Primary Six
Examination Papers

2016

Science

1	**Nanyang Primary School**	**CA1**	**SA1**	**SA2**
2	**Nan Hua School**	**CA1**	**SA1**	**SA2**
3	**Rosyth School**	**CA1**	**SA1**	**SA2**
4	**Chij St Nicholas Girls' School**	**CA1**	**SA1**	**SA2**
5	**Anglo Chinese School**	**CA1**	**SA1**	**SA2**
6	**Raffles Girls' Primary School**		**SA1**	**SA2**
7	**Tao Nan School**		**SA1**	
8	**Henry Park Primary School**		**SA1**	**SA2**
9	**Catholic High School**		**SA1**	**SA2**
10	**Red Swastika School**		**SA1**	**SA2**
11	**Singapore Chinese Girls' School**		**SA1**	**SA2**
12	**Pei Hwa Presbyterian Primary School**		**SA1**	**SA2**
13	**Methodist Girls School**			**SA2**
14	**Christian Brothers' School**			**SA2**
15	**Pei Chun Public School**			**SA2**
16	**St. Hilda's Primary School**			**SA2**

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT

2016

BOOKLET A

Date : 29 February 2016
Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 21 printed pages including this cover page.

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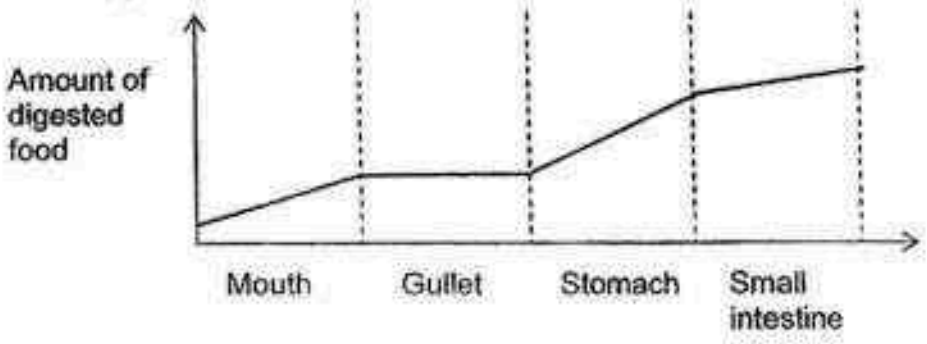
Section A (30 x 2 marks = 60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. John ate a sandwich for lunch. Which one of the graphs below correctly represents the amount of digested food found in the different body parts as it passes through John's digestive system?

(1)



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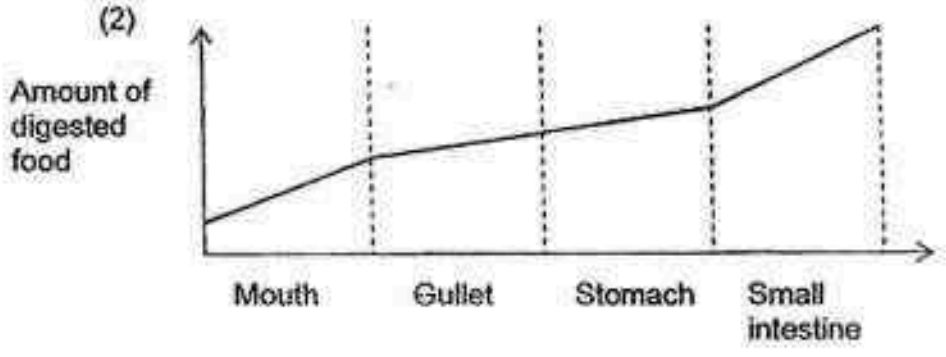

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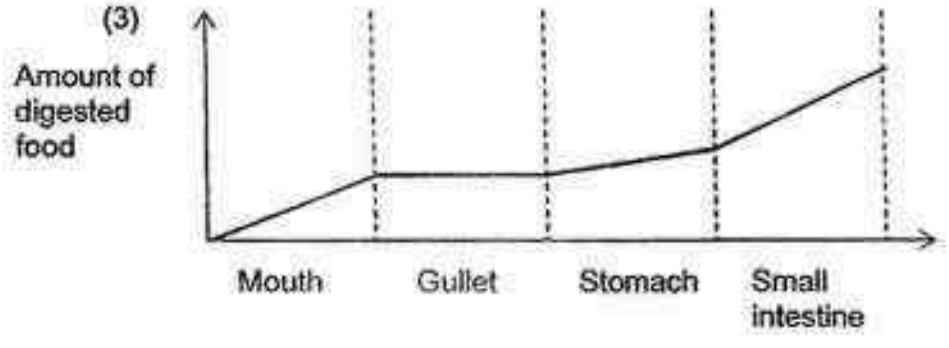

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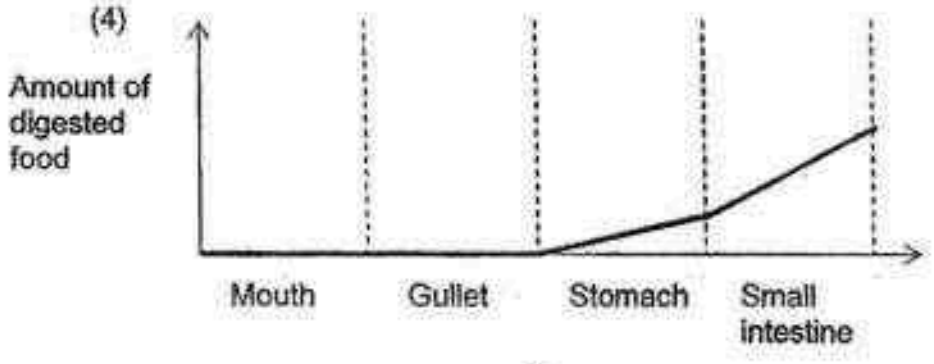

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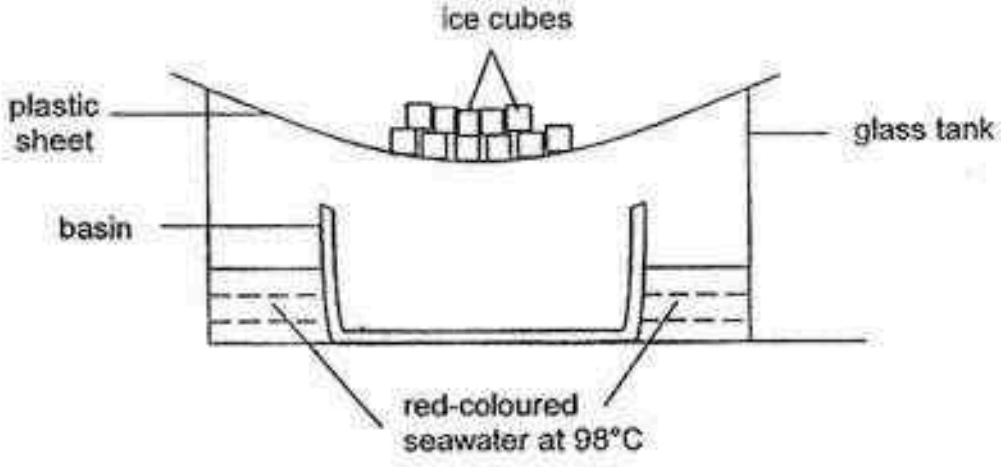
2. Which of the following statement(s) is/are **true** about the various systems in our body?

A The skeletal system gives the body its shape.
B The digestive system transports food to all parts of our body.
C The muscular system is directly involved in the digestion of food.
D The muscular, digestive and skeletal systems are directly involved when we breathe.

(1) A only
(2) A and C only
(3) B and D only
(4) B, C and D only

3. Sam set up the experiment as shown in the diagram below and placed it under a light source.



What would most likely be collected in the basin after 30 minutes?

(1) Red-coloured water will be collected in the basin.
(2) Colourless salt water will be collected in the basin.
(3) Colourless pure water will be collected in the basin.
(4) Red-coloured salt water will be collected in the basin.

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4. James conducted an experiment using 4 set-ups, P, Q, R and S, containing water in containers made of the same material. The table below shows the different conditions at the start of each experiment.

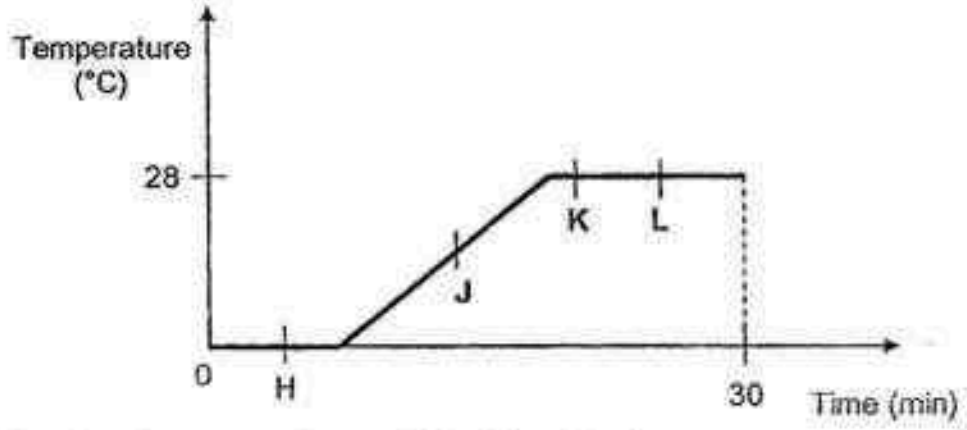
	Set-ups			
	P	Q	R	S
Room temperature (°C)	28	26	26	28
Exposed surface area of water (cm^2)	100	100	200	100
Volume of water (ml)	200	200	200	200
Temperature of water (°C)	40	40	50	50

James wanted to investigate how the rate of evaporation of water was affected by the temperature of water.

Which of the following 2 set-ups are the best for him to use to ensure a fair test?

(1) P and Q
(2) P and S
(3) Q and R
(4) R and S

5. Tim placed a beaker of crushed ice in a classroom which was at room temperature. The temperature of the melting ice was recorded and the results were plotted in the graph shown below.



Based on the graph above, which of the following statements are **true**?

A At point K, water in the beaker is evaporating.
B At point J, all the ice in the beaker has melted.
C At point L, there is no water present in the beaker.
D At point H, the beaker contains a mixture of ice and water.

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, B, C and D

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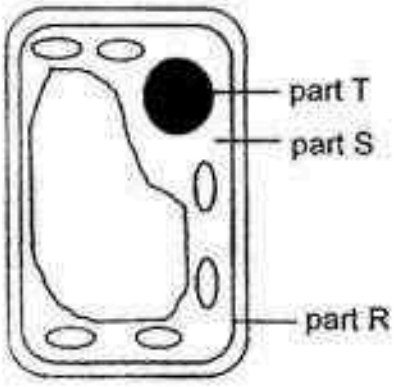
6. The diagram below represents a cell.



Which of the following statements about the cell above are **true**?

A Part R can only be found in animal cells.
B Part T is the basic unit of any living organism.
C Part S can be found in both plant and animal cells.
D Part T contains information that is passed down from one generation to another.

(1) A and B only
(2) C and D only
(3) A, B and C only
(4) B, C and D only

The table below shows the parts present in cells W, X, Y and Z.

	Cell			
Cell structure	**W**	**X**	**Y**	**Z**
Nucleus	Present	Present	Absent	Present
Cell wall	Present	Present	Absent	Absent
Cytoplasm	Present	Present	Present	Present
Chloroplast	Present	Absent	Absent	Absent
Cell membrane	Present	Present	Present	Present

Based on the information in the table above, which of the following statements are **true**?

A Cell Z could be a cheek cell.
B Cell X could be a sperm cell.
C Cell Y could be a root hair cell.
D Cell W could be an onion skin cell.

(1) A only
(2) A and C only
(3) B and D only
(4) A, C and D only

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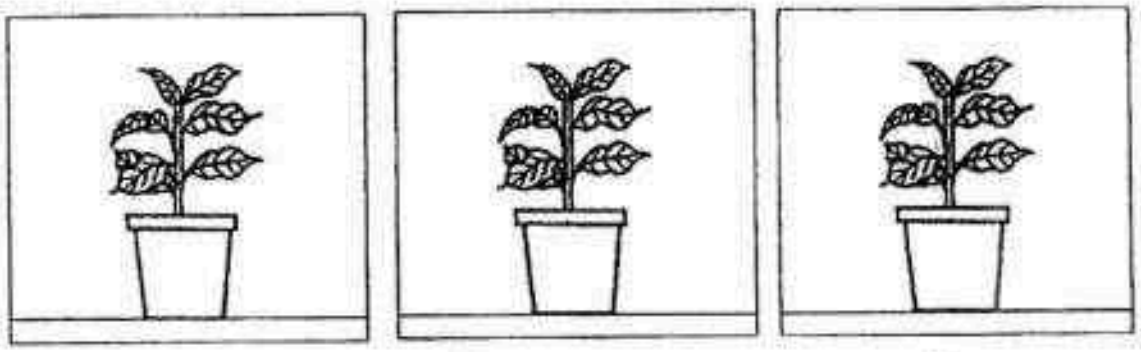
8. Ali placed three identical potted plants in three glass containers, A, B and C. The glass containers had the same amount of carbon dioxide at the start of the experiment and were placed at different locations as shown in the diagrams below.



A
in a dark cupboard

B
under the sun

C
in the shade

Arrange the glass containers accordingly, from the one containing the least amount of carbon dioxide to the one with the most carbon dioxide, after a few hours.

least carbon dioxide ⟶ most carbon dioxide

(1)	A	B	C
(2)	A	C	B
(3)	B	C	A
(4)	C	B	A

9. Which of following statements about photosynthesis are **correct**?

A Photosynthesis releases energy.
B Water and carbon dioxide are taken in by the stomata.
C Oxygen is given out during the process of photosynthesis.
D Food made in the leaves is transported to all parts of the plants.

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

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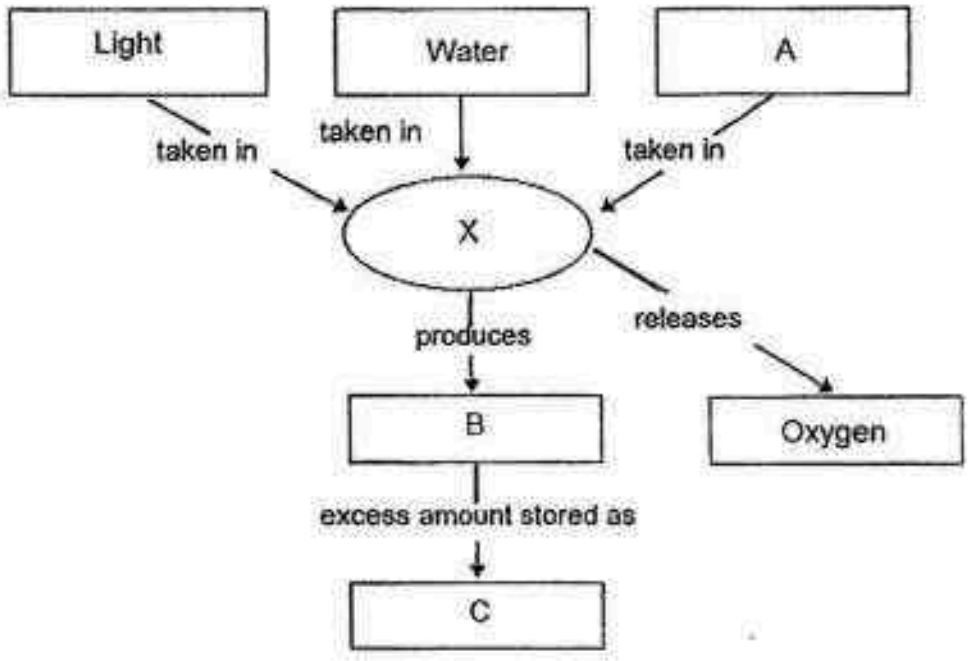
10. Study the diagram below.



Which one of the following correctly represents process X and substances A, B and C in the diagram?

	X	A	B	C
(1)	photosynthesis	oxygen	starch	sugar
(2)	respiration	carbon dioxide	sugar	starch
(3)	respiration	oxygen	starch	sugar
(4)	photosynthesis	carbon dioxide	sugar	starch

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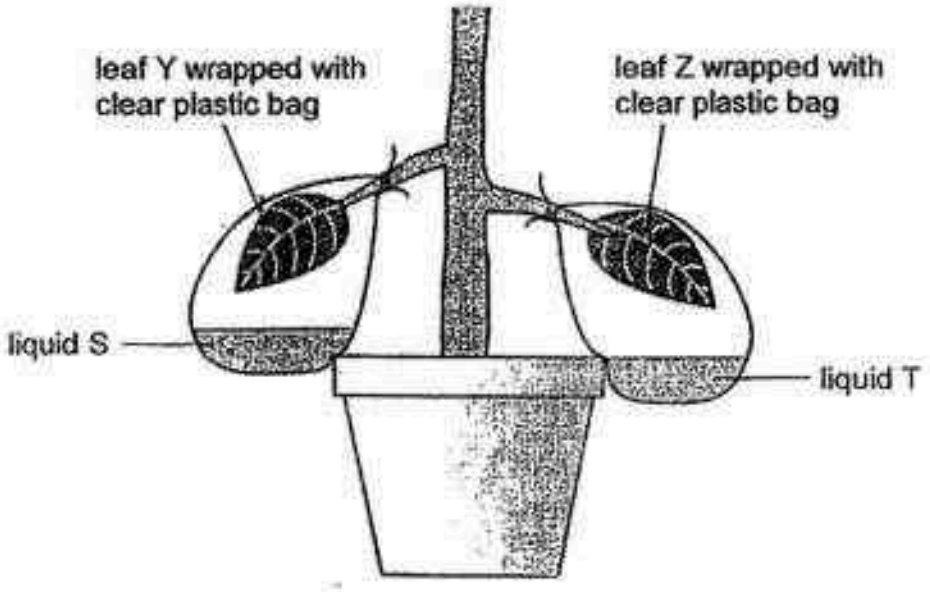
11. Jane placed a pot of plant in a dark room for 3 days. She then set up the following experiment under the sun to find out the effect of carbon dioxide on photosynthesis. Liquids S and T were placed in each of the plastic bags as shown below.



Jane conducted a starch test on both leaves, Y and Z. The iodine solution turned dark blue on leaf Y but it remained brown on leaf Z.

Which of the following statements best explain the results from the above experiment?

A Starch was absent in leaf Z.
B Starch was present in leaf Y.
C Liquid T removed carbon dioxide from the plastic bag.
D Liquid S removed carbon dioxide from the plastic bag.

(1) A and B only
(2) B and D only
(3) A, B and C only
(4) A, C and D only

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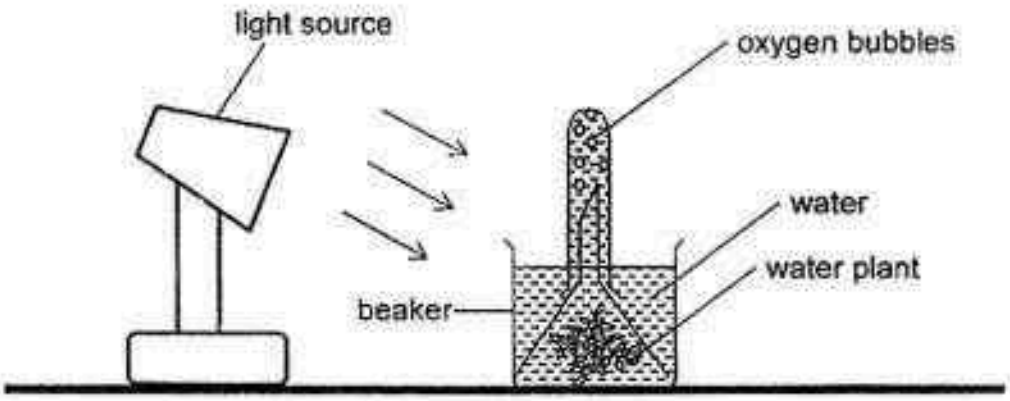
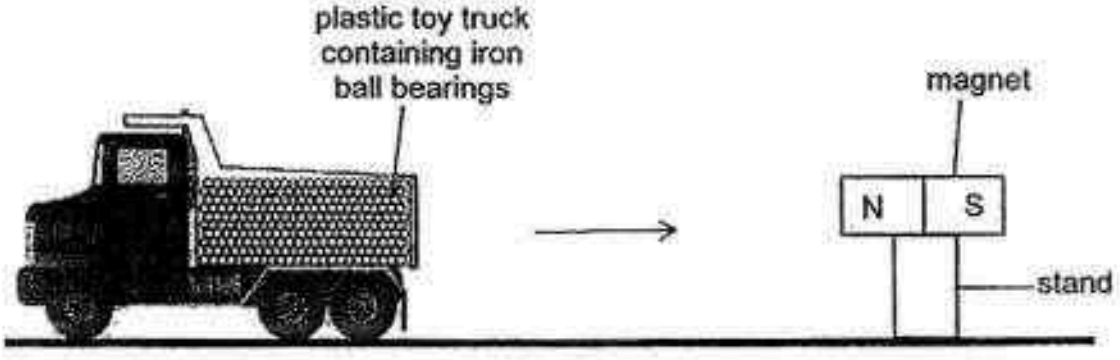
12. Study the experimental set-up below.



It was observed that the water plant produced oxygen bubbles during the experiment. Which one of the following factors would most likely cause a decrease in the number of oxygen bubbles produced?

(1) Using a bigger beaker.
(2) Adding one more light source.
(3) Increasing the amount of water in the beaker.
(4) Moving the set-up away from the light source.

13. A plastic toy truck carrying some iron ball bearings was given a push and was moving in the direction of the magnet as shown below.



Which of the following change(s) would enable the plastic toy truck to take a shorter time to reach the magnet?

A Replace the magnet with a stronger magnet.
B Add additional copper ball bearings to the truck.
C Flip the magnet such that the South Pole is facing the truck.
D Replace the iron ball bearings with plastic ball bearings of the same mass.

(1) A only
(2) A and B only
(3) A, C and D only
(4) B, C and D only

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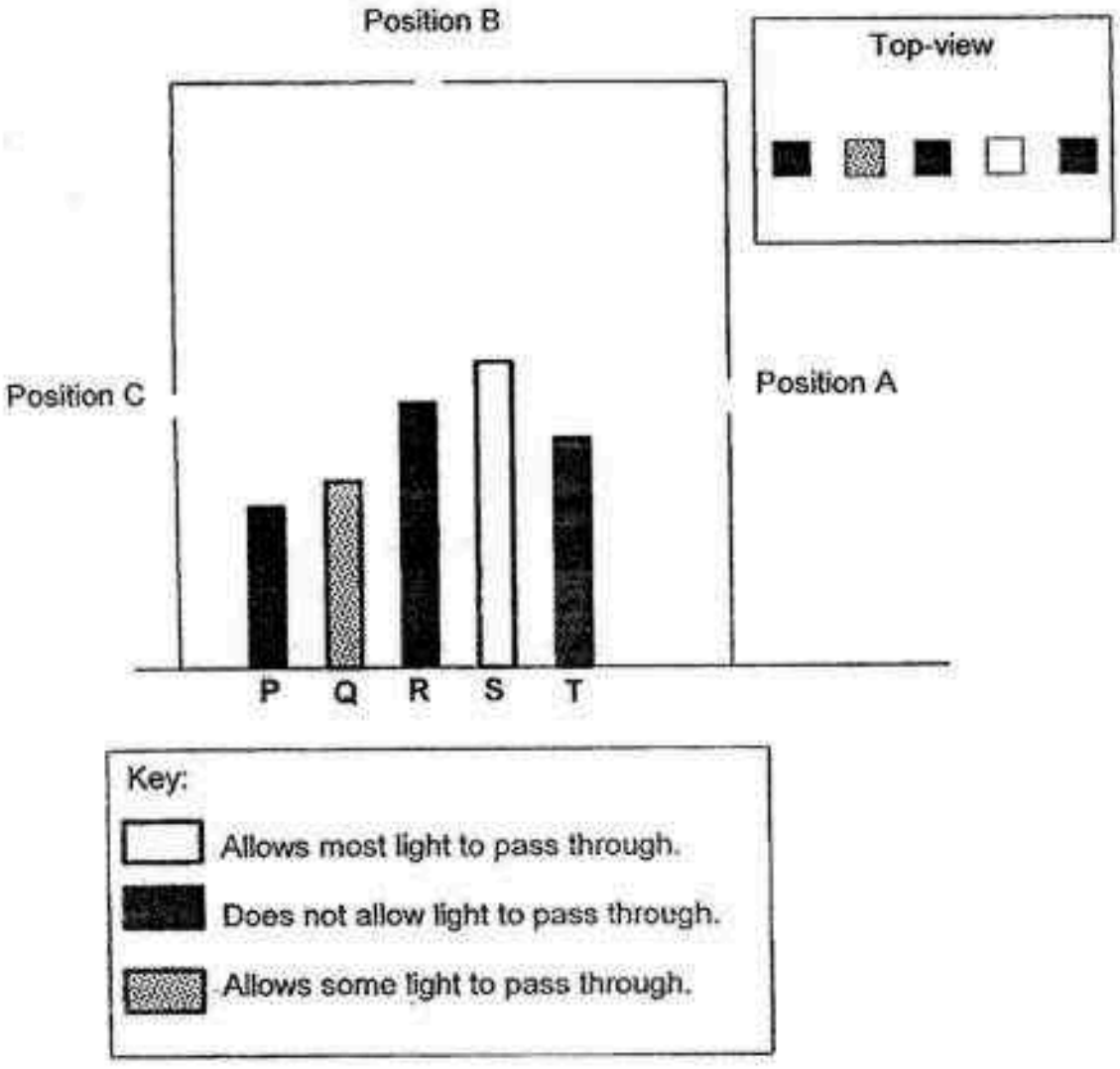
14. Five rectangular blocks of the same thickness and width were placed in a straight line in a well-lit box as shown in the diagram below. Shaun peered through the three small holes at positions A, B and C to look at the blocks from different positions.



Which rectangular blocks would he be able to see from the various positions?

	Position A	Position B	Position C
(1)	R and T	P, R and T	P and R
(2)	R, S and T	P, Q, R, S and T	P, Q, R and S
(3)	S and T	P, Q, R, and T	P, Q, R and S
(4)	P, Q, R, S and T	P, Q, R, S and T	P, Q, R, S and T

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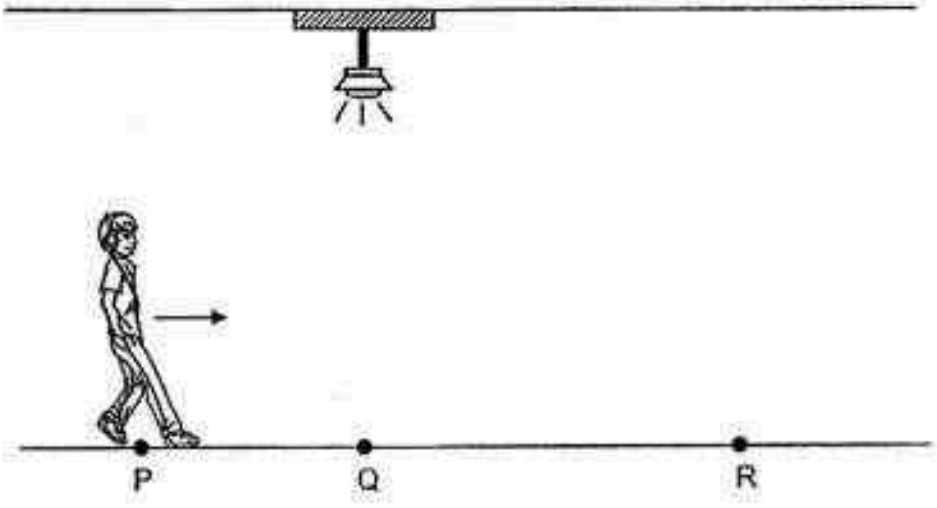
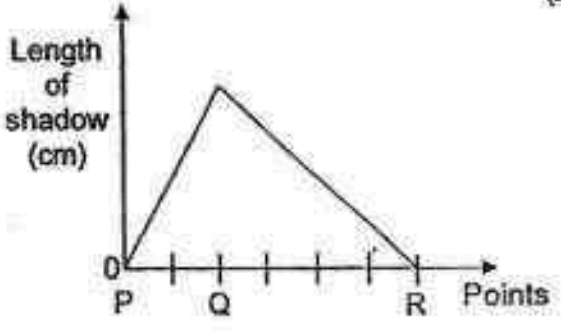
15. Peter walked in a straight line from P to R as shown in the figure below.

At Q, he was directly under the lamp. The distance between P and Q is half the distance between Q and R.



Which one of the following graphs correctly represents the length of Peter's shadow from point P to point R?

(1)



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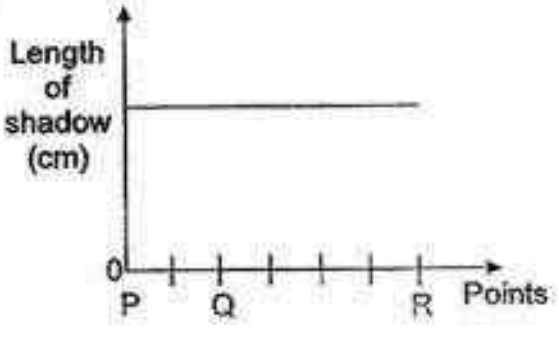

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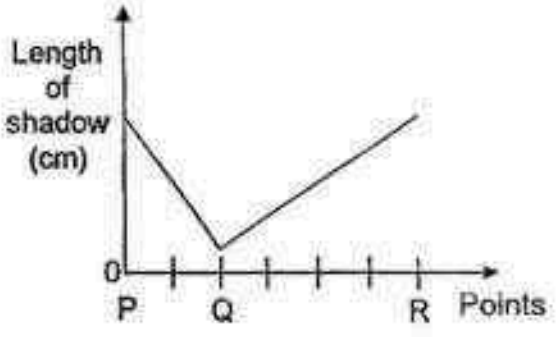

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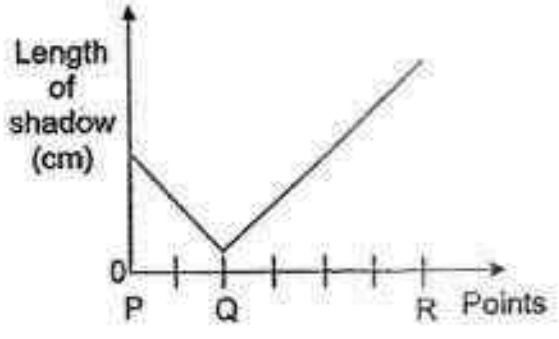

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16. The table below shows the states of 4 substances, E, F, G and H, at different temperatures.

Substances	States of substances		
	at 2°C	at 52°C	at 95°C
E	solid	liquid	gas
F	liquid	liquid	gas
G	liquid	gas	gas
H	solid	solid	liquid

Which of the following statements **correctly** describe substances E, F, G and H?

A The freezing point of substance E is 1°C.
B The boiling point of substance F is 98°C.
C Substance H has the highest boiling point.
D Substance G has the highest melting point.

(1) C only
(2) A and B only
(3) C and D only
(4) A, B and D only

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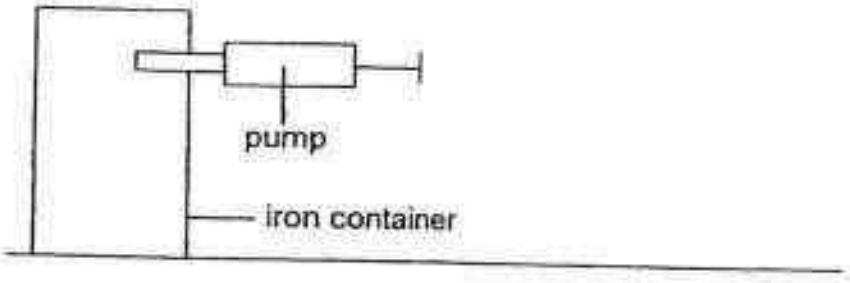
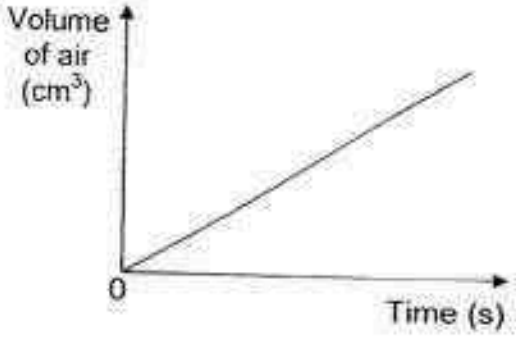
17. An experiment was set up using a sealed iron container that contains $300cm^3$ of air as shown in the diagram below



Air was pumped into the container at a rate of $20cm^3$ per second for 10 seconds.

Which one of the following graphs represents the volume of air in the sealed container during the experiment?

(1)



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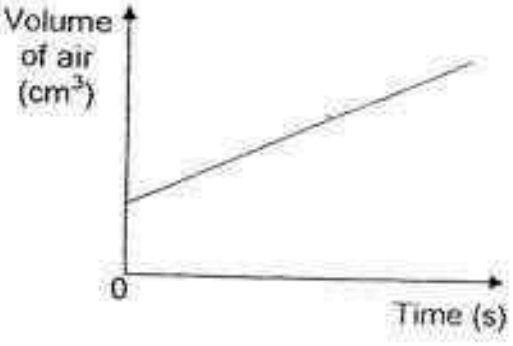

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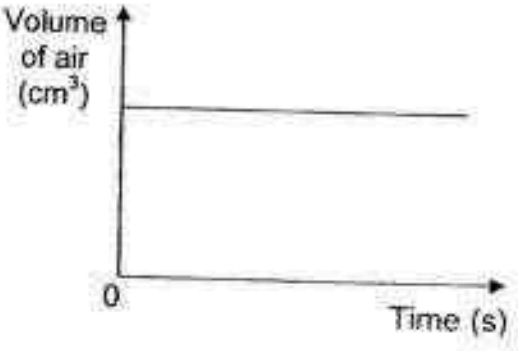

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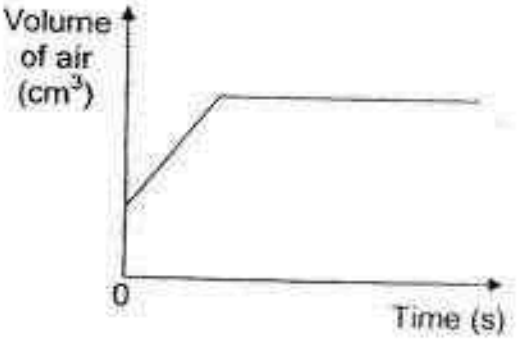

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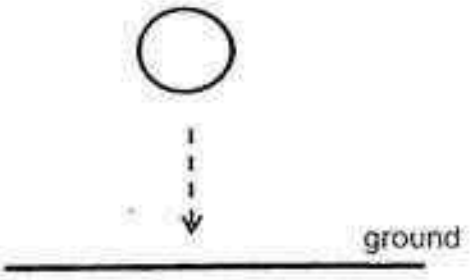
18. Which of the following action(s) demonstrate(s) a person exerting a push force?

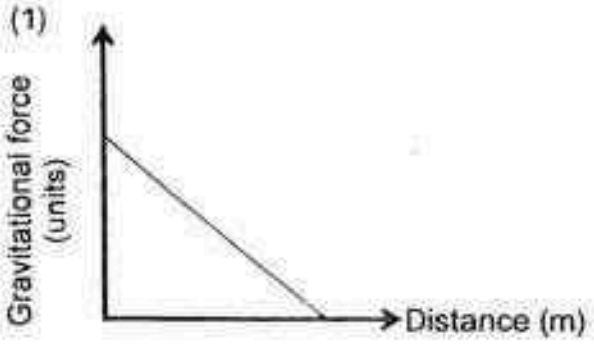
A A person lifting a box off the ground.
B A person walking up a flight of steps.
C A person hitting the ping pong ball with a bat.
D A person pressing the emergency button in a lift

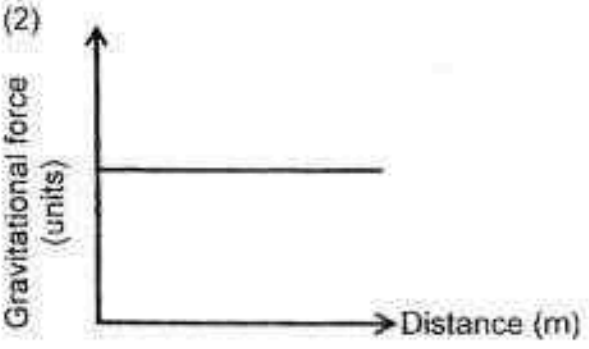
(1) A only
(2) C and D only
(3) A, B and D only
(4) B, C and D only

19. The diagram below shows a ball that was released from a certain height.



Which one of the following graphs correctly shows how the gravitational force acting on the ball is affected by the distance of the ball from the ground?

(1)


(2)


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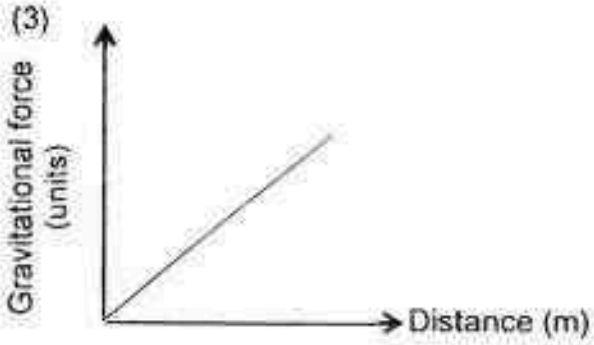

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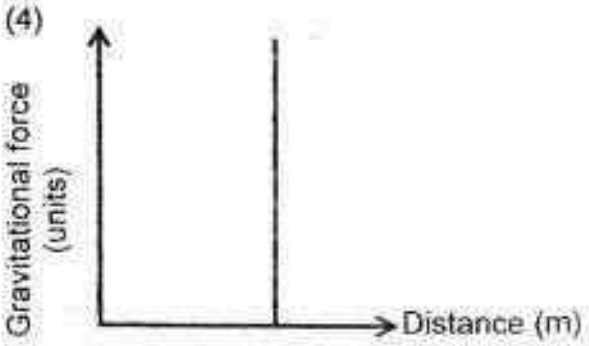

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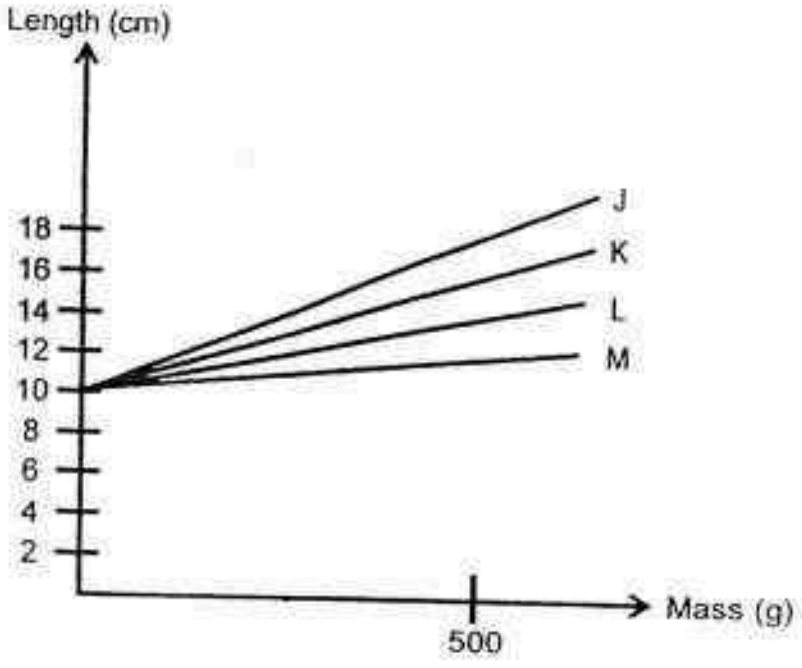
20. The graph below shows how 4 springs, J, K, L, and M, were stretched when different weights were hung on them.



Which spring was the least elastic when a mass of 500g was hung on it?

(1) J
(2) K
(3) L
(4) M

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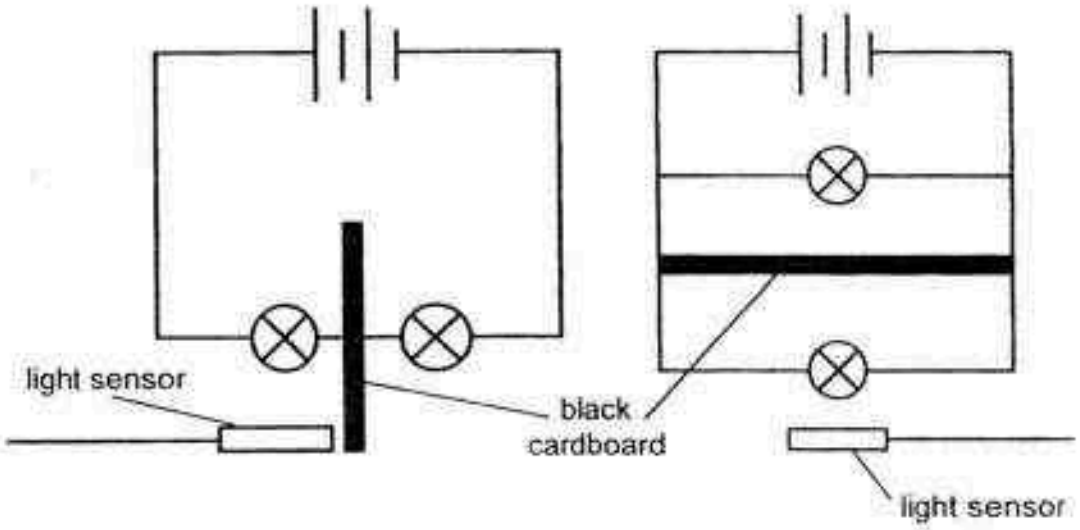
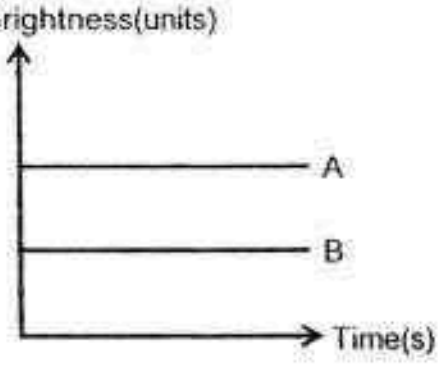
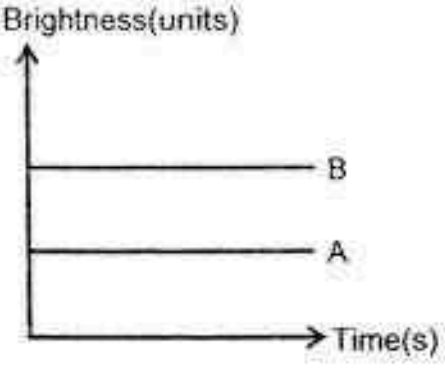
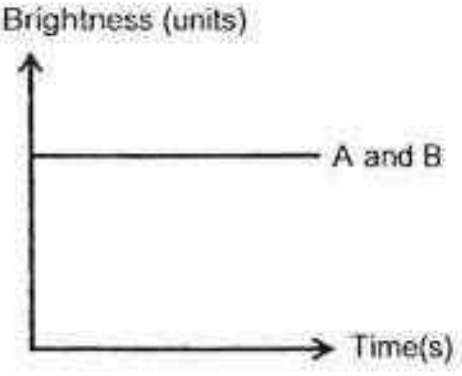
21. Two circuits using identical bulbs were set up as shown in the diagram below. A black cardboard was placed between the 2 bulbs in each set-up such that the light sensor was only able to detect light coming from one light bulb.

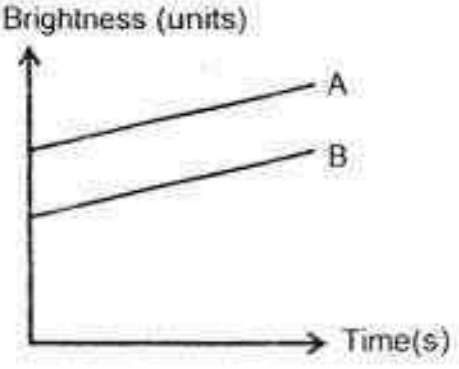


Which one of the following graphs correctly shows how the readings of the light sensor would vary with the two set-ups?

(1)


(2)


(3)


(4)


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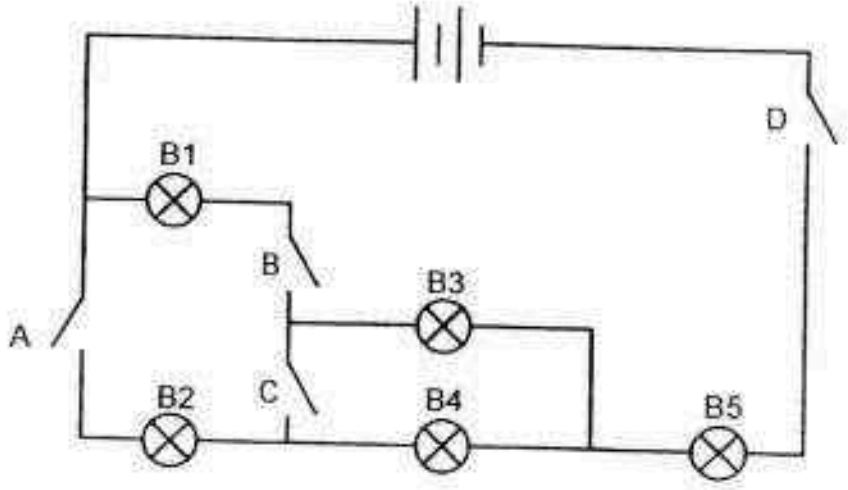
22. A circuit was constructed as shown.

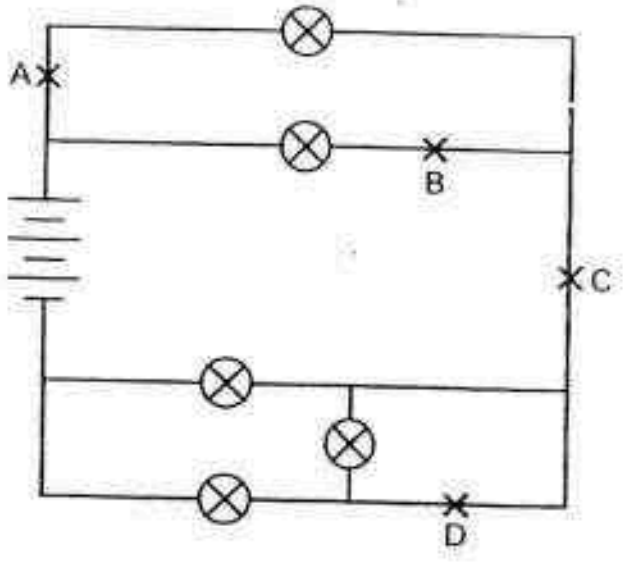


When some switches were closed, only bulbs B1, B3 and B5 lit up.

Which of the following switches were closed?

(1) A and C only
(2) B and D only
(3) A, B and D only
(4) B, C and D only

23. Alice set up the circuit diagram as shown below.



In which position should she add a switch such that she is able to control all the bulbs at the same time?

(1) A
(2) B
(3) C
(4) D

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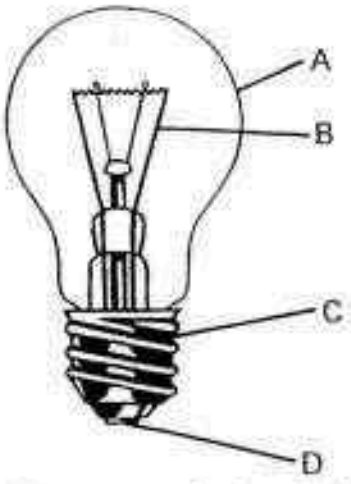
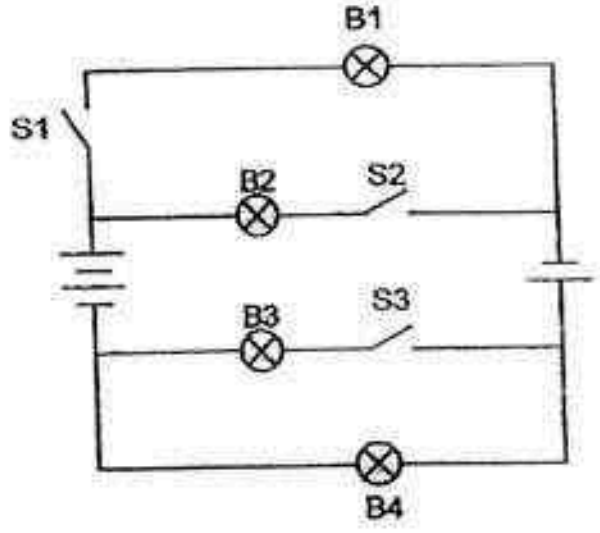
24. The diagram below shows a light bulb.



Which parts of the light bulb are conductors of electricity?

(1) A and B only
(2) C and D only
(3) B, C and D only
(4) A, B, C and D

25. Study the circuit diagram shown below.



Which of the following statement(s) is/are **true** of the above set-up?

A When only S1 is closed, only B1 will light up.
B When only S3 is closed, only B3 will light up.
C When only S2 is closed, only B2 and B4 will light up.
D When only S2 and S3 is closed, only B2, B3 and B4 will light up.

(1) C only
(2) C and D only
(3) A and B only
(4) A, C and D only

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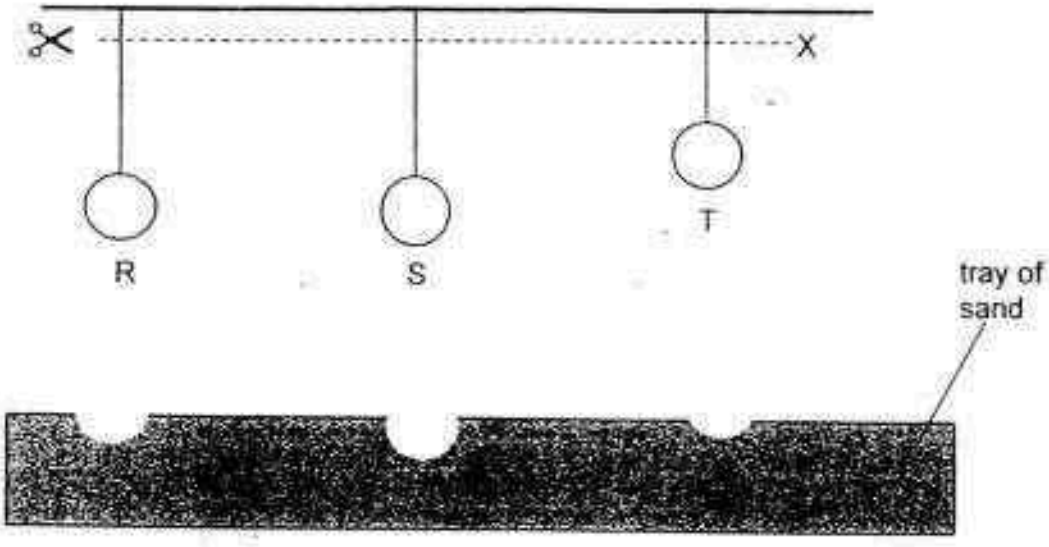
26. Which of the following statements about energy are **true**?

A Energy can exist in different forms.
B Energy is not needed during sleeping.
C Energy is needed by green plants only.
D Energy can be converted from one form to another

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

27. Three metal balls of the same size, R, S and T, were hung from the ceiling. The strings were cut at point X and the metal balls landed on a tray of fine sand, leaving dents made by them respectively.



Based on the above diagram, which of the following statements is/are **correct**?

A T has the greatest mass.
B S has a greater mass than R.
C T has the greatest gravitational potential energy.

(1) B only
(2) A and C only
(3) B and C only
(4) A, B and C only

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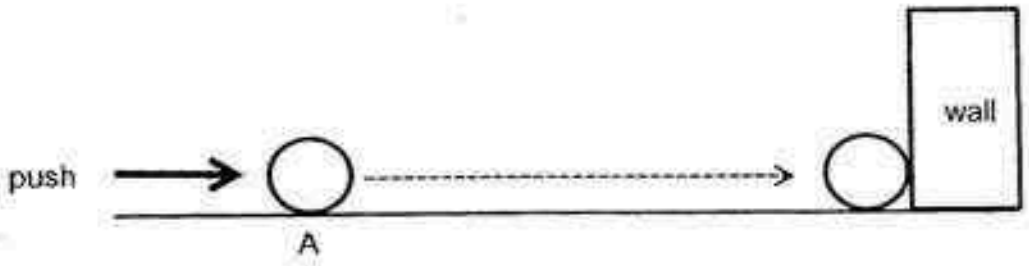
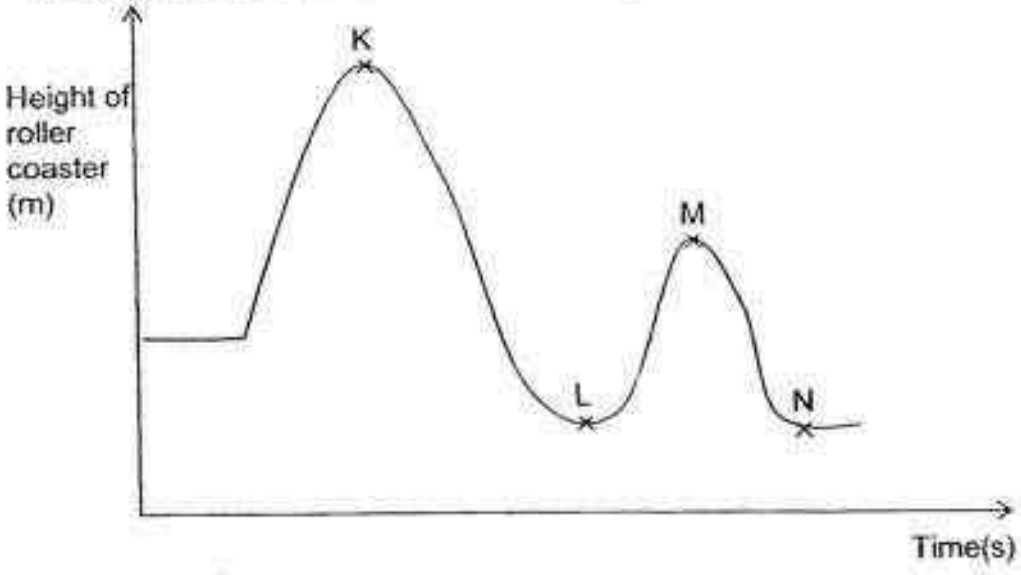
28. A ball was pushed at point A. The ball rolled along the floor, hit the wall and it stopped immediately as shown in the diagram below.



Which one of the following statements best describes the forms of energy involved in the above activity?

(1) The ball possessed gravitational potential energy at A.
(2) Heat energy was produced when the ball rolled on the floor.
(3) The kinetic energy of the ball is the highest before it hits the wall.
(4) The kinetic energy of the ball was converted to gravitational potential energy when it rolled on the floor

29. Bob took a roller coaster ride. The graph below shows the changes in the height of the roller coaster at different points in time.



Based on the graph above, which one of the following statements is **correct**?

(1) There was the same amount of kinetic energy at L and N.
(2) The car had the maximum gravitational potential energy at M.
(3) The kinetic energy of the roller coaster was greater at L than N.
(4) The gravitational potential energy gained by the roller coaster was converted to kinetic energy only from K to L.

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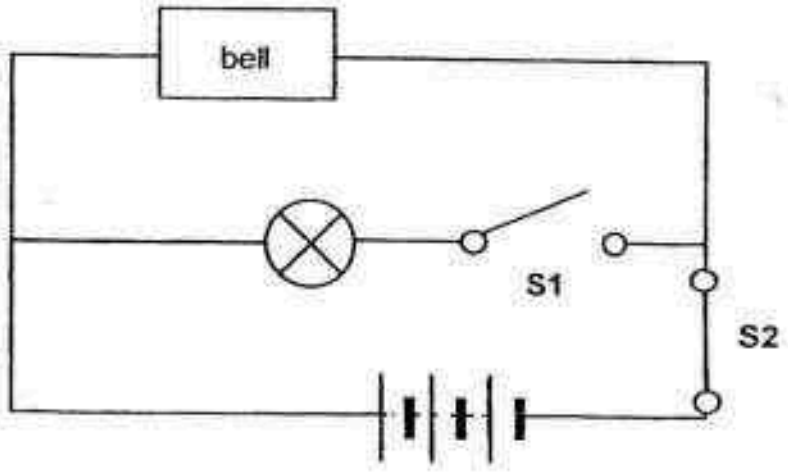
30. The diagram below shows a diagram of a circuit used in an alarm system. A bell is connected to the circuit.



Which of the following shows the correct energy conversions when S1 is opened and S2 is closed?

(1) Electrical energy → Sound energy

(2) Chemical potential energy → Electrical energy → Sound energy

(3) Electrical energy → Light energy + Sound energy

(4) Chemical potential energy → Electrical energy → Light energy + Sound energy

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT

2016

BOOKLET B

Date : 29 February 2016

Duration : 1 h 45 min

Name : _____ **( )**

Class: Primary 6 ( )

Marks Scored:

Booklet A:		**60**
Booklet B :		**40**
Total :		**100**

Any query on marks awarded should be raised by 11 March 2016. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature:

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 18 printed pages including this cover page.

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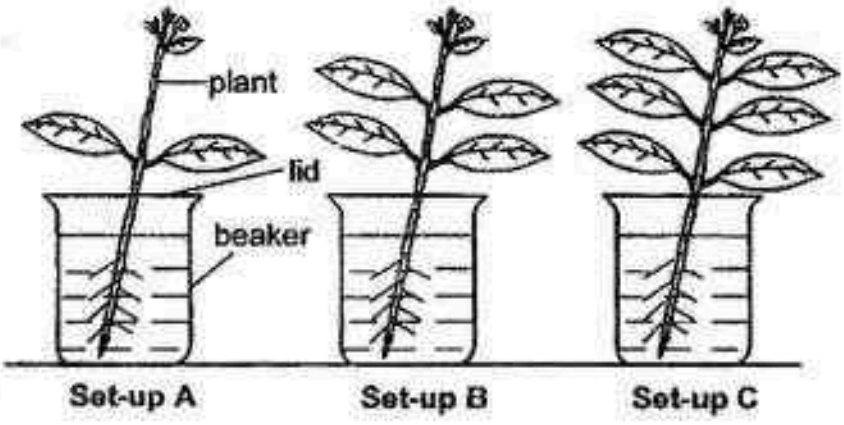
Section B (40 marks)
Write your answers to questions 31 to 44 in the spaces provided.

31. Henry carried out an experiment to find out how the number of leaves on a plant affects the amount of water it takes in.

The diagram below shows the set-ups of his experiment.



He left the set-ups near the window and recorded the amount of water left in each beaker after 4 days.

	Set-up A	Set-up B	Set-up C
Amount of water at the start of the experiment (ml)	200	200	200
Amount of water at the end of the experiment (ml)	190	184	171

(a) Explain the change in the amount of water in all the set-ups above [1]

_____

_____

(b) Why did he use plants with the same number of roots in set-ups A, B and C?

_____

_____

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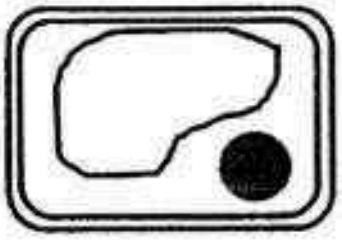
32. The diagram below shows two different types of cells, A and B, taken from different parts of a same plant.



Cell A



Cell B

In which parts of the plant are you most likely to find cell A and cell B? Explain your answers. [2]

Cell A: _____

Explanation:

_____

_____

Cell B: _____

Explanation:

_____

_____

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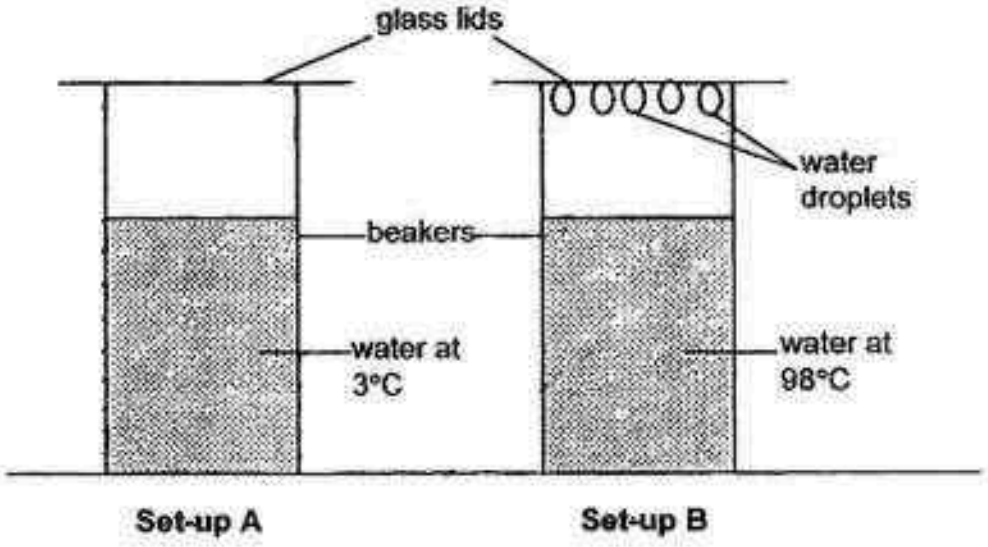
33. Oliver took a beaker of water at 3°C and a beaker of water at 98°C and placed them in a classroom at room temperature as shown in the diagram below.



(a) **Draw** where the water droplets will be observed for set-up A after 10 minutes. [1]

(b) Explain how the water droplets are formed in set-up B. [2]

(c) After 20 minutes, he observed that there were less water droplets being formed in both set-ups. Explain this observation. [1]

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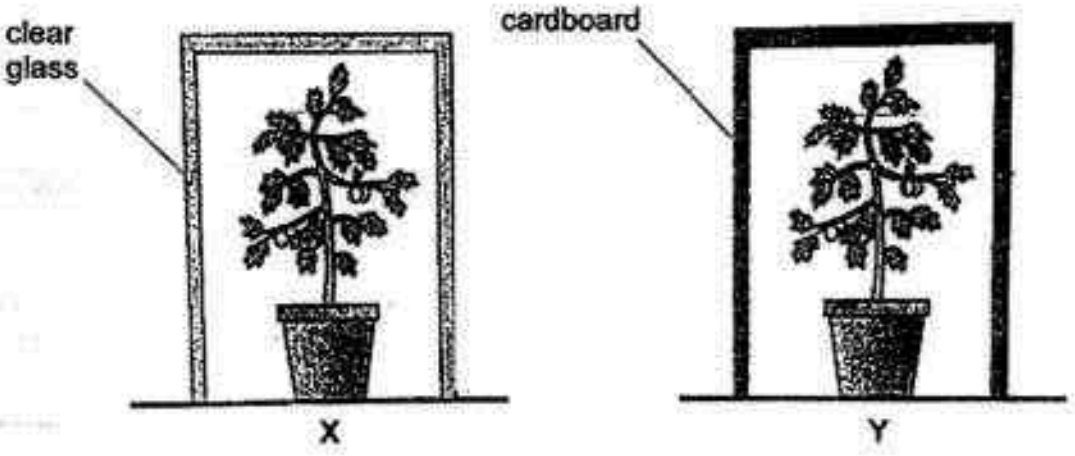
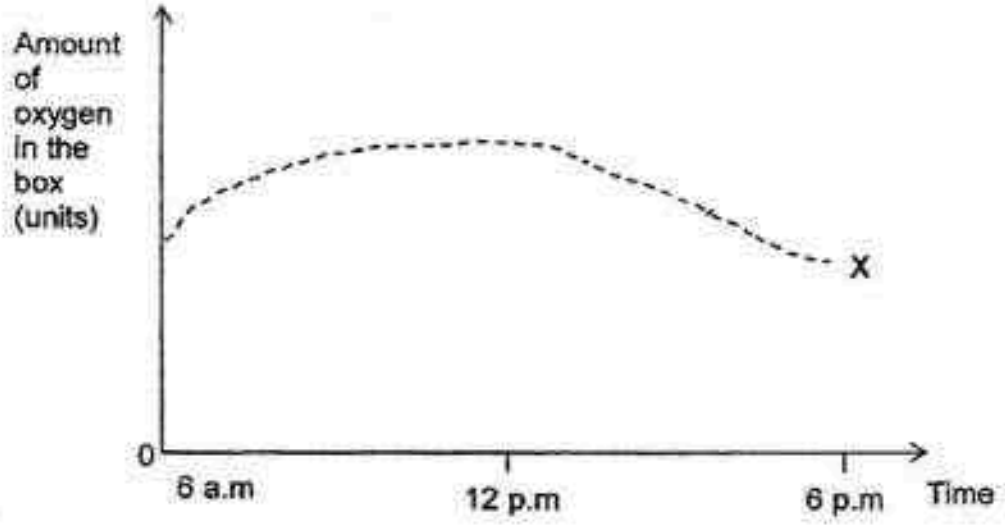
34. The following experiment was set up using two similar pots of plants, X and Y, which were placed in two boxes made of different materials as shown below.



The two boxes were placed in a garden for a day and the amount of oxygen present in the box for plant X was recorded as shown below.



(a) Draw and **label** the graph for plant Y. [1]

(b) Based on the graph for plant X, state the relationship between the amount of light received by the plants and the amount of oxygen present in the box. [2]

_____

_____

_____

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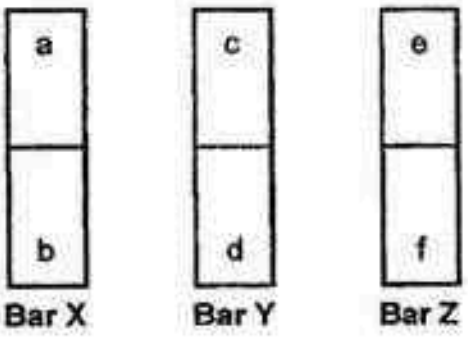
35. Tom had three similar bars as shown in the diagram below. They were identical in colour, shape and mass. Two of the bars were magnetised while the other bar was made of a magnetic material but not magnetised.



Using only the three bars (X, Y and Z) above, describe how Tom could determine which two bars were magnetised. [2]

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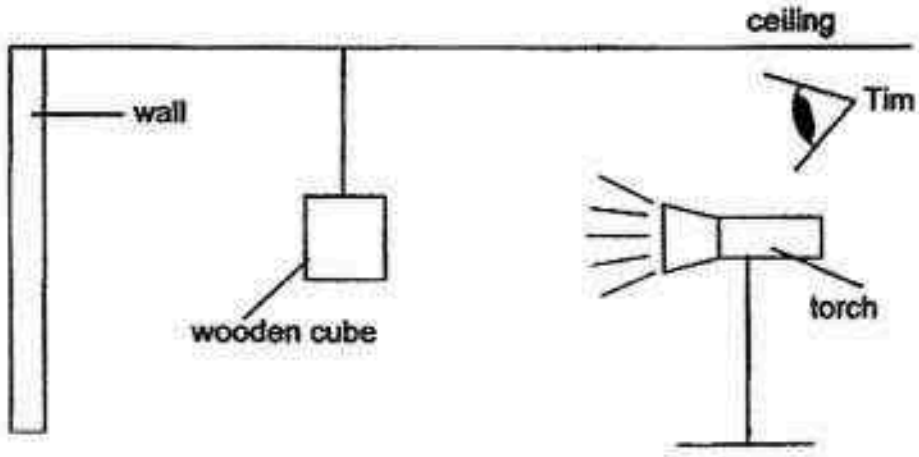
36. Tim carried out an experiment in a dark room as shown in the diagram below.



(a) Explain how Tim was able to see the wooden cube when the torch was switched on. [1]

_____

_____

(b) Without moving the wall, state two changes that he could make to **decrease** the size of the shadow formed on the wall. [1]

(i) _____

(ii) _____

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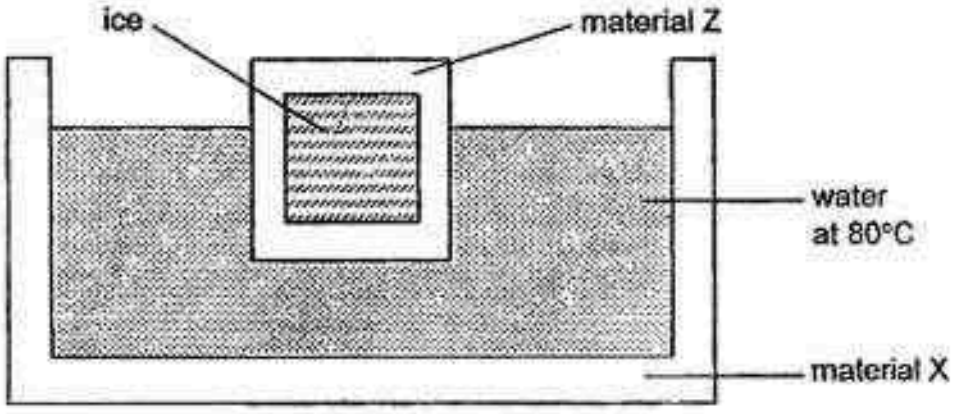
37. Hanson recorded the time taken for the same amount of water to boil when placed in containers of different materials, X, Y and Z, in the table shown below. The same amount of heat was used for each set-up.

Material	Time taken for water to start boiling (min)
X	10
Y	15
Z	20

He then created a set-up as shown in the diagram below.



Explain why materials X and Z were used so as to ensure that the ice melts the slowest. [2]

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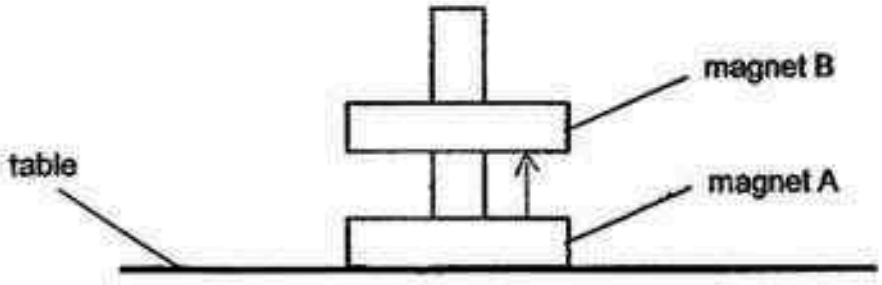
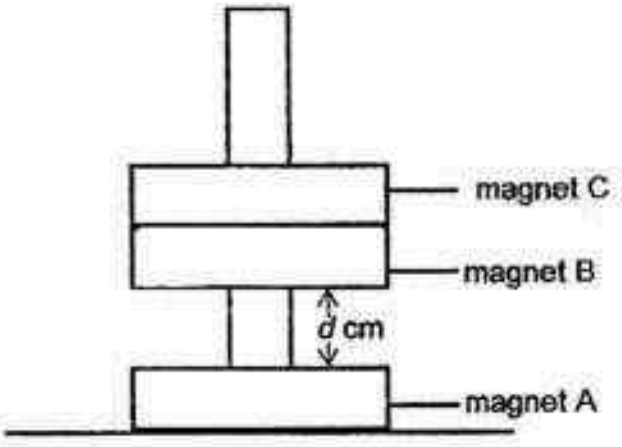
38. The diagram below shows two ring magnets, A and B, with one "floating" on top of the other.



(a) **On the diagram above**, draw and label two forces that were **acting on magnet B.** [1]

(b) Explain why the two magnets were "floating" on top of one another. [1]

(c) Another similar ring magnet, C, was added as shown in the diagram below.



Using the concept of forces, explain why the distance, *d*, decreased when ring magnet C was added. [1]

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39. The pictures below show a gymnast dipping his palms into a container of powder before his competition.



powder



bar

Gymnasts with sweaty palms tend to cover their palms with more powder.

(a) Using the concept of forces, explain how covering their sweaty palms with powder will help to improve their grip on the handle bars. [2]

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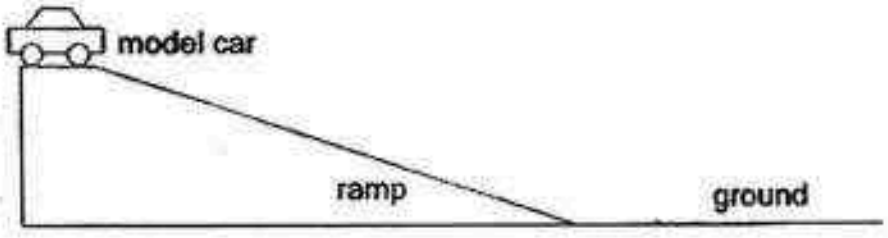
Jonathan conducted an experiment as shown below.



Some powder was applied to the surface of the ramp and the car was given a gentle push. The distance travelled by the car on the ground was then measured. The experiment was repeated using 4 different types of powder.

(b) What was the aim of Jonathan's experiment? [1]

_____

_____

(c) List down one factor that Jonathan should keep constant when he conducted the experiment. [1]

_____

_____

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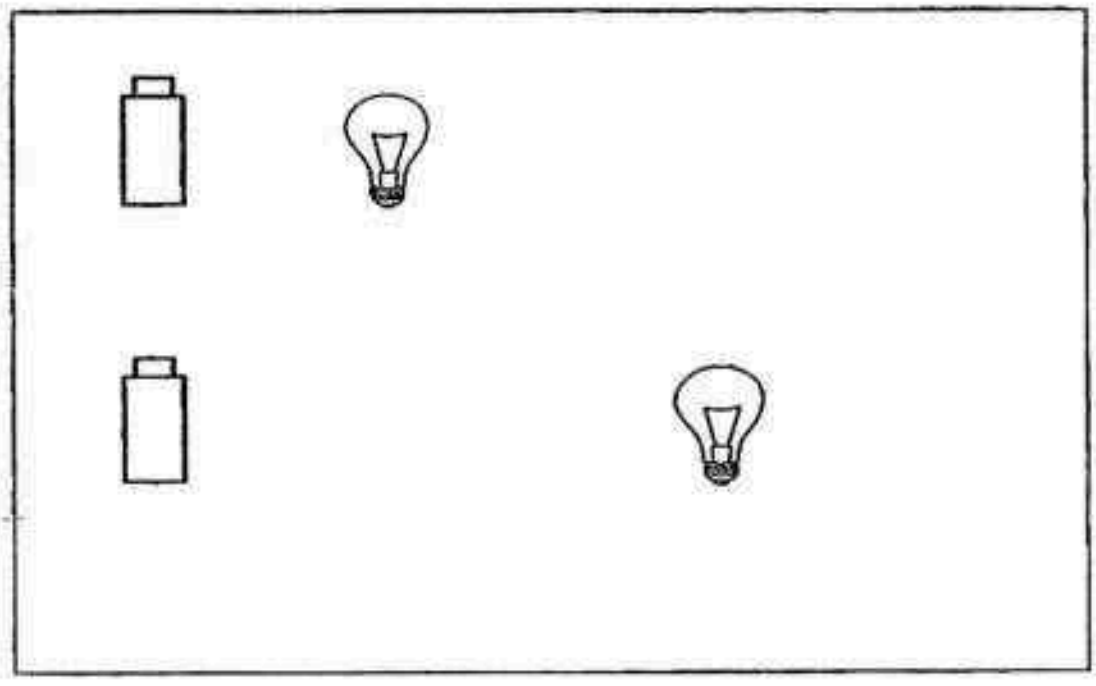
40. (a) In the space provided below, connect the two bulbs and batteries together such that each bulb will light up the brightest. [2]



(b) Suggest one disadvantage of connecting bulbs in series. [1]

_____

_____

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41. The diagram below shows a circuit board with four bulb holders, H1, H2, H3 and H4. Diagram 2 shows a bulb attached to a bulb holder. Electricity can only flow through a bulb holder when a bulb is attached to it.

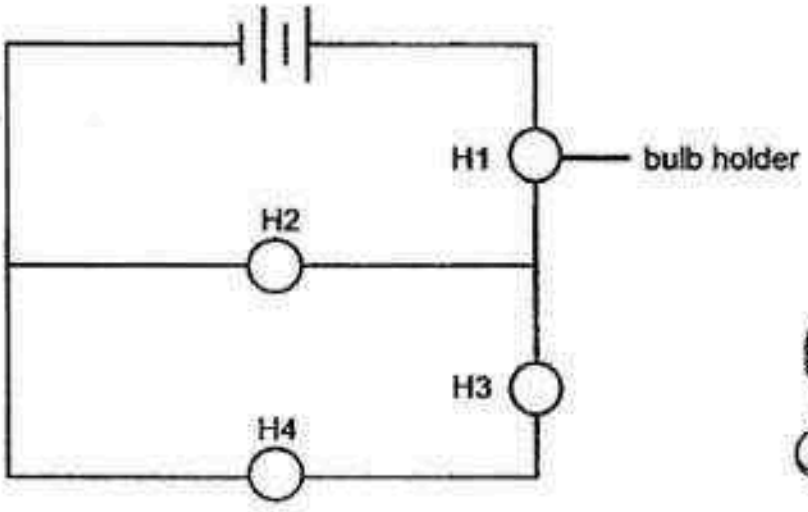

Diagram 1

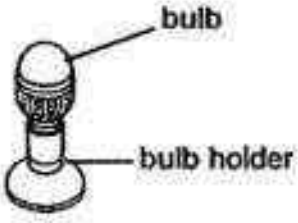

Diagram 2

Tammy was given four bulbs, B1, B2, B3 and B4. One of the bulbs had fused.

(a) Suggest 2 methods how Tammy could use the above circuit board to determine which was the bulb that had fused. (You may rearrange the positions of the bulb.) [2]

Method 1

_____

_____

_____

Method 2

_____

_____

_____

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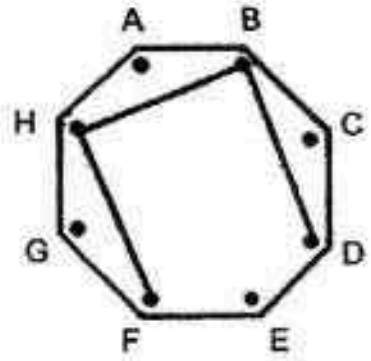
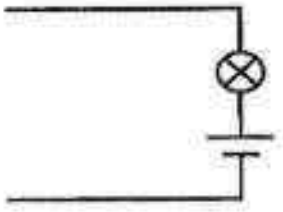
The diagram below shows wires connected in a circuit card.



Circuit card

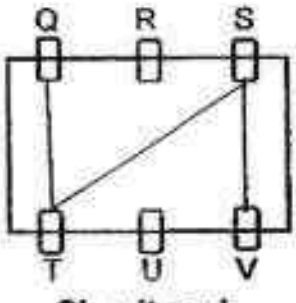


Circuit tester

(bi) In the table below, list 2 different pairs of connecting points which would enable the bulb of the circuit tester to light up. [1]

and	
and	

(bii) In the circuit card below, using only 3 wires, draw one way of connecting the circuit such that the bulb of the circuit tester will light up based on the results in the table below. [1]



Circuit card

Clips tested	Results of test
Q and R	Did not light up
Q and T	Light up
S and V	Light up
R and V	Did not light up
T and U	Did not light up
T and S	Light up
T and V	Light up
R and S	Did not light up

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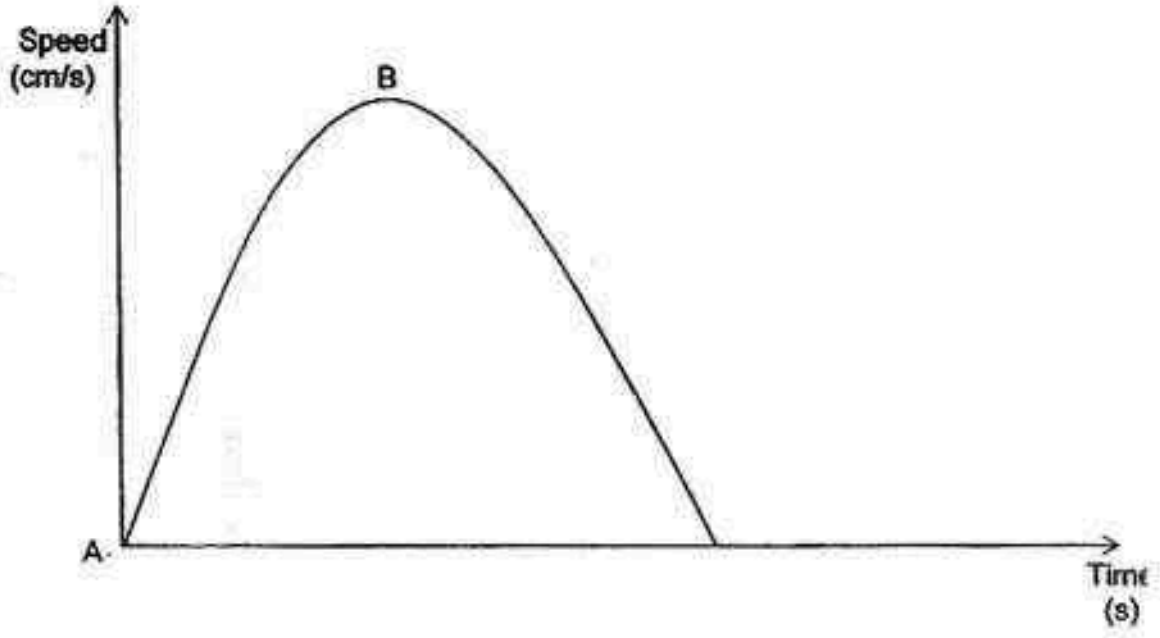
42. A toy car was pushed down a ramp. The graph below shows the speed of the toy car at different points, A, B, and C, over a period of time.



(a) Describe how the kinetic energy of the toy car changes from points A to C. [1]

(b) Explain, in terms of energy conversion, why the toy car came to a stop at point C. [1]

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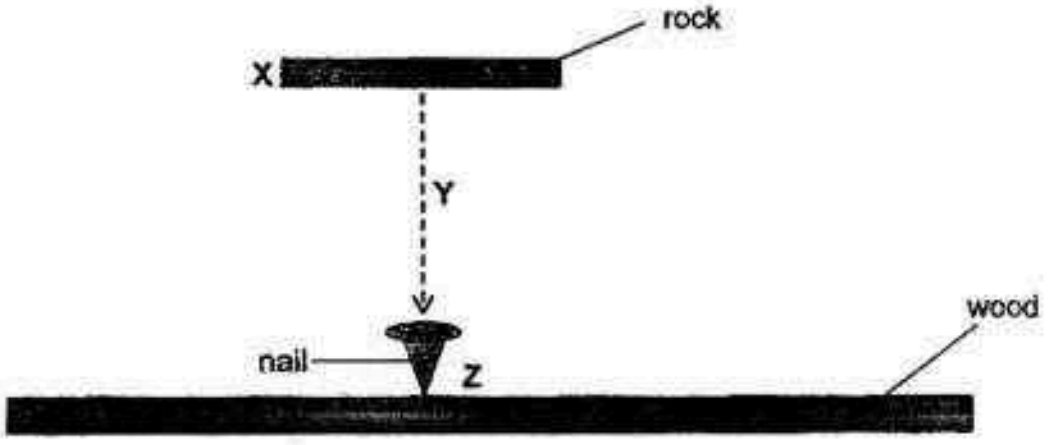
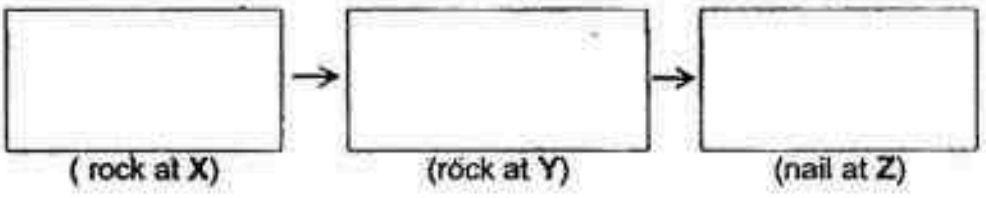
43. Ali dropped a slab of rock to push a nail into a piece of wood as shown in the diagram below. He then observed that only half of the nail was pushed into the wood.



(a) State the main energy changes from point X to point Z. [1]



(b) Explain, in terms of energy conversion, what would happen to the nail when Ali raised the rock higher than point X and dropped it? [2]

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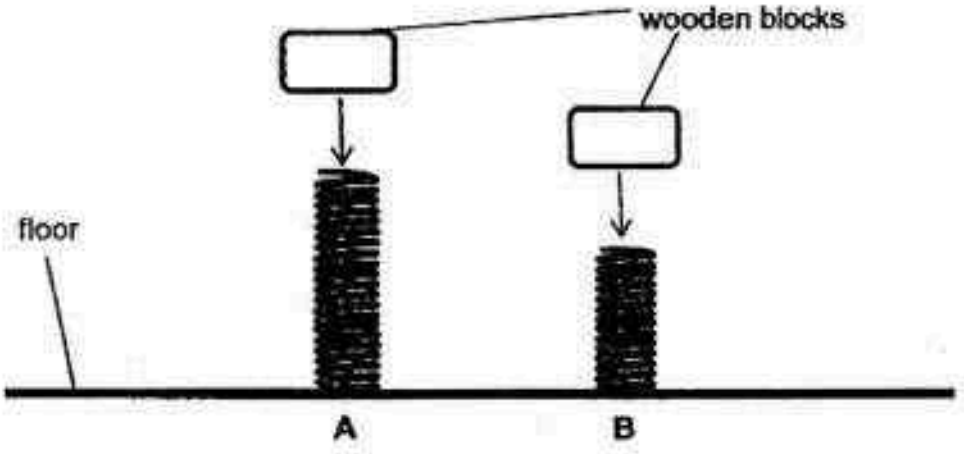
44. The diagram below shows two similar springs, A and B, of different lengths which were attached to the floor. The two springs were fully compressed after two wooden blocks were pressed on them as shown below.



(a) State the type of energy possessed by the springs when they are fully compressed. [1]

_____

(b) Explain what could happen to both springs when both the wooden blocks were removed at the same time. [1]

_____

_____

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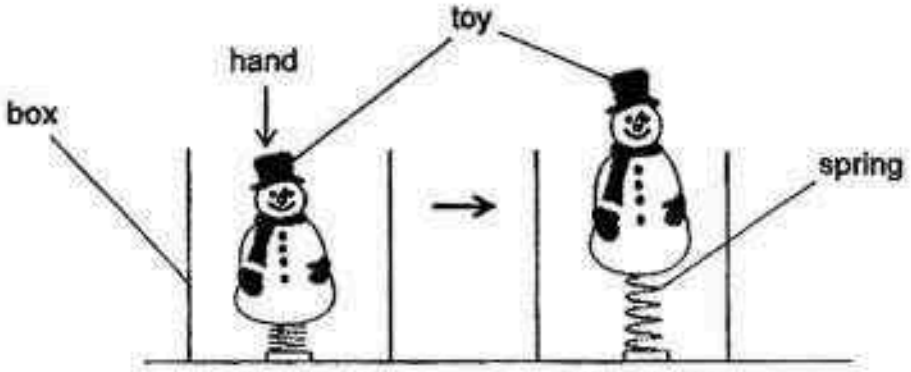
Ray fixed a toy to a spring in a box shown below. He used his hand to press down the toy in diagram 1. The toy jumped up when Ray let go of his hand as shown in diagram 2.



(ci) Suggest a change to the set-up so that the toy could jump higher. [1]

(cii) Using energy conversion, explain your answer to your suggestion. [1]

End of paper

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EXAM PAPER 2016

SCHOOL :NANYANG

SUBJECT :P6 SCIENCE

TERM : CA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	1	3	2	3	2	1	3	4	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	4	1	2	4	1	3	4	2	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	2	3	3	2	2	3	2	3	2

31)a)The amount of water decreased because the plants used the water for transpiration/photosynthesis.

b)It is to ensure a fair test so that he can ensure that the decrease in the amount of water is only due to the number of leaves and not the number of roots.

32)Cell A: leave

Explanation: Just like the leaves Cell A also has chloroplast which makes food for the plant.

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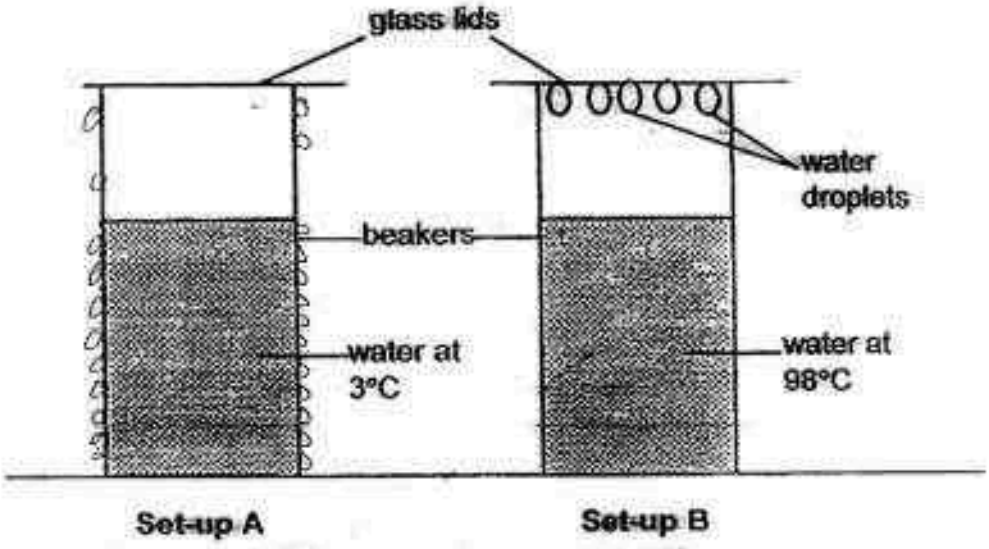
32) Cell B: roots

Explanation: Just like the roots, Cell B does not have any chloroplast to make food for the plant.

33)a)



b)The water in set-up B evaporates, forming water vapour. The water vapour then comes into contact with the cooler under surface of the glass lid, loses heat to the glass lid and condenses, forming water droplets.

c)The water in set-up A was gaining heat. Thus, vapour from the surrounding air lost lesser heat to the beaker and condensed lesser than before, forming lesser water droplet. The water in beaker B was losing heat. Thus, lesser water evaporated and there was lesser water vapour to condense onto the under surface of the glass lid, forming lesser water droplets.

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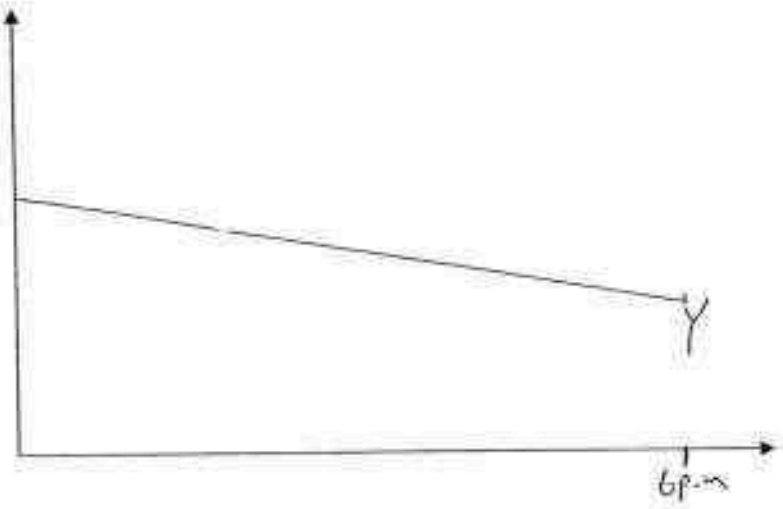
34)a)



b)As the amount of light received by the plant increase, the amount of oxygen present in the box also increases.

35)Take end of each bar and place the end together with another bars. If any of the ends repel the two bars are magnetized .

36)a)The light from the torch was reflected by the wooden cube into Tim's eyes.

b)i)He could move the wooden cube nearer to the wall.

ii)He could move the torch further from the wooden cube.

37)Material Z is the poorest conductor of heat. Therefore heat transferred heat transferred through the surrounding air and water at 80℃ through material Z to the ice will be the slowest.

Material X is the best of heat. Heat transfer from the water at 80℃ to the surrounding air will be the fastest.

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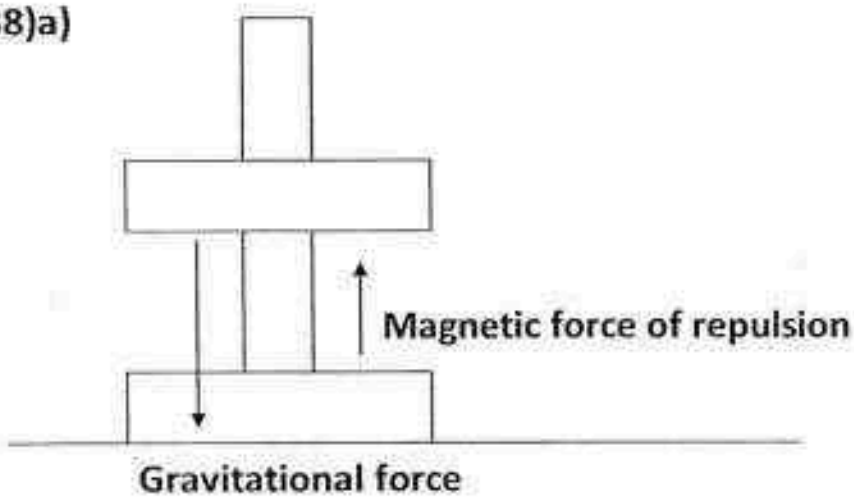
38)a)



38)b)The like poles of the two magnets were facing each other. Hence they repelled each other,causing them to float.

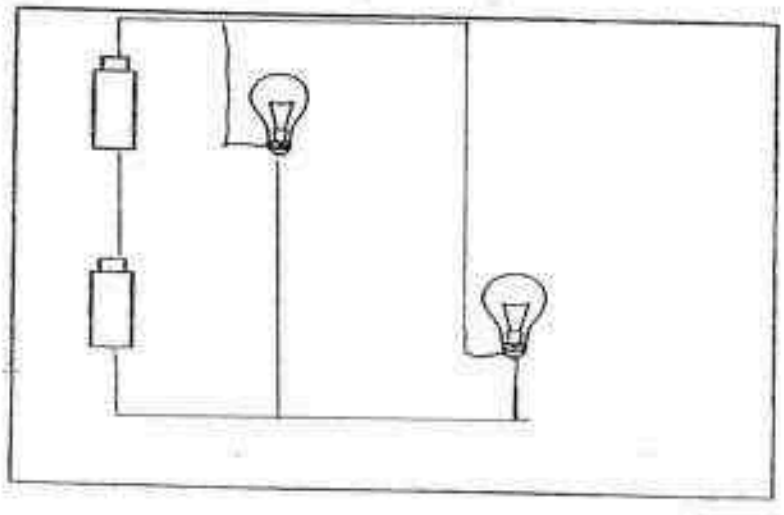
c)When magnet C was added, there was more gravity, thus pushing magnet B down, and causing distance d to decrease.

39)a)To powder absorbs the sweat is a lubricant. Hence it increases friction between the hand the bar, helping the gymnast to get a better grip of the bar.

b)To find out how the different type of powder affects the travelled by the car on the ground.

c)The material of the ramp.

40)a)



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40)b)If one fuse, the other bulbs will not be able to light up.

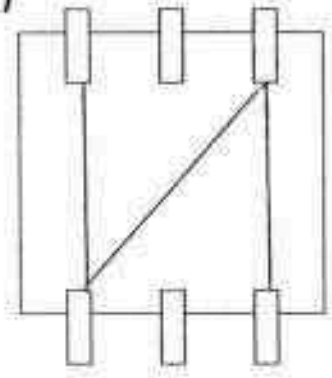
41)a)Method 1: Put each bulb at H1 and the rest and the other slots when all the bulbs do not light up, the bulb at H1 is the fused bulb.

Method 2: Put each bulb in all 4 bulb holders and ensure that the bulbs have been placed at H2. When all the bulbs except the bulb in H1 light up, the bulb on H2 is the fused bulb.

bi)F and D

H and F

bii)



42)a)Kinetic energy from the car is 0 at A, the kinetic energy increases and reaches the maximum point at B , then decreases to 0 when it reaches C.

b)Kinetic energy was converted to sound and heat energy. When all the kinetic energy bad been converted ,the car will come to a stop.

43)a)Gravitational potential energy→kinetic energy→kinetic and sound energy

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43) b)The nail will be pushed deeper into the wood as when the rock is raised higher, it possessed more gravitational energy and was converted to more kinetic energy when it dropped. Hence there will be more impact on the nail and it will be pushed deeper into the wood.

44)a)Elastic potential energy.

b)They would spring up and become their original length.

ci)Ray could use a longer spring.

cii)When a longer spring is used, it will possess more elastic potential energy when it is compressed and will be converted to more kinetic energy when it is released, pushing the toy up higher.

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. 2

NAN HUA PRIMARY SCHOOL
CONTINUAL ASSESSMENT 1 2016
PRIMARY SIX
SCIENCE

Name : _____( )

Class : Primary 6 / ____

Date : 1 March 2016

Duration : 1 hr 45 min

MARKS	
Sect A:	/ 60
Sect B:	/ 40
Total :	**/ 100**

Parent's Signature : _____

Section A: (30 x 2 marks = 60 marks)
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Study the flowers below carefully.



X Y Z

Which of the flower(s) can possibly develop into a fruit? Why?

	Flower(s)	Reason
(1)	Flower Y only	Its stigma is not blocked by petals
(2)	Flowers X and Z only	They have petals to attract pollinators
(3)	Flowers X and Z only	They have male and female parts of the flower
(4)	Flower X, Y and Z	They have female parts of the flower

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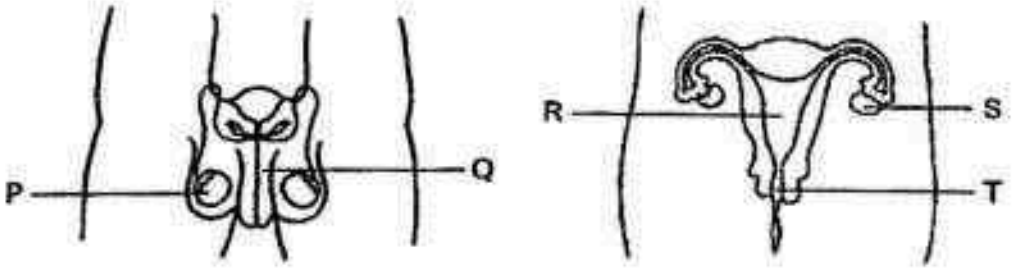
2. The diagrams below show the male and female human reproductive systems. P, Q, R, S and T are organs of the reproductive systems.



Which of the following statement(s) is/are correct?

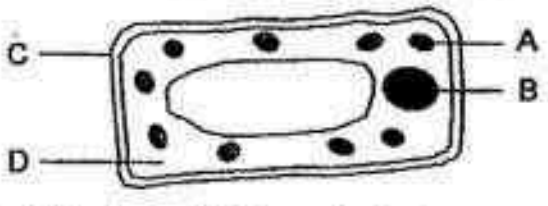
A Fertilisation takes place at T.
B The fertilised egg develops in R.
C P and S produce the reproductive cells.

(1) A only
(2) B only
(3) A and C only
(4) B and C only

3. Jason took some cells from part Y of a plant as shown in the diagram below. He then observed the cells from part Y under a microscope.



The diagram below shows a leaf plant cell with its parts labelled A, B, C and D.



Which part(s) of the leaf cell is/are missing from the cell that Jason saw from part Y?

(1) A only
(2) C only
(3) A and B only
(4) C and D only

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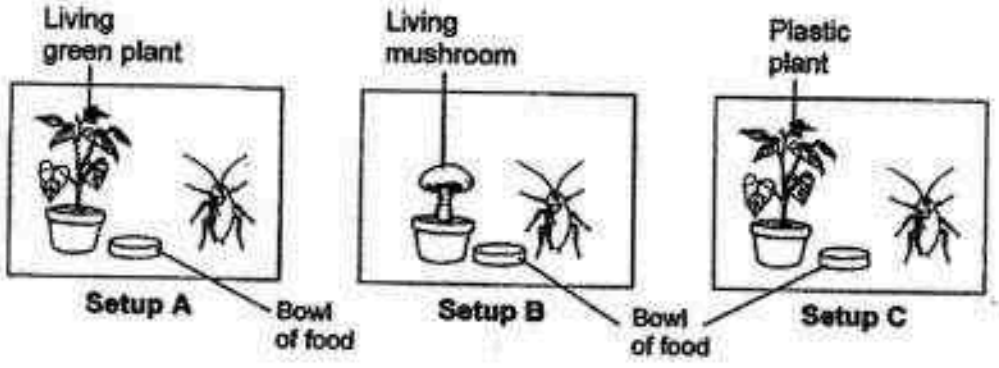
4. The diagrams below show three setups. A live cockroach is placed in each setup that has been enclosed in a transparent airtight box. The three boxes were placed in a brightly lit place.



Which cockroach(s) will survive at the end of one week?

(1) Setup A only
(2) Setup C only
(3) Setup A and B only
(4) Setup B and C only

5. Jack has a pet dog. He observed that his dog has the following characteristics:

A It eats meat.
B It has long eye lashes.
C Its fur grew longer after a month.
D It sticks out its tongue on a hot day.

Which of the characteristics above show that Jack's dog is a living thing?

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, C and D only

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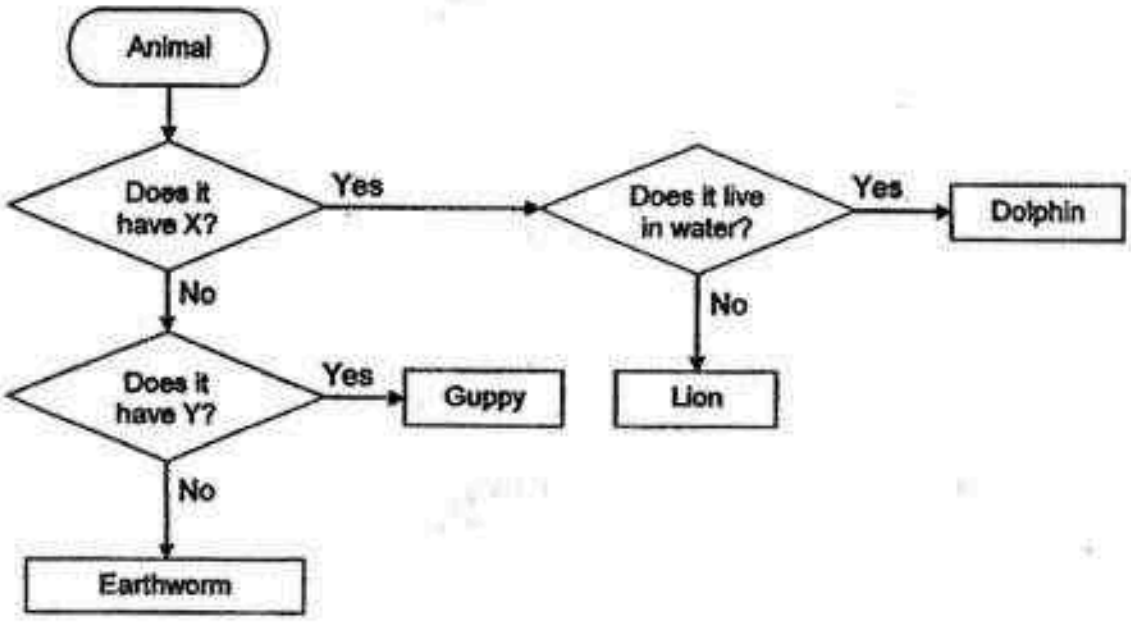
6. Study the classification chart below carefully.



What can characteristics X and Y be?

	X	Y
(1)	gills	lungs
(2)	lungs	gills
(3)	fur	limbs
(4)	limbs	fur

7. Study the classification table below carefully.

S	T
Grasshopper	Mosquito
Chicken	Frog
Cockroach	Mealworm Beetle

What do S and T represent in the table above?

	S	T
(1)	3-stage life cycle	4-stage life cycle
(2)	Needs both male and female to reproduce	Does not need both male and female to reproduce
(3)	Eggs laid on land	Eggs laid in water
(4)	Young resembles the adult	Young does not resemble the adult

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8. The picture below shows a nectar feeding bat. They have long tongues to feed on nectar found in flowers in the night. They have a strong sense of smell that enable them to find the flowers at night.



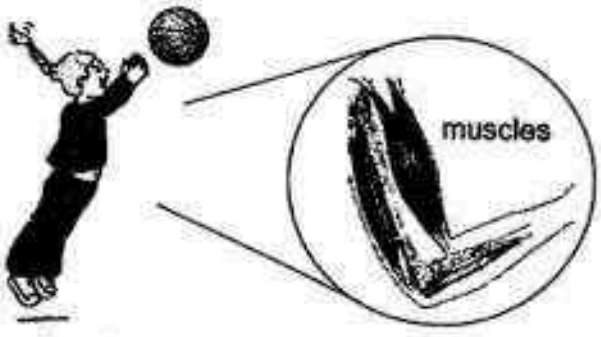
The table below shows some characteristics of flowers P, Q, R and S.

Flower	Colour of Petals	Produces sweet scent?	Blooming
P	Bright	Yes	Day only
Q	Bright	No	Day and night
R	Dull	Yes	Night only
S	Bright	Yes	Day and night

Which flowers are likely to be pollinated by this bat?

(1) P and Q only
(2) P and S only
(3) Q and R only
(4) R and S only

9. Si Min is playing basketball a few hours after her breakfast. She needs to jump and flex her muscles for the activity.



The statements below show how the systems in our body are involved in the above activity.

A The digestive system is not needed in this activity.
B The respiratory system works faster to take in more oxygen.
C The circulatory system works faster to transport oxygen-rich blood to the muscles.

Which of the statement(s) above is/are **correct**?

(1) A only
(2) B only
(3) A and C only
(4) B and C only

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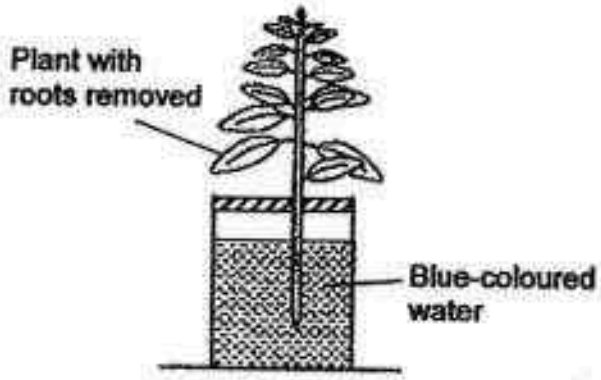
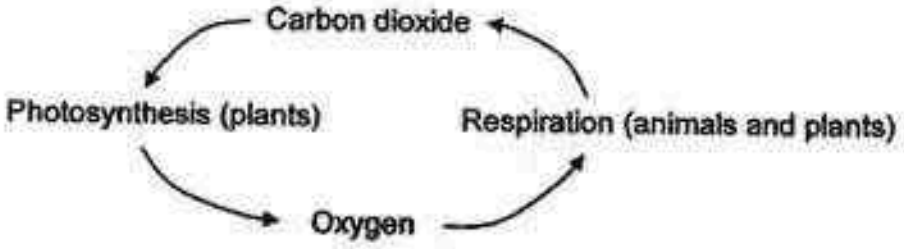
10. John wanted to find out if plants have water-carrying tubes that can take in water. He removed the roots from a plant and placed it in a beaker of blue-coloured water as shown in the diagram below.



What is the variable measured in this experiment that will help John to make a conclusion at the end of the experiment?

(1) The colour of the leaves
(2) The number of leaves left
(3) The plant withered or lived
(4) The change in height of the plant

11. The diagram below shows the exchange of gases with the environment between animals and plants.



Which of the following statements are true?

A Both plants and animals respire to give out oxygen.
B Only plants take in carbon dioxide and give out oxygen.
C Both plants and animals carry out respiration and photosynthesis.
D Both plants and animals take in oxygen and give out carbon dioxide during respiration.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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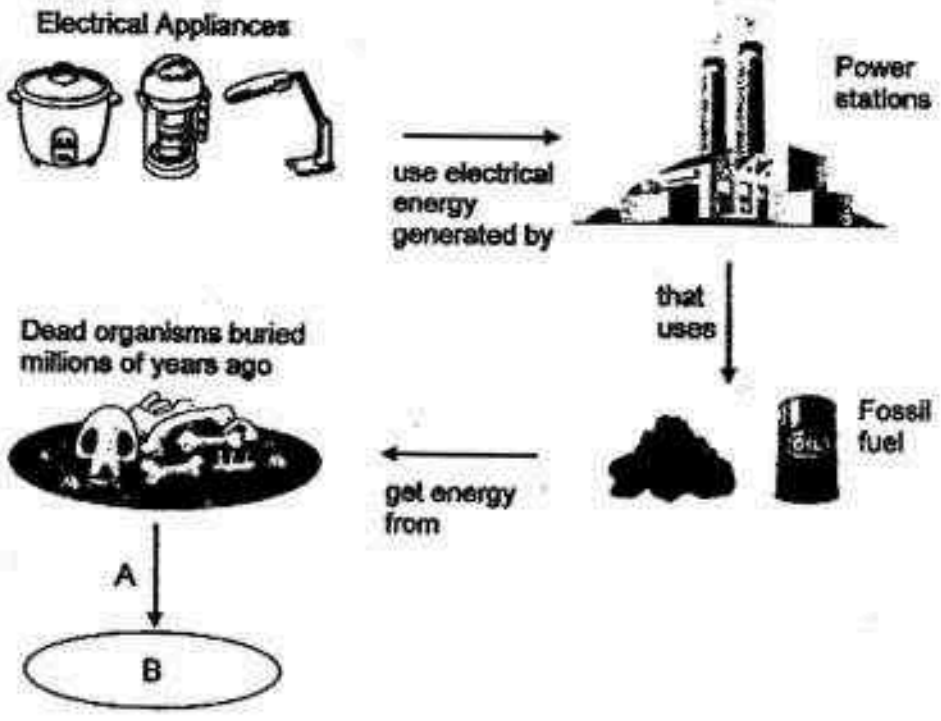
12. Study the flow chart below carefully.



Which of the options below correctly identifies Process A and Object B?

	Process A	Object B
(1)	Obtain energy directly from	Plants
(2)	Obtain energy indirectly from	Living things
(3)	Obtain energy directly and indirectly from	Animals
(4)	Obtain energy directly and indirectly from	Sun

13. Study the classification table below carefully.

Forms of energy		
P	Q	R
Sea waves Wind	Bread Natural gas	Water in a dam Hot air balloon in the air

What could be the possible forms of energy P, Q and R?

	P	Q	R
(1)	Kinetic energy	Heat energy	Gravitational potential energy
(2)	Sound energy	Light energy	Kinetic energy
(3)	Kinetic energy	Chemical potential energy	Gravitational potential energy
(4)	Gravitational potential energy	Sound energy	Heat energy

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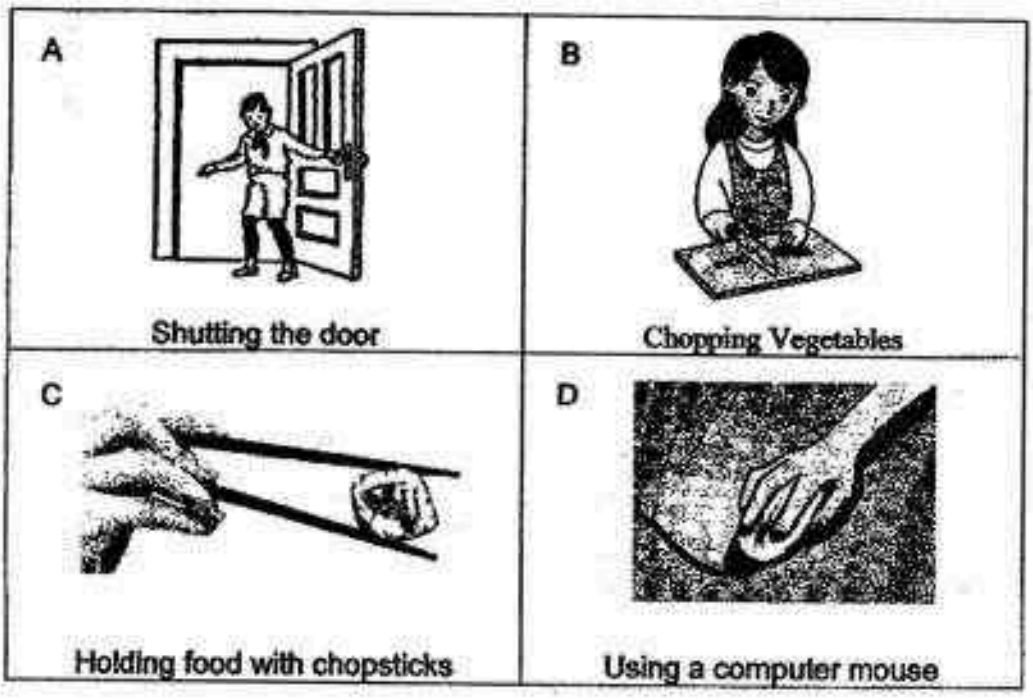
14. The diagrams below show some daily activities that we engage in.



Which of the above activity/ activities involve(s) only a pull?

(1) A only
(2) C only
(3) A and D only
(4) B and D only

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15. The diagram below shows a picture of a car crash.



Four students provided their responses to the effects of the force of the crash on the car.

Jim	It stopped the moving car.
Aini	It changed the shape of the car.
Sam	It changed the position of the car.
Citi	It changed the direction of the car.

Whose responses to the effects of the force on the car are correct?

(1) Jim and Aini only
(2) Sam and Citi only
(3) Jim, Aini and Sam only
(4) Aini, Sam and Citi only

16. Study the following actions carefully.







Which of the following force(s) make(s) all the above activities difficult?

(1) Friction
(2) Gravitational force
(3) Friction and gravitational force
(4) Elastic spring force, friction and gravitational force

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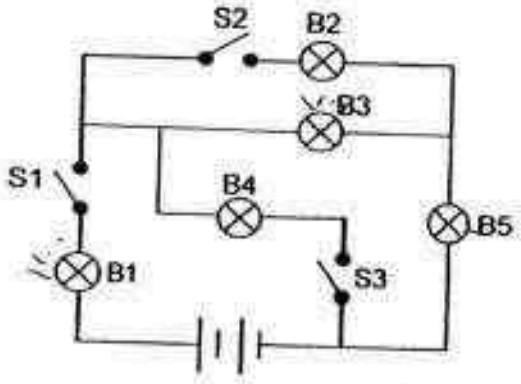
17. Study the circuit diagram below carefully.



When switch S1 is closed, which of the bulbs will light up?

(1) B1, B2 and B3 only
(2) B1, B3 and B5 only
(3) B2, B4 and B5 only
(4) B3, B4 and B5 only

18. The diagram below shows a fruit splitting open, throwing the seeds outwards.



Which of the following forms of energy do the seeds that are thrown out have?

(1) Light energy and kinetic energy
(2) Light energy and elastic potential energy
(3) Kinetic energy and gravitational potential energy
(4) Elastic potential energy and gravitational potential energy

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19. Study the activities illustrated in the diagrams below.



Sawing



Writing



Swimming



Climbing

Which of the above activities show that friction is useful?

(1) Sawing and climbing
(2) Writing and swimming
(3) Sawing, writing and climbing
(4) Writing, swimming and climbing

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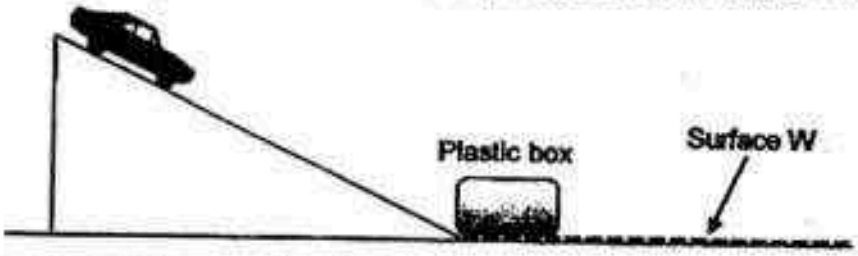
20. A toy car was rolled down a ramp from the same position as shown in the diagram below. The toy car will hit and move a plastic box over surface W.



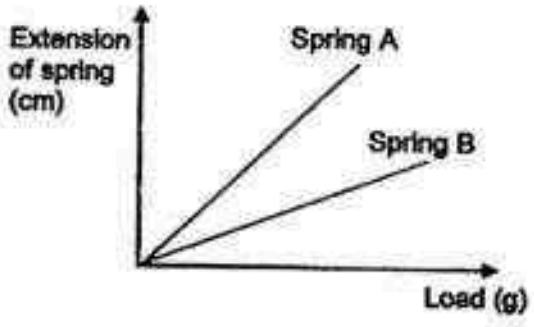
He repeated the experiment using three other surfaces, X, Y and Z, placed under the plastic box. The distance moved by the plastic box was recorded in the table below.

Surface	Distance moved by the plastic box (cm)
W	4
X	8
Y	6
Z	3

Which of the following can be inferred from the experiment?

(1) The friction between the plastic box and surface X is the highest.
(2) Surfaces W and Z are made of smoother materials than the other surfaces.
(3) The rougher the surface, the greater the force needed to move the plastic box.
(4) The friction between the plastic box and surface Y is higher than the plastic box and surface X.

21. Shanthi conducted an experiment on springs A and B that have the same original length of 4cm. She hung various loads one at a time and recorded the extension of the spring. The results are shown in the graph below.



Based on the graph, which of the following statement is definitely correct?

(1) For the duration of the experiment, the length of Spring A was longer than Spring B.
(2) If more load was added to both springs, Spring A would reach its elastic limit first.
(3) When the loads were removed, Spring A returned to its original length faster than Spring B.
(4) When the same load was added to both springs, Spring B extended more than Spring A.

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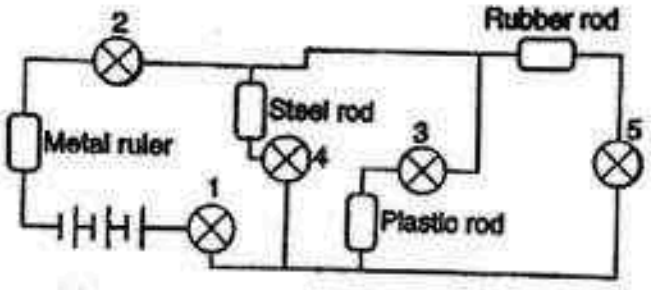
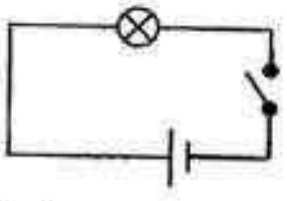
22. Study the circuit diagram below carefully. All the bulbs and batteries are in working condition.



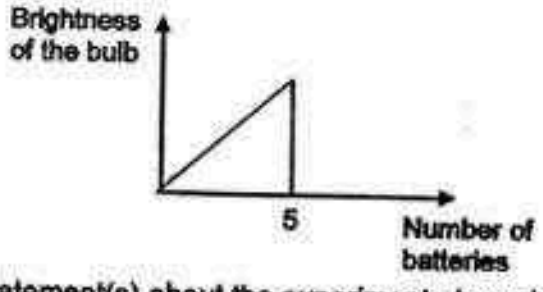
Which bulbs will light up?

(1) Bulbs 1, 2 and 4 only
(2) Bulbs 1, 3 and 5 only
(3) Bulbs 2, 3 and 4 only
(4) Bulbs 2, 4 and 5 only

23. The diagram below shows a simple circuit. The bulb will light up when the switch is closed.



Jieqi added batteries, one at a time, in series to this circuit and recorded the brightness of the bulb without changing anything else. She plotted the graph with the measurements she recorded.



Which statement(s) about the experiment above is/are definitely true?

A The more batteries added, the brighter the bulb.
B One of the batteries went flat when the 5th battery was added.
C The brightness of the bulb remains at zero when the 6th battery is added.

(1) A only
(2) C only
(3) A and B only
(4) B and C only

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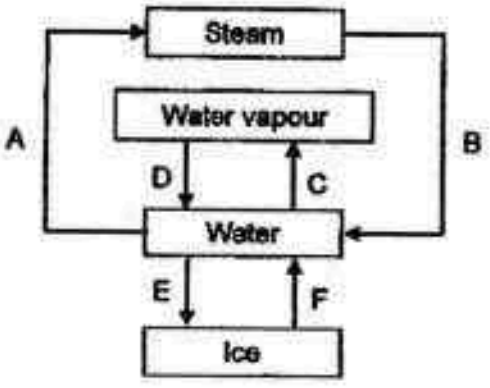
24. The diagram below shows the various states of water. Letters A, B, C, D, E and F represent different processes.



Which of the following correctly matches the letters to the processes?

	Evaporation	Condensation	Freezing	Melting	Boiling
(1)	A, F	B	D	E	C
(2)	C	A, D	F	E	B
(3)	C	B, D	E	F	A
(4)	A, C	E	B	D	F

25. Four containers, P, Q, R and S, were filled with 200ml of water. Each container were placed at different locations and exposed to different conditions as shown in the table below.

Container	Surrounding Temperature (°C)	Fan Speed	Exposed surface area of water (cm^2)
P	20	High	20
Q	30	Low	10
R	20	Low	10
S	30	High	20

Which container will have the most water left after two hours?

(1) P
(2) Q
(3) R
(4) S

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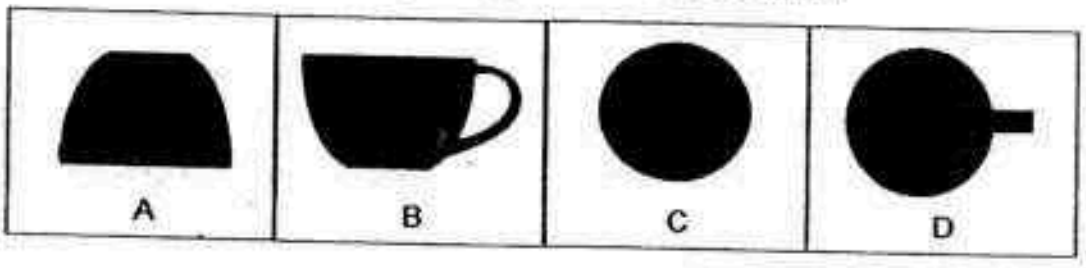
26. The diagram below shows a mug.



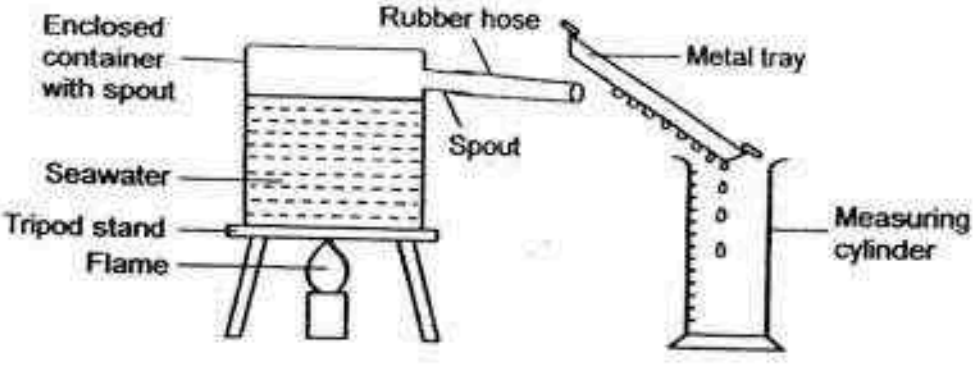
A beam of light is shone onto the mug to form a shadow on a white wall in a dark room.

Which of the following could possibly be the shadows formed?



(1) A and C only
(2) B and D only
(3) A, B and D only
(4) A, B, C and D

27. Matthew prepared the setup below to show how rain is formed.



At the start of the experiment, the measuring cylinder began to fill quickly. However, after five minutes, the amount of water droplets formed on the metal tray reduced even though nothing was changed.

What could be a possible reason for this observation?

(1) The seawater in the container was running out.
(2) The amount of steam from the spout had reduced.
(3) The metal tray had lost heat to the steam and contracted.
(4) The metal tray had gained heat from the steam and increased in temperature.

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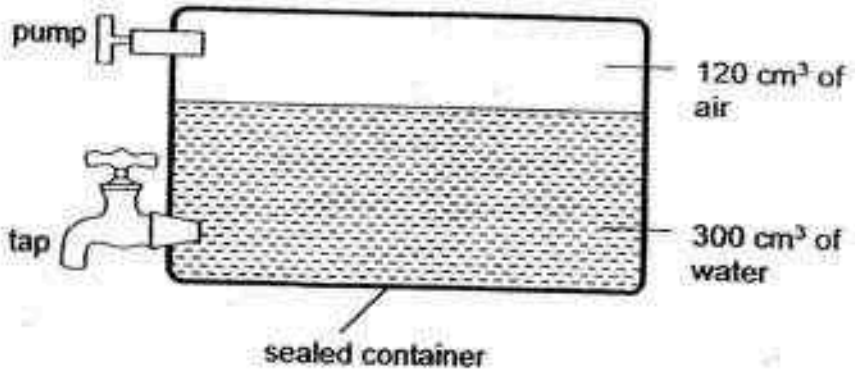
28. The diagrams below shows a sealed container filled with 300 cm^3 of water.



100 cm^3 of water was released through the tap and then 50 cm^3 of air was pumped out of the container.

What is the volume of air and water left in the sealed container?

	Volume of air (cm^3)	Volume of water (cm^3)
(1)	70	150
(2)	70	200
(3)	170	150
(4)	220	200

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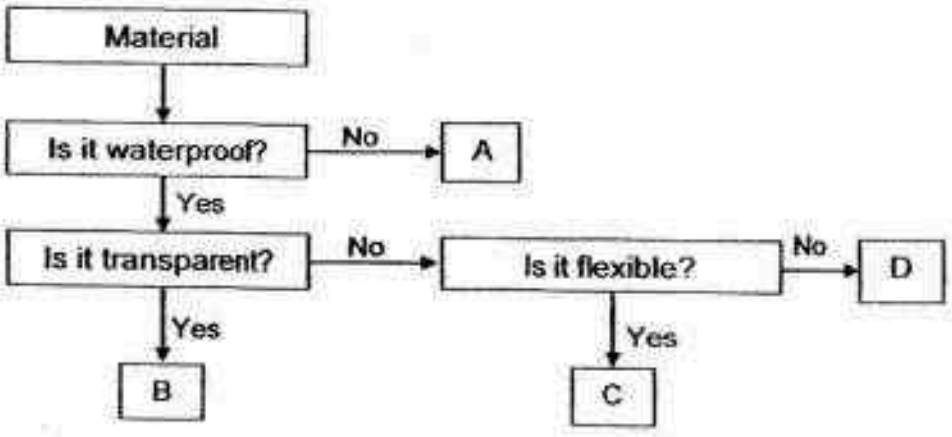
29. Study the flow chart below carefully.



The picture below shows a car cover being used to protect the car when the owner is away on a long vacation.



Which one of the materials is best used to make the car cover?

(1) A
(2) B
(3) C
(4) D

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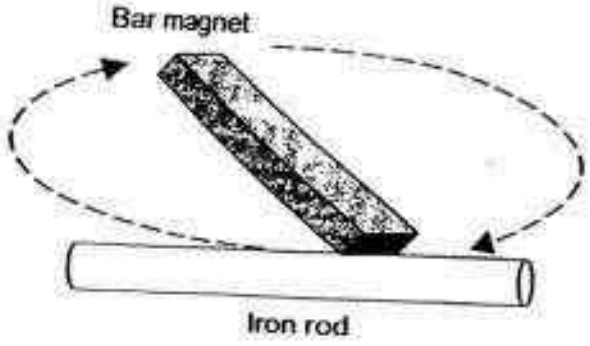
30. The diagram below shows an iron rod being stroked by a bar magnet in a circular motion to magnetise it.



Which of the statements about magnetizing the iron rod is/are **incorrect**?

A Stroke the iron rod hard until it gets hot to make a strong magnet
B Use both ends of the bar magnet to stroke the iron bar without moving the iron rod.
C Stroke from one end of the iron rod to the other using one end of the bar magnet only.

(1) A only
(2) C only
(3) A and B only
(4) B and C only

End of Section A

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NAN HUA PRIMARY SCHOOL
CONTINUAL ASSESSMENT 1 2016
PRIMARY SIX
SCIENCE

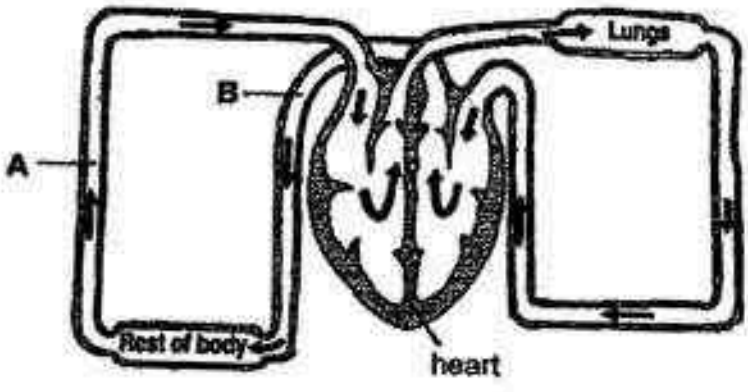
Name : _____( )

Class : Primary 6 / ____

MARKS
/ 40

Section B: (40 marks)
Write your answers to question 31 to 44.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. Study the diagram of the human circulatory system below carefully.



(a) Name 2 substances that are transported in the circulatory system. [1]

_____

(b) Name the gas that is in greater amount at B than at A. Why is this so? [2]

_____

_____

_____

_____

Score	/ 3

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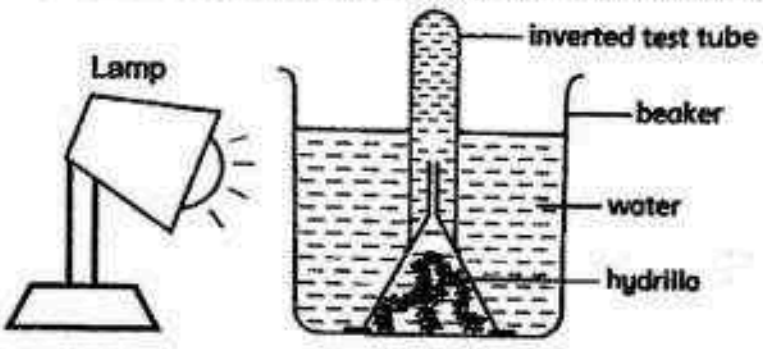
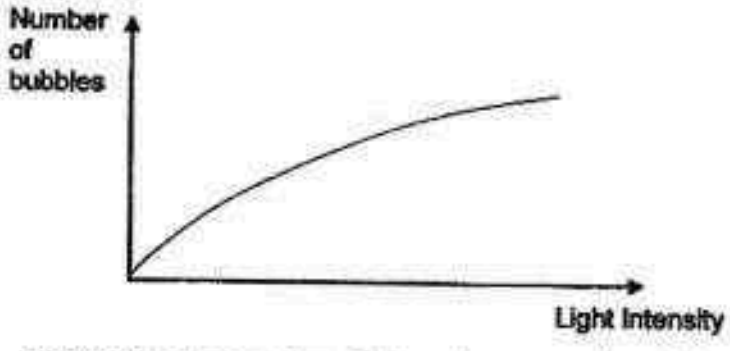
32. Jamie placed some hydrilla into a funnel and inverted it together with a test tube into a beaker of water as shown in the diagram below. She placed a lighted lamp next to the beaker for five hours without changing the light intensity.



(a) After five hours, an air space is observed at the top of the inverted test tube. What is the gas collected at the top of the inverted test tube and what is the process that enabled the plant to produce the gas? [1]

Gas: _____ Process: _____

(b) Jamie repeated the above experiment but this time, she increased the light intensity over the five hours. She counted the number of bubbles produced as she increased the light intensity and plotted the graph below.



(i) Identify the changed variable and measured variable in this experiment. [1]

Independent (Changed) variable: _____

Dependent (Measured) variable: _____

(ii) Based on the graph, how was the rate of bubbles produced affected by the light intensity? [1]

_____

_____

Score	3

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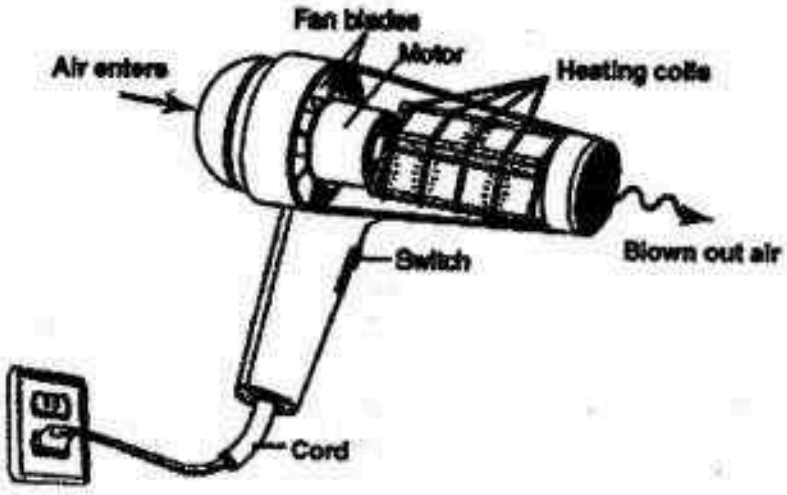
33. A hair dryer is an electrical appliance used to blow out hot air to dry our hair quickly after a shower. The diagram below shows the internal parts of the hair dryer.



(a) Identify the useful energy(s) found at the various parts when using the hair dryer. [2]

i) Cord	
ii) Fan blades	
iii) Heating coils	
iv) Blown out air	

(b) The fan below is another common household appliance.



Name two unwanted energy produced by the fan when it is turned on. [1]

_____

Score	/ 3

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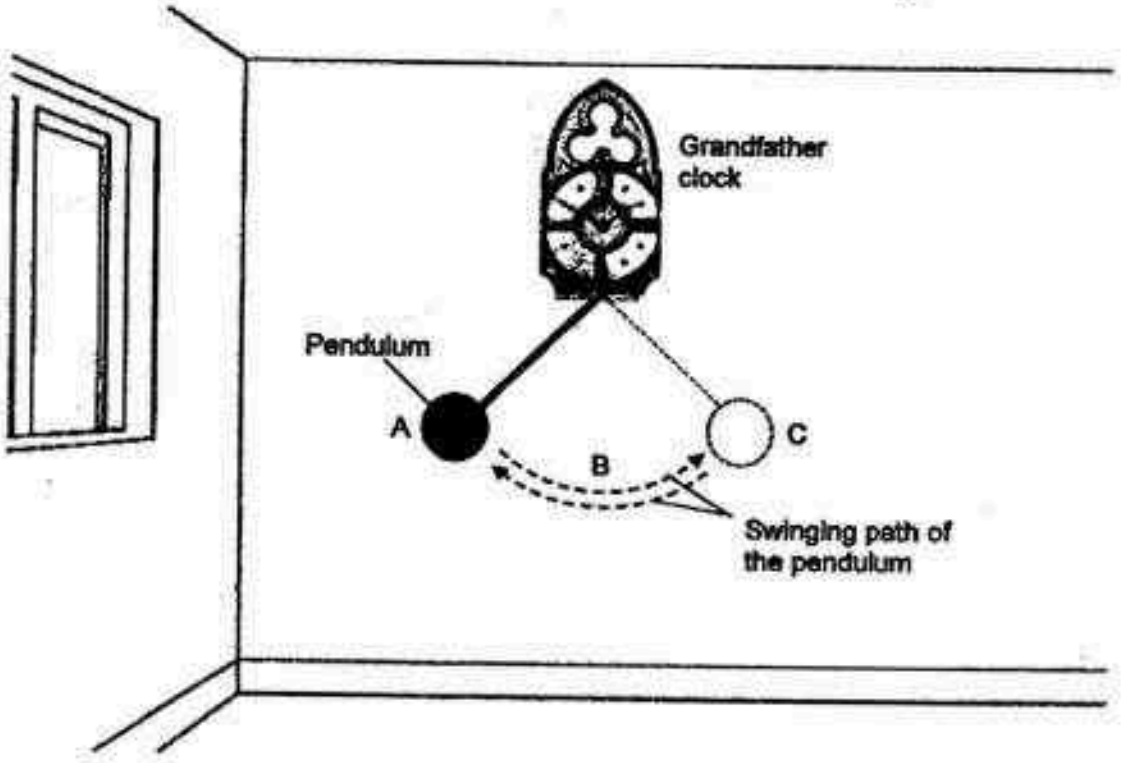
34. The diagram below shows a grandfather clock hung on a wall in a room. It has a pendulum that swings left and right as long as the clock is working.



(a) Identify the energy possessed by the pendulum at: [1]

B: _____

C: _____

(b) The grandfather clock runs on electricity. During a blackout, the entire room is left without electricity. The pendulum is observed to swing a few more times before it finally stopped.

Without electricity, why did the pendulum continue to swing a few more times before it finally stopped? [1]

_____

_____

Score	2

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35. The diagram below shows a baseball player swinging his bat to hit the ball.



(a) State two possible effects of the force exerted by the baseball bat on the ball?
[1]

After the player hits the ball, he sends the ball flying up into the air.



(b) Explain why the flying baseball begins to slow down in the air and falls to the ground.
[2]

Score 3

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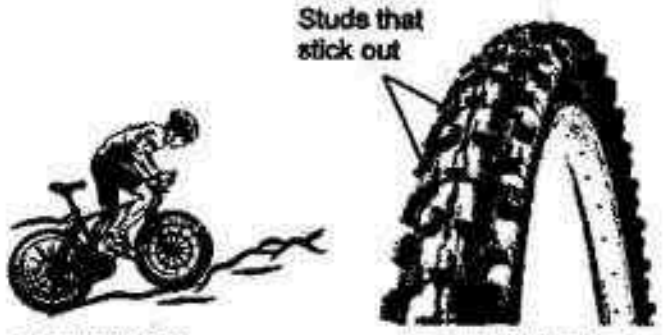
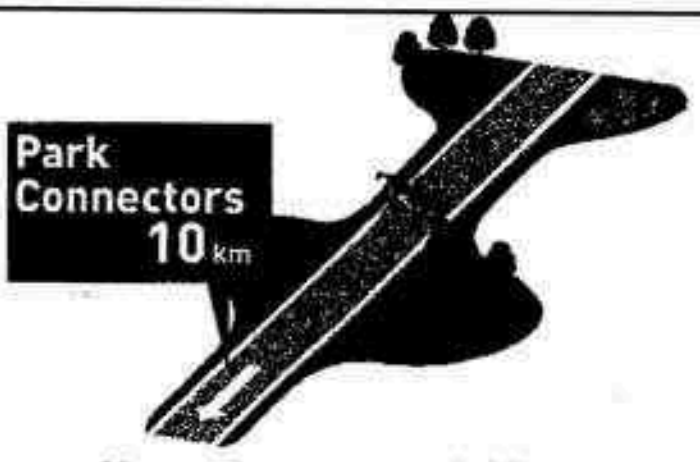
36. The diagrams below shows a mountain bike and a close-up picture of a mountain bike tyre. These bikers normally cycle on mud-paths and forest tracks. Their tyres are so rough, they look like having studs that stick out of the tyres.



Mountain bike Mountain bike tyre

(a) How do these tyres help to prevent the mountain bike from slipping when travelling on the mud-paths? [1]

(b) What is a disadvantage of using such tyres? [1]



(c) What change would you make to the mountain bike tyres in order to go faster on the Park-Connector cycling paths? [1]

Score 3

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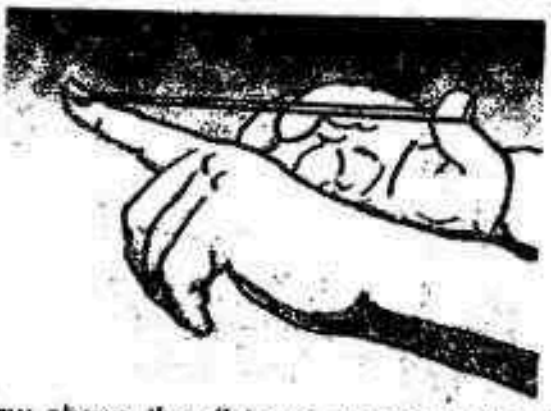
37. The diagram below shows how we can shoot a rubber band.



The table below shows the distance moved by the rubber band when it is stretched at various lengths

Stretched length of rubber band (cm)	Distance moved by the rubber band (m)
10	2
15	4
20	6

(a) What is the relationship between the extension of the rubber band and the distance moved by the rubber band? [1]

(b) Explain why the rubber band moved further when stretched to 20cm as compared to 10cm. [1]

Score 2

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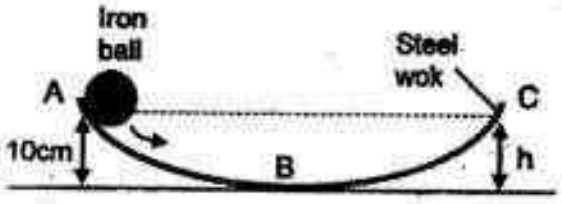
38. Jessie prepared an experiment as shown below.



She released an iron ball at the top edge of side A of the steel wok and measured how high the ball reached, height h, at side C. She recorded the measurement in the table below.

Attempt	Height h (cm)
1st	9.5

Jessie was puzzled that the iron ball did not reach the height of 10cm on the opposite side of the wok.

(a) What should Jessie do to ensure the reliability of her results? [1]

(b) Write down the energy conversion from the time that she released the iron ball at A, to B and to C. [1]

(c) Why was the ball not able to roll to a height h of 10cm at C? [1]

Score 3

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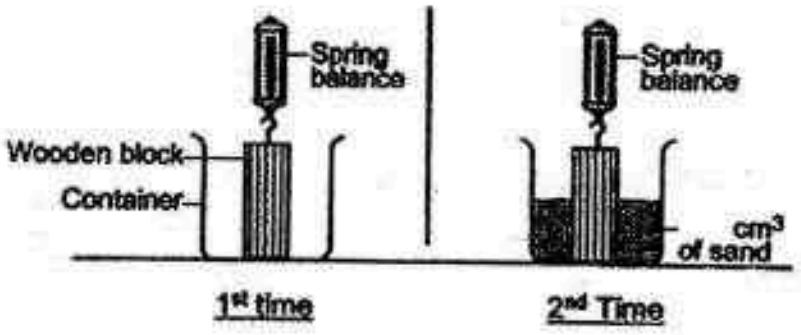
39. Kenny set up an experiment to measure the amount of force needed to lift the wooden block out of the container.
He did the experiment the first time with nothing in the container. He then poured in 200 cm^3 of sand and measured the amount of force needed to lift the wooden block out of the container.



He recorded the measurements in the table below.

	Force needed to lift the wooden block (N)
1st time	200
2nd Time	250

(a) What is the force that caused the spring balance to stretch the first time? [1]

_____

(b) After adding the sand, an additional 50N force was needed to lift the wooden block out of the container with the sand. What is this additional 50N force for? [1]

_____

_____

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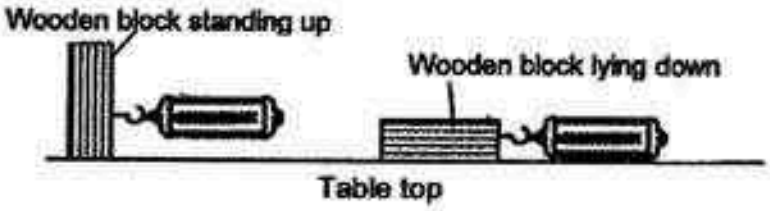

Using the same wooden block and spring balance, Kenny measured the force needed to move the wooden block when different sides are placed on the same table top. He tabulated the results as shown below.

Wooden block position	Surface area in contact with the table top (cm^3)	Force needed to move the wooden block (N)
Standing up	25	100
Lying down	50	100

(c) What can you conclude from the results of the experiment? [1]

_____

_____

Score 3

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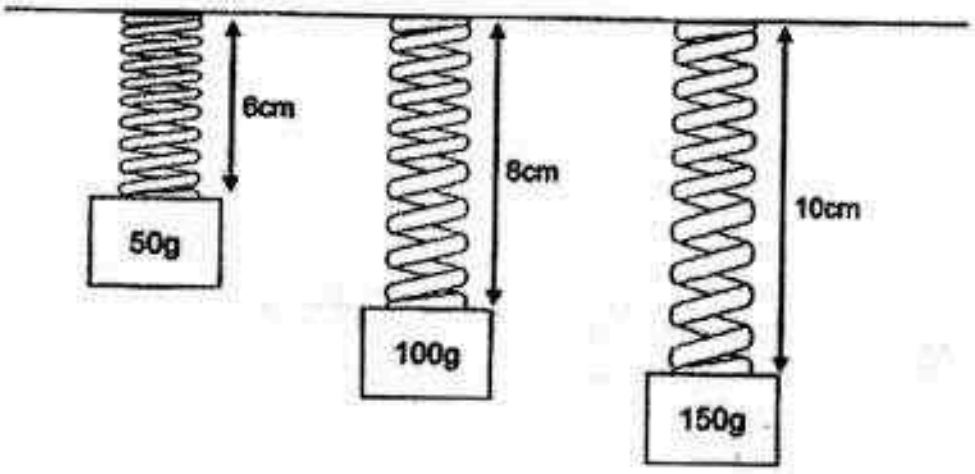
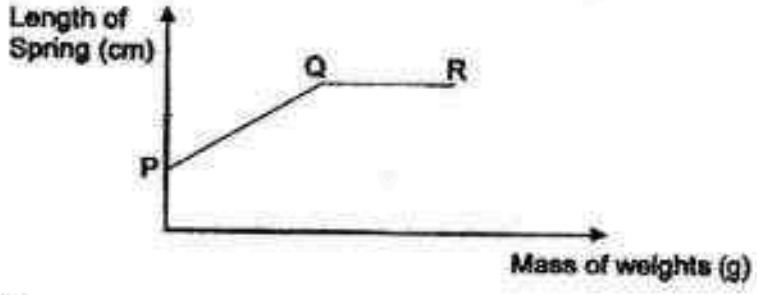
40. In an experiment, various loads were hung on a spring to measure how much they stretched as shown in the diagram below.



(a) Explain why did the spring stretch when a load was hung on it? [1]

After the experiment above, 50g weights was continued to be added to the spring above. The length of the spring was recorded and shown in the graph below.



(b) What is P? [1]

(c) The spring had reached its elastic limit at Q. From the graph, explain clearly why this is true. [1]

Score 3

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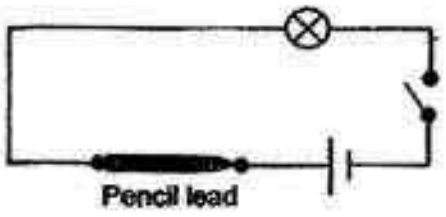
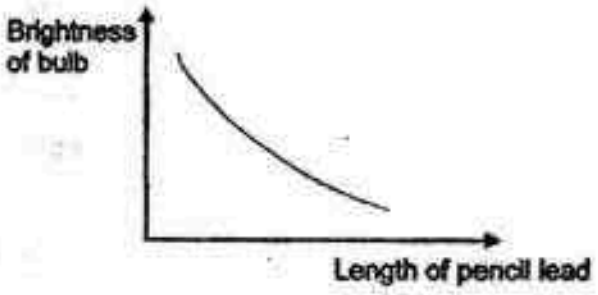
41. Alex set up the experiment as shown in the diagram below.



During the experiment, he used pencil leads of different lengths and measured the brightness of the bulb. With the results, he plotted a graph.



(a) What is the property of the pencil lead that allowed the experiment to be carried out? [1]

_____

(b) What is a possible conclusion you can infer from this experiment? [1]

_____

_____

(c) During the experiment, what could have happened to the battery that could make this experiment an unfair test? [1]

_____

Score	3

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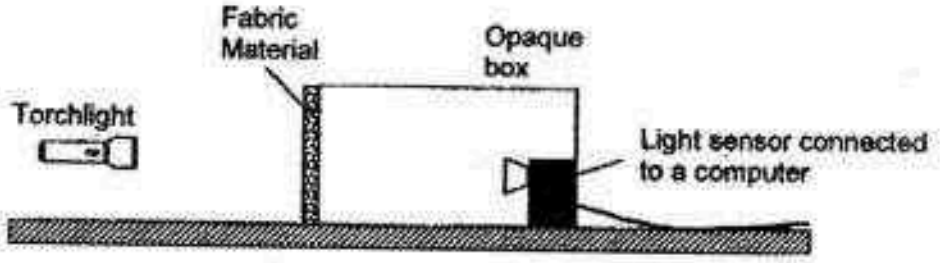
42. Mr Chua prepared a setup using an opaque box that is open at one end. He placed a fabric material over the open end and shone a torchlight through it as shown in the diagram below.



Mr Chua then recorded the amount of light measured by the light sensor fixed inside the box. He repeated the experiment using different fabric materials and recorded the amount of light measured by the light sensor.

(a) Name two variables Mr Chua need to keep constant to make this experiment a fair test. [1]

(b) What do you think is the aim of Mr Chua's experiment? [1]

(c) Why did Mr Chua use a light sensor instead of his own eyes to see how much light passed through the material? [1]

Score 3

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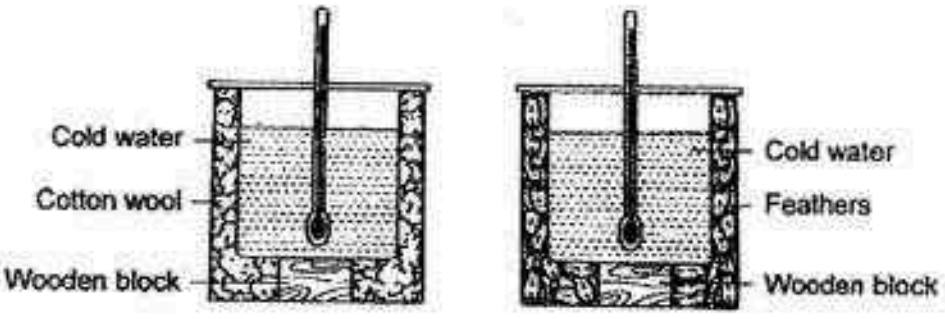
43. Eli prepared two identical beakers filled with equal amount of cold water and placed them in two identical larger beakers, one filled with cotton wool and the other filled with feathers.



The aim of Eli's experiment was to find out if cotton wool or feathers was the poorer conductor of heat. He recorded the temperature of the water at the start of the experiment and after one hour in the table below.

Material	Starting Temperature (°C)	Temperature after one hour (°C)
Cotton wool	5	10
Feathers	5	8

(a) Based on the results in the table, which material was the poorer conductor of heat? Explain. [1]

(b) The diagram below shows a sleeping bag.



If you were to go camping and had to sleep outdoors in the cold, the sleeping bag keeps you warm.
Feather is used as stuffing for your sleeping bag to keep you warm.
Explain why feather is used. [2]

Score 3

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44. Ravi has two steel bars, X and Y. He thinks that one of them is a magnet but he was not sure.

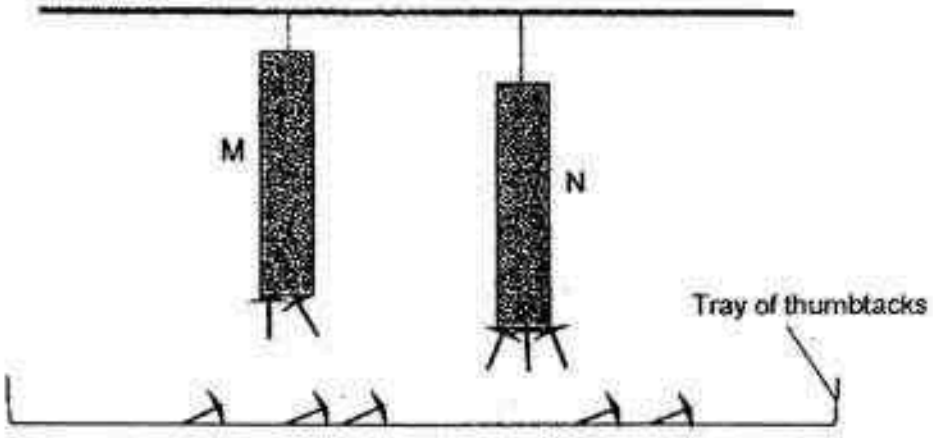


He conducted a simple experiment by bringing the different ends of the steel bars together and recorded his findings in a table.

Ends that meet each other		Observation
P	R	Attracted
Q	S	Attracted
P	S	Repelled

(a) From the results of Ravi's experiment, what can you conclude about steel bars X and Y? Explain your answer clearly. [1]

In a separate experiment, Magnets M and N were hung over a tray of thumbtacks to see how many thumbtacks each magnet can attract as shown in the setup below.



(b) From the simple experiment above, is it possible to tell which magnet is stronger? Explain your answer. [2]

End of Paper

Score	3

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EXAM PAPER 2016

SCHOOL :NAN HUA

SUBJECT : P6 SCIENCE

TERM :CA1

ORDER CALL :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	4	1	1	4	2	4	4	4	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	4	3	1	1	2	2	3	3	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	2	3	3	3	4	4	3	3

31)a)Oxygen and carbon dioxide.

b)Oxygen At B. The blood had taken in oxygen from the lungs. At A, the blood is returning to the heart from the rest of the body where oxygen is taken in for respiration.

32)a)Gas: oxygen Process: photosynthesis

b)i)The intensity of the light

The number of bubbles

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32)b)ii)The higher the light intensity the light rate of bubbles produced.

33)a)i)electrical energy ii)kinetic energy

iii)heat energy iv)heat energy + kinetic energy

b)Sound energy and heat energy.

34)a)B: Gravitational potential + kinetic energy

C: Gravitational potential energy

b)There is still gravitational potential energy and kinetic energy to let the pendulum continue swinging a few more times.

35)a)The ball moves in a different direction. The ball moves faster.

b)There is air resistance that slows the ball down and gravity pulling the ball down the ground.

36)a)These types increases friction between the types and these paths preventing the bike from slipping.

b)The friction produced will slow the bike down and not let it go very fast.

c)I will change the tyres to tyres with less studs.

37)a)The further the rubber band is stretched the further the rubber and moves.

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37)b)The rubber band has more elastic potential energy to be converted to more kinetic energy when released.

38)a)Jessie should repeat the experiment two more times.

b)Gravitational potential energy→kinetic energy→ Gravitational potential energy.

c)When the ball reached B, some kinetic energy has been converted into other types of energy.

39)a)The weight of the wooden block.

b)The 50N force was needed to overcome the friction between the sand and the wooden block.

c)The position and surface area in contact does not affect the force needed to move the wooden block.

40)a)Gravity pulls the load down and the spring is stretched.

b)The length of the spring without loads.

c)From Q to R the length of the spring is contact, thus, the spring will reach its limit.

41)a)The pencil lead is able to conduct electricity.

b)The longer the pencil lead, the dimmer the bulb light up.

c)The battery may become weaker/ flat.

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42)a)The thickness of the fabric material and the intensity of the light.

b)To find out if different material allow different amounts at light to pass through.

c)The light sensor is more accurate.

43)a)Feathers was the poor conductor of heat as the temperature of water is cower after one hour. The water gainer heat slower from the surrounding.

b)I would use feathers since it is a poor conductor of heat and can reduce heat loss from my body to the surrounding.

44)a)They are both magnets. Like poles repel and both bars repel each other, thus, making them magnets.

b)No. It is an unfair test as M and N are hung at different heights, thus, I am unable to tell which magnet is stronger.

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Rosyth School
Continual Assessment 1 2016
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: /60

Class: Pr 6 _____ Register No. _____ Duration: 1 h 45 min

Date: 29 February 2016 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 30 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 31 to 44, give your answers in the spaces given in the Booklet B.

* This booklet consists of 23 printed pages.

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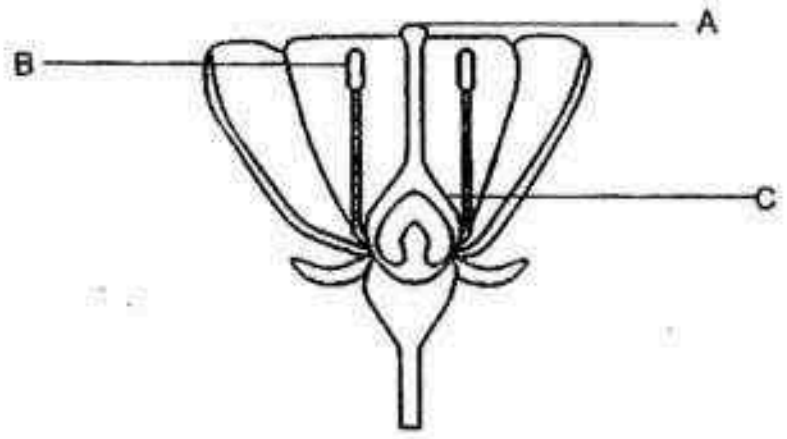
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1 Study the diagram of the cross-section of a flower. A, B and C are three parts of the flower.



Which of the following statements are correct?

A: Part C becomes a fruit after fertilisation.
B: Pollen grains are released from part B for pollination.
C: Pollen tube grows from part A to reach the egg for fertilisation.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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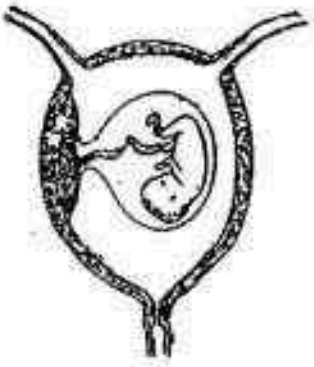
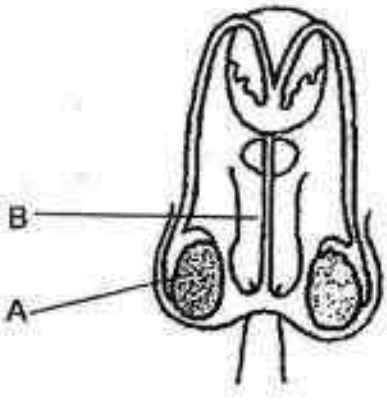
2. The diagram shows an unborn baby in the mother's womb.



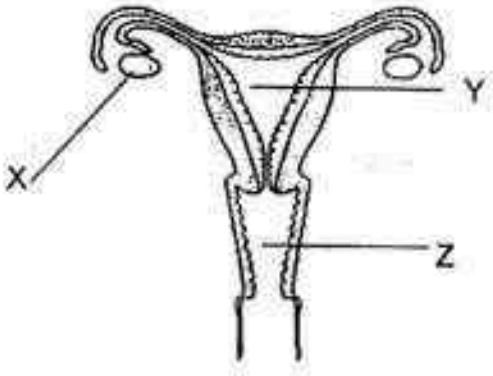
Which of the following statements is true about the unborn baby?

(1) It has genetic information only from his mother.
(2) It develops in his mother's womb for 12 months.
(3) It depends on his mother for nutrients when it is in the womb.
(4) It carries out life processes only after his mother gives birth to him.

3. The diagrams below show the parts of a human male and female reproductive system.



male reproductive system



female reproductive system

Which one of the following statements is correct?

(1) Parts A and X store the eggs.
(2) The fertilised egg develops in part Z.
(3) The sperms swim from part Y to part Z to fertilise the egg.
(4) The sperms leave the male reproductive system through part B.

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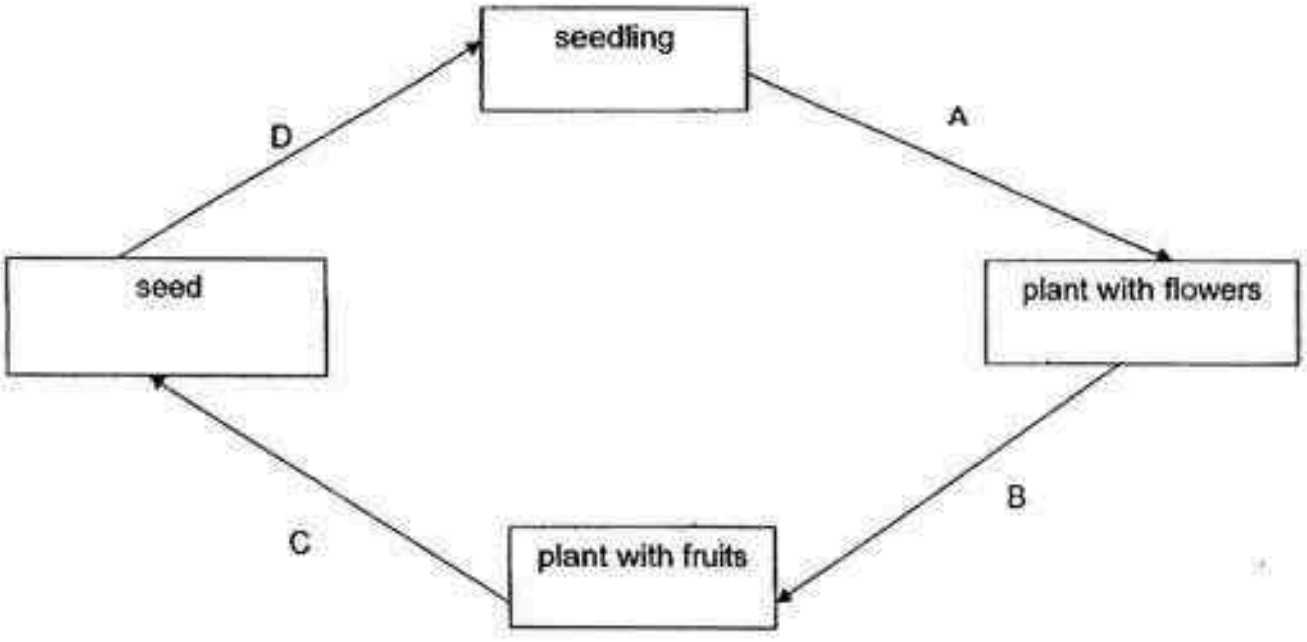
4. The diagram below shows the developmental stages of a plant.



At which points(A, B, C and D) do the processes of seed dispersal, germination and fertilisation take place?

	Seed Dispersal	Germination	Fertilisation
(1)	C	D	A
(2)	B	C	A
(3)	D	A	B
(4)	C	D	B

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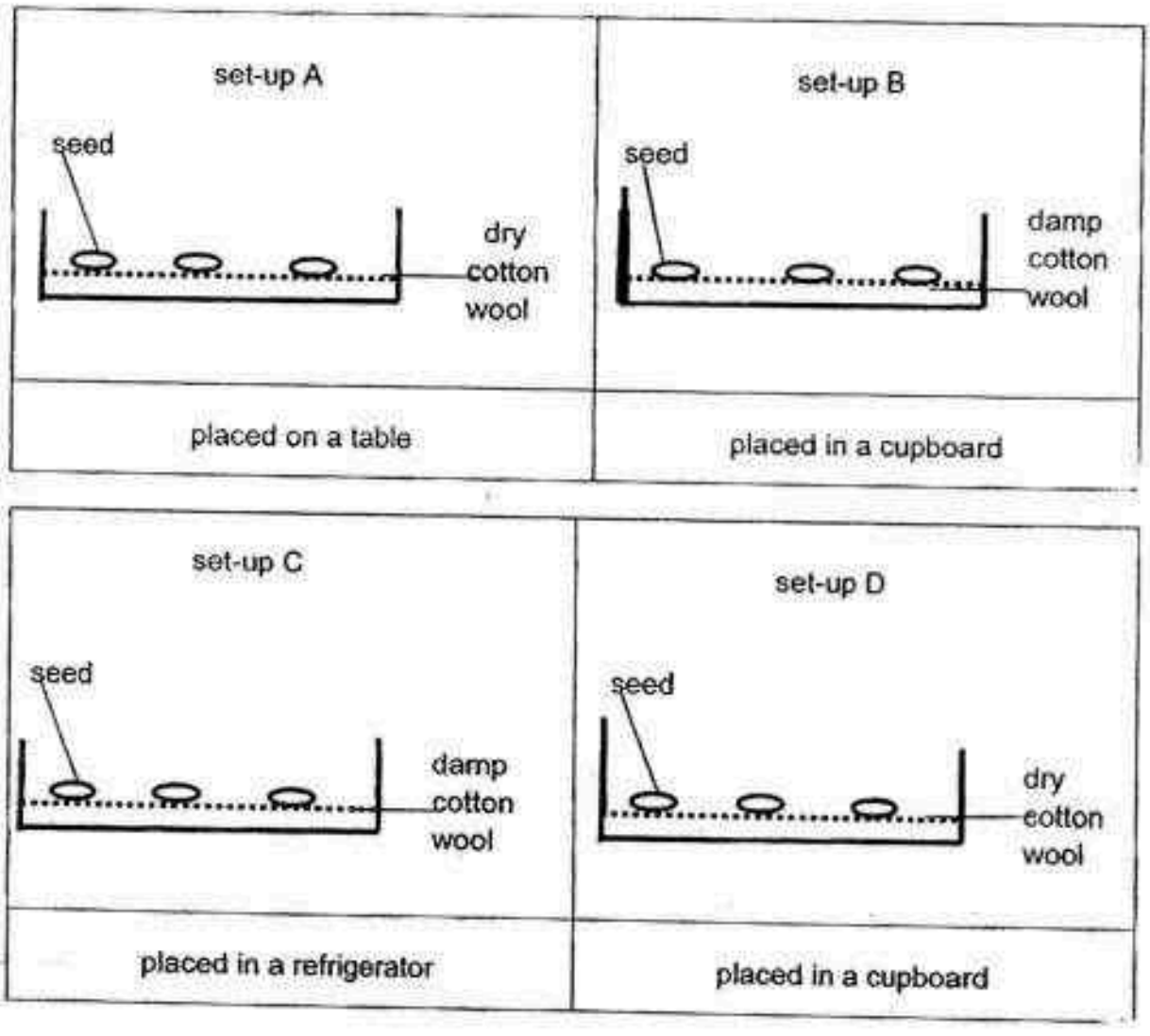
5. Study the following set-ups on the germination of seeds.



Tom wanted to find out if warmth is needed for seeds to germinate. Which of the following pair of set-ups should he use to ensure a fair test?

(1) A and C
(2) B and C
(3) A and D
(4) B and D

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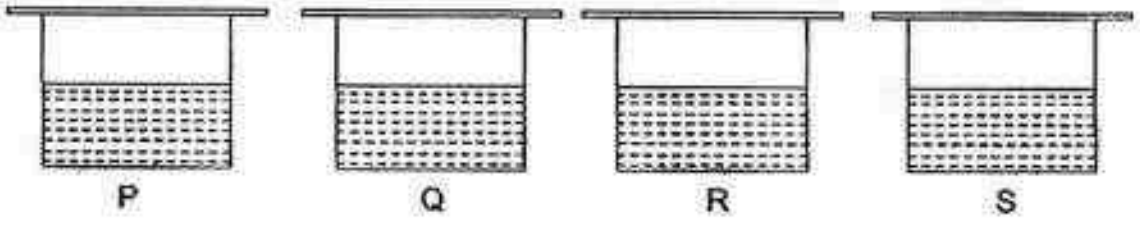
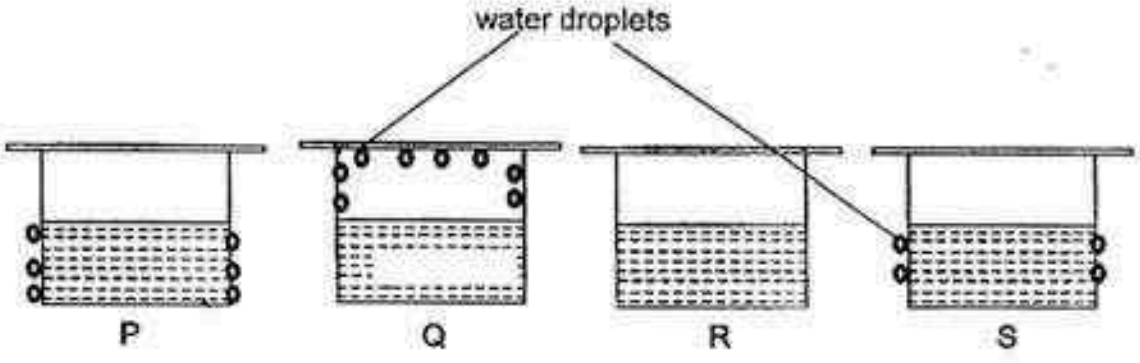
6. The diagram below shows four identical containers P, Q, R and S. Each container was filled with water at different temperature. The containers were covered with a plastic lid and left on the kitchen table.



After 15 minutes, the following observations were seen.



Arrange the containers of water in ascending order, according to the temperature of water.

(1) Q, R, S, P
(2) R, S, P, Q
(3) P, S, R, Q
(4) S, P, Q, R

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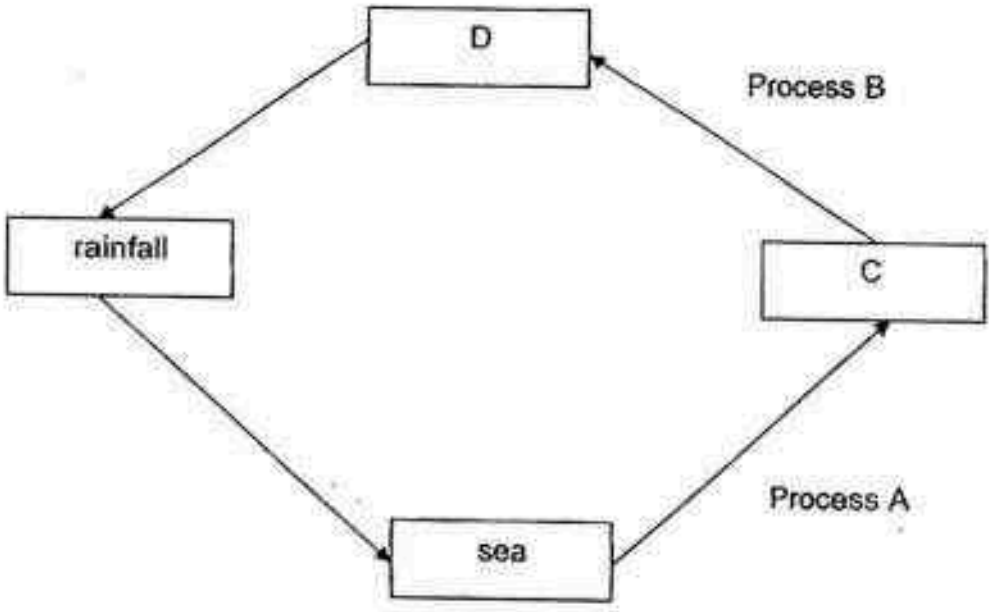
7. The diagram below shows the water cycle. A and B are processes while C and D represent the states of water.



Which one of the following correctly identifies A, B, C and D?

	Process		State of water	
	A	B	C	D
(1)	condensation	evaporation	liquid	gas
(2)	condensation	evaporation	gas	liquid
(3)	evaporation	condensation	liquid	gas
(4)	evaporation	condensation	gas	liquid

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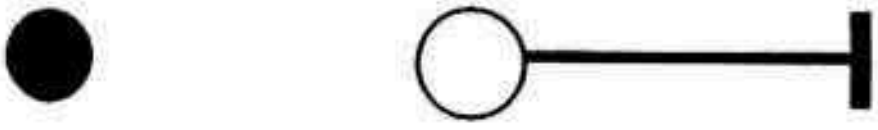
8. Joshua conducted an experiment as shown below. The ball and the ring were heated. Both objects were made of the same material.



ball ring

The ball was able to pass through the ring at room temperature. However, after heating the ball for a while, it was unable to pass through the ring.

Which of the following explains this observation?

	The ball	The ring
(1)	expanded	contracted
(2)	expanded	remained the same
(3)	remained the same	expanded
(4)	remained the same	contracted

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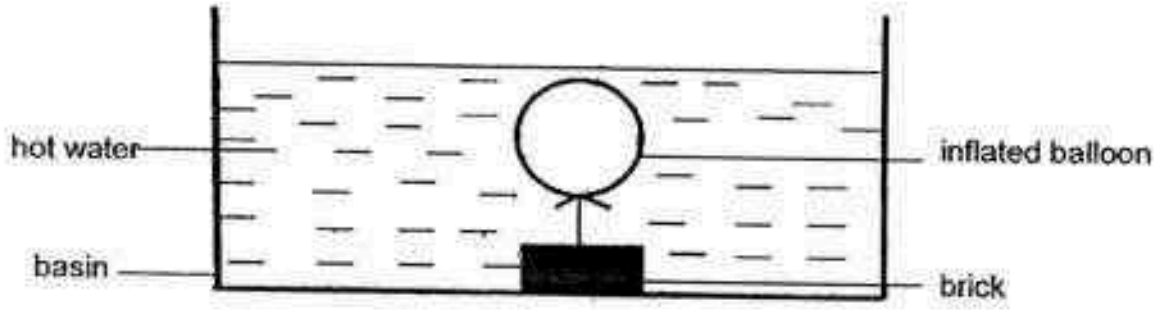
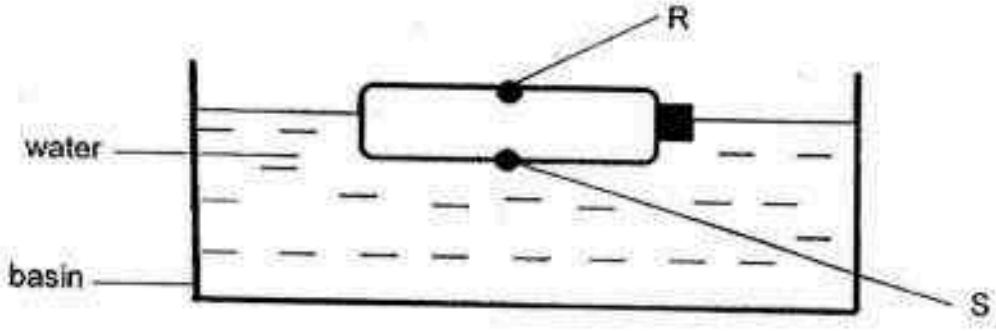
9. Sally tied an inflated balloon to a brick and placed it completely in a basin of hot water as shown below.



What would happen to the water level, mass and size of the inflated balloon after 5 minutes?

	water level	mass of inflated balloon	size of inflated balloon
(1)	increase	no change	increase
(2)	increase	increase	increase
(3)	decrease	decrease	decrease
(4)	decrease	no change	decrease

10. Su Fen placed an empty bottle with two holes at points R and S into a basin of water as shown below.



After a while, she noticed that the bottle started to sink. What could be a possible reason for this?

(1) Air entered through R.
(2) Air escaped through S.
(3) Water entered through S while air entered through R.
(4) Air escaped through R while water entered through S.

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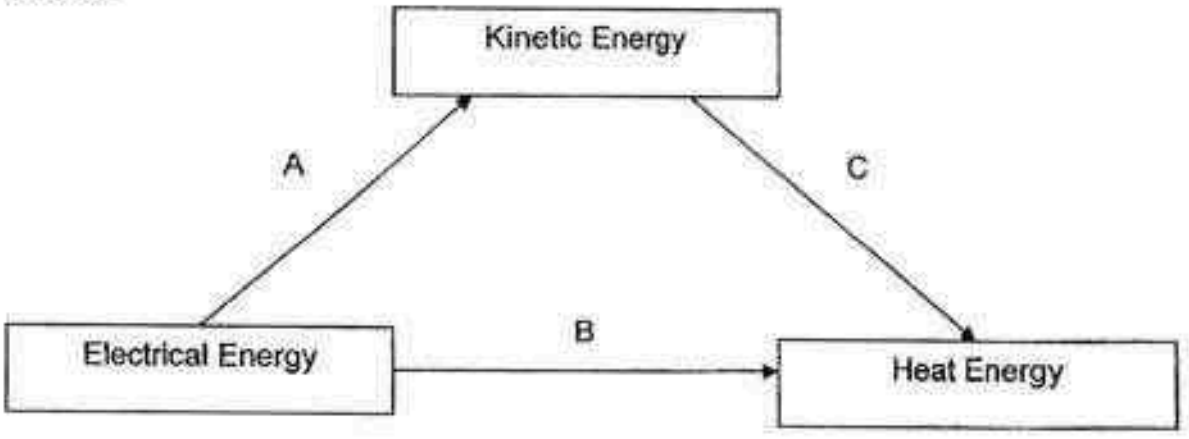
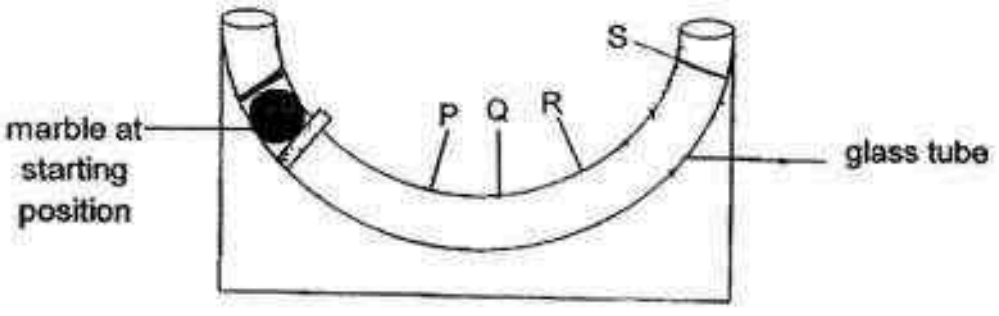
11. The diagram below shows how energy can be converted from one form to another.



Which set of activities best represents the conversion of energy as shown above?

	A	B	C
(1)	Using an electric fan	Rubbing two sticks together	Using an electric toaster
(2)	Rubbing two sticks together	Using an electric toaster	Using an electric fan
(3)	Using an electric toaster	Rubbing two sticks together	Using an electric fan
(4)	Using an electric fan	Using an electric toaster	Rubbing two sticks together

12. Mary placed a marble in a glass tube. She observed that when she released the marble it rolled to the other end of the tube before rolling back downwards.



At which position, P, Q, R or S, will the marble reach before it rolls back downwards?

(1) P
(2) Q
(3) R
(4) S

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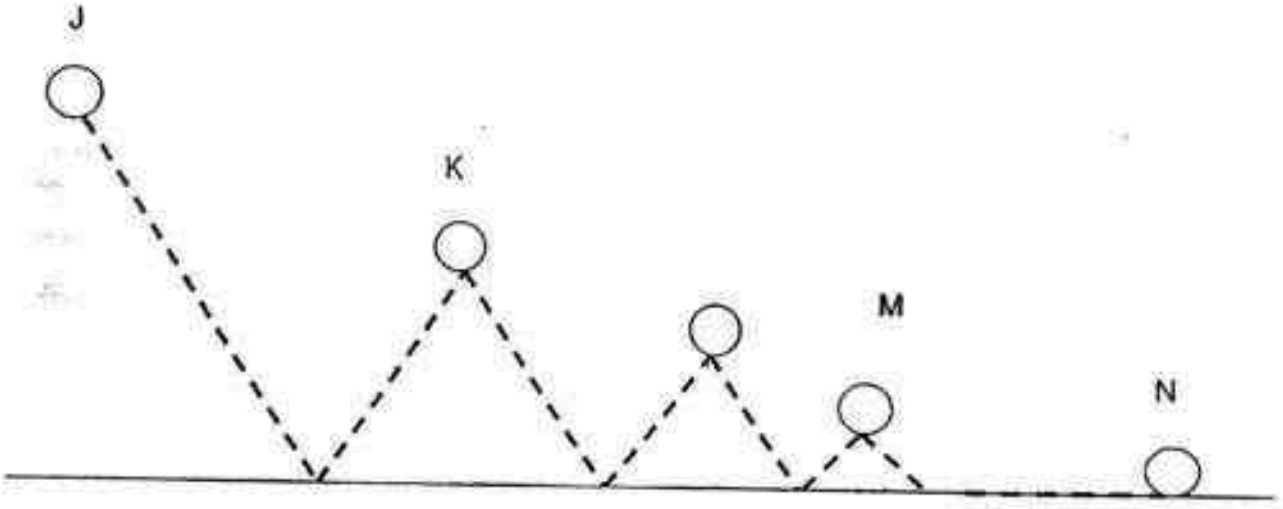
13. John bounced a plastic ball from J above the ground. The ball bounced to a lower height each time it hit the ground as shown below until it finally came to a stop at N.



Which one of the following statements is correct?

(1) Kinetic energy is the highest at J.
(2) Gravitational force is the least at N.
(3) Potential energy is decreasing from L to M
(4) Kinetic energy and potential energy is equal at K.

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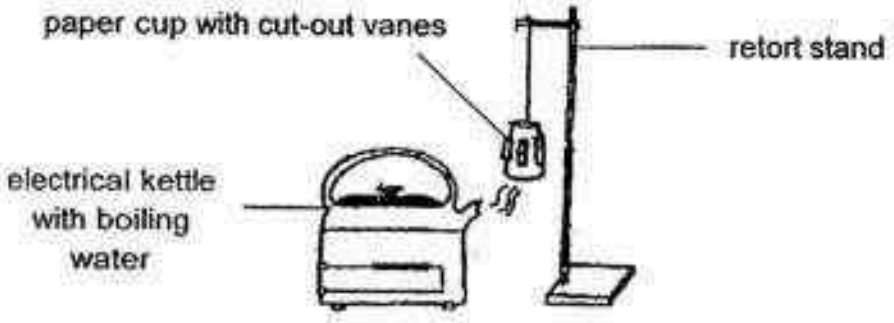
14. The diagram shows an electric kettle of water. It is placed under a paper cup with cut-out vanes.



Which one of the following shows the energy conversion when the paper cup began to spin?

(1) electrical energy → heat energy → kinetic energy

(2) electrical energy → kinetic energy → heat energy

(3) heat energy → electrical energy → kinetic energy

(4) heat energy → electrical energy → kinetic energy → heat energy → kinetic energy

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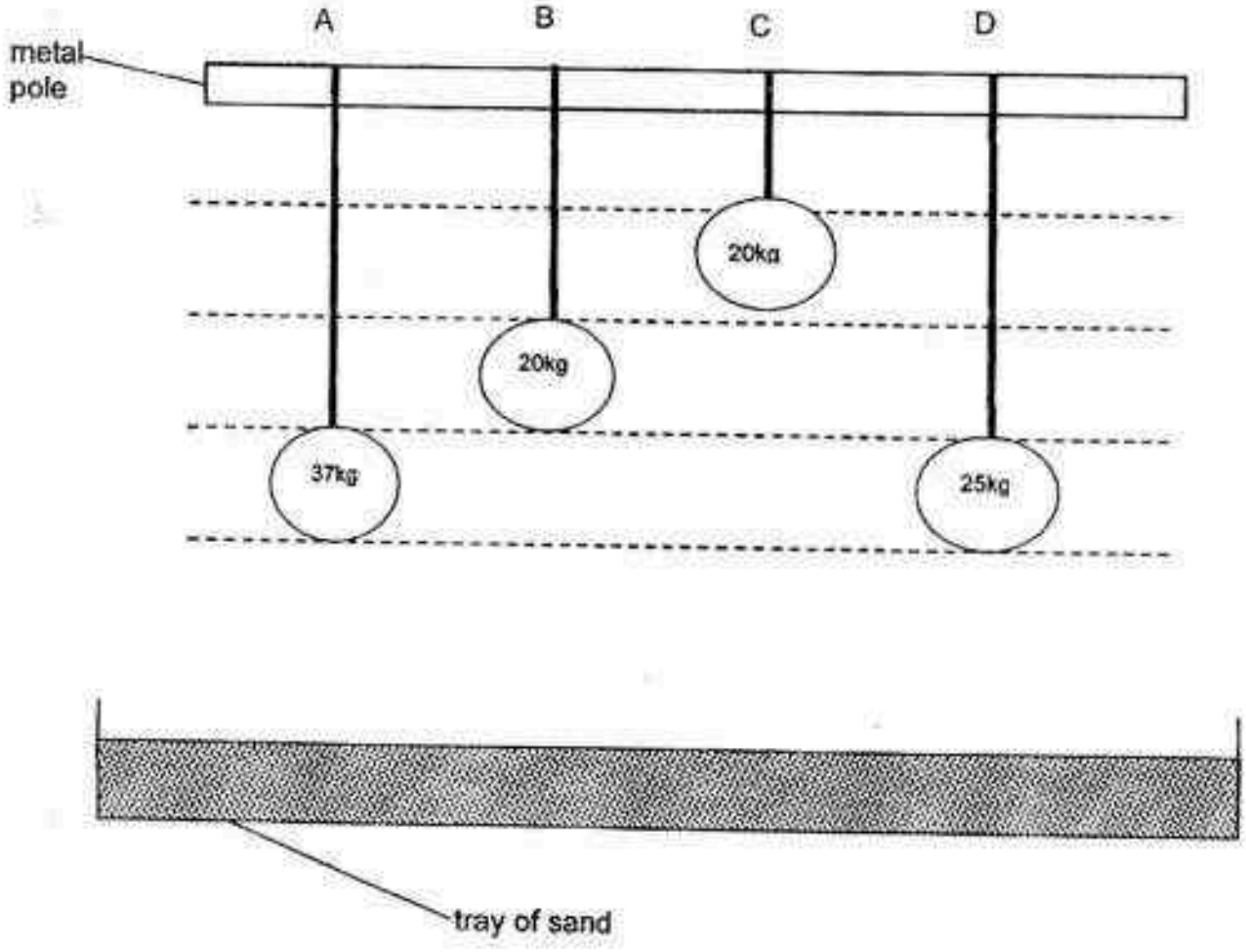
15. Susan had four iron balls A, B, C and D of different masses. She tied each of them to a metal pole as shown below.



When the strings were released, each ball fell and created a dent in the sand.
Which of the following statements is definitely correct?

(1) Ball A would create a smaller dent that ball D.
(2) Ball B would create a smaller dent than ball C.
(3) Ball B and ball C would hit the sand with equal sound.
(4) Ball C would hit the sand with greater sound than ball A.

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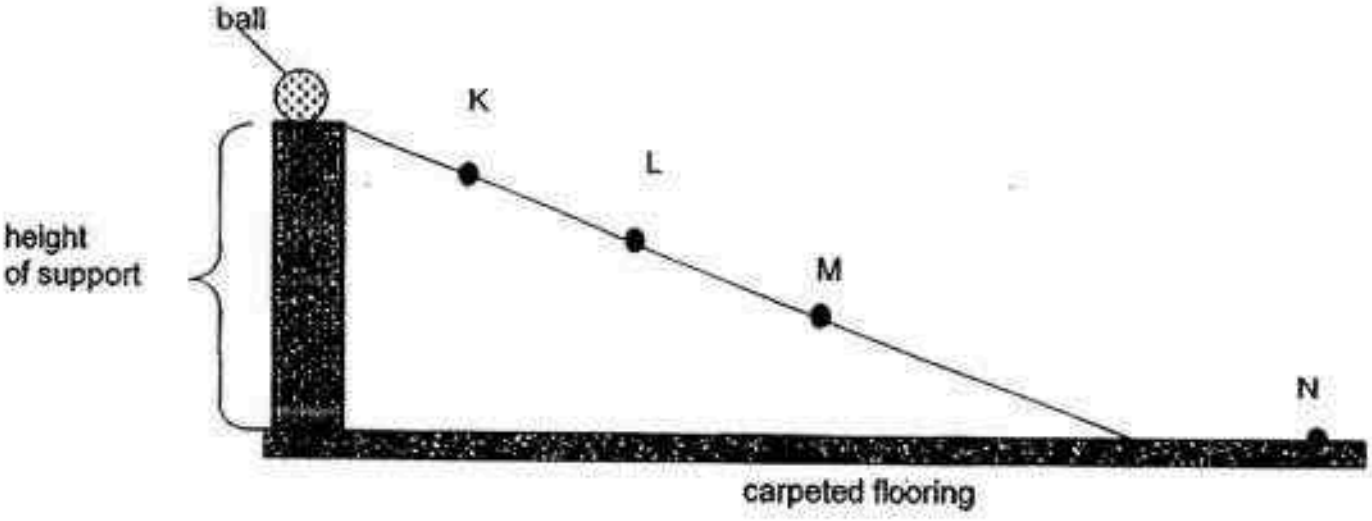
16. Some pupils released a ball along a ramp as shown in the diagram below. It rolled down the slope, passing through points K, L, M and moved along the carpeted floor. It finally stopped at point N.



Next, the pupils placed the ball at points K, L and M and repeated the experiment respectively.

The pupils made the following statements.

Don: The ball only has kinetic energy at points K and L.
Raju: The ball has the greatest amount of gravitational potential energy at point K.
Sam: The ball would have rolled further if the experiment had been done on a tiled floor.
Kim: The ball would have rolled further if the height of the support is increased.

Who had made a correct statement?

(1) Raju and Sam only.
(2) Don and Raju only.
(3) Raju, Sam and Kim only.
(4) Don, Sam and Kim only.

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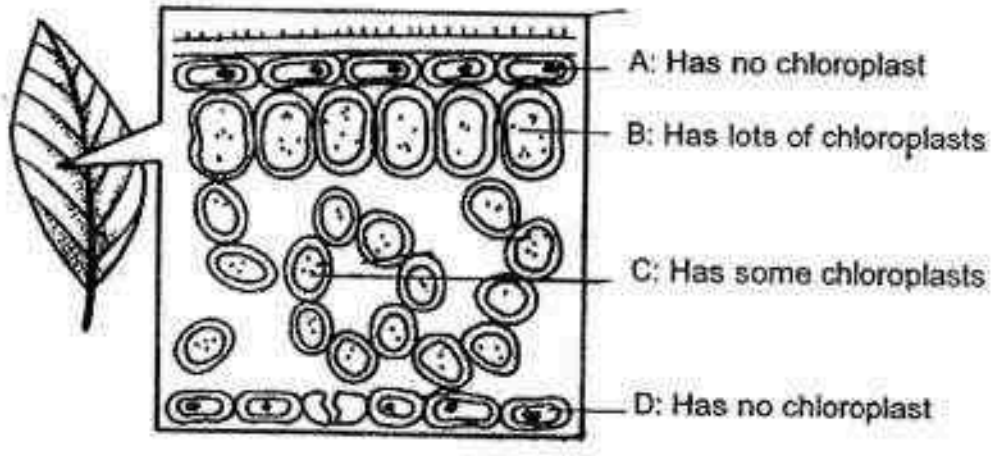
17. Why do we want to find other sources of energy to produce electricity?

A: Energy for coal, oil or natural gas are fast depleting
B: Energy for coal, oil or natural gas are less efficient.
C: Energy for coal, oil or natural gas causes pollution.
D: Energy for coal, oil or natural gas produces less energy.

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

18. The diagram below shows the layers of cells in the cross-section of a leaf. John observed if there are chloroplasts in the cells A to D and recorded in the diagram as shown below.



In which of the layers of cells A, B, C or D, will energy conversion take place?

	Layers of cells	Conversion of energy
(1)	A and B only	heat energy → light energy
(2)	A and C only	light energy → heat energy
(3)	B and C only	light energy → potential energy
(4)	B, C and D only	light energy → potential energy

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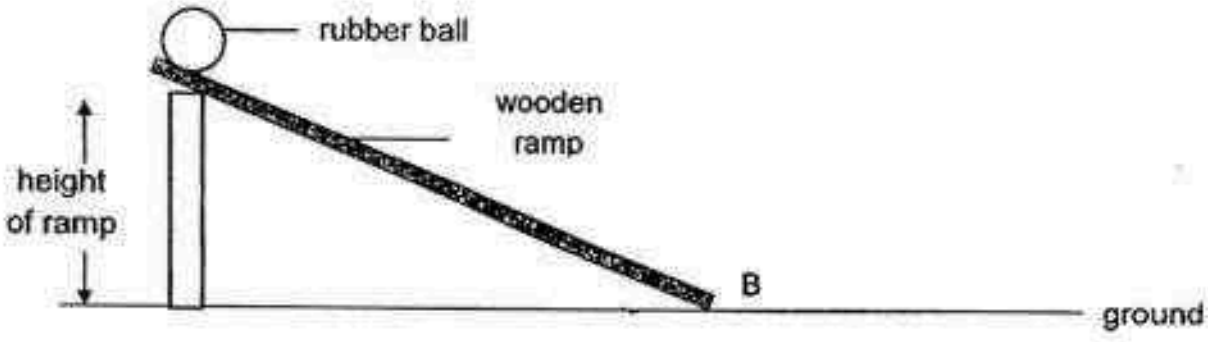
19. Some pupils carried out an experiment to find out whether the amount of potential energy affects the horizontal distance the ball moves after reaching point B.



Which of the following variables must they keep the same in order to have a fair test?

A: Height of ramp
B: Length of ramp
C: Position where the ball is released on the ramp
D: Horizontal distance moved by the ball

(1) B and C only
(2) A, B and C only
(3) B, C and D only
(4) A, B, C and D

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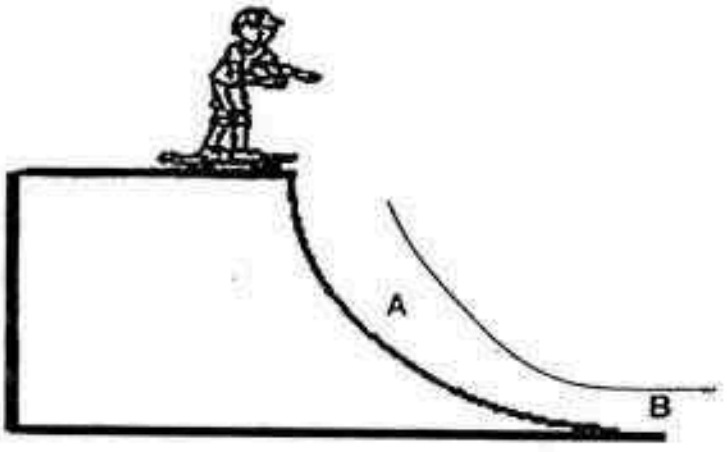
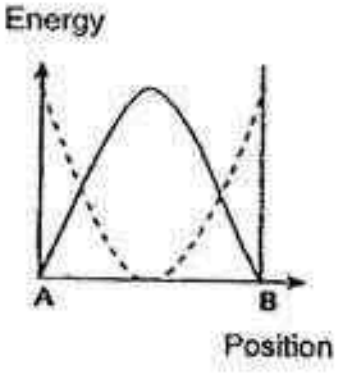
20. Kevin rode on a skateboard down a slope as shown in the diagram below.

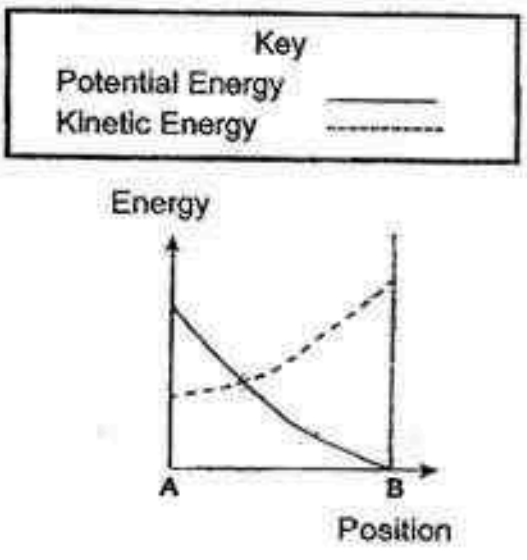


Which one of the following graphs correctly shows how the potential energy and kinetic energy changes as Kevin skates from A to B?

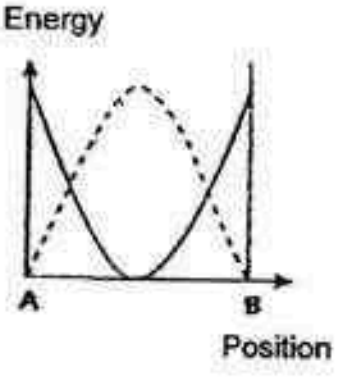
(1)



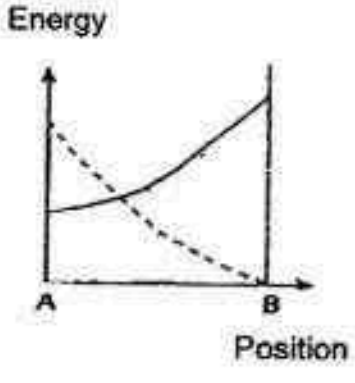
(2)



(3)



(4)



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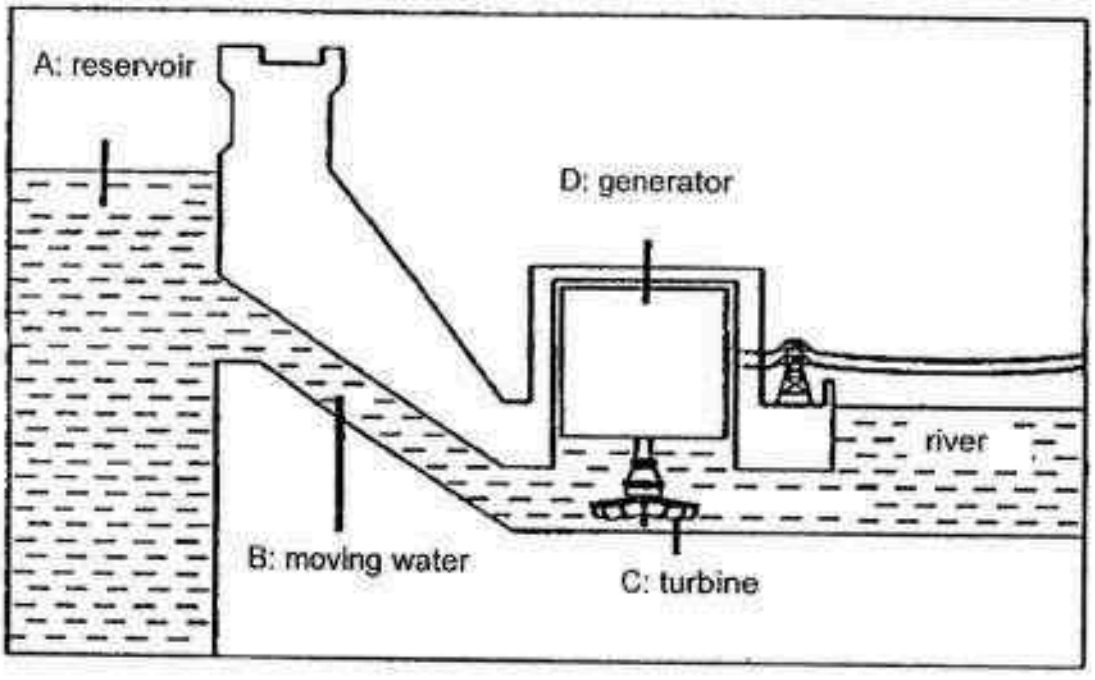
21. The diagram below shows a hydroelectric power station.



Which of the following matches the correct energy conversion in the hydroelectric power station?

	kinetic energy → electrical energy	potential energy → kinetic energy
(1)	C	B
(2)	C	D
(3)	D	B
(4)	D	C

22. Force is a push or a pull. Which one of the following actions involves a push only?

(1) Closing the cap of a pen.
(2) Peeling off the peel of an orange.
(3) Cutting a piece of paper with a pair of scissors.
(4) Sweeping the floor with a broom.

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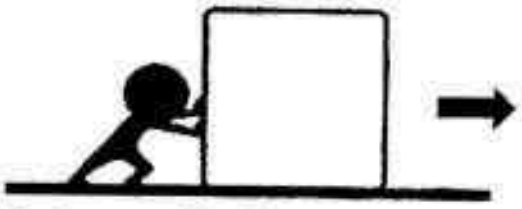
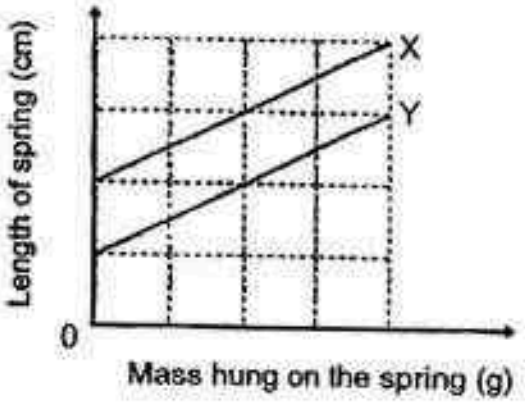
23. Ben is having difficulty pushing a heavy box across a room in the direction represented by the arrow.



Which of the following way(s) will help Ben push the box with less force?
A: Add rollers to the bottom of the box
B: Apply some oil on the soles of Ben's shoes
C: Ask a friend to push the box harder in the opposite direction

(1) A only
(2) C only
(3) A and B only
(4) B and C only

24. The graph below shows how the length of two springs X and Y are affected by the mass hung on each of them.



Which of the following statement(s) about the graph is/are true?

A: The original length of spring X is longer than the original length of spring Y.
B: For the same amount of mass hung on each spring, spring X extends more than spring Y.
C: The greater the mass hung on the spring, the greater the extension of spring for both spring X and spring Y.

(1) C only
(2) A and C only
(3) B and C only
(4) A, B and C

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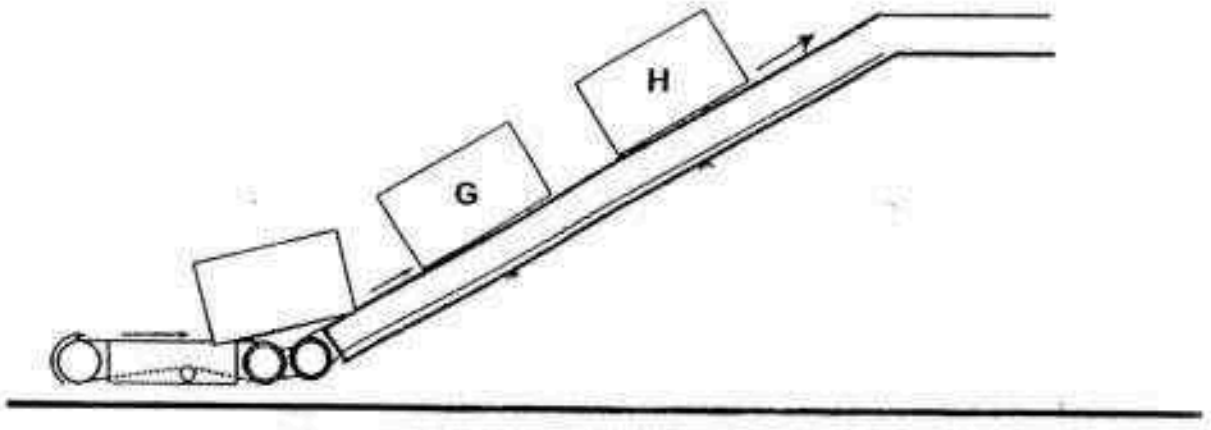
25. Identical wooden blocks are pulled up using a conveyor belt on a ramp. The two blocks G and H are at different positions as shown below.



Which of the following statements is **not** correct?

(1) Block G needs more force to pull up than block H.
(2) Blocks G and H need the same amount of force to pull up.
(3) Blocks G and H have the same amount of frictional force acting on them.
(4) Blocks G and H have the same amount of gravitational force acting on them.

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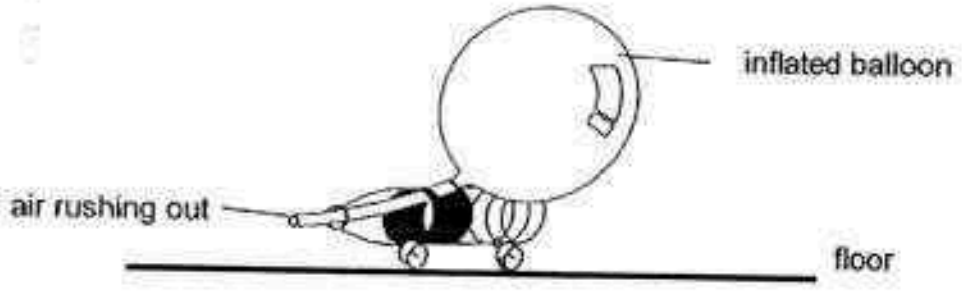
26. Jane taped a straw to a toy car. She attached an inflated balloon at one end of the straw as shown below.



When she released the balloon, air rushed out of the balloon, exerting a force. However, the car did not move forward along the level floor.
Which of the following explains Jane's observation?

The toy car could not move because the force of air rushing out of the balloon was smaller than _____.

A: the weight of the straw and the toy car
B: the friction between the toy car and the floor
C: the weight of the balloon and the straw

(1) A only
(2) B only
(3) A and B only
(4) A, B and C

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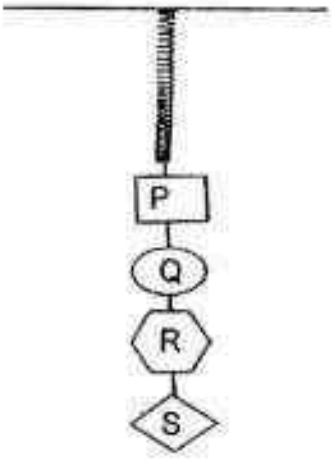
27. Aaron carried out an experiment using a spring and four objects, P, Q, R and S. When each of the objects was hung on the spring, the length of the extension of the spring was measured.



The table below shows the extension of the spring when the following object(s) is/are hung on it.

Object(s)	Extension of the spring(cm)
P	20
P and Q	50
P, Q and R	60
P, Q, R and S	80

Based on the results shown in the above table, which one of the following objects exerts the least force on the spring?

(1) P
(2) Q
(3) R
(4) S

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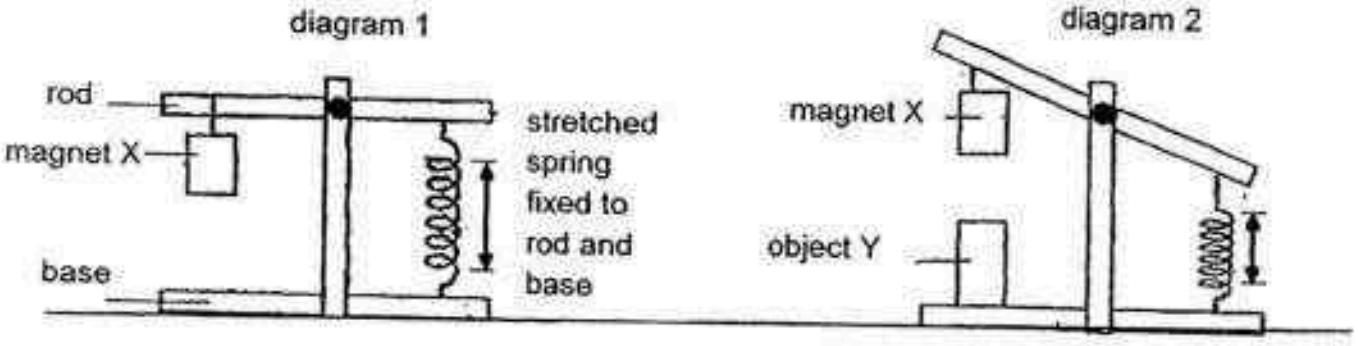
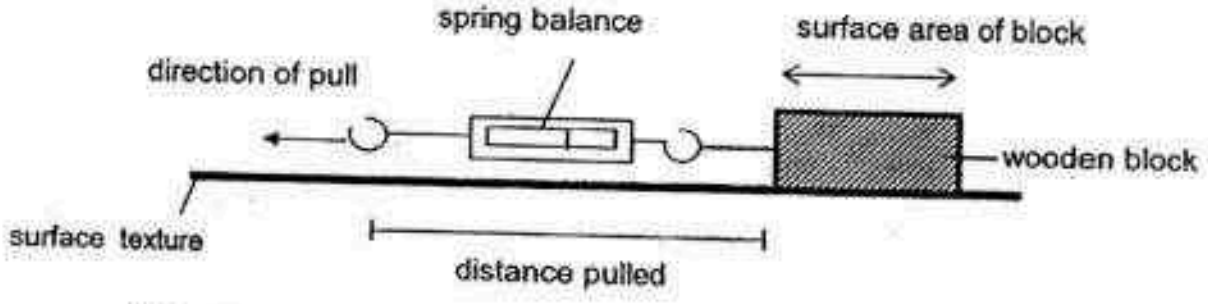
28. John set up an experiment as shown below. The rod was horizontal when magnet X was hung on it as shown in diagram 1. Object Y was then placed below magnet X as shown in diagram 2.



Why did the spring stretch less as shown in diagram 2?

(1) Object Y repelled magnet X.
(2) Object Y attracted magnet X.
(3) Magnet X lost its magnetism.
(4) The stretched spring lost its elasticity.

29. Roy wanted to find out if the surface area of a wooden block will affect friction.



Using the set-up above, he changed the following the variables to have 4 set-ups, A, B, C and D.

Set-up	Surface area of block(cm^2)	Surface texture	Distance pulled (cm)
A	30	smooth	30
B	15	rough	15
C	15	rough	30
D	10	smooth	30

Which two set-ups above should Roy use to ensure a fair test?

(1) A and B
(2) B and D
(3) A and D
(4) B and C

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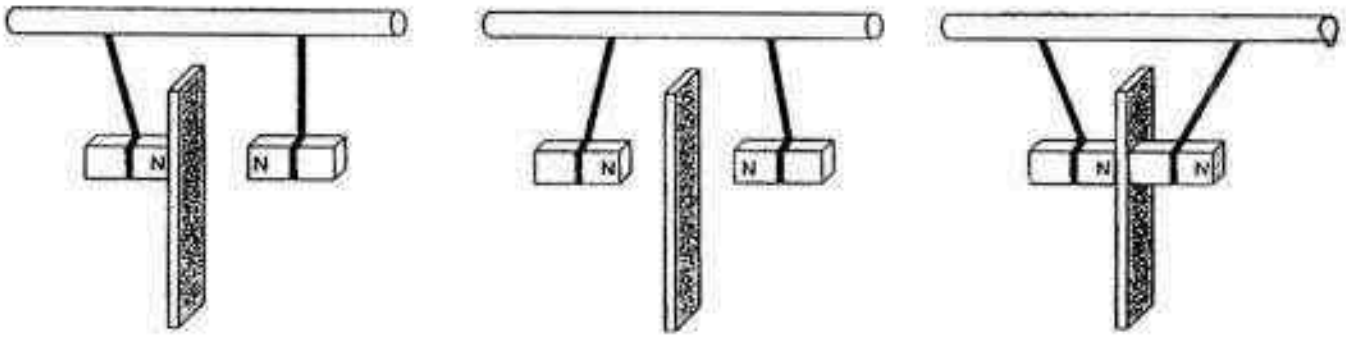
30. Joe set up the following experiment to find out if strips A, B and C are non-magnetic or a magnet. He placed each strip between the same magnets as shown below.



strip A strip B strip C

Which of the strip(s) is/are definitely non-magnetic?

(1) A only
(2) B only
(3) A and C only
(4) B and C only

End of Booklet A

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Rosyth School
Continual Assessment 1 2016
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: 100

Class: Pr 6 ____ Register No. _____ Duration: 1 h 45 min

Date: 29 February 2016 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 31 to 44, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	60 marks	
Booklet B	40 marks	
Total	100 marks	

* This booklet consists of 17 printed pages.

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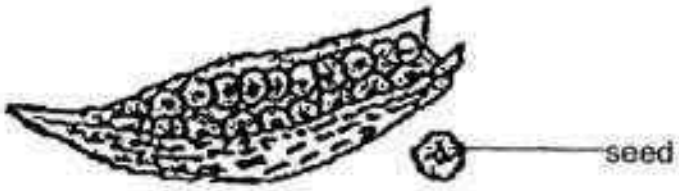
Part II (40 Marks)

For questions 31 to 44, write your answers in the space provided.

31. The diagram below shows two fruits A and B dispersing their seeds when the fruit ripens. Both seeds are small and light.



fruit A



fruit B

(a) Which fruit would disperse its seeds further away from the parent plant? Explain why. (1m)

_____

_____

(b) State the importance of seed dispersal. (1m)

_____

_____

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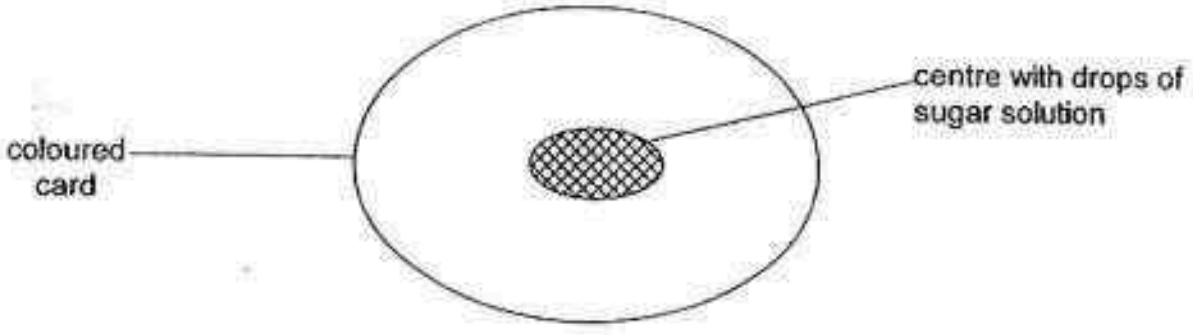
32. John conducted two experiments with the following items.

- three different coloured cards
- sugar solution

In his first experiment, he added 10 drops of sugar solution in the centre of each card. He placed the cards in the garden for three hours. He then counted the number of butterflies that visited the cards.



John recorded the number of butterflies that visited the coloured cards in the table below.

Colour of card	Number of butterflies visiting the ~~flowers~~ cards		
	8am-9am	9am-10am	10am-11am
light blue	2	4	3
dark yellow	5	8	10
white	1	3	2

(a) State the aim of the first experiment conducted by John. (1m)

Question 32 continues on pg 3

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(b) For his second experiment, he wanted to find out if the size of the coloured cards would affect the number of butterflies visiting.

In the table below, put a tick (√) to indicate the variable(s) that he should keep the same to ensure a fair test. (1m)

size of card	
timing of experiment	
number of butterflies visiting each card	
number of drops of sugar solution added to each card	

(c) Which colour card should John use for his second experiment? Explain why. (1m)

_____

_____

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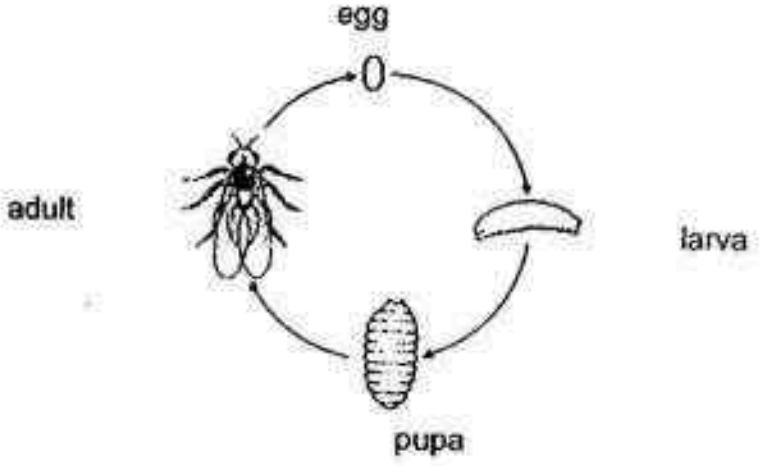
33. Kok Sim studied the life cycle of organism F as shown below.



Kok Sim classified organism F as an insect.

(a) State one characteristic of organism F that could have helped him classify it as an insect. (1m)

_____

(b) Organism F lays its eggs which hatch into larvae on the bodies of some animals. The larvae grow bigger in size after some time.

Explain one benefit for organism F to lays its eggs on the bodies of animals. (1m)

_____

Kok Sim studied the effect of the surrounding temperature on the life cycle of organism F. His findings are shown below.

Surrounding temperature (°C)	Number of days to complete one life cycle
10	30
20	25
30	20
35	18

(c) Why did the number of adults of organism F increase during hot weather? (1m)

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34. The table below shows the freezing points and boiling points of 3 substances X, Y and Z.

Substance	Freezing point(°C)	Boiling point(°C)
X	29	130
Y	17	118
Z	7	59

(a) Name the states of substances X and Y at 20°C. (1m)

substance X: _____

substance Y: _____

(b) Besides having mass and occupying space, state another property of substance Z when it is at 80°C. (1m)

_____

_____

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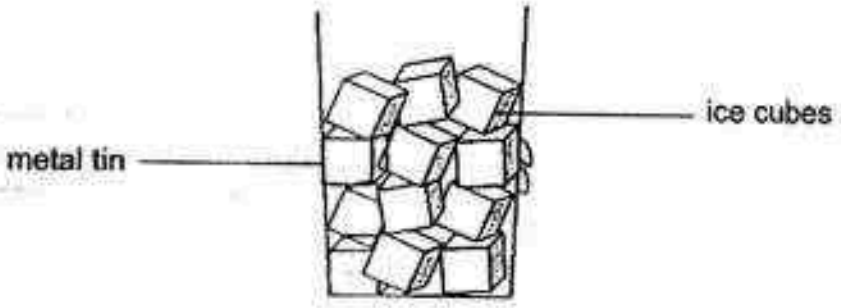
35 Ali put some ice cubes in a metal tin as shown below.



(a) What will Ali observe on the outer surface of the metal tin after some time? (1m)

_____

(b) Explain your observation in (a). (1m)

_____

_____

_____

(c) Ali's teacher told him that the crushed ice cubes are better in making his soft drink cool faster blocks of ice - cubes. Explain why. (1m)

_____

_____

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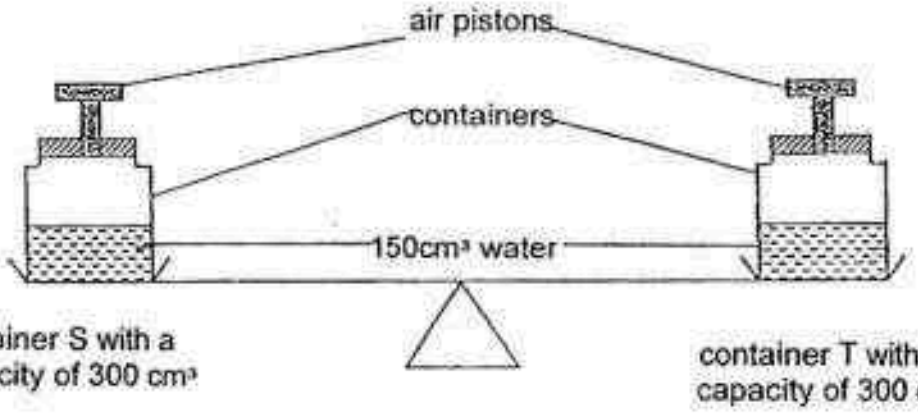
36. Mary balanced two identical containers S and T with a maximum capacity of 300 cm^3 on a lever balance as shown in the diagram below. Both containers were filled with 150 cm^3 of water.



Mary used an air piston to pump 100 cm^3 of air into container S and another 50 cm^3 of air into container T. Both containers were placed on the lever balance again.

(a) What would happen to the level balance? (1m)

_____

_____

(b) Which property of air does this experiment demonstrate? (1m)

_____

(c) What is the volume of air in each container now? (1m)

(i) Volume of air in container S: _____ cm^3

(ii) Volume of air in container T: _____ cm^3

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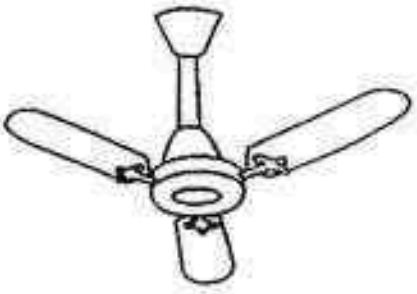
37. Below is a diagram of a wind turbine and fan.



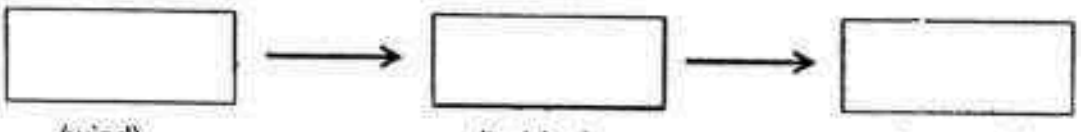
wind turbine



fan

State the energy conversions involved in the wind turbine and the fan. (2m)

(a) wind turbine:



(b) fan:



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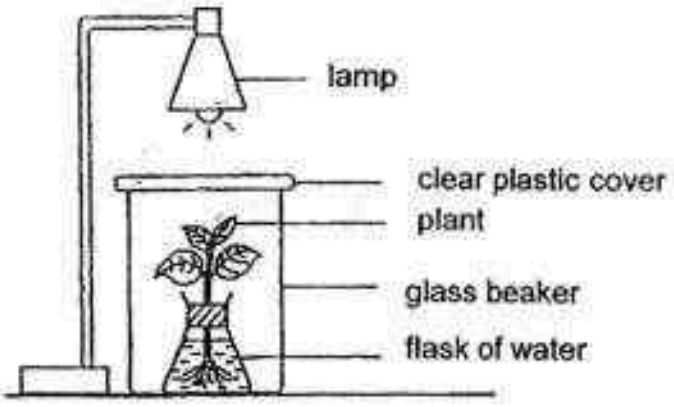
38. Sue set up an experiment as shown below and placed it in a cupboard. The intensity of light from the lamp remained the same throughout the experiment.



(a) Name the products of photosynthesis. (1m)

_____

After 8 hours, the rate of photosynthesis slowed down.

(b) What could have caused the rate of photosynthesis to slow down? (1m)

_____

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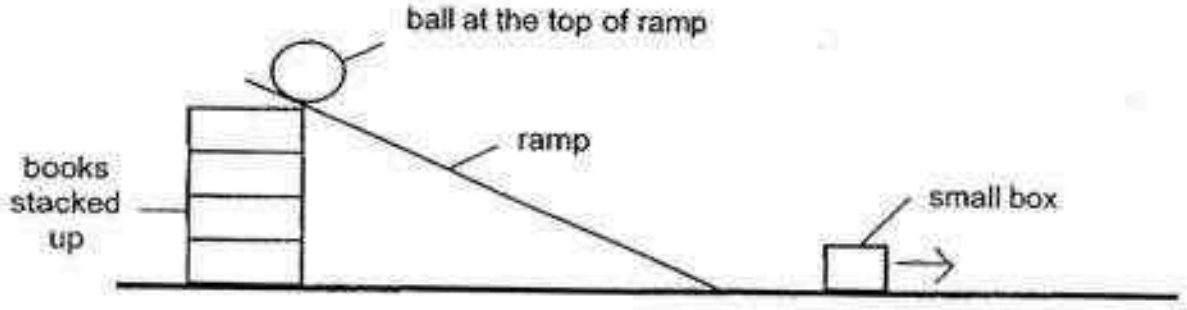
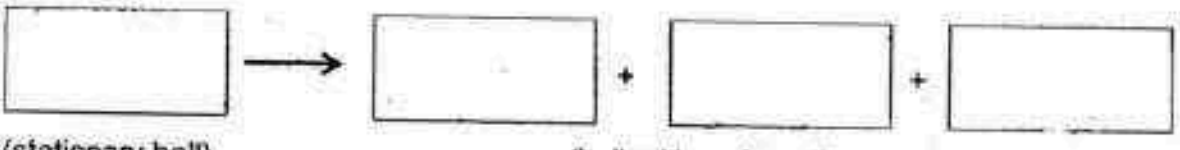
39. A ramp is supported by some identical books. A small box is placed at the bottom of the ramp. Aminah released a ball from the top of the ramp. As the ball reached the bottom of the ramp, it hit the small box and the small box moved.



Number of books stacked up	3	5	7	8
Distance moved by the small box (cm)	4	7	14	22

(a) State the energy conversions taking place as the ball is released from the top of the ramp. (1m)



(stationary ball) (ball rolling along the ramp)

(b) Why did the small box gradually stop moving after some time? (1m)

_____

_____

(c) If the ball was heavier, what would happen to the distance moved by the small box? (1m)

_____

_____

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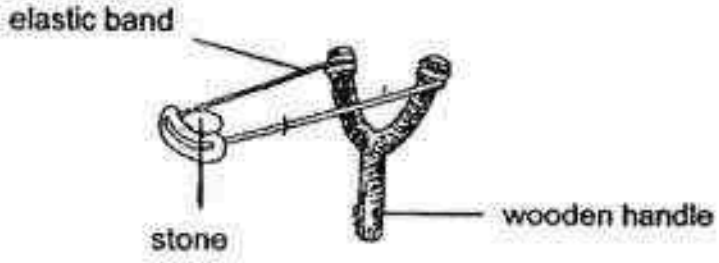
40. Jacob used the sling shot and the stone below to conduct an experiment to find out how the distance travelled by the stone was affected by the length of the stretched elastic band of the sling shot.



The table below shows the results of Jacob's experiment.

Length of stretched elastic band (cm)	Distance travelled by the stone (m)
5	2
10	4
15	6

(a) Identify the source of energy in the above experiment. (1m)

_____

(b) What is the relationship between the length of the stretched elastic band and the distance travelled by the stone. (1m)

_____

_____

(c) Explain how the relationship in (b) is possible. (1m)

_____

_____

(d) Suggest another way Jacob can do to increase the distance travelled by the stone using the sling shot. (1m)

_____

_____

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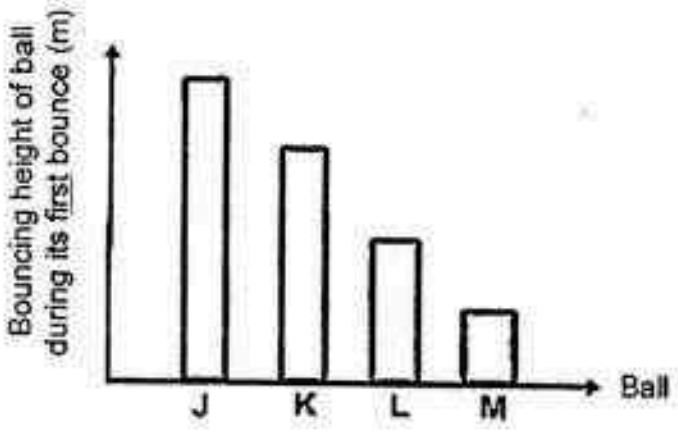
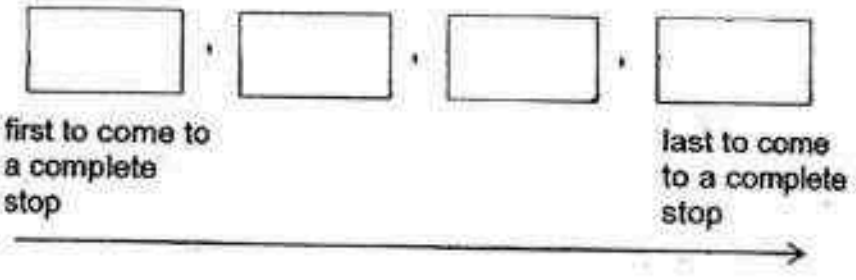
41. Sammy conducted an experiment with 4 balls, J, K, L and M which were made from different materials. He released each ball from the same height and allowed it to bounce off the ground. He measured the bouncing height of each ball during its first bounce and presented his results in the bar graph as shown below.



(a) Based on the bar graph as shown above, rank the time taken for each of the balls J, K, L or M, to come to a complete stop. (1m)



(b) Which property of the material affected the bouncing height of the ball? (1m)

_____

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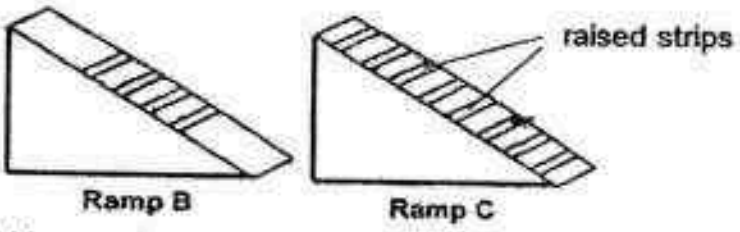
42. Michael carried out an investigation using a toy car and ramps with raised strips as shown below.



He repeated his experiment a few times to obtain the average results as shown below.

	Average time taken for car to move down the ramp in sec
Ramp B	5
Ramp C	7

(a) State the conclusion for the experiment. (1m)

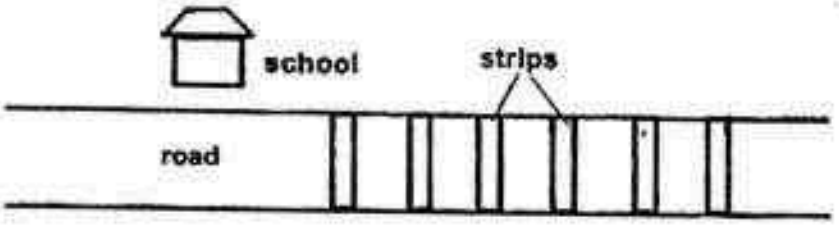
_____

_____

(b) Why did he repeat his experiment? (1m)

_____

Michael saw that a section of the road near his school had raised strips on the road as shown below.



(c) Explain how the raised strips on the road would decrease the speed of the car? (2m)

_____

_____

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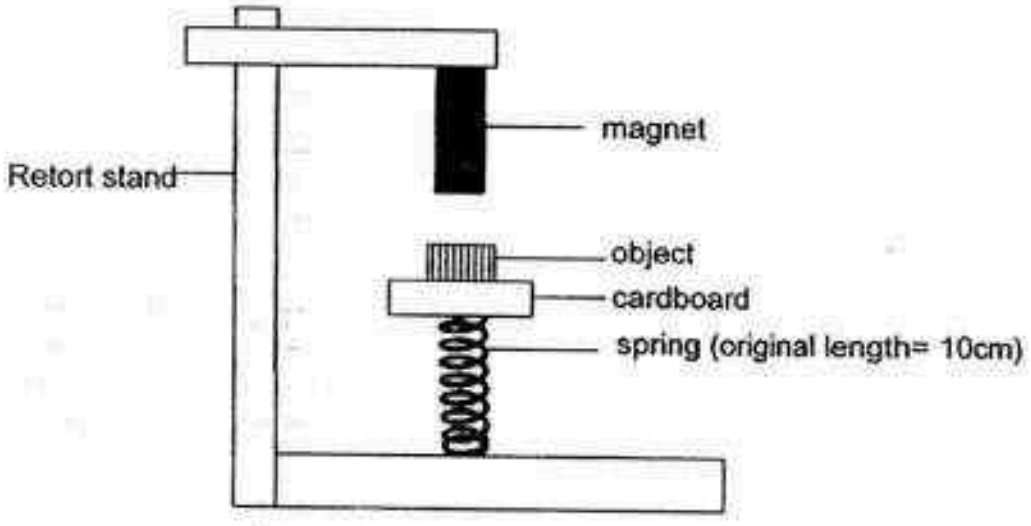
43. Siti set up the experiment as shown below.



She attached two different objects A and B of similar mass on a cardboard resting on the 10cm-spring coil, one at a time. He recorded the length of the spring coil after each attachment.

Object	Length of spring (cm)
A	20
B	6

(a) Identify the force which is acting on the object when the spring coil increases in its length? (1m)

_____

(b) Based on the experiment, explain why the length of the spring changed when the objects A and B were attached to the cardboard. (2m)

A: _____

_____

B: _____

_____

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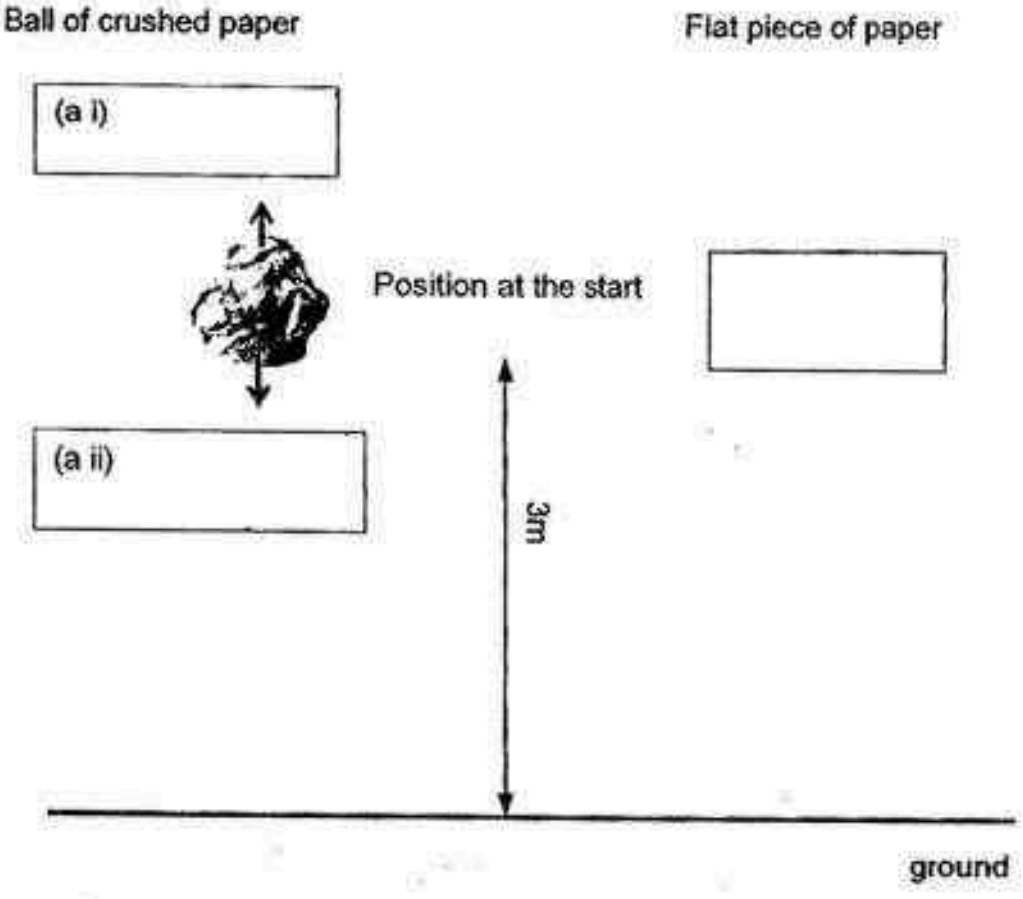
44. The diagram below shows a ball of crushed paper and a flat sheet of paper. Both are made from the same type of paper and are of the same dimensions and mass. Philip released both pieces of paper from a height of 3m at the same time.



He recorded the time taken by the pieces of paper to reach the ground in the table below.

Paper	Time taken to reach the ground (sec)
Ball of crushed paper	3
Flat piece of paper	7

(a) Identify the two types of forces that are acting on the paper when they are falling to the ground. Fill in the boxes in the above diagram. (1m)

Question 44 continues on page 16 and 17

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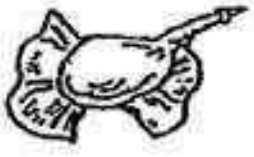
Philip then decided to repeat the same experiment with a fruit, as shown below. He trimmed the wing-like structure before testing fruit B and fruit C.



fruit A
with a complete wing-like structure

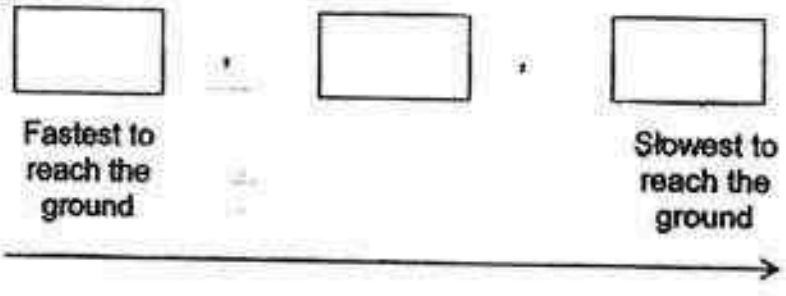


fruit B
with some parts of the wing-like structure cut away



fruit C
with all parts of the wing-like structure cut away

(b) Using the results obtained in the previous experiment, predict and arrange in ascending order the time taken for fruits A, B and C to reach the ground. Write the fruit A, B or C in the boxes below. (1m)



Question 44 continues of page 17

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(c) Explain how the wing-like structure helps the fruit to be dispersed further from the parent plant. (2m)

_____

_____

_____

End of Booklet B

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EXAM PAPER 2016

SCHOOL :ROSYTH

SUBJECT :P6 SCIENCE

TERM : CA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	3	4	4	2	3	4	2	1	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	3	3	1	2	3	2	3	1	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	1	1	2	1	2	3	1	3	2

31)a)Fruit A. Wing-like structure of seed enables the wind to disperse further away from the parent plant.

b)If the parent plant does not disperse its seeds, the seed would compete with the parent plant for light, water nutrients and space.

32)a)To find out if the colour of card affects the number of butterflies visiting the cards.

b)timing of experiment

number of drops of sugar solution added to each card

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32)c)Dark yellow card is to be used as it's the colour that is most attractive to the butterflies.

33)a)Organism F has six legs just like an insect.

b)Organism F's larva can eat the bodies of the animal as food and does not need to search for food.

c)The higher the temperature of the surrounding environment for organism F, the number of days for it to complete its life cycle is shorter.

34)a)X: Solid Y: liquid

b)Substance Z has no definite volume.

35)a)Ali would observe that there would be water droplets outside the container.

b)The water vapour in the surrounding air of the metal tin of ice loses heat comes in contact with the cooler outer surface of the metal tin, to condense as water droplets.

c)As the crush ice cubes has more surface area and increased the rate of evaporation thus, faster than the block of ice.

36)a)The lever balance would tilt in the direction of Container S.

b)Air has mass.

c)i)150cm_3 ii)150cm_3

37)a)Kinetic energy → Kinetic energy → Electrical energy

b)Electrical energy → Kinetic energy

38)a)Sugar, Oxygen.

b)The shortage of Carbon Dioxide as the plant takes in Carbon Dioxide for photosynthesis to occur.

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39)a)Potential energy → Kinetic energy + Heat energy + Sound energy

b)The kinetic energy is converted to heat and sound energy

c)The distance moved by the small box would be greater

40)a)Stone.

b)As the length of the stretched elastic band increases, the distance travelled by the stone increases.

c)As the length of the elastic band stretched increases, there is move potential energy possessed, more potential energy converts to move kinetic energy allowing if fly faster and further.

d)1)Increase the weight of the stone heavier stone.

2)Change to another elastic and that has beater elasticity strength.

41)a)M, L, K, J

b)Mass.

42)a)The more the raised strips of paper,the slower the toy car travels on the ramp.

b)To ensure the reliability of the experiment.

c)The raised strips produces more friction between the rod and type of the car, hence slows down the speed of the car.

43)a)Magnetic force.

b)A: Object A was attracted to magnet, hence the spring board in creased in length.

B: Object B is a magnet its like pole facing the other magnet, causing to repel each other. Hence the spring decreases in length.

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44)a)i)Air resistance Frictional force.

ii)Gravitational Force.

b)C, B, A

c)The structure being light and has more exposed surface area against the wind causing air resistance to act on it making it float and easier for the wind to carry it away.

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4

Name: _____( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Continual Assessment 1 – 2016
SCIENCE

BOOKLET A

3 March 2016

Total Time for Booklets A and B: 1 hour 45 minutes

30 questions
60 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 24 printed pages.

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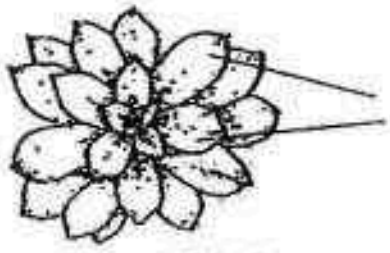
Section A (30 x 2 marks = 60 marks)m
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

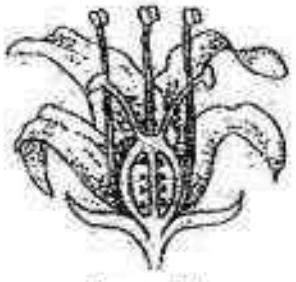
1. The diagram below shows the top view of a plant.



How does the arrangement of the leaves help the plant to survive?

(1) It helps the plant to get more sunlight.
(2) It helps the plant to collect more water.
(3) It helps to prevent water loss through the leaves.
(4) It helps the plant to attract more insects to pollinate its flowers.

2. The diagrams below show the cross-sections of two different types of flowers, W and X.



flower W



flower X

Which of the following statements are true about flowers, W and X?

A Both flowers can be pollinated by insects.
B Both flowers produce fruits with many seeds.
C Pollination can take place in flower W but not in flower X.
D Flower X can develop into a fruit as it can receive pollen grains from flower W.

(1) A and B only
(2) B and C only
(3) A and C only
(4) A, B and D only

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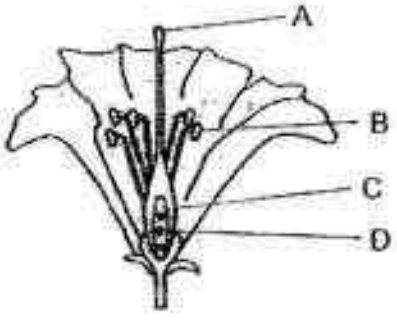
3. Bobby carried out an experiment to find out how the temperature of the surroundings affects the germination of seeds. He planted the same number of seeds of the same type in five identical pots of soil. The pots were exposed to different temperatures. He counted the number of seedlings over a period of 5 days and recorded his results in the table below.

Pot	Temperature (°C)	Total number of seedlings in the pot				
		Day 1	Day 2	Day 3	Day 4	Day 5
A	0	0	0	0	0	0
B	10	0	0	0	1	4
C	20	0	2	4	9	12
D	30	0	6	13	16	19
E	40	0	0	0	0	0

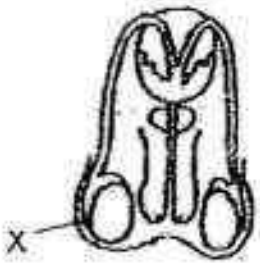
Based on the information in the table above, which one of the following statements is correct?

(1) All the seeds died at 0°C.
(2) Most seeds germinated at 30°C.
(3) All the seeds in Pot D germinated.
(4) The number of seeds germinated increases as the surrounding temperature increases from 10°C to 40°C.

4. The diagram below shows the reproductive systems of a plant, a man and a woman.



Reproductive system of a flower



Reproductive system of a man



Reproductive system of a woman

Which one of the following represents the parts of the flower which have the same functions as X and Y respectively?

	Part X	Part Y
(1)	A	D
(2)	B	D
(3)	B	C
(4)	C	A

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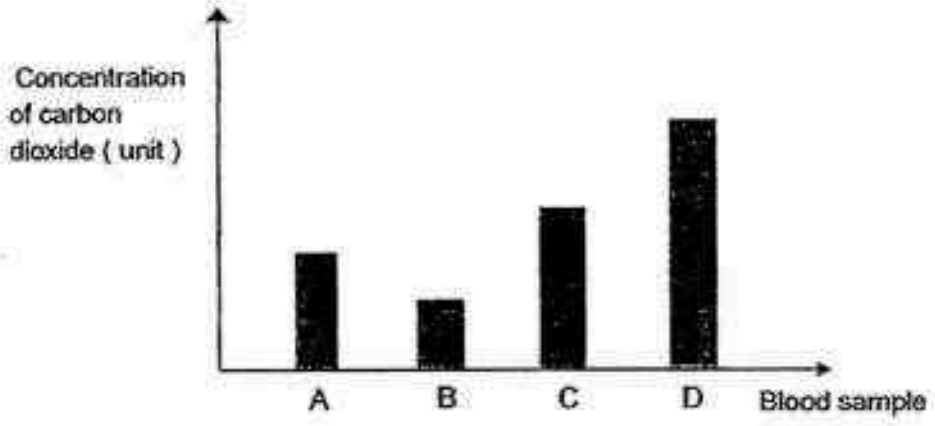
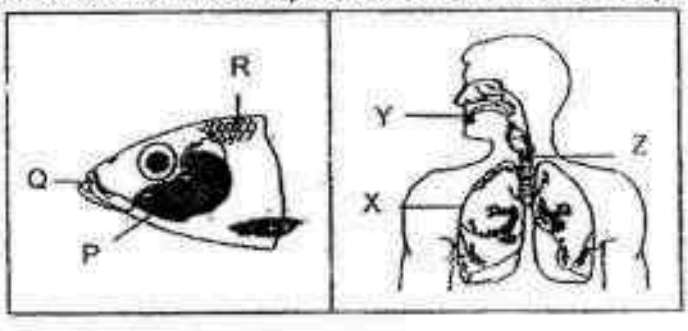
5. The graph below shows the concentration of carbon dioxide in 4 blood samples taken from different blood vessels in the human circulatory system.



Which sample is most likely to be taken from the blood vessel which carries blood from the heart to the lungs?

(1) A
(2) B
(3) C
(4) D

6. The diagrams below shows different parts of fish and human respiratory systems.



Which of the following correctly matches parts of the fish and human respiratory system that perform similar function?

	Fish respiratory system	Human respiratory system
A	P	X
B	Q	Y
C	R	Z
D	P	Z

(1) A and B
(2) A and C
(3) B and C
(4) C and D

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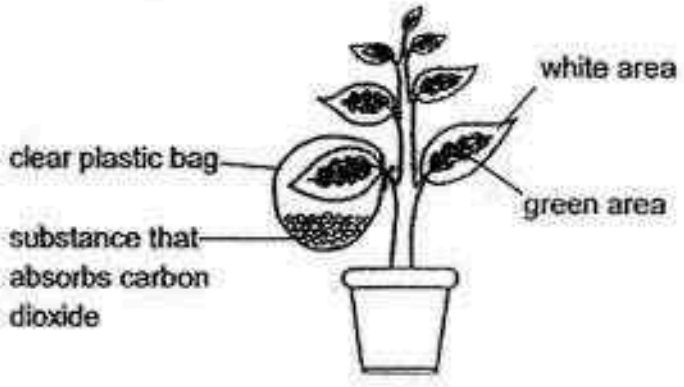
7. Elaine set up an experiment to investigate the conditions needed for photosynthesis to take place. She used a plant which had leaves with green areas in the middle and white areas round the edges as shown below. She placed the set-up in a sunny place.



What is/are the possible aim(s) of this experiment?

A Whether water is needed for photosynthesis to take place
B Whether sunlight is needed for photosynthesis to take place
C Whether chlorophyll is needed for photosynthesis to take place
D Whether carbon dioxide is needed for photosynthesis to take place

(1) D only
(2) C and D only
(3) A, B and C only
(4) B, C and D only

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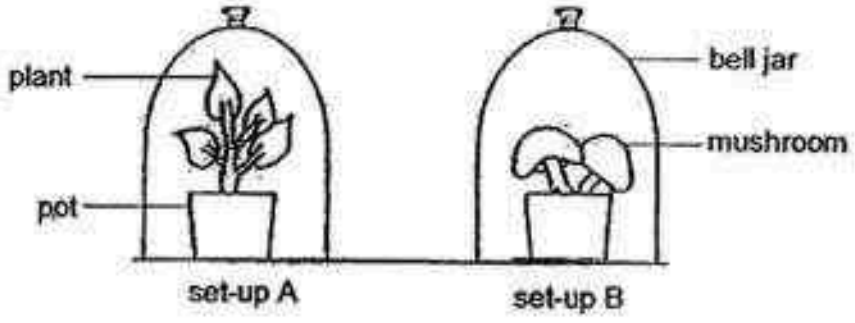
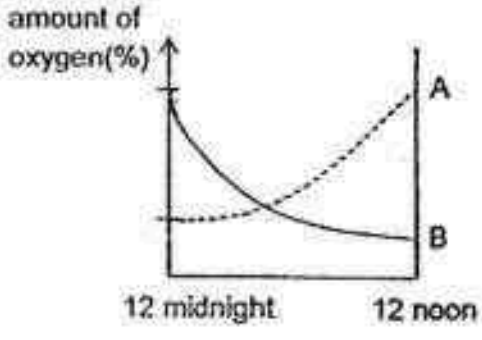
8. John carried out an experiment with a potted plant and a pot of mushrooms as shown in the diagram below. Both bell jars were left in the open from 12 midnight to 12 noon. All other variables were kept the same.

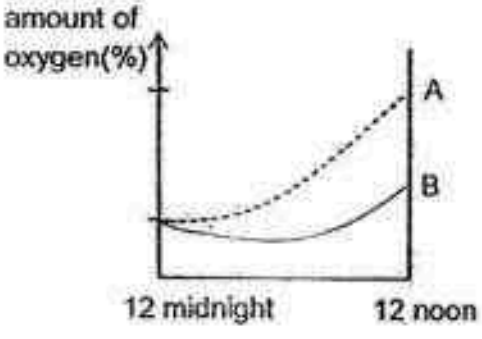


Which one of the following graphs correctly shows the oxygen content of air in set-ups A and B from 12 midnight to 12 noon?

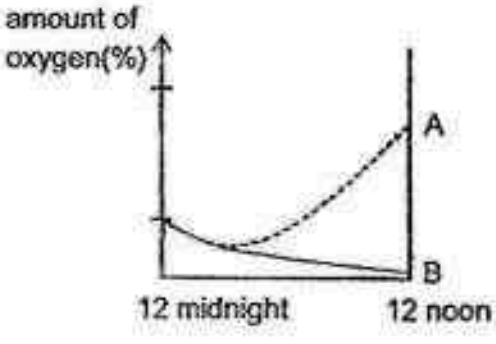
(1)



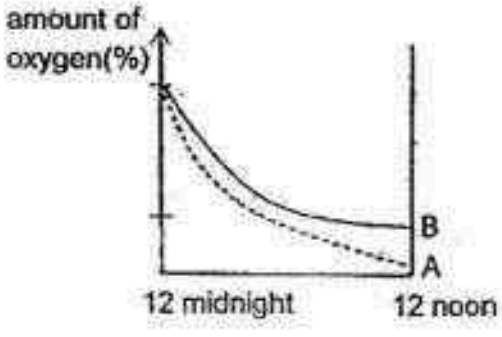
(2)



(3)



(4)



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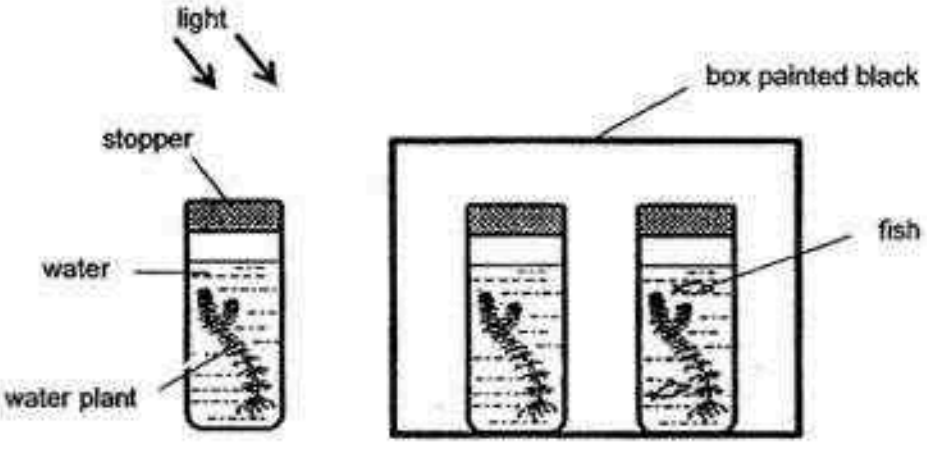
9. Ray conducted an experiment using the following set-ups.



What would be the likely change in the amount of carbon dioxide after a few hours?

	Amount of carbon dioxide in the set-up		
	A	B	C
(1)	increase	increase	no change
(2)	decrease	no change	no change
(3)	increase	no change	increase
(4)	decrease	increase	increase

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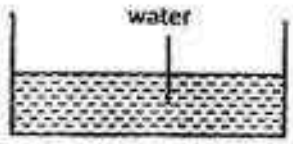
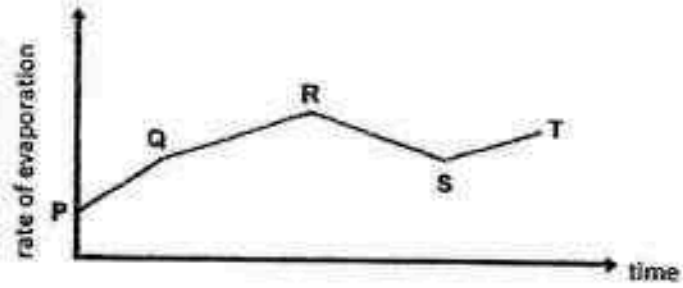
10. The graph below shows the rate of evaporation of water in the container over a period of time.



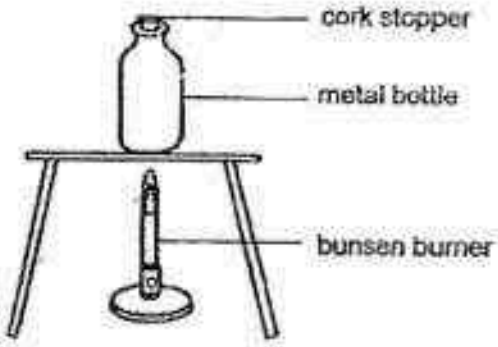


Which of the following are possible reasons for the changes in the rate of evaporation as shown in the graph?

A During PQ, the volume of water was the highest.
B During ST, there was an increase in the speed of wind.
C During QR, there was an increase in the exposed surface area of water.
D During RS, there was a decrease in the temperature of the surrounding air.

(1) A and B only
(2) B and D only
(3) A, C and D only
(4) B, C and D only

11. The diagram below shows a metal bottle with a cork stopper being heated over a fire. The bottle was completely filled with water. After a while, the cork stopper popped out of the metal bottle.



Which one of the following statements explains why the stopper popped out of the metal bottle?

(1) The stopper gained heat and expanded.
(2) The metal bottle gained heat and expanded.
(3) The heat from the burner forced the stopper out.
(4) The water in the bottle gained heat and expanded.

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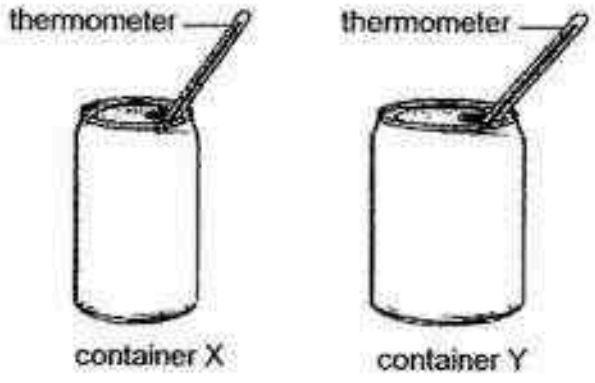
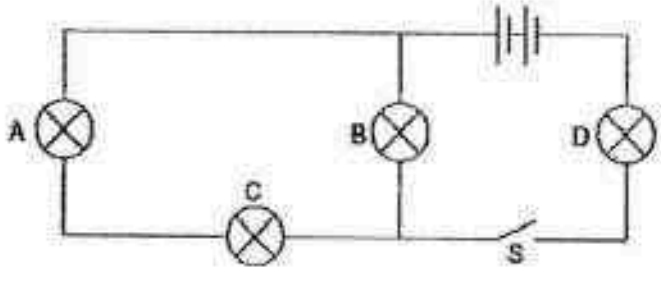
12. Same amount of boiling water was poured into two containers, X and Y, of similar shape, material and colour. The containers were placed in a room with a temperature of 29°C. The water in container X took 30 minutes to cool down to the room temperature while the water in container Y took 22 minutes.



Why did the water in container Y take a shorter time to cool down to room temperature?

(1) Container Y can hold more water than container X.
(2) Container Y is a better conductor of heat than container X.
(3) Container Y loses heat faster as it has a bigger surface area than X.
(4) The boiling water in Y has a lower temperature than the boiling water in X.

13. Musa set up the circuit below.



When he closed switch S, all the bulbs lighted up. Then he removed one of the bulbs and all the bulbs did not light up.

Which bulb did he remove?

(1) Bulb A
(2) Bulb B
(3) Bulb C
(4) Bulb D

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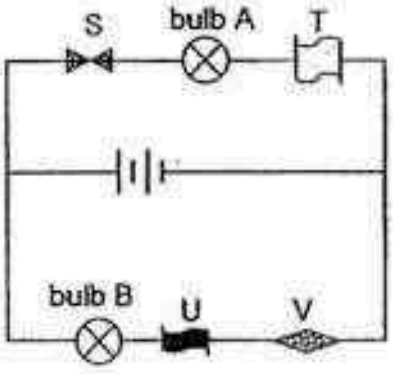
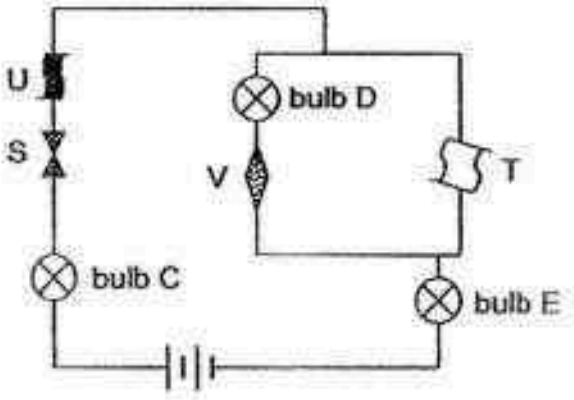
14. Ah Seng set up the following electrical circuits to find out if materials, S, T, U and V, could conduct electricity.





He recorded his observations in the table below.

Bulb	Did the bulb light up?
A	Yes
B	No
C	Yes
D	No
E	Yes

From the observations, which one of the following groupings is correct?

	Electrical conductors	Electrical insulators
(1)	S, T	U, V
(2)	V	S, T, U
(3)	S, T, U	V
(4)	T	S, U, V

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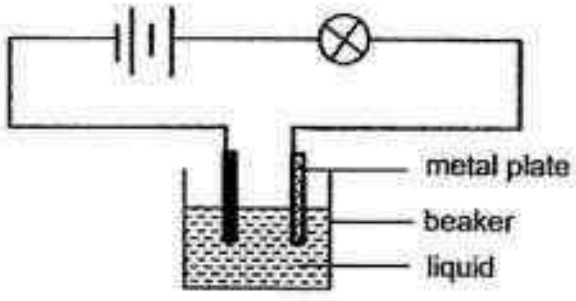
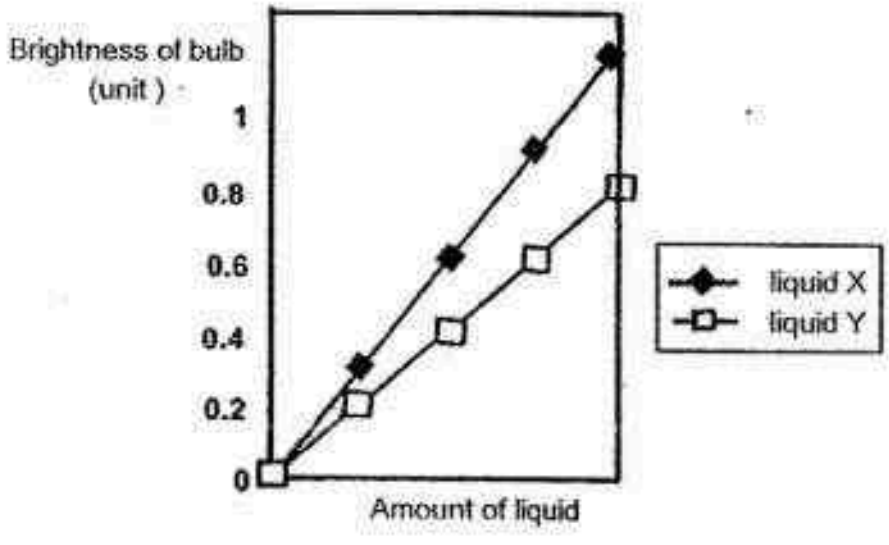
15. Steven set up the circuit below to find out how the amount of liquid in the beaker affects the brightness of the bulb.



He poured different amounts of liquid X into the beaker and measured the brightness of the light bulb using a light sensor. He repeated the experiment with liquid Y. He recorded his results in the graph below.



Based on the results of his experiment, which of the following statements is/are correct?

A Both liquids are conductors of electricity.
B Liquid X conducts electricity faster than Liquid Y.
C Liquid X conducts more electricity than the same amount of Liquid Y.
D More of Liquid X than Liquid Y is needed to produce the same brightness in the bulb.

(1) A only
(2) A and C only
(3) B and D only
(4) A, B and C only

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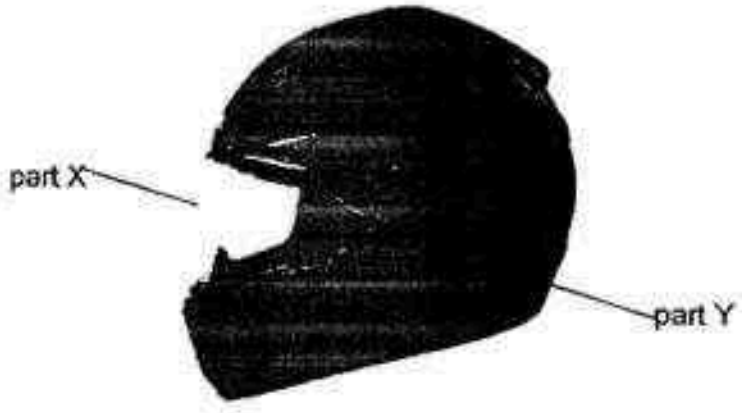
16. The properties of materials, A, B, C and D, are shown in the table below. A tick (✓) indicates the presence of the property.

Material	Flexible	Waterproof	Does not break easily	Does not allow light to pass through
A		✓	✓	✓
B		✓		
C	✓			✓
D		✓	✓	



The helmet shown above is used by motorcyclists to protect their heads from any injuries.

Which of the following shows the most suitable materials for making parts X and Y of the helmet?

	Part X	Part Y
(1)	B	A
(2)	D	A
(3)	C	B
(4)	D	C

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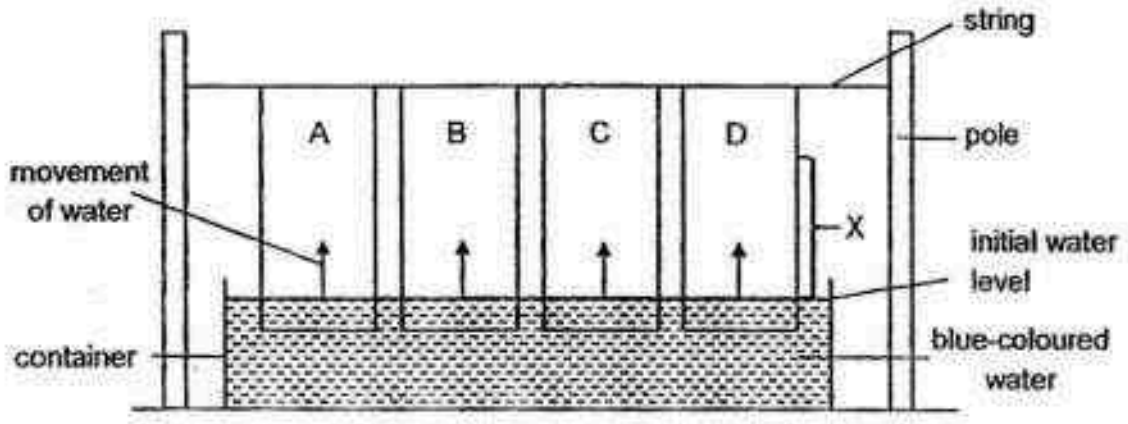
17. Janice wanted to find out which material, A, B, C or D, is the most suitable material for a towel. She conducted an experiment as shown below.



After 5 minutes, Janice measured the distance X, which the water had travelled up each material.

Material	Distance X (cm)
A	9
B	12
C	6
D	4

Which one of the materials is the most suitable for making a towel?

(1) A
(2) B
(3) C
(4) D

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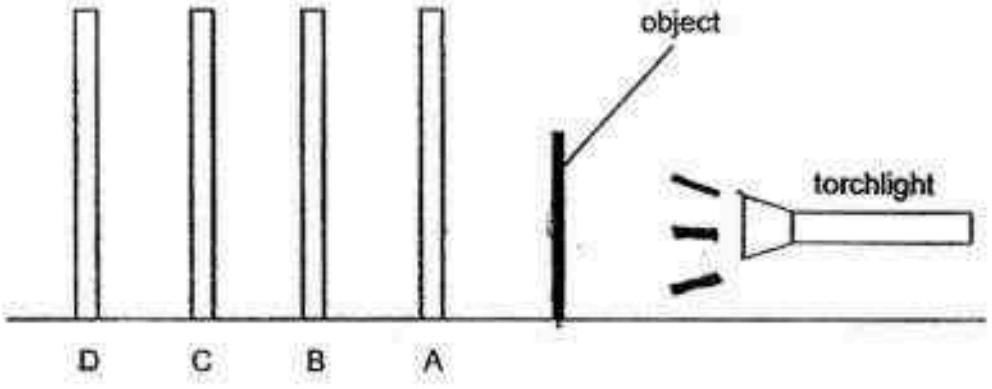
18. Julian carried out the following experiment in a dark room. Cardboards, A, B, C and D, were arranged in a straight line as shown below.

Side view



The front view of the object is shown below.



The properties of the materials of the cardboards are shown below.

Allows light to pass through	Does not allow light to pass through
A	C
B	D

When the torch was switched on, a triangular shadow was cast. On which one of the following cardboards was the shadow casted?

(1) A
(2) B
(3) C
(4) D

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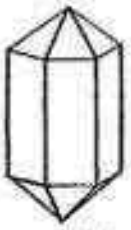
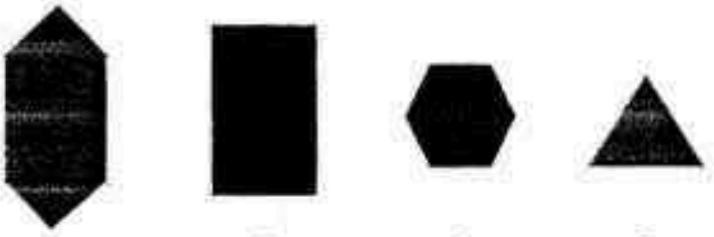
19. Different shadows could be formed when a torch is shone on the object below from different positions.

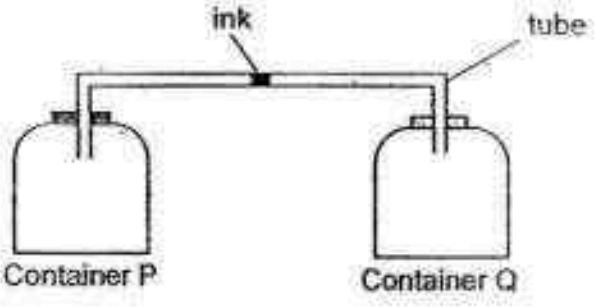


Which of the following could possibly be the shadows of the object?



(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

20. Two metal containers are connected by a tube as shown below.



When a hot towel is wrapped around container P, the drop of ink in the glass tube will _____.

(1) evaporate
(2) remain stationary
(3) move towards container P
(4) move towards container Q

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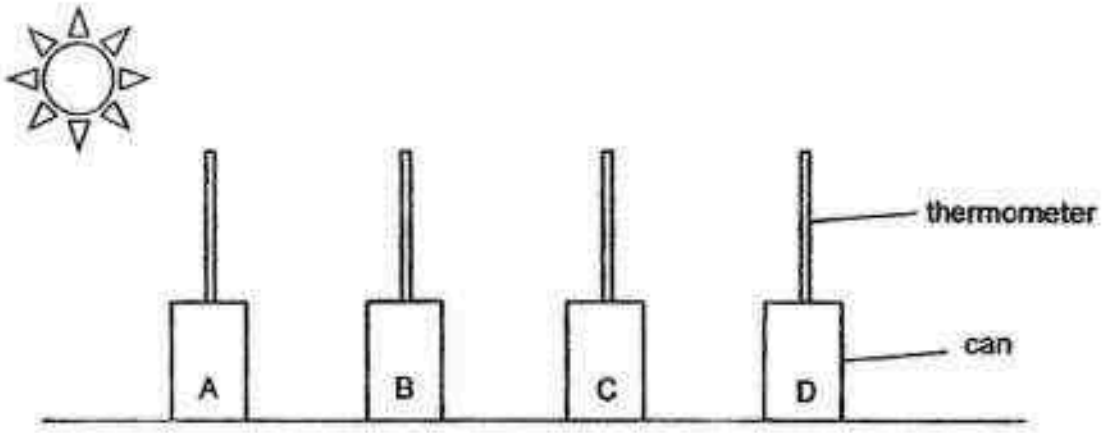
21. Alan wanted to find out the effect of the Sun's heat on different materials. He used 4 similar cans made of different materials, A, B, C and D, for the set-ups shown below.



He recorded the temperature in the cans over time, as shown in the table below.

	Temperature in the cans (°C)			
Time (min)	A	B	C	D
0	28	28	28	28
5	32	34	31	33
10	34	39	33	36
15	37	47	34	39

Based on his results, which one of the following materials is the most suitable for making a lunch box to keep hot food warm for a longer time?

(1) A
(2) B
(3) C
(4) D

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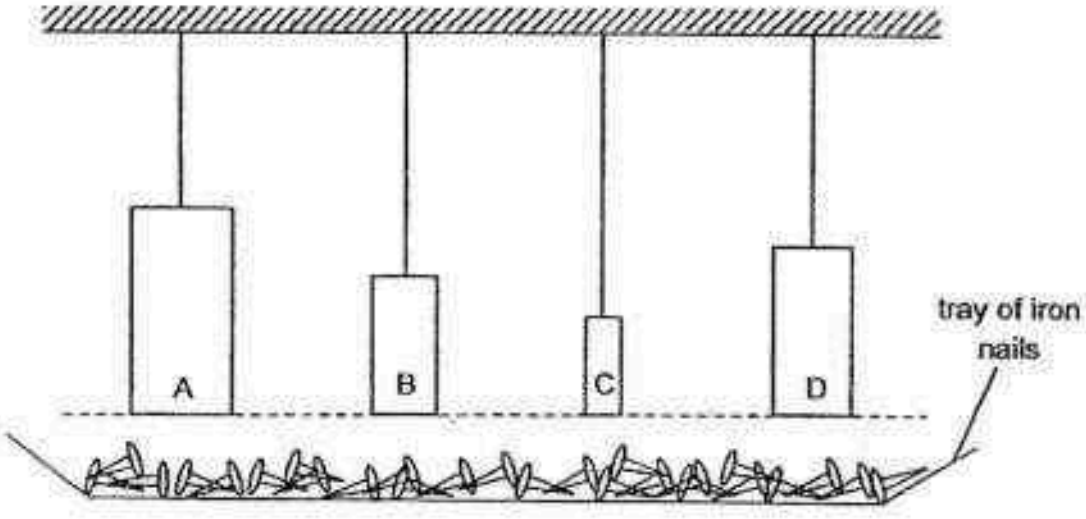
22. The magnets, A, B, C and D, are placed at an equal distance above a tray of iron nails.



The table below shows the number of nails attracted by each magnet.

Magnet	A	B	C	D
Number of nails attracted	7	3	6	10

Which of the following conclusions can be drawn from the results obtained?

A Magnet D has the strongest magnetic strength.
B Magnet B has a stronger magnetic strength than magnet A.
C The magnetic strength does not depend on the magnet's size.
D The poles of the magnets have the strongest magnetic strength.

(1) A and C
(2) A and D
(3) B and C
(4) B and D

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23. Zena pushed a toy, which was attached to a spring, into a box and closed the lid as shown in Diagram 1. When she opened the lid, the toy jumped up as shown in Diagram 2.

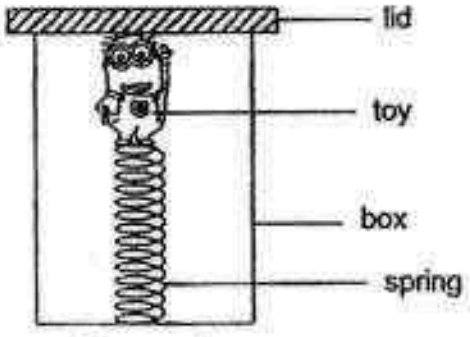

Diagram 1

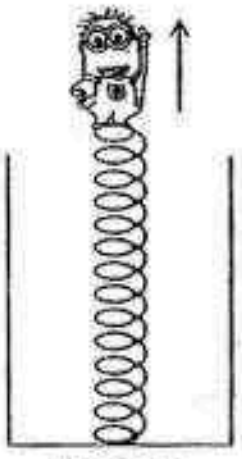
Diagram 2

What could she do to make the toy jump higher?

A Use a taller box
B Use a lighter toy
C Use a shorter box
D Use oil to coat the spring

(1) A and B
(2) A and D
(3) B and C
(4) C and D

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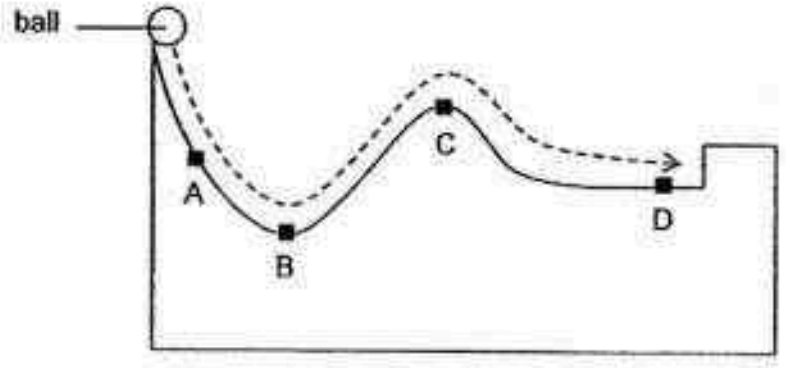
24. Kelvin released a ball and it rolled from point A to point D as shown in the diagram below.



At which point on the slope does the ball have the greatest amount of kinetic energy?

(1) A
(2) B
(3) C
(4) D

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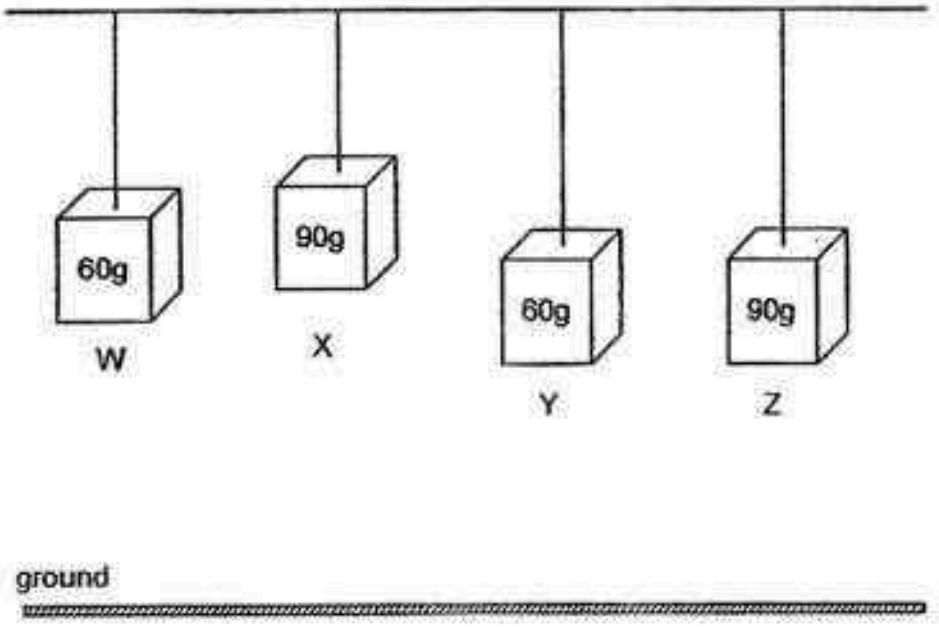
25. The diagram below shows 4 objects which are hung from the ceiling.



Which of the following statements is/are true?

A Object X has more gravitational potential energy than Object Z.
B Object Z has more gravitational potential energy than Object Y.
C Object W and Object Y have the same amount of gravitational potential energy.
D When the strings are cut and all the objects fall onto the ground, all the gravitational potential energy of the objects will change into kinetic energy.

(1) B only
(2) A and B only
(3) A and D only
(4) C and D only

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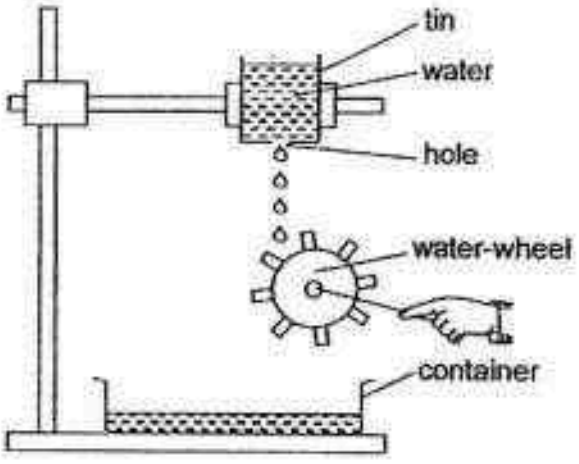
26. Study the diagram below.



Which one of the following can turn the water-wheel faster?

(1) Use a bigger water wheel.
(2) Make the hole in the tin smaller.
(3) Move the tin nearer to the water-wheel.
(4) Move the tin further away from the water-wheel.

27. Jane was jumping on the trampoline and was pulled down by force X. When she landed on the trampoline, she was pushed upwards by force Y.



Which one of the following correctly represents forces, X and Y?

	Force X	Force Y
(1)	Gravitational force	Elastic spring force
(2)	Gravitational force	Gravitational force
(3)	Elastic spring force	Elastic spring force
(4)	Elastic spring force	Gravitational force

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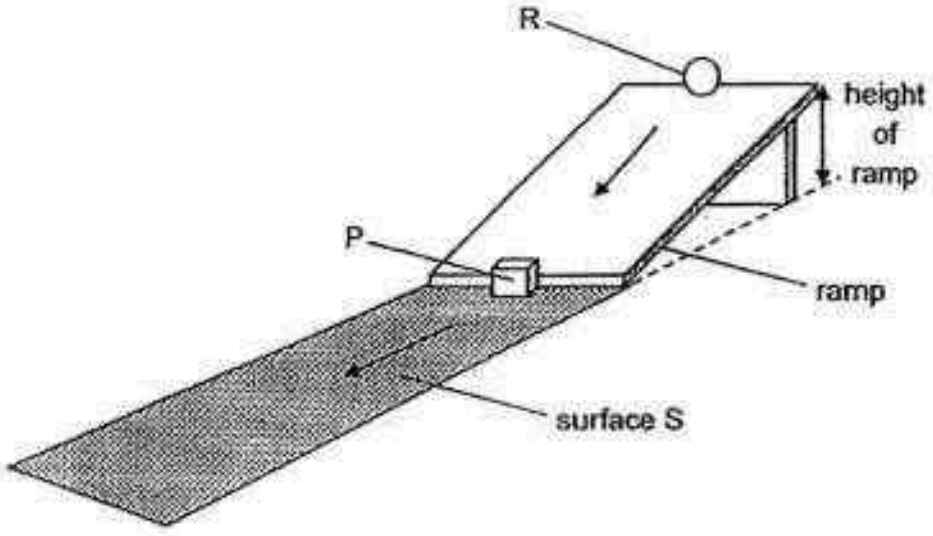
28. Study the diagram below. When ball R is released from the top of the ramp, it rolled down the ramp, hit and pushed cube P along surface S.



Which one of the following changes will not increase the distance moved by P along surface S?

A Increase the mass of R.
B Increase the length of S.
C Increase the roughness of S.
D Increase the height of the slope.

(1) A and B
(2) A and D
(3) B and C
(4) C and D

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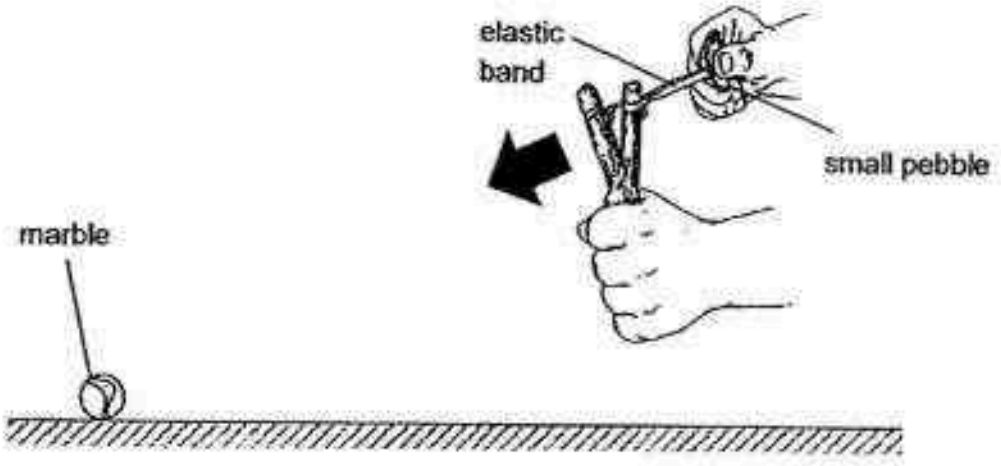
29. A catapult was used to shoot a marble over a distance as shown in the diagram below.



Which of the following will affect the distance moved by the marble after it had been hit by the pebble?

A The thickness of the stick
B The size and mass of the marble
C The thickness of the elastic band
D The distance the elastic band is stretched

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) B, C and D only

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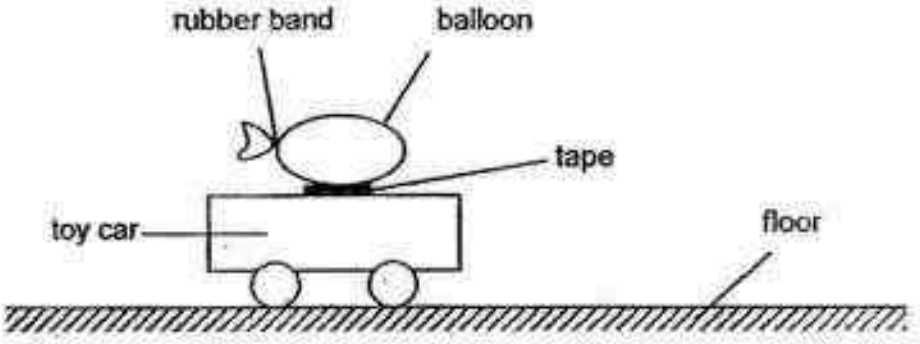
30. Jovie attached an inflated balloon to a toy car as shown below. When the rubber band was removed, air rushed out of the balloon, producing a force. However, the toy car did not move.



Which of the following statements best explains Jovie's observation?

The toy car did not move as the force of rushing air from the balloon was smaller than _____

A the weight of the toy car and balloon
B friction between the balloon and the tape
C friction between the wheels of toy car and the floor

(1) B only
(2) A and C only
(3) B and C only
(4) A, B and C

- End of paper -

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Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Continual Assessment 1 – 2016
SCIENCE

BOOKLET B

3 March 2016

Booklet A	/60
Booklet B	/40
Total	/100

Total Time for Booklets A and B: 1 hour 45 minutes

14 questions
40 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 13 printed pages.

_____
Parent's Signature/Date

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Section B: 40 marks

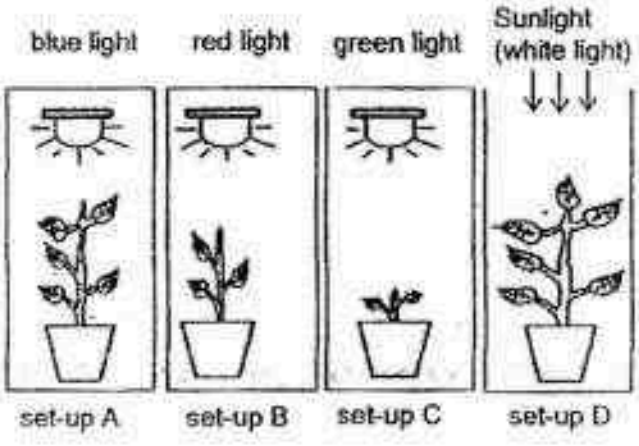
For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part question.

31. John learnt that white light is made up of 7 colours. When white light falls on a red opaque object, the object will reflect the red light while absorbing all the rest of the coloured lights.

Based on the above information, he carried out an experiment to find out the effect of different lights on plant growth. He used four similar seedlings and placed them into four similar boxes with different coloured lights.

The diagram below shows the results of his investigation after 4 weeks.



(a) The plant exposed to green light grew the least. Explain why. [2]

(b) What is the purpose of set-up D?

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32. Ken carried out an experiment with 4 similar pots of seedlings of height 6cm. He watered each pot of seedling with different amounts of water daily. He measured the height of each seedling at the end of 10 days and recorded the results in the table below.

Pot	Daily amount of water (ml)	Height of seedling after 10 days (cm)
A	10	10
B	15	16
C	20	18
D	25	20

(a) What was the aim of Ken's experiment? [1]

_____

_____

(b) If a healthy seedling of the same type grows by 8cm at the end of the first 10 days, based on the results above, what should be the least amount of water given to the seedlings every day to ensure that they grow healthily? [1]

_____

33. The diagram below shows a balsam plant and a bird's nest fern.



balsam plant



bird's nest fern

(a) How are they different in their methods of reproduction? [1]

_____

(b) Name another group of organisms that reproduces in the same way as the bird's nest fern. [1]

_____

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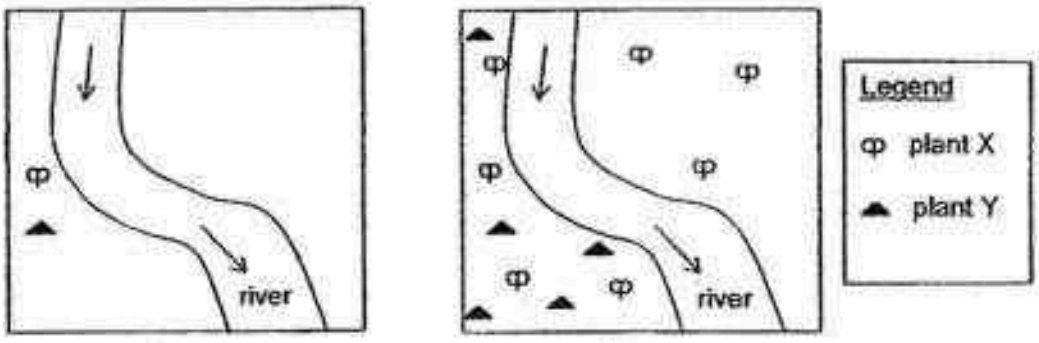
34. The map below shows the changes in the number of plant X and plant Y in a field from January to May.

Many birds feed on the fruits from plants X and Y.



January May

The diagrams below show the characteristics of three fruits, A, B and C.



A B C

(a) Which one of the above is likely to be the fruit of plant X? Explain your answer. [2]

(b) The plant part below has stiff hairs.



How do the stiff hairs help in its dispersal? [1]

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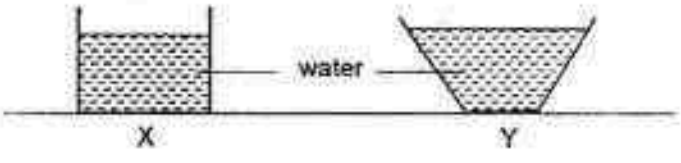
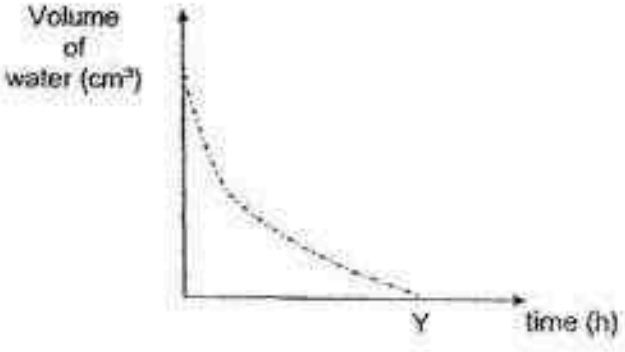
35. Sexual reproduction in plants and animals involve male cells and female cells. Complete the table below with the correct word(s). [2]

	In plants	In animals
Male sex cell		
Female sex cell		egg
After fertilisation	Develop into a seed	

36. Hussein carried out an experiment to find out how the shape of the container would affect the rate of evaporation of water. He filled two glass containers, X and Y, with 100cm³ of water each. He placed both containers on a table in his room.



He plotted a graph to show the amount of water left in container Y over a period of time.



(a) Using the same grid above, draw a line graph to show the amount of water left in container X. [1]

(b) Explain your graph in (a) above. [2]

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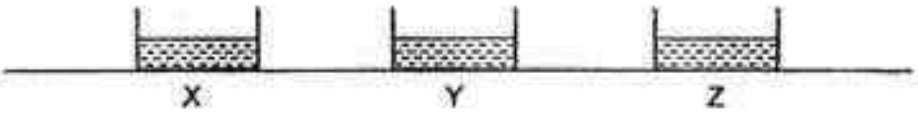
37. Bala wanted to find out how the boiling point of a liquid affects its rate of evaporation at room temperature. He poured an equal volume of liquids, X, Y and Z, in three identical containers as shown below and placed the dishes in the same location in the open.



He recorded the volume of the liquid remaining in each of the containers after 10 minutes in the table below.

Liquid	X	Y	Z
Boiling point (°C)	80	120	100
Volume of liquid at the start of experiment (ml)	100	100	100
Volume of liquid at the end of experiment (ml)	70	92	85

(a) Based on the results, which liquid has the lowest rate of evaporation? [1]

_____

(b) Based on the results, describe the relationship between the boiling point of a liquid and its rate of evaporation. [1]

_____

_____

(c) Describe how placing the three containers at the same location helps to make the experiment a fair test. Give two reasons. [2]

Reason 1: _____

_____

Reason 2: _____

_____

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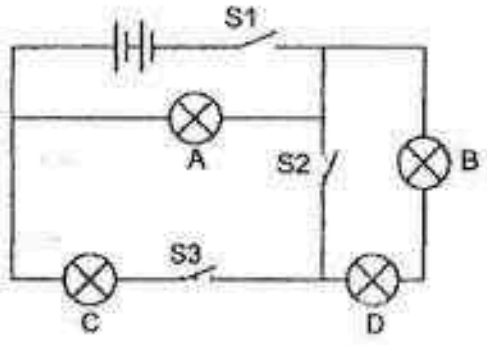
38. All the bulbs in the circuit below are identical.



(a) Complete the table below by writing **on** or **off** for each bulb. One has been done for you. [3]

Switch			Bulb			
S1	S2	S3	A	B	C	D
open	open	open	off	off	off	off
open	closed	closed				
closed	open	open				
closed	open	closed				

(b) If all the switches are closed, what will be the difference between the brightness of bulb A and bulb B? [1]

_____

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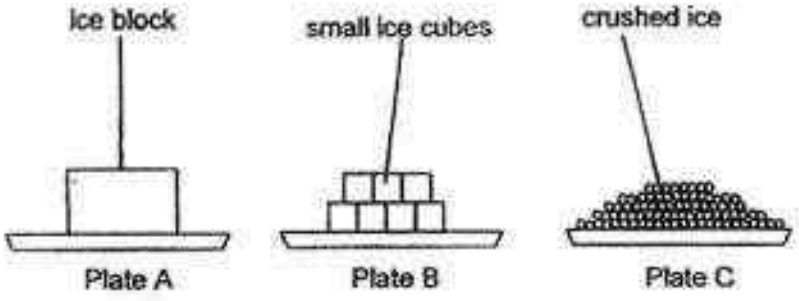
39. Equal volumes of ice were placed on 3 similar plates as shown below.



Using a stopwatch, the time taken for the ice in each plate to melt completely was measured.

(a) Fill in the boxes below with A, B or C, to show the correct order of decreasing rate of melting of the ice on the plates. [1]

fastest melting ⟶ slowest melting

Plate ☐ , Plate ☐ , Plate ☐

(b) Explain your answer in (a). [1]

_____

_____

_____

☐

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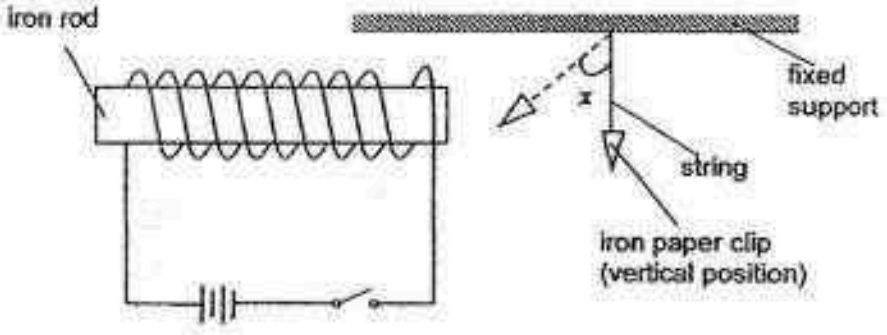
40. Yun set up an experiment as shown in the diagram below.



She measured the angle x, by which the iron paper clip moved from the vertical position when she closed the switch. She repeated the experiment by increasing the number of batteries in the circuit. The results are recorded in the table below.

Number of batteries	0	1	2	3	4
Angle x (°)	Y	12	25	32	40

(a) What is the value of Y? Explain your answer. [1]

(b) Other than increasing the number of batteries, suggest 2 ways to increase the size of angle x. [2]

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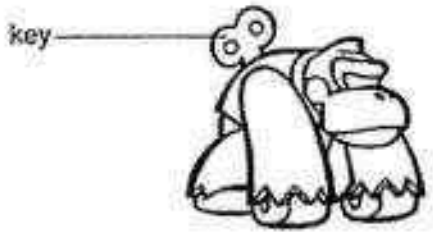
41. Jane conducted an experiment with a wound-up toy as shown below. She wanted to find out if the number of turns of the key would affect the distance moved by the toy.



She recorded the results of her experiment in the table below.

Number of turns of the key	Distance travelled (cm)
3	15
5	25
7	35
9	45
11	50

(a) Write down the main energy conversion in the toy from the time Jane winds the key to the time the toy stopped moving. [1]



(hand turning the key)

(b) What is the relationship between the number of turns of the key and the distance moved by the toy? [1]

_____

_____

(c) When does the toy have the greatest potential energy? [1]

_____

_____

_____

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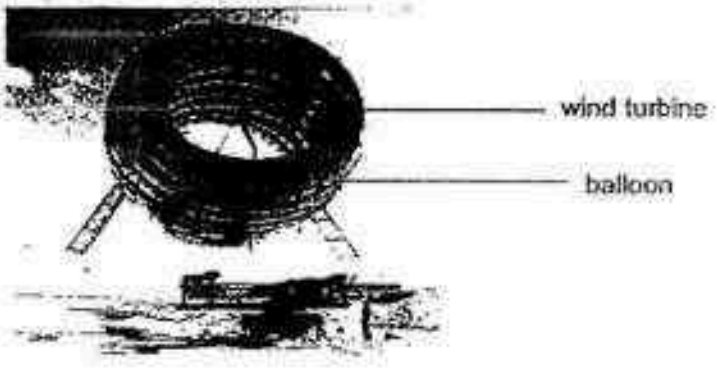
42. The diagram below shows conventional wind turbines erected on a piece of land to generate electricity.



Advancement in technology has enabled scientists to design a modern airborne wind turbine. A lightweight wind turbine is mounted in the center of a helium balloon and flown to about 300m above ground. The airborne wind turbine is launched from a specially designed trailer, driven around by a heavy-duty vehicle.



(a) Give 2 advantages of the airborne wind turbine over the conventional wind turbine. [2]

Advantage 1: _____

_____

Advantage 2: _____

_____

(b) Suggest a benefit for using the conventional wind turbine compared to a traditional power station which burns fossil fuels to generate energy. [1]

_____

_____

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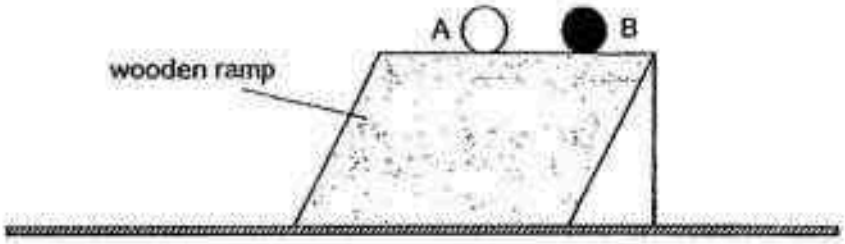
43. Two balls of the same weight and size but of different surface texture, were released from the top of a wooden ramp as shown in the diagram below. Ball A moved a greater distance along the ground than Ball B.



(a) What could be inferred about the surface texture of the two balls? [1]

_____

(b) How would raising the height of the ramp affect the distance moved by the two balls along the ground? [1]

_____

(c) Explain your answer in part (b). [1]

_____

_____

_____

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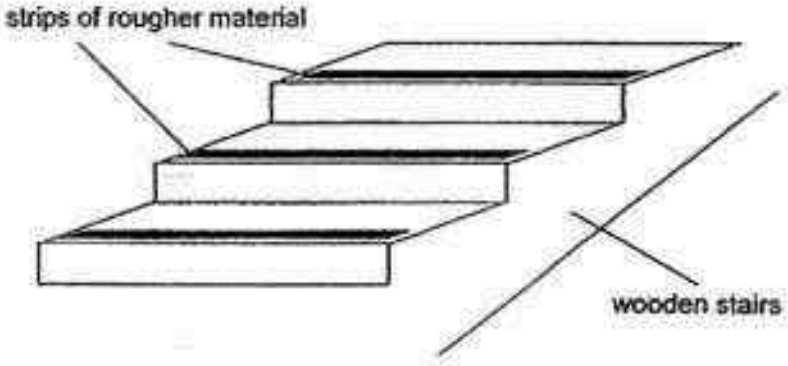
44. Julie's new house has a flight of wooden stairs. On every step, there is a strip of material pasted near the edge of the step. The strips felt much rougher than the wood used to make the stairs.



(a) What purpose does the strip of rougher material serve? Explain your answer. [2]

(b) After a few years of use, Julie noticed that the strips were not as rough as before. Give one reason for her observation. [1]

- End of paper -

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CHIJ ST NICHOLAS GIRLS' SCHOOL – PRIMARY 6 CA 1 2016

SCIENCE Booklet A

1	1	6	1	11	4	16	2	21	3	26	4
2	1	7	2	12	3	17	2	22	1	27	1
3	2	8	3	13	4	18	3	23	3	28	3
4	3	9	4	14	3	19	1	24	2	29	4
5	4	10	2	15	2	20	4	25	2	30	2

SCIENCE Booklet B

31(a) Green light is being reflected by the leaves of the plant and hence no light is being absorbed by the leaves to carry out photosynthesis. As a result, there is no food produced for the plant to grow.
31(b) It is used as a control set-up to show that the difference in plant growth due to the different types of colored lights.

32(a) To find out how if the amount of water will affect the height of seedling after 10 days.
32(b) Since initial = 8cm, 15ml is needed. (8+8)

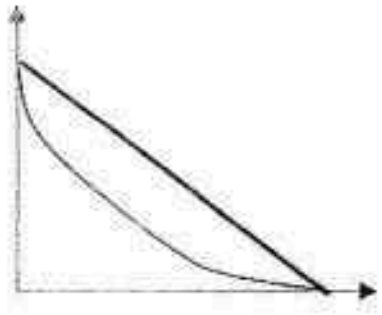
33(a) Balsam plant grows from seeds while the bird's nest fern grows from spores.
33(b) Fungi

34(a) B. The fruit has small seeds which can be swallowed by birds and pass out together with its droppings at the opposite side of the river. (Plant X is very dispersed compared to Plant Y)
34(b) The stiff hairs will allow the plant part to be hooked on fur of passing animals so the fruit can be carried away from parent plant and be dispersed elsewhere.

35)

	In Plants	In Animals
Male sex cells	Pollen grains	Sperm
Female sex cells	Ovules	Egg
After fertilization	Develop into a seed	Develop into a foetus

36(a)



36(b) Container X has a constant surface area exposure whereas container Y do not have a constant surface are of exposure. Container Y larger surface exposure at the start will allow the water to be evaporate quickly at the start.

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37(a) Liquid Y

37(b) The boiling point of liquid and rate of evaporation has an inverse relationship. The higher the temperature, the lower the rate of evaporation. Evaporation happens faster below boiling point.

37(c) Reason 1: The temperature will be the same for all liquid.

Reason 2: External conditions that affects evaporation such as wind will be the same for all liquid.

38(a)

Switch			Bulb			
S1	S2	S3	A	B	C	D
Open	Open	Open	off	off	off	off
Open	Closed	Closed	off	off	off	off
Closed	Open	Open	On	off	off	off
Closed	Open	Closed	On	On	On	On

38(b) Bulb A will be brighter than B.

39(a) C,B,A

39(b) Since crushed ice is made up of smaller pieces, it has the biggest surface area compared to the ice block and small ice cubes. In comparison, crushed ice has the biggest surface area, followed by the ice cube and lastly the ice block. The bigger the surface area, the faster the melting rate.

40(a) The electromagnet does not work as there is no battery to provide electric current for the iron rod to become a electromagnet.

40(b)(1) Increase the number of coils around the iron rod.

(2) Bring the electromagnet nearer to the paper clip.

41(a) Kinetic energy → Elastic Potential Energy → Kinetic Energy

41(b) As the number of turns of the key increases, the distance travelled by the toy increases

41(c) It has the greatest potential energy when the key has the maximum number of turns before the toy is released.

42(a) It is portable so it can provide electricity for rural areas. It can fly higher to catch more wind as it will not be blocked.

42(b) The conventional wind turbine makes use of renewable energy compared to fossil fuel which is a non-renewable and will run out eventually.

43(a) A has a smoother surface area than B.

43(b) The two balls will move a longer distance.

43(c) At a greater height, the balls will have more gravitational potential energy which is converted to more kinetic energy when the ball is released to travel a longer distance.

44(a) It reduces the chance of slipping as the rough strip increases friction between shoes/feet and stairs.

44(b) The strip become smoother due to wear and tear.

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5

Anglo-Chinese School (Junior)

CONTINUAL ASSESSMENT 1 (2016)

PRIMARY 6

SCIENCE

BOOKLET A

WEDNESDAY **9 MARCH 2016** **1 HOUR**

Name : _____ ( )

Class : P6 _____

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO

Follow all instructions carefully.

There are 15 questions in this booklet.

Answer **ALL** questions.

INFORMATION FOR PUPILS

The total marks for this booklet is 30.

The total time for Booklets A and B is 1 hour.

This question paper consists of 9 printed pages (inclusive of cover page).

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Booklet A (30 marks)

For each question from 1 to 15, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet. (15 x 2 marks)

1. The table below shows two groups of living things.

Group A	Group B
cow	onion
rabbit	balsam
monkey	water lily

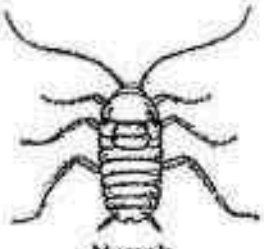
Which of the following statements correctly describe the difference between the two groups of living things?

	Group A	Group B
(1)	Live on land	Live in water
(2)	Breathe all the time	Breathe only at night
(3)	Feed on other animals	Make their own food
(4)	Able to move from place to place	Unable to move from place to place

2. The diagram below shows a caterpillar and a nymph of a cockroach.



Caterpillar



Nymph

Which of the following are true about the caterpillar and the nymph of a cockroach?

A They are wingless.
B They go through moulting several times.
C They grow into adults that look different from them.

(1) A and B only
(2) B and C only
(3) A and C only
(4) A, B and C

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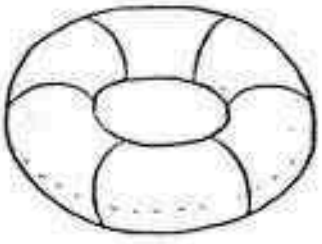
3. The diagram below shows a rubber float of volume 200cm³.



Rubber float

Initially, it had 150cm³ of air pumped in. An additional 100cm³ of air is pumped in. What is the final volume of air in the float?

(1) 100cm³
(2) 150cm³
(3) 200cm³
(4) 250cm³

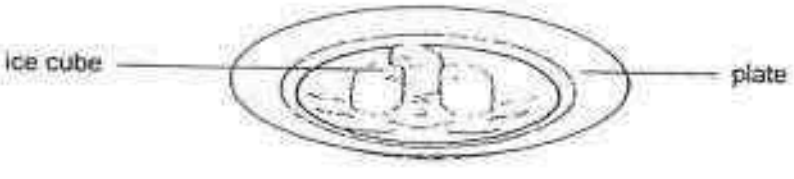
4. John recorded the events in one reproduction cycle of a flowering plant.

A First shoot appears.
B Reproductive cells meet in the ovule.
C Seeds are dispersed from the fruit by wind.
D Pollen grains are transferred from the anther to the stigma of another flower.
E First roots appear.

Which of the following states the correct sequence of the events?

(1) D, C, A, E, B
(2) D, B, C, E, A
(3) D, A, E, B, C
(4) D, B, C, A, E

5. Sam left some ice cubes on a plate in the kitchen and observed them for some time.



Which one of the following statements about the melting of ice is **not true**?

(1) There is a change of state during melting.
(2) The ice cubes lose heat to the surrounding air.
(3) The water on the plate is a result of the ice cubes gaining heat.
(4) Heat affects the time taken for the ice cubes to melt completely.

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6. Which of the following shows the correct path taken by the food in a human digestive system?

(1) mouth → windpipe → stomach → small intestine → large intestine
(2) mouth → gullet → small intestine → large intestine → anus
(3) mouth → windpipe → stomach → small intestine → large intestine
(4) mouth → gullet → stomach → small intestine → large intestine

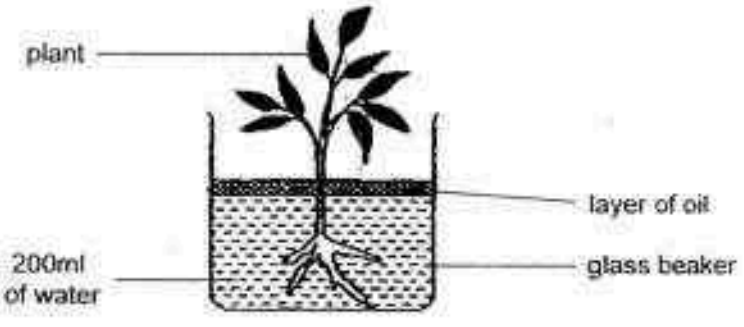
7. Zander made the following statements about the stomata of a plant and the gills of fish.

A: The stomata carry out photosynthesis for the plant.
B: Both the stomata and the gills are part of the respiratory system of the plant and fish respectively.
C: The stomata are part of the digestive system of the plant while the gills are part of the circulatory system of the fish.
D: The function of the gills is to carry out gaseous exchange for respiration to take place in the fish.

Which of his statements are true?

(1) A and C only
(2) B and D only
(3) C and D only
(4) A, B and D only

8. Theo set up an experiment as shown below. He filled a beaker with 200ml of water and placed a plant in it. Then, he left the set-up by the classroom window for 5 days.



At the end of the 5 days, he observed a change in the amount of water in the beaker. Which of the following is the correct amount of water he recorded and its reason?

	Amount of water left	Reason
(1)	220ml	The plant gave out some water during photosynthesis.
(2)	150ml	The roots of the plant took in some water.
(3)	100ml	Some of the water from the beaker evaporated to the surrounding air.
(4)	20ml	Some of the water from the beaker evaporated and some was taken in by the plant.

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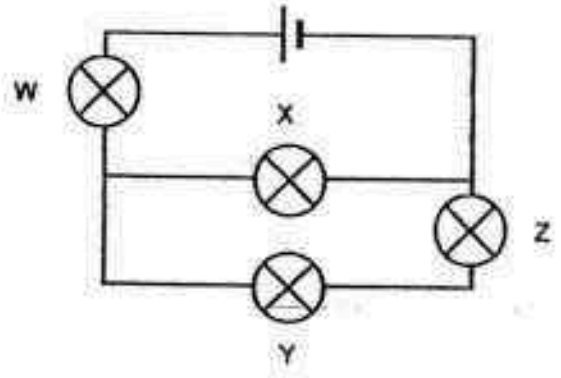
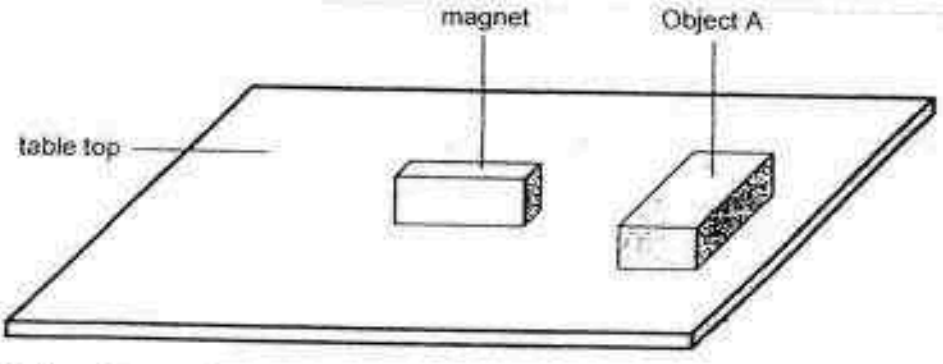
9. Study the circuit diagram below.



Which bulb, if it blows, will result in an open circuit?

(1) W
(2) X
(3) Y
(4) Z

10. Ali carries out an experiment using a magnet and Object A. When he placed the magnet near Object A, he noticed that Object A moved away from the magnet.



What can he conclude about Object A from this experiment?

(1) It is made of iron.
(2) It has a very smooth surface.
(3) Its pole attracted the magnet.
(4) It is made of a non-magnetic material.

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11 Reese conducted an experiment by exerting a push force, F, on a block at point A as shown below.



He measured the distance the block moved across the surface. He repeated his experiment by exerting the same push force, F, on the same surface. He used blocks of the same material but of different mass. The area of contact between the block and the surface was different. He recorded his results in the table below.

Block	Mass (g)	Area of contact with the surface (cm^2)	Distance moved (cm)
S	50	80	18
T	50	60	18
U	100	100	12
V	150	100	10
W	200	120	5

Based on Reese's results, which of the following statement(s) is/are correct?

A The mass of the blocks affect the distance travelled by the blocks.

B Block U requires a greater force to move the same distance as W.

C The area of contact between the block and the surface does not affect the distance moved by the block.

D The smaller the area of contact between the block and the ~~table~~ surface, the further the distance moved by the block.

(1) C only
(2) A and C only
(3) B and D only
(4) A, B and D only

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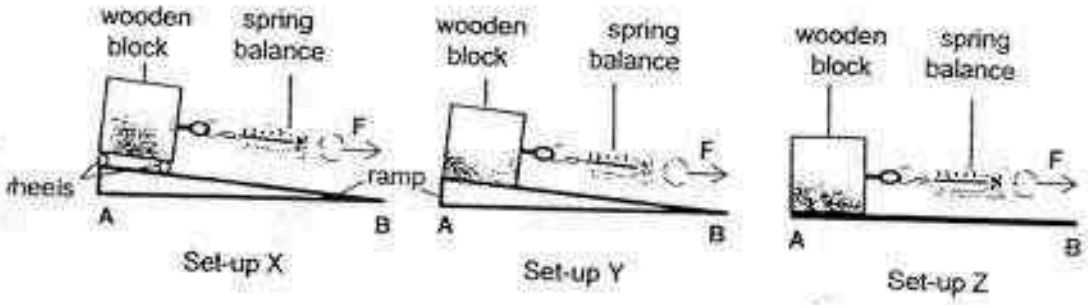
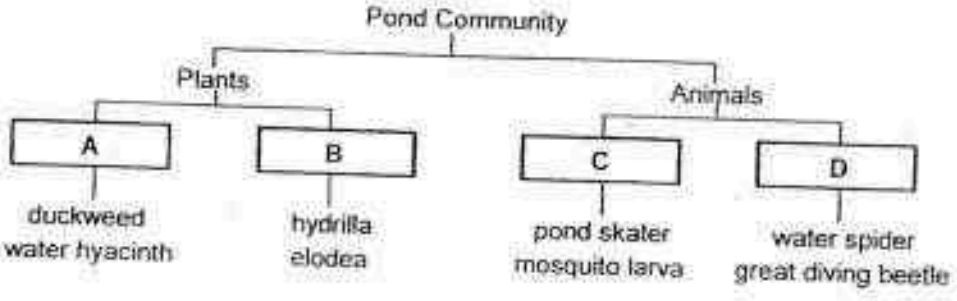
12. Raju wanted to find out the amount of force needed to move a wooden block from Point A to B. He prepared 3 set-ups with identical wooden blocks on identical surfaces as shown below.



Which of the following correctly identifies the amount of force (F) needed to move the wooden block in Set-ups X, Y and Z?

	Least amount of force (F) →		Most amount of force (F)
(1)	X	Z	Y
(2)	Y	X	Z
(3)	Z	Y	X
(4)	X	Y	Z

13. The classification chart below shows the different organisms living in a pond community.



Which of the following shows the correct headings for A, B, C and D?

	A	B	C	D
(1)	Floating plants	Submerged plants	Deeper part of the pond	Near the water's surface
(2)	Submerged plants	Floating plants	Near the water's surface	Deeper part of the pond
(3)	Floating plants	Submerged plants	Near the water's surface	Deeper part of the pond
(4)	Submerged plants	Floating plants	Deeper part of the pond	Near the water's surface

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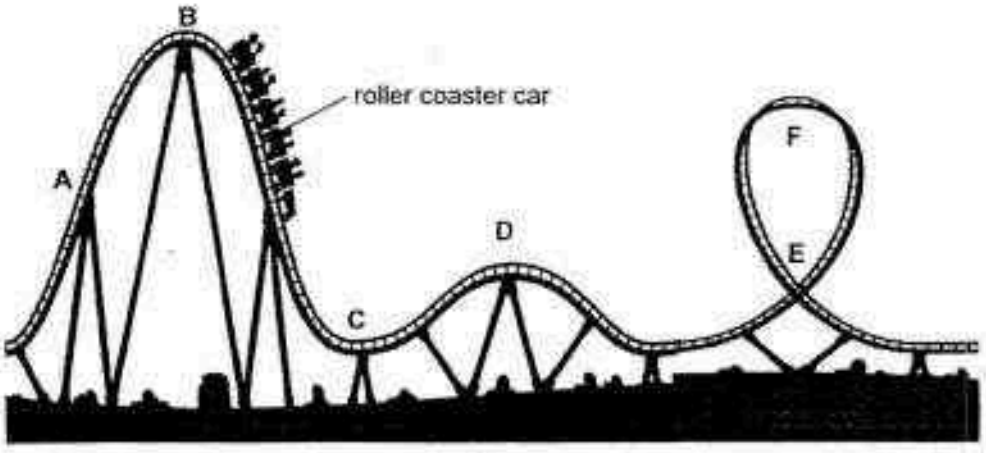
14. The picture below shows a roller coaster track.



At which points on the track does the roller coaster car have the most potential energy and the most kinetic energy?

	Most Potential Energy	Most Kinetic Energy
(1)	A	B
(2)	E	D
(3)	C	F
(4)	B	C

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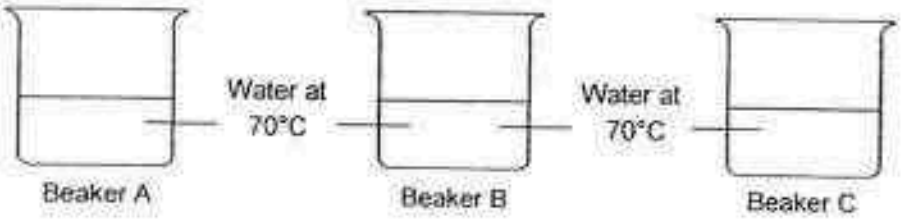
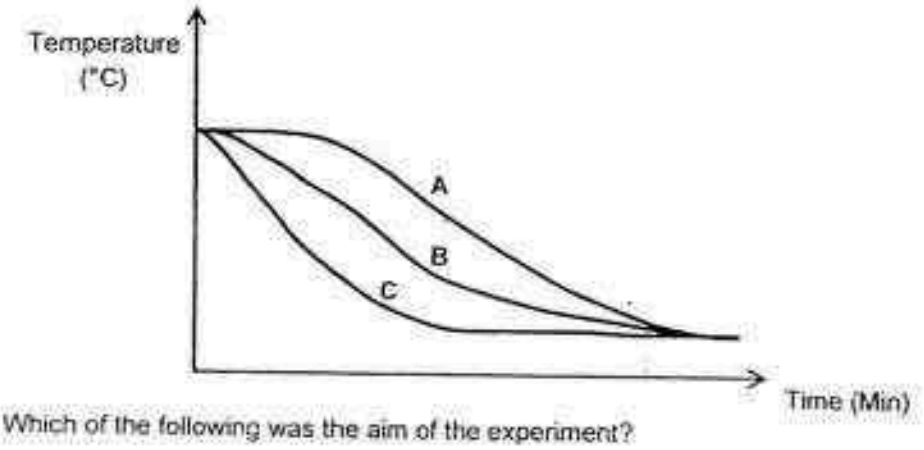
15 Tom carried out an experiment as shown below. He used three similar beakers made of different materials, each with the same amount of water at 70°C.



The graph below shows the change in the temperature of the water in the three beakers over a period of time.



Which of the following was the aim of the experiment?

(1) To find out which material is the best conductor of heat.
(2) To measure the temperature of the beakers at different times.
(3) To find out which beaker can hold water at different temperature.
(4) To measure the amount of water that has evaporated from the beakers.

End of Booklet A

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Anglo-Chinese School (Junior)

CONTINUAL ASSESSMENT 1 (2016)

PRIMARY 6

SCIENCE

BOOKLET B

WEDNESDAY **9 MARCH 2016** **1 HOUR**

Name : _____ ( )

Class : P6 _____

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO

Follow all instructions carefully.

There are 7 questions in this booklet.

Answer **ALL** questions.

INFORMATION FOR PUPILS

The number of marks is given in brackets [ ] at the end of each question or part question.

The total marks for this booklet is 20.

The total time for Booklets A and B is 1 hour.

This question paper consists of 8 printed pages (inclusive of cover page).

BOOKLET A	**/ 30**
BOOKLET B	**/ 20**
TOTAL	**/ 50**
Parent's signature/ Date:	

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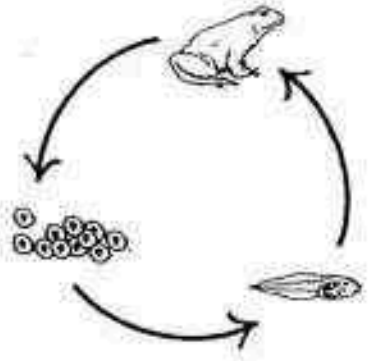
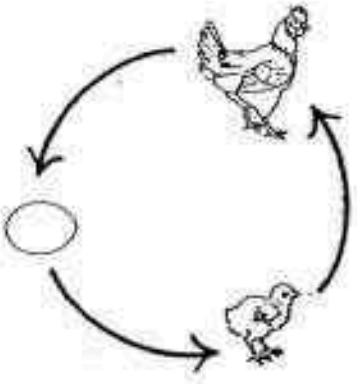
Booklet B (20 marks)

For questions 16 to 22, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

16. The diagrams below show the life cycles of a frog and a chicken.



Life cycle of a frog



Life cycle of a chicken

(a) State two similarities between the two life cycles. [2]

i. _____

_____

ii. _____

_____

(b) State one difference between the two life cycles. [1]

_____

_____

(Go on to the next page)

SCORE	3

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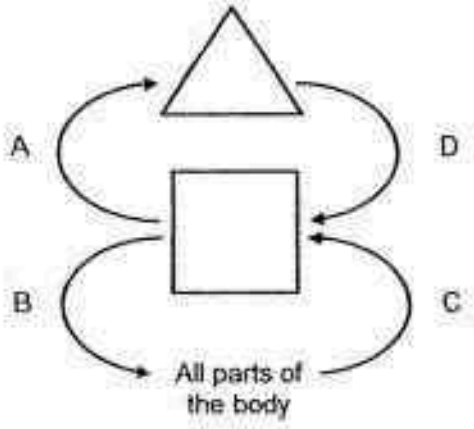
17. The diagram below is a simplified representation of the human circulatory system showing blood flow to the different parts of the body.



(a) The triangle and the square represent two different organs in the system. Identify the organs. [1]

Square: _____

Triangle: _____

(b) State the difference between the blood in blood vessels A and D. Explain your answer clearly. [2]

_____

_____

_____

_____

(Go on to the next page)

SCORE	3

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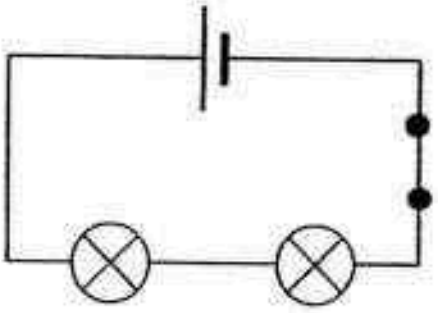
18. Study the circuit diagram below carefully.



(a) After some time, the bulbs did not light up. State two possible reasons for this. [1]

i. _____

_____

ii. _____

_____

(b) Name a material that the switch can be made of and its property. [1]

_____

_____

(c) In the box provided, draw a circuit diagram using 2 bulbs, 2 switches and 1 battery so that each bulb can be controlled individually with the switches. [1]

(Go on to the next page)

SCORE	3

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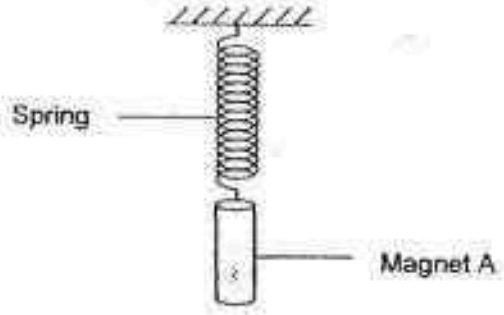
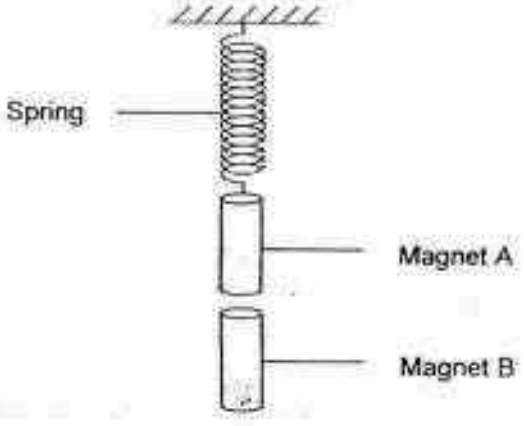
19. The diagram below shows a set-up where a magnet is hung from a spring.



(a) Name the main forces acting on the magnet. [1]

(b) Magnet B is then placed as shown in the set-up below.



Predict what will happen to the spring and magnet A. Explain your prediction. [1]

(Go on to the next page)

SCORE	/ 2

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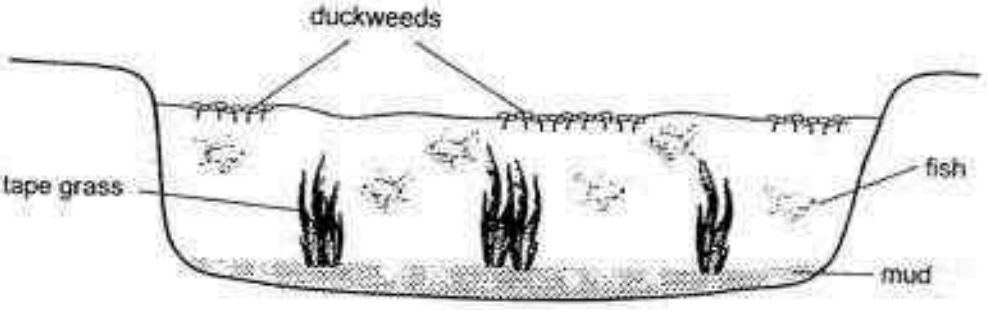
20. Study the pond shown in the diagram below. The pond has clear water that is rich in nutrients and with a depth of 1.5 metres.



(a) State two benefits of the presence of the tape grass to the aquatic animals that do not feed on it. [1]

i. _____

_____

ii. _____

_____

(b) There was a large increase in the population of duckweed. How will this affect the population of the tape grass? Explain your answer clearly. [2]

_____

_____

_____

_____

(Go on to the next page)

SCORE	3

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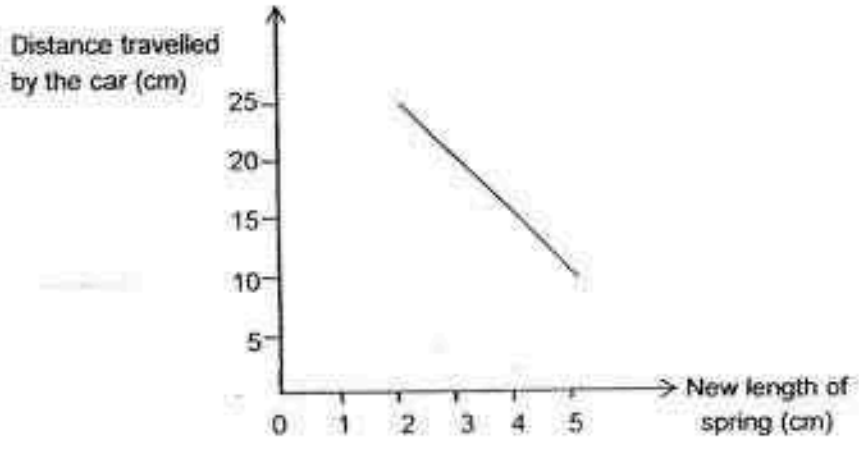
21. Willy fixed a spring with an original length of 7cm to a wall. He then placed a toy car against the spring as shown in the diagram below.



He pushed the car against the spring, which caused the spring to compress and measured the new length of the spring. Then he released the car and measured the distance travelled by the car. He repeated this several times and recorded his findings in the graph below.



(a) State the relationship between the length of the compressed spring and the distance travelled by the car. [1]

(b) When Willy pushed the car as far back as possible, the new length of the spring remained at 2cm. Explain why this is so. [1]

(Go on to the next page)

SCORE 2

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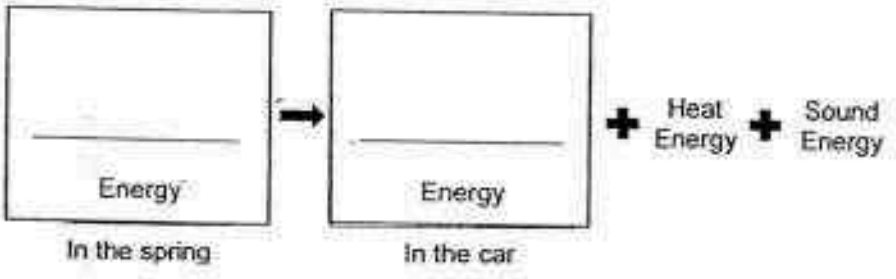
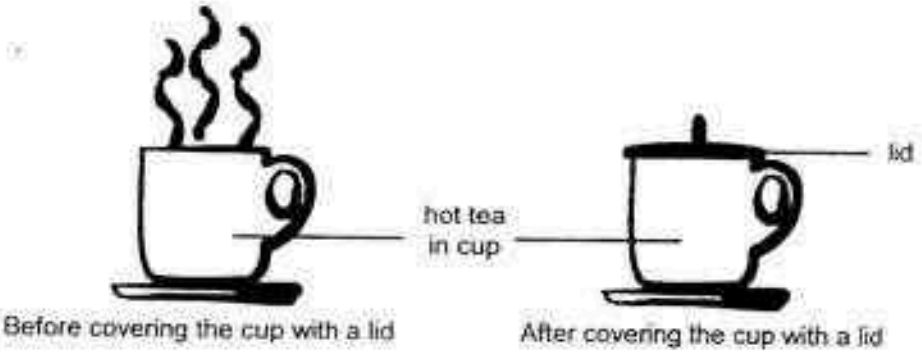
(c) After Willy had pushed the car back against the spring, state the changes in the form of energy from the time he releases the car till it comes to a stop in the boxes below. [1]



22. Alain poured some hot tea into a cup and placed a lid over the cup.



(a) What did he notice when he looked under the lid after a short while? [1]

_____

_____

(b) Describe how your answer in (a) occurred. [2]

_____

_____

_____

_____

End of Paper

SCORE	
	4

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YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**ANGLO-CHINESE (JUNIOR)**
SUBJECT	:	**SCIENCE**
TERM	:	**CA1**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
4	1	3	2	2	4	2	2	1	1	2	4	3	4	1

Booklet B

Q16a (i) They both have a 3-stage life cycle.
(ii) They both have egg, young and adult stage in their life cycles.

Q16b The young of the frog looks different from the adult while the young of a chicken looks similar to its adult.

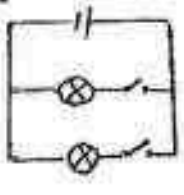
Q17a Square : Heart
Triangle : Lungs

Q17b Blood vessel A carries blood which has more carbon dioxide than blood vessel D as all parts of the body has used up the oxygen from the lungs and it will travel to blood vessel C and then to A. Blood vessel D has a lot of oxygen as it is taken in from the lungs.

Q18a (i) The bulbs fused.
(ii) All the chemical potential energy in the battery was used up.

Q18b Iron as it is a conductor of electricity.

Q18c



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Q19a Gravitational force and elastic spring force.

Q19b Magnet A would attract Magnet B and the spring will extend. As the unlike poles of magnet A and magnet B are facing each other, magnets A and B would attract each other. Therefore, the spring would extend.

Q20a (i) When the tape grass photosynthesizes, it will take in carbon dioxide and give out oxygen. Therefore, the aquatic animals would respire.

(ii) It provides shelter and shade for the equatic animals.

Q20b The tape grass cannot photosynthesize as it will have no sunlight to be able to photosynthesize. This is because the duckweeds covered more of the surface of the water. Therefore, the tape grass would eventually die.

Q21a The shorter the distance travelled by the car, the longer the spring.

Q21b The spring could not be compressed any further.

Q21c Elastic Potential Energy → Kinetic Energy

Q22a It had water droplets on it.

Q22b The water from the hot tea gained heat and evaporated into water vapour. The water vapour then condensed into water droplets on the cooler surface of the lid.

End

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· 6

RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1) 2016

Section A	/60
Section B	/40
Your score out of **100** marks	
Parent's signature	

Name : _____ Index No: ____ Class: P6 ___

10 May 2016 **SCIENCE** Attn: 1h 45min

SECTION A (30 X 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet.

1. Which one of the following characteristics can be used to differentiate between birds and insects?

P number of legs
Q type of body covering
R method of reproduction

(1) R only
(2) R and Q only
(3) P and Q only
(4) P and R only

2. Which of the following statements is/are true about ferns, mushrooms and mould?

A They only grow in soil.
B They reproduce from spores.
C They are able to make their own food.
D They break down dead and organic matter into simple substances.

(1) A only
(2) B only
(3) B and D only
(4) A, C and D only

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3. Erwin conducted a study on two animals, P and Q.
He recorded his observations in the table below.

A tick (√) in the box indicates the observation made of the animal.

Observations	Animal P	Animal Q
There are 4 stages in its life cycle.	√	√
Its eggs are laid on land.	√	
Its young do not have wings.	√	√

Which one of the following sets identifies animals P and Q correctly?

	Animal P	Animal Q
(1)	butterfly	mosquito
(2)	mosquito	butterfly
(3)	cockroach	butterfly
(4)	mosquito	cockroach

4. Nadia wanted to find out how different factors affect the germination of balsam seeds. She listed the variables below.

A location of experiment
B type of soil in each pot
C amount of soil in each pot
D number of balsam seeds in each pot
E amount of water given to balsam seeds

She made a list of the aim of the experiment and the variables to be kept constant respectively in the table below.

Which one of the following will enable her to conduct a fair the experiment fairly?

	Aim of the experiment	Variables to be kept constant
(1)	To find out if the amount of water affects the germination of balsam seeds.	A, B, D and E only
(2)	To find out if temperature affects the germination of balsam seeds.	B, C, D and E only
(3)	To find out if the presence of light affects the germination of balsam seeds.	B, C and E only
(4)	To find out if the type of soil affects the germination of balsam seeds.	A, D and E only

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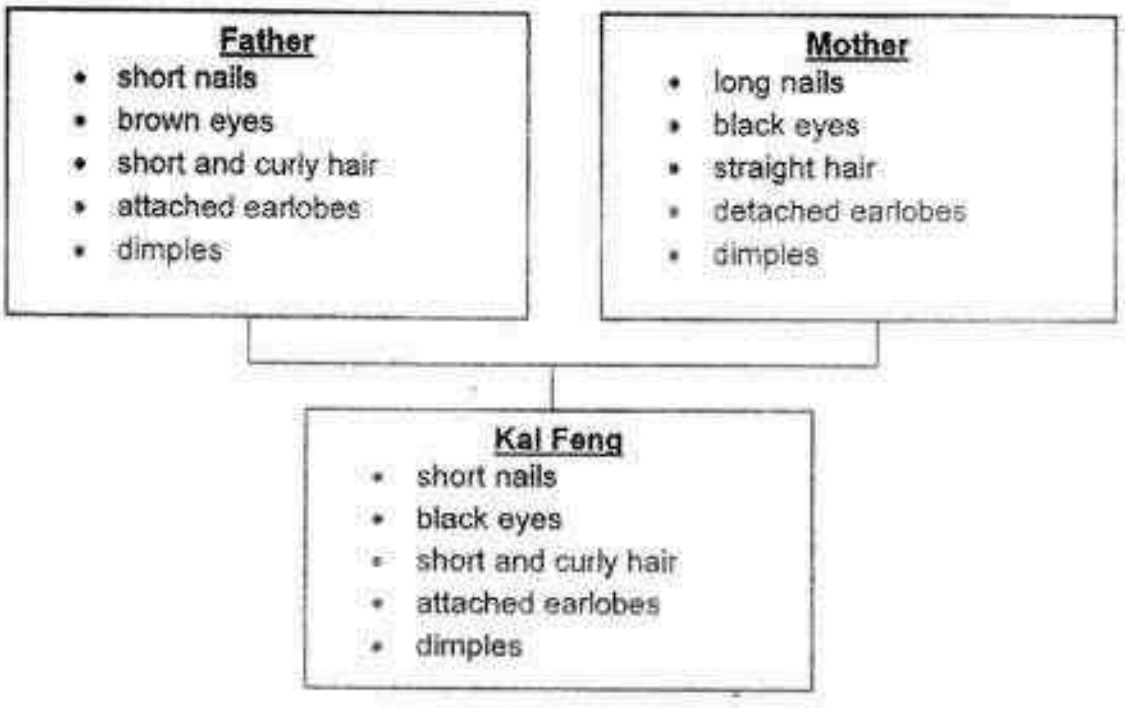
5. Kai Feng recorded the physical characteristics of his parents and himself as shown below.



Which of the following are traits inherited from his parents?

(1) length of hair and attached earlobes
(2) dimples, curly hair and length of nails
(3) eye colour, dimples and attached earlobes
(4) length of nails, curly hair and attached earlobes

6. Mingli wants to find out whether a fruit which she has picked up is dispersed the same way as the coconut.

Which of the following investigations should she carry out?

A Find the mass of the fruit by weighing it.
B Cut open the fruit to check if it has a fibrous husk.
C Place the fruit in a pail of water to see if it can float.
D Cut open the fruit to check if it contains water and is fleshy.

(1) A and B only
(2) B and C only
(3) A, C and D only
(4) B, C and D only

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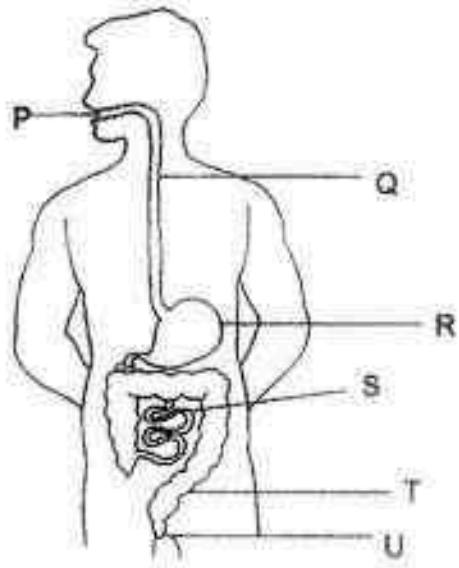
7. The diagram below shows parts of the digestive system of a human.



Which of the following statements about the system above is/are correct?

A Food is broken into smaller pieces in part P.
B Digestive juices in part R help to digest the food further.
C Digested food in part S is absorbed into the bloodstream.
D Parts T and S remove water from the undigested food.

(1) A only
(2) B and D only
(3) C and D only
(4) A, B and C only

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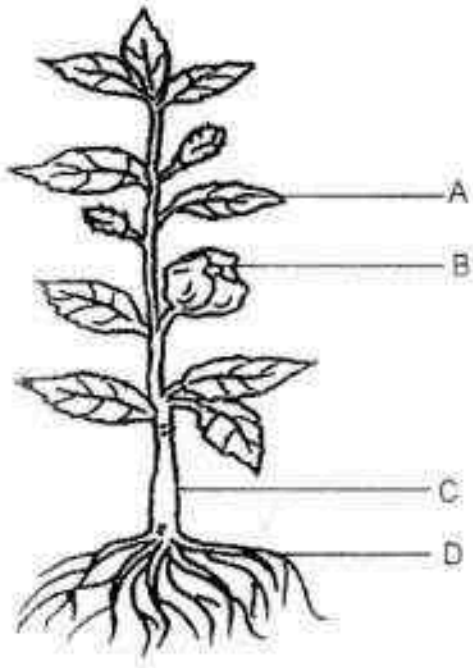
8. The diagram below shows a plant.



Four children made statements about the functions of the parts of the plant.

Peiling	Part C transports water and dissolved mineral salts.
Qiuping	Part D absorbs water and dissolved mineral salts from the soil.
Ray	Part A makes food for the plant during respiration.
Stanley	Part B attracts animals which help in seed dispersal.

Whose descriptions of the functions of the parts of the plant are correct?

(1) Peiling and Qiuping only

(2) Qiuping and Ray only

(3) Ray and Stanley only

(4) Peiling, Qiuping and Stanley

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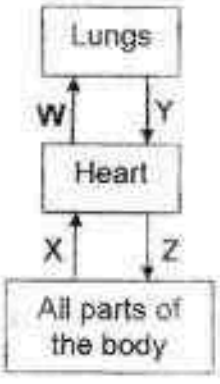
9. Ahmad observed two cells under a microscope and he recorded his observations in the table below. A tick (√) shows the part(s) that the cell has.

Part of Cell	Cell X	Cell Y
Nucleus	√	√
Cell wall		√
Chloroplast		√
Cytoplasm	√	√
Cell membrane	√	√

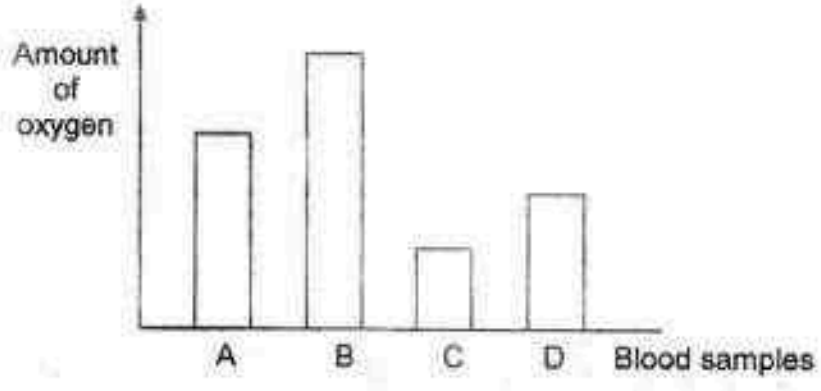
Which of he following statements is correct?

(1) Cell X can make food but Cell Y cannot.
(2) Cell X can trap light energy but Cell Y cannot.
(3) Cell Y has a regular shape but Cell X does not.
(4) Cells X and Y could have been taken from the leaves of different plants.

10. The arrows below show the flow of blood in a human body.



The bar chart below shows the amount of oxygen in the 4 blood samples taken from W, X, Y and Z in the human circulatory system.



Based on the information provided above, where was blood sample B likely to be taken from?

(1) W
(2) X
(3) Y
(4) Z

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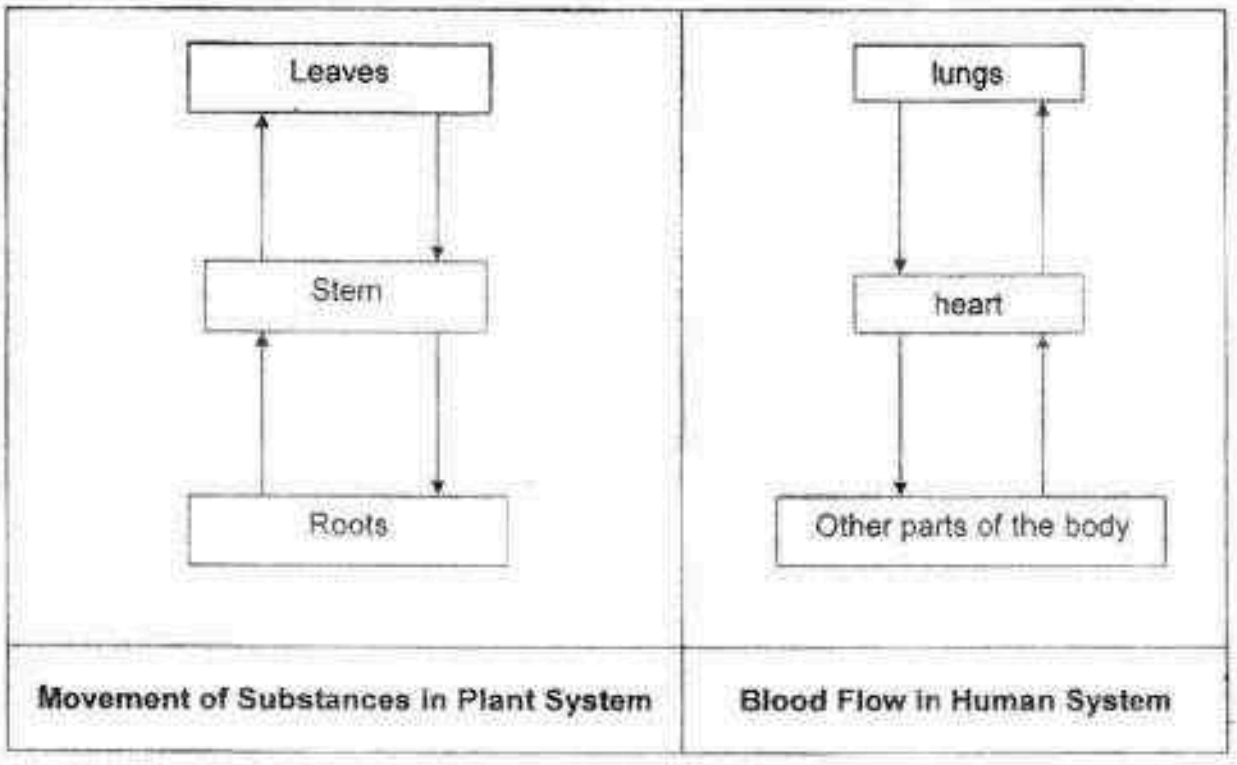
11. The diagrams below show the movement of substances in a plant and a human.



Which of the following statements about the plant and human systems is/are true?

P Food is being transported from the roots to other parts of the plant.

Q The water in the plant moves in one direction only, from the roots to other parts of the plant.

R The blood is being pumped by the heart and circulated to all parts of the body.

S Blood flows from the lungs to the heart and then back to the lungs again.

(1) P and Q only
(2) Q and R only
(3) R and S only
(4) P, Q and R only

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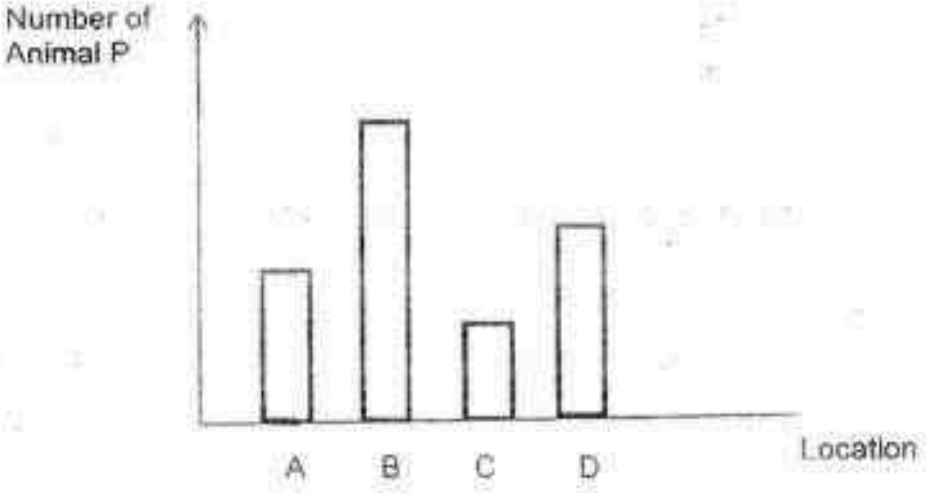
12. Animal P prefers the following conditions in its surroundings in the following order:

Conditions
bright and dry
bright and damp
dark and dry
dark and damp

prefers most

prefers least

The graph below shows the number of Animal P found in different locations, A, B, C and D, in a garden.



Based on the above information, which one of the following statements is definitely correct?

(1) Location B is most likely dark and dry.

(2) The likely condition for location C is dark and damp.

(3) Location D has the least preferred conditions for Animal P.

(4) Animal P most likely belongs to the leaf litter community.

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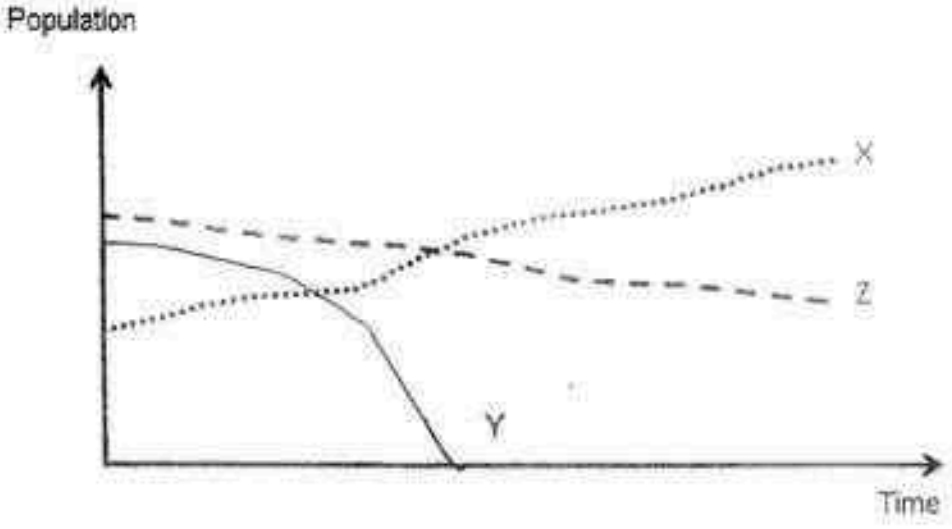
13. The graph below shows the changes in the population of animals X, Y and Z in a particular community over a period of time.



Which is/are the possible reason(s) for the change in the populations of animals X, Y and Z over that period of time?

A Animal X is a predator of Animal Y.
B Animal Z feed on Animal X only.
C There was a drought during the period of time.
D There was a disease outbreak in Animal Y population.

(1) C only
(2) A and D only
(3) B and C only
(4) A, B and D only

14. Pamela wanted to find out the effects of carbon dioxide on the organisms living in a pond over a period of time. She recorded her observations in the table below.

Concentration of Carbon dioxide (mg/l)	Population size			
	Organism P	Organism Q	Organism R	Organism S
1	60	95	137	105
5	43	72	152	86
10	21	55	174	50
15	6	30	199	27

Based on her observation, which organism is likely to be a food producer?

(1) P
(2) Q
(3) R
(4) S

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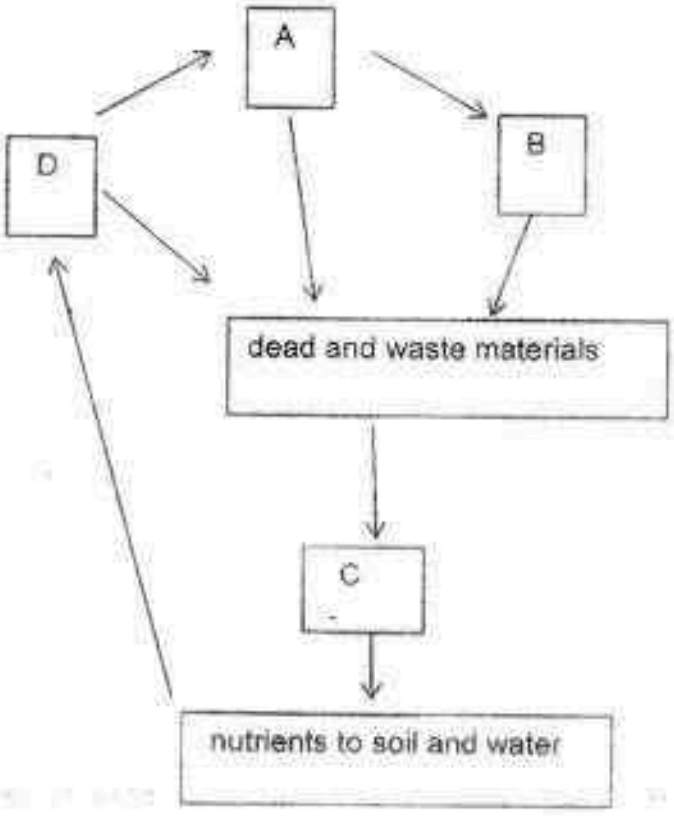
15. The diagram below represents the nutrient cycle. Letters A, B, C and D represent 4 organisms in a community. The arrow (⟶) represents the direction of flow of energy.



Which one of the following correctly represents A, B, C and D in this community?

	A	B	C	D
(1)	decomposer	producer	animal eater	plant eater
(2)	producer	animal eater	plant eater	decomposer
(3)	plant eater	animal eater	decomposer	producer
(4)	producer	plant eater	animal eater	decomposer

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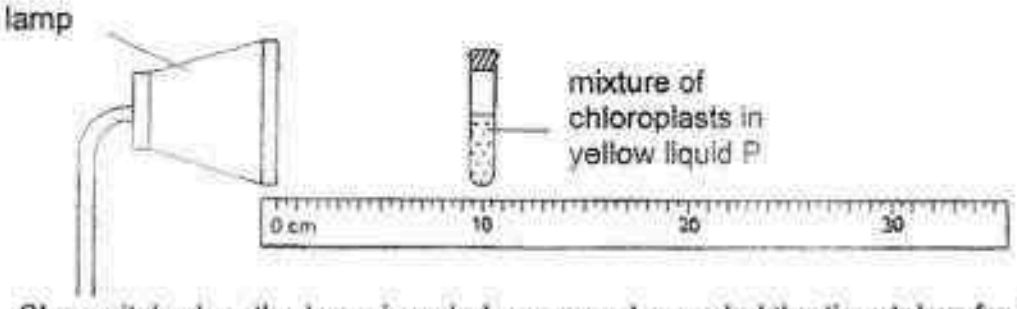
16. Jessica had three tubes, X, Y and Z, containing an equal amount of chloroplasts mixed in the same amount of yellow liquid P. This yellow mixture turns green after photosynthesis has taken place.

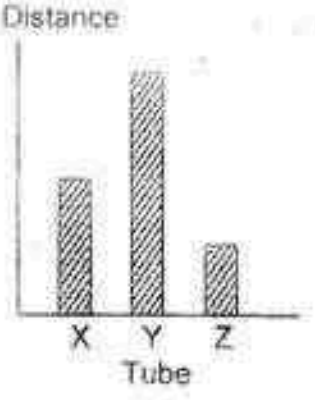
Jessica placed tube X at a distance of 10 cm from the lamp.

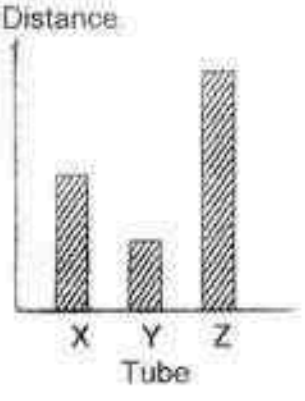


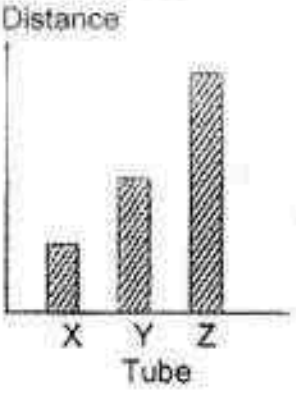
She switched on the lamp in a dark room and recorded the time taken for the mixture to turn green. She repeated the experiment with tubes Y and Z at various distances from the lamp and recorded the results as shown in the table below.

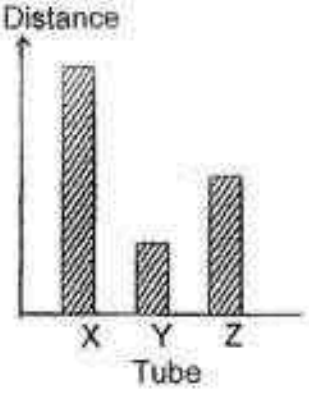
Tubes	Time taken for mixture to turn green (s)
X	17
Y	9
Z	28

Which graph correctly represents the distance tubes X, Y and Z are from the lamp?

(1)


(2)


(3)


(4)


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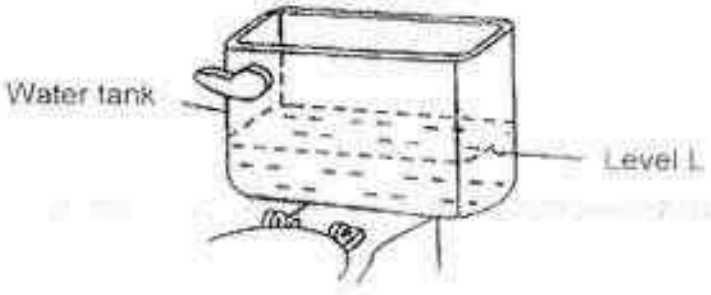
17. Imran wanted to choose a suitable material for making the base of an electric iron.

Which of the following properties of the material must Imran take into consideration when making his choice?

A heavy
B magnetic
C high melting point
D smooth and cools down quickly when heated

(1) C only
(2) D only
(3) B and C only
(4) A and D only

18. Below is a water tank used for flushing a toilet bowl. After each flush, water enters and re-fills the tank. The re-filling will stop when the water reaches the level L mark.



Mabel made use of the properties of matter to use less water to flush the toilet bowl. She put a plastic bottle filled with pebbles into the water tank.
Which of the following properties of matter was Mabel's method based on?

A Solids have mass.
B Solids occupy space.
C Liquids have no definite volume.
D Liquids take the shape of any container.

(1) B only
(2) A and B only
(3) C and D only
(4) A, B and D only

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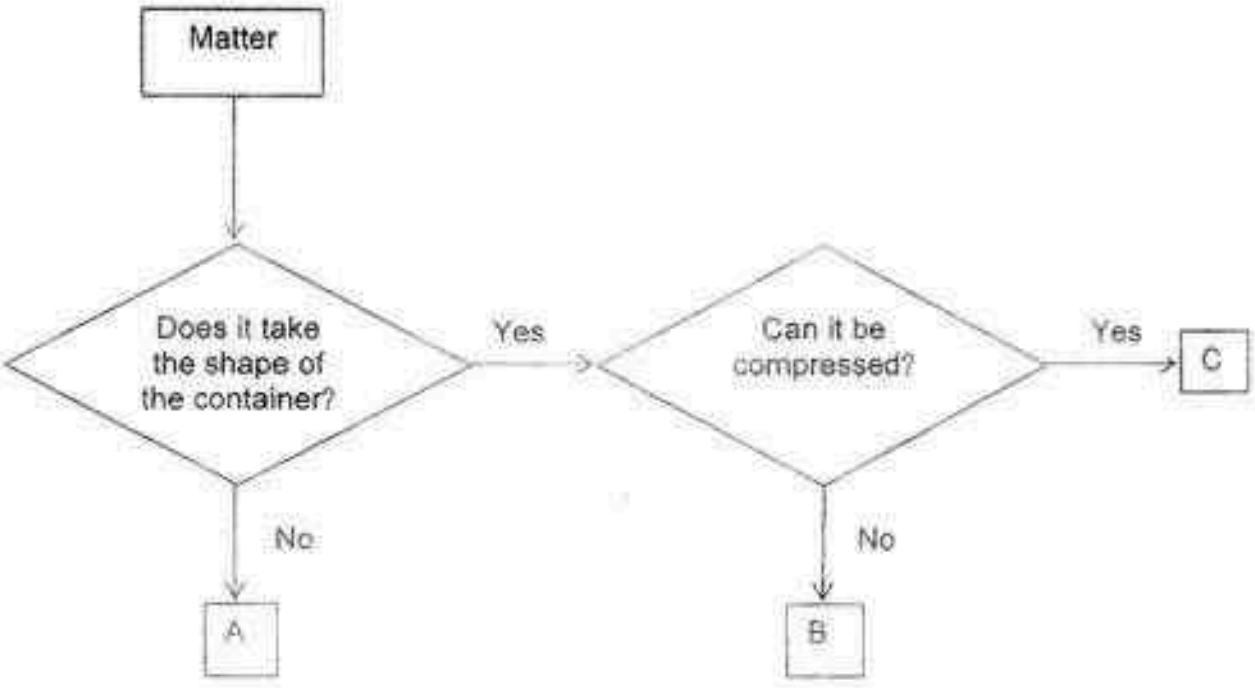
19. The flow chart below identifies the characteristics of three different substances,A, B and C at 39°C.



Which one of the following correctly matches the melting points and boiling points of the three substances A, B and C?

(1)

Substances	Melting point (°C)	Boiling point(°C)
A	36	45
B	28	189
C	5	28

(2)

Substances	Melting point (°C)	Boiling point(°C)
A	45	87
B	28	189
C	5	28

(3)

Substances	Melting point (°C)	Boiling point(°C)
A	31	200
B	45	87
C	20	50

(4)

Substances	Melting point (°C)	Boiling point(°C)
A	45	87
B	50	180
C	5	28

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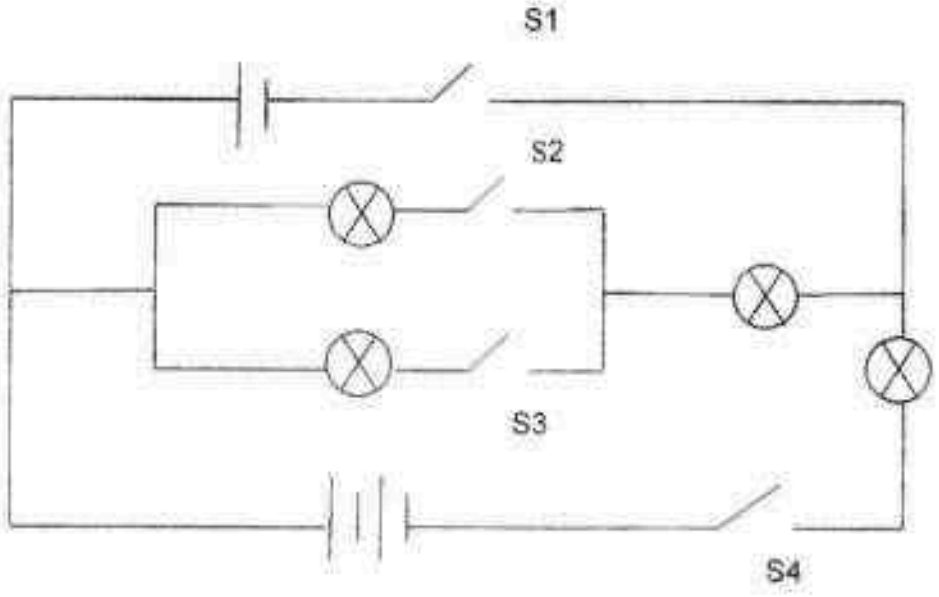
20. In the circuit below, the bulbs and batteries are working properly.



Which one of the following shows the correct number of bulbs lit when the respective switches are closed?

	Switches closed	No of bulbs lit
(1)	S1 & S4	4
(2)	S2 & S3	3
(3)	S2 & S4	4
(4)	S3 & S4	3

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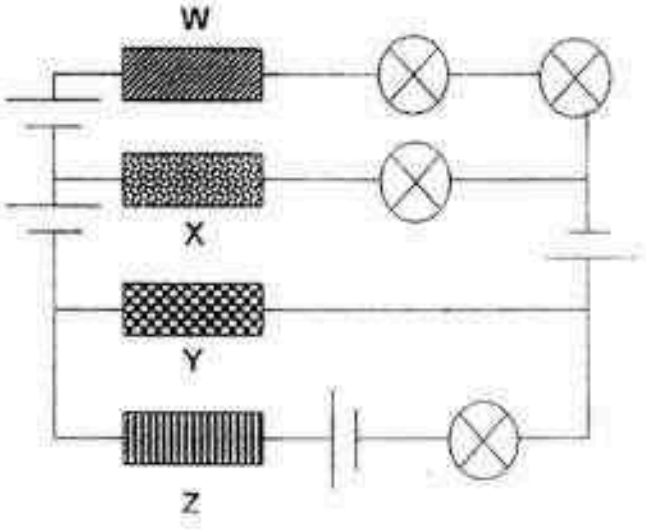
21. The circuit below, consists of four similar batteries, four similar bulbs and four bars, W, X, Y, Z, which are made of different materials.



Which one of the following classifications of the 4 materials is correct if only **ONE** bulb in the circuit is lit?

(1)

Conductors of electricity	Non-conductors of electricity
X	W
Z	Y

(2)

Conductors of electricity	Non-conductors of electricity
X	W
Y	
Z	

(3)

Conductors of electricity	Non-conductors of electricity
Y	W
Z	X

(4)

Conductors of electricity	Non-conductors of electricity
W	X
Z	Y

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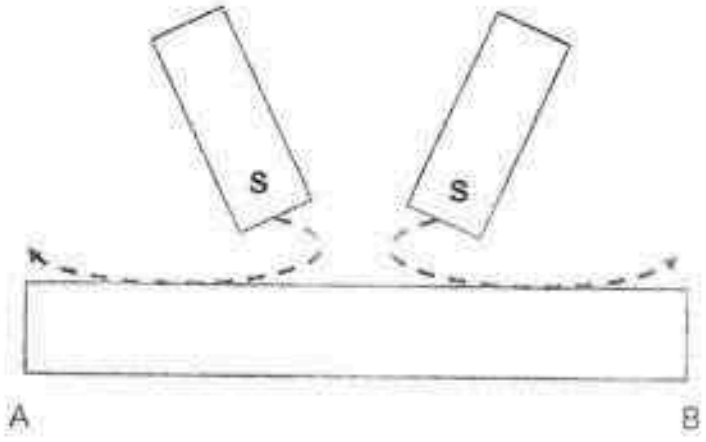
22. Serene used the "stroke" method to magnetise an iron bar AB with the South poles of two magnets as shown in the diagram below.



Which one of the following could explain why iron bar AB could not be magnetised by Serene's method?

(1) Iron bar AB is a magnetic material.
(2) Both magnets used are of the same poles.
(3) Both magnets should point in the north-south direction.
(4) The magnetic force of the magnets was not strong enough.

23. Which of the following statements about forces are correct?

A The further an object is from the Earth, the smaller is its mass.

B An object with a smaller mass has a smaller gravitational force acting on it.

C An object which is thrown upwards will eventually fall down due to the pull of gravity.

D The amount of force needed to lift an object depends on the size of the object.

(1) A and B only
(2) B and C only
(3) C and D only
(4) A, B, C only

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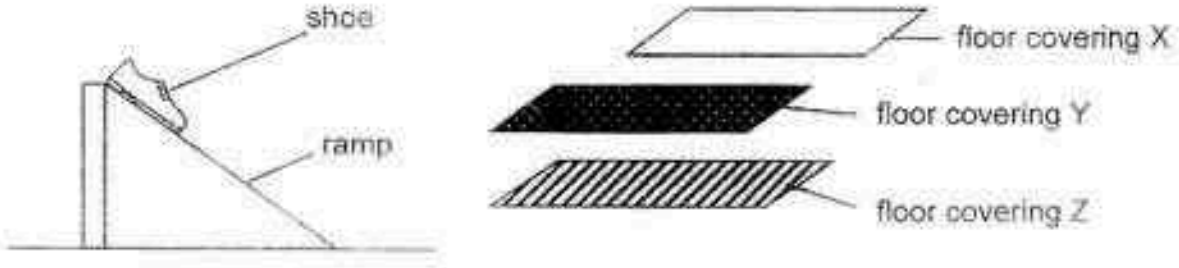
24. Mingli conducted an experiment to find out which type of floor covering, X, Y or Z, provides the best grip when someone walks on it. She set up the experiment and came up with the following steps:

Step 1: Place one type of floor covering on the ramp.

Step 2: Tilt the ramp at an angle until the shoe started to slide down the ramp.

Step 3: Record the height of the ramp at which the shoe started to slide down.



Which of the variables below should be kept the same to ensure a fair test?

A Type of shoe
B Type of floor covering
C Initial height of the ramp
D Length of ramp

(1) A only
(2) B only
(3) A and C only
(4) A, C and D only

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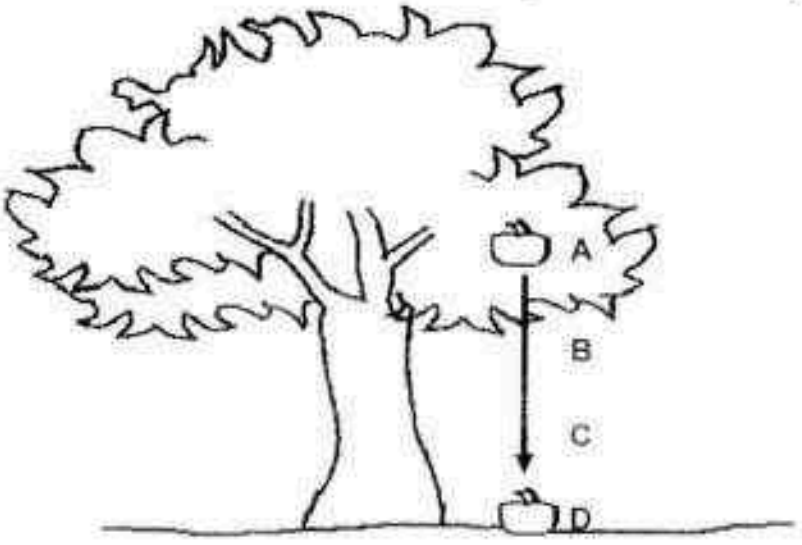
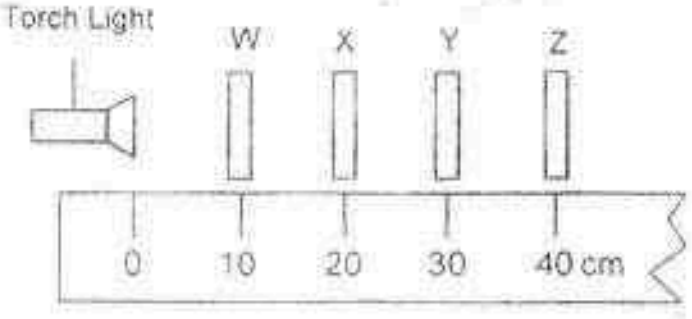
25. The diagram below shows a fruit falling from a tree to the ground.



At which point(s) does/do gravity act on the fruit?

(1) A only
(2) D only
(3) A and D only
(4) A, B, C and D

26 Daniel set up an experiment using four different objects, wood, tracing paper, clear glass and a cardboard. He arranged the objects in different positions, W, X, Y and Z as shown below.



He observed that the distance travelled by the light was 30 cm.

Which one of the following correctly shows the positions of the objects?

	W	X	Y	Z
(1)	wood	tracing paper	clear glass	cardboard
(2)	cardboard	clear glass	tracing paper	wood
(3)	tracing paper	cardboard	wood	clear glass
(4)	clear glass	tracing paper	cardboard	wood

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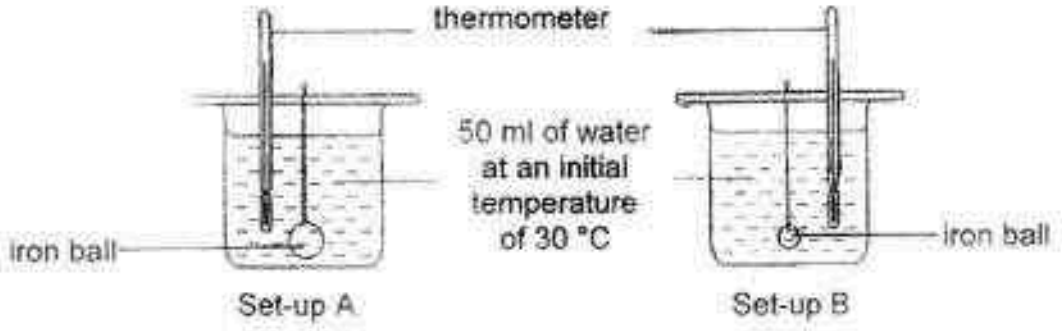
27. Zoe heated up two iron balls of different sizes to 100 °C. She then put each iron ball into Set-up A and Set-up B and measured the rise in the temperature of water as shown below.



Which of the following statements are correct?

A The water lost heat to the iron ball.

B The iron balls expanded after being heated.

C The iron balls have the same amount of heat at 100 °C.

D The water in Set-up A has a greater increase in temperature than the water in Set-up B.

(1) A and D only

(2) B and C only

(3) B and D only

(4) B, C and D only

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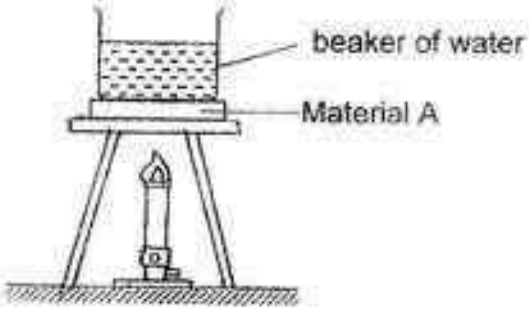
28. Roy wanted to find out if the thickness of Material A affects the conduction of heat. He set up the experiment below.



The table below shows the different conditions in Roy's four experiments set-ups, W, X, Y and Z as well as the results.

Variables	Experiment Set-ups			
	W	X	Y	Z
Thickness of material A (cm)	9	8	6	6
Amount of water (ml)	100	120	100	150
Results				
Time taken for water to start boiling (min)	4	3.5	2.5	3.5

Which of the following two experiment set-ups should Roy compare?

(1) W and X
(2) W and Y
(3) X and Z
(4) Y and Z

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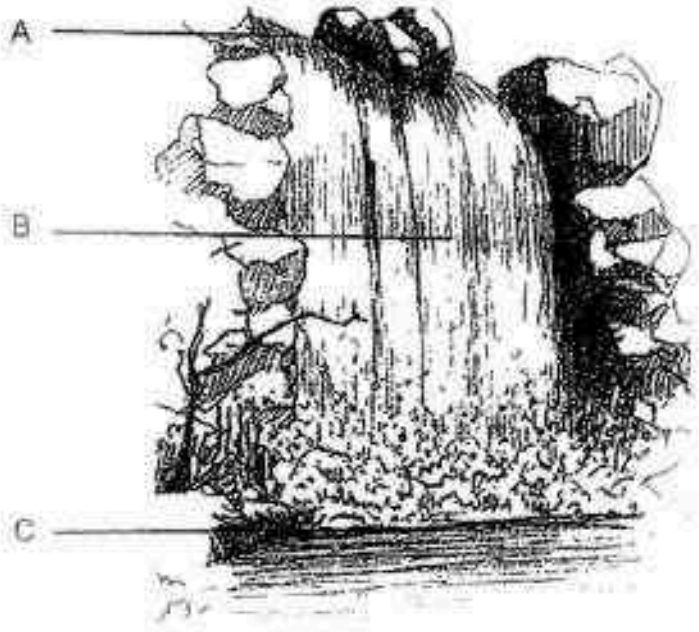
29. The diagram below shows a waterfall.



Which one of the following correctly describes the energy of the water at A, B and C?

	A	B	C
(1)	kinetic energy	potential energy	kinetic energy
(2)	kinetic energy	potential energy and kinetic energy	kinetic energy and heat energy
(3)	potential energy and kinetic energy	potential energy and kinetic energy	kinetic energy and sound energy
(4)	potential energy and kinetic energy	kinetic energy and sound energy	heat energy

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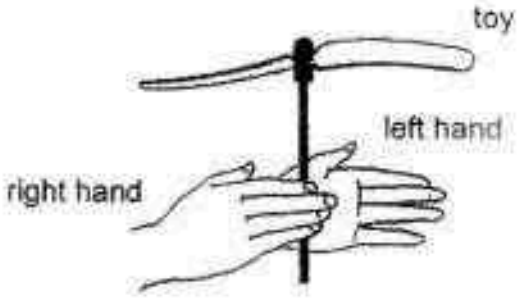
30. Ashlyn held a toy between her hands as shown. She rotated the toy by sliding her right hand forward and her left hand backwards before releasing it. The toy flew to a certain height after it left her hands.



She rotated the same toy at the same starting position again. However, the toy flew to a higher height than it did before.

Which one of the following could explain why the toy flew to a higher height?

(1) The weight of the toy was lesser.
(2) The toy used up more heat energy.
(3) The kinetic energy of the toy was greater.
(4) The potential energy of the toy was lesser.

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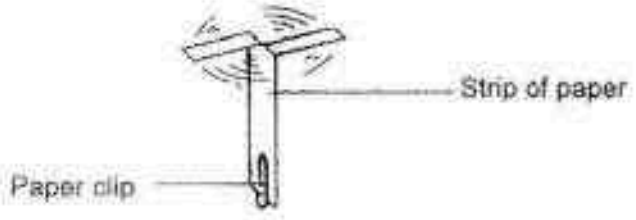
Name : _____ Index No : _____ Class : P6 ___

40

SECTION B (40 marks)

For questions 31 to 44, write your answers clearly in the spaces provided.
The number of marks available is shown in the brackets [ ] at the end of each question or part question.

31. Gary made a paper flyer using a strip of paper and a paper clip as shown below.



He wanted to find out if the number of paper clips on the paper flyer would affect the time it took for the paper flyer to fall to the ground.

Below were the steps he took in his experiment.

Step 1: Cut a piece of paper and fold it into a paper flyer.
Step 2: Attach one paper clip to the paper flyer.
Step 3: Drop the paper flyer from a height of 5 metres.

(a) What did Gary have to measure after dropping the paper flyer? [1]

_____

_____

(b) Name one variable which Gary must keep constant in his experiment. [1]

_____

(c) Explain why Gary had to keep the variable in (b) constant. [1]

_____

_____

Score 3

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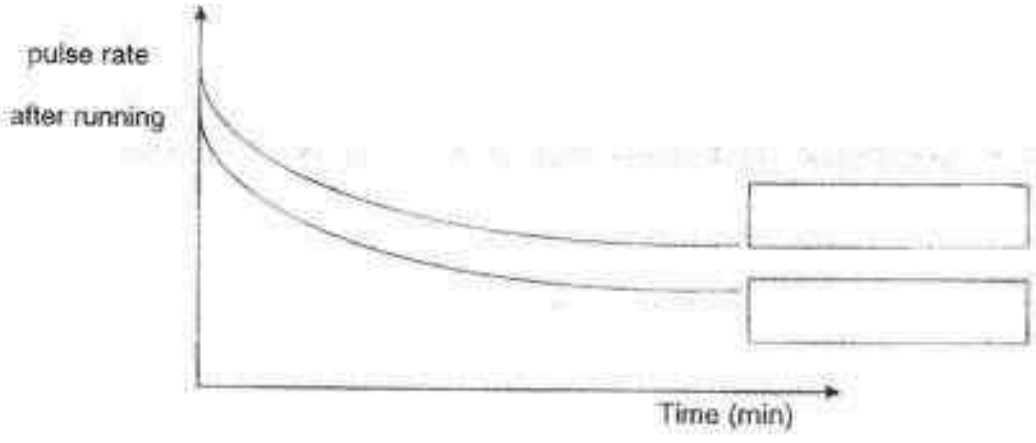
32. Two pupils, X and Y, carried out an experiment to investigate how running could affect their pulse rates. They measured their pulse rates before the run. After 15 minutes of running, they measured their pulse rates immediately and again at every 2-minute interval for 10 minutes.

They recorded their pulse rates before and after the run in the table below.

Pupil	pulse rate **before** running (beats per minute)	Pulse rate **after** running (beats per minute)					
		Number of minutes					
		0	2	4	6	8	10
X	72	139	119	85	79	75	74
Y	74	135	117	82	76	72	70

(a) The graph below shows the pupils' pulse rate **after** running.

Label the graph by filling in the boxes with X and Y. [1]



(b) Explain why the boys' pulse rates increased after exercising. [1]

Score 2

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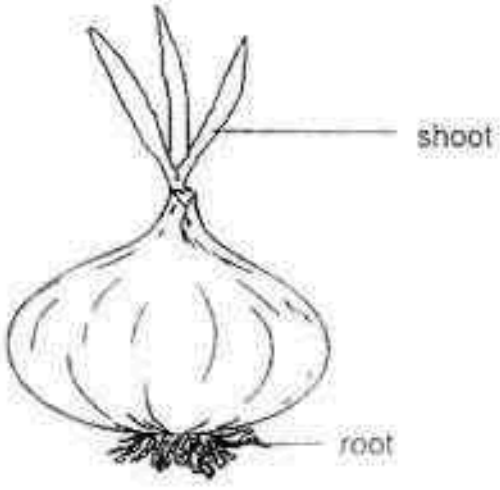
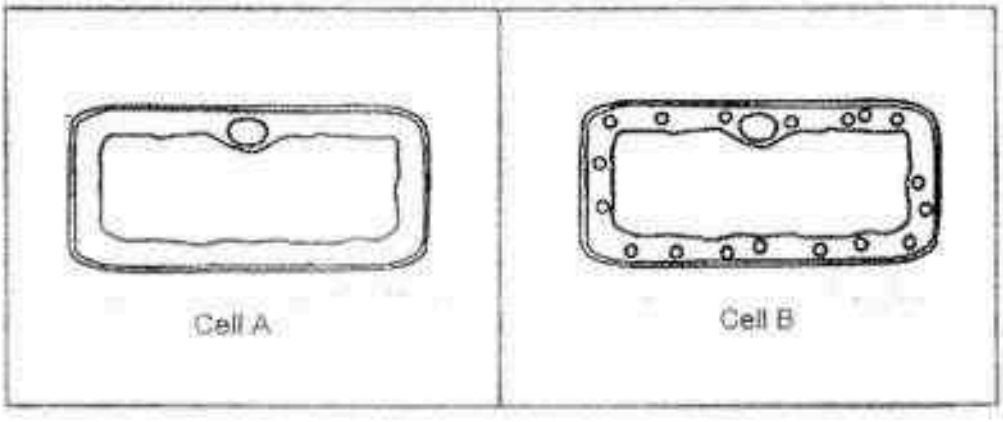
33. The diagram below shows a plant.



The following cells, A and B, were taken from two different parts of the plant which are labelled above.



In the table below, identify and write down the cells, A and B, to show where they were taken from the plant and give reasons for your answer. [2]

Cell	Part of plant the cell is taken from	Reason
	shoot	
	root	

Score 2

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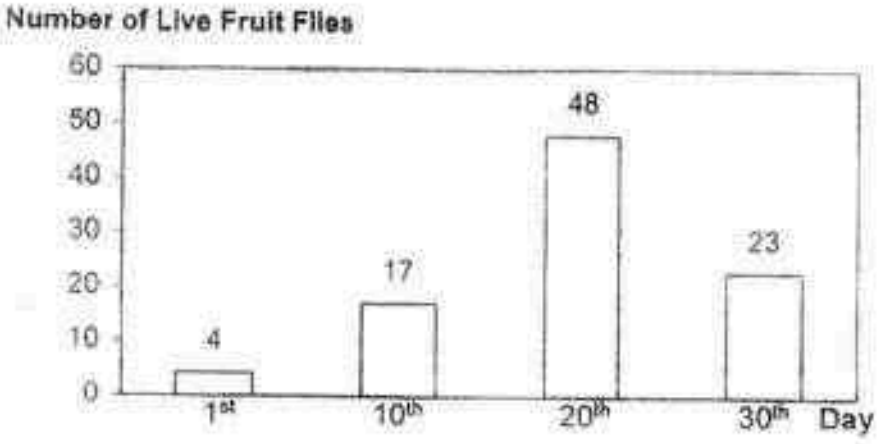
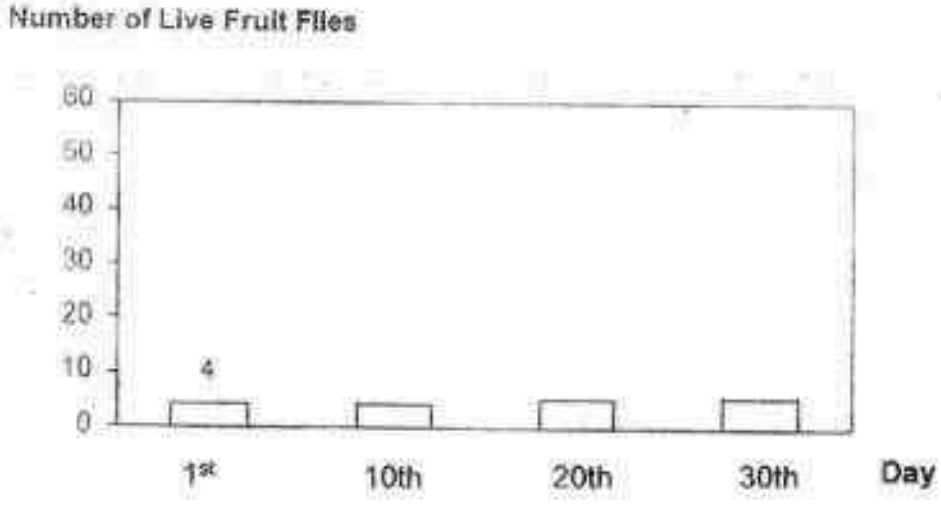
34. Alexis conducted an experiment to study the changes in the population of fruit flies over a period of about one month.
The life cycle of a fruit fly from an egg to an adult is approximately 10 days at room temperature of 30°C.
Alexis placed a piece of banana, a live plant on some damp soil and 4 fruit flies in a closed glass container.
Alexis recorded her observations in the graph below.



Alexis' classmate, Tom, carried out a similar experiment, but he noticed the number of fruit flies on the 30th day in his experiment still remained the same, as shown in the graph below.



(a) Explain why there is a difference in the number of fruit flies in both experiments. [1]

_____

_____

continued on next page

Score 1

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continued from previous page

(b) Explain clearly how the fruit flies can have a constant supply of water and air in the closed container in both experiments? [2]

(c) There was a decrease in the population of fruit flies after the 20th day in [illegible] experiments. Give a reason for his observation. [1]

Score 3

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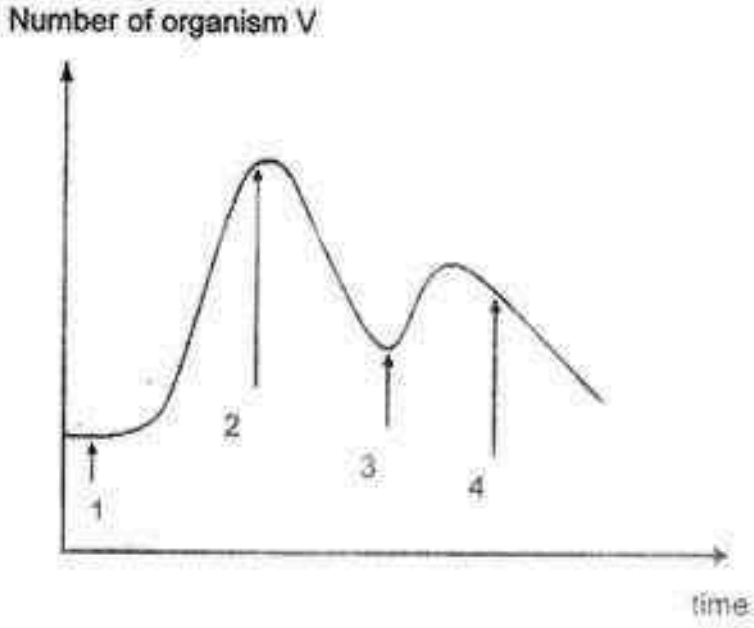
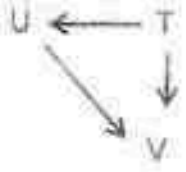
35. The graph below shows the number of organism V in their habitat over a period of time.



(a) Animal K, which eats both plants and animals, was first introduced to the habitat at point 2.
Complete the food web below to show the food relationships between Animal K with the rest of the organisms T, U and V. [1]



(b) Based on the food web, which organism(s) K, T, U, V, is/are both a prey and predator? [1]

_____

_____ _____

(c) Which organism is a food producer? [1]

_____

Score	3

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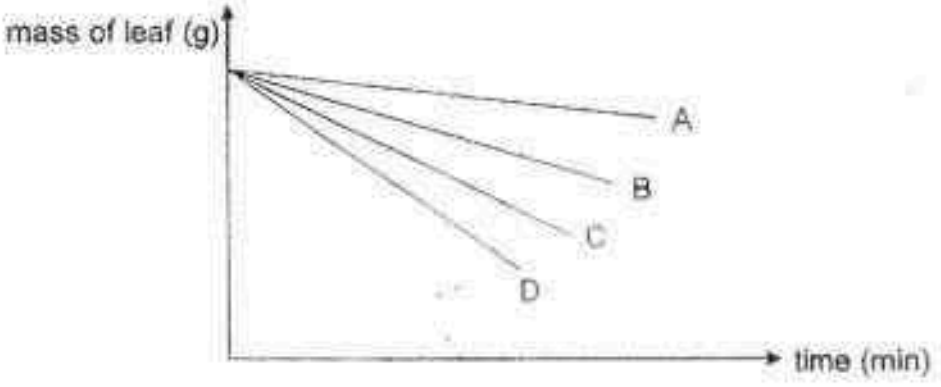
36. Lissy set up an experiment using four similar leaves A, B, C and D of a plant. She coated some surfaces of the leaves on the plant with oil as shown in the table.
A tick (√) shows the surface of the leaf coated with oil.

Leaf	Coated with oil	
	Upper surface	Lower surface
A	√	√
B	√	
C		√
D		

The leaves were put in an open area for five hours. Lissy measured the mass of the leaves at regular time intervals. Her results are shown in the graph below.



Lissy used her results to compare the difference between the stomata on the upper and lower surface of the leaves.

(a) What can Lissy conclude about the number of stomata on the surfaces of the leaves of this plant? [1]

_____

_____

(b) Explain the purpose of Leaf B in the experiment. [1]

_____

_____

Score	2

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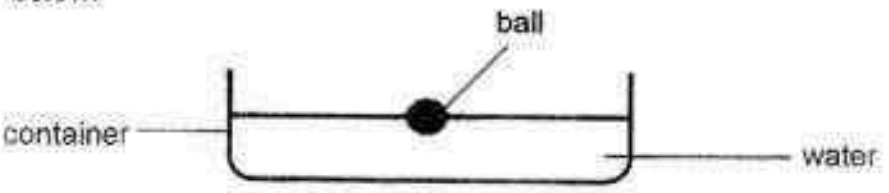
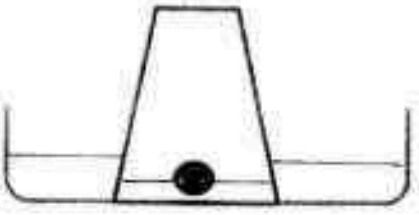
37. Edwin placed a small ball in a container with water as shown in the diagram below.



Next he lowered an empty glass into the container of water with the small ball in the glass.

Below is what Edwin observed.

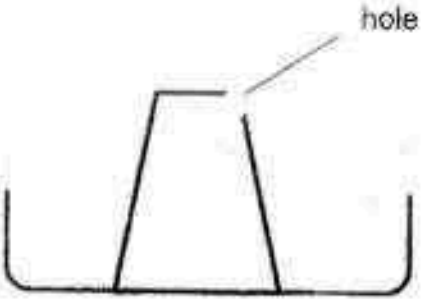


(a) State two reasons for his observation. [2]

(i) _____

(ii) _____

(b) Next, he made a hole at the top of the cup.
In the diagram below, draw the water level and the ball which Edwin would observe. [1]



Score	3

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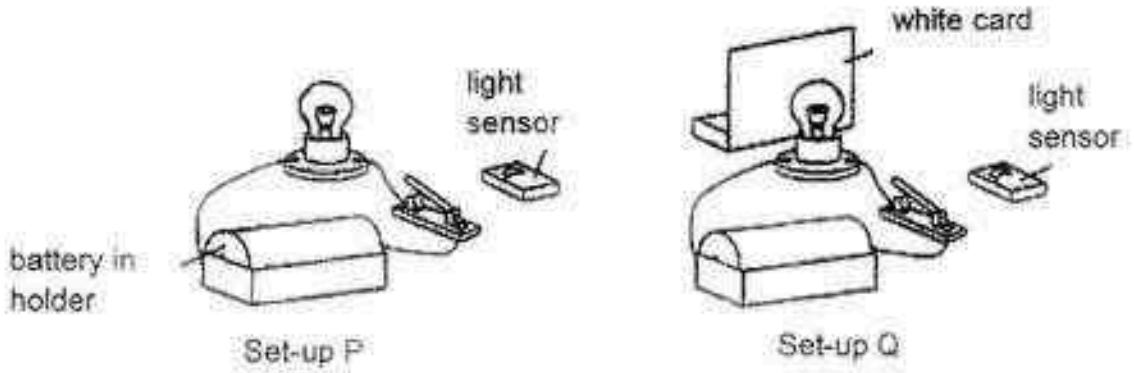
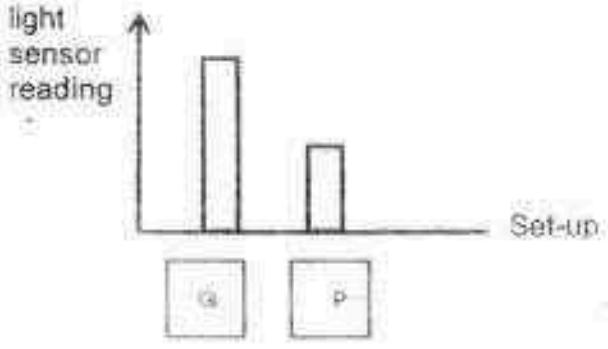
38. Tiffany conducted an experiment using identical bulbs and batteries with the set-ups below. The light sensor is used to measure the brightness.



(a) Fill in the boxes below with P and Q to show Tiffany's results of the experiment. [1]



(b) Explain your answer in (a). [1]

_____

_____

(c) In another set-up, R, Tiffany connected another identical bulb in series to the bulb in set-up Q.

What will be the reading on the light sensor in set-up R as compared to that in set-up Q? [1]

_____

Score 3

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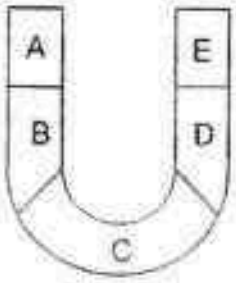
39. Ali and Siti tested the strength of the different parts of a horseshoe magnet. They divided the magnet into five parts, A, B, C, D and E, as shown in the diagram below.



They used the horseshoe magnet to attract iron nails and recorded their results in the tables below.

Ali's results	
Part	Number of iron nails attracted
A	2
B	5
C	3
D	4
E	1

Siti's results	
Part	Number of iron nails attracted
A	4
B	1
C	0
D	1
E	3

(a) Whose results are more likely to be correct?
Give a reason for your answer. [1]

_____

_____

continued on next page

Score	
	1

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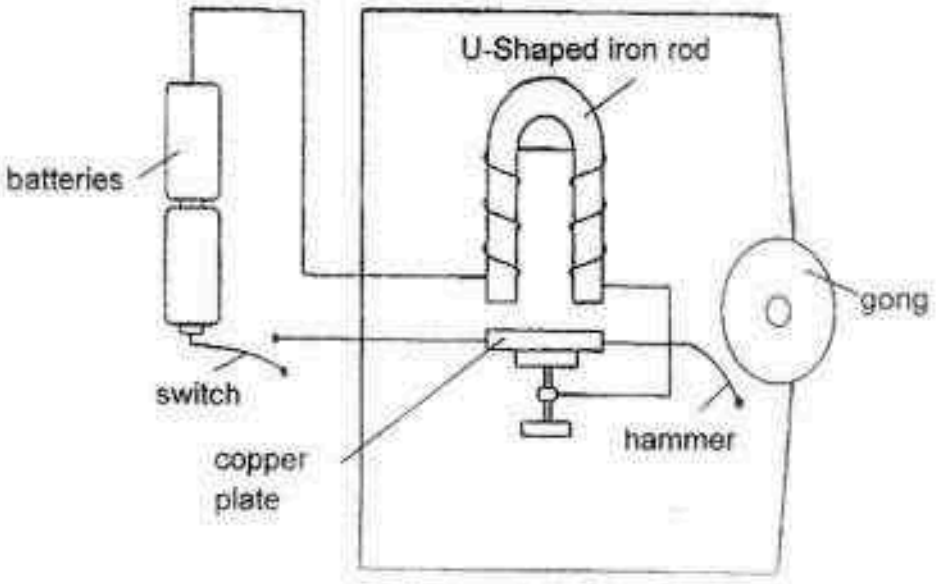
Ali set up the circuit below.



(b) Would the hammer hit the gong when the switch is closed?
Give a reason for your answer. [1]

_____

_____

(c) Suggest one way for the hammer to hit the gong faster if the circuit works. [1]

_____

_____

Score	2

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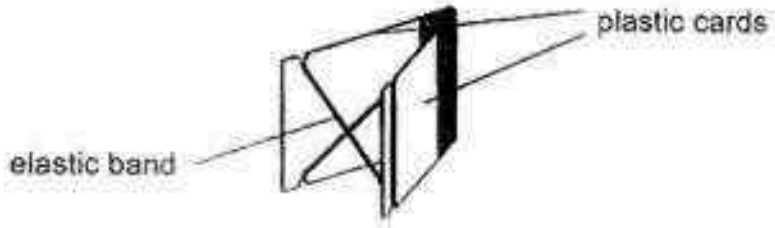
40. June made a jumping toy using two pieces of strong plastic cards and an elastic band as shown in the diagram below.



She wanted to find out how the number of elastic bands used to make the toy would affect the height it jumped to. She stretched the elastic band and pressed it down before releasing the toy.



The toy snapped and jumped to a certain height which June measured and recorded in the table below. She repeated the activity by increasing the number of elastic bands used each time.

Number of elastic bands used	Height toy that the jumped (cm)	Put a cross (X)
1	6	
2	9	
3	5	
4	13	
5	16	

Based on the information above, answer the following questions.

(a) June recorded ONE of the results wrongly.
Put **ONE** cross (X) in the box above to indicate the mistake she had made. [1]

(b) Suggest what June could do to ensure that her results were reliable. [1]

Score 2

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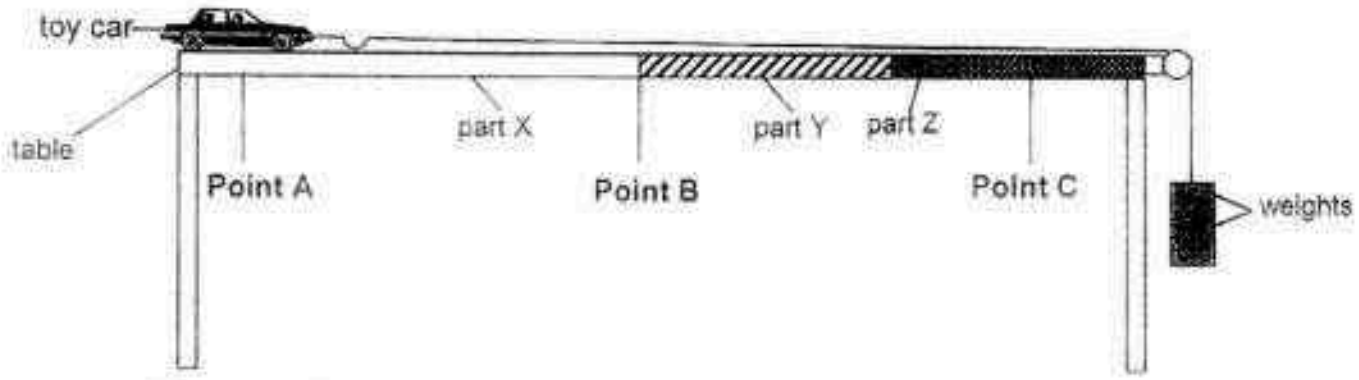
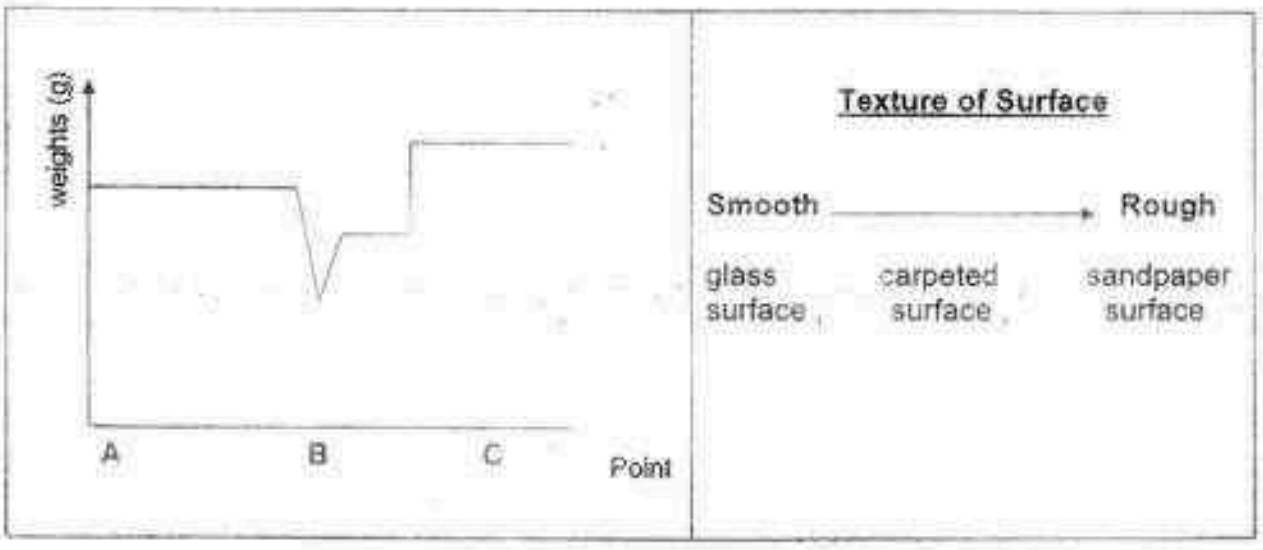
41. Tom set up the experiment below to find out if the type of surface would affect the amount of weights needed to move a toy car. He covered parts X, Y and Z of the table with three different types of surfaces and measured the amount of weights needed to move the toy car from point A to point B and finally to point C.



Tom recorded his observations below.



Based on the information above, answer the following questions:

(a) Identify the type of surfaces that **parts X, Y and Z** could have been covered with in the experiment above. [1]

Type of Surface	Parts of the Table
glass	
carpeted	
sandpaper	

continued on next page

Score	1

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continued from previous page

(b) Tom discovered that fewer weights were needed to move the toy car when he poured some water on the glass surface. Explain why this was so. [1]

_____

_____

(c) Name the force(s) acting on the toy car when it was moving. [1]

_____

_____

Score	2

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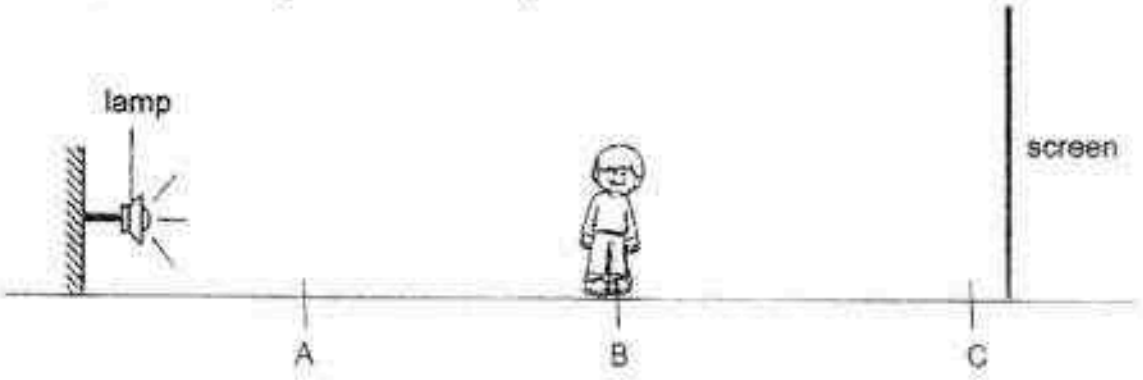
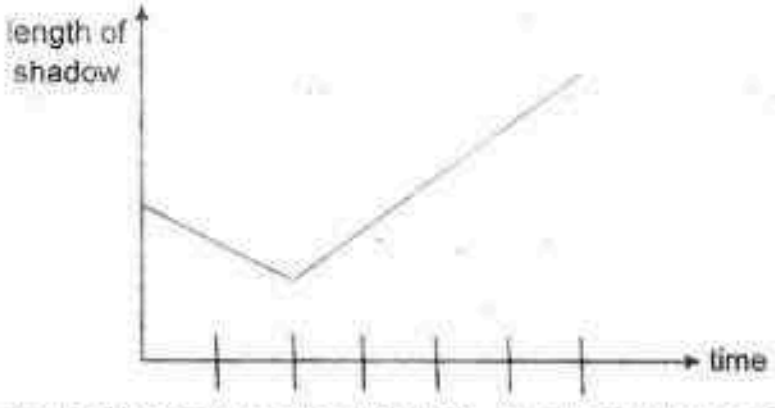
42. Jerry was standing in front of a lamp in a dark room as shown below.



(a) State a property of light resulting in Jerry's shadow to be formed on the screen? [1]

_____

Jerry was standing at Position B and he walked in a straight line between Positions A and C. The distance between A and B is the same as the distance between B and C.
The graph below shows how the length of Jerry's shadow on the screen changed during his walk.



(b) Fill in the boxes below to show the path Jerry took between Position A and Position C that caused the change in the length of his shadow. [1]

Jerry walked from ☐ to ☐ and then from ☐ to ☐

(c) Explain why Jerry was able to see the lamp in the dark. [1]

_____

Score	3

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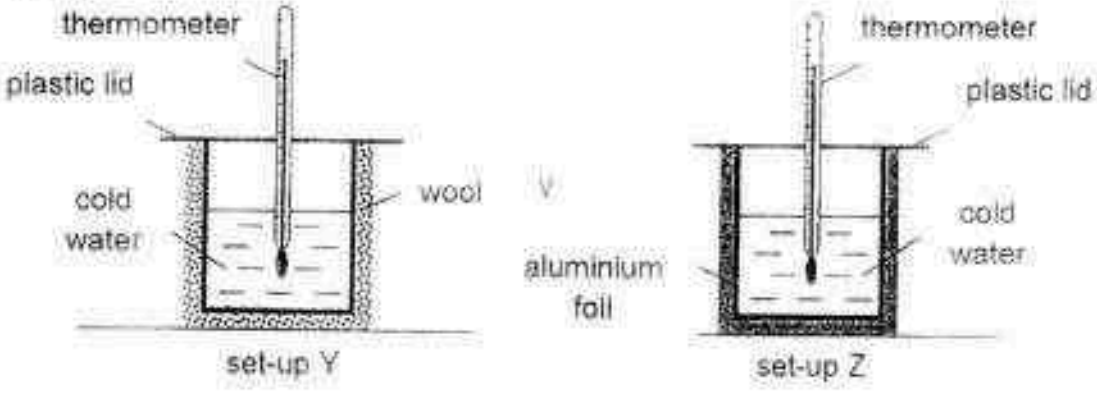
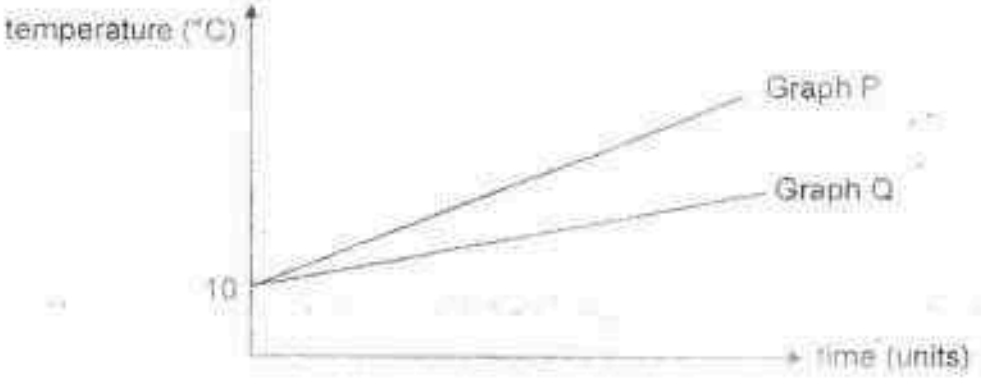
43. Amanda conducted an experiment using set-ups Y and Z as shown below. She wrapped a glass beaker with wool and another identical glass beaker with aluminium foil. She filled both beakers with the same volume of cold water at 10 °C.



Amanda measured the temperature of the water at different times and plotted her results in the graph shown.



(a) Based on the graph above, what is the relationship between the temperature of the water and time? [1]

(b) Which graph, P or Q, shows the change in the temperature of water in set-up Z after some time? Give a reason for your answer. [1]

Score 2

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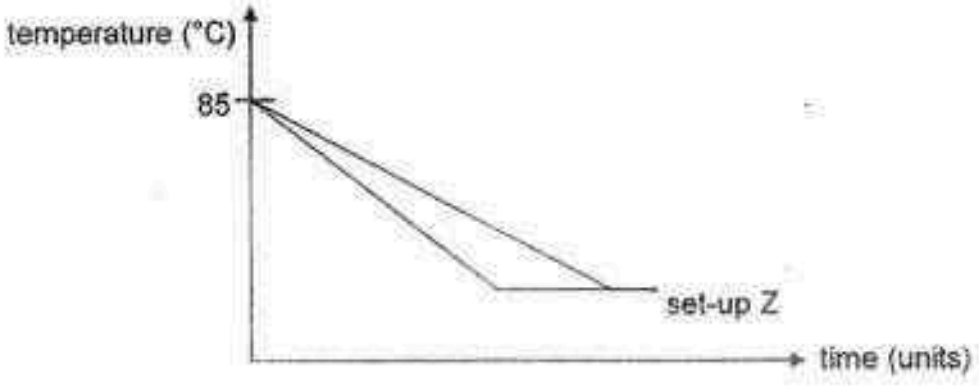
continued from previous page

(c) **Next, Amanda used hot water at 85 °C in the glass beakers of set-ups Y and Z instead.**

Complete the graph below to show the change in temperature of the water in set-up Y. Label your graph set-up Y. [1]



Score	1

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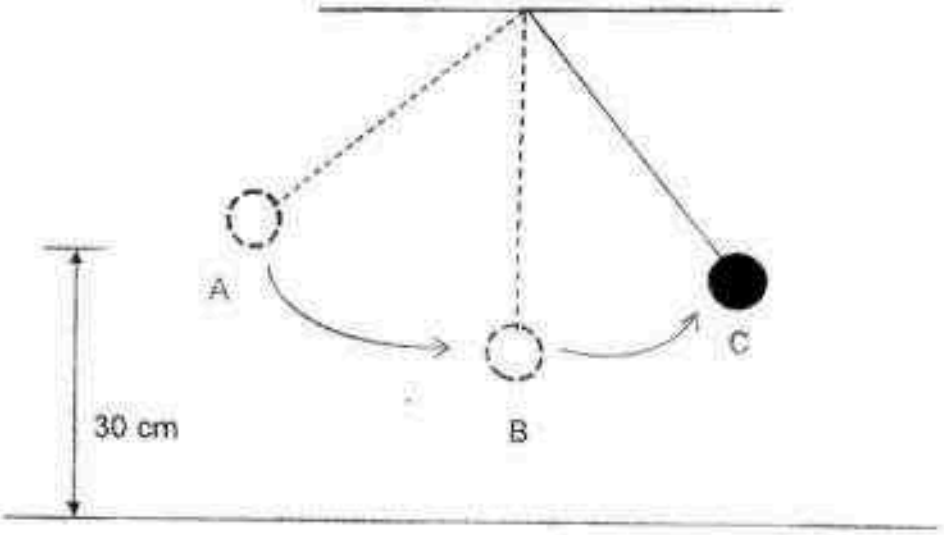
44. A metal ball which is tied to a string swings from A to B and then to C as shown below.



(a) Describe the energy change for the metal ball as it moved from position A to B and then to C. [2]

(b) At which position, A, B or C, did the ball have the greatest kinetic energy and the least gravitational potential energy? [1]

The ball had the greatest kinetic energy at : _____

The ball had the least gravitational potential energy at : _____

(c) Why was the height of the ball at C less than 30 cm? [1]

Score 4

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EXAM PAPER 2016

SCHOOL : RAFFLES GIRLS'

SUBJECT : SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	2	1	2	3	2	4	1	3	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	2	2	3	3	2	1	1	2	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	2	2	4	4	4	3	2	3	3

31)a)Gray should measure the amount of time the paper flyer took to fall to the ground.

b)The paper flyer used had to be kept constant.

c)The paper flyer must be kept constant as ome with a greater mass would take a shorter time to reach the ground due to grevitional force acting on it and one with a larger exposed surface area would take a longer time to reach the ground due to air resistance acting on it.

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32)a)X

Y

b)When they exercised, their miscle cells required more energy,which was released during respiration, a process that requires oxygen and digested food. Hence, the heart needs to pump faster so that blood containing oxygen and digested food can reach the body cells at a faster rate, there by increasing the rate of respiration and the rate at which energy is released increases. Met abollic waste products such as carbin dioxide are also removed by the blood as a faster rate.Hence, their pulse rate increased.

33)B / The shoot of the plant contains chloroplasts as it is the only part of the plant exposed to light,hence it will under go photosynthesis to trap light to make food for the plant. Since cell B also has chloroplasts, cell B is taken from the shoot.

A / The root is under ground and is not exposed to light. Hence, it does not need to have chloroplast to trap light to make food for the plant through photosynthesis. Since cell A also does not contain chloroplasts, cell A is taken from the root.

34)a)the number of fruit flies thatreproduced exceeded the number of fruit flies that died in Alexis' experiment while in Tom's experiment, the number of fruit flies that died exceeded the rate of reproduction.

b)The live plant took in the water in the damp sol for photosynthesis and released water vapour through the stomata during transpiration. The warmer water vapour came into contact with the cooler inner surface of the container, lost heat and condensed into water droplets that driped back into the container. This is how the fruit flies have a constant supply of water from the damp soil, When the plant photosynthesis it take in carbon dioxide and gives out oxygen, which the fruit flies take in for respiration. This is how the fruit flies have a constant supply of oxygen.

c)The banana had been fully fed on by the fruit flies and there was no more banana for the fruit files to feed on,causing many of the flies to die.

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35)a)U ← T → K
V

b)organism V.

c)organism T.

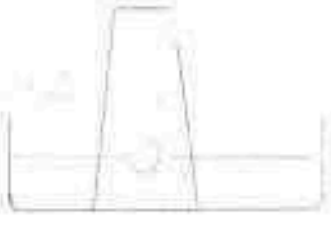
36)a)There is more stomata on the upper surfaces of the leaves of this plant than on the lower surfaces of the leaves.

b)Leaf D acts as a control set-up to compare and ensure that any change in the mass of the leaves A, B, C and D are due solely to the oil on the surfaces of the leaves.

37)a)i)Air takes up space in the container and cannot escape.

ii)Air can be compressed so a little water netered the galss to take up the space that was previously occupied air.

b)



38)a)Q P

b)The light sensor receives light from the bulb and replected light from the white card. Hence the light sensor reading in set-up will be higher.

c)The amount of light detected by the light sensor will decrease.

39)a)Siti. The horseshoe magnet's magnetic strength is strongest at its poles, hence the most number of iron nails will be attracted to its poles, like shown in Siti's results, where A and E attracted the most number of iron nails.

b)No. The copper plate is not a magnetic abject, hence the magnetised U-shaped iron rod will not attract it and the hammer will not move upwards and will not hit the gong.

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39)c)Increase the number coils around the magnetised U-shaped iron rod.

40)a) 3 5 X

b)June could repeat the experiment two more times and calculate the average height the toy jumped to when the different number of elastic bands were used.

41)a)Y X Z

b)Water is a lubricant, hence the amount of friction between the glass surface and the wheels of the toy car that opposed its motion decreased, hence less weight were needed to overcome less friction.

c)Frictional force, gravitational force and the pulling force exerted the weight.

42)a)Light travels in a straight line.

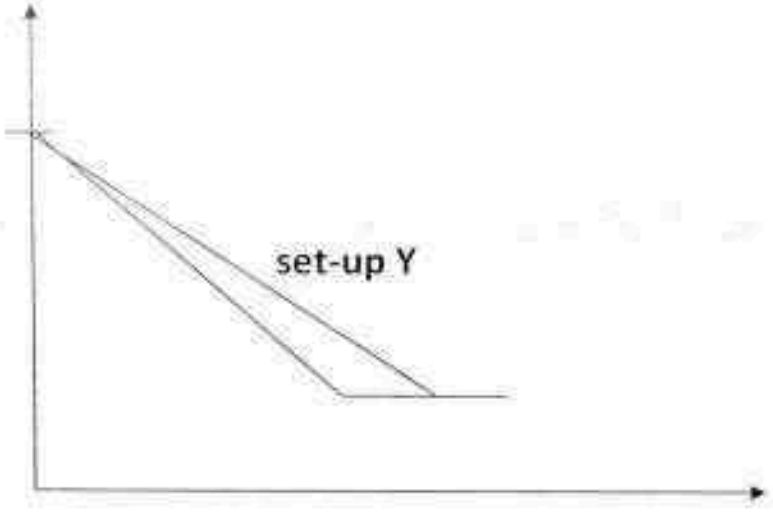
b)Jerry walked from B to C and then from C to A

c)The lamp gave out light which entered Jerry's eyes.

43)a)As the time passed increases, the temperature of the water increases.

b)P. Aluminium foils was better conductor of heat , so the cold water plains heat from the surrounding faster.

c)



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44)a)When the ball moves from A to B, gravitational potential energy os converted to kinetic energy. When the ball moves from B to C , kinetic energy is converted to gravitational potential energy.

b)B

B

c)As the ball moved from A to C, other than gravitational potential energy, the kinetic energy of the ball also converted to other forms of energy such as heat and sound energy. Thus, there was not enough kinetic energy to be converted to the original amount of gravitational potential energy. Thus, the height of the ball at C was less than 30cm.

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2016

BOOKLET A

Date : 4th May 2016
Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 24 printed pages including this cover page.

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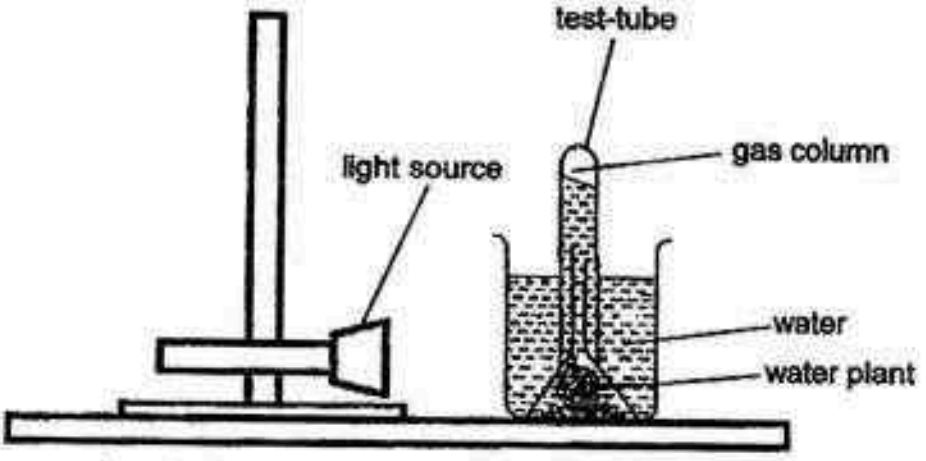
Section A (30 x 2 marks = 60 marks)
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

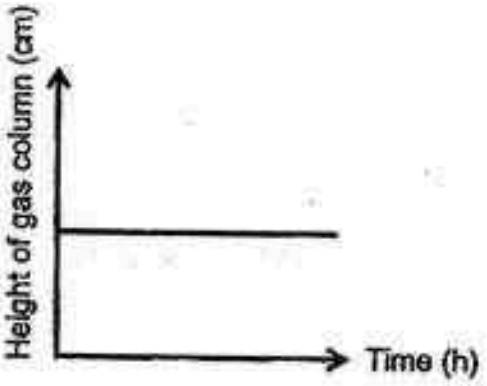
1. Study the set-up below.



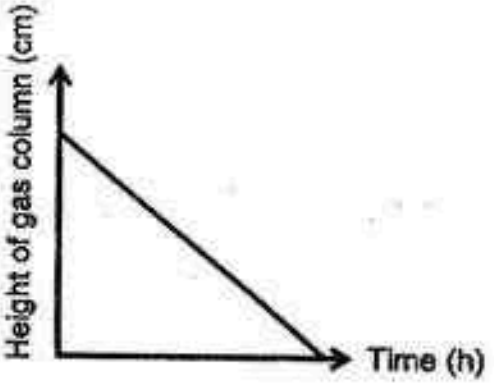
Bubbles were forming inside the test tube, forming a gas column.

Which one of the following graphs correctly shows the height of the gas column in the test-tube over a period of 2 hours?

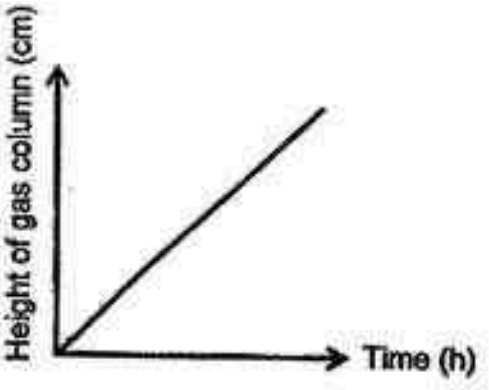
(1)



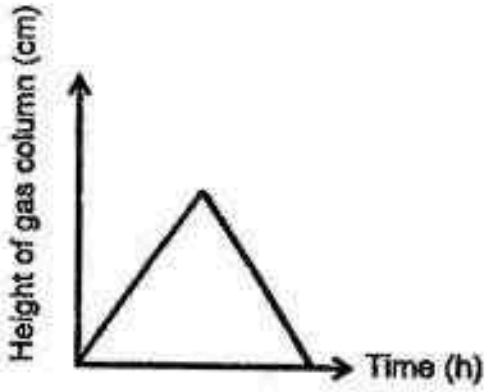
(2)



(3)



(4)



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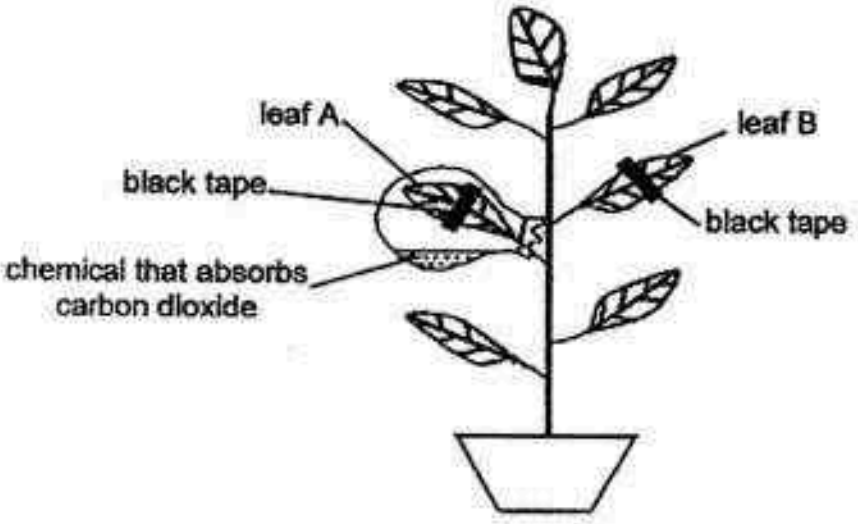
2. **Study the diagram below.**



A potted plant was left in a dark room for 12 hours before being placed under the sun for 6 hours. The leaves were then decolourised and tested for starch using iodine solution.

Which of the following correctly shows the appearance of iodine on the leaves at the end of the experiment?

	Leaf A	Leaf B
(1)	yellowish-brown, dark blue	dark blue, yellowish-brown
(2)	yellowish-brown	yellowish-brown, dark blue
(3)	dark blue, yellowish-brown	dark blue
(4)	dark blue	dark blue

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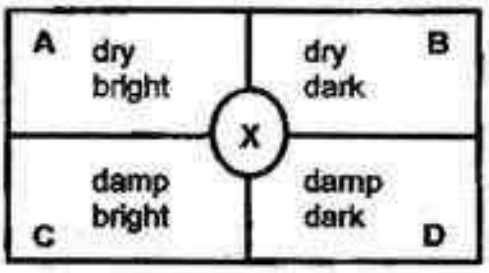
3. Which of the following are necessary for photosynthesis to take place?

A water
B oxygen
C sunlight
D water vapour

(1) A and B only
(2) A and C only
(3) C and D only
(4) B, C and D only

4. Martin conducted an experiment to find out the preferred living conditions of Animal Z. The diagram below shows a closed glass box divided into four equal parts, A, B, C and D. Each part has a different condition.



top view of box

Martin put 16 Animal Z in the centre (X). The result below shows the number of Animal Z in different parts of the glass box after three hours.

	A	B	C	D
Number of Animal Z after three hours	0	8	0	8

Which one of the following reasons can be concluded about the preferred habitat of Animal Z based on the results above?

(1) Animal Z is only affected by the amount of light.
(2) Animal Z requires water to survive in the habitat.
(3) Animal Z survives best in a dry and dark environment.
(4) Animal Z can only survive in a dark and damp environment.

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5. Some pupils set up a fish tank with two female fish X. They wanted to increase the population of fish X and suggested the following ways.



Pupil A	Add two male fish X.
Pupil B	Add two more female fish X.
Pupil C	Add more water plants and fish food.
Pupil D	Fix a light source beside the fish tank to be switched on at night.

Which of the following pupils' suggestions would most likely help to increase the population of fish X after some time?

(1) Pupils A and B only
(2) Pupils C and D only
(3) Pupils A, B and C only
(4) Pupils A, B, C and D only

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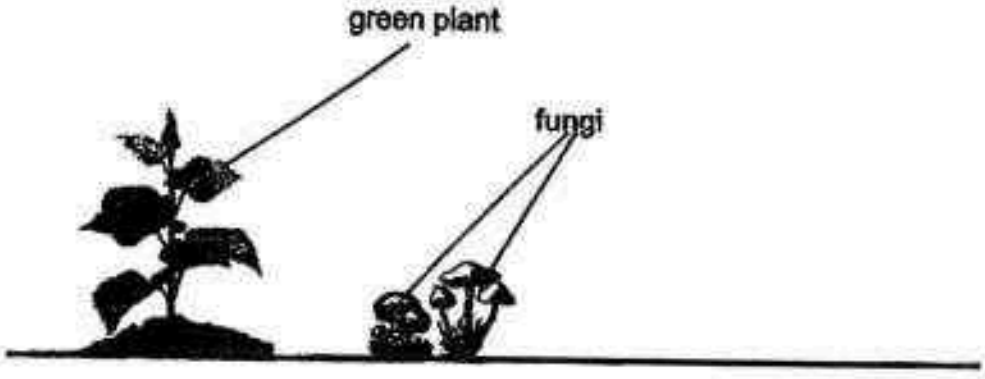
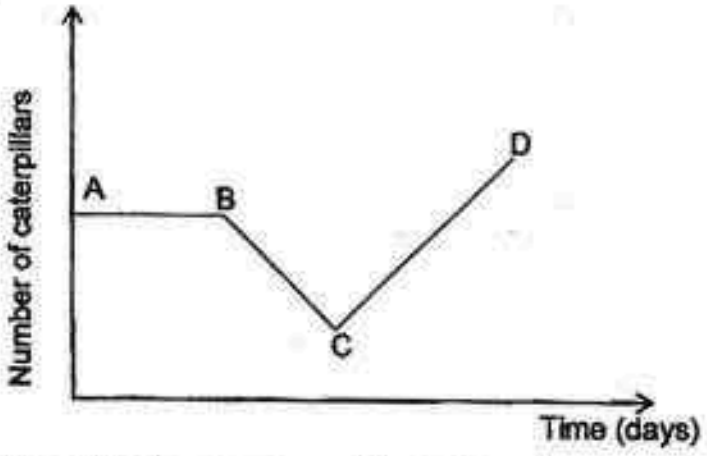
6. Xing Yan went to a park and observed that there were some fungi growing near a green plant.



Which of the following states the negative impact that the presence of fungi has on the green plant?

(1) They compete with the plant for space and water.
(2) They help in the decaying of dead organisms near the plant.
(3) They give out carbon dioxide during decomposition which the plant could use to make food.
(4) They break down waste matter into simpler substances which the plant could use as mineral salts.

7. The graph below shows the change in the number of caterpillars in a garden.



Which of the following events could be taking place from B to C?

A Some caterpillars were eaten by birds.
B Some caterpillars developed into pupae.
C Some caterpillars hatched from the eggs.
D Some caterpillars were killed by pesticides.

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) B , C and D only

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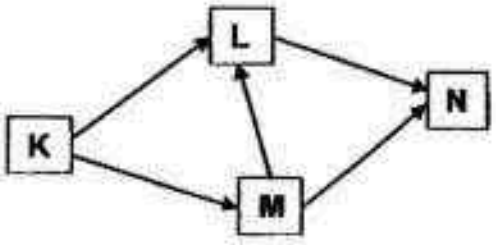
8. The food web below shows the relationship among the organisms K, L, M and N in a habitat.



Organism X was then introduced into the habitat. It fed on only one type of organism in the food web.

After one month, all the other organisms decreased in number.

Which organism did X most likely feed on?

(1) K
(2) L
(3) M
(4) N

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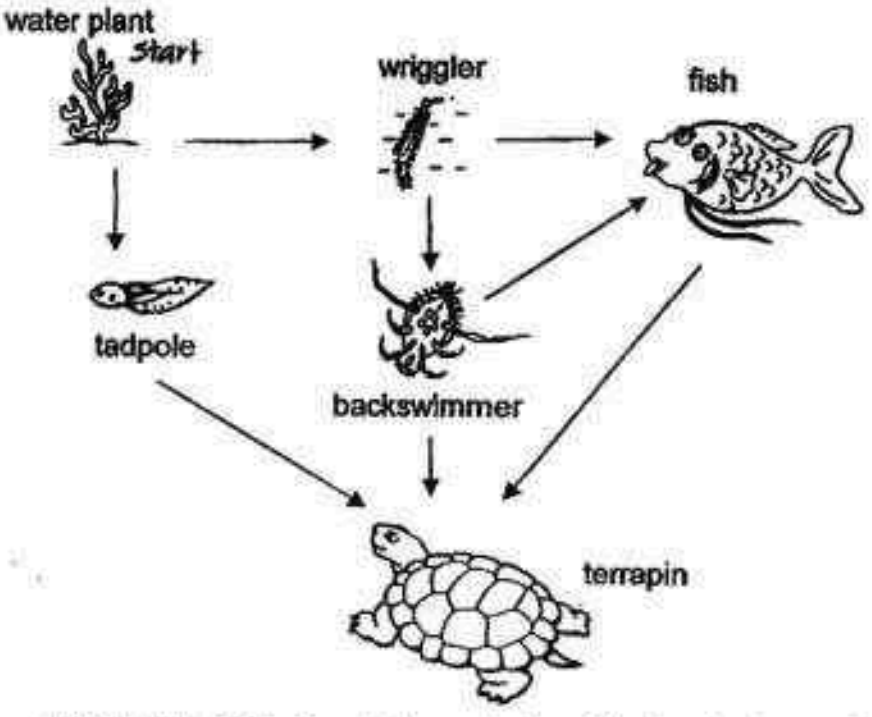
The food web below shows the relationship between the organisms found in a pond community in the park. Use the food web below to answer questions 9 and 10.



9. Which of the following statements about the food web are **false**?

A The tadpole is both a prey and a predator.
B There are only three food chains that could be formed from the food web.
C There are only two organisms which get their energy directly from the water plant.
D A decrease in the population of the water plants affects the populations of the wriggler and tadpole.

(1) A and B only
(2) A and D only
(3) B and C only
(4) B , C and D only

10. Which of the following states a direct impact on the organisms in the food web if there is an increase in the number of terrapins?

A The number of fish will increase.
B The number of tadpoles will decrease.
C The number of mosquitoes will increase in the park.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A , B and C

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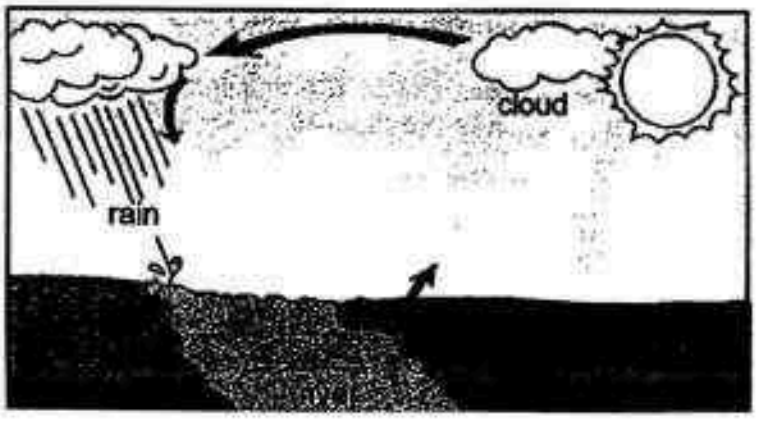
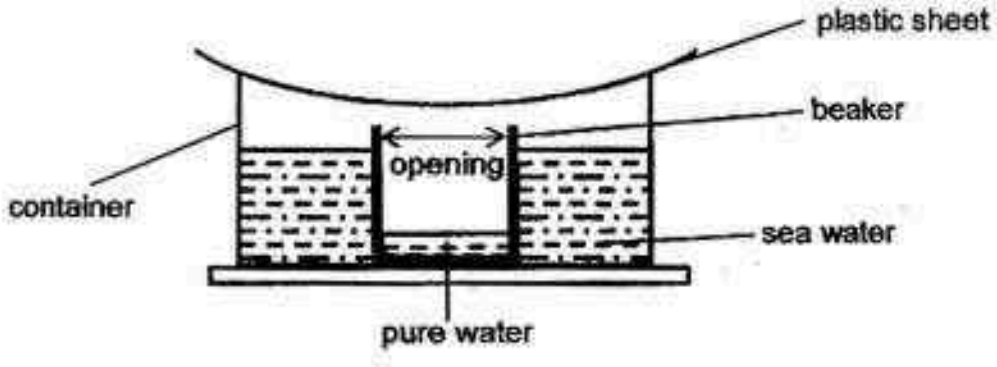
11. The diagram below shows a water cycle.



How many times does water undergo a change of state in 1 complete cycle?

(1) 1
(2) 2
(3) 3
(4) 4

12. Jason made use of the set-up below to collect pure water in the beaker. He managed to collect 50ml of pure water in 1 hour.



Which of the following methods would enable him to collect **more** water in the beaker within 1 hour?

A Heat up the sea water.
B Use a beaker with a smaller opening.
C Pour more sea water into the container.
D Place some ice cubes on top of the plastic sheet.

(1) A and D only
(2) B and C only
(3) A, B and D only
(4) B, C and D only

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13. Martin carried out an investigation on four similar flowers, A, B, C and D, to find out if a fruit can be developed when certain parts of a flower are removed. The four flowers contain both male and female parts.

In the table below, a cross (X) in the box indicates that the part had been removed from each of the flowers.

	Flower			
	A	B	C	D
Petals	X		X	X
Male parts	X			
Female parts		X		X

Which flower(s) will still be able to become a fruit if it is pollinated?

(1) C only
(2) A and C only
(3) B and D only
(4) A, B and D only

14. The diagram below shows plant A in the park. Tom made some notes in his diary after observing plant A.



Plant A

Notes in his diary:
- green leaves
- spore bags

Which of the following statements are **true** about plant A?

A It produces fruits.
B It is not able to produce flowers.
C It is able to carry out photosynthesis.
D It disperses its spores with the help of insects or animals only.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B, C and D only

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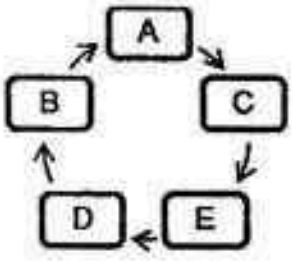
15. The statements below describe the stages of the sexual reproduction in a flowering plant.

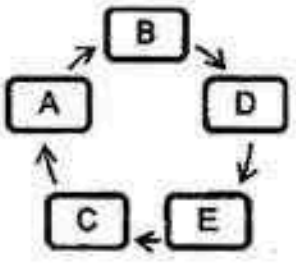
A	The ovules develop into seeds.
B	The anther releases pollen grains.
C	The pollen grains land on the stigma.
D	The male cell from the pollen grain travels to the ovary.
E	The male cell of the pollen grain fuses with the female cell.

Which one of the following diagrams shows the stages in the correct order?

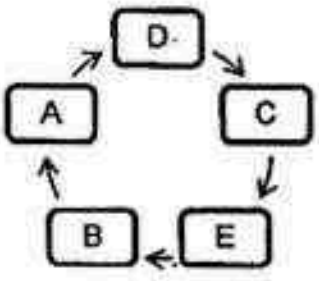
(1)



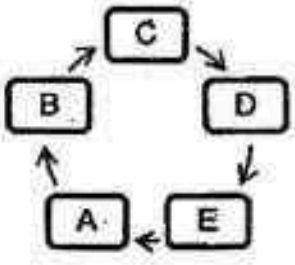
(2)



(3)



(4)



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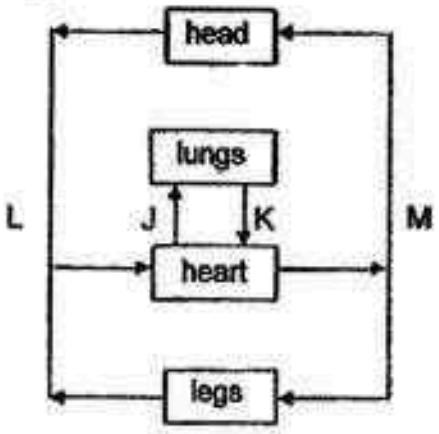
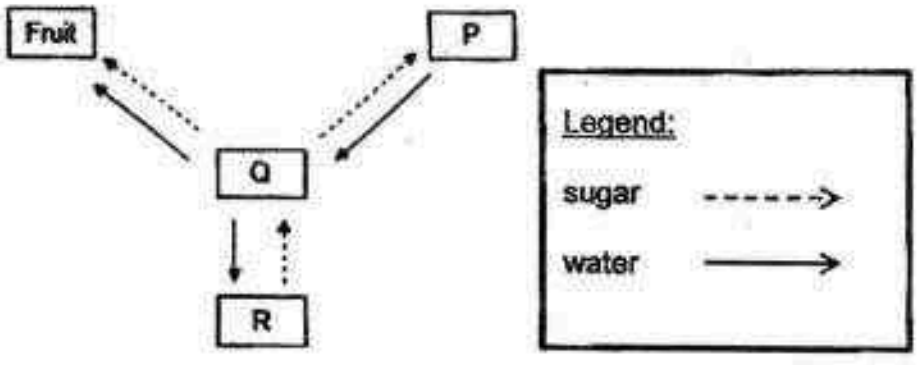
16. The diagram below represents the human circulatory system. The arrows represent blood vessels carrying blood to and from the head, lungs, heart and legs.



Which one of the following correctly matches the amount of oxygen in the blood with the blood vessels that are carrying it?

	More oxygen in the blood	Less oxygen in the blood
(1)	J and K	L and M
(2)	J and M	K and L
(3)	K and M	J and L
(4)	K and L	J and M

17. The diagram below shows how sugar and water are transported to and from different parts of a plant.



Which one of the following correctly shows the parts of the plant that are represented by P, Q and R?

	P	Q	R
(1)	stem	leaves	roots
(2)	roots	stem	leaves
(3)	roots	leaves	stem
(4)	leaves	roots	stem

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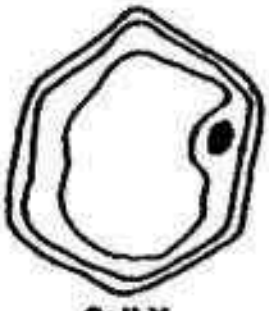
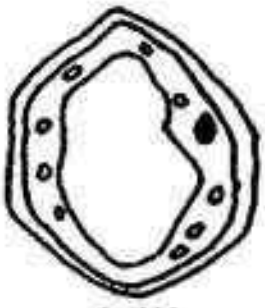
18. Four pupils, A, B, C and D, examined the following two types of cells, X and Y, under a microscope.



Cell X



Cell Y

They recorded their observations in a table as shown below.

A tick (✓) indicated the presence of the cell part.

Pupil	Cell	Cell wall	Cytoplasm	Cell membrane	Chloroplast
A	X		✓		✓
B	Y	✓		✓	✓
C	X	✓	✓	✓	
D	Y	✓	✓	✓	✓

Which pupils had made the **correct** observations about the two cells, X and Y?

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) B, C and D only

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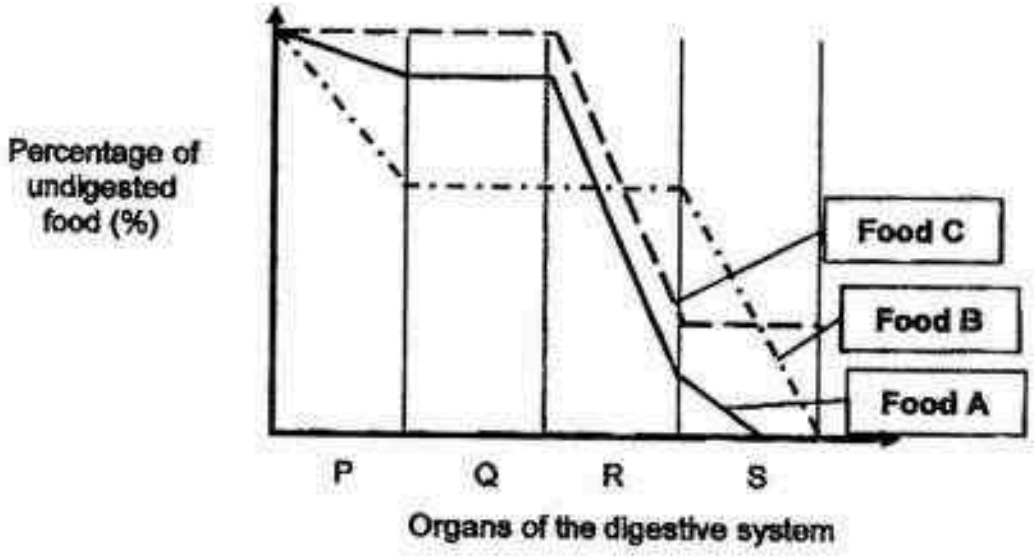
19. Some scientists wanted to study the digestive system of animal X. They fed animal X with the same amount of different food, A, B and C.

Animal X's digestive system was checked at each organ to find out how much of the food remains to be digested.

The results were plotted in the line graph as shown below.



Based on the above results, what can the scientists conclude at the end of the experiment?

(1) Organ R is the most effective at digestion.
(2) Food A is the most difficult to digest by Animal X.
(3) Each organ of the digestive system digests all three types of food.
(4) The type of food Animal X ate affects the rate of digestion of food.

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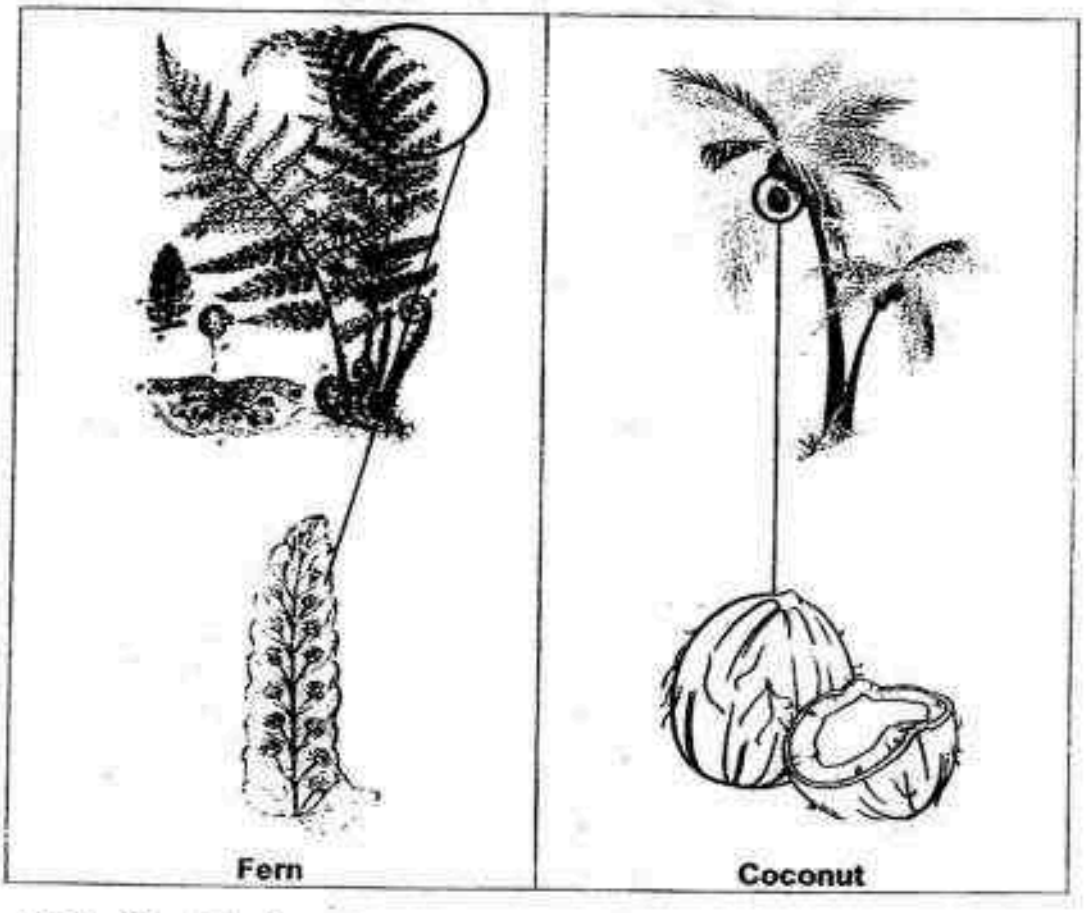
20. The pictures below show two plants.



Which of the following statements are **true** about both plants?

A Both of them can produce flowers.
B Both of their leaves have chlorophyll.
C The fern has spores while the coconut has seeds.
D The fern may grow on trees while the coconut grows on soil.

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) B, C and D only

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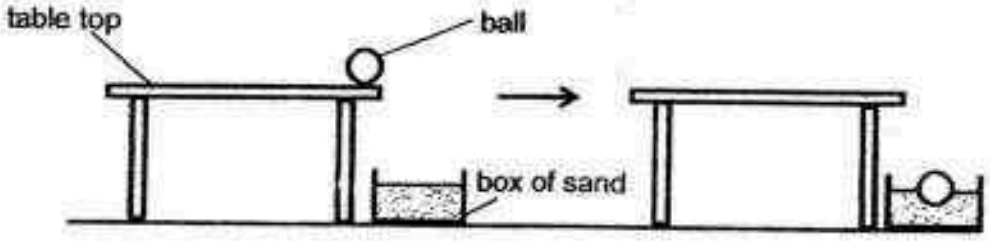
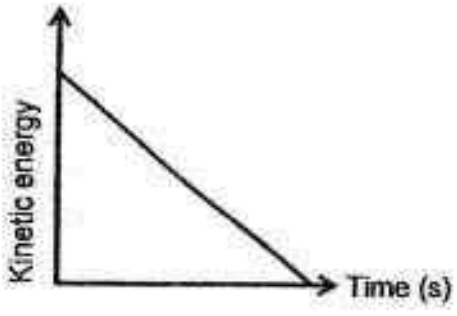
21. A ball was pushed off a table top and landed in a box filled with sand as shown in the diagram below.

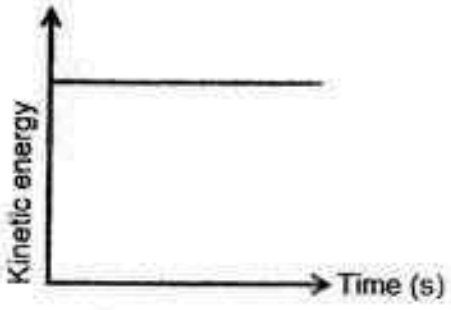


Which of the following graphs correctly shows how the kinetic energy of the ball changed from the time it was pushed off the table to the time it landed in the box of sand?

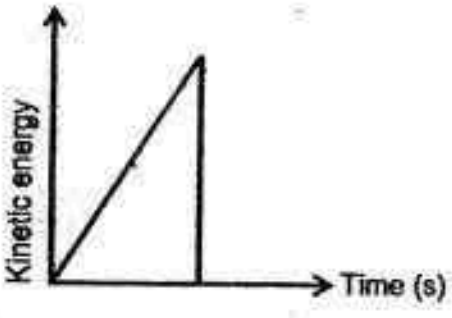
(1)



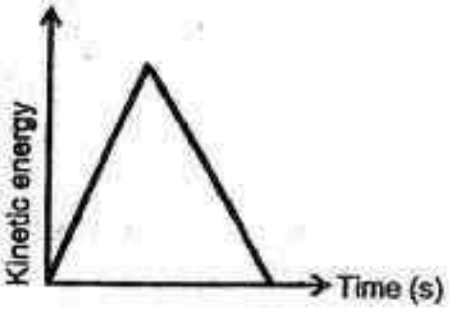
(2)



(3)



(4)



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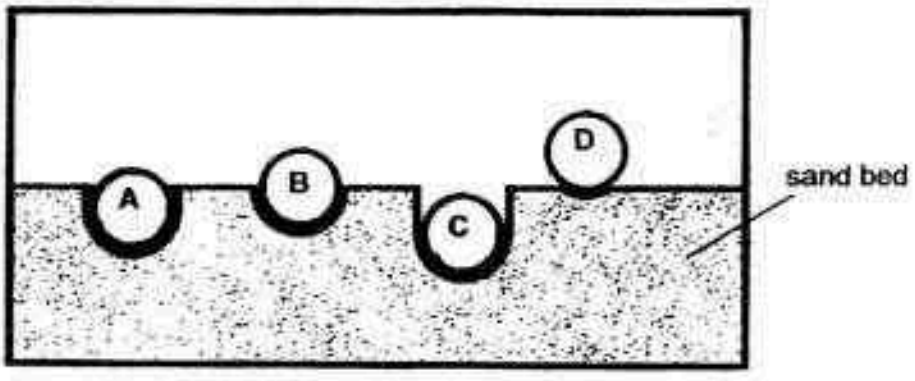
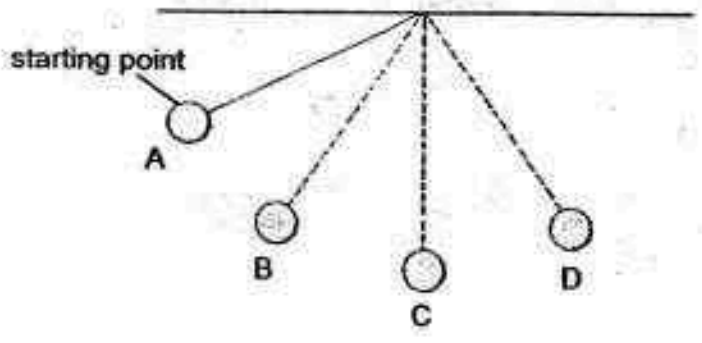
22. Four identical marbles were **dropped from different heights and landed** onto a sand bed as **shown in the diagram below.**



Which of the following shows the correct arrangement of the marbles based on the height from which they were dropped?

	Highest →			Lowest
(1)	A	B	C	D
(2)	B	C	A	D
(3)	C	A	B	D
(4)	D	B	A	C

23. A pendulum was released from the starting point as shown in the diagram below.



At which point did the pendulum possess the most kinetic energy?

(1) A
(2) B
(3) C
(4) D

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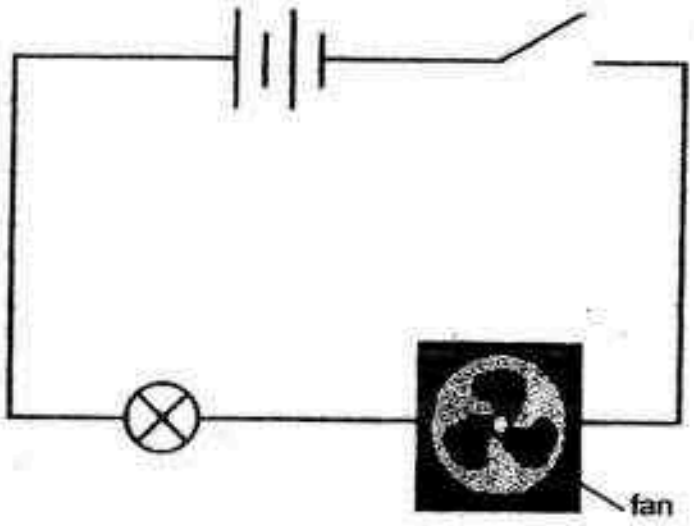
24. Study the set-up below.



Which of the following correctly shows the main energy conversion of the above set-up when the switch is closed?

	Battery		Wire		Bulb		Fan
(1)	Electrical energy	→	Electrical energy	→	Heat energy	+	Kinetic energy
(2)	Chemical potential energy	→	Electrical energy	→	Heat energy	→	Kinetic energy
(3)	Electrical energy	→	Electrical energy	→	Light energy	+	Heat energy
(4)	Chemical potential energy	→	Electrical energy	→	Light energy	+	Kinetic energy

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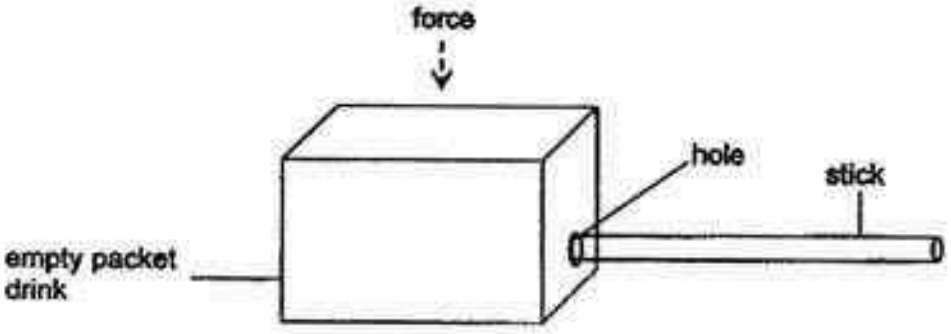
25. The diagram below shows an empty packet drink and a stick. When a force is applied on the empty packet drink, the stick pops out.



Which of the following statements can be concluded based on the experiment?

(1) The air in the packet expands and pushes the stick out.
(2) The air in the packet exerts a force on the stick and forces it out.
(3) The air outside the packet exerts a force on the stick and pulls it out.
(4) The hole in the packet becomes slightly bigger and pushes the stick out.

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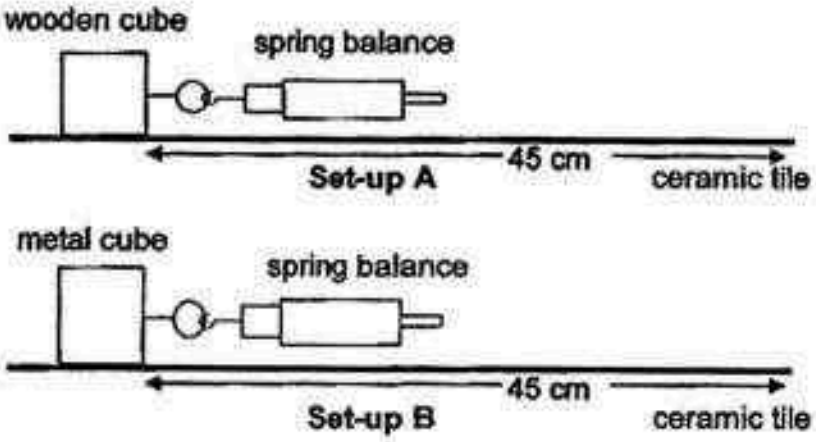
26. Mike carries out an experiment to find out how the type of surface affects the amount of force needed to move a wooden cube over a certain distance as shown in the set-ups below.



However, he was told that he should change two of the variables in set-up B.

Which one of the following shows the correct change in the two variables to be done in set-up B?

	Variable 1	Variable 2
(1)	Remove spring balance	Use a shorter distance of 35 cm
(2)	Change metal cube to a wooden cube	Replace ceramic tile with sandpaper
(3)	Use a smaller metal cube	Use a shorter distance of 35 cm
(4)	Remove spring balance	Replace ceramic tile with sandpaper

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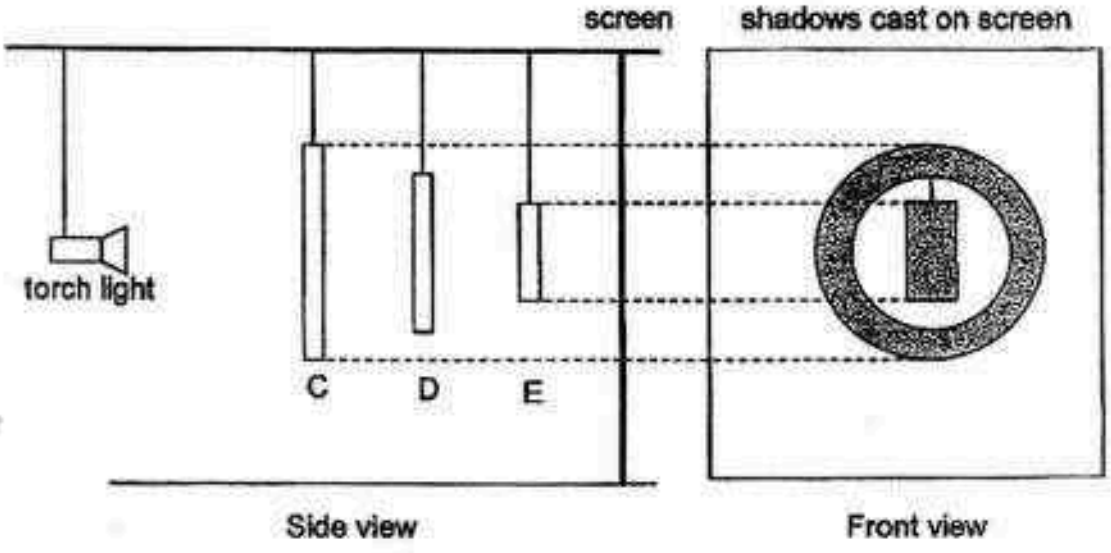
27. Justin used 3 different materials, C, D and E, to make 3 cut-outs of different shapes and heights but of the same thickness.

He hung the 3 cut-outs from a support between a screen and a torchlight. When he switched on the torchlight, the shadows cast on the screen are shown below.[The diagrams are drawn to scale]



Which one of the following best represents the materials, C, D and E, based on the observation of the shadows formed on the screen?

	Material C	Material D	Material E
(1)	cardboard	wood	tracing paper
(2)	wood	clear glass	aluminium
(3)	iron	cardboard	frosted glass
(4)	clear plastic	frosted glass	clear glass

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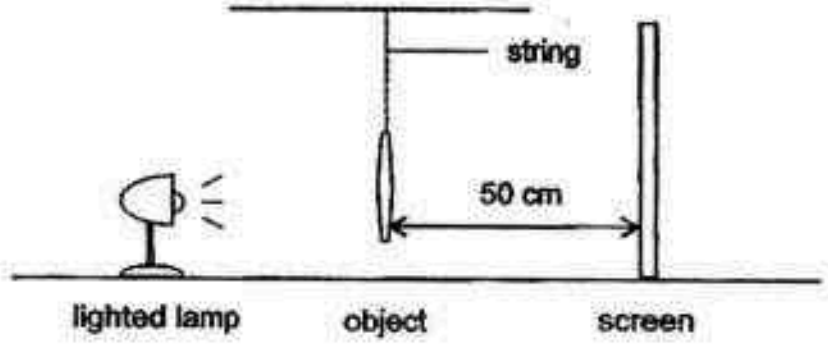
28. The following experiment was set in a darkened room.



The distance between the lighted lamp and the object remained unchanged. The distance between the object and the screen was changed and the size of the shadow on the screen was measured.

Which one of the following results shows the correct relationship?

(1)

Distance between object and screen (cm)	Size of shadow of object (cm)
50	55
100	68
150	81

(2)

Distance between object and screen (cm)	Size of shadow of object (cm)
50	81
100	68
150	55

(3)

Distance between object and screen (cm)	Size of shadow of object (cm)
50	68
100	68
150	68

(4)

Distance between object and screen (cm)	Size of shadow of object (cm)
50	81
100	55
150	68

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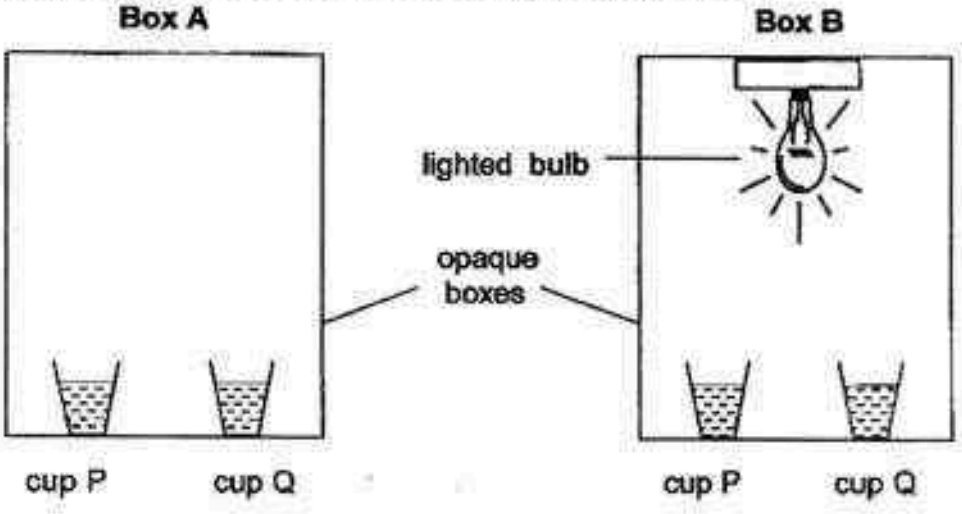
29. An experiment was conducted using 2 opaque boxes, A and B, as shown below. Box B had a bright bulb attached to the top. There were 2 open cups in each box. The cups were made of 2 different materials, P and Q. The 4 cups were each filled with 20ml of water at 1°C and left in the boxes for 6 hours at room temperature in a room.



The amount of water left in each cup was then compared and recorded in the table as shown below.

Box A		Box B	
Amount of water left in cup P (ml)	Amount of water left in cup Q (ml)	Amount of water left in cup P (ml)	Amount of water left in cup Q (ml)
19	19.5	16	18

Which of the following statements about the above experiment are **correct?**

A Cup P is a better conductor of heat than Cup Q.
B Cup Q in box A conducts more heat than Cup Q in box B.
C Water in cup P in box B has gained the most heat from the surroundings as compared to the other 3 cups.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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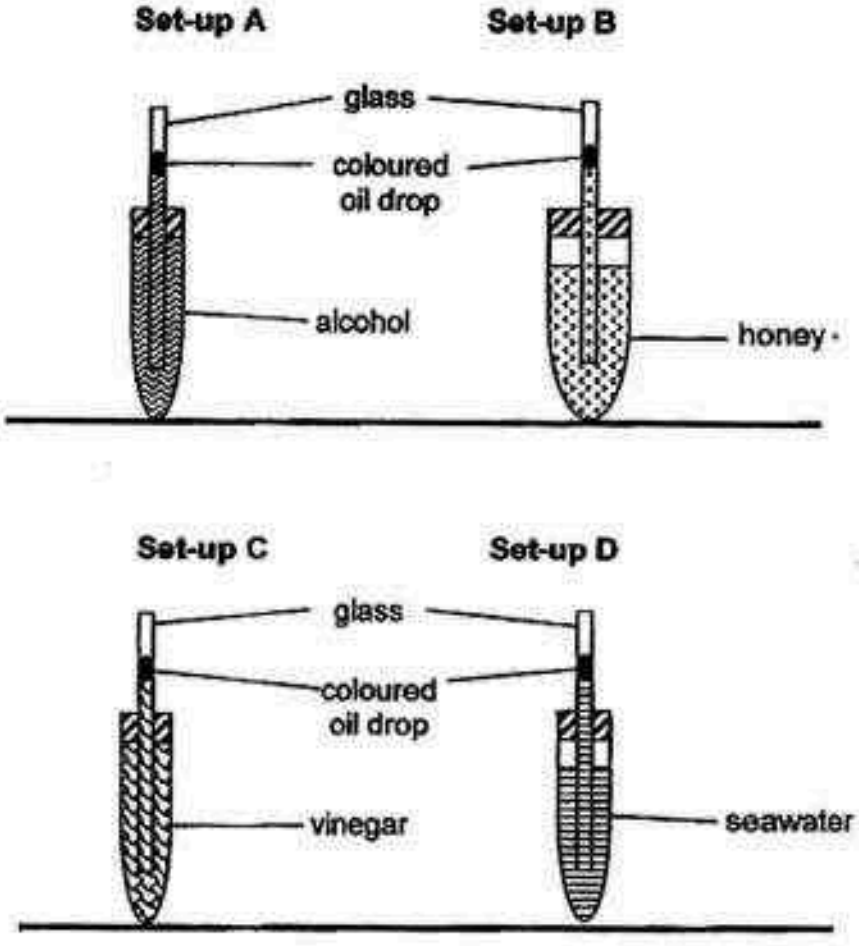
30. Samantha wanted to conduct an experiment to find out which liquid expanded the most when heated.



In order to conduct the experiment, Samantha planned to heat the set-ups over a bunsen burner and note the time taken for the coloured oil drop to move 5cm up the glass tube.

Which two of the above set-ups should she use to ensure a fair test?

(1) A and C
(2) A and D
(3) B and C
(4) B and D

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2016

BOOKLET B

Date : 4th May 2016

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		**60**
Booklet B :		**40**
Total :		**100**

Any query on marks awarded should be raised by 18th May 2016. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature: .....

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 15 printed pages including this cover page.

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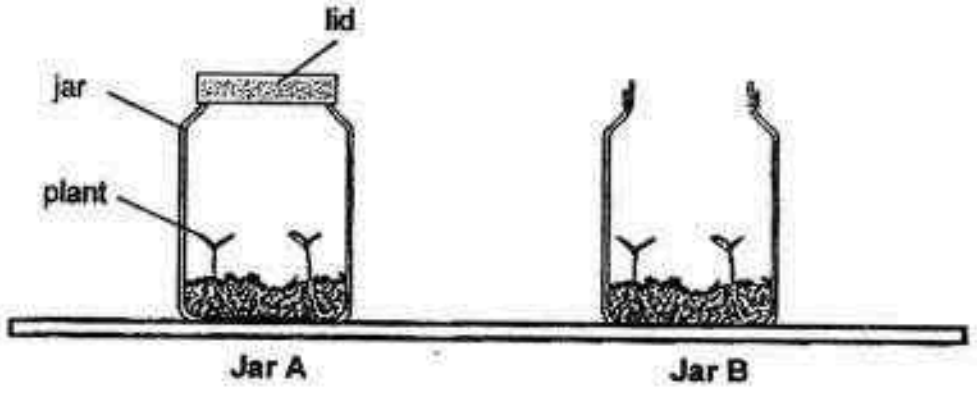
Section B (40 marks)
Write your answers to questions 31 to 44 in the spaces provided.

31. Jason grew similar plants in two different clear glass jars as shown in the diagram below.



The plants in both jars were watered with the same amount of water before placing them near the window. After a few weeks, the plants in one of the jars died.

(a) Which jar most likely contained the plants that died? Explain your answer [1]

_____

_____

_____

Two similar seeds were planted in a similar jar wrapped with a sheet of black paper. 50ml of water was poured into the jar before closing the lid. After a week; it was observed that the seedlings which had germinated from the seeds had died.

(b) Explain why the seedlings died after a week. [1]

_____

_____

_____

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32. A group of pupils studied the development of eggs of fish S. They placed 50 fertilised eggs in each fish tank. The water in each fish tank was kept at different temperature. The eggs were observed for a month and the number of hatched eggs in each fish tank was recorded in the table as shown below. RESULT

Fish tank	Temperature of water (°C)	Number of hatched eggs
1	20	0
2	22	5
3	24	21
4	26	47
5	28	15
6	30	9
7	32	0

(a) State the aim of the experiment. [1]

_____

_____

(b) Based on the results above, state the relationship between the temperature of water and the number of hatched eggs. [2]

_____

_____

_____

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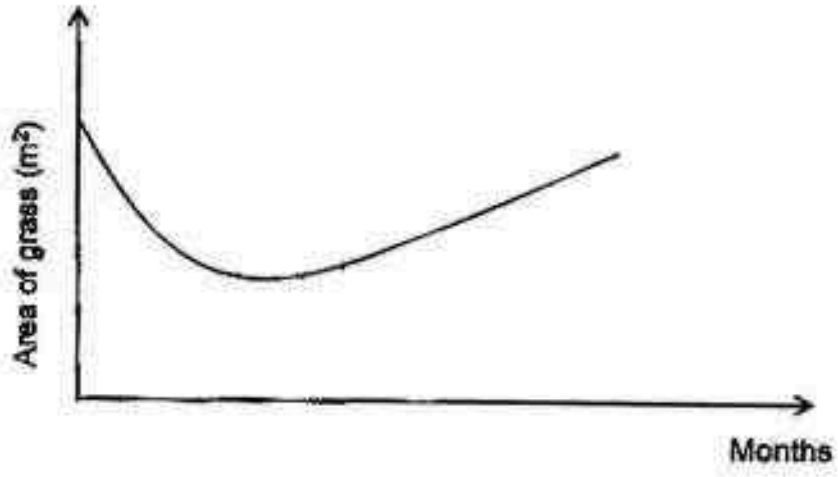
33. The food chain below shows the relationship of two organisms in a habitat.

Grass ⟶ B

The graph below shows the area of grass found in the habitat in the first six months.



(a) Organism C was introduced into the habitat after some time and the population of B decreased over time. **Mark with an 'X'** on the graph above to show when organism C was introduced to the habitat. [1]

State the food relationship between organisms B and C. [1]

_____

_____

(c) Organism D was then introduced into the habitat. It feeds on organism B only. Explain how this would affect the populations of grass and organism B. [2]

_____

_____

_____

_____

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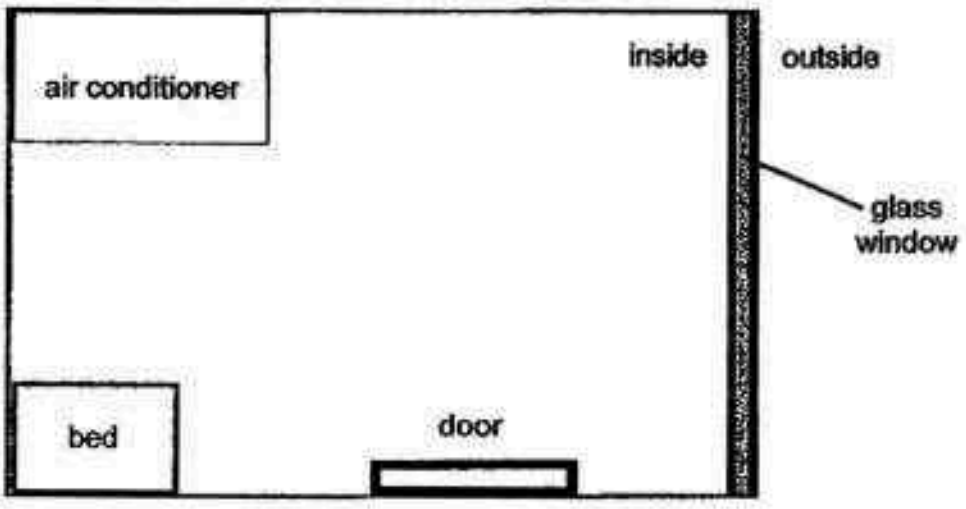
34. The diagram below shows the layout of Tom's room. The air-conditioner is used to keep the room cool.



Tom switched on the air-conditioner before he went to bed. He observed that there were tiny droplets of water on the glass window the next morning.

(a) Did the water droplets form on the inside or outside of the glass window? Explain your answer [2]

_____

_____

_____

(b) Without switching off the air conditioner and using only items found in the room, suggest a method to reduce the amount of water droplets forming on the glass window. Explain your answer. [2]

Method:

_____

Explanation:

_____

_____

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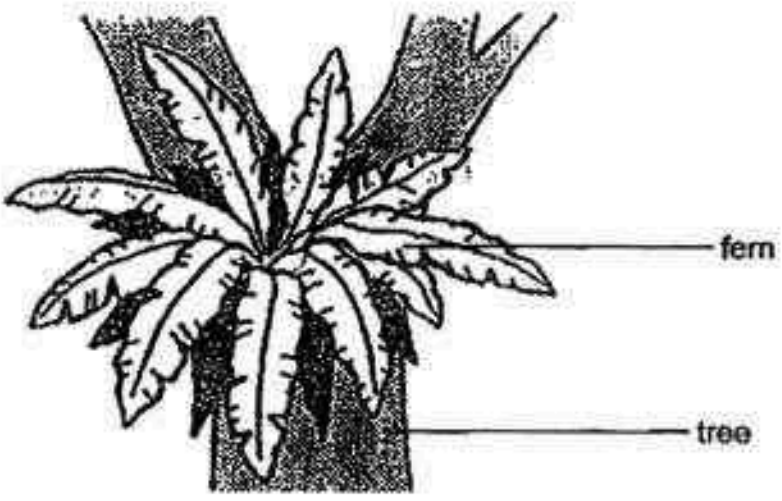
35. Yuxuan noticed that a fern had grown on the big tree outside his school after a few months.



(a) How did the fern manage to grow on the tree? [1]

_____

_____

(b) Explain how the tree is useful for the fern to grow well. [1]

_____

_____

_____

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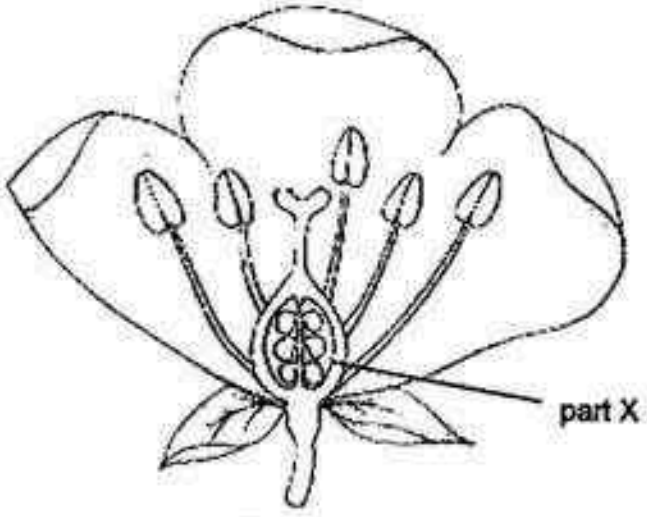
36. The diagram below shows the cross-section of flower Y.



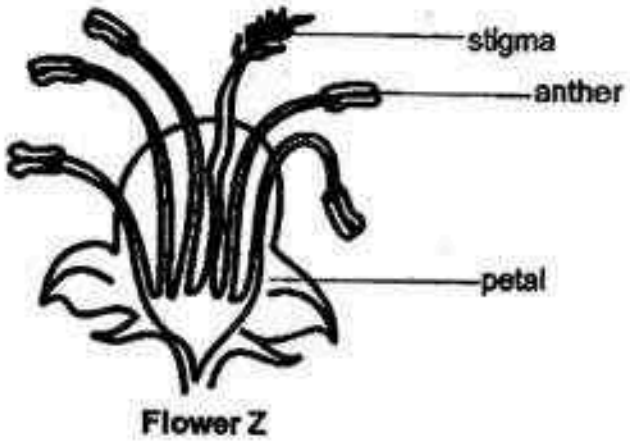
Flower Y

(a) It was observed that flower Y developed into a fruit even after its male parts had been removed. Explain how this was possible [1]

_____

_____

(b) The diagram below shows the cross-section of flower Z.



Flower Z

Based on the diagram above, state **one** characteristic of flower Z to show that it is pollinated by wind. [1]

_____

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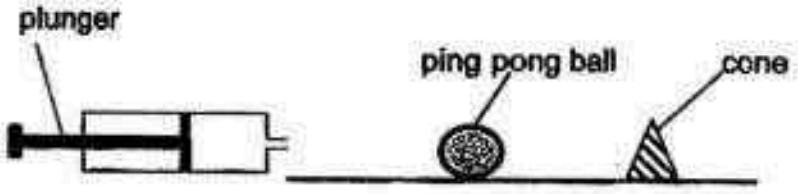
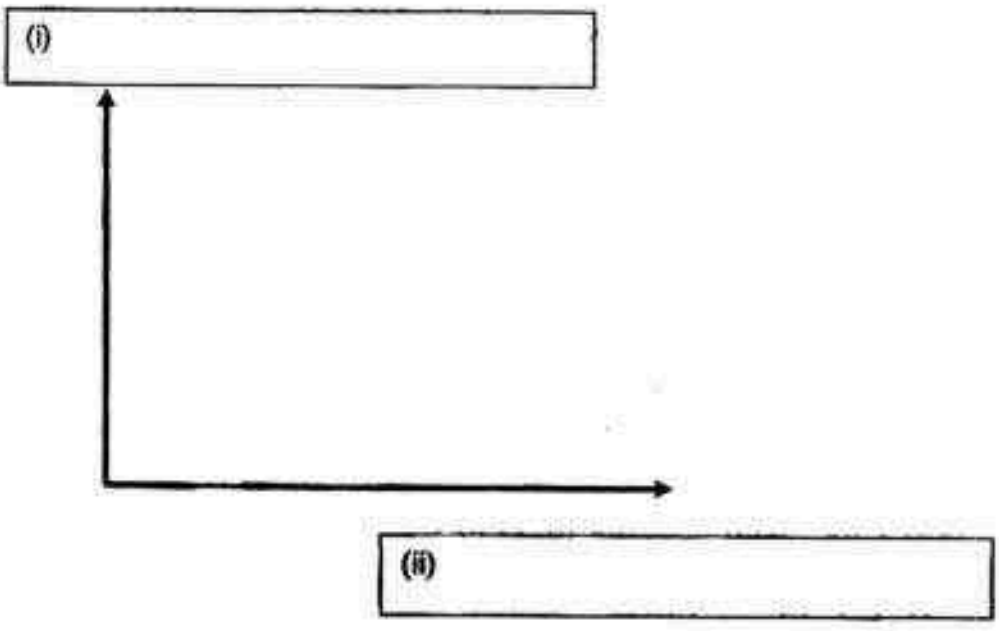
37. Luke conducted an experiment using a syringe to push air out when the plunger is pushed in. The force exerted by the air from the syringe would cause the ping pong ball to move along the table and hit a cone. He then measured the distance moved by the cone. The experiment was repeated by pulling the plunger to different distances.



(a) In the incomplete graph below, **fill in** the boxes for the 2 axes **and draw a line graph** to show the relationship between the force of air on the ball and the distance travelled by the cone when hit by the ping pong ball. [2]



(b) Explain why the experiment must be repeated at least 3 times for each distance. [1]

_____

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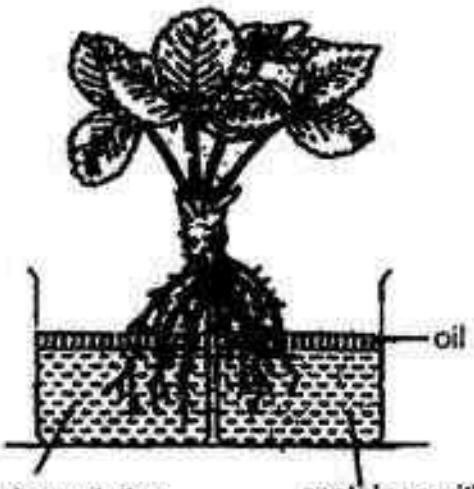
38. Study the diagram below.



Half of the roots of the plant were placed in each container which contained a red dye solution and clear water respectively. The set-ups were placed in an open area for 2 days.

(a) Describe and give a reason for the change in the amount of water in the 2 containers after 2 days. [1]

_____

_____

(b) It was observed that the stem and leaves of the plant turned red. Explain how these parts turned red. [1]

_____

_____

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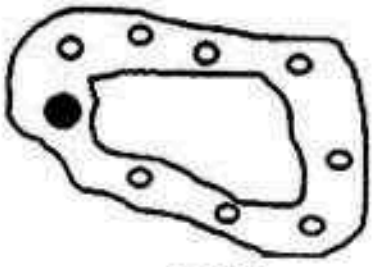
39. The diagram below shows cell X which is from a plant. One part had been removed from the cell.



Cell X

(a) State the cell part which had been removed. State the function of that cell part. [1]

_____

_____

(b) Tom's teacher used the nucleus from cell X to confirm that the cell came from a plant.

State the function of the nucleus which enables him to do so. [1]

_____

_____

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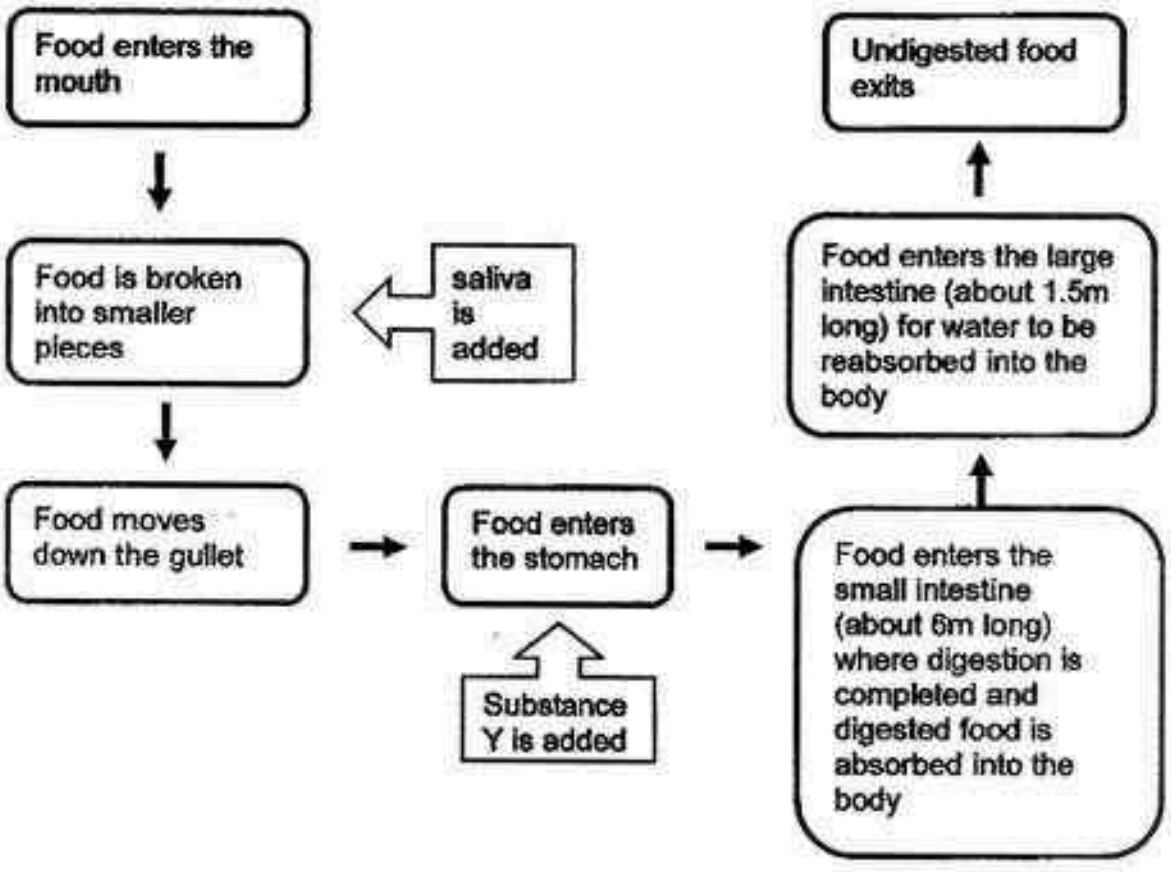
40. Study the following flow chart carefully.



(a) Identify substance Y and state its function in the digestion of food in the stomach. [2]

Substance Y: _____

Function: _____

_____

(b) Based on the above flowchart, explain in terms of their function in the digestive system, why the small intestine is much longer than the large intestine? [1]

_____

_____

_____

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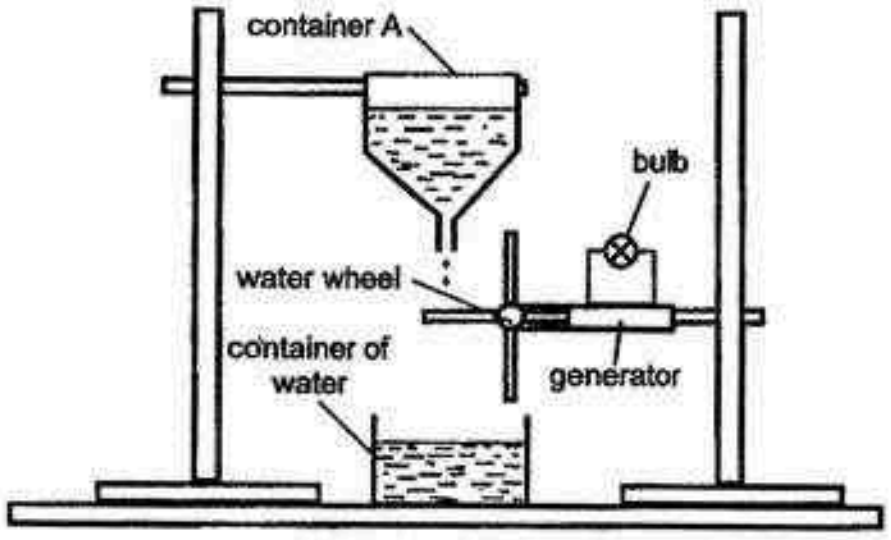
41. Study the set-up below. When the water dripped from container A, the water wheel would spin and the generator would generate energy for the bulb to light up.



(a) Using the concept of energy conversion, describe how the water in container A enabled the bulb to light up. [2]

(b) Using the same items in the set-up, suggest and explain one modification to the set-up to enable the bulb to light up more brightly. [2]

Method:

Explanation:

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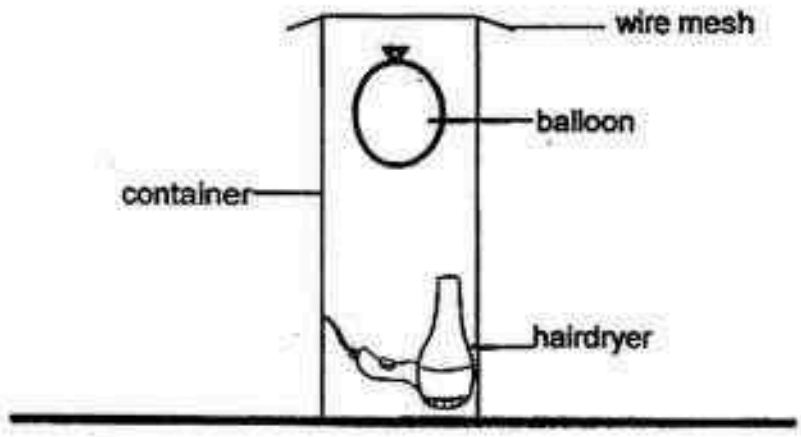
42. A hair dryer was used to blow a balloon to keep it suspended in the air as shown below.



The height of the balloon from the ground was measured and the results were recorded in the table below.

	Height of balloon (cm)			
Speed of hair dryer	1st reading	2nd reading	3rd reading	Average reading
Low	33	34	32	33
Medium	42	40	44	42
High	57	50	55	54

(a) What is the relationship between the speed of the hair dryer and the height of the balloon? [1]

_____

_____

(b) State 2 forces that were acting on the balloon while it was suspended in the air. [1]

_____

_____

(c) When the balloon is blown at low speed for 4 minutes, it bursts. Explain clearly why this happens. [1]

_____

_____

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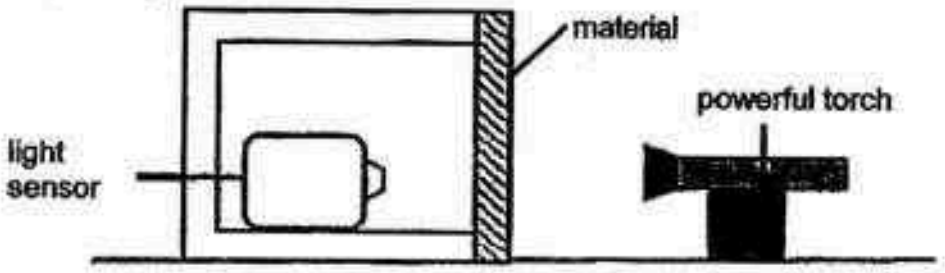
43. Anne set up the experiment as shown below. She covered the open side of a darkened box with material A and then recorded the amount of light detected by the light sensor.



She repeated the experiment using materials B and C of the same thickness as material A. The table below shows her results.

Materials	Light detected by light sensor (lux)
A	50
B	240
C	120

(a) Based on the set-up above, state the aim of Anne's experiment. [1]

(b) Why did Anne ensure that the materials were of the same thickness each time she carried out the experiment? [1]

Anne works the night shift. When she returns home after work in the morning, she wants to make her environment as dark as possible while she sleeps.

(c) Which material, A, B or C, should she use to make curtains for her windows? Give a reason for your answer. [1]

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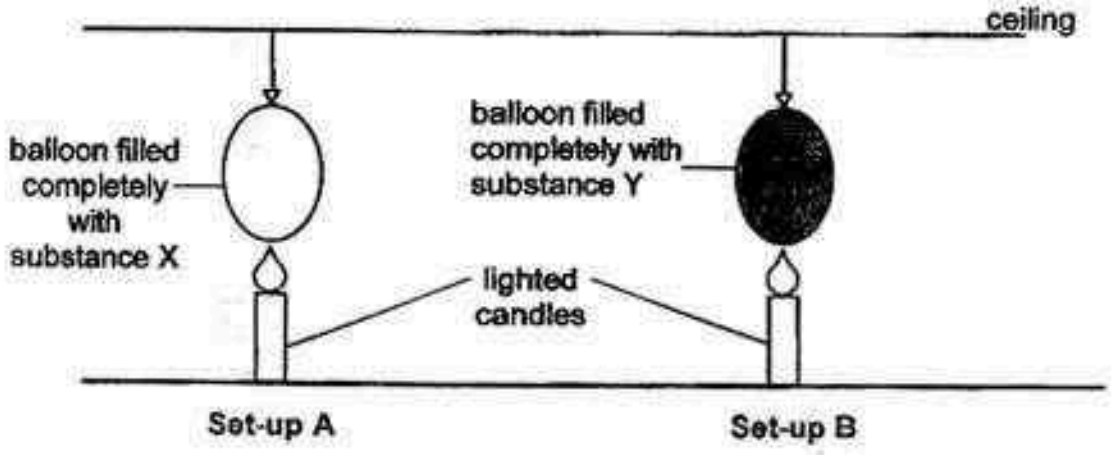
44. Steve wanted to test the properties of substances X and Y. He set up the experiment as shown below in the Science laboratory. He placed 2 balloons of the same type, one completely filled with substance X only and the other completely filled with substance Y, and hung them over a candle flame. He lit the candle and observed what happened.



He recorded the time taken for the balloon to burst in the table below.

Set-up	Time taken for balloon to burst (s)
A	10
B	120

(a) Based on the results above, what can he conclude about the property of substance Y as compared to substance X? [1]

(b) Explain the difference in the time taken for the balloons to pop in the 2 set-ups above. [2]

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EXAM PAPER 2016

SCHOOL :NANYANG

SUBJECT :P6 SCINECE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	2	2	1	1/4	1	3	1	1	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	3	2	3	4	3	2	2	4	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	3	3	4	2	2	2	1	2	1

31)a)Jar B. Water in the jar had evaporated. Therefore the plant has no water for photosynthesis and died.

b)The seedlings will not be able to receive sunlight and thus not able to photosynthesis, and died due to lack of food.

32)a)To find out how the temperature of the water affect the number of hatched eggs.

b)As the temperature of the water increased, the number of hatched eggs also increase. Until 26℃, as the temperature increase, the number of hatched eggs decrease.

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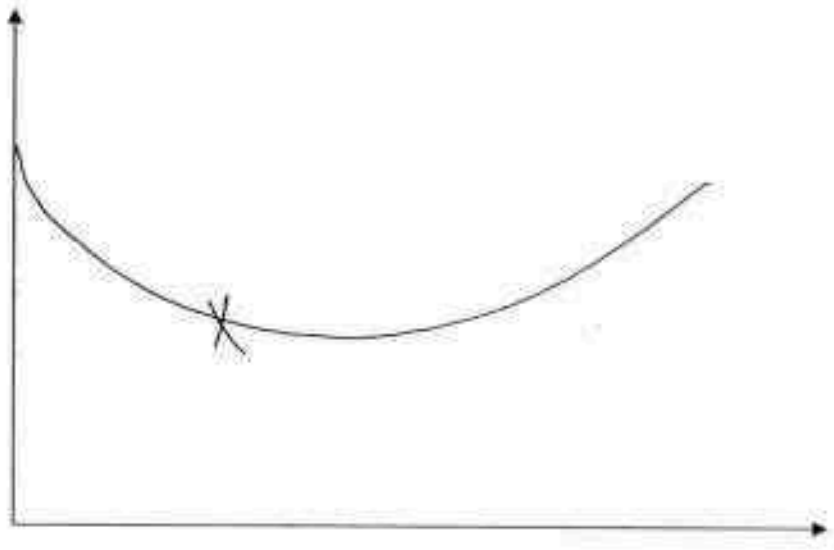
33)a)



b)B is the prey of C.

c)D eats B, therefore the population of B decrease. There will be less B feeding on the grass. Hence, the population of the grass will increase.

34)a)Outside. Water vapour from the surrounding air outside the glass loses heat to the cooler glass window and condense to form water droplets.

b)It increases the temperature in the room. The glass will be warmer then before, hence the rate of condensation will decrease.

35)a)The spores were blown by the wind onto the tree, thus the fern germinated on the tree.

b)The fern will be able to obtain more sunlight to make food.

36)a)The pollen grains from other plants landed on the stigma, then created a pollen tube down to the ovule and fused with it. Thus the ovary became a fruit.

b)Its stigma and anther are hanging out of the petal.

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37)a)i)Distance travelled by the cone

ii)Force of air on the ball/unit

b)To ensure that the result are reliable.

38)a)The amount of volume of water decrease by the roots for photosynthesis.

b)The die solution was absorbed by the roots and transported through the water carrying tube to other parts of the plant.

39)a)Cell wall. It give the plant call a regular shape.

b)The nucleus contains genetic information of the cell.

40)a)Substance Y: Digestive juice.

Function : Breaks down the food into simpler substances.

b)The small intestine is longer so that more time for food to be digested and absorbed into the blood stream while for the large intestine, only water needs to be absorbed.

41)a)GPE of the water in A is converted to KE of the dripping water. The KE of the dripping water is converted to the water wheel in the form of KE which is then converted to EE of the generator and LE of the bulb.

b)Method: Place container A at a higher height.

Explanation: The water in container A will possess more gravitational potential energy which would be converted to more kinetic energy of the spinning water wheel. More kinetic energy will then be converted to more electrical energy of the circuit and more light energy of the light bulb, allowing the bulb to light up brighter.

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42)a)As the speed of the hair dryer increases, the height of the balloon also increase.

b)Gravitational force and air resistance.

c)The air in the balloon gains heat form the air blown from the hairdryer and expands. When the air expands too much, there is not enough space in the balloon for the air, thus the balloon bursts.

43)a)To find out how the different materials allow different amount If light to pass through.

b)It was to ensure that it is a fair test, and that the results were only due to the different type of materials and not the difference in the thickness of materials.

c)She should use material A as it allows the least amount of light to pass through, keeping the room the darkest.

44)a)Substance Y is a better conductor of heat than X. Y expands slower than X. X expand faster than Y.

b)The balloon with substance Y takes a longer time to burst as it stretched slower since it did not expand as quickly.

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8

NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2016
PRIMARY 6

SCIENCE

BOOKLET A

30 Multiple Choice Questions (60 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Marks Obtained

Booklet A		/ 60
Booklet B		/ 40
Total		/ 100

Name: _____ ( ) **Class: P 6** _____

Date : 11 May 2016 **Parent's Signature:** _____

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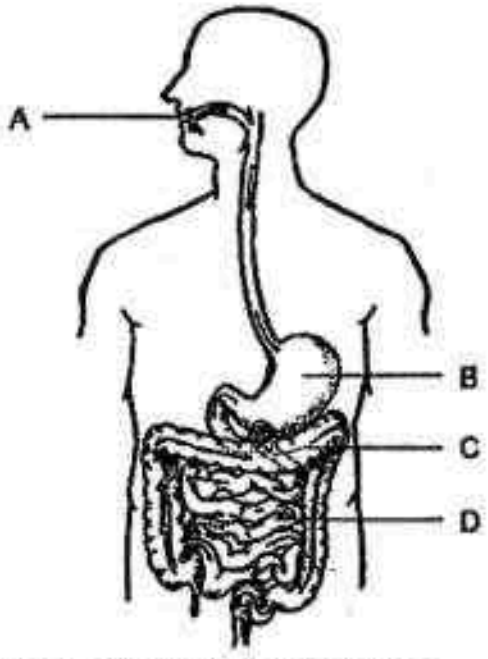
Section A: (30 × 2 marks = 60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Which of the following is not a function of the stem in plants?

   (1) Provide support for the plant.
   (2) Anchor the plant to the ground.
   (3) Hold and enable leaves to receive sunlight.
   (4) Transport food and water to the other parts of the plant.

2. The diagram below shows part of the human digestive system.



In which part(s) does/do digestion take place?

   (1) D only
   (2) B and C only
   (3) A, B and D only
   (4) A, B, C and D

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3. Sharon recorded the different plants and animals she saw in and around her school pond and presented her findings in the table as shown below.

Animals	Number	Plants	Number
frog	2	water lily	2
dragonfly	1	water hyacinth	3
tadpole	5		
pond skater	4		
dragonfly nymph	2		

Based only on the information in the table, which one of the following statements is correct?

(1) There is 1 community and 19 organisms
(2) There is 1 community and 7 populations
(3) There are 2 communities and 7 organisms
(4) There are 2 communities and 5 populations.

4. Bala saw a rotting log behind his school.



Which group of organisms would he most likely find on the rotting log?

(1) frogs, wrigglers, cattail
(2) ants, caterpillars, mushroom
(3) termites, beetles, bracket fungus
(4) squirrels, grasshoppers, millipedes

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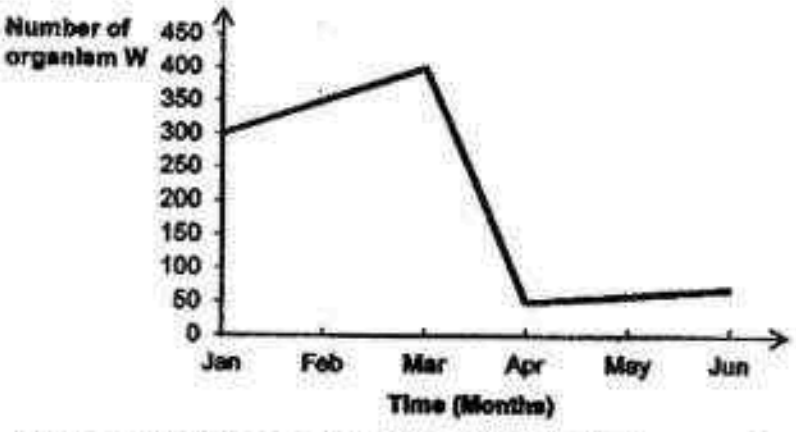
5. John studied the habitats of some organisms and discovered that different organisms grow well under different conditions. He classified the organisms according to two environmental factors.

		Change in temperature throughout the day	
		great	small
Amount of light	high	A	B
	low	C	D

Which organism is likely to be found in a seashore habitat?

(1) A
(2) B
(3) C
(4) D

6. The graph below shows the change in the population of organism W in a habitat during a six-month period.



What could be the possible cause of the drastic decrease in population from March to April?

(1) There was a fire in the habitat.
(2) There was an increase in the number of prey of organism W.
(3) There was a decrease in the number of predators of organism W.
(4) A new organism with the same diet as organism W migrated to the habitat.

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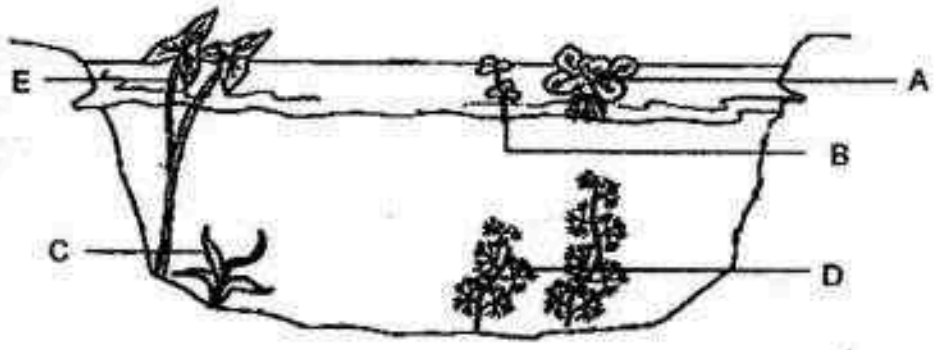
7. The diagram below shows the cross section of a pond.



If there is an increase in organism A, which of the following is most likely to happen?

(1) The population of organism B will decrease due to lack of water.
(2) The population of organism C will decrease due to lack of space.
(3) The population of organism D will decrease due to lack of sunlight.
(4) The population of organism E will decrease due to lack of nutrients.

8. Which of the following describe(s) what happens when we breathe in and breathe out?

	Breathing in	Breathing out
A	Ribcage moves outwards	Ribcage moves inwards
B	Space in our chest becomes larger	Space in our chest becomes smaller
C	Air rushes into the lungs	Air moves out of the lungs

(1) C only
(2) A and B only
(3) B and C only
(4) A, B and C

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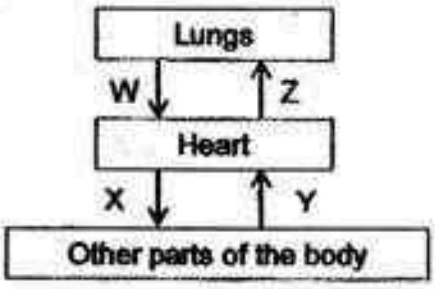
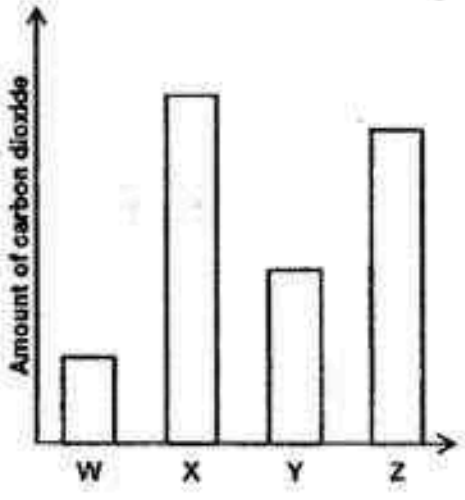
9. The diagram below shows a simple representation of blood circulation in a human body. Arrows W, X, Y and Z represent the flow of blood to different parts of the body.

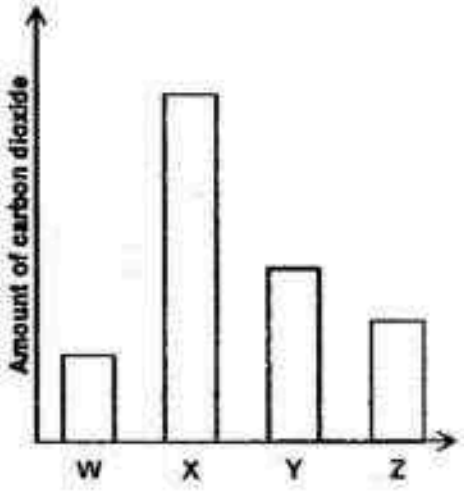


Which of the following graphs correctly represents the amount of carbon dioxide in W, X, Y and Z?

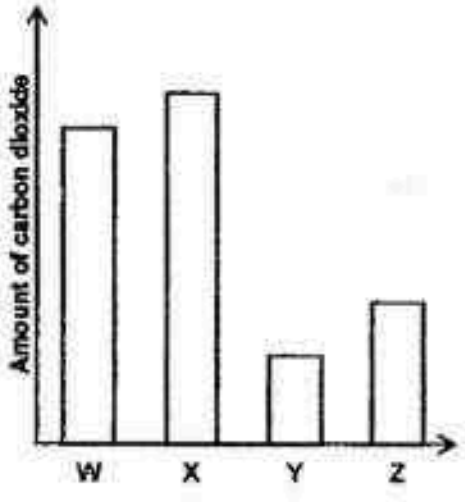
(1)



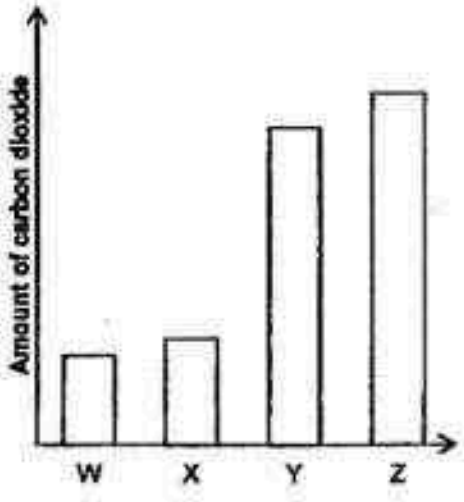
(2)



(3)



(4)



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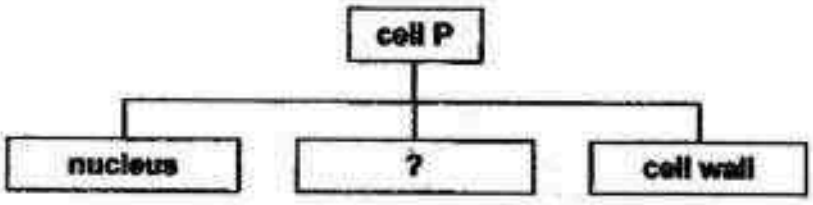
10. Jared studied cell P under a microscope and listed some parts of the cell below.



Which of the following part(s) could definitely be found in cell P?

A chloroplast
B cytoplasm
C cell membrane

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

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11. Study the diagram below.



Which of the following statements about the plant of the pod shown above are **definitely** correct?

A The plant has edible fruits.
B Pollination has taken place.
C The plant is a flowering plant.
D The ovary has more than one ovule.

(1) A and D only
(2) B and C only
(3) B, C and D only
(4) A, B, C and D

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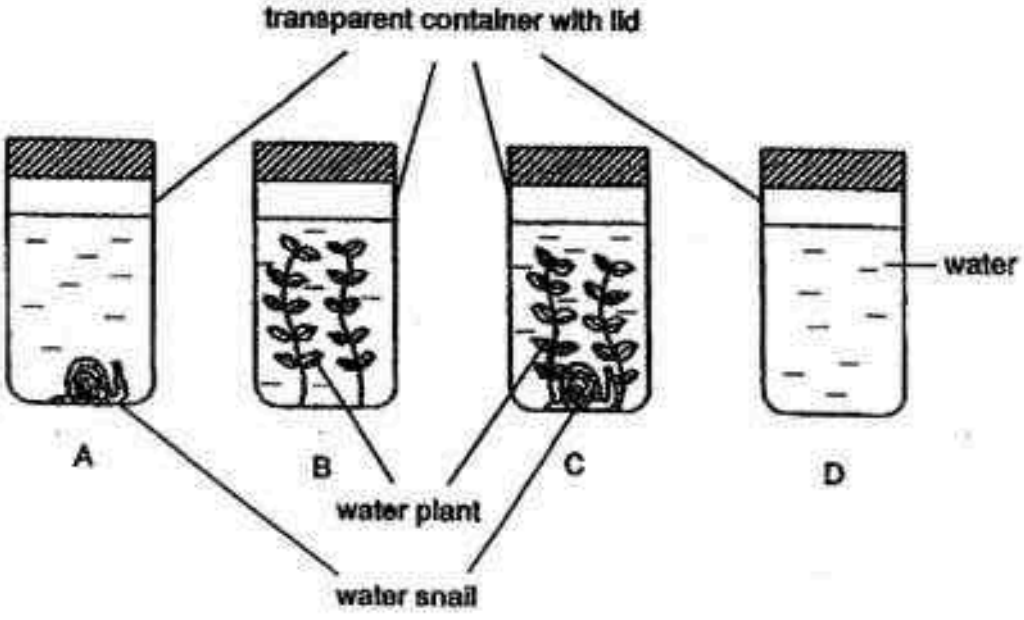
12. Four set-ups, A, B, C and D, were left under the Sun for 8 hours.



Which of the set-ups will have the greatest amount of oxygen and carbon dioxide respectively after 8 hours?

	Greatest amount of oxygen	Greatest amount of carbon dioxide
(1)	A	C
(2)	B	A
(3)	C	D
(4)	D	B

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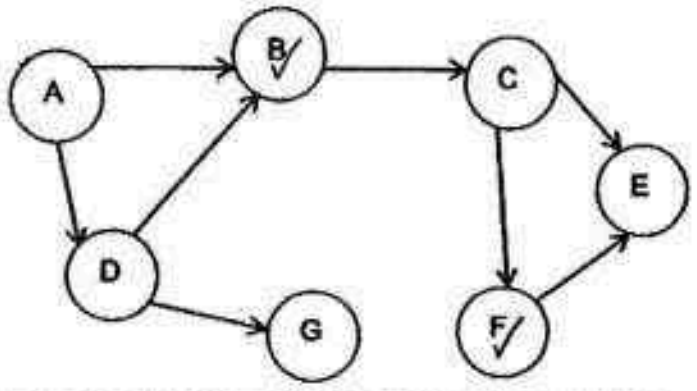
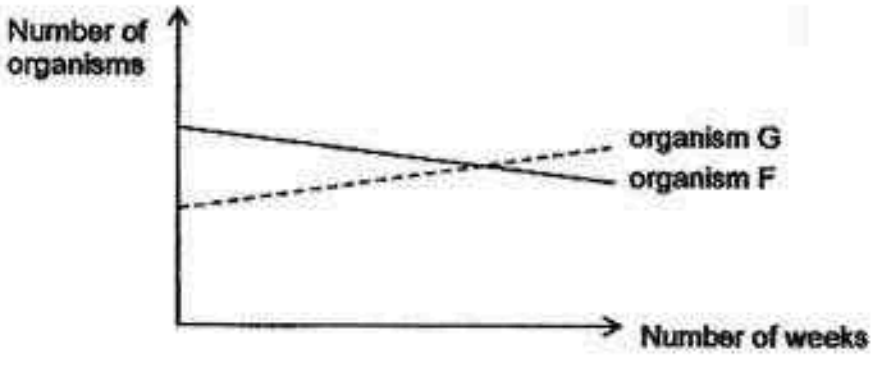
The food web below shows the relationship among the organisms in a habitat. Study the food web and answer questions 13 and 14.



13. How many organisms are both a prey and a predator?

(1) 1
(2) 2
(3) 3
(4) 4

14. Animal P was then introduced into the habitat. The graph below shows the changes to the populations of organism F and organism G after animal P fed on one of the organisms in the habitat.



Which organism is most likely the one that animal P fed on?

(1) A
(2) B
(3) C
(4) D

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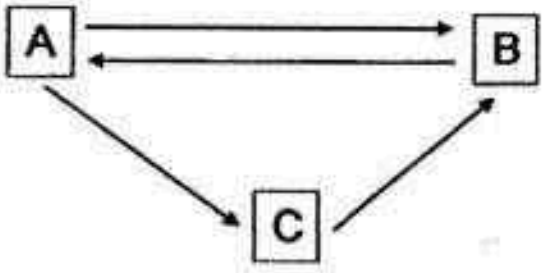
15. The diagram below shows the interaction among three groups of organisms.



Which of the following shows the groups of organisms represented by A, B and C?

	A	B	C
(1)	producers	consumers	decomposers
(2)	producers	decomposers	consumers
(3)	consumers	producers	decomposers
(4)	decomposers	consumers	producers

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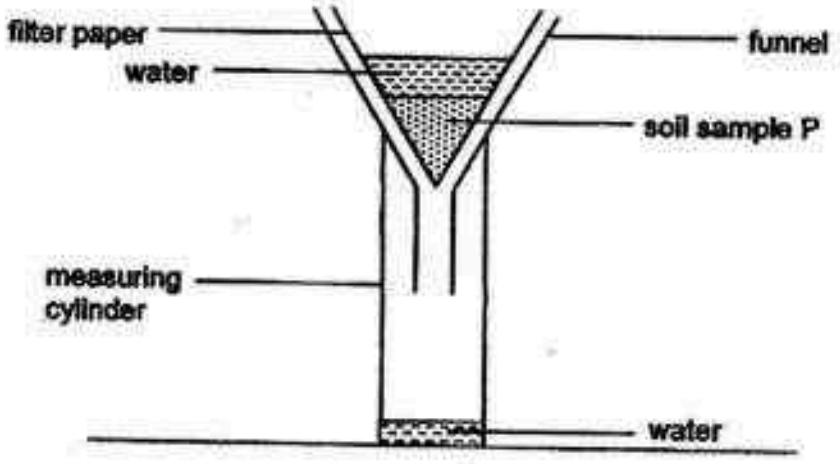
16. Alvin collected three soil samples, P, Q and R. He poured 40 g of soil sample P onto a filter paper in the funnel and poured 50 ml of water onto the soil sample as shown below.



He measured the time taken to collect 20 ml of water. He repeated the experiment with soil samples Q and R. The results are tabulated below.

Soil sample	Time taken to collect 20 ml of water (min)
P	15
Q	5
R	30

Based on the results above, which of the following matches the soil sample correctly?

	Sample P	Sample Q	Sample R
(1)	garden	clayey	sandy
(2)	garden	sandy	clayey
(3)	sandy	garden	clayey
(4)	clayey	sandy	garden

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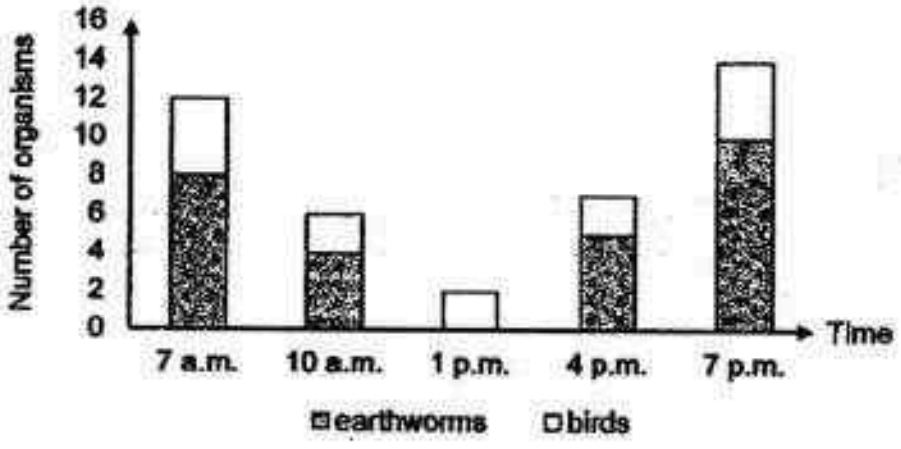
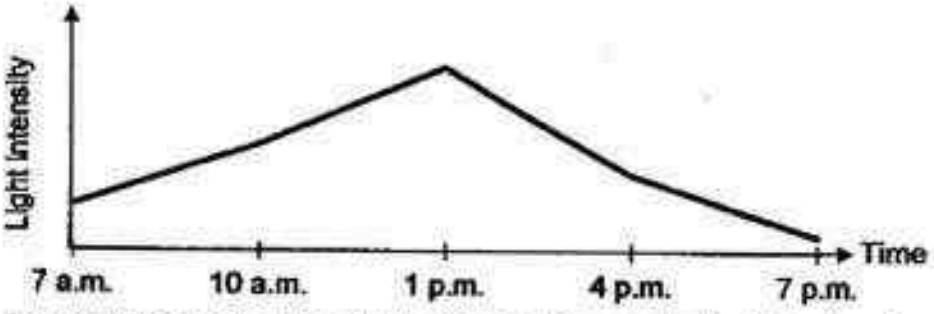
17. The graph below shows the number of earthworms (near the surface of the soil) and birds in an eco-garden over a period of 12 hours. The earthworm is the prey of the bird.



The light intensity in the eco-garden over the similar period of time is shown below.



Based on the information above, which of the conclusion below has been ticked correctly?

	Conclusion	True	False	Not possible to tell
(1)	Earthworms do not come to the surface of the soil at midnight		√	
(2)	The greatest number of earthworm is found near the surface of the soil at 1 p.m.			√
(3)	The stronger the light intensity, the fewer the earthworms are found near the surface of the soil.	√		
(4)	The greater the number of birds, the greater the number of earthworms found near the surface of the soil.	√		

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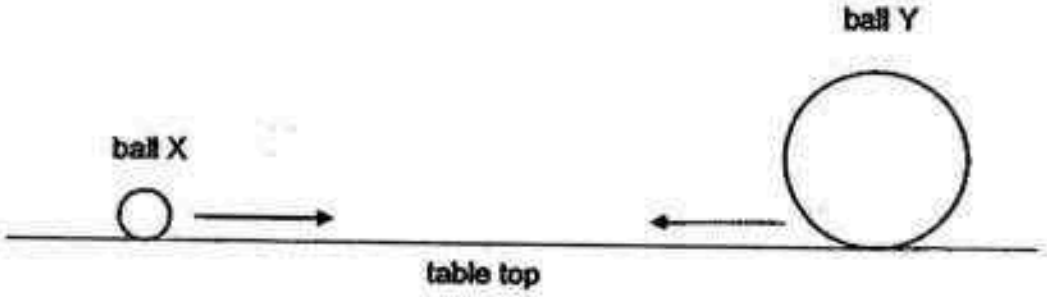
18. A force was exerted on ball X in the direction as shown in the diagram below. A similar amount of force was exerted on ball Y in the opposite direction. Both balls are made of the same material. The two balls collided.



What will happen after the collision?

A Ball X will move slower.

B Ball X will change direction.

C Ball Y will stop.

D Ball Y will move slower.

E Ball Y will change direction.

(1) A and C only
(2) B and E only
(3) A, B and D only
(4) A, D and E only

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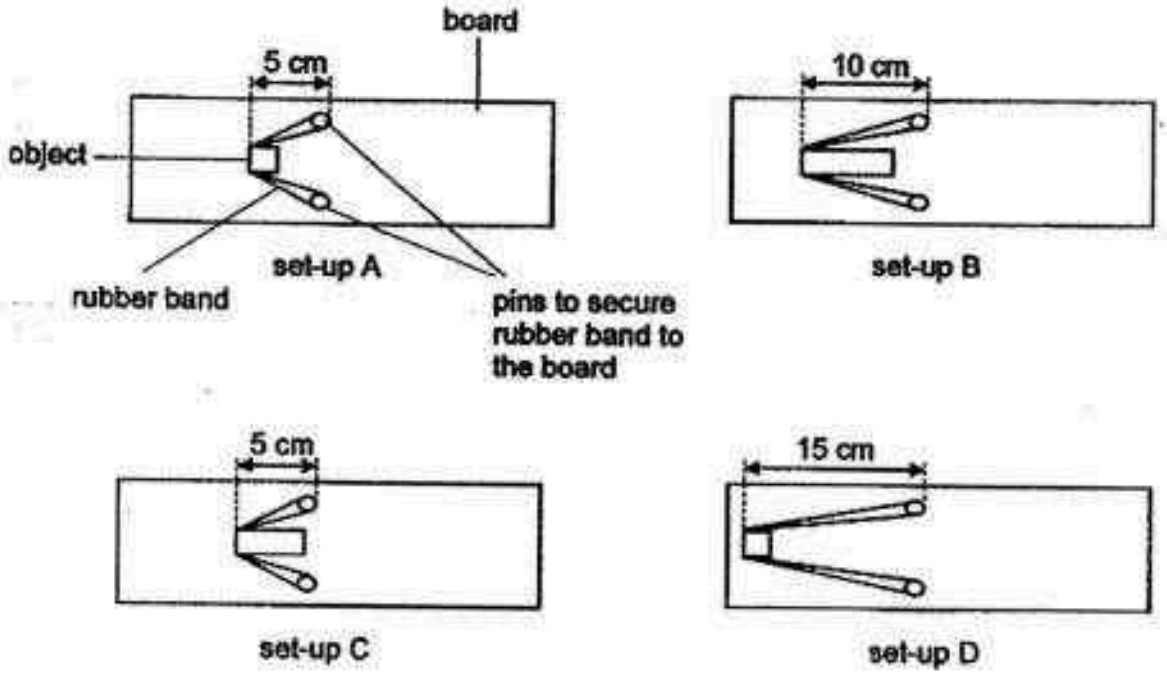
19. Study the diagram below carefully.



Which two set-ups should be used to find out how the distance that the object has been pushed back against the rubber band affects the distance travelled by the object across the board once the object has been released?

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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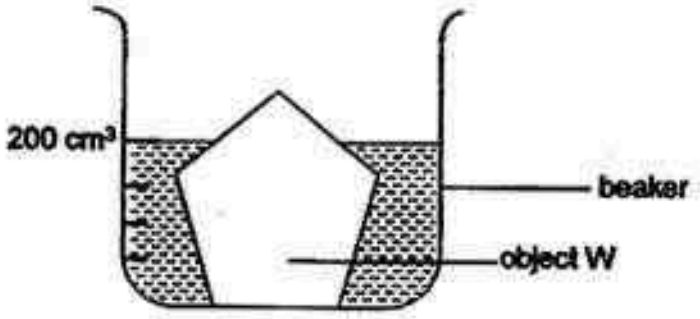
20. Jason filled a beaker with 100 ml of water. He then placed object W into the beaker and noted the reading on the beaker.



Which of the following is most likely the volume of object W?

(1) 80 cm^3
(2) 100 cm^3
(3) 120 cm^3
(4) 200 cm^3

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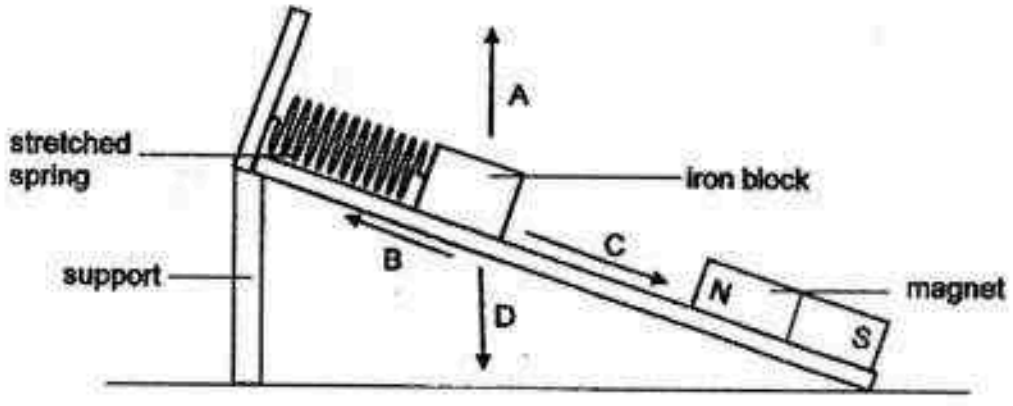
21. Taulik set up the experiment as shown below.



Which of the following correctly shows the direction of the different forces acting on the iron block?

	Gravitational Force	Frictional Force	Elastic Spring Force	Magnetic Force
(1)	A	C	B	B
(2)	D	B	B	C
(3)	D	B	C	C
(4)	A	B	C	C

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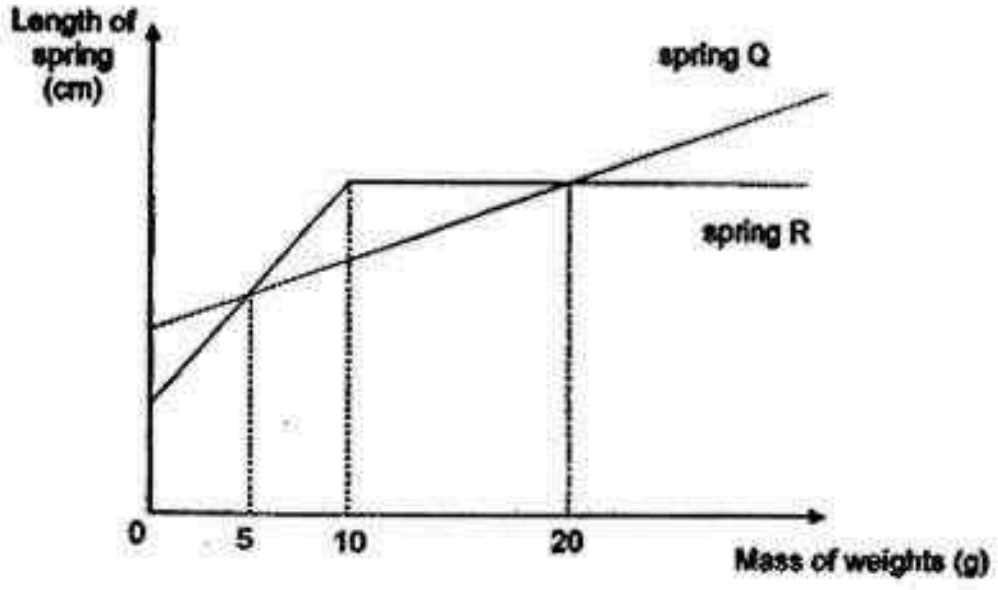
22. The graph below shows how the length of two springs, Q and R, changed when different weights were hung on them.



Based on the graph above, which of the following statements are correct?

A Spring Q reaches its elastic limit earlier than Spring R.

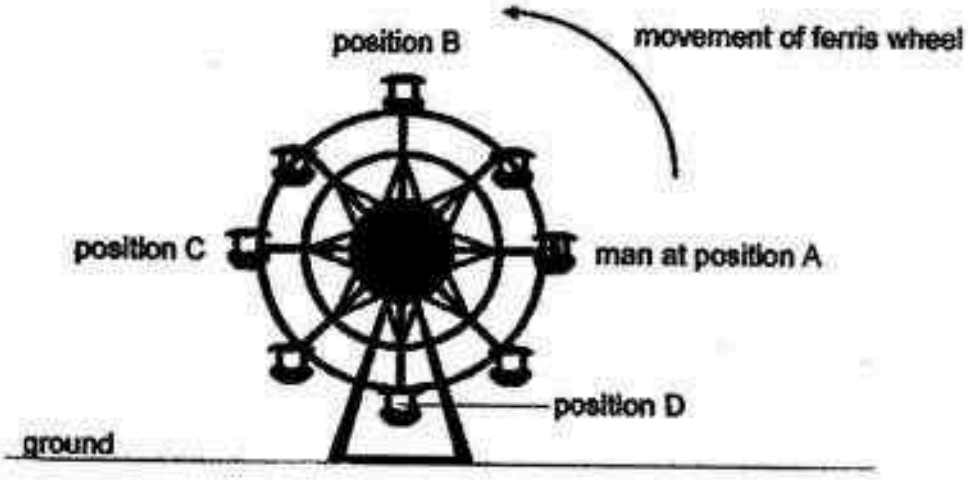
B The original length of Spring Q is longer than the original length of Spring R.

C The length of Spring R no longer increase when a mass of more than 10 g is hung on it.

D The length of Spring Q and the length of Spring R are the same when a mass of 5 g and 20 g are hung on them respectively.

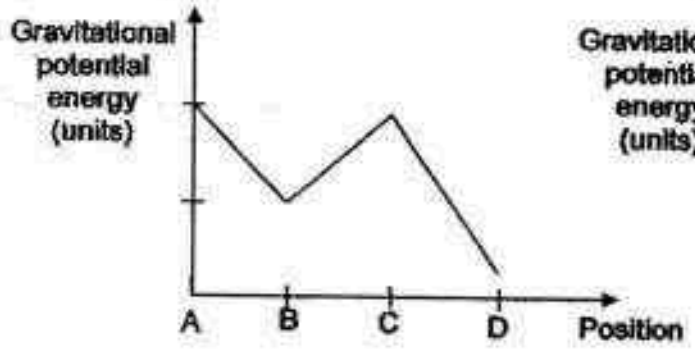
(1) A and B only
(2) C and D only
(3) A, B and D only
(4) B, C and D only

23. The diagram below shows a man sitting on a ferris wheel.

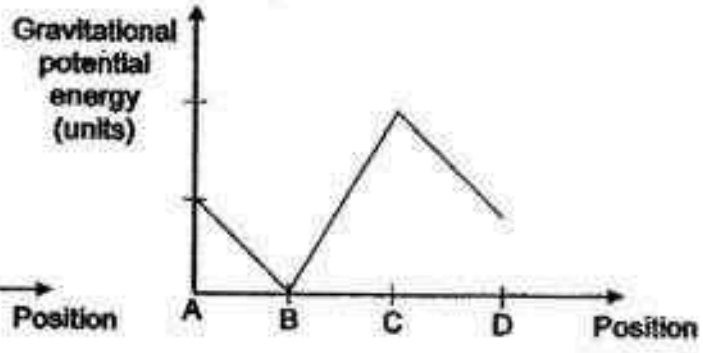


Which one of the following graphs shows the change in the amount of gravitational potential energy of the man as he travelled from position A to position D?

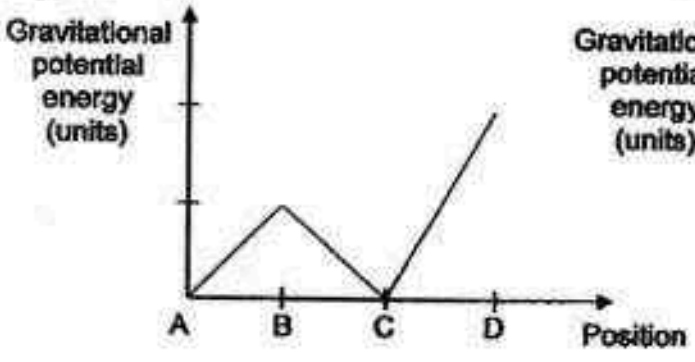
(1)



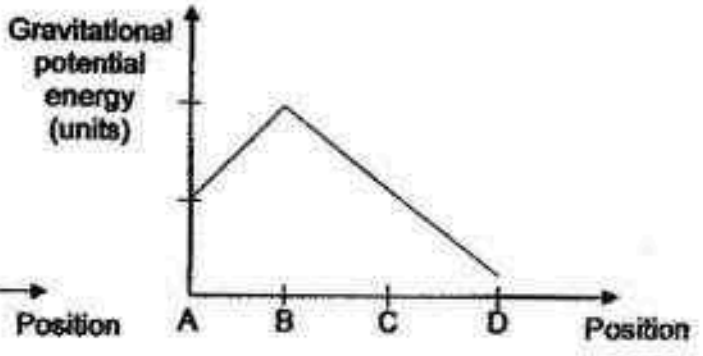
(3)



(2)



(4)



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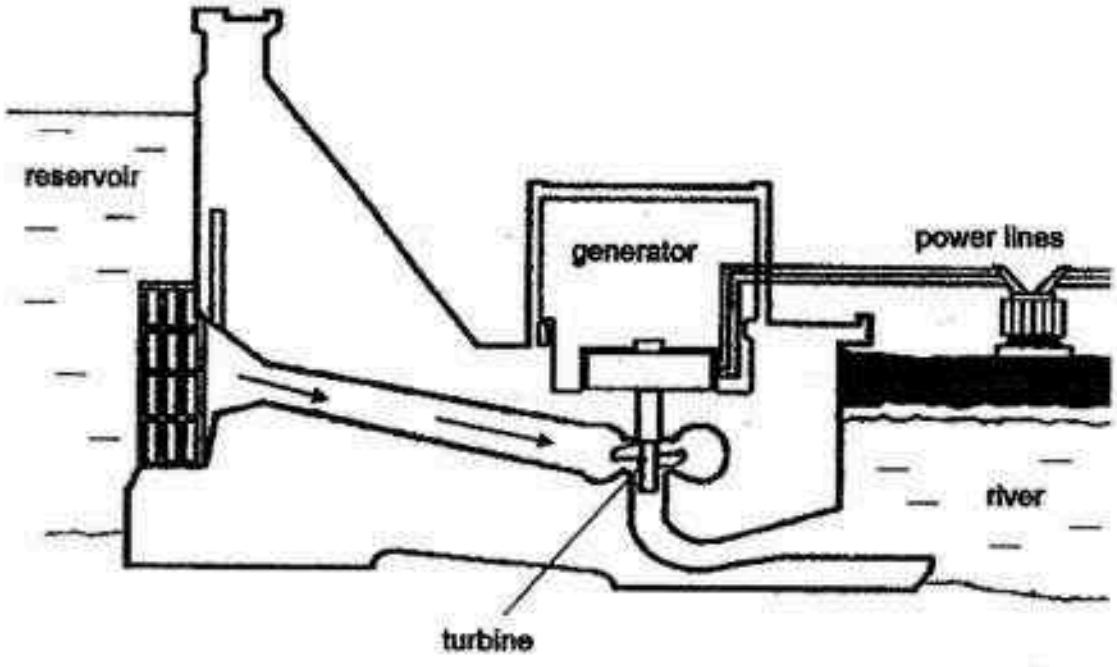
24. The diagram below shows a hydroelectric power station.



Which of the following shows the correct energy conversion in the power station?

(1)	Gravitational potential energy of water	→	kinetic energy of water	→	kinetic energy of turbine	→	electrical energy in power lines
(2)	Chemical potential energy of water	→	kinetic energy of water	→	kinetic energy of turbine	→	electrical energy in power lines
(3)	Kinetic energy of water	→	gravitational potential energy of water	→	electrical energy of turbine	→	electrical energy in power lines
(4)	Gravitational potential energy of water	→	kinetic energy of turbine	→	chemical potential energy of generator	→	electrical energy in power lines

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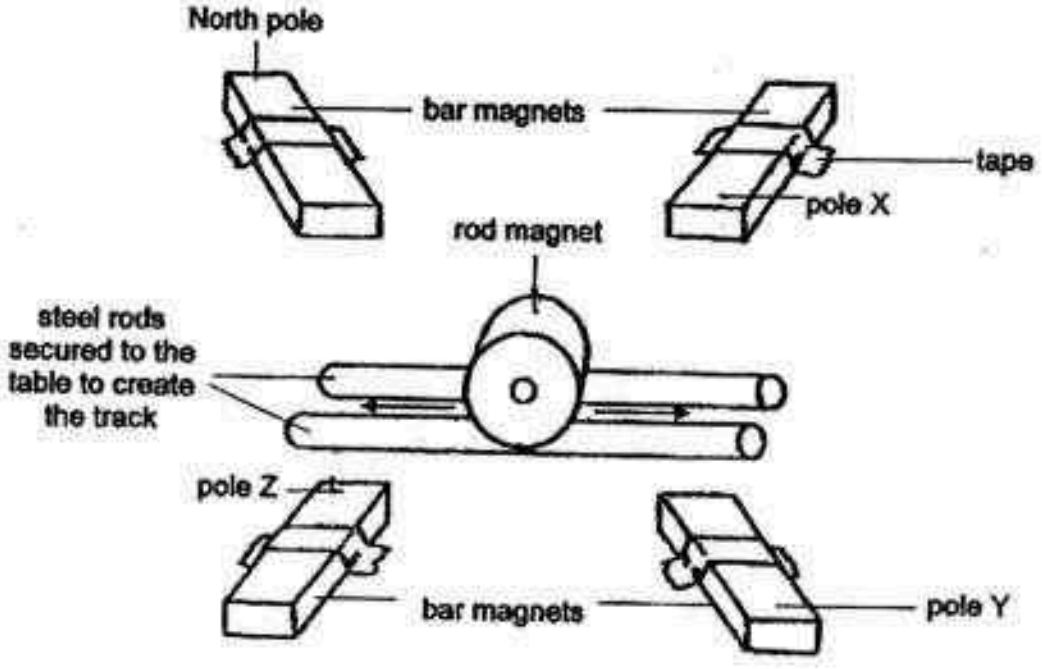
25. Alisha set up an experiment as shown in the diagram below. She made a track by securing 2 steel rods to the table. The track is at the centre of the 4 magnets. She then placed a rod magnet on the track and gave it a push in one direction along the track.



She noticed that the rod magnet travelled back and forth along the track for a few minutes before coming to a stop in the centre of the track.

What are poles X, Y and Z of the 3 magnets?

	Pole X	Pole Y	Pole Z
(1)	South	North	South
(2)	North	South	North
(3)	North	North	South
(4)	South	South	North

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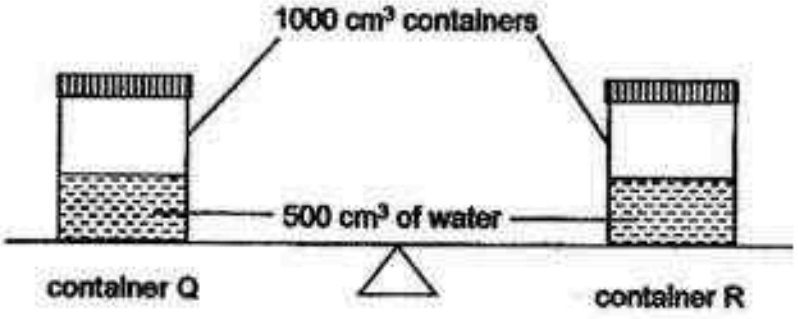
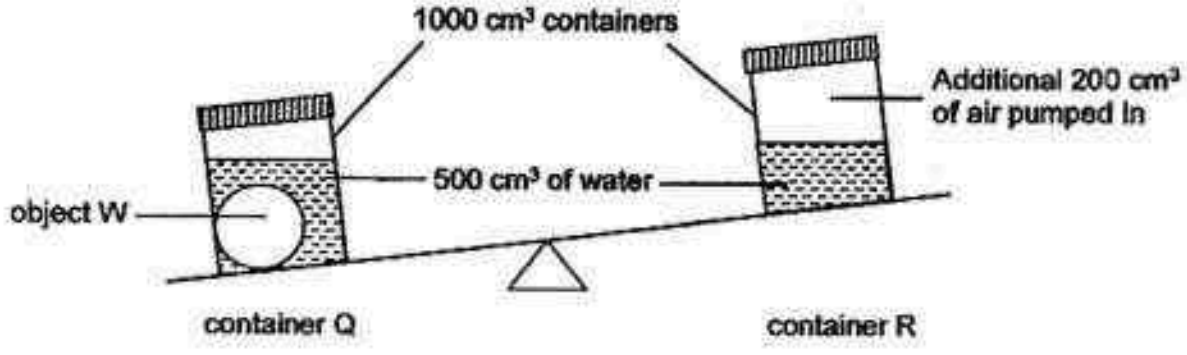
26. Ted prepared the set-up as shown in the diagram below. He balanced two similar sealed containers on a balance. 500 cm^3 of water was poured into each container which has a capacity of 1000 cm^3 each.



Ted then added object W, which is a solid ball, into container Q and pumped an additional 200 cm^3 of air into container R before sealing them again. Object W has a volume of 200 cm^3.

He then observed that the balance was tilted as shown in the diagram below.



Which of the following statements can be inferred from his observation?

A The volume of air in container R has increased.

B The volume of water in container Q stays the same.

C The volume of air in container Q has decreased to 300 cm^3.

D Object W has a greater mass than the additional 200 cm^3 of air pumped into container R.

(1) C only
(2) A and D only
(3) A, B and C only
(4) B, C and D only

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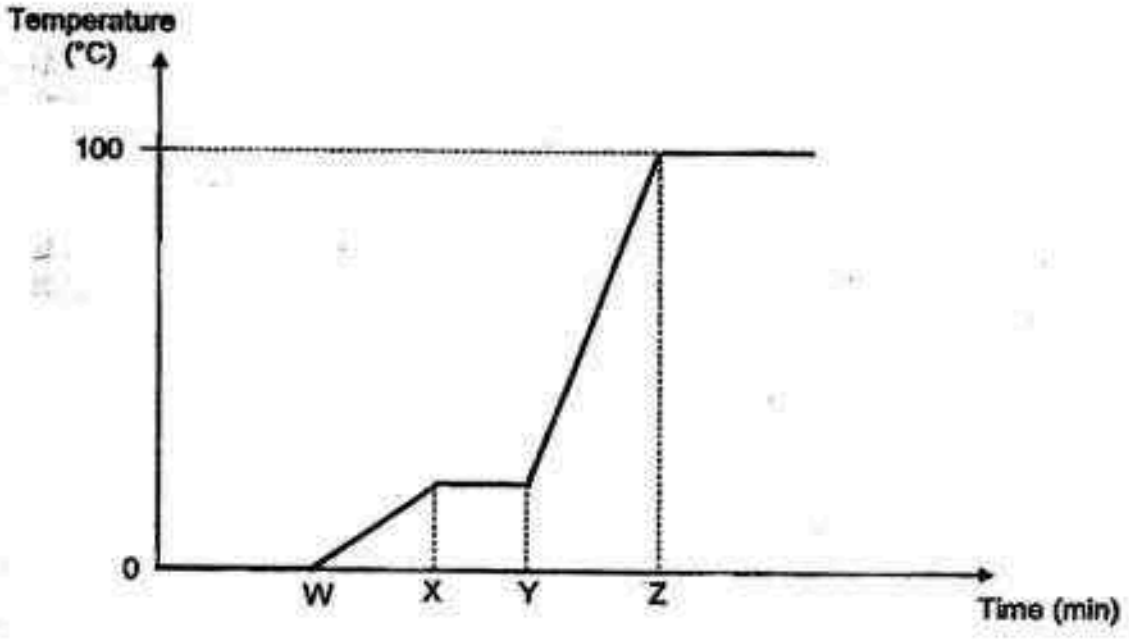
27. Muthu placed some ice cubes in a beaker. He left the beaker on his table for 60 min before placing the beaker on top of a Bunsen burner. He then plotted a graph to show the change in the temperature of the ice cubes over time.



Based on the graph above, at which point on the graph did Muthu put his beaker on top of the Bunsen burner?

(1) W
(2) X
(3) Y
(4) Z

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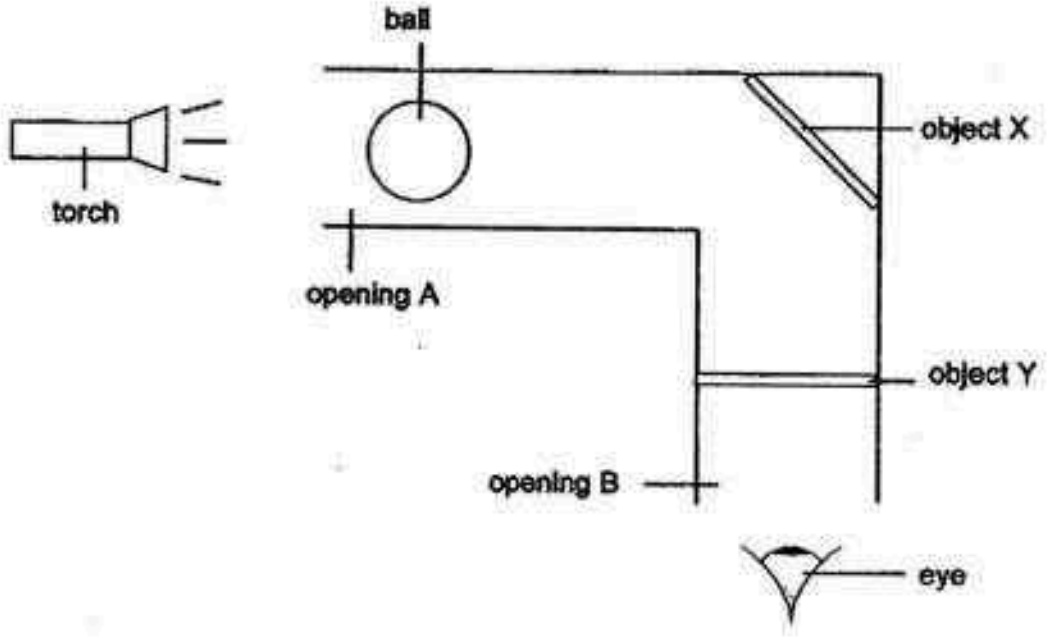
28. Katie prepared a set-up as shown in the diagram below. A ball has been placed in the opening A.



Top view of set-up

What should the objects X and Y be made of such that an image can be seen when a person looks into opening B?

	object X	object Y
(1)	aluminium foil	mirror
(2)	glass	tracing paper
(3)	tracing paper	aluminium foil
(4)	mirror	glass

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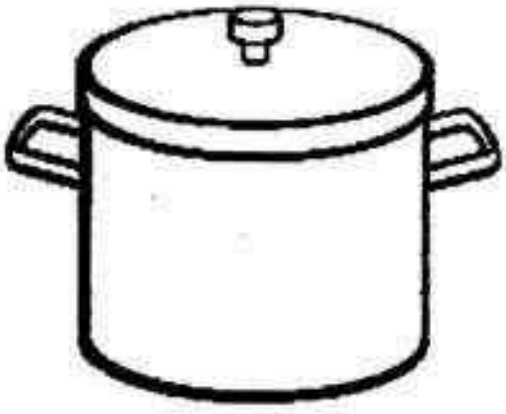
29. Ling Ling has brought along a pot of hot curry to her friend's house. She wanted to keep the curry hot for as long as possible.



What should she do and why?

	What she should do	Reason
(1)	Pour the curry into a few smaller pot	The smaller pots will be able to slow down heat lost to the surroundings.
(2)	Open the cover of the pot	The heat from the surroundings will travel to the curry and warm it up.
(3)	Put the pot in the refrigerator	The cool air around the pot will prevent the heat from the curry from being lost to the surroundings.
(4)	Wrap the pot with a thick layer of cloth	The cloth is a poor conductor of heat which will reduce heat lost from the hot curry to the surroundings.

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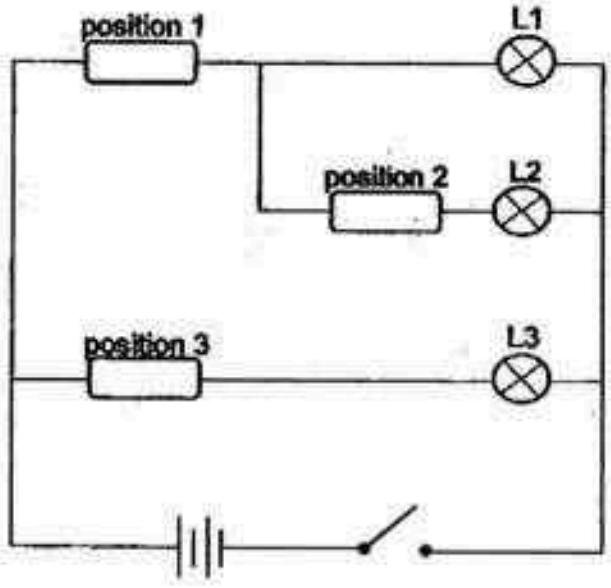
30. Fred wanted to find out if the 3 objects that he had, X, Y and Z, are electrical conductors. He set up the circuit as shown below to help him find out.



He placed X, Y and Z at different positions and noted if any of the 3 light bulbs lights up. He then recorded his findings in the table below.

	Position 1	Position 2	Position 3	Did L1 light up?	Did L2 light up?	Did L3 light up?
1st try	X	Y	Z	No	No	Yes
2nd try	Z	X	Y	Yes	No	Yes
3rd try	Y	Z	X	Yes	Yes	No

Which of the 3 objects is/are not electrical conductor(s)?

(1) X only
(2) Y only
(3) X and Z only
(4) Y and Z only

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NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2016
PRIMARY 6

SCIENCE

BOOKLET B

14 Open-ended questions (40 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

Marks Obtained

Section B		**/ 40**

Name: _____ ( ) **Class: P 6** _____

Date : 11 May 2016 **Parent's Signature:** _____

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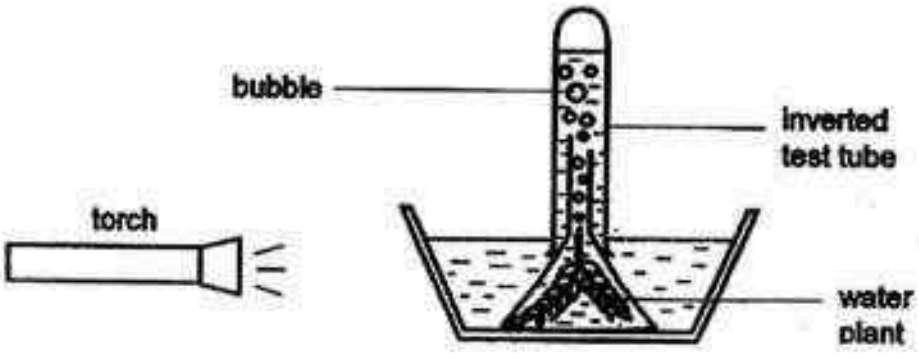
Section B: (40 marks)
Write your answers to question 31 to 44.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. Peggy set up the experiment as shown below in a dark room. The inverted test tube was totally filled with water at first.



She shone the torch at the water plant for 30 minutes and recorded the number of bubbles given out by the plant during that period of time as shown in the table below. She repeated the experiment using the same set-up but with torches of different light intensity in the same dark room.

Light Intensity	Number of bubbles
Low	26
Medium	37
High	48

(a) What is the aim of the above experiment? [1]

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(b) What will happen to the number of bubbles given out by the plant if she changes the plant to another one with fewer leaves? Explain your answer. [1]

(c) State one other variable that she must keep constant in order for the experiment to be a fair one? [1]

Score	3

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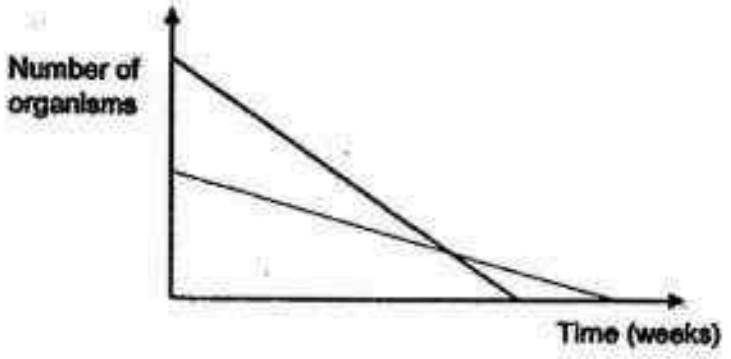
32. The diagram below shows a food chain made up of three populations of organisms.

X ⟶ Y ⟶ Z

A disease wiped out one of the populations of organisms and the graph below shows the change in populations of the other two organisms.



(a) Which population of organism was first to be wiped out due to the disease? What was the role of this population of organism in the food chain? [1]

(b) Explain the effect of the removal of the organism mentioned in (a) on the other two organisms. [1]

Score 2

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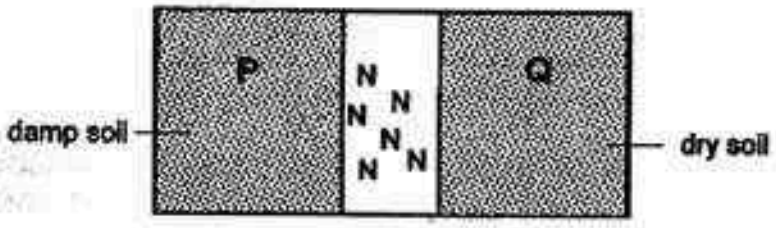
33. Ali knew that organism N prefers dark places. He set up an experiment with a cardboard box as shown.



He placed 20 organism N in the middle of the box and covered the box with a black cloth. One hour later, he counted the number of organism N in each region.

(a) How does placing all the organism N in the middle of the box ensure a fair test? [1]

(b) After counting the number of organisms one hour later, Ali placed all the organism N in the middle of the box and repeated the experiment again. Why did Ali repeat the experiment? [1]

Score 2

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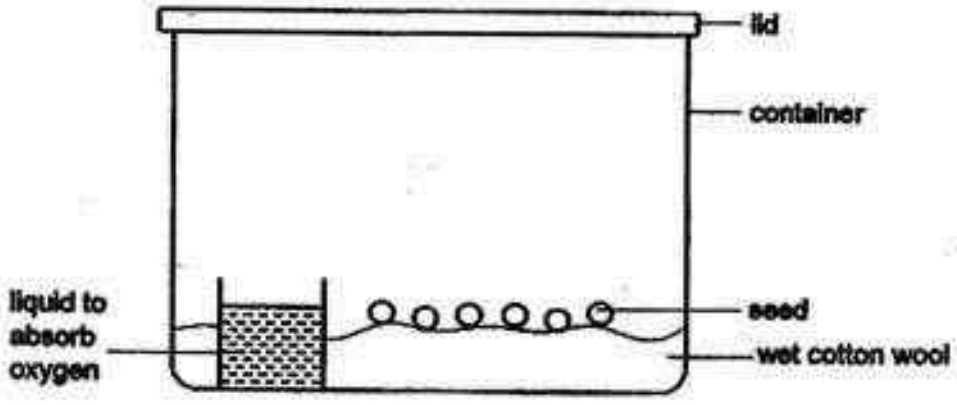
34. Jaslyn wanted to conduct an experiment to find out whether oxygen is needed for the germination of seeds. She prepared a set-up as shown below.



(a) In the box below, draw and label clearly, the control set-up for Jaslyn's experiment. [1]

(b) What is the purpose of the control set-up? [2]

_____

_____

Score 3

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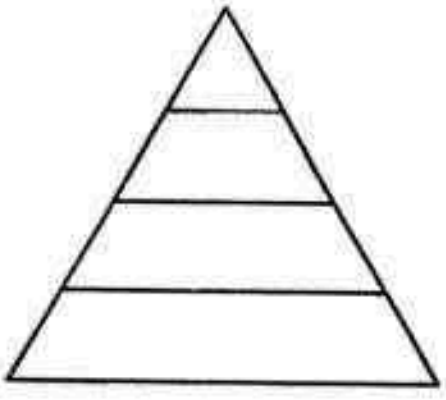
35. Study the information on the food relationships among some organisms in a habitat.

Organism	Information
A	• A herbivore
B	• An omnivore
C	• Gets its energy from the Sun • Makes its own food
D	• A carnivore • Preys on all other consumers

(a) Draw a food web consisting of the four organisms, A, B, C and D, in the box below. [2]

(b) Based on the information provided, label the levels of the pyramid according to the population sizes of the organisms with the letters A, B, C and D. [1]



Score	3

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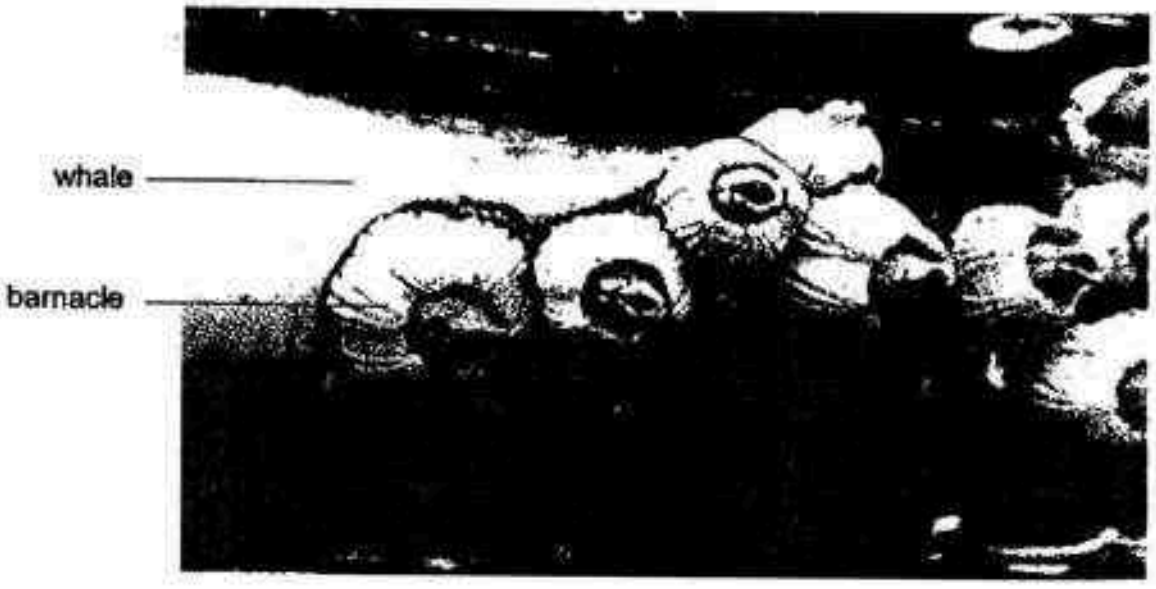
36. Barnacles are sea creatures that rely on currents to bring food passed them in order to eat. They are also the prey of some other animals that live in the sea. The barnacle larvae settle onto a surface. Then they secrete cement that harden into a shell that surround them throughout their lives. The picture below shows how barnacles attach themselves to the side of a whale. The whale is not harmed by the barnacles.



(a) Unlike rocks, whales are able to swim around the sea, bringing the barnacles with them. Name two advantages for the barnacles that attach themselves to the whale compared to those that attach themselves to rocks. [2]

Advantage 1: _____

_____

Advantage 2: _____

_____

(b) Some species of whales are preyed on by killer whales. How do the barnacles help these whales increase their chances of survival? [1]

_____

_____

Score	/ 3

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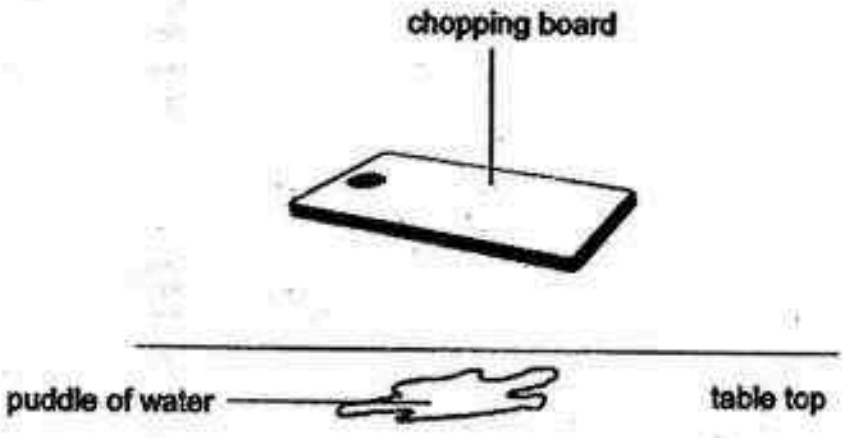
37. Mrs Tan washed some meat and started chopping it on a chopping board. She realised that the chopping board kept sliding around the table top as she chopped the meat. She lifted the chopping board and saw a puddle of water underneath it.



(a) Explain, in terms of forces, why did the chopping board slide around the table top? [1]

Her husband wiped away the water and suggested putting a piece of towel underneath the chopping board to prevent it from sliding around. Mrs Tan did that and found that it worked.

(b) Explain why putting the piece of towel underneath the chopping board helps to prevent it from sliding around. [2]

Score 3

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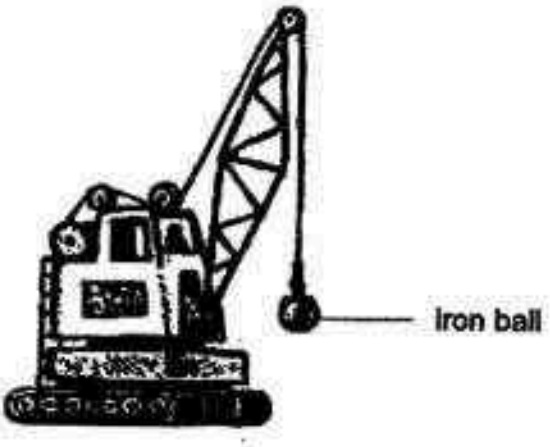
38. The diagram below shows a demolition machine. It is used to demolish building and structures that are no longer needed.



The driver of the machine will swing the iron ball at the building to demolish it. The driver realised that the higher he swings the ball, the faster the building gets demolished.

(a) Explain, in terms of energy, how swinging the ball higher helps the driver complete his work faster. [1]

_____

_____

(b) Other than swinging the ball higher, what changes can he make to the ball to help him complete his work faster? [1]

_____

_____

Score	/ 2

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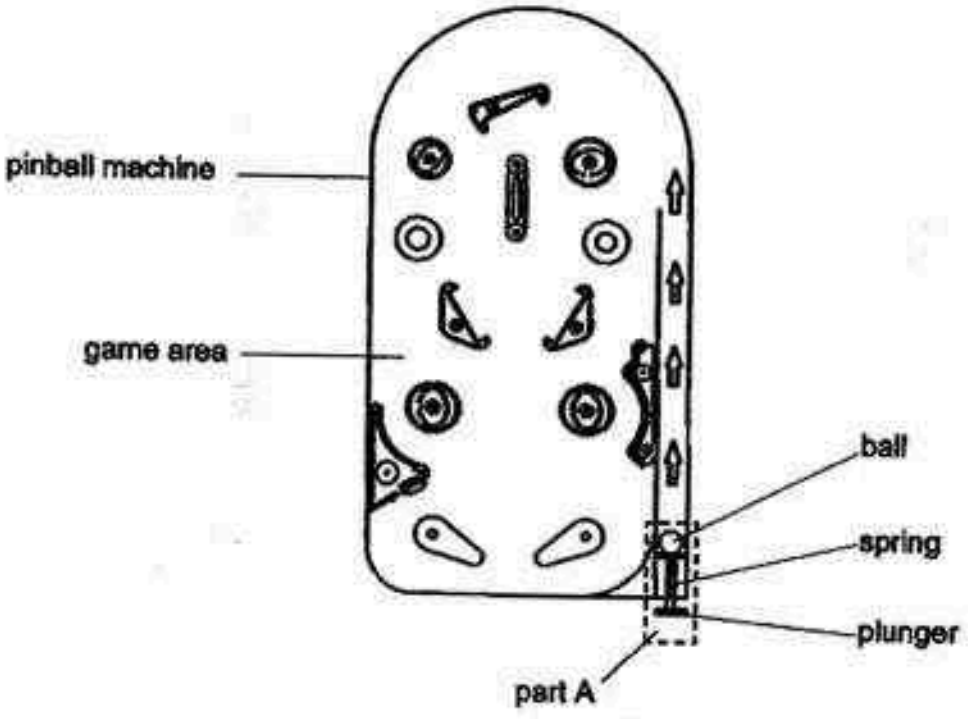
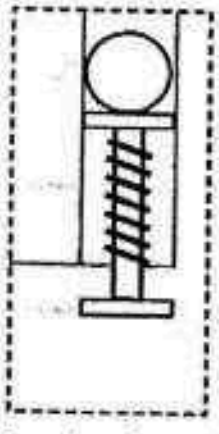
39. Tom loves to play on the pinball machine at the arcade. The diagram below shows the top view of the game machine.

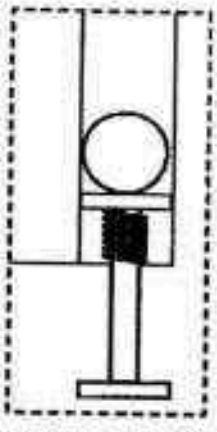


To play the game, Tom has to pull the plunger down as indicated by the diagram below and release it to launch the ball into the game area. The ball will then travel through the different obstacles before dropping to the bottom of the game area.

magnified view of part A



before the plunger is pulled down



after the plunger is pulled down

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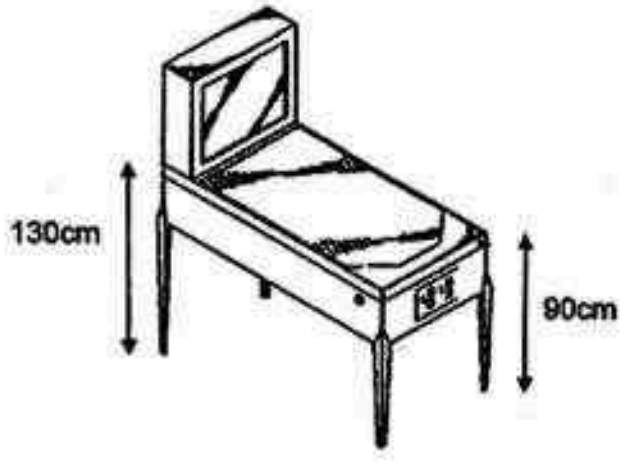
(a) What force(s) is/are acting on the ball when Tom releases the plunger? [1]

(b) Will the ball travel faster or slower when Tom pulled the plunger all the way down as compared to when he pulled it only halfway down? Explain your answer. [1]

Tom realised that all the pinball machines were built in a way such that the bottom part of the game area will be at a lower height from the ground as compared to the top part of the game area as shown in the diagram below.



(c) Explain, in terms of forces, what is the purpose of building the machine in such a manner? [1]

Score 3

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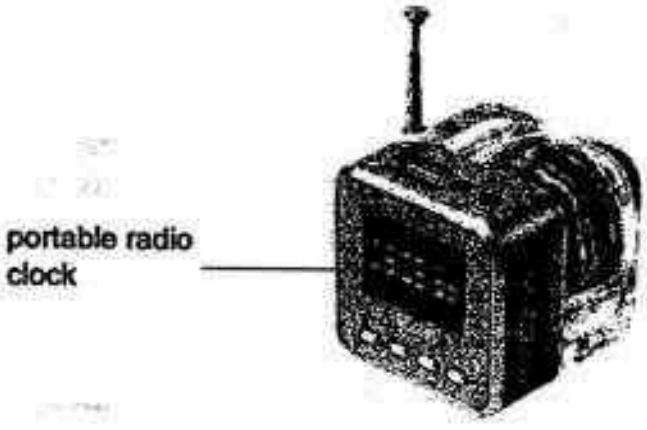
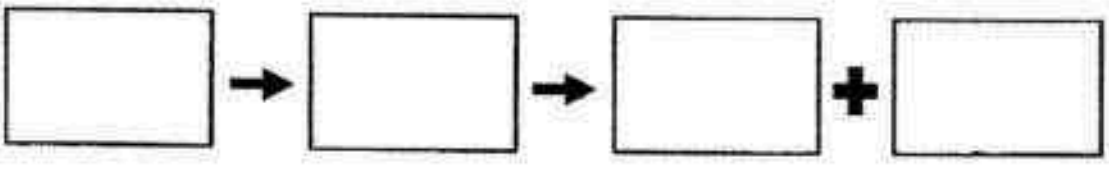
40. Qing Ling brought along her portable radio clock to a gathering by the beach. She made sure that she had fully charged the radio clock before she left her house.



(a) Write down the energy conversion for the portable radio clock when she switched it on in the boxes provided below. [1]



(b) After 2 hours of continuous use, Qing Ling found that her radio clock has stopped working. What is a possible reason for it? [1]

_____

_____

She brought the radio clock home and connected it to the socket. It started working again. She then used it to play music for 4 hours before turning it off.

(c) Why was she able to use the radio clock for a longer period of time when it was connected to the socket? [1]

_____

_____

Score 3

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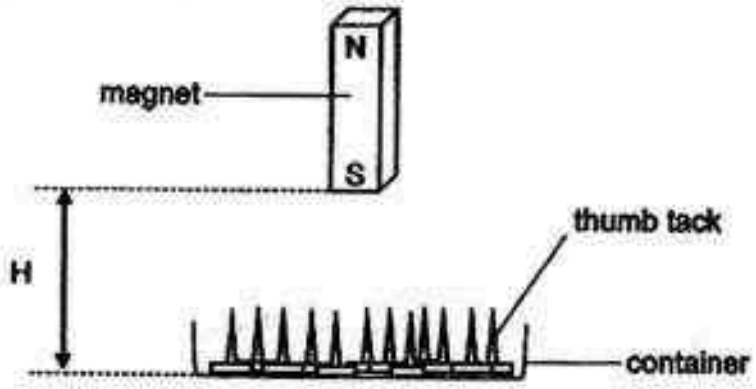
41. Henry prepared a set-up as shown below.



He wanted to find out how the distance between the magnet and the thumb tacks affects the number of thumb tacks the magnet is able to attract.

He then recorded his findings in the table below.

Distance, H (cm)	Number of thumb tacks attracted
2	10
4	X
6	5
8	3

(a) In the table above, what could possibly be the value of X? [1]

_____

(b) State the independent and dependent variables of the experiment: [1]

Independent (changed) variable: _____

Dependent (measured) variable: _____

(c) From the table above, what is the relationship between the distance between the magnet and the thumb tacks and the number of thumb tacks the magnet is able to attract? [1]

_____

_____

Score / 3

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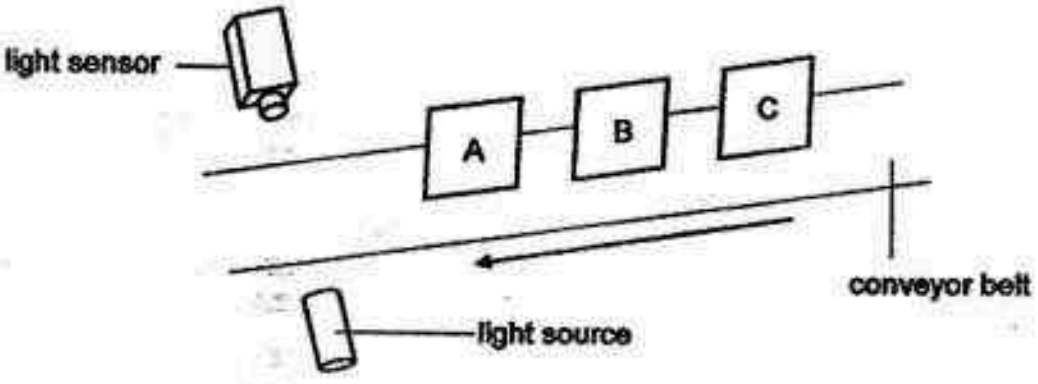
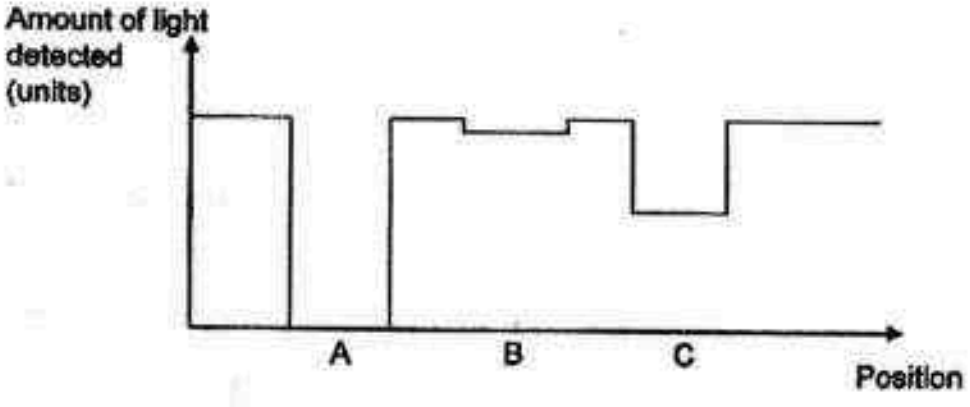
42. Eddie conducted the experiment as shown below in the dark. 3 similar-sized objects, A, B and C, which were made of 3 different materials were placed on a conveyor belt. A light sensor was used to help determine the transparency of the 3 different materials. Of the 3 objects, one of them is transparent, one of them is translucent and one of them is opaque.



The belt moves at a constant speed. The objects were placed at equal distance from each other. The data collected was used to plot the graph as shown below.



(a) Based on the graph above, which object is made up of a translucent material? Explain your answer clearly. [2]

(b) What is the property of light that enables him to determine the transparency of the 3 different materials in the above set-up? [1]

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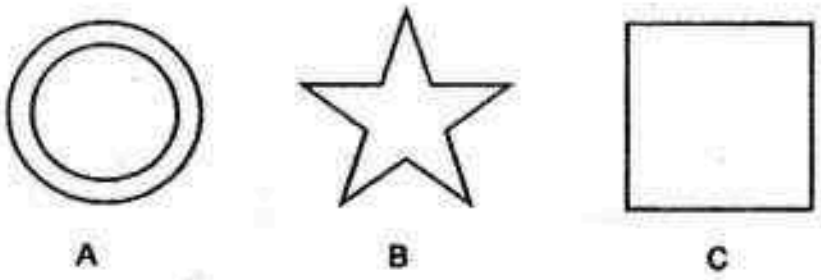
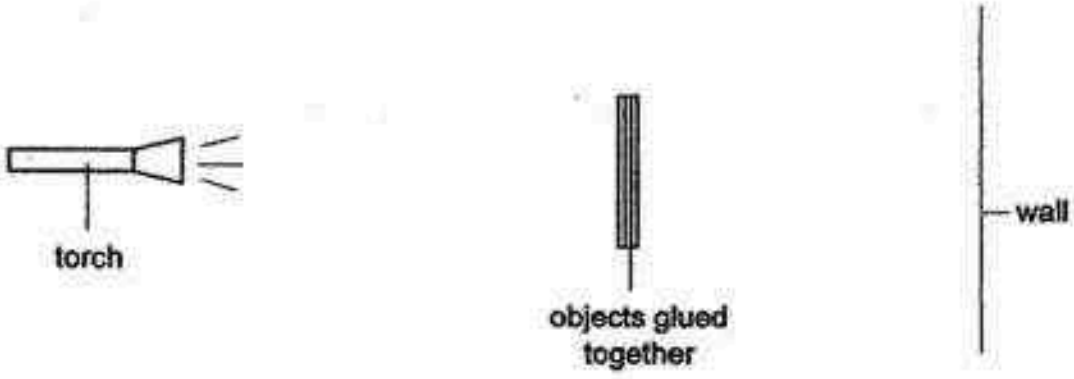
Eddie then cut the 3 objects into 3 different shapes as shown in the diagram below.

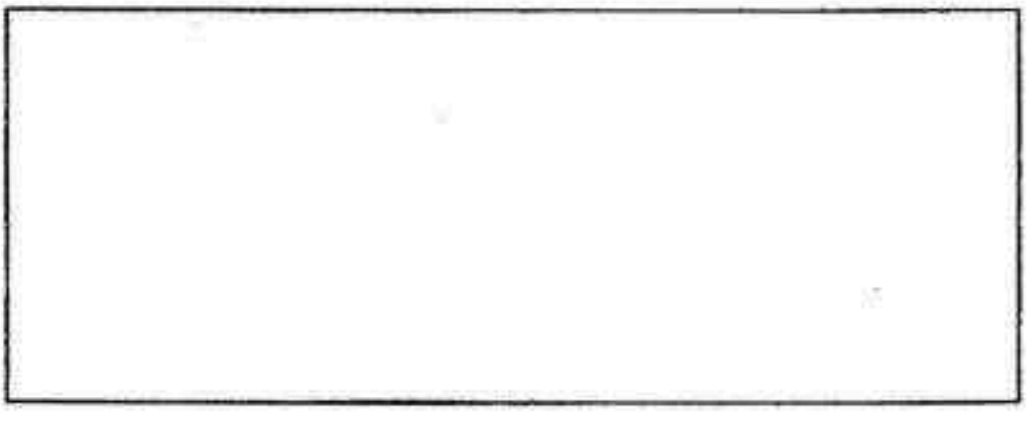


A B C

He stuck them together using glue and cast a beam of light on them to create a shadow on a wall as shown below.



(c) In the box below, draw the resulting shadow form by the 3 objects when glued together. [1]



Score	4

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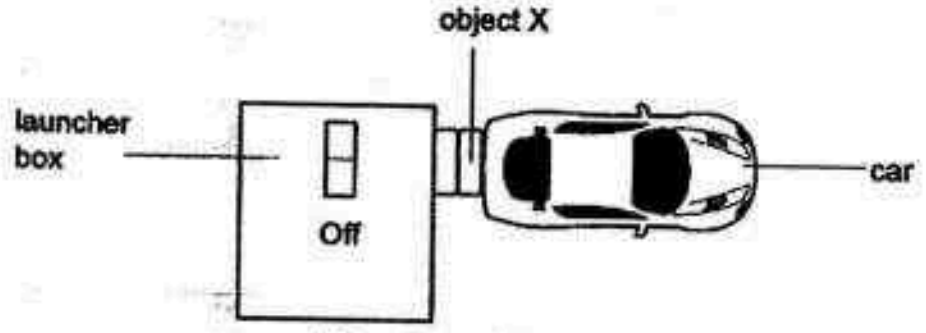
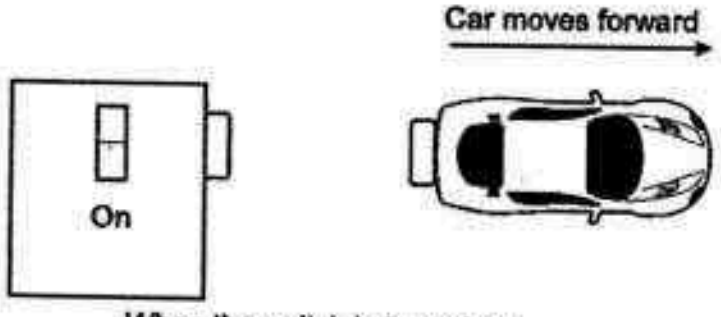
43. Dan made a toy as shown in the set-up below. He attached object X to a plastic toy car and made the launcher box on his own. The toy car in the set-up would move forward when the switch is turned on.

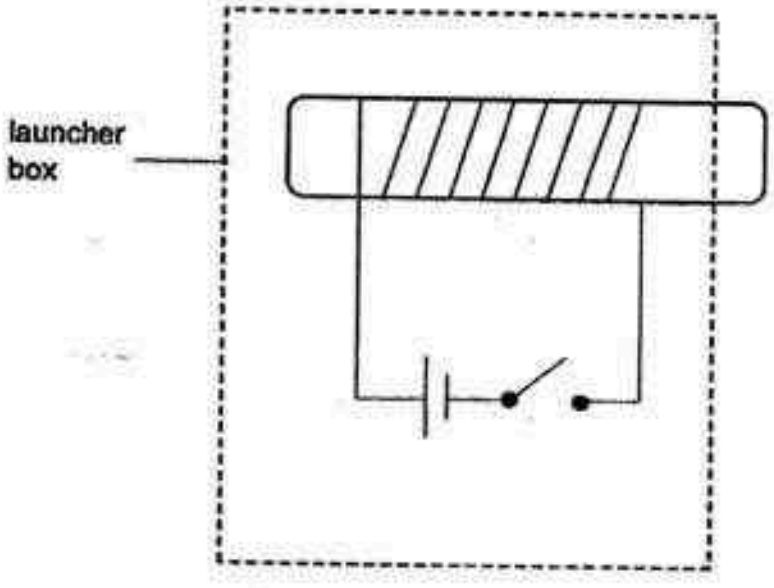


When the switch is turned off



When the switch is turned on

The diagram below shows the magnified view of the circuit within the launcher box.



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(a) What must object X be in order for this toy to work? [1]

_____

After playing for a while, Dan wanted to make his car move faster.

(b) Suggest two changes that he can make to the circuit in the launcher box to make his car move faster? [2]

_____

_____

Score 3/3

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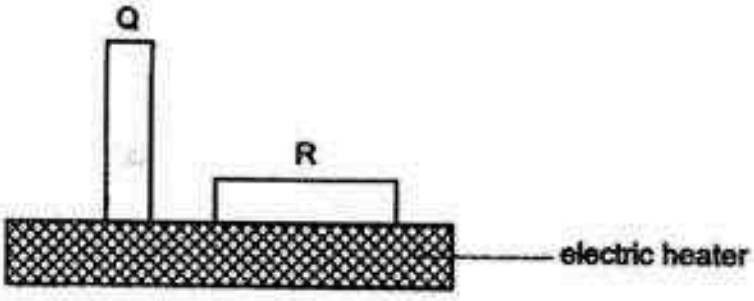
44. An experiment was conducted by placing 2 identical blocks, Q and R, on top of an electric heater as shown in the diagram below.



The time taken for the top of the 2 blocks to reach 80°C was noted down.

(a) Fill in the blanks below with the correct blocks for the different timing. [1]

Block _____ : 10 seconds

Block _____ : 25 seconds

Susan was learning how to cook stir-fried sliced pork from her mother. She stacked up all the meat in the middle of the wok as shown below in Diagram A. Her mother told her that that was not the best way to cook the pork and taught her to spread out the pork as shown below in Diagram B.

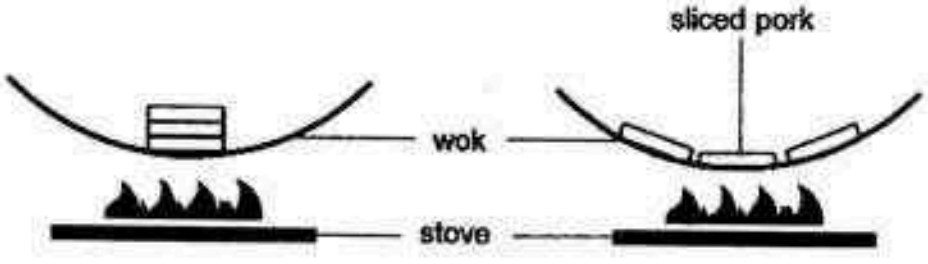


Diagram A Diagram B

(b) Explain how would spreading out the pork help to cook the pork faster? [2]

_____

_____

End of Paper

Score	3

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EXAM PAPER 2016

SCHOOL :NAN HUA

SUBJECT : P6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	3	1	3	1	1	3	4	4	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	2	3	2	2	2	3	3	2	3
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	4	4	1	4	4	3	4	4	1

31)a)Ti find out how the light intensity of the torch will affect the number of bubbles given out.

b)There will be fewer bubbles given out by the water plant as there are fewer leaves to photosynthesis.

c)The distance between the torch and the plant.

32)a)Organism. It is the food producer.

b)Organism X was the produces which provide a food and energy directly or indirectly to organism Y and Z. without X,Y and Z eventually died.

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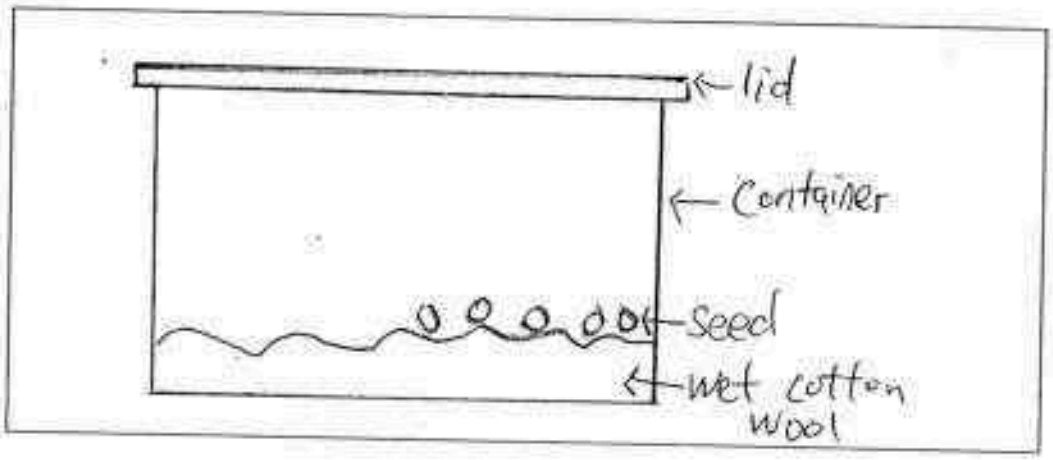
33)a)This ensure that the distance travelled by organism N to different regions is the same.

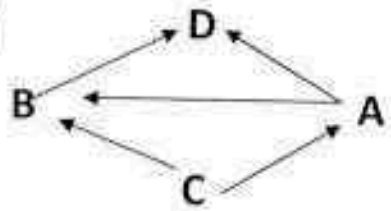
b)It is to ensure the reliability of the results.

34)a)



b)It is to allow Jaslyn to make a comparison so that she can confirm that it is the presence of Oxygen that affects the germination of seeds and not any other variable.

35)a)



b)D

B

A

C

36)a)1)The barnacles does not need to wait for the tide to come as the wholes can swim.

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36)2)The wholes help the barnacle to more away and escape their predator.

b)The hard shells of protect the wholes from their predator.

37)a)The puddle of water reduced the friction between the chopping board and the table top, making it harder for the chopping board to stay put in one place.

b)Being rough, the towel increases the friction between the chopping board and towel. This helps the chopping board to stay put in one place.

38)a)When the driver swings the ball higher the ball will posses more gravitational energy which will be converted to more kinetic energy.

b)He can change the ball to a heavier one.

39)a)Elastic spring force, gravitational force, frictional force.

b)It will travel faster when the spring is compressed more there will up more elastic spring force acting on the ball when the plunder is released.

c)Gravitational force will pull the ball down to the bottom of the game area.

40)a)Chemical potential energy→electrical energy→light energy + sound energy

b)The battery is flat.

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40)c)By using electrical energy from the mains, the supply of energy is constant and as long as the devise is plugged in, it functions.

41)a)7.

b)The distance of H (cm)

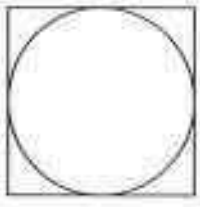
The number of thumb tacks attracted.

c)The closer the magnet is to the thumb tacks, the more the amount of thumb tacks the magnet can attract.

42)a)Object C. The light sensor detected more light than A but less light than B.

b)Light travels in straight lines.

c)



43)a)A magnet.

b)Add more batteries to the circuit within the launcher box. Coil the wire around the rod a greater amount of times.

44)a)R , Q

b)Spreading out the pork helps to increase the amount of contact surface with the heat sourer the rate of heat transfer will be faster.

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'9

Rosyth School
First Semestral Assessment 2016
STANDARD SCIENCE
Primary 6

Total Marks: ____/60

Name: _____

Class: Pr 6 _____ Register No. _____ Duration: 1 h 45 min

Date: 11 May 2016 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 30 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 31 to 44, give your answers in the spaces given in the Booklet B.

* This booklet consists of 18 printed pages (including cover page).

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Part I

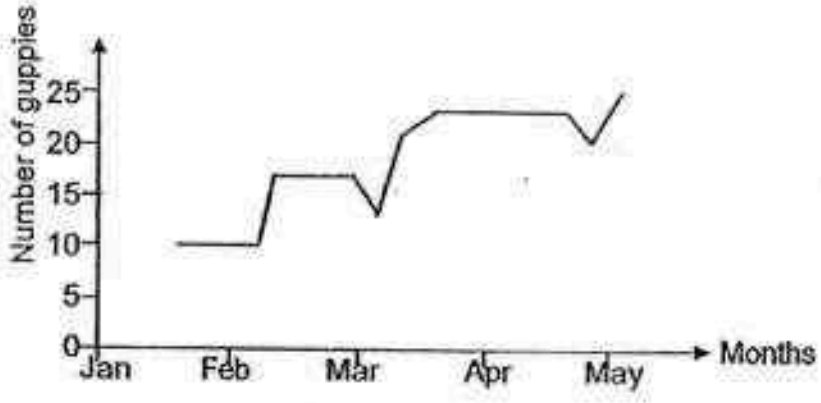
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **(60 Marks)**

1 Which of the following about all non-flowering plants and fungi are correct?

		Non-flowering plants	Fungi
A	Do they contain chlorophyll?	Yes	No
B	Do they feed on decaying matter?	No	Yes
C	Do they reproduce by spores?	No	Yes

(1) B only
(2) A and B only
(3) A and C only
(4) A, B and C

2 Charlie puts ten guppies into an aquarium and feeds them every day. He does not add in any more guppies into the aquarium. The graph below shows how the number of guppies in the aquarium changes over the next few months.



Which characteristic(s) of living things is/are shown in the graph?

A Living things die.
B Living things grow.
C Living things reproduce.

(1) B only
(2) C only
(3) A and C only
(4) A, B and C

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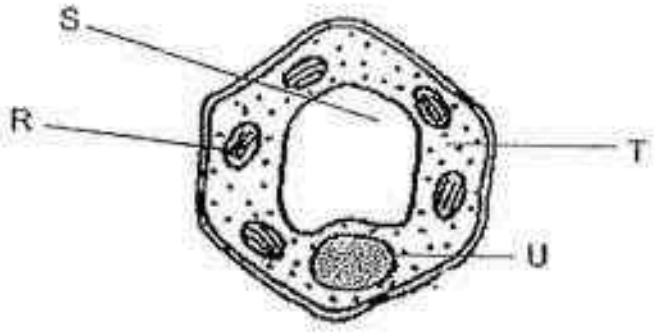
3 One of the characteristics of living things is growth. Which one of the following statements best describes growth?

(1) It is the process whereby cells die and are replaced.
(2) It is the process whereby damaged cells are repaired.
(3) It is the process whereby cells divide and increase in size.
(4) It is the process whereby cells divide and increase in numbers.

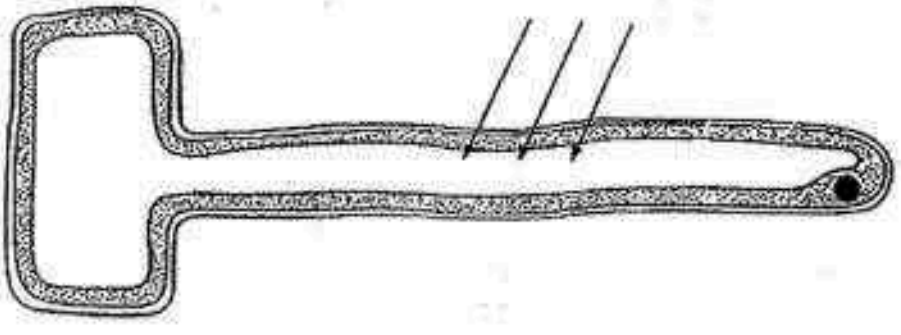
4 The diagram below shows a plant cell.



In which part of the cell is sugar made?

(1) R
(2) S
(3) T
(4) U

5 Study the diagram below.



The arrows show the movement of mineral salts into a plant cell. Which of the following shows the correct order of the parts that the mineral salts have to pass through to reach the centre of the cell?

(1) cell membrane → cytoplasm → cell wall → cell sap
(2) cell wall → cell membrane → cytoplasm → cell sap
(3) cell wall → cell membrane → cell sap → cytoplasm
(4) cell membrane → cell wall → cell sap → cytoplasm

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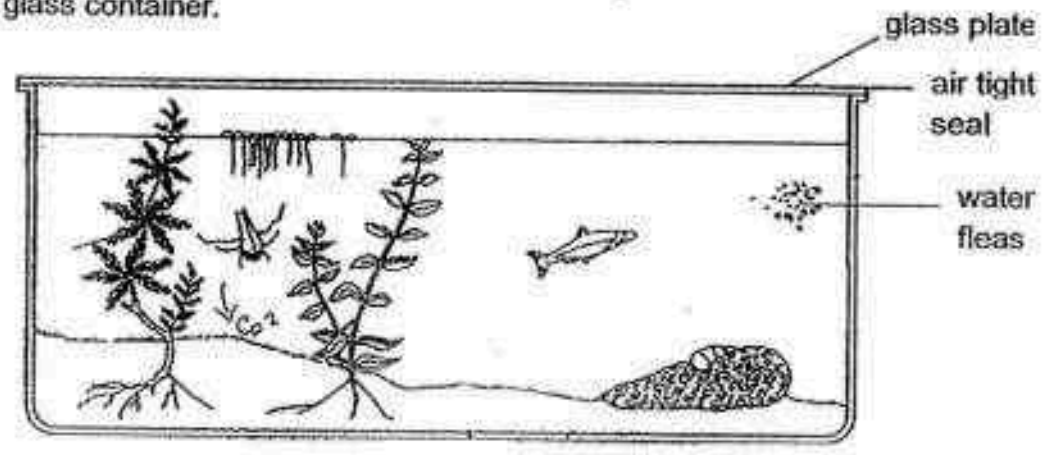
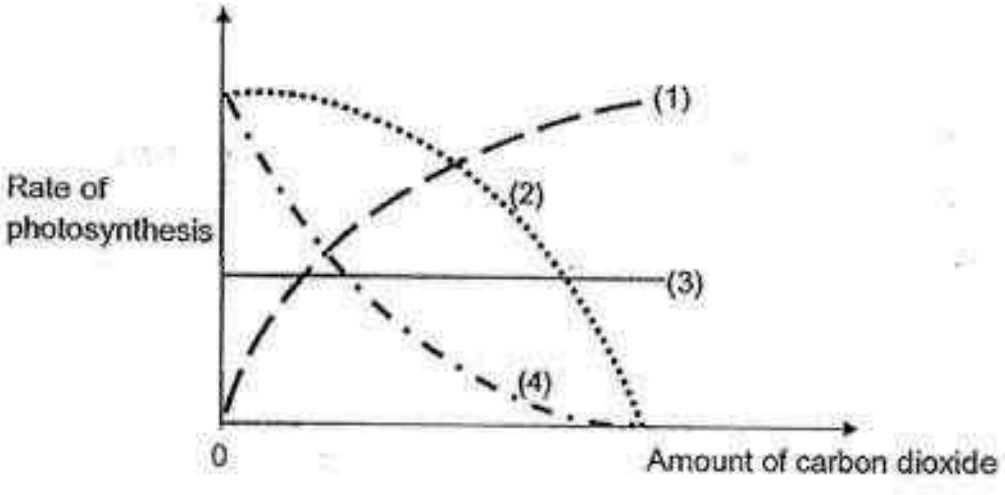
6 The diagram below shows some animals and plants sealed in a glass container.



What must be supplied to keep the organisms alive for the longest possible time?

(1) oxygen
(2) food
(3) carbon dioxide
(4) light

7 Rosy carried out an experiment to see how the amount of carbon dioxide affects the rate of photosynthesis. Which one of the following correctly shows the results if she had carried out a fair test?



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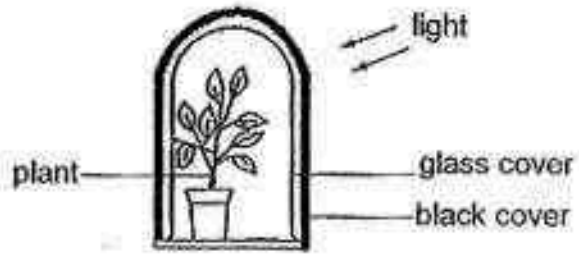
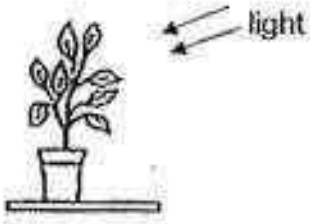
8 The diagram shows an experiment to find out whether light is needed for photosynthesis.

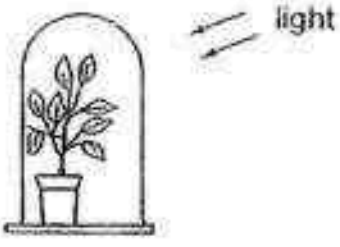


Which one of the following is the most suitable control for the experiment?

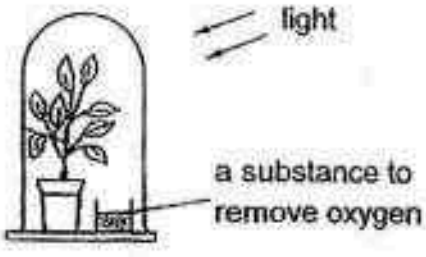
(1)



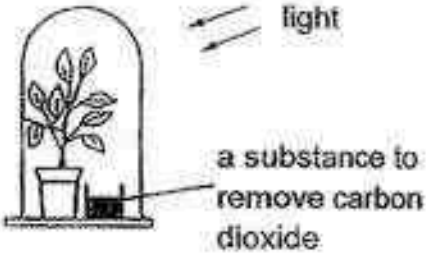
(2)



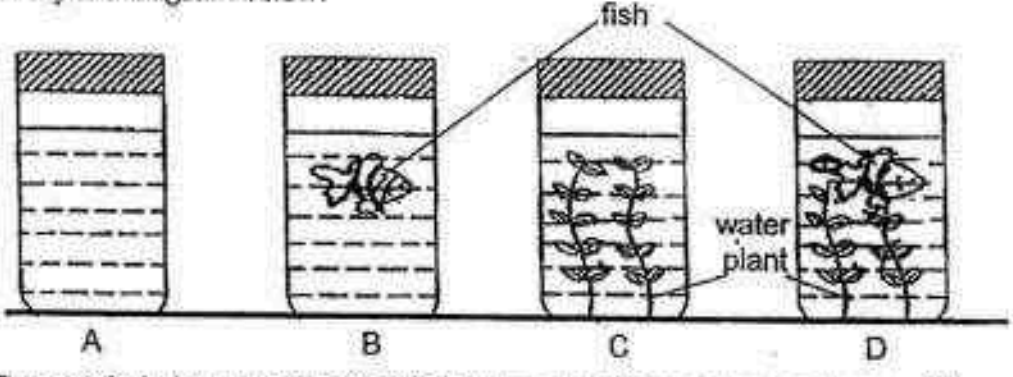
(3)



(4)



9 Study the diagram below.



Four sealed glass containers of the same size were set up as shown. They were left in the sunlight for six hours.

At the end of the experiment, which container of water would contain the least amount of carbon dioxide?

(1) Container A
(2) Container B
(3) Container C
(4) Container D

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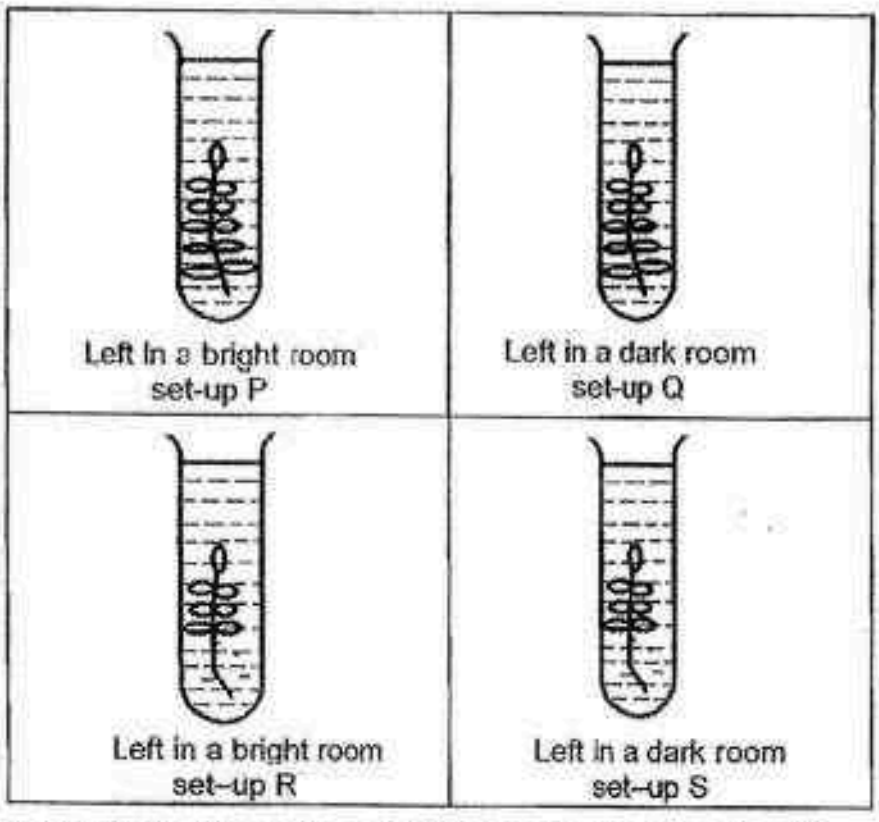
10 Leela carried out an experiment to find out if the number of leaves of a plant affects the rate of photosynthesis.



Which two of the above set-ups should be used in the experiment?

(1) P and Q
(2) P and R
(3) Q and R
(4) Q and S

11 Some pupils counted the birds that visited the field soon after the grass was cut.

Which one of the following is a possible observation and explanation?

	Observation	Explanation
(1)	More birds visited the field.	The insects were exposed, making it easier for the birds to catch them.
(2)	More birds visited the field.	The birds were eating the cut grass which could be easily digested.
(3)	Less birds visited the field.	Many insects had been killed so the birds had fewer insects to feed on.
(4)	Less birds visited the field.	The field could no longer provide a shelter for the birds.

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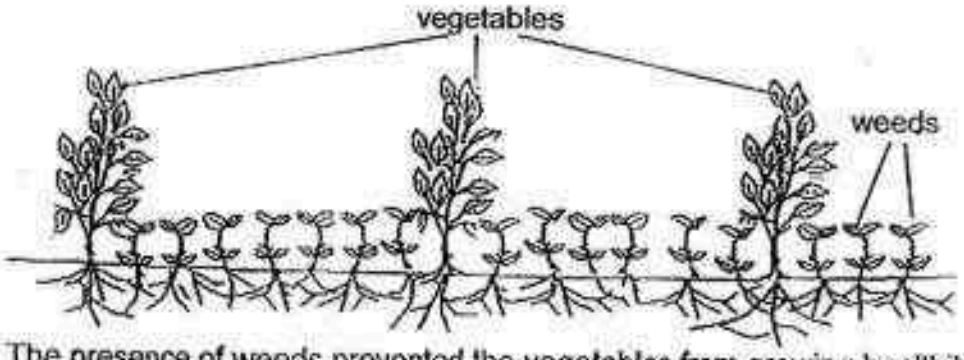
12 The diagram below shows some vegetables and weeds growing in a plot of land.

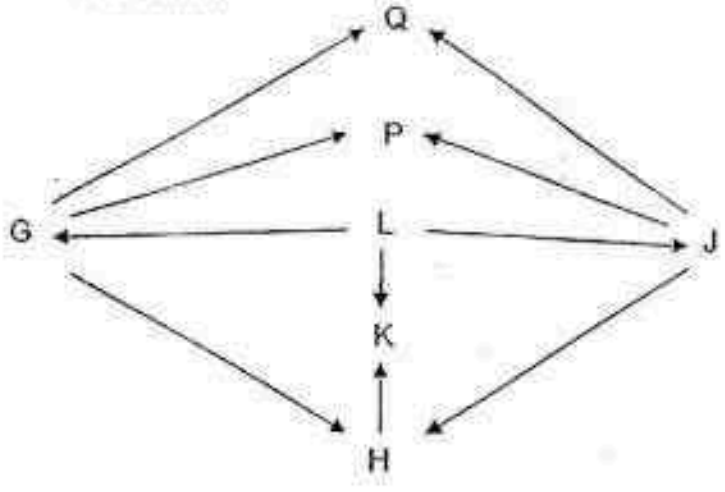


The presence of weeds prevented the vegetables from growing healthily.
Which of the following do the vegetables need to compete with the weeds for?

A water
B oxygen
C space
D nutrients
E sunlight

(1) A, C and D only
(2) B, C and E only
(3) A, C, D and E only
(4) A, B, C, D and E

13 Study the food web below.



What is likely to happen to the population of H if the population of P is wiped out by a disease?

(1) It will stay the same because H do not eat P.
(2) It will stay the same because Q will eat more food.
(3) It will increase because H will have more food to eat.
(4) It will decrease because there will be more competition with Q for food.

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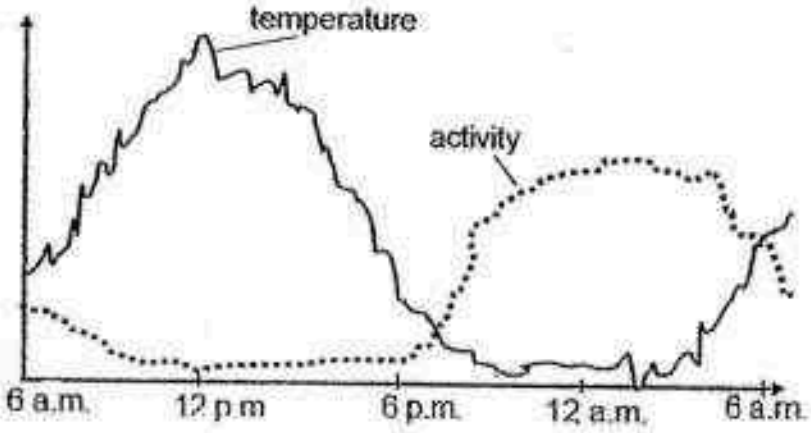
14 The leopard gecko lives in the desert. The two line graphs below show the relationship between the activity level of the leopard gecko and the temperature changes of the desert in a day.

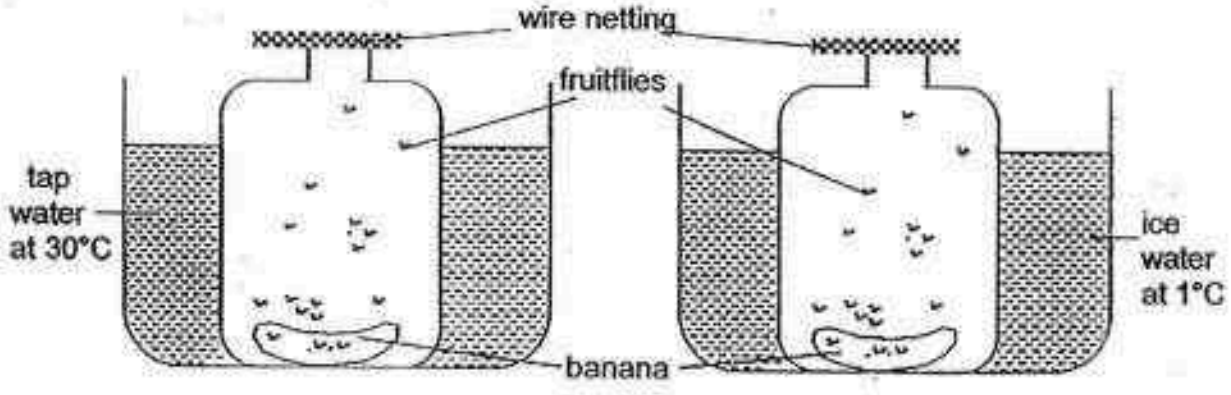


What can you infer about the leopard gecko based on the graph shown above?

A Its activity increases as the temperature increases.
B It is most active in the night when the temperature is cooler.
C Its behavioural adaptation helps it to survive in the hot desert.
D It is structurally adapted to be active when the temperature is hot.

(1) A and B only
(2) B and C only
(3) C and D only
(4) B and D only

15 Steve set up the experiment below. He observed the behaviour of the fruitflies in the 2 set-ups at ten-minute intervals for one hour. The wire netting kept the fruitflies in while allowing air exchange.



Which of the following is the aim for Steve's experiment?

(1) To find out which type of food fruitflies prefer.
(2) To find out if fruitflies prefer cold to warm surroundings.
(3) To find out which is the best temperature for fruitflies to survive.
(4) To find out how temperature of the surrounding affects the activity level of fruitflies.

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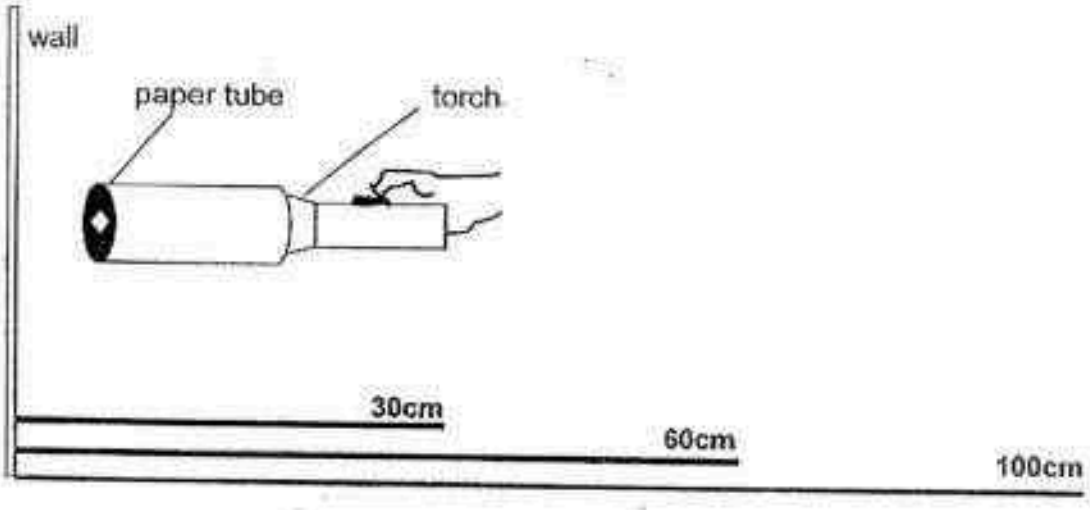
16 Anna cut out a square of dimension 1cm by 1cm from a piece of opaque paper and taped the paper to one end of a paper tube.



A torch was fixed onto the other end of the paper tube. The torch was fixed at different distances, in front of a wall in a completely dark room and switched on as shown in the diagram below.



A shadow was cast on the wall and Anna made the following statements.

A The shadow formed on the wall was bigger when the torch was nearer to the wall.
B The size of the shape formed on the wall was the same at 30cm and 60cm.
C At a distance of 60cm, the shape formed on the wall was smaller than at a distance of 100cm.

Which of the statement(s) about the shadow formed on the wall is/are correct?

(1) A only
(2) C only
(3) B and C only
(4) A, B and C

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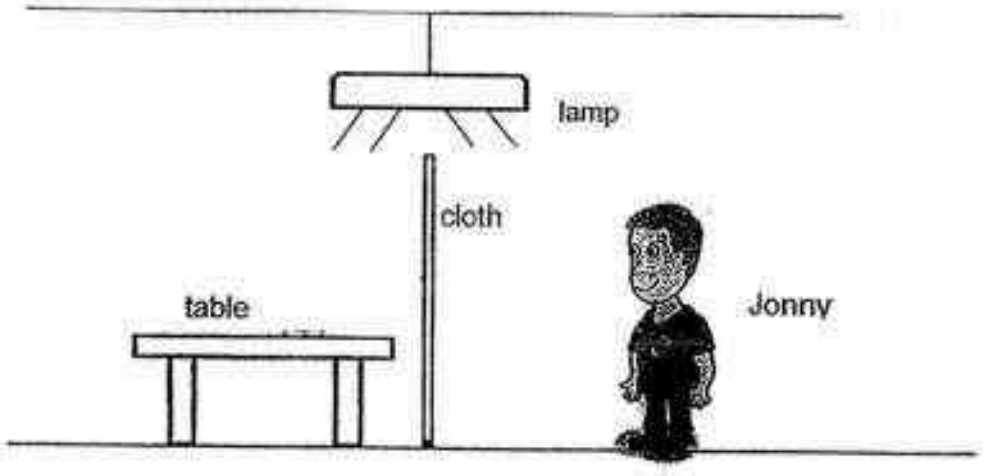
17 In the diagram below, Jonny was standing behind a piece of cloth. He was not able to see the table.



Which one of the following explains why Jonny was not able to see the table?

(1) The table is not a light source.
(2) The table did not reflect light from the lamp.
(3) The cloth did not allow light to pass through.
(4) The table did not allow light to pass through.

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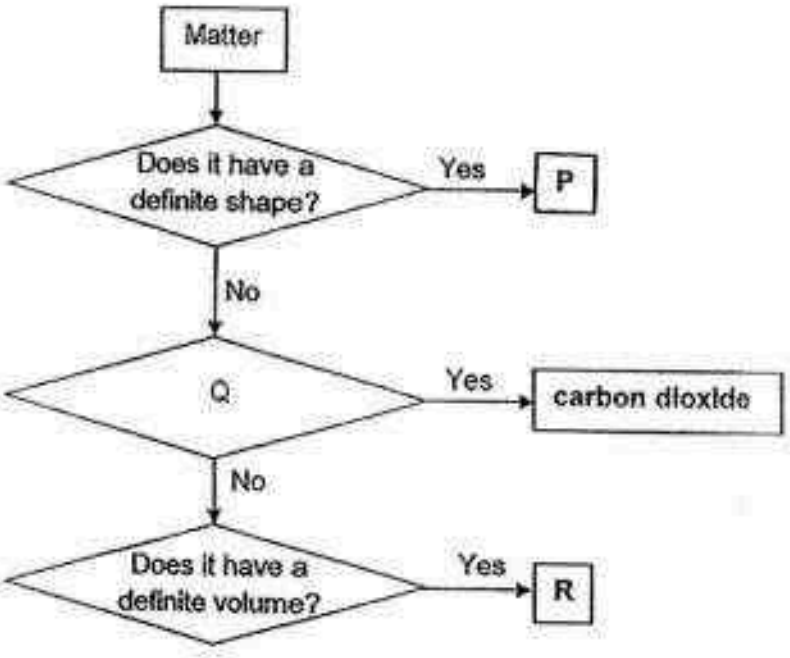
18 Study the flowchart below.



Which of the following represents P, Q and R?

	P	Q	R
(1)	smoke	Can it be expanded?	brick
(2)	milk	Can it be expanded?	smoke
(3)	brick	Can it be compressed?	milk
(4)	brick	Can it be compressed?	smoke

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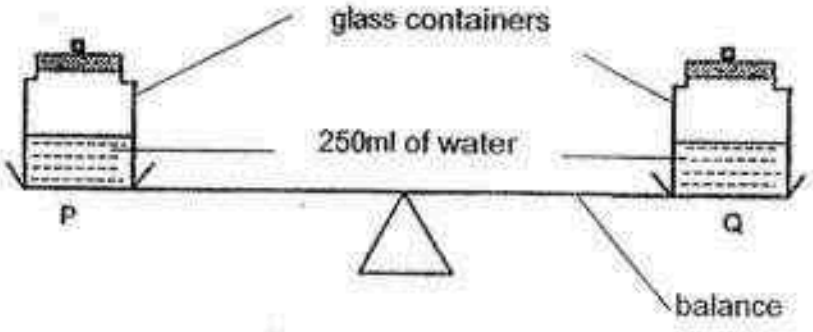
19 Sunny balanced two identical glass containers, P and Q, each containing 250ml of water on a balance as shown in the diagram below.



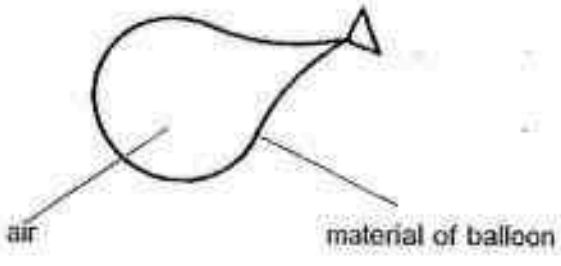
Through a special hole in the cap of the containers, Sunny pumped in an additional 50ml of air into container P only.

Which of the following statement(s) is/are correct?

A The volume of air in container P increased.
B The side of the balance with container P moved downwards.
C The mass of air in container P remained the same.

(1) A only
(2) B only
(3) A and B only
(4) B and C only

20 Air was blown into a balloon to inflate it partially as shown in the diagram below.



The partially inflated balloon was placed into a basin of hot water. After 30 minutes, it was observed that the balloon was bigger than before.

Which one of the following best explains the observation?

(1) Heat flowed from the hot water to the air inside the balloon.
(2) Heat flowed from the hot water to the material of the balloon.
(3) Heat flowed from the material of the balloon to the air inside the balloon.
(4) Heat flowed from the air inside the balloon to the material of the balloon.

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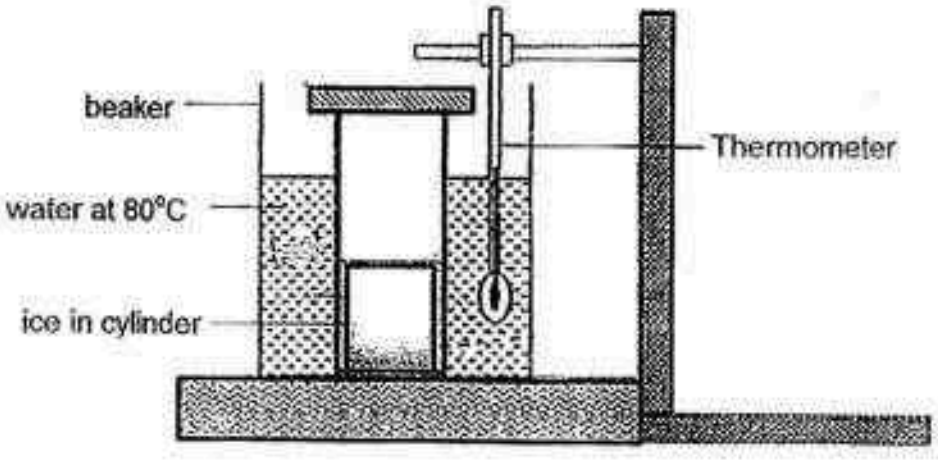
21 Martin filled a beaker with water at 80°C. A piece of ice in a cylinder was placed into the beaker of water as shown below. The experiment was conducted in a room where temperature was 28°C.



Which of the following statement(s) is/are correct about his observation 20 minutes later?

A The ice had melted as it lost heat to the water in the beaker.
B The ice had melted as it gained heat from the water in the beaker.
C The temperature of water increased as the ice in the cylinder lost heat to the water.
D The temperature of water decreased as it had lost heat to the ice in the cylinder.

(1) A only
(2) C only
(3) B and C only
(4) B and D only

22 The table below shows the freezing and boiling points of substances X, Y and Z.

Substances	Freezing point (°C)	Boiling point (°C)
X	39	93
Y	3	120
Z	19	79

Which of the substances X, Y and Z is/are in the liquid state at 81°C?

(1) X only
(2) Y only
(3) X and Y only
(4) Y and Z only

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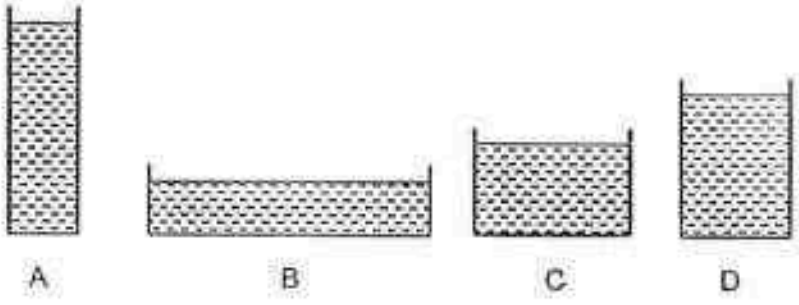
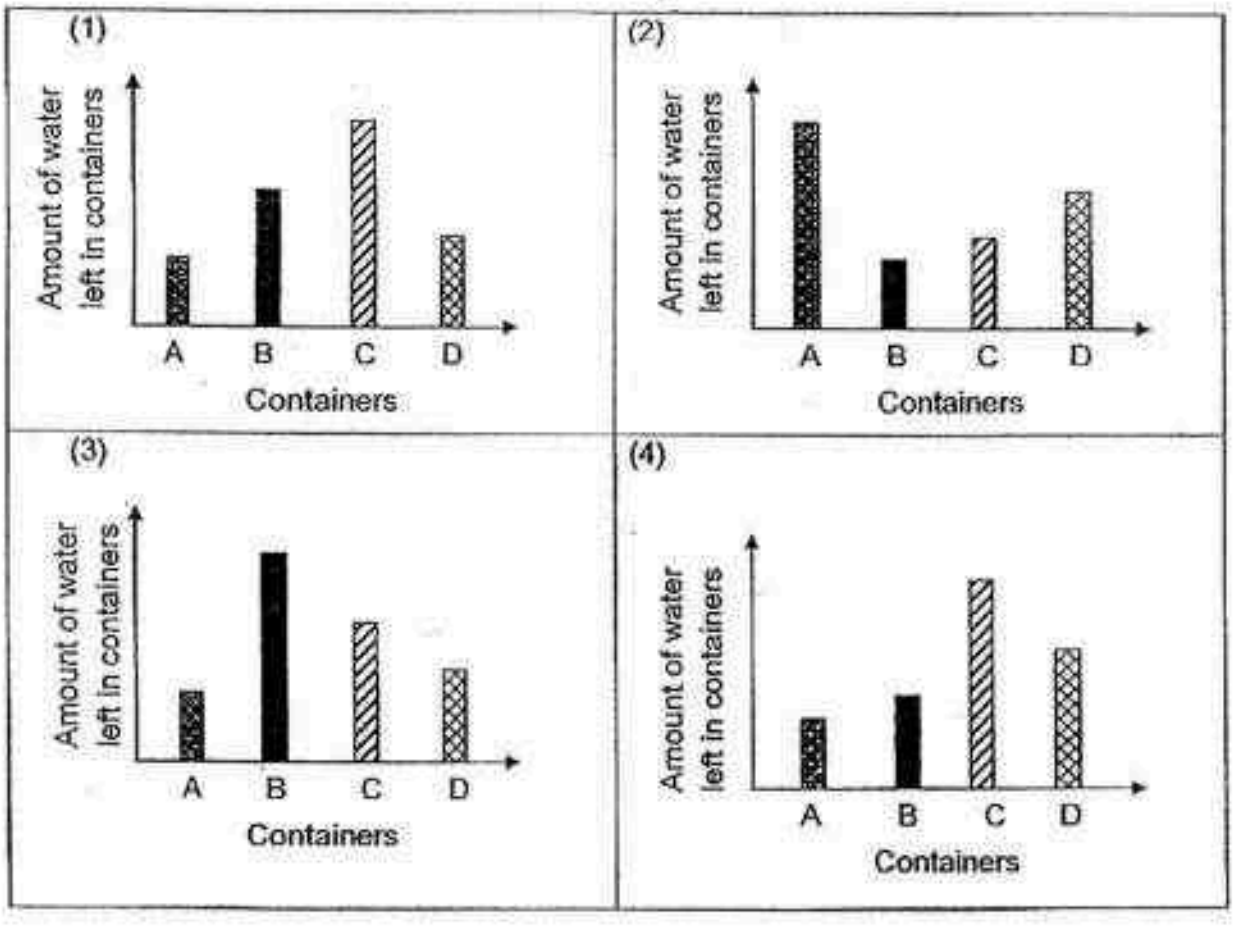
23 Ahmad poured 1000 ml of water into each container, A, B, C and D, as shown in the diagram below.



The 4 containers were each placed under a fan moving at a constant speed. After 6 hours, Ahmad measured the amount of water left in each container and recorded the results using a bar graph.

Based on the information above, which one of the following graphs shows the correct results?



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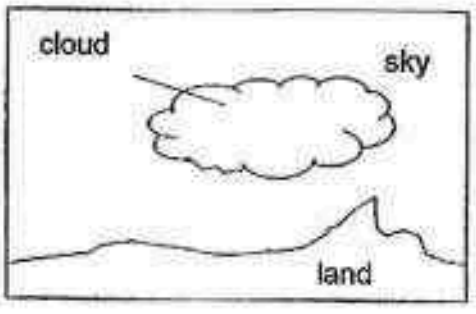
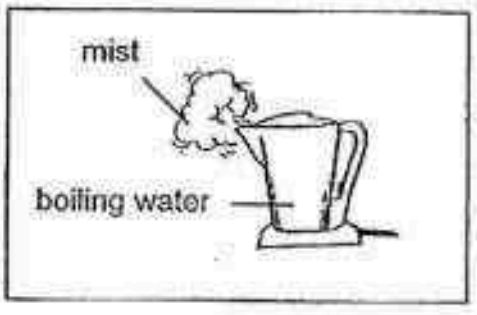
24 Study the two diagrams below.



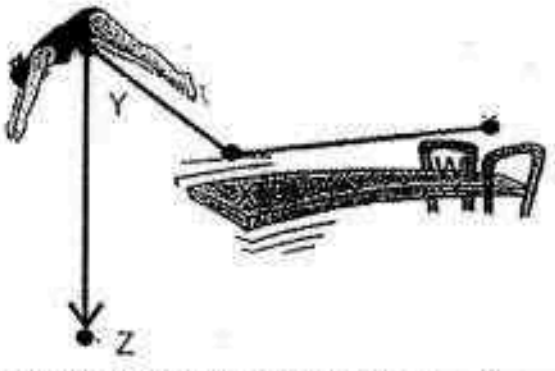


How are the clouds in the sky and the mist formed around the spout of a kettle of boiling water similar?

A Both are made up of water vapour.
B Both are made up of water droplets.
C Both are formed by water evaporating into the surrounding air.
D Both are formed by water vapour losing heat to the surrounding air.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

25 The diver in the diagram below started her dive standing at point W. The arrow traces her path in the dive.



Based on the diagram above, at which point in her dive was elastic potential energy converted to kinetic energy?

(1) W
(2) X
(3) Y
(4) Z

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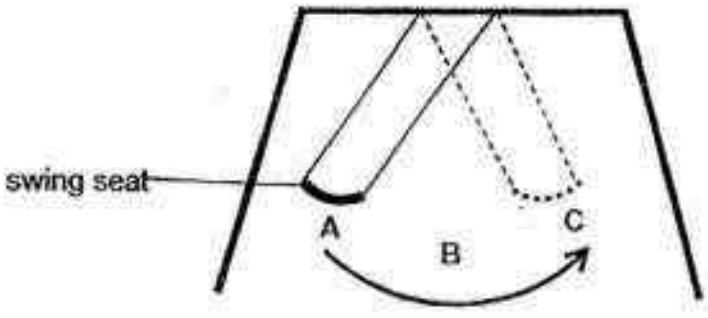
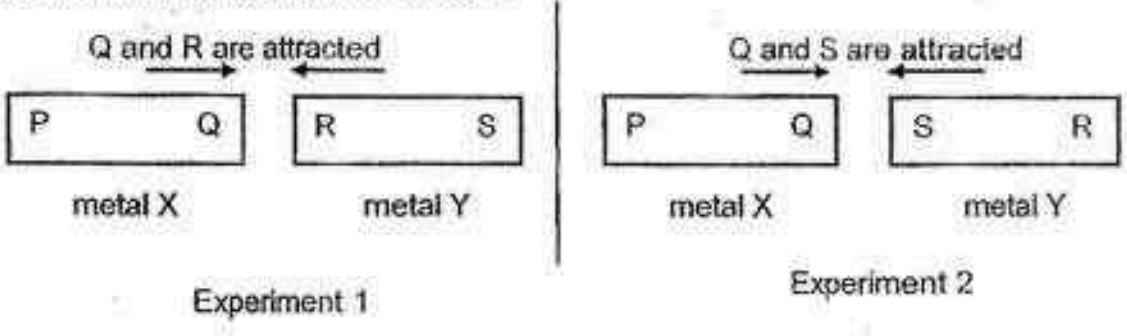
26 The diagram below shows how a swing moves from the start position A to B and then to C.



Which one of the following correctly shows the changes in potential energy and kinetic energy of the seat as the swing moves from position A to C?

	Potential energy from A to B	Kinetic energy from B to C
(1)	increasing	decreasing
(2)	decreasing	increasing
(3)	increasing	increasing
(4)	decreasing	decreasing

27 Two pieces of metals, X and Y, are placed side by side as shown in the two experiments. Results are shown below.



Based on the information given, which of the following statement(s) is/are true?

A Both metals X and Y are magnets.
B Q and R are definitely unlike poles.
C Both metals X and Y are made of magnetic materials.

(1) A only
(2) C only
(3) A and B only
(4) B and C only

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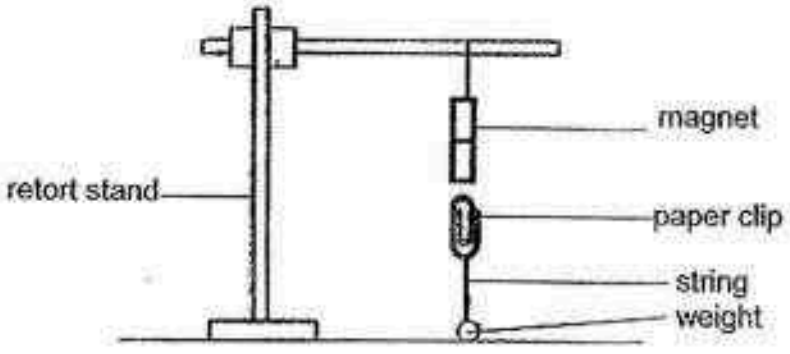
28 Study the set-up shown below.

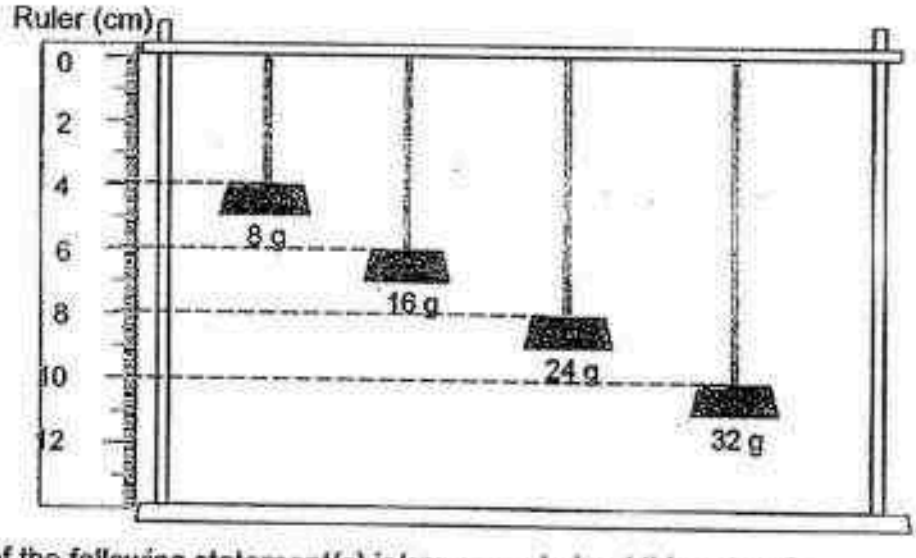


Which of the following force(s) is/are acting on the paper clip?

A magnetic force
B gravitational force
C frictional force

(1) A only
(2) A and B only
(3) A and C only
(4) A, B and C

29 Gabriel set up an experiment using four similar elastic bands to find out how the mass of the weights affects the extension of an elastic band.



Which of the following statement(s) is/are correct about this set-up?

A The elastic band is exerting a downward force.
B The weights exert a downward force on the elastic band.
C When a mass of 24 g is hung on the elastic band, the extension of the elastic band is 6 cm.

(1) B only
(2) A and C only
(3) B and C only
(4) A, B and C

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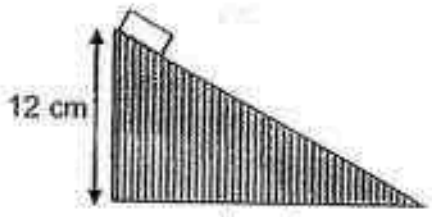
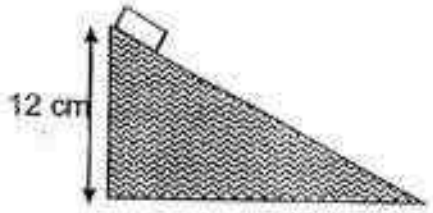
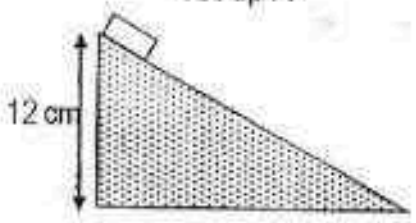
30 Ling conducted an experiment using a similar wooden block and 4 ramps. The ramps have surfaces of different textures. She carried out the experiment with each set-up individually.



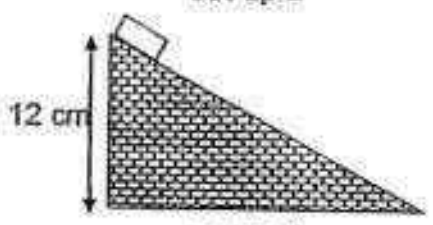
set-up A



set-up B



set-up C



set-up D

She released the wooden block from the top of each ramp and measured the distance moved by the block before it came to a stop for each set-up and recorded it in the table below.

set-up	**A**	**B**	**C**	**D**
distance moved by the block (cm)	20	8	6	11

Which one of the following most likely shows the material used for the surface of the ramp in each set-up?

	set-up A	**set-up B**	**set-up C**	**set-up D**
(1)	glass	sandpaper	carpet	polished wood
(2)	carpet	polished wood	glass	sandpaper
(3)	polished wood	glass	sandpaper	carpet
(4)	sandpaper	polished wood	carpet	glass

END OF BOOKLET A

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Rosyth School
First Semestral Assessment 2016
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: / 100

Class: Pr 6 ____ Register No. _____ Duration: 1 h 45 min

Date: 11 May 2016 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 31 to 44, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	60 marks	
Booklet B	40 marks	
Total	100 marks	

* This booklet consists of 17 printed pages (including cover page).

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Part II

For questions 31 to 44, write your answers in the space provided. **(40 Marks)**

31 The diagram below shows animal Q.



This animal is originally found in country R that experiences short summers and long winters. It flies to Singapore between September and March when its country of origin experiences cold winter.

(a) Name 2 characteristics of living things that are shown in this behaviour by animal Q. [2]

Characteristic 1: _____

_____

Characteristic 2: _____

_____

(b) Which group of animals does animal Q belong to? Explain your answer. [1]

_____

_____

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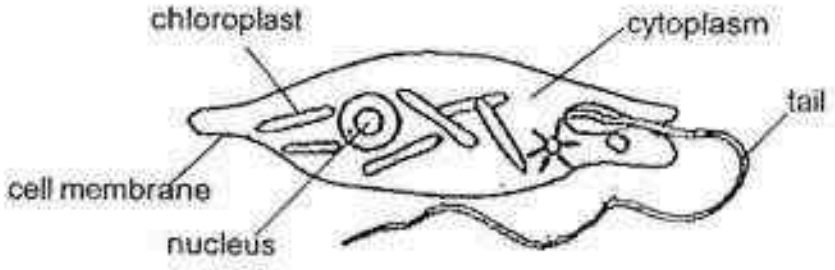
32 Aziz found a single-cell organism, organism Z, in a freshwater pond.
The diagram below shows how organism Z looks like under the microscope.



(a) Aziz concluded that organism Z does not need to feed on other organisms.
Do you agree with him? Explain your answer. [1]

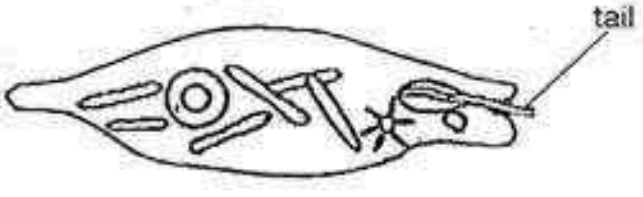
_____

_____

(b) State one part of a typical plant cell that is not present in organism Z. [1]

_____

When Aziz cut away the tail of organism Z as shown in the diagram below, he observed that a new tail started to form.



(c) How was it possible for organism Z to form a new tail? [1]

_____

_____

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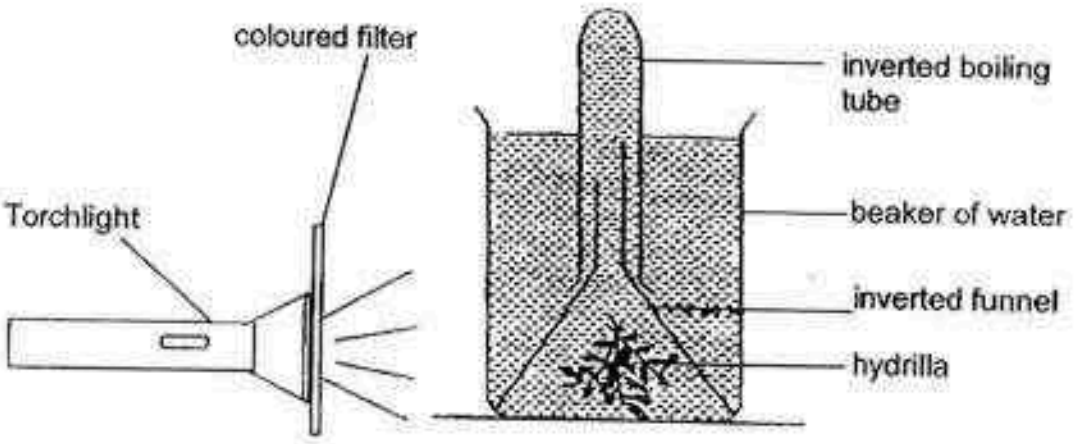
33 Peter set up the experiment as shown below.



He placed a coloured filter in front of the torchlight and shone the torch at the hydrilla plant for 15 minutes. He then repeated the experiment using another coloured filter.

(a) What is the aim of the experiment? [1]

_____

_____

(b) Identify the variable to measure for the experiment. [1]

_____

_____

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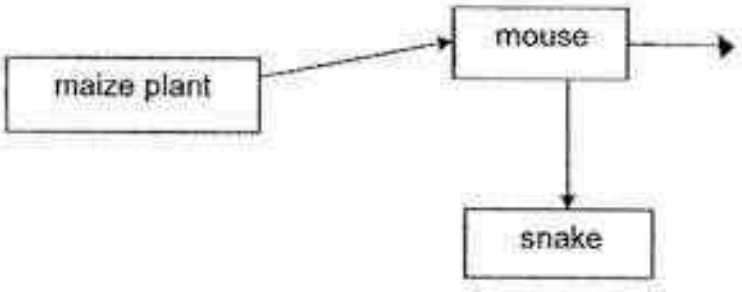
34 The diagram below shows a food chain in a habitat.



An organism X was introduced to the habitat. As a result, the population of mice decreased.

(a) Draw organism X in the food chain above. [1]

(b) Name two physical characteristics of the environment that will affect the growth of the maize plant. [1]

(c) If all the snakes are killed, what will be the immediate effect on the maize plants? Explain your answer clearly. [1]

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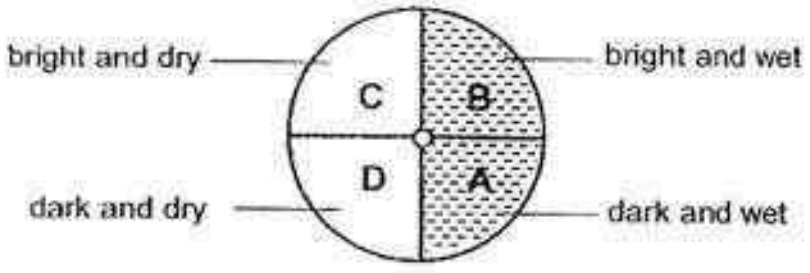
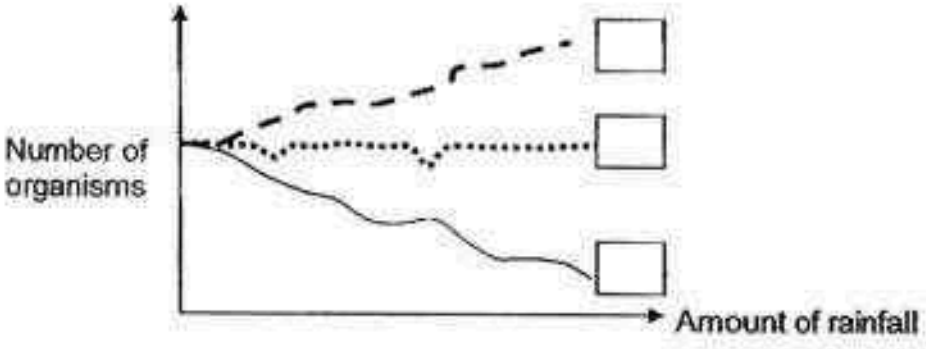
35 Ahmad set up an experiment to find out the preferred living conditions of three types of organisms P, Q and R. First, he filled parts A and B of a round tray with wet soil and parts C and D with dry soil. Next, he covered parts A and D with black paper.
He put 20 of each type of organism P, Q and R, in the centre of the tray. After one hour, he counted the number of organisms found in each part of the tray.



	Number of organisms in each part of the tray			
Organism	A	B	C	D
P	1	0	10	9
Q	9	1	0	10
R	18	2	0	0

(a) Why did Ahmad put the organisms in the centre of the tray at the start of the experiment? [1]

The organisms were then returned to their natural environment. Ahmad continued to study their number and monitored the amount of rainfall in their natural environment over a period of time. He drew a graph to show his findings.



(b) Based on the results of Ahmad's experiment, write the letters P, Q and R into the correct boxes in the graph above to represent the three types of organisms. [1]

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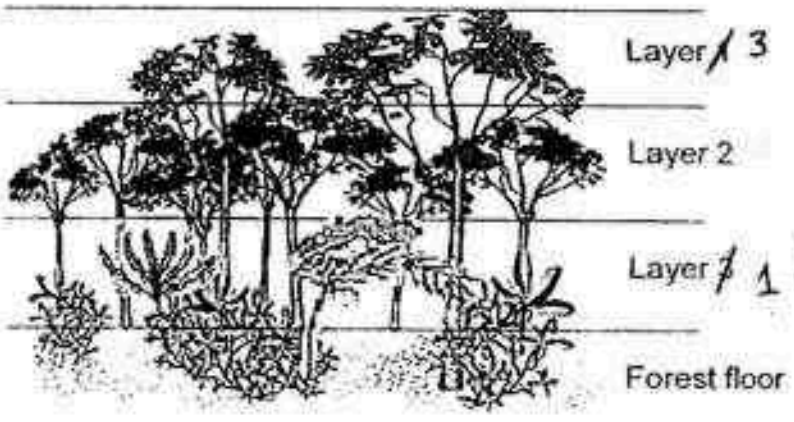
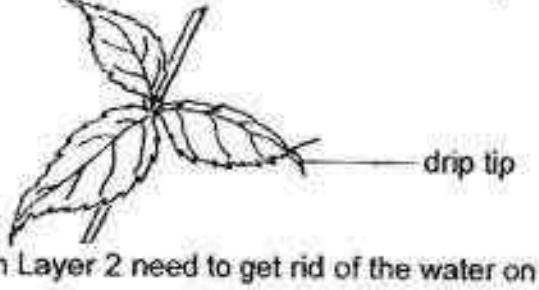
36 The diagram below shows four different layers of a typical rainforest.



(a) Why are there ~~are~~ fewer plants found on the forest floor than the upper layers? [1]

(b) Why do the plants in Layer 1 have large leaves? [1]

The diagram below shows the leaves of a typical plant in Layer 2. The leaves of these plants have adapted to cope with exceptionally high rainfall by having drip tips. These drip tips enable rain drops to run off quickly.



(c) Why do plants in Layer 2 need to get rid of the water on its leaves quickly? [1]

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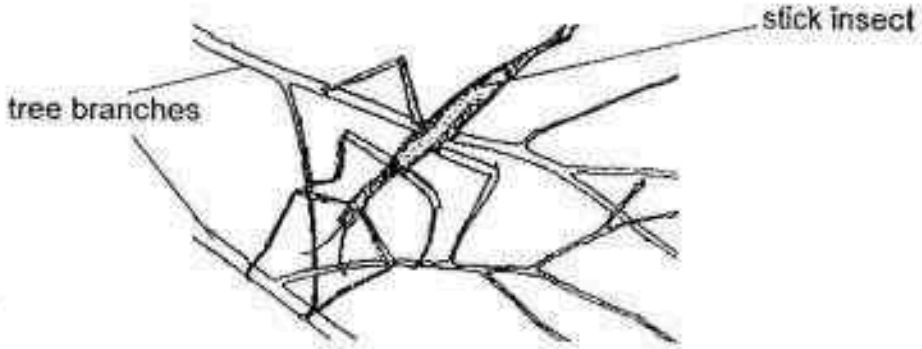
37 The picture below shows a stick insect. It is not easily seen by its predators as it is able to camouflage itself among the branches of a tree in the forest.



(a) How is the stick insect structurally adapted to avoid being seen by its predators? [1]

_____

_____

The diagram below shows an egg of a stick insect.



The egg has a protruding structure which is full of sugar. The ants carry the egg down into their nest underground where they eat the sugar but leave the egg. Ants usually leave the existing nest to build a new nest after 6 months. The stick insect eggs can take up to a year to hatch.

(b) How does the ant's behaviour benefit itself and the stick insect? [2]

Benefit for ants: _____

_____

Benefit for stick insect: _____

_____

(c) Why are young stick insects that hatch from the eggs not eaten by the ants? [1]

_____

_____

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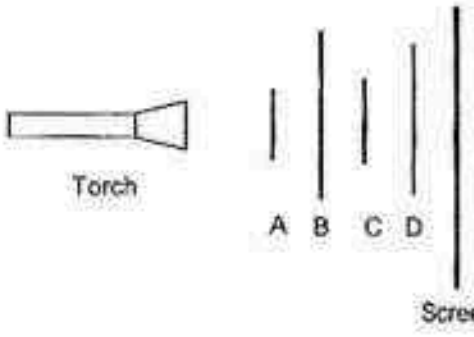
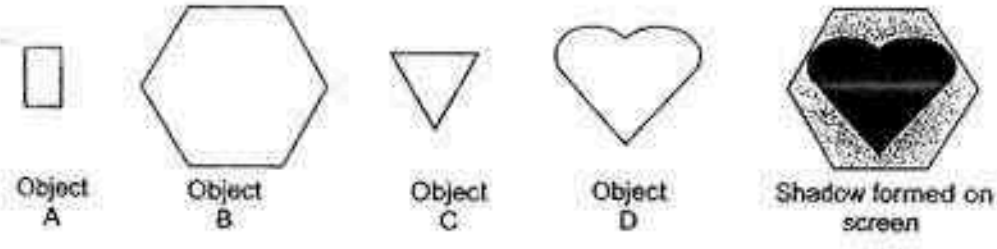
38 Ken placed 4 different objects in front of the torchlight as shown below.





(a) Read the following statements and put a tick (✓) in the correct boxes. [2]

		True	False	Not possible to tell
i)	A is translucent.			
ii)	B is transparent.			
iii)	C is opaque.			
iv)	D is opaque.			

(b) List 2 ways in which he can increase the size of the shadow cast on the screen. [1]

(i) _____

(ii) _____

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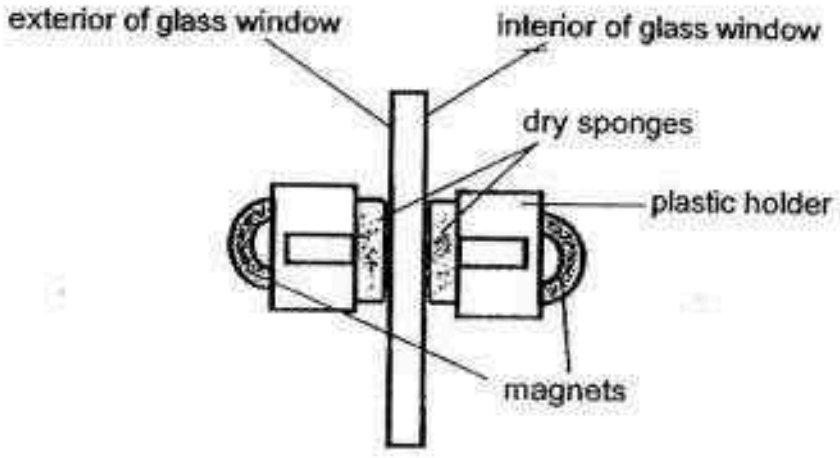
39 Ethan designed the device shown below to clean both sides of his window panes.



(a) Identify all the forces acting on the device as Ethan starts moving it to clean the window panes? [1]

(b) Next, Ethan dipped the sponges in water. He tried to put the device on the window panes as shown above but it slid down. Explain why that happened. [1]

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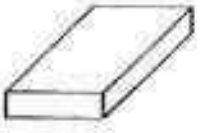
40 Bala conducted 2 experiments to find out more about matter. In the first experiment, he moulded a piece of plasticine into shape X as shown below. Then he measured its mass and volume.

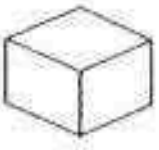


X

Using the same piece of plasticine, he moulded it into another two other shapes Y and Z as shown below and measured their masses and volumes each time.



Y



Z

He then made the following statements about plasticine.

Statement P: Plasticine can be compressed.

Statement Q: Plasticine has an indefinite shape.

(a) Which statement, P or Q, is **not** correct? Explain your answer. [1]

_____

_____

Question 40 continues on page 11

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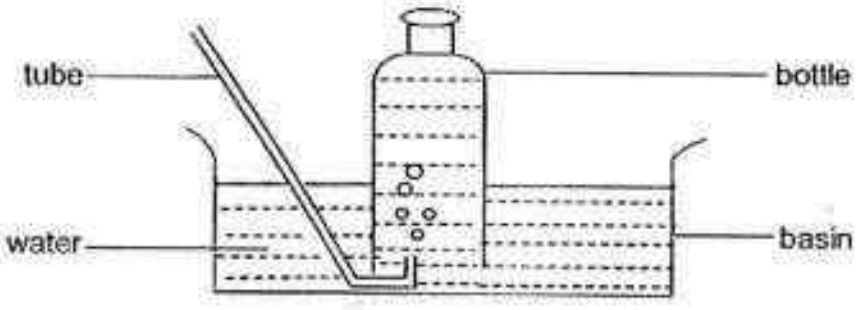
In the second experiment, Bala took a deep breath and blew into the tube twice in the set up shown below.



The results of the experiment are shown in the table below.

Height of water in the bottle at the beginning of the experiment (cm)	Height of water in the bottle after the 1st blow (cm)	Height of water in the bottle after the 2nd blow (cm)
10	8.3	7.9

(b) Why was there a decrease in the height of water in the bottle each time when Bala blew into the tube? [2]

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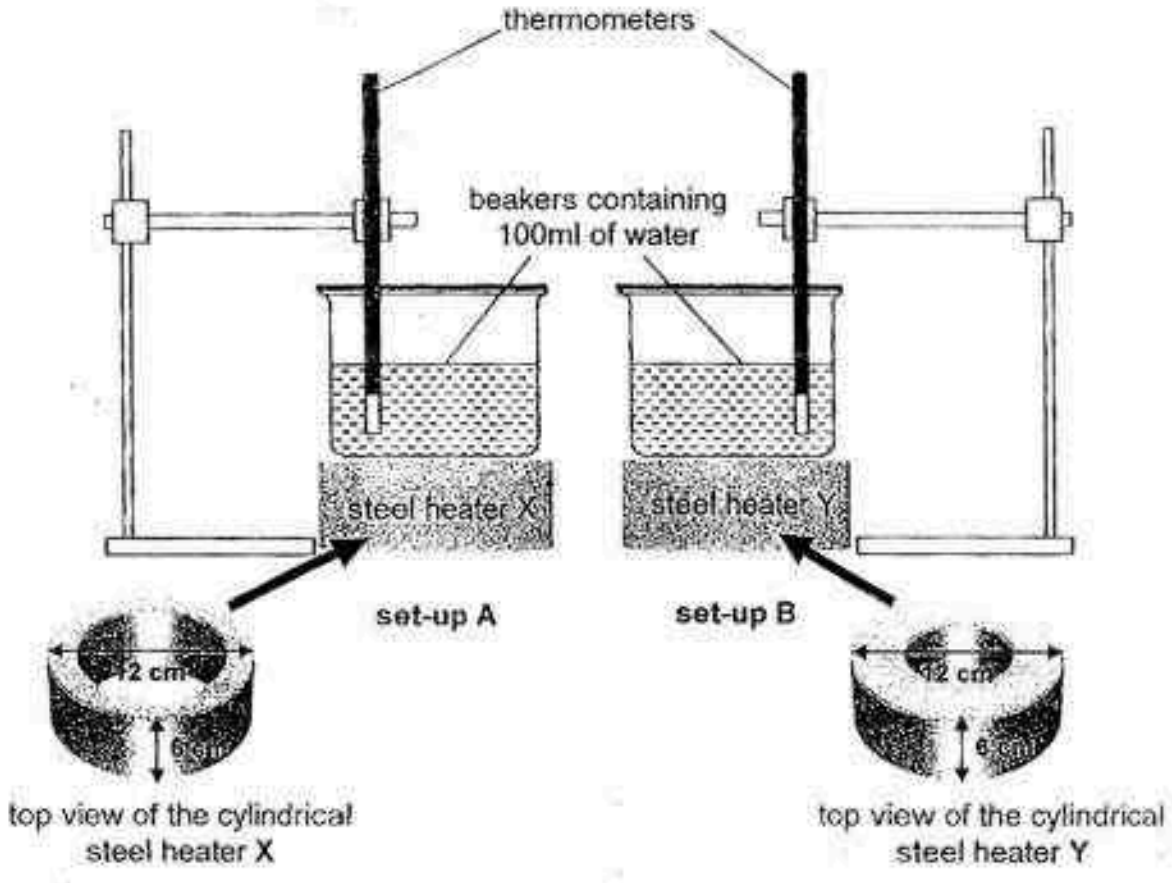
41 Pei Hwa set up the experiment as shown below.

Two similar cylindrical steel heaters, X and Y, of the same diameter and height but of different thickness, were both heated up to 130°C. Two similar beakers, each filled with 100ml of water, were placed on the cylindrical steel heaters.



(a) After 15 minutes, he recorded a higher temperature of water in set-up B than in set-up A. Explain why. [2]

_____

_____

_____

Question 41 continues on page 13

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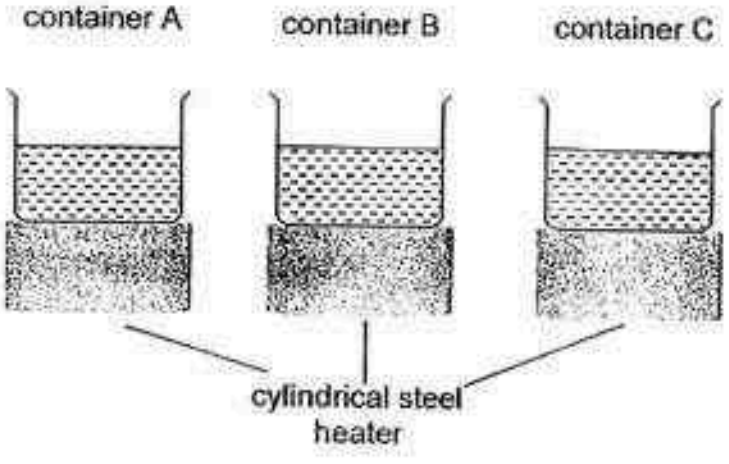
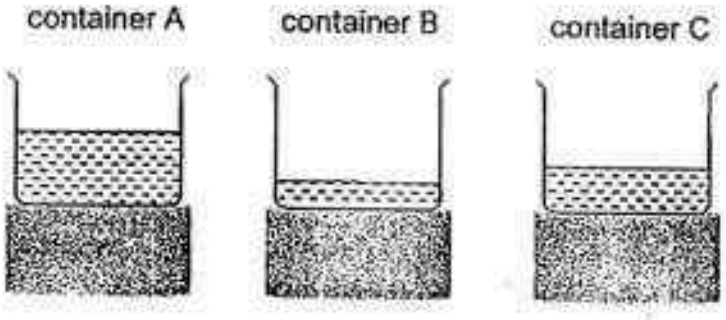
Pei Hwa conducted another experiment. He poured the same amount of water into three containers A, B and C made of different materials. The containers were then placed on the same cylindrical steel heater as shown in the diagram below.



After 15 minutes, he observed the amount of water left in the containers.



(b) From the different amount of water left in the containers, what can he conclude about the materials of the containers? [1]

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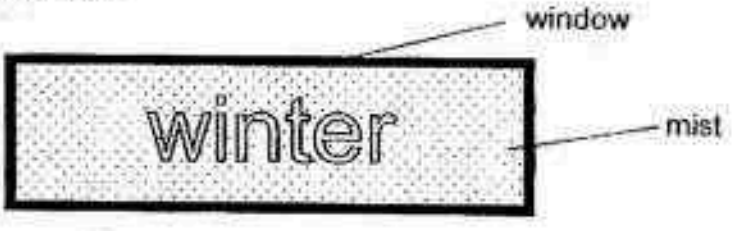
42 During winter time, the heater installed in the bus was switched on to keep the passengers warm while they travelled from one place to another.



After travelling on the road for a while, mist was formed on the inner surface of the window in the bus.

(a) Explain how the mist was formed on the inner surface of the window. [2]

A word "winter" was written on the inner surface of the window with a finger as shown below.



(b) After a while, the word disappeared without anyone wiping it away. Explain how it happened. [1]

(c) The heater was switched off after the bus reached the terminal. The surface of the window became clear after a while. Explain why. [1]

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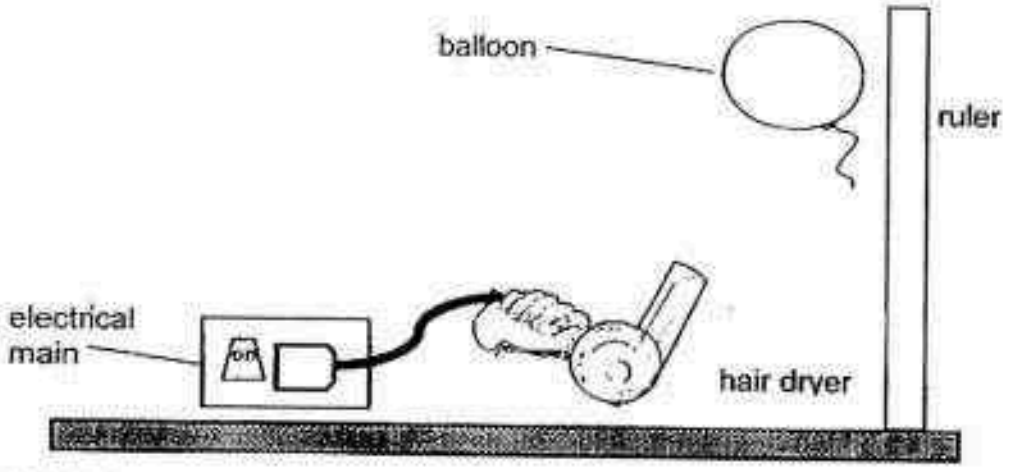
43 A hair dryer was used to blow a balloon which remained suspended in the air as shown below.



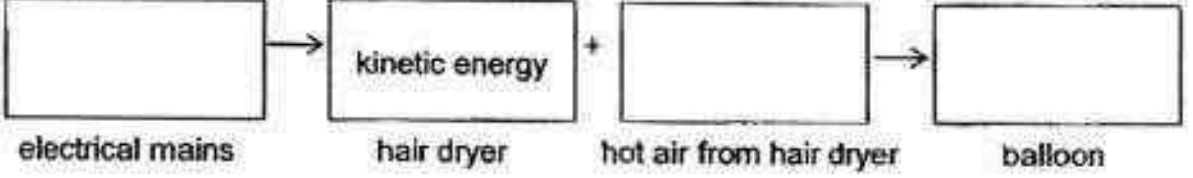
The height of the balloon from the ground was measured as the speed of the hair dryer was changed. The results were recorded as shown below.

Height of balloon (cm) from the ground / Speed of hair dryer	1st reading	2nd reading	3rd reading	Average reading
Low	28	30	29	29
Medium	37	39	41	39
High	46	44	48	46

(a) What is the relationship between the speed of the hair dryer and the height of the balloon from the ground? [1]

(b) Explain the stated relationship in (a) in terms of energy conversion. [1]

(c) State the energy conversion while the hair dryer was switched on to keep the balloon suspended in the air. [1]



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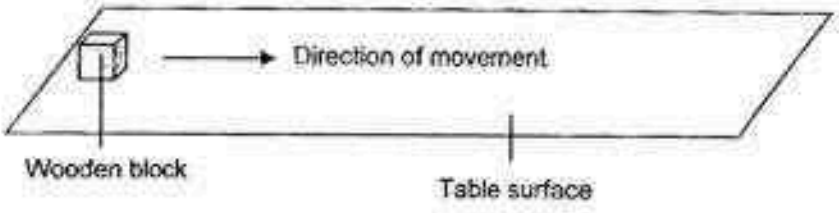
44 Neesha conducted an experiment to find out how different types of lubricants would affect the distance moved by the wooden block.



The same amount of lubricants X, Y and Z was applied each time on the table surface shown above. The wooden block was then pushed in the direction indicated by the arrow. The distances moved by the wooden block were recorded in the table below.

Type of lubricants	Distance moved by the wooden block (cm)		
	1st attempt	2nd attempt	3rd attempt
X	32	30	31
Y	45	43	44
Z	27	10	25

(a) Which of the lubricants, X, Y or Z, is the best? Explain your answer. [1]

_____

_____

(b) In an accident, a lorry spilled some oil onto the road. Explain why this will be a danger to other drivers travelling on the road. [1]

_____

_____

END OF PAPER

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EXAM PAPER 2016

SCHOOL :ROSYTH

SUBJECT :P6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	3	4	1	2	4	1	2	3	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	1	3	2	4	2	3	3	2	1
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	3	2	4	2	4	2	2	3	1

31)a)1)Living things can move by themselves.

2)Living things respond to changes.

b)Birds, as it has a body of feathers and a long beak.

32)a)Yes, as Organism Z has Chloroplast to help to absorb sunlight so as to make food for the plant.

b)Cell wall.

c)There is a nucleus in it, that controls the whole cell and divide to repair the dead or damaged cells.

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33)a)To find out how the colour of the filter affects the rate of photosynthesis of the plant.

b)The number of bubbles in the inverted boiling tube.

34)a)mouse-→organism

b)Amount of sunlight /Type of soil.

c)If all the snakes are killed, the mice population would increase and feed on the maize plant so the maize plant population would decrease.

35)a)The organisms will have equal distance to travel to any part of the tray.

b)R , Q, P

36)a)The teller plants also block the smaller plant from sunlight.

b)So that the plant can trap enough sunlight to make food.

c)To avoid the growth of fungi /algae on the surfaces of the leaf in the warm and wet conditions.

37)a)To reduce chances of being spotted by a predator. Long and thin body and legs looks like the branches of tree.

b)Benefit for ants : The ants can eat the sugar the stick insect left for them.

Benefit for stick insect: The stick insect is protected by the army ants especially the eggs.

c)Ants have evacuated the nest before the eggs hatch.

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38)a)i)Not ii)F iii)Not iv)T

b)i)Move the torch nearer to the object.

ii)Move the screen further away from the object.

39)a)Gravitational Force, magnetic force and frictional.

b)Dipping the sponges in water. Lubricated the sponges causing less friction allowing the gravitational force to overcome the friction force,hence the result.

40)a)Statement P in incorrect. Plasticine is a solid, hence cannot be compressed. As it's able to be shaped into different shape with exertion of force, statement Q is correct that it has indefinite shape.

b)The air she blew occupied space in the bottle, allowing the water to flow out the bottle into the basin.

41)a)Y ,has bigger exposed surface area in contact with beaker of water, hence able to transfer more heat to water in set up B.

b)He can conclude that Container B is the best conductor of heat and A conducts the least heat.

42)a)The water vapour from the people's breath gained heat from the heat, It then condensed as water droplets on the inner cooler surface of the bus's window,

b)More condensation took place and more mist formed to cover the word.

c)The temperature of the air in the bus in the same as the temperature of the window, so no condensation would occur.

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43)a)As the speed of the hair dryer increases, the height of the balloon form the ground increases.

b)When the speed of the hair dryer increased, more kinetic energy was transferred to the air which was transferred to the balloon.

c)Electrical energy → Kinetic energy + Heat energy →Kinetic energy

44)a)Lubricant Y, as it reduces the most friction and allows the block to move the fastest.

b)Oil is a lubricant and reduces Friction on the road. When other cars stop, they skid and might result in an accident.

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10

Name: _____( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Semestral Assessment 1 – 2016
SCIENCE

BOOKLET A

12 May 2016

Total Time for Booklets A and B: 1 hour 45 minutes

30 questions
60 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 22 printed pages.

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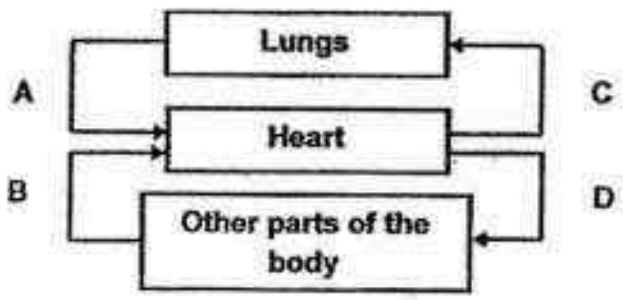
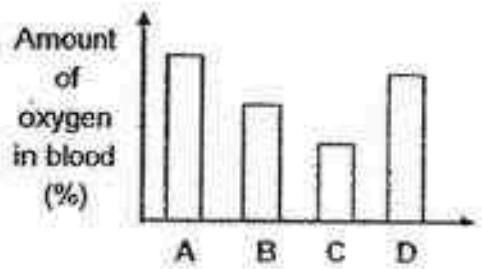
Section A (30 x 2 marks = 60 marks)
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. The diagram below shows how blood flows in some parts of the human body.

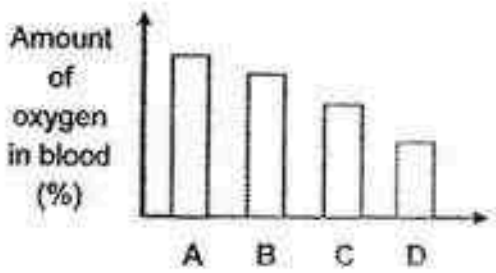


Which one of the following graphs correctly represents the amount of oxygen in the blood found in A, B, C and D?

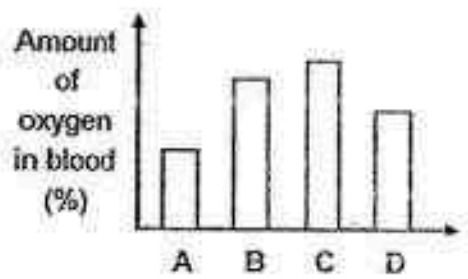
(1)



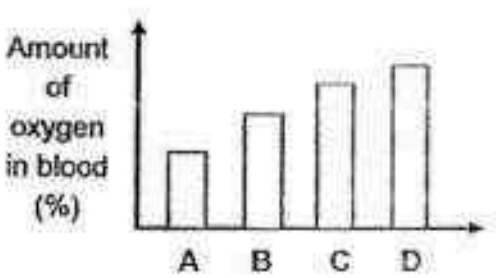
(2)



(3)



(4)



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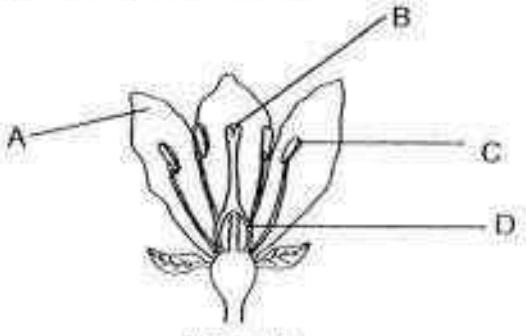
2. Jordan conducted an experiment to find out which parts of flower P shown below were necessary to form a fruit. He removed two parts of flower P. He then transferred some pollen from another flower of the same plant to the remaining flower parts of P.

After some time, flower P formed a fruit.



flower P

Which two parts were removed from flower P?

(1) A and D only
(2) A and C only
(3) B and D only
(4) C and D only

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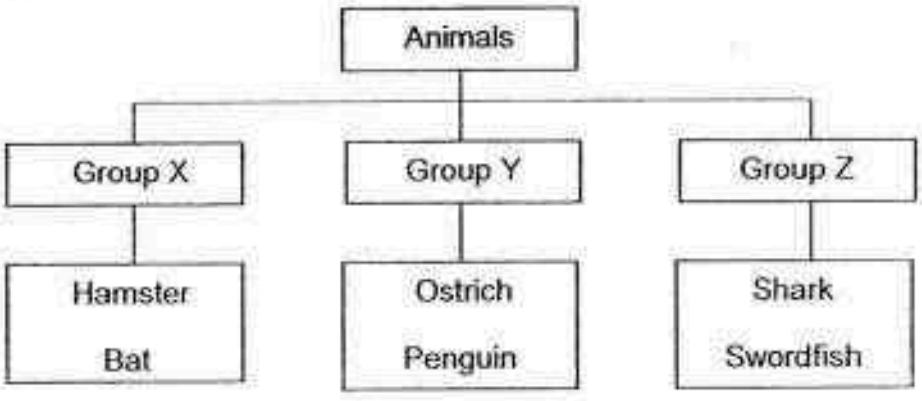
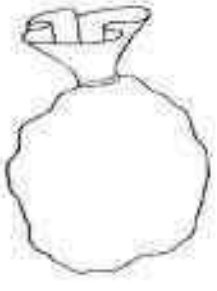
3. Study the classification chart below.



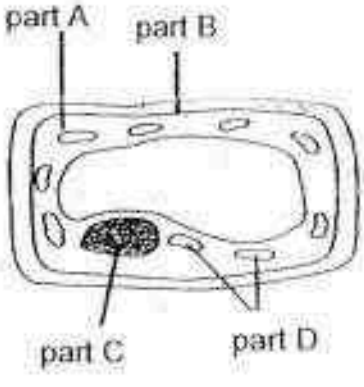
Which of the following are appropriate headings for groups, X, Y and Z?

	Group X	Group Y	Group Z
(1)	Live on land	Live on land and water	Live in water
(2)	Give birth	Give birth	Lay eggs
(3)	Has hair	Has feathers	Has scales
(4)	Fish	Birds	Mammals

4. Maggie placed some wet towels into a cloth bag after her swim. Although she tied the bag up, she noticed that water was seeping out of the cloth bag.



cloth bag



cell X

Which part of cell X has a similar function as displayed by the cloth bag?

(1) Part A
(2) Part B
(3) Part C
(4) Part D

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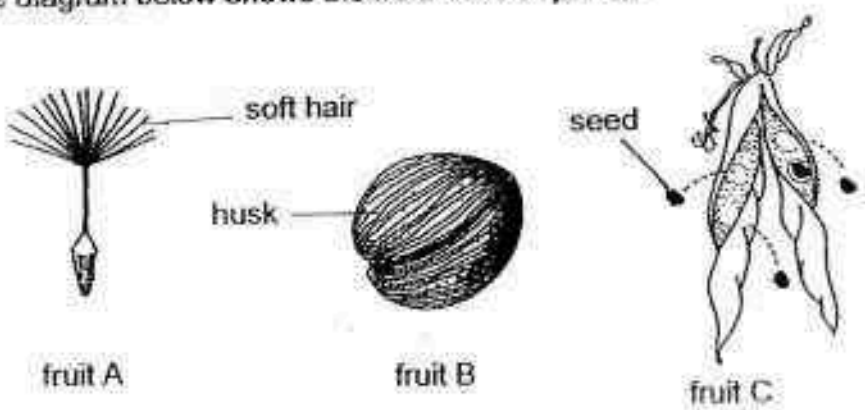
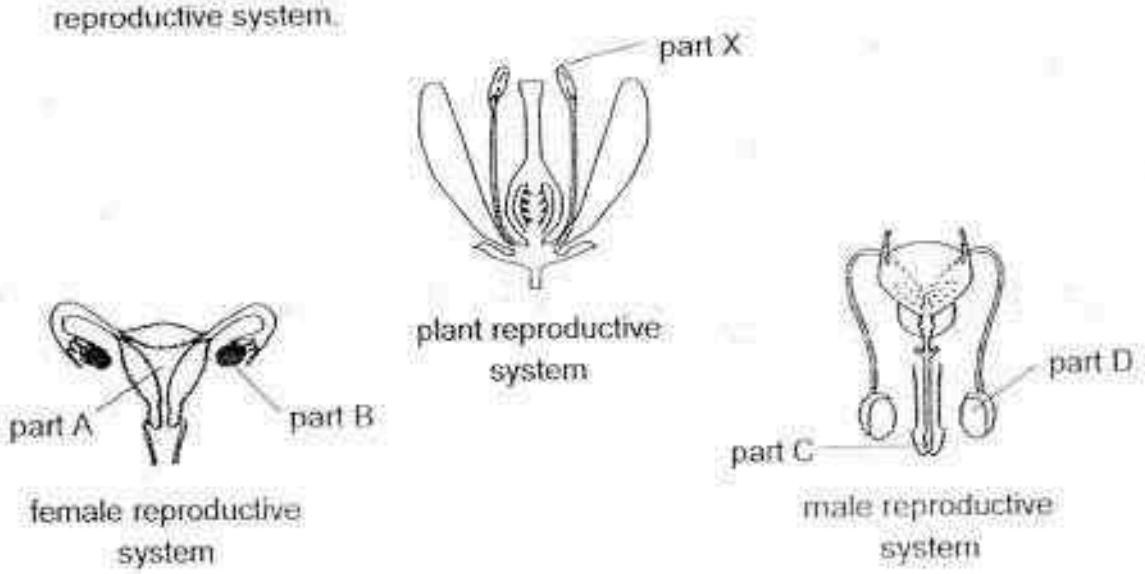
5. The diagram below shows the fruit of some plants.



How are fruits, A, B and C, dispersed?

	A	B	C
(1)	splitting action	animal	water
(2)	wind	water	splitting action
(3)	water	splitting action	animal
(4)	wind	animal	wind

6. The diagrams below show the human reproductive systems and a plant reproductive system.



Which part of the human reproductive system has a similar function as part X of the plant?

(1) Part A
(2) Part B
(3) Part C
(4) Part D

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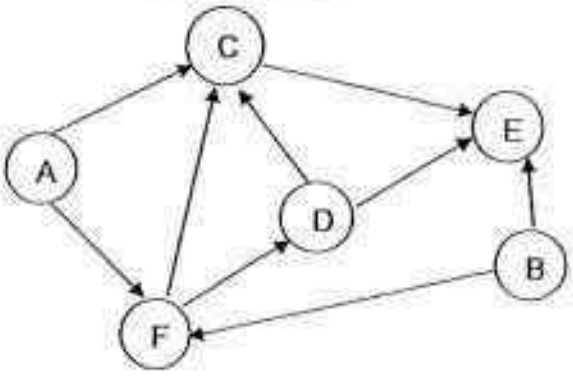
7. Study the food web below carefully.



Which one of the following is correct?

	Food producer	Prey	Predator
(1)	C	D	B
(2)	F	A	E
(3)	B	C	D
(4)	A	F	C

8. Which of the following statement(s) about bacteria and fungi is/are not correct?

A They are decomposers.
B All bacteria are harmful to humans.
C Bacteria are not useful to human while fungi are useful to human.
D Fungi only feed on dead plants while bacteria only feed on dead animals.

(1) A only
(2) A and D only
(3) B and C only
(4) B, C and D only

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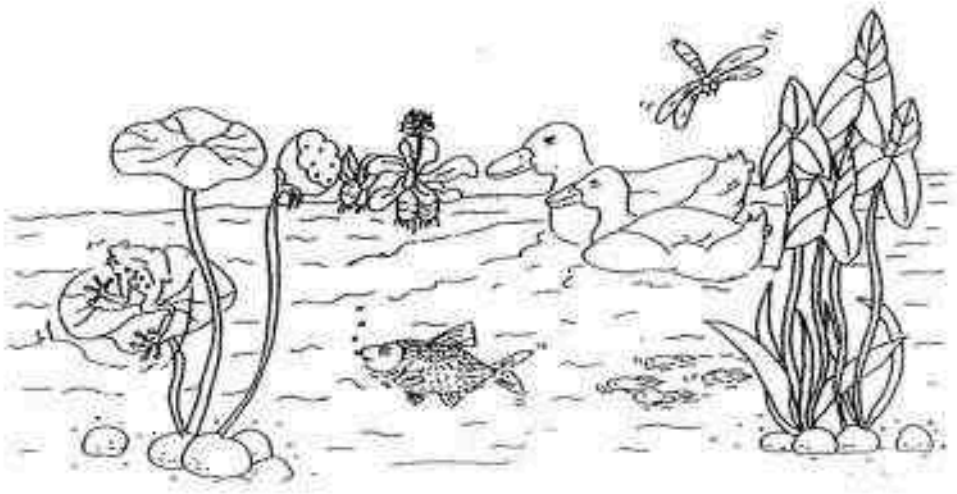
9. Look at the diagram below carefully.



Which of the following is/ are correct?

A There is only one community.
B There are 6 populations in total.
C Only the fish is not considered as a population here.
D There is only one population of animal and one population of plant.

(1) A only
(2) A and B only
(3) B and C only
(4) C and D only

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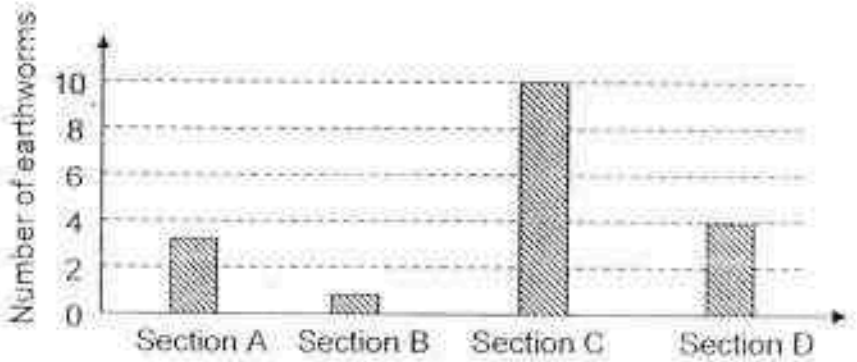
10. Dan carried out an investigation to find the preferred habitat of earthworms. He divided a tray into four equal sections as shown in the diagram below. Five earthworms were placed in each sections and were free to move between the sections.

Section A Dry soil covered with a black cloth.	**Section B** Dry soil exposed to light.
Section C Wet soil covered with a black cloth.	**Section D** Wet soil exposed to light

Four weeks later, he counted the number of earthworms found in each section. The graph below shows the results of his investigation.



Based on the results above, what can Dan conclude about the preferred characteristics of the earthworm's habitat?

A Dry
B Dark
C Damp
D Bright

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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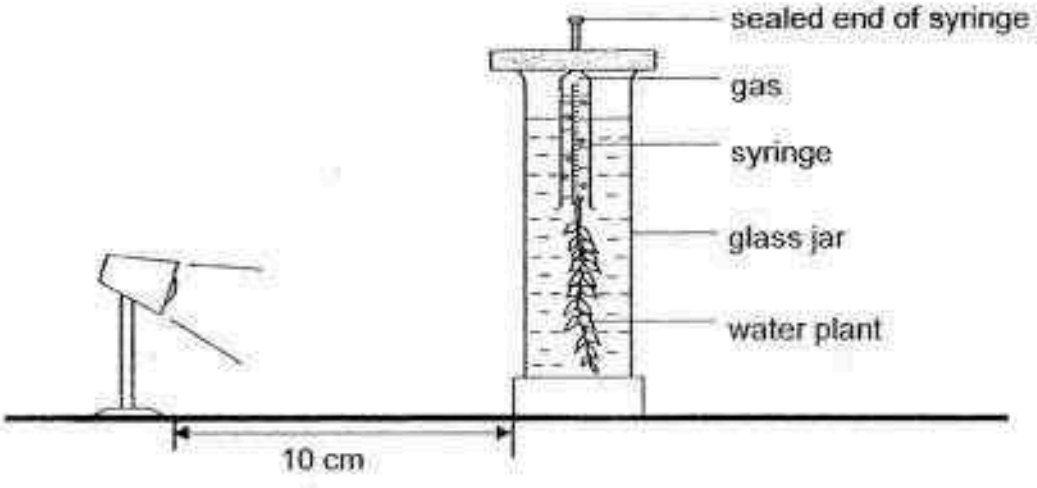
11. Elisa set up an experiment in a dark room as shown below.



She placed a table lamp at a distance of 10cm from the glass jar. After one hour, she observed that the syringe had collected $5cm^3$ of gas. She repeated the experiment by placing the lamp at different distances from the glass jar.

Which one of the following shows the most likely result of her experiment?

	Distance from the lamp (cm)	Gas collected
(1)	5	Less than $5cm^3$
(2)	5	More than $5cm^3$
(3)	15	Equal to $5cm^3$
(4)	15	More than $5cm^3$

12. Which one of the following are some of the factors that affect the survival of different organisms in a habitat?

A The amount of food.
B The amount of sunlight.
C The presence of predators.
D The presence of disease-causing organisms.

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B, C and D

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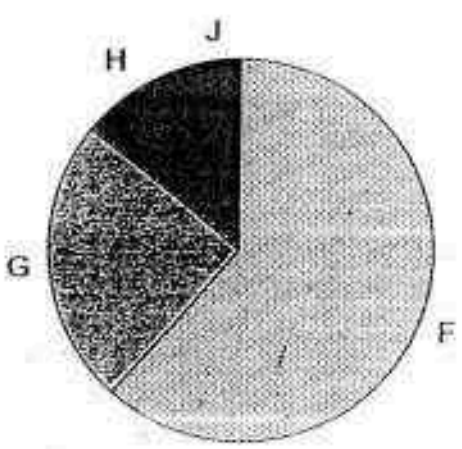
13. Which of the following statements is/are correct?

A Plants are the main source of energy for all living things.
B Plants need sunlight and oxygen only in order to make food.
C All living things depends directly and indirectly on plants for food.
D Energy from the Sun is transferred to the plants during photosynthesis.

(1) B only
(2) A and B only
(3) C and D only
(4) A, C and D only

14. The pie chart below shows five different populations of organisms in a forest community. These five populations forms a food chain.



Which one of the following illustrates the food chain of the community?

(1) F → G → H → J
(2) F → H → G → J
(3) J → H → G → F
(4) J → G → H → F

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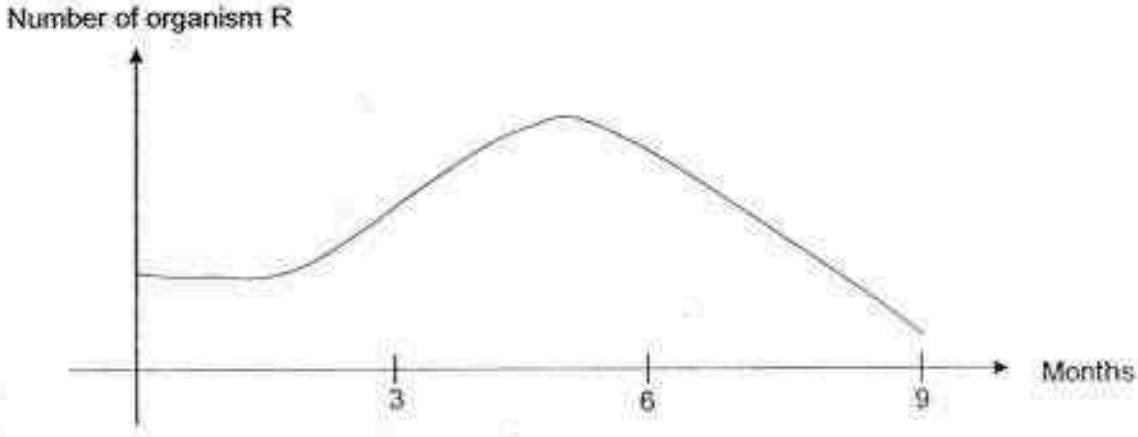
15. The graph below shows the population of organism R over a period of 9 months.



Which of the following are the possible reasons for the decline of the number of organism R during the last few months?

A A disease has attacked the predator of organism R.
B A prey of organism R is introduced to the community.
C A prey of organism R is removed from the community.
D A new predator of organism R is introduced to the community.

(1) B only
(2) A and B only
(3) C and D only
(4) A, C and D only

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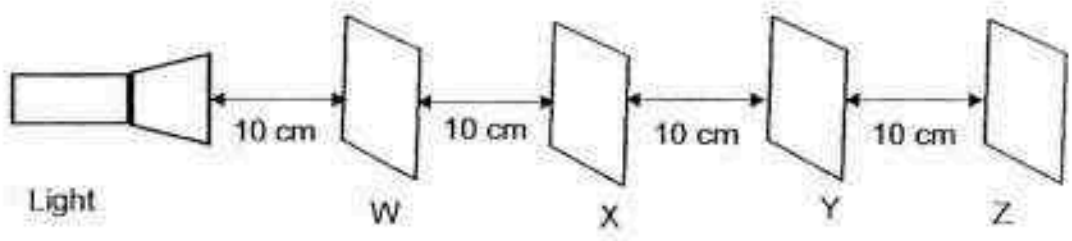
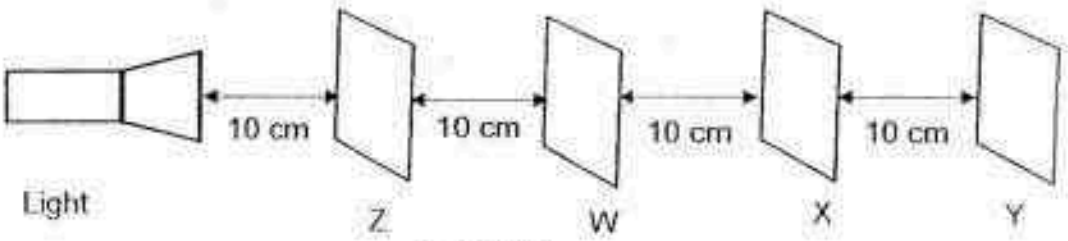
16. An experiment was conducted to investigate whether light can pass through four sheets, W, X, Y and Z, made of different materials. The sheets were arranged in the set-ups shown below.



set-up A



set-up B

The distance travelled by the light was measured and the result is shown in the table below.

Set-up	Distance travelled by the light
A	20 cm
B	30 cm

Which one of the following correctly describes sheets, W, X, Y and Z?

	Allows light to pass through	Does not allow light to pass through	Not possible to tell
(1)	W	Y	X and Z
(2)	Y	X	W and Z
(3)	W and Z	X	Y
(4)	X and Y	Z	W

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17. Study the diagram below. Three bowls of the same size were filled with the same amount of hot porridge at 90°C. The bowls were left for 10 minutes in the kitchen with a room temperature of 30 °C.

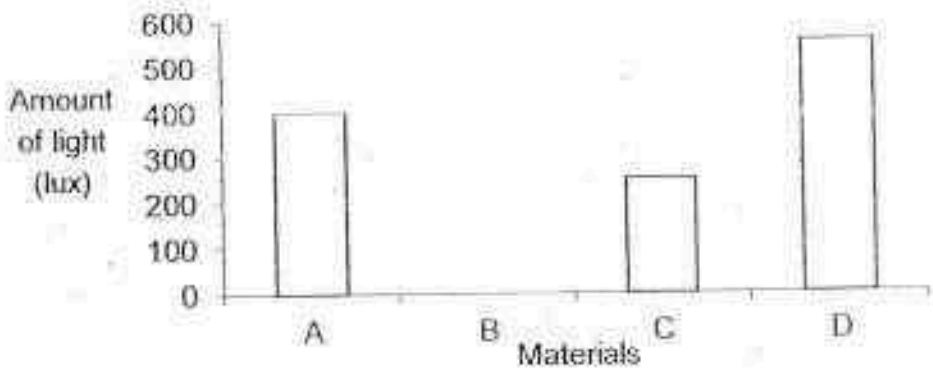


plastic bowl metal bowl styrofoam bowl

Which one of the following is the most possible temperature of the porridge after 10 minutes?

	plastic bowl	metal bowl	styrofoam bowl
(1)	70 °C	70 °C	70 °C
(2)	50 °C	70 °C	60 °C
(3)	60 °C	50 °C	70 °C
(4)	70 °C	60 °C	50 °C

18. Janice conducted an experiment to find out how much light could pass through four different materials, A, B, C and D, using a data logger connected to a light sensor.



The results are shown in the graph above. Based on the graph, which one of the following statements is true?

(1) Material A is opaque.
(2) Material B is transparent.
(3) Material A allows lesser light to pass through than material C.
(4) Material B does not allow light to pass through when placed in front of Material D.

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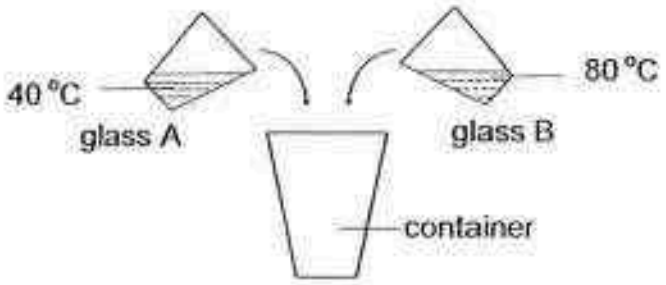
19. Alice filled two glasses, A and B, with the same amount of water. She then poured all the water into a container.



Immediately, she measured and recorded the temperature of the water in the container.
Which one of the following statements about the temperature of water in the container is true?

(1) The temperature of the water in the container is the same as the room temperature.

(2) The temperature of the water in the container is lower than the temperature of water in Glass A.

(3) The temperature of the water in the container is the same as the temperature of water in Glass B.

(4) The temperature of the water in the container is higher than the temperature of water in Glass A.

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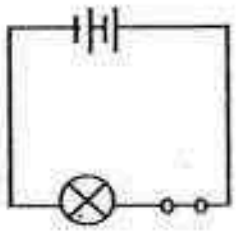
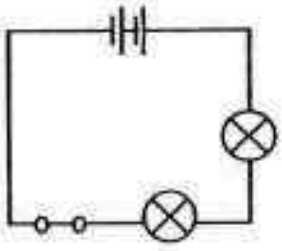
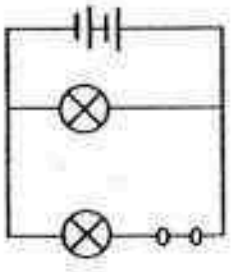
20. Study the four circuits, P, Q, R and S, as shown below.



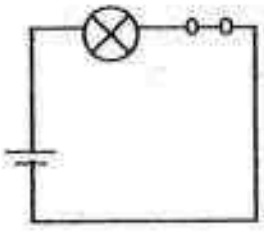
circuit P



circuit Q



circuit R



circuit S

The bulbs and the batteries in the four circuits are identical. All the bulbs light up when the circuits are closed.

Which one of the following statements is correct?

(1) The bulb in circuit S is as bright as the bulb in circuit P.
(2) Each bulb in circuit Q ia as bright as each bulb in circuit R.
(3) The bulb in circuit P is brighter than each bulb in circuit Q.
(4) The 2 bulbs in circuit R will be dimmer than the bulb in circuit S.

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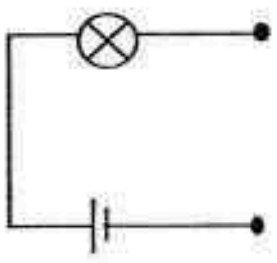
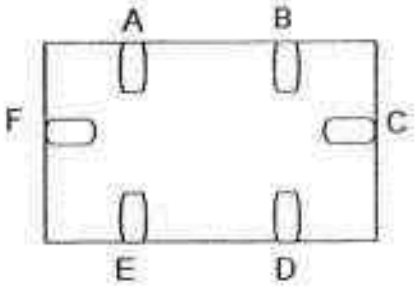
21. The diagram below shows a circuit tester and a circuit card with six paper clips, A, B, C, D, E and F.



circuit tester



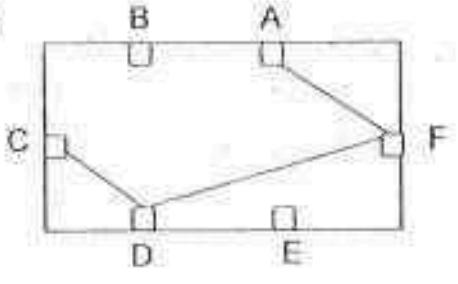
circuit card (front view)

The circuit tester was used to connect the paper clips on the circuit card. The following observations were made.

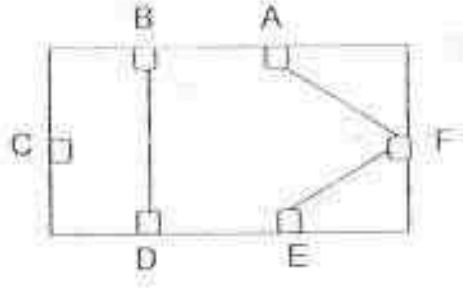
Paper clips connected	Did the bulb light up?
A and F	Yes
A and D	Yes
E and F	No
A and C	Yes
D and F	Yes
B and D	No

Which one of the following diagram shows the correct back view of the circuit card?

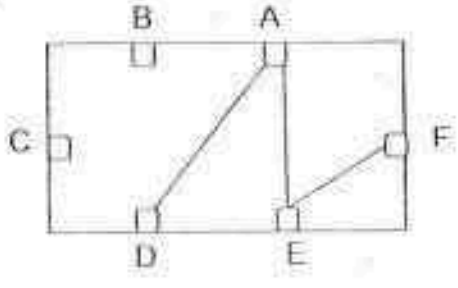
(1)



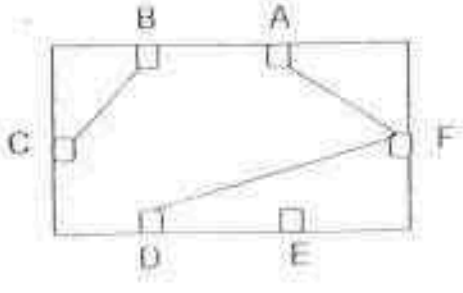
(2)



(3)



(4)



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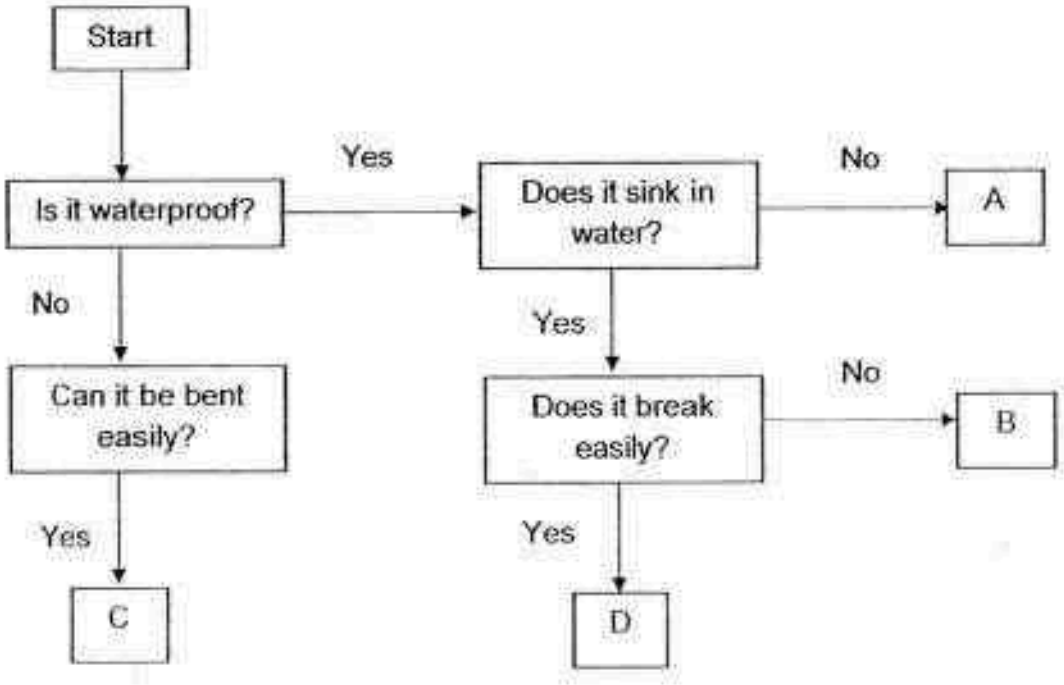
22. Study the flowchart shown below.



	A	B	C	D
(1)	glass vase	ceramic tile	iron ball	nail clipper
(2)	beach ball	swimming float	towel	paper plate
(3)	paper plate	towel	ceramic tile	beach ball
(4)	swimming float	nail clipper	handkerchief	ceramic tile

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23. Four objects are classified into two groups as shown below.

Group 1	Group 2
 balloon	 sewing needle
 tyre	 aluminium foil

The objects are grouped according to _____.

(1) how hard they are
(2) whether they are waterproof
(3) what materials they are made of
(4) whether they are made of magnetic materials

24. Amelia wanted to find out how the exposed surface area of a container affects the rate of evaporation of water.

Set-up	Volume of water in the container (ml)	Exposed surface area of container (cm^2)	Where the container is placed
A	200	120	Classroom
B	250	100	Field
C	200	110	Classroom
D	250	100	Classroom

Which two set-ups should Amelia use for her investigation?

(1) A and B
(2) A and C
(3) B and D
(4) C and D

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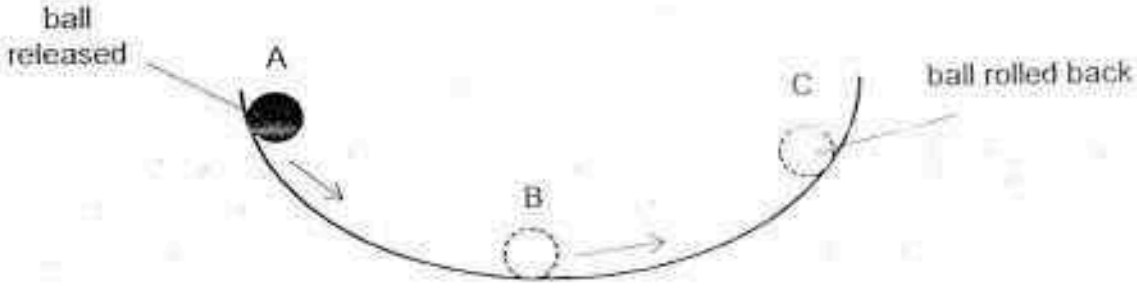
25. The diagram below shows an ice cube left on a table in a room. The room temperature is 30 °C.



Which of the following is correct?

	Heat Gain	Heat Loss	Temperature of ice cube	Temperature of air surrounding the ice cube
(1)	ice cube	surrounding air	remains the same	decreasing
(2)	ice cube	water	increasing	increasing
(3)	water	ice cube	remains the same	increasing
(4)	water	ice cube	decreasing	remains the same

26. Daniel released a ball at position X along a slope as shown below. The ball rolled to position B and then to position C where it rolled back.



Which of the following shows the energy conversion when the ball rolled from B to C?

(1) kinetic energy ⟶ potential energy
(2) kinetic energy ⟶ potential energy + sound energy + heat energy
(3) potential energy + sound energy + heat energy ⟶ kinetic energy
(4) potential energy ⟶ kinetic energy + sound energy + heat energy

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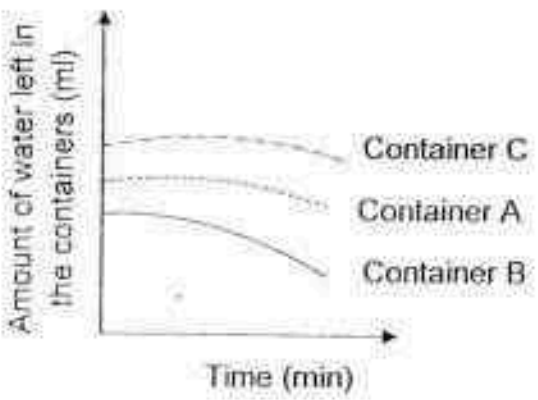
27. Sally conducted an experiment as shown below. Each container was filled with the same amount of water and left in the same room.



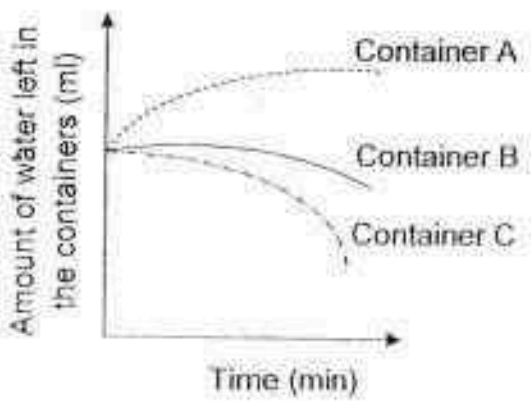
Container A Container B Container C

Which one of the following graph shows the correct amount of water left in the containers after 50 minutes?

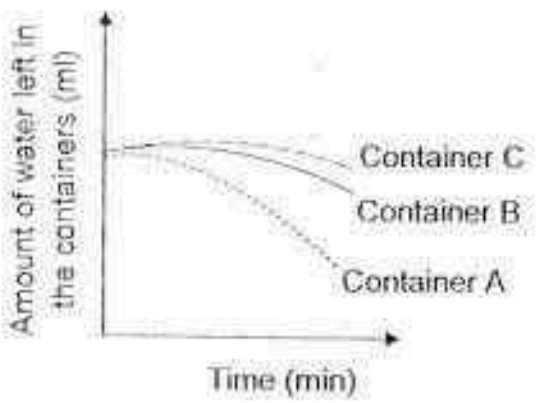
(1)



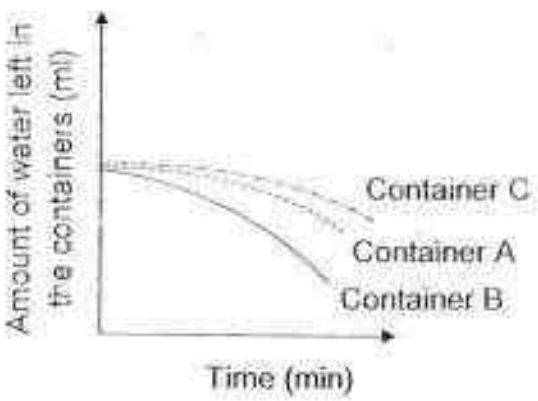
(2)



(3)



(4)



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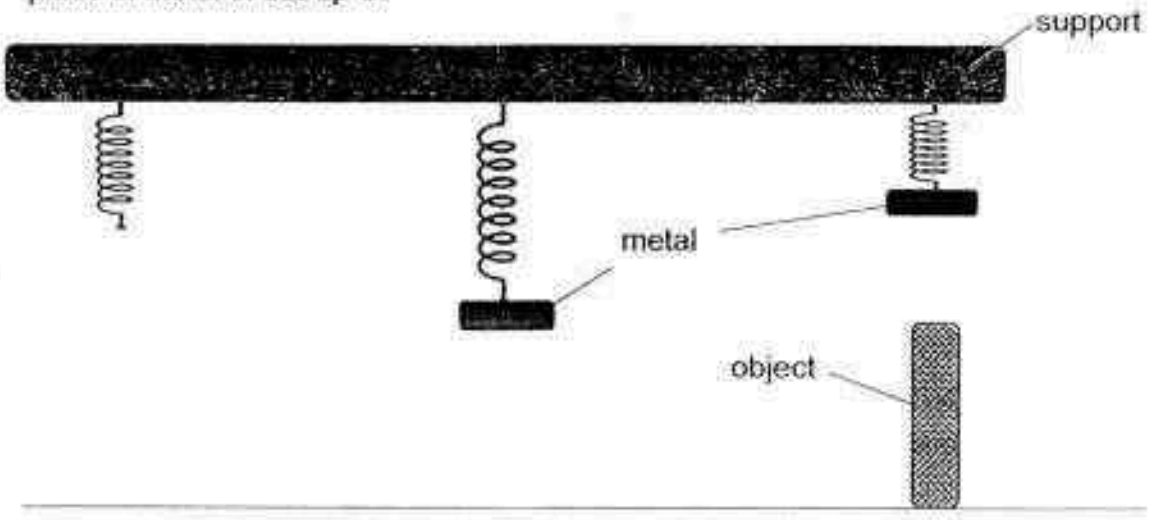
28. 3 similar springs were hung from a support as shown below. A piece of metal was hung on the spring of set-ups B and C. An object was placed under the piece of metal of set-up C.



Which one of the following is a possible reason that cause the springs in setup B and C to behave as shown?

	Set-up B	Set-up C
(1)	The metal piece has gravitational potential energy.	Elastic spring force is acting on the metal piece.
(2)	The metal piece has gravitational potential energy.	The metal piece has kinetic energy.
(3)	Gravitational force is acting on the metal piece.	Magnetic force is acting on the metal piece.
(4)	There is a pushing force acting on the piece of metal.	The metal piece has chemical potential energy.

29. Which of the following are effects of a pull?

A Playing tug-of-war.
B Cycling on a bicycle.
C A ball rolling away.
D Lifting a box from the floor.

(1) B only
(2) A and D only
(3) B and C only
(4) A, C and D only

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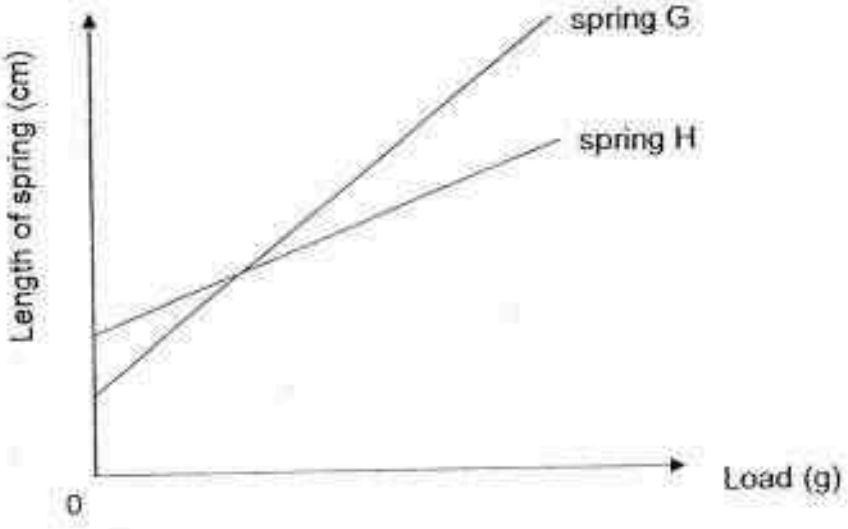
30. Mandy hung different weights on 2 springs, G and H. She recorded her results and plotted the graph below.



Based on the graph, which one of the following is correct?

	Spring with longer original length	Spring that is more elastic
(1)	spring G	spring H
(2)	spring H	spring H
(3)	spring G	spring G
(4)	spring H	spring G

End of Booklet A

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Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Semestral Assessment 1 – 2016
SCIENCE

BOOKLET B

12 May 2016

Total Time for Booklets A and B: 1 hour 45 minutes

14 questions
40 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

Booklet A	60
Booklet B	40
Total	/100

This paper consists of 16 printed pages.

_____
Parent's Signature/Date

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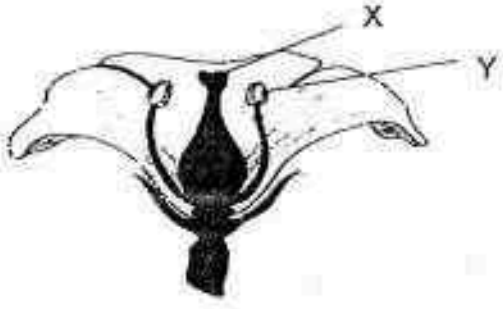
Section B (40 marks)
For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in the brackets at the end of each question or part question.

31. The diagram below represents a cross section of a flower.



a) Many ants are seen crawling on parts, X and Y. Describe how the ants help to pollinate the flower. [1]

_____

_____

The following sentences describe how sexual reproduction in plants takes place.

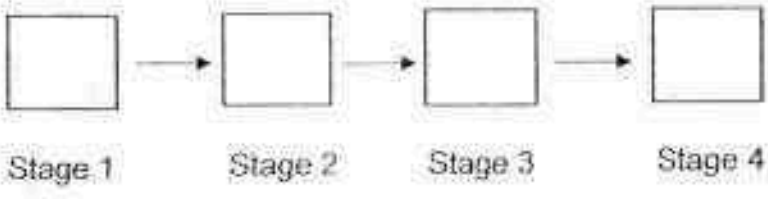
A. Pollen grains are transferred to the stigma.

B. The anther of flower releases pollen grains.

C. The male and female reproductive cells fused.

D. Pollen tubes grow down the style towards the ovary.

b) Write the letters, A, B, C and D, in the boxes below in the correct sequence. [1]



c) Describe what happens to the female parts of the flower after Stage 4? [1]

_____

_____

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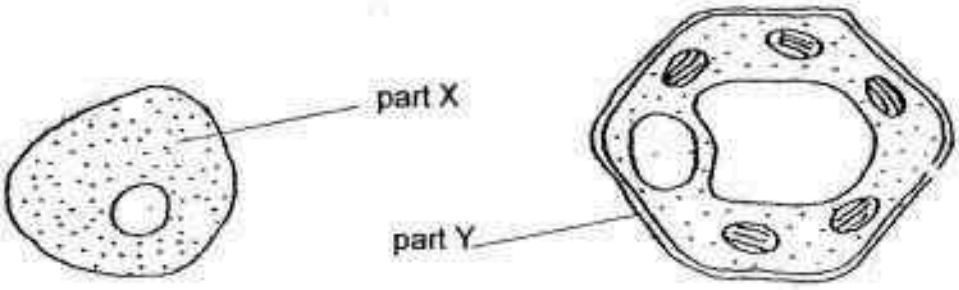
32. The diagram below shows an animal cell and a plant cell.



Animal cell

Plant cell

a) Name part X and state its main function. [1]

b) Other than part Y, name another cell part present in the plant cell but not in the animal cell. State its function. [1]

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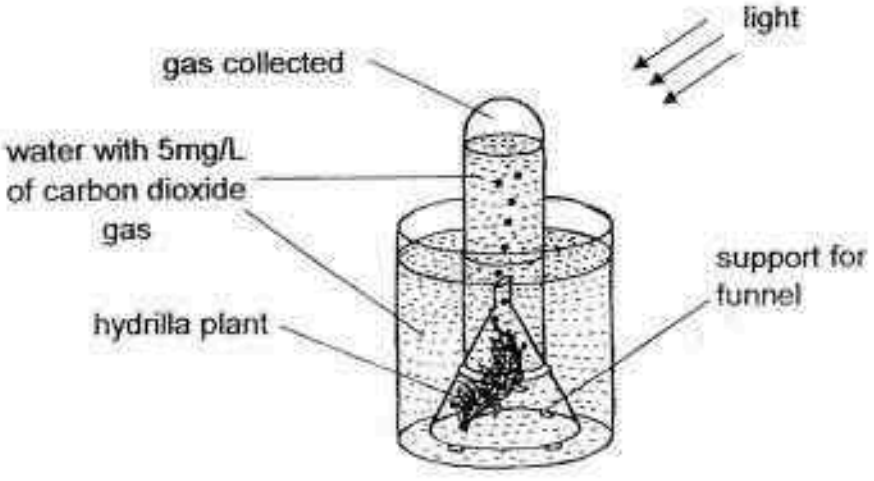
33. Ashlyn wanted to find out if the concentration of carbon dioxide present in the water will affect the rate of photosynthesis of the hydrilla plant. She conducted the experiment using the set-up as shown in the diagram below. After 3 hours, she recorded the amount of gas collected in the test-tube. She repeated the experiment with different concentrations of carbon dioxide present in the water.



The table below shows the results of Ashlyn's experiment.

Set-up	A	B	C	D
Concentration of carbon dioxide in the water (mg/L)	5	10	15	20
Amount of gas collected (cm^3)	10	20	X	40

a) Predict the value of X, the amount of gas collected for set-up C.

[1]

b) Based on the table above, what can you conclude about the concentration of carbon dioxide present in the water and the rate of photosynthesis of the hydrilla plant?

[1]

c) If Ashlyn conducted the experiment with a hydrilla plant of a greater mass, would the amount of gas collected be the same, lesser or more? Explain your answer.

[1]

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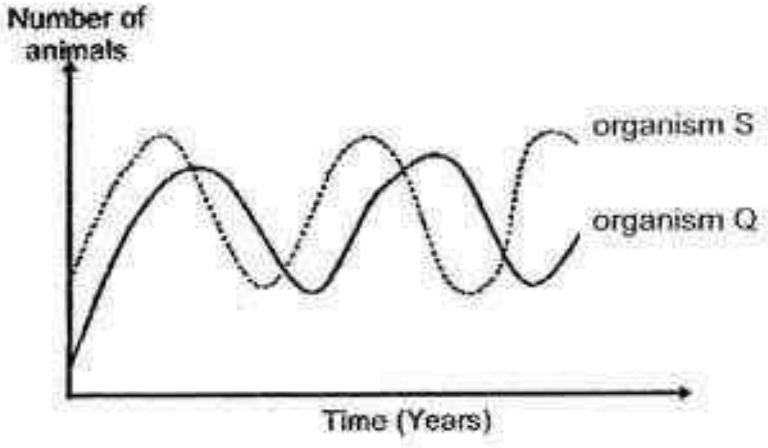
34. The graph below shows the change in the population size of organisms, S and Q, within a community over a period of time. Organisms S and Q have a predator and prey relationship.



a) Identify which organism is the prey and which organism is the predator. Write the letter 'S' or 'Q' in the space below. [1]

Prey: _____

Predator: _____

b) What will happen to the population of organism S if a predator of organism Q is introduced to the community? Explain your answer. [1]

_____

_____

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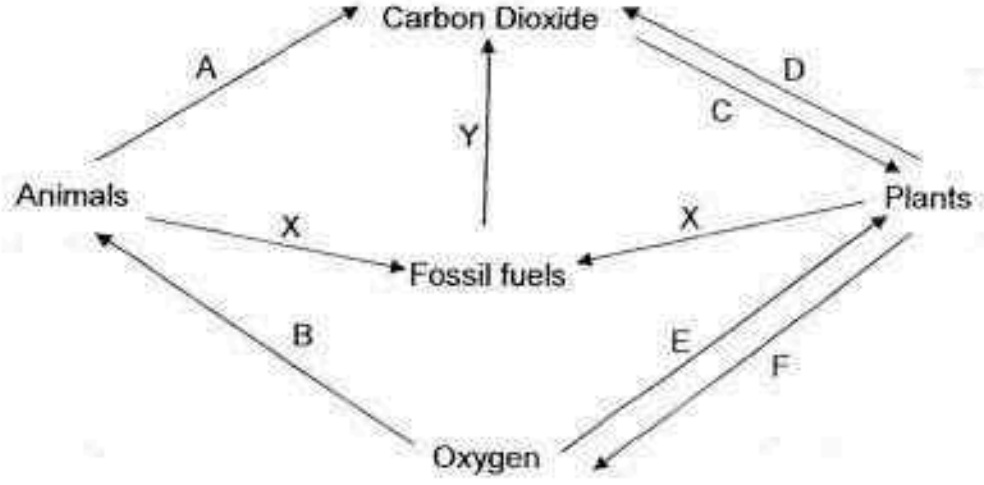
35. The diagram below shows the exchange of gases between living things and their surroundings.



a) Name the processes that X and Y represent. [1]

Arrow	Name of process
X	
Y	

b) Identify the 2 arrows that show a process plants undergo which **does not** depend on the presence of light. [1]

_____

c) Name the process in (b). [1]

_____

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36. Juanita made observations of a pond community and noted the interdependence of 4 organisms, P, Q , R and S, living in that community.

Observation A: If population of P decreases, population of Q will also decrease.
Observation B: If population of S increases, population of P will also gradually increase.

a) Based on the information above, describe the food relationship among organisms, P, Q and S. [1]

b) When Juanita removed all the organism R from the pond, she observed that organisms, P, Q and S, started to swim near the surface of the water. What is organism R most likely to be? Explain your answer. [2]

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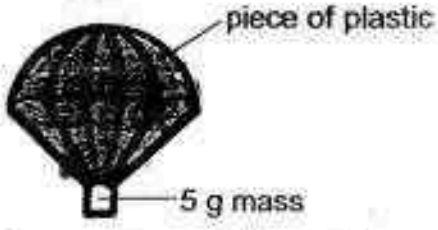
37. Sandra made a parachute as shown below.

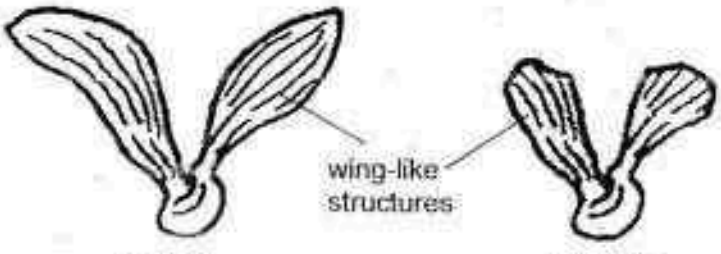


She then made another 3 parachutes of different sizes using the same plastic material. She attached a 5g mass to each parachute and dropped them from the same height. She recorded the time taken for each of the four parachutes to reach the ground.

Area of parachute (cm^2)	50	75	100	125
Time taken to reach the ground (s)	4.2	7.3	10.5	14.1

a) What is the relationship between the area of the parachute and the time taken for the parachute to reach the ground? [1]

Sandra found the fruits below in her garden.



Fruit A Fruit B

b) Which fruit, A or B, is more likely to be dispersed further away from the parent plant? Explain your answer. [1]

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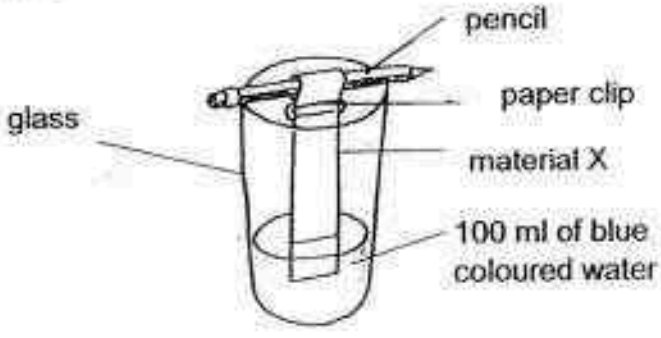
38. Jim carried out an experiment as shown below. He dipped material X into the blue coloured water for five minutes. He then removed material X and measured the amount of water left in the glass. He repeated the experiment with materials, Y and Z.



He recorded his observations in the table below.

Material	Amount of blue coloured water left (ml)
X	50
Y	100
Z	75

(a) Which material, X, Y or Z, was able to absorb the most water? Explain your answer. [1]



(b) Which material is most suitable for making part Q of an umbrella? Give a reason for your choice. [1]

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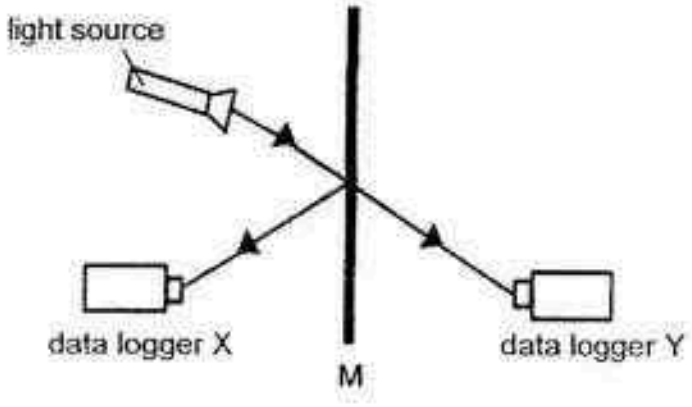
39. Tom carried out an experiment in a dark room. He wanted to compare the amount of light different materials reflect and allow to pass through them. He fixed the positions of the light source, materials and data loggers X and Y as shown below.



He placed a different material at position M, one at a time and recorded his results in the table below.

Material	Amount of light received by data logger X (lux)	Amount of light received by data logger Y (lux)
Aluminium	1200	0
R	700	200
Clear glass	150	900

a) Explain why the experiment must be conducted in a dark room. [1]

_____

_____

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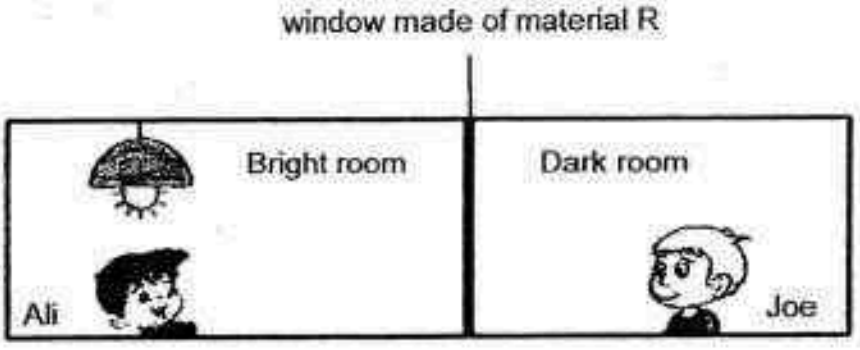
Ali was playing in a brightly-lit room while Joe was in a dark room next to Ali's. The window that separated the boys' rooms was made of material R.



Very little amount of light passed through the window from Joe's room into Ali's room. Hence, Ali saw **ONLY** his own reflection but could not see Joe's. Joe could see Ali through the window.

b) Based on the results recorded in the table, explain why Ali saw **ONLY** his own reflection on the window made of material R. [1]

_____

_____

c) Based on the results recorded in the table, explain why Ali could not see Joe through the window made of material R. [1]

_____

_____

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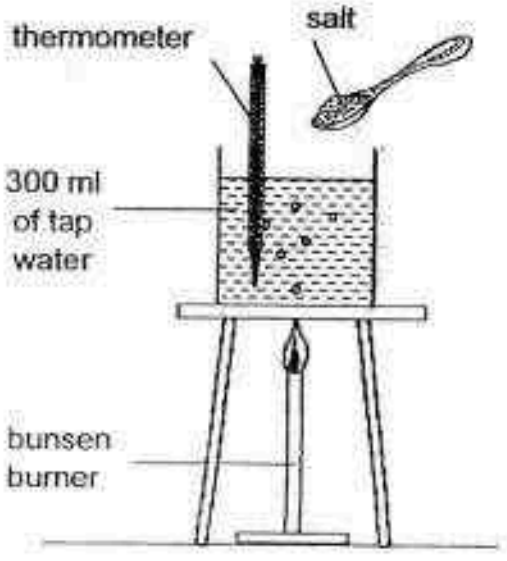
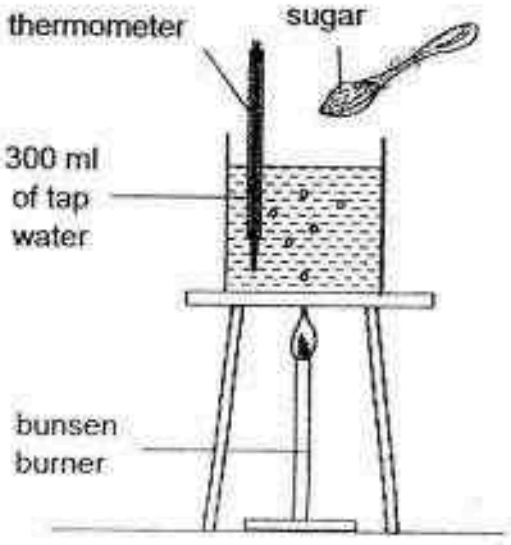
40. Xavier conducted an experiment to find out if adding different substances to water would affect the boiling point of the water. He added salt to the water in Set-up A and sugar to Set-up B. He stirred the mixtures to make sure the salt and sugar had dissolved completely. He measured the boiling points of the solutions in both set-ups.



set-up A



set-up B

a) State two variables Xavier must keep the same in order to carry out a fair test. [2]

i) _____

ii) _____

b) Other than a thermometer, what else can Xavier use to measure the boiling points of the solutions? [1]

_____

_____

b) Suggest a control set-up to show that the change in the boiling point of water was caused by the addition of the salt and sugar. [1]

_____

_____

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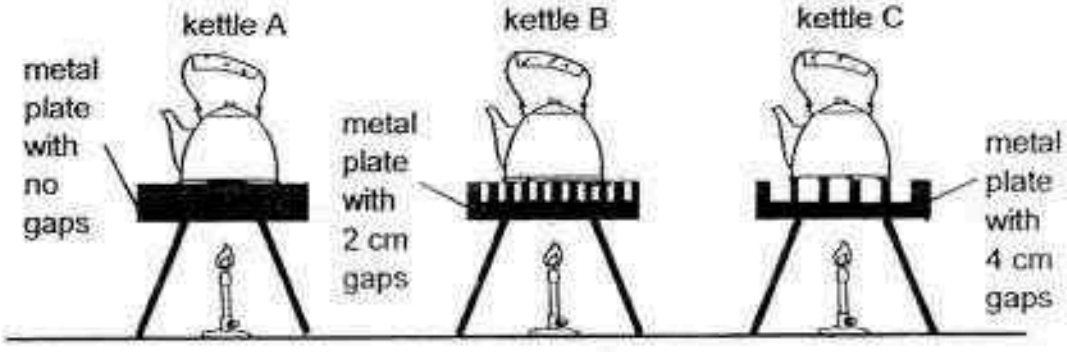
41. Study the diagram below. Candy placed three identical kettles, A, B and C, on three metal plates of the same material but with different surfaces. The kettles contained the same amount of water at room temperature. The metal plates were then heated with the same amount of heat.



She then recorded the time taken for each kettle to boil as shown in the table below.

Kettle	Time taken for the water to boil (minutes)
A	9
B	14
C	22

a) Based on the information in the table above, Kettle C took the longest time to boil. Explain why. [2]

b) Give a reason how each of the following actions helps to make her experiment a fair test. [2]

(i) Using similar kettles of the same size

(ii) Using the same material for all the 3 metal plates

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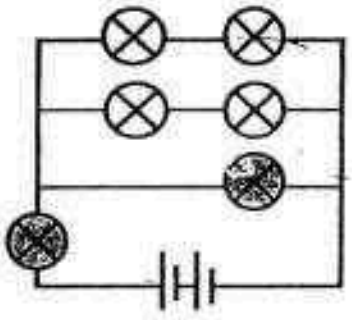
42. Look at the circuit diagram below. All the bulbs are lit.



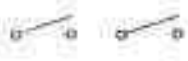
a) Complete the table below by writing down the minimum and maximum number of bulbs that will remain lit when one of the bulbs fuses. [1]

Minimum number of bulbs that will remain lit	
Maximum number of bulbs that will remain lit	

b) Using all the symbols of the electric components given below, draw a circuit such that:

- When one bulb is fused, the other bulb remains lighted
- Only one bulb will light up at a time when one switch is turned on

[2]

			
2 bulbs	2 batteries	2 switches	wires

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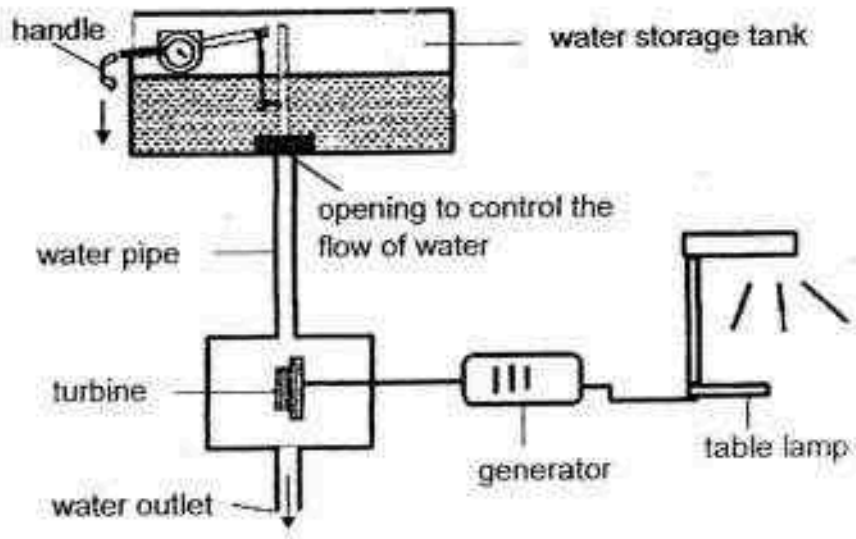
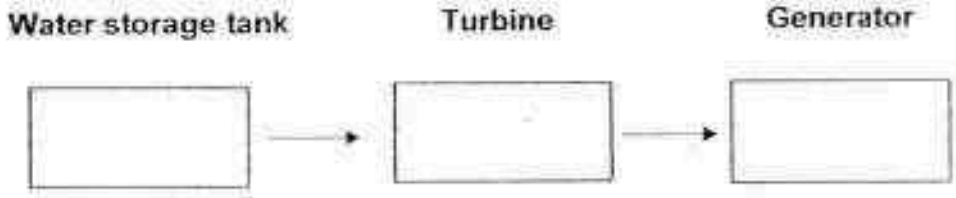
43. Harry designed a simplified hydro-electric power station by connecting the toilet flushing system to a generator as shown below.



a) Complete the boxes to show the energy conversion when the handle is pushed down. [1]



b) Without changing the turbine and generator, suggest two ways Harry can re-design the flushing system so that more energy can be produced to light the table lamp. [2]

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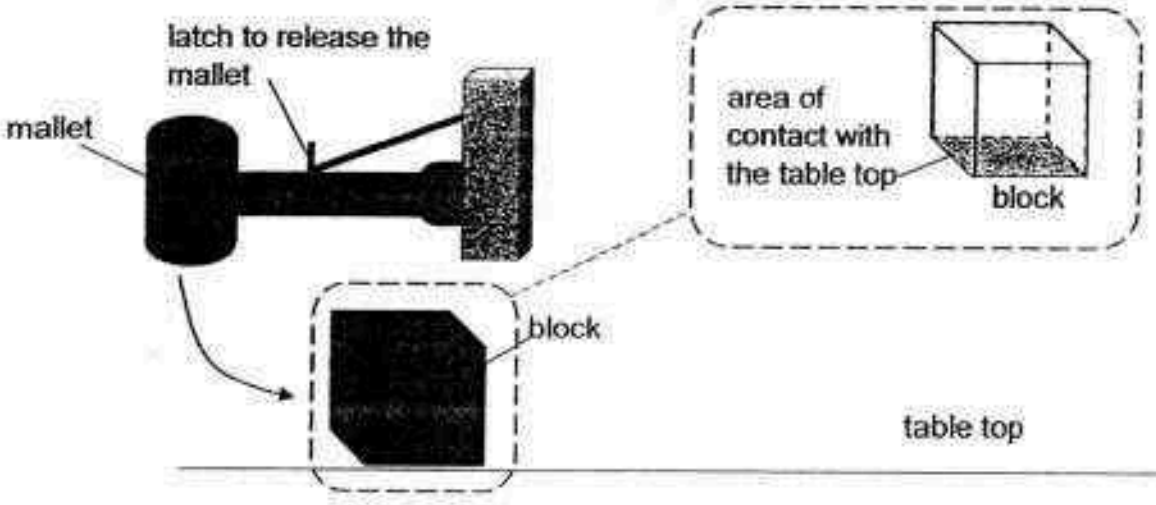
44. Jason set up the experiment as shown below.



When the latch is released, the mallet will swing towards the block and move it across the table top. The distance moved by the block was measured and recorded. Jason repeated the experiment using blocks made of the same material, but with different mass and area of contact with the table.

His results are shown below.

Block	Mass (g)	Area of contact with the table top (cm^3)	Distance moved (cm)
X	50	25	10
Y	50	36	10
Z	30	36	15

a) Based on Jason's results, what is the relationship between the mass of the block and the friction acting on the block? [1]

b) Based on Jason's results, did the area of contact with the table affect the friction on the block? Explain your answer. [1]

c) Other than changing the mass of the block, what should Jason do to the setup if he wants the block to move a shorter distance? Explain your answer. [1]

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YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**CHIJ ST NICHOLAS GIRLS'**
SUBJECT	:	**SCIENCE**
TERM	:	**SA1**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	3	2	2	4	4	4	1	3
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
2	4	3	1	3	3	3	4	4	3
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
1	4	3	2	1	2	4	3	2	4

Booklet B

Q31a The ants has tiny hair on their legs. The legs will trap some pollen grains from Y. When it crawls onto X, the pollen grains will get stuck onto the sticky stigma.

Q31b B → A → D → C

Q31c The ovule becomes the seed and the ovary becomes the fruit.

Q32a Cytoplasm. It allows cell activity to occur within the cell.

Q32b Chloroplast. It contains chlorophyll which traps sunlight for photosynthesis.

Q33a 30

Q33b As the concentration of the carbon dioxide in the water increases, the rate of photosynthesis increases.

Q33c The amount of gas collected will be greater as greater mass hydrilla will have more leaves to photosynthesize more thus more oxygen will be produced by the plant.

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Q34a Prey : S
Predator : Q

Q34b It will increase. Organism Q will be eaten by the next predator and there will be lesser organism Q to feed on organism S. Therefore organism S will increase.

Q35a

Arrow	Name of process
X	Decomposition
Y	Burning

Q35b E and D

Q35c Respiration

Q36a Organism S is a prey of organism P and organism Q is a predator of organism P.

Q36b Organism R could be a plant. Organism P, Q and S swimming near the surface of the water shows that there is a lack of dissolved oxygen in the water. Plants provide oxygen which is required by the living organisms in the water. Hence organism R is most likely to be plant.

Q37a The bigger the area of parachute, the longer the time taken to reach the ground.

Q37b Fruit A, because the longer the wing like structure, the more air-resistance it has than Fruit B to be dispersed further away from parent plant.

Q38a Material X, because there was the least amount of water left in the beaker.

Q38b Material Y, because it has to be waterproof whereas material Y did not absorb any of the blue coloured water.

Q39a So, it is easier for the data logger Y and X to measure the amount of light and to make sure it does not measure the amount of light from the room.

Q39b Light is reflected off Ali onto material R and from R back into Ali's eyes.

Q39c Very little light can pass through material K to Joe. Therefore, very little light is reflected off Joe to material R and then to Ali's eyes. Thus Ali cannot see Joe.

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Q40a (i) The amount of salt or sugar added.
(ii) The type of bunsen burner.

Q40b Data logger with temperature sensor.

Q40c Using the same bunsen burner, similar beaker with 300ml of tap water and thermometer but without adding any salt, sugar or other substances.

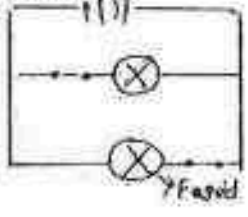
Q41a The surface area in contact with the plate is the least. Therefore lesser heat is conducted to the kettle and water will gain heat slower.

Q41b (i) Same surface area of kettle.
(ii) So it gains heat at the same time.

Q42a

Minimum number of bulbs that will remain lit	0
Maximum number of bulbs that will remain lit	5

Q42b



Q43a Potential energy → Kinetic energy → Electrical energy.

Q43b Change to a bigger water storage tank so that water will flow out with a greater force when flushed.
Use a longer water pipe so that gravitational potential energy increased.

Q44a The heavier the block, the more the friction acting on the block.

Q44b No. The distance moved by block X and Y are the same ev though the area of contact is different. This shows that the amount of frictional force is the same.

Q44c Make the top rougher by adding sand paper.

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Anglo-Chinese School (Junior)

SEMESTRAL ASSESSMENT 1 (2016)

PRIMARY 6

SCIENCE

BOOKLET A

Tuesday **10 MAY 2016** **1 hour 45 minutes**

Name: _____ ( ) Class: 6.( )

INSTRUCTIONS TO PUPILS

1 Do not turn over the pages until you are told to do so.

2 Follow all instructions carefully.

3 There are 30 questions in this booklet.

4 Answer ALL questions.

5 Shade your answers in the Optical Answer Sheet (OAS) provided.

This question paper consists of 21 printed pages (inclusive of cover page).

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Booklet A (60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

(60 marks)

---

1 Mrs Ang gave pictures of the following 4 living things to her pupils.



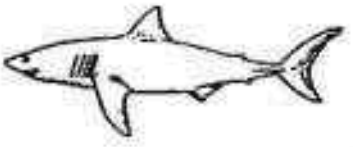
sunflower



dolphin

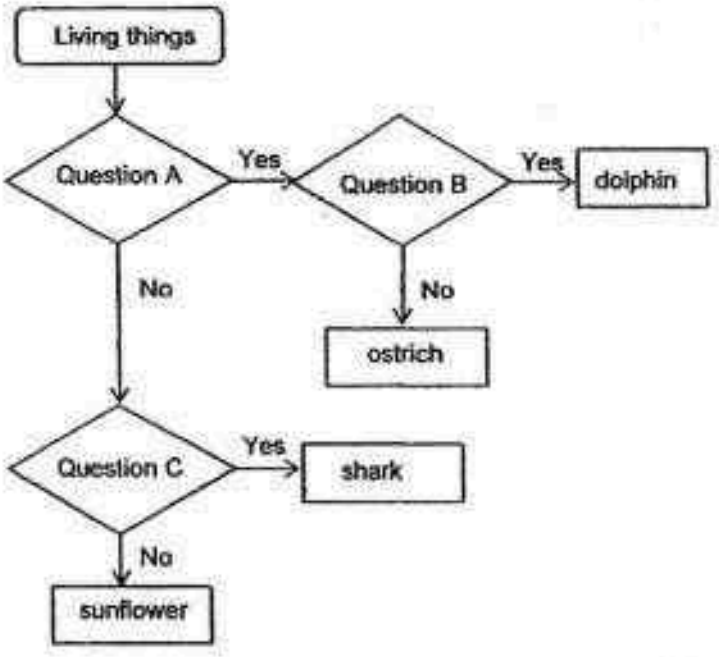


ostrich



shark

The pupils grouped the living things into the classification chart below.



What were the three questions, A, B and C?

	A	B	C
(1)	Does it have gills?	Does it have lungs?	Does it live on land?
(2)	Does it have lungs?	Does it live in water?	Does it have gills?
(3)	Does it live on land?	Does it have gills?	Does it have lungs?
(4)	Does it live in water?	Does it have lungs?	Does it have gills?

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2 The table below shows some characteristics of 2 animals, X and Y.

Characteristics	Animal X	Animal Y
It has a pupa stage in its life cycle.	Yes	No
The young moults several times.	Yes	Yes
The young looks like the adult.	No	Yes

Which set of animals below are likely to be X and Y?

	Animal X	Animal Y
(1)	Butterfly	Cockroach
(2)	Beetle	Mosquito
(3)	Butterfly	Beetle
(4)	Cockroach	Mosquito

3 The table below shows some characteristics of Kiran's parents.

Characteristics	Kiran's father	Kiran's mother
Has widow's peak	No	Yes
Has short hair	Yes	Yes
Has double eyelids	No	No
Has attached earlobes	Yes	No
Has short fingernails	Yes	No

Based on the information above, which of the characteristics are likely passed on from either of Kiran's parents to him?

(1) Has widow's peak and attached earlobes.
(2) Has double eyelids, short hair and attached earlobes.
(3) Has short hair, attached earlobes and short fingernails.
(4) Has widow's peak, double eyelids and short fingernails.

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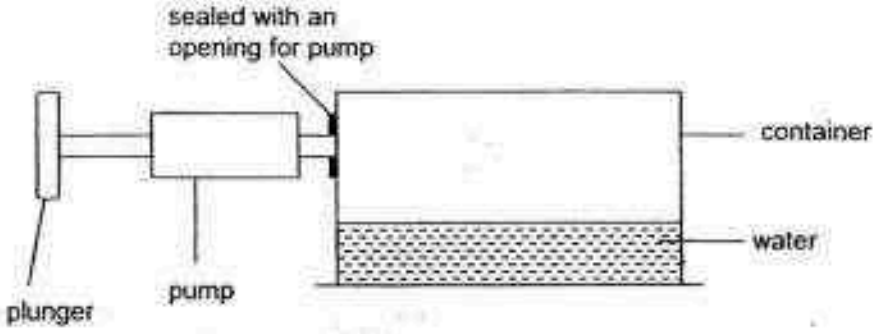
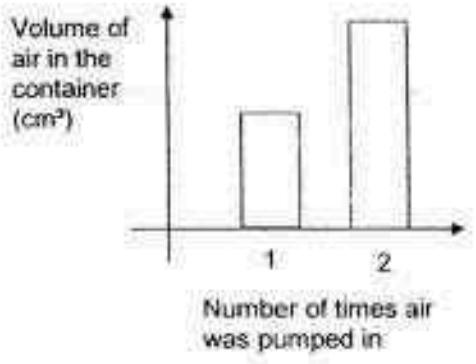
4 The diagram below shows a pump fitted to a container with a capacity of 300 cm^3. It contains 100 cm^3 of water. When Kevin pushed the plunger of the pump in completely to pump air, it allows 15 cm^3 of air to enter the container.

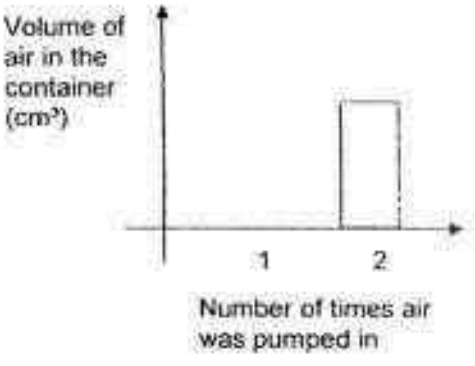


The plunger of the pump was pushed in completely 2 times. Which one of the following graphs correctly shows the volume of air in the container as air was pumped into the container?

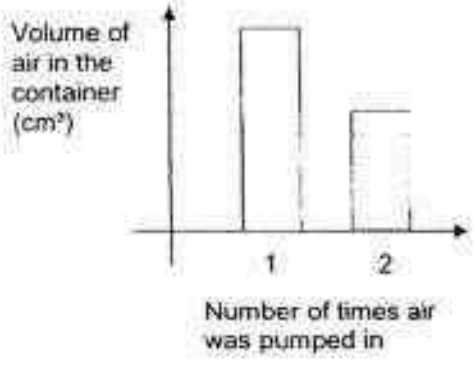
(1)



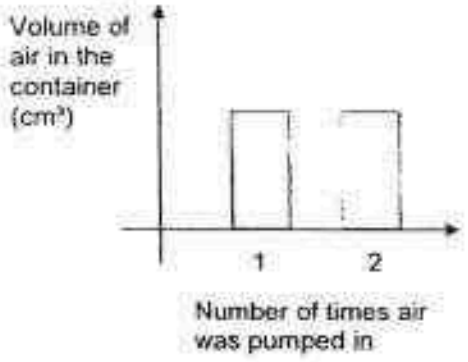
(2)



(3)



(4)



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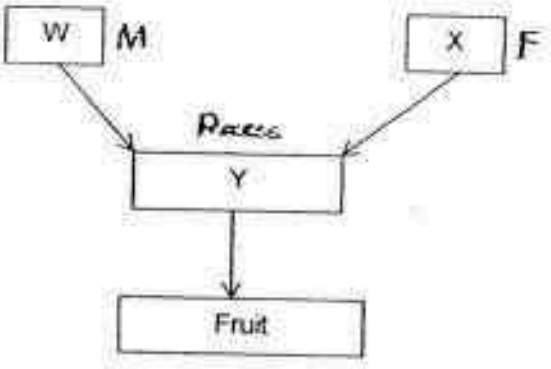
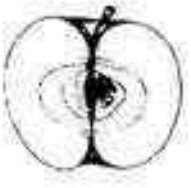
5 The following flowchart shows reproduction in flowering plants. W represents a male reproductive part and X represents a female reproductive part. Y represents a process in reproduction.



Which of the following is most likely W, X and Y?

	W	X	Y
(1)	Anther	Pollen grain	Pollination
(2)	Stigma	Anther	Pollination
(3)	Anther	Stigma	Fertilisation
(4)	Stigma	Pollen grain	Fertilisation

6 Charlotte found 4 different types of fruits, A, B, C and D, in a field. She searched the internet for more information on these fruits and recorded her findings in the table below.

			
Fruit A	**Fruit B**	**Fruit C**	**Fruit D**
Has wing-like structure	Dry, poisonous, has a bitter taste	Juicy, fleshy with small hard seeds	Has hooks and stiff hair

Which of the fruit(s), A, B, C or D, is/are most likely dispersed by animals?

(1) C only
(2) A and B only
(3) C and D only
(4) A, B, and D only

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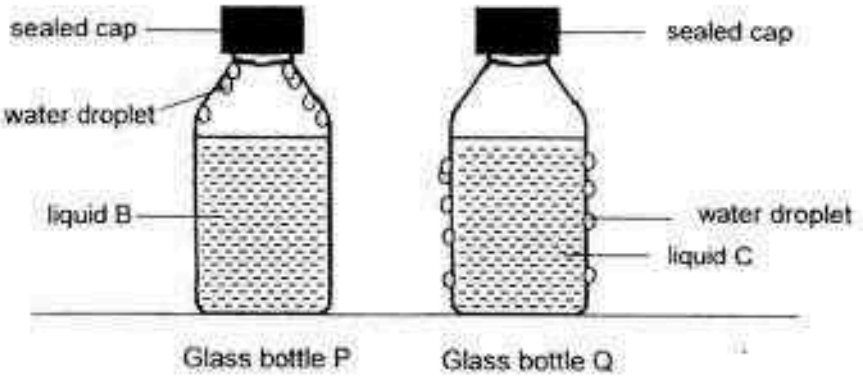
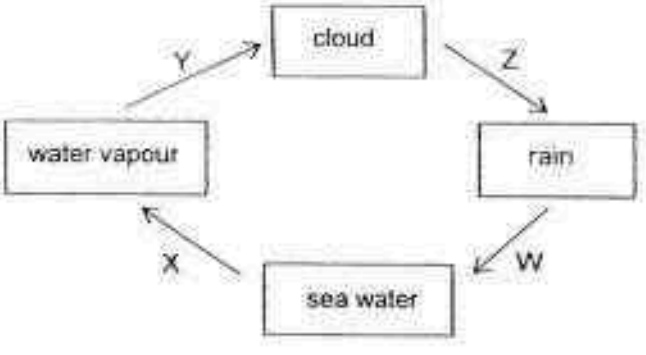
7 Kevin filled equal amount of liquid B and C into two identical glass bottles, P and Q, respectively. Liquid B and C are at different temperature. He sealed both glass bottles and left them on the dining table. After some time, he noticed water droplets formed as shown in the diagram below.



What are liquid B and C most likely to be?

	Liquid B	Liquid C
(1)	tap water	hot water
(2)	hot water	iced water
(3)	iced water	tap water
(4)	hot water	hot water

8 The diagram shows the water cycle.



Which one of the following shows the correct changes in state?

	Liquid to gaseous	Gaseous to liquid
(1)	X	Y
(2)	Y	W
(3)	W	Z
(4)	X	Z

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9 A group of pupils was asked to state a function of the digestive system.

Pupil	Functions of digestive system
Amy	Absorbs simple substances so that they can be used by the body.
Ben	Carries digested food to all parts of the body.
Carl	Breaks down food into simple substances.
Danny	Carries waste material away from different parts of the body.

Which of the above pupil(s) has/have stated a correct function / correct functions?

(1) Amy only
(2) Amy and Carl only
(3) Ben and Danny only
(4) Ben, Carl and Danny only

10 The table shows a comparison between the plant and human transport system.

	Statements	Plant Transport System	Human Transport System
A	Water is transported in the system.	Yes	Yes
B	Has a centralised organ to pump materials to all parts in the system.	No	Yes
C	There are tubes to transport materials in the system.	No	Yes
D	Food produced is transported by food-carrying tubes to all parts in the system.	Yes	Yes

Which of the above comparison(s) is/are correct?

(1) B only
(2) A and B only
(3) C and D only
(4) A, C and D only

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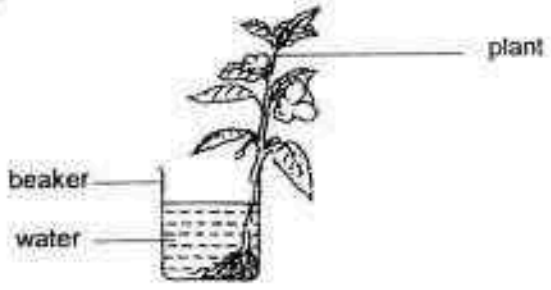
11 Tim wanted to find out if plants take in different amounts of water when placed at different locations in his school. He set up an experiment using the same type of plant placed in 3 identical beakers A, B and C.



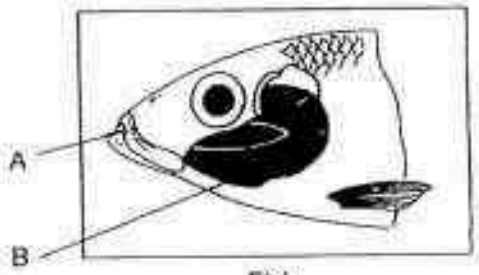
He placed the beakers at different locations in the school and gave different amounts of water to each plant.

Beaker	Location	Amount of water given to each plant (ml)
A	At a classroom	100
B	At the Ecogarden	150
C	At the field	50

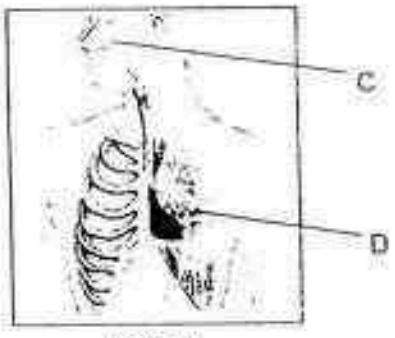
Tim's teacher said that his experiment was not a fair one. What change should Tim make to make it a fair experiment?

(1) Give the same amount of water to each plant.
(2) Place different types of plants in each beaker.
(3) Place plants with different amount of roots in each beaker.
(4) Place plants with the same number of leaves in each beaker.

12 The diagrams below show the respiratory system of a fish and human.



Fish



Human

Which part of the respiratory system of the fish and human allow exchange of gases?

	Fish	Human
(1)	A	C
(2)	A	D
(3)	B	C
(4)	B	D

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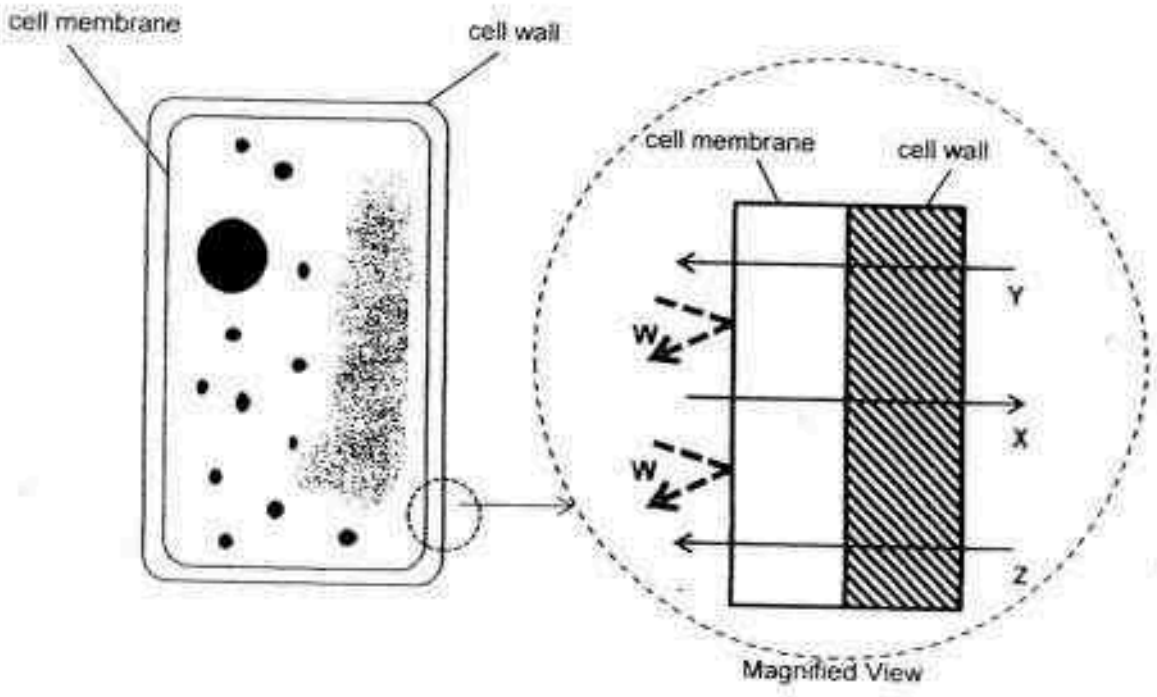
13 The diagram below shows the outer layers of a plant cell as well as the movement of substances, W, X, Y and Z, in and out of the cell as represented by the arrows shown.



Based on the diagram, which of the following statements correctly describes the cell membrane of the plant cell?

A It allows only substance W to pass through.
B It supports and gives the plant cell its shape.
C It controls the movement of substances in and out of the cell.
D It allows substances X, Y and Z to pass through but prevents substance W from passing through.

(1) A and B only
(2) A and C only
(3) C and D only
(4) B, C and D only

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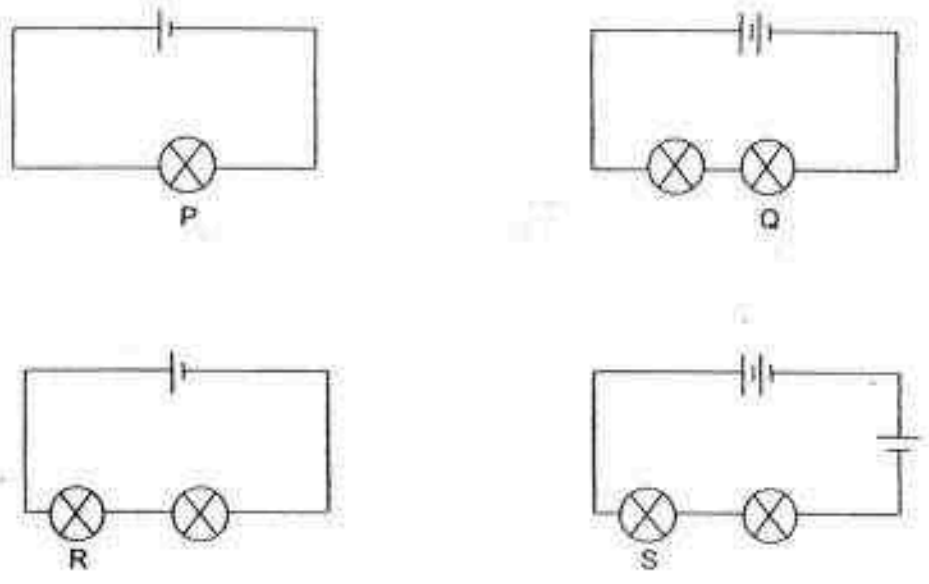
14 The diagram below shows four circuits with different arrangements of identical batteries and identical bulbs. The bulbs in all circuits light up.



Which one of the following shows correctly the brightness of the bulbs?

	Brightness of bulbs		
	Bright →	**Brighter →**	**Brightest**
(1)	R	P	S
(2)	R	P	Q
(3)	S	Q	R
(4)	Q	P	S

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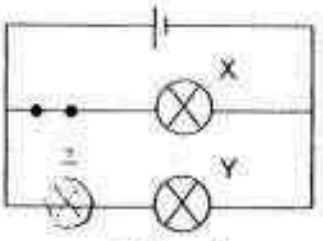
15 Michael set up an electric circuit in Set-up A as shown below. He measured the brightness of bulbs X and Y.



Set-up A



Set-up B

Next, he set up an identical electric circuit in set-up B and connected another identical bulb Z to the circuit in set-up B. He made the following observations:

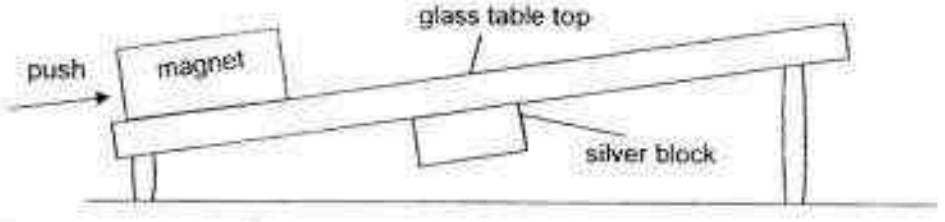
- All three bulbs lighted up in set-up B.
- Bulbs X and Z had the same brightness in set-up B.
- Brightness of bulb X was lower in set-up B than in set-up A.
- Brightness of bulb Y remained the same in set-ups A and B.

Which of the following statement(s) about the electric circuit in set-up B is/are correct?

A When bulb X fuses, bulbs Y and Z will remain lit.
B All the bulbs in the circuit are arranged in parallel.
C When the switch is opened, bulb Z will not light up.

(1) B only
(2) C only
(3) A and B only
(4) A, B and C

16 A bar magnet was placed on a glass table as shown below. A silver block was attached to the bottom of the table. The bar magnet was then pushed along the table.



Which of the force(s) given below must the push force overcome in order for the magnet to move along the table?

A Magnetic force
B Frictional Force
C Gravitational Force

(1) C only
(2) A and B only
(3) B and C only
(4) A, B and C

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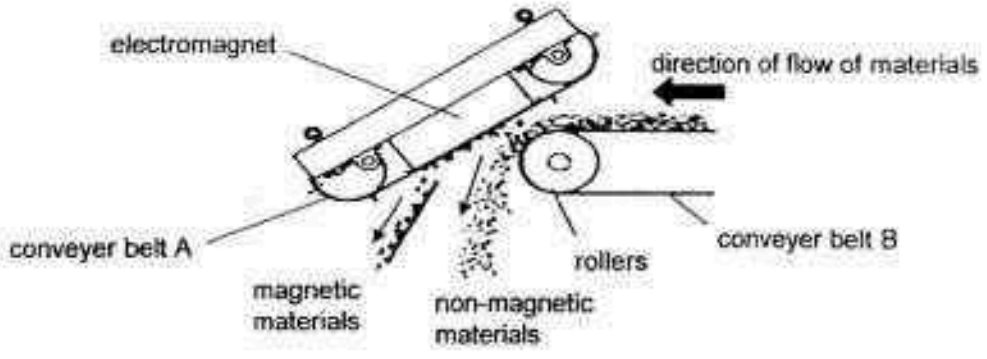
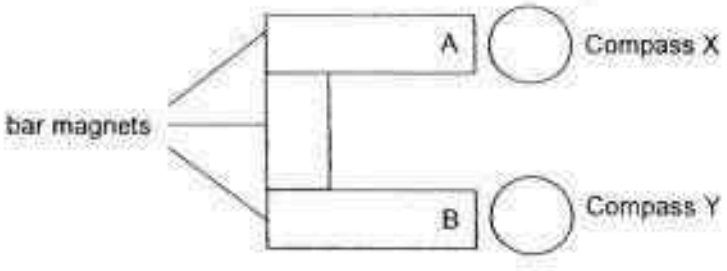
17 The diagram below shows a magnetic conveyer belt system in a recycling plant.



Conveyer belt A is placed to attract magnetic materials. If conveyer belt A was to be used for attracting larger magnetic materials, what should be done to the conveyer belt system if only one change was to be made?

(1) Increase the speed of the rollers.
(2) Increase the length of conveyor belt B.
(3) Increase the magnetic force of the electromagnet in conveyor belt A.
(4) Increase the height of the gap between conveyor belt A and conveyer belt B.

18 Mark set up 3 bar magnets. He brought Compass X towards side A of one of the bar magnets and Compass Y towards side B of another bar magnet. His set-up is shown in the diagram below.



Which of the following correctly represents the directions both compasses will point to?

	Compass X	Compass Y
(1)	←	→
(2)	↓	↑
(3)	↑	↓
(4)	←	←

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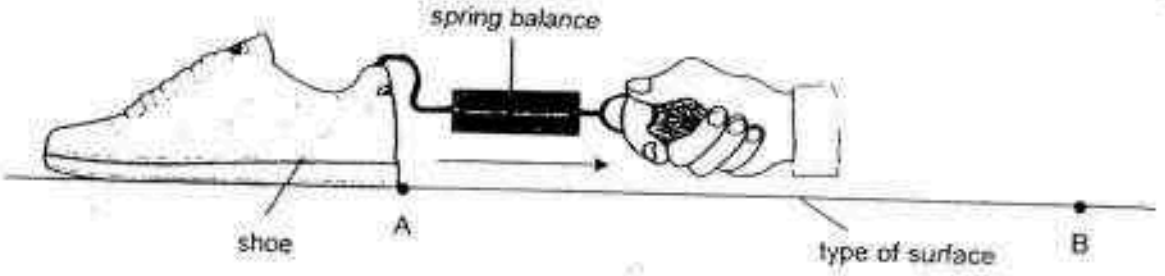
19 Gary conducted an experiment to find out which type of surface, Q, R, S and T, would be the best for making a pathway next to a swimming pool. He conducted an experiment by placing a shoe on the surface and pulling the shoe from point A to point B as shown below.



Gary repeated the experiment for each of the surfaces and recorded the amount of force needed to pull the shoe over the surfaces.

Type of surfaces	Amount of force (N)
Q	30
R	60
S	15
T	90

Based on the results, which one of the following conclusions is correct?

(1) Surface R is the best surface for making the pathway.
(2) Surface R creates more friction than surface Q and less friction than surface S.
(3) There is least friction between the shoe and surface S, as compared to other surfaces.
(4) Friction between the shoe and surface Q was greater than the friction between the shoe and surface R.

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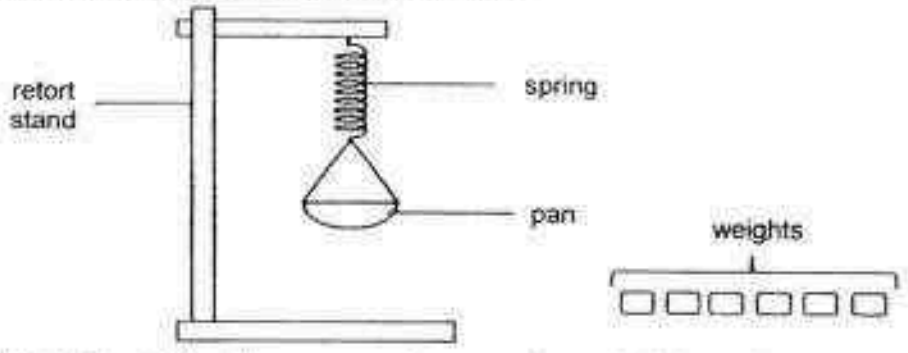
20 Jack conducted an experiment using the set-up below.



He placed identical weights in the pan, one by one, and recorded the results in the table below.

Number of weights in the pan	1	2	3	4	5	6
Length of spring (cm)	7	10	13	16	16	16

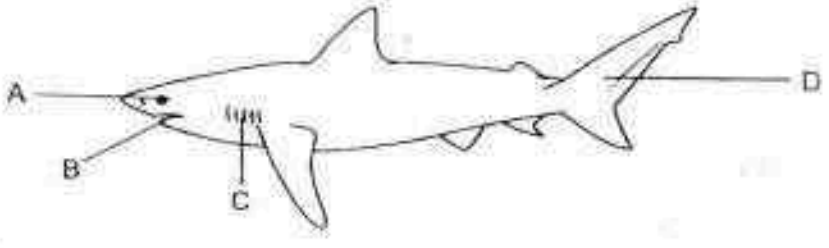
What was most likely the original length of the spring when the pan was empty?

(1) 2 cm
(2) 4 cm
(3) 7 cm
(4) 10 cm

21 The diagram below shows a scuba diver in the ocean. The swim fins labelled in the diagram enable the diver to move forward more effectively through the water.



Which part of the shark, A, B, C or D, has the most similar function to the swim fins of the diver?



(1) A
(2) B
(3) C
(4) D

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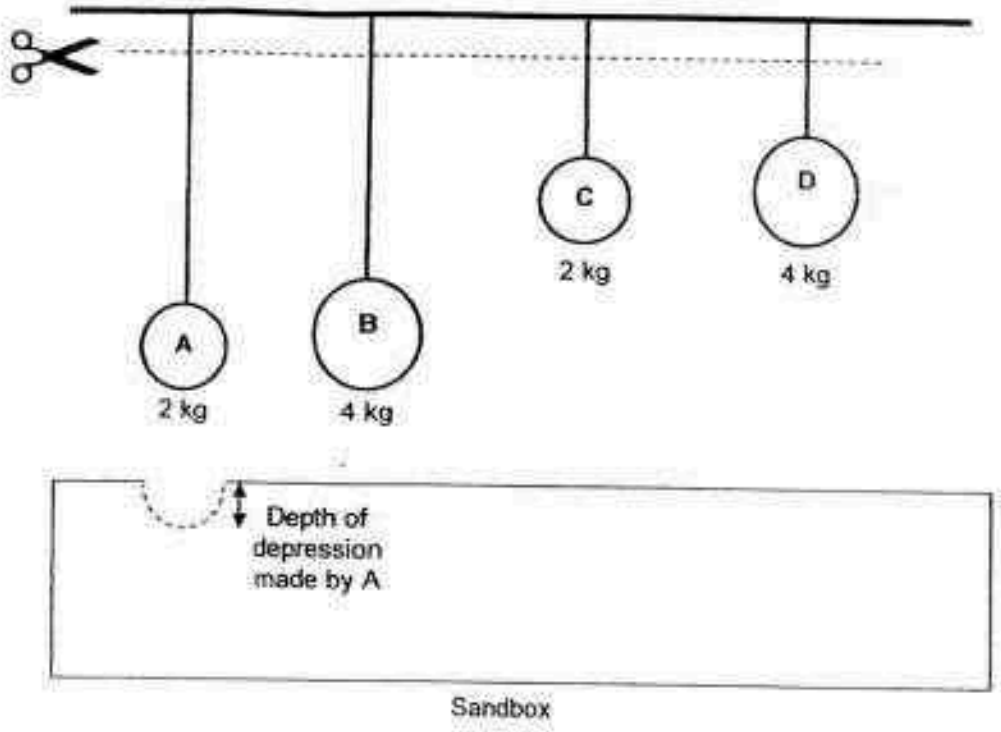
22 Four metal balls, A, B, C and D, are suspended on 4 identical strings of different length from the ceiling. The four strings are cut at the dotted line and the balls dropped from different heights into the sandbox as shown in the diagram below.



The depressions made by the balls were measured and recorded in the table below.

Ball	Depth of depression in sand (cm)
A	7
B	9
C	12
D	14

Based on the set-up above, which of the following statement(s) is/are correct?

A More gravitational force is acting on ball D than ball B.
B Ball C has more gravitational potential energy than ball A.
C Ball D makes a deeper depression than ball C because it has more mass.

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

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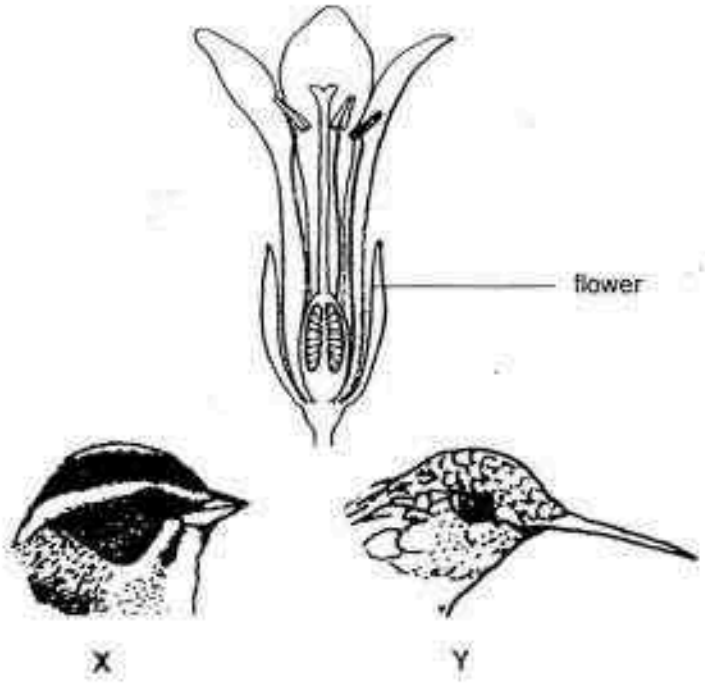
23 The diagrams below show a cross-section of a flower and two birds, X and Y which are found in the same habitat. Both the birds feed on nectar and are attracted to brightly coloured flowers. However, only Bird Y is able to pollinate the flower.



Why is the flower pollinated by bird Y and not bird X?

(1) The petals are brightly coloured.
(2) The flower has a strong sweet scent.
(3) The stigma is positioned below its anthers.
(4) The nectar is found deep within the flower.

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24 The diagram shows a leaf bug. The leaf bug is an insect that is shaped like a leaf and has patterns on its body similar to the leaves of its surrounding.



An experiment was conducted on the leaf bugs. Four tanks W, X, Y and Z were each placed at the same location for a week with the following conditions:

- Each tank had a different type of plant
- Each tank had the same number of plants
- Each tank had the same number of leaf bugs
- Each tank had the same number of leaf bug predators
- Each tank had sufficient food for the leaf bugs to last 2 weeks

The table below shows the results of the experiment.

Tank	Number of leaf bugs before experiment	Number of leaf bugs after 1 week
W	30	13
X	30	20
Y	30	8
Z	30	30

Based on the results, which of the following statements best explain the results?

A The leaf bugs in tank W had too much sunlight for them to survive.
B The leaf bugs in tank Y could not camouflage themselves from predators.
C The structure of the leaves of the plants in tank Z was similar to the leaf bug.
D The structure and colour of the leaf in tank X was the least similar to the leaf bug.

(1) A and B only
(2) A and C only
(3) B and C only
(4) C and D only

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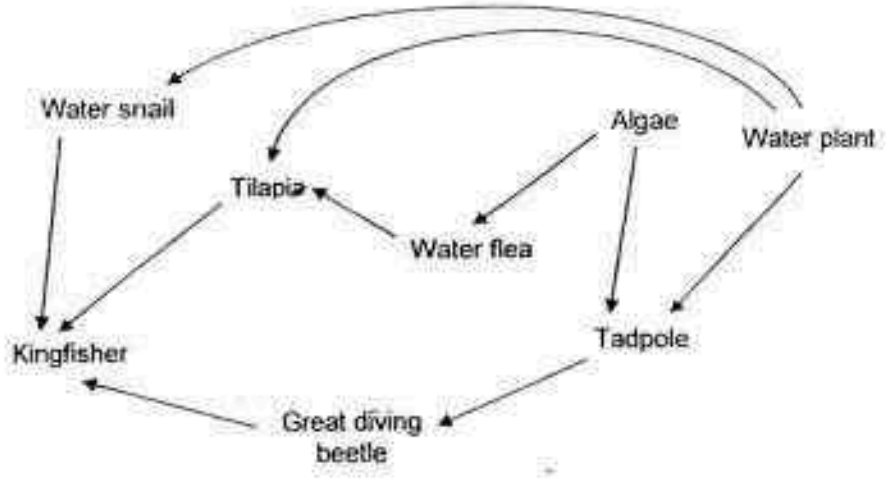
25 The food web below shows the food relationships among some organisms in a pond community.



Based on the above food web, which of the following statements are true?

A There are two omnivores.
B There are six food chains.
C There are three predators.
D There are three herbivores.

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) B, C and D only

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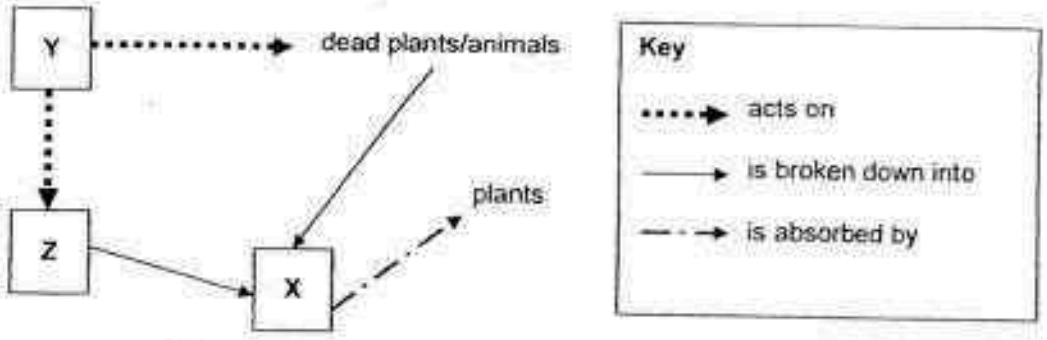
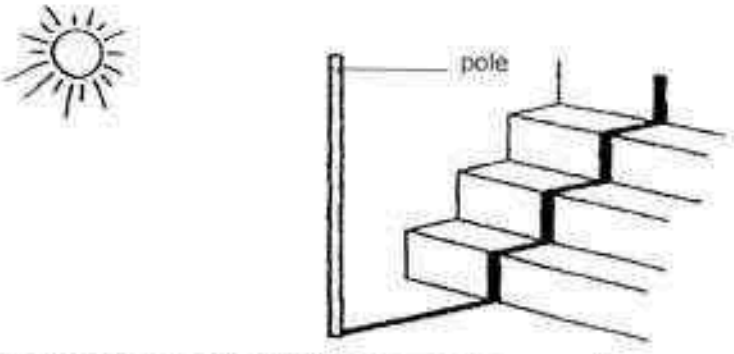
26 Decomposers enrich the soil with nutrients for the plants to grow well. The diagram below shows how decomposers act on dead matter and change them into simpler substances.



Which of the following best represent X, Y and Z respectively?

	X	Y	Z
(1)	carbon dioxide	predators	nutrients
(2)	water	fungi	carbon dioxide
(3)	mineral salts	prey	animal waste
(4)	mineral salts	bacteria	animal waste

27 Paul placed a pole in front of a flight of stairs as shown below.



Paul made the following statements based on the diagram above.

A Paul carried out the experiment at noon.
B The pole is made of an opaque material.
C The shadow is formed as light reflected off the steps.
D The length of the pole is always the same as the length of its shadow.

Which of the above statements is/are definitely correct?

(1) B only
(2) A and D only
(3) B and C only
(4) A, C and D only

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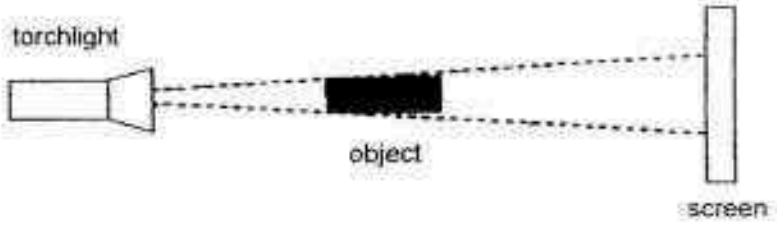
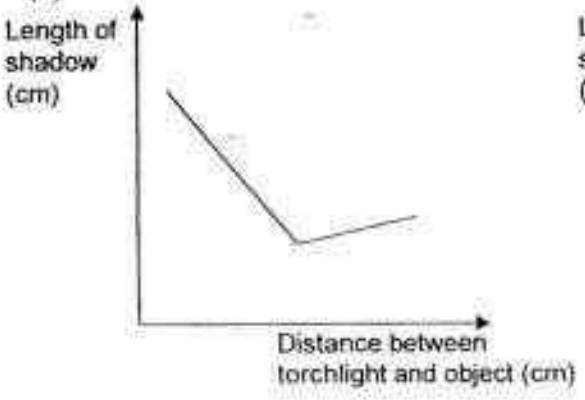
28 Amanda carried out an experiment using an object as shown in the diagram below. When the torchlight was switched on, a shadow formed on the screen.

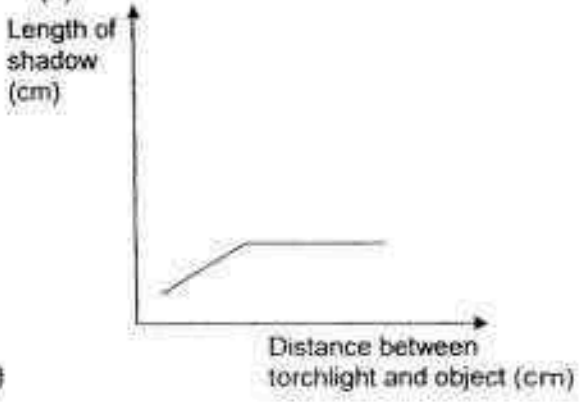


Which of the following graphs shows the relationship between the length of the shadow cast on the screen and the distance between the torchlight and the object?

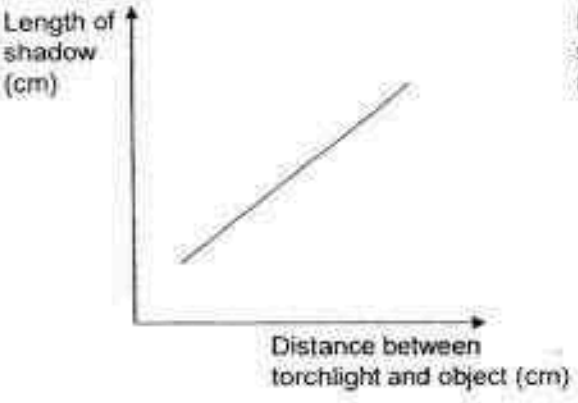
(1)



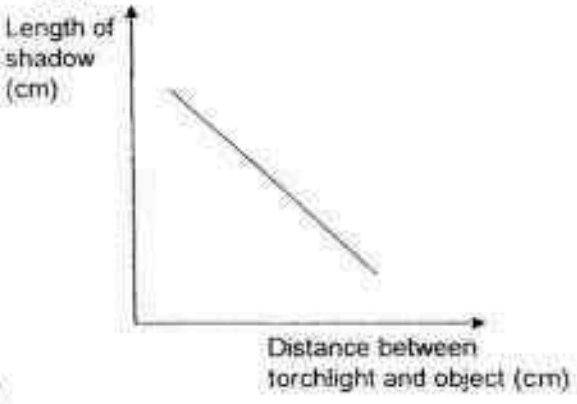
(2)



(3)



(4)



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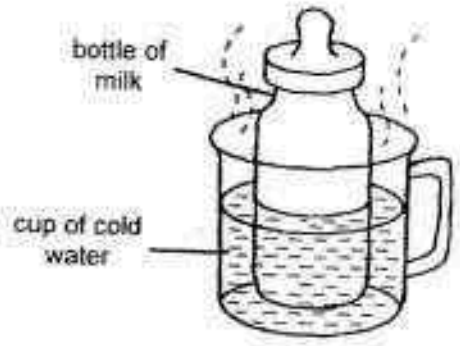
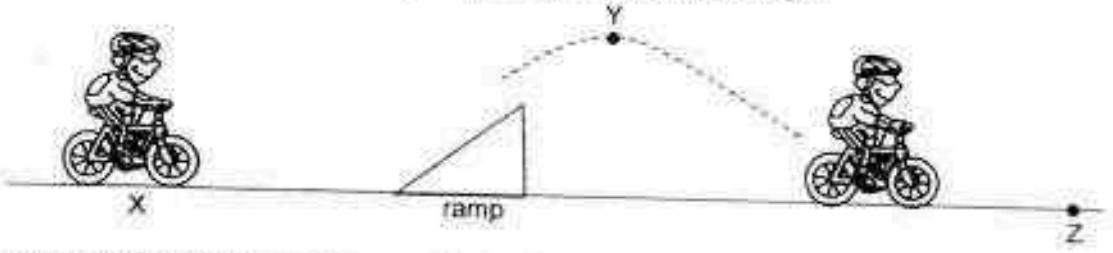
29 Mrs Lim made a bottle of milk for her baby. She tested the milk and realised that it was too hot. She placed the bottle of milk into a cup of cold water as shown below.



Which of the following explanations best described what happened after ten minutes?

(1) The milk gained heat from the cup of water.
(2) The milk lost heat to the cold water and the surrounding air.
(3) There was less milk because the heat had caused it to evaporate.
(4) The milk gained heat from the cold water but lost heat to the surrounding air.

30 Tim starts to ride his bicycle from point X. He rides up the ramp, then flies through the air for a short distance before landing on the ground and stopping at Point Z as shown in the diagram below. Point Y is the highest point his bicycle was in the air.



What are the main forms of energy at points X, Y and Z in the bicycle as Tim cycles it?

	X	Y	Z
(1)	chemical potential energy	kinetic energy	kinetic energy
(2)	kinetic energy	gravitational potential energy	kinetic energy
(3)	gravitational potential energy	kinetic energy	gravitational potential energy
(4)	kinetic energy	elastic potential energy	kinetic energy

Please go on to Booklet B.

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Anglo-Chinese School (Junior)

SEMESTRAL ASSESSMENT 1 (2016)

PRIMARY 6

SCIENCE

BOOKLET B

Tuesday **10 MAY 2016** **1 hour 45 minutes**

Name: _____ ( ) Class: 6.( ) Parent's Signature: _____

INSTRUCTIONS TO PUPILS

1 Do not turn over the pages until you are told to do so.

2 Follow all instructions carefully.

3 There are 14 questions in this booklet.

4 Answer ALL questions.

5 The marks are given in the brackets [ ] at the end of each question or part question.

Booklet	Possible Marks	Marks Obtained
A	60	
B	40	
Total	100	

This question paper consists of 15 printed pages (inclusive of cover page).

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Booklet B (40 marks)

For questions 31 to 44, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31 The states of 4 different substances, P, Q, R and S at different temperatures are shown in the table below.

Substance	At 28°C	At 40°C	At 78°C
P	solid	solid	liquid
Q	liquid	liquid	liquid
R	solid	solid	solid
S	liquid	liquid	gas

Based on the information given in the table, for each of the following four statements, put a tick (✓) in the correct column. [2]

Statement	True	False
i. Melting point of Substance P is at 78°C.		
ii. Substance Q has the lowest boiling point.		
iii. Substance R has the highest melting point.		
iv. Both substances Q and S have melting points below 28°C.		

(Go on to the next page)

SCORE / 2

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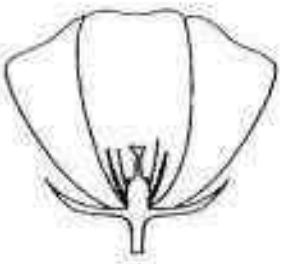
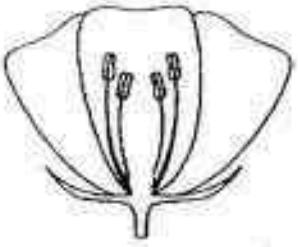
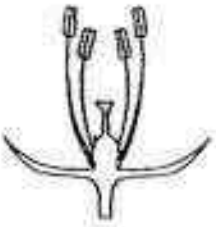
32 Nathan conducted an experiment to find out which parts of a flower are required to form a fruit. He removed one different part from each of 3 identical flowers, W, X and Y, of the same plant as shown below.



Flower W
(anther removed)



Flower X
(stigma removed)



Flower Y
(petals removed)

He transferred some pollen grains from another flower of the same plant to all the remaining parts of flowers W, X and Y.

(a) Which flower(s), W, X and/or Y, is/are able to develop into a fruit/fruits? Explain why. [2]

_____

_____

(b) Explain why plants need to disperse their seeds. [1]

_____

_____

(Go on to the next page)

SCORE	/ 3

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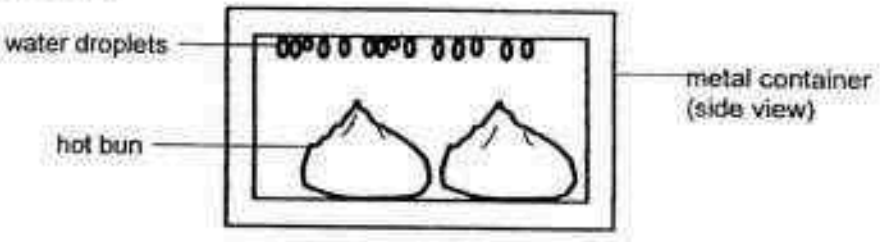
33 Kamal bought two hot buns at a coffeeshop. He packed them in an enclosed metal container. When he opened the container at home half an hour later, he found that there were water droplets on the top inner surface of the container as shown in the diagram below.



(a) Explain clearly how these water droplets were formed. [2]

(b) A week later, Kamal bought two identical buns from another coffeeshop. He packed them into a styrofoam container that is of the same size as the metal container. Half an hour later, he observed that less water droplets formed on the top inner surface of the container. Explain why. [1]

(Go on to the next page)

SCORE 3

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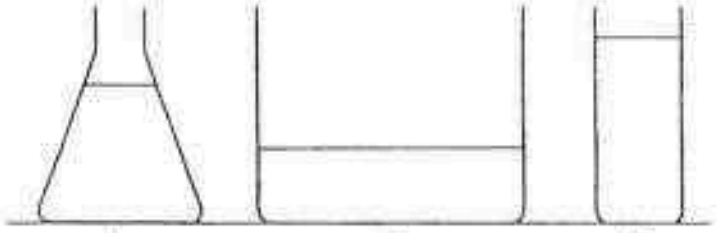
34 Xinrui set up an experiment with 3 containers, A, B and C, of different shapes and sizes. She poured the same amount of water into each container. She left the containers under the sun.



(a) If Xinrui wanted to find out the rate of evaporation of water in each container, what should she measure at the end of the experiment? [1]

(b) In which container will water evaporate the fastest? Explain why. [1]

(c) Other than the factor mentioned in (b) affecting the rate of evaporation, identify two other factors that will increase the rate of evaporation in this experiment. [1]

(Go on to the next page)

SCORE	/ 3

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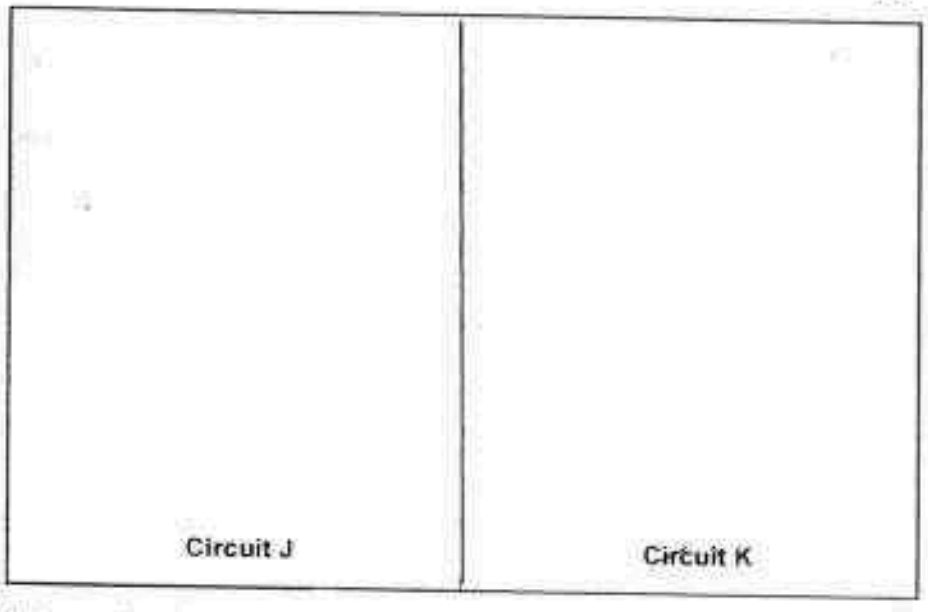
37 Liwen carried out an experiment to find out how the arrangement of bulbs in a circuit will affect the brightness of the bulbs. He set up two different electric circuits, J and K, in his experiment. He used all of the following apparatus for his experiment:

- 6 identical bulbs
- 4 identical batteries
- a few wires

He observed that in Circuit J, when 1 bulb fused, all the other bulbs did not light up. In Circuit K, the bulbs are brighter than those in Circuit J.

(a) Based on the information given above, draw circuit diagrams for Circuit J and Circuit K in the space provided below. He had set up both electric circuits at the same time. [2]



(b) What are the advantage, other than bulbs being brighter in Circuit K, and disadvantage of the arrangement of bulbs in Circuit K as compared to Circuit J? [1]

Advantage:

_____

_____

Disadvantage:

_____

_____

(Go on to the next page)

SCORE / 3

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38 At a coffeeshop, Mr Raju pours hot tea using the pulling action from one container into another from a height as shown in the diagram below. After a while, the hot tea became cool.



(a) What material should the containers be made of so that the hot tea can lose heat as quickly as possible? Give a reason for your answer. [1]

_____

_____

(b) Explain how his pulling action allows the hot tea to lose heat much faster than leaving it in the container to cool down. [1]

_____

_____

(c) When hot tea is ordered as a takeaway, it is given in a styrofoam cup instead of a plastic cup. Explain why this is so using the property of materials. [1]

_____

_____

(Go on to the next page)

SCORE	/ 3

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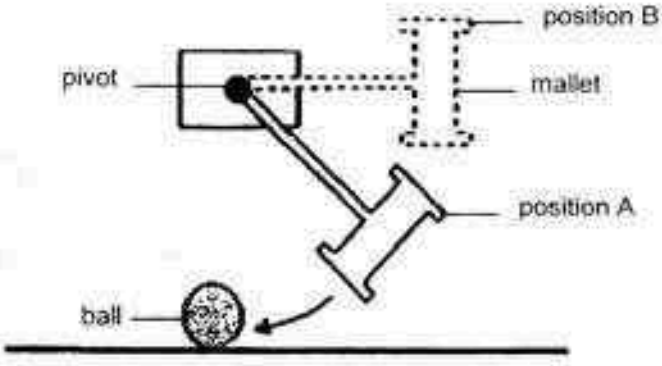
39 The diagram below shows a mallet pivoted at one end. It is allowed to swing freely and hit a ball upon release.



(a) Which position, A or B, when the mallet is released from will cause the ball to travel a further distance? Explain your answer. [2]

(b) Tom used the above set-up to carry out an experiment. He recorded the distance travelled by the ball. He then replaced the mallet with one of a smaller mass and repeated the experiment.

(i) What was the aim of Tom's experiment?

(ii) Predict the most likely outcome of Tom's experiment. [1]

(Go on to the next page)

SCORE 4

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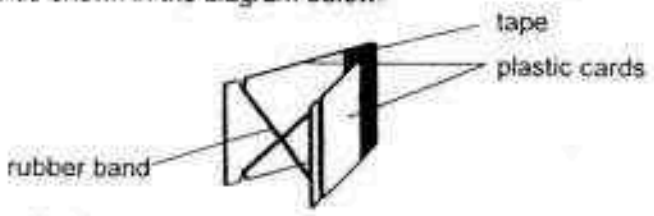
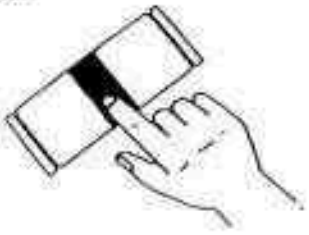
40 Sam made a jumping toy using two pieces of strong plastic cards, some tape and a rubber band as shown in the diagram below.



He wanted to find out how the number of rubber bands used to make the toy affects the height it jumped to. Sam stretched the rubber band and pressed it down before removing his finger from the toy.



The toy snapped and jumped to a certain height which Sam measured and recorded in the table below. He repeated the activity by increasing the number of rubber bands used at one time.

Number of rubber bands used	1	2	3	4
Maximum height reached by the toy (cm)	7	12	18	23

Based on the information above, answer the following questions.

(a) What is the relationship between the number of rubber bands used and the height reached by the toy? [1]

_____

_____

(b) Why should Sam use the same plastic cards and same type of rubber band? [1]

_____

_____

(c) Other than those stated in (b), what other variable must be kept constant to ensure a fair test? [1]

_____

(Go on to the next page)

SCORE / 3

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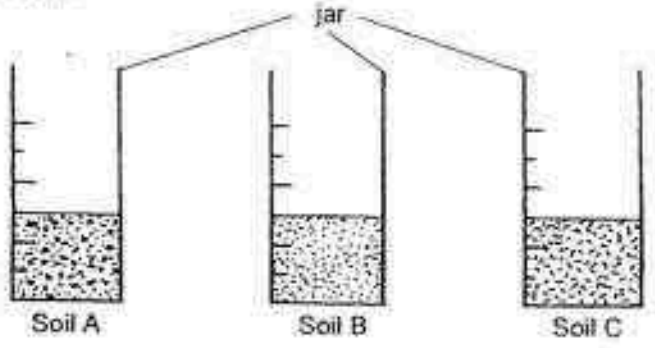
41 Ben conducted an experiment to find out about the air spaces in different types of soil. He placed an equal amount of each type of soil, A, B and C, into three identical jars as shown below.

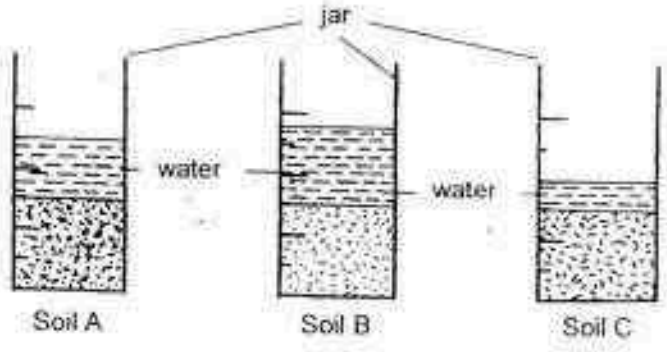


He then gently poured an equal amount of water into each jar at the same time.

(a) What would Ben observe in the jars to show that there is air in the soil? [1]

_____

The diagrams below show Ben's initial observations of the three set-ups after the water was poured into each jar of soil.



(b) What can he conclude about the air spaces in Soils A, B and C? [1]

_____

_____

(Go on to the next page)

SCORE 2

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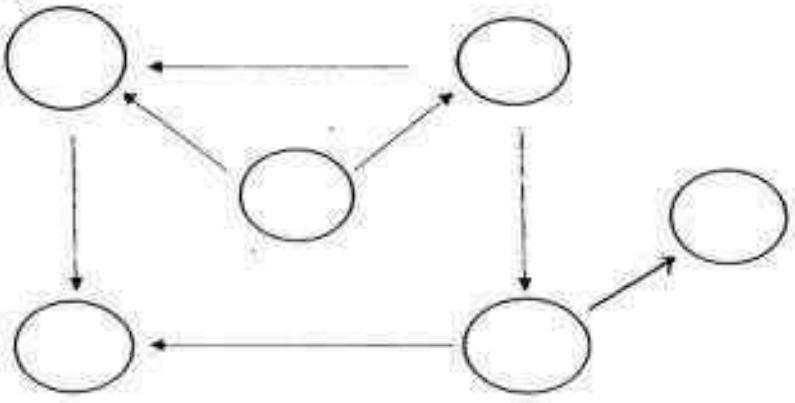
42 A, B, C, D, E and F are six organisms found in a community. The following information will help you to complete the food web below.

- E is a food producer
- B is eaten by D and F
- C eats D and F
- B and F eat E
- A eats D

(a) Complete the food web by writing the correct letters, A, B, C, D, E and F, in each circle below. [1]



(b) Based on the food web, state which organism(s) is/are: [1]

(i) Both prey and predator: _____

(ii) Herbivore: _____

(c) If the population of A becomes extinct, how would organism D be affected? Explain why. [1]

_____

_____

_____

(Go on to the next page)

SCORE 3

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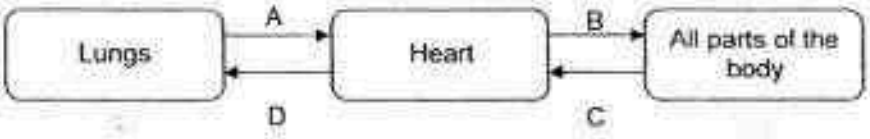
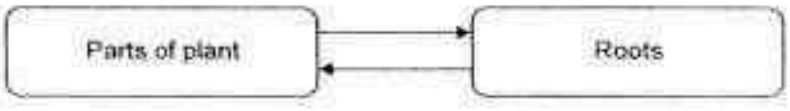
36 The diagram below shows the flow of blood in a human circulatory system. A, B, C and D represent blood vessels. The arrows represent the movement of blood in the body.



(a) Explain why blood must flow from the heart to the lungs, and back to the heart again before it is sent to all parts of the body. [2]

The diagram below shows the transport of substances, represented by the arrows, in a plant transport system.



In the human circulatory system, when blood vessel A is entirely blocked, the movement of substances in blood vessels B, C and D are also affected.

(b) Explain why, in a plant transport system, when the path of substance(s) from parts of plant to the roots is entirely blocked, the movement of substance(s) from the roots to parts of plant will not be affected. [1]

(Go on to the next page)

SCORE / 3

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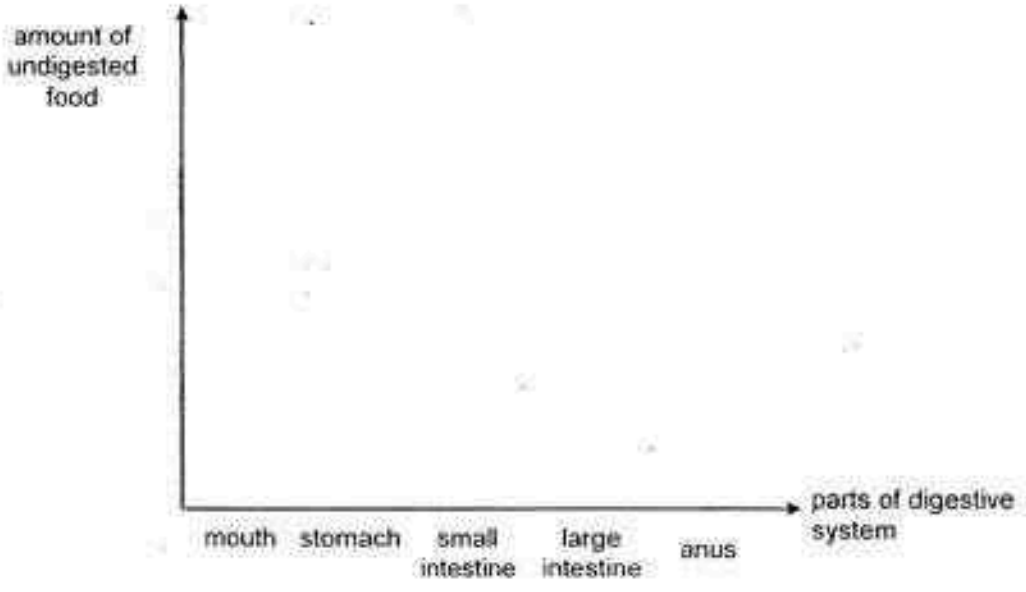
35 The diagram below shows the amount of undigested food as it enters parts of the digestive system.



(a) Complete the bar graph to show the amount of undigested food at the stomach. [1]

(b) Based on the graph, what can you conclude about digestion of food in the large intestine? [1]

_____

_____

(c) Explain clearly the path of digested food from the small intestine to the body cells. [1]

_____

_____

(Go on to the next page)

SCORE 3

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43 The diagram below shows Animal S and Animal T. They are both slow-moving animals.



(a) Both Animal S and Animal T produce a slimy liquid substance from their mucous gland, which is found on the underside of their bodies, when they move. How does this help the animal in its movement? [1]

_____

_____

(b) How does Animal T protect itself when threatened by a predator?

_____

_____

(c) Animal S is unable to protect itself like Animal T. However, when it is threatened by a predator, it produces a lot of the slimy liquid which covers its whole body. How do you think this would protect it from its predator? [1]

_____

_____

(Go on to the next page)

SCORE	/3

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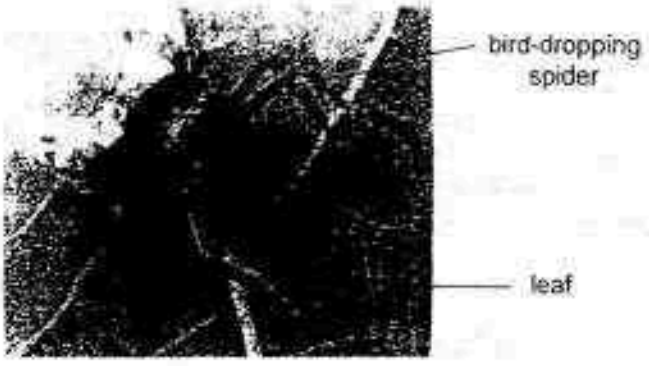
44 The bird-dropping spider has adapted itself to live in the rainforest. It looks like bird droppings when it stays motionless on a leaf during the day as shown below. It usually hunts at night. Its main predators are birds.

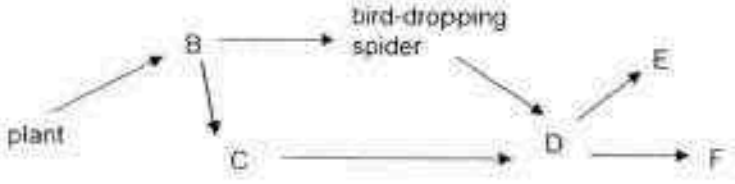


(a) Based on the description above, how does the structural adaptation of the bird-dropping spider decrease its chances of being spotted by birds? [1]

_____

_____

The food web below shows the food relationship of the bird-dropping spider with other organisms in its habitat.



(b) The period of daylight is shorter in certain months in the habitat where the bird-dropping spiders can be found. What would happen to the population of Organism B in those months? Explain your answer. [1]

_____

_____

_____

_____

End of Paper

SCORE	/ 2

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EXAM PAPER 2016
LEVEL : PRIMARY 6
SCHOOL : ANGLO-CHINESE SCHOOL (JUNIOR)
SUBJECT : SCIENCE
TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	1	1	4	3	3	2	1	2	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	4	3	1	2	3	3	1	3	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	3	4	3	2	4	1	4	2	2

Q31. Melting point of substance P is 78 Degrees Celsius – False
Substance Q has the lowest boiling point – False
Substance R has the highest melting point – True
Both substances Q and S have melting points below 28 Degrees Celsius – True

Q32a) W and Y. The stigmas were still there for pollination and fertilization to take place.

b) To prevent overcrowding so that there is no competition with other plants for light, space, water and nutrients.

Q33a) The water vapour from the hot bun made contact with the cooler inner surface of the metal container. Therefore, the water vapour condensed into water droplets.

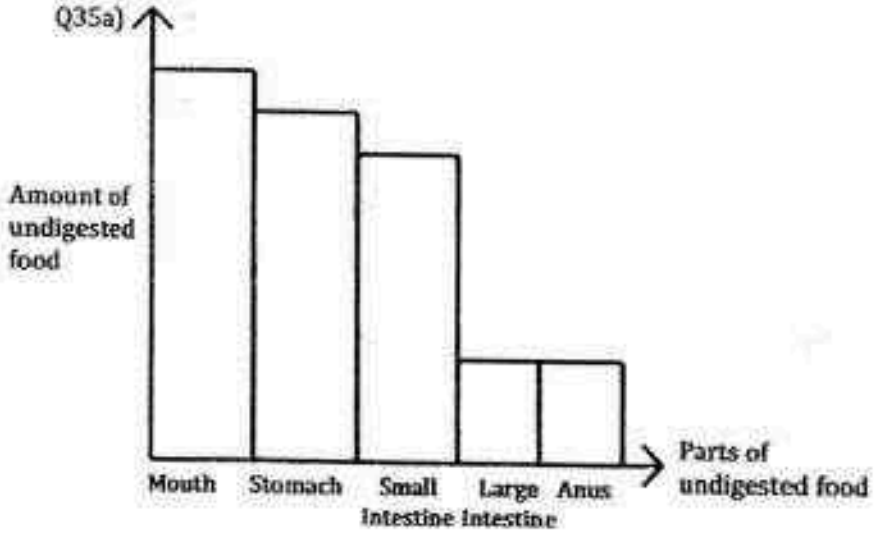
b) Styrofoam is a poor conductor of heat therefor less water vapour condenses to form water droplets.

Q34a) The amount of water left in each container.

b) B. It had the largest exposed surface area, hence the water gains the most heat.

c) Wind and temperature.

Q35a)



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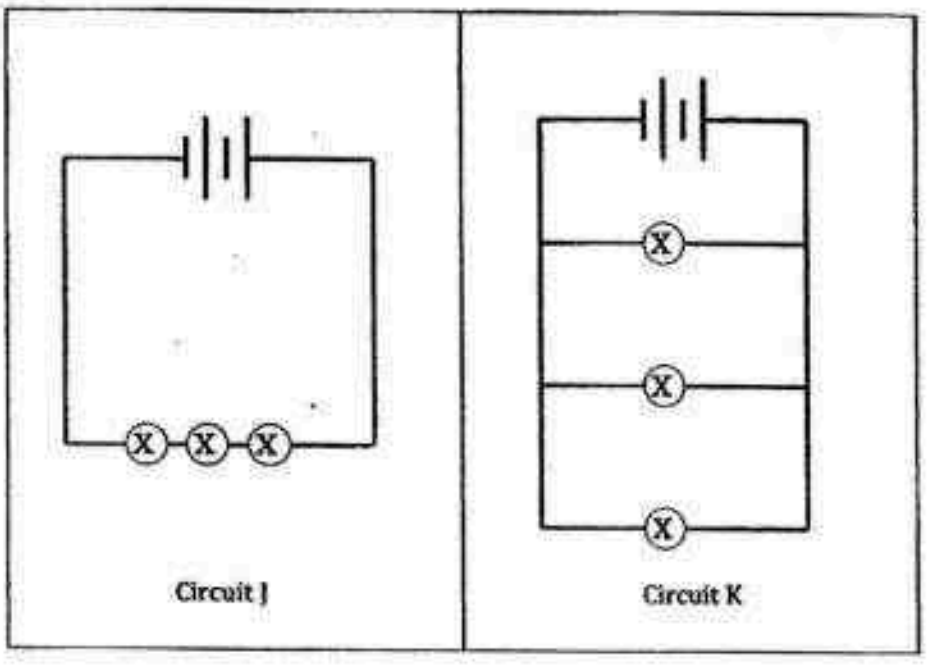
b) The large intestine does not digest any food.

c) Digested food is absorbed through the walls of the small intestine and into the bloodstream.

Q36a) The blood from the heart flows to the lungs to exchange carbon dioxide for oxygen and back to the heart to send blood rich in oxygen to all parts of the body.

b) The substances move through different tubes.

Q37a)



b) Advantage: When one bulb fuses, the others will still light up.
Disadvantage: Use up more electricity.

Q38a) Iron. It is a good conductor of heat.

b) This increases the exposed surface area of the hot tea.

c) Styrofoam is a poorer conductor of heat than plastic. Therefore, styrofoam is able to keep the drink hot for a longer period of time.

Q39a) Position B because it is higher than position A so the mallet has more gravitational potential energy which will be converted to more kinetic energy of the mallet to more kinetic energy in the ball.

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b)(i) To find out if the mass of the mallet would affect the distance travelled by the ball.

(ii) The ball will travel a shorter distance.

Q40a) The more the number of rubber bands, the higher the toy jumped.

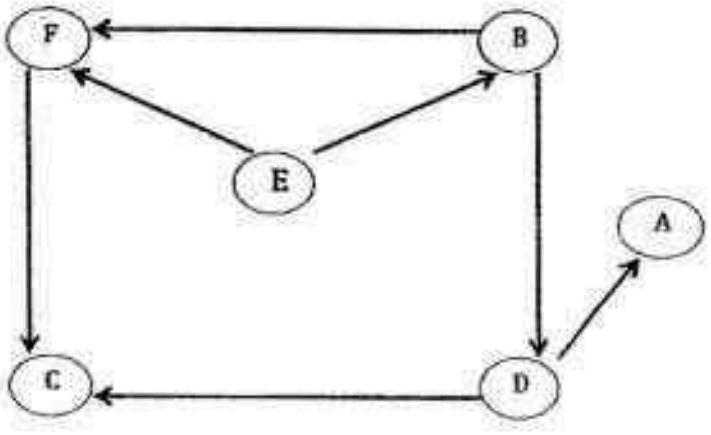
b) To ensure that the height that the toy jumped to is only affected by the number of rubber bands.

c) The thickness of the tape.

Q41a) Bubbles will be observed.

b) Soil C has the most amount of air spaces followed by Soil A and B.

Q42a)



b)(i) D and F

(ii) B

c) The population of organism D would increase. It would have one less predator which is only C.

Q43a) It reduces friction between the ground and their body and allowing them to move more easily.

b) It would hide in its shell and use the shell as a protective layer.

c) It would not be easy for the predator to grip onto S as there would be less friction between the predator's claws and animal S's body.

Q44a) Birds would think that it is a bird dropping and ignore it.

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b) More time for the bird-dropping spiders to hunt for organism B, thus the population of B will decrease. The population of plants will decrease because there is less light for them to photosynthesize, hence less food for organism B.

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12



PRIMARY 6 MID-YEAR EXAMINATION 2016

Name : _____ ( )

Date: 12 May 2016

Class : Primary 6 ( )

Time: 1 hour 45 minutes

Parent's Signature : _____

Marks: _____ / 60

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

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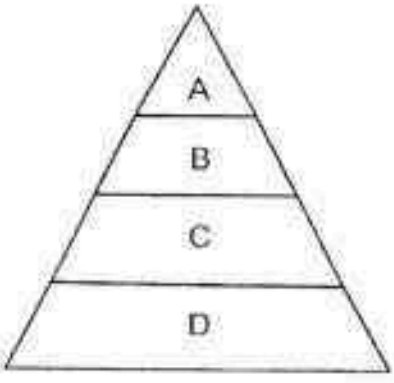
Section A (30 x 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

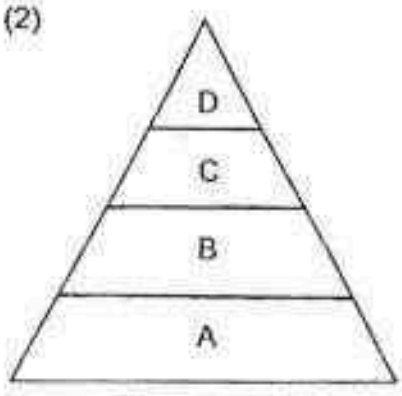
1. Which of the following energy pyramids correctly shows a balance in the food chain below?

A ⟶ B ⟶ C ⟶ D

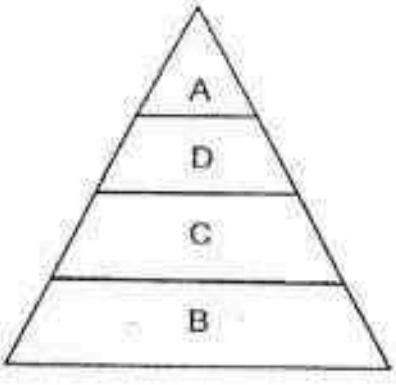
(1)



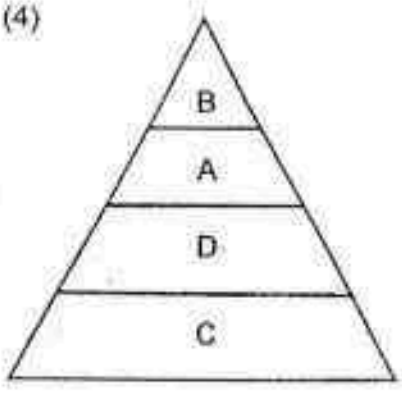
(2)



(3)



(4)



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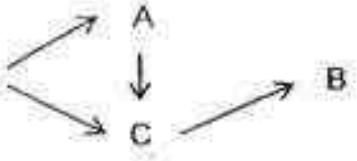
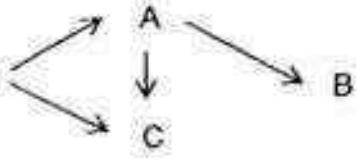
2. Kumar conducted two experiments on food relationships in a community consisting of a plant and three other organisms, A, B and C.

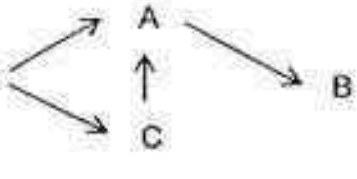
The table below shows the observations at the end of the experiments after three days.

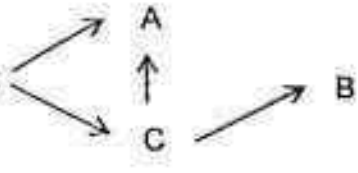
Experiment	Start of experiment	End of experiment
1	• Five freshly plucked leaves from the plant • One living organism A • One living organism C	• Bits of leaves • One living organism C
2	• One living organism A • One living organism B • One living organism C	• One living organism B

Based on the experiments above, which of the following shows a possible food relationship amongst the plant and the organisms, A, B and C?

(1) 

(2) 

(3) 

(4) 

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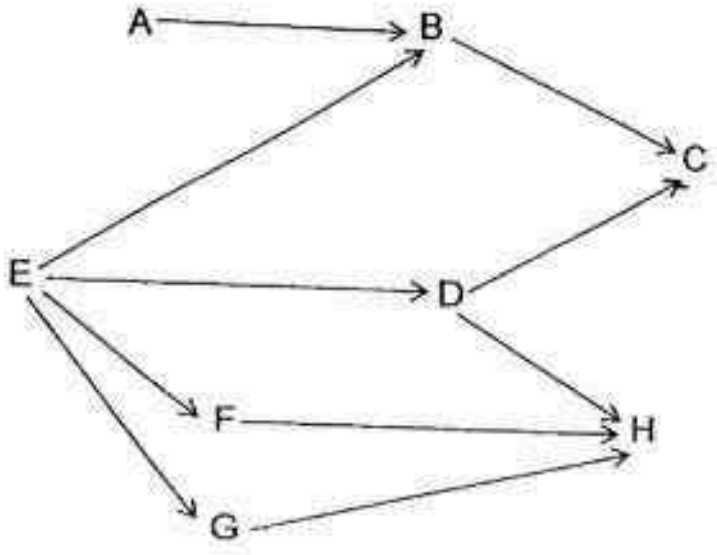
3. The food web below shows the food relationships between organisms, A, B, C, D, E, F, G and H.



Which of the following statements is true of the food web?

(1) The only source of food for H is D.

(2) There are three plant-eaters in the food web.

(3) All of the organisms in the food web feed on E.

(4) None of the organisms present in the food web is a plant-and-animal eater.

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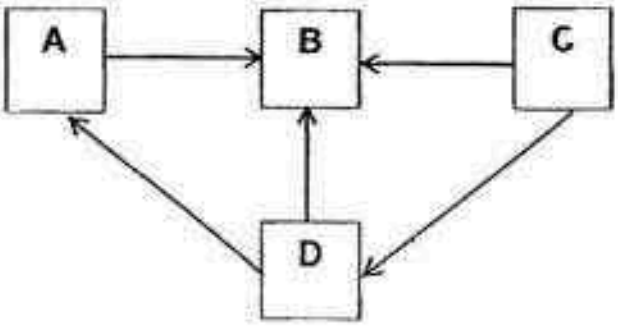
4. The diagram below shows the flow of energy between organisms, A, B, C and D, in an ecosystem.



Which of the following correctly represents the role that organisms, A, B, C and D, play in the food web?

	A	B	C	D
(1)	Consumer	Consumer	Decomposer	Producer
(2)	Consumer	Decomposer	Producer	Consumer
(3)	Consumer	Decomposer	Consumer	Producer
(4)	Consumer	Consumer	Producer	Decomposer

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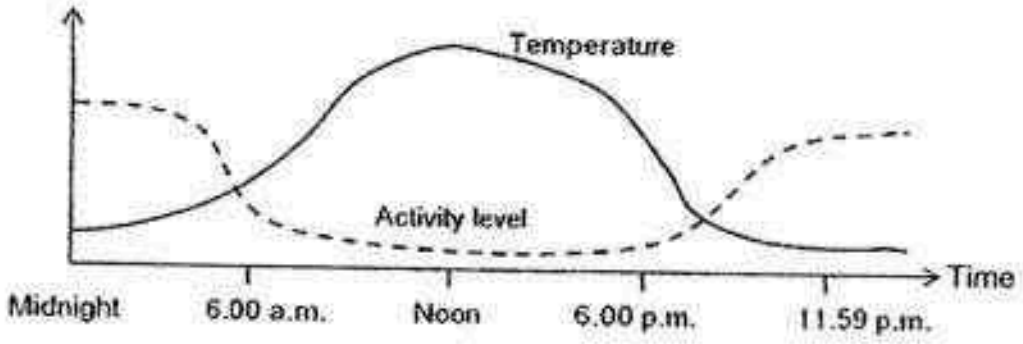
5. The desert cottontail is a type of rabbit that lives in a desert. The two line graphs below show the relationship between the activity level of the desert cottontail and the temperature changes of the desert in a day.



Which of the following conclusions can you make about the desert cottontail based on the graphs?

A: Its fur colour helps it to survive in a desert.

B: It is able to survive in a desert because it hibernates.

C: Its behavioural adaptation helps it to survive in the desert.

D: Its activity level increases when the temperature decreases.

(1) A and C only
(2) B and D only
(3) A and D only
(4) C and D only

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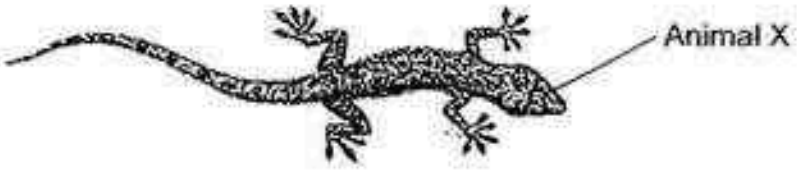
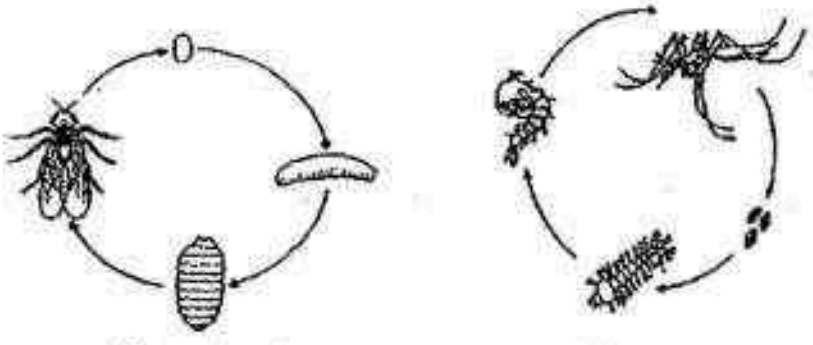
6. Tom saw Animal X in his room and he tried to catch it by its tail. However, its tail broke off and Animal X managed to escape.



Which of the following shows the breaking of its tail help Animal X increase its chances of survival?

(1) It helps to keep Animal X warmer.
(2) It helps Animal X to distract its predator.
(3) It allows Animal X to blend into the surroundings.
(4) It enables Animal X to crawl in to cracks and gaps.

7. The diagrams below show the life cycles of two insects.



Life cycle of Insect A

Life cycle of Insect B

Based on what you can observe from the life cycles above, which of the following best describes a similarity of the young of both insects?

(1) They look like their parents.
(2) They go through the pupal stage.
(3) They have more legs than their parents.
(4) They live in the same habitat as their parents.

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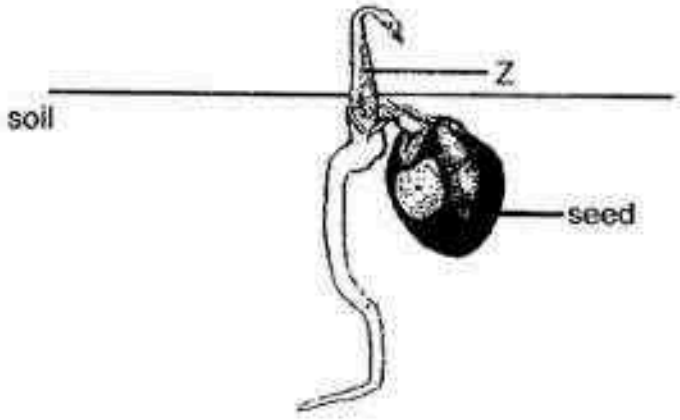
8. The diagram below shows a seed growing into a young plant.



Which of the following shows the direction in which food and water are being transported at Z?

	Direction of transport of	
	food	water
(1)	upwards	upwards
(2)	downwards	upwards
(3)	upwards	downwards
(4)	downwards	downwards

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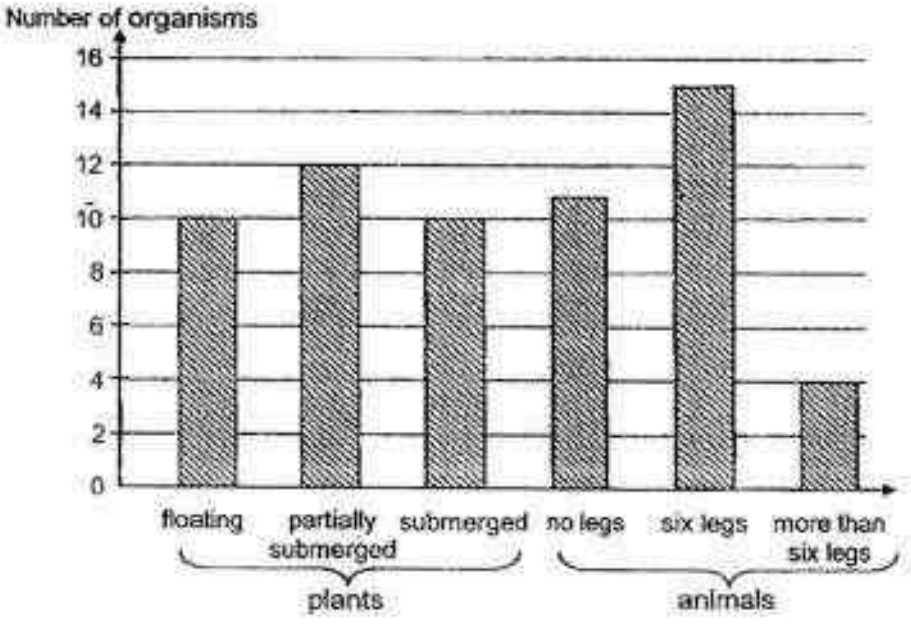
9. A group of Primary 6 pupils counted the number of plants and animals in the school pond. They drew a bar chart based on their data collected as shown below.



Which of the following statements about the plants and the animals in the pond is/ are correct?

A: There are 30 populations of animals.
B: There is at least 6 populations of plants and animals.
C: The number of floating plants and submerged plants are equal.

(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C

10. Jenny has a garden where she planted some vegetables and fruit trees. She always buries leftover food and bones in the garden instead of throwing them in dustbins. Why does Jenny bury these items?

(1) They will not be broken down easily.
(2) They will decompose only if they are buried.
(3) They will attract mosquitoes if they are not buried.
(4) They will decompose and provide nutrients for the plants.

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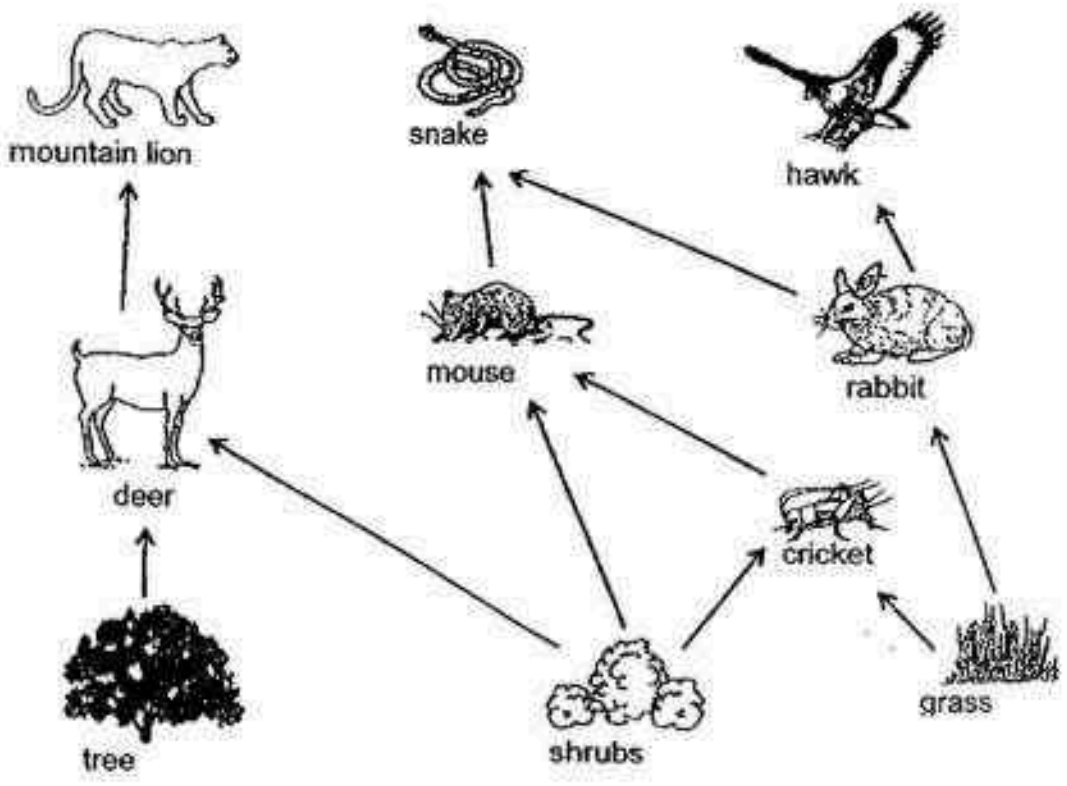
11. Study the food web below.



Which of the following statements are definitely true about the food web above?

A: There are three types of food producers in the web.
B: When the population of snakes decreases, the population of the crickets would increase.
C: The population of the deer is only affected by the population of the mountain lion.
D: When the populations of all the plants decrease, the populations of other organisms would decrease too.

(1) A and D only
(2) B and C only
(3) A, C and D only
(4) A, B, C and D

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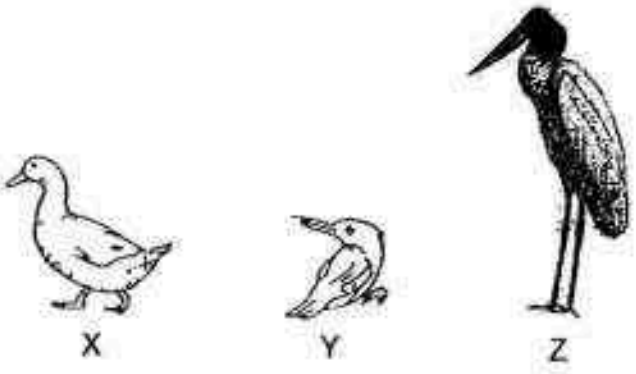
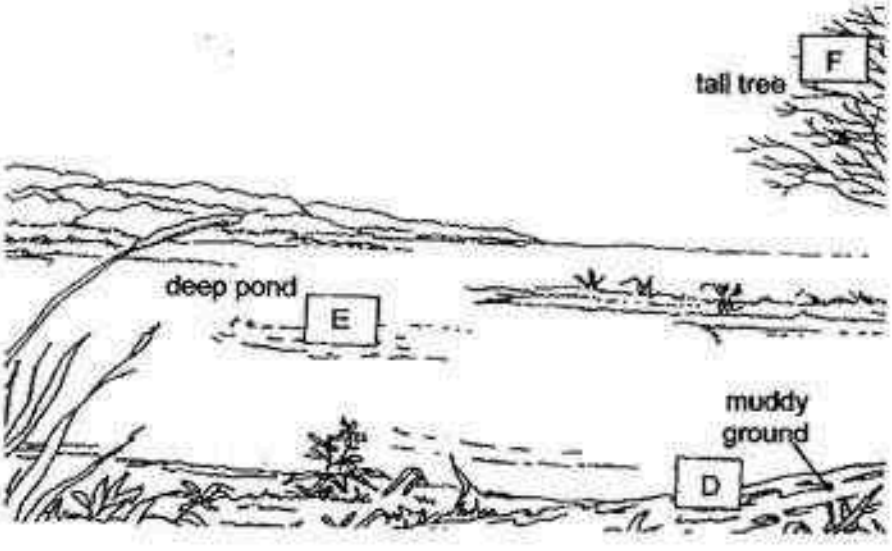
12. The diagram below shows three birds, X, Y and Z, which feed on fish.



They are usually seen in different parts, D, E and F of the habitat below.



Which of the birds, X, Y and Z, are most likely to be found at D, E and F?

	D	E	F
(1)	X	Y	Z
(2)	Y	Z	X
(3)	Z	X	Y
(4)	Y	X	Z

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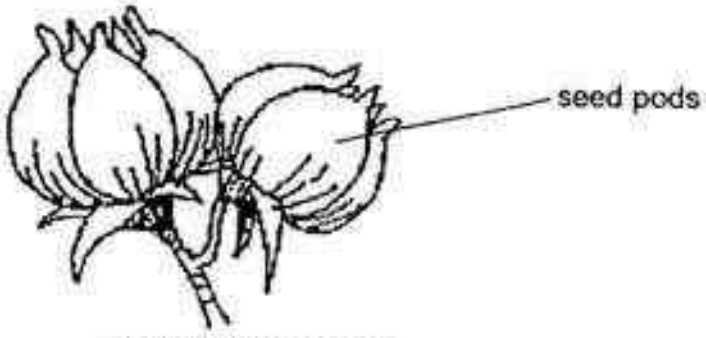
The picture below shows the fruit of the Rose of India.



fruit of Rose of India

The fruits have seed pods which are hard and dry when matured and the seeds have wing-like structures.

How does the Rose of India disperse its seeds?

A: By wind
B: By splitting
C: By animals

(1) A only
(2) B only
(3) A and B only
(4) A and C only

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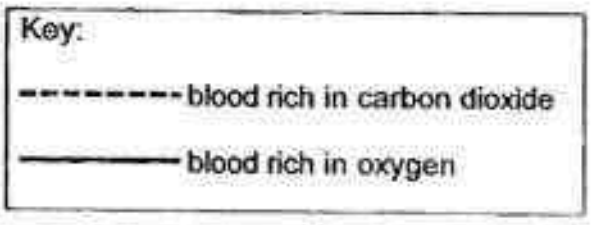
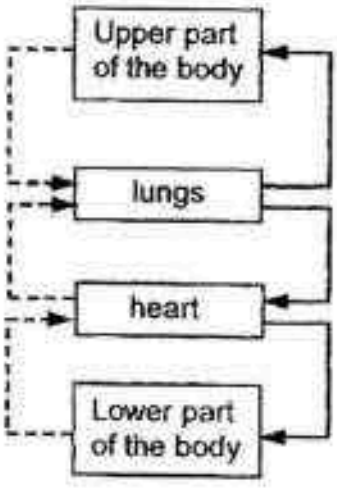
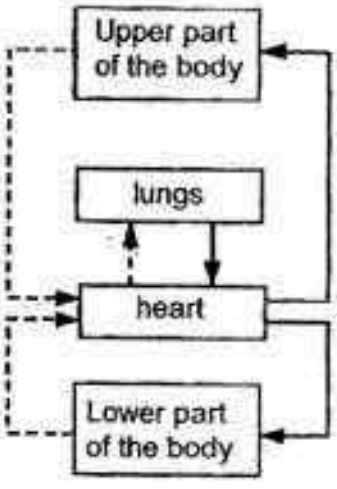
14. Which of the following diagrams below correctly shows the movement of blood in the human circulatory system?



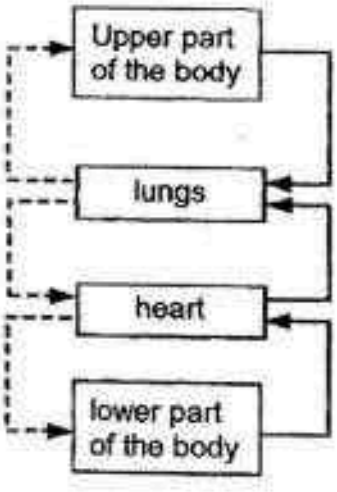
(1)



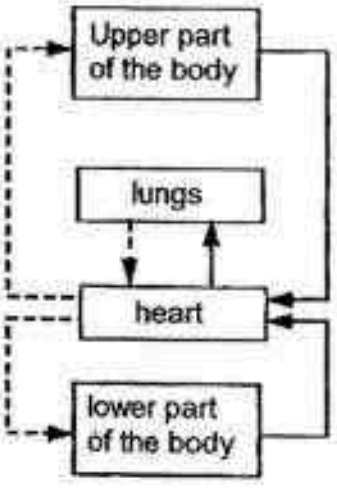
(2)



(3)



(4)



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15. Shanti carried out an experiment with the following steps to show out how plants grow under certain conditions.

Step 1: She filled two identical flower pots with the same amount of garden soil.

Step 2: She labelled each pot, Pot A and Pot B, respectively.

Step 3: She planted the same number of the same type of seed in each pot.

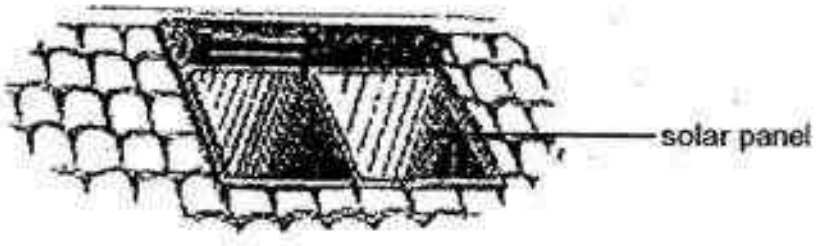
Step 4: She placed Pot A in the garden and Pot B in a closed cupboard.

Step 5: She watered each pot with the same amount of water daily.

Which of the following was Shanti trying to show?

(1) Water is necessary for healthy plant growth.
(2) Space is necessary for healthy plant growth.
(3) Sunlight is necessary for healthy plant growth.
(4) Garden soil is necessary for healthy plant growth.

16. The picture below shows a solar panel on the roof of a house. The solar panel is connected to the water heater.



Which of the following shows the energy conversion taking place in a solar-powered water heater?

(1) light energy → electrical energy → heat energy
(2) heat energy → electrical energy → heat energy
(3) light energy → chemical potential energy → heat energy
(4) chemical potential energy →kinetic energy → heat energy

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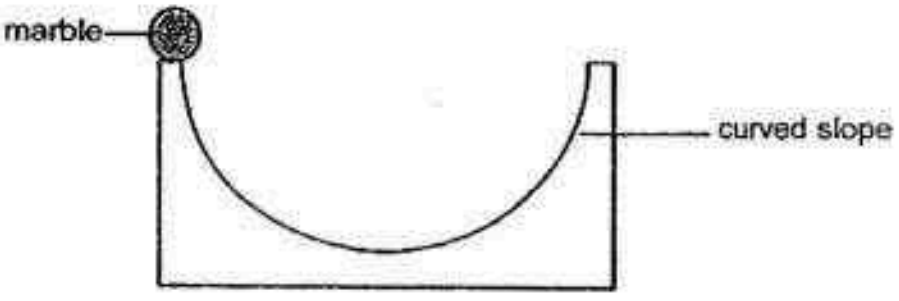
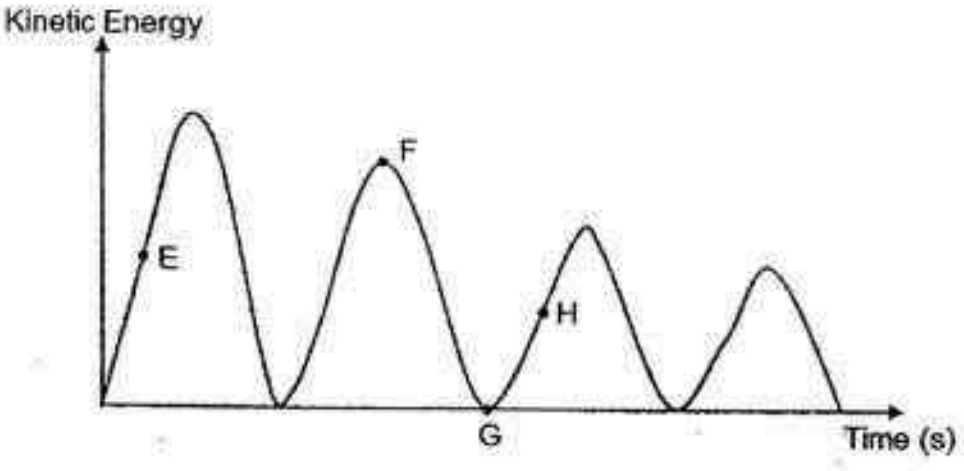
17. A marble was placed at the top of a curved slope as shown below.



The graph below shows the changes in kinetic energy of the marble once it was released.



Which of the following letters, E, F, G or H, in the graph represents the point where the marble was at the bottom of the slope?

(1) E
(2) F
(3) G
(4) H

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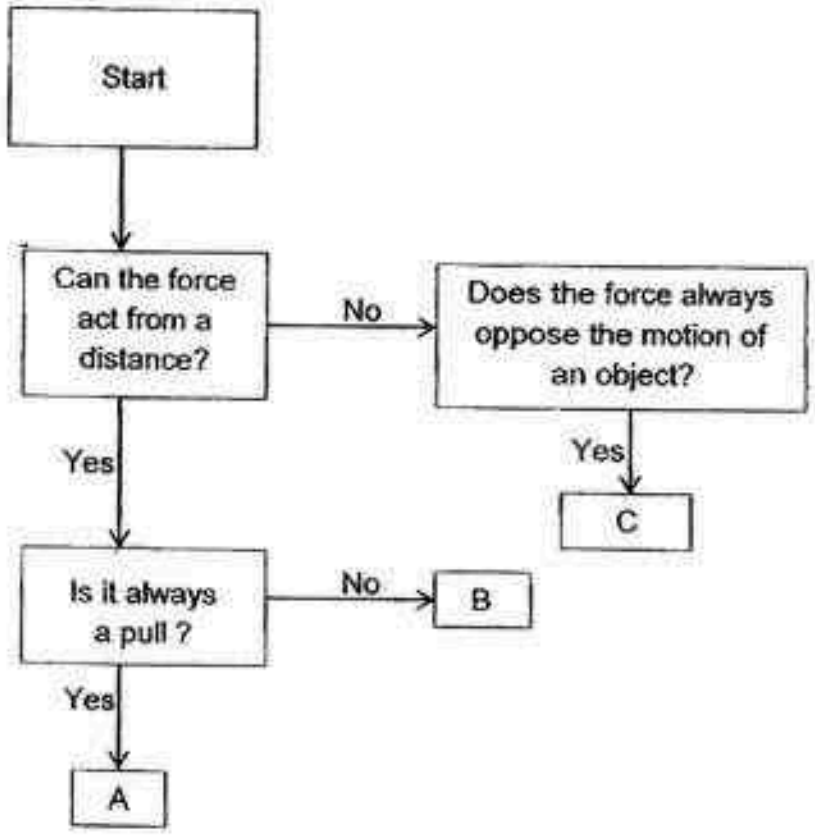
18. The flowchart below is used to classify three different types of forces, A, B and C.



Which of the following are the forces, A, B and C?

	A	B	C
(1)	Gravitational	Magnetic	Frictional
(2)	Magnetic	Gravitational	Frictional
(3)	Magnetic	Gravitational	Elastic Spring
(4)	Gravitational	Magnetic	Elastic Spring

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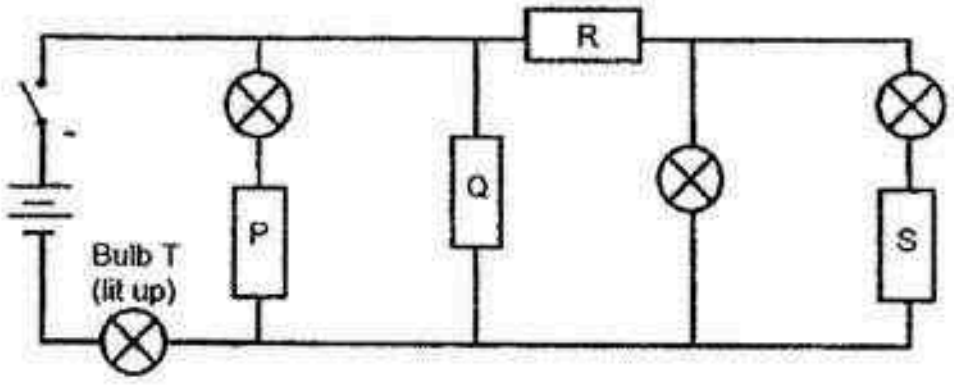
19. Simone had four rods, P, Q, R and S, of unknown materials. She connected the rods in the circuit below. All the bulbs were connected correctly and were working properly.



She observed that only Bulb T lit up when the circuit was closed.
Which of the following correctly describes the electrical conductivity of the rods, P, Q, R and S?

	Does it conduct electricity?			
	P	Q	R	S
(1)	No	Unable to tell	Yes	No
(2)	No	Yes	Yes	No
(3)	Yes	No	No	Unable to tell
(4)	No	Yes	No	Unable to tell

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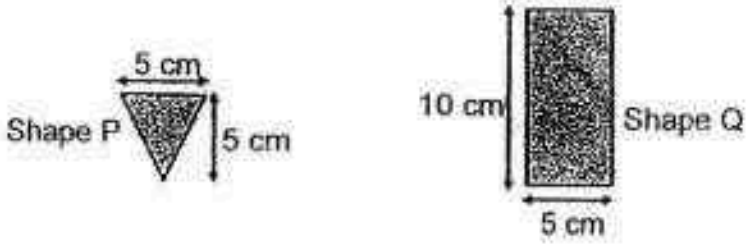
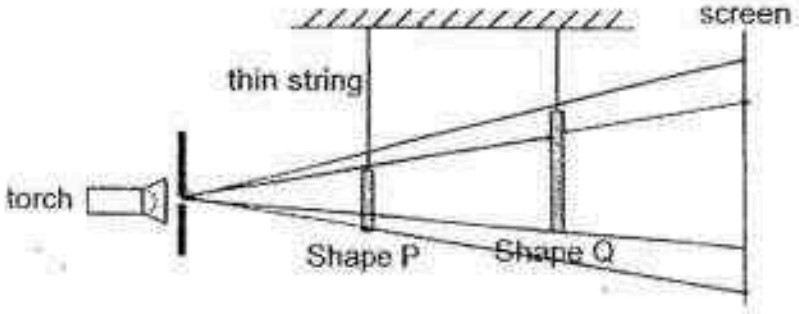
20. The diagram below shows two shapes, P and Q, made of cardboard.



The two shapes are placed between a torch and a screen as shown below.



Which of the following shows the shadow formed on the screen when the torch is switched on?

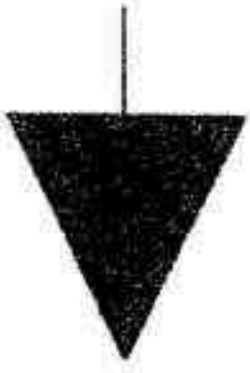
(1)



(2)



(3)



(4)



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21. Caroline found four bars, W, X, Y and Z, made of different materials. She carried out a scratch test to investigate the hardness of the four bars. The table below shows the results of the test performed on the four bars.

Results of Test			
Bars	Presence of scratch marks made by the disc?		
	Iron disc	Wooden disc	Plastic disc
W	No	No	No
X	Yes	No	No
Y	Yes	Yes	Yes
Z	Yes	Yes	No

Based on the test results above, arrange the bars from the **least hard** to the **hardest**.

(1) W, X, Z, Y
(2) Z, Y, X, W
(3) Y, Z, X, W
(4) Y, Z, W, X

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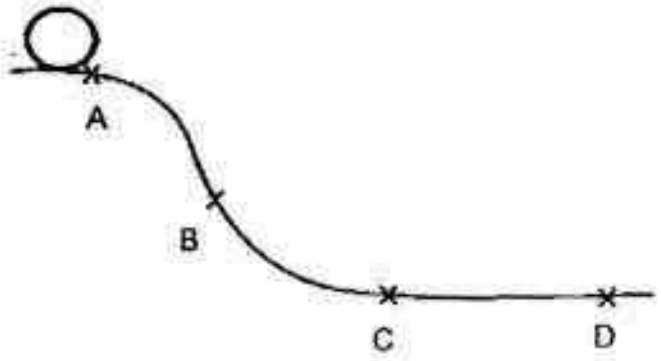
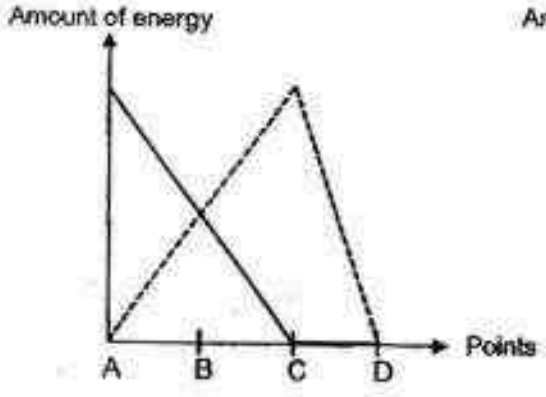
22. The diagram below shows a ball rolling down a slope from point A and stopping at point D.



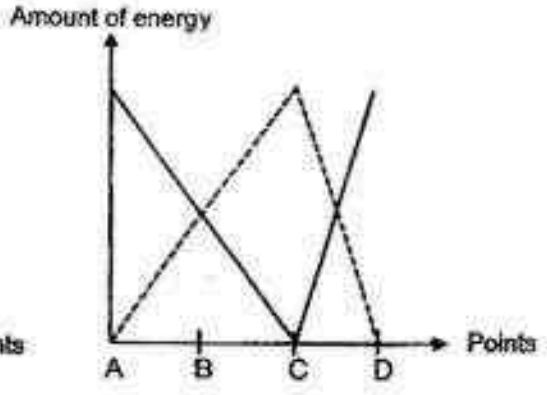
Which of the following graphs shows the change in the amount of the gravitational potential energy and kinetic energy of the ball from point A to point D?

Key:
——— Gravitational potential energy
---------- Kinetic energy

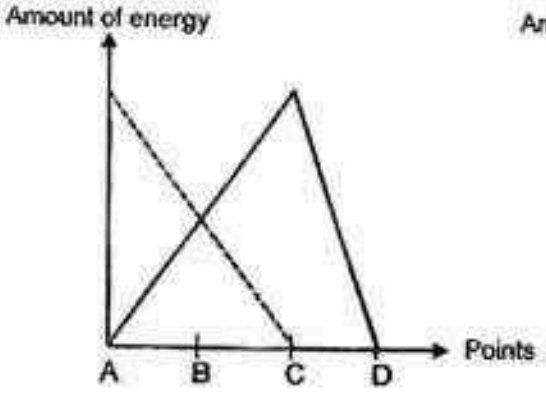
(1)



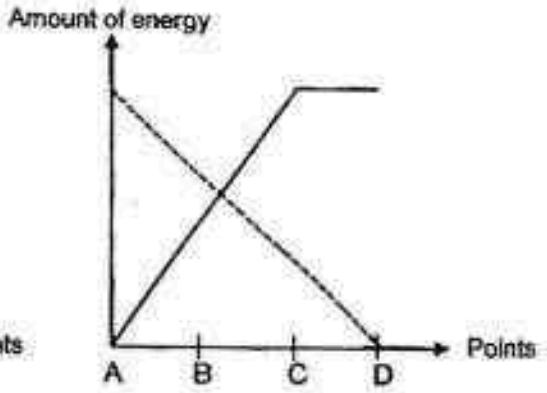
(2)



(3)



(4)



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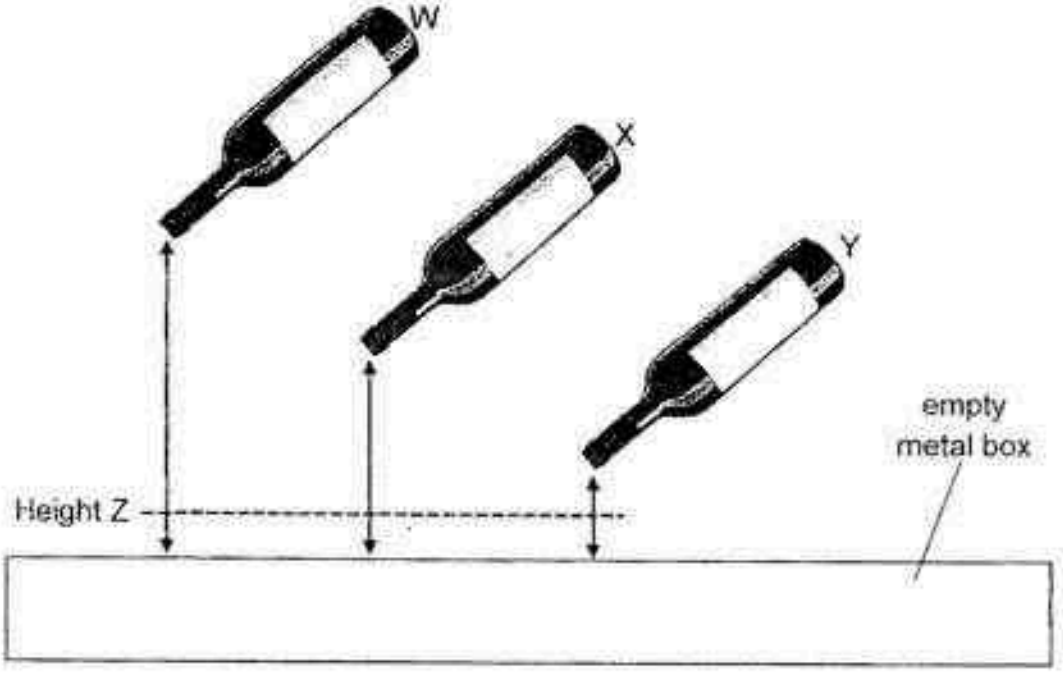
23. Three similar bottles, W, X and Y, were filled to the brim with water. The bottles were tilted at the same angle but held at different heights above an empty metal box as shown below.



Which of the following statements are true about the above experiment?

A: Water flowed out of the bottles, W, X and Y, at the same rate.
B: Water from the bottle, W, produced the loudest sound upon hitting the metal box.
C: Water from the bottles, W, X and Y, possessed the same amount of kinetic energy at height Z.
D: Water flowing out from the bottles, W, X and Y, possessed gravitational potential energy and kinetic energy when the bottles were tilted.

(1) A and D only
(2) B and C only
(3) B, C and D only
(4) A, B and D only.

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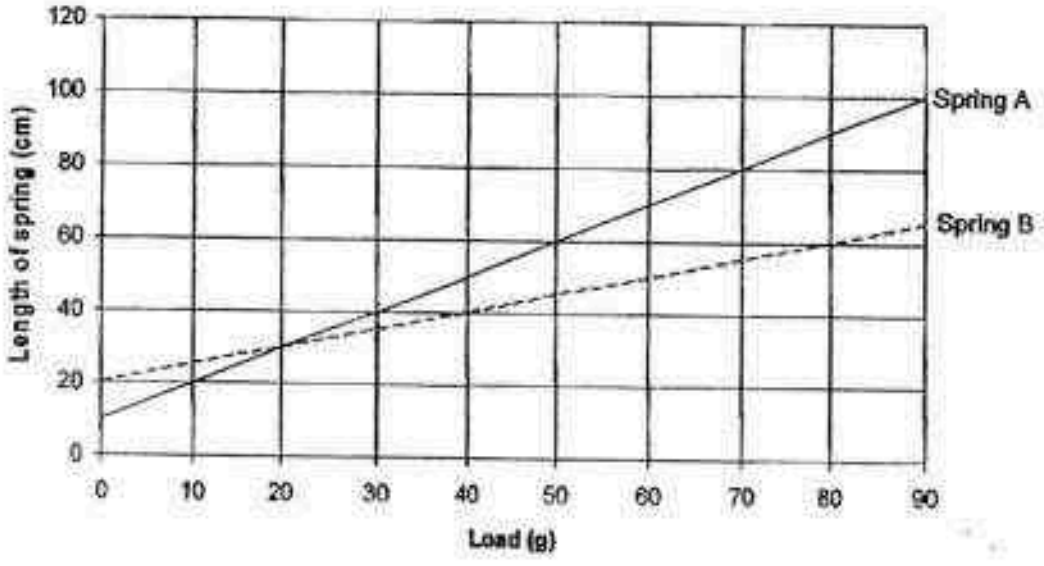
24. Yvette conducted an experiment on Spring A and Spring B. She hung various loads one at a time on the springs and recorded the resulting length of the spring. Her results are shown in the graph below.



Based on the graph, what can Yvette conclude about the springs?

A: The original length of Spring A is shorter than the original length of Spring B.

B: For the same load hung on the springs, Spring A extends more than Spring B.

C: Gravity acts on the mass hung on the springs but not on the springs.

(1) C only

(2) A and B only

(3) B and C only

(4) A, B and C

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25. A toy truck, at point X, was moving down a slope as shown below.



After some time, the toy truck stopped at point Y.

Compare the kinetic energy and the potential energy of the toy truck at point X and point Y. Which of the following is correct?

	Kinetic energy at Y compared to X	Potential energy at Y compared to X
(1)	more	more
(2)	less	more
(3)	more	less
(4)	less	less

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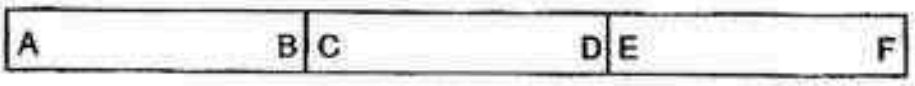
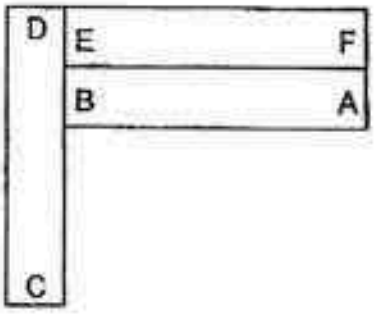
26. Three bar magnets AB, CD and EF can be arranged as shown below.

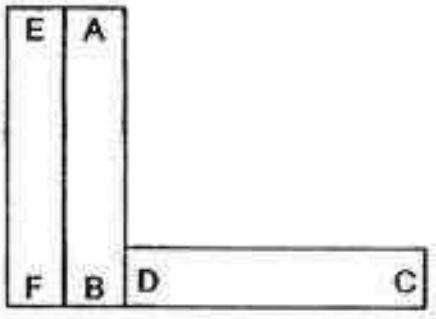


Which of the following arrangements of the magnets is possible?

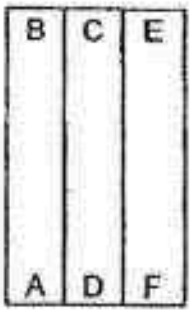
(1)



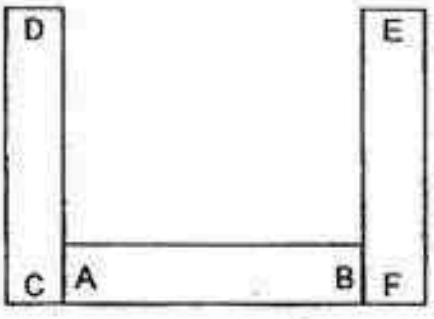
(2)



(3)



(4)



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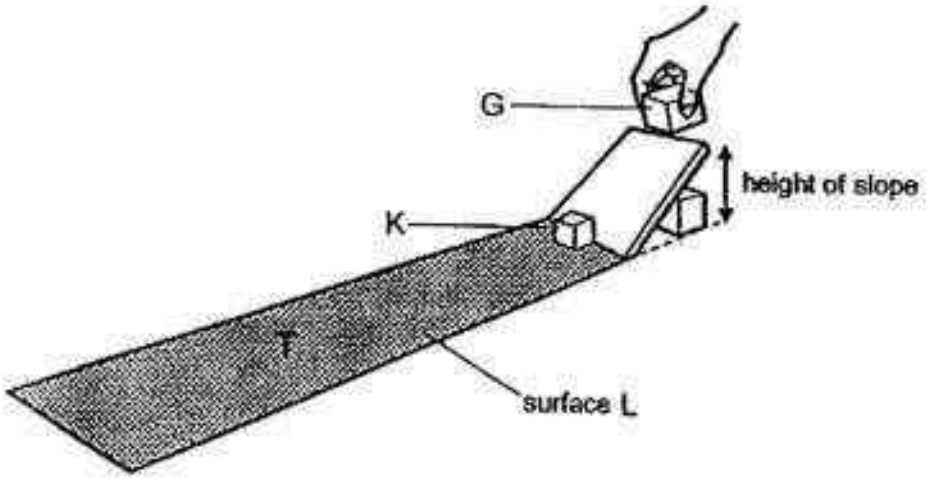
27. Block G is released from the top of a smooth slope. It moves down and hits Block K at the bottom of the slope.



After being hit by Block G, Block K slides along Surface L, before coming to a stop at the point T.
Which of the following changes can increase the distance moved by Block K along Surface L?

(1) increasing the width of the slope

(2) increasing the height of the slope

(3) increasing the length of Surface L

(4) increasing the roughness of Surface L

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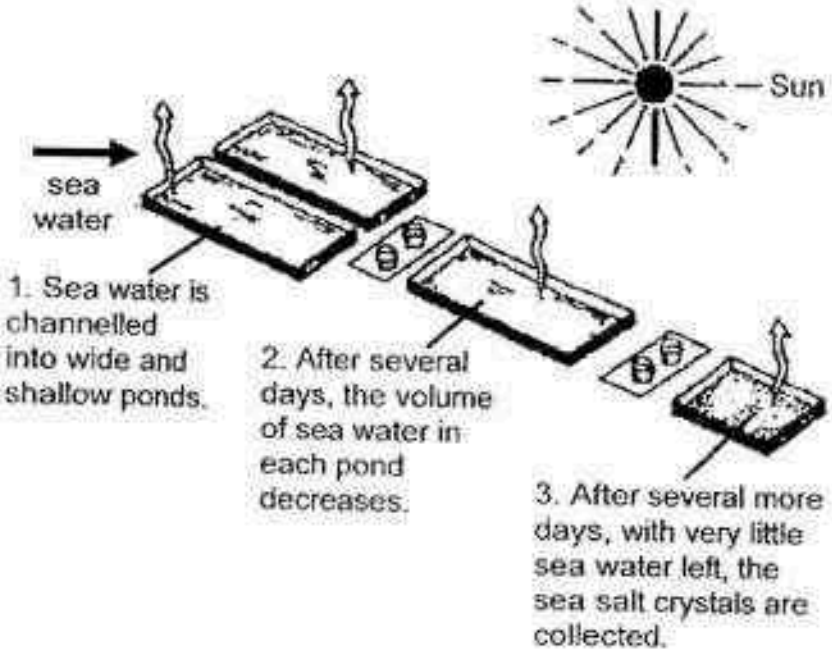
28. The diagram below shows the process of obtaining sea salt from sea water. This method of producing salt is still used till this day.



Which of the following happens during the above method of producing salt?

(1) Heat is lost by the seawater during the evaporation process.

(2) Heat is lost by the seawater during the condensation process.

(3) Heat is gained by the seawater during the evaporation process.

(4) Heat is gained by the seawater during the condensation process.

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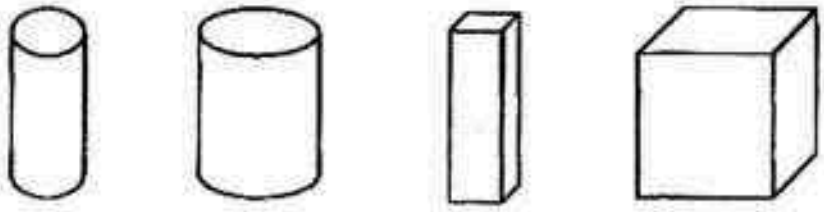
29. Gopal has four magnets, E, F, G and H, as shown below.



E F G H

To compare the strength of the magnets, he put each of the magnets near a tray of pins. The table below shows the number of pins attracted by the magnets, E, F, G and H, from various distances.

Magnet	Distance between the magnet and the pins (cm)	Number of pins attracted
E	5	10
F	4	10
G	6	8
H	4	12

Which of the following statements is definitely correct?

(1) H is the strongest magnet.

(2) F is as strong a magnet as H.

(3) E is a stronger magnet than F.

(4) F is a stronger magnet than G.

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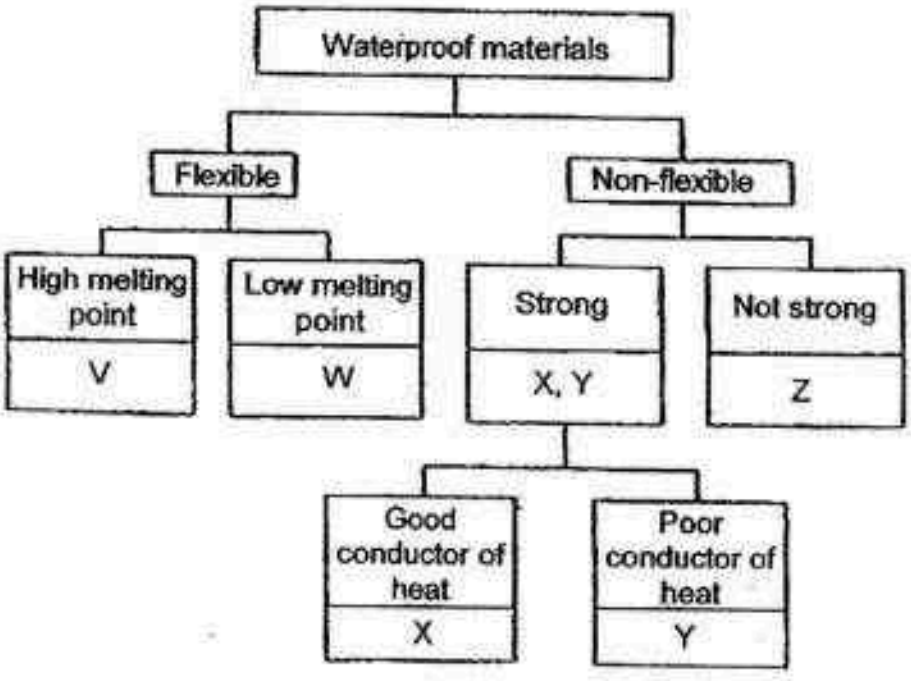
30. Chandru was told to select the best materials for making raincoats and helmets based on the classification chart below. He was also told not to choose the same materials for making the items.



Which of the following shows the best materials for making the raincoats and helmets?

	Raincoats	Helmets
(1)	V	Z
(2)	W	Y
(3)	X	Y
(4)	V	Y

End of Booklet A

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SINCERITY & PERSEVERANCE

PRIMARY 6 MID-YEAR EXAMINATION 2016

Name : _____ ( )

Class : Primary 6 ( )

Parent's Signature : _____

Date: 12 May 2016

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Booklet A	60
Booklet B	40
Total	100

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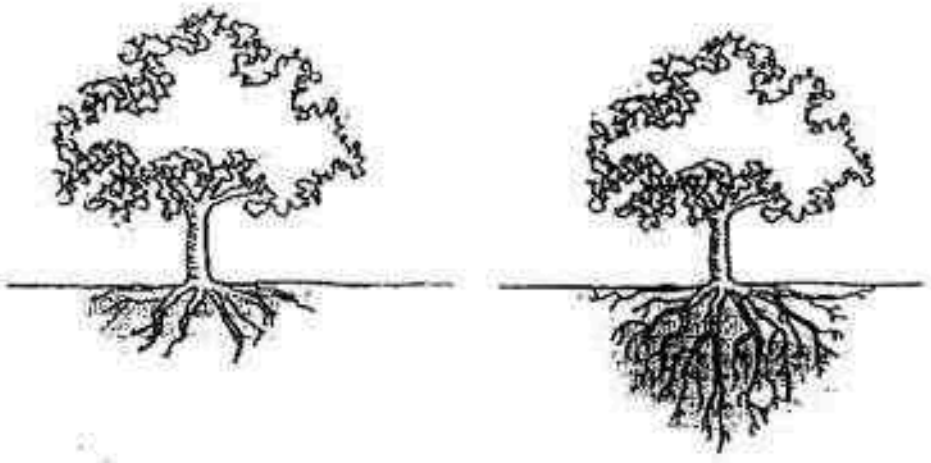
Section B (40 marks)

Write your answers to the questions, 31 to 44, in the spaces provided.

31. The diagrams below show two trees, A and B, with different types of roots.



A B

a) Which tree is more likely to topple during a heavy storm?
Explain your answer. [1]

_____

_____

b) State another function of the roots of the trees. [1]

_____

_____

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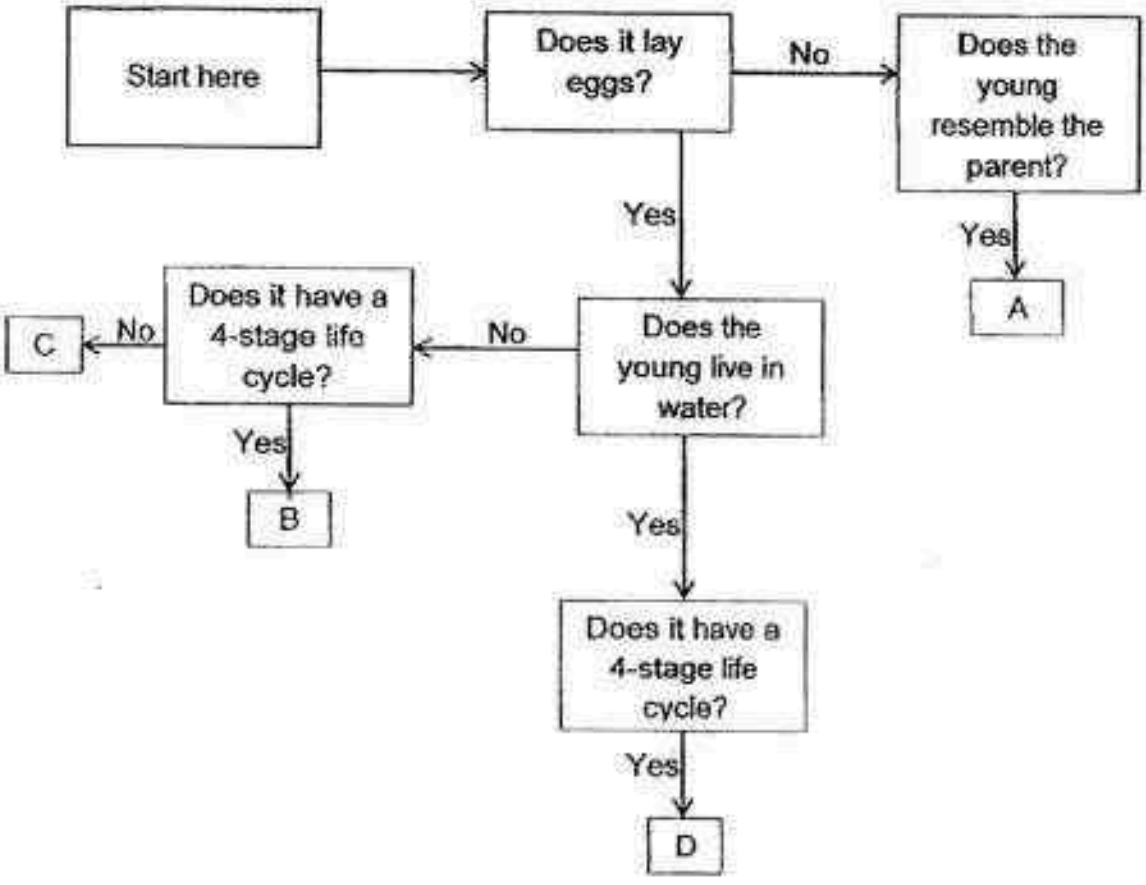
32. In the flow chart below, A, B, C and D, represent different animals.



Based on the flow chart, write down the letter that represents each animal in the table below. [2]

	Animals	Letters
i)	Mosquito	
ii)	Monkey	
iii)	Housefly	
iv)	Cockroach	

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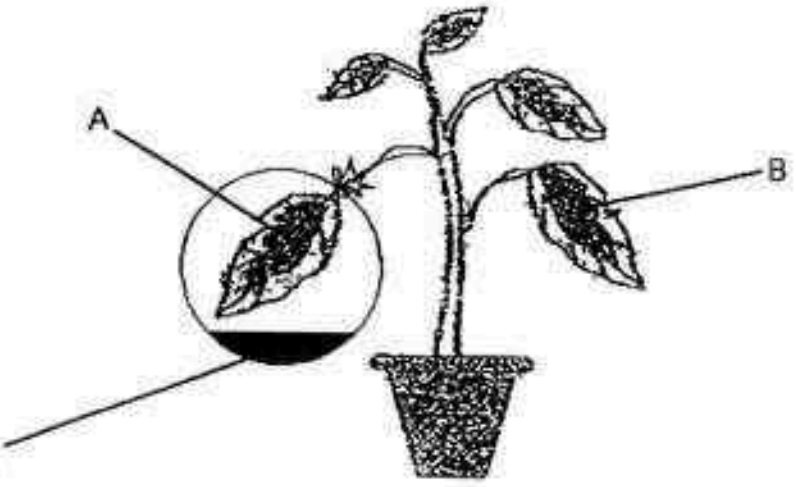
33. The diagram below shows an experiment to investigate the effect of the presence of carbon dioxide on photosynthesis in a plant. The leaves of the plant were green in the centre and white around the edges. The plant had sufficient water and was placed under suitable light intensity for 48 hours.



a) The leaves, A and B, from the plant were then tested for starch with iodine solution. Complete the following table with the expected correct results for the leaves, A and B. [1]

	Leaf	Results (Colour of iodine solution on the green part of the leaf)
(i)	A	
(ii)	B	

b) Explain your answer in part (a)(i) [2]

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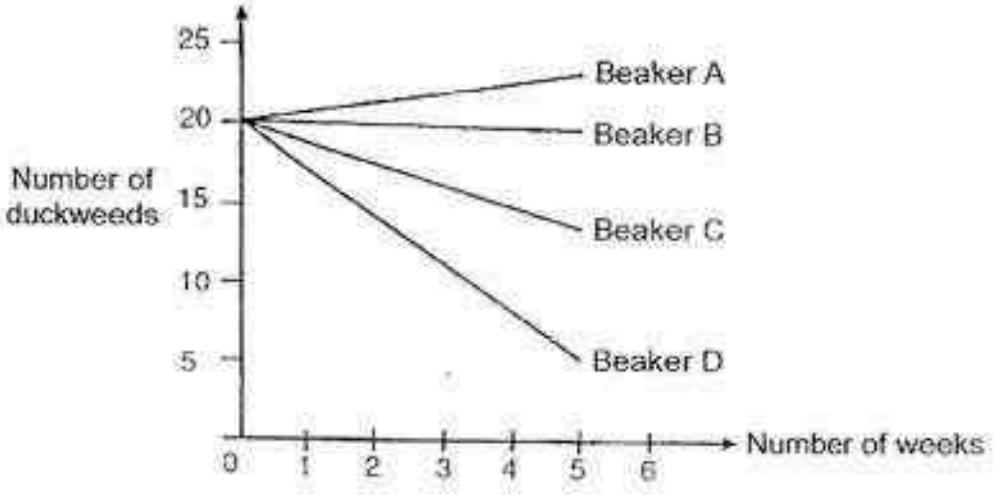
34. Daniel collected water from 4 different ponds to grow duckweeds. He poured 100 mℓ of water from each pond into four similar beakers, A, B, C and D. He then added twenty duckweeds into each beaker and left the beakers near a window.

At the end of each week, he counted the number of duckweeds in each beaker and recorded his observations in the graph below.



a) Which beaker of water, A, B, C or D, is the most suitable for the growth of duckweeds? Give a reason for your answer. [1]

b) After a few weeks, Daniel returned to the pond where the water in Beaker A was taken from. He observed that the duckweeds covered almost the whole surface of the pond and dead fish were floating on the pond.

Explain Daniel's observation. [2]

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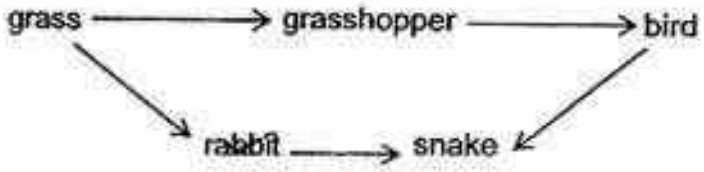
35. Below shows a food web in a field community.



a) Which animal(s) is/ are both prey and predator? [1]

b) What will happen to the bird population when the entire rabbit population is killed by a disease? [2]

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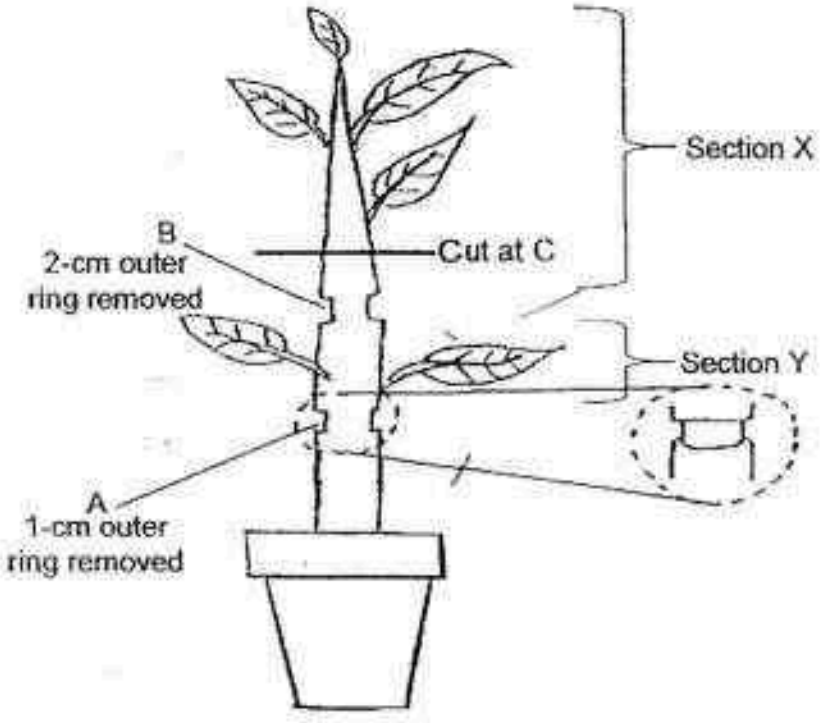
36. Cindy carried out an experiment on a plant. She removed a 1-cm thick outer ring from the plant at A. She also removed another ring which was 2-cm thick from the same plant at B.



a) After five days, Cindy noticed that Section X of the plant died while Section Y of the plant survived. Suggest the possible reasons why this happened. [2]

Section X:

_____

_____

Section Y:

_____

_____

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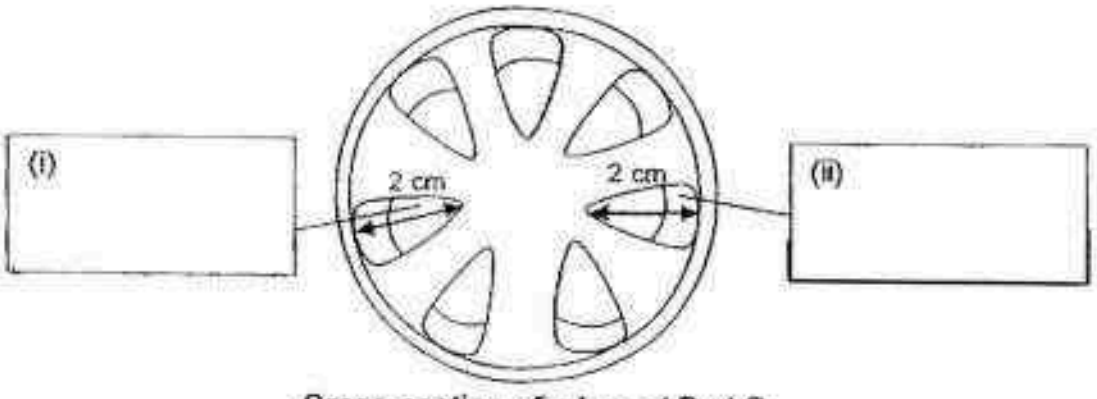
Cindy cut the plant at C. The diagram below shows the cross-section of the stem at C.

b) Write **'water-carrying tubes'** and **'food-carrying tubes'** in the correct boxes below to indicate the position of the tubes. [1]



Cross-section of stem at Part C

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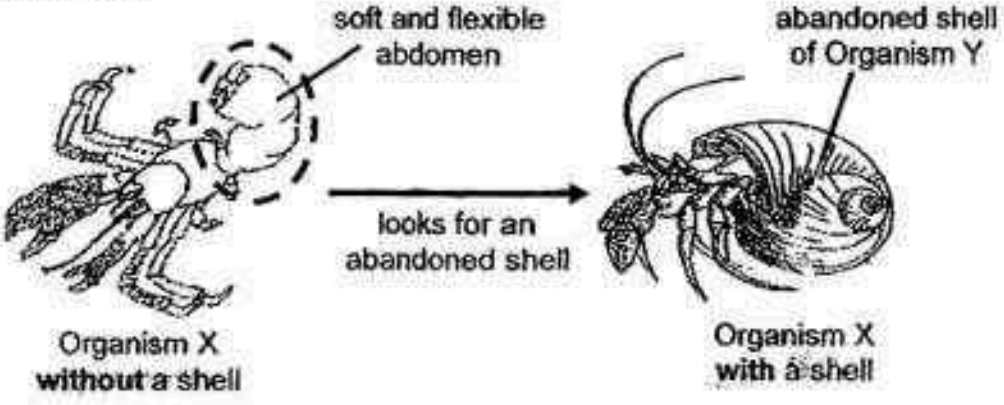
37. Organism X can be found in the sea. It has a soft and flexible abdomen and no shell of its own. It will look for an abandoned shell of organism Y and will carry the shell on its back.

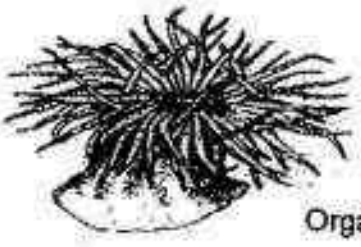


a) Explain how the behaviour of Organism X helps in its survival. [1]

_____

_____

It was observed that Organism X sometimes carries other organisms such as Organism Z, on its shell. Organism Z moves very slowly from place to place on its own and its tentacles are poisonous.



Organism Z

b) Organisms X and Z are interdependent on each other for their survival. [2]

i. How does Organism X benefit from Organism Z?

_____

_____

ii. How does Organism Z benefit from Organism X?

_____

_____

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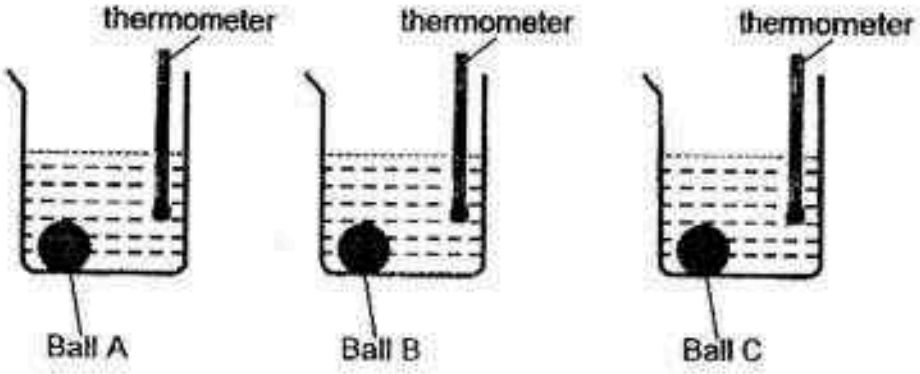
38. Tracy carried out an experiment with three balls of different materials in the set-up shown below. The balls, A, B and C, were heated to the same temperature and then placed into three separate and identical beakers. The temperature of the water was measured regularly. The three balls were of the same shape and size.



Time (min)	Temperature of water (°C)		
	with Ball A	with Ball B	with Ball C
0	20	20	20
3	20	34	29
6	21	41	31
9	21	50	32
12	21	55	33
15	22	57	33

a) What is the aim of the experiment? [1]

b) What other two variables must be kept constant to ensure a fair test? [2]

c) Tracy wanted to select a material to make a lunch box to keep her food warm for the **longest** time. Which material, of balls, A, B, or C, is most suitable for making this lunch box? Explain why. [1]

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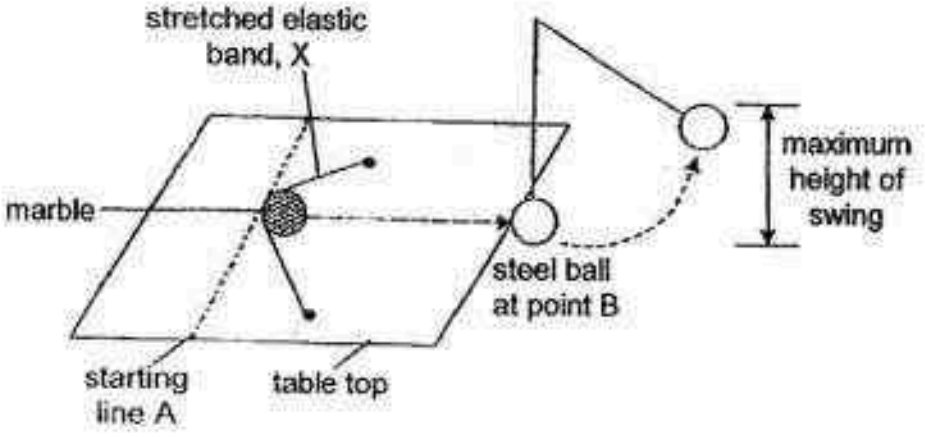
39. Michael hung a steel ball from a string at the edge of the table shown below.



He stretched an elastic band, X, with a marble placed against it. He released the stretched elastic band. The marble hit the steel ball, causing the steel ball to swing upwards.

Michael repeated the experiment with two other types of elastic bands, Y and Z, one at a time. He recorded the maximum height of swing of the steel ball when it swung upwards away from the edge of the table. He presented his results in table below.

Elastic Band	X	Y	Z
Maximum height of swing (cm)	12	18	9

a) Based on the results above, which elastic band has the most elastic potential energy? Give a reason for your answer. [1]

b) When Michael stretched the elastic band further back, the maximum height of the swing of the steel ball will be higher. Explain why. [2]

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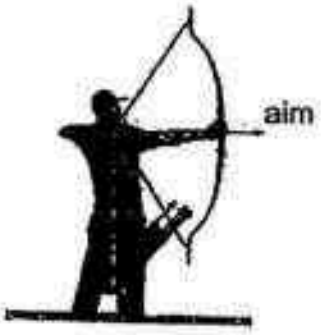
40. Siva enrolled in archery as a CCA. After his first lesson of learning the technique of handling the bow and the arrow, Siva was eager to hit the centre of the target, the bull's eye.





(a) Name the force(s) that was/were acting on the moving arrow as it moved towards the centre of the target. [1]

Siva decided to challenge his two other teammates, Paul and Kenny, in hitting the bull's eye.

The following describes how each of them aimed their arrow at the target.

Siva: Aimed the arrow directly at the bull's eye before releasing.

Paul: Aimed the arrow slightly above the bull's eye before releasing.

Kenny: Aimed the arrow slightly below the bull's eye before releasing.

b) Who had the best chance of hitting the bull's eye? Give a reason for your answer. [1]

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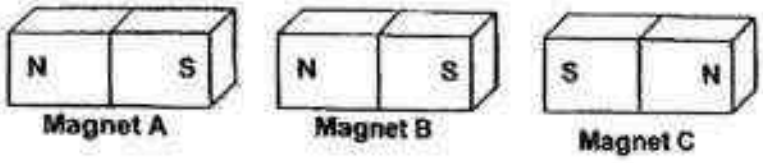
41. James placed three magnets next to one another as shown below.

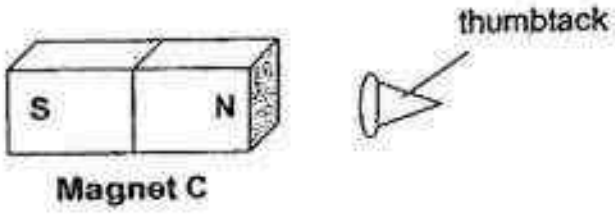


He observed what happened and wrote some statements about the magnets in the table below.

a) Put a (✓) in the correct box to indicate whether each of the statements is 'True' 'False' or 'Not possible to tell'. [2]

	Statement	True	False	Not possible to tell
(i)	There is a pulling force between Magnet A and Magnet B.			
(ii)	A pushing force caused Magnet B and Magnet C to move apart.			
(iii)	Magnet A is made of iron.			
(iv)	Magnet B is made of copper.			

James then placed a steel thumbtack near Magnet C as shown below and observed an effect of magnetic force.



b) What effect of magnetic force did James observe? [1]

_____

_____

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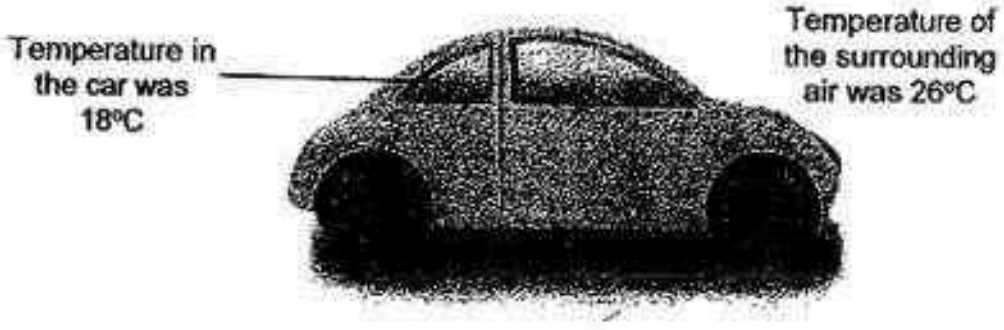
42. As Aminah was driving to work in the morning, she turned on the air-conditioner in her car. After a while, she noticed that the windscreen and windows of her car had become misty.



a) On which surface (interior or exterior) of the windscreen would Aminah find the mist? Explain your answer. [2]

b) Would Aminah make the same observation if the temperature in the car was 26°C? Give a reason for your answer. 1]

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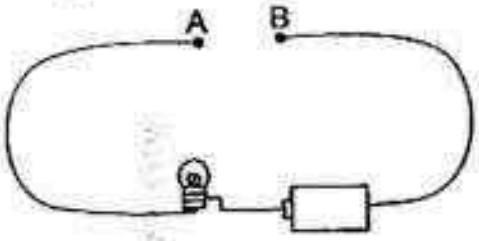
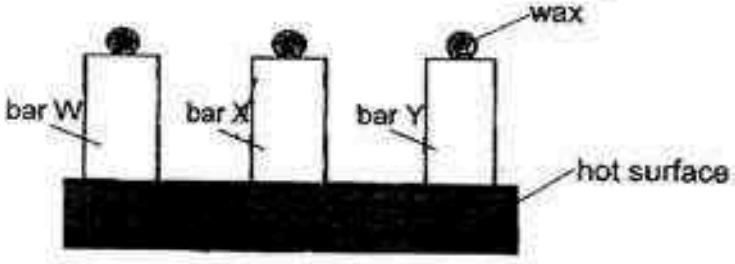
43. The diagram below shows a circuit and what happens to a bulb when three bars, W, X and Y, are placed, one at a time, across AB.



Bar across AB	Bulb lights up
W	No
X	No
Y	Yes

a) Based on the experiment above, which bar is most likely to be a conductor of electricity? Give a reason for you answer. [1]

In another experiment, some wax was placed on the top end of the same three bars, W, X and Y. The three bars were then placed on top of a hot surface as shown below.



It was observed that wax on bar Y melted first, followed by that on bar X and then bar W.

b) What conclusion can you draw about the conduction of heat of bars, W, X and Y? [1]

c) From your answers to (a) and (b), what can you conclude about the likely relationship between a conductor of electricity and a conductor of heat? [1]

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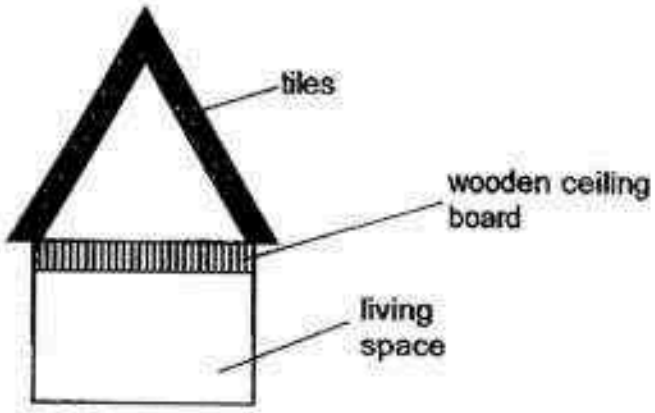
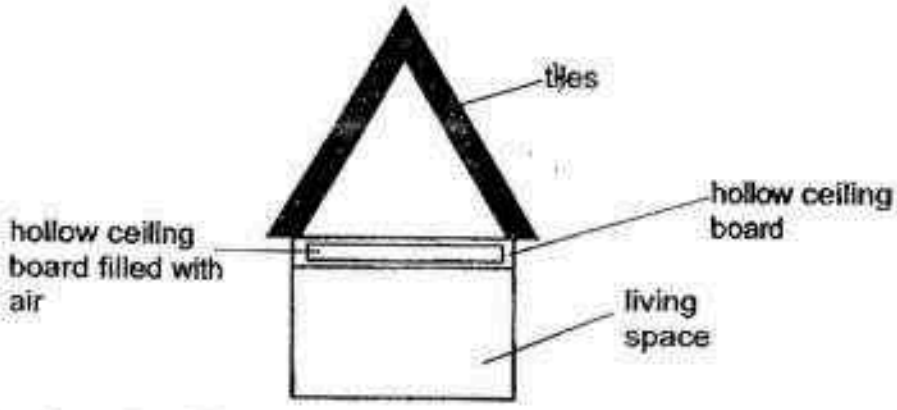
44. Dave laid some black ceramic tiles on the roof of his house as shown below. However, he found that on sunny days, the living space in his house was very warm.



He decided to replace his original wooden ceiling board with a hollow ceiling board filled with air as shown below.



a) How does installing the hollow ceiling board keep the living space in his house cool? [2]

Dave's neighbour, Tien La, told him that white tiles absorb less heat than black tiles. Dave then decided to replace the black tiles with white ones.

b) Explain why using white tiles is a better choice for Dave. [1]

End of Booklet B

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EXAM PAPER 2016

SCHOOL : TAONAN

SUBJECT :P6 SCIENCE

TERM : SA1

ORDER CALL :

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	1	4	2	4	2	2	1	3	4
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	3	3	2	3	1	2	1	4	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	1	4	2	4	1	2	3	3	4

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TAO NAN SCHOOL
MID-YEAR EXAMINATION
PRIMARY 6 2016
SCIENCE

Name: _____( ) Date: _____

Class: Pri 6/ ___

Common Areas of Concerns:

1) **Making general statements** instead of explaining to the context.
2) Answering in terms of B, when asked about A. **(Reverse Reasoning)**
3) **No comparison** shown in answer when question asked to compare or substantiate choice made
4) Not answering to the **context** of the question.

Question		Suggested Answer		Self-check/ What was my error?
31	a	It is Tree A. This is because it has **shorter/ less/ fewer/ less spread out/ shallower roots** (must show comparison), hence the Tree A is **anchored less firmly to the soil**.		¤ No comparison shown.
	b	Roots **take in/ absorb water (and minerals/mineral salts/ nutrients)** for the trees.		¤ Wrong function of roots (To transport (x) water)
32	(i) (ii) (iii) (iv)	D A B C		
33	(a)(i)	Leaf A: brown		
	(a)(ii)	Leaf B: dark blue/blue-black		
	(b)	There was **no carbon dioxide present for part A to photosynthesise/ to make food**. There was **no starch present** as the iodine solution remained brown.		

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Question		Suggested Answer		Self-check/ What was my error?
34	(a)	Beaker A was the most suitable. This is because it is the <u>only</u> beaker where the **number of duckweeds increased** or **there was most number of duckweeds in Beaker A at the end of experiment/at Week 5.** (comparison required)		¤ No comparison shown
	(b)	As the duckweeds were covering most of the pond, they (**block the sunlight/ did not allow light to pass through/ prevent light from passing through**) from reaching the **submerged plants**. Hence, the plants **cannot photosynthesise, to produce oxygen** for the organisms in the pond and the organisms die due to a lack of dissolved oxygen.		¤ Making general statements instead of explaining ¤ Explaining about leaf B instead of leaf A.
35	(a)	The **bird** is both a prey and predator		
	(b)	The bird population would **decrease** because the snake population has **only one food source left/ less food source/ less prey** and will **feed on more birds.**		
36	(a)	Section X: X's water–carrying tube (and food-carrying tube) had been cut off. **Water cannot reach X/ no water supply reaches X** and it cannot make food. Section Y: Water-carrying tubes not removed and Section Y can still **receive/transport water** to leaves to **(make) food.**		
	(b)(i) (b)(ii)	water-carrying tubes food- carrying tubes		
37	(a)	The abandoned shell that organism X carries <u>**helps it to protect (itself)/ hides**</u> **from its predators** to ensure its survival.		¤ Not linking the adaptations/behaviours to survival (protection from <u>**predators**</u>)
	(b)i	The poison/ tentacles in organism Z keeps **predators** away from Organism X.		
	(b)ii	Organism Z gets to feed from the same source of food that Organism X hunts for. *OR* Organism X transports **Organism** Z from place to place to a **wider area for sourcing/finding <u>food</u>.** *OR* Organism X can help Organism Z to **move faster/ more quickly to <u>eat</u>** (more) **food.**		¤ Not linking the movement of Z to survival <u>(getting more food)</u>.

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Question		Suggested Answer		☐ Self-check/ What was my error?
38	(a)	The aim of the experiment is to find out which material/ ball is the best/ poorest conductor (insulator) of heat.		☐ No comparison shown.
	(b)	The amount/ volume of water. The mass/colour of the ball The location of experiment/ where the beakers are placed. The type of thermometer		☐ Listing variables already stated kept the same in the question.
	(c)	Material made from Ball A is to be used. The **temperature of the water is the lowest at the end of experiment/ the water took the longest time to increase its temperature/ poorest conductor of heat/ best insulator of heat** therefore the **food will lose heat the slowest** to the surroundings.		☐ Not stating **evidence** from data ☐ Not linking **concept** (material chosen reduced heat lost from heat source/food to surrounding) to the **context *(food)***
39	(a)	Elastic Band Y has the most elastic potential energy. This is because it caused the **steel ball to swing the highest.**		☐ Not using **evidence** from data to support selection
	(b)	When the elastic band is stretched further, it will have **more elastic potential energy**, to be **converted into (more) kinetic energy of the elastic band** to be transferred to the marble thus ***hitting the steel ball with a greater impact*** *for it to swing higher.* OR When the elastic band is stretched further, it will have **more elastic potential energy**, to be **converted into (more) kinetic energy of the elastic band** to be transferred to the marble thus ***Transferring more kinetic energy to the steel ball (so that it can be converted into more gravitational potential energy),*** *hence swinging to a higher height.*		☐ Not being clear which **object** (elastic band /marbles/steel ball) possess which energy at each point. ☐ Confused between energy conversion and energy transfer.
40	(a)	The two forces are **gravitational force (gravity)** and **frictional force (friction).**		☐ Confused between energy and forces.
	(b)	**Paul** has the best chance of hitting a bull's eye. This is because **gravity will pull the arrow downwards**. Hence, if the arrow is aimed slightly above the bull's eye, the chance of hitting the bull's eye is highest, compared to the other two arrows.		

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Question		Suggested Answer		Self-check/ What was my error?
41	(a)i (a)ii (a)iii (a)iv	True True Not Possible To Tell False		
	(b)	The thumbtack was **attracted to/moved towards/pulled towards** to Magnet C		
42	(a)	Amirah would find mist on the **exterior** of the windscreen. The **warmer water vapour in the surroundings** came into contact with the **cooler windscreen**. This caused the water vapour to **condense** on the exterior of the windscreen, to form tiny water droplets/mist.		¤ Wrong concept of <u>air</u> condensing ¤ Not clear about the windscreen being <u>cooler</u> than the water vapour (no comparison)
	(b)	No she will not. This is because **the temperature of the air in the car and temperature of the air in the surroundings are nearly the same.** As such, **minimum condensation/ no condensation/ no heat transfer** takes place on the surface on the windscreen.		
43	(a)	Bar Y is most likely the conductor of electricity. **Bar Y** was the only **bar that caused the bulb to light up** when it was placed across AB.		
	(b)	Bar Y is the **best conductor of heat** followed by Bar X and then Bar W.		
	(c)	A (good) conductor of electricity is also a (good) conductor of heat.		
44	(a)	As <u>air</u> **is a poor conductor of heat**, the air in the gap **slows down/ reduces the heat gain** from the roof to the living space in the house.		¤ Did not use science concept to explain how the air reduces heat gain/transfer from roof to living space. (heat source or direction of movement of heat not clear)
	(b)	White ceramic gains less heat, hence help **to keep the living space cooler.**		¤ No <u>comparison</u> of the effect of white tiles on Dave's living space.

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13

HENRY PARK PRIMARY SCHOOL
FIRST SEMESTRAL ASSESSMENT 2016

PRIMARY 6

Duration of Paper: 1 h 45 min

100

Name: _____

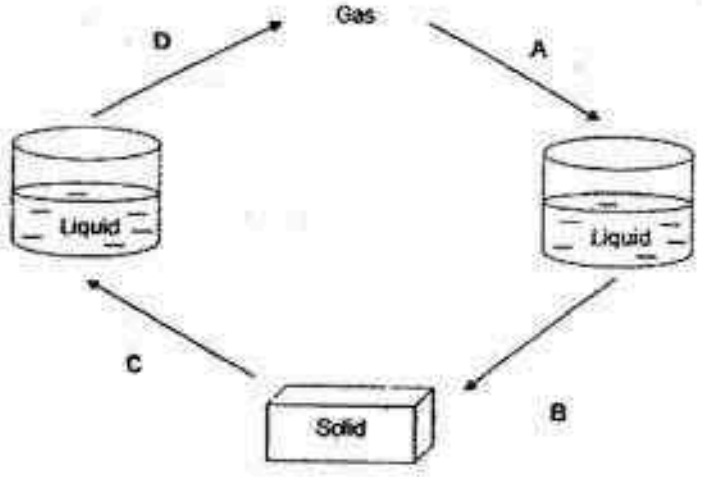
Parent's Signature: _____

Class: Primary 6

Part A: Multiple-Choice Questions (30 X 2 = 60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. The diagram below shows the three states of a substance.



Arrows A, B, C and D represent whether heat is 'lost' or 'gained' by the substance during each change of state.

Which one of the following best represents the four arrows, A, B, C and D as shown in the diagram above?

	A	B	C	D
(1)	heat lost	heat gained	heat gained	heat lost
(2)	heat lost	heat lost	heat gained	heat gained
(3)	heat gained	heat gained	heat lost	heat lost
(4)	heat gained	heat lost	heat lost	heat gained

( )

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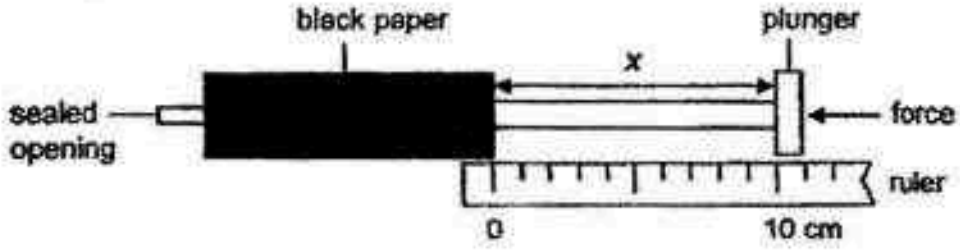
2. Simon completely filled two identical syringes, one with air while the other with water, and covered them with black paper as shown in the diagram below.

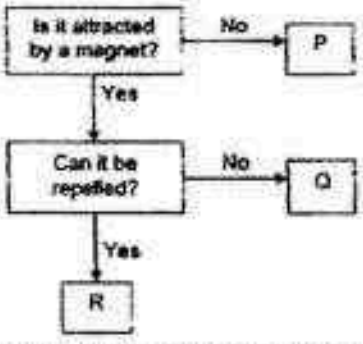


He then pushed each plunger as hard as he could and measured the distance, x. Which one of the following shows the correct values of x?

	Syringe with water x (cm)	Syringe with air x (cm)
(1)	10	0
(2)	0	10
(3)	10	7
(4)	7	10

( )

3. Study the diagram below.



Based on the diagram above, which of the following statements are correct?

A: P is a magnet.
B: Q can be magnetised.
C: R can attract iron nails.
D: P and Q are non-magnetic.

(1) A and B only
(2) B and C only
(3) C and D only
(4) A and D only

( )

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4. The table below shows the state of four different substances, A, B, C and D, at different temperatures.

Substance	State of substance at 20°C	State of substance at 50°C	State of substance at 90°C
A	Liquid	Gaseous	Gaseous
B	Solid	Solid	Liquid
C	Liquid	Liquid	Gaseous
D	Solid	Liquid	Liquid

Which substance has the highest melting point?

(1) A
(2) B
(3) C
(4) D

( )

5. Study the properties of A and B below that represents two states of water.

A	B
Has no definite shape and volume	Has no definite shape but has definite volume

What process takes place when A changes into B?

(1) Boiling
(2) Melting
(3) Evaporation
(4) Condensation

( )

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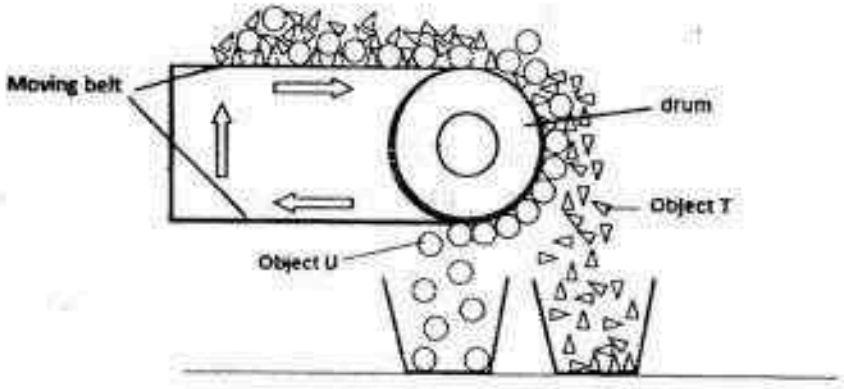
6. The diagram below shows a way to separate magnetic metals from non-magnetic metals. Mr Tan poured objects T and U on the moving belt. The arrows show how the belt moves.



Based on the above diagram, which of the following are correct?

A: Object U is magnetic, but T is not.
B: Object U is made of nickel while object T is made of copper.
C: The moving belt is a strong magnet.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

( )

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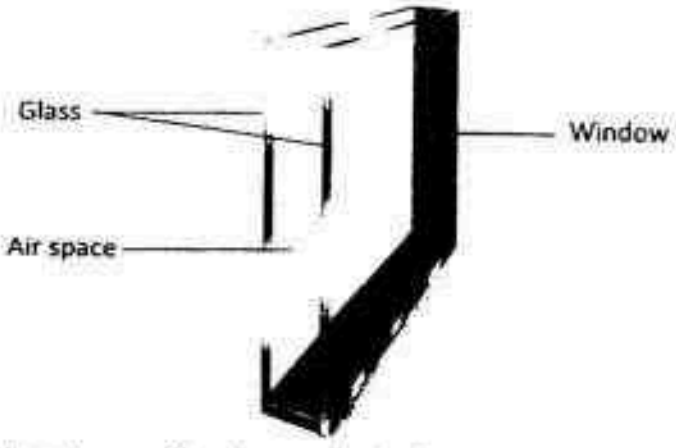
7. Houses in cold countries often have windows that are constructed using two pieces of glass panes as shown below.

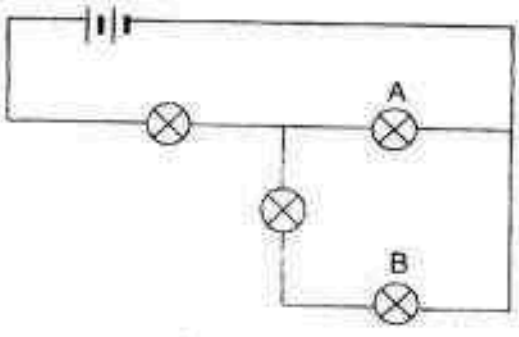


What is the advantage of having such windows in cold countries?

(1) As glass is a good conductor of heat, it quickly conducts heat away from the house.
(2) The air present in the gap allows heat to escape from the house into the surrounding.
(3) The air present in the gap is a poor conductor of heat, so it slows down heat from escaping from the house.
(4) The air present in the gap is a poor conductor of heat and quickly conducts heat away from the house.

( )

8. The diagram below shows an electric circuit with four identical bulbs.



How many bulbs will remain lit in the circuit when bulb A or B is fused?

	Number of bulbs which remain lit when	
	Bulb A is fused	Bulb B is fused
(1)	0	2
(2)	1	3
(3)	2	3
(4)	3	2

( )

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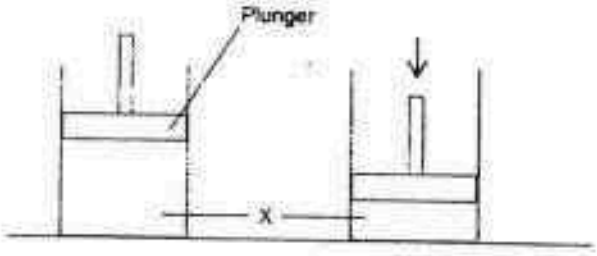
9. An air-tight container contains substance X and plunger is pushed down as shown below.



Which of the following statements about substance X are correct when the plunger is pushed down?

A: Volume of X decreased.
B: Volume of X remains the same.
C: Mass of X decreased.
D: Mass of X remains the same

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

( )

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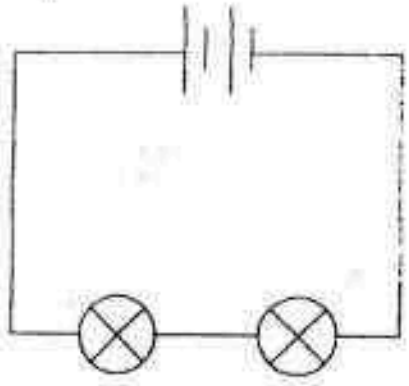
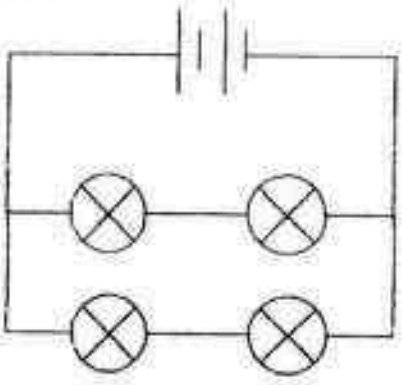
10. Tim used some identical bulbs and some identical batteries in each of the set ups below.

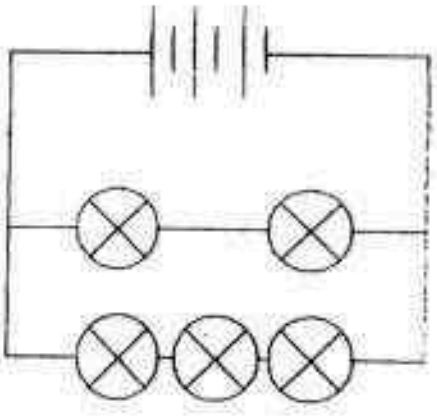
Set up A



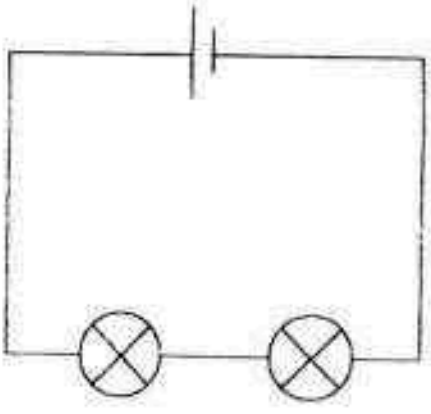
Set up B



Set up C



Set up D



Which of the following set ups will have <u>all</u> the bulbs lighting up with the same brightness?

(1) A and B only
(2) A and D only
(3) B and C only
(4) B, C and D only

( )

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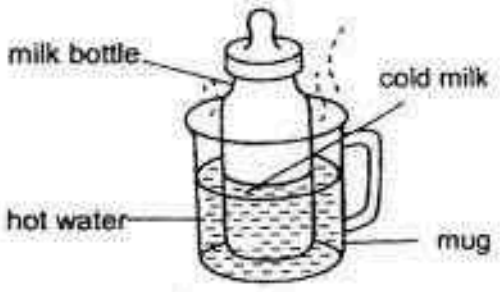
11. Mrs Lim removed a bottle of milk from the refrigerator and placed the bottle in a mug containing hot water as shown below.



Which of the following statements are correct?

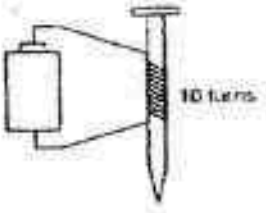
A: The cold milk loses heat to the hot water.
B: The mug gains heat from the hot water.
C: The hot water loses heat to the cold milk:
D: The temperature of the cold milk decreases

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

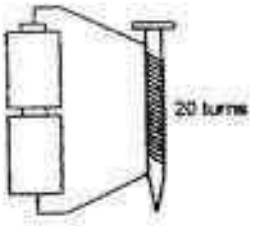
( )

12. Alan wants to find out whether the number of batteries affects the strength of an electromagnet.

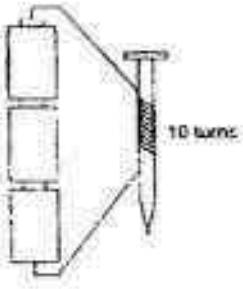
A



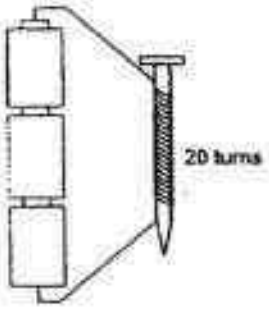
B



C



D



Which two arrangements below should he set up to conduct a fair test?

(1) A and B
(2) A and C
(3) B and C
(4) B and D

( )

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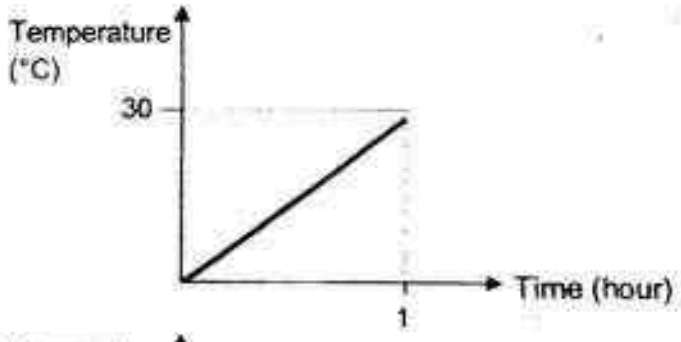
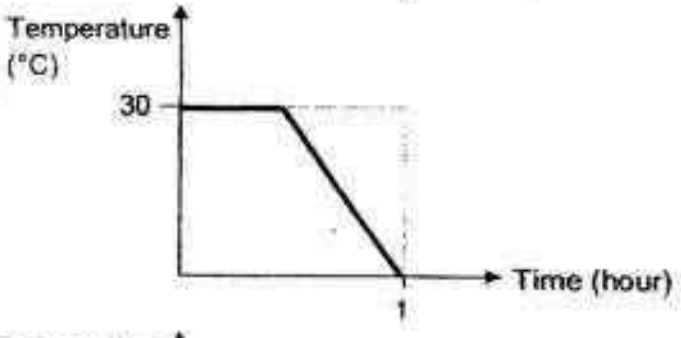
13. Which of the following graphs below shows how the temperature of a block of ice placed at room temperature changes with time correctly?

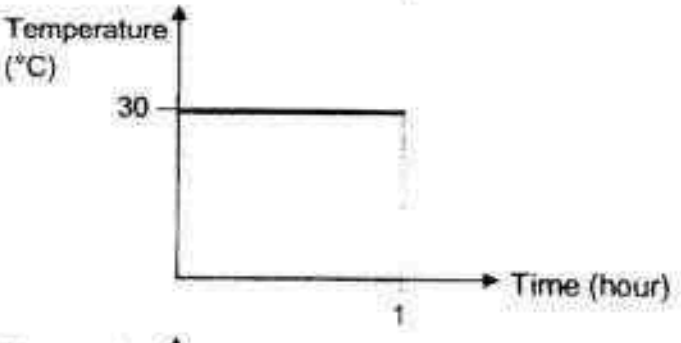
(1)



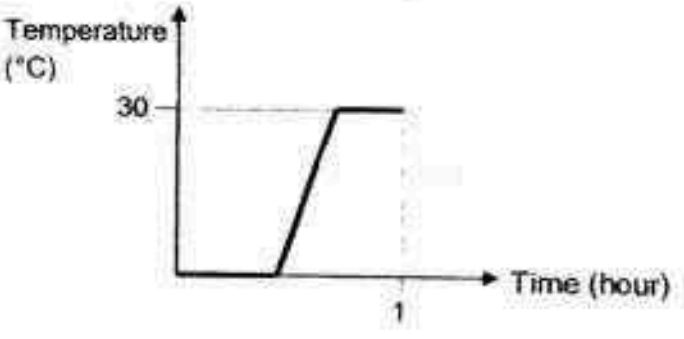
(2)



(3)



(4)



( )

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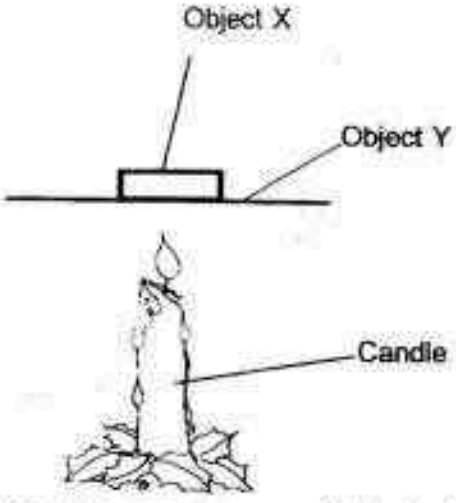
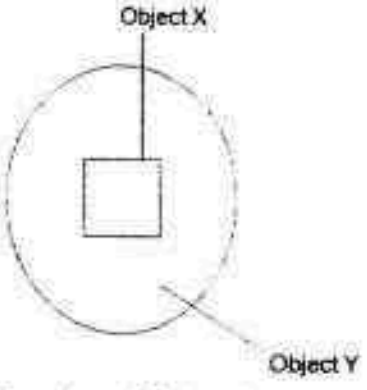
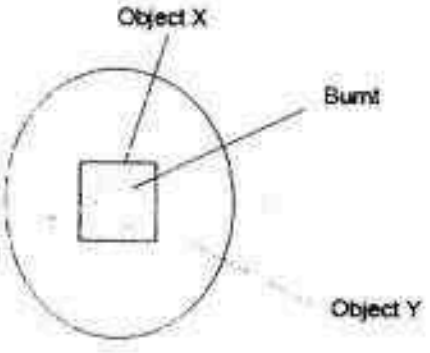
14. Kim placed object X on top of object Y and heated them over a candle flame as shown below.



The diagram below shows the appearance of objects X and Y before and after heating.



Top view of Object X and Object Y before heating



Top view of Object X and Object Y after heating

Only object X was burnt.
Which one of the following **correctly** shows properties of objects X and Y?

	Object X	Object Y
(1)	Good conductor of heat	Poor conductor of heat
(2)	Good conductor of heat	Good conductor of heat
(3)	Poor conductor of heat	Good conductor of heat
(4)	Poor conductor of heat	Poor conductor of heat

( )

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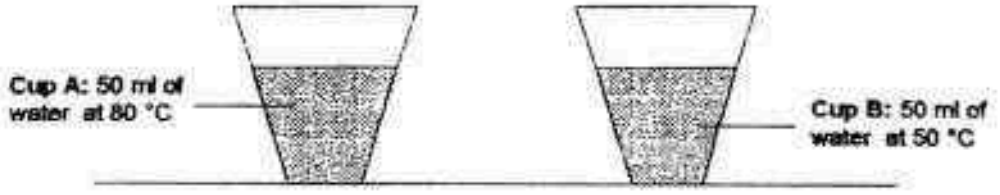
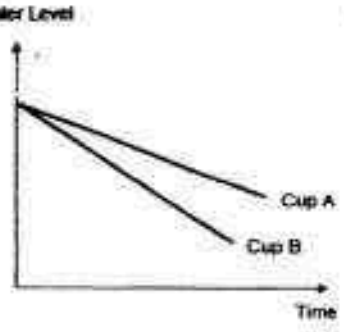
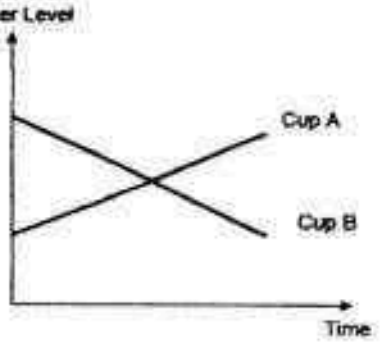
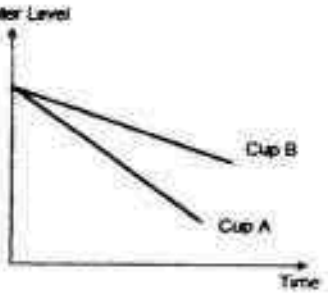
15. Bryan wanted to find out if water at different temperatures would evaporate at different rates. He set up the experiment as shown below and put them at the **same** place. He recorded the water level for both cups at regular intervals.

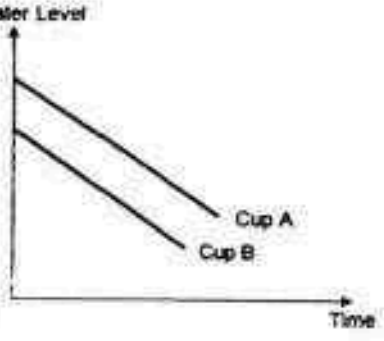


Which one of the following graphs **correctly** shows the change in water levels for both cups after ten minutes?

(1)


(2)


(3)


(4)


( )

16. Which of the following shows the correct order of processes observed in the reproduction and growth of flowering plants?

(1) Fertilization → Germination → Pollination → Seed dispersal
(2) Germination → Seed dispersal → Fertilization → Pollination
(3) Pollination → Fertilization → Seed dispersal → Germination
(4) Seed dispersal → Pollination → Germination → Fertilization

( )

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17. The table below shows some of the physical characteristics of Jack and his parents.

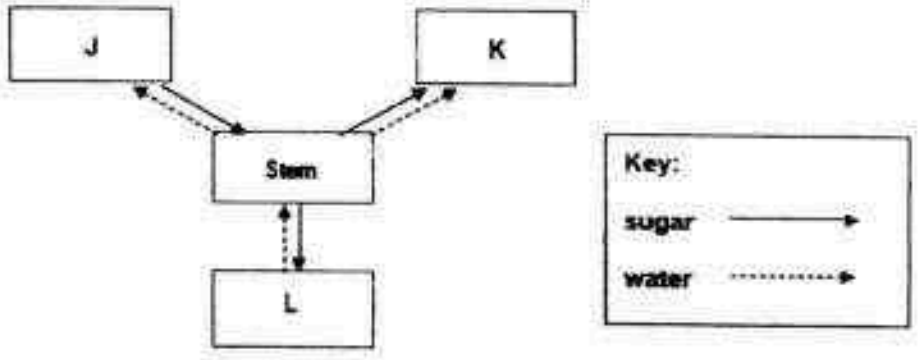
	Physical Characteristics		
	Eyes	Eyelids	Earlobes
Jack Lee	brown	single	detached
Mr Lee	brown	double	attached
Mrs Lee	grey	single	attached

Which one of the following statements is correct?

(1) He inherited all the characteristics from his father.
(2) He inherited one characteristic from his father and two from his mother.
(3) He inherited one characteristic from his father and one from his mother.
(4) He inherited two characteristics from his father and one from his mother.

( )

18. Brandon drew the diagram below to show how sugar and water are transported to and from different parts of the plant represented by J, K and L.



Which of the following parts of the plant are best represented by J, K and L?

	J	K	L
(1)	fruits	leaves	roots
(2)	leaves	roots	fruits
(3)	roots	leaves	fruits
(4)	leaves	fruits	roots

( )

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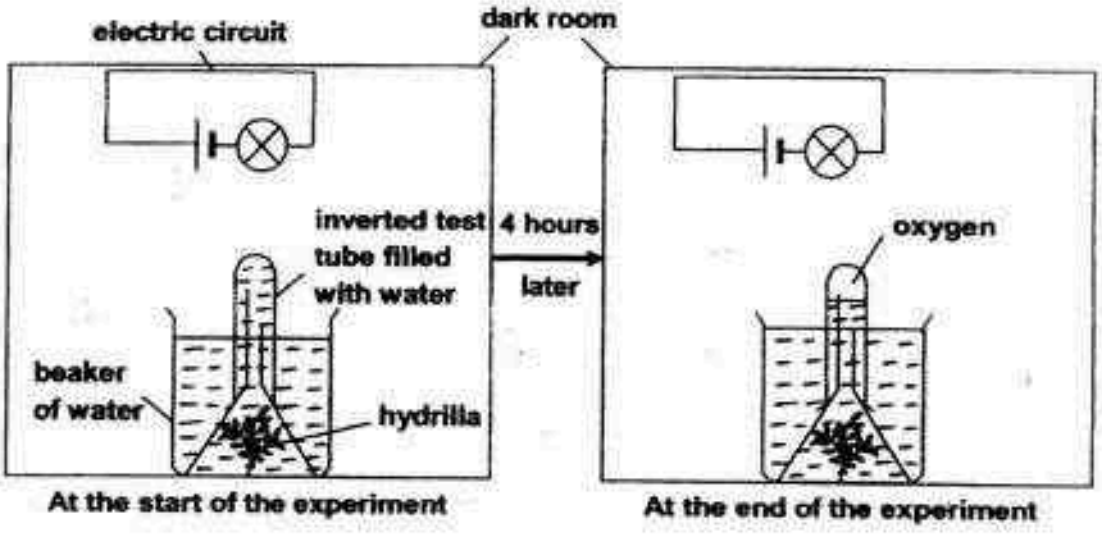
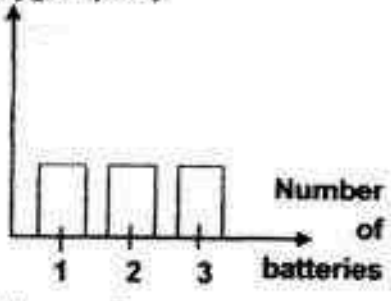
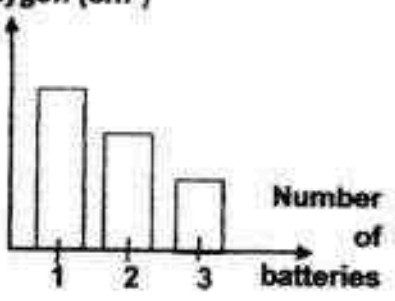
19. Alexander carried out an experiment in a dark room as shown in the diagram below. He first exposed a stalk of hydrilla to a lit light bulb connected to 1 battery. After 4 hours, he measured the volume of oxygen collected in the test-tube.

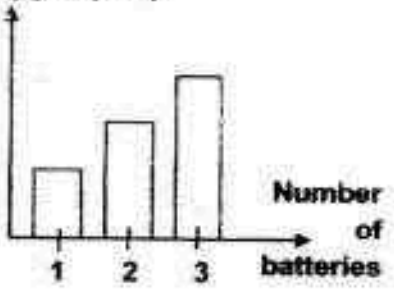


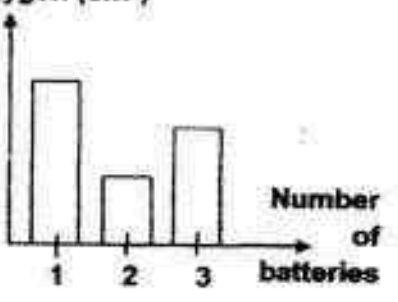
He then repeated the whole experiment using different number of batteries. The batteries used were new and identical and they were arranged in series.

Which one of the following graphs best represents the amount of oxygen collected when using different number of batteries?

(1)


(2)


(3)


(4)


( )

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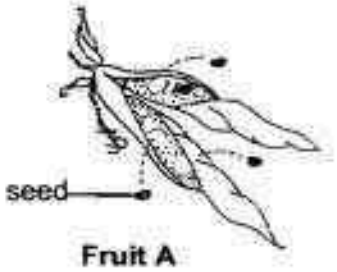
20. Compare the two fruits below.



Fruit A



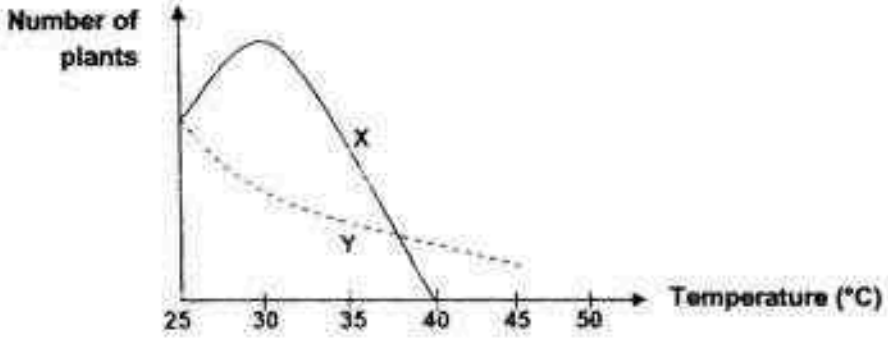
Fruit B

Based on your observation of the characteristics of the fruits shown above, which of the following shows how the fruits are dispersed?

	Fruit A	Fruit B
(1)	animal	wind
(2)	splitting	wind
(3)	wind	water
(4)	water	splitting

( )

21. The graph below shows how temperature affects the number of 2 types of plants, X and Y.



Based on the information given in the graph, 4 pupils made the following conclusions.

Wei En	X reproduces most at 30°C.
Ritvik	The higher the temperature, the fewer Y.
Alvin	The higher the temperature, the fewer X.
Raju	There are more Y than X between 25°C and 40°C.

Who made the correct conclusion?

(1) Alvin and Raju only
(2) Alvin and Ritvik only
(3) Wei En and Raju only
(4) Wei En and Ritvik only

( )

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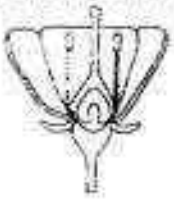
22. Which of the following comparison(s) about plants is/are correct?

	When plants carry out photosynthesis	When plants respire
A	Light is needed	Light is not needed
B	Carbon dioxide is taken in	Carbon dioxide is given out
C	Oxygen is taken in	Oxygen is given out
D	Takes place in the presence of light only	Takes place in darkness only

(1) A only
(2) A and B only
(3) B and D only
(4) C and D only

( )

23. Jerry has two flowers, X and Y, of the same species.
The diagram below shows one of the flowers.



Some parts of the flowers were removed. The diagram below shows the two flowers with some parts removed.



Flower X



Flower Y

Explain why pollination could take place between flowers X and Y.

(1) Flower Y has both the female and male reproductive parts in it.
(2) The petals of flower X were removed.
(3) Flowers X and Y have both the female and male reproductive parts.
(4) Each flower has only either the female reproductive part or the male reproductive part.

( )

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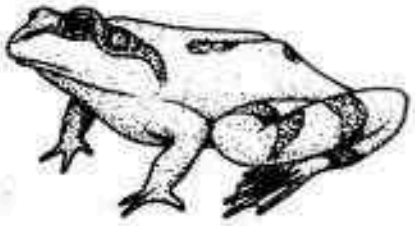
24. The table below shows the characteristics of living things, X, Y and Z.



X



Y



Z

		Living Things		
		X	Y	Z
A	Makes its own food	Yes	No	No
B	Reproduce by seeds	No	No	No
C	Breaks down dead matter	No	Yes	No
D	Responds to changes	Yes	No	Yes

Which of the above statements are correct?

(1) A and B only

(2) A and C only

(3) B and C only

(4) C and D only

( )

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25. Janice had two similar pots of soil (Y and Z).
She placed ten maize seeds in each pot.
She placed Pot Y in a cupboard and Pot Z near the window.
She watered the pots of plants with an equal amount of water daily.

The average heights of the plants were recorded in the table below.

Day	Average height of plants (cm)	
	Pot Y (In the cupboard)	Pot Z (Near the window)
1	0	0
2	0	0
3	0	0
4	1	1
5	3	2
6	5	3
7	7	4

Based on the information provided, which of the following statement(s) is/are true?

A: All the seeds started to germinate on the 4th day.
B: There is an increase in the average height of the plants in Pot Y and Z over 7 days.
C: The average height of the plants grown in the bright area was taller than those grown in the dark.

(1) A only
(2) B only
(3) A and B only
(4) B and C only

( )

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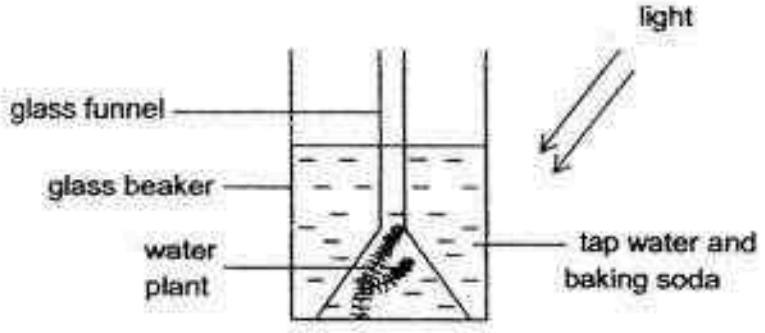
26. Jenny wanted to find out how the amount of carbon dioxide would affect the rate of photosynthesis. She set up her experiment as shown below.



Adding baking soda increases amount of carbon dioxide in the water.

Which of the following variables should she keep the same for a fair test?

A: The type of funnel
B: The amount of light
C: The amount of water plant
D: The amount of baking soda

(1) A and B only
(2) A, B and C only
(3) A, C and D only
(4) B, C and D only

( )

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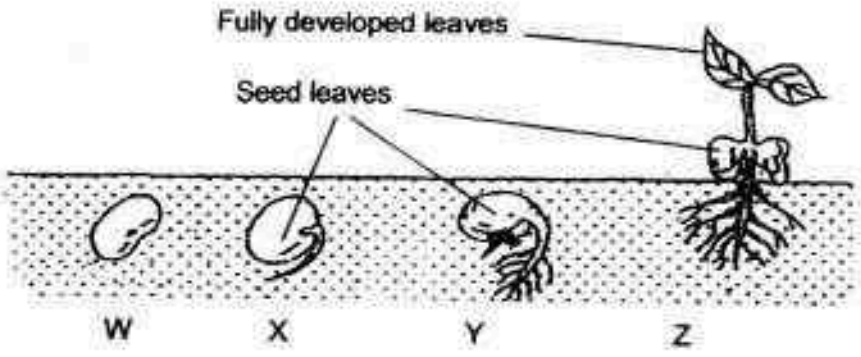
27. Below are the early stages (W, X, Y and Z) of plant growth.



Which of the following describes the early stages of plant growth correctly?

A: Seed leaves provide food for the seed at stages X and Y
B: The seedling is able to make food at Stage Z
C: Shoots appear before the roots at stage X

(1) A and B only
(2) B and C only
(3) A and C only
(4) A, B and C

( )

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28. Nemo used a leaf as shown in Diagram A for an investigation on photosynthesis. The leaf was de-starched before the start of the experiment.

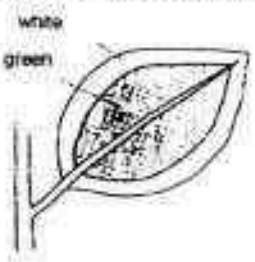


Diagram A

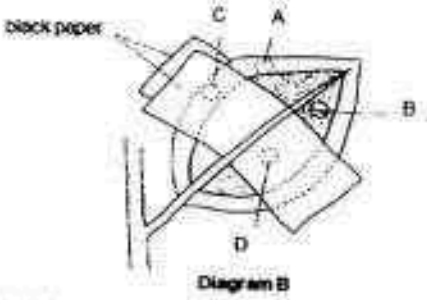


Diagram B

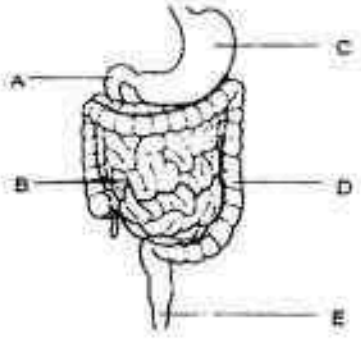
He then covered part of the leaf with black paper as shown in Diagram B. He put the plant under the Sun. Two days later, he plucked off the leaf and removed the black paper. He used iodine to test for starch in the leaf.

In which area A, B, C or D was most starch found?

(1) A
(2) B
(3) C
(4) D

( )

29. The diagram below shows the human digestive system.



Goofy, Harry and Sammy each made a statement about the digestive system.

Goofy: Solid waste is stored here.
Harry: Digestion is completed here.
Sammy: Digestive juices are added here.

Which one of the following correctly matches each statement made by each boy to the corresponding labelled parts of the digestive system above?

	Goofy	Harry	Sammy
(1)	D	E	A
(2)	D	B	E
(3)	E	D	A
(4)	E	B	C

( )

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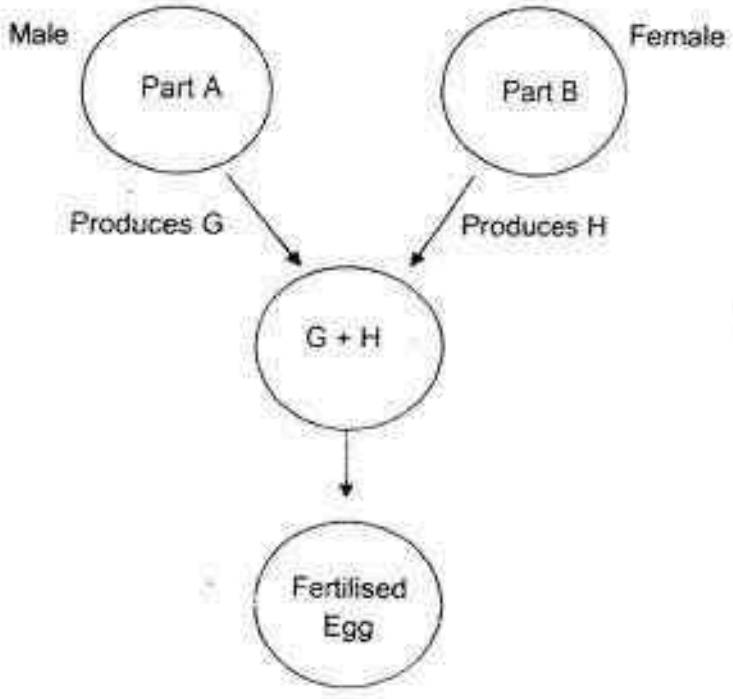
30. In animal reproduction, fertilization takes place when G from Part A fuses with H from Part B to form a fertilised egg.



Which of the following correctly represent A, B, G and H from the diagram above?

	Part A	Part B	G	H
(1)	ovary	egg	testes	sperm
(2)	sperm	testes	egg	ovary
(3)	egg	sperm	ovary	testes
(4)	testes	ovary	sperm	egg

( )

End of Booklet A

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HENRY PARK PRIMARY SCHOOL
FIRST SEMESTRAL ASSESSMENT 2016

PRIMARY 6
STANDARD SCIENCE

40

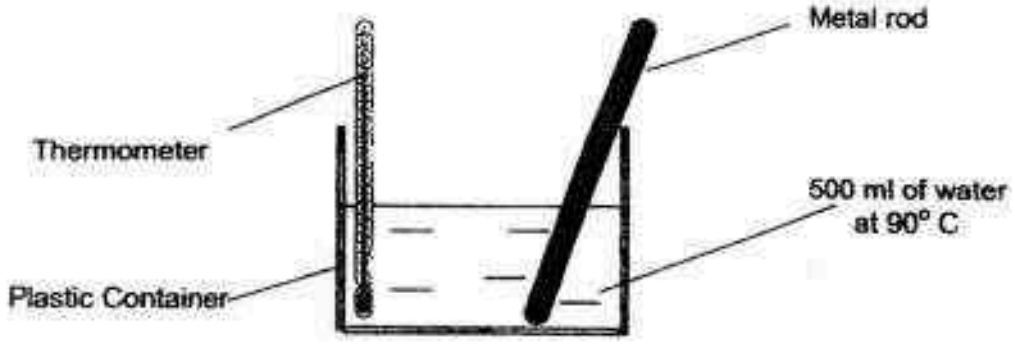
Name: _____ Class: Primary 6

Section B: Open-Ended Questions (40 marks)

Write your answers to questions 31 to 44 in the spaces given.

31 (a) John wanted to find which metal rod, A, B or C is a better conductor of heat. He used three metal rods of the same size and thickness. The experiment was conducted at a room temperature of 32° C.

He placed metal rod A in the container as shown below and recorded the change in the temperature of water in the container over 30 minutes. The steps were repeated with metal rods B and C.



The result of his experiment is shown in the table Y below:

TABLE Y

	Temperature of Water in Container (° C)		
Time (min)	**With Rod A**	**With Rod B**	**With Rod C**
0	90° C	90° C	90° C
10	82° C	81° C	87° C
20	75° C	71° C	82° C
30	68° C	52° C	76° C

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(Question 31 continued)

Study table **Y** carefully.

(i) Based on table **Y**, state one step John has taken to ensure that the experiment is carried out <u>fairly</u>. Explain why this step is important. [2]

_____

_____

_____

(ii) If the plastic container is replaced by a metal container of the same thickness, explain the difference in the temperature of water over the 30 minutes. [1]

_____

_____

(b) Meena poured different amounts of water in four identical beakers and heated the water until it started to boil. She observed and recorded the time taken for water in each container to boil. Her findings are given below.

Amount of water in Container (ml)	150	450	350	250
Time taken for water to boil (min)	3	11	8	5

The following statements are made based on the above table.
Put a tick (✓) in the boxes below against statements that are correct. [1]

(i) Amount of water in each beaker affects its boiling point.	
(ii) Amount of heat in each beaker, as the water boils, is different.	
(iii) Amount of water in each beaker affects how fast the water boils.	
(iv) Temperature of water in each beaker, as the water boils, is different.	

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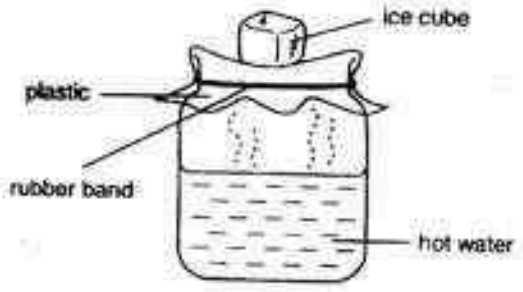
32. Christopher set up a model of the water cycle as shown below.



a) What was the purpose of putting an ice cube on top of the plastic sheet? [1]

_____

_____

b) After a few minutes, he noticed water droplets on the bottom of the plastic sheet. Explain how the water droplets were formed. [2]

_____

_____

_____

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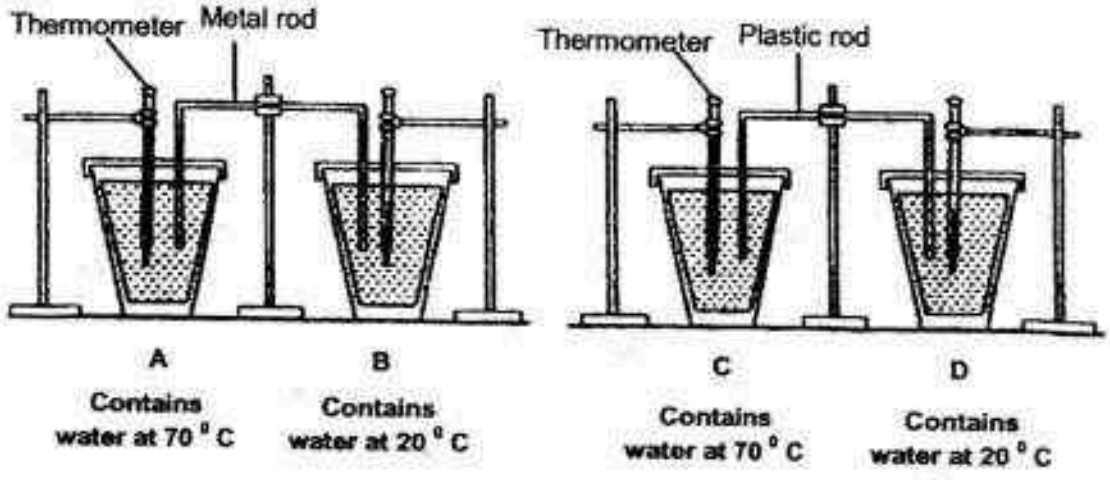
33. Mei Chen set up the experiment shown below using four identical insulated cups, A, B, C and D. The diagram below shows the set-ups at the start of the experiment.



a) Mei Chen observed and recorded the temperature of the water in each cup after 10 minutes.

Which cup, B or D, would have water with the higher temperature after 10 minutes? Explain your answer. [2]

_____

_____

b) After 15 minutes, will the **difference in temperature** between the water in cups A and D be **greater** or **smaller**? [1]

_____

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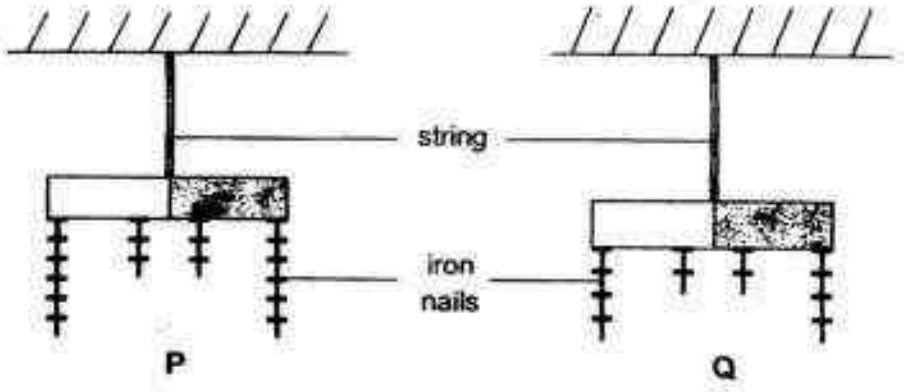
34. Asif carried out an experiment with two bar magnets, P and Q, and some iron nails. The diagram shows the maximum number of iron nails that can be attracted by each magnet.



Based on the diagram, answer the following questions.

a) What common property about the strength of the poles could Asif observe about the 2 magnets? [1]

b) What can be concluded about the difference in the strength of the two magnets?
Explain how you arrived at the answer. [2]

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35. The table below shows the amount of digested food and whether the digestive juice is produced in different parts (A, B, C, D and E) of the human digestive system during an experiment.

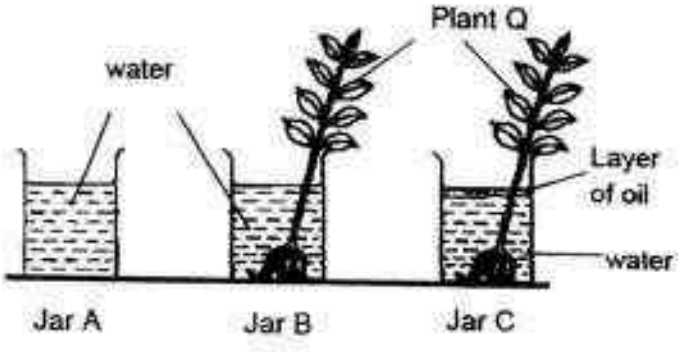
Part	Amount of digested food at each part	Does it produce digestive juice?
A	None	No
B	A small amount	No
C	A large amount	Yes
D	A very small amount	Yes
E	Almost all	Yes

Based on the information from the table, which part (A, B, C, D or E) represents the **gullet** in the human digestive system? Explain why. [2]

_____

_____

36. Tom filled 3 identical jars with the same amount of water. He put a plant of similar size each in Jar B and Jar C. He poured a layer of oil on the water surface of Jar C. The 3 jars were placed next to an open window.



a) He recorded the results of his experiment in the table below. [2]

	Jar A	Jar B	Jar C
Volume of water at the start of experiment		300ml	300 ml
Volume of water after 2 days	275ml	225ml	

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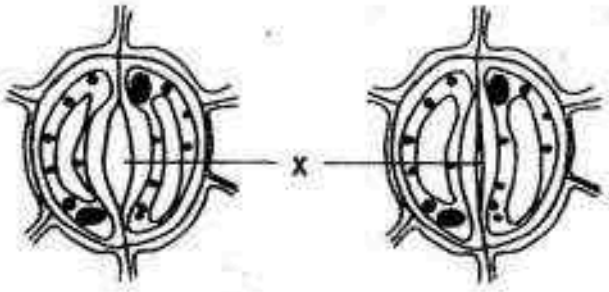
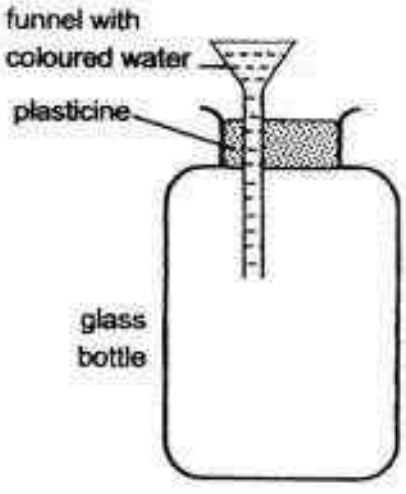
(Question 36 continued)

The diagrams below show the changes that occur in a leaf seen under a microscope.



b) X is a tiny opening found in leaves. When the plant is placed under strong light, it is observed that the size of X increases.
Explain why X becomes larger. [2]

37. Beng Lee fitted a bottle with a funnel using plasticine as shown below.



a) He poured coloured water into the funnel and realised that the water did not flow into the bottle. Give a reason for this. [1]

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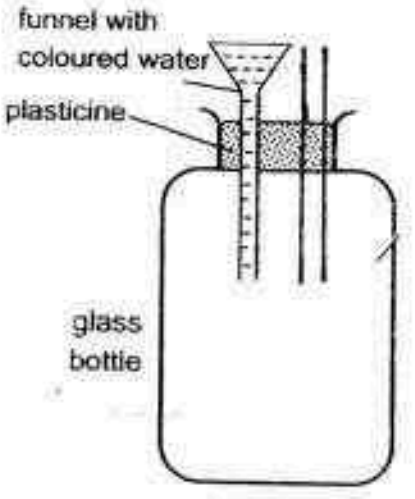
(Question 37 continued)

b) A glass tube was given as shown in the diagram below. Using the diagram below, **draw** how the glass tube should be placed to allow more coloured water to enter the glass bottle. [1]





c) Give a reason for your answer in (b). [1]

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38. The diagram below shows a rice weevil which is often found in rice.
Rice weevils feed on rice and they pose a problem to people as they are often found in large numbers.



Amy made this hypothesis:

The presence of pandan leaves keeps rice weevils away from rice bins.

She planned an investigation using only the following items:

- 600 g of uncooked rice
- 3 stalks of pandan leaf
- 20 rice weevils
- 1 large tray divided into 2 parts

a) The following steps show how Amy carried out the experiment.
Write down the 3rd step. [1]

Step 1: Fill each part of the tray with 300 g uncooked rice.

Step 2: Put in10 rice weevils in each part of the tray.

Step 3: _____

_____

Step 4: Compare the number of weevils in each part of the tray at the end of the experiment.

b) At the end of the experiment, Amy concluded that her hypothesis is correct.
What observation had she made that caused her to make this conclusion? [1]

_____

_____

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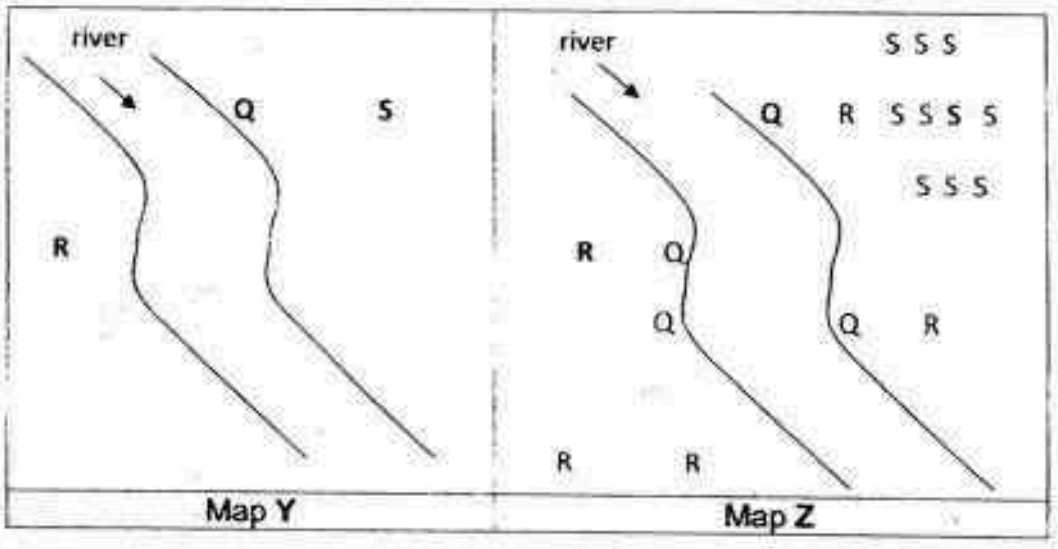
39. Three plants Q, R and S are planted along a river as shown on Map Y. Map Z shows the same piece of land 2 years later.



a) Which plant, Q, R or S is most likely to be dispersed by the explosive action of its fruits? Explain your answer. [1]

_____

_____

b) How are the fruits of Plant Q likely to be dispersed? [1]

_____

c) Based on your answer in (b), give <u>two</u> characteristics that the fruits of Plant Q may possess. [2]

i) _____

ii) _____

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40. Muthu left a slice of bread on top of a table in the kitchen. After a few days, he noticed that there were dark patches of bread mould on the bread.



a) Bread mould belongs to a group of living things.
Name the group. [1]

_____

b) How does the bread mould reproduce? [1]

_____

_____

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41. The table below shows the freezing point and boiling points of three substances, X, Y and Z.

Substance	Freezing Point (°C)	Boiling Point (°C)
X	29	678
Y	17	118
Z	-7	59

a) What are the states of substances, X and Y, at 20°C?
Write your answers in the boxes of the table below. [2]

Substance	State of substance
X	
Y	

b) Other than having mass and occupying space, state another property of substance Z when it is at 100°C. [1]

_____

_____

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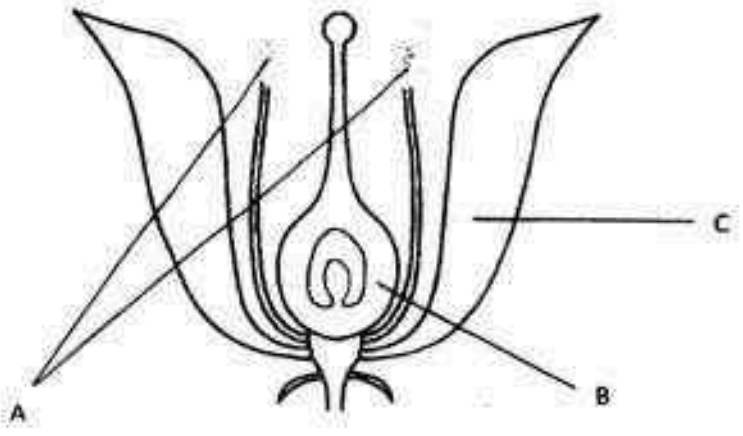
42. The figure below shows the cross section of a flower.



Describe what will happen to Parts B and C after fertilisation. [2]

(a)

Part B - _____

Part C - _____

(b)

Can fertilisation occur if Part A is removed? Explain your answer. [1]

_____

_____

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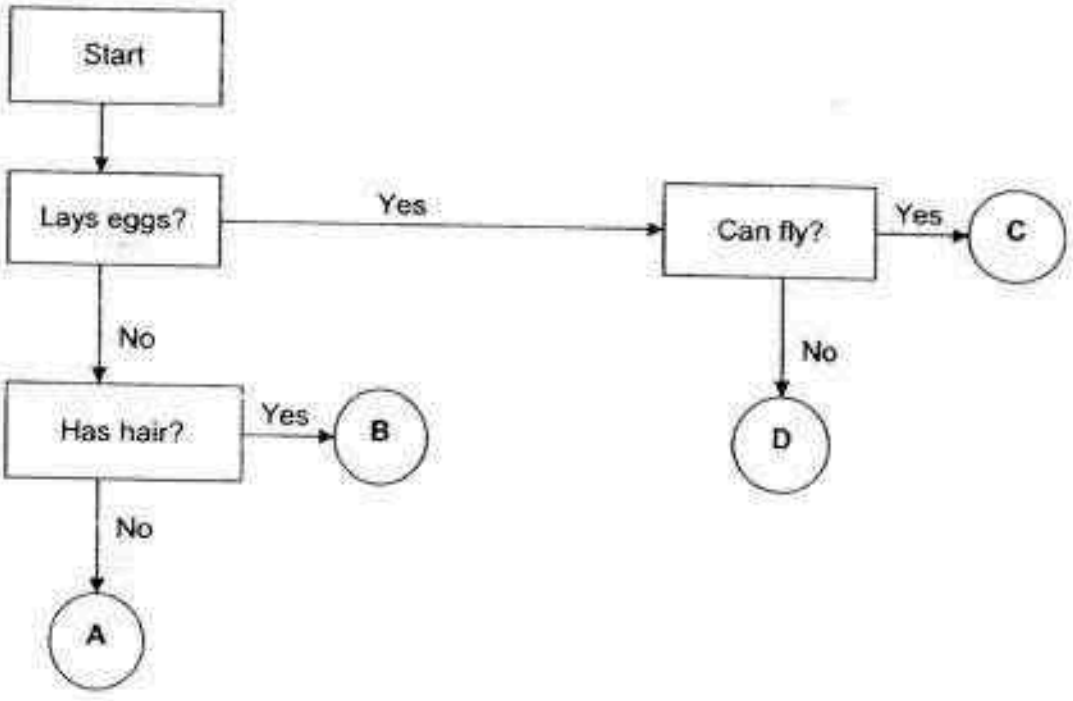
43. Study the following diagram about organisms, A, B, C and D carefully.



Use information from the diagram to answer the following questions.

(a) Jane concluded that organism C is definitely a bird. [1]

Do you agree? Give a reason for your answer.

(b) Name one difference between organisms A and B. [1]

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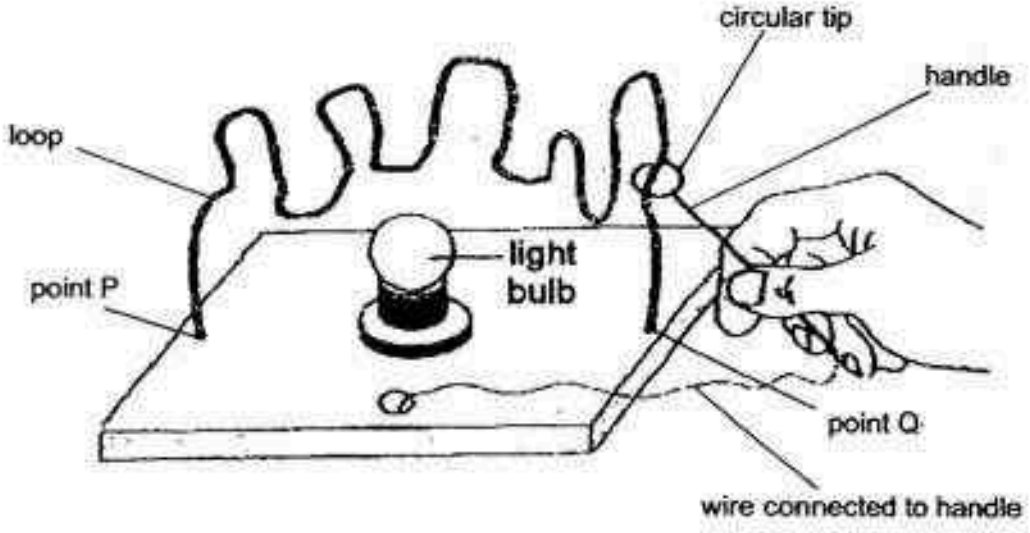
44. The diagram below shows a toy which Tom has built.

The player has to guide the circular tip from point P to point Q without touching the loop.

The bulb lights up when the circular tip touches any part of the loop.



a. What is the component which is not shown in the diagram above that enables the bulb to light up? [1]

_____

b. Explain why the bulb lights up when the circular tip touches any part of the loop. [1]

_____

_____

End of Booklet B

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EXAM PAPER 2016
LEVEL : PRIMARY 6
SCHOOL : HENRY PARK
SUBJECT : SCIENCE
TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	3	2	2	4	1	3	4	2	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	2	4	1	3	3	3	4	3	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	2	4	2	3	2	1	2	4	4

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Booklet B Answers for CORRECTION

Name _____

Q	Answer	Correction
31.	(a)(i) Temperature of water in each container at the start of the experiment is the same. (1) This ensures that the changes in the temperature of water is due to the material of the rod used.(1) ii) Temperature of water will decrease more/lose heat faster quickly as the metal container will conduct heat away/ better conductor of heat from the water more quickly b) ii, iii (½ each)	
32.	a) To lower the temperature of plastic b) **Water vapour/** Hot water evaporated in the container **lose heat** **to the cooler surface** of the plastic sheet and **condense**	
33.	a) B as the metal rod will conduct heat away more / better conductor quickly from the water in cup A to water in cup B. b) Smaller	
34.	a) Poles of the magnet are strongest b) P is a stronger magnet as more iron nails are attracted to P	
35.	B. (1) Some food has been digested (in the mouth) before entering the gullet.	
36.	a) Jar A - 300 ml (1), Jar C – 226-274 ml b) It is to take in more carbon dioxide to make more food.	
37.	a) Air occupies space inside the sealed bottle preventing water from flowing in. c) Put glass tube through the plasticine . b) Air is allowed to escape through the tube and water is able to flow in.	

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38.	a) Place 3 stalks of pandan leaves on one part of the tray. b) There are less or no weevils on one (part of the) tray with pandan leaves	
39.	a) S as the seeds are dispersed closely around/near/cluster together the parent plant. b) Water c) i) Q has waterproof outer covering / can float ii) Q has fibrous husk/hair	
40.	a) Fungi (b) By spores	
41.	a) Solid , Liquid b) It does not have definite shape.	
42.	a) It will /swell/swollen/become bigger/become the fruit (1), It will wilt/fall off b) Yes, pollen grains from another flower of the same species can still be transferred to the stigma. Yes, pollination has taken place before A is cut No, pollination cannot take place because the anther which carry the pollen grains are cut and cannot be transferred to the stigma.	
43.	a) No, as (some) insects also lay eggs and can fly (½). b) A does not have hair but B has.	
44	a) Battery b) The tip is a conductor of electricity that creates a closed circuit upon touching the loop.	

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14

CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION
2016
PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____ ( )

Class: Primary 6 - _____

30 questions

60 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 21 printed pages, excluding the cover page.

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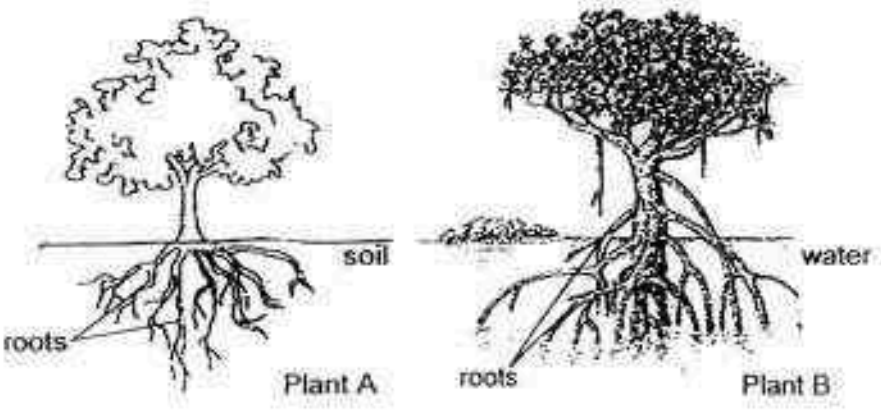
Booklet A (30 × 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet. (60 marks)

1 The diagram below shows Plants A and B.



Which one of the following correctly describes the similarity between the roots of plant A and plant B?

(1) Both grow completely underground.

(2) Both take in water and mineral salts.

(3) Both climb on other plants for support.

(4) Both are green due to presence of chlorophyll.

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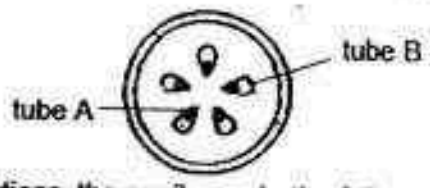
2 3 pupils left plant X in a beaker of red-coloured water. 5 hours later, they cut a cross-section of plant X and observed that tube A had turned red but not tube B.



Based on their observations, the pupils made the following statements:

Julie The plant depended on tube A to transport food to all its other parts.

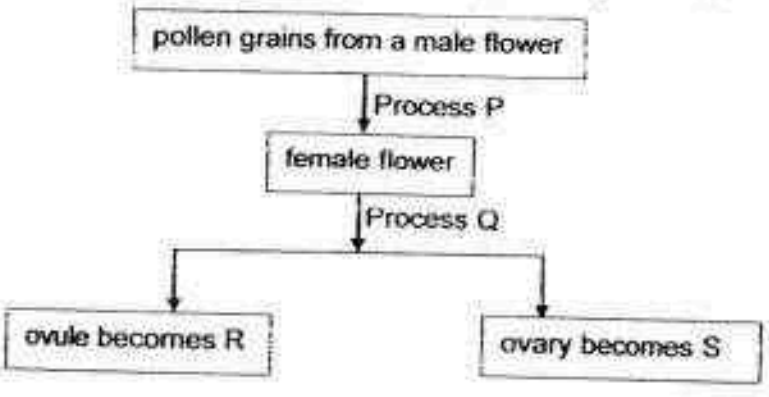
Mark Tube A ensured that water from the roots was transported to all parts of the plant.

Ravi The plant depended on tube B to transport water from its roots to some parts of the plant.

Which pupil(s) made the correct statement(s)?

(1) Julie only
(2) Ravi only
(3) Mark only
(4) Julie and Ravi only

3 The diagram below shows how a flowering plant reproduces.



Which of the following do P, Q, R and S represent?

	Process		Parts of the plant	
	P	Q	R	S
(1)	fertilisation	pollination	fruit	seed
(2)	pollination	fertilisation	fruit	seed
(3)	pollination	fertilisation	seed	fruit
(4)	fertilisation	pollination	seed	fruit

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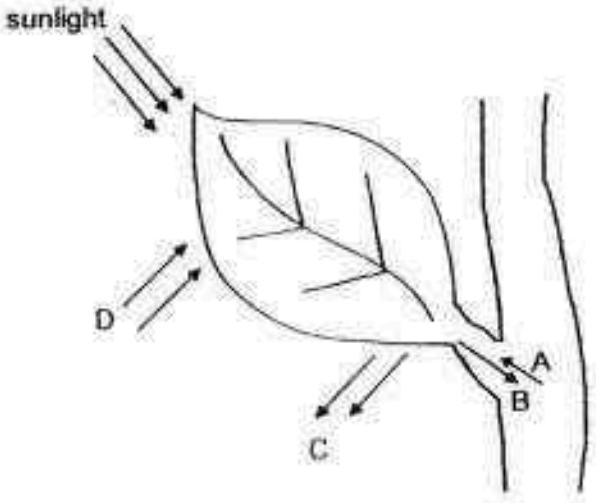
4 Which of the following shows the characteristics of a flower that is pollinated by an insect?

	Smell of flower	Colour of petals	Size of petals
(1)	scented	dull	small
(2)	scented	brightly-coloured	big
(3)	unscented	dull	small
(4)	unscented	brightly-coloured	big

5 The diagram below shows a process being carried out by a green leaf on a plant.



Which of the following do A, B, C and D represent?

	A	B	C	D
(1)	sugar	water	carbon dioxide	oxygen
(2)	sugar	carbon dioxide	water	oxygen
(3)	water	carbon dioxide	sugar	oxygen
(4)	water	sugar	oxygen	carbon dioxide

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6 Which of the following statements are correct about sexual reproduction in both plants and animals?

A Pollination takes place before fertilisation.

B The female egg cells are stored in the ovary.

C The male reproductive cells are called sperms.

D The male and female reproductive cells have to fuse for fertilisation to take place.

(1) B and D only

(2) A, B and C only

(3) A, C and D only

(4) B, C and D only

7 Luke sets up 4 containers of leaf litter, W, X, Y and Z, of the same size and left them in 4 different places. The table below shows the condition in each container of leaf litter.

Container of leaf litter	Location	Temperature	Condition in the leaf litter
W	under a tree	25°C	damp
X	in the middle of the basketball court	37°C	dry
Y	in the middle of the school field	38°C	damp
Z	beside a window	28°C	dry

In which container, W, X, Y or Z, will Luke find the greatest number of populations of animals after 2 months?

(1) W

(2) X

(3) Y

(4) Z

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8 Betty carried out an experiment to find out the effects of carbon dioxide on 4 organisms, W, X, Y and Z living in a pond. 4 similar set-ups for each of the organisms were kept over a period of 5 months. Different concentration of carbon dioxide were given to the 4 set-ups and she recorded her observations in the table below.

Concentration of carbon dioxide (units)	Size of population			
	Organism W	Organism X	Organism Y	Organism Z
1	75	107	99	213
5	75	105	95	257
10	75	100	86	274
15	80	95	80	289

Which one of the organisms could most likely be water plants found inside the pond?

(1) W

(2) X

(3) Y

(4) Z

9 Lily did a study on 3 animals, S, T and U. She placed a tick (√) in the box when she made the observation. At the end of her study, she completed the table as shown.

Observations	Animal S	Animal T	Animal U
Young looks like the adult			√
Gives birth to young alive			√
3 stages in the life cycle	√		
Moults several times at one stage in its life cycle		√	

Which of the following could be Animals S, T and U?

	Animal S	Animal T	Animal U
(1)	hen	frog	cat
(2)	cat	dog	cockroach
(3)	frog	butterfly	dog
(4)	cockroach	mealworm	grasshopper

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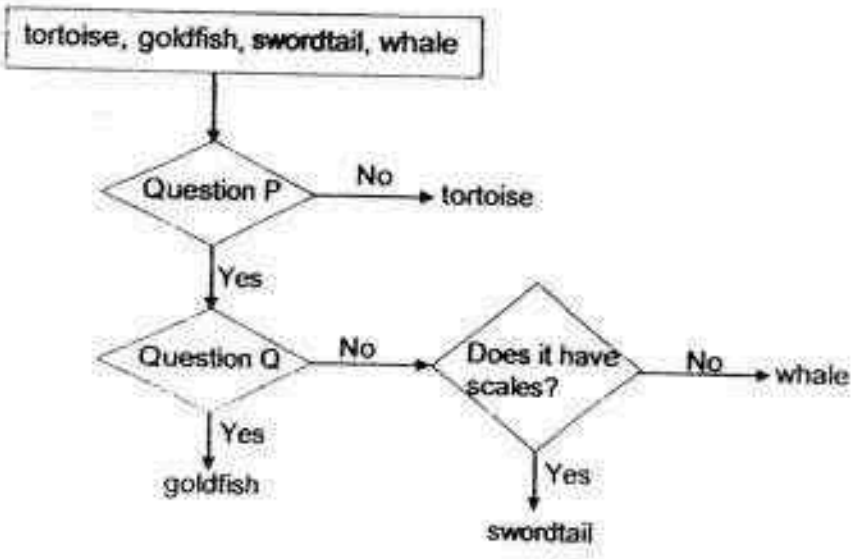
10 Ali classified four organisms, tortoise, goldfish, swordtail and whale.



He classified them according to the flowchart below.



What were the two questions, P and Q?

	Question P	Question Q
(1)	Does it live only on land?	Does it grow?
(2)	Does it live only in water?	Does it lay eggs?
(3)	Does it feed on smaller animals?	Does it give birth alive?
(4)	Does it respond to changes around it?	Does it move about freely?

11 What is the function of the large intestine in the human digestive system?

(1) It digests food.

(2) It passes the digested food to the blood.

(3) It absorbs water from the undigested food.

(4) It passes the undigested food out of the body.

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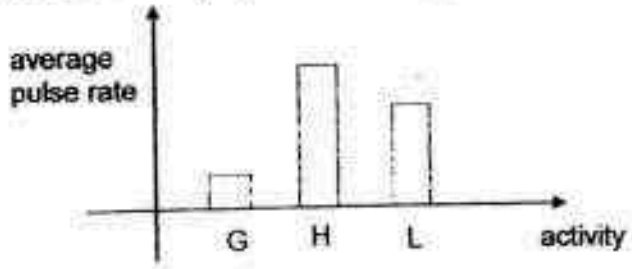
12 Krishnan completed several activities, G, H and L. The graph below shows Krishan's average pulse rate during each activity.



Which of the following best describes the activities, G, H and L?

	G	H	L
(1)	running	reading	strolling
(2)	reading	running	walking
(3)	swimming	sleeping	walking
(4)	resting	strolling	swimming

13 5 pupils observed some plant and animal cells under the microscope. They recorded their observations and conclusions in the table below.

Name of pupil	Observation on cell parts	Conclusion on type of cell
Ali	cytoplasm, nucleus, cell membrane	animal
Meiling	nucleus, cell wall, cell membrane, chloroplasts	plant
Emily	cell membrane, nucleus, chloroplasts	animal
Ben	cell membrane, cell wall, nucleus	animal
Nancy	cell membrane, cell wall, nucleus, cytoplasm	plant

Which pupils made the correct conclusions?

(1) Ali, Emily and Ben
(2) Ali, Meiling and Nancy
(3) Emily, Ben and Nancy
(4) Meiling, Emily and Ben

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14 The following table shows the number of animals in a particular community.

Animal	Number of organisms
spider	10
snail	12
butterfly	8
earthworm	5
caterpillar	5

How many populations of organisms are there in this community?

(1) 4

(2) 5

(3) 13

(4) 40

15 Which of the following statements correctly describes the structural and behavioural adaptations of some organisms?

	Structural adaptation	Behavioural adaptation
(1)	lays eggs in corners to increase the chances of survival	lays many eggs to increase the chances of survival
(2)	moves slowly to avoid predators	coils up to avoid predators
(3)	uses big eyes to hunt in darkness	uses big ears to hunt in darkness
(4)	uses stripes on the body to blend in with the surroundings	uses twigs to decorate its shells to blend in its surroundings

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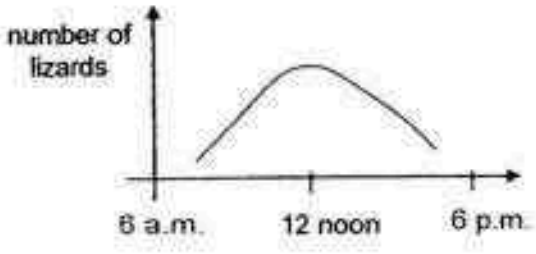
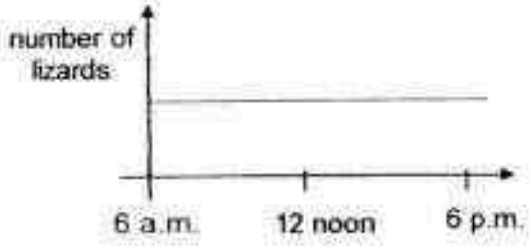
16 In the early morning, lizards will lie on surrounding rocks to warm their bodies. At noon, the hottest part of the day, the lizards will hide under rocks to cool their bodies.
Xiao Ling went to area X to observe the number of lizards she could spot.

Which one of the following graphs correctly shows the number of lizards Xiao Ling spotted in area X throughout the day?

(1)



(2)



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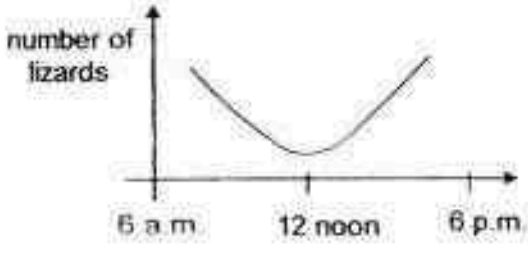
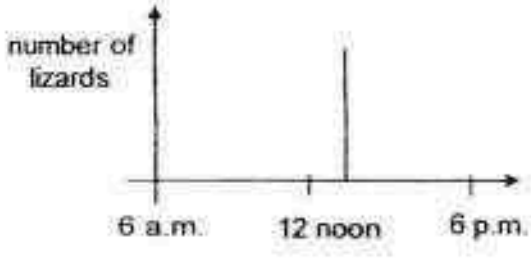


(4)



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17 Salleh fully dipped 4 different fabric, R, S, T and U, of the same size into 4 containers containing the same amount of water. He recorded the amount of water in each container after dipping the fabric into the containers. His results are shown in the table below.

	Container for fabric R	Container for fabric S	Container for fabric T	Container for fabric U
Amount of water in the container at the beginning (ml)	200	200	200	200
Amount of water in the container at the end (ml)	200	80	185	145

Based on the results above, which fabric should Salleh choose to make an umbrella?

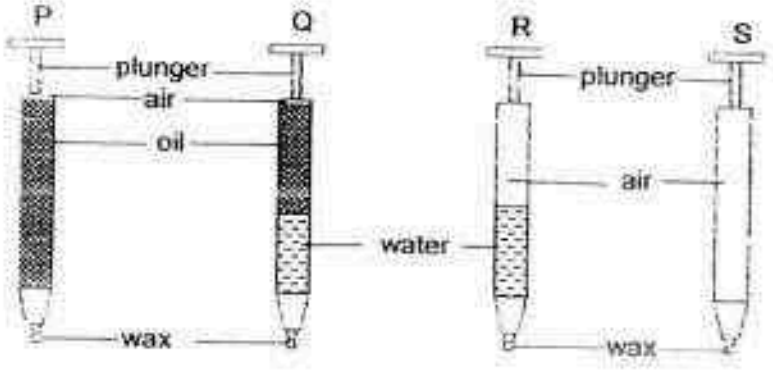
(1) Fabric R

(2) Fabric S

(3) Fabric T

(4) Fabric U

18 Ahmad set up 4 syringes as shown in the diagram below. The ends of the syringes were sealed with some wax.



Which of the two plungers cannot be pushed inwards easily?

(1) P and Q

(2) Q and R

(3) R and S

(4) S and Q

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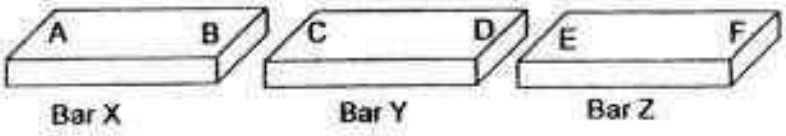
19 Bob had 3 bars, X, Y and Z. Their ends were labelled A, B, C, D, E and F respectively.

He brought the ends of Bar X, Bar Y and Bar Z close to one another to find out if they would attract or repel.



The results of Bob's experiment is as shown below.

		Bar Y		Bar Z	
		C	D	E	F
Bar X	A	attract	attrac.	attract	attract
	B	attract	attract	attract	attract
Bar Y	C			attract	repel
	D			repel	attract

Based on the results above, which of the following statements is/are correct?

A Bars X, Y and Z are magnets.
B Only Bars Y and Z are magnets.
C Only Bars X and Y are magnetic materials.
D Bars X, Y and Z are made of magnetic materials.

(1) B only
(2) A and C only
(3) B and D only
(4) C and D only

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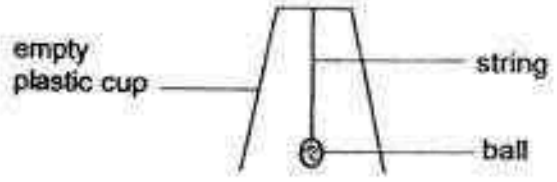
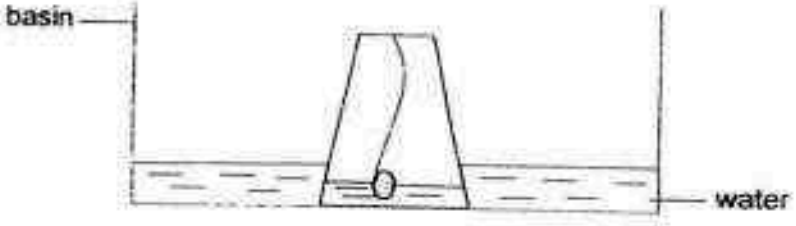
20 Johari attached a small ball to the base of an empty plastic cup as shown below.



He placed the plastic cup with the attached small ball into a basin of water and pushed the cup downwards.



Which one of the following statements best explains the difference in the water level inside the plastic cup and the water level in the basin?

(1) The ball took up space in the plastic cup.

(2) The ball got the water out of the plastic cup and into the basin.

(3) Some air was trapped in the plastic cup and could not escape out of it.

(4) The plastic cup occupied space in the basin and caused the water in it to rise.

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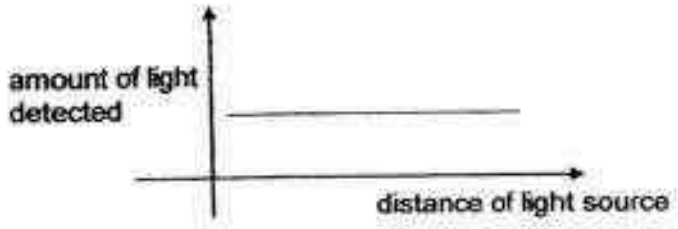
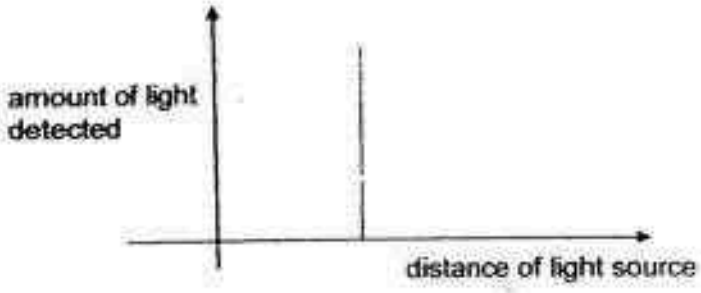
21 The light sensor in a datalogger measures the amount of light that it is exposed to. Which one of the following graphs shows how the reading of the datalogger changes as the light source is placed further away from the light sensor?

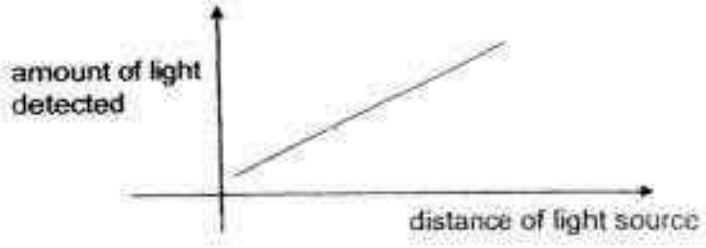
(1)



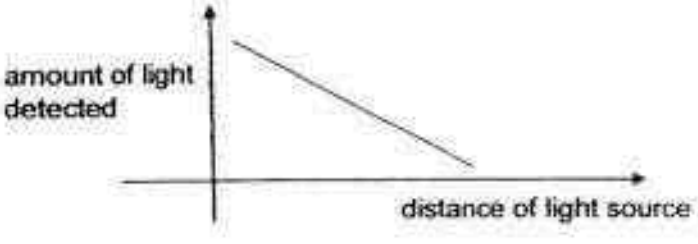
(2)



(3)



(4)



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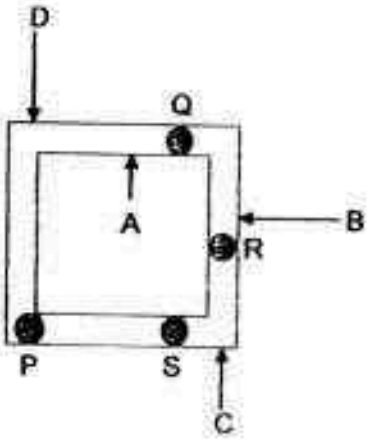
22 The diagram below shows a square metal frame with four drops of wax attached at P, Q, R and S.



Zainal heated the metal frame at one of the points, A, B, C or D, and recorded the time taken for the drops of wax to melt in the table below.

Position of wax	Time taken for wax to melt (seconds)
P	107
Q	24
R	56
S	97

At which point, A, B, C or D, did Zainal heat the metal frame?

(1) A
(2) B
(3) C
(4) D

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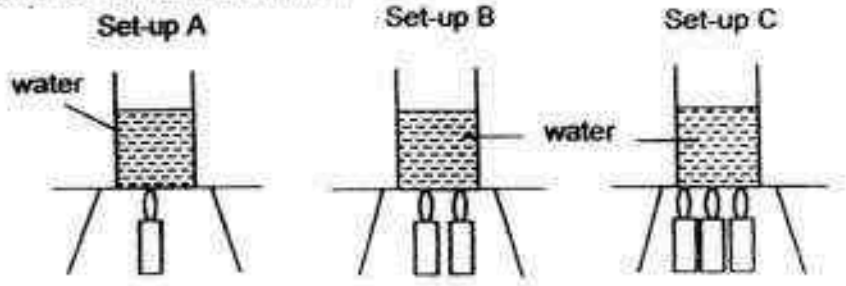
23 Jaspir heated 3 identical beakers containing equal amount of water with different number of identical heat sources as shown below. He heated each beaker of water until it boiled.



At the end of the experiment, he made 3 statements. Which statement(s) was/were correct?

A The final temperature of water in all the 3 set-ups was the same.

B The water in set-up C reached the highest temperature in the shortest time.

C The water in set-up A was of a lower final temperature than the water in set-up B.

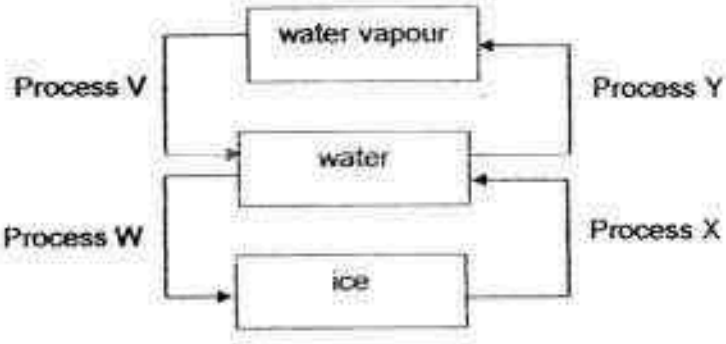
(1) A only

(2) C only

(3) A and B only

(4) B and C only

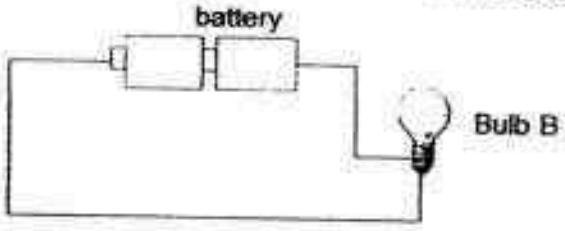
24 Water changes from one state to another through some processes as shown.



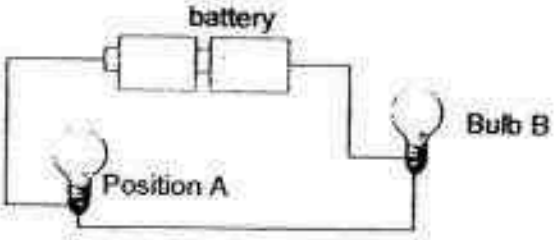
What do processes V, W, X and Y represent?

	Process V	Process W	Process X	Process Y
(1)	condensation	freezing	melting	evaporation
(2)	evaporation	melting	freezing	condensation
(3)	freezing	melting	boiling	evaporation
(4)	melting	evaporation	condensation	boiling

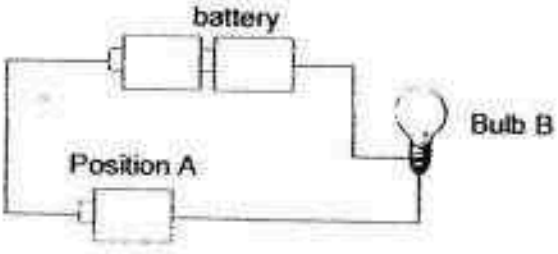
25 Sally set up the circuit as shown below. She observed the brightness of Bulb B.



She connected another bulb at Position A as shown below and observed the brightness of Bulb B.



Then, she removed the bulb at Position A and replaced it with a battery as shown below and made her observations again.



All parts of the circuit were connected properly.

Which of the following shows the correct observation of the brightness of Bulb B when another bulb or battery was connected at Position A respectively?

	Bulb at Position A	Battery at Position A
(1)	dimmer	brighter
(2)	dimmer	remains the same
(3)	remains the same	brighter
(4)	remains the same	remains the same

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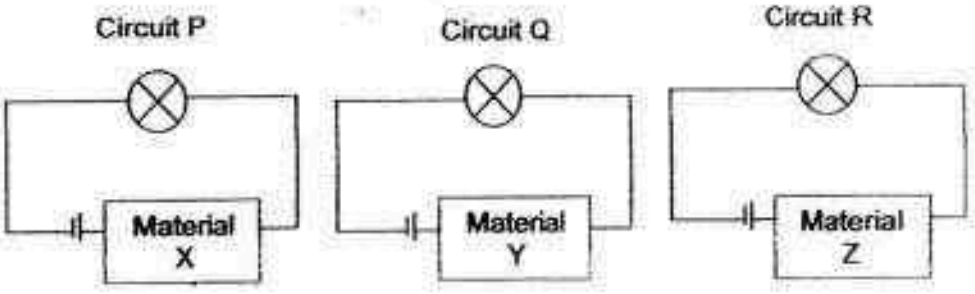
26 Ramesh set up 3 similar circuits P, Q and R with different objects made of materials X, Y and Z as shown below.



Ramesh made the following observations:

- The bulb in circuit R did not light up.
- The bulbs in circuits P and Q lighted up.
- The bulb in circuit Q was brighter than the bulb in circuit P.

What can Ramesh conclude about the materials X, Y and Z?

A Z is a metal.

B Z is a non-conductor of electricity.

C X is a better conductor of electricity than Y.

D Both X and Y are good conductors of electricity.

(1) A and C only

(2) A and D only

(3) B and D only

(4) B, C and D only

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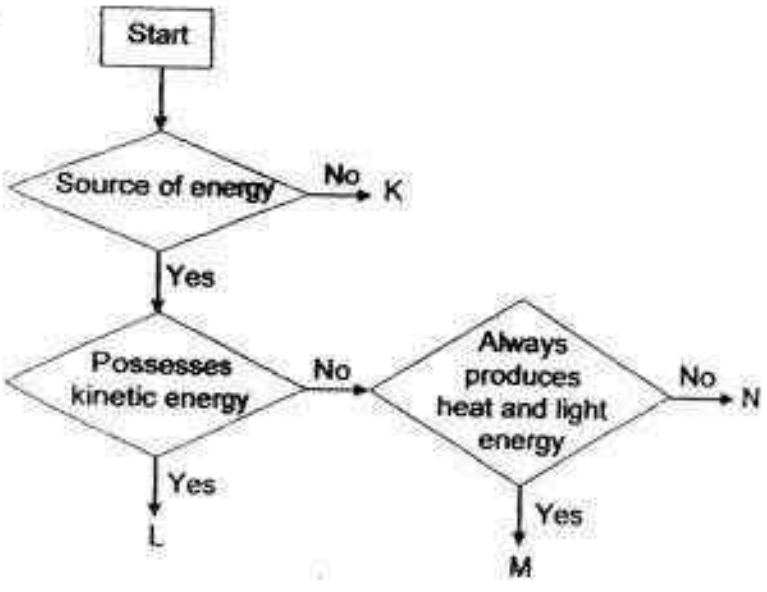
27 Study the flowchart below.



What could L and M represent?

	L	M
(1)	bouncing ball	coal
(2)	running water	sun
(3)	rolling ball	oil
(4)	wind	moon

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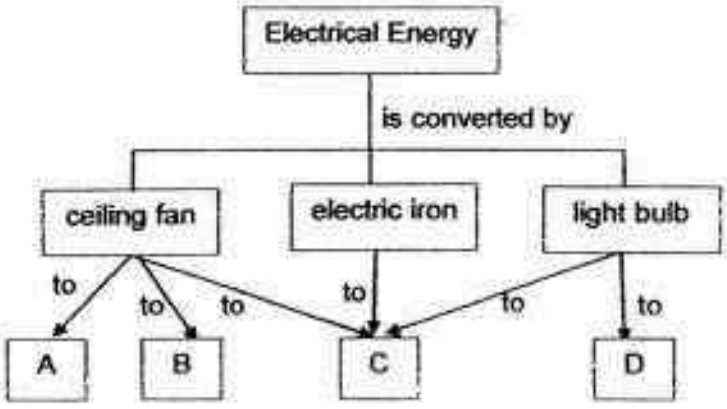
28 The diagram below shows the conversion of electricity to other forms of energy, A, B, C and D, by some household electrical appliances.



Identify the forms of energy A, B, C and D.

	A	B	C	D
(1)	heat	light	sound	kinetic
(2)	kinetic	sound	heat	light
(3)	kinetic	potential	light	heat
(4)	sound	chemical	heat	light

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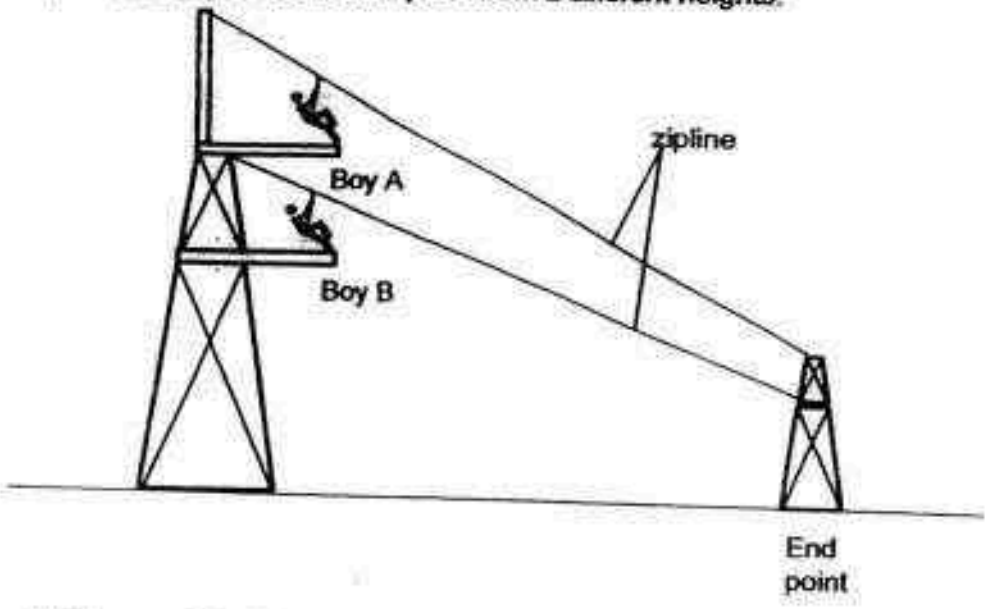
29 The diagram below shows a zipline in an adventure camp. 2 boys, A and B, started to slide down the zipline from 2 different heights.



Which one of the following statements best describes the gravitational force possessed by the 2 boys of similar built and at similar starting point but different height?

(1) Both boys have no gravitational force acting on them.

(2) Boy A has less gravitational force acting on him than Boy B.

(3) Boy A has more gravitational force acting on him than Boy B.

(4) Both boys have the same amount of gravitational force acting on them.

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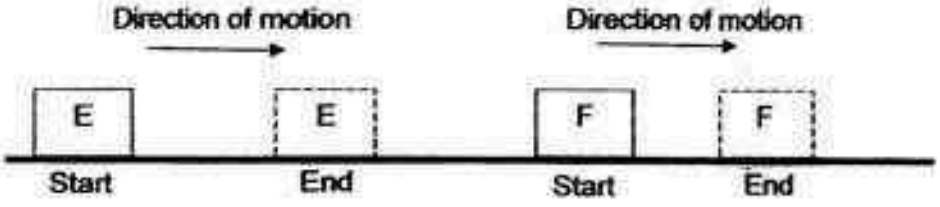
30 The diagram below shows two identical blocks, E and F, of the same material being pushed along the same surface. Block F was observed to travel a shorter distance.



Which of the following statements is/are possible explanations for the observation?

A Block E and Block F are moving on ice.

B Block F has greater mass than Block E.

C A layer of oil was spread below Block E.

D A greater force was used to push Block E.

(1) A only

(2) C and D only

(3) A, B and C only

(4) B, C and D only

End of Booklet A

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CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION
2016
PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____ ( )

Class: Primary 6 - _____

Parent's Signature: _____

Booklet A	60
Booklet B	40
Total	100

14 questions

40 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

This booklet consists of 14 printed pages, excluding the cover page.

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Booklet B (40 marks)

For questions 31 to 44, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (40 marks)

31 Alice opened 2 sweet, juicy and fleshy fruits as shown below.



Fruit A Fruit B

(a) Explain why it is important for seeds to be dispersed far away from the parent plant. [1]

(b) The seeds of fruit A are tiny and not digestible. The seed of fruit B is large and hard. Compare the difference in the process of seed dispersal for the 2 fruits. [1]

(Go on to the next page)

SCORE 2

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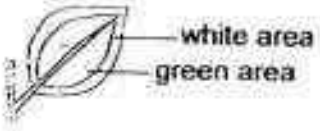
32 Abdul wanted to find out the rate of photosynthesis of a plant. He placed a potted plant in the dark for 48 hours. After that he wrapped three leaves A, B and C using clear plastic bags with different substances as shown below. Then he placed the potted plant in the garden and watered it.

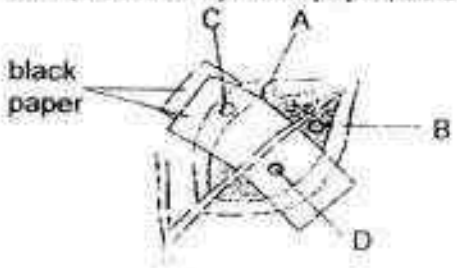


(a) In which leaf will the rate of photosynthesis be the fastest? Give a reason. [1]

In another experiment, Abdul wanted to find out if plants make food during the process of photosynthesis. Diagram 1 below shows a leaf on a plant. At the start of the experiment, there was no food on the leaf.



Next, the leaf was partly covered by black paper, as shown in Diagram 2.



The plant was then put in the sun. After several hours, the leaf was plucked off and the black paper was removed. The leaf was tested for food.

(b) In which of the areas labelled A, B, C and D is food mostly found? Explain. [1]

(Go on to the next page)

SCORE 2

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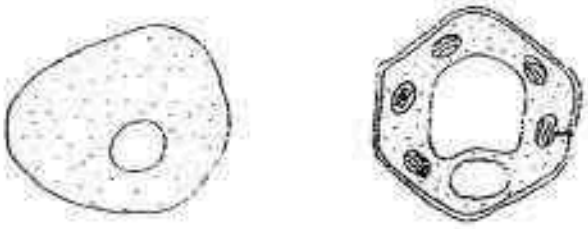
33 Hafiz observed 2 cells as shown below.



cell W cell X

(a) From the above diagram, identify the plant cell and the animal cell. [1]

Plant cell: _____

Animal cell: _____

(b) A certain part in the cytoplasm of the plant cell is not found in the animal cell.

(i) Name this part. [1]

_____

(ii) What is the function of this part? [1]

_____

(iii) Label the part named in (i) in the diagram above. [1]

(Go on to the next page)

SCORE	/4

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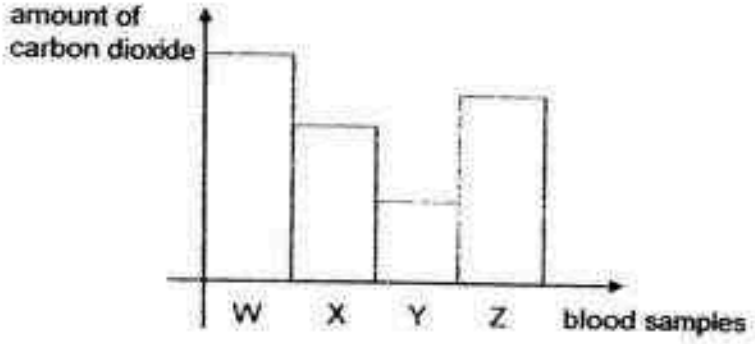
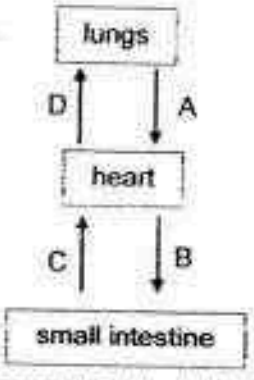
34 The bar graph below shows the amount of carbon dioxide in 4 blood samples taken at the same time from different blood vessels in different parts of the circulatory system.



The following diagram shows the different organs linked by different blood vessels, A, B, C and D.



(a) Fill in, A, B, C and D, correctly in the table below to show which blood vessels, A, B, C and D, are blood samples, W, X, Y and Z taken from. [2]

Blood Sample	Blood vessel
W	
X	
Y	
Z	

(b) What role does the circulatory system play in the digestion of food? [1]

_____

_____

(Go on to the next page)

SCORE	3

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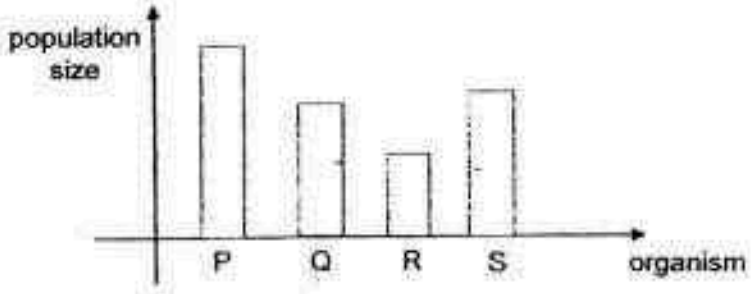
35 A food web consists of 4 organisms, P, Q, R and S. The bar graph below shows the population of the 4 organisms at a particular time.



There is only one food producer in this food web.

(a) Based on the graph above, name the organism that is most likely the food producer. Give a reason. [1]

_____

_____

The box below contains additional information about the 4 organisms.

- ✓ S eats Q.
- ✓ There is one meat-eater, one meat- and plant-eater and one plant-eater.
- ✓ The meat-eater eats two of the other three organisms.
- ✓ R feeds on S and Q.

(b) Using the bar graph and the additional information above, draw a food web for organisms, P, Q, R and S, in the space provided below. [2]

(Go on to the next page)

SCORE	3

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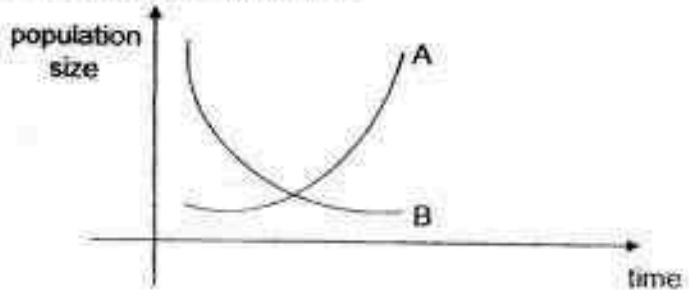
36 The diagram below shows Organism R.



Farmers in area X realised that too many Organism R had been eating their chickens on their farm. They started killing off Organism R.

The graph below shows the changes in the population of Organism R and population of chickens on their farm.



(a) Which line, A or B, shows the changes in the population of Organism R? Explain. [1]

_____

_____

(b) How did the change in the population of Organism R affect the population of chicken? Give a possible reason for the change. [2]

_____

_____

_____

_____

(Go on to the next page)

SCORE 3

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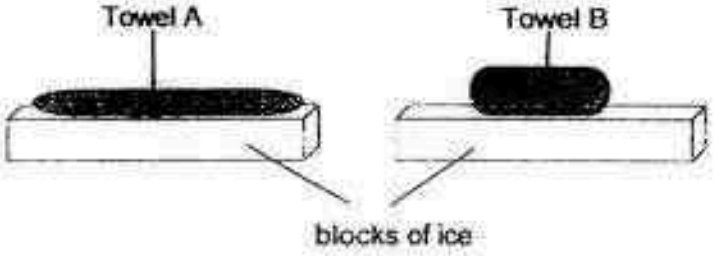
37 Jane set up an experiment as shown below to find out about heat loss. 2 similar towels, A and B, were heated to a temperature of 50°C and placed on 2 similar blocks of ice. Towel B was folded before being placed on the block of ice. The amount of time taken for the towels to reach a temperature of 30°C was noted down.



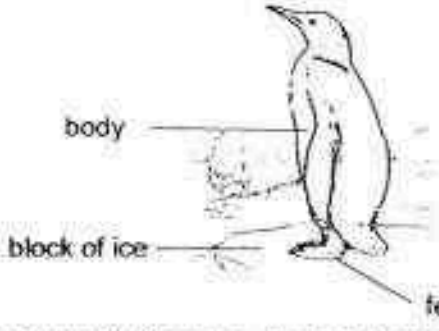
(a) Which towel took a shorter time to reach a temperature of 30°C? Explain. [1]

_____

_____

_____

The diagram below shows a penguin standing on a block of ice.



(b) Penguins do not usually lie down. Most of the time, they stand on their feet on the cold ice. Why does a penguin spend more time standing on its two feet? [1]

_____

_____

(Go on to the next page)

SCORE	2

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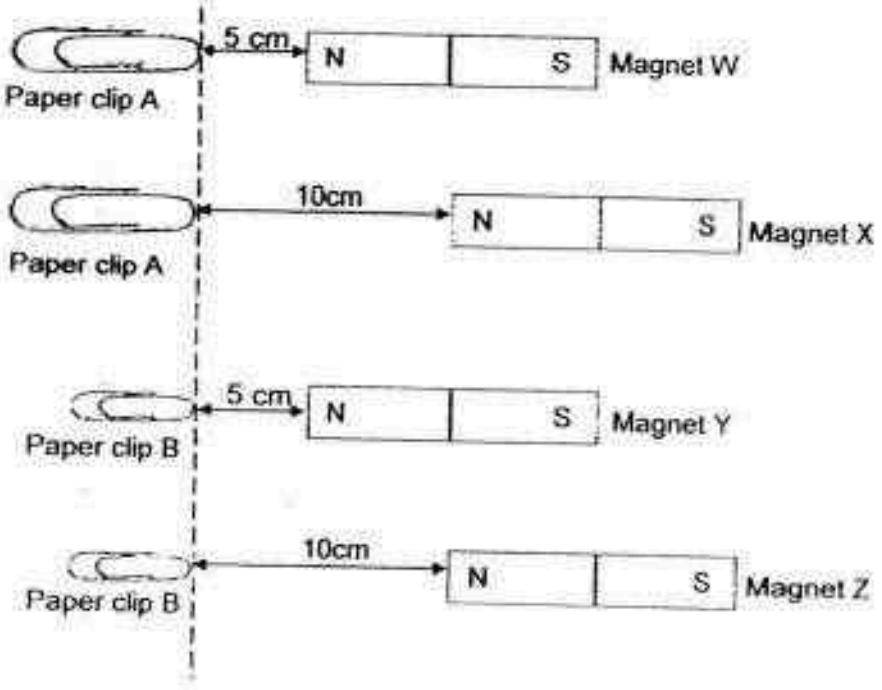
38 Khalid set up an experiment to find out the strengths of magnets W, X, Y and Z. The diagram below shows the greatest distance at which the magnets will attract paper clips A and B. Paper clip A is twice as heavy as paper clip B.



(a) Khalid wants to compare magnets W and Y to find out which magnet is stronger. What should he do to ensure a fair test? [1]

_____

_____

(b) Explain your answer in (a). [1]

_____

_____

(Go on to the next page)

SCORE	/2

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39 Mrs Lim wants to find out the most suitable material for making a curtain to keep the room dark. She has materials A, B and C. The experiment is conducted in the same room using the same torch. The distance between the torch and the material has been kept the same. The set-up is as shown below.



(a) Besides the size and thickness of material, give one other variable that is needed to be kept constant. [1]

_____

(b) What should she look out for so that she can choose the most suitable material to be made into the curtain? Explain. [1]

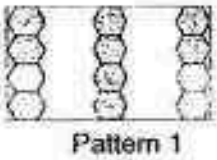
_____

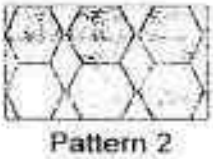
_____

Mrs Lim decides to use a type of plastic window film that can be pasted on windows to block out light in a room.



The clear plastic window film comes with 2 different patterns as shown below. Both patterns have the same colour.


Pattern 1


Pattern 2

(c) Which pattern (Pattern 1 or 2) will be more suitable for pasting on the windows to keep Mrs Lim's room shady? Explain. [1]

_____

_____

(Go on to the next page)

SCORE	3

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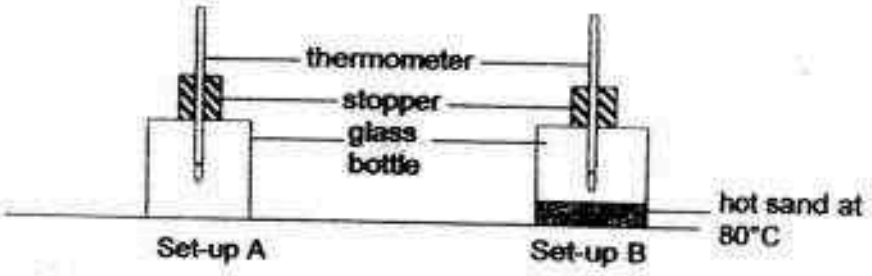
40 Rick recorded the temperature of air in a glass bottle in set-up A as shown below. Then he heated some sand and poured them into the bottle. After 15 minutes, he recorded the temperature of air in the bottle as shown in set-up B.



The results are as shown in the table below.

Temperature of air in the glass bottle	
Set-up A	Set-up B
30°C	40°C

(a) Explain why there was an increase in the temperature of the air in Set-up B. [1]

(b) Set-up A is a control. What is the purpose of a control? [1]

In another experiment, Rick carried out the same experiment with metal bottles. The table below shows the new results.

Temperature of air in the metal bottle	
Set-up A	Set-up B
30°C	33°C

(c) Explain why the temperature was lower in Set-up B when the metal bottles were used. [1]

(Go on to the next page)

SCORE 3

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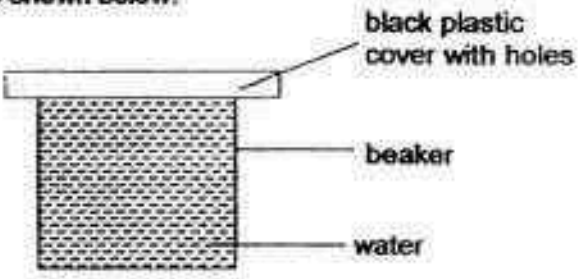
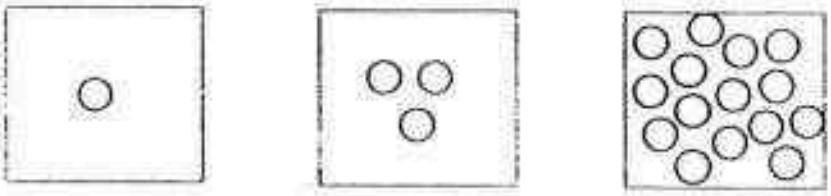
41 Rizal wanted to find out how one factor affects the rate of evaporation. He prepared a set-up as shown below.



He had 3 similar black plastic covers with different number of holes as shown below. Each cover was placed over a beaker filled with water of the same temperature. The beakers were placed in the same room.



Cover A Cover B Cover C

(a) Which factor of evaporation is tested by Rizal in the above set-up? [1]

_____

(b) What needs to be measured to determine the rate of evaporation? [1]

_____

(c) In which of the above set-up (Cover A, B or C) will the rate of evaporation be the greatest? Explain. [1]

_____

_____

(d) Why must the temperature of water be the same? [1]

_____

_____

(Go on to the next page)

SCORE	4

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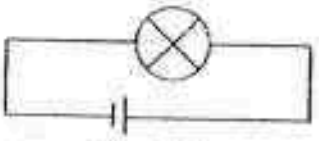
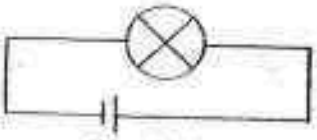
42 Dora wanted to find out how the arrangement of bulbs affects the brightness of the bulbs in a closed circuit. Her set up was as shown below at the start of the experiment. The bulbs and batteries used were similar.



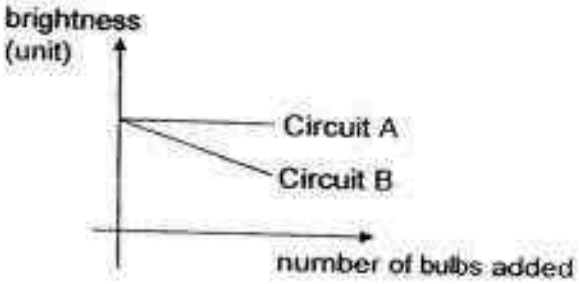
Circuit A



Circuit B

Then she added one bulb to each circuit and observed the brightness of each bulb in each circuit. After that, she added another bulb to each circuit again. She observed the brightness of each bulb again.

The results are as shown below.



(a) Give a possible explanation for the difference in the brightness of bulbs as shown in the graph. [2]

(b) Based on your answer in (a), what will happen to the rest of the bulbs in each circuit when one bulb in each circuit blows? [1]

(Go on to the next page)

SCORE 3

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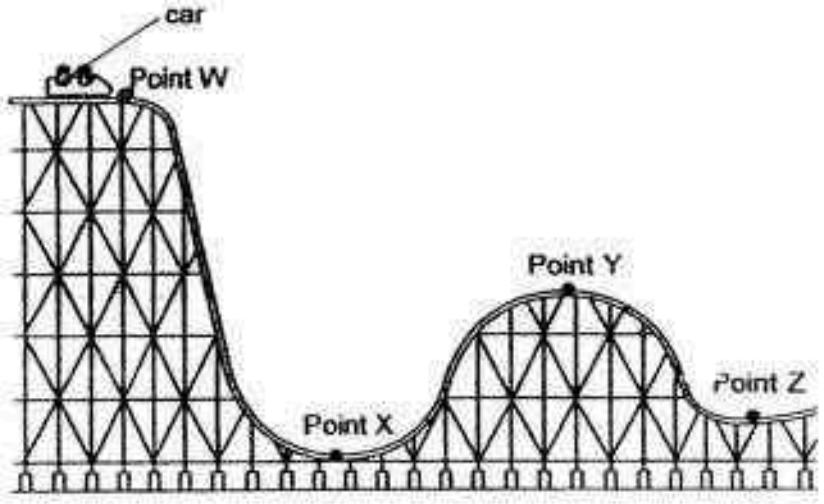
43 The diagram below shows a car on a roller coaster that starts at point W and stops at point Z.



(a) Point W is the highest point on the roller coaster. Explain in terms of energy why the car must be at point W. [1]

_____

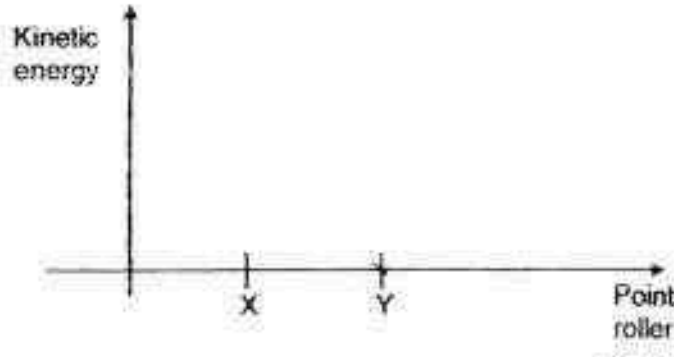
_____

(b) Explain why eventually, without applying any brakes, the car on the roller coaster will come to a stop at point Z. [1]

_____

_____

(c) In the graph below, draw a line graph to show the conversion of kinetic energy of the car as it goes through from points X to Y in the roller coaster ride. [1]



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SCORE	3

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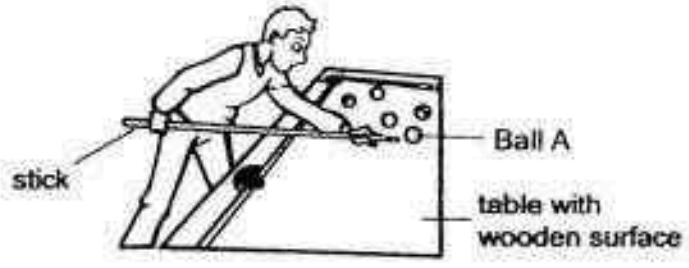
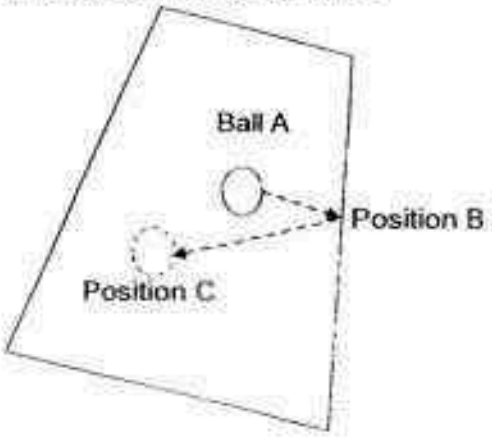
44 Sam pushes a stick gently to strike Ball A.



The diagram below shows the path taken by Ball A.



(a) State the force(s) that is/are acting on Ball A as it moves from B to C [1]

_____

(b) What can Sam do to the table if he wants Ball A to move further than Position C using the same amount of force to push the stick? [1]

_____

_____

(c) Explain your answer in (b). [1]

_____

_____

End of Booklet B

SCORE	/ 3

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EXAM PAPER 2016

SCHOOL : CATHOLIC HIGH SCHOOL
SUBJECT : PRIMARY 6 SCIENCE

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	3	3	2	4	1	1	4	3	2
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
3	2	2	1	4	3	1	3	3	3
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
4	1	3	1	-	3	2	2	4	2

Booklet B

Q31 (a) To reduce/avoid overcrowding so that plants will not compete for sunlight, nutrients, space and water with other plants.

(b) Seeds of fruit A are tiny and so can be swallowed and the seeds are not digestible so can passed out through droppings by the animals. Seeds of fruit B are too large and hard to be swallowed and are spitted by the animals.

Q32 (a) Leaf C. It is the only leaf among the three leaves that have access to carbon dioxide that is needed for photosynthesis.

(b) Area B. Area B is exposed to most amount of sunlight. Since area B is green and contains chlorophyll which can trap most amount of sunlight to make most food for the plant.

Q33 (a) Cell X
Cell W

(b)(i) Chloroplasts

(ii) Chloroplast contains chlorophyll that trap sunlight to make food.

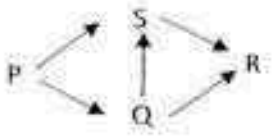
Q34 (a)

D
B
A
C

(b) It transports digested food to other parts of the body.

Q35 (a) Organism P. It has the greatest population size.

(b)



Q36 (a) Line B. Organism R were killed leaving no predators for chickens, thus chickens would increase and organism R would decrease.

(b) When the population size of R is decreasing, the population of chickens will increase. Organism R are eating the chickens so when there are less of organism R, more chickens can reproduce and increase in population size.

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Q37 (a) Towel A. It has a larger surface area exposed to the block of ice, thus losing heat quicker than towel B.

(b) Standing on its two feet reduces body contact with the ice. Less area of the penguin's body is touching the ice, so less body heat is lost

Q38 (a) He should replace paper clip B with paper clip A.

(b) This is to ensure any difference in the distance at which the magnet attracts the paper clips is due only to the strength of the magnets and not the mass of paper clips.

Q39 (a) The distance between the screen and the material.

(b) She should look out for the darkness shadow. The darkest shadow cast is the most suitable as it blocks out the most light.

(c) Pattern 2. The pattern on Pattern 2 blocks out more light than Pattern 1 as the pattern cover a large area.

Q40 (a) The heat travelled/flow from the hot sand to the air in the bottle.

(b) To compare and confirm that any change in the temperature of air in the bottle is only due to the heat loss from the hot sand and not any others variables.

(c) Metal is a better conductor of heat so more heat is lost to the surrounding air faster outside the bottle.

Q41 (a) Area of exposed surface of water.

(b) The amount of water left in the beaker after a stated period of time.

(c) C. C has the most number of holes on the cover so it has the largest exposed surface area, thus, most amount of water evaporated.

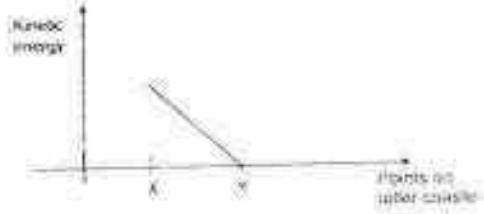
(d) To ensure that the difference in the amount of water left is only affected by the exposed surface of the water and not the temperature of water.

Q42 (a) Given the same number of batteries in A, the brightness of the bulbs is the same so bulbs are arranged in parallel while in B, the brightness of bulbs decreases, so the bulbs are arranged in series.

(b) The rest of the bulbs in A will still light up while all the bulbs in B will not light up.

Q43 (a) W is the highest point so there is the greatest amount of gravitational potential energy that can be converted to greatest amount of kinetic energy for the car to reach point Z.

(b) The kinetic energy in the car has been converted to heat energy and sound energy.

(c) 

Q44 (a) Gravitational force and frictional force.

(b) Apply lubricant like oil.

(c) With a layer of oil, the table is smoother as the oil reduced the frictional force between ball A and the surface of the table.

END

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15

RED SWASTIKA SCHOOL

SCIENCE
2016 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 10 May 2016

BOOKLET A

Total time for Booklets A & B: 1h 45 min

Booklet A: 30 questions (60 marks)

Note:

1. Do not open the booklet until you are told to do so.
2. Read carefully the instructions given at the beginning of each part of the booklet.
3. Do not waste time. If the question is too difficult for you, go on to the next question.
4. Check your answers thoroughly and make sure you attempt every question.
5. In this booklet, you should have the following:
   a. Page 1 to Page 18
   b. Questions 1 to 30

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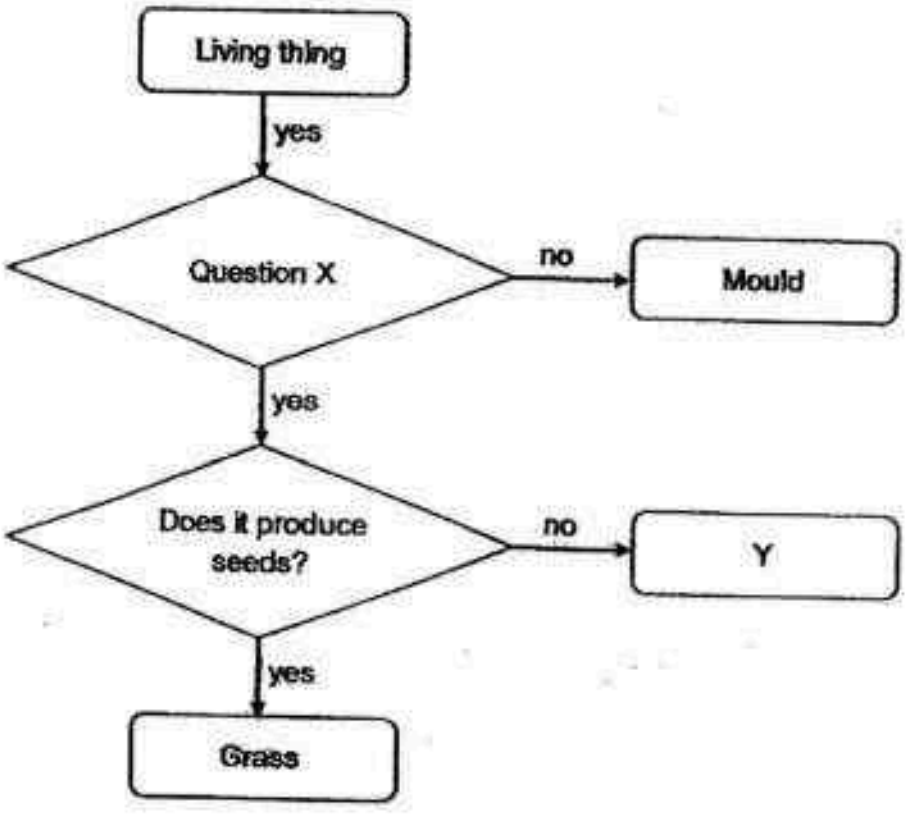
Section A

For Questions 1 to 30, choose the most suitable answer and shade its number in the OAS provided.

1. What is generally common between mammals and fish?

   (1) They have no legs.
   (2) They live only on land.
   (3) They obtain food from other living things.
   (4) They have the same type of body covering.

2. Study the chart below.



Which one of the following is correct?

	Question X	Y
(1)	Does it make its own food?	Hibiscus
(2)	Does it reproduce through spores?	Mushroom
(3)	Does it make its own food?	Moss
(4)	Does it reproduce through spores?	Toadstool

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3. The characteristics of three organisms, D, E and F, are given in the table below.

Type of Organism	D	E	F
Has a four-stage life cycle	Yes	No	No
Can move from one place to another freely	Yes	Yes	No
Depends on other organisms for food	Yes	Yes	No

From the information given, which of the following organisms are correctly represented by organisms D, E and F?

	Mosquito	Angsana tree	Cockroach
(1)	D	E	F
(2)	E	F	D
(3)	F	D	E
(4)	D	F	E

4. For a seed to eventually grow into a fruit, which process(es) must take place?

(1) fertilisation only
(2) germination only
(3) pollination and fertilisation only
(4) germination, pollination and fertilisation

5. Michael carried out an experiment with some green bean seedlings. He placed four identical pots with different number of seedlings in the garden. The same amount of water was provided for the seedlings. The results were shown in the table below.

Pot	No. of seedlings	Amount of water (ml)	Average height of seedlings after 5 days (cm)
A	3	20	5
B	30	20	14
C	8	20	6
D	12	20	9

He wanted to find out if _____.

(1) overcrowding affects the growth of the seedlings
(2) the size of the pots affects the growth of the seedlings
(3) the amount of water affects the growth of the seedlings
(4) the amount of water affects the germination of the seedlings

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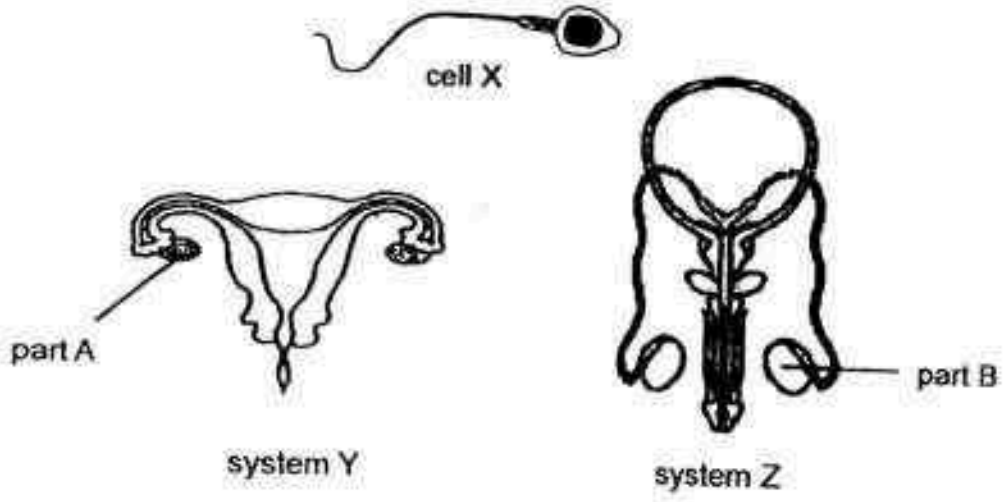
6. The diagrams below show cell X and the two systems, Y and Z, which are involved in the human reproduction process.



Which of the following statement(s) is/are true?

A: During mating, many cells X are first released from part A.
B: The fertilised egg will develop in part A.
C: Cell X is produced in part B.
D: Fertilisation takes place in part B.

(1) C only
(2) A and C only
(3) B and C only
(4) A, B and D only

7. The male frog X is bright blue and lives on land in the rainforests. It is considered a poisonous animal.

What is/are the possible advantage(s) of the male frog X's skin colour to its survival?

A: Attract female frog X.
B: Warn its prey of its presence.
C: Warn its predator against eating it.

(1) A only
(2) B only
(3) A and B only
(4) A and C only

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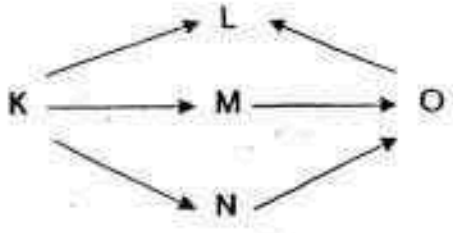
8. Gopal observed and recorded the organisms found in the school field. The results are shown in the table below.

Organisms	
Ant	Papaya tree
Bee	Earthworm
Grass	Grasshopper
Butterfly	Bird's nest fern
Millipede	Sparrow

Based on the table above, how many populations of producers and consumers are present in the school field?

	Number of populations of producers	Number of populations of consumers
(1)	2	7
(2)	2	8
(3)	3	7
(4)	3	6

9. Study the food web carefully.



The population of O decreases suddenly because of a disease. Which of the following statement(s) correctly describe(s) how this will affect the other populations at first?

A: The population of L will increase.
B: The population of M will increase.
C: The population of N will decrease.

(1) B only
(2) A and B only
(3) A and C only
(4) B and C only

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10. Air pumps are used to increase the amount of dissolved oxygen in a fish tank. Stacia wants to investigate how the amount of dissolved oxygen in the water affects the survival of fish.

She uses three similar fish tanks to conduct the experiment.

Which of the following should be kept constant in each fish tank for a fair test?

A: Number of fish
B: Species of fish
C: Amount of water
D: Number of air pumps

(1) D only
(2) A and D only
(3) A, B and C only
(4) A, B and D only

11. Which of the following statements about photosynthesis is/are correct?

A: Plant has chlorophyll to trap sunlight for it to make food.
B: Plant gives out carbon dioxide during photosynthesis.
C: Plant needs water during photosynthesis.

(1) A only
(2) B only
(3) A and C only
(4) A, B and C

12. Vibha put a few drops of iodine solution on some food items and recorded her observations in the table shown.

Food item	Colour of iodine on the food item
X	brown
Y	dark blue
Z	dark blue

Which of the following is correct?

	X	Y	Z
(1)	fish	bread	chicken
(2)	fish	potato	rice
(3)	rice	chicken	potato
(4)	rice	potato	bread

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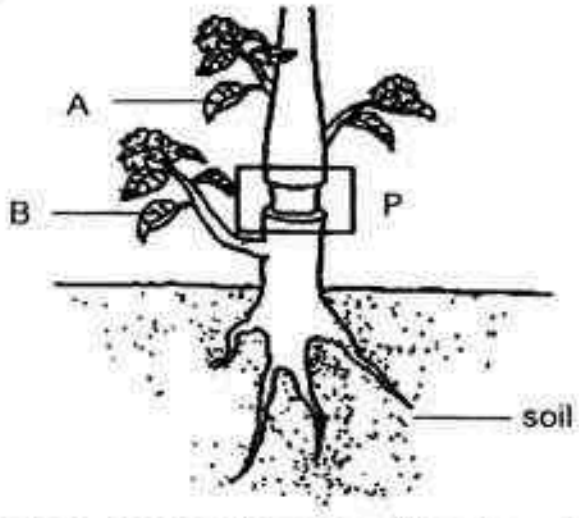
13 Ahmad covered a plant in his garden with a cardboard box for two days before conducting an experiment.



After removing the box, he cut a ring around the stem at P. Three days later, he conducted a starch test on leaves A and B.

He wrote down the results in the table below.

	Colour of iodine
Leaf A	brown
Leaf B	dark blue

Which of the following statements could explain Ahmad's test results?

(1) There was no water in the soil.
(2) There was a lack of sunlight during the three days after the ring was cut.
(3) He had cut the food-carrying tube only.
(4) He had cut both the food-carrying and water-carrying tubes.

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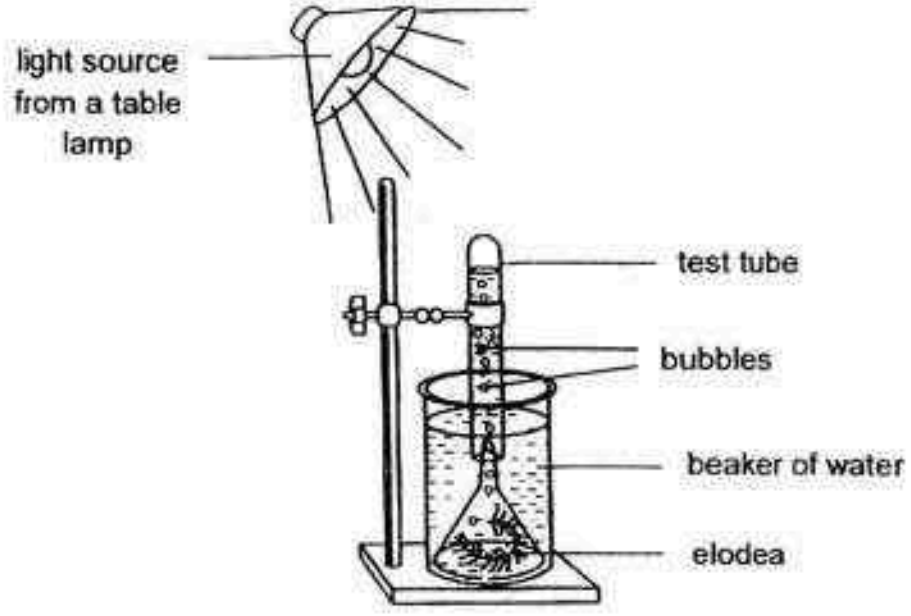
14. Ali created the set-up shown below.

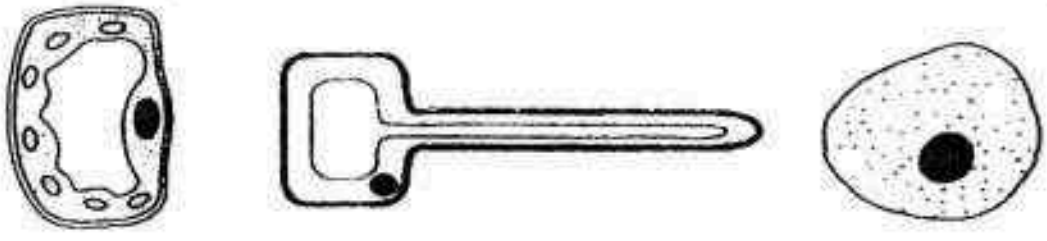


He noticed that when the light source was positioned nearer to the beaker of water, more bubbles could be seen in the test tube. These bubbles were produced by the elodea.

Which of the following best explains how the bubbles were produced?

(1) The light source caused the water to boil.
(2) The evaporation of water into water vapour.
(3) The presence of light caused photosynthesis to take place.
(4) The absorption of mineral salt present in the water by the elodea.

15. Study the three different cells shown below.



Which of the following statements is true about all the three cells?

(1) They are plant cells.
(2) They have chloroplasts.
(3) Every cell has nucleus and cell wall.
(4) Every cell has nucleus and cell membrane.

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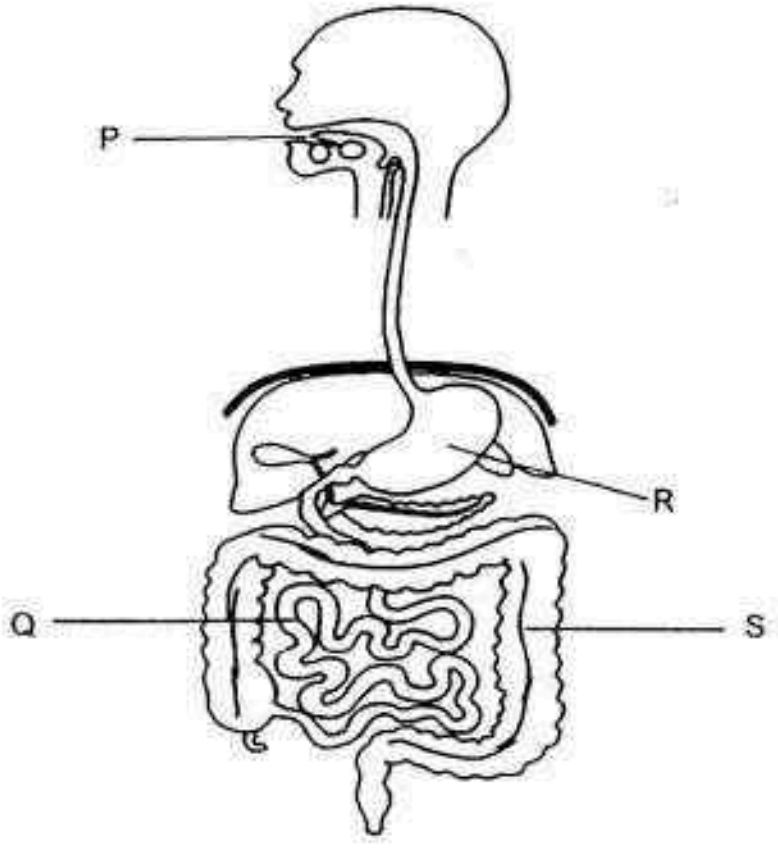
16. The diagram below shows the human digestive system.



Students A, B and C each made a statement about the parts of the digestive system.

A : Digestion is completed here.

B : Digestive juices are added here.

C : Water is absorbed from the undigested food here.

Which of the parts P, Q, R and S match correctly to the statements made by students A, B and C?

	Student A	Student B	Student C
(1)	Q	P, Q	R
(2)	Q	P, R, Q	S
(3)	S	P, R, Q	S
(4)	S	R, Q	P

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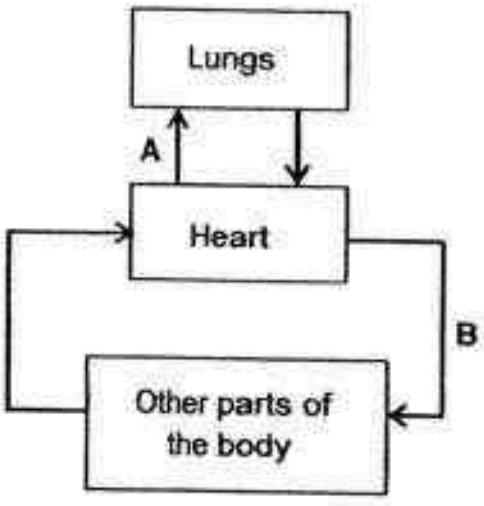
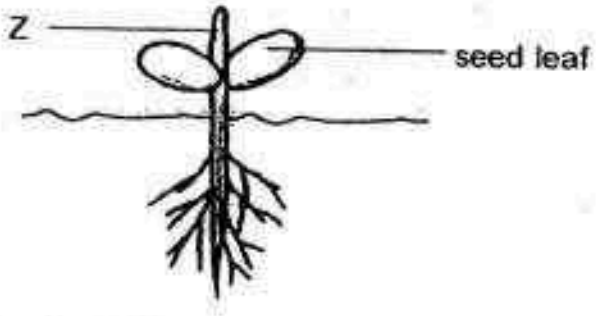
17. The diagram below shows the movement of blood.



Which one of the following about the blood in blood vessels A and B is correct?

	A	B
(1)	Poor in oxygen	Poor in carbon dioxide
(2)	Poor in oxygen	Rich in carbon dioxide
(3)	Rich in oxygen	Rich in carbon dioxide
(4)	Rich in oxygen	Poor in carbon dioxide

18. The diagram shows a seed growing into a young plant.



What is the direction in which water and food are being transported to Z?

	Direction for transport of	
	water	**food**
(1)	upwards	downwards
(2)	upwards	upwards
(3)	downwards	downwards
(4)	downwards	upwards

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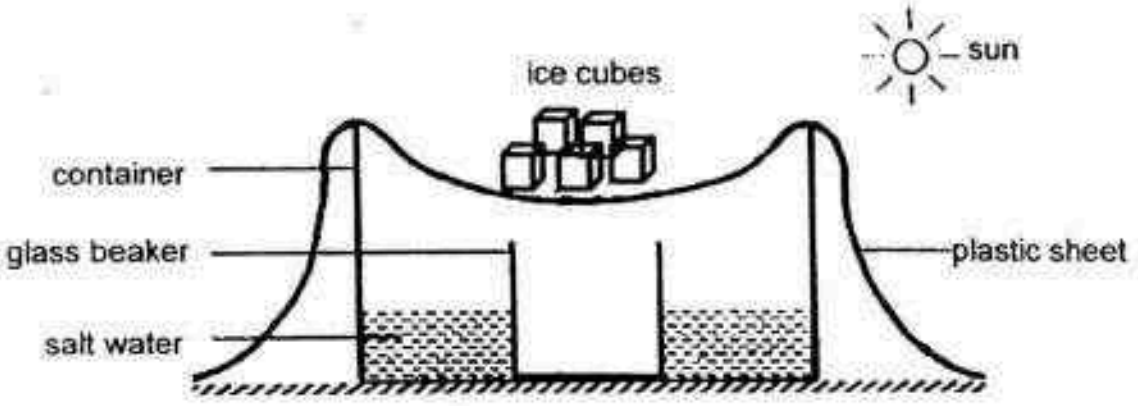
Please use the information below to answer questions 19 and 20.

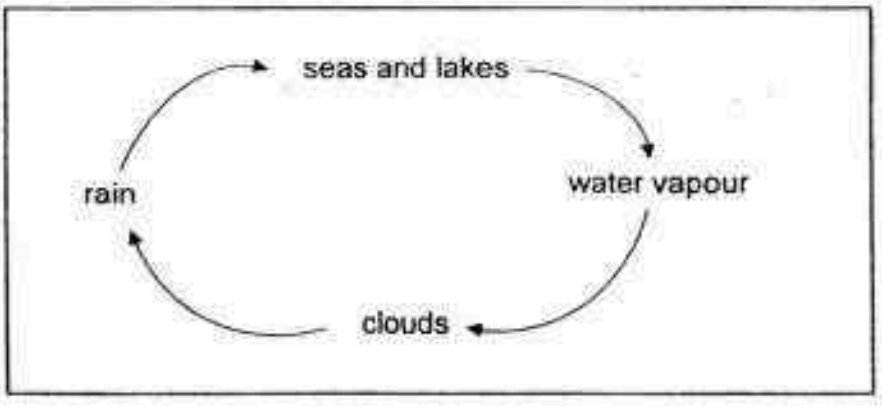
Raja created a model of the water cycle in the experiment as shown below. He put a glass beaker in a container of water and covered it with a plastic sheet. Next, he put some ice cubes on the plastic sheet.



19. What was the purpose of the ice cubes?

(1) To cool down the plastic sheet so that water vapour forms in the container.
(2) To cool down the plastic sheet so that water vapour condenses under the sheet.
(3) To cool down the container so that more salt water evaporates
(4) To cool down the salt water so that more water evaporates.

20. Which part of the water cycle does the salt water in the container represent?



(1) seas and lakes
(2) water vapour
(3) clouds
(4) rain

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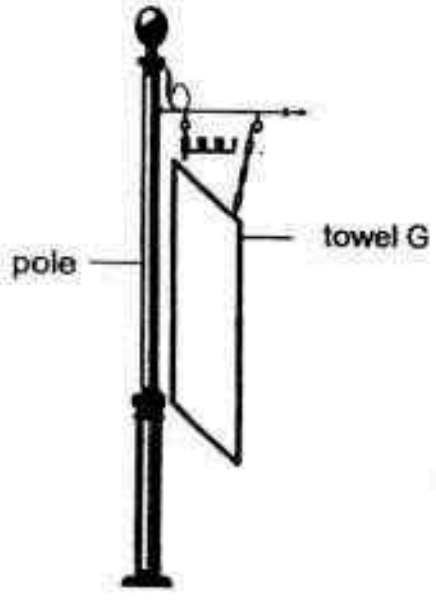
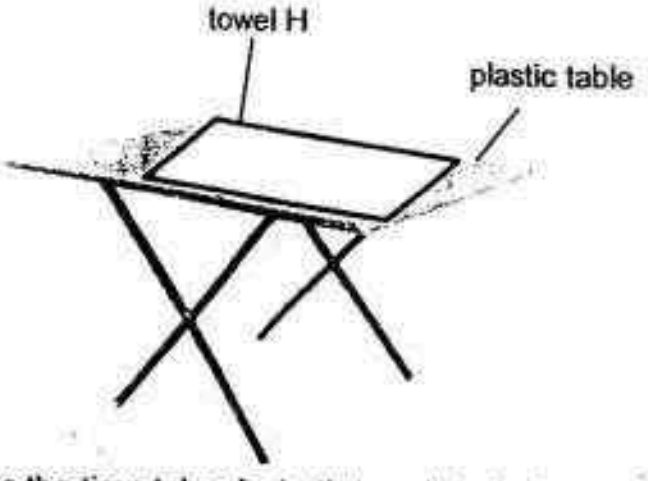
21. Calvin has two identical towels, G and H, which are each soaked in one litre of water. He tries to dry them using different methods as shown below. The two towels are placed in his garden. Towel G is hung on a pole and towel H is laid on a plastic table.





Which of the following best describes the time taken for both towels to dry?

A: Towel G took a shorter time. The temperature was higher for the water to evaporate.
B: Towel G took a shorter time. There was more exposed surface area for the water to evaporate.
C: Towel H took a shorter time. The temperature was lower for the water to evaporate.
D: Towel H took a longer time. There was less exposed surface area for the water to evaporate.

(1) A and D only
(2) B and C only
(3) A and C only
(4) B and D only

22. Which one of the following are example(s) of energy conversion?

A: Walking to the classroom
B: Switching on a torch
C: Using petrol to drive a car

(1) A and B
(2) B and C
(3) A and C
(4) A, B and C

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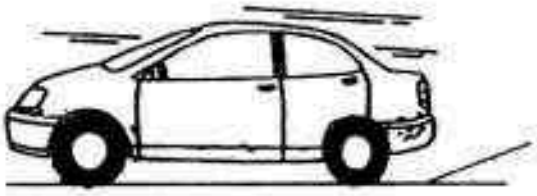
23. Study the diagrams shown below carefully. In some countries which snow during winter, drivers may fit snow chains on the tyres of car wheels. This helps them to drive safer on roads covered with snow.





snow chain fitted on the tyres

Average speed of car with snow chains	Average speed of car without snow chains
40km/h	70km/h

Which of the following best explain about the use of snow chains during the winter season?

A: The chains reduce friction between the wheel and the road surface.

B: The chains increase friction between the wheel and the road surface.

C: The chains cause the car to move at a slower speed.

D: The chains cause the car to move at a faster speed.

(1) A and C only
(2) B and C only
(3) A and D only
(4) B and D only

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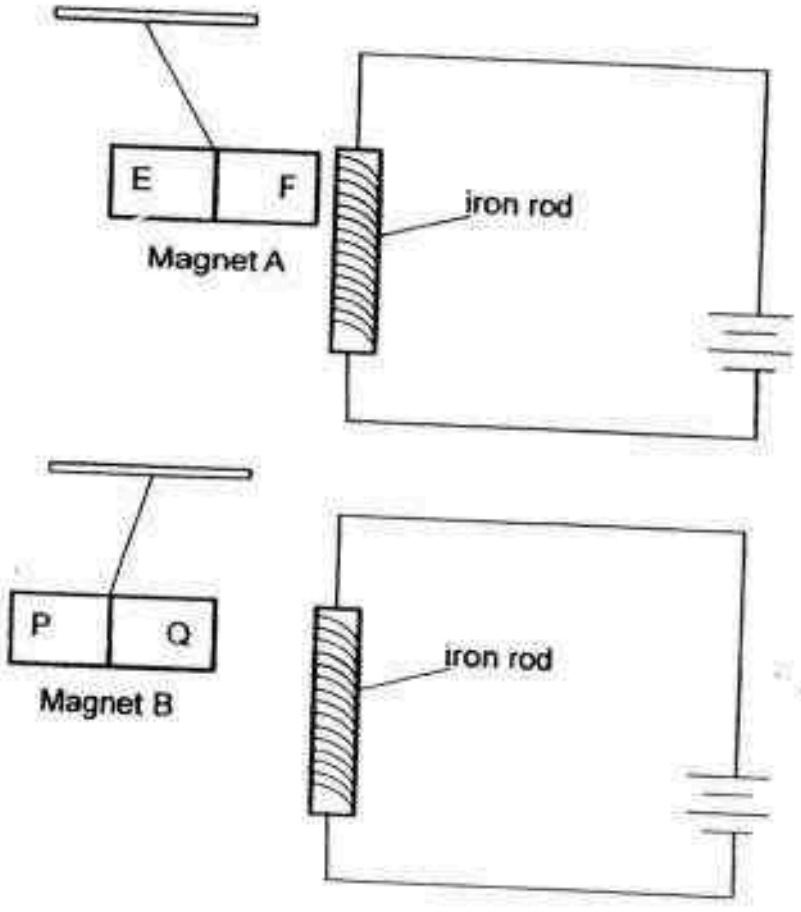
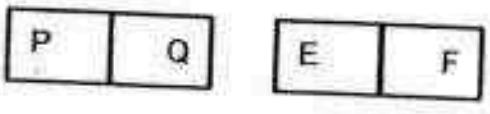
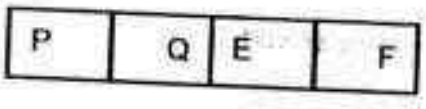
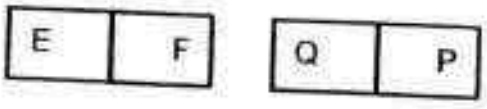
24. An iron rod is connected to a closed circuit. The diagrams below show the reaction when magnets A and B are held close to the iron rod.

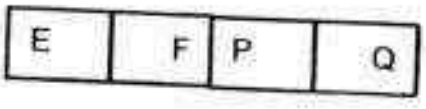


What will be the most likely reaction if magnet A and B are placed together?

(1) 

(2) 

(3) 

(4) 

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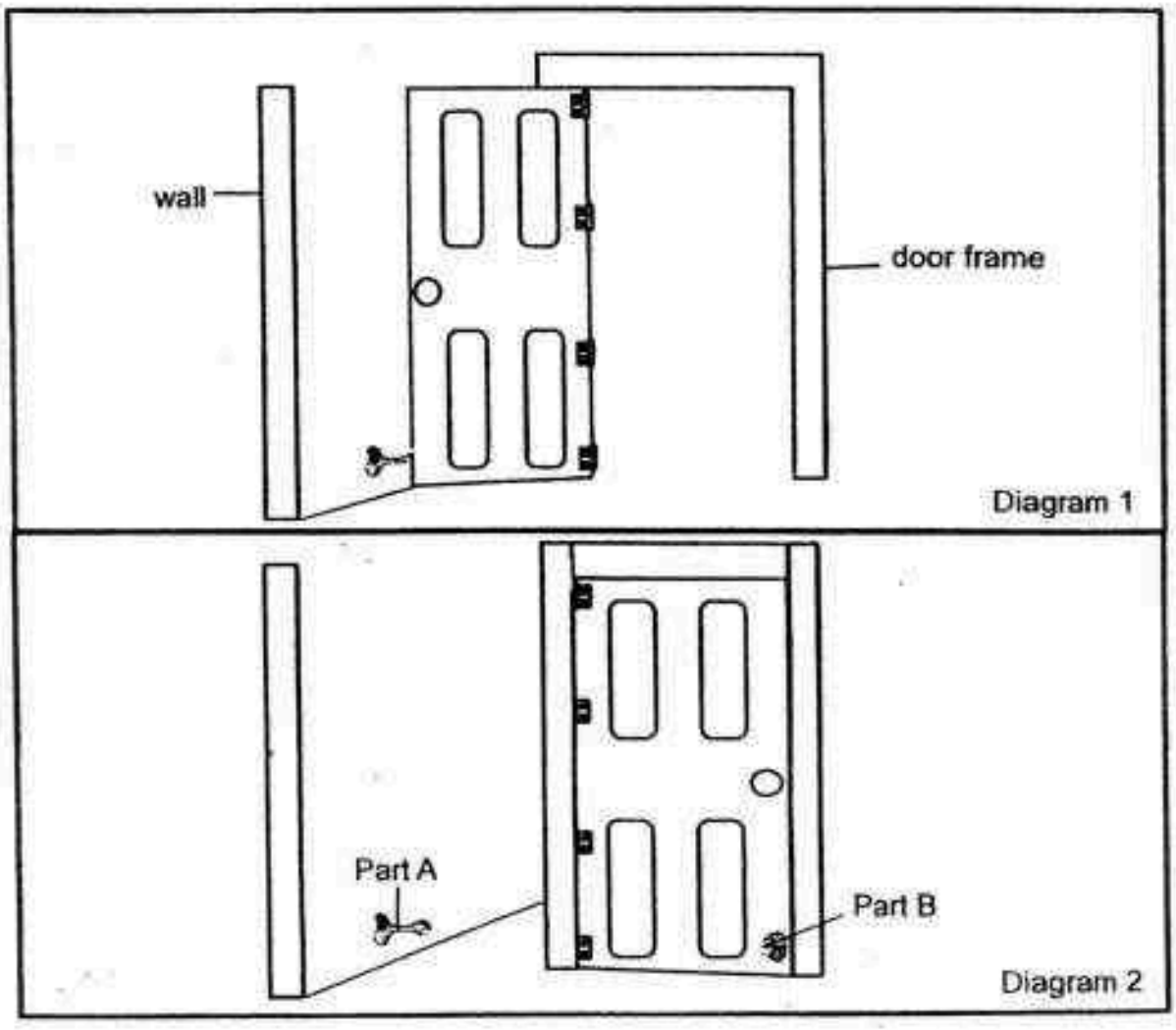
25. The diagrams below show the interaction between parts A and B of a magnetic door stopper. In diagram 1, the magnetic door stopper helps to keep the door open without it closing accidentally.



Based on the diagrams shown above, parts A and B have to interact to enable this magnetic door stopper to work.

Which of the following best represents parts A and B?

	Part A	Part B
(1)	iron	copper
(2)	aluminium	steel
(3)	aluminium	plastic
(4)	iron	steel

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26. Aminah tested the hardness of four materials, A, B, C and D, by scratching them using the sharp ends of a plastic rod and a wooden rod.

She checked for the presence of scratch marks on the materials and recorded her observations in the table below.

Rod used to scratch material	Scratch marks observed on material?			
	A	B	C	D
plastic	yes	no	no	no
wood	yes	no	yes	no

Which one of the following statements is correct?

(1) A and B are harder than plastic.
(2) B and D are harder than plastic.
(3) A and C are harder than wood.
(4) C and D are harder than wood.

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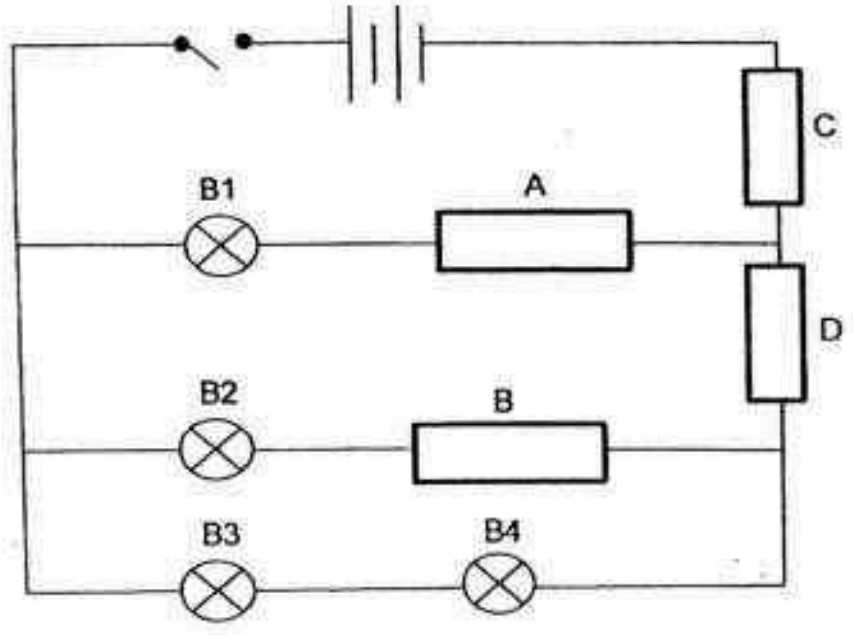
27. Yuzal set up an electrical circuit as shown below. A, B, C and D are objects made of different materials and placed in the circuit. When the switch is closed, certain bulbs lighted up.



When the switch is closed, he recorded the bulbs that lighted up in the table.

Bulb	Did the bulb light up?
B1	Yes
B2	No
B3	Yes
B4	Yes

Which one of the following correctly shows what is represented in Yuzal's investigation?

	A	B	C	D
(1)	conductor	insulator	conductor	conductor
(2)	conductor	conductor	conductor	insulator
(3)	insulator	insulator	conductor	conductor
(4)	conductor	insulator	insulator	conductor

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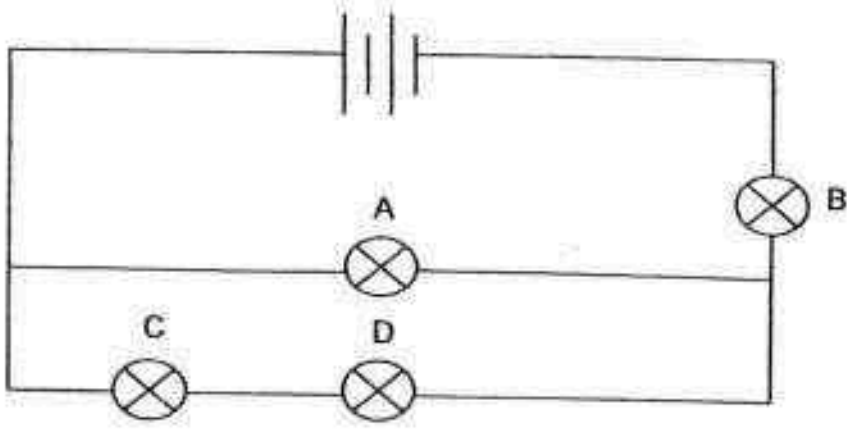
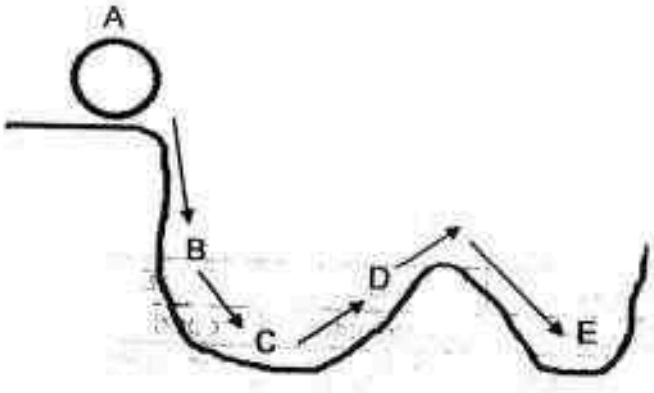
28. Study the circuit diagram below carefully.



If one bulb fuses and the rest of the bulbs remain lighted up, which bulb fused?

(1) A
(2) B
(3) C
(4) D

29. A ball was released from point A and it moved along the points to point E where it stopped as shown below.



Which of the following is correct?

(1) The ball had less kinetic energy at B than at A.
(2) The ball had more kinetic energy at C than at D.
(3) All the kinetic energy of the ball was converted to gravitational potential energy as the ball rolled to D.
(4) The kinetic energy of the ball was converted to only sound energy at C.

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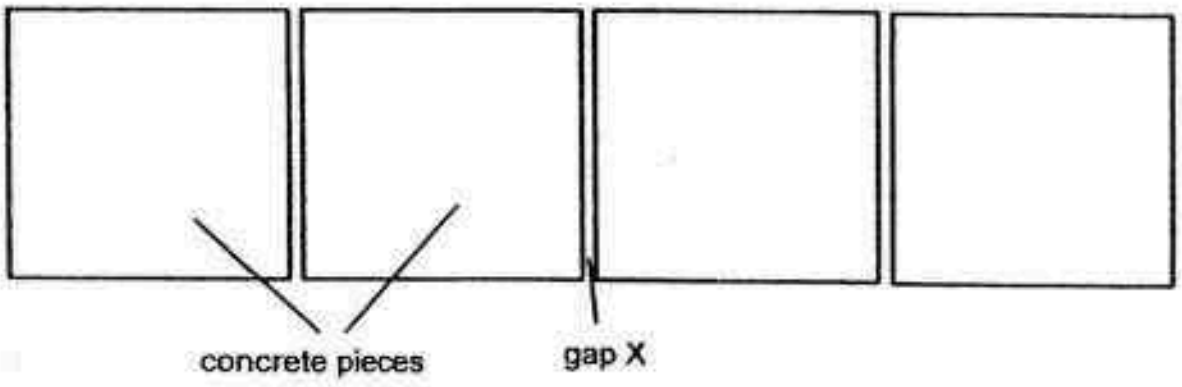
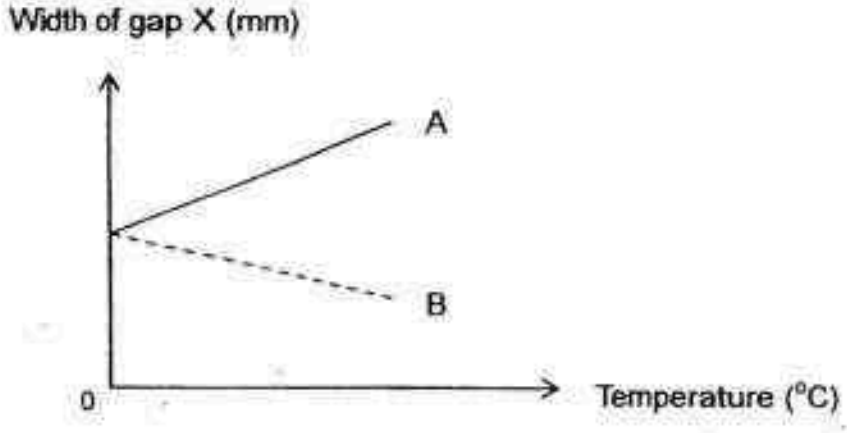
30. Mr Tan was walking along the pavement when he observed narrow gaps between the pieces of concrete on the pavement.

Top view of pavement



He plotted two graphs to show the changes in the width of gap X as the temperature changes.



Which of the following shows the correct graph and explanation on the changes in the width of gap X as the day becomes warmer?

	Graph	Explanation
(1)	A	The concrete pieces lost heat and contracted.
(2)	A	The concrete pieces gained heat and expanded.
(3)	B	The concrete pieces lost heat and contracted.
(4)	B	The concrete pieces gained heat and expanded.

End of Section A

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RED SWASTIKA SCHOOL

SCIENCE
2016 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____( )

Class : Primary 6/ _____

Date : 10 May 2016

BOOKLET B

14 Questions
40 Marks

In this booklet, you should have the following:
a. Page 19 to Page 34
b. Questions 31 to 44

MARKS

	OBTAINED	POSSIBLE
BOOKLET A		60
BOOKLET B		40
TOTAL		100

Parent's Signature : _____

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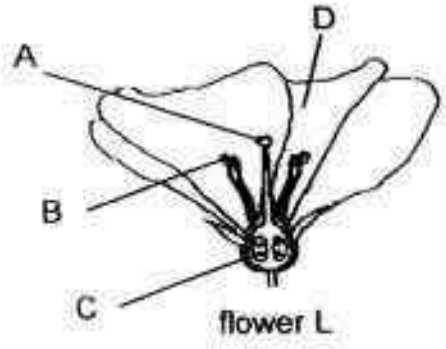
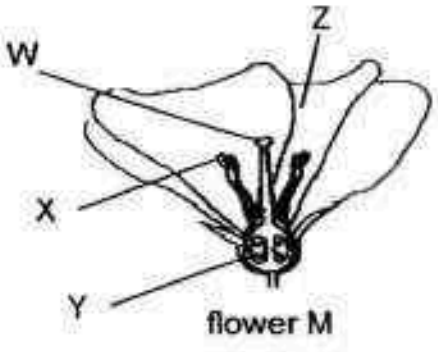
SECTION B
Answer all the questions in the spaces provided.

31. A bee moves from flower L to flower M in search for nectar.



flower L



flower M

When the bee landed on flower M, it unknowingly transferred substance Q from flower L to flower M. Substance Q is needed for flower M to develop into a fruit.

(a) (i) Based on the information above, from which part of flower L (A, B, C or D) was substance Q produced? (1/2m)

_____

(ii) Based on the information above, to which part of flower M (W, X, Y or Z) was substance Q transferred by the bee that could help the flower develop into a fruit? (1/2m)

_____

(b) If flower M develops into a fruit, will the fruit have one seed or a few seeds? Why? (2m)

_____

_____

3

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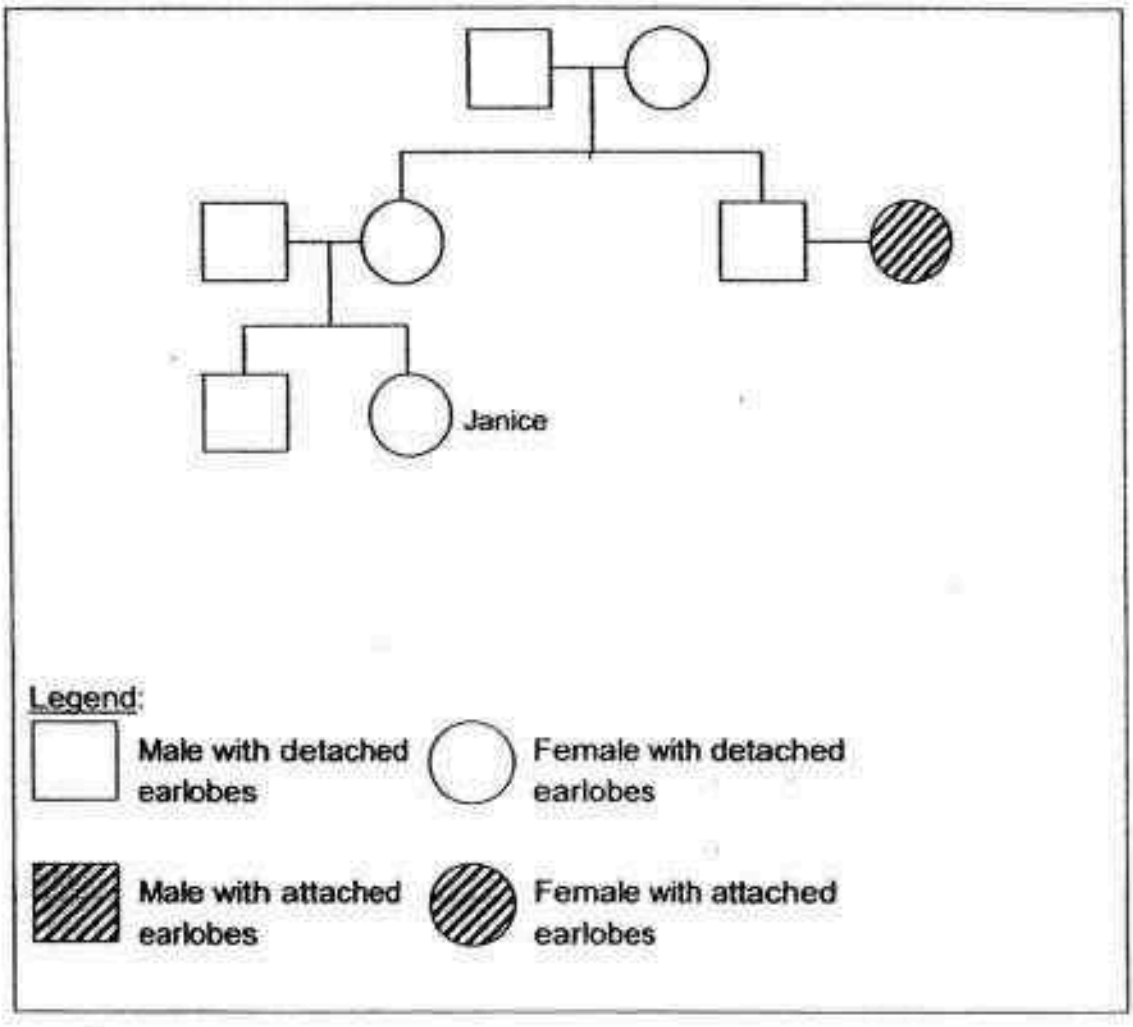
32. Read the description about Janice and her family below.

Janice's grandmother has three children and only one of them is a female.
Janice has an uncle, Ken, who is not married.
Janice's elder brother, Jordan, is married to Candice.
Candice and Janice's aunt have attached earlobes.

(a) Complete Janice's family tree using the information above. Draw and label the symbols for Janice's uncle, **Ken**, and her brother's wife, **Candice**. (1m)



(b) Why did Janice have detached earlobes? (1m)

_____

_____

2

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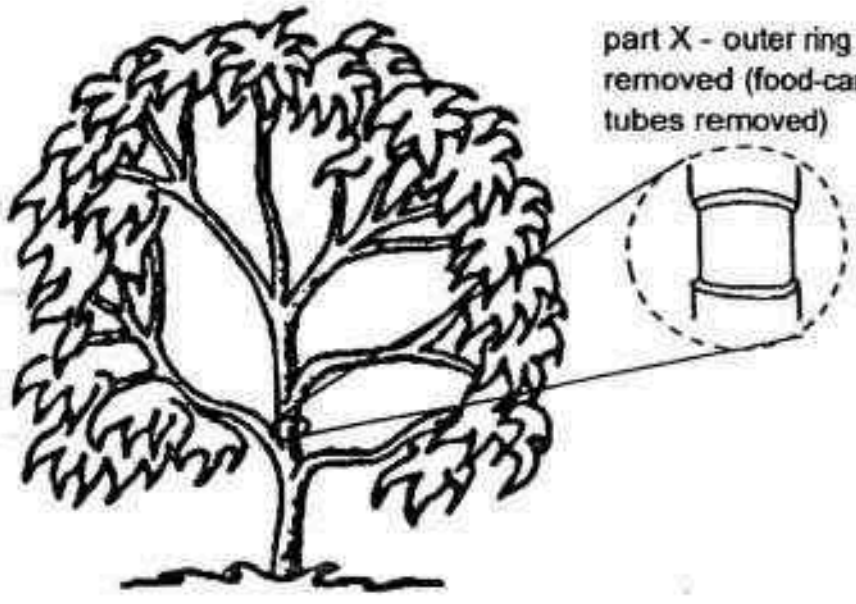
33. Dianne found a fruit tree in her garden. At part X, she removed an outer ring from the stem as shown below. The food-carrying tubes were removed while the water-carrying tubes remained in the stem.



After some time, she noticed fruits growing above and below part X, where she removed the outer ring.

Dianne found that the fruits above part X were sweeter than those below part X. Suggest why sweeter fruits were produced above part X. (2m)

_____

_____

_____

2

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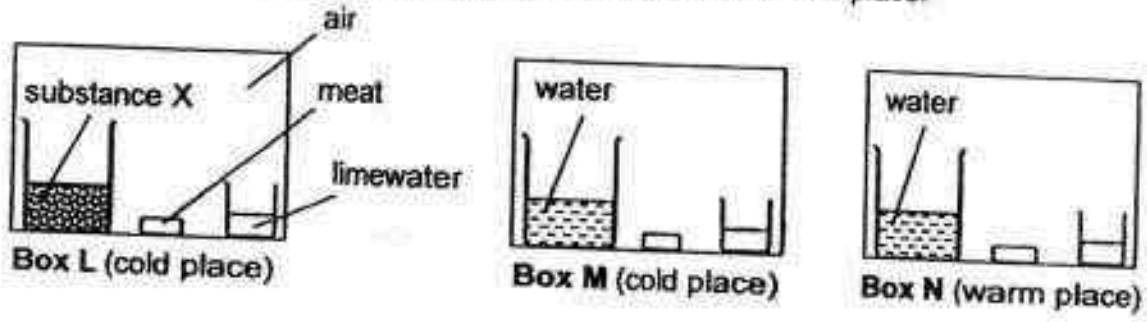
34. George placed three similar pieces of meat into three identical sealed transparent boxes, L, M and N. In each box, there was a small beaker of limewater and a large beaker of either substance X or water. Substance X absorbed oxygen from the surrounding air.

He placed boxes L and M in a cold place and box N in a warm place.



(a) The beaker of limewater in box N turned chalky the fastest. Explain why. (2m)

(b) George observed that the meat in box M decomposed but the one in box L did not. Why did the meat in box L not decompose? (1m)

3

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35. Organism X is adapted to the conditions of dry grasslands. Dry grasslands can be very hot in the day and very cold at night.



organism X

(a) Explain how does organism X's structural adaptation (coat of fur) help it to survive the cold weather at night. (1m)

_____

_____

In hot weather, organism X's ears stand straight up. In cold weather, the ears lie back close to the body.

(b) How does the behavioural adaptation help organism X to survive the hot and cold weather? (2m)

Hot weather:

_____

_____

Cold weather:

_____

_____

(c) Organism X is a plant eater. It has an excellent sense of hearing and moves quickly with its strong legs. Suggest a reason why its hearing and movement are important to its survival. (1m)

_____

_____

4

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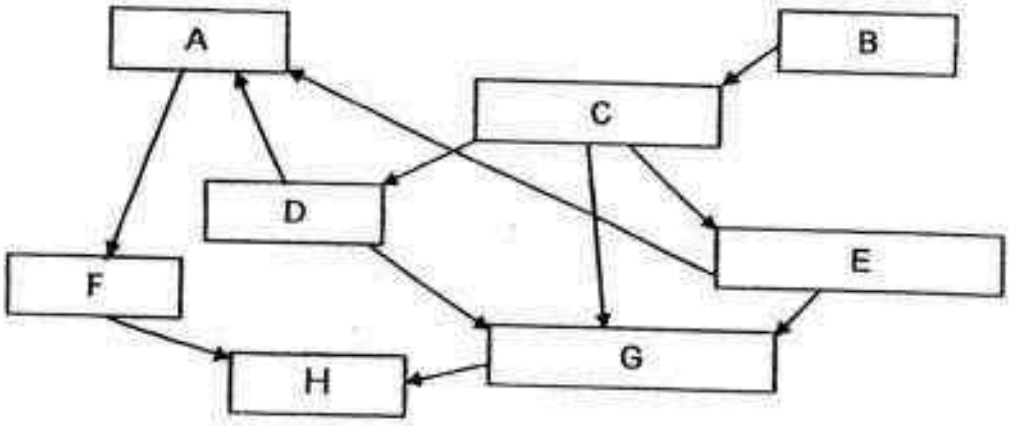
36. Study the food web below.



(a) Explain how does the removal of organism B affect the population of organism E. (2m)

(b) Other than providing food indirectly, explain another benefit that organism B could provide for organism H. (1m)

(c) Identify two organisms that are both a predator and a prey. (1m)

4

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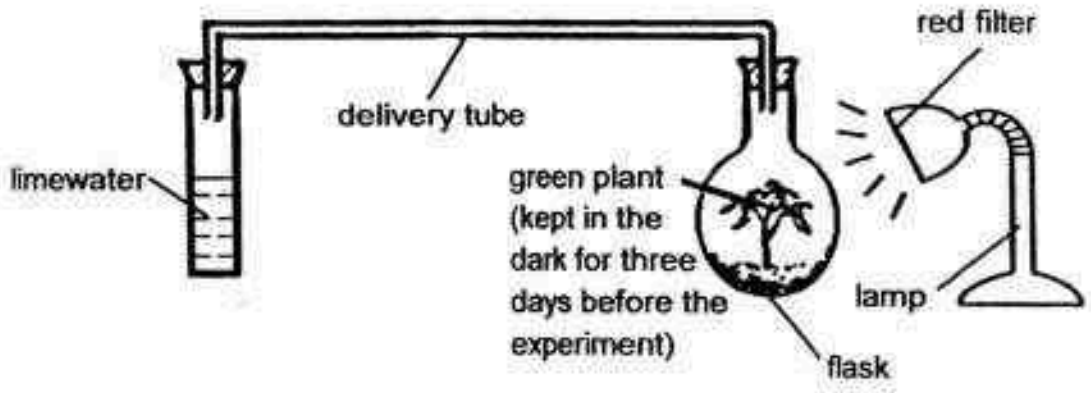
37. Ai Qing wanted to find out if there was any coloured light that could not be used for plants to photosynthesise. She prepared three set-ups. One example of the set-ups was shown in the diagram.



For each set-up, the plant was exposed to light that was similar in colour as the filter colour. At the end of five hours, one leaf in each set-up was tested for starch. Also, the observation of the limewater was recorded in the table shown.

Colour of filter	Limewater
Red	Remained clear
Blue	Remained clear
Green	Turned chalky

(a) Name one variable that must be kept constant to ensure a fair test. (1m)

_____

(b) Based on the table, what could be concluded about the effect of light colour on the plant's ability to photosynthesise? (1½ m)

_____

_____

(c) After the starch test was done, what observation to the colour of the iodine solution would show that her conclusion was correct? Complete the table below. (1½ m)

Colour of filter	Colour of iodine solution after starch test was done
Red	
Blue	
Green	

4

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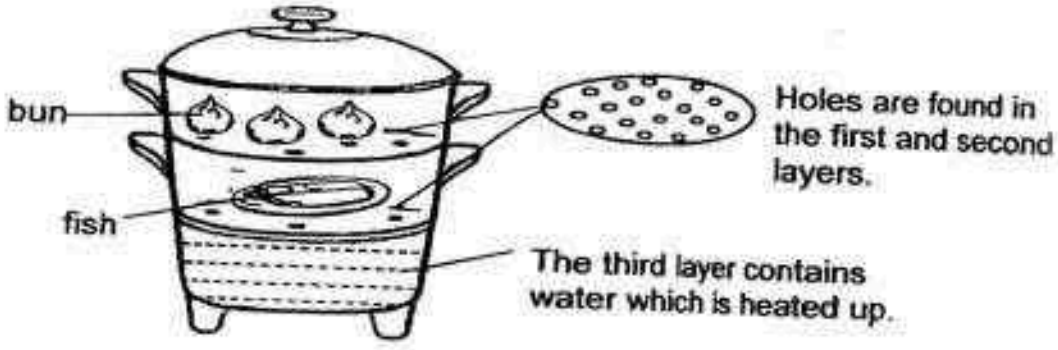
38. During a shopping trip, Mr Tan saw a multi-steamer with two layers that can cook food as illustrated below. It is a product which saves time as you can cook two dishes at a time. Mr Tan saw the demonstration of cooking steamed buns and fish.



(a) There were water droplets found on the surface of the steamed buns. Explain how the water droplets were formed. (2m)

(b) Explain how the use of a cover helps to cook the food in a shorter time. (1m)

3

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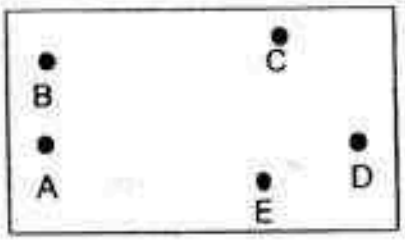
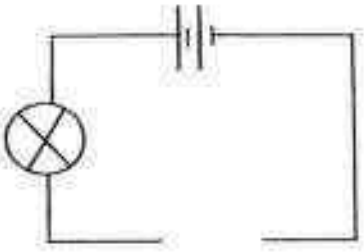
39. The diagram below shows a circuit card and a circuit tester.

Circuit card



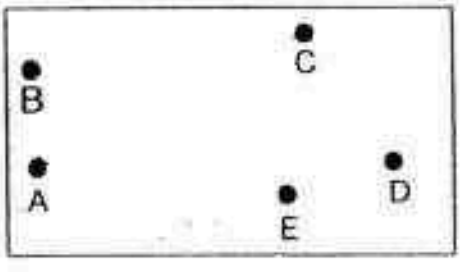
Circuit tester



The table below shows what happens to the bulb when each of the points on the circuit card is connected to the circuit tester.

Points connected to the circuit tester	Does the bulb light up?
A and B	Yes
A and C	Yes
B and D	No
B and E	Yes
C and D	No

Based on the information given in the table above, draw three lines to complete the circuit card to show the correct arrangement of the wires. (1m)



1

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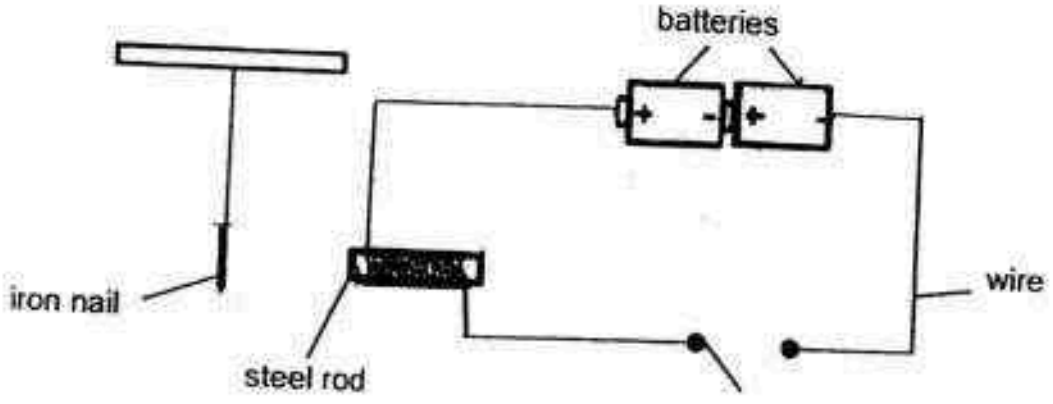
40. Study the set-up shown.

Circuit C



(a) When the switch in circuit C is closed, which direction will the iron nail move towards? Explain your answer. (2m)

(b) Will the iron nail move if the steel rod is changed to a plastic rod? Why is it so? (1m)

3

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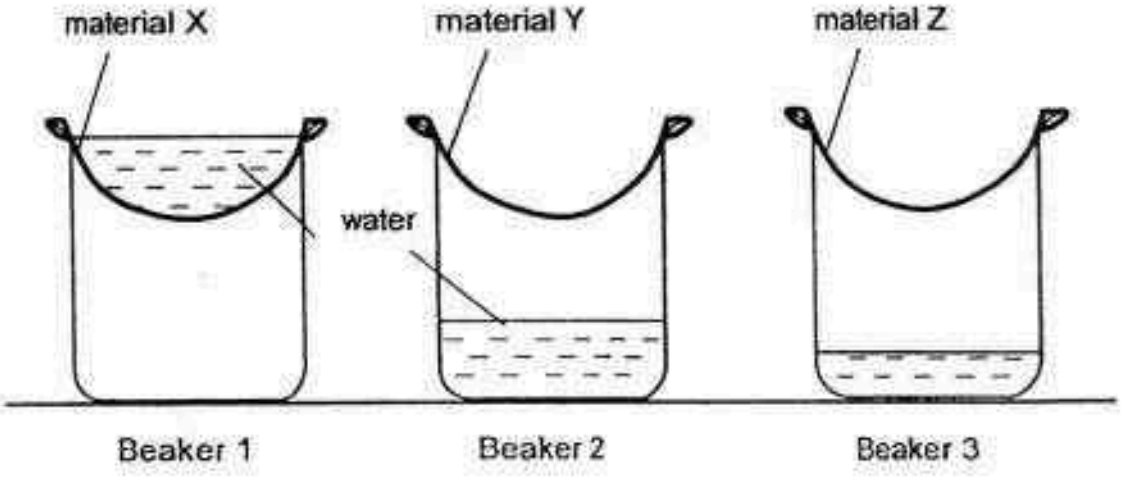
41. Devi set up an experiment using materials X, Y and Z. She secured the materials at the top of the beakers and poured the same amount of water onto each material. The amount of water collected in each beaker and/or on each material after 30 minutes is shown below.



(a) What could she observe to confirm which material is the most suitable to make a bath towel? (1m)

_____

_____

(b) Devi poured different amount of water onto three separate identical pieces of material Z. She measured the mass of the wet material and recorded the results as shown.

Amount of water poured onto each piece of material Z (ml)	0	10	20
Mass of material Z (g)	20	30	40

What is the relationship between the mass of material Z and the amount of water poured onto material Z? (1m)

_____

_____

2

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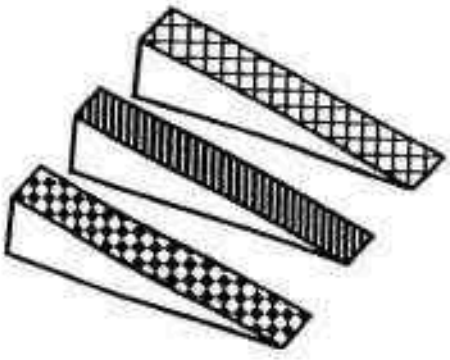
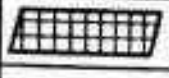
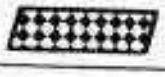
42. Kai Le conducted an experiment in which he released the same block to slide down a ramp from the same starting point. He used ramps of the same height but with three different surfaces. The ramps were shown below.



He tabulated the results as shown.

Ramp		Time taken for the block to slide down the ramp
A		10 seconds
B		20 seconds
C		30 seconds

(a) Explain what Kai Le can conclude about ramp A. (2m)

2

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Kai Le's parents brought him to the Water Play Park and he played on the water slide as shown.



He took three minutes to get from the top to the bottom of the slide for his first ride. On his second ride, he noticed that more water flowed down the slide. As a result, Kai Le's took only two minutes to reach the bottom of the slide for his second ride.

(b) Why did Kai Le take a shorter time to reach the bottom of the slide on his second ride? (1m)

_____

_____

1

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43. Xin Man carried out an experiment with a steel paper clip attached to a string and a magnet. The set-up of the experiment was shown below.

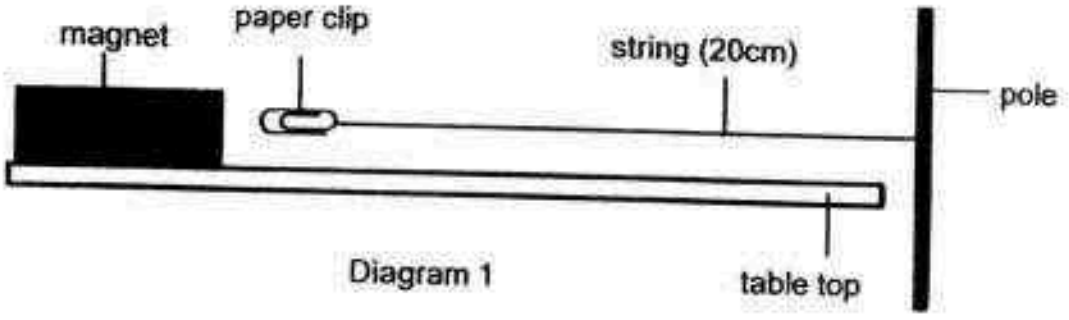

Diagram 1

(a) Explain why the steel paper clip reacted towards the magnet as shown in diagram 1. (1m)

Xin Man heated the magnet. After heating, she measured the length of the string needed to achieve the same effect as shown in diagram 1. The results were recorded below.

Magnet	Length of string needed (cm)
Before heating	20
After heating	22

(b) After heating the magnet, why did she have to use a longer string to achieve the same effect as shown in diagram 1? (1m)

2

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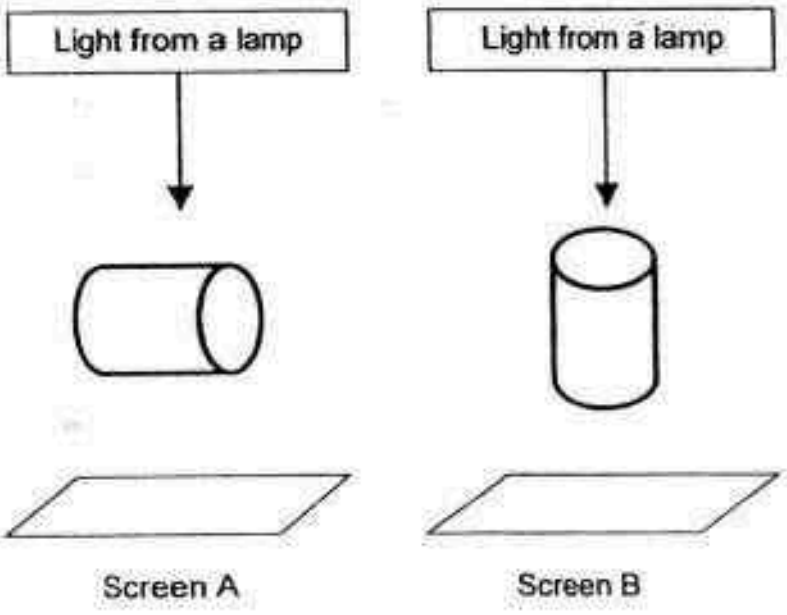
44. Jin Yong wanted to find out how the shape of the shadow of a metal can is affected by the way it is placed. He placed two similar cans in two different positions and shone light from the same lamp. He observed the shadows cast on screen A and B below.



(a) Tick a possible set of shadows Jin Yong would observe on screens A and B. (1m)

Screen A	Screen B	Tick the correct set of shadows
		
		

1

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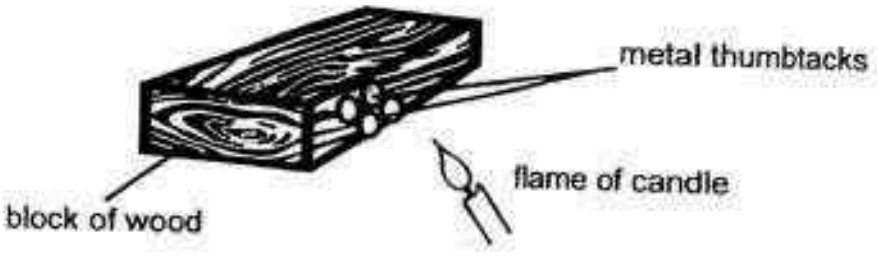
Study the experiment carefully.

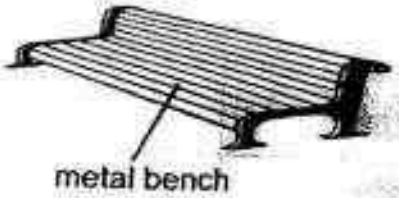


Jin Yong set up and conducted an experiment as shown above. He used a candle to heat the area around the wood for approximately 10 minutes.

After heating, he measured the temperature and realised that the wood was not as hot as the metal thumbtacks.

(b) Explain why the metal thumbtacks were hotter than the wood after being heated for 10 minutes. (2m)

On a hot day, Jin Yong observed that more people prefer to sit on a wooden bench than the metal bench. Both benches were located at the same location at the field.





c) Explain why more people prefer to sit on the wooden bench during a hot day. (1m)

End of Section B
Please check your answer.

3

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YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**RED SWASTIKA**
SUBJECT	:	**SCIENCE**
TERM	:	**SA1**

Booklet A

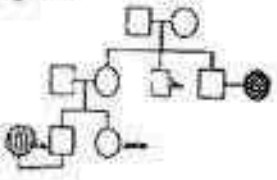
Q1	3	**Q6**	1	**Q11**	3	**Q16**	2	**Q21**	4	**Q26**	2
Q2	3	**Q7**	4	**Q12**	2	**Q17**	1	**Q22**	4	**Q27**	1
Q3	4	**Q8**	3	**Q13**	4	**Q18**	2	**Q23**	2	**Q28**	1
Q4	4	**Q9**	1	**Q14**	3	**Q19**	2	**Q24**	1	**Q29**	2
Q5	1	**Q10**	3	**Q15**	4	**Q20**	1	**Q25**	4	**Q30**	4

Booklet B

Q31a (i) Part B
(ii) Part W

Q31b The fruit will have a few seeds. After fertilisation, the ovules of flower M turn into seeds. As flower M has more than one ovule, the fruit will have a few seeds.

Q32a



Q32b Both her parents have detached earlobes, hence they are able to pass the characteristics/traits/genetic information to her.

Q33 Food produced by the leaves above part X cannot be transported below part X as the food carrying tubes were removed. More food is stored in the fruits above part X making the fruits sweeter.

Q34a Box N had the best conditions, warmth, oxygen, and water/moisture, for bacteria to grow most quickly. The rate of decomposition of meat was the fastest and most carbon dioxide was produced.

Q34b Bacteria could not survive as there was no oxygen present. Hence, there was no bacteria to decompose the meat.

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Q35a Organism X's fur will trap air. The air trapped is a poor conductor of heat and reduces heat loss from the organism to the surroundings.

Q35b Hot weather : When organism X's ears stand upright, there is an increased exposed surface area between its body and the surrounding air, allowing it to lose more heat to the surrounding air.

Cold weather : When organism X's ears lie back close to its body, less exposed surface area of the ears is exposed to the surrounding air and there is less body heat loss.

Q35c With an excellent sense of hearing, Organism X can sense danger as early as possible, and with its quick movement, it can runaway/hop away quickly from danger.

Q36a When the organism B is removed, (organism) C has no food to feed on and so the population will decrease. There is less Organism C for Organism E to feed on. Hence, the population of Organism E would decrease.

Q36b Organism B is a food producer which produces oxygen when it makes food during photosynthesis.

Q36c E and F are both a predator and a prey.

Q37a She must ensure that the amount of limewater used OR the light intensity is kept the same.

Q37b She had concluded that the plant could not photosynthesise under green light and can only photosynthesise under blue and red light.

Q37c

Colour of filter	Colour of iodine solution after starch test was done
Red	Blue - black
Blue	Blue - black
Green	Brown

Q38a Water (droplets) in the third layer gained heat and evaporated into water vapour. The hot water vapour rises and touched the cooler inner surface of the cover, lost heat to it and condensed into water droplets.

Q38b The cover prevents the hot water vapour from escaping the steamer so that the heat is trapped in the steamer to cook the food in a shorter time.

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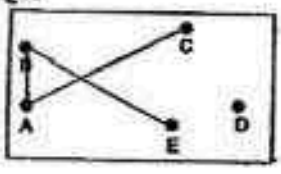
Q39



Q40a The iron nail moved towards the steel rod. When the switch was closed, a closed circuit was formed and electricity flowed through the circuit. The steel rod became an electromagnet and attracted the iron nail, a magnetic material, to move towards it.

Q40b The iron nail would not move. Plastic rod is not a magnetic material so it cannot attract the iron nail.

Q41a The amount of water collected in the beaker is the least.

Q41b As the amount of water poured onto material Z increases, the mass of material Z increases.

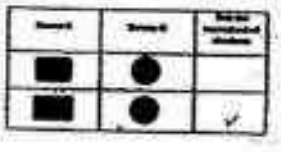
Q42a Ramp A has the smoothest surface. The amount of frictional force between the surface of the ramp and the block is the least.

Q42b There was more water which reduced the frictional force between the surface of the slide and Kai Le.

Q43a The paper clip is made of steel, a magnetic material so it was attracted to the magnet.

Q43b A longer string is required because the magnet's magnetic strength was weakened by the heat.

Q44a



Q44b The metal thumbtacks are better conductor of heat so it gain more heat from the flame.

Q44c Wood is a poorer conductor of heat. Heat is conducted from the bench to the person at a slower rate so it is cooler to sit on a wooden bench.

End

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16

SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

FIRST SEMESTRAL ASSESSMENT 2016

NAME: _____ ( ) DATE: _____

CLASS: PRIMARY 6

Parent's Signature:

_____

SCIENCE

BOOKLET A

30 questions

60 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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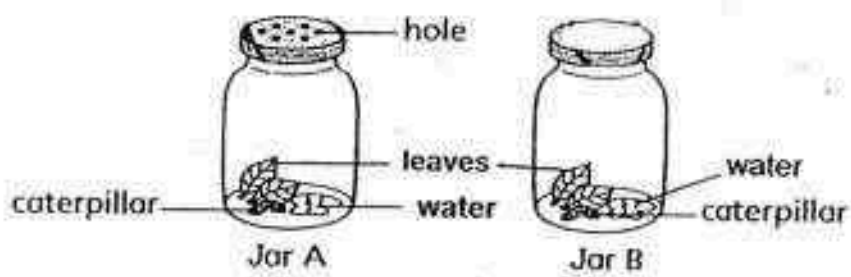
Part I (60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. Dave conducted an experiment. He prepared 2 setups as shown in the diagram below. He placed the containers near an open window. At the end of 3 days, the caterpillar in Jar B died.



His experiment shows that living things need _____ to survive.

A: Air
B: Food
C: Light
D: Water

1) A only
2) A and D only
3) B, C and D only
4) A, B, C and D

2. Marvin matched some parts or organs to the systems in living things. Which one of the following systems has been matched correctly with the parts / organs?

	Systems	Parts / Organs
1)	Skeletal system of an animal	Bones, muscles, skull
2)	Digestive system of a human	Gullet, stomach, intestines
3)	Transport system of plants	Xylem, Phloem, blood
4)	Reproductive system of flowering plants	Seeds, fruits, flowers, leaves

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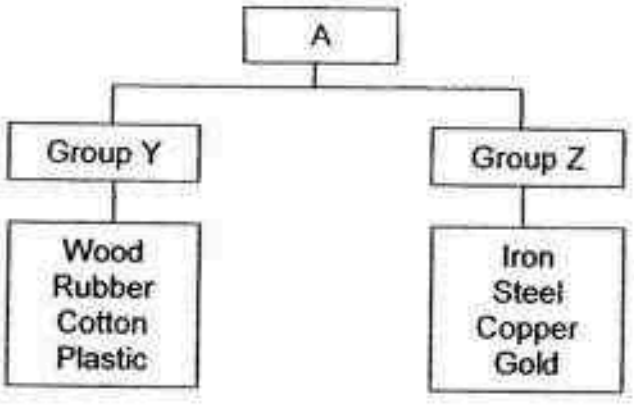
3. Study the following chart.



What are the possible headings for Group Y and Group Z respectively?

	Group Y	Group Z
A:	Non-magnetic	Magnetic
B:	Poor conductors of heat	Good conductors of heat
C:	Non-conductors of electricity	Conductors of electricity
D:	Made from things that are once alive	Made from things that are never alive

1) A and B only
2) A and D only
3) B and C only
4) C and D only

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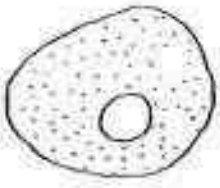
4. Kate viewed the following cells under a microscope.


P


Q


R


S

Which one of the above is/are plant cells?

1) P only
2) P and R only
3) Q and S only
4) P, R and S only

5. Which of the following correctly shows the functions of the parts of the cell?

	Nucleus	Cell Wall	Cell Membrane
1)	Gives the cell its regular shape	Controls materials moving in and out	Controls all the activities in the cell
2)	Controls all the activities in the cell	Gives the cell its regular shape	Controls materials moving in and out
3)	Controls all the activities in the cell	Controls materials moving in and out	Gives the cell its regular shape
4)	Controls materials moving in and out	Gives the cell its regular shape	Controls all the activities in the cell

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6. Wei Ling notices that her heart beat rate increased whenever she exercises. Which one of the following could be the reason?

A: To transport oxygen to all parts of her body faster.

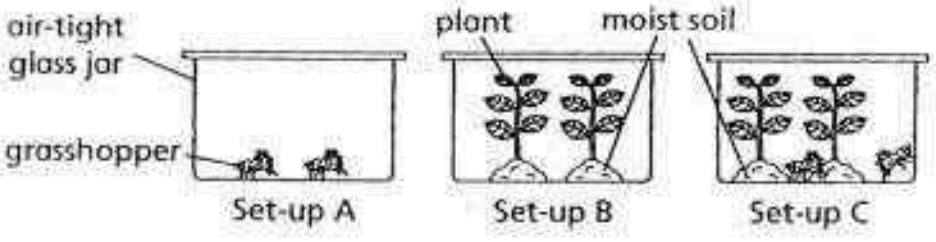
B: To transport digested food to all parts of her body faster.

C: To transport carbon dioxide to all parts of her body faster.

D: To transport waste products to all parts of her body faster.

1) A and B only
2) A and C only
3) B and C only
4) C and D only

7. Junko prepared 3 set-ups and placed them in her garden from 8am to 10pm. She then monitored the amount of oxygen in the set-ups every hour.



After the experiment has ended, she recorded the following statements.

A: There is less oxygen in set-up C than set-up B at the end of the experiment.
B: There is an equal amount of oxygen at 12 noon in all the set-ups.
C: Set-up C has the most amount of oxygen at the end of the experiment.
D: There is no carbon dioxide left in set-up A at the end of the experiment.

Which of the above statements is/are true?

1) A only
2) B and C only
3) A, B and C only
4) B, C and D only

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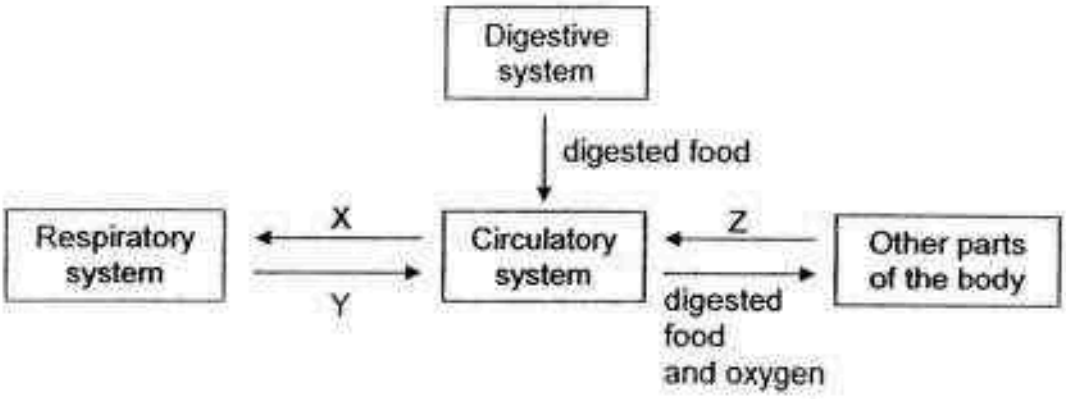
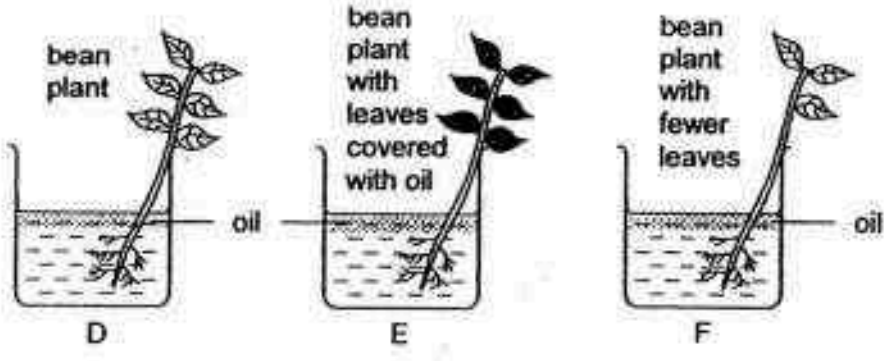
8. Study the flow chart below.



What type of blood do the blood vessels X, Y and Z carry?

	X	Y	Z
1)	Rich in oxygen	Rich in carbon dioxide	Rich in oxygen
2)	Rich in oxygen	Rich in carbon dioxide	Rich in carbon dioxide
3)	Rich in carbon dioxide	Rich in oxygen	Rich in oxygen
4)	Rich in carbon dioxide	Rich in oxygen	Rich in carbon dioxide

9. Peggy wanted to conduct an experiment to show what affects the rate in which plants take in and give out water. Arrange in order from the fastest to the slowest rate in which the plants take in and gives out water.



1) D, E, F
2) F, E, D
3) E, F, D
4) D, F, E

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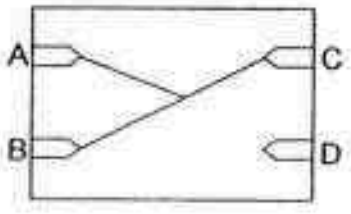
10. A circuit card is tested and the results are as shown in the table below.

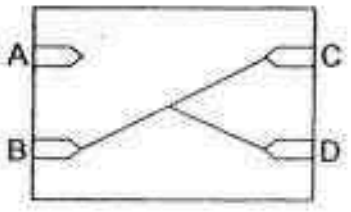
Clips tested	Bulb lights up? (Yes/No)
A and B	No
B and D	Yes
A and C	No
B and C	Yes
C and D	Yes

Which one of the following could be the correct circuit card tested?

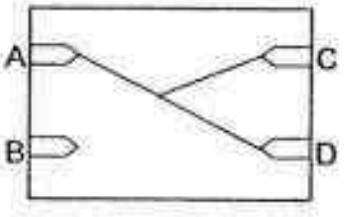
1)



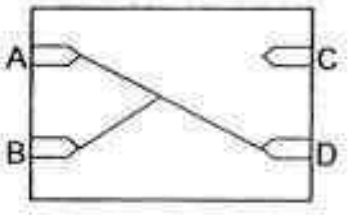
3)



2)



4)



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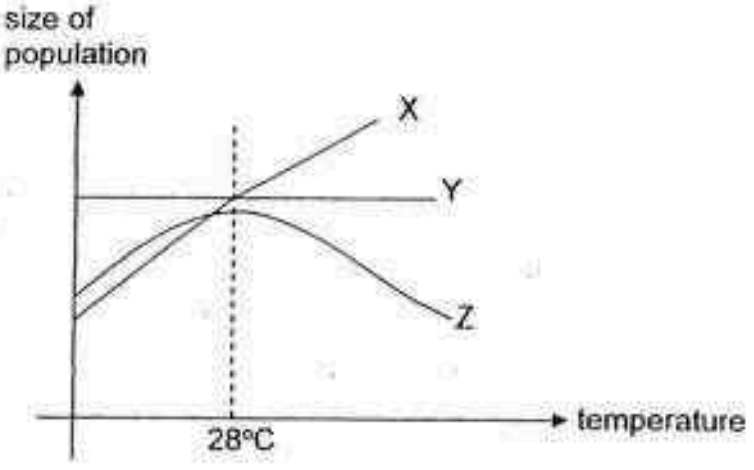
11. The following line chart shows the effect of temperature on the population size of 3 different organisms, X, Y and Z.



Which one of the following statements is **false**?

1) Organism Y is able to live with the change in temperature.

2) Organism Z must move to a place cooler than 28°C in order to survive.

3) The population size of X increases as the temperature increases.

4) Organism Z thrives at about 28°C.

12. Teresa was doing spray painting and she noticed that the paint was sprayed onto the upper side of all the leaves of her potted plants. After 1 day, the plants were still able to survive because _____ _____.

1) there were no stomata on the upper side of the leaves.

2) the stomata on the underside of the leaves could still perform gaseous exchange.

3) the plant could make food as the stomata were blocked.

4) there were stomata on the roots and stem of the plant.

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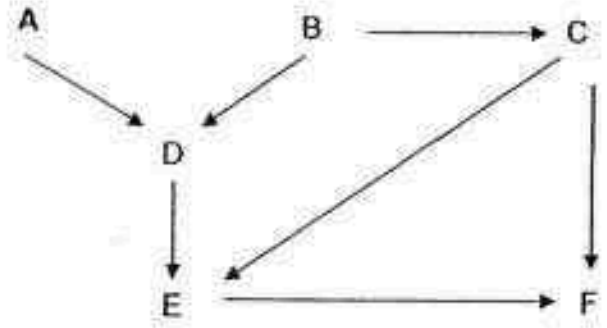
13. Study the following food web carefully.



If all the Organism A are removed, which of the following is the most likely to happen?

1) number of Organism F will decrease
2) number of Organism E will decrease
3) Organism D will have less competition for food
4) Organism C will have more competition for food

14. Joseph found the following plants and animals in a certain habitat while camping.

adult mosquito	water stick insect	water lettuce
frog	tadpole of a frog	mosquito pupa
mosquito larva	duckweed	pond skater

How many populations are there in the habitat?

1) 5
2) 6
3) 7
4) 8

(Go on to the next page)

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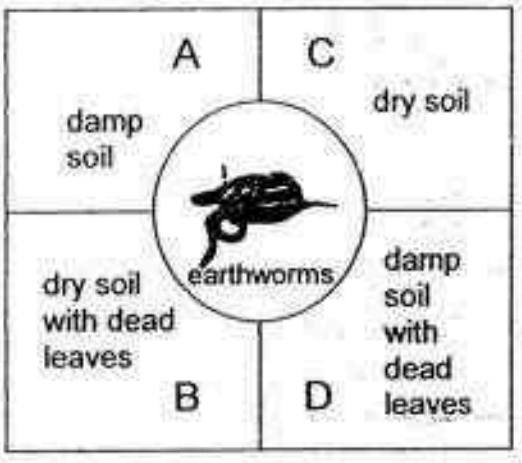
15. A tray was divided into 4 sections and damp soil was placed in sections A and D while dry soil was placed in sections B and C. The tray was placed in a bright place and sections C and D were covered with dark cloth. Some earthworms were then released into the empty middle part of the tray.



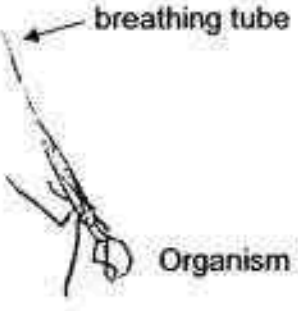
After some time, in which section would the most number of earthworms be found?

1) A
2) B
3) C
4) D

16. Xiao Ming observed 2 organisms, P and Q. Organism P is an insect that has an air bubble attached to its body and Organism Q is an insect with a breathing tube.



Organism P



Organism Q

Which one of the following most likely shows where Xiao Ming found the 2 organisms?

	P	Q
1)	on plants above pond	at the bottom of pond
2)	just under the surface of the pond	at the bottom of pond
3)	at the bottom of pond	just under the surface of the pond
4)	at the bottom of pond	on plants above pond

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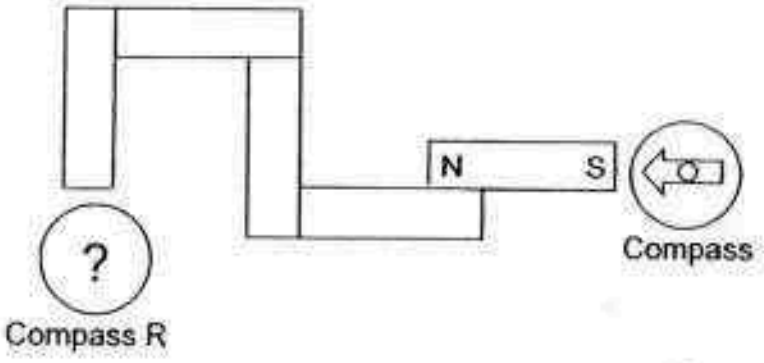
17. Connie conducted an experiment with 4 bar magnets and 2 compasses and made a set-up as shown below.



Which of the following compasses correctly represents Compass R in the above set-up?

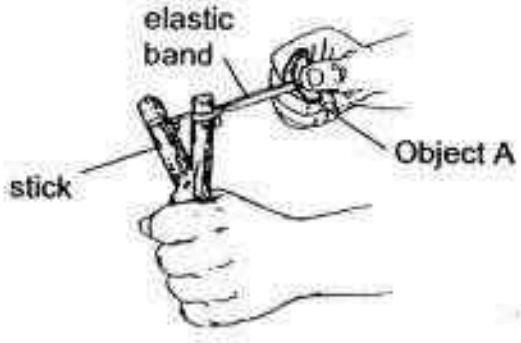
1) 

3) 

2) 

4) 

18. The diagram shows a catapult that will hit a target when Object A placed at the end of the elastic band is released.



Which of the following factors will affect the distance travelled by Object A?

A: mass of Object A
B: material of the stick used
C: distance the elastic band is pulled back

1) A only
2) A and B
3) A and C
4) B and C

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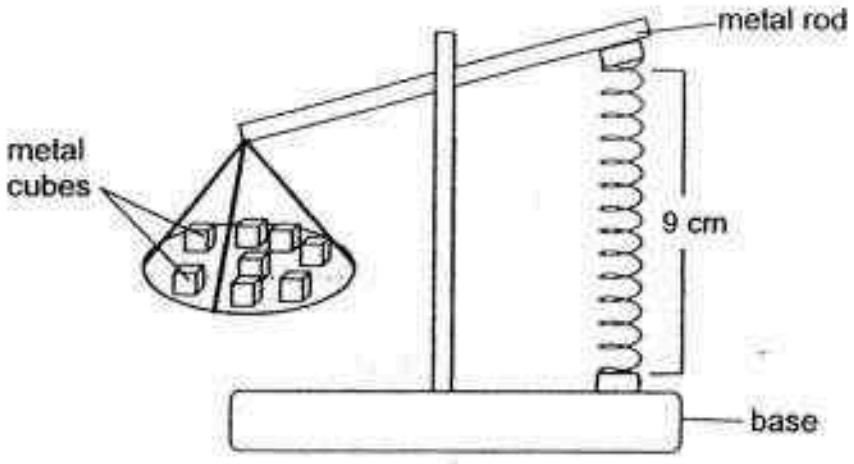
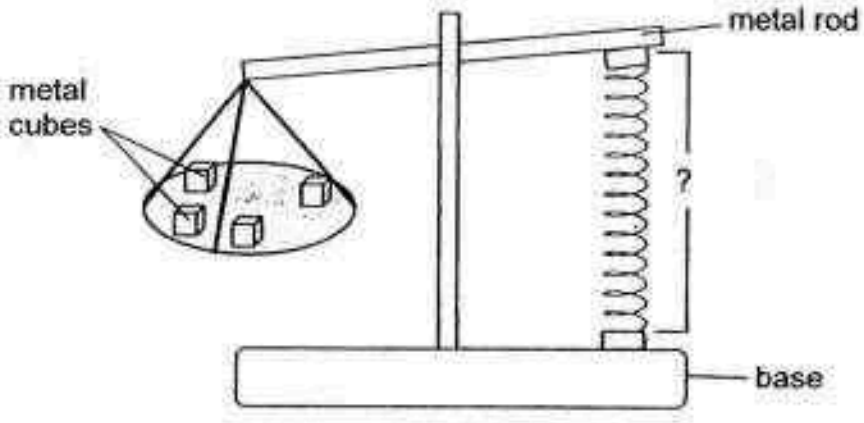
19. Pam set up an experiment as shown below. She placed 8 metal cubes in the tray, and she measured the extension of the metal spring.



Pam then removed 4 metal cubes and 4 metal cubes were left on the tray.



The metal spring originally measures 5 cm when it was attached to the metal rod and base at the start of the experiment when there were no metal cubes on the tray.

What would be the most likely length of the extension of the metal spring when only 4 cubes remain in the tray?

1) 11 cm
2) 2 cm
3) 7 cm
4) 4.5 cm

(Go on to the next page)

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20. Aziz made a comparison between the life cycle of a mosquito and a frog. He drew up the following table to chart the comparisons.

	Comparison	Mosquito	Frog
A:	Lay eggs in water	✓	✓
B:	Spends its entire life cycle on land		✓
C:	4 stages in life cycle	✓	
D:	Young moults	✓	✓

Which of the above comparison/s is/are correct?

1) A and C
2) B and C
3) A, B and C
4) B, C and D

21. The diagram below shows the cross-section of 2 different flowers.



Flower D



Flower E

What can be concluded from the diagrams above?

A: Flower E will not be pollinated.
B: Flower E does not have male parts.
C: Flower D has both male and female sex cells.
D: After fertilisation, both flowers D and E can develop into fruits.

1) A and D
2) B and C
3) B, C and D
4) A, B, C and D

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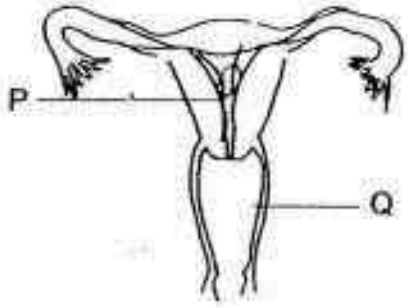
22. Pupils from Class S observed a diagram of a part of the female reproduction system and wrote down some statements about fertilisation in humans.



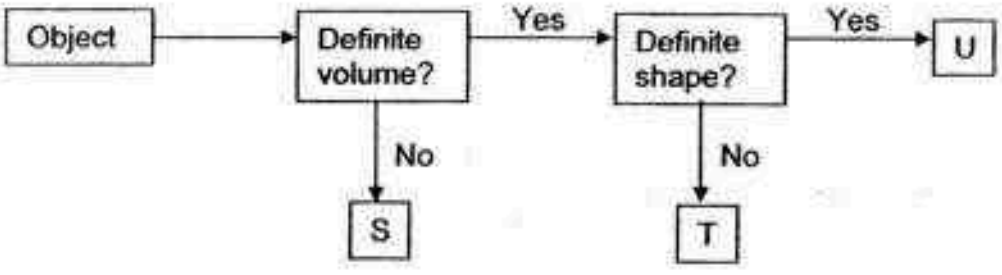
4 pupils' statements were chosen for discussion.

Mike:	The womb is missing from the diagram.
Josh:	The ovaries are missing from the diagram.
Siew Lee:	Part Q is where the foetus will develop.
Mohan:	Part P produces and releases the eggs for fertilisation.

Who was correct?

1) Mike
2) Josh
3) Siew Lee
4) Mohan

23. Study the flow chart below.



Which one of the following items match Objects S, T and U correctly?

	S	T	U
1)	eraser	book	water
2)	book	carbon dioxide	milk
3)	water	eraser	carbon dioxide
4)	carbon dioxide	milk	book

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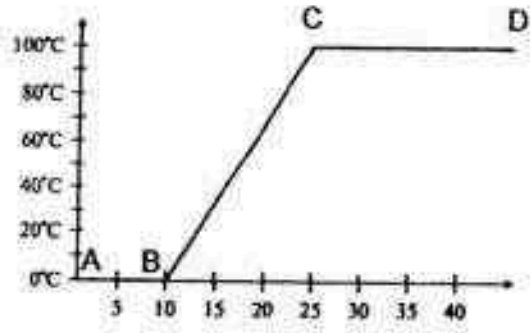
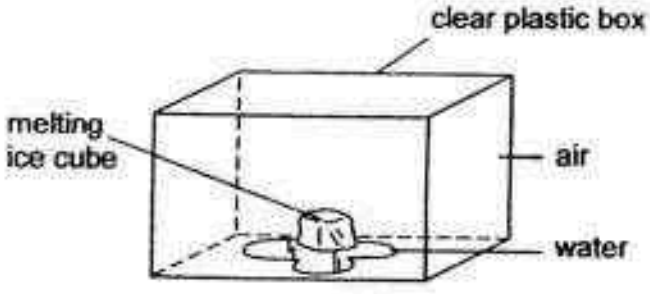
24. The following graph represents substance X being heated over a flame.



At which time interval was substance X gaining heat?

1) A to C only
2) A to D only
3) B to C only
4) C to D only

25. Gopal placed an ice cube in a clear plastic box as shown in the diagram below. The ice cube started to melt.



What will happen to the temperature of the air, melting ice cube and water in the box over 15 minutes?

	Temperature of air	Temperature of melting ice cube	Temperature of water
1)	Decreases	Remains the same	Increases
2)	Increases	Decreases	Remains the same
3)	Remains the same	Decreases	Increases
4)	Remains the same	Increases	Decreases

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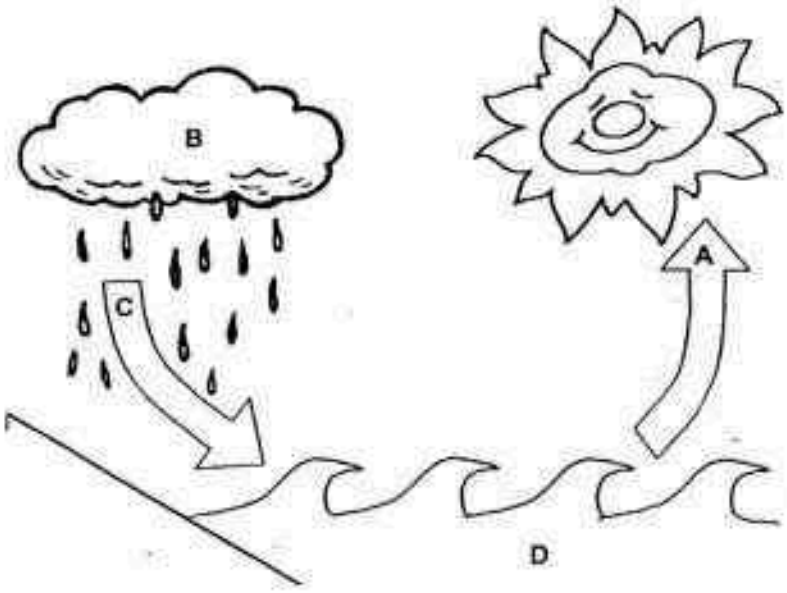
26. Study the diagram below carefully.



Which of the following shows the correct state of water in each stage of the water cycle?

	A	B	C	D
1)	Gas	Gas	Liquid	Liquid
2)	Liquid	Liquid	Liquid	Liquid
3)	Liquid	Gas	Gas	Liquid
4)	Gas	Liquid	Liquid	Liquid

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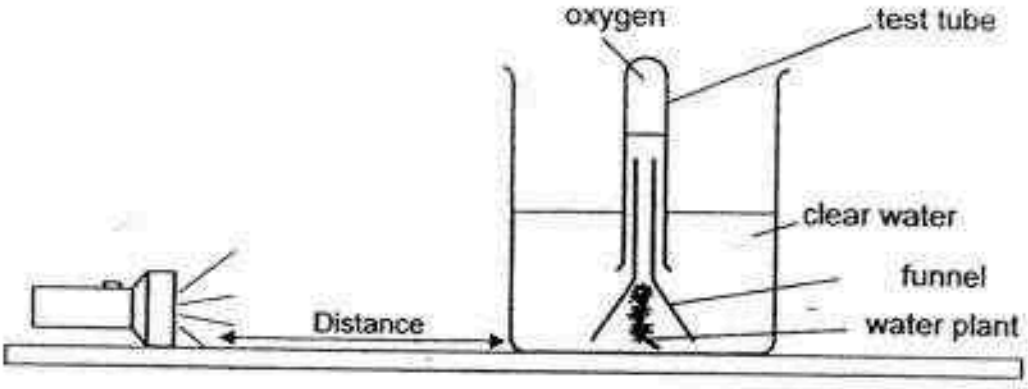
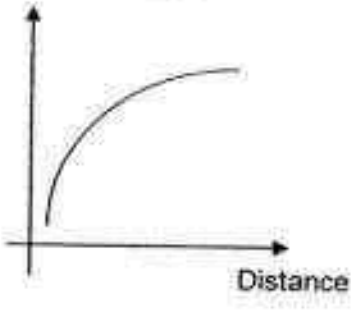
27. Jay wanted to find out if the distance of the light source from the plant has any effect on photosynthesis. He prepared the following setup for his experiment.

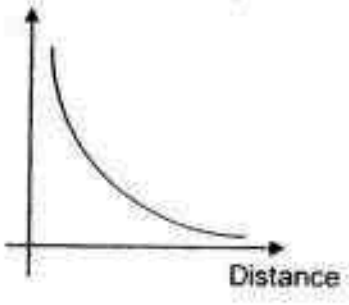


Which of the following graphs shows how the distance of the light source from the plant affects the rate of photosynthesis?

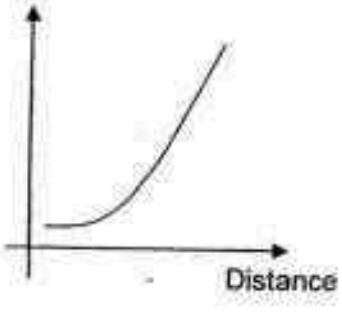
1)



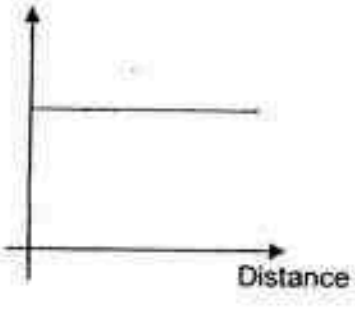
3)



2)



4)



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28. Olivia ordered a cup of hot coffee and it was served in a ceramic cup as shown in the diagram below. As Olivia needed to finish it in a hurry, she asked for her coffee to be served in a steel cup instead.



Which one of the following best explains why she asked for her coffee to be served in a steel cup?

1) Steel is a better conductor of heat than ceramic.
2) Steel can conduct heat but ceramic **cannot.**
3) Steel reduces the amount of heat from escaping from the coffee.
4) Steel prevents the coffee from gaining heat from the surrounding air.

29. An object R casts a shadow as shown below.

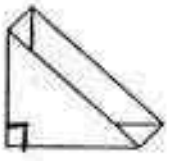


Which of the following opaque objects will be able to cast such a shadow without being rotated?

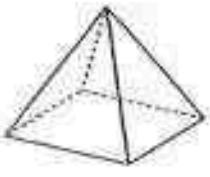
A:



C:



B:



D:



1) A and B
2) B and C
3) B and D
4) A, C and D

(Go on to the next page)

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30. Gopal had a wind-up toy mouse. He turned the key of the toy mouse to wind up the spring inside the toy. After three turns of the key, the spring became stuck and could not unwind and the toy mouse could not move.



What inference could Gopal make regarding this observation?

1) The spring had lost its energy.

2) The potential energy had been converted to sound energy.

3) The potential energy of the spring could not be converted to kinetic energy.

4) Gopal had destroyed the energy when he turned the key too hard.

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SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

FIRST SEMESTRAL ASSESSMENT 2016

NAME: _____ ( ) DATE: _____

CLASS: PRIMARY 6

Parent's Signature:

_____

SCIENCE

BOOKLET B

	Total Actual Marks	Total Possible Marks
Booklet A		**60**
Booklet B		**40**
Total		**100**

14 questions

40 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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Name: _____ ( ) Date: _____

Class: Primary 6

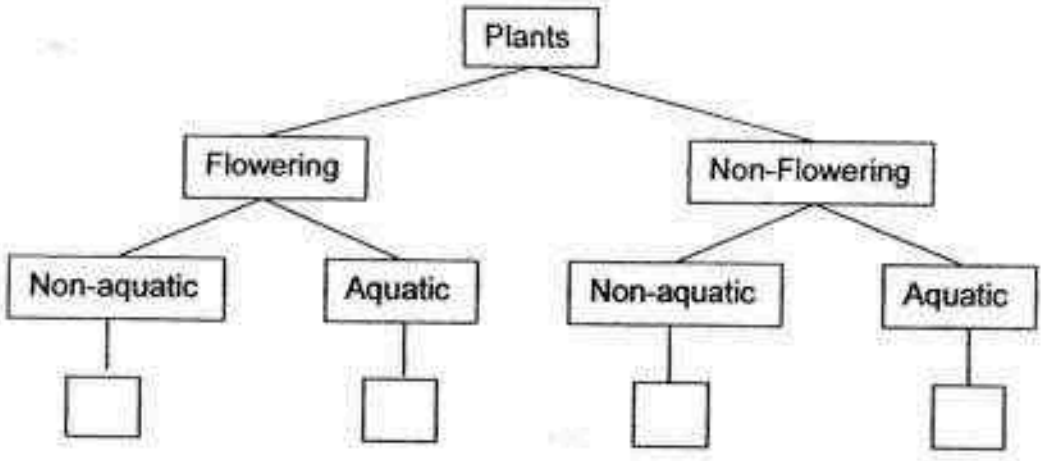
Part II (40 marks)

Answer all the following questions.

31. The following table shows the characteristics of 4 plants, A, B, C and D.

Characteristics	A	B	C	D
Bears fruits	✓		✓	
Grows on land		✓	✓	

a) From the information above, classify the plants and put them in the boxes provided. (2m)



b) In which group, A, B, C or D does the bird's nest fern belong to? (1m)

_____

3

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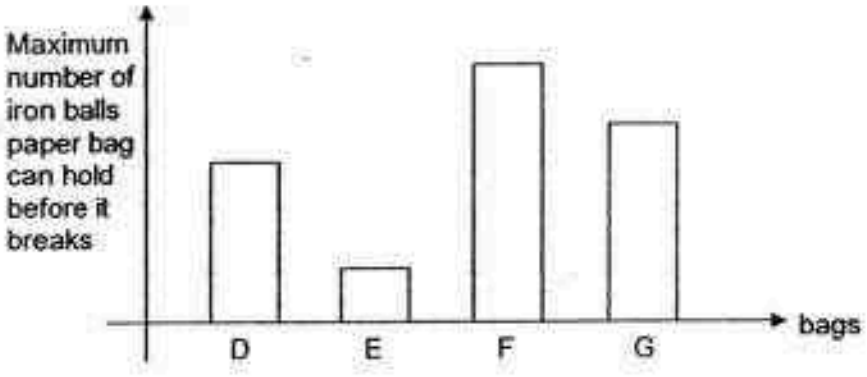
32. James took 4 paper bags made of different materials and put iron balls into them until each paper bag broke.



James recorded the maximum number of balls that each bag could hold before it breaks and plotted a graph as shown below.



a) Arrange the bags according to their strength from the strongest to the least strong. (1m)

☐ ☐ ☐ ☐

b) Which bag will most likely break when groceries and canned food are placed in it? (1m)

_____

c) James noticed that a paper bag lined with Material X allows the bag to hold cut fruits without any juice leaking out. What is the property of Material X that enables this to happen? (1m)

_____

3

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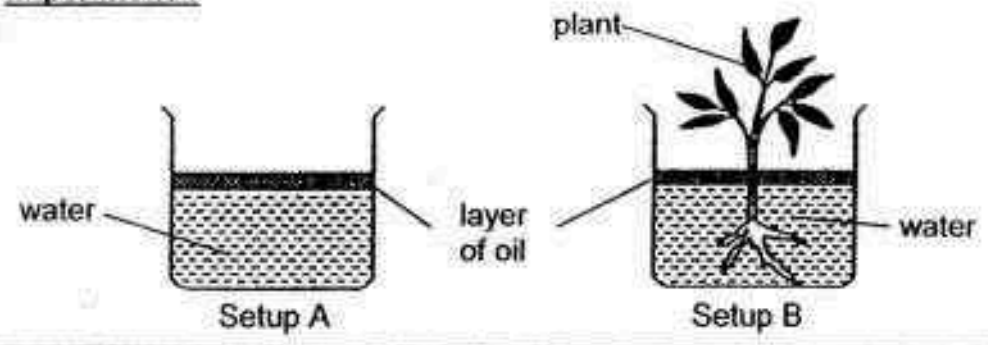
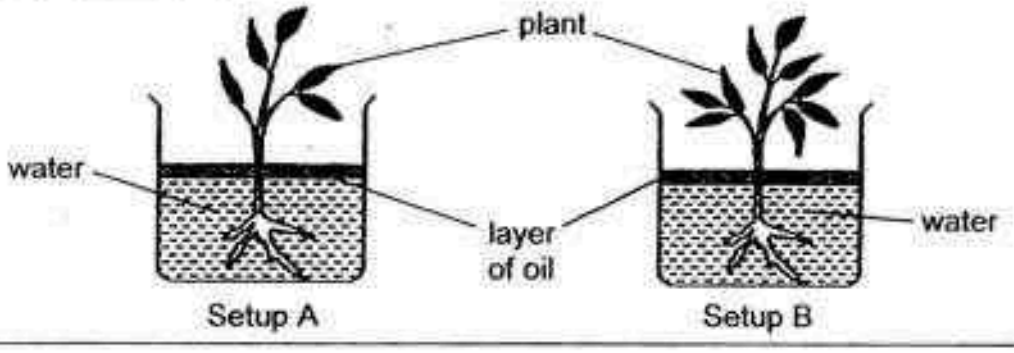
33. Joyce wanted to conduct two experiments to find out if plants take in water though their roots.

Experiment 1



Experiment 2



a) Bruce, Joyce's brother, told her that she can achieve her aim by conducting Experiment 1. Why was Experiment 2 not suitable? (1m)

_____

_____

b) If Joyce conducted Experiment 1, what should Joyce <u>observe</u> at the end of the experiment to confirm that plant has taken in the water? (1m)

_____

_____

c) Explain your answer in part (b). (1m)

_____

_____

3

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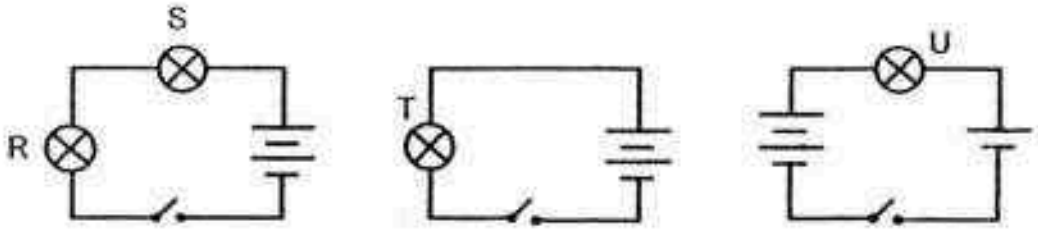
34. Colin set up 3 circuits with 4 bulbs R, S, T and U using similar electrical components as shown below.



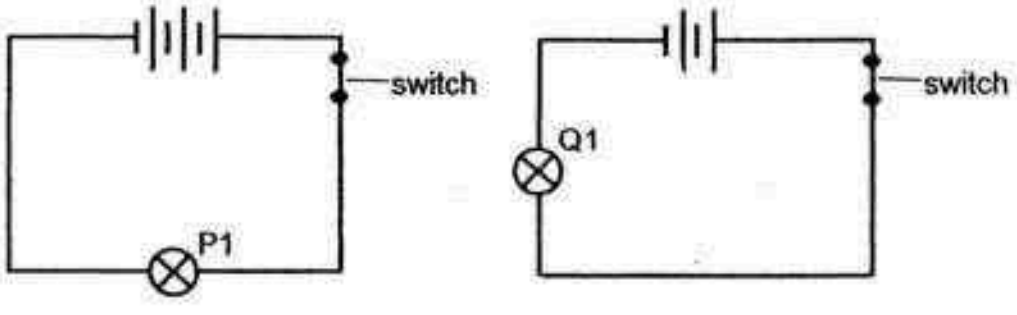
a) Which bulb will be the brightest when the switches are closed? (1m)

_____

b) Colin set up an experiment as shown below. What could be the aim of his experiment? (1m)

_____

_____



Setup P

Setup Q

2

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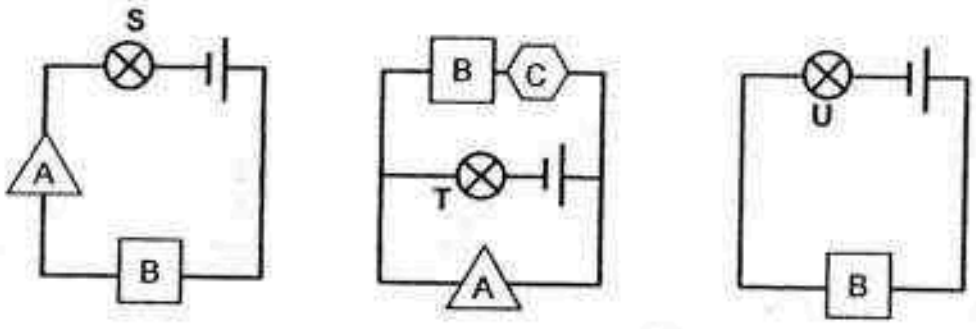
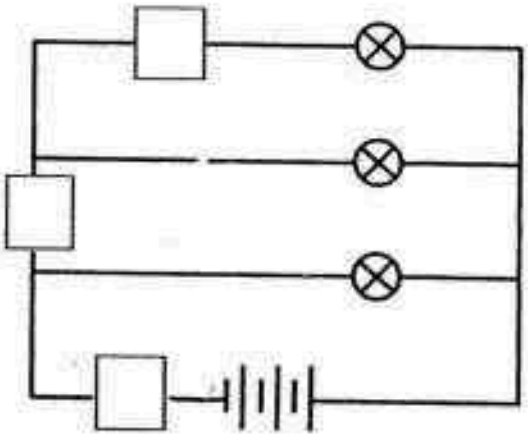
35. Kok Keong set up 3 circuits as shown below. Objects A, B and C are made of different materials and are connected to the circuits.



a) If only bulbs T and U are lighted, which object/s is/are conductors of electricity? (1m)

b) Kok Keong repeated another experiment using the same Objects A, B and C. Write the letters A, B or C in the boxes provided in the circuit below to represent the objects that enable 2 bulbs to light up. (2m)



3

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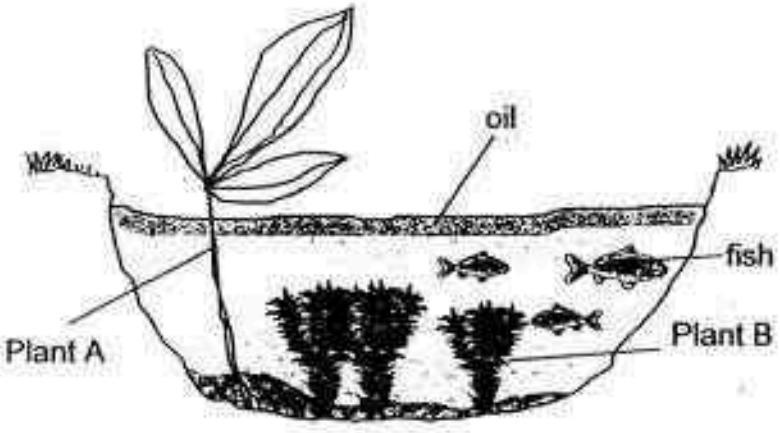
36. Mosquitoes have been breeding in the school pond over the past month. The Eco Club members noticed that the school caretaker had poured clear transparent oil into the pond to stop the mosquitoes from laying eggs in the pond. The Eco Club members told the caretaker that he should not pour the oil into the pond as it would affect the organisms in the pond.



a) Explain why the level of dissolved oxygen in the pond dropped 3 hours later. (1m)

_____

b) At night, the dissolved oxygen level in the pond dropped even more, why is this so? (2m)

_____

_____

c) Explain why is Plant A is not affected by the oil. (1m)

_____

4

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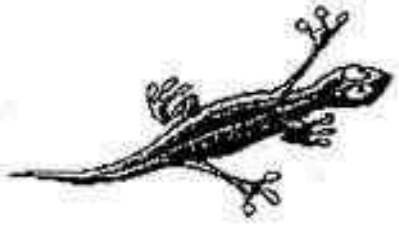
37. Below is a picture of a house lizard. It crawls around the house and feeds on small insects.



a) Based on the structural adaptations of the house lizard as shown below, state how these adaptations help it to survive in its habitat.

Part a) has been completed for you.

	Adaptation	How it is useful
a)	Long, narrow and flat body	To hide from predators by squeezing into crevices or cracks.
b)	Long, sticky tongue	
c)	Sticky pads on the underside of its feet	
d)	Tail drops off and keeps moving for a while	

3

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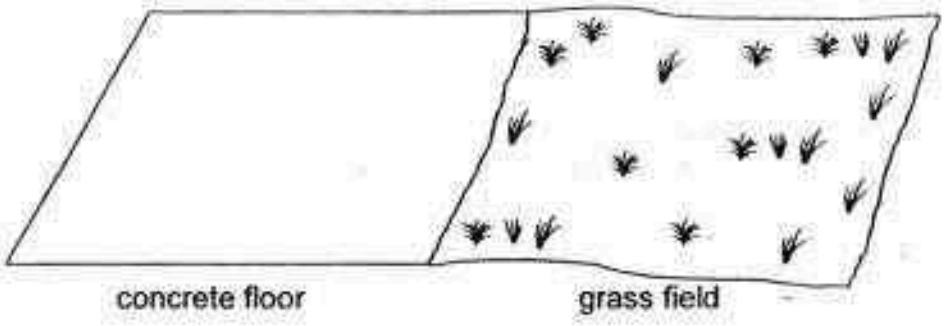
38. Bobby was playing soccer on the grass field near the park. He accidentally kicked the ball too hard and it landed on a concrete floor next to the field. He noticed that the ball rolled faster on the concrete floor as compared to the grass field.



a) Explain why the same soccer ball moved faster on the concrete floor than on the grass field. (1m)

_____

_____

b) When the ball was on the concrete floor, how can Bobby make the ball move faster? (1m)

_____

_____

2

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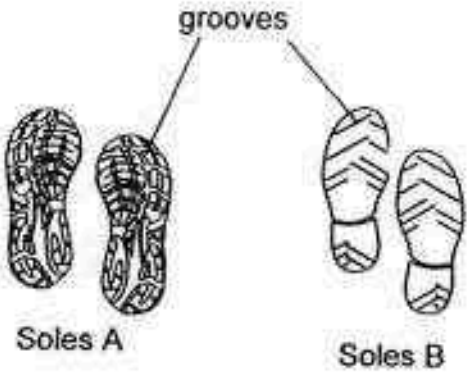
39. Alvin was climbing up a mountain. He used a rope to help him and also wore special shoes.



a) What force/s was/were acting on Alvin as he climbed up and down the mountain? (1m)

_____

b) Leng Leng went out on a rainy day. She wore shoes with Soles A. Why is A better than B? (1m)



_____

_____

2

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40. Study the information below.

Characteristics of Plant A

- It bears fruits.
- Its fruits have stiff hair.
- Its fruits are inedible and are hard and dry.

Characteristics of Plant B

- It bears fruits.
- Its fruits are brightly coloured.
- Its fruits are edible and are soft and juicy.

a) Based on the information given above, what is the most likely seed dispersal of Plant A and Plant B respectively? (1m)

Plant A: _____ Plant B: _____

b) During a certain month, Plant B happened to have a higher rate of dispersal than Plant A. Explain why this could happen. (2m)

_____

_____

_____

3

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41. Gopal and Ameen wanted to find out how temperature affects the rate of evaporation of water. The duration of the experiment was kept the same. They conducted an experiment and recorded their findings in the table below.

Set-up	Volume of water (ml)	Exposed surface area of water (cm^2)	Temperature (0°C)	Wind speed (km/h)
P	100	35	30	5
Q	120	50	40	20
R	100	35	30	20
S	120	50	80	20

a) Which two set-ups should they use for their experiment? (1m)

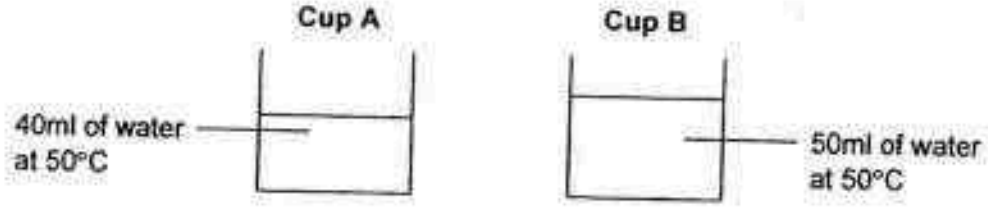
_____

b) If the boys conducted the experiment using set-ups P and R, what would be the aim of their experiment? (1m)

_____

_____

c) Gopal then carried out another experiment as shown below. He used cups of the same size and placed them in the Science Room.



Will the water in Cup A evaporate faster, slower or at the same rate as Cup B? Explain your answer. (1m)

_____

_____

3

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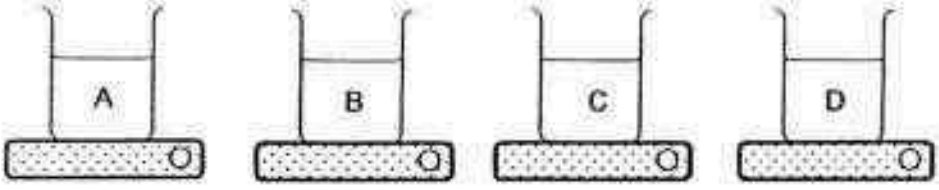
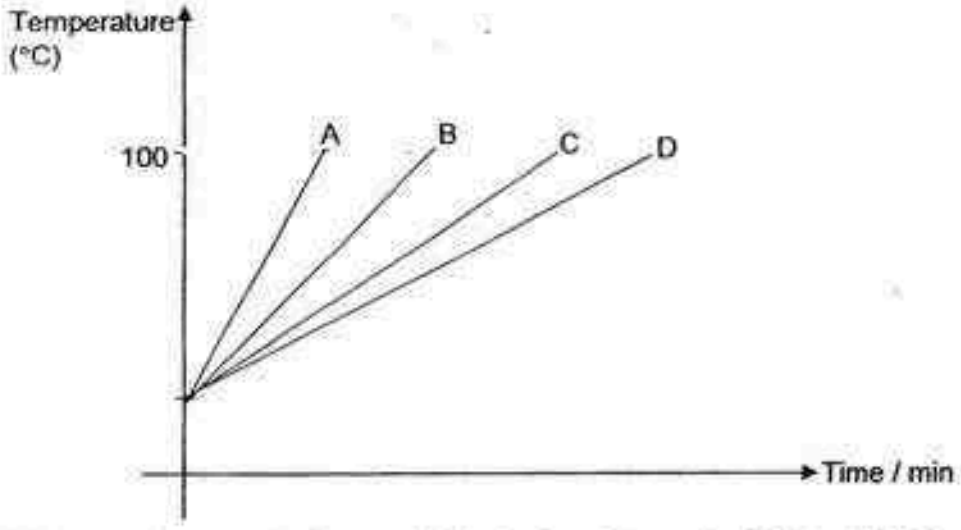
42. Irene prepared 4 containers made of different materials A, B, C and D and poured water of room temperature into them. She then heated the containers on stoves that provided the same amount of heat as shown below.



Irene then recorded the time taken for each container of water to boil and plotted the line graph as shown below.



a) Which container made of material A, B, C or D was the first to boil? (1m)

_____

b) Which material is the best conductor of heat? (1m)

_____

c) Which material is the best for making a container to be used to transport ice? Explain your answer. (2m)

_____

_____

4

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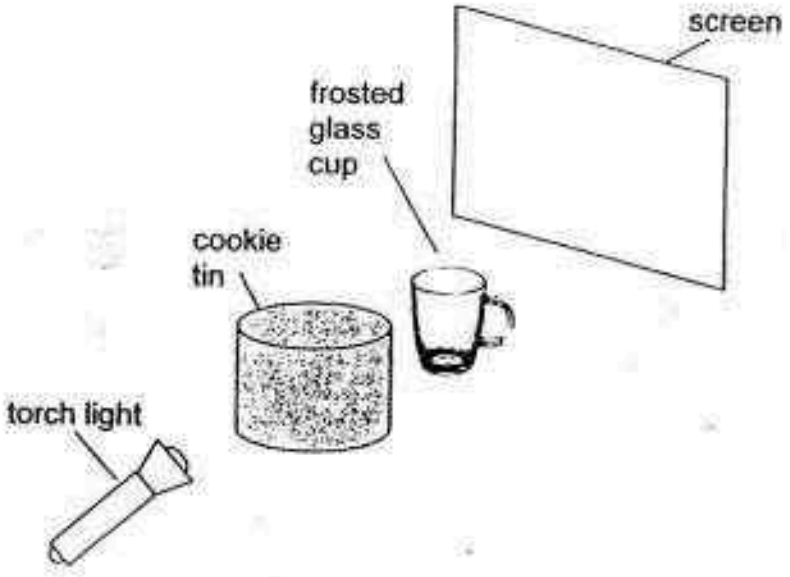
43. Christy set up an experiment as shown below.



a) Which object's shadow would Christy see on the screen? (1m)

_____

b) Christy then removed the cookie tin from her previous experiment. If she wanted to make the shadow of the cup bigger, what she should she do? (1m)

_____

_____

2

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44. Jack made a rattle-snake toy using a thick bendable wire, rubber bands and a ring. He attached the ring to the ends of the wire using 2 rubber bands.

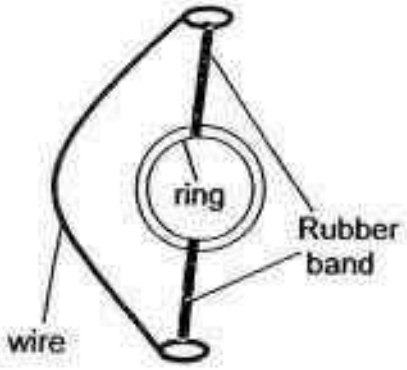


Diagram A:
Before the ring is turned

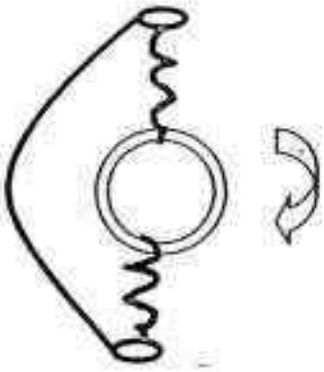
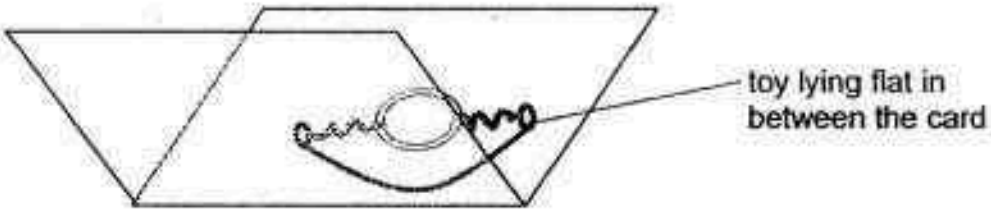
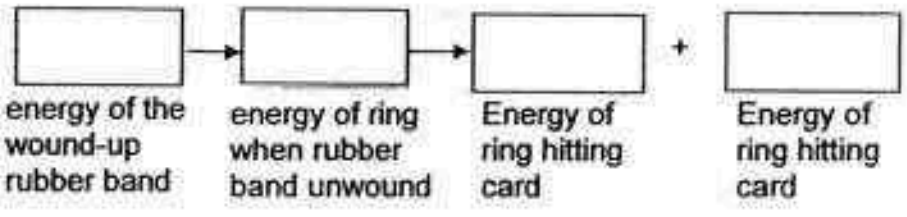


Diagram B:
After the ring was turned 5 times

Jack turned the ring 5 times and the rubber band was wound up as shown in Diagram B. Jack carefully placed the toy in between a card and made sure it lay flat. When his friend, Calvin opened the card, the rubber band unwound and the ring hit the sides of the card and made a loud sound which resembles the sound of a rattle snake.



a) Complete the main energy conversion for the toy before the card was opened to the time it unwound and hit the sides of the envelope. (2m)



b) Explain why the sound made by the toy became louder when Jack turned the ring 10 times. (1m)

_____

_____

3

End of Booklet B

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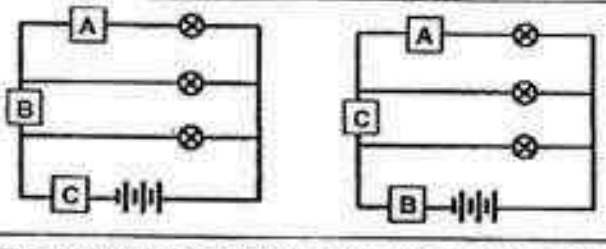
SINGAPORE CHINESE GIRLS' SCHOOL
PRIMARY 6 SCIENCE SA1 2016

Booklet A

1) 1	6) 1	11) 2	16) 3	21) 3	26) 4
2) 2	7) 1	12) 2	17) 2	22) 2	27) 3
3) 3	8) 4	13) 4	18) 3	23) 4	28) 1
4) 2	9) 4	14) 2	19) 2	24) 2	29) 1
5) 2	10) 3	15) 4	20) 1	25) 1	30) 3

Booklet B

Qn	Model Answer
31a	C , A, B, D
31b	B
32a	F, G, D, E
32b	E
32c	It is waterproof.
33a	There is no control setup in experiment 2.
33b	The amount of water in the beaker has decreased.
33c	The plant took in water through its roots and gave out through its leaves.
34a	T
34b	To find out if the number of batteries affects the brightness of the bulb.
35a	B and C
35b	
36a	The oil blocked oxygen at the surface from entering and dissolving in the pond water.
36b	At night, the plants do not carry out photosynthesis so they cannot produce oxygen. However, they will still carry out respiration and take in oxygen.
36c	Plant A has its leaves above water to carry out gaseous exchange.
37b	To catch its prey from a distance.
37c	To be able to climb on walls and ceilings to escape predators and also catch prey effectively.
37d	To distract the predator of the lizard so that it can escape.
38a	There is less friction between the ball and concrete floor than the grass field.

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38b	He can kick the ball harder / pour lubricant on the floor.
39a	Gravity / Gravitational force and Friction / Frictional force
39b	Soles A is rougher / has more grooves which provides more friction.
40a	Plant A: By animals Plant B: By animals
40b	Plant B produced more fruits than Plant A during that month.
41a	Q and S
41b	To find out if the wind speed affects the rate of evaporation.
41c	Same. The water in Cup A and Cup B has the same temperature and the same exposed surface area.
42a	A
42b	A
42c	D. It is the poorest conductor of heat so it will conduct heat from the surrounding to the ice the slowest.
43a	Cookie tin
43b	She should move the torch nearer to the cup. / She should move the cup further away from the screen.
44a	Potential energy → Kinetic energy → Sound energy + Heat energy
44b	When the number of turns increase, there will be more potential energy to be converted to more kinetic energy. More kinetic energy will then be converted to more sound energy.

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.17

PEI HWA PRESBYTERIAN PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1

PRIMARY 6
SCIENCE
13th May 2016

(BOOKLET A)

Name:_____ ( )

Class: Primary 6 Resilience _____

Additional Material(s): Optical Answer Sheet (OAS) Total time for Booklets A and B: 1 h 45 mins

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Index No. at the spaces provided above.
2. DO NOT turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

There are a total of 19 pages in this booklet, excluding the cover page.

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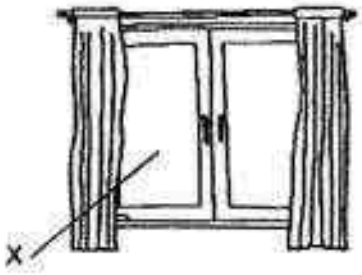
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade the oval on the Optical Answer Sheet (OAS). (60 marks)

1 Aden stands in front of the window and is able to see his friend outside.



What is the property of the part labelled X that allows Aden to see his friend?

(1) It is strong.
(2) It breaks easily.
(3) It allows light to pass through.
(4) It allows water to pass through.

2 The table below shows the properties of some objects. A tick (✓) shows that the object has that property and a cross (x) shows that it does not have that property.

Object	Properties		
	Allows light to pass through	Breaks easily	Sinks in water
A	x	✓	✓
B	x	✓	x
C	✓	x	✓
D	x	x	x

Which of the following objects is likely to be made of ceramic?

(1) A
(2) B
(3) C
(4) D

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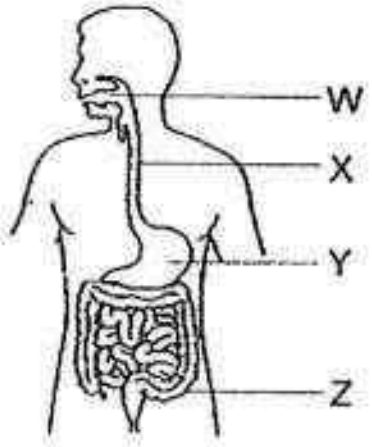
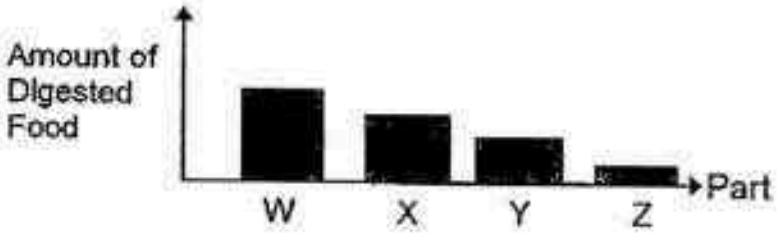
The diagram below shows the human digestive system with 4 parts labelled W, X, Y and Z.

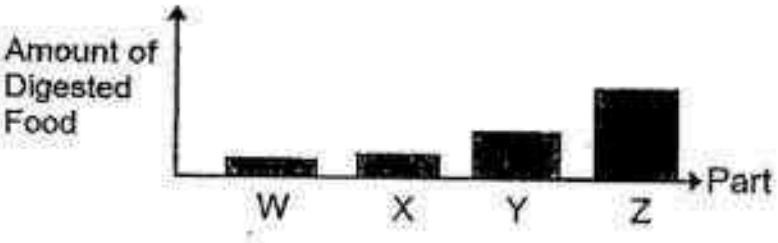


Which one of the following graphs correctly shows the amount of digested food in each part when the human digestive system functions properly?

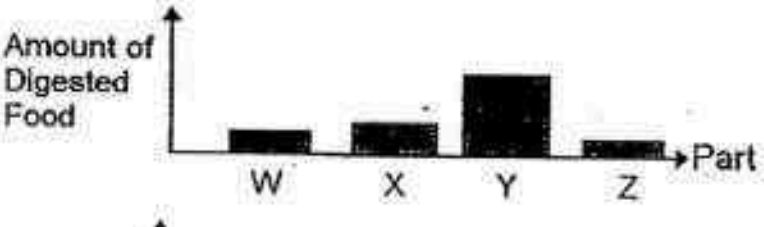
(1)



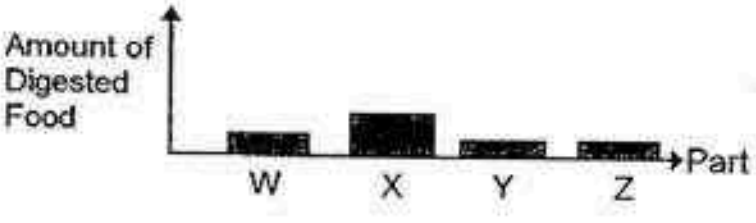
(2)



(3)



(4)



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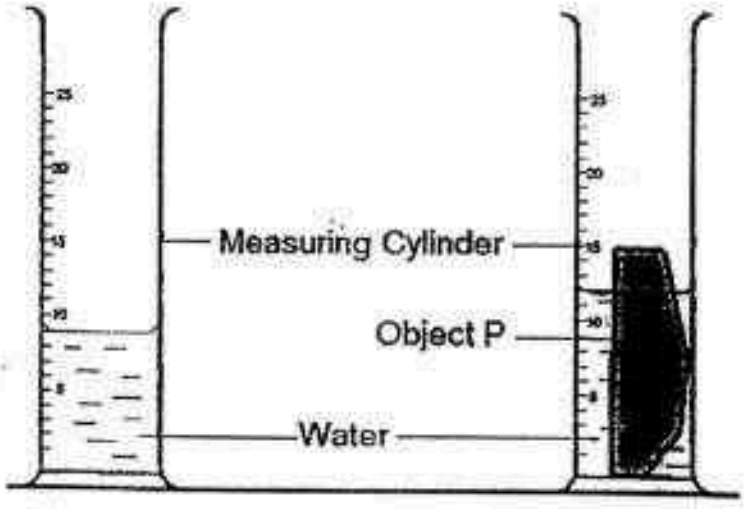
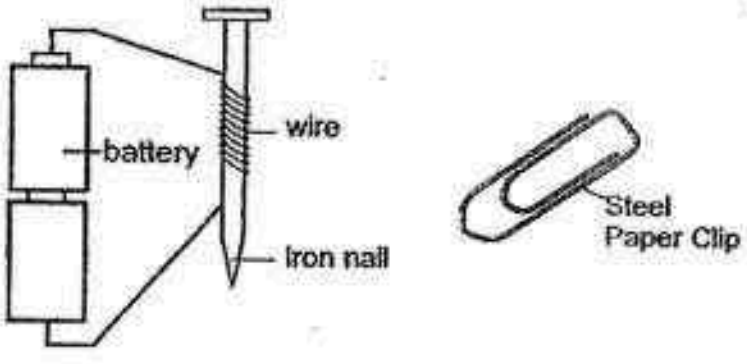
4 Diagram 1 below shows a measuring cylinder containing certain amount of water. Diagram 2 shows the same cylinder of water when Object P is placed into it.



From the diagrams, the volume of the object is most likely _____.

(1) 3 cm^3
(2) between 3 cm^3 and 6 cm^3
(3) between 7 cm^3 and 15 cm^3
(4) 15 cm^3

5 Brandon made an electromagnet. However, the electromagnet is unable to attract a steel paper clip as shown below.



Which of the following actions will enable the electromagnet to attract the paperclip?

(1) Heat the iron nail.
(2) Change the iron nail to a plastic nail.
(3) Change the steel paperclip to an aluminium paper clip.
(4) Increase the number of coils of wire round the iron nail.

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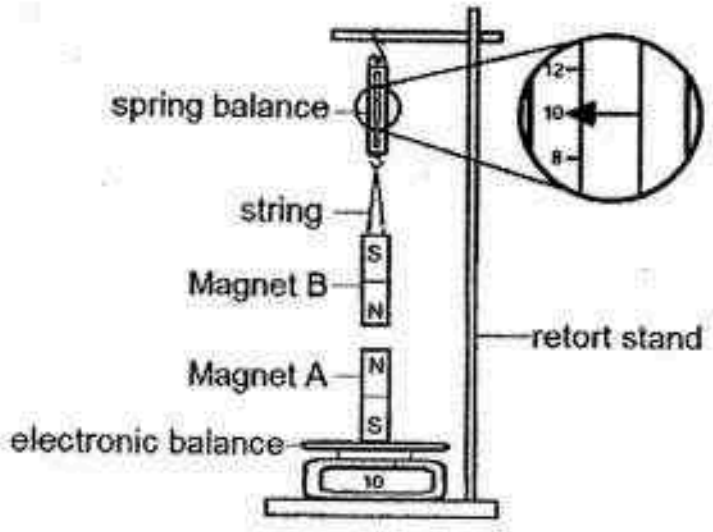
6 Abby set up an experiment using two strong magnets of different masses as shown in the diagram below. Magnet A was placed on an electronic balance while Magnet B was suspended from a spring balance.



She recorded the readings of the spring balance and electronic balance in the table below:

Reading on Spring balance (Units)	Reading on Electronic balance (Units)
10	10

Next, she replaced Magnet A with an aluminum bar of the same mass.

Which of the following about the readings on the electronic balance and spring balance is correct?

	Reading on Spring balance (Units)	Reading on Electronic balance (Units)
(1)	12	8
(2)	8	12
(3)	8	8
(4)	12	12

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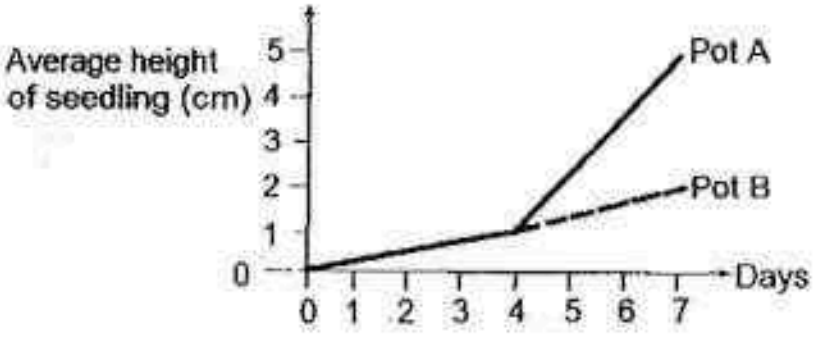
7 Ali had two similar pots of the same soil, labelled A and B. He placed 10 bean seeds in each pot. He placed Pot A in a dark cupboard and Pot B in a bright place. As the seeds germinated, Ali measured the height of the seedlings daily and presented the graph below.



Which of the following statement can be concluded from the graph?

(1) All the seeds germinated by Day 4.

(2) Light is necessary for the germination of seeds.

(3) Seedlings in the dark grow taller than seedlings in the light.

(4) The seedlings in Pot A have more leaves than those in Pot B.

8 Figures 1 and 2 show how gases are transported in the circulatory system of a fish and a human respectively.

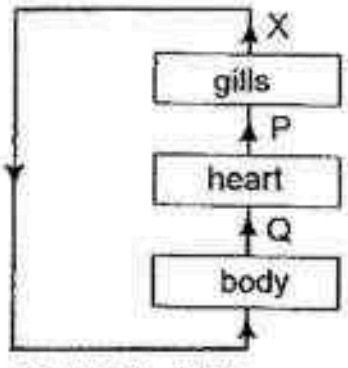


Figure 1 - Fish

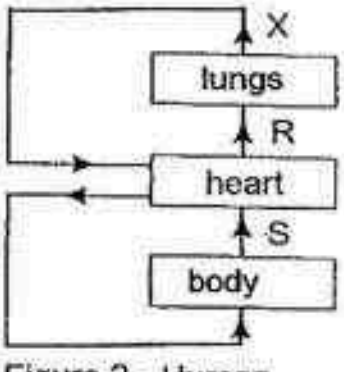


Figure 2 - Human

Which of the following correctly shows the amount of carbon dioxide in P, Q, R and S as compared to the amount of carbon dioxide at X?

	P	Q	R	S
(1)	Higher	Lower	Higher	Lower
(2)	Higher	Higher	Lower	Lower
(3)	Lower	Lower	Lower	Lower
(4)	Higher	Higher	Higher	Higher

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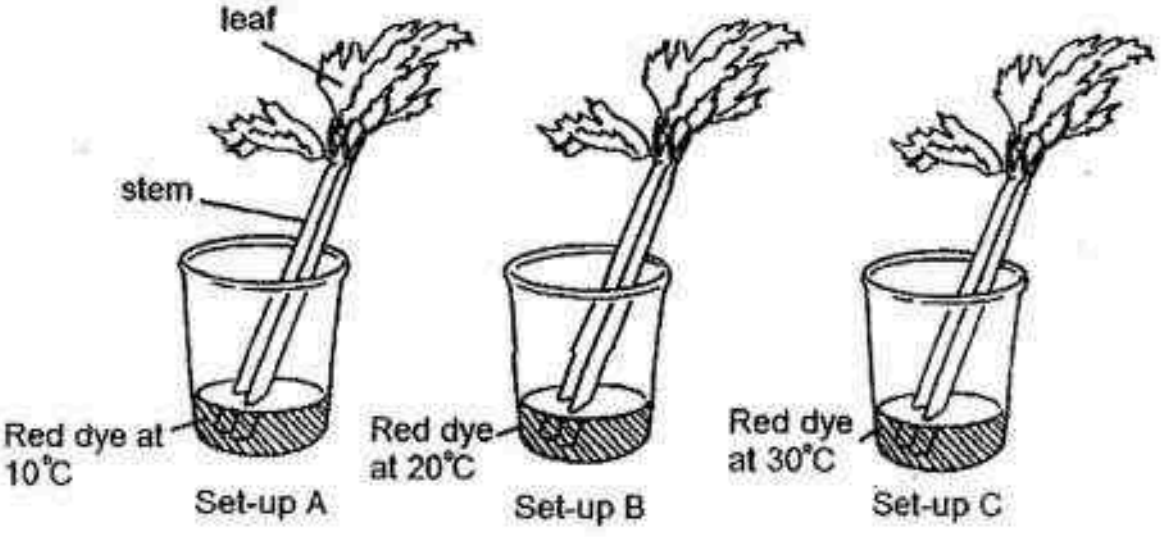
9 Devi placed three similar-sized stalks of celery plant into identical cups containing red dye at different temperatures as shown below.



The temperature of the red dye was maintained throughout the experiment. Devi observed the leaves of the celery for 5 days and recorded her results in the table below:

Set-up	A	B	C
Temperature of red dye (°C)	10	20	30
Number of days for leaves to turn red	5	3	1.5

Based on the information given above, which one of the following statements is incorrect?

(1) The leaf of the celery plant contains water-carrying tubes.

(2) The stem of the celery plant contains water-carrying tubes.

(3) The lower the temperature of the red dye, the higher the speed that water is taken in by the celery plant.

(4) The higher the temperature of the red dye, the higher the speed that water is taken in by the celery plant.

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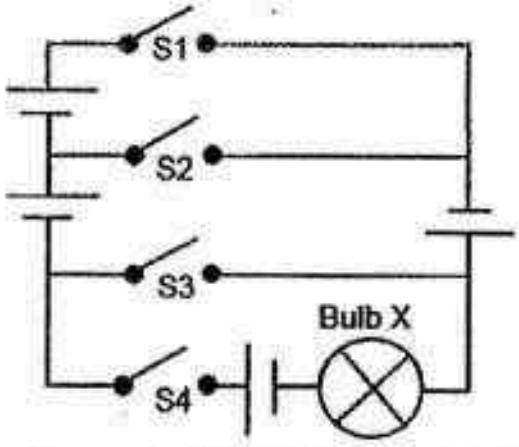
10 The diagram below shows an electric circuit with identical switches and batteries.



Which of the following will cause Bulb X to light up the brightest?

	S1	S2	S3	S4
(1)	Close	Close	Open	Open
(2)	Close	Open	Close	Open
(3)	Open	Close	Open	Close
(4)	Open	Open	Close	Close

11 A boy kicks a ball upwards into the air. The ball reaches a maximum height and then falls downwards to the ground.



Which of the following statements about the moving ball is correct?

(1) No force acts on the ball at the maximum height.

(2) Gravity acts on the ball throughout the path of motion.

(3) The ball travels at a constant speed throughout the motion.

(4) Gravity acts on the ball only after it has attained its maximum height and falling downwards.

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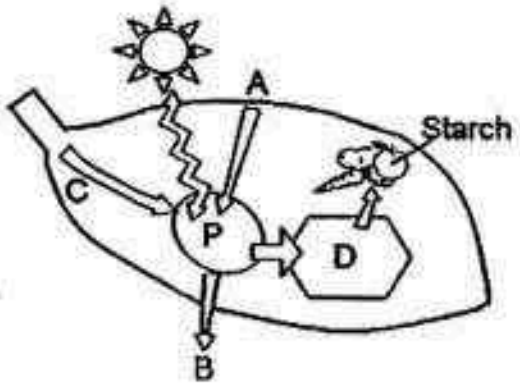
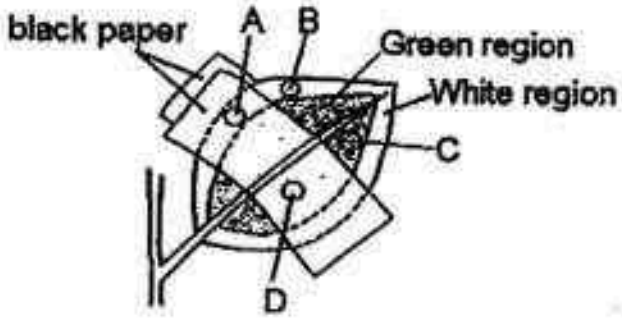
12 The diagram below shows a life process, P, carried out in a green leaf on a plant.



Which one of the following correctly represents A, B, C and D?

	A	B	C	D
(1)	Oxygen	Water	Carbon dioxide	Sugar
(2)	Carbon dioxide	Water	Sugar	Oxygen
(3)	Carbon dioxide	Oxygen	Water	Sugar
(4)	Sugar	Oxygen	Water	Carbon dioxide

13 A plant with leaves of green and white regions was left in a dark cupboard for 48 hours. The top and underside of one leaf was each partially covered by a strip of black paper, as shown in the diagram below.



The plant was then left under the sun. After 48 hours, the leaf was plucked off and both strips of black paper were removed. The leaf was then tested for the presence of starch. In which of the areas labelled A, B, C and D is starch found?

(1) C only
(2) B and C only
(3) A and D only
(4) A, B and D only

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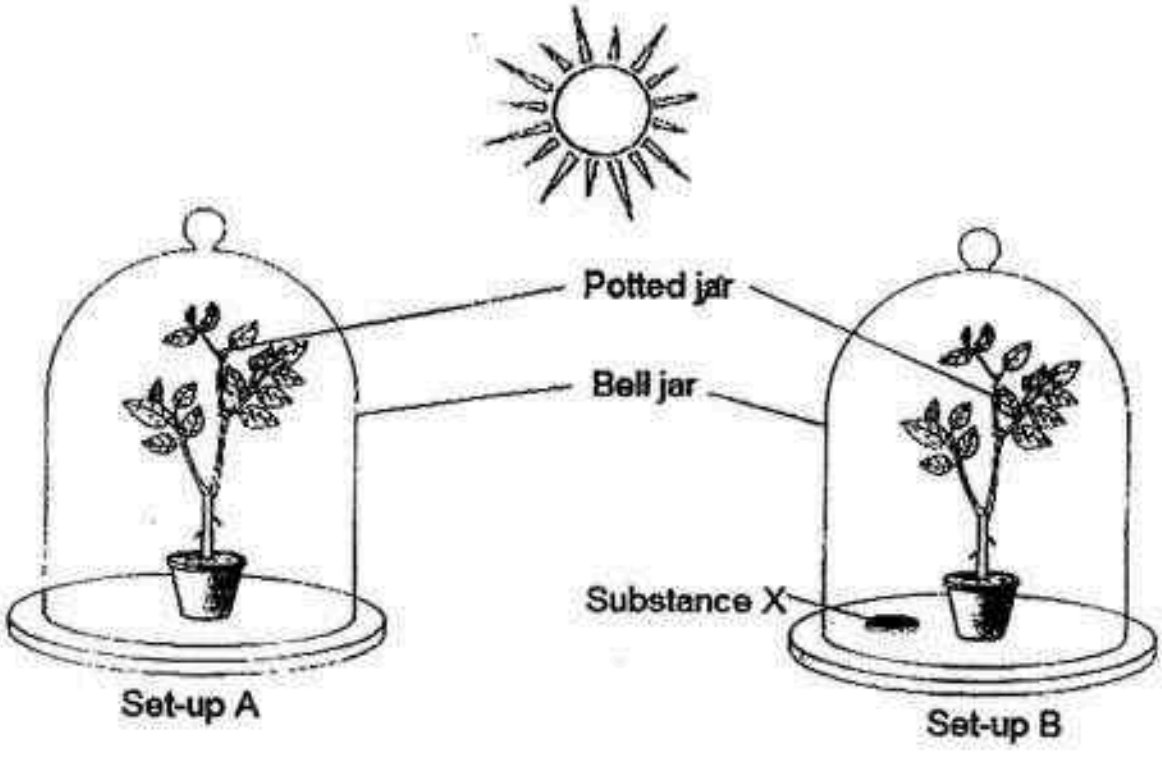
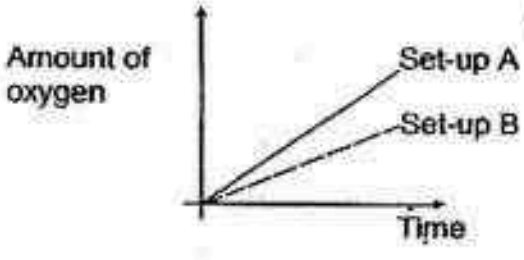
14 Edward prepared two set-ups, A and B as shown below. He gave both the plants the same amount of water. He placed Substance X which is used to remove carbon dioxide from the surrounding air in Set-up B. He placed both the set-ups under the sun for 24 hours.

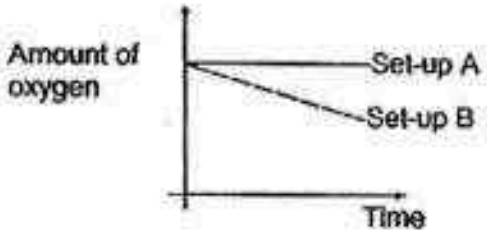


Which of the following graph would show the amount of oxygen in both set-ups over time?

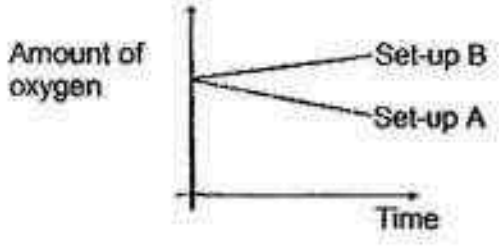
(1)



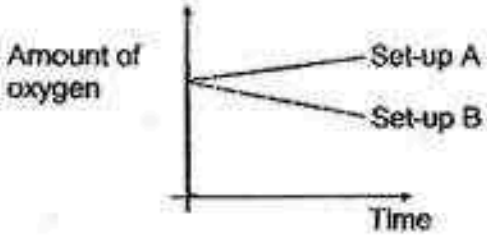
(2)



(3)



(4)



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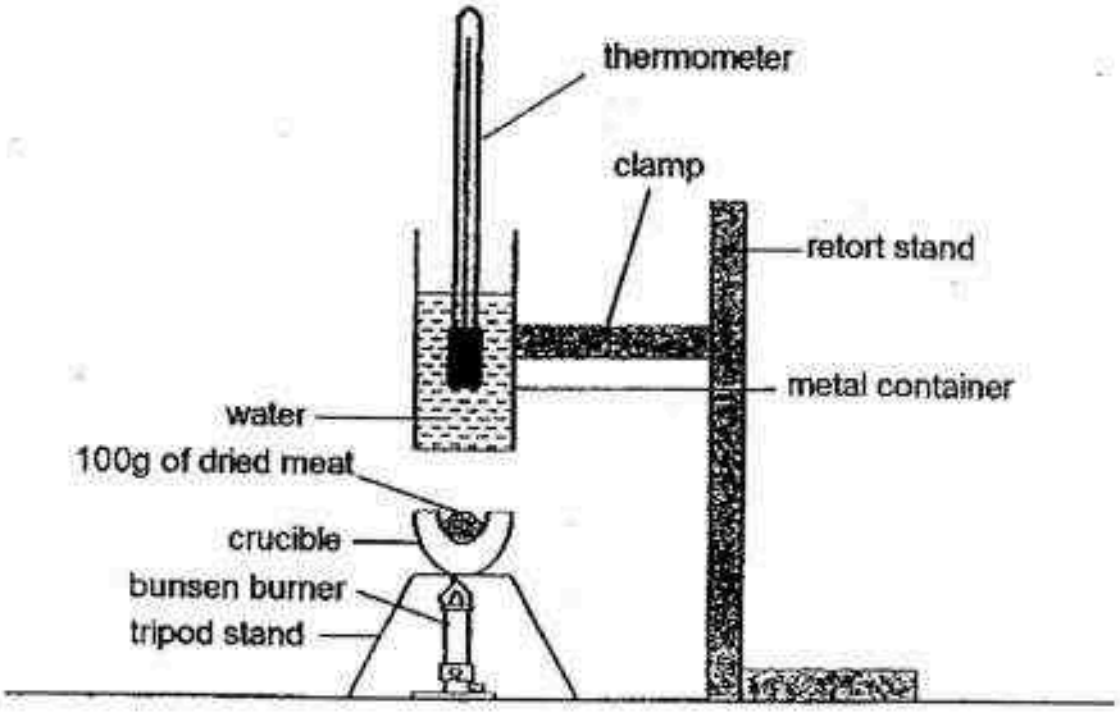
15 Francisca conducted an experiment as shown below. She placed 100g of dried meat in a crucible and burned it over a bunsen burner for 30 minutes. The temperature of the water was measured with a thermometer. She repeated the experiment with 100g of mash potatoes, and then followed by a block of butter of the same mass.



The results are recorded in the table below.

Type of food	Initial temperature of water (°C)	Final temperature of water (°C)
Dried Meat	29	77
Mashed Potato	29	56
Butter	29	89

What can Francisca infer from the results of her experiment?

A The three types of food are sources of energy.

B The three types of food can give off heat energy when heated.

C Butter produced more energy than dried meat and mashed potato.

(1) A only

(2) A and B only

(3) B and C only

(4) A, B and C

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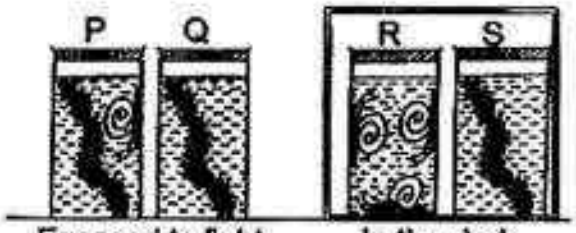
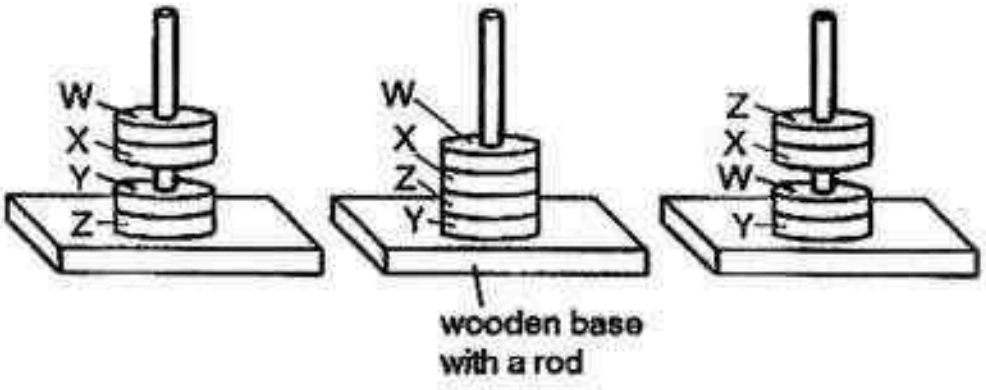
16 Judy set up the following apparatus as shown below. Containers P and R contained 1 and 3 water snails respectively while Containers P, Q and S contained an identical water plant each. The containers were sealed and left standing for one day.



Assuming all the living things are still alive at the end of the experiment, arrange in order, the amount of carbon dioxide in each container at the end of the experiment, starting from the least to the most.

	Least amount of carbon dioxide → Most amount of carbon dioxide			
(1)	P	Q	R	S
(2)	Q	S	P	R
(3)	R	S	P	Q
(4)	Q	P	S	R

17 The diagrams below show 3 different arrangements of 4 rings being slotted through a rod. Out of the 4 rings, W, X, Y and Z, 3 of them are ring magnets and 1 of them is an iron ring.



Based on the 3 arrangements, which one of the rings is most likely the iron ring?

(1) W
(2) X
(3) Y
(4) Z

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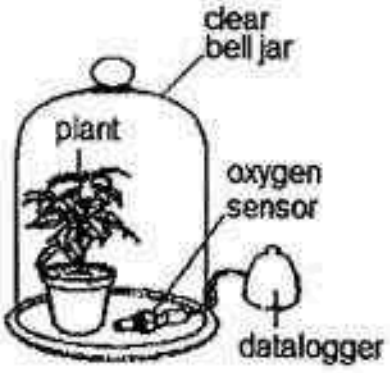
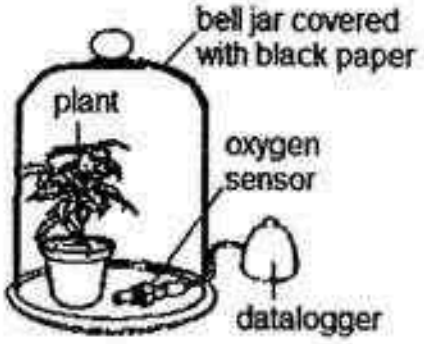
18 Harry set up an experiment to investigate how the presence of light affects the rate of photosynthesis of a plant.

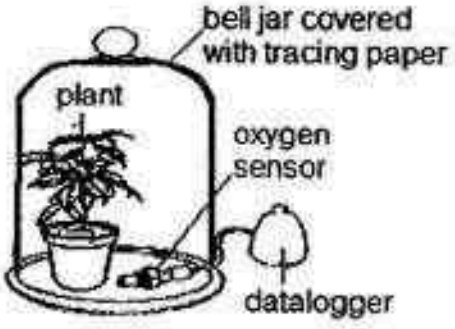




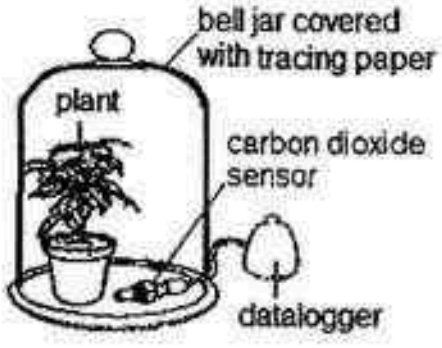
Harry's teacher told him that he should include a control in his experiment to assist him to make a valid conclusion.

Which one of the following is a suitable control for his experiment?

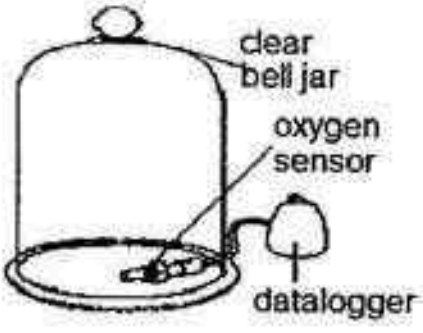
(1)



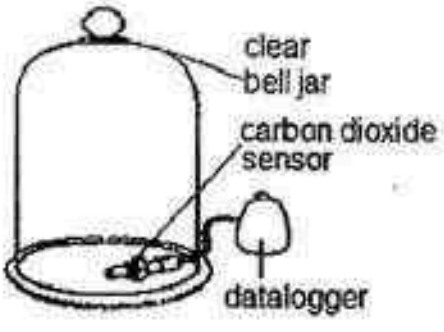
(2)



(3)



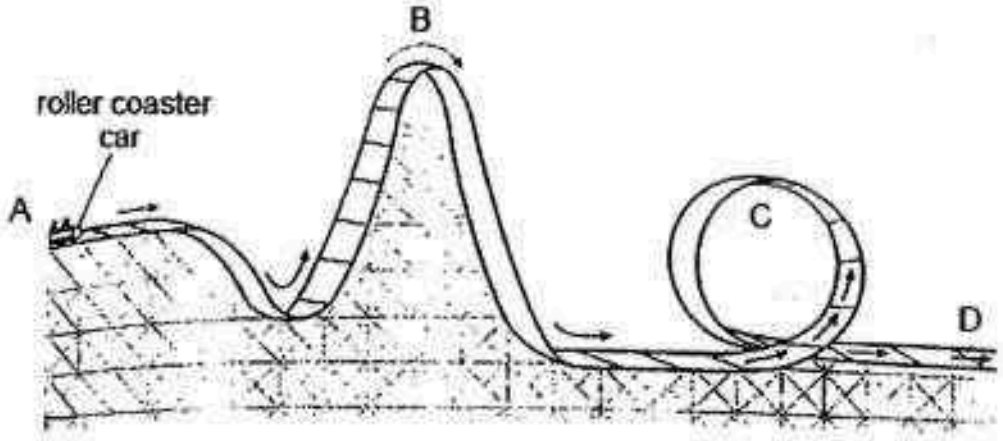
(4)



19 Which of the following has a different form of potential energy from the others?

(1) firewood
(2) solid fuel
(3) car battery
(4) stretched rubber band

20 The diagram below shows part of a roller coaster ride that can be found in amusement parks. The roller coaster car started moving at A and travelled to D.



Which one of the following statements about the roller coaster car is correct?

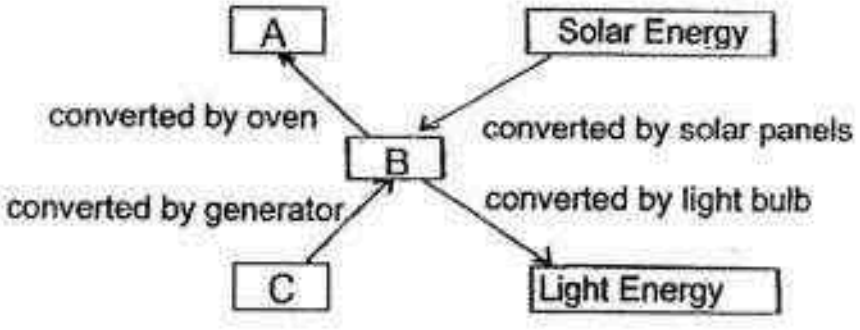
(1) The kinetic energy of the roller coaster car at C is zero.

(2) The roller coaster car has the greatest kinetic energy at B.

(3) The gravitational potential energy possessed by the car at B is more than the gravitational potential energy possessed by the car at C.

(4) Its total potential and kinetic energy at C is greater that its total potential and kinetic energy at B.

21 The diagram below shows how energy is converted from one form to another in 4 different objects.



Which one of the following represents the energy labelled A, B and C?

	A	B	C
(1)	Light	Heat	Electrical
(2)	Sound	Potential	Heat
(3)	Sound	Electrical	Heat
(4)	Heat	Electrical	Kinetic

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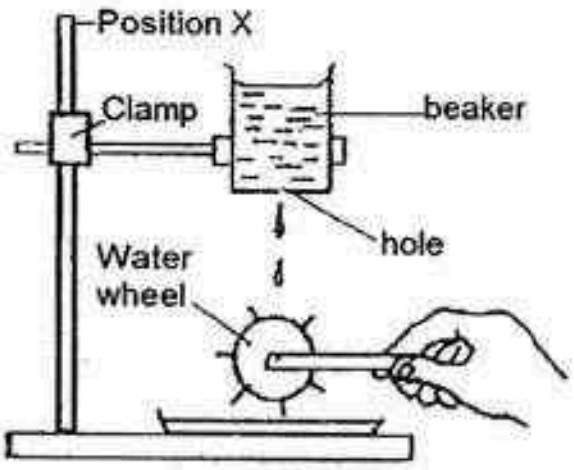
22 Jack set up an experiment as shown in the diagram below.



Which of the following would happen if Jack raises the clamp for the Beaker to Position X?

A The water wheel will spin faster.

B The water wheel will spin slower.

C The water hitting the wheel will have more kinetic energy.

D The water at the hole will possess more gravitational potential energy.

(1) A and C only

(2) A and D only

(3) A, C and D only

(4) B, C and D only

23 Which one of the following statements about energy is true?

(1) Energy can only be found in living things.

(2) Energy can be created but not destroyed.

(3) Energy is needed by non-living things to do work.

(4) Solar energy is a form of non-renewable energy source.

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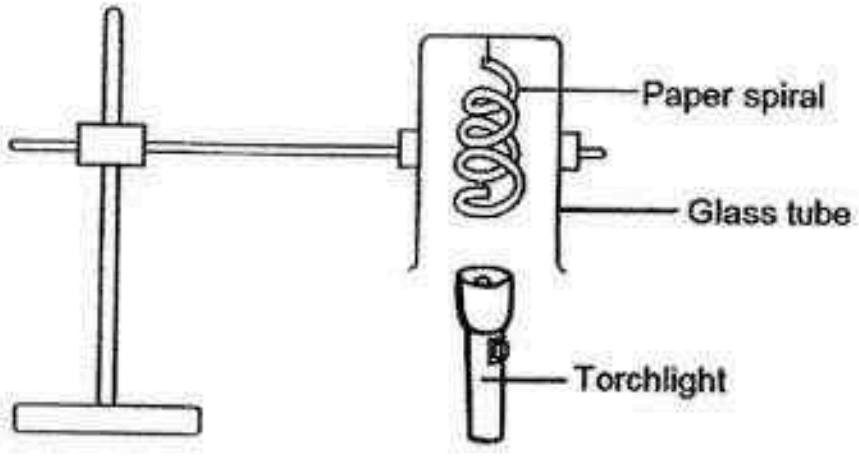
24 Xavier prepared a set-up as shown below. He observed that the paper spiral began to spin 5 minutes after the torchlight was turned on.



Which one of the following correctly describes the energy conversion from the time the torchlight was switched on until the time the spiral began to spin?

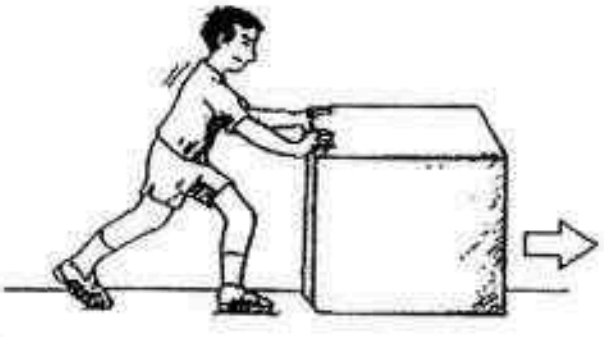
(1) chemical potential energy → electrical energy → light energy → kinetic energy

(2) chemical potential energy → electrical energy → kinetic energy → light energy

(3) chemical potential energy → electrical energy → kinetic energy → heat energy

(4) chemical potential energy → electrical energy → heat energy → kinetic energy

25 Kai Leong pushes a box in the direction as shown in the diagram below.



Which one of the following must happen for the box to move in the direction shown?

(1) The frictional force acting against the box must be greater than the force applied by Kai Leong.

(2) The gravitational force and the frictional force acting on the box must be equal.

(3) The force applied by Kai Leong must be greater than the frictional force acting against the box.

(4) The frictional force acting against the box must be greater than the gravitational force acting on the box.

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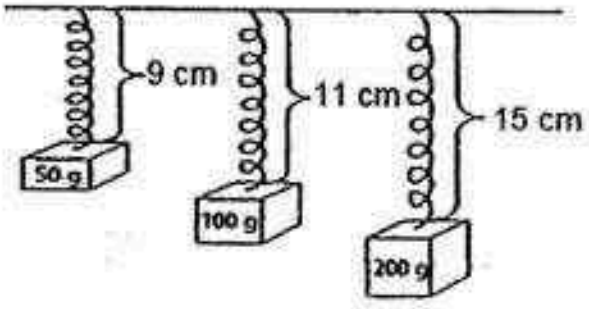
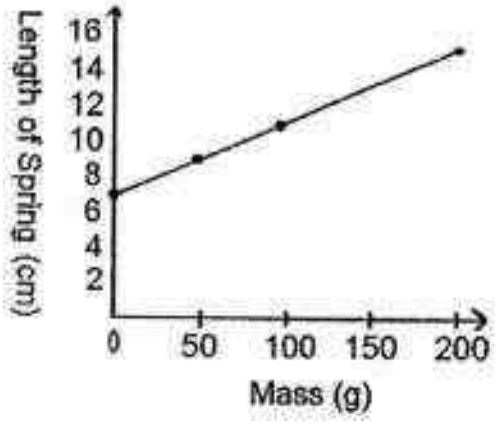
26. Larry was given a spring that was 7 cm long as shown in the diagram below. He hung a 50g mass on it and measured the length of the spring as 9 cm. He then repeated his experiment with masses 100g and 200g.

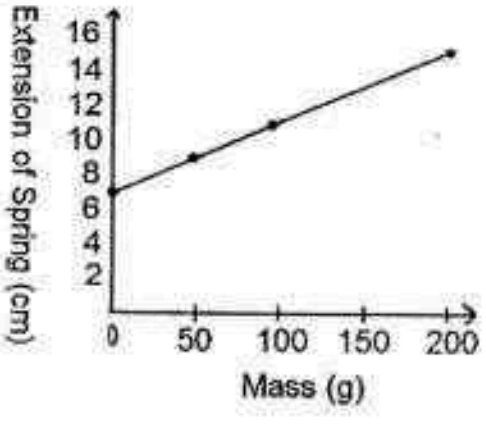


He then plotted 4 different graphs to shown his results as shown below.

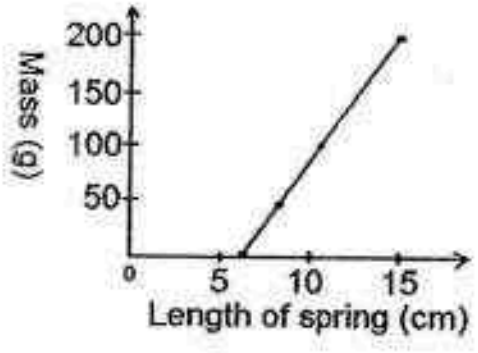
A



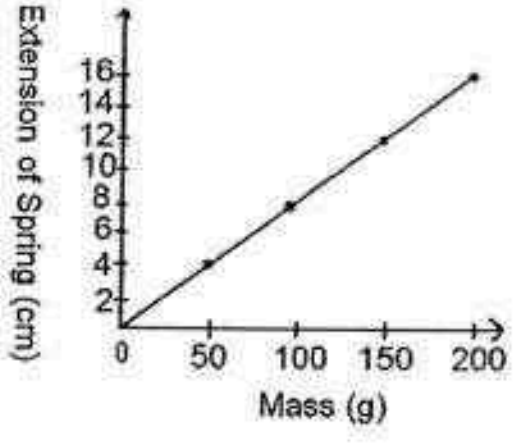
B



C



D



Which of the following graphs can be used to represent Larry's results?

(1) A only

(2) D only

(3) A and B only

(4) A and C only

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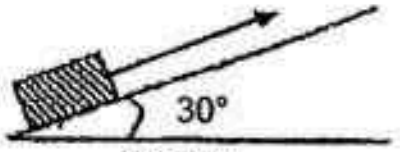
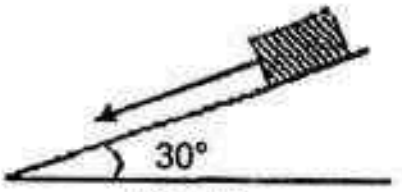
27 The diagrams below show a 20-kg metal box being pulled by Linda along 4 slopes of smooth surfaces made of the same material.

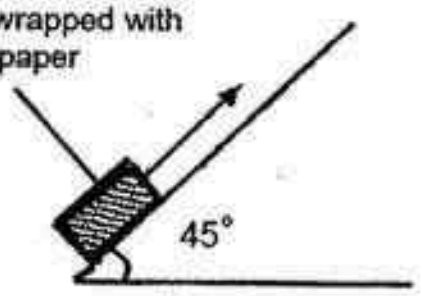


Slope A



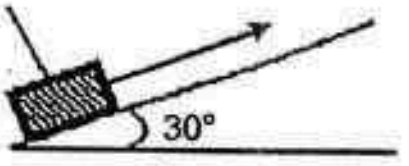
Slope B

Box wrapped with sandpaper



Slope C

Box wrapped with sandpaper



Slope D

Arrange in order, the amount of force needed by Linda to move the box, from the least amount of force to the most amount of force.

	Least amount ⟶ Most amount			
(1)	B	D	A	C
(2)	B	A	D	C
(3)	C	A	B	D
(4)	C	D	A	B

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28 The table below provides the physical characteristics in 4 different habitats (P, Q, R and S).

Physical factors	Habitats			
	P	Q	R	S
Moisture	High	Low	High	Low
Average temperature (°C)	30	23	21	18
Intensity of light	High	Low	Low	High

Plant X was observed to grow well in a damp and shaded environment with temperature ranging from 15 to 25°C.

In which one of the following habitats can you find the most number of Plant X?

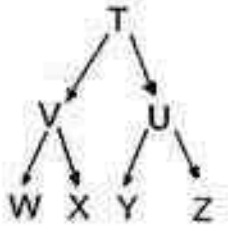
(1) P
(2) Q
(3) R
(4) S

29 Organisms *T*, *U*, *V*, *W*, *X*, *Y* and *Z* live in the same habitat. Study the information below carefully.

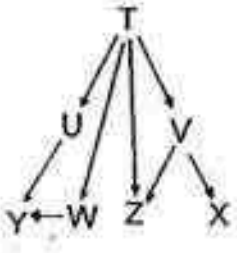
T is a plant.
U and *V* are plant eaters.
W and *X* are animal eaters.
Y and *Z* are plant and animal eaters.

Based on the information above, which of the following food webs correctly shows the food relationships of the organisms?

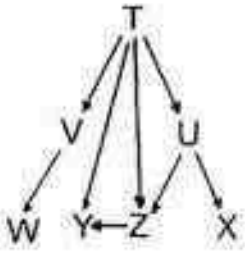
(1)



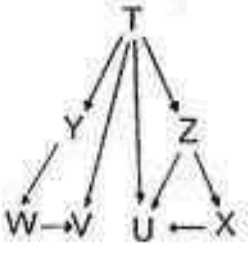
(2)



(3)



(4)



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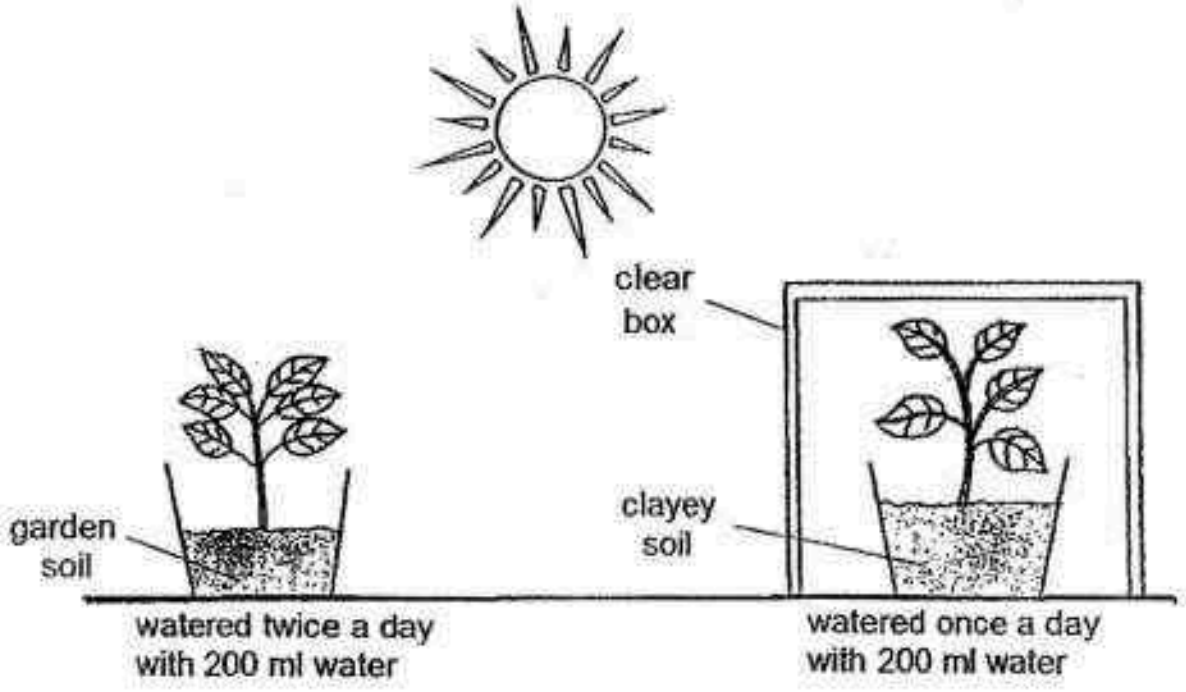
30 Raju wanted to find out if the type of soil a plant is grown in would affects its growth. The diagram below shows the experiment he carried out.



His teacher told him that his test was unfair. Which of the following are possible reasons why he said that?

A Both plants should be watered twice a day.

B The clear box in Set-up B should be removed.

C Both plants should have the same number of leaves.

D The type of soil used in both pots should be clayey soil.

(1) A and B only

(2) A, B and C only

(3) A, C and D only

(4) B, C and D only

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PEI HWA PRESBYTERIAN PRIMARY SCHOOL

SEMESTRAL ASSESSMENT 1

PRIMARY 6
SCIENCE
13th May 2016

(BOOKLET B)

Name: _____( )

Class: Primary 6 Resilience _____

Parent's Signature

Total time: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Index No. at the spaces provided above.
2. DO NOT turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answers in this booklet.

FOR TEACHER'S USE

Marks (Booklet A) :	60
Marks (Booklet B) :	40
Total Marks (Booklet A & B) :	100

There are a total of 15 pages in this booklet, excluding the cover page.

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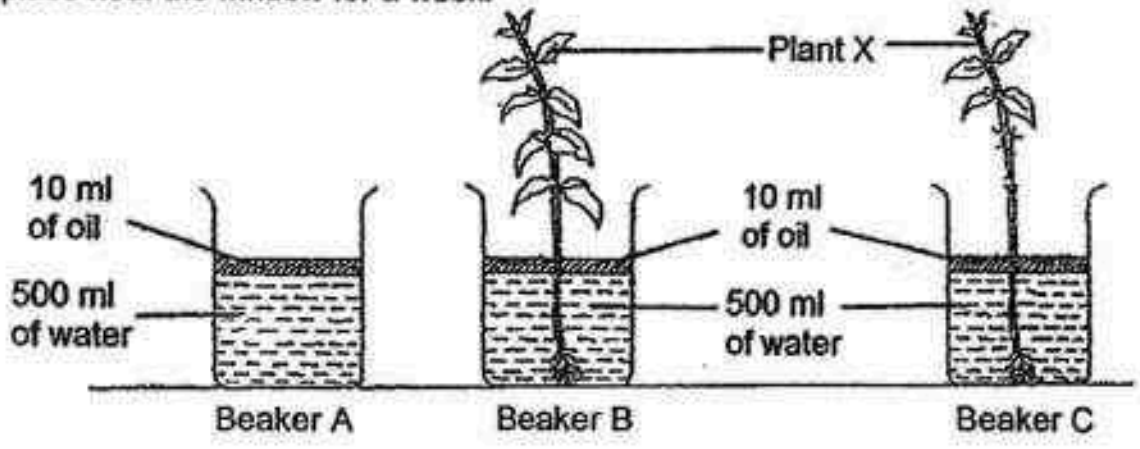
For questions 31 to 44, write your answers in the booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question.

31 Siti carried out an experiment as shown below. All of 3 beakers were left at the same place near the window for a week.



Siti recorded the volume of water in each beaker on Day 1 and Day 7 in the table below.

Beaker	Volume of water (ml)	
	Day 1	Day 7
A	500	500
B	500	230
C	500	350

(a) What was the aim of Siti's experiment? [1]

(b) Explain why there was less water in Beaker B than Beaker C on Day 7. [2]

(c) Give a reason how leaving her set-up at the same place helps to make her experiment a fair test. [1]

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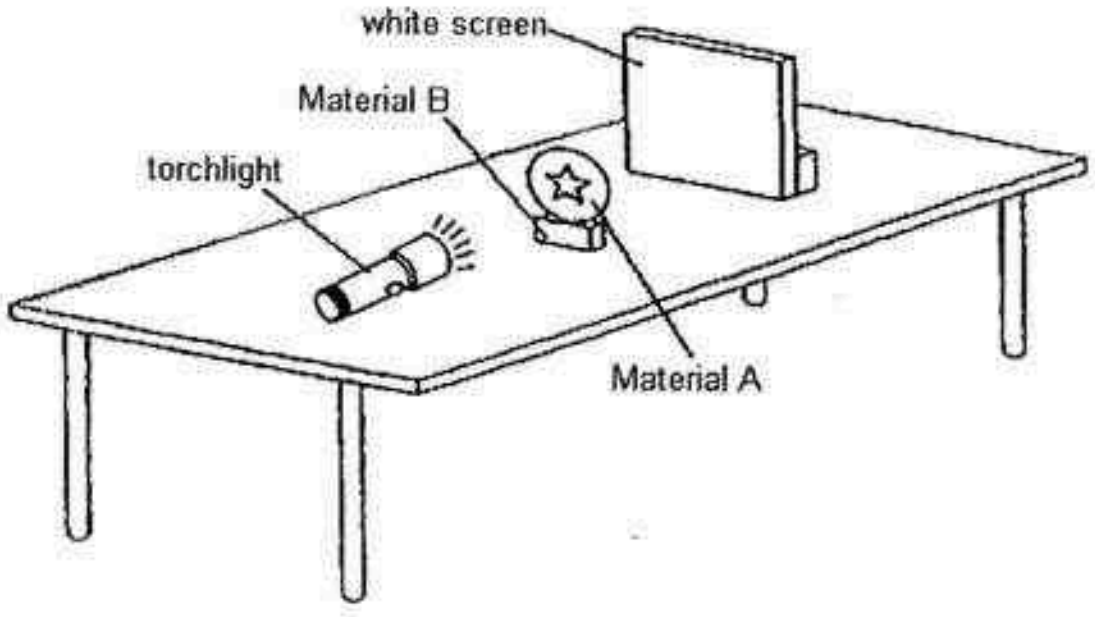
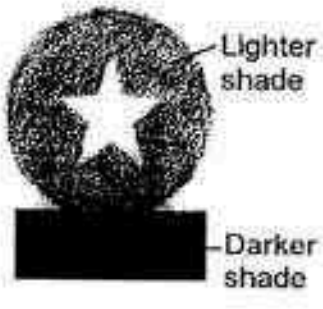
32 Tom carried out the following experiment in a dark room using the set-up below. An object made up of Material A and Material B is placed between a torchlight and a white screen.



He switched on the torch and shone the light on the object, and noticed that a shadow was cast on the white screen as shown below:



(a) Based on the shadow observed, state the properties of Material A and Material B. [2]

Material A : _____

Material B : _____

(b) If Tom were to move the object towards the torch, what change would he see in his observation on the white screen? [1]

_____

_____

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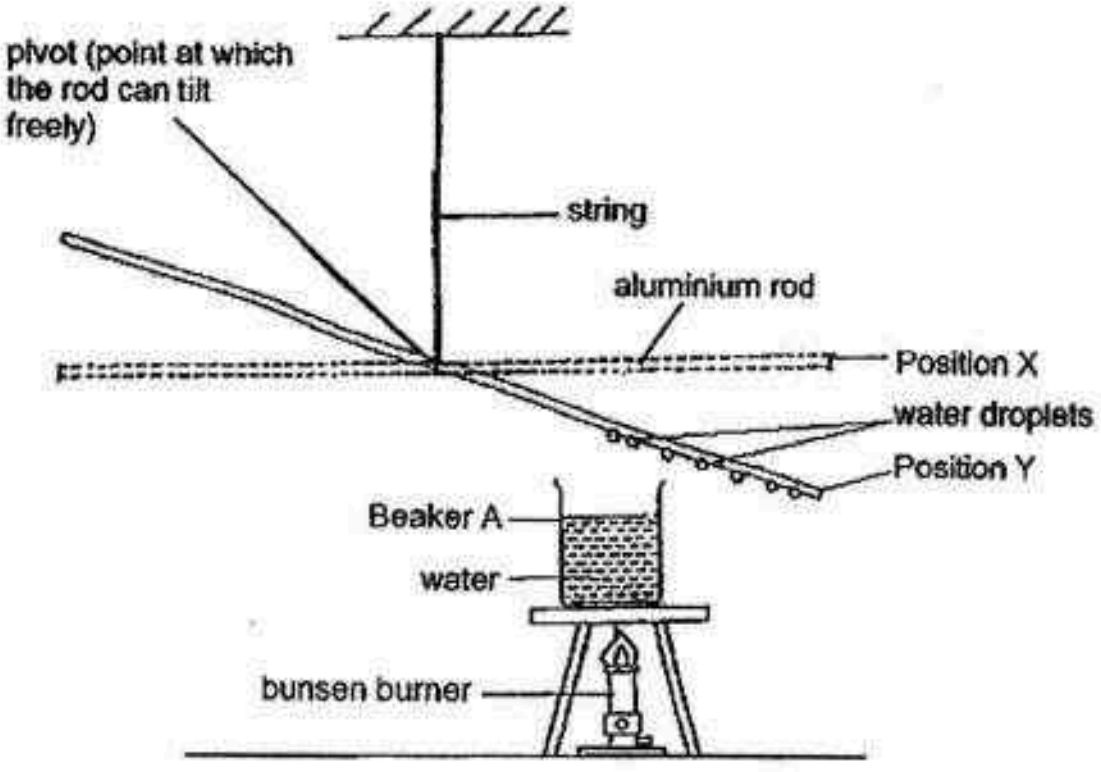
33 Wei Liang conducted an experiment by using the set-up shown below.



He observed that after a while, the water in Beaker A boiled and turned into steam. The aluminium rod tilted and the end of the rod moved from Position X to Position Y after a few minutes.

(a) Describe how the aluminium rod moved from Position X to Position Y. [2]

(b) Wei Liang waited for the aluminium rod to cool down to room temperature and replaced Beaker A with another beaker with the same volume of water. He observed that the aluminium rod took longer time to move to Position Y. Suggest a reason for his observation. [1]

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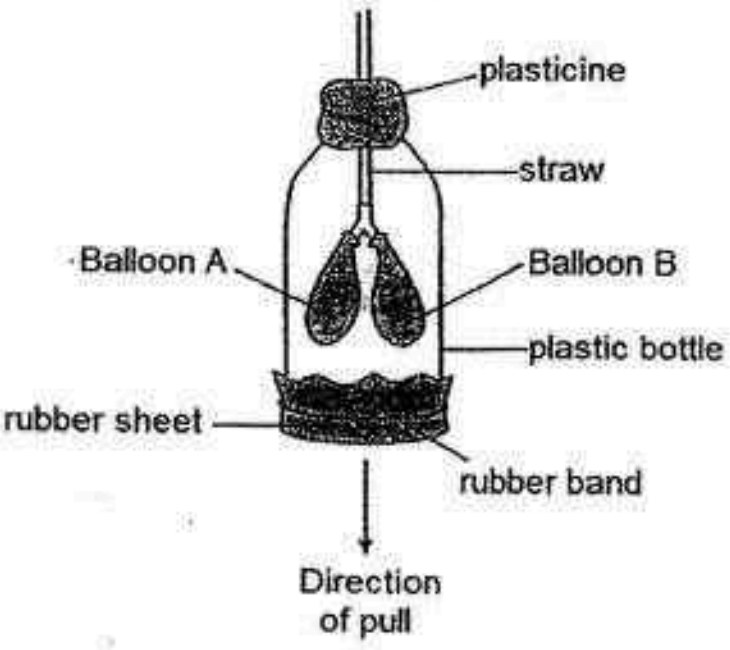
34 Zachary cut off the bottom of a plastic bottle and built a model of the human respiratory system as shown in the diagram below.



(a) What would happen to Balloons A and B when the rubber sheet is pulled downwards from the bottom of the bottle? Explain your answer. [2]

(b) Zachary found out that the lungs cannot function if there is a hole in the lungs. Based on the model, explain why this is so. [1]

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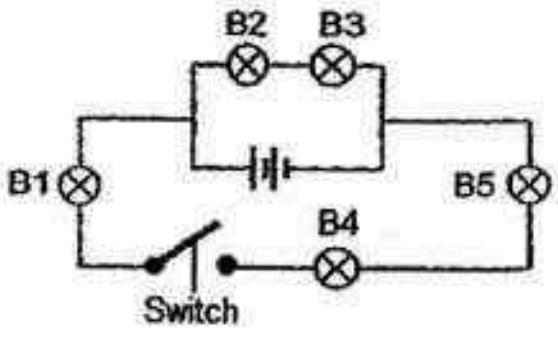
35 Study the circuit diagram shown below. All the bulbs (B1, B2, B3, B4 and B5) are lit when the switch is closed.



Write down the minimum number of bulbs that would remain lit when one of the bulbs in the circuit is blown. Give a reason for your answer. [2]

(a) Minimum number of bulbs remaining lit : _____

Reason :_____

_____

(b) Maximum number of bulbs remaining lit : _____

Reason _____

_____

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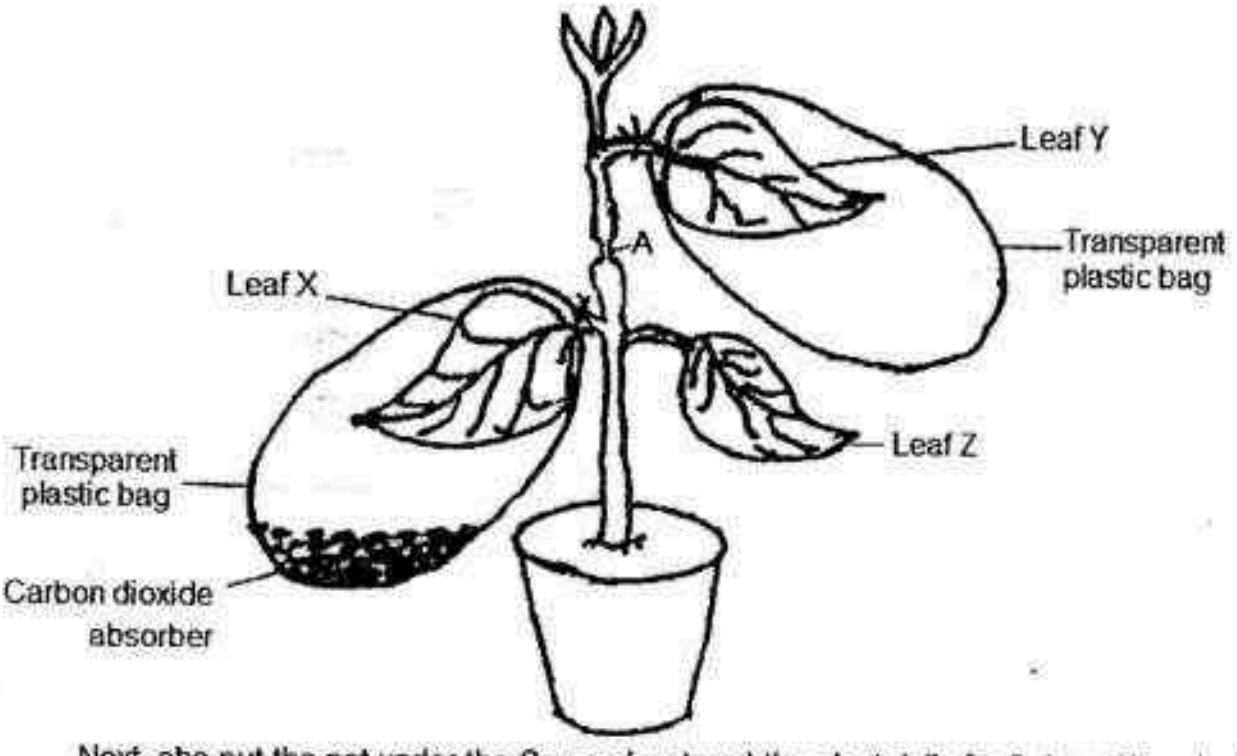
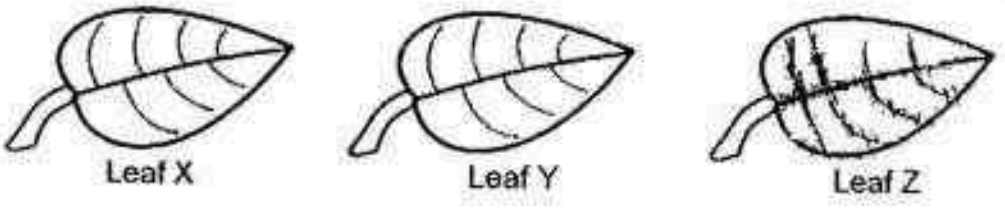
36 Ramlah removed the water-carrying tubes from a plant by making a ring around the stem at A. In addition, she wrapped Leaf X and Leaf Y with 2 separate transparent plastic bags. In the plastic bag containing Leaf X, she put some carbon dioxide absorber. She then put the pot of plant in a dark cupboard for 24 hours. The diagram below shows her experimental set-up.



Next, she put the pot under the Sun and watered the plant daily for 3 days. The plant was given equal amount of water daily.

After 3 days, Ramlah plucked Leaf X, Y and Z from the plant and used iodine solution to test for the presence of starch. Iodine solution turns dark blue in the presence of starch.

(a) In the diagrams below, shade Leaf X, Leaf Y and/or Leaf Z that would turn dark blue. [1]



(b) Explain your answer in (a). [2]

_____

_____

_____

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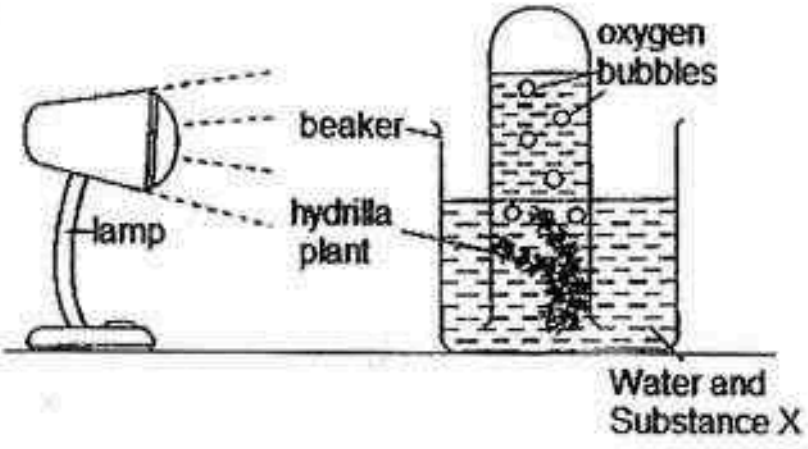
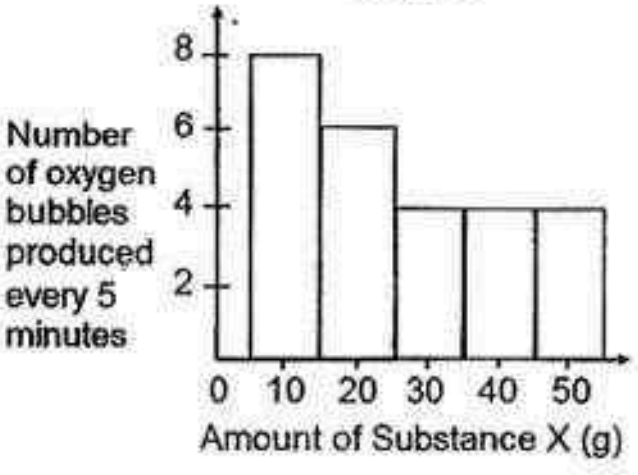
37 Anthony set up an experiment in a dark room using a hydrilla plant to find out the effect of Substance X on the rate of photosynthesis as shown in the diagram below.



He counted the number of oxygen bubbles given out by the hydrilla plant for 5 minutes. He repeated the experiment 5 times with different amount of Substance X. He then plotted his results in Graph A as shown below.

Graph A



(a) Based on the graph, what could Anthony conclude about the number of oxygen bubbles given out and the amount of Substance X? [1]

_____

_____

_____

Question 37 continues on Page 27

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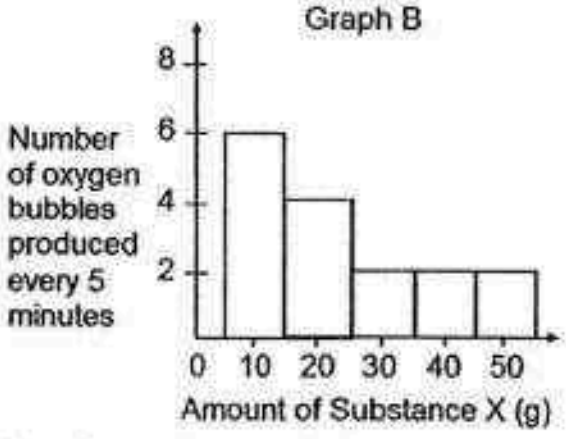
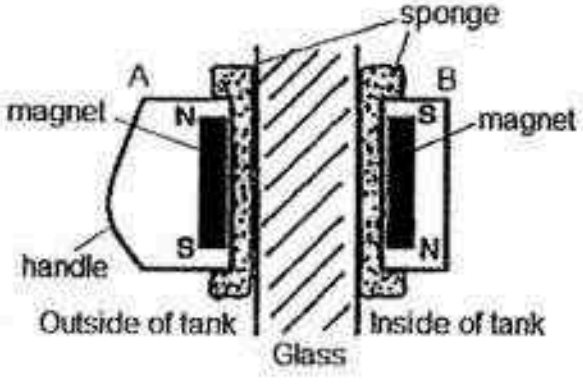
Anthony repeated his experiment by adjusting his set-up, without introducing or removing anything from his set-up. He obtained a new sets of results as shown in Graph B below.



(b) What could Anthony have done to obtain the results as shown in Graph B? Explain vour answer. [2]

38 Pei Ling wanted to clean the interior part of her glass aquarium. She then bought with a device as shown below to help her do just that



a) Name the force(s) acting on the device throughout the time when Pei Ling is cleaning the glass aquarium? [1]

b) When Pei Ling replaced the magnet in Part B with a steel bar. She noticed that the device still worked. Explain why. [1]

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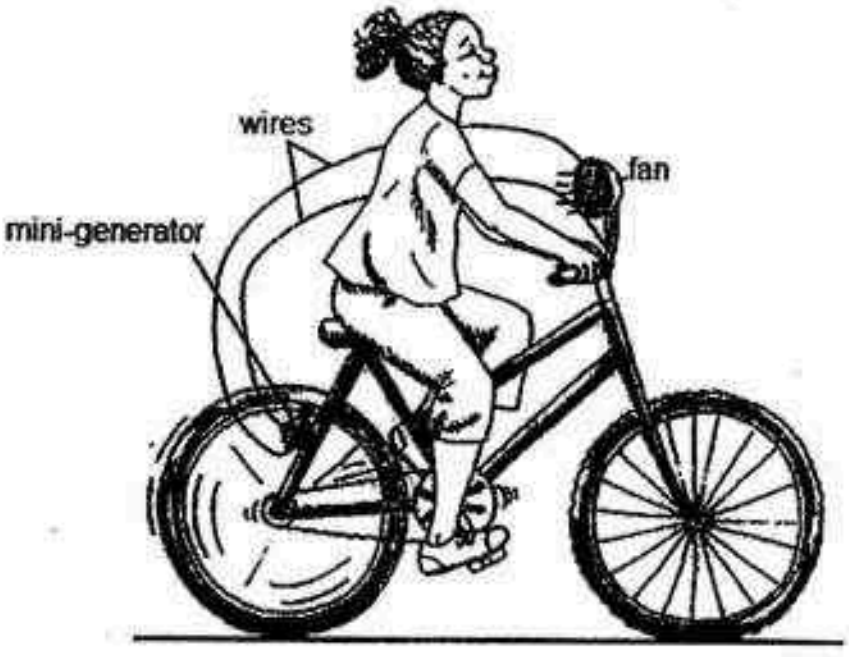
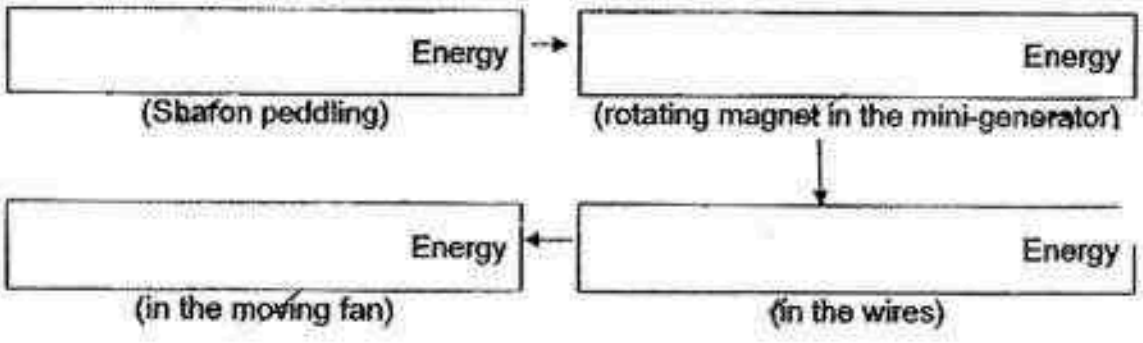
39 Sharon attached a dynamo to the rear wheel of her bicycle. The dynamo is connected to a fan by wires. She noticed that the fan worked when she paddled on her bicycle for a few seconds.



(a) Complete the energy conversion that allows the ~~lamp to lit up~~ fan to move. [2]



(b) Give a reason why cycling is an environmentally-friendly mode of transport. [1]

_____

_____

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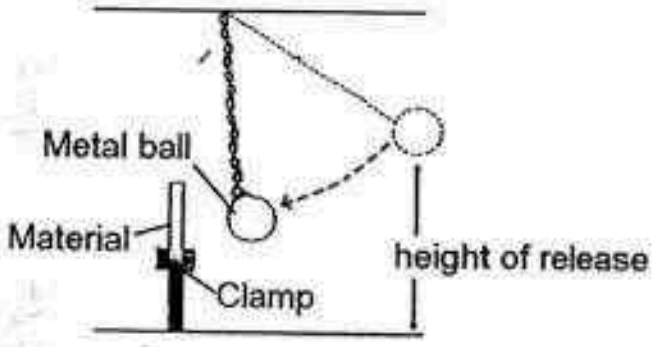
40 Ali hung a metal ball to a chain connected to the ceiling. He then raised the metal ball to a certain level as shown below and released it. As the metal ball swung downwards, it hit a piece of material that was put in its path. He adjusted the height of release of the metal ball and recorded the minimum height (*h*) he needed to break the material after the ball was released. The process was repeated with different types of materials.



He recorded the height of release of the ball which broke the different materials in the table below.

Material	Minimum height of release to break the material, *h* (cm)
A	12
B	5
C	16
D	23

(a) Which material (A, B, C or,D) is the strongest? Explain your answer [1]

(b) Using Material A, Ali repeated the experiment and released the ball at 10 cm. He observed that the metal ball did not break the material when the ball hit it. Explain your answer. [1]

(c) Would the mass of the metal ball affect the value of *h* in the above experiment? Explain your answer. [1]

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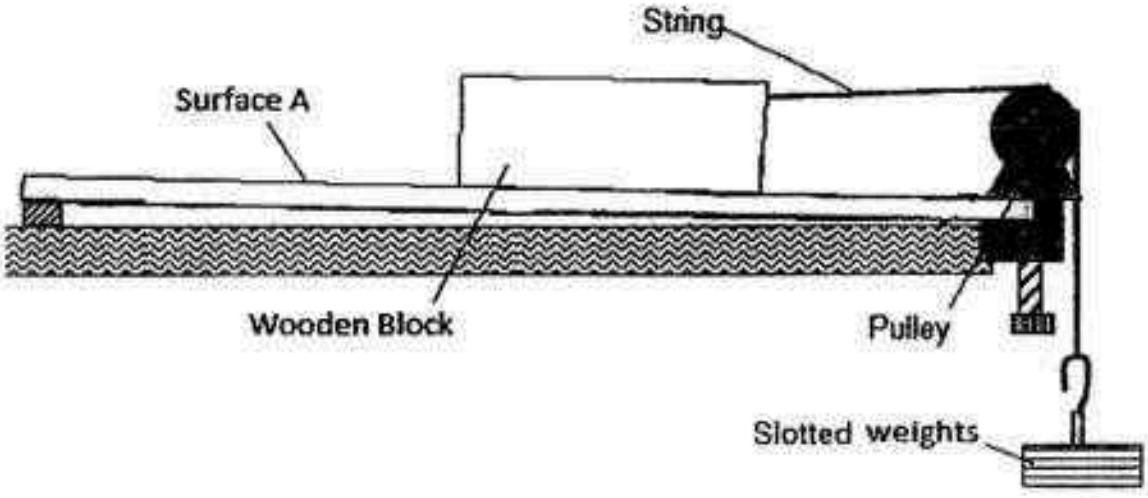
41 Josh wanted to find out which surface he should use to layer the road at a traffic junction. He set up an experiment as shown below. Weights were added, one at a time, till the wooden block just started to move over Surface A.



The experiment was repeated by replacing Surface A with Surfaces B, C and D, one at a time. The minimum weight required to move the wooden block was recorded in the table shown below.

Type of Surface	Minimum weight required to move the wooden block (g)
A	130
B	90
C	200
D	145

(a) Based on the results above, arrange the types of surface, A, B, C and D, in order from the roughest to the smoothest. [1]

Roughest →			Smoothest

(b) Based on your answer in (a), state and explain which surface (A, B, C or D) should Josh use to layer the traffic junction. [1]

_____

_____

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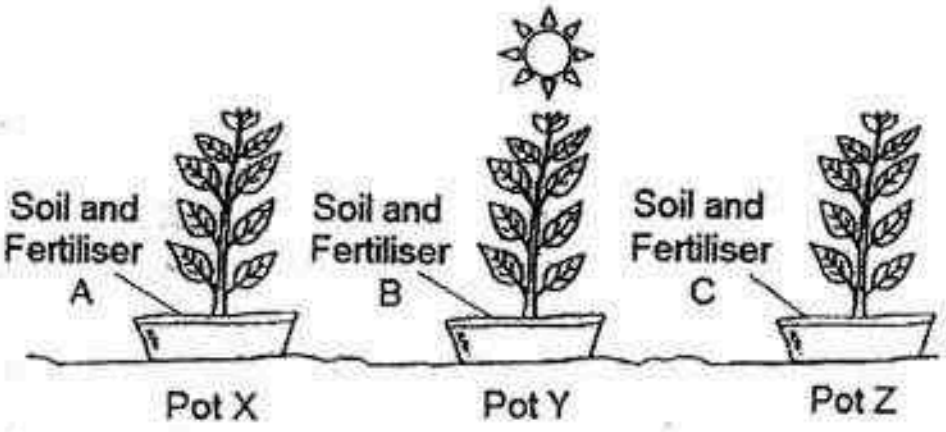
42 Zayn set up an experiment to find out how the type of fertilizer, A, B and C, would affect the growth of balsam plants. He planted balsam plants of the same height (20 cm each) at the beginning of the experiment as shown below.



After 1 month, he measured the height of each of the balsam plant and drew up a table to record his results as shown below.

Pot	Type of Fertilizer	Height of plant after 1 month (cm)
X	A	35
Y	B	35
Z	C	20

Zayn's father told him that he needed one more set-up to allow him to confirm that the fertilisers affect the growth of the plant.

(a) In the space below, draw a well-labeled diagram to show how the set-up would look like. [2]

(b) Zayn's father suggested to have 3 more pots of plants for each fertilizer used. Give a reason why Zayn's father said so. [1]

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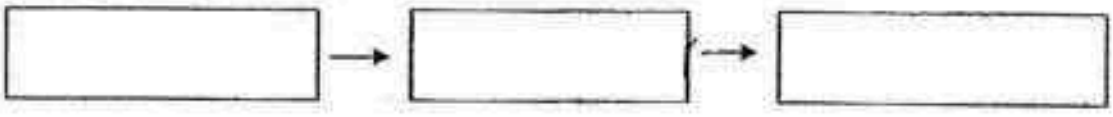
43 Farmer Lim used Chemical X to kill the caterpillars that were eating the leaves of his Mulberry plants. After a few days, he found several dead birds. These birds are natural predators of caterpillars in his farm.

(a) Using the information given, complete the food chain below. [1]



(b) Farmer Lim did not want to harm the birds and decided to spray a natural Substance Y on the leaves of his plants to keep butterflies away from them instead. Why did Farmer Lim want to keep the butterflies away? [1]

_____

_____

(c) Predator C feeds on the birds. After using Substance Y for some time, Farmer Lim noticed that the population of Predator C decreased. Explain why. [1]

_____

_____

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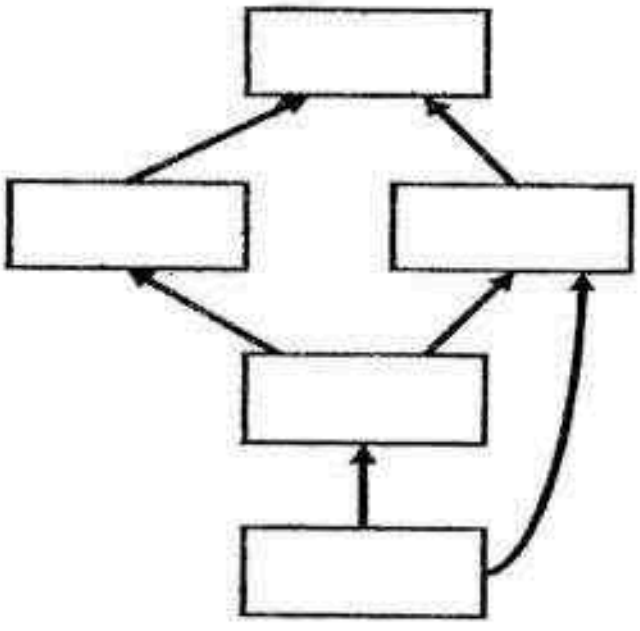
44 Study the food relationships found in a grassland habitat below.

Food	Consumer
 Grass	 Insects  Mouse
 Insects	 Rat  Mouse
 Rat  Mouse	 Snake

(a) Based on the food relationships above, complete the food web below. [1]



Question 44(b) continues on Page 34

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(b) An ecologist working in the grassland noticed that there was a sudden decrease in snakes in the grassland due to a disease. State the immediate effect on the population of the insects. Give a reason for your answer. [2]

Effect on insects: _____

Reason : _____

_____

_____

End of Paper

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SCHOOL : PEI HWA PRESBYTERIAN PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : SEMESTRAL ASSESSMENT 1

CONTACT :

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	1	3	2	4	3	3	4	3	3

Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	3	1	4	4	4	4	3	4	3

Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	3	3	4	3	1 or 4	2	3	3	2

BOOKLET B

31 a) To find out whether the number of leaves on a plant will affect the amount of water it takes in.

b) There are more leaves in Beaker B than Beaker A and more photosynthesis takes place and more water is absorbed.

C) So that the surrounding temperature is the same.

32 a) Material A: Translucent. / Material B: Opaque

b) The shadow would get bigger.

33 a) The water vapour condensed on the cooler surface of the aluminium rod into water droplets. The water droplets have weight and moved the aluminium rod down.

b) The other beaker was a poorer conductor of heat than Beaker A.

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34 a) They will inflate and become bigger. That is because the rubber sheet pulled the balloon down, and air enters the through the straw forcing it to inflate.

b) Air will escape from the balloon and push on the balloon, and the balloon cannot inflate.

35 a) 2. When either B1, B4 or B5 is blown, B2 or B3 still form a closed circuit.

b) 3. When either B2 or B3 is blown, B1, B4 or B5 still form a closed circuit.

36 a) Leaf Z.

b) Z has both carbon dioxide and water, allowing it to photosynthesise and make starch, unlike Y which does not have water and X does not have carbon dioxide.

37 a) When the amount of substance X is increased to 20g, the amount of bubbles decreases and remains the same after that when X increases.

b) He moved the lamp away from the beaker. When the amount of light decreases, rate of photosynthesis decreases.

38 a) Friction, magnetic and gravitational forces.

b) Steel is a magnetic material and get attracted by the magnet.

39 a) Kinetic Energy → Kinetic Energy → Electrical Energy → Kinetic Energy.

b) It does not produce exhaust fumes.

40 a) D. The metal ball needs to be lifted to the greatest height to have more gravitational potential energy to break the material.

b) There is less gravitational potential energy to be converted to kinetic energy to break the object.

C.) Yes. The more mass the metal ball has, the greater the gravitational potential energy the ball has.

41 a) Roughest C, D A B (Smoothest)

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b) C has the greatest amount of friction between the wheel and the road, so it is the safest to be used to stop the car.

42 a)



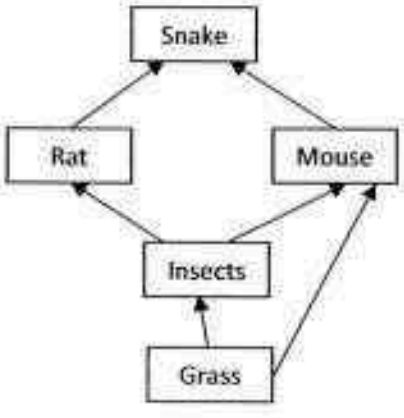
b) To ensure that his results are reliable.

43 a) Plants → Caterpillars → Birds

b) So that butterflies cannot lay eggs on the leaves and there would be no caterpillars.

c) As the number of caterpillar decreases, the number of bird decreases as there is less food for the birds. And as the number of bird decreases, there is less food for predator C.

44 a)



b) Effect on insects: The population will decrease.

Reason: The population of rat and mouse increases as there is less snake to feed on them. As the population of rats and mouse increases, they will feed on more insects.

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·18

RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2016

Section A	/60
Section B	/40
Your score out of **100** marks	
Parent's signature	

Name : _____ **Index No:** ____ **Class: P 6** ___

25 Aug 2016 **SCIENCE** **Attn: 1h 45min**

SECTION A (30 X 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet.

1. The table below provides some information on organisms X, Y and Z.

A tick (✓) in the box indicates the presence of the characteristics.

Organisms	Makes its own food	Feeds on dead matter	Reproduces from spores
X			
Y			
Z			

What are X, Y and Z most likely to be?

	X	Y	Z
(1)	mushroom	bacteria	bird's nest fern
(2)	bird's nest fern	mushroom	bacteria
(3)	bacteria	mushroom	bird's nest fern
(4)	bird's nest fern	bacteria	mushroom

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2. Which one of the following animals is **not** an insect?

(1)



(2)



(3)



(4)



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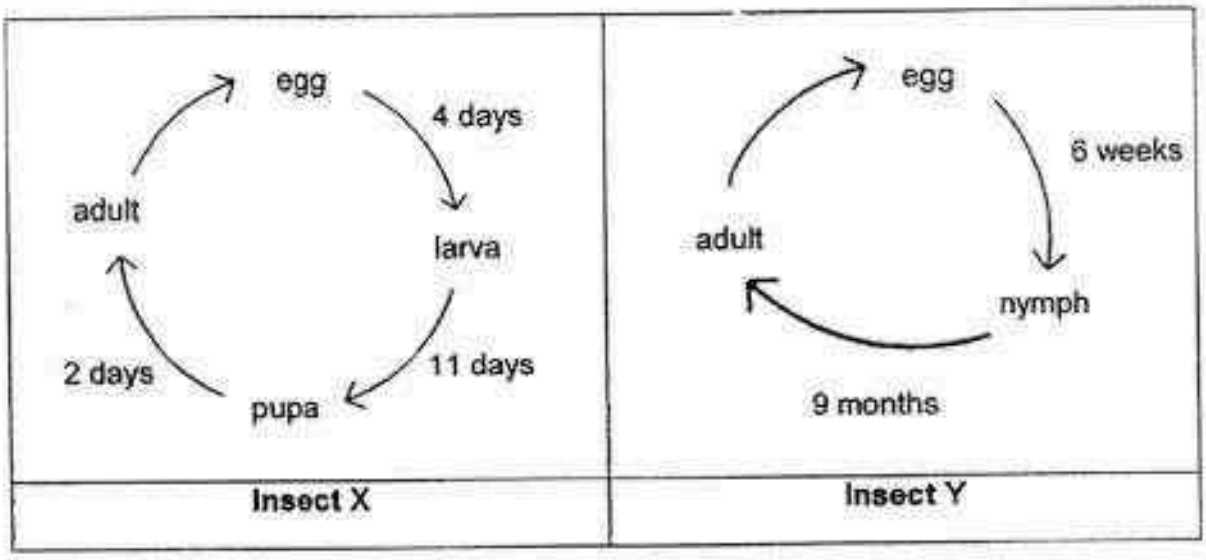
3. Study the life cycles of insects X and Y below.



Based on the diagrams above only, which of the following statements are true?

A X and Y do not give birth to their young alive.

B X and Y have different number of stages in their life cycles.

C The young of Y resembles its adult but the young of X does not.

D The young of X takes a longer time to develop into the adult stage than the young of Y.

(1) A and B only

(2) C and D only

(3) A, B and C only

(4) A, B and D only

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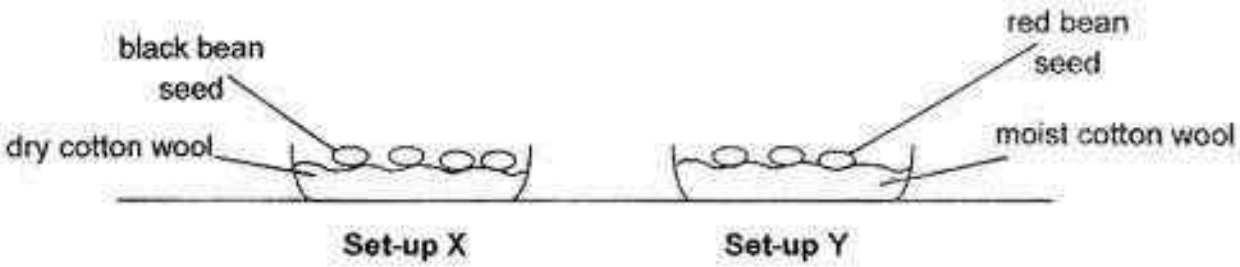
4. Jenny conducted an experiment to find out if the presence of water would affect seed germination. She prepared the experimental set-ups as shown below.



Her classmates commented that her experimental set-ups were incorrect.

Which of the following should she do to ensure a fair test?

A Add one more seed to set-up Y.

B Add water to the cotton wool in set-up X.

C Reduce the amount of cotton wool in set-up X.

D Replace the black bean seed in set-up X with red bean seeds.

(1) A and B only
(2) A and D only
(3) B and D only
(4) C and D only

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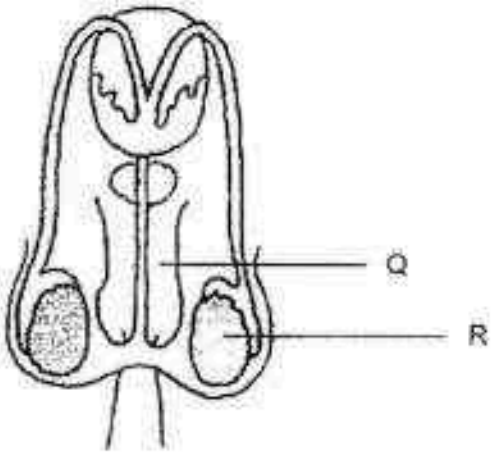
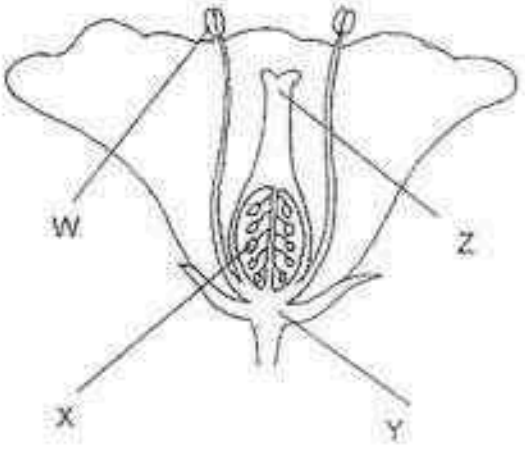
5. Diagrams 1 and 2 show the reproductive parts of a human and a plant respectively.

Diagram 1	Diagram 2
	

Identify the part where the male sex cells are produced in the reproductive system of a human and plant respectively.

	Reproductive system of human	Reproductive system of plant
(1)	Q	X
(2)	Q	Z
(3)	R	W
(4)	R	Y

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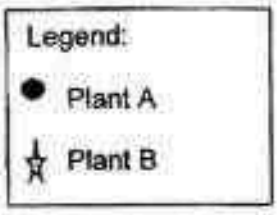
6. The diagrams below show the parts of a river bank. Diagram 1 shows the areas where two different types of plants, A and B, were introduced in 2015, while Diagram 2 shows the same river bank and the growth of the plants in some other areas of the land in 2016.



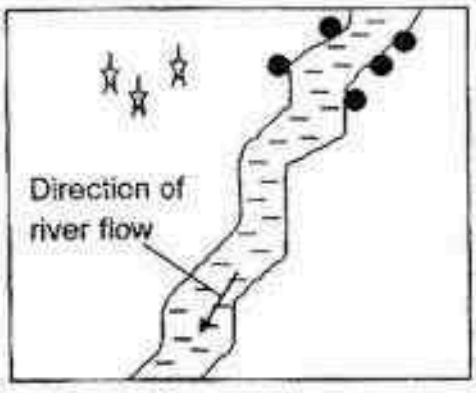


Diagram 1
(Year 2015)

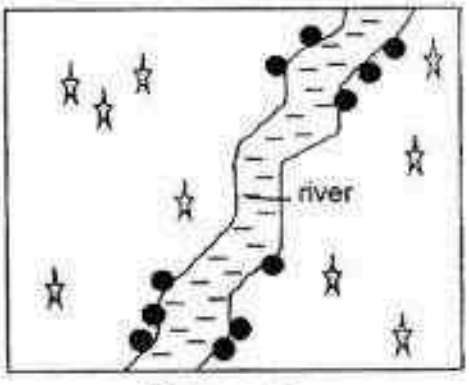


Diagram 2
(Year 2016)

Based on the diagrams above, which one of the following shows the possible characteristics of the fruits of Plants A and B?

	A	B
(1)	Has hooks	Has fibrous husk
(2)	Has wing-like structure	Is brightly coloured and juicy
(3)	Has stiff hairs	Has wing-like structure
(4)	Has fibrous husk.	Is small and light

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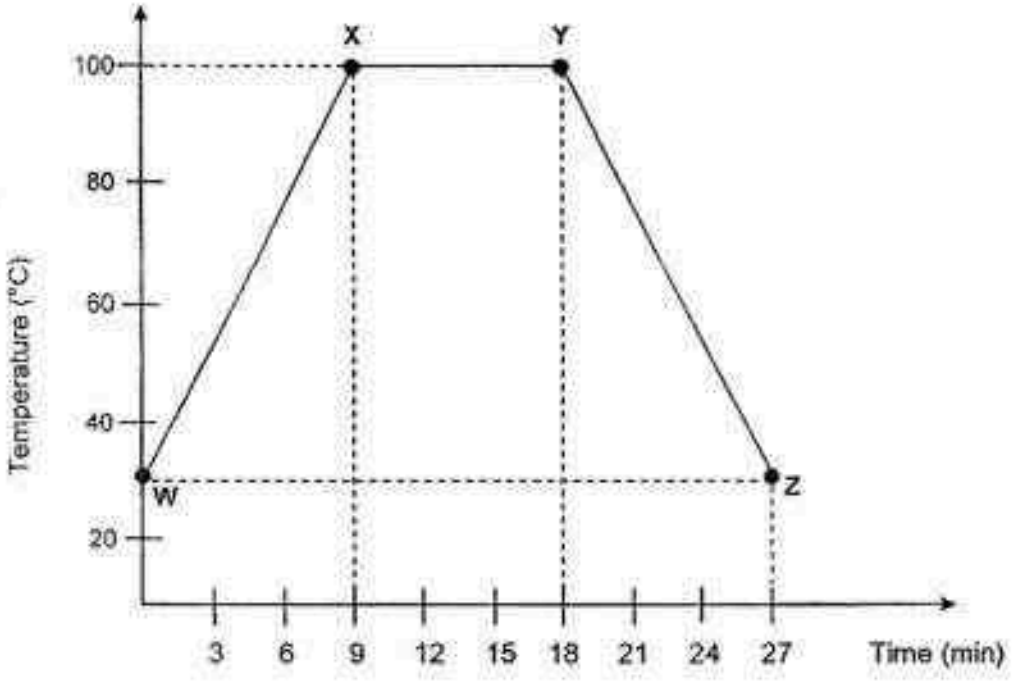
7. Mary heated some water in a beaker until it boiled. The results of her experiment are recorded in the graph below.



Based on the information above, which of the following statements correctly describes what happened to the water at the different stages?

A Evaporation takes place only from Y to Z.

B The water in the beaker gained heat energy from W to X.

C Mary heated the water in the beaker for more than 20 minutes.

D The water in the beaker started to boil after it had been heated for 18 minutes.

(1) A only

(2) B only

(3) A and D only

(4) B and C only

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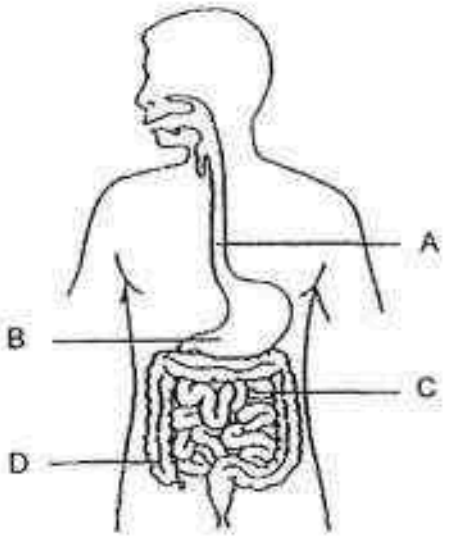
8. The lungs and heart are two organs in the human body. Which one of the following statements on the function of the lungs or heart is correct?

(1) The heart removes carbon dioxide from the lungs.
(2) The heart takes in oxygen from the surrounding air into the body.
(3) The lungs remove carbon dioxide from the body when we breathe out.
(4) The lungs transports oxygen from the heart to the other parts of the body.

9. The diagram below shows the digestive system of a human body.



Digestion is completed at _____.

(1) C only
(2) A and B only
(3) B and C only
(4) B, C and D only

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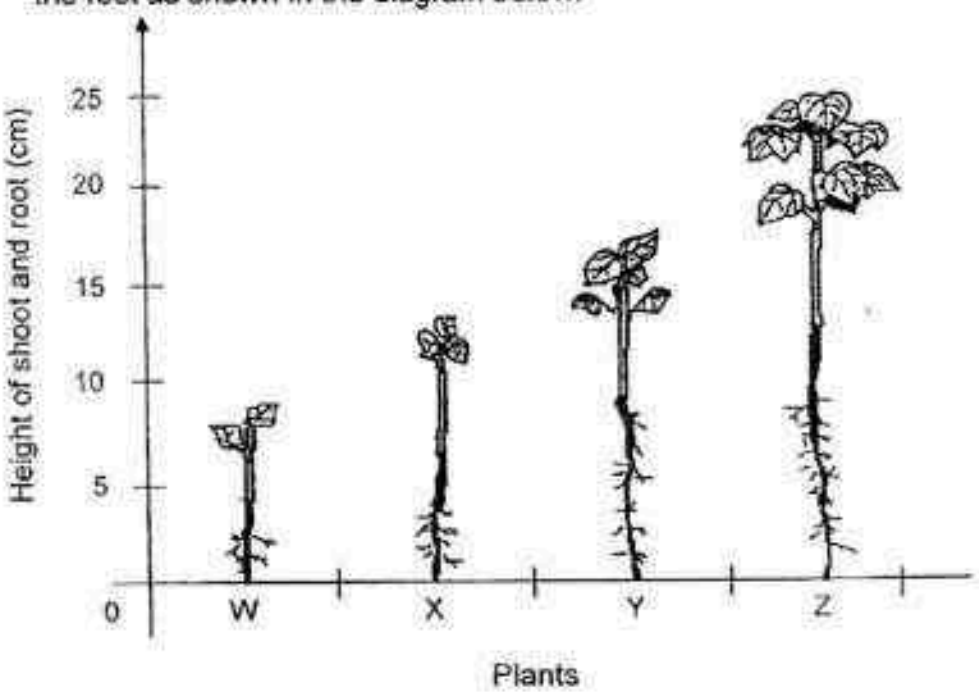
10. Peter wanted to find out how the length of the root affected the growth of plants. He planted four similar plants, W, X, Y and Z. He added the same amount of water to the plants. The table below shows when each plant was harvested.

Plant	Day on which the plant was harvested
W	10th
X	20th
Y	30th
Z	40th

He then recorded the height of the plant, number of leaves and the length of the root as shown in the diagram below.



Based on the information above, which of the following conclusions are correct?

A As the length of the root increases, the height of the plant increases.

B As the length of the root increases, the number of leaves increases.

C The longer the length of the root, the greater the volume of water the plant was able to absorb.

(1) A and B only

(2) B and C only

(3) A and C only

(4) A, B and C only

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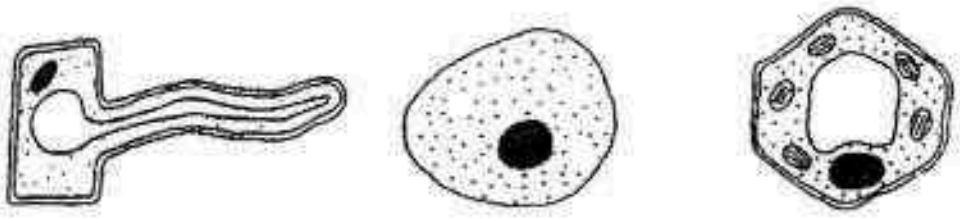
11. Study the three cells below.



Which of the following cell parts are found in all three cells?

(1) cell wall and nucleus only

(2) nucleus and cell membrane only

(3) cytoplasm and cell membrane only

(4) cytoplasm, nucleus and cell membrane only

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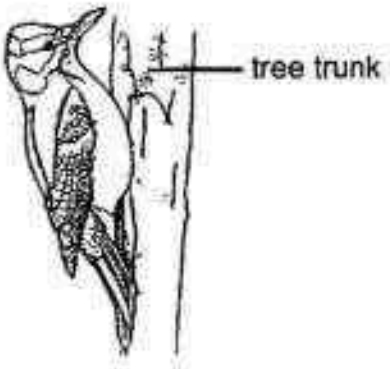
12. Jack saw two different types of birds, Y and Z. Bird Y was seen feeding in the pond while bird Z was seen feeding on the tree trunk. Bird Y waddled through shallow waters and does not swim. Bird Z perched on the tree trunk and feed on tiny organisms.



Bird Y



Bird Z

Which of the bird feet, A, B, C and D shown below represents the feet of bird Y and Z?

			
A	B	C	D

	Bird Y	Bird Z
(1)	A	B
(2)	A	C
(3)	D	C
(4)	B	D

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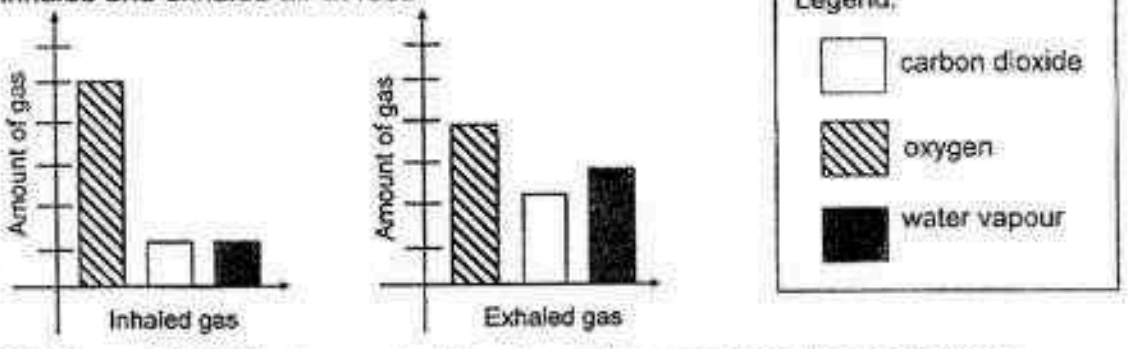
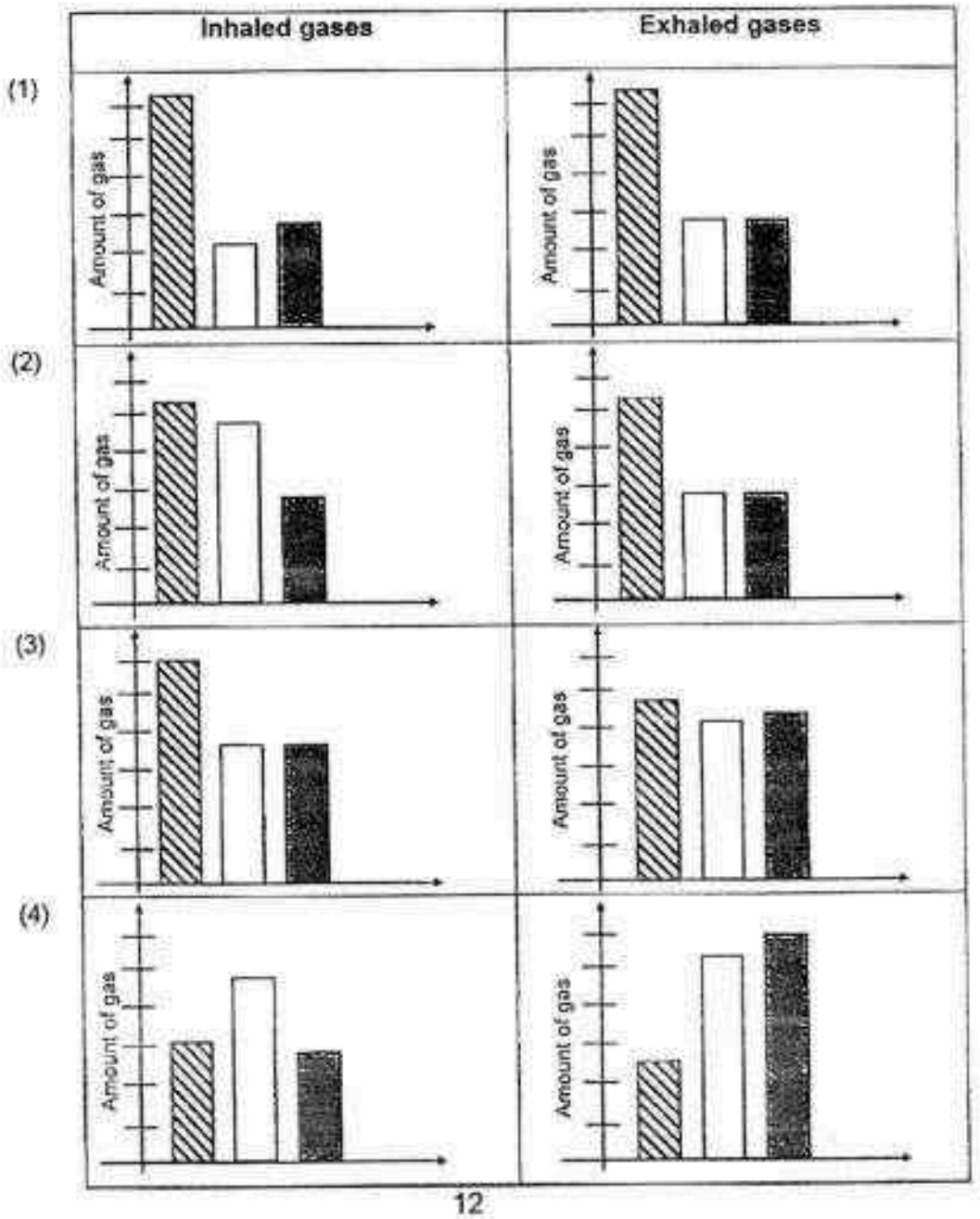
13. Mary was trapped in a small lift. She started to kick the lift door and shout for help continuously. The graph below shows the percentage of gases in Mary's inhaled and exhaled air at rest.



Which one of the following graphs below shows the percentage of gases in Mary's inhaled and exhaled air after 15 minutes in the lift?



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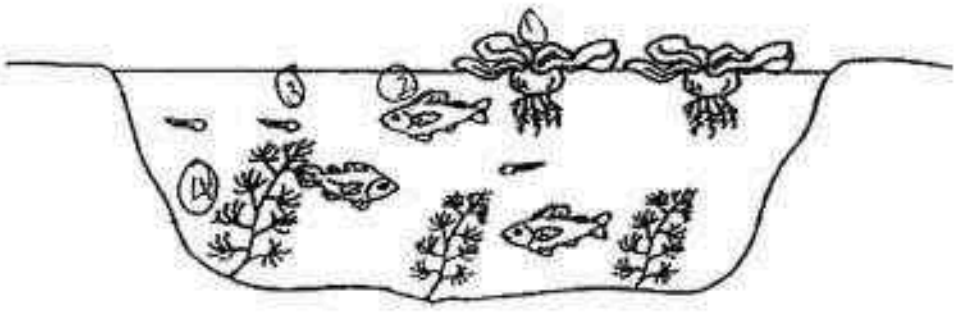
14. The diagram below shows an aquatic habitat.



Four friends made the following statements about the aquatic habitat.

A There are a total of two different populations in the aquatic habitat.

B The fishes and the tadpoles form two communities in aquatic habitat.

C The tadpoles, fishes and aquatic plans form one community in the aquatic habitat.

D The tadpoles, fishes and aquatic plants form three different populations in the aquatic habitat.

Which of the above statements is/are correct?

(1) C only

(2) C and D only

(3) A and C only

(4) A, B and D only

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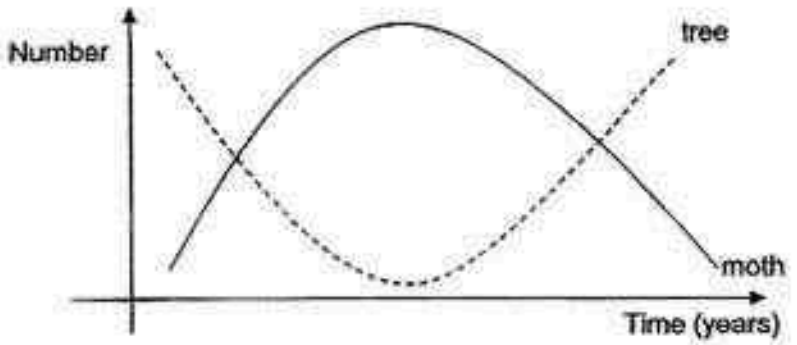
15. The table below shows the changes between the number of moths and the number of trees in the forest over a period of 5 years.



Based on the table above, which of the following reasons possibly explain for the changes in the population of moths and trees over a period of 5 years?

A The trees provides food for the moths.

B The number of trees decreased due to a fire in the forest.

C The number of moths increases faster than the number of trees.

D As the number of moths decreases, the number of trees increased.

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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16. The characteristics of a desert frog are listed below:

- feeds in the day
- hides in its burrow at night.
- stays in the burrow when the temperature rises above 40°C.

Which of the following statements explain the above behaviour of the desert frog?

A Availability of water in the burrow.

B Availability of prey above the ground in the day.

C Availability of shelter to hide from predators in the burrow.

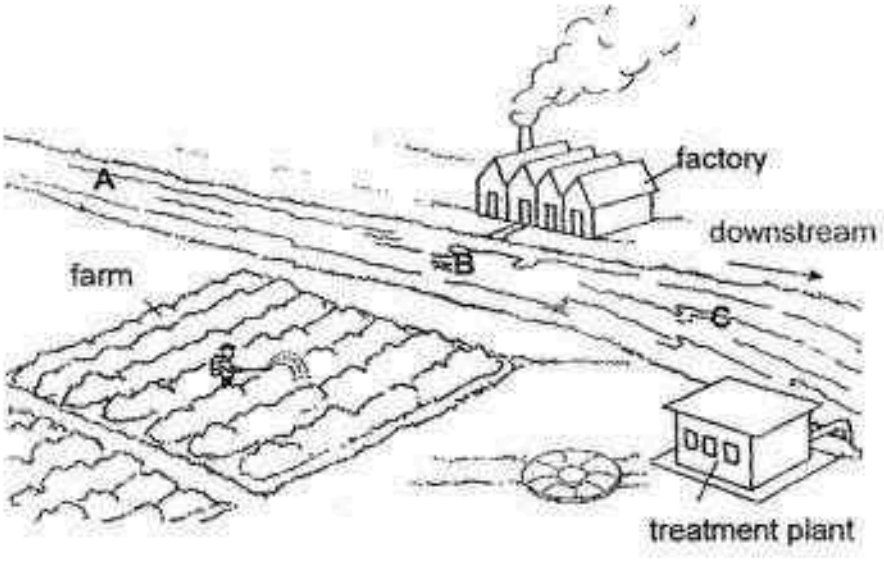
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

17. Pollution affects the environment. The diagram below shows three points, A, B and C, of the river.



Which points, A, B and/or C will be the most polluted?

(1) A and B only

(2) B and C only

(3) A and C only

(4) A, B and C

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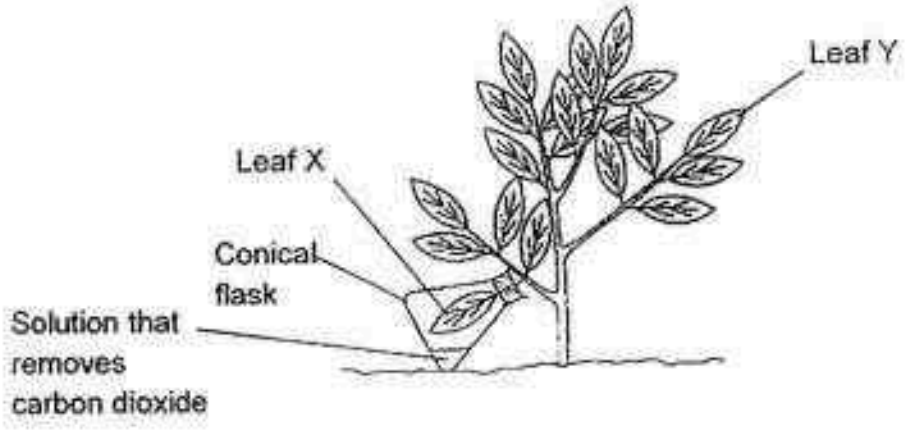
18. Siti set up an experiment to find out if carbon dioxide is needed for photosynthesis. She placed a plant in a dark room for two days and then moved it to the school garden. She inserted one of its leaves, Leaf X, in a conical flask containing a solution that removes carbon dioxide as shown in the diagram below.



After 6 hours, Siti removed leaves X and Y from the plant, discoloured the leaves and then tested them for starch using iodine.

Which one of the following correctly shows the results of Siti's experiment?

	Colour of iodine on leaves	
	Leaf X	**Leaf Y**
(1)	yellowish-brown	yellowish-brown
(2)	blue-black	blue-black
(3)	yellowish-brown	blue-black
(4)	blue-black	yellowish-brown

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19. Marie conducted an experiment using three rods, A, B and C and four bars made of materials W, X, Y and Z. She used each rod to scratch each bar. Her observations are shown in the table below.

A tick (✓) indicates the presence of scratch marks on the bar.

	Scratch marks observed on bar			
Rod / Material of Bar	W	X	Y	Z
A				
B				
C				

Based on Marie's experiment, which material, W, X, Y or Z, is most suitable for making a safety helmet?

(1) W
(2) X
(3) Y
(4) Z

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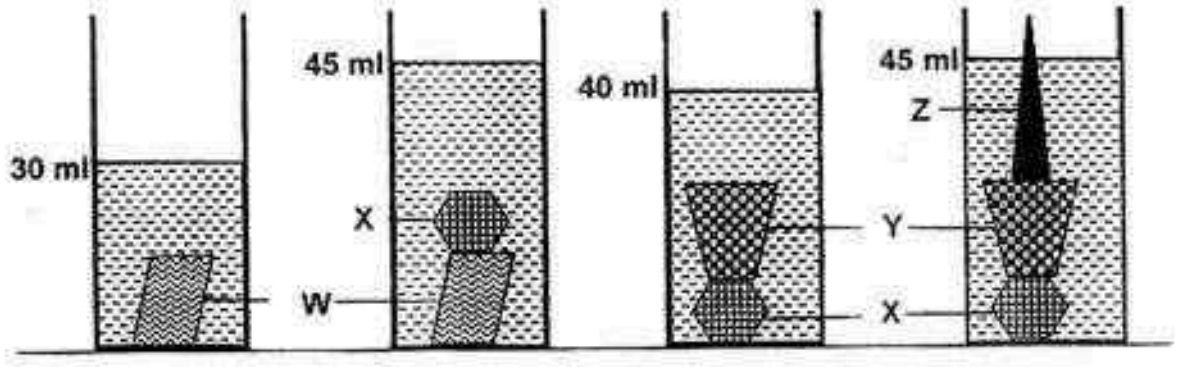
20. Germaine poured an equal amount of water into four similar measuring cylinders. She then placed four blocks, W, X, Y and Z, in the cylinders in the following order.



Which of the following statements are definitely correct?

A The volume of block Z is 5 ml.

B The volume of block X is 15 ml.

C The original volume of water was 20 ml.

D The volume of block W is greater than the volume of block Y.

(1) A and C only

(2) B and D only

(3) C and D only

(4) A, B and D only

21. Cheryl has a container filled with a mixture of two substances, X and Y. The table below shows the melting point and boiling point of the substances.

Substance	Melting point (°C)	Boiling point (°C)
X	217	700
Y	420	900

At what temperature should Cheryl heat the mixture such that one substance becomes a liquid and the other substance becomes a solid?

(1) 300 °C

(2) 500 °C

(3) 800 °C

(4) 900 °C

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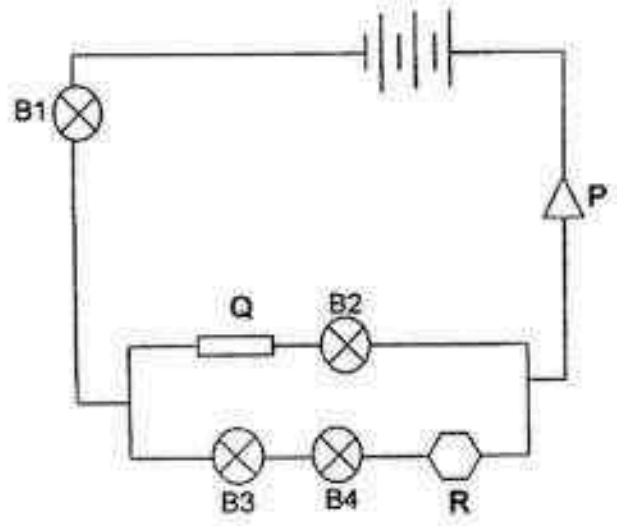
22. Study the circuit diagram below carefully. Materials P, Q and R were connected to the circuit below.



Which one of the following most likely represents the materials, P, Q and R, and the number of bulbs that lighted up?

	P	Q	R	Number of bulbs that lighted up
(1)	steel	glass	aluminium	4
(2)	aluminium	iron	glass	3
(3)	glass	copper	steel	2
(4)	copper	glass	iron	3

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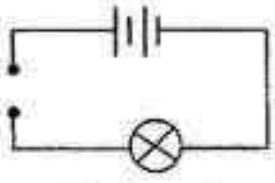
23. A circuit card with six metal pins, A, B, C, D, E and F, are connected by wires on its underside. It is tested with a circuit tester and the results are recorded below.

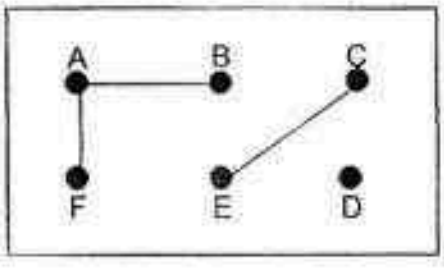
Metal pins connected to the circuit tester	Did the bulb light up?
A and B	no
A and F	yes
B and D	no
C and E	no
D and E	yes



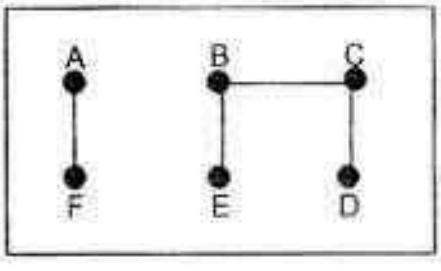
Circuit tester

Which one of the following correctly identifies the circuit card used?

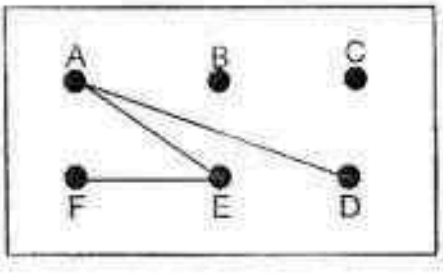
(1)



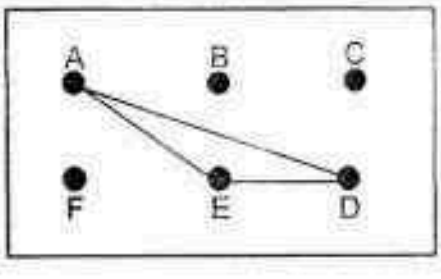
(2)



(3)



(4)



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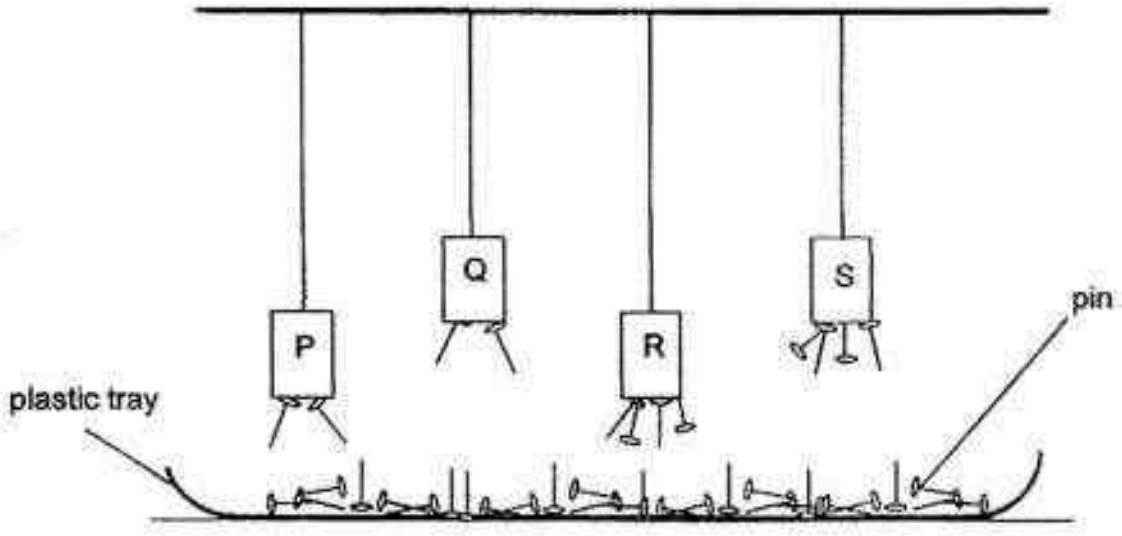
24. Wendy hung four magnets, P, Q, R and S, above a tray of identical iron pins. Her observation is shown below.



Which of the following statements are correct?

A Magnet S is the strongest magnet.

B Magnet P is weaker than Magnet R.

C Magnet R is stronger than Magnet Q.

D Both Magnets P and Q have the same strength.

(1) A and B only

(2) B and D only

(3) A, B and C only

(4) A, C and D only

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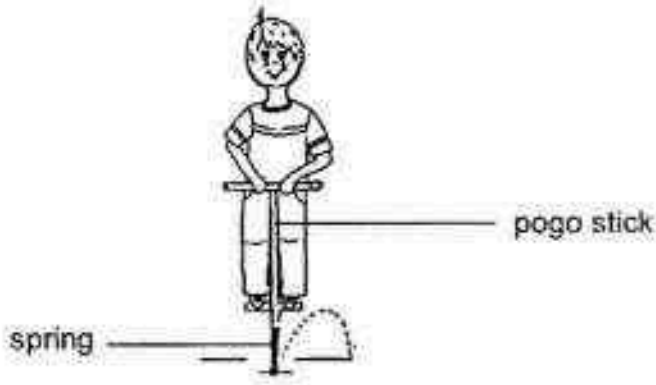
25. Tom is riding on his pogo stick as shown below.



Which of the following statements is/are correct?

A Gravitational force increases as Tom jumps into the air.

B There is gravitational attraction between Tom and the Earth.

C Only elastic spring force is needed for Tom to move over a distance.

(1) B only

(2) C only

(3) A and C only

(4) B and C only

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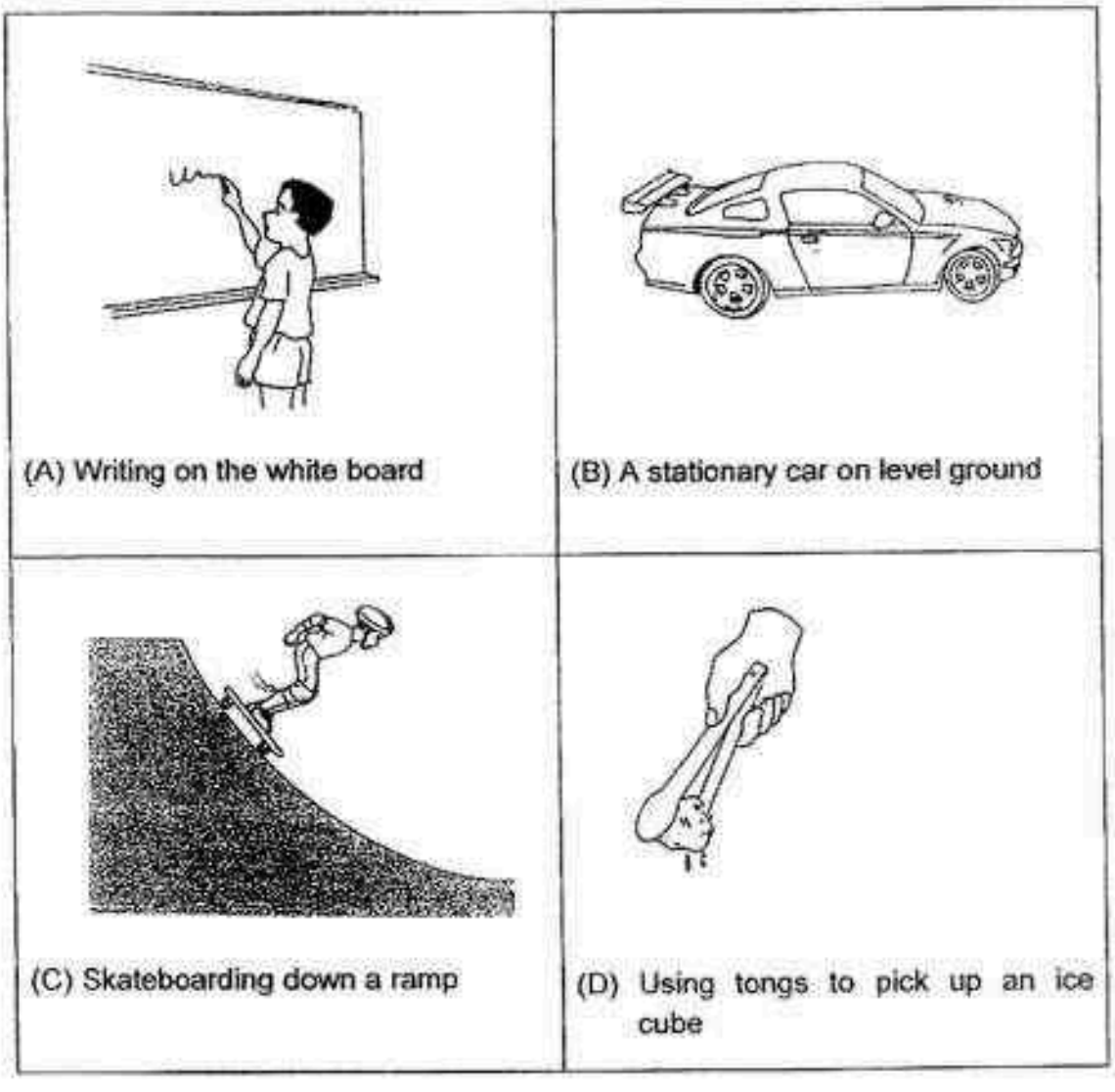
26. The diagrams below show four examples of forces in our daily life.



(A) Writing on the white board

(B) A stationary car on level ground

(C) Skateboarding down a ramp

(D) Using tongs to pick up an ice cube

Which of the following has friction acting on it?

(1) B only
(2) C and D only
(3) A, C and D only
(4) B, C and D only

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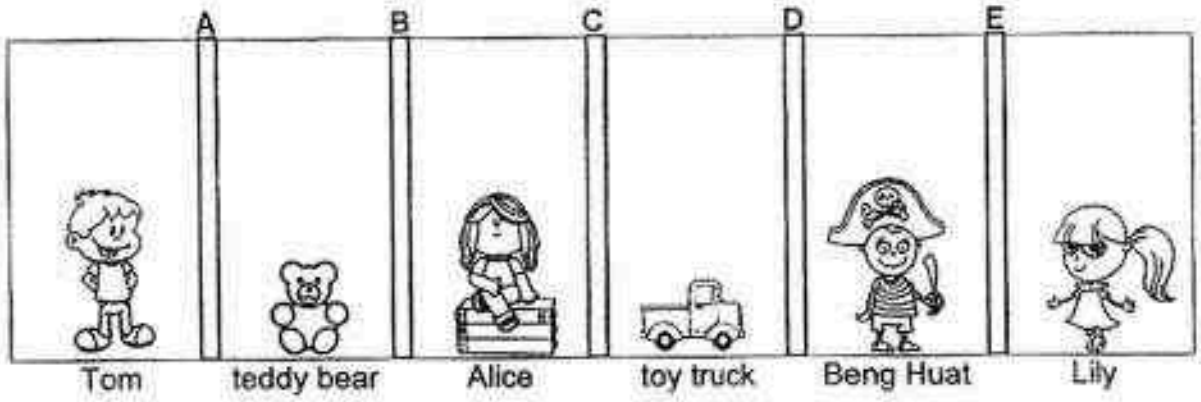
27. Study the diagram below.



Four children and two of their toys are separated by screens, A, B, C, D and E. Given that the screens are made of different materials,

- Tom is unable to see Alice.
- Lily is unable to see the toy truck.
- Alice can see both the teddy bear and the toy truck.

Based on the information above, which one of the following could possibly be the materials which have been used to make the screens?

	A	B	C	D	E
(1)	clear plastic	metal	clear plastic	wood	clear glass
(2)	wood	clear plastic	clear glass	metal	clear plastic
(3)	clear plastic	clear glass	metal	wood	clear glass
(4)	metal	metal	wood	clear plastic	clear glass

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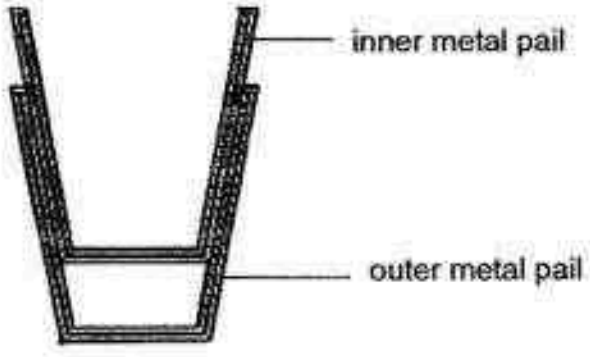
28. Gopal always has difficulty separating two metal pails which are stacked together as shown in the diagram below.



Which one of the following ways is the best in separating the two pails easily?

A Pour hot water into the inner pail.

B Pour cold water into the inner pail.

C Place the outer pail in a tub of hot water.

D Place the outer pail in a tub of cold water.

(1) A and C

(2) A and D

(3) B and C

(4) B and D

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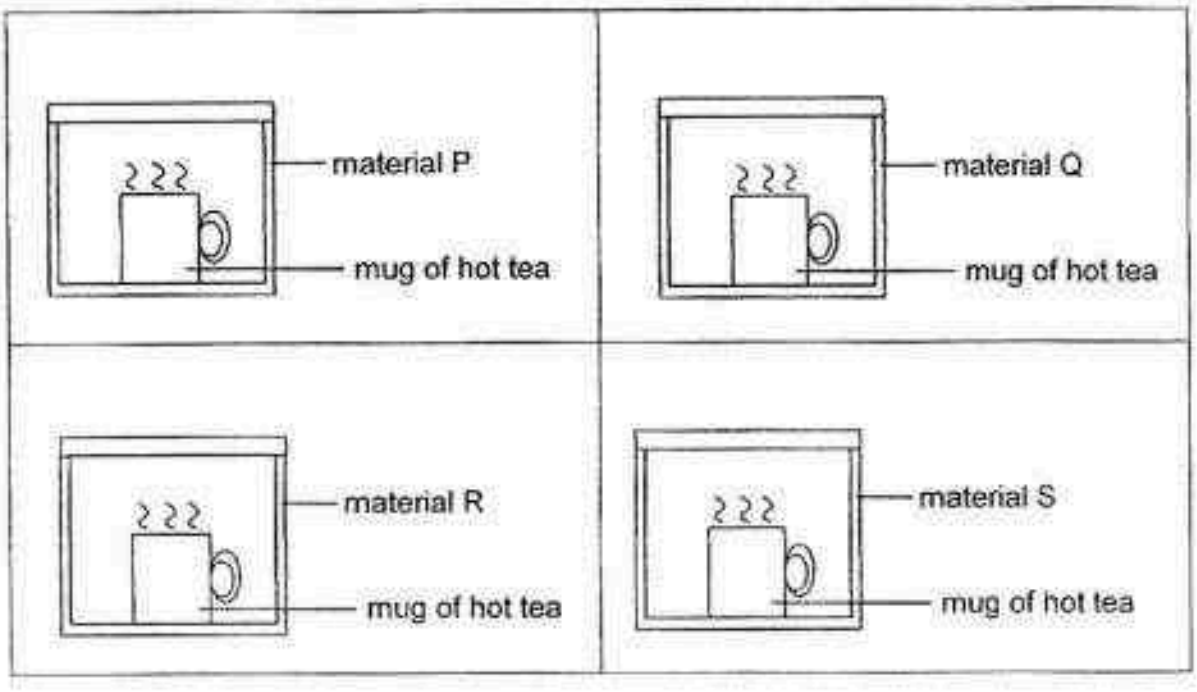
29. Four mugs of hot tea of the same temperature were placed inside four boxes which were made of different materials, P, Q, R and S, as shown in the diagrams below.



The time taken for the hot tea to reach room temperature of 30°C was recorded in the table below.

Materials	Time taken to reach room temperature (min)
P	25
Q	51
R	38
S	46

Which one of the materials is the most suitable to be used to make a container which can keep a bottle of water cold for the longest time?

(1) P

(2) Q

(3) R

(4) S

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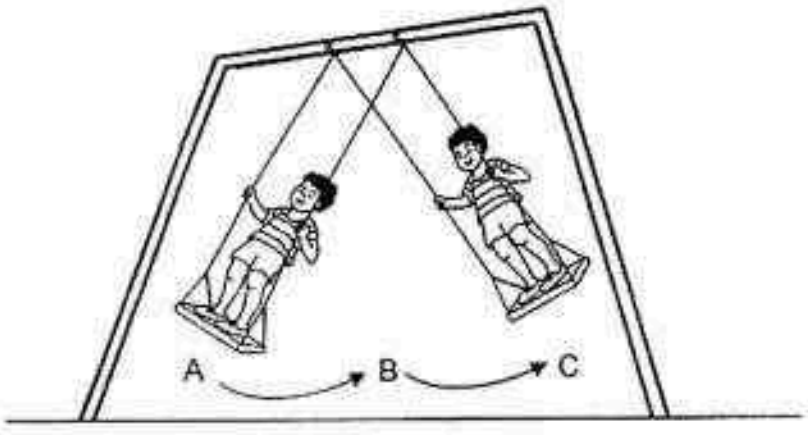
30. Denny was playing on a swing as shown in the diagram below.



Which one of the following statements is true when Denny swung from position A to B and then to C?

(1) The potential energy at A, B and C are the same.

(2) Potential energy was the highest at A and was lost at B.

(3) Kinetic energy increased from A to B and again from B to C.

(4) Kinetic energy increased from A to B and decreased from B to C.

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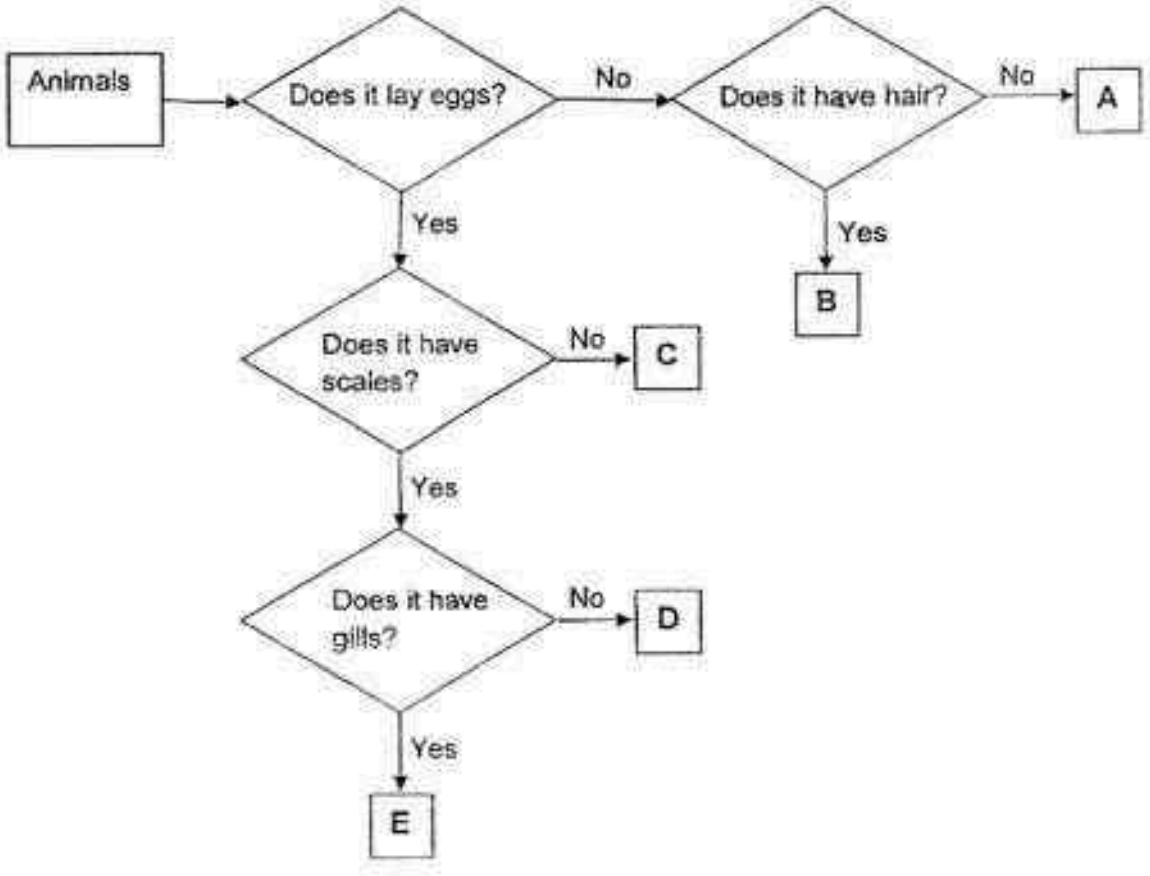
Name : _____ Index No : _____ Class : P6 ___ 40

SECTION B (40 marks)
For questions 31 to 44, write your answers clearly in the spaces provided.
The number of marks available is shown in the brackets [ ] at the end of each question or part question.

31. The flowchart below shows the characteristics of five different animals represented by letters A, B, C, D and E.



Based on the flowchart, answer the following questions.

(a) Name one difference between Animals A and D. [1]

_____

_____

continue on the next page

Score 1

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continue from the previous page

(b) State two characteristics of Animal C. [1]

_____

_____

(c) Which group of animals does Animal E belong to? [1]

_____

Score	
	2

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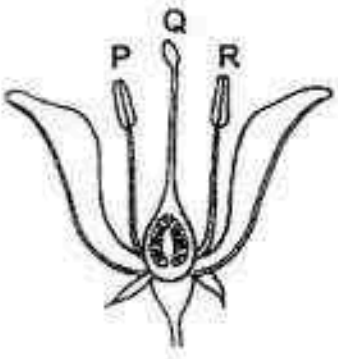
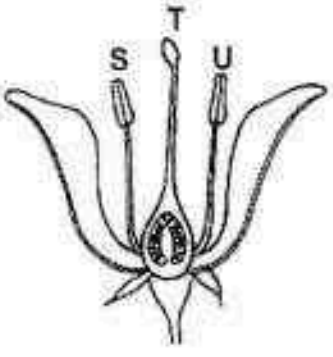
32. The diagram below shows two flowers, X and Y, growing on a plant.



Flower X



Flower Y

Mary studied the flowers and wrote down the following in the table below.

Pollination takes place when pollen grains are transferred from
P to Q
T to P
R to Q
U to T
S to T
Q to U

Mary's teacher told her that she had made two mistakes.

Which two mistakes did Mary make in the table above?

(a) Pollination does **not** take place when pollen grains are transferred from

_____ to _____ and _____ to _____ [1]

Score	
	1

continue on the next page

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continue from the previous page

Mary wanted to find out if a fruit can be developed from a flower when a certain part of the flower is removed. She removed only a certain part from flower X on the plant as shown below.



Flower X with a missing part

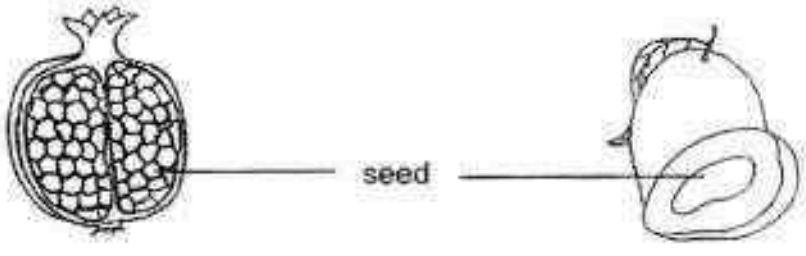
Mary then dusted pollen grains from the same type of flower over flower X on the plant. She observed the flower over a few weeks.

(b) Is flower X likely to develop into a fruit? Explain your answer. [2]

_____

_____

The diagrams below show two fruits, S and T, that Mary has cut open.



Fruit S Fruit T

(c) Based on the diagrams above, what can Mary infer about the number of ovules in the flower of fruit S and fruit T respectively? [1]

_____

_____

Score	3

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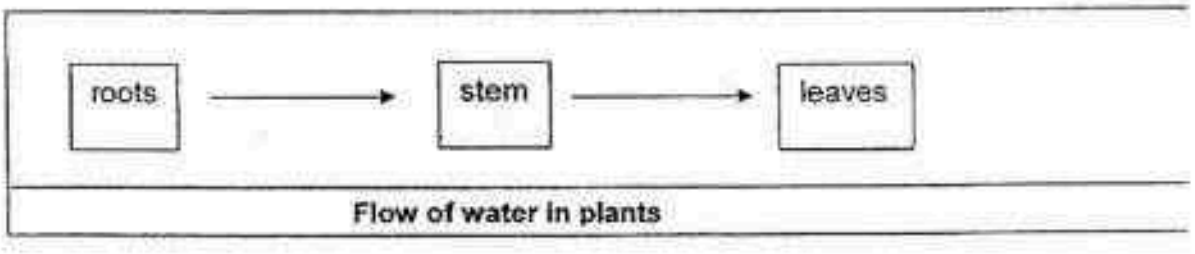
33. Sarah made the following observations on different plant parts, A, B, C and D on a plant.

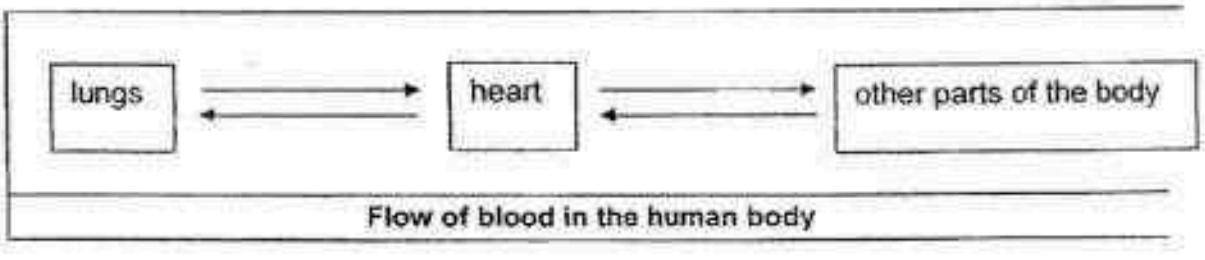
Parts of a plant	Observations
A	contains starch
B	absorbs water and dissolved mineral salts
C	holds the plant upright and has two types of tubes to transport substances
D	traps light and makes food

(a) Describe how part C helps in the growth of the plant. [1]

(b) The diagrams below show the movement of water in a plant and the movement of blood in a human body.



Flow of water in plants



Flow of blood in the human body

State a difference between the direction of the movement of water in the plant and the direction of movement of blood in the human body. [1]

Score 2

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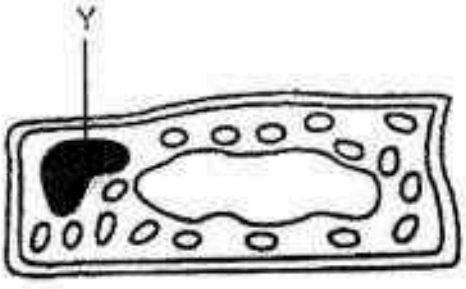
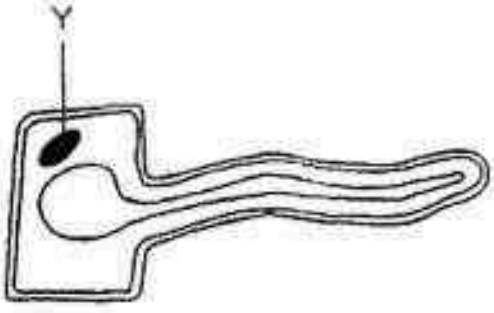
34. Siew Qi observed the two different types of cells, A and B, as shown in the diagrams below.

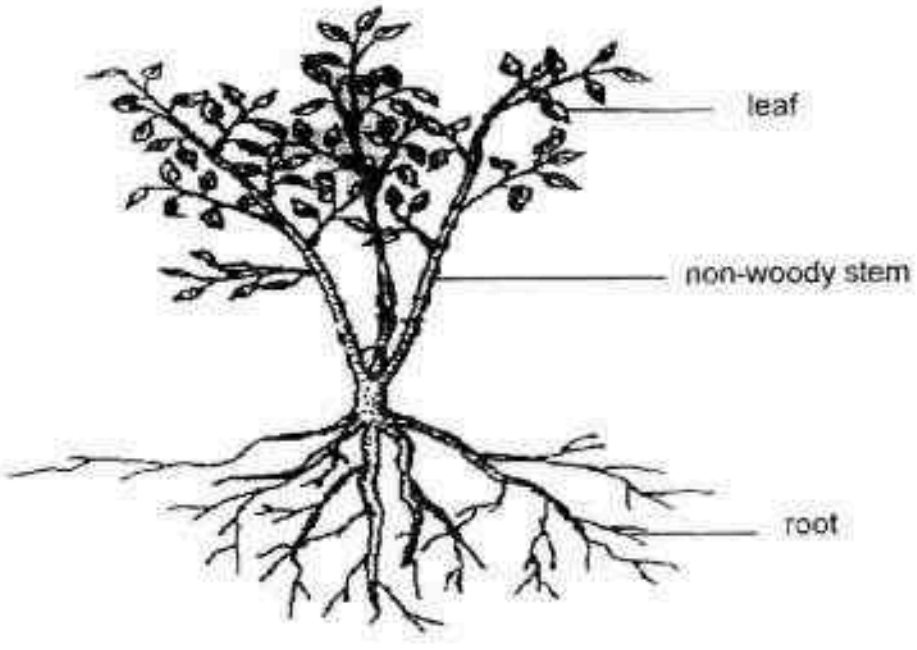


Cell A



Cell B

(a) What is the function of Y? [1]



(b) In which part of the plant shown above are you most likely to find cell B? Give a reason for your answer. [1]

Score	2

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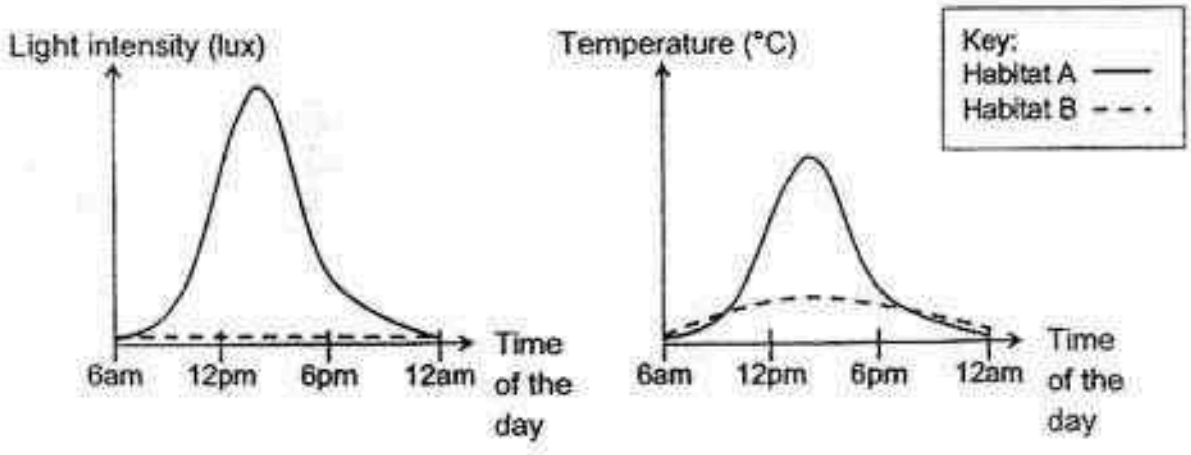
35 Kathy used a data logger to measure the light intensity and temperature of the surrounding air in two different types of habitat, A and B, in her school. She then plotted her data as shown below.



(a) Based on the graph above, suggest a possible habitat for A and B. [1]

Habitat A: _____

Habitat B: _____

(b) Based on the graph above, what is the relationship between the light intensity and temperature for habitat A? [1]

_____

_____

Score	2

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(c) Kathy then counted and recorded the number of organisms X, Y and Z in two areas in one of the habitats at 1pm. She also observed that both organisms X and Y fed mainly on dead leaves while organism Z fed on small organisms. None of the organisms left the habitat.

	Number of organisms		
	X	Y	Z
Area 1	15	25	1
Area 2	3	10	5

(i) Based on the information above, what is the most possible reason for the difference in the number of organisms X and Y in the two areas in the same habitat. [1]

_____

_____

(ii) Write a possible 3-linked food chain involving organisms X and Z. [1]

_____

Score	
	2

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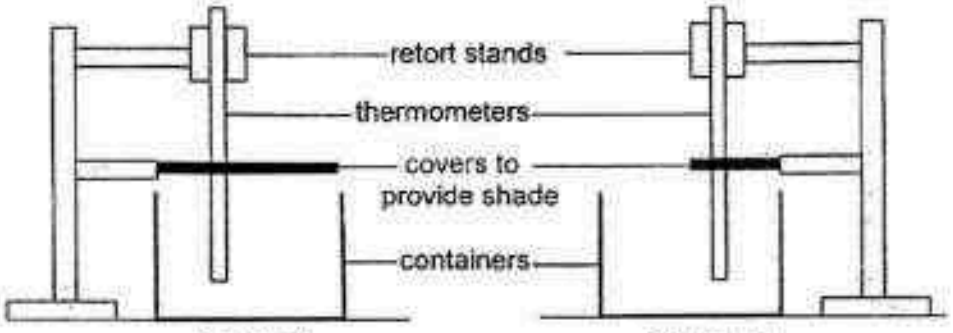
36. Ben prepared set-ups A and B as shown in the diagrams below. He placed both set-ups under the sun. The temperature of the air within the containers in both set-ups were measured using a thermometer and recorded at different times of the day.



Ben's results are shown in the table below.

Part of the day	Average temperature of the surrounding (°C)	Temperature of air in the container (°C)	
		Setup A	Setup B
Morning	25-30	25	29
Afternoon	31-38	32	37
Evening	26-29	26	28

(a) Based on the data above, compare the temperature of the air in the containers of set-ups A and B. [1]

_____

_____

Score	
	1

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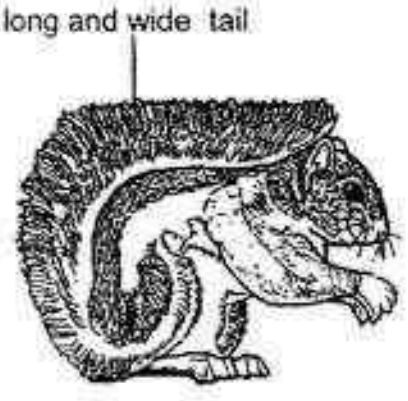
(b) Animal Q and Animal R live in a very hot and dry habitat. The temperature in the day can be higher than 40°C with little water all year round. Both animals come out of their burrows in the day to search for food.



Animal Q



Animal R

Based on Ben's findings, explain which animal has an advantage to survive in the hot and dry habitat. Explain your answer clearly [2]

_____

_____

Score	2

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37. Ashlyn has a football which can hold 350cm³ of air. She used a 100-cm³ syringe and removed 80cm³ of air from the football as shown in the diagram below.



(a) What is the volume of air in the football after the air is removed from the ball? [1]

Volume of air in the football: _____ cm³

(b) What property of air did you use to obtain your answer in (a)? [1]

_____

_____

(c) Did the mass of the football increase, decrease or remain the same? Give a reason for your answer. [1]

_____

_____

Score	
	3

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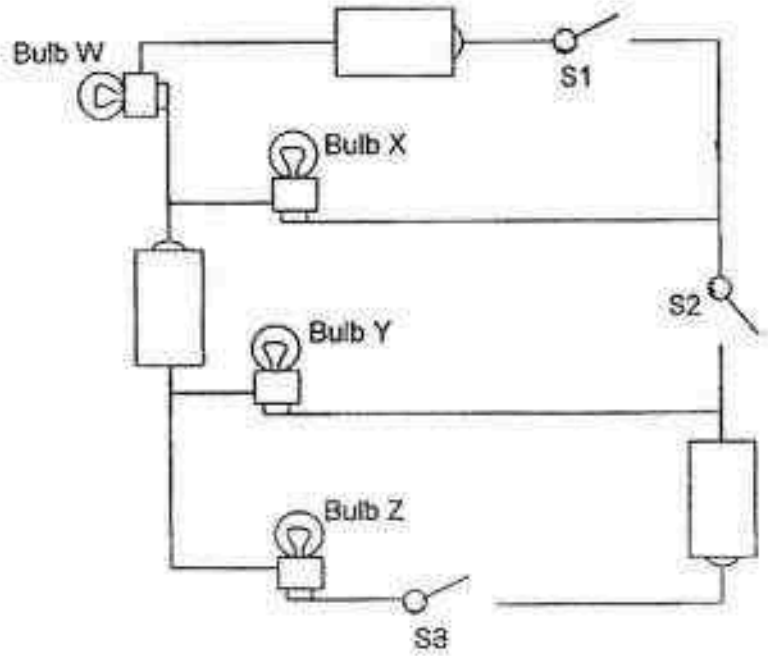
38. Ming Ming set up an electrical circuit as shown below.



(a) Which bulb(s) will be lighted up when all the switches in the circuit above are closed and bulb Z has fused? [1]

_____

(b) Given that all the bulbs are working, what is the greatest number of bulbs that can light up when any 2 of the switches, S1, S2 and S3, are closed? [1]

_____

(c) Ming Ming wants to add one more switch to the circuit above such that only 2 bulbs will light up when all the switches, S1, S2 and S3, are closed at the same time. Given that all the bulbs are working, **draw a cross (X)** on the circuit diagram above to show the position of the additional switch. [1]

Score	/ 3

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39. Chris brought a magnet near Rod Z which is tied to a string as shown in Diagram 1. She then placed a flame at one end of Rod Z as shown in Diagram 2. After a while, Rod Z started to move towards the magnet.

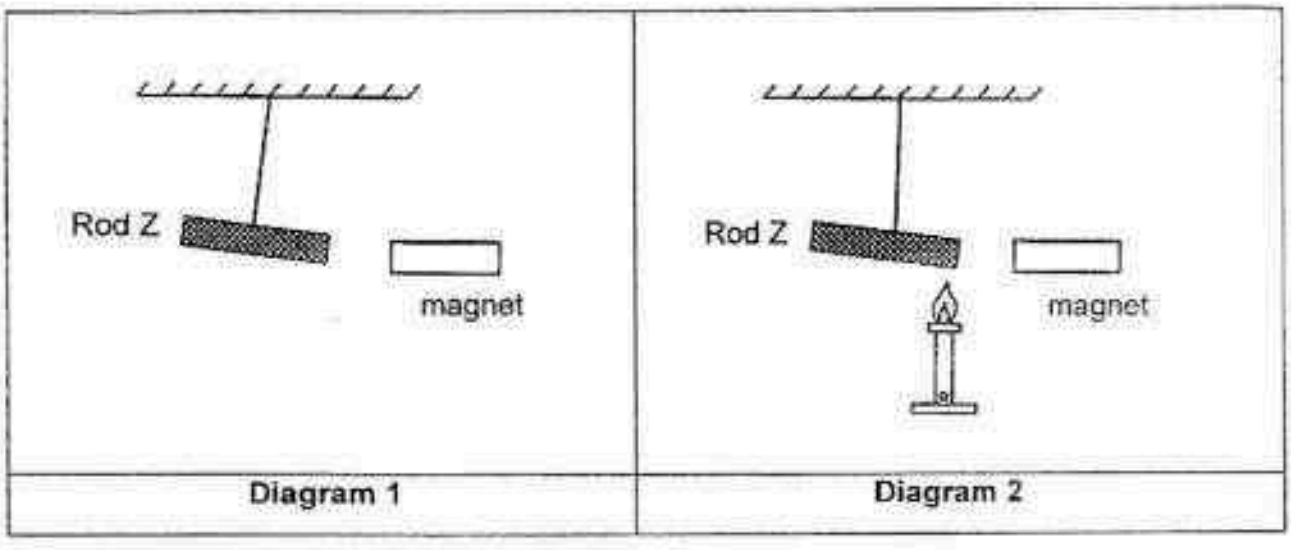

Diagram 1 | Diagram 2

(a) Explain why Rod Z moved away when a magnet is brought near it in Diagram 1. [1]

_____

_____

(b) Explain why Rod Z started to move towards the magnet in Diagram 2. [1]

_____

_____

Score	/ 2

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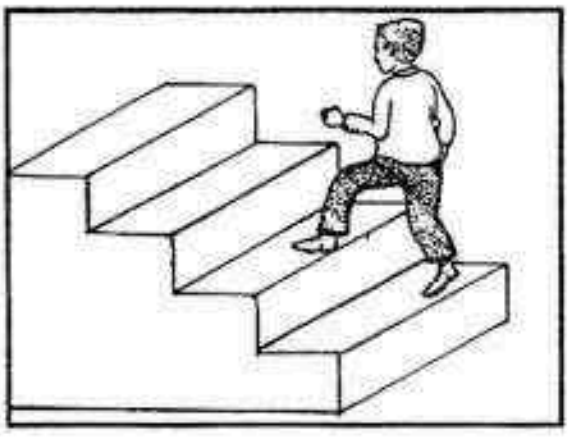
40. The diagram below shows Raymond walking up the stairs.

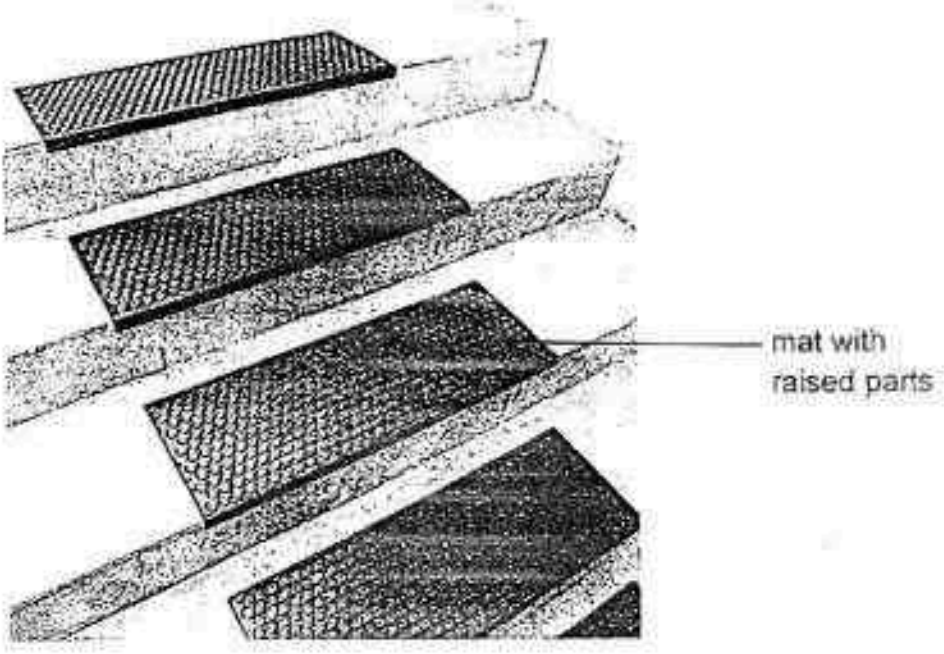


(a) Explain why more energy is needed to walk up than walk down the stairs. [1]

_____

_____

Raymond put some mats on the stairs as shown in the diagram below.



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Score 1

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The mat has a surface made up of raised parts.

(b) Suggest a reason for using such mats on the stairs. Explain your answer. [1]

Score	/ 1

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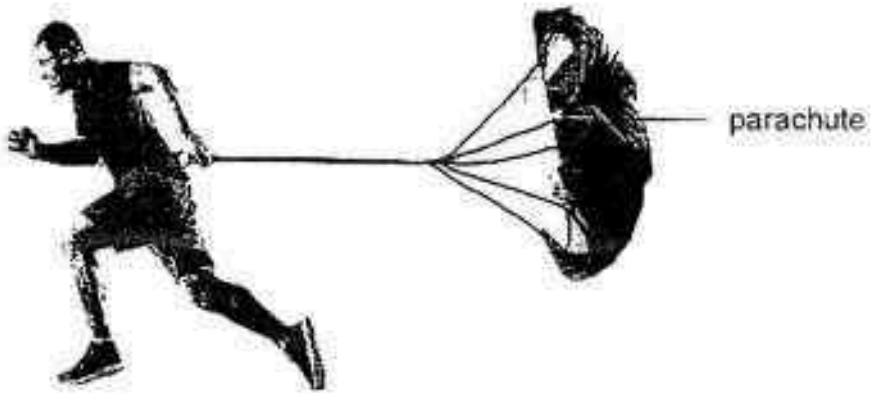
41. Peter wanted to find out how the surface area of a parachute affected the time taken for him to run five metres with it.

The diagram below shows Peter running with the parachute.



Peter recorded his readings in the table below.

Surface area of parachute (cm^2)	Time taken to complete five metres (s)
900	20
1000	28
1100	34
1200	45
1300	59

(a) Based on the information above, what is the relationship between the surface area of the parachute and the time taken to complete the five-metre run? [1]

_____

_____

Peter cut a few holes on the 1300-cm^2 parachute and then ran with it.

(b) Would the time recorded for Peter to complete running 5 metres be "more than", "less than" or "the same" as 59 seconds?
Explain your answer clearly. [2]

_____

_____

Score 3

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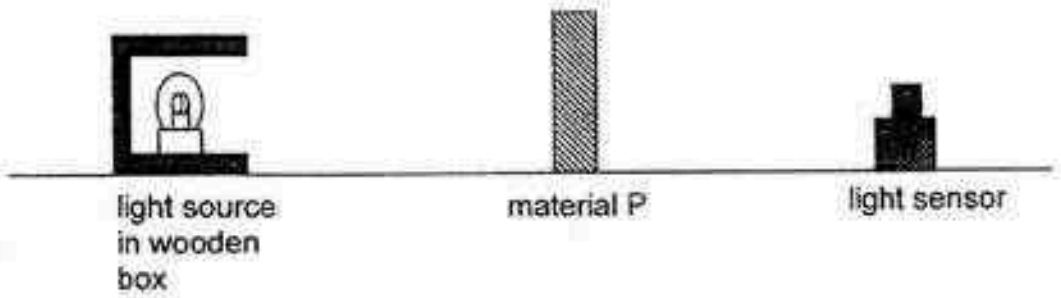
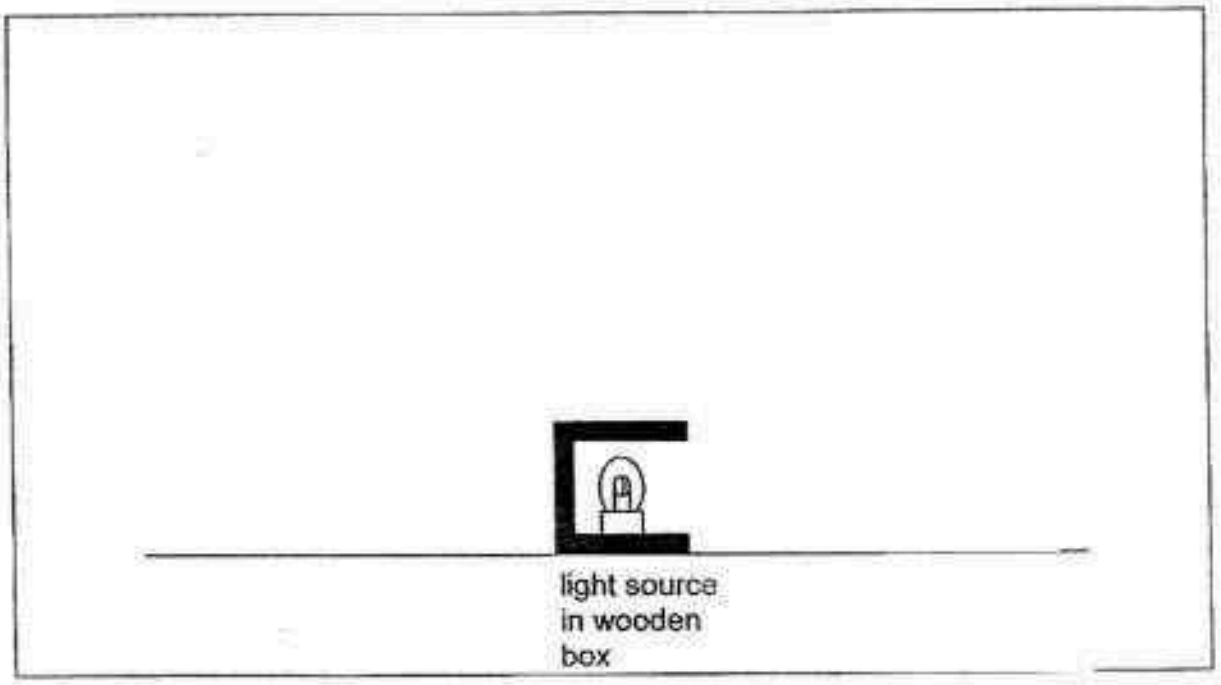
42. Tristan set up the experiment below in a dark room to find out which material, P, Q, R and S, reflect the most amount of light.



(a) Tristan's teacher said that his set-up is incorrect. Using the same apparatus as above, draw and label the correct set-up in the box below. [1]



(b) Name one variable he should keep constant in his experiment. [1]

Score	/ 2

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Tristan measured the amount of light reflected from each material and recorded the results of his experiment in the table below.

Material	Amount of light reflected (lux)
P	2250
Q	1670
R	980
S	2750

(c) From the results in the experiment, which material is the most suitable to be made into a safety vest for traffic police officers who have to work at night? Explain your answer. [1]

Score	/ 1

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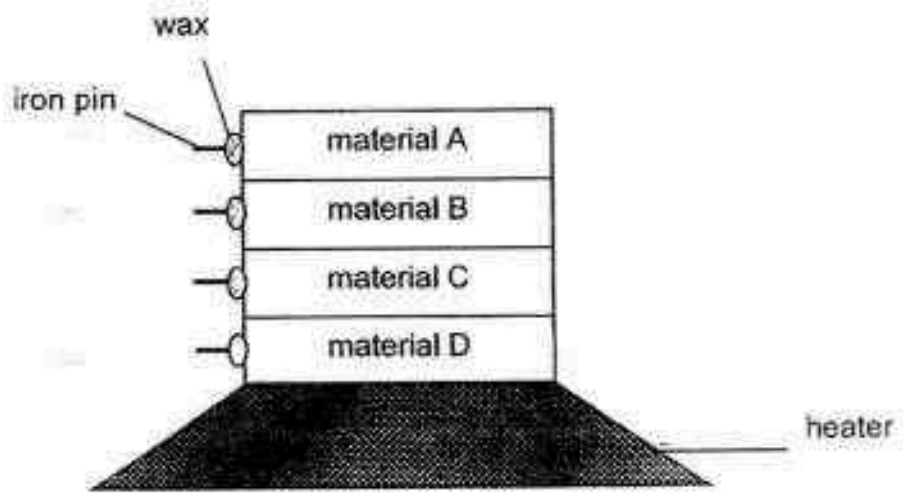
43. Ahmad set up the experiment shown below to find out the heat conductivity of four different materials, A, B, C and D.



Ahmad recorded the results of his experiment in the table below.

Material	Time taken for iron pin to drop (min)	Put a cross (X)
A	13	
B	9	
C	15	
D	2	

(a) Ahmad's sister said that he had recorded ONE of the results wrongly. Put **ONE** cross (X) in the table above to indicate the mistake he had made. [1]

Score	/ 1

continue on the next page

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continue from the previous page

(b) Explain your answer in part (a). [1]

_____

_____

(c) Ahmad's sister also said that he did not conduct a fair test. Suggest what Ahmad can do to the set-up to ensure a fair test. [1]

_____

_____

Score	/ 2

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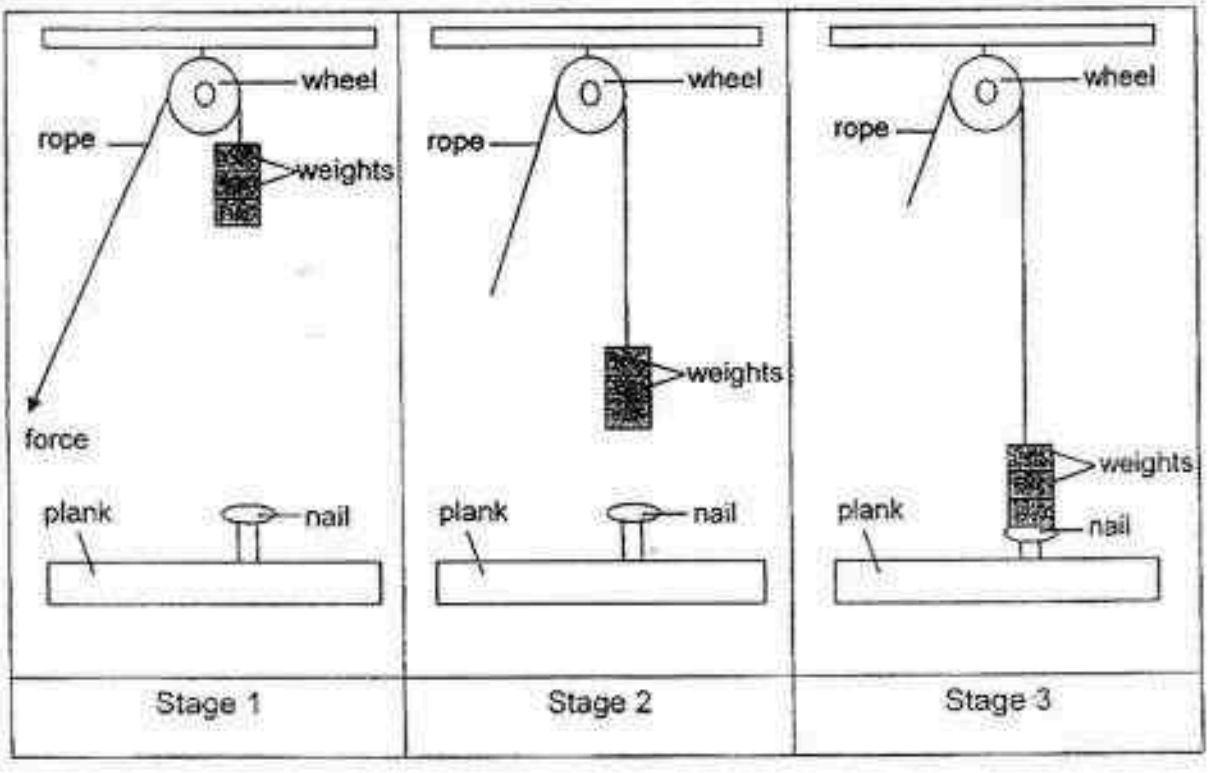
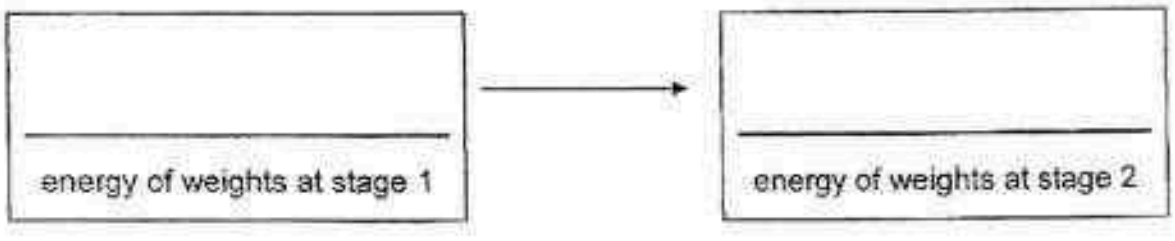
44. Jia Xin designed a simple machine to drive a nail into a plank. She pulled the rope to lift some weights. She then released the rope so that the weights hit the nail into the plank. The diagrams below show the different stages of how the machine works.



(a) Fill in the blanks below to show the main energy conversion from stage 1 to stage 2. [1]



Score 1

continue on the next page

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continue from the previous page

(b) Suggest two changes that can be made to Jia Xin's machine to reduce the time taken to drive the nail into the plank. [2]

Suggestion 1	
Suggestion 2	

- End of Paper -

Score / 2

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EXAM PAPER 2016

SCHOOL : RAFFLES GIRLS'S

SUBJECT : SCIENCE

TERM : SA2

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	4	3	2	3	4	2	3	1	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	1	3	1	2	3	2	3	2	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	4	3	1	1	3	2	3	2	4

31)a)Animal D lays eggs, but Animal A does not lay eggs.

b)Animal C lays eggs and does not have scales.

c)Fish.

32)a)T to P and Q to U.

b)Yes. Since pollen grains from the same type of flower were dusted over the stigma of Flower X, Flower X is pollinated and the female gamete of the ovules will fuse with the male gamete of the pollen grain, causing Flower X to be fertilised. Thus, its ovary will develop into a fruit.

c)Fruit S has many ovules, while Fruit T only has one ovule.

33)a)Part C holds the plant upright, allowing the plant to reach for more sunlight and capture more sunlight to make food through photosynthesis. Part C also has water-carrying tubes that transport water from the roots to the leaves and food-carrying tubes that transport food from the leaves to the roots.

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33)b)The movement of water in plants only go in one direction from the roots to the leaves, but the movement of blood in the human body goes in 2 directions, from the lungs to the other parts of the body, then back to the lungs.

34)a)Y controls the cell activities in the cytoplasm and cell division.

b)Root. Cell B does not contain chloroplasts, just loke the cells in the roots as the roots do not need to capture light to make food since it is underground, thus it does not contain chloroplasts.

35)a)A: Garden B: Leaf litter

b)For Habitat A, as the light intensity increases, the temperature increases.

c)i)There were fewer dead leaves in Area 2, and since X and Y feed on dead leaves, there were less dead leaves foe X and Y to fees on, causing their population size to decrease. However, there were more dead leaves in Area 1 for X and Y to feed on, allowing their population size to increase.

ii)dead leaves → X → Z

36)a)The temperature of air in container of set-up A is always lower than the temperature of air in container of set-up B regard less which part of the day it is.

b)Animal Q. Animal Q has a long and wide tail, while Animal R has a short and narrow tail. So, Animal Q's long and wide tail can provide more shade for itself, allowing it to gain less heat from the warmer surroundings in the hot habitat and keep cooler.

37)a)350 cm^3

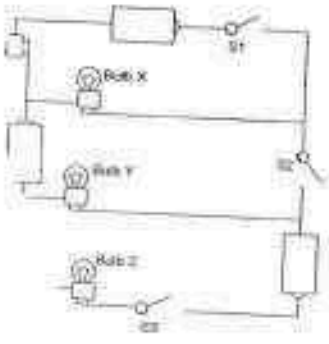
b)Air does not have a definite volume.

c)Decrease. Air has mass and since Ashlyn removed 80cm^3 of air, the air inside the football had less mass.

38)a)Bulbs W, X and Y.

b)4.

c)



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39)a)Rod Z is a magnet and the loke poles of Rod Z and the magnet were facing each other, hence they repelled. Causing Rod Z to move away.

b)When heated, Rod Z's magnetic force was weakened and was attracted by the magnet as it is a magnetic material.

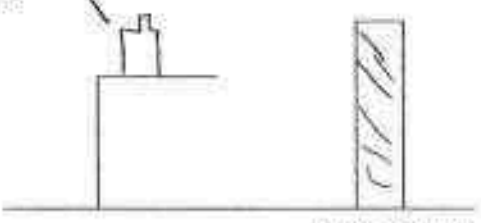
40)a)When we walk up the stairs, gravity is acting against us, pulling us towards the ground, hence more energy is required to overcome the gravity acting against us.

b)This prevents people the stairs from slipping. The raised parts increase the friction between the person's feet and the stairs opposing his motion, hence preventing the person from slipping.

41)a)As the surface area of the parachute increase, the time taken to complete the five metre run increases.

b)Less than 59 seconds. By cutting a few holes, Peter reduced the exposed surface area of the parachute, hence reducing the amount of air resistance the parachute encounters that opposes its motion, and thus in turn opposes Peter's motion less, hence Peter will take a shorter time to complete running 5 metres.

42)a)light sensor



Material P

b)The intensity of light shone by the light source.

c)Material S. Material S reflected the most light, hence when made into a safety vest. Material S will be able to reflect the most light emmited by the lampposts into the driver's eyes, allowing the drivers to spot the traffic police officers most easily at night, when it is dark, preventing the traffic police officers from being knocked down.

43)a) C → X

b)Material C is the second closest to the heater, hence it will gain heat the second-fastest and melt the wax second, causing the iron pin to drop second. However, Ahmad recored that the iron pin attached to material C took the longest time to drop and dropped last.

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43)c)Ahnad should place materials A, B, C and D side by side, instead of stacking them up.

44)a)Gravitational potential → Kinetic energy

b)1)Attach more than three weights to the rope.

2)Pull the weights to a higher height, before releasing the rope.

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19

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION
2016

BOOKLET A

Date: 25 August 2016

Duration: 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 24 printed pages including this cover page.

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Section A (30 x 2 marks = 60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. Rahman observed the different types of organisms found in an area at a park. He recorded the number of each organism in the table below.

Type of organism	Number of organisms
Spider	2
Tree	2
Caterpillar	5
Beetle	3
Fern	3
Squirrel	2
Beetle larva	4
Butterfly	6
Mushroom	4

Based on the information above, which of the following statement is **correct**?

(1) There is only one food producer.
(2) There are only six food consumers.
(3) There are seven populations of organisms.
(4) There are eight communities of organisms.

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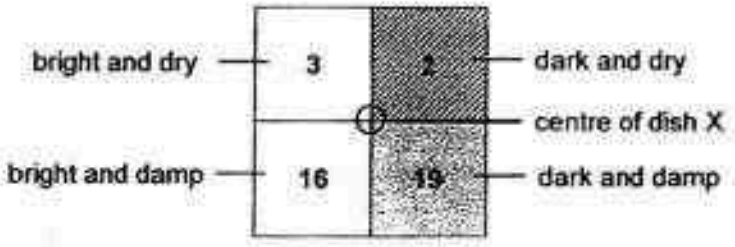
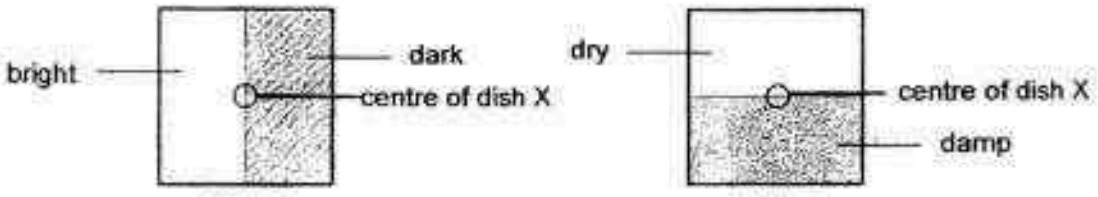
2. Devi carried out an experiment to find out the preferred environment for organism A. Forty organism A were placed in the middle of Dish X. After 20 minutes, the number of organism A in each section of Dish X was counted and recorded in the diagram as shown below.

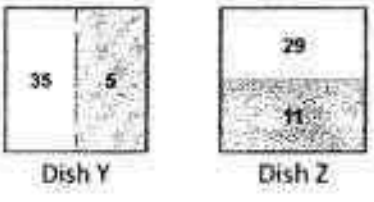


The experiment was then repeated with Dishes Y and Z using the same number of organism A.



Which one of the following shows the likely number of organism A in each section of Dishes Y and Z?

(1)



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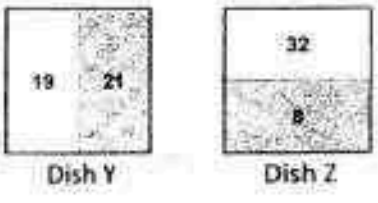

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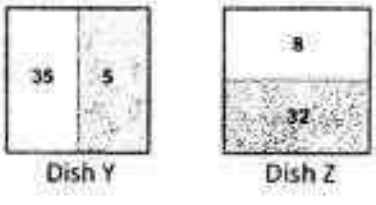

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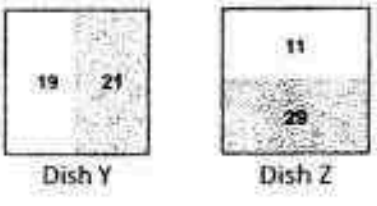

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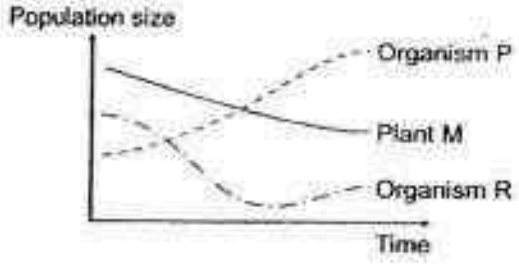
3. Study the food chain below.

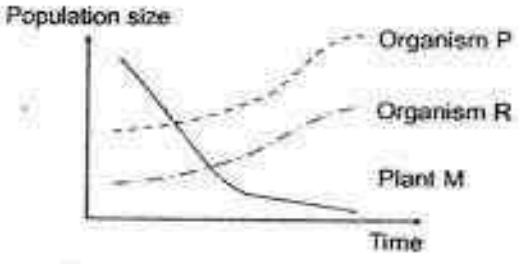
Plant M → Organism P → Organism R

It was observed that there is an increase in the population of organism P. Which one of the following graphs below correctly shows the change in the population size of plant M, organisms P and R over a period of time?

(1)



(2)



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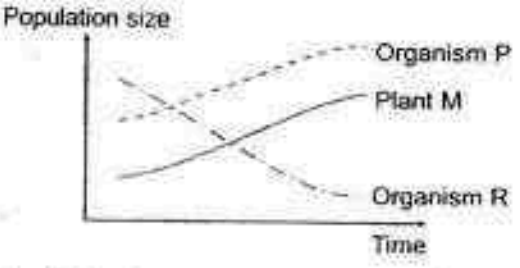

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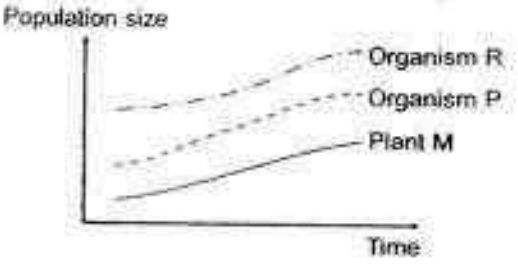

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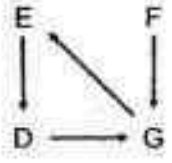
4. The following food relationships were observed among four organisms, D, E, F and G.

D is a prey only.
E is a predator only.
F is a food producer.
G is both a predator and a prey.

Which one of the following correctly represents the food web for D, E, F and G?

(1)



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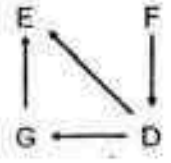
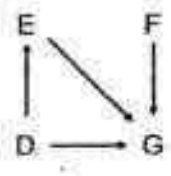


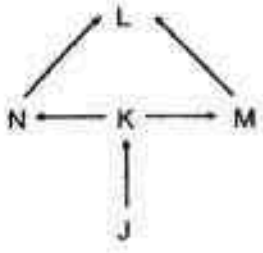
(3)



(4)



5. Study the food web below.



If the population of organism K decreases, which of the following statements show immediate effects on the other organisms?

A The population of organism L will increase.
B The population of organism J will increase.
C The population of organism N will decrease.
D The population of organism M will be the same.

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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6. The diagram below shows types of feet from three different birds R, S and T.

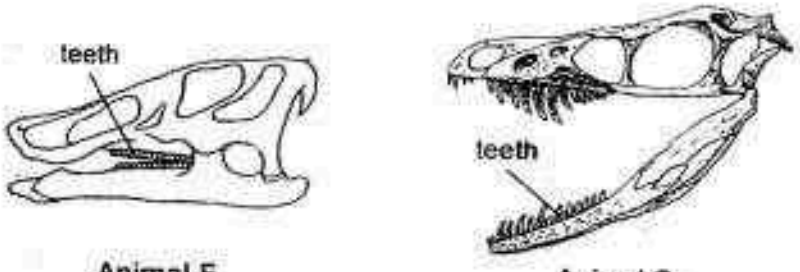


Bird R Bird S Bird T

Which of the following is the most likely habitat of each bird?

	Types of habitats		
	Bird R	Bird S	Bird T
(1)	Tree	Field	Pond
(2)	Pond	Field	Tree
(3)	Field	Pond	Tree
(4)	Pond	Tree	Field

7. The diagrams below show the skulls of two animals, F and G. Animal F was a herbivore.



Animal F Animal G

Based on the diagrams, which one of the following statements about animal G's diet is **correct**?

(1) It is a herbivore as it has many teeth like animal F.
(2) It is a carnivore as it has teeth at the front unlike animal F.
(3) It is a herbivore as its skull is long and pointed like animal F.
(4) It is a carnivore as it has sharp teeth unlike those of animal F.

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8. The list below states some behaviours of Bird V which is known to feed on small animals.

A It puffs up and ruffles its feathers.
B It pierces insects with its sharp beak.
C It turns its back to face the sun.
D It imitates the mating call of its prey.

Which of the above behaviour(s) helps it to catch its prey?

(1) B only
(2) A and C only
(3) B and D only
(4) C and D only

9. Which of the following is/are behavioural adaptation(s) that will help an animal to escape from its predators?

A Having soft pads on paws.
B Moving quickly and without making any sound.
C Decorating the nest with colourful pebbles and flowers.
D Having body covering that has similar colours as its surroundings.

(1) B only
(2) B and D only
(3) A, B and C only
(4) A, C and D only

10. Plant K grows in an environment with the following characteristics:

- Low average temperature
- Surrounding air has very little water vapour
- Frozen soil prevents water from flowing deep into the ground

Which of the following adaptations must be present to ensure the survival of Plant K?

A Having very small leaves
B Having stems that store water
C Having long and shallow roots

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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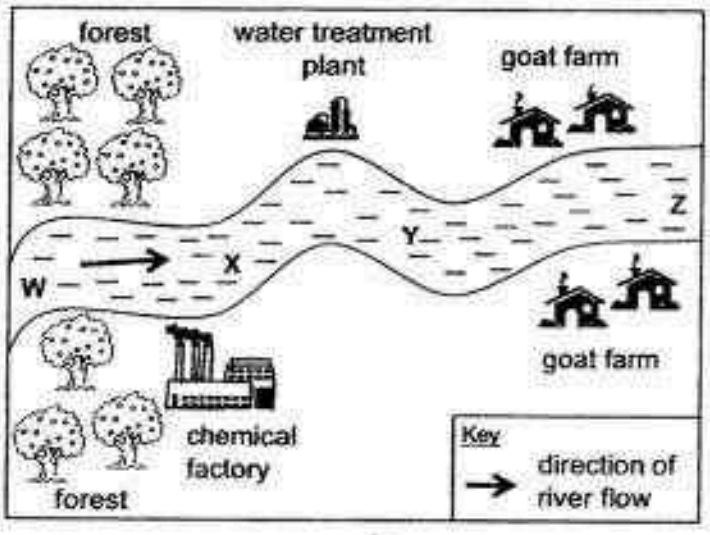
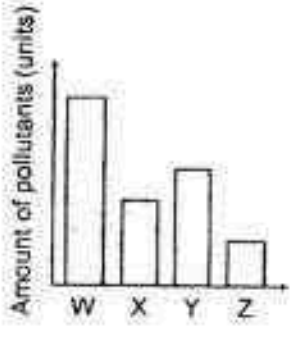
11. A river runs through an area of land as shown in the diagram below.



Equal amounts of water samples were collected from positions W, X, Y and Z in the river and were analysed for the amount of pollutants in them.

Which one of the following graphs correctly shows the most likely levels of pollutants in each water sample?

(1)



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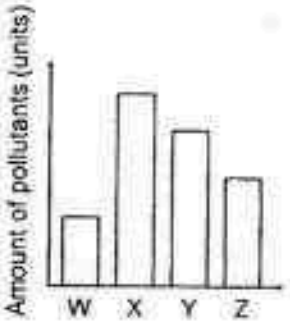
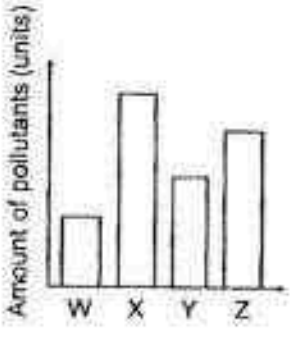


(3)



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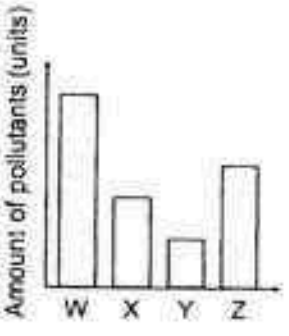

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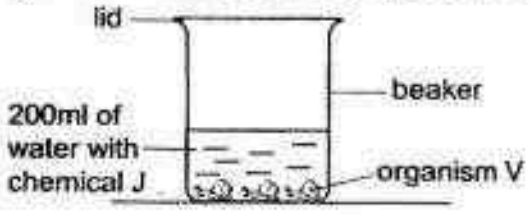
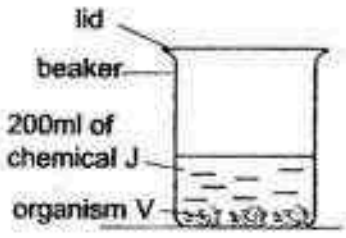
12. Daphne wanted to find out if the presence of chemical J in water would affect the growth of organism V. She used the set-up below for her experiment.

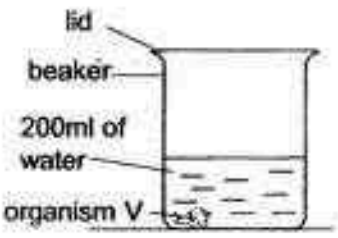


Which one of the following set-ups should she use as a control for her experiment?

(1)



(2)



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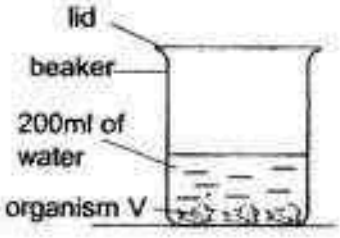

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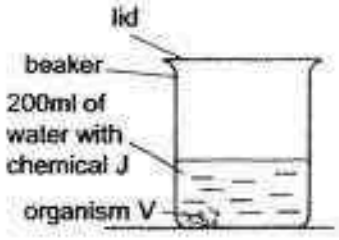

13. Some observations of four different types of fruits are shown below.

Fruit	Description
A	It has a pod with a few seeds. It turns dark brown when it is ripe.
B	It is edible and has small indigestible seeds.
C	It has a waterproof outer covering.
D	It is small, light and has a wing-like structure.

Based on the observations, how are the fruits most likely to be dispersed?

	Dispersal methods			
	Water	Wind	Animals	Explosive action
(1)	C	B	D	A
(2)	C	D	B	A
(3)	D	C	A	B
(4)	A	D	B	C

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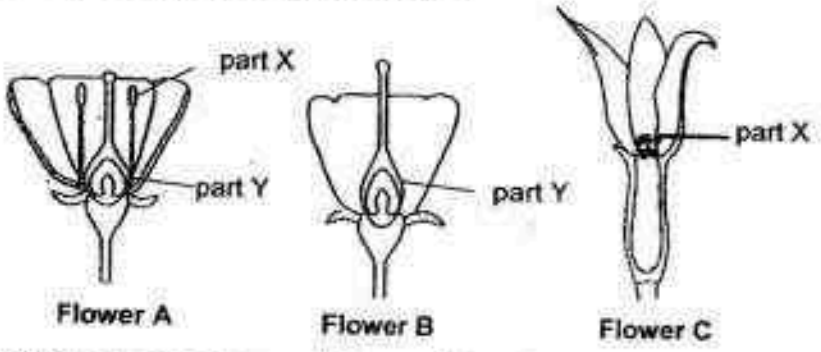
14. The diagram below show the cross-sections of flowers A, B and C. Flowers A and B are from the same plant. Only Flowers A and B have part Y. Part X of flowers A and C carry out the same function.



Based on the diagram above, which one of the statements is **correct**?

(1) Flower C can be fertilised.
(2) Only Flower B can develop into a fruit.
(3) Pollen grains from part X of flower A can pollinate flower B.
(4) Flower A is pollinated by insect but Flower C is pollinated by wind.

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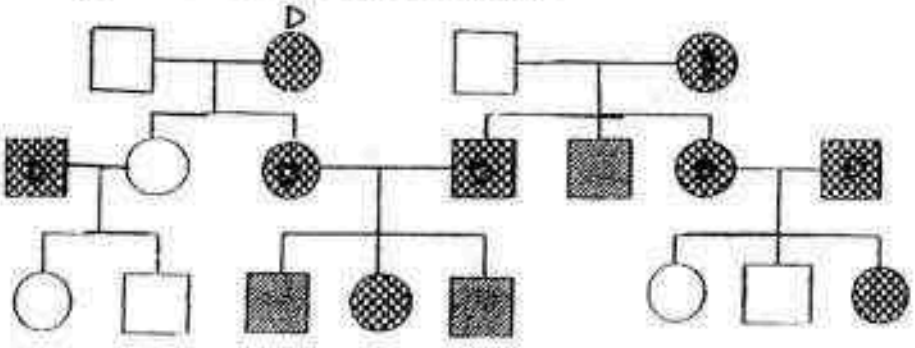
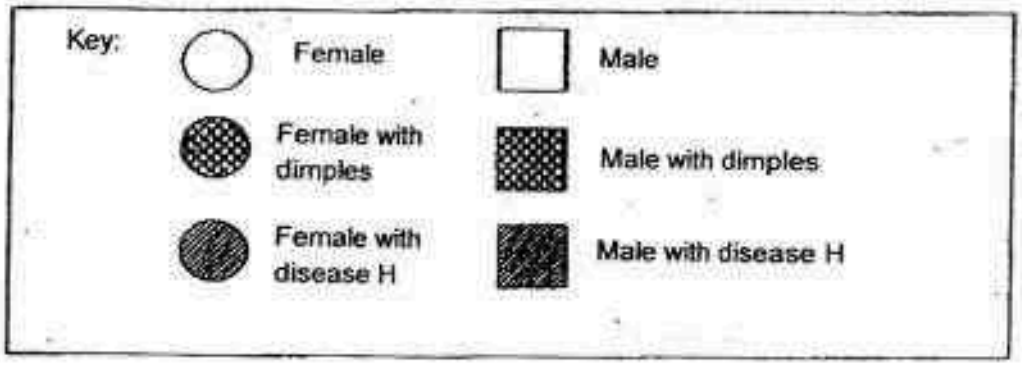
15. The diagram below shows Diana's family tree.





Based on the information provided above, which of the following statements are **true**?

A Three of Diana's uncle has dimples.
B None of Diana's cousins has disease H.
C Both Diana's grandmothers have disease H.
D Some of the male members of the family have disease H.

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) B, C and D only

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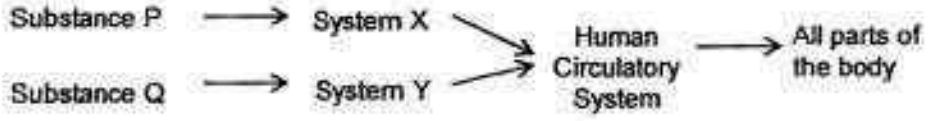
16. The diagram below represents how different systems work together in a human body to take in substances P and Q that are needed for life processes.



Which one of the following correctly identifies substances P and Q and systems X and Y?

	Substance P	Substance Q	System X	System Y
(1)	water	oxygen	Respiratory System	Digestive System
(2)	water	carbon dioxide	Digestive System	Muscular System
(3)	food	carbon dioxide	Muscular System	Respiratory System
(4)	food	oxygen	Digestive System	Respiratory System

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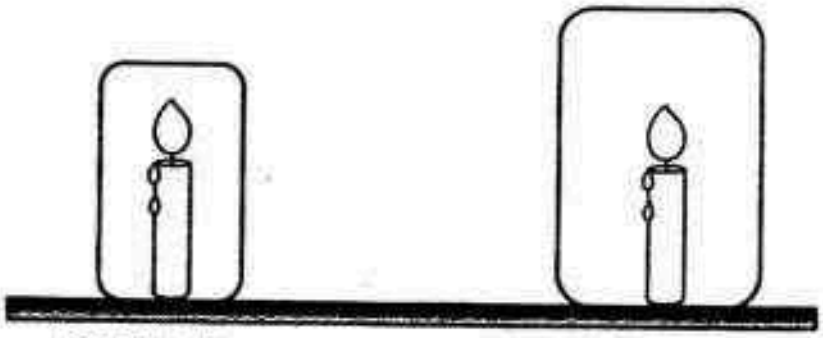
17. Joong Ki placed two lit candles in different containers that were filled with oxygen as shown in the set-ups below.



Based on the experiment, which one of the following correctly describes the aim of the experiment and the variables that he needs to keep constant to ensure a fair test?

	Aim	Variables to be kept constant
(1)	To find out how the amount of oxygen affects how long the candle remains lit.	• size of the candles • size of the containers
(2)	To find out if oxygen is needed for burning.	• material of the container • time taken for the flame to go off
(3)	To find out if oxygen is needed for burning.	• size of the candles • size of the containers
(4)	To find out how the amount of oxygen affects how long the candle remains lit.	• size of the candles • number of candles

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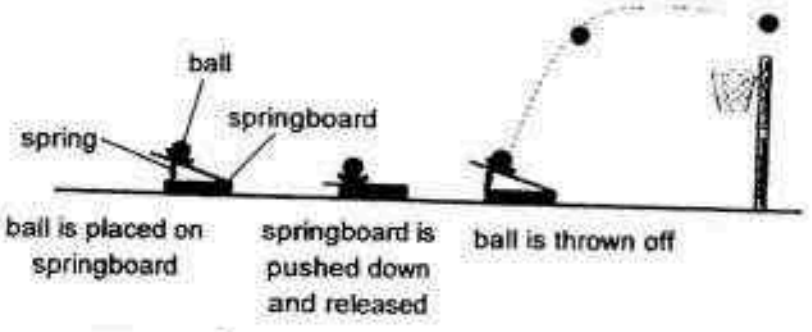
18. Which one of the following statements **correctly** matches the part of the digestive system with its function?

	Part of digestive system	Function
(1)	gullet	produces digestive juices to digest the food
(2)	stomach	allows food to travel into the blood
(3)	small intestine	absorbs nutrients from the food
(4)	large intestine	transports undigested food to the small intestine

3

19. Samantha was playing a game of Mini Shoot Basket with her brother. The diagram below shows how the game is played.



Which one of the following shows the correct energy conversions of the game when the springboard is pressed and released?

(1)	Chemical potential energy	→	Kinetic energy	→	Gravitational potential energy
(2)	Elastic potential energy	→	Kinetic energy	→	Gravitational potential energy
(3)	Gravitational potential energy	→	Elastic potential energy	→	Kinetic energy
(4)	Kinetic energy	→	Gravitational potential energy	→	Elastic potential energy

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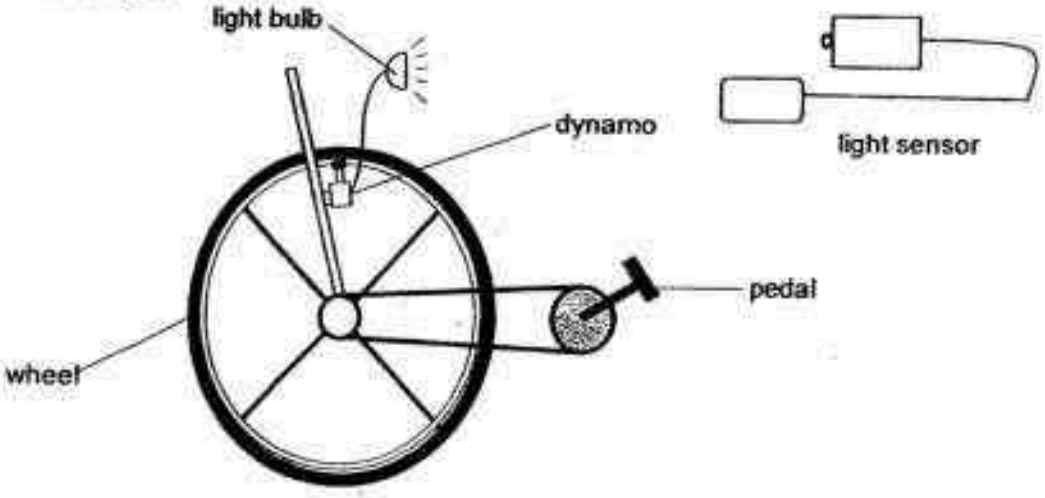
20. A dynamo is a gadget that converts kinetic energy into electrical energy. Some pupils fixed a dynamo to a wheel as shown below and began turning the wheel. They observed that the bulb started to light up after a while. The pupils then turned the pedal of the wheel at different speeds and measured the brightness of the light.



Which one of the following tables correctly shows the most likely results of their investigation?

(1)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	60
70	80
90	130
110	180

(2)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	60
70	130
90	180
110	80

(3)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	180
70	80
90	60
110	130

(4)

Speed of wheel (Number of turns per min)	Intensity of light (lux)
50	180
70	130
90	80
110	60

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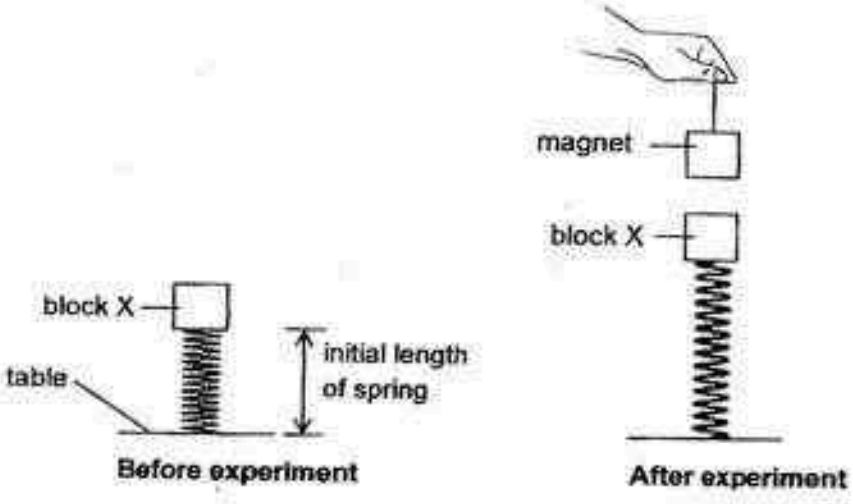
21. A spring was attached to a table and block X was attached on top of the spring and left to rest. A magnet was then hung above block X and slowly brought closer to the block. The sequence of events is shown in the diagrams below.



Which of the following statements **correctly** state the types of forces acting on block X after the experiment?

A Gravity
B Magnetic force
C Elastic spring force

(1) A and C only
(2) A and B only
(3) B and C only
(4) A, B and C

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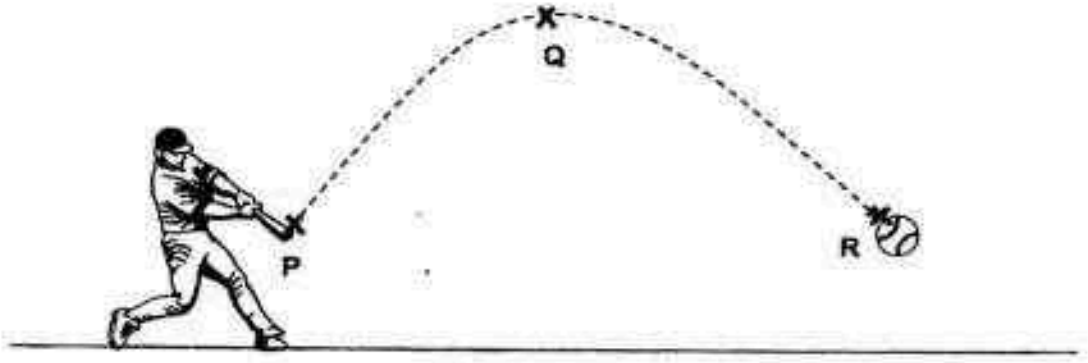
22. A ball was hit using a bat as shown below.



Which of the following statements below **correctly** states the effects of forces on the ball?

A The ball stopped moving at point R.
B The ball changed direction at point Q.
C The ball moved faster from point P to Q.

(1) B only
(2) A and C only
(3) B and C only
(4) A, B and C

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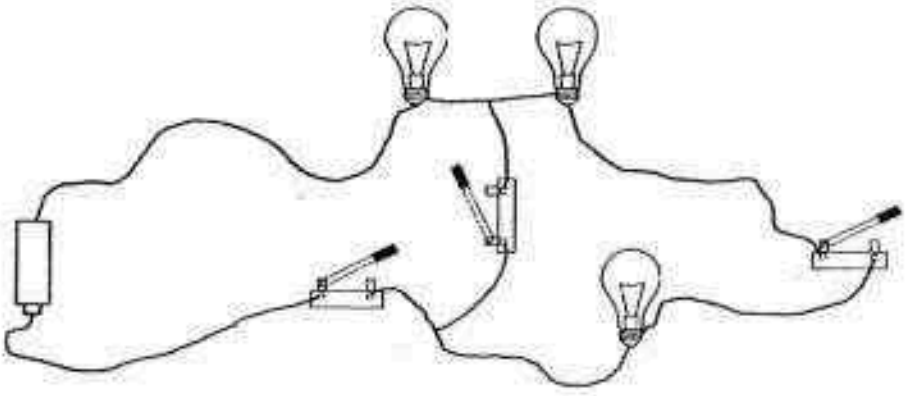
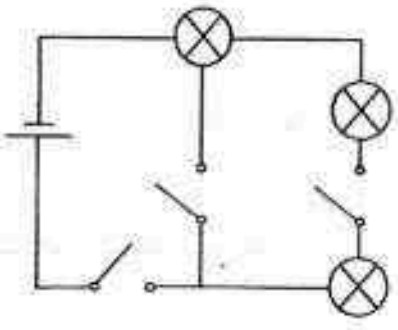
23. Study the electric circuit below.

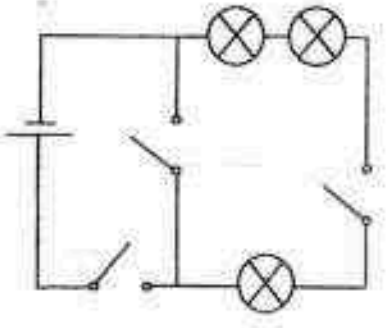


Which circuit diagram below **correctly** represents the circuit arrangement above?

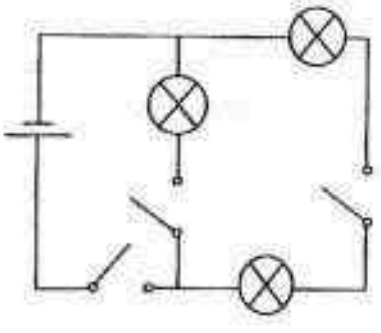
(1)



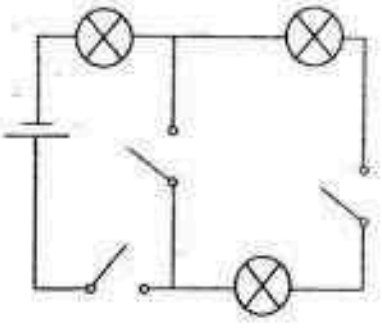
(2)



(3)



(4)



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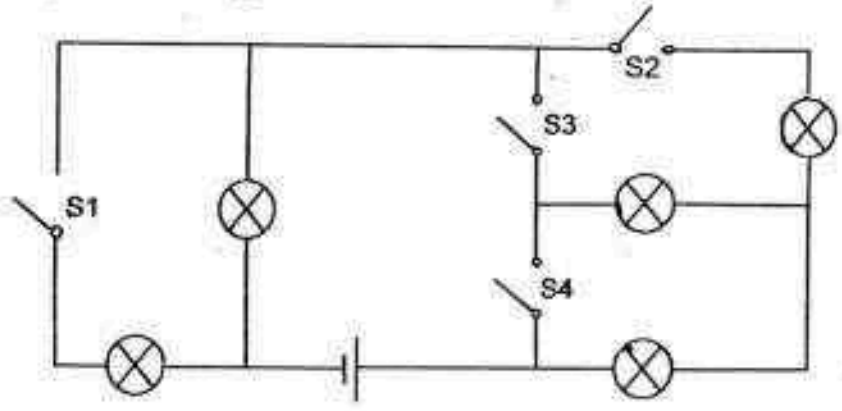
24. Study the circuit diagram below.

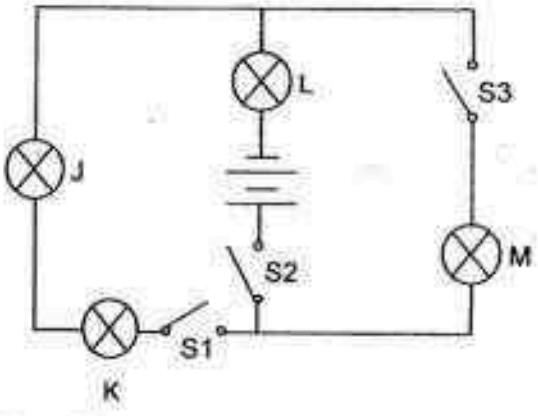


Which pairs of switches will allow only four bulbs to light up when closed?

A S1 and S2 only
B S1 and S3 only
C S2 and S3 only
D S2 and S4 only

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, B, C and D

25. A circuit was set up as shown below.



Which one of the following statements **correctly** describes the bulbs when switches S1 and S2 are closed?

(1) Bulbs J and K do not light up.
(2) Bulb L is brighter than bulb K.
(3) Bulb M is brighter than bulb K.
(4) Bulbs J, K and L have the same brightness.

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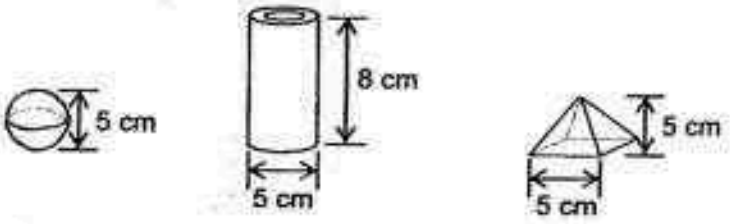
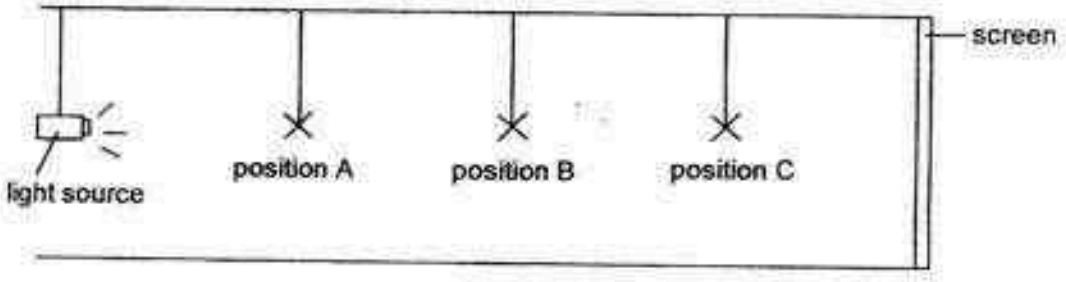
26. Three objects made of the same material that does not allow light to pass through are shown in the diagrams below.



sphere **cylinder** **pyramid**

The objects were hung in a line at various positions, A, B and C, to cast a shadow on a screen as shown in the diagram below.





shadow cast

Which of the following **correctly** matches the positions the objects were hung and the shadow cast on the screen?

	position A	position B	position C
(1)	cylinder	sphere	pyramid
(2)	cylinder	pyramid	sphere
(3)	sphere	pyramid	cylinder
(4)	pyramid	cylinder	sphere

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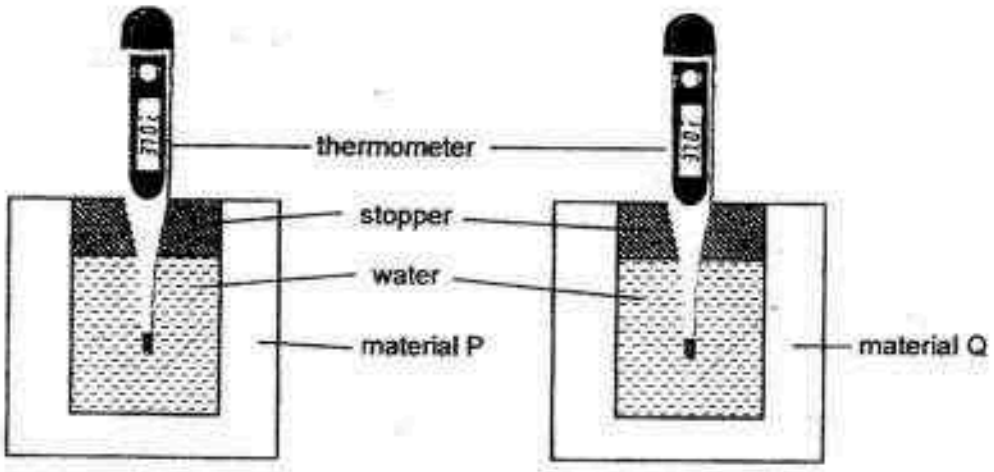
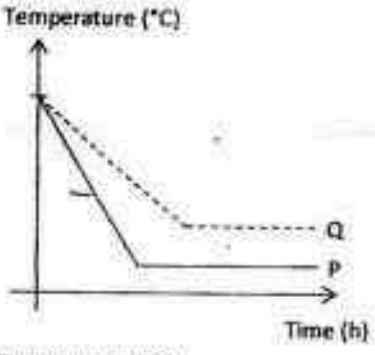
27. Suzy has two identical blocks each made of a different material, P and Q. Material P is a better conductor of heat than material Q.

Both blocks are placed in the same compartment in a refrigerator at the same time and their temperatures monitored using a thermometer as shown below.

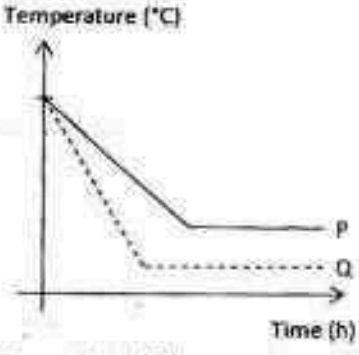


Which of the following graphs correctly shows the temperatures of both blocks over time?

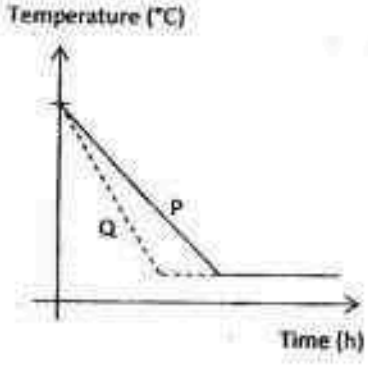
(1)



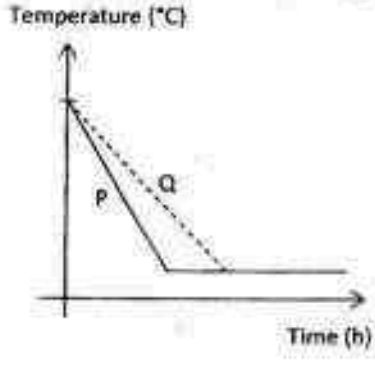
(2)



(3)



(4)



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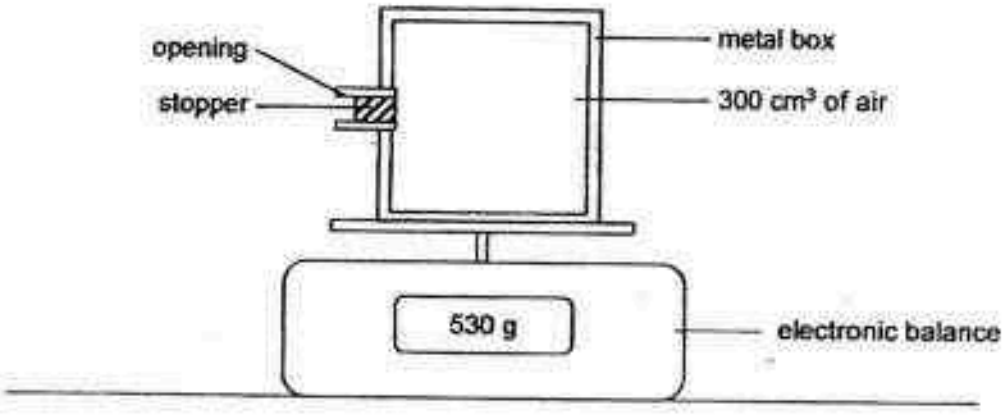
28. A metal box containing 300 cm^3 of air was placed on an electronic balance as shown in the diagram below.



An additional 100 cm^3 of air was pumped into the metal box. Which option below **correctly** states the volume of air in the metal box and the reading on the electronic balance?

	Volume of air in the metal box (cm^3)	Reading on the electronic balance (g)
(1)	300	530
(2)	300	more than 530
(3)	400	530
(4)	400	more than 530

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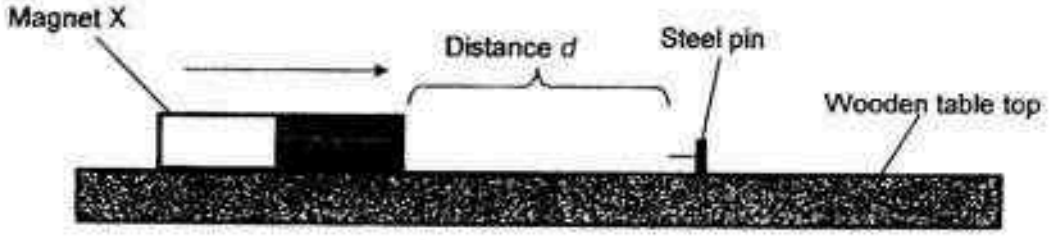
29. Jamie carried out an investigation to find the strength of three magnets, X, Y and Z, given to her. She slowly moved Magnet X towards a steel pin placed on a wooden table until the magnet attracted the pin from a distance *d* as shown in the diagram below.



She then repeated the procedure two more times and calculated the average distance. The experiment was then repeated with the other two magnets, Y and Z. The results were tabulated as shown below.

	Distance *d* (cm)			
	1st try	2nd try	3rd try	Average
Magnet X	2.4	2.3	2.8	2.5
Magnet Y	3.0	3.1	2.7	2.9
Magnet Z	1.5	1.9	1.8	1.7

Which of the following shows the correct ranking of the strength of the magnets from the strongest to the weakest?

(1) X, Y and Z
(2) X, Z and Y
(3) Y, X and Z
(4) Z, Y and X

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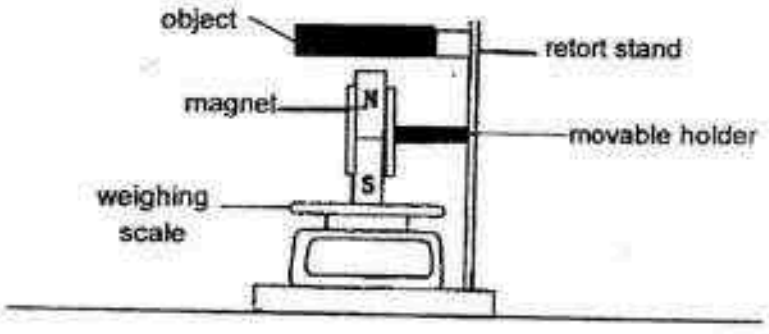
30. Benedict set up an experiment with a magnet weighing 4 units to find the properties of objects X, Y and Z. The magnet is attached to a holder which allows it to move.



The table below shows the readings on the weighing scale when each object is used.

Object	Reading on weighing scale (units)
X	More than 4
Y	0
Z	4

Based on the results, which of the following statements can Benedict possibly make about the properties of the objects?

a Object Y can be an iron rod.
b Object X can be a ring magnet.
c Object Z can be an aluminium rod.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION 2016

BOOKLET B

Date: 25 August 2016

Duration: 1 h 45 min

Name : _____ **( )**

Class: Primary 6 ( )

Marks Scored:

Booklet A:		**60**
Booklet B :		**40**
Total :		**100**

Any query on marks awarded should be raised by 6 Sept 2016. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature: .....

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 21 printed pages including this cover page.

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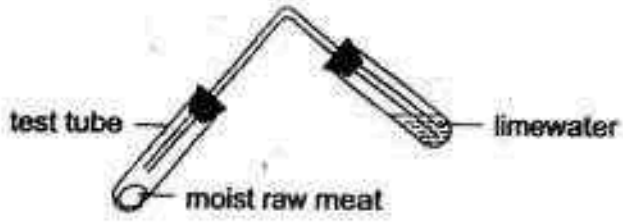
Section B (40 marks)
Write your answers to questions 31 to 44 in the spaces provided.

31. Wallace conducted an experiment with a small piece of moist raw meat and limewater as shown in the diagram below.



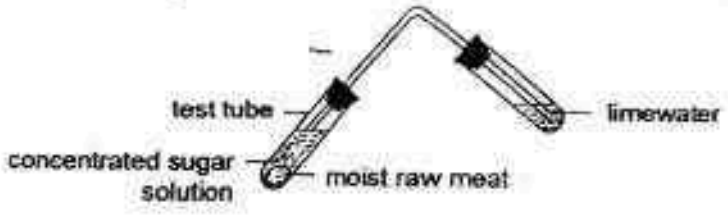
After 1 week, he observed that the limewater had turned cloudy. He was also told that process X took place to cause this change.

(a) Name process X. Explain his observation. [1]

_____

_____

He repeated the experiment but added some concentrated sugar solution to the moist raw meat as shown in the diagram below.



After 1 week, he observed that the limewater remained colourless.

(b) Based on his observation, what can he conclude about the effect of the concentrated sugar solution on the process happening in the raw meat? [1]

_____

_____

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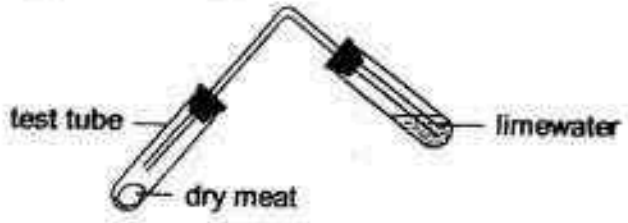
(c) He repeated the experiment again using dry meat as shown in the diagram below.



After 1 week, he observed that the limewater remained colourless.

(i) Explain his observation. [1]

_____

_____

(ii) Based on this experiment, state one condition that is needed for process X to take place. [1]

_____

_____

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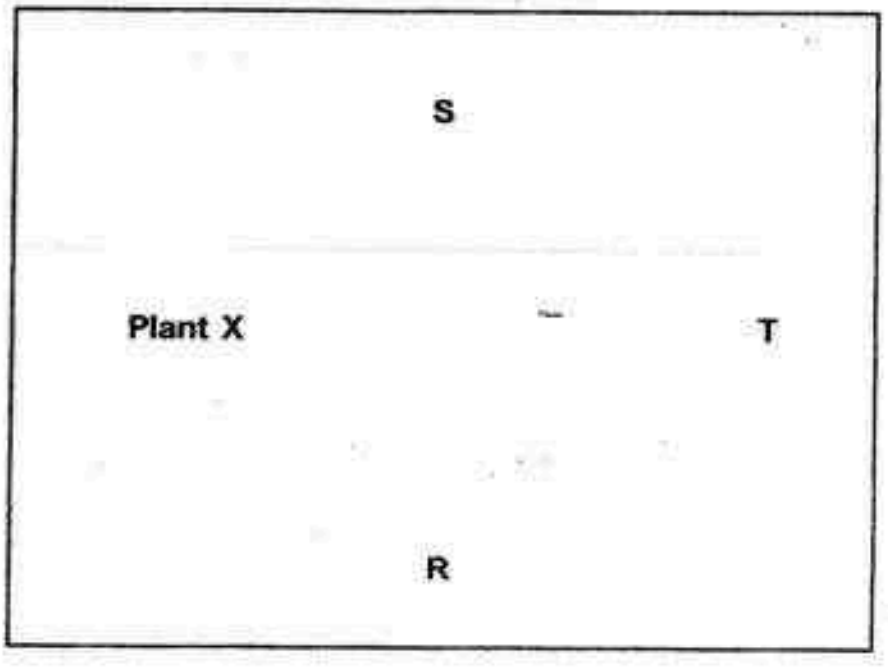
32. Wei Xiang conducted an experiment to study the food relationships between some organisms by using leaves from plant X and three other organisms, R, S and T. The table below shows the results of the experiments conducted over a period of five days.

Experiment	Number of live organisms at the start of experiment				Number of live organisms at the end of experiment			
	Plant X	R	S	T	Plant X	R	S	T
1	10	0	3	0	10	0	0	0
2	10	3	0	0	5	3	0	0
3	10	3	0	3	0	0	0	3
4	0	3	3	3	0	0	2	2
5	0	0	3	3	0	0	0	0

In the space below, draw arrows to complete the food web for plant X, organism R, organism S and organism T. [2]



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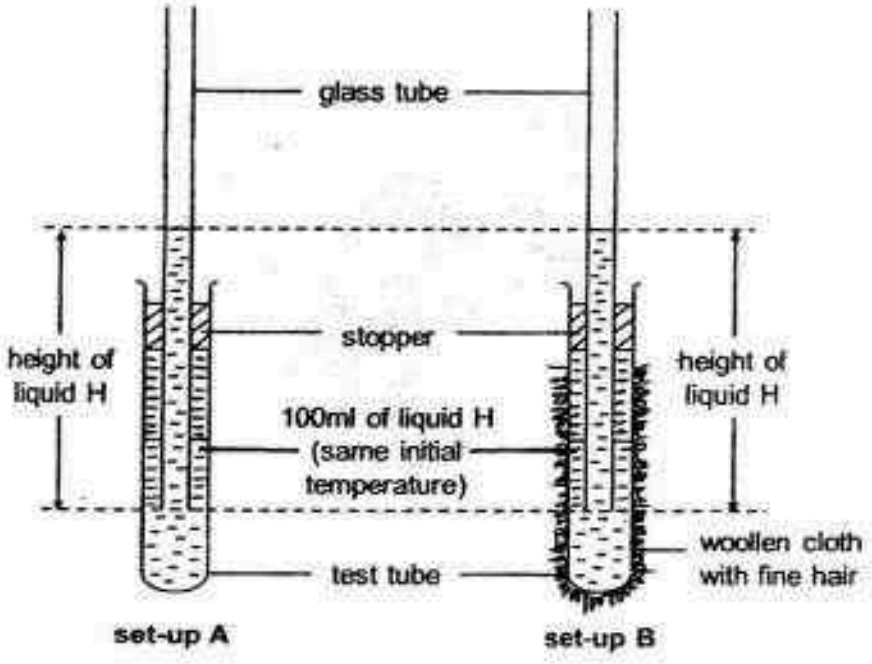
33. Vivian carried out an experiment using the set-up shown below. She covered the test tube in set-up B with some woollen cloth and added liquid H of the same temperature into both test tubes.



She then recorded the height of liquid H in the glass tube every 5 minute for 15 minutes. The results are shown in the table below.

	Height of liquid H (cm)	
Time (min)	Set-up A	Set-up B
0	2.0	2.0
5	1.6	1.8
10	1.3	1.7
15	0.8	1.5

(a) Based on the information above, which set-up contains liquid with a lower temperature after 15 minutes? Explain. [2]

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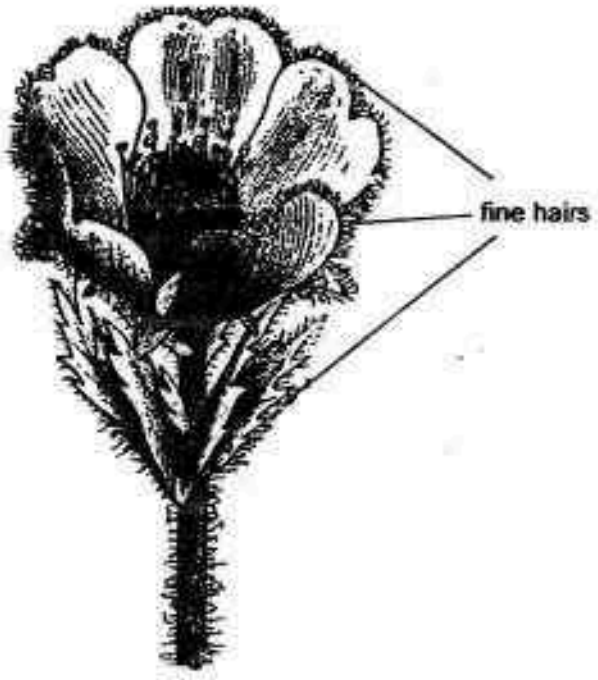
The picture below shows a flowering plant G found in an environment with very low temperatures. It is observed that all the parts of the plant are covered with fine hairs.



(b) Explain how the fine hairs help the plant to survive in its cold environment. [2]

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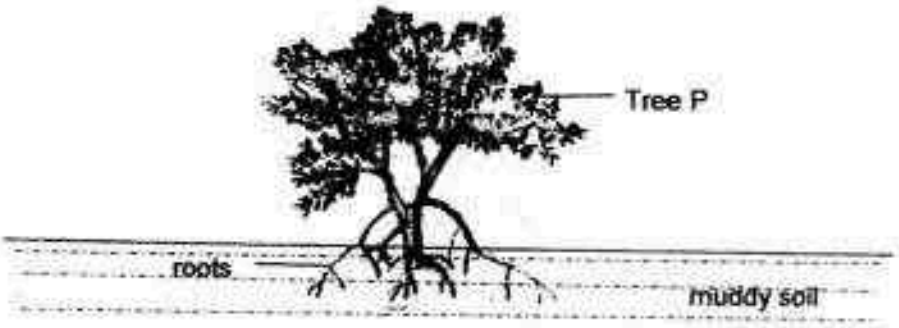
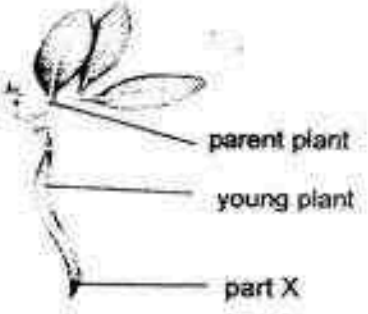
34. Trees P are found in muddy swamps. They have special roots that enable them to survive in the swamps.



Another adaptive feature of Tree P is the way in which it reproduces. The seeds of Tree P start to grow into a young plant while they are still attached to the parent plant as shown in the diagram below.



(a) During certain seasons, the young plant drops into the mud near the parent tree and starts to grow. Explain how the location of the young plant is a disadvantage for it. [1]

_____

_____

(b) During high tide, the young plant floats on the water. State a most likely physical characteristic of part X. [1]

_____

(c) Tree P is observed to produce many young plants at a time. Suggest a reason how this is an advantage for Tree P. [1]

_____

_____

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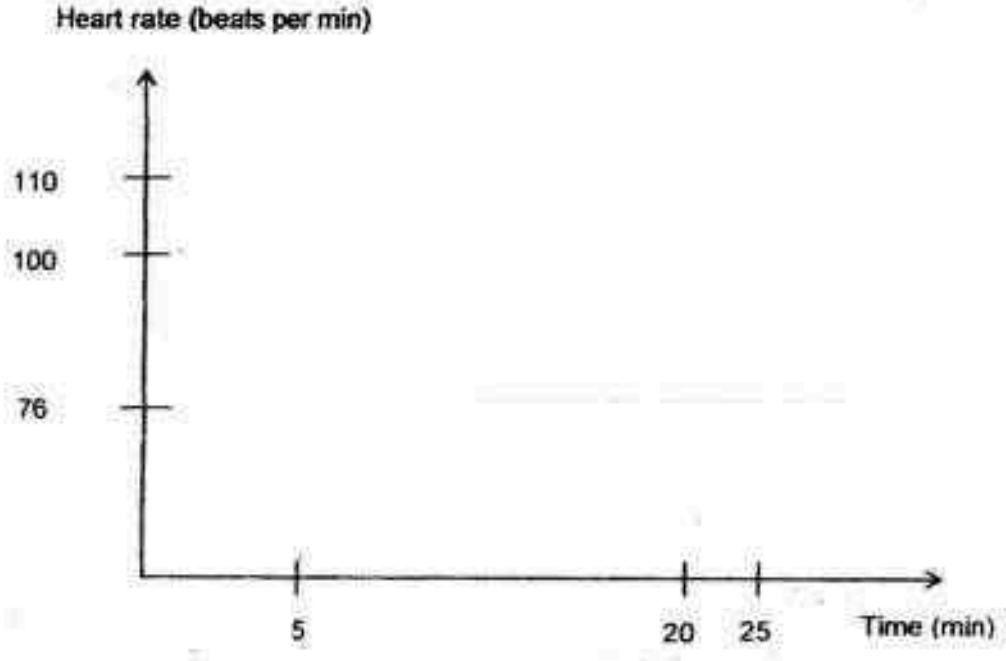
35. Danielle measured her heart rate at three points during 3 activities, standing still, jogging and immediately after jogging. She recorded her heart rate for the three activities in the table as shown below.

	Activity	Heart rate (beats per min)	Time (min)
(i)	standing still	76	5
(ii)	jogging	110	15
(iii)	immediately after jogging	100	5

(a) Complete the line graph below to show Danielle's heart rate during the three activities in this respective order – standing still, jogging and immediately after jogging. [1]



(b) On the graph that you have drawn in part (a), label with a letter "X" to show the time when Danielle started jogging. [1]

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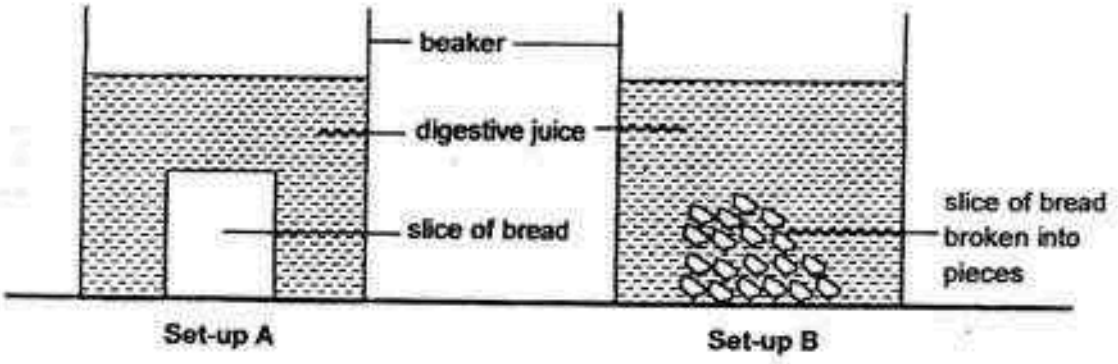
36. Raju conducted an experiment using the set-ups shown below.



He measured the mass of the bread after 1 hour and the results are shown in the table below.

Setup	Mass of bread (g)	
	Before experiment	After experiment
A	5	3
B	5	1

(a) Using the information given, explain the results from the table above. [1]

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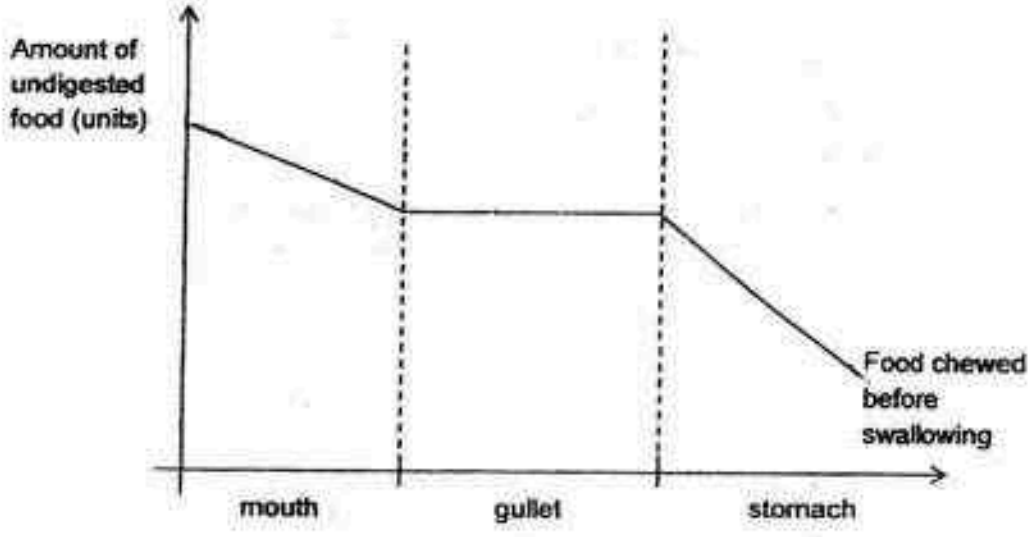
The graph below shows the amount of undigested food in some parts of animal X's digestive system after a meal.



Parts of the digestive system

(b) Draw on the graph above the amount of undigested food in each part of the digestive system if the food has not been chewed before swallowing. [1]

37. During the process of human reproduction, many millions of sperms are released at a time.

(a) Give a possible reason for the release of millions of sperms. [1]

_____

_____

(b) State the organ which produces the sperms. [1]

_____

_____

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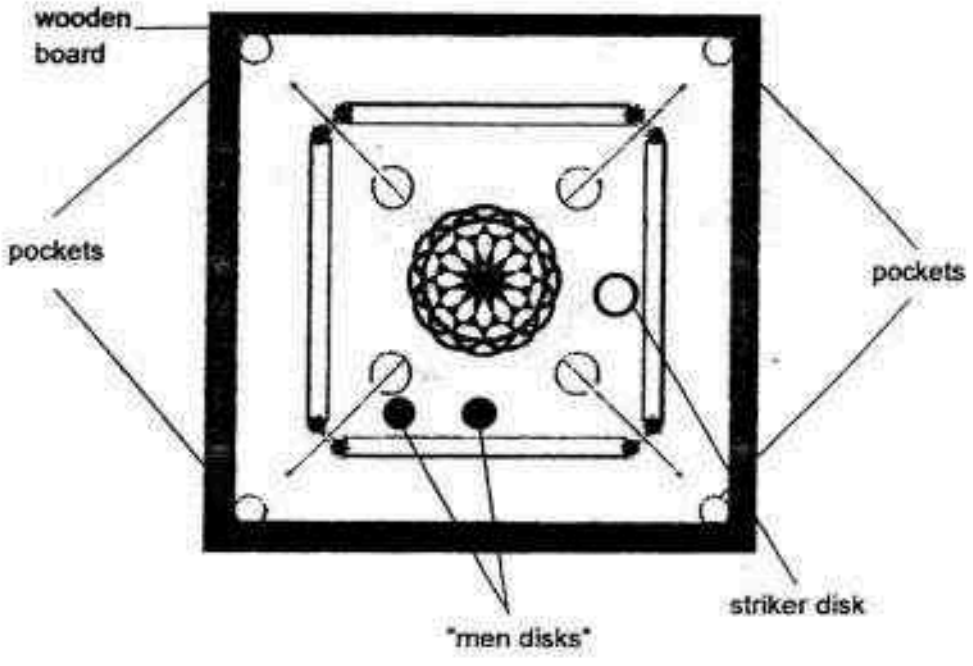
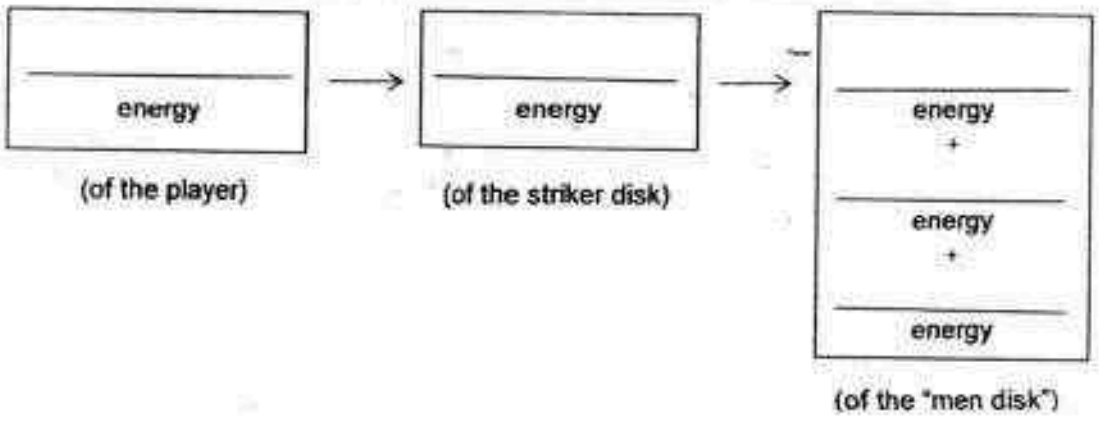
38. In the game of carom, a striker disk is flicked with the finger to hit small disks called "men disks" and shoot them into pockets at the four corners of a wooden board.



(a) State the energy conversions that take place from the time the player flicks the striker disk until the striker disk hits a "man disk". [1]



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(b) If the player changes his striker disk to a heavier one and the striker disk travels at the same speed as in part (a), explain how it would affect the "men disk"? [2]

(c) It was observed that the "men disk" slowed down after some time. Using the concept of energy conversion, provide a reason for the observation. [1]

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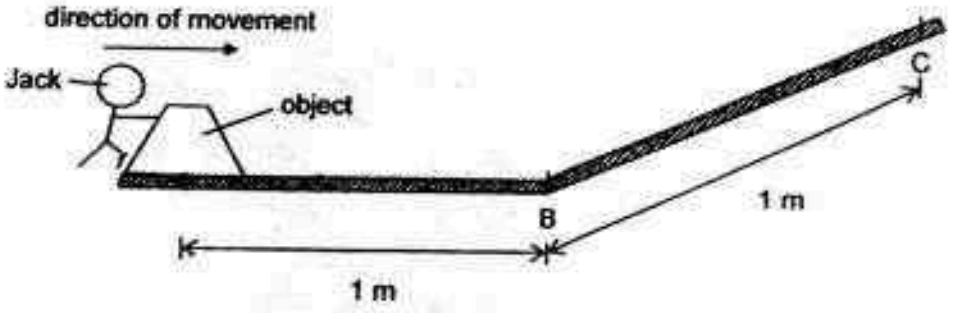
39. Jack pushed an object over the same type of surface from points A to C as shown in the diagram below.



(a) In the diagram above, **draw and label any two forces** that were acting on the object at A as Jack was pushing it. [1]

(b) Based on the diagram above, explain why Jack needed more force to push the object from B to C than from A to B. [1]

_____

_____

(c)(i) Suggest one method to allow Jack to reduce the amount of force needed to push the object from A to B. [1]

_____

_____

(ii) Explain, in terms of forces, how your method stated in (c)(i) will reduce the amount of force needed to push the object from A to B. [1]

_____

_____

_____

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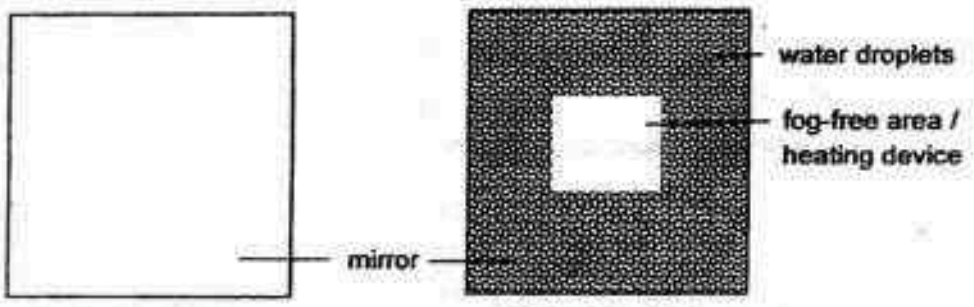
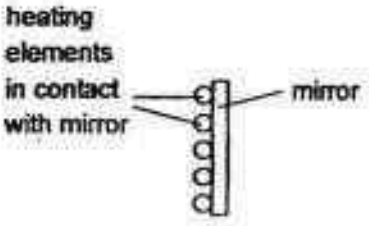
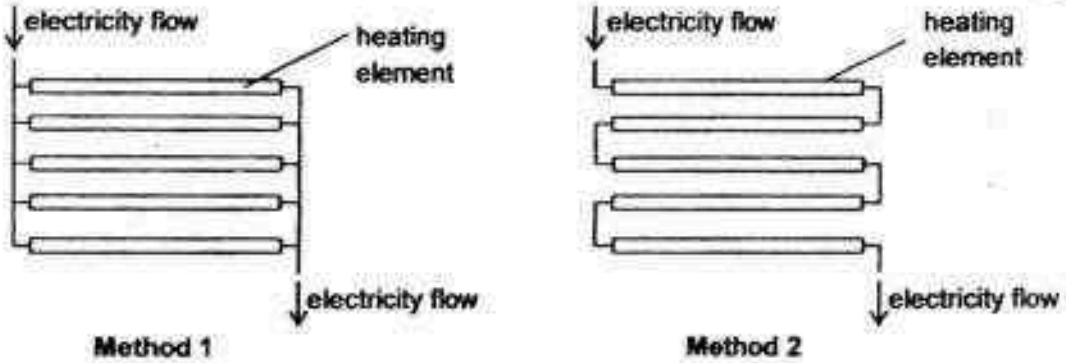
40. Rena is building an anti-fog mirror which uses a heating device to prevent it from fogging when taking a hot shower. Fogging occurs when water droplets are formed on the surface of the mirror.





Side view of fog-free area

Rena is deciding between two possible methods to wire the heating elements in the heating device as shown below.



(a) What is one advantage of Method 1 compared to Method 2? [1]

_____

_____

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In deciding the material to be used for the mirror, Rena tested three different types of material, K, L and M, for heat and electrical conductivity. Her results are shown in the table below.

Material	Heat conductivity	Electrical conductivity
K	poorest conductor	does not conduct electricity
L	poor conductor	conducts electricity
M	good conductor	conducts electricity

(b) Rena chose Material K to make the mirror. Explain an advantage and a disadvantage for choosing that material. [2]

Advantage:

_____

_____

_____

Disadvantage:

_____

_____

_____

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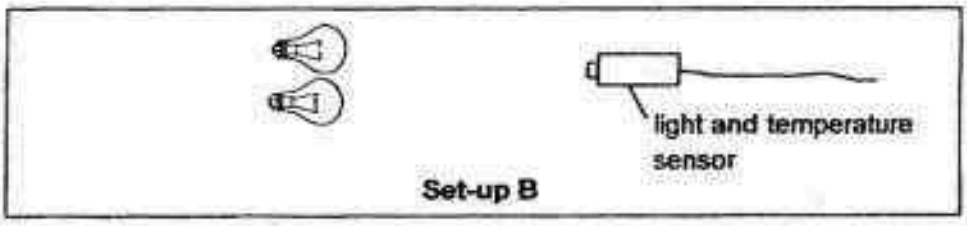
41. An experiment was conducted to determine the difference between one bulb, two bulbs and a bulb with a light reflector for use in a classroom as shown in the diagrams below.



Set-up A



Set-up B



Set-up C

The results are shown in the table below.

Set-up	Amount of light detected (lux)	Temperature (°C)
A	200	31
B	400	34
C	400	31

The ideal amount of light for a classroom is between 350 lux to 400 lux.

(a) Using the information given above, state & explain two advantages of using a light with a light reflector to help to save energy. [2]

Advantage 1:

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Advantage 2:

_____

_____

_____

(b) In the diagram below, draw a path of light to show how the light reflector works by lighting the book brighter for the reader. [1]

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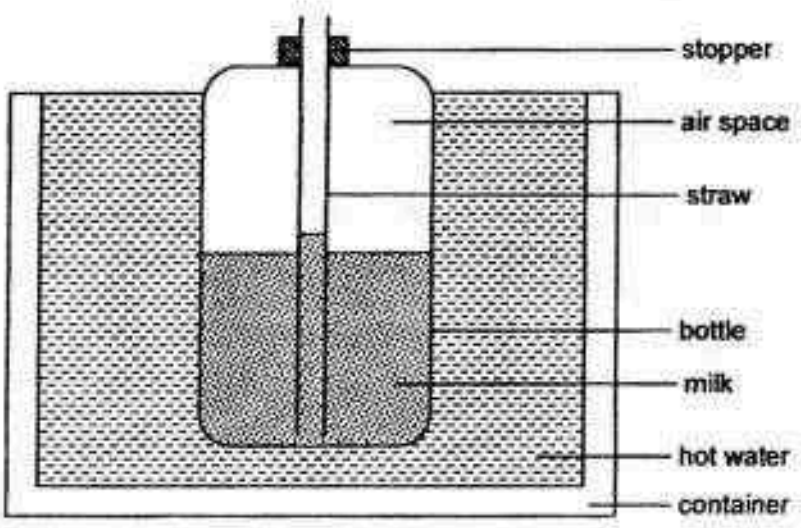
42. Athena wanted to warm up a bottle of milk. She placed the bottle in a container of hot water as shown in the diagram below.



After a few seconds, she noticed some milk was rising up the straw and flowing out of it.

Explain why the milk flowed out of the straw. [2]

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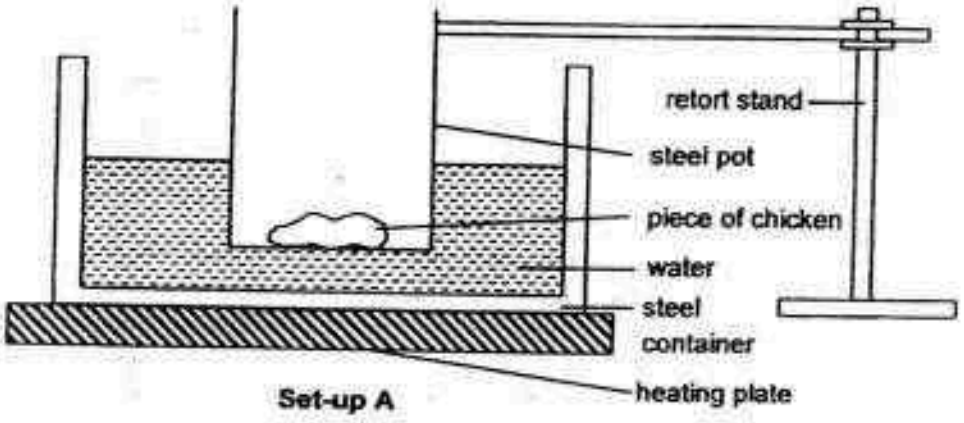
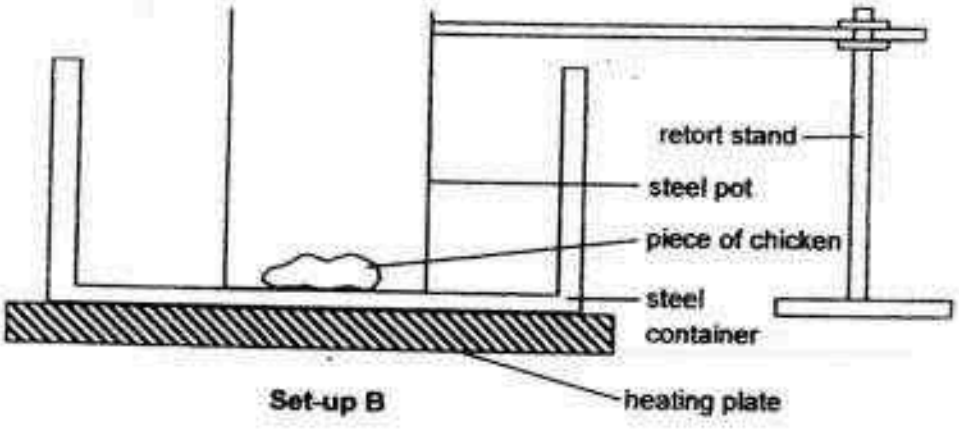
43. Gordon used 2 set-ups to cook a piece of chicken each as shown below.



Set-up A



Set-up B

Gordon used a temperature sensor to measure the temperature of the piece of chicken meat and heated both set-ups on medium heat for 30 minutes. He then repeated his experiment using high heat. His results are shown in the table below.

Medium heat used		
Set-up	Temperature of piece of chicken (°C)	
	Initial	After 30 mins
A	5	100
B	5	250

High heat used		
Set-up	Temperature of piece of chicken (°C)	
	Initial	After 30 mins
A	5	100
B	5	375

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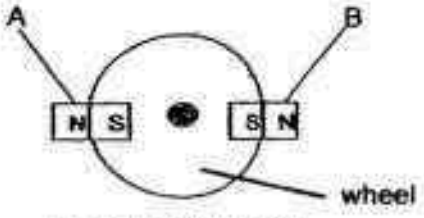
Explain why the temperature of the piece of chicken in set-up A will never go above 100°C. [2]

44. Timothy wanted to find out the properties of a bar magnet. He attached two pieces of strong bar magnets, A and B, to a wheel as shown below.



top view of the wheel

The wheel is fixed to a board in the middle but is able to rotate freely as shown below. The iron bar was attached to a spring that allowed it to move from its original position.

When the wheel was placed in the set-up as shown above, the bulb in the circuit was lit as shown in diagram 1.

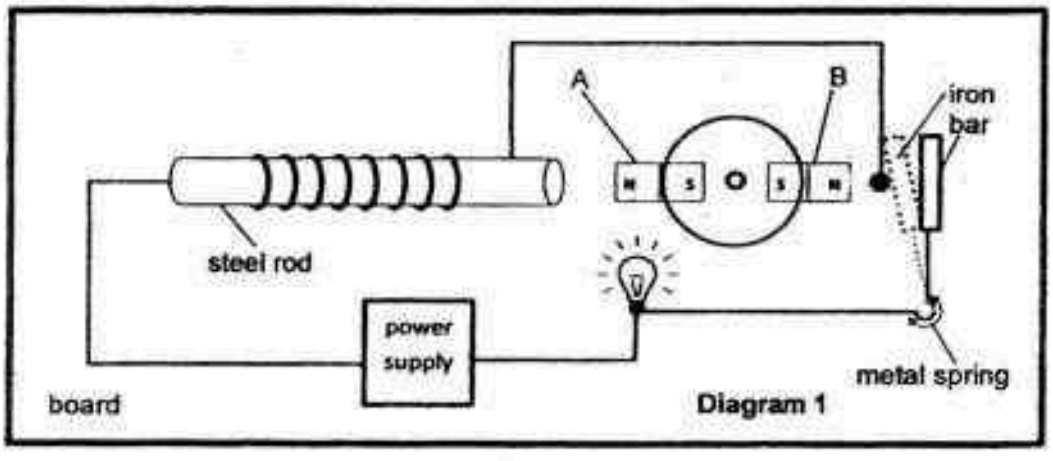


Diagram 1

(a) Explain how the light bulb was lighted up in Diagram 1. [1]

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Timothy noticed that the wheel moved to the position as shown in Diagram 2 below after the circuit was closed in Diagram 1.

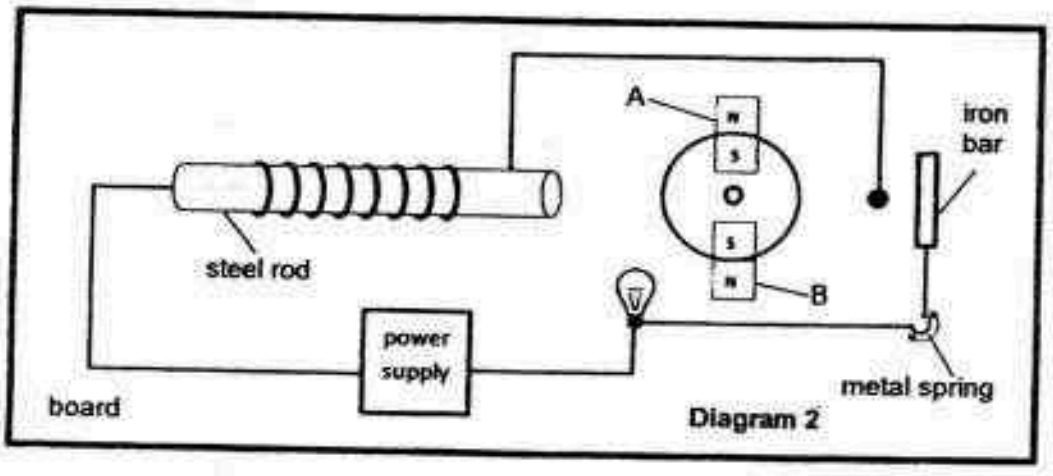

Diagram 2

(b) Explain why the bulb in Diagram 2 did not light up. [2]

END

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YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**NANYANG PRIMARY**
SUBJECT	:	**SCIENCE**
TERM	:	**PRELIMINARY EXAMINATION**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	4	2	2	3	2	4	3	1	4
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
3	3	2	3	2	4	4	3	2	1
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
4	1	4	4	4	2	4	2	3	4

Booklet B

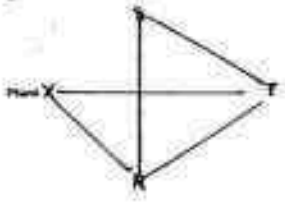
Q31a Process X is decomposition. When decomposition occurs, it will take in oxygen and give out carbon dioxide which will turn the limewater cloudy.

Q31b The concentrated sugar solution prevents decomposition from taking place.

Q31c (i) Decomposition needs moisture to take place and since there was no moisture decomposition could not take place and give out carbon dioxide which turns the limewater cloudy.

(ii) Moisture is needed.

Q32



Q33a The height of liquid A is lower. So liquid in A will lose more heat to the surroundings.

Q33b The fine hairs will trap a layer of air that is a poor conductor of heat and will conduct the heat away from the flowering plant slower allowing the plant to stay warm for a longer amount of time in the cold environment.

Q34a The young plant will have to compete with the parent plants for mineral salts, space, water and sunlight.

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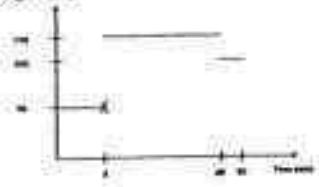
Q34b Part X is light and traps air.

Q34c This increases the changes of the young plant growing into an adult.

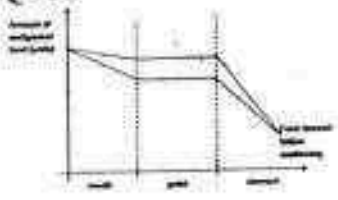
Q35a



Q35b See above

Q36a The broken slice of bread had a larger surface area in contact with the digestive juice so the broken pieces could get digested faster than the slice so after one hour the mass of bread in set-up B is less than set-up A.

Q36b



Q37a This increases the chances of a sperm fertilising the egg.

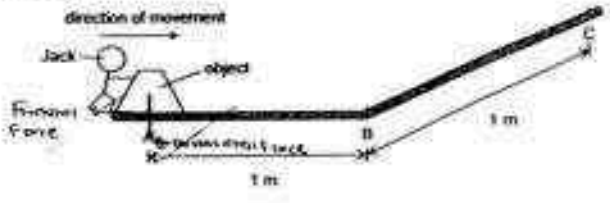
Q37b The testes.

Q38a Kinetic → Kinetic → Kinetic + Heat + Sound

Q38b When the striker disk has a greater mass the kinetic energy is greater and will hit the man disk with greater impact.

Q38c Some of the kinetic energy of the "men disk" was converted into heat and sound energy.

Q39a



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Q39b When the block was travelling from B to C it was opposing gravity.

Q39c (i) Add some wheels to object A.
(ii) Allowing the block to move more easily hence requiring less force to push.

Q40a Method 1. Since the heating elements are arranged in parallel, this ensures that each heating element can be heated to its maximum termperature allowing he mirror to heat up faster and more so less water vapor will condense on it.

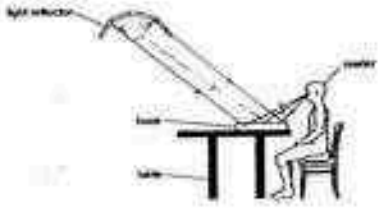
Q40b Advantage: She will not get electrocuted or burned if she touches that part of the mirror.

Disadvantage: It is the poorest conductor of heat so the heat will transfer to the mirror slower.

Q41a Advantage 1: The reflector will reflect the light from the lightbulb, allowing maximum light to be detected. Since the amount of light detected for one bulb with a reflector is the same as using 2 light bulbs, it saves energy as there is no need for the second light bulb to produce same amount of light.

Advantage 2: The bulb produces less heat than 2 bulbs even though the amount of light detected was the same resulting in a cooler classroom.

Q41b



Q42 The air in the bottle gained heat from the hot water and was expanding and pushing the milk downwards the milk. The milk was entering the straw and displacing the air in the straw.

Q43 Water boils at 100°C and becomes steam and the steam will escape from the container and thus less heat is transferred to the chicken.

Q44a The magnet on the wheel could attract the iron bar causing a closed circuit to be formed allowing electricity to pass through lighting of the bulb.

Q44b The iron rod became an electromagnet and the north pole of the rod was facing the north pole of the magnet repelling each other.

End

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Index No. | | | | | | |

NAN HUA PRIMARY SCHOOL
PRELIMINARY EXAMINATION – 2016
PRIMARY 6

SCIENCE

BOOKLET A

30 Multiple Choice Questions (60 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Booklet A		/ 60
Booklet B		/ 40
Total		/100

Name: _____( ) Class: P 6_____

Date: 26 August 2016 Parent's Signature: _____

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Section A: (30 x 2 marks = 60 marks)

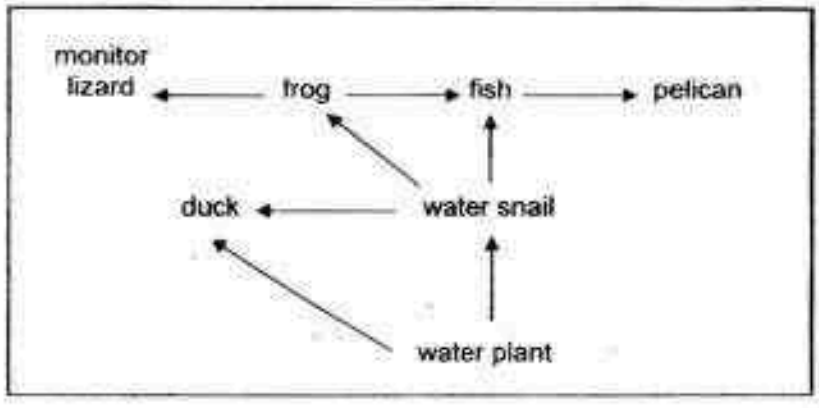
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Which of the following forces are able to act at a distance?

A Frictional force
B Magnetic force
C Gravitational force
D Elastic spring force

(1) A and B only
(2) B and C only
(3) C and D only
(4) A and D only

2. The diagram below shows a food web in a wetland ecosystem.



Based on the given food web above, which of the following is correct?

	Number of organisms		
	Herbivore	**Carnivore**	**Omnivore**
(1)	1	4	1
(2)	1	5	0
(3)	2	4	1
(4)	3	2	2

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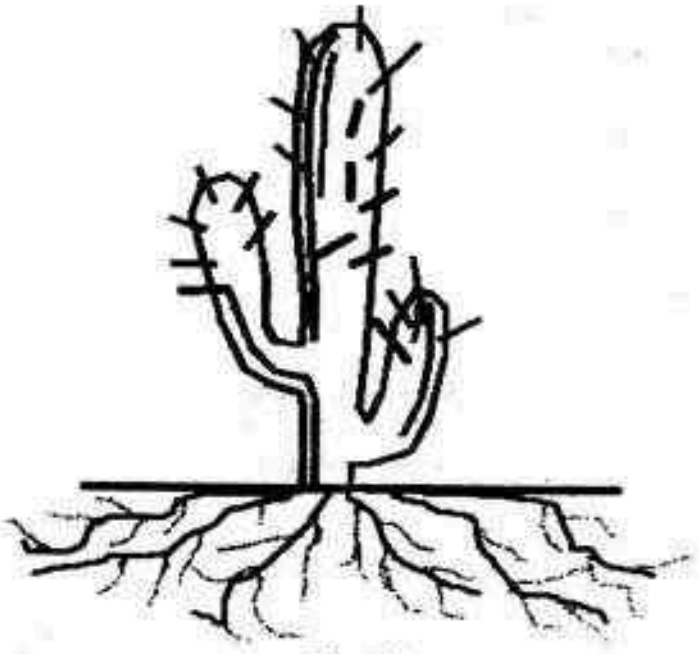
3. Study the diagram below.



Plant X

Based on the diagram above, which of the following feature(s) of Plant X enable(s) it to survive in the desert?

A swollen stem
B needle-like leaves
C wide-spread root system

(1) B only
(2) C only
(3) A and B only
(4) A, B and C

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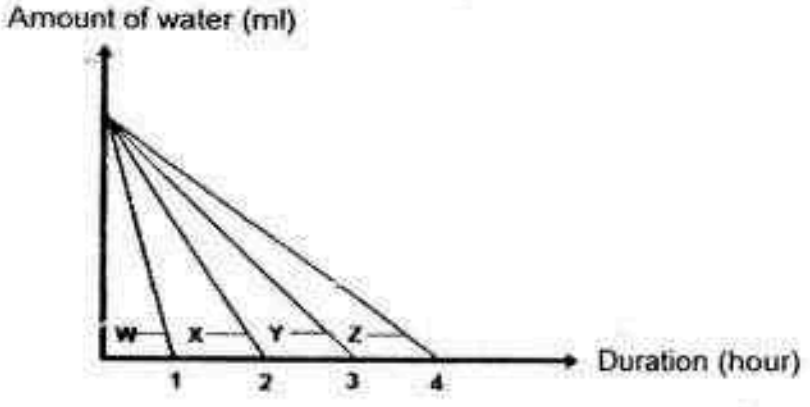
4. Which of the following are possible causes of global warming?

A Acid rain
B Melting of polar ice caps
C Flooding of coastal towns
D Increased deforestation activities
E Increased number of cars on the road

(1) B and C only
(2) D and E only
(3) A, B and C only
(4) A, D and E only

5. Wan Yi left 4 identical beakers of water, W, X, Y and Z, at different locations under different conditions. The graph below shows how the amount of water in each beaker changed over time.



She studied the graph and gave the possible reasons to explain the difference in the time taken for all the water to evaporate.

A There is wind in the location where Z is placed but not X.
B The temperature of the surroundings for Y is higher than that of Z.
C The exposed surface area of the water in W is greater than that in X.
D The amount of water in W is less than the amount of water in Z at the start of the experiment.

Which of the statement(s) made by Wan Yi is/are possible explanation(s) for the graph above?

(1) B only
(2) A and D only
(3) B and C only
(4) A, B and C only

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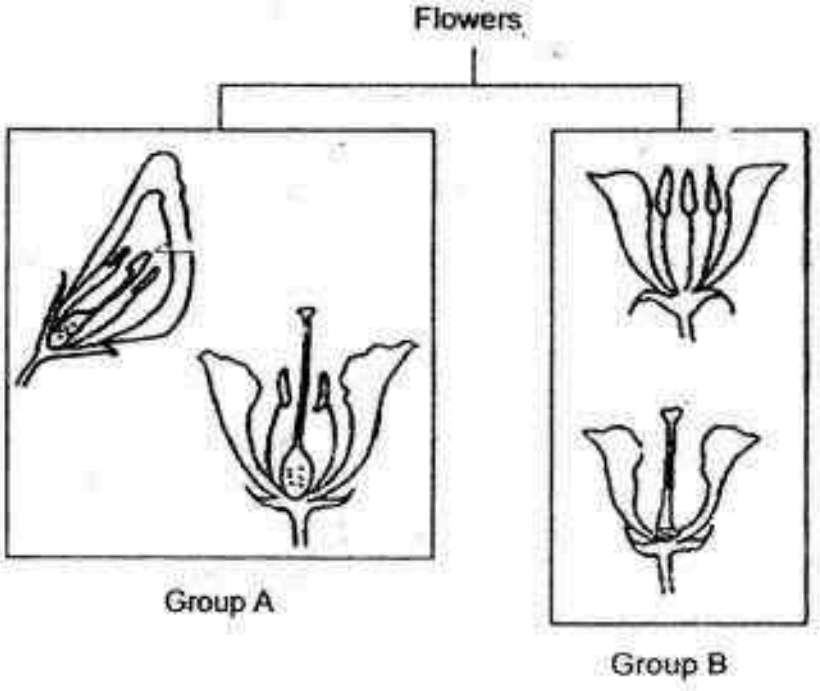
6. Study the diagram below.



How are the flowers grouped?

	Group A	Group B
(1)	Insect pollinated	Wind pollinated
(2)	Wind pollinated	Insect pollinated
(3)	Have either male or female parts	Have both male and female parts
(4)	Have both male and female parts	Have either male or female parts

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7. The table below shows the different cell parts of 3 types of cells, A, B and C. A tick (√) indicates the cell part that can be found in each cell.

Cell part	Cell A	Cell B	Cell C
Nucleus	√	√	√
Cell wall	√	√	
Chloroplast	√		

Which of the following best represents cell A, B and C?

	Cell A	Cell B	Cell C
(1)	Elodea leaf cell	Animal skin cell	Cactus stem cell
(2)	Balsam leaf cell	Cheek cell	Onion root cell
(3)	Cactus stem cell	Onion root cell	Cheek cell
(4)	Onion root cell	Cactus stem cell	Animal skin cell

8. Fatimah carried out an experiment on 4 different materials. She used 4 beakers of identical size and filled each one with the same amount of water. The temperature of the water in all the beakers was 60°C. She then wrapped each beaker with the 4 different materials respectively.

After 10 minutes, she took the temperature of water in each beaker and recorded the results in the table below.

Material used to wrap the beakers	Temperature (°C) after 10 minutes
A	45
B	40
C	50
D	55

Which material should Fatimah choose to wrap around blocks of ice to prevent them from melting for the longest possible period of time?

(1) Material A
(2) Material B
(3) Material C
(4) Material D

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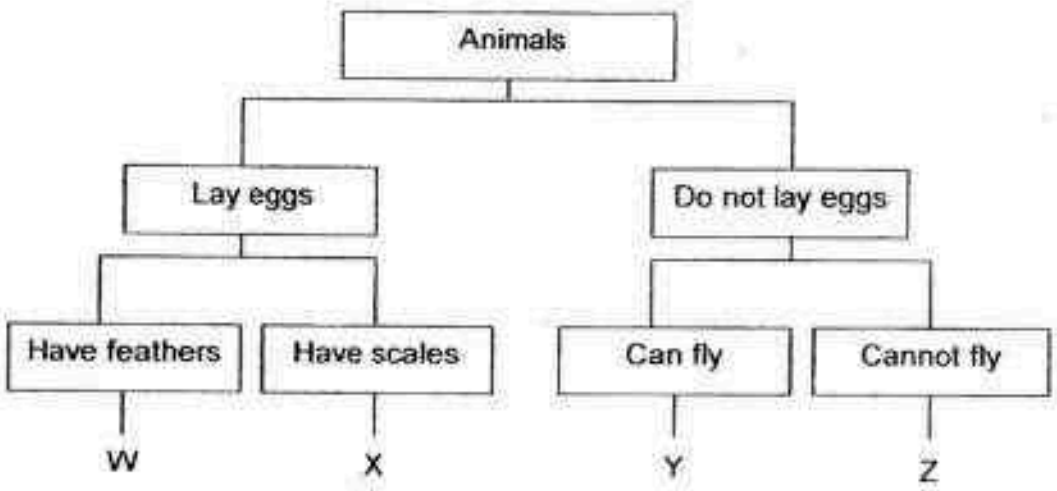
9. The table below shows how some animals can be classified.



Based on the above classification chart, which of the following statement(s) is/are true?

A Bats can be classified under group Y.
B Fish can be classified under group X.
C Penguins can be classified under group Z.
D Animals in groups W and Y can have the same body covering.

(1) A only
(2) A and B only
(3) B and D only
(4) C and D only

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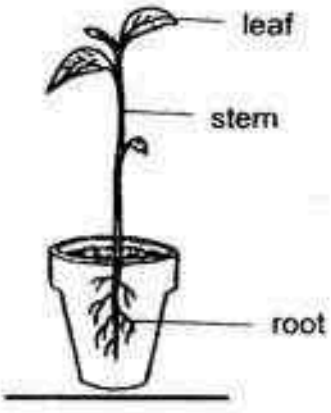
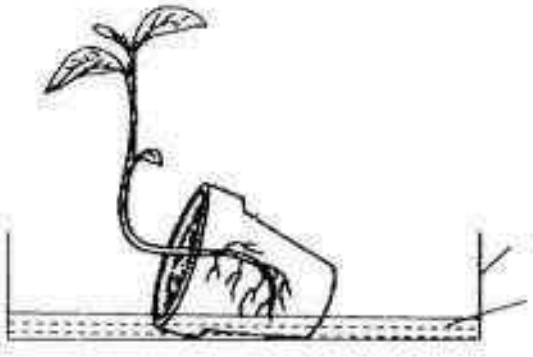
10. Peter placed a potted plant out in the open as shown below.

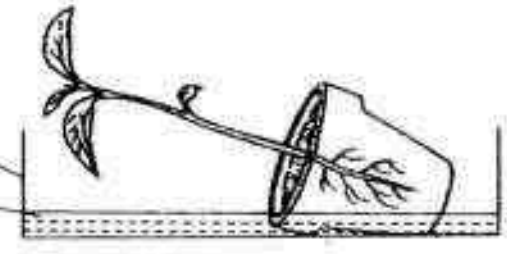


A strong gust of wind knocked the potted plant over and it fell into a small open drain. Which one of the following shows how the plant would grow if it was left in the drain for several weeks?

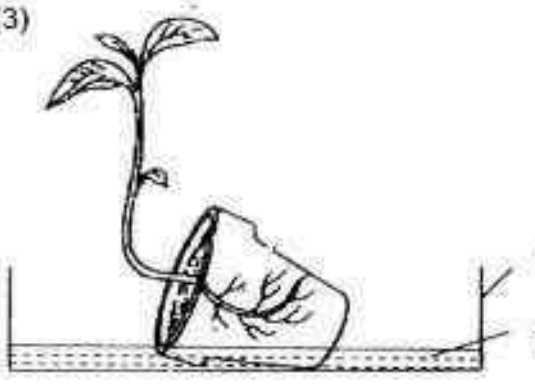
(1)



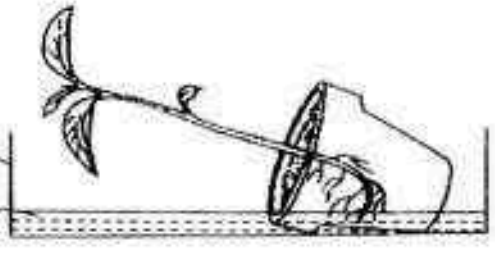
(2)



(3)



(4)



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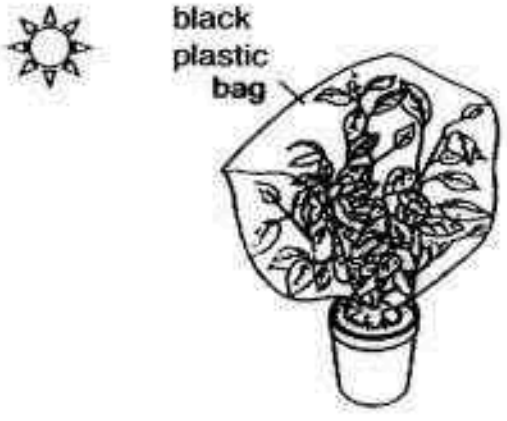
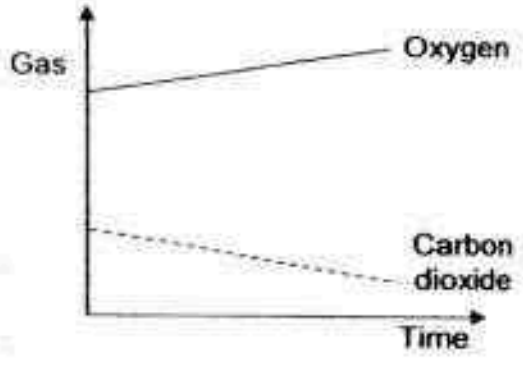
11. Susie put a well-watered plant into a black plastic bag. Then she tied the bag with a string and placed it under the Sun for several hours.

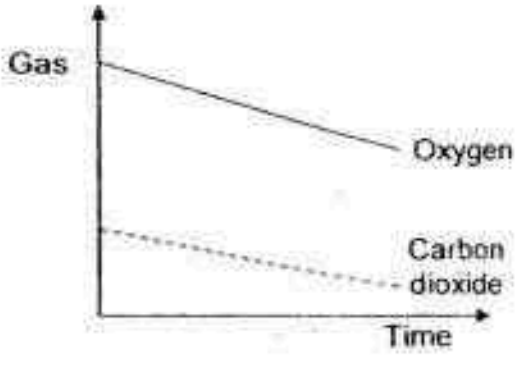


Which one of the following graphs shows the changes in the amount of carbon dioxide and oxygen in the bag during that period of time?

(1)



(2)



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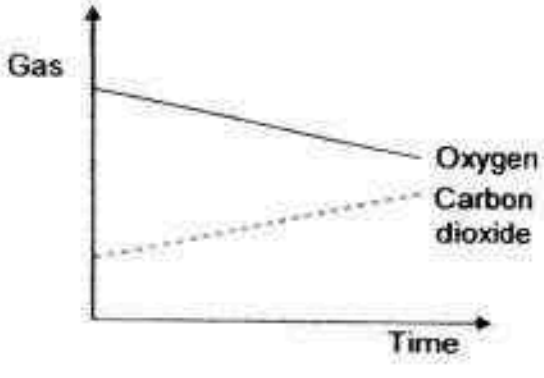

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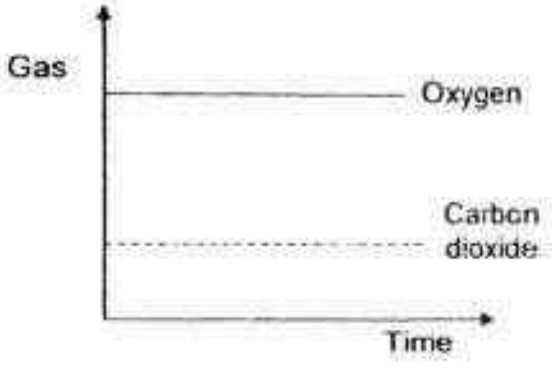

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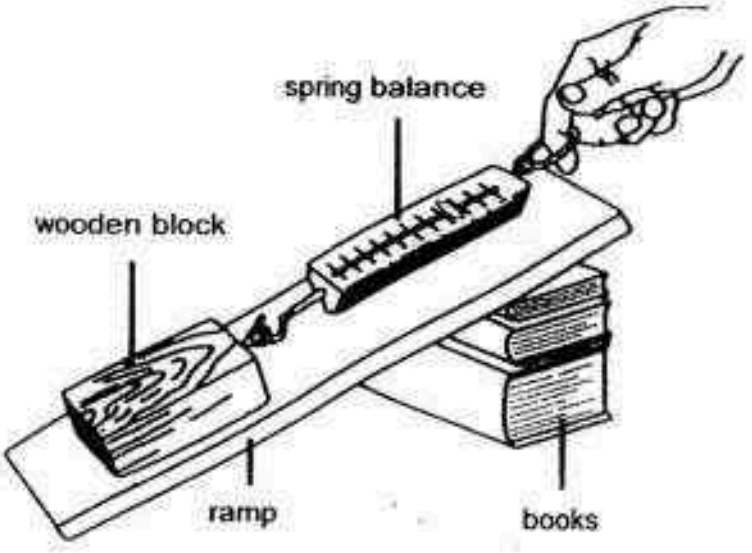
12. The diagram below shows a student using a spring balance to pull a wooden block up a ramp that is resting on a stack of books.



Which change would require more force to pull the wooden block up the ramp?

(1) Apply oil to the wooden block.
(2) Reduce the mass of the wooden block.
(3) Glue sandpaper to the surface of the ramp.
(4) Restack the books so the thinnest book is on the bottom.

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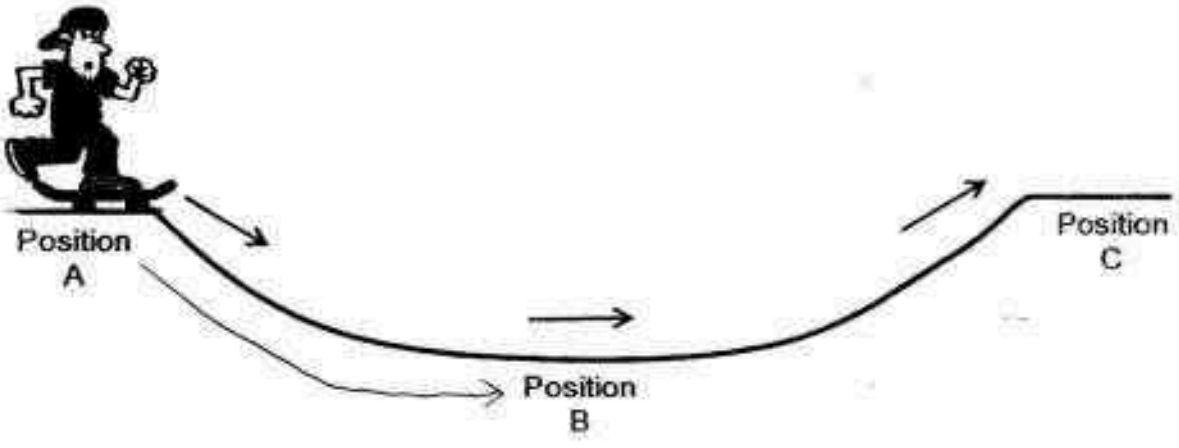
13. Ahmad started to skate from position A to B and then to C as shown below.



Which of the following shows the energy conversion when Ahmad skated from A to B?

(1) Kinetic energy ⟶ potential energy
(2) Kinetic energy ⟶ potential energy + sound energy + heat energy
(3) Potential energy + sound energy + heat energy ⟶ kinetic energy
(4) Potential energy ⟶ kinetic energy + sound energy + heat energy

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14. Tammy and her friends counted the organisms that were living in the school garden. They recorded their findings in the table shown below.

Description	Number of organisms
Flowering plants	6
Non-flowering plants	12
Animals with no legs	18
Animals with two legs	7
Animals with six legs	25
Animals with more than six legs	10

Which of the following conclusion(s) can they draw from their findings?

A There are 25 insects in the garden.
B There are at least 2 populations of plants.
C There are 12 populations of non-flowering plants.

(1) A only
(2) C only
(3) A and B only
(4) A, B and C

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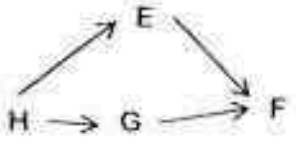
15 Julie observed the food relationships among four organisms, E, F, G and H, which lived in her garden. She recorded information about them in the table below.

Prey only	Prey and predator	Producer	Predator only
E	G	H	F

Based only on the above information, which one of the following food webs best describes the food relationships amongst the four organisms?

(1)



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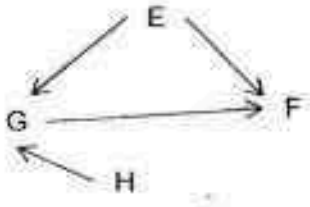
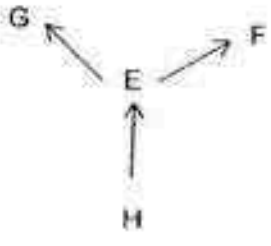


(3)



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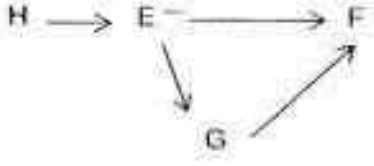

16 Study the data below and answer the following question.

Season	Spring	Summer	Autumn	Winter
Average Temperature / °C	7	20	5	-1
Availability of food	moderate	high	moderate	low
Activity level of the bear	moderate	high	moderate	low

Hibernation is a state of little or no activity. When an organism hibernates, its body temperature is low. They will breathe slowly and have a low heart rate.

The black bears in Northern America will always go into hibernation in winter.

What could be a possible reason for such a behavioural adaptation?

(1) The bears are hiding from their predators.
(2) There is insufficient food available in winter.
(3) There are no bears to interact with as it is too cold.
(4) The bears are trying to attract a mate for reproduction.

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17. The table below shows the functions and adaptations of three animals.

Animal	Adaptation	Function
Polar bear	A	To keep itself warm.
Dolphin	B	To propel itself forward.
Peacock	C	To attract the female during mating.

Which one of the following best represents adaptations A, B and C?

	A	B	C
(1)	layer of fat	tail	colourful feathers
(2)	layer of fat	flippers	clapping its bill
(3)	light colour of fur	tail	colourful feathers
(4)	light colour of fur	flippers	clapping its bill

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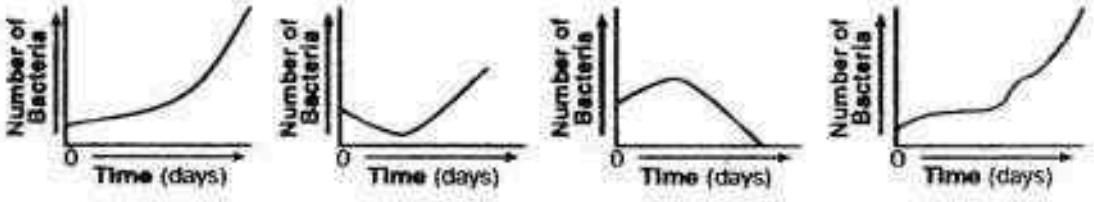
Read the information below before answering questions 18 and 19.

Some species of bacteria are harmful. Antibiotics are chemicals that kill bacteria. Some bacteria are resistant to antibiotics and are not killed by these chemicals. Over time, the resistant bacteria can reproduce and create populations that are not affected by antibiotics.

The graphs below show the results of an experiment that measured the population of one species of bacteria that had been grown in four containers under identical conditions. Different antibiotics were added to three of the four containers.

Antibiotic A added | Antibiotic B added | Antibiotic C added | No Antibiotic added



18. Which conclusion about this species of bacteria is best supported by the information in the graphs?

(1) Antibiotics A and B slowed the growth.
(2) Antibiotic A continuously slowed the growth.
(3) Antibiotic B was least effective in controlling the growth.
(4) Antibiotic C was most effective in controlling the growth.

19. The control in this experiment is represented by the container with _____.

(1) antibiotic A added
(2) antibiotic B added
(3) antibiotic C added
(4) no antibiotic added

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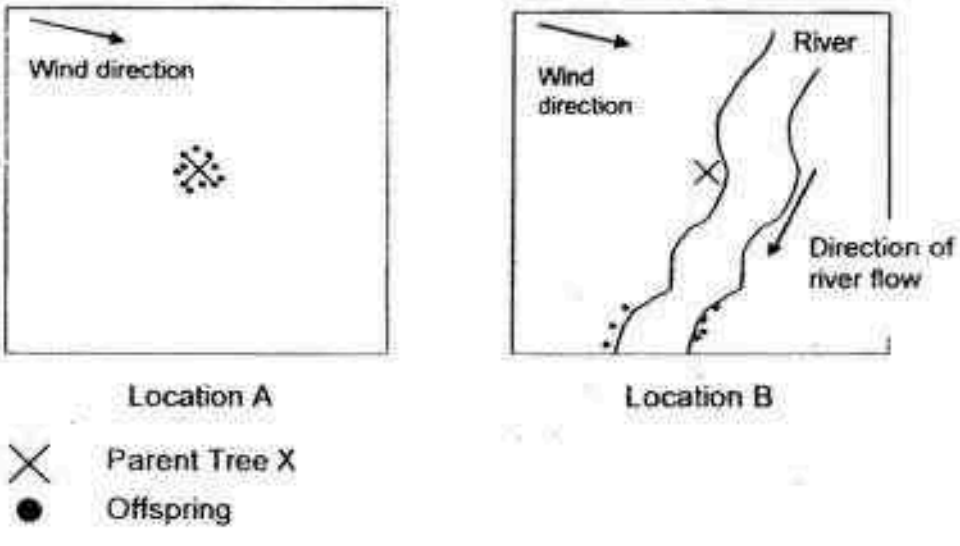
20. The water cycle on Earth can take place repeatedly because water _____.

A freezes at 0°C and boils at 100°C
B has no definite shape but has a definite volume
C can condense when it comes in contact with a cooler surface
D can change from one state to another when it gains or loses heat

(1) D only
(2) C and D only
(3) B and C only
(4) A, B and D only

21. The diagrams below show tree X planted at two different locations, A and B.



Based on the diagrams above, the seeds of tree X are most likely dispersed by _____.

A wind
B water
C animal

(1) A only
(2) B only
(3) C only
(4) A and B only

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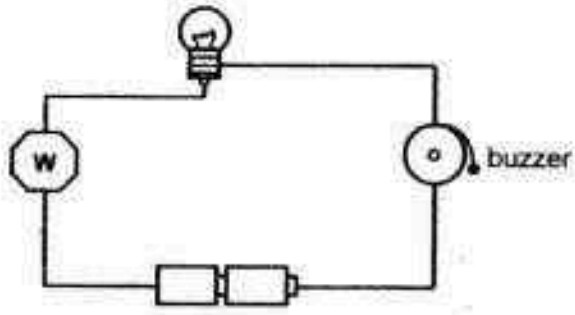
22. Which of the following statement(s) about the human and plant transport systems is/are **incorrect**?

A A human needs an organ to pump blood to transport materials around the body.
B No organs are needed by a plant to transport materials around the plant.
C A plant has only one type of tube to transport materials around the plant.
D Only oxygen and digested food are transported around the body of a human.

(1) C only
(2) A and B only
(3) B and C only
(4) C and D only

23. The diagram below shows an electric circuit.



Which of the following items can be placed at W for the bulb to light up and for the buzzer to ring?

A A magnet
B A steel rod
C A gold coin
D A piece of aluminium foil

(1) A and B only
(2) C and D only
(3) A, B and C only
(4) A, B, C and D

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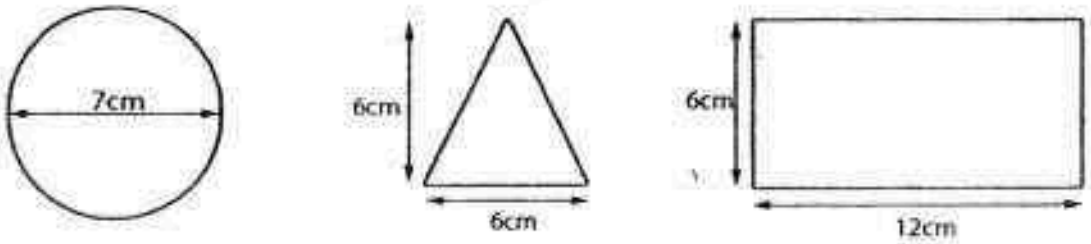
24. The diagram below shows three pieces of wood of different shapes (Not drawn to scale).



The three pieces of wood are glued together and placed between a torch and a screen as shown below.



Which one of the following shadows could be seen on the screen?

(1)



(2)



(3)



(4)



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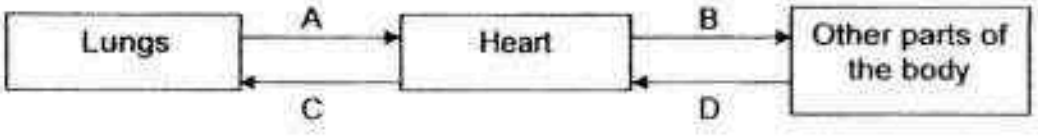
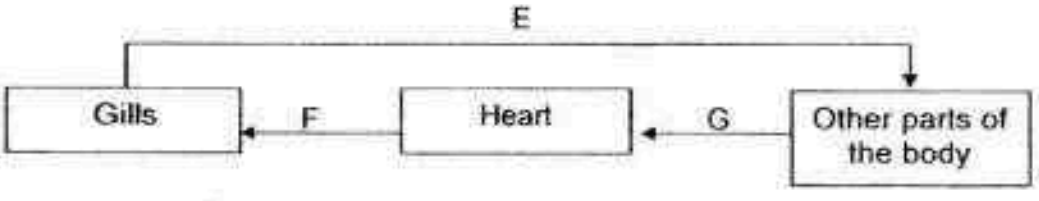
25. The diagrams below show the circulatory systems of two organisms, a mammal and a fish. The arrows represent the movement of blood in the body of the mammal and the fish.



Circulatory system of a mammal



Circulatory system of a fish

Based on the diagrams above, which of the following statement(s) is/are correct?

A Only arrows C, D, F and G represent the movement of blood rich in carbon dioxide.
B Only arrows A, B and E represent the movement of blood rich in oxygen.
C In both systems, the blood rich in oxygen flows through the heart to the other parts of the body.

(1) B only
(2) A and B only
(3) A and C only
(4) A, B and C

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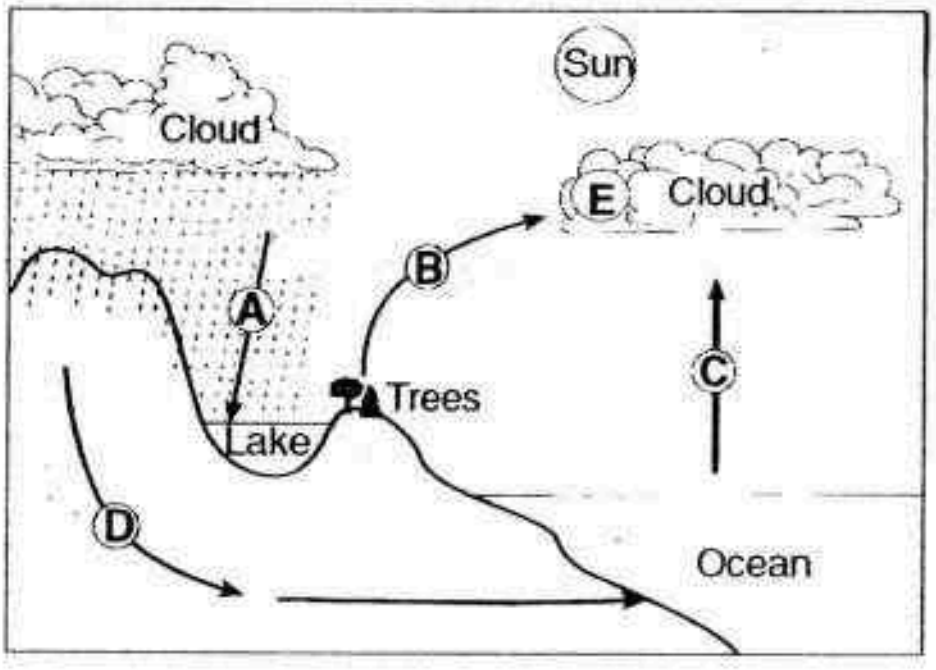
26. The diagram below shows the water cycle.



Which one of the following is correct?

	State of Matter				
	A	B	C	D	E
(1)	Liquid	Gas	Gas	Liquid	Liquid
(2)	Gas	Gas	Gas	Liquid	Gas
(3)	Gas	Liquid	Liquid	Gas	Gas
(4)	Liquid	Liquid	Liquid	Gas	Liquid

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27. Bala has a potted plant. He wants to set up an experiment which shows that water travels through a plant into the air.



Which one of the following experiments did Bala carry out?

(1) Put water in the container under the pot; water will disappear from the container.
(2) Place a cut stem with a few leaves in a glass of red-coloured water; the leaves will turn red.
(3) Cover one of the stems with a few leaves with a plastic bag and water the plant; drops of water will be seen in the bag.
(4) Remove the water-carrying and food-carrying tubes from one of the stems of the plant; the leaves on the stem will turn yellow.

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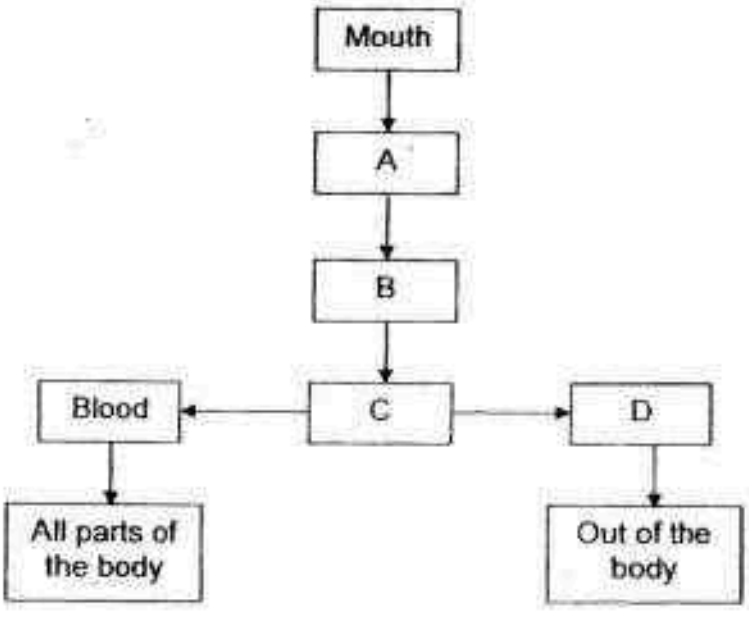
28. Which property of a substance will indicate whether the substance is a liquid or a solid at room temperature?

(1) Strength
(2) Hardness
(3) Melting point
(4) Heat conductivity

29. The flowchart below shows the pathway taken by food after it enters the mouth. A, B, C and D are parts of the digestive system.



Which part contains the most amount of digested food?

(1) A
(2) B
(3) C
(4) D

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30. Diagram 1 shows a magnet held near rod P which is tied to a string. A flame is then placed at one end of the rod P as shown in diagram 2. After a while, rod P started to move towards the magnet.

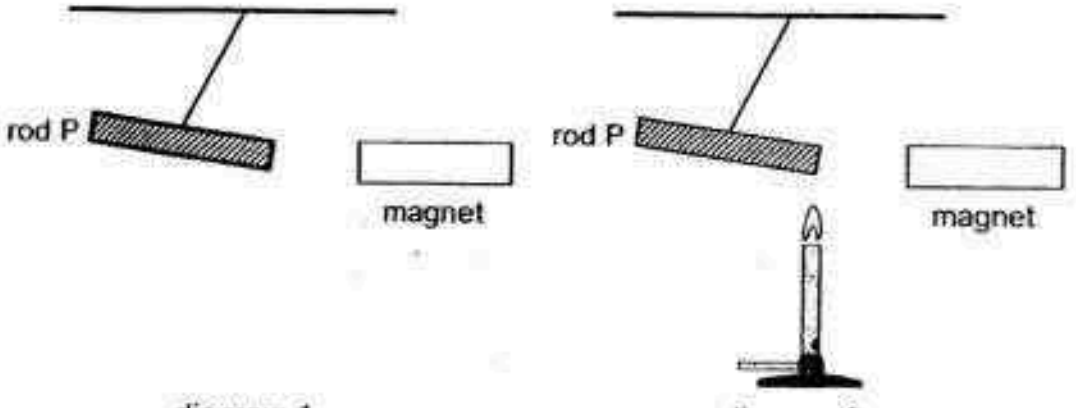

diagram 1 diagram 2

Which of the following caused rod P to move towards the magnet?

A Rod P was pulled by gravity.
B Rod P had lost some of its magnetism.
C Rod P expanded and increase in mass.

(1) C only
(2) A and B only
(3) B and C only
(4) A, B and C

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Index No. | | | | | | |

NAN HUA PRIMARY SCHOOL
PRELIMINARY EXAMINATION – 2016
PRIMARY 6

SCIENCE

BOOKLET B

14 Open-ended questions (40 marks)

Total Time for Booklets A and B : 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

Section B		/40

Name: _____( ) **Class: P 6**_____

Date: 26 August 2016 **Parent's Signature:** _____

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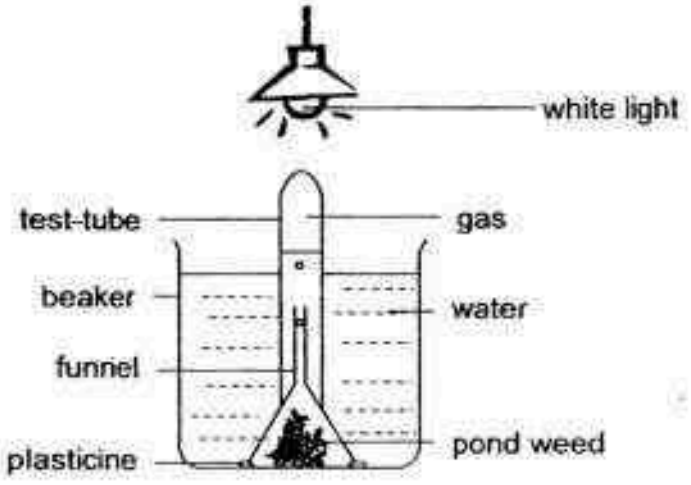
Section B: (40 marks)
Write your answers to questions 31 to 44.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

31. The diagram below shows an experiment to investigate how the colour of light will affect photosynthesis in pond weeds.



Bubbles of gas produced during photosynthesis were given off from the pond weed and collected in the test tube.

(a) State **two** substances that are taken in by the pond weed and used for photosynthesis? [1]

_____

Blue, green and red light were then shone, in turn, onto the same set-up. The number of bubbles of the gas given off in one minute was counted and recorded in the table below.

Colour of light	Number of bubbles given off in one minute
White	140
Blue	85
Green	10
Red	68

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(b) Under which type of light will pond weeds grow the least? Explain why. [1]

_____

_____

(c) What is the purpose of conducting the experiment using white light? [1]

_____

_____

Score	3

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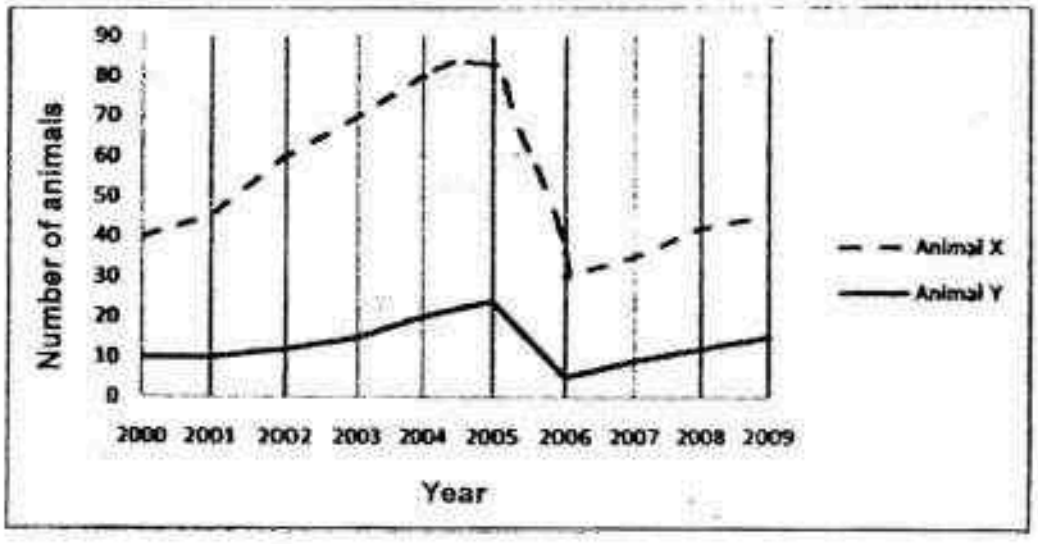
32. The graph below shows the number of Animals X and Y living in a community over a period of 10 years.



(a) The population of Animal X must increase before the population of Animal Y can increase. Explain why? [2]

_____

_____

_____

(b) There was a drought during the 10-year period. Identify the possible time period of the drought from the graph. [1]

_____

_____

Score	3

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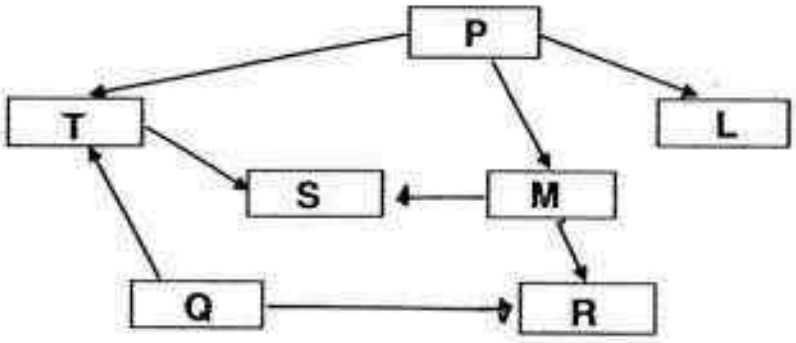
33. Study the food web below carefully.



The letters represent organisms living in an ecosystem.

(a) Based on the food web, identify the possible food producer(s). [1]

_____

(b) Explain the role of organism S in the food web above. [1]

_____

_____

(c) Based on the food web above, if the whole population of S is killed by a disease, which population will be most affected? Explain your answer. [1]

_____

_____

_____

Score	3

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34. The picture below shows the skull of an animal.



(a) Based on the structure of the jaw and teeth, identify if the animal is a/an herbivore, carnivore or omnivore. Explain your answer. [2]

_____

_____

(b) The young of the animal above stays on the trees, while the adult can move on land and swim in water easily. Suggest one possible reason for nesting the young up on the tree. [1]

_____

_____

Score	/3

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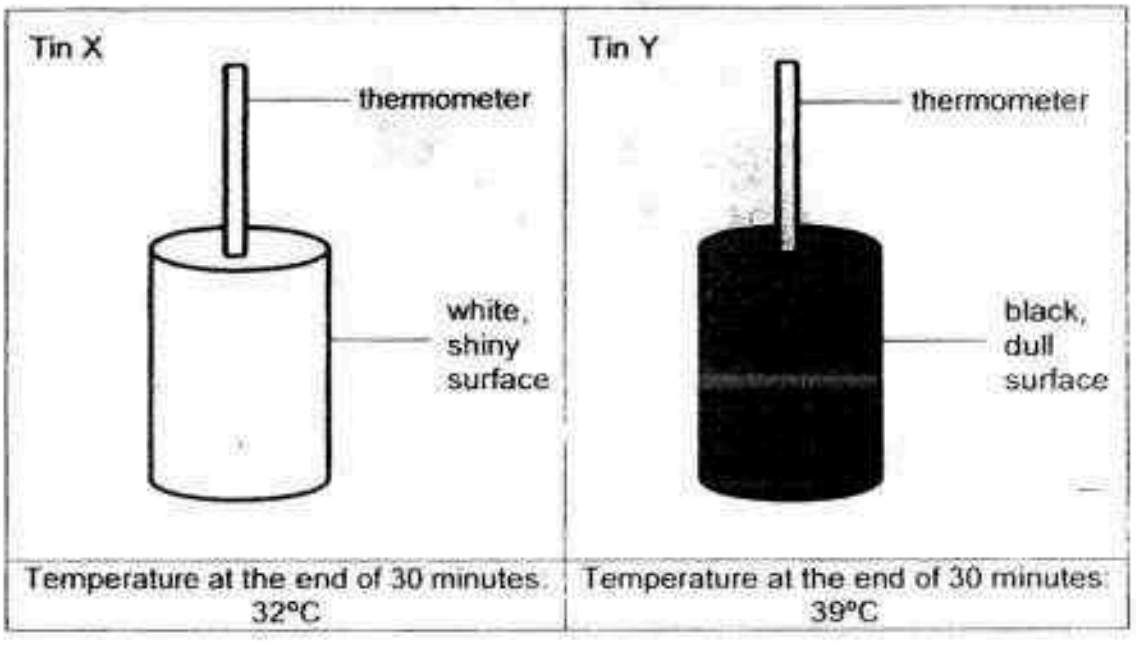
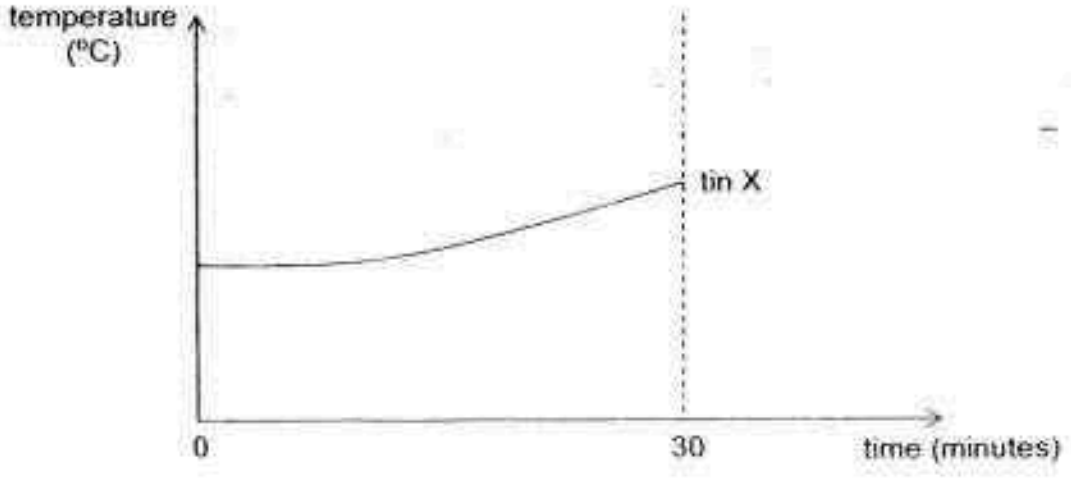
35. James placed 2 tins, X and Y, in an open field on a sunny day. The starting temperature for both tins is the same. He then measured and recorded the temperature of the air in each tin at 2-minute intervals for a period of 30 minutes.



The temperature change in tin X was recorded in the graph below.



(a) Complete the graph for tin Y above. Label your graph. [1]

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(b) After 30 minutes, the temperature of ,air in tin Y shows a higher temperature? Explain why. [1]

_____

_____

(c) Aluminium foil is often used to wrap chocolate bars.
Based on the experiment, explain why aluminium foil is used. [1]

_____

_____

Score	3

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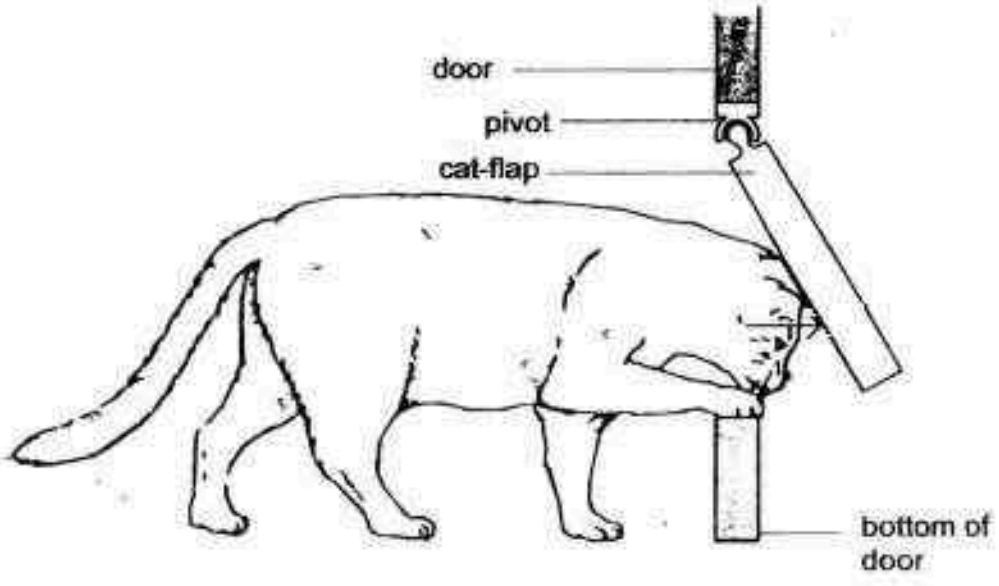
36. Ali made a cat-flap to fit into a door.



(a) On the diagram above, draw an arrow to show the direction of the force of the cat's head on the cat-flap. [1]

(b) When the cat has gone through the cat-flap, the flap closes on its own. Explain why. [1]

_____

_____

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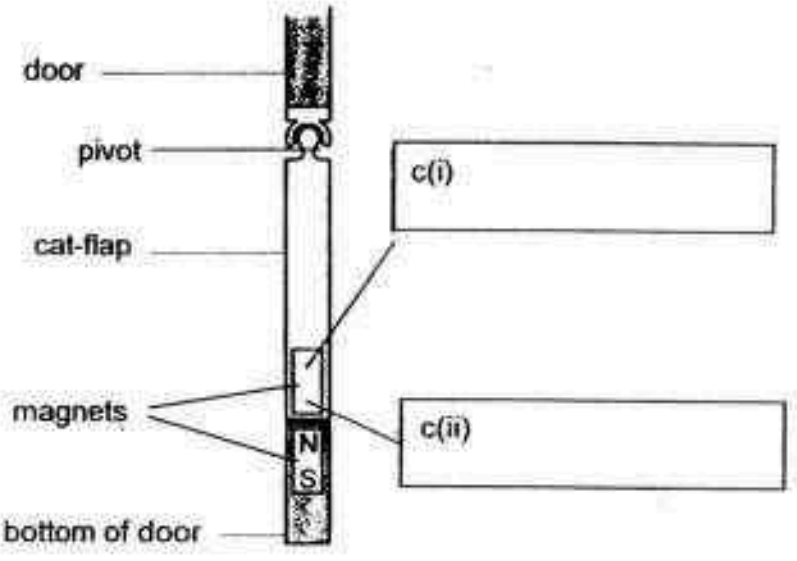
(c) When a strong wind blows, the cat-flap blows open on its own. Ali decided to add 2 bar magnets to keep the cat-flap closed so that it will not be blown open by the wind.



On the diagram above, label **both** the North and South poles of the magnet on the cat-flap. [1]

(d) After a while, whenever the cat goes through the cat-flap, a squeaky sound is heard. Explain, in terms of forces, what causes the squeaky sound and what Ali could do to reduce the squeaky sound. [1]

_____

_____

Score	4

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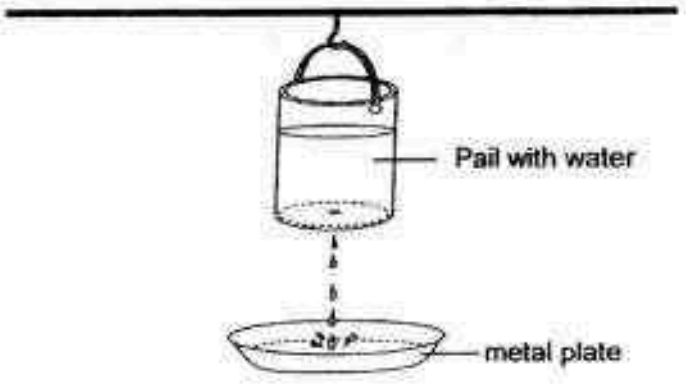
37. Bala filled a pail with water. He hung it above a metal plate. A hole was made at the base of the pail for the water in it to drip out. When each drop of water hit the metal plate, a sound was heard.



(a) State the energy changes which took place when the water from the pail dripped onto the metal plate. [1]

_____

_____

(b) The hole at the base of the pail was enlarged.
Describe the change in the loudness of the sound heard. [1]

_____

_____

(c) Explain how enlarging the hole caused the change in the loudness of sound as described in your answer in (b). [1]

_____

_____

Score	3

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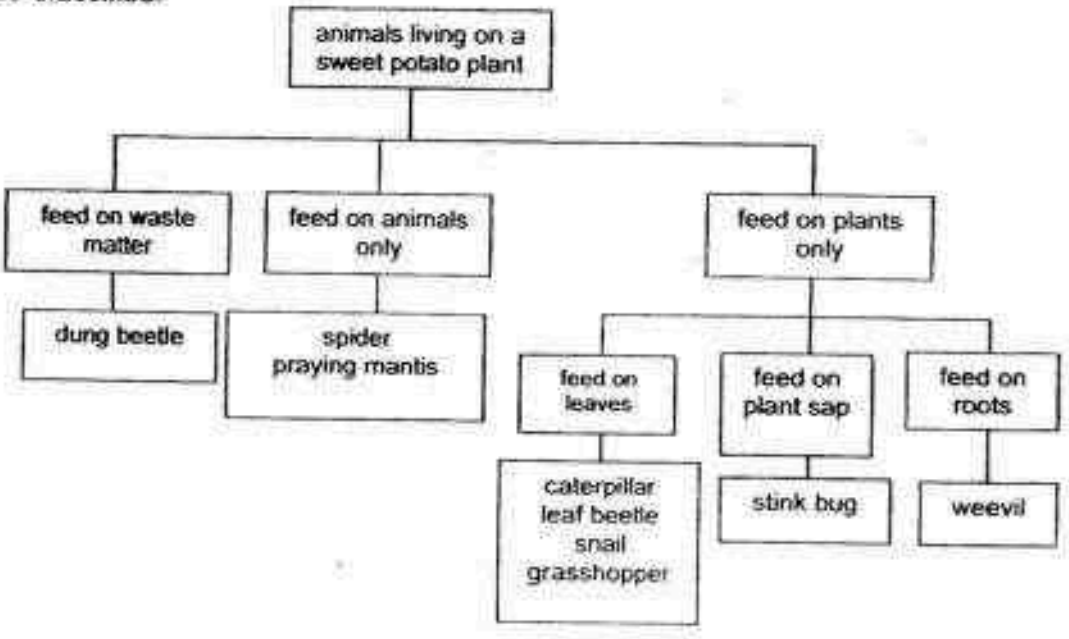
38. The chart below shows how the animals living on a sweet potato plant are classified.



Using the information from the chart, answer the following questions.

(a) Peter spotted a caterpillar on the leaf of the sweet potato plant. He picked up the caterpillar and dropped it onto the waste matter on the soil near the plant. The caterpillar was injured and could not move. After a few days, Peter found that the caterpillar had died.

Explain why the caterpillar died. [1]

_____

_____

(b) The different groups of animals eat different types of food. How does this benefit the animals living on the sweet potato plant? [1]

_____

_____

Score	/2

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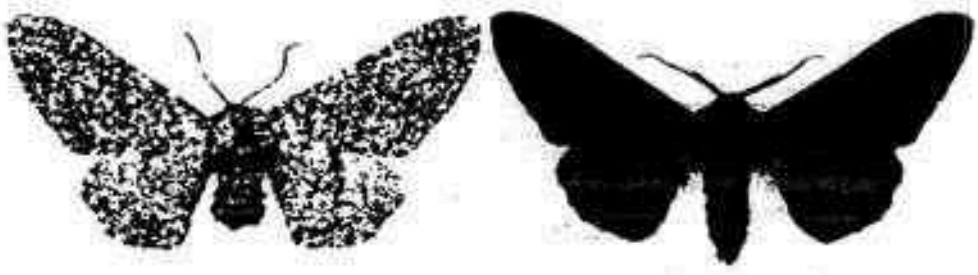
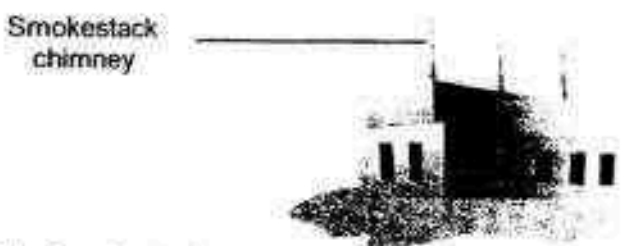
39. Below are 2 species of moth found in a forest which is surrounded by factories in town X.

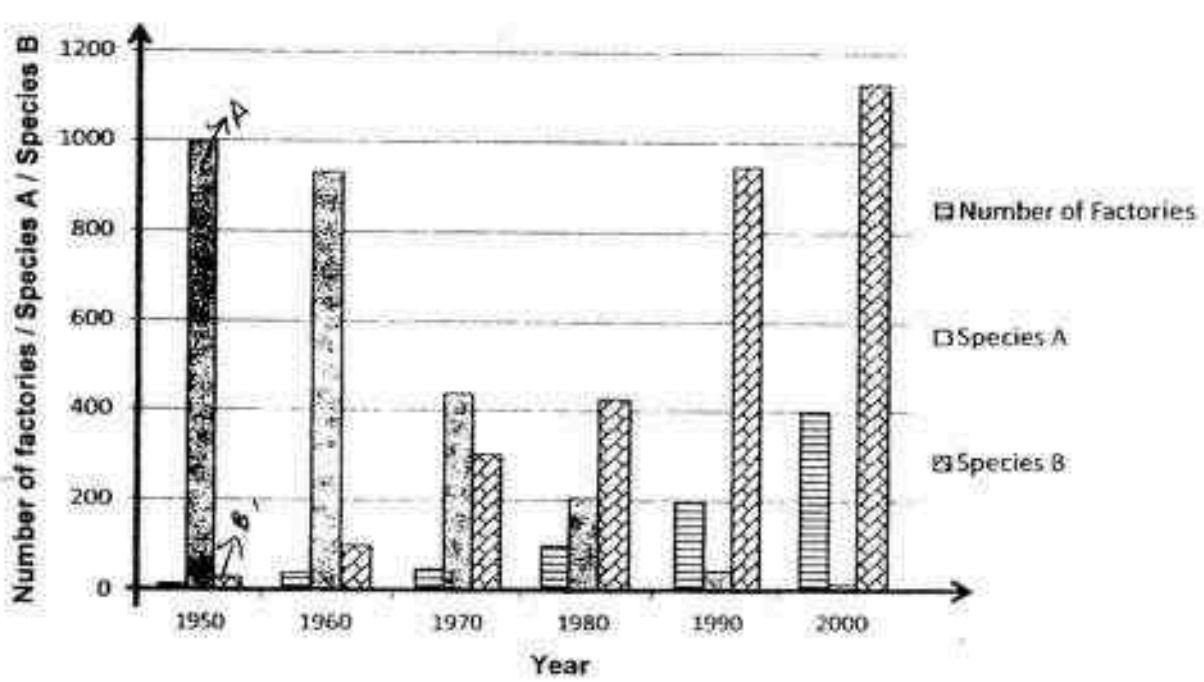


species A **species B**

The factories have smokestack chimneys. These factories were constantly giving out black soot into the air over the period of 1950 to 2000. The trees in the forest were blackened over the years because of the soot.



The bar chart shows the data collected on the number of factories built over a period of time in town X as well as the population of the two species of moth, A and B, found in town X.



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(a) State the relationship between the number of species A and the number of factories built between the years 1950 and 2000. [1]

_____

_____

(b) Suggest a possible reason for the increase in the number of species B over the years with reference to the data provided. [1]

_____

_____

Score	
	2

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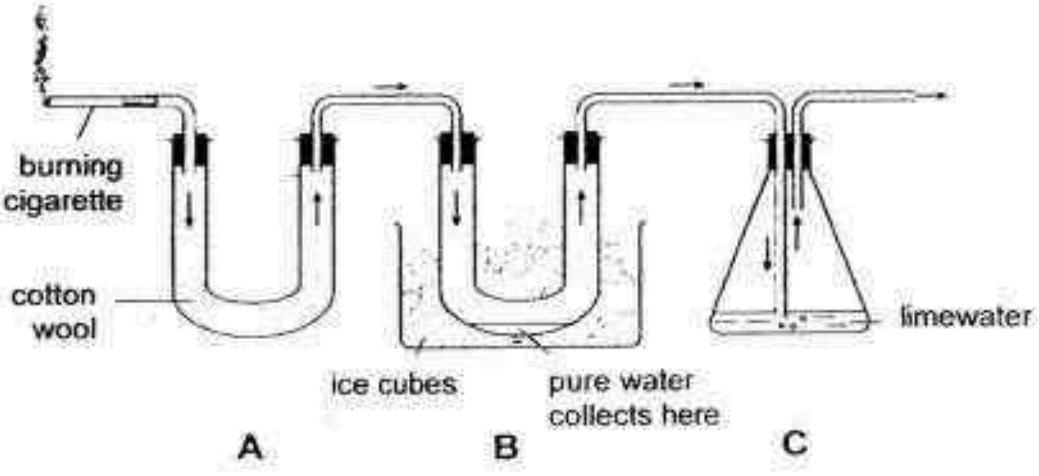
40. A teacher set up the following apparatus to separate the chemicals in cigarette smoke.
The chemicals pass through the apparatus in the direction of the arrows.



In A, tar, a brown sticky substance which causes lung cancer, is collected on the cotton wool.

As the cigarette burned, two different gases were produced and passed through B and C.

(a) After one of the gases passed through B, pure water was collected in B. What is this gas? Explain your answer. [1]

(b) The limewater in C turned cloudy. What is the gas produced during cigarette burning? Explain clearly how this gas can harm the environment. [2]

Score	3

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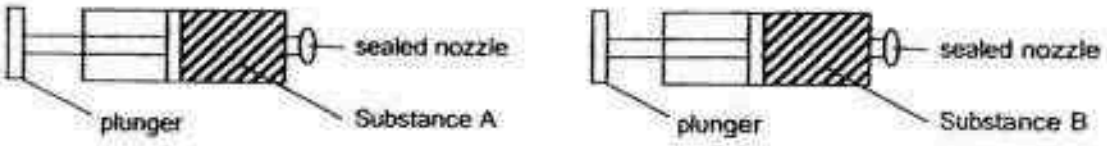
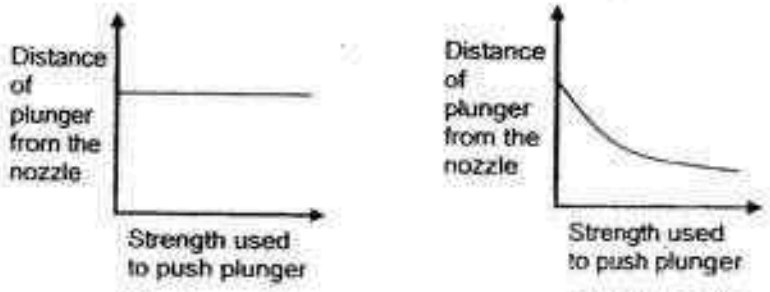
41. Leonard filled 2 identical syringes completely with a different substance each and sealed the nozzles as shown below.



He tried to push the plungers in. The graphs below show the results.

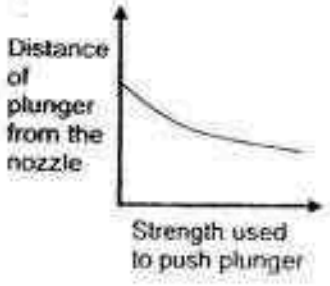


(a) Identify the state of matter of each substance. [1]

Substance A: _____

Substance B: _____

Melissa filled another identical syringe with a ball of cotton wool and sealed the nozzle. She tried to push the plunger in. The graph below shows her results.



(b) Explain the results obtained [1]

_____

_____

Score	2

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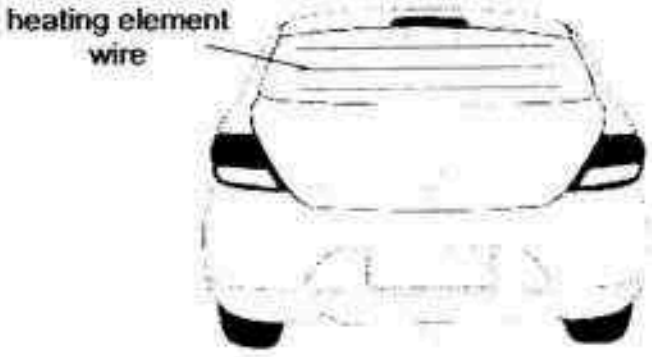
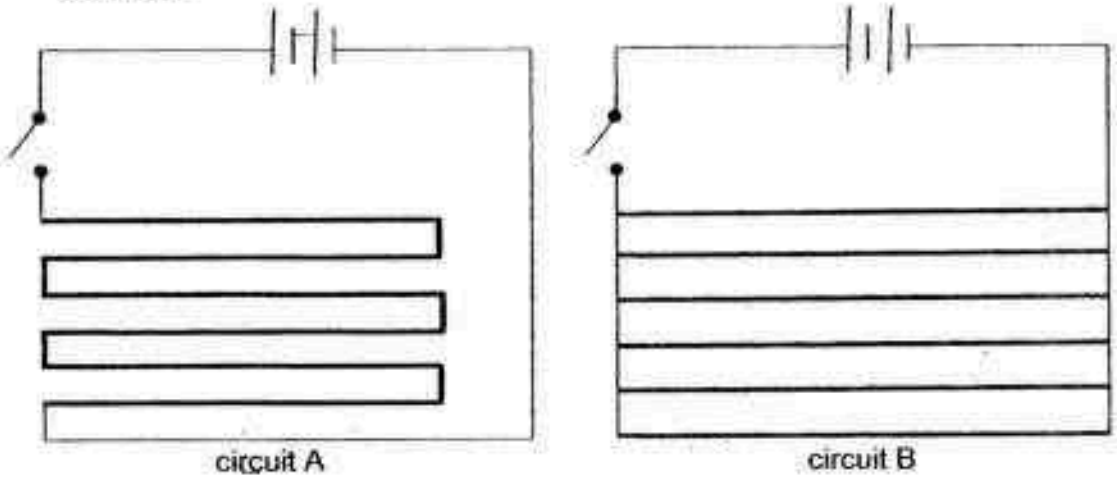
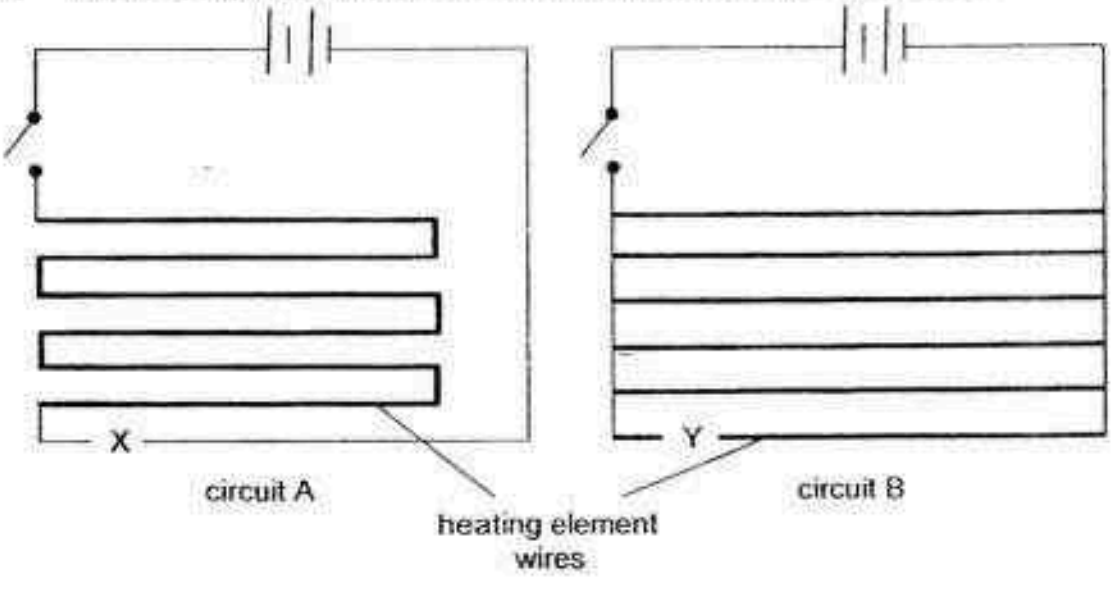
42. In cold countries, the back window of a car usually contains a heating element.
The heating element is part of an electrical circuit connected to the battery of the car.



The diagrams below show **two** ways of connecting the circuit of a heating element.



(a) A wire gets broken at point X on circuit A and at point Y on circuit B.



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When the switch is closed, how does the broken wire affect the heating element in circuit A and circuit B? [2]

Circuit A :

_____

_____

Circuit B :

_____

_____

(b) In very cold weather, ice may form on the back window of the car. When the heating element is switched on, the ice will disappear and the surface of the window will become clear and dry. Explain the processes that cause the ice to disappear and the window to become clear and dry. [2]

_____

_____

Score	4

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43. Some organisms need to maintain a constant body temperature for survival.

(a) Whales have a thick layer of blubber (fat) under their skin. How does this blubber help the whales to maintain a constant body temperature in cold water? [1]

_____

_____

(b) Humans sweat when they are under the hot sun. How does sweating help humans to maintain a constant body temperature? [2]

_____

_____

_____

Score	3

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44. A group of students conducted an experiment to test the effect of rainwater on the growth of radish plants.

The students planted two identical radish seeds in equal amount of soil. One was watered with non-acidic rainwater, and the other was watered with an equal amount of acidic rainwater. All other variables that would affect plant growth were kept the same for both plants.

The students measured the heights of the plants over a period of 20 days and recorded the results in the table below.

Day	Height of plant watered with acidic rainwater (cm)	Height of plant watered with non-acidic rainwater (cm)
8	1	2
12	2	3
14	3	4
17	4	7
20	7	9

(a) What can the students conclude based on the results given in the table above? [1]

_____

_____

(b) The investigation was fair but could be improved to make the results more reliable. Other than repeating the experiment, suggest another improvement that could be made. [1]

_____

_____

Score	2

End of Paper

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EXAM PAPER 2016

SCHOOL : NAN HUA

SUBJECT : SCIENCE

TERM : SA2

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	1	4	2	1	4	3	4	2	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	3	4	3	4	2	1	4	4	2
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	4	4	3	2	1	3	3	3	2

31)a)Water and dissolved carbon dioxide.

b)Under Green light. According to the table, the pond weed produced the least amount of bubbles in a minute exposed to green light. Thus, this shows that the pond weed photosynthesis the slowest under green light. The pond weed would make less food.

c)To act as a control so as to compare and confirm that the colour of light affects photosynthesis in pond weed.

32)a)Animal Y feeds on animal X as animal X has a higher population then animal. Thus, Animal X must increase in population to provide animal Y with more food.

b)2005 to 2006.

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33)a)P and Q.

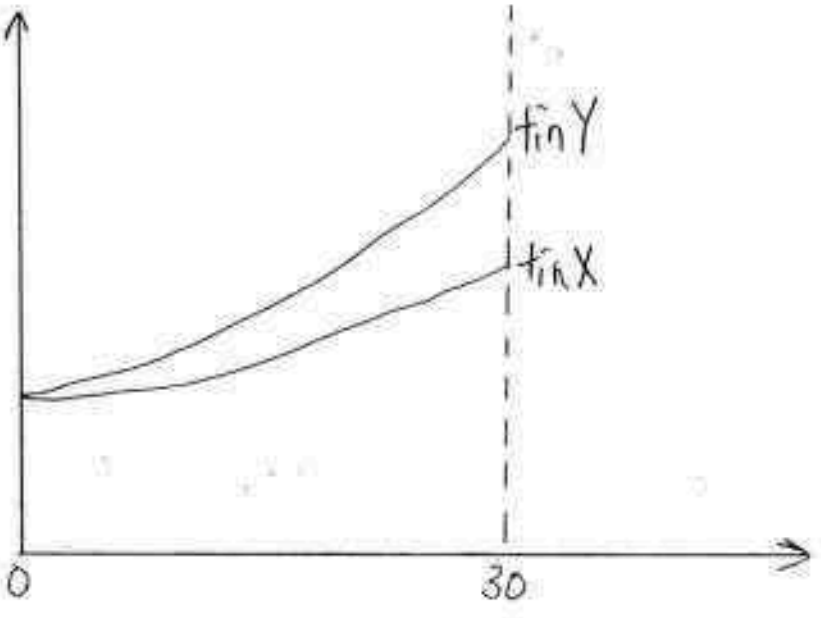
b)The role of organism is to control the populations of T and M by killing and eating them. By doing this, S ensures that T and M does not over population and upset the ecosystem.

c)Organism T. As there are no more predators to feed on T, the population of T will increase drastically and there will not be enough food.

34)a)The animal is a carnivore. The animal has very sharp teeth to grip and tear flesh.

b)Predator of the young of the animal would not be able to reach the young so easily.

35)a)



b)Tin Y is has a black, dull surface. This type of surface absorbs heat faster and would transfer the heat to air in the tin.

c)The shiny surface of the aluminium foil reflects light away, hence the foil will absorb less heat and the chocolate from gain less the foil and not melt easily.

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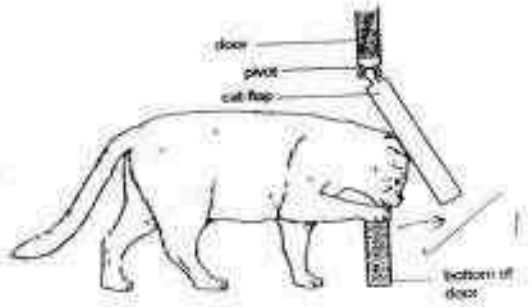
36)a)



b)Gravity would pull the cat flap down.

c)i)N-pole ii)S-pole

d)When a cat enters, there is friction between the pivot and the door. Thus, there is a squeaky sound. Ali could apply some oil on the pivot.

37)a)Gravitational potential energy→Kinetic energy→Heat + sound energy

b)The loudness would be higher.

c)When the hole was larger, the mass of water flowing out increased. Hence there was more greater gravitational potential energy converted to kinetic energy of the water and then converted to more sound energy.

38)a)The caterpillar could not move, thus it cannot climb for leaves to eat. Thus it died of starvation.

b)There will be less competition for food.

39)a)As the number of factories built increases, the number of species A decreases.

b)As species B is darker in colour it can camouflaged with the dark coloured truncks of trees in the forest and are not spotted easily by predaotrs.

40)a)Water vapour. The warm water vapour from the cigarette came into contact with the cooler surface of B. Only water vapour can condense and form pure water.

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40)b)Carbon dioxide. Carbon dioxide is a green house gas that traps heat on Earth. This can lead to global warming. The polar ice caps would melt and sea levels will rise, flooding coastal areas.

41)a)A: Liquid

B: Gas

b)The cotton wool has tiny air spaces which contain air. The air can be compressed and the plunger can be pushed.

42)a)A: Heating element totally stops working.

B: Heating element still works, but less effective.

b)The heat from the heating element melts the ice into water. The water gains heat from the heating element and evaporates.

43)a)The thick layer of blubber reduces heat loss from the body to the cold water.

b)The water in the sweat gain heat from the body to evaporate. The body loses heat and cools down. Thus the body is cool under the hot sun.

44)a)The radish plant does not grow well in acidic rainwater.

b)They could use more radish plants and calculated the average height.

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21

Rosyth School
Preliminary Examination 2016
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: / 60

Class: Pr 6 _____ Register No. _____ Duration: 1 h 45 min

Date: 25 August 2016 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 30 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 31 to 44, give your answers in the spaces given in the Booklet B.

* This booklet consists of 20 printed pages (including cover page).

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Part I

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **(60 Marks)**

1 Which of the following is/are the unit of life for all living things?

A : cell
B : tissue
C : organ

(1) A only
(2) B only
(3) A and B only
(4) A, B and C

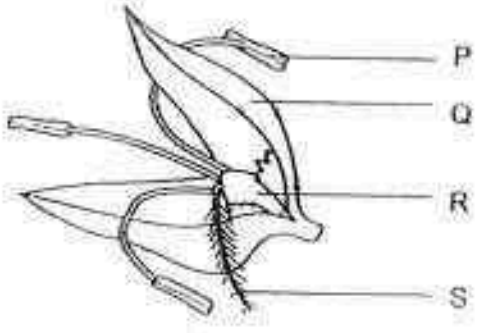
2 Study the characteristics of P, Q, R and S below.

	Characteristics			
	Can it move from place to place?	**Can it reproduce?**	**Can it produce its own food?**	**Can it respond to changes?**
P	No	No	No	Yes
Q	Yes	No	No	Yes
R	No	Yes	Yes	Yes
S	Yes	Yes	No	Yes

Which of them is/are definitely living thing(s)?

(1) R only
(2) Q and S only
(3) R and S only
(4) P, Q, R and S

3 Study the diagram below.



Which part(s) of the above flower is/are definitely <u>not</u> needed for pollination and fertilisation to take place?

(1) P only
(2) Q only
(3) Q and R only
(4) R and S only

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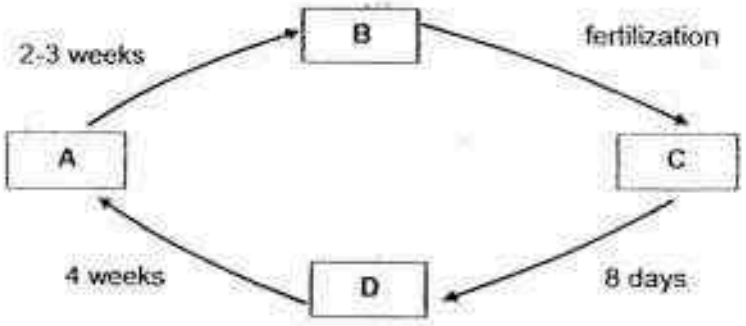
4 The diagram below shows the 4 stages in the life cycle of an organism.



Identify the correct stages in the above life cycle.

	A	B	C	D
(1)	egg	larva	pupa	adult
(2)	pupa	adult	egg	larva
(3)	larva	pupa	adult	egg
(4)	adult	egg	larva	pupa

5 Which of the following body systems work together with the reproductive system in humans for the growth and birth of the baby?

A : Skeletal system
B : Muscular system
C : Digestive system
D : Circulatory system
E : Respiratory system

(1) A, B and D only
(2) C, D and E only
(3) A, B, D and E only
(4) A, B, C, D and E

6 Which of the following are similarities between digestion and decomposition?

A : Both provide nutrients for survival.
B : Both require bacteria and fungi to take place.
C : Both break matter down into simpler substances.
D : Both break dead matter up into smaller substances.

(1) A and C only
(2) B and D only
(3) A, B and D only
(4) B, C and D only

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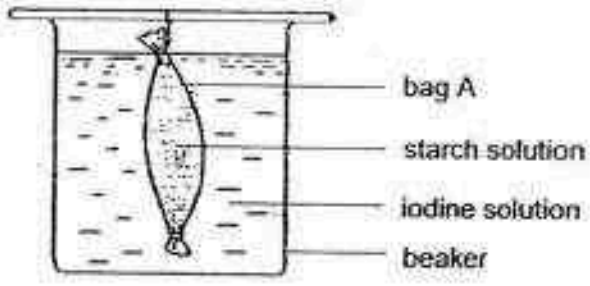
7 Alison filled bag A with starch solution and immersed it into the iodine solution as shown below.



When the iodine solution comes into contact with starch, the iodine solution would change from brown to dark blue.
After one day, she observed that the content in bag A turned dark blue while the content in the beaker remained brown.

Which part(s) of a cell is/are similar in function to bag A?
A : cell wall
B : cell membrane
C : cytoplasm

(1) A only
(2) B only
(3) A and B only
(4) B and C only

8 Ahmad studied a small habitat and constructed a food web which consisted of four organisms A, B, C and D. He described the food relationship as shown in the box below.

A eats B,C and D
B is eaten by A and D
D is eaten by C

Which organism in the food web above obtains its energy directly from the Sun?

(1) A
(2) B
(3) C
(4) D

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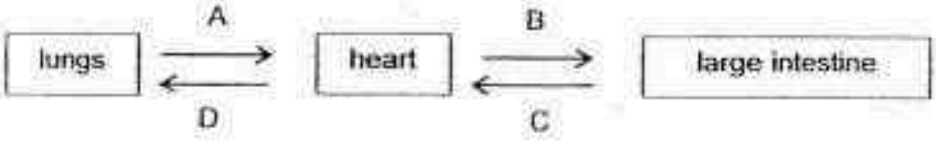
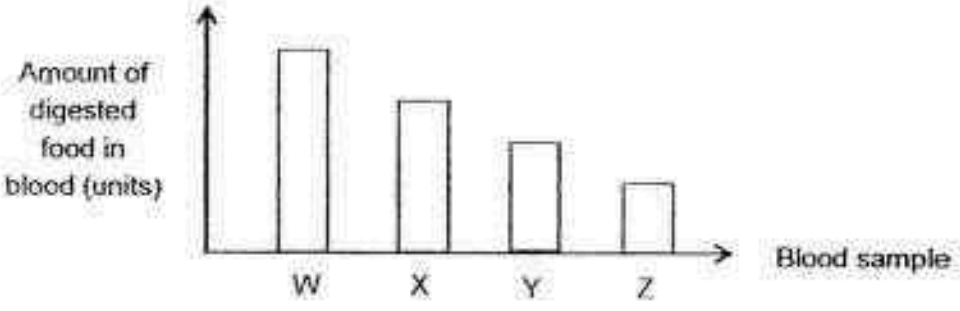
9 The diagram below shows how blood flows from one organ to another through blood vessels A, B, C and D in a human body.



Blood samples, W, X, Y and Z were collected from the blood vessels shown above. The graph below shows the amount of digested food present in each blood sample.



Which blood vessel was the blood sample W most likely taken from?

(1) A
(2) B
(3) C
(4) D

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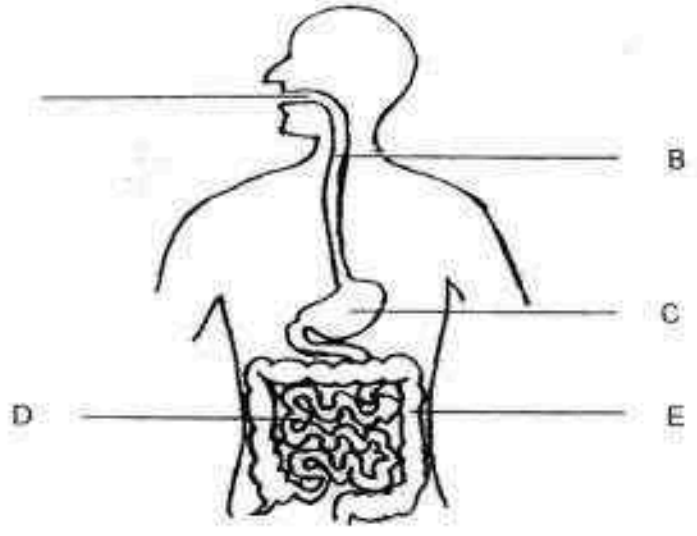
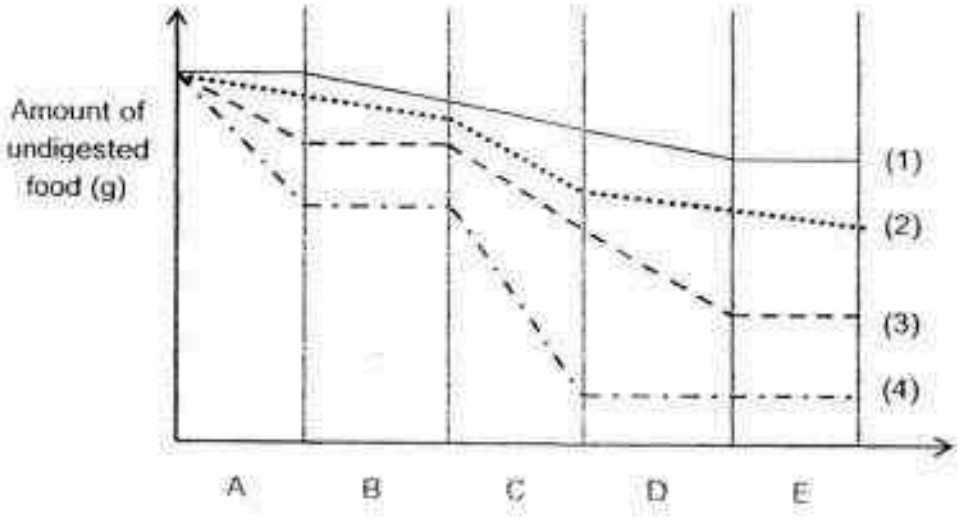
10 Zachary wanted to investigate how digestion takes place in the body. He took samples of food as it passed through five parts, A, B, C, D and E, of the digestive system as shown below.



He plotted the amount of undigested food at the five parts on a graph below. Which line best represents the relative amount of undigested food in the various parts of the human digestive system?



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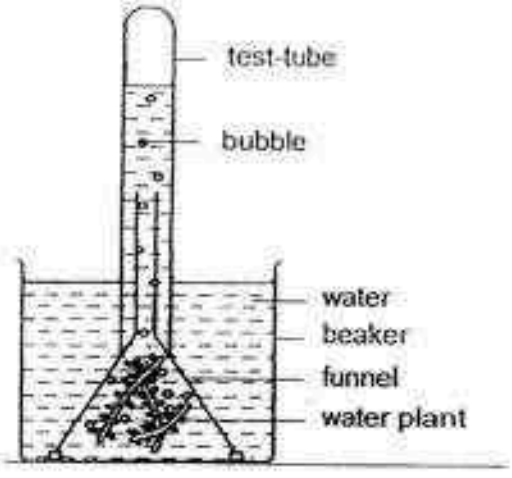
11 Hamid had 4 water samples, A, B, C and D, collected from different parts of the same river. Using the same amount of each water sample, he set up the following apparatus using the same amount of water plant. He placed the 4 set-ups near a window for 3 days.



At the end of the experiment, Hamid compared the amount of oxygen produced by the water plants and recorded his observation in the table shown below.

Water sample	Volume of oxygen collected (cm^3)
A	14
B	20
C	18
D	10

Hamid made the following conclusions:

A : The water plants in all the water samples photosynthesized at different rates.
B : The water samples used affected the rate of photosynthesis of the water plants.
C : The water is not polluted at the parts of the river where water samples B and C were collected from.
D : The rate of photosynthesis of the water plants was dependent on the amount of sunlight that reached each plant.

Based on Hamid's experimental results above, which of his conclusions are correct?

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, B, C and D

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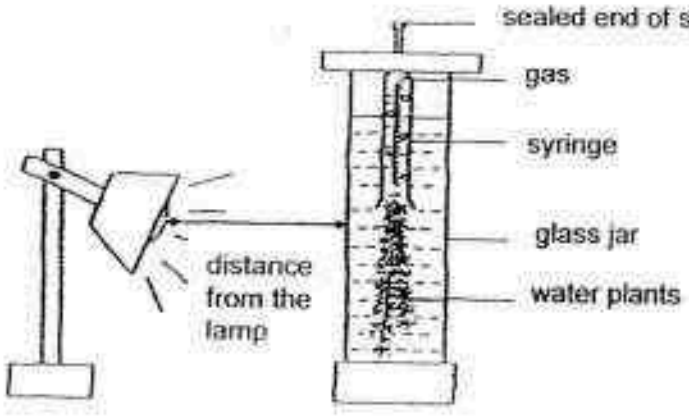
12 Joseph carried out an experiment to find out if the brightness of the light will affect the amount of gas produced. He set up the apparatus as shown below.



In order to ensure a fair test, he should only change the _____.

(1) type of water plants used
(2) amount of water plants used
(3) amount of water in the glass jar
(4) distance between the lamp and the glass jar

13 Mr Quek noticed some mealybugs feeding on a plant in the Community Garden. He made the following observations:

- The mealybugs damaged the plant while feeding on the plant sap.
- There were many black ants crawling all over the plant.
- The ants were feeding on the honeydew or waste produced by the mealybugs.
- Ladybugs appeared on the plant after a few days and were seen feeding on the mealybugs.
- The ants were seen attacking the ladybugs.

Based on the interactions as stated above, which one of the following correctly states the relationship between the different organisms?

	Both organisms benefitted	Only one out of the following organisms benefitted
(1)	ant and plant	mealybug and ladybug
(2)	mealybug and ladybug	mealybug and ant
(3)	mealybug and ant	mealybug and plant
(4)	ant and ladybug	ant and plant

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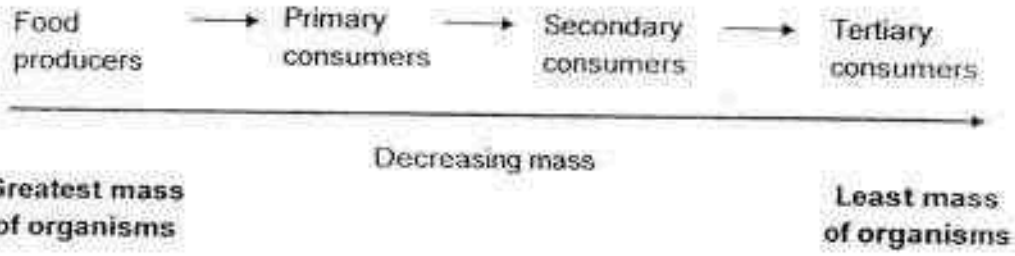
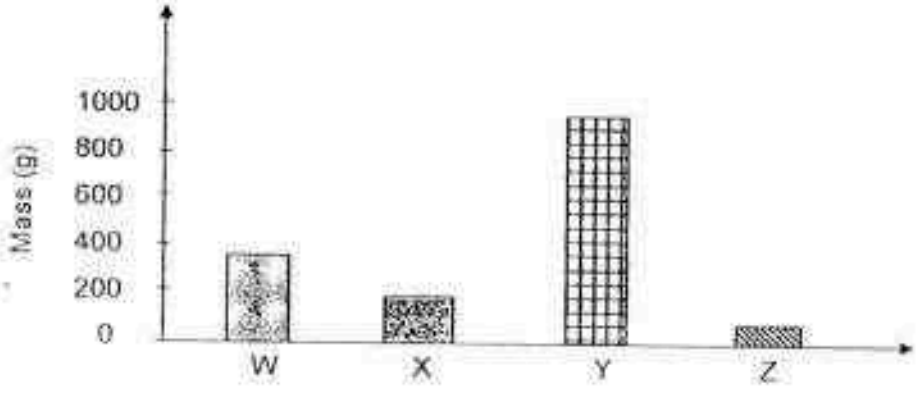
14 The diagram below shows a model of a food chain.



The graph below shows the masses of the organisms that form a food chain in a lake at the Gardens by the Bay.



Based on the given information above, deduce which part of the food chain each organism belongs to.

	Food producer	Primary consumer	Secondary consumer	Tertiary consumer
(1)	Y	X	W	Z
(2)	W	X	Z	Y
(3)	Y	W	X	Z
(4)	W	Z	X	Y

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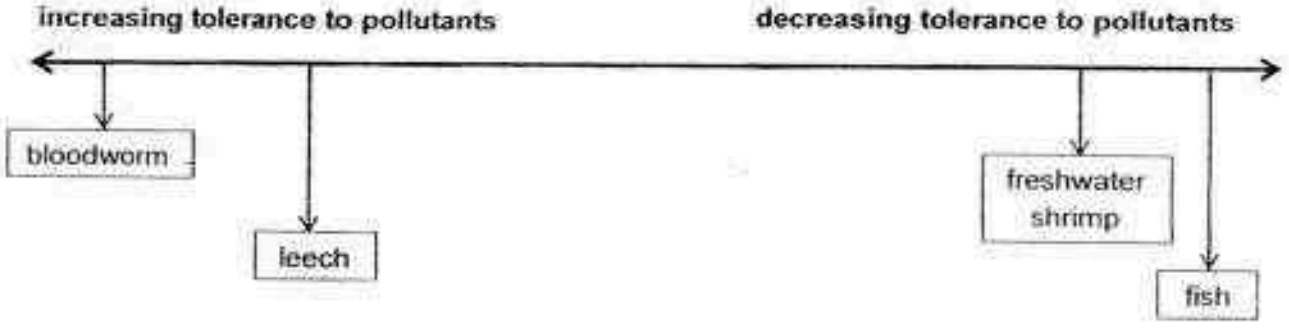
15 One way of measuring water quality in rivers is by examining the types of fish, insects and other invertebrates that the water will support. Different aquatic animals are able to tolerate different levels of pollutants. As the level of pollutants increases, the number of sensitive animals will decrease and the number of tolerant animals will increase.

The chart below shows the tolerance of some aquatic organisms to water pollutants.



During a random check, an environmental officer counted the number of individual organisms in water samples taken from 4 different rivers and recorded his results in the table below.

River	bloodworm	leech	freshwater shrimp	fish
A	4	5	5	3
B	2	2	6	5
C	6	4	2	0
D	8	5	0	0

Arrange the rivers from the most polluted to the least polluted.

	most polluted → least polluted			
(1)	C	D	A	B
(2)	B	A	C	D
(3)	D	C	B	A
(4)	D	C	A	B

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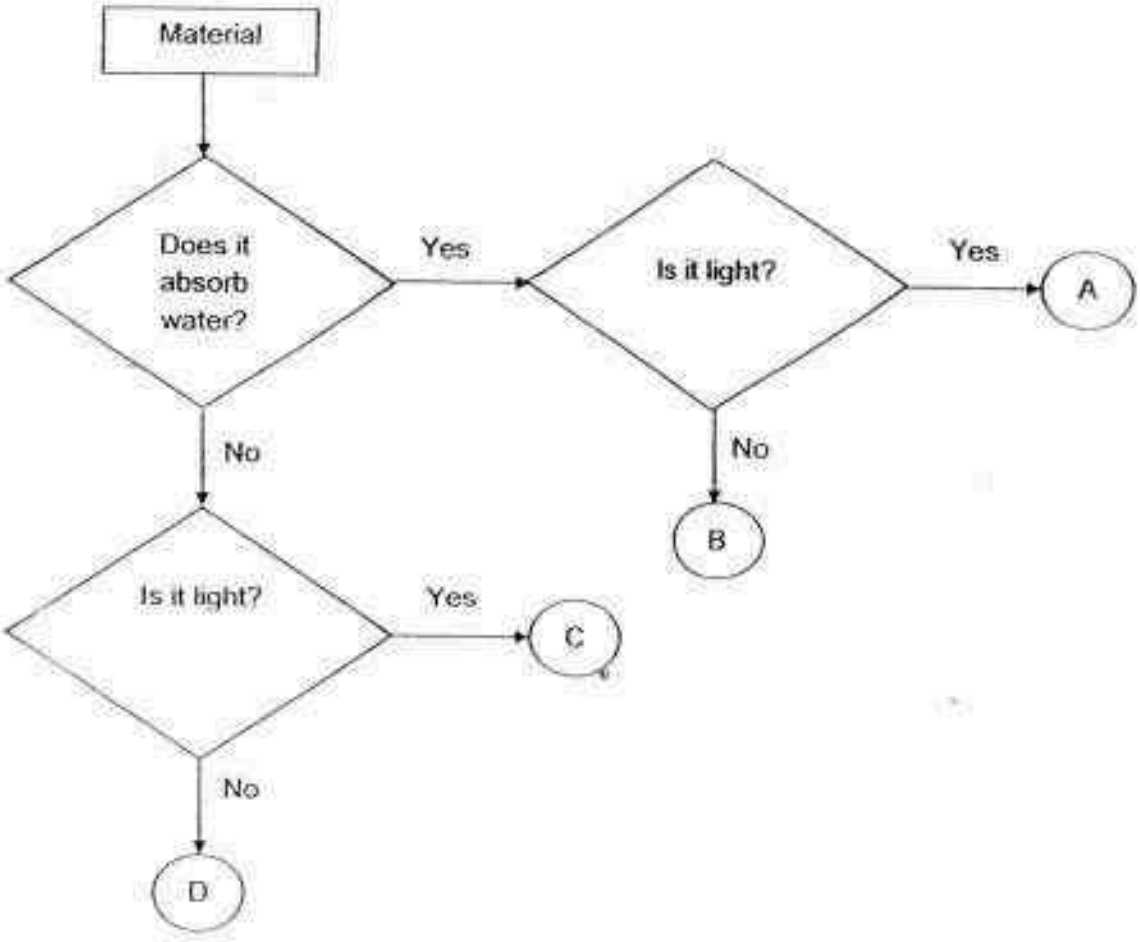
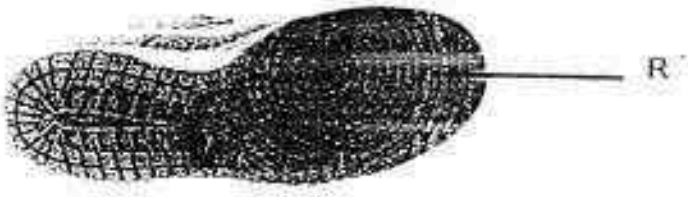
16 Study the flow chart below carefully.



Refer to part R of the shoes as shown below.



Which of the letter, A, B, C or D, matches with the material used to make part R of the shoe?

(1) A
(2) B
(3) C
(4) D

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Test		
A	B	C
Can it be attracted to another magnet?	Does it come to a rest pointing in N-S direction when suspended freely?	Can it repel another magnet?

(1) Test B only
(2) Test C only
(3) Tests A and B only
(4) Tests B and C only

18 A shadow is formed because _____.

A: light can be blocked.
B: light can be reflected.
C: light can be absorbed.

(1) A only
(2) C only
(3) A and B only
(4) A, B and C

19 Why is air classified as a matter?

A: Air has mass.
B: Air occupies space.
C: Air can be compressed.

(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

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20 The table below shows the melting points of substances P, Q, R and S.

Substance	Melting Point (°C)
P	49
Q	15
R	23
S	5

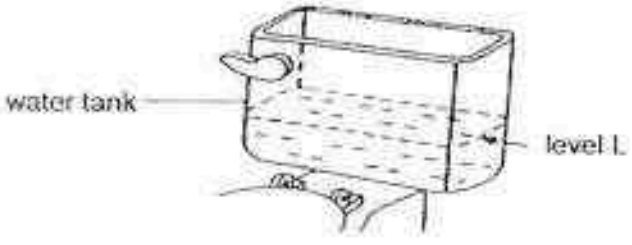
At which temperature will two of the above substances be at its liquid state?

(1) 0 °C
(2) 10 °C
(3) 20 °C
(4) 30 °C

21 Andy recorded the volume of four objects and the volume of water the objects can displace when put into a measuring cylinder.

Object	Volume of the object (cm^3)	Volume of water displaced by the object (cm^3)
W	20	20
X	40	10
Y	60	30
Z	80	5

Andy studied the water tank used for flushing a toilet bowl in his house as shown below. After flushing, water enters and re-fills the tank. The tank will stop filling when the water reaches level L.



Based on the results above, which object W, X, Y or Z should Andy put inside the water tank so that he would use the least water to flush the toilet?

(1) W
(2) X
(3) Y
(4) Z

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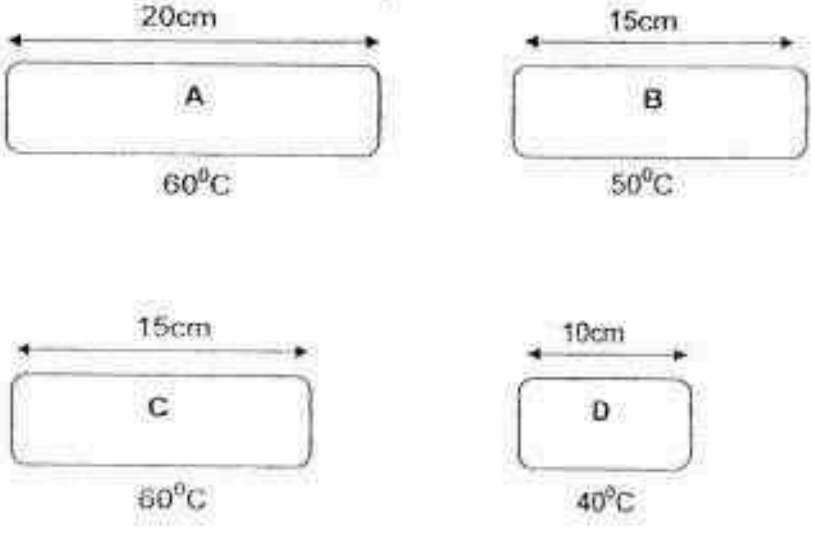
22 Li Fei was holding a metal spoon with a cube of ice as shown. After some time, she felt that the spoon was cold.



Which one of the following correctly explains why Li Fei felt that the spoon was cold?

(1) The spoon lost heat to the ice and to her hand.
(2) The spoon gained heat from the ice and from her hand.
(3) The spoon lost heat to the ice and gained heat from her hand.
(4) The spoon gained heat from the ice and lost heat to her hand.

23 Four steel rods of equal thickness but different lengths were heated to the temperatures indicated in the diagrams below.



Ali wanted to investigate if the amount of heat the object has is affected by the mass of the object and its temperature. Which one of the following should he compare?

(1) A, B and C only
(2) A, B and D only
(3) A, C and D only
(4) B, C and D only

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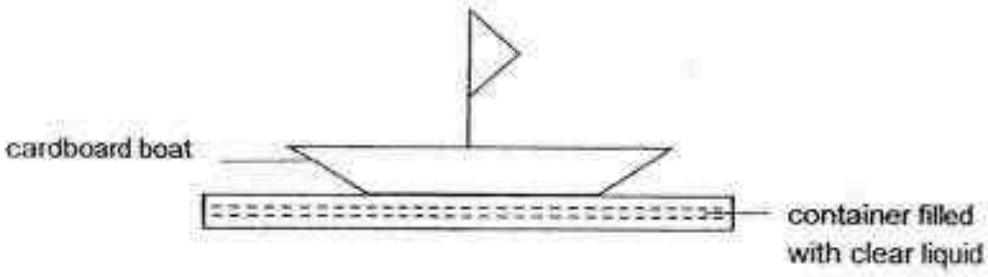
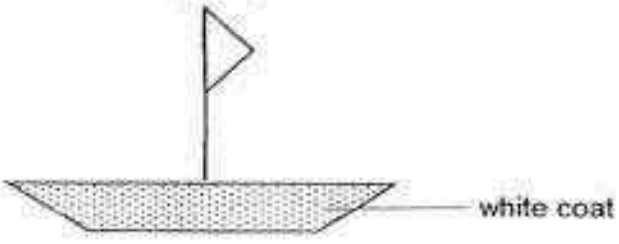
24 David stirred a white solid in some water and it became a clear liquid. He then poured the clear liquid into a container. Finally, he placed a cardboard boat in the container filled with the clear liquid.



At first, the boat looked wet. Then he placed the boat on a table.



After a few days, David observed a white coat on the boat. The above observation is possible due to _____.

(1) melting
(2) freezing
(3) evaporation
(4) condensation

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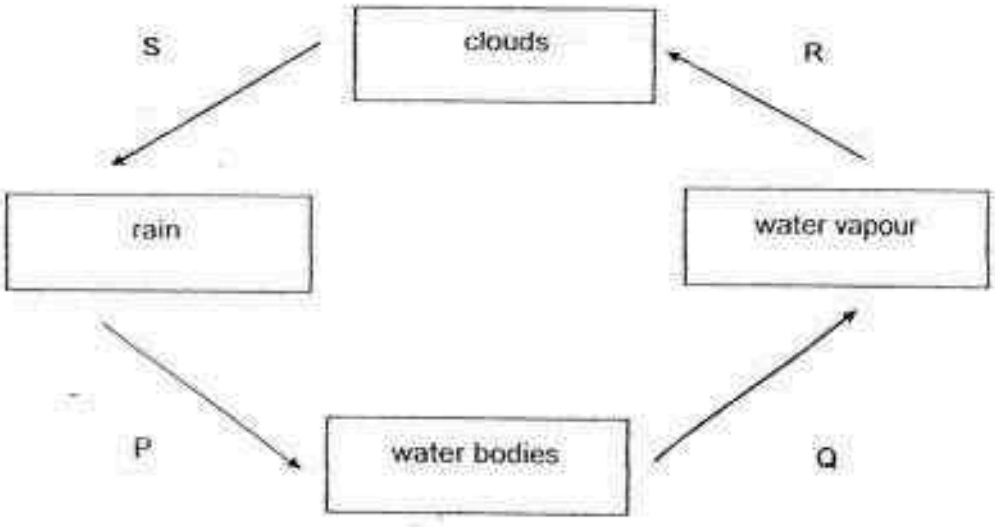
25 Study the water cycle below.



Which one of the following statements about the water cycle is true?

(1) Heat gain is needed at P.
(2) There is energy conversion at Q.
(3) Heat loss from the surrounding air is needed at R.
(4) There is a change of state at S.

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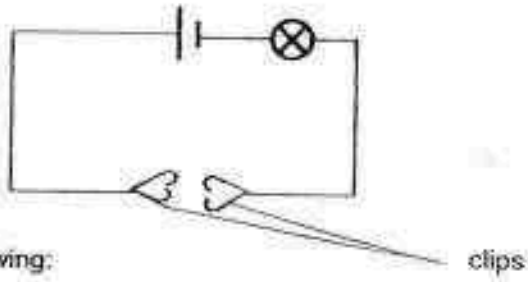
26 Abby has an electric circuit as shown below.



He did the following:

1. Joined the clips and measured the brightness of the bulb.
2. Added an object between the clips and measured the brightness of the bulb.
3. Compared the brightness of the bulb between steps 1 and 2.
4. Repeated steps 2 and 3 for three other objects.

Which one of the following is a possible observation?

	Objects	The brightness of the bulb is _____ compared to no object between the clips.
(1)	electric bell	brighter
(2)	bulb	dimmer
(3)	battery	the same
(4)	copper wire	brighter

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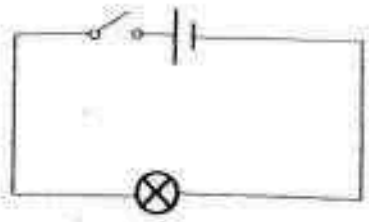
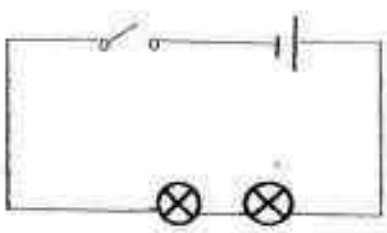
27 Study the four electrical circuits as shown below. All the batteries and bulbs are similar.

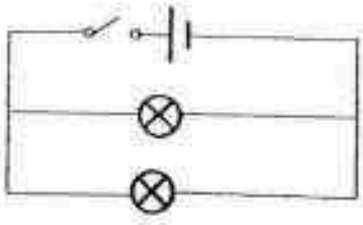
A



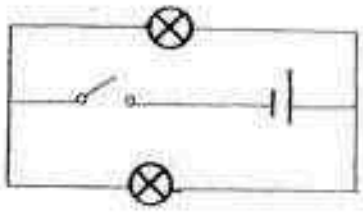
B



C



D



In which circuits will the bulbs be of the same brightness?

(1) B and C only
(2) C and D only
(3) A, C and D only
(4) B, C and D only

28 Which of the following effects of forces are true?

A: A force may change the shape of an object.
B: A force can change the speed of a moving object.
C: A force can change the direction of a moving object.
D: A force can change the size of a gas trapped in a balloon.

(1) A and B only
(2) C and D only
(3) B, C and D only
(4) A, B, C and D

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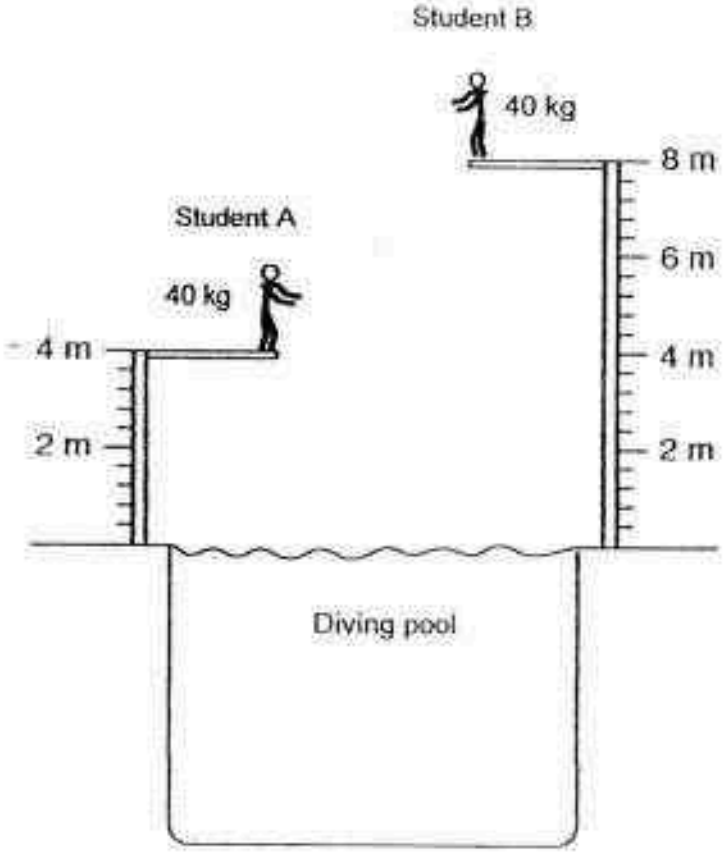
29 The diagram below shows two 40 kg students ready to dive into the pool.



Which one of the following is a possible aim for the experiment?

(1) To find out if the mass of a person will affect the depth of the dive.
(2) To find out if amount of potential energy will affect the depth of the dive.
(3) To find out if amount of water resistance will affect the depth of the dive.
(4) To find out if amount of gravitational force will affect the depth of the dive.

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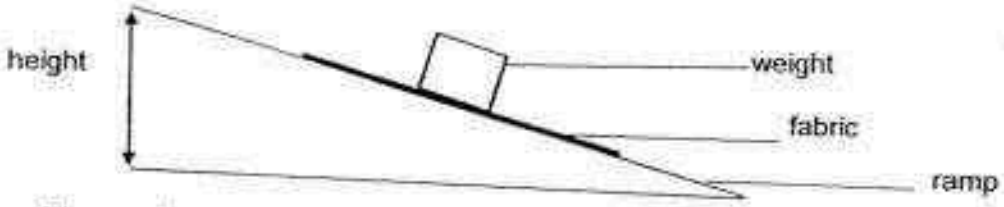
30 Some students wanted to find a suitable fabric to make a bathmat.
They placed the fabric on a ramp and put a weight on it to represent a person standing on it. They raised the height until the weight started to slide off the fabric.



The results were as shown below.

Fabric	Height at which the weight started to slide off the fabric (cm)
P	8
Q	17

Based on the results obtained, which fabric will be more suitable for making the bathmat and why?

	Fabric	Reason
(1)	P	There is greater friction between the mat and the floor.
(2)	P	There is greater friction between the mat and the feet.
(3)	Q	There is greater friction between the mat and the floor.
(4)	Q	There is greater friction between the mat and the feet.

END OF BOOKLET A

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Rosyth School
Preliminary Examination 2016
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: /100

Class: Pr 6 ____ Register No. ____ Duration: 1 h 45 min

Date: 25 August 2016 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 31 to 44, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	60 marks	
Booklet B	40 marks	
Total	100 marks	

* This booklet consists of 20 printed pages (including cover page).

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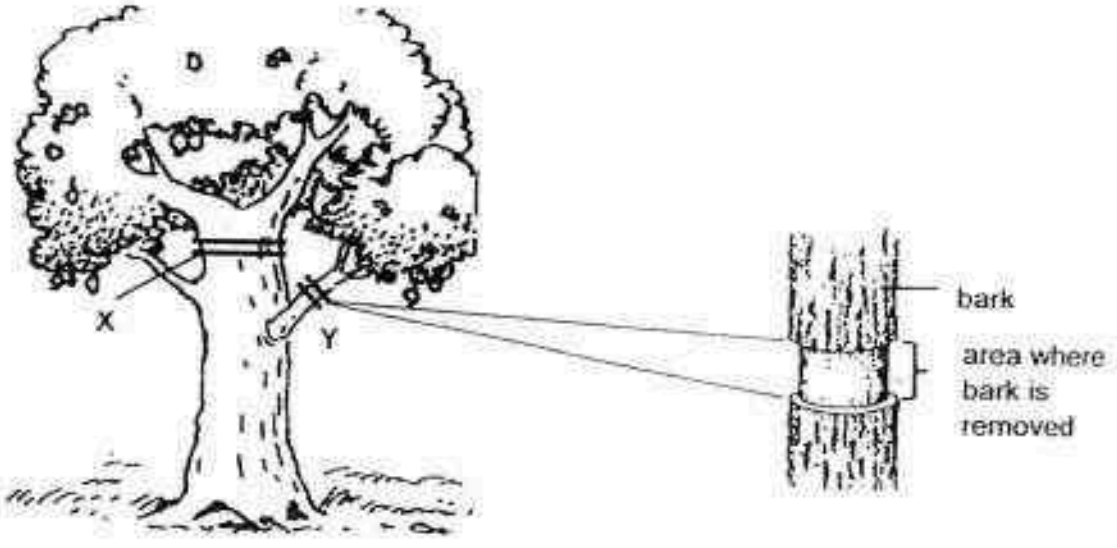
Part II

For questions 31 to 44, write your answers in the space provided. **(40 Marks)**

31 Farmer Rajah made some observations on similar-sized mangoes on a mango tree in his plantation.
He made two bark removals on two different parts of the mango tree. He removed the outer ring of the bark on the main trunk and on a lower branch. Only the food-carrying tubes were removed in the cuts made while the water-carrying tubes remained intact.

The two cuts are indicated as X on the main trunk and Y on the branch as shown in the diagram below.



After a few weeks, both branches above cuts X and Y bore fruits.

Branches above cut X bore bigger fruits. Explain your answer. [2]

_____

_____

_____

_____

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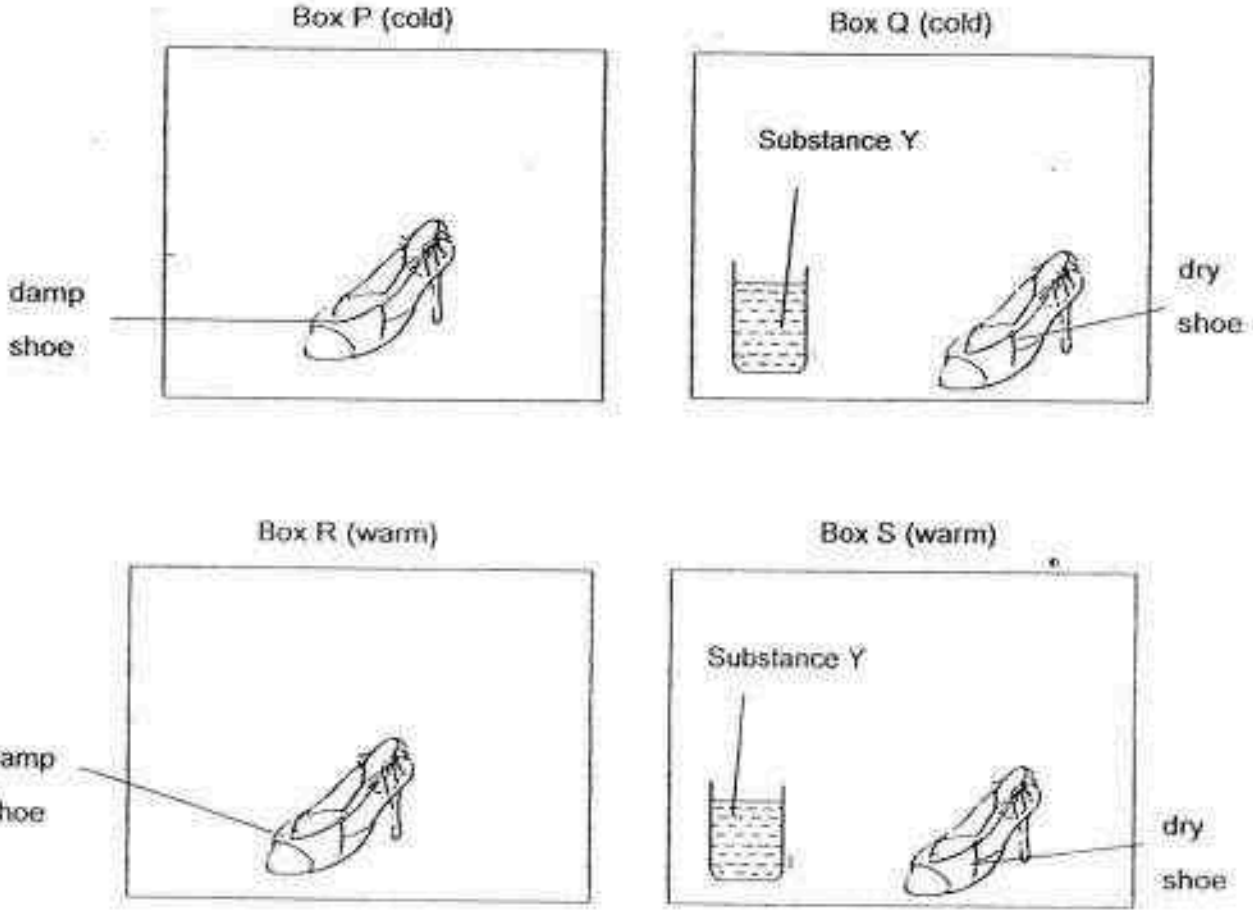
32 Joyce placed four identical leather shoes in four identical sealed boxes. She placed boxes P and Q in a cold place and boxes R and S in a warm place. Substance Y was used to absorb water vapour from the surrounding.



(a) In which box, P, Q, R or S, would fungus first appear on the shoe? Explain your answer. [1]

Question 32 continues on page 3

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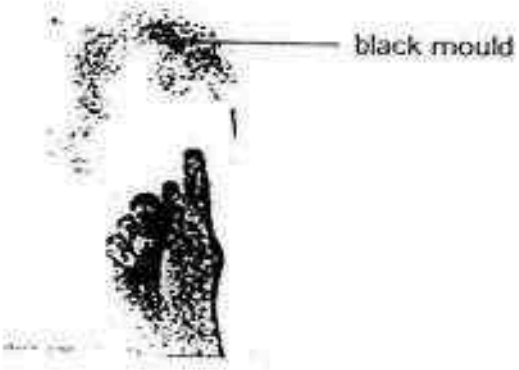
(b) While showering, Joyce noticed patches of black mould growing on the ceiling surface of her bathroom.



Her mother advised her to open the bathroom windows immediately after her shower everyday.
Explain how this action would help to reduce the growth of mould on the ceiling.
[2]

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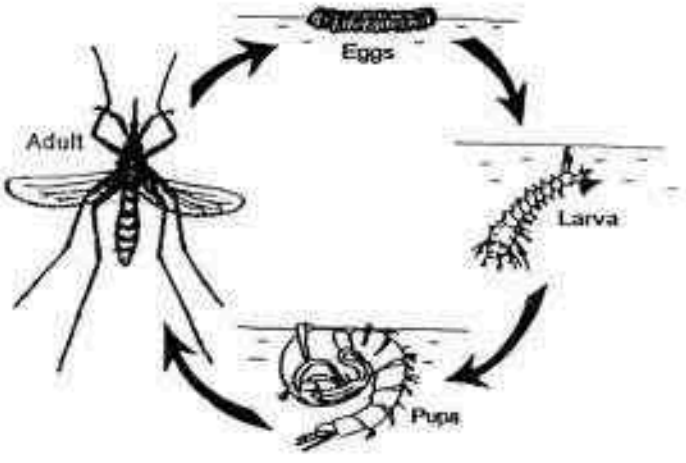
33 Dengue fever is an illness caused by infection trasmitted by the *Aedes* mosquito. Lisa studied the life cycle of the *Aedes* mosquitoes at different temperatures of the water.

Life cycle of the *Aedes* Mosquito



The results are shown below:

	Duration of stages across water of different temperatures (Days)			
	23 °C	25 °C	27 °C	29 °C
egg	2	2	2	2
larva	10	8	6	4
pupa	2	2	2	2

(a) Based on the results in the table above, what is the relationship between the temperature of the water and the length of the life cycle of the *Aedes* mosquito? [1]

_____

_____

Question 33 continues on page 5

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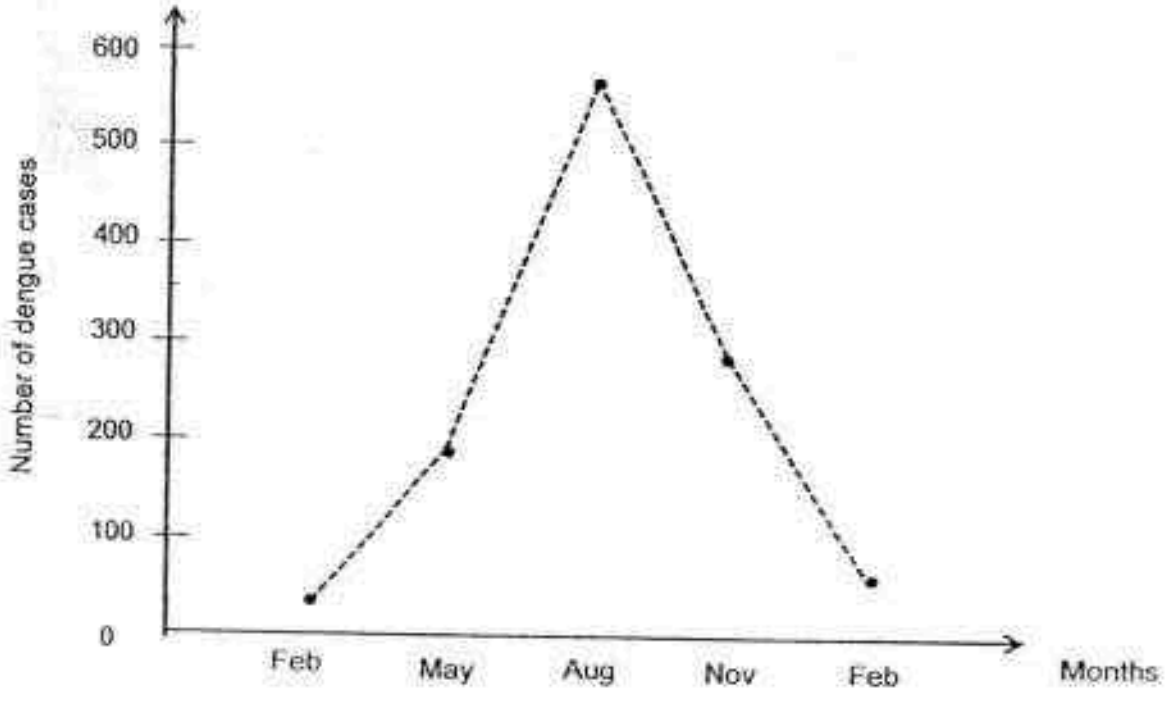
Dengue infection and transmission depends on the seasonal variation of the climate of a country. Graphs A and B below show the number of dengue cases and the average amount of rainfall in Singapore for a period of one year.



Graph A



Graph B

Question 33 continues on page 6

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(b) **Study the graphs and identify the period when there is a sudden increase in the number of dengue cases. Tick the appropriate box below.** [1]

February to May	☐
May to August	☐
August to November	☐
November to February	☐

(c) Give a reason for the sudden increase in the number of dengue cases in relation to the life cycle of the *Aedes* mosquito. [2]

_____

_____

_____

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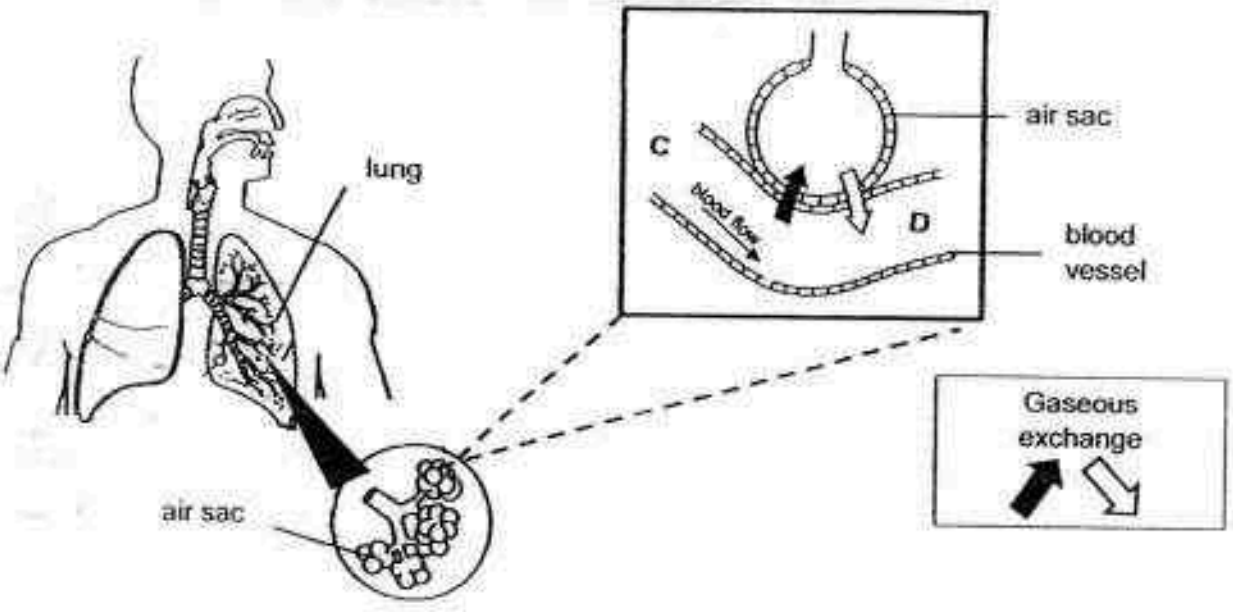
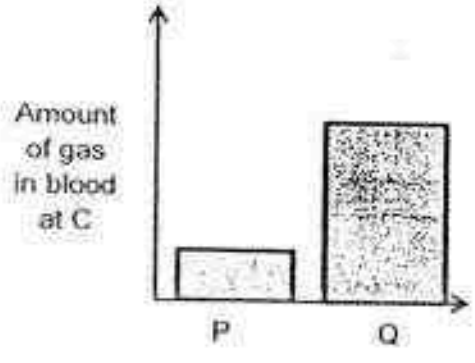
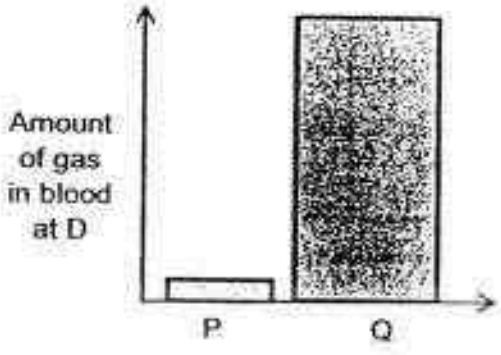
34 The diagram below shows the lungs of a human and how gaseous exchange takes place at the air sacs.



Gases P and Q are found in the blood at parts C and D of the blood vessel. The amount of gases P and Q found in C and D is represented in the bar graphs below.





(a) Identify gases P and Q. [1]

(i) P is _____

(ii) Q is _____

(b) Describe how two systems in the human body work together to ensure the circulation of gas Q in the body. [2]

_____

_____

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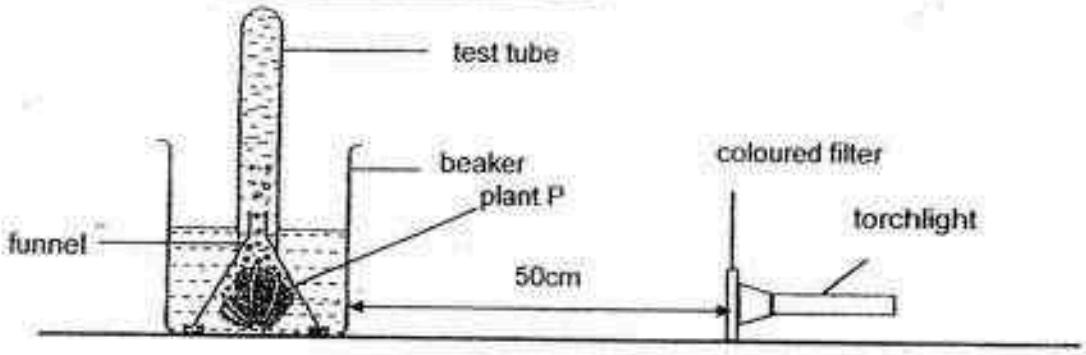
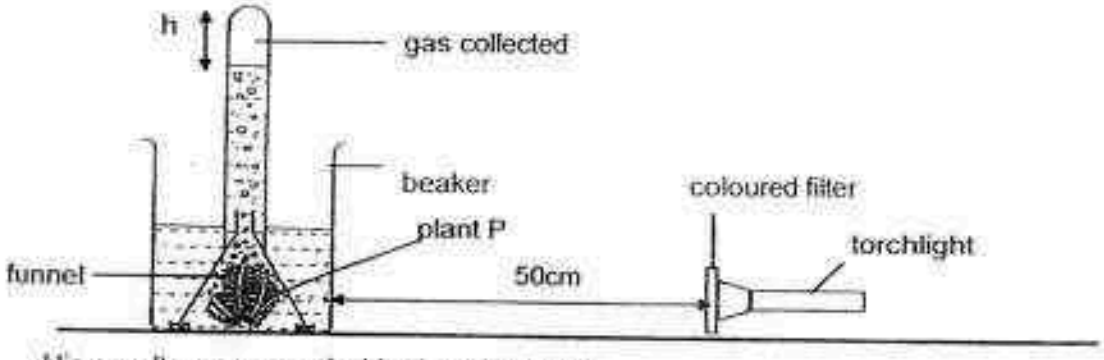
35 Joseph carried out an experiment as shown below in a dark room. He measured the amount of gas collected in the test tube after shining different colours of light at plant P for 3 hours each.

At the start of the experiment



After 3 hours



His results were recorded in the table below.

Colour of the light	Height of h (cm)
white	3
blue	7
green	2

Joseph has an aquarium containing some plants P and some fishes. He did not put an air pump in his aquarium.

Which colour of light (white, blue or green) should he use to shine on his aquarium in order to allow his fish to survive the longest period of time? Explain your answer. [2]

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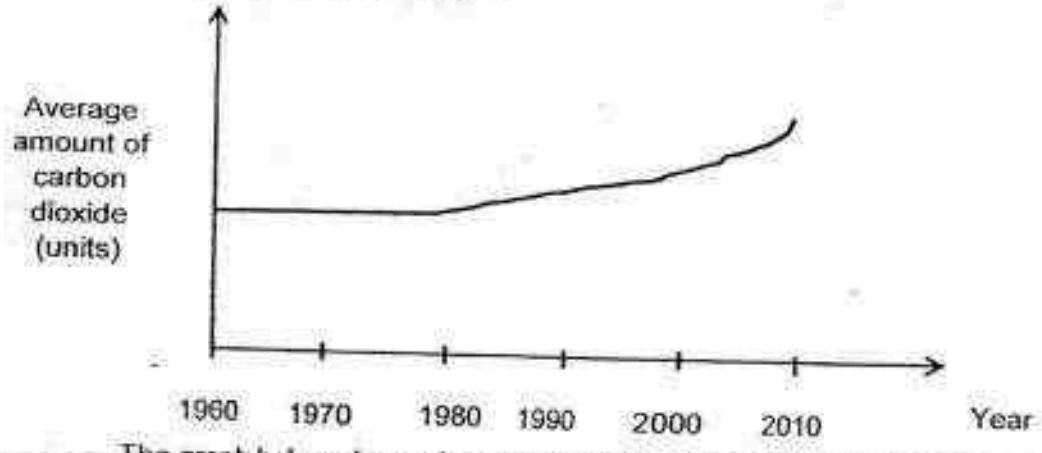
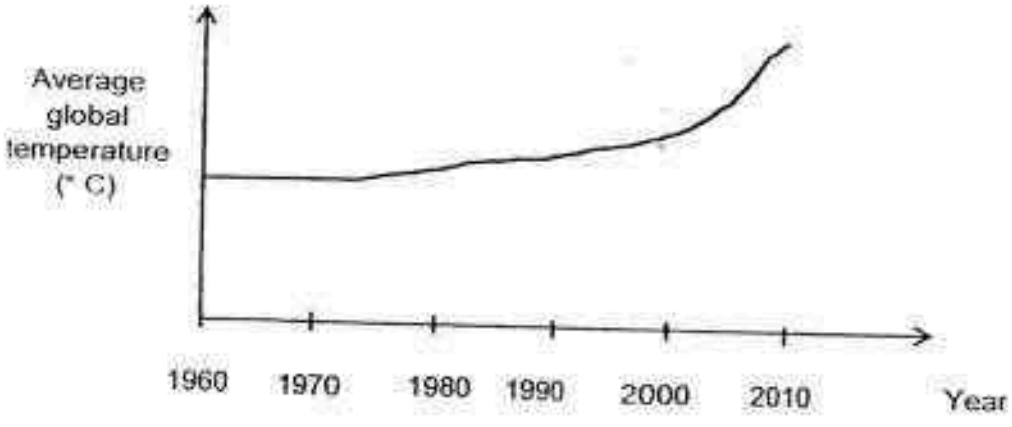
36 The graph below shows the average amount of carbon dioxide in the atmosphere from 1960 to 2010.



The graph below shows the average global temperature readings from 1960 to 2010.



(a) What is the relationship between the amount of carbon dioxide in the atmosphere and the average global temperature? [1]

(b) Explain how reforestation (extensive planting of trees) could reduce the average global temperature over time. [1]

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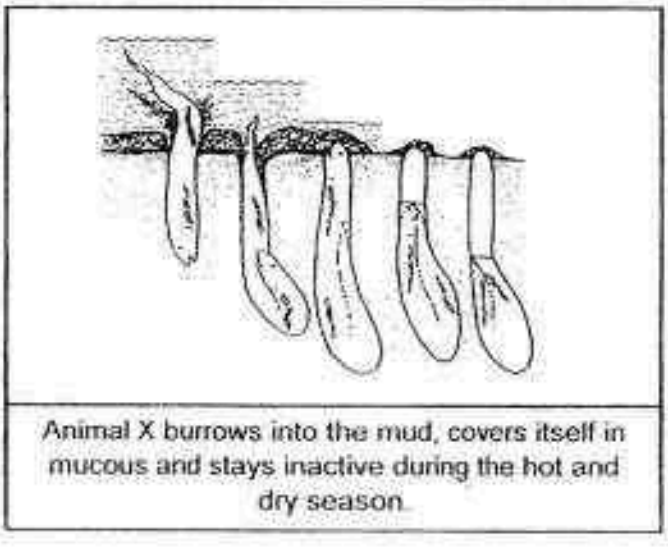
37 John studied about animal X. It lives in shallow streams. It breathes through lungs. It also has gills that cannot be used for breathing.



animal X

During the hot and dry season, animal X burrows into the mud at the bottom of dried up streams. It covers its entire body in a mucous 'cocoon' which traps moisture and lets in air slowly through an opening. As the animal goes into a deep sleep, its activity level slows down. It can stay inactive for as long as four years until the rainy season returns and restores its aquatic habitat.



Animal X burrows into the mud, covers itself in mucous and stays inactive during the hot and dry season.

(a) State two physical factors of the environment which affect the survival of animal X. [1]

(i) _____

(ii) _____

Question 37 continues on page 11

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(b) State how the following structural and behavioral adaptations help animal X. [2]

(i) Structural adaptation: streamlined body

How it helps: _____

_____

(ii) Behaviorial adaptation: covers body with mucous

How it helps: _____

_____

(c) Explain how the change in activity level of animal X during the hot and dry season affects its rate of breathing. [1]

_____

_____

_____

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38 A company was investigating on the effects of its products A, B and C on hair quality. Good quality hair should be able to absorb moisture and retain it, be elastic and strong.

After using the same amount of products A, B and C on different parts of a person's hair for one week, three of the following tests were carried out.

Test 1

1. Fill a glass or bowl with water at room temperature.
2. Take a few strands of clean hair and put them in the water.
3. Observe it for 2-4 minutes.

The results were recorded as shown below.

Product	A	B	C
Observation	Hair is slowly sinking	Hair is still floating after 4 minutes	Hair sinks immediately

(a) Which product A, B or C has improved the hair quality the most? Explain why. [1]

_____

_____

Test 2

Next, it wanted to investigate the efficiency of its products A, B and C on improving the elasticity of hair. A few strands of wet hair were selected on the head. The strands of hair were held securely, pulled and released.

(b) What result should be measured in Test 2? [1]

_____

Lastly, the company investigated on how strong the hair was after using the products for a week. The results of Test 3 were recorded as shown below.

Product	Average number of hair pulled out from the head
A	8
B	6
C	12

(c) Based on the table above, what must the company do to ensure that the investigation is fair? [1]

_____

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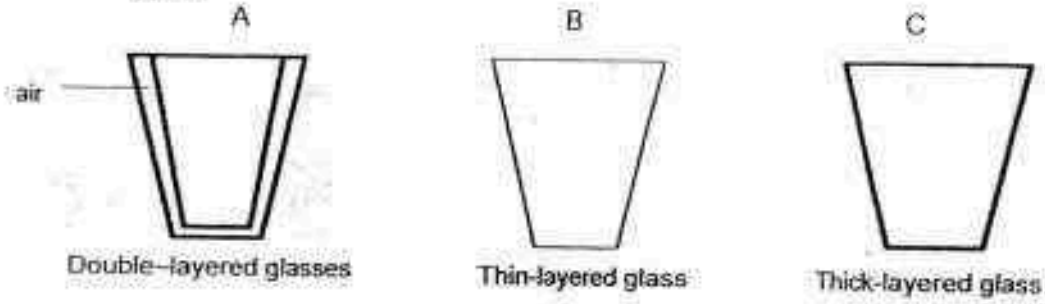
39 Ansel wanted to know which cup is the best to keep water hot for a long period. He used the cups as shown below. All the cups are made of the same glass.



He measured the temperature of water at the start of the experiment. After 20 minutes, he measured the temperature of water in each cup and recorded the results as shown below.

Cup	Temperature of water at the start of the experiment (^{0}C)	Temperature of water after 20 minutes(^{0}C)
☐	70	60
☐	70	54
☐	70	40

(a) Write A, B and C in the table above to match the cups with the respective results. [1]

(b) Ansel noticed that most houses have glass windows.
Which glass A, B or C is most suitable for the windows in a house during winter? Explain why. [2]

_____

_____

Ansel observed that the window of the house was made of a special glass. On a sunny day, the glass window became translucent as shown below.



(c) How does this change help to keep the house cooler on a sunny day? [1]

_____

_____

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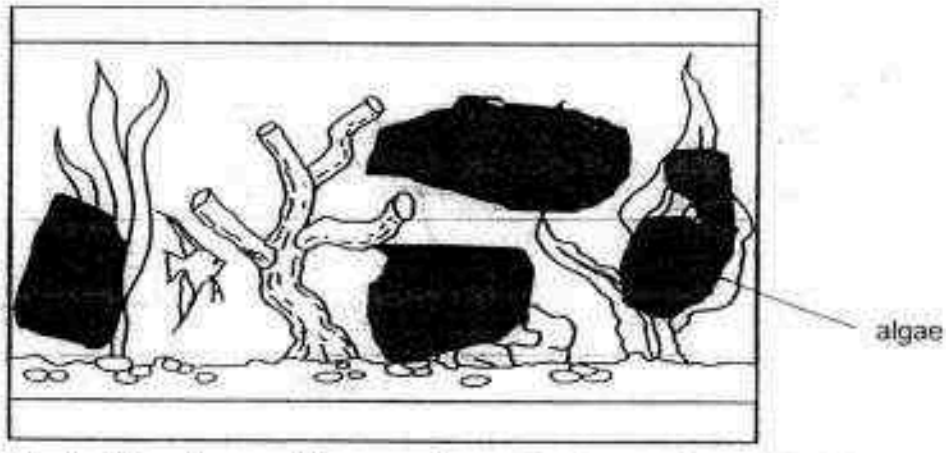
40 Alex has a fish tank as shown below.



Inside the tank, he observed algae growing on the inner surface of the fish tank. He wants to clean off the algae using two magnets only.

(a) Describe how the inner surface of the tank can be cleaned using two magnets. [2]

_____

_____

(b) State the property of the magnet that enables Alex to do as stated in (a). [1]

_____

_____

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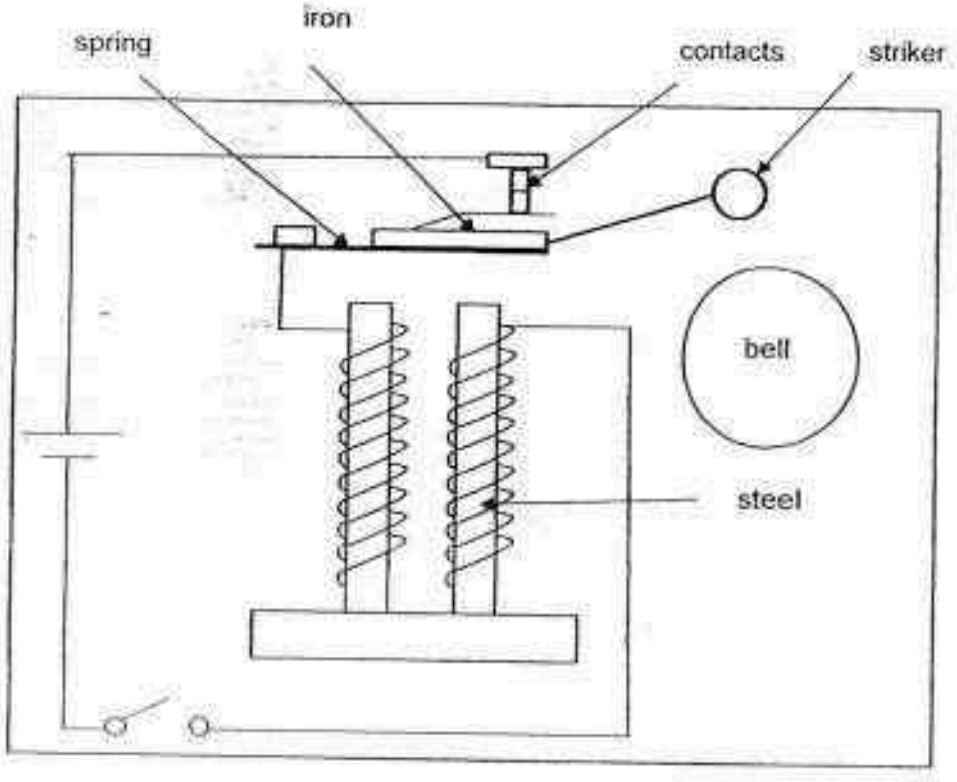
41 Study the diagram below.



(a) Describe how the circuit works for the striker to hit the bell once. [2]

(b) What is the advantage of using an electromagnet in the circuit above? [1]

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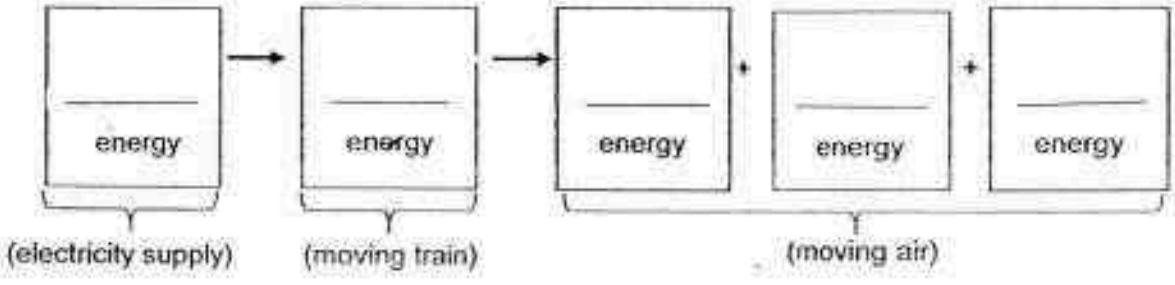
42 Bullet trains travel at a super-fast speed using electricity. A scientist investigated on the shape of the nose to prevent the train from slowing down.



The speed at which the air is pushed and the intensity of sound produced were measured as the train exited the tunnel.

Type of nose	Shape of the nose	Speed at which the air is pushed	Intensity of sound produced
1		High	High
2		Low	Low

(a) Complete the energy conversion as the train exited the tunnel. [1]



(b) Explain why the train uses more electrical energy when nose 1 was used [1]

Question 42 continues on page 17

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The nose 2 of the bullet train was designed based on the beak of the kingfisher.



(c) Based on the results above, explain how the kingfisher's beak enables it to dive into the water without a big splash. [1]

_____

_____

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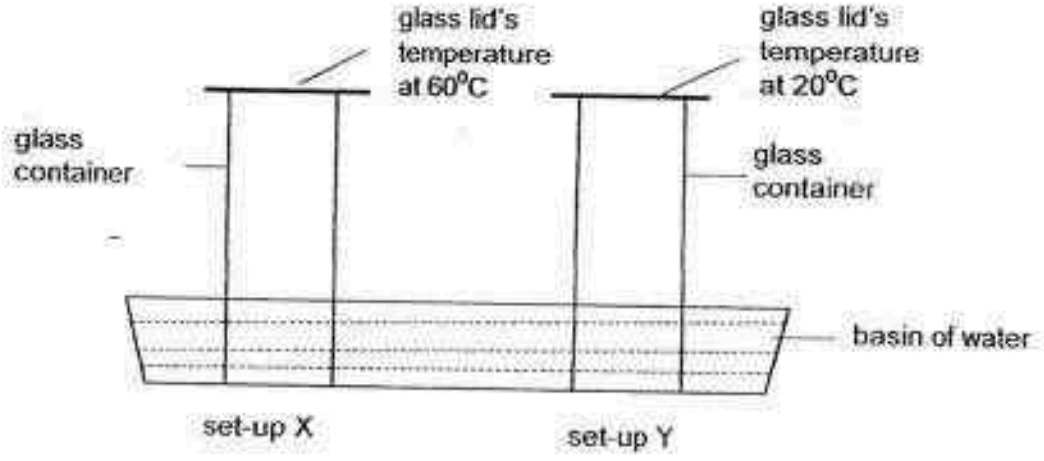
43 Siti prepared two set-ups X and Y as shown below. She placed two glass containers into a basin of water at a certain temperature. Then she placed the glass lids at different temperatures on each glass container.



After some time, she observed water droplets formed on the underside of the glass lids inside the glass containers in both set-ups.

There were more water droplets formed in set-up Y than in set-up X.

(a) Predict the temperature of the water in the basin at the start of the experiment. [1]

_____

(b) Why were both set-ups placed in the same basin of water? [1]

_____

_____

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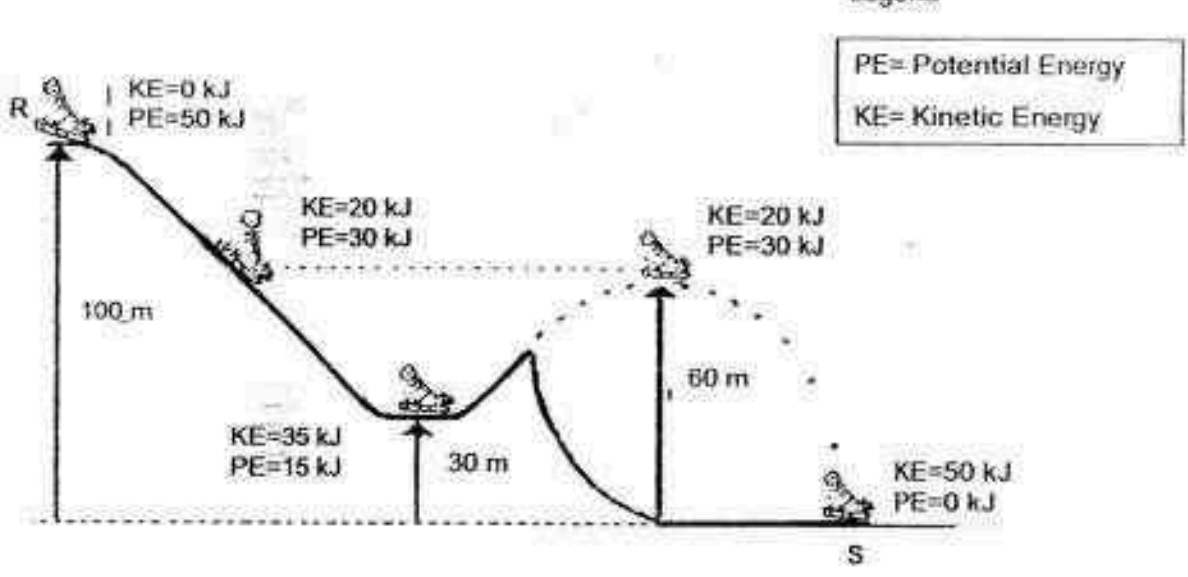
44 The amount of potential and kinetic energy were measured as Ahmad surfed down the slope from point R to S as shown below.



(a) State the relationship between the height of the slope and the amount of potential energy as Ahmad surfed down from point R and flew in the air to land at point S. [1]

_____

_____

(b) Based on the results above, what happened to the total amount energy as Ahmad surfed down the slope? Explain your answer. [1]

_____

_____

End of Booklet B

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YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**ROSYTH**
SUBJECT	:	**SCIENCE**
TERM	:	**PRELIMINARY EXAMINATION**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	3	2	2	4	1	2	2	2	3
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
1	4	3	3	4	3	3	1	2	3
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
3	3	1	3	2	2	3	4	2	4

Booklet B

Q31 More food made by the leaves above cut X, which cannot be transported downwards and was transported to the fruits above cut X.

Q32a Box R. Fungus appears in warm and damp places. Since Box R is warm and the shoe in Box R is damp, fungus will first appear in Box R.

Q32b It would allow the water vapour to escape, water to evaporate faster, thus keeping the ceiling dry and preventing growth of fungus.

Q33a As the temperature of the water increases, the length of the life cycle of the Aedes mosquito decreases.

Q33b May to August ✔

Q33c When there is more rainfall, there is more places for the mosquito to lay eggs/reproduce and become adults/to have mosquitoes.

Q34a (i) P is Carbon Dioxide
(ii) Q is Oxygen

Q34b The circulatory system transports blood to all parts of the body including the air sacs rich in oxygen and to some parts with carbon dioxide. The respiratory system performs gaseous exchange with carbon dioxide from the blood passing through the walls of blood vessels and into the surrounding. The oxygen will be taken in and will pass through the walls of the vessels and into the blood. The blood circulates it to all parts of the body.

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Q35 Blue. When blue light was shone at the beaker, the most amount of photosynthesis took place causing the most amount of oxygen to be collected. In order for the fish to breathe, it needs dissolved oxygen produced by water plants but for it to survive the longest period of time, blue light must be shone for the fish to take in more dissolved oxygen.

Q35b The webbed feet increases the surface area in contact with water so the turtle can push a larger amount of water to propel it forward.

Q35c The slimy substance acts as a lubricant and reduces friction between the snail's body and the ground so it is easier to move on the ground.

Q36a As the amount of carbon dioxide increases, the average global temperature increases.

Q36b When trees are planted again, it will photosynthesis and produce oxygen to the surroundings and take in carbon dioxide from the surroundings reducing the amount of carbon dioxide in the surroundings. When the amount of carbon dioxide decreases, it will trap lesser heat reducing the average global temperature over time.

Q37a (i) Temperature of surroundings
(ii) Amount of water in its habited

Q37b (i) H reduces friction between the body and the water causing it to overcome lesser water resistance helping it to move faster.
(ii) It traps moisture to keep it moist to reduce heat gain.

Q37c As the activity level of Animal K decreases during the hot and dry season, the lesser oxygen is taken in.

Q38a C. Good quality hair must be able to absorb moisture and retain it. C absorbs the most water and causes it to sink immediately due to its heavy weight.

Q38b How much hair is stretched.

Q38c Ensure that the amount of hair is the same.
Ensures that the amount of force is the same.

Q39a Cup: A
C
B

Q39b Glass C. It is not feasible for homes to have double-layered glass windows. Since the thick-layered glass is proven to be able to reduce heat loss compared to the thin-layered glass, glass C is the most suitable.

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Q39c When the glass window becomes translucent, it reflects heat and light away, preventing heat gain into the house, which keeps the house cooler.

Q40a He could place one magnet on the outer surface of the fish tank and the other one on the inner surface. He could glide the magnet on the outside surface of the glass tank.. The magnet inside will also act accordingly. If we move the magnet upwards, the one inside will move together with the algae. Through this process, we can clean off the algae.

Q40b Magnetism can pass through non-magnetic materials.

Q41a When the switch is closed, electricity passes through the circuit magnetising the steel. The steel will become an electromagnet attracting the iron on the spring. The striker attached to it will move down at the same time hitting the bell. We must open the switch, so the striker will only hit the bell once.

Q41b Once the switch is open, the electromagnet will not be able to attract the iron and the striker will not ring the bell.

Q42a Electrical → Kinetic → Kinetic + Heat + Sound

Q42b The shape of nose 1 is less steamlined causing it to overcome more air resistance so more electrical energy is used.

Q42c The sharp beak enables it to dive with a very small amount of pressure as it's surface area is small and sharp, allowing it to overcome air and water resistance.

Q43a 70°C

Q43b To ensure that it is a fair test because the temperature of water would be the same. The results will also be reliable and consistent.

Q44a As the height of the slope decreased, Ahmad possessed lesser potential energy and when it increased as he flew in the air, the potential energy he possessed was more and when he landed at points, he possessed the least potential energy.

Q44b It remained the same. Energy conversion was taking place but he did not lose it which is called energy efficiency. There was conversion taking place between kinetic and potential energy.

End

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22

Name: _____( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Preliminary Examinations – 2016
SCIENCE

BOOKLET A

25 August 2016

Total Time for Booklets A and B: 1 hour 45 minutes

30 questions
60 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 22 printed pages.

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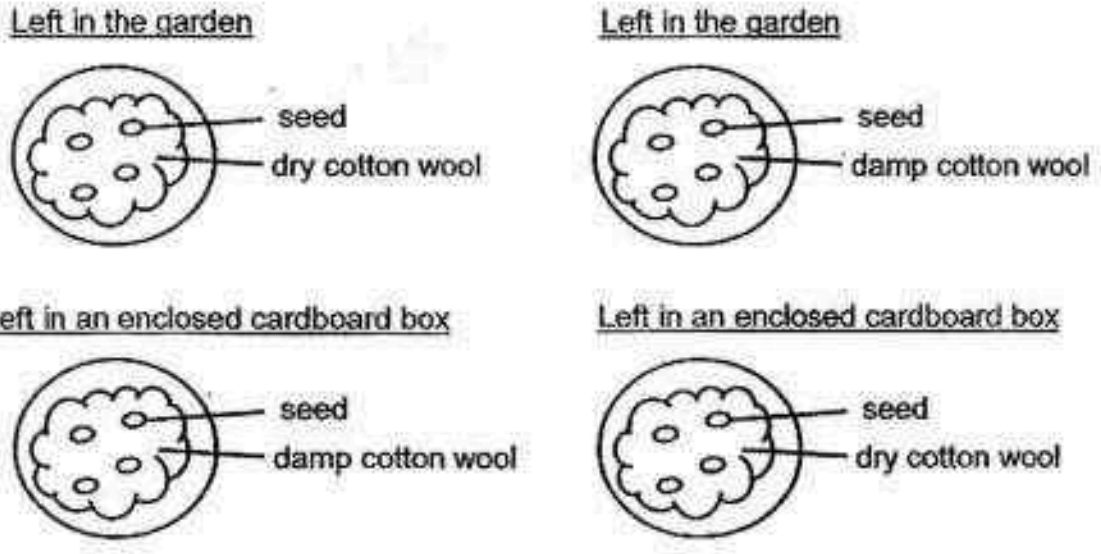
Section A (30 x 2 marks = 60 marks)
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

1. Tom set up an experiment as shown in the diagram below.



At the end of the experiment, it was observed that the seeds grew into seedlings in some of the set-ups but not in others.

From this experiment, Tom was trying to find out if _____.

(1) seeds need light to germinate
(2) seedlings need light for photosynthesis
(3) seedlings need water and light to germinate
(4) seeds need water and light to grow into seedlings

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2. Which of the following activities will contribute to global warming?

A Using wind turbine to obtain electricity
B Burning of crops to clear land for farming
C Turning off the lights when they are not in use
D Having more cars and motorcycles on the roads

(1) A and C only
(2) A and D only
(3) B and D only
(4) A, B and C only

3. The list below shows some adaptations of penguins.

A They huddle together for warmth.
B In summer, they stand on their heels to further reduce heat loss.
C Their streamlined bodies allow them to swim rapidly through water
D Their black backs and white bellies camouflage the penguin from predators when it is in the water.

Which of the above are behavioural adaptations?

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

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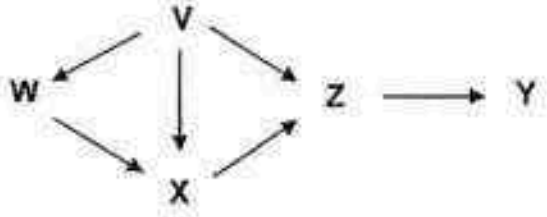
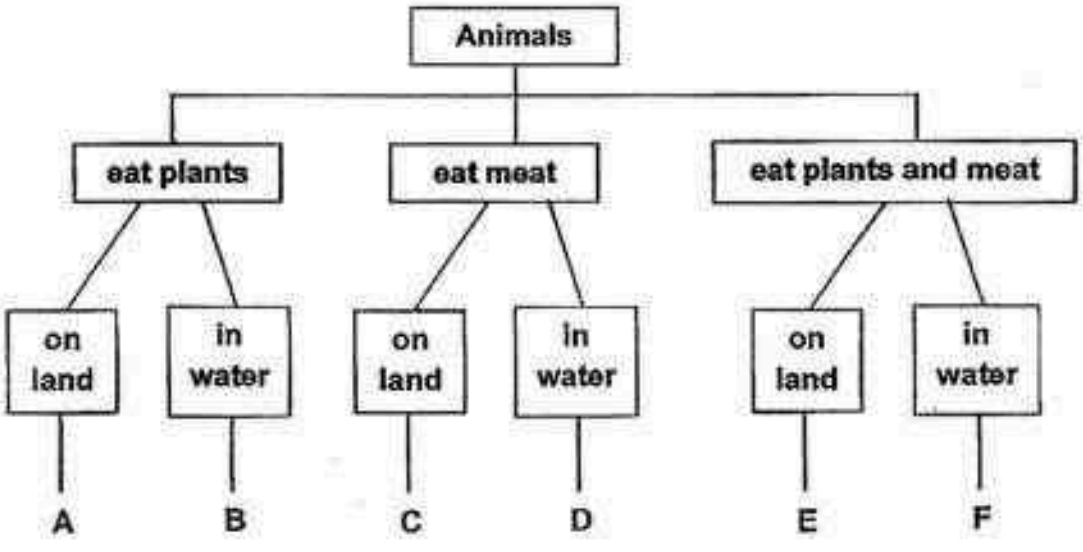
4. The diagrams below show a food web and the feet structures of two animals.



Feet structure of animal X	Feet structure of animal Y
	

Study the classification chart below.



Which of the following shows how animals, X and Y, should be classified?

	Animal X	Animal Y
(1)	B	C
(2)	E	A
(3)	F	C
(4)	D	E

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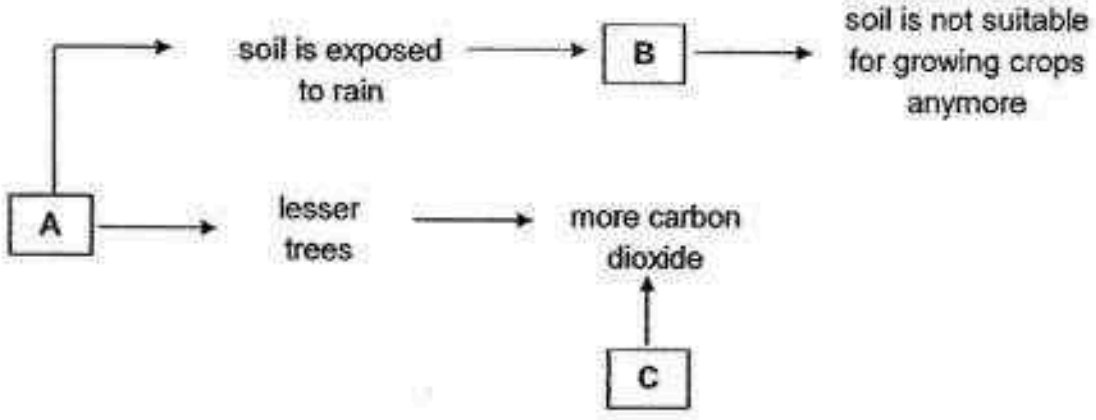
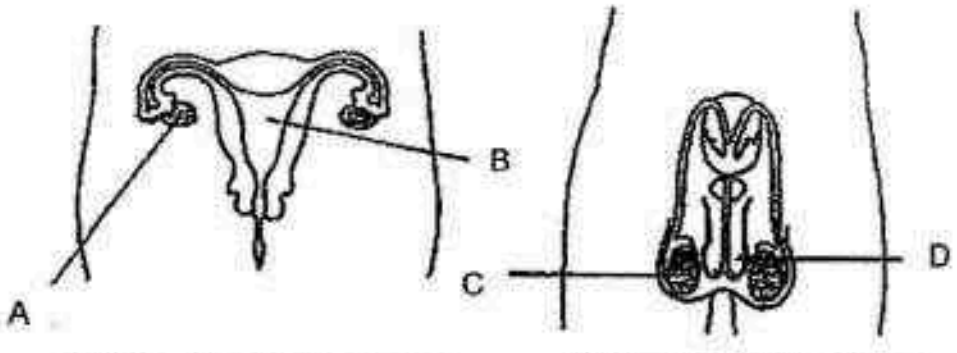
5. The diagram below shows Man's activities which affect the environment.



Which one of the following is correctly represented by A, B and C?

	A	B	C
(1)	burning of fossil fuels	global warming	deforestation
(2)	soil erosion	burning of fossil fuels	deforestation
(3)	global warming	deforestation	soil erosion
(4)	deforestation	soil erosion	burning of fossil fuels

6. The diagram below shows the female and male reproductive systems.



Female reproductive system Male reproductive system

Which of the parts, A, B, C or D, will produce the cells that are necessary for human reproduction to take place?

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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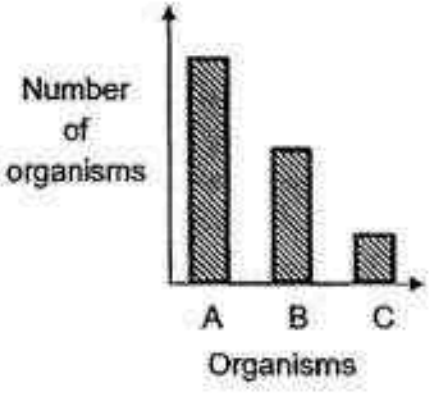
7. The characteristics of three organisms, A, B and C, are presented in the table below. A tick (✓) represents the presence of the characteristic.

	Organisms		
Characteristics	**A**	**B**	**C**
Preys on other animals		✓	
Moves around freely		✓	✓
Produces food	✓		

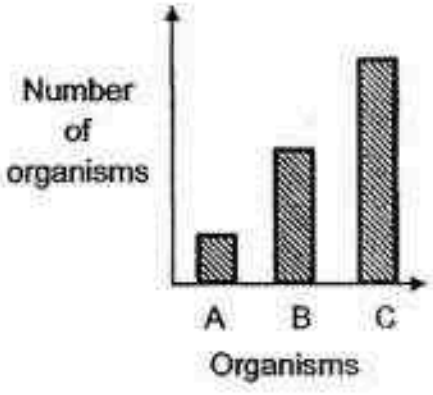
The graphs below show the number of organisms, A, B and C, present in a community.

Which one of the graphs correctly represents organisms, A, B and C?

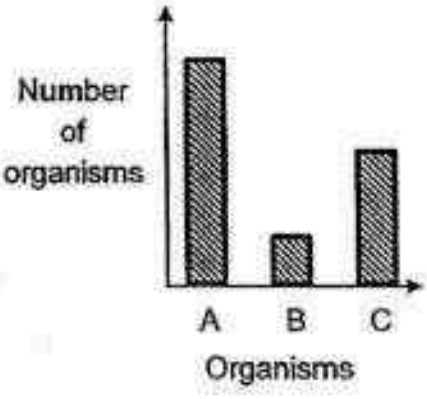
(1)



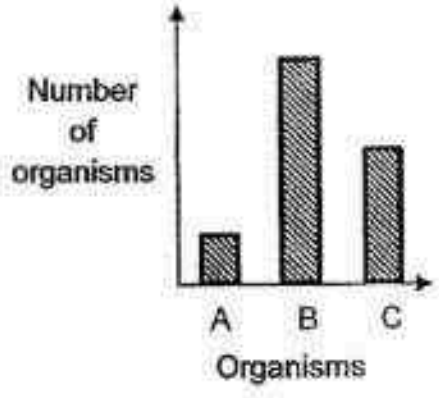
(2)



(3)



(4)



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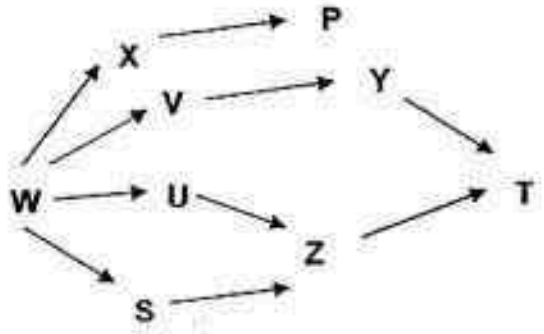
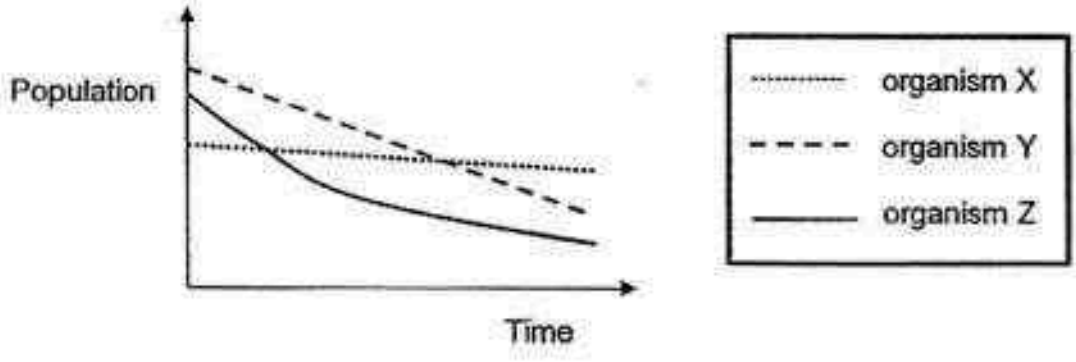
8. Study the food web below.



The graph below shows the population of organisms, X, Y and Z over a 2-month period.



Based on the graphs, which one of the following is the most possible cause for the change in the population of organisms, X, Y and Z?

A A decrease in the population of W
B An increase in the population of T
C A decrease in the population of P
D An increase in the population of V

(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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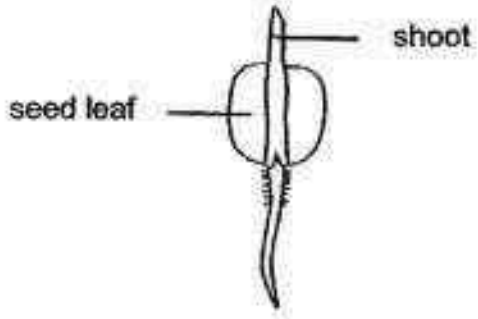
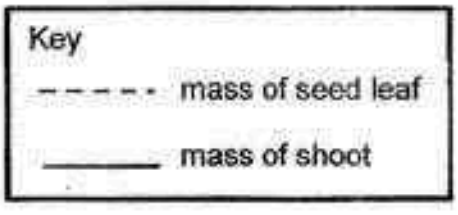
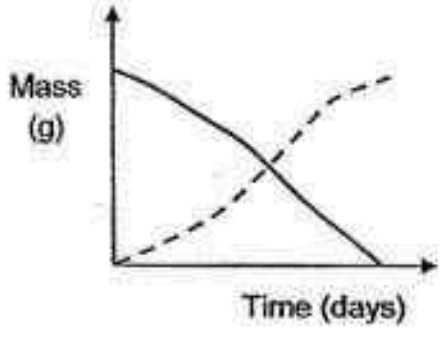
9. Mary carried out an experiment on a seed growing into a seedling as shown below.



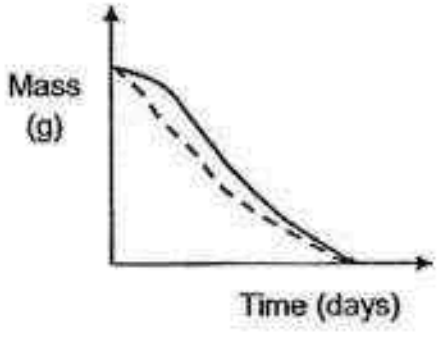
Which one of the following graphs shows the changes in the mass of the shoot and the mass of the seed leaf during the experiment?



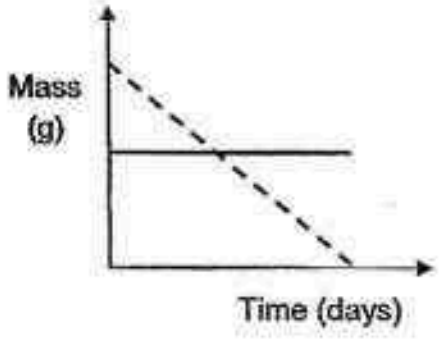
(1)



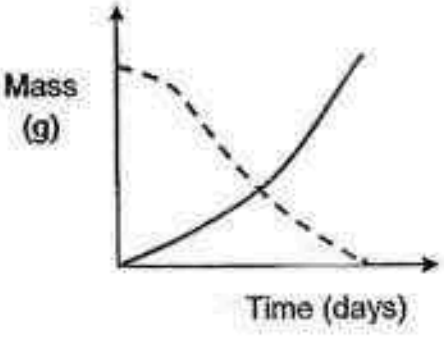
(2)



(3)



(4)



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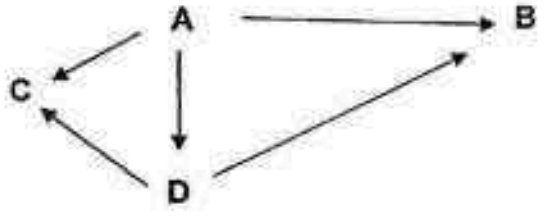
10. Cheryl made some statements about decomposers as shown below.

A Fungi and centipedes are decomposers.
B Decomposers feed on dead plants only.
C Carbon dioxide is given out during decomposition.
D Decomposers break down dead matter into simpler substances.

Which of the statements about decomposers are correct?

(1) A and B only
(2) B and D only
(3) C and D only
(4) A, C and D only

11. The diagram below represents a food web.



Which one of the following organisms will benefit directly if the level of carbon dioxide in the surroundings increases?

(1) A
(2) B
(3) C
(4) D

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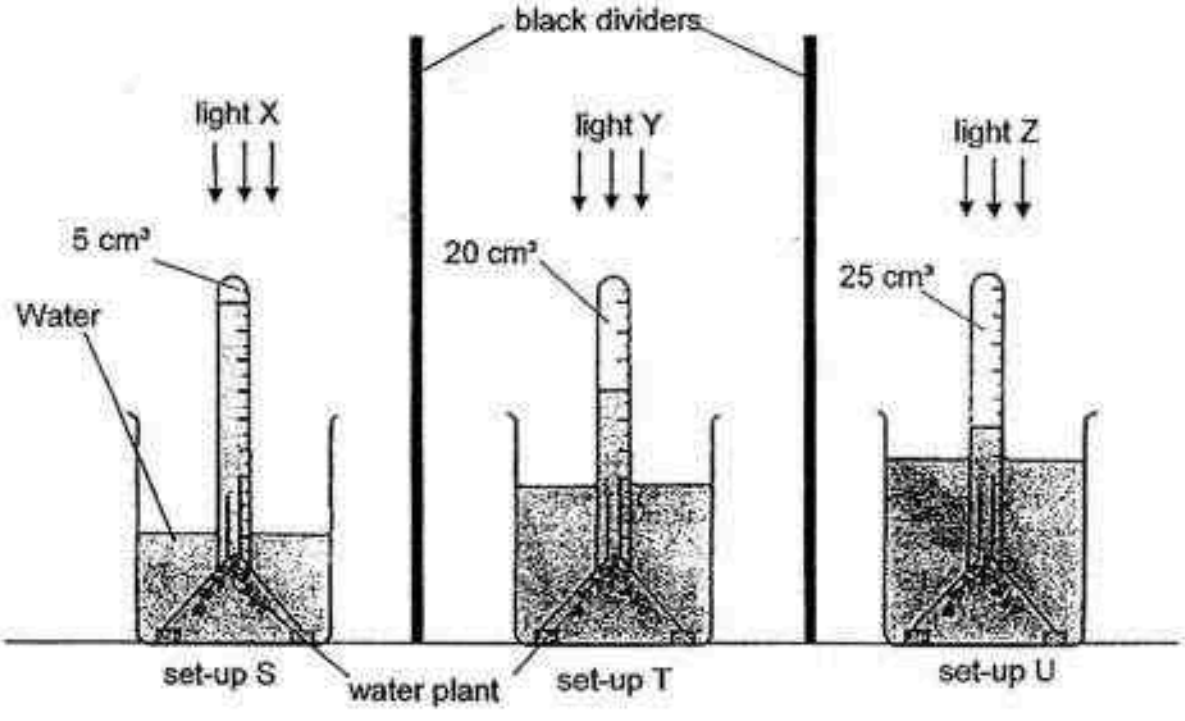
12. Sam wanted to find out if different coloured lights affect the amount of oxygen produced by the plant during photosynthesis. He used three similar water plants and the same volume of water to conduct his experiment. After a period of time, the results were shown in the diagrams below.



Based on the results above, which of the conclusions given below are most likely correct?

A The water plant produces less oxygen in light Z than in light X.
B The water plant produces more oxygen in light Y than in light X.
C The amount of carbon dioxide in the water is the least in set-up S.
D The amount of oxygen produced by the water plant is affected by the colour of the light.

(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

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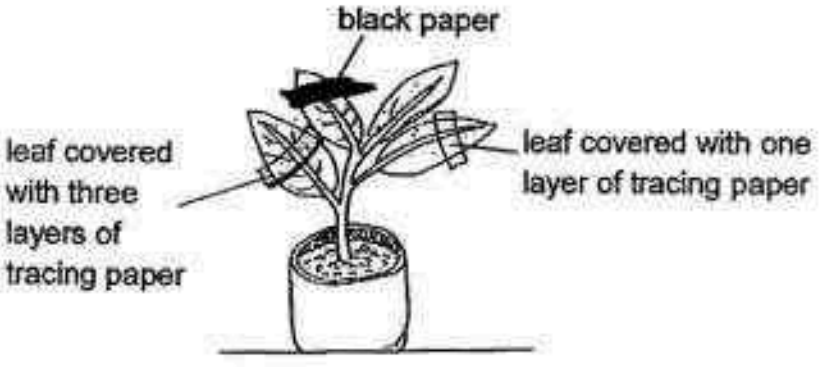
13. Study the set-up below. Two leaves are covered with different layers of tracing paper of the same size and one of the leaf is covered with a strip of black paper. The whole plant is placed under a light source for 8 hours.



Which one is **not** a possible aim of the above experiment?

(1) To find out if light is necessary for photosynthesis.
(2) To find out if the amount of light would affect the rate of photosynthesis.
(3) To find out if the thickness of the tracing papers affect the rate of photosynthesis.
(4) To find out if the presence of carbon dioxide would affect the rate of photosynthesis.

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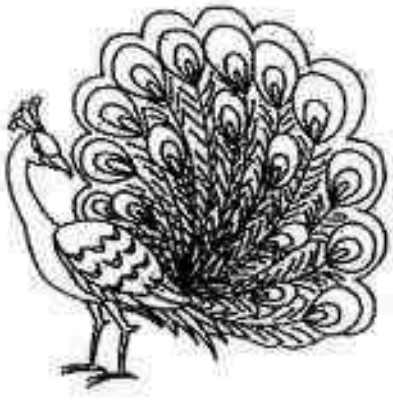
14. The picture below shows a peacock.



Which one of the following adaptations of the peacock is stated **incorrectly**?

	Adaptation	Explanation
(1)	Structural	The peacock has talons to grab onto things.
(2)	Structural	The peacock has a beak to eat seeds and fruits.
(3)	Behavioural	The peacock has beautiful tail feathers to attract a peahen.
(4)	Behavioural	The peacock spreads out its beautiful tail feathers to attract a peahen.

15. Mrs Raju wanted to find out how temperature affects the rate of evaporation of water.

Set-up	Volume of water (ml)	Exposed surface area of water (cm^3)	Temperature of water (°C)	Wind Speed (km/h)
A	120	60	70	10
B	120	45	40	15
C	120	60	40	10
D	120	45	70	20
E	120	60	25	10
F	120	45	25	20

Which three set-ups can she use to conduct a fair test?

(1) A, B and E
(2) A, C and E
(3) B, D and F
(4) C, D and F

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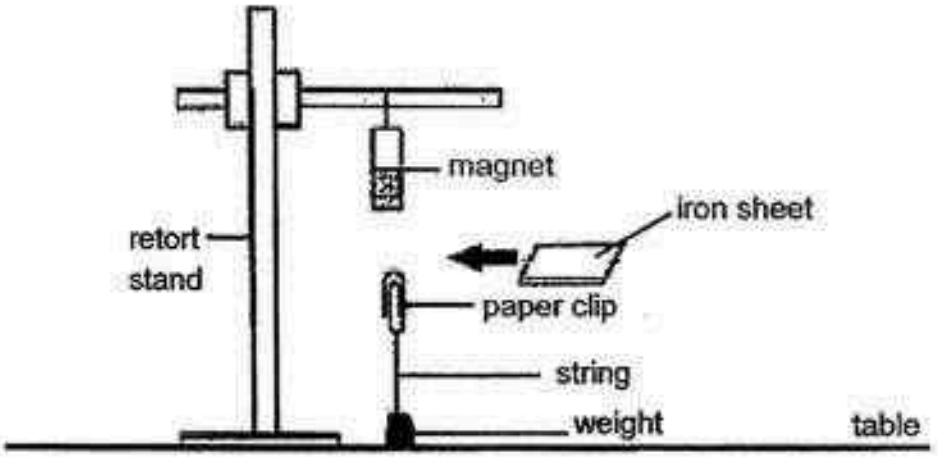
16. Razoo mixed three powders, X, Y and Z, together in a container. These powders cannot be dissolved in water. The other properties of the three powders are given in the table below.

Powder	Property A	Property B	Property C
	Is it magnetic?	Does it sink in water?	Is it a good conductor of heat?
X	No	No	No
Y	No	Yes	Yes
Z	Yes	No	Yes

Which one of the following allow him to separate the three powders quickly?

(1) A only
(2) B only
(3) A and B only
(4) A and C only

17. Study the set-up shown below.



What will happen to the paper clip if an iron sheet is placed between the magnet and the paper clip?

(1) The paper clip will remain suspended as magnetism can pass through the iron sheet.
(2) The paper clip will remain suspended as the magnetic force is strong and is able to overcome the pull of gravity.
(3) The paper clip will drop to the table as the magnetic force is weak and is not able to overcome the pull of gravity.
(4) The paper clip will drop to the table as magnetism cannot pass through the iron sheet.

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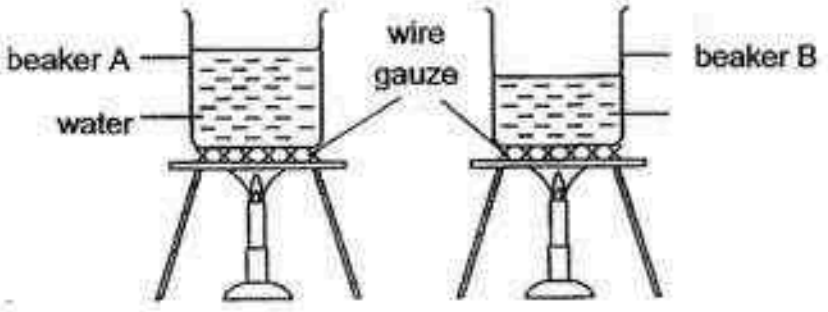
18. In the experiment below, two beakers containing different volumes of water at room temperature were heated until the water in both beakers reached 50°C.



Which of the following statement(s) is/are correct?

A The water in Beaker A has more heat energy than in Beaker B.
B The water in Beaker B took a shorter time to be heated to 50°C.
C The water in Beaker A had gained heat faster than the water in Beaker B.
D The water in Beaker A and Beaker B have the same amount of heat energy.

(1) B only
(2) A and B only
(3) C and D only
(4) A, C and D only

19. Which of the following items possess chemical potential energy?

A sugar
B battery
C cooking oil
D a compressed spring

(1) A and B only
(2) C and D only
(3) A, B and C only
(4) A, B, C and D

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20 The table below shows the state of four substances, W, X, Y and Z, at different temperatures.

	State of substance at _____.		
Substance	**10°C**	**50°C**	**190°C**
W	Solid	Solid	Solid
X	Solid	Liquid	Liquid
Y	Solid	Solid	Liquid
Z	Liquid	Liquid	Liquid

Based on the information above, which one of the following statements is correct?

(1) The boiling point of X is 10°C.
(2) The freezing point of Y is 50°C.
(3) Substance W has the lowest boiling point.
(4) Substance Z has the lowest freezing point.

21 Jack threw a ball from A to B as shown below.



Which one of the following statements is **not** correct?

(1) The mass of the ball remained the same.
(2) The force exerted by Jack moved the ball.
(3) The potential energy of the ball increased from A to B.
(4) The gravitational force acting on the ball increased from A to B.

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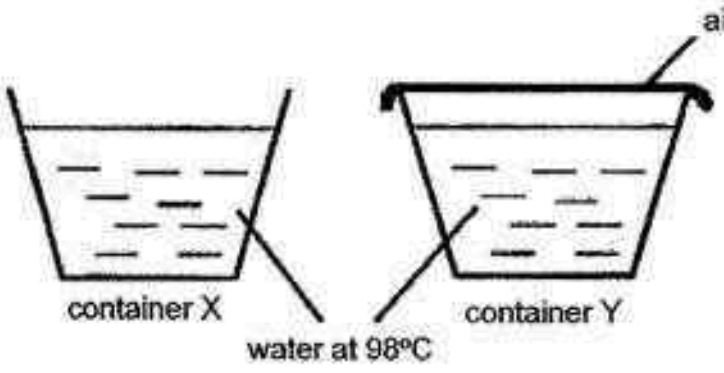
22. Two identical containers, X and Y, were filled with an equal amount of hot water. Container Y was covered with an air-tight lid as shown in the diagram below.



Which of the following statements is/are true?

A Evaporation will take place in both containers.
B Evaporation will take place in container X but not in container Y.
C The temperature of the water in container Y will remain constant.
D The temperature of the water in both containers will drop after some time.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

23. The diagram below shows a solar-powered calculator without an attached battery.



Which of the following shows the energy conversion when the calculator is turned on?

(1) Heat energy → light energy → kinetic energy
(2) Light energy → electrical energy → light energy
(3) Light energy → electrical energy → kinetic energy
(4) Chemical potential energy → electrical energy → light energy

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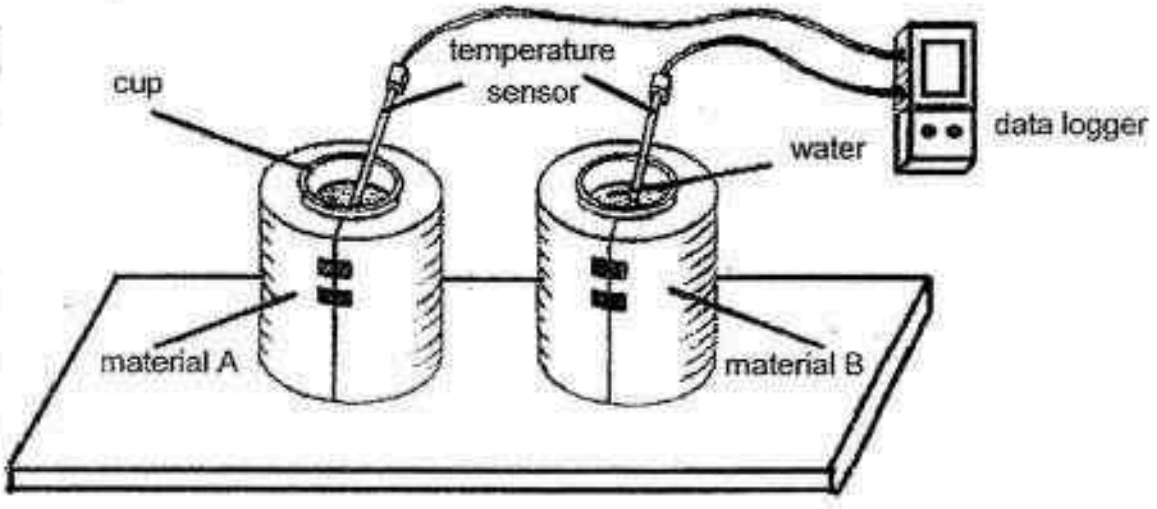
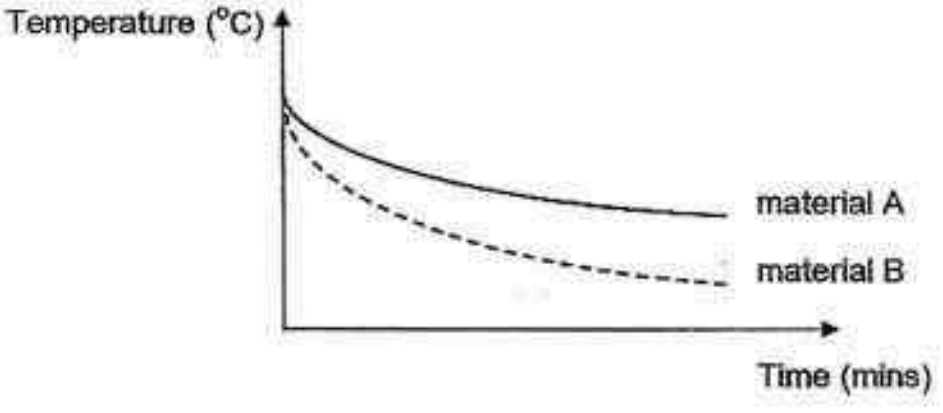
24. Aisha conducted an investigation to find out which material, A or B, is a poorer conductor of heat. She wrapped two identical cups, filled with the same amount of water of the same temperature, with the two materials as shown below.



She used temperature sensors to measure the temperature of the water over a period of time. The graph below shows the result of her experiment.



Based on the graph above, which of the following is correct?

	To keep hot tea warm for a longer period of time	To keep ice water cool for a longer period of time
(1)	Material A	Material B
(2)	Material B	Material A
(3)	Material A	Material A
(4)	Material B	Material B

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25. Charlie carried out an experiment with a torch, a tennis ball and a screen as shown below.



He wrote down what he did below:

Step:

I. Switch on the torch.

II. Measure the height of the shadow of the tennis ball formed on the screen.

III. Move the tennis ball 5 cm closer to the torch.

IV. Measure the height of the shadow again.

V. Repeat steps (III) and (IV) twice, moving the tennis ball 5 cm closer to the torch each time.

Which one of the following is the correct **hypothesis** for his experiment?

(1) The size of the torch will affect the shape of the shadow.
(2) The colour of the tennis ball will affect the sharpness of the shadow.
(3) The distance between the torch and the tennis ball will affect the height of the shadow.
(4) The distance between the tennis ball and the screen will affect the shape of the shadow.

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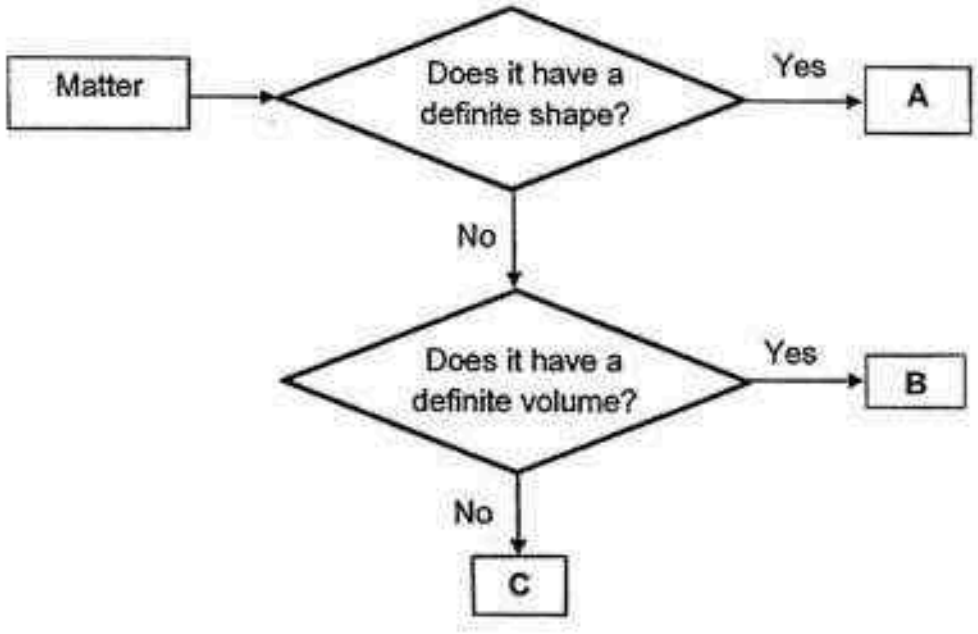
26. The table below gives some information about objects, P and Q, and their characteristics. A tick (√) represents the presence of the characteristic.

Characteristic	Object	
	P	Q
Occupies space	√	√
Can be compressed		√
Takes the shape of the container it is in	√	√

Objects, P and Q, can be represented by letters, A, B or C, in the flowchart shown below.



Based on the flowchart above, which letters, A, B or C, represent Objects P and Q respectively?

	Object P	Object Q
(1)	A	B
(2)	C	A
(3)	B	C
(4)	C	B

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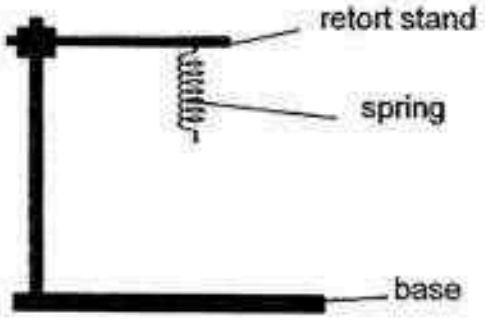
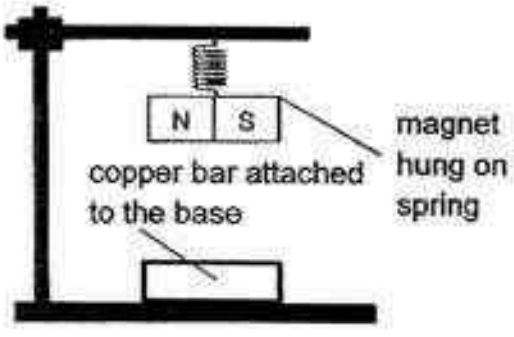
27. The diagram below shows the original length of a spring hung on a retort stand.

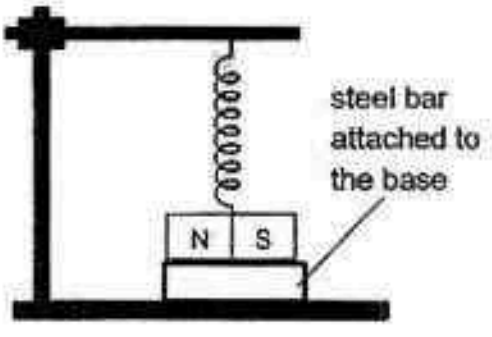


Which one of the following shows a correct observation?

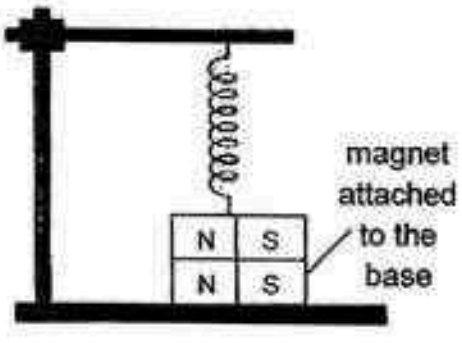
(1)



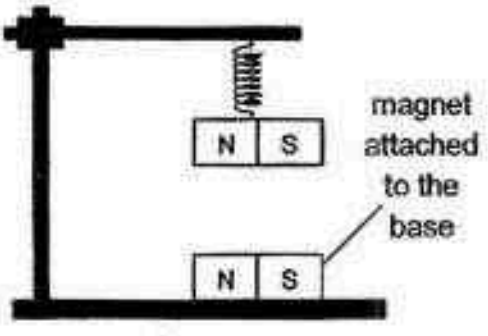
(2)



(3)



(4)



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28. Diagram 1 below shows light shining on three shapes, A, B and C, made of cardboard. The shapes are of different sizes and they are placed at different distances from the torch. Diagram 2 shows the shadow of the shapes on the screen.

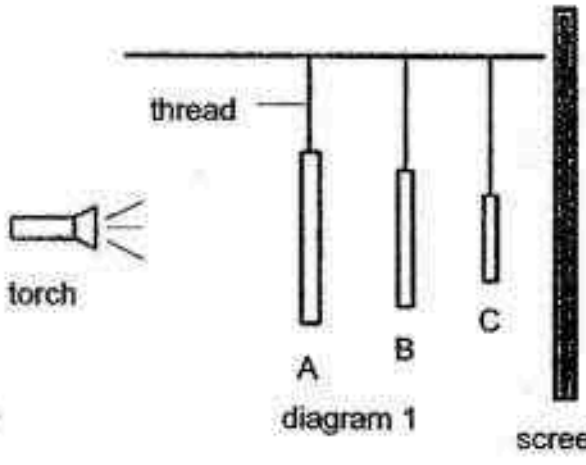


diagram 1

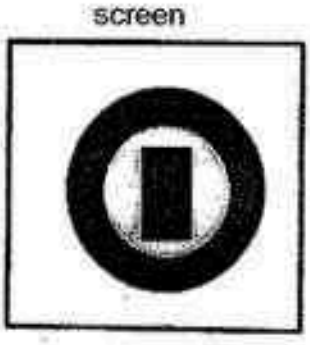
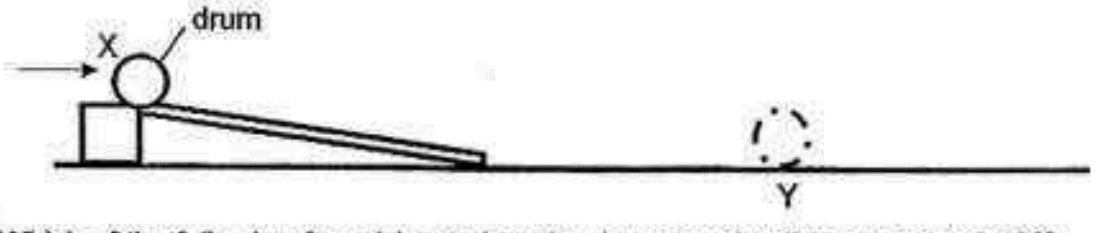


diagram 2

Which one of the following represents correctly shapes, A, B and C, respectively?

	A	B	C
(1)	circle	ring	rectangle
(2)	circle	rectangle	ring
(3)	ring	circle	rectangle
(4)	ring	rectangle	circle

29. A man wanted to move a drum down a ramp. He gave a push to the drum at point X and the drum rolled to point Y and stopped.



Which of the following force(s) acted on the drum causing it to stop at point Y?

A kinetic force
B frictional force
C magnetic force
D gravitational force

(1) B only
(2) A and C only
(3) B and D only
(4) A, B and D only

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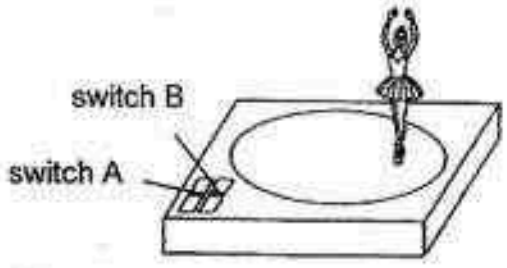
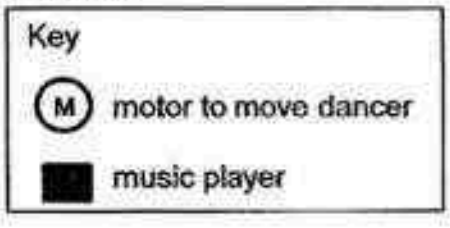
30. Alysia has a toy that works on batteries as shown in the diagram below.



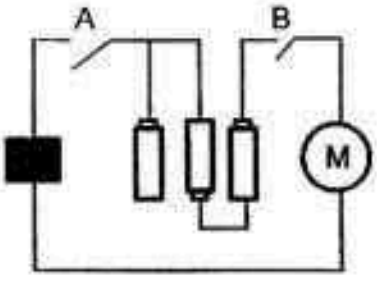
Her observations are shown below.

Switched on	Observation
Both A and B	Dancer moved in circles. There was music.
A only	Dancer did not move. There was music.
B only	Dancer moved in circles. There was no music.

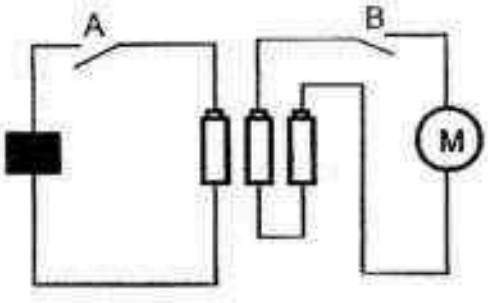
Which one of the circuits below is a possible circuit of the toy?



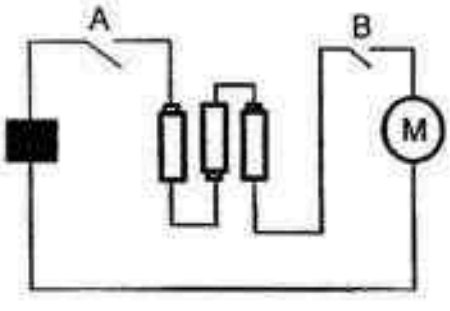
(1)



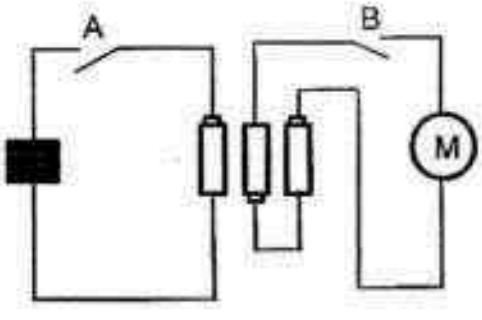
(2)



(3)



(4)



~~End of Booklet A~~

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Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Preliminary Examinations – 2016
SCIENCE

BOOKLET B

25 August 2016

Booklet A	60
Booklet B	40
Total	100

Total Time for Booklets A and B: 1 hour 45 minutes

14 questions
40 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This paper consists of 15 printed pages.

_____

Parent's Signature/Date

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Section B (40 marks)
For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in the brackets at the end of each question or part question.

31. Organisms, H, J, K and L, belong to the same community. The table below shows what organisms, J, K and L, feed on.

Organisms	Food
J	H, K
K	H
L	J, K

(a) Based on the information above, which organism is most likely to be the food producer? [1]

(b) Write down one possible food chain with three organisms found in this community. [1]

(c) Write down one possible food chain with four organisms found in this community. [1]

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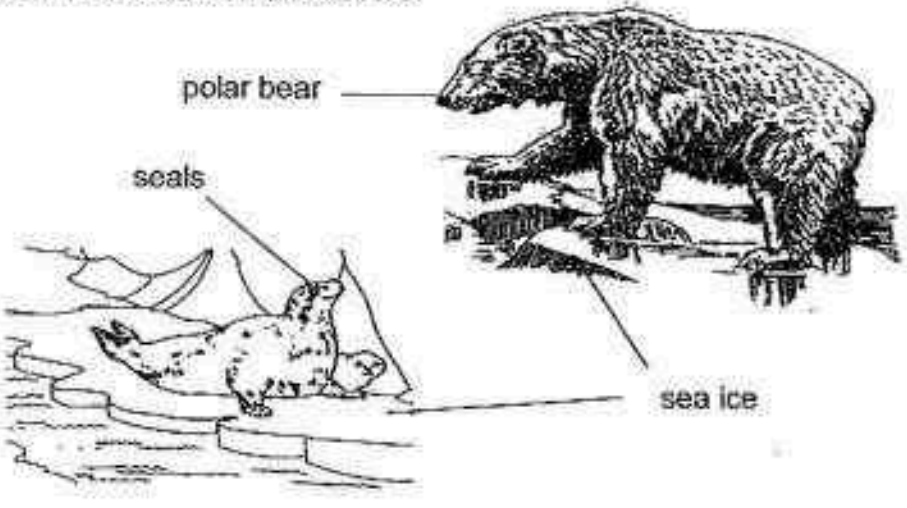
32. The picture below shows a polar bear on the sea ice.



(a) Explain how global warming affects the sea ice. [1]

Polar bears hunt for seals on the sea ice.



(b) Explain how global warming makes it more difficult for polar bears to hunt for seals on the sea ice. [1]

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33. Jackrabbits are well adapted to the conditions of the desert grasslands. Desert grasslands can be very hot in summer and very cold in winter. In hot weather, the jackrabbit's ears stand straight up while in cold weather, the ears lie back close to the body as shown in the pictures below.



In cold weather



In hot weather

(a) How does this adaptation help the Jackrabbit to survive the hot and cold weather? [2]

In cold weather: _____

_____

_____

In hot weather: _____

_____

_____

(b) The soles of a jackrabbit's front and hind feet are covered with a layer of fur. How does this extra fur on its soles help the jackrabbit cope with the hot desert sands? [1]

_____

_____

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34. Aminah put an equal number of bean seeds in two beakers, A and B. She placed beaker A in sunlight and beaker B in the dark. She watered them daily and recorded the height and observations of the seedlings every two days as shown.

Day	Beaker A (In the light)		Beaker B (in the dark)	
	Average height (mm)	Observations	Average height (mm)	Observations
2	4	First leaves appeared	4	First leaves appeared
4	10	Green healthy leaves	15	Pale green leaves
6	20	Straight stems and green leaves	31	Long thin stems and yellowish leaves
8	31	Straight stems, green leaves started to open.	50	Thin stems started to droop. Yellow leaves.
10	42	Very straight stems. Green leaves opened.	60	Straggly thin stems. Yellow closed leaves.
12	55	Straight strong stems and large green leaves.	65	Few seedlings left and all with small yellow leaves.

(a) From the information given above, state two differences between the plants growing in the light and those growing in the dark in the first eight days. [2]

(i) _____

_____

(ii) _____

_____

(b) Based on the results of the average height of plants in beakers A and B, what conclusion can you make? [1]

_____ _____

_____

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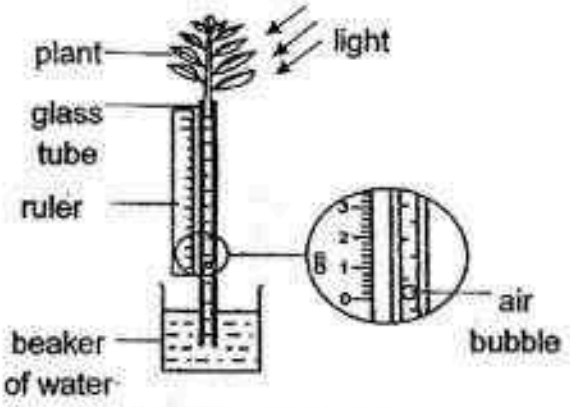
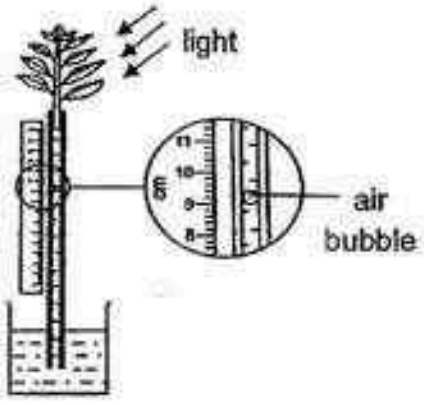
35. Paul used the set-up below to measure the distance moved by an air bubble when water is taken in by a plant.



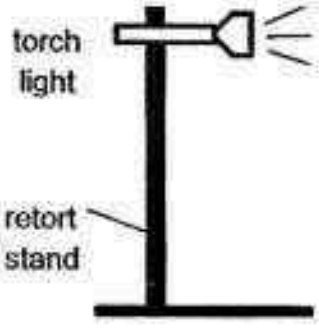
Start of experiment

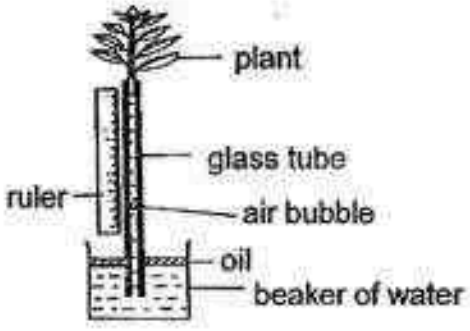


End of experiment

(a) Explain why the air bubble moved upwards at the end of the experiment. [1]

Paul used another set-up below to study how the amount of light would affect the distance moved by the air bubble.





(b) What is the purpose of adding oil to the beaker of water in his set-up? [1]

(c) Paul needs another set-up to compare his result. List the variable that he should change in the second set-up to ensure a fair test. [1]

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36. The article below was published in the newspapers in 2014.

Mass fish deaths overnight hit Changi farmers hard



Share

February 13, 2014, 6:09 pm

Undercurrent News

Singapore's fish farmers continued to add up their losses as the mass fish deaths resulting from the low levels of dissolved oxygen in the water showed no sign of improvement, while National Development Minister pledged the government would "do its utmost" to help farmers.

It was reported that thousands of fish in Changi fish farms died due to algal blooms, a rapid increase in the population of algae in a water system. Algae are able to carry out photosynthesis and they are usually found near the surface of the water.

(a) Give two possible reasons why the fish in the fish farms died overnight when there was an algal bloom. [2]

(i) _____

_____

_____

(ii) _____

_____

_____

(b) Global warming can also affect the population of the fish in the ponds. Describe how this could happen. [1]

_____

_____

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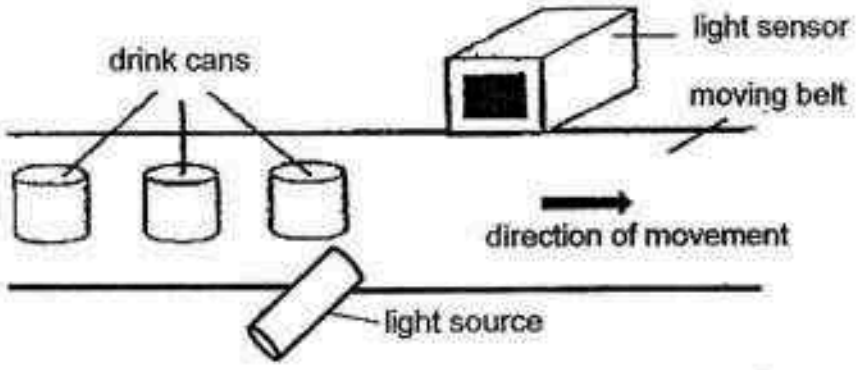
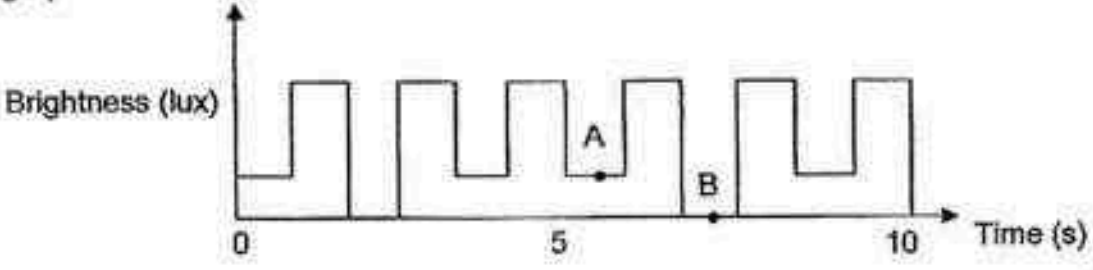
37. Minah set up a light sensor to count the number of drink cans on a moving belt as shown in the diagram below.



The belt moves at the same speed. As the cans pass between the light source and the sensor, they block light from reaching the sensor. The data recorded is shown in the graph below.



(a) Based on the graph, how many cans could be counted in 10 seconds? [1]

(b) From the graph, points A and B are results obtained from 2 different cans. State whether these cans are transparent, translucent or opaque at points A and B. [2]

Point A:

Point B:

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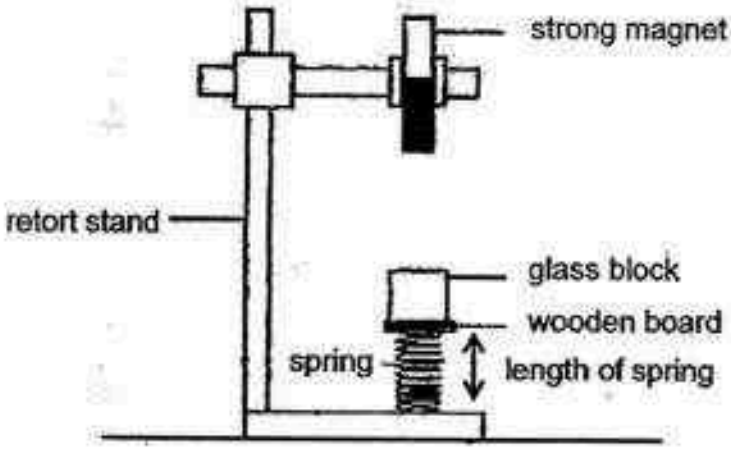
38. Sonia set up an experiment as shown in the diagram below.



The spring with a wooden board is secured to the base of the retort stand. After attaching a glass block to the wooden board with some tape, Sonia measured and recorded the length of the spring in the table as shown below.

She repeated the experiment with two different objects, Y and Z, which have the same mass and shape as the glass block, one at a time.

Object	Length of spring (cm)
Y	12
Z	6
Glass block	8

(a) What material could object Y be made of ? [1]

_____

(b) What is object Z likely to be? Explain your answer. [1]

_____

_____

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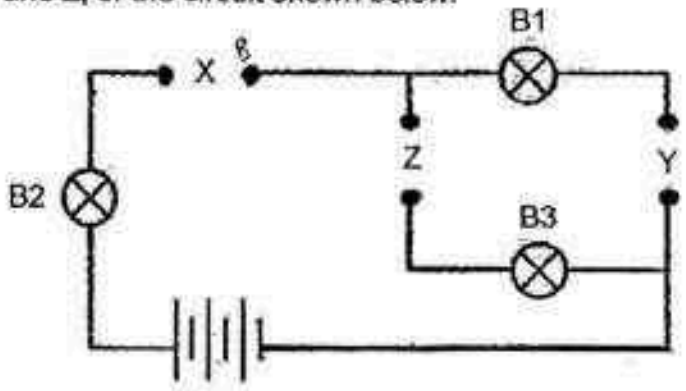
39. Nathan had three rods, A, B and C, of unknown materials. He placed them in different positions, X, Y and Z, of the circuit shown below.

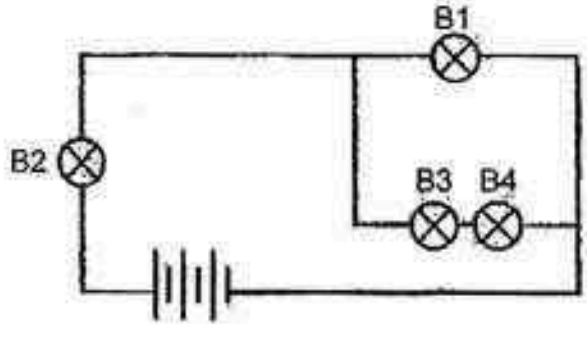


The table below shows the results of his experiment.

Positions where rods were placed			Did the bulb light up?		
X	Y	Z	B1	B2	B3
A	B	C	Yes	Yes	No
B	C	A	No	Yes	Yes
C	A	B	No	No	No

(a) Based on the results of the experiment what can he conclude about the three materials A, B and C? [1]

Nathan added another bulb and re-arranged the circuit as shown below.



(b) How will the brightness of bulb B3 be affected with the addition of bulb B4? Explain your answer. [2]

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40. Three identical cans, each filled with the same amount of oil, sand and water respectively, were left standing in the Sun. After an hour, the cans were brought indoors and the temperatures of the substances were taken at an interval of two minutes. The results are recorded in the table below.

Time in minutes	Temperature (°C)		
	Oil	Sand	Water
0	38	51	48
2	37	45	45
4	36	38	42
6	35	33	38
8	33	30	35
10	31	30	31

(a) Based on the results above, which one of the three substances is best for retaining heat? [1]

_____

(b) Give a reason for your answer in (a) above. [1]

_____

(c) What would be the likely temperature of oil at the end of 12 minutes? Explain your answer. [1]

_____

_____

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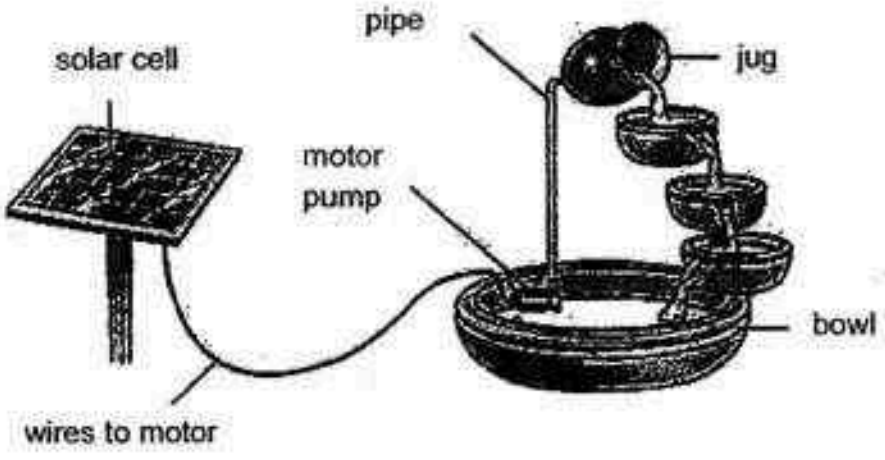
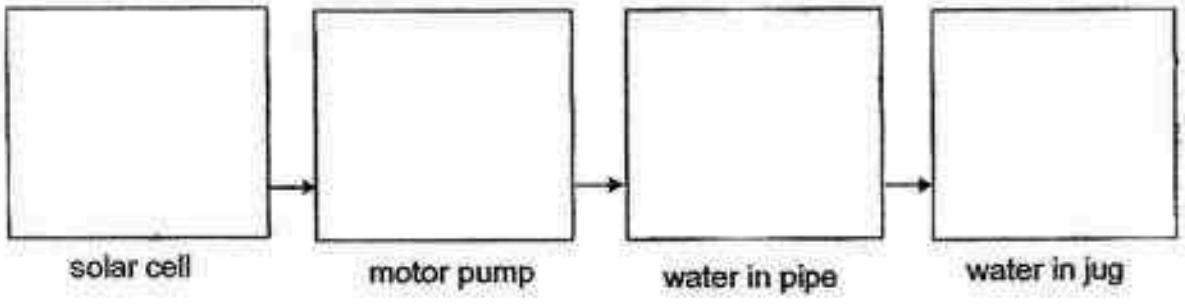
41. The diagram below shows a solar-powered miniature waterfall in the garden.



(a) Complete the energy conversion below. [2]



(b) Give one advantage of using a solar cell to power the miniature waterfall. [1]

_____

_____

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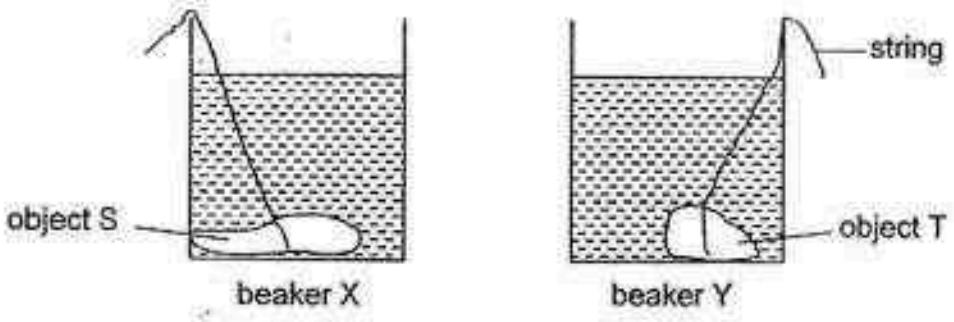
42. The diagram below shows two identical beakers with two objects, S and T, made of plasticine. The water levels in the two beakers are the same.



(a) If you are not allowed to use any other apparatus, add or remove water from the beaker, describe how you can find out which object, S or T, has a bigger volume. [2]

(b) Based on what you have done in (a), how can you tell if object T has a bigger volume than object S? [1]

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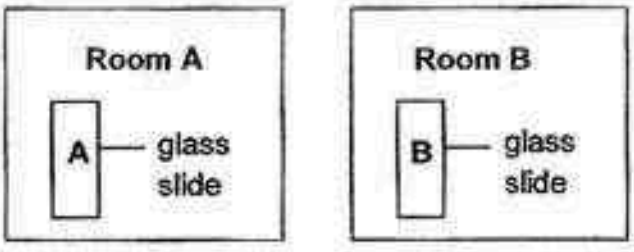
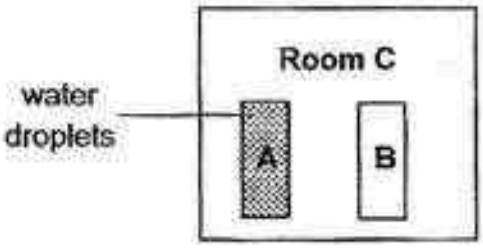
43. Justin left two glass slides in two rooms, A and B, of different temperatures for half an hour.



Thereafter, he removed the two slides and left them in room C as shown in the diagram below.



After a few minutes, he noticed water droplets on the glass slide from room A but not on the glass slide from room B.

(a) Based on his observation, what can you conclude about the temperatures of room A and room B? [1]

(b) Explain clearly how the water droplets are found on glass slide A. [2]

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44. When a cannon shown in diagram 1 is fired, it moved up the slope from point P to Q. The cannon then moved back from Q to P on its own as shown in diagram 2.

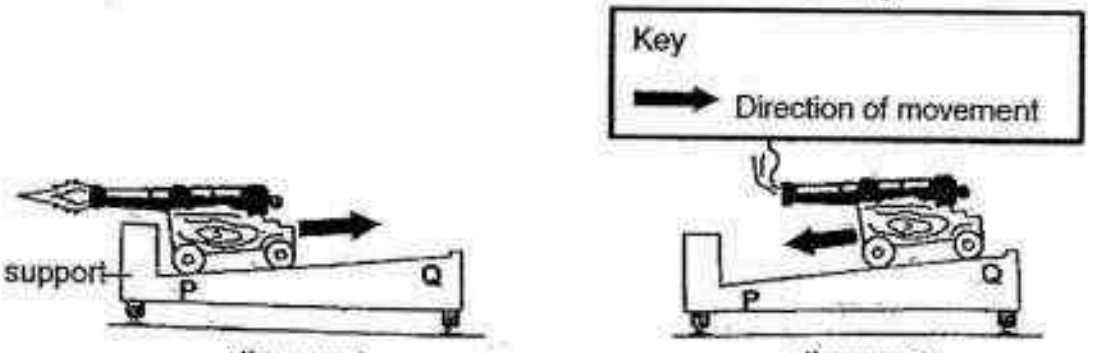

diagram 1 diagram 2

(a) What caused the cannon in diagram 2 to move back to point P? [1]

To aim at a different point, the cannon is moved on the metal rails as shown in diagram 3.

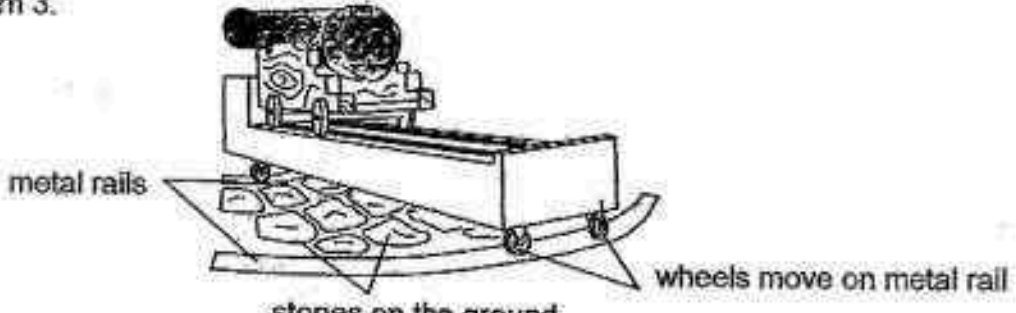

diagram 3

(b) Give a reason why it is easier to move the cannon on the metal rails than on the ground shown? [1]

(c) After sometime, the wheels are unable to move along the metal rail easily. Suggest a way to enable the wheels to continue to move easily along the metal rails. Explain your answer.

[1]

~~End of Booklet B~~

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EXAM PAPER 2016 (P6)

SCHOOL : GHIJ

SUBJECT : SCIENCE

TERM : SA2

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
4	3	1	3	4	1	3	1	4	3
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	3	4	3	2	3	4	2	3	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	2	2	3	3	3	2	4	1	4

31)a)Organism H.

b)H → J → L

c)H → K → J → L

32)a)The sea ice gained heat and melted faster.

b)When the sea ice melt faster, lesser sea ice for the polar bear to hunt on.

33)a)In cold weather :Lesser surface area of the erasure exposed of the cold. Therefore lesser heat lost to the surrounding. Thus rabbit can feel warmer.

In hot weather: Greater surface area of the ears are exposed to the heat.Therefore more beat loss to the surrounding. Thus rabbit can feel cooler.

b)Fur traps air, air is a poor conductor of heat. Rabbit gains heat from the hot sand slower.

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34)a)i)On the fourth day, the plants growing in the light has healthy green leaves while the plants growing in the dark has pale green leaves.

ii)Plant A has straight stem but plant in B has droopy stems.

b)The plants growing in the light average height is shorter than the plants growing in the dark average height.

35)a)Plant take in water during photosynthesis, more water taken in pushes the bubble up the tube.

b)Prevent evaporation if water and ensure any water loss due to the plant absorbing the water.

c)The brightness of the torch.

36)a)i)The algae bloom caused not enough oxygen to enter the water. Thus, the fishes were not able to receive enough dissolve oxygen to breathe.

ii)Algae cover the water surface reducing amount of oxygen from the air dissolving in the water.

b)When there is global warming, the water in the ponds will become heated up and will kill the fishes.

37)a)6 cans.

b)Point A: Translucent.

Point B: Opaque.

38)a)Magnetic material.

b)A is a magnet. Like-pole facing each other repel causes the spring to compress.

39)a)A and B are electrical conductors. C is an electrical insulator.

b)Bulb 3 will be dimmer. It is a series circuit, lesser electrical current puss through bulb 3.

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40)a)Oil.

b)Temperature for oil decrease the least.

c)30℃ . It is the room temperature.

41)a)Light energy →Electrical energy → Kinetic energy →Gravitational potential energy

b)Does not need to burn fossil fusel so less pollution.

42)a)Remove the object S and T and compare the water level in the beaker.

b)Beaker Y has a lower water level than beaker X.

43)a)The temperature in room A is colder than the temperature in room B.

b)The warm water vapour in the surrounding air in room C comes into contact with the cooler surface of glass side A, lose heat and condense to form water droplets.

44)a)Gravitational force and the slope.

b)The metal rails are smoother, reducing friction between the wheels of the cannon and the metal rails.

c)Apply lotion in the metal rail. Lotion is a lubricant, which helps to reduce friction between the wheels of the cannon and metal rails and hence will allow the wheels to continue to move easily along the metal rails.

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23

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2016
PRIMARY 6
SCIENCE

BOOKLET A1

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: _____ ( )

Class: Primary 6._____

Date : 25 August 2016

This booklet consists of 15 printed pages including this page.

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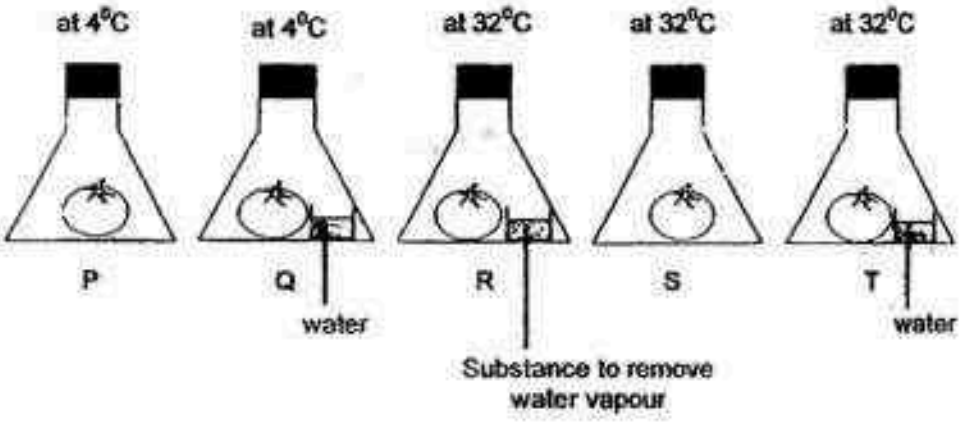
For each question from 1 to 15, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS). [30 marks]

---

1. An experiment was conducted to find out the conditions needed to prevent tomatoes from decaying. A tomato was placed in each of the flasks, P, Q, R, S and T and kept in different conditions as shown below.



After six days, only the tomatoes in flasks Q, S and T showed signs of decay.

If this type of tomatoes were shipped from overseas to Singapore, which of the following condition(s) would allow the tomatoes to be kept the freshest during the shipment?

(1) moist

(2) at 32°C

(3) dry and at 4°C

(4) moist and at 4°C

(Go on to the next page)

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2. Four children made the following statements about the life cycle of a mealworm beetle and a mosquito.

Amy	The young of a mealworm beetle and mosquito hatch from fertilized eggs.
Bala	The young of a mealworm beetle and mosquito go through the moulting stage.
Cindy	There are 3 stages in the life cycle of the mealworm beetle and 4 stages in the life cycle of a mosquito.
Dora	The young of a mealworm beetle looks like its parents but the young of a mosquito does not look like its parents.

Who made the correct statements?

(1) Amy only
(2) Bala only
(3) Amy and Bala only
(4) Amy, Cindy and Dora only

3. Mr Rahim conducted an experiment using the flowers of a particular plant in his garden. He wanted to find out if a flower would still develop into a fruit when only a certain part of the flower was removed.

Flower	Part removed
A	stigma
B	all the anthers
C	all the petals

He dusted pollen grains of the same type of flowers over Flowers A, B and C and observed them for a certain period of time.

Which of the flower(s) is/are more likely to have developed into fruits at the end of that time period?

(1) C only
(2) A and B only
(3) B and C only
(4) A, B and C

(Go on to the next page)

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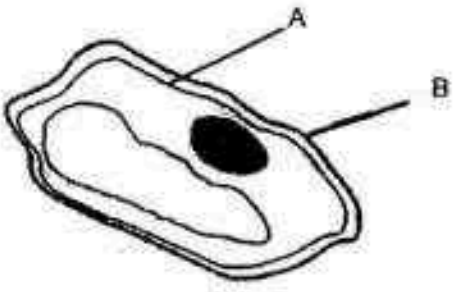
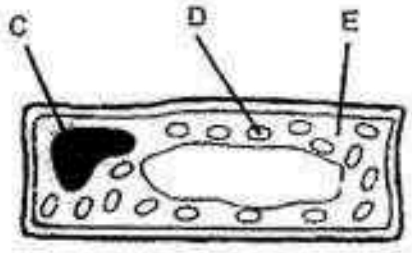
4. Shakira observed two different types of cells, X and Y, from the same plant using a microscope. The cells are shown in the diagram below. The parts of the cells are labelled as A to E.



Cell X



Cell Y

Which of the following parts (A to E) of the cells have been correctly matched to the functions provided in the table?

	Supports and give the cell a regular shape	Contains the genetic information of the plant	Converts light energy to chemical potential energy
(1)	A	C	D
(2)	B	D	C
(3)	A	B	E
(4)	B	C	D

(Go on to the next page)

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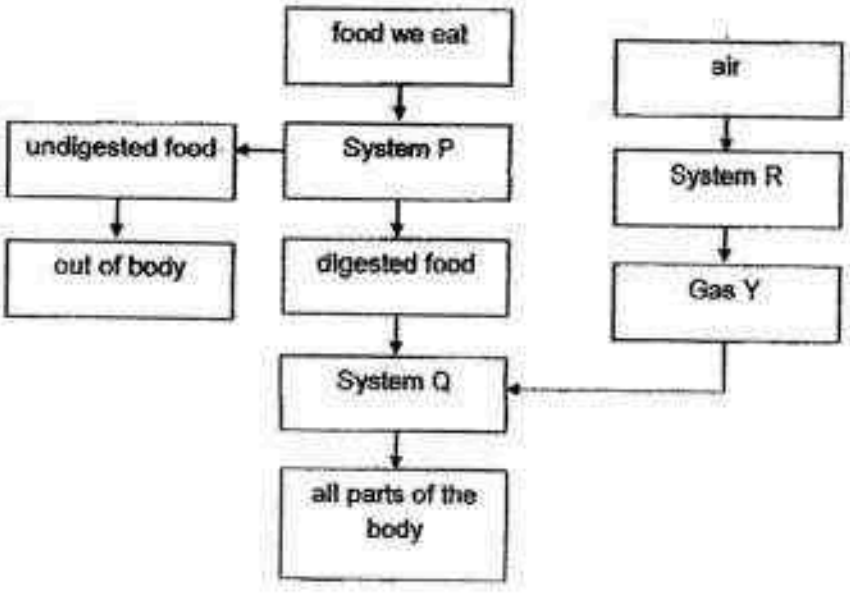
5. Study the diagram below.



Which of the following statements are correct?

A Gas Y is carbon dioxide.
B System P breaks down food into simpler substances.
C Systems P, Q and R work independently in our body.
D System Q transports digested food and oxygen to the cells in our body.

(1) C and D only
(2) B and D only
(3) A, B and C only
(4) B, C and D only

(Go on to the next page)

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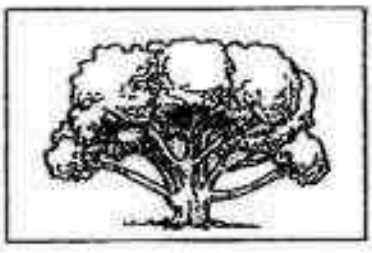
6 The picture below shows a tree.



Why are the branches spread out over a large area in different directions?

This is to enable the tree to _____.

A trap rainwater

B take in more carbon dioxide

C provide more shade for the roots

D receive as much sunlight as possible

(1) D only

(2) B and C only

(3) A, C and D only

(4) A, B and D only

(Go on to the next page)

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7 The pictures below show a mountain pine beetle and a part of the pine tree trunk that it has attacked.



mountain pine beetle



pine tree trunk

The mountain pine beetle makes a hole in the tree trunk and lays its egg in the tree trunk so that its larvae can feed on the food produced by the tree.

Which of the following diagrams shows the cross-section of a tree trunk that has been attacked by the mountain pine beetle, shaded correctly?

(1)



(2)



(3)



(4)



(Go on to the next page)

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8 Diagrams 1 and 2 below show the reproductive parts of a plant and a human respectively.

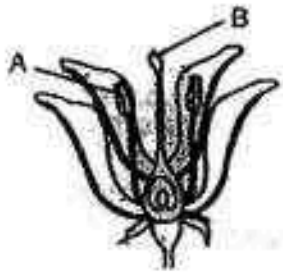

Diagram 1

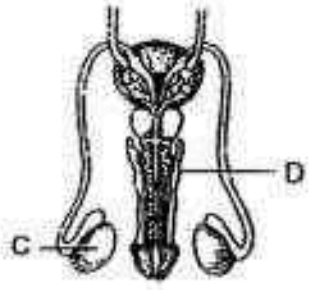

Diagram 2

Which of the following parts are responsible for the production of male reproductive cells?

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

(Go on to the next page)

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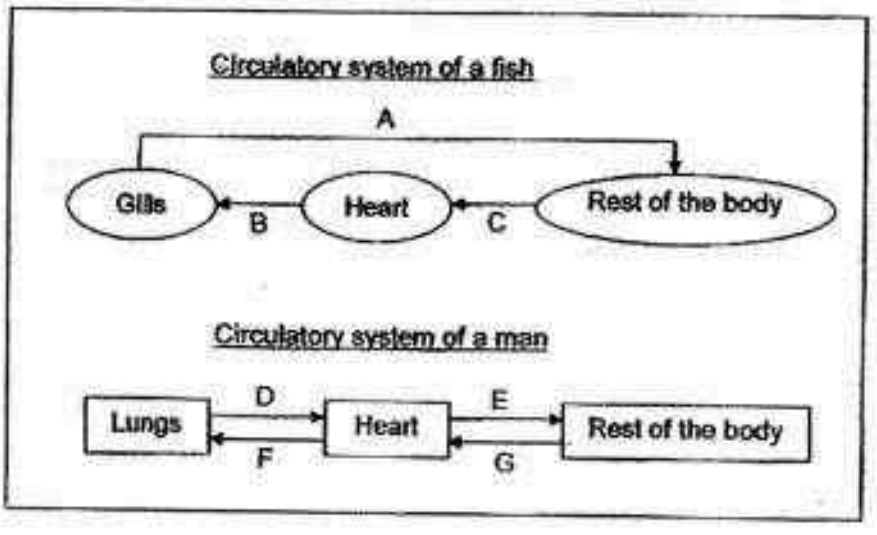
9 The diagrams below show how gases are transported in the circulatory systems of a fish and a man.



Which of the following identifies the level of carbon dioxide at the respective parts?

	Low carbon dioxide level	High carbon dioxide level
(1)	A, D, E	B, C, F, G
(2)	B, C, F, G	A, D, E
(3)	B, C, D, E	A, F, G
(4)	A, F, G	B, C, D, E

(Go on to the next page)

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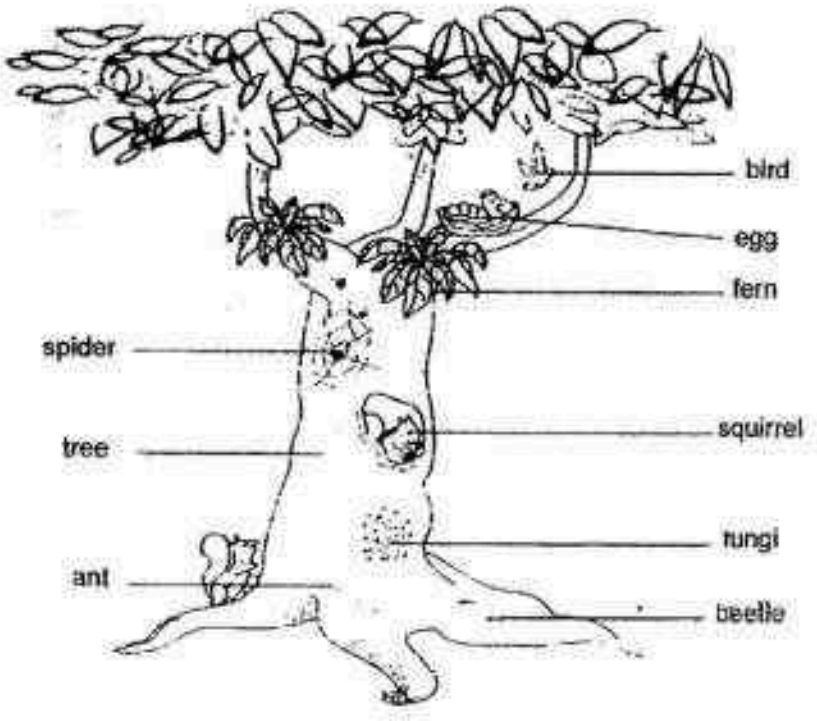
10 The diagram below show organisms found on a tree.



Based on the picture, which of the following statements are true?

A There are two types of decomposers.
B There are five populations of animals.
C The tree is the habitat of the organisms.
D There are seven communities living on the tree.

(1) A and B only
(2) B and C only
(3) A, B and C only
(4) A, C and D only

(Go on to the next page)

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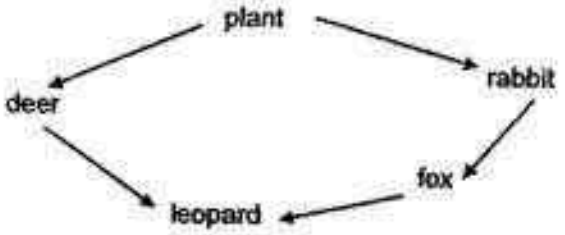
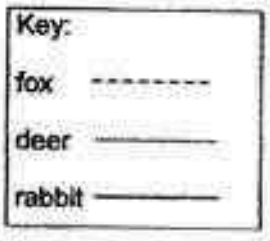
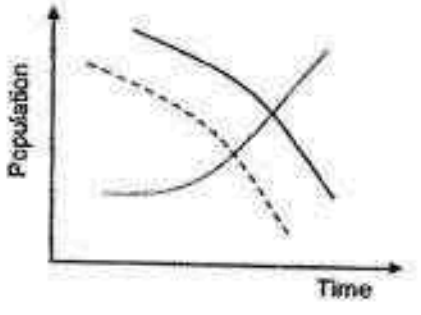
11 The food web below shows the relationship between some animals in the forest community.



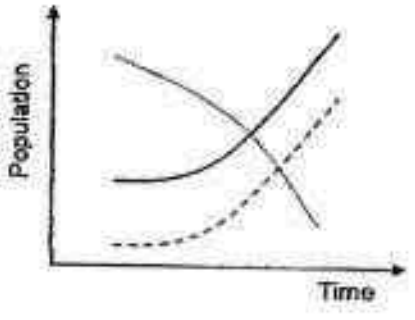
Which of the following graphs correctly shows how the populations of the animals are affected if the demand for leopard fur increases?



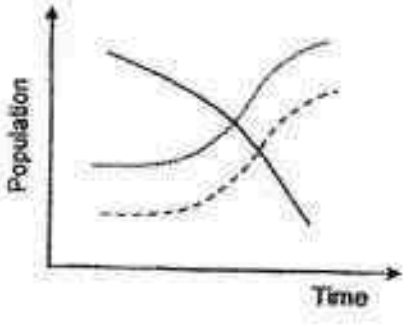
(1)



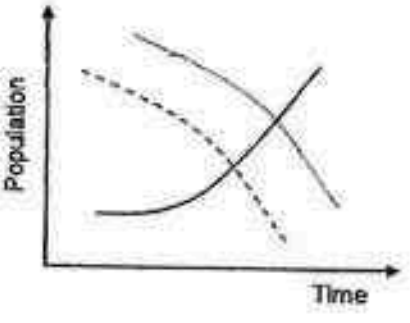
(2)



(3)



(4)



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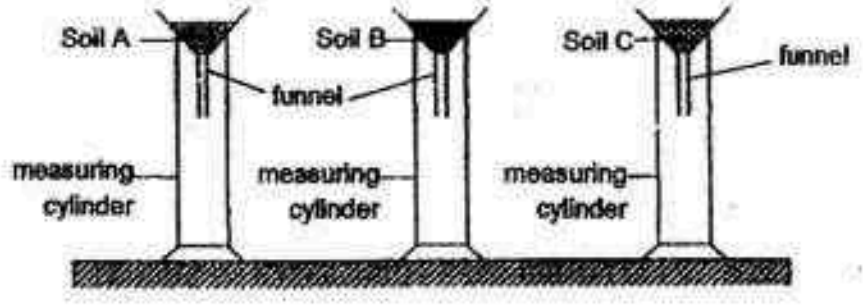
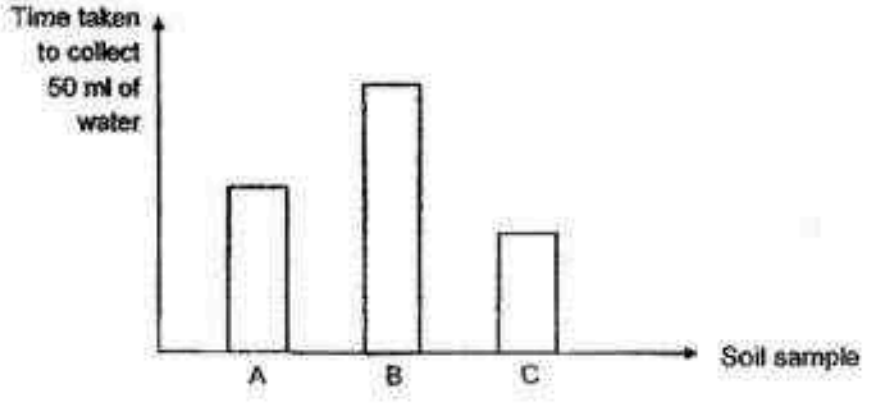
12 Siti wanted to find out which type of soil is suitable for growing cactus, rose and lotus. She collected three equal amounts of soil A, B and C and placed them each in a funnel lined with filter paper as shown in the diagram below.



She then poured 150 ml of water into each funnel and measured the time taken to collect 50 ml of water in each of the measuring cylinder. The graph below shows the results of her experiment.



Based on the above table, choose the most suitable soil for each of the plants.

	cactus	rose	lotus
(1)	Soil A	Soil B	Soil C
(2)	Soil B	Soil A	Soil C
(3)	Soil C	Soil A	Soil B
(4)	Soil A	Soil C	Soil B

(Go on to the next page)

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13 The leaves of four different plants, A, B, C and D are shown below.



waxy leaves

A



purple leaves around white flowers

B



thick succulent leaves

C



Needle-like leaves

D

Which one of the following best describes the functions of the structural adaptation in the leaves of the four plants?

	A	B	C	D
(1)	store food	absorb more light	prevent water accumulation	reduce water loss
(2)	reduce water loss	attract pollinators	store water	self-defence
(3)	absorb more light	self-defence	store food	hook on support
(4)	prevent water accumulation	attract pollinators	store water	reduce water loss

(Go on to the next page)

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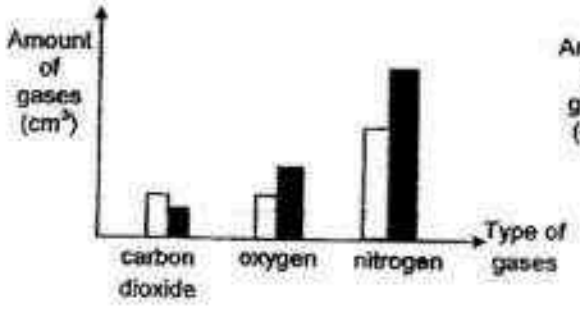
14 The diagram shows an experimental set-up in which a plant in a jar carries out photosynthesis during the day.

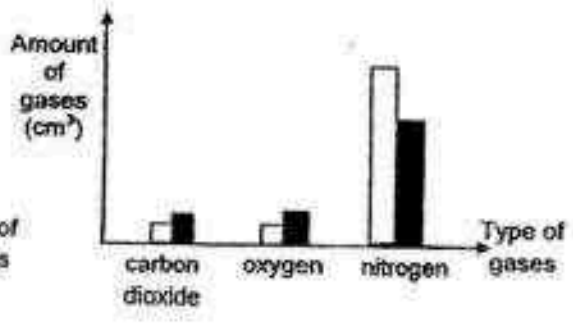


A sample of air is taken from regions A and B during the process of photosynthesis. Which graph correctly represents the amount of oxygen, carbon dioxide and nitrogen between these two regions?

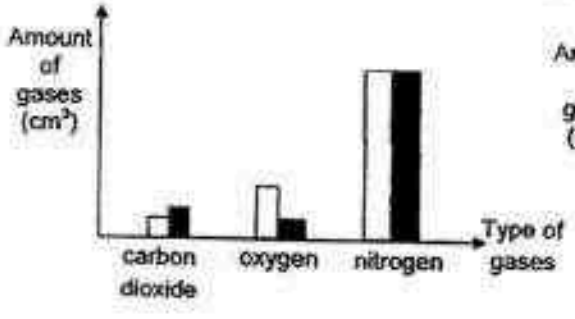
(1)



(2)



(3)



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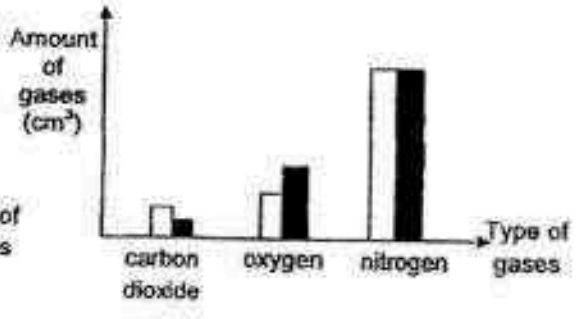

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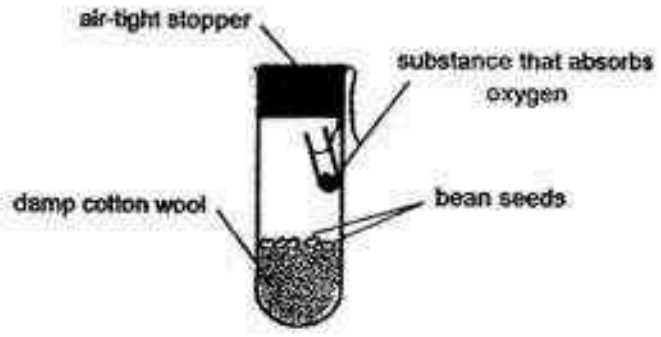
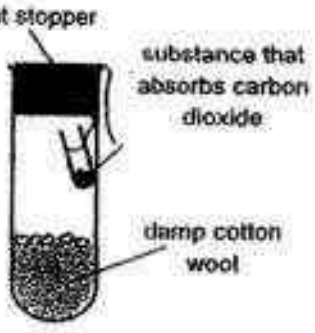
15 Siti conducted an experiment to find out if oxygen is required for the germination of bean seeds. She used the set-up shown below.

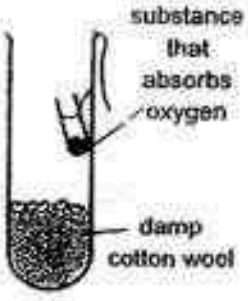


Which one of the following should Siti use as a control for her experiment?

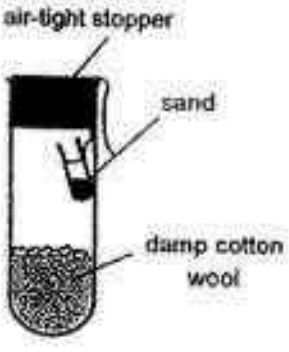
(1)



(2)



(3)



(4)



End of Booklet A1

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PRELIMINARY EXAMINATION 2016
PRIMARY 6
SCIENCE

BOOKLET A2

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: _____ ( )

Class: Primary 6_____

Date : 25 August 2016

This booklet consists of 13 printed pages including this page.

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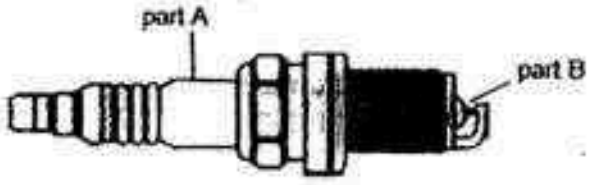
For each question from 16 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS). [30 marks]

---

16 A spark plug is an electrical device that is used in a car engine to get the fuel-air mixture to burn by producing an electric spark. A picture below shows a simple spark plug.



Part A of the spark plug in contact with the combustion chamber has to be insulated from extremely high temperature. Part B of the spark plug is a conductor of electricity for spark production.

What are the best materials for Part A and Part B when the engine of a car is started?

	part A	part B
(1)	metal	plastic
(2)	plastic	metal
(3)	metal	ceramic
(4)	ceramic	metal

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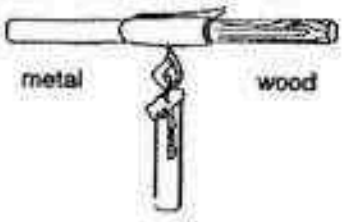
17 A metal rod and a wooden rod were joined together with a piece of paper wrapped around the part where the 2 rods were joined as shown below.



The joint was heated by a candle flame for a few seconds. It was observed that the part of paper around the metal rod showed no change while the part of paper around the wooden rod was slightly burnt.

Which one of the following reasons explains the observation?

(1) Metal does not burn as well as wood.

(2) Metal and wood burn at different temperatures.

(3) Metal is able to conduct heat away while wood cannot.

(4) Metal conducts heat to the wood and causes it to burn.

18 Four pupils, Ali, Bill, Choi and Devi, wanted to find out how the length of the shadow of a tree is affected at different times of the day. They conducted an experiment on a sunny day by measuring the length of the shadow of a particular tree at 8 a.m. and every two hours thereafter.

After the experiment, the following statements were made by the four pupils.

Ali The length of the shadow of the tree is longest at noon.

Bill The length of the shadow of the tree changes with the time of the day.

Choi The change in length of the shadow of the tree does not follow a pattern.

Devi The length of the shadow of the tree is affected by the apparent position of the Sun.

Whose statements are likely to be correct?

(1) Ali and Bill only

(2) Devi and Ali only

(3) Choi and Bill only

(4) Bill and Devi only

(Go on to the next page)

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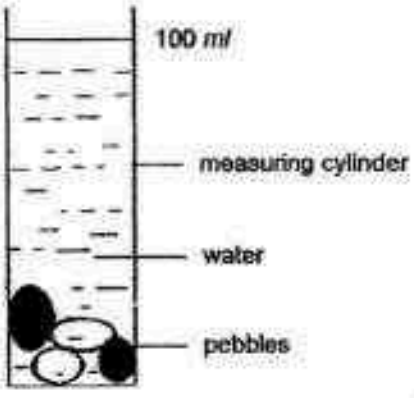
19 Four pebbles of different sizes, P, Q, R and S, are dropped into a measuring cylinder filled with water. The water reaches a level of 100 *ml* in the measuring cylinder as shown in the diagram below.



Fauziah carefully removes one pebble at a time from the measuring cylinder and the new water level is recorded after each pebble is removed. The table below shows her recordings.

pebble	water level (ml)
P	83
Q	68
R	65
S	55

Which one of the following arrangements shows the size of the pebbles from the biggest to the smallest?

(1) P, Q, R, S

(2) P, Q, S, R

(3) R, S, Q, P

(4) S, R, Q, P

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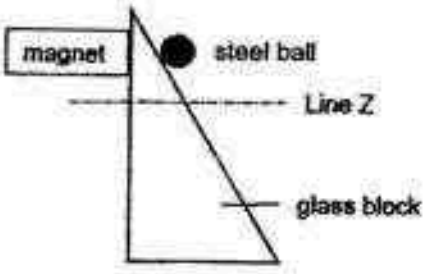
20 A steel ball was held near the top of a triangular glass block by a magnet as shown in the diagram below.



The magnet was slid down the vertical side of the triangular glass block at a constant speed. It was observed that the steel ball also slid down in tandem on the other side of the glass block until it passed Line Z where it rolled down the block.

What is the **best** explanation for this observation?

(1) Magnetic force cannot pass through glass.

(2) Magnetic force completely disappeared when it passed Line Z.

(3) Magnetic repulsion between the magnet and the steel ball was increased as the magnet slid down the glass block.

(4) Magnetic attraction between the magnet and the steel ball was reduced as the magnet slid down the glass block.

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21 The area of forests covering the Earth is reducing rapidly with the increasing rate of deforestation. There are global effects as a result of deforestation.

What are the likely events, A, B and C that can result from the increasing rate of deforestation?

	Event A	Event B	Event C
(1)	decreasing number of habitats	decreasing amount of carbon dioxide in the air	increasing biodiversity in the rainforests
(2)	increasing number of trees	decreasing biodiversity in the rainforests	increasing amount of carbon dioxide in the air
(3)	decreasing biodiversity in the rainforests	decreasing amount of oxygen in the air	increasing amount of carbon dioxide in the air
(4)	decreasing amount of carbon dioxide in the air	decreasing biodiversity in the rainforests	increasing amount of oxygen in the air

(Go on to the next page)

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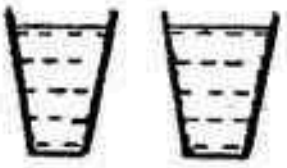
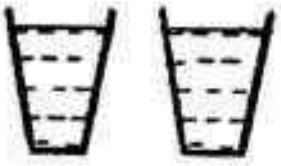
22 An experiment is conducted in class to compare the rates of evaporation of two liquids, X and Y. Which one of the following set-ups will not give a fair test?

(1) paper cup
50 ml of liquid X



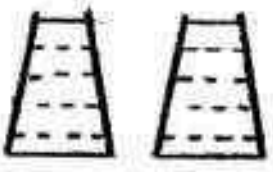
paper cup
50 ml of liquid Y

(2) plastic cup
50 ml of liquid X



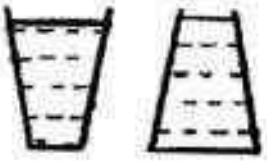
plastic cup
50 ml of liquid Y

(3) paper cup
50 ml of liquid X



paper cup
50 ml of liquid Y

(4) paper cup
50 ml of liquid X



paper cup
50 ml of liquid Y

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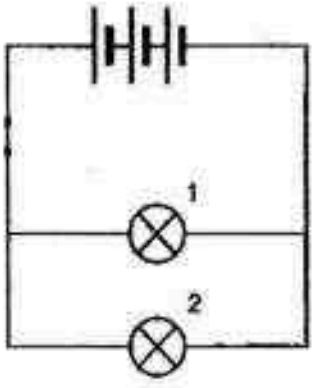
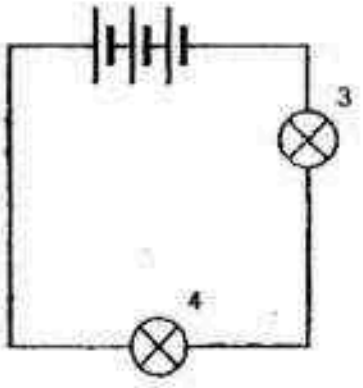
23 Two electrical circuits, A and B, with similar bulbs and batteries are set up as shown in the circuit diagram below.



Circuit A



Circuit B

Which one of the following options is correct when circuit A is compared to circuit B?

	Brightness of bulbs	Time taken before batteries are flat
(1)	1, 2, 3 and 4 are equally bright	Same time for both circuits A and B
(2)	1, 2, 3 and 4 are equally bright	Faster for circuit A compared to circuit B
(3)	1 and 2 are brighter than 3 and 4	Faster for circuit A compared to circuit B
(4)	1 and 2 are dimmer than 3 and 4	Same time for both circuits A and B

[Go on to the next page]

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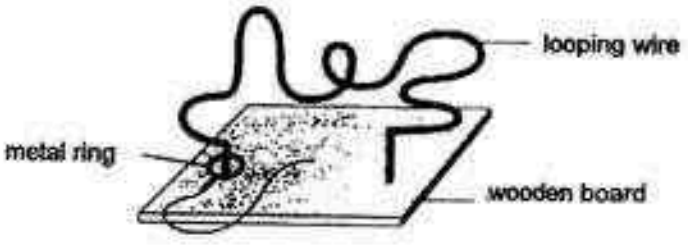
24 Sammy has a toy that consists of an electrical circuit, a wooden board, a metal ring, a buzzer and a looping wire. Some parts of the toy are shown below.



Sammy must not allow the metal ring to touch the looping wire as he moves the ring through the wire from the start to the end of the loop. Otherwise, the buzzer will sound instantly and he will have to begin all over again.

What is the reason the buzzer sounds?

(1) The looping wire is fused when the metal ring touches it.

(2) The flow of electric current takes place in a closed circuit.

(3) The metal ring provides the electrical energy needed by the buzzer.

(4) The buzzer is sensitive to the flow of electric current in the looping wire.

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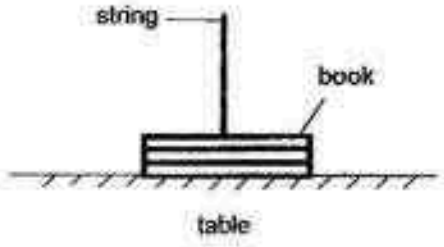
25 A string is tied to a book and pulled lightly upwards as shown by the side-view below.



The book remains in contact with the table and does not move. What is/are the most likely reason(s) for the book to remain stationary?

A The book was not pulled by gravity.

B The frictional force was greater than gravitational force.

C The weight of the book was greater than the pull on the string.

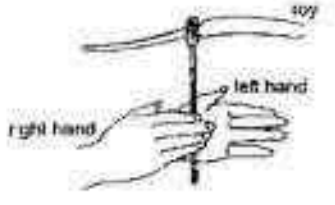
(1) C only

(2) A and B only

(3) A and C only

(4) A, B and C

26 Begum held a toy between his hands as shown. He rotated the toy by sliding his right hand forward and his left hand backwards before releasing it. The toy flew to a certain height after it left his hands.



He rotated the toy at the same starting position again. But this time, the toy flew to a higher height than it did before.

Which one of the following could explain why the toy flew to a higher height?

(1) The weight of the toy was smaller.

(2) The kinetic energy of the toy was greater.

(3) The frictional force acting on the toy is smaller.

(4) The gravitational potential energy of the toy was greater.

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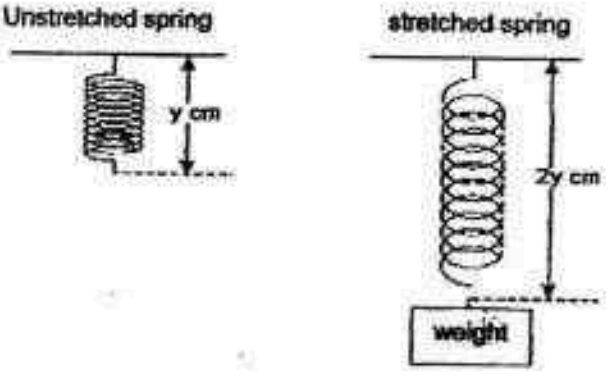
27 An elastic spring of length, y cm, stretches to a length of 2y cm when a mass is hung from its end as shown below.



Upon removing the mass, the spring returns to its original length, y cm. Next, if a mass twice as heavy as the original mass was hung from its end, what will be the new length of the spring?

(1) 2y cm

(2) 3y cm

(3) 4y cm

(4) 5y cm

28 Ting Ting hits a volleyball during a volleyball game. The diagram shows the path of the ball after she has hit it.



How can you tell that there is gravity acting on the ball?

(1) The ball changes its shape.

(2) The ball moves at a constant speed.

(3) The ball landed and comes to a stop.

(4) The path of the ball changes direction.

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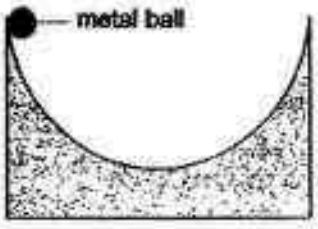
29 The diagram below shows a setup that allows a metal ball to roll up and down a ramp several times.

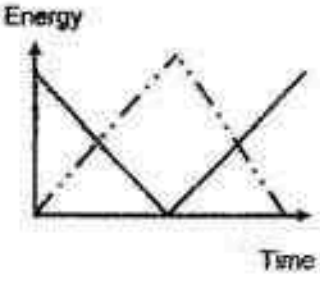


Eventually, the metal ball comes to a stop at the bottom of the ramp.

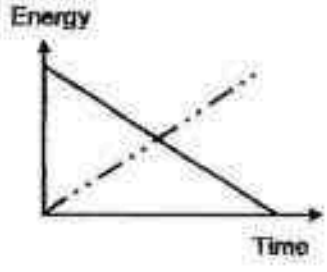
Which one of the following graphs best represents the changes in kinetic energy and potential energy over the course of **one complete roll** from one end to the other end of the ramp?

potential energy ——
kinetic energy — · · —

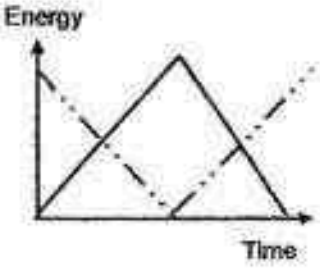
(1)



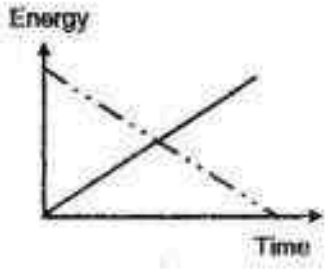
(2)



(3)



(4)



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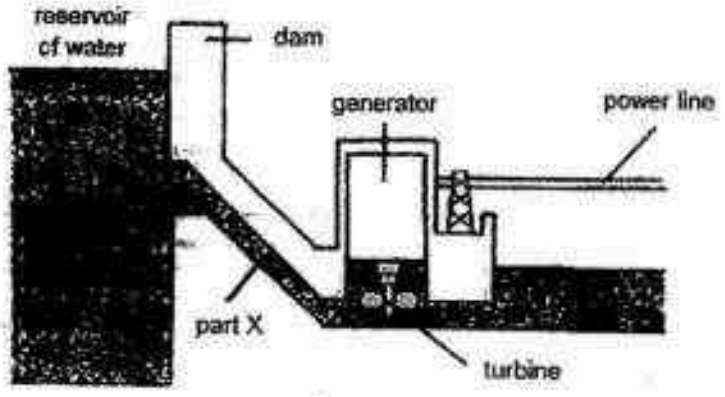
30 Running water from a river can be used to generate electricity in hydroelectric power stations. This is done by passing running water over large turbine blades connected to generators as shown below.



What are the advantages of storing a large quantity of water in the dam and controlling the flow of water over the turbines?

A Water stored in a dam has greater kinetic energy compared to water in part X.

B Controlling the rate of release of water can control the quantity of electricity generated.

C Water released from a higher height at the dam has greater potential energy that can be converted into kinetic energy to turn the turbines.

D The flowing water of the river may not have sufficient kinetic energy to turn the turbine blades fast enough to generate sufficient electricity.

(1) A, B and C only

(2) A, B and D only

(3) B, C and D only

(4) A, B, C and D

End of Booklet A2

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PRELIMINARY EXAMINATION 2016
PRIMARY 6
SCIENCE

BOOKLET B1

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ( )

Class: Primary 6._____

Date : 25 August 2016

This booklet consists of 10 printed pages including this page.

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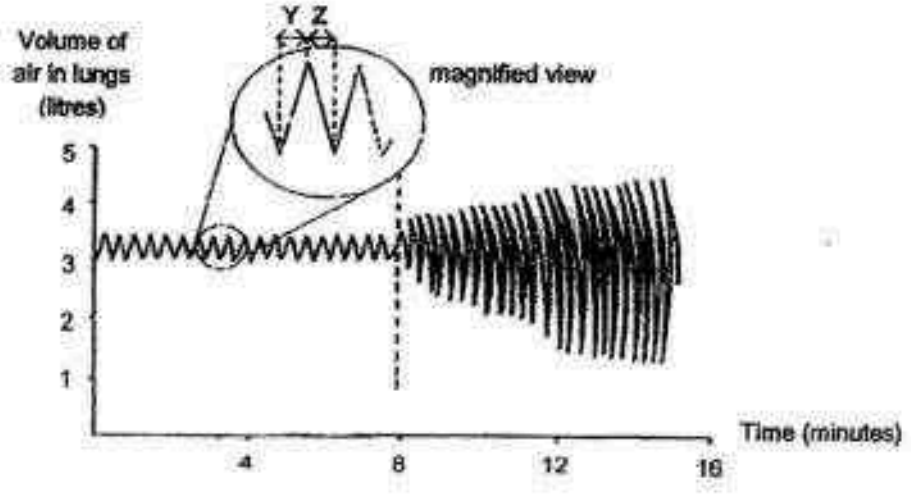
For questions 31 to 37, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [20 marks]

31. The graph below shows the breathing rate of Mr Lim by measuring the volume of air entering and leaving his lungs over a 16-minute interval.



(a) Which section (Y or Z) in the magnified view of the graph shows that Mr Lim is breathing in? Based on the graph, explain your answer clearly. [1]

(b) Based on the graph above, suggest a possible reason for the change in Mr Lim's breathing rate after the 8th minute? Explain your answer clearly. [2]

3

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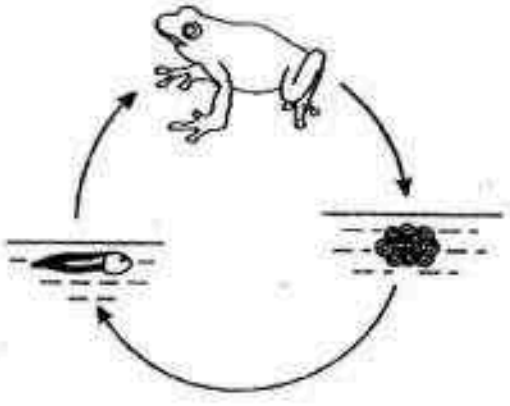
32. The diagram below shows the life cycle of a frog.



(a) Frogs can live in water and on land. Regardless of where they spend most of their time, all female frogs return to the water to lay their eggs. Explain why female frogs return to the water to lay their eggs for their young's survival. [1]

(b) Frogs lay many eggs at a time. Explain why do frogs need to lay so many eggs? [1]

2

(Go on to the next page)

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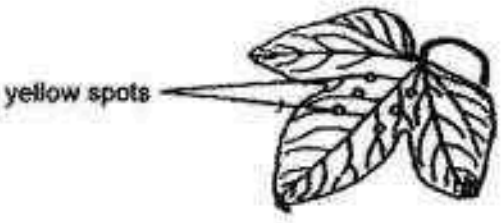
33. Plant A has yellow spots on some of its leaves which look like the eggs of butterfly B. The flowers of plant A also produce nectar for butterfly B.



leaf of plant A



flower of plant A

Butterfly B does not lay its eggs on leaves with yellow spots. It will choose to lay eggs on leaves without the spots. Caterpillars of butterfly B eat a lot of the leaves of plant A which can severely damage or even kill the plant.

(a) How does having yellow spots benefit plant A? [1]

(b) Based on the information given, give a reason why butterfly B will not choose to lay its eggs on the yellow-spotted leaves of plant A? [1]

(c) What is the benefit to plant A when butterfly B visits it? [1]

3

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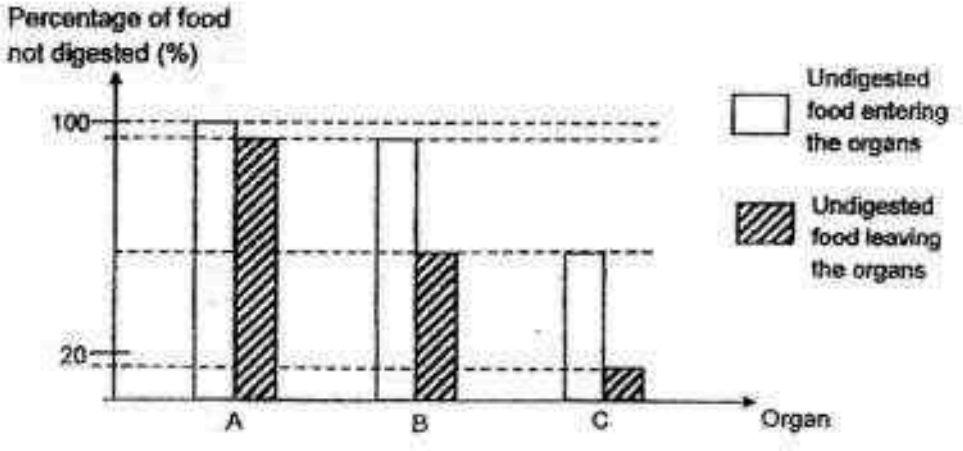
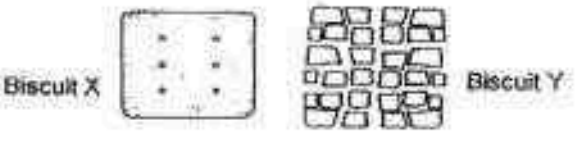
34. Kumar consumed different kinds of food during dinner.

The graph below shows the percentage of food not digested in his three digestive organs, A, B and C, when the food entered and left the organs.



(a) Identify organ C from the digestive system. Explain your answer clearly based on the graph above. [2]

The diagram below shows two identical biscuits, X and Y, of the same size. Biscuit Y is broken into smaller pieces.



(b) If both biscuits are soaked into equal amounts of digestive juices, which biscuit, X or Y, will be digested faster? Give a reason for your answer. [1]

3

(Go on to the next page)

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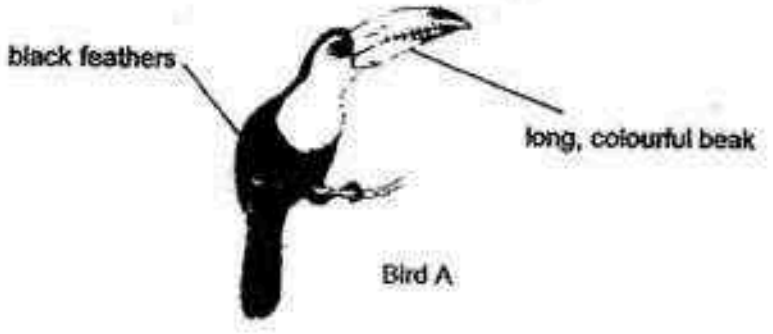
35. Bird A has a black and white body and a distinctively large yellow and orange beak that is easily seen against the dark canopy of trees. It lives in holes in trees and is usually found in the tropical rainforest where temperature is high throughout the year. Its main food source is fruits from the rainforest trees. It plucks and swallows the whole fruit, then flies off through the forest where it digests the fruit and usually spitting out the seeds.



(a) In the day, Bird A sometimes tucks its colourful beak under its wings. Explain why it behaves in this manner. [1]

(b) During the day, the body temperature of Bird A can get quite high. Give a reason why a large beak can be an advantage? [1]

(c) Based on the information given, explain how Bird A's feeding habit benefits most plants in the rainforest. [1]

3

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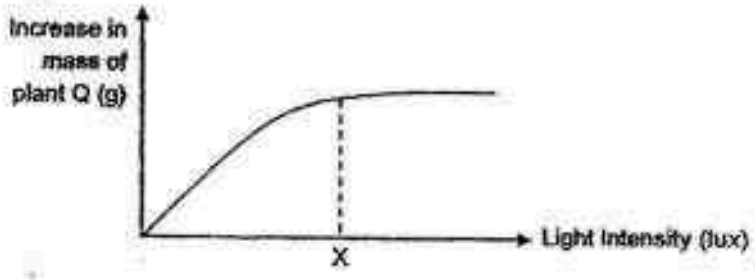
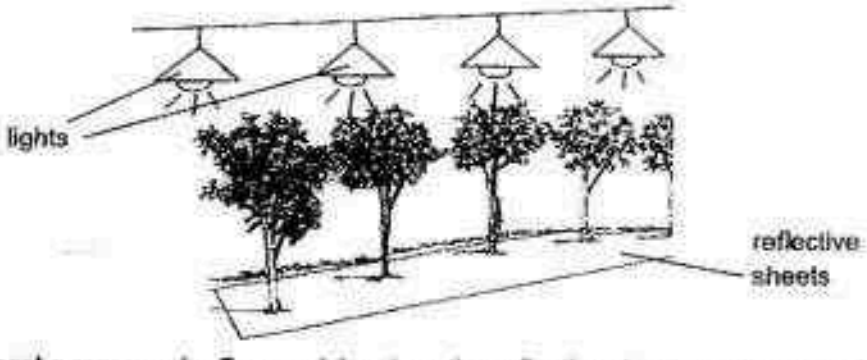
36. Farmer John conducted an experiment to investigate the effect of light intensity on the growth of a plant Q over a period of time.

The graph below shows the result of his experiment.



(a) Explain why a change in light intensity affects the mass gain of plant Q. [1]

Farmer John placed reflective sheets at the bottom of each plant Q on the ground and switched on rows of lights in his farm at night as shown in the picture below.



(b) Suggest a reason why Farmer John place the reflective sheets on the ground. [1]

2

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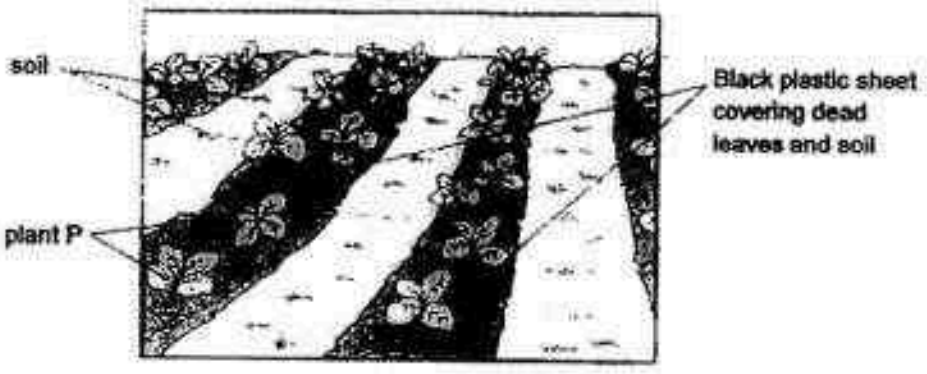
On another plot of land, Farmer John put a layer of dead leaves and a black plastic sheet above the dead leaves around plant P.



(c) Give a reason why Farmer John put the layer of dead leaves around plant P. [1]

1

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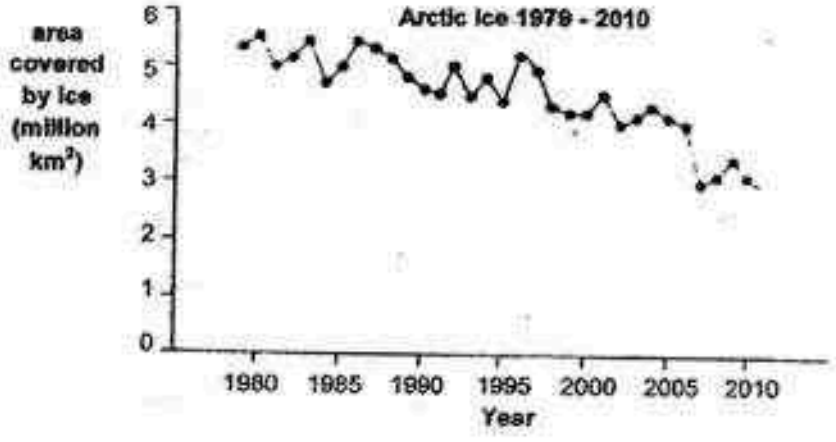
37. Scientists use satellite images to measure the area of ice covering the Arctic region. One reason for doing this is to find out if there is global warming. The graph below shows the smallest area of the Arctic region that was covered with ice, each year, from 1979 to 2010.



(a) Based on the graph above, explain how global warming affects the area of ice covering the Arctic region from 1979 to 2010. [1]

(b) Name the gas in our atmosphere that is the main contributor of global warming. Describe how it causes global warming. [1]

2

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The monk seals spend most of their life at sea and they also make use of shores, mostly remote sea caves, to rest, give birth and nurse their young. The monk seal, as shown in the diagram below, is endangered and its population size is decreasing.



monk seal

(c) Based on the information given, explain how global warming causes the population size of monk seals to decrease. [1]

_____

_____

_____

1

End of Booklet B1

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METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2016
PRIMARY 6
SCIENCE

BOOKLET B2

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ( )

Class: Primary 6. _____

Date : 25 August 2016

Booklet A1 & A2	60
Booklet B1	20
Booklet B2	20
Total	100
Parent's Signature	

This booklet consists of 8 printed pages including this page.

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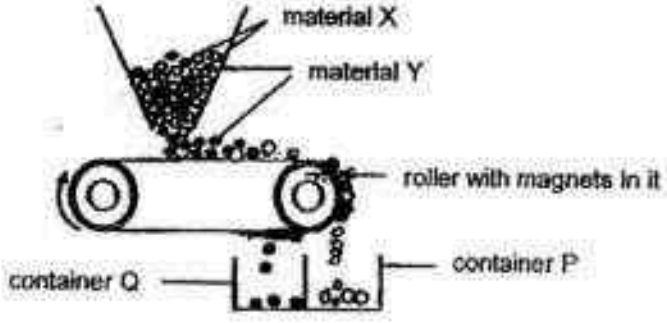
For questions 38 to 44, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question.

[20 marks]

38 Magnets are used in magnetic conveyor belts in recycling plants. The diagram below shows the use of magnets to separate magnetic materials from non-magnetic materials.



(a) It was observed that material X and material Y were collected in container P and container Q respectively, as shown in the diagram.

State the property of material X and material Y. [1]

Material X: _____

Material Y: _____

(b) Explain how material Y was collected in container Q. [1]

_____

_____

_____

2

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30 **The diagram below shows three mugs designed to keep hot drinks warm for as long as possible. All three mugs are the same size, thickness and colour.**



(a) **Explain why the hot drink in mug A is likely to cool down more quickly than the hot drink in mug B.** [1]

(b) **Mug C is made from the same plastic as mug B. Explain why mug C is likely to keep the drink warmer for longer than mug B.** [1]

(c) **Based on your answer in (b), how do builders keep houses warm in cold countries?** [1]

3

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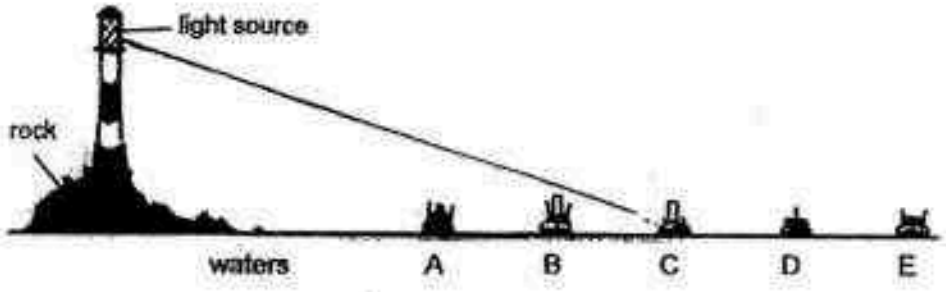
40 The diagram below shows a lighthouse on a rock. It is night-time and there are no other light sources nearby where boats are moored at A, B, C, D and E in the waters.



(a) Each boat makes a shadow on the water. Draw a cross (X) on the diagram to show where the shadow of boat C will be. Explain why the shadow forms there. [1½]

(b) The captain of boat A claimed that the light from the lighthouse is brightest on his boat. Suggest how you could determine his claim accurately. Explain your answer. [1½]

3

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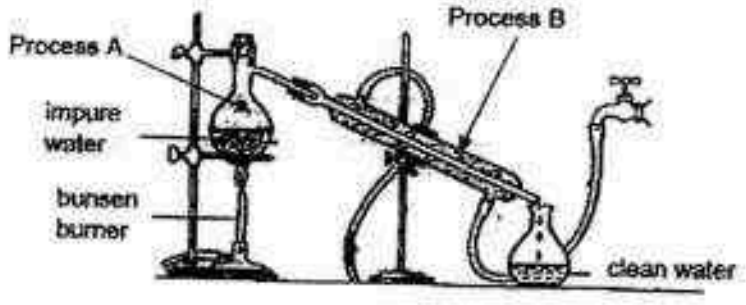
41 The diagram below shows a set-up used to obtain clean water from impure water.



(a) Based on the diagram, identify the two different processes involved in the set-up. [1]

Process A: _____

Process B: _____

(b) There is a heat source in this set-up. Explain clearly what happens if this heat source is removed and how this affects the amount of clean water collected. [2]

_____

_____

_____

_____

_____

3

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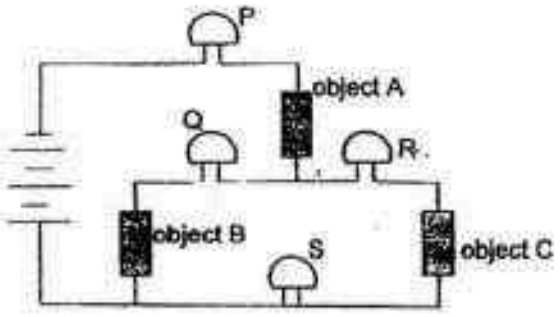
42 Four bells, P, Q, R and S, were connected in a circuit as shown below. Objects A, B and C are made of different materials. One of these three materials is an insulator of electricity.



When objects A, B and C were connected as shown in the circuit diagram above, the following results are shown.

Bell	Did it ring?
P	yes
Q	no
R	yes
S	yes

(a) Explain why bell Q did not ring. [1]

(b) How would the results be affected if object A is replaced by a glass rod? Explain your answer. [2]

3

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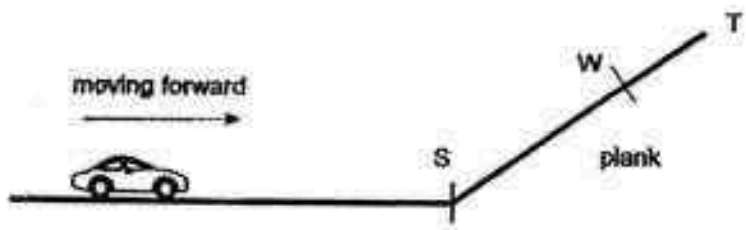
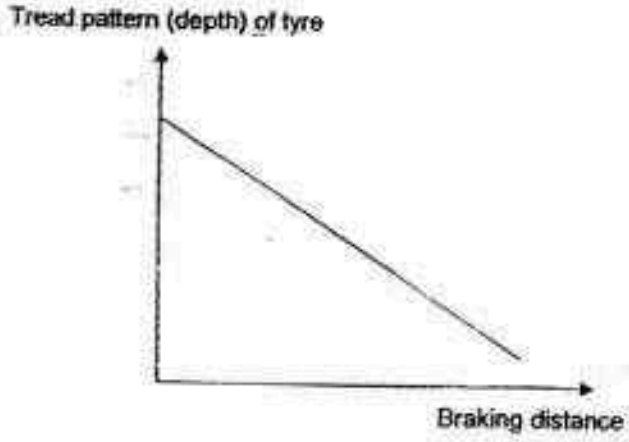
43 A toy car was pushed towards a wooden plank ST as shown in the diagram below.



(a) It was observed that the toy car moved up the plank, stopped at W and then it rolled down the plank. Explain clearly this observation. [1]

(b) Drivers know that it is dangerous to drive too fast on rainy days as a car has to travel a longer distance after applying the brakes before it can come to a stop. Why is a longer braking distance necessary to prevent accidents? [1]

(c) There is a relationship between the braking distance and the tread pattern (depth) of the tyres of a car. Represent this relationship by drawing a line graph below. [1]



3

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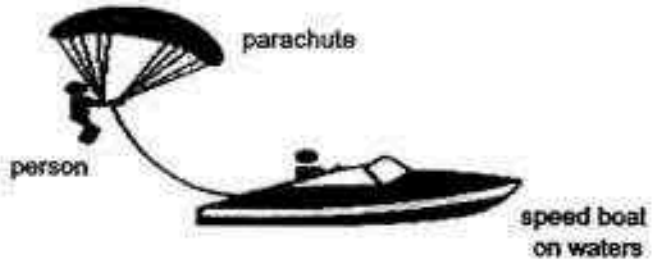
44 **Parasailing is an activity whereby a person is suspended in the air by a parachute and pulled along by a speed boat moving at great speed on the waters as shown in the diagram below.**



(a) There are 2 **sources** of energy in this sport. Identify these sources of energy in the: [1]

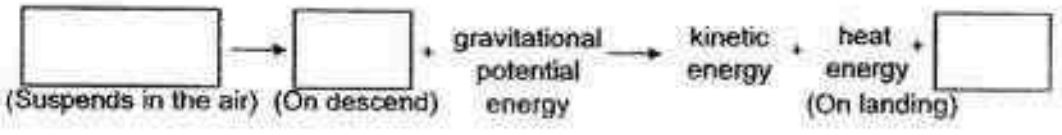
(i) floating parachute

energy source: _____

(ii) speed boat

energy source: _____

(b) Fill in the boxes below to show the energy conversions as Suzy descends and lands after the sport. [1]



(c) How does the speed of the boat affect the height of the parachute in the air? [1]

_____

_____

_____

3

End of Booklet B2

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YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**METHODIST GIRLS' SCHOOL**
SUBJECT	:	**SCIENCE**
TERM	:	**PRELIMINARY EXAMINATION**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	3	3	4	2	1	2	1	1	2
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
3	3	4	4	3	4	3	4	2	4
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
3	4	3	2	1	2	2	4	1	3

Booklet B

Q31a Section Y. Section Y shows an increase in volume white. Section Z shows a decrease and when Mr Lim is breathing in, the volume of his lungs should increase, thus, section Y shows Mr Lim is breathing in.

Q31b When M Lim runs, he needs more energy so he needs to take in more air and also exhale more air more quickly so his rate of respiration increase.

Q32a The young of the frog can only breath in dissolved oxygen through the gills so the female must lay the eggs in the water so the young can breathe.

Q32b It is to ensure some eggs would survive and hatch into tadpoles to ensure a continuity of its kind if a predator came and eat the eggs.

Q33a Butterfly B will not lay its eggs on leaves of plant A and so the leaves will not be eaten by the caterpillars.

Q33b Butterfly B does not want its young to compete for food, space, water and wants to prevent overcrowding.

Q33c When butterfly B comes to visit plant A for nectar, when it reach for the nectar some of the sticky pollen grains would get suck into the butterfly and when the butterfly visits another flower of plant A, the pollen grains on it would fertilised the flower when it brushes onto the stigma.

Q34a Small intestine. Organ C had the least amount of undigested food entering its organ and had a big decrease in the undigested food entering an leaving the organ and small intestines are the last organ that digest the food and where most digestion takes place, thus, the organ is small intestine.

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Q34b Biscuit Y. Biscuit Y has a bigger expose surface area compared to X, thus digestion can occur at a faster rate and would be digested faster for biscuit Y.

Q35a It is so it can camouflage with it's surroundings so predators cannot spot it.

Q35b The large beak can increase the surface area so it can cool down faster and lost heat faster from the surroundings.

Q35c The bird would help disperse the seeds when it flies away from the parent plant so they would not need to compete for air, water, nutrients and warmth.

Q36a As light intensity increase until point X, the rate of photosynthesis increases thus increasing the ways of the plant.

Q36b He placed the reflective sheets on the ground so that light can be reflected and more light will be received by the plants to increase the rate of photosynthesis.

Q36C So the dead leaves can decompose and return the nutrients back to the soil where Farmer John's plants can absorb the nutrients and grow better.

Q37a Global warming traps the sun's heat on earth and causes the global temperature to increase, resulting in global warming.

Q37b Carbon dioxide. Carbon dioxide traps heat from the sun and makes the earth warmer and thus, cause the arctic region to increase in temperature and contributes to global warming.

Q37c When the arctic regions melt, the sea level will rise, leaving less place for the monk seal to give birth and nurse their young, thus they will decrease.

Q38a Material X: It is made of a non-magnetic material.
Material Y: It is made of a magnetic material.

Q38b When material Y falls onto the conveyor belts, it would get attracted to the magnets in the roller and when the conveyor belts move it to far for it to attract the magnet, it would fall into container Q.

Q39a Mug A is made of metal and it is a good conductor of heat which allows heat to be lost quickly from hot drink to the surrounding air. Mug B is made of plastic and it is a poor conductor which loses heat slowly.

Q39b Air is a poorer conductor of heat than plastic. So mug C with the air gap is more likely to keep the drink warmer for longer than mug B.

Q39c They put a layer of air between the walls of the house to trap heat and make the house warmer

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Q40a ----X----- (cross between C & D)
C D
Light from the lighthouse is blocked by an opaque object which is the boat at C. A shadow of the boat is formed on the opposite the lighthouse.

Q40b To determine his claim accurately, use a light sensor/data logger. The device is made to measure the intensity of light accurately and is not dependent a human judgement.

Q41a Process A: Evaporation
Process B: Condensation

Q41b It would decrease. As when the heat source is removed, the rate of evaporation would decrease as the amount of heat gained would be lesser causing the rate of condensation would decrease as there would be less heat of lose, thus there would be less water vapour condensing to form water droplets for clean water.

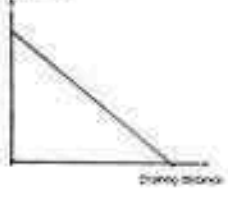
Q42a Object B which is connected next to bell Q is an electrical insulator which does not allow electricity to pass through to bell Q.

Q42b No bells will ring. This is because the circuit is broken and no electricity can flow through.

Q43a The toy car stopped at W due to friction and rolled downwards due to gravity.

Q43b As when it rains the water serves as a lubricant so the drivers would need to apply more friction for the car to stop, thus it is necessary for a longer breaking distance to prevent accidents.

Q43c



Q44a (i) Air
(ii) Engine

Q44b Gravitational potential energy → kinetic energy + sound energy

Q44c As the speed of the boat increase the height of the parachute in the air increase.

End

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Index No: | | | | | | |

Anglo-Chinese School (Junior)
Anglo-Chinese School (Primary)

PRELIMINARY EXAMINATION 2016
SCIENCE
BOOKLET A
PRIMARY SIX

Name: _____ ( ) Class: Primary 6 _

Date: 25 August 2016 Duration of paper: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, register number and class.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.
6. This question paper consists of 20 printed pages including this cover page.

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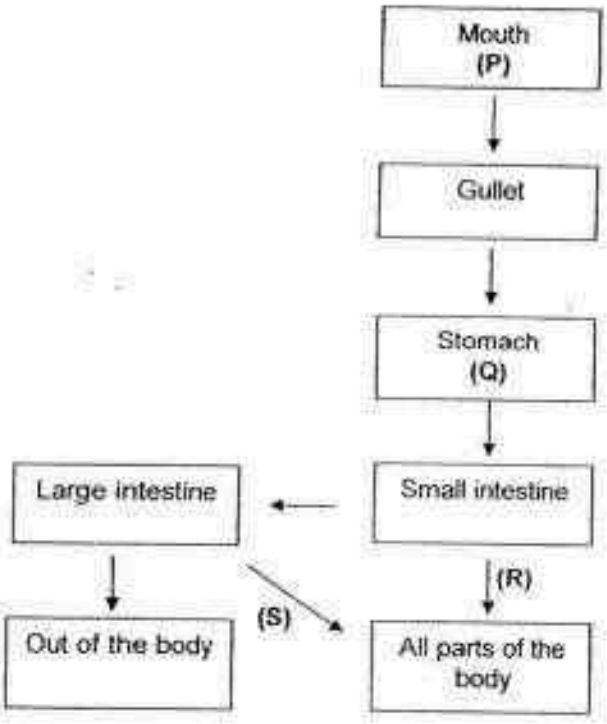
PART I

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(60 marks)

---

1 The flowchart below shows the human digestive system. P and Q represent substances found in the system while R and S represent substances leaving the organs in the system.



Which one of the following correctly identify P, Q, R and S?

	P	Q	R	S
(1)	digestive juice	saliva	water	digested food
(2)	saliva	digested food	digestive juice	water
(3)	digestive juice	water	saliva	digested food
(4)	saliva	digestive juice	digested food	water

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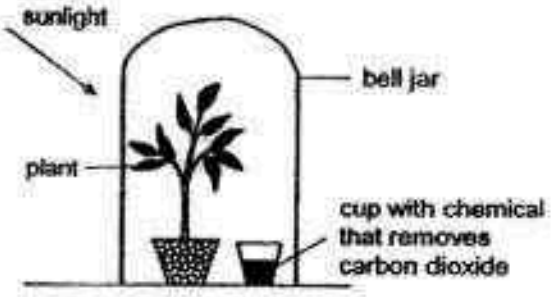
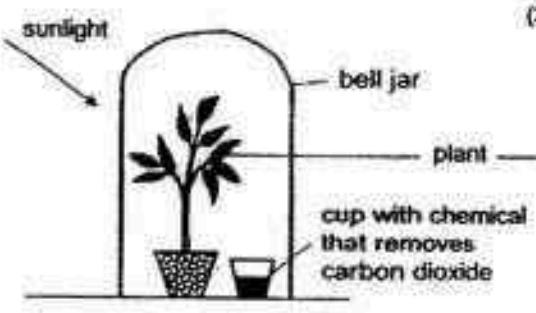
2 Jonathan wanted to set up an experiment to find out if carbon dioxide is necessary for plants to make food as shown in the diagram below.

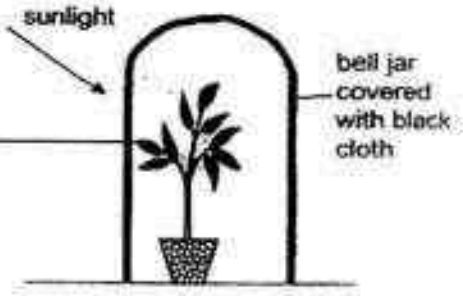


Which one of the following is a suitable control for his experiment?

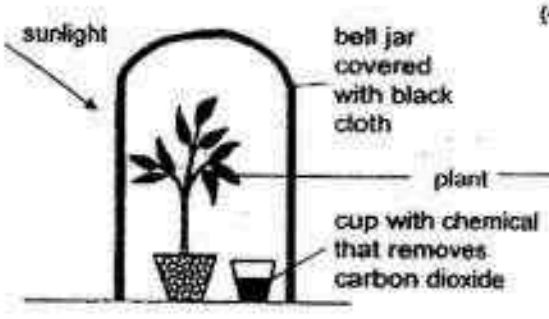
(1)



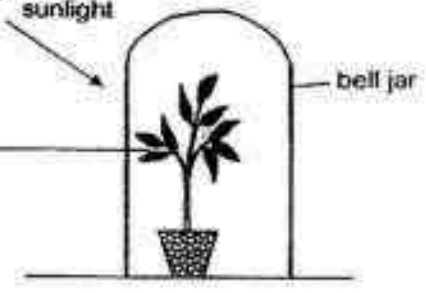
(2)



(3)



(4)



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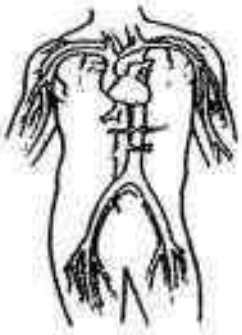
3 The diagrams below show part of the transport system of a plant and a human body.



Plant



Human body

Which of the following statements are true of the systems?

A Nutrients are transported within both systems.

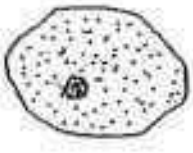
B Food made by the leaves is transported to all parts of the plant.

C Blood is transported from the heart to the rest of the body and back to the heart again.

D Water is absorbed by the roots and transported to the rest of the plant and back to the roots again.

(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B and D only

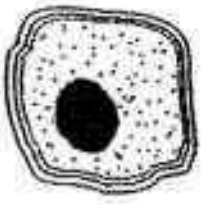
4 The diagram below shows three cells.



Cell A



Cell B



Cell C

Which parts are found in all three cells?

(1) Cell wall and nucleus
(2) Cell wall and cytoplasm
(3) Cytoplasm and cell membrane
(4) Cell membrane and chloroplast

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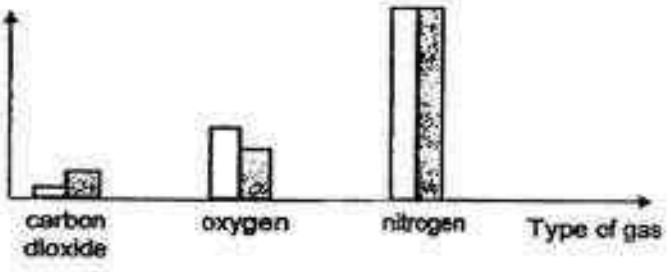
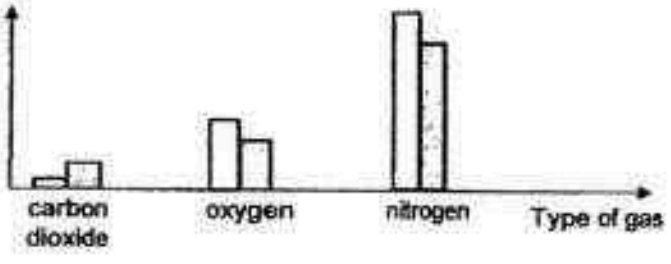
6 Which one **of the following graphs best represents the correct volume of oxygen, carbon dioxide and nitrogen found in inhaled air and exhaled air?**



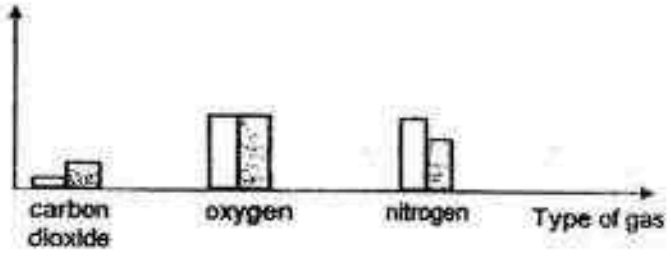
(1)



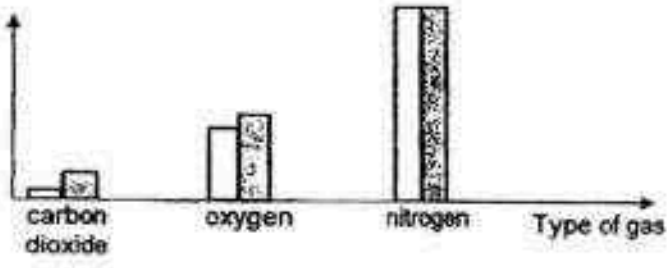
(2)



(3)



(4)



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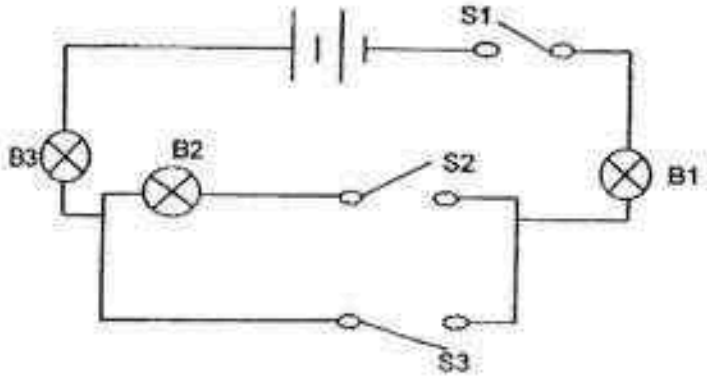
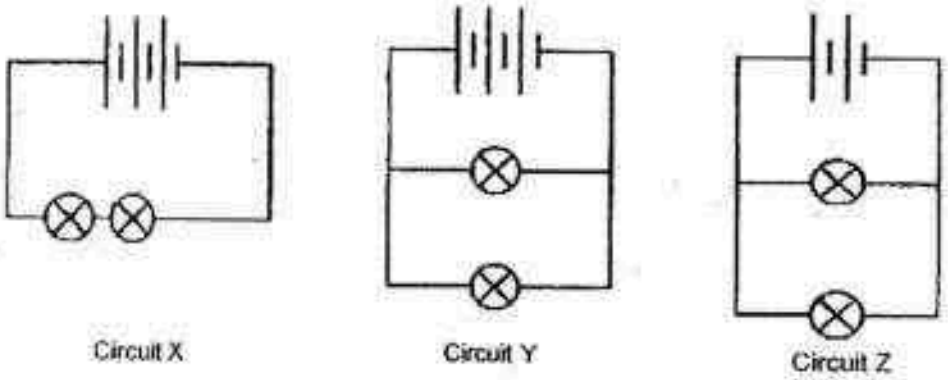
6 Study the circuit shown below.



Which one of the following statements about the circuit above is correct?

(1) When S2 is closed, at least 1 bulb will light up.
(2) When S1 and S2 are closed, 2 bulbs will light up.
(3) If B3 fuses, B1 and B2 will not light up when all the switches are closed.
(4) If B2 fuses, B1 will light up while B3 will not light up when all the switches are closed.

7 The diagram below shows three circuit diagrams. All bulbs, batteries and wires are similar and are in good working condition.



Circuit X Circuit Y Circuit Z

Arrange the circuits from the brightest bulbs to the dimmest bulbs.

	Brightest bulbs ⟶ dimmest bulbs		
(1)	X	Y	Z
(2)	X	Z	Y
(3)	Y	Z	X
(4)	Y	X	Z

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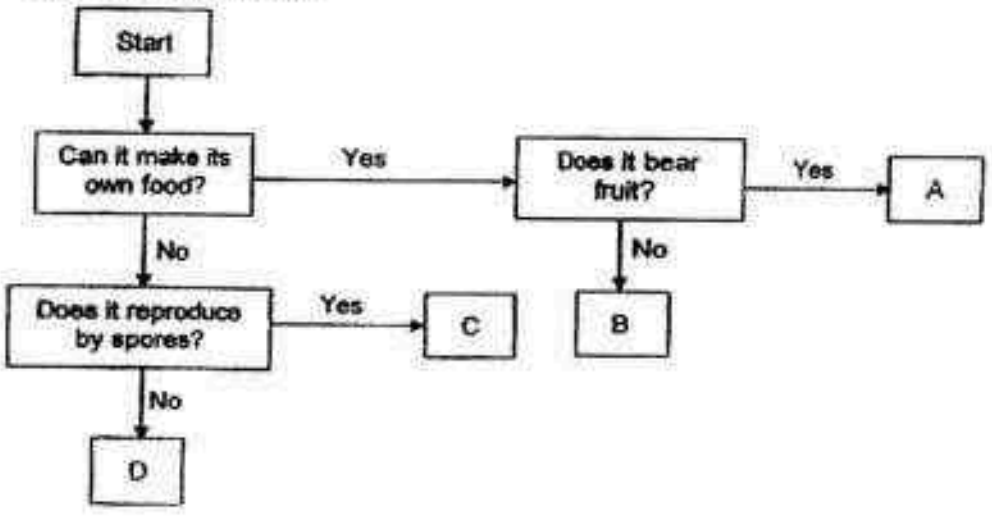
8 Study the flowchart below.



Which one of the following most likely represent, A, B, C and D?

	A	B	C	D
(1)	Fern	Animal	Flowering plant	Bacteria
(2)	Flowering plant	Fern	Fungus	Animal
(3)	Animal	Fungus	Bacteria	Flowering plant
(4)	Flowering plant	Bacteria	Fungus	Animal

9 Study the transfer of energy below

$$\text{Sun} \rightarrow X \rightarrow Y \rightarrow Z$$

What does the transfer of energy show?

A X is the food producer.
B Y feeds on X to obtain energy.
C Food that Y and Z eat comes directly from the Sun.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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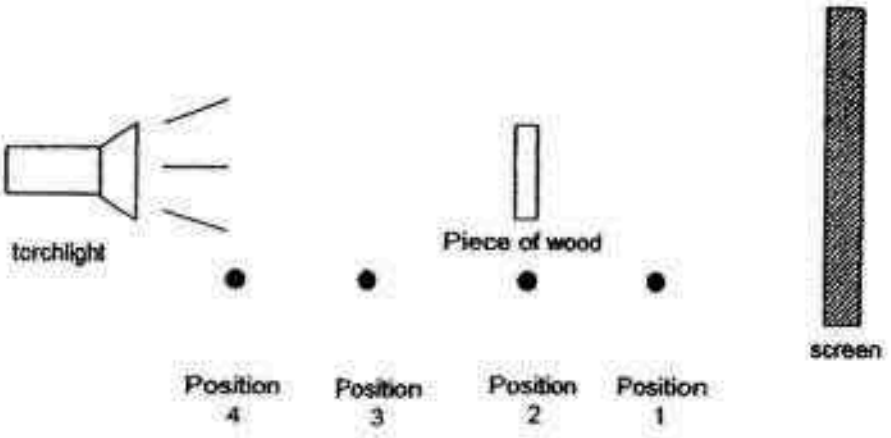
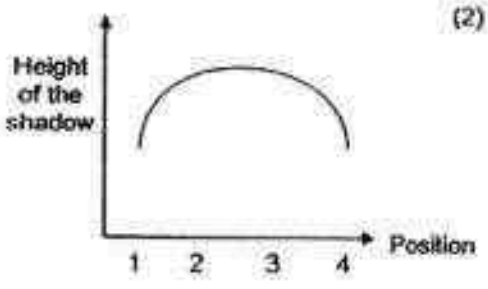
10 Phil set up the experiment as shown below. He placed a piece of wood at four different positions, and measured the height of each shadow formed on the screen.

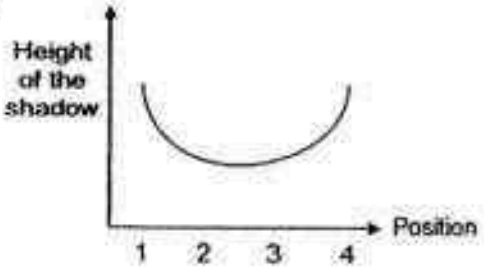


Which graph shows the correct relationship between the position of the piece of wood and the height of the shadow formed?

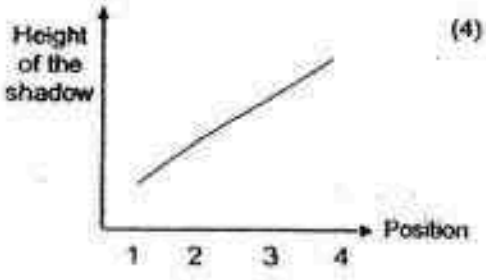
(1)



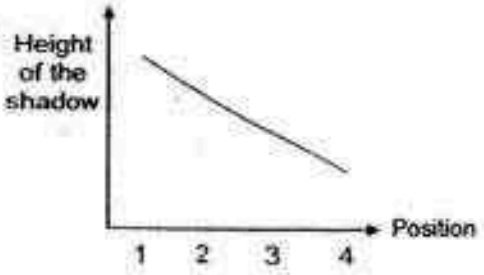
(2)



(3)



(4)



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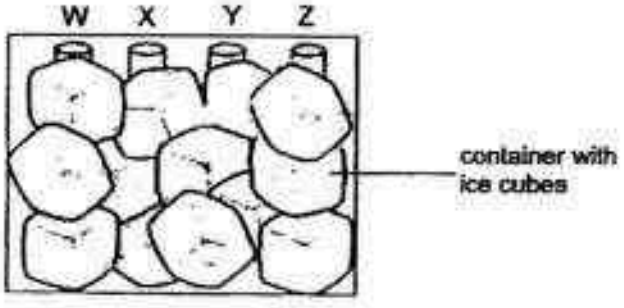
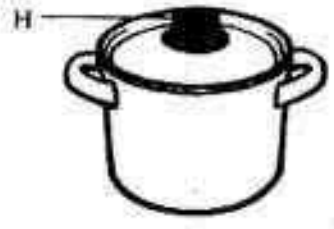
11 An experiment was set up with four identical rods made of different materials, W, X, Y and Z, at the same temperature of 30°C. The rods were placed in a container of ice cubes as shown below.



After ten minutes, the rods were taken out and their temperatures were recorded in the table below.

Materials	Temperature (°C)
W	4
X	20
Y	10
Z	28

Based on the result above, which material is most suitable for making the part labelled 'H'?



pot

(1) W
(2) X
(3) Y
(4) Z

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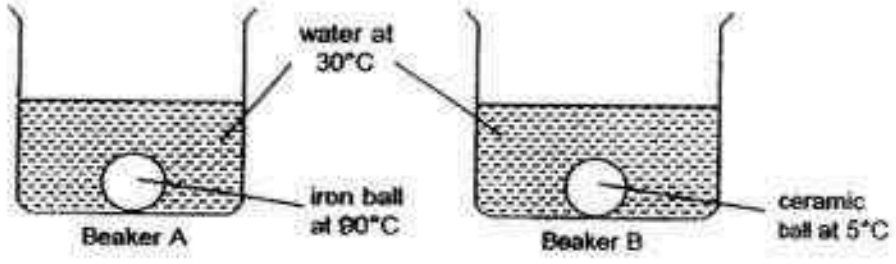
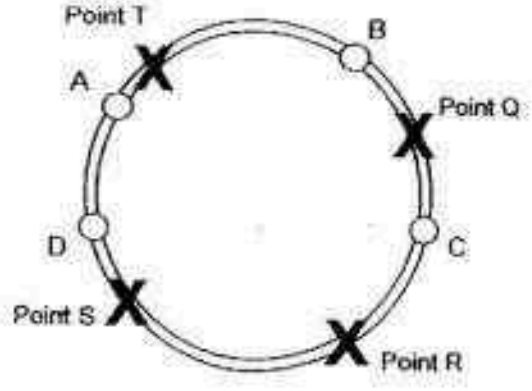
12 Kenny set up an experiment as shown below. An iron ball was heated to 90°C and a ceramic ball was cooled to 5°C. They were then immediately placed into beaker A and beaker B as shown in the diagram below.



What would happen to the temperature of the water in both beakers in the next few minutes ?

	Temperature of water in Beaker A	Temperature of water in Beaker B
(1)	decrease	decrease
(2)	decrease	increase
(3)	increase	increase
(4)	increase	decrease

13 A, B, C and D were blobs of wax placed on a metal ring as shown in the diagram below.



When the ring was heated at a certain point, the order in which the drops of wax melted was D, A, C and B. At which point, Q, R, S or T was the ring heated?

(1) Point Q
(2) Point R
(3) Point S
(4) Point T

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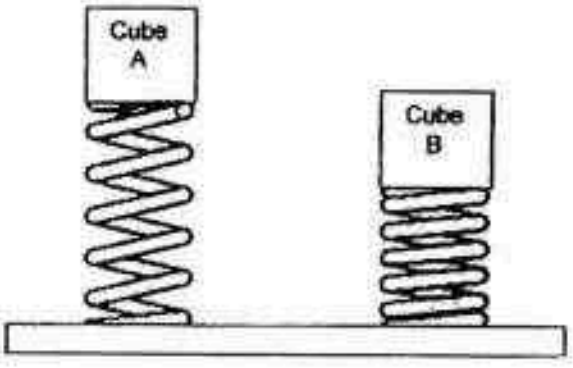
14 Jason placed two cubes of different materials but of the same size on two identical springs. As a result, the springs were compressed as shown below.



Based on his observation, Jason can conclude that _____.

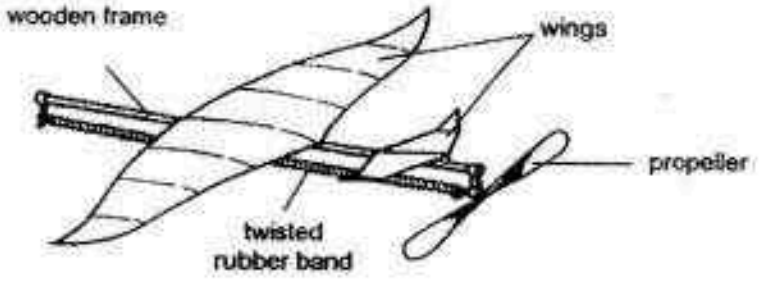
(1) Cube A is heavier than Cube B

(2) the compressed spring with Cube A has less elastic potential energy than the compressed spring with Cube B

(3) the compressed spring with Cube A has less gravitational potential energy than the compressed spring with Cube B

(4) the elastic potential energy in the compressed spring with Cube A will be converted to more kinetic energy than the compressed spring in Cube B

15 Study the diagram of a toy plane below.



Which part of the toy plane possesses the source of energy which enables it to move when it is released?

(1) Wings
(2) Propeller
(3) Wooden frame
(4) Twisted Rubber band

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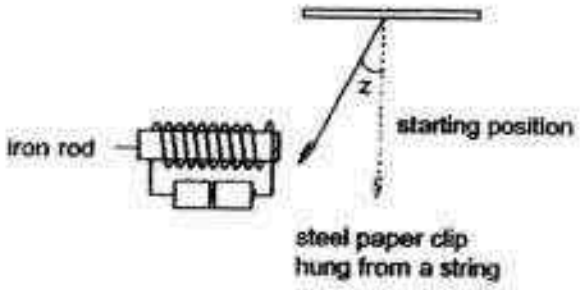
16 Joe set up an experiment as shown below. When the steel paper clip moved towards the iron rod, Joe measured the angle z from the starting position as shown below.



What changes to the experiment could Joe make to decrease angle z?

(1) Decrease the number of batteries.

(2) Move the circuit slightly to the right.

(3) Replace the steel paper clip with a lighter one.

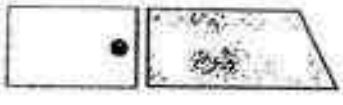
(4) Increase the number of coils around the iron rod.

17 When a magnet is broken into two pieces, each piece will have its own poles.
Kyle broke a bar magnet into three pieces as shown below.



Each piece was brought near to another piece of the broken magnet. Which one of the following below is most likely correct?

(1)



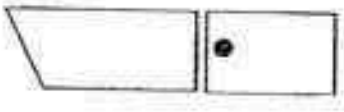
Attracted

(2)



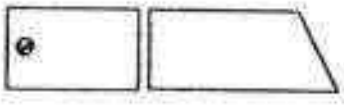
Repelled

(3)



Attracted

(4)



Repelled

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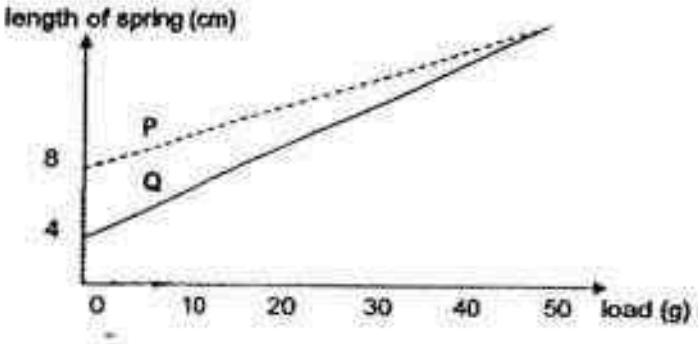
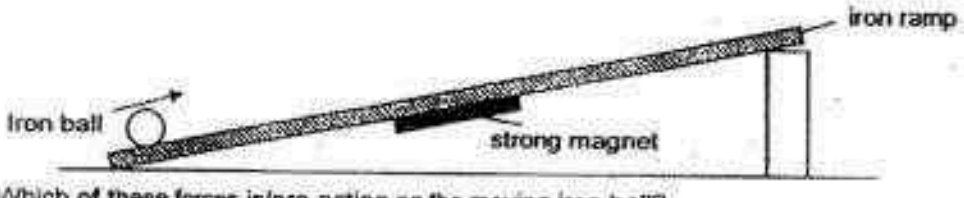
18 Tom conducted an experiment using springs P and Q. He hung different loads at a time on each spring and recorded their lengths. The results are shown in the graph below.



Which of these conclusions could Tom make based on his results?

	Spring that is longer at the start of the experiment	Spring that can be stretched more with the same load
(1)	Q	P
(2)	P	P
(3)	P	Q
(4)	Q	Q

19 An iron ball is rolled up an iron ramp which has a strong magnet attached on its underside as shown below.



Which of these forces is/are acting on the moving iron ball?

A Gravity
B Friction
C Magnetic
D Weight of the ramp

(1) C only

(2) A and B only

(3) B, C and D only

(4) A, B, C and D

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20 Gary wanted to find out the effect of water on photosynthesis. He used the same type of plants in each set-up. He listed the different conditions in his five set-ups as shown in the table below. A tick (✓) indicates that the set-up has the condition.

Condition	Set-up				
	A	B	C	D	E
Oxygen		✓	✓		✓
Carbon dioxide	✓	✓		✓	✓
Water	✓				✓
Fertilizer			✓		
Sunlight	✓	✓	✓		✓

Which two set-ups should be used to show that water is needed for the plant to make food?

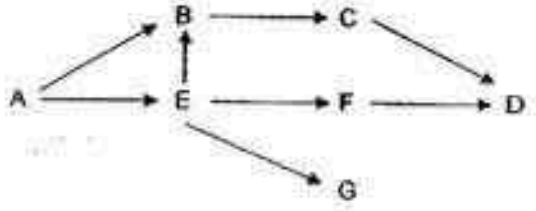
(1) A and D

(2) B and E

(3) C and D

(4) D and E

21 Study the food web below.



Based on the food web, which one of the following will cause a decrease in the population of F?

(1) An increase in the population of A

(2) An increase in the population of E

(3) An increase in the population of G

(4) A decrease in the population of D

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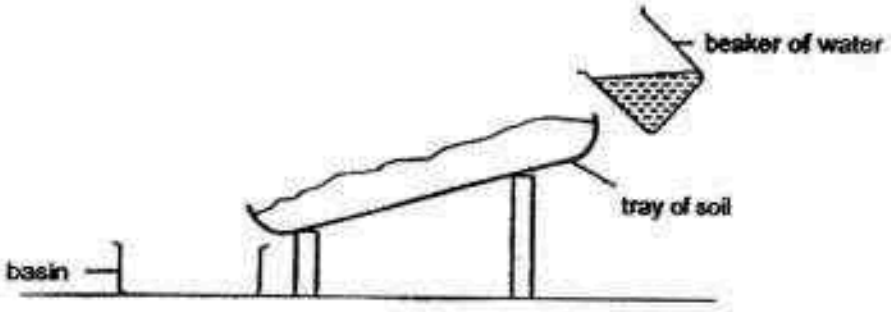
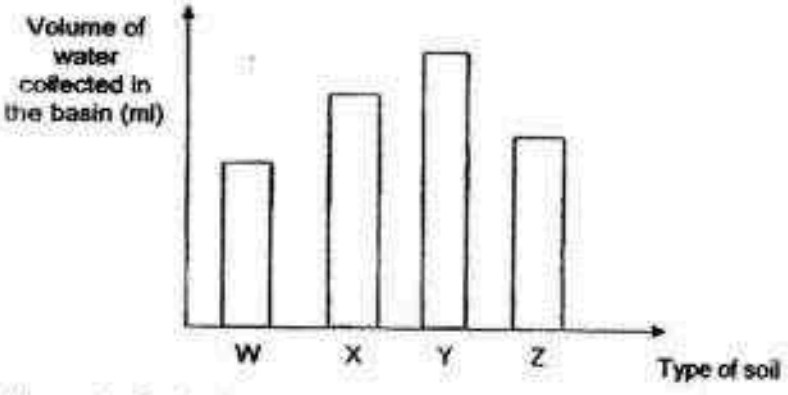
22 Rio wanted to find out how fast water flow through different types of soil. He used the set-up below.



He poured 300 ml of water onto soil W at one end of the tray and allowed the water to flow into the basin. After 5 seconds, he measured the volume of the water collected in the basin. He repeated the experiment with soil X, Y and Z. The graph below shows the results of the experiment.



Rio wanted to plant a cactus which requires soil that allows water to pass through easily. Which soil is the most suitable for the cactus to grow in?

(1) W

(2) X

(3) Y

(4) Z

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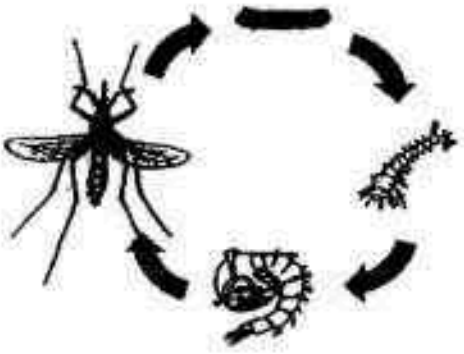
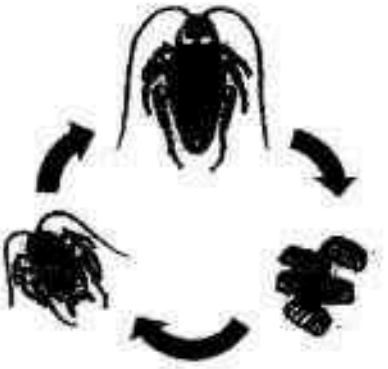
23 The diagrams below show the life cycles of insects P and Q.



Insect P



Insect Q

Based on the diagrams above only, which of the following statements about insects P and Q is/are true?

A Both adults lay eggs.

B Both adults do not have wings.

C Insect P lives longer than insect Q.

D Both their young looks like their adult.

(1) A only
(2) A and C only
(3) B and C only
(4) B and D only

24 The four statements A, B, C and D below describe the processes of plant reproduction.

A The male sex cell fuses with the female sex cell.

B When water is present, the roots of the seeds will appear first.

C The fruit splits open and the seeds are carried away by the wind.

D When the insects collect the nectar, they also transfer pollen grains to the flower.

In which order does the process of plant reproduction occur within one cycle?

(1) A, C, B, D

(2) B, A, C, D

(3) A, B, C, D

(4) D, B, C, A

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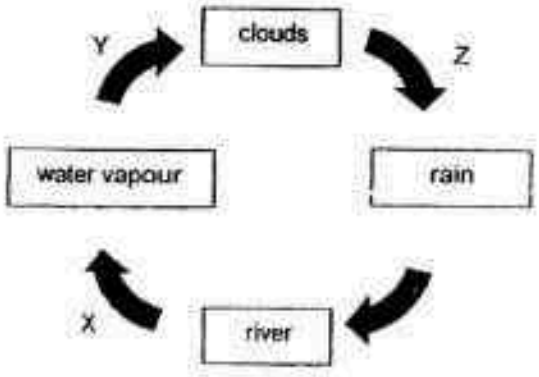
25 The diagram below shows the water cycle.



Which of the following statement(s) about the water cycle is/are correct?

A At stage Y, the water vapour loses heat to the surroundings.

B At stage X, the water in the river loses heat to the surroundings.

C At stage Z, the clouds gained heat from the surroundings to form rain.

(1) A only
(2) B only
(3) A and B only
(4) A and C only

26 The table below shows how the various parts, A, B, C, and D, of the reproductive system in a human and a plant are similar in their function.

	Reproductive System	
	Human	Plant
A	egg	X
B	ovary	ovary
C	Y	pollen grain
D	Z	anther

Which one of the following shows the correct representation of X, Y and Z?

	X	Y	Z
(1)	ovule	sperm	testes
(2)	seed	sperm	testes
(3)	ovule	testes	penis
(4)	seed	testes	penis

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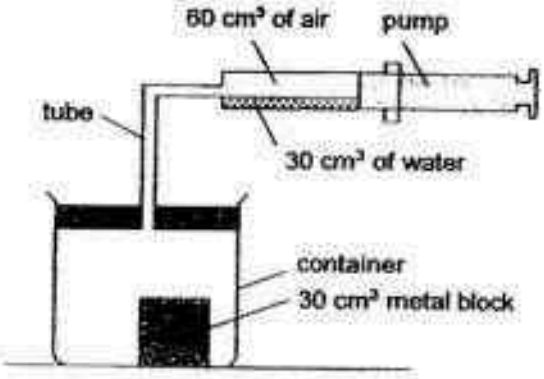
27 The diagram below shows a pump connected to a sealed container, with a capacity of 500 cm^3 through a thin tube. A block of metal with a volume of 30 cm^3 was placed inside the container.



When the pump was completely pushed in, the 30 cm^3 of water and 60 cm^3 of air was forced into the container.

What would be the final volume of the air inside the container?

(1) 120 cm^3
(2) 380 cm^3
(3) 440 cm^3
(4) 470 cm^3

28 The diagram below shows a water bird which catches and feeds on fish.



Based on the diagram above, which one of the following adaptations of the bird **does not** match the function for catching fish?

	Adaptation	Function
(1)	Beak	To help it grab fish.
(2)	Long beak	To help it reach into the water to catch fish.
(3)	Long legs	To keep its feathers dry for flying.
(4)	Thin legs	To make it look like tree branches so they can avoid being detected by fish.

(Go on to the next page)

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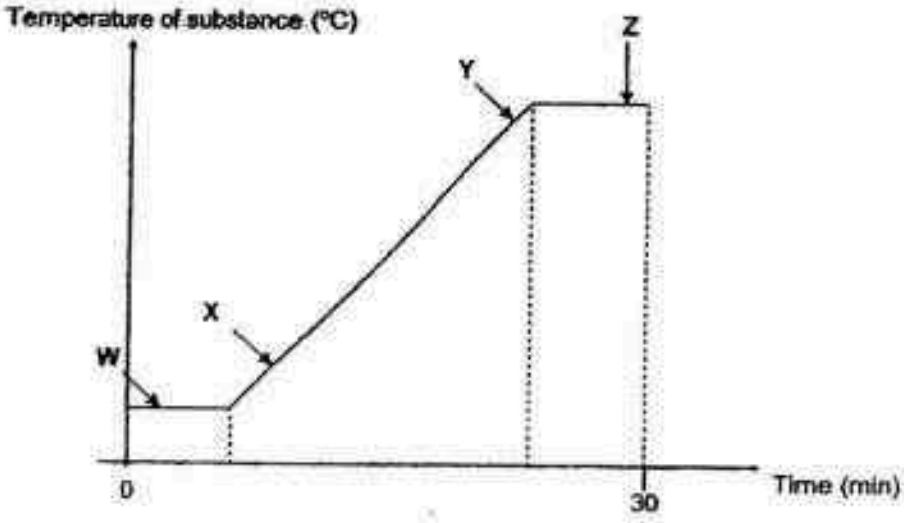
29 Melissa heated a substance for 30 minutes and measured its temperature during that 30 minutes at one-minute intervals. She plotted her results in a graph as shown below.



Based on the graph above, which of the following statements are true?

A The substance is at the same state at points W and X.

B The substance is at the same state at points X and Y.

C The substance loses heat to the surroundings at point W.

D The substance continues to gain heat from the heat source at point Z.

(1) A and B only

(2) B and C only

(3) B and D only

(4) A, C and D only

(Go on to the next page)

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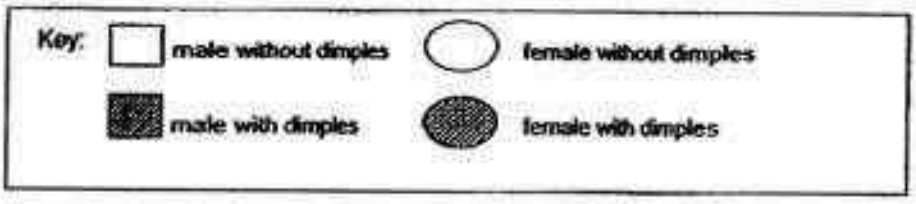
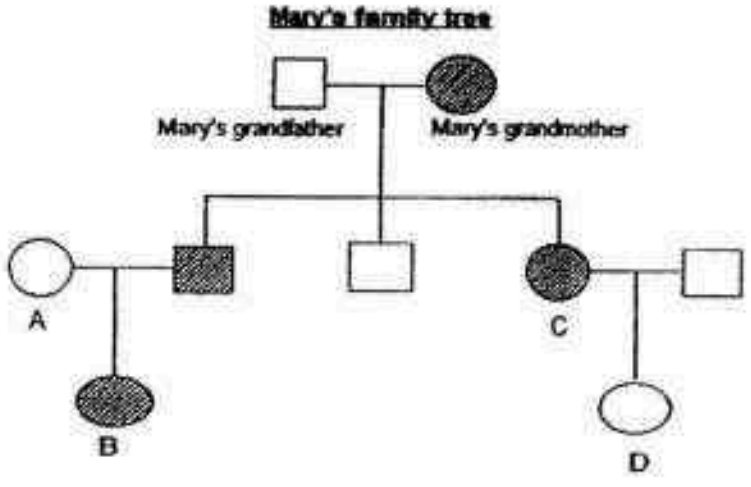
30 The diagram below shows Mary's family tree. A key to show the presence of the physical characteristic of dimples for the different family members is given.





Which one of the following, A, B, C or D, best represents Mary in the family tree if Mary has dimples?

(1) A

(2) B

(3) C

(4) D

(Go on to Booklet B)

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Index No: | | | | | | |

Anglo-Chinese School (Junior)
Anglo-Chinese School (Primary)

PRELIMINARY EXAMINATION 2016
SCIENCE
BOOKLET B
PRIMARY SIX

Name: _____ ( ) **Class: Primary 6**

Date: 25 August 2016 **Duration of paper: 1 h 45 min**

_____
Parent's/Guardian's Signature

INSTRUCTIONS TO CANDIDATES

1. Write your name, register number and class.
2. Do not turn this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.
6. This question paper consists of 17 printed pages including this cover page.

BOOKLET	POSSIBLE MARKS	MARKS OBTAINED
A	60	
B	40	
Total	100	

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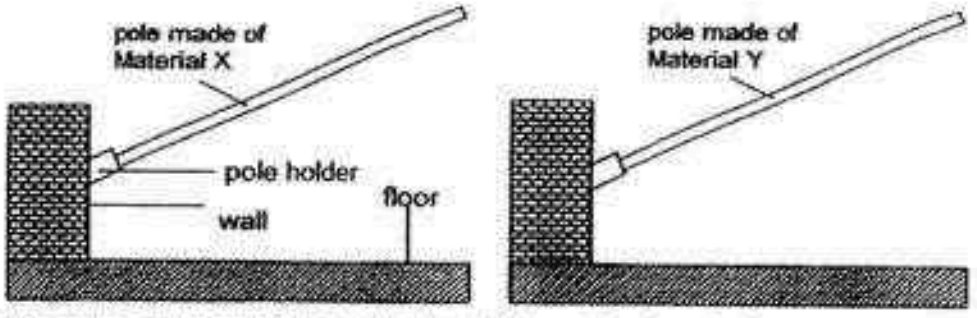
PART II

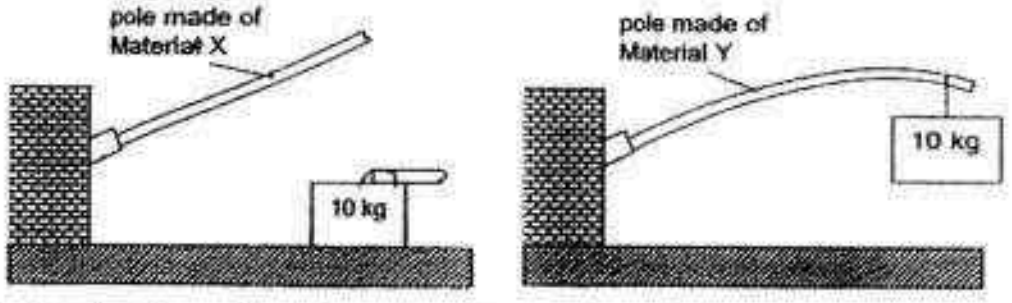
For questions 31 to 44, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

(40 marks)

31 Ravi wanted to find out which material, X or Y, would be more suitable to hang clothes to dry. He hung the two poles of the same mass and size as shown below.



He then hung a 10 kg weight on each pole and the result is shown below.



(a) Based on the results, what property of the material was Ravi testing? [1]

(b) What two variables must Ravi keep the same while conducting the experiment? [1]

(c) Ravi wanted to use either pole X or Y for fishing instead of for hanging clothes. Based on the results above, which material, X or Y, is more suitable to be used as a fishing pole? Explain your answer. [1]

(Go on to the next page)

SCORE 3

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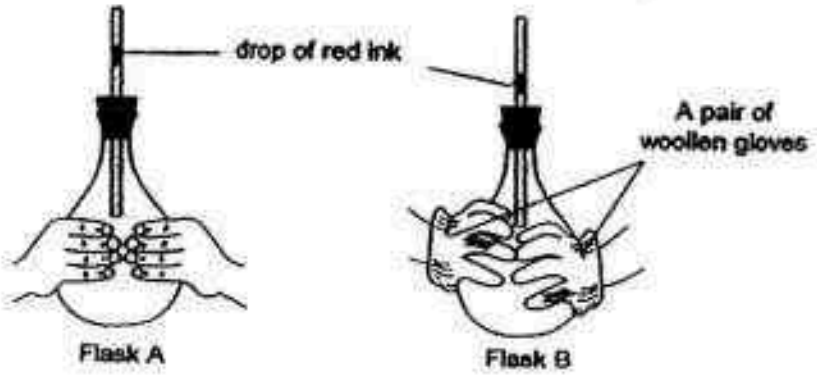
32 Tom conducted an experiment using two identical flasks, A and B, as shown below. Each flask had a stopper covering the opening and a tube with a drop of red ink in it.



When Tom held Flask A for 5 minutes, he observed that the drop of ink in the tube moved downwards and then rose upwards, but when he held Flask B for the same amount of time, the drop of ink in the tube did not move.

(a) Why did the drop of ink in Flask A eventually rise when Tom was holding it? [1]

(b) Explain why the drop of ink in Flask B did not move. [1]

(c) Alex wanted to make the drop of ink in Flask A to rise even higher than Tom's. Using only his hands, what can Alex do to achieve this? [1]

(Go on to the next page)

SCORE 3

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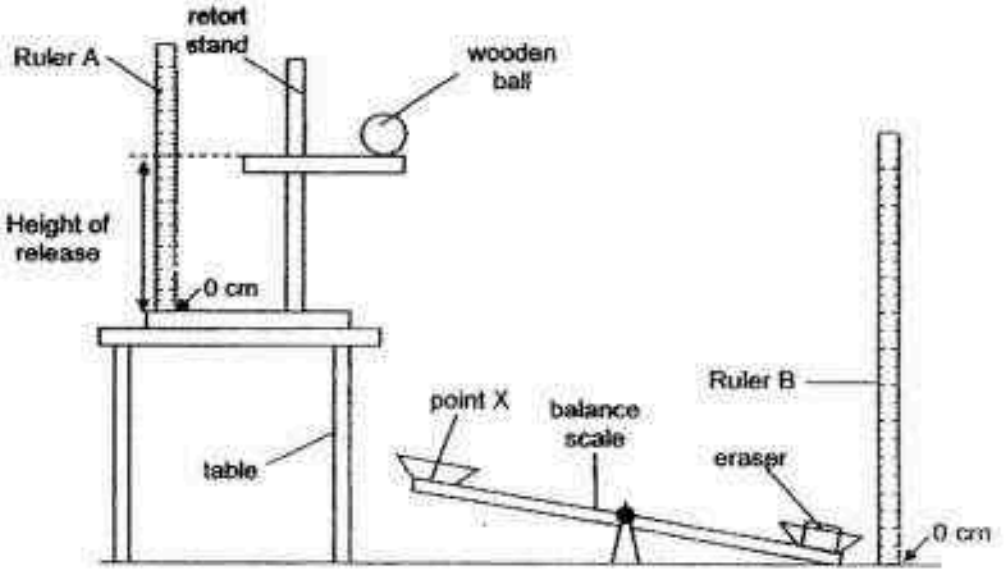
33 Dave conducted an experiment to find out the relationship between the height at which a wooden ball is released and the height at which an eraser can reach. When the wooden ball was released, it fell and hit the balance scale at point X. The balance scale then tilted downwards and caused the eraser to launch upwards.



(a) Identify the form(s) of energy that the wooden ball had: [1]

i) just before it was released.

_____

ii) when it hit the balance scale at point X.

_____

(This question continues on page 5.)

(Go on to the next page)

SCORE 1

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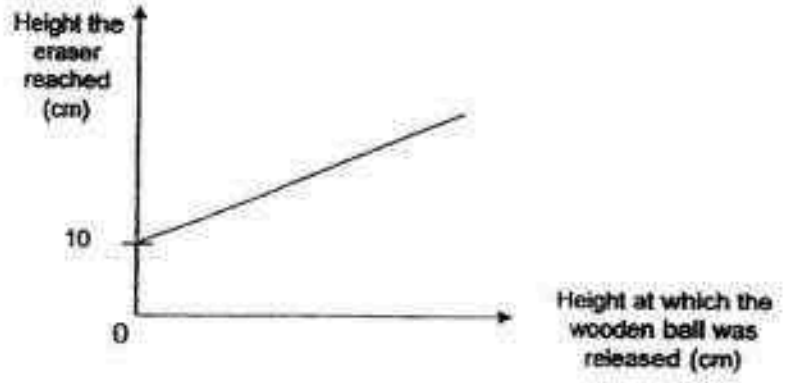
(b) Dave plotted the results on a graph shown below.



i) Based on the graph, what can Dave conclude about the relationship between the height at which the wooden ball was released and the height at which the eraser reached? [1]

ii) When the wooden ball was released from a height of 0 cm as indicated on Ruler A, the eraser was able to reach a height of 10 cm on Ruler B. Explain why. [1]

(Go on to the next page)

SCORE 2

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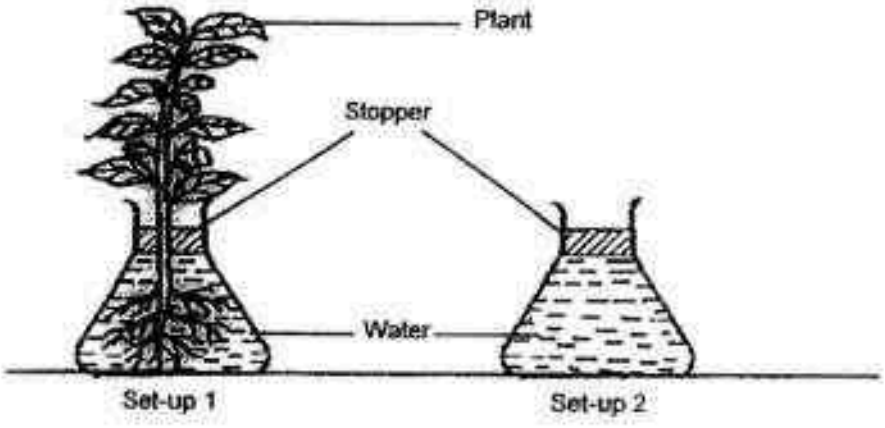
34 Jared wanted to find out if the amount of roots a plant has affects the amount of water it can absorb. He carried out an experiment using the set-up shown below.



He left the set-up undisturbed for two days in the garden. The amount of water only decreased in Set-up 1.

(a) What is the function of the stopper? [1]

_____

_____

(b) Why did the volume of water in Set-up 1 decrease after two days? [1]

_____

_____

(Go on to the next page)

SCORE / 2

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35 Mr Tan went overseas for a week. When he returned, he observed that his plant had wilted as shown below.



When a plant is wilting, the stomata on the leaves either close or reduce the size of their openings.

(a) How does the closing of the stomata help the wilting plant stay alive? [1]

(b) The rate of photosynthesis of the plant decreases when the plant is wilting. Give two reasons for this. [2]

(Go on to the next page)

SCORE	/ 3

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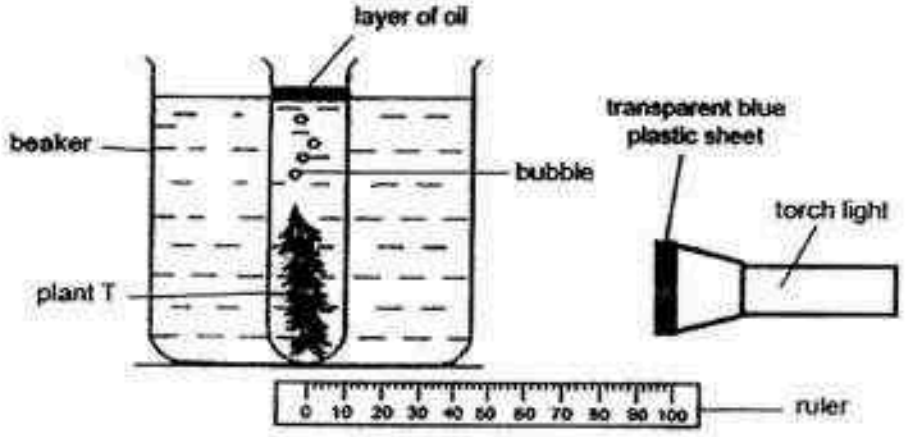
36 Jared wanted to find out if the colour of the light affects the rate of photosynthesis. He set up the experiment in a dark room with a torchlight producing white light. The number of oxygen bubbles produced by Plant T in ten minutes was counted. The experiment was then repeated, with the torch wrapped with a transparent blue plastic sheet giving out blue light.



Jared's readings are as shown below.

	Number of bubbles produced in 10 minutes		
	1st try	2nd try	3rd try
White light	6	5	6
Blue light	4	4	4

(a) Jared used the same Plant T throughout the experiment. Give a reason why using the same plant helps to make the experiment a fair test. [1]

(b) What can Jared do to increase the number of bubbles produced by Plant T? [1]

(c) Jared wanted to find out if the temperature of water would affect the rate of photosynthesis for Plant T. Apart from using the same plant, suggest two other variables that he has to keep constant when conducting his experiment. [1]

(Go on to the next page)

SCORE 3

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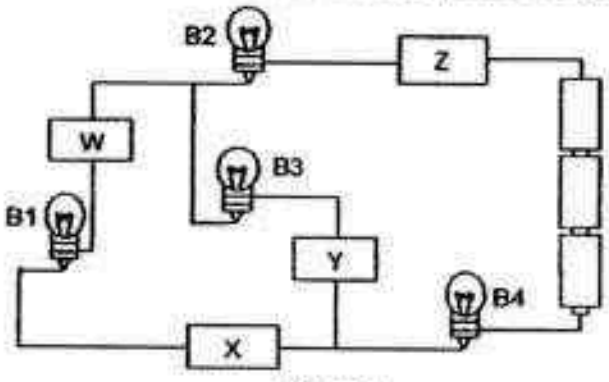
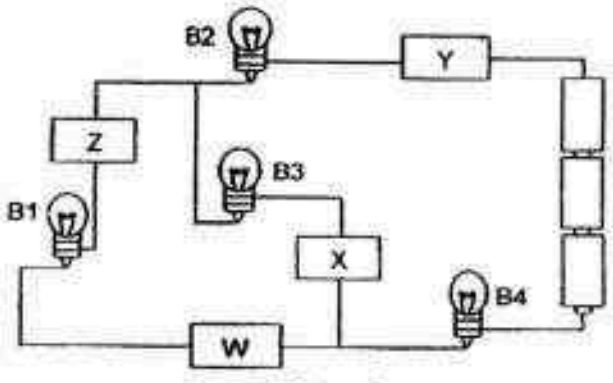
37 Kathy set up the circuit below with new bulbs and batteries. She connected four objects W, X, Y and Z to the electrical circuit as shown below. Bulbs B1, B2, B4 lit up while B3 did not.



Set-up 1

She then shifted the position of the objects W, X, Y and Z as shown below.



Set-up 2

(a) Which bulb(s) would light up in Set-up 2? Explain your answer. [2]

_____

_____

(b) Give an example of a type of material that objects Y and Z could be made of. [1]

(i) Y: _____

(ii) Z: _____

(Go on to the next page)

SCORE 3

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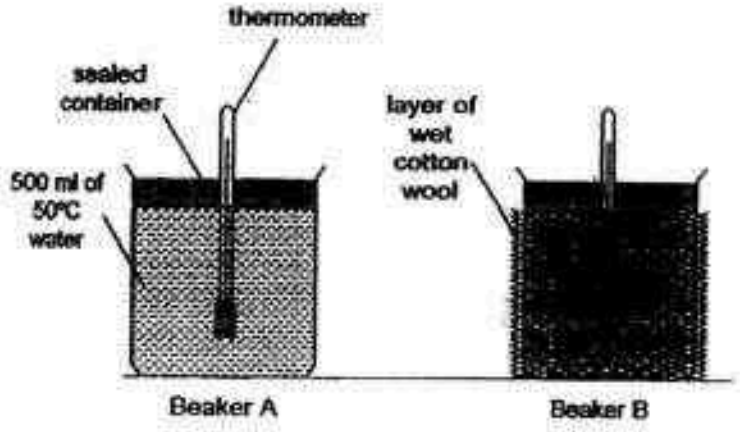
38 The diagram below shows an experimental set-up. It is made up of two sealed beakers of the same size, each containing 500 ml of water at 50°C at the start of the experiment. Beaker B is wrapped with a layer of wet cotton wool.



The temperatures of the water in the beakers were measured at regular intervals and the results tabulated as shown below.

Beaker	Temperature (°C)				
	5 min	10 min	15 min	20 min	25 min
A	50	45	40	38	35
B	50	43	39	35	30

(a) Beaker A was used as a control set-up. Explain the purpose of the control set-up in this experiment. [1]

_____

_____

(b) Explain how the layer of wet cotton wool helped the water in beaker B to reach a lower temperature than beaker A at the end of the experiment. [1]

_____

_____

(This question continues on page 11.)

(Go on to the next page)

SCORE 2

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38 A polar bear has a layer of fur to help keep it warm in a cold environment. When the polar bear climbs onto dry land after a swim in the ocean, it shakes its entire body to remove the water trapped in its fur, as shown below.



Picture taken from http://www.telegraph.co.uk/

(c) Explain how this behavioural adaptation helps the polar bear in keeping warm. [1]

_____

_____

(Go on to the next page)

30

SCORE 1

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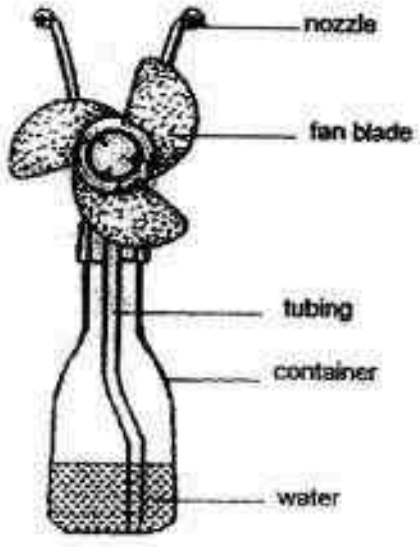
39 The diagram below shows a water container with fan blades and nozzles attached to it.



Water in the container is being transported through the tubing to the nozzles, which sprays out the water in the form of 'fine mist'.

(a) When the 'fine mist' is being sprayed into the air, the surrounding air becomes cooler. Explain why this is so. [1]

_____

_____

The fan blades on the device are made of rubber and they will start turning only when the user presses a switch on the container.

(b) Explain how switching on the device helps to make the surrounding air cool faster. [1]

_____

_____

(c) Without making any changes to the device, state one method which can make the device cool the surrounding air even faster. [1]

_____

_____

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SCORE	
	3

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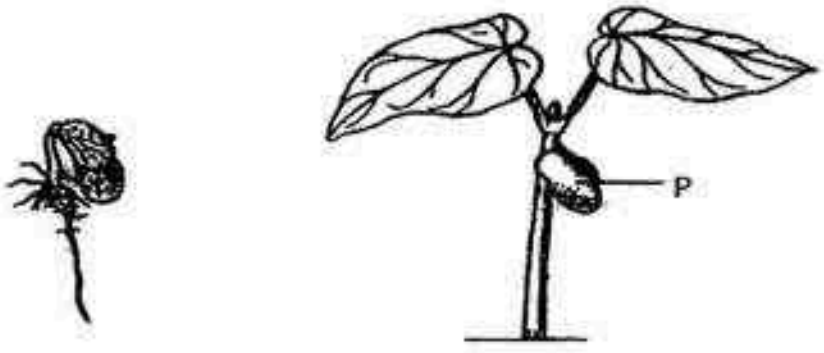
40 The diagrams below show a seedling at two different stages in its life cycle.



Stage X Stage Y

(a) Which of the following factors below will allow the original seed to develop into stage X? Put a tick (✓) beside the correct factors. [1]

Factors	Tick (✓)
Presence of water	
Presence of oxygen	
Presence of carbon dioxide	
Presence of nutrients	
Presence of light	
Presence of heat	

(b) Identify part P. [1]

_____

(c) Explain why part P becomes smaller as the leaves of the seedlings become bigger. [1]

_____

_____

(Go on to the next page)

SCORE 3

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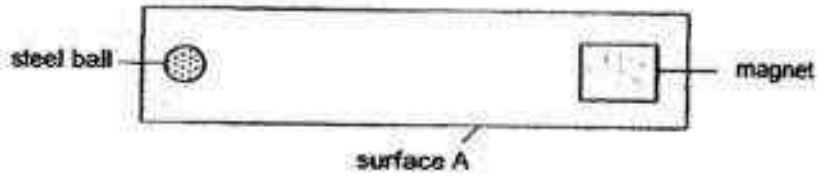
41 Roy conducted an experiment as shown below. He placed a magnet at one end of surface A and placed a steel ball at the other end and observed what happened.



Roy repeated the experiment using the same magnet and steel ball but with surface B. He recorded his observations in the table below.

Surface	Time taken for the steel ball to be attracted to the magnet (s)		
	Try 1	Try 2	Try 3
Surface A	1.2	1.0	1.2
Surface B	1.3	1.2	1.3

(a) Based on the results, which surface was smoother? Explain why. [1]

_____

_____

(b) What will happen to the time taken when lubricant is applied on the surfaces? Explain why. [2]

_____

_____

_____

(Go on to the next page)

SCORE / 3

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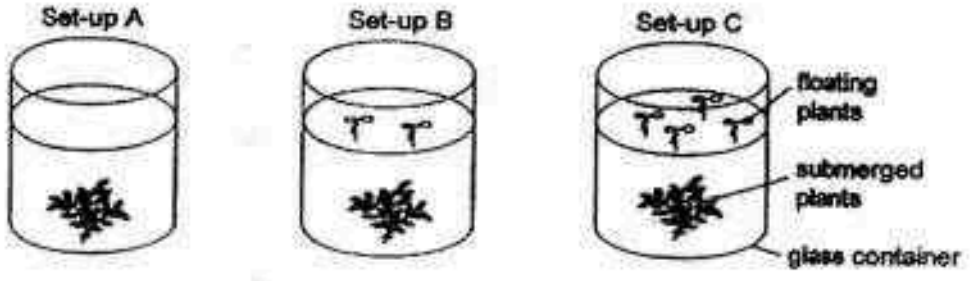
42 George wanted to find out if the survival of submerged plants would be affected by the presence of floating plants.

George used identical glass containers with the same amount of water. He also used the same type and amount of submerged plants. He placed the set-ups below by the window.



After three days, all the submerged plants were still alive.

How can George improve his set-ups or experiment so that he can observe an effect on the submerged plants? [2]

Improvement 1:

_____

_____

Improvement 2:

_____

_____

(Go on to the next page)

SCORE / 2

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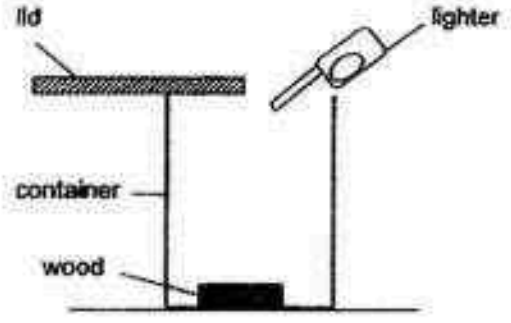
43 Gareth wanted to find out how fast different types of wood could burn. He used the set-up as shown below. Once he had lit up the wood, he quickly covered the container with the lid and made his observations. He repeated his experiment with the other types of wood.



(a) Gareth repeated the experiment with the wood being broken into smaller pieces. He observed that the small pieces of wood burnt faster. Explain why. [1]

(b) Give one example of a pollutant released into the surrounding air as a result of deforestation by burning. [1]

(c) Deforestation by burning causes global warming. Explain how. [1]

(Go on to the next page)

SCORE 3

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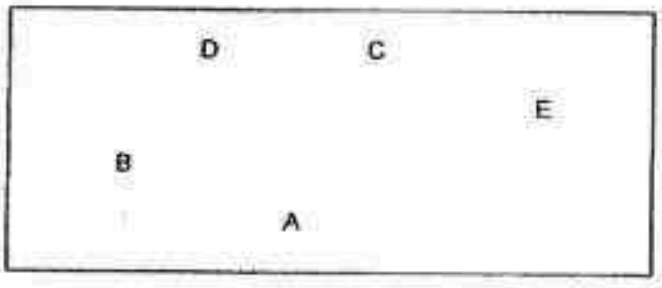
44 A, B, C, D and E are five living things in a community.
The following statements show the food relationships between the five organisms.

C is eaten by B and E.
D is eaten by B and C.
A eats B and E.

(a) Draw the correct arrows to complete the food web below using the information above. [1]



(b) How many food chains are there? [1]

_____

(c) Which organism(s) is/are both a prey and a predator? [1]

_____

End of Paper

SCORE 3

25

HENRY PARK PRIMARY SCHOOL
PRELIMINARY EXAMINATION 2016

PRIMARY 6
STANDARD SCIENCE
SECTION A (60 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers on the Optical Answer Sheet (OAS) provided.

Name: _____ ( )

Class: Primary 6 ( )

Date: 25 August 2016

Total Time for Booklets A and B: 1 h 45 min

Section	Marks
A	
B	
Total (A & B)	

Parent's Signature _____

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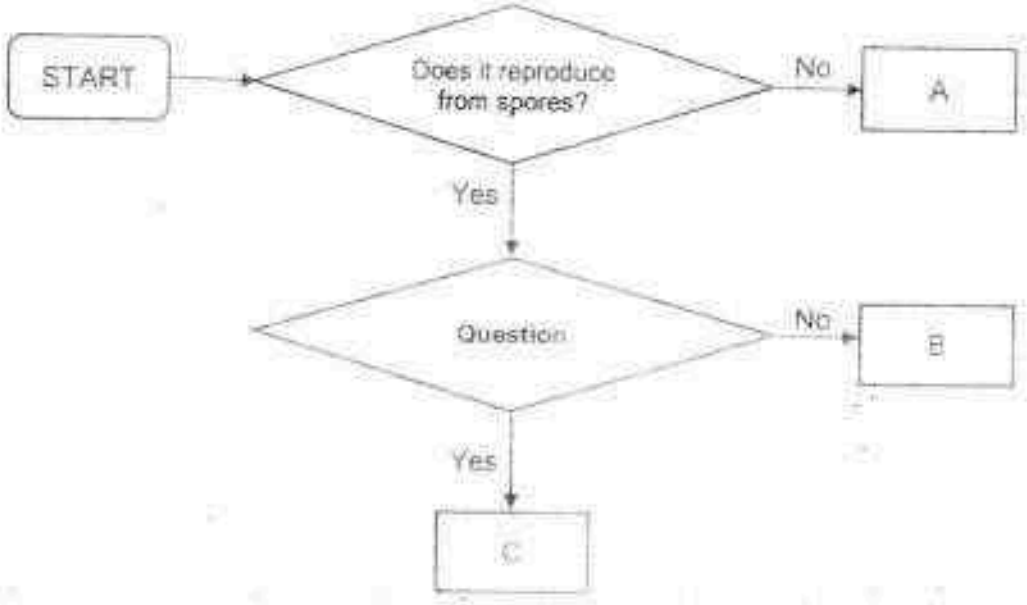
Section A

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

[30 X 2 marks]

1. The flowchart below shows how some living things are classified into three groups, A, B and C.



The diagram below shows organism X which is a bird's nest fern.



Given that organism X belongs in group C, what could the second question in the above flowchart be?

(1) Does it make its own food?

(2) Does it feed on other plants?

(3) Does it feed on decaying matter?

(4) Does it depend on other living things for food?

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2. Sarah compared animals Y and Z and made some observations.

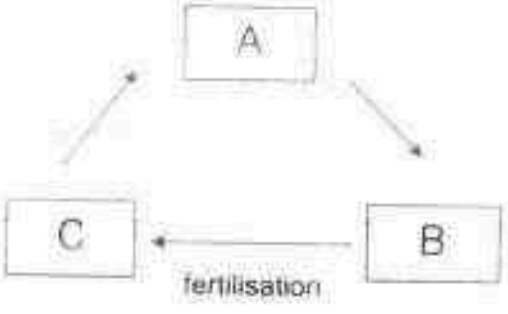
She drew a checklist and placed a tick (✓) in the box when she made the observations. Her completed checklist is shown below.

Observations	Animal Y	Animal Z
Eggs are laid in water.	✓	
There are 3 stages in the life cycle (egg, young, adult).	✓	✓
It has six legs.		✓

Which of the following are likely to be animals Y and Z?

	Animal Y	Animal Z
(1)	frog	butterfly
(2)	frog	cockroach
(3)	chicken	butterfly
(4)	butterfly	cockroach

3. The diagram shows the life cycle of a flowering plant.



Fertilisation occurs after the flowering plant has reached stage B.

Which of the following correctly represents the three stages, A, B and C?

	A	B	C
(1)	seed	young plant	adult plant
(2)	adult plant	seed	young plant
(3)	young plant	adult plant	seed
(4)	young plant	seed	adult plant

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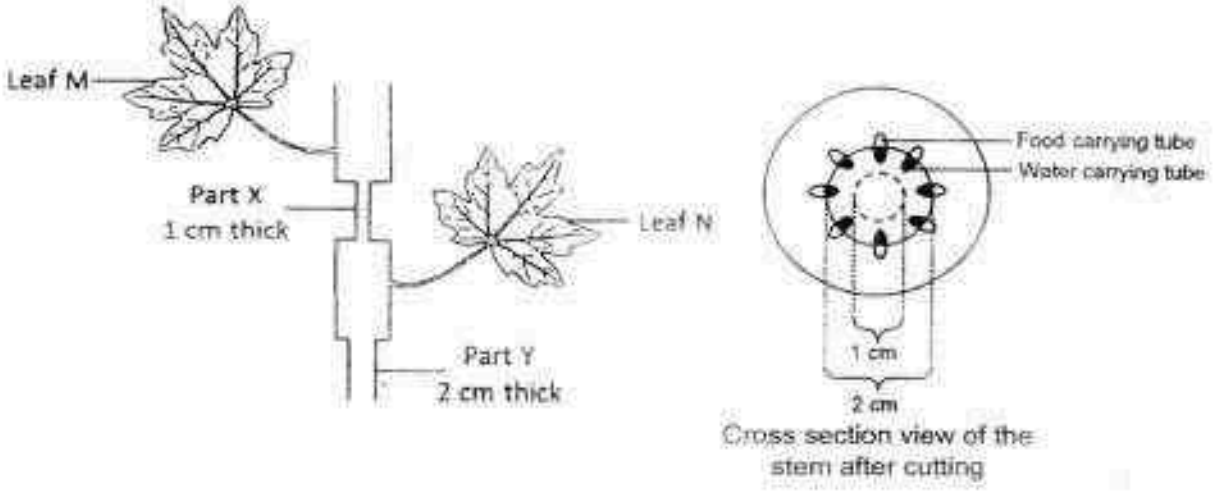
4. The diagram below shows a potted plant after Affin had cut away the outer ring of the stem at parts X and Y. The plant was watered daily.



A week later, Affin observed that only leaf N had survived.

Which one of the following statements based on Affin's observation is likely to be correct?

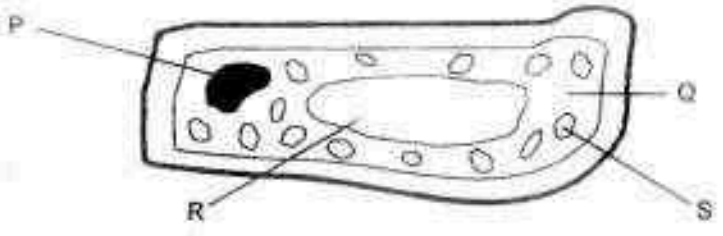
(1) Both leaves were able to receive food.

(2) Both leaves were able to receive water.

(3) Leaf M was able to receive water but not food.

(4) Leaf M was not able to receive water to make food.

5. The diagram below shows a plant cell.



In which part of the cell, P, Q, R or S, does photosynthesis take place?

(1) P

(2) Q

(3) R

(4) S

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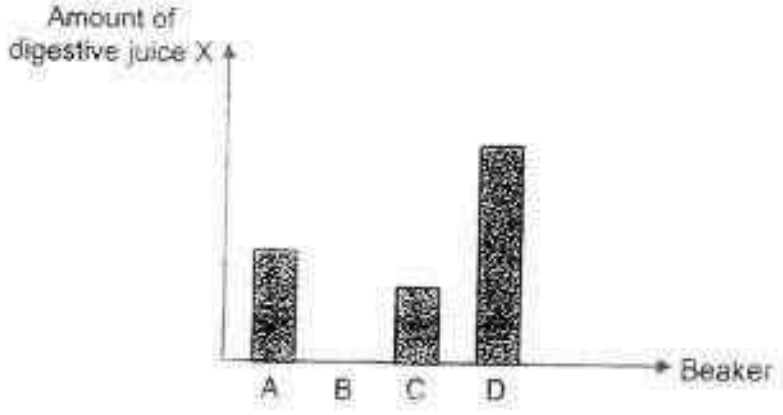
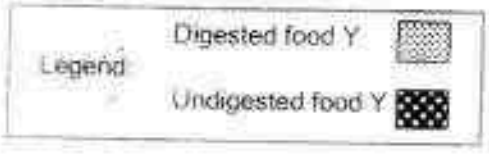
6. The graph below shows the amount of digestive juice X in 4 similar beakers, A, B, C and D.

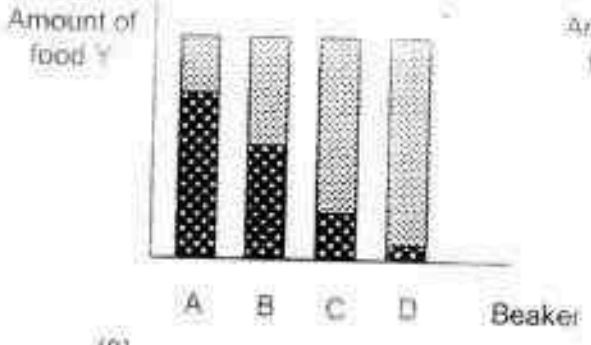
6 similar sized cubes of food Y that can be digested by X were then placed in each beaker for 4 hours.



Which one of the following graphs shows the possible amount of food Y found in each beaker after 4 hours?



(1)



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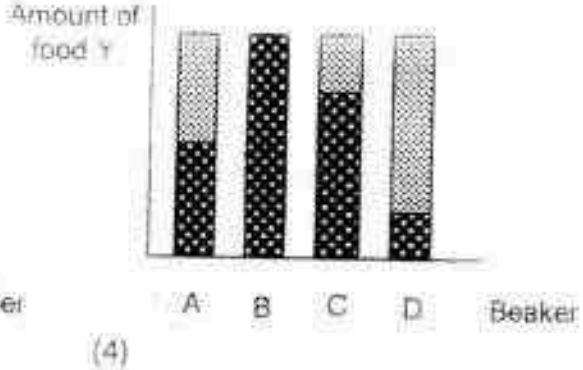
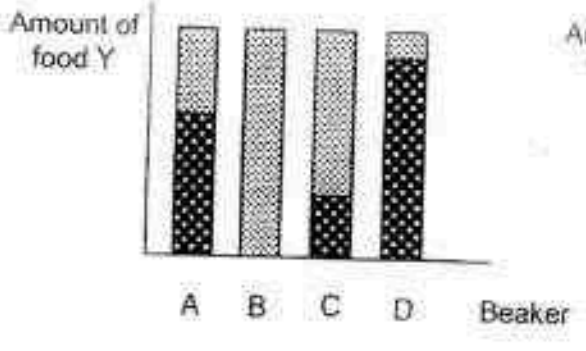


(3)



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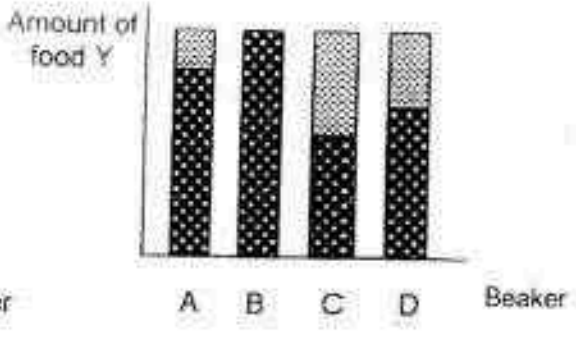

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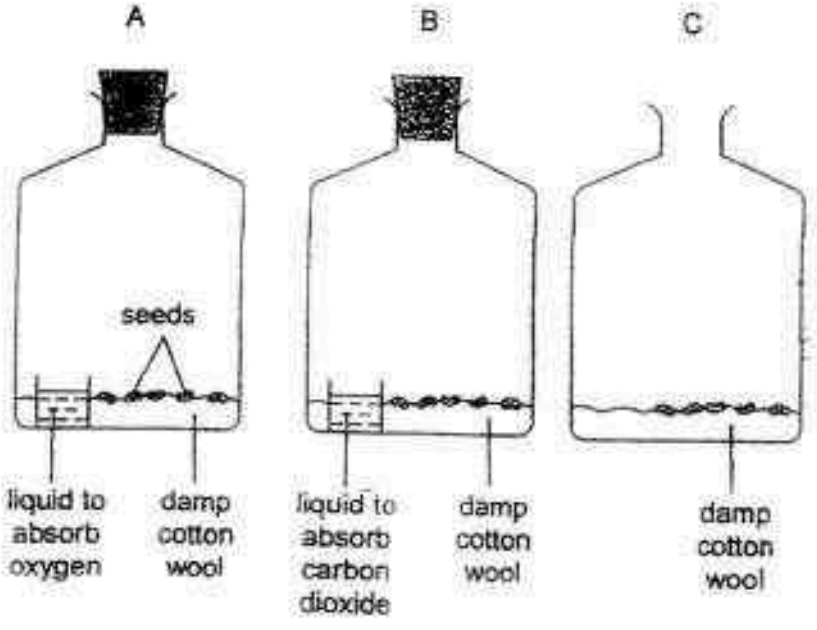
7. The diagram below shows three jars, A, B and C, containing similar seeds. They were kept at room temperature throughout the experiment.



In which jars are the seeds likely to germinate?

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

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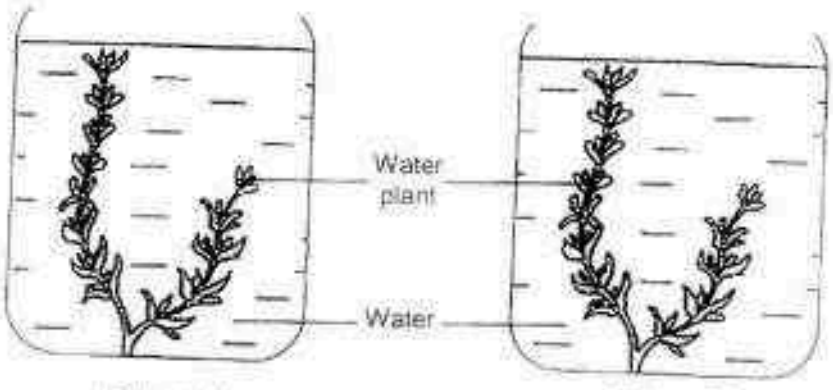
8. Kumar conducted an experiment using two set-ups, A and B, shown below.



Set-up A
Placed near an open window

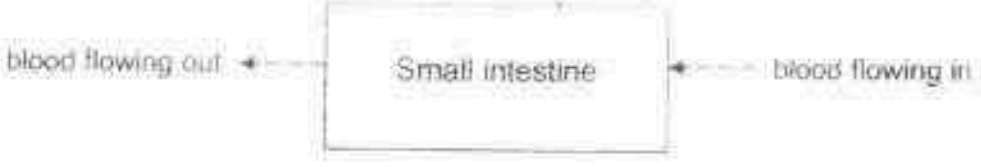
Set-up B
Placed inside a dark cupboard

After 5 hours, he observed that the plant in one of the set-ups produced bubbles.

Which one of the following could he correctly conclude based on his observation?

(1) The plant in set-up A produced oxygen.
(2) The plant in set-up B produced oxygen.
(3) Plants do not need light to photosynthesize.
(4) None of the plants produced carbon dioxide.

9. The diagram shows blood flow in a part of the human digestive system about six hours after a meal.



The amount of oxygen, carbon dioxide and digested food in the blood flowing out was compared with the blood flowing in.

Which of the following shows the correct comparison?

	Blood flowing out has		
(1)	more oxygen	less carbon dioxide	more digested food
(2)	more oxygen	more carbon dioxide	less digested food
(3)	less oxygen	more carbon dioxide	more digested food
(4)	less oxygen	less carbon dioxide	less digested food

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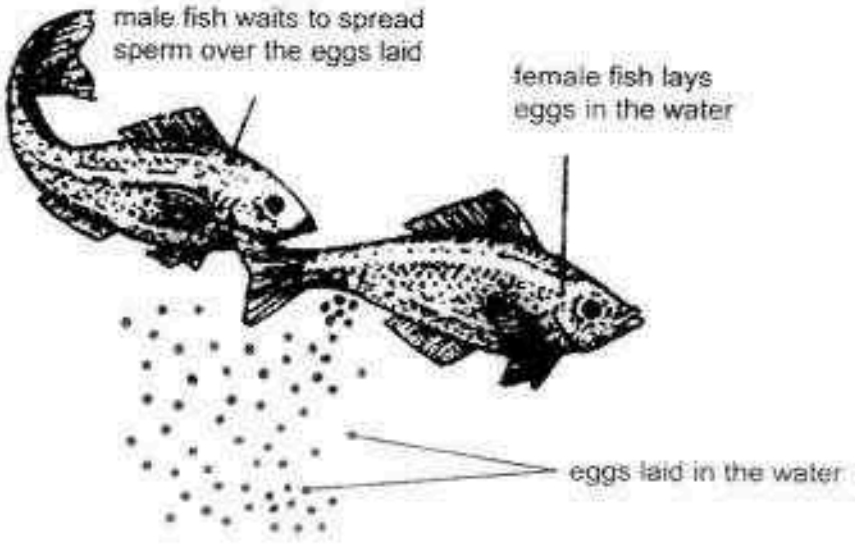
10. The diagram below shows a part of the reproduction process of fish.



Based on the above diagram, which of the following statement(s) is/are likely to be correct?

A. Sperms are needed to fertilise the eggs.

B. The eggs are fertilised outside the female's body.

C. Numerous eggs are laid to increase the chance of them hatching.

(1) A only

(2) C only

(3) B and C only

(4) A, B and C

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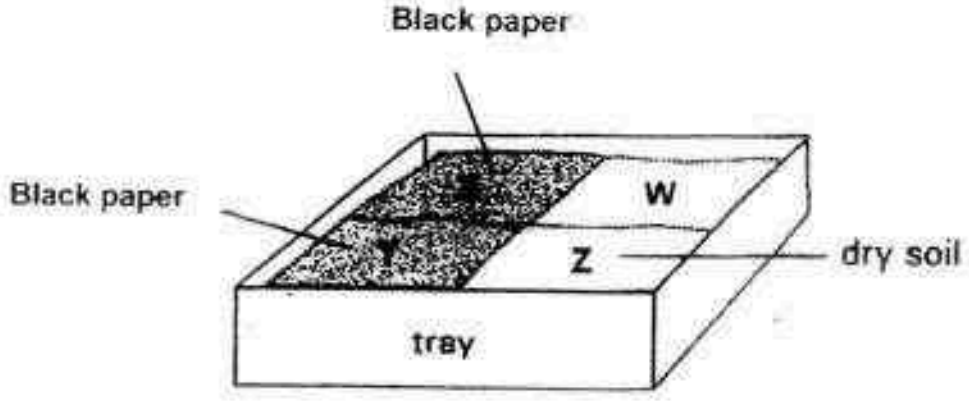
11. The diagram below shows a tray of soil which is divided into four sections, W, X, Y and Z. Sections X and Y are covered with black paper.



Alfred wanted to conduct an experiment to confirm that woodlice prefer dark and moist condition.

Which of the following shows correctly the condition of soil he should place in W, X and Y?

	W	X	Y
(1)	dry soil	damp soil	damp soil
(2)	damp soil	damp soil	dry soil
(3)	damp soil	damp soil	damp soil
(4)	dry soil	dry soil	damp soil

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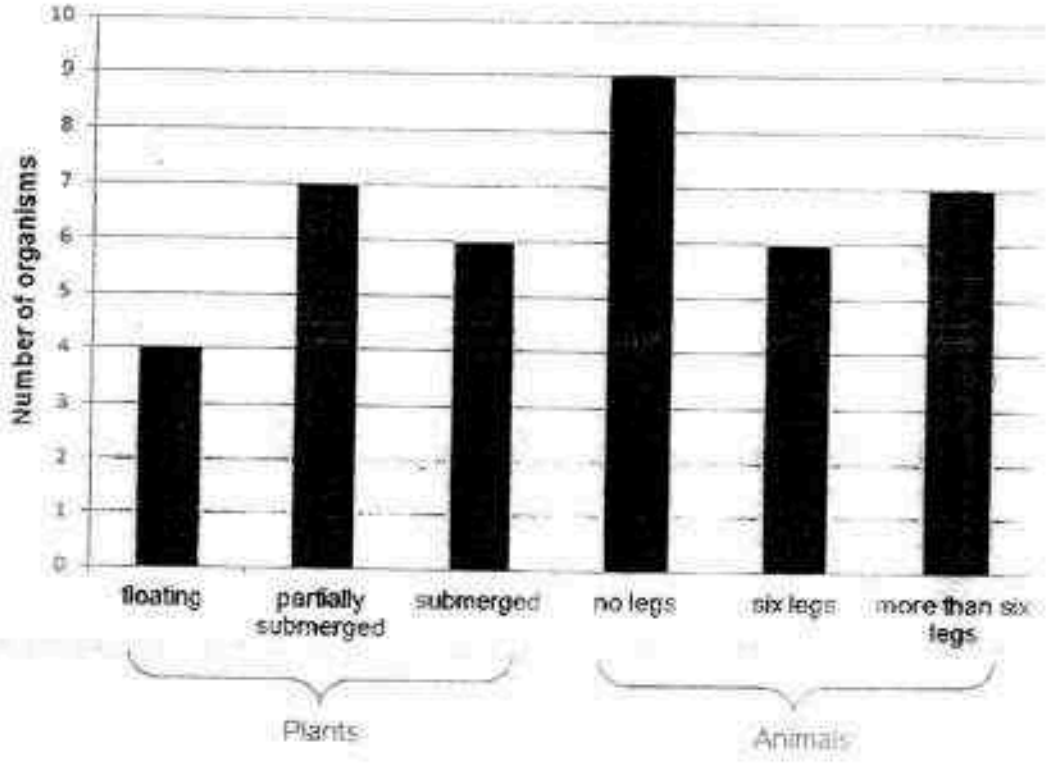
Name: Class: F

12. A group of students counted the plants and animals found in a school pond. The results are shown in the graph below.



Which of the following statements about the plants and animals in the pond is/are definitely correct?

A There is only one pond community.

B There are twenty-two populations of animals.

C There are at least six populations of plants and animals.

(1) A only

(2) A and C only

(3) B and C only

(4) A, B and C

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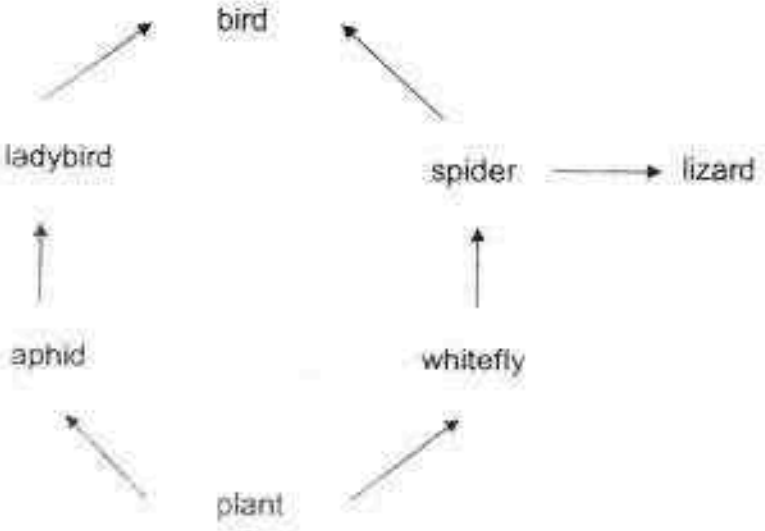
13. The food web below shows the feeding relationship of some organisms.



If there is an increase in the bird population, which of the following shows the most likely changes in the population of aphid and lizard?

	Aphid	Lizard
(1)	increase	increase
(2)	increase	decrease
(3)	decrease	decrease
(4)	decrease	increase

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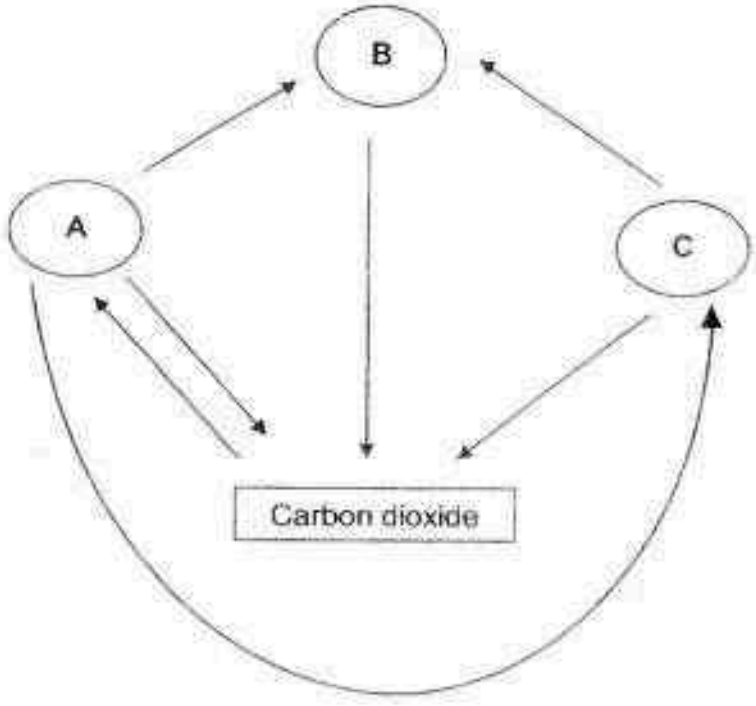
14. The diagram below shows the interaction of plants, animals, decomposers and carbon dioxide in the environment.



What could A, B and C likely represent?

	A	B	C
(1)	decomposers	animals	plants
(2)	plants	animals	decomposers
(3)	plants	decomposers	animals
(4)	animals	plants	decomposers

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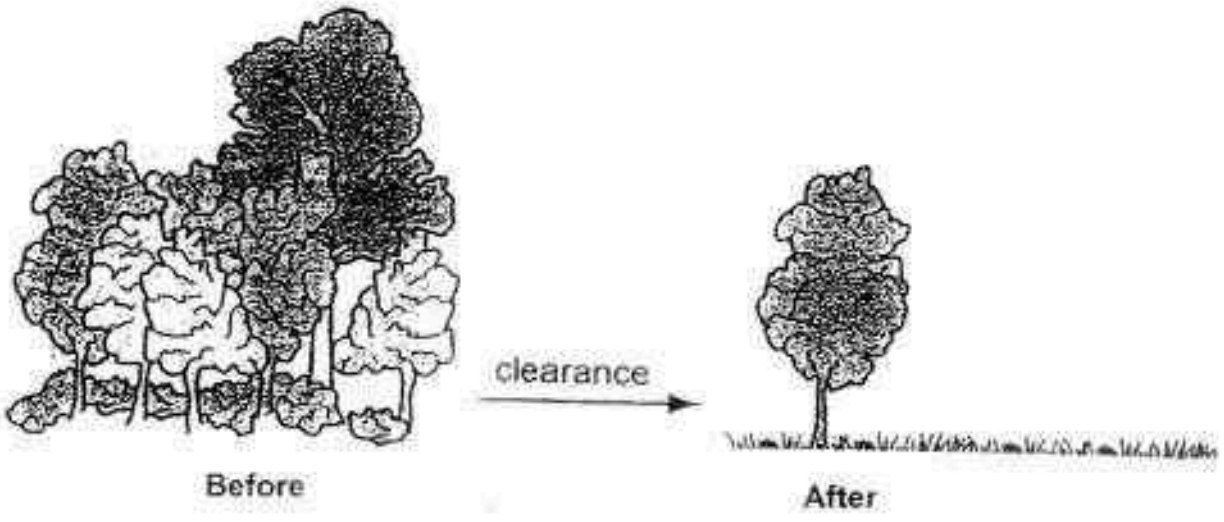
15. The diagram below shows a forest before and after it has been cleared.



Deforestation occurs in many countries where large areas of land are cleared for building houses and roads.

Which one of the following effects of deforestation will cause a rise in the amount of carbon dioxide in the atmosphere?

(1) Less photosynthesis

(2) Decrease in rainfall

(3) The roots of trees die

(4) Loss of natural habitat

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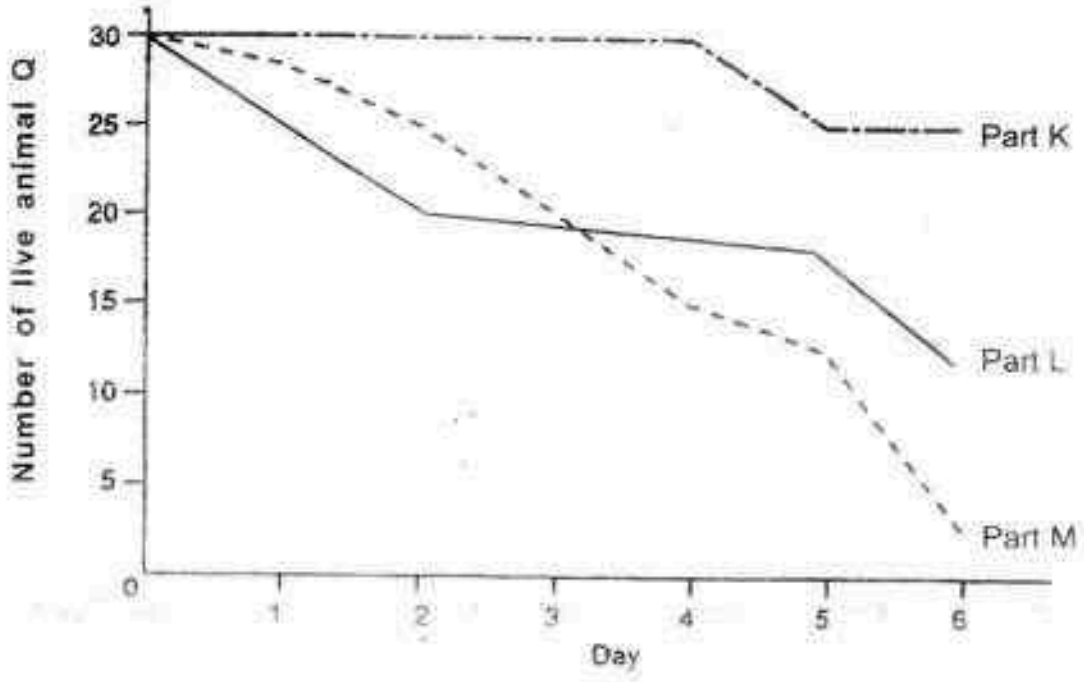
16. Stephen wanted to find out which part of a stream is least polluted.

He lowered three cages with the same number of live animal Q into each of the three parts of the stream, K, L and M. Animal Q is sensitive to pollutants in the water and does not survive for long in heavily polluted water.

He counted the number of live animal Q in each cage over 6 days and plotted the graph shown below.



Based on the graph, which of the following statements are correct?

A. Part K of the stream was the least polluted.
B. The number of live animal Q in part M decreased every day.
C. The number of live animal Q in part L decreased first and then increased.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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17. Amy tested three materials A, B and C for hardness.
She used the sharp ends of a glass rod and a plastic rod to scratch each of the three materials.
She recorded her observations in the table below.

Items used to scratch material	Were scratch marks observed on the material?		
	A	B	C
glass rod	✓	✓	✗
plastic rod	✓	✗	✗

(✓ - scratch mark observed, ✗ - scratch mark not observed)

Which of the following statements about the materials are correct?

A. Material C is strongest material.

B. Material B is harder than material A.

C. Material C is harder than material B.

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

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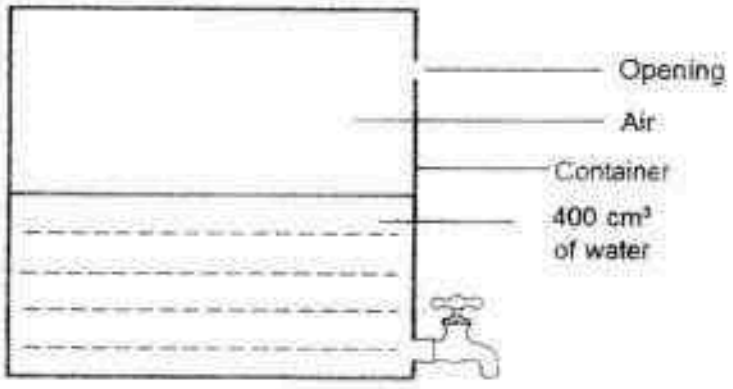
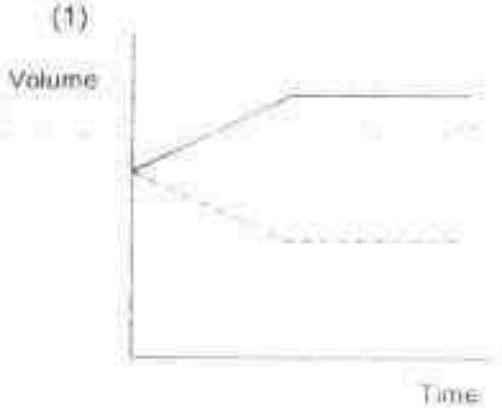
18. The diagram below shows a container with a tap.
The volume of the container is 800 cm^3. It contains 400 cm^3 of water.



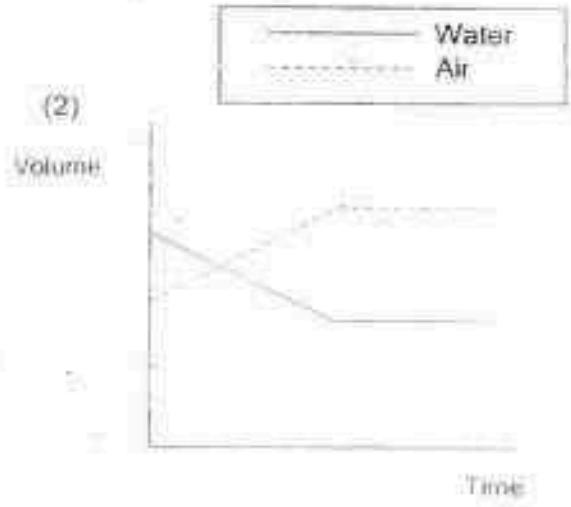
When the tap was turned on, 100 cm^3 of water flowed out before the tap was turned off.

Which one of the following graphs shows correctly the changes in the volume of water and air in the container?

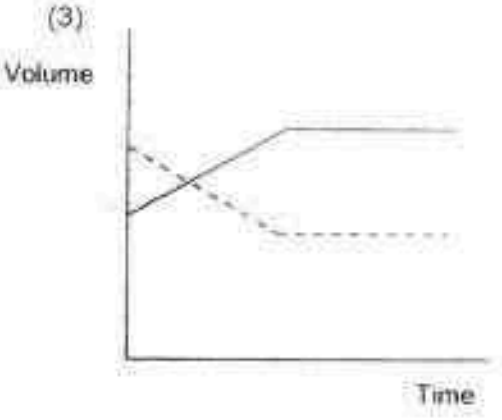
(1)



(2)



(3)



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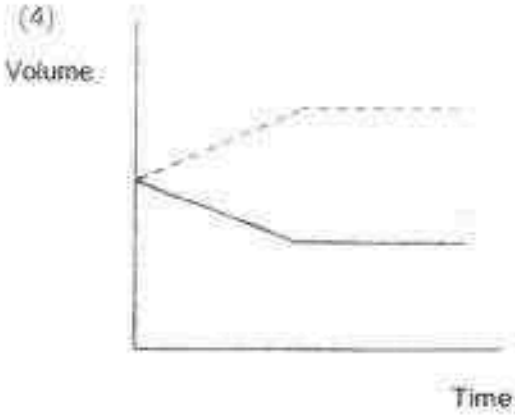

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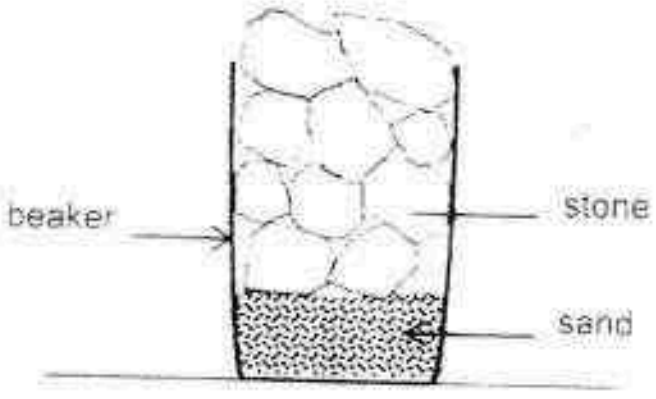
19. Leon filled a beaker with some sand and stones as shown below.



He could not place a lid to cover the beaker.

His friend suggested putting in the stones first before filling in the sand and giving the beaker a good shake.

Which of the following explains correctly whether or not the above method works?

	Does the method work?	Reason
(1)	Yes	The sand takes up less space when put above the stones.
(2)	Yes	The sand can enter and take up the spaces between the stones.
(3)	No	The sand takes up more space above and in between the stones.
(4)	No	The sand and stones still take up the same amount of space in the beaker.

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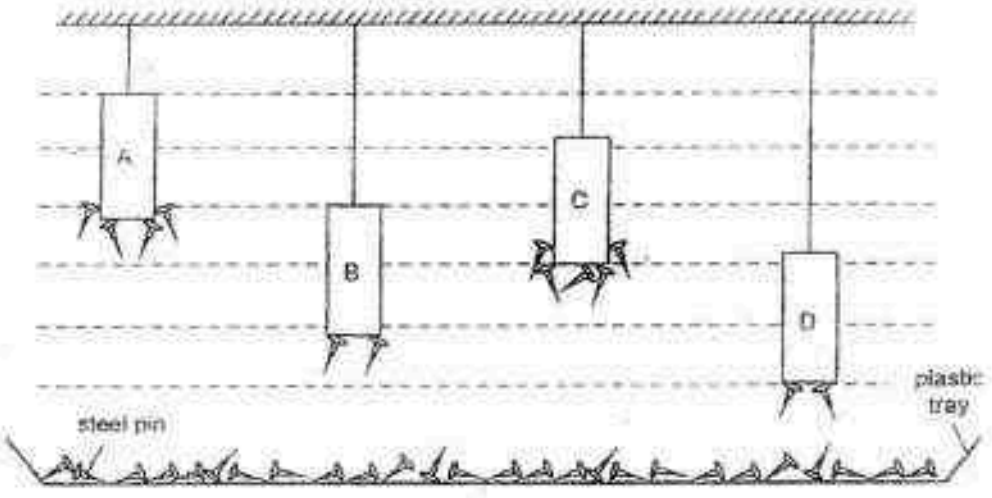
20. Yusof wanted to compare the magnetic force of four similar magnets, A, B, C and D. He set up the experiment shown below and counted the number of steel pins that were attracted by each magnet.



Yusof could not conclude which magnet was the strongest.

What change should he make to the set-up above in order to find out which magnet is the strongest?

(1) Add more steel pins into the plastic tray.

(2) Place magnet C at the same height as magnet B.

(3) Place magnet D at the same height as magnet B.

(4) Place magnet A at the same height as magnet C.

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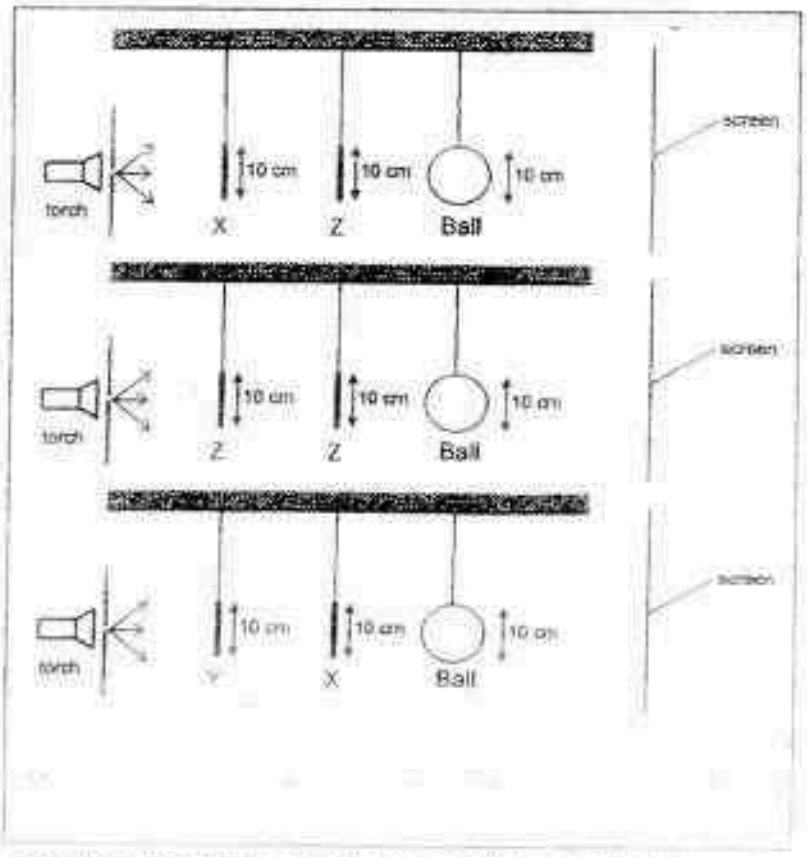
21. Rachel carried out an experiment with three different materials X, Y and Z of rectangular shape.
She placed two materials and a ball between a torch and a screen and observed the shadow formed on the screen.
The diagrams below show her set-ups and what she observed on the screen.



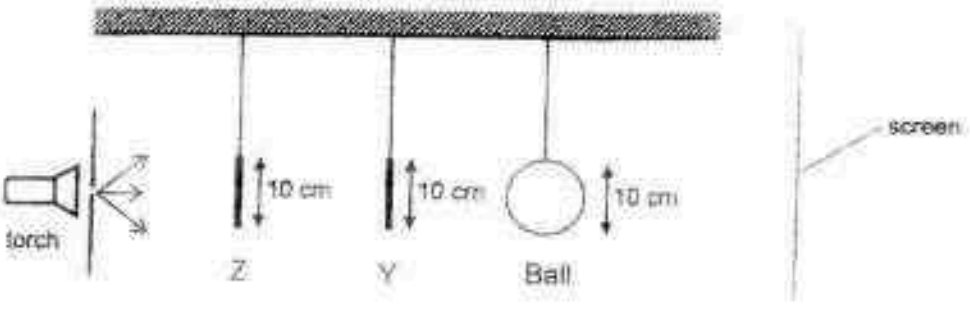
What Rachel observed:


Blur image


Sharp image

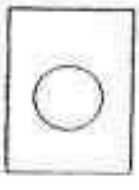

Black patch

Based on the above experiment, predict what Rachel would most likely observe in the set-up below.



(1) 

(2) 

(3) 

(4) 

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22. Jimmy breathed onto a mirror and it turned "misty" at first.

After a while, the "mist" cleared up and he was able to see himself clearly in the mirror again.

What is the explanation for his observation?

	The 'mist' on the mirror is _____.	The 'mist' on the mirror has cleared up because it has _____.
(1)	water vapour	condensed
(2)	water vapour	evaporated
(3)	water droplets	condensed
(4)	water droplets	evaporated

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23. Mr Lim poured 200 ml of cold water measuring 10°C into 4 different containers. The 4 containers were made of different materials, W, X, Y and Z.

The temperature of the water in each container is measured and recorded in the table below.

Material of container	Temperature of water after 5 minutes (°C)
W	?
X	16
Y	20
Z	?

If material W is the best conductor of heat and material Z is the poorest conductor of heat, what will be the likely temperature of water in containers made of materials W and Z?

	Material W	Material Z
(1)	5°C	28°C
(2)	25°C	13°C
(3)	13°C	25°C
(4)	28°C	5°C

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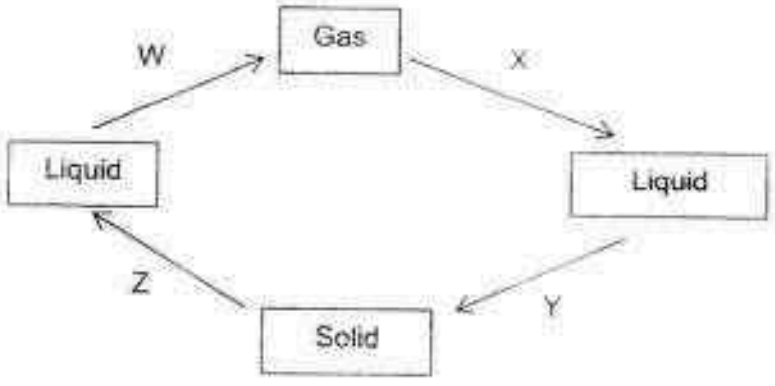
24. The diagram below shows changes in the state of water. W, X, Y and Z represent processes during which heat is gained or lost.



Based on the above diagram, which of the following statements are **not** correct?

A. The gas gains heat during process X.
B. The solid gains heat during process Z.
C. The liquid loses heat during process W.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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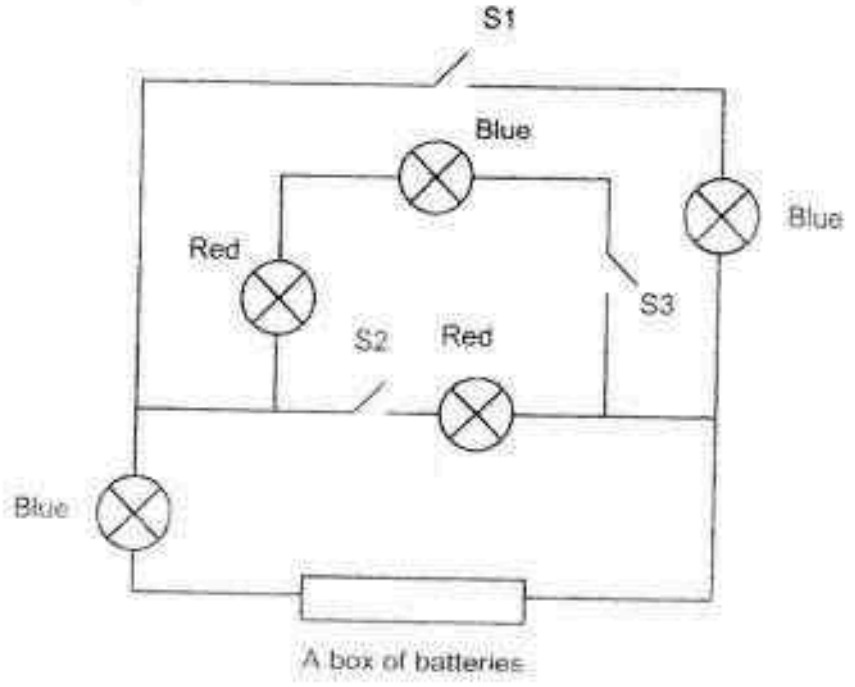
25. The circuit below consists of some blue and red bulbs, switches and a box of batteries.



Which switches (S1, S2, S3) should be closed in order for 2 blue bulbs and 2 red bulbs to be lit up at the same time?

(1) S1 and S2
(2) S1 and S3
(3) S2 and S3
(4) S1, S2 and S3

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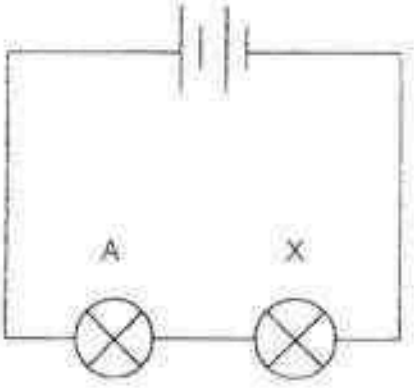
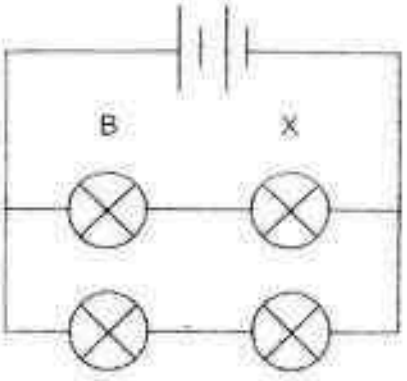
26. Amy used some identical bulbs and identical batteries in each of the circuits below.

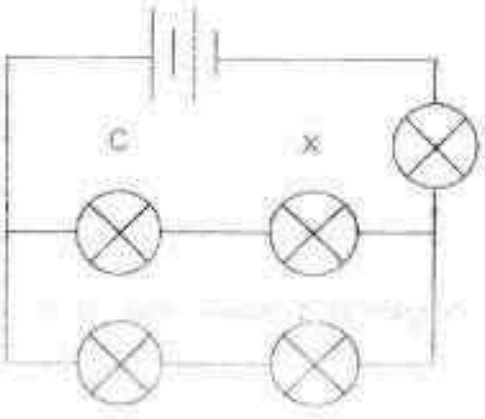
Circuit 1



Circuit 2



Circuit 3



Amy removed bulb X from each of the 3 circuits above.
She compared the brightness of bulbs A, B and C that remained lighted.

Which one of the following statements is correct?

(1) Bulbs A, B and C will have the same brightness.

(2) Bulb A will be the brightest amongst bulbs A, B and C.

(3) Bulb B will be as bright as all the other bulbs in circuit 2.

(4) Bulb C will be the least bright amongst bulbs A, B and C.

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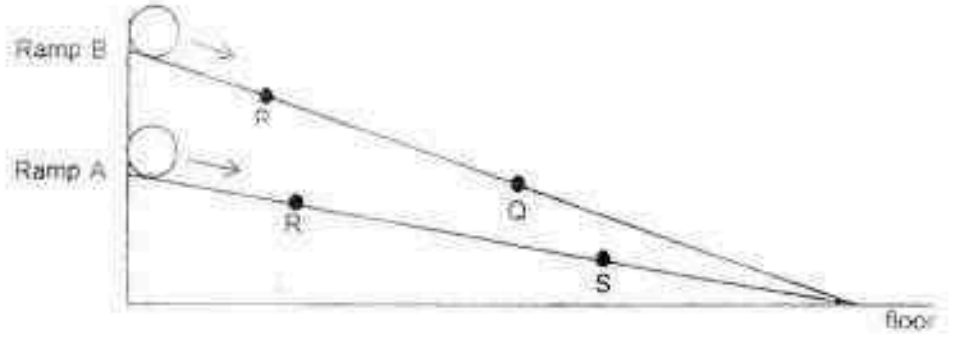
27. Sam set up an experiment, comprising of two similar ramps, A and B. Ramp A is placed at half the height of Ramp B. He then released two identical balls from the top of the two ramps at the same time. Sam used the same amount of force when releasing each ball.

The diagram below shows the two balls moving down the respective ramps and positions, P, Q, R and S on the ramps.



Based on the diagram above, which of the following statements are correct?

A. The ball at P has more potential energy than the ball at R.
B. The ball at R has more kinetic energy than the ball at S.
C. The ball at S has the least amount of potential energy than the ball at the other 3 positions.
D. The ball on ramp B is likely to go further along the floor than the ball on ramp A.

(1) A and B only
(2) A, B and D only
(3) A, C and D only
(4) B, C and D only

28. Which of the following statements about forces are correct?

A. A force can stop a moving object.
B. A force can change the shape of an object.
C. A force can change the speed of a moving object.

(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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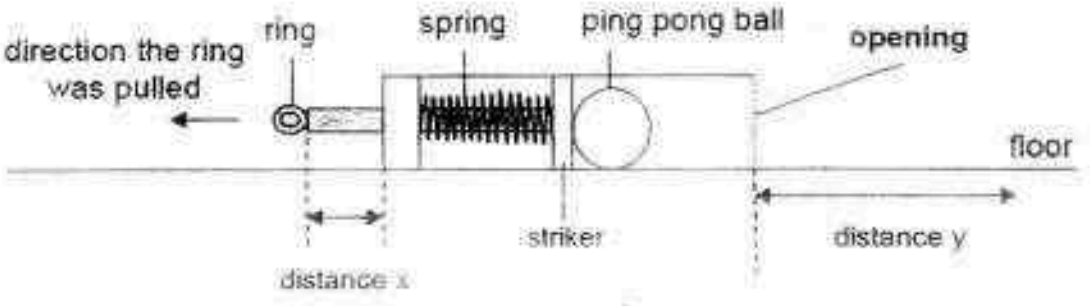
29. Lilly carried out an investigation using the toy she created.

She placed the toy on the floor and pulled the ring back over a distance, x, with a ping pong ball inserted as shown in the diagram below. A striker is attached to the spring.

When she pulls the ring back, the spring becomes compressed.

When she releases the ring, the striker hits and pushes the ping pong ball out through the opening.

The ball then moves along the floor which is measured as distance y.



Based on the toy above, which one of the following correctly shows the relationship between distance x and distance y?

	Distance x	Distance y
(1)	longer	longer
(2)	shorter	longer
(3)	longer	shorter
(4)	shorter or longer	no change

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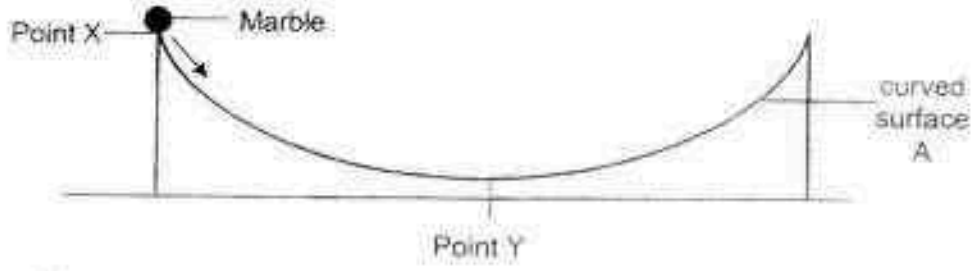
30. Jake wanted to find out the time taken for a marble to stop at point Y when released from point X on curved surface A as shown below.



The marble, when released from point X, rolled up and down along the curved surface for a few times before slowing down and stopping at point Y.

Jake repeated the experiment on a similar curved surface B, which was made of a different material. He recorded the results of his experiment as shown in the table below.

Curved surface	Average time taken for the marble to stop at point Y (s)
A	25
B	38

Based on the above experiment, which of the following statements is/are correct?

A. The amount of friction between the marble and surface B is smaller.

B. The amount of friction between the marble and surface B is greater.

C. The amount of gravitational force exerted on the marble on surface B is greater.

D. The amount of gravitational potential energy the marble has at point X on surface B is greater.

(1) A only
(2) B only
(3) A and C only
(4) B and D only

(Go on to Section B)

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HENRY PARK PRIMARY SCHOOL
PRELIMINARY EXAMINATION 2016

PRIMARY 6
STANDARD SCIENCE
SECTION B (40 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.

Name: _____ ( )

Class: Primary 6 ( )

Date: 25 August 2016

Total Time for Booklets A and B: 1 h 45 min

Marks for Section B: _____

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Section B

For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question.

[40 marks]

31. Sam made the following statements about an animal he observed.

- It lays eggs.
- It has wings and can fly.

Based on his observation, Sam concluded that the animal is a bird because it lays eggs.

(a) Explain why Sam's reason for his conclusion is wrong. [1]

(b) Name one observation that Sam can make about the animal to confirm if it is a bird.

[1]

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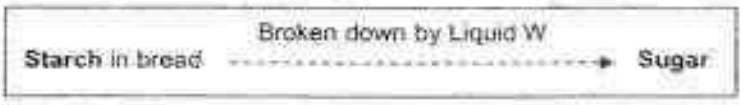
32. Kate wanted to find out how the amount of time a piece of bread is placed in Liquid W affects how quickly it breaks down the bread. Liquid W is similar to the saliva in the human digestive system.

Kate placed a piece of bread in a beaker filled with 20 ml of Liquid W for 5 seconds. Then she removed and tested the bread for the amount of starch that was left in the bread.

She repeated the experiment by increasing the time the bread was placed in Liquid W. She used similar pieces of bread and 20 ml of Liquid W for each set-up.

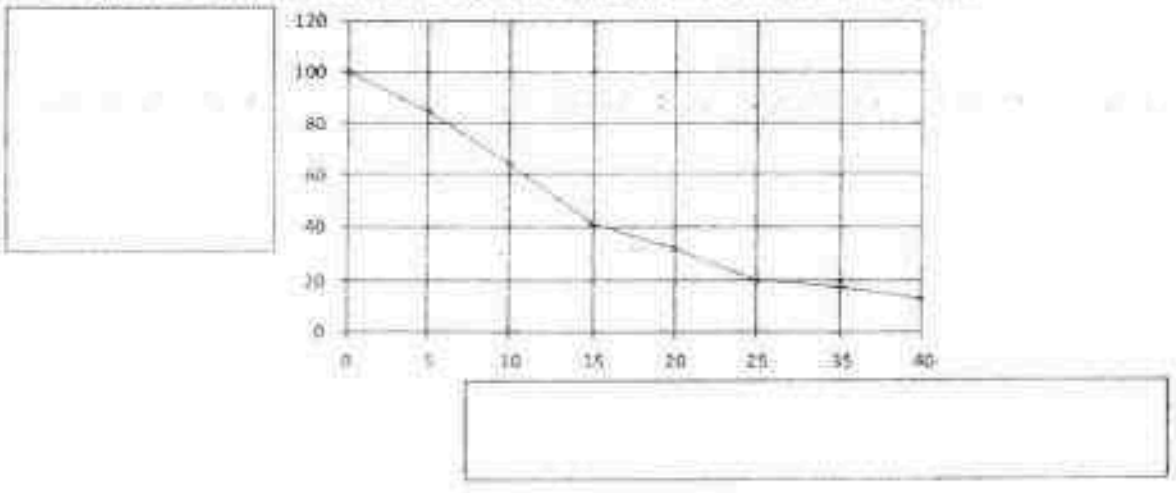
The diagram below shows what happens to the bread when Liquid W breaks it down.



The table below shows the results of her experiment.

Set-ups	A	B	C	D	E	F	G	H
Time each piece of bread was placed in Liquid W (s)	0	5	10	15	20	25	35	40
Percentage of starch left in the bread (%)	100	85	64	41	32	20	17	13

She plotted a graph to show the results of her experiment as shown below.



(a) Fill in the boxes on the graph above correctly to show the relationship between **'Time each piece of bread was placed in Liquid W (s)'** and **'Percentage of starch left in the bread (%)'** [1]

(b) Food is chewed in the mouth before it is swallowed.
Explain why chewing the food longer helps it to be digested faster. [1]

_____

_____

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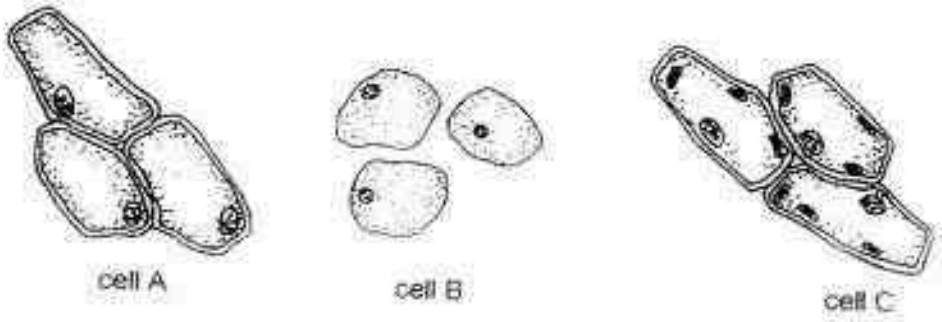
33. The diagrams below show cells A, B and C.



cell A cell B cell C

(a) Joy observed and compared the parts of the three cells.
State how cell B is different from cells A and C. [1]

_____

_____

(b) Both cells A and C are found in the same organism. Identify the part of the organism in which each cell can be found. [1]

Cell A: _____

Cell C: _____

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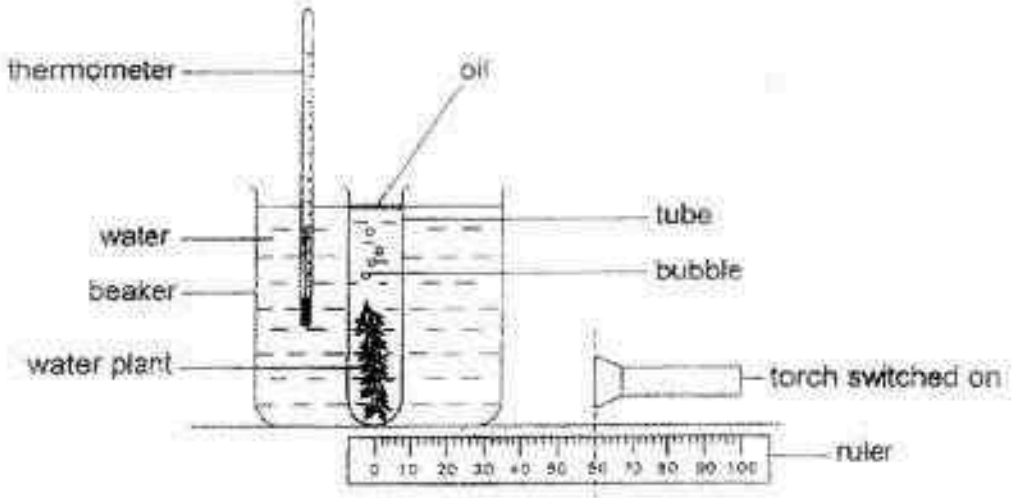
34. Ali set up an experiment in a dark room as shown below. He wanted to find out how the distance between the torch and plant affects the rate of photosynthesis.



2 sets of data, X and Y, are shown in the tables below.

Data X	
Distance between torch and plant (cm)	Number of oxygen bubbles produced (per min)
40	6
60	13
80	23

Data Y	
Distance between torch and plant (cm)	Number of oxygen bubbles produced (per min)
40	23
60	13
80	6

(a) Which set of data, X or Y, is likely to be the results of Ali's experiment? [2]
Explain your answer.

(b) Ali repeated the experiment by adding some live worms in the tube with the water plant. Explain the change observed in the number of oxygen bubbles produced by the water plant after the live worms were added. [2]

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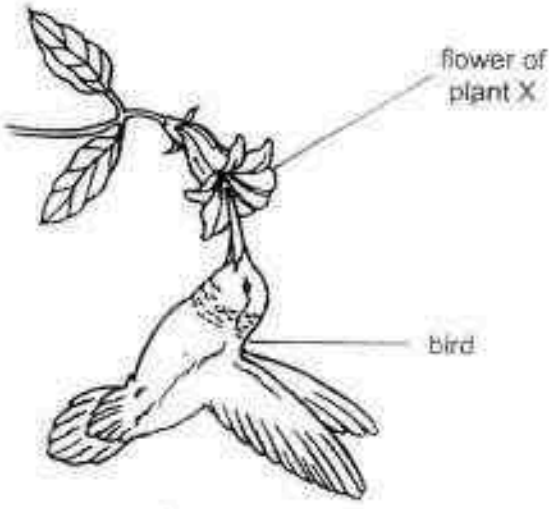
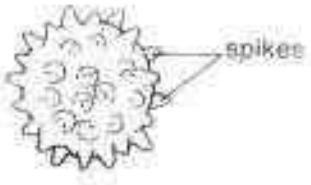
35. The diagram below shows a bird feeding on the nectar of a flower of plant X.



(a) By feeding on the nectar, the bird helps in one process of reproduction in plant X. Describe this process.

The diagram shows two types of pollen grains, P and Q.



Pollen grain P



Pollen grain Q

(b) Which pollen grain (P or Q) is more likely to be produced by the flower of plant X? [1]

(c) Explain your answer in (b).

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36. A plantation is infested with two types of aphids, X and Y. The farmer wants to use ladybirds to remove the aphids. He wanted to find out which type of ladybird, P, Q or R, is the most effective.

He put 50 ladybird P in the first cage, 50 ladybird Q in the second cage and 50 ladybird R in the third cage. He also put 200 Aphid X and 200 Aphid Y in each of the three cages.

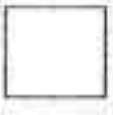
The number of Aphid X and Aphid Y eaten by the ladybirds in each cage is shown in the table below.

Cage with	Number of aphids eaten	
	Aphid X	Aphid Y
Ladybird P	10	84
Ladybird Q	103	175
Ladybird R	126	21

(a) If the farmer wanted to use only one type of ladybird for his plantation, which type (P, Q or R) should he use if he wanted to remove as many of Aphid X and Aphid Y as possible? [1]

(b) Using information from the table above, give a reason for your answer in (a). [1]

(c) What should the farmer do to ensure the results of his experiment are more reliable? [1]



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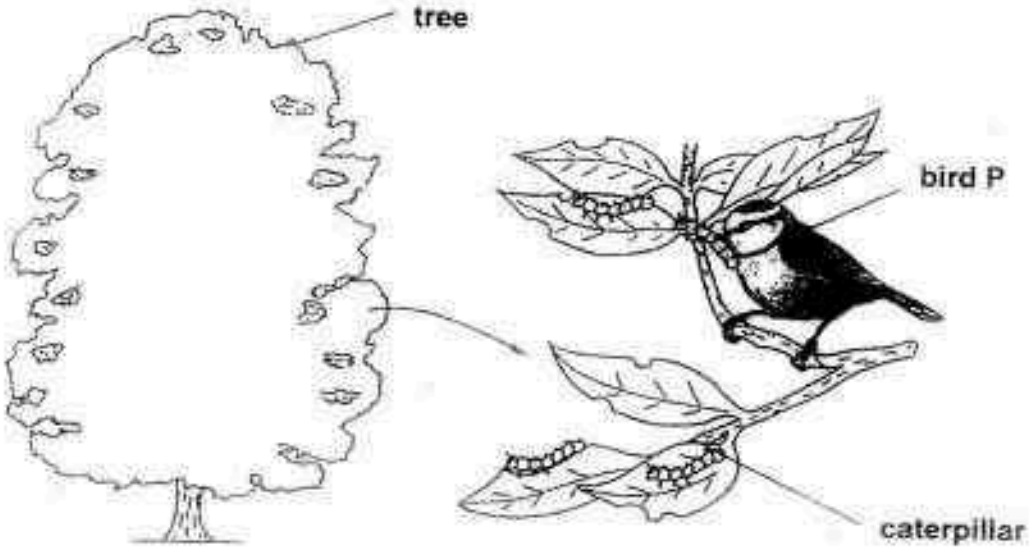
37. The diagram below shows a few organisms living together in a garden community.



(a) In the box below, draw a food chain linking the three organisms shown above. [1]

(b) The tree and bird P depend on each other.

How does the tree and bird P benefit each other? [2]

(i) Benefit for the tree: _____

_____

(ii) Benefit for bird P: _____

_____

(Question 37 continues on the next page)

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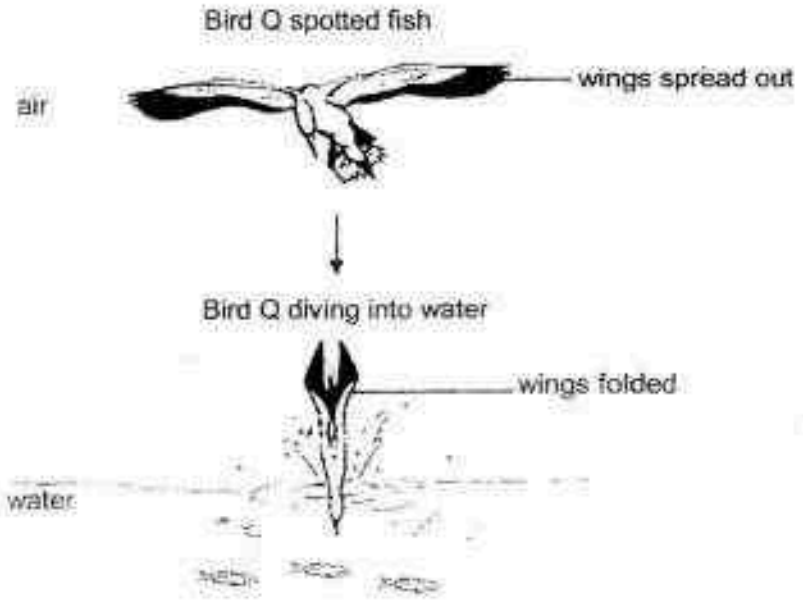
(Question 37 continues on the this page)

The diagram below shows how bird Q catches fish for food.



(c) Bird Q folds its wings as it dives into the water to catch its prey.
Give a reason for this behaviour. [1]

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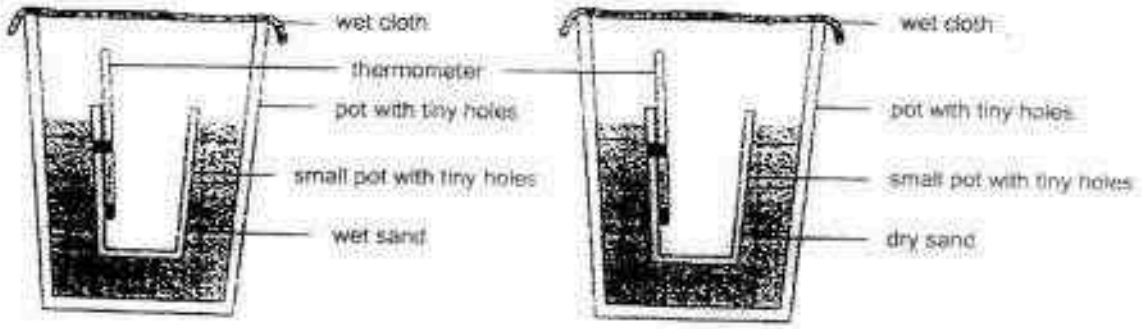
38. Meng Yong set up an experiment as shown below.



Set-up A **Set-up B**

He placed both set-ups in a hot and dry place. He recorded the temperature of the air inside the small pot in each set-up. His results are shown below.

Time (min)	Temperature of air in the small pot (°C)	
	Set-up A	Set-up B
0	34	34
10	31	33
20	29	32

(a) Explain why the temperature of the air in the small pot in set-up A is lower than that in set-up B. [1]

(Question 38 continues on the next page)

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(Question 38 continues on the this page)

The picture below shows animal D which lives in a hot environment.



It can be seen spraying water over its body to keep itself cool.

(b) What type of adaptation (structural or behavioural) is this? [1]

(c) Explain how animal D can keep itself cool by spraying water over its body. [1]

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39. Mei Mei placed some wet plates on top of one another and left them to dry as shown in diagram 1 below.



Diagram 1

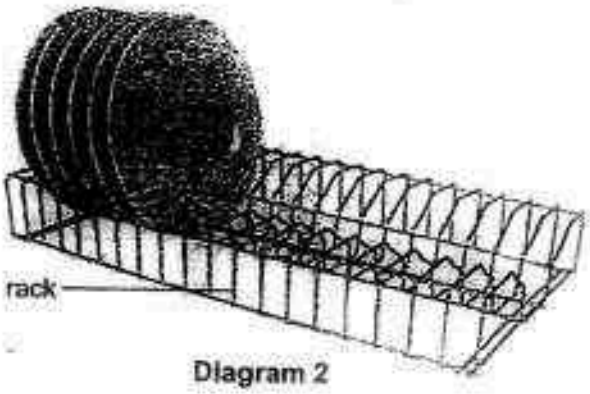

Diagram 2

Mei Mei's sister told her to arrange them on a rack as shown in diagram 2 so that the plates will dry faster.

(a) Give two reasons why the plates in diagram 2 would dry faster. [2]

Reason 1: _____

_____

Reason 2: _____

_____

(b) Besides wiping the wet plates with a piece of dry cloth, suggest one way to make the plates in diagram 2 dry even faster. [1]

_____

_____



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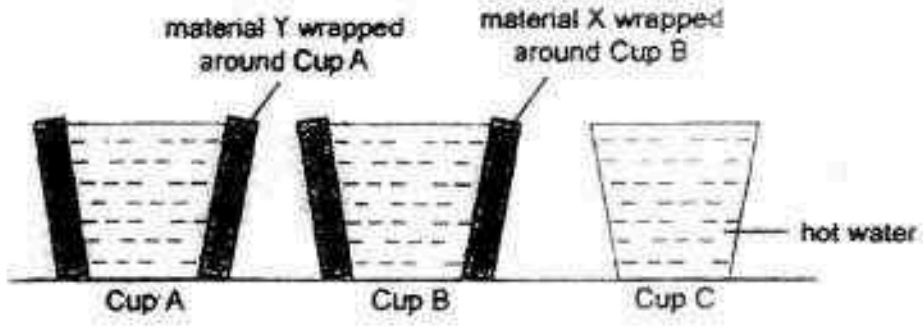
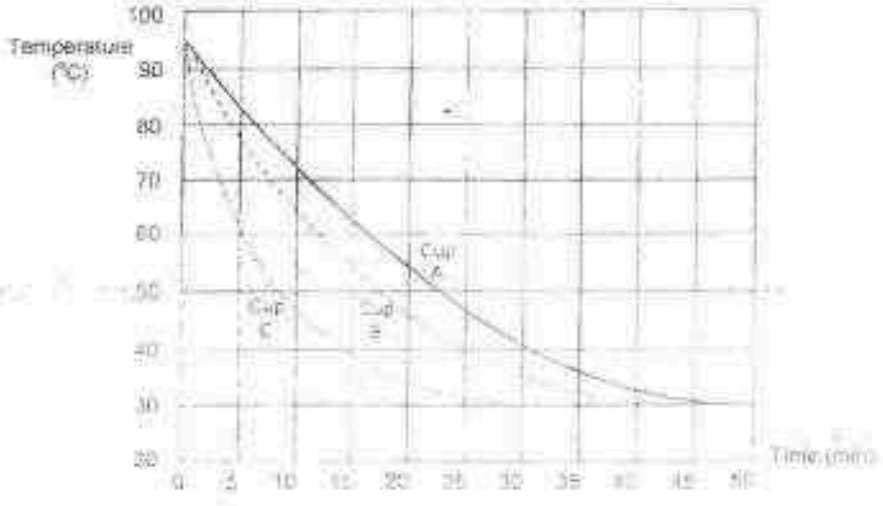
40. Gordon wanted to find out which material, X or Y, is better at keeping water warm. He poured the same amount of hot water into three identical cups using the set-ups below. The cups were left in the Science room.



He measured the temperature of water in each cup and recorded his results in a graph below.



(a) What was the temperature in the Science room? [1]

(b) Gordon wants to use a container to keep drinks cold for a very long period of time. Which material, X or Y, should the container be wrapped with? Explain your answer. [2]

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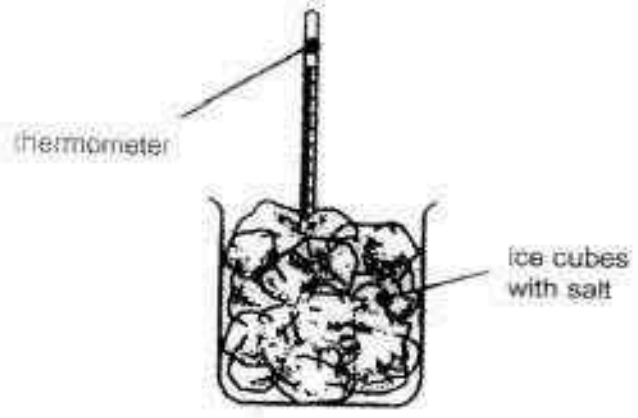
41. An experiment was set up as shown below. Salt was slowly sprinkled onto the ice in the beaker and the temperature of the content was taken using a thermometer after different amounts of salt had been added.



The table below shows the readings measured by the thermometer.

Amount of salt (g)	0	10	25	40	50
Melting point of ice (°C)	0	-2	-5	?	-9

(a) State the **independent** variable in the above experiment. [1]

(b) What could the melting point of ice be when 40g of salt is added? [1]

During winter, in country G, the roads are covered in snow and ice. This makes the roads slippery and this is a danger to motorists.

(c) People sprinkle salt onto the roads when the surrounding temperature is below 0 °C. Explain why this is done. [1]

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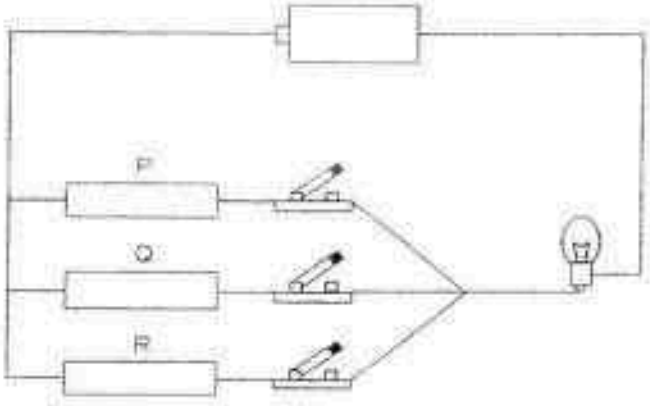
42. Thaddeus set up the following experiment to find out which material, P, Q or R, conducts electricity. He closed the switches, one at a time, and observed whether the bulb lit up.



He recorded the experimental results in a table as shown below.

Material	Does the bulb light up?
P	Yes
Q	Yes
R	Yes

(a) Explain the purpose of putting a bulb in the above set-up. [1]

In another experiment, he brought a magnet close to each of the materials, P, Q and R, and observed which one of them would be attracted to it.

Again, he recorded the experimental results in a table as shown below.

Material	Does the magnet attract the material?
P	No
Q	Yes
R	Yes

(b) Based on the above experiments, what can be concluded about the likely relationship between a conductor of electricity and its magnetic property? [1]

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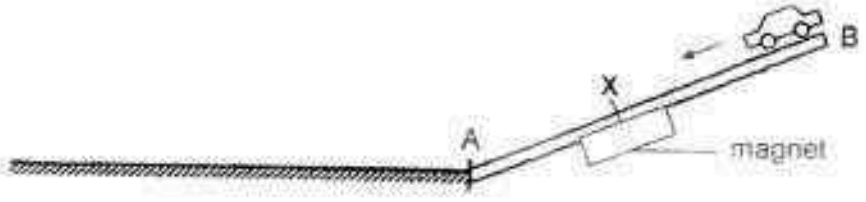
43. John set up an experiment as shown below. He released a steel toy car down a wooden plank AB. The steel toy car moved down the plank and stopped at point X.



Experiment 1

John heated the magnet at point X for 5 minutes before experiment 2 was conducted.



Experiment 2

(a) The steel toy car reached point A without stopping at point X in experiment 2. Give a reason for this observation. [1]

_____

_____

(Question 43 continues on the next page)

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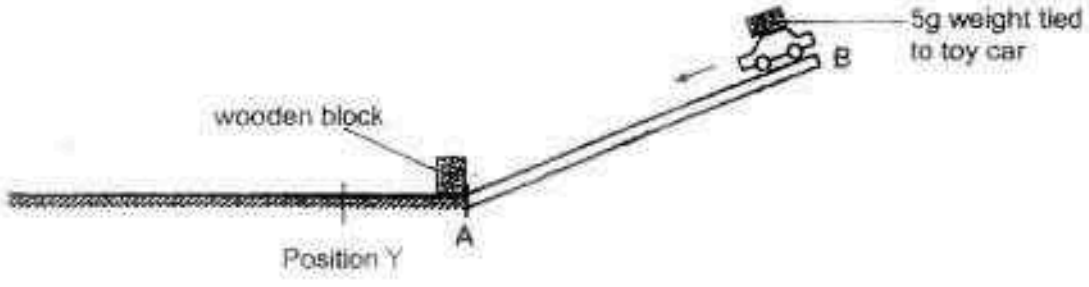
(Question 43 continues on this page)

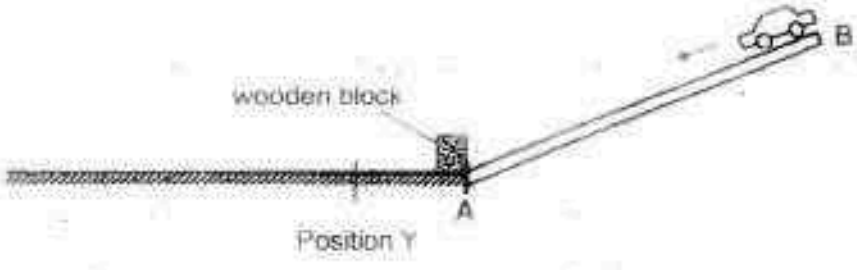
Using similar materials from the previous experiments, John conducted experiment 3 as shown below with two set-ups, P and Q.

In set-up P, a 5-gram weight was tied to the toy car.
He placed two identical wooden blocks, one in each set-up, at point A.

Set-up P



Set-up Q



When the toy cars were released, each toy car moved down the ramp and hit the wooden block.

After being hit by the toy car, the wooden block in set-up P moved to position Y but the wooden block in set-up Q did not reach position Y.

(b) Explain why the wooden block in set-up P moved further than the wooden block in set-up Q. [2]

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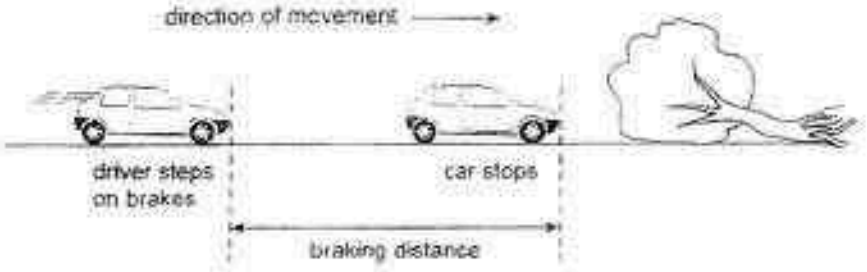
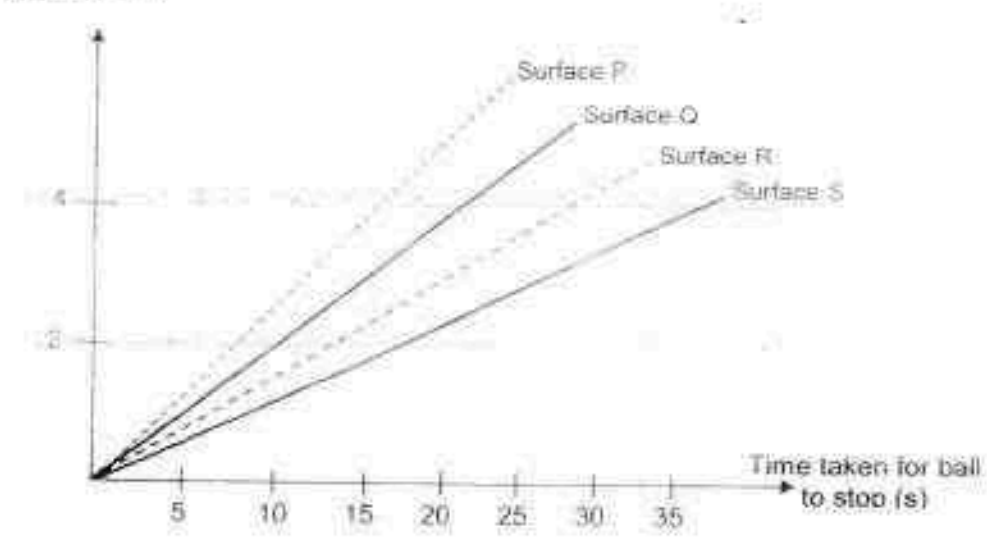
44. The diagram below shows how a car, travelling on a wet road, moves a short distance after the driver steps on the brakes. This is called the 'braking distance'.



(a) Would the braking distance be **longer**, **shorter**, or the **same** if the road was dry? [1]

Amanda rolled a rubber ball over four different surfaces, P, Q, R and S. She recorded the time taken for the ball to come to a stop on each surface at different distances.

Using the results obtained from her experiment, she plotted a graph as shown below.



(b) On which surface, P, Q, R or S, would the braking distance of the car be the longest if the car travels at the same speed? Explain your answer. [2]

-END OF PAPER-

Setters: Ms. Evelyn Tan, Mrs. Liu Ying Hui & Miss Ruchika

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YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**HENRY PARK PRIMARY**
SUBJECT	:	**SCIENCE**
TERM	:	**PRELIMINARY EXAMINATION**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	3	4	4	2	3	1	4	4
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
2	2	3	3	1	1	4	4	2	4
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
4	4	2	2	3	4	3	2	1	1

Booklet B

Q31a Insects also lays eggs an some has wings and can fly.

Q31b It has a beak. / The bird has feathers.

Q32a

Percentage of starch left in the bread (%)

Time each piece of bread was placed in Liquid W (s)

Q32b The food will have more expose surface area and the liquid W will break it down faster.

Q33a Cell B does not have cell wall while Cell C and Cell A have.

Q33b Cell A : roots
Cell C : leaves

Q34a Set up Y. When there is more light, the distance between torch and plant is decreased. The rate of photosynthesis will increase and would give out more number of oxygen.

Q34b The worms give out carbon dioxide when they re-pile with more carbon dioxide.

Q35a The process is pollination. The birds will suck the nectar of the flower than pollen grains will also be carried along by the bird.

Q35b Pollen grain P.

Q35c The pollen grain has spikes to hook onto bird.

Q36a Ladybird Q.

Q36b Ladybird Q eats more Aphid X and Y as compared to ladybird R.

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Q36c He could repeat the test three times.

Q37a Plants → caterpillar → bird

Q37b (i) Benefit for the tree: The caterpillar would not eat its leave.
(ii) Benefit for bird P: The tree is a habitat for bird P.

Q37c Bird Q folds its wing to form a stream-lined body shape which reduce friction between the water and the bird.

Q38a The water in the wet sand gained heat from the surrounding air. And thus will evaporate. When the hot water vapour condenses on the cool underside of the wet cloth, the wet cloth will absorb the water vapour. This process will keep the cloth wet and thus moist the water vapour in the pot. Thus keeping the temperature of the air in the small pot in setup A lower than in setup B.

Q38b Behavioural.

Q38c When animal D sprays water over its body, its skin is wet. When the water evaporates, the water together with the heat will evaporate hence the animal can keep itself cool.

Q39a Reason 1: The exposed surface area of water is greater, thus the rate of evaporation is faster.
Reason 2: Water on the plates will drip down due to gravity.

Q39b Put it in a hot place so the water will evaporate.

Q40a 30°C

Q40b Material Y Remains at a high temperature loses heat slower as it is a poor conductor of heat.

Q41a Amount of salt

Q41b -7°C

Q41c This is to prevent the people from slipping as the ice will melt faster.

Q42a The purpose of putting a bulb is to observe whether material P, Q and R are conductors or electricity.

Q42b A conductor of electricity might not be a magnetic property.

Q43a Heating make the magnets loses its magnetism.

Q43b In set-up P, there is a 5g tied to the toy hence there is more gravitational potential that is converted to more kinetic energy than set-up Q which does not have a 5g weight to the car. Hence in set-up P the wooden block moved further than position Y.

Q44a Shorter.

Q44b From the graph, the rubber ball took the longest time to come to a stop on surface P. This implies that surface P has the least friction. Thus the car would have the longest braking distance if travel on Surface P.

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CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 2
2016
PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____

Class: Primary 6 - _____

Date: 25 August 2016

30 questions

60 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 17 printed pages, excluding the cover page.

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Booklet A (30 × 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet. (60 marks)

1 Which of the following need(s) to be present for bread to turn mouldy?

A light
B water
C oxygen
D carbon dioxide

(1) B only
(2) A and C only
(3) B and C only
(4) A, B and D only

2 Mr Song observed the following characteristics of an animal.

A Number of wings
B Number of feelers
C Number of legs it has
D Number of body parts it has

Which of the above characteristics would conclude that the animal is an insect?

(1) B only
(2) C and D only
(3) A, C and D only
(4) A, B, C and D

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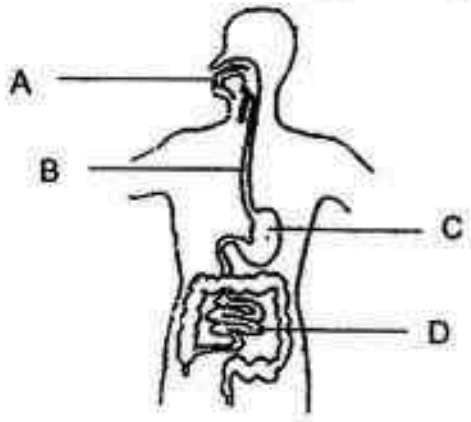
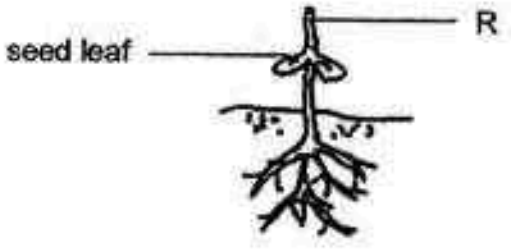
3 The diagram below shows the human digestive system.



Which of the following shows the changes in the amount of undigested food at A, B, C and D?

	A	B	C	D
(1)	decrease	decrease	increase	increase
(2)	no change	no change	decrease	decrease
(3)	decrease	no change	decrease	decrease
(4)	no change	no change	increase	no change

4 The diagram shows a seed growing into a young plant.



What is the direction in which food and water are being transported to R?

	Direction for transport of	
	food	water
(1)	upwards	upwards
(2)	downwards	upwards
(3)	upwards	downwards
(4)	downwards	downwards

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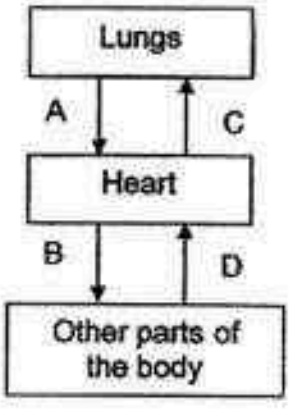
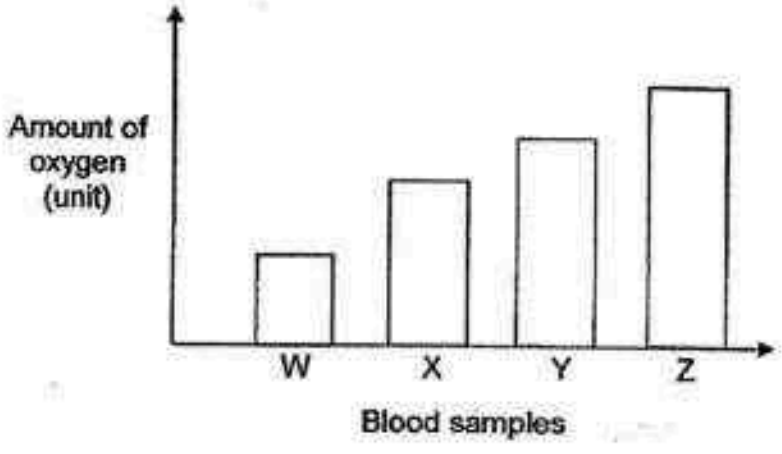
5 The diagram below shows the direction of blood flow in some parts of the body.



Four blood samples were taken at the same time from four different blood vessels, A, B, C and D, in the body. The graph below shows the amount of oxygen in the four blood samples.



Which blood samples shown in the graph were most likely taken from C and D of the circulatory system shown in the diagram above?

(1) W and X
(2) W and Y
(3) X and Z
(4) Y and Z

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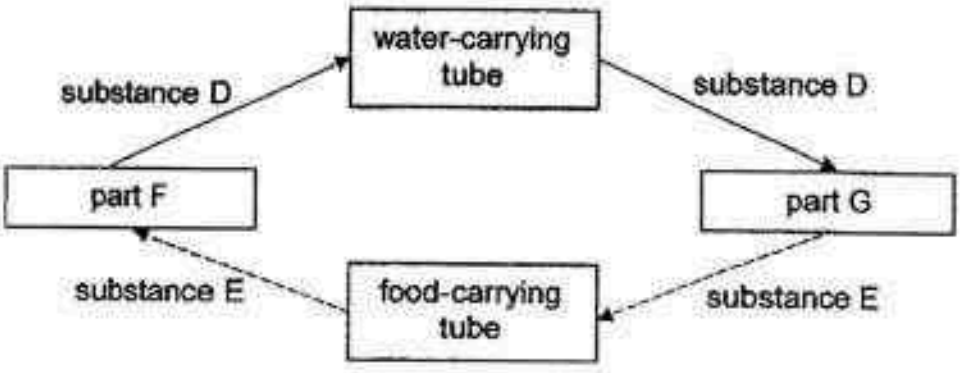
6 The diagram below represents the transport system of a plant.



What do parts F and G and substances D and E represent?

	part F	part G	substance D	substance E
(1)	stem	roots	mineral salts	water
(2)	roots	leaf	water	mineral salts
(3)	leaf	roots	water	sugar
(4)	roots	leaf	mineral salts	sugar

7 The table below provides some information on four types of cells, A, B, C and D. A tick (✓) indicates the presence of the part of the cell.

Parts of a cell	Cell A	Cell B	Cell C	Cell D
cell wall		✓	✓	
nucleus	✓	✓	✓	
chloroplasts		✓		
cell membrane	✓	✓	✓	✓

Which of the above cells is/are most likely to produce oxygen?

(1) B only
(2) A and D only
(3) B and C only
(4) B, C and D only

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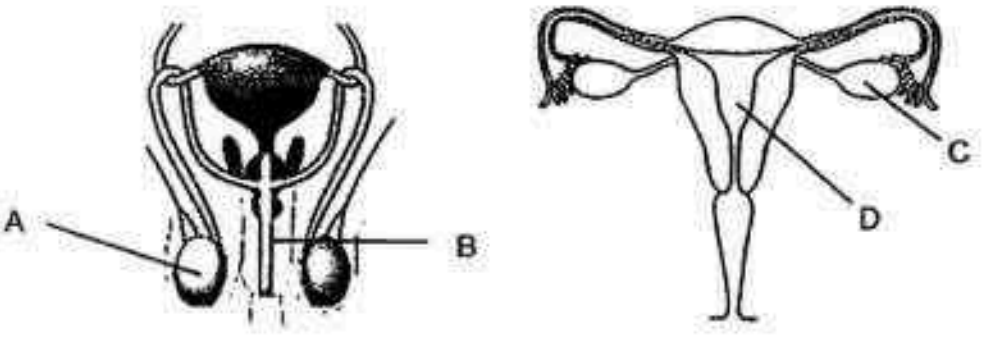
8 Which of the following statements is/are correct of a cockroach and a mealworm beetle?

A Their young do not have wings.
B Their young look like the adults.
C They have four stages in their life cycles.

(1) A only
(2) B only
(3) A and C only
(4) B and C only

9 The diagram below shows the human reproductive systems.



Which parts of the reproductive systems produce cells that have to be fused to develop into a baby?

(1) A and C
(2) A and D
(3) B and C
(4) B and D

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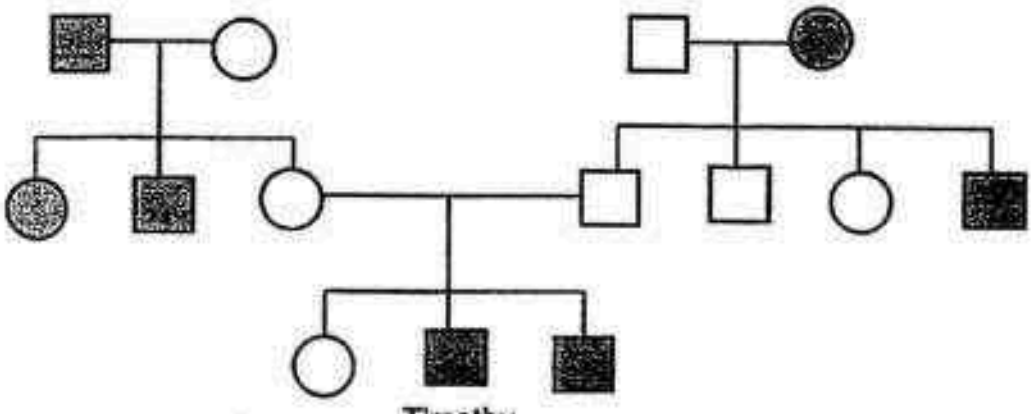
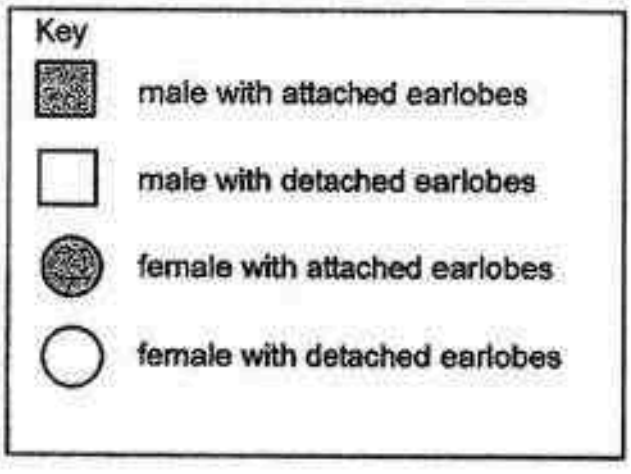
10 Study the family tree of Timothy below. The family tree shows the members who have attached earlobes or detached earlobes.





Which one of the following statements about the family tree is correct?

(1) Timothy's parents have attached earlobes.

(2) Timothy and his brother have detached earlobes.

(3) Both Timothy's grandfathers have detached earlobes.

(4) Timothy's father has a brother who has attached earlobes.

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11 Jackie carried out an experiment to find out if the type of water would affect how well fruit that are dispersed by water can float. He planned and carried out an investigation.

Step 1 Collected a lotus fruit and a coconut.
Step 2 Filled a pail with 5 litres of tap water.
Step 3 Filled another identical pail with 5 litres of sea water.
Step 4 Placed the lotus fruit in the first pail and the coconut in the second pail.

Jackie recorded his observations and presented his findings to his teacher who said that he had made a mistake in his investigation.

What mistake did Jackie make?

(1) He used two types of fruit.
(2) He used two types of water.
(3) He used two pails instead of one.
(4) He used the same amount of water.

12 Yusoff carried out a project to study more about the habitats of a garden and a desert.

Which of the following factors could he use to tell the difference between the habitats of a garden and a desert?

A type of soil
B amount of light present
C amount of water available
D number of organisms present

(1) A and D only
(2) A, B and C only
(3) B, C and D only
(4) A, B, C and D

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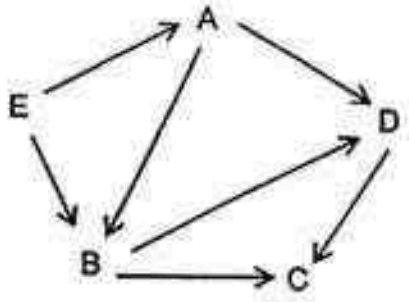
Using the food web provided below, answer Questions 13 and 14.



13 Which one of the following classifications is correct?

	producer	prey only	prey and predator	predator only
(1)	A	C	B, D	E
(2)	E	A	B, D	C
(3)	E	C	D	A, B
(4)	E	E	A, B, D	C

14 How many food chains are there in the food web above that involve at least four organisms?

(1) 1
(2) 2
(3) 3
(4) 4

15 Which of the following statements about photosynthesis is/are correct?

A Plants require only light for photosynthesis to take place.
B During photosynthesis, oxygen is produced by the plants.
C After photosynthesis, food is stored only in the leaves of a plant.

(1) B only
(2) C only
(3) A and B only
(4) A, B and C

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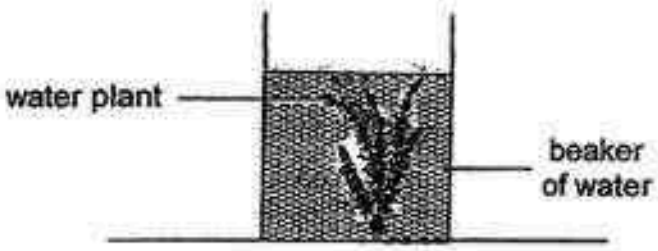
16 Aishah prepared a set-up as shown below and left it in an open field for 24 hours.



At every six-hour interval, she took a sample of the water and added liquid A to it.

Liquid A changes colour as shown below.

amount of carbon dioxide in the water	low	high
colour of water with liquid A	yellow	red

What colour of water with liquid A would Aishah observe when samples were collected at noon and at midnight respectively?

	At noon	**At midnight**
(1)	red	red
(2)	red	yellow
(3)	yellow	yellow
(4)	yellow	red

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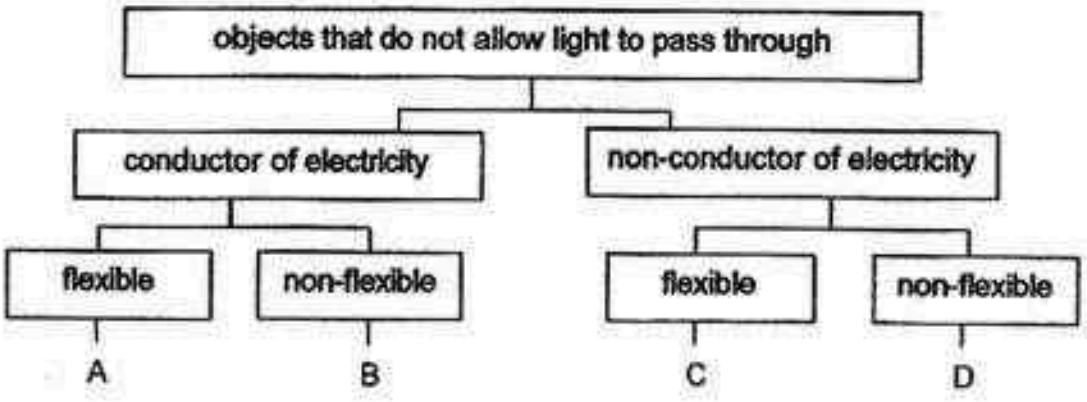
17 Study the information provided in the classification chart below.



Based on the information above, which one of the following represents objects A, B, C and D?

	A	B	C	D
(1)	nylon	iron nail	magnifying lens	ceramic mug
(2)	nylon	aluminium foil	towel	rubber band
(3)	copper wire	steel pipe	rubber band	magnifying lens
(4)	copper wire	iron nail	towel	ceramic mug

18 Kumala was given a beaker containing three powders, J, K and L, mixed together. These powders cannot be dissolved in water. The properties of the three powders are given in the table below.

	property X	property Y	property Z
	Does it float in water?	Is it a magnetic material?	Is it a good conductor of electricity?
powder J	no	no	yes
powder K	yes	no	no
powder L	no	yes	yes

Which property / properties should Kumala make use of in order to separate the three powders quickly?

(1) Y only
(2) X and Y only
(3) X and Z only
(4) Y and Z only

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19 Four paper clips, W, X, Y and Z, were fixed onto a cardboard as shown in Diagram 1 below. Diagram 2 shows a battery and a bulb connected to two wires A and B.

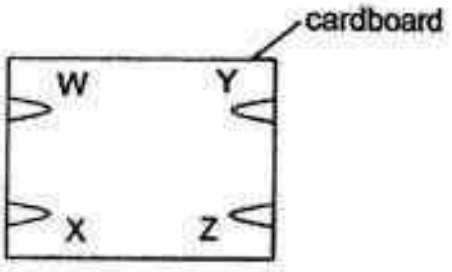


Diagram 1

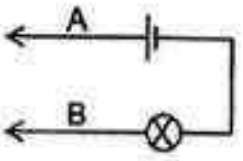


Diagram 2

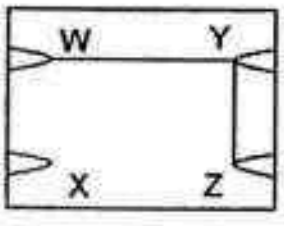
Lloyd connected some but not all of the paper clips on the cardboard in Diagram 1 with wires.

He then connected A and B across different pairs of paper clips in turn. He recorded his results in the table below.

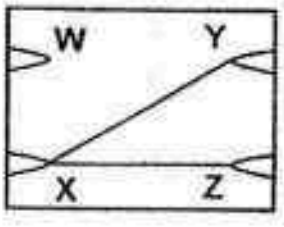
Paper clips connected to A	Paper clips connected to B	Did the bulb light up?
W	Y	yes
X	Z	no
Y	X	yes
Z	W	no

Which one of the following shows a possible arrangement of the wires behind the circuit card?

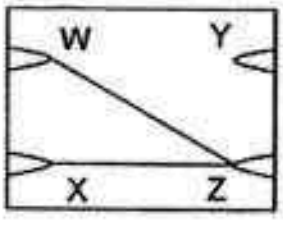
(1)



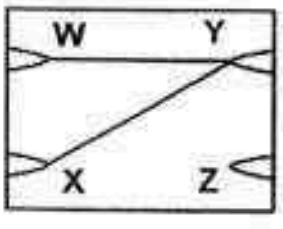
(2)



(3)



(4)



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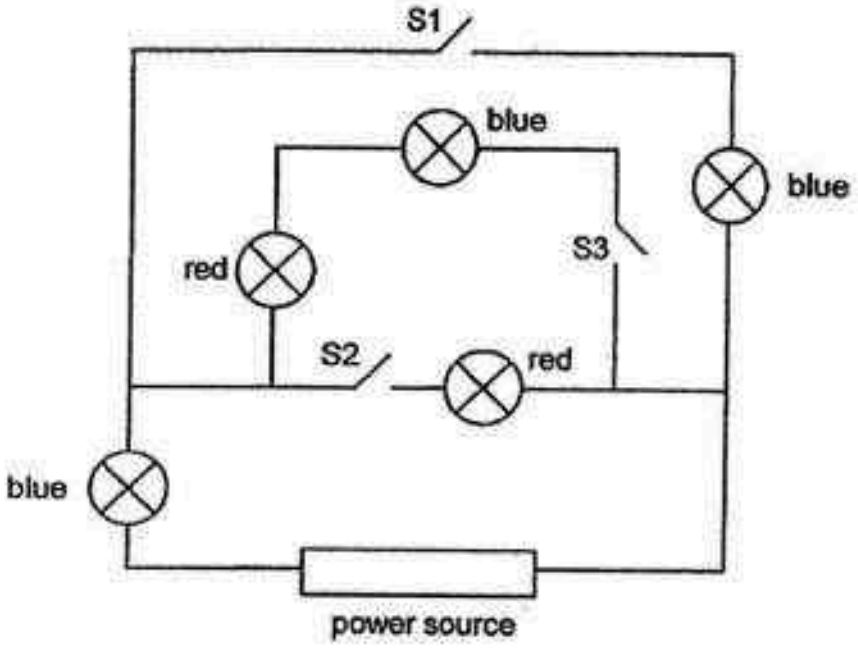
20 The diagram below shows some blue and red bulbs in a circuit.



Which switch(es) should be closed in order to light up 2 blue bulbs and 2 red bulbs at the same time?

(1) S2 only
(2) S1 and S3 only
(3) S2 and S3 only
(4) S1, S2 and S3

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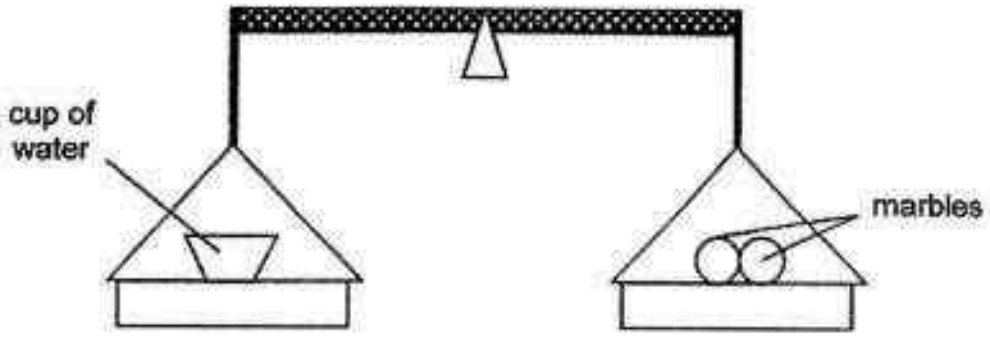
21 A cup of water and 2 marbles are placed on a balance scale as shown below. The pointer of the balance is at the centre.



Which one of the following is correct?

(1) The cup of water and two marbles have no mass.
(2) The cup of water and two marbles have the same volume.
(3) The mass of the cup of water is equal to the mass of the two marbles.
(4) The cup of water occupies the same amount of space as the two marbles.

22 Which of the following actions are gravity acting on?

A A pencil rolling on a table
B A cyclist cycling up a slope
C A box moving down a ramp
D A rocket launching into space

(1) A and C only
(2) B and D only
(3) B, C and D only
(4) A, B, C and D

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23 Suriah wanted to find out how the rate of evaporation of water was affected by the exposed surface area of water. She poured water into 4 containers, P, Q, R and S, made of the same material.

The table below shows the different conditions at the start of the experiment.

	Containers			
	P	Q	R	S
Room temperature (°C)	34	25	25	25
Exposed surface area of water (cm^2)	50	140	50	50
Volume of water (cm^3)	300	300	600	300

Which two containers should Suriah compare?

(1) P and Q

(2) R and P

(3) Q and S

(4) S and P

24 Han Ming conducted an experiment using four bars, A, B, C and D. Each bar was made of a different material. He heated them one at a time over a strong flame for one minute each. The table below shows the temperature of the bars that were recorded before and after the experiment.

Bar	Temperature at the start of the experiment (°C)	Temperature at the end of the experiment (°C)
A	30	50
B	30	39
C	30	58
D	30	43

Which one of the following correctly shows the arrangement of the bars from the best to the poorest conductor of heat?

	Best conductor → Poorest conductor			
(1)	A	C	D	B
(2)	B	D	A	C
(3)	C	A	D	B
(4)	C	D	A	B

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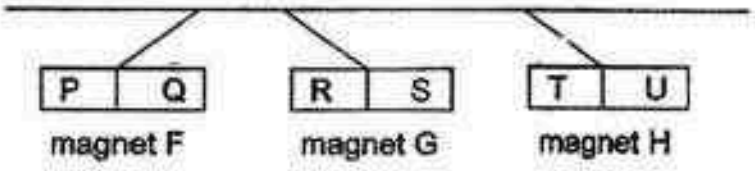
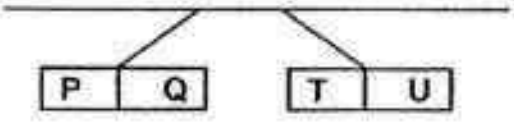
Using the information provided, answer Questions 25 and 26.

25 The diagram below shows the observation made by Chloe when she hung three magnets, F, G and H, next to one another.

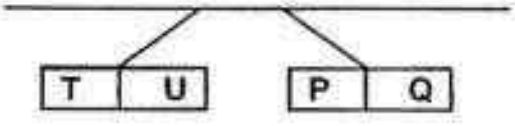


Which one of the following correctly shows the observation that would be made by Chloe when magnets F and H are placed next to each other?

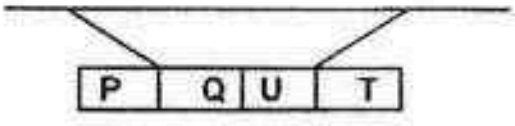
(1)



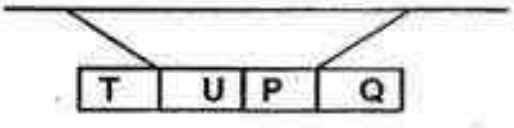
(2)



(3)



(4)



26 Which of the following is/are possible conclusion(s) about magnetic force based on Chloe's observation?

A It acts at a distance.

B It exerts a push or a pull.

C It is strongest at the poles of magnets.

D Its strength is dependent on the material that makes the magnets.

(1) B only

(2) A and B only

(3) A and C only

(4) C and D only

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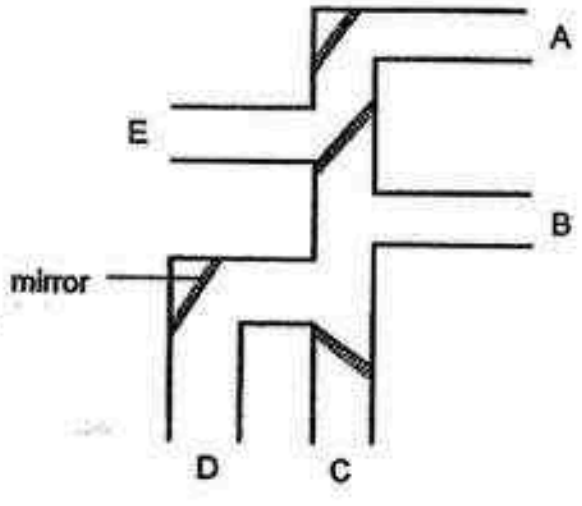
27 The table shows the melting and boiling points of two substances, P and R.

Substances	Melting point (°C)	Boiling point (°C)
P	80	150
R	60	250

Which one of the following shows the states of P and R at 70°C?

	P	R
(1)	solid	solid
(2)	solid	liquid
(3)	liquid	solid
(4)	liquid	liquid

28 Rachael made a set-up as shown in the diagram below. It was made up of pipes with openings at A, B, C, D and E. Four mirrors were placed inside the pipes.



Rachael used her set-up to see an object X that was placed near one of the openings.

Which one of the following would enable Rachael to see object X?

	Position of eye	Position of object X
(1)	A	E
(2)	B	D
(3)	C	A
(4)	D	B

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29 Which one of the following is not an example of energy conversion?

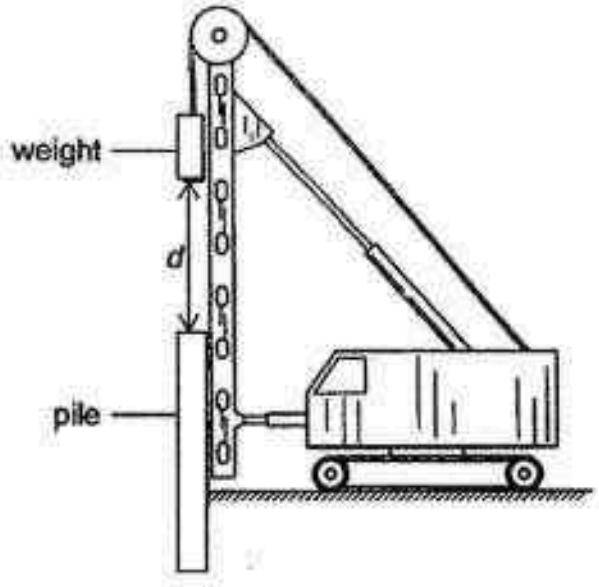
(1) walking up a staircase

(2) cooling hot water in a cup

(3) lighting a candle with a matchstick

(4) generating electricity in a power station

30 The diagram below shows a machine used to drive piles into the ground which serve as support for buildings.



As the weight is raised above the ground, it gains gravitational potential energy. When it is released to hit the pile, its gravitational potential energy is converted to kinetic energy.

How should distance *d* and mass of weight be changed in order to increase the kinetic energy of the weight when released?

	distance *d*	mass of weight
(1)	increase	decrease
(2)	decrease	increase
(3)	increase	Increase
(4)	decrease	decrease

End of Booklet A

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CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 2
2016
PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____ ( )

Class: Primary 6 - _____

Date: 25 August 2016

Parent's Signature: _____

Booklet A	60
Booklet B	40
Total	100

14 questions

40 marks

Total Time for Booklets A and B: 1 hour 45 minutes

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

This booklet consists of 17 printed pages, excluding the cover page.

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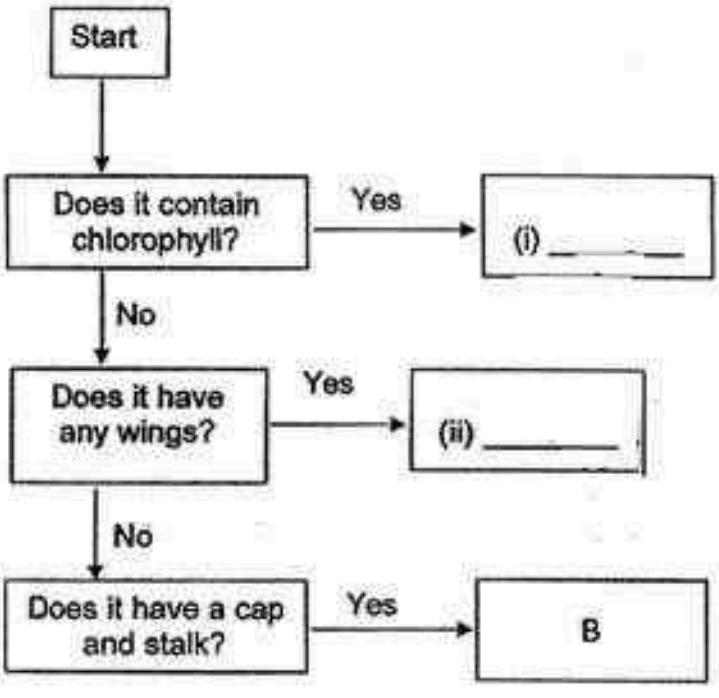
Booklet B (40 marks)

For questions 31 to 44, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (40 marks)

31 The table below shows three organisms and their characteristics.

Organism	Able to move	Has head, body and legs	Able to make its own food
A	Yes	Yes	No
B	No	No	No
C	No	No	Yes

(a) Use the information in the table above to complete the flow chart by filling in the boxes below with the letters A and C. [1]



(b) Which group of organisms does Organism B belong to? [1]

_____

_____

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SCORE 2

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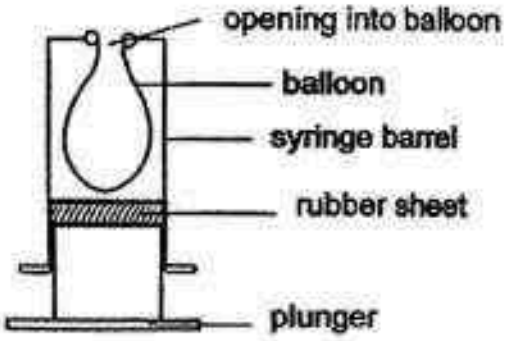
32 Pauline made a model of the human respiratory system using a syringe and a balloon as shown below.



(a) Which part of the body does the following parts of the model represent? [1]

(i) syringe barrel: _____

(ii) balloon: _____

(b) State one difference between the air entering the lungs and the air leaving the lungs. [1]

_____

_____



(c) Pauline then observed the gills of a fish using a magnifying glass and realised that the gills have many folds. [1]
How does this help the fish in the process of taking in oxygen?

_____

_____

(Go on to the next page)

SCORE	/ 3

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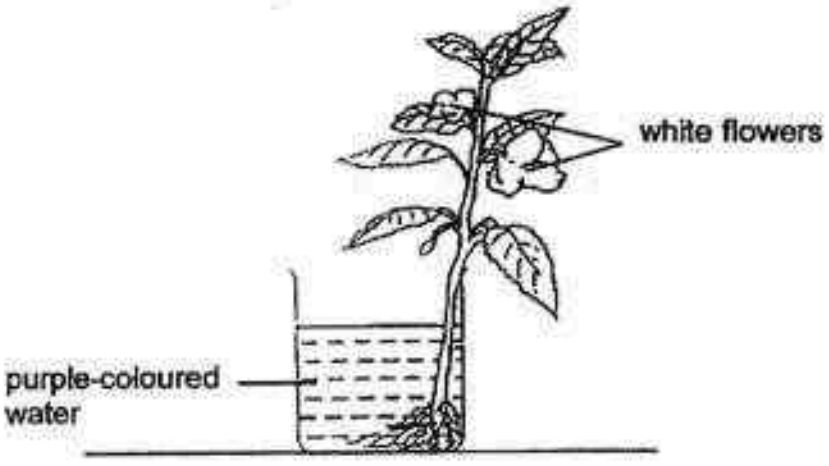
33 Joong Ki placed a plant with white flowers into a beaker containing purple-coloured water as shown below. He left the set-up on the table for 2 days.



(a) What would he observe about the flowers after 2 days? [1]

_____

_____

(b) Explain your answer in (a). [1]

_____

_____

(Go on to the next page)

SCORE	2

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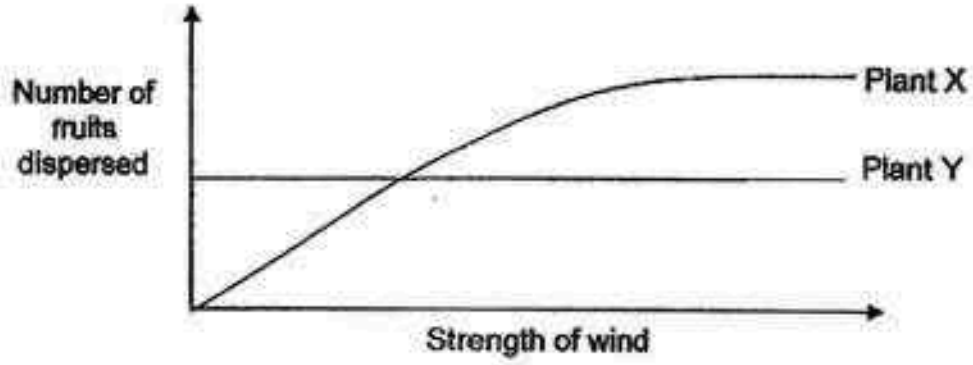
34 Study the graph below.



(a) Based on the graph above, how are the number of fruits dispersed by Plant X and Plant Y affected by the strength of the wind? [2]

(b) What can you infer about the structure of the fruits of Plant X based on the graph? [1]

(Go on to the next page)

SCORE 3

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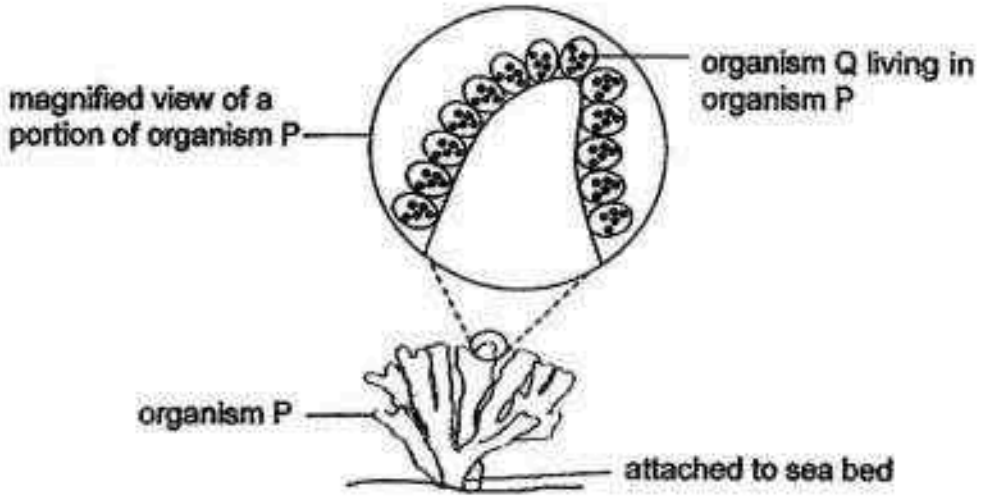
35 The diagram below shows organisms P and Q which live in the sea.



(a) Organism Q is found living in organism P. How does organism Q benefit from its relationship with organism P? [1]

_____

_____

(b) Organism Q contains coloured pigment which gives organism P its colour, preventing organism P from being easily infected by diseases. The coloured pigment in organism Q also allows it to make food for itself and organism P. When temperature of the sea rises, organism Q will leave organism P.

State two ways how organism P will be affected. [2]

(i) _____

_____

(ii) _____

_____

(Go on to the next page)

SCORE	3

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Continue from Question 35

(c) Besides temperature, state one other environmental factor that will affect the process which organism Q carries out to make food. [1]

_____

_____

(Go on to the next page)

SCORE	/ 1

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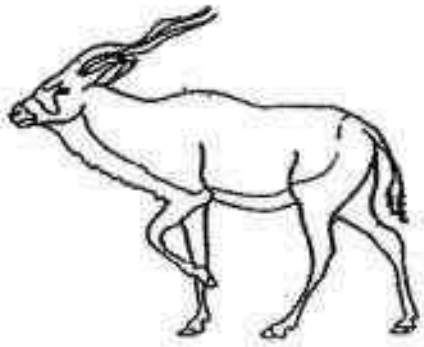
36 Animal A shown below lives in a very dry and hot habitat. There is very little rainfall throughout the year in the habitat.



(a) Animal A gets its water from the plants it feeds on. It is able to store most of the water from those plants in its body. It does not need to drink water frequently.

Based on the description above, what type of adaptation does Animal A have? [1]

_____

_____

(b) The average temperature in the habitat is very high for some months of the year while in the other months, the average temperature is low.

Animal A is observed to have two different coloured coat in a year. It usually has a light-coloured coat during the hotter months and a dark-coloured coat during the cooler months.

Explain how such an adaptation would help Animal A survive in its habitat. [1]

_____

_____

(Go on to the next page)

SCORE	/ 2

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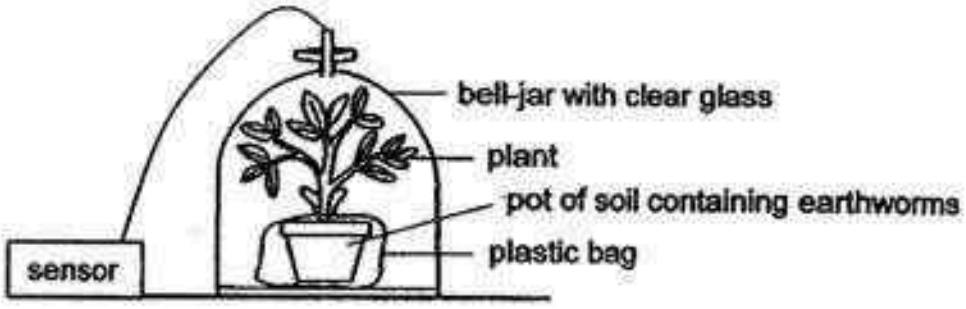
37 Dylan placed a potted plant in a bell jar. A sensor was attached to measure the amount of carbon dioxide in the air in the bell jar as shown below.



He left the set-up in a brightly-lit room for four hours.

(a) Four hours later, it was recorded that the air in the bell jar had a lower amount of carbon dioxide than at the start of the experiment. Give a reason. [1]

_____

_____

(b) Why did Dylan tie a plastic bag around the pot of the potted plant? [1]

_____

_____

(c) Using the same set-up, what must Dylan do if he wants to increase the amount of carbon dioxide in the air in the bell jar? [1]

_____

_____

(Go on to the next page)

SCORE	/ 3

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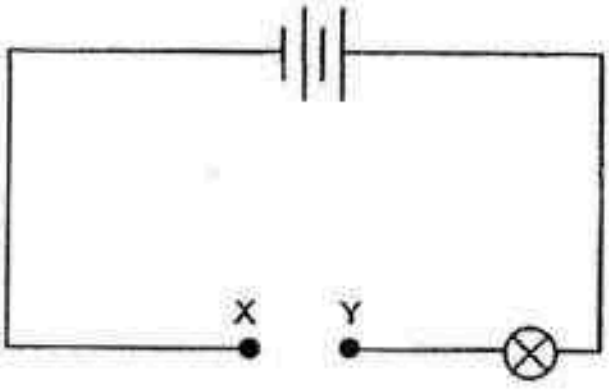
38 The diagram below shows a circuit.



The table below shows what happens to the lamp when three objects A, B and C are connected, one at a time, across XY.

Object across XY	Bulb light up
A	Yes
B	No
C	Yes

(a) From the results above, which object is most likely to be a non-conductor of electricity? Explain your answer. [1]

(Go on to the next page)

SCORE / 1

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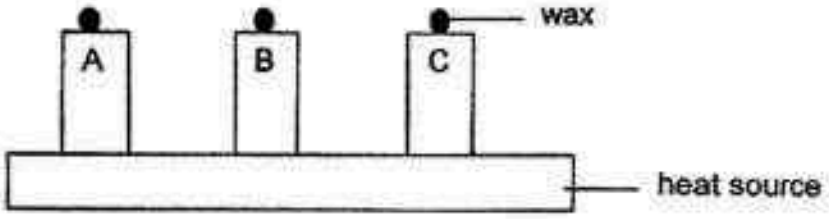
Continue from Question 38

In another experiment, same amount of wax was placed on the top end of the same three objects, A, B and C. The three objects were then placed on a heat source as shown below.



It was observed that the wax on object A melted first, followed by that on object C then object B.

(b) What conclusion can you draw about the conduction of heat in objects A, B and C? [1]

_____

_____

(c) From your answers to (a) and (b), what can you conclude about the likely relationship between a conductor of electricity and a conductor of heat? [1]

_____

_____

(d) Why was the same amount of wax used in the experiment to ensure a fair test? [1]

_____

_____

(Go on to the next page)

SCORE	/ 3

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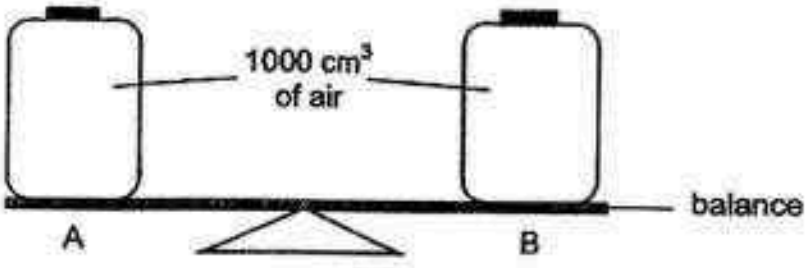
39 Sangeetha had two identical containers, A and B, of equal capacity of 1000 cm^3 each. She placed them on a balance as shown in the diagram below.



(a) What would Sangeetha observe when she removed 500 cm^3 of air from container A? [1]

(b) What would be the volume of air in container A after Sangeetha had removed the 500 cm^3 of air? Explain your answer. [1]

(Go on to the next page)

SCORE	2 / 2

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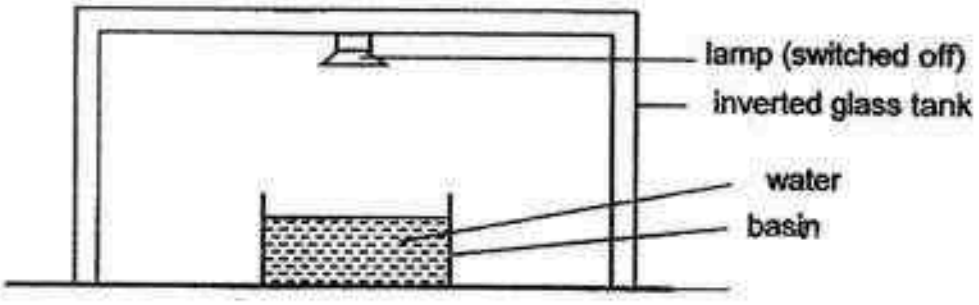
40 Sanjay set up the experiment as shown below.



At the start of Day 1 of the experiment, there was 100 ml of water in the basin.

The temperature inside the tank and the volume of water left in the basin were recorded at the end of each day.

Day	Temperature inside tank (°C)	Volume of water in basin (ml)
1	30	95
2	30	90
3	30	86
4	30	83
5	30	81

(a) Based on the results, how much water had evaporated over the 5-day period? [1]

(b) What change of state had occurred to the water in the basin? [1]

(c) After Day 5, Sanjay switched on the lamp in the set-up. How will this affect the rate of evaporation? [2]

(Go on to the next page)

SCORE ___/4

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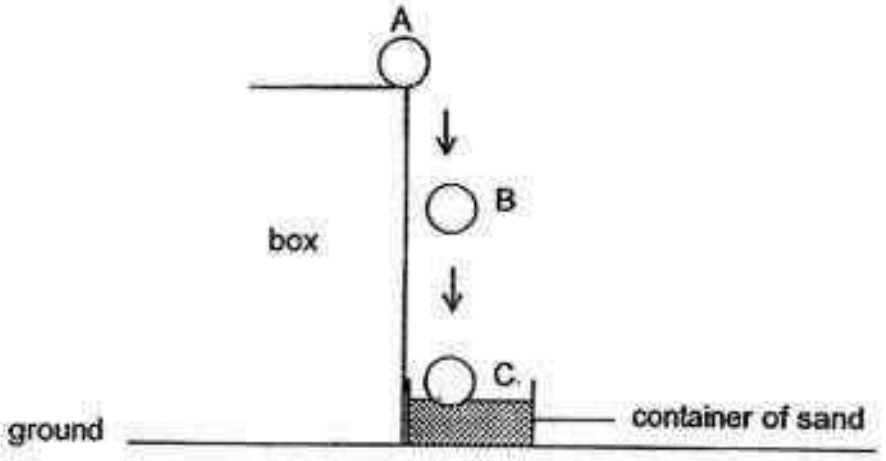
41 The diagram below shows a ball with a mass of x g, being released from the edge of a box. The arrow shows the path taken by the ball from positions A to C as it falls into a container of sand on the ground.



The depth of the depression made in the container of sand when the ball lands is measured and recorded as shown in the table below.

Number of attempts	Depth of depression in the sand (cm)
1	5.8
2	5.6
3	5.9

(a) Other than air resistance, state another force that is exerted on the ball as it travels from positions A to C. [1]

(b) Why was the above experiment repeated several times? [1]

(c) Using a ball of a mass lighter than x g in the same set-up, would the depth of the depression in the container be shallower or deeper than 5.6cm? Explain. [1]

(Go on to the next page)

SCORE 3

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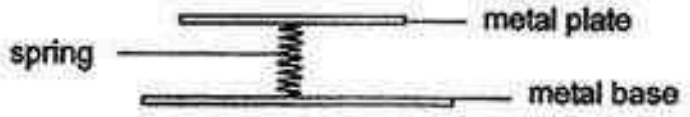
42 Lionel attached a metal plate onto a spring as shown below.



He placed different number of identical cubes on the metal plate and measured the length of the spring. The results recorded are shown in the table below.

Number of cubes	Length of spring (cm)
0	24
2	21
4	18
6	15

(a) How does the number of cubes on the metal plate affects the length of the spring? [1]

_____

_____

(b) Why did the length of spring change as more cubes were placed on the metal plate? [2]

_____

_____

_____

_____

(Go on to the next page)

SCORE	/ 3

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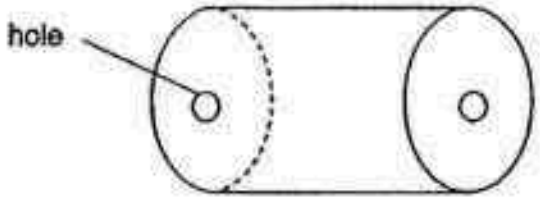
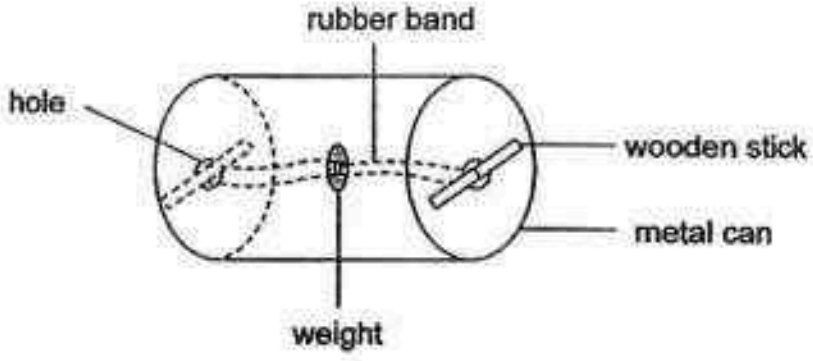
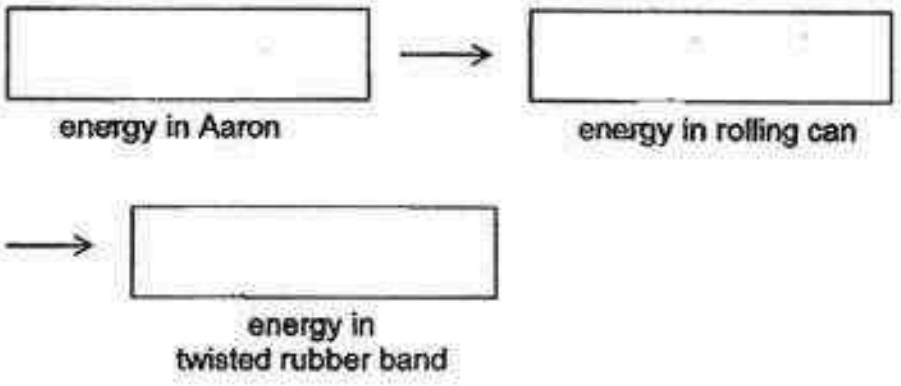
43 Aaron made a toy using a cylindrical metal can as shown in the diagram below. He made a hole on each side of the metal can.



He then secured a rubber band with a weight attached, in the centre of the metal can, using a wooden stick on each side of the metal can.



(a) Fill in the boxes with the forms of energy converted when Aaron gave the metal can a slight push forward to start it rolling. [1]



(Go on to the next page)

SCORE 1

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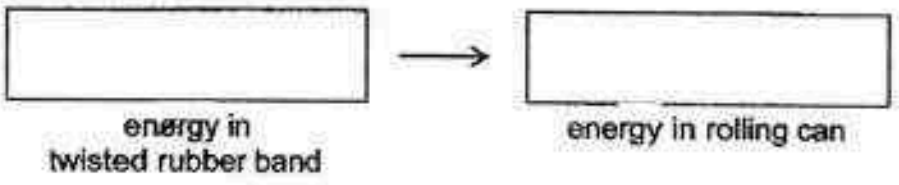
Continue from Question 43

Aaron observed that after the metal can had started rolling forward for a short distance, it would roll backward on its own. This happened several times before the toy came to a complete stop.

(b) Fill in the boxes to show how energy was converted when the toy rolled backwards. [1]



(c) What would Aaron observe if he used a rubber band that could be twisted more in the toy? [1]

_____

_____

(Go on to the next page)

SCORE 2

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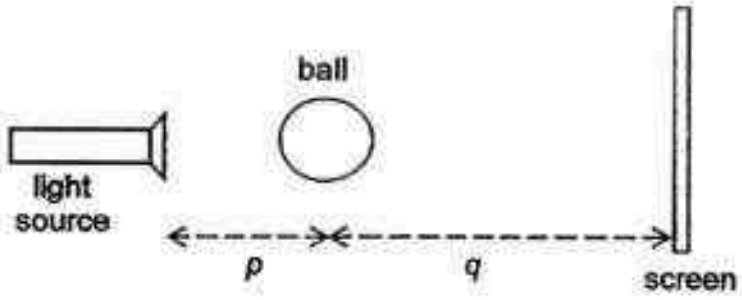
44 Elijah used a set-up as shown below to demonstrate a property of light. He placed a ball at distance p away from the light source and a screen at distance q away from the ball.



The shadow cast by the ball on the screen is shown below.



(a) What property of light is demonstrated based on Elijah's set-up? [1]

_____

_____

(b) Assuming that the light source and the screen are fixed at their positions, how will the size of shadow on the screen be affected as distance p increases? [1]

_____

_____

End of Booklet B

SCORE	2

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SCHOOL : CATHOLIC HIGH SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : PRELIM 2

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	2	3	1	1	4	1	1	1	4

Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	2	2	4	1	4	4	2	4	3

Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	4	3	3	4	2	2	1	2	3

SECTION B

Q31)	(a) (i) C (a) (ii) A (b) Fungi
Q32)	(a) (i) ribcage (a) (ii) lungs (b) The air entering the lungs is cooler than the air leaving the lungs. (c) The folds of the gills increases the exposed surface areas so that the

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	oxygen can be taken in by the fish.
Q33)	(a) The colour of the plant would become purple. (b) The roots took in the purple-coloured water and transported to the flowers through the water-carrying tubes.
Q34)	(a) The number of Plant X's fruits dispersed increases as the strength of the wind increases. After a certain point, as the strength of the wind increases, the number of Plant X's fruits dispersed remains constant. As for Plant Y, the number of fruits dispersed remains constant when the strength of wind increases. (b) It has a wing-like structure.
Q35)	(a) Organism P will offer protection to Q. (b) (i) Organism P will lose its colour, becoming more easily infested by diseases. (b) (ii) It will not have food to eat. (c) The presence of the light.
Q36)	(a) Structural adaptation (b) In the hotter month, Animal A has a light-coloured coat to reflect heat and thus prevent from absorbing heat from the surrounding too fast, keeping it cool. In the cooler months, it has a dark-coloured coat to lose heat to the surroundings slower, keeping it warm for a longer period of time.
Q37)	(a) In the presence of light, photosynthesis would occur and it needs carbon dioxide. So the carbon dioxide would be lower. (b) To prevent carbon dioxide from escaping. (c) Untie the bag to released carbon dioxide produced by the plant.
Q38)	(a) When object B is placed across XY, the bulb did not light up which proves that it is most likely to be a non-conductor of electricity. (b) A is the fastest followed by B then C. (c) A good conductor of electricity is also a good conductor of heat. (d) This is to ensure that the time takes for the wax to melt is only only affected by the rate of conductivity of heat.
Q39)	(a) The balance will tilt downwards on the side of B. (b) The volume of A will be 1000 cm3 as air can be compressed. Air has no definite volume and it takes the volume of its container.

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Q40)	(a) 100 ml – 81 ml = 19 ml (b) Changed from liquid to gaseous state (c) When the lamp is switched on, more heat gained by the air increases which resulted in the water gaining more heat. This increases the rate of evaporation of water.
Q41)	(a) Gravitational Force (b) To have a more reliable results by finding the average results (c) Shallower. There is a weaker/ less gravitational force resulting in a smaller impact when the bulb lands in the container of sand, thus creating a shallower depression.
Q42)	(a) When the number of cubes increases, the length of spring decreases. (b) The gravitational force that has acting on the cubes overcame the elastic spring force in the spring. This resulted in the spring becoming short when more cubes were placed on the metal plate.
Q43)	(a) chemical potential energy in Aaron → kinetic energy in rolling can → elastic potential energy in twisted rubber band (b) elastic potential energy in twisted rubber band → kinetic energy in rolling can (c) The toy would roll forward and backward more times. The toy would roll forward and backward across a longer distance. The toy would roll forward and backward for a longer time.
Q44)	(a) Light travels in a straight line. (b) The size of the shadow would be smaller.

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. 27

RED SWASTIKA SCHOOL

2016 PRELIMINARY EXAMINATION
SCIENCE
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 29 August 2016

BOOKLET A

Total time for Booklets A & B: 1h 45 min

Booklet A: 30 questions (60 marks)

Note:

1. Do not open the booklet until you are told to do so.
2. Read carefully the instructions given at the beginning of each part of the booklet.
3. Do not waste time. If the question is too difficult for you, go on to the next question.
4. Check your answers thoroughly and make sure you attempt every question.
5. In this booklet, you should have the following:
   a. Page 1 to Page 22
   b. Questions 1 to 30

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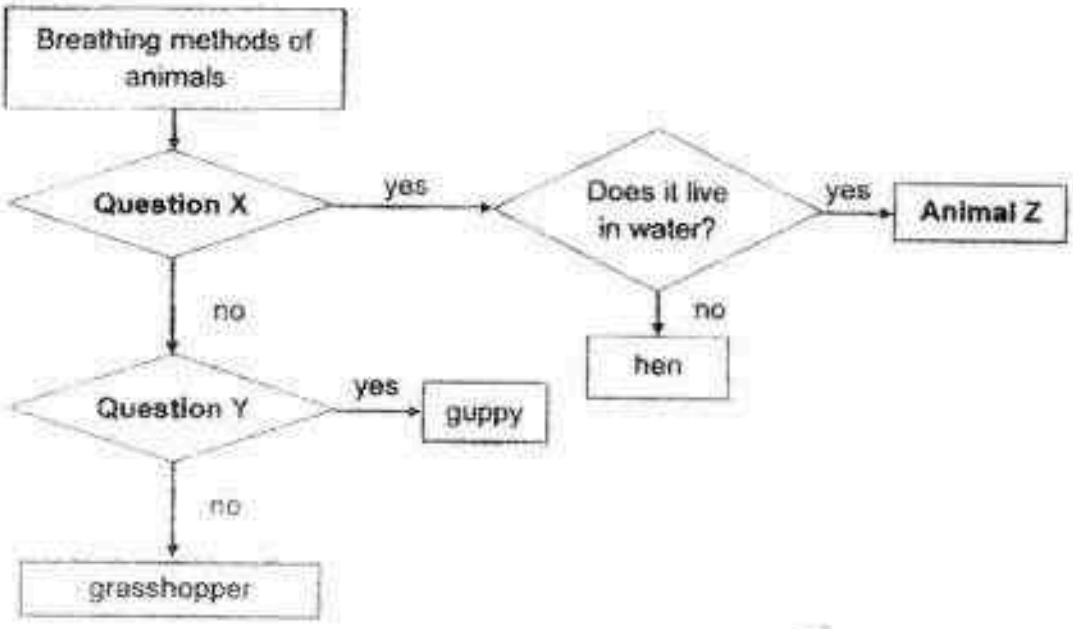
Section A

For Questions 1 to 30, choose the most suitable answer and shade its number in the OAS provided.

1. Look at the flowchart below carefully.



Which of the following describes X, Y and Z?

	Question X	Question Y	Animal Z
(1)	Does it have feathers?	Does it have scales?	duck
(2)	Does it breathe with lungs?	Does it have gills?	dolphin
(3)	Does it breathe through its skin?	Does it have gills?	snake
(4)	Does it breathe with gills?	Does it have breathing tubes?	seal

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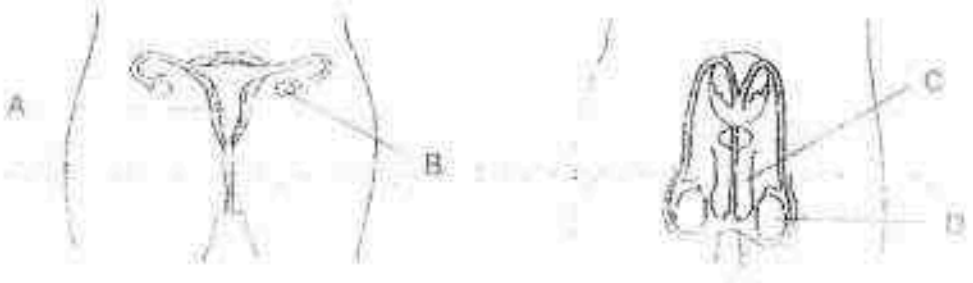
2. Usha observed some animals in her garden. She recorded her observations in the table shown below.

Observation	cat	bird	butterfly	millipede
Has fur	yes	no	no	no
Has feathers	no	yes	no	no
Has wings	no	yes	yes	no
Has two legs	yes	yes	no	no

Which one of the following animals was described wrongly?

(1) cat
(2) bird
(3) butterfly
(4) millipede

3. The diagrams below show the human reproductive systems.



Where are the eggs and sperms produced?

	Eggs	Sperms
(1)	A	C
(2)	B	C
(3)	B	D
(4)	D	B

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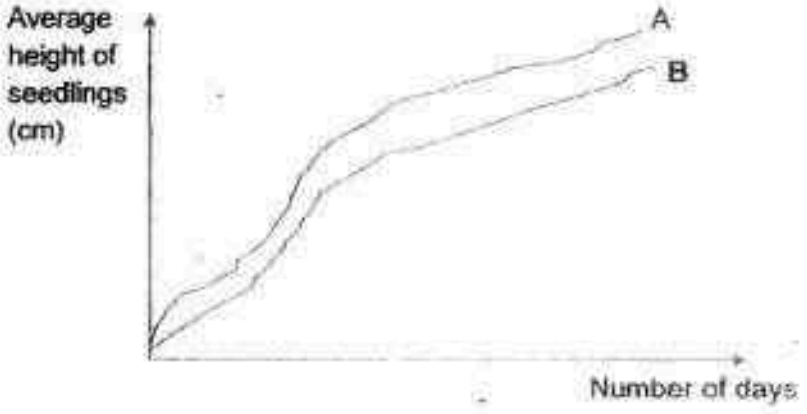
4. Mrs Chan planted some seeds in two similar pots. She then left the two pots by the window and watered them with the same amount of water every day.
The table below shows the number of seeds she planted in each of the pots.

Pot	X	Y
Number of seeds	5	25

The seeds germinated and she measured the average height of the seedlings daily for two weeks. The graph below shows her results.



Mrs Chan then asked her four students, Ai Meng, Brendon, Chrischelle and Danu, to explain the graph.

Ai Meng: Line A shows the average height of the seedlings in pot X. As there is no overcrowding, the seedlings need not compete for sunlight. Hence their stems are taller and thinner.

Brendon: Line B shows the average height of the seedlings in pot Y. Due to overcrowding, the seedlings need to compete for sunlight. Hence their stems are shorter and thicker.

Chrischelle: Line A shows the average height of the seedlings in pot Y. Due to overcrowding, the seedlings need to compete for sunlight. Hence their stems are taller but thinner.

Danu: Line B shows the average height of the seedlings in pot X. As there is no overcrowding, the seedlings need not compete for sunlight. Hence their stems are shorter and thicker.

Which of the students made the correct statements?

(1) Ai Meng only
(2) Chrischelle only
(3) Ai Meng and Brendon only
(4) Chrischelle and Danu only

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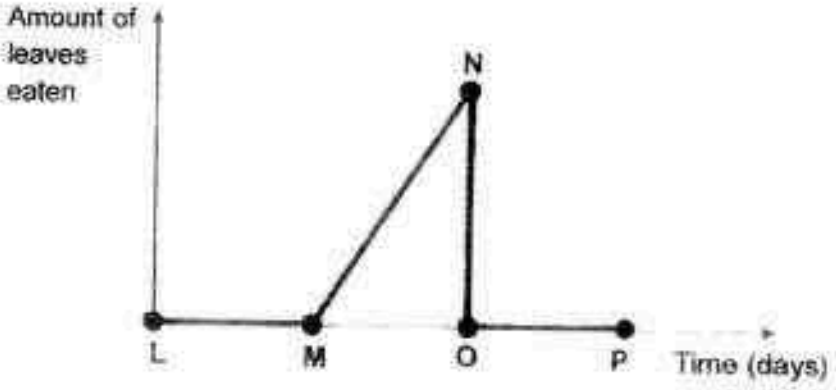
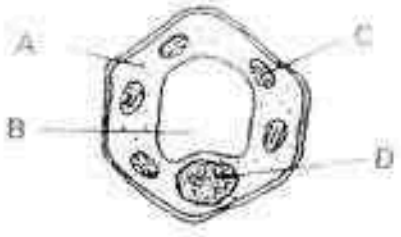
5 Hannah wanted to find out the amount of leaves eaten by an insect in the various stages of its life cycle. She conducted an experiment and plotted a graph according to the sequence of some of the stages in its life cycle as shown below.



Which of the following represents the egg, larval and pupal stages of the insect?

	egg stage	larval stage	pupal stage
(1)	NOP	MN	LM
(2)	NO	LMN	OP
(3)	LMN	NO	OP
(4)	LM	MN	NOP

6 Professor Javier extracted a cell from organism X as shown in the diagram below. He wanted to study the structure that contains the substance which is able to trap light energy.



Which part should Professor Javier focus on for his research?

(1) A
(2) B
(3) C
(4) D

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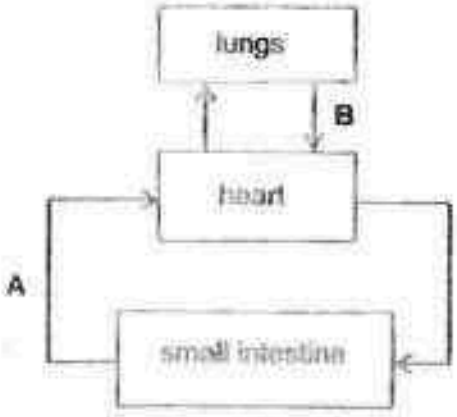
7. **The diagram below shows how blood flows in certain parts of the body a few hours after a meal.**



Which of the following correctly shows the comparison between the blood flowing at A and the blood flowing at B?

	Blood flowing at A	Blood flowing at B
(1)	more carbon dioxide, more digested food	less carbon dioxide, less digested food
(2)	more carbon dioxide, less digested food	less carbon dioxide, more digested food
(3)	less carbon dioxide, more digested food	more carbon dioxide, less digested food
(4)	less carbon dioxide, less digested food	more carbon dioxide, more digested food

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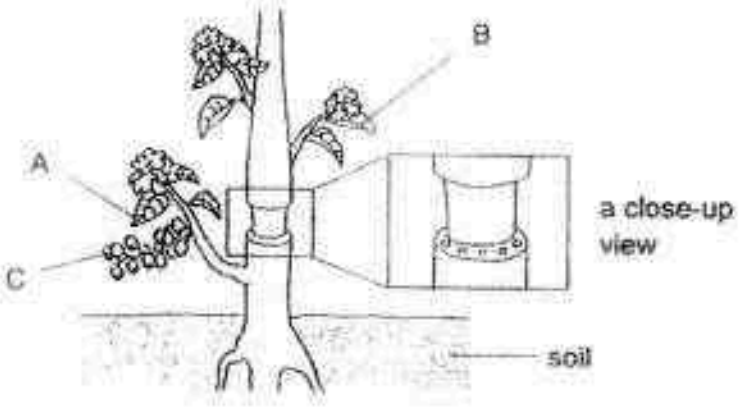
8. Scott removed the outer ring of a stem from a plant in his garden as shown below. As a result, the tubes carrying food and water were removed.



It was observed that C grew bigger after one week.
Which of the following statements best explains the observation?

(1) Food is made by C itself.
(2) Food is absorbed by C from the soil.
(3) Food is transported from A to C.
(4) Food is transported from B to C.

9. Gupta counted the number of organisms in a particular habitat and recorded the data in the table below.

Organisms	Number of organisms
Water lilies	8
Duckweeds	12
Guppies	3
Dragonfly nymphs	4
Wrigglers	8
Dragonflies	2
Mosquitoes	3

Based on the table above, which one of the following is correct?

(1) There are 5 communities.
(2) There is 1 community with 5 populations.
(3) There are 40 populations living in the habitat.
(4) There are 7 populations with a total of 40 organisms.

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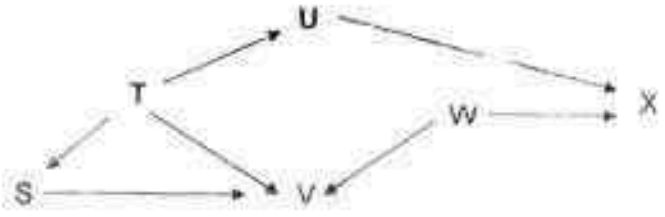
The diagram represents a food web in a habitat with organisms R, S, T, U, V, W and X. Study the diagram and answer question 10 and 11.



10. Which of the following statements about the food web are true?

A: X is a carnivore.
B: T is the only producer.
C: V is a predator of S.
D: U and S are herbivores.

(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, C and D only

11. The whole population of X is killed by Man due to overhunting.
Which one of the following will most likely happen after some time?

(1) The population of S will increase.
(2) The population of T will decrease.
(3) The population of U will decrease.
(4) The population of W will decrease.

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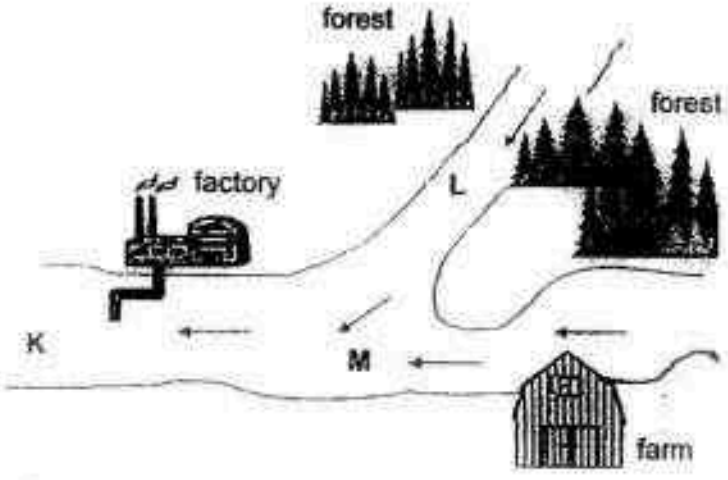
12. Daria obtained water samples from different parts of a river, K, L and M, as shown below. The arrow --->shows the direction of flow of the river.



She put 30 fishes into each water sample and recorded her observations in the table below.

water sample from	number of fish alive after two weeks
K	5
L	30
M	15

What can Daria conclude from her observation?

(1) The water is the most polluted at L.
(2) The water is the least polluted at M.
(3) The factory waste caused most of the fish to die in the water sample taken from M.
(4) The factory waste and the pesticide from the farm caused most of the fish to die in the water sample taken from K.

13. Which of the following correctly describes the direct source of energy received by the angsana tree and the mushroom?

	angsana tree	mushroom
(1)	sun	rotting log
(2)	soil	sun
(3)	soil	rotting log
(4)	sun	sun

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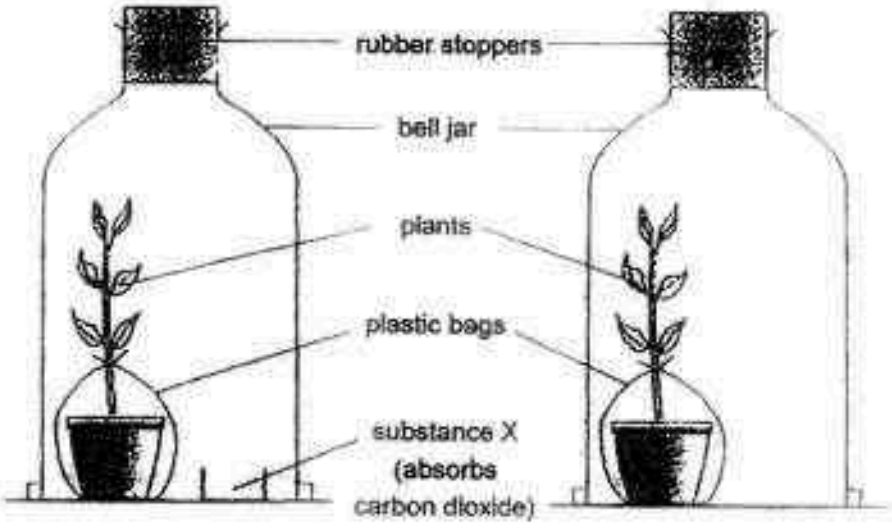
14. Zalina used the following set-up to conduct an experiment. She kept the set-ups in a dark room for one before placing the set-ups in the open field during the day. After the experiment, Zalina conducted a starch test on a leaf from each plant.



What was the aim of Zalina's experiment?

The aim of her experiment was to find out if plants _____

(1) give out oxygen during photosynthesis
(2) give out carbon dioxide during photosynthesis
(3) need oxygen to carry out photosynthesis
(4) need carbon dioxide to carry out photosynthesis

15. Prima Supermarket encourages shoppers to bring their own plastic bags or the supermarket will sell a paper bag, which is made from recycled paper, at $0.10 each for the shoppers to store their groceries.

Mdm Krishna listed the characteristics of the paper bag sold by the supermarket as shown below.

A. Tears easily.
B. Absorbs water.
C. Does not allow light to pass through.

Which characteristic(s) of the paper bag made Mdm Krishna decide to bring her own plastic bag since her groceries are often heavy and it is always raining?

(1) A only
(2) B only
(3) A and B only
(4) A, B and C

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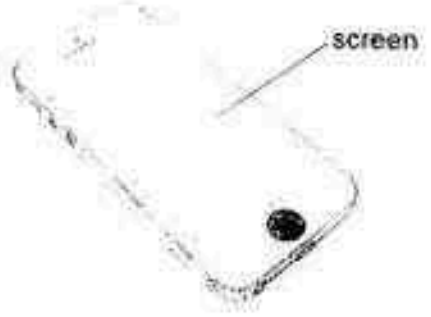
16. The diagram below shows a handphone with a screen.



Study the properties of the four materials below.

Material	Property of material		
	Hard	Transparent	Flexible
A	yes	yes	no
B	yes	no	no
C	no	yes	yes
D	no	no	yes

Which material is the most suitable for making the screen?

(1) A
(2) B
(3) C
(4) D

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17. Gary lived overseas. When he entered his car one morning, he found that the inner surface of his car window was covered with tiny water droplets.



Which of the following statements are true?

A The temperature inside the car was higher than the temperature outside the car.
B The temperature outside the car was higher than the temperature inside the car.
C Lowering the temperature in the car will slow down the formation of tiny water droplets on the inner surface of the window.
D Increasing the temperature in the car will slow down the formation of tiny water droplets on the inner surface of the window.

(1) A and C only
(2) A and D only
(3) B and C only
(4) B and D only

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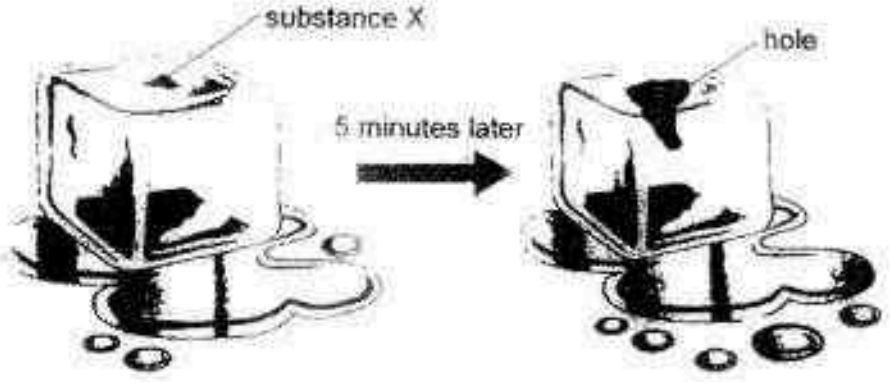
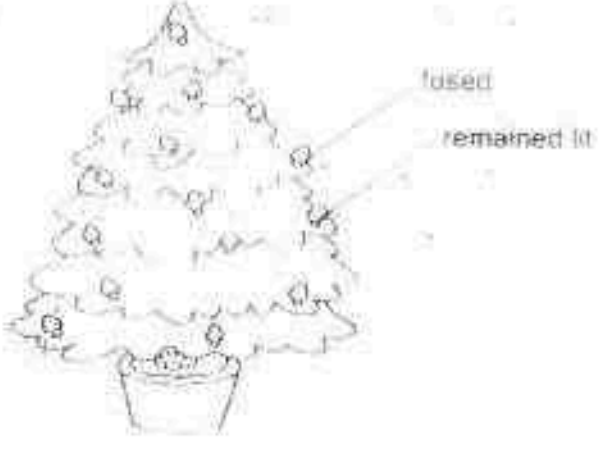
18 A simple experiment with an ice cube was conducted in the Science laboratory. A pinch of substance X was placed on the ice cube and left there for five minutes. After five minutes, a hole was observed in the middle of the ice cube.



What does the experiment show?

(1) Substance X causes the boiling point of water to be lower.
(2) Substance X causes the freezing point of water to be lower.
(3) Substance X causes the freezing point of water to be higher.
(4) Substance X causes the melting point of ice to remain the same.

19 The Christmas tree below was decorated with Christmas lighting. When one of the light bulbs on the trees fused, the rest of the light bulbs remained lit.



What does this show?

(1) There were many batteries used for the Christmas tree.
(2) There were many switches used for the Christmas tree.
(3) The bulbs in the Christmas tree were arranged in series.
(4) The bulbs in the Christmas tree were arranged in parallel.

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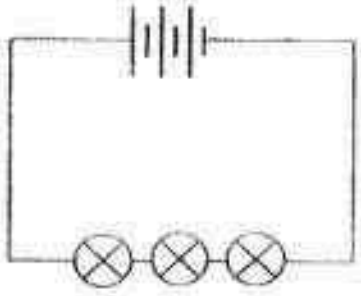
20. The diagram below shows an electric circuit containing three similar batteries and three similar bulbs.



Which of the following actions will increase the brightness of each bulb?

A Arrange the bulbs in parallel.
B Increase the distance between each bulb.
C Reduce the number of bulbs in the circuit.
D Increase the number of batteries in the circuit.

(1) A and B only
(2) C and D only
(3) A, C and D only
(4) B, C and D only

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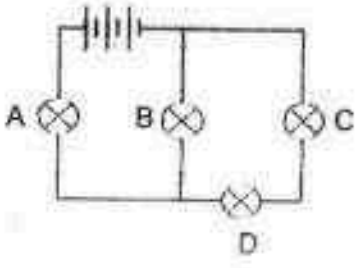
21. **In an electrical circuit, all bulbs were initially lit. The table below shows which bulb(s) would continue to light up when one of the bulbs had fused.**

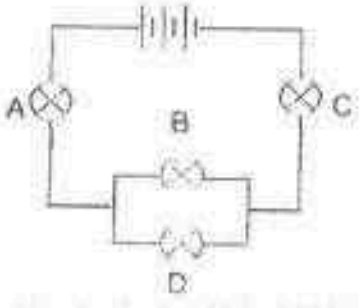
Fused bulb	Bulb(s) that continued to light up
A	None
B	A, C and D
C	A, B and D
D	None

Based on the table above, which one the following circuits was used?

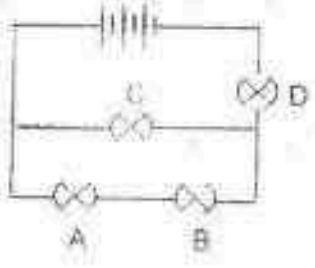
(1)



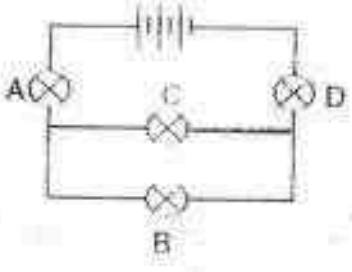
(2)



(3)



(4)



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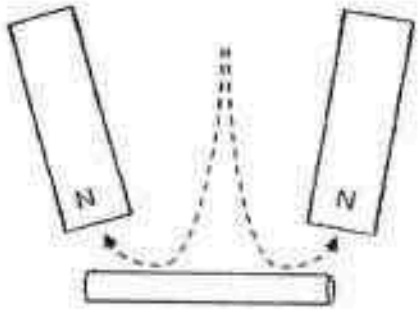
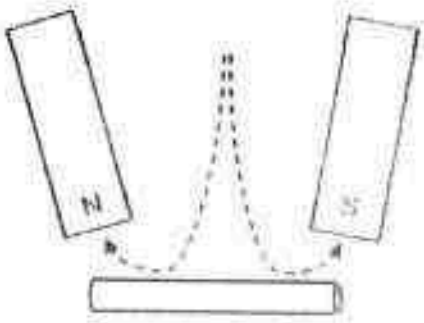
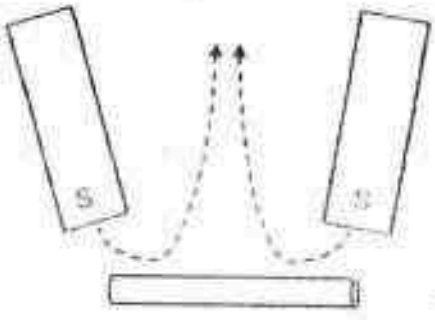
22. **Sam wants to magnetise an iron rod using the following 'stroke' methods. The arrows (----►) show the movement of the magnets.**



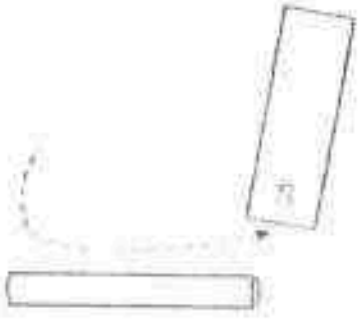
Method A



Method B



Method C



Method D

Which of the above is/are the correct 'stroke' method(s) that will magnetise the iron rod?

(1) C only
(2) D only
(3) A and C only
(4) B and D only

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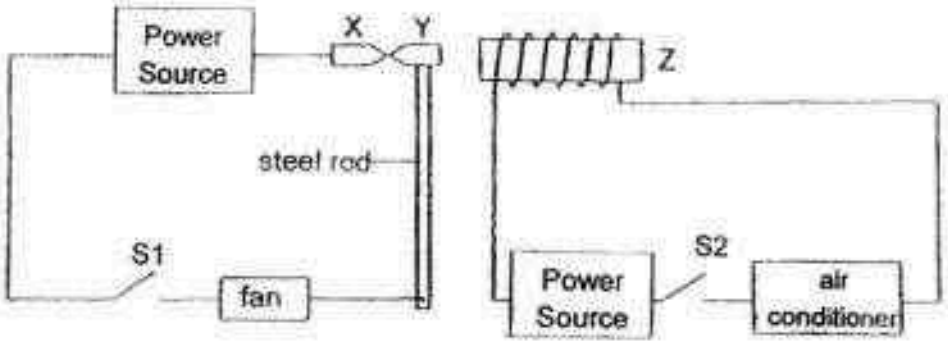
23. Nurul installed an electrical system in her room as shown below.

X and Y are made of steel and are in contact with one another.
X is fixed but Y attached to a steel rod that can move sideways.
Z is an iron rod placed inside a coil of wire.



What is the purpose of installing such an electrical system?

(1) When the air conditioner is turned off, more electricity flows through the fan.
(2) This system increases the amount of electricity flowing through the air conditioner.
(3) This system prevents the fan and air conditioner from being turned on at the same time.
(4) When both S1 and S2 are closed, this system allows the fan and the air conditioner to be turned on at the same time.

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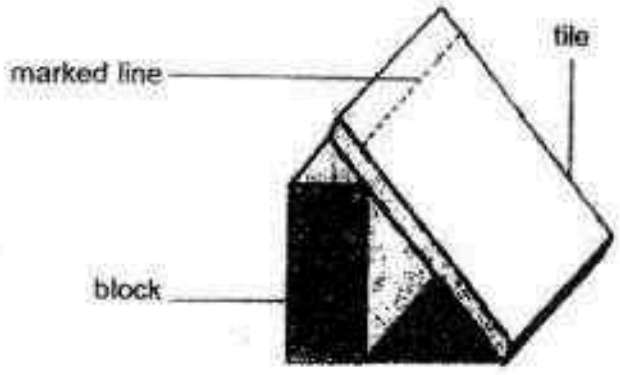
24. Mr Lee was looking at three different types of floor tiles. He conducted an experiment to decide which floor tile to use for his bathroom. He leaned each tile on a block to make a ramp. He then dripped a drop of coloured water from a marked line at the top of the ramp and recorded the time taken for the drop of water to reach the bottom of the ramp. The set-up and the data recorded are shown below.



Tile	Time taken for water to reach the bottom of the ramp (s)
W	3.1
X	2.5
Y	4.3

What was the aim of Mr Lee's experiment?

(1) To find out which tile shows the most friction between its surface and water.
(2) To find out which tile transfers the most kinetic energy to the water.
(3) To find out which tile can absorb the most amount of water.
(4) To find out which tile has the greatest potential energy.

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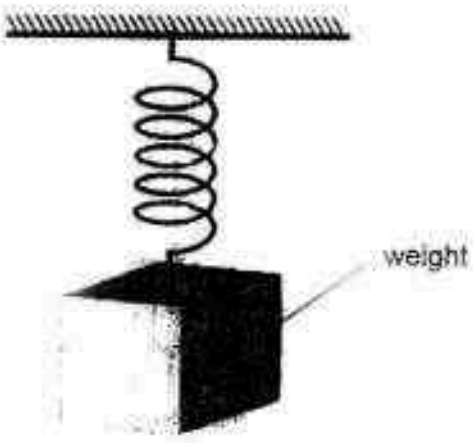
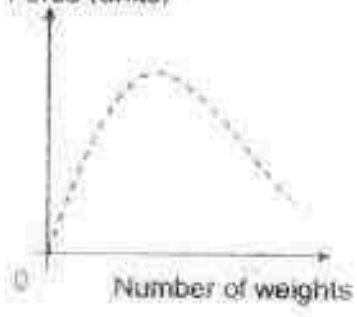
25. Chee Loong hung a weight on a spring as shown below.

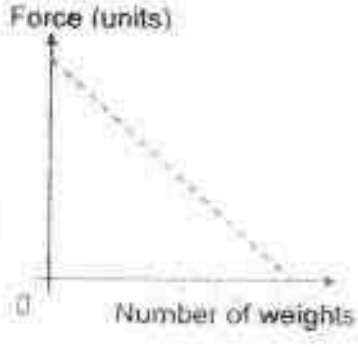


He slowly added more weights to the spring. Which one of the following graphs shows how the number of weights affects the pulling force acting on the spring only?

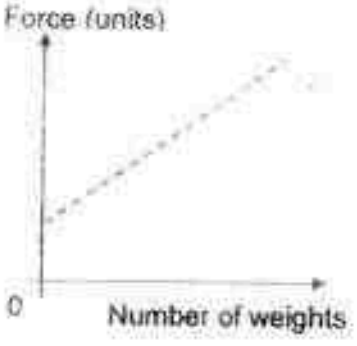
(1)



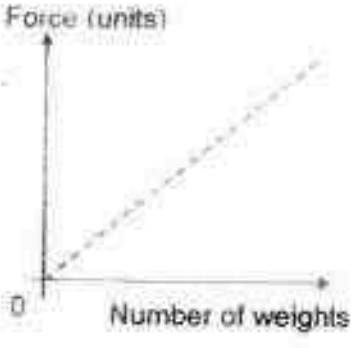
(2)



(3)



(4)



Legend

pulling force

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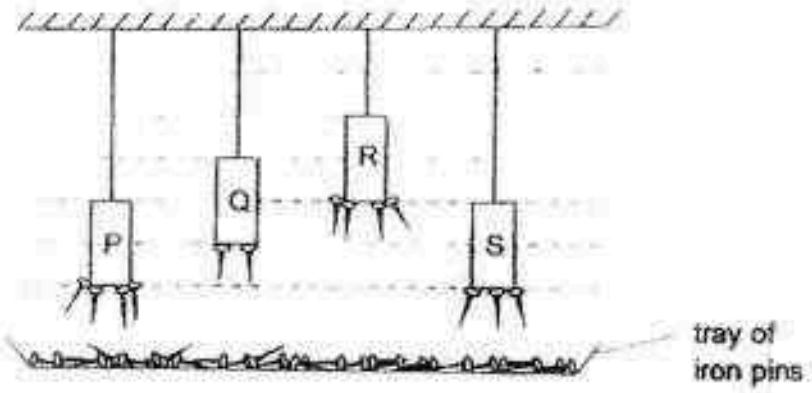
26. **Muthu hung four magnets, P, Q, R and S, above a tray of identical iron pins. His observation is shown below.**



Which of the following conclusions is correct?

	Greatest magnetic strength	Least magnetic strength
(1)	R	Q
(2)	R	cannot be concluded
(3)	P	Q
(4)	P	cannot be concluded

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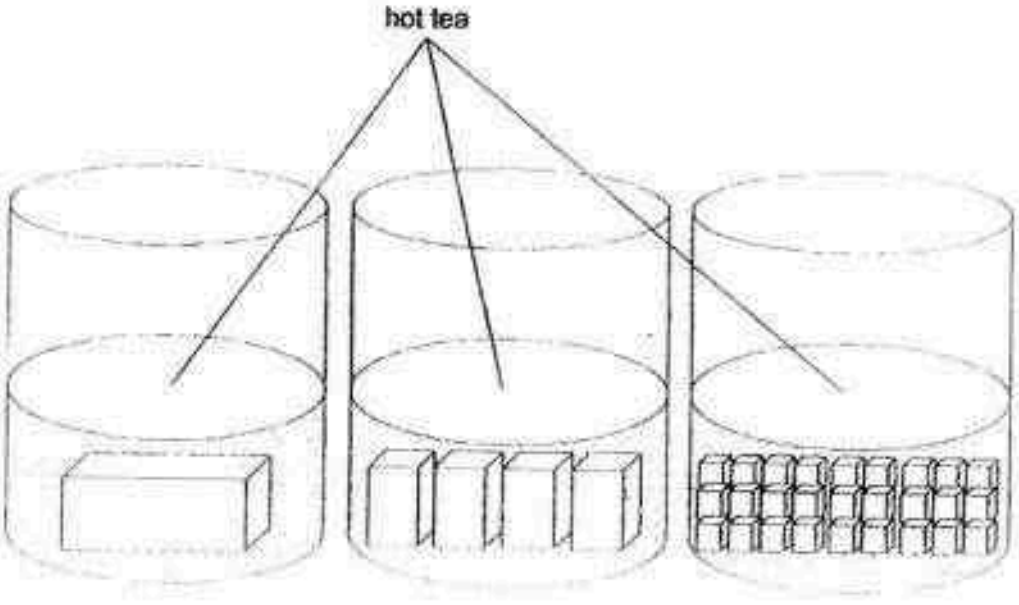
27 **Nicole conducted an experiment to investigate the melting of ice in hot tea. Equal amounts of tea were poured into containers A, B and C. The same volume of ice was then added into each container. After five minutes, the temperatures of the tea were recorded.**



Container A	Container B	Container C
one block of ice	big ice cubes	small ice cubes

After five minutes, some ice can still be seen in all of the containers. Arrange the containers, A, B and C, in ascending order of the temperatures of the tea in them after five minutes.

(1) A, B, C
(2) C, B, A
(3) B, A, C
(4) C, A, B

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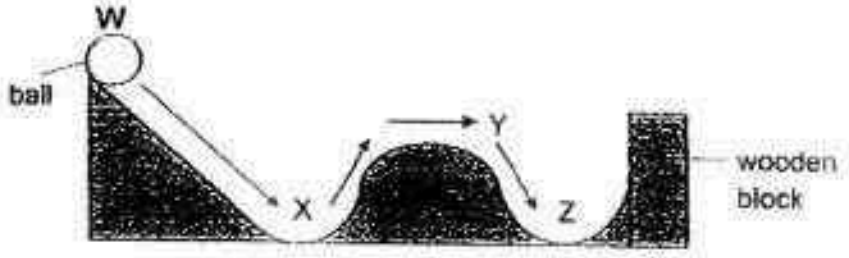
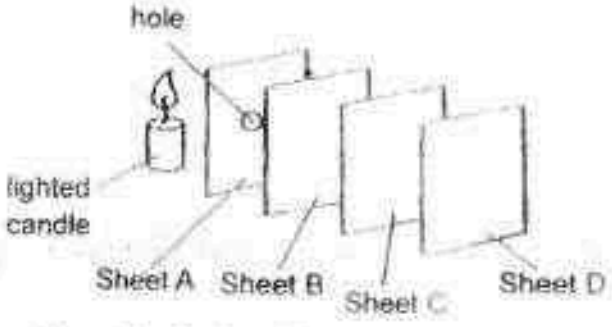
28. **The diagram below shows a ball being released from a stationary position at point W. The ball rolled along the track through points X and Y before it was stopped by a wooden block and came to a stop at point Z.**



Which one of the following is correct?

	Kinetic Energy	Gravitational Potential Energy		
	From W to X	From W to X	From X to Y	From Y to Z
(1)	increase	increase	decrease	decrease
(2)	decrease	decrease	decrease	increase
(3)	decrease	increase	increase	increase
(4)	increase	decrease	increase	decrease

29. The experiment below is carried out in a dark room. Sheets A, B, C, and D are arranged in a straight line.



The properties of sheets A, B, C and D are shown in the table below.

Allows light to pass through	Does not allow light to pass through
B, D	A, C

A bright spot of light can be seen on one sheet only. Which sheet is that?

(1) A
(2) B
(3) C
(4) D

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30. The picture below shows a wooden object.



Which of the following shadows could be cast by the object?



A B C D

(1) A and D only
(2) B and C only
(3) A, B and C only
(4) A, B, C and D

END OF SECTION A

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RED SWASTIKA SCHOOL

2016 PRELIMINARY EXAMINATION
SCIENCE
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 29 August 2016

BOOKLET B

14 Questions
40 Marks

In this booklet, you should have the following:

a. Page 23 to Page 39
b. Questions 31 to 44

MARKS

	OBTAINED	POSSIBLE
BOOKLET A		60
BOOKLET B		~~40~~ 39
TOTAL		~~100~~ 99

Parent's Signature : _____ _____

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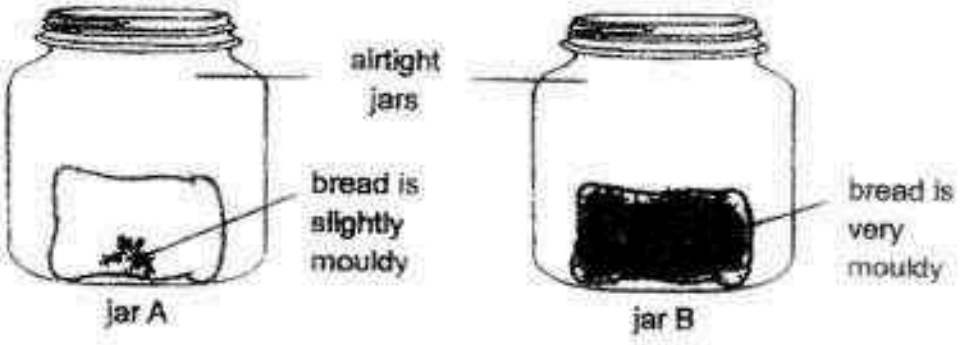
SECTION B

Answer all the questions in the spaces provided.

31. Imran left two pieces of bread in two identical jars, A and B. Drops of water were added to the bread in jar B only. He covered the jars to make them airtight. The diagrams below show the results of the experiment after three days.



(a) What is the purpose of keeping the bread in airtight jars? (1m)

(b) A third piece of bread was toasted in the oven. After the bread had cooled down, it was put into another airtight jar. Three days later, it was observed that no mould grew on the bread. Give a reason for this observation. (1m)

(c) Other than the condition that was being investigated in this experiment, state another condition that allows the bread to be kept fresh for a longer period of time. (1m)

3

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32. The pie chart below shows the dispersal methods of various plants on an island.



(a) From the pie chart, describe one characteristic of the fruits that most of the plants on the island will have. Explain how this characteristic helps in the dispersal of the fruits. (1m)

_____

_____

(b) Give a reason why the plant with dispersal method mention in part (a) has a better advantage over another plant that is dispersed by splitting its fruit forcefully. (1m)

_____

_____

(c) Man decided to cut down many trees found on the island to supply wood for buildings. Some time after the trees were cut down, the population of birds decreased rapidly.

Give a reason why the population of birds decreased rapidly. (1m)

_____

_____

3

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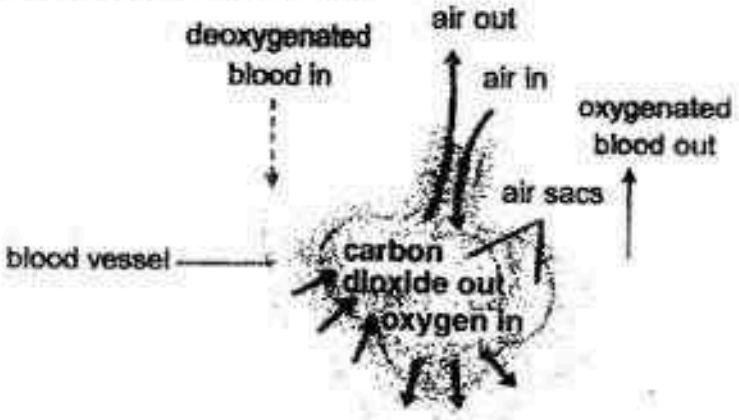
33. **There are many air sacs in our lungs. Each air sac is surrounded by many tiny blood vessels. The diagram below shows how oxygen from the air sacs goes into one of the blood vessels.**



It is found that cigarette smoke damages the walls of air sacs and thus causes the number of air sacs to be reduced. The following table shows the number of breaths Mr X (a non-smoker) and Mr Y (a smoker) take at rest and the number of air sacs found in a sample part of their lungs.

	Number of breaths per minute at rest	**Number of air sacs found in sample part of lungs**
Mr X	12	15
Mr Y	20	3

(a) Based on the table, what is the relationship between the number of air sacs in the lungs and the breathing rate at rest? (1m)

(b) Using the information above, explain why Mr Y's breathing rate at rest is higher than Mr X's. (1m)

2

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(c) Mr X and Mr Y are friends who jog together. During a jog, the breathing rates of both Mr X and Mr Y increase. Explain why. (2m)

_____

_____

_____

2

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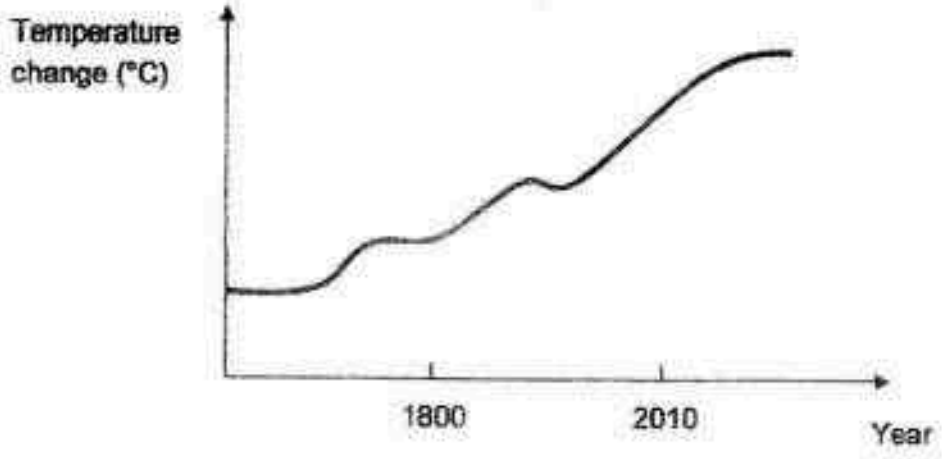
34. The graph below shows the change in temperature on Earth in the last few hundred years.



(a) Name a greenhouse gas responsible for the change in temperature shown in the graph above. (1m)

(b) How does the gas in (a) cause the change in temperature on Earth? (1m)

(c) Explain how the loss of trees can lead to global warming. (1m)

3

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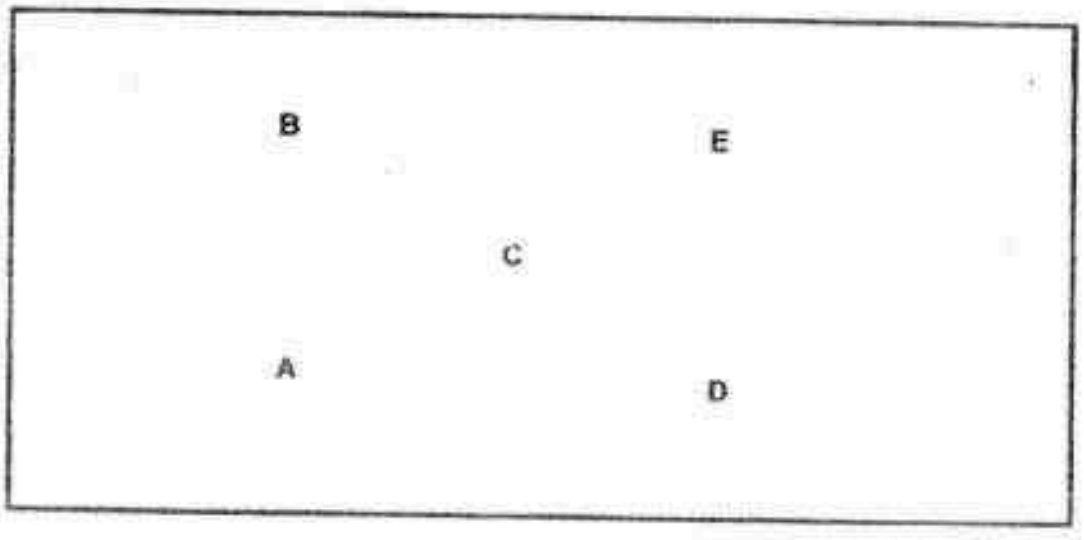
35. A food web comprises of five organisms, A, B, C, D and E. The table below shows the diet of organisms A, B, D and E.

Organism	Diet
A	B and D
B	C
D	C and E
E	C

(a) In the space provided below, construct a food web based on the information given. (1m)



Organism B has the ability to change its skin colour to match the colour of organism C.

(b) Based on the food web above, how does organism B's ability to change its colour help in its survival? (1m)

(c) How does organism C benefit from the other organisms in the food web? (2m)

4

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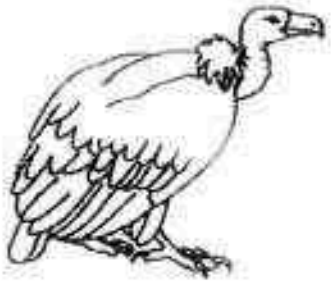
36. Vultures are birds found in the warm region of the Earth. Unlike other birds, their heads are not covered with feathers. Vultures have sharp beaks and claws. They also have excellent senses of sight and smell. They normally feed on the rotting bodies of dead animals. They often fly and feed in large flocks.



(a) A vulture does not have sweat glands and therefore it cannot perspire. Explain how the bald head of the vulture helps it to survive warm climate. (1m)

_____

_____

(b) Besides the bald head, name another structural adaptation of the vulture based on the information given above. (0.5m)

_____

(c) Explain how the structural adaptation mentioned in (b) helps the vulture to survive. (0.5m)

_____

_____

2

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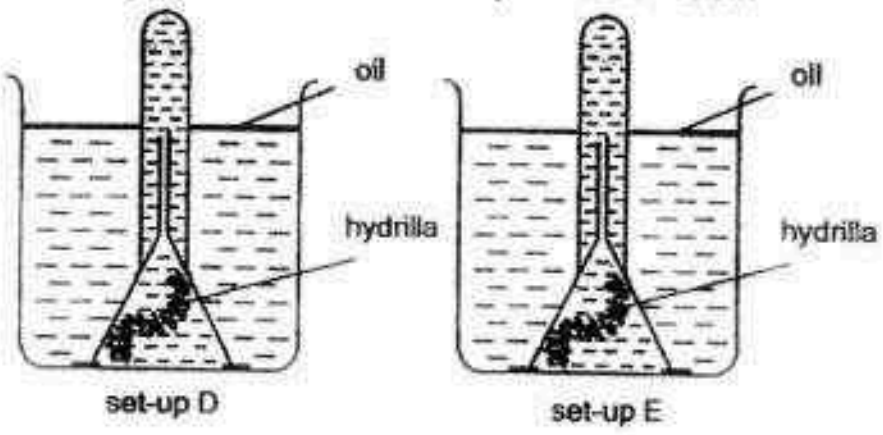
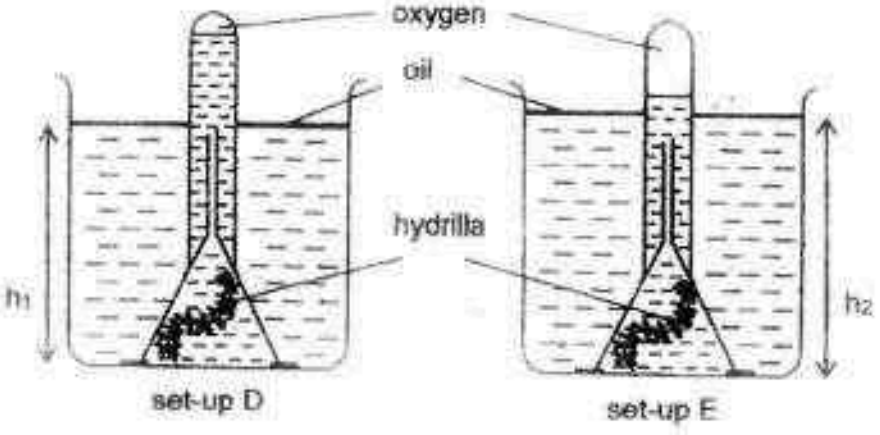
37. **Gao Hang wanted to find out if the amount of sunlight would affect the rate of photosynthesis. He prepared two identical set-ups as shown below.**



set-up D set-up E

At the start of the experiment, Gao Hang filled each beaker with the same amount of water and each test tube was completely filled with water. He added a layer of oil to the water in the beaker. He placed the set-ups at two different locations.

The diagrams below show the observations of the two set-ups, D and E, after one day.



set-up D set-up E

(a) Which set-up was placed at a brighter location? Explain your answer. (1m)

(b) **Gao Hang noticed the water level outside the test-tube for set-up E, h_2, was higher than that in set-up D, h_1.**
Explain why h_2 was higher than h_1. (1m)

2

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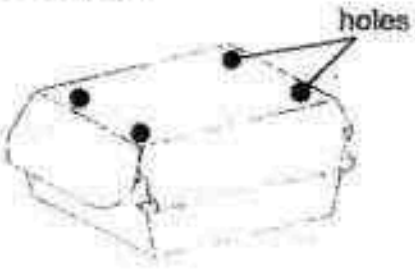
38. **Eddie owns a shop that sells steamed buns. He keeps the steamed buns in boxes that look like the one below.**



He observes that the steamed buns become soggy and the inside of the boxes become wet after he uses the boxes to store the steamed buns. He decides to make holes on the boxes as shown.



(a) He realises that the steamed buns become less soggy after being kept in the boxes that have holes. Explain why. (2m)

(b) Eddie wanted to find out which paper, X or Y, he should use for the box to keep the steamed buns. He conducted a fair experiment to find out how much water each type of paper could absorb and he recorded the results in the following table.

	Paper X	Paper Y
Amount of water absorbed	21.2 ml	13.2 ml

Given that both paper X and Y conducted heat similarly, which paper, X or Y, should Eddie use for the box so that the steamed buns would become less soggy after being kept in the box for some time? Explain your answer. (1m)

3

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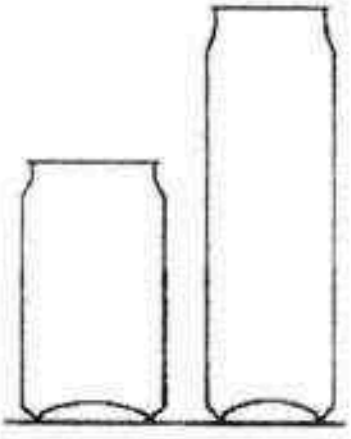
39. **Recently, a drinks company changed the design of its cans, from design A to design B, as shown below.**



Design A **Design B**

(a) The same volume of drinks can be placed into both cans. What property of liquids is shown here? (1m)

_____

_____

Some details of the two designs are shown in the table below.

	Design A	Design B
Height	11.6 cm	14.8 cm
Metal Type	aluminium	aluminium
Amount of metal used	303.24 cm^2	322.52 cm^2
Thickness of metal used	0.02 cm	0.02 cm

(b) Cans of Design A and B at room temperature, containing the same volume of drinks, were placed into a refrigerator at the same time. After five minutes, the drinks in the can of Design B had a lower temperature than the drinks in the can of Design A. Based on the data given, explain why. (1m)

_____

_____

2

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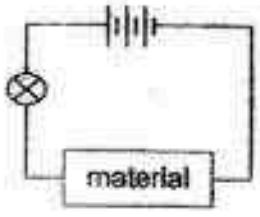
40. Lixin set up the circuit below.

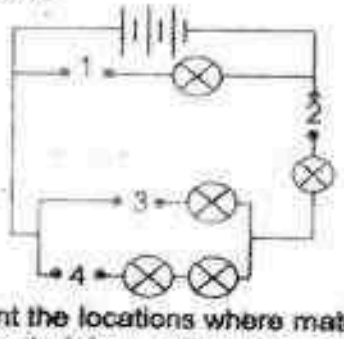


She used different materials in the circuit above and observed whether the bulb lit up. She recorded her results in the table below.

Material	Did the bulb light up?
W	Yes
X	Yes
Y	No
Z	Yes

(a) What was the aim of her experiment? (1m)

(b) Study the circuit diagram below.



The numbers 1 to 4 represent the locations where materials W, X, Y and Z can be placed in the circuit. All the materials must be used and each material can only be used once. In the tables below, fill in where you can place materials W, X, Y and Z such that:

(i) the most number of bulbs will light up. (½m)

Position	1	2	3	4
Material				

(ii) the least number of bulbs will light up. (½m)

Position	1	2	3	4
Material				

2

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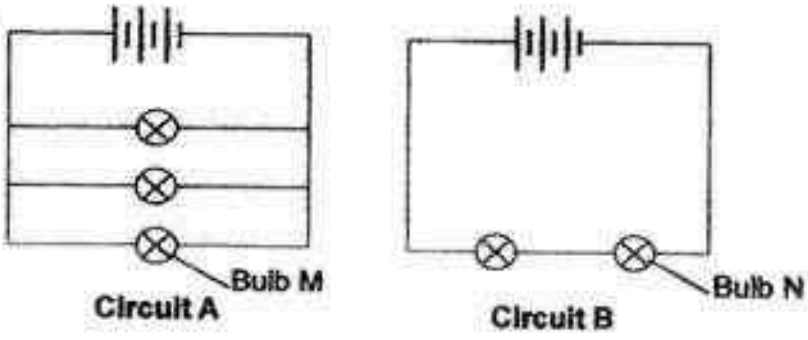
Lixin wanted to find out whether the number of bulbs in a circuit would affect the brightness of bulbs M and N. She set up the following circuits to investigate.



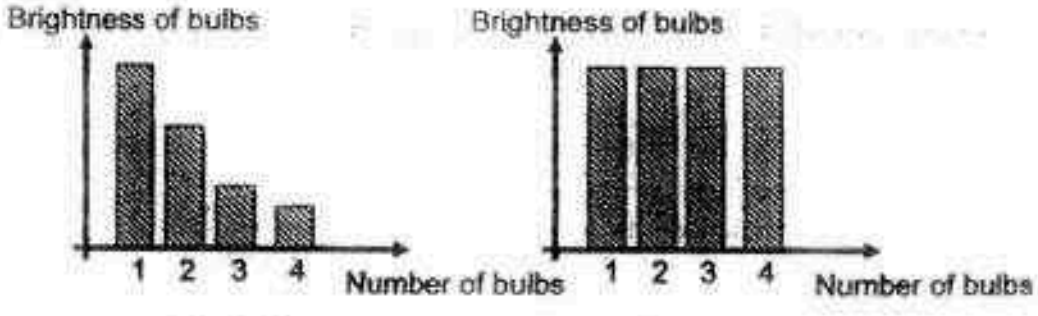
(c) Do you think Lixin would be able to achieve her aim from the above set-ups? Explain your answer. (1m)

_____

_____

_____

(d) Lixin set up two circuits, C and D. She increased the number of bulbs in each circuit and observed the brightness of the bulbs. She recorded her observation in the graphs below.



Based on the graphs above, what is the arrangement of the bulbs in each of the circuits? (1m)

(i) Circuit C: _____

(ii) Circuit D: _____

2

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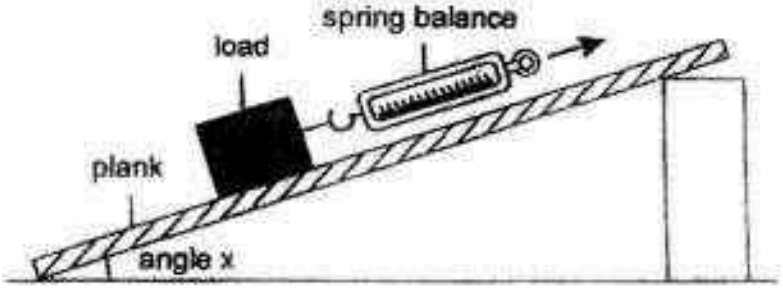
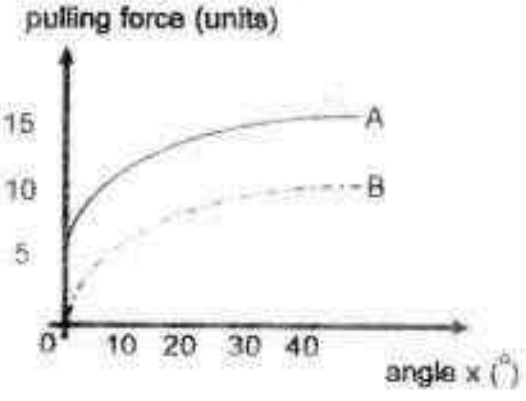
41. **Norman set up an experiment as shown below. He pulled the load up the plank using a spring balance for different values of angle x.**

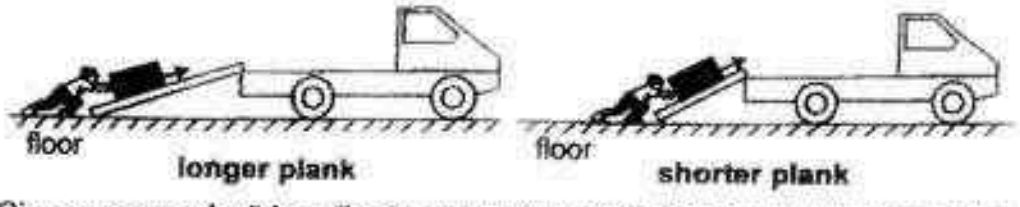


Norman plotted two lines, A and B, to represent the results of the experiment.



(a) Which line, A or B, is the correct representation of the results of the experiment Norman conducted? Explain. (1m)

A worker wanted to push a heavy box up a plank from the ground to the back of a truck as shown below.



(b) Give a reason why it is a disadvantage to use the shorter plank instead of the longer plank. (1m)

2

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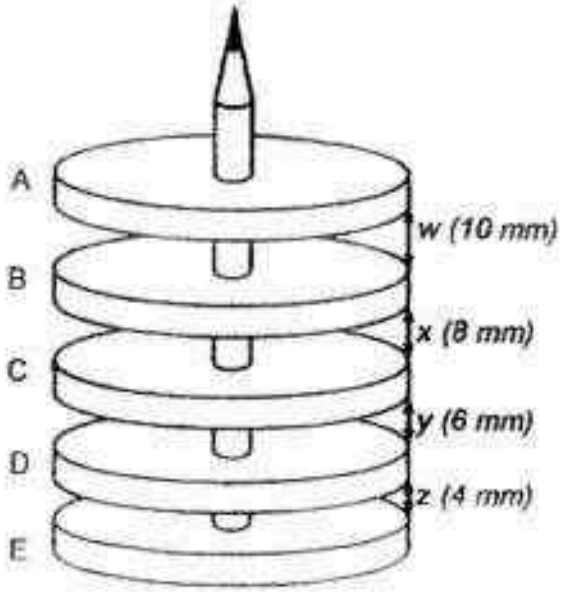
42. **Five ring magnets, A, B, C, D and E, with equal magnetic strength were placed over a pencil vertically as shown below.**



(a) Why did the magnets float above one another? (1m)

_____

_____

(b) In terms of forces, explain why distance *w* is greater than distance *z*. (1m)

_____

_____

2

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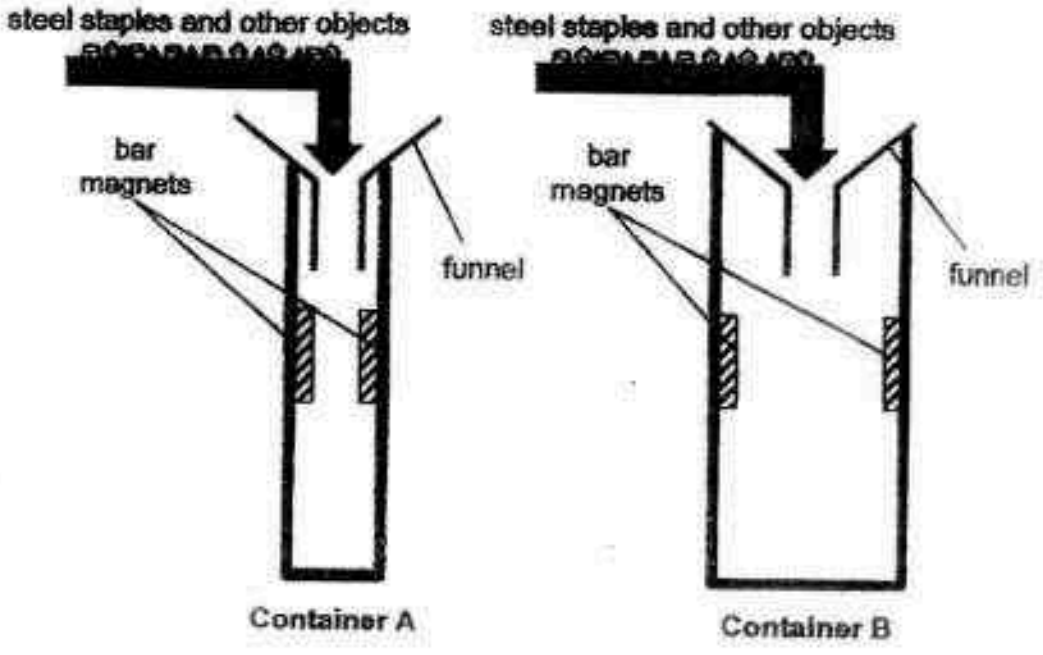
Some steel staple were mixed with other objects. Zhi Wei prepared the following set-up to separate the steel staple from the other objects. The bar magnets used in containers A and B were of the same magnetic strength.



(c) Which container, A or B, should Zhi Wei use to separate more steel staples from the other objects? Explain your answer. (1m)

(d) What can Zhi Wei conclude about the property of the remaining items collected at the bottom of the container? Explain your answer. (1m)

2

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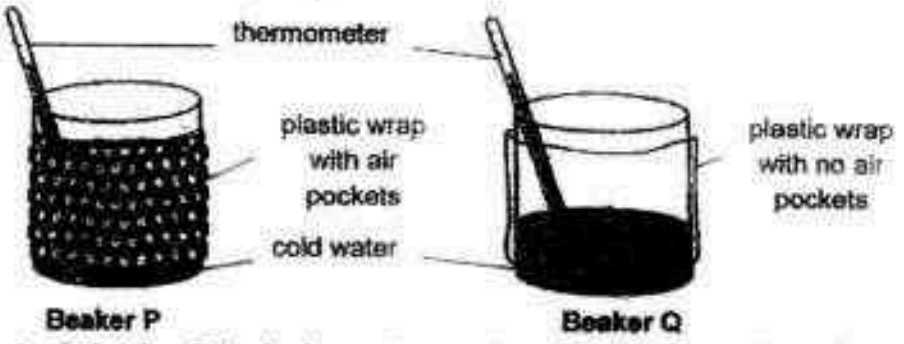
43. **Megan wanted to find out if pockets of air would affect how fast cold water gains heat. She poured 150ml of cold water into two similar beakers. She used a plastic wrap that has airpockets to wrap around beaker P. She used another plastic wrap with no air pockets to wrap around beaker Q. Both set-up were placed next to each other in the Science laboratory.**

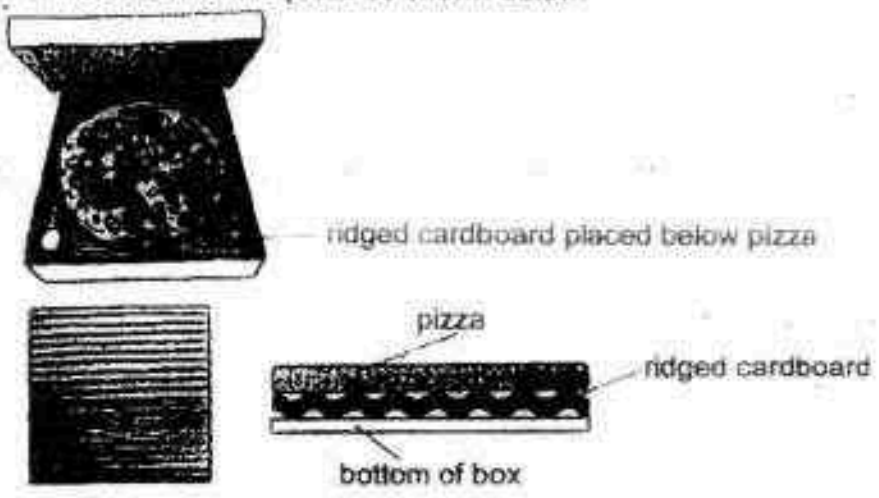


(a) The water in beaker P had a lower temperature than the water in beaker Q after 5 minutes. Explain why. (1m)

_____

_____

(b) Pizza is delivered in a closed cardboard box. A piece of ridged cardboard is placed at the bottom of the pizza as shown below.



Explain why a ridged cardboard is placed under the pizza to keep the pizza warm for a longer period of time. (1m)

2

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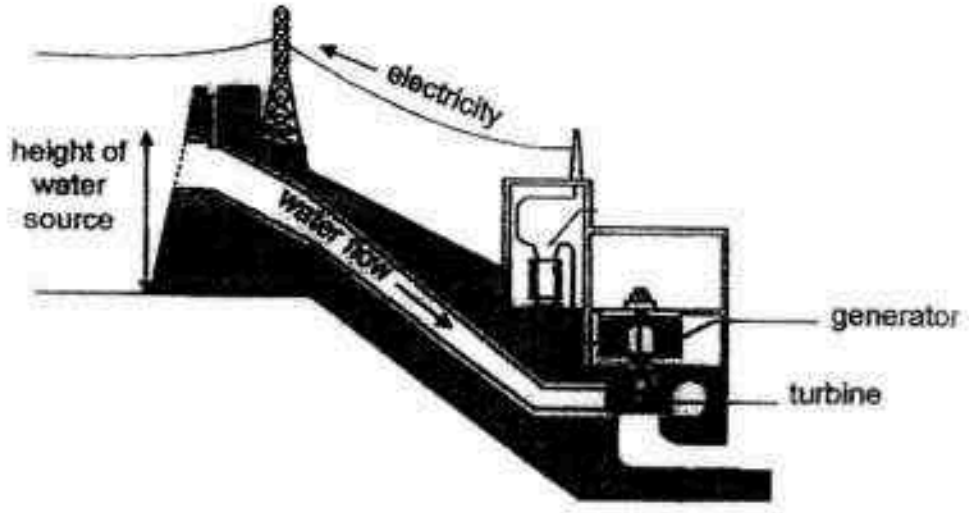
44. The diagram below shows how a hydro-electric power station is set up.

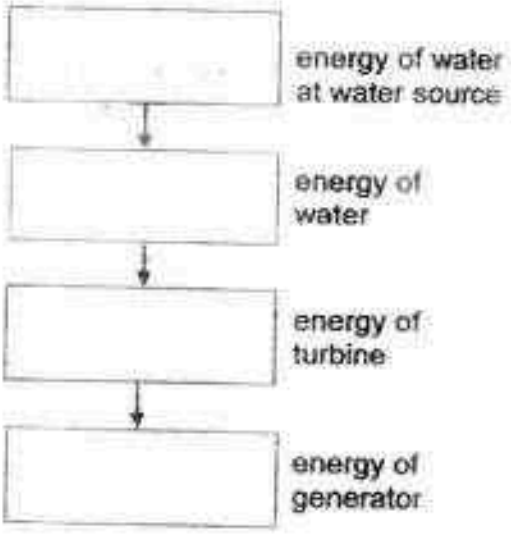


(a) What is the relationship between the height of the water source and the electrical energy generated by the generator. (1m)

_____

_____

(b) Fill in the boxes to show the energy changes. (1m)



END OF SECTION B

PLEASE CHECK YOUR WORK

2

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PRELIMINARY EXAM PAPER 2016

SCHOOL : RED SWASTIKA PRIMARY SCHOOL
SUBJECT : SCIENCE PRIMARY 6
TERM : PRELIMINARY EXAMINATION 2016

PAPER 1
BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	1	3	4	4	3	1	3	2	2
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
2	4	1	4	3	1	1	2	4	3
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
4	4	3	1	3	2	2	4	3	3

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PRELIMINARY EXAM PAPER 2016

SCHOOL : RED SWASTIKA PRIMARY SCHOOL
SUBJECT : SCIENCE PRIMARY 6
TERM : PRELIMINARY EXAMINATION 2016

BOOKLET B

31a) It is to ensure that no water vapour/ spores/ oxygen from the surroundings will enter the jars and no water vapour/ spores/ oxygen from the jars will escape.

31b) As the moisture in the bread was removed from the bread during the toasting/ heating, mould would not be able to grow.

31c) Low temperature/ No oxygen/ less oxygen/ No air/ Less air/ Kept at O°c/ NO warmth/ Cold/ cooler temperature.

32a) Most of the fruits are sweet /fleshy have small seeds that can be eaten/ have seeds that cannot be digested The birds eat the fruits and disperse the seeds in their droppings when they fly to the other parts of the island.

OR

Most of the fruits have last-be structures/ stiff hair and would cling onto the feathers/bodyllegs of the birds and be dropped off somewhere else.

32b) The fruits seeds can be dispersed further away from their parent plants so there will be less overcrowding and competition for nutrients space/sunlight/water.

32c) Trees are the natural habitat of birds. They provide food/ place to build nests/ protection from predators/ shelter. Without the trees on the island, the birds have no food/ no or place to live/ no place to build nest /no protection from predators /no shelter.

33a) The fewer the(the number of air sacs, the higher/ faster the breathing rate at rest.

33b) Mr Y has fewer air sacs, so oxygen moves into his blood from his air sacs. Hence, he has to breathe faster/ his breathing rate has to be higher to take in more oxygen.

33c) When they jog, their body needs more energy, hence they have to breathe faster to take in more oxygen from the surrounding air

34a) Carbon dioxide

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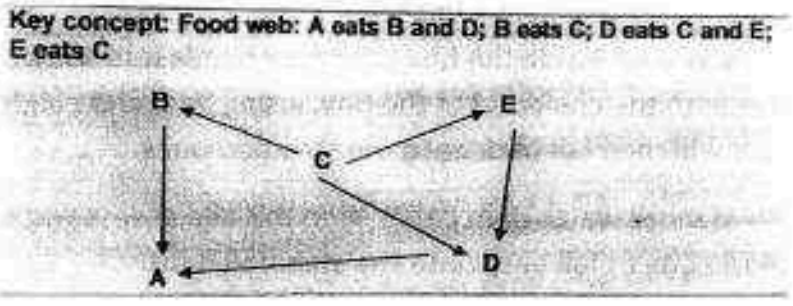
34b) The gas traps heat from the sun, thus increasing the temperature on Earth

34c) There will be less trees to remove/ take in carbon dioxide for photosynthesis, so there will be more carbon dioxide in the atmosphere to trap more heat from the Sun.

35a)



35 (b) Organism B can flag itself from organism A, its predator so that it will not be eaten by A.

35c) When the other organisms die their dead bodies will break down into simple substances which return into the soil and are taken in by organism C as nutrients for growth

OR The droppings of other organisms will act as fertilizer for Organism C

OR Organisms produce carbon dioxide to help it photosynthesis

OR The other organisms help to disperse the fruit of C further away from the parent plant to reduce overcrowding/ competition for sunlight/ space/ nutrients/water (any one condition)

36a) The bald head of the vulture helps it to lose its body heat to the surroundings more easily/ faster/ at a faster rate to keep cool.

OR The head of the vulture is bald so less body heat is trapped

36b) It has a good sense of sight/ good sense of smell/ sharp beak/ sharp claws (any one)

36c) Its good sense of sight / smell helps it to detect dead/ rotting animals from a distance.

Its sharp beak /claws help(s) it to tear the flesh of the dead animals it is feeding on.

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37a) Set-up E. There is more oxygen produced. With more light received, the rate of photosynthesis of the hydrilla is higher.

37b) There was more oxygen produced in set-up E, thus the oxygen occupied more space in the test tube, pushing/ displacing the water out of the test tube, causing h2 to be higher than h1.

38a) The holes allow hot water vapour inside the box to escape hence less hot water vapour will come into contact with the cooler lid of the box, losing heat and condensing into tiny water droplets which will then fall back onto the steamed buns.

38b) Paper X. Paper x absorbed more water than paper Y, so this allows less water that was condensed on the lid of the box to fall back onto the steamed buns.

39a) Liquids
- have no definite shape
- take the shape of their containers
- have definite volume

39b) Design B has a larger surface area / more metal, therefore the drinks lost heat faster to its surroundings and cooled down faster.

40a) To find out if the material is a conductor /an insulator of electricity.

40b) i) As long as "Y" is placed in '1' or 3', that would result in 4 bulbs lighting up.
ii) As long as Y is placed in 2, that would result in 1 bulb lighting up.

40c) No. Her investigation not fair. She has changed two variables: the arrangement of the bulbs and the number of bulbs, hence the results, the brightness of the bulb is affected.

40d) Circuit C: series
Circuit D: parallel

41a) Line A. When angle x is 0°, force is still required to pull the load on the plank to overcome the gravitational force or frictional force between the plank and the load.

41b) The inclination/ angle of the shorter plank is greater, hence of mole force is required to push the box.

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42a) The like poles of the magnets were facing one another, so they repelled one another.

42b) NIL

42c) Container A. The magnets are closer and has greater magnetism to attract more steel staples.

42d) The remaining items collected in the container were non- magnetic as they were not attracted to the bar magnets.

43a) The air in the air pockets is a poor conductor of heat, so heat gain from the warmer surroundings to the cold water in beaker P is slower than that for the water in beaker Q.

43b) The ridged cardboard reduces the surface area of pizza in contact with the cardboard, thus, slowing down heat loss from the pizza to the cupboard.

44a) As the height of the water source increases/decreases, the electrical energy generated by the generator increases/decreases.

44b) gravitational energy of water

↓

kinetic energy of water

↓

kinetic energy of turbine

↓

electrical energy of generator

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28

SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

PRIMARY SIX PRELIMINARY ASSESSMENT 2016

NAME: _____ ( ) DATE: 26 August 2016

CLASS: PRIMARY 6

Parent's Signature:

_____

SCIENCE

BOOKLET A

30 questions

60 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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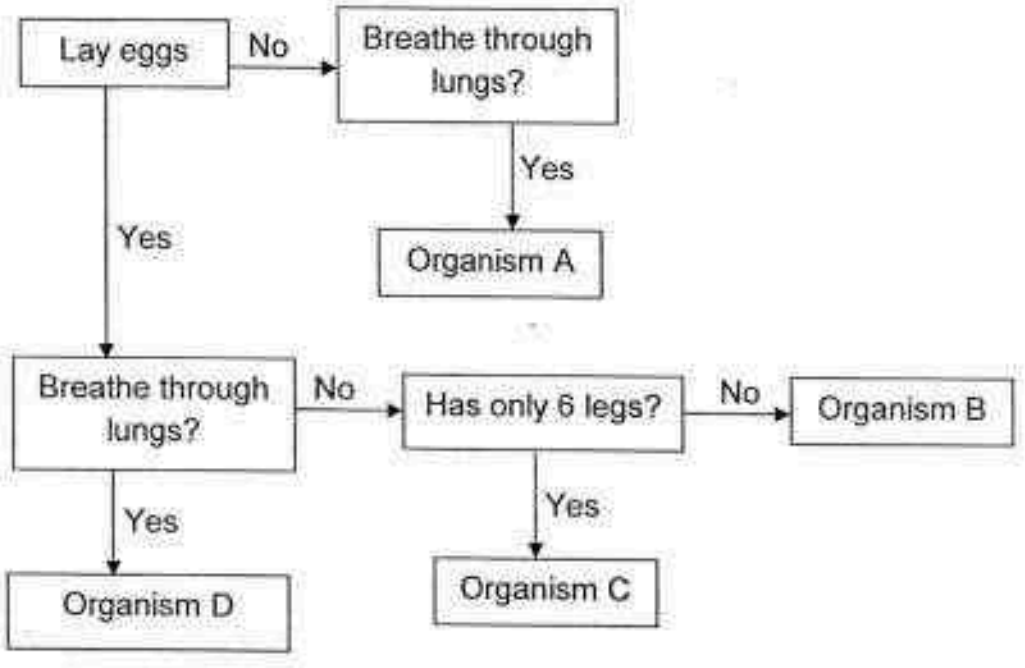
Part I (60 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. Study the flow chart below carefully.



Based on the flow chart above, which of the organisms is an insect?

(1) Organism A
(2) Organism B
(3) Organism C
(4) Organism D

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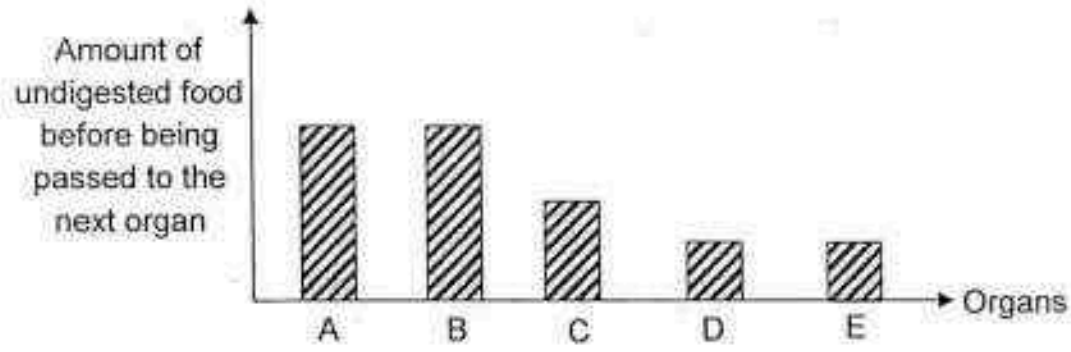
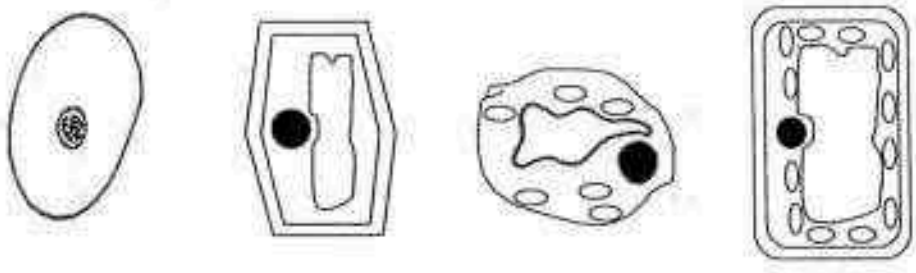
2. The graph below shows the amount of undigested food at each organ just before being passed to the next organ in the digestive system.



Based on the graph only, in which organs was food digested?

(1) A and B
(2) C and D
(3) A, B and D
(4) A, C and E

3. Kelly cut some cell samples from a hibiscus plant and observed them under a microscope.
Which of the following cells are likely to come from a leaf and a root of the plant?



	Leaf	Root
(1)	B	D
(2)	C	A
(3)	D	B
(4)	C	B

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4. Janice sealed some leaves in a clear plastic bag as shown below. Both the bag and leaves are at room temperature.



Leaves sealed in plastic bag for 1 hour

Which of the following is likely to be observed after 1 hour?

(1) The bag becomes deflated as the leaves take in more air.

(2) The leaves become bloated as the leaves take in water vapour.

(3) Water droplets can be seen inside the bag as the leaves gave out water vapour.

(4) Water droplets can be seen outside the bag which is warmer than the water vapour in the room.

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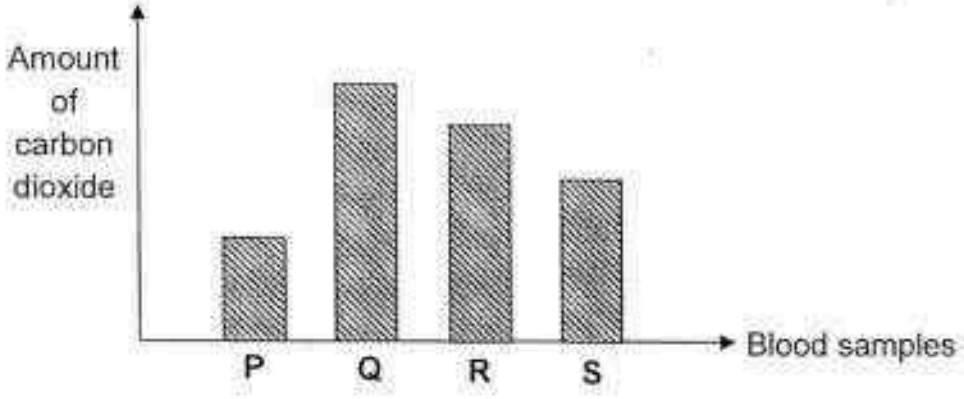
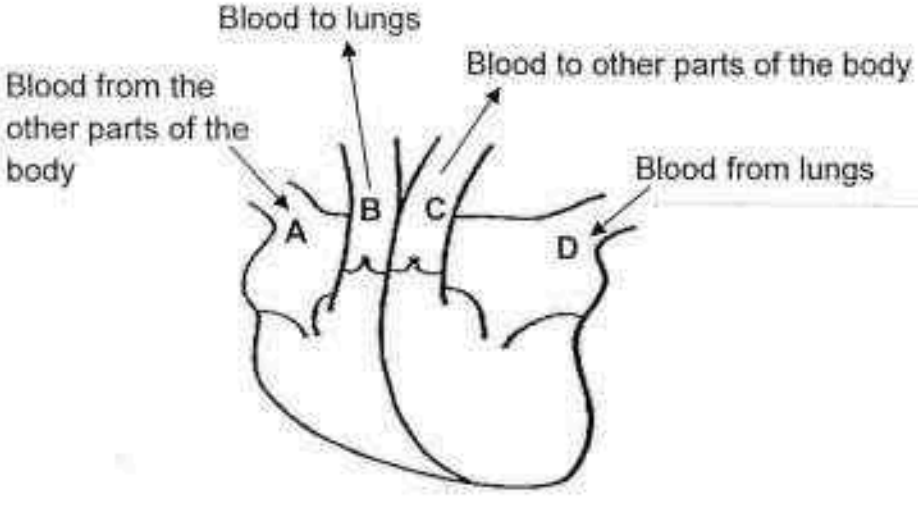
5. The doctor collected 4 different blood samples from Jana. The graph below shows the amount of carbon dioxide present in her blood.



The diagram below shows Jana's heart with 4 main blood vessels, A, B, C and D and the directions of blood flow.



Jana's heart

Which blood vessel was blood sample Q most likely collected from?

(1) A
(2) B
(3) C
(4) D

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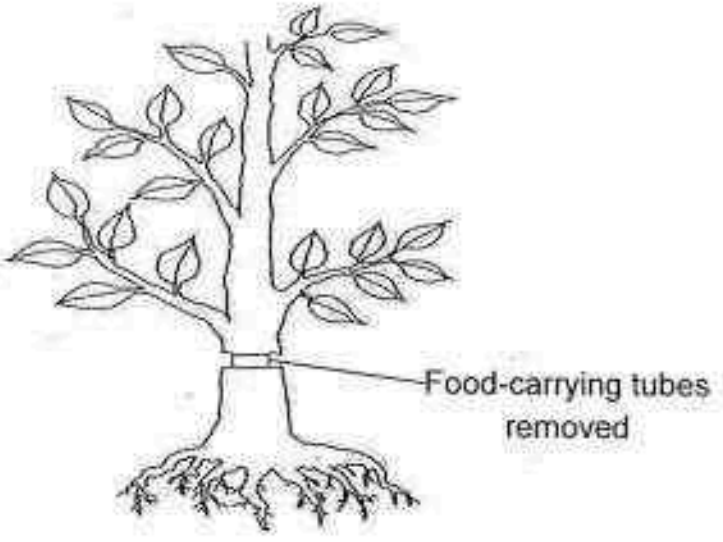
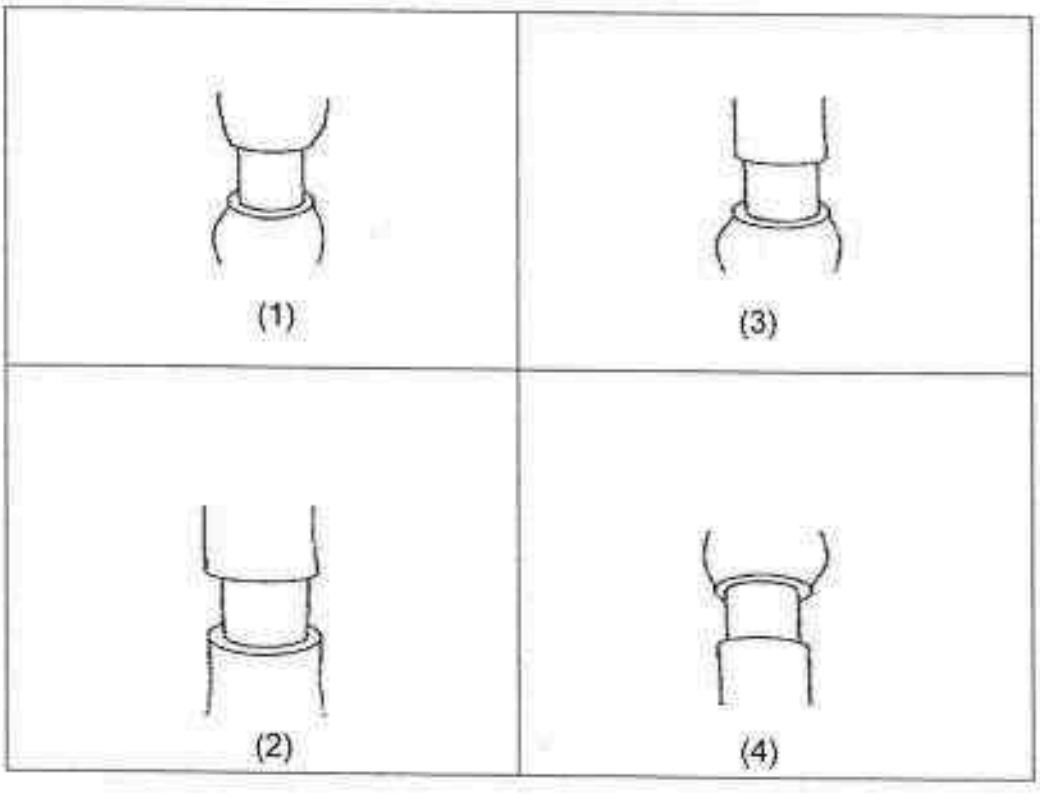
6. Yale removed only food-carrying tubes from the outer part of a plant as shown below.



Which of the following diagrams will represent the appearance of the stem after some time?



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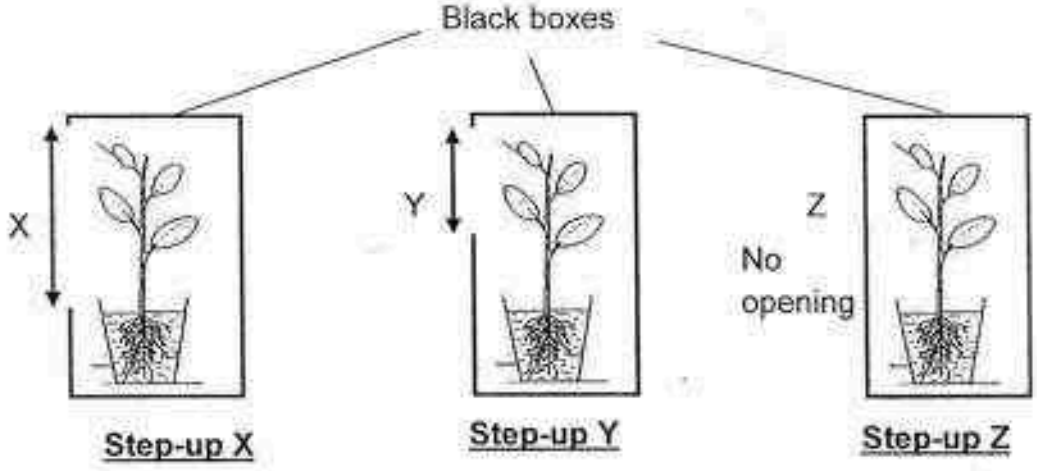
7. Yuki kept 3 plants, X, Y and Z, each in a black box. She gave each plant equal amounts of water. In each set-up, she kept the distance between the plant and the light source constant but she changed the size of the opening of the black boxes as shown below.



After one week, she plucked a leaf from each set-up and put equal amount of iodine onto each leaf and observed the colour of the iodine on the leaves.

Iodine test: Iodine will turn dark blue in the presence of starch.

Which one of the following results of the iodine colour correctly matches her observation of Plants X, Y and Z?

	Iodine remains brown	**Iodine turned dark blue immediately**	**Iodine turned dark blue after 5 minutes**
(1)	X	Y	Z
(2)	X	Z	Y
(3)	Y	Z	X
(4)	Z	X	Y

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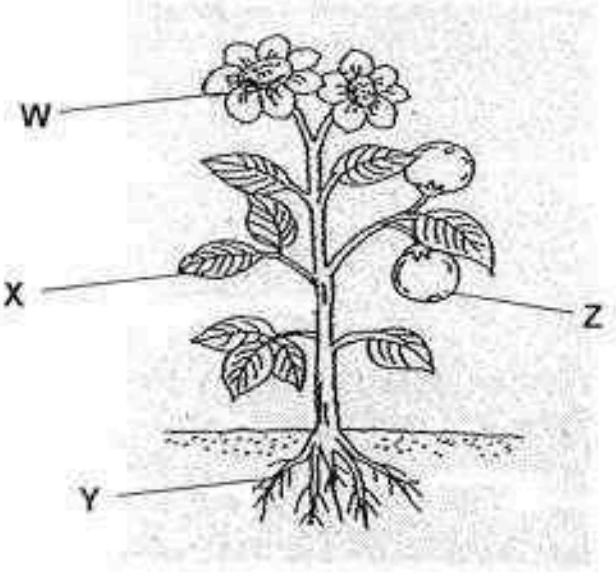
8. The diagram below shows a plant.



Part	Function
W	Help the plant to produce seeds.
X	Allow plant to take in water to make food.
Y	Hold the plant upright.
Z	Help the plant to make food.

Which plant part has been matched correctly to its function?

(1) W
(2) X
(3) Y
(4) Z

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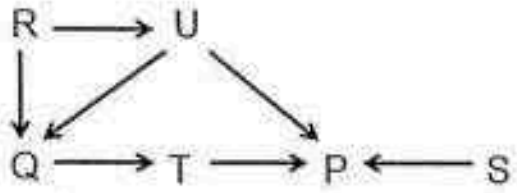
9. The food web below shows the relationship among organisms, P, Q, R, S, T and U.



Which of the following shows the correct classification of the organisms?

	Food Producer	Carnivore	Omnivore
1)	R	T and S	Q and P
2)	R and S	T	Q and P
3)	R and S	T and P	Q
4)	R	T, P and S	Q

10. Study the food chain below carefully.

A → B → C → D

Based on the food chain above, which one of the following statements is correct?

(1) Organism D is likely to have the highest population among A, B, C and D.

(2) Organism C is likely to have a lower population than Organism B.

(3) Organism A does not need any energy to stay alive.

(4) Organisms B, C and D get equal amounts of energy from organism A.

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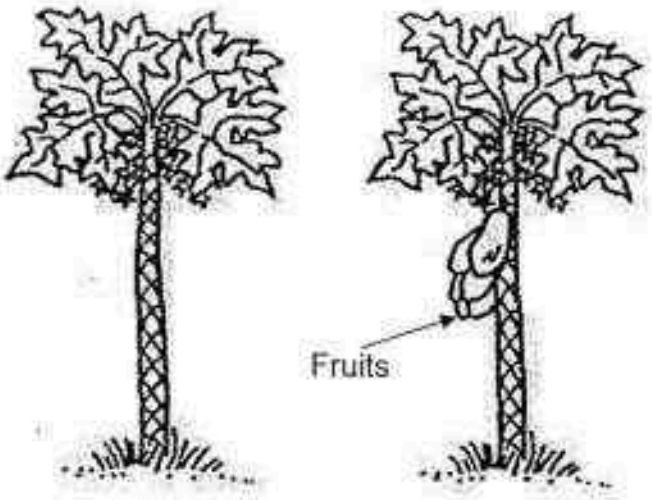
11. Jason has 2 adult plants close to each other in her garden as shown below. Plant A and B are of the same species. Jason provided each plant with equal amounts of water and sunlight each day.



Only adult plant B bears fruits.
The flowers of Plant A and Plant B look different from each other even when they are the same species.
What can Jason most likely infer about the flowers of plants A and B?

(1) Both Plant A and Plant B has only males flowers.

(2) Both Plant A and Plant B have both male and female flowers.

(3) Plant A has only female flowers but plant B has only male flowers.

(4) Plant A has only male flowers but Plant B has only female flowers.

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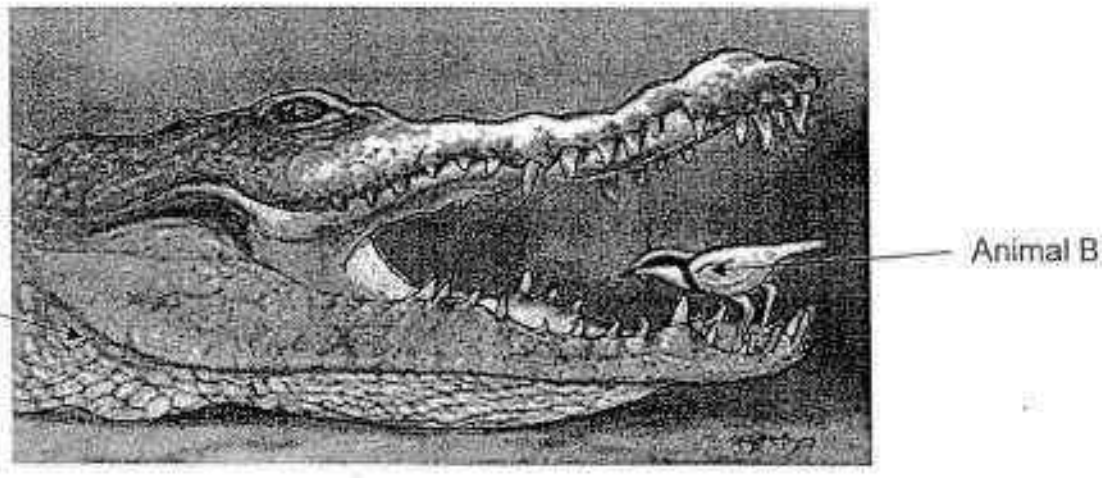
12. Animal A has strong jaws but it does not chew its food. As Animal A swallows its prey, bits of food get stuck in its teeth, causing possible diseases.

Animal B picks and eats the bits of food in Animal A's mouth without getting harmed or eaten by Animal A.



Which of the following is most likely correct about the relationship between Animal A and Animal B?

(1) Only A benefits from the relationship.

(2) Animal A can survive better without Animal B.

(3) Both animals help each other survive better.

(4) Animal B can survive better without Animal A.

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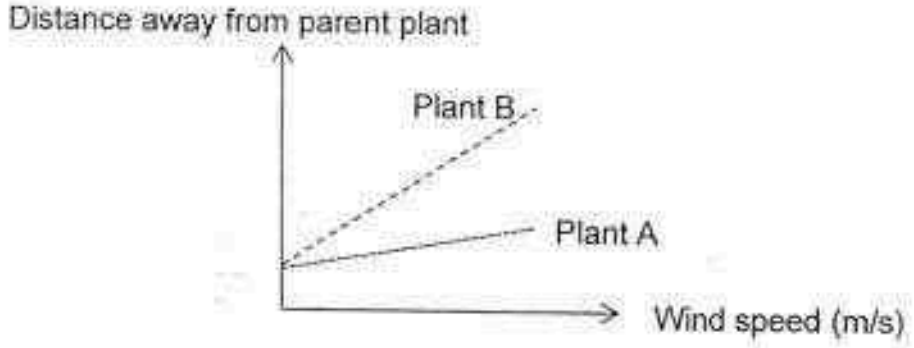
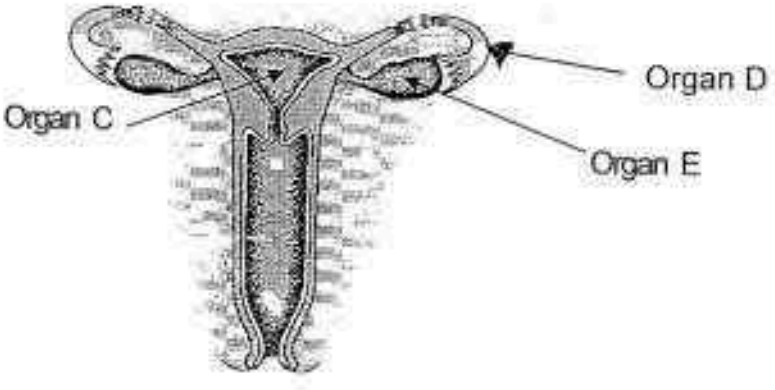
13. The graph below shows the relationship between the wind speed and the distance of seeds/fruits dispersal by plants A and B.



Which one of the following characteristics correctly represents the fruits/seeds of plants A and B?

	Plant A	Plant B
1)	Has wing-like structure	Has dried pods
2)	Has wing-like structure	Has hooks
3)	Has fibrous husk	Has dried pods
4)	Has dried pods	Has wing-like structure

14. Study the diagram of the human female reproductive system shown below.



Which one of the following correctly represents Organs C, D and E?

	Egg travels through here	Eggs are produced here	Foetus develops here till birth
1)	Organ C	Organ D	Organ E
2)	Organ D	Organ C	Organ E
3)	Organ D	Organ E	Organ C
4)	Organ E	Organ C	Organ D

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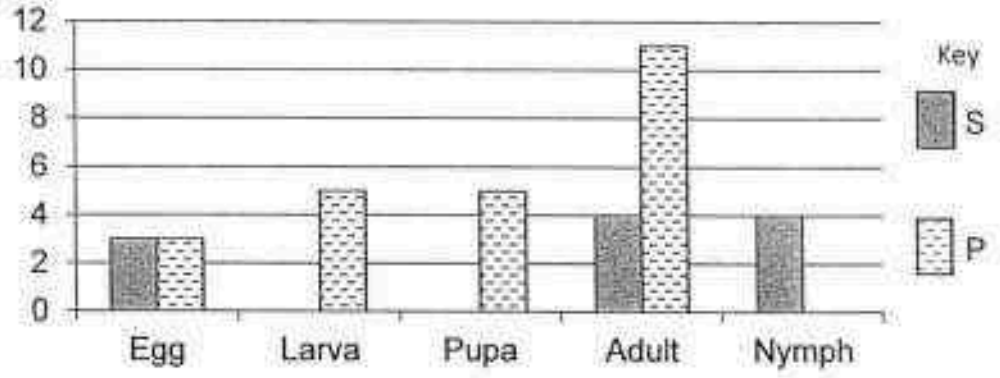
15. The graph below shows the number of days for each stage of the life cycle of organism S and P.



Based on the graph above, which of the following statements are true?

A: Organism S has 3 stages in its life cycle.

B: Organism S has longer life span than Organism P.

C: The male of organism P dies immediately after fertilizing the eggs.

D: It takes 7 days for organism S to become an adult after the eggs are laid.

(1) A and D only

(2) B and D only

(3) B and C only

(4) A, B and D only

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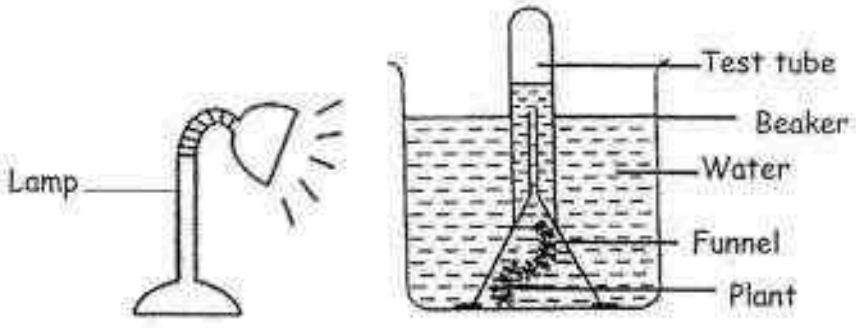
16. Mala wanted to find out how the rate of photosynthesis is affected by the amount of carbon dioxide.



She set-up 4 similar set-ups as shown above. In each set-up, she changed the amount of carbon dioxide in the water by blowing into the water using a straw.

Set-up	Number of times Mala blew into water
P	3
Q	6
R	9
S	12

In which set-up would Mala be able to collect the most oxygen in the syringe at the end of 3 hours?

(1) P

(2) Q

(3) R

(4) S

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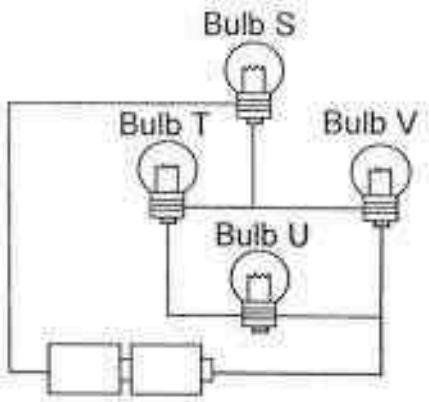
17 Study the circuit below carefully.



Which bulbs will light up if bulb V is fused?

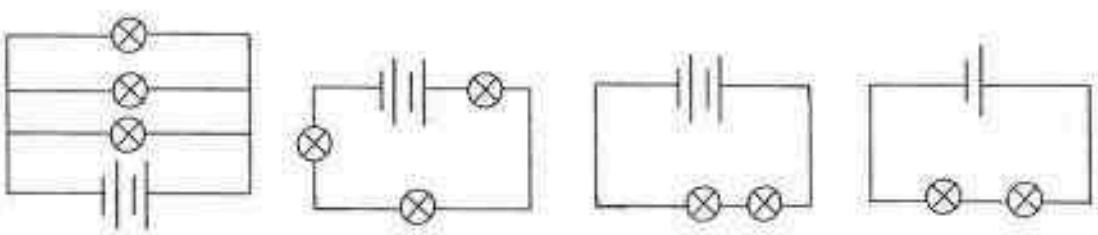
(1) Bulb S and T only

(2) Bulb S and U only

(3) Bulb S, T and U

(4) None of the bulbs

18. The diagram below shows four circuits, A, B, C and D with different arrangements of identical batteries and identical bulbs. The bulbs in all four circuits light up.



A **B** **C** **D**

Which one of the following set-ups shows the correct brightness of the bulbs?

	Brightness of bulb			
	Dimmest			**Brightest**
1)	A	C	B	D
2)	B	C	D	A
3)	D	B	C	A
4)	C	D	B	A

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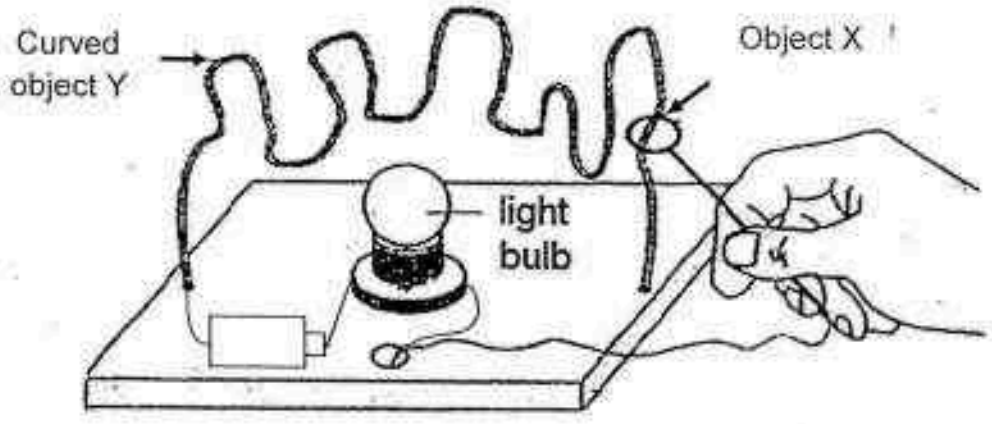
19. Pauline made a game set as shown below. The bulb lights up when the loop of Object X is in contact with Object Y.



Based on the game set above, what can the player conclude about objects X and Y?

(1) Only Object X is a condutor of electricity.

(2) Only Object Y is a conductor of electricity.

(3) Both Objects X and Y are non-conductors of electricity.

(4) Both Objects X and Y are conductors of electricity.

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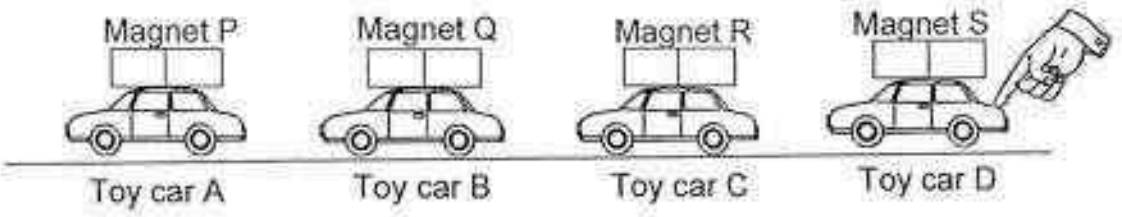
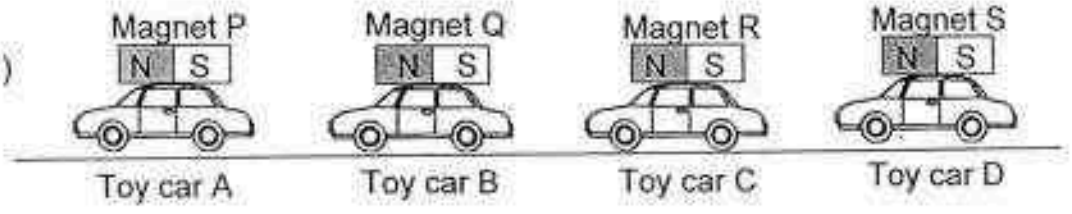
20. Jessica made 4 toy cars, A, B, C and D, as shown below. There is a magnet on the top of each toy car.

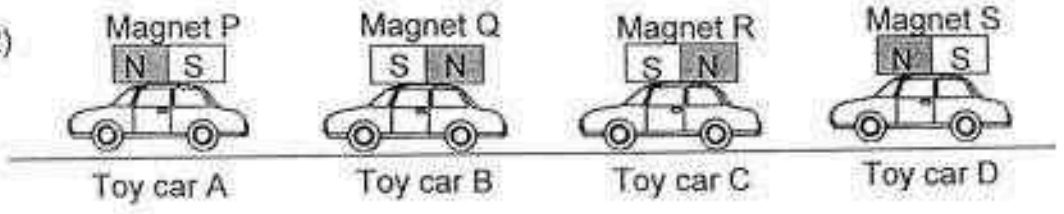


The toy cars are moving at a distance away from each other when Jessica pushes **only** toy car D. Which one of the following correctly shows how the magnet on each toy car is arranged?

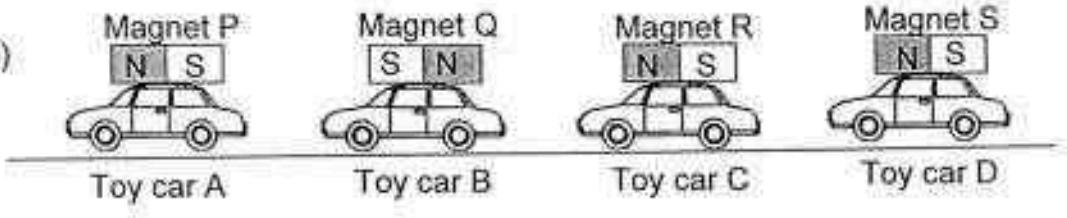
(1)



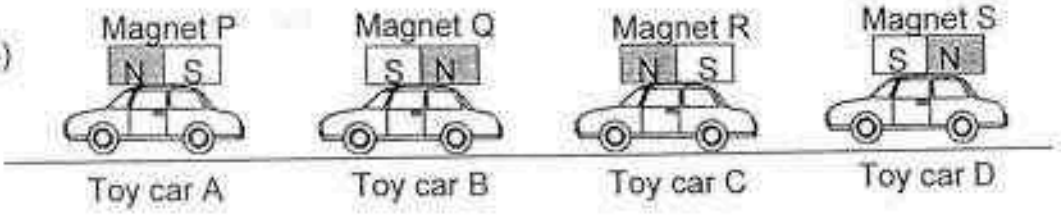
(2)



(3)



(4)



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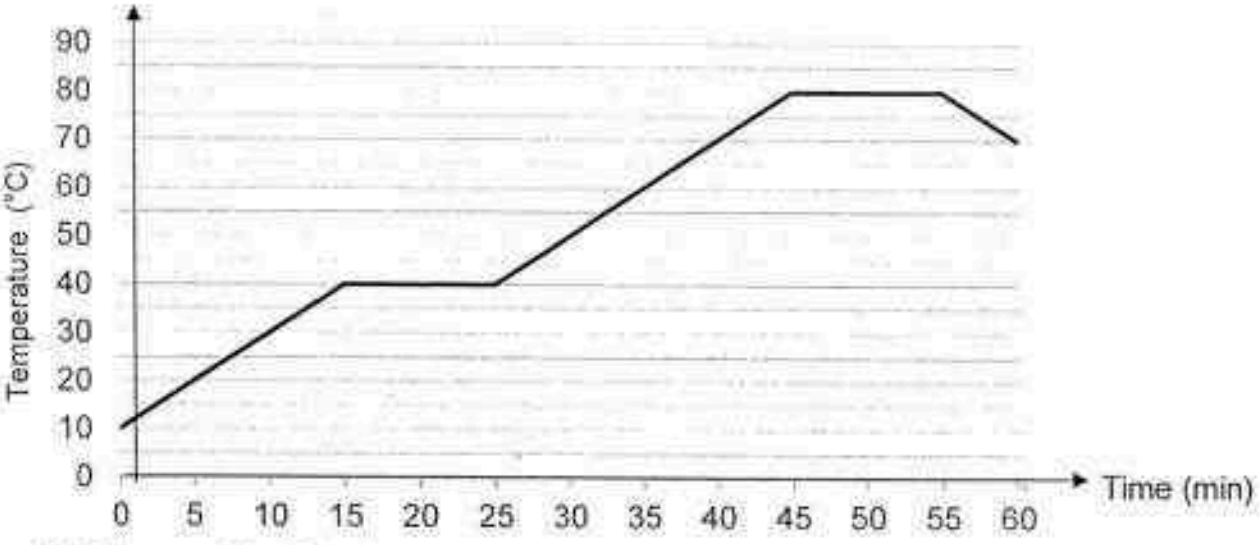
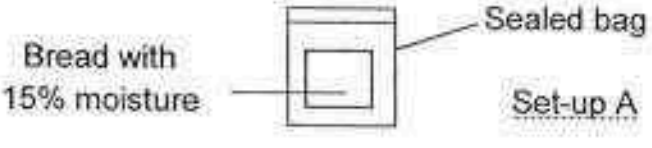
21. The table below shows the change in temperature of Substance X as it was heated over 60 minutes. Before heating, Substance X was a solid.



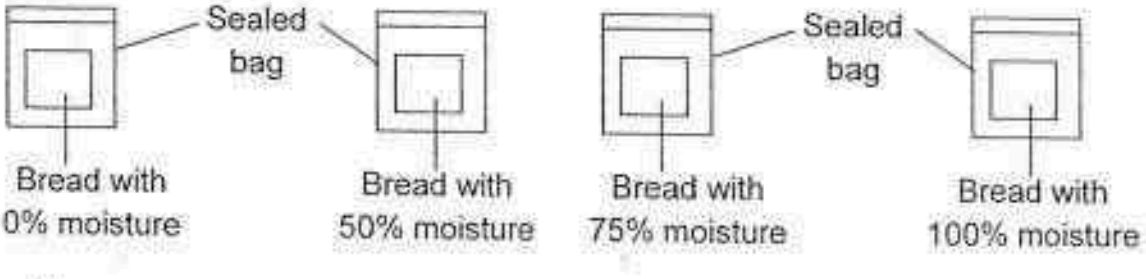
Which one of the following correctly represents the melting and boiling point of Substance X?

	Melting point	Boiling point
1)	40°C	80°C
2)	40°C	100°C
3)	10°C	80°C
4)	0°C	100°C

22. Shaun placed a piece of bread into a sealed bag. The bread contained 15% of moisture.



Which one of the following set-ups should Shaun choose to compare with Set-up A so that he can conclude that moisture is needed for decomposition to take place?



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23. Ryden put some seeds into 4 small containers for the seeds to germinate. The seeds are placed under different conditions as shown in the table below.



A
Dry at 0°C

B
Dry at 30°C

C
Wet at 0°C

D
Wet at 30°C

Condition	Observation
A	Did not germinate
B	Did not germinate
C	Did not germinate
D	Germinate

Based on her experiment, which are the conditions required for seeds to germinate?

(1) Water and air

(2) Water and warmth

(3) Air and warmth

(4) Water, air and sunlight

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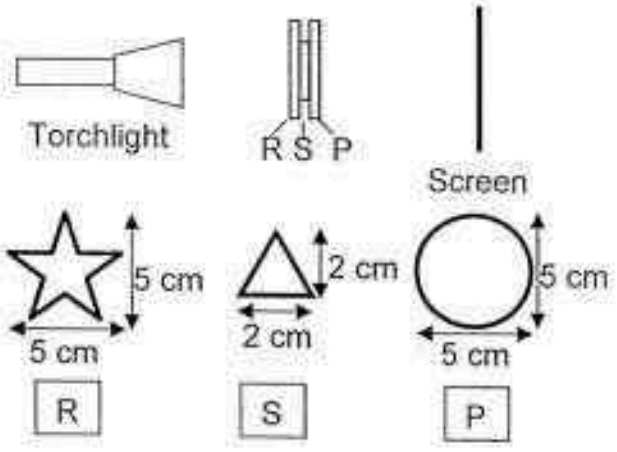
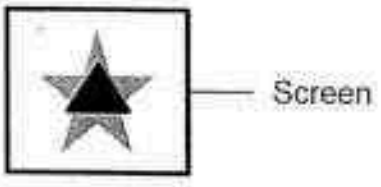
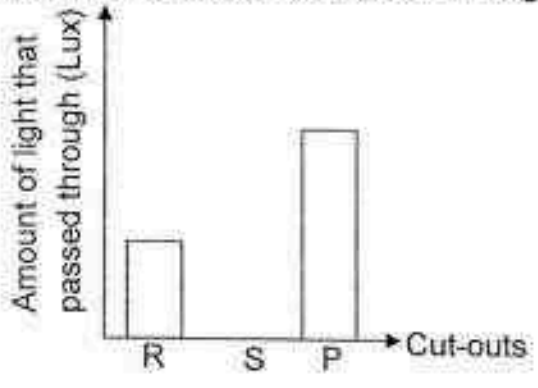
24. The set-up below shows light from a torch shining through 3 cut-outs, R, S and P, which are made of different materials as shown below.



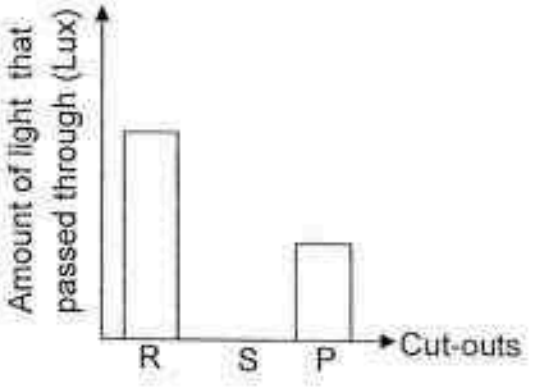
The diagram below shows the shadow that was formed on the screen.



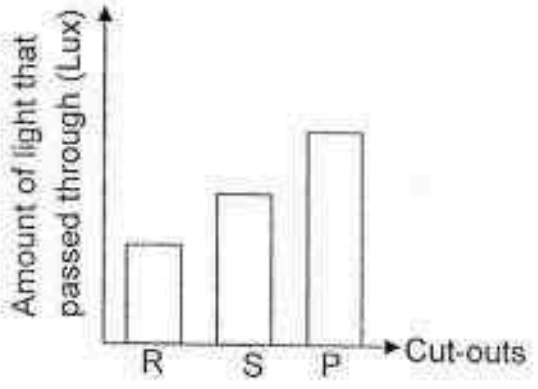
Based on the shadow formed above, which of the following bar graphs show the amount of light that had passed through Objects R, S and P?



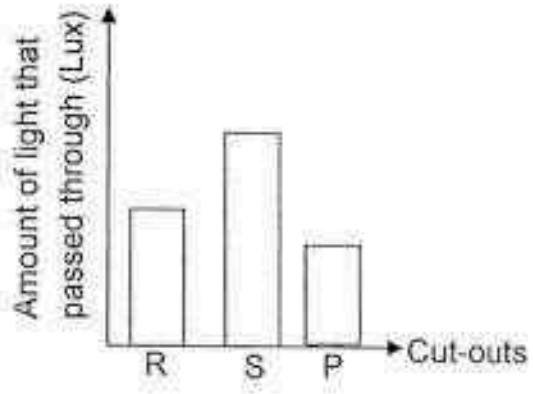
(1)



(3)



(2)



(4)

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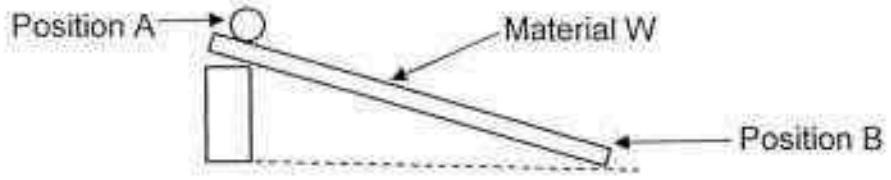
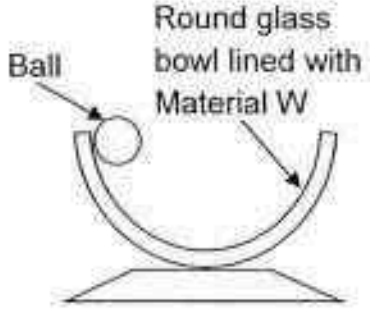
25. Jason set-up an experiment shown below using Materials, W, X, Y and Z. He placed the ball at position A and recorded the time taken for the ball to reach Position B using Material W. He then repeated the experiment with Materials, X, Y and Z.



The table below shows the time taken for the ball to reach Position B.

Material	Time taken (s)
W	5.0
X	2.4
Y	3.5
Z	1.8

Next Jason lined the glass bowls with Material W as shown below. He released ball and measured the amount of time taken for the ball to stop rolling. He repeated the set-up below with Materials X, Y and Z.



On which material will the ball take the longest time to stop rolling?

(1) Material W
(2) Material X
(3) Material Y
(4) Material Z

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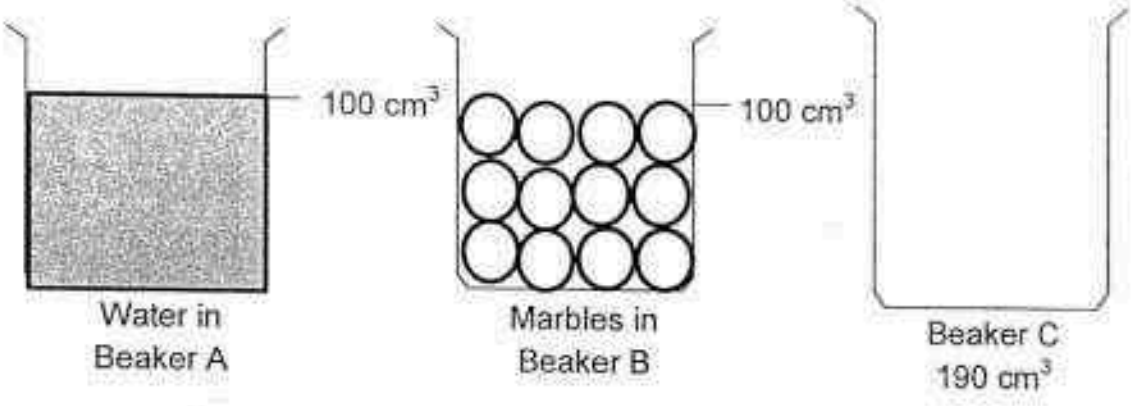
26. Beaker A contained water while Beaker B contained marbles as shown in the diagrams below.



The capacity of Beaker C is 190 cm^3, but it can hold all the water from Beaker A and all the marbles from Beaker B without overflowing. Why is this possible?

(1) The marbles will take up the space occupied by the water.

(2) Water can be compressed to take up less of the space.

(3) Some of the water takes the place of the air occupying the spaces in between the marbles.

(4) Some of the marbles are shifted to occupy less spaces so that the water can be poured in without overflowing.

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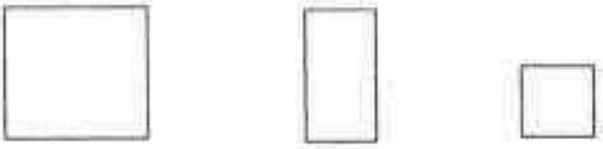
27. Olive wets 3 identical towels, A, B and C, with equal amounts of water. She then hangs the 3 towels, A, B and C, using different ways as shown below.



A B C

Towel A is the original size of the towel. Towel B is folded once into halves. Towel C is folded twice into quarters. At the end of 5 hours, she weighs them to compare their mass.

What is the aim of Olive's experiment?

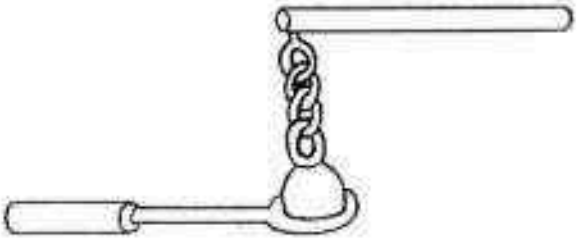
(1) She wants to find out if the size of the towel will affect the mass of the towels.

(2) She wants to find out if the exposed surface area of the towels will affect the rate of evaporation.

(3) She wants to find out if the size of the towel will affect the rate of evaporation.

(4) She wants to find out if the mass of the towels will affect the number of folds of the towels.

28. The metal ball **cannot** pass through the metal ring at first.



State and explain what will happen after the ball is put in iced water for 3 minutes.

	Result	Explanation
(1)	Ball can pass through.	The ball contracted upon cooling.
(2)	Ball can pass through.	The ring expanded upon heating.
(3)	Ball cannot pass through.	The ring contracted upon cooling.
(4)	Ball cannot pass through.	The ball expanded upon heating.

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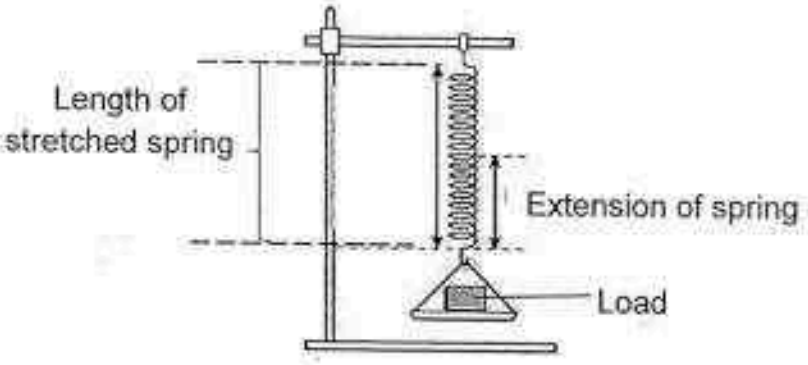
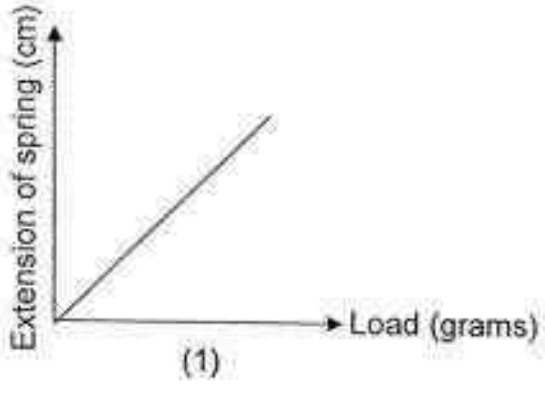
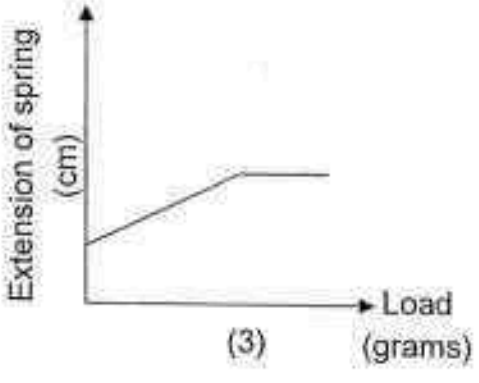
29. Alice conducted an experiment using a spring and some loads. She measured the length of the spring as she increased the mass of the loads in the diagram below.

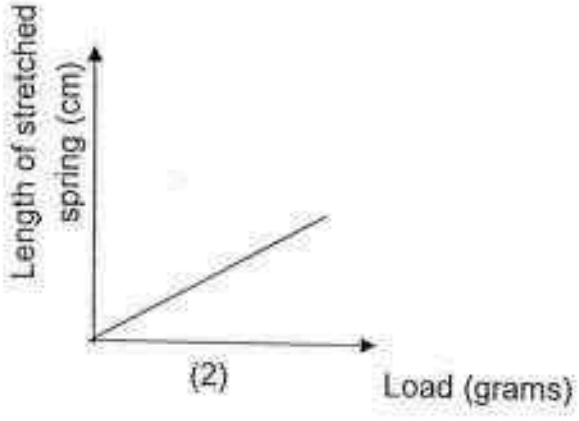


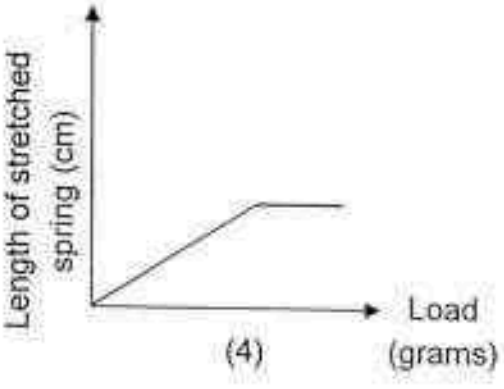
Next, she represented her results of her experiment by plotting 4 different graphs as shown below.

Which of the graphs correctly represents Alice's results?









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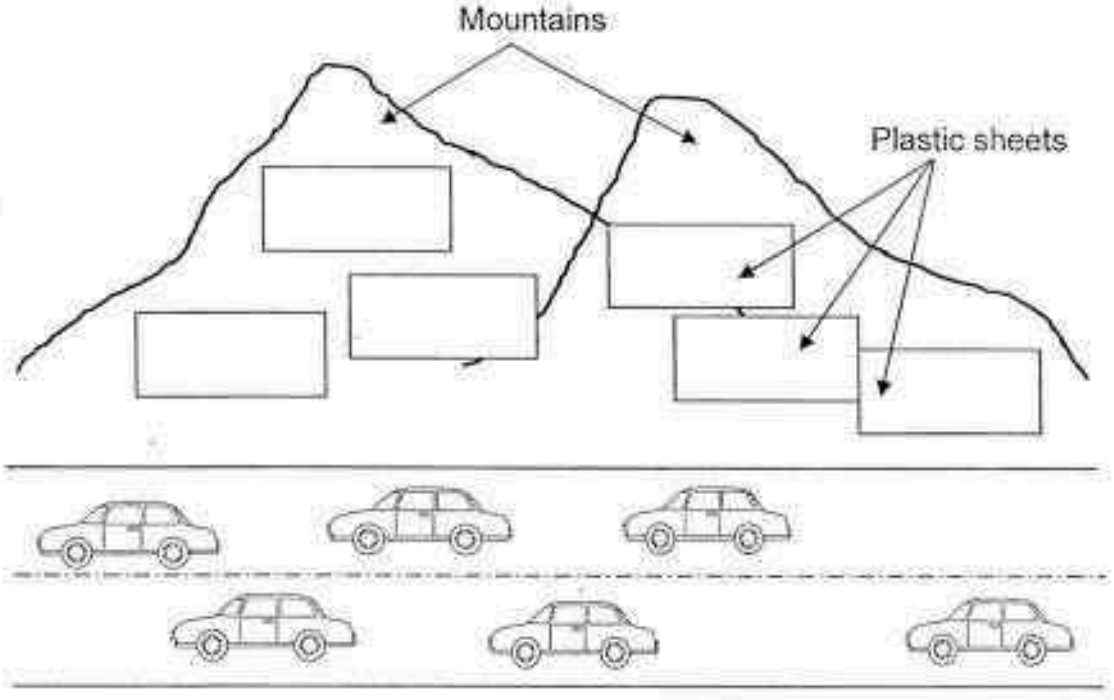
30. The diagram below shows some plastic sheets laid on the mountains after the all the plants are removed from it. There is a busy road at the bottom of the mountains as shown below.



The purpose of having the big plastic sheets on the mountains after deforestation is to _____.

(1) create new space for plants to grow.

(2) prevent the rain from washing the soil down.

(3) prevent the mountains from getting wet and flooded by rain.

(4) protect the motorists from air pollution caused by flying dust from the soil.

End of Booklet A

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SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

PRIMARY SIX PRELIMINARY ASSESSMENT 2016

NAME: _____ ( )

DATE: 26 August 2016

CLASS: PRIMARY 6 SY / C / G / SE / P

Parent's Signature:

_____

SCIENCE

BOOKLET B

	Total Actual Marks	Total Possible Marks
Booklet A		**60**
Booklet B		**40**
Total		**100**

14 questions

40 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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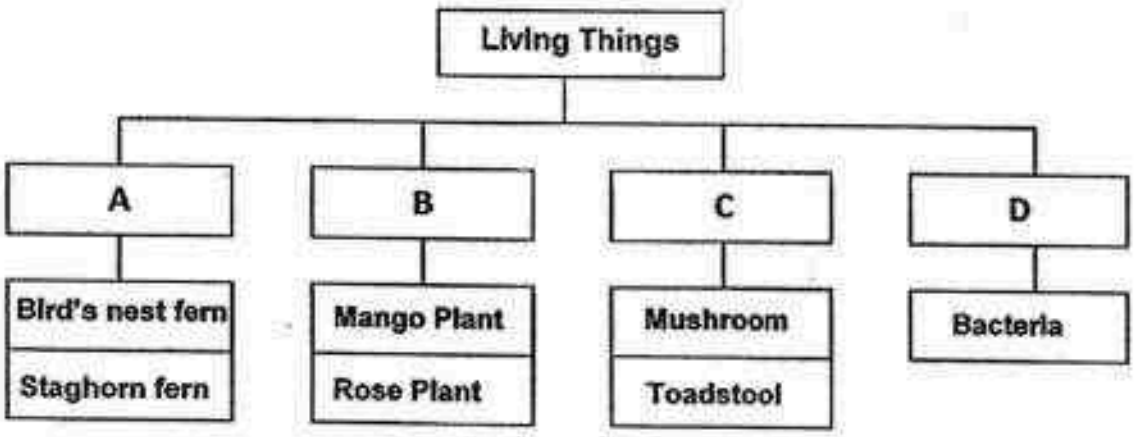
Part II (40 marks)

Answer all the following questions.

31. Study the flowchart about living things below.



a) Which 2 groups reproduce by spores? (1m)

_____

b) Which 2 groups break dead and waste matter down into simpler substances? (1m)

_____

c) Increasing the populations of which 2 groups is able to help Man reduce global warming? Explain your answer. (2 m)

_____

_____

_____

4

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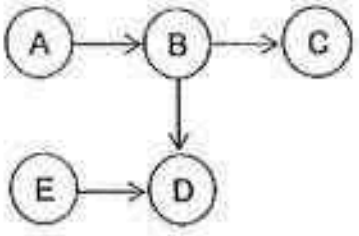
32. The food web below shows the food relationships of Organisms, A, B, C, D and E. Study the food web to answer questions (a) and (b).

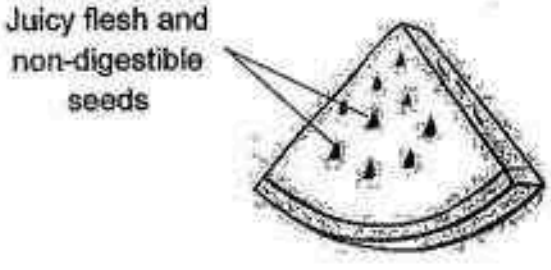


a) How would the decrease in the number of Organism C cause the number of Organism D to increase? (1m)

_____

_____

b) The diagram below shows the seeds of Organisms A.



Explain how Organism B is able to help Organism A in Organism A's seed dispersal. (2m)

_____

_____

_____

3

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33. Lianne observed and recorded the physical conditions of 4 different types of communities in the table below.

Conditions	Community P	Community Q	Community R	Community S
Sunlight	Bright	Shady	Bright	Shady
Temperature	33° C	25° C	29° C	27° C
Moisture is present	A little	Moist	Very Wet	Very Wet
Examples of organisms found	Grasshopper Grass	Wood louse Bracket fungus	Coconut trees Horseshoe crab	Hydrilla Pond skater

a) Based on the conditions of the Communities P, Q, R and S , given in the table above, identify which of them are the following communities . (1m)

i) seashore community: _____

ii) rotting log community: _____

b) State one thing that the grasshoppers in Community P will do to survive if all the plants in the habitat are removed because of a building project. (1m)

_____

_____

2

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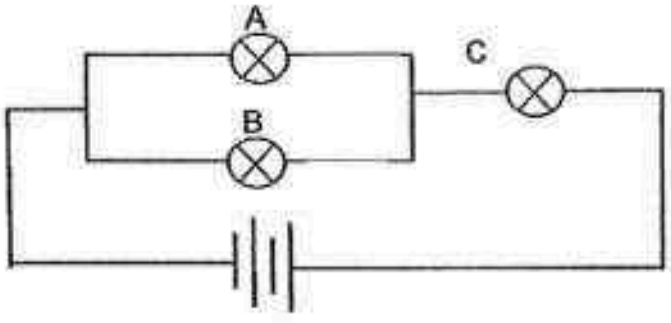
34. a) Eden constructed an electric circuit as shown below.

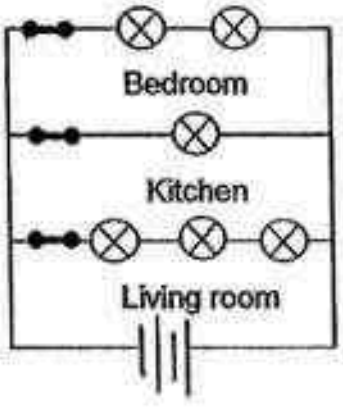


She needed 2 switches, M and K, that could control light bulbs A, B and C as shown in the table below.

Bulb	Only switch K is closed	Only switch M is closed
A	lights up	Did not light up
B	Did not light up	lights up
C	lights up	lights up

Mark an "K" to represent switch K and "M" to represent switch M in the above circuit . (1m)

b) Jenny has a doll house which has 3 rooms as shown below. There are 2 light bulbs in the bedroom, 1 light bulb in the kitchen and 3 light bulbs in the living room. 2 batteries are used to light up her doll house.



Which one of the rooms will have the dimmest bulbs? (1m)

_____

2

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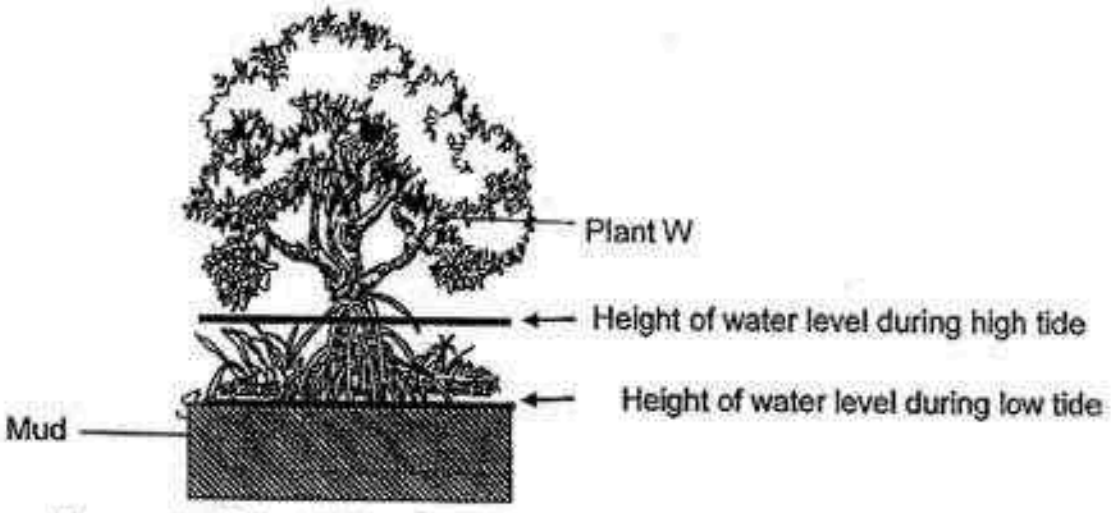
35. The diagram below shows the water level during the high tide and low tide of a habitat which Plant W lives in. The adult of Plant W grows in mud.



The seeds of plant W does not fall when ripen. The seeds start to germinate in the fruit while it is on the parent plant W.
The fruits of Plant W will drop during low tide after the seeds have germinated. The seeds then continue to grow under their parent plant.

The fruit of Plant W hangs downwards on adult Plant W.



a) Explain why Shape A works better than Shape B as the seed of Plant W. (1m)

_____

_____

b) Explain how germinating the seeds on the tree can be an advantage to the plant. (1m)

_____

_____

c) Explain how dropping the seeds below the parent tree can be an disadvantage to the plant. (1m)

_____

_____

3

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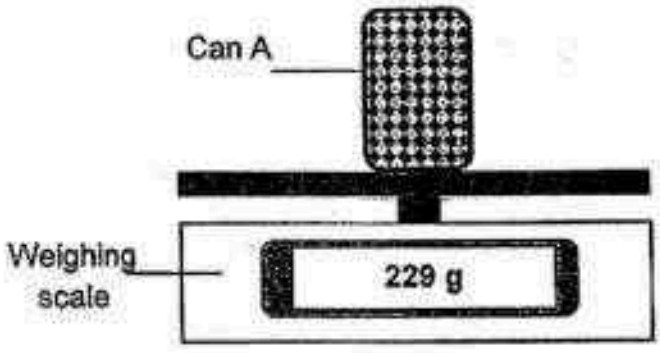
36. Lily took a can of drink, Can A, weighing 225g from the refrigerator and left it on the weighing scale in the Room A for 15 minutes. She then observed that Can A became heavier as shown below.



Lily took a similar can of drink weighing 225g, Can B, from the refrigerator and left it on the weighing scale for 15 minutes in Room B.

The temperature of the 3 areas are specified in the table below.

Area	Temperature
Refrigerator	4°C
Room A	24°C
Room B	16°C

a) Circle the most likely mass of Can B 15 minutes after it was taken out of the refrigerator. (1m)

224g	227g	230g

b) Explain your answer in (a). (2m)

_____

_____

_____

3

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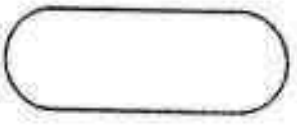
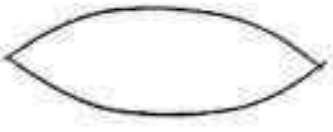
37. Kelly's class is designing a float to take part in a race with other classes. They had to decide on the shape of the float which will allow them to pull the float most quickly along the swimming pool.

The table below shows 3 shapes, X, Y and Z, Kelly's class has come up with.

Shape	Top View of the Float
X	
Y	
Z	

Which shape should Kelly's class choose if they want to win the race? Explain. (2m)

2

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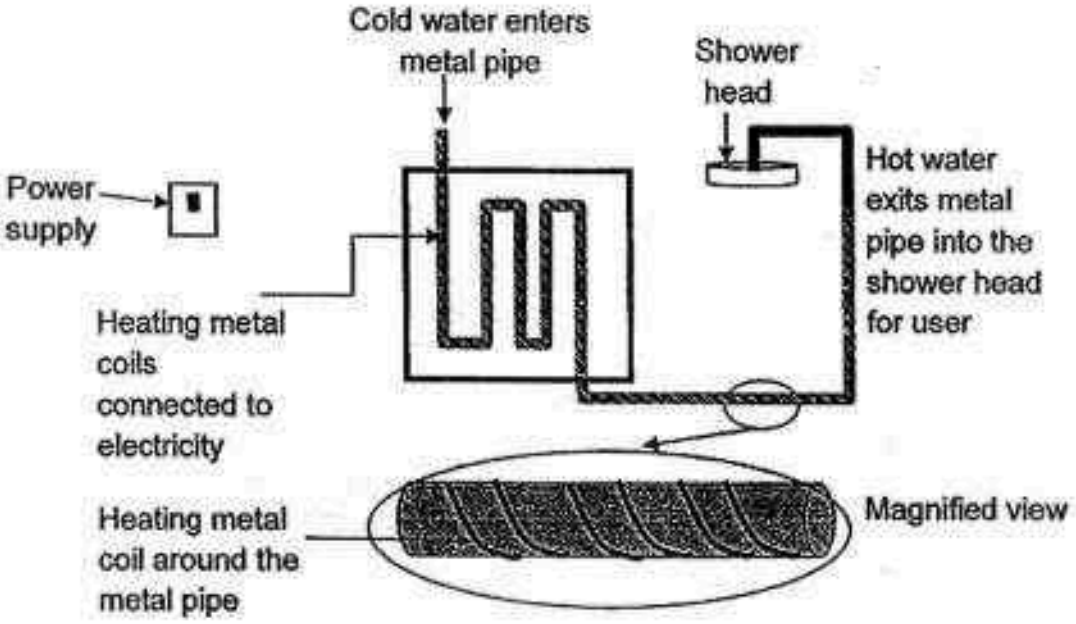
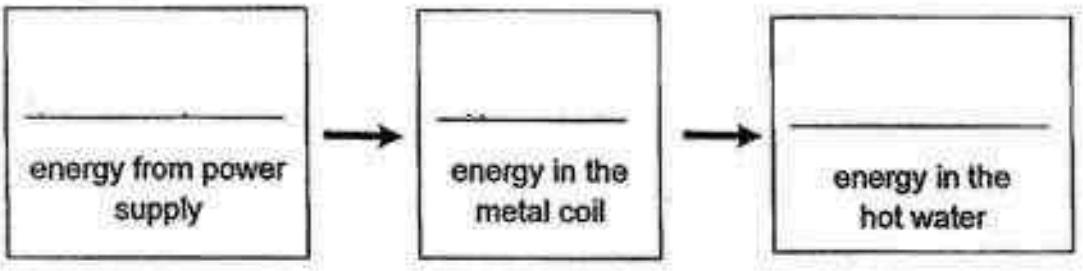
38. The diagram shows how an instant household water heater works.



a) Based on the diagram above, state in the boxes below how energy changes in the instant water heater to provide hot water for the user. (1m)



b) Explain what will happen to the rate of heating the water if the following changes are made. (2m)

i) Metal pipe is made thicker without changing the material:

_____

_____

ii) More heating metal coils are coiled round the pipe:

_____

_____

3

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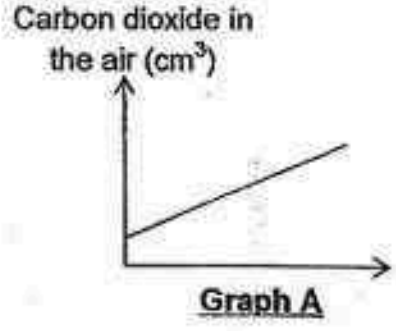
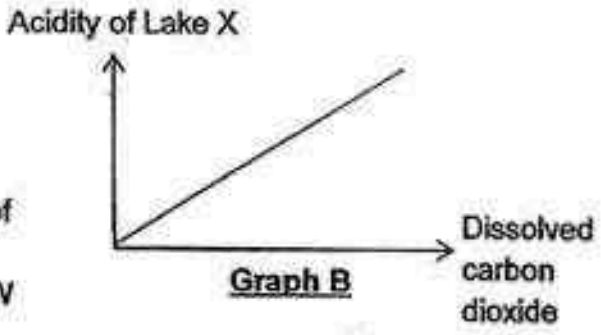
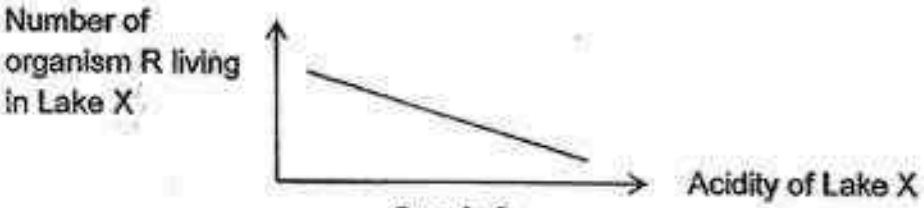
39a. Study the 3 graphs below carefully.



Graph A



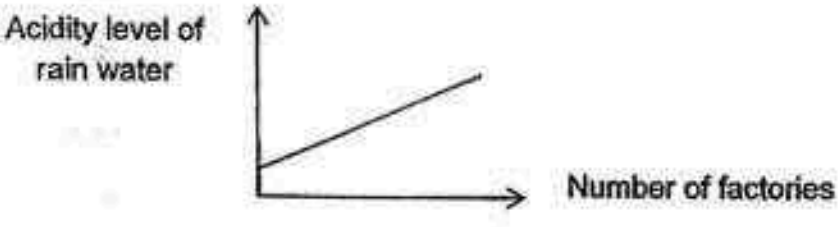
Graph B



Graph C

Based on the 3 graphs above, state the relationship between the number of cars in Country W and the number of organism R living in Lake X. (1m)

39b. The graph below shows how the number of factories in Country H affects the acidity level of the rain water in Country H.



Explain why a higher number of factories changes the acidity level of the rain water. (2m)

2/3

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40. In an experiment, Rachel had to find out whether Rods A, B and C are magnets, magnetic objects or non-magnetic objects.

The 3 rods, Rods A, B and C are tested with a bar magnet.

J is attracted by the S-pole and U is attracted by the N-pole.	G and H are attracted by the N-pole.	Q is attracted by the N-pole but V is repelled by the N-pole.
Rod A J U	Rod B G H	Rod C Q V

Complete the table below by writing A, B and/or C to identify the rods described. (2m)

	Description	**Rod or Rods**
a)	It is a magnetic material.	
b)	It is definitely not a magnet	
c)	It is definitely a magnet	
d)	Not possible to tell if it is a magnet or not.	

2

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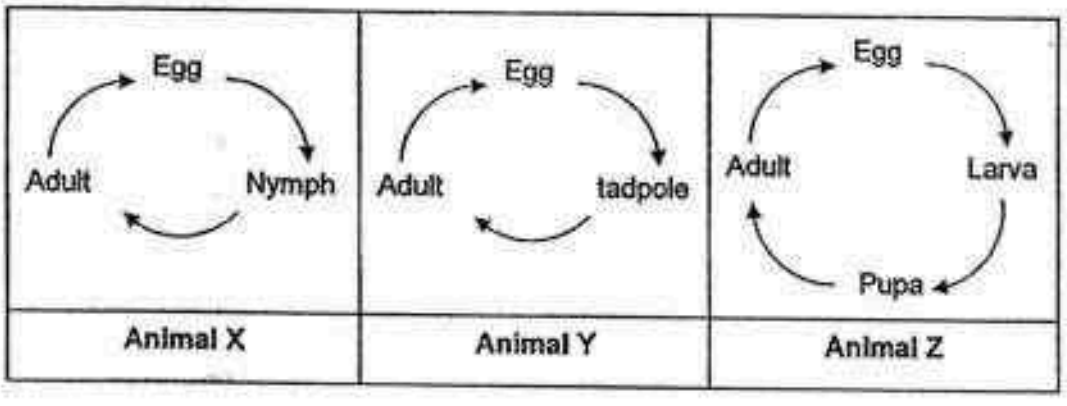
41. The diagrams below show the life cycles of Animal X, Animal Y and Animal Z.



a) State one similarity between the life cycles of Animal Y and Animal Z that is not shared with the life cycle of Animal X. (1m)

_____

_____

b) Animal Y lays eggs in water and the tadpole lives in water while the adult mostly lives on land.
What is the advantage to Animal Y when the young and adult live in different places? (1m)

_____

_____

2

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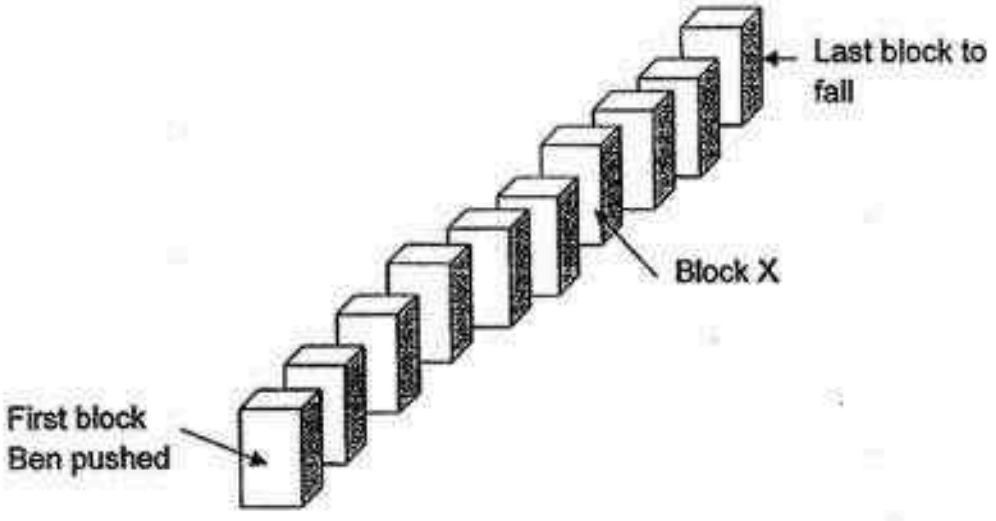
42. Ben arranged some blocks as shown below. He then pushed only the first block and the rest of the blocks toppled over in a line.



a) Explain how the last block had the energy to move and fall. (1m)

_____

_____

b) When the last block fell and hit the ground, what forms of energy did the kinetic energy convert into? (1m)

_____

c) What will happen if Block X indicated in the diagram is removed before Ben pushes the first block? Explain your answer. (1m)

_____

_____

d) Ben wanted to use blocks made of different materials. He had 5 Styrofoam blocks and 5 metal blocks. He was advised to place all the 5 metal blocks at the start and all the 5 Styrofoam blocks towards the end. Explain why Ben should take this advice. (1m)

_____

_____

4

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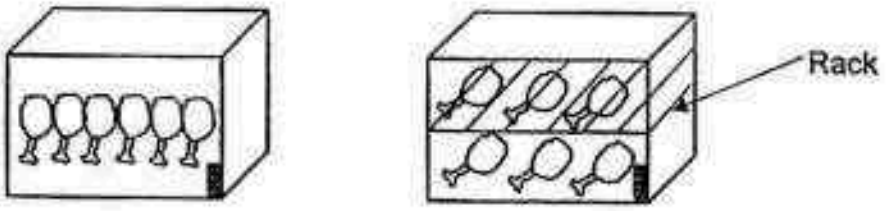
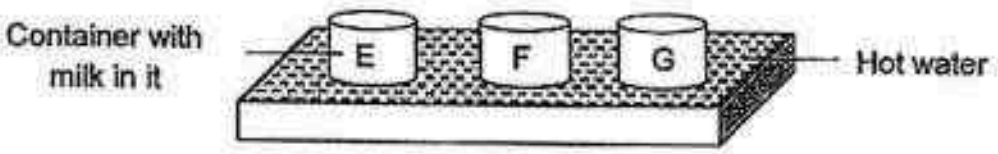
43. a) Kelly placed 12 identical raw chicken drumsticks into 2 identical ovens, A and B as shown below. In Oven A, the drumsticks were placed close to one another. In Oven B, the drumsticks were placed in 2 layers and well-spaced apart.



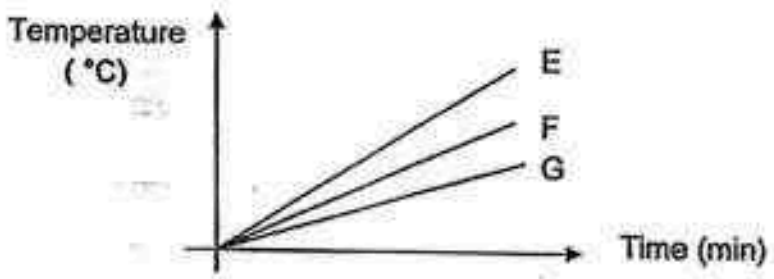
Oven A Oven B

Explain why the drumsticks in Oven B were cooked faster than in Oven A. (2m)

b) Kelly had 3 containers made of material E, F and G. She put an equal amount of milk in the containers before putting them in a tray of hot water as shown below.



The graph below shows the temperature change of the milk over time.



Kelly wanted to keep the drumsticks she baked as warm as possible in a container before dinner.
Based on the graph above, which material, E, F or G, should Kelly choose for her container? Explain. (2m)

4

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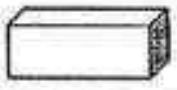
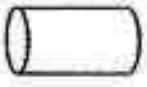
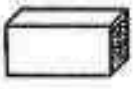
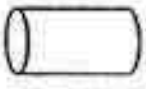
44. a) Danny wanted to find out which material is most suitable for making a solid swimming float for a baby. He used 4 items made of materials A, B, C and D respectively. Each item is described in the table below.

Material	Shape	Colour	Volume
A		Blue	300 cm^3
B		Pink	250 cm^3
C		White	180 cm^3
D		Blue	250 cm^3

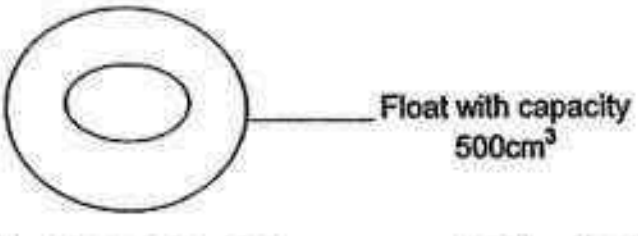
i) Which 2 materials should Danny use to conduct a fair test? (1m)

_____

ii) Which variable shown in the table does not affect the results of the experiment? (1m)

_____

b) Jenny bought an inflatable float which needs air to pumped into it.



The capacity of the float is $500cm^3$. Danny pumped $800cm^3$ of air into the float but the float did not burst. What does this show about the property of gas? (1m)

_____

End of Booklet B

3

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EXAM PAPER 2016

SCHOOL : SCGS

SUBJECT : SCIENCE

TERM : SA2

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	2	3	3	2	4	4	1	2	2
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	3	4	3	1	4	1	3	4	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	2	1	4	3	2	1	1	2

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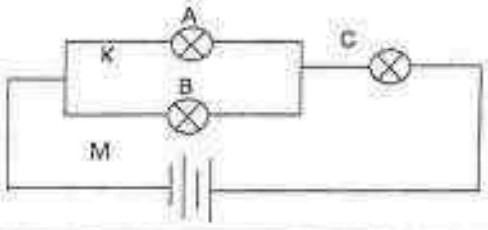
	Answers
31a	A, C
31b	C, D
31c	Ans: A, B Reason: A and B are plants which undergo photosynthesis which takes in carbon dioxide. And carbon dioxide contributes/ increases/ causes to global warming.
32a	When there are fewer Organism C, Organism D has <u>less competition</u> for the <u>same</u> food source.
32b	Organism B <u>eats A's fruit and passes out the non-digestible seeds</u> as it travels <u>away/ moves further/away from the parent plant</u>. ('Away from the parent plant' is needed as that shows dispersal)
33a	i) Seashore : R ii) Rotting Log : Q
33b	The grasshoppers will migrate/ move to a more suitable habitat
34a	
34b	Living Room
35a	Shape A is pointed/streamlined/sharpest and it will able to go deeper into the mud.
35b	<u>Advantage:</u> The seeds germinate on the parent plant have have less chance of being swept away where it has no air, warmth and water to germinate.

	OR: The seeds are not able to germinate well in saltish water and will die if they drop into the water for germination. <u>Disadvantage:</u> When the seeds grow under the parent plant, there will be overcrowding in the long run OR: The young plants will compete with the parent plant for sunlight/ nutrients/ space.
36a	227g
36b	The temperature of the water vapour in Room B is not as warm as in Room A/ cooler than in Room A , thus the rate of condensation in Room B is slower and fewer water droplets are produced for Can B
37	Z has the most streamlined shape. Therefore/ thus it can reduce water resistance/ frictional force most to travel fastest.
38a	Electrical energy from mains → heat energy in the metal coil → heat energy in the hot water
38	(Slow down) The thicker pipe will cause the heating of water to slow down because the heat from the coils has to pass through more material/ travel through a longer distance to reach the hot water.
bi	Ans: (Speed Up) With more coiling/ coils, there is more heated/ hot coils around the pipe, this increase the amount of heat transferred to the water/ pipe.
bii	OR (Speed Up) With more coiling/ coils, there is more heat produced by the coils, thus more heat will be transferred to the water.
39a	When the number of cars (in Country W) increases, the number/ population of organism R decreases
39b	When there are more factories, they produce more air pollutants (which may be acidic)/ acidic gases AND

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	Air pollutants / acidic gases will dissolve in/ mix with the clouds/ rain water, causing the rain to become <u>more</u> acidic.
40	<table><tr><th></th><th>Description</th><th>Rod/s</th></tr><tr><td>a)</td><td>It is a magnetic material.</td><td>A, B, C</td></tr><tr><td>b)</td><td>It is definitely not a magnet</td><td>B</td></tr><tr><td>c)</td><td>It is definitely a magnet</td><td>C</td></tr><tr><td>d)</td><td>Not possible to tell if it is a</td><td>A</td></tr></table>
41a	Both the young do not resemble/ do not look like the parent.
41b	<not sharing the same food source and similarly suffering from lack of food if food source is depleted/ diseased etc> If the adult and the young have different habitats/ live in different places, they will likely have different food sources. So even if place the adult is in has no food, the young is at another place and may have food and survives. OR <not having the same predators and suffering similarly from a sudden increase in predators> If the adult and the young live in different places, they are likely to have different types of predators. So, if there is a sudden increase in predators for one/ the young/ the adult, eating up all the young/ adult up, the other / adult/ young can still survive. OR <not having the same habitat and suffering similarly pollution or poisoning> If where the adults live gets polluted and kill / poison them, the place the young live may still be safe enough for the young to survive. (and vice versa)
42a	The kinetic energy of the first block is transferred to the next block, which will transfer the energy to the following block (from one block to another) right to the last block.
42b	Sound (energy) and Heat (energy)

42c	The blocks after the gap will not fall as the energy cannot be transferred to the next block/ the next block is too far away for the block before X to touch/ hit/ reach.
42d	The Styrofoam blocks have a much smaller mass/ are lighter than the metal blocks, thus they do not have enough kinetic energy to topple over the heavier metal block.
43a	The drumstick in oven B has greater contact area/ exposure with the heat/ to the hot air so there is more heat conduction to the drumstick, thus they cook faster.
43b	G. G is the poorest conductor of heat and heat from the drumstick will travel to the surroundings the slowest/ drumstick will lose heat the slowest through the poorest conductor of heat.
44ai	B and D
44aii	Colour has no impact on/ does not affect the results.
44bi	Air can be compressed. OR Air has no definite volume.

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29

PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATIONS

PRIMARY 6
SCIENCE
(BOOKLET A)

25 AUG 2016

Name: _____

Class: Resilience_____ _____

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

This booklet consists of 19 printed pages, excluding the cover page.

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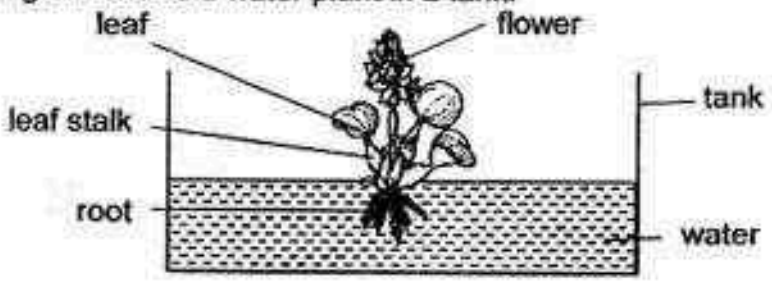
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(60 marks)

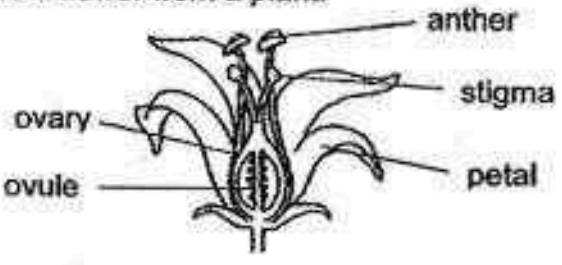
1. The diagram shows a water plant in a tank.



Which of the following is not correct for this plant?

	Part of plant	Function of part
(1)	Leaf	Makes food
(2)	Root	Holds the plant to the soil
(3)	Leaf stalk	Keeps the plant afloat
(4)	Flower	For reproduction

2. The diagram shows a flower from a plant.



The following are three flowers, Flowers T, U and W, from the same plant, with some parts removed. The plant is then left out in the open for a week.



Flower T Flower U Flower W

Which of the following flowers will be able to develop into fruits?

(1) T only
(2) T and U only
(3) U and W only
(4) T, U and W

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3. Wendy had to classify the four animals shown below.

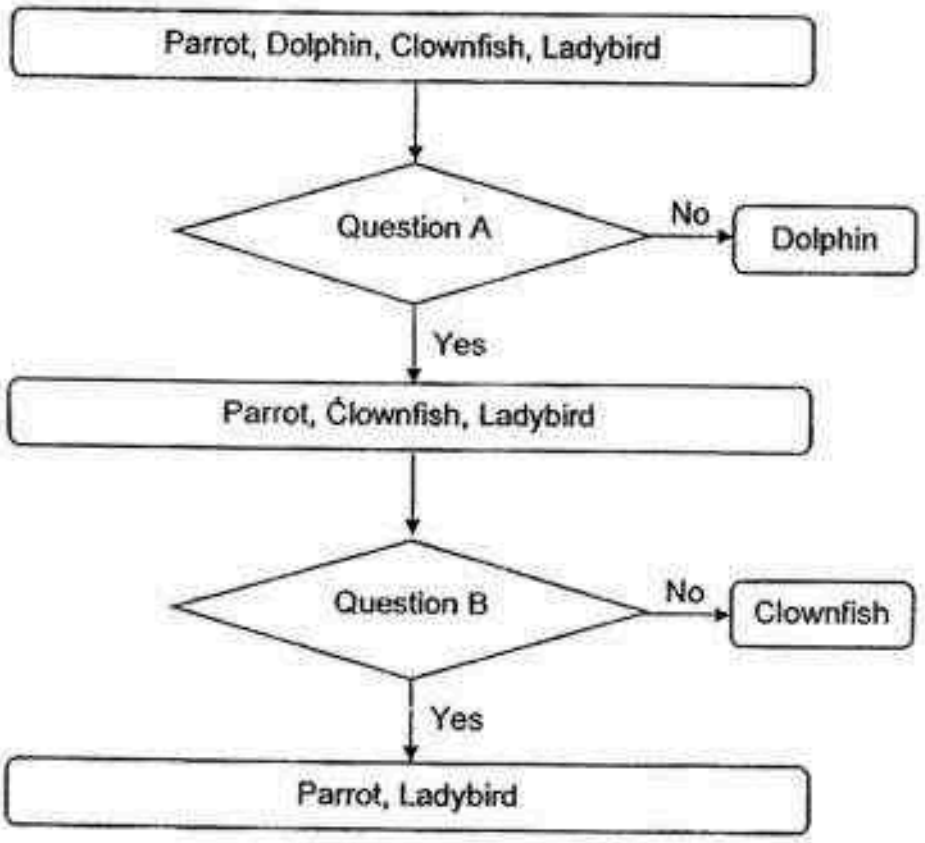

Parrot


Dolphin


Clownfish


Ladybird

She classified them with the help of the chart below.



What were the two questions?

	Question A	Question B
(1)	Do they feed the young with milk?	Do they lay eggs?
(2)	Do they have wings?	Do they feed the young with milk?
(3)	Do they lay eggs?	Do they have wings?
(4)	Do they have wings?	Do they lay eggs?

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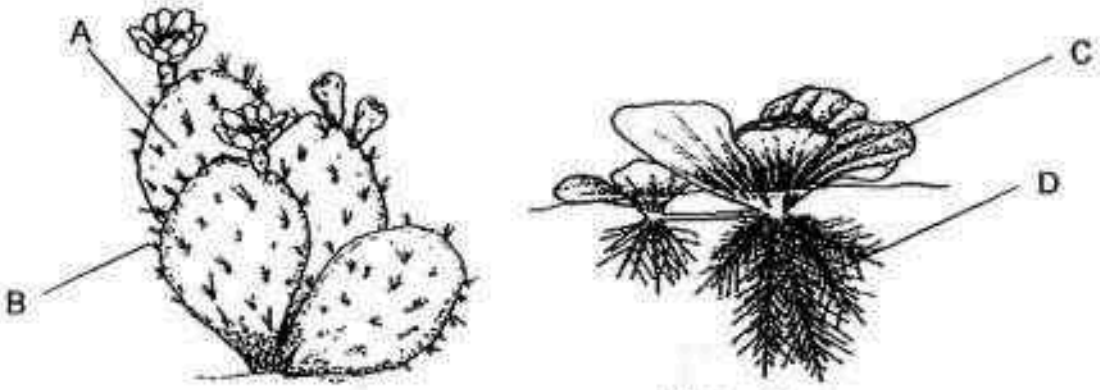
4. Study the diagrams of the cactus and water lettuce shown below carefully.



Cactus

Water lettuce

Which two parts of the plants above have the same main function?

(1) A and C
(2) A and D
(3) B and C
(4) B and D

5. Fluffy the dog loves to play in the garden. Her owner always had to pick out fruits that were stuck on her fur when she comes into the house.



Which one of the fruits would most possibly be found stuck firmly on Fluffy's fur?

(1) 

(2) 

(3) 

(4) 

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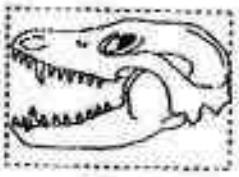
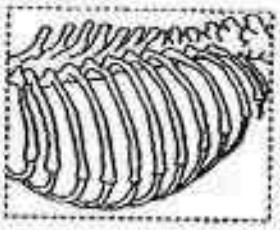
6. Scientists found the two parts, K and L, of an animal as shown below.



Part K

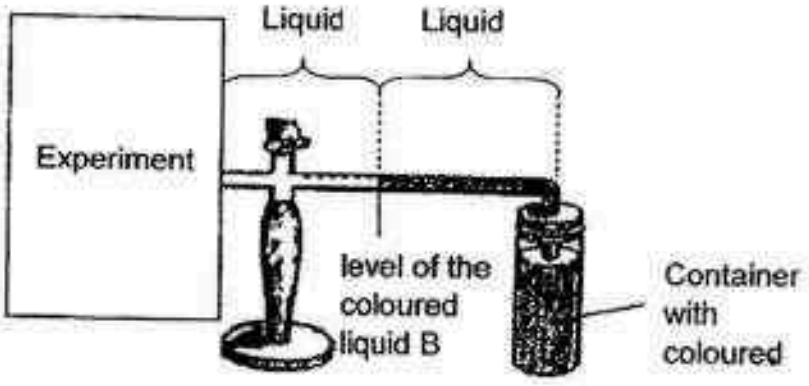


Part L

Based on the diagrams above, what was the likely diet and the breathing method of this animal?

	Diet	Method of breathing
(1)	Meat eater	Lungs
(2)	Meat eater	Gills
(3)	Plant eater	Lungs
(4)	Plant and meat eater	Skin

7. Ali set up 4 experiments of different processes, one at a time, using the set up shown below.



He filled the entire set up with liquid A and B, sealed it air tight with one end of the horizontal tube dipped into a container containing coloured liquid B. On the other end, he attached the set-up to the experiment. He observed that the level of the coloured liquid B will move after some time.

Which of the following would show the result matched to the processes happening in the experiment correctly?

	Direction of the coloured liquid B	Process tested in experiments
(1)	→	Melting
(2)	←	Condensation
(3)	→	Evaporation
(4)	→	Photosynthesis

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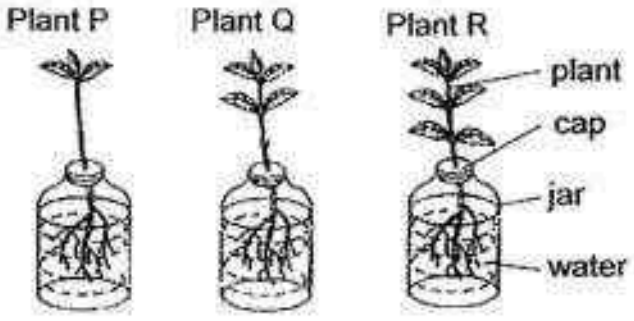
8. Kumar set up an experiment using 3 similar plants shown below.



After a few days, he measured the amount of water left in each jar and recorded his results in the table below.

Plants	Amount of water in jar (cm^3)	
	Start of experiment	After a few days
P	200	192
Q	200	180
R	200	149

What can be concluded from this experiment?

A The presence of leaves affected the amount of water absorbed by the plant.
B The number of leaves affected the amount of water absorbed by the plant.
C The greater the number of leaves, the less amount of water in the jar.
D The amount of water absorbed by the plant will affect the rate of growth of the plant.

(1) A and D only
(2) B and C only
(3) A, B and C only
(4) A, B, C and D

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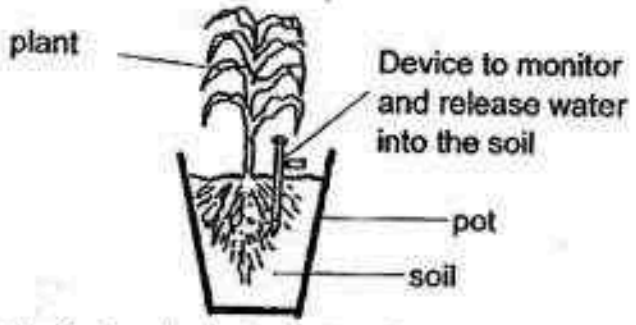
9. Stanley has a potted plant and a device which monitors the amount of water in the soil. The device releases water when the amount of water in the soil decreases.



He wanted the water in the device to last as long as possible. So he came up with a few possible solutions:

A Cover only the plant with a black bag.

B Place the pot of plant in a shady place.

C Cover only the pot with a transparent bag.

D Remove all the roots from the plant.

Which two actions stated above could Stanley take to conserve as much water as he could in the device, without killing the plant?

(1) A and B

(2) A and D

(3) B and C

(4) C and D

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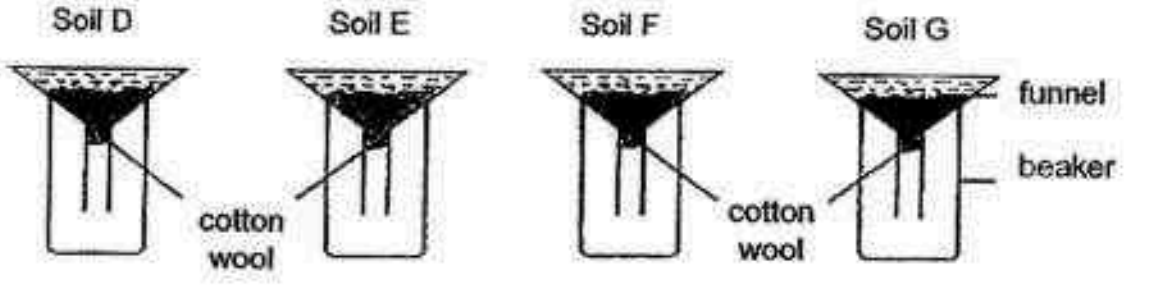
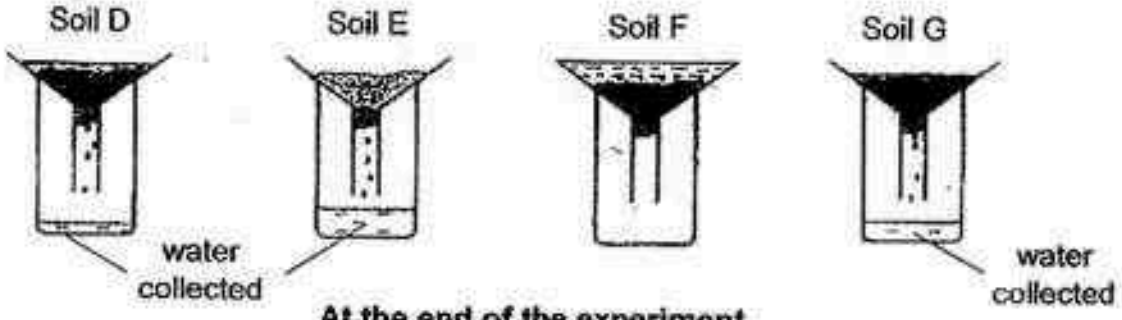
10. A farmer wanted to find out how different soils will affect the amount of water passing through. He poured 50ml of water into each soil, D, E, F and G in the set-ups shown below.



At the start of the experiment



At the end of the experiment

The farmer needs to find soil to put at the bottom of his pond so that he can fill the pond with water. Based on the experiment, which soil should he use?

(1) Soil D
(2) Soil E
(3) Soil F
(4) Soil G

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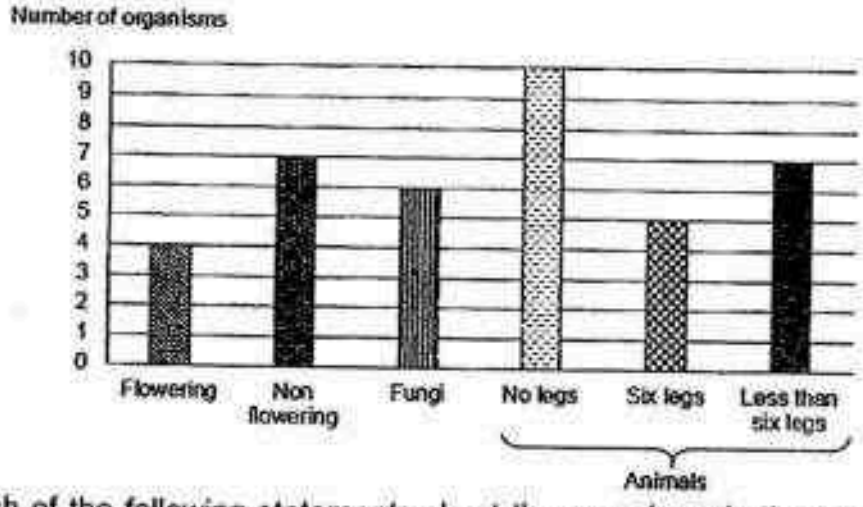
11. A group of pupils counted the number of organisms found in the school garden. The results are shown below.



Which of the following statements about the organisms in the garden is/are definitely correct?

A There is only one garden community.

B There are seventeen populations of plants.

C There are at least 6 populations of plants and animals.

(1) A only

(2) A and C only

(3) B and C only

(4) A, B and C

12. Gary found some living things in his garden.



snake bird cabbage caterpillar

He then drew a food chain about the living things he found in his garden. Which of the following food chains should be correct?

(1) cabbage ← caterpillar ← snake ← bird

(2) cabbage ← snake ← bird ← caterpillar

(3) cabbage → caterpillar → bird → snake

(4) cabbage → bird → caterpillar → snake

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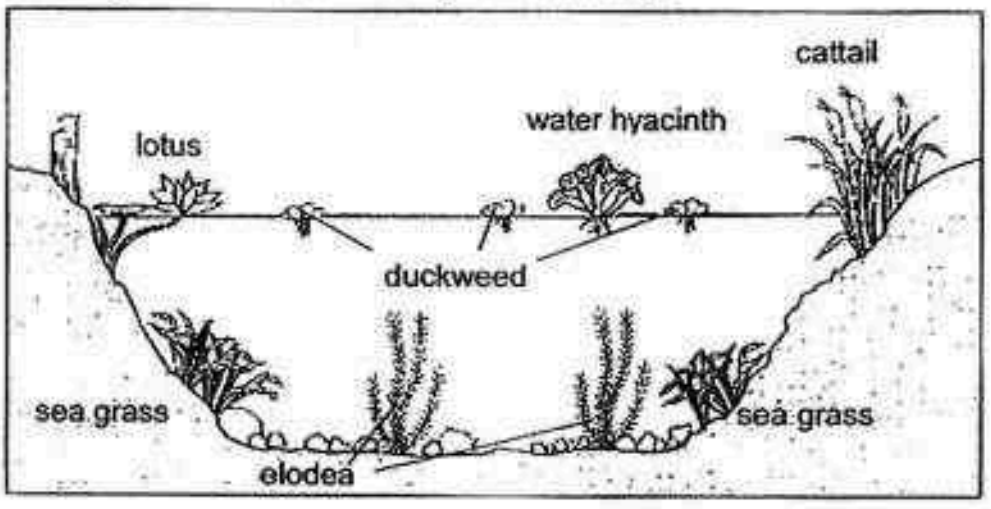
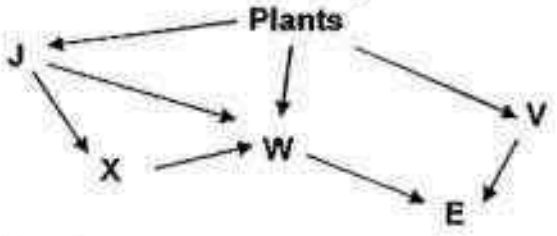
13. The diagram shows plants living in a community.



Based on the diagram above, how many populations of the plants are fully submerged?

(1) 2
(2) 4
(3) 6
(4) 10

14. Study the food web below carefully.



Which of the following statements are true?

A J, V and W eat plants.
B X and E are meat eaters.
C W is the only plant and meat eaters.
D When J increases, E will have more food.

(1) A and B only
(2) C and D only
(3) B, C and D only
(4) A, B, C and D

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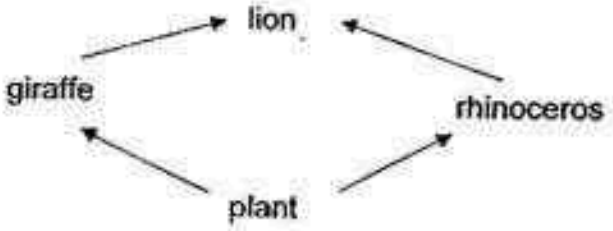
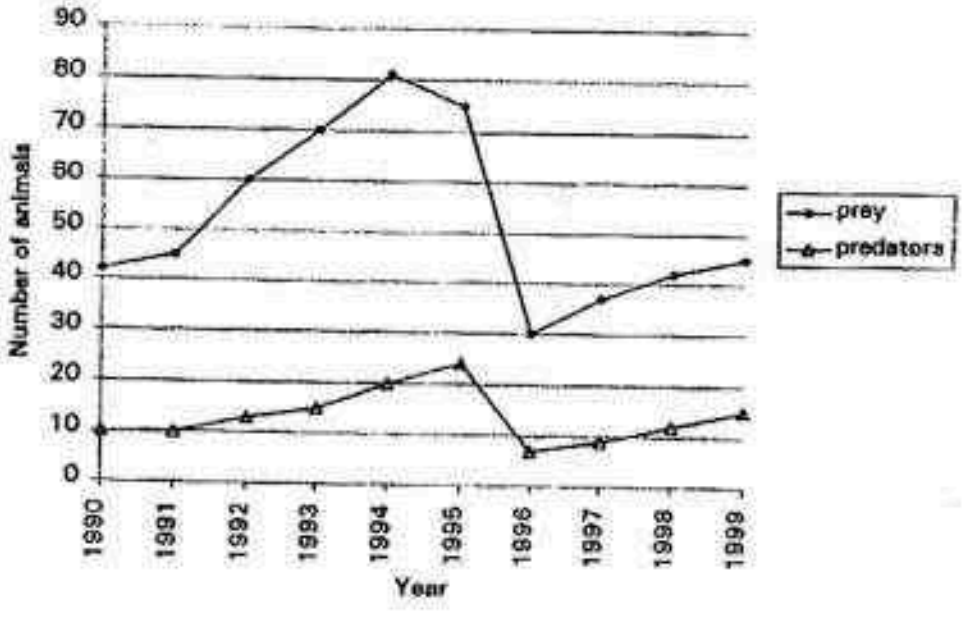
15. The diagram below shows the food web in a community.



Which of the following would be the immediate effect on the number of plants and giraffe if hunters killed most of the rhinoceros in that community and the number of lions remained the same?

	Plant	Giraffe
(1)	Decrease	Increase
(2)	Increase	Increase
(3)	Increase	Decrease
(4)	Decrease	Decrease

16. The graph below shows the number of predators and their prey in a community.



Over these ten years, there was a period with no rainfall at all.
This most likely happened from _____.

(1) 1992 to 1993
(2) 1994 to 1995
(3) 1995 to 1996
(4) 1997 to 1998

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17. Large amount of oil spilled into the ocean when an oil tanker crashed with another ship. Which of the following are possible negative impacts to the environment due to the oil spill?

A Oil spill causes an increase in amount of carbon dioxide.

B Animals that depend on the sea weeds for food will die.

C Sea birds can keep warm as their feathers are coated with oil.

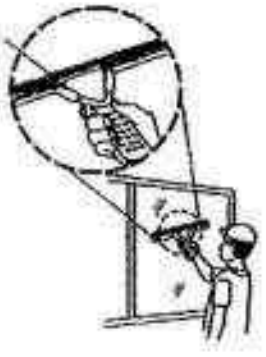
(1) A only
(2) B only
(3) B and C only
(4) A, B and C

18. A scratch test was conducted using 4 rods of different materials. When Rod P was used to scratch on Rod Q, no scratches were observed on Rod Q. The rest of the observations are shown in the table below.

Material of rods	Scratch marks observed on rods?			
	P	Q	R	S
P		No	No	Yes
Q	Yes		Yes	Yes
R	Yes	No		Yes
S	No	No	No	

A worker cleans the glass window with a tool as shown in the diagram below.

Black part



Based on the experiment above, which material should most likely be used to make the "Black part" of the tool?

(1) P
(2) Q
(3) R
(4) S

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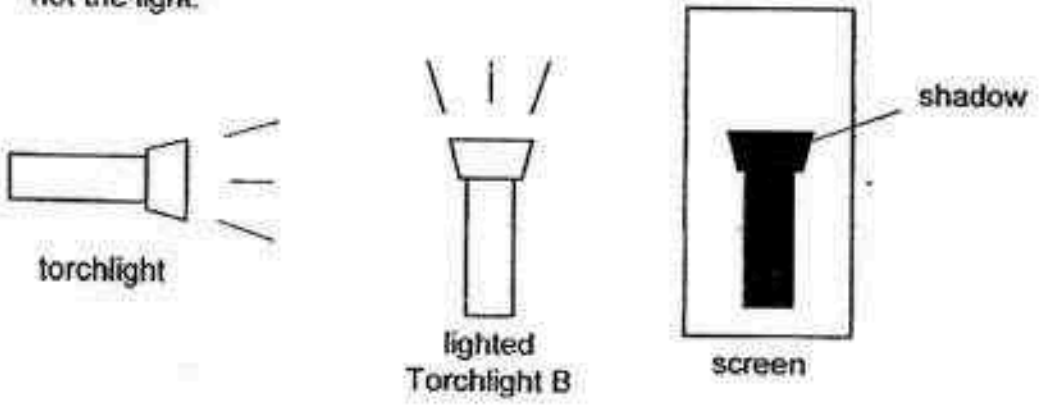
19. Two chairs were left in a cold room for an hour. Melly touched the seats of each chair and found that the seat of Chair Z felt colder than the seat of Chair X.

Which one of the following best explains why her hand felt colder on the seat for Chair Z than the seat of Chair X?

(1) The seat of Chair Z was thicker than the seat of Chair X.
(2) The seat of Chair X was smoother than the seat of Chair
(3) The material used to make the seat of Chair Z was a better conductor of heat.
(4) There was more heat flowing from her hand to the seat of Chair X than Chair Z.

20. Emma shone a light on a lighted Torchlight B. She noticed the shadow formed on the screen behind the lighted Torchlight B only showed the torchlight but not the light.



Which of the following could be a reason for Emma's observation?

	Torchlight	Light
(1)	Is a matter and does not allow light to pass through	Not a matter
(2)	Is a matter and does not allow light to pass through	Is a matter and allows light to pass through
(3)	Not a matter	Is a matter and allows light to pass through
(4)	Not a matter	Not a matter

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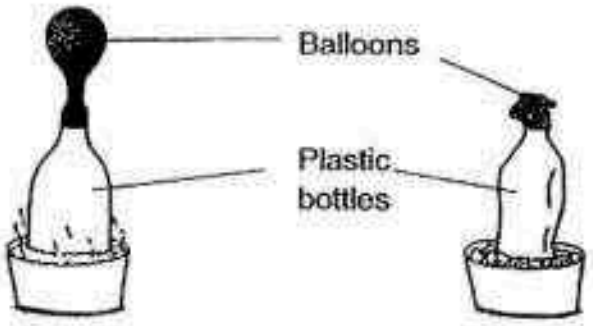
21. Zul has two similar balloons stuck to two similar bottles. He placed one of the bottle in hot water and the other bottle in iced water. The diagrams below show what he observed after some time.



Container with hot water Container with iced water

Which of the following is correct about the mass and volume of air in the bottles shown in Zul's experiment?

	In container of hot water		In container of cold water	
	Mass of air	**Volume of air**	**Mass of air**	**Volume of air**
(1)	Remained the same	Decrease	Remained the same	Increase
(2)	Decrease	Remained the same	Increase	Remained the same
(3)	Increase	Increase	Decrease	Decrease
(4)	Remained the same	Increase	Remained the same	Decrease

22. The table below shows the boiling point of 3 substances, J, K and L.

Substance	Boiling point (°C)
J	35
K	120
L	75

Based on the information given above, which one of the following is definitely correct?

(1) J is a gas at 38°C.

(2) K is a liquid at 100°C.

(3) K and L are both gas at 35°C.

(4) L can be a solid or a liquid at 75°C.

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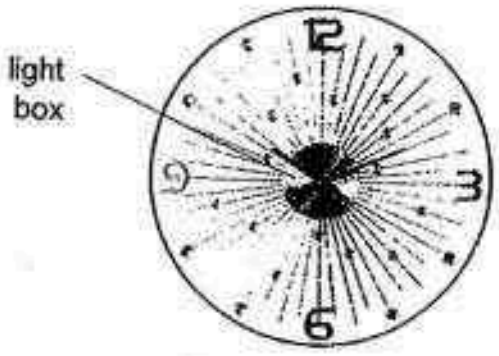
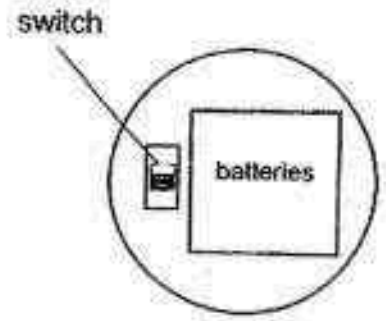
23. Ah Ling has a clock that works on batteries as shown in the diagram below.



Front of the clock

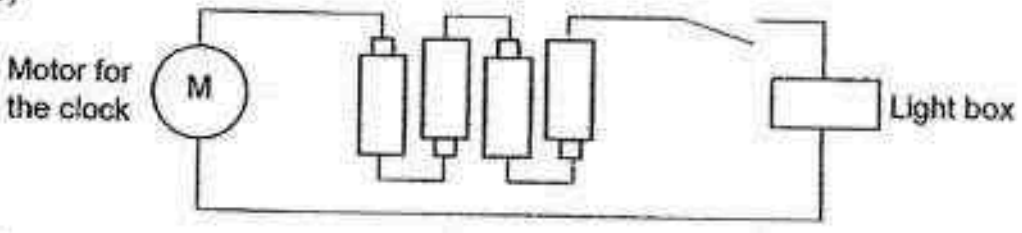


Back of the clock

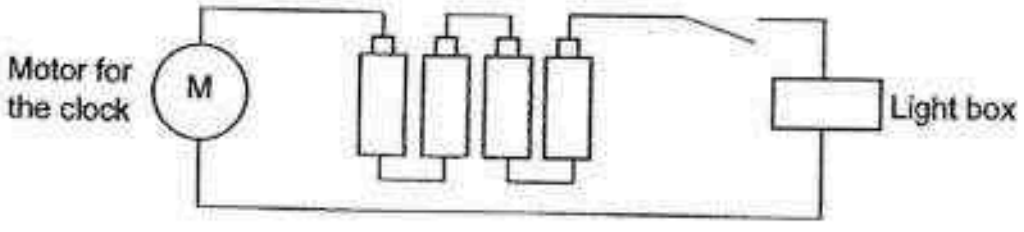
When she put in the 4 batteries needed, the clock moved. When she turned on the switch at the back of the clock, the light box lit up.

Which one of the circuits below is possible?

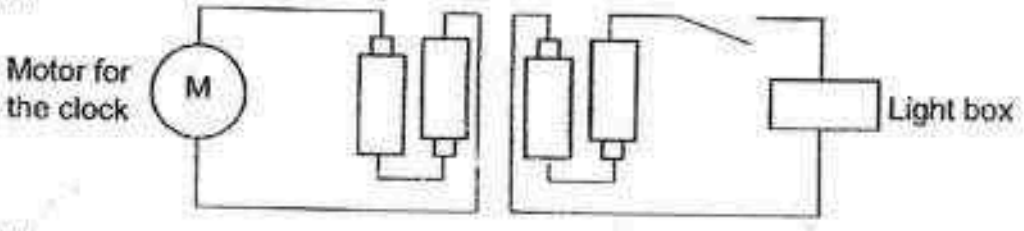
(1)



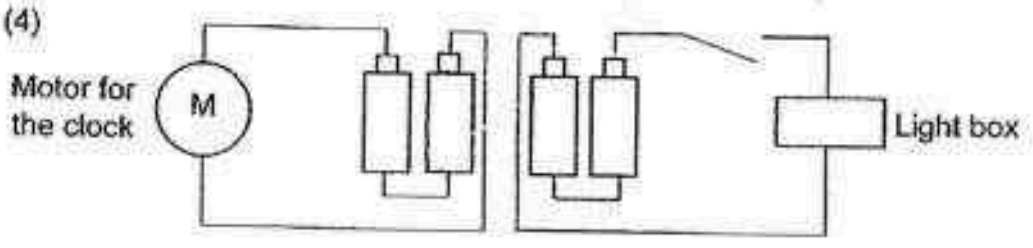
(2)



(3)



(4)



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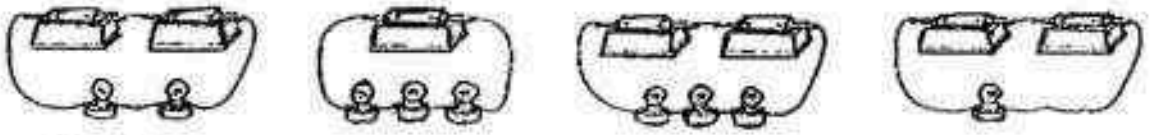
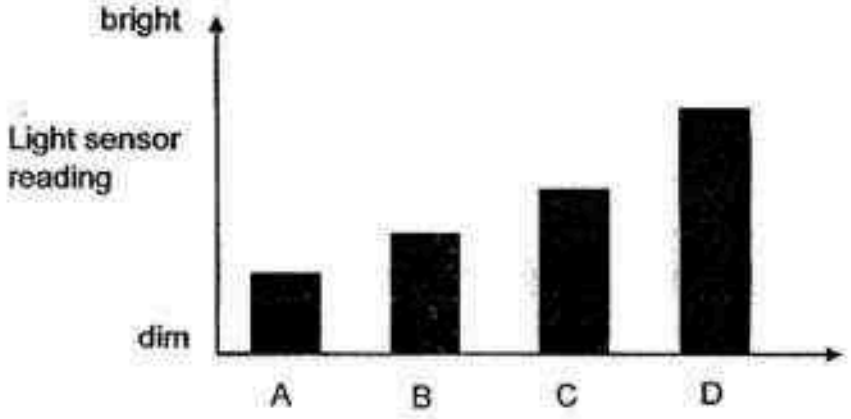
24. Moody made 4 electrical circuits using similar batteries and bulbs as shown.



Circuit R Circuit S Circuit T Circuit U

He used a light sensor to measure the brightness of one of the bulbs in each circuit.

The graph below shows his results.



Which of the following shows the circuit matched to the results correctly?

	A	B	C	D
(1)	Circuit R	Circuit U	Circuit T	Circuit S
(2)	Circuit U	Circuit T	Circuit R	Circuit S
(3)	Circuit S	Circuit T	Circuit R	Circuit U
(4)	Circuit S	Circuit R	Circuit T	Circuit U

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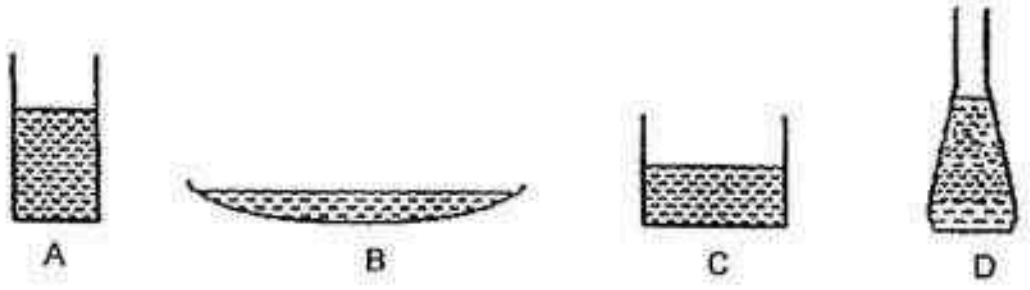
25. Ernie has 4 glass containers with the same mass. Each glass container contained the same amount of water and he placed them under the sun.



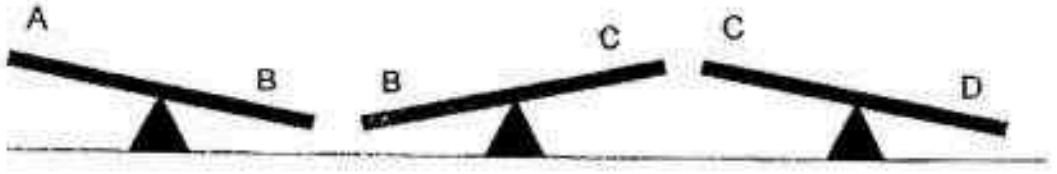
After some time, he placed 2 glass containers at a time on a beam balance.

Which of the following shows the correct observation after some time?

(1)



(2)



(3)



(4)



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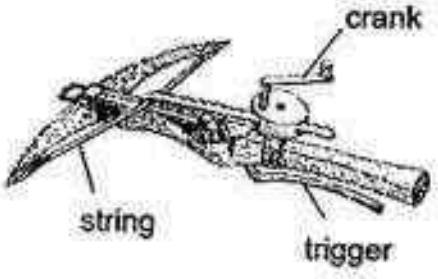
26. Mei Mei has a crossbow as shown below.



When she turned the crank, it pulled the string back to put the arrow in place. When she released the trigger, the string is released and the arrow is pushed out by the string.

Which of the following shows the energy conversion in Mei Mei's crossbow from the start to when the arrow is released?

(1) kinetic energy of the crank → potential energy of pulled string → kinetic energy of moving string → kinetic energy of moving arrow

(2) potential energy of the crank → potential energy of pulled string → kinetic energy of moving string → kinetic energy of moving arrow

(3) kinetic energy of crank → kinetic energy of pulled string → potential energy of moving string → potential energy of moving arrow

(4) potential energy of the crank → kinetic energy of pulled string → potential energy of moving string → potential energy of moving arrow

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27. The diagrams show how a catapult works.

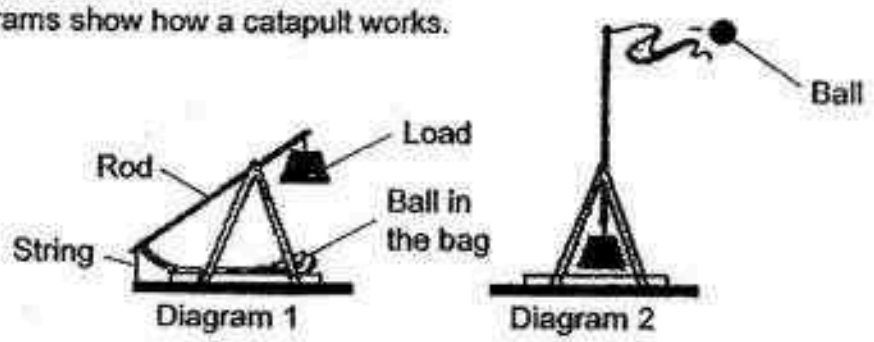


Diagram 1 shows how the catapult is set. When the string is cut, the load moves down and the rod of the catapult swings and the ball in the bag is released as shown in Diagram 2.

Where is the source of the energy in the catapult?

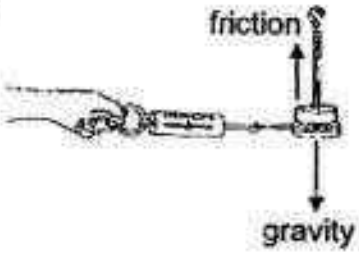
(1) Load
(2) String
(3) Ball in the bag
(4) Rod of the catapult

28. Abdul stacked some mass on a weight hanger and used a spring balance to pull the weight hanger on a table as shown in the diagram below.

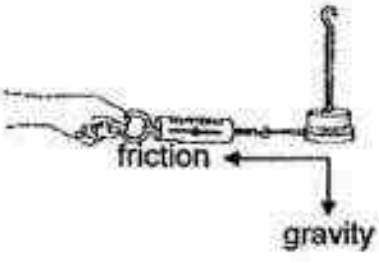


Which of the following shows the correct direction of the force of gravity and friction acting on the weight hanger as Abdul pulls the weight hanger?

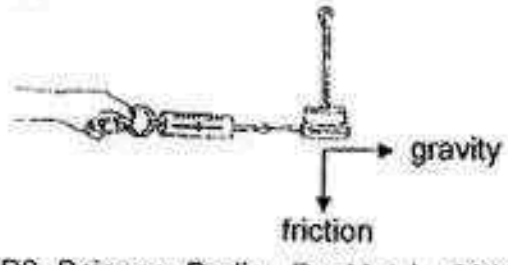
(1)



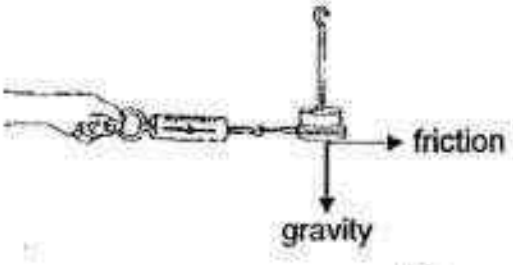
(2)



(3)



(4)



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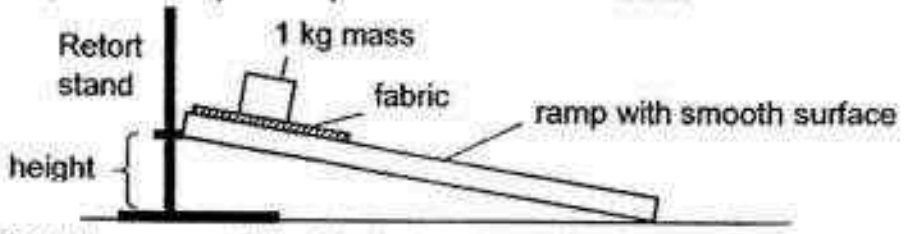
29. Yanfang wanted to find out if a type of fabric will slip easily on a smooth surface of a ramp. She set up the experiment as shown below.



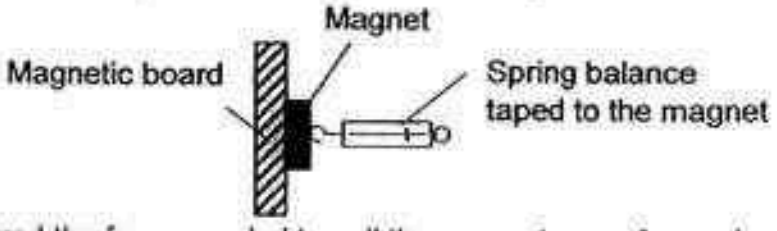
She lifted the ramp until the fabric started to slide down the ramp and recorded the height of the ramp in the table shown below.

Fabric	D	E	F	G
Height of ramp when fabric starts to slide (cm)	11	16	13	8

She wanted to place a bath mat in a bathroom for safety.
Based on her experiment, which fabric should she use to improve safety?

(1) D
(2) E
(3) F
(4) G

30. Yasmin has 4 magnets. She wanted to measure how much force is needed to pull each magnet away from the magnetic board. The diagram below shows her set-up. The spring balance is taped to the magnet.



She measured the force needed to pull the magnet away for each magnet and recorded her results in the table below.

Magnet	H	J	K	L
Force needed to pull the magnet away (units)	2	10	5	8

Which of the magnet is the strongest?

(1) H
(2) J
(3) K
(4) L

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PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATIONS

PRIMARY 6
SCIENCE
(BOOKLET B)

25 AUG 2016

Name: _____

Class: Resilience _____

Parent's Signature

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answers in this booklet.

Marks (Booklet A) :	/60
Marks (Booklet B) :	/40
Total Marks (Booklets A & B) :	/100

This booklet consists of 16 printed pages, excluding the cover page.

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For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question. (40 marks)

31. The table below shows the amount of available oxygen in the air at different heights above sea level.

Height above sea level (metres)	Amount of available oxygen in the air (%)
0	21
900	18
1800	16
2700	14
3600	13
4500	11
5400	10

a) Based on the information in the table, how does the height above sea level affect the amount of available oxygen in the air? [1]

_____

_____

b) As a person goes higher above the sea level, his heart beats faster. Based on the information given above, explain why this is so. [1]

_____

_____

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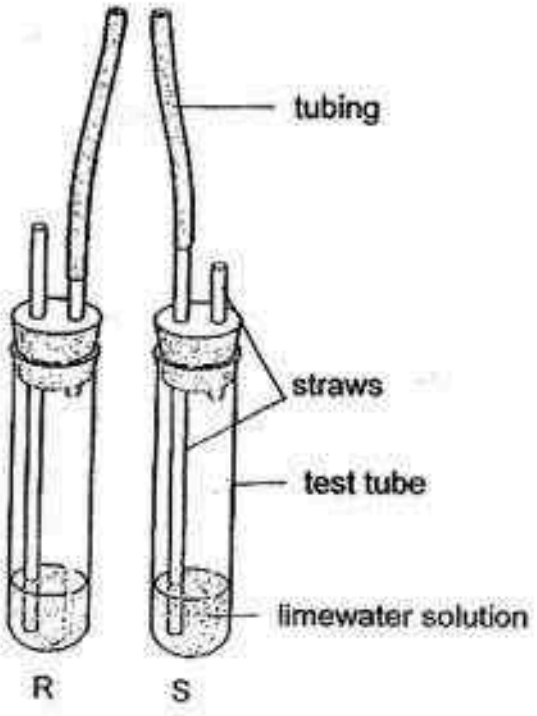
32. Tracy conducted an experiment using 2 similar sealed test tubes, R and S, containing same amounts of limewater solution as shown below.



She placed both ends of the tubings in her mouth and blew air into the tubings for about 15 seconds.

a) Explain why it is important to use the same thickness of the tubing for both set-ups for her experiment. [1]

_____

_____

b) She noticed that one of the limewater solution turned chalky faster. Which test tube, R or S, had the limewater solution turned chalky faster? Explain your answer. [1]

_____

_____

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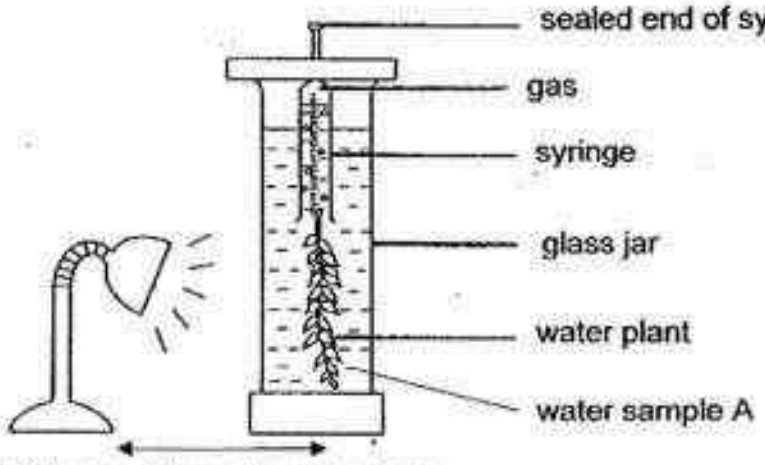
33. Rita wanted to find out how polluted water affects the growth of plants. She obtained 3 water samples, A, B and C and measured the amount of light that can pass through the water using a light sensor with a data logger. The results are recorded in the table below.

Water sample	A	B	C
Amount of light pass through (units)	80	50	120

She then placed similar water plants in similar containers containing water from the 3 different sources and shone a table lamp at 20 cm from the water plants. After 1 hour, she measured the amount of gas collected in the syringe.



(a) Based on the results from the first experiment, arrange in order the amount of gas collected in the syringe for the different water samples, starting from the least to the most. [1]

Least → Most

(b) Describe how Rita should conduct a control experiment to show that polluted water affects the growth of plants. [1]

(c) Explain how placing the experiment in a dark room helps to make the results of the experiment more accurate. [1]

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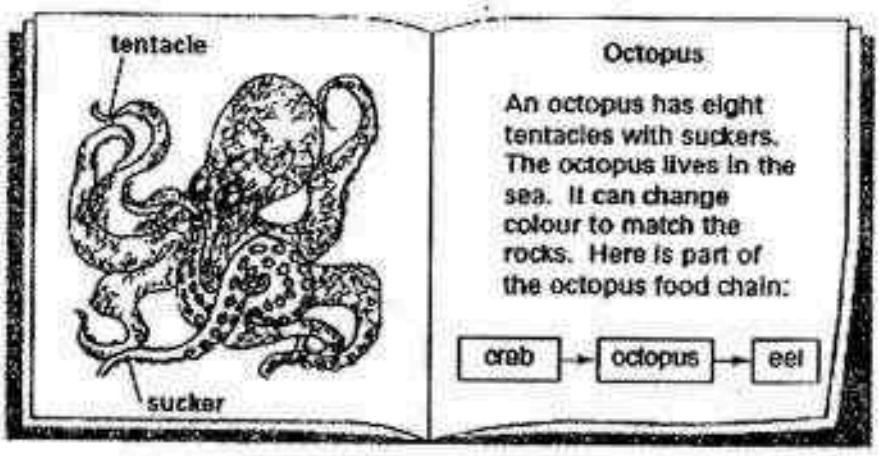
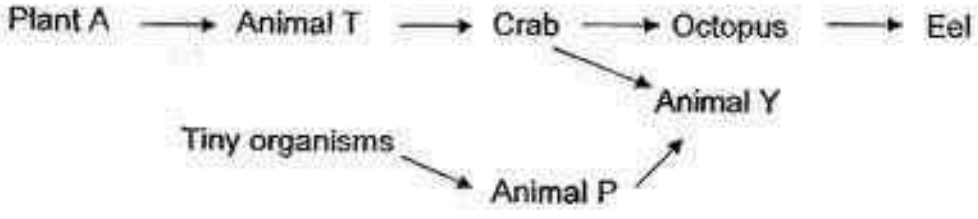
34. Below is the information found in a book on Octopus.



(a) Based on the information above, state 2 adaptations and explain how that the octopus uses these adaptations to capture prey. [2]

	Adaptation	How the octopus use the adaptation to capture prey
i)		
ii)		

(b) The crab, octopus and the eel forms part of a food web found in a particular part of the ocean.



A large number of octopus were caught by fishermen. The number of Animal Y remained the same.
How would the population of Animal T change? Explain your answer. [1]

_____

_____

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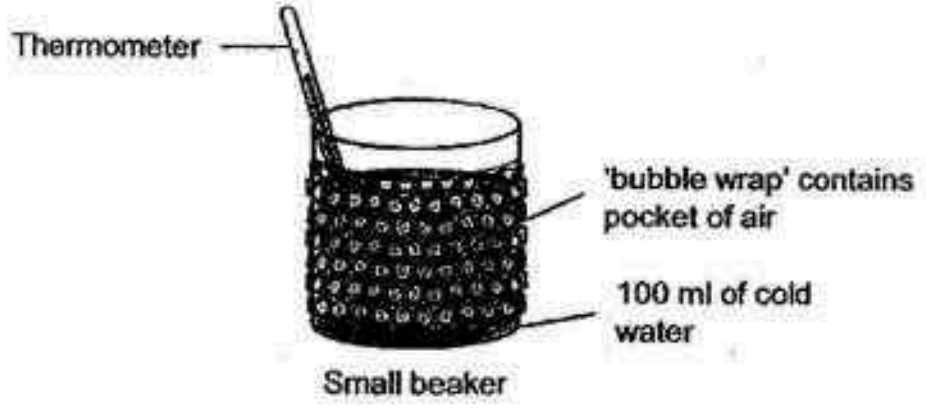
35. Judy wanted to find out how the material, 'bubble wrap', affects the temperature of cold water in the beaker. She set up the beaker as shown



(a) She needed to set up another beaker, with another bubble wrap. This time, she burst all the bubbles containing the pockets of air in the bubble wrap before using it to wrap the 2nd beaker. Put a tick (✓) to show which factors she should keep the same or change, to set up the second beaker. [1]

Factors	Change	Keep the same
Amount of water		
Material of beaker		
Temperature of water		
Size of beaker		

Question 35 continues on page 6

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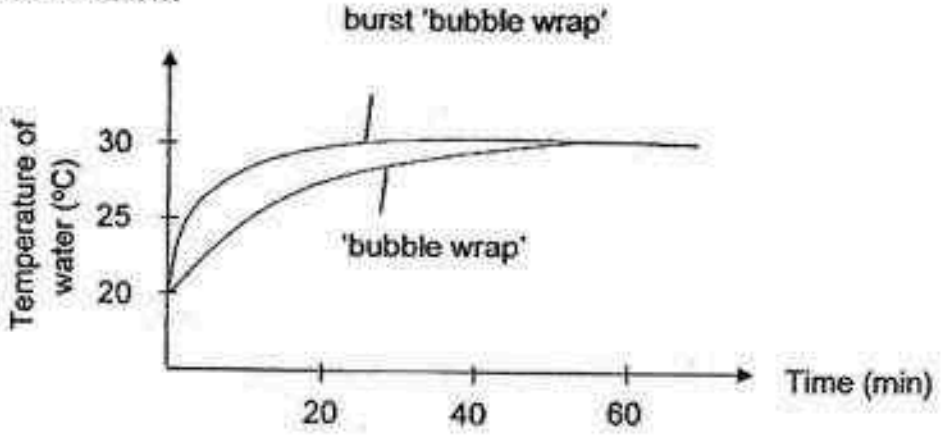
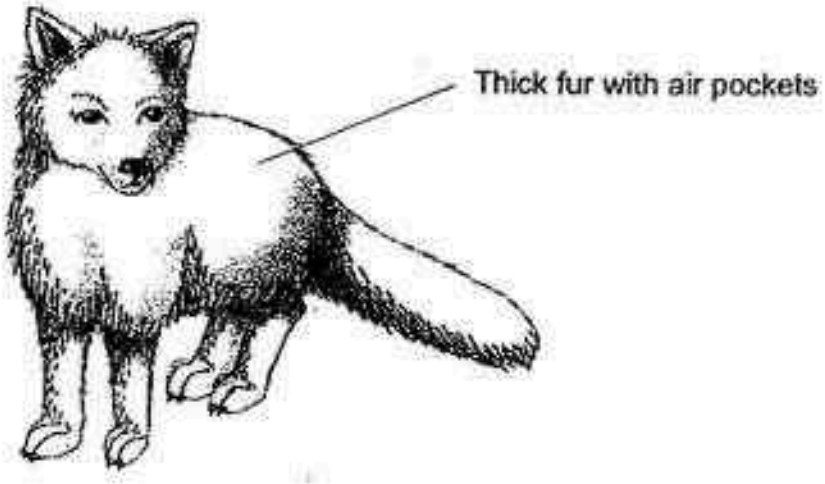
(b) Judy recorded the temperature of the water over time in the graph shown below.



Based on Judy's results, what can she conclude about the pockets of air in the bubble wrap? Explain your answer. [1]

(c) An animal that lives in a very cold place most of the year has thick fur as its body covering.



Based on the results of Judy's experiment, explain how the air pockets in the thick fur keep the animal warm in the cold habitat. [1]

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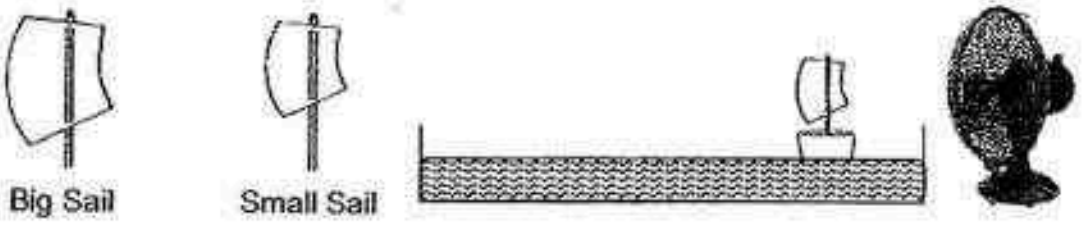
36. Micah made 2 sails for his boats out of paper. He used a fan to blow the boats in a big tub of water.



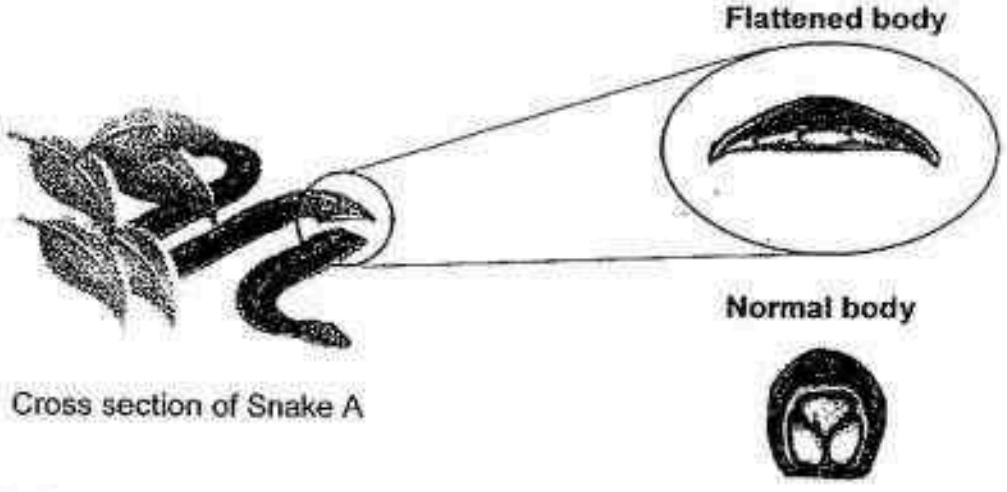
He realised that the big sail made his boat go faster.

(a) Explain, in terms of force, why the big sail made his boat go faster. [1]

_____

_____

Snake A can "fly" from one place to another by flattening its body.



Cross section of Snake A

(b) Based on Micah's experiment, explain how the flattened body help Snake A move from tree to tree in the forest. [1]

_____

_____

(c) State another advantage of having such adaptation for Snake A to move in forests. [1]

_____

_____

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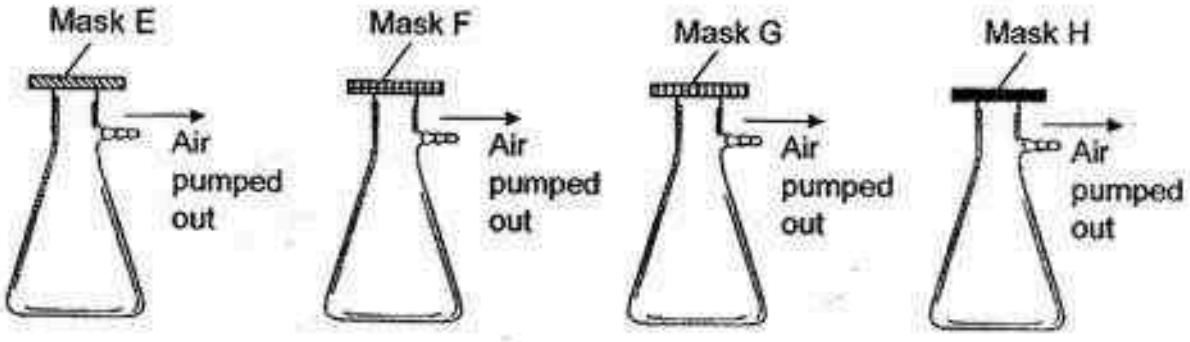
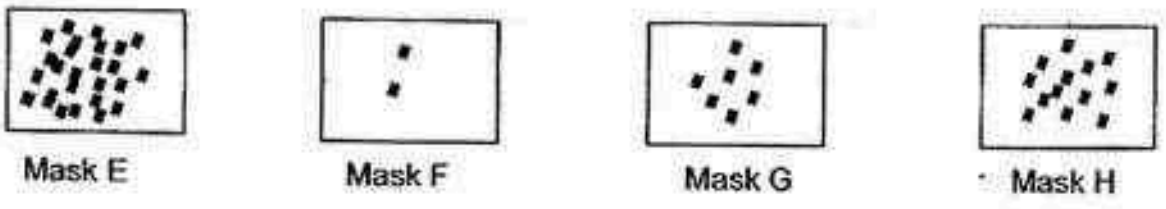
37. Deforestation by burning the trees causes haze that is hazardous to human health. Siti wanted to find out which type of masks can protect the human respiratory system best. She set up the following experiment using 4 types of masks and similar flasks.



She placed the 4 flasks outdoors during the haze period and pumped out air from each of the flasks for 30 minutes. She then removed the masks and observed the amount of particles on each of the masks. She drew her observations shown below.



(a) Based on Siti's experiment, which mask should she use to protect herself from the particles in the haze? Give a reason for your answer. [1]

_____

_____

(b) Explain how placing the 4 flasks outdoors during non-hazy days as compared to hazy days would make the results less accurate. [1]

_____

_____

Question 37 continues on page 9

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(c) Deforestation causes other negative effects on the environment other than air pollution. State 2 other effects of deforestation and explain how deforestation caused these. [2]

	Effects of deforestation	How deforestation caused this effect
(i)		
(ii)		

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38. Muthu wanted to make a steel rod into a temporary magnet using electricity. He found the following items in the laboratory:

- 1 Coiled wire
- 2 Batteries
- Some wires
- 1 Light bulb
- 1 Steel rod

a) He wanted to make sure that electricity was flowing through the circuit when making the temporary magnet.

Using only the above items, complete the diagram below, using **electrical symbols**, to show how Muthu should set up the items. The coiled wire has been drawn for you. [1]



Coiled wire

b) Muthu made another temporary magnet using the same method but this time he used a thicker steel rod. Describe what he should do to find out which magnet was stronger. [2]

_____

_____

_____

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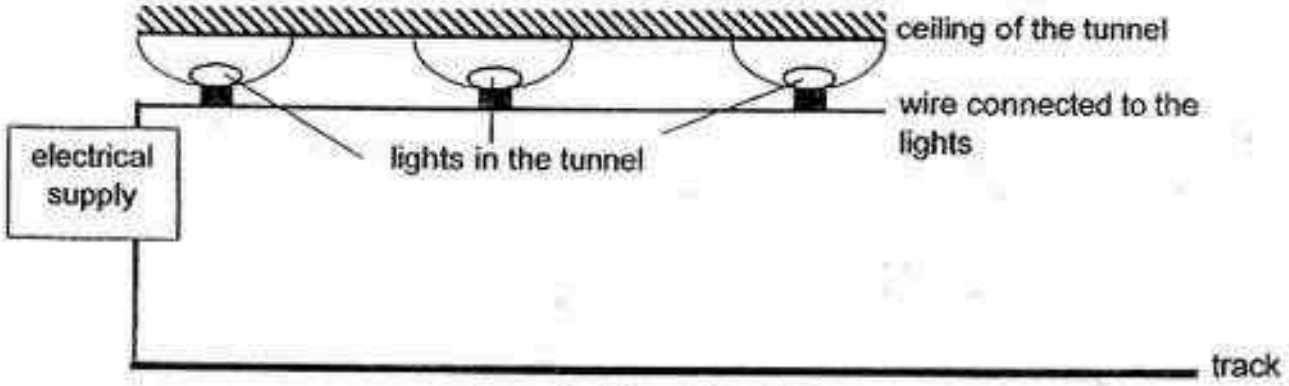
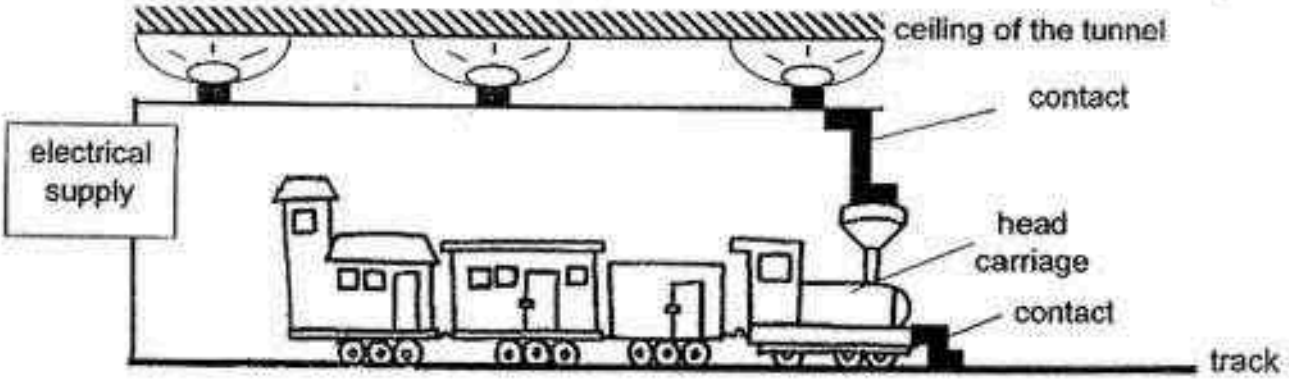
39. Karen has a battery-operated toy train system. The lights in the ceiling of the tunnel will only light up when the train goes into the tunnel. The lights will then go off when the head carriage leaves the tunnel.



Tunnel without the train



Tunnel with the train

The contacts are attached to the head carriage of the train and they can move along the ceiling and the track.

a) Explain how the lights in the tunnel turn on when the train is at the position as shown in the picture [1]

_____

_____

b) Karen realised that when the head carriage left the tunnel, the lights went out. She wanted to have the lights in the tunnel to be lit until the last carriage leaves the tunnel.
Draw and label 2 contact lines on the train diagram above, to show where Karen should put 2 more contacts so that the lights in the tunnel will light up until the last carriage leaves. [1]

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40. Ginny has 3 similar looking plates, Plates F, G and H. She wanted to find out which plate is the best conductor of heat. She only has 6 ice cubes and the 3 plates.



Plate F



Plate G

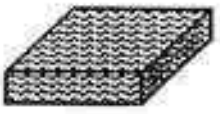
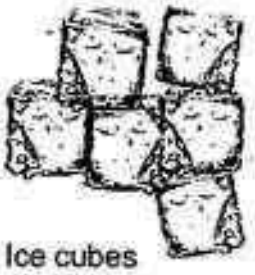


Plate H



Ice cubes

(a) Using only the materials given above, describe how she can find out which plate is the best conductor. [2]

(b) After the experiment, she realised that the plate that is the best conductor of heat also felt the coldest when she touched it. Explain why the plate felt the coldest. [1]

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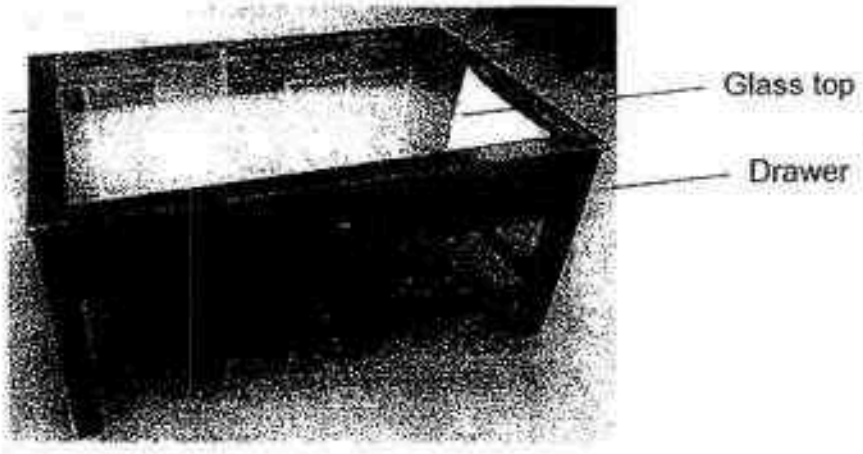
41. Collin has a coffee table with a drawer and a glass top as shown below.



Every time he placed a bottle of cold drink on the glass top, he noticed that water droplets were formed on the inner surface of the glass top, right where he had left the bottle of cold drink.

a) Explain how the water droplets were formed. [2]

b) He did not want to have the water droplets form on the inner surface of the glass top. So, he put some Substance S in the drawer. After he had done so, no more water droplets were formed even when he placed bottles of cold drink on it.
Based on Collin's observation, state the function of Substance S. [1]

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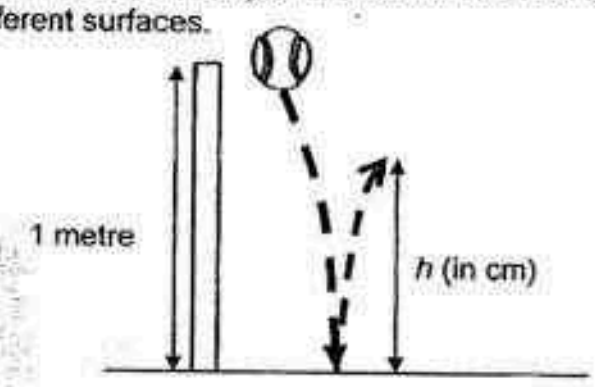
42. Some children conducted an experiment to find out how high a tennis ball bounce on different surfaces.



They dropped a tennis ball from a height of 1 metre each time and measured how high the ball bounced on the different surface. They recorded their results in the table below:

Surface	Grass	Concrete	Clay	Carpet
Height the ball bounced, h (cm)	40	61	47	35

(a) Why did the children drop the ball from the same height each time? [1]

_____

_____

The children then conducted a second experiment. They recorded the height the same ball bounced when dropped from different heights onto the same surface.

Height the ball was dropped (cm)	50	100	150	200
Height the ball bounced (cm)	32	63	88	120

9/95

(b) Using the results from the 2 experiments, suggest which surface, ~~glass~~, concrete, clay or carpet, the children used for their second experiment. [1]

_____

(c) What is the relationship between the height the ball was dropped and the height of the ball bounced? [1]

_____

_____

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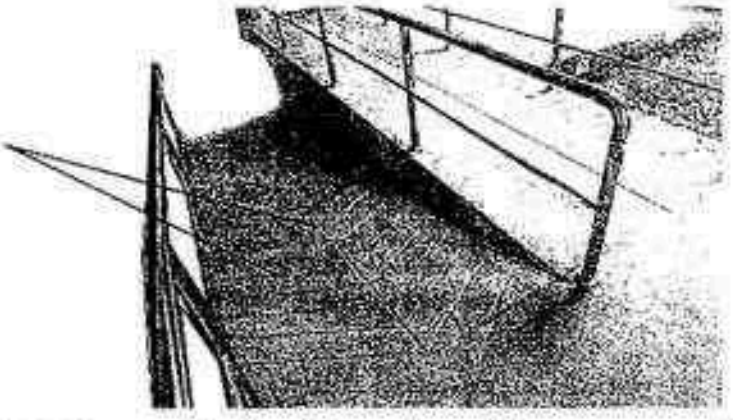
43. Ali stood at the top of a ramp for wheelchairs. He noticed that the surface of the ramp had grooves as shown in the diagram below.



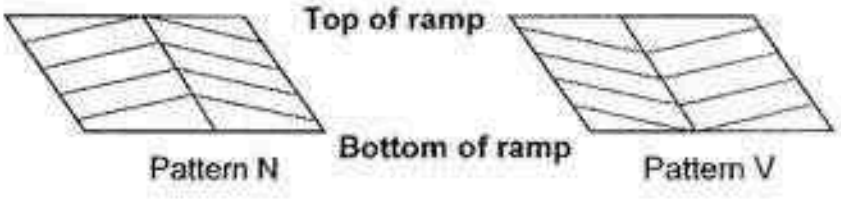
He also noticed that whenever it rains, the water on the ramp runs off along these grooves on the ramp.

a) Explain how this make the ramp safer for the people with wheelchairs during rainy days. [1]

_____

_____

b) There are two pattern designs for the ramps, Pattern N and Pattern V, as shown below.



Why is Pattern N a better design than Pattern V for people with wheelchairs using the ramp on rainy days? [1]

_____

_____

c) Other than allowing water to drain off faster on the surface of the ramp, explain why it is necessary to have grooves on the ramp, especially on very hot days. [1]

_____

_____

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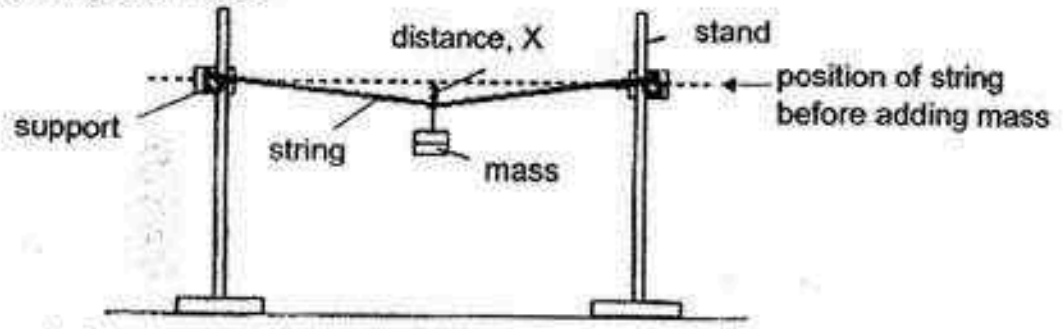
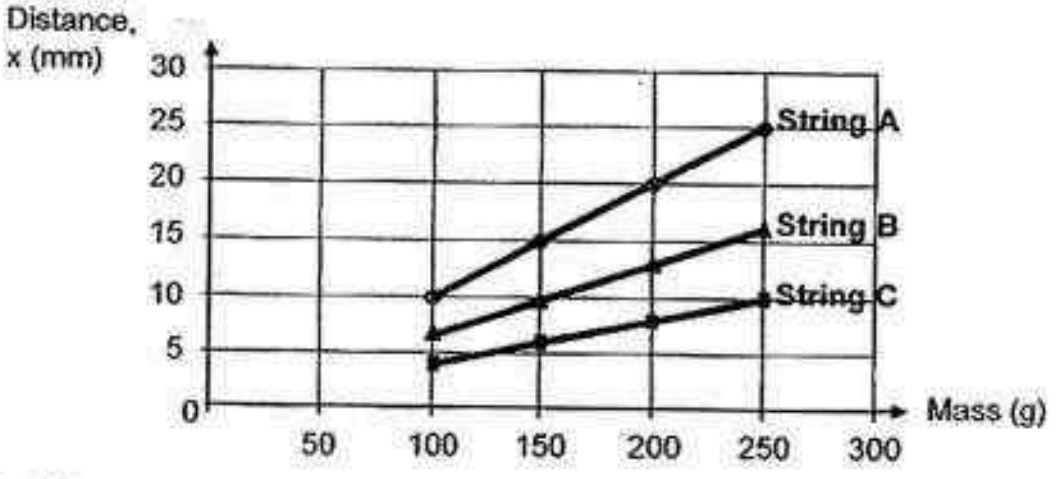
44. Yuhao carried out an experiment to find out a property of 3 strings, Strings A, B and C, which are made of different materials. For each string, he used the set-up shown below. He measured the distance, X, at the middle of the string after adding each mass.



He repeated the experiment using Strings B and C and recorded his results shown below.



(a) What was the distance, X, for String A before any mass was added? [1]

_____

(b) In order for Yuhao to conduct a fair test, state two variables of the strings he has to fix for the experiment. [1]

_____

(c) Based on the results of Yuhao's experiment, what can he conclude about how distance, X, changes with the mass in string A compared to that in string C? [1]

_____

_____

End of paper

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SCHOOL : PEI HWA PREBYTERIAN PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : Preliminary Examination

CONTACT :

BOOKLET A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	2	3	1	4	1	1	2	3	3

Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	3	1	4	3	3	2	4	3	1

Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	1	3	3	3	1	1	4	2	2

BOOKLET B

31 a) The higher the height above sea level, the lesser the amount of available oxygen in the air.

b) The heart needs to beat faster to deliver more blood so more/enough oxygen is given to the body.

32 a) So that the same amount of air can go in in a breath.

b) As the exhaled air rich in carbon dioxide enter the lime water, turning limewater chalky faster, but R will not directly enter the limewater.

33 a) B A C

b) She should use clear water with the light placed 20 cm away from the setup and measure the amount of gas collected in the syringe after one hour.

c) It ensures that the only light source for the plants to produce gas is from the lamp.

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34 a) i) It changes colour to match rocks

Prey cannot see the octopus

ii) It has suckers

Prey that are caught cannot escape.

b) It will decrease with less octopus to eat crabs. With less octopus to eat crabs, crabs will increase and eat more of animal T.

35 a) All 'keep the same'

b) The pocket of air is a poor conductor of heat and so conducting heat slower from the surrounding to the water.

c) The pocket of air is a poor conductor of heat and slows down heat transfer from the animal to the surrounding.

36 a) Big sail has more surface area to trap more air, creating a greater push force to move the boat forward faster.

b) The body makes the snake to glide in the air for a longer time.

c) Avoiding predators from the ground.

37 a) E. E traps the most haze particles and protects her lungs.

b) On non hazy days, there are less haze particles in the air, so no results can be collected.

c) i) Global warming. There are less trees to absorb carbon dioxide in the atmosphere, so global warming occurs.

ii) More land slides. There are less trees to hold the soil in place, so the soil get washed away when rain comes.

iii) Loss of habitats. There are less trees, resulting in less food, homes/shelters.

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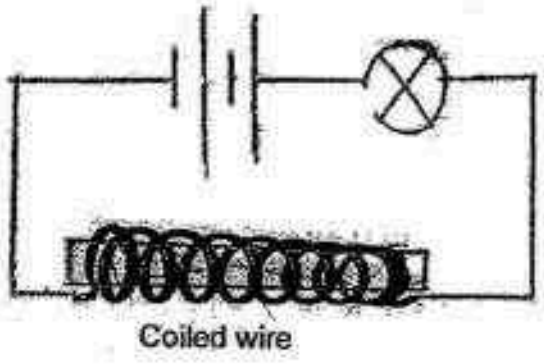
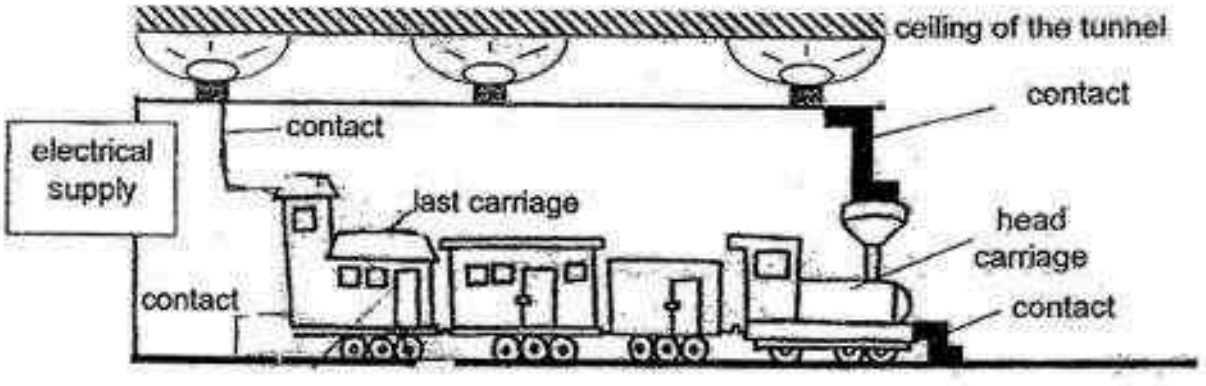
38 a)



b) Put the 2 magnets the same distance away from some magnetic materials. The magnet which attracted more magnetic material is a stronger magnet.

39 a) The contacts allow electricity to flow, closing the circuit and electricity flows through the lights.

b)



Tunnel with the train

40 a) She can put 2 ice cubes in each plate and put them in the same location, and find out which ice cube in the plate melts the fastest. The one that melts the fastest is the best conductor of heat.

b) Heat was conducted away from her hand the fastest causing it to feel the coldest.

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41 a) The cold drinks make the surface of the glass cold so water vapour in the drawer condensed on the cooler surface of the glass, causing water droplets to form.

b) It absorbs water vapour.

42 a) It ensures that gravitational potential energy is the same.

b) Concrete

c) The higher the height the ball was dropped, the higher the ball bounced.

43 a) There will be less water on the ramp, increasing friction and making it safer.

b) Water will flow down the sides allowing more water to flow off, making it less slippery.

c) So that the ramp can expand and will not crack.

44 a) 0mm

b) The string should be of the same thickness and length.

c) String A stretched more that String C on the same mass.

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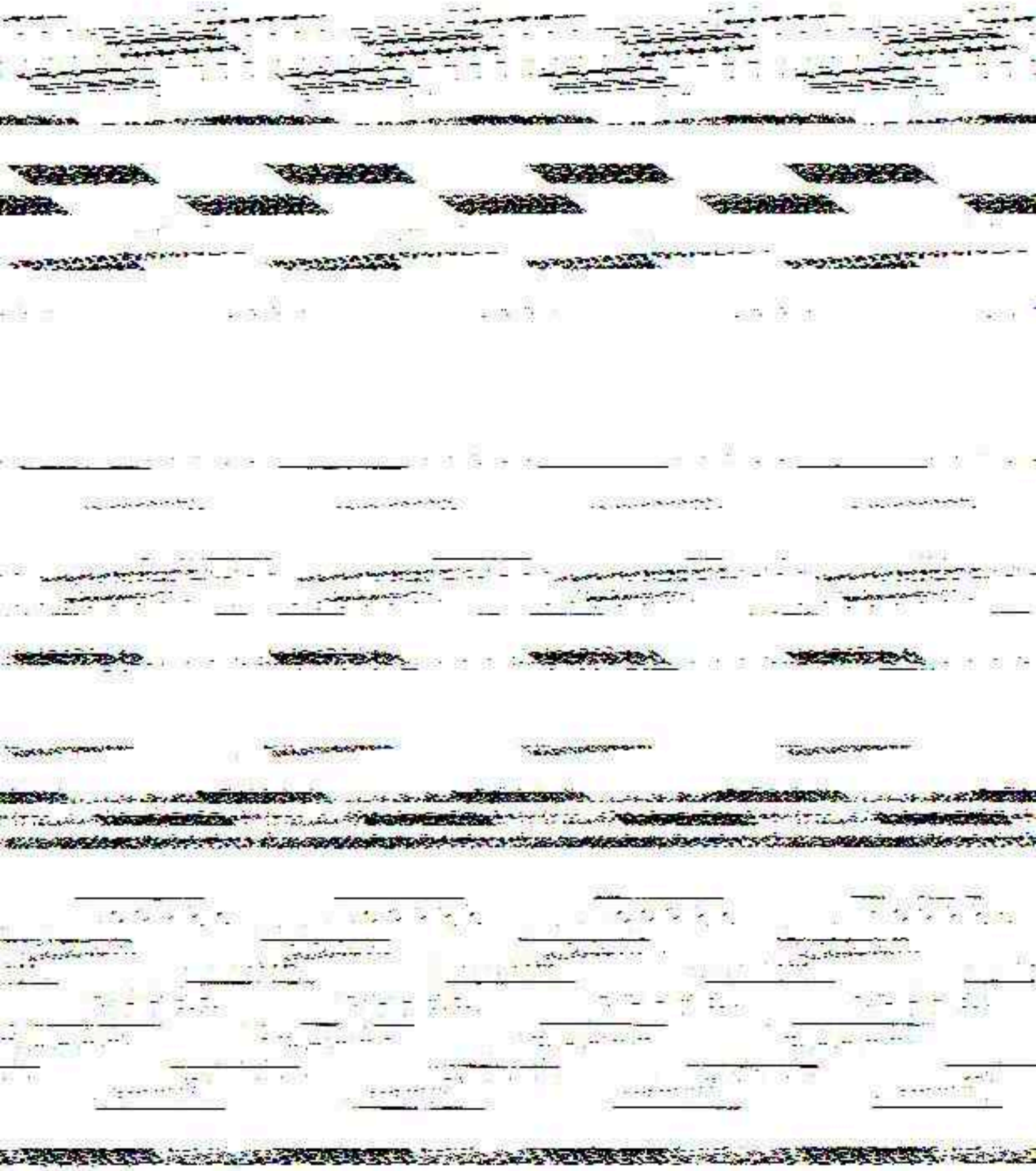

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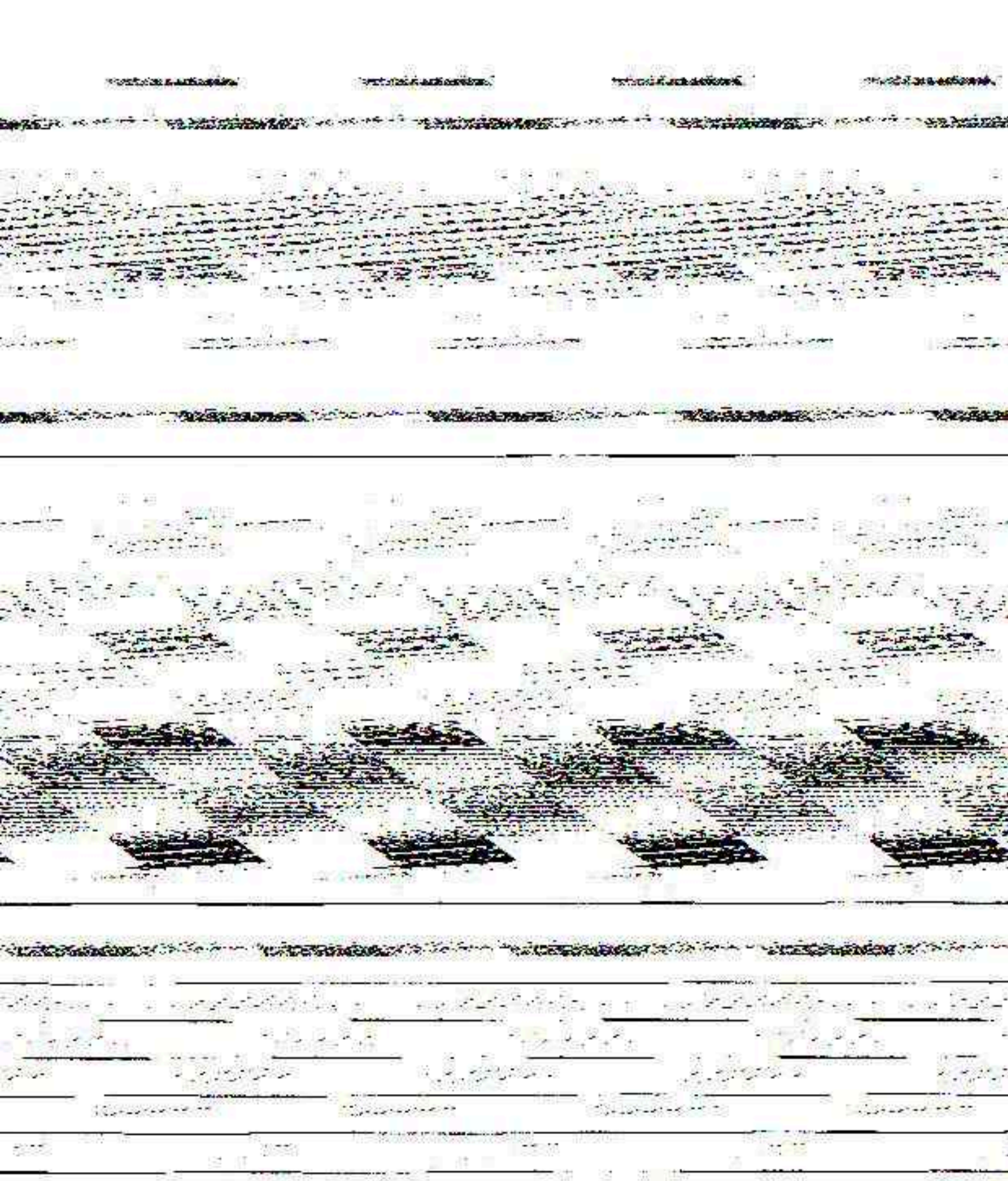

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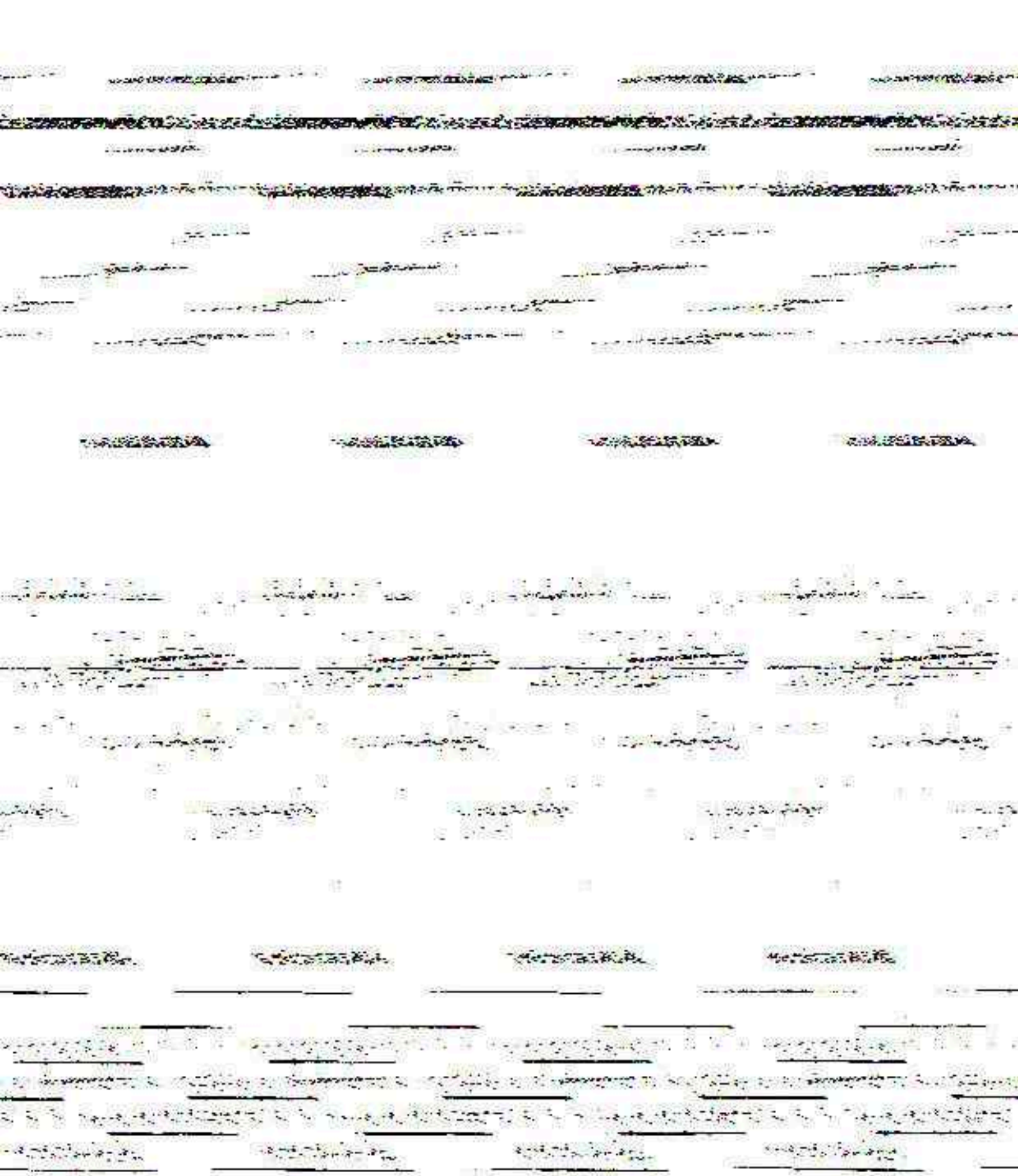

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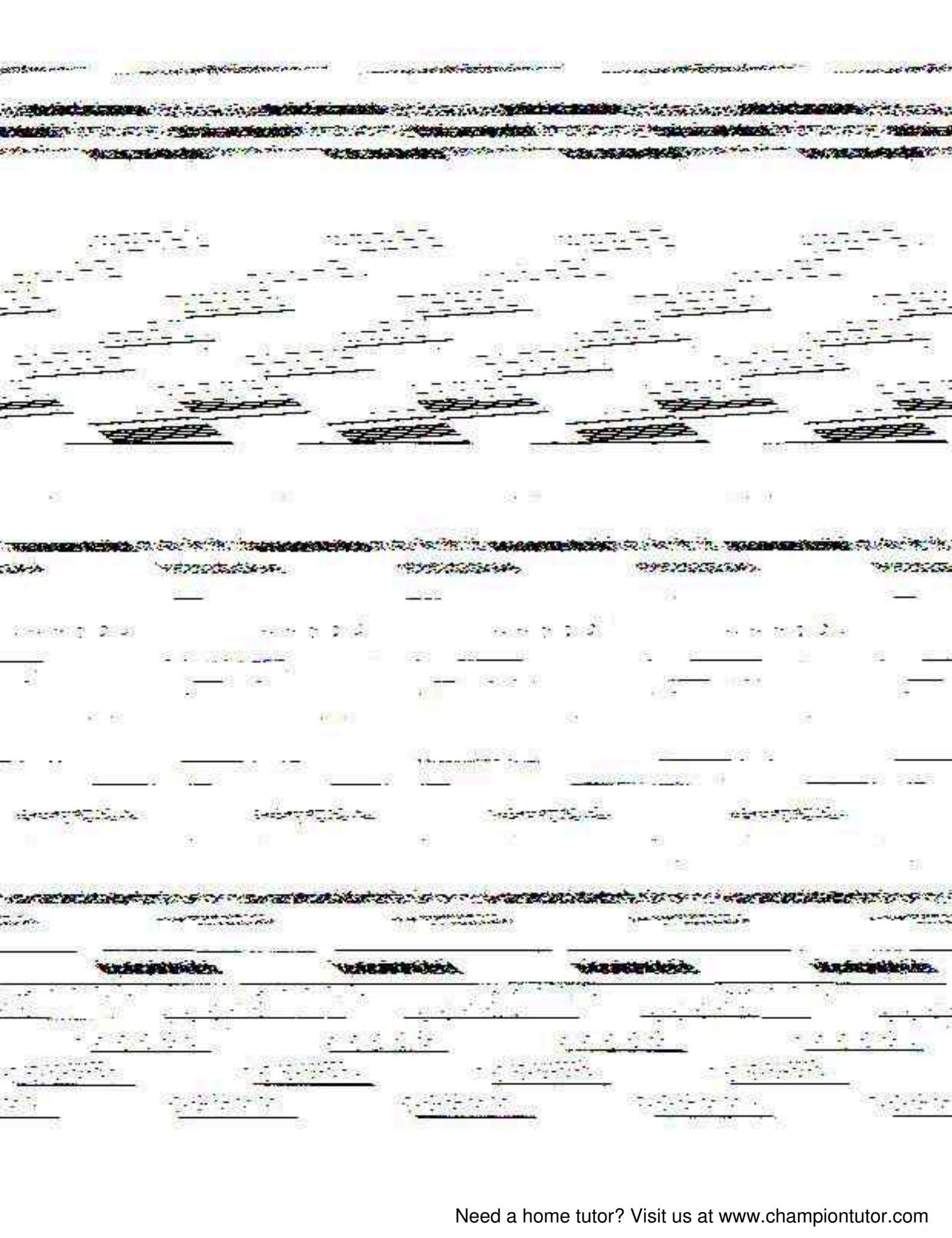

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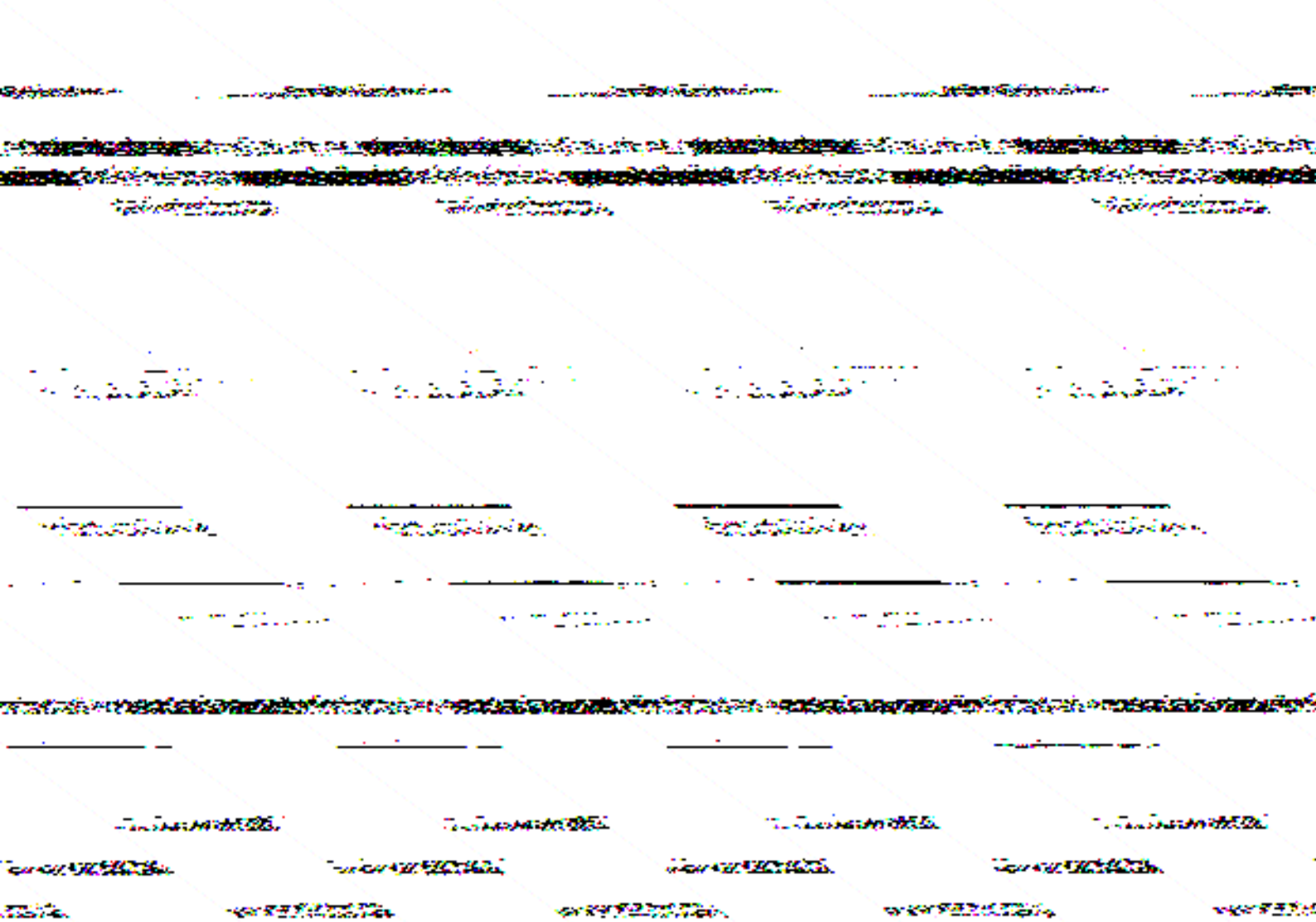

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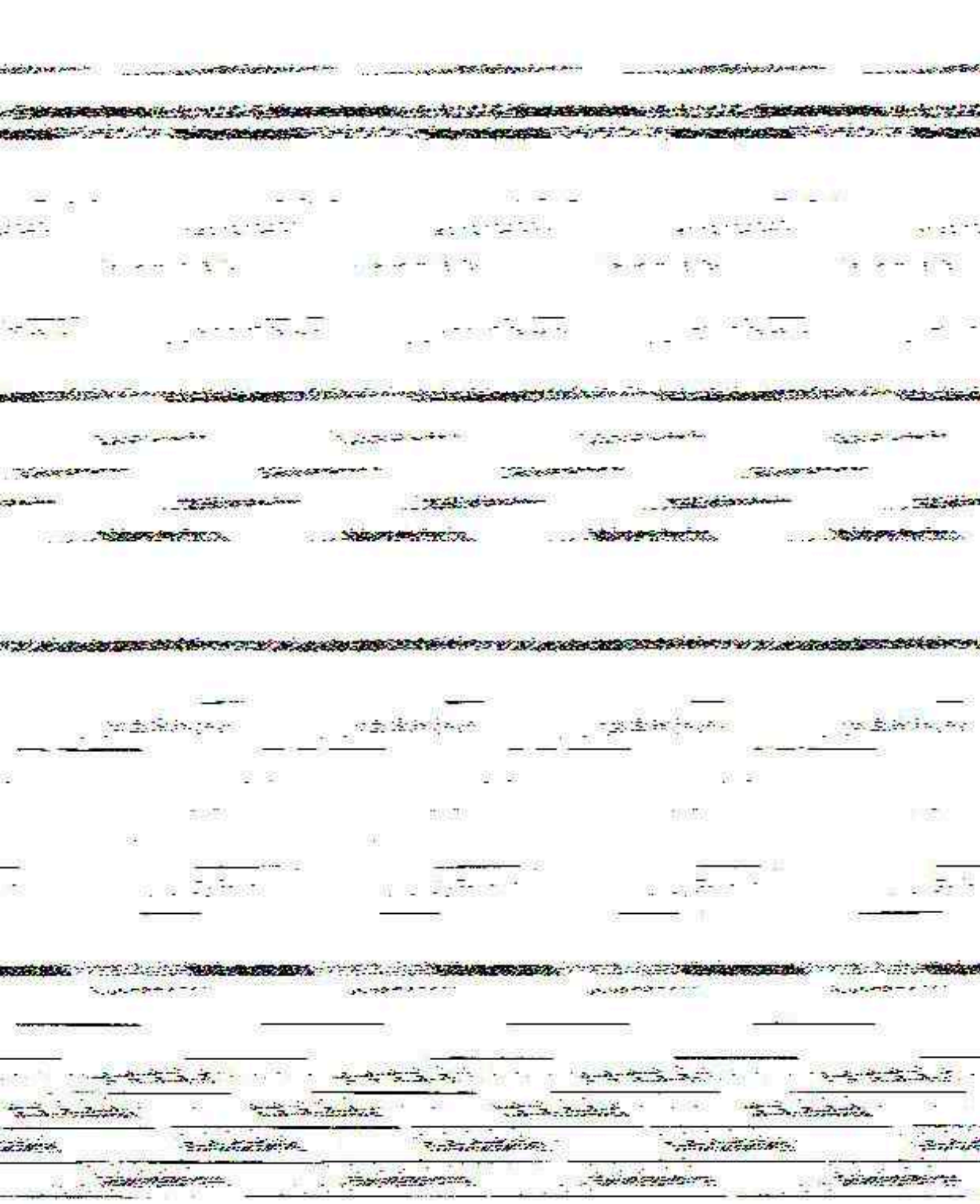

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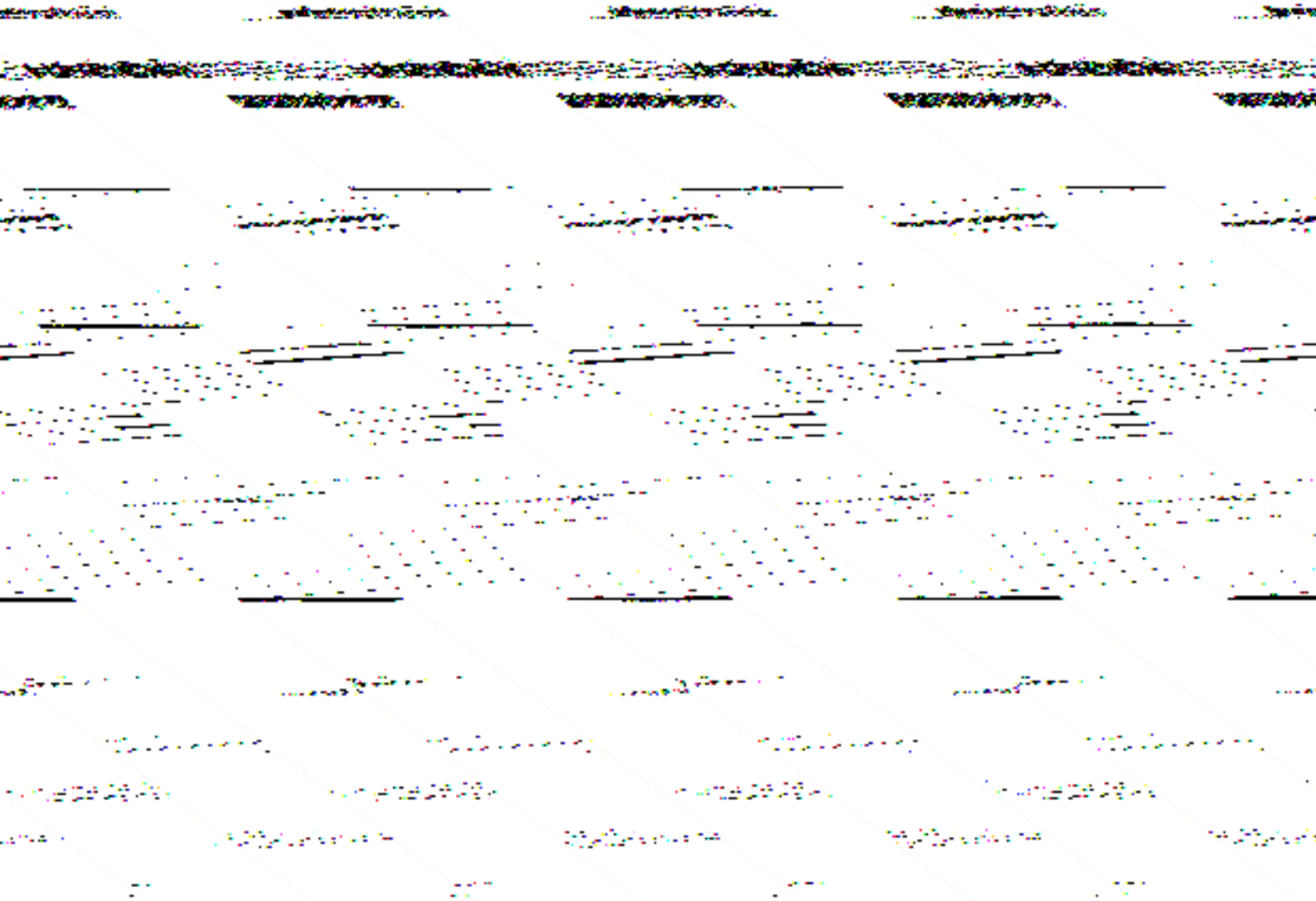

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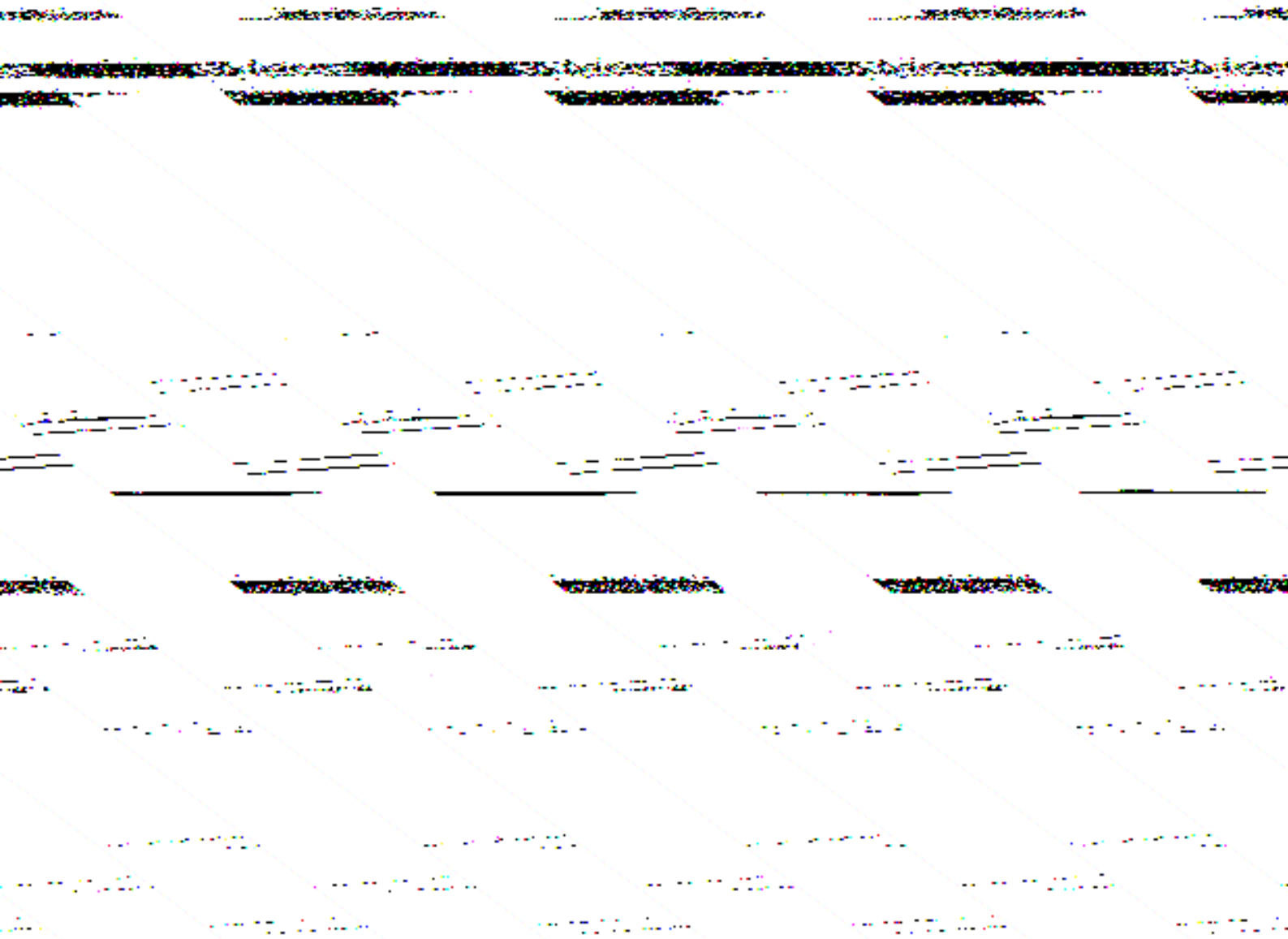

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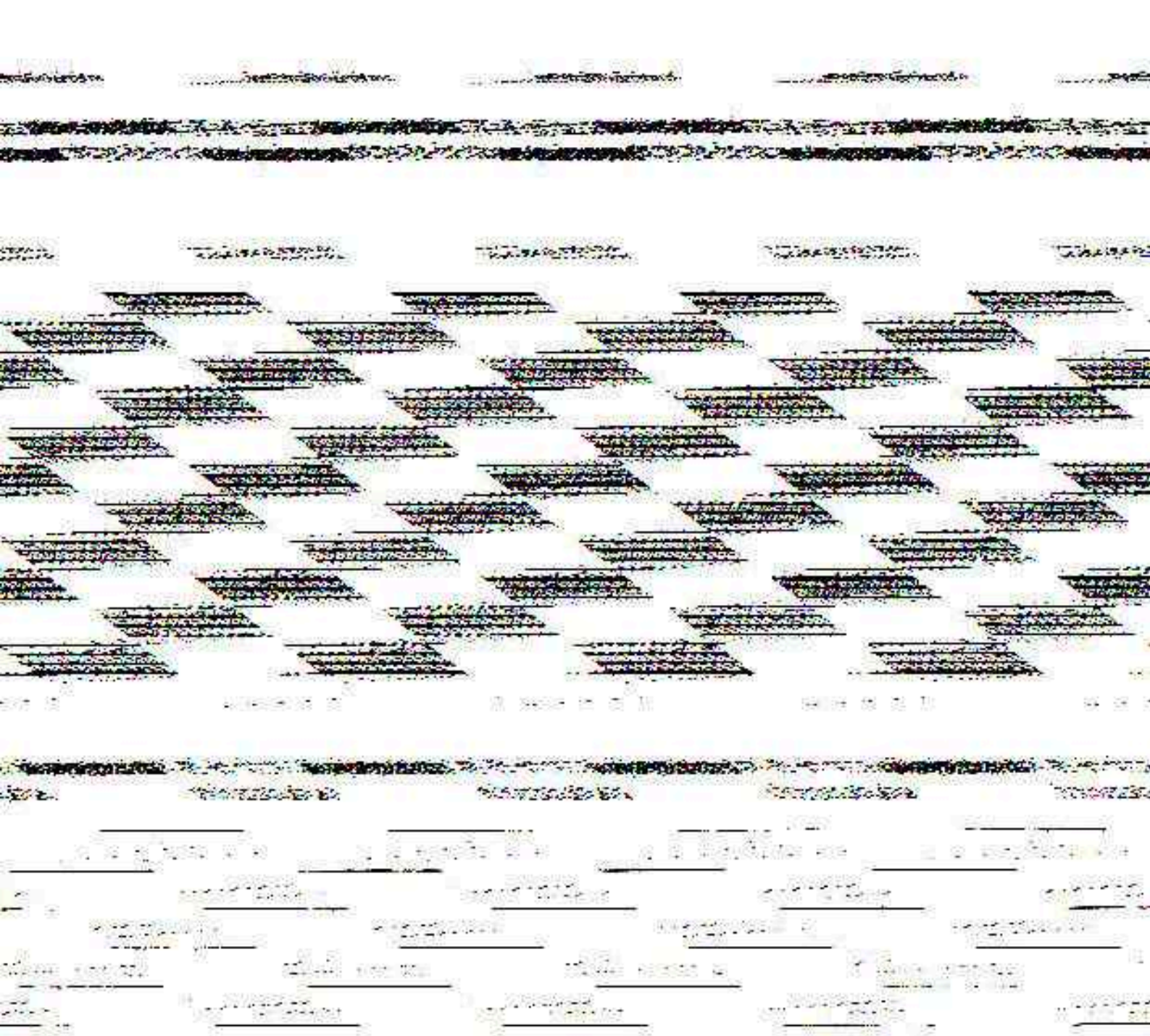

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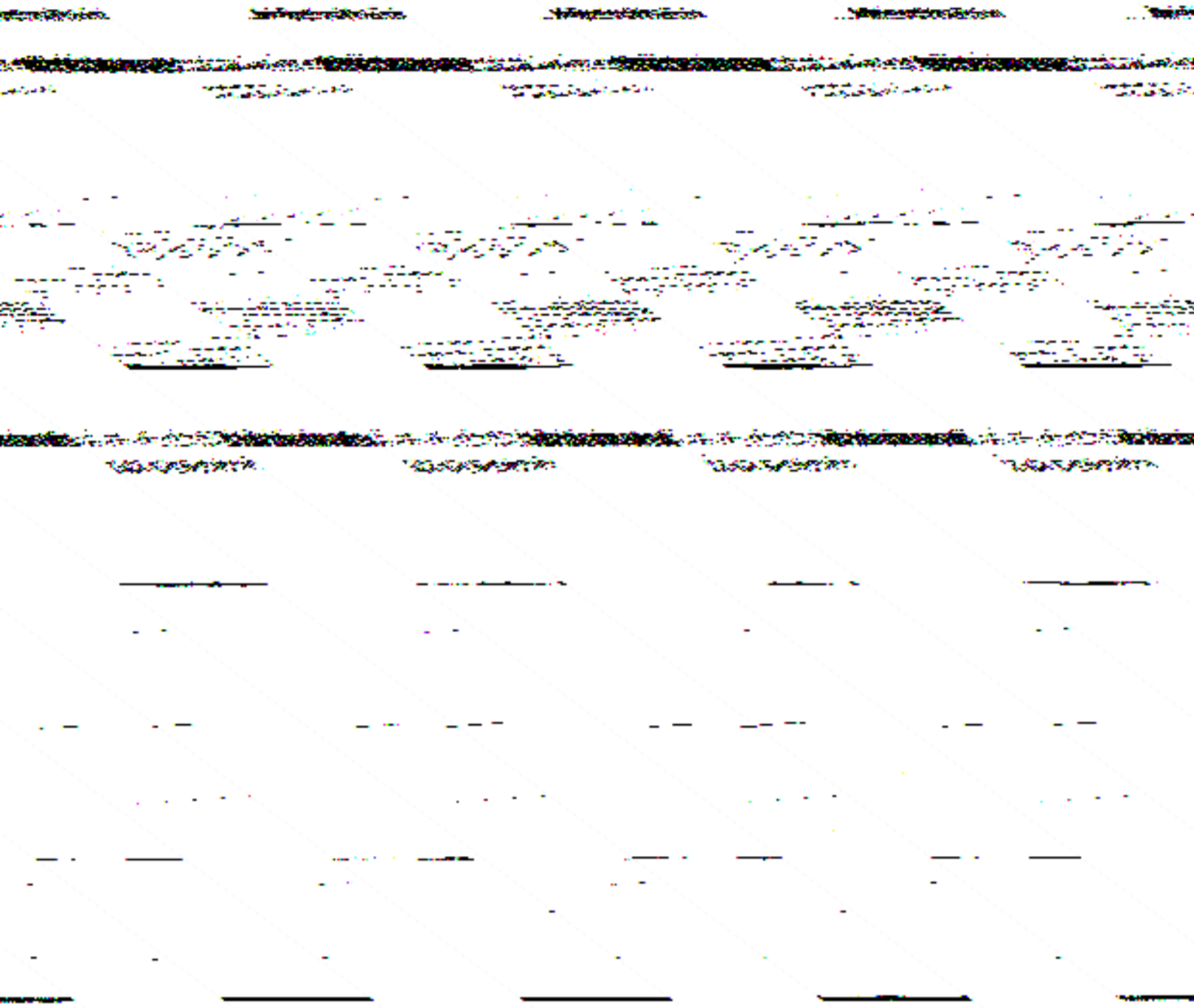

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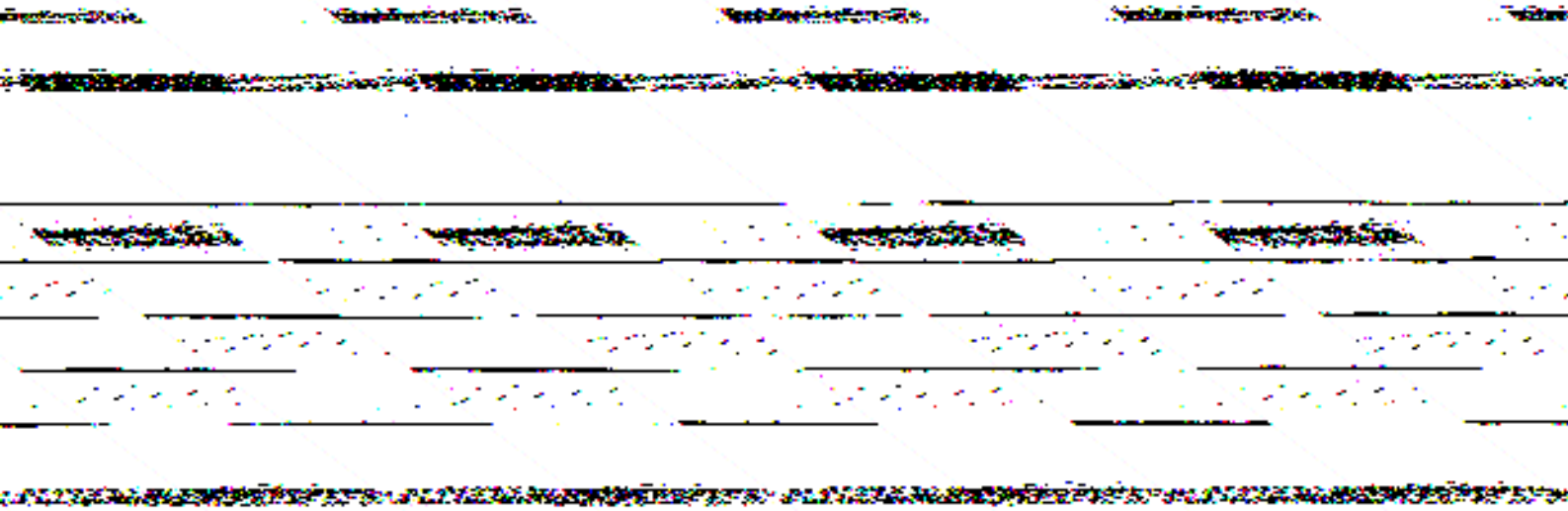

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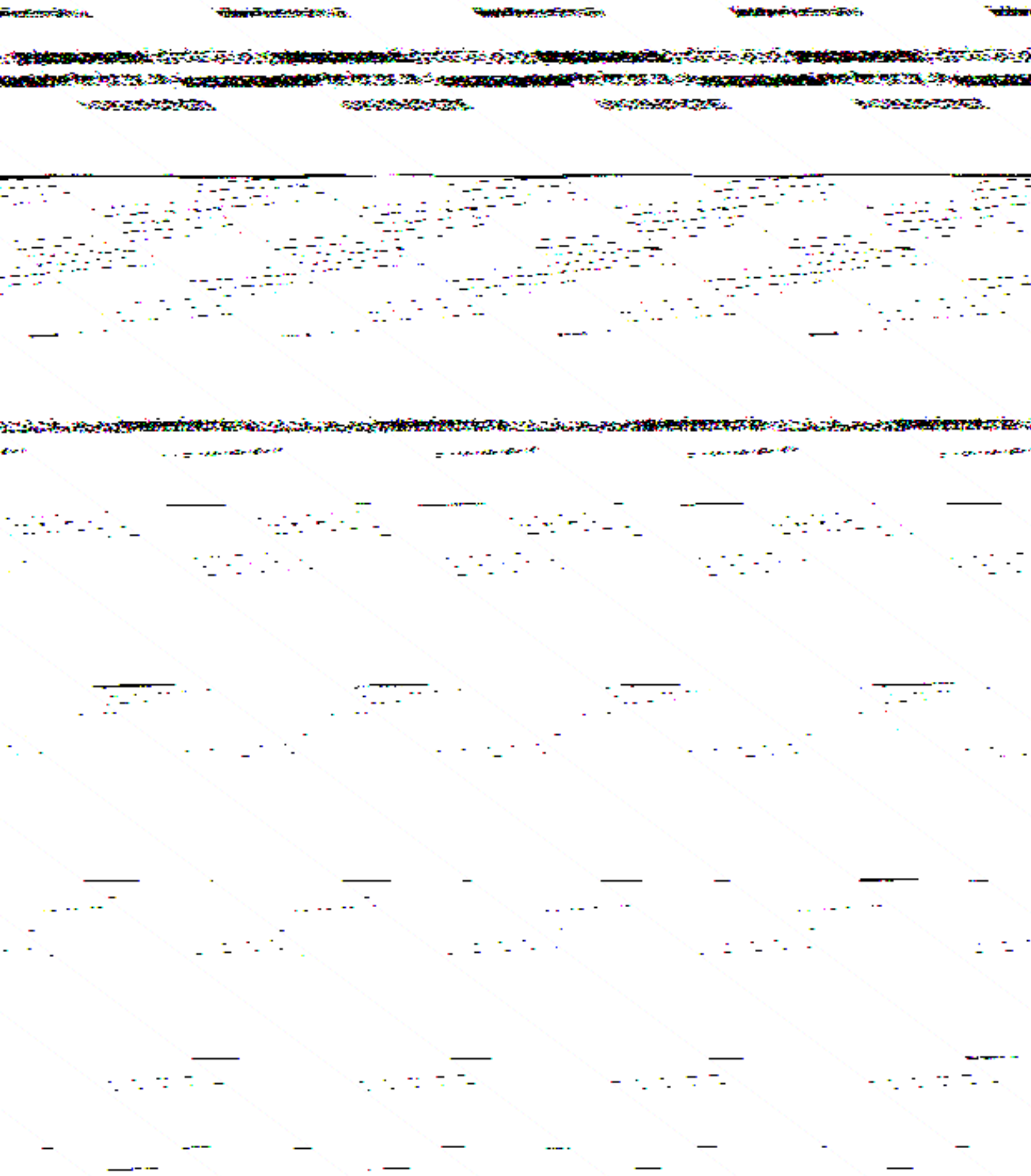

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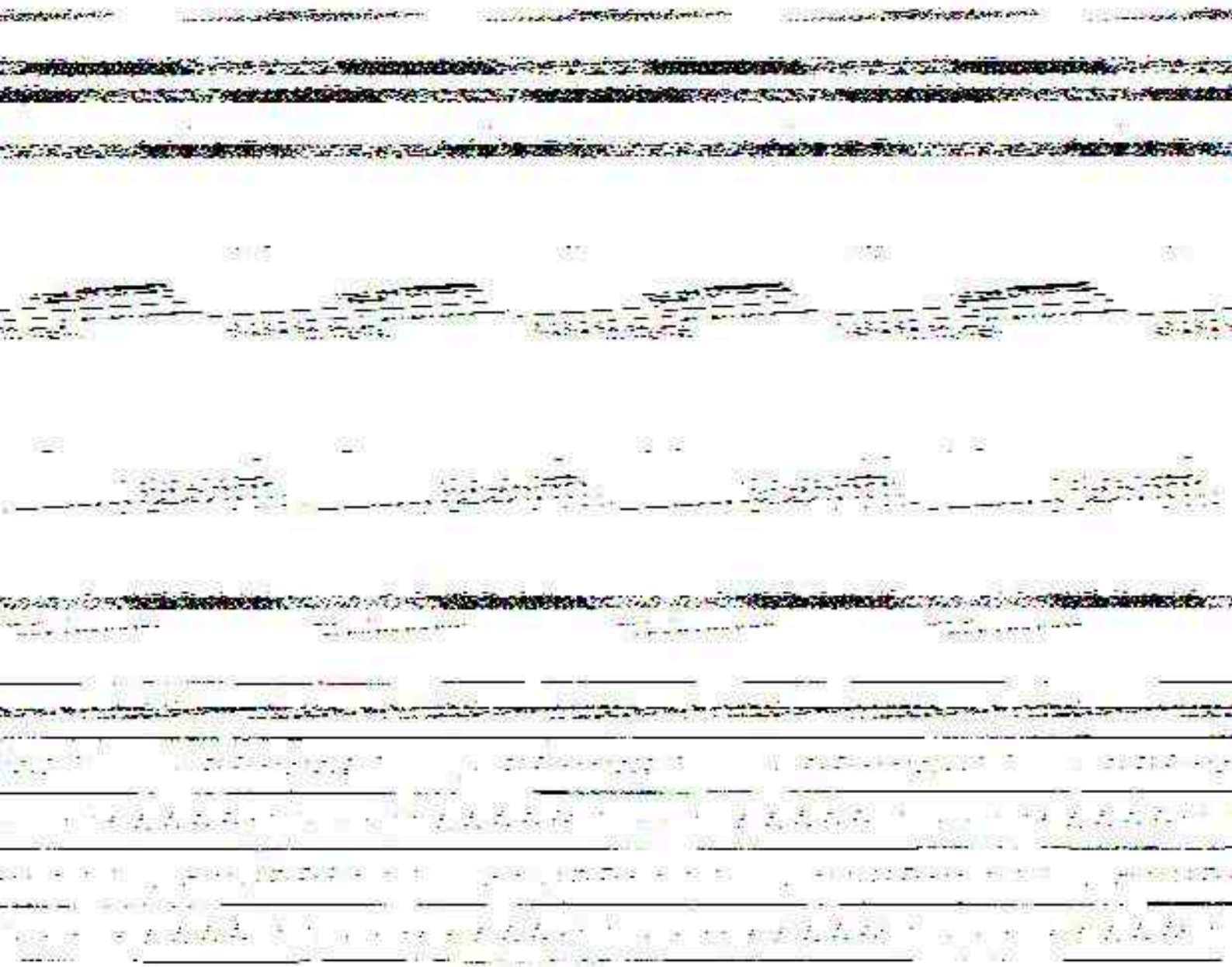

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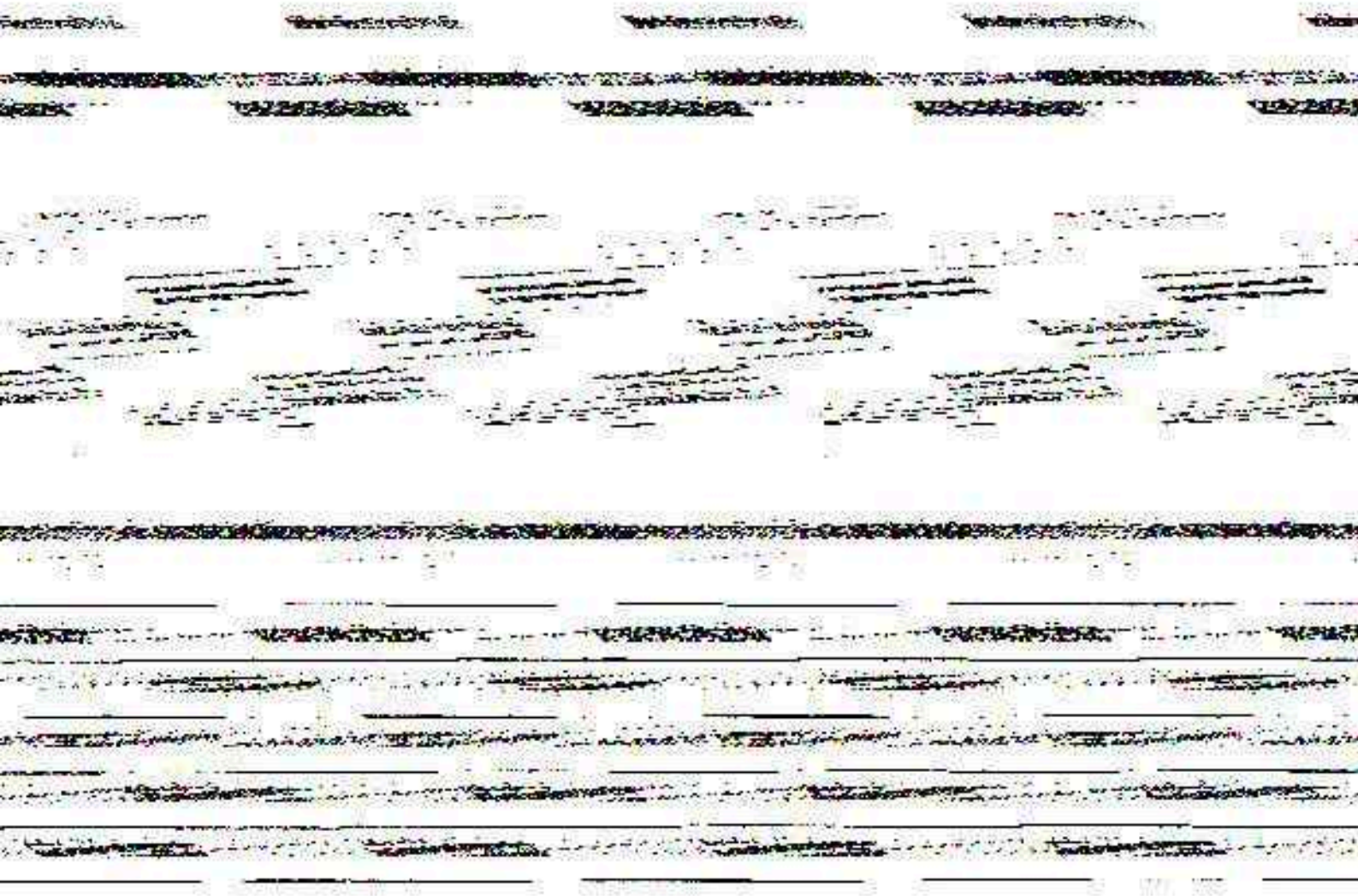

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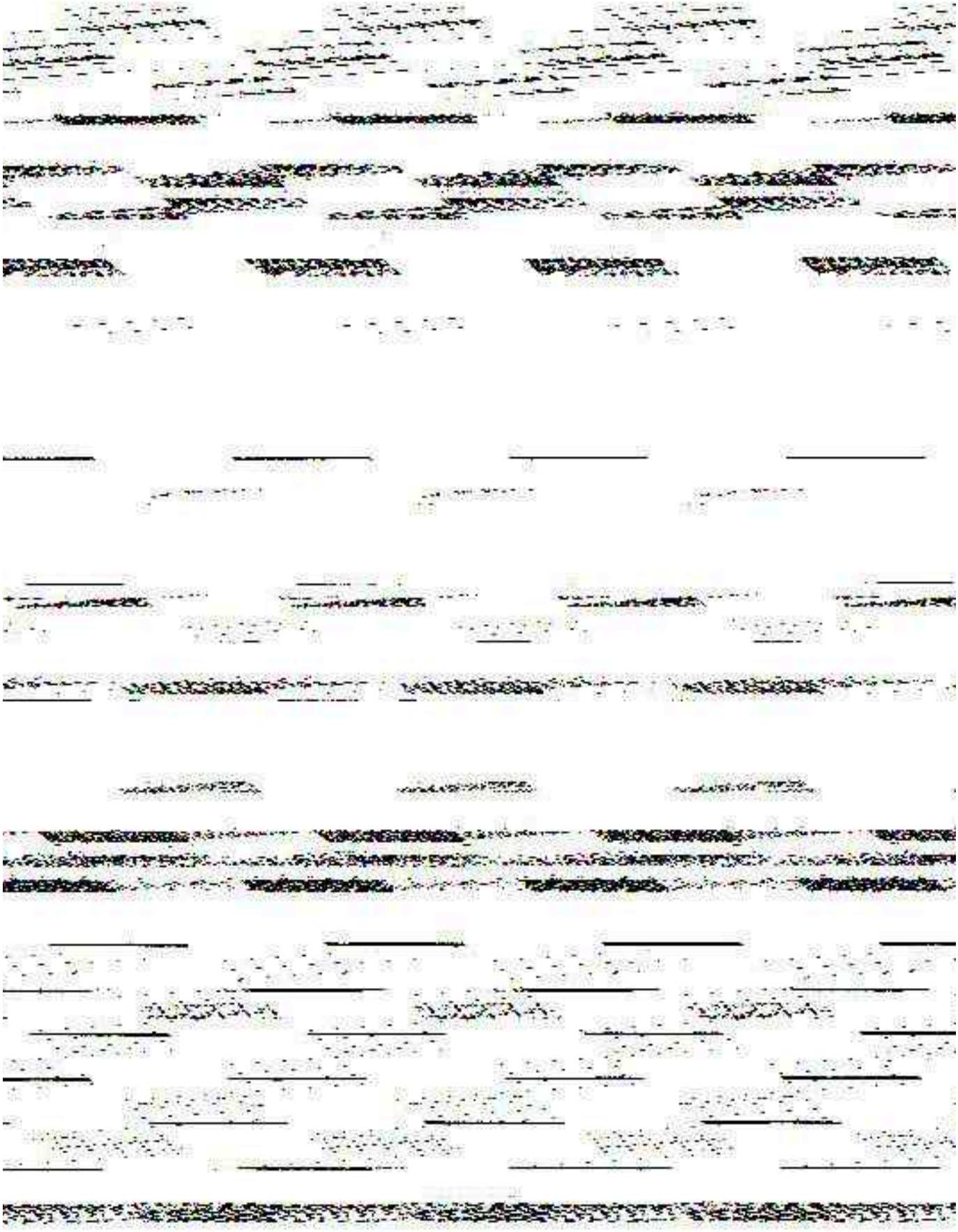

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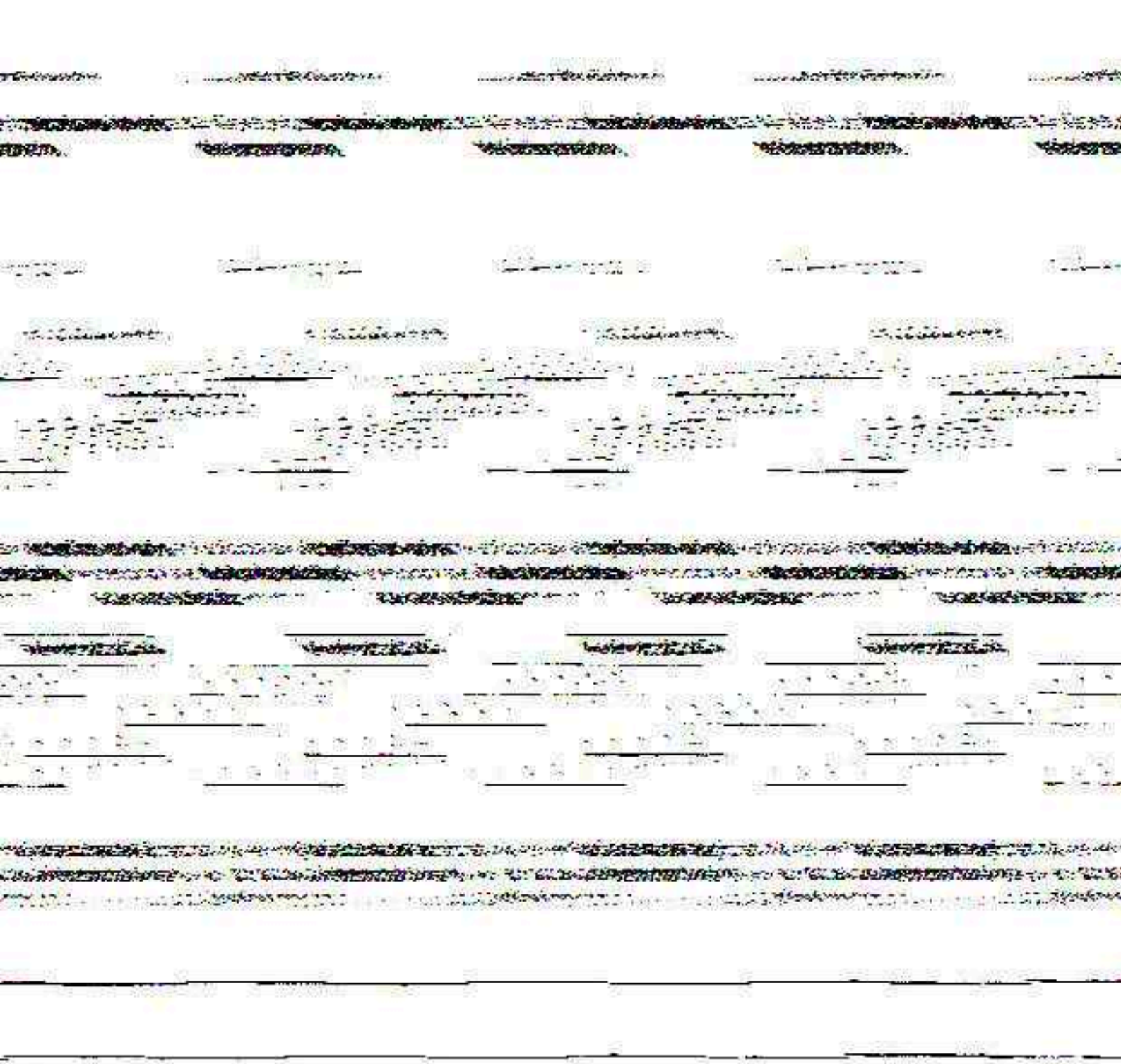

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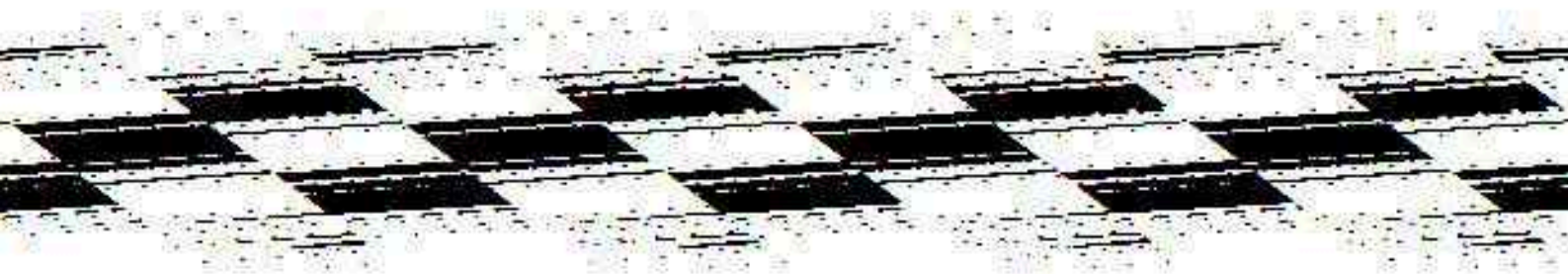

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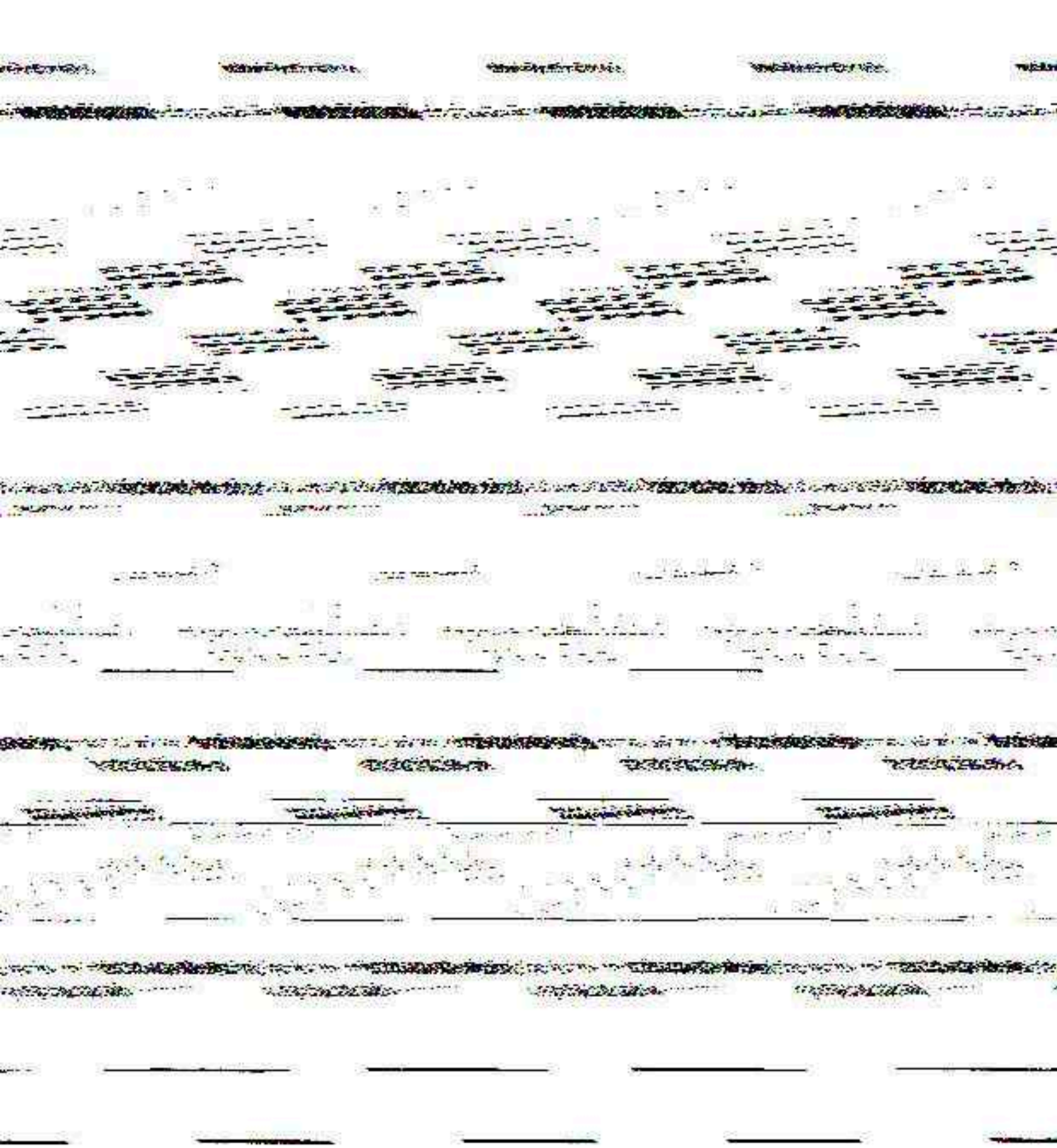

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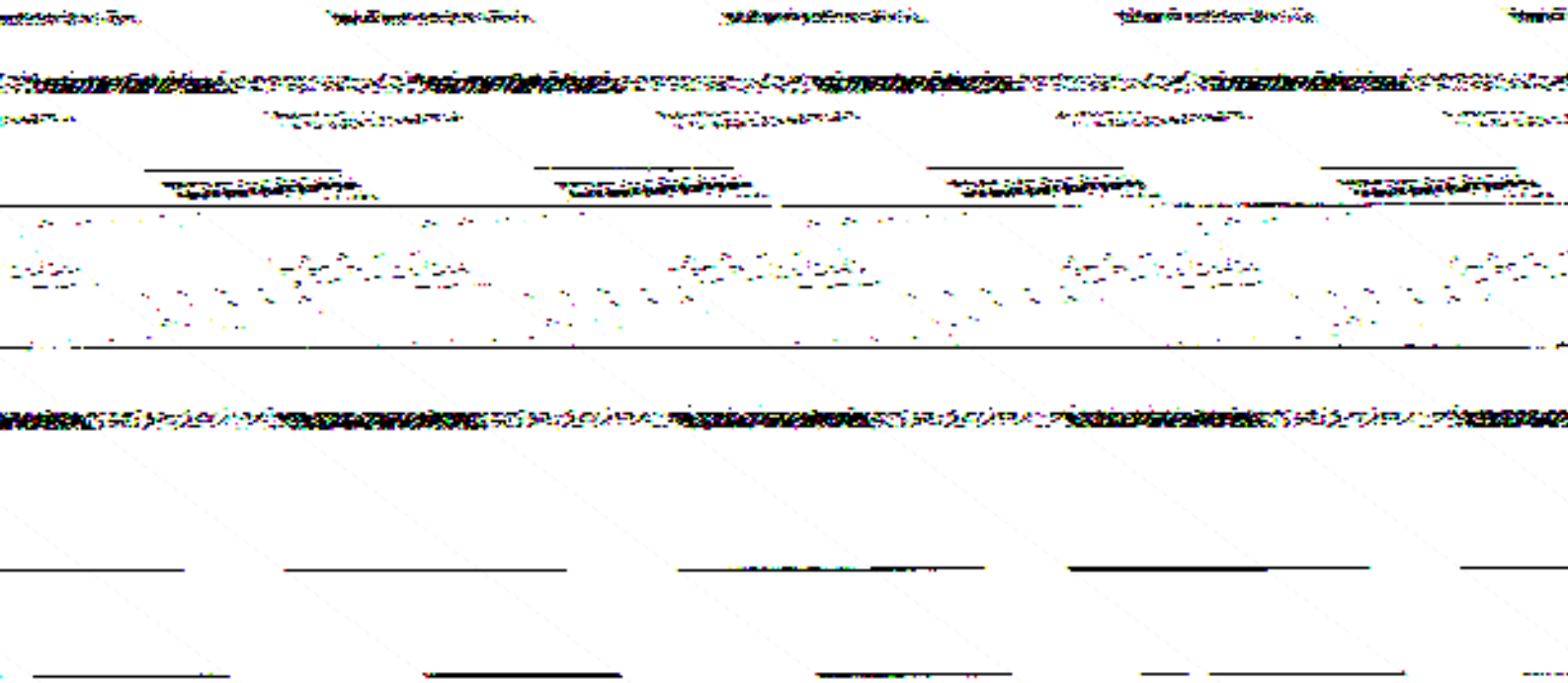

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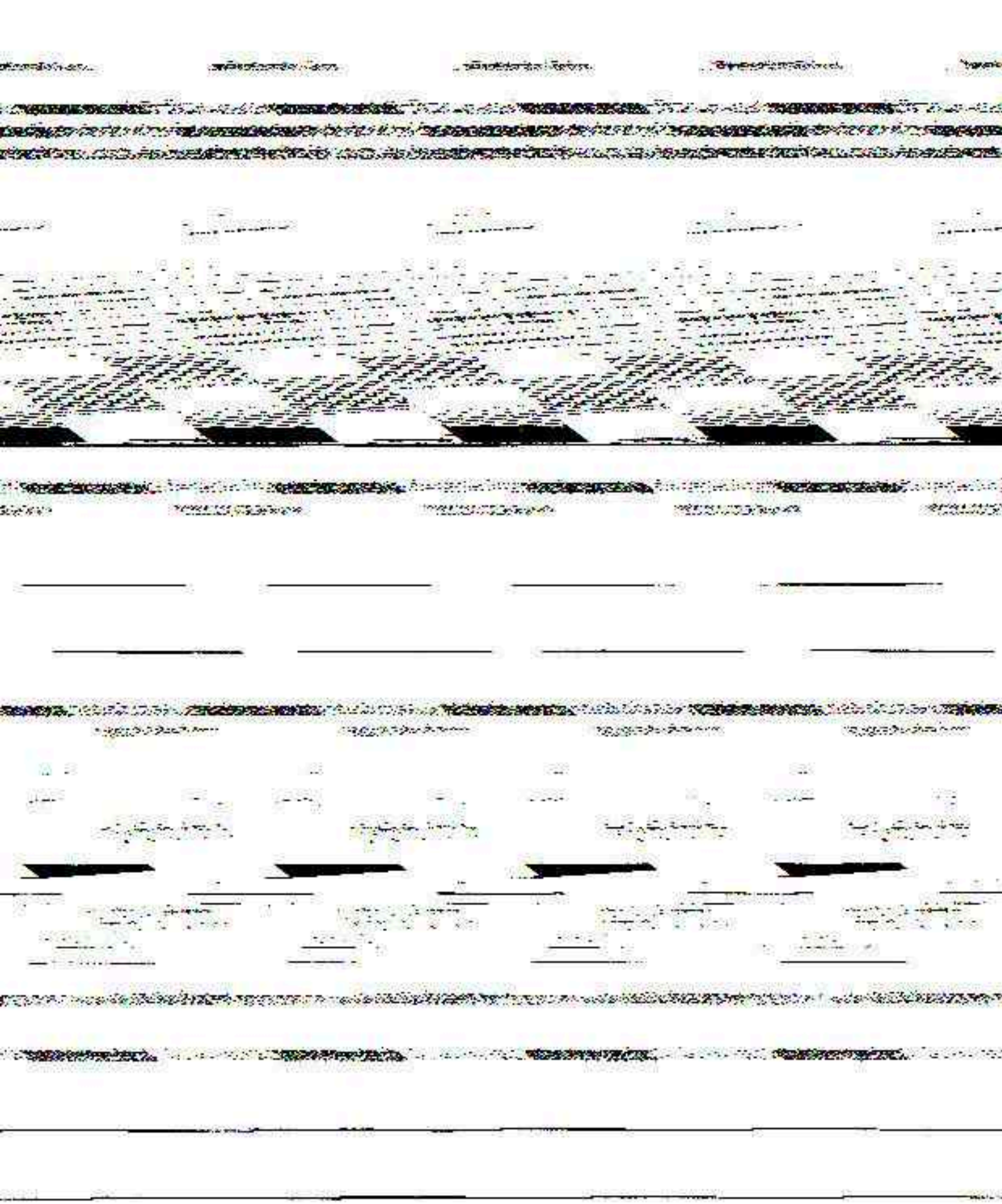

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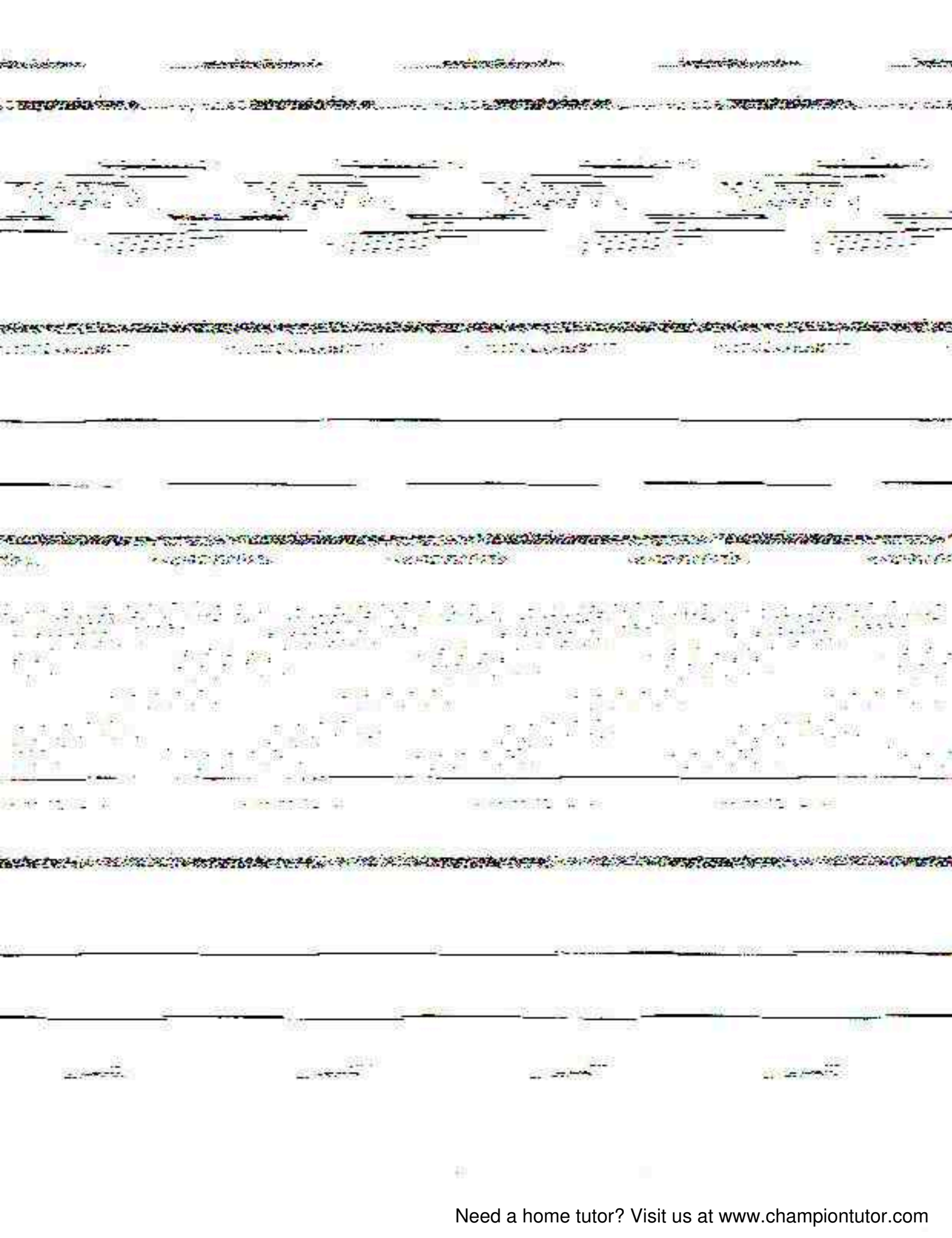

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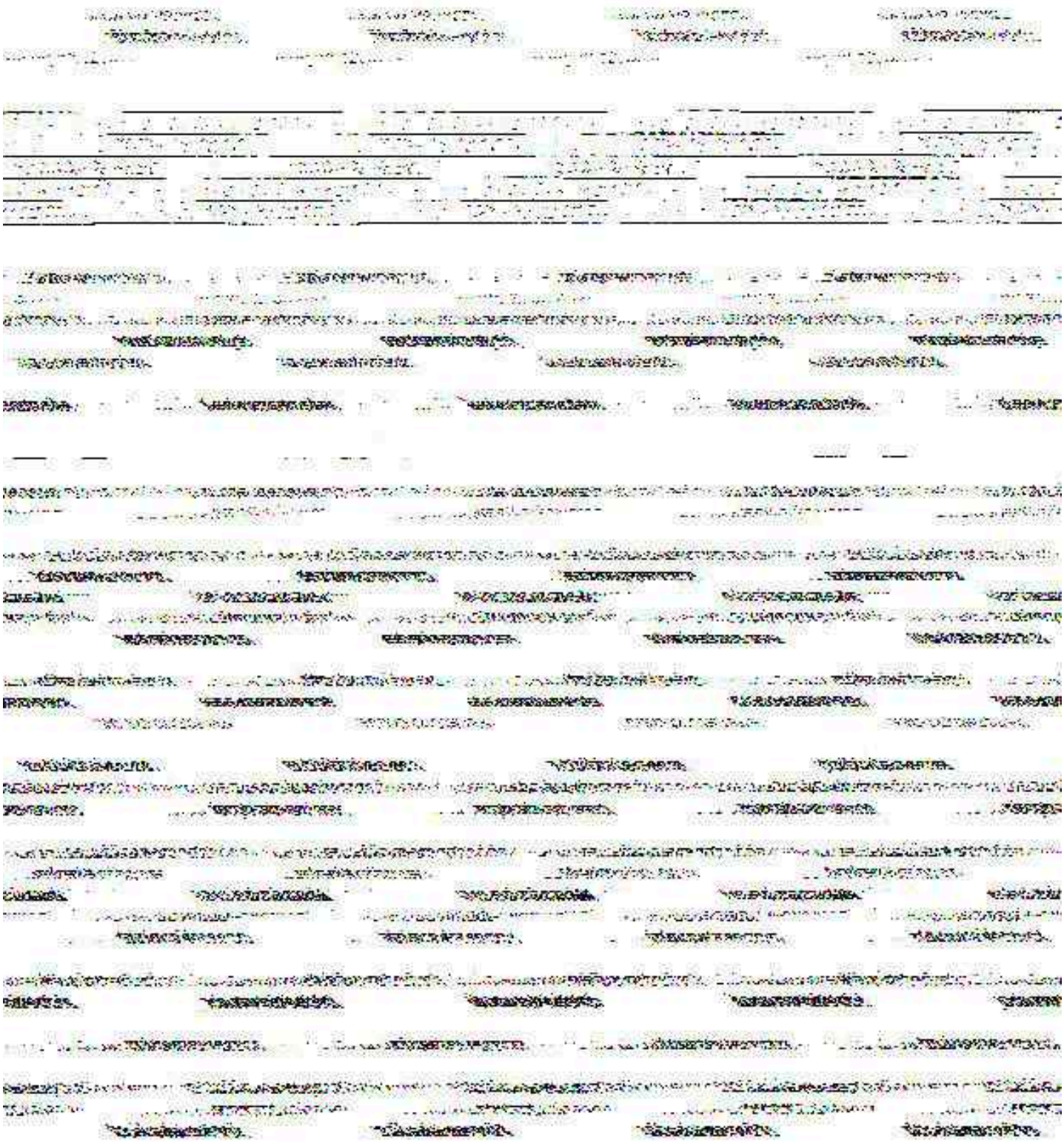

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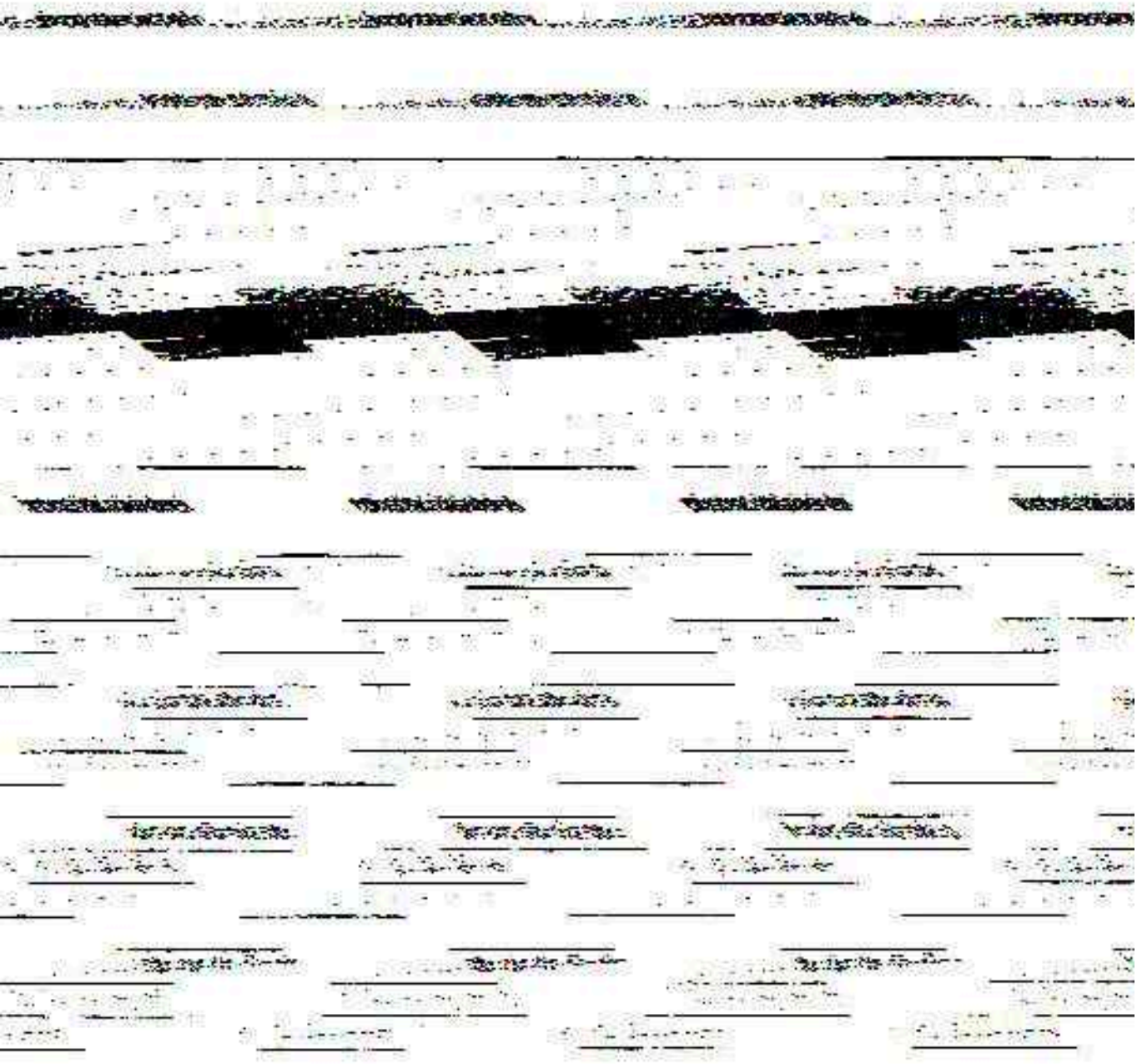

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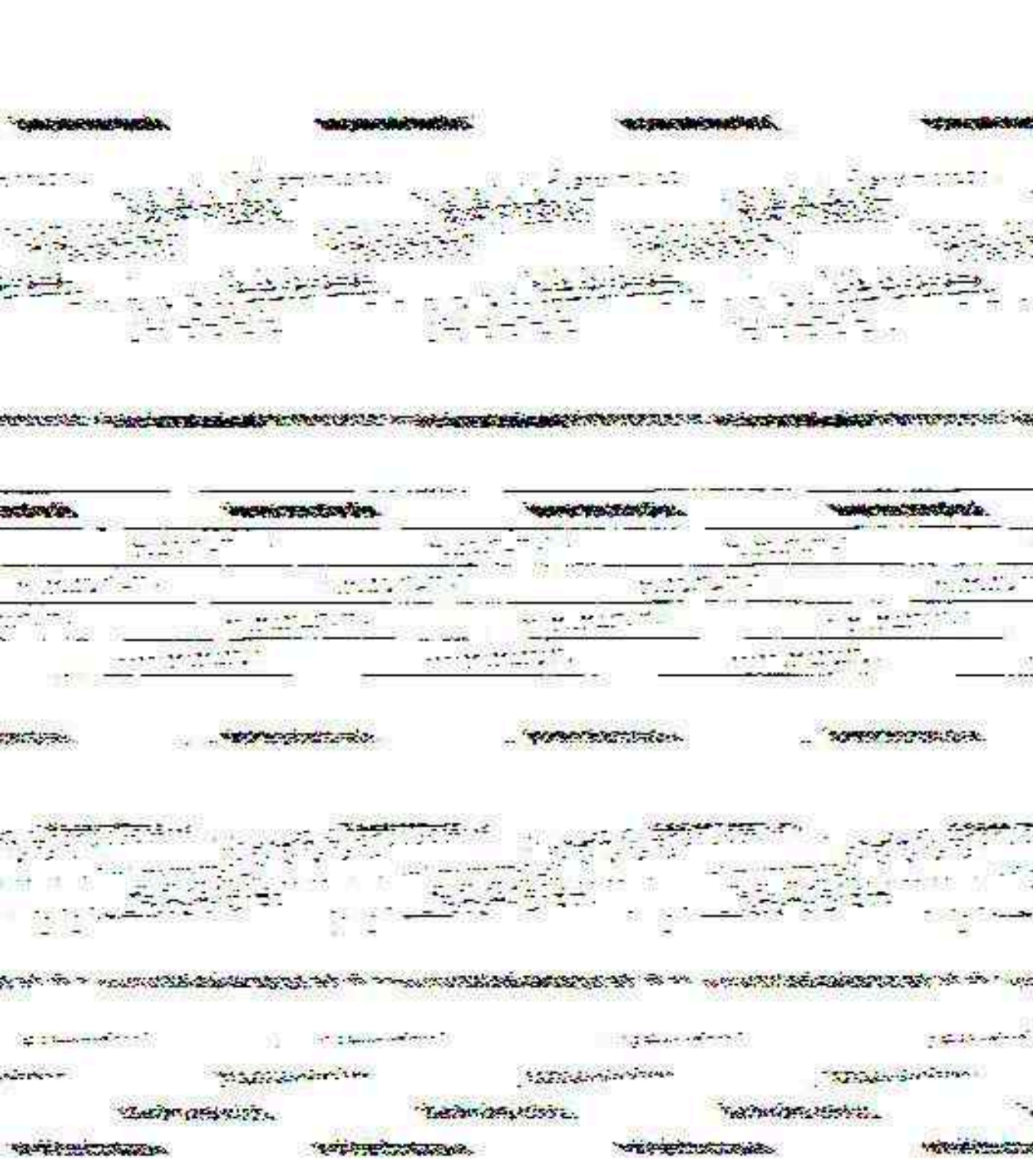

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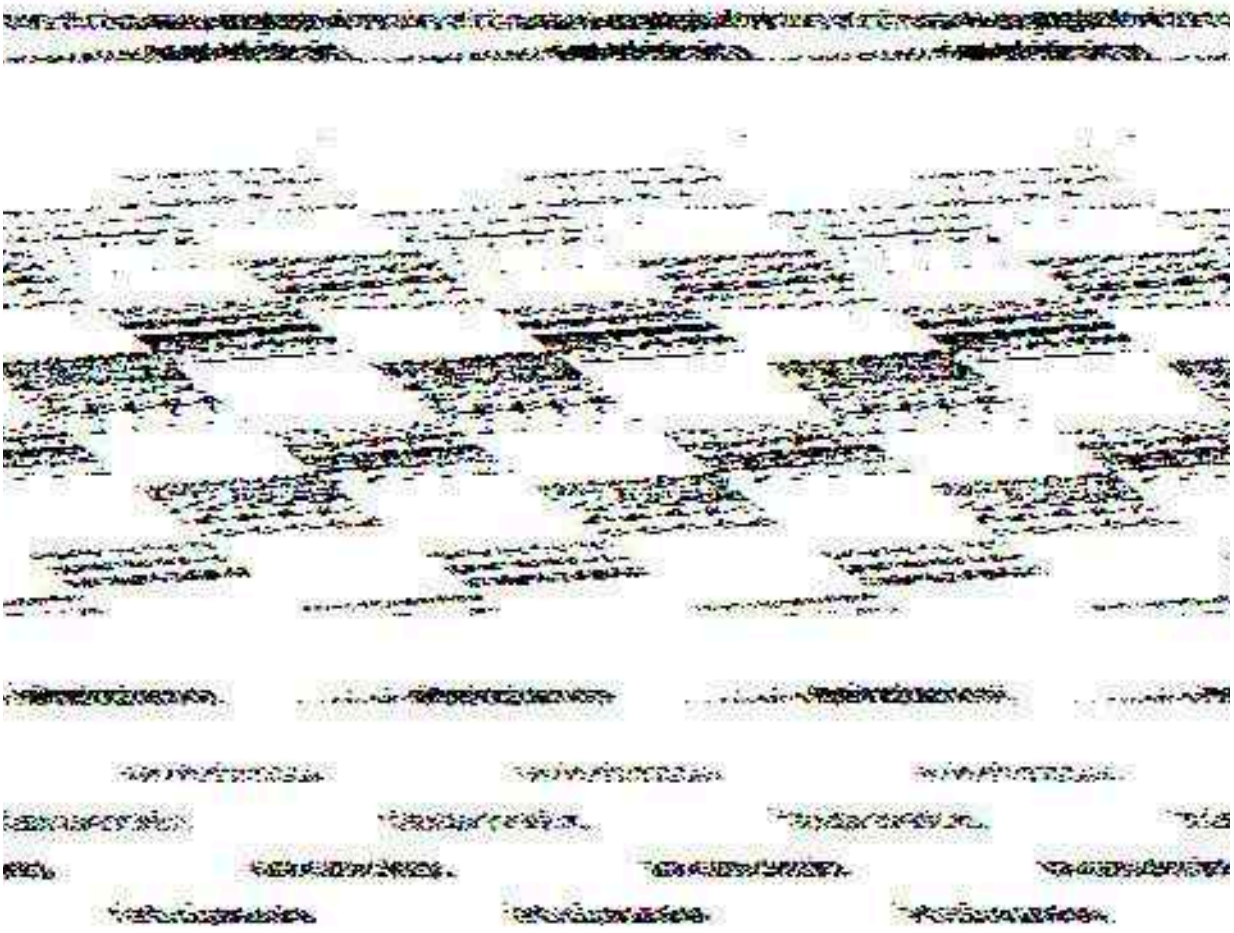

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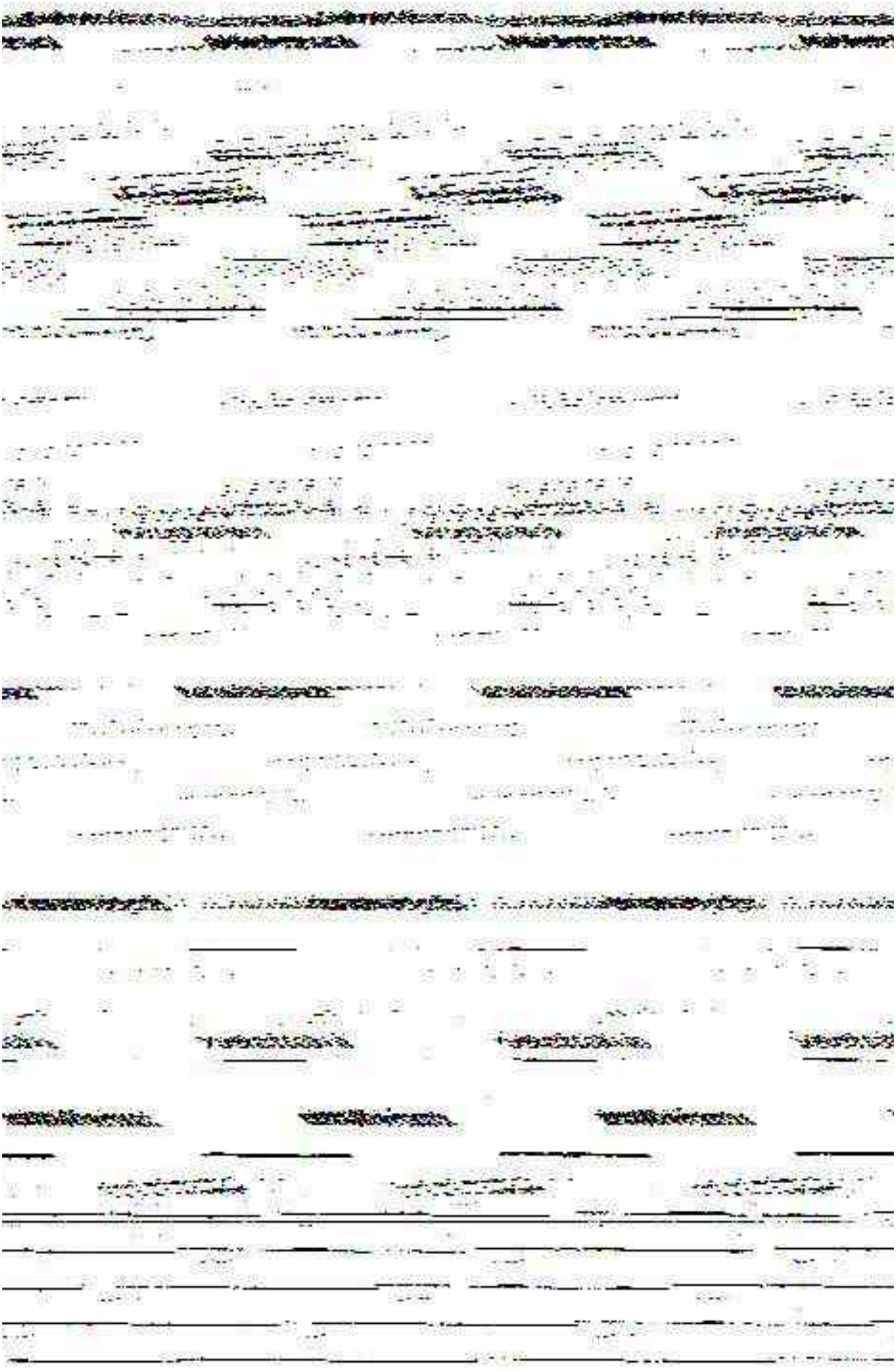

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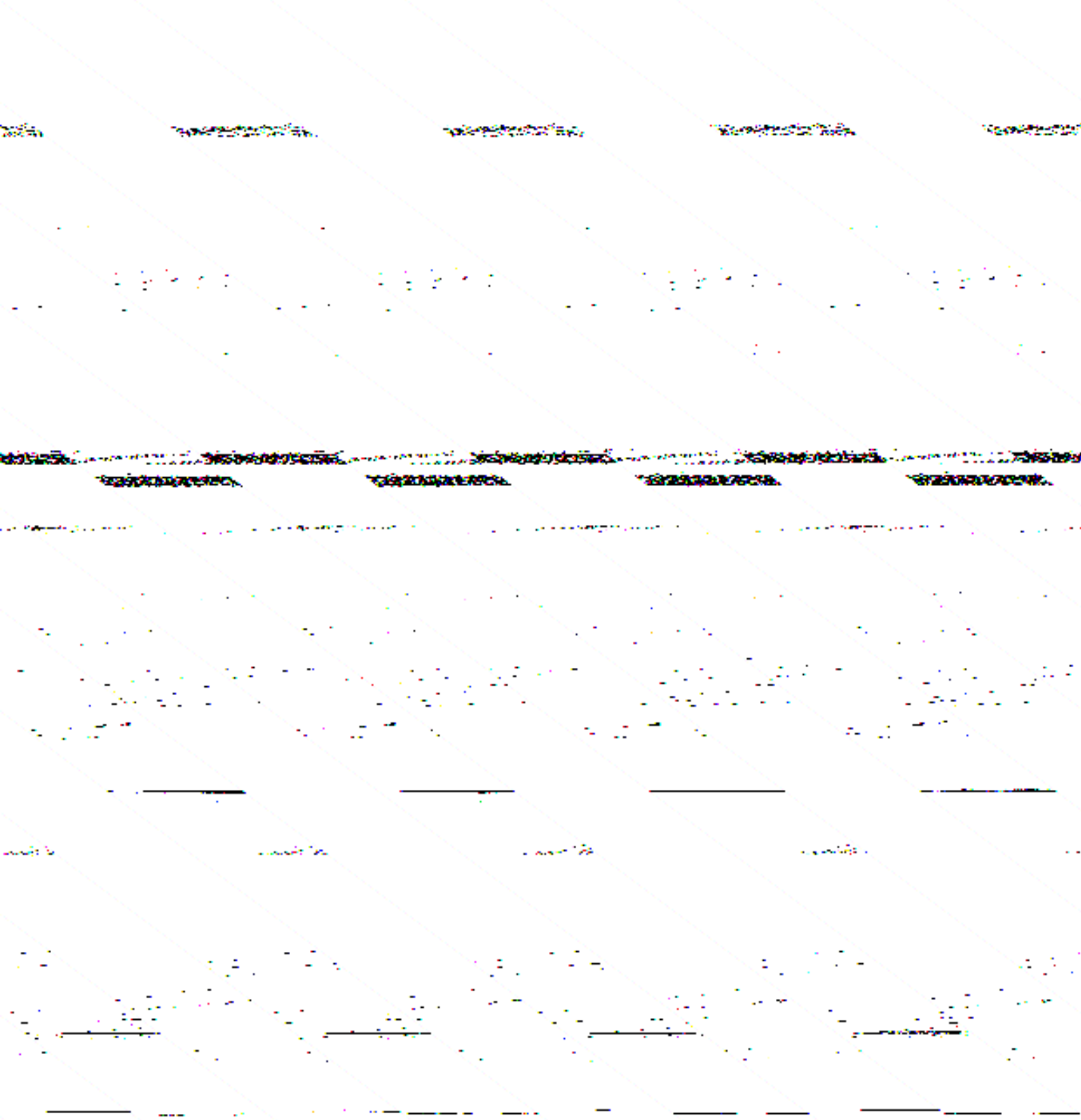

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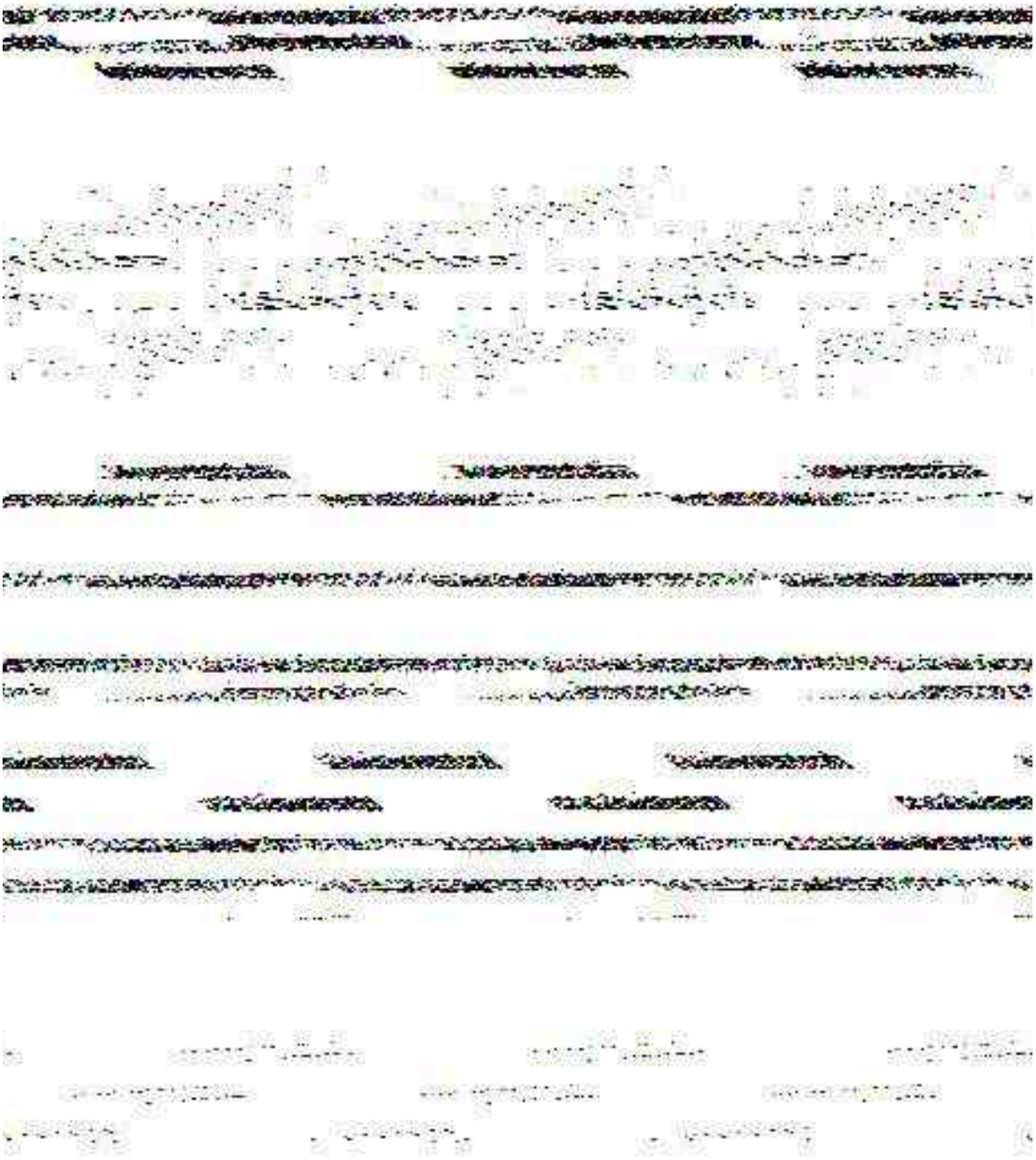

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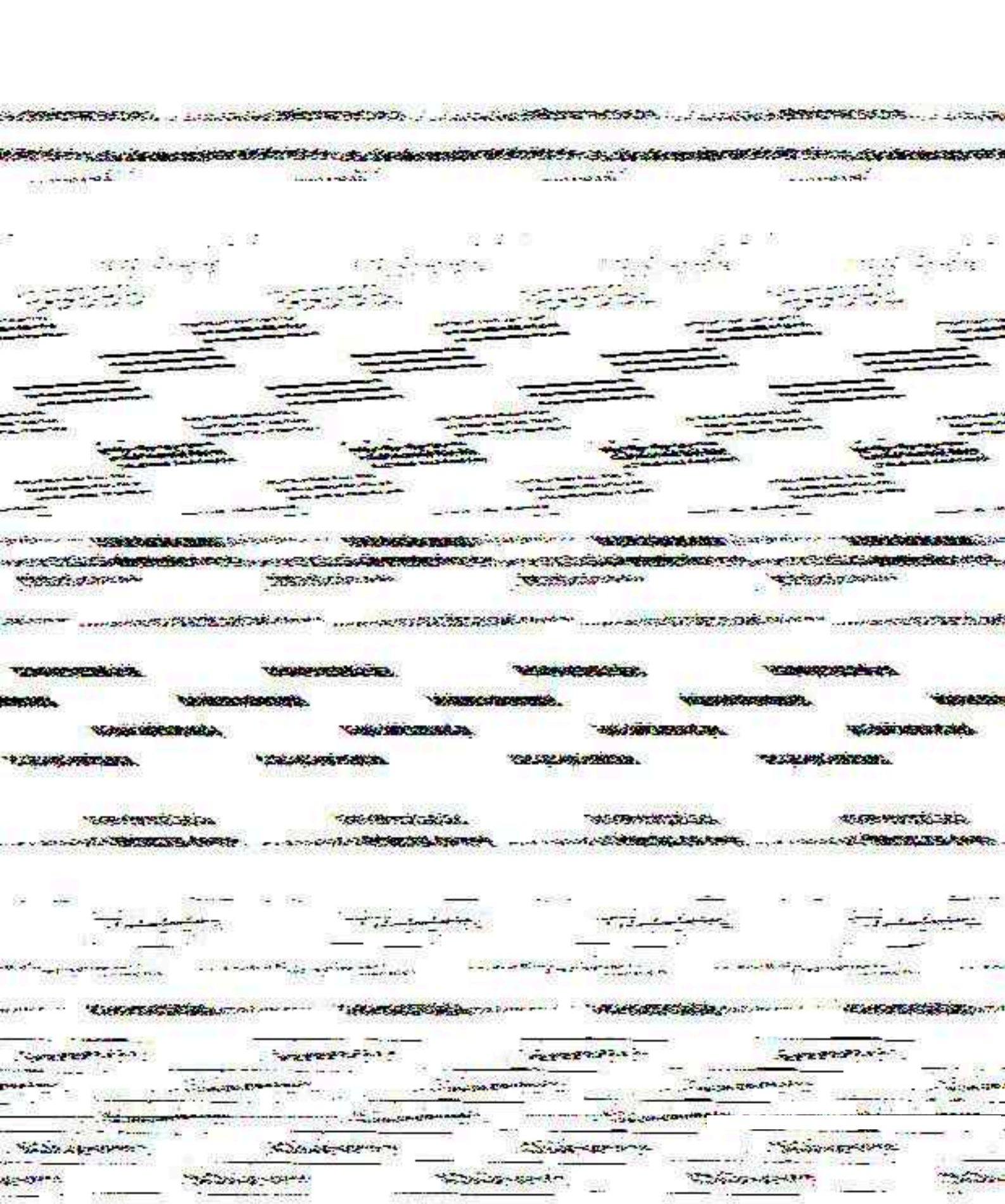

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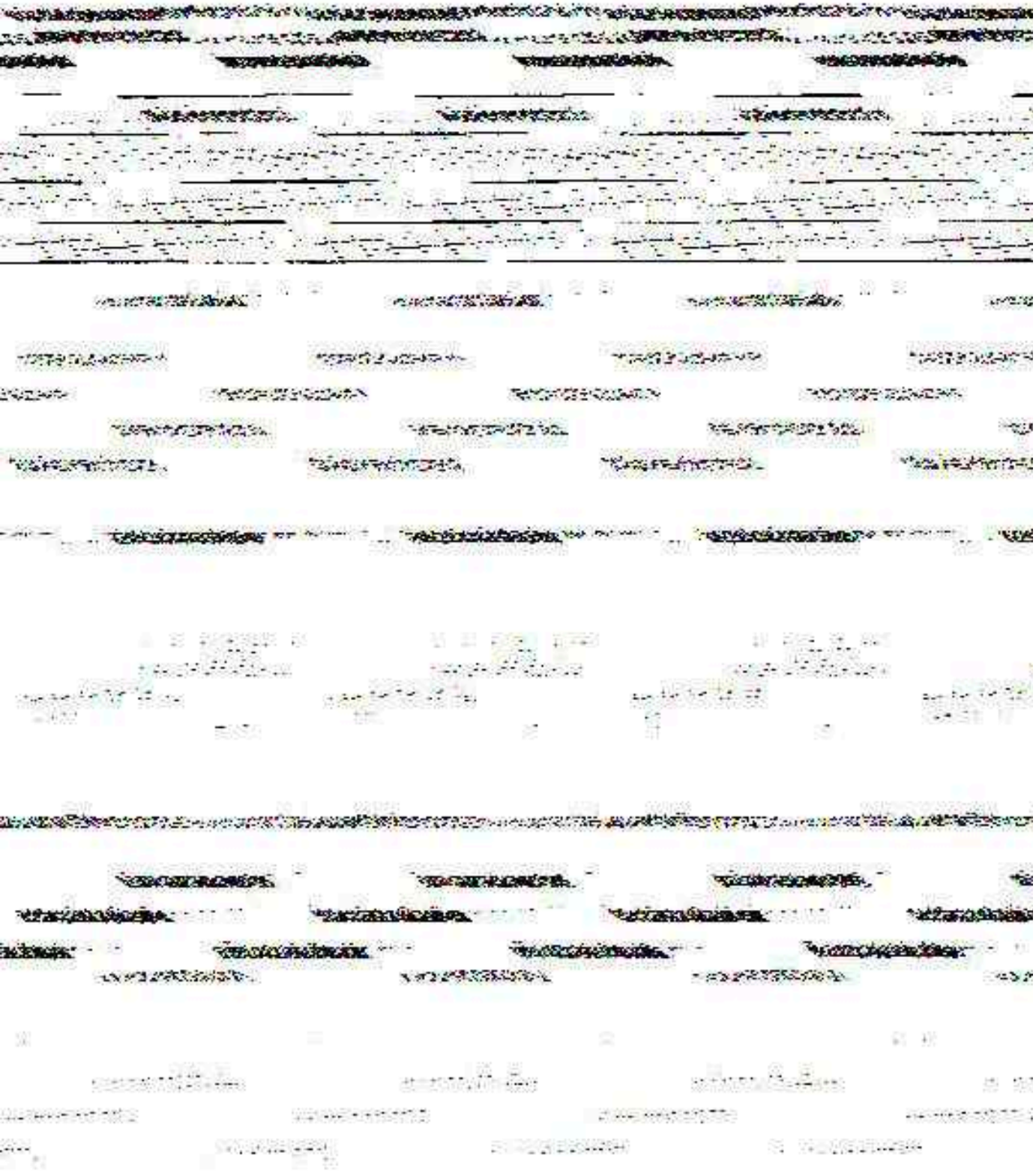

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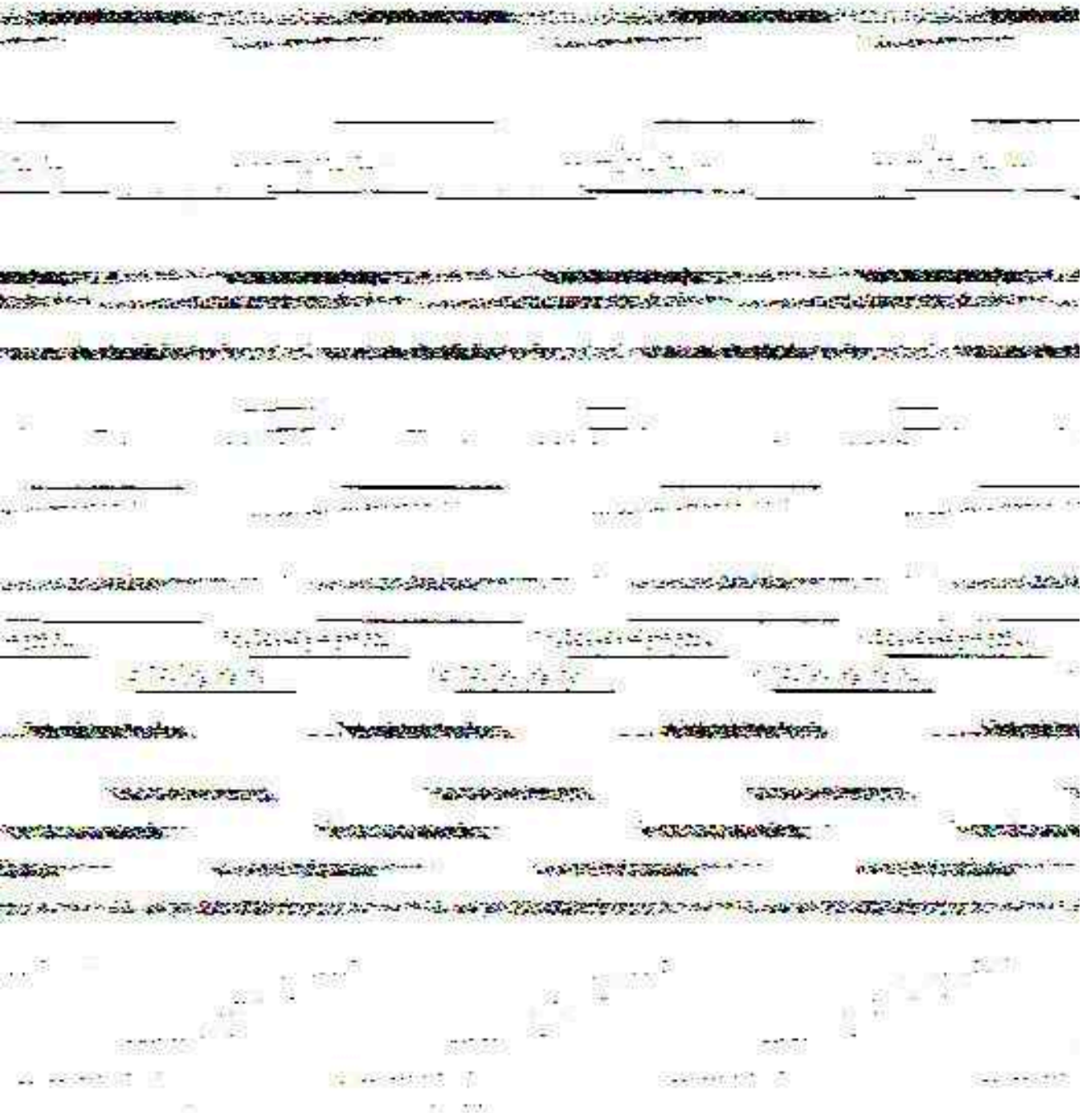

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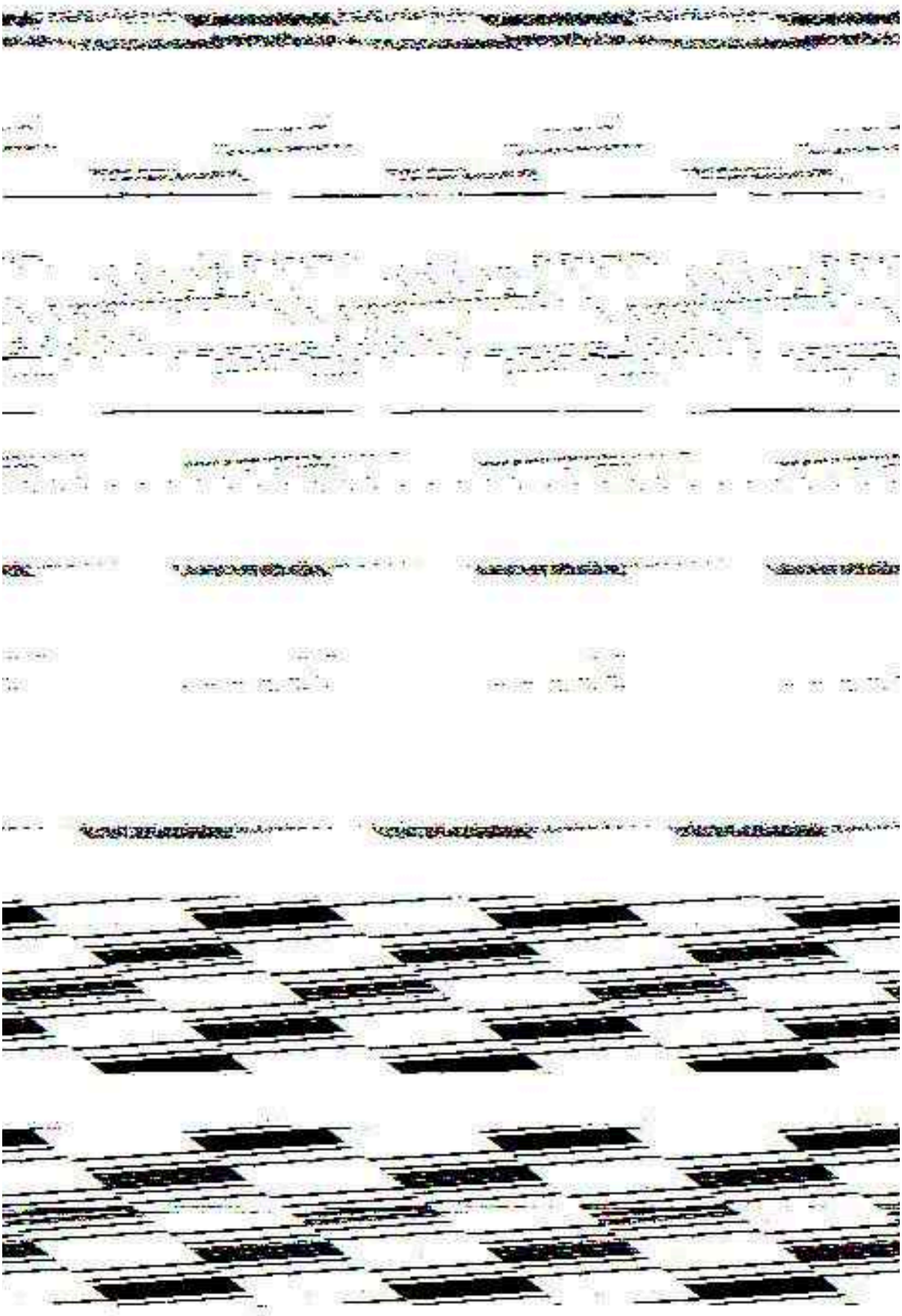

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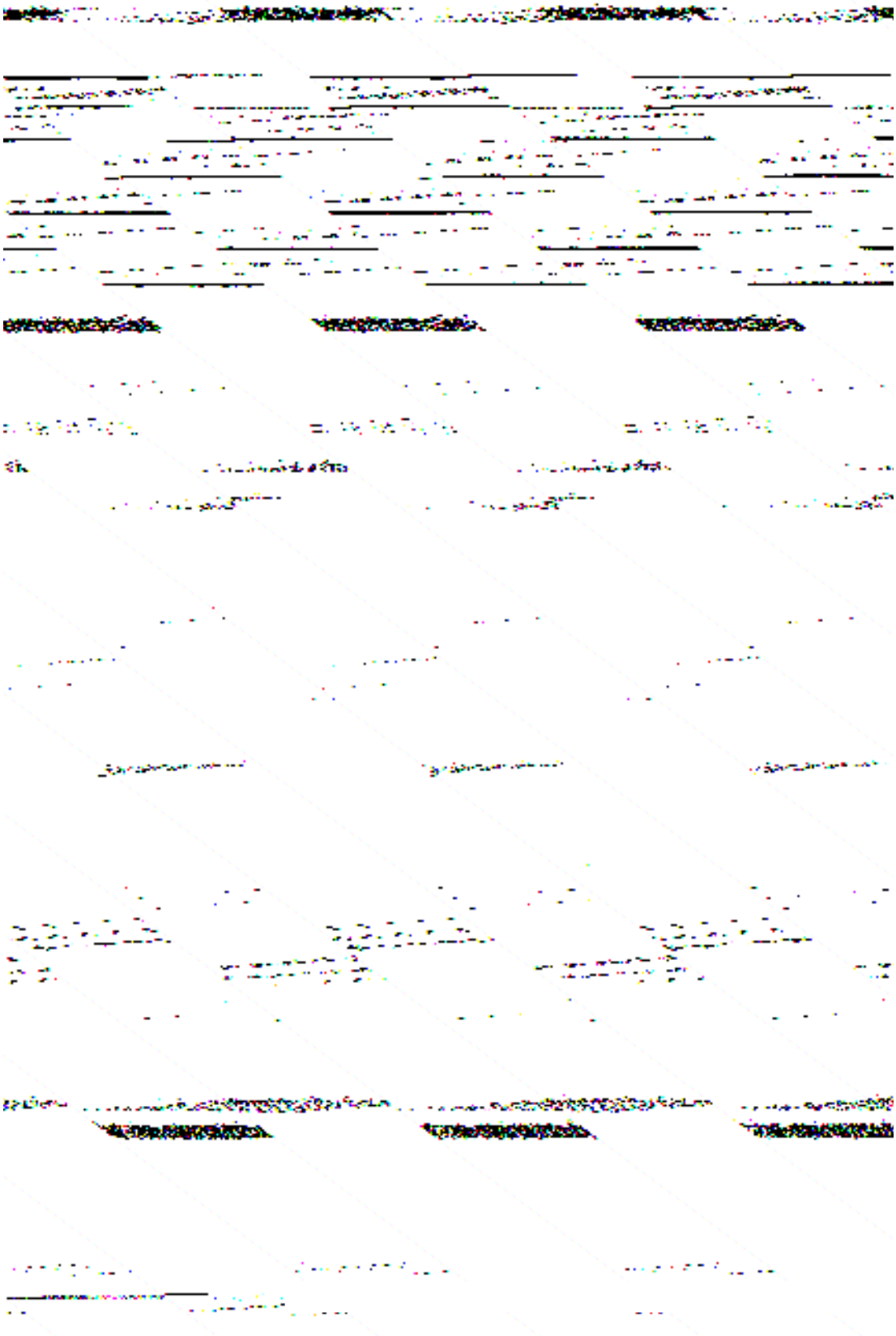

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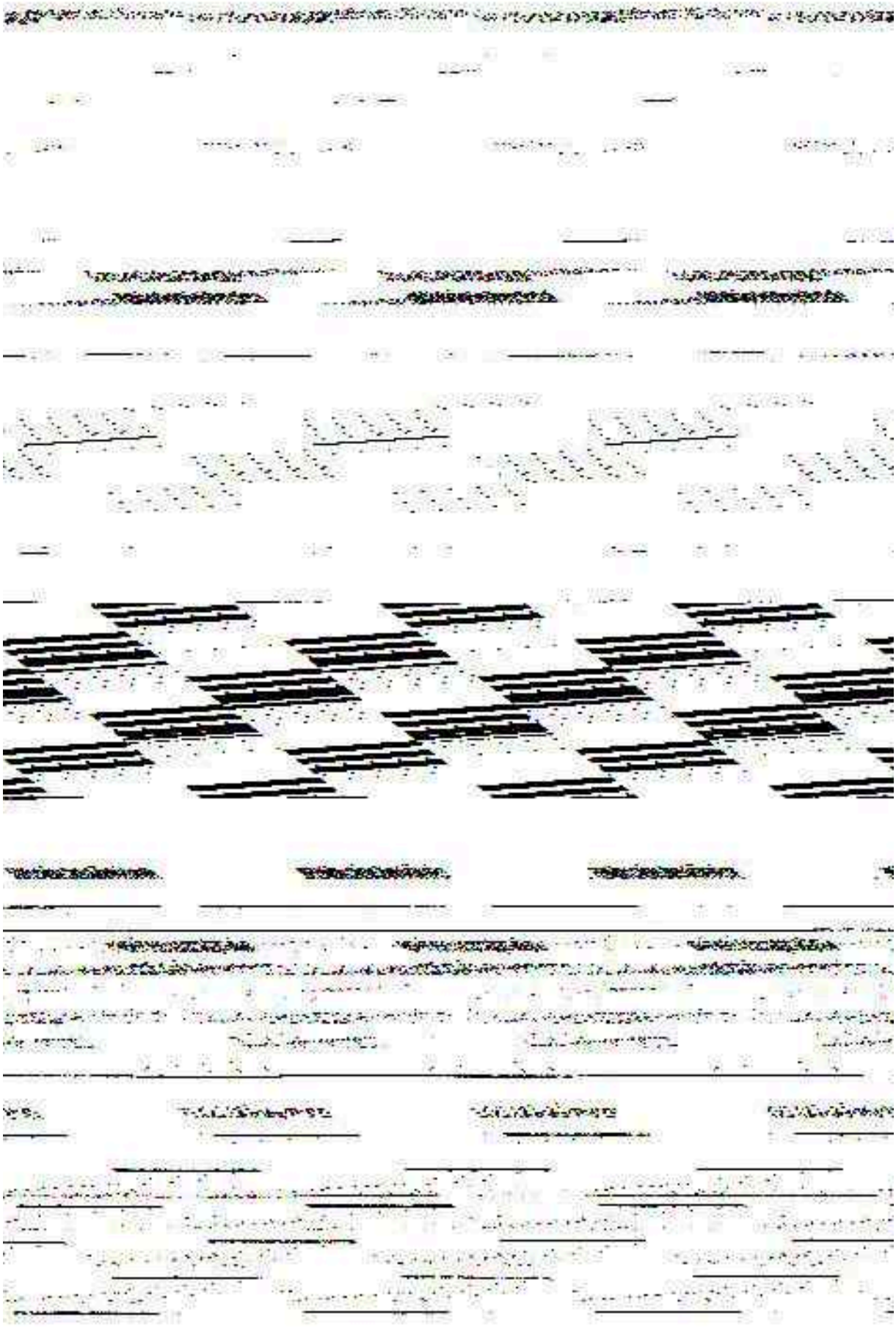

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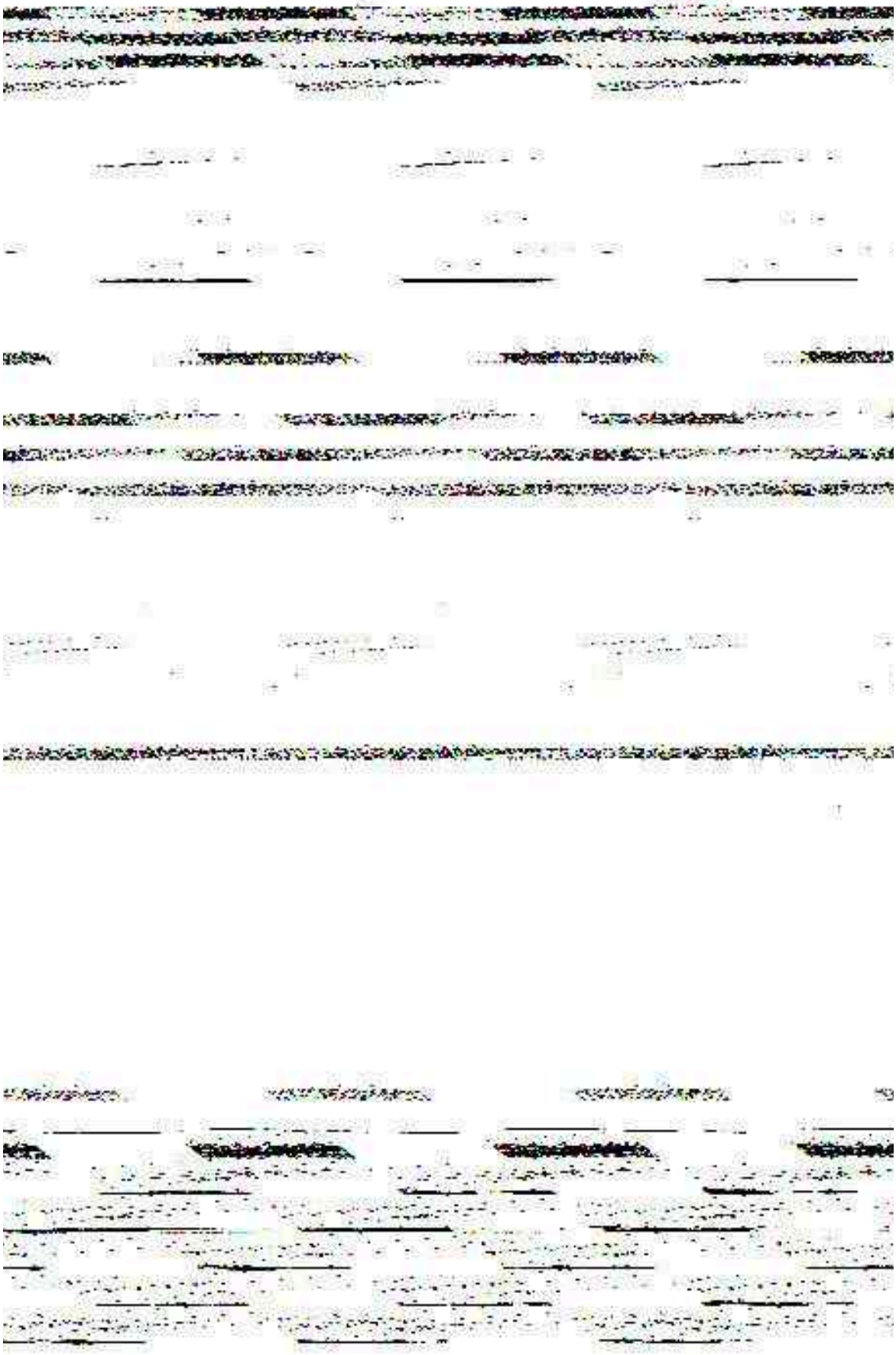

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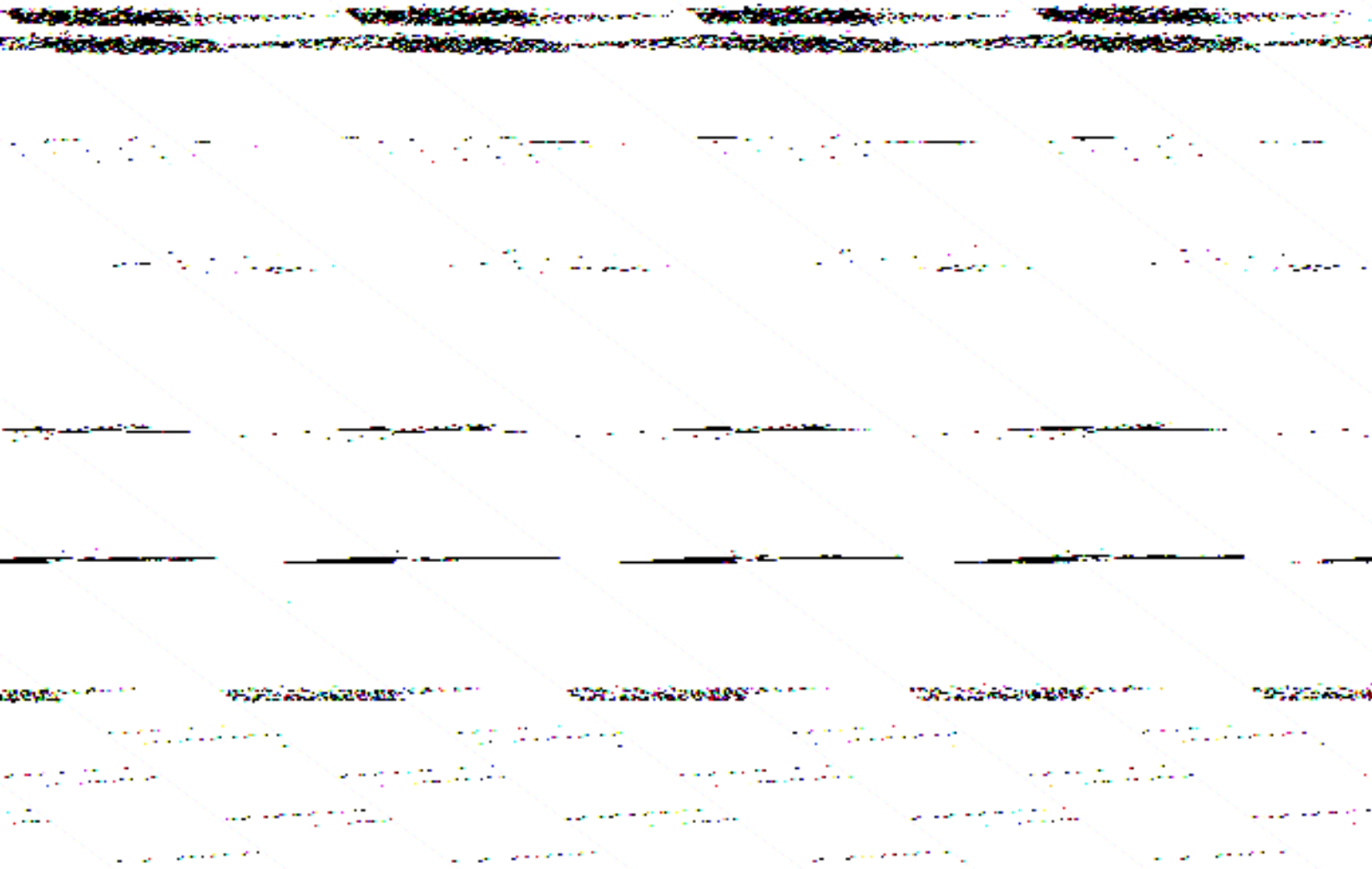

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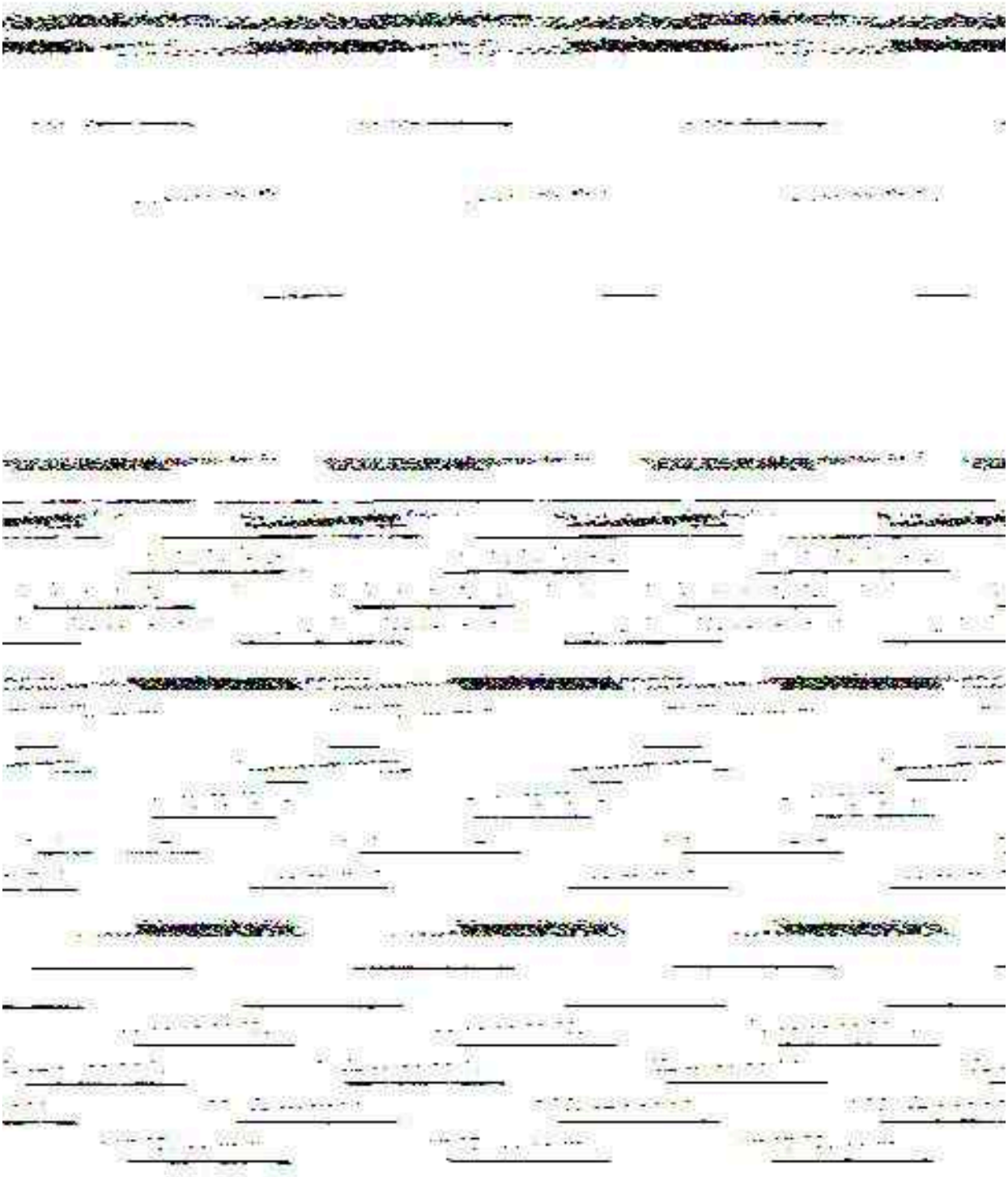

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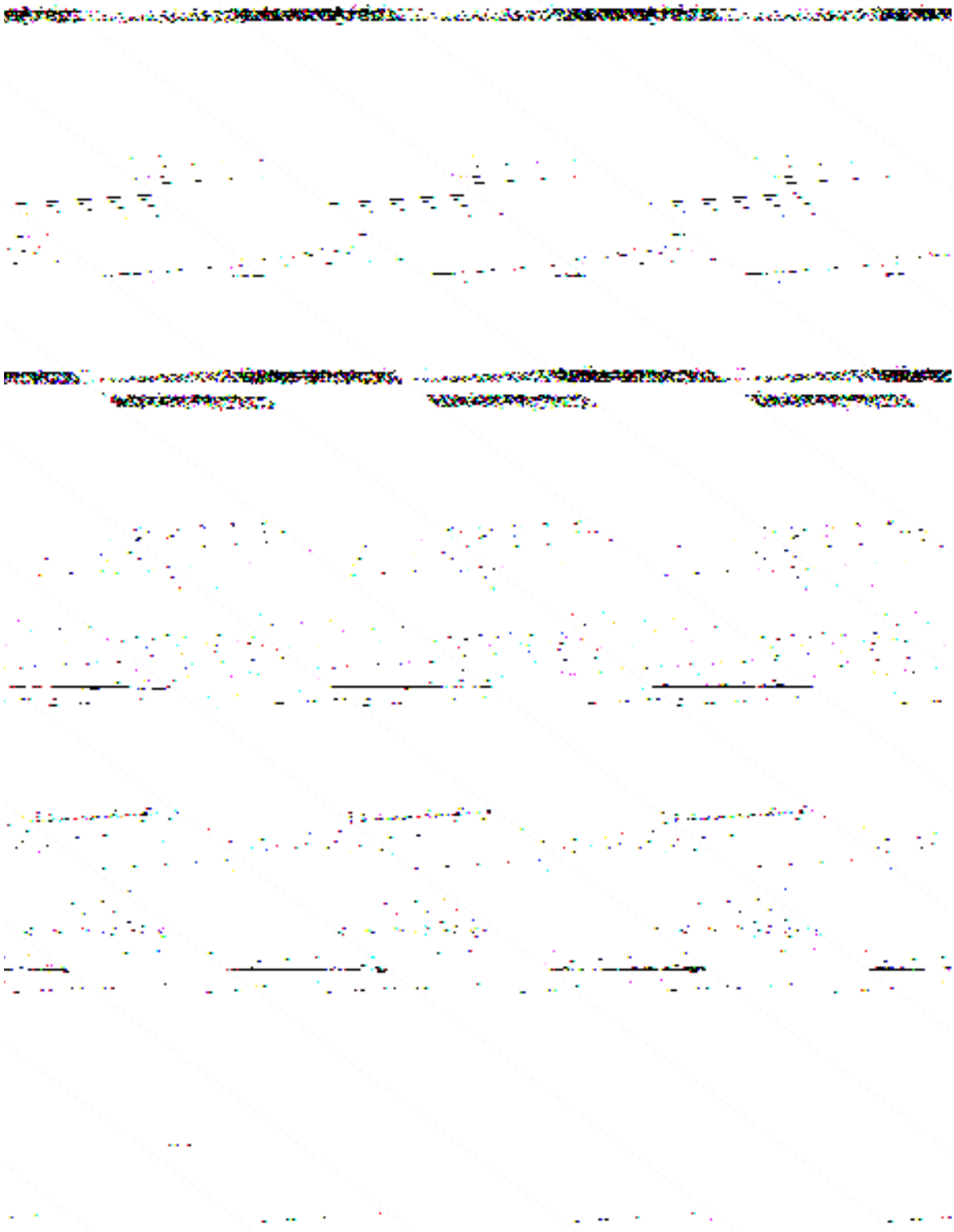

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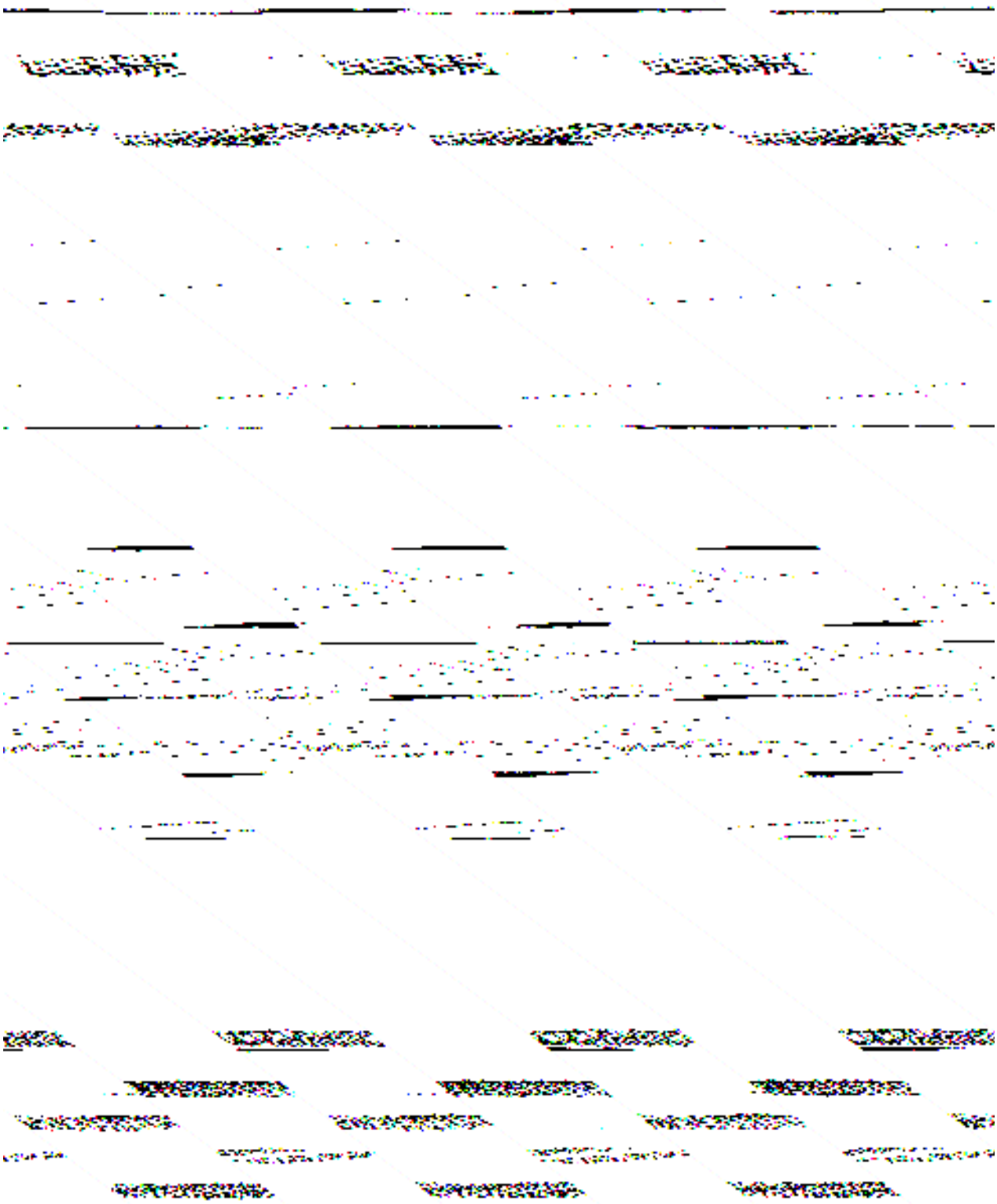

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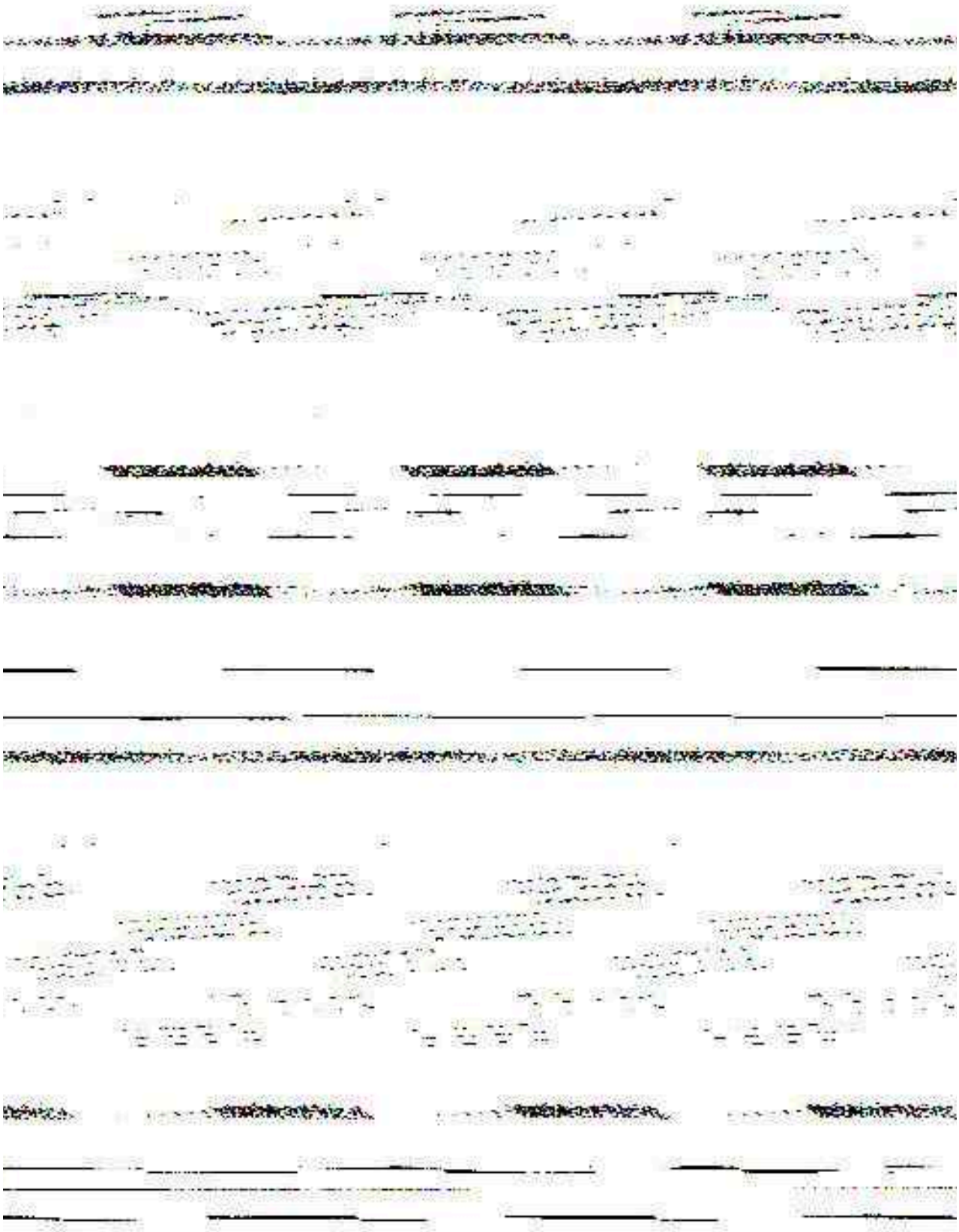

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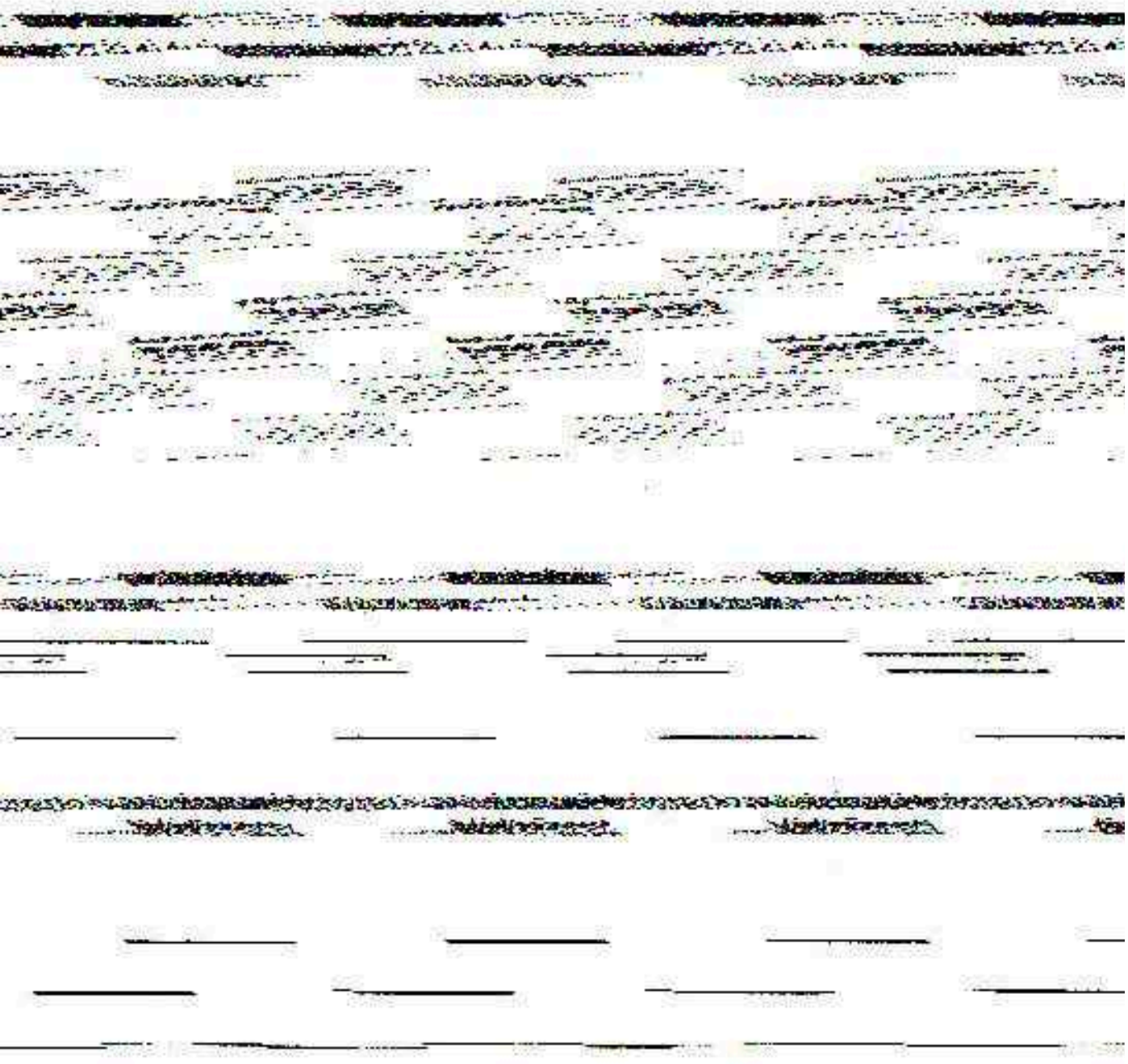

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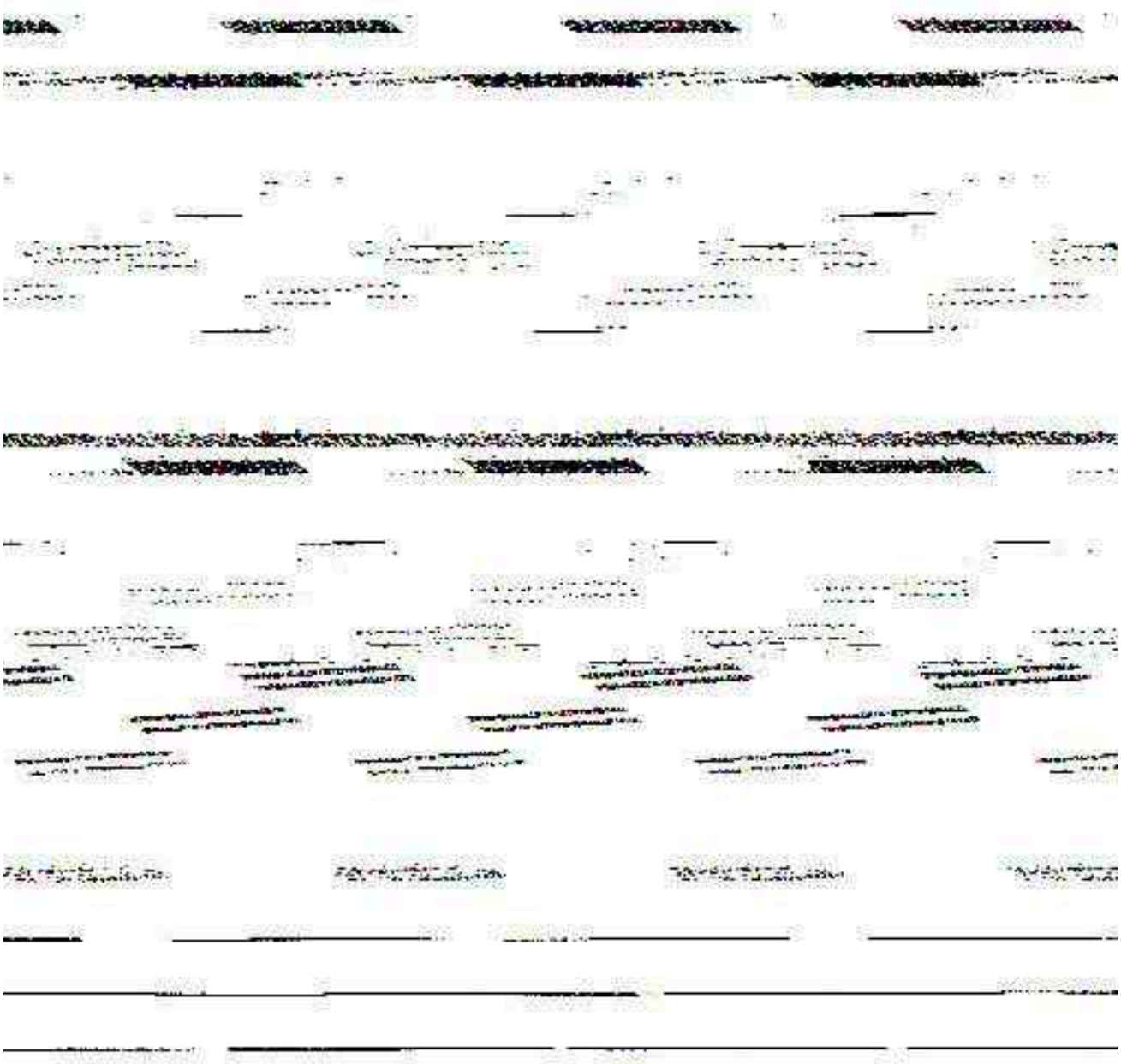

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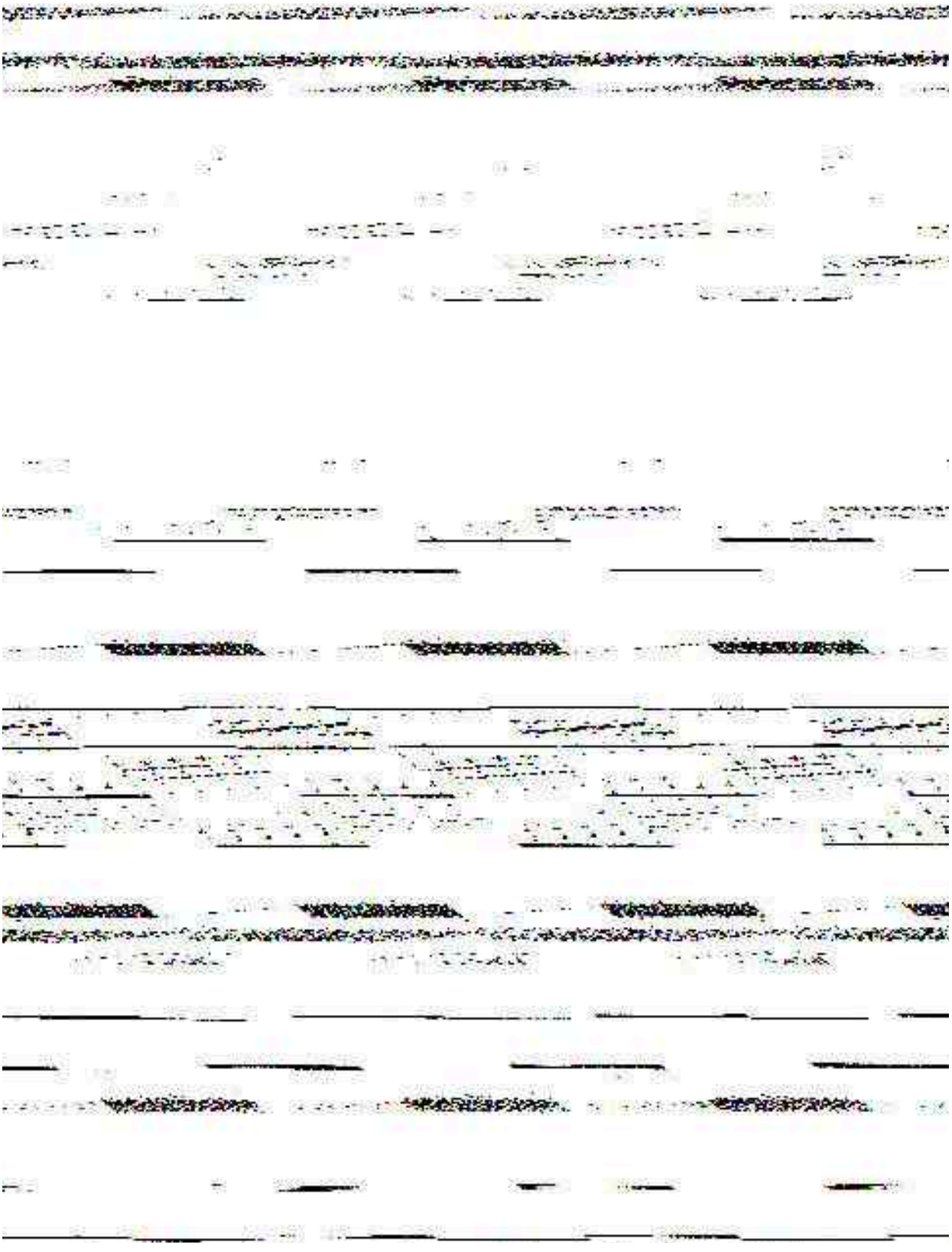

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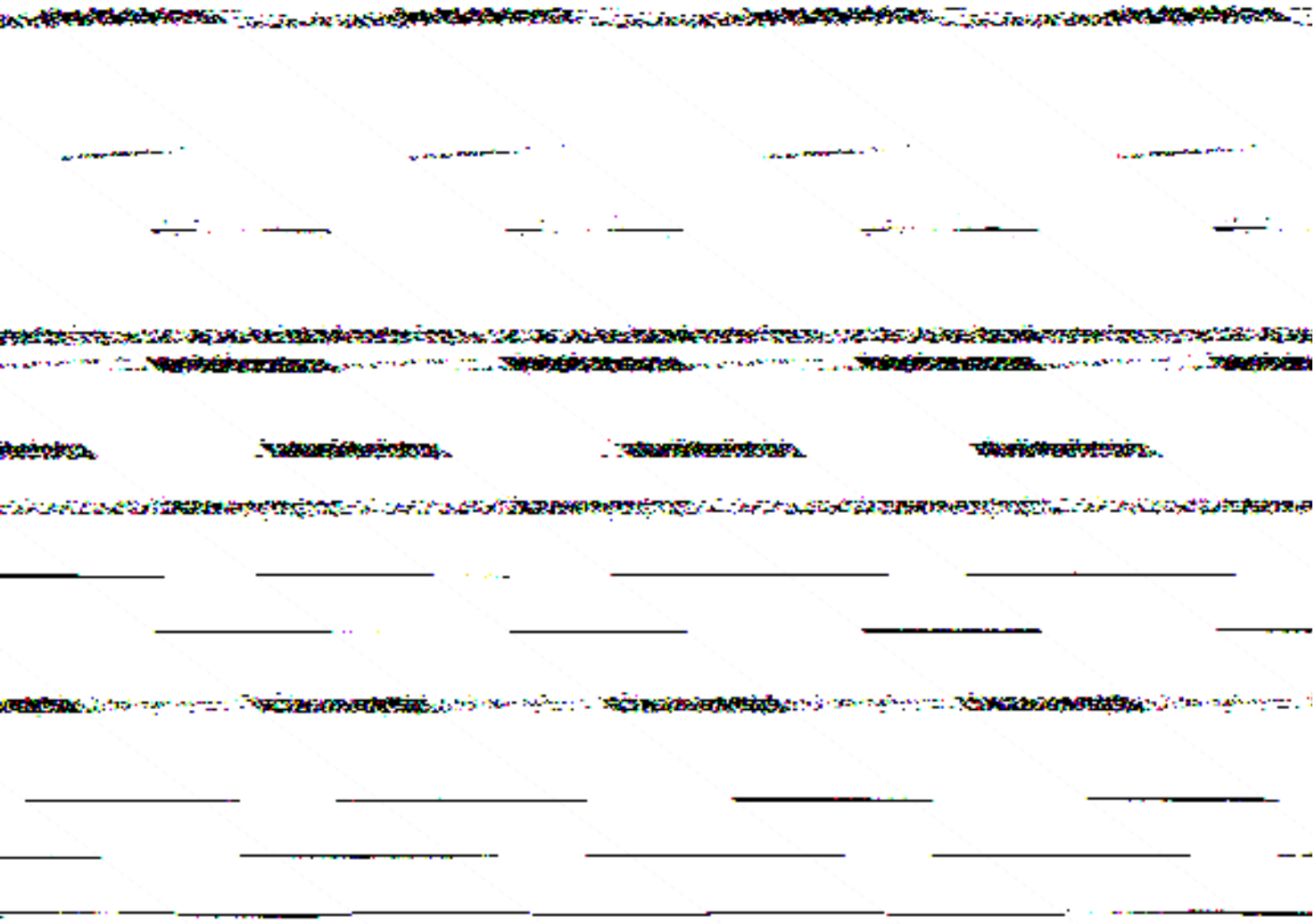

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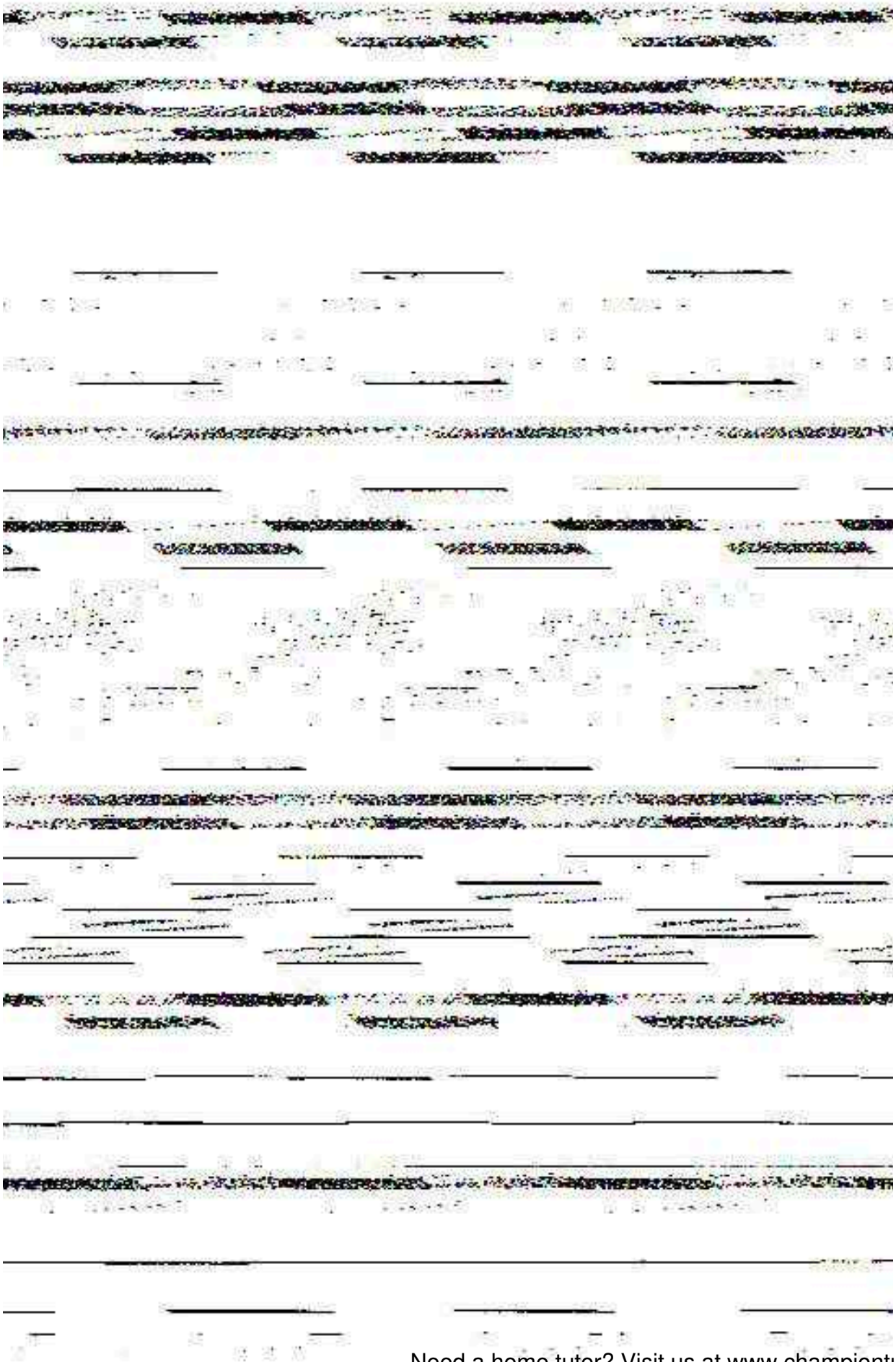

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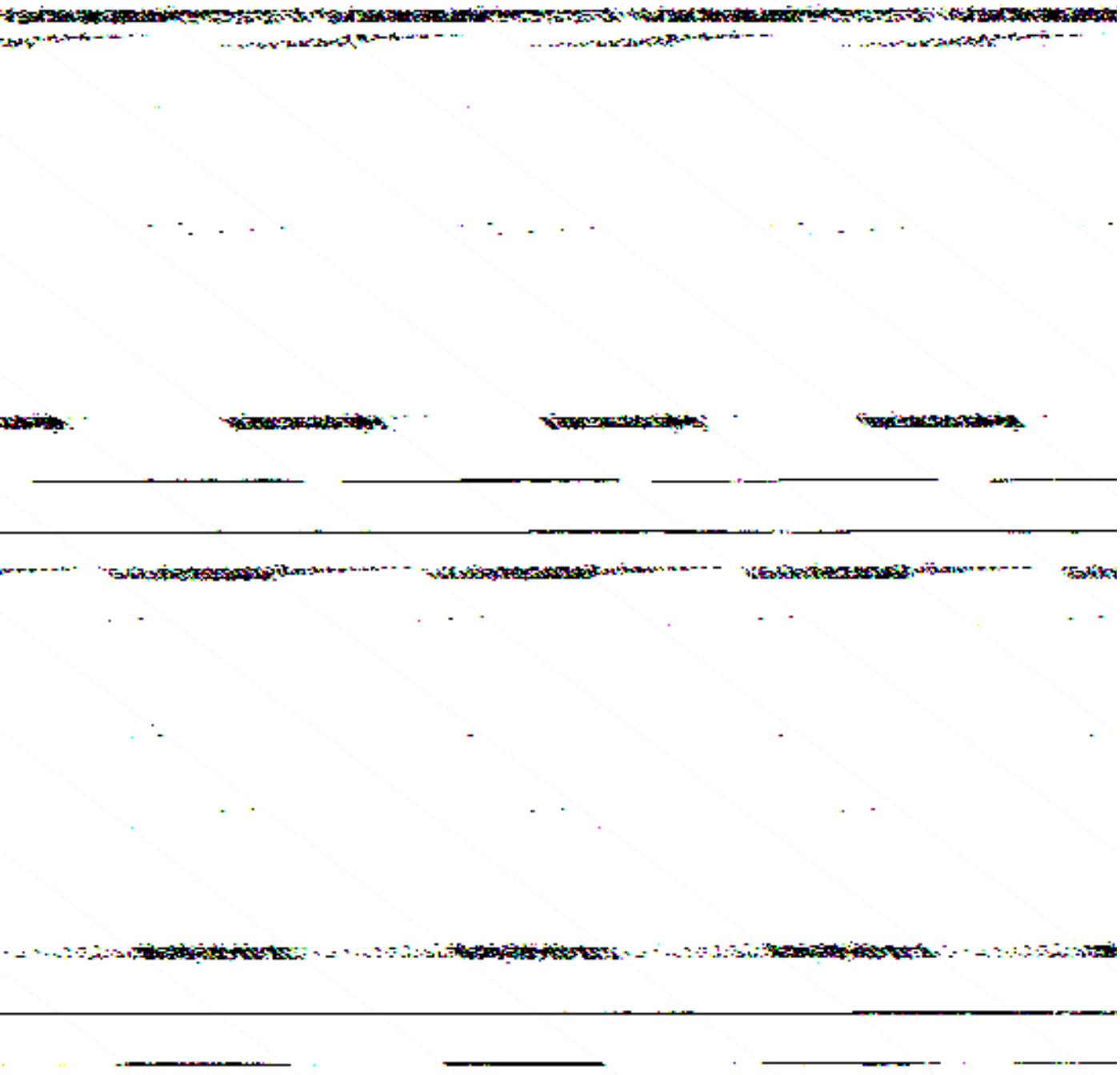

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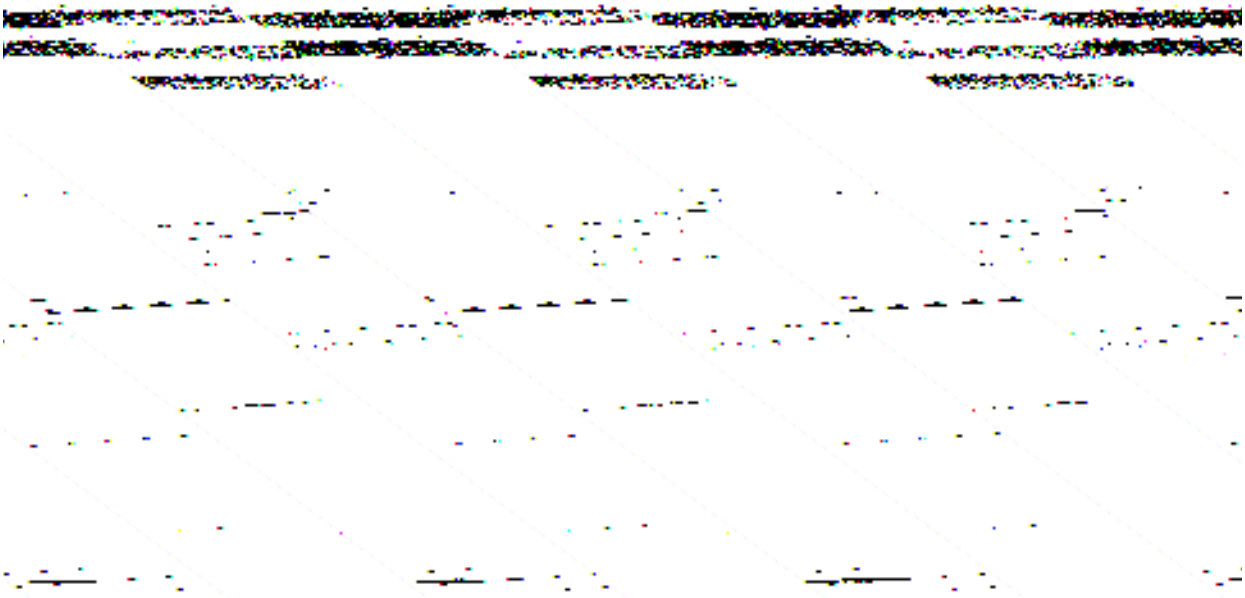



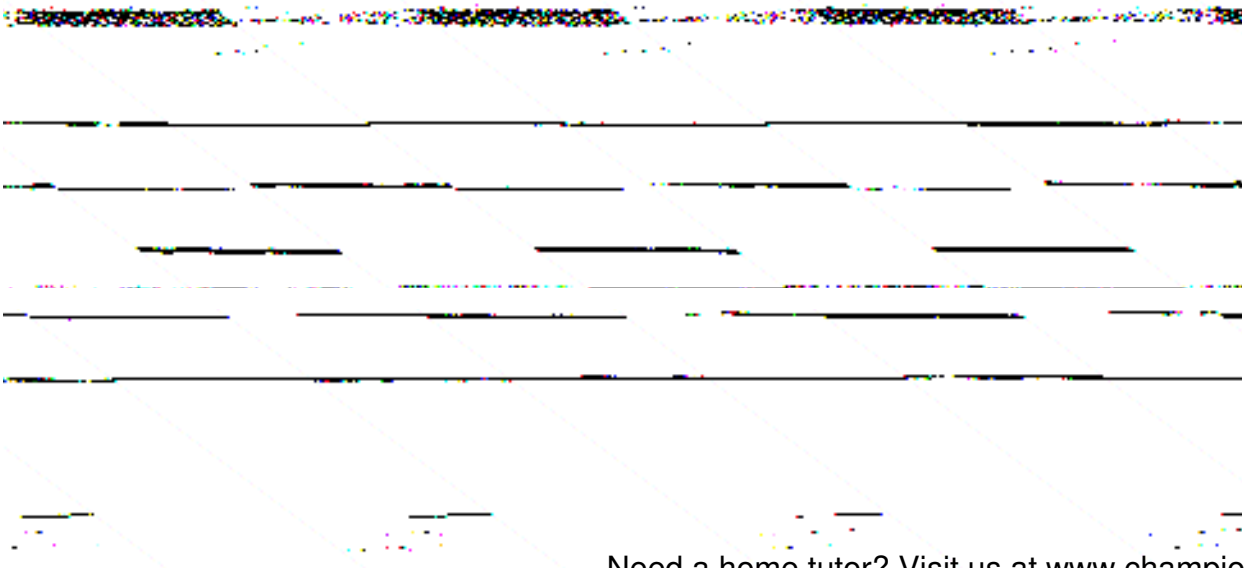

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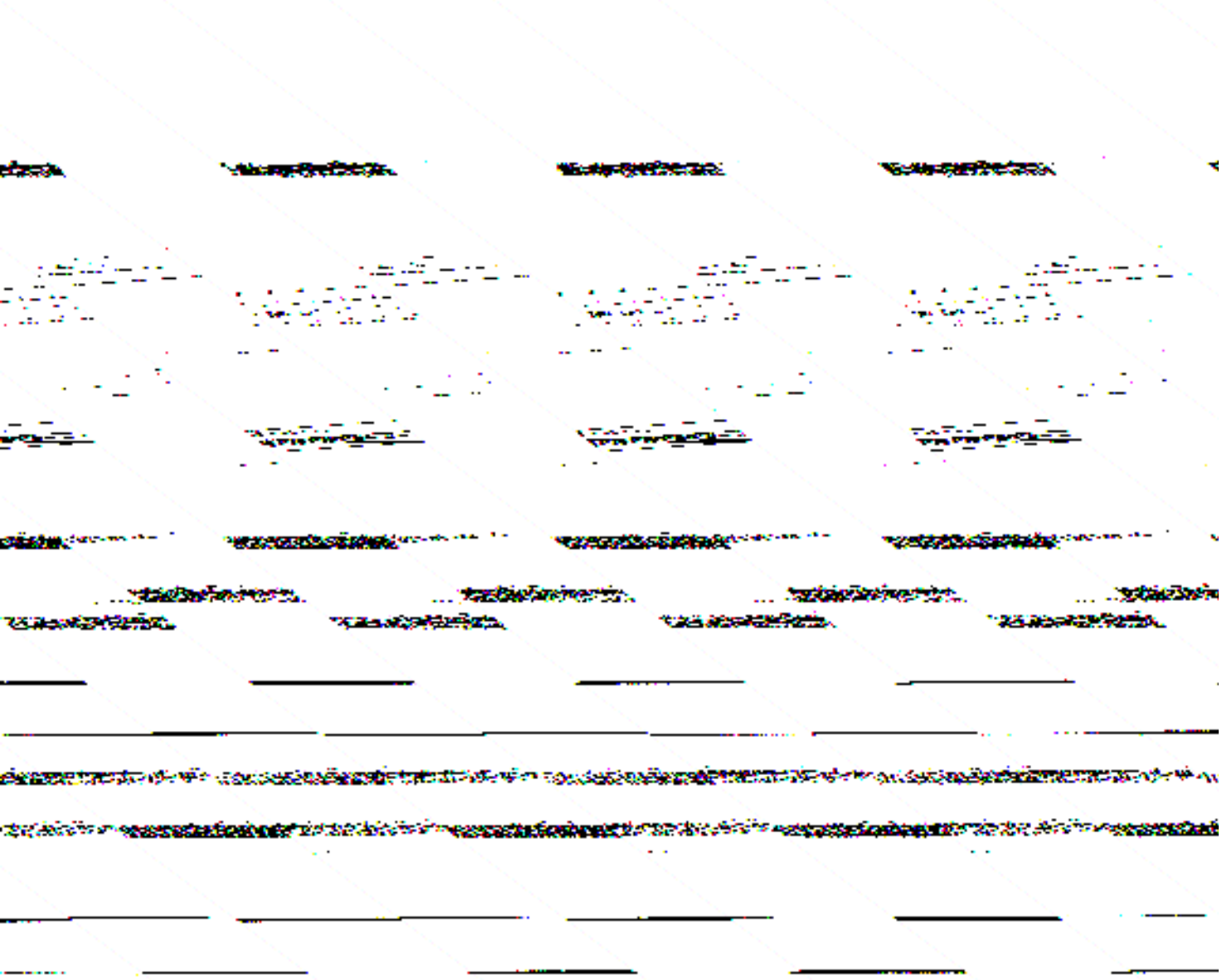

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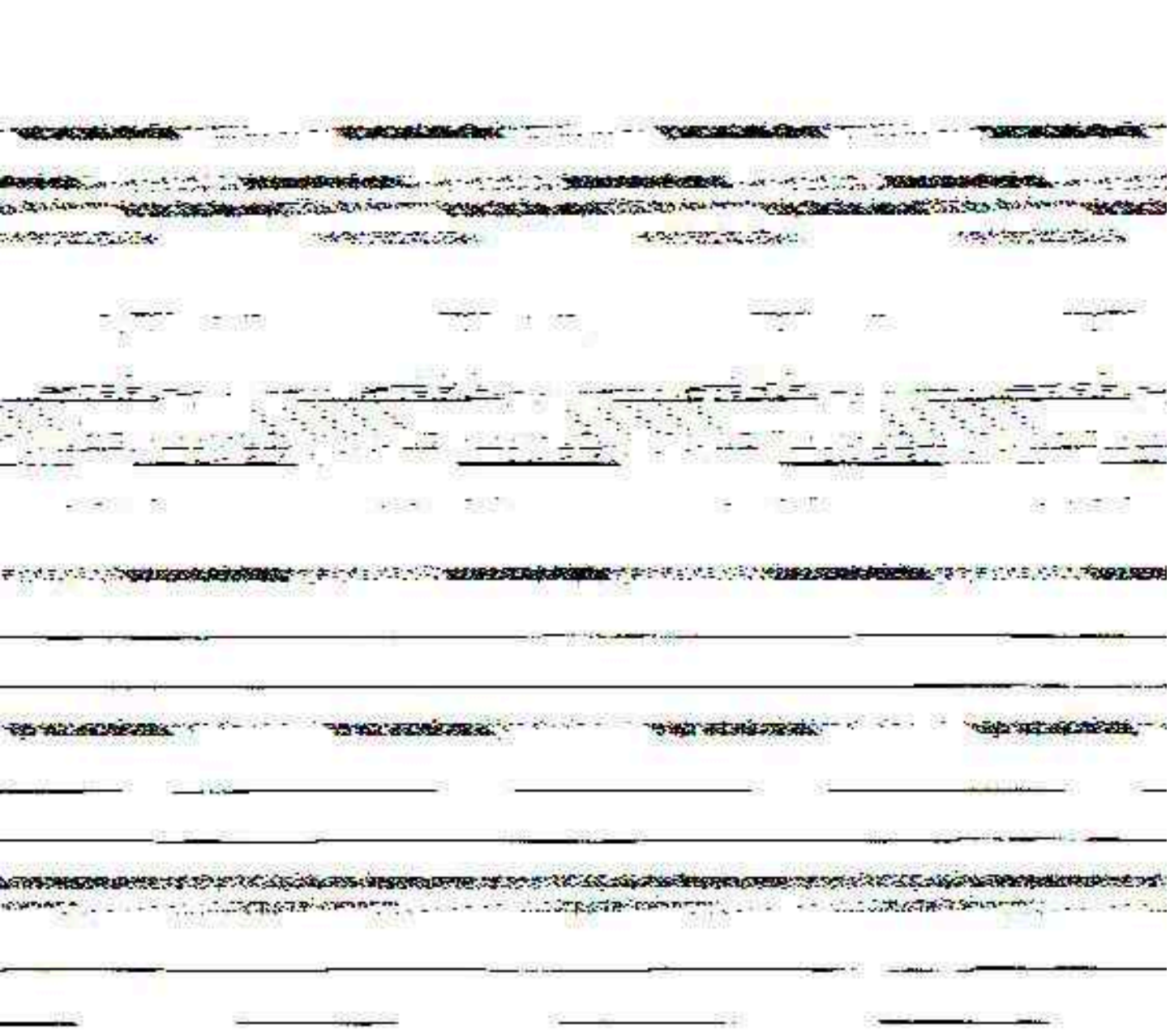

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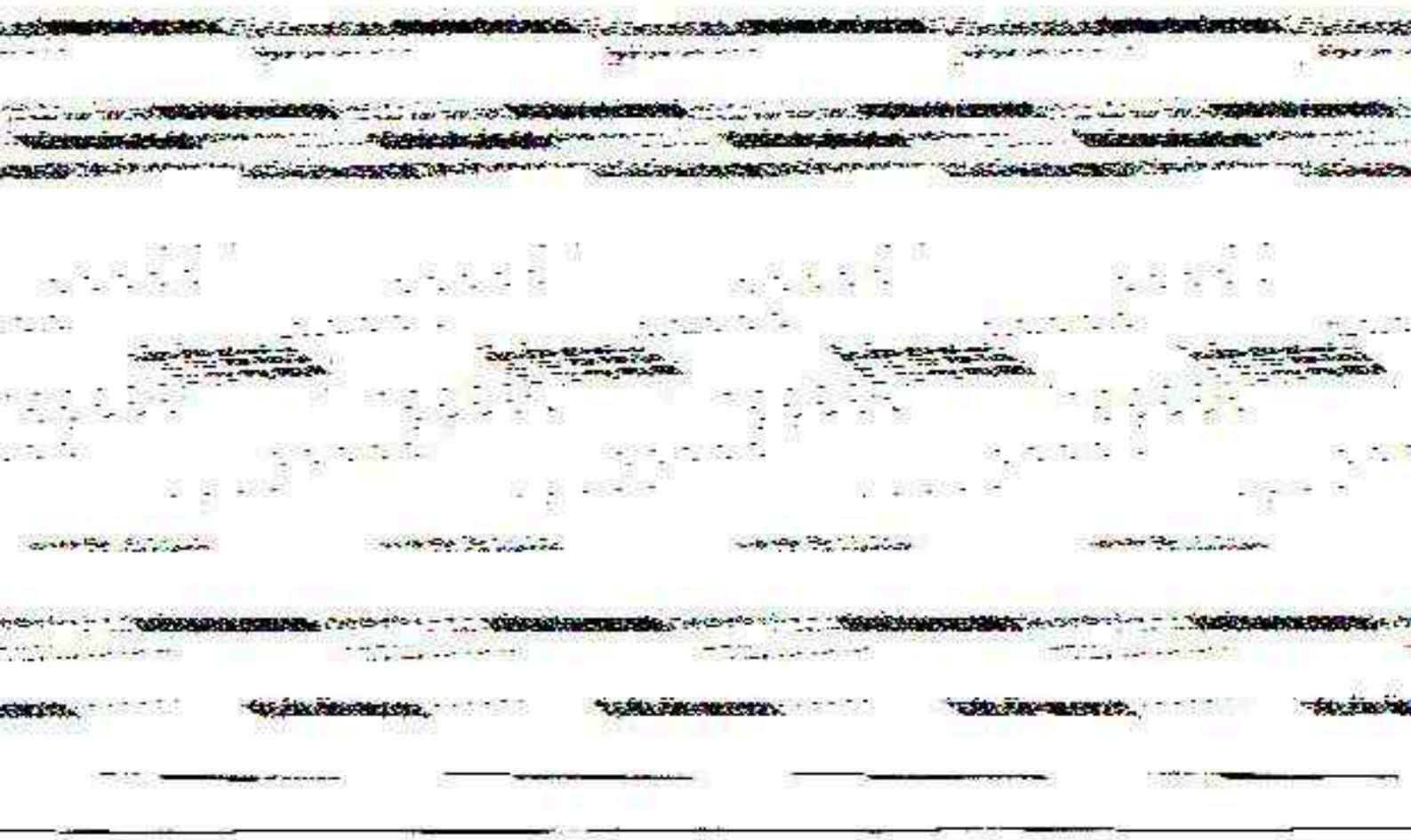

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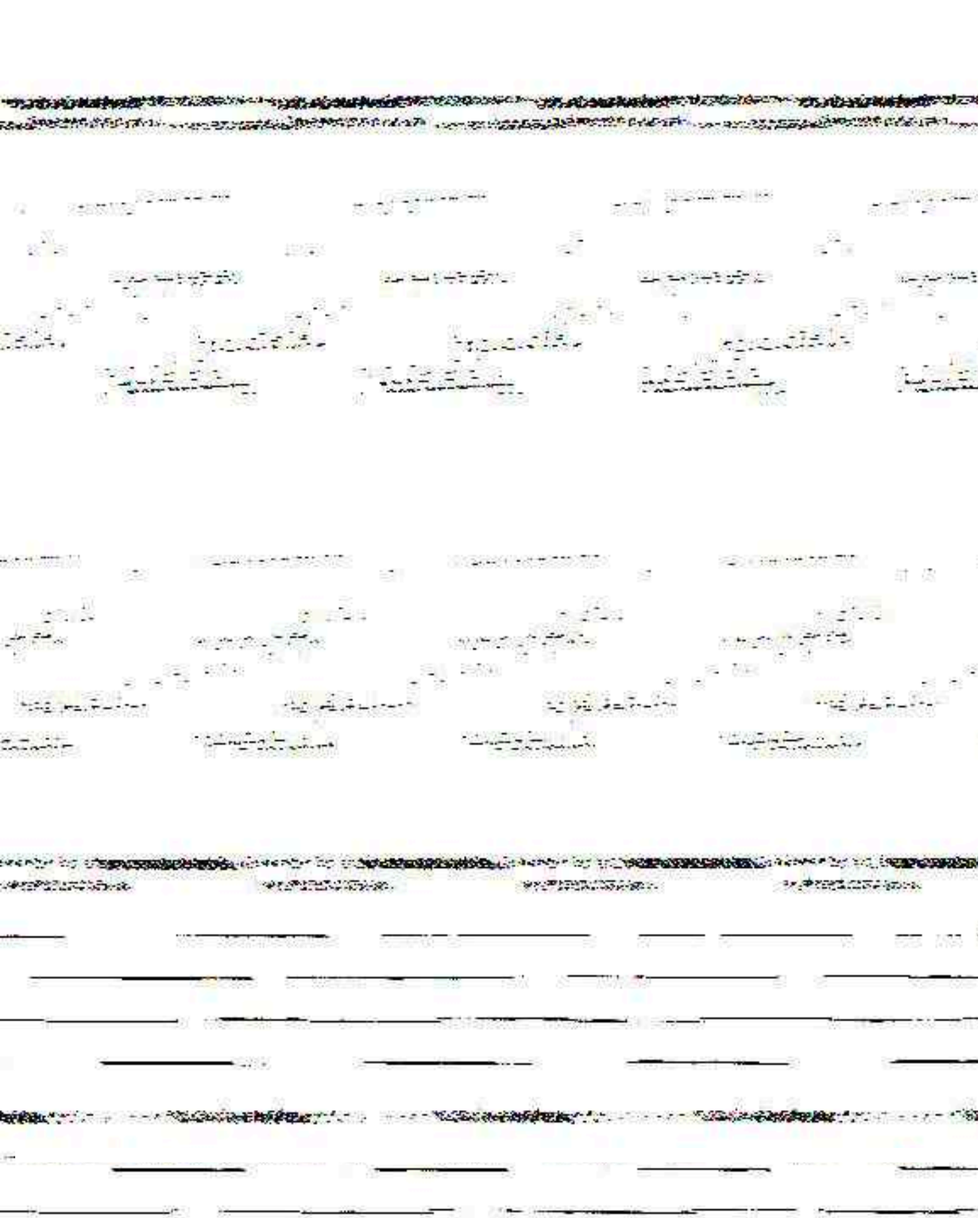

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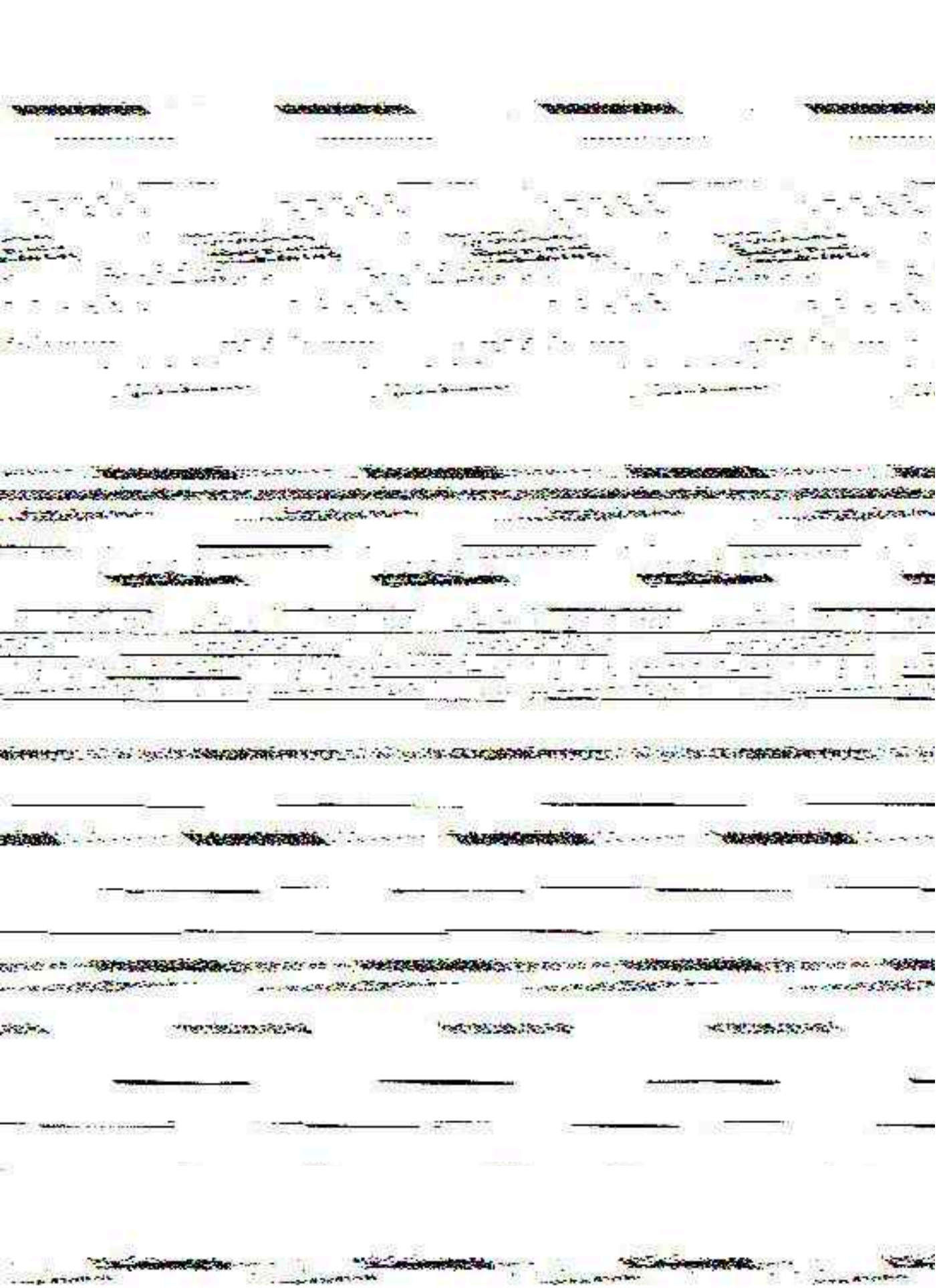

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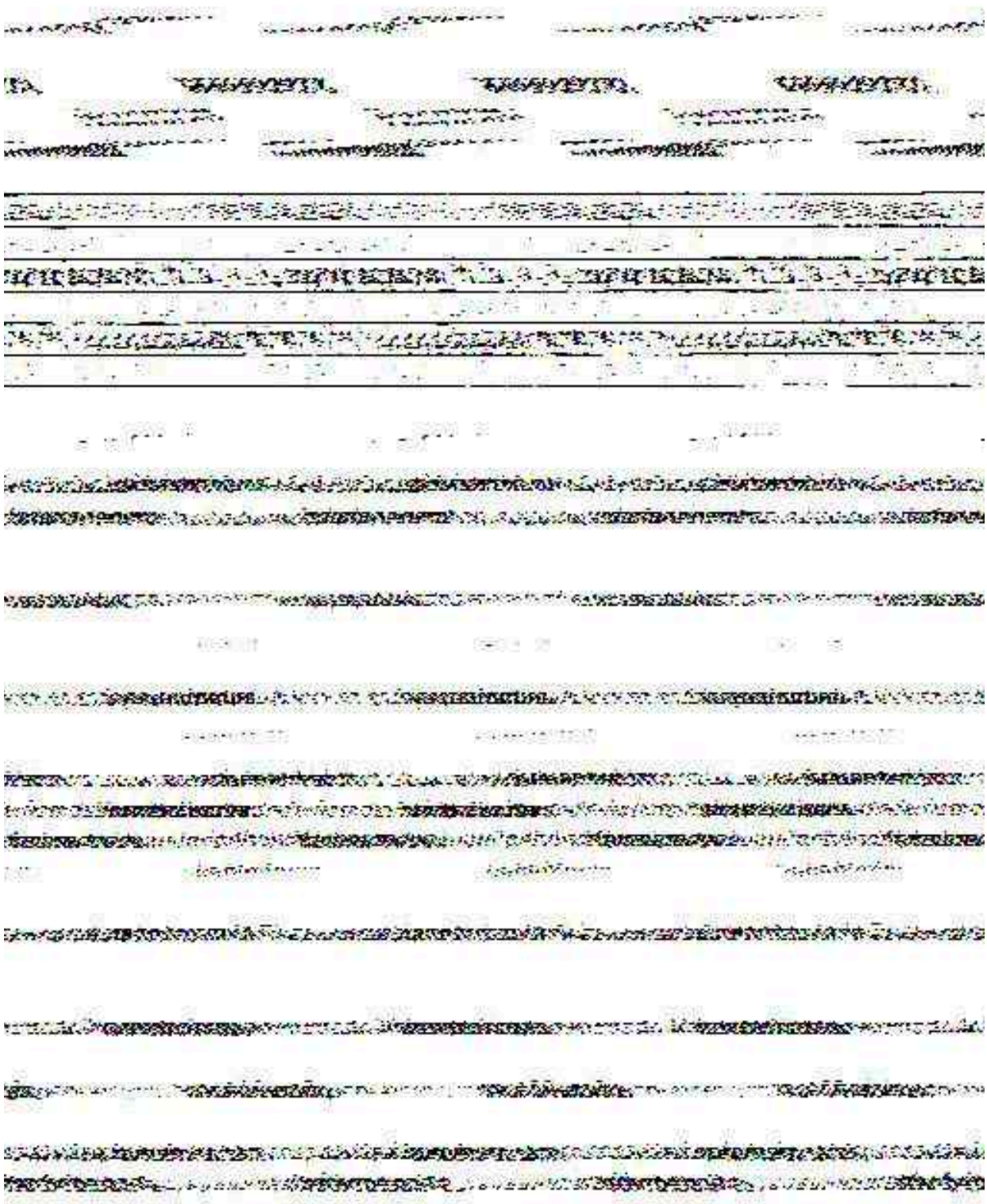

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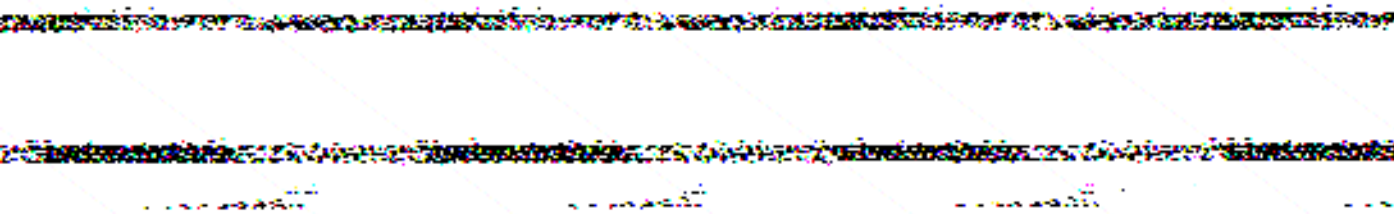

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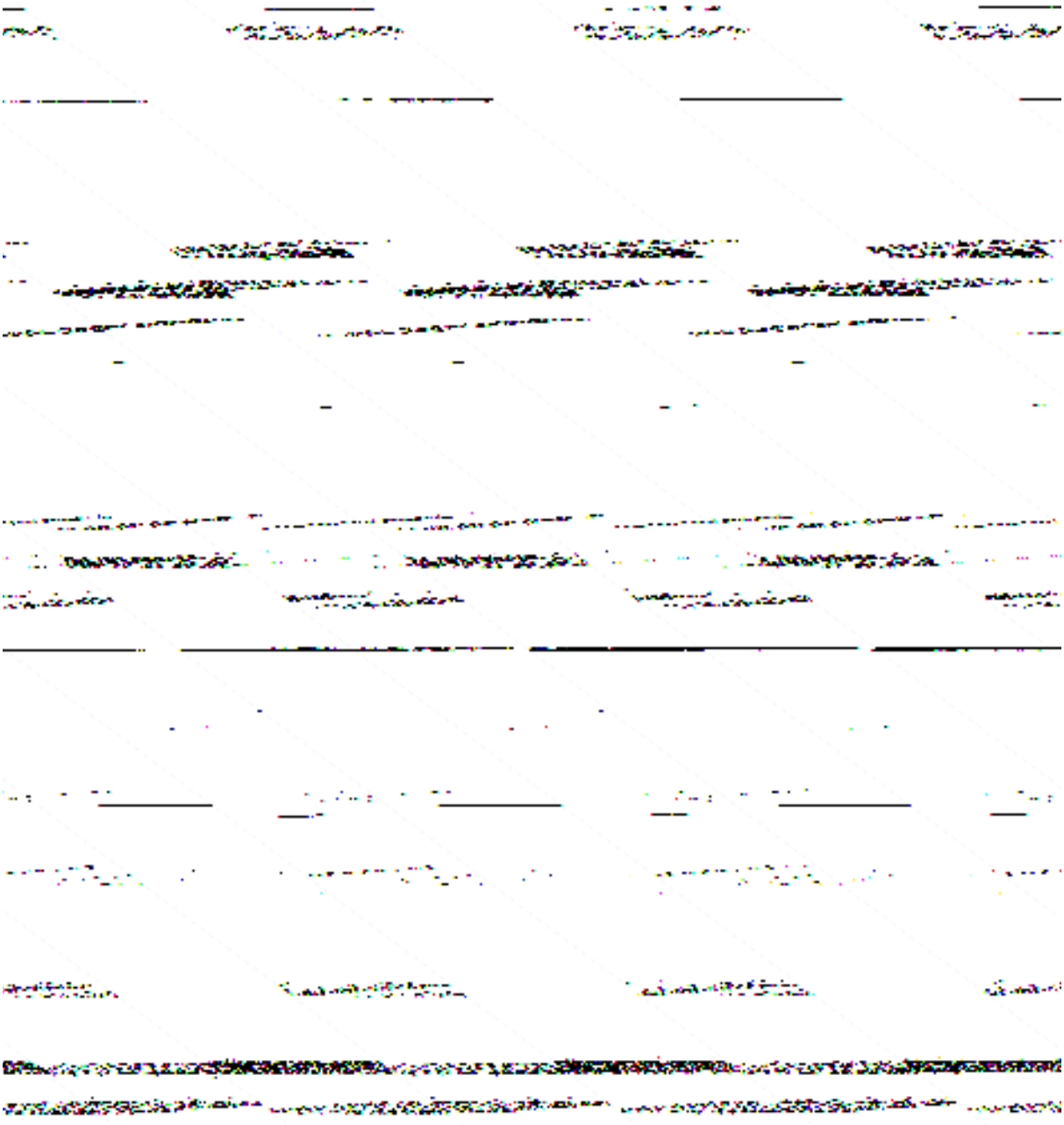

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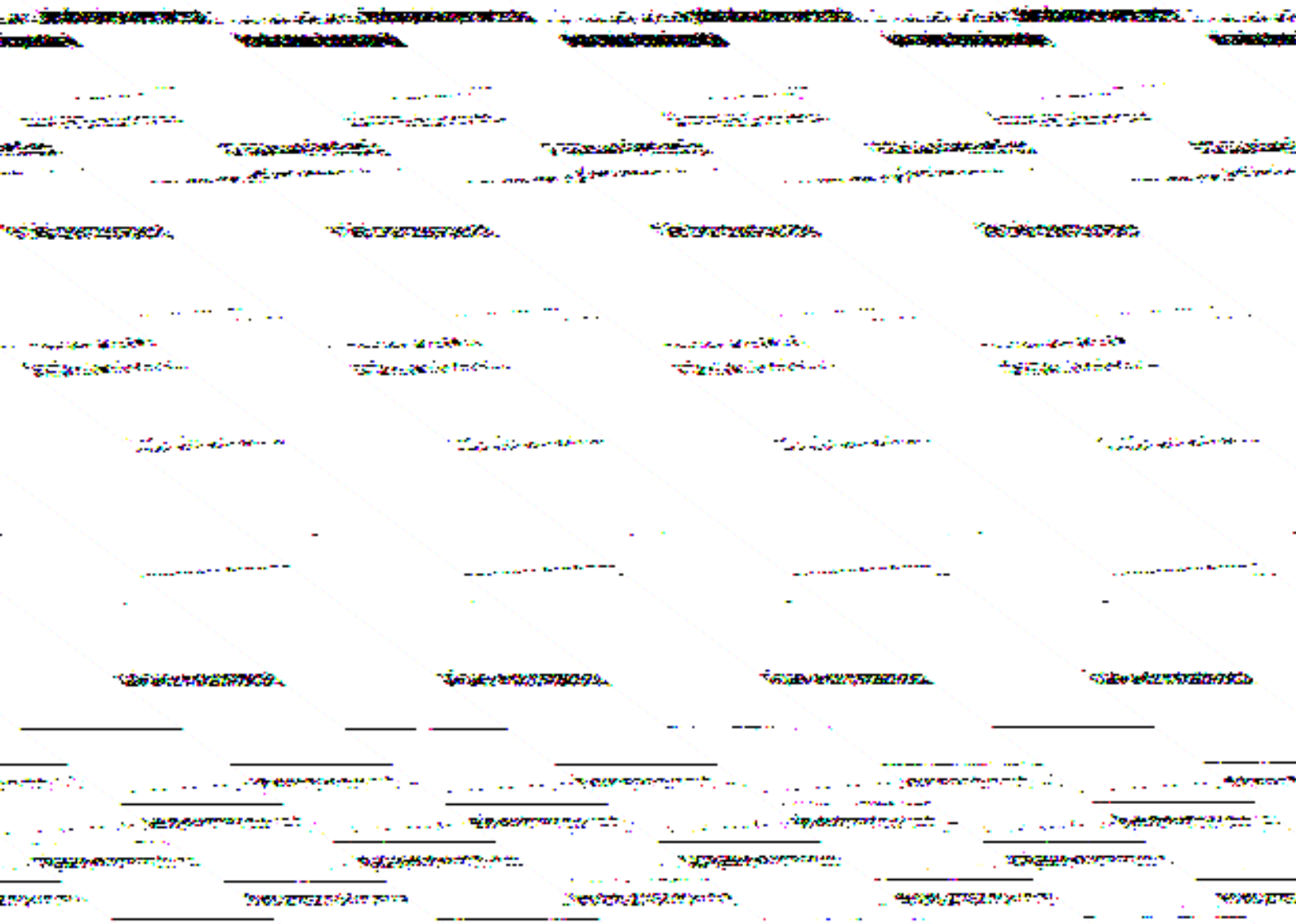

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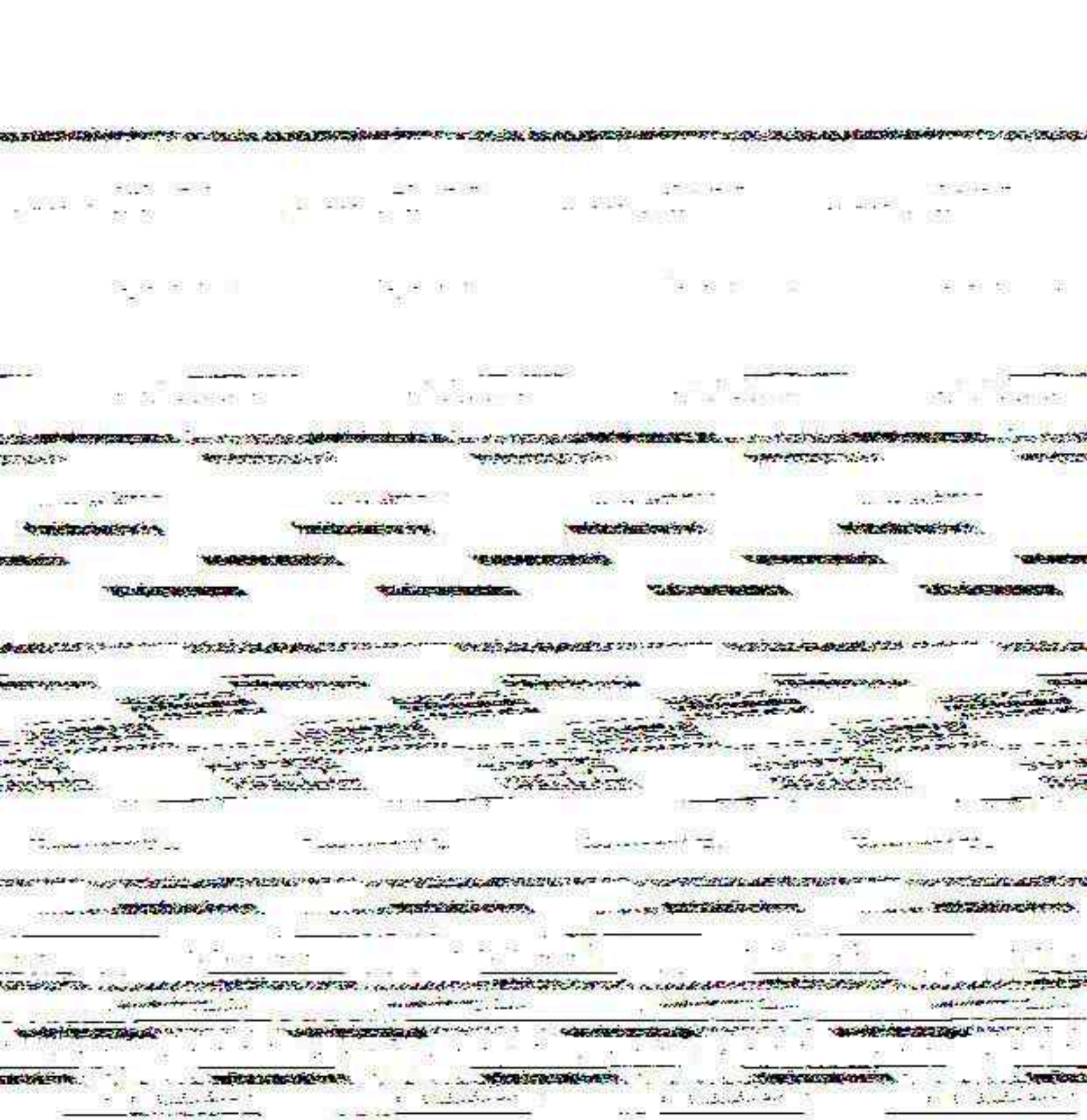

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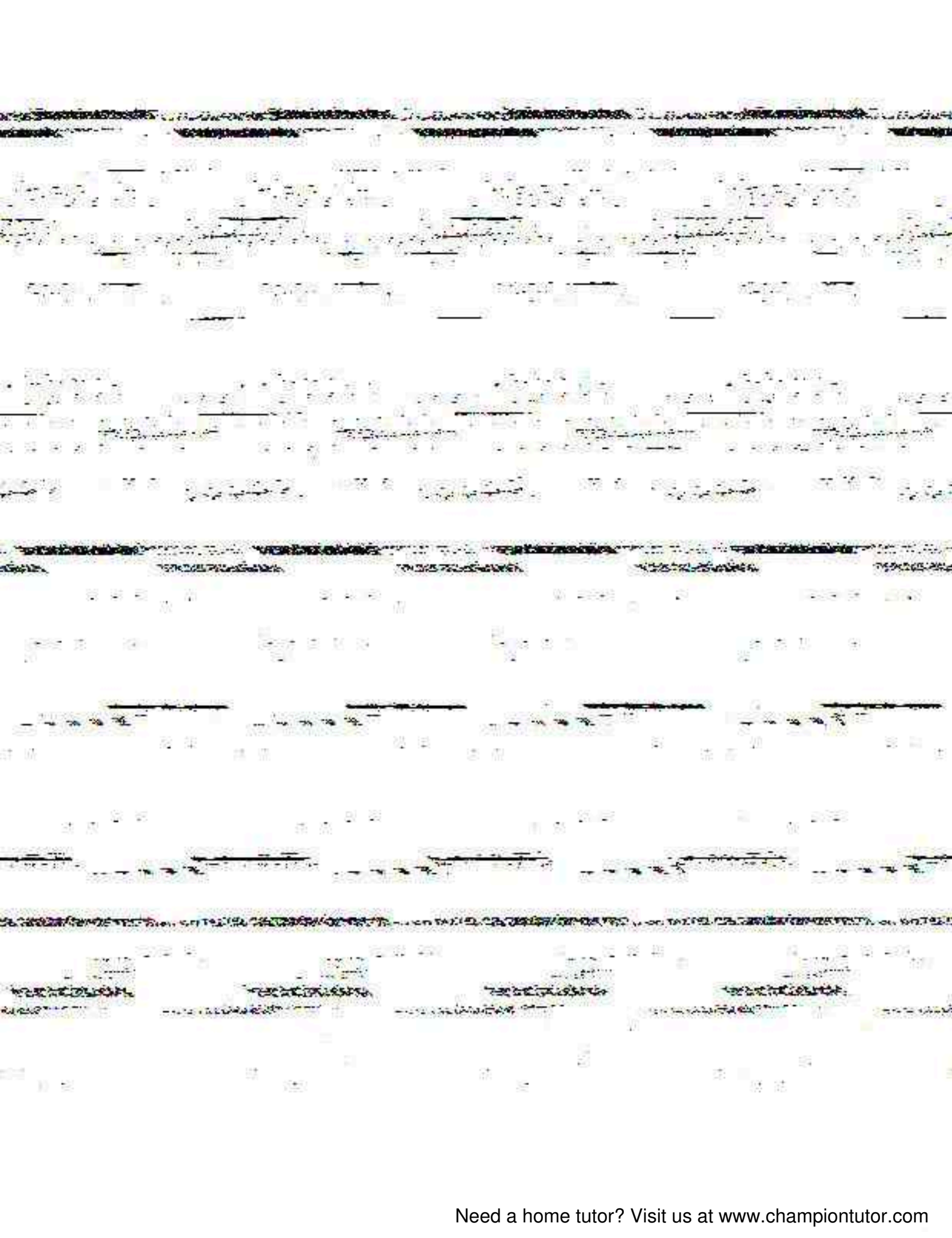

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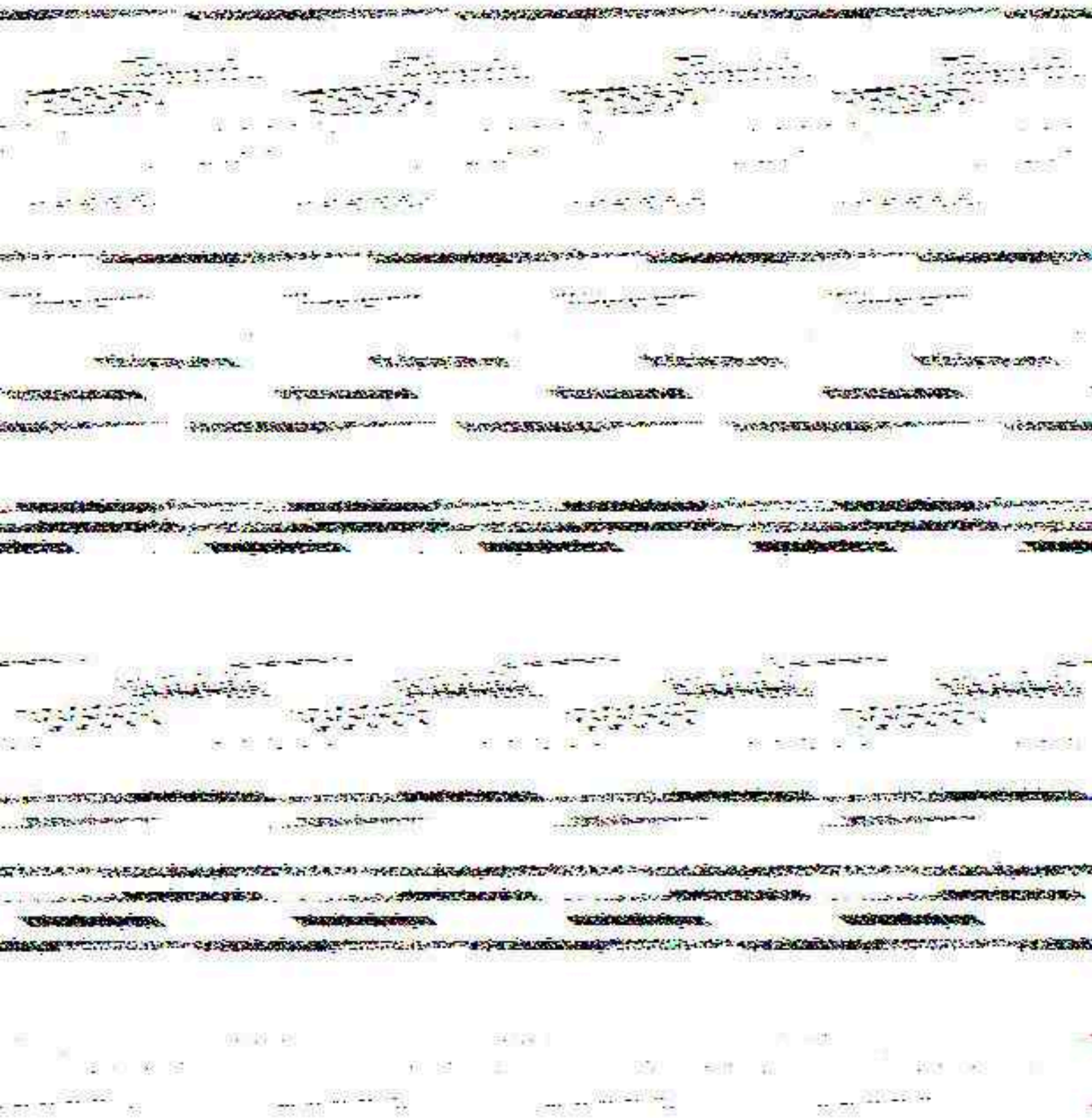

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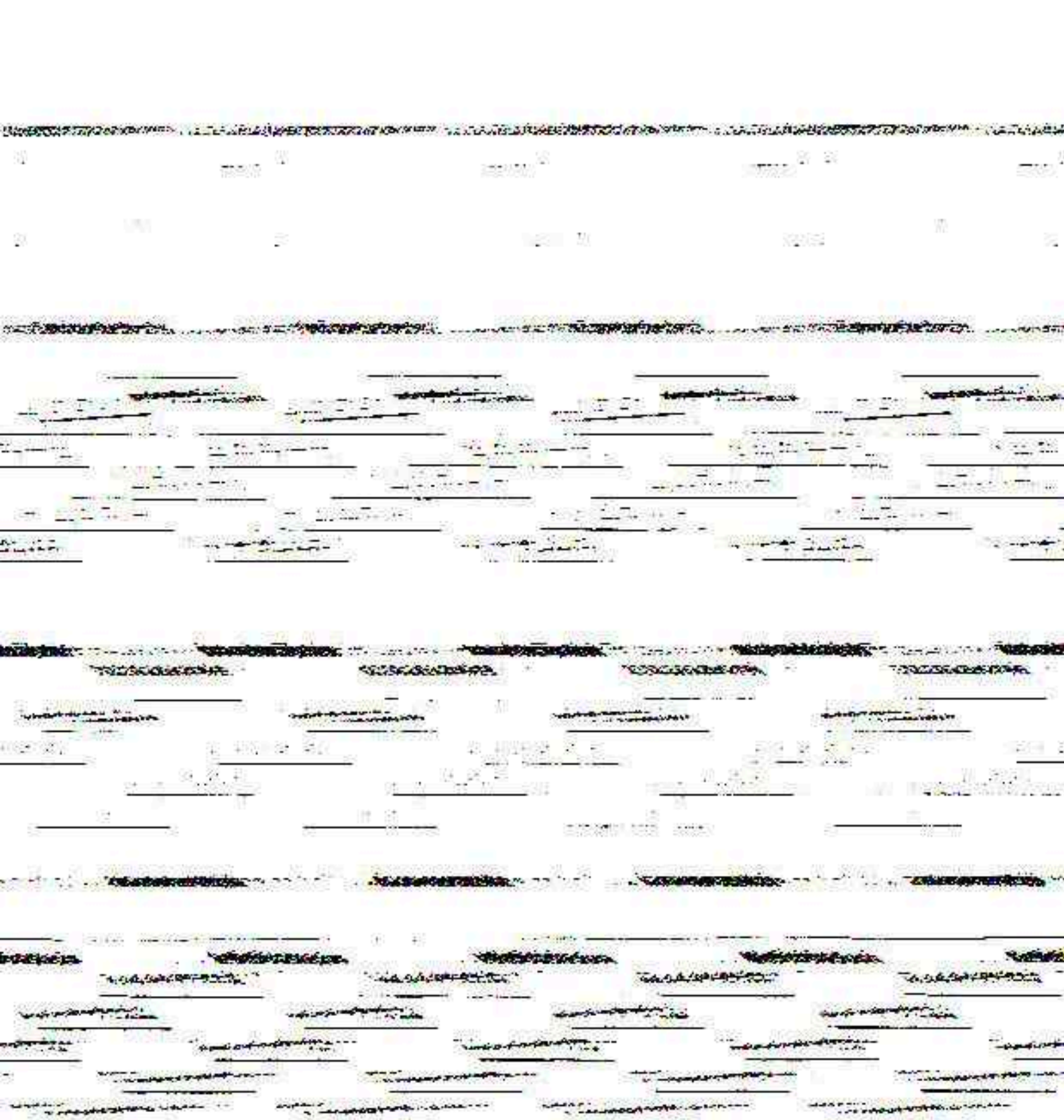

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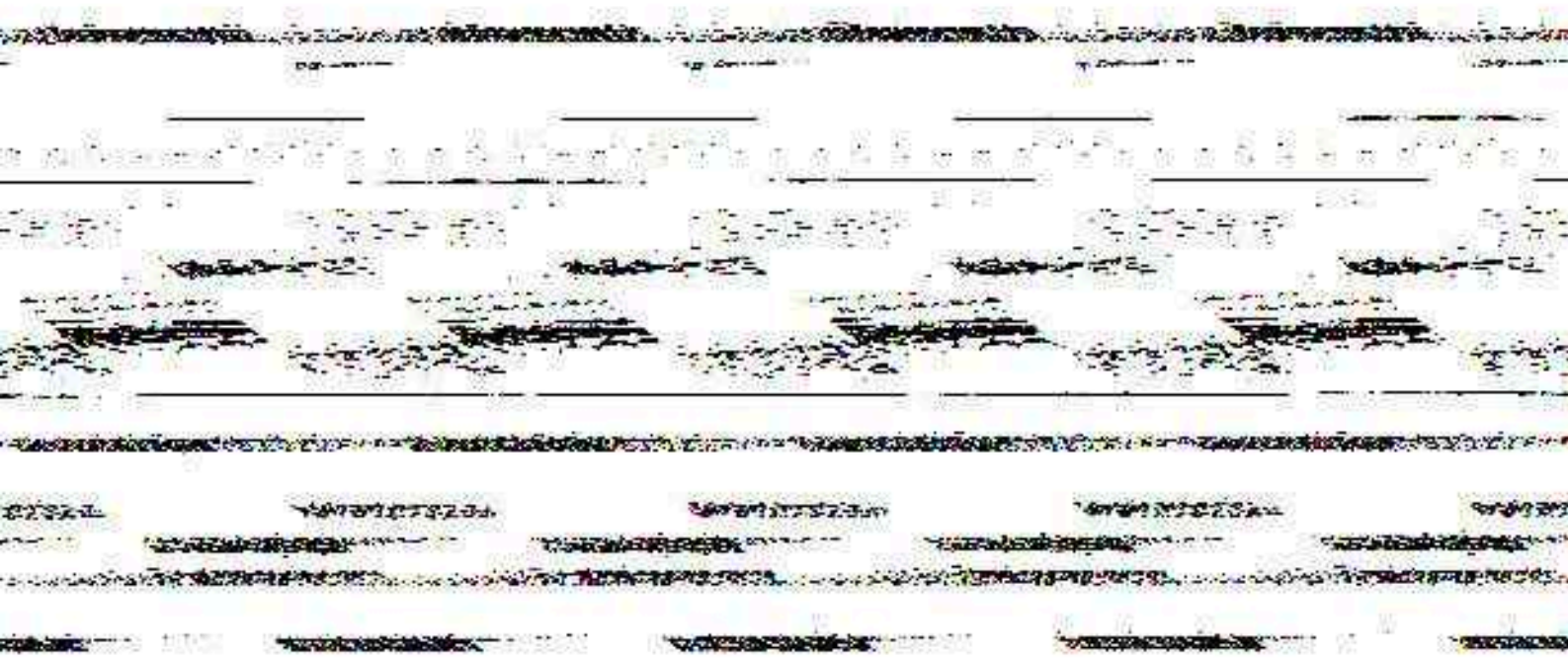

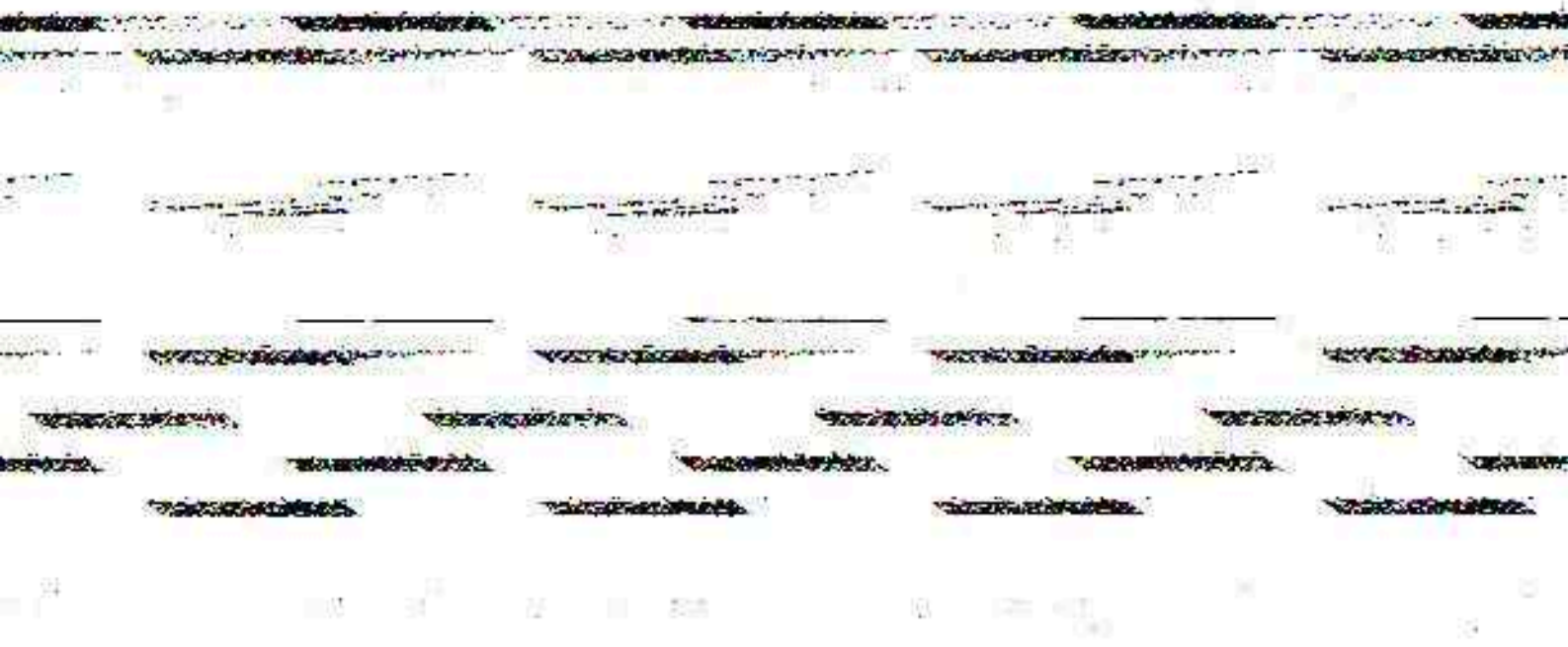

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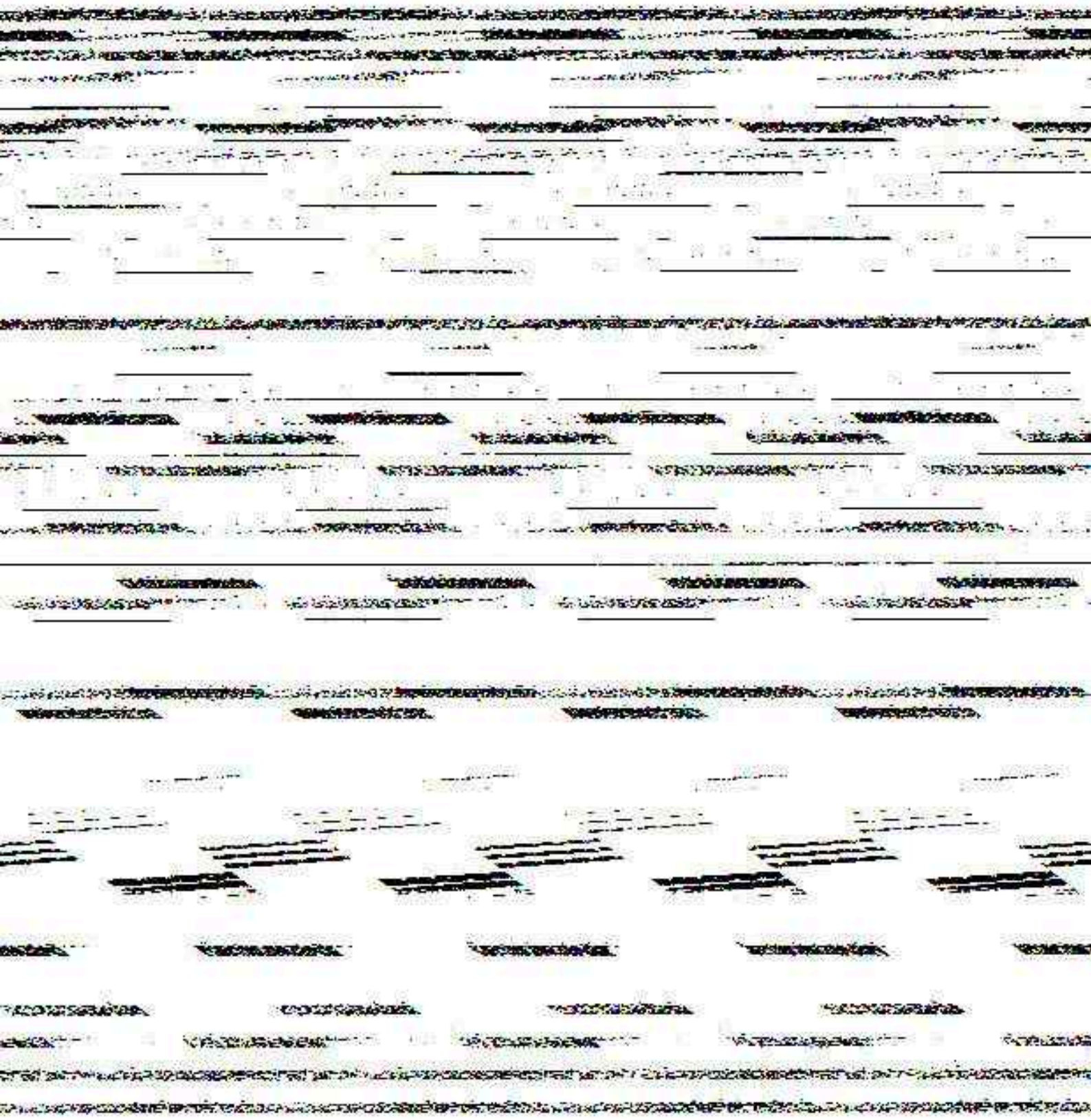

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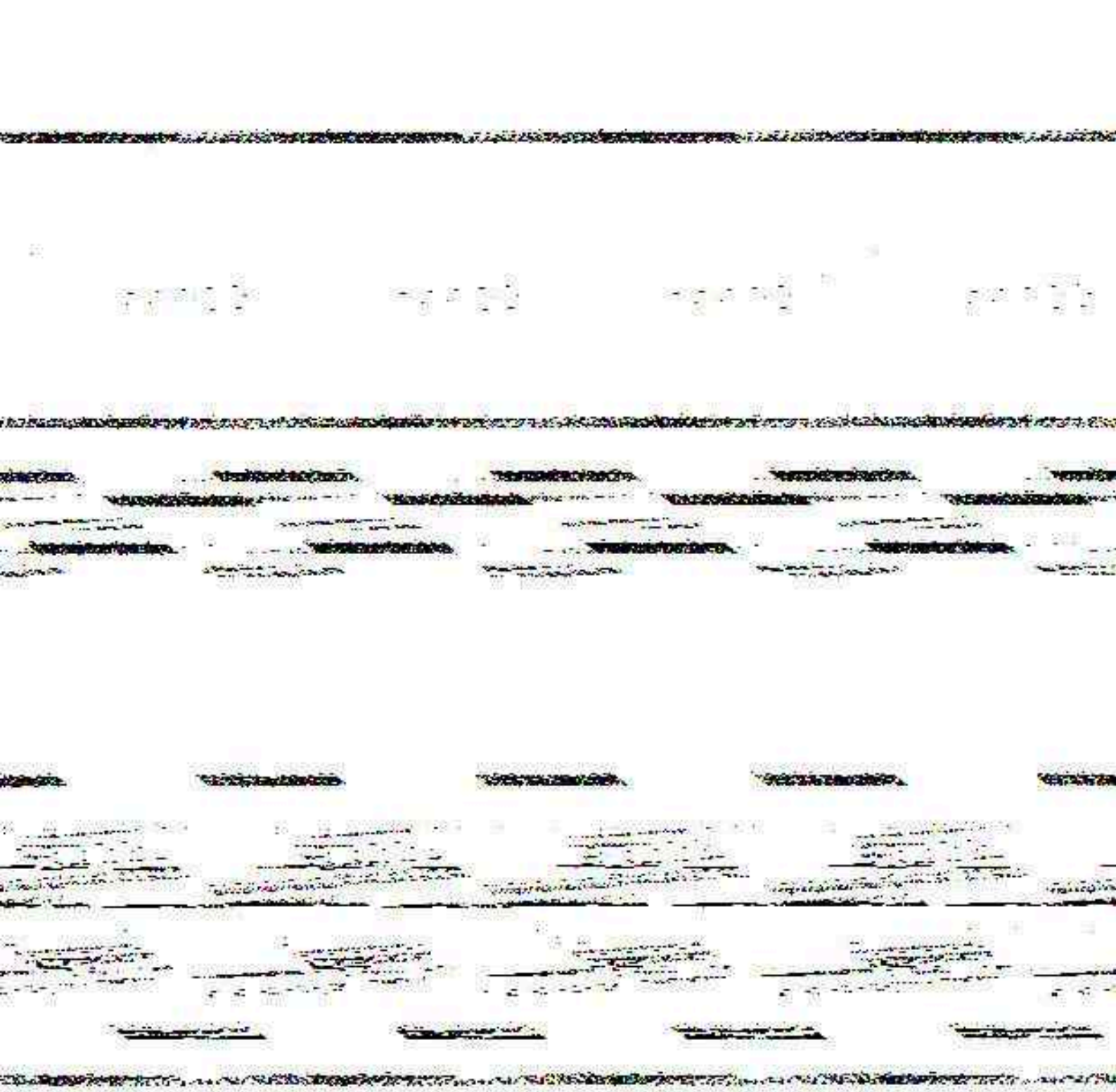

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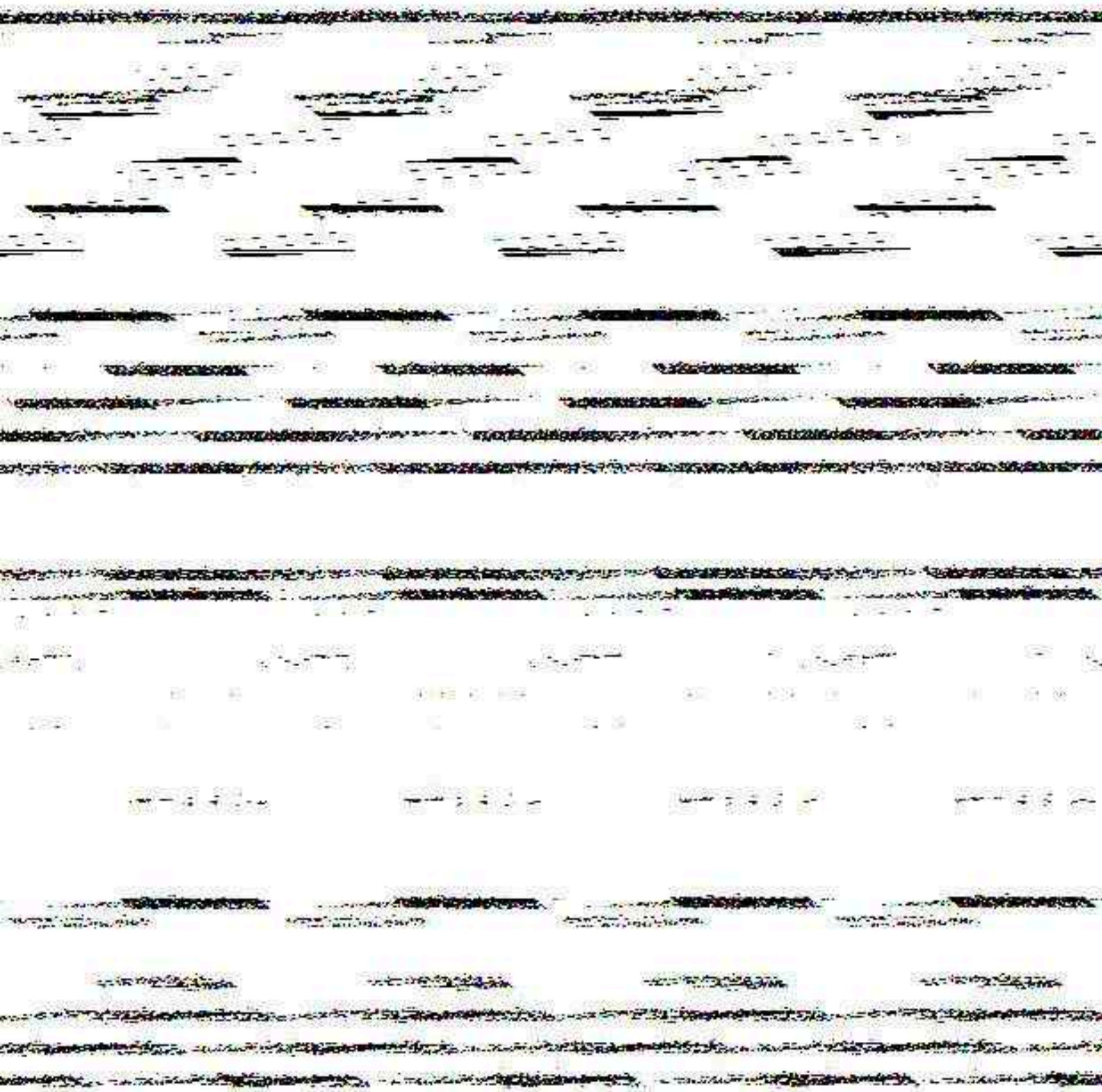

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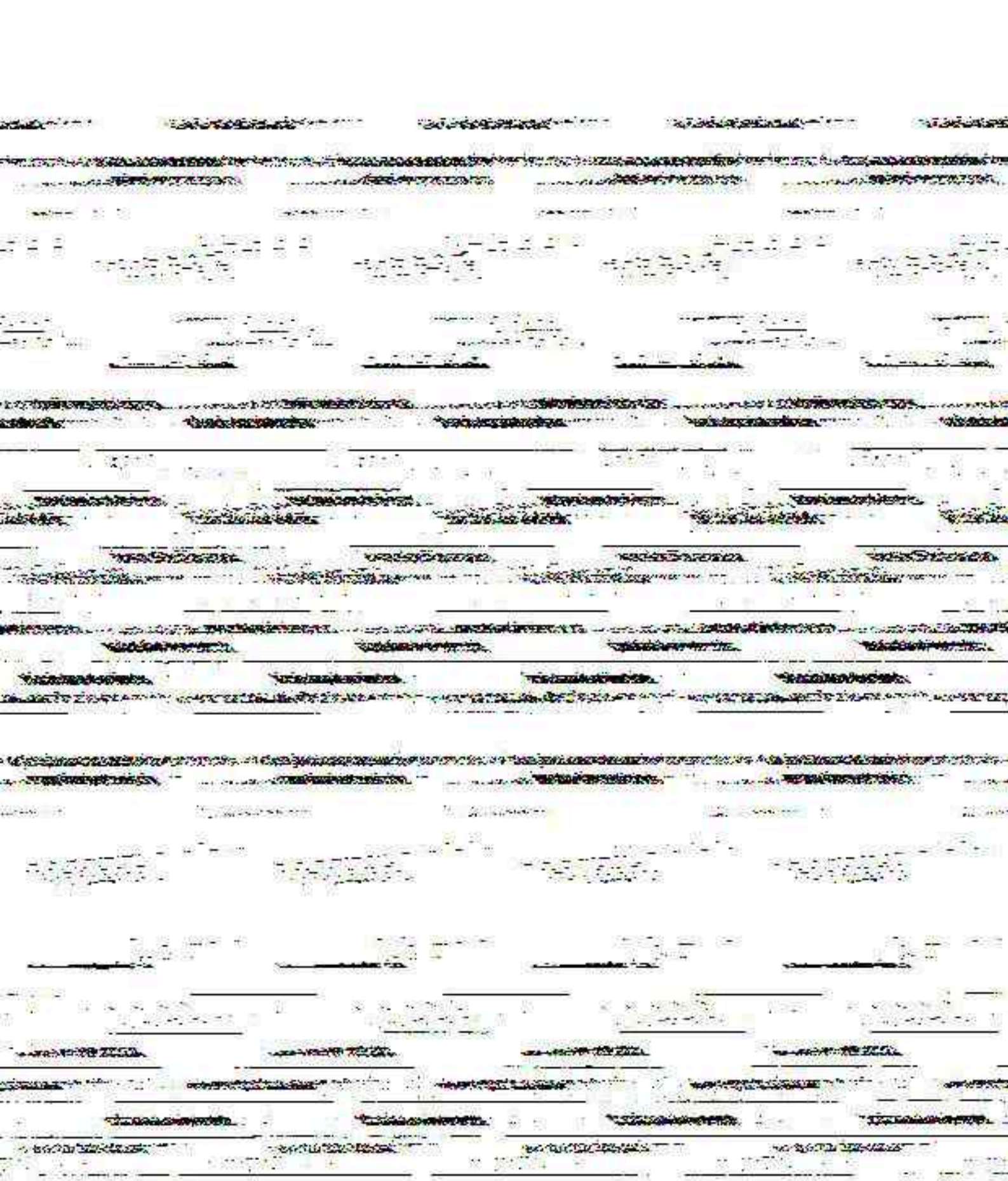

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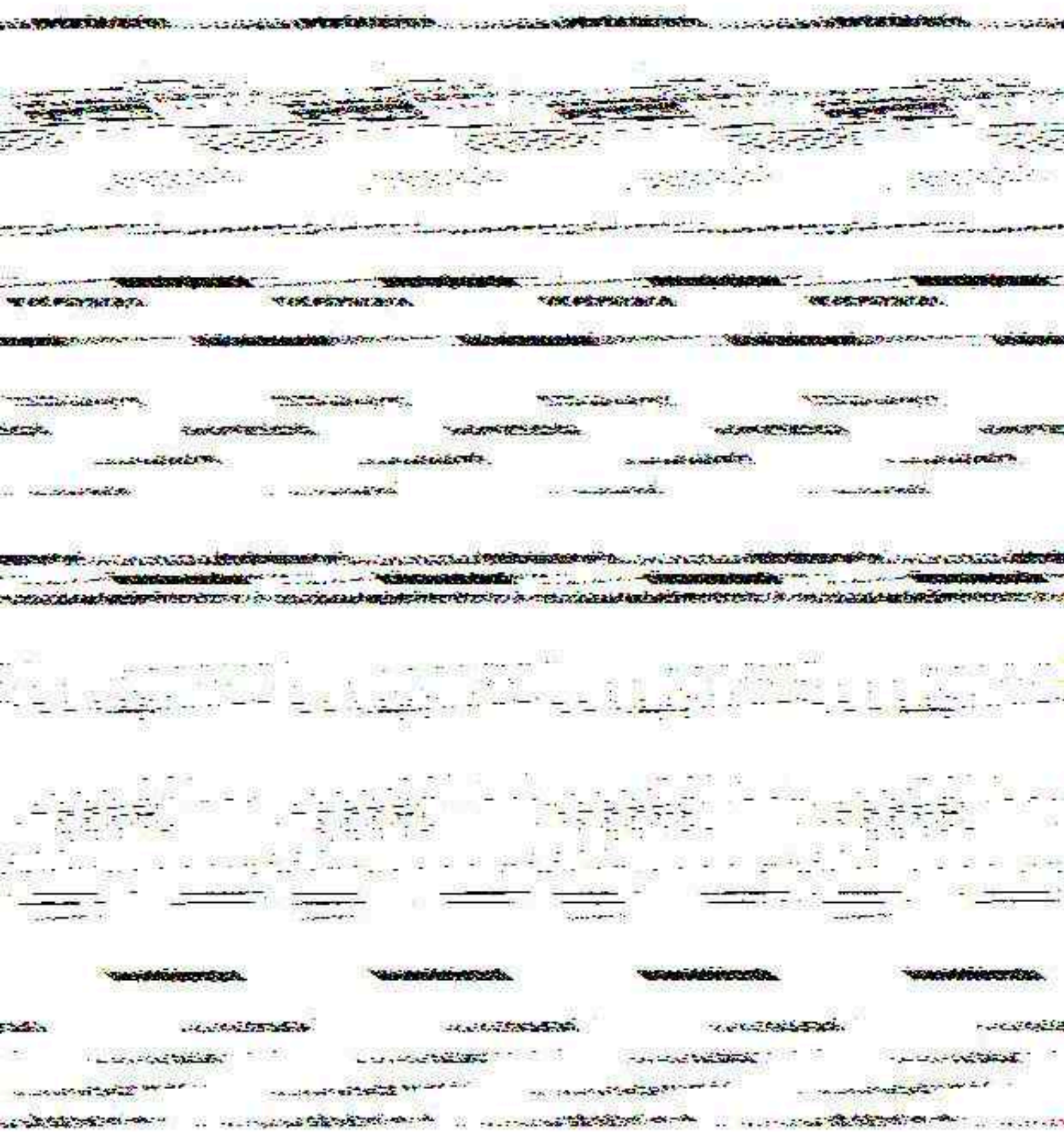

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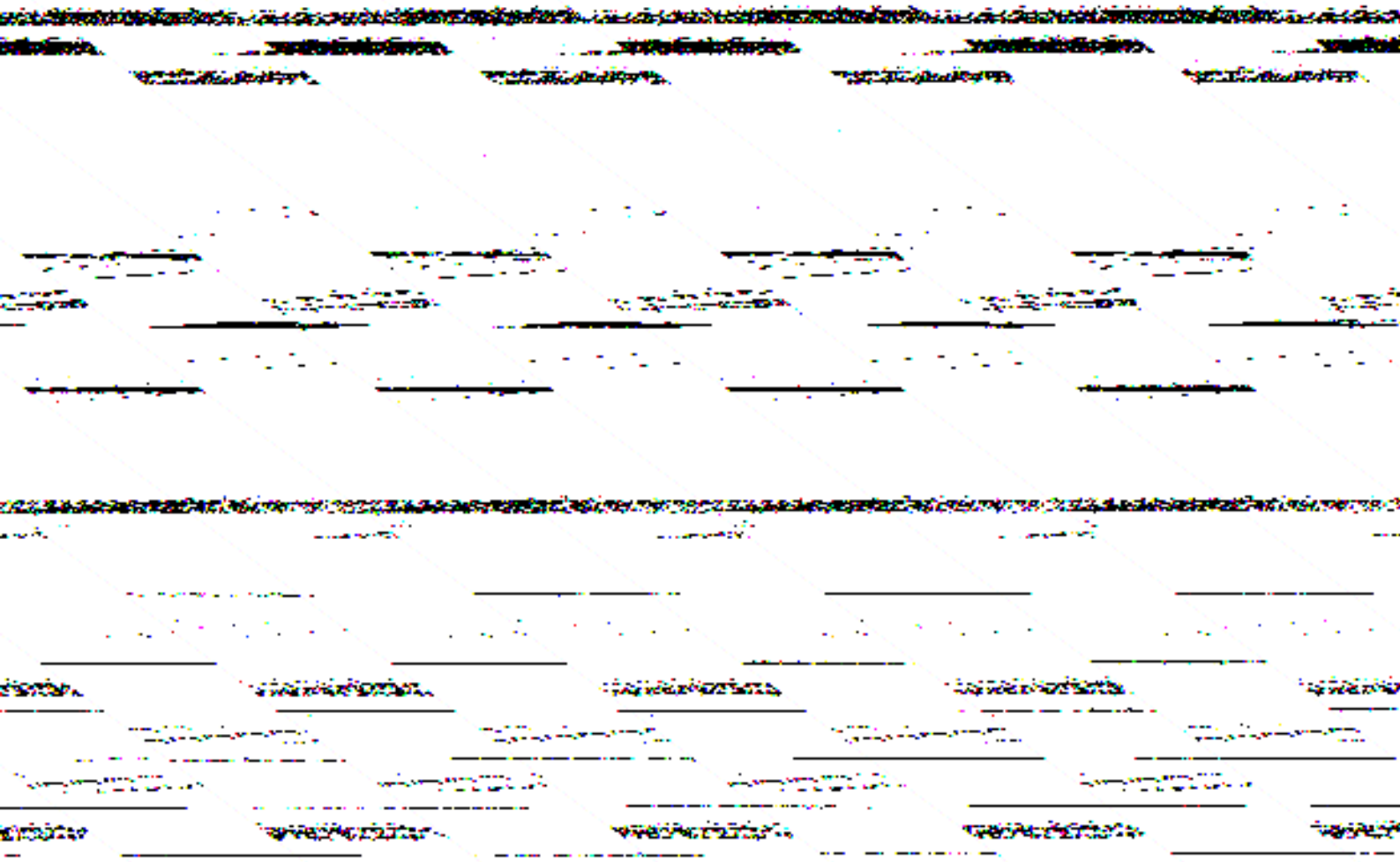

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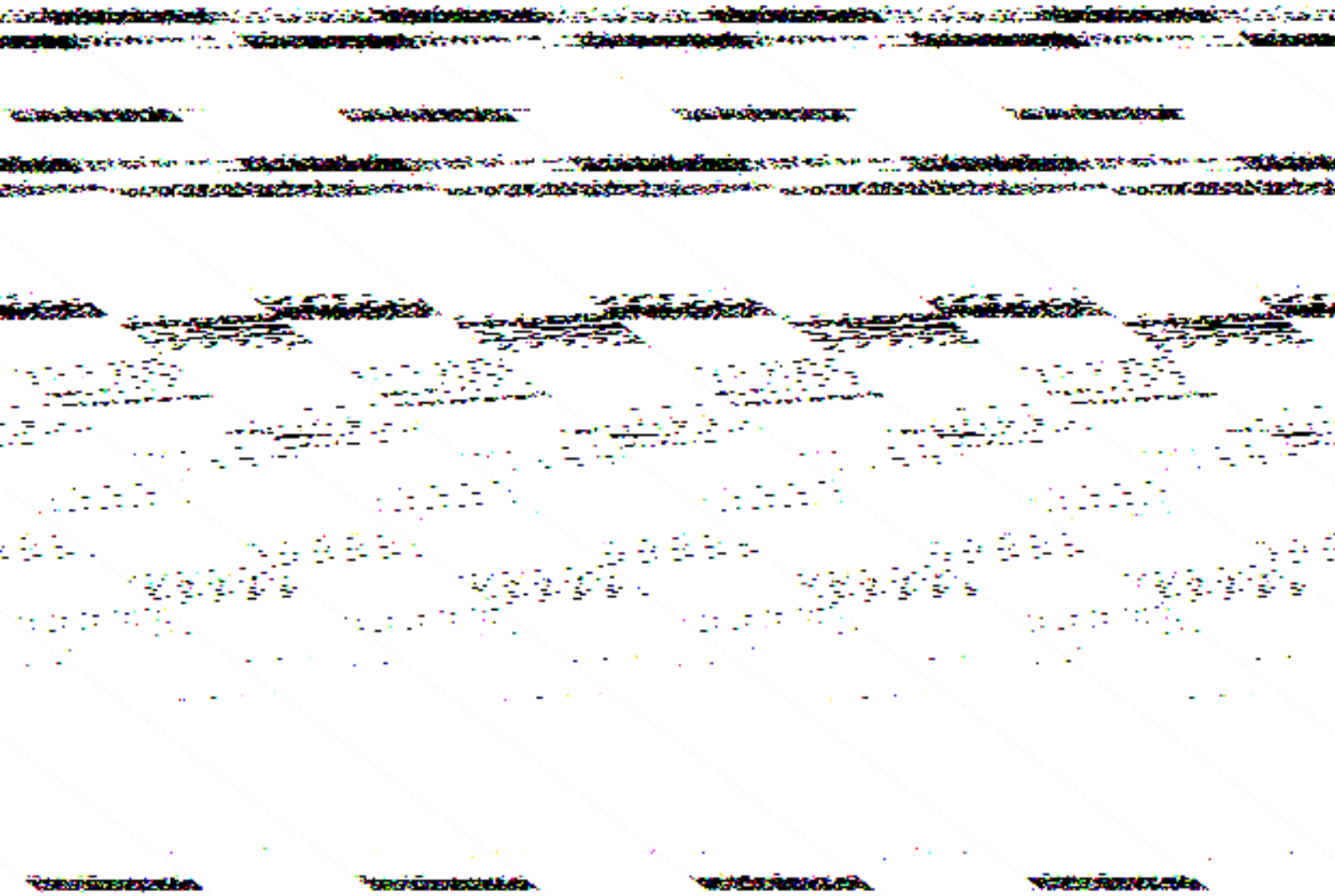

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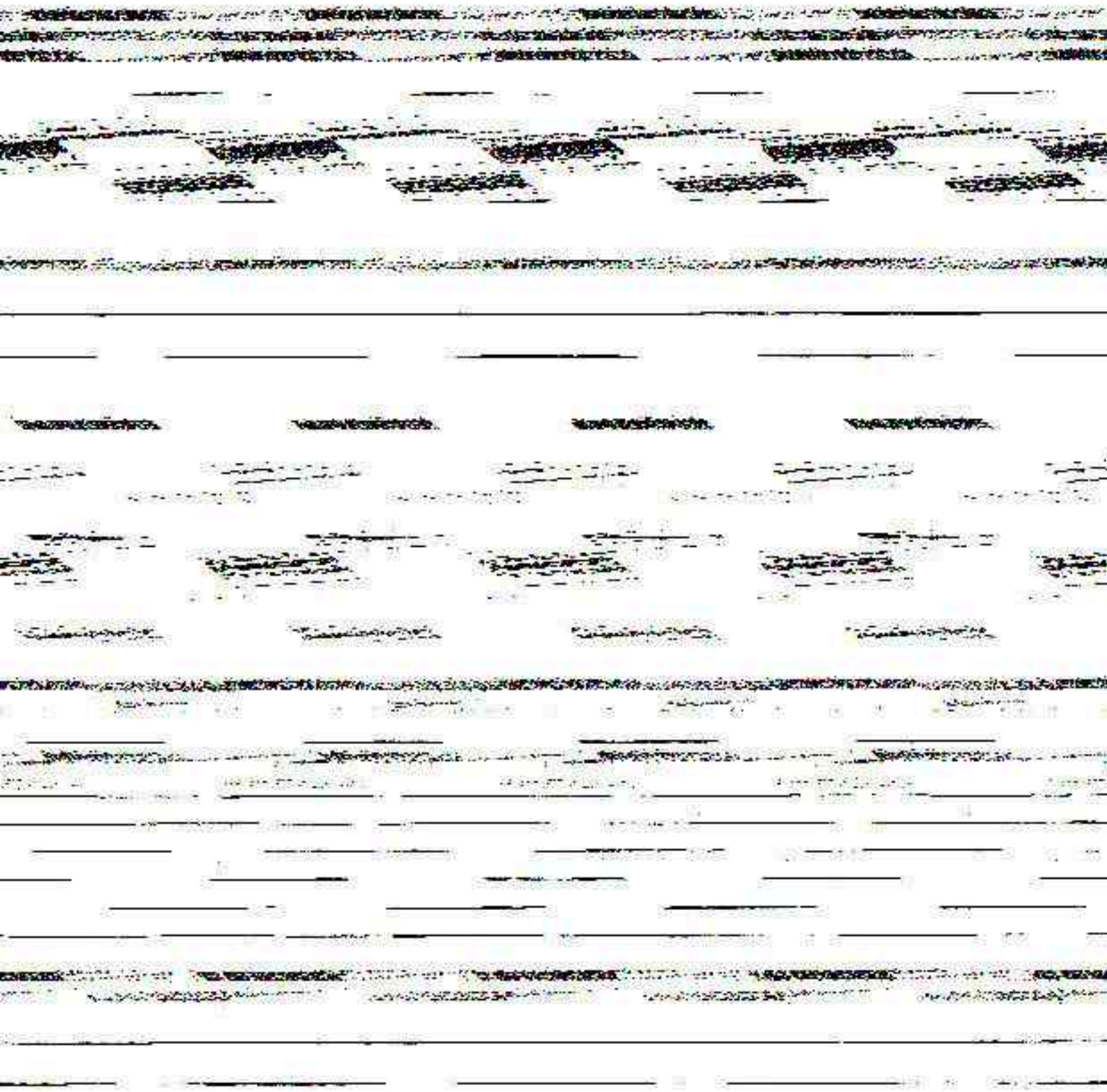

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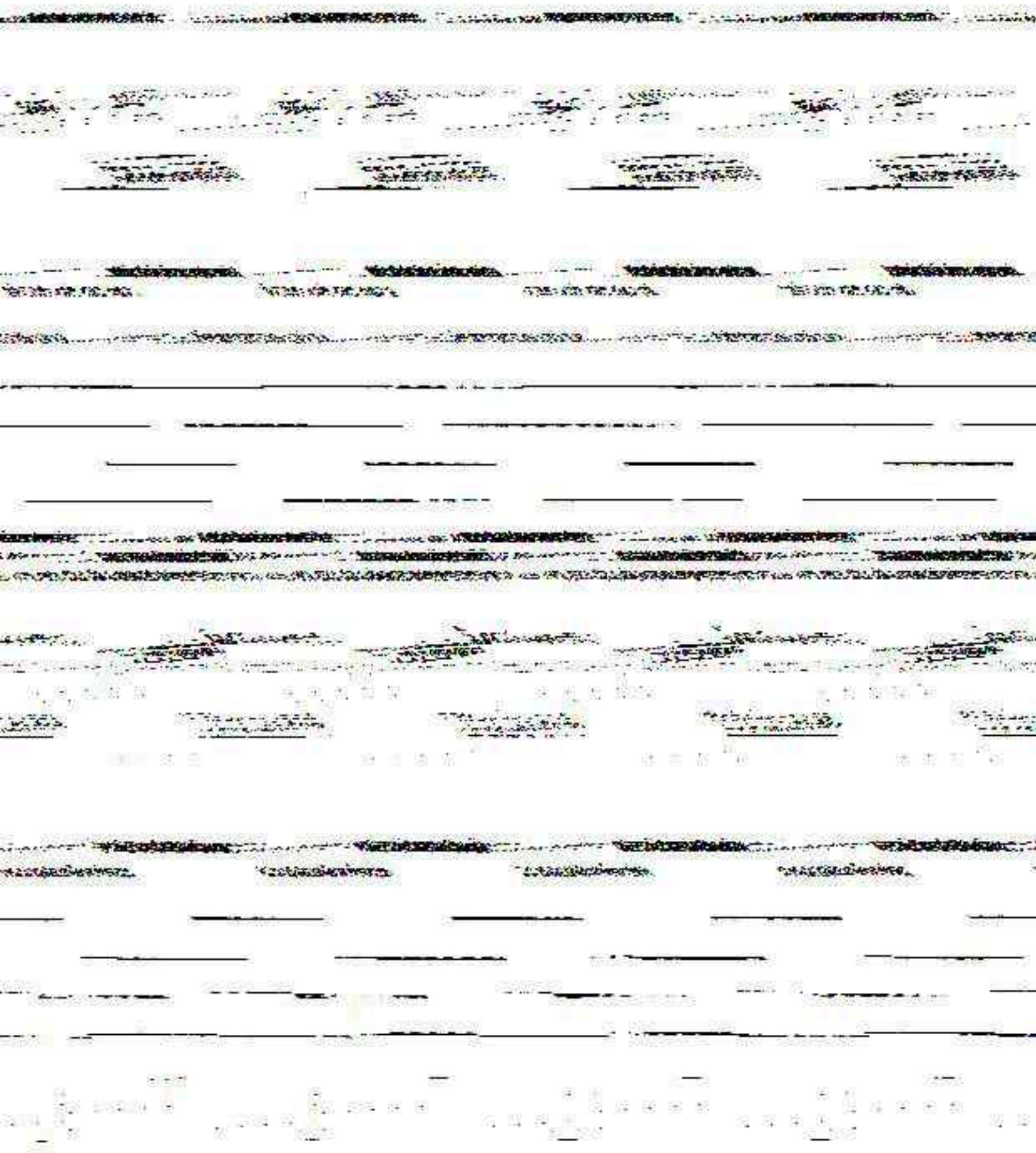

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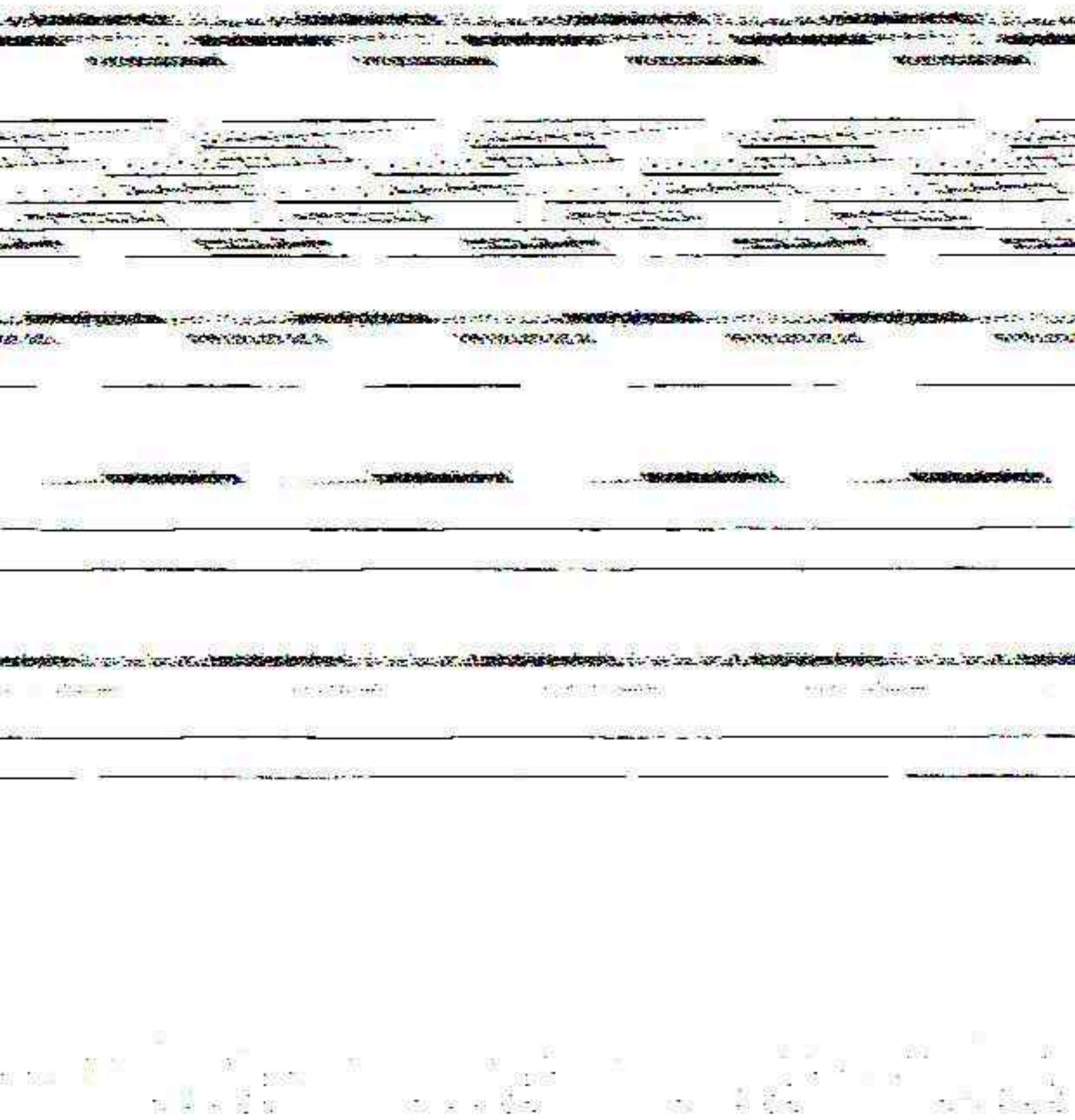

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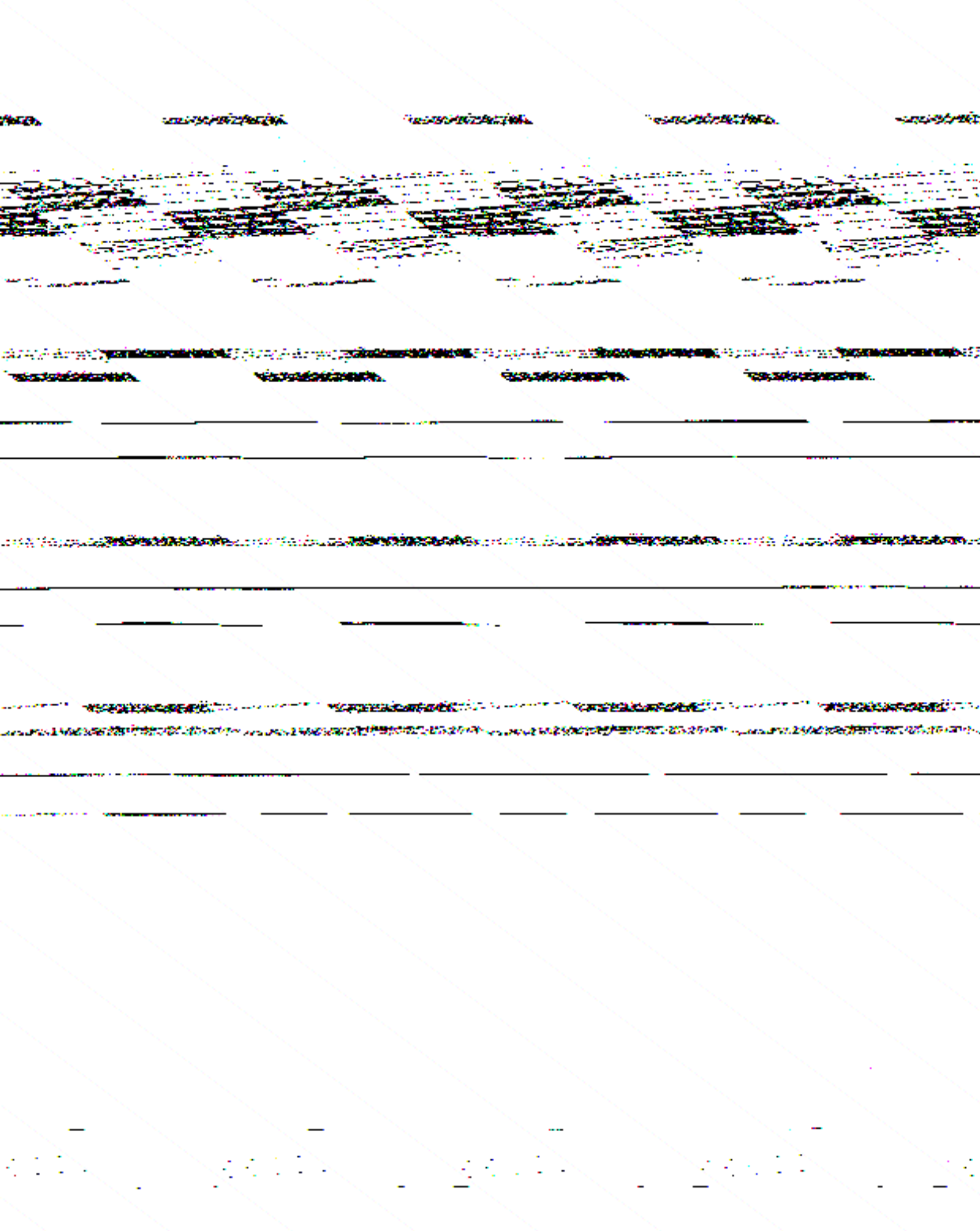

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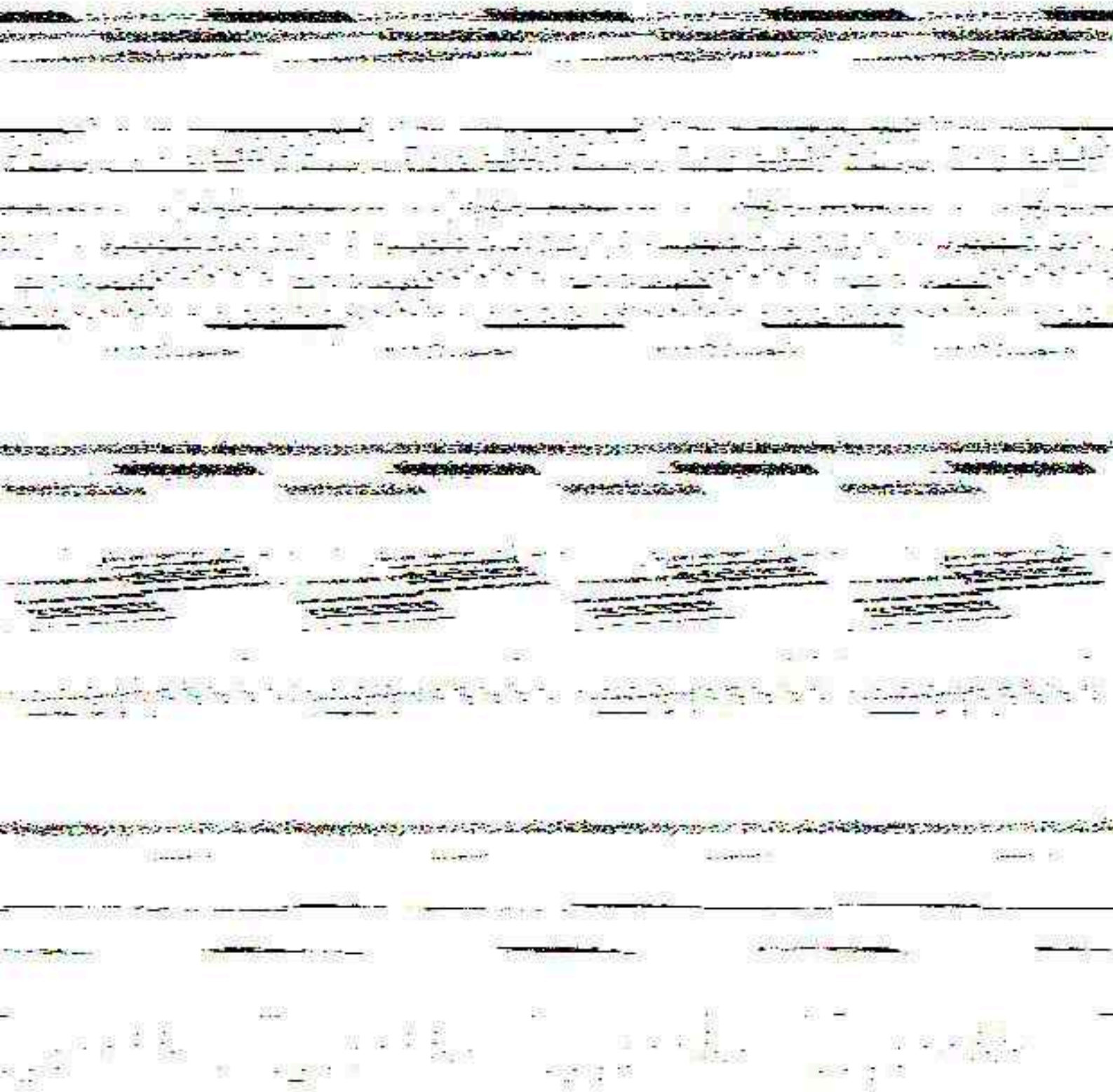

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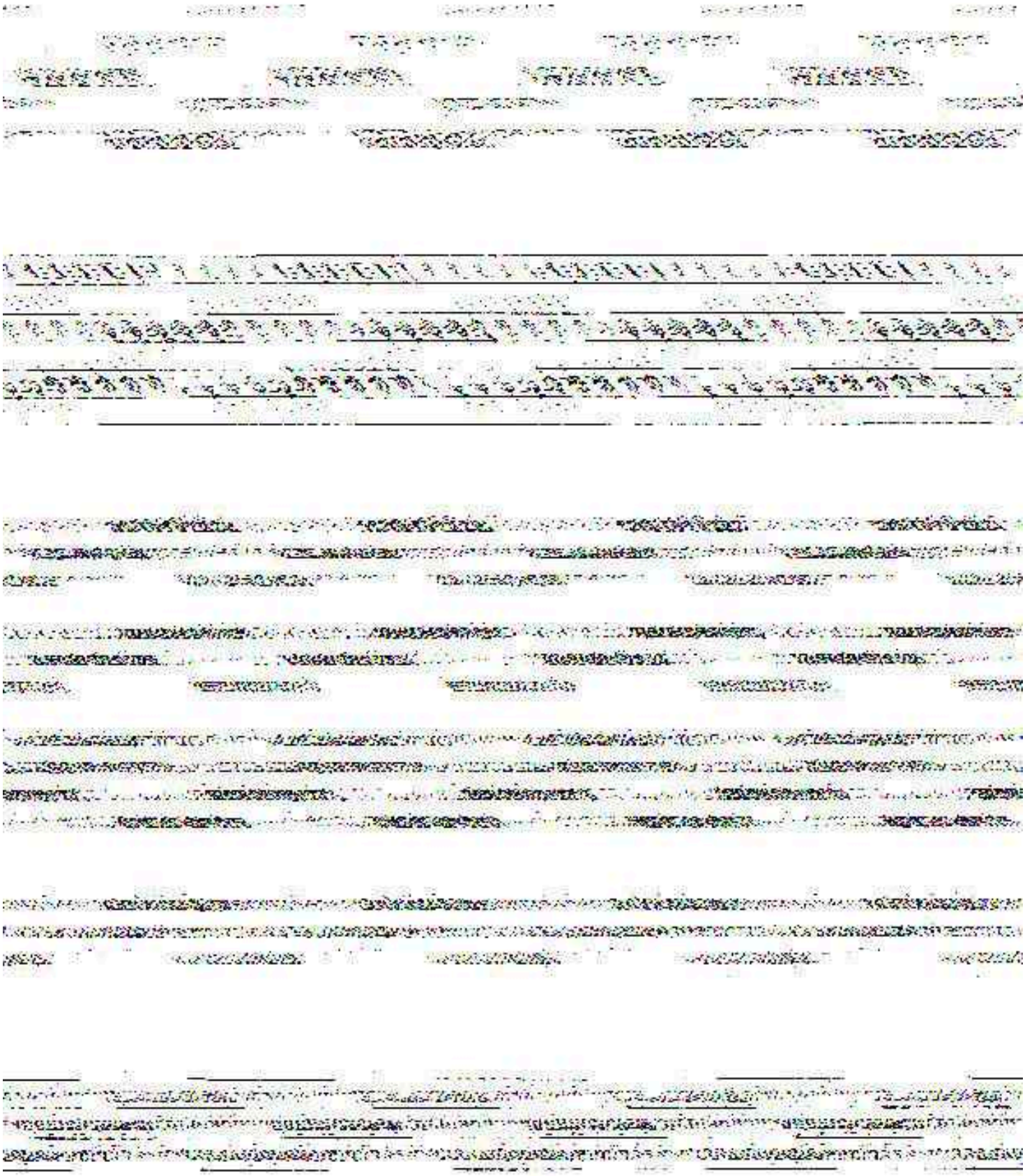

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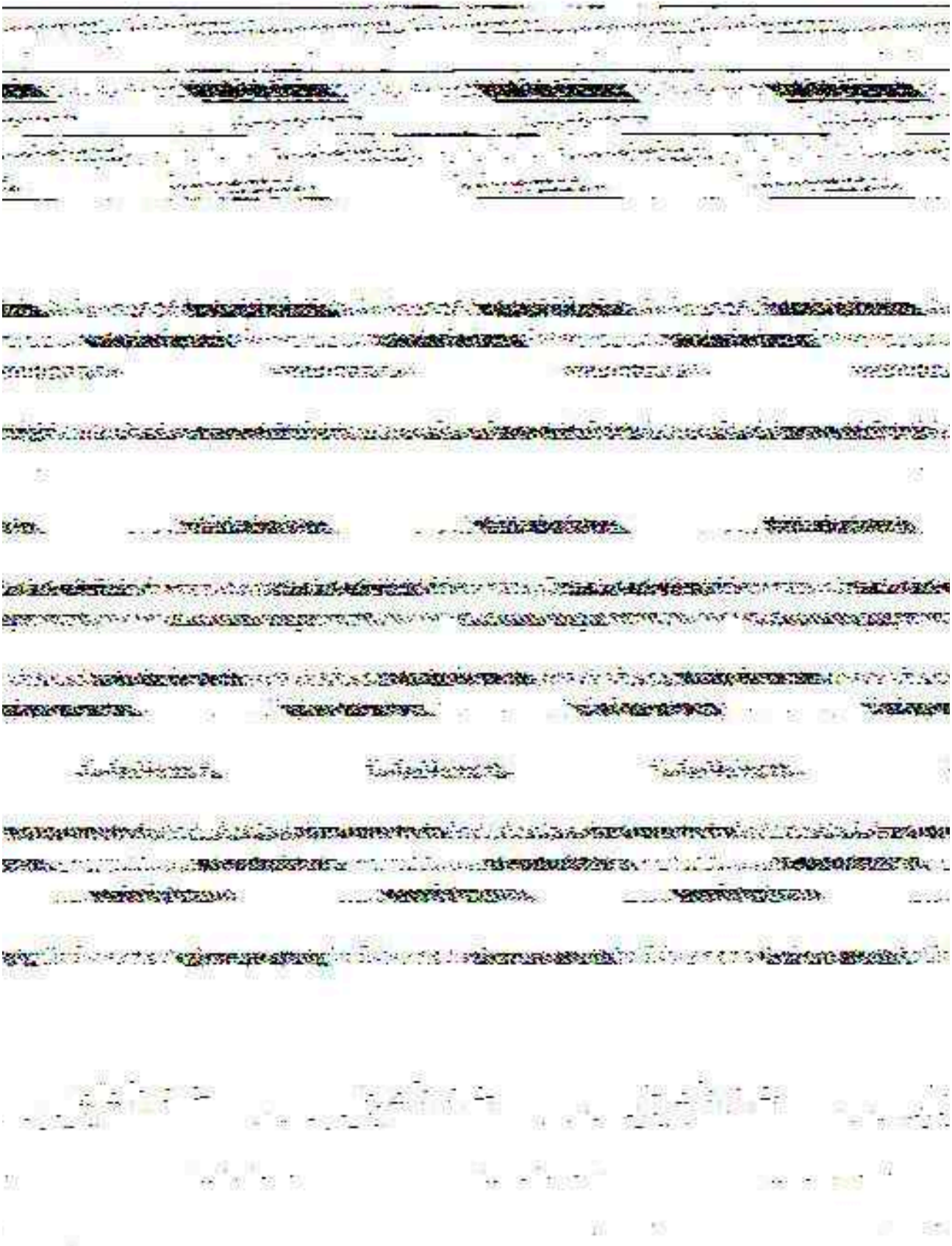

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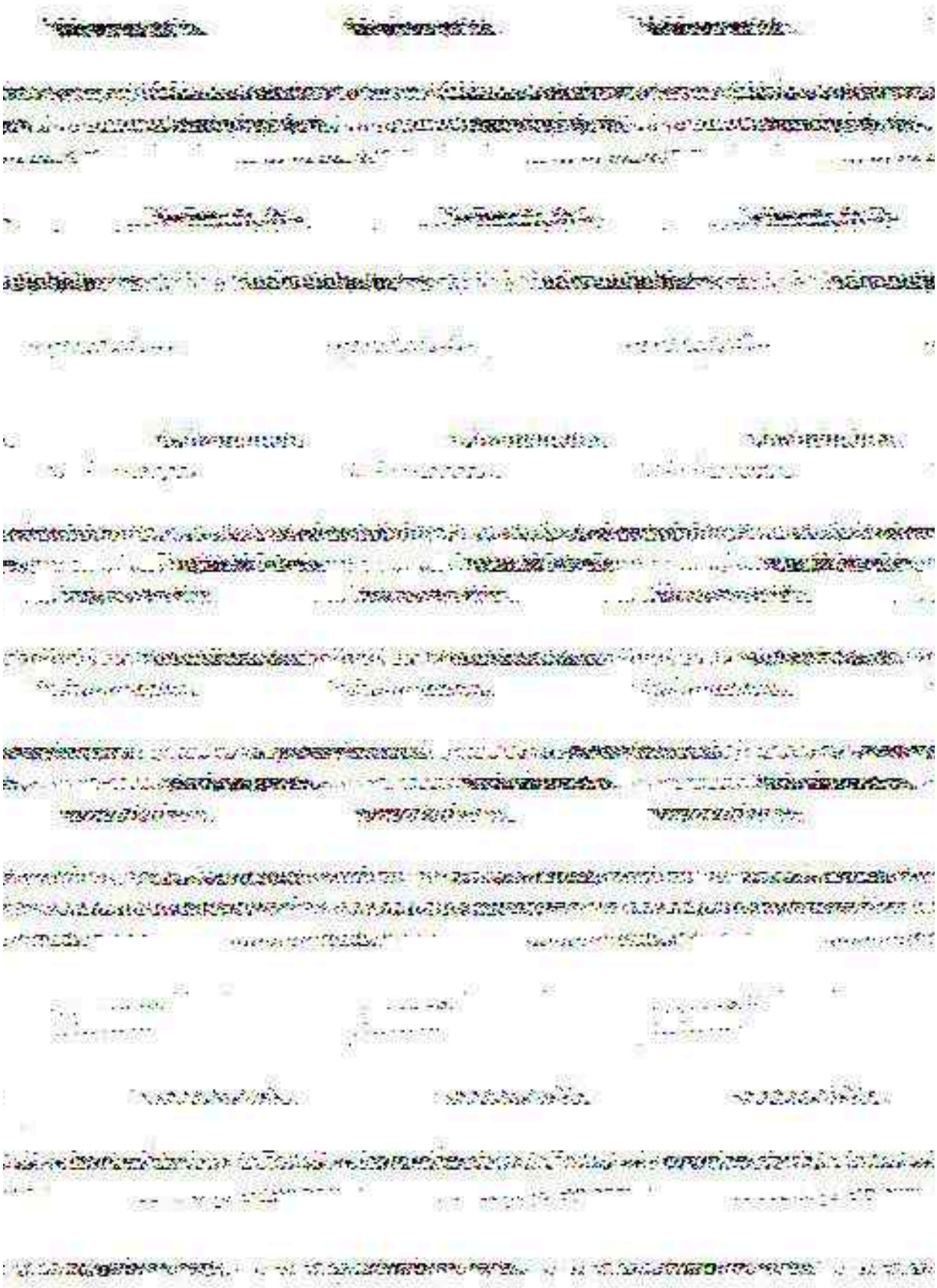

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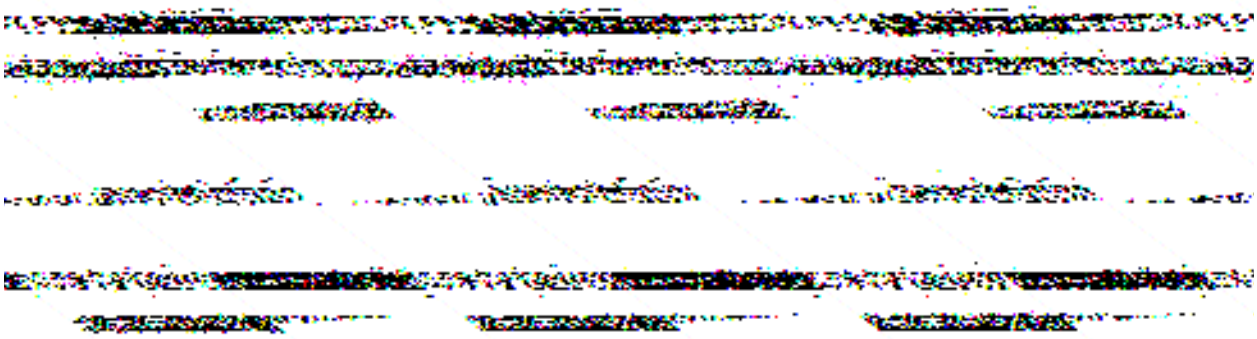

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