Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Continual Assessment 1 – 2014
SCIENCE

BOOKLET A

6 March 2014

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.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This paper consists of 20 printed pages.

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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.

1. Which of the following characteristics of all living things is/ are true?

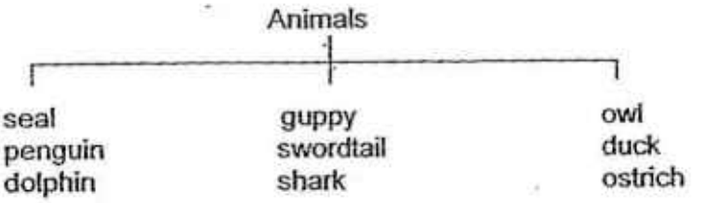
   A They need air, water and food.
   B They can move around freely from place to place.
   C They only reproduce by giving birth to young alive.
   D They can respond to changes in their environment.

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

2. Which one of the following is correct?

	Organ involved in digestion of food	Organ involved in absorption of food
(1)	Mouth	Stomach
(2)	Small intestine	Small intestine
(3)	Stomach	Large intestine
(4)	Large intestine	Small intestine

3. Wen Pei classified the following animals according to their outer body coverings.



Which one of the following animals is placed in the wrong group?

(1) seal
(2) guppy
(3) dolphin
(4) penguin

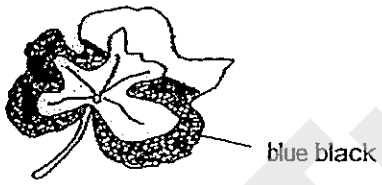
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4. Rayna kept a potted plant in the dark for 48 hours before using it for an experiment. In her experiment, she covered a leaf from the plant as shown below. The red parts of the leaf contain some green pigment.

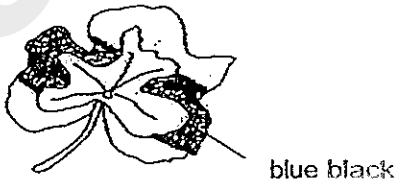


After 5 hours in the Sun, the leaf was removed from the plant and tested for starch. Which one of the following diagrams show how the test result would look like?

(1)



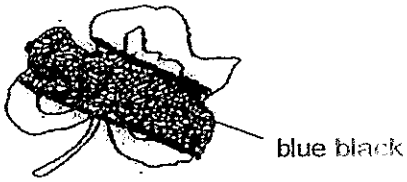
(2)



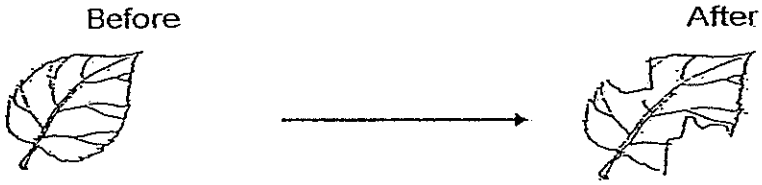
(3)



(4)



5. The diagram below shows the difference in the appearance of a leaf within a day.

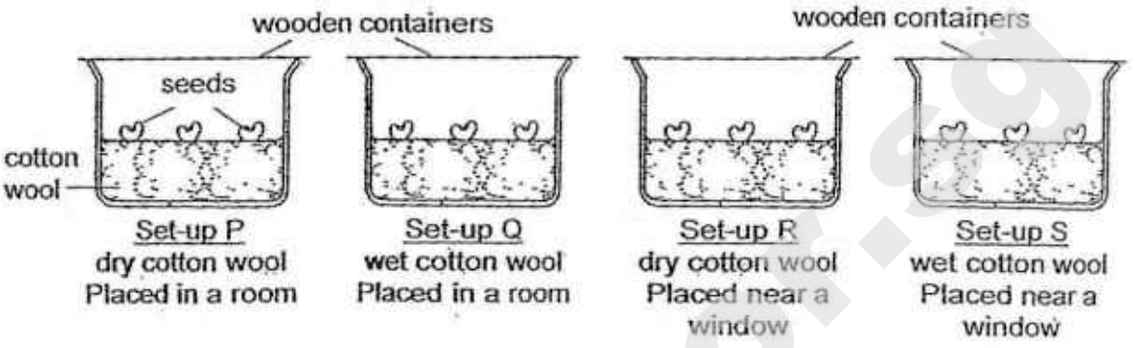


Which one of the following stages of the life cycle of the butterfly could have caused the change in the appearance of the leaf?

(1) egg
(2) larval
(3) pupal
(4) adult

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6. Seeds were placed in 4 identical wooden containers as shown in set-ups, P, Q, R and S below.



It is observed that only the seeds in Set-ups, Q and S, germinated after 4 days. Which of the following conditions resulted in only the seeds from Set-up Q and S germinating?

A Presence of air
B Presence of water
C Amount of sunlight
D Temperature of the surrounding

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

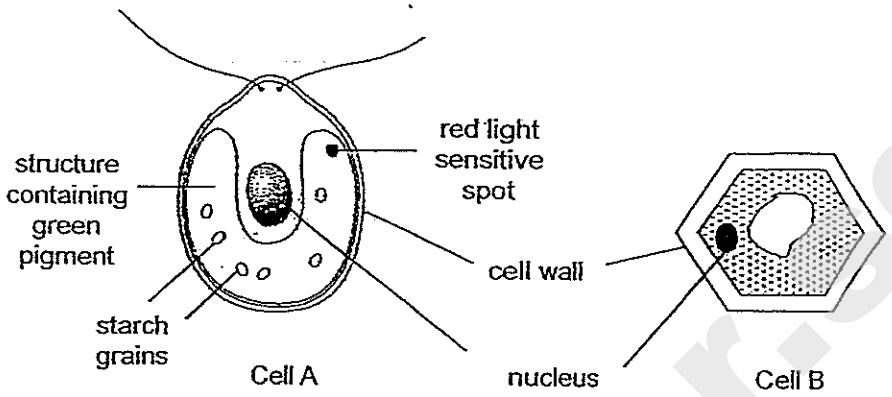
7. Which of the following statements about the human systems are true?

A The lungs remove carbon dioxide from the body.
B The nose, mouth and gullet are parts of the human respiratory system
C Vigorous exercise makes the blood vessels pump more blood to the rest of the body.
D The skeletal system works together with the muscular system to enable body movement.

(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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8. Study the two cells below.

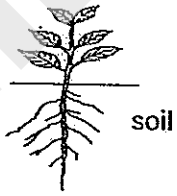


Based on observations of the cells above, which of the following statements are definitely true?

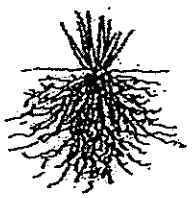
A They can both reproduce.
B They are likely to be plant cells.
C Cell A can move while Cell B cannot.
D Cell A can make food while Cell B cannot.

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

9. The diagram below shows the roots of two plants.



Roots of Plant A



Roots of Plant B

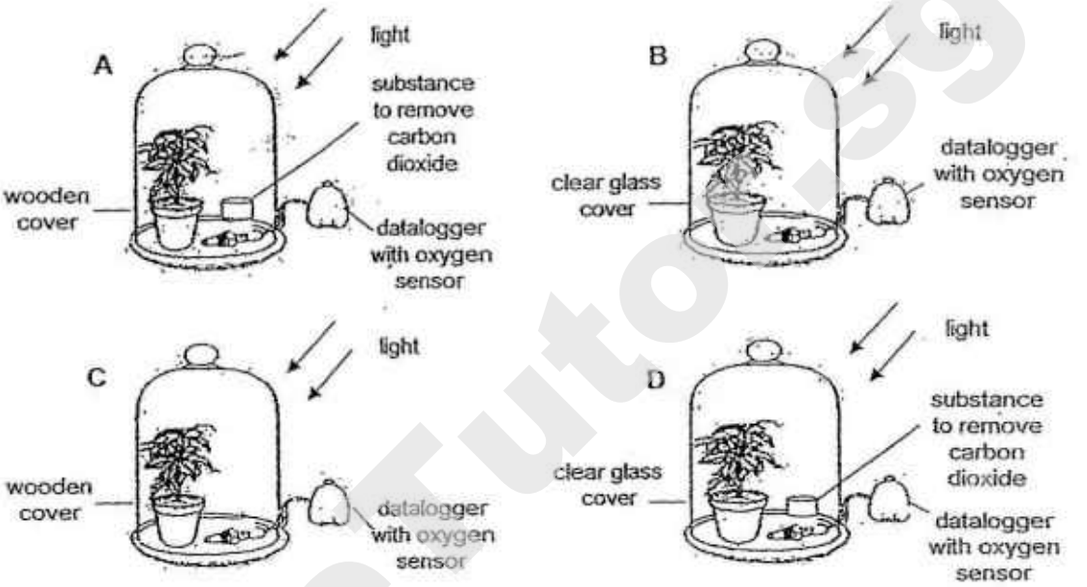
Roots of Plant B can _____ than that of Plant A.

A produce more mineral salts
B hold the plant more firmly to the ground
C absorb more water from a greater area of soil
D transport more food to the other parts of the plant

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

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10. Belinda wanted to find out if the presence of light would affect the rate of photosynthesis. Which two set-ups should she use for her experiment?



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

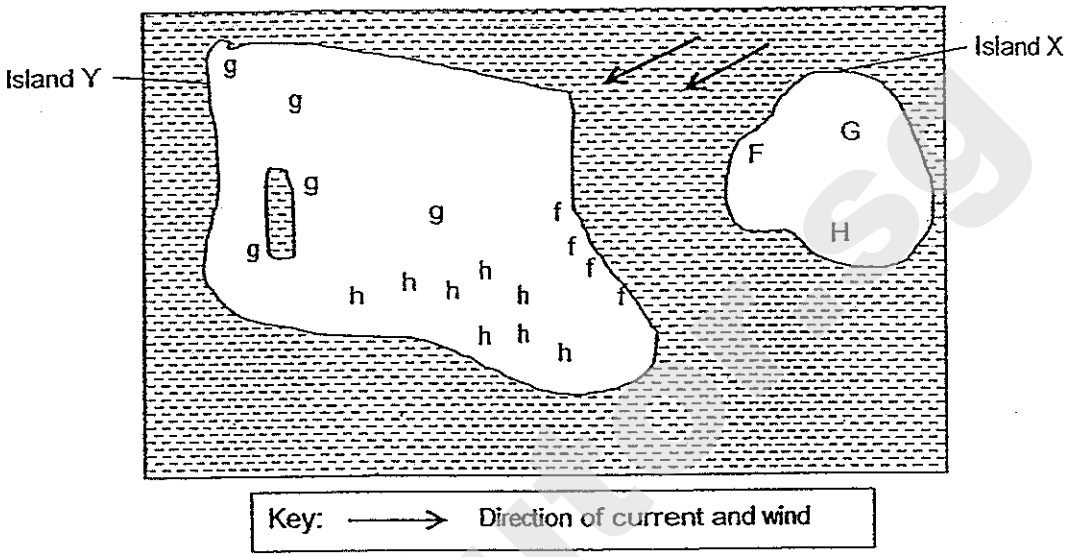
11. Which of the following statements about photosynthesis is/are true?

A Photosynthesis can only occur in plants.
B Light energy is needed for photosynthesis to occur.
C Plants produce starch and oxygen during photosynthesis.
D Plants get water and carbon dioxide through the stomata of leaves.

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

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12: Three plants, F, G and H, were planted on Island X. The diagram below shows their locations on Island X.



After a few years, the young plants of F, G and H were found growing on Island Y. These are represented on the above diagram by f, g and h respectively.

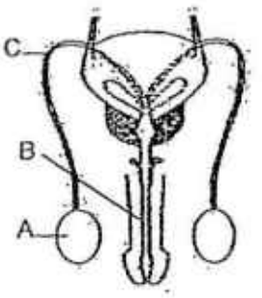
Based on the information provided above, which of the following statements are definitely true?

A Plant F's fruits have a fibrous husk.
B Plant H's fruits have a wing-like structure.
C Plant G's fruits are most likely fleshy and juicy.
D Plant H's fruits are most likely dispersed by water.

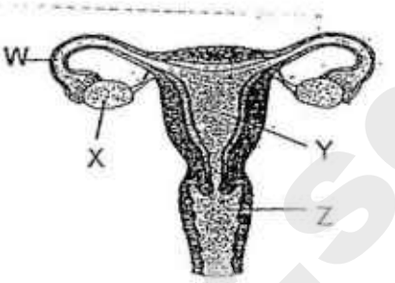
(1) A and B only
(2) A and D only
(3) C and D only
(4) A, B and C only

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



Human male reproductive system



Human female reproductive system

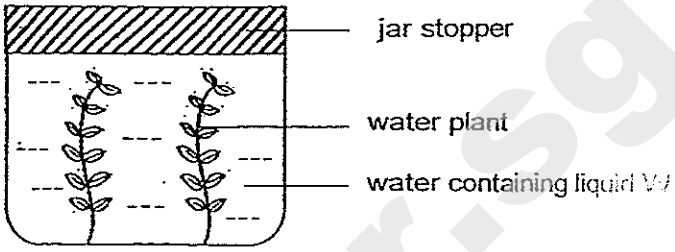
Which one of the following statements is true?

(1) Part A and X store the eggs.
(2) The embryo develops in part Z.
(3) The sperms leave the male reproductive system through part B.
(4) The sperms swim downwards from part Y to part Z and out of the body if they are unable to fertilise the egg.

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14. Rashini used the set-up below to investigate if the presence of water plants would affect the amount of carbon dioxide in water at different times of the day.



The set-up was placed near the window and a few drops of liquid W were added to the water. Liquid W changes colour as shown below.

Amount of carbon dioxide	Colour of water with liquid W
less than normal	purple
normal	red
higher than normal	yellow

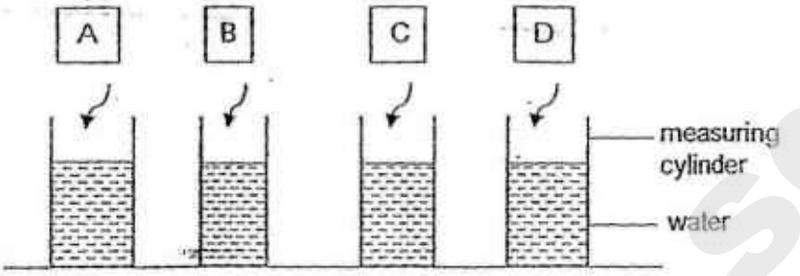
What colour would the water with liquid W be at noon and at midnight?

	At noon	At midnight
(1)	purple	red
(2)	purple	yellow
(3)	red	yellow
(4)	yellow	red

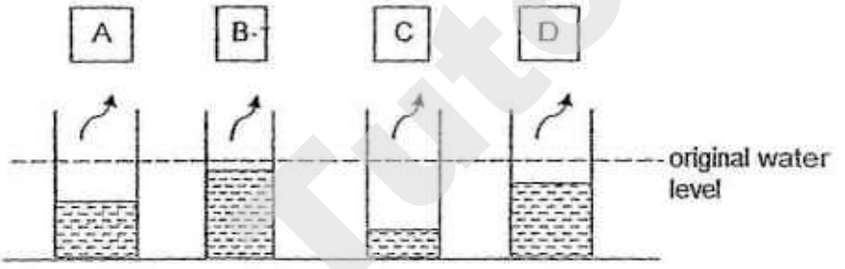
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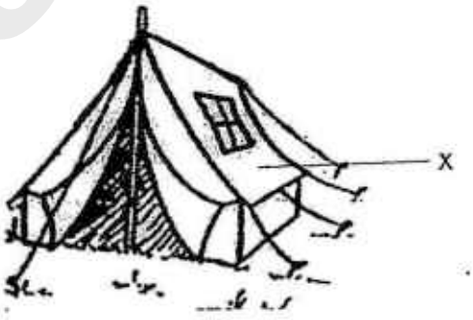
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15. Megan placed four materials, A, B, C and D of the same size into similar measuring cylinders containing the same amount of water as shown below.



She removed the materials after 5 minutes and noticed the change in the water level in each measuring cylinder.





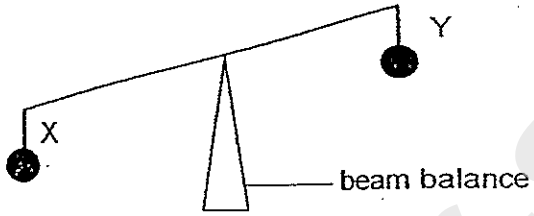
Based on the results of Megan's experiment, which one of the materials, A, B, C or D, is most suitable for making part X of the tent as shown above?

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

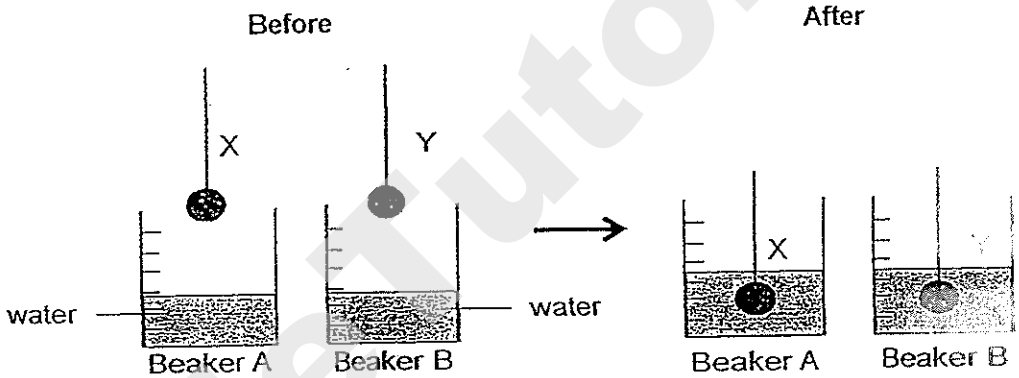
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16. Alina carried out the following experiments on two objects, X and Y, of the same size.

Experiment 1



Experiment 2



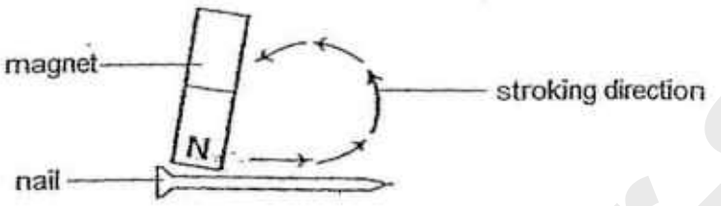
Based on the results above, Alina can conclude that _____.

(1) Object Y is heavier than object X
(2) Objects X and Y have the same mass
(3) Objects X and Y have the same volume
(4) Objects X and Y are made of the same material

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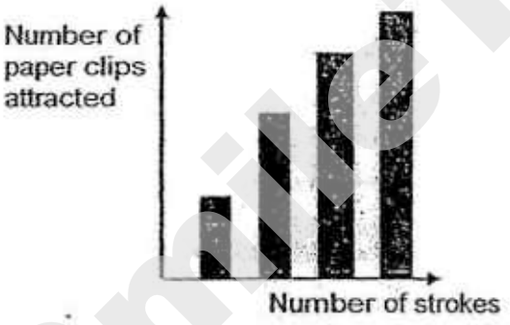
17. Yong Mei wanted to make a temporary magnet out of a nail by stroking the magnet on the nail as shown below.



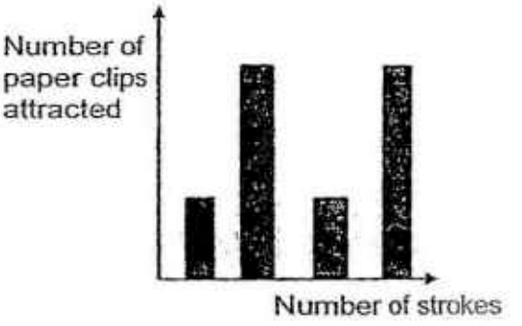
She recorded the number of paper clips the temporary magnet could attract and plotted a graph.

Which one of the graphs below best represents the relationship between the number of strokes made and the number of paper clips the temporary magnet could attract?

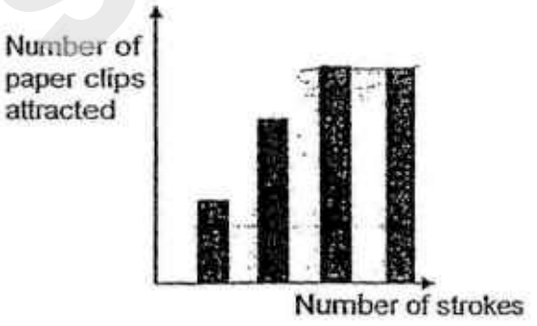
(1)



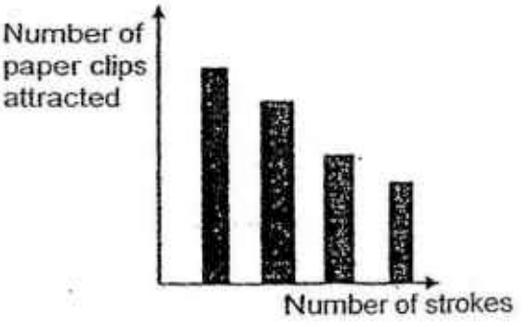
(2)



(3)



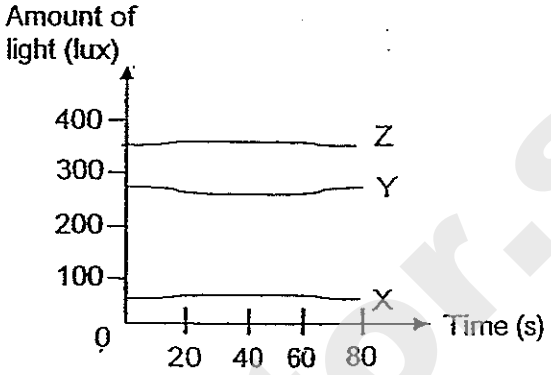
(4)



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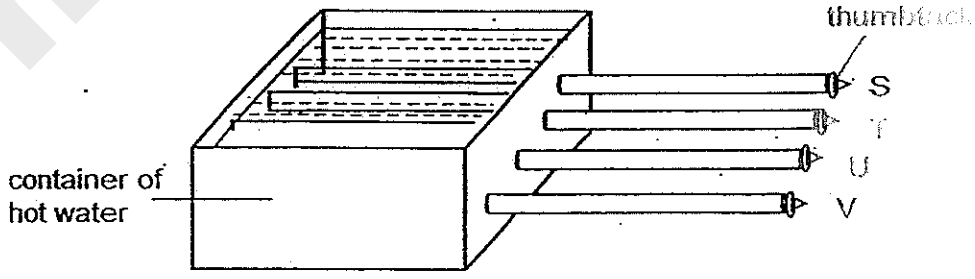
18. Jamilah used a light sensor connected to a data logger to detect the amount of light passing through three different materials, X, Y and Z. The readings on the data logger are shown in the graph below.



Based on the results in the graph, which one of the following best represents materials X, Y and Z?

	X	Y	Z
(1)	red cellophane sheet	cardboard	tracing paper
(2)	writing paper	red cellophane sheet	clear glass
(3)	Cardboard	clear plastic	tracing paper
(4)	clear plastic	tracing paper	cardboard

19. Four rods of the same length, S, T, U and V, made of different materials were inserted into a container of hot water. 4 similar thumbtacks were then attached to the ends of each rod using hardened wax as shown below.

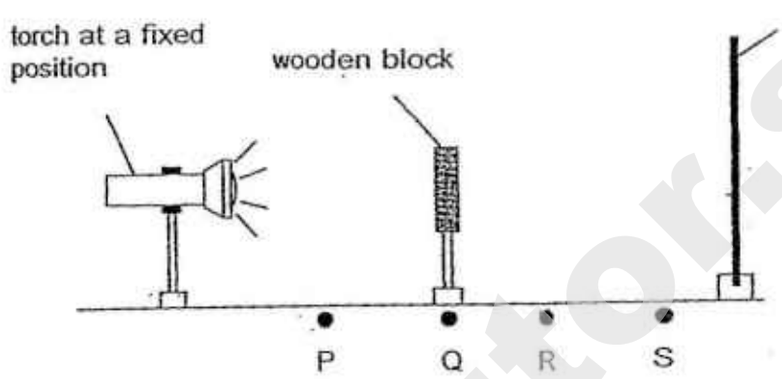


The time taken for each thumbtack to fall off from the rods was taken. What was the aim of the experiment?

(1) To find out the direction of heat flow.
(2) To find out if water could conduct heat.
(3) To find out the heat conductivity of the rods.
(4) To find out the rate at which the wax melts.

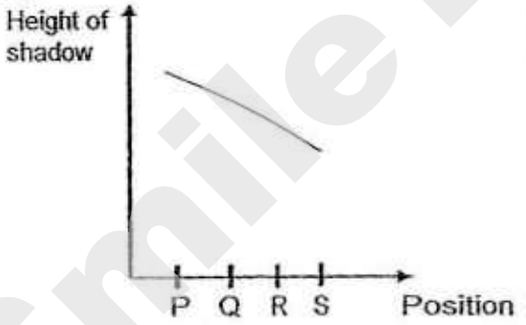
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20. Ayden places a wooden block at positions, P, Q, R and S as shown in the diagram below. At each position, he measures and records the height of the shadow cast on the screen and plotted a graph with the data collected.

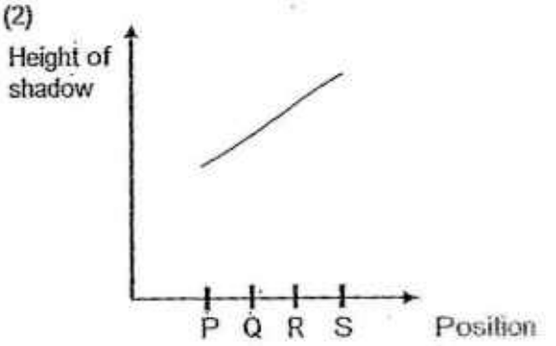


Which one of the following graphs shows how the height of the shadow of the wooden block changes when it is placed at the different positions, P, Q, R and S?

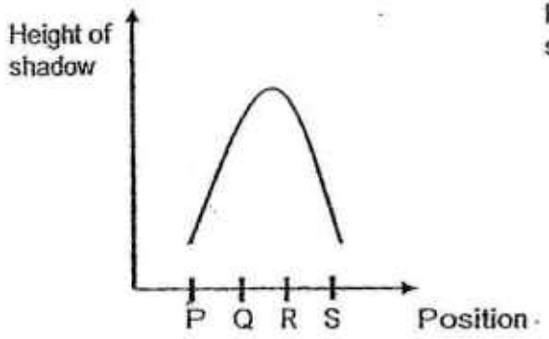
(1)



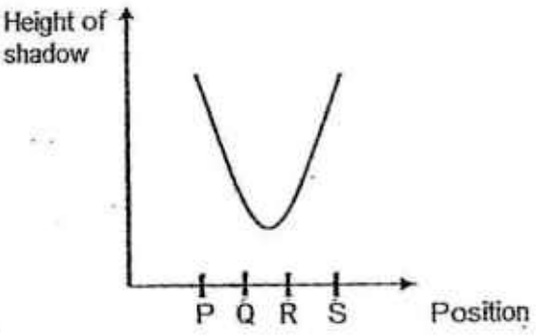
(2)



(3)

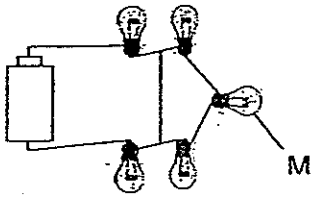


(4)

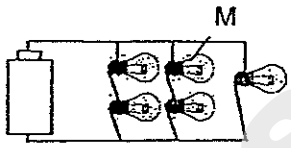


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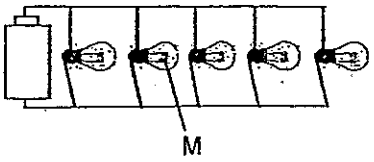
21. Study the circuits shown below.



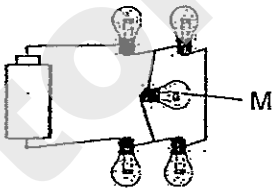
Circuit Q



Circuit R



Circuit S



Circuit T

Which of the circuits above would have the same number of bulbs remaining lit when bulb M fuses?

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

22. Sin Ling needs substances, W, X and Y, to be in the states shown in the table below in order for her to carry out an experiment.

substance	required state
W	liquid
X	solid
Y	liquid

The table below shows the freezing point and boiling points of the three substances.

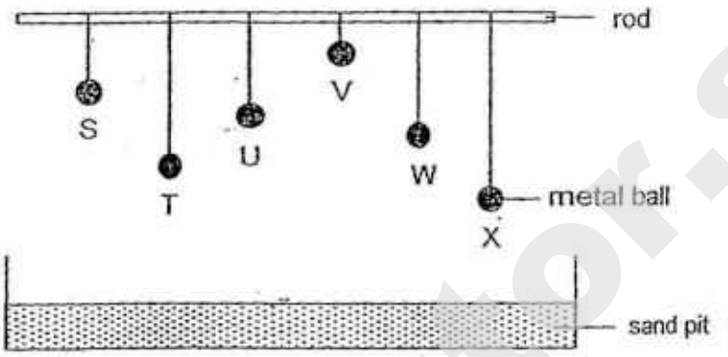
substance	freezing point	boiling point
W	-4°C	62°C
X	48°C	200°C
Y	23°C	114°C

At which temperature should Sin Ling carry out her experiment?

(1) 14°C
(2) 35°C
(3) 52°C
(4) 71°C

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23. John suspended 6 identical metal balls, S, T, U, V, W and X, on a rod as shown in the diagram below. The strings used to hang the metal balls were made of the same material but of different lengths.



John then cut all six strings and the balls fell into the sand pit. Which of the following statements are false?

A X has more gravitational potential energy than W.
B V made the deepest depression in the sand pit when the string was cut.
C T made a shallower depression in the sand pit than S when the string was cut.
D All the balls possessed the same amount of gravitational potential energy since they have the same mass.

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

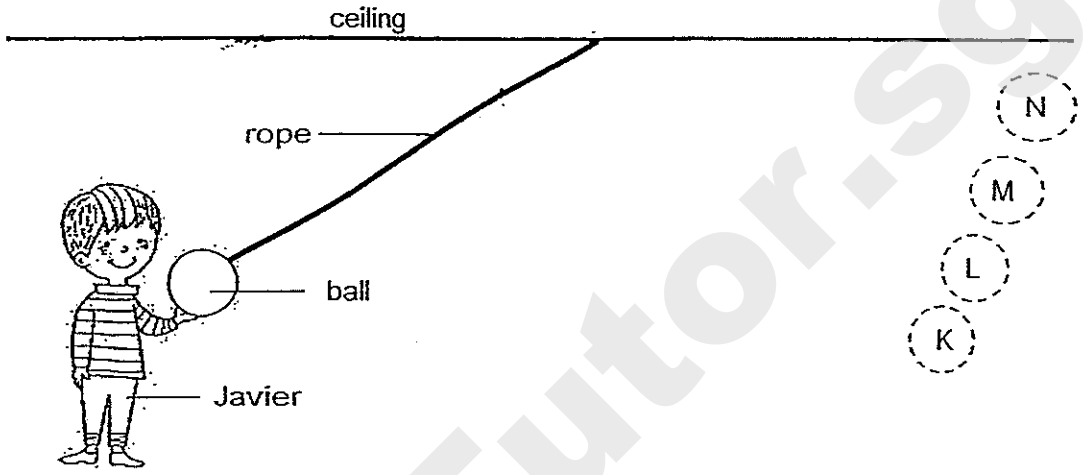
24. Wei Qiang wanted to find out which type of lubricant, A or B, would reduce the amount of time taken for a toy car to travel down a slope when it is released from the top of the slope. Which of the following variables must he keep constant to ensure a fair test?

A The toy car
B Point of release
C Amount of lubricant used
D The amount of pushing force

(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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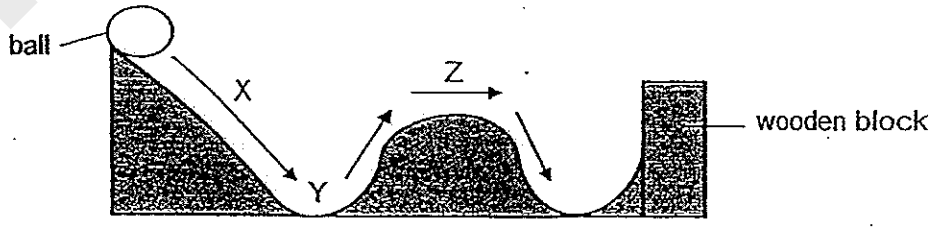
25. Javier held onto a ball that had been hung from the ceiling of a room as shown below.



Which one of the following positions would the ball reach after Javier released his grip on the ball?

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

26. The diagram below shows a ball being released from the top of a track. The ball rolled along the track before it was stopped at the end of the track by a wooden block.



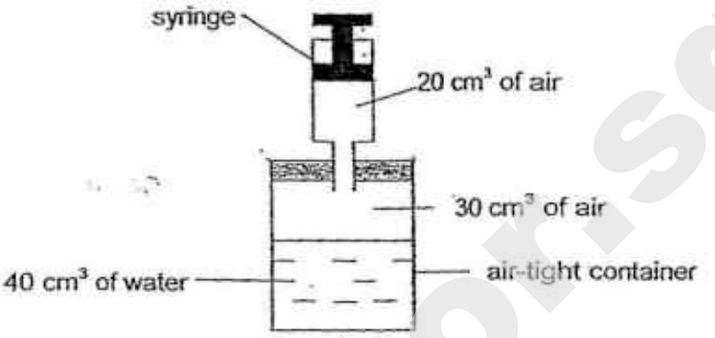
Which one of the following statement is correct?

(1) The ball had more kinetic energy at Y than at Z.
(2) The ball lost its kinetic energy when it was stopped by the wooden block.
(3) All of the ball's kinetic energy was converted to gravitational potential energy as the ball rolled upwards to Z.
(4) The conversion of the ball's kinetic energy to heat and sound energy takes place only when the ball hits the block.

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27. The diagram below shows an air-tight container filled with 40cm^3 of water and 30cm^3 of air. A syringe was used to draw out 20 cm^3 of air from the container.



What is the volume of air left in the container?

(1) 10 cm^3
(2) 20 cm^3
(3) 30 cm^3
(4) 40 cm^3

28. Which of the following actions involve both a push and a pull?

A Wringing the clothes
B Pumping air to inflate a ball
C Raising a flag on a flag pole
D Dragging a heavy bag across the floor

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

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29. Thiru conducted an experiment using a wooden block, R, and a wooden plank, ST, as shown in Figure 1.

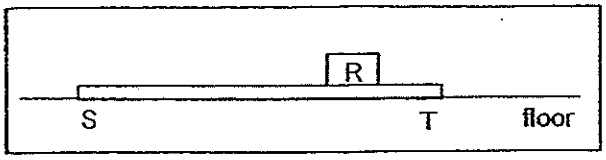


Figure 1

He raised end T of the plank slightly and noted that the wooden block did not slide down as shown in Figure 2.

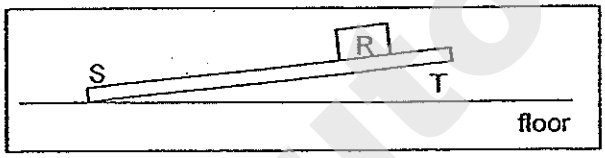


Figure 2

However, when end T was raised high enough, the wooden block slid down the plank towards end S as shown in Figure 3.

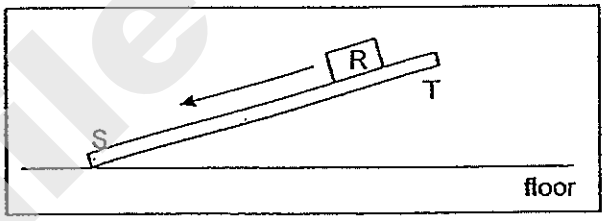


Figure 3

Which of the following statements are true?

A No frictional force acts on the block in Figure 1 and 2.
B Frictional force acts on the block as it slides down the plank in Figure 3.
C No gravitational force is acting on the block when it is resting on the plank in Figure 1.
D Gravitational force is greater than frictional force causing the block to slide down the plank in Figure 3.

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

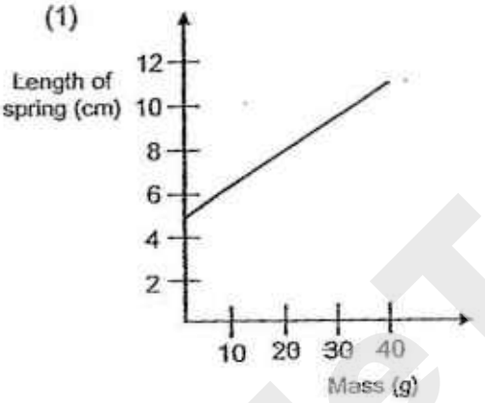
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30. Larry was given a spring that was 3cm long. He hung a 10g mass on it and measured the length of the spring. He then repeated his experiment with masses of 20g, 30g and 40g and recorded his results in the table below. He then plotted his results on a graph.

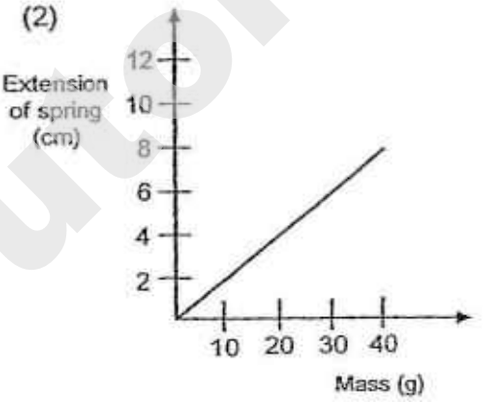
Mass hung on spring (g)	10	20	30	40
Length of spring (cm)	5	7	9	11

Which one of the following graphs best represents Larry's results?

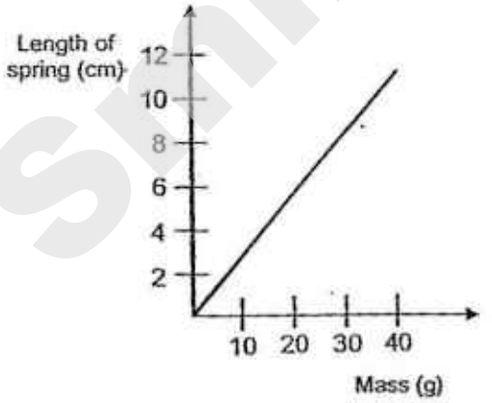
(1)



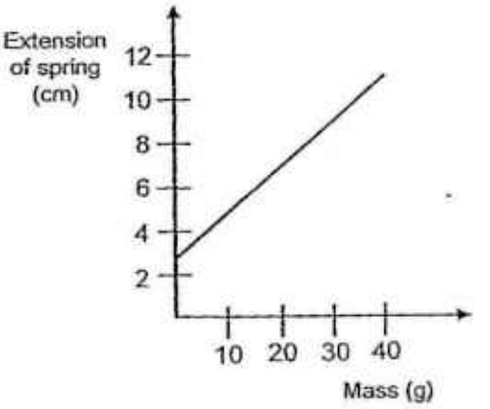
(2)



(3)



(4)



--End of Section A--

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Class : Primary 6 _____

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Primary 6
Continual Assessment 1 – 2014
SCIENCE

BOOKLET B

6 March 2014

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.

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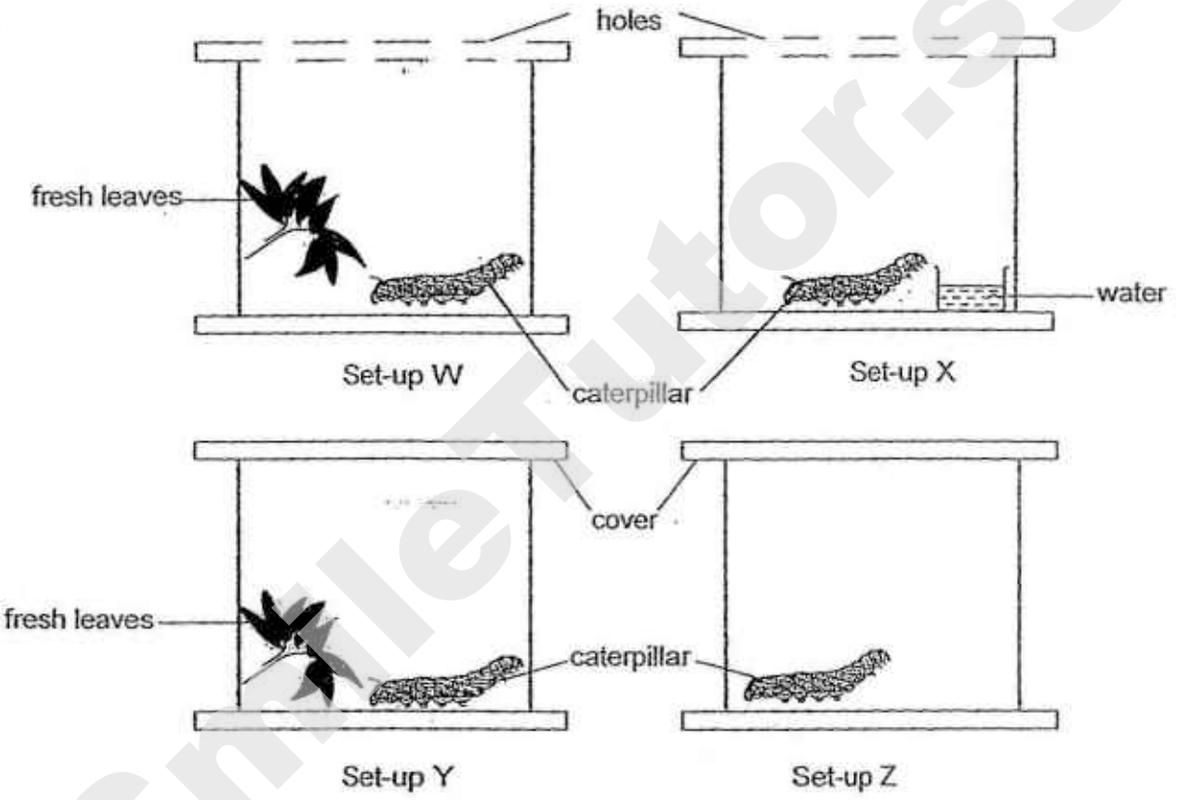
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Section B: 40 marks

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. Salleh set up an experiment using 4 similar containers as shown below.

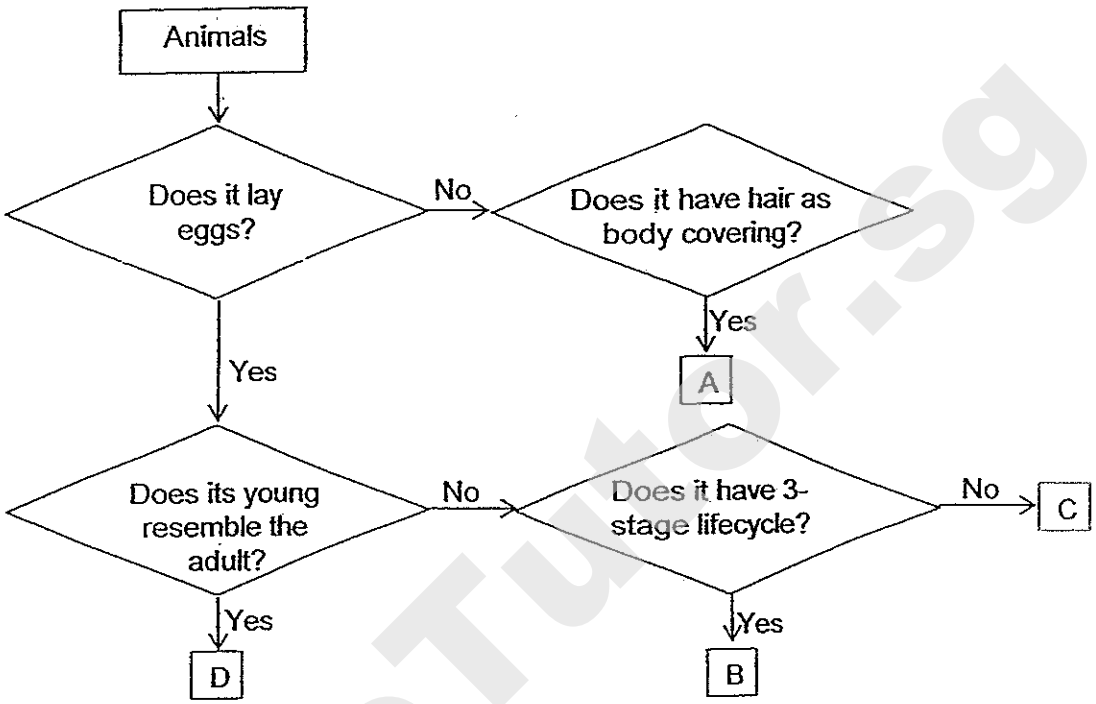


(a) In which set-up would the caterpillar survive the longest? Explain your answer

(b) Salleh wants to find out if living things need air to survive. Which two set-ups should he use for his experiment? [1]

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32. Study the flow chart below.



(a) Which letters, A, B, C or D, could represent a 'butterfly'? [1]

(b) Based on the flowchart, which group of animals would Animal A belong to? [1]

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33. The diagram below shows a terrarium (bottle garden) which is a miniature garden of small plants growing in an enclosed glass container.



In the making of the terrarium, plants are placed in the container and watered before the container is sealed with a stopper. The plants in the terrarium only need to be watered once a month.

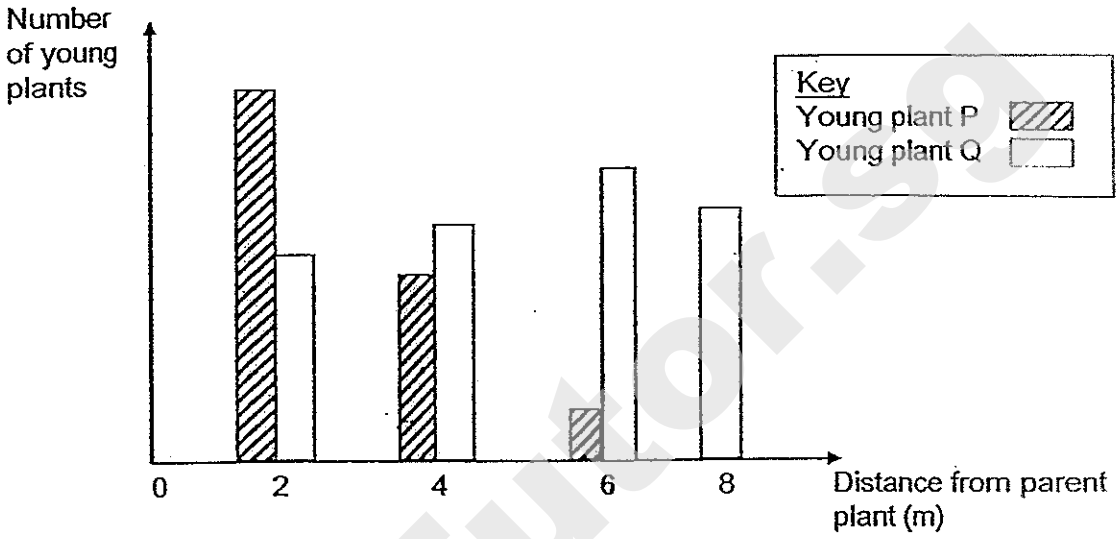
(a) Based on the information above, explain why the plants in the terrarium need not be watered frequently. [2]

(b) Where should the terrarium be placed to ensure healthy plant growth? [1]

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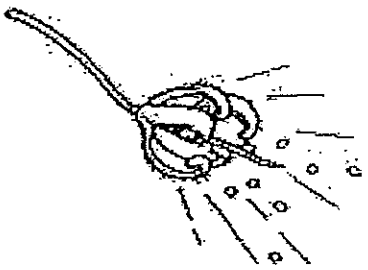
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34. Germaine counted the number of two different types of young plants, P and Q, at various distances from their parent plants in the eco-garden. The results are shown in the graph below.



In relation to the graph, which of the following best represents the fruit of plant P? Put a tick in the box to indicate your choice.





Explain your answer. [2]

_____

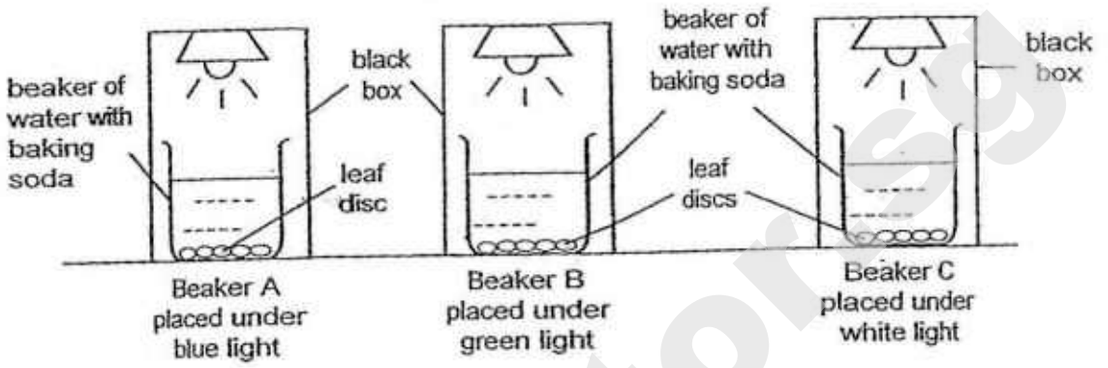
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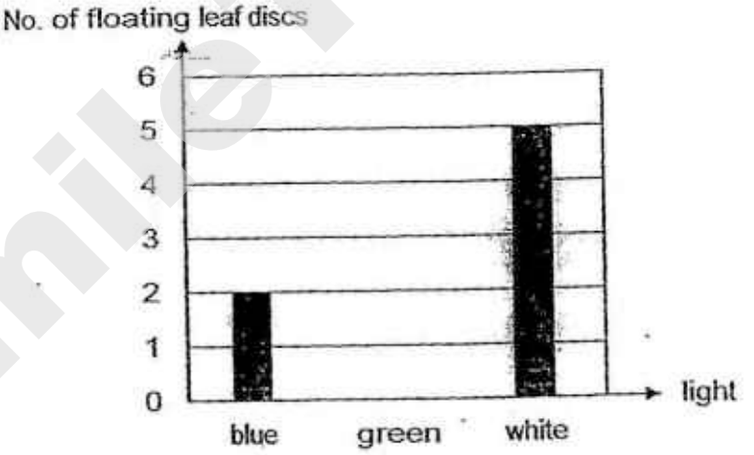
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35. Sean set up an experiment using identical beakers of water containing baking soda and similar-sized leaf discs punched from freshly plucked leaves of the same plant left in the sun for 6 hours. Baking soda increases the amount of dissolved carbon dioxide in the water.



He made sure that all the leaf discs had sunk to the bottom of the beakers before he started his experiment. The leaf discs would float to the top of the beaker if photosynthesis had occurred. He recorded the number of leaf discs that floated to the top of the beakers after 20 minutes and tabulated his results in the bar graph below.



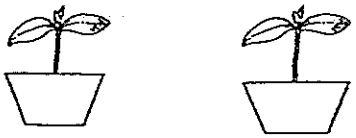
(a) What was the aim of Sean's experiment? [1]

(b) Sean observed that the floating leaf discs had bubbles of gas X on them. What could gas X be? [1]

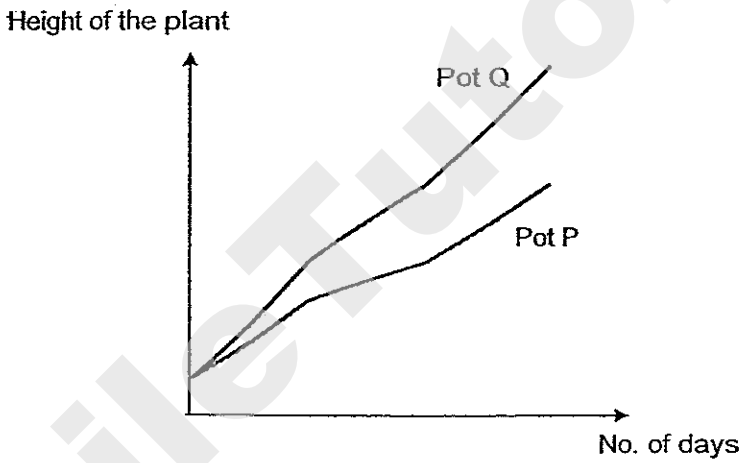
(c) What could he conclude from the results of his experiment? [1]

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36. Benjamin bought two similar seedlings, P and Q, from a nursery as shown below.



He watered Pot P with 125ml of salt solution and Pot Q with 125ml of water. He measured the height of the two plants each day for 2 weeks and plotted his results in the graph below.



(a) Based on the results shown in the graph above, what can Beniamin conclude about the effect of salt on plant growth? [1]

_____

(b) In his experiment, Benjamin placed the two pots of plants in the same area of his garden. State two variables that he was trying to keep constant by doing so. [2]

(i) _____

(ii) _____

(c) Benjamin investigated the effect of salt solution on the growth of plant R by measuring the height of the plants in the two pots, P and Q. Other than the height of the plants, what else could he measure to determine the growth of the plant? [1]

_____

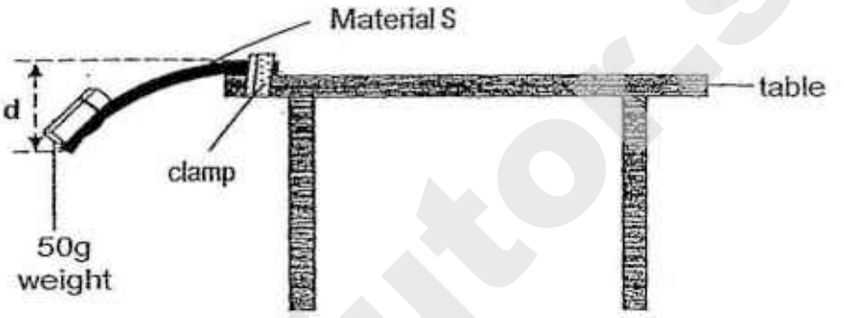
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37. Lyna conducted an experiment with four different materials, S, T, U and V.

She clamped a strip of material S onto the edge of the table before taping a 50g weight to the end of the strip, causing the strip to bend as shown below. She measured the distance 'd', which was the extent to which the material bent before it broke. She repeated her experiment with strips of materials, T, U and V, one at a time, and recorded her results in the table below.



Materials	Distance 'd' (cm)
S	4
T	2
U	7
V	14

(a) What is the aim of the experiment? [1]

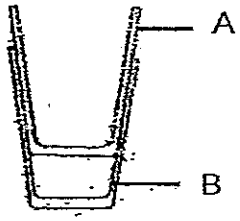
(b) Based on the results of the above experiment, which material, S, T, U and V, is most suitable for making a paper clip? [1]

(c) In order for the experiment to be fair, state one other variable that must be kept constant. [1]

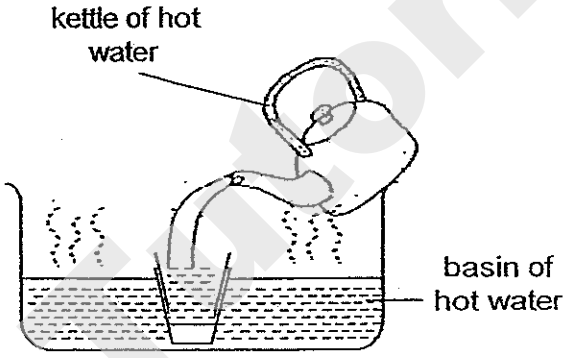
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38. Wei Wei found two glasses, A and B, stuck together as shown below.



She put them in a basin of hot water and poured hot water into glass A in an attempt to separate the glasses as shown in the diagram below.



(a) Wei Wei found that the glasses could not be separated. Explain why this is so. [1]

_____

_____

(b) Suggest a change to Wei Wei's method that would enable her to separate the glasses. [1]

_____

_____

_____

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39. William conducted an experiment by heating three similar rods made of metals A, B and C for 20 minutes. He recorded the length of each rod before and after the heating in the table below.

Metal	Length before heating (mm)	Length after 20 min of heating (mm)
A	200	207
B	200	210
C	200	204

(a) Based on the results of his experiment, what could William conclude about the effect of heating **different** metals? [1]

_____

(b) In another experiment, William heated a thicker rod made of metal B of length 200mm for 20 minutes.

Would the length of this rod after the heating be less than, equal to, or more than 210mm? Give reason for your answer. [1]

_____

_____

_____

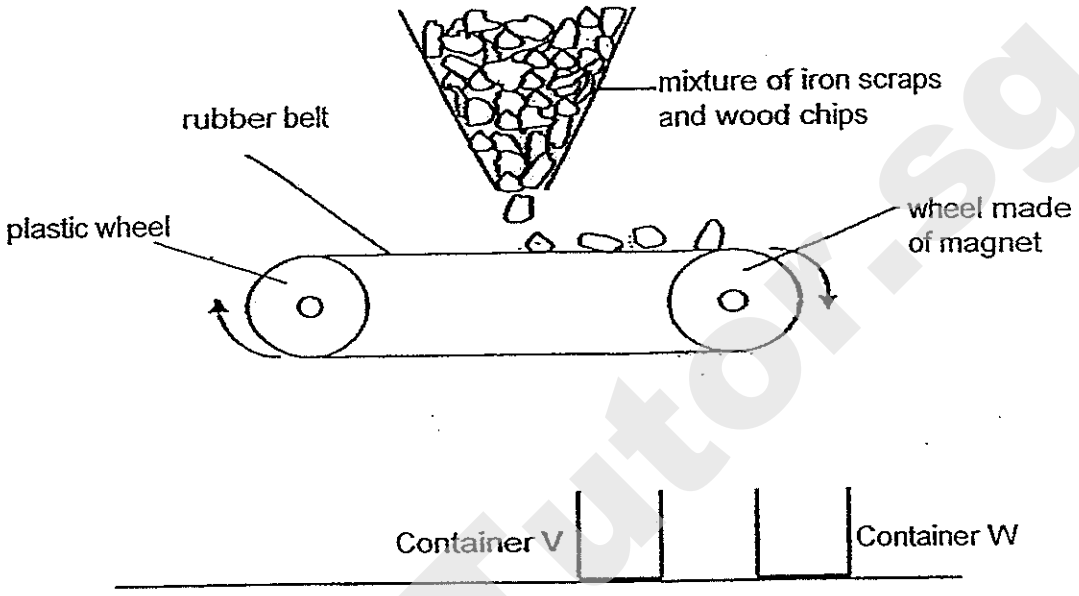
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40. A factory uses a specially designed conveyor belt to separate iron scraps from wood chips. The diagram below shows how the conveyor belt works.



(a) What would be collected in container, V and W? [1]

(i) Container V: _____

(ii) Container W: _____

(b) Explain clearly how the contents were collected in Container V. [2]

_____

_____

_____

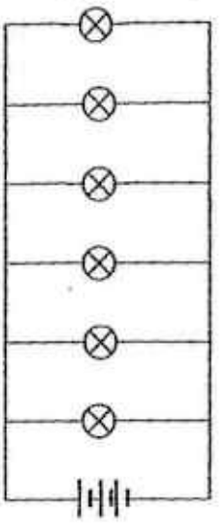
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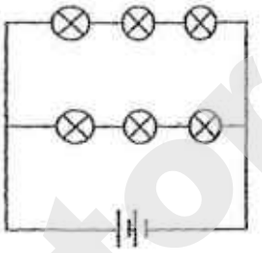
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41. (a) In the circuits, P and Q, below, all the bulbs are lit.



Circuit P

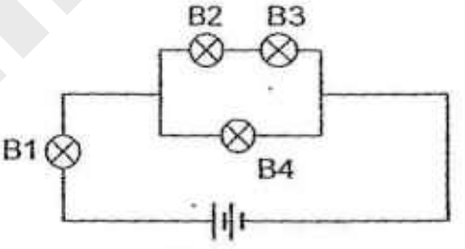


Circuit Q

In the table below, write down the number of bulbs that would remain lit when one of the bulbs in each circuit is blown. [1]

	Circuit P	Circuit Q
Number of bulbs remaining lit		

(b) In circuit R below, all bulbs, B1, B2, B3 and B4, are lit.



Circuit R

Write down the minimum and the maximum number of bulbs that would remain lit when one of the bulbs in circuit R is blown. Give a reason for your answer. [2]

(i) Minimum number of bulbs remaining lit: _____
Reason:

_____

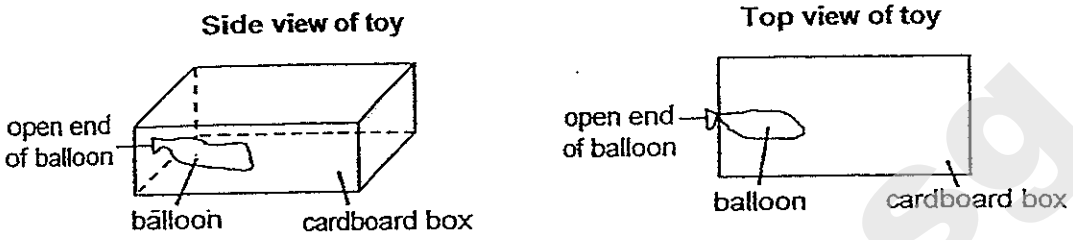
(ii) Maximum number of bulbs remaining lit: _____
Reason:

_____

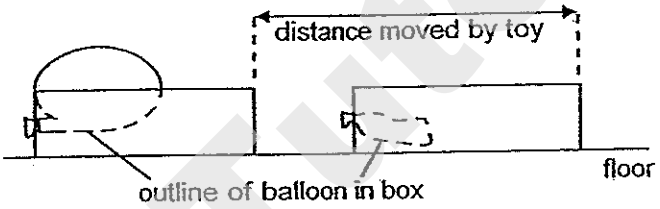
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42. Thalia made a toy out of a balloon and an open top cardboard box as shown below.

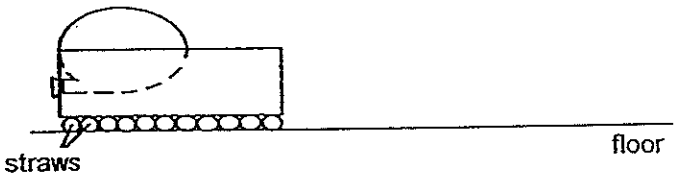


After she had inflated the balloon with air, she twisted the open end of the balloon and held it between her fingers. She then placed the toy on the floor and released her grip on the balloon. Immediately, the toy moved a distance away from her.



(a) What caused the toy to move? [1]

She inflated the balloon again. This time, instead of placing her toy on the floor, she placed it on some straws.

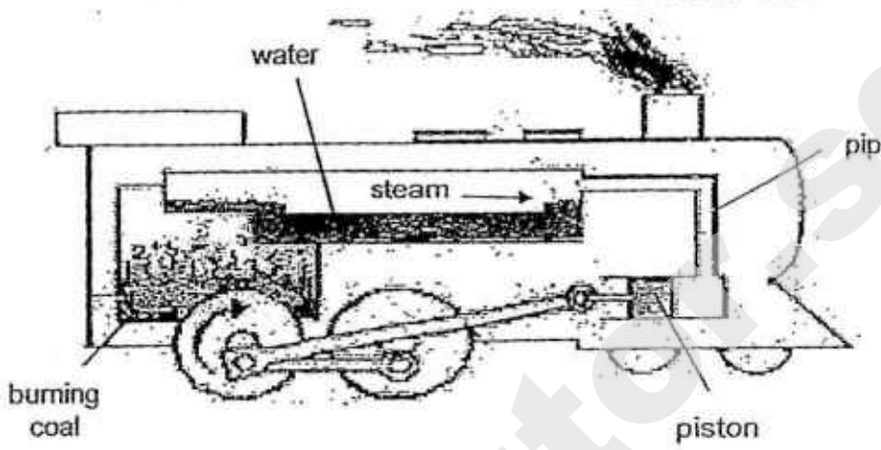


(b) Would the toy move a shorter or longer distance than before? Give a reason for your answer. [2]

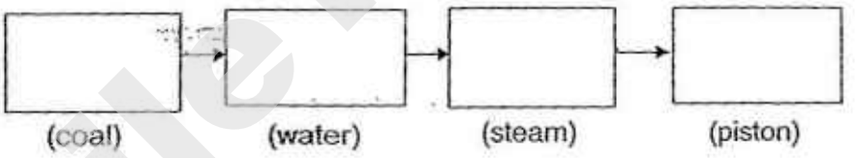
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43. The diagram below is a simplified illustration of how a simple steam train engine uses the burning of coal to produce energy to enable the train to move. The heating of water produces steam which helps to move the piston that turns the wheels of the train.



(a) Study the diagram above carefully and complete the main energy conversion of the steam train below. [1]

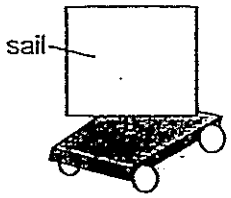


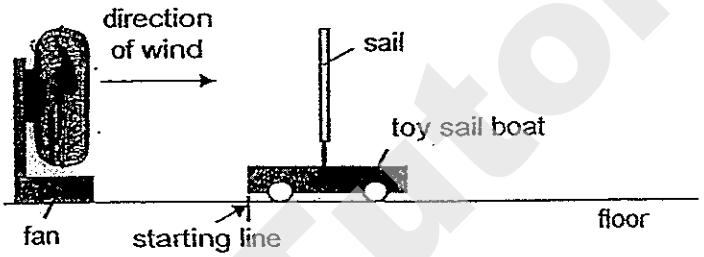
(b) What would happen if more coal is added into the burner? Explain your answer. [2]

(c) State another way to make the train move faster. [1]

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44. Ali wanted to find out if the size of a sail would affect the distance travelled by a boat. He placed the toy sailboat at the starting line, switched on the fan and recorded the distance 'X' travelled by the toy.





He repeated the experiment by varying the size of the sail and recorded his results in the table below.

size of sail (cm^2)	distance X (cm)
100	8
225	20
400	50
625	75

(a) Based on the results shown in the above table, what can he conclude from his experiment? [1]

_____

(b) Without changing any of the materials above, what can Ali do to improve the reliability of the results of his experiment? [1]

_____

_____

(c) For his experiment, Ali made sure to place the toy sailboat at the starting line each time and that the strength of the wind from the fan is the same. State one other variable that Ali should keep constant to make his experiment a fair test. [1]

_____

--End of Section B--

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EXAM PAPER 2014
LEVEL : PRIMARY 6
SCHOOL : ST. NICHOLAS
SUBJECT : SCIENCE
TERM : CA1

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

Q31	(a)	Set-up W. There are fresh leaves in the container showing that there are both food and water presence as fresh leaves contain water so the caterpillar in Set-up W will survive the longest as air, food and water is present in the container.
	(b)	Set-up W and Set-up Y
Q32	(a)	Letter C
	(b)	Mammals
Q33	(a)	The water of the soil will be absorbed by the roots of the plants. Some of the water absorbed by the plants will escape and evaporate through the stomata. The warm water vapour touches the cooler surface of the bottle, loses heat and condenses on the bottle surface as tiny water droplets. These water droplets will fall back to the soil so the plants in the terrarium need not be watered frequently.
	(b)	The terrarium should be placed near a light source or next to a window.
Q34		☐ ☑
		The number of young plant decreases as the distance from the parent plant increases showing that the plant dispersed. Seeds that are dispersed by splitting will not be land far from the parent plant.
Q35	(a)	To find out whether the colour of light affects the photosynthesis carried out by plant leaves.
	(b)	oxygen
	(c)	White light is the best colour of light for photosynthesis to occur.
Q36	(a)	Plants growing in salt solution grows further than those growing in water.
	(b)	(i) The temperature of the surroundings. (ii) The amount of light the plant receives.
	(c)	Number of leaves
Q37	(a)	To find out the flexibility of the different materials.
	(b)	Material V
	(c)	The length of the material
Q38	(a)	When two cups are placed in the basin of hot water, the glass B gained heat and expands. However, she poured hot water into glass A causing it to expand too. Thus, both glasses could not be separated.
	(b)	She could put both cups in the hot water again and put ice into cup A.

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Q39	(a)	Different metals when heated over the same flame for the same period of time expands at different rates.
	(b)	Less than 210mm. The rod is thick so it will take a longer time for the heat to travel from one end to the other end.
Q40	(a)	(i) Iron scraps (ii) Wooden chips
	(b)	The iron scraps, magnetic objects are attracted to the wheel made of magnet as the magnetism can pass through the rubber belt which is non-magnetic. The iron scraps continue to travel to the underside of the belt until it reaches a certain distance, where the force of attraction by the magnet is weak and falls into container V.
Q41	(a)	5 ; 3
	(b)	(i) 0. After bulb 1 blows, the circuit is broken, thus no electricity can flow through. (ii) 3. After bulb 4 blows, electricity can still flow through the rest of the circuit.
Q42	(a)	The air escape from the balloon, it pushes the toy forward.
	(b)	A longer distance. The toy would move a longer distance than before. The straws reduce the friction between the box and the floor.
Q43	(a)	Chemical Potential Energy → Heat energy → Heat kinetic energy → Kinetic energy
	(b)	Faster. There will be more chemical potential energy of the coal converted to more heat energy of the coal, converted to more heat energy of the water, converted to more kinetic energy of the steam and is finally converted to more kinetic energy of the piston.
	(c)	Add lubricant on the wheel.
Q44	(a)	The greater the size of the sail, the greater he distance the car travelled.
	(b)	He could repeat the test again and find the average of the results.
	(c)	The material of the sail.

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METHODIST GIRLS' SCHOOL

Founded in 1887

CONTINUAL ASSESSMENT 2014
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.

Name: _____

Class: Primary 6._____

Date: 6 March 2014

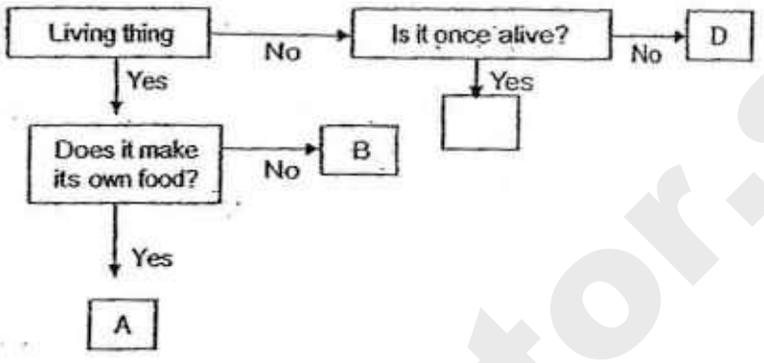
This booklet consists of 12 printed pages including this page.

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Part 1 (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.**

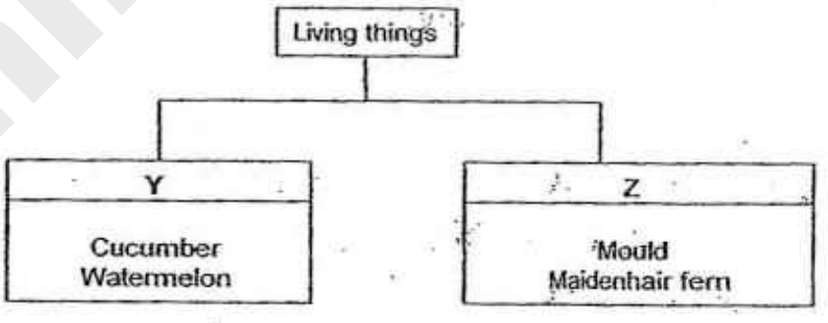
1. Study the flow chart below.



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

	A	B	C	D
(1)	Fungi	Deer	Steel bar	Cement
(2)	Grass	Bacteria	Wooden beads	Cotton towel
(3)	Frangipani	Staghorn fern	Silk dress	Pebble
(4)	Mango tree	Oyster Mushroom	Leather shoes	Stone

2. The classification chart below shows how some living things can be grouped.



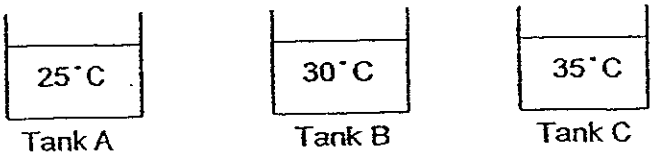
Which of the following represents Y and Z?

	Y	Z
(1)	Grow on land	Grow in water
(2)	Make their own food	Do not make their own food
(3)	Reproduce from seeds	Reproduce from spores
(4)	Have fruits with many seeds	Have fruits with no seeds

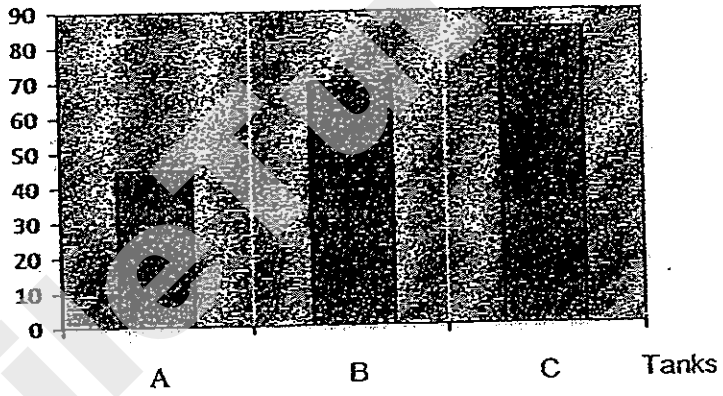
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3. Andy put 100 frog eggs into each of the three tanks, A, B and C at varying temperatures.



The graph below shows what happened after a week.

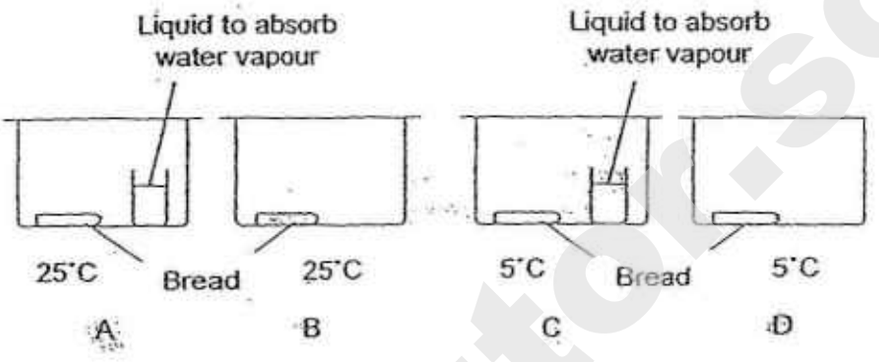


Which of the following statements correctly describes the graph?

(1) The number of frog eggs in a tank affects how fast they are hatched.
(2) The number of frog eggs in a tank affects the temperature of the tanks.
(3) The temperature in a tank affects the number of frog eggs to be hatched.
(4) The temperature in a tank affects the number of frog eggs that will survive.

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4. Tania conducted an experiment to investigate the growth of mould on a slice of bread. She put a slice of bread each into four containers, A, B, C and D, and left them for one week.



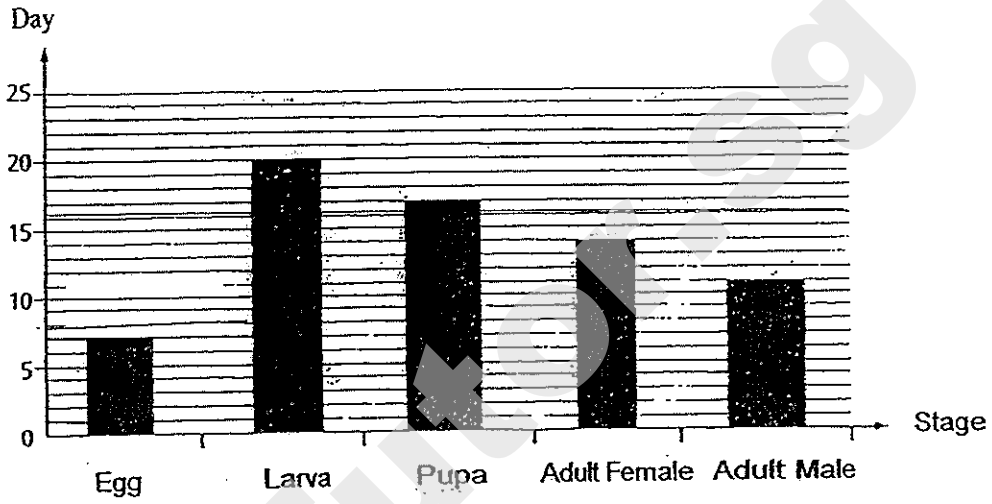
After one week, she observes that the bread in container B has the most bread mould. From the results of this experiment, she can conclude that bread remains freshest when kept in _____.

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

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5. The graph below shows the number of days in each stage of the life cycle of an insect.



Using the information from the graph above, which of the following statement(s) is/are true?

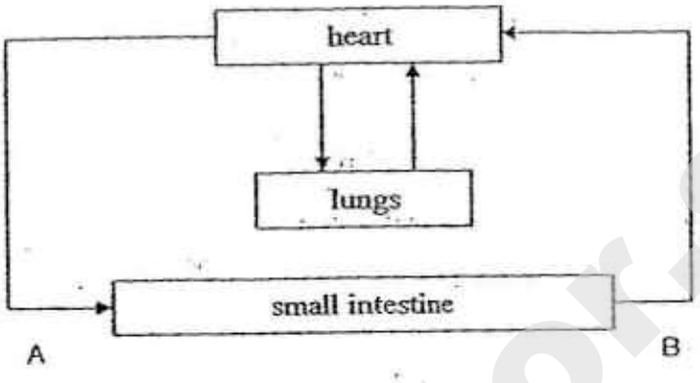
A: The insect has a four-stage life cycle.
B: The whole life cycle of this insect requires 69 days.
C: The process from egg to pupa takes 27 days.
D: There are more female adult mosquitoes than male adult mosquitoes

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

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6. The diagram below shows how blood flows in our lungs, heart and small intestine a few hours after a meal.



In comparison to A, which of the following shows the blood in B correctly?

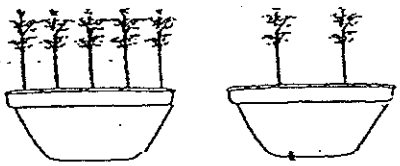
	Oxygen	Digested food
(1)	less	less
(2)	less	more
(3)	more	less
(4)	more	more

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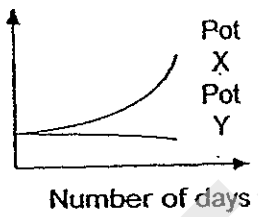
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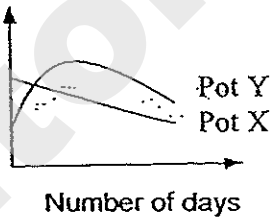
7. Some seedlings were planted in two identical pots, X and Y. The pots had the same amount of soil in them and were placed in the garden side by side.

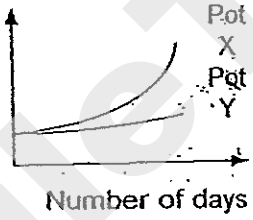


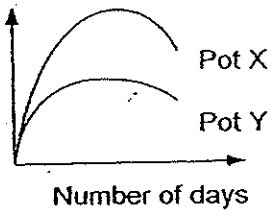
Pot X Pot Y

Given that the same amount of water was given to the two pots daily, which one of the following graphs shows the average heights of the plants in pots X and Y correctly?

(1)


(2)


(3)


(4)


8. Which of the following statements about sexual reproduction in **both** flowering plants and most mammals are true?

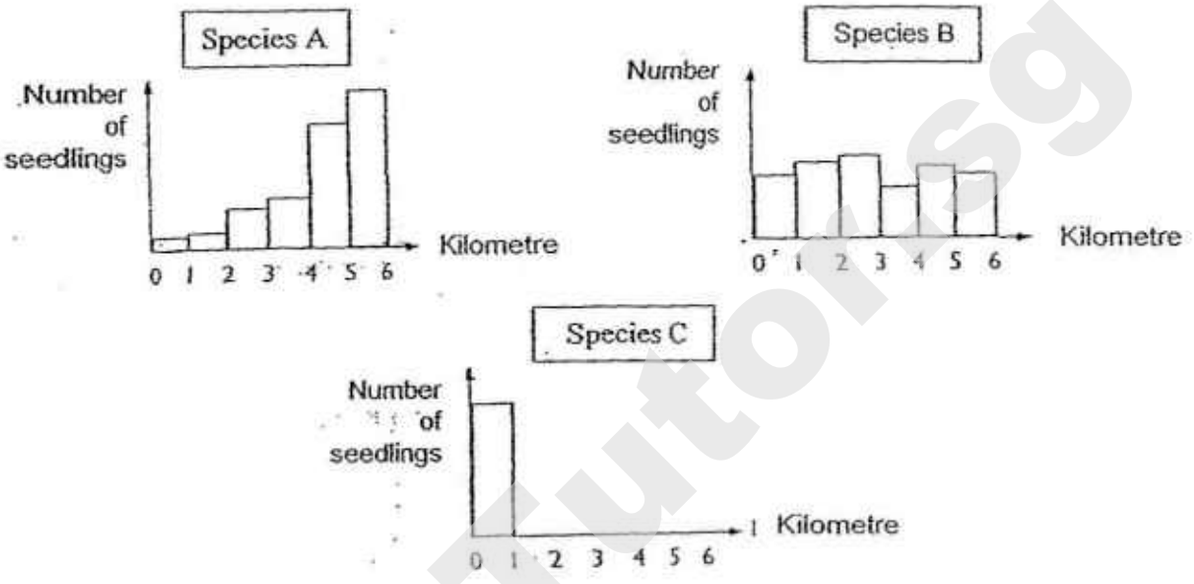
A: The female reproductive cells are called eggs.
B: The male reproductive cells are produced in the ovaries.
C: The male and female organisms have to meet for fertilization to take place.
D: Fertilization takes place in the female reproductive system.

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

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9. Three different species of plants were chosen for recording of their methods of dispersal. The graphs below show the average number of seedlings found at various distances around the parent plant.



What one of the following shows the correct methods of seed dispersal of each plant?

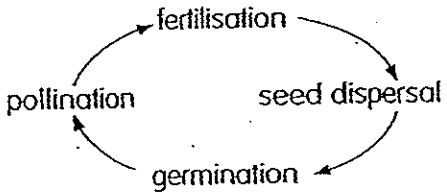
	Species A	Species B	Species C
(1)	Wind	Animal	Explosive action
(2)	Wind	Animal	Water
(3)	Explosive action	Water	Animal
(4)	Explosive action	Animal	Water

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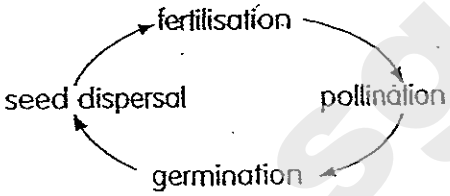
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10. Which of the following diagrams shows the correct sequence of the reproduction of a flowering plant?

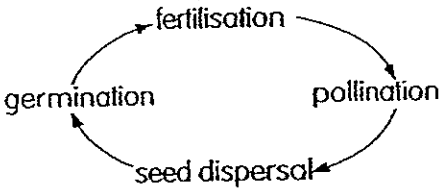
(1)



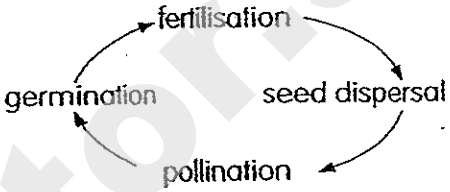
(2)



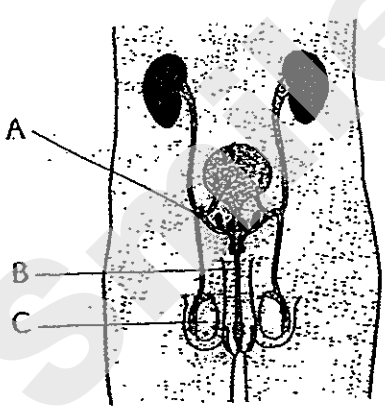
(3)

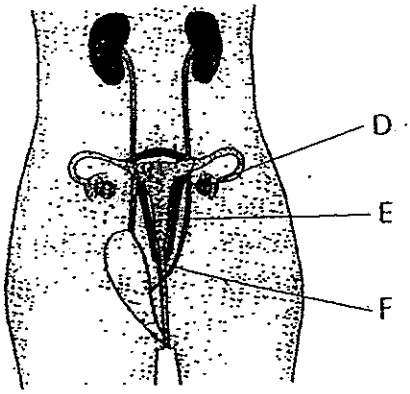


(4)



11. The diagrams show the reproductive organs of human beings.



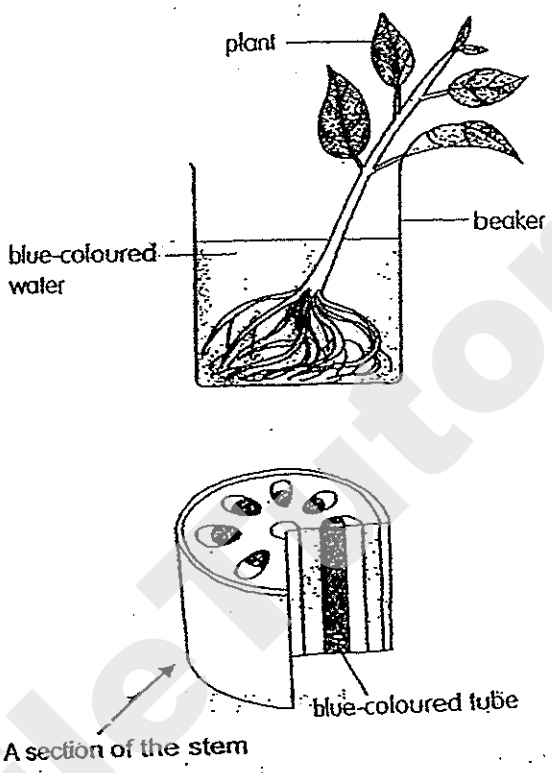


Which of the following is correct?

	Produces egg cell	Produces sperm cell	Where the fertilized egg develops
(1)	C	D	E
(2)	D	B	F
(3)	D	C	E
(4)	E	A	F

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12. Nathanael placed a plant in a beaker with blue-coloured water. The plant was left aside for a day. It was then removed from the beaker and a short length of the stem was cut. The diagram below shows a section of the stem.



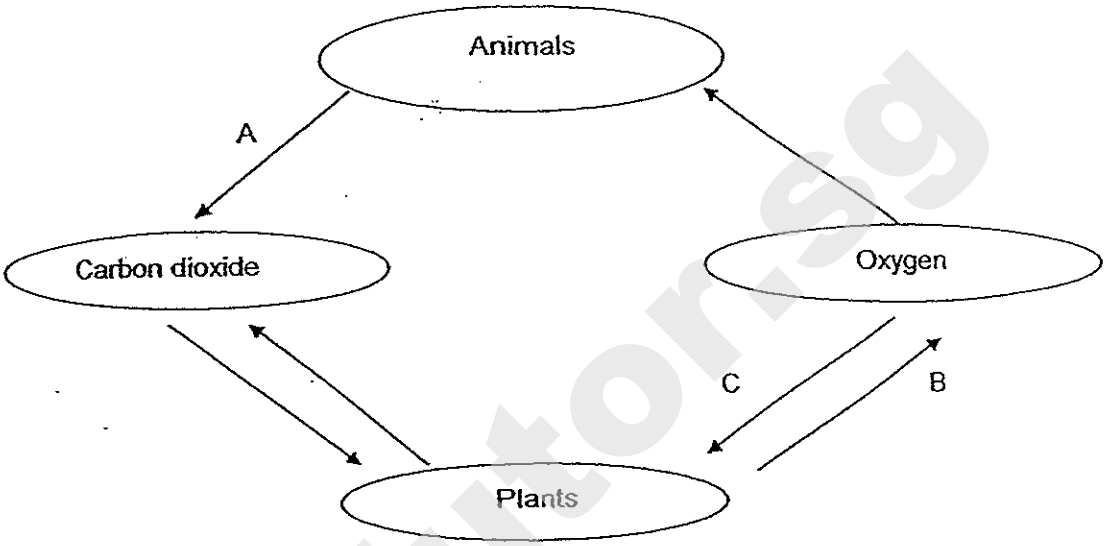
Without the blue-coloured tubes, X cannot be absorbed by Y to be transported to Z. Which of the following could X, Y and Z represent?

	X	Y	Z
(1)	Food	Roots	Leaves and other parts of the plant
(2)	Food	Leaves	Other parts of the plant
(3)	Water and mineral salts ✓	Roots ✓	Leaves and other parts of the plants ✓
(4)	Water and mineral salts	Leaves	Other parts of the plants

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13. The diagram below shows gaseous exchange occurring in living organisms.



What one of the following represents processes A, B and C?

	A	B	C
(1)	Breathing	Photosynthesis	Photosynthesis
(2)	Respiration	Photosynthesis	Respiration
(3)	Breathing	Respiration	Photosynthesis
(4)	Respiration	Breathing	Photosynthesis

14. Charlene goes for a jog at the exercise park. Which of the following happens while she is jogging?

A: Her heart rate increases.
B: Her oxygen intake decreases.
C: Her leg muscles contract and relax.
D: Her skin temperature becomes greater than her body temperature.

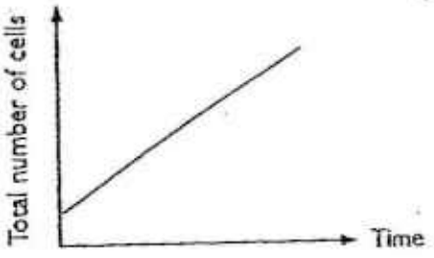
(1) A and C only
(2) A, B and C
(3) A, C and D
(4) All of the above

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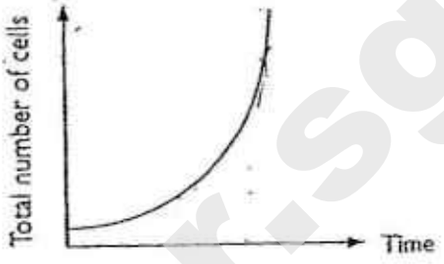
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15. Which one of the following graphs shows the change in the total number of cells over time when a cell of a bacterium starts to divide?

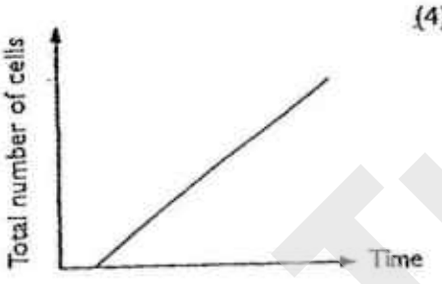
(1)



(2)



(3)



(4)



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METHODIST GIRLS' SCHOOL

Founded in 1887

CONTINUAL ASSESSMENT 2014
PRIMARY 6
SCIENCE

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.

Name: _____

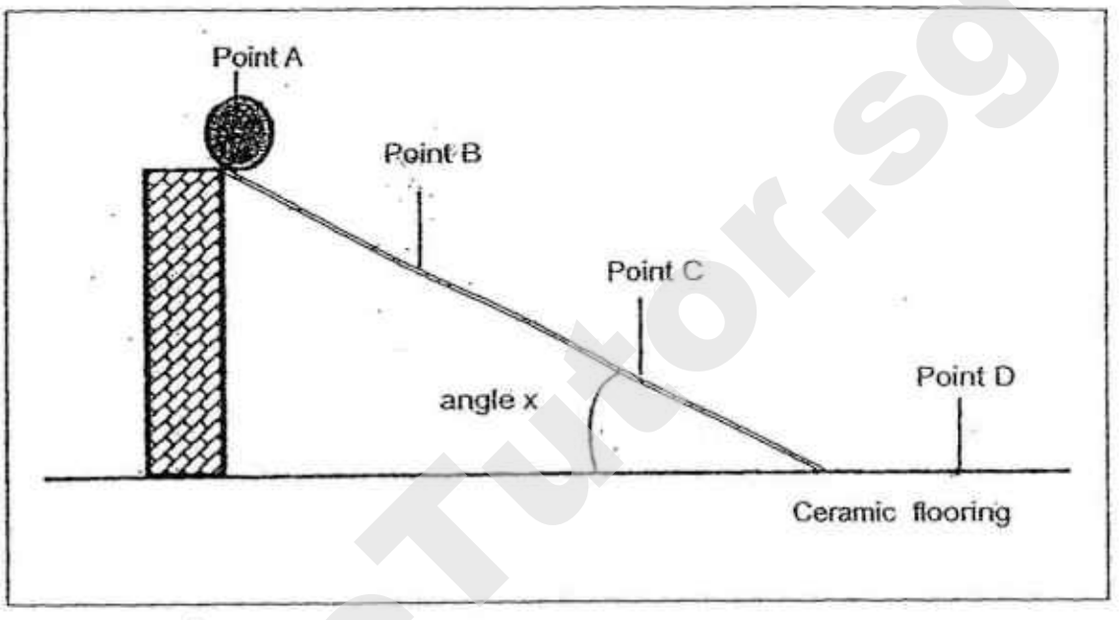
Class: Primary 6._____

Date: 6 March 2014

This booklet consists of 15 printed pages including this page.

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16. A marble was released at Point A as shown in the diagram below. It rolled down the ramp until it reached Point D.



Four pupils then made the following statements:

Mandy: The marble has the greatest amount of gravitational potential energy at Point A.
Ravi: At Point A to C, the marble only has kinetic energy since it is moving.
Susan: The marble will travel a shorter distance if the experiment is done on carpeted flooring.
Erikson: The marble will travel a longer distance if the angle x is smaller.

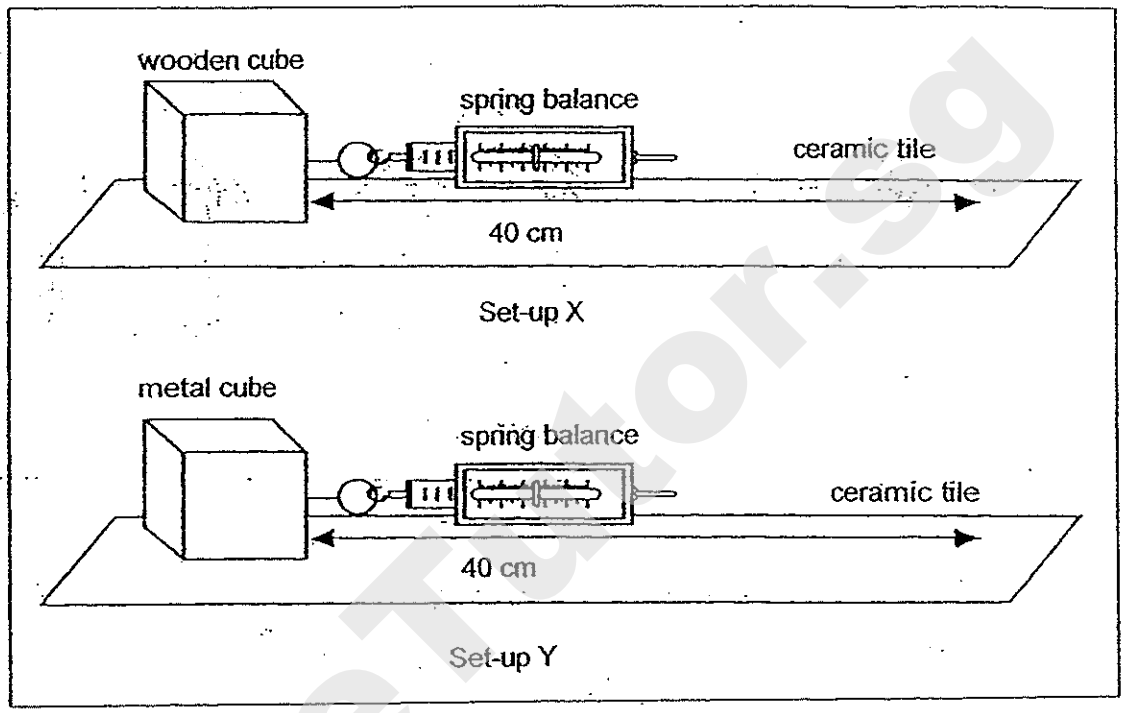
Which of the above statements are correct?

(1) Mandy and Ravi
(2) Ravi and Susan
(3) Mandy and Susan
(4) Ravi, Susan and Erikson

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17. Linda set up the following experiment to find out if the type of surface affects the amount of force needed to move a metal cube over a certain distance.

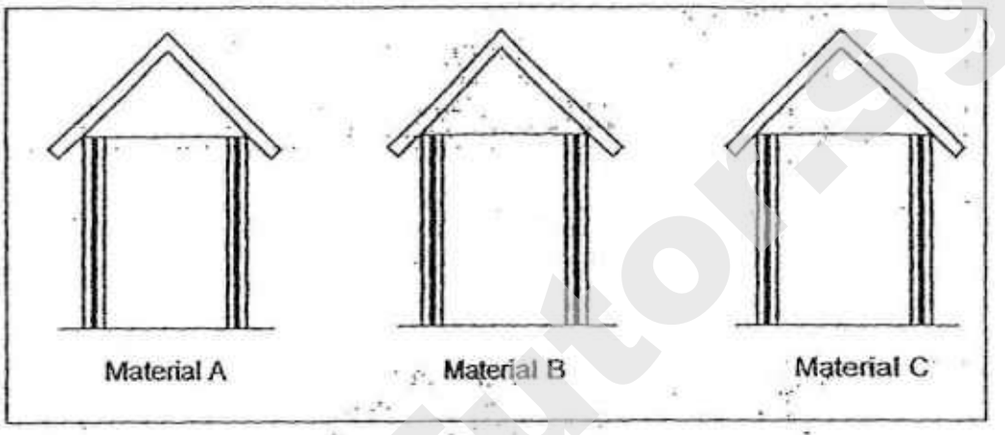


Her teacher commented that she should change some variables in Set- up X in order to ensure that it is a fair test. Which of these variables in Set- up X should she change?

	Variable 1	Variable 2
(1)	Replace the wooden cube with a metal cube	Replace the ceramic tile with a marble tile
(2)	Use shorter distance of 35 cm	Use 2 spring balances to move the cube
(3)	Replace the metal cube with a smaller one	Replace the ceramic tile with a marble tile
(4)	Use a longer distance of 55 cm	Use 2 spring balances to move the cube.

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18. Ben built 3 model houses to compare the heat conductivity of materials A, B and C as shown in the following diagram. He then placed the model houses outdoors on 3 different days. The temperature inside the model houses was then recorded in the table below.



Day	Temperature outside the model house /°C	Temperature inside the model house/ °C		
		Material A	Material B	Material C
Day 1	32.5	28	29.5	31
Day 2	33	29	30	31.5
Day 3	31	27.5	28	29.5

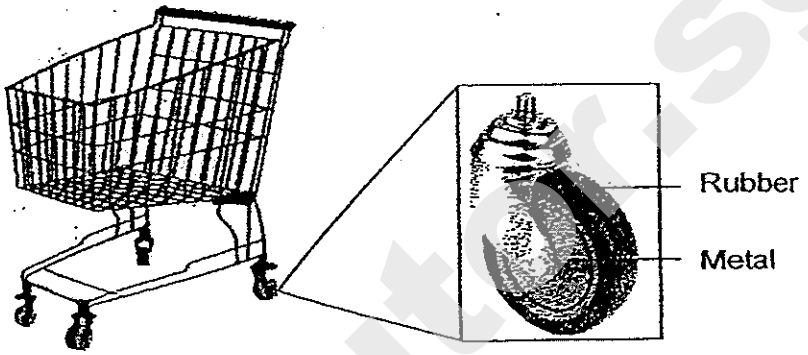
Which one of the following shows the correct heat conductivity of the 3 materials?

	Heat Conductivity: Good ← → Poor		
(1)	A	B	C
(2)	C	B	A
(3)	C	A	B
(4)	A	C	B

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19. Siva used a trolley to carry some heavy boxes across the room. The trolley has four metals wheels covered with a layer of rubber as shown in the diagram. One of the rubber coverings in the wheels came off and scratched the ceramic tiles while the other wheels did not scratch the tiles.



Which is the correct conclusion Siva can make?

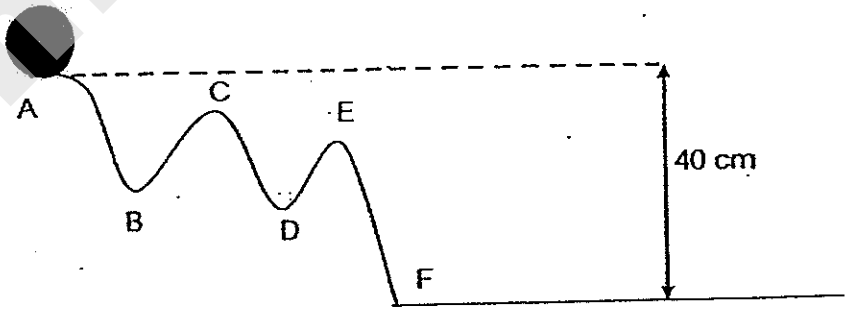
(1) Metal is heavier than rubber.

(2) Metal is harder than ceramic.

(3) Ceramic is smoother than rubber.

(4) There is no friction between ceramic and rubber.

20. Xiao Wei released a ball from position A to F as shown in the following diagram.



At which of the following point(s) on the slope would the **gravitational** force acting on the ball be the same as that of position C?

(1) A only

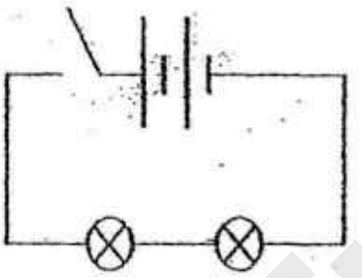
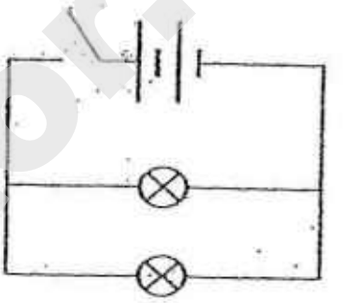
(2) A and E only

(3) B and D only

(4) A, B, D, E and F

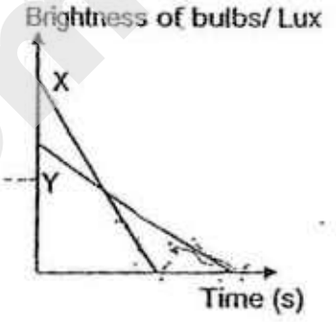
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21. Jenny set up the 2 circuits, X and Y, as shown below. Both switches in the circuits are closed at the same time. A data logger was used to measure the brightness of the bulbs for a period of time until the power in the batteries ran out. She also recorded the length of time that the bulbs remained lit.

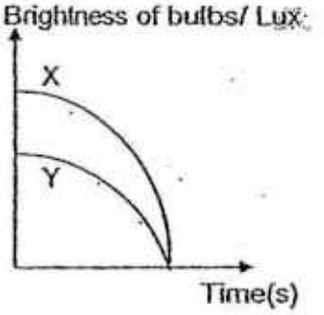
Circuit X	Circuit Y
	
Number of hours bulbs remain lit : 9h	Number of hours bulbs remain lit : 7h

Which one of the following graphs correctly represents the change in brightness of bulbs in circuit X and Y with time?

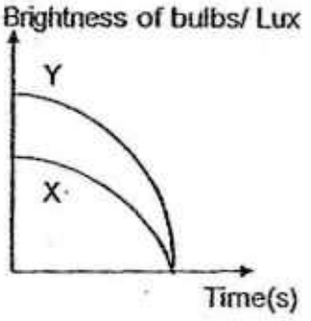
(1)



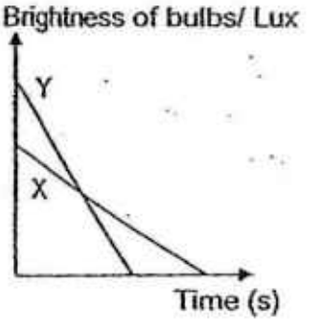
(2)



(3)

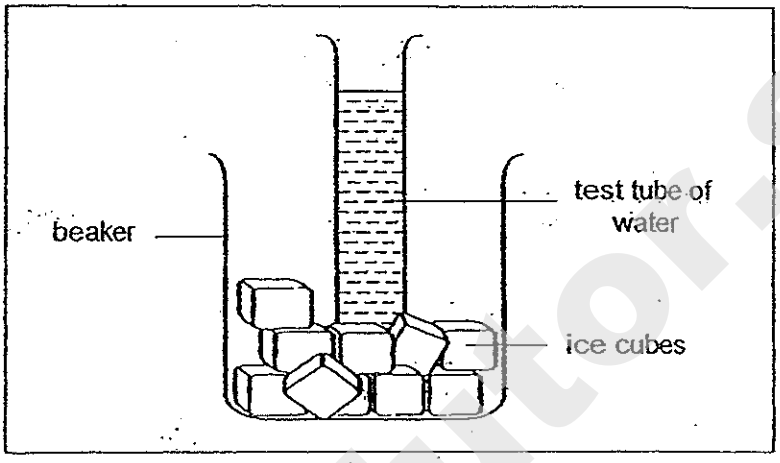


(4)



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22. Ahmad set up an experiment in a Science Laboratory as shown in the following diagram.



Which of the following are most likely to be observed after <u>5 minutes</u>?

A: Some ice cubes will slowly change its state.

B: The test tube of water will slowly change its state

C: The temperature of water in the test tube will drop.

D: Both the test tube of water and the ice cubes will reach room temperature

(1) A and B only

(2) A and C only

(3) B and D only

(4) A, B and C only

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Go on to the next page

23. The table below shows the states of four substances W, X, Y and Z at different temperatures.

Substance	State of substance		
	30°C	60°C	90°C
W	Liquid	Liquid	Gas
X	Solid	Liquid	Gas
Y	Liquid	Liquid	Liquid
Z	Solid	Solid	Solid

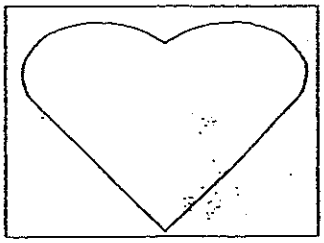
Which of the following statements is correct?

(1) The boiling point of Substance W is the highest
(2) The boiling point of Substance X is the lowest.
(3) The melting point of Substance Y is the lowest.
(4) The melting point of substance Z is the highest.

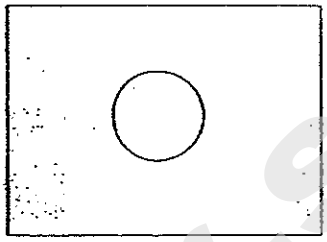
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24. Johnny cut out a heart shape from a clear plastic sheet and a circle from a metal sheet of the same size. The two sheets are then glued together.

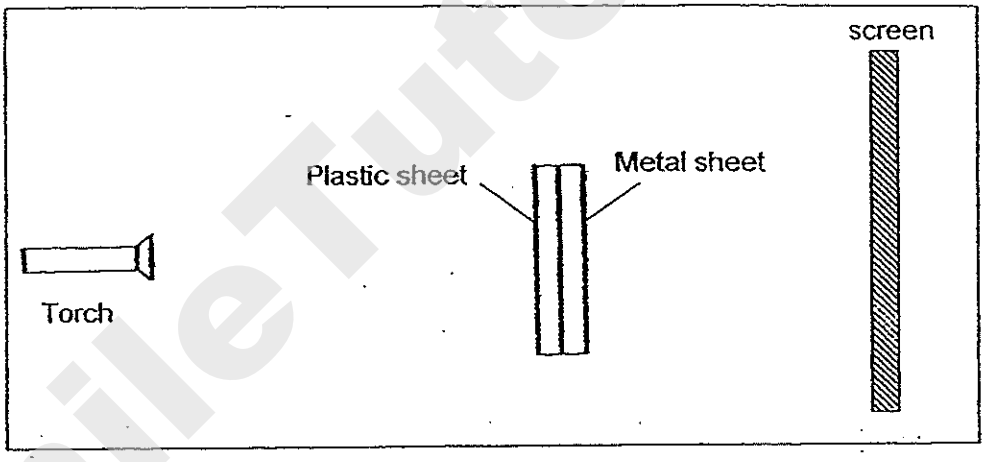


Clear plastic sheet



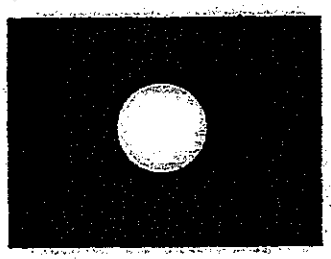
Metal sheet

Johnny then shone a torch at the glued sheets. A shadow was then cast on the screen.

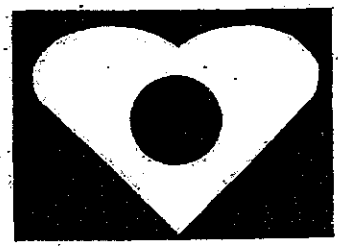


Which one of the following is most likely to be the shadow formed on the screen?

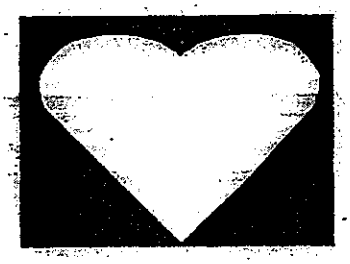
(1)



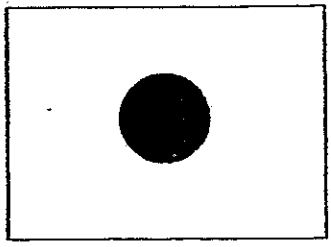
(2)



(3)

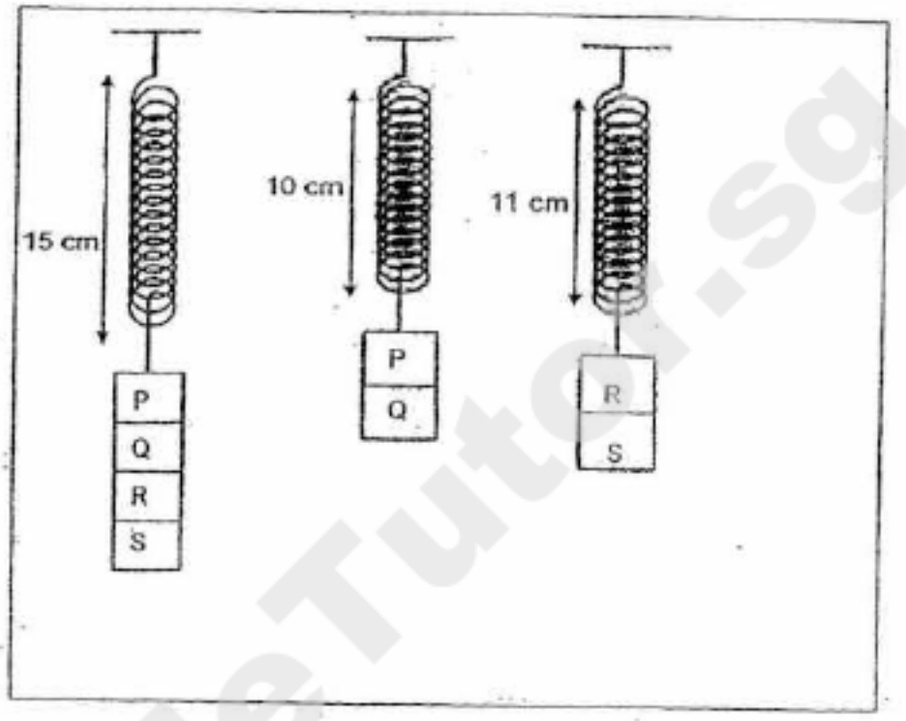


(4)



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25. The diagram below shows the same spring with different amounts of weights, P, Q, R and S hanging on it.



Based on the results shown in the diagram, what is the original length of the spring?

(1) 7 cm
(2) 6 cm
(3) 5 cm
(4) 4 cm

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26. Mandy set up the following experiment as shown in the figure below. Four rings, A, B, C and D were placed through a ceramic rod and remained in that position as shown in Figure 1. Mandy then removed ring A and B and added a new ring, Z. She then placed ring A and B back without flipping them.

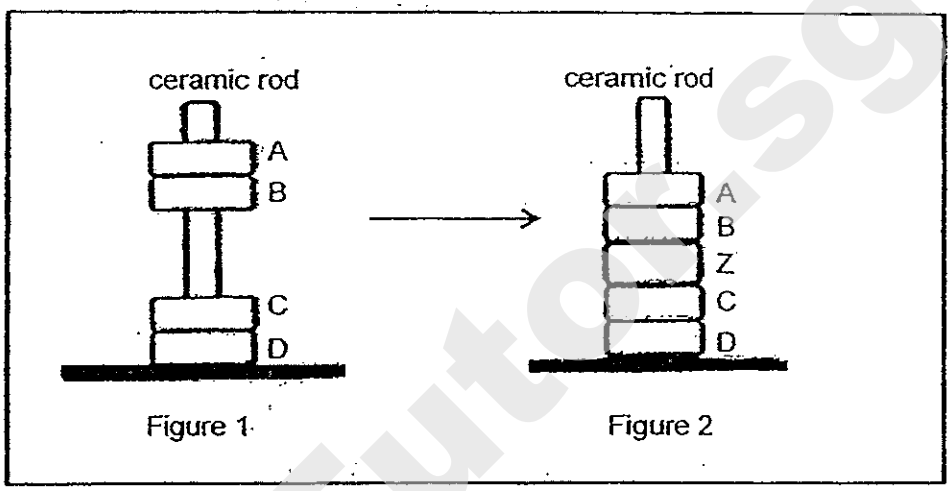


Figure 1 Figure 2

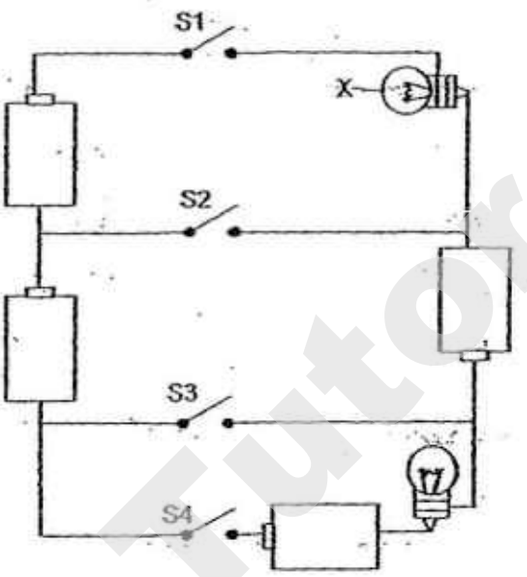
Which one of the following correctly represents A, B, C, D and Z in Figure 2?

	Ring Magnet	Iron Ring	Wooden Ring
(1)	B, D	C, Z	A
(2)	B, C	D, Z	A
(3)	C, D	A,Z	B
(4)	B	C, D	A, Z

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27. The diagram below shows an electric circuit with identical bulbs and batteries.



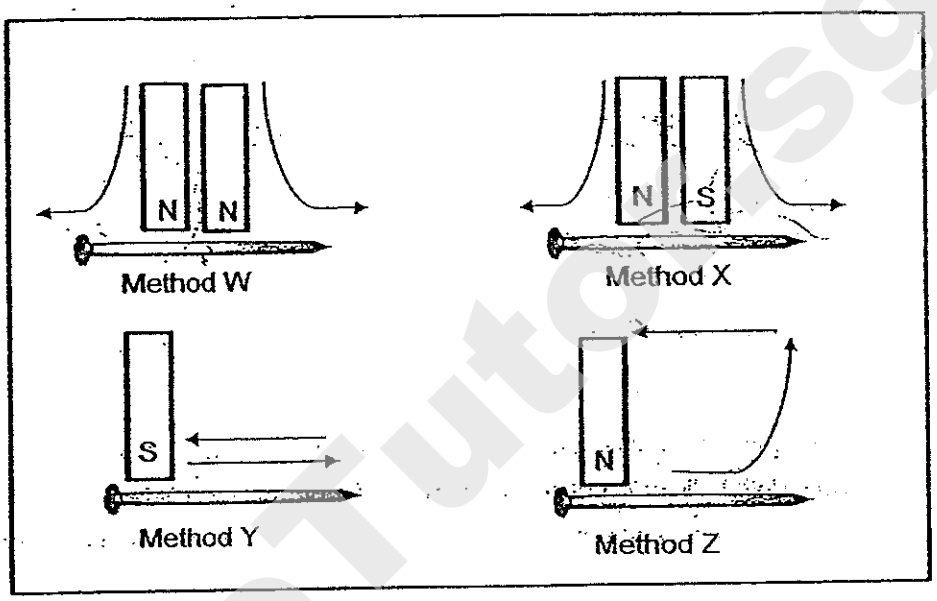
Which one of the following would ensure that Bulb X is the brightest?

	S1	S2	S3	S4
(1)	Close	Close	Open	Open
(2)	Close	Open	Close	Open
(3)	Open	Close	Open	Close
(4)	Close	Open	Open	Close

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28. The following diagrams show the different methods of stroking to make a temporary magnet of a steel nail. The arrow (→) shows the movement of the magnet.



Which of the above methods is/are correct to make a steel nail into a temporary magnet?

(1) Z
(2) X and Z only
(3) W and Z only
(4) X, Y and Z only

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29. Two identical balls, A and B are rolling along a smooth wooden floor at different speeds in the same direction.

Go on to the next page



Four students observed how the balls rolled and made the following statements.

Andy: Both balls possess the same amount of kinetic energy

Betty: Both balls move in the opposite direction after they collide.

Cathy: Both balls will continue moving forward after they collide.

Doris: Both balls possess the same amount of gravitational potential energy

Which of the following statements is/are correct?

(1) Andy

(2) Betty and Cathy

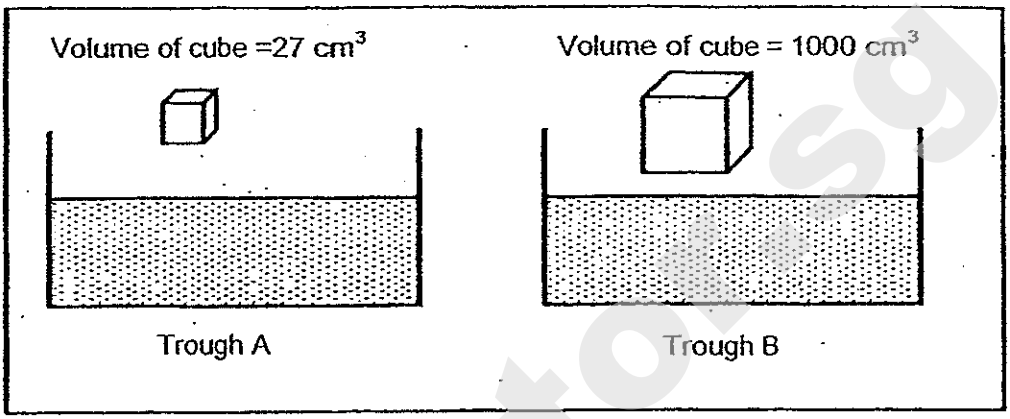
(3) Cathy and Doris

(4) Andy and Betty

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30. Two metal cubes at room temperature but with different volumes were placed into 2 troughs of hot water of the same temperature as shown in the figure below. Both troughs A and B contain the same amount of water.



After 3 minutes, the metal cubes were removed from both troughs and the temperature of the water in each trough was measured.

Which one of the following observations and reasons is correct?

	Observation	Reason
(1)	The water in trough A has a higher temperature than trough B	The water lost less heat to the metal cube.
(2)	The water in trough B has a higher temperature than trough	The water gained more heat from the metal cube.
(3)	Both the water in trough A and B will have the same temperature	The amount of heat lost by the water in both troughs is the same.
(4)	Both the water in trough A and B will have the same temperature.	The metal cubes do not gain any heat

End of Booklet A

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CONTINUAL ASSESSMENT 2014

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: 6 March 2014

Booklet A	/ 60
Booklet B1	/ 20
Booklet B2	/ 20
Total	/ 100

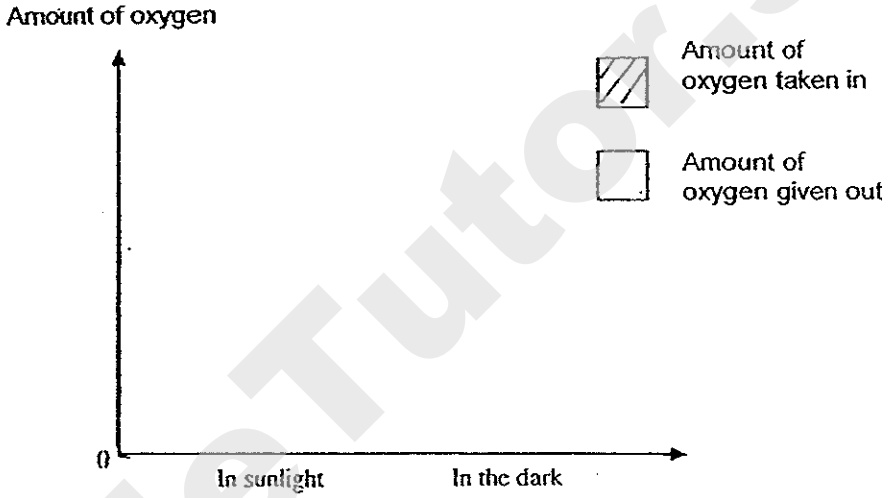
This booklet consists of 9 printed pages including this page.

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Part 2 (40 marks)

For questions 31 to 44, write your answers clearly in the space provided.
The number of marks available is shown in the brackets ( ) at the end of each question or part question.

31. The graph below shows the amount of oxygen taken in and given out by a green plant in an open field for 24 hours that covers both day and night, with absence of artificial light.



a) Complete the chart, by drawing bar(s), to show the amount of oxygen taken in and given out in sunlight. (1m)

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

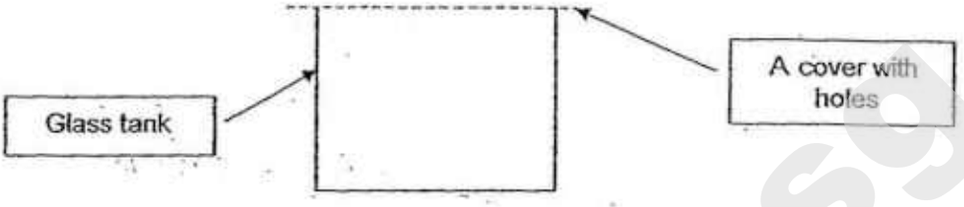
Green

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Go on to the next page

32. Animal P was placed in a glass tank with a cover that had small holes in it as shown below.



Thereafter, 8 flies, 15 leaves and a dish of water were placed into the tank, and covered. The table below shows the number of flies and leaves in the tank at 3-hour intervals.

Time	Number of flies	Number of leaves
7am	8	15
10am	8	13
1pm	8	11
4pm	8	9
7pm	8	9
10pm	8	9

a) Why was the dish of water placed in the tank? (1m)

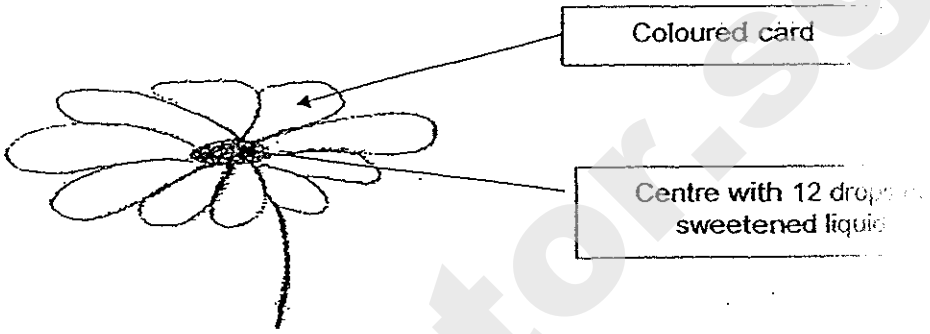
b) Using only the table above, what can you conclude about animal P and the two items in the tank from 7am to 10pm? (1m)

c) How will the outcome in the table differ if animal P was replaced by a frog? (1m)

d) Give a reason for the difference in (c). (1m)

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33. Jamilah wanted to find out if butterflies have a preference for the colour of flow... made similar model flowers using different coloured cards. 12 drops of sweete... liquid were put in the centre of each flower. The model flowers were left in the garden.



For three hours, Jamilah counted the number of butterflies that visited the model flowers. The results were recorded in the table below.

Colour of flower	Number of butterflies visiting the flower		
	9am - 10am	10am - 11am	11am - 12pm
White	7	6	2
Yellow	15	12	5
Red	8	6	1

a) Based on Jamilah's findings, which colour of flower did most of the butterflies prefer? (1m)

_____

b) Jamilah decided to find out the relationship between the size of the flowers and the number of butterflies visiting the flowers. What changes(s) would she have made? (1m)

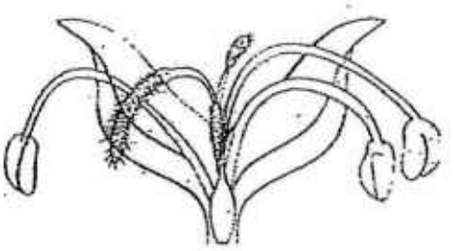
_____

_____

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While Jamilah was in the garden, she spotted a flower as shown below.



c) Suggest the most likely agent of pollination of this flower. (1m)

_____

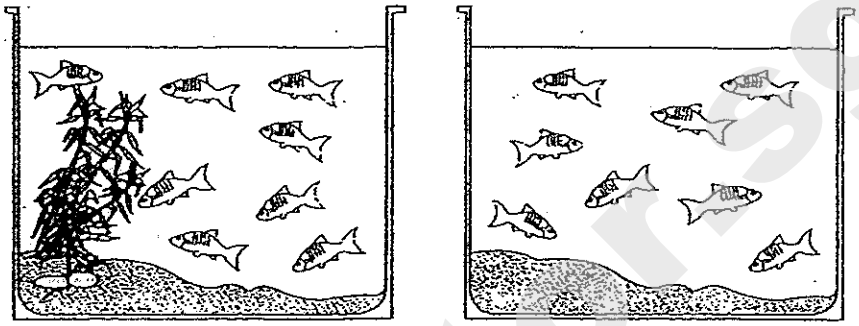
d) Give a reason for your answer in (c). (1m)

_____

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34. Muthu set up the following experiment with Tank A and Tank B as shown. Both tanks were similar but Tank A had water plants. He allowed the two tanks to stand for three days in a room, on a table near a window.



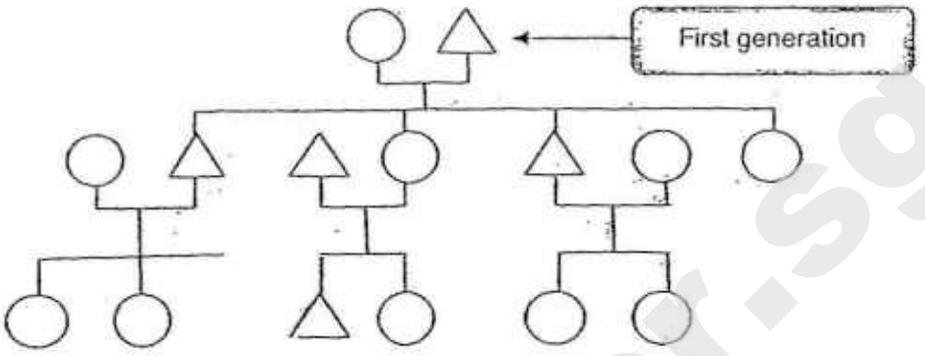
a) He observed that most fishes were swimming near the water surface in Tank B after the third day. Why? (2m)

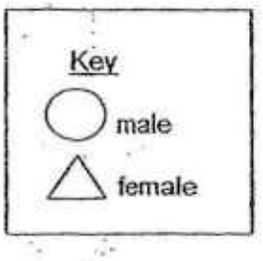
b) ~~Suggest~~ a reason for your answer in (a). (1m)

b) Did Muthu set up a fair test? Explain your answer. (1m)

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35. The family tree of the Tan family is shown below.





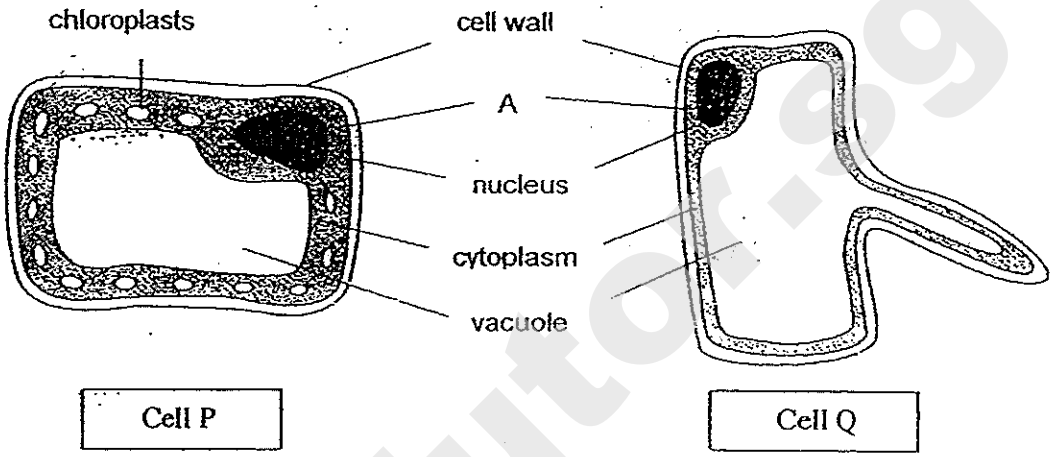
a) Paula is born in the third generation. She has three male cousins. Shade the right shape that represents Paula in the family tree. (1/2m)

b) The unmarried son in the second generation of the family tree later marries and has a son and a daughter. Show these in the family tree by drawing the relevant shapes and lines. (1 1/2m)

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36. Two different types of cells, P and Q, from the same plant are shown below.



a) Name structure A and state its function. (1m)

_____

_____

b) Which cell is able to photosynthesise? Explain your answer. (1m)

_____

_____

c) In which part of the plant is cell Q likely to be found? Explain your answer. (1m)

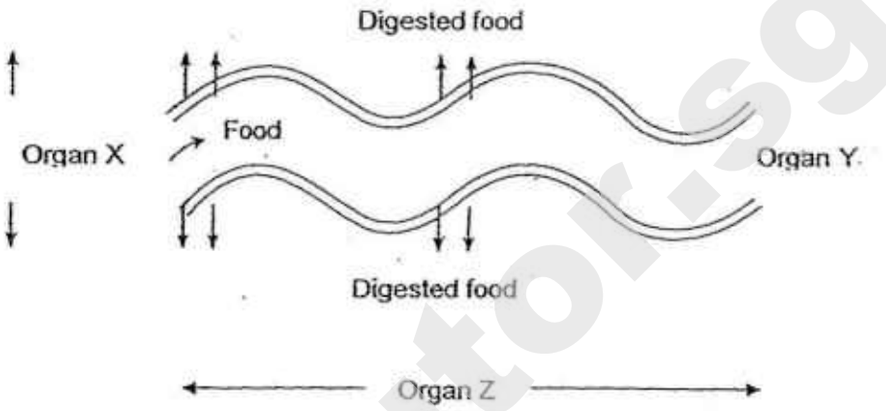
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37. As food travels from organ X to organ Y in the digestive system of a human body, digested food is absorbed in organ Z as shown below.



a) Name the organs.

Organ X: _____ (1/2m)

Organ Y: _____ (1/2m)

b) If organ Z is shorter, what will happen to the digested food? (1m)

_____

_____

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CONTINUAL ASSESSMENT 2014
PRIMARY 6
SCIENCE

BOOKLET B2

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

INSTRUCTIONS TO CANDIDATES

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Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____

Class: Primary 6._____

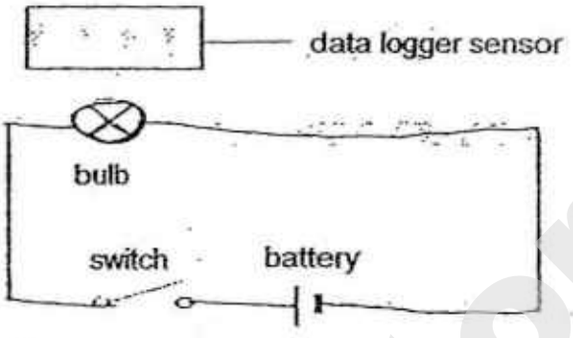
Date: 6 March 2014

Booklet A	**/ 60**
Booklet B1	**/ 20**
Booklet B2	**/ 20**
Total	**/ 100**

This booklet consists of 8 printed pages including this page.

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38. Ali set up the following experiment to find out if the number of batteries would affect the brightness of the bulb. A data logger sensor was placed at a distance from the bulb to measure its brightness.



Ali then tabulated the results in the following table.

Number of batteries	Brightness (Lux)
0	300
1	400
2	500
3	600

a) Based on the table above, what is the relationship between the number of batteries in the circuit and the brightness of the bulb? (1 m)

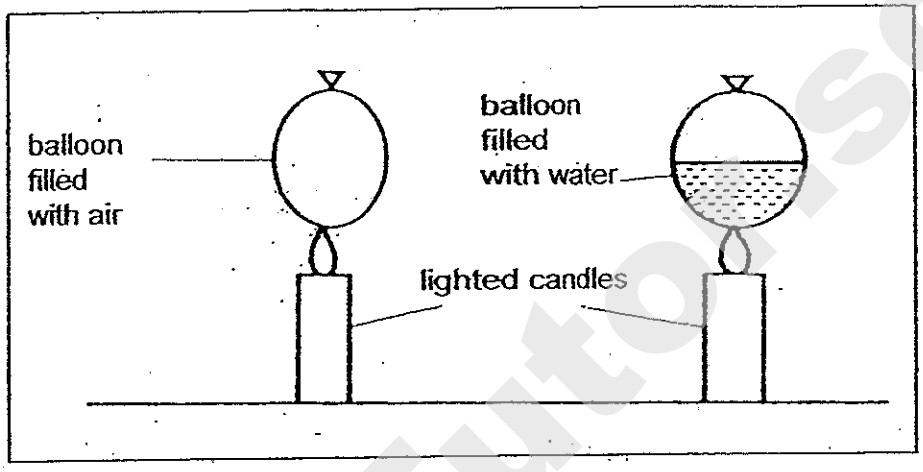
b) Ali noticed that there was a reading on the data logger even when there was no battery in the circuit. Suggest a possible reason for his observation. (1m)

c) When a fourth battery is added, the reading on the data logger shows 300 lux. Suggest a possible reason for the decrease in reading. (1m)

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39) Cindy set up the following experiment as shown in the Science Laboratory. She inflated two balloons to the same size. Balloon A was completely filled with air and the other was filled with some water. She then placed the balloons on top of a Bunsen burner as shown in the following diagram.

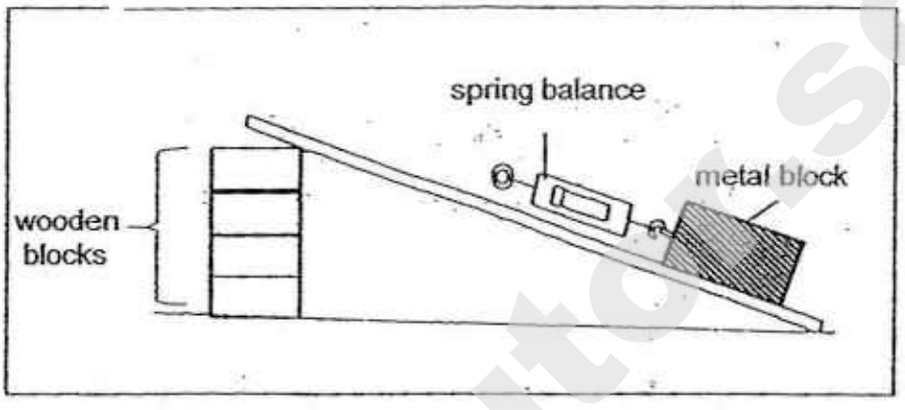


a) It is observed that the balloon without water burst first. Explain why (2m)

b) Without changing the heat intensity of the Bunsen burner, what can Cindy do to increase the time taken for both balloons to burst? (1m)

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40. Jasvinder set up the following by using a spring balance to pull a metal block along a ramp. She then increased the height of the ramp by putting more wooden blocks. Jasvinder then recorded the amount of force needed to pull the metal block up the ramp.



(ai) Give a reason to explain why more force is required to pull the metal block as the height of the ramp increased.

_____

(ii) Without changing the height of the ramp and the mass of the metal block, suggest a way to decrease the amount of force required to pull the metal block up the ramp. (1m)

_____

(b) Using the same set up, Jasvinder pulled the metal block down the ramp instead of pulling it up. She observed that the spring balance show a smaller reading compared to pulling the metal block up the ramp. Explain her observation. (1m)

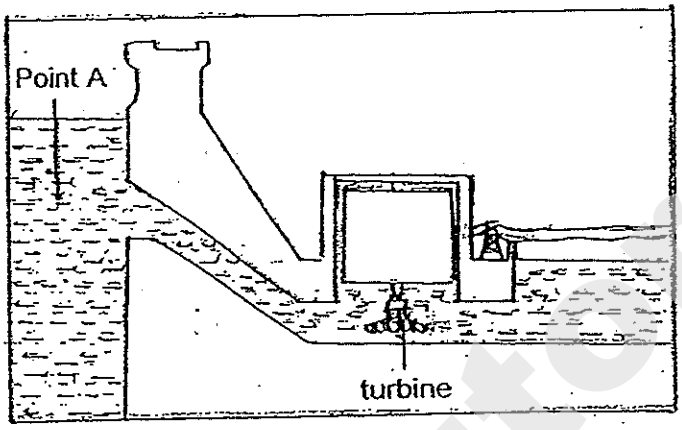
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41. The following shows a hydroelectric power station.

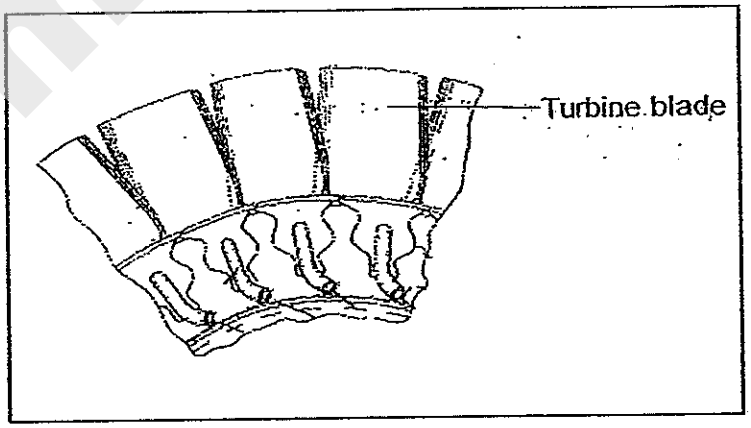


(a) State the energy changes which occur in the hydroelectric power station by filling in the following blanks (1m)

_____ energy → _____ energy → _____ energy →
(water from Point A) (running water) (turbine)

_____ energy
(generator)

(b) The following shows a closed up view of the blades of the turbine

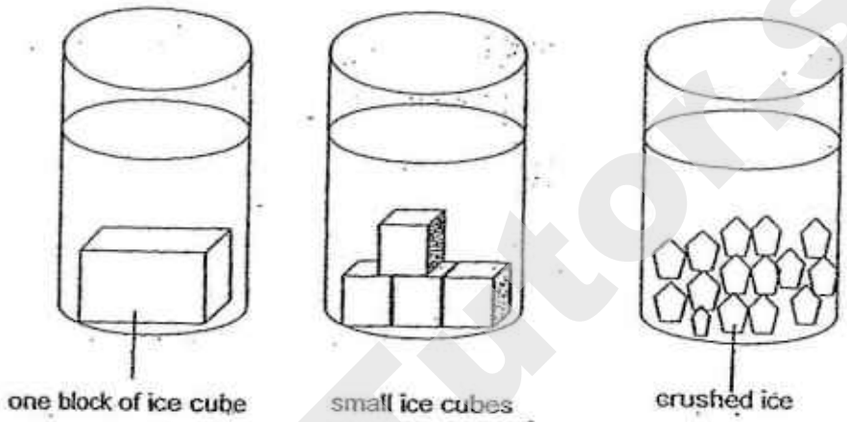


(i) Assuming that all variables remain the **same**, how would the amount of power generated by the hydroelectric station change if **heavier** turbine blades are used. Explain your answer.
(2m)

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42. Li Yen conducted an experiment to investigate the melting of ice in hot coffee. Equal amount of hot coffee of the same temperature was poured into containers A, B and C. The same volume of ice was then added to the coffee. After 5 minutes, the temperature of the coffee was recorded.

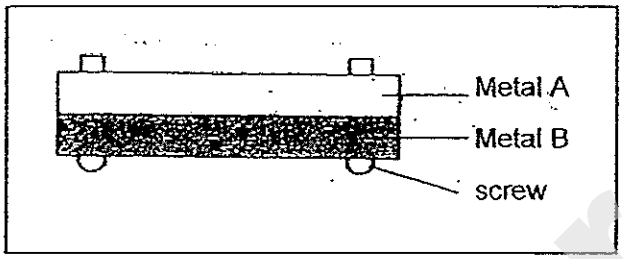


a) Arrange the containers of coffee above in <u>ascending</u> order of their temperatures after 5 minutes. Explain your answer. (2m)

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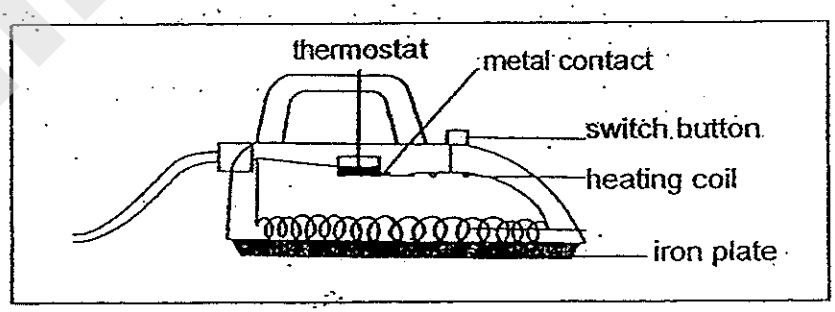
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43. As shown in the following diagram, a thermostat is made of two different metals A and B, which are joined together. The two ends of the metals are fixed with a screw so that the ends will always be in line with each other. When the thermostat is heated, one metal expands more and it will cause the thermostat to bend.



(a) Given that metal B expands more than metal A, draw in the space below to show what the thermostat will look like when it is heated.

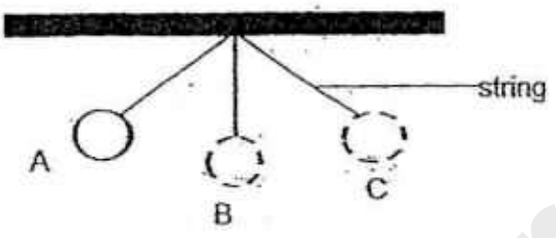
(b) The thermostat can be found in an electric iron to control its temperature as shown in the following diagram. Explain how the thermostat works.



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44. Mr Lim released a pendulum from Point A to find out the amount of time it took to make 20 complete swings (from A to B to C and back to A again) by varying the lengths of the string.



He recorded the data as shown in the following table.

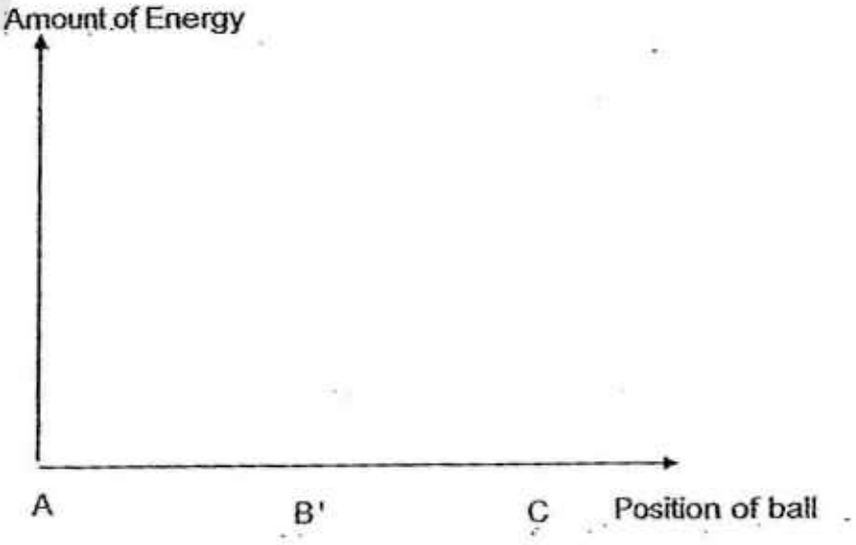
Length of string	Time taken to make 20 complete swings
30	21.8
25	20
20	17.8
15	15.4
10	12.6

a) What is the relationship between the length of the string and the time taken to make 20 complete swings? (1m)

_____

_____

b) In the diagram below, draw **2 line graphs** to represent the amount of kinetic energy and gravitational potential energy as the pendulum swing from A to B and to C. **Label** the 2 graphs as "KE" and "GPE" accordingly. (2m)



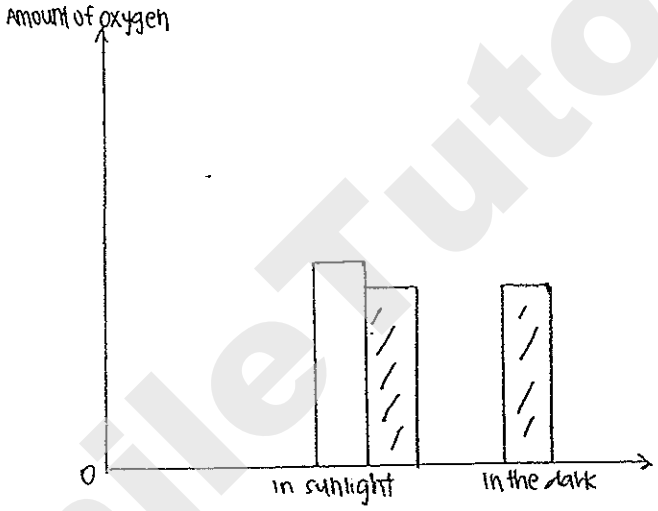
End of Paper

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School: METHODIST GIRLS' SCHOOL
Subject: PRIMARY 6 SCIENCE
Term: CA1

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

31. (a)



(b) Oxygen is taken in by the plant all the time for respiration. More oxygen is given out by the plant during photosynthesis which occurs only during the day.

32. (a) Animal P is a living thing and needs water, air and food to survive.
(b) Animal P only feeds on leaves, so the number of leaves will decrease but the number of flies remained the same.
(c) The number of leaves will remain the same and the number of flies will decrease.
(d) Frogs feed on flies and not leaves whereas Animal P feeds on leaves and not flies.

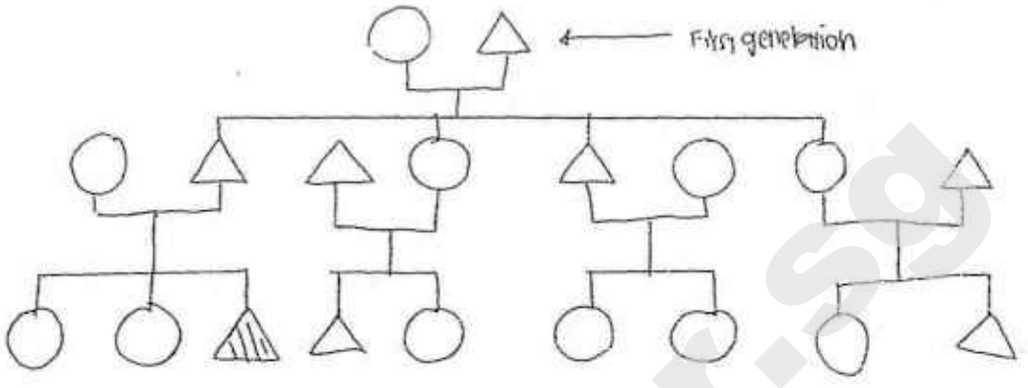
33. (a) Yellow colour.
(b) She should change the colour of the flowers all to one colour and change the size of the flowers.
(c) The wind.
(d) The anthers of the flower are hanging out of the petals, making it easier for the wind to blow the pollen grains made by the anthers to the stigma of another flower.

34. (a) There are no water plants in tank B to provide oxygen for the fishes so the fishes had to swim near the water surface to breathe in oxygen.

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(b) Yes as all the variables except the presence of water plants were kept the same.

35.



36. (a) Cell membrane, it allows only certain substances to come in and out of the cell.

(b) Cell P. It has chloroplasts to trap sunlight and make food.

(c) The roots of the plant. It does not need chloroplasts as it absorbs water and mineral salts from the soil.

37. (a) X: stomach

Y: large intestine

(b) Not all or less digested food will be absorbed by the body.

38. (a) The more the number of batteries, the brighter the bulb.

(b) The reading on the data logger sensor is the amount of brightness of the room the experiment is conducted in.

(c) There is too much electricity flowing to the bulb, causing the bulb to fuse.

39. (a) The water in the balloon gained heat from the candle so the balloon will not burst.

(b) Big balloons increase the distance between the balloons and the flames.

40. (a) i. More force is needed to overcome the pull of gravity which is acting on the ball as it is being pull up along the ramp.

ii. Change the material of the ramp to a smoother material.

(b) When he pulls the metal block down the ramp, it is moving in the same direction of gravity.

41. (a) Gravitational potential; kinetic; kinetic; electrical

(b) i. Since heavier turbines are used, more energy is needed to move them.

42. (a) C, B, A. The more the number of cubes and ice, the more surface area is in contact with the water, causing the water to lose heat fast.

43. (a)

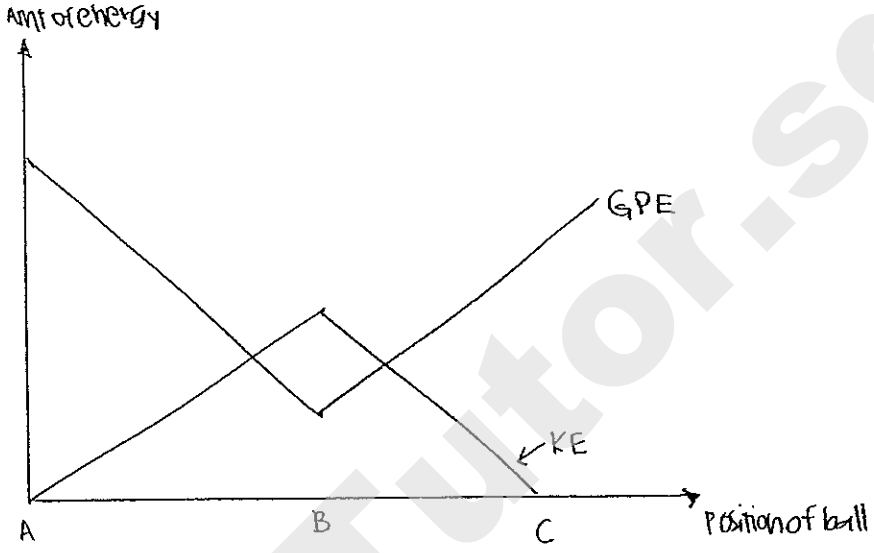


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(b) When the temperature of the iron is too hot, the thermostat will bend upwards and no longer be in contact with the metal conduct. This creates an open circuit and electricity will not continue to heat up.

44. (a) The longer the string, the longer the time taken to make 20 complete swings.

(b)



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NAN HUA PRIMARY SCHOOL
CONTINUAL ASSESSMENT 1 2014
PRIMARY SIX
SCIENCE

Name : _____( )

Class : Primary 6 / ____

Date : 6 March 2014

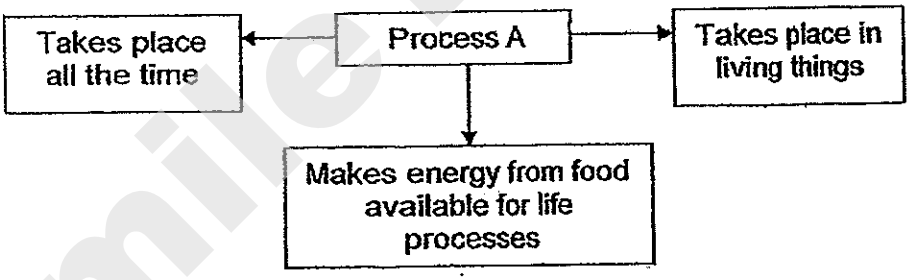
Duration : 1 hr 45 min

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

Parent's Signature : _____

Section A: (30 x 2marks = 60marks)
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 flowchart below.



What is Process A?

(1) Digestion
(2) Breathing
(3) Respiration
(4) Photosynthesis

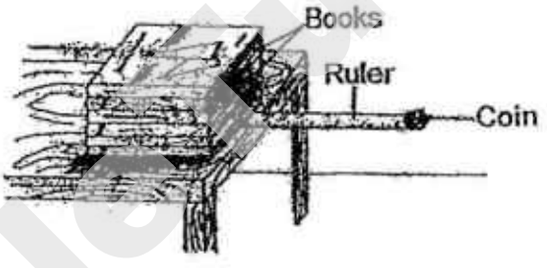
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2. Which of the following statements about energy is true?

A The Sun is our main source of energy.
B Only living things need energy to work.
C Light energy from the Sun keeps the water cycle going.
D Food consumers are indirectly dependent on the Sun for energy.

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

3. Norman planced a ruler at the edge of the table and held it with several books as shown below. Then he used it to launch a coin into the air. However,the coin did not go very far.Which of the following changes would help to make the coin go further?

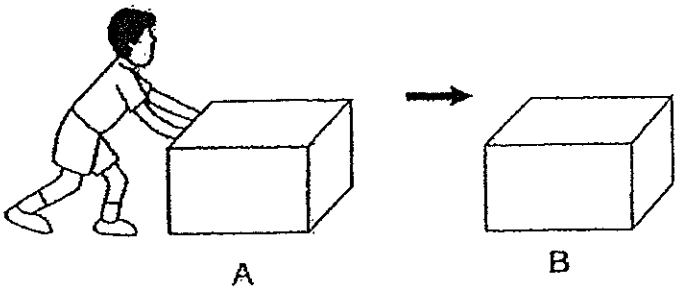


A Pull the ruler lower.
B Use a heavier coin.
C Move the coin nearer to the books

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

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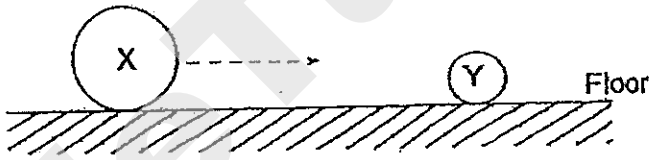
4. The diagram below shows a boy moving a box from position A to B.



Which of the following statement(s) is **not true** of the force used?

(1) A push is being applied on the box.
(2) The force can be seen as the box moves.
(3) The force causes the box to move forward.
(4) Both the direction of the force and box move in the same direction.

5. Look at the diagram below.



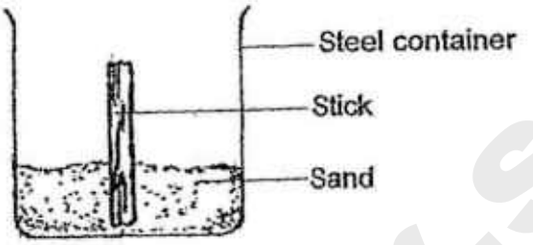
Ball X and Ball Y are made of the same material. Ball X is rolling on the floor in the direction shown. it hits Ball Y which is stationary. What do you think is likely to happen to Ball X?

(1) Ball X will stop suddenly.
(2) Ball X will move more slowly in the same direction.
(3) Ball X will move more slowly in the opposite direction.
(4) Ball X will move more quickly in the opposite direction.

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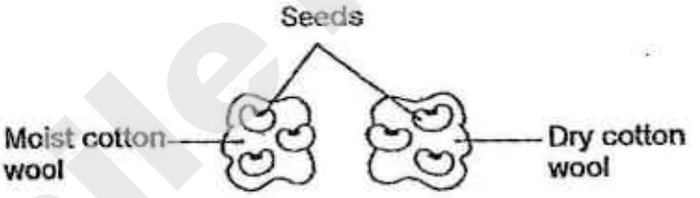
6. The diagram below shows that sand has been poured into a steel container to hold up a stick. The sand is able to prop up the stick.



What force enables the stick to be propped up in the sand?

(1) Frictional force
(2) Electrical force
(3) Magnetic force
(4) Gravitational force

7. Samy placed some seeds on a moist cotton wool and some on a dry cotton wool.



What is the aim of his experiment?

(1) To find out if soil is needed for seeds to germinate.
(2) To find out if water is needed for seeds to germinate.
(3) To find out if cotton wool is needed for seeds to germinate
(4) To find out if oxygen dissolved in water is needed for the seeds to germinate.

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8. Which of the following statements on reproduction of humans are correct?

A All eggs are fertilised externally.
B One female eggs can be fertilsed by many sperms.
C Males produce sperms and the females produce eggs.
D After fertilisation, the fertilised eggs will develop into a baby.

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

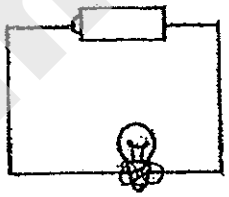
9. What are the common cell parts found in both the leaf of a hibiscus plant and the root of a sweet potato plant?

A Nucleus
B Cell wall
C Chloropfast
D Cell membrane

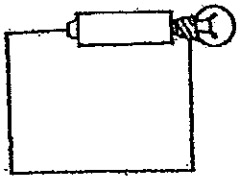
(1) A and D only
(2) B and C only
(3) A, B and D only
(4) A, B, C and D

10. Which bulb in the following circuits will not light up?

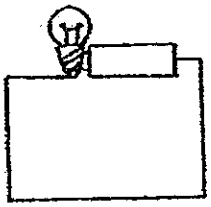
(1)



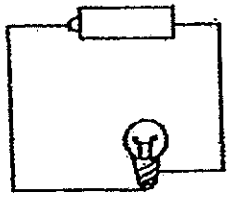
(3)



(2)



(4)



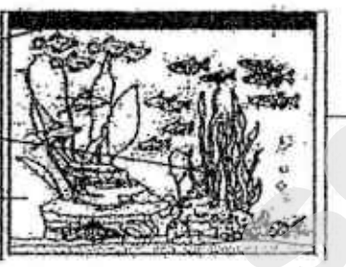
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11. Four similar fish tanks are placed in a sunny place.In which tank will the fish be able to survive the longest?

(1)



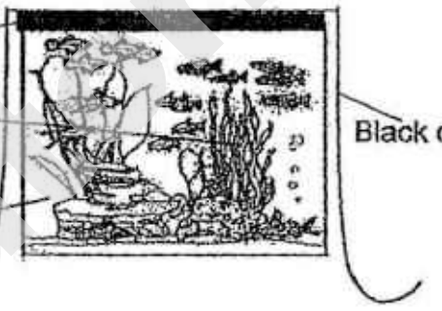
(3)



(2)



(4)



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12. A ball was thrown straight up into the air. It moved from X to Y as shown in Figure 1 and then dropped to X a shown in figure 2.



Figure 1



Figure 2

Identify the energy that is increasing or decreasing from Figure 1 and 2

	Kinetic energy of the ball from X to Y	Potential energy of the ball from Y to X
(1)	decreases	decreases
(2)	increases	decreases
(3)	increases	increases
(4)	decreases	increases

13. Which of the following statements are true of magnetic force?

A It can act from a distance.
B It travels only in straight line.
C It exerts a force on all metallic materials.
D We can see the effects of a magnetic force.

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

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14. If the gravitational pull on Earth decreases, which of the following are likely to happen?

A Objects will weigh less.
B Objects will fall more slowly.
C We will be able to jump higher.
D We will be able to lift heavy objects more easily

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

15. A marble was pushed with the same amount of force across four different types of surfaces, A, B, C and D. The table below shows the distance travelled by the marble before it came to a stop.

Surface	**A**	**B**	**C**	**D**
Distance travelled (cm)	66	21	35	54

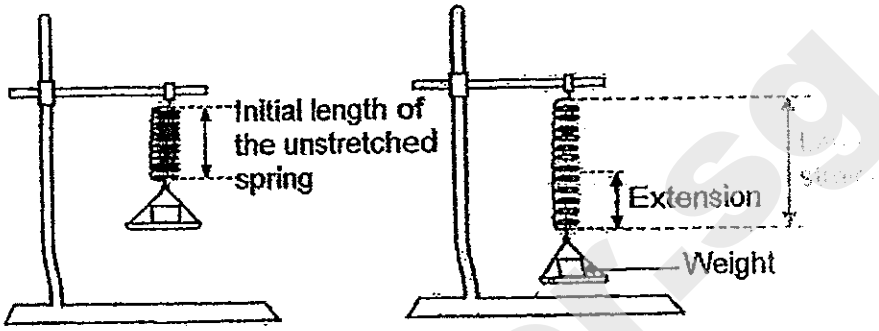
Which one of the following sets of surfaces best matches the distances recorded above?

	A	B	C	D
(1)	aluminium	wood	glass	carpet
(2)	glass	carpet	wood	aluminium
(3)	carpet	glass	aluminium	wood
(4)	wood	aluminium	carpet	glass

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16. Mr Lim set up the following experiment. First he measured the initial length of the spring. Then he placed a 50-gram, 100-gram and 150-gram weight individually in the pan and measured the length of stretched spring and recorded the readings in a table shown below.



Weights (g)	Length of stretched spring (cm)
50	9
100	11
150	13

What is the initial length of the spring?

(1) 2 cm
(2) 7 cm
(3) 9 cm
(4) 13 cm

17. May conducted an experiment with the flowers in her garden. She wanted to find out if a flower can develop into a fruit when a certain part of a flower is removed. She used the same type of flower for her experiment.

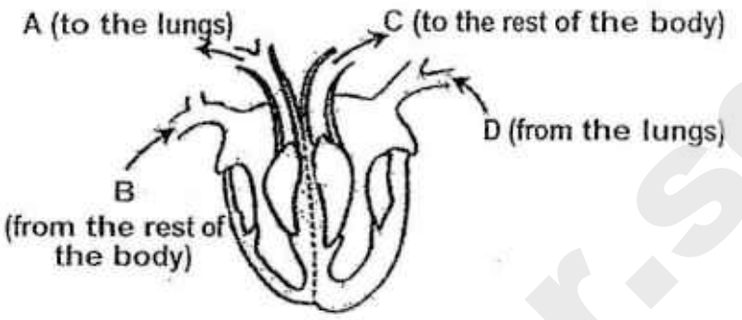
Flower X: Style is removed
Flower Y: Anthers are removed.
Flower Z: Petals are removed.

May then dusted pollen grains from the same type of flower over Flowers X, Y and Z. She observed them for two weeks. Which of the flowers are most likely to produce fruit after two weeks?

(1) Flowers X and Y
(2) Flowers Y and Z
(3) Flowers X and Z
(4) None of the flowers

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18. The diagram below shows how blood is circulated in our body.



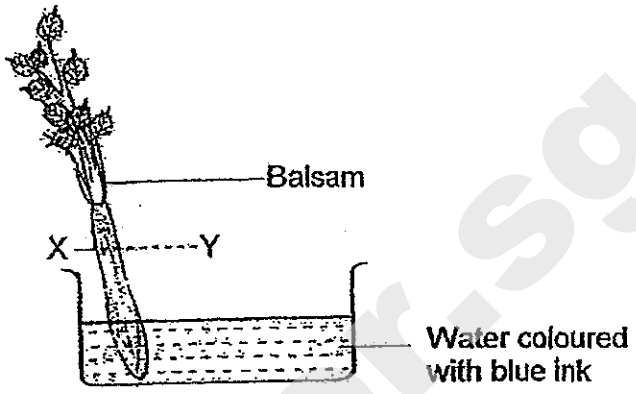
Which one of the following correctly shows the amount of carbon dioxide in our blood at A,B,C and D?

	More carbon dioxide	Less carbon dioxide
(1)	A and B	C and D
(2)	B and D	A and C
(3)	A and D	B and C
(4)	C and D	A and B

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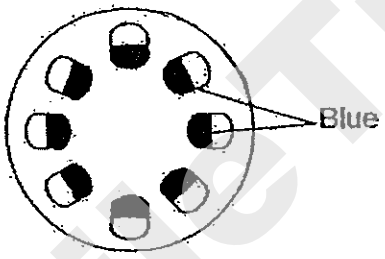
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19. A stalk of balsam was placed in water that was coloured with blue ink. The next day, the stalk was removed and cut across XY as shown in the diagram below.

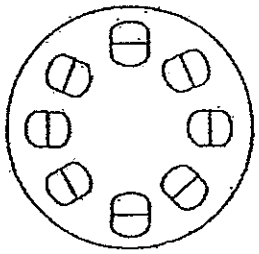


Which of the following shows the cross-section that would be observed in XY?

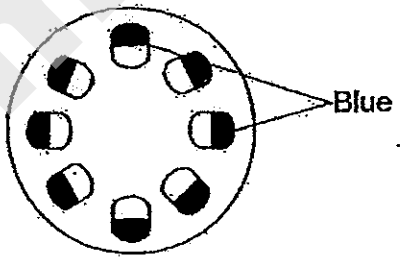
(1)

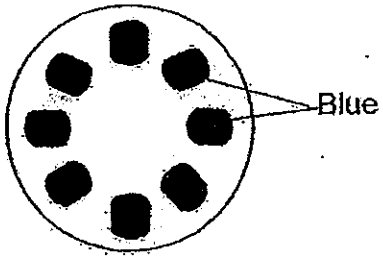


(3)



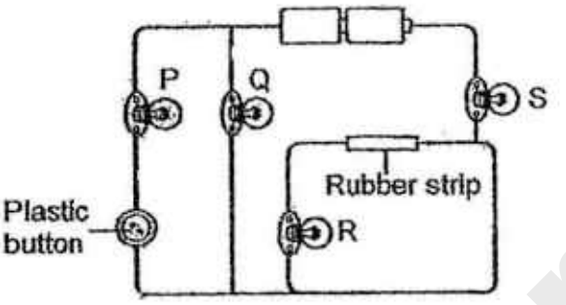
(2)





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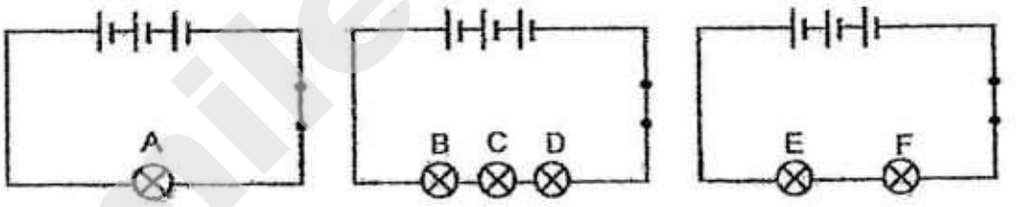
20. There are four indetical bulbs, P, Q, R and S, in the circuit.



Which of the bulbs will not light up when all the circuit components are connected properly?

(1) Q and S only
(2) P and R only
(3) P, Q, R and S
(4) None of the bulbs

21. Identical switches, bulbs and dry cells are used in the circuit below.



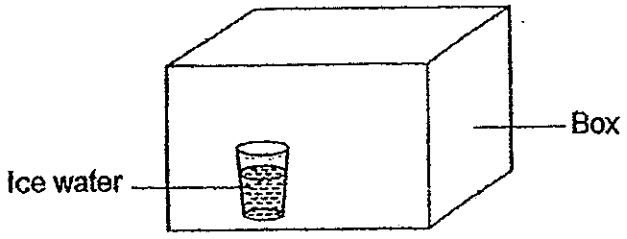
All the bulbs in the circuits light up.Which of the following statements about the bulbs are true?

A Bulbs A is the brightest.
B Bulbs E is brigther than Bulb C.
C Bulbs E and F have the same brightnees.
D Bulbs B ,C and D have the same brightnees.

(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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22. A glass of ice water at a temperature of 10°C is placed in an air-tight box as shown in the diagram below.



What will happen to the air in the air-tight box after 2 minutes?

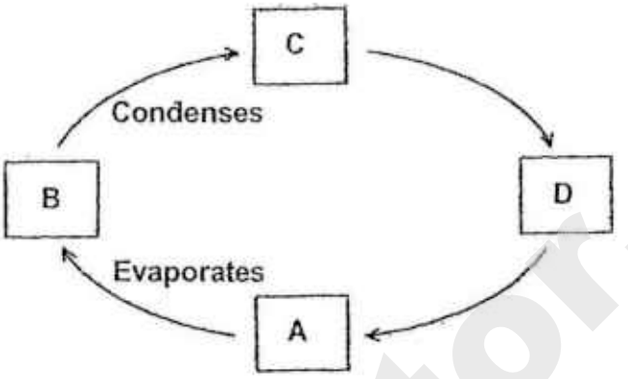
A The air will become hotter.
B The air will become cooler.
C The air will contain less water vapour.
D The air will contain more water vapour.

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

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23. Study the diagram shown below.



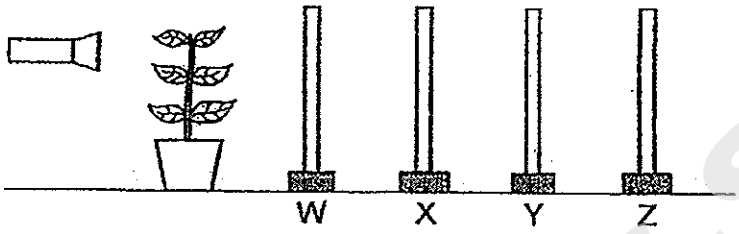
Which one of the following can be correctly placed in the boxes?

	A	B	C	D
(1)	Clouds	Rain	Water	Water vapour
(2)	Water	Water vapour	Clouds	Rain
(3)	Water	Clouds	Water vapour	Rain
(4)	Clouds	Water vapour	Rain	Water

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24. Ben carried out the following experiment in a dark room. He arranged a torch, a potted plant and four sheets of different materials as shown below. When the torch was switched on, a dark shadow of the plant was cast on Sheet Y only.



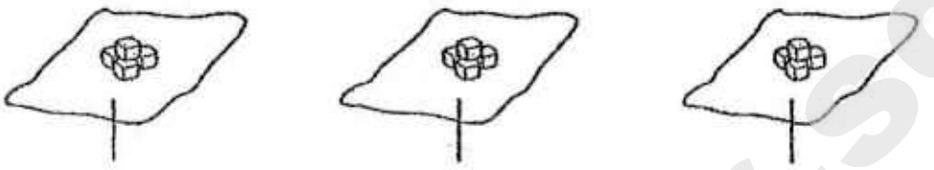
Which of the following conclusion(s) can be made from the experiment?

A Sheet Z is transparent.
B Sheet Y blocks light completely.
C Sheet W and X allow light to pass through.
D Sheet W, X and Y allow light to pass through but Sheet Z blocks light completely.

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

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25. Tammy has three types of fabric. She wants to find out the type of fabric that can slow down heat loss to the greatest extent. She cuts a piece from each type of fabric and uses it to wrap some ice cubes. Then, she observes the conditions of the ice cubes every 5 minutes.



Fabric A Fabric B Fabric C

Which variables must she keep constant so that a fair test is conducted?

A The number of ice cubes used.
B The size of the ice cubes at the end of the experiment.
C The size of each piece of fabric used for the experiment.
D The surface area of the ice cubes in contact with the fabric.

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

26. Study the three animals below carefully.



Chicken Frog Cockroach

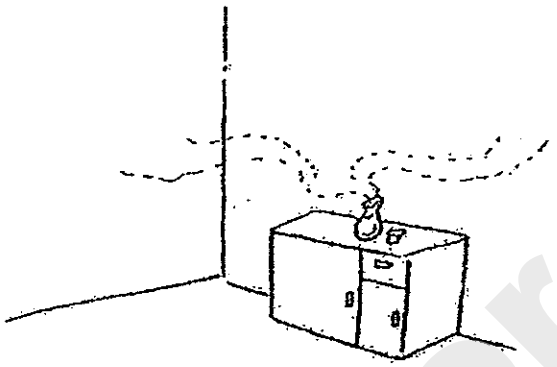
Which of the following statements about the animals are false?

A They feed on animals only.
B They have a 3-stage life cycle.
C Their young do not have wings.
D Their young do not resemble them.

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

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27. When a bottle of perfume is opened at one corner of a room, the scent of the perfume can be detected at other corners of the room very quickly.



Which of the following characteristics of matter is related to this phenomenon?

(1) Matter has mass.
(2) Gases can spread out to occupy more space.
(3) Gases can be compressed to occupy less space.
(4) Liquids have no definite shape but have a definite volume.

28. The table below compares some information of plants and animals.

	Plants	Animals
A	Fixed in one place.	Move from place to place by themselves.
B	All cells contain chloroplasts.	All cells do not contain chloroplasts.
C	Make their own food.	Feed on other living things.
D	Generally have leaves, a stem and roots and are usually green.	Various body forms, usually a head and a body.

Which of the following comparisons are **true**?

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

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29. Compare the two groups of animals.

Group X
Goldfish Guppy Seabass Molly

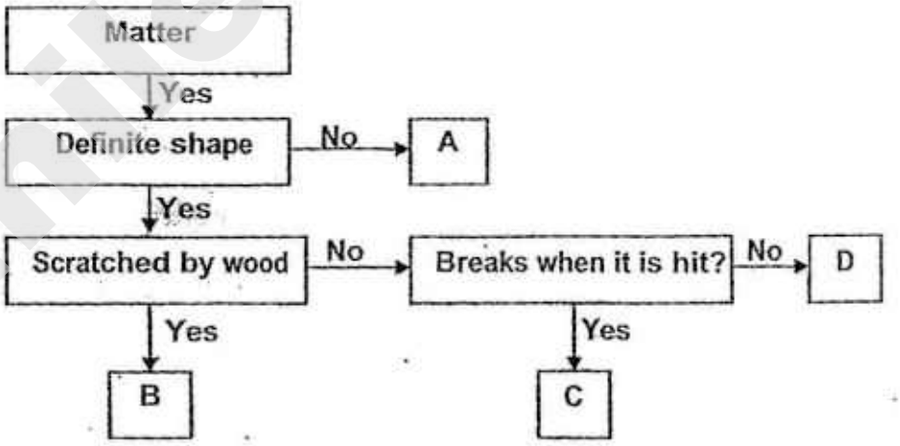
Group Y
Platypus Parrot Spiny Anteater Bat

In what ways are the animals in Group X and Group Y similar?

A The have scales.
B They reproduce sexually.
C They lay hard-shelled eggs
D They breathe with their gills.

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

30. Study the flow chart below carefully.



Which of the letters below best represents a steel bar?

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

End of Section A

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NAN HUA PRIMARY SCHOOL
CONTINUAL ASSESSMENT 1 2014
PRIMARY SIX
SCIENCE

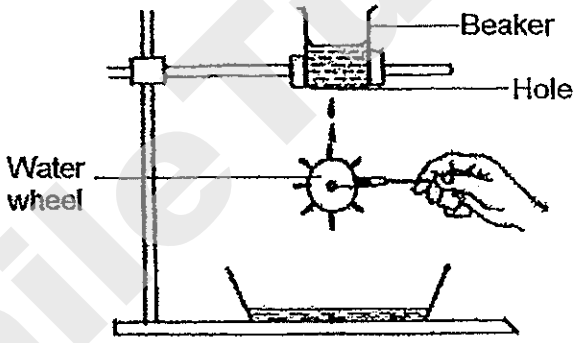
MARKS
/40

Name : _____( )

Class : Primary 6 /_____

Section B: (40marks)
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 below.



(a) What will happen to the water wheel? [1]

_____

_____

(b) What will heppen when the size of the hole is increased? Explain your answer. [2]

_____

_____

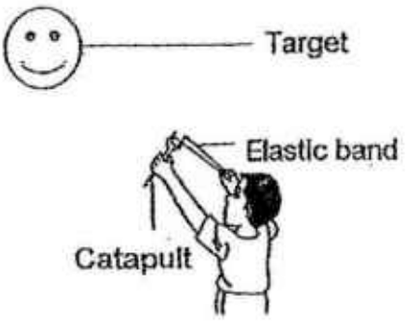
_____

_____

Score	/3

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32. The diagram below shows a boy who is about to release a stone from the catapult.



(a) The force of impact on the target made by the stone when the elastic band is released depends on some factors. Identify two factors that will affect the impact made on the targets. [2]

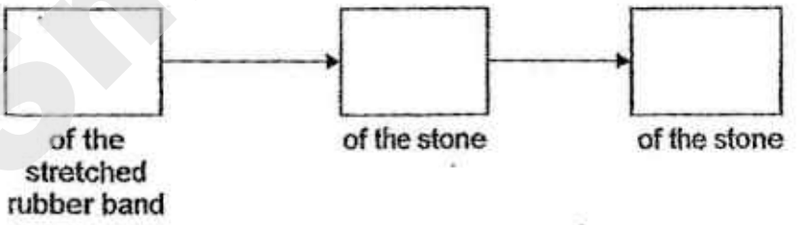
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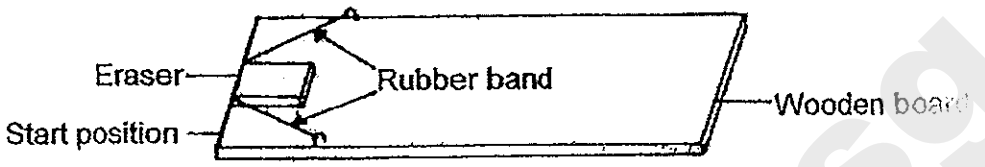
(b) Write down the main energy conversion when he releases the stone in the catapult. [1]



Score / 3

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33. Jonathan used some rubber bands to set up an experiment as shown below.



He held an eraser on the board at the start position, released it and let it slide along the board. He did this for three times and recorded the distances moved by the eraser. He then repeated the experiment after spreading some talcum powder on the board.

	1	2	3	4
Board without talcum powder	10.8cm	12.5cm	12.3cm	11.8cm
Board with talcum powder	13.1cm	12.5cm	13.8cm	14.1cm

(a) What is the independent variable in this experiment?

_____

_____

(b) What is the effect of the force exerted by the stretched rubber band on the eraser? [1]

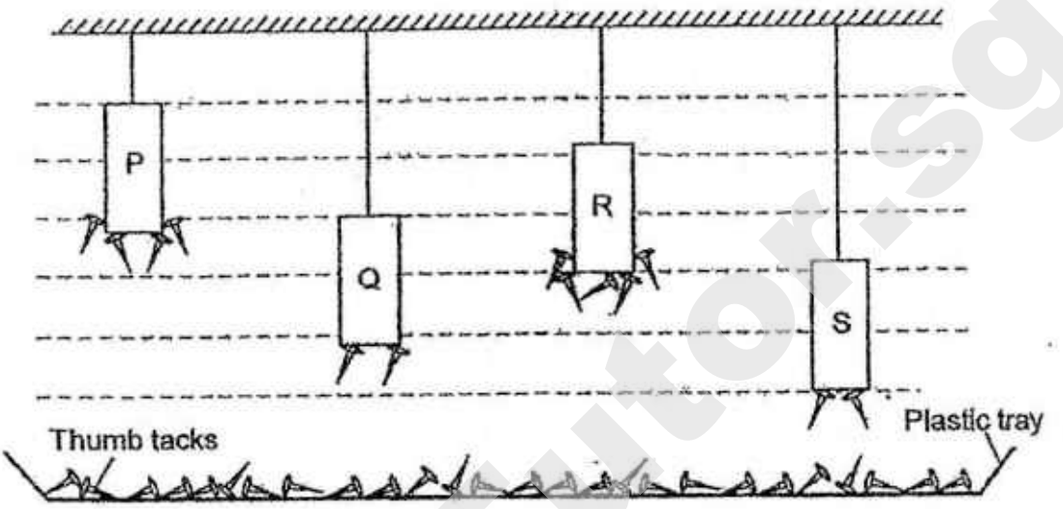
_____

_____

Score 2

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34. Paul wanted to compare the magnetic force of four magnets, P, Q, R and S. The magnets were of the same size. He set up the experiment below and observed the number of thumbtacks that were attracted by each magnet.



From the result of his experiment as shown above, Paul could not conclude which magnet has the strongest magnetic force.

(a) How would Paul change his set-up so that he would be able to find out which magnet was the strongest? [1]

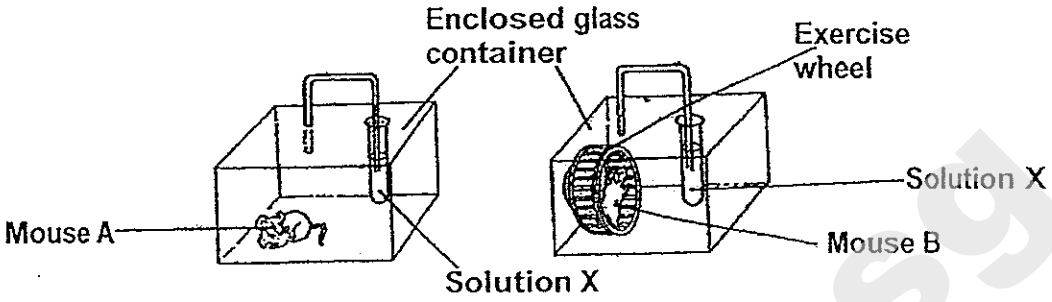
(b) Using the same set-up as shown in the diagram above, Paul replaced magnet S with another magnet A of the same size.

State two possible observations that could be made if magnet A was a weaker magnet than magnet S. [2]

Score 3

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35. Helen set up the experiment as shown below to find out the rate of respiration with increased activity.



(a) What could solution X be? [1]

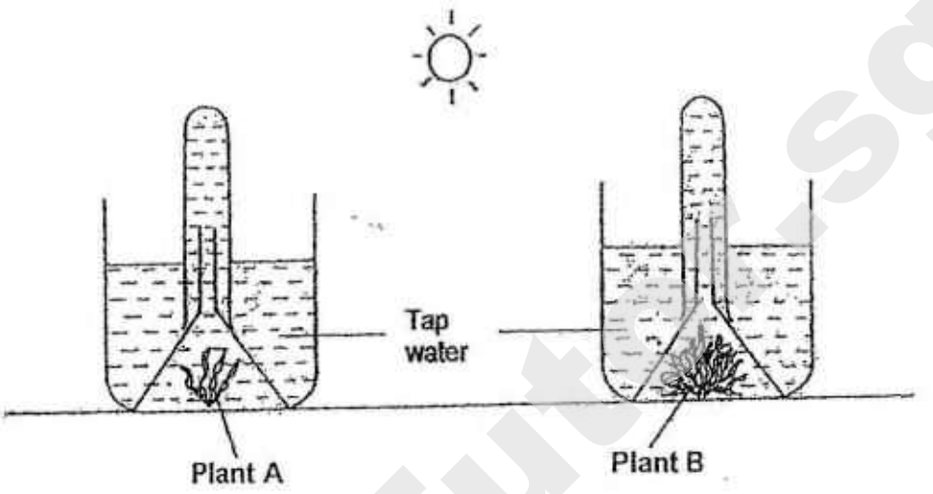
(b) Which mouse respiring faster? Why did the mouse respire faster and how did Helen come to the conclusion? [2]

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Score / 3

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36. The diagram below shows an experiment that Sam set up. He wanted to find out if the number of leaves on the plant will affect the rate of photosynthesis.



After two days, Sam noted the amount of gas collected from the two plants and recorded the results in the table below.

Plant	Amount of gas collected (cm^3)
A	5
B	16

(a) What was the gas collected at the test tube? [1]

_____

(b) What is the relationship between the number the of leaves and the rate of photosynthesis? [1]

_____

_____

(c) Explain how the number of leaves affect the amount of oxygen collected. [1]

_____

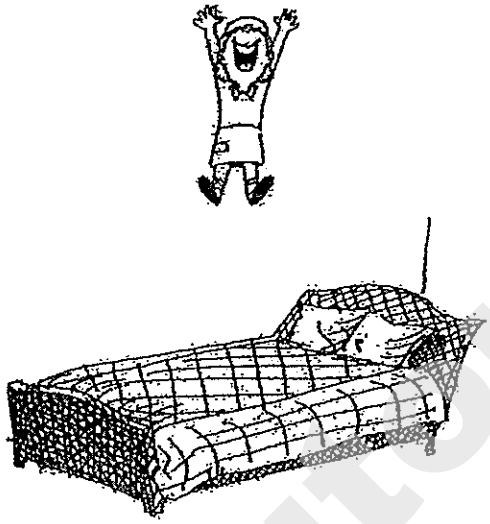
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Score	3

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37. Shalome likes to jump on her spring mattress as it lifts her up in the air as shown below.



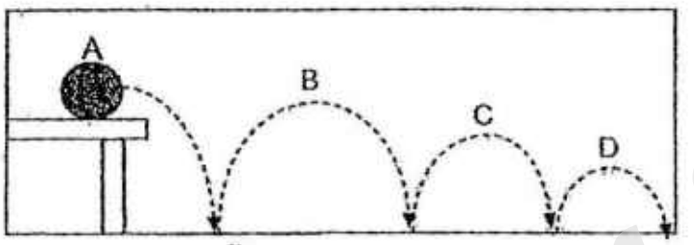
Explain, in terms of energy conversion, how does jumpig on the spring mattress a few times enable her to reach a higher height? [2]

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Score	/ 2

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38. Jane dropped a ball from a table. The path it took is represented by the dotted lines in the diagram.



Jane repeated the above experiment three times and recorded the bouncing height of the ball, B, C and D, in the table as shown below.

Number of tries	Height (cm)		
	B	C	D
1	77	59	43
2	74	58	39
3	80	63	38
Average	77	60	40

(a) Why did Jane conduct the experiment three times? [1]

_____

_____

(b) Write down the energy conversion from Position A to B. [1]

_____

_____

(c) Why did the ball not bounce back to the original height? [1]

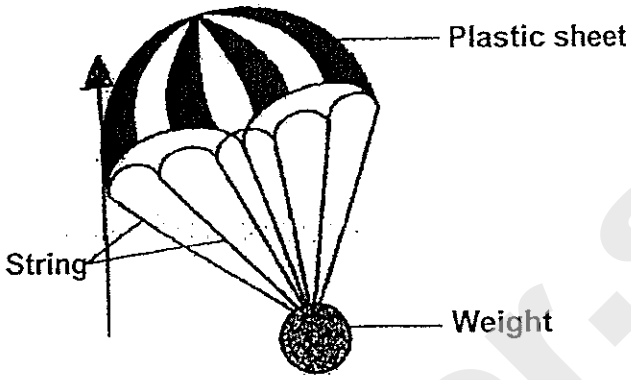
_____

_____

Score	/ 3

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39. Adam threw a toy parachute from the top of the roof.Within seconds, it fell to the ground.



(a) Label and draw arrow(s) in the diagram above to indicate the force(s) acting on the parachute. [2]

(b) Suggest one method to keep the parachute in the air for a longer time.[1]

_____

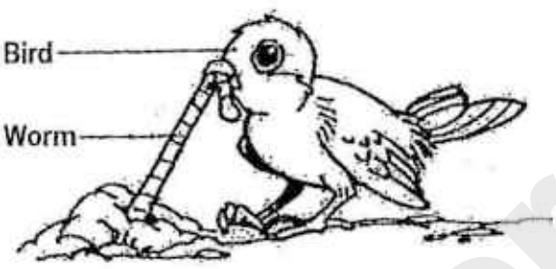
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Score	3

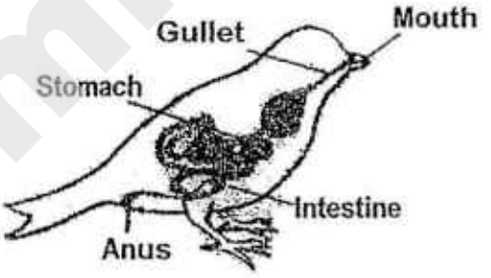
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40. In the diagram below, a bird is trying to pull a slippery worm out of the ground.



(a) Is it easy for the bird to pull out the slippery worm ? Why? [1]

(b) The bird has no teeth chew the worm.The picture below shows the digestive system of a bird.

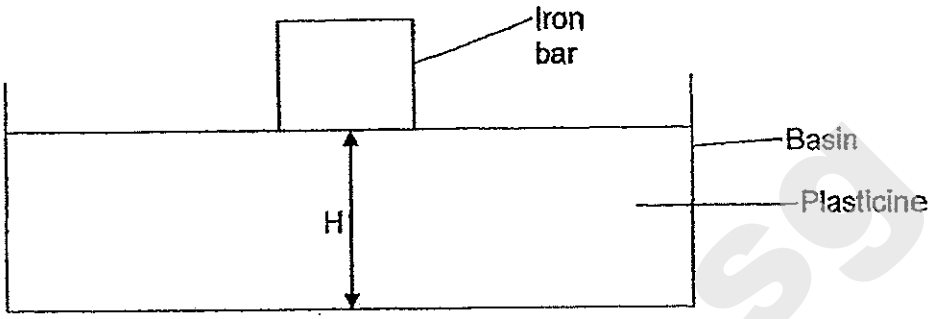


How does the slippery surface of the worm helps the bird to eat the worm? [2]

Score 3

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



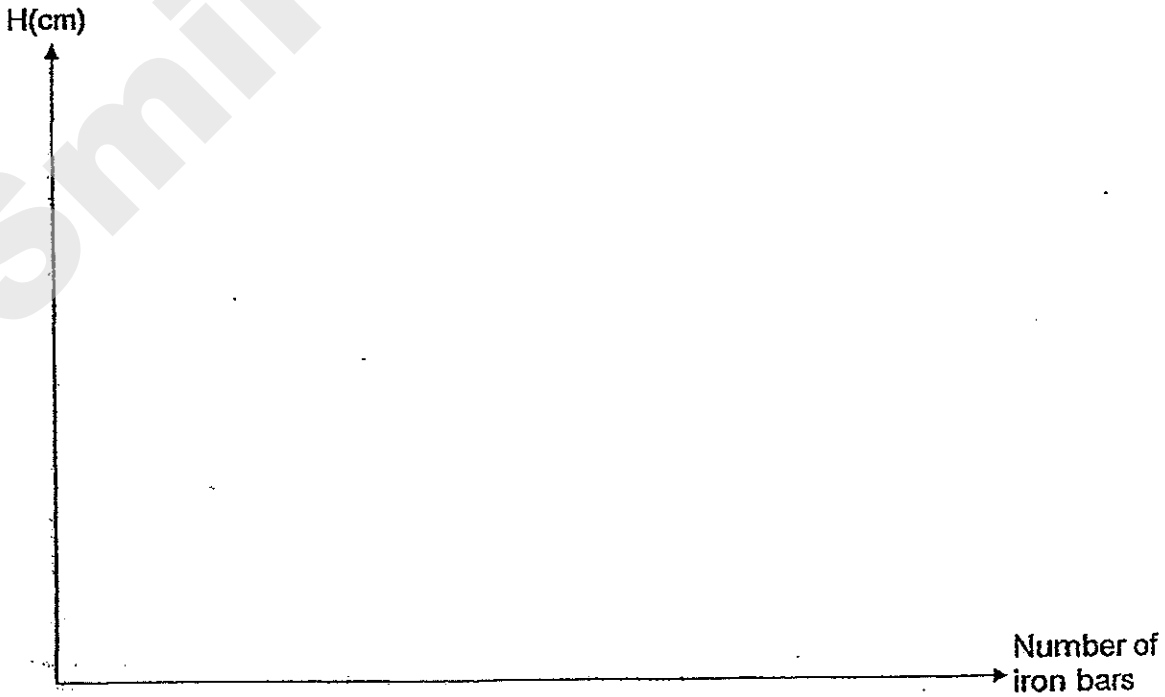
He added an iron bar on the plasticine and measured the height of the plasticine, H. He continued stacking more iron bars on top of each other and recorded the height of the plasticine.

(a) Identify the force that is acting on the plasticine when the iron bars are placed on it. [1]

_____

_____

(b) Sketch a graph to show the height of the plasticine, H, when more weights are added. [2]

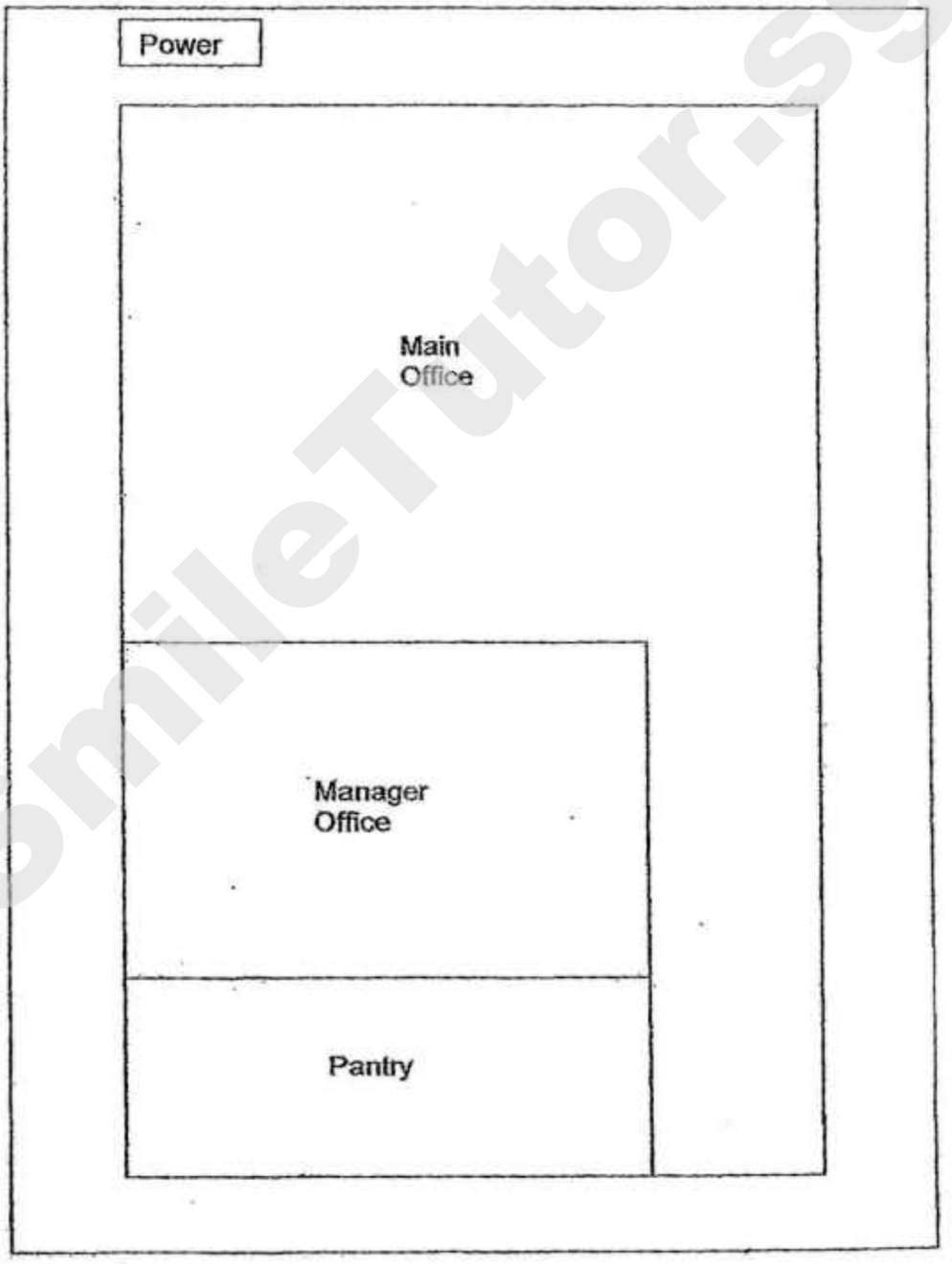


Score 3

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42. Mr Lim is designing the light system in his office. He wants all the lights in the rooms to lit up independently and to remain lit even if one of the bulbs fuses.

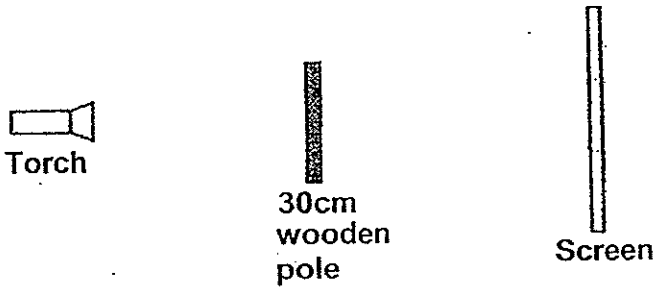
Construct a circuit diagram in the box below. [2]



Score	/ 2

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43. Study the set-up below.



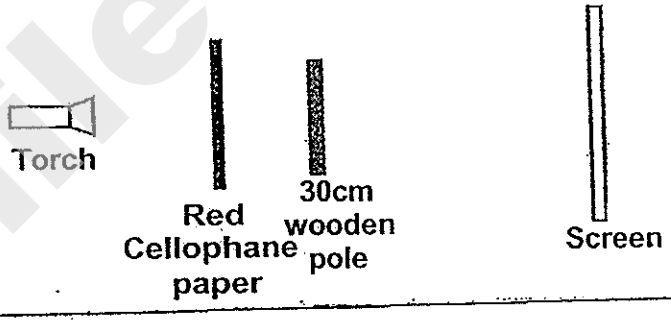
When the torchlight was shone on the wooden pole, a dark shadow of the wooden pole was cast on the screen.

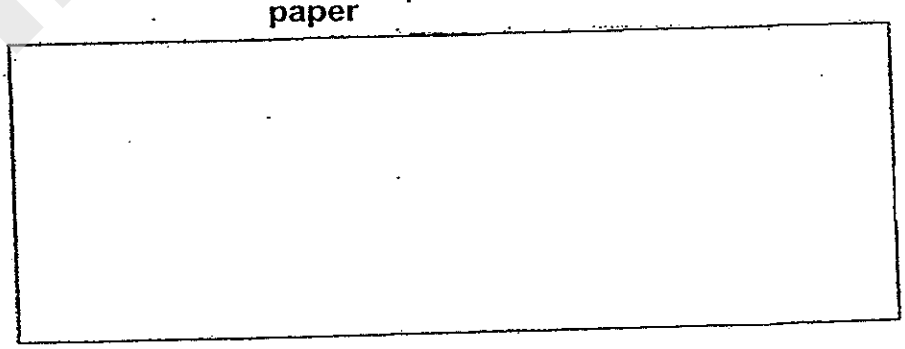
(a) What would happen to the shadow if the wooden pole was shifted further from the source of light? [1]

_____

_____

(b) A sheet of red cellophane paper measuring 40cm by 40cm was placed between the torch and the wooden pole as shown below. Draw the shadow that he would observe on the screen in the box below. [2]

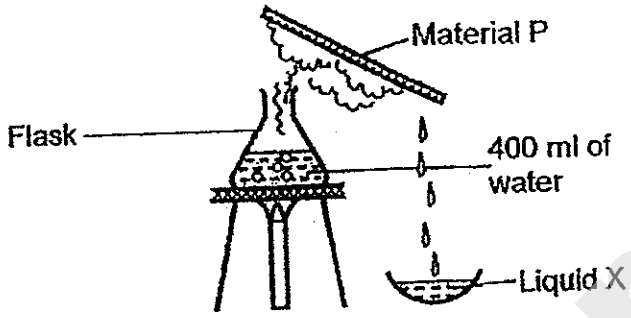




Score 3

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44. Ahmad conducted an experiment as shown below.



Four materials of the same temperature were placed above the flask, one at a time. He recorded the amount of liquid X collected in the bowl after ten minutes in the table below.

Material	Amount of Liquid X collected after 10 min (ml)
P	200
Q	50
R	110
S	75

(a) What is Liquid X? [1]

(b) Explain how Liquid X was collected in the bowl? [1]

(c) Which material is most suitable for keeping food hot? Explain your answer. [2]

Score 4

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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : NAN HUA
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q1
3	1	1	2	2	1	2	4	3	1	1	1	2	4	

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	2	4	3	2	2	3	3	2	3	1	4

31)a)If will spin.
b)The water wheel will turn faster with a bigger hole, there will be more mass at the same time which will increase the kinetic energy of the water being transferred to kinetic energy of the cup.

32)a)The amount of elastic force applied on the elastic band and the mass of the stone.
b)Elastic potential energy→kinetic energy→Gravitational potential energy.

33)a)The presence of talcum powder.
b)The eraser will move.

34)a)He should have all four magnets at the same height.
b)Magnet A could be attract by Magnet R or could attract only one thumbtack.

35)a)Limewater.
b)Mouse B. The mouse needs more energy for its exercise. It respires more to buy taking in more oxygen to break down the digested food to release the energy. More carbon dioxide will also be produced during respiration to turn the limewater calking more quickly.

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36)a)Oxygen.

b)The more the number of leaves, the faster the rate of photosynthesis.

c)The greater number of leaves trap more sunlight. Thus the rate of photosynthesis increase and produces more oxygen.

37)When the jumps, the springs in the mattress will be compressed. Hence the kinetic energy of her body will be charged into elastic potential energy of the spring in the mattress. When she jumps up again, elastic potential energy from the spring in the mattress is changed back into kinetic energy and this kinetic energy is needed to her kinetic energy.

38)a)It is to collect consistent data to calculate the average reading for reliable results.

b)Gravitational potential energy→Kinetic energy→Gravitational potential energy.

c)Some of the kinetic energy has been converted to other forms of energy.

39)a) ↑ Air resistance | ↓ Gravitational force

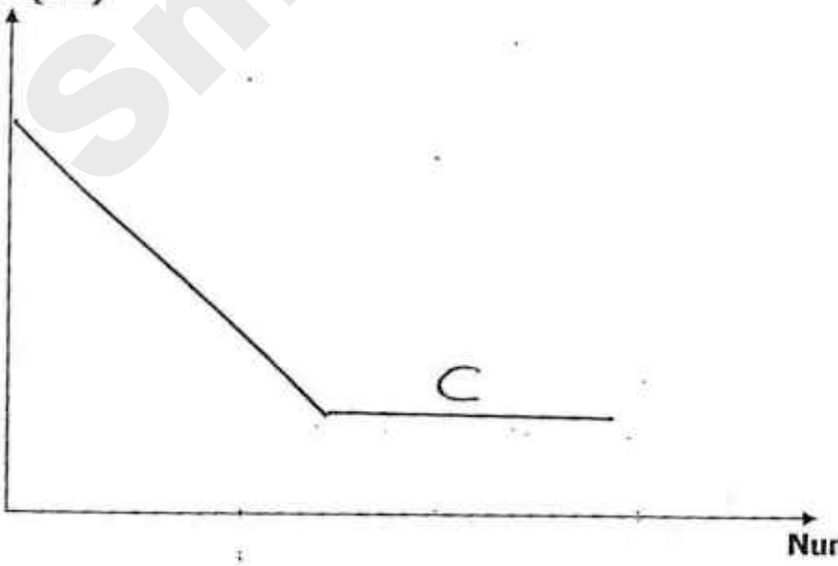
b)Use a parachute with a large exposed surface area.

40)a)Yes. The slippery surface reduces friction between the worm skin and the surface reduces friction between the worm's will use less effort to pull it eat.

b)It helps the bird to swallow the worm faster due to the reduction in friction between the gullet worm's body.

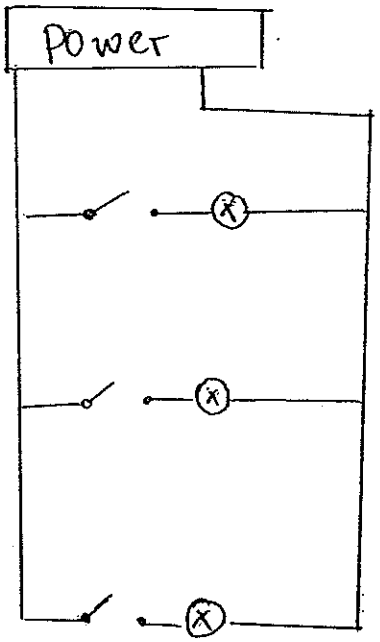
41)a)Gravitational force.

b)H (cm)



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42)



43)a)The shadow will be smaller.

b)



44)a)Pure water.

b)Water evaporates into hot water vapour as it gains heat from the heat source. Vapour condenses on the cooler surface of material P into water droplets. Due to gravity the water droplets will roll down and into the bowl at the bottom.

c)Material P. It is the poorest conductor of heat as it gains heat the slowest. The surface will be the coolest for the longest period of time and hence allows the most amount of water vapour to condense.

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2014

BOOKLET A

Date : 03 March 2014

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Parent's signature: _____

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

Booklet A consists of 22 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. Which of the following statements correctly describe the similarities between moss and fungi?

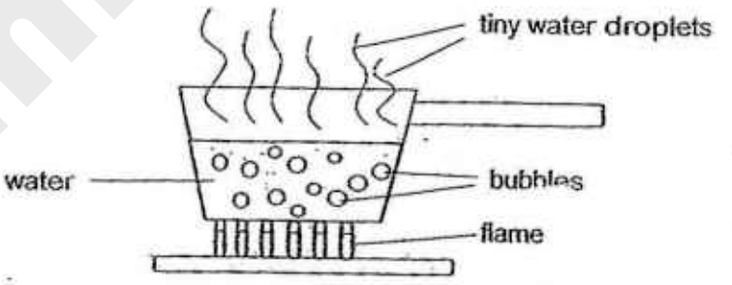
   A They reproduce by spores
   B They can photosynthesise.
   C They absorb food from surroundings.

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

2. Which one of the following classifications of the animals shown below is correct?

	Fish	Mammals that lays eggs	Mammals that gives birth to young alive
1)	guppy	platypus	shark and dolphin
2)	guppy	shark and platypus	dolphin
3)	shark and guppy	platypus	dolphin
4)	shark and guppy	dolphin	playtpus

3. The diagram below shows water being heated in a pot.

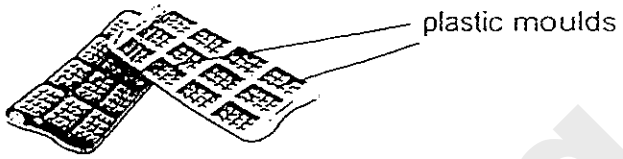


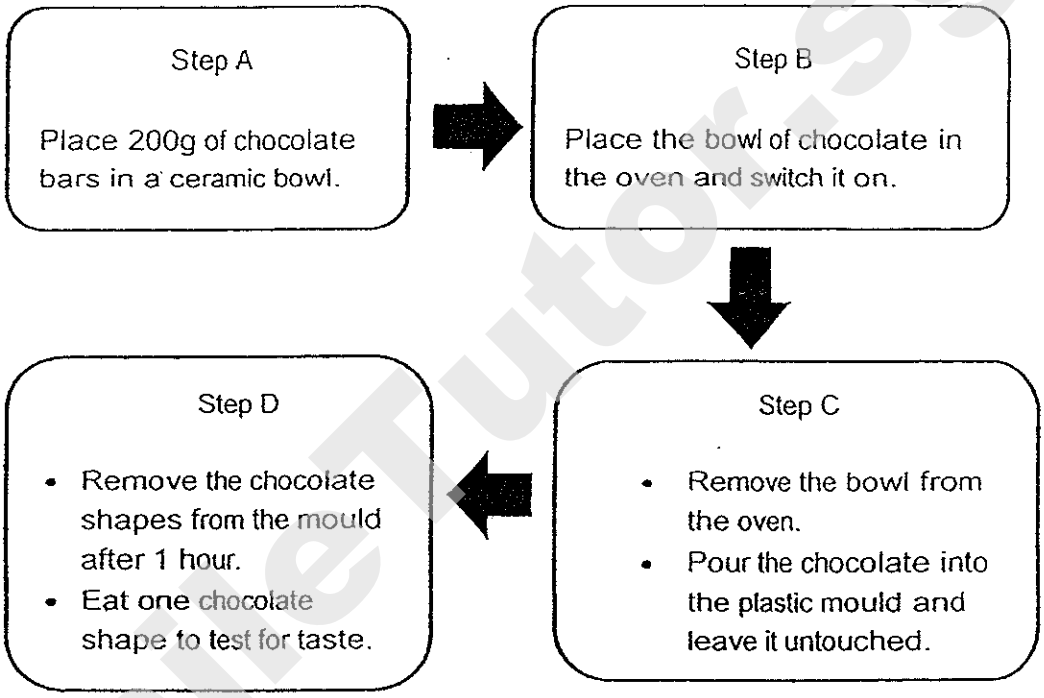
Based only on the diagram, which one of the following statements is considered an observation?

1) The bubbles contain air.
2) Bubbles are formed in the water.
3) Water gains heat to become steam.
4) The water has a temperature of 40°C.

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4. Look at the following diagram that shows how chocolate shapes are made using a plastic mould.



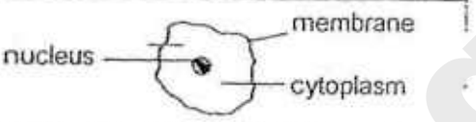
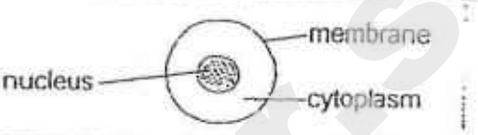


Which one of the following correctly describes what happens to the chocolate during steps B, C and D?

	Step B	Step C	Step D
(1)	heat is lost	heat is lost	heat is gained
(2)	heat is gained	heat is gained	heat is lost
(3)	heat is lost	heat is gained	heat is gained
(4)	heat is gained	heat is lost	heat is gained

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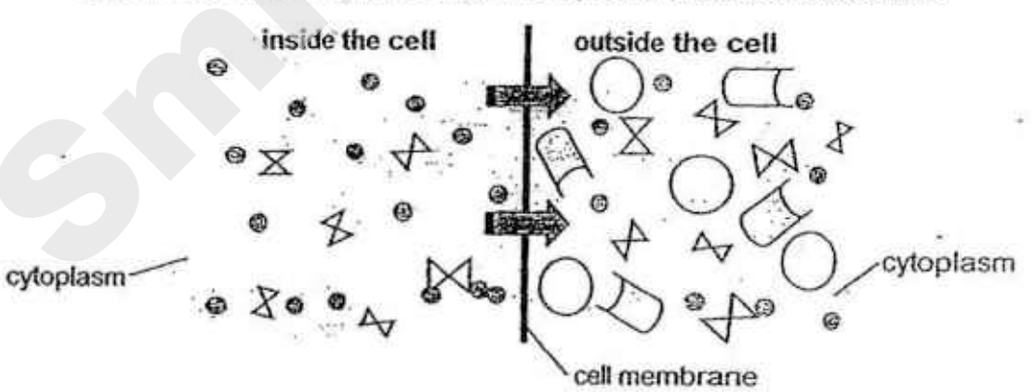
5. The diagram below shows different types of cells found in an animal.

Types of cells found in an animal	Appearance of Cell
A	
B	
C	

Based only on the information in the table above, which one of the following best describes the cells?

(1) All three cells have a nucleus.
(2) Each of the cells performs a different function.
(3) The cell wall has been removed in each of the three cells.
(4) Only cell B can undergo cell division but not the other two.

6. Study the following diagram carefully. The shapes represent different substances while the arrows show the movement of these substances.



Which one of the following statements best describes the function of the cell membrane as shown in the diagram above?

(1) The cell membrane controls all the activities in the cell.
(2) The cell membrane prevents the cytoplasm from leaking out.
(3) The cell membrane allows all substances to enter and exit the cell.
(4) The cell membrane controls the substances entering and exiting the cell.

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7. Which of the following are functions of the nucleus in a cell ?

A Controls cell growth
B Repairs damaged cells
C Needed for cell division
D It is where all the activities take place

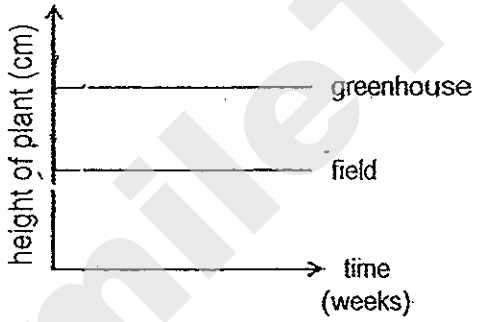
(1) A and B only
(2) C and D only
(3) A, B and C only
(4) A, C and D only

8. Plants in some greenhouses are exposed to light 24 hours a day while plants that are grown in an open field are exposed to approximately 10 hours of light each day.

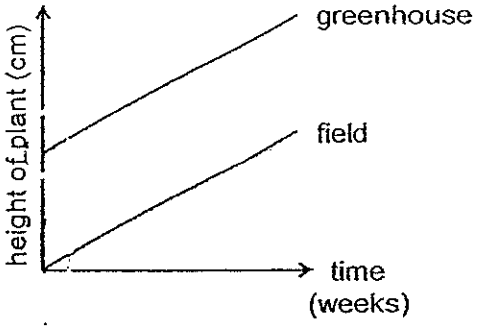
Jason conducted an experiment using 2 pots of identical plants to find out which plant would grow better over a period of time. He measured the height of the plants over a period of 12 weeks. The plants were of the same height at the start of the experiment.

Which one of the graphs below is likely to represent the growth of the plants in both the greenhouse and the field?

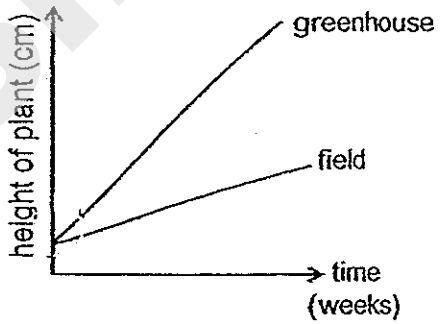
(1)



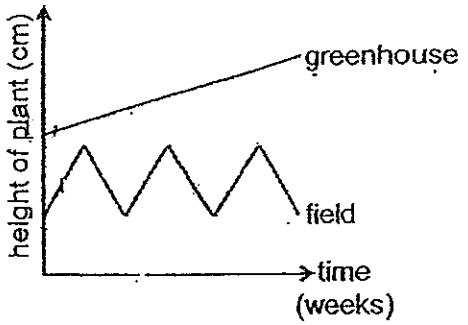
(2)



(3)



(4)



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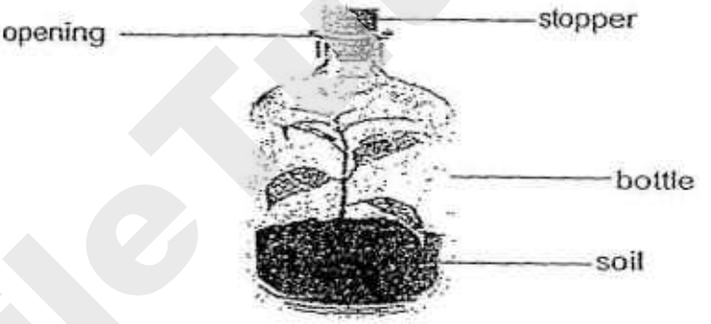
9. Study the information in the table below.

Variables	Pot			
	A	B	C	D
Amount of soil (g)	400	450	400	450
Amount of water (ml)	300	0	300	250
Number of plants	10	5	5	5

Which two pots should Brandon use to find out if water is needed for photosynthesis?

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

10. Lydia came across a picture of a bottle garden as shown in the diagram below.



She wanted to make her own bottle garden.

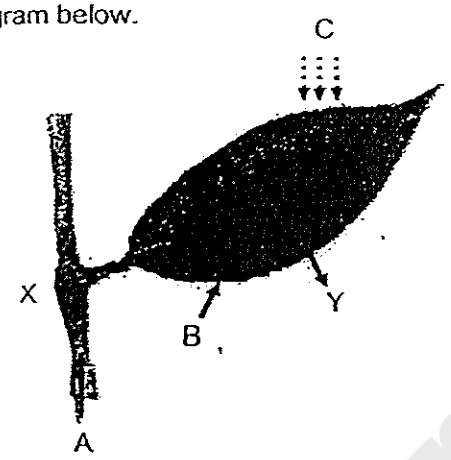
Which of the following should she do in order for her plants to grow well?

A Add chemical that absorbs carbon dioxide.
B Add sufficient water before sealing the bottle tightly.
C Place the bottle garden in a place with sufficient light.

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

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11. Study the diagram below.



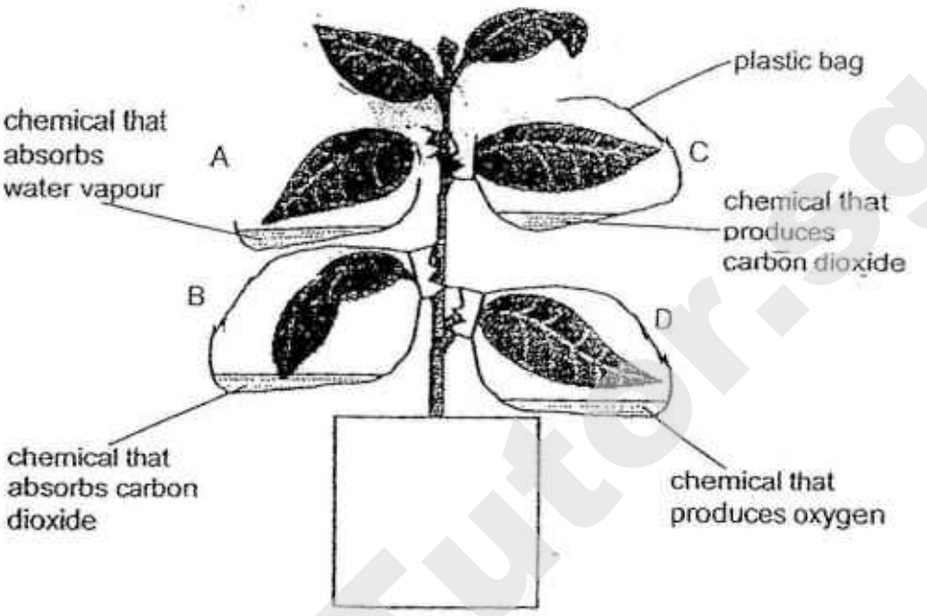
During photosynthesis, A, B and C are needed and substances X and Y are products of the process. Which one of the following best identifies what A, B, C, X and Y could be?

	A	B	C	X	Y
(1)	sugar	water	sunlight	oxygen	carbon dioxide
(2)	oxygen	sunlight	carbon dioxide	sugar	water
(3)	oxygen	water	sunlight	sugar	carbon dioxide
(4)	water	carbon dioxide	sunlight	sugar	oxygen

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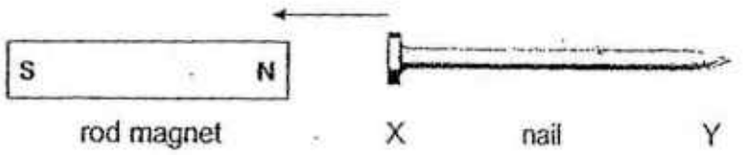
12. Alex conducted an experiment as shown in the diagram below. He wanted to find out the conditions needed for plants to photosynthesise. Alex left the set-up in a dark cupboard for 2 days before placing it in a bright area.



After 6 hours in the bright area, Alex removed leaves A, B, C and D. He conducted a starch test on the leaves. Which of the leaves would most likely turn iodine solution blue-black?

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

13. The diagram below shows a rod magnet and a non-magnetised nail. The North-pole of the magnet can attract the nail at point X.



Based on the observation above, which one of the following statements is most likely to be true?

1) The nail is a magnet.
2) The nail is made of steel.
3) The South-pole of the magnet can repel point X of the nail.
4) The South-pole of the magnet can attract point X of the nail.

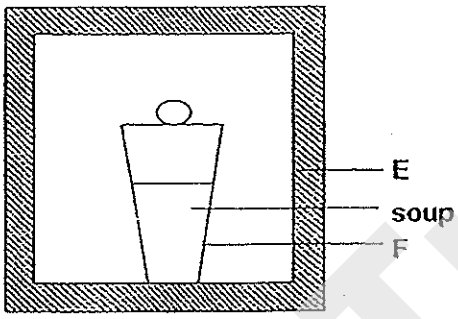
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14. An experiment was conducted to measure the amount of time taken for the temperature of 3 different materials to increase by 4 °C. The result of the experiment is shown below.

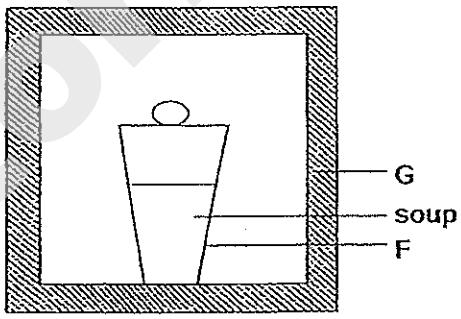
Material	Time taken to increase by 4°C (min)
E	8
F	12
G	95

The materials were then used to create the following containers. Hot soup of the same temperature was poured into each container. Which of the following set-ups will keep the soup warm as long as possible?

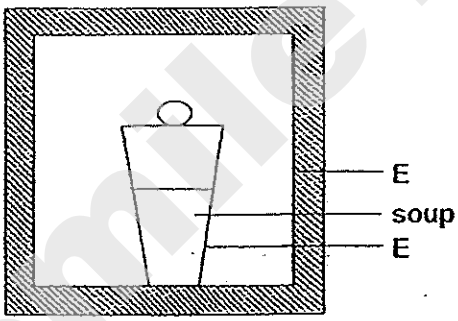
(1)



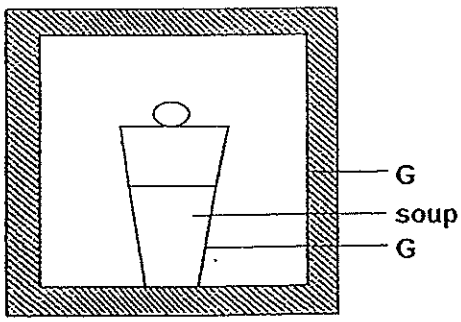
(2)



(3)



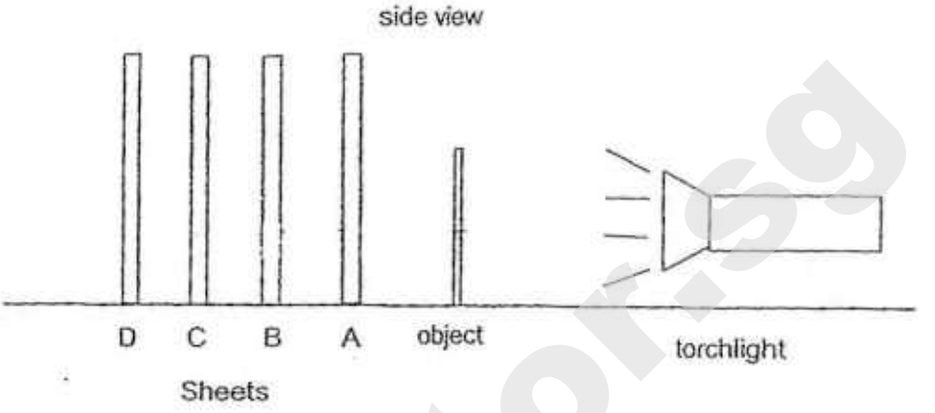
(4)



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15. Judy carried out an experiment in a dark room as shown below. Sheets A, B, C and D were arranged in a straight line.



The front view of the object is as shown below.



Object

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

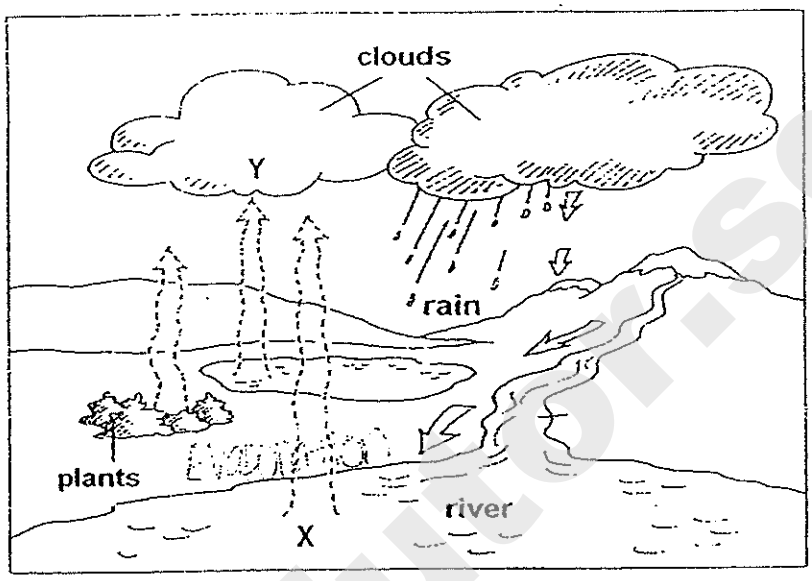
Allows light to pass through	Does not allow light to pass through
A	D
B	C

When the torchlight was switched on, a heart-shaped shadow was observed. On which sheet was the shadow observed?

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

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16. The diagram below shows the water cycle.



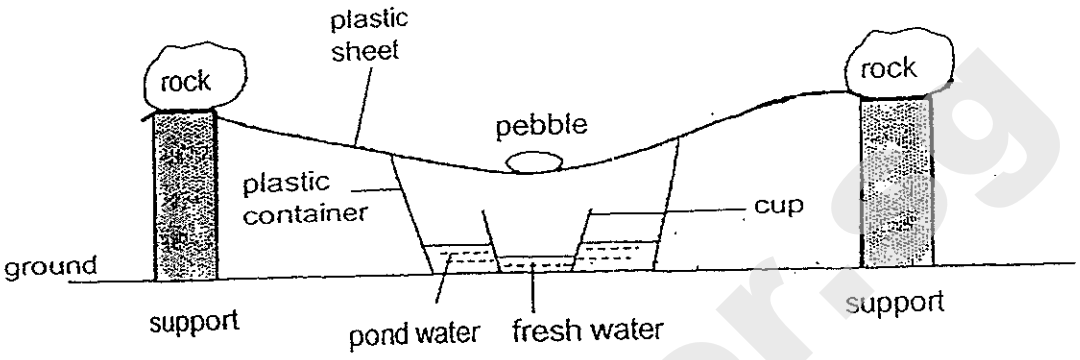
X and Y represent two processes that take place in the water cycle. Based on the above diagram, which of the following statements are **false**?

A Heat is gained during Y.
B X takes place at any temperature.
C There is a change in state during X and Y.

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

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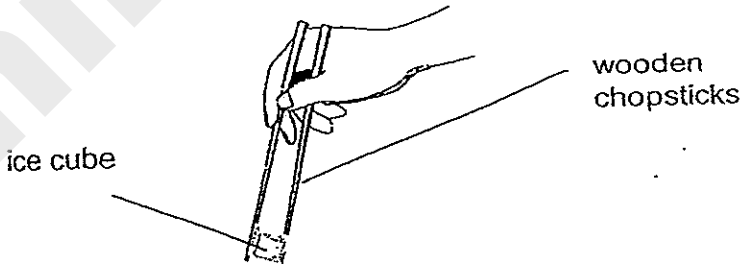
17. Zechariah prepared the following set-up to collect fresh water from pond water.



He placed the set-up in an open field on a sunny day. After a few hours, he managed to collect some fresh water in the cup. What should he do to the set-up in order to collect more fresh water in the cup?

(1) He should use a bigger cup.
(2) He should use a bigger pebble.
(3) He should use a wider plastic container.
(4) He should use a glass container instead of a plastic container.

18. The diagram below shows a person holding an ice cube using a pair of wooden chopsticks



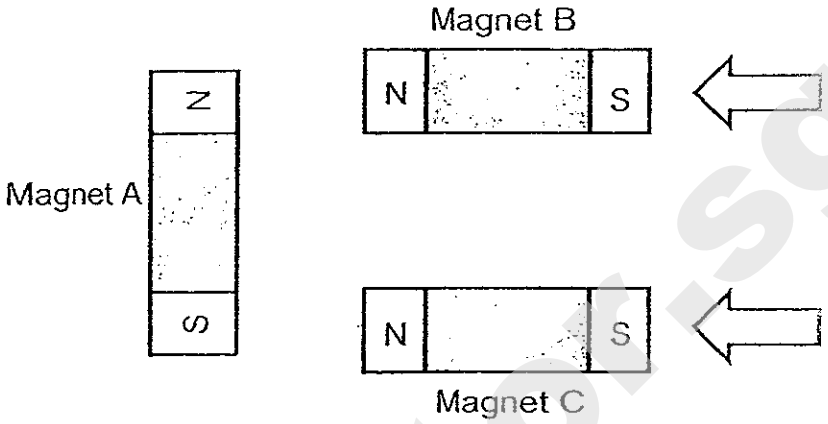
Which one of the following describes the force(s) acting on the ice cube?

1) gravitational force only
2) pulling force and elastic force
3) frictional force and gravitational force
4) push force, frictional force and gravitational force

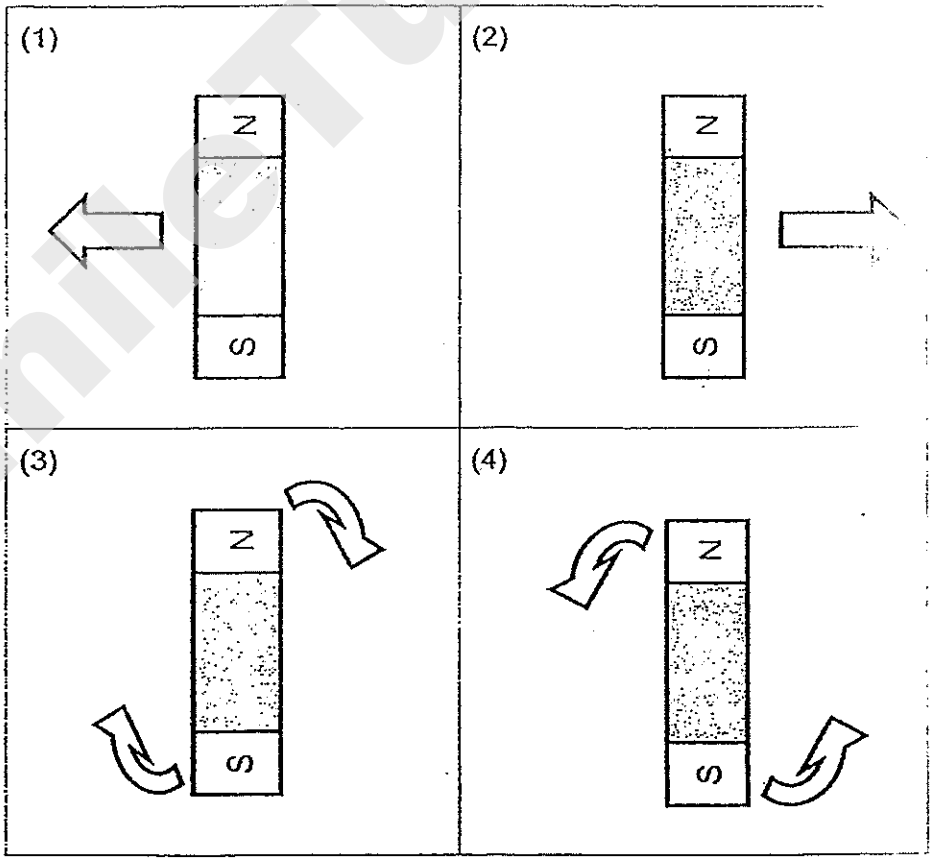
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19. Study the following diagrams carefully.

Magnets B and C are moved towards magnet A at the same time.



Which one of the following represents how magnet A will move?



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20. Swee Heng wanted to find out how the width of a spring affects the length at which they are stretched when a load is hung at one end.



Based on the aim of Swee Heng's experiment, which pairs of springs should she use?

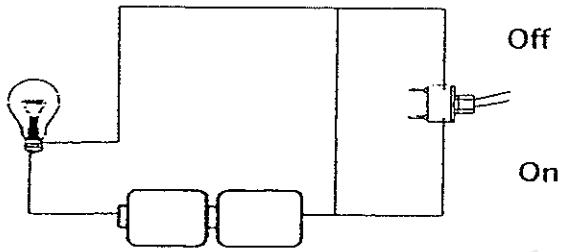
Pairs	Springs
A	W and X
B	W and Y
C	X and Z
D	Y and Z

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

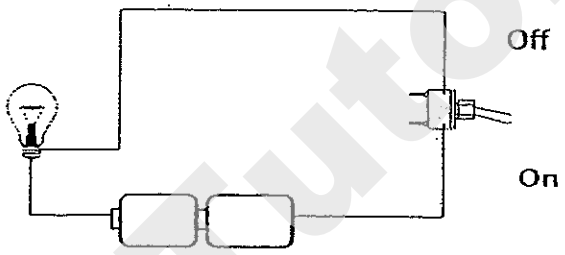
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21. Study the following electrical circuits carefully.

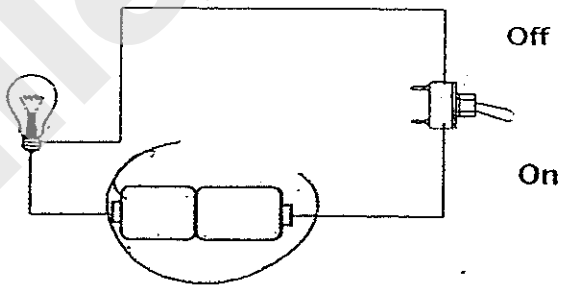
A



B



C

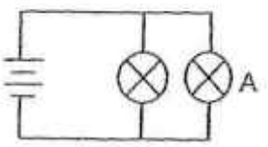
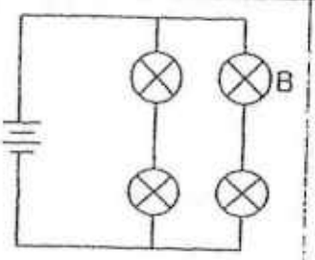
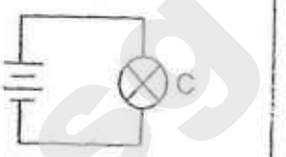


In which of the following circuits would the bulb light up?

(1) B only
(2) A and B only
(3) B and C only
(4) None of the circuits

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22. Study the following circuit diagrams comprising similar bulbs and batteries.

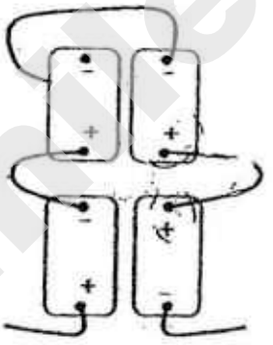
circuit diagram X	circuit diagram Y	circuit diagram Z
		

Which one of the following best describes the brightness of the bulbs?

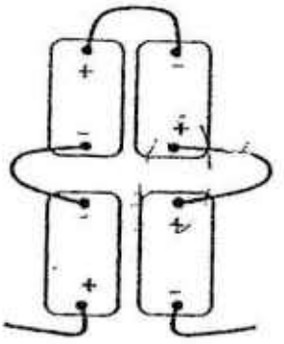
1) Bulb C is the brightest.
2) Bulb A is brighter than Bulb C.
3) Bulb B is dimmer than Bulb C.
4) Bulb C has the same brightness as Bulb B.

23. Which one of the following set-ups has batteries that have been connected correctly for a bulb to light up?

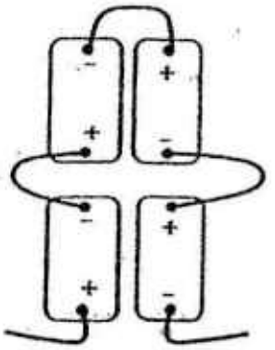
(1)



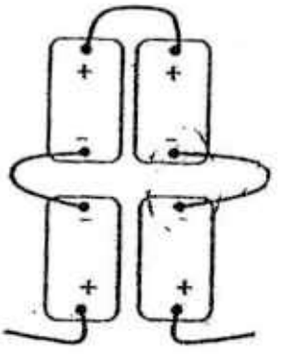
(2)



(3)



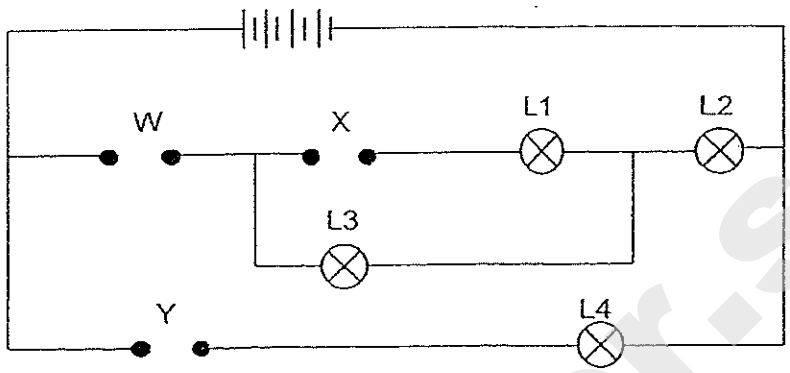
(4)



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24. Hamzah set up the electrical circuit as shown below.



Hamzah then placed rods, Q, R and S, of unknown materials in positions W, X and Y. When any of the lamps, L1, L2, L3 and L4, lit up during the experiment, a (✓) was placed in the box shown in the table below.

position where rods were placed			observation of lamps			
position W	position X	position Y	L1	L2	L3	L4
Q	S	R				✓
S	R	Q	✓	✓	✓	
R	Q	S		✓	✓	✓

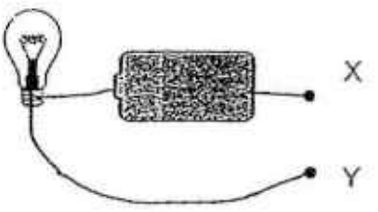
Based on the information given above, which of the following statement(s) is/are correct?

A Rod Q is definitely made from rubber.
B If 3 rod S are placed in all of the positions, W, X and Y, all the lamps will light up.
C If 3 rod R are placed in all of the positions, W, X and Y, all the lamps will light up.

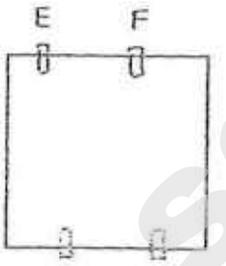
(1) A only
(2) B only
(3) A and C only
(4) B and C only

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25. The diagram below shows a circuit tester and a circuit card. When points X and Y of the circuit tester are connected to points E to H of the circuit card in different combinations, the results are shown in the table below.



circuit tester

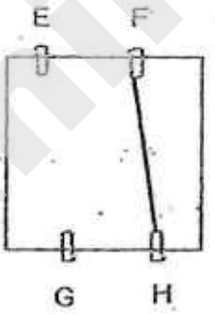


circuit card

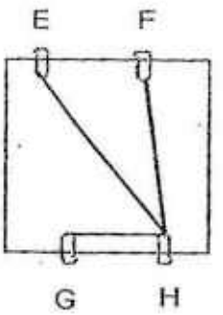
Points connected	Does the bulb light up?
E and F	Yes
E and H	Yes
F and G	No
E and G	No
F and H	Yes

Based on the results in the table only, which one of the following circuit cards shows how the four paper clips, E, F, G and H are connected?

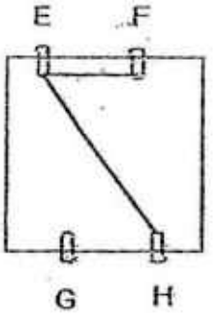
(1)



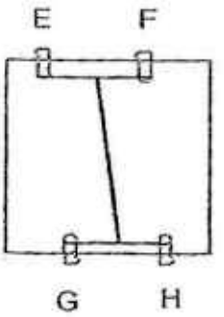
(2)



(3)



(4)



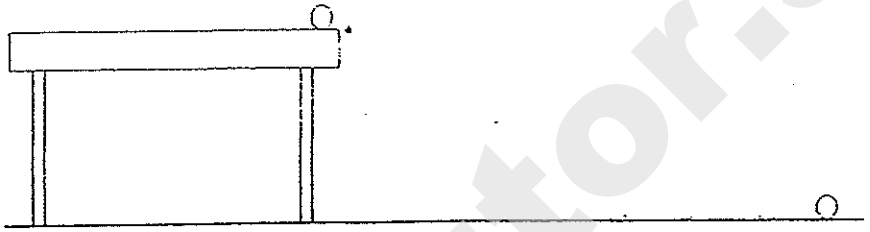
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26. Which of the following is a renewable source of energy?

A Coal
B Wind
C Fossil fuel
D Running water

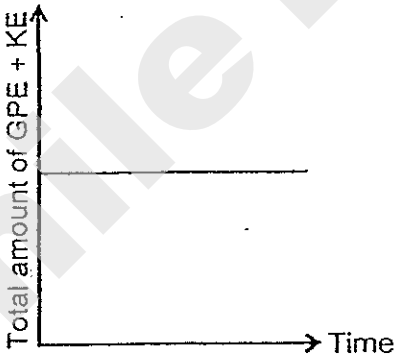
(1) B only
(2) A and B only
(3) B and D only
(4) B, C and D only

27. The diagram below shows a ball which was released from a table top and allowed to bounce on the floor until it comes to a complete stop.

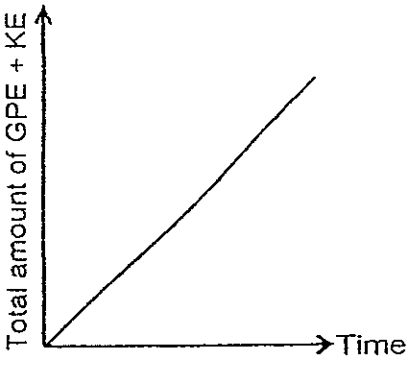


Which one of the following graphs correctly shows the change in total amount of gravitational potential energy (GPE) and kinetic energy (KE)?

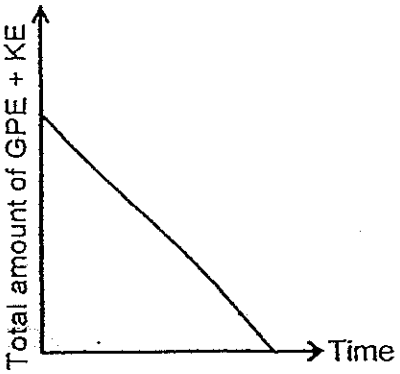
(1)



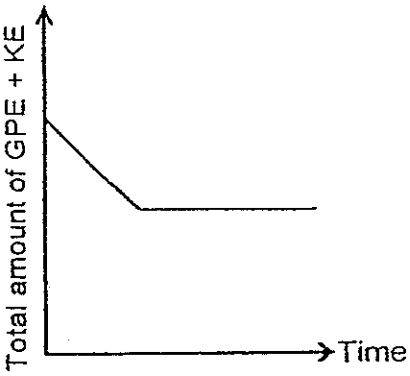
(2)



(3)

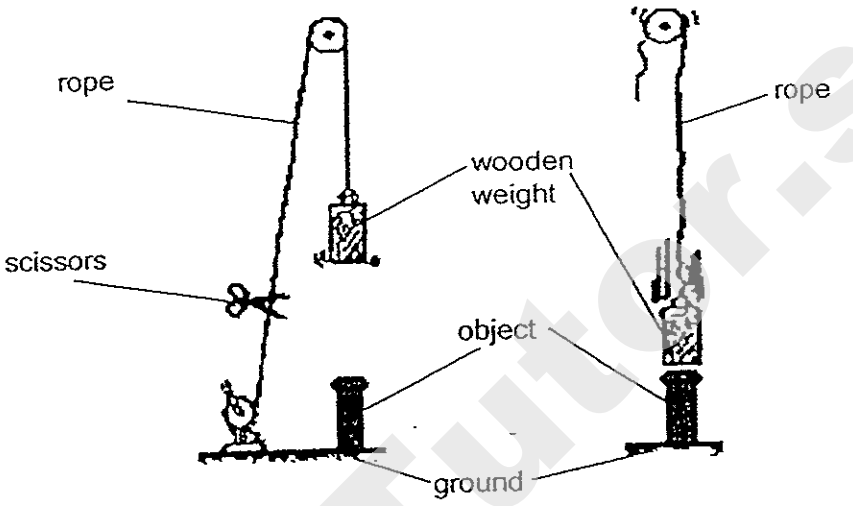


(4)



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28. Study the diagram below. When the rope was cut with a pair of scissors, a wooden weight was released to hammer the object into the ground as shown.



Which of the following changes can be made to enable Michael to hammer the object deeper into the ground?

A Make the cut nearer to the wooden weight
B Release the wooden weight from a greater height
C Use a bigger wooden weight that has a larger mass
D Replace the wooden weight with an iron weight of the same mass

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

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29. The diagram below shows a toy known as the straw helicopter. By rubbing the straw, the toy will fly upwards.



Which of the following correctly shows the energy conversion as a person release the toy into the air?

	Person spinning the toy			Toy rising up into the air		
(1)	Kinetic Energy	→		Kinetic Energy	+	Gravitational Potential Energy
(2)	Solar Energy	→		Kinetic Energy	→	Gravitational Potential Energy
(3)	Chemical Potential Energy	→	Kinetic Energy	→ Kinetic Energy	→	Gravitational Potential Energy
(4)	Chemical Potential Energy	→	Kinetic Energy	→ Kinetic Energy	+	Gravitational Potential Energy

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30. George dropped 2 similar sized balls from different heights as shown in diagram 1 below. Both balls created a dent of the same depth ***h*** as shown in diagram 2.

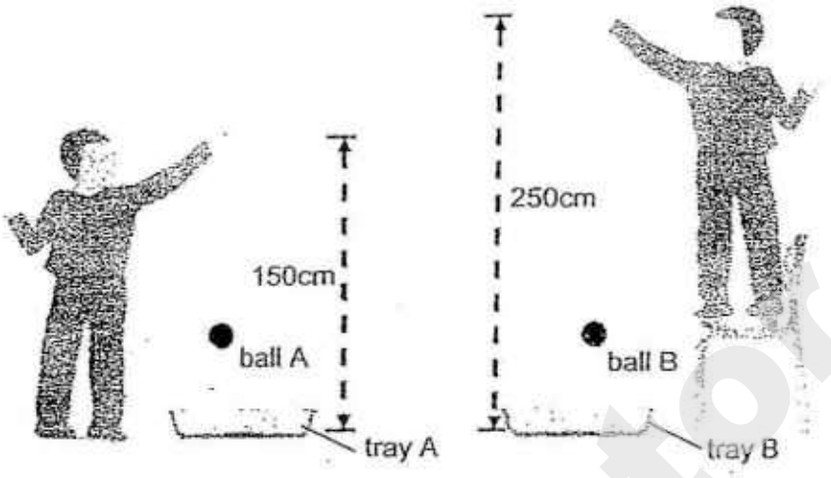


Diagram 1

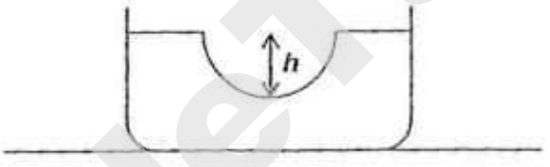


Diagram 2

Based on the results of the above experiment, which of the following statements is/are most likely to be true?

A Mass of ball B is greater than ball A
B Kinetic energy of ball A is greater than that of ball B
C Depth ***h*** of tray B would be the same if ball B is lowered to 150 cm
D Depth ***h*** in tray A would be greater than tray B if ball A is released at the same height as b

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

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1
2014

BOOKLET B

Date : 03 March 2014

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 _____
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.

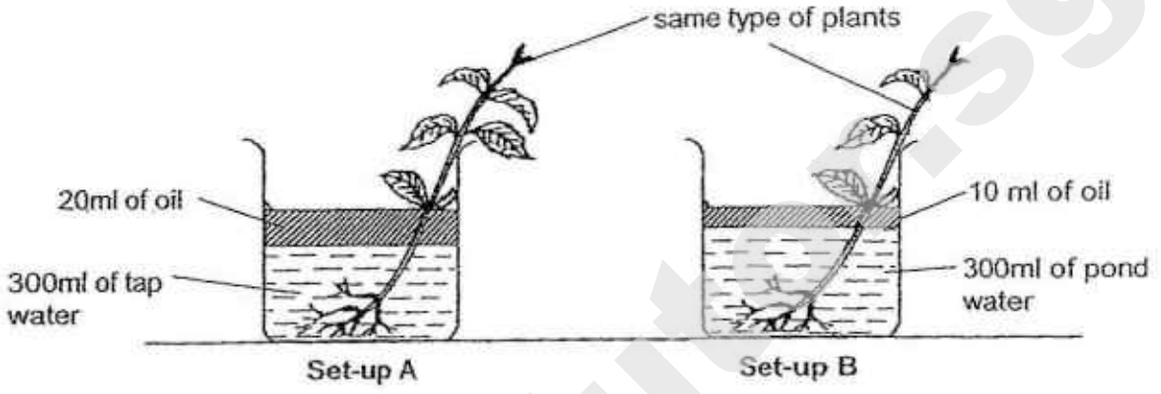
Booklet B consists of 15 printed pages (pages 23-37) including this cover page.

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

31. Naomi conducted an experiment using identical beakers to find out if the number of leaves on a plant affects the amount of water that it loses to the surrounding.



(a) Suggest two changes to both set-ups to ensure that the experiment will be a fair test. [1m]

(i) _____

(ii) _____

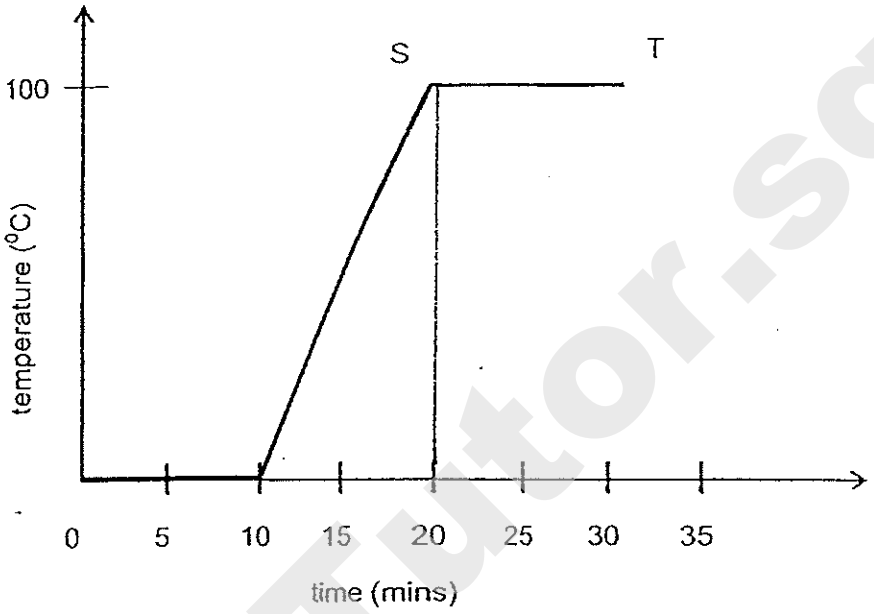
(b) After making the above changes, what should Naomi observe before she could conclude that more leaves cause a higher amount of water loss? [1m]

_____

_____

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32. A beaker of ice was heated for 30 minutes. The graph below shows how the temperature of the contents in the beaker changes over time.



(a) Complete the table below by identifying the time duration and the contents inside the beaker correctly. [1m]

Time duration	Contents in the beaker
_____	ice and water
10 to 20 mins	_____

(b) Describe what happened between points S and T. [1m]

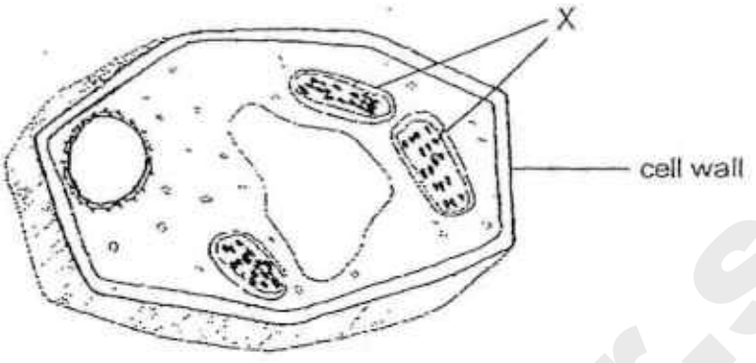
_____

_____

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33. The diagram below shows a plant cell.



(a) Identify part X. [1m]

_____

(b) Part X contains a substance. What is the function of this substance? [1m]

_____

_____

(c) What is the function of the cell wall? [1m]

_____

_____

(d) On which part of the plant could this cell be found? [1m]

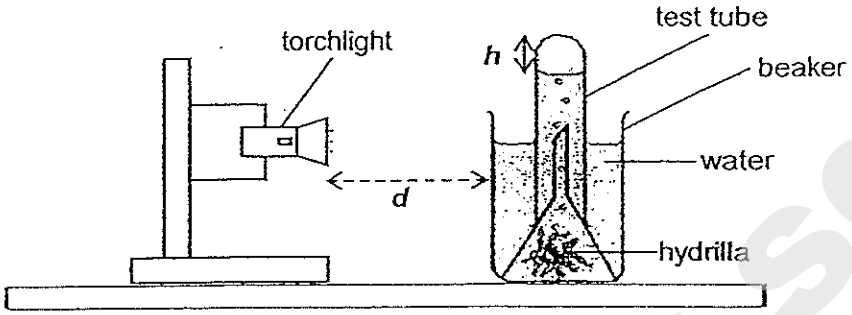
_____

_____

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34. Tommy set up 5 similar sets of experiment as shown in the diagram below.



He varied the distance d for each set up and recorded the height ***h*** for each set-up after 2 hours. The table below shows the results of his experiment.

set-up	A	B	C	D	E
d (cm)	10	20	30	40	50
h (cm)	4	4	3	2	1

(a) The experiment was conducted in a dimly lit room. Suggest a reason why this is important for the experiment? [1m]

_____

_____

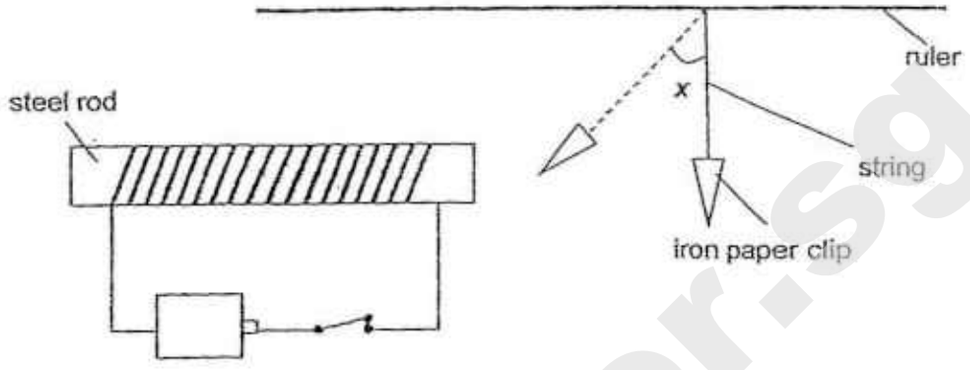
(b) Are the results of the experiment reliable? Explain your answer. [1m]

_____

_____

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35. Jun Jie set up an experiment as shown in the diagram below.



He measured the angle x by which the iron paper clip moved from the vertical position as he increased the number of batteries. He recorded his observations 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. [1m]

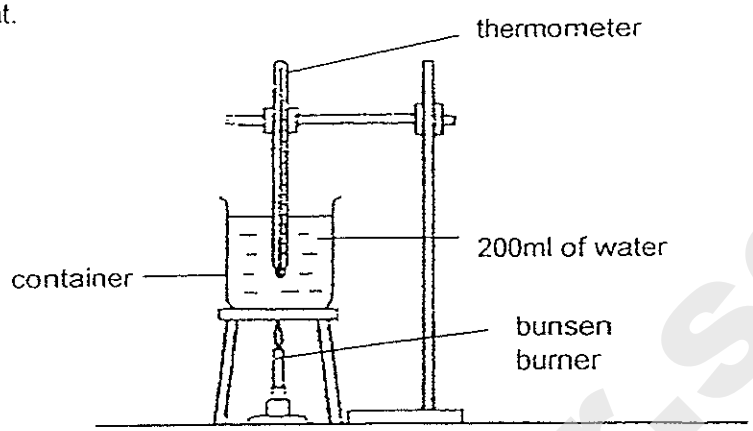
(b) Suggest 2 ways to increase the size of angle x when 4 batteries are used in the set-up. [2m]

(i)

(ii)

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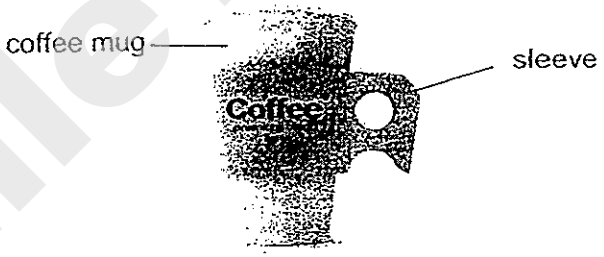
36. June set up an experiment to find out how the material of a container affects the time taken for the water in the container to reach boiling point.



Three containers made from different materials, X, Y and Z, were used for the experiment. The results are shown below.

	Container X	Container Y	Container Z
Time taken for water to reach boiling point (min)	16	8	12 -

June decided to use one of the materials to make the sleeve for a coffee mug as shown below.



(a) Which material, X, Y or Z, is the best choice for making the sleeve? Explain your choice. [1m]

_____

_____

(b) Explain why the coffee in the mug becomes cold after some time. [1m]

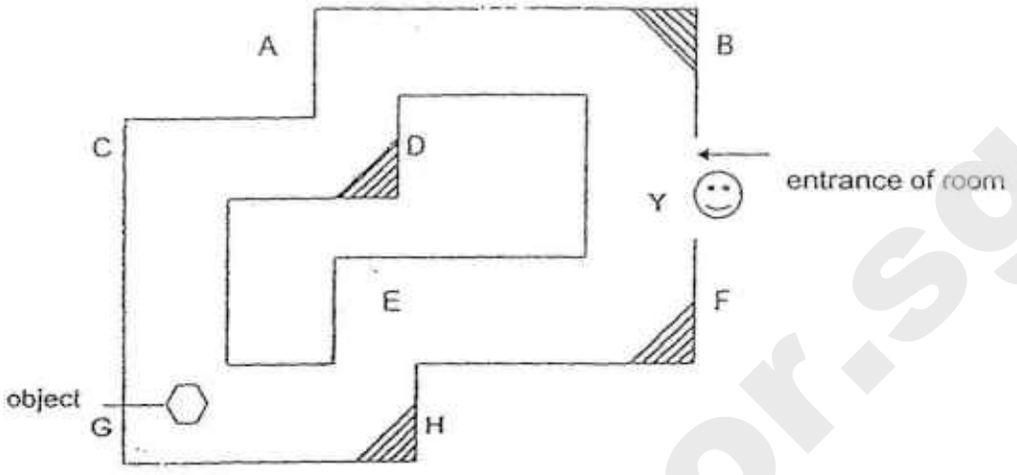
_____

_____

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37. The diagram below shows a top view of a lit room at a theme park.



(a) Which mirror should be rearranged in order to allow a person standing at point Y to see the object? State where this mirror should be placed. [1m]

(b) State 2 properties of light that allows the person at entrance Y to be able to see the object? [1m]

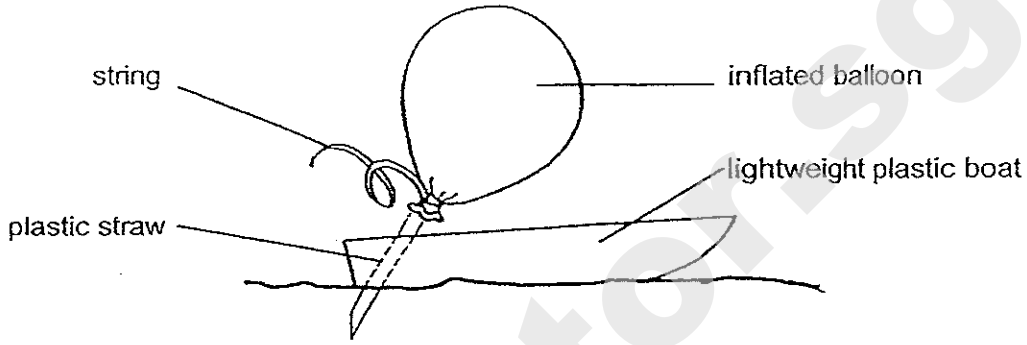
(i).

(ii)

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38. The diagram below shows a model of a boat.



(a) When the model boat was placed on water and the string at the opening was pulled to release the knot, what caused the boat to move? [1m]

_____

_____

(b) Using the same setup, what can be done to make the model boat move at a greater speed? [1m]

_____

_____

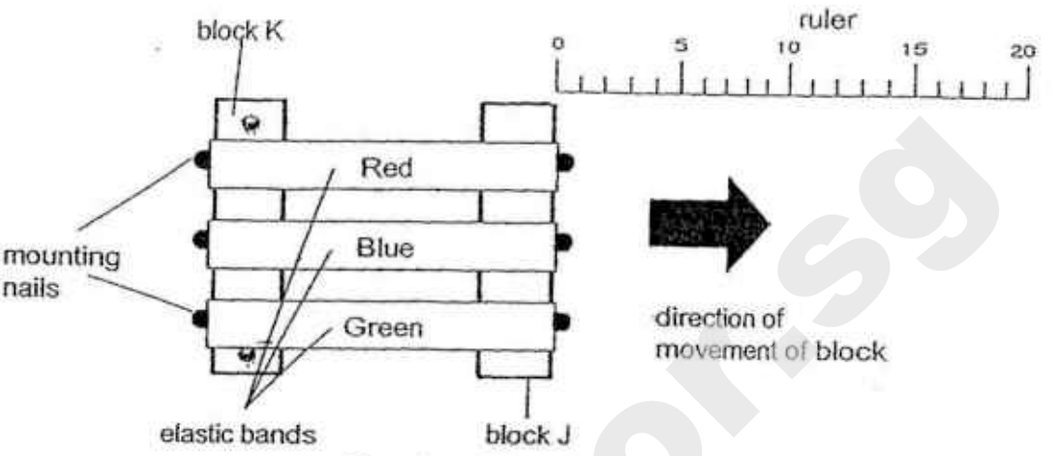
(c) What causes the model boat to stop moving after some time? [1m]

_____

_____

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39. Rajakumar set up the following experiment to find out the strength of three elastic bands. He mounted the elastic bands of different colours but with the same thickness onto two wooden blocks.



Top view of the set-up

For this experiment, one end of the elastic bands was mounted to block K, which was fixed to the floor. The other end was attached to block J, which was movable. Block J was then pulled in the direction shown above until one of the elastic bands broke.

(a) State the force acting on block J when the elastic bands were stretched. [1m]

_____

(b) How was the strength of the elastic band measured? [1m]

_____

_____

(c) Why was it important to ensure the same thickness for each elastic band? [1m]

_____

_____

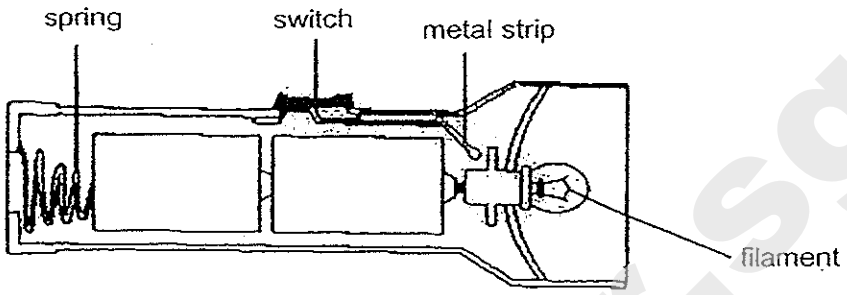
(d) What would happen to the elastic bands if Block J was released as they were being pulled? [1m]

_____

_____

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40. The diagram below shows a flashlight. The bulb lights up when the switch is pushed to the right.



(a) Explain why the bulb lights up when the switch is pushed to the right? [1m]

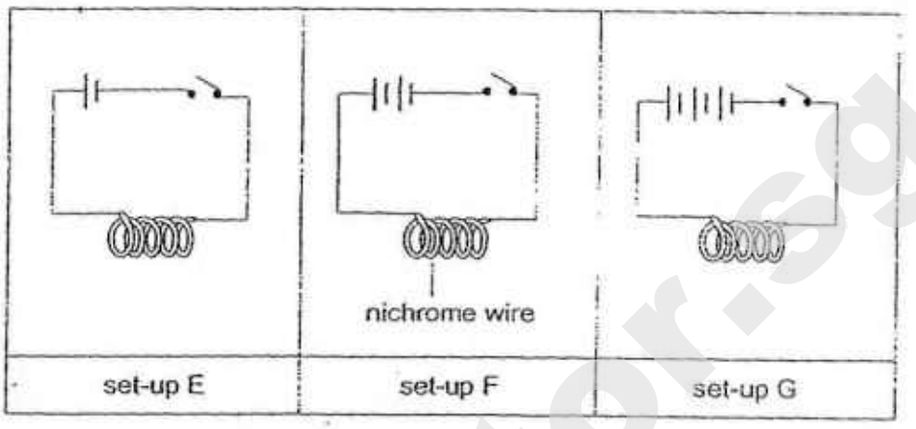
(b) Explain why the spring is not made of plastic. [1m]

(c) Using **symbols**, draw only the arrangement of the batteries shown in the flashlight in the space provided below. [1m]

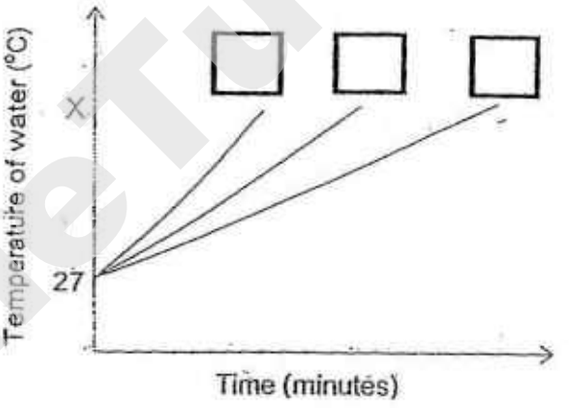
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41. Liwen arranged three different set-ups using nichrome wires as shown below. After closing the circuit, she submerged the part with the nichrome wire into a beaker of 100ml of water. She then measured the time taken for the water to reach 40°C.



(a) Based on the expected results, write the letters, E, F and G in the boxes provided to match the line graphs to the correct set ups. [1m]



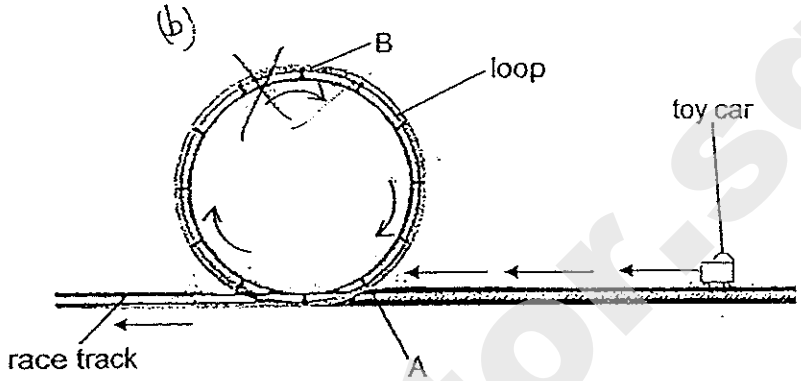
(b) What does the temperature 27°C in the graph represent? [1m]

(c) What temperature is represented by the letter 'X' in the graph? [1m]

(d) What could you expect, in terms of time needed to heat up the water, if more coils of nichrome wire are added to set up G? [1m]

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42. The diagram shows a toy car going through a loop of a race track.



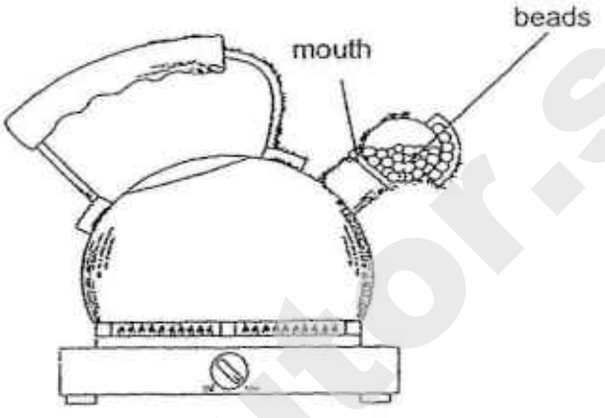
(a) Describe the energy conversion as the toy car moves from point A to point B. [1m]

(b) In the diagram above, **mark a point in the loop** with the letter "X" where kinetic energy of the toy car is the least. [1m]

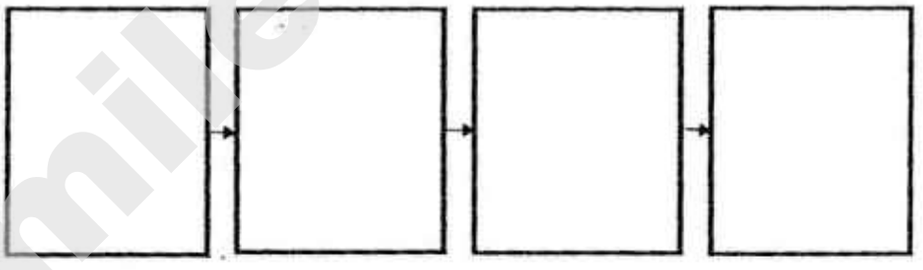
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43. The diagram below shows a newly designed kettle that Daniel bought. The beads at the mouth of the kettle will start to move when the water boils. The movement of the beads will create a sound to alert Daniel that the water is boiling.



(a) State the energy conversion that took place when the kettle was placed on top of a stove. [2m]



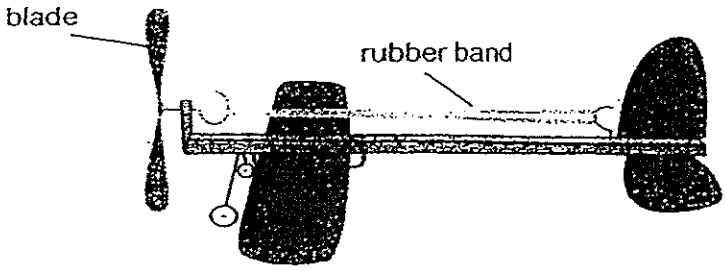
(b) Suggest one method in which the noise of these beads can be made louder. [1m]

_____

_____

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44. George bought a rubber band-propelled plane as shown in the diagram below. He had to rotate the blade before releasing it in order for the plane to move forward. The plane is able to reach a distance of 10 metres when allowed to move on the ground.



(a) Describe the energy conversion that took place when George released the plane to the moment the plane was moving on the ground. [1m]

(b) Explain why the aeroplane come to stop eventually. [1m]

(c) Using only a measuring tape and a marker, describe an experiment that George could set up to find out the relationship between the number of turns the blade is wound and the distance travelled by the plane. [2m]

Step 1	Place the measuring tape on the ground.
Step 2	
Step 3	

~ End of Paper

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School: NANYANG PRIMARY SCHOOL
Subject: PRIMARY 6 SCIENCE
Term: CA1

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

31. (a) i. Use an equal amount of oil.
ii. Use the same type of water.
(b) Setup A will have less water left than set-up B.

32. (a) 0 to 10 min; water and water vapour
(b) The water boiled.

33. (a) Chloroplasts
(b) It traps sunlight for the plant cell to make food.
(c) It is to give the plant cell a regular shape.
(d) Leaves of a plant.

34. (a) So that the torchlight is the main source of light which affects the results.
(b) No. He did not repeat the experiment for at least three times.

35. (a) 0°. When there are no batteries, the steel rod would not even become an electromagnet and would not attract the paper clip.
(b) i. Wrap more coils of wire around the steel rod.
ii. Move the electromagnet higher.

36. (a) Material X. It does not conduct heat as well as the other materials so the person holding the mug would not be scaled.
(b) It loses heat to the mug and the surroundings.

37. (a) The mirror at D should be placed at E.
(b) i. Light travels in a straight line.
ii. Light can be reflected.

38. (a) The air in the balloon rushed out of the straw, pushing the boat through the water.
(b) Increase the amount of air in the balloon.
(c) Friction between the boat and the water.

39. (a) Elastic spring force.
(b) It was measured by seeing the order of which the elastic band broke. The first one to break is the weakest, while the last one to break is the strongest.

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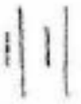
(c) To ensure a fair test so that the results are only due to the type of elastic band.

(d) The rubber bands would be returned to the original length.

40. (a) When the metal strip of the switch touches the bulb, the circuit in the flashlight would be closed, causing the bulb to light up.

(b) Plastic is a non-conductor of electricity.

(c)



41. (a) G; F; E

(b) It represents the water at the room temperature.

(c) 40°C

(d) The amount of time needed to heat the water to 40°C is faster than a setup with less coils of wire.

42. (a) Kinetic energy is converted to gravitational potential energy and kinetic energy.

(b)



43. (a) Heat energy → heat energy → heat energy + kinetic energy → sound energy + kinetic energy

(b) Reduce the number of beads.

44. (a) Elastic potential energy is converted to kinetic energy and sound energy.

(b) Frictional force between the tyres of plane and the ground.

(c) Step 2: Wind the rubber band many times. Measure how far it moves. Mark where it stops. Repeat for reliable results.

Step 3: Repeat the experiment but wind up the rubber band less times and compare it to before. Mark where it stops. Repeat for reliable results.

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Rosyth School
First Continual Examination for 2014
SCIENCE
Primary 6

Name: _____ Total Marks 100

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

Date: 3 March 2014 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.

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

This booklet consists of 17 pages.

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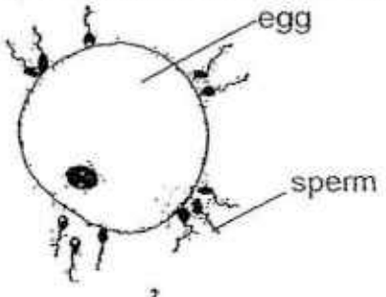
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Part I (60 Marks)

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. Which one of the diagrams below illustrates fertilisation in humans?

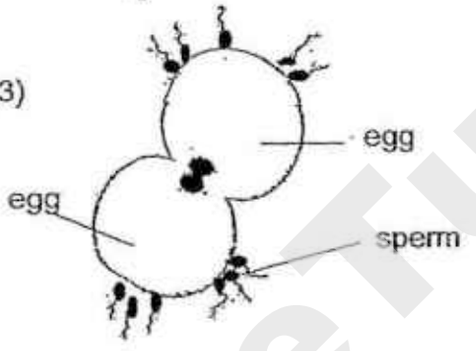
(1)



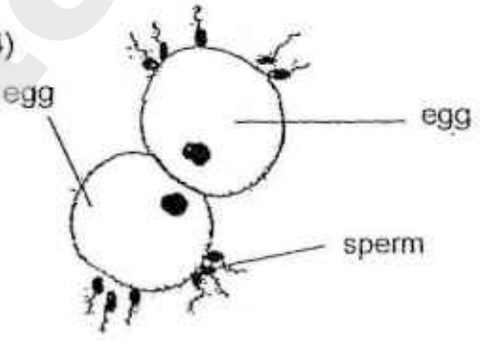
(2)



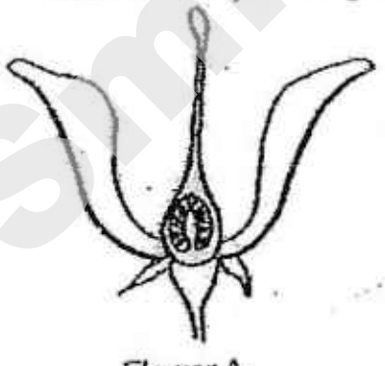
(3)



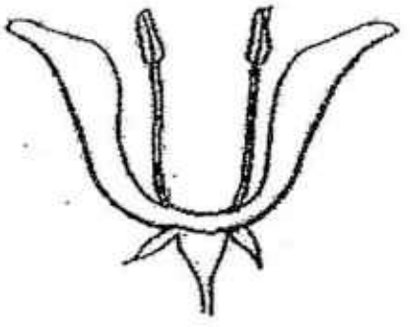
(4)



2. The diagrams below shows the cross-sections of 2 different types of flowers. Study the diagrams as shown below.



Flower A



Flower B

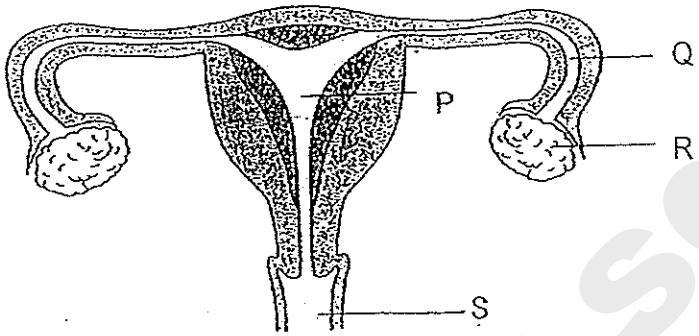
Which statement(s) about the flowers is/are true?

A: Both flowers can grow into fruits.
B: Pollination can take place in both flowers.
C: Fertilisation cannot occur in Flower B.

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

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3. The diagram shows the female reproductive system.



In which part is the egg formed and in which part does the foetus develop?

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

4. Which of the following about the male reproductive cell in the human body are correct?

A: It has a nucleus.
B: It is stored in the testicles.
C: It is produced in the penis.
D: It is the largest cell in the human body.

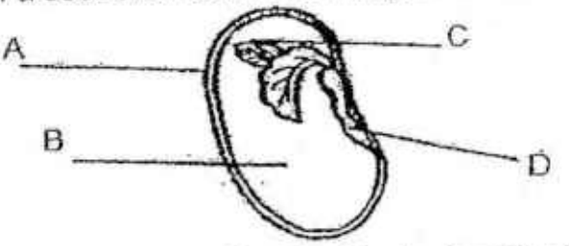
(1) A and B only
(2) A and C only
(3) A, C and D only
(4) B, C and D only

5. Which of the following is the path taken by a pollen tube after pollination of a flower?

(1) stigma → style → ovary → ovule
(2) style → filament → stigma → ovary
(3) anther → filament → stigma → ovary
(4) filament → stigma → ovary → ovule

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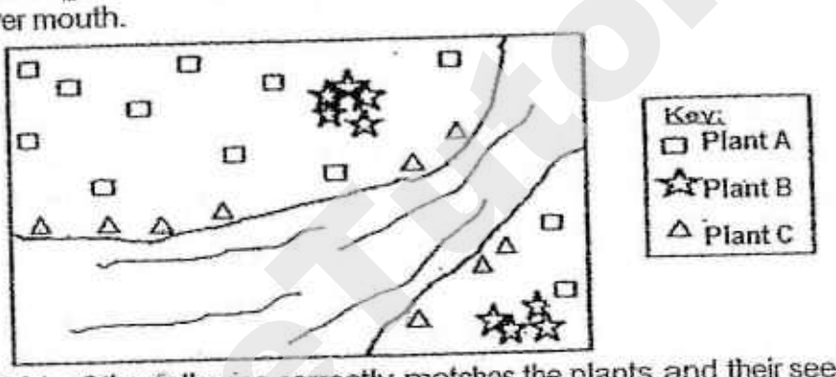
6. The parts of a seed are shown in the diagram below.



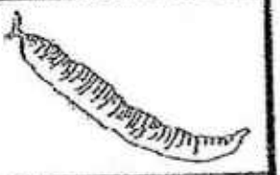
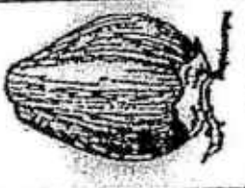
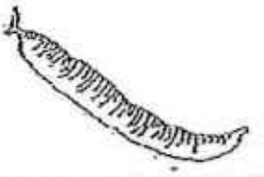
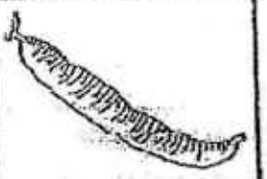
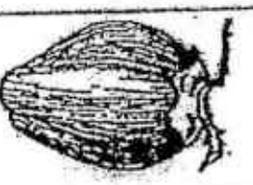
Which part of the seed provides food for the seedling?

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

7. The diagram below shows the location of 3 plants, A, B and C, near a river mouth.



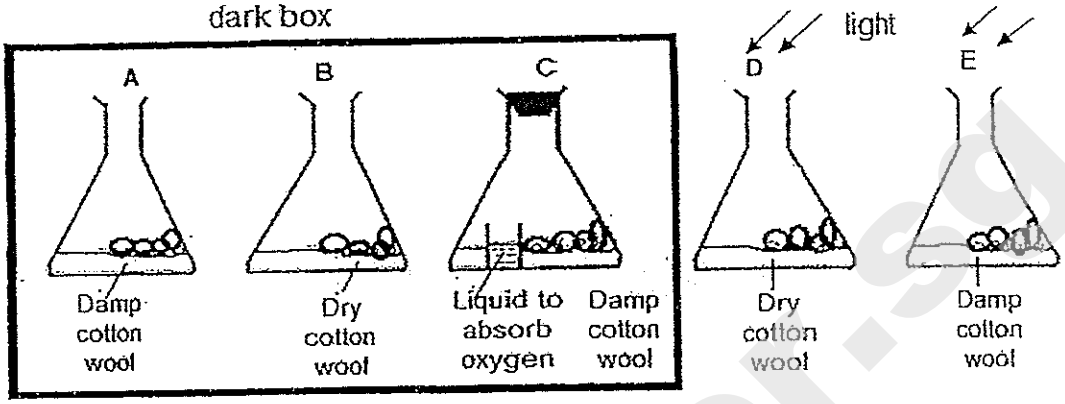
Which of the following correctly matches the plants and their seeds?

	Plant A □	Plant B ☆	Plant C △
(1)			
(2)			
(3)			
(4)			

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8. In the experiment shown below, each conical flask contains 4 identical seeds on cotton wool.



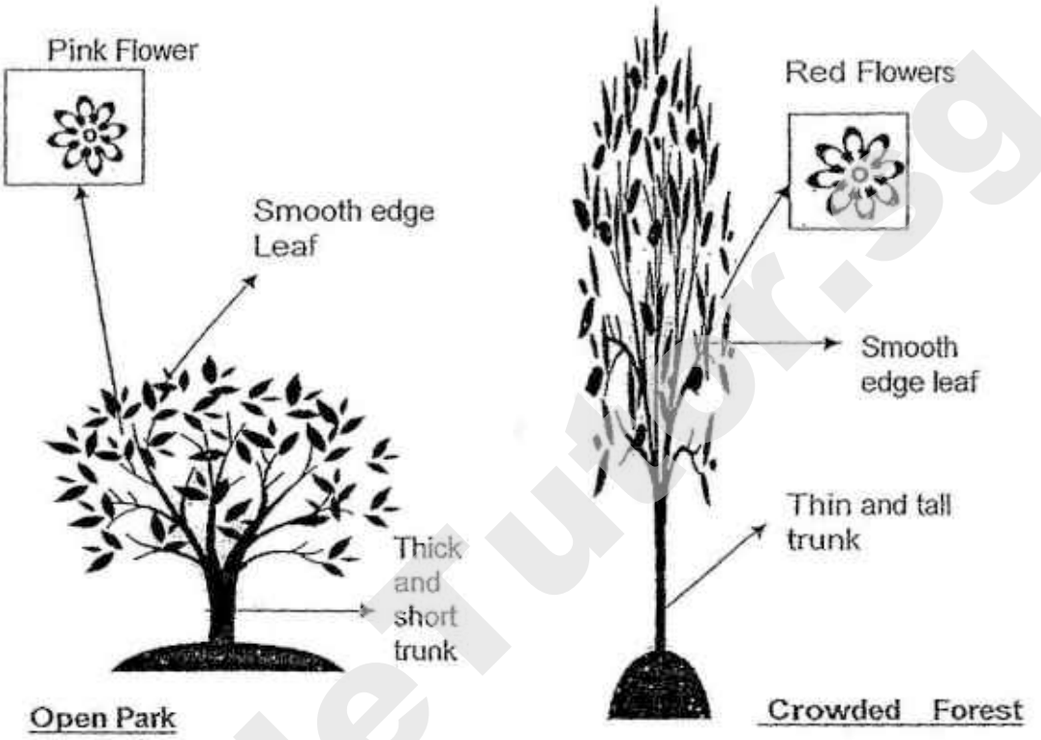
Which two conical flasks should be compared to find out whether light is needed for germination of these seeds?

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

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9. Study the diagram below. The two similar species of trees are grown at two different places.



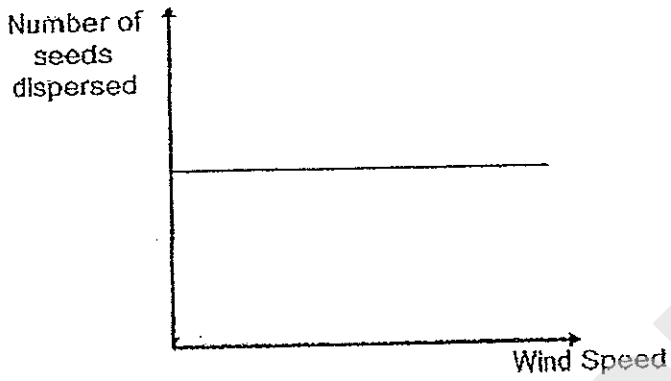
If sexual reproduction takes place between the two trees, which are the characteristics the young of the tree can inherit?

A: Types of leaves
B: Height of the tree
C: Colour of the flower
D: Thickness of the trunk

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

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10. Study the graph below.



Based on the graph above, which of the following is likely to be the description of the fruit which contained the seeds?

(1) fluffy and light
(2) fleshy and sweet
(3) flat and has wing-like structure
(4) small and has hair-like structure

11 The classification table below shows the classification of the cucumber plant, love grass, bracket fungus and ladder fern into two groups X and Y.

Group X	Group Y
ladder fern bracket fungus	~~chilli plant~~ love grass cucumber plant

What characteristics can be used to classify them into groups X and Y?

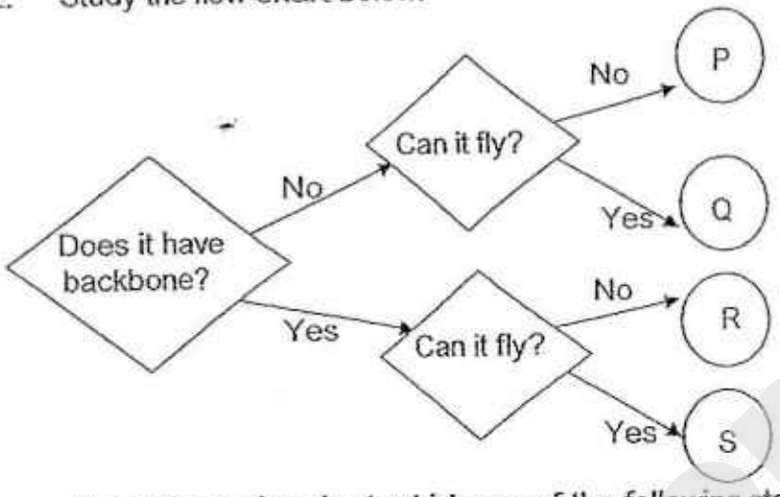
A: Source of nutrition
B: Method of reproduction
C: Unicellular or multicellular
D: Non-flowering or flowering

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

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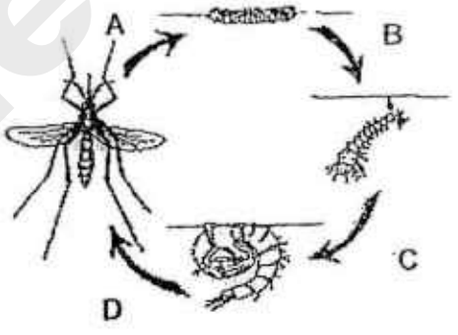
12. Study the flow chart below.



According to the chart, which one of the following statements is true?

(1) P is a fish.
(2) Q is a bird.
(3) R is a mammal.
(4) S is an insect .

13. The diagram below shows the life cycle of a mosquito.



At which period/s does/do cell division take place?

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

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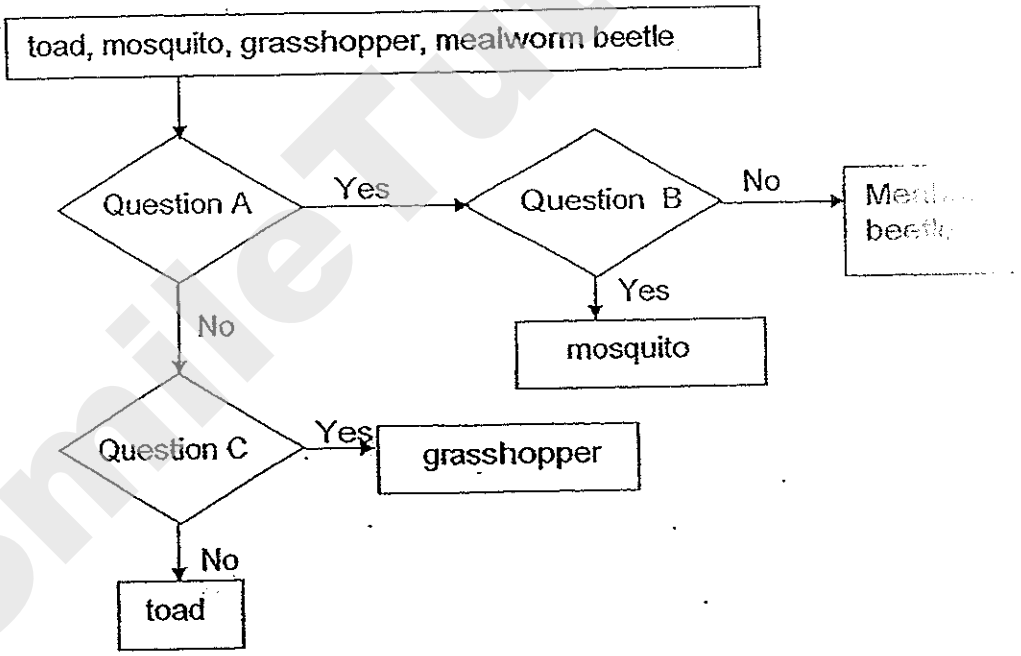
14. Jeremy germinated some seeds and recorded his observations in table as shown below.

Observation	Day
Seeds become swollen	2
Seed coats break	5
Roots appear	7
Shoots start to appear	11
Shrivelled seed leaves drop off	17

On which day will the seedlings most probably start to need light for their survival?

(1) Day 4
(2) Day 8
(3) Day 10
(4) Day 15

15. Tom classifies some organism using the chart below.



What are the questions for A, B and C?

	Question A	Question B	Question C
(1)	Are there 4 stages in the life cycle?	Is part of its life cycle spent in water?	Does the young look like the adult?
(2)	Are there 4 stages in the life cycle?	Does the young look like the adult?	Is part of its life cycle spent in water?
(3)	Is part of its life cycle spent in water?	Are there 4 stages in the life cycle?	Does the young look like the adult?
(4)	Does the young look like the adult?	Is part of its life cycle spent in water?	Are there 4 stages in the life cycle?

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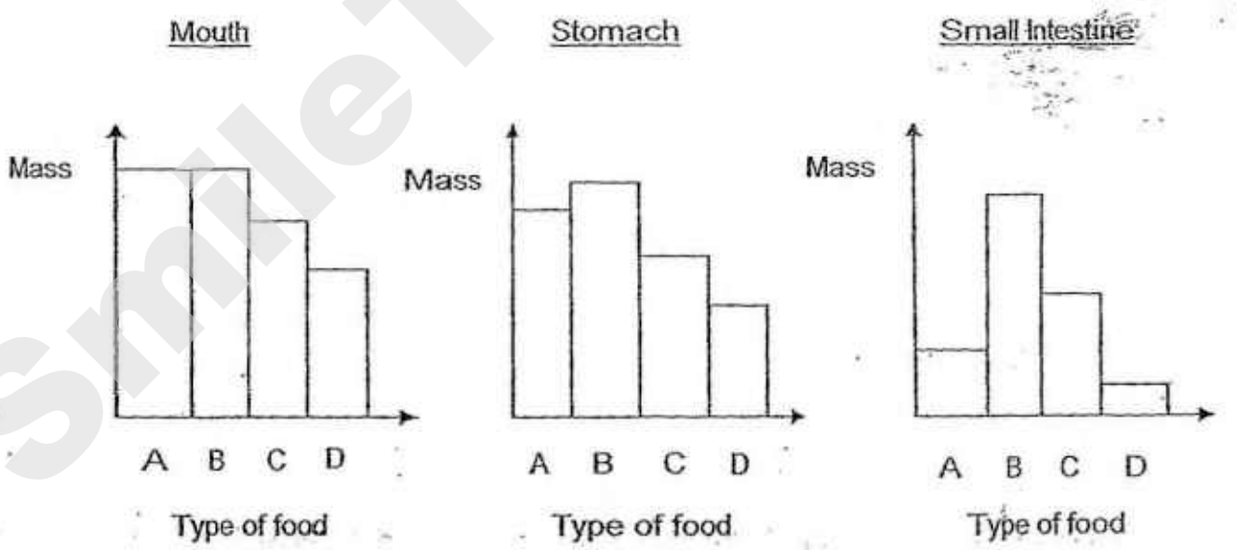
16. Jane viewed two cells under a powerful microscope and recorded her observations in the table below.

Cell parts	Cell A	Cell B
Cell wall	Present	Absent
Cell membrane	Present	Present
Cytoplasm	Present	Present
Nucleus	Present	Absent
Chloroplasts	Absent	Absent

Which of the following are possible deductions from her observations?

(1) Cell A and Cell B are plant cells.
(2) Cell A is a cheek cell but Cell B is a yeast cell.
(3) Cell A is a root cell but Cell B is a red blood cell.
(4) Cell A is a bacterial cell but Cell B is a white blood cell.

17. The graphs below show the masses of 4 different types of food, A, B, C and D as they travel from the mouth to the small intestine.

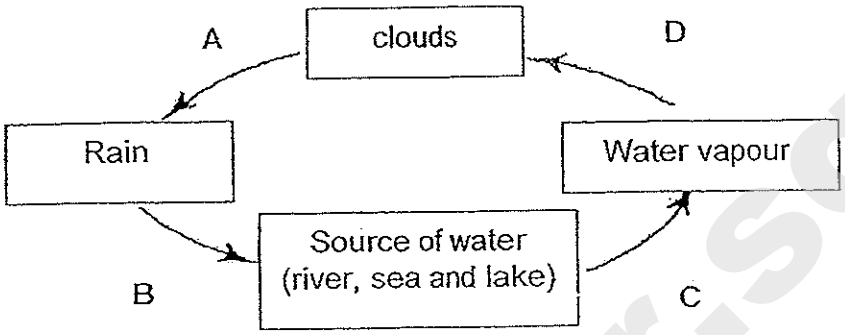


Which type of food was the least digested?

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

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18. Study the water cycle below.

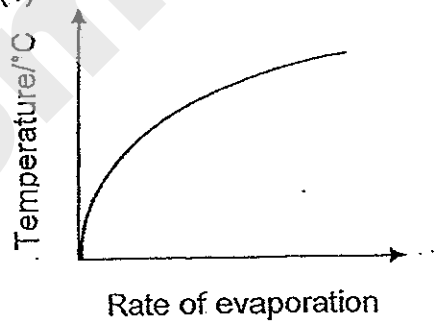


At point C, what happens to the surrounding air and the state of the water?

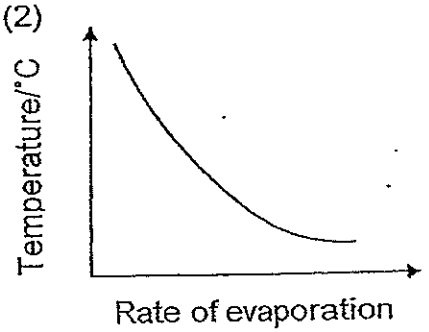
	Surrounding air	Change in state
(1)	Gains heat	Liquid to gaseous state
(2)	Loses heat	Liquid to gaseous state
(3)	Gains heat	Gaseous state to liquid state
(4)	Loses heat	Gaseous state to liquid state

19. Which one of the following graphs shows the relationship between temperature and rate of evaporation?

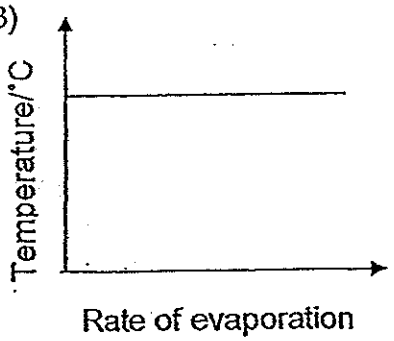
(1)



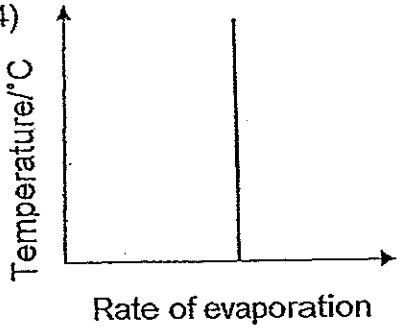
(2)



(3)



(4)



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20. One rainy day, Annie, Brenda, Claire and Diana observed that all the windows inside their house got misty although all the windows were closed. The explanations provided by each of them are listed below.

Annie: The glass window is colder than the air inside the house.
Brenda: The glass window is warmer than the air inside the house.
Claire: Water vapour outside the house condenses on the cold glass window.
Diana: Water vapour inside the house condenses on the cold glass window.

Whose explanations are correct?

(1) Annie and Claire only
(2) Annie and Diana only
(3) Brenda and Claire only
(4) Brenda and Diana only

21. Mrs Lee was cooking some porridge in a pot. She lifted the lid and noticed 'clouds' forming.



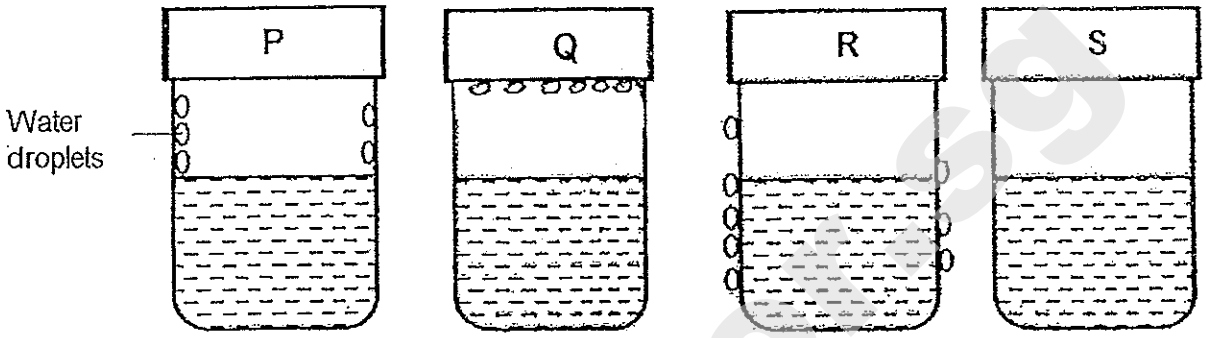
What are these 'clouds' formed at X?

(1) Steam
(2) Smoke
(3) Water Vapour
(4) Water droplets

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22. Felicia filled four similar containers P, Q, R and S with the same amount of water at different temperatures. The containers were then placed on a table in her kitchen. The diagram below shows the containers after 15 minutes.



Which of the above containers are most likely to contain water above room temperature?

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

23. Water can be conserved through reducing, reusing and recycling. William listed the following ways in which water can be conserved.

A: Repair a leaking tap immediately.
B: Purify sewage water to get drinking water.
C: Avoid washing the car with a running water hose.
D: Water the plants using water from the aquarium.

Which one of the following shows correctly how water is conserved for each situation.

	Ways to conserve water		
	Reduce	Reuse	Recycle
(1)	A, B	C	D
(2)	B, C	A	D
(3)	A, C	D	B
(4)	A, D	C	B

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24. A group of pupils decided to carry out an experiment to find if the exposed surface area of a beaker affects the rate of evaporation.

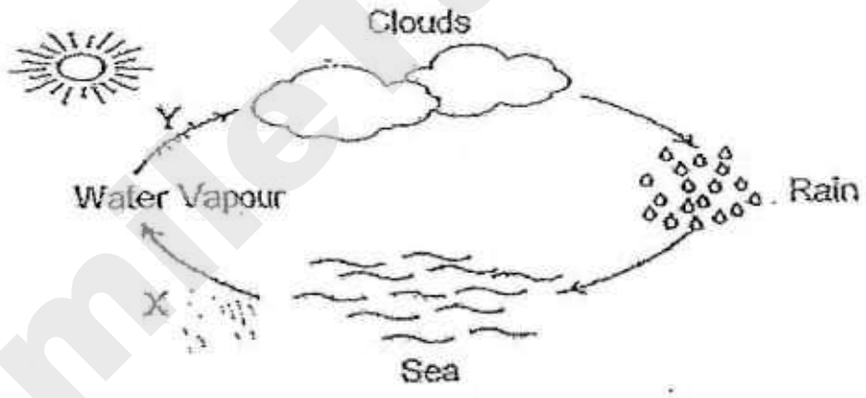
The table below shows the variables used in four set-ups A, B C and D.

	A	B	C	D
Amount of water (ml)	150	150	150	150
Surface Area (cm^2)	40	40	60	60
Temperature (°C)	25	38	30	38
Speed of wind (km/h)	10	20	10	20

Which two set-ups could the pupils use in order to carry out a fair test?

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

25. Study the diagram below.



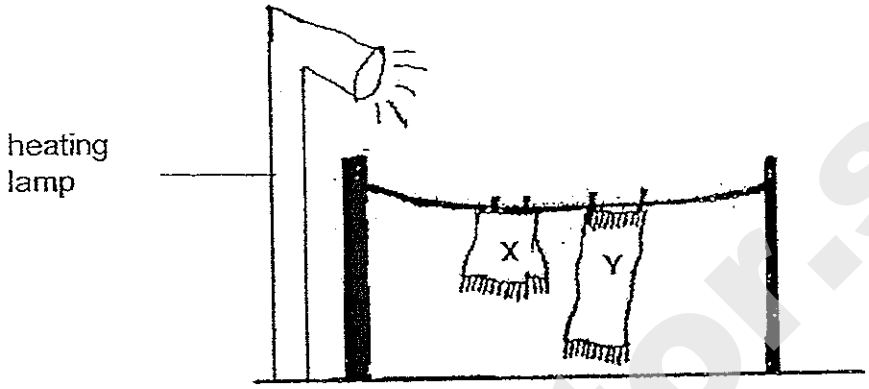
Processes X and Y take place in the water cycle. Which of the following describes water going through the same processes as X and Y in the diagram above?

A : Leaving a piece of ice on a table
B: Blowing wet hair using a hairdryer
C: Adding water into a glass of orange juice
D: Spectacles turning misty when stepping out of an air-conditioned room.

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

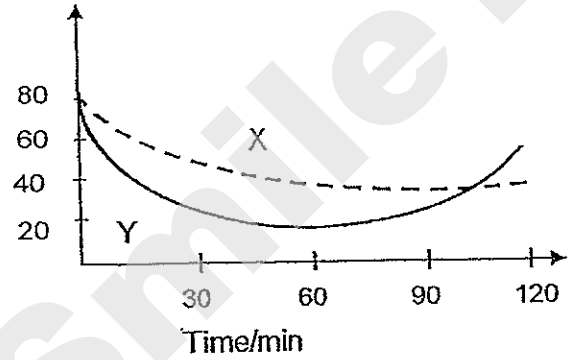
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26. Jill hung two identical wet scarves, X and Y, in a room kept warm by a heating lamp as shown below. She weighed the scarves at regular intervals and used her results to plot a graph.

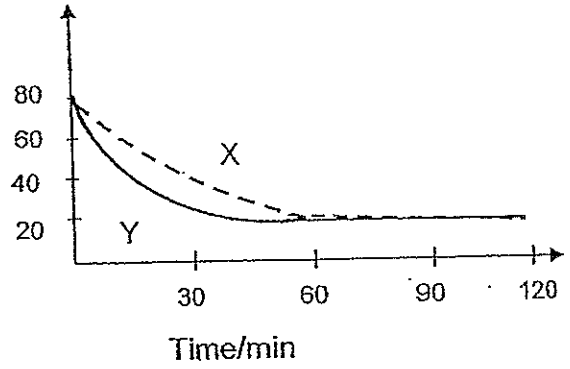


Which one of the following graphs shows the most likely results obtained by Jill?

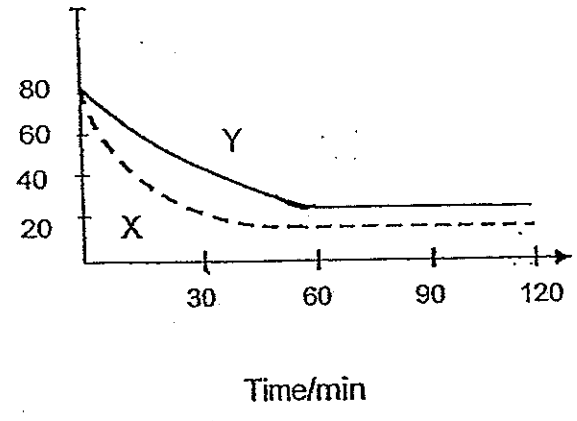
(1)



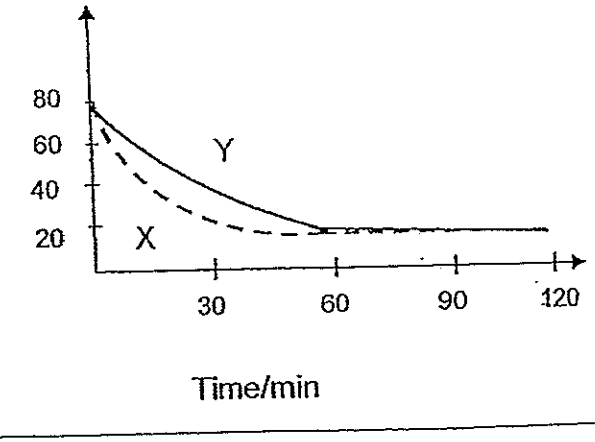
(2)



(3)



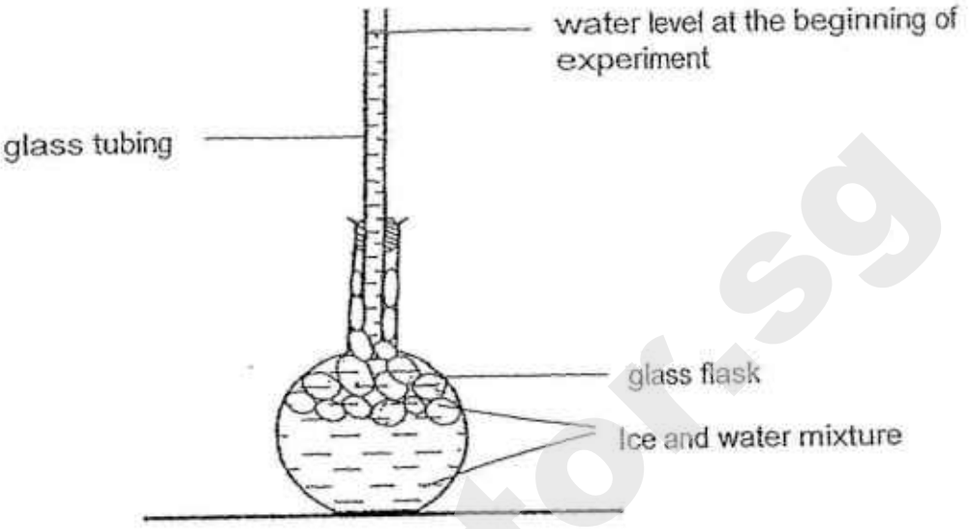
(4)



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27. Study the diagram below.



A flask containing a mixture of ice and water is allowed to stand on a table for some time.
Which of the following will occur as the ice in the flask melts?

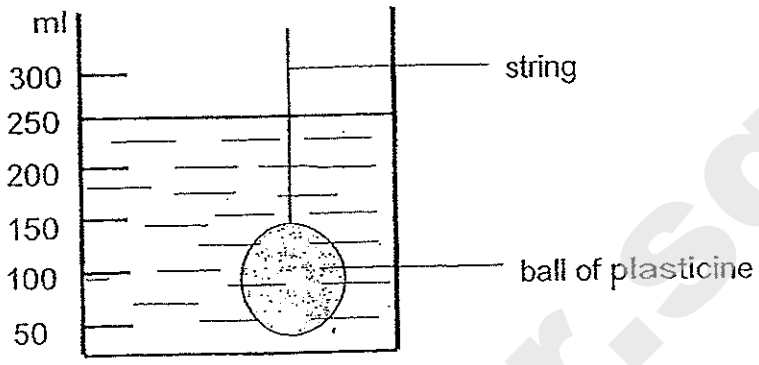
A: The state of the ice changes.
B: The water level in the glass tube changes.
C: The temperature of the ice and water mixture increases.

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

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28. Betty lowered a ball of plasticine tied to a string into a container of water. She noticed that the water level rose to the 250ml mark.

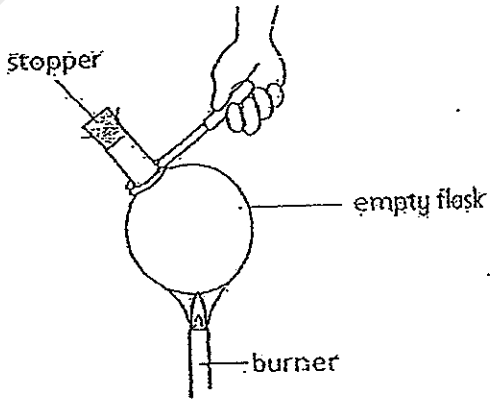


She then lifted the string to remove the ball of plasticine out of the water. She divided the ball of plasticine into three pieces and lowered them slowly into the water again.

Which would be the approximate water level in the container after the three pieces of plasticine were lowered into the water?

(1) 100ml
(2) 250ml
(3) 150 ml
(4) 300ml

29. Azman placed a bottle with a tightly fitted stopper over a flame as shown in the diagram. He observed that the stopper popped out after a while.



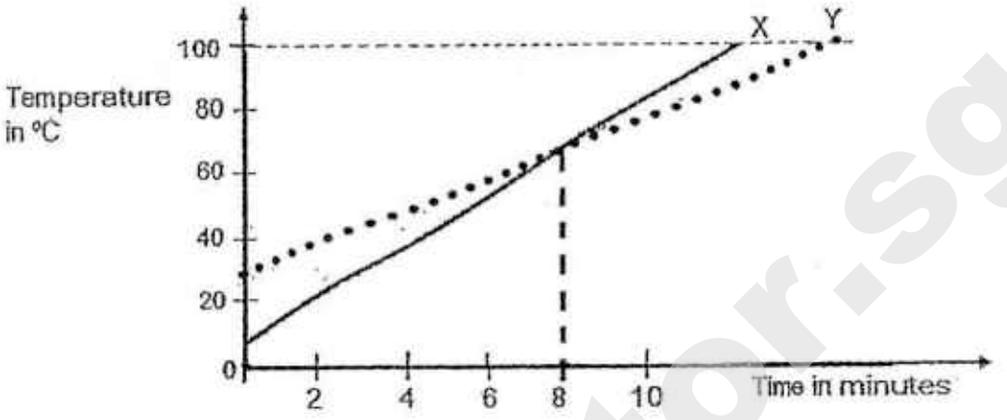
Which of the following correctly explained his observation?

(1) The stopper contracted and became loose.
(2) The bottle expanded and pushed the stopper out.
(3) The air inside the bottle expanded and pushed the stopper out.
(4) The air around the bottle expanded and pushed the stopper out.

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30. Wendy heated two identical beakers marked X and Y, which were filled with the same amount of water. The graph below shows the changes in the temperature of water in beakers X and Y over a period of time.



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

A: Beaker Y received less heat than Beaker X.
B: Both beakers of water reached the same temperature after 8 minutes.
C: Wendy filled the beakers with water of the same temperature before heating.

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

End of Part I

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Rosyth School
First Continual Examination for 2014
SCIENCE
Primary 6

Name: _____

Total Marks: _____ / 40

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

Date: 3 March 2014 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 31 to 44, write your answers in the spaces given in this booklet.

* This booklet consists of 12 pages.

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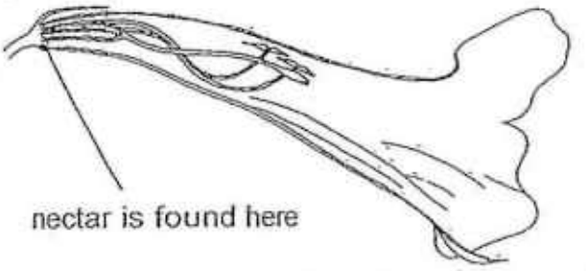
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Part II (40 marks)

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

31. The figure below shows a section of a flower.



(a) Based on your observations, state the agent of pollination for the flower. Support your choice with a reason. (1m)

_____

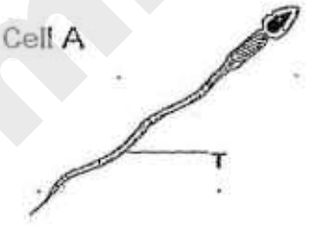
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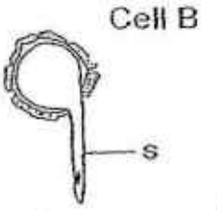
(b) Explain how the agent helps in the pollination. (1m)

_____

_____

32 The diagram below shows structures produced by the male reproductive organs of a human being and a plant.





(a) Identify Cell A and Cell B. (1m)

_____

(b) What is part S? _____ (1m)

(c) How is the function of part T similar to part S? (1m)

_____

_____

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33. Bala planted a 2cm identical seedling in each of 4 similar pots. Each pot contained the same amount and type of soil.
He watered each seedling with different amounts of water daily. Then he measured the height of each seedling at the end of 10 days and recorded his observations in the table below.

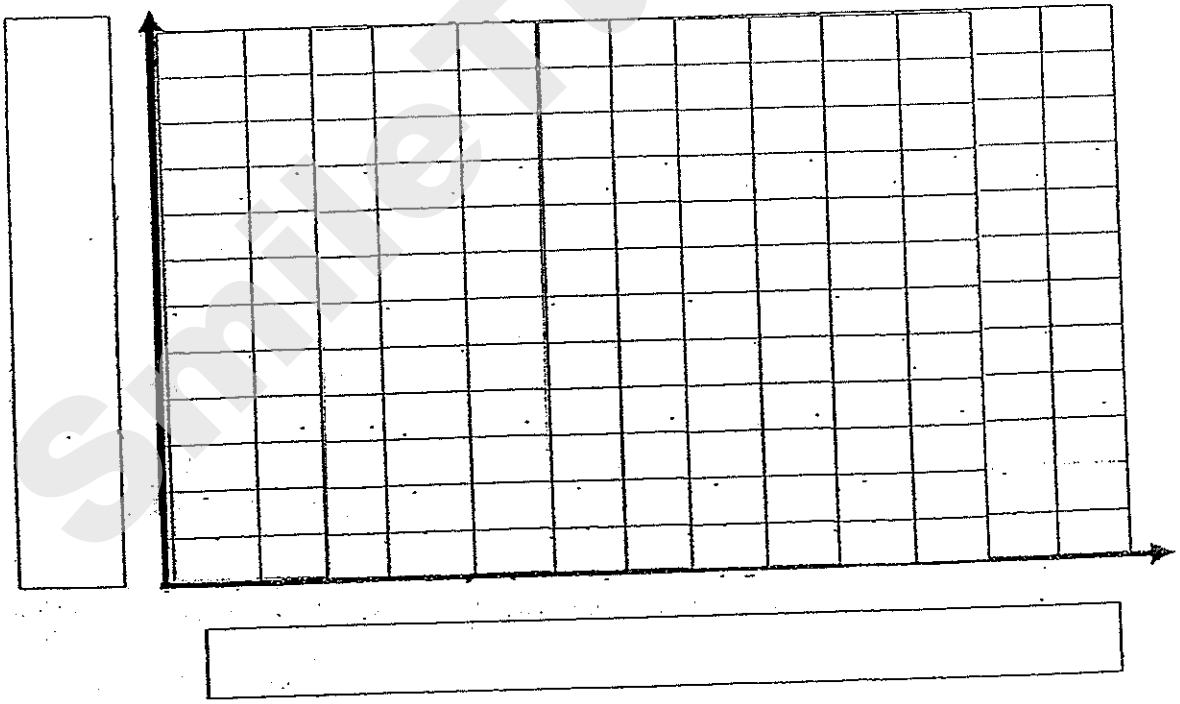
Pot	Amount of water given daily (ml)	Height of seedling after 10 days (cm)
P	20	3
Q	35	6
R	40	9
S	45	12

(a) What was the aim of the experiment? (1m)

_____

_____

(b) Draw a bar graph in the space below to show the height of the seedling in each pot after 10 days. Label the X and Y axes. (2m)



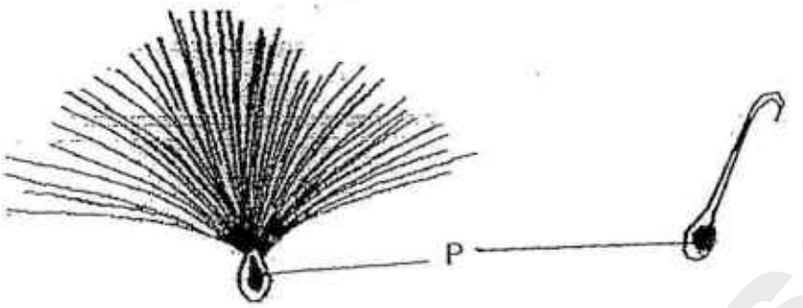
(c) He wanted to ensure that his results were reliable, but he did not want to repeat his experiment. What do you think he should have done at the start of his experiment? (1m)

_____

_____

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34. The diagram below shows the cross-section of 2 fruits, W and X.



Fruit W Fruit X

(a) What is part P in both fruits? (1m)

_____

(b) Suggest and explain how each of the fruits might be dispersed. (2m)

Fruit W

Method of dispersal: _____

Explanation: _____

_____

Fruit X

Method of dispersal: _____

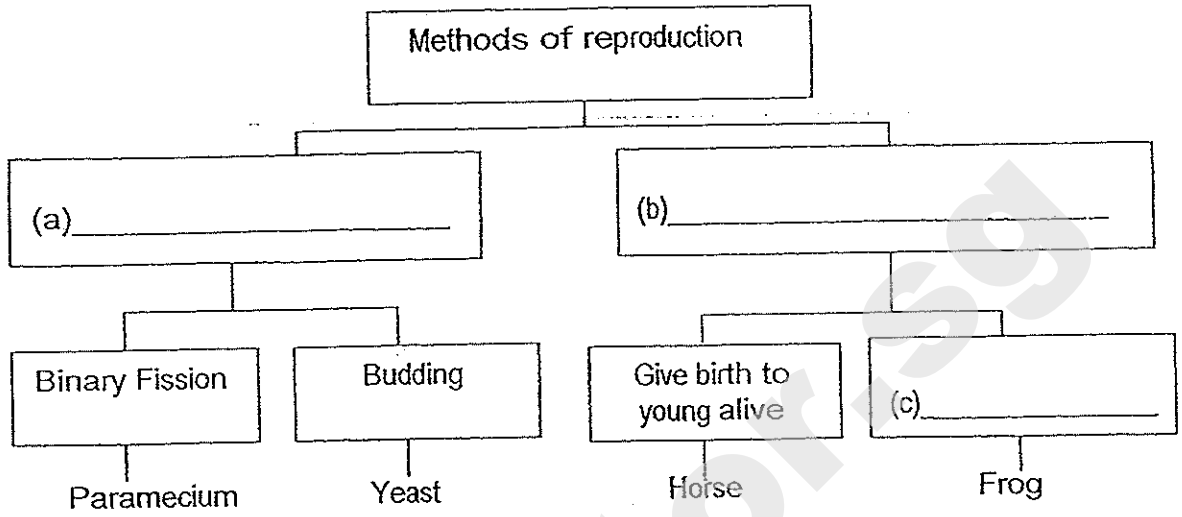
Explanation: _____

_____

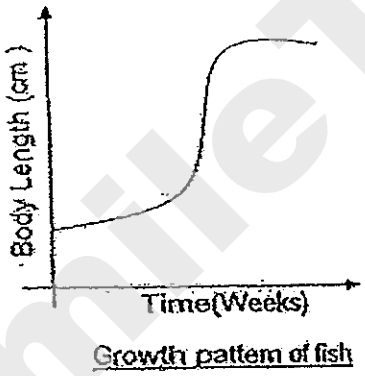
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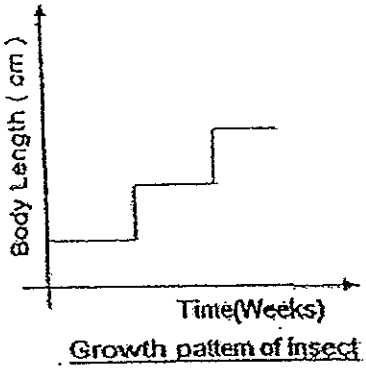
35. Look at the classification chart below. Complete the chart with suitable words in (a), (b)and (c). (3m)



36. The graphs below show the pattern of growth of a fish and an insect from young to adulthood.



Growth pattern of fish



Growth pattern of insect

(a) State one similarity between the growth pattern of the two organisms. (1m)

_____

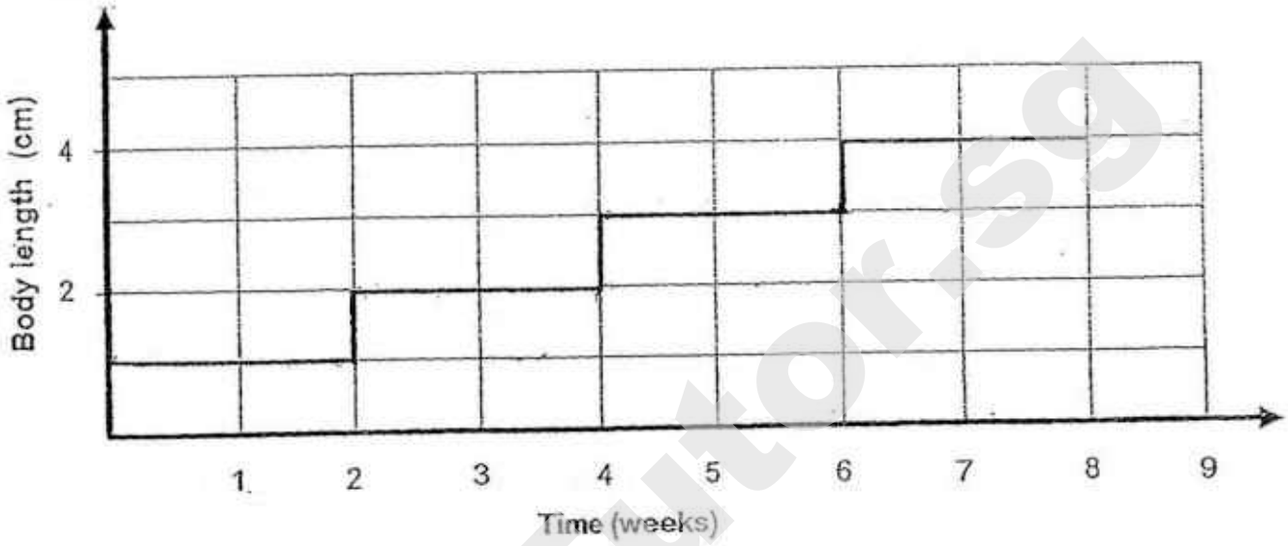
_____

Question 36 is continued on page 5

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(b) Study the growth pattern of an insect as shown in the graph below.
The nymph of the insect moults 3 times before reaching the adult stage in eight weeks. After the third moult, its body grows to a maximum length of 4cm.



(i) On the graph above, indicate with 3 crosses (X) to show when the three moults are taking place. (1m)

(ii) Complete the table below to show how the insect's body length changes after each moult. (1m)

Number of moults	Body length (cm)
1	
2	
3	4

(c) Why do the young of insects need to moult in order to grow? (1m)

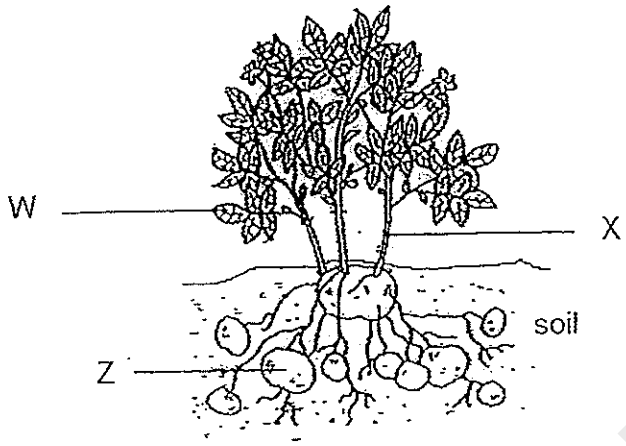
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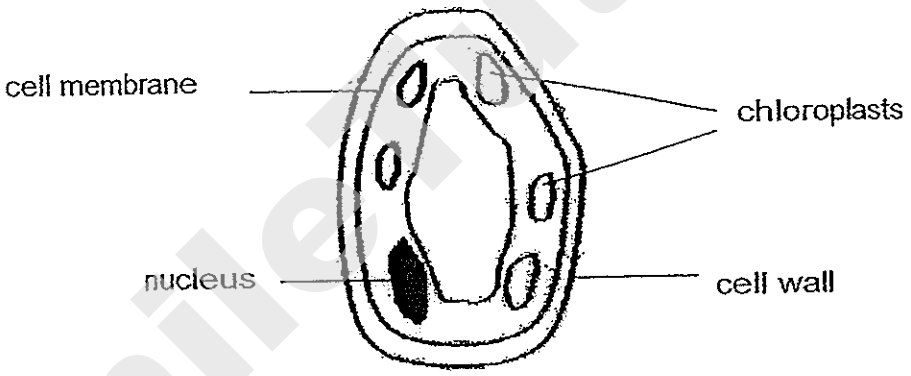
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37. The diagram below shows the parts of plant A.



The magnified cell below is taken from a certain part of plant A.



(a) Which part of the plant is the cell least likely to have been taken from? (1m)

_____

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

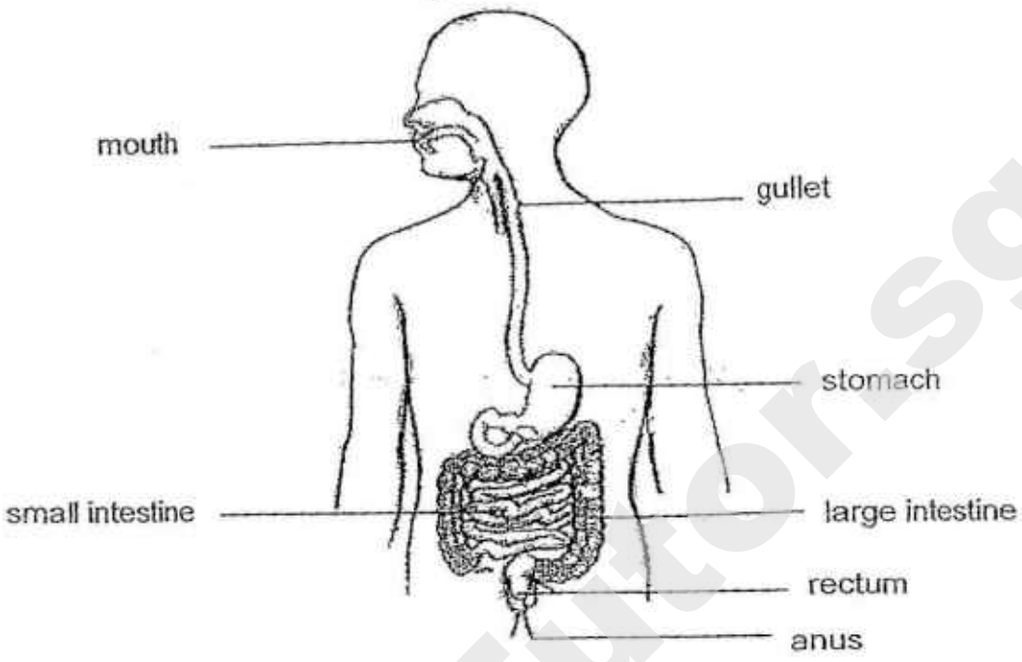
_____

_____

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38. The diagram below shows part of the human digestive system.



(a) At which part of the digestive system does digestion end? (1m)

_____

(b) Blood vessels carry blood to and from parts of the digestive system. Explain why there are many blood vessels in the walls of the small intestine. (1m)

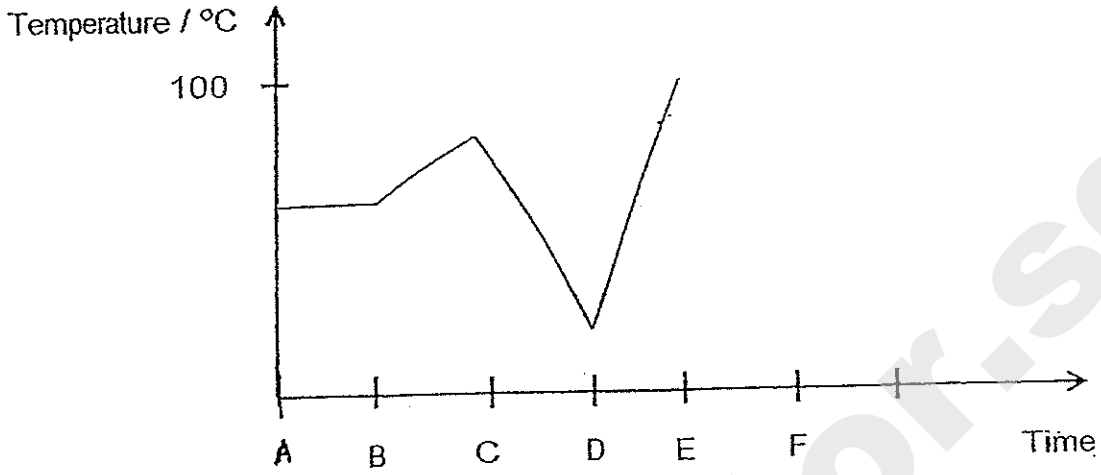
_____

_____

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39. Kenny heated a kettle of water and recorded how the temperature of the water in the kettle changes over time. He turned on the stove at period B.



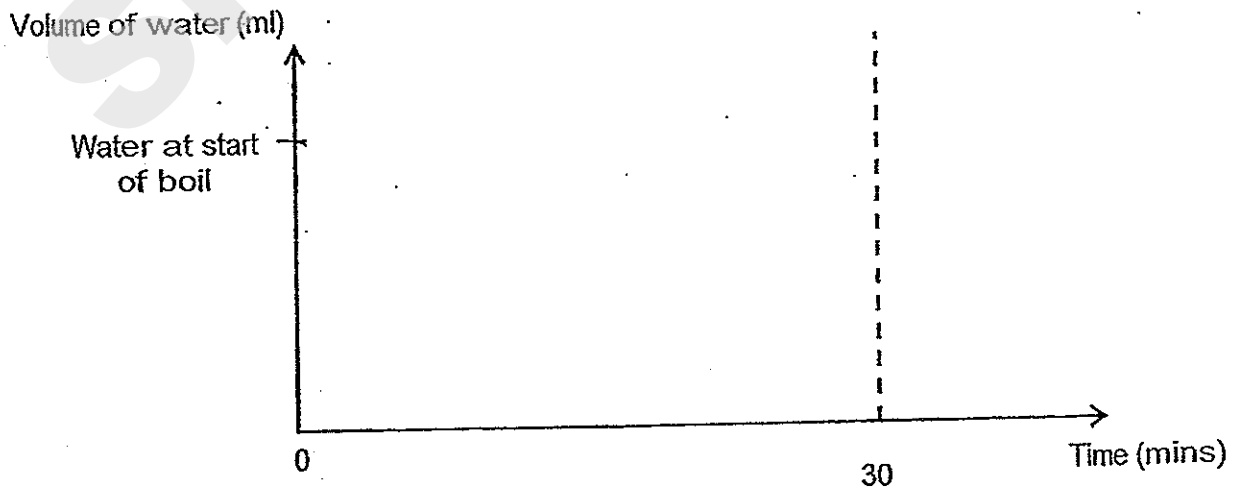
(a) On the **graph above**, mark with an 'X' when steam had been formed. (1m)

(b) Kenny did not lower the fire on the stove or turn it off. Suggest what he had done to cause the temperature change between C and D. (1m)

_____

_____

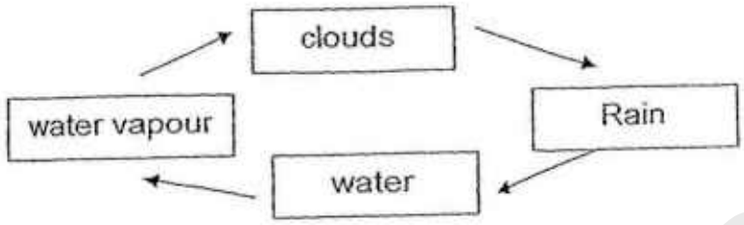
(c) Draw on the **graph below** to show how the volume of water in the kettle will change as the water continued to boil for 30 minutes. (1m)



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40. The diagram below shows how the water cycle recycles the water from the earth. The arrows show the different stages of water in motion.



(a) Where does the energy for the continuation of the water cycle come from? (1m)

_____

(b) Explain how plants can be part of the water cycle (2m)

_____

_____

41. Fatimah took out some ice cubes from the freezer and boiled some water in a kettle.



She noticed 'white clouds' forming above the ice cubes and spout of the kettle.

(a) Name the process that causes the 'white clouds' to form (1m)

_____

(b) Explain how the 'white clouds' were formed above the ice cubes and the kettle. (2m)

(i) Ice Cubes :_____

_____

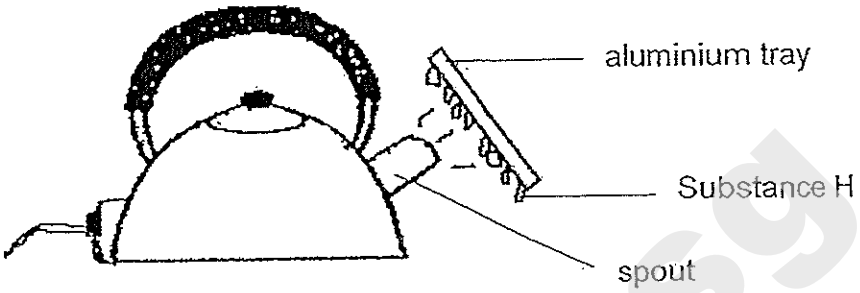
(ii) Kettle :_____

_____

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42. Mary boiled some water in an electric kettle as shown in the diagram below.



Electric kettle

When she held an aluminium tray a short distance from the spout of the boiling kettle, substance H is formed.

(a) What is substance H? (1m)

_____

(b) After some time, Mary observed that less and less of substance H was formed even though the water in the kettle was still boiling. Explain her observation. (2m)

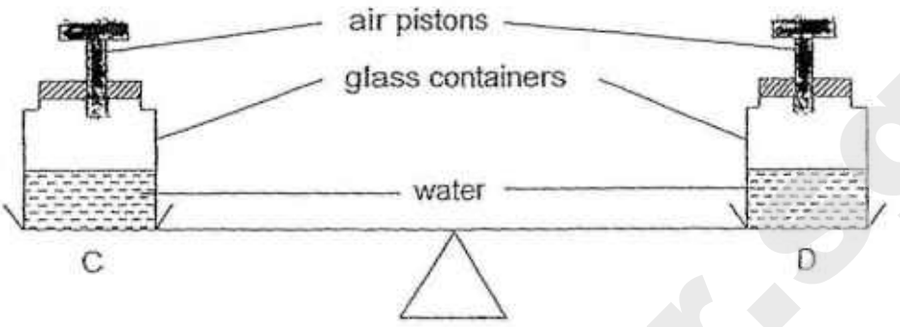
_____

_____

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43. Two similar glass containers, C and D, both with a maximum capacity of 4000 cm^3 were both filled with 2000 cm^3 of water and capped. They were placed on a balance as shown in the diagram below.



Through an air piston, Pete managed to pump another 500 cm^3 of air into Container C and another 300 cm^3 of air into Container D. Both containers were then placed on the balance again.

(a) What happens to the balance? (1m)

_____

(b) What is the volume of air in each container,now? (2m)

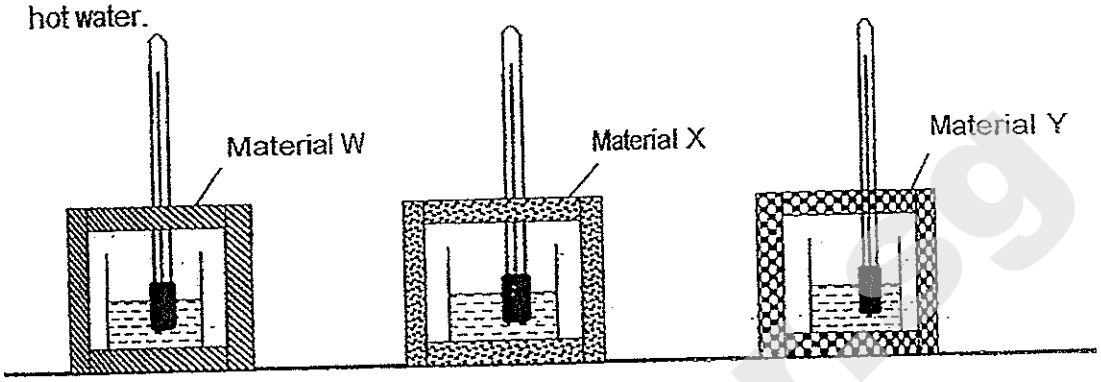
Volume of air in Container C : _____ cm^3

Volume of air in Container D : _____ cm^3

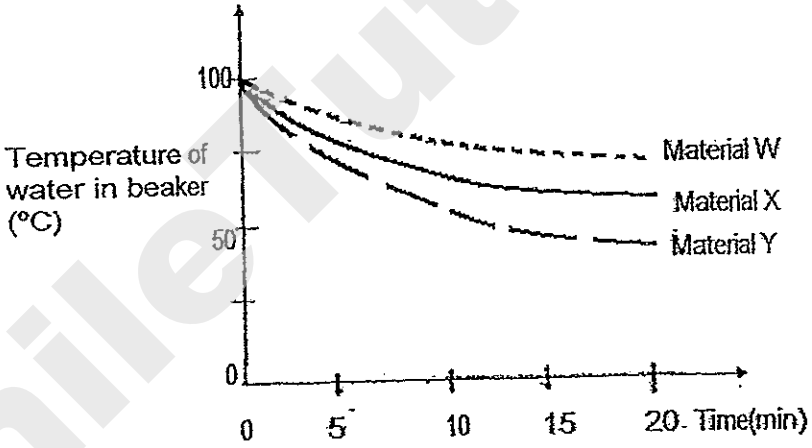
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44. Gabriel set up the apparatus below using different insulation materials of equal thickness. He used beakers of the same size containing the same amount of hot water.



He measured and recorded the temperature of water in each beaker at regular intervals using a thermometer. The graph below shows the results of the experiment.



(a) Based on the results of the experiment, match the type of materials, W and Y are made of. (1m)

W •	• metal
Y •	• wool

(b) Which material W, X or Y is the most ideal for making a container to keep ice-cream frozen? Explain your answer clearly. (1m)

_____

_____

End of Paper

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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : ROSYTH
PRIMARY : P6
SUBJECT : SCIENCE
TERM : CA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q1
2	2	1	1	1	2	4	3	2	2	2	3	4	4	1

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	1	2	4	1	3	3	4	2	2	2	3	3

31)a)The anther and the stigma are inside the flower.
b)Pollen grain are stuck on the insect's body when it flies to anther flower of the same species, the pollen is deposited on the stigma.

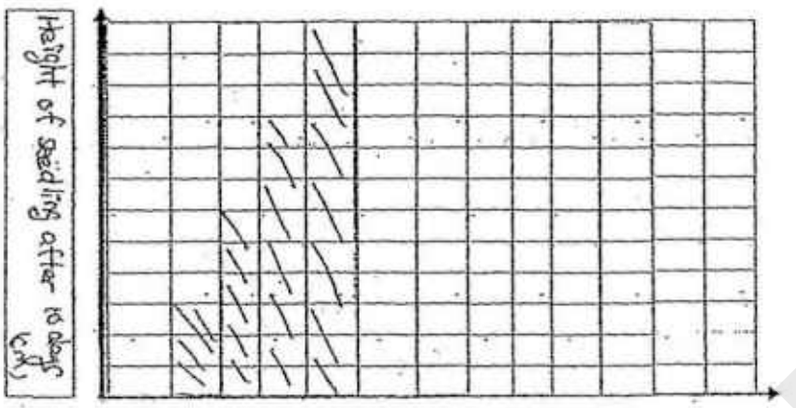
32)a)Cell A is a sperm. Cell B is a pollen grain.
b)Pollen tube.
c)Both help the male sex cell to move towards the female sex cell.

33)a)The aim to find out if the amount of water given daily affects the height of the seedling after 10 days.

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33)b)



c)He should have done more experimental setup by growing seedling in each pot and taking the average height.

34)a)seed of Both fruits.
b)Fruit W
Method of dispersal: Wind dispersal.
Explanation : Has Hair that helps it float in the wind.

Fruit X
Method of dispersal : animal dispersal.
Explanation: Have hook-like structure to hang on the animal.

35)a)asexual reproduction
b)sexual reproduction

36)a)Both of the two organism body length increases.
b)i)

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36)b)ii)2 3

c)The insect shed has to shed the hard outer skin as it prevents them from growing.

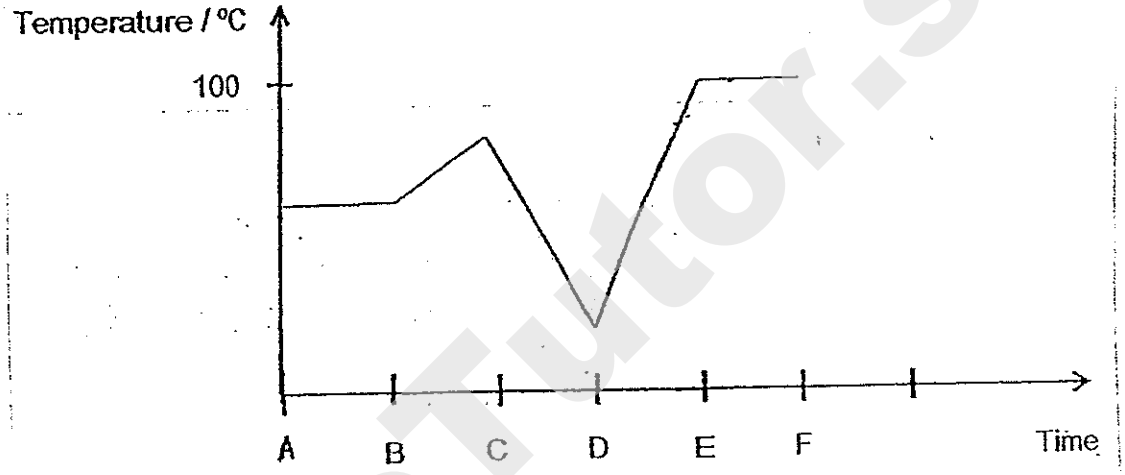
37)a)Z.

b)It does not have chloroplast and does not need to make food.

38)a)Small intestine.

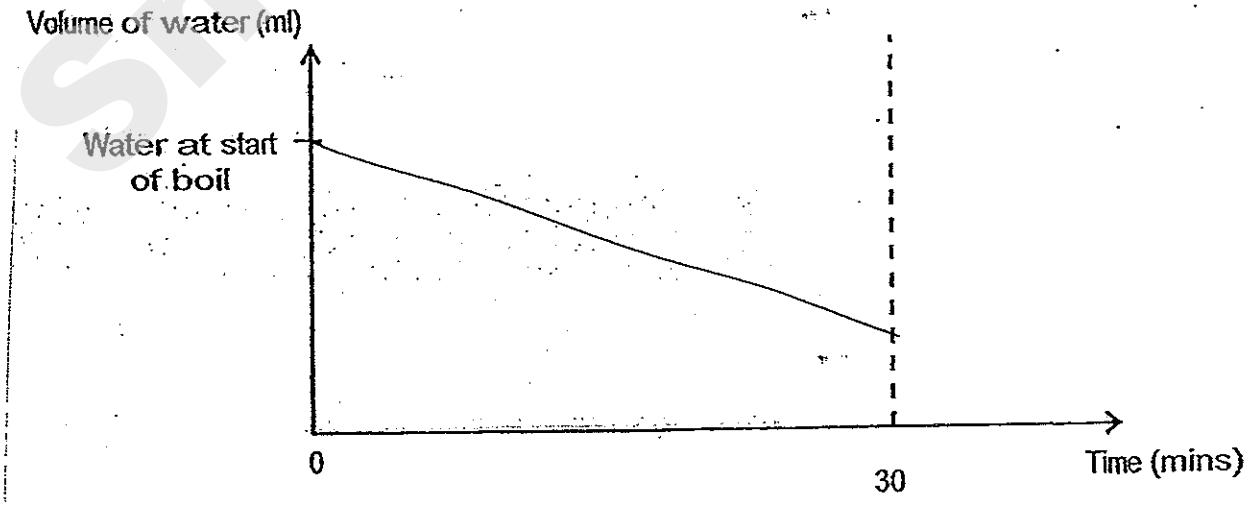
b)To help absorb food more quickly into the blood.

39)a)



b)He added cold water to the kettle.

c)



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40)a)Sun.

b)Water from water bodies is taken in by the plants, water evaporates from the plant.

41)a)Condensation.

b)i)The water vapour in the surrounding air loses heat to the ice and condense to the water droplet.

ii)The hot water vapour from the kettle loses heat to the cooler surface surrounding air and condenses to water.

42)a)water droplet/water.

b)When the hot vapour comes in contact with the cool surface of the aluminum sheet, the sheet gains heat and becomes hotter. This slows down the rate of condensation.

43)a)Container C will more down while container D will move up.

b)C: 2000 cm^3

D: 2000 cm^3

44)a)W. .metal

Y. .wool

b)The temperature of the water decreased the least making it the poorest conductor of heat.

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Anglo-Chinese School (Primary)

MID-YEAR EXAMINATION 2014
SCIENCE
PRIMARY SIX
BOOKLET A

Name: _____ ( ) Class: Primary 6 ____

Date: 8 May 2014 Duration of paper: 1 h 45 min

_____
Parent's/Guardian's Signature

INSTRUCTIONS TO CANDIDATES

1. This questions paper consists of **20** printed pages including this cover page.
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.

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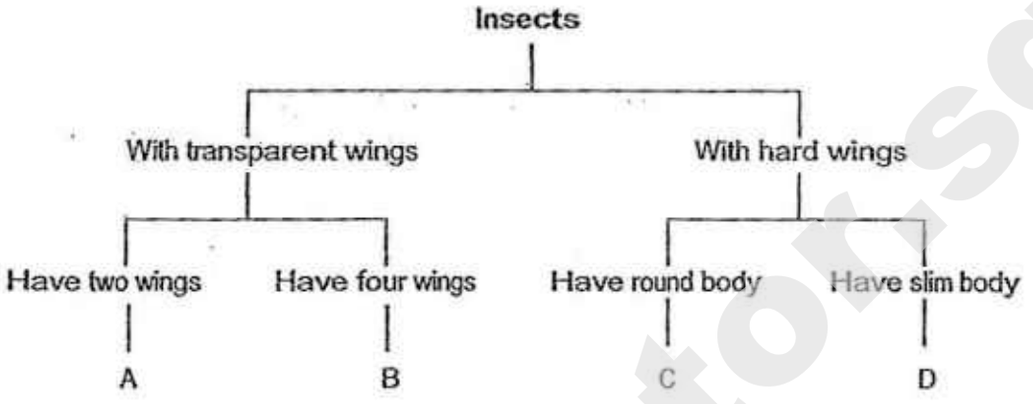
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For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

(60 marks)

---

1 The classification chart below shows how four insects A, B, C and D are classified.



Insects A, B, C and D are <u>not</u> classified according to the _____.

(1) Body shape

(2) Way they fly

(3) Type of wings

(4) Number of wings

2 Tom wanted to test the strength of four different strings, W, X, Y and Z. He hung weights at the end of each string until the string broke. The table below shows the result.

String	Mass at which the string broke (g)
W	500
X	450
Y	420
Z	510

Which variable must he keep the same in order to conduct a fair test?

(1) Length of each string

(2) Strength of each string

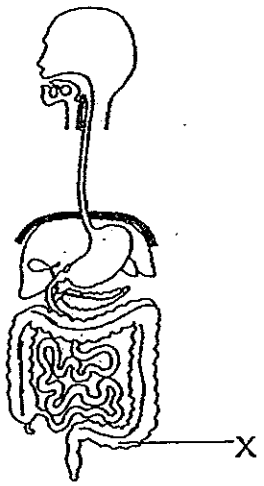
(3) Mass at which each string broke

(4) Number of weights hung on each string

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3 The picture below shows the human digestive system.



What substance is mostly found at part X?

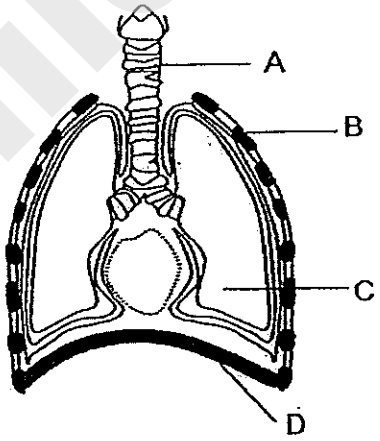
(1) Water

(2) Digested food

(3) Digestive juices

(4) Undigested food

4 The picture below shows the human respiratory system.



Which part(s) of the system when contract(s) cause(s) air to be pushed out of the system?

(1) A only

(2) D only

(3) A and B only

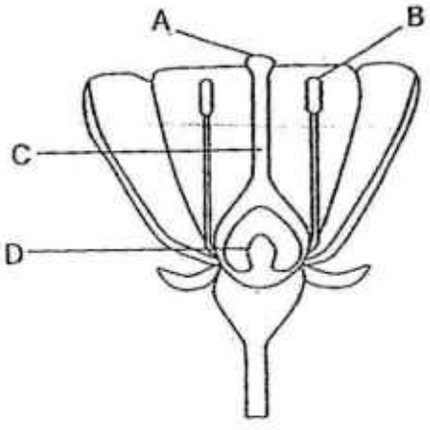
(4) B, C and D only

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5 Study the diagram of a flower as shown below.



In which part, A, B, C or D, does fertilization take place?

(1) A

(2) B

(3) C

(4) D

6 Danny counted the number of certain animals found in a pond. He recorded the information in the table below.

Number of				
A		B		C
Larvae	Adults	Eggs	Adults	Adults
20	7	50	18	5

Based on the table, which one of the following statements is most probably correct?

(1) The number of animal C is increasing.

(2) The number of adults of animal C is the least.

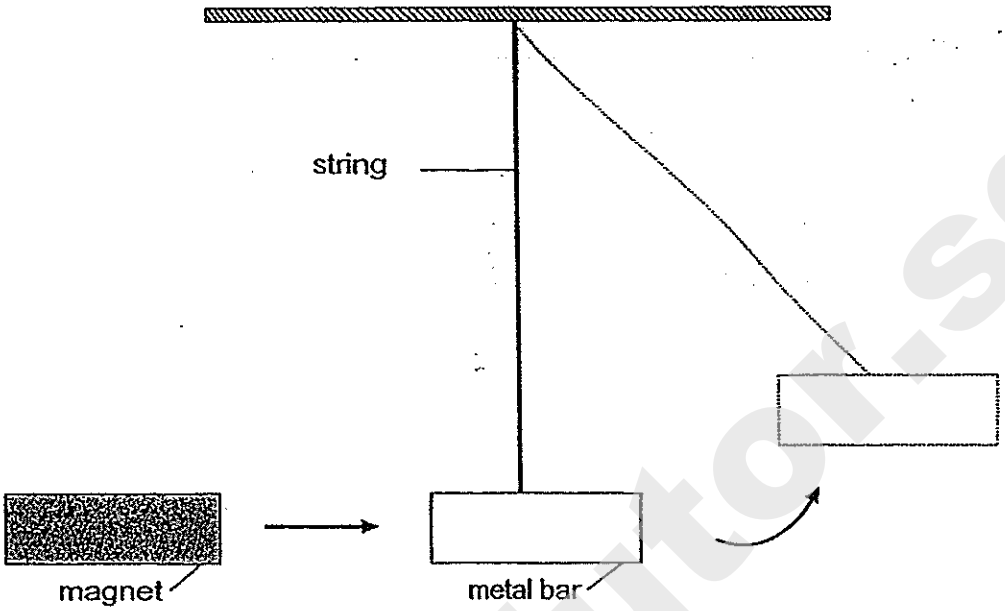
(3) The population size of animal A is more than B.

(4) The community is made up of only animals A and B.

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7 A metal bar was hung freely by a string. A magnet was then placed near the metal bar which caused the metal bar to swing as shown below.



Based on the observation, which one of the following is changed by the magnetic force?

(1) The size of an object

(2) The mass of an object

(3) The shape of an object

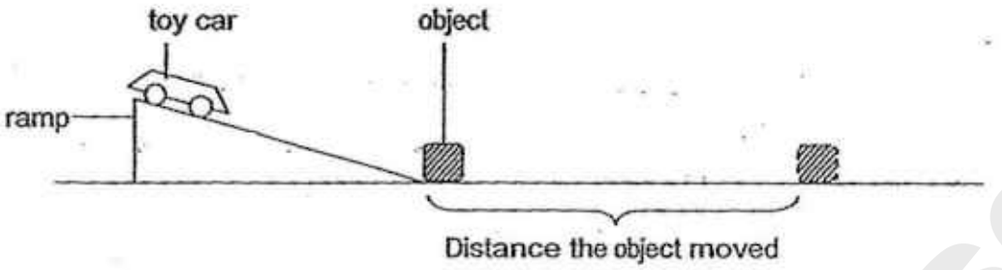
(4) The position of an object

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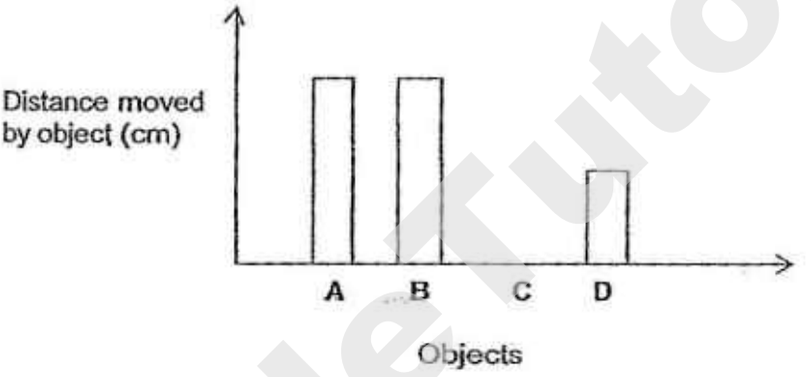
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8 A toy car was allowed to roll down a ramp and hit an object A at the end of the ramp. The distance that object A moved was measured as shown below.



The experiment was repeated using three other objects B, C and D. The results were recorded in the graph below.



Which object(s) exerted a force equal and opposite to the force that the toy car exerted?

(1) C only

(2) D only

(3) A and B only

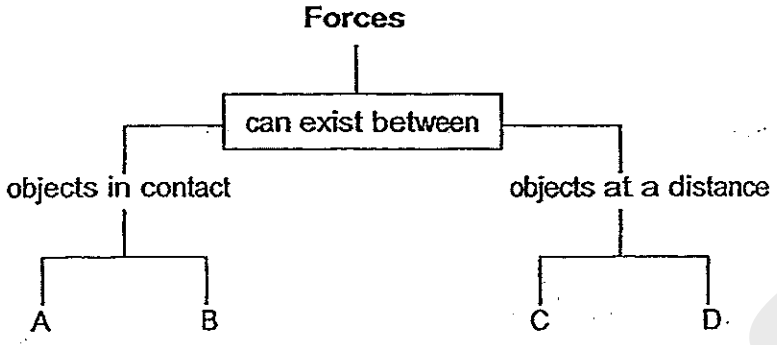
(4) A, B, C and D

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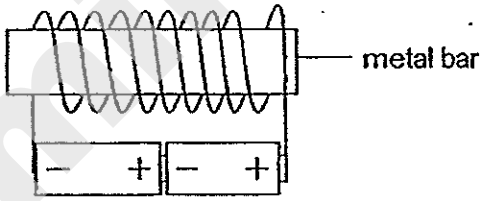
9 The classification chart below shows how forces can exist between objects.



Which of the following correctly identify the types of forces represented by A, B, C and D?

	A	B	C	D
(1)	Magnetic	Gravitational	Frictional	Elastic spring
(2)	Magnetic	Frictional	Gravitational	Elastic spring
(3)	Gravitational	Elastic spring	Magnetic	Frictional
(4)	Frictional	Elastic spring	Magnetic	Gravitational

10 The diagram below shows an electromagnet.



Which action will enable the electromagnet to attract a magnetic object from a greater distance?

(1) Heat the electromagnet

(2) Change the wire to a thinner wire

(3) Decrease the number of batteries

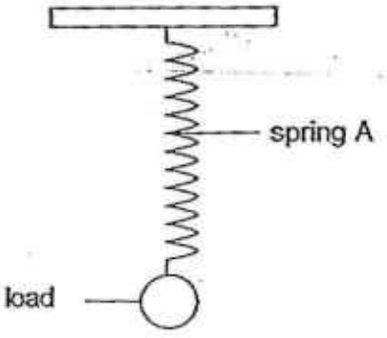
(4) Increase the number of coils round the metal bar

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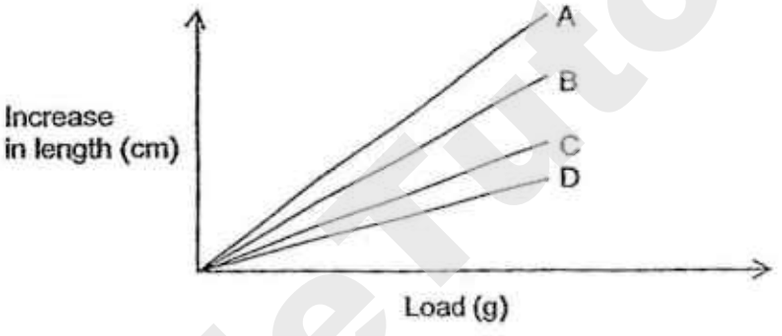
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11 A load was hung from a spring A as shown below and the increase in length was measured and recorded. The experiment was repeated using the same load but different springs, B, C and D.



The graphs below show the results of the experiment.



Which spring, A, B, C or D stretched most easily?

(1) A

(2) B

(3) C

(4) D

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12. Ben kicked a ball as shown and the ball flew to a height of five metres.



He kicked the ball again but this time the ball flew to a height of three metres.

Which one of the following could explain why the ball did not fly as high as the first time?

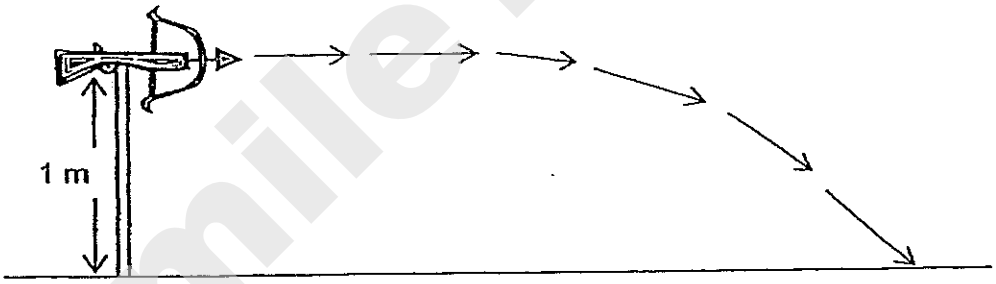
(1) The ball lost some weight.

(2) The amount of friction increased.

(3) The kinetic energy of the ball was less than before.

(4) The kinetic energy of the ball was not converted to potential energy.

13 An arrow was shot and it flew along the path as shown below.



Which one of the following statements about the arrow moving along the path is true?

(1) Gravity is constant throughout the path.

(2) Gravity is the least when the arrow landed.

(3) The speed of the arrow is the fastest when it landed.

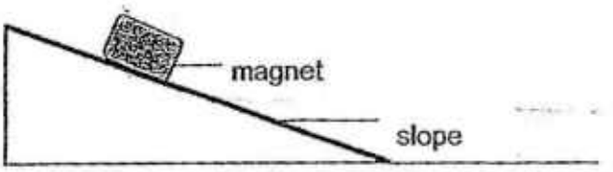
(4) The speed of the arrow is constant throughout the path.

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14 A magnet was placed on a slope with a rubber surface and it remained stationary as shown below.



Which force caused the magnet to remain stationary on the slope?

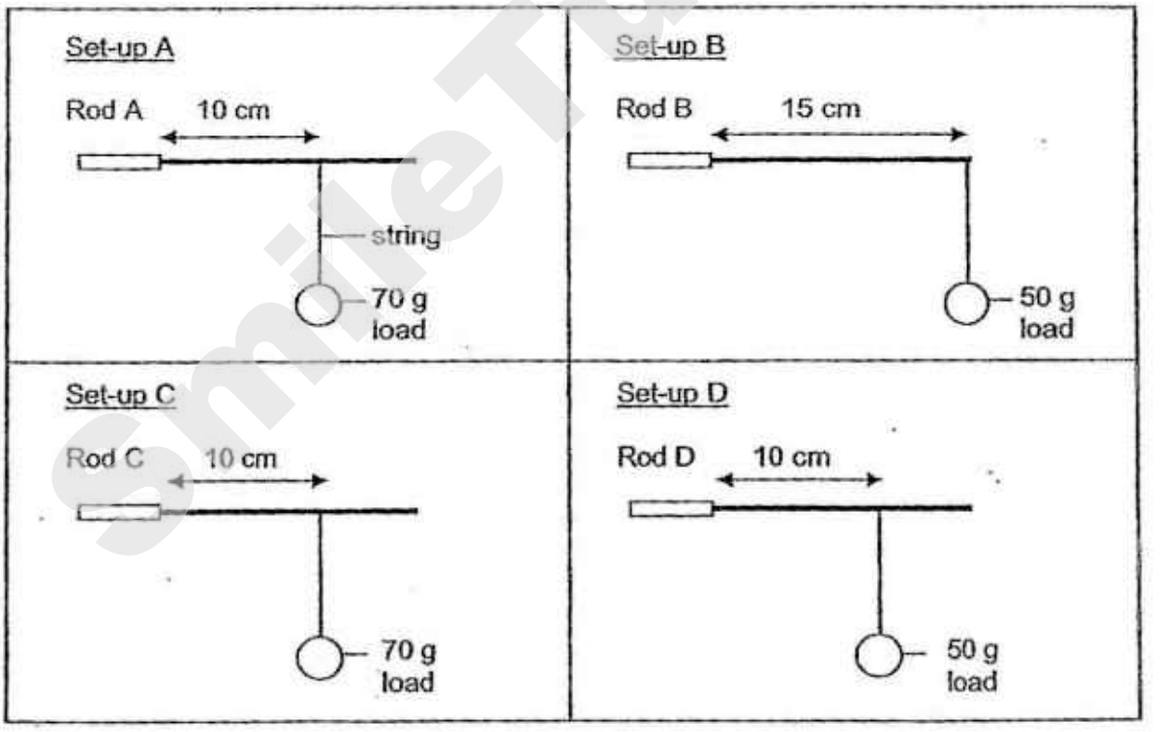
(1) Frictional force

(2) Magnetic force

(3) Gravitational force

(4) Elastic spring force

15 Weiyi wanted to test the flexibility of some fishing rods. He hung a load from rod, A, B, C and D as shown below. The strings used were similar and of equal lengths.



Which two set-ups should he use in order for the test to be fair?

(1) A and B

(2) A and C

(3) B and C

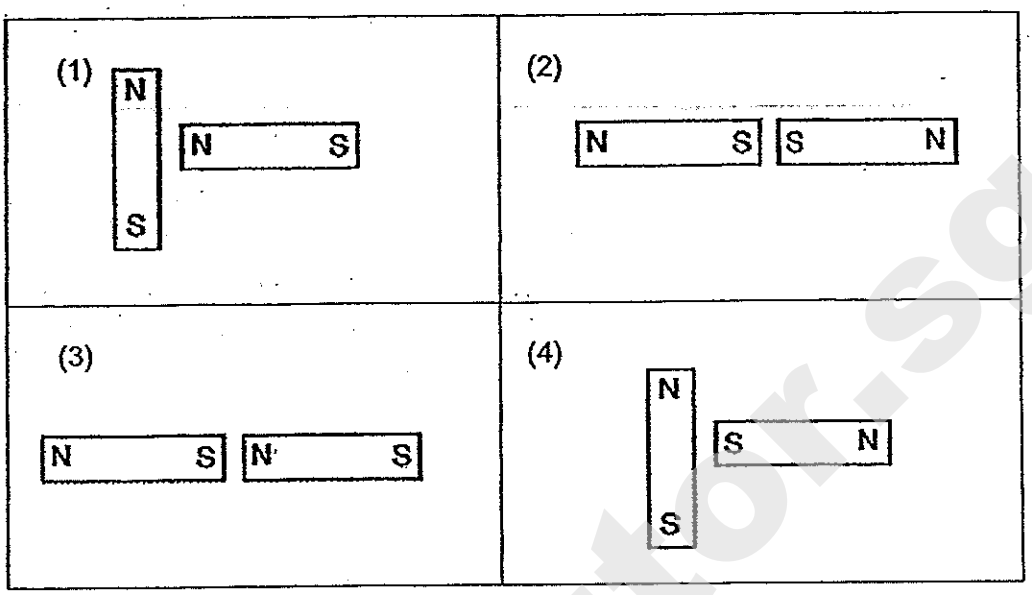
(4) C and D

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16 Study the diagrams below. Which one of the following would result in the greatest attraction between the two magnets?



17 The picture below shows a battery-powered torch.



Which sequence of energy conversions occurs when the torch is switched on?

(1) electrical energy → light energy → chemical potential energy

(2) electrical energy → chemical potential energy → light energy

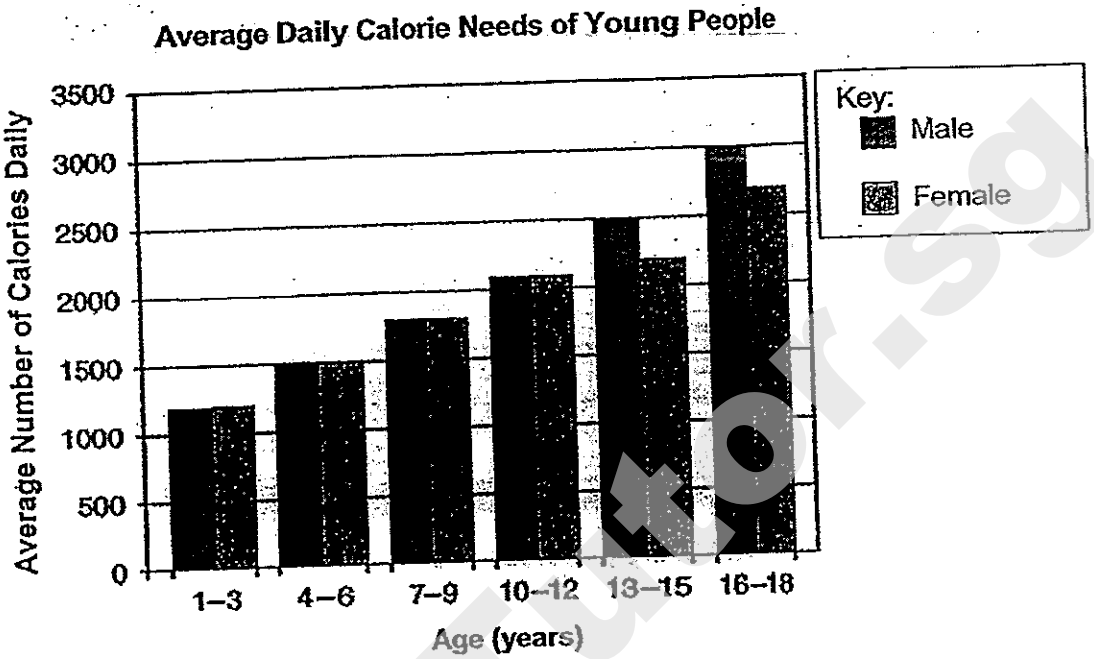
(3) chemical potential energy → light energy → electrical energy

(4) chemical potential energy → electrical energy → light energy

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18 A calorie is a unit of energy used to represent the amount of energy in the food that we consume. The graph below shows the average number of calories needed each day by young people.



Which one of the following statements is supported by the information from the graph?

(1) At age 16, a female needs the same amount of calories as a male.

(2) At age 13, a male needs the same amount of calories as a female.

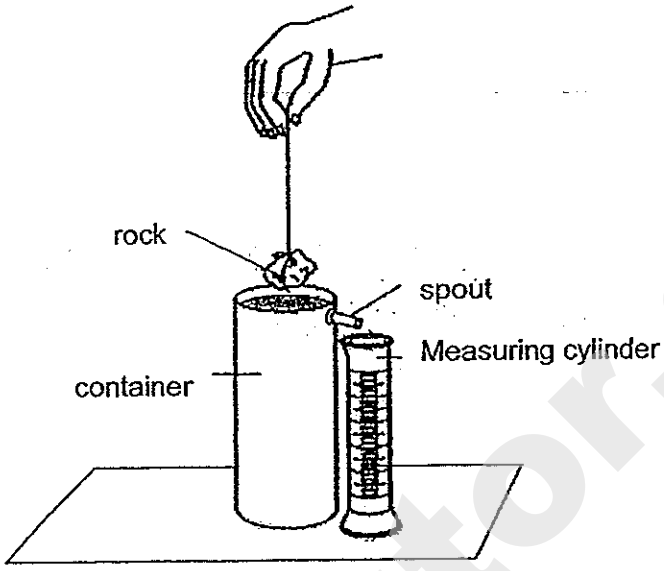
(3) An 8-year-old female needs fewer calories than a 5-year-old male.

(4) An 18-year-old female needs more calories than a 14-year-old female.

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19 The diagram below shows a rock being suspended above a container filled with water up to the spout.



When the rock was lowered gently into the container filled with water, water came out of the spout and was collected by the measuring cylinder. Which property of the rock was determined when it was placed completely in the container?

(1) Mass

(2) Volume

(3) Strength

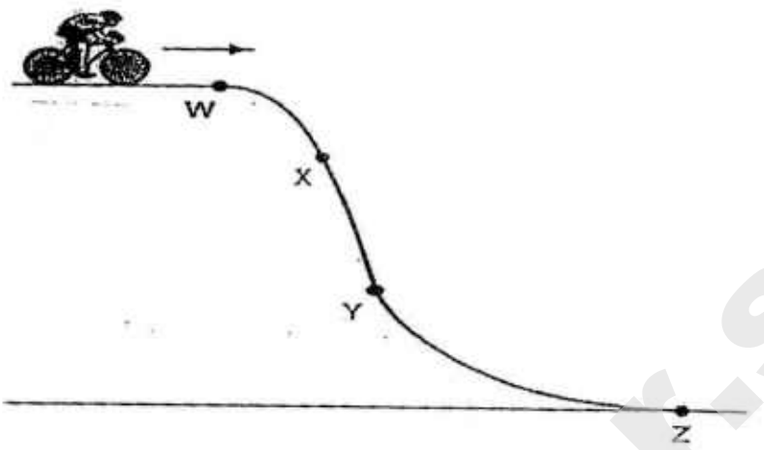
(4) Hardness

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20 The diagram below shows a cyclist travelling down a slope.



At which position, W, X, Y or Z, does the cyclist have the greatest amount of kinetic energy?

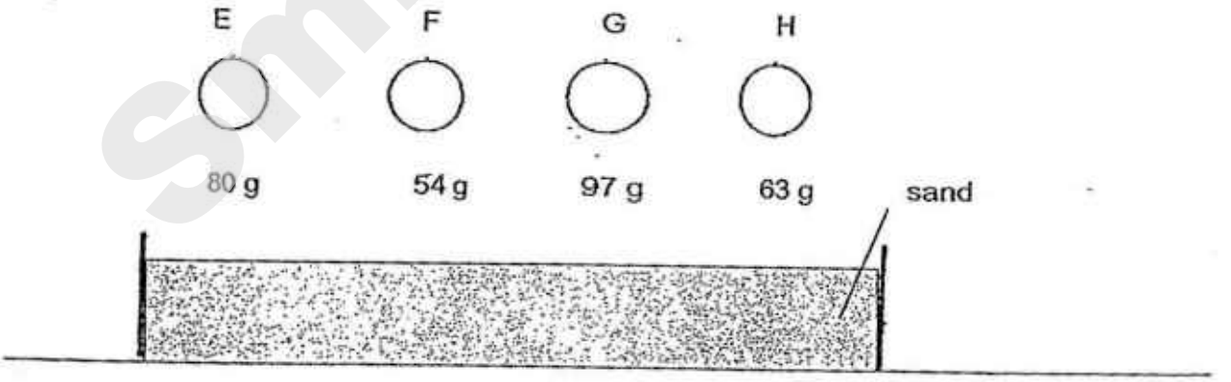
(1) W

(2) X

(3) Y

(4) Z

21 Study the diagram below. Four balls E, F, G and H, each of a different mass, were dropped from the same height into a tray of fine sand.



Which ball created the greatest depression when it landed in the sand?

(1) E

(2) F

(3) G

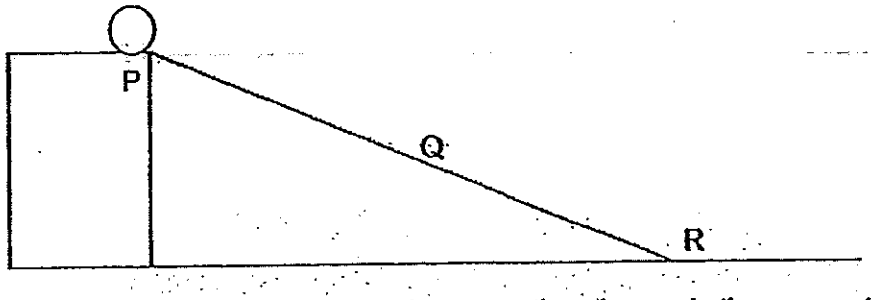
(4) H

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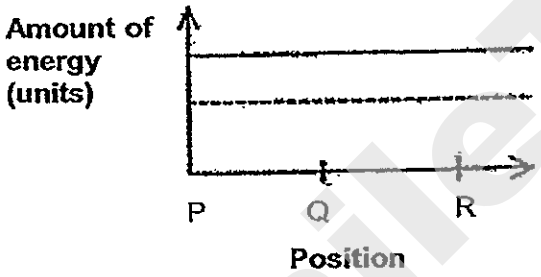
22 Sam placed a ball on a ramp as shown in the diagram below. He gave the ball a push and it rolled down the ramp.



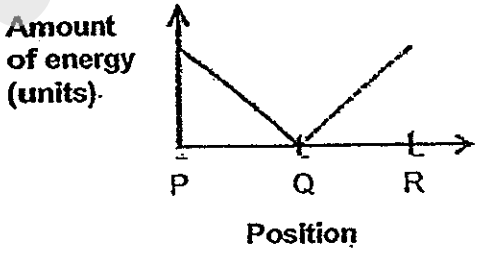
Which one of the graphs below illustrates the change in the amount of kinetic and potential energy of the ball as it rolled down the ramp?

Key:
——— Potential energy
——— Kinetic energy

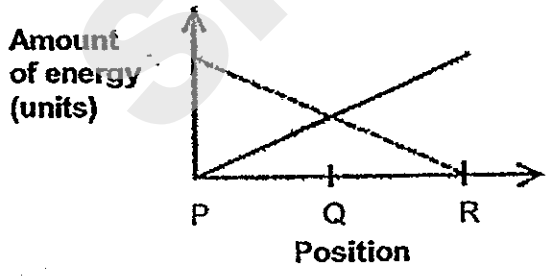
(1)



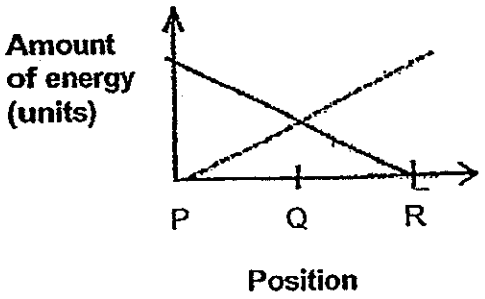
(2)



(3)



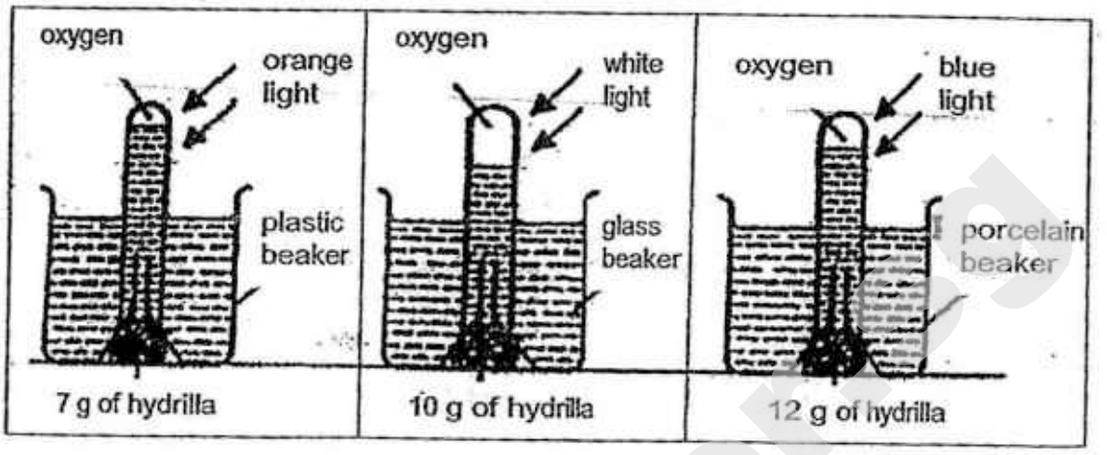
(4)



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23 John carried out an experiment to find out whether the colour of light affects the rate of photosynthesis.



The experiment that he had conducted was not a fair test because _____.

A different colours of lights were used

B different types of beakers were used

C different amount of hydrilla was used

D. different amount of oxygen was collected

(1) A and B only

(2) A and D only

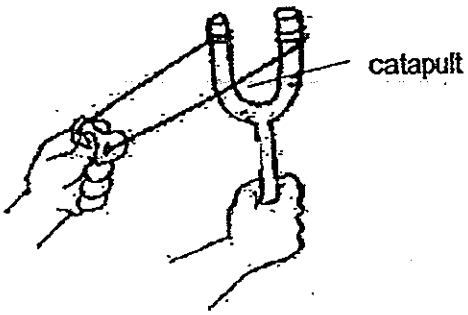
(3) B and C only

(4) C and D only

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24 Alan is holding a catapult as shown in the picture below. Which form of energy does the catapult possess after it is pulled back?



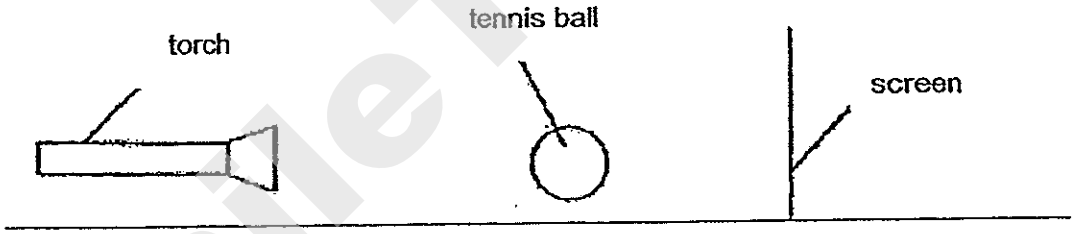
(1) Light energy

(2) Kinetic energy

(3) Elastic potential energy

(4) Gravitational potential energy

25 Alex shone his torch at a tennis ball as shown in the diagram below.



What can he do to get a smaller shadow of the ball on the screen?

A Rotate the ball.

B Move the ball closer to the screen.

C Move the torch further away from the ball.

D Move the screen further away from the ball.

(1) A and B only

(2) B and C only

(3) B and D only

(4) C and D only

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26 Which one of the following groups of items below consists of only renewable sources of energy?

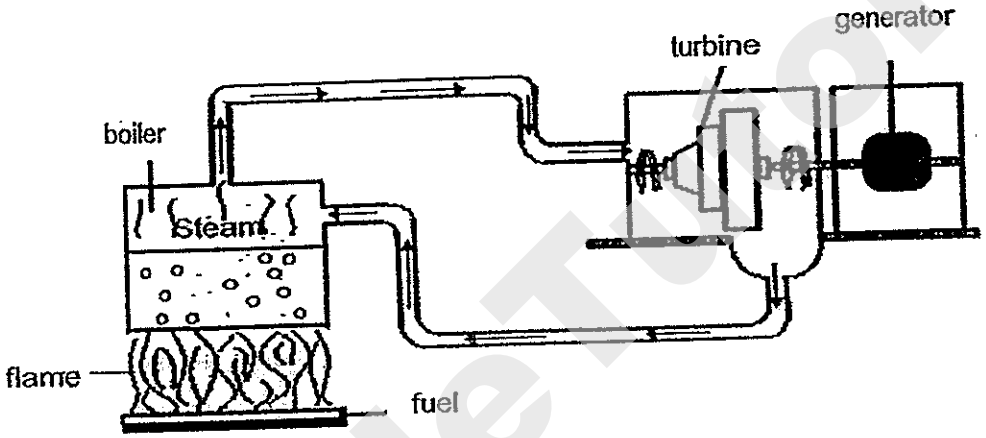
(1) Sun and wind

(2) Wind and petrol

(3) Coal and waterfall

(4) Waves and natural gas

27 The diagram below shows how electricity is produced at a power station.



At which part of the power station is the correct form of energy conversion shown?

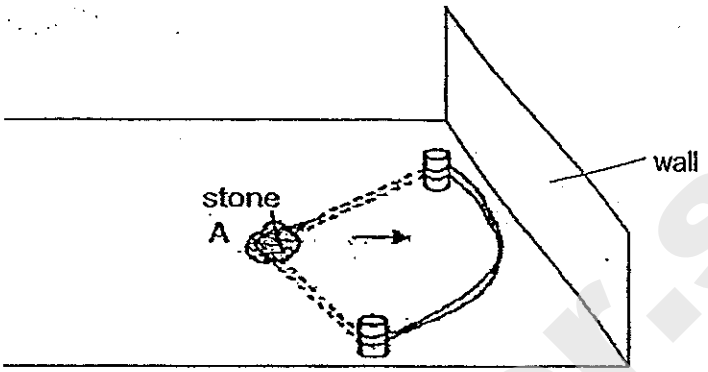
	Part	Energy Conversion
(1)	Boiler	heat energy → electrical energy
(2)	Generator	electrical energy → kinetic energy
(3)	Fuel	chemical potential energy → heat energy
(4)	Turbine	kinetic energy → chemical potential energy

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28 Rafi conducted an experiment as shown in the diagram below. He stretched a rubber band with a stone to position A. When he released the stone, the rubber band and the stone moved forward and the stone hit the wall.



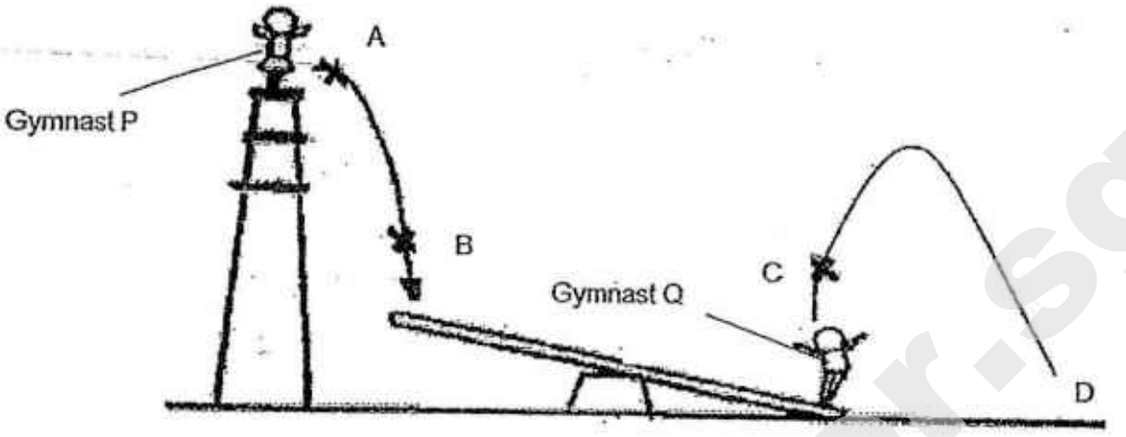
Which one of the following showed the correct energy conversion that took place from the moment Rafi released the rubber band till the stone hit the wall?

(1)	Kinetic energy → heat energy + sound energy
(2)	Potential energy → heat energy + sound energy
(3)	Potential energy → kinetic energy → heat energy + sound energy
(4)	Kinetic energy → potential energy → heat energy + sound energy

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29 The diagram below shows a performance by two gymnasts, P and Q.



At which positions will the gymnasts possess more kinetic energy than gravitational potential energy?

(1) A and C only

(2) A and D only

(3) B and C only

(4) B and D only

30 What are needed for photosynthesis to take place?

(1) Oxygen and sugar

(2) Oxygen and water

(3) Carbon dioxide and sugar

(4) Carbon dioxide and water

End of Booklet A

Please go on to Booklet B

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Anglo-Chinese School (Primary)

MID-YEAR EXAMINATION 2014
SCIENCE
PRIMARY SIX
BOOKLET B

Name: _____ ( ) Class: Primary 6 ___

Date: 8 May 2014 Duration of paper: 1 h 45 min

_____
Parent's/Guardian's Signature

INSRUCTIONS TO CANDIDATES

1. This questions paper consists of 15 printed pages including this cover page.
2. Do not turn this page until you are told to do so.
3. Follow all questions.
4. Answer all questions.
5. Write your answer in this booklet.

BOOKLET	MAXIMUM MARKS	MARKS OBTAINED
A	60	
B	40	
Total	100	

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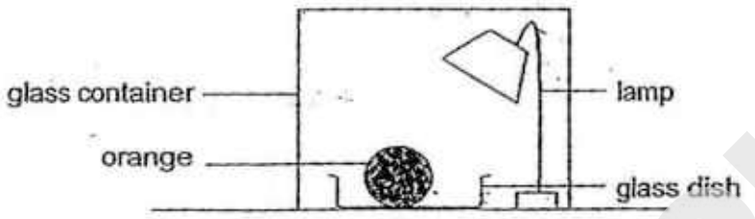
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For questions 31 to 44, write your answers in the spaces provided in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part question. (40 marks)

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31 Ali wanted to find out how the presence of light affects the growth of mould on oranges. The orange in set-up A was left under a lamp in an air-tight glass container as shown in the diagram below. He observed that no mould was growing on the orange after five days.



Set-up A

(a) In the space below, draw and label how Ali should set up a control experiment. [1]

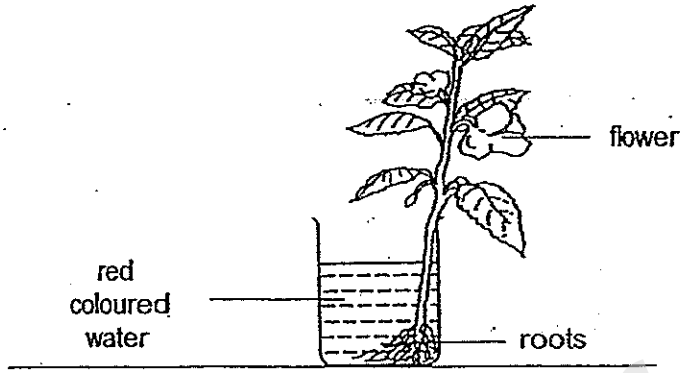
(b) What is the purpose of having the control experiment? [1]

(c) What can be done to the oranges in order to observe a change in them? [1]

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Score 3

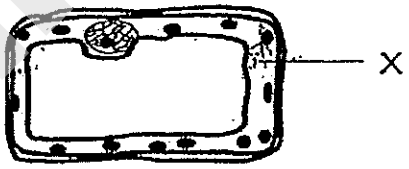
32 Ravi put a plant into a beaker of water coloured with some red ink. The next day, he observed that some parts of the plant had turned red.



(a) Which two parts of the plant would have turned red? [1]

(b) Explain how this happened. [2]

33 Study the diagram of a cell as shown below.



(a) What is the function of part X of the cell? [1]

(b) Draw and label all the parts of an animal cell in the space below. [2]

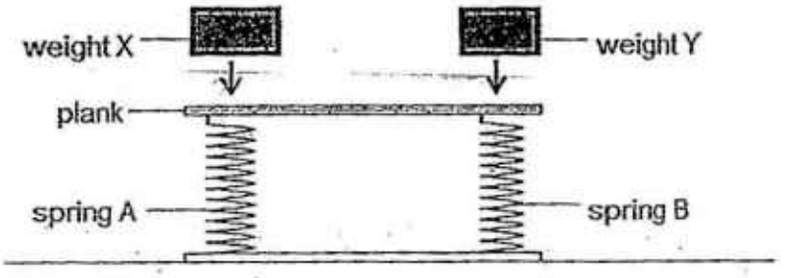
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Score ___ / 6

34 A plank was placed horizontally on two similar springs, A and B, as shown below. Weight X and Weight Y were then placed on either side of the plank.



(a) If Spring A was compressed more than Spring B, what can you infer about Weight X and Weight Y? [1]

(b) Without removing the weights, how can the plank be returned to a horizontal position? [1]

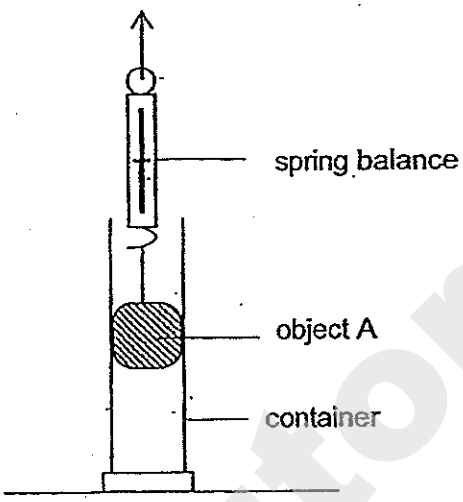
(c) How can you tell that both the springs are elastic? [1]

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Score /3

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35 Jenny pulled object A up the inner wall of a container using a spring balance as shown below. At first, she applied lubricant X along the inner wall of the container. She recorded the amount of force needed to move the object over a distance of 20 cm.



Jenny repeated the experiment using the same set-up and applied another type of lubricant, Y, along the inner wall of the container.

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

_____

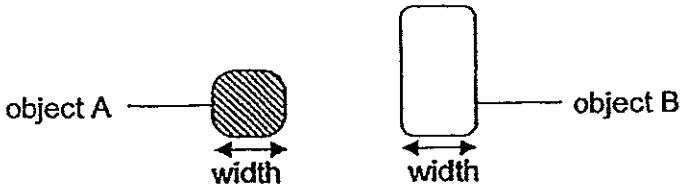
_____

(b) What prevented object A from moving up the inner wall of the container easily? **[1]**

_____

_____

Jenny replaced object A with object B of the same mass and width as shown below. She repeated the experiment using lubricant X only.



(c) What did Jenny want to compare by using object A and object B? **[1]**

_____

_____

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36 Henry wanted to compare how long two different springs, A and B, could stretch. The original lengths of the springs were equal.

Table 1 shows the results when different loads were hung from Spring A.

Table 1

Load (g)	Length of Spring A (cm)
10	4.5
20	9
30	13.5
40	18

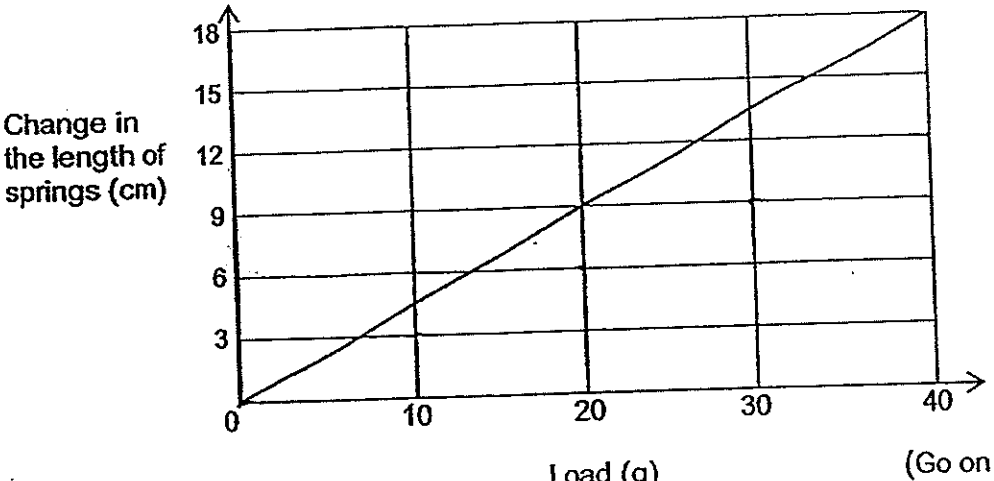
(a) Based on the results in Table 1, what would the length of Spring A most likely be if a load of 35 g was hung from Spring A? [1]

Table 2 shows the results when different loads were hung from Spring B.

Table 2

Load (g)	Length of Spring B (cm)
10	3
20	6
30	9
40	12

(b) The graph below shows the change in the length of Spring A.
Based on the results in Table 2, draw a line graph to show the change in the length of Spring B. Use a ruler and pencil. [1]

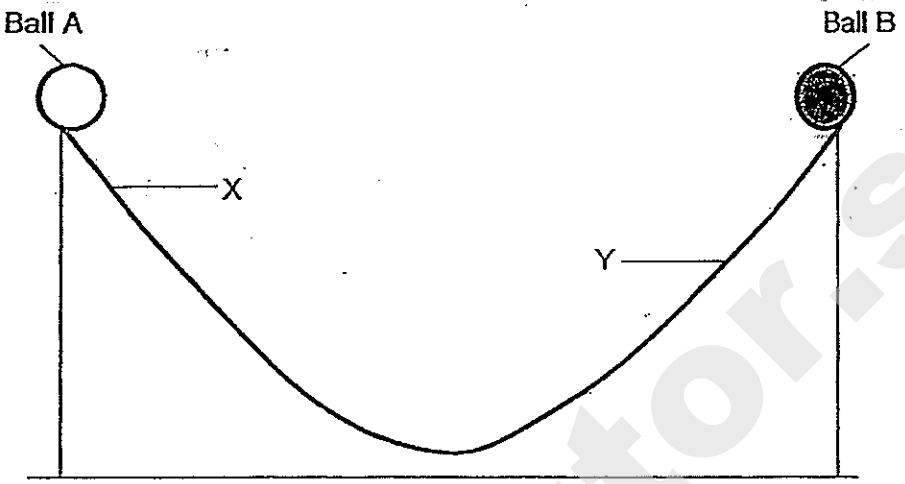


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Score 2

37 Ball A and Ball B were released at the same time, from the same height but on the opposite side of the symmetrical slope as shown below. After the balls have rolled down the slope and collided at the bottom of the slope, Ball A rolled to Point X while Ball B rolled to Point Y. The two balls finally came to a rest at the bottom of the slope.



(a) State the effect of force that was observed during this activity. [1]

(b) What can you infer about the mass of the balls from the observation? [1]

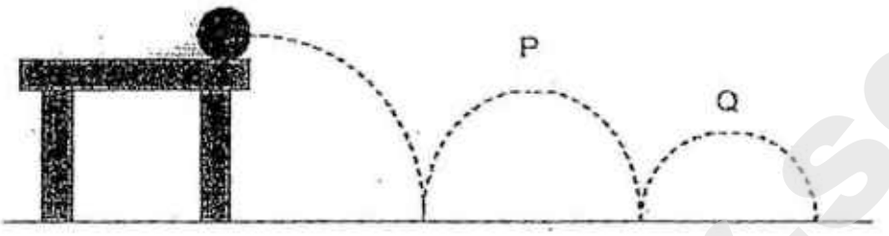
(c) Without adding any force, suggest a way so that Ball B is able to roll back to a point which is higher than Point Y after the collision with Ball A. [1]

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Score 3

38 Susan conducted an experiment as shown in the diagram below. She released a ball from a table and recorded the maximum height reached by the ball when it rebounded at points P and Q. The path taken by the ball was represented by the dotted lines.



She recorded her results as shown in the table below.

Maximum height (cm) at	
P	Q
67	45

(a) Why was there a difference in the bouncing heights at points P and Q? [1]

_____

_____

(b) Suggest two ways in which she can make changes to the experiment such that the height of point P can be greater than 67 cm? [2]

(i) _____

_____

(ii) _____

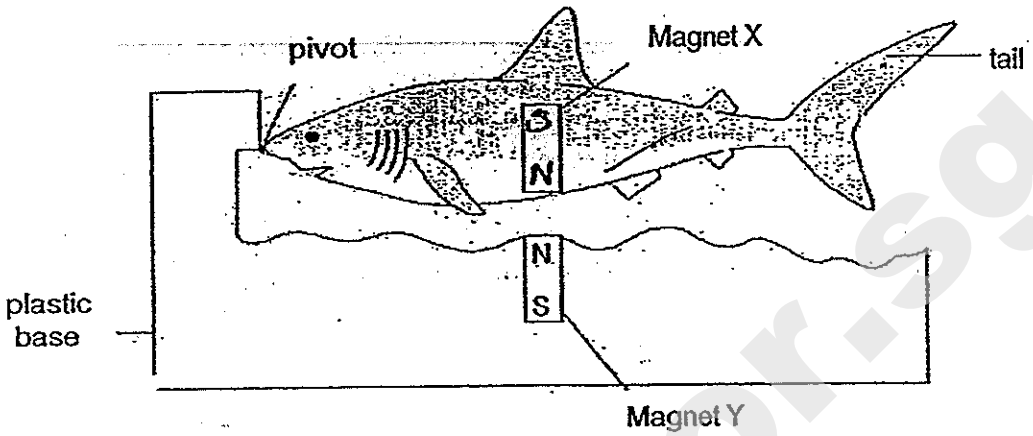
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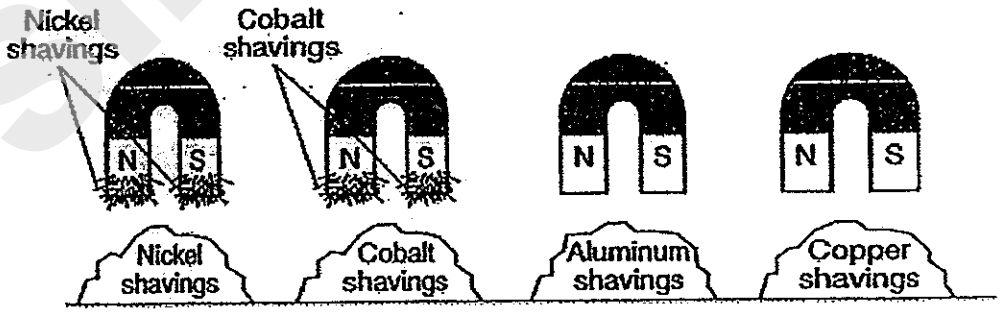
39 The diagram below shows a toy shark. Magnet X in the shark and Magnet Y in the plastic base cause the shark to suspend above the plastic base. The pivot attaches the toy shark to the plastic base.



(a) Write the letters N and S on Magnet X in the diagram above to label the poles of the magnet. [1]

(b) Janet pressed down on the shark's tail with her finger. What happened to the shark when she removed her finger? Explain your answer. [1]

The diagram below shows four identical magnets that had been dipped into piles of shavings of four different metals: nickel, cobalt, aluminium and copper.



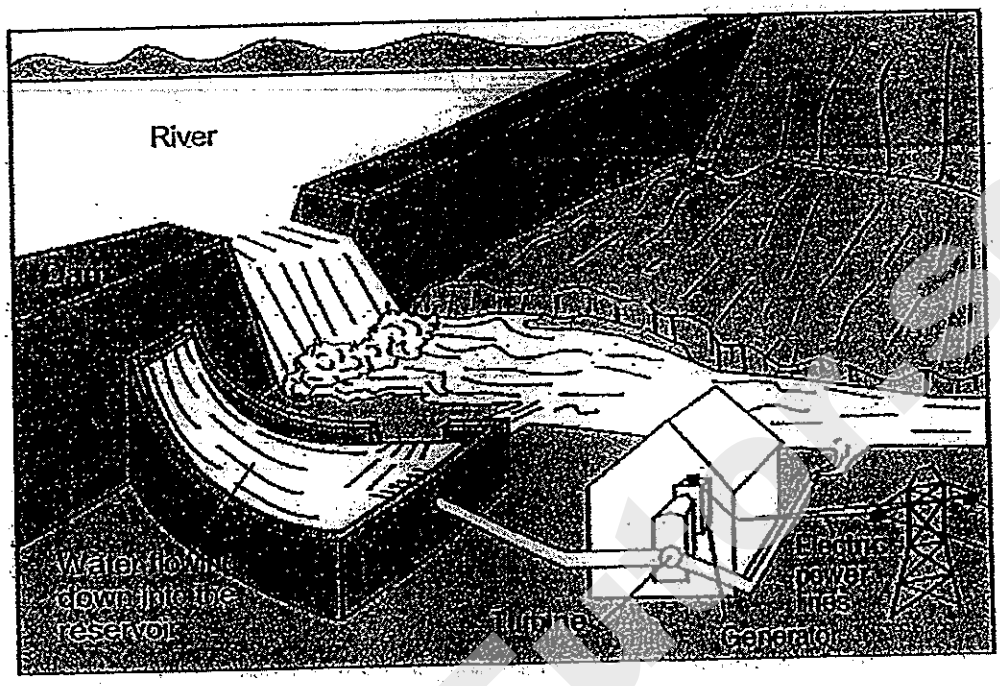
(c) Based on the diagram above, what can you conclude about a magnet's ability to attract the different metals? [1]

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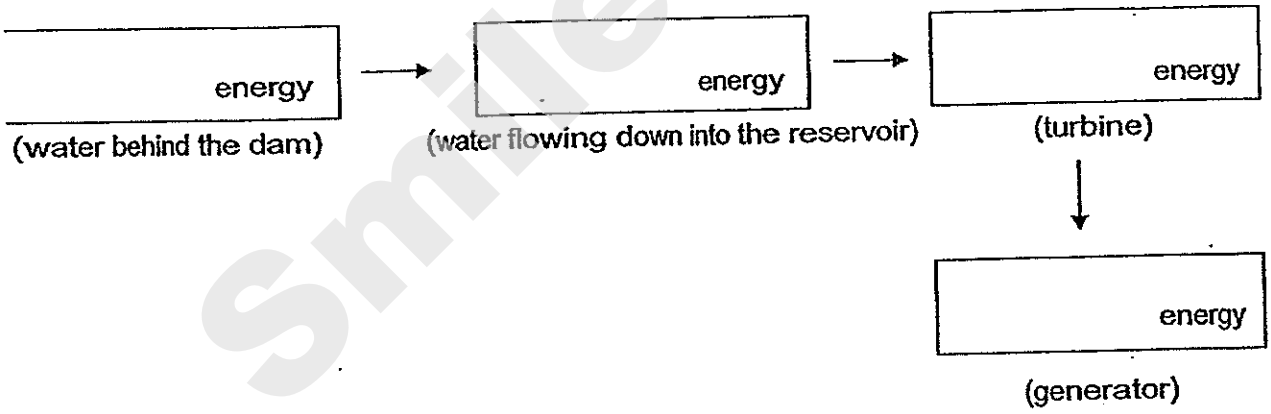
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40 The diagram shows a dam and an electric power plant built next to a river. The power plant uses the water from the dam to generate electricity.



(a) Complete the energy conversion for the different stages in the power plant. [2]



(b) Although the above method can be used to generate electricity without burning any fuels, why is this source of energy not used to provide electricity for homes in Singapore? [1]

_____

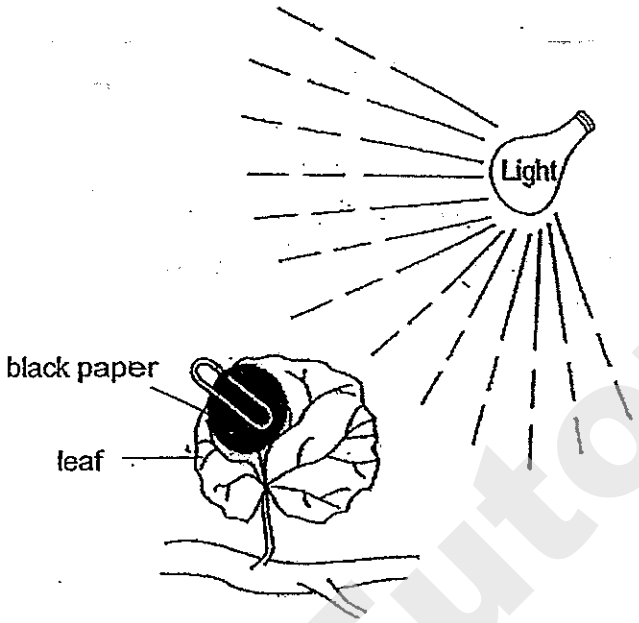
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Score 3

41 The plant below was placed under a direct source of light for three days. Everyday, it was given an equal amount of water. One of the leaves was partially covered with black paper during the three days.



When the black paper was removed, the area that was covered by the black paper had turned pale. The pale area of the leaf did not contain starch and the remaining green area was found to contain starch after a starch test was conducted.

Explain the above observations. [2]

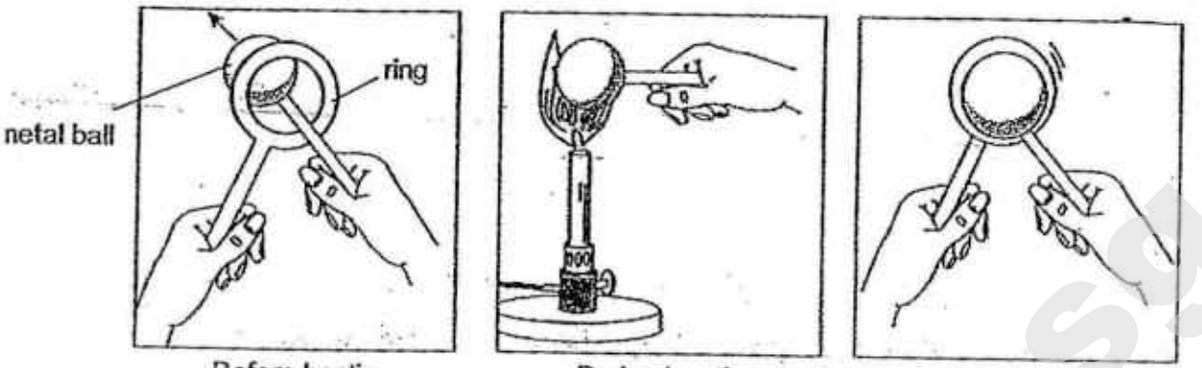
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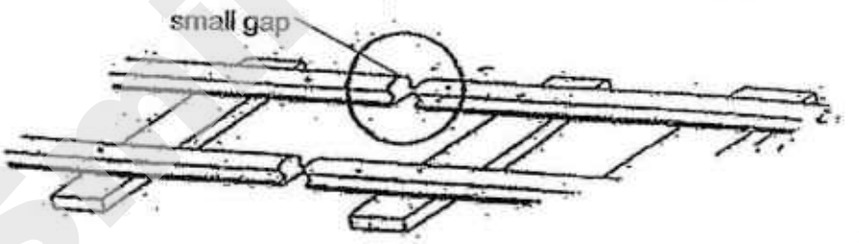
42 The diagrams below show a metal ball and a ring before, during and immediately after heat was applied to the metal ball.



(a) What evidence shows that a change has taken place in the metal ball? [1]

(b) Explain how heating the metal ball had caused this change. [1]

The diagram below shows a railway track with small gaps in between.



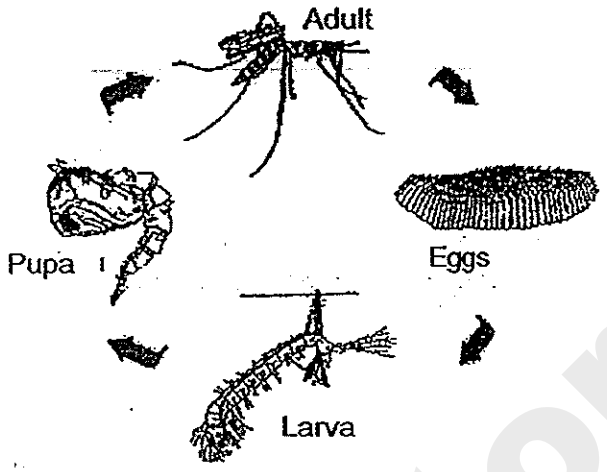
(c) Engineers designing a railway track leave small gaps in between the tracks for a purpose. Explain why the engineers do so. [1]

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Score 3

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43 Dengue fever is an illness caused by infection transmitted by the *Aedes* mosquito. Bala studied the life cycle of the *Aedes* mosquitoes at different temperatures and observed how long each stage of their life cycle took.



The results are shown in the table below:

	Duration of stage at different temperature (Days)			
	22°C	24°C	26°C	28°C
Egg	2	2	2	2
Larva	9	8	7	6
Pupa	2	2	2	2

(a) Based on the results in the table above, what is the relationship between the temperature and the length of life cycle of the *Aedes* mosquito? [1]

_____

_____

(b) Bala commented that as the temperature increases, the number of days that the eggs took to hatch decreases. Based on his results, was he correct? Explain your answer. [1]

_____

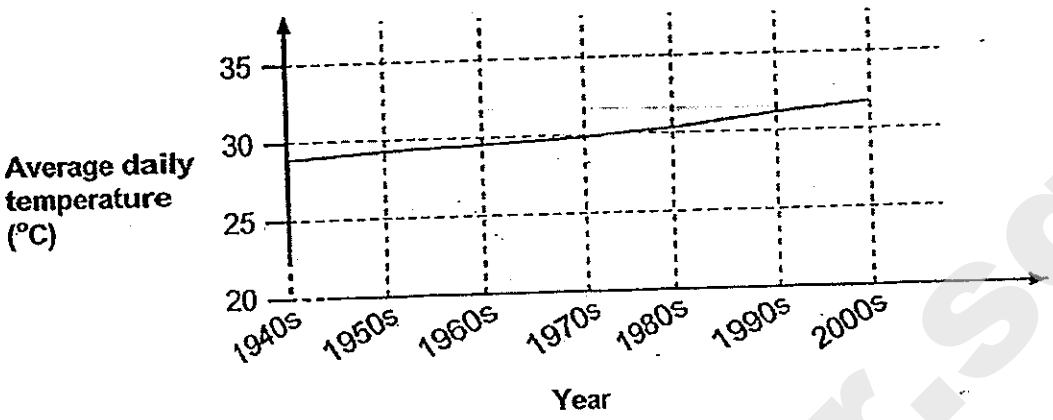
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(Question 43 continues on page 14)

Score 2

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The graph below shows how Singapore's average daily temperature has changed over the past 60 years.



(c) Based on Bala's results and the graph above, how has the change in the average daily temperature affected the *Aedes* mosquito? [1]

(d) From your answer in (c), how will this affect humans? [1]

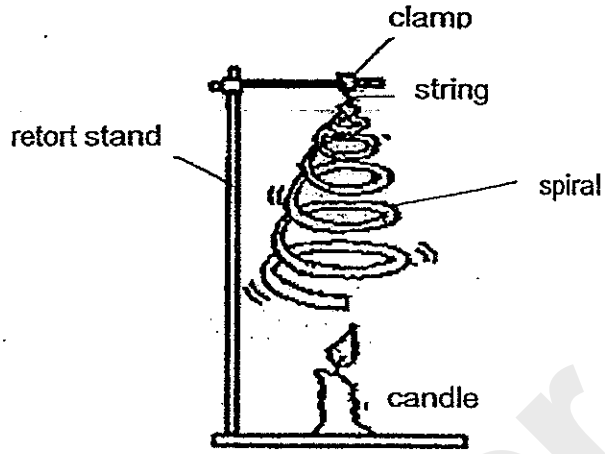
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Score 2

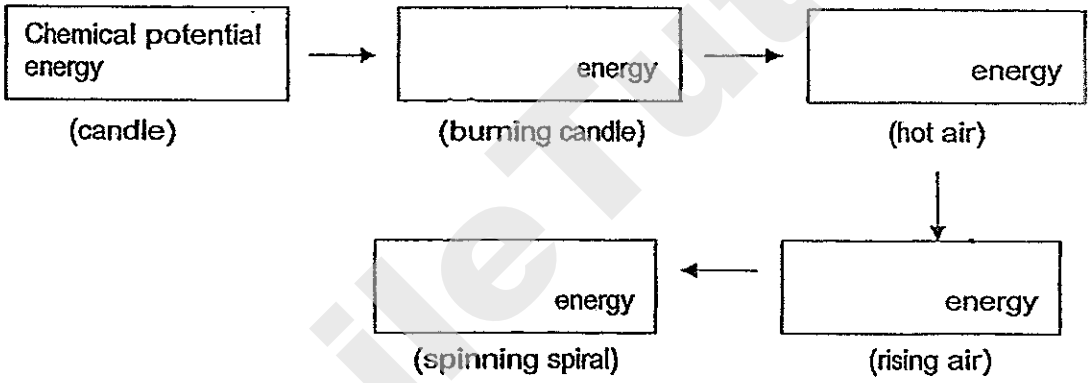
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44 Carol hung a spiral above a candle. She then lighted the candle and observed that the spiral started to spin after a short while as shown below.



(a) Write down the energy conversion that took place in the above experiment in the boxes below. [1]



She then counted the number of spins made per minute and recorded her results in the table below.

Number of spins per minute			Average number of spins per minute
Try 1	Try 2	Try 3	
15	17	16	16

(b) Explain what will happen to the average number of spins per minute if carol placed three candles below the spiral instead of one. Explain your answer. [1]

End of Booklet B

Please check your answers carefully

Score 2

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ANSWER SHEET

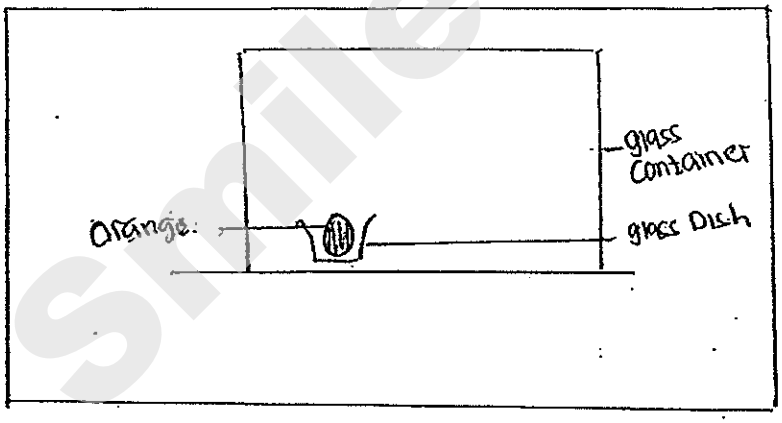
EXAM PAPER 2014
SCHOOL : ACS
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
2	1	4	4	4	2	4	1	4	4	1	3	1	1	2	3	4

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	2	4	3	4	3	3	2	1	3	3	4	4

31)a)



b)To confirm that the presence of light cause or does not cause the growth of mould.

c)Place the oranges in a damp dark place.

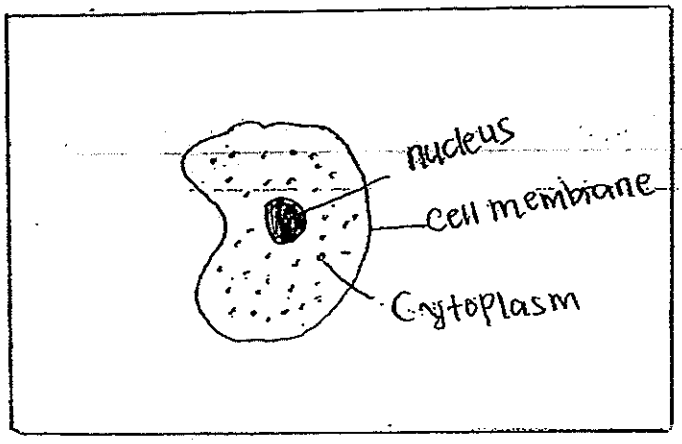
32)a)The stem and the flower.

b)The roots absorbs the red coloured water, so the water went from roots to the stem to the flowers making it red.

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33)a)X controls the movement in the cell.

b)



34)a)Weight X would be heavier than Weight Y.

b)Deduct the mass of X and Y, finding out how much heavier is X. The add the difference to Y.

c)The springs must be able return to its original length.

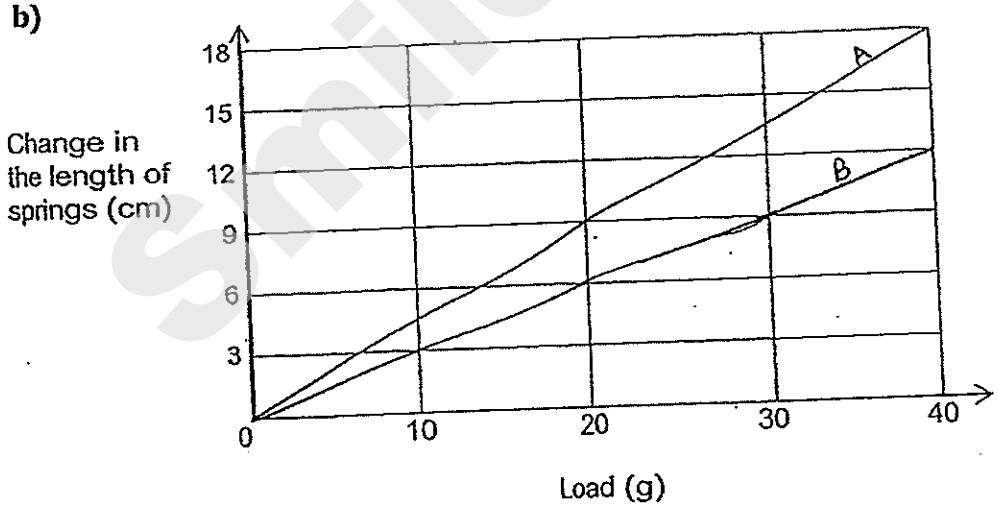
35)a)To find if the type of lubricant will affect the amount of force needed to move the object.

b)Frictional force & Gravitational force.

c)To compare the amount of force needed to move up the objects if the surface areas in contact are different.

36)a)16.5cm

b)



37)a)A force can make a moving object change directions.

b)Ball B is heavier than Ball A.

c)Apply lubricant on side.

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38)a)As the ball bounces the kinetic energy in the ball convents into heat and sound energy so the ball lost its bounce over time.

b)i)Change the balls mass greater.

ii)Use a taller table.

39)a)S

N

b)The shark returned to its original position. The magnet continues to be repelled so the shark has to go back to if original position.

c)The magnets can attract Nickel and Cobalt shavings but cannot attract or copper shavings.

40)a)Potential energy→Kinetic energy→Kinetic energy

↓

electrical energy

b)There is not enough land in Singapore to built this.

41)When the paper covers the plant, the plant cannot photosynthesis, then that part of the plant will die, After the part of the plant dies, the part will become pare and the starch is lost,so the remaining sections are exposed to light and can carry out photosynthesise.

42)a)It could go through the ring but after heating it could not.

b)When it was heated the metal ball expanded when it did , it could not go through the ring anymore.

c)During hot weather the sun will heat the metal rails, when it does, the rails will expand when it does will cover up the gaps. If the gaps were not there, the rails would expand and the rails and the rails will be damaged.

43)a)The higher the temperature, the faster the life cycle.

b)No. The amount days it took for the egg to hatch is constant.

c)It allowed the mosquitos to breed faster.

d)It will make humans sick more often.

44)a)Heat energy→Heat energy

↓

Kinetic enegry←—Wind energy

b)The number of spin will increase. There is now more heat energy from the flame of the candles, which is converted to more KE of the air rises and then converted to more KE of the spiral.

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CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 1
2014
PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____ ( )

Class: Primary 6 - _____

Date: 16 May 2014

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 26 printed pages, excluding cover page.

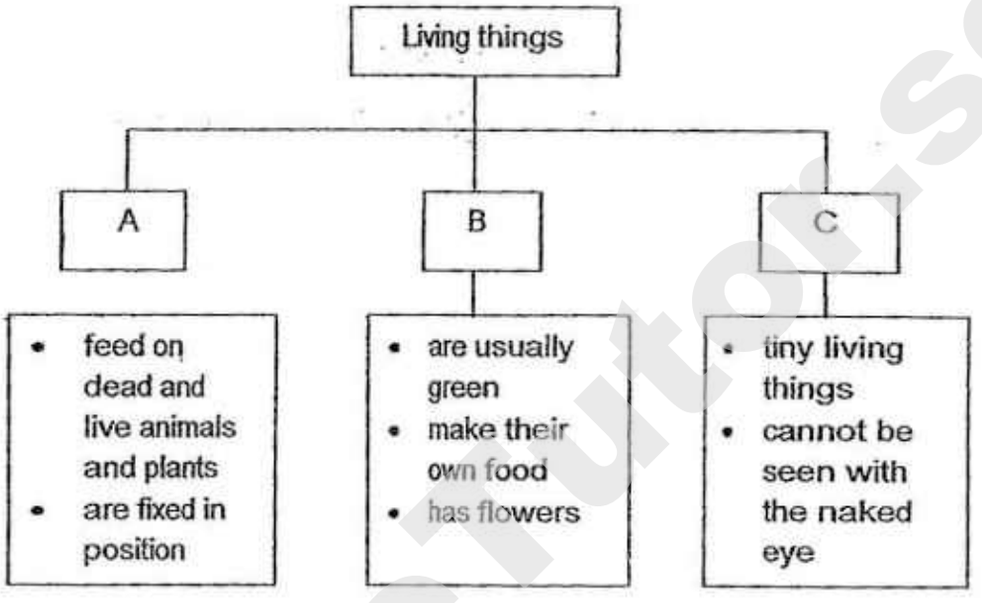
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Booklet A (30 × 2 marks)

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 Study the classification chart below.



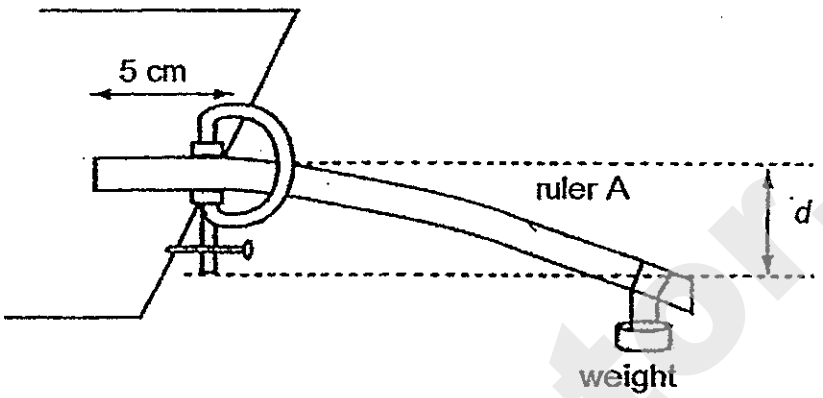
Which of the following headings do A, B and C represent?

	A	B	C
(1)	Fungi	Micro-organisms	Non-flowering plants
(2)	Fungi	Flowering plants	Micro-organisms
(3)	Plants	Decomposers	Micro-organisms
(4)	Decomposers	Flowering plants	Fungi

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2 Zenon fixed one end of a ruler A to a table and hung a weight on the other end. He then observed how far the ruler could be bent, just before it broke, by measuring the distance *d*, as shown in the diagram below.



Zenon repeated the above experiment with three other rulers, B, C and E, and recorded his results in the table below.

Ruler	Distance *d* (cm)
A	3
B	7
C	5
E	10

Arrange the rulers according to their flexibility, starting with the most flexible to the least flexible.

(1) A, B, C, E

(2) A, C, B, E

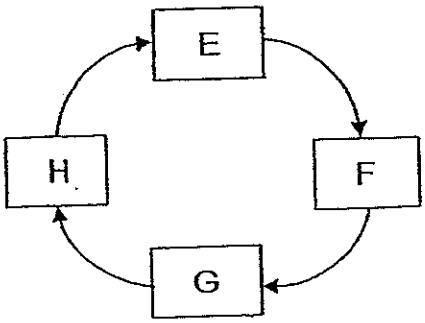
(3) C, B, E, A

(4) E, B, C, A

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3 Each letter in the diagram below represents a stage in the life cycle of a mealworm beetle.



Which of the following statements are true if G represents the adult stage?

A At Stage H, it has developed wings.

B At Stage G, it spends most of its time eating.

C At Stage E, it moults several times as it grows.

D At Stage F, it does not move around and does not eat.

(1) A and B only

(2) A and C only

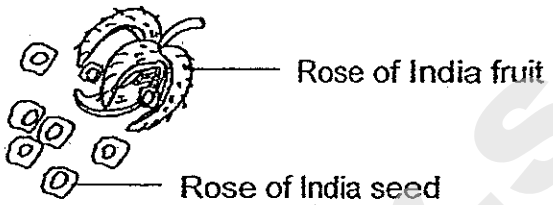
(3) B and D only

(4) C and D only

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4 Lionel did some findings on the seeds of the Rose of India fruit and presented them in the table below. The seeds of the Rose of India were dispersed by wind after the Rose of India fruit split open.



Rose of India seeds	Surface area of seed (cm^2)
A	0.25
B	0.75
C	0.5
D	1

He then dropped seeds A, B, C and D, one at a time, from a fixed height above the ground and recorded the distance travelled by each seed.

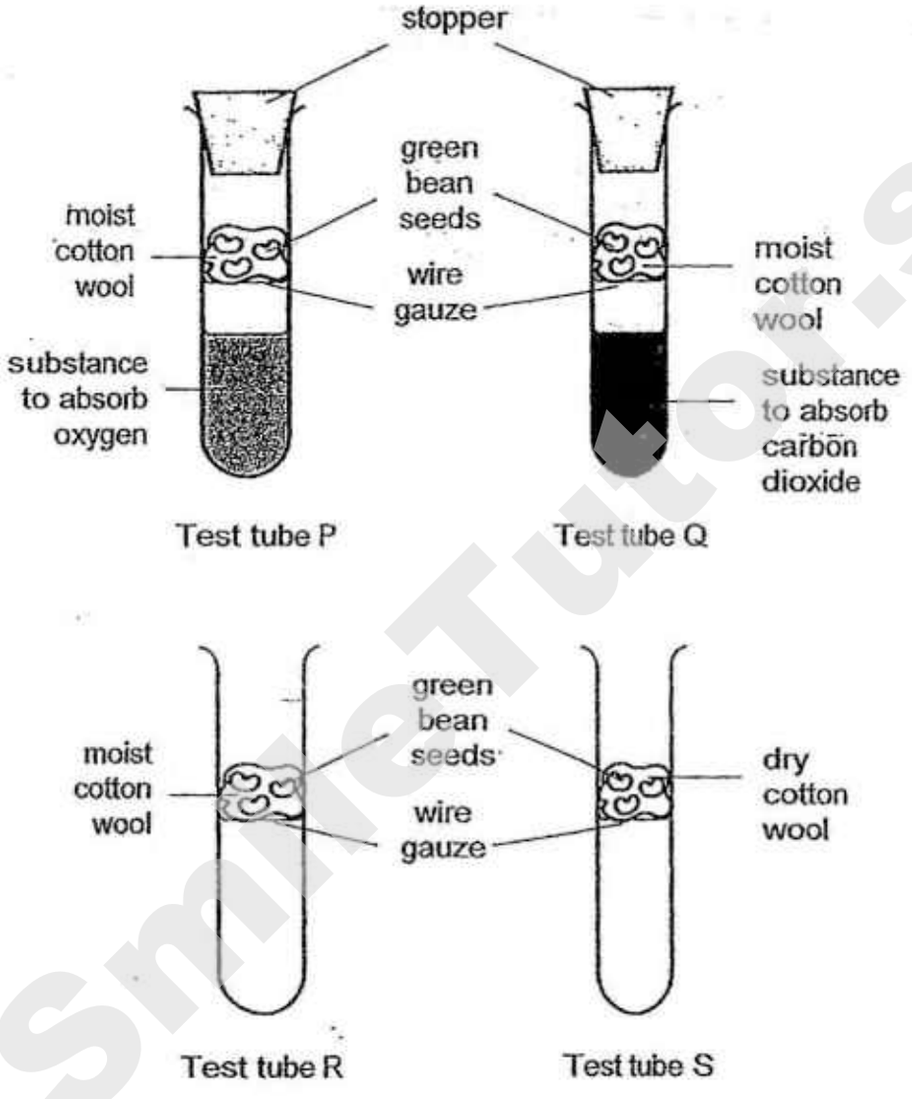
Which of the following most likely shows Lionel's results?

	Distance moved by the Rose of India seeds (cm)			
	A	B	C	D
(1)	14.5	43.8	23.1	56.7
(2)	14.5	23.1	43.8	56.7
(3)	23.1	56.7	14.5	43.8
(4)	56.7	14.5	43.8	23.1

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5 Meiling placed seeds in 4 test tubes of the same size, P, Q, R and S. Test tubes P, Q and S were kept in a room with temperature of 30°C while test tube R was kept in a black box with temperature of 30°C. The 4 test tubes were exposed to different conditions as shown in the diagram below.



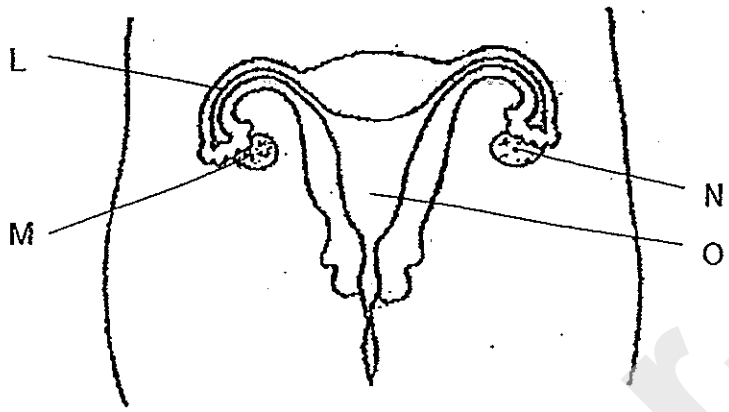
In which of the above test tubes would the seeds most likely to germinate?

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

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6 The diagram below shows a female reproductive system.



Which of the following statements are true?

A M and N are the ovaries.

B L provides nutrients to the foetus.

C M can still produce eggs if N is removed.

D O is the place where a fertilized egg will develop into a foetus.

(1) A and B only

(2) A, C and D only

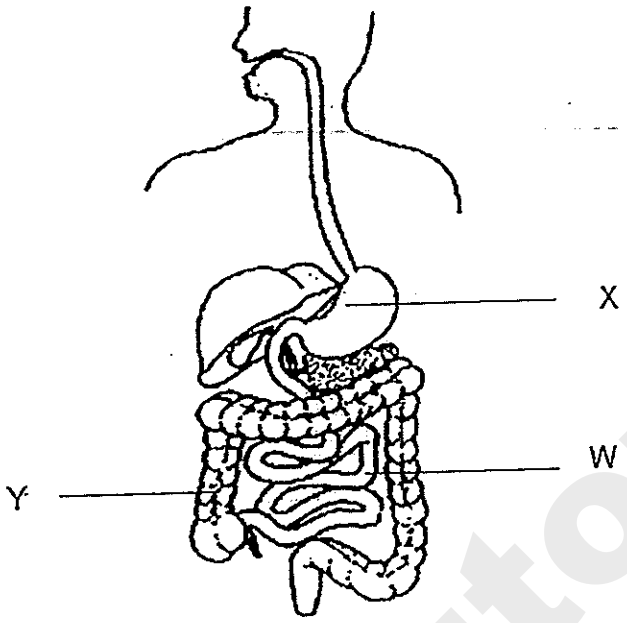
(3) B, C and D only

(4) A, B, C and D

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7 Look at the diagram of a human digestive system below.



Which of the following correctly shows what happens at W, X and Y?

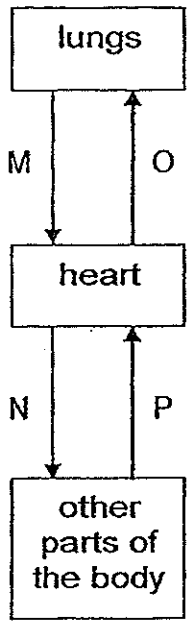
	W	X	Y
(1)	Digestion of food	Absorption of water	Absorption of water
(2)	Absorption of water	Completion of digestion	Absorption of digested food
(3)	Completion of digestion	Digestion of food	Absorption of digested food
(4)	Absorption of digested food	Produces digestive juices	Absorption of water

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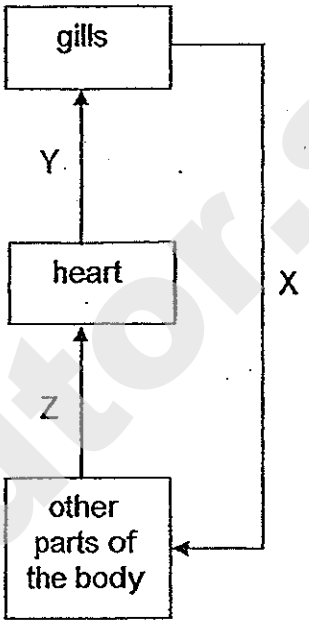
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8 The diagrams below show the circulatory systems of two organisms, a man and a fish.

The arrows represent the blood vessels that carry blood around the body.



Circulatory System of a Man



Circulatory System of a Fish

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

A Only blood vessels O, P and Y carry blood with less oxygen.

B Oxygen-rich blood from the heart goes to the gills of the fish.

C Only blood vessels M, N and X carry blood with more oxygen.

(1) C only

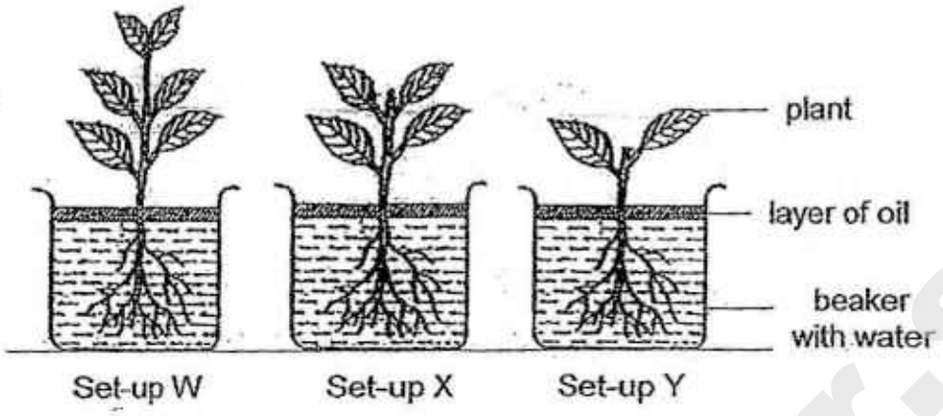
(2) A and B only

(3) B and C only

(4) A, B and C

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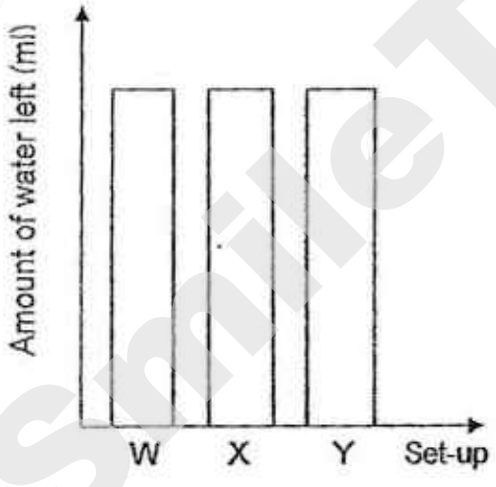
9 Lucien placed three plants of the same species in identical beakers. Each beaker contained an equal amount of water as shown in the diagram below. He placed set-ups W, X and Y near a window for a day.



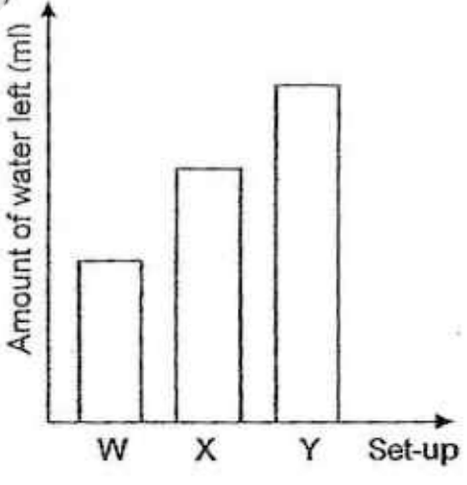
He then recorded the amount of water left in each beaker at the end of his experiment.

Which one of the following graphs below shows the correct height of water level in set-ups W, X and Y at the end of the experiment?

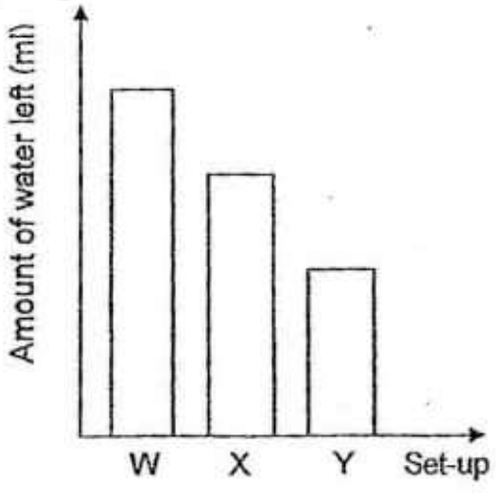
(1)



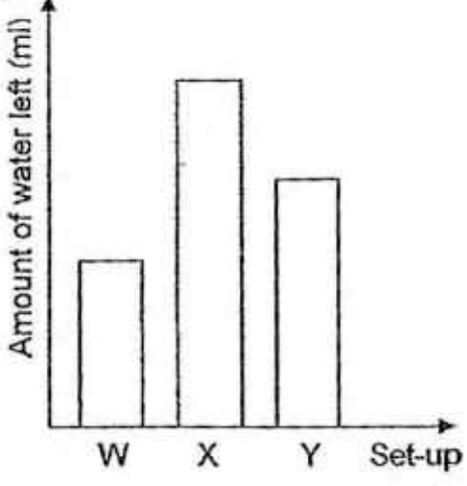
(2)



(3)



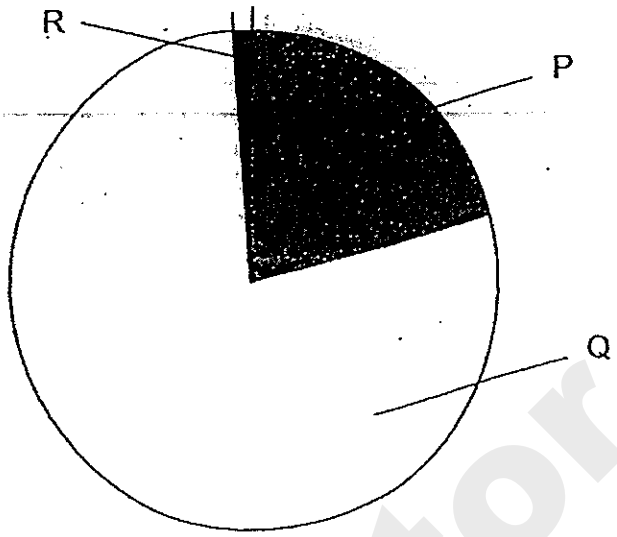
(4)



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10 The amount of different gases in the air is shown in the pie chart below.



Which of the statements are true?

A Plants take in R during respiration.

B Plants produce P during photosynthesis.

C Animals only breathe out R during gaseous exchange.

D Animals breathe in P, Q and R during gaseous exchange.

(1) A and B only

(2) A and C only

(3) B and D only

(4) B, C and D only

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11 Four pupils observed some plant and animal cells under a microscope. They recorded their observations and their findings in the table below.

Name of pupil	Observations on cell parts seen	Function of mentioned cell parts
Ian	Both the plant and animal cells have cell membranes.	Holds the cytoplasm and chloroplasts inside the cell.
Lucas	The plant cell has a cell wall but an animal cell does not have a cell wall.	Controls the movement of substances in and out of the cell.
Callum	Both the plant and animal cells have cell membranes.	Controls the movement of substances in and out of the cell.
Nathan	Both the plant and animal cells have cytoplasm.	Place where many activities of the cell takes place.

Which of the children made the correct conclusions?

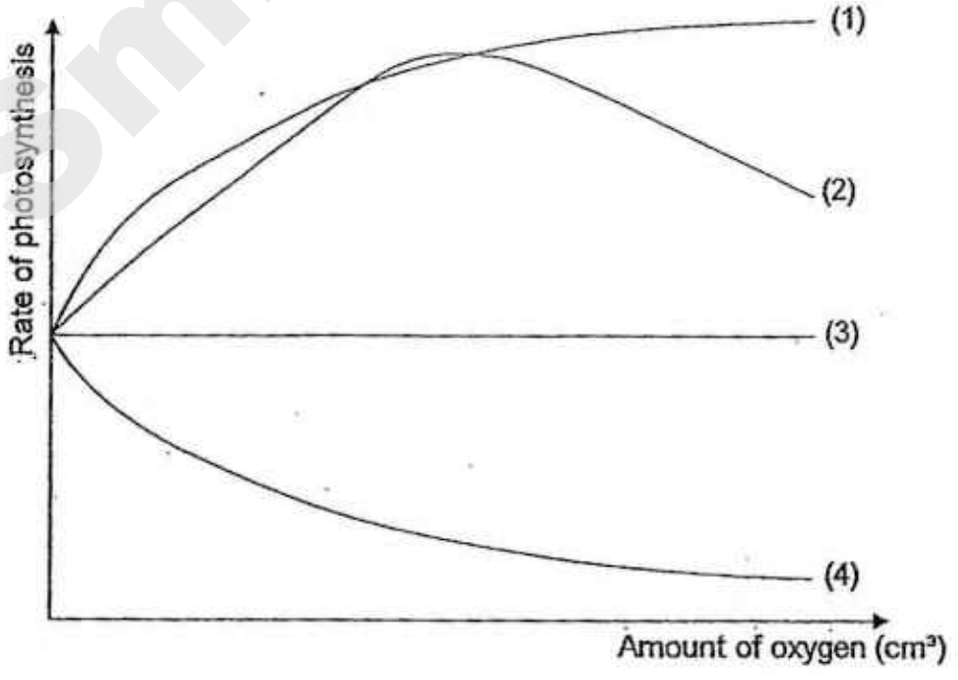
(1) Ian and Lucas

(2) Callum and Nathan

(3) Nathan, Ian and Lucas

(4) Nathan, Callum and Lucas

12 Joel carried out an experiment to see how the amount of oxygen taken in during respiration affects the rate of photosynthesis in a plant. Which of the following correctly shows the results of his experiment if he had carried out a fair test?



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13 Hendric counted the number of organisms in a pond community and recorded the findings below.

Organisms	Number of organisms
Guppy	8
Mosquito larva	1
Water lily	10
Mosquito	3
Pond skater	3
Water hyacinth	3
Mosquito pupa	4
Water moss fern	7

Which of the following statements about the organisms in the pond community is true?

(1) There were 6 populations of animals altogether.

(2) There were 8 populations of organisms altogether.

(3) The population size of the mosquito is the same as that of the guppy.

(4) There are more organisms in the animal populations than plant populations.

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14 The characteristics of Environment P are listed in the table below.

Environment P	
Temperature	24°C
Light Intensity	0 units to 10 units
Moisture	Very high
Availability of oxygen	Very little
Availability of carbon dioxide	High

The table below shows the characteristics of the preferred habitats of 3 organisms, A, B and C.

Organisms	Characteristics of Preferred Habitat			
	Temperature	Light Intensity	Moisture	Air
A	15°C to 25°C	11 units	Very High	Thrives well in places rich in oxygen
B	20°C to 30°C	3 units	Very High	Thrives well in places poor in oxygen
C	Any temperature	5 units	Very High	Thrives well in places rich in carbon dioxide

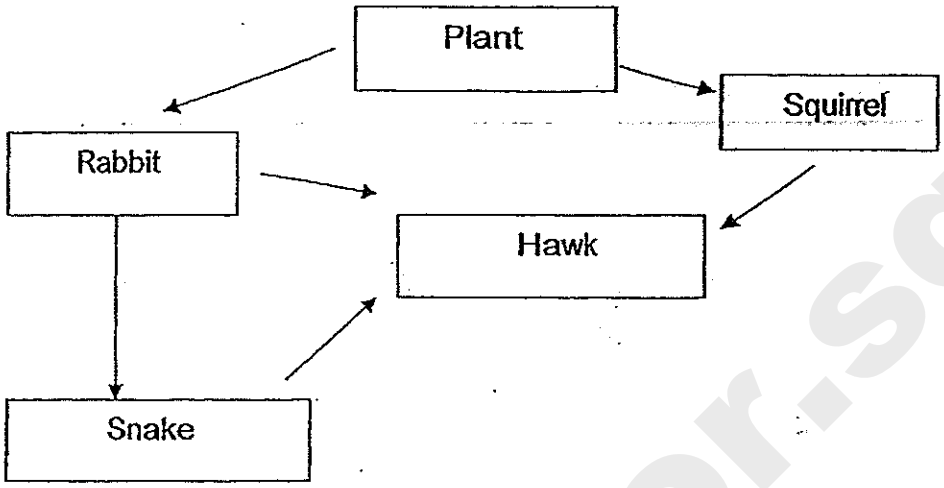
Which of these organisms, A, B or C, could live in Environment P?

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

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15 Study the food web shown below.



Which organisms would be most badly affected over a long period of time if all the rabbits are removed from the food web?

A Plant

B Snake

C Squirrel

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

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16 The pictures below show some adaptations which animals use to cope with the extreme temperature in their environment.

A 

Fennec fox has big oversized ears.

B 

Camel urinates very little.

C 

Polar bear has small ears.

D 

Grizzly bear hibernates.

E 

Emperor penguins huddle together in groups.

Which of the following are examples of behavioural adaptations of animals to cope with the extreme temperature in their environment?

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

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17 The table below shows the freezing points of three substances, A, B and C.

Substance	Freezing Point (°C)
A	10
B	40
C	160

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

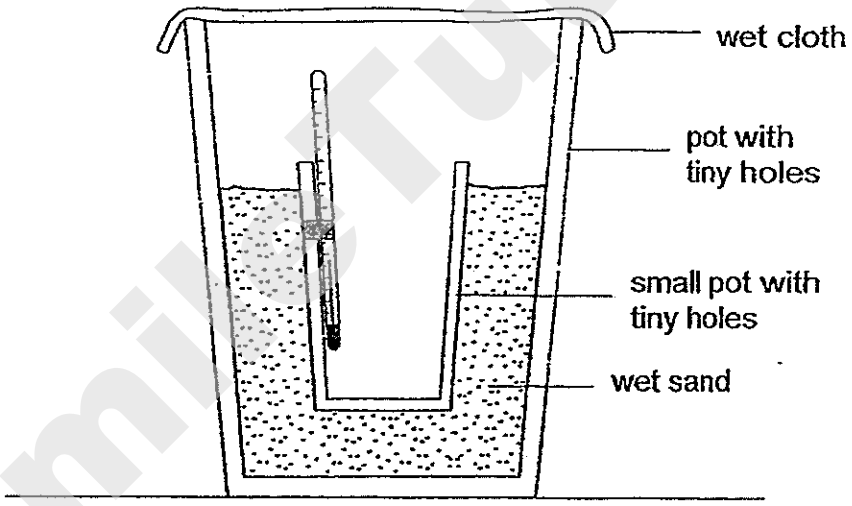
(1) A is a solid at 8°C.

(2) A and B are both liquids at 35°C.

(3) B and C are both solids at 170°C.

(4) C can be a liquid or a gas at 160°C.

18 Oliver set up an experiment in a classroom as shown below.



Which of the following would most likely result in a drop in the temperature of air inside the small pot?

A Use a dry cloth to cover the pot.

B Add cold water to the wet sand.

C Place a fan in front of the set-up.

D Add warm water to the wet sand.

(1) A and D only

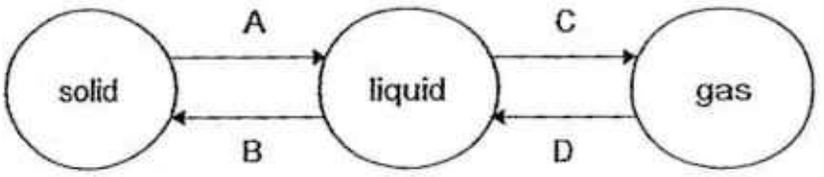
(2) B and C only

(3) B and D only

(4) A, B and C only

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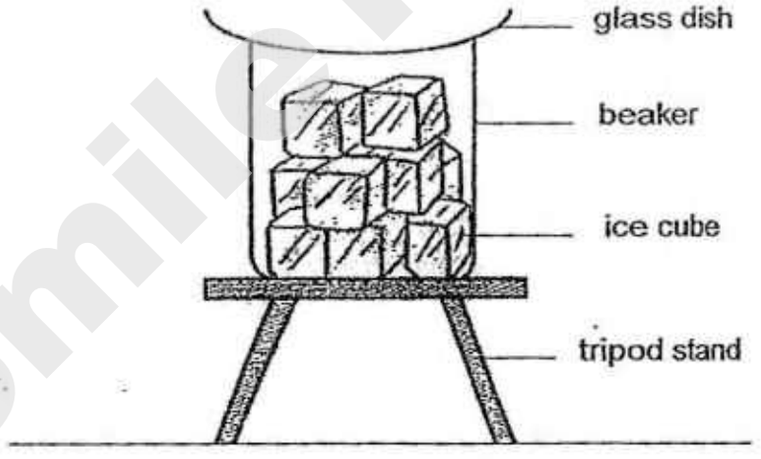
19 The diagram below represents the changes in the states of water.



Which of the following do A, B, C and D represent?

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

20 Patrick set up an experiment at room temperature as shown in the diagram below.



What would most likely happen after some time?

(1) The inside of the beaker would be dry.

(2) There would be tiny water droplets on the outside of the beaker.

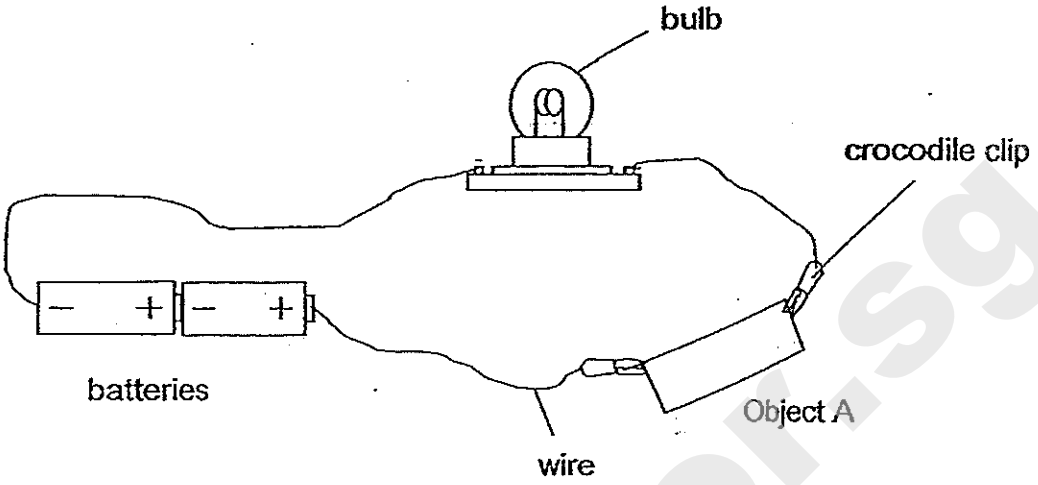
(3) There would be water vapour collected on the inside of the beaker.

(4) There would be more water droplets on the underside of the glass dish.

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21 Jacob carried out an investigation to find out if objects, A, B, C and D, allow electricity to pass through the electrical circuit as shown below.



He repeated the same experiment using objects, B, C and D. The four objects, A, B, C and D, are made of different materials but are similar in size and thickness.
Jacob recorded the results in the table shown below.

Object	Does the bulb light up?
A	Yes
B	No
C	Yes
D	No

Which of the following shows the materials which objects A, B, C and D are made of?

	A	B	C	D
(1)	iron	ceramic	copper	rubber
(2)	steel	iron	paper	fabric
(3)	fabric	ceramic	plastic	carbon
(4)	rubber	steel	glass	carbon

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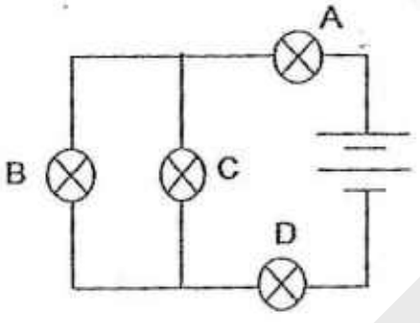
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22 Ronald was asked to suggest how four bulbs could be arranged. All bulbs were initially lit. The table below shows which bulbs would continue to light up when one of the bulbs had fused.

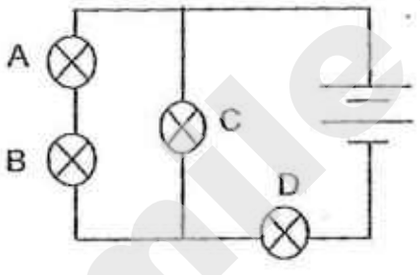
Fused bulb	Bulb(s) that light up
A	None
B	A, C and D
C	A, B and D
D	None

Based on the information above, which one of the following circuit diagrams is correct?

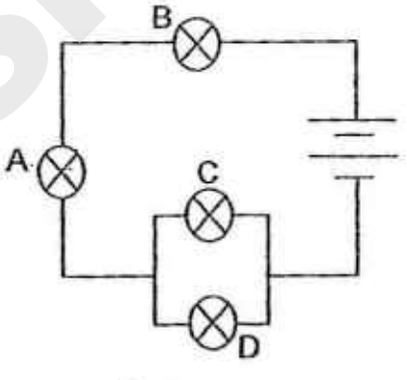
(1)



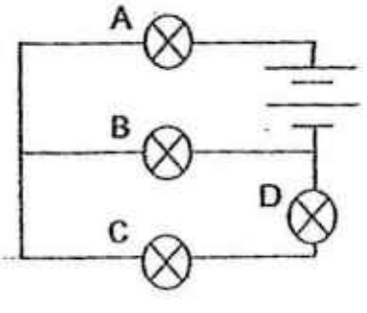
(2)



(3)



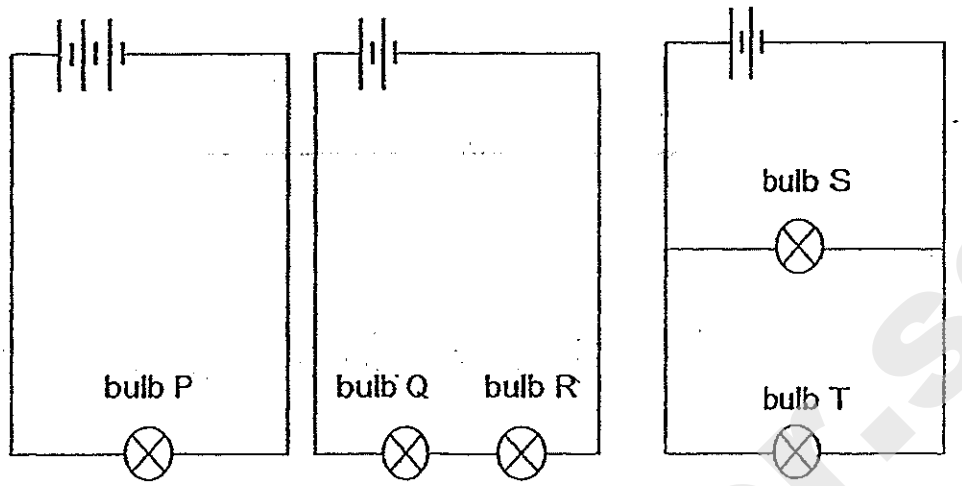
(4)



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23 Circuits C, D and E are made up of similar batteries and bulbs.



Circuit C Circuit D Circuit E

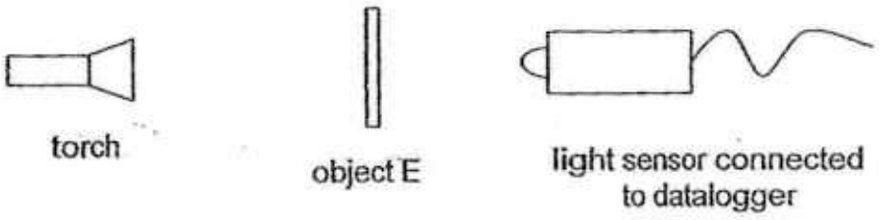
Which of the following shows the correct order of bulbs arranged from the brightest to the least bright bulbs?

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

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24 Kienan set up an experiment as shown below using object E.



He repeated the same experiment using objects F, G and H. The four objects, E, F, G and H, are made of different materials but are similar in size and thickness. He recorded the amount of light picked up by the light sensor connected to the datalogger as shown in the table below.

Object	Amount of light detected by datalogger (lux)
E	350
F	400
G	150
H	0

What was the aim of Kienan's experiment?

To find out how _____.

(1) the amount of light detected by the datalogger affects the material of the object

(2) the material of an object affects the amount of light allowed to pass through the object

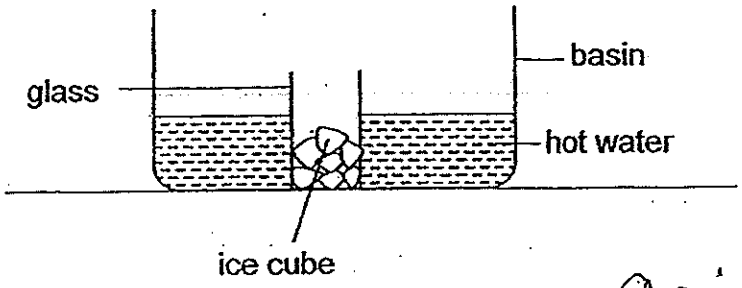
(3) the thickness of an object affects the amount of light allowed to pass through the object

(4) the size of an object affects the amount of light allowed to pass through the object

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25 Faridah put a glass of ice cubes into a basin of hot water as shown below.



gain in heat

Which of the following items will experience a ~~rise in temperature?~~

A Basin
B Glass
C Hot water
D Ice cubes

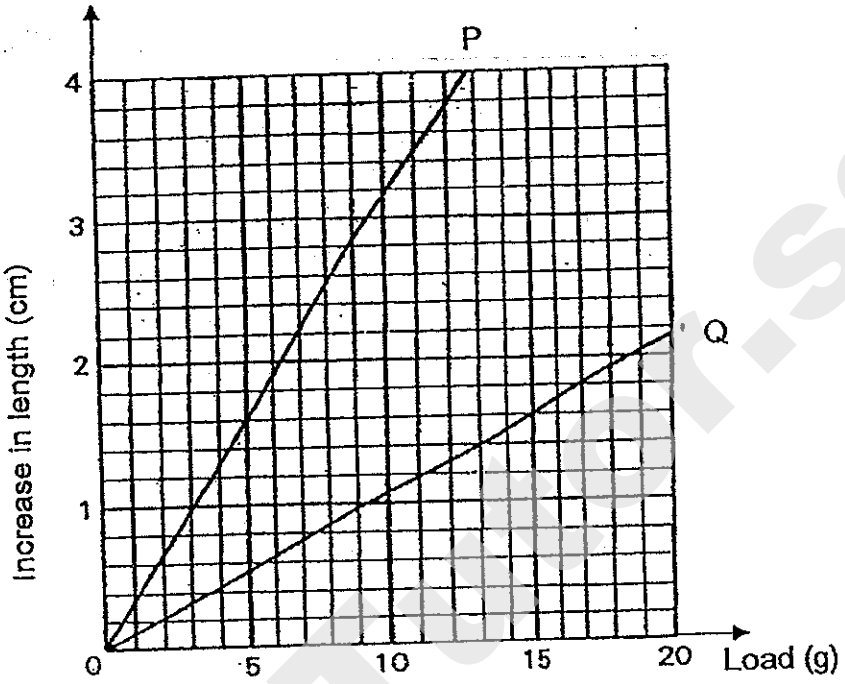
(1) A and D only
(2) B and C only
(3) A, B and D only
(4) A, B, C and D

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Use the graph below to answer questions 26 and 27.

26. The graph below shows the increase in length of two springs, P and Q, when loads were hung on them. The original length of both springs is 2 cm.



What is the length of Spring P when a weight of 5g is hung on it?

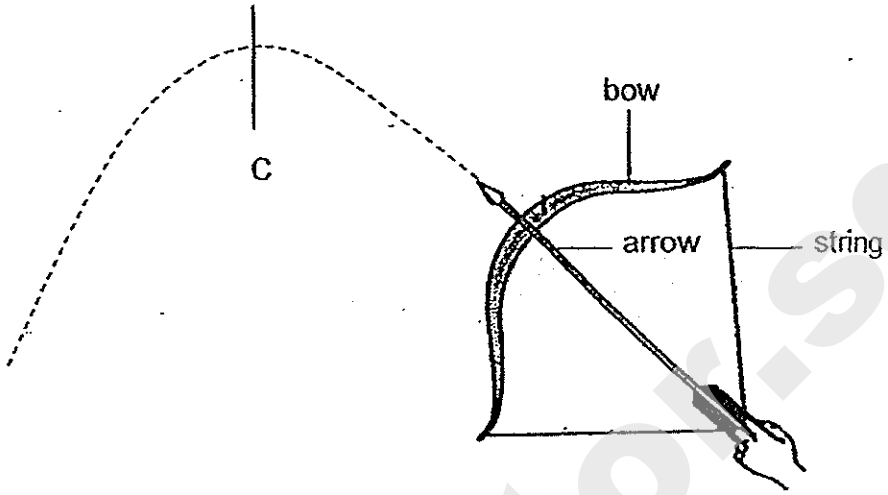
(1) 0.6 cm
(2) 1.6 cm
(3) 2.6 cm
(4) 3.6 cm

27 Based on the graph above, which one of the following statements is true?

(1) The length of spring P is longer than the length of spring Q.
(2) The extension of both springs is the same for the same weight hung.
(3) Spring P has more elastic potential energy than spring Q when the same weight is hung.
(4) The elastic spring force on spring P is the same as that of spring Q when the same weight is hung.

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28 When Desmond shot an arrow from a bow, the arrow propelled forward and upward before falling to the ground. The path of the arrow is shown in the diagram below.



What energy changes occurred when the arrow was released to propel the arrow up to the greatest height, C?

(1) Gravitational potential energy → Elastic potential energy → Kinetic energy

(2) Elastic potential energy → Kinetic energy → Gravitational potential energy

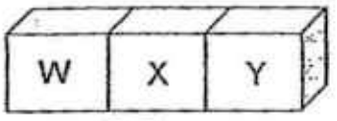
(3) Gravitational potential energy → Kinetic energy → Gravitational potential energy

(4) Elastic potential energy → Kinetic energy → Gravitational potential energy → Kinetic energy

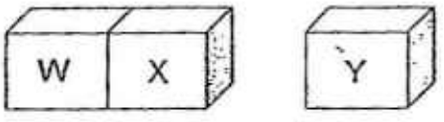
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29 The diagram below shows three cubes, W, X and Y, being held next to one another as shown below.



However, when the cubes are released, cube Y is being pushed away while cubes W and X are attracted to each other.



Which one of the following statements about the cubes is correct?

(1) Cube Y is not a magnet.

(2) Cube W must be made of iron.

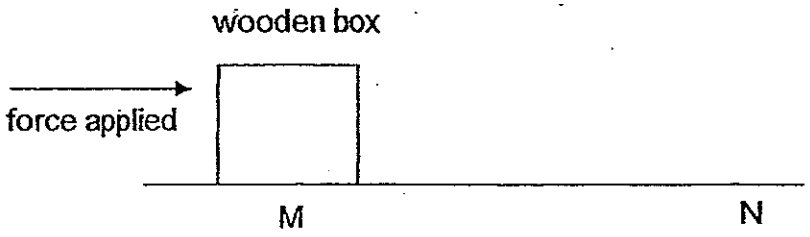
(3) There are at least two magnets.

(4) Cubes W and X have the same poles facing each other.

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30 A wooden box needs to be moved from position M to N, as shown in the diagram below.



Which one of the following must happen for the box to move from position M to N?

(1) The gravitational force and the frictional force acting on the box must be equal.

(2) The frictional force acting against the box must be greater than the applied force.

(3) The force applied to the box must be greater than the frictional force acting against it.

(4) The frictional force acting against the box must be greater than the gravitational force acting on it.

End of Booklet A

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CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 1
2014
PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____ ( )

Class: Primary 6 - _____

Date: 16 May 2014

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 16 printed pages, excluding cover page.

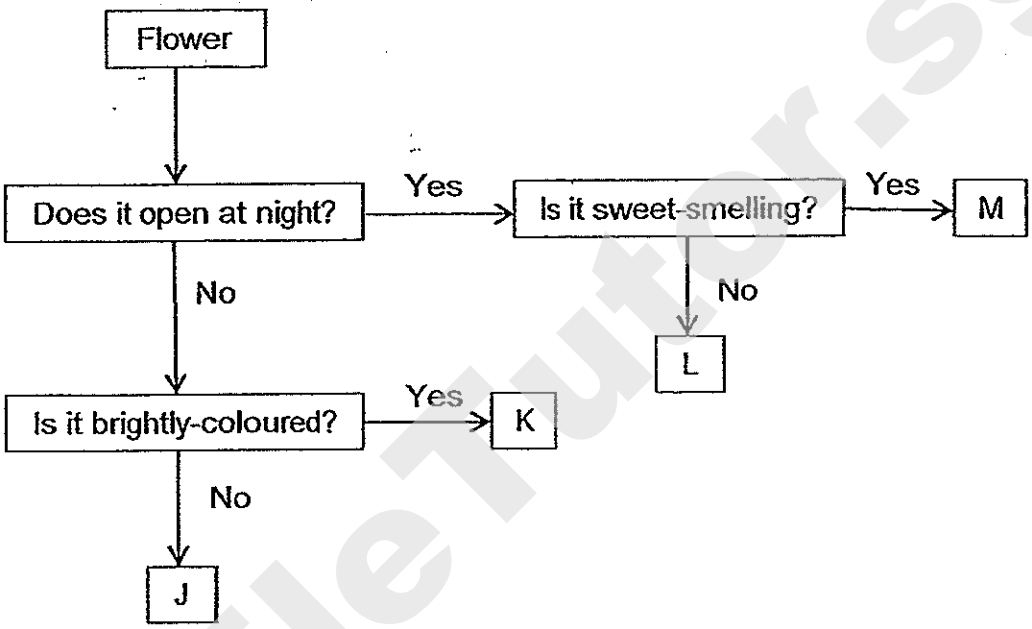
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Booklet B (40 marks)

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 Jess was at the Gardens by the Bay and she made the following observations of the characteristics of four flowers, J, K, L and M, as shown in the chart below.



Jess also spotted an animal pollinator with the characteristics listed in the table below.

(a) Based on Jess' observations, which flower, J, K, L or M, is most likely to be pollinated by the animal pollinator? Write your answer in the box below. [1]

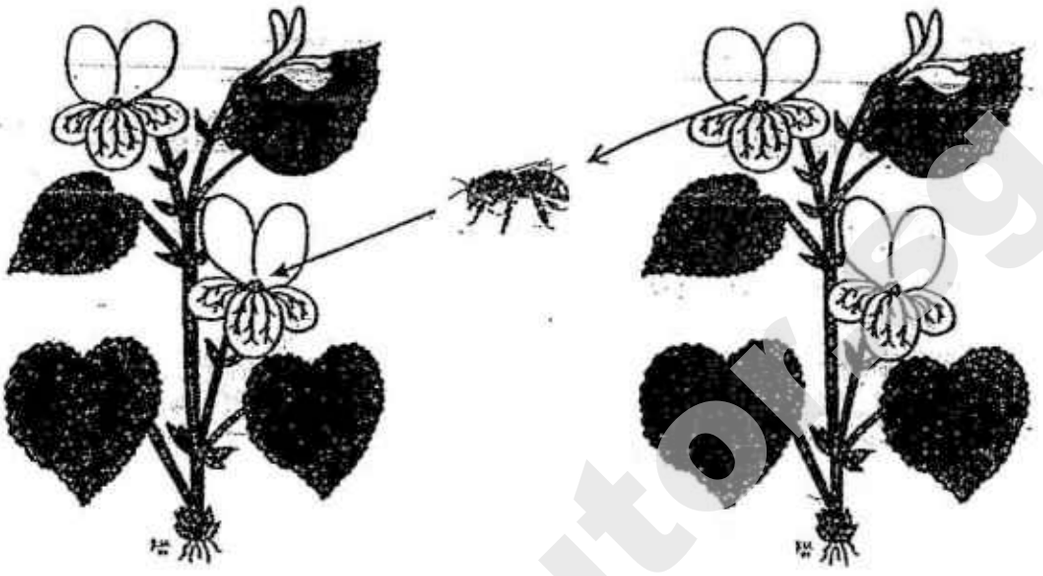
Characteristics of the animal pollinator	Flower most likely to be pollinated by the animal pollinator
• Active in the day • Prefers bright red flowers	

(Go on to the next page)

SCORE 1

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(b) Jess walked around the garden and saw an insect flying from a flower in plant Y to a flower in plant X of the same species.



Plant X Plant Y

Based on the diagram above, will the young plants that develop from the seeds of Plant Y contain only the characteristics of the parent plant Y? Explain. [2]

_____

_____

_____

(Go on to the next page)

SCORE	2

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32 Mr Tan removed a ring of bark from a tree as shown in the diagram below.



After a few days, he found a swelling above the stripped area with a liquid leaking from it.

(a) What has been removed from the trunk together with the bark? [1]

_____

(b) Would the tree survive after a month? Explain your answer. [2]

_____

_____

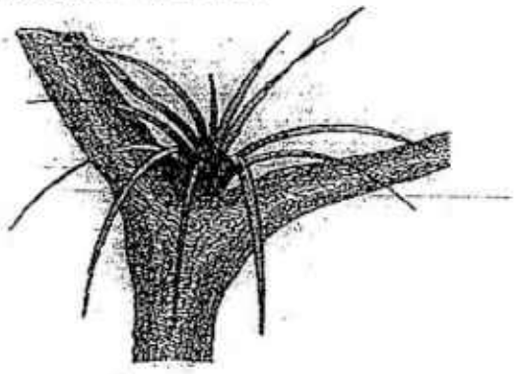
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SCORE 3

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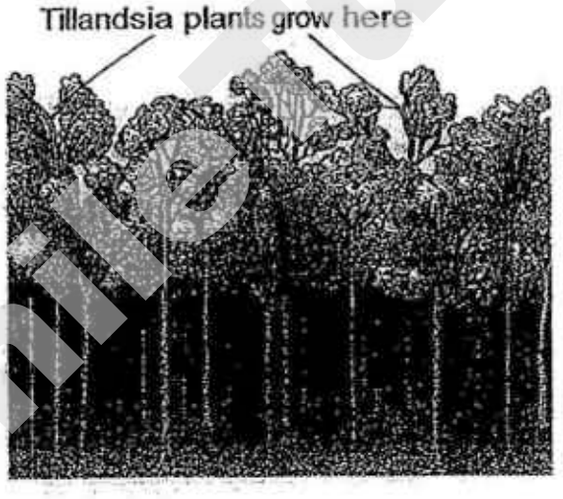
33 The drawing shows a plant called Tillandsia.



(a) The leaves of these plants absorb sunlight.
Why do plants need light? [1]

_____

(b) Tillandsia plants grow on the high branches of trees in rain forests.



Explain why these plants cannot grow well on the lowest branches of trees. [1]

_____

_____

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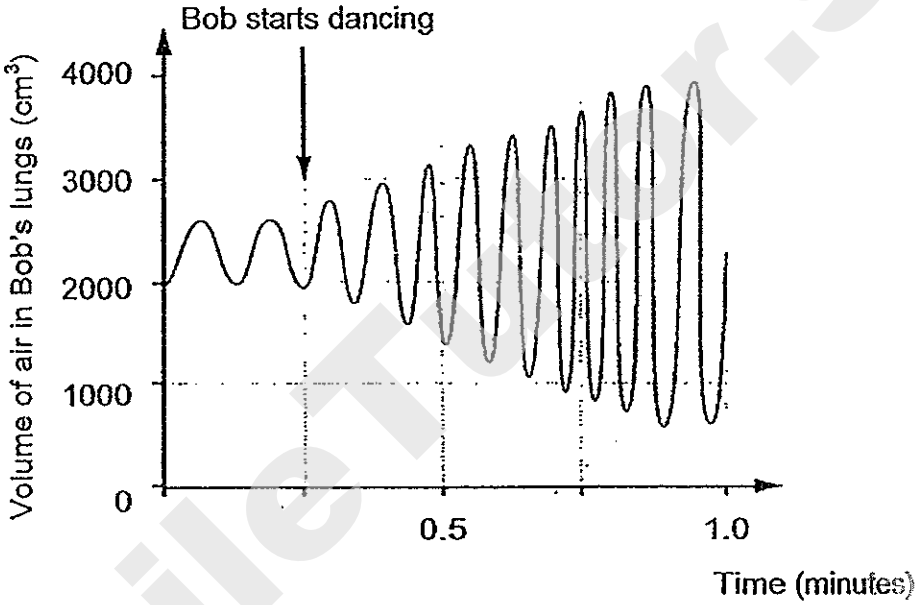
SCORE	2

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34 Bob is a dancer.



(a) As Bob dances, his breathing changes because he needs more oxygen.
The graph below shows how oxygen in his lungs changes when he dances.

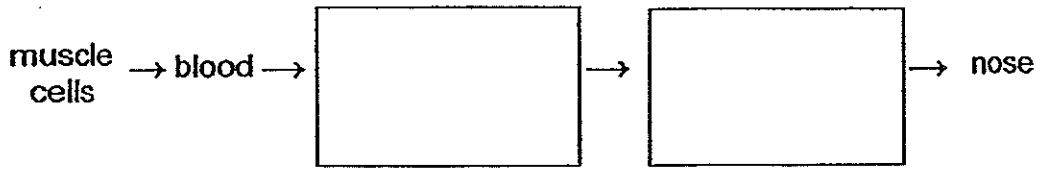


From the graph, state two ways his breathing changes as he dances. [2]

(i) _____

(ii) _____

(b) Bob's muscle cells produce carbon dioxide as he dances. Write the path taken by the carbon dioxide as it travels from his muscle cells to leave the body.



[1]

(Go on to the next page)

SCORE 3

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35 Katy carried out an experiment to find out how the height of three similar plants was affected by the amount of light they had been exposed to for a period of time. The results were recorded in the table below.

Amount of light	Height of the plants (cm)	
	Start of the experiment	End of the experiment
Dim	2.5	3.5
Bright	2.1	3.8
Very bright	2.0	4.4

(a) Explain how the amount of light can affect the height of a plant in the experiment above. [1]

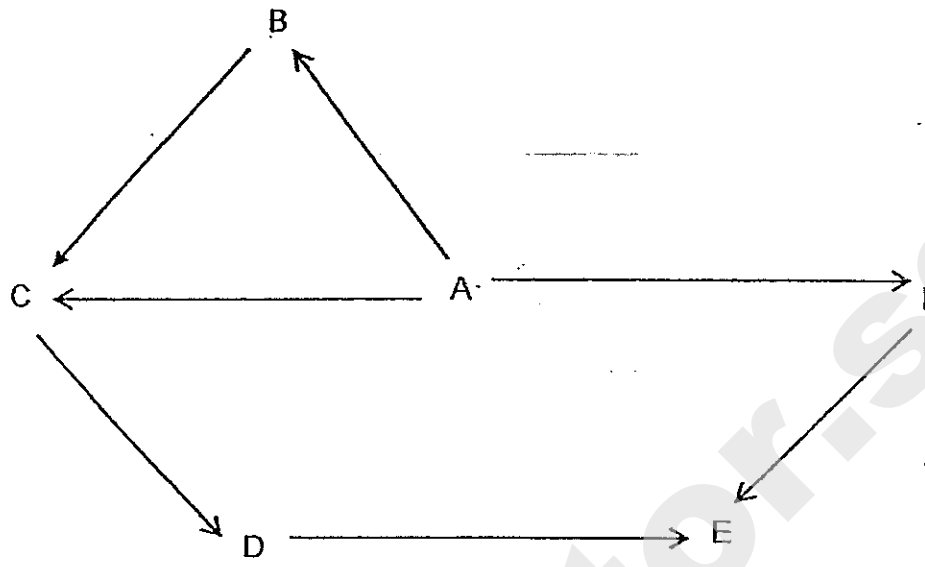
(b) Suggest how the above experiment can be improved to ensure more reliable results. [1]

(Go on to the next page)

SCORE	/ 2

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36 The food web below consists of organisms found in a certain habitat.



(a) Which organisms, A, B, C, D, E or F, are both predator and prey? [1]

_____

(b) Which organism, A, B, C, D, E or F, in the food web has the largest population? [1]

_____

(c) Organism G is an animal that is a predator of B and a prey of F. Write the letter 'G' and draw the appropriate arrows to show organism G's place in the food web above. [1]

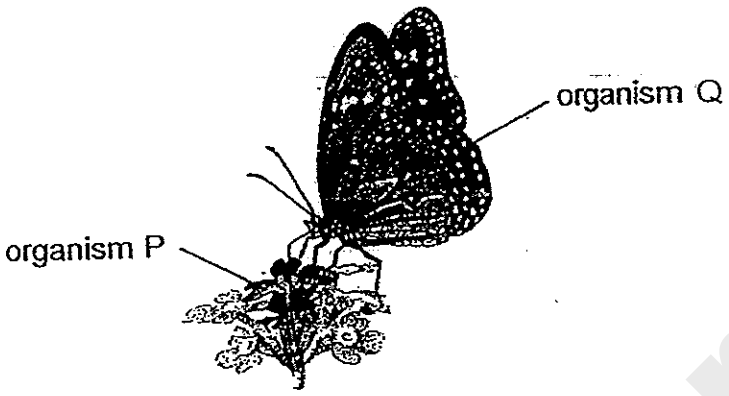
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SCORE 3

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37 Some organisms live in the same habitat because they need one another for survival.

(a) Organism P is a flowering plant and organism Q feeds on nectar.



What are the benefits of organisms P and Q to each other?

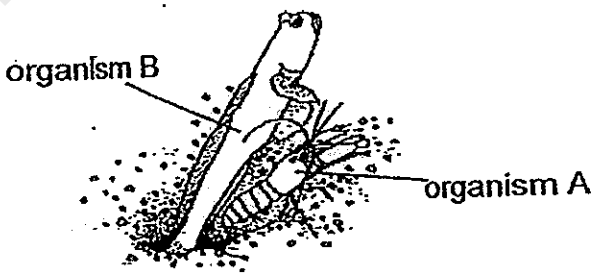
(i) Benefit of organism P to Q : _____ [1]

_____

(ii) Benefit of organism Q to P : _____ [1]

_____

(b) Organisms A and B live in the same habitat. Organism A is blind and digs a hole for itself while organism B, on spotting a predator, darts about and hides from predators in organism A's hole. This alerts organism A to the danger.



Explain how organism B benefits organism A. [2]

_____

_____

_____

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SCORE

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38 The diagram shows trees that grow in countries with heavy snowfall. They have many structural adaptations to help them cope with the low temperatures.and heavy snowfall.



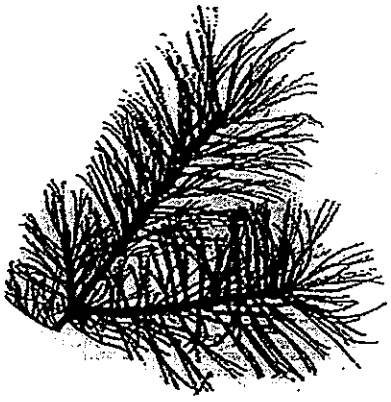
(a) After a heavy snowfall, snow accumulates on the branches of trees and might break the branches.
Explain how the shape of the trees above helps to prevent this from happening. [2]

_____

_____

_____

(b) During the winter season, the ground is frozen and very little water is available to trees. The diagram below shows the leaves of the above trees.



How are the leaves structurally adapted to prevent water loss? [2]

_____

_____

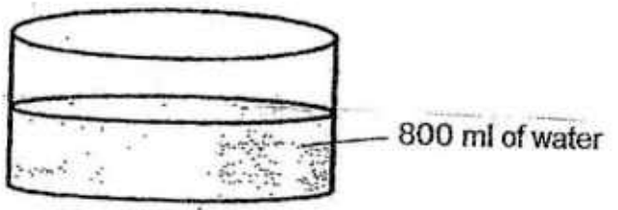
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SCORE 4

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39. Joseph wanted to find out the rate of evaporation at different times of a day. He filled 3 similar containers with 800 ml of water each and placed one container at the same location at different time period of the day.



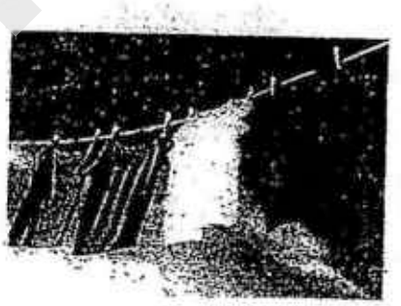
container

At the end of each time period, the amount of water left in the container was recorded in the table below.

Time period	7 a.m. – 9 a.m.	1 p.m. – 3 p.m.	7 p.m. – 9 p.m.
Amount of water left in the container (ml)	740	680	760

(a) Based on the results of the experiment, what is the relationship between the surrounding temperature and the rate of evaporation? [1]

(b) Based on the results, state an appropriate time period to hang your wet clothes out to dry.



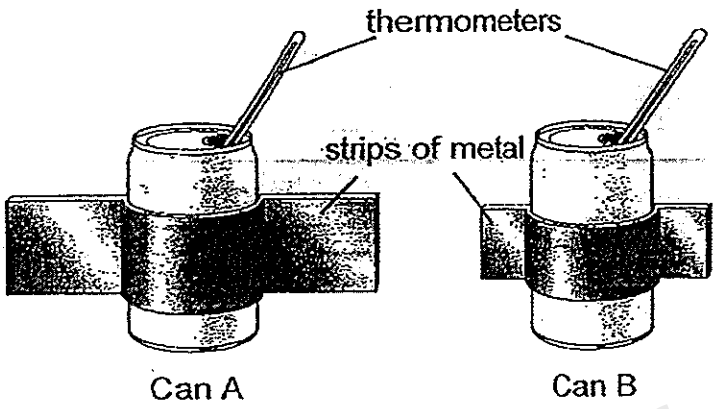
Explain your answer. [2]

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SCORE	/ 3

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40 Samuel filled two identical metal cans with 250 cm^3 of hot water and wrapped strips of metal of different sizes around them as shown below.



He recorded the temperature of the water in each can every 5 minutes. The table below shows his results.

	Temperature (°C)	
Time (minutes)	Can A	Can B
0	80	80
5	72	76
10	68	72
15	60	68
20	55	62

(a) Based on the experiment above, explain why the water in Can A cooled faster than the water in Can B. [2]

_____

_____

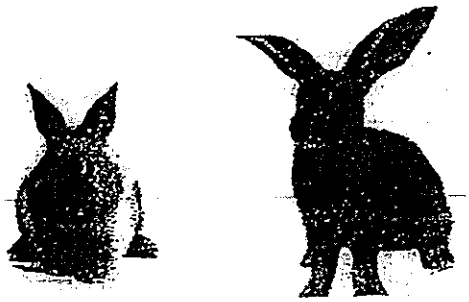
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SCORE 2

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(b) Rabbits keep cool by losing heat from their ears.



Rabbit A Rabbit B

Which rabbit can lose more heat through its ears? Give a reason for your answer. [1]

_____

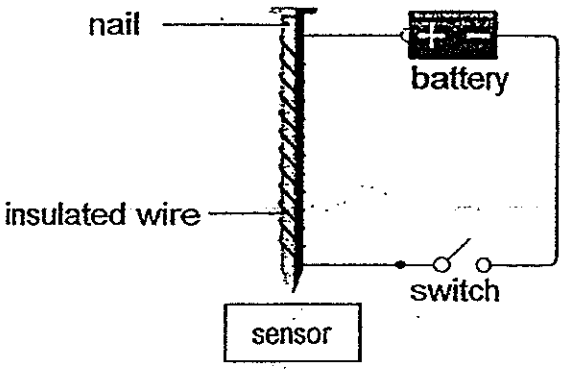
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SCORE 1

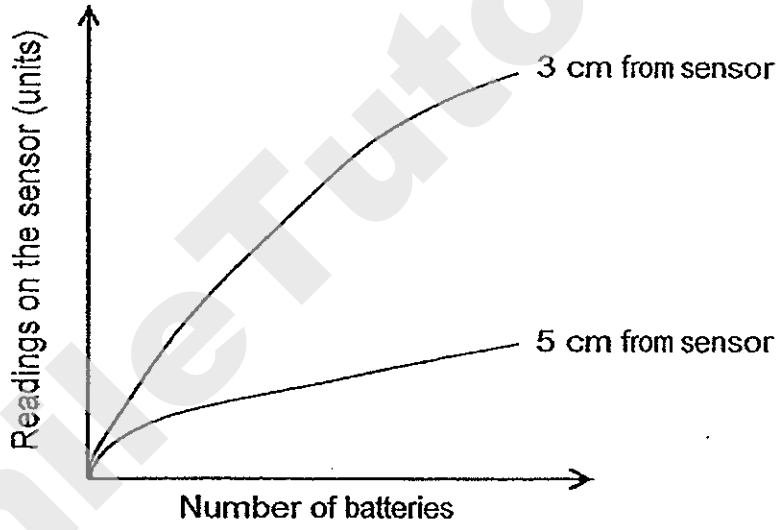
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41 Daniel made an electromagnet as shown below.



He used a sensor to measure the strength of the electromagnet. He placed the sensor 3 cm from the magnet and increased the number of batteries. He repeated the experiment with the sensor 5 cm from the electromagnet.

The graph below shows his results.



(a) How did the distance of the sensor from the electromagnet affect the reading on the sensor? [1]

_____

_____

(b) What else can Daniel do to the electromagnet to increase its strength? [1]

_____

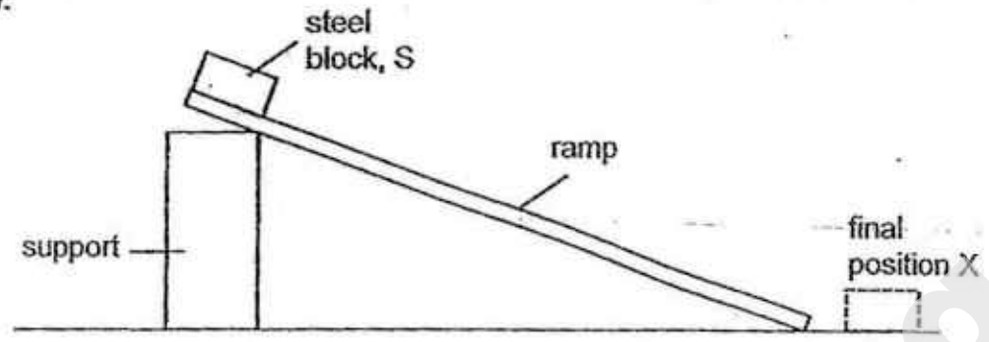
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SCORE 2

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42 Carl placed a steel block, S, at the top of a ramp as shown in the diagram below.

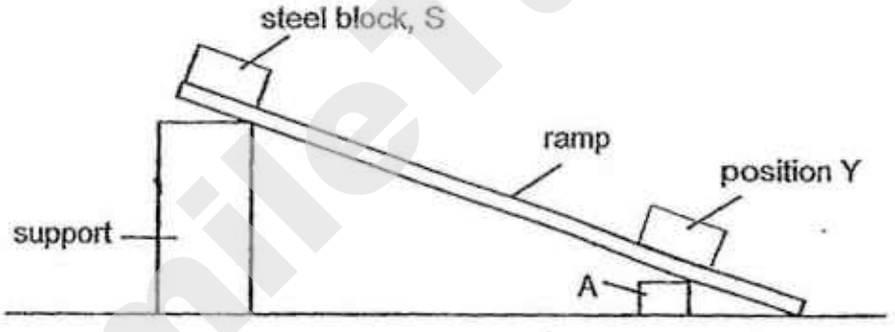


When Carl let go of the block, it slid down the ramp and came to rest at position X.

(a) Other than friction, name another force acting on the block. [1]

_____

When object A was placed at a point below the ramp as shown in the diagram below, block S took a shorter time to move down the ramp and came to rest at position Y.



(b) What could object A be? How did it affect the time taken for steel block S to reach position Y on the ramp? [2]

_____

_____

(c) Carl wanted steel block S to take an even shorter time to reach position Y on the ramp. Without changing the set-up or the position of steel block S, suggest one way for Carl to make the steel block S take a shorter time to reach position Y. [1]

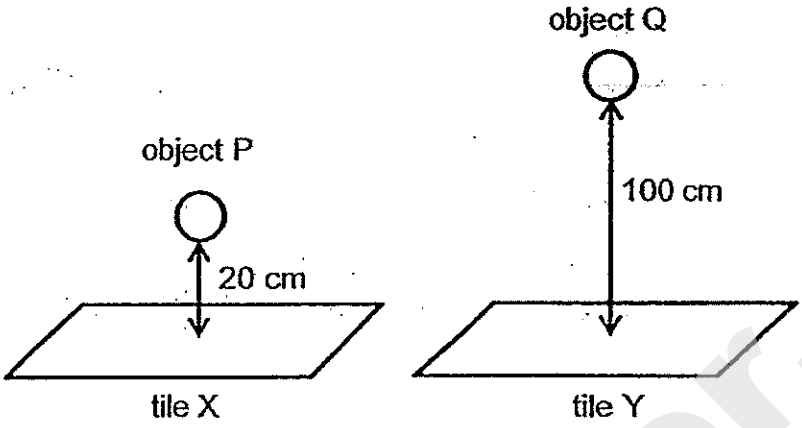
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SCORE	4

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43 Alvin conducted an experiment to find out what happens when objects are dropped from different heights.
He dropped 2 identical objects, P and Q, from different heights. Object P was dropped from 20 cm and object Q from 100 cm.



2 identical tiles were placed on the floor just below each object. Tile Y broke when object Q landed on it but tile X did not break when object P landed on it.

(a) Complete the energy conversion of object Q from the point it was released to when it landed on tile Y. [1]

Gravitational potential energy of object Q

↓

Kinetic energy + Gravitational potential energy of object Q

↓

kinetic energy + [ ] energy + [ ] energy of broken tile Y

(b) Based on the experiment, why is it more dangerous when an object is dropped from a high-rise building as compared to a low building? [1]

_____

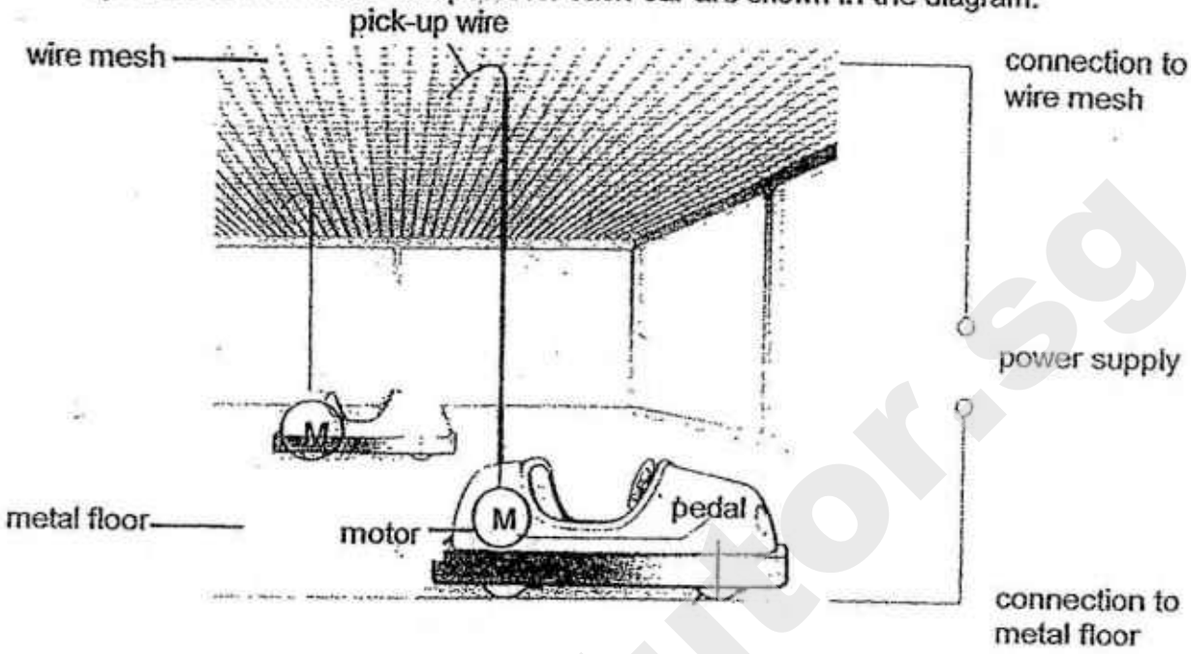
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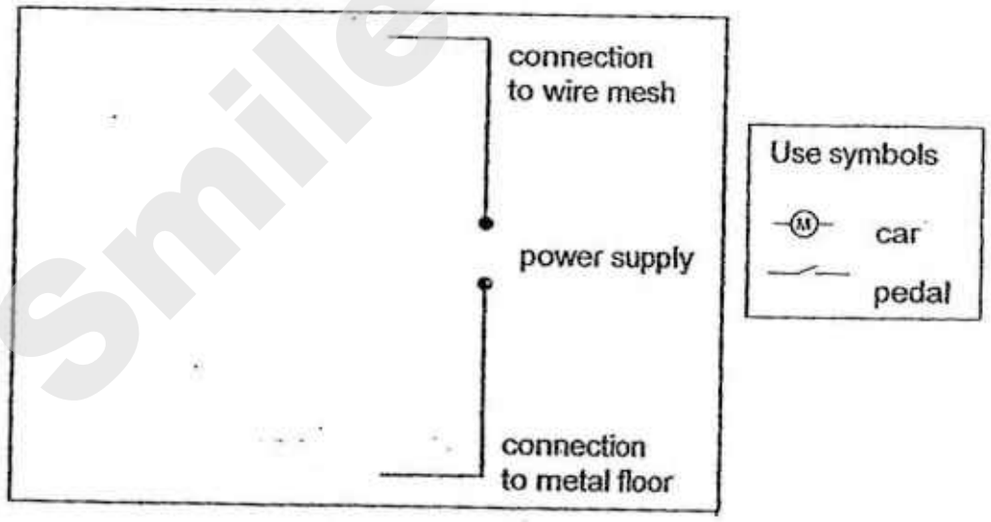
SCORE ___/2

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44 The diagram shows two bumper cars at a carnival. When the rider steps on the pedal, the circuit is closed. Therefore, the bumper car moves. The circuit symbols for the motor and pedal for each car are shown in the diagram.



(a) Bumper cars are connected using parallel circuits.
Complete the circuit diagram below to show how the two bumper cars are connected. [1]



(b) The operator looks after the bumper cars during the rides. [1]
Why does the man not get an electric shock as he walks across the metal floor?

_____

_____

SCORE

End of Booklet B

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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : CATHOLIC HIGH
SUBJECT : PRIMARY 6 SCIENCE

TERM : PRELIM 1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15
2	4	4	1	3	2	4	1	2	3	2	3	3	4	3

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	1	2	1	1	3	2	3	4	3	2	3	3

31)a)K
b)No, the young plant will have characteristics of both plants X and Y. The nucleus of both male and female cells containing genetic information fuse during fertilization. The young plant contains the genetic information of both parents, plant X and Y.

32)a)Food-carrying tubes or phloem.
b)No, The food-carrying tubes cannot transport food/sugars to the roots and as such, the roots used up their stored food and cannot take in water and died.

33)a)Plants need light to make food.
b)Leaves from the other tall trees block most of the light from reaching Tilandsia plants.

34)a)i)He needs to take in more air.
ii)His breathing increases.
b)lungs →windpipe.

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35)a)The greater the amount of light, the greater the rate of photosynthesis, thus the plant has more food/energy to grow taller.

b)Have more plants, have plants of the same height at the start of the experiment. Repeat the experiment a few times using similar plants.

36)a)C and D.

b)A

c)B → G → F

37)a)i)Q can get nectar from P. ii)Q helps to pollinate P.

b)When organism B darts and tries to hide in the hole dug by organism A in view of approaching danger, its action also alerts organism A to do likewise and thus, keep itself safe from danger.

38)a)The conical shape of the tree allows snow to slide down the branches. Thus, this reduces the amount of snow collected on the branches.

b)The leaves have very small exposed surface area from which water can be lost, this prevents water loss.

39)a)As the surrounding temperature increases, the rate of evaporation also increases.

b)1 pm to 3 pm. The amount of water left in the container is the least so during this time period the wet clothes will dry faster.

40)a)As the strip of metal wrapped around can A has a greater exposed surface area, more heat is conducted away from the water, hence the water in can A lost heat faster.

b)Rabbit B. Its ears have a larger exposed surface area to lose more heat.

41)a)As the distance of the sensor from the electromagnet increases, the reading on the sensor decreases.

b)Increase the number of batteries in series.

42)a)Gravitational force.

b)Object A could be a magnet. As steel is a magnetic material, it is attracted to magnet, hence the time taken for steel block S to reach position Y is shorter .

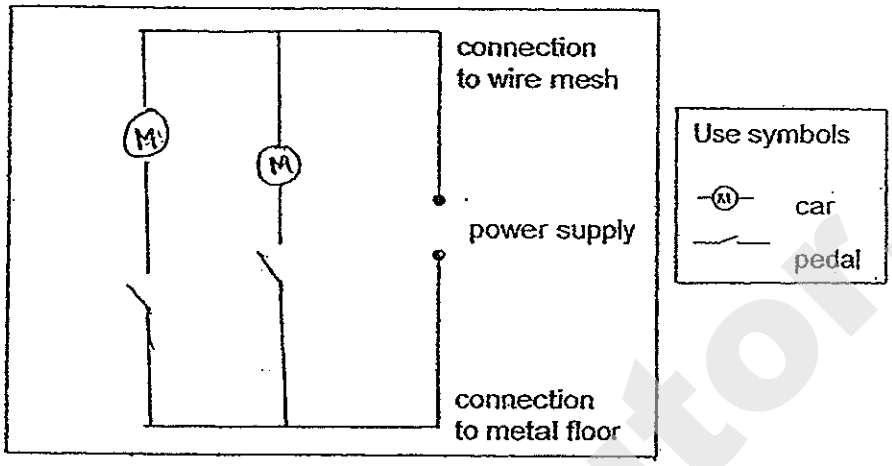
c)Put oil on the upper surface of the ramp to reduce the friction between the steel block and ramp.

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43)a)heat , sound

b)When an object is dropped from a high-rise building, the object possesses greater amount of gravitational potential energy which is converted.

44)a)



b)The man is not connected to the metal floor and the wire mesh, so there is an open circuit.

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Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6
Semestral Assessment 1 – 2014
SCIENCE

BOOKLET A

15 May 2014

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.
Shade your answers in the Optical Answer Sheet (OAS) provided.

This paper consists of 25 printed pages.

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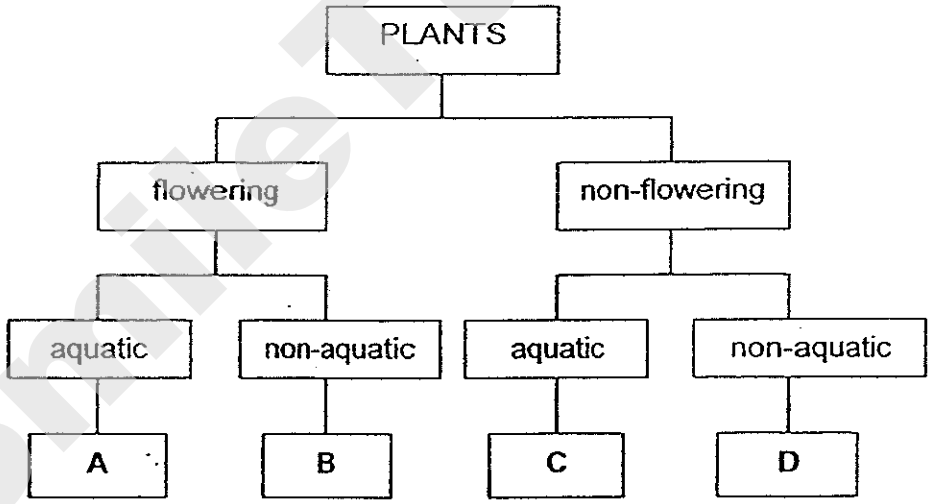
Section A : (30 x 2 MARKS)

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.

1. The following table gives information on four plants, R, S, T and U, based on two characteristics. A tick (√) shows that the plant has the given characteristic.

Characteristic \ Plant	R	S	T	U
Bear fruit		✓	✓	
Grow in water	✓		✓	

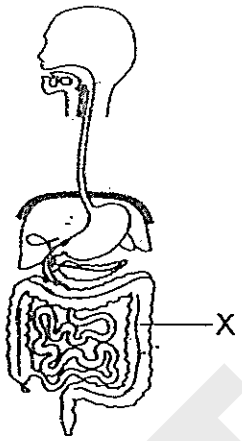
Based on the information above, where do plants R, S, T and U belong to in the following classification chart?



	Plant R	Plant S	Plant T	Plant U
(1)	D	B	A	C
(2)	C	A	B	D
(3)	A	D	C	B
(4)	C	B	A	D

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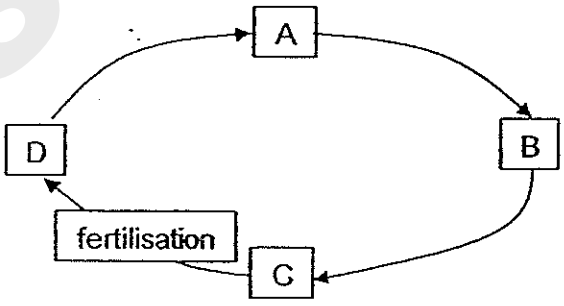
2. The diagram below shows a human digestive system.



Which one of the following best describes the function of organ X of the human digestive system?

(1) It digests the food.
(2) It passes the digested food into the blood.
(3) It churns and mixes food with the digestive juice.
(4) It takes away the water from the undigested food.

3. The diagram below shows the life cycle of a mosquito and the point at which fertilisation occurs.

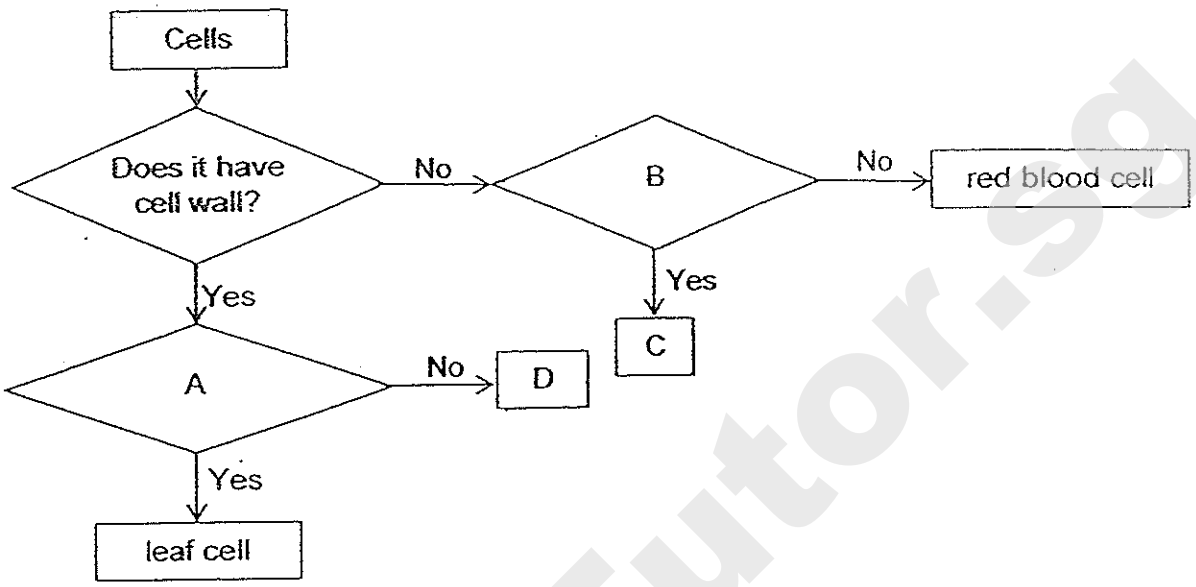


At which stage, A, B, C or D, of its life cycle is the mosquito the most difficult to kill?

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

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4. Study the flowchart below carefully.



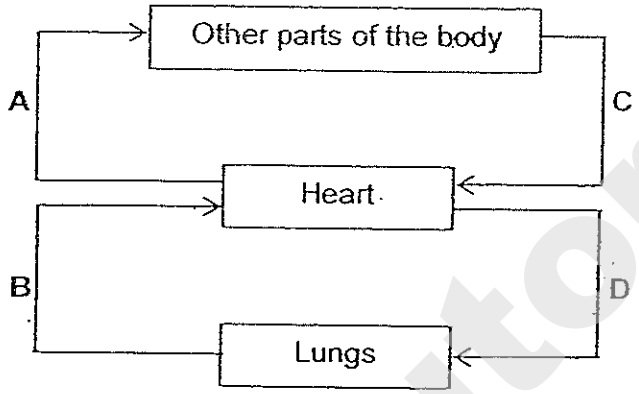
Which one of the following best represents A, B, C and D?

	A	B	C	D
(1)	Does it have cell membrane?	Does it have chloroplast?	Onion cell	Cheek cell
(2)	Does it have chloroplast?	Does it have nucleus?	Cheek cell	Root cell
(3)	Does it have nucleus?	Does it have cell membrane?	Onion cell	Cheek cell
(4)	Does it have chloroplast?	Does it have cell membrane?	Cheek cell	Root cell

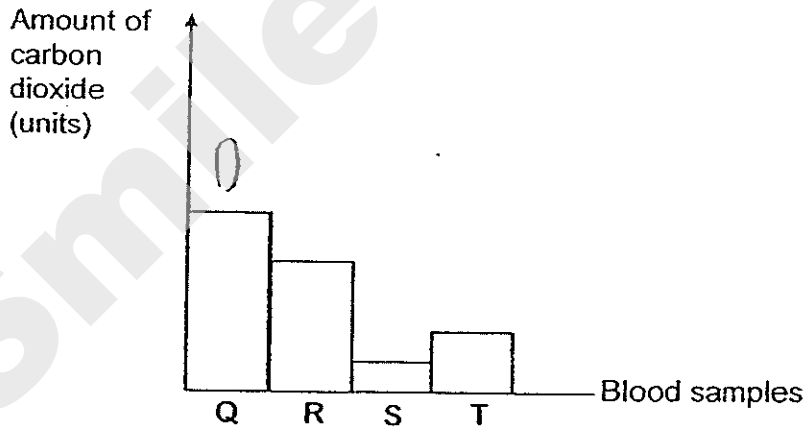
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5. A, B, C and D represent the blood vessels in the human body.



Four blood samples, Q, R, S and T, were taken from blood vessels A, B, C and D in the body. The graph below shows the amount of carbon dioxide in each of the blood samples.



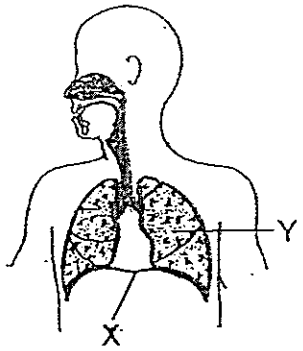
Which one of the following best identifies the blood vessels from which the blood samples are taken from?

	Q	R	S	T
(1)	D	A	B	C
(2)	B	A	D	C
(3)	D	C	B	A
(4)	C	D	A	B

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6. The diagram below shows Harry's respiratory system.

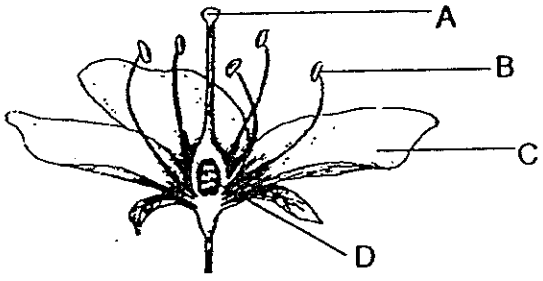


Which one of the following best describes what happens to parts, X and Y, when Harry exhales?

	X	Y
(1)	Moves downwards	Expands
(2)	Moves upwards	Expands
(3)	Moves downwards	Contracts
(4)	Moves upwards	Contracts

7. Adele wanted to find out if flower H shown below would develop into a fruit if some parts of it were removed. She removed two parts of flower H before dusting some pollen grains on it.

After several days, she discovered that a fruit had started to develop.



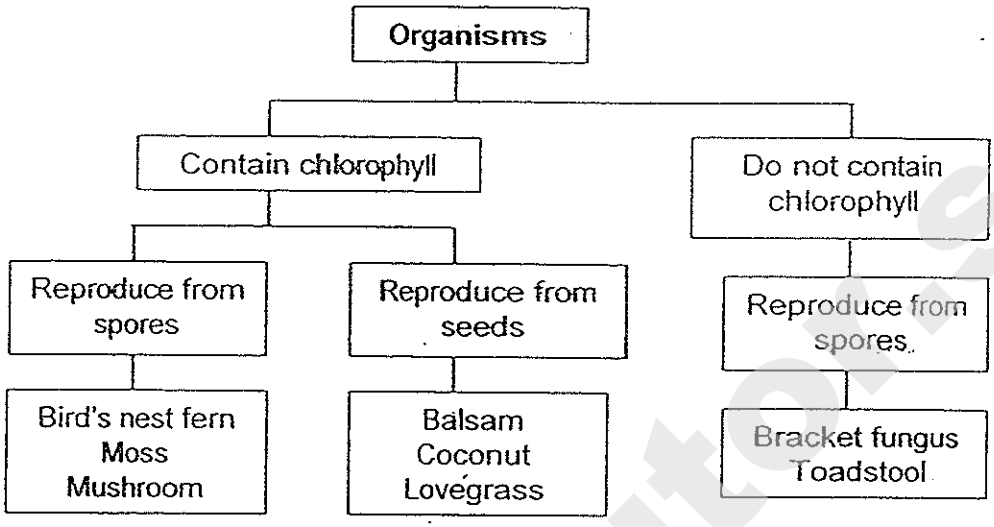
Flower H

Which two parts of flower H had been removed?

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

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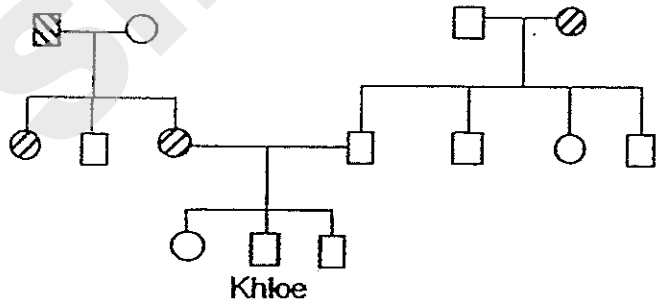
8. Study the classification chart below carefully.

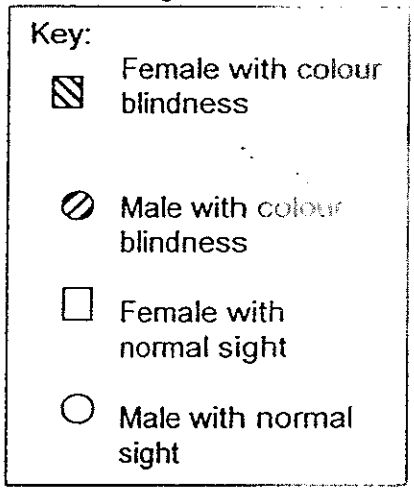


Which one of the above organisms has been **incorrectly** classified?

(1) Moss
(2) Mushroom
(3) Toadstool
(4) Lovegrass

9. The diagram below shows Khloe's family tree. The family tree shows the members who inherited colour blindness and those who have normal sight.



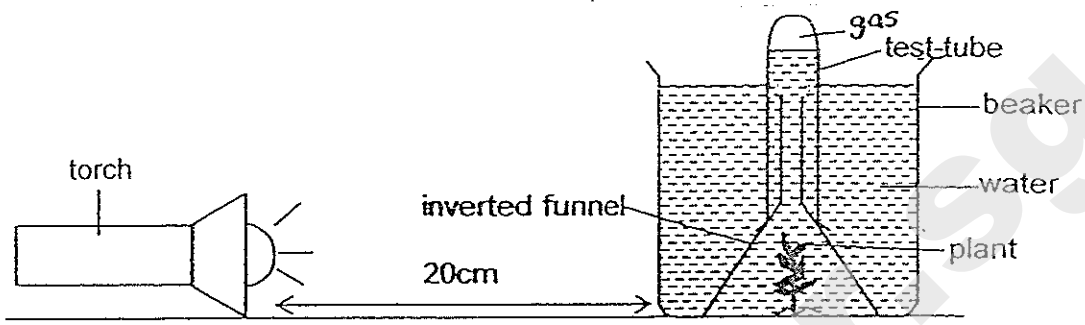


Based on the above family tree, which one of the following statements is true?

(1) Khloe's parents are colour blind.
(2) Khloe and her brother have normal sight.
(3) Khloe's father has a sister who is colour blind.
(4) Khloe's paternal and maternal grandmothers have normal sight.

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10. Jane set up the following experiment in a dark room.



She placed a torch at a distance of 20cm from the beaker. After one hour, she observed that 5cm³ of gas had collected in the test-tube. She repeated the experiment by placing the torch at different distances from the beaker and recorded the results in a table.

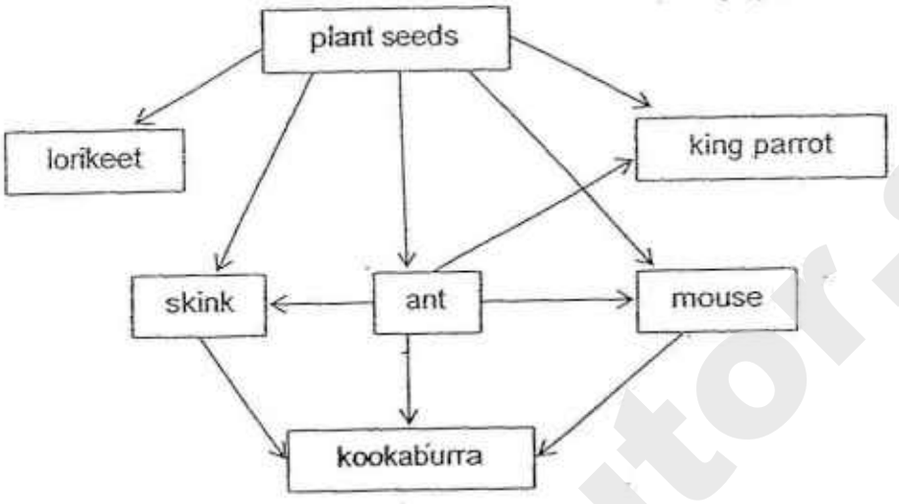
Which one of the following best represents the result recorded by Jane?

	Distance from lamp (cm)	Gas collected	Volume of gas
(1)	5	Oxygen	less than 5cm³
(2)	10	Carbon dioxide	more than 5cm³
(3)	25	Carbon dioxide	less than 5cm³
(4)	30	Oxygen	less than 5cm³

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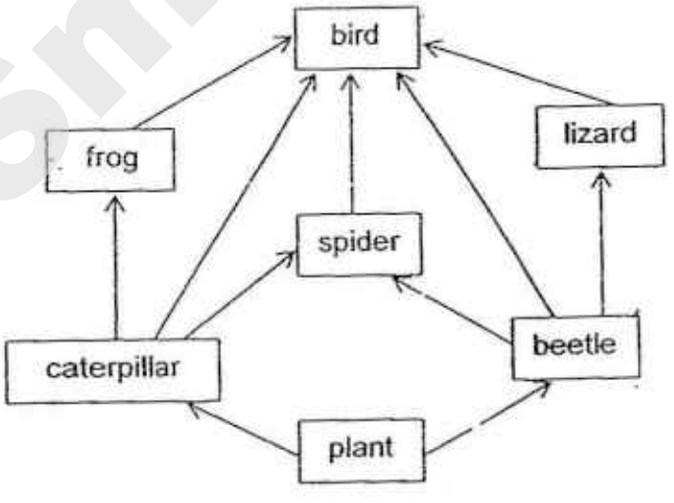
11. The diagram below shows a food web among some organisms in a garden.



Based on the above food web, which two animals are not in direct competition with each other for the same food?

(1) ant and skink
(2) king parrot and skink
(3) kookaburra and skink
(4) kookaburra and lorikeet

12. The diagram below shows a food web.



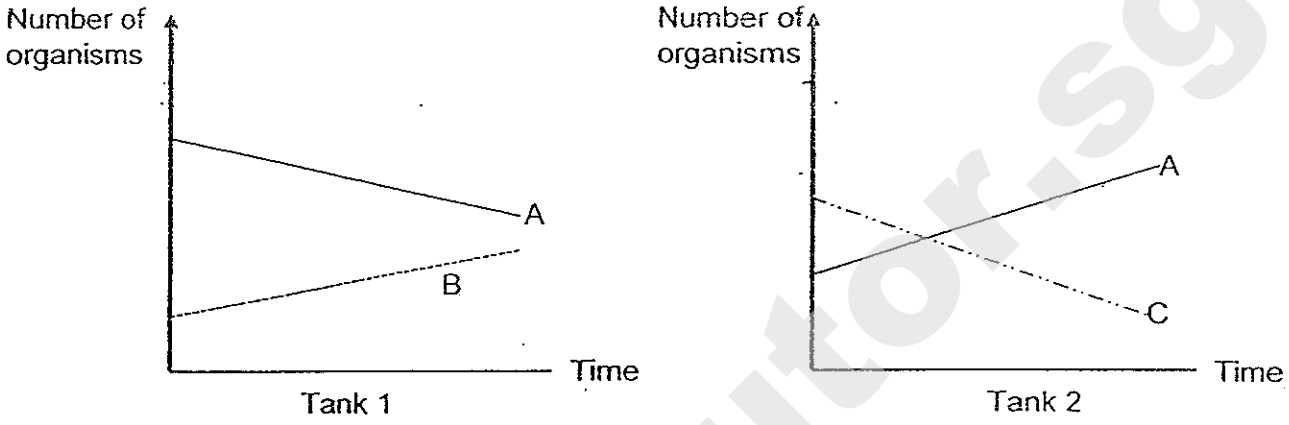
If a disease kills all the birds in the above food web, which one of the following animal populations is most likely to decrease in number?

(1) frog
(2) lizard
(3) beetle
(4) spider

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13. Liz placed three different types of organisms A, B and C into two tanks and monitored their populations over a period of two weeks. She placed organism A and B in tank 1 and organism A and C into tank 2.

She counted and recorded the population of the three organisms every day and plotted two graphs as shown below.



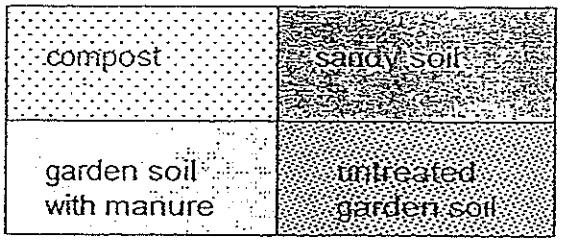
Based on the graphs above, which one of the following food chains best shows the relationships among organisms A, B and C?

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

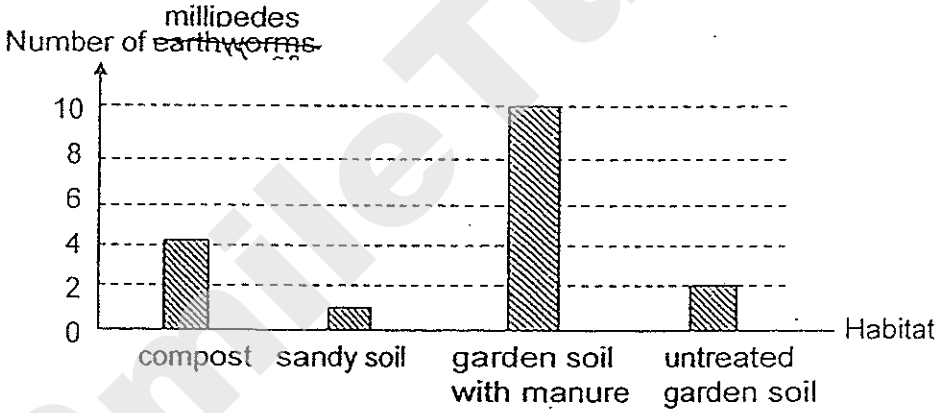
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14. Wayne carried out an investigation to find out the preferred habitats of millipedes. He created four adjoining habitats as shown in the diagram below and placed five millipedes in each habitat.



The millipedes were free to move between the habitats. After four weeks, he counted the number of millipedes found in each habitat and noticed that some millipedes were missing.
The graph below shows the results of his investigation.



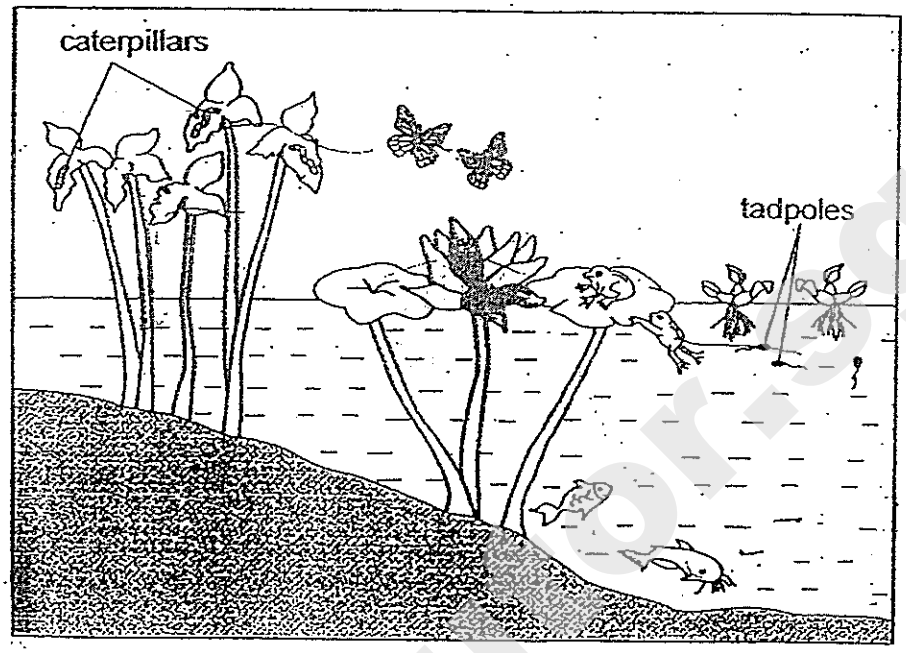
Based on the results of his experiment, which one of the following conclusions can Wayne make?

(1) Millipedes prefer to live in dark and damp habitats
(2) The untreated garden soil is harmful to the millipedes.
(3) Millipedes prefer garden soil with manure to the other habitats.
(4) The missing millipedes' preferred habitat is not provided in the experiment.

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15. The picture below shows a pond community.



How many populations are there in this community?

(1) 4
(2) 5
(3) 7
(4) 8

16. The table below shows the boiling point and freezing point of some substances.

Substance	Boiling point (°C)	Freezing point (°C)
P	55	-2
Q	62	-10
R	75	-15
S	90	-30

Based on the table above, which of the following statements are true about the substances?

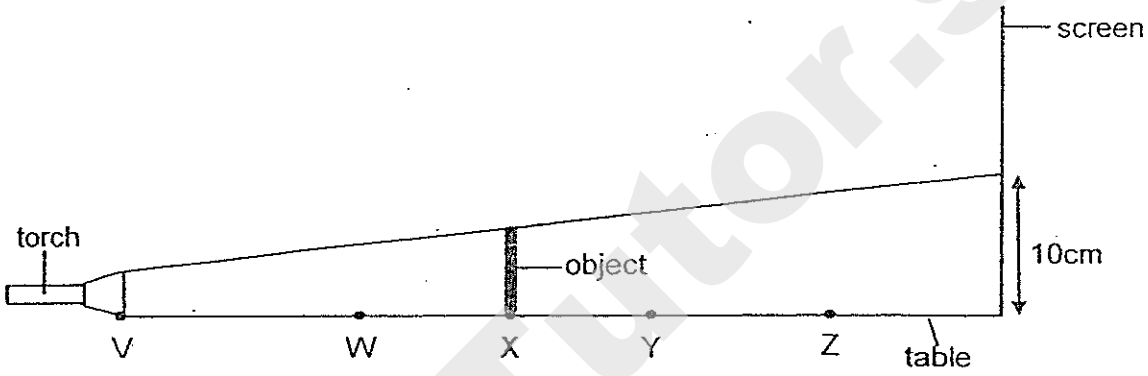
A Substance P is in the solid state at -1°C.
B Substance S is in the liquid state at 85°C.
C All the four substances are in the liquid state at 27 °C.
D Substances Q and R are in the gaseous state at 63°C.

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

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17. Jane wanted to find out the effect of the positions of a light source and an object on the length of the shadow cast by the object.

She marked V, W, X, Y and Z on a table before a screen. An object was placed between the torch and the screen as shown below.



When Jane switched on the torch, she observed a shadow of 10cm was cast on the screen. She then placed the torch and the object at different positions and recorded her observations.

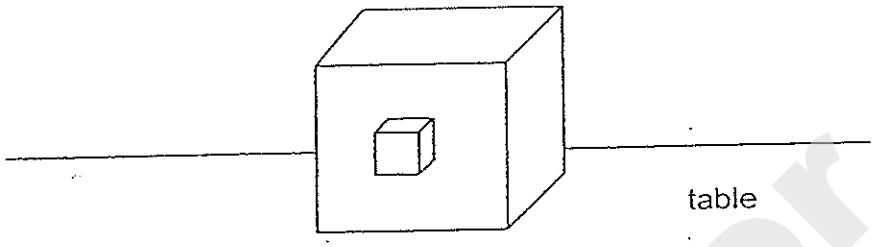
Which one of the following sets of data is most likely to be the one recorded by Jane?

	Position of torch	Position of object	Length of shadow (cm)
(1)	W	X	6
(2)	W	Y	7
(3)	X	Z	12
(4)	V	Z	10

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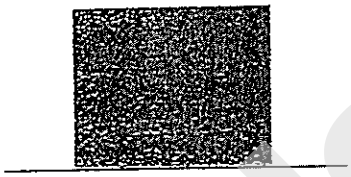
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18. Two cubes of different sizes are attached together and fixed to a table in a room as shown in the diagram below.

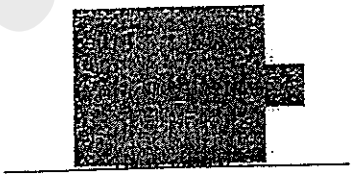


A torch was then shone on the two cubes from different positions and shadows were observed on the walls of the room.

A



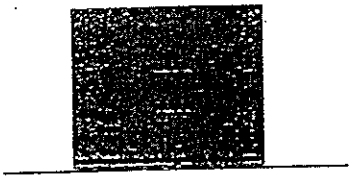
B



C



D



Which of the above shadows could be observed on the walls?

(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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19. Mr Lim used the same amount of water to make two plates of ice, A and B, as shown below before leaving them on the table in the Science Laboratory.

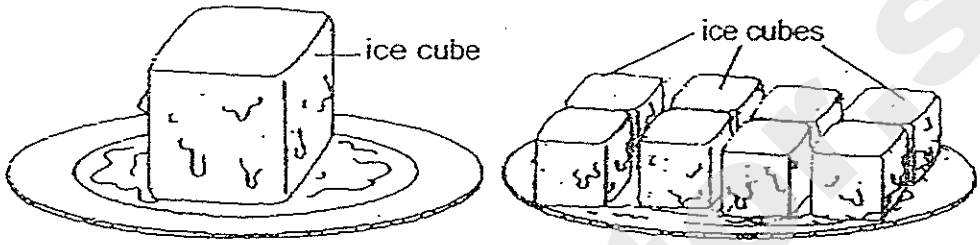


Plate A Plate B

He had made the ice cube on plate A from a mould measuring 2cm by 2cm by 2cm and the eight ice cubes on plate B from a mould measuring 1cm by 1cm by 1cm.
He then asked his students to predict which plate of ice cube(s) would take a longer time to melt completely.

His students gave the following predictions and explanations.

Student	Prediction	Explanation
Rachel	B	There are more ice cubes on plate B so they will take a longer time to melt completely.
Natasha	B	The ice cubes on plate B have a smaller volume so they will gain less heat and take a longer time to melt completely.
Ying Hooi	A	The surface areas of the ice cube on plate A that are exposed to the surrounding is smaller so it will take a longer time for the ice cube to gain heat to melt completely.
Chloe	A	The total volume of the ice cube on plate A is greater so it will take a longer time to gain heat to melt completely.

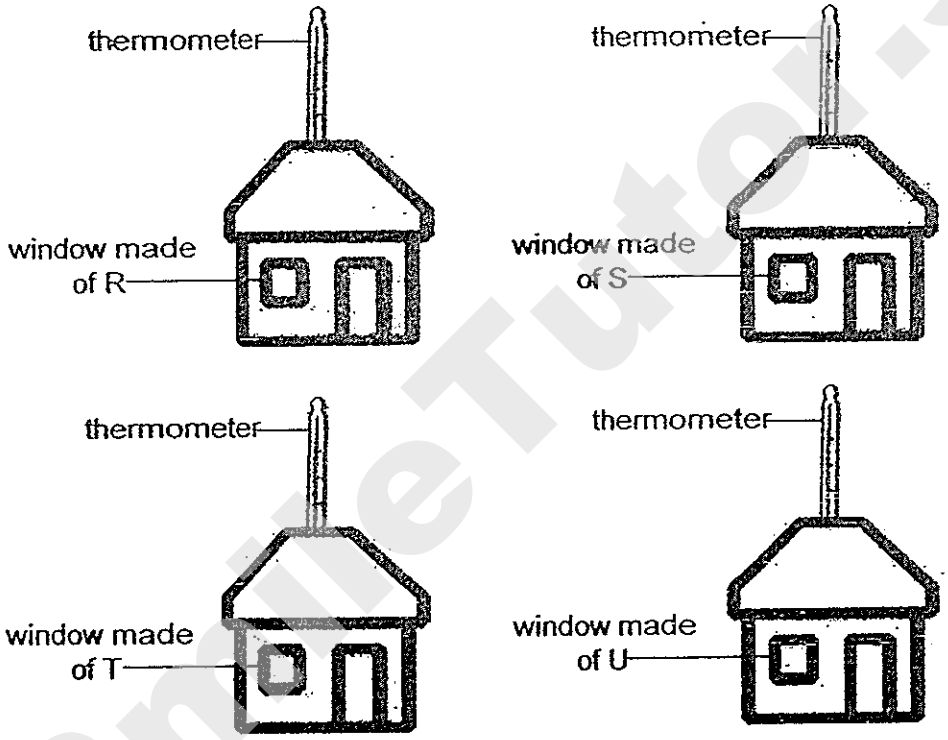
Which one of his above students' predictions and explanations is most likely to be correct?

(1) Chloe
(2) Rachel
(3) Natasha
(4) Ying Hooi

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20. Poh Poh carried out an experiment to find out how windows made of different types of materials, R, S, T and U, could affect the temperature inside a house.

She built four similar model houses, each with windows made of different materials as shown below, and left them at the same place in the garden. She then measured the temperature of the air inside each house model over a period of time in a day and recorded the results in the table below.



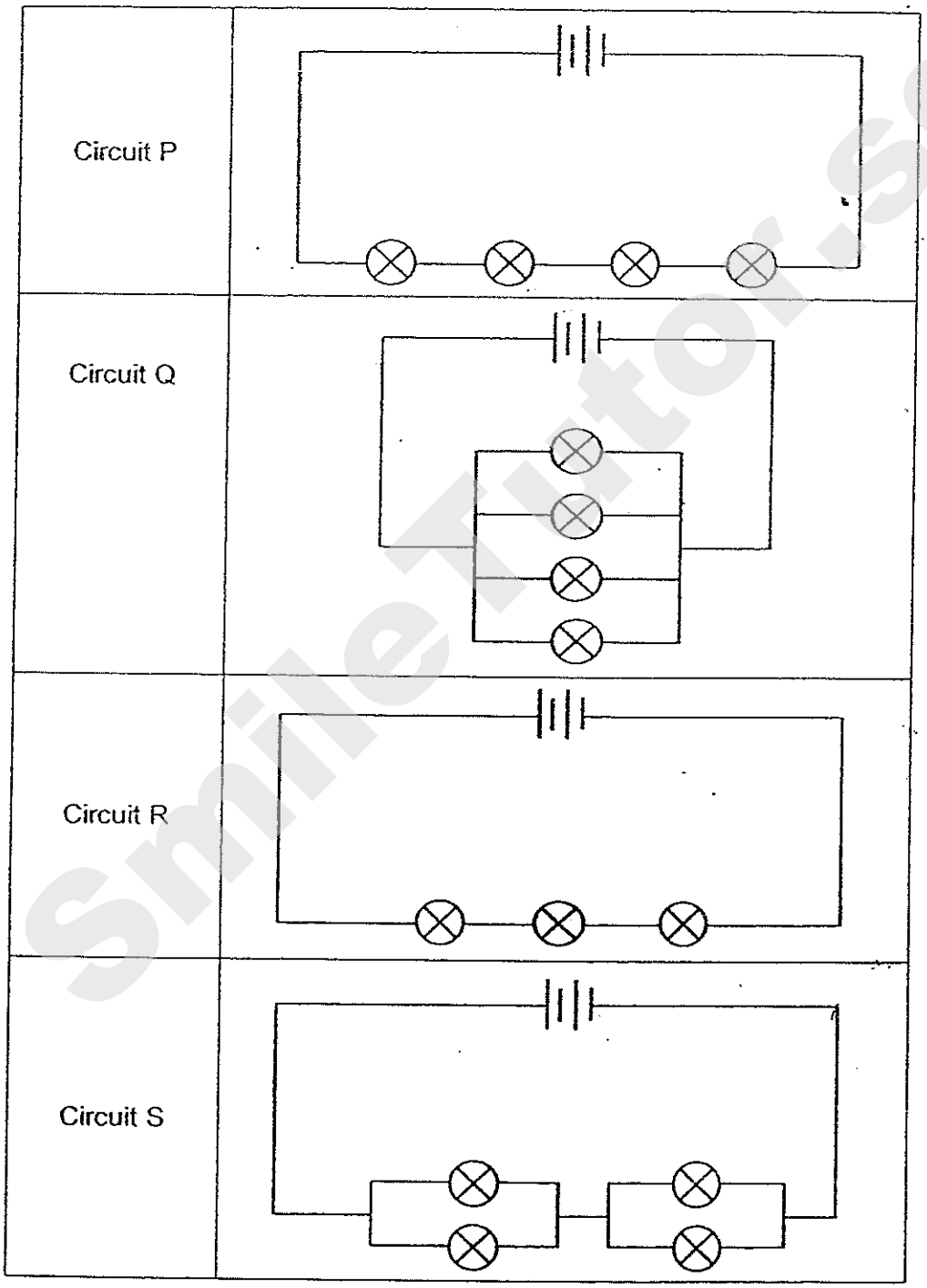
Material used for the windows	Temperature of the air inside the house at the following time of the day (°C)		
	8.00 a.m.	12 p.m.	4 p.m.
R	22	31	23
S	23	26	23
T	22	29	23
U	23	32	24

Which one of the following materials would be most suitable for making the windows of a house in a cold country?

(1) R
(2) S
(3) T
(4) U

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21. Study the electrical circuits, P, Q, R and S, below.



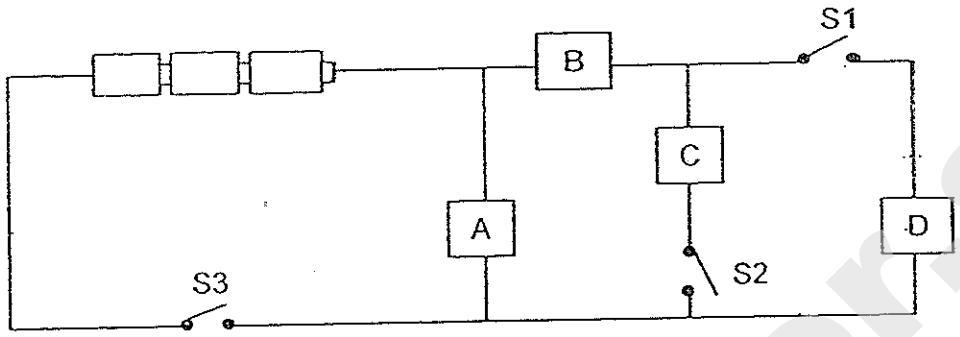
Arrange the circuits in order of the brightness of the bulbs, from the least bright to the brightest. [Ignore resistance in the wires.]

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

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22. Wen Xiong constructed an electrical circuit as shown below.



A wooden toothpick, a bulb, a metal ruler and a rubber band were placed at various points A, B, C and D in the above circuit.

Wen Xiong closed some switches and recorded his observations in the table below.

Closed switches	Did the bulb light up?
S2 and S3	Yes
S1 and S3	No

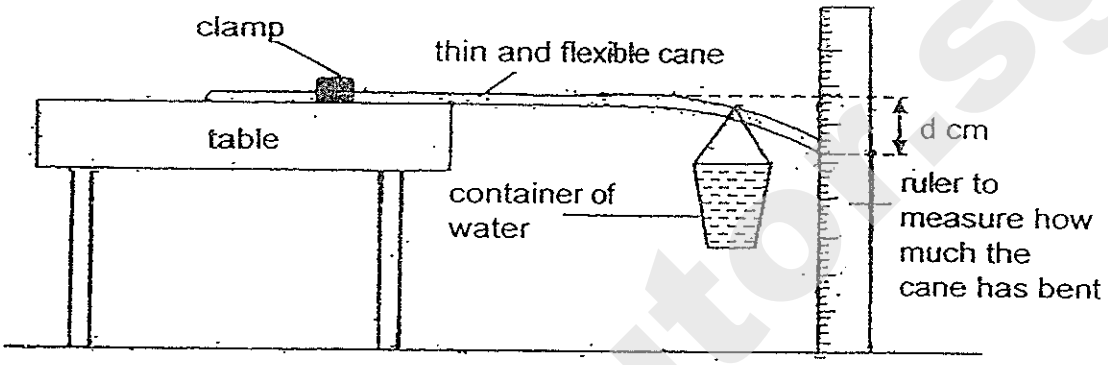
Based on Wen Xiong's observations in the table above, which one of the following correctly identifies the objects placed at points A, B, C and D?

	A	B	C	D
(1)	metal ruler	bulb	wooden toothpick	rubber band
(2)	wooden toothpick	bulb	rubber band	metal ruler
(3)	wooden toothpick	rubber band	bulb	metal ruler
(4)	rubber band	metal ruler	bulb	wooden toothpick

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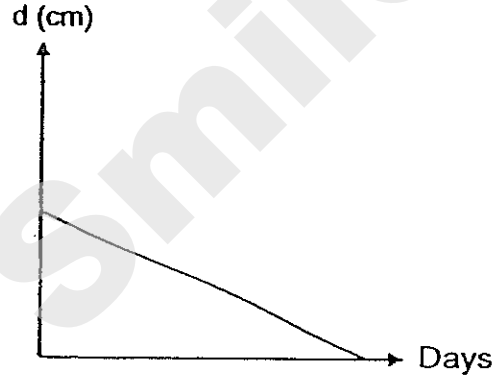
23. Abu set up an experiment with the following apparatus next to an open window in the classroom.



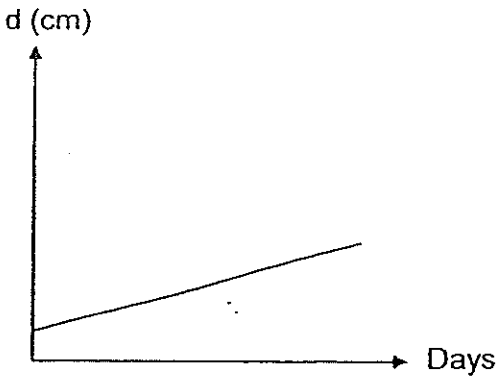
He started the experiment with 400ml of water in a small container and as the water in the container evaporated, he measured and recorded the distance between the table top and the end of the cane, d cm, over a week.

Which one of the following graphs best represents the changes in the value of d cm over a week?

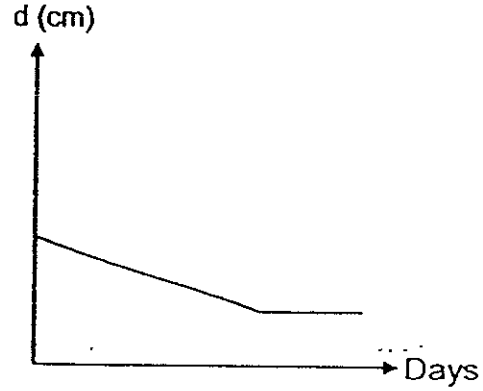
(1)



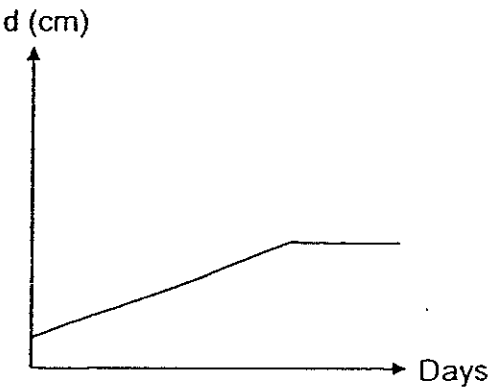
(2)



(3)

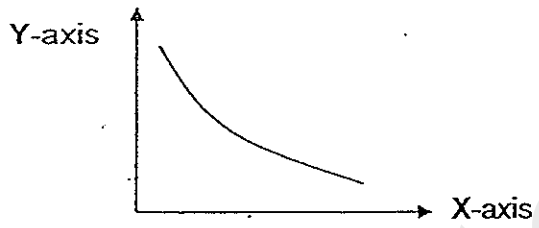


(4)



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24. Hannah put three identical towels containing the same amount of water in the balcony to dry. Each towel was folded such that the exposed surface areas of the towels were different. After 4 hours, each towel was weighed. Hannah then recorded her results and plotted them on a graph.



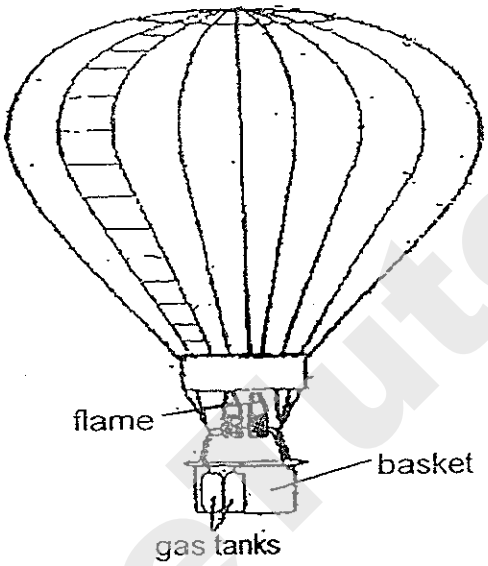
Which one of the following pairs of labels is most suitable for the X and Y axes of the graph?

	X-axis	Y-axis
(1)	Time taken	Mass of towels
(2)	Exposed surface area of towels	Time taken
(3)	Time taken	Exposed surface area of towels
(4)	Exposed surface area of towels	Weight of towels

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25. The hot air balloon shown in the diagram below started to float up from the ground when a flame was created just beneath the balloon.



Which one of the following best represents the energy conversion that resulted in the hot air balloon floating into the sky when the fuel was burnt?

(1) heat energy (flame) → kinetic energy (air) → kinetic energy (balloon)

(2) heat energy (fuel) → kinetic energy (balloon) → potential energy (balloon)

(3) potential energy (fuel) → heat energy (flame) → kinetic energy (air) →

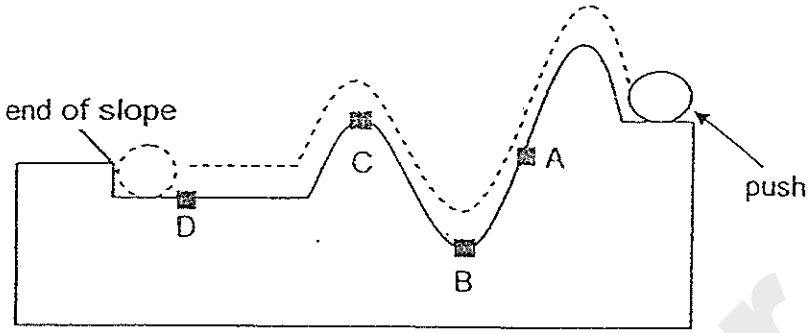
sound energy (balloon) → kinetic energy (balloon)

(4) potential energy (fuel) → heat energy (flame) → kinetic energy (air) →

kinetic + potential energy (balloon)

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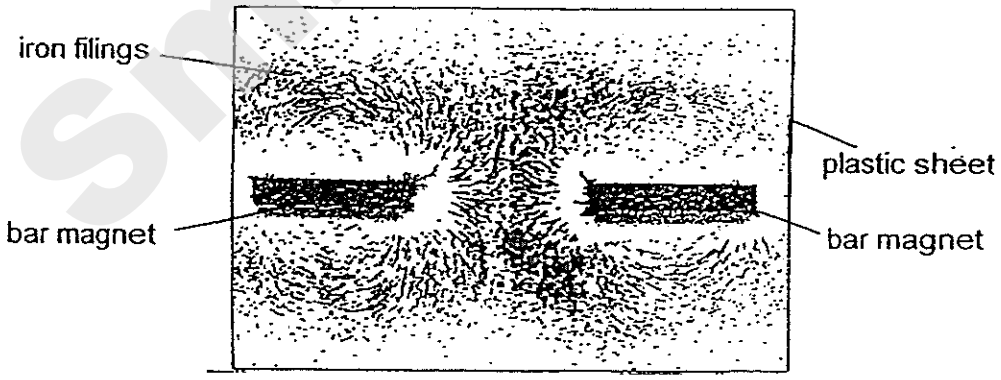
26. Joshua pushed a ball in the direction shown and it rolled towards the end of the slope.



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

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

27. Jaden and Grace placed two bar magnets on a table. Next, they placed a thick sheet of plastic over the two magnets before Grace sprinkled some iron filings over the plastic sheet. The diagram below shows what Jaden and Grace observed.



Based on their observation in the above diagram, which one of the following conclusions can they draw?

(1) The magnets are repelling each other.
(2) One magnet is stronger than the other.
(3) The magnets are attracting each other.
(4) There are no iron filings attracted to the magnets.

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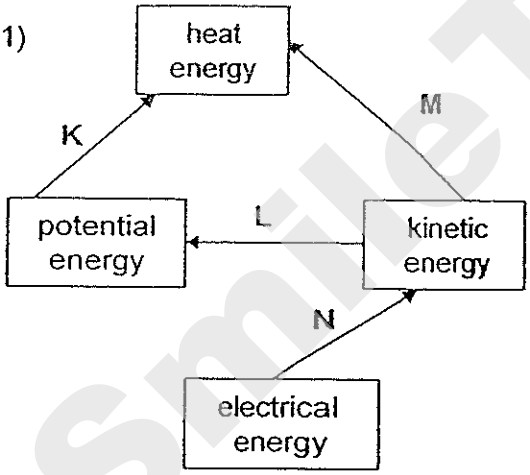
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28. The list below shows some processes K, L, M and N.

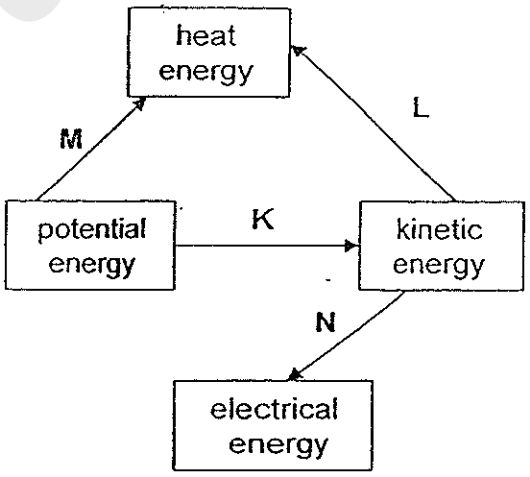
K	Burning of wood
L	A stone rolling down a slope
M	Rubbing two hands together
N	A moving windmill connected to an electric generator

Which one of the following diagrams best represents the main energy changes involved in the processes above?

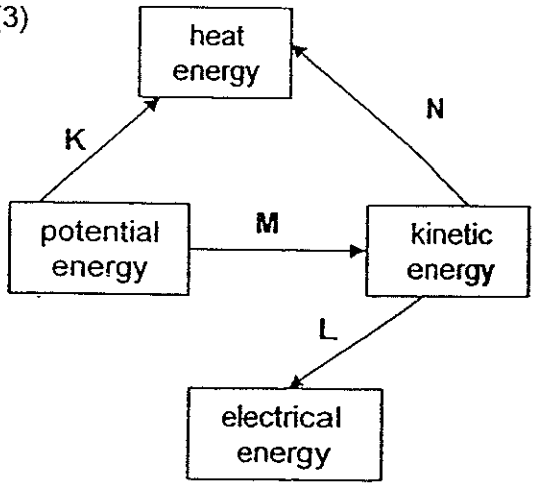
(1)



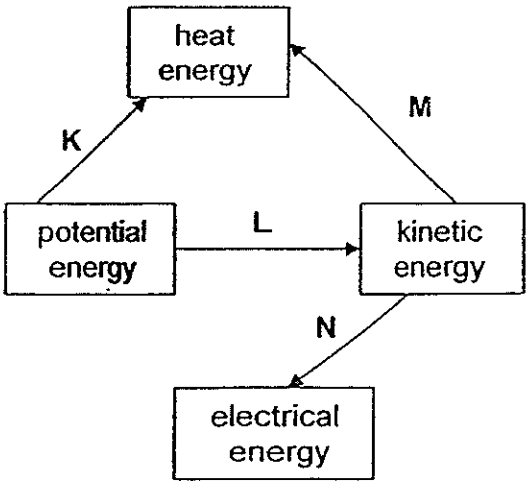
(2)



(3)



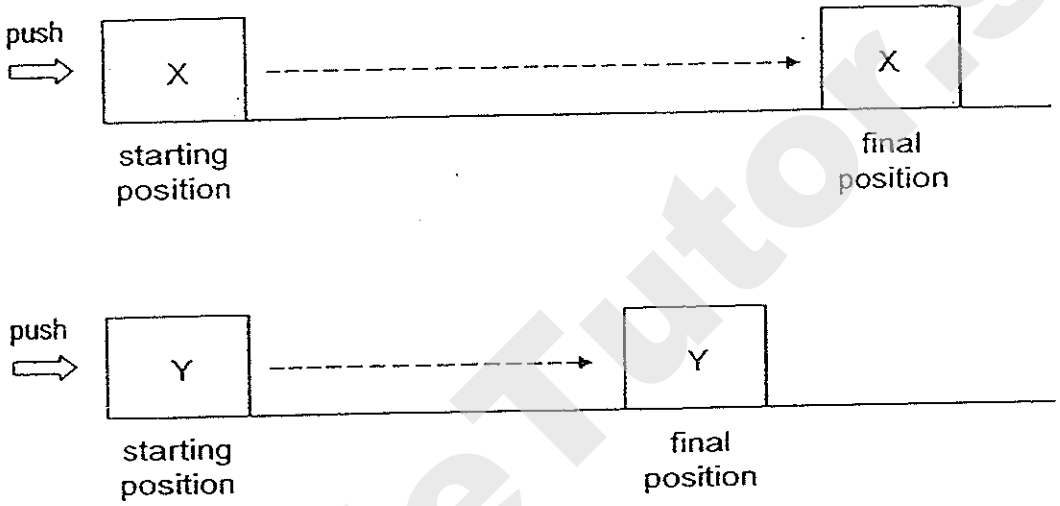
(4)



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29. Two objects, X and Y, of the same size were pushed with an equal amount of force along the same surface. The starting and final positions of the blocks are shown in the diagram below.



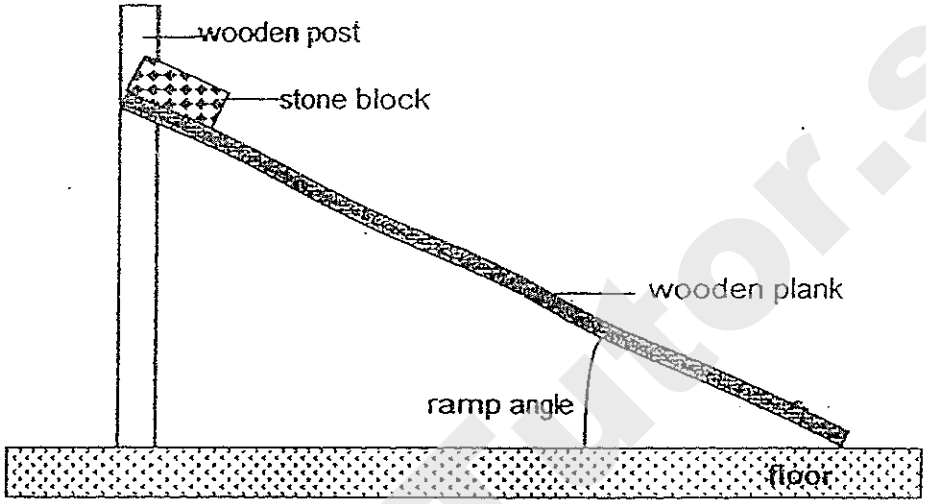
Which one of the following statements best explains the above observation?

(1) Y has a greater volume than X.
(2) X may have a smaller mass than Y.
(3) The surface that X is travelling on is smoother.
(4) The amount of gravitational force acting on Y is less than that acting on X.

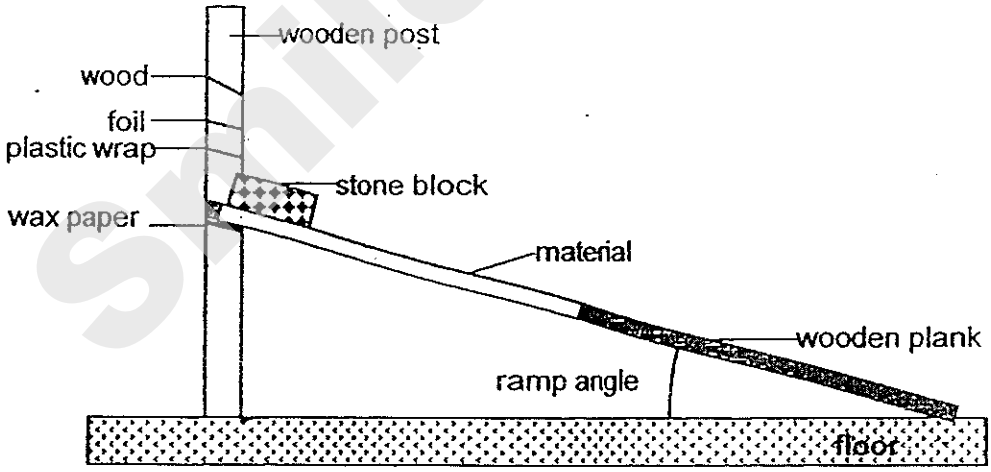
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30. Martin conducted an experiment to investigate the amount of frictional force between a stone block and different surfaces.
He placed one end of a wooden plank on the floor as shown in the diagram below. He then placed a stone block on the other end of the wooden plank and lifted the wooden plank till the stone block starts to slide down.



He repeated his experiment by wrapping different materials, one at a time, around the plank as shown in the diagram below. For each material, he marked on the wooden post the ramp angle where the stone block began to move.



Based on observation of the above experimental results, which one of the following conclusions can Martin make?

(1) There is least friction between the stone block and the wax paper.
(2) The stone block move more quickly over foil than over plastic wrap.
(3) The longer the plank, the greater the friction between the plank and the object moving on it.
(4) The frictional force between the plank and the object moving on it increases when the ramp angle increases.

-End of Section A-

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Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Semestral Assessment 1 – 2014
SCIENCE

BOOKLET B

15 May 2014

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 15 printed pages.

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Parent's Signature/Date

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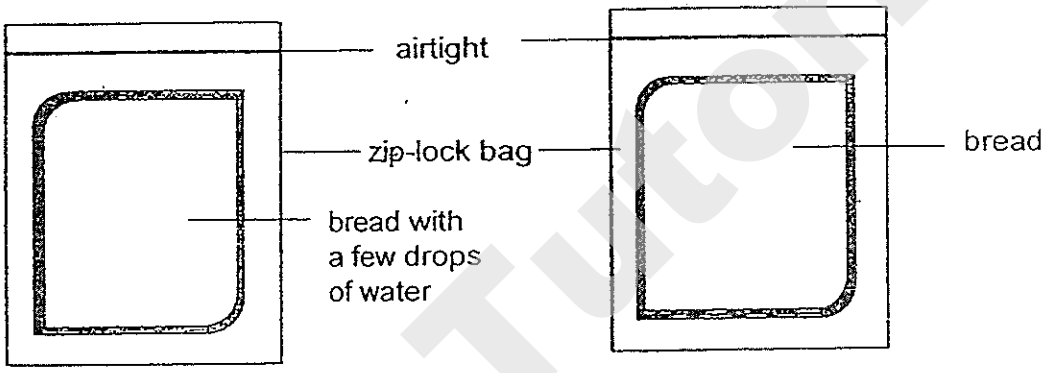
SECTION B (40 MARKS)

Answer the following questions in the spaces provided.

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

---

31. Mason left two similar pieces of bread in two zip-lock bags and labelled them X and Y. A few drops of water were added to the bread in bag X only. He then sealed both bags to make them airtight as shown in the diagram below.



Both bags were left in a room for three days and he recorded his observations in the table below.

Bread	Observation
X	Turns mouldy on day 2
Y	Turns slightly mouldy on day 3

(a) How did sealing the bags to make them airtight help ensure a fair test? [1]

_____

_____

(b) Mason toasted a third piece of bread and cooled it before putting it in another zip-lock bag. Do you expect to see mould growing on the bread on day 3? Give a reason for your answer. [1]

_____

_____

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32. John did a study of two rotting log communities, A and B, of different sizes found in a field. He recorded the populations of the different organisms found in the two communities as shown in the tables below.

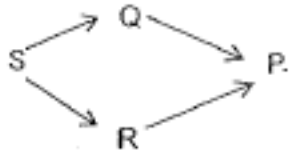
Community A	
Type of organism	Population (%)
P	5
Q	25
R	30
S	40
Total	100

Community B	
Type of organism	Population (%)
P	10
Q	25
R	25
S	35
Others	5
Total	100

(a) Based only on the information given above, put a tick (√) in the boxes to indicate if each of the following statements is "True", "False" or "Not possible to tell" [2]

	Statement	True	False	Not possible to tell
(i)	Community A and B have an equal number of organisms Q.			
(ii)	There are more populations of organisms found in B than in A.			
(iii)	P's population is the smallest in both communities.			
(iv)	The population of R in A is 3 times that of the population of P in B.			

(b) The food relationships among the organisms in community A is shown in the food web below.

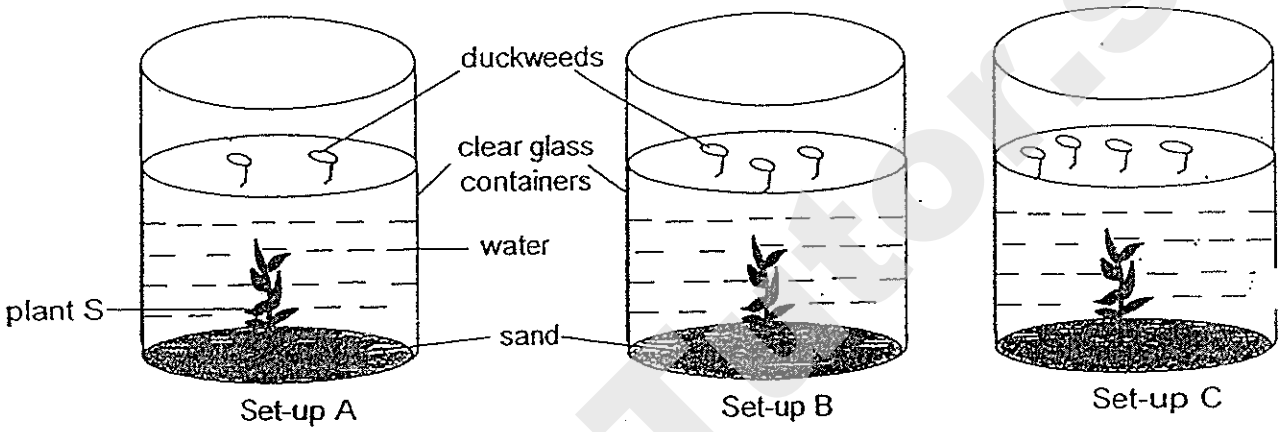


When John introduced organism T into the community, he observed a sharp decrease in population P and R. In the above food web, <u>draw</u> arrows to show the food relationship between T and the other organisms in the community. [1]

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33. Salmah hypothesised that floating plants affect the survival of submerged plants. She then carried out the following experiment to investigate this.

She placed 3 similar submerged plants, S, into 3 clear glass containers, A, B and C, containing the same amount of water. She then placed different number of duckweeds in each container as shown below before leaving the set-ups near the window in the Science laboratory. She went to the Science laboratory every day, for a week, to make her observation.



(a) What do you think Salmah was observing in her experiment? [1]

_____

_____

(b) Based on her observation, Salmah concluded that the number of floating plants have no effect on the survival of submerged plants. Her teacher told her that she had made a wrong conclusion as her set-ups do not allow her to test out her hypothesis. Suggest two reasons for her teacher saying so. [2]

(i) _____

_____

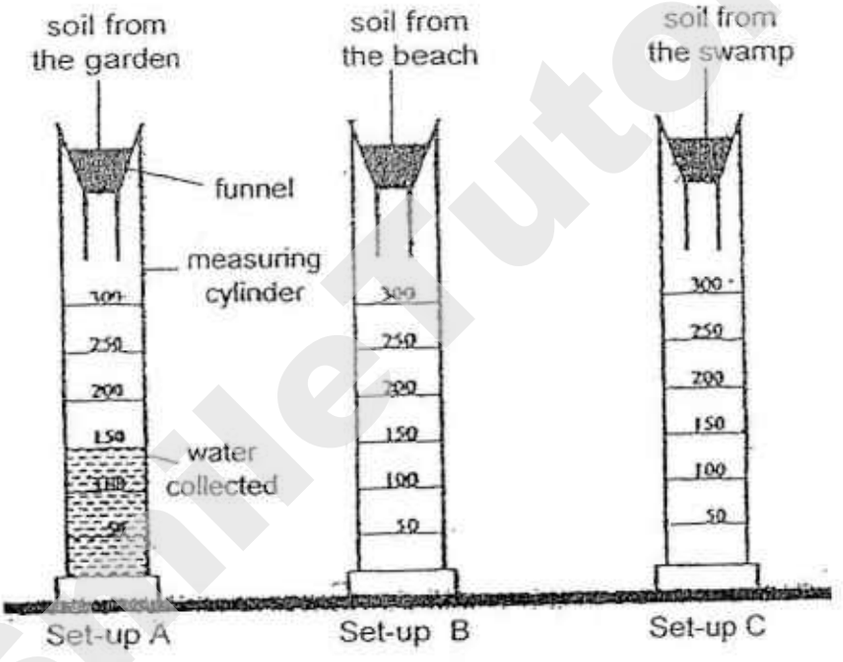
(ii) _____

_____

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34. Jenny collected some soil samples from the garden, beach and swamp. She set up an experiment as shown below to find out which type of soil allows the most amount of water to pass through.

She poured 220ml of water into set-up A which contains soil from the garden. She measured the volume of water collected in the measuring cylinder after 5 minutes. She then repeated the experiment with soil samples from the beach and the swamp.



(a) The volume of water collected in set-up A was approximately 150ml. Put a tick (√) in the boxes to indicate the estimated volume of water collected for set-ups B and C. [1]

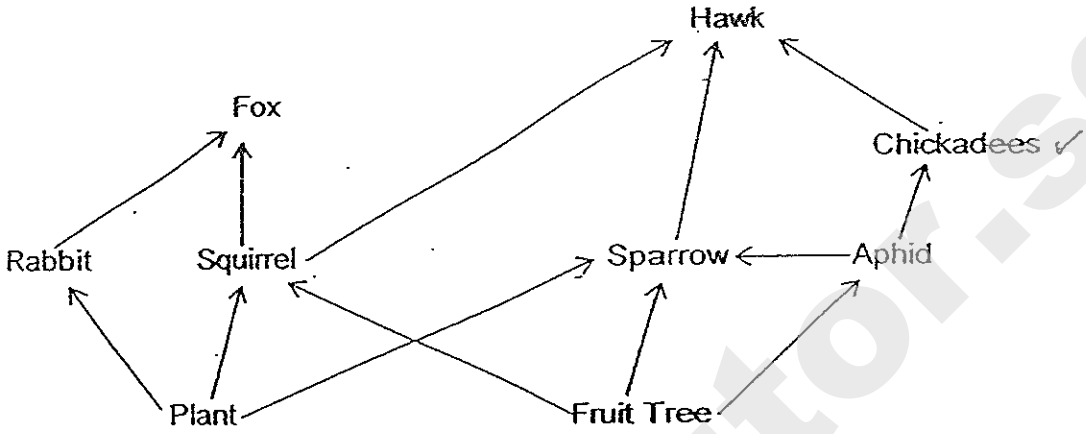
Set-up	Less than 150ml	Equal to 150ml	More than 150ml
B			
C			

(b) Why do you think Jenny waited for 5 minutes before measuring the amount of water in the measuring cylinders? [1]

_____

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35. The food web below shows the food relationship among some organisms in a forest.



(a) Based on the above food web, which organism(s) is/are both a predator and a prey? [½]

_____

(b) Based on the above food web, write down one food chain that has four organisms. [½]

_____

(c) Some ladybirds were introduced into the habitat. How would the chickadees population be affected? Explain your answer. [2]

_____

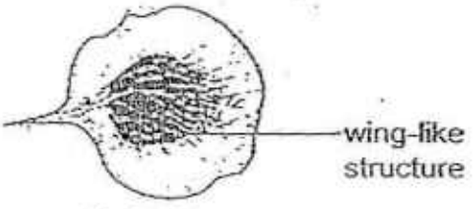
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36. Vanessa dropped a fruit X from a certain height and recorded the time it took to land on the ground.



Fruit X

She then took two similar fruits, Y and Z, and cut the wing-like structures off as shown below. She repeated the experiment with the fruits Y and Z.



Fruit Y



Fruit Z

She recorded her readings in the table below.

Results	Time taken for the fruit to land (sec)			
	1st Try	2nd Try	3rd Try	Average
A	3.6	3.4	3.5	3.5
B	5.2	5.4	5.3	5.3
C	1.9	1.7	1.8	1.7

(a) Which set of the above results, A, B or C, best represents that recorded by Vanessa for fruit X? Explain your answer. [1]

_____

_____

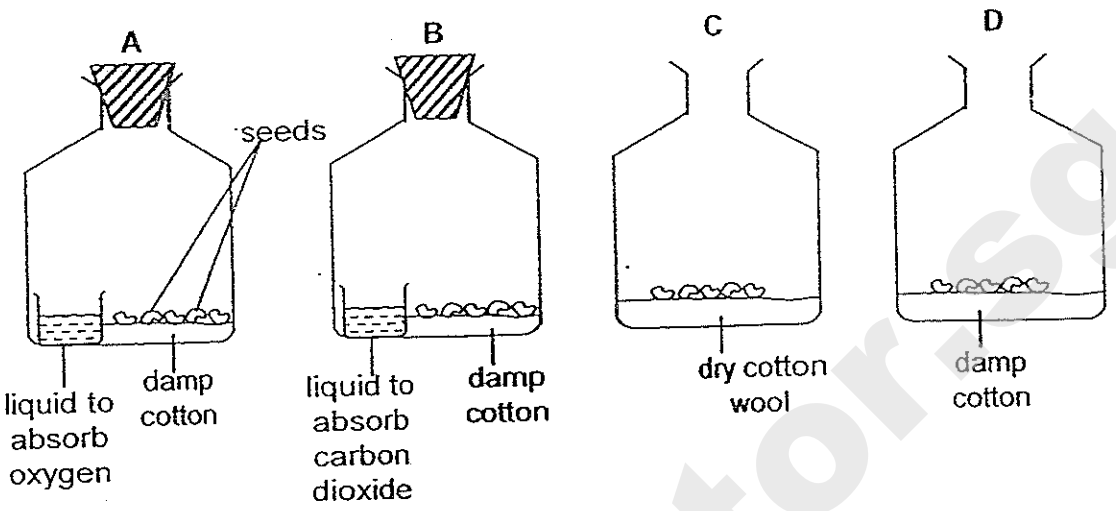
(b) Why did Vanessa repeat her experiment for each fruit three times? [1]

_____

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37. Kendal placed some seeds in four identical bottles as shown in set-ups A, B, C and D below. The set-ups were then left in a room at a temperature of 5°C.



(a) In which set-ups would the seeds most likely germinate? [1]

_____

(b) Give a reason for your answer in (a). [1]

_____

38. A new species of plant was discovered by a group of botanist. They are trying to find out its method of pollination and seed dispersal. They analyzed the flowers and the fruits and made the following observations of the flowers and fruits:

- The fruits are juicy and sweet.
- There are many small and hard seeds in each fruit.
- The flowers are small, colourful and grow in bunches.
- The flowers have short filaments and sticky pollen grains.

(a) Based on the information given above, how do you think the seeds are dispersed? [1]

_____

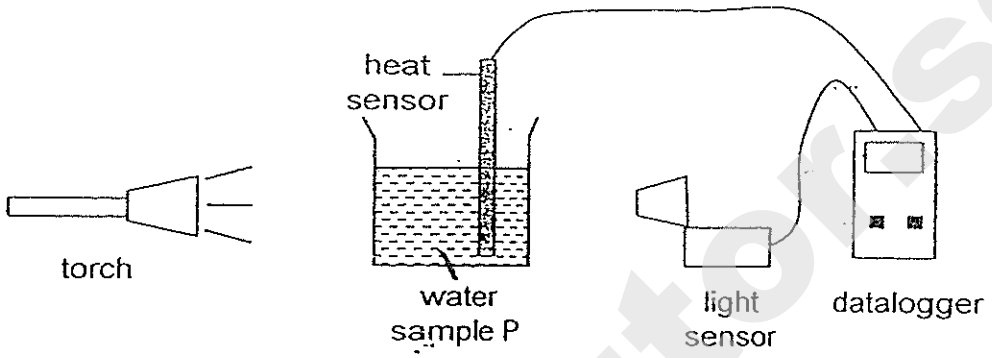
(b) How do the characteristics of the fruits/seeds enable the seeds to be dispersed by the method mentioned in (a)? [1]

_____

_____

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39. Sheon carried out an experiment in a dimly-lit room. She filled a beaker with 100ml of water from pond P and placed it in front of a torch. She switched on the torch for 5 minutes and measured the amount of light that passed through the water and the temperature of the water, using the light and heat sensors connected to a datalogger as shown below. She then repeated her experiment using the same amount of water from ponds Q and R, one water sample at a time.



The readings were recorded in the table below.

Water sample from pond	Amount of light recorded (Lux)	Temperature of water (°C)
P	162	34
Q	5	42
R	288	23

(a) Based on the results in the table above, what is the relationship between the clarity and temperature of the water? [1]

_____

_____

(b) If Sheon drops a coin into three beakers containing pond water P, Q and R respectively, in which beaker, P, Q or R, will she be able to see the coin most clearly? Explain your answer using the results in the table above. [2]

_____

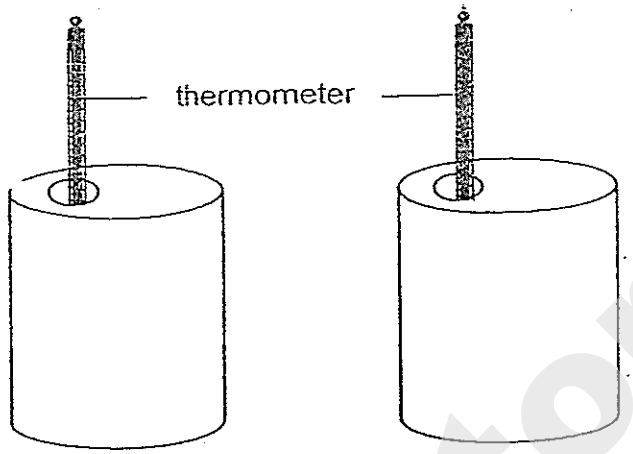
_____

(c) State one other variable Sheon has to keep constant to ensure a fair test. [1]

_____

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40. Ken has two containers, D and E, each made of a different material as shown below. He filled them with the same amount of water measuring 3°C at the same time.



When he touched the containers, container D felt colder to his hands than container E. He then left the two containers in a room. The temperature of the room was 29°C. He measured and recorded the temperature of the water in the two containers at every 4-minute interval.

The table below shows the changes in the temperature of the water in Container E over a period of 20 minutes.

Time (min)	0	4	8	12	16	20
Water temperature (°C)	3	7	12	16	18	21

(a) Do you think the temperature of the water in container D will be **less than, equal to or more than** 21°C at the 20th minute? Explain your answer. [2]

_____

_____

(b) Using the above information from the experiment, which container, D or E, will be more suitable to be used as a flask for keeping hot coffee warm for as long as possible? Explain your answer. [2]

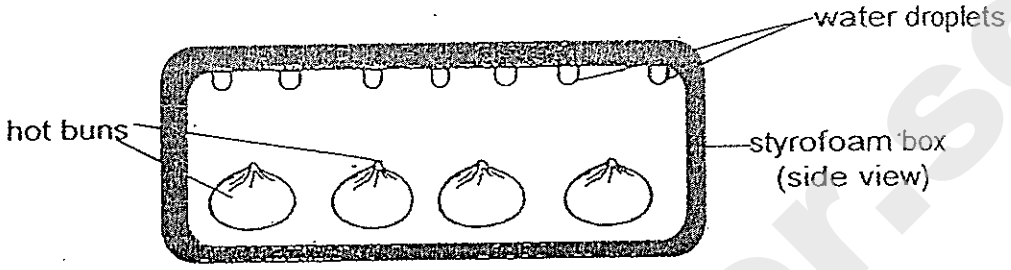
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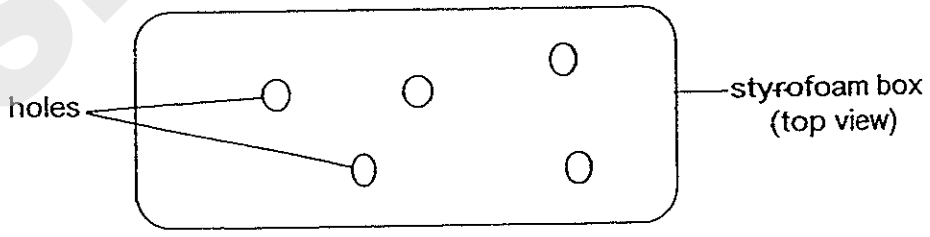
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41. Clarise bought some hot plain buns from a hawker who placed them in an enclosed styrofoam box. When she reached home, she opened the styrofoam box and found that there were water droplets on the inner surface of the lid as shown in the diagram below and her buns were moist.



(a) Explain clearly how the water droplets were formed on the inner surface of the lid. [2]

The next day, Clarise bought similar buns from another hawker. The hawker placed the hot buns into a similar styrofoam box after poking some holes on the lid as shown in the diagram below.

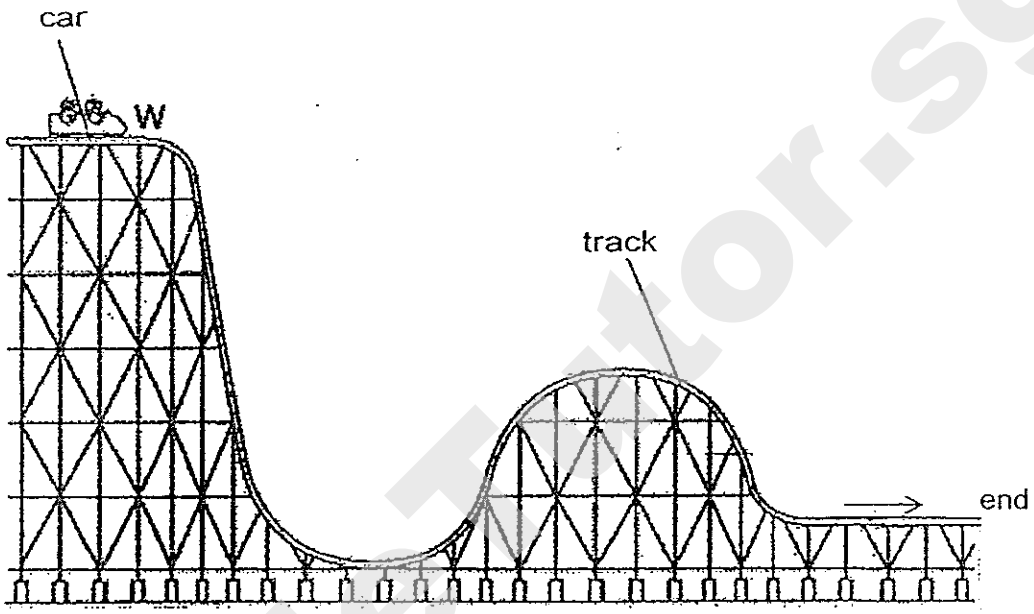


(b) Explain why the hawker poked holes on the lid of the styrofoam box? [1]

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42. The diagram below shows a roller coaster,that works mainly on the principle of energy conversion, at an amusement park. At the start of the ride, the car is usually pulled to point W along the track before it is being released. The car then starts to travel along the track before it finally slows down to a stop at the end of the ride.



(a) Based on observation of the above diagram, explain why the car needs to be pulled to point W at the start of the ride. [2]

_____

_____

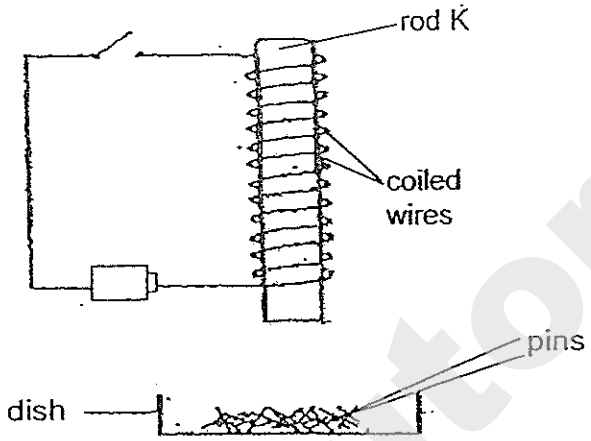
(b) Explain why the car is able to slow down to a stop at the end of the ride, without the application of brakes.

_____

_____

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43. James had four rods made of different materials, K, L, M and N. He placed rod K through some coiled wires in a circuit as shown in the diagram below. When he closed the switch, he recorded the number of pins attracted by rod K. Some pins dropped from rod K when James opened the switch and he recorded the number of pins remaining on rod K after 5 minutes.



He then repeated his experiment using rods L, M and N, one at a time, and recorded his results in the table below.

Rod	Number of pins attracted to the rod when the switch was	
	closed	opened
K	34	6
L	0	0
M	45	4
N	53	45

(a) Based on the result in the table above, which rod lost its magnetism most easily after the switch was opened? Give a reason for your answer. [1]

_____

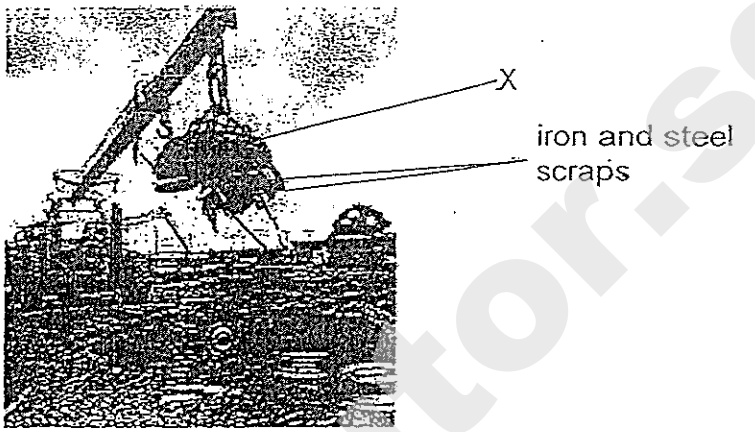
_____

(b) Suggest a reason for the experimental results recorded by James for rod L. [1]

_____

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The diagram below shows a junkyard where the crane has an electric generator connected to a wire coil in part X. When the power is on, X is used to lift iron and steel scraps, and to separate them from non-magnetic scraps. When the scraps are positioned where they want it, they turn off the switch that supplies electrical current to X and the scraps drop.

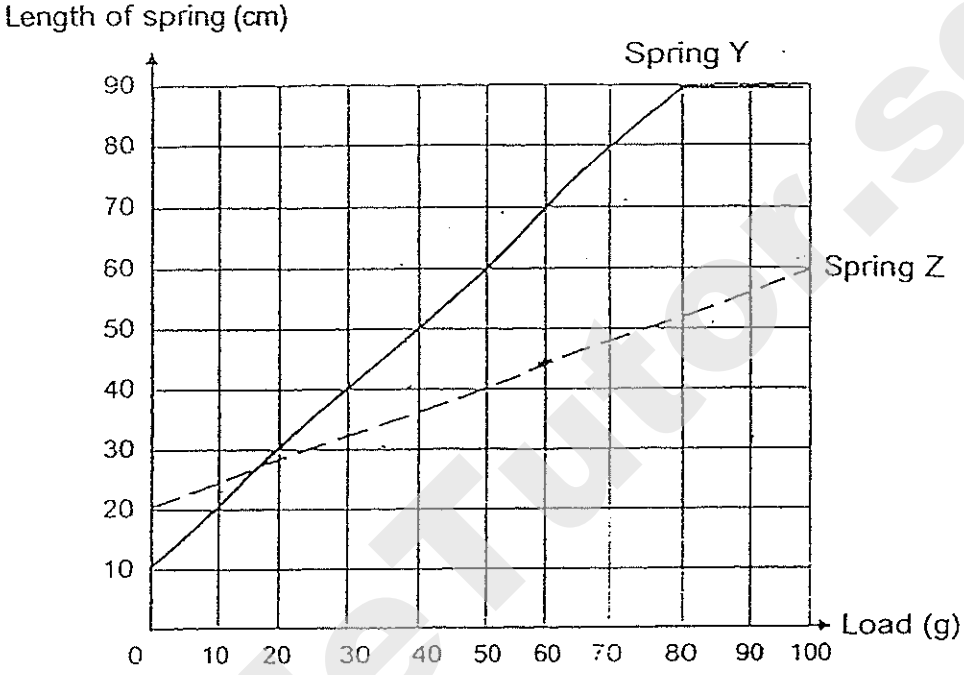


(c) Based on James' experimental results, which material, K, M or N, is the least suitable to be used for part X shown above? Explain your answer. [2]

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44. Arul carried out an experiment with 2 springs, Y and Z. She hung various loads on the 2 springs and measured their corresponding lengths accordingly. She then recorded the results and plotted the graph as shown below.



(a) When a load of 60g is hung on the springs, what is the extension for springs Y and Z? [1]

(i) Spring Y: _____

(ii) Spring Z: _____

(b) Based on your answers in (a), which spring is more elastic? Explain. [1]

_____

(b) Why do you think spring Y behaves as shown in the graph above when loads greater than 80g were hung on it? [1]

_____

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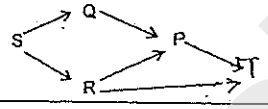
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EXAM PAPER 2014
LEVEL : PRIMARY 6
SCHOOL : ST. NICHOLAS
SUBJECT : SCIENCE
TERM : SA1

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

Q31	(a)	To prevent moisture in the surrounding from entering the bags.
	(b)	No. The toasted piece of bread would not have any water that is necessary for mould to grow.
Q32	(a)	(i) False (ii) True (iii) False (iv) Not possible to tell
	(b)	
Q33	(a)	Which plant is still alive at the end of the experiment.
	(b)	(i) As the sides of her containers were clear, sunlight could still enter the set-up. (ii) The duckweeds are too few to block off sunlight for the plants.
Q34	(a)	Set-up B – more than 150ml Set-up C – less than 150ml
	(b)	To ensure that water had sufficient time to flow through the soil.
Q35	(a)	Chickadee, sparrow
	(b)	Fruit tree → Aphid → Sparrow → Hawk
	(c)	The chickadee population will decrease. There will be competition for food between the chickadees and the ladybirds. There will be more predators for the aphids. Thus, the aphid population will decrease. In turn, there will be less prey for the chickadees so the chickadee population will decrease.
Q36	(a)	B. Fruits X has the largest wing-like structure so it can stay afloat in the air the longest.
	(b)	To ensure the reliability of the results.
Q37	(a)	None
	(b)	There is no warmth for the seed to germinate.
Q38	(a)	By animals
	(b)	The animals will be attracted to eat the juicy and sweet fruits and pass out the undigested seeds in their waste.
Q39	(a)	The greater the clarity of water, the lesser the temperature of the water.
	(b)	Beaker R. Beaker R allows the most amount of light to pass through showing that water is

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Q40	(a)	Container D will be less than 21°C. Container D will be less than 21°C showing that container D is a better heat conductor so it will conduct heat from the surrounding to the water faster.
	(b)	Container E. Container E feels warmer to his hands showing that container E is a poorer heat conductor so it will conduct hear from the surrounding slower.
Q41	(a)	Warm water vapour from the buns came into contact with the cooler inner surface of the lid, lost heat and condensed as water droplets on the inner surface of the lid.
	(b)	The warm water will escape, allowing lesser/no condensation to take place.
Q42	(a)	W is the highest point so the car will have the most gravitational potential energy to be converted to the most kinetic energy for the car to reach the end of the ride.
	(b)	The kinetic energy of the car is converted into sound and heat energy, thus it is able to slow down to a stop at the end of the ride.
Q43	(a)	Rod M. It dropped the most pins when the switch was opened.
	(b)	Rod L is not a magnetic object so it cannot be magnetised.
	(c)	Material N. The least number of pins dropped from N when the switch is opened showing that N loses its magnetism the least easily so most of the magnetic objects will not drop from it when used for X.
Q44	(a)	(i) 60cm (ii) 25cm
	(b)	Spring Y. Spring Y extended more than spring Z when a 60g load was placed in them.
	(c)	Spring Y exceeded its tensile strength and could not be stretched further.

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HENRY PARK PRIMARY SCHOOL

2014 SEMESTRAL EXAMINATION 1

PRIMARY 6 SCIENCE

Booklet A

Name: _____ ( )

Class: Primary 6 _____

60

30 Questions
60 Marks

Total Time for Booklet A and B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

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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 (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the **Optical Answer Sheet**.

---

1. Alex made some observations of Animal F and wrote them in his Science journal.

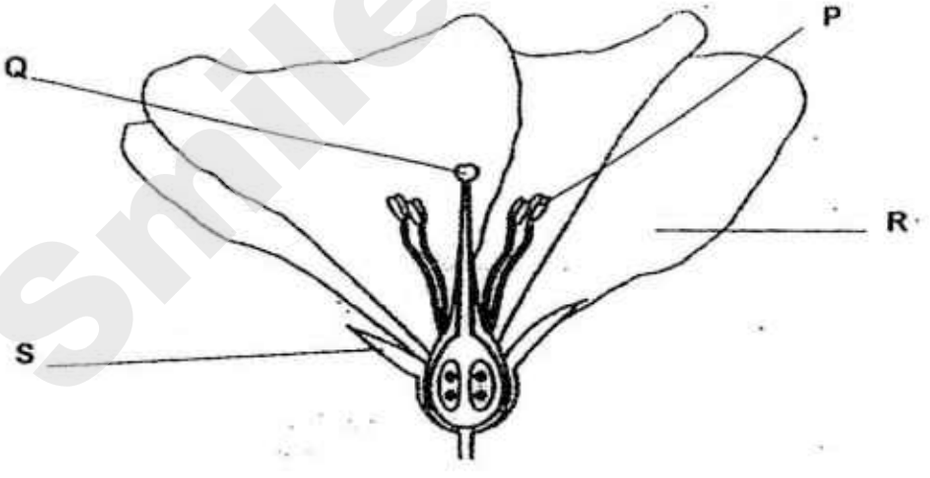
Animal F
• Has hair on its body
• Can fly

Which of the following animal groups does Animal F belong to?

(1) Fish
(2) Birds
(3) Insects
(4) Mammals

( )

2. Siti conducted an experiment with a flower shown below.



She removed one part of the flower. The flower did not produce any seeds after that.

Which part of the flower, **P**, **Q**, **R** or **S** did Siti remove?

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

( )

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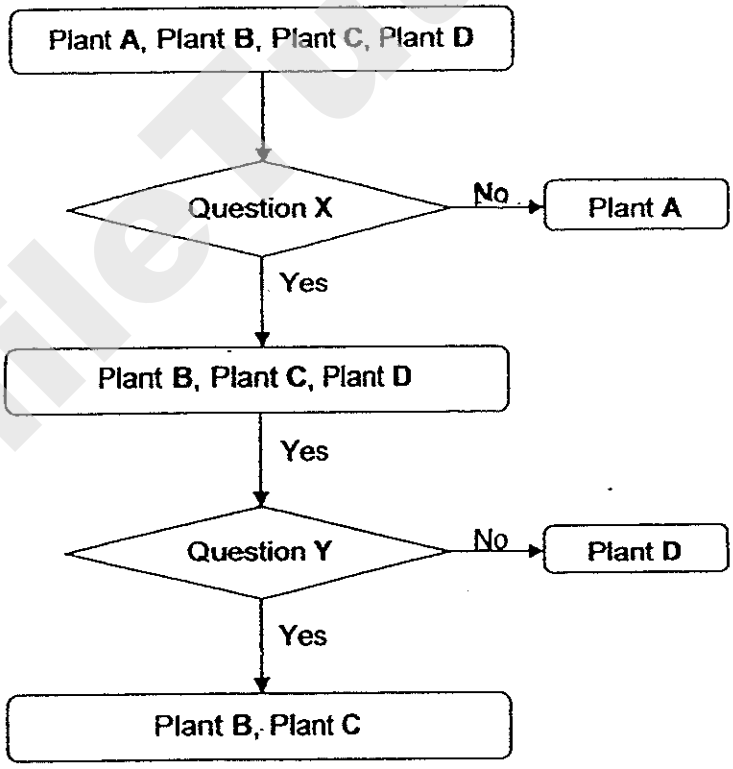
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3. Ali had to classify the four plants, **A**, **B**, **C** and **D**, shown below.



Plant **A** Plant **B** Plant **C** Plant **D**

He classified them using the chart below.



What were the two questions, **X** and **Y**?

	Question X	Question Y
(1)	Does it grow on water?	Does it reproduce from seeds?
(2)	Does it grow on land?	Does it reproduce from seeds?
(3)	Does it grow on water?	Does it reproduce from spores?
(4)	Does it grow on land?	Does it reproduce from spores?

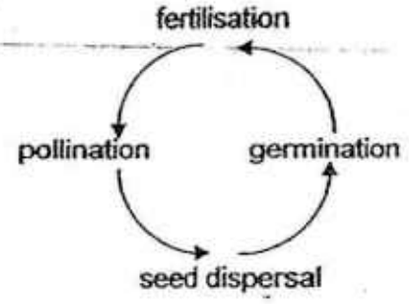
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4. Which one of the following shows the correct order of processes in the life cycle of a flowering plant?

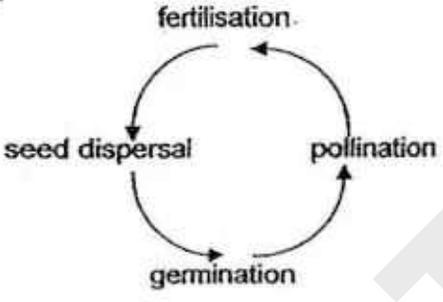
(1)



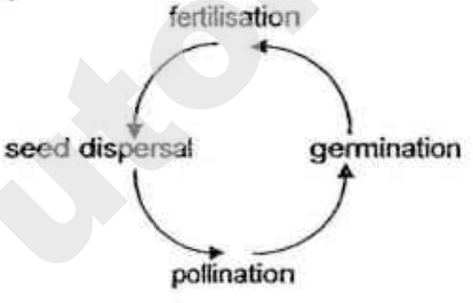
(2)



(3)



(4)



( )

5. Sarah conducted an experiment with substances **X**, **Y** and **Z**.
These are her observations.

X cannot be compressed. **Y** will take the shape of the container. **Z** can be compressed.

Y becomes **Z** when it gains heat. **X** becomes **Y** when it gains heat.

Based on her observations, identify **X**, **Y** and **Z** respectively.

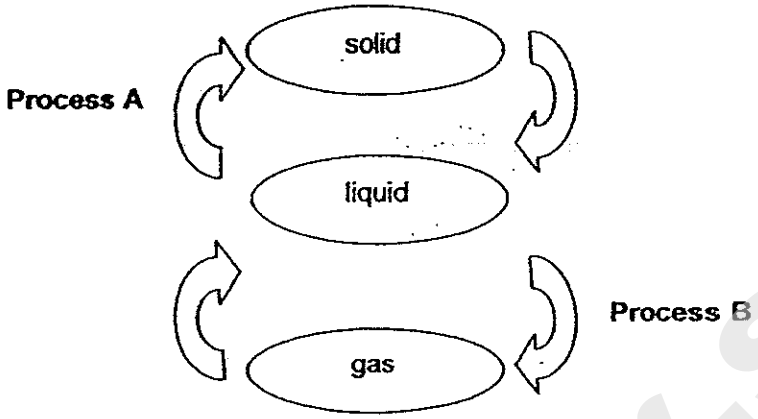
	X	Y	Z
(1)	Solid	Liquid	Gas
(2)	Solid	Gas	Liquid
(3)	Liquid	Solid	Gas
(4)	Gas	Liquid	Solid

( )

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6. The diagram below shows how water changes from one state to another.



Which of the following is true about Process A and Process B?

	Process A		Process B	
(1)	Freezing	Heat gain	Evaporation	Heat loss
(2)	Freezing	Heat loss	Evaporation	Heat gain
(3)	Boiling	Heat gain	Condensation	Heat gain
(4)	Boiling	Heat loss	Condensation	Heat loss

( )

7. The table below shows the boiling and freezing points of four substances, **W**, **X**, **Y** and **Z**.

Substance	Boiling Point (°C)	Freezing Point (°C)
W	50	20
X	120	40
Y	200	130
Z	90	3

Which of the following substances will be a liquid at 65°C?

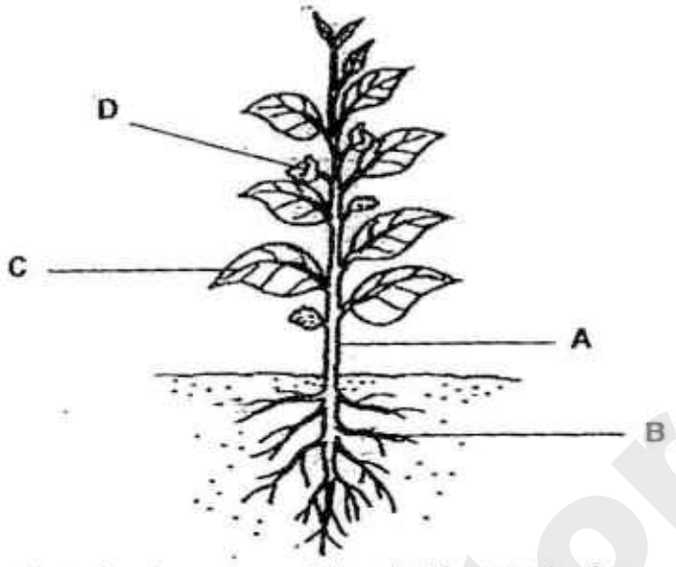
(1) W and X only
(2) W and Y only
(3) X and Z only
(4) Y and Z only

( )

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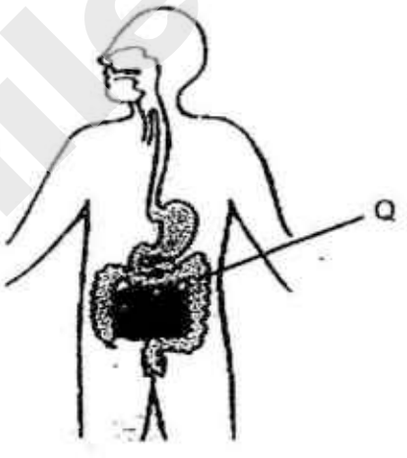
8. The diagram below shows four different parts of the balsam plant.



The main function of part _____ of the plant is reproduction.

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

9. The diagram below shows the human digestive system.



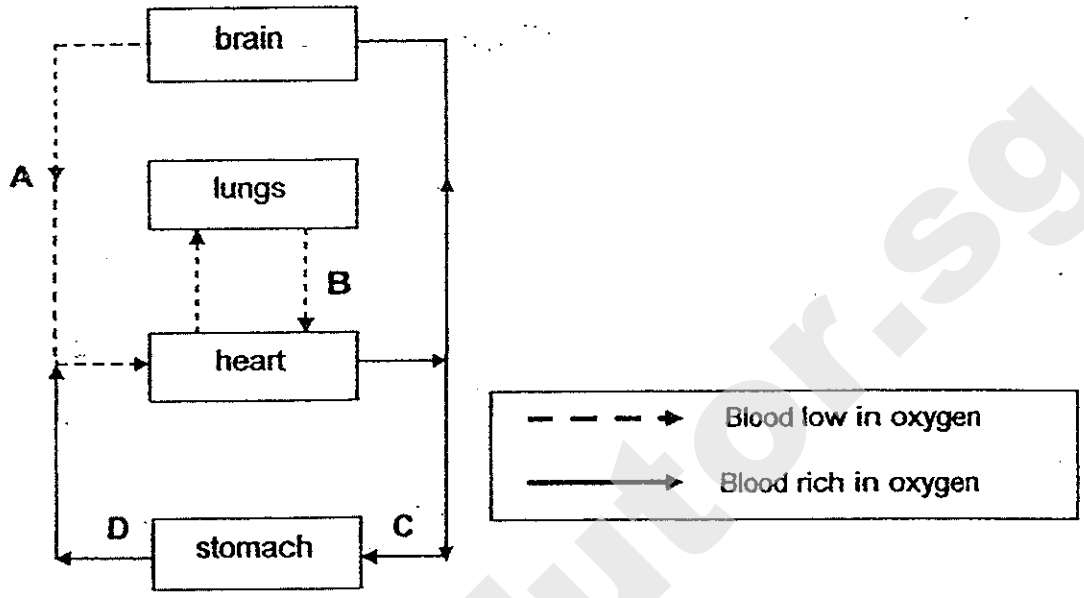
What is the function of part Q?

(1) It removes water from the undigested food.
(2) It breaks food down into simple substances.
(3) It passes the undigested food out of the body.
(4) It absorbs the digested food into the bloodstream. ( )

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10. The diagram below shows the direction of blood flow indicated by arrows, **A**, **B**, **C** and **D**, in the human circulatory system.



Which two arrows were **not** drawn correctly?

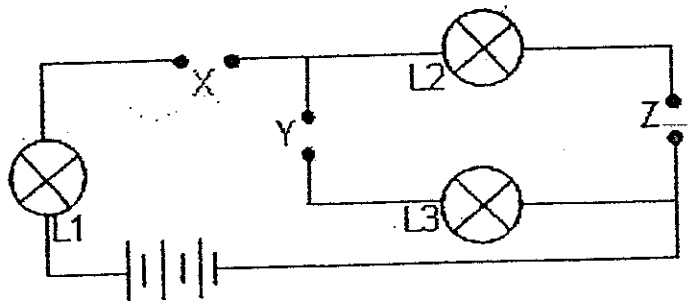
(1) A and B
(2) B and D
(3) B and C
(4) C and D

( )

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11. Ali had three rods, **P**, **Q** and **R**, made of different materials.
He placed them in various positions, **X**, **Y** and **Z**, in the circuit below.



The results of the experiment are shown in the table below.

Positions where rods were placed			Did the bulb light up?		
X	Y	Z	L1	L2	L3
P	Q	R	Yes	Yes	No
Q	R	P	No	No	No
R	P	Q	Yes	No	Yes

Which one of the inferences can he make based on the results above?

(1) Only rod R is a non-conductor of electricity.
(2) Only rods P and R are conductors of electricity.
(3) Only rods P and Q are conductors of electricity.
(4) Rods Q and R are better conductors of electricity than rod P. ( )

12. Which of the following **does not** show effects of heat gain?

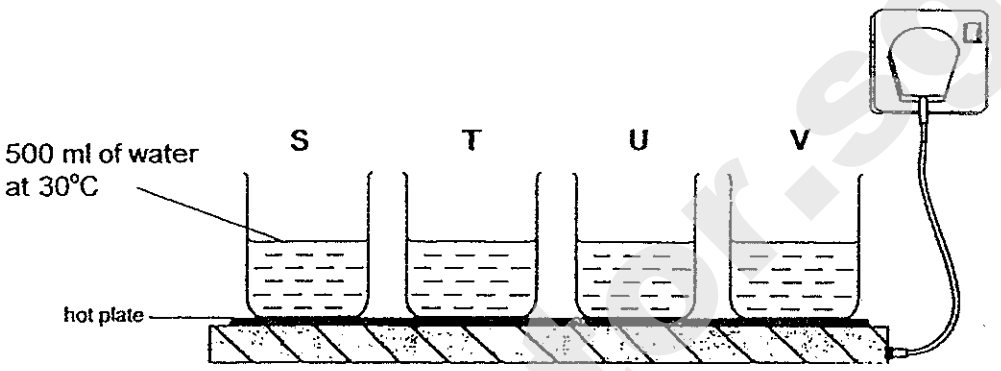
(1) Water freezing
(2) Ice cube melting
(3) Drying clothes in the garden
(4) Cooking rice in a rice cooker ( )

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13. In an experiment, Jamal uses an electrical hot plate to heat four containers of water, **S**, **T**, **U** and **V**, to 100°C.

The amount and temperature of water in each container is the same at the start of the experiment. The material of each container is different.



He then recorded how long it took for each container to reach 100°C in the table below.

Container	Time taken to reach 100°C (minutes)
S	20
T	50
U	15
V	35

Based on his results above, arrange the containers from the poorest conductor to the best conductor of heat.

(1) T, V, S, U
(2) T, S, V, U
(3) U, S, V, T
(4) U, V, S, T ( )

14. Many of our daily activities use energy from burning fossil fuels such as coal and oil.
We need to conserve such energy resources because fossil fuels

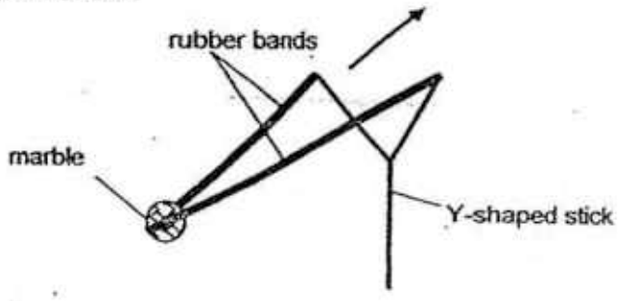
A: are renewable.
B: take millions of years to form.
C: are not used up and the environment stays clean.

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

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15. Dheeva made a toy with rubber bands, a Y-shaped stick and a marble as shown in the diagram below.



Dheeva released the marble and it landed at a distance.

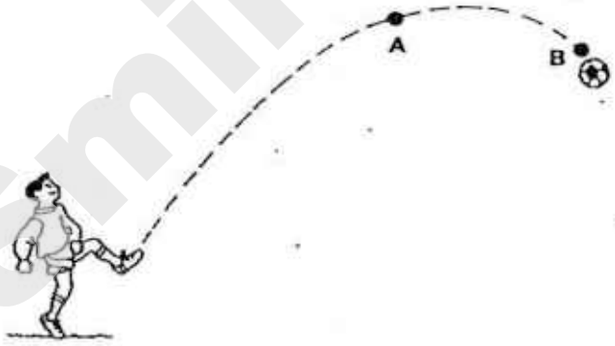
If he wanted the marble to travel a longer distance when released, which of the following would Dheeva carry out?

A: Use more rubber bands
B: Stretch the rubber bands further.
C: Use a marble with a greater mass.
D: Change the colour of the rubber band.

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

( )

16. Bob kicks a football.
The path taken by the football after he has kicked it is shown below.



Which of the following statements show correctly what happens to the amount of gravitational potential energy and kinetic energy of the football between points **A** and **B**?

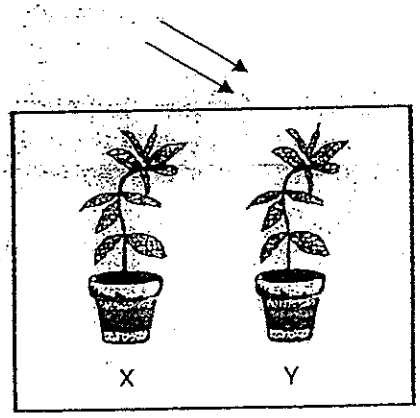
	Gravitational Potential Energy	**Kinetic Energy**
(1)	Decreases then increases	Decreases then increases
(2)	Decreases then increases	Increases then decreases
(3)	Increases then decreases	Decreases then increases
(4)	Increases then decreases	Increases then decreases

( )

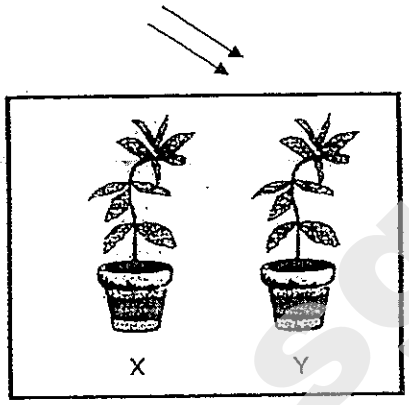
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17. Raja wanted to investigate how the amount of light affects the growth of plants. The diagram below shows each of his set-ups in a glass tank.



glass tank covered with **tracing paper**



glass tank covered with **black paper**

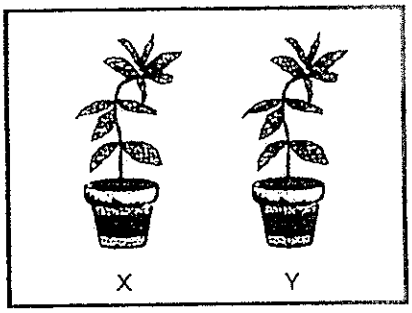
Which one of the following could be used as a control for his experiment?

(1)



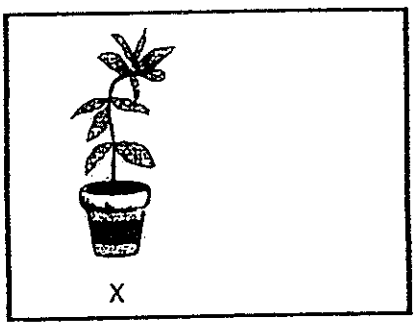
glass tank covered with **tracing paper**

(2)



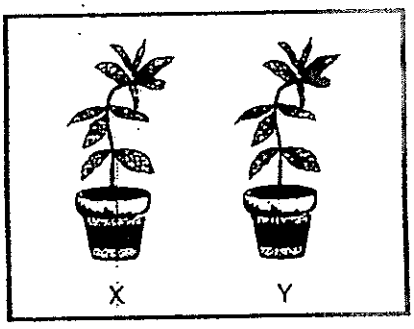
glass tank covered with **dark paper**

(3)



glass tank

(4)



glass tank

( )

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18. Sue carried out an experiment with some water plants and fishes. She used 3 transparent jars, **A**, **B** and **C**, of the same size for her experiment. In each jar, she put in 10 fishes of the same type.

The table below shows the results of her experiment.

Jar	Size of jar	Amount of light (lux)	Number of water plants	Amount of water (ml)	Number of fishes alive at the end of the experiment
A	Medium	300	2	1500	3
B	Medium	300	8	1500	9
C	Medium	300	4	1500	6

What hypothesis is Sue testing?

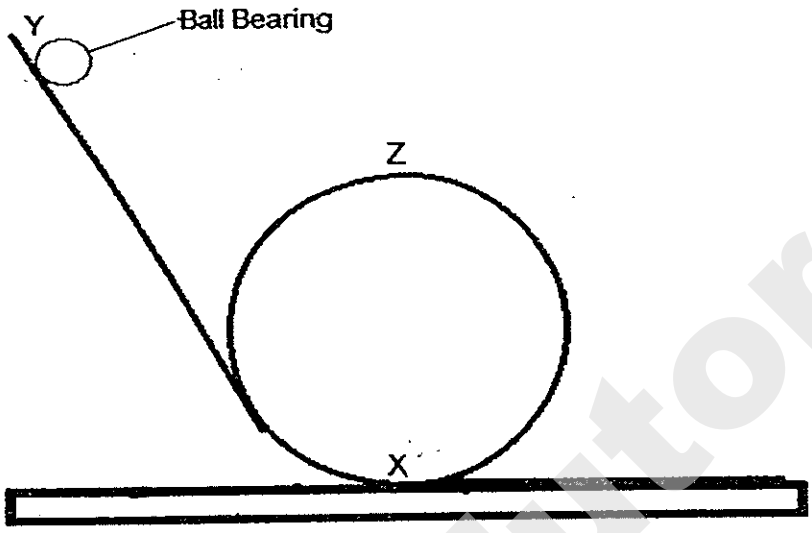
(1) The greater the size of the jar, the greater the chance of survival of the fishes.
(2) The greater the amount of light, the greater the chance of survival of the fishes.
(3) The greater the amount of water, the greater the chance of survival of the fishes.
(4) The greater the number of water plants, the greater the chance of survival of the fishes.

( )

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19. The diagram below shows a loop apparatus and a ball bearing that is released from Point Y.



Loop Apparatus

Which of the following statements are correct about the ball bearing at points, X, Y and Z?

A: The ball bearing has the greatest kinetic energy at X.

B: The ball bearing has the greatest kinetic energy at Y.

C: The ball bearing has less gravitational potential energy at X than at Y.

D: The ball bearing has less gravitational potential energy at Y than at Z.

(1) A and C only

(2) B and D only

(3) A, C and D only

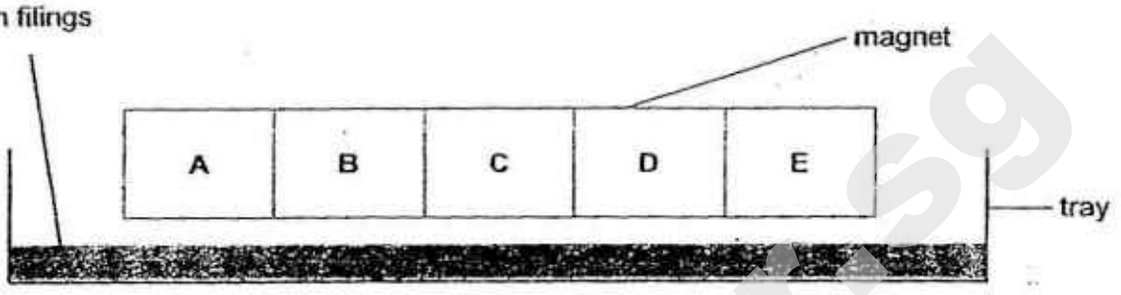
(4) B, C and D only

( )

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20. In an experiment, Moses put a bar magnet which has been divided into five equal parts, **A**, **B**, **C**, **D** and **E**, into a tray of iron filings as shown in the diagram below.



Then, he measured the mass of iron filings found attracted to each part of the bar magnet. He repeated the experiment another two times.

The table below shows the results of the experiment.

Experiment	Mass of iron filings (g)				
	A	B	C	D	E
1st	10.2	7.1	2.2	7.4	10.5
2nd	10.9	6.9	2.6	7.1	10.6
3rd	10.3	7.5	3.0	7.3	10.6

Which of the following statements about the bar magnet are correct?

A: There is no magnetic force in the middle part of the magnet.

B: The magnetic strength of the poles of the magnet is the strongest.

C: The magnetic strength of the middle part of the magnet is the weakest.

D: The magnetic strength increases from one pole to the other pole of the magnet.

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

( )

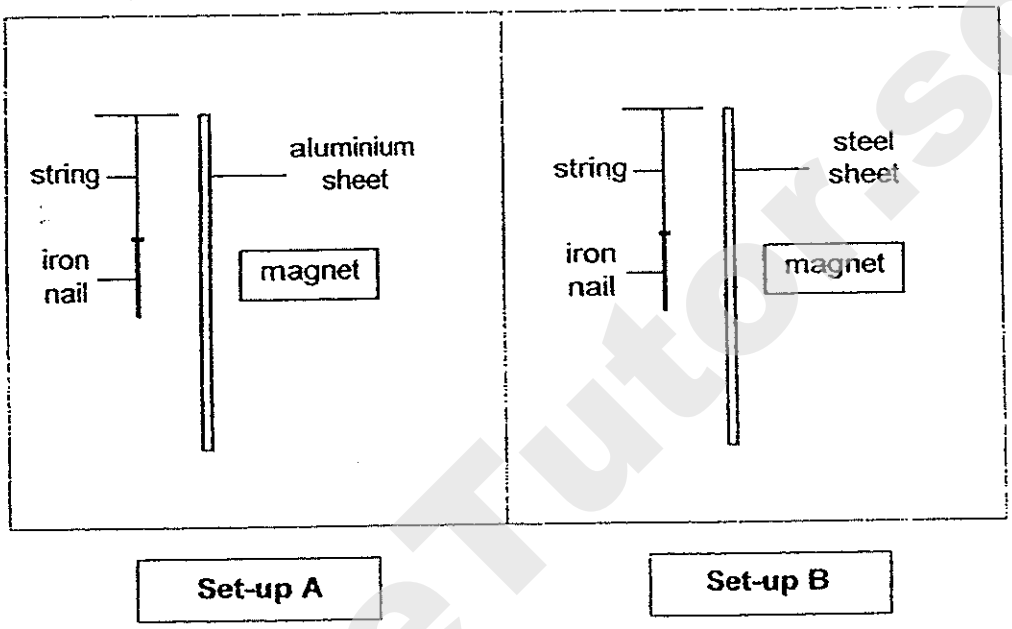
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21. Fiona carried out an experiment to find out whether magnetism can pass through aluminium or steel.

In her experiment, she used aluminium and steel sheets of the same thickness. She also used identical magnets and iron nails.

The diagram below shows her experimental set-ups, A and B.



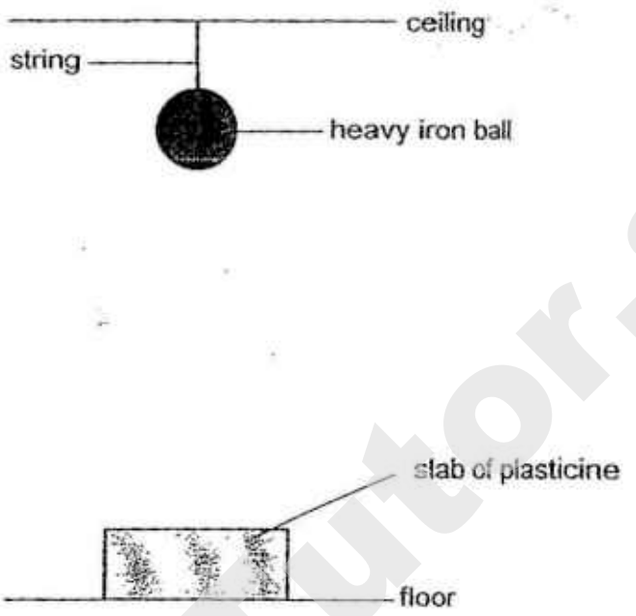
What would Fiona observe in set-ups A and B?

(1) Both iron nails would remain stationary.
(2) Both iron nails would move towards the magnets.
(3) Only iron nail in set-up A would move towards the magnet.
(4) Only iron nail in set-up B would move towards the magnet. ( )

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22. The experimental set-up shown below has a heavy iron ball hung from the ceiling with a slab of plasticine under it.



Which of the following is correct about the force involved and its effect when the string is cut with a pair of scissors?

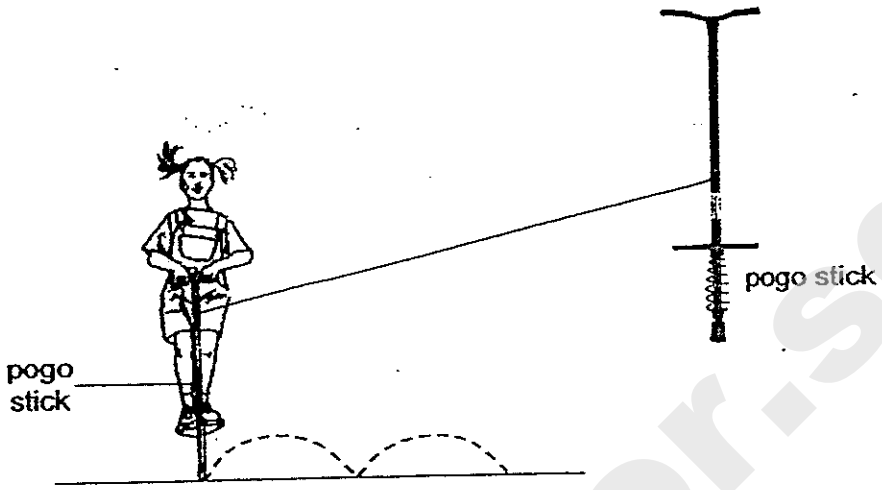
	Force involved	Effect of the force
(1)	Friction	The slab of plasticine changes shape.
(2)	Weight	The slab of plasticine changes shape.
(3)	Friction	The slab of plasticine bounces up and down.
(4)	Gravity	The mass of the slab of plasticine decreases.

( )

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23. Chloe plays with a pogo stick as shown in the diagram below.



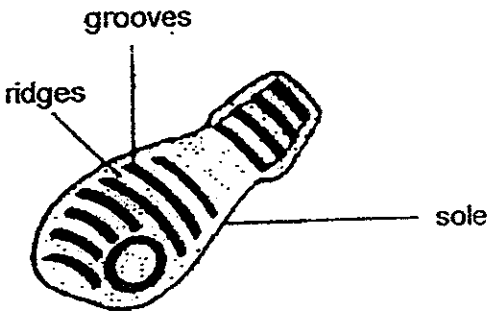
What are the forces involved when she jumps around on the pogo stick?

A: Frictional force
B: Magnetic force
C: Gravitational force
D: Elastic spring force

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

( )

24. The diagram below shows the sole of a shoe.



The sole is covered with grooves and ridges because _____.

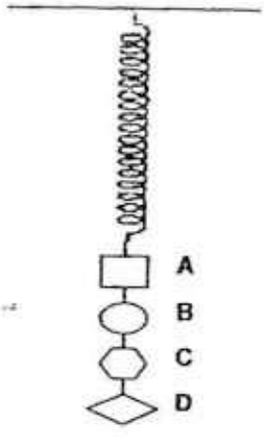
(1) they help to increase friction
(2) they form a beautiful pattern
(3) they make the sole last longer
(4) they help to cut down material used

( )

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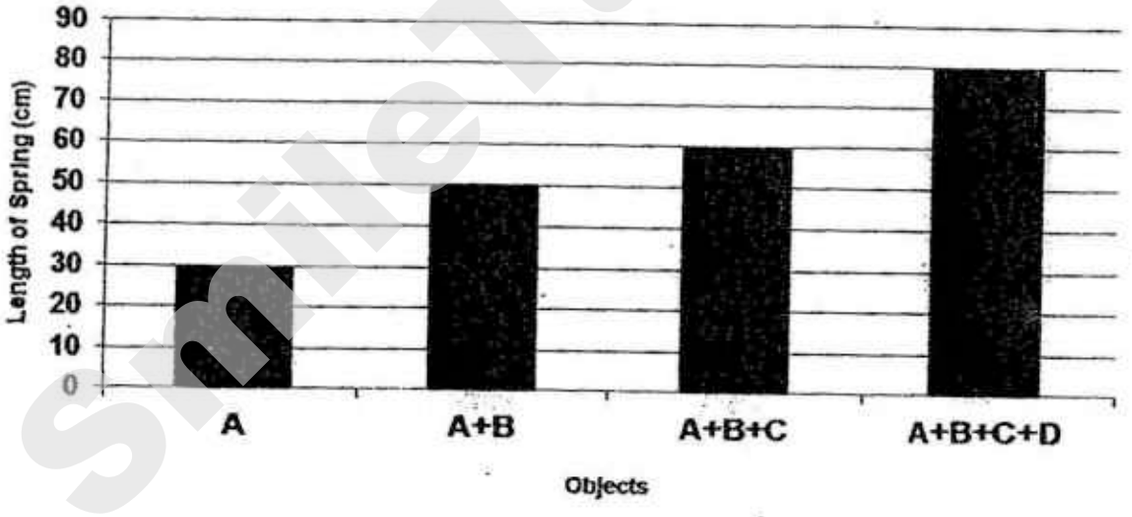
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25. An experiment was carried out for four objects, **A**, **B**, **C** and **D**, of different masses and a spring.



When each of the objects was hung on the spring, the length of the spring was measured.

The graph below shows the results of the experiment.



The original length of the spring is 18 cm.

Which one of the following objects causes the **shortest** extension in the spring?

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

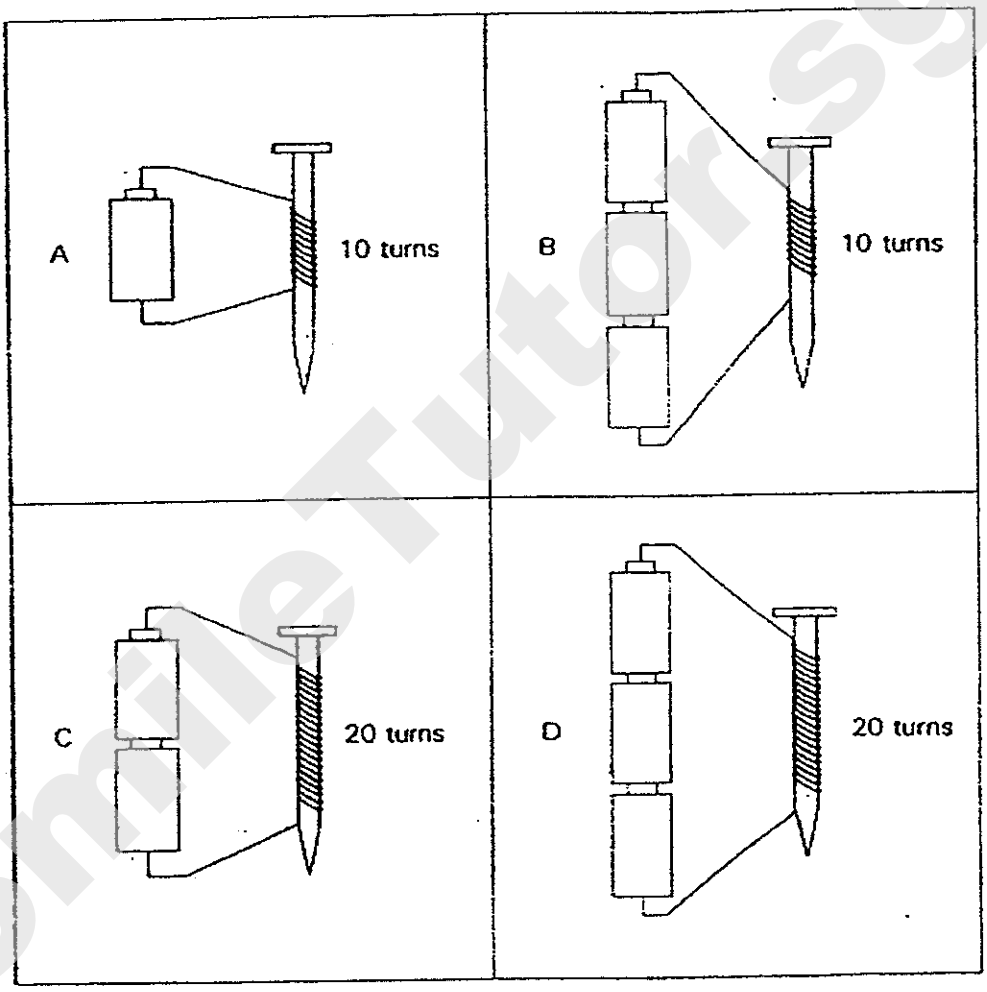
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26. An iron nail becomes a temporary magnet when it is placed in a coil of wire joined to the batteries.

Jonathan wants to find out if the number of batteries affects the strength of a magnet. He sets up two arrangements. In each arrangement, he test the strength of the magnet by counting the number of steel paper clips it can attract.



In order for Jonathan to conduct a fair test, which of the two arrangements as shown above should he use?

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

( )

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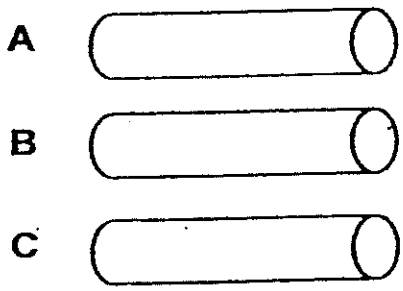
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27. Which of the following effects are possible when a force is applied to an object?

A: The mass of the object can change.
B: The shape of the object can change.
C: The speed of the object can change if it is moving.

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

28. Fahrin has three rods labelled **A**, **B** and **C**.





He carried out an experiment by bringing part X of a bar magnet near to each end of the three rods, A, B and C, as shown above.

He then recorded his results in the table below.

Rod	Observation
A	Both ends of Rod A are attracted to part X of the bar magnet.
B	One end of Rod B is attracted to part X of the bar magnet while the other end repels.
C	Both the ends of Rod C are not attracted to part X of the bar magnet.

Which of the following statements about rods **A**, **B** and **C** is likely to be correct?

(1) Rod A is non-magnetic.
(2) Rod B is a magnet.
(3) Both Rod A and Rod B are magnets.
(4) Both Rod A and Rod C are made of magnetic materials. ( )

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29. Phyllis wanted to investigate whether garden snails prefer **dark** or **bright** conditions. She used the following apparatus and materials for her investigation.

- some water
- some leaves
- some garden snails
- 2 similar containers

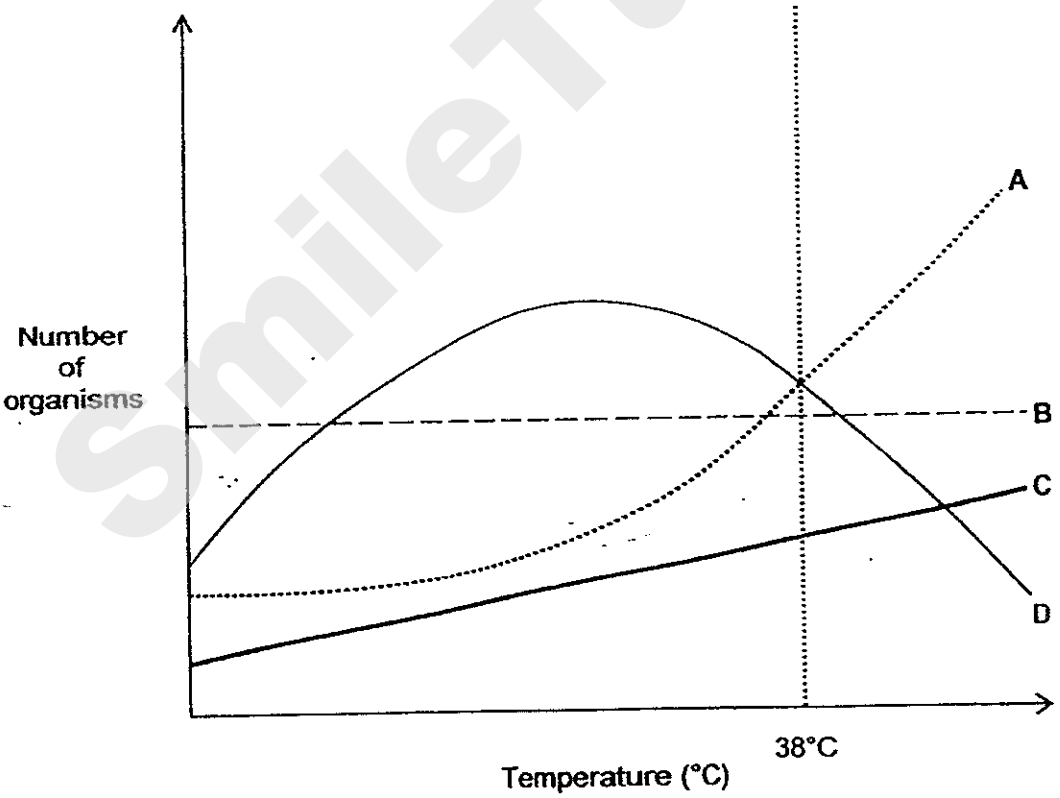
Which variables should Phyllis keep the same to ensure that her investigation was fair?

A: The amount of leaves in each container.
B: The amount of water sprinkled over the leaves.
C: The number of garden snails in each container.
D: The amount of light each container was exposed to.

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

( )

30. The graph below shows the effect of temperature on the number of organisms, A, B, C and D, living at a particular habitat.



Which of the organisms, **A, B, C** or **D**, will survive better when the temperature of the habitat starts to rise above 38°C?

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

( )

End of Booklet A

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HENRY PARK PRIMARY SCHOOL

2014 SEMESTRAL EXAMINATION 1

PRIMARY 6 SCIENCE

Booklet B

Name:_____ ( )

Class: Primary 6 _____

/40

14 Questions
40 Marks

Total Time for Booklet A and B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

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2014 SA1 Primary 6 Science

40

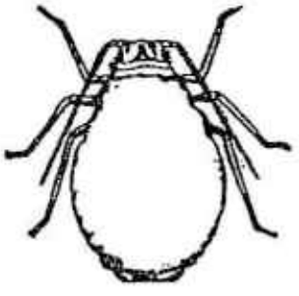
Name: _____ ( )

Class: Pr 6 _____ Parent's Signature: _____

Booklet B (40 marks)

Write your answers to questions 31 to 44 in the spaces given.

31. James and Mei Ling went to Bukit Chandra for an excursion and observed animals X and Y as shown below.

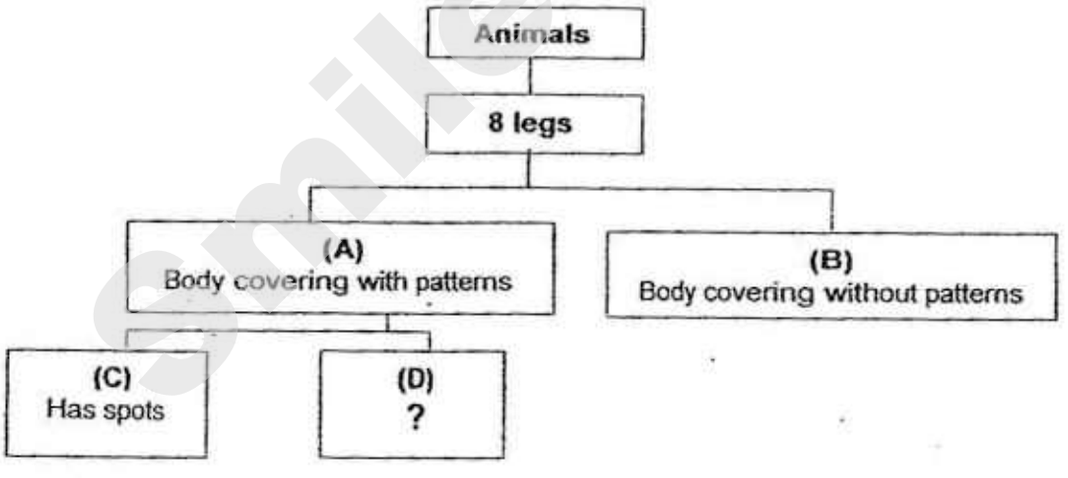


Animal X



Animal Y

The two pupils then came up with a classification chart as shown below.



a) Based on the classification chart above, write a suitable heading for (D). *(1m)*

_____

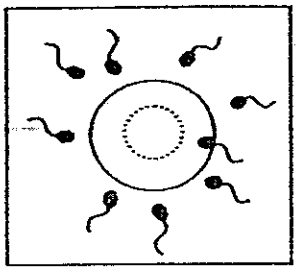
b) Mei Ling stated that animal X cannot be placed in the classification chart above. *(1m)*
Do you agree with Mei Ling? Give a reason for your answer.

_____

_____

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32. The diagram below shows process G that will be taking place soon in the egg.

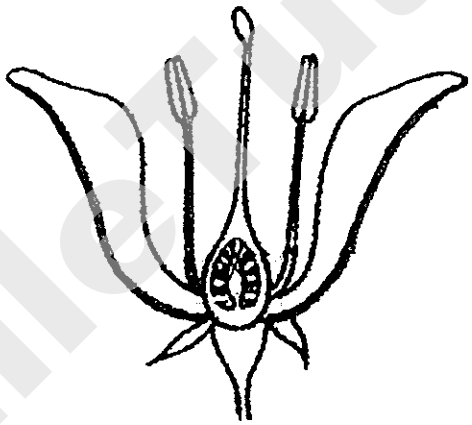


a) What is process G? *(1m)*

_____

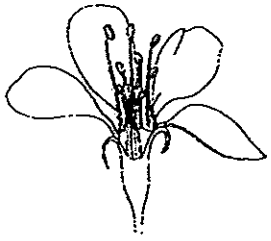
b) Process G also takes place in flowering plants. *(1m)*

On the diagram of the flower F below, **label** with an 'X' where process G takes place.



Flower F

Ahmad saw flower H, as shown below, in his garden.



Flower H

c) What will Ahmad observe about flower H that confirms that process G has taken place in the flower successfully? *(1m)*

_____

_____

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33. Four different types of plants (**A**, **B**, **C** and **D**) were found growing near a river as shown in Diagram **X**. Diagram **Y** shows what was observed after 5 years.

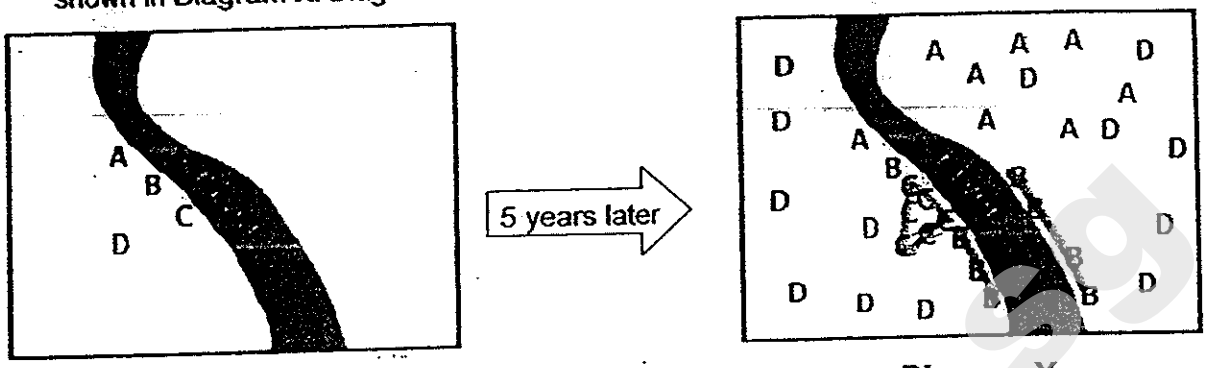
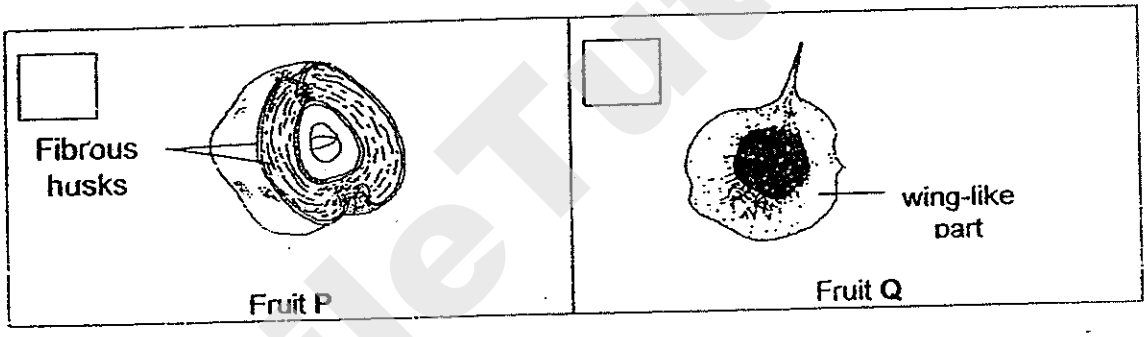


Diagram X **Diagram Y**

(1m)

a) The diagram below shows 2 fruits, **P** and **Q**.

Identify which plant, **A**, **B**, **C** or **D**, they came from. Write **A**, **B**, **C** or **D** in the boxes provided.

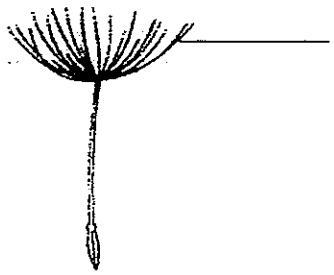


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Continued from page 3

The diagram below shows another fruit, Fruit Z.



Denny carried out an experiment with Fruit **Q** and Fruit **Z** and measured the distance between the seeds of each fruit from their parent plant.

He recorded his results in a table below.

Fruit	Distance between seeds of each fruit and parent plant (km)
Q	2
Z	5

b) Which fruit, **Q** or **Z**, has a more advantageous method of seed dispersal? *(1m)*

_____

c) Explain your answer in (b). *(1m)*

_____

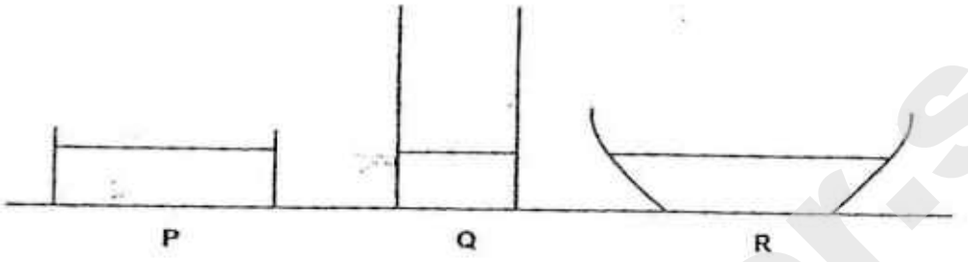
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34. Xiaoming wanted to investigate how the surrounding temperature will affect the rate of evaporation of water.

He set up his experiment using three containers, P, Q and R, of the same material. Water was poured into each of them until it reached the same height for all the containers. He then left the containers at different locations with different surrounding temperatures for one day.



a) His Science teacher commented that his experiment was **not** fair. *(2m)*

State 2 changes he needed to make for a fair experiment.

Change 1: _____

Change 2: _____

b) What can Xiaoming measure to collect results for his experiment? *(1m)*

_____

_____

As Xiaoming was preparing his experiment, he spilt a puddle of water on the floor. He used a broom to spread the puddle out as shown below.



c) Explain how his action helped to dry the floor faster. *(1m)*

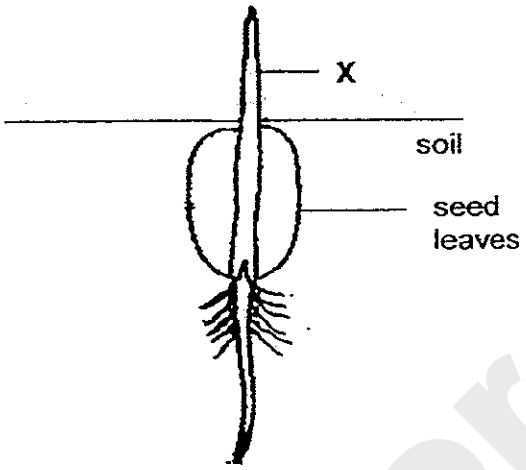
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35. The diagram shows a seed growing into a young plant.



a) What is the direction in which food and water are being transported at X? *(1m)*

Write in each box below the word 'upwards' or 'downwards'

Direction for transport of	
Food	**Water**

b) Name the part of the seed that provides the young plant with food. *(1m)*

_____

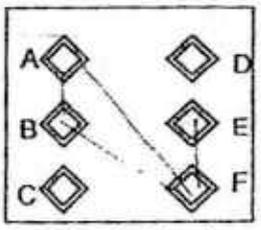
c) Name the part of the seed that grows out first. *(1m)*

_____

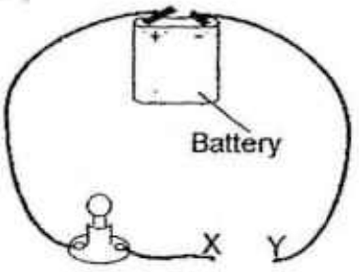
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36. In an experiment, Ahmad constructed a circuit card with six metal buttons, **A**, **B**, **C**, **D**, **E** and **F**, and a piece of cardboard.



Circuit Card

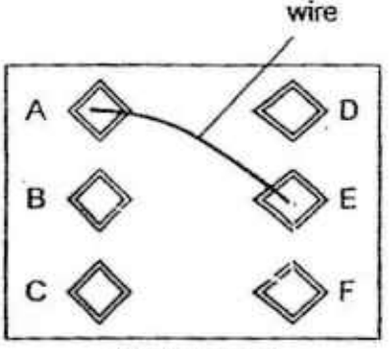


Circuit tester

On the back of the cardboard he connected the six metal buttons using some wires. The following table shows what happened to the bulb in the circuit tester when points **X** and **Y** of the circuit tester was connected to a pair of metal buttons on the circuit card.

Buttons connected by wire	Did the bulb light up?
A and B	Yes
A and F	Yes
C and E	No
B and F	Yes
E and F	Yes
A and D	No

(a) On the incomplete circuit card shown below, **draw 2 more wires** to connect all relevant buttons such that information given in the table above is correct. *(1m)*



Circuit Card

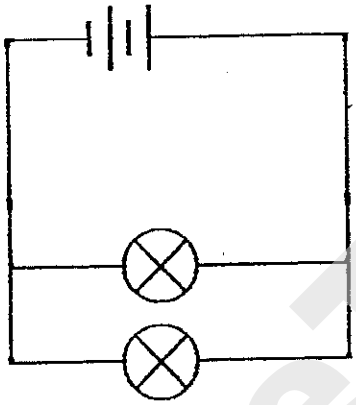
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continued from page 7

(b) Joy wants to find out if the number of bulbs, arranged in parallel, will affect the brightness of bulbs. Joy sets up two circuits, **P** and **Q**, to conduct the experiment.

Circuit **P** is drawn below. Draw a circuit diagram to represent Circuit **Q** in the box below. *(2m)*



Circuit P

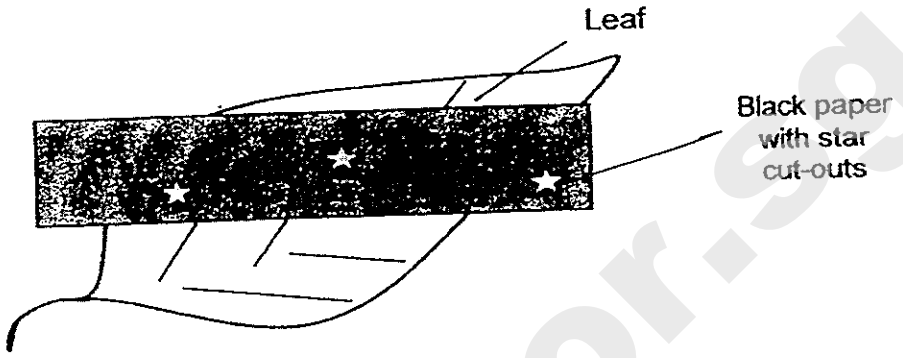
Circuit Q

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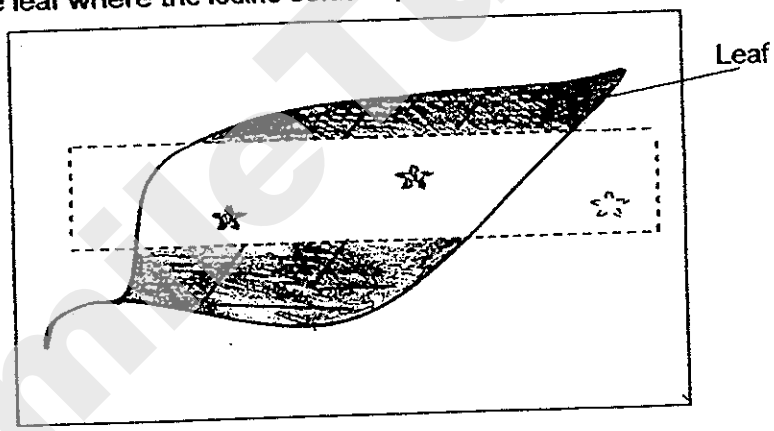
37. A green leaf from a plant was covered with black paper with star cut-outs as shown in the diagram below.

The plant was left in the open for 48 hours before a starch test was performed on this leaf.



The plant was de-starched before the experiment was conducted.

a) In the box given below, when the black paper is removed, **shade** the parts of the leaf where the iodine solution, when added, turns dark blue. *(1m)*

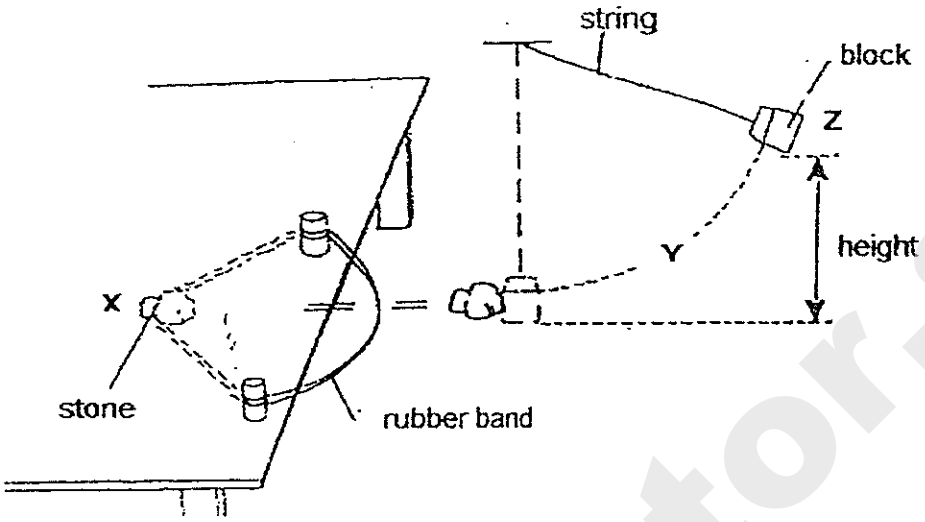


b) Explain why the iodine solution remains yellowish brown on some parts of the leaf. *(2m)*

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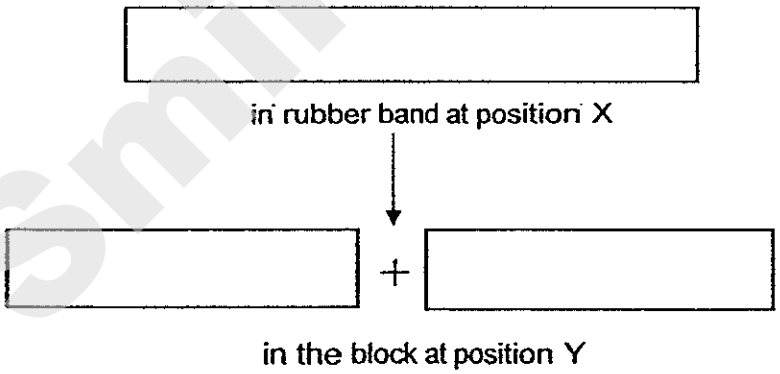
38. Mary conducted an experiment as shown in the diagram below.



She pulled the rubber band backwards together with a stone to position X. When she released the stone, it moved forward and hit the block.

The block, which was suspended by a string, swung upwards to position Y and then position Z before falling back.

a) State the energy conversion from position X to position Y. *(2m)*



b) Suggest two methods that will cause the block to swing higher than position Z. *(2m)*

Method 1 : _____

Method 2 : _____

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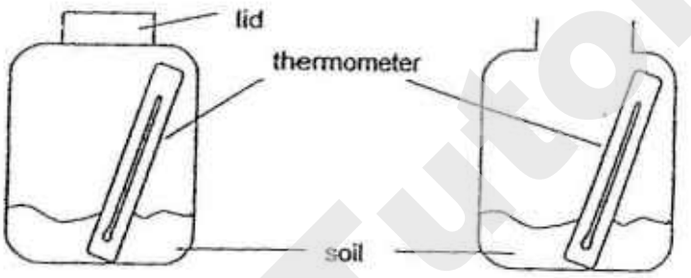
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39. Two similar glass jars, **X** and **Y**, which contained 100g of soil each, were placed under the Sun next to each other. Jar **X** was covered with a lid while jar **Y** was left open.

A thermometer was placed into each jar and the temperature of the air inside each jar was measured at hourly intervals for 3 hours.

The table below shows the temperature readings of the air in the two jars.

Temperature reading	Temperature (°C) at different times			
	10am	11am	12pm	1pm
Set A	30	32	39	45
Set B	30	33	37	40



a) The temperature of air in both jars **X** and **Y** increased at the end of the experiment. *(1m)*

Explain why this is so.

_____

_____

b) Which set of readings, **A** or **B**, will more likely represent the temperature of air in jar **Y**? Explain your answer. *(2m)*

_____

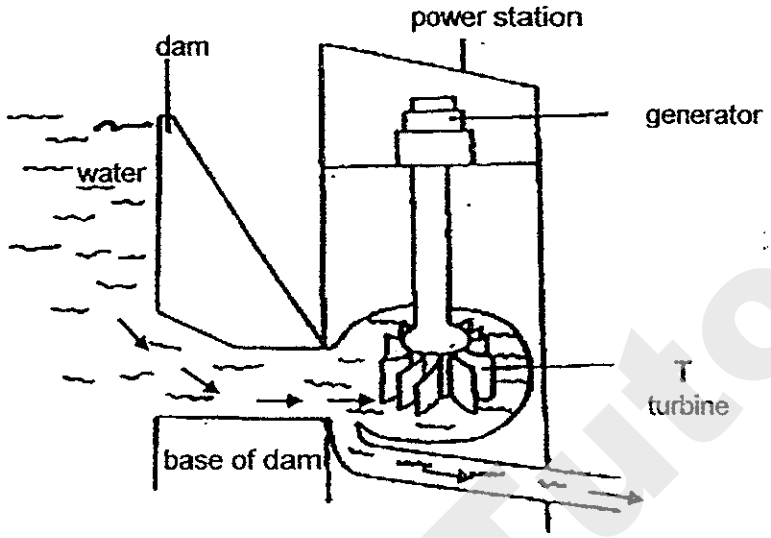
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40. The diagram below shows a hydroelectric power station.
The arrows show the movement of water.



At Point T, the turbine turns to generate electricity.

Explain how the turbine is able to turn. *(2m)*

_____

_____

_____

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41. In an experiment, Walter placed a toy car on a cardboard and object X below it as shown in diagram 1.

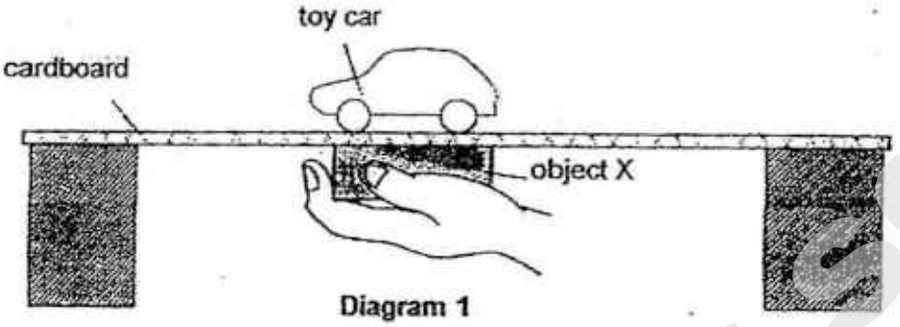


Diagram 1

a) Walter moved object X and the toy car moved in the same direction as object X. *(1m)*

Explain why this is so.

_____

_____

In another experiment, Walter used the same toy car on a thicker cardboard and placed object X below it as shown in diagram 2.

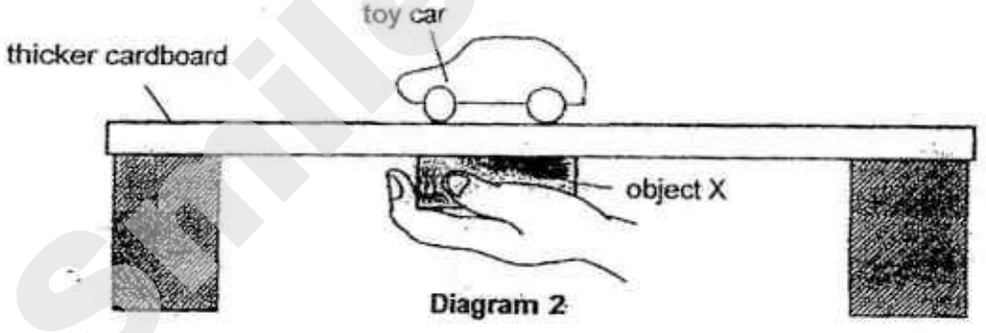


Diagram 2

b) When Walter moved object X, the toy car did not move at all.

Explain why the toy car did not move when a thicker cardboard is used. *(1m)*

_____

_____

c) Using the same method, suggest what Walter can do to make the toy car move when the thicker cardboard is used. *(1m)*

_____

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42. Diagram 1 shows the set-up of an experiment with three metal rods, **A**, **B** and **C**, each of the same size and length, three identical magnets and springs.

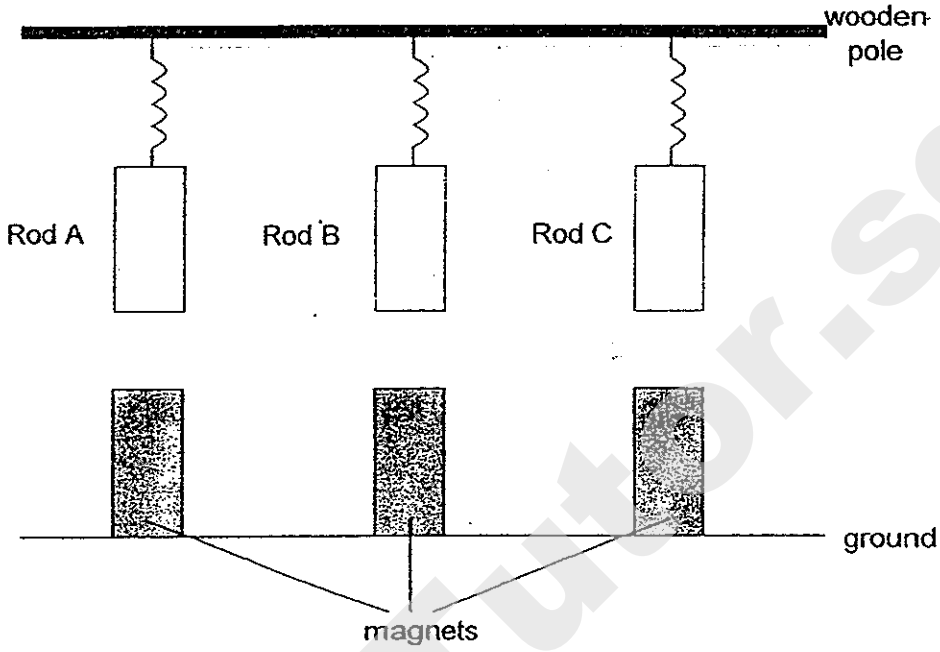


Diagram 1

Diagram 2 shows the results of the experiment.

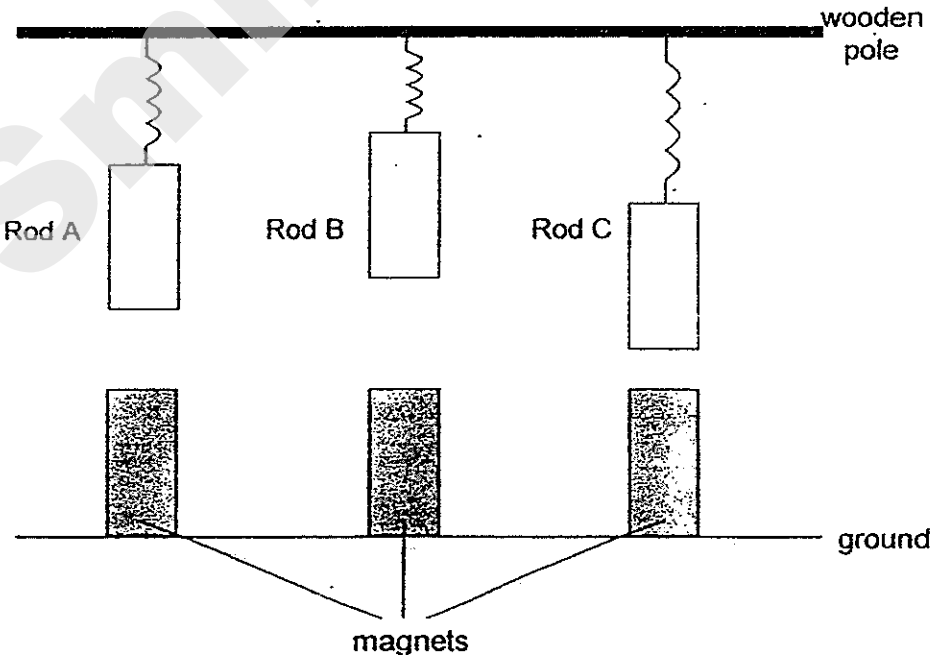


Diagram 2

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continued from page 14

a) Based on your observation in Diagram 2, state which rod, **A**, **B** or **C** is *(1m)*

(i) a magnet : _____

(ii) a non-magnetic metal : _____

b) Give a reason for your answer in (a)(i). *(2m)*

_____

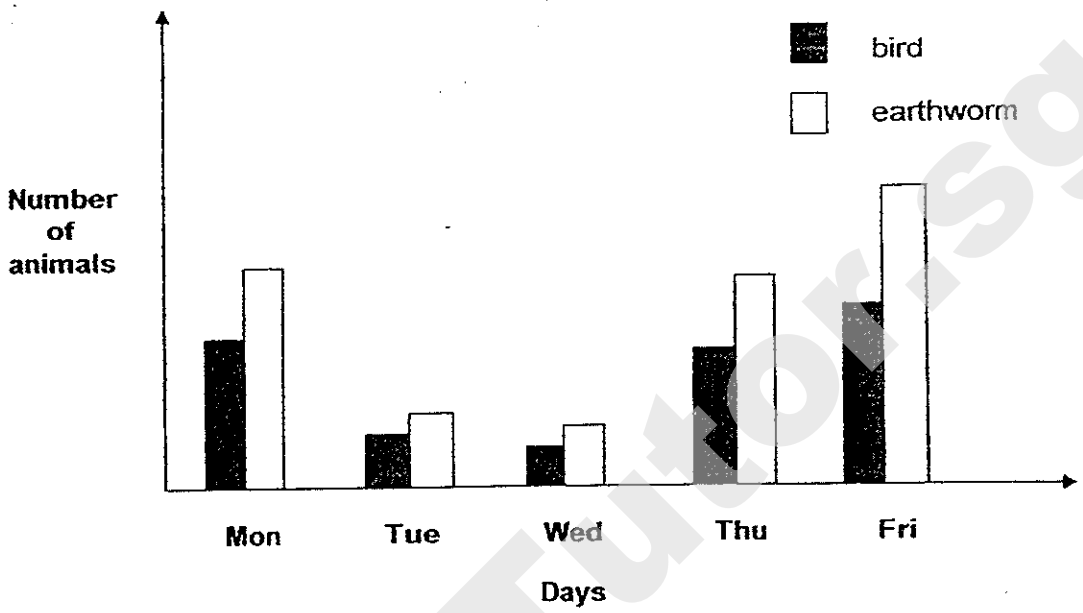
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43. Mr Tan made a study of two types of animals, birds and earthworms, in a particular habitat. The number of birds and earthworms were counted and the weather condition and temperature were noted over a period of five days.

The results of the study are shown below.



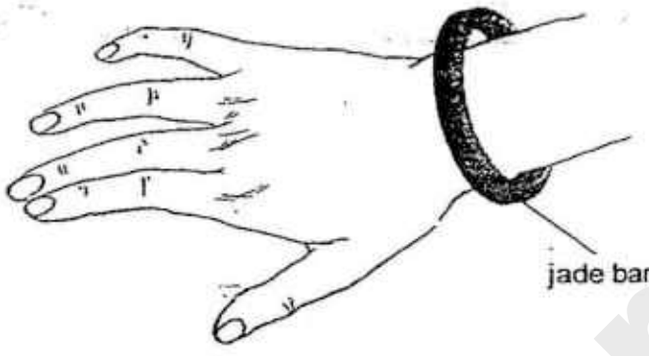
Day	Monday	Tuesday	Wednesday	Thursday	Friday
Weather condition	Rainy	Sunny	Sunny	Rainy	Rainy
Temperature (°C)	27	31	32	28	26

Describe how the **weather condition** and **temperature** affect the number of birds and earthworms observed over the five days. *(2m)*

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44. Mrs Tan has difficulty removing the jade bangle on her wrist as shown below.



a) Suggest a method for Mrs Tan to remove the jade bangle without breaking it. *(1m)*

_____

_____

b) Give a reason for your answer. *(1m)*

_____

_____

End of Booklet B

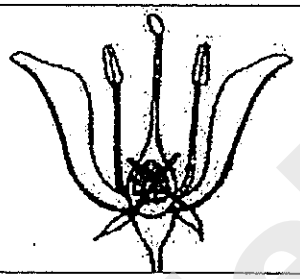
Setters:
Mdm Cecilia Quah
Mrs Liu Ying Hui
Mr Tan Joo Nam

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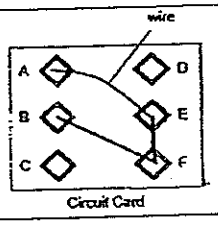
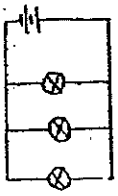
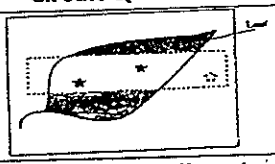
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EXAM PAPER 2014
LEVEL : PRIMARY 6
SCHOOL : HENRY PARK
SUBJECT : SCIENCE
TERM : SA1

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

Q31	(a)	Has no spots
	(b)	Yes. The chart is for animals with 8 legs while X has only 6 legs.
Q32	(a)	Fertilisation
	(b)	
	(c)	It will start developing into a fruit and the petals would drop off.
Q33	(a)	Fruit P : B Fruit Q : A
	(b)	Z
	(c)	As it can fly further from the parent plant, it will enable the seeds to be more spread out, reducing the chance of overcrowding, allowing the seedlings to grow healthily without having to compete over sunlight, water and nutrients.
Q34	(a)	Change 1: Ensure the containers have the same exposed surface. Change 2: Ensure that the amount of water poured into each container is the same.
	(b)	The amount of water left in each container after a certain period of time.
	(c)	Spreading out the puddle of water enables the puddle to have a larger exposed surface area of water increasing the rate of evaporation of the water.
Q35	(a)	Food : upwards Water : upwards
	(b)	Seed leaves
	(c)	Roots

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Q36	(a)	
	(b)	 Circuit Q
Q37	(a)	
	(b)	When the iodine turns yellowish brown, this shows that those parts of the leaf have no starch present. This happened as the black paper covered some parts of the leaf preventing sunlight from reaching these parts. Without sunlight, the leaf would not be able to make food and no sugar was produced to be concerted to starch.
Q38	(a)	Elastic Potential Energy Kinetic Energy Gravitational Potential Energy
	(b)	Method 1: Use a lighter block Method 2 : Use more rubber bands
Q39	(a)	They were both placed under the sun. The air inside both jar gain heat from the sun thus there is an increase in temperature of the air.
	(b)	Set B. As it is not covered with a lid thus allowing warm air to escape from the jar and will be replaced by cooler air resulting in lower temperature of the sir.
Q40		The water behind the dam has GPE which is converted to KE, thus causes the turbine to turn.
Q41	(a)	X could be a magnet and the toy could have been made of magnetic materials. Moreover, cardboard is not a magnetic material. Hence, magnetism can pass through the cardboard and attract the car so as the object X moves, the car attracted to it follows.
	(b)	The distance between the magnet and the toy car has increased, thus not being able to attract the toy car. This resulted on the toy car not being able to move.
	(c)	He could use a stronger magnet.
Q42	(a)	(i) Rod B (ii) Rod A
	(b)	Rod A was not attracted to the magnets showing that is it not a magnetic material. Rod B had repelled the magnet and the spring holding it was compressed.

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METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2014
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: 12 May 2014

This booklet consists of 11 printed pages including this 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 and shade the oval (1, 2, 3 or 4) on the Optical Answer Sheet.

[60 marks]

---

1 Why do crabs shed their outer skeletons?

(1) Their skeletons are expanding.
(2) They are outgrowing their skeletons.
(3) Their body temperature is increasing.
(4) They need to breathe through their skin.

2 Which part of the respiratory system does gas exchange take place?

(1) nose
(2) lungs
(3) windpipe
(4) diaphragm

3 Earthworms and woodlice feed on dead leaves. How do they increase the rate of decomposition?

(1) They raise the temperature of the decaying material.
(2) They release carbon dioxide to the decaying material.
(3) They release body substances to decay the dead leaves.
(4) They break down the decaying material into smaller pieces.

4 Which one of the following characteristics can be used to differentiate between a housefly and a spider?

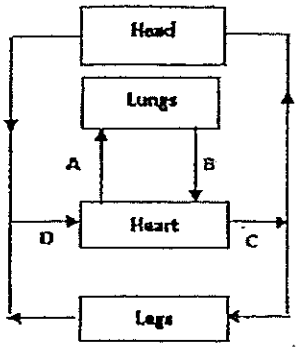
(1) Number of legs
(2) Body temperature
(3) Type of body covering
(4) Method of reproduction

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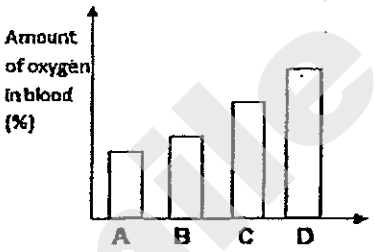
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5 The diagram below shows the movement of blood in some parts of the human circulatory system.

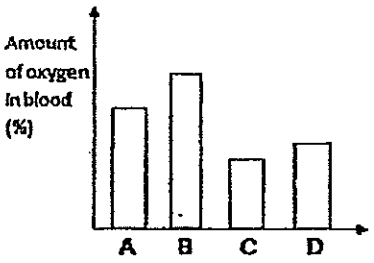


Which of the following graphs represents the amount of oxygen in blood vessels, A, B, C and D?

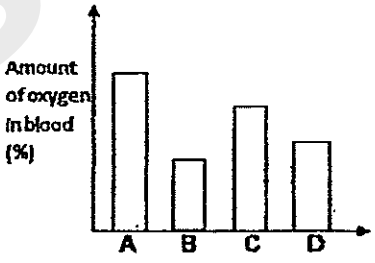
(1)



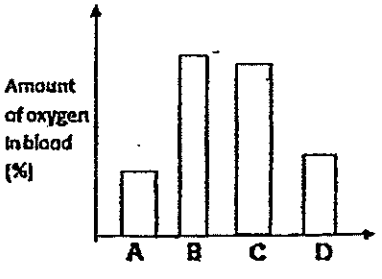
(2)



(3)



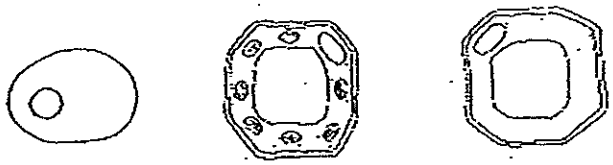
(4)



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6 Study the three cells below.

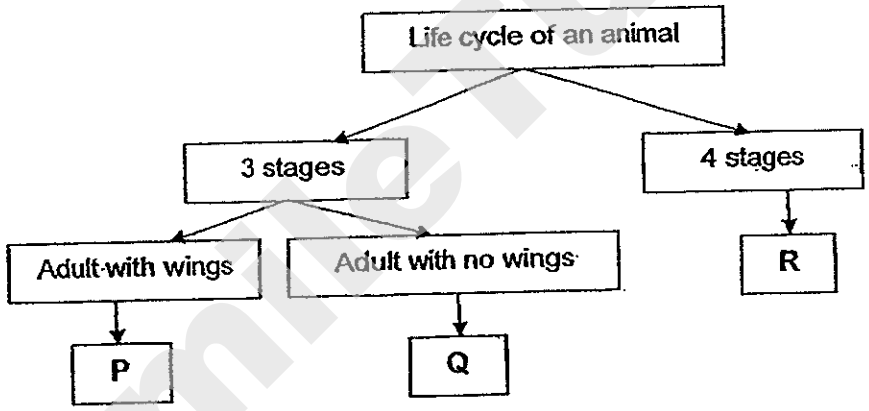


Cell X Cell Y Cell Z

Which of the following are found in all the three cells?

(1) cell wall and nucleus
(2) cytoplasm and nucleus
(3) cytoplasm and chloroplast
(4) cell membrane and chloroplast

7 Study the classification chart below.



Which one of the following animals represents P, Q and R?

	P	Q	R
(1)	frog	grasshopper	cockroach
(2)	grasshopper	butterfly	frog
(3)	cockroach	frog	butterfly
(4)	butterfly	cockroach	grasshopper

(Go on to the next page)

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8 Three types of plants, A, B and C, were planted on an island near the sea as shown in Diagram A below.

A few years later, more of the three types of plants were found growing at different parts of the island as shown in Diagram B.

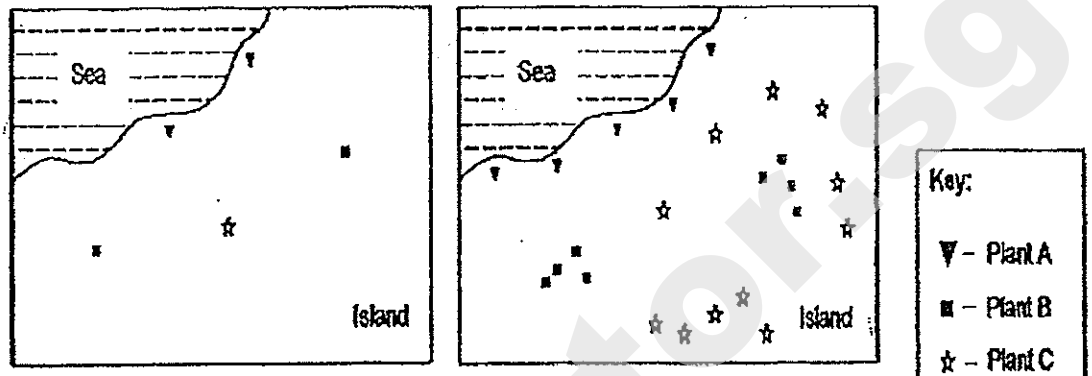


Diagram A Diagram B

Based on the information given above, how are the fruits or seeds of each type of plant dispersed?

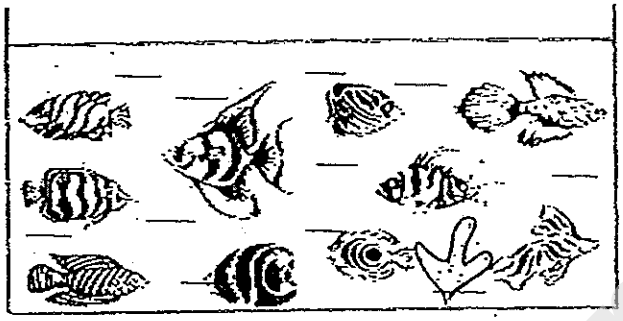
	Plant A	Plant B	Plant C
(1)	By splitting action	By animals	By water
(2)	By animals	By wind	By splitting action
(3)	By water	By splitting action	By animals
(4)	By wind	By splitting action	By water

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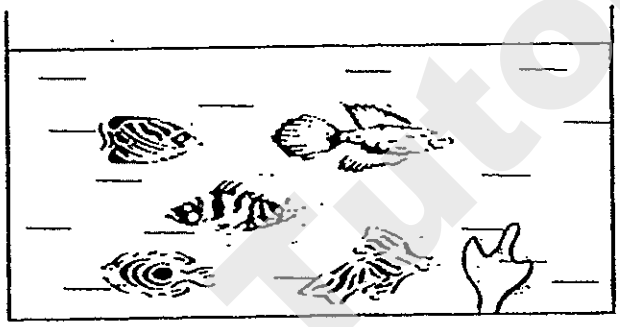
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9 Sandy set up an experiment as shown in the diagram. At the end of the experiment, it was observed that some fishes stopped swimming in Tank A but not in Tank B.



Tank A



Tank B

Which of the following best describes what effect overcrowding has on the fishes?

A The water plant gives out oxygen during photosynthesis.

B Fishes show no change in behaviour in the water.

C Both the water plant and the fishes need oxygen to carry out respiration.

D Fishes may not be able to survive long when there is more carbon dioxide than oxygen in the water.

(1) A and B

(2) B and C

(3) A and D

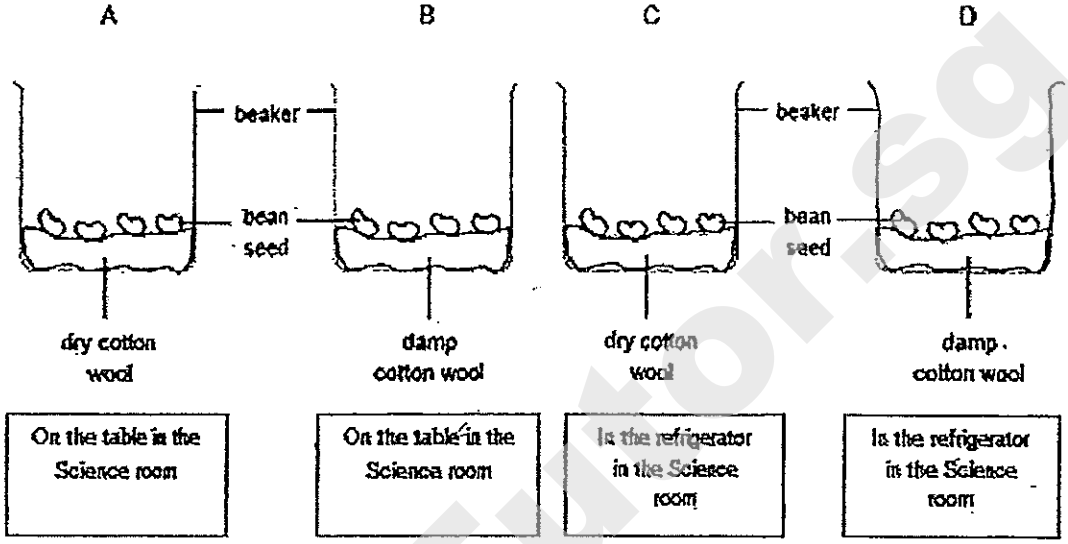
(4) C and D

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10 Grace wanted to find out if seeds need warmth for germination. She had four containers, each with four green bean seeds placed on some cotton wool, as shown below.



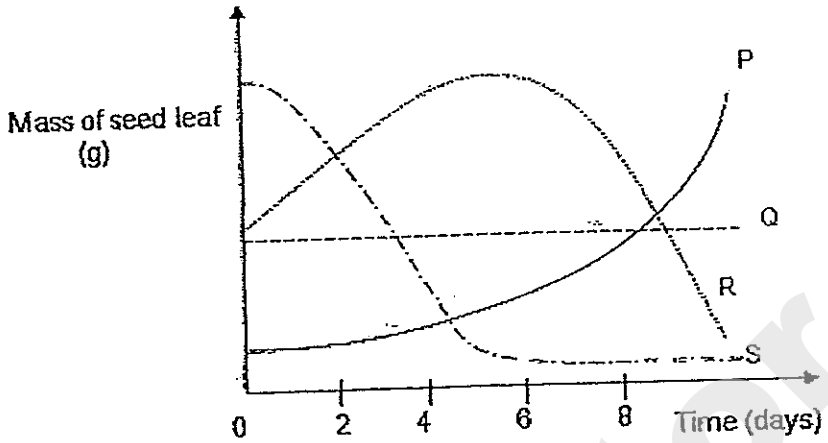
Which pairs of containers should she use to find out if seeds need warmth for germination?

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

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11 The diagram shows a seed that is germinating.



Which line shows the change in the mass of the seed leaf over time?

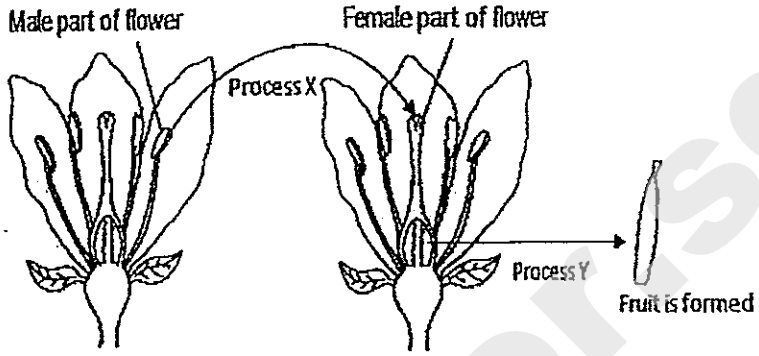
(1) P
(2) Q
(3) R
(4) S

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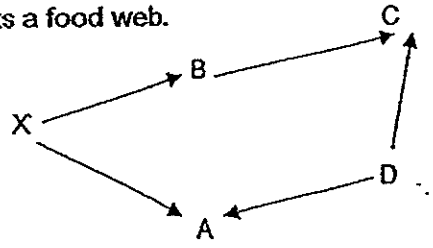
12 The diagram shows the main processes in the sexual reproduction of a flowering plant. Process X takes place before process Y.



Which one of the following correctly shows processes X and Y?

	Process	Process Y
(1)	Germination	Fertilisation
(2)	Pollination	Fertilisation
(3)	Pollination	Dispersal
(4)	Fertilisation	Pollination

13 The diagram represents a food web.



Which one of the following organisms will be most affected if there is a decrease in organism X?

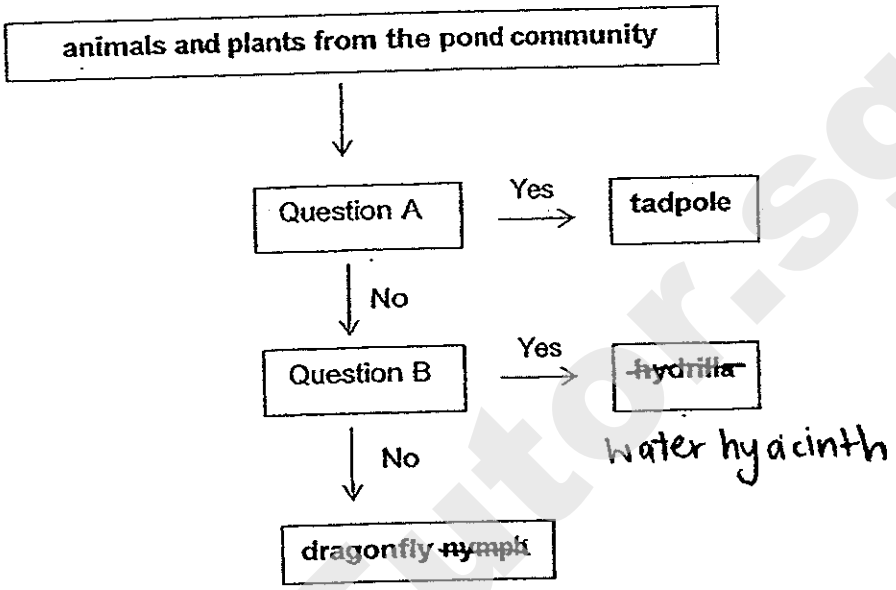
(1) A
(2) B
(3) C
(4) D

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14 Study the chart below.



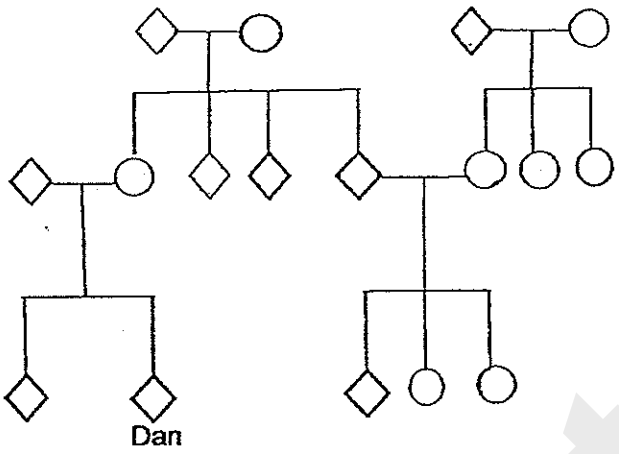
What are Questions A and B?

	Question A	Question B
1)	Does it photosynthesise ?	Does it partially submerge in water ?
2)	Does it float on water ?	Does it photosynthesise ?
3)	Does it have chlorophyll ?	Does it float on water ?
4)	Does it submerge in water ?	Does it have chlorophyll?

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15 Study the family tree of Dan below. The family tree shows the members who have either ~~single~~ detached earlobes or attached earlobes.



Key

- Male attached earlobes
- Female attached earlobes
- Male detached earlobes
- Female detached earlobes

Which one of the following statements about the family tree is correct?

(1) Dan's parents have attached earlobes.
(2) Dan's cousins have detached earlobes.
(3) Dan has one uncle who has attached earlobes.
(4) Dan inherited the detached earlobe gene from his cousin.

End of Booklet A1

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MID-YEAR EXAMINATION 2014
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: 12 May 2014

This booklet consists of 8 printed pages including this 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). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

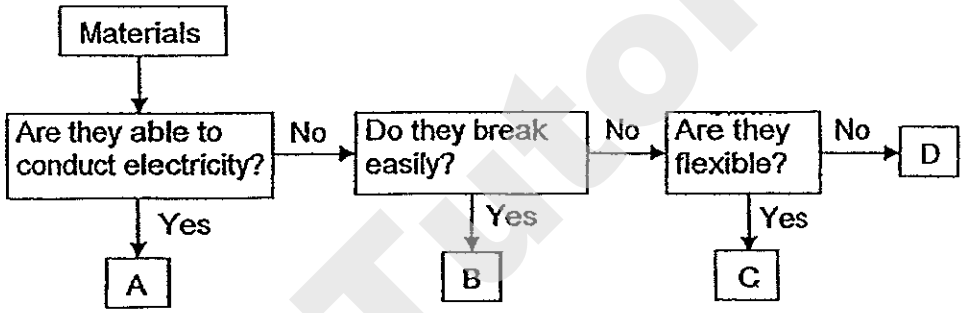
[60 marks]

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16 Which property is the <u>least</u> important when choosing a material to make a frying pan?

(1) It is hard.
(2) It is shiny.
(3) It is durable.
(4) It conducts heat easily.

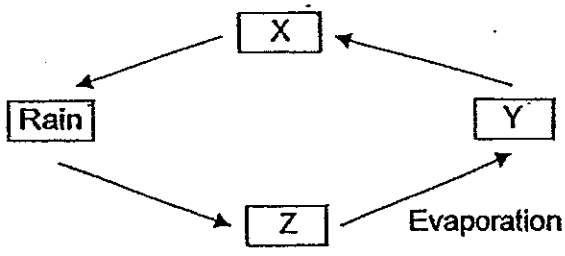
17 Study the flow chart below.



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

	A	B	C	D
(1)	Rubber	Glass	Wood	Iron
(2)	Iron	Glass	Rubber	Wood
(3)	Steel	Wood	Porcelain	Rubber
(4)	Steel	Porcelain	Wood	Rubber

18 The diagram below shows the various stages in the water cycle.



In which stage(s), X, Y or Z, in the water cycle does water have definite volume but <u>no</u> definite shape?

(1) Z only
(2) X and Y only
(3) X and Z only
(4) X, Y and Z

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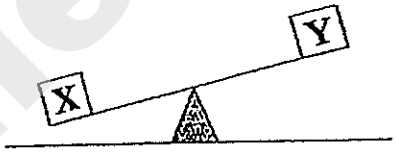
19 The table below shows the melting point and boiling point for 4 different substances, P, Q, R and S.

Substance	Melting point (°C)	Boiling point (°C)
P	17	116
Q	-9	39
R	42	184
S	-104	-37

Which one of the following represents correctly the states of each of the substances P, Q, R and S respectively at 30°C?

	States of substances at 30°C			
	P	Q	R	S
(1)	Gas	Solid	Liquid	Solid
(2)	Liquid	Liquid	Solid	Liquid
(3)	Liquid	Liquid	Solid	Gas
(4)	Solid	Gas	Liquid	Gas

20 Rita placed two cubes of the same size made of different materials on a beam balance. The result is as shown below.



Rita made the following statements:

A: Object X has a greater mass than Object Y
B: Object Y takes up less space than Object X.
C: Object X and Object Y have the same mass.
D: Object X and Object Y have the same volume.

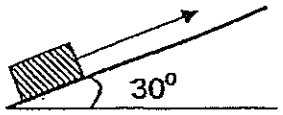
Which of his statements are correct?

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

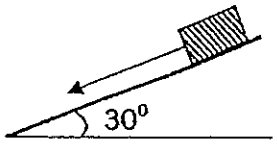
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21 The diagrams below show a 20 kg load being pulled along ramps made of different materials.



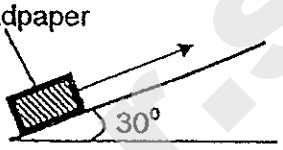
Ramp A



Ramp B



Ramp C



Ramp D

If the force needed to move the load along the four ramps is the same, arrange the order of the texture of the ramp from the roughest to the smoothest.

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

22 The graph below shows the possible relationship between two variables in an electric circuit.

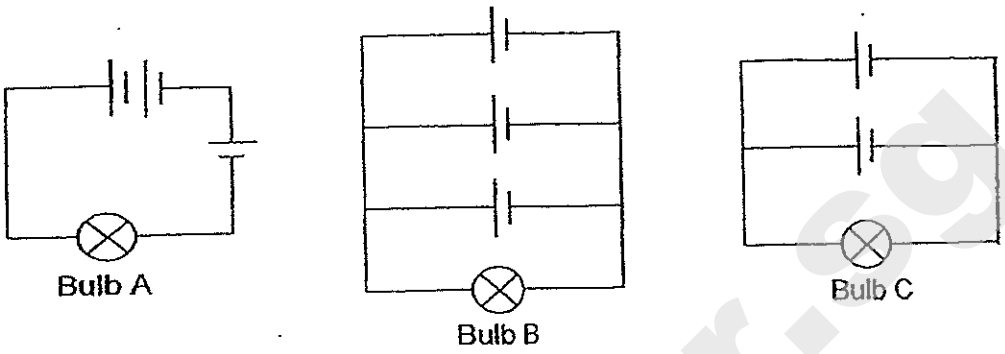


Which of the following could represent both X and Y ~~axes~~ in the graph above?

	X-axis	Y-axis
(1)	Number of Batteries	Brightness of Bulbs
(2)	Number of Bulbs	Brightness of bulbs
(3)	Number of Switches	Brightness of Bulbs
(4)	Number of Bulbs	Voltage of Bulbs

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23 Study the circuits below carefully. The batteries and bulbs used in all the circuits are identical.



All the three bulbs light up when the circuits are closed. Which of the following statements is/are correct?

X: Bulb B is the brightest.
Y: Bulb B and Bulb C are of equal brightness.
Z Bulb A will light up for the longest period of time.

(1) Y only
(2) X and Y only
(3) X and Z only
(4) Y and Z only

24 Which of the following are examples of pushing force at work?

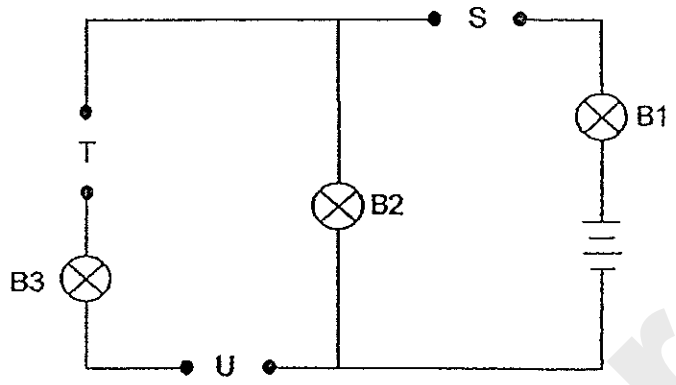
A: Hoisting a flag.
B: Playing on the piano.
C: Bouncing a basketball
D: A bird flapping its wings.

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

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25 Three objects, P, Q and R made from different materials are placed in the circuit at various positions, S, T and U, as shown below.



The results of the experiment are shown in the table below.

Position of objects			Bulbs are lighted up		
S	T	U	B1	B2	B3
P	Q	R	Yes	Yes	No
R	P	Q	Yes	Yes	No
Q	R	P	No	No	No

Based on the above information, which of the objects, P, Q or R are insulators of electricity?

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

26 Jasmine had four objects of different masses. She hung them one at a time on a spring which had an original length of 7 cm. She then recorded the length of the spring respectively in the table as shown below.

Object	Length of spring (cm)
A	13
B	10
C	15
D	20

What can Jasmine conclude from this experiment?

(1) Object A is the lightest.
(2) Object B is heavier than Object C.
(3) The mass of Object A is twice the mass of Object B.
(4) The mass of Object D is twice the mass of Object B.

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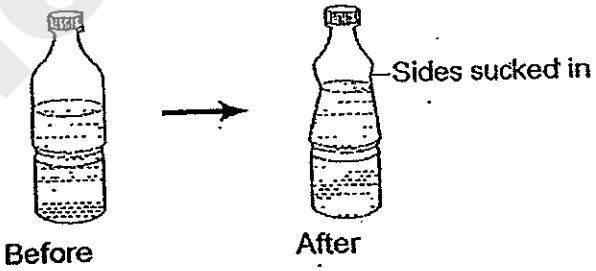
27 A boy is starting a fire by rubbing a stick on a piece of wood as shown below.



Which of the following shows the energy conversions that take place when the boy rubs the stick against the piece of wood?

(1) Kinetic energy → potential energy → heat + light energy
(2) Kinetic energy → heat energy → light energy
(3) Potential energy → kinetic energy → light energy
(4) Potential energy → kinetic energy → heat + light energy

28 John filled a plastic bottle with water and put the half-filled water bottle in the refrigerator. When he took the bottle out the next day, he noticed that sides of the bottle had been sucked in. The diagrams below show the bottle before and after it has been placed in the refrigerator.



What could be the possible explanation for his observation?

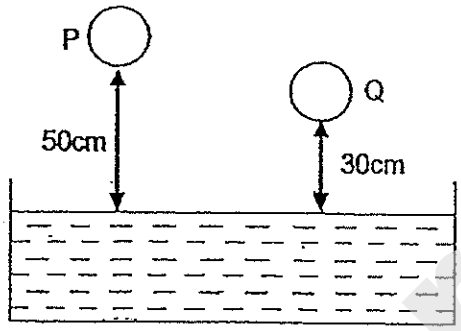
(1) The bottle had cooled down and expanded.
(2) The air in the bottle lost heat and contracted.
(3) The air in the bottle gained heat and expanded.
(4) The water in the bottle gained heat and expanded.

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29 Two identical balls, each weighing 300g, are dropped from different heights at the same time.



Which of the following statements are correct?

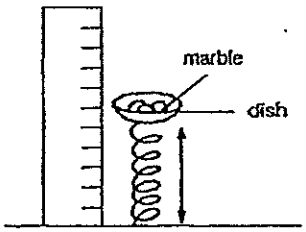
A: P has more gravitational potential energy than Q.
B: Q will give a greater splash in the water when both balls are dropped into the water.
C: P will have more kinetic energy than Q just before they were dropped into the water.

(1) A only
(2) A and C only
(3) B and C only
(4) All of the above

30 Mr Han wanted to find out how the number of marbles affected the length of a spring

He first measured the length of the spring when the dish was empty. He then placed three marbles on the dish and measured the new length of the spring. He repeated the same steps by adding more marbles to the dish and recorded the results in the table as shown.

Number of marbles	Length of spring (cm)
0	50
3	44
6	38
8	34



If the experiment was repeated on a planet with **half** the gravitational force of Earth, what will the length of the spring be when the same three marbles are placed on the dish?

(1) 22 cm
(2) 38 cm
(3) 44 cm
(4) 47 cm

End of Booklet A2

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PRIMARY 6
SCIENCE

BOOKLET B1

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

INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ( )

Class: Primary 6._____

Date: 12 May 2014

Booklet A	**/ 60**
Booklet B1	**/ 20**
Booklet B2	**/ 20**
TOTAL	**/ 100**

This booklet consists of 7 printed pages including this page.

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

The number of marks available is shown in brackets [ ] at the end of each question or part question. [20 marks]

---

31 Yeast is useful in food production. It is used to make bread dough rise.



(a) Arrange these statements about the bread baking process in correct order by inserting the numbers,1, 2, 3 and 4, (1 being the first step), in the spaces provided. [2]

Statement	Order
The dough is left in a warm place.	
Carbon dioxide produced by respiring yeast makes dough rise.	
Bubbles of gas expand when bread is baked.	
Yeast and sugar are added to flour to make dough.	

(b) Besides sugar and warmth, give another substance that will affect the speed of the process. [1]

3

(Go on to the next page)

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32 The berries shown below are the red, fleshy fruit of a plant. The berries contain seeds which are hard and not easily digested.



To investigate if having red fruits is an advantage for a green plant, Meihua hung different coloured beads on some green plants. She used the same number of beads of each colour. Meihua gave Andy two minutes to look for the beads.

The table below shows the number of beads of each colour found by Andy.

Colour of beads	Number found in 2 minutes
Black	20
Green	9
Red	26

(a) Based on the results, suggest why it is an advantage for the berries to be red. [1]

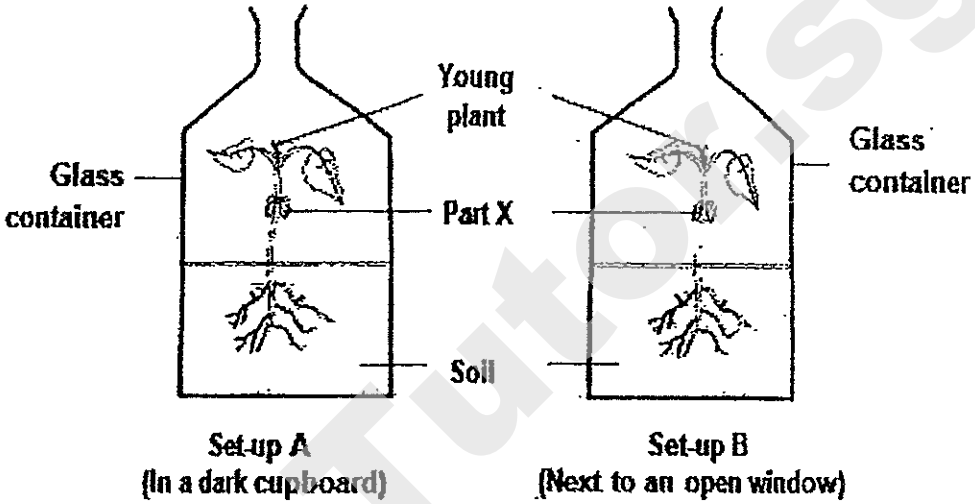
(b) Suggest a reason why the number of green beads is the least number of beads found by Andy. [1]

2

(Go on to the next page)

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33 Jeremy planted a bean seed in each of the two similar glass containers below. He placed set-up A in a dark cupboard and set-up B next to an open window. He watered the seeds daily. After 5 days, he observed that both seeds had germinated as shown in the diagram below.



(a) Based on the findings above, explain if light is needed for seeds to germinate. [1]

_____

_____

(b) What is the function of part X before the leaves start to grow? [1]

_____

_____

2

(Go on to the next page)

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34 Ravi carried out an experiment to find out if bees are attracted to water with sugar. He used two similar plastic flowers of different colours and sprayed each of them with 5 ml of water with sugar as shown below.



The plastic flowers were left in an open garden for five hours. The number of bees visiting each flower was counted.

However, his teacher, Mrs Tan, told him that his experiment was not a fair one.

State two changes that Ravi would have to make to his set-up to ensure a fair experiment. [2]

(i) _____

_____

(ii) _____

_____

2

(Go on to the next page)

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35 The diagram below shows a fish and a human swimming in the water.



(a) Name one characteristic that helps the fish and the human swim in the water. [2]

_____

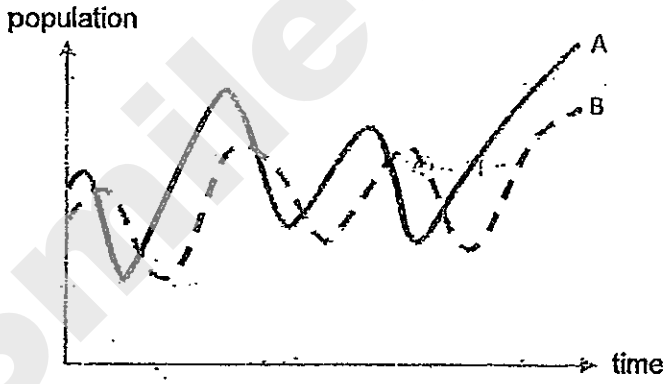
_____

(b) How do both breathe while swimming in the water? [2]

_____

_____

36 The graph below shows the relationship between a plant eater and an animal eater.



(a) What are organisms A and B ? [1]

Prey	
Predator	

(b) What can you infer from the graph about keeping a balance in a food chain? [2]

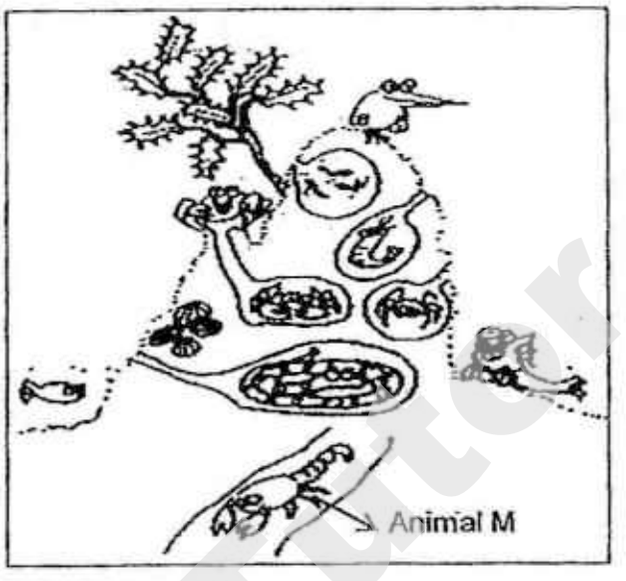
_____

_____

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37 Animal M lives deep under the swamp mud mound it builds. It feeds on the mud as it digs into the mud and recycles nutrients from deep underground Some animals are found living in this mud mound. Plants also grow on this mound.



(a) How does the mud mound benefit these animals? [1]

(b) How does the waste of animal M benefit the plant? [1]

(c) Give a possible reason why the plant population gradually multiplies on the mud mound.

(d) In what way is animal M similar to the earthworm in their feeding diet? [1]

End of Booklet B1

4

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METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2014
PRIMARY 6
SCIENCE

BOOKLET B2

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

INSTRUCTIONS TO CANDIDATES

Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ( )

Class: Primary 6._____

Date: 12 May 2014

Booklet B2	**/ 20**

This booklet consists of 8 printed pages including this page.

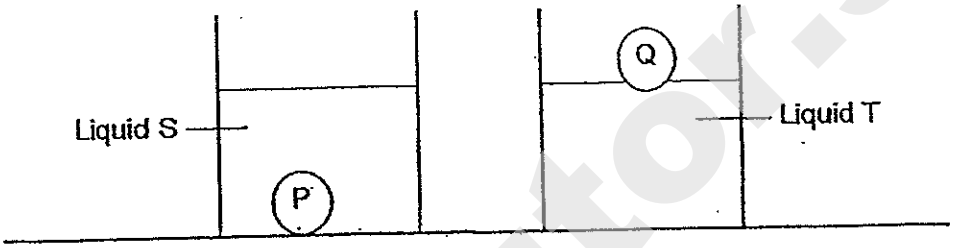
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For questions 38 to 44, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question.

[20 marks]

38 When Ball P is placed in Liquid S and Ball Q is placed in Liquid T, the positions of the Ball P and Ball Q are shown in the diagrams below.



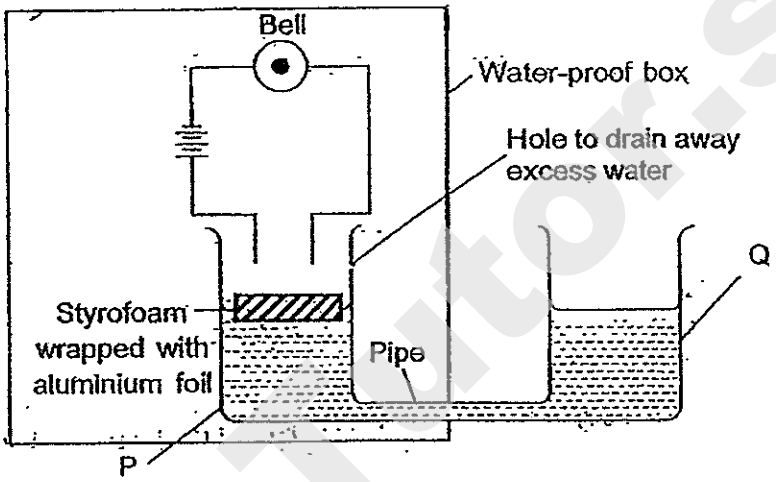
Given that Liquid S is water and Liquid T is oil, draw and label the diagram in the space below to show the possible outcome when Liquid S, Liquid T, Ball P and Ball Q are put together in a container. [2]

2

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39 Mr Singh designed a simple flood warning device as shown in the diagram below.

Parts P and Q of a tank are linked by a horizontal pipe and their water levels will always be equal. P and the electric circuit are kept covered in a water-proof box, while Q is left uncovered outdoors. When it rains, the rain water collects in Q and causes the water level in P to rise as well.



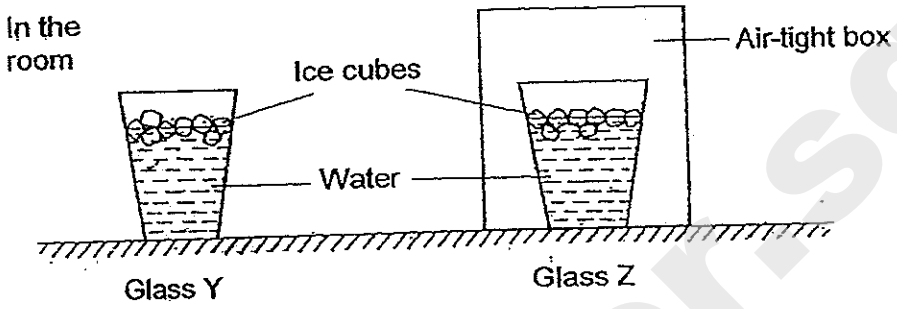
(a) Explain how a heavy rain can cause the alarm in the flood warning device to sound. [2]

(b) Why is the circuit housed in a water-proof box? [1]

3

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40 Siti left two identical glasses of ice water, Y and Z, in a room as shown below.



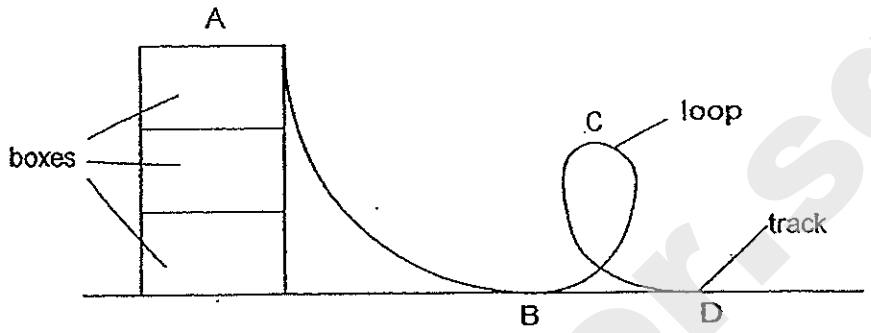
(a) What will you observe for both glasses after ten minutes? [2]

(b) Explain your answer in (a). [2]

4

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41 The diagram below shows a track that Calvin set up. He wanted his toy car to move up the loop to the end of the track. The toy car is not operated by battery.



(a) Explain why the top of the loop (point C) has to be constructed lower than Point A. [1]

(b) Calvin stacked more boxes to raise the starting height.

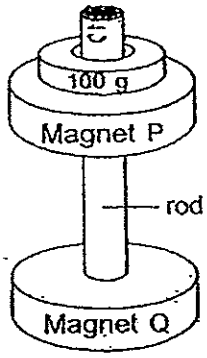
State and explain his observation about the distance moved by the car. [2]

3

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42 Zihua placed a 100g mass and two ring magnets P and Q, through a wooden rod as shown in Set-up M.

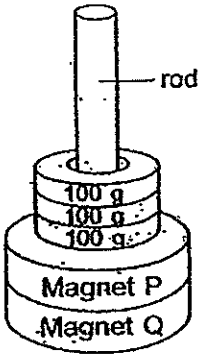
Set-up M



(a) Why is Magnet P floating above Magnet Q? [1]

When Zihua placed two additional 100g masses on top of Magnet P, it falls on top of Magnet Q as shown in the set-up N.

Set-up N



(b) Compare the magnetic force between Magnets P and Q and the gravitational force exerted by the masses in both set-ups. What is the difference between the two forces? [1]

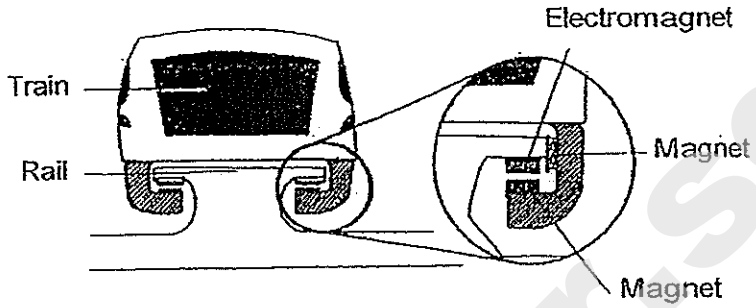
2

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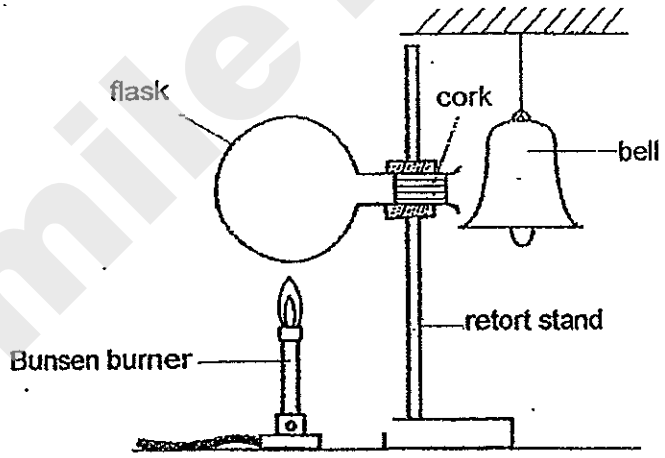
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The diagram shows a Maglev train, which uses the magnet force between the train and the tracks, to move quickly.



(c) Based on your answers in (a) and (b), what must engineers do to ensure that the situation in Set-up N would not happen to the Maglev train? [1]

43 Mr Lee set up a flask stoppered with a cork, positioned near to but not touching the bell. He warmed up the flask by supplying heat using a Bunsen burner.

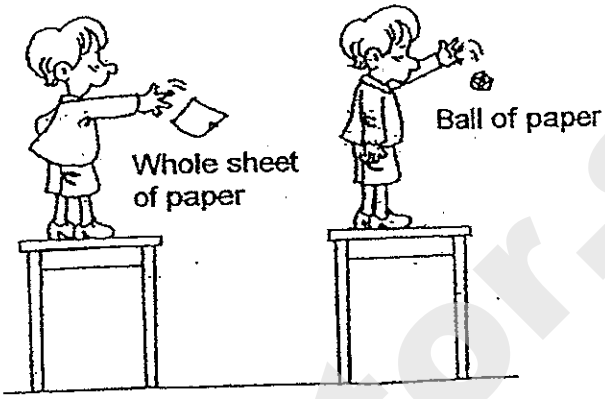


(a) Describe what happens after some time. [1]

(b) Provide an explanation for your answer in (a) [1]

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44 Tim took two identical sheets of paper, crushing one of them into a ball of paper. He then released both pieces of paper from a height of 2.5m above the ground and measured the time taken for each piece of paper to reach the ground.



(a) What is the relationship between the surface area of the paper and the time taken for it to reach the ground? [1]

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

(c) What were the effects of the force applied on the whole sheet of paper as Tim crushed the sheet of paper into a ball? [1]

3

End of Booklet B2

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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : MGS
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
2	2	4	1	4	2	3	3	4	4	4	2	2	4	3	2	2

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	3	2	4	2	1	4	2	3	4	2	2	4

31)a)2 3 4 1
b)water

32)a)Red is a striking colour, thus it allows animals to spot it easily and hence the plant able to disperse its seeds more efficiently.
b)The green beads camouflaged with the leaves of the plant, thus Andy could not spot many green beads.

33)a)Light is not needed for germination as the plant only needs light to make food. However, the plants leaves have not grown yet and can not make their own food.
b)X provides the seedling with food before its leaves start to grow.

34)i)Ravi should change the colour of one flower to the same colour as the other flower.
ii)He should ensure that one of the flowers is not sprayed with the mixture of water sugar.

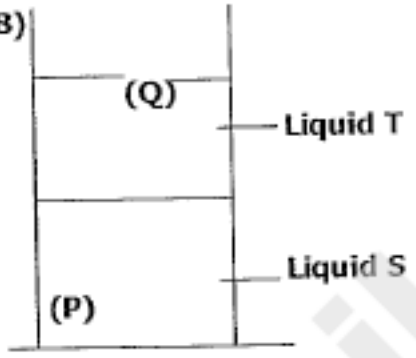
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35)a)They have fins or hands that allow them to swim in the water.
b)The fish take in dissolved oxygen from the water through its gills but the human has to come up for air while swimming as it breathes through lungs.

36)a)Prey : A
Predator : B
b)It is important to keep a balance in a food chain as some animals depend on other animals for food. When there is a decrease in the plant-eaten population, the meat-eaten population will decrease. The plant-eaten will gradually increase and feed on more plants resulting in the decrease of plants. Finally, the plant-eaten will decrease over time.

37)a)The mud mound provides a place for animals to live.
b)It fertilizes the mud and the plant would grow even better.
c)The waste from all the animals fertilizes the mud and they the plant would grow and reproduce well.
d)Both M and the earthworm recycle nutrients from deep underground.

38)



39)a)The heavy rain will fill Q, thus also filling P, causing the Styrofoam wrapped in aluminium foil to rise along with the water sounding the device as aluminium foil as a conductor of electricity it close the circuit, sounding the device.
b)It is to keep the circuit dry so that it will protect people from getting an electric shock when they touched a wet circuit.

40)a)There would be tiny water droplets on the outer surface of Y but nothing would happen to Z. Ice has melted and water droplets are seen on the outer surface of Y. Ice has melted and no water droplets are seen on the outer surface of Z.
b)The water vapour from the surrounding air came into contact with the cooler outer surface of Y. It loss heat and condenses into water droplets. However Z was put in a air-tight box, thus no air would condense into water droplets on the outer surface of glass Z.

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41)a)The gravitational potential energy of the toy car at point A is converted to kinetic energy as it travels to point B but some of it is lost as heat and sound energy. Making point C lower than point A ensures that the toy car has sufficient kinetic energy to reach and pass through to the pot the loop.

42)a)The pokes of magnet P and Q that were facing each other were like poles and like poles repel each other.

b)The gravitational force exerted by the masses was stronger than the magnetic force between P and Q.

c)The engineers need to ensure that the magnetic force of repulsion is equal to the gravitational force acting on the train which is affected by the number of passengers on it. This ensures that the train will float above the track and not press down against it.

43)a)The cork shoots out of the flask and hit the bell, making the bell ring.

b)As the Bunsen heated the flask, the air inside it expanded more than the flask, pushing the cork out and thus it hit the bell.

44)a)The larger the surface area of the paper, the longer it takes to reach the ground.

b)The large surface area of the paper increase the air resistance pushing the paper, the air slows the paper down.

c)Tim changed the shape of the paper.

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NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2014
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 : 16 May 2014 **Parent's Signature:** _____

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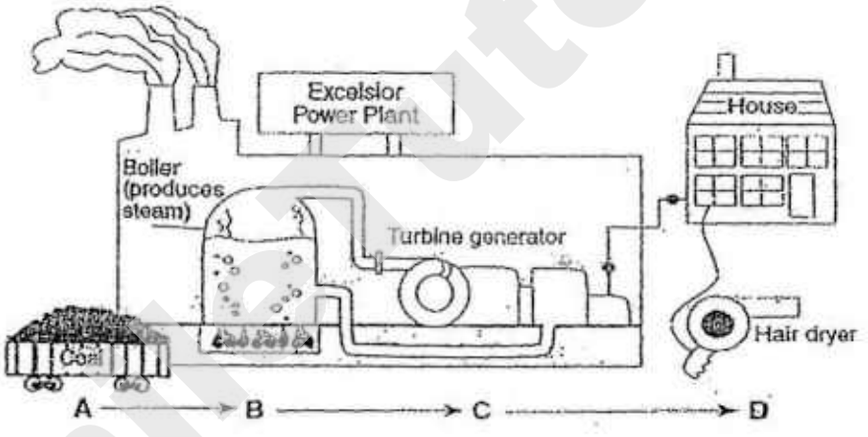
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Section A: (30 x 2marks = 60marks)
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Which of the following statements about energy is false?

   (1) Energy can be stored.
   (2) Energy can change forms.
   (3) Non-living things do not need energy to do work.
   (4) Energy can be transferred from one object to another.

2. The diagram below shows the steps necessary to provide the energy needed to run a hair dryer.



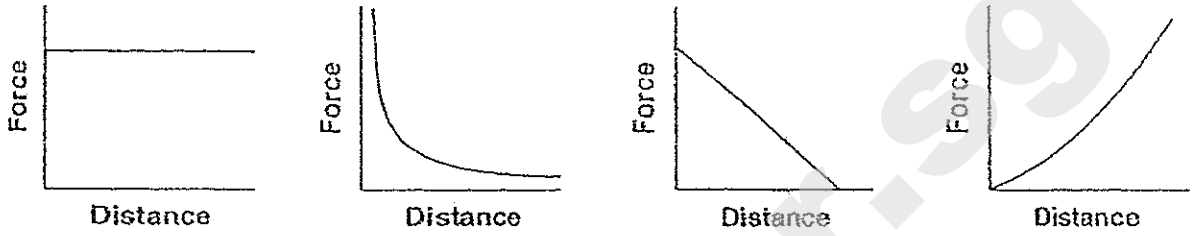
From Location A to Location D in the diagram, which of the following best shows the form of energy in each location?

	A	B	C	D
(1)	Heat Energy	Kinetic Energy	Kinetic Energy	Heat Energy
(2)	Chemical Potential Energy	Heat Energy	Kinetic Energy	Electrical Energy
(3)	Heat Energy	Kinetic Energy	Electrical Energy	Heat Energy
(4)	Chemical Potential Energy	Kinetic Energy	Kinetic Energy	Chemical Potential Energy

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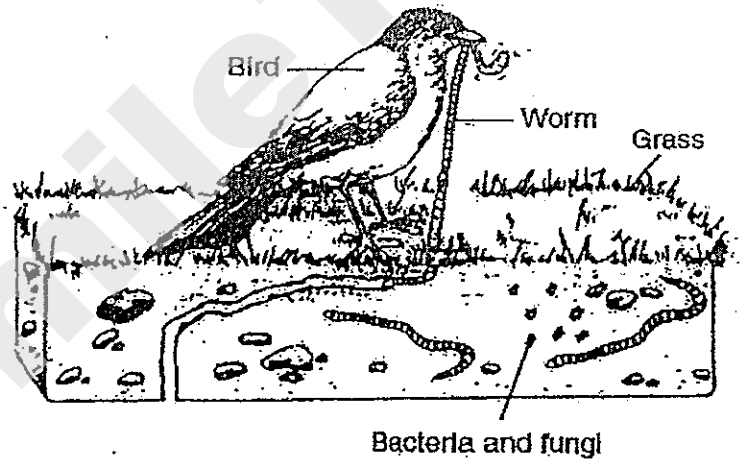
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3. A space probe is launched into space from Earth's surface.
Which graph below shows the relationship between the amount of gravitational force exerted by Earth on the space probe and the distance between the space probe and the centre of Earth?



(1) (2) (3) (4)

4. The diagram below shows several different organisms found in an area.



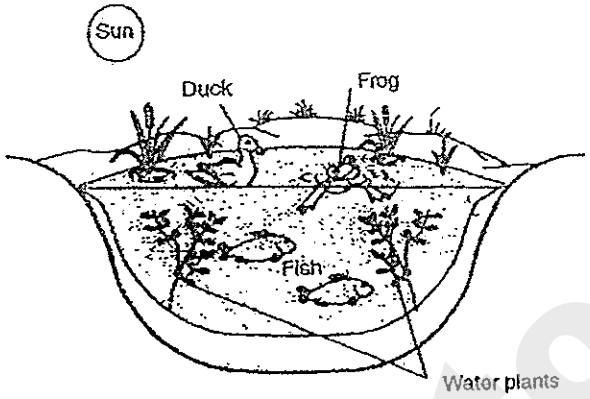
The worms in the diagram represent _____.

(1) a habitat
(2) a population
(3) a community
(4) an ecosystem

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The diagram below shows a pond community containing a variety of plants and animals. Answer Questions 5 and 6 based on the diagram.



5. What is the main source of energy for this pond community?

(1) Sun
(2) Fish
(3) Pond water
(4) Water plants

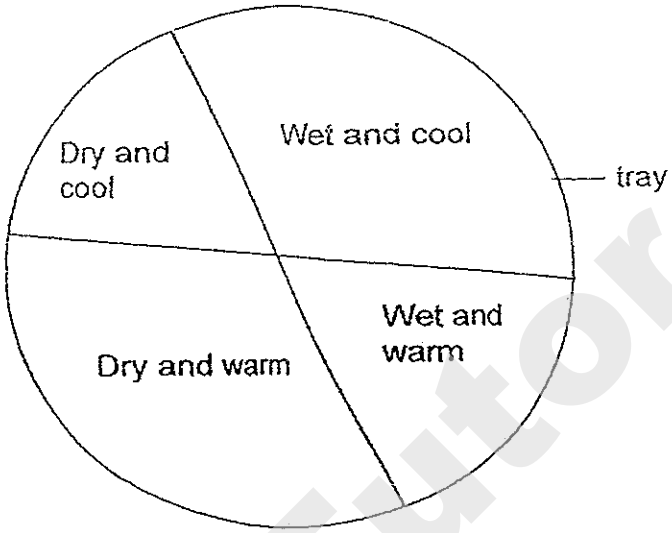
6. Why are the fish able to survive in the pond?

(1) The fish use oxygen produced by the plants.
(2) The fish use carbon dioxide produced by the frog.
(3) The fish use carbon dioxide produced by the plants.
(4) The fish can make its own food through photosynthesis.

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7. Ellen conducted an experiment to find out the suitable conditions needed for the survival of an Organism X. She took a round tray and divided it into four sections as shown below. Then she introduced 40 Organism X and placed them in the middle of the tray.



After five hours, she recorded the number of Organism X found in each section. Her classmates commented that her experiment was not fair. Their comments are stated below.

Alice : Ellen should repeat the experiment.
Ben : The sections of the tray were not divided equally
Charlie : The observations should be done as soon as the experiment was set up.
David : At the beginning of the experiment, all the Organism X should be spread all over the tray.

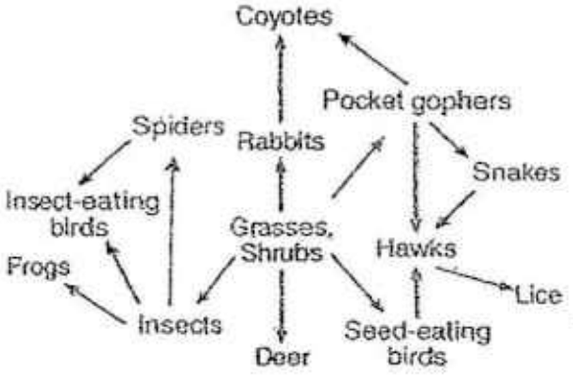
Which classmate(s) had provided the best reason(s) to show that Ellen's experiment was not fair?

(1) Ben only
(2) David only
(3) Alice and Ben only
(4) Alice and Charlie only

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8. The diagram below represents a food web.



Which statement regarding organisms in this food web is correct?

(1) There would be more coyotes than rabbits.
(2) There would be more snakes than pocket gophers.
(3) There would be more hawks than seed-eating birds.
(4) There would be more insects than insect-eating birds.

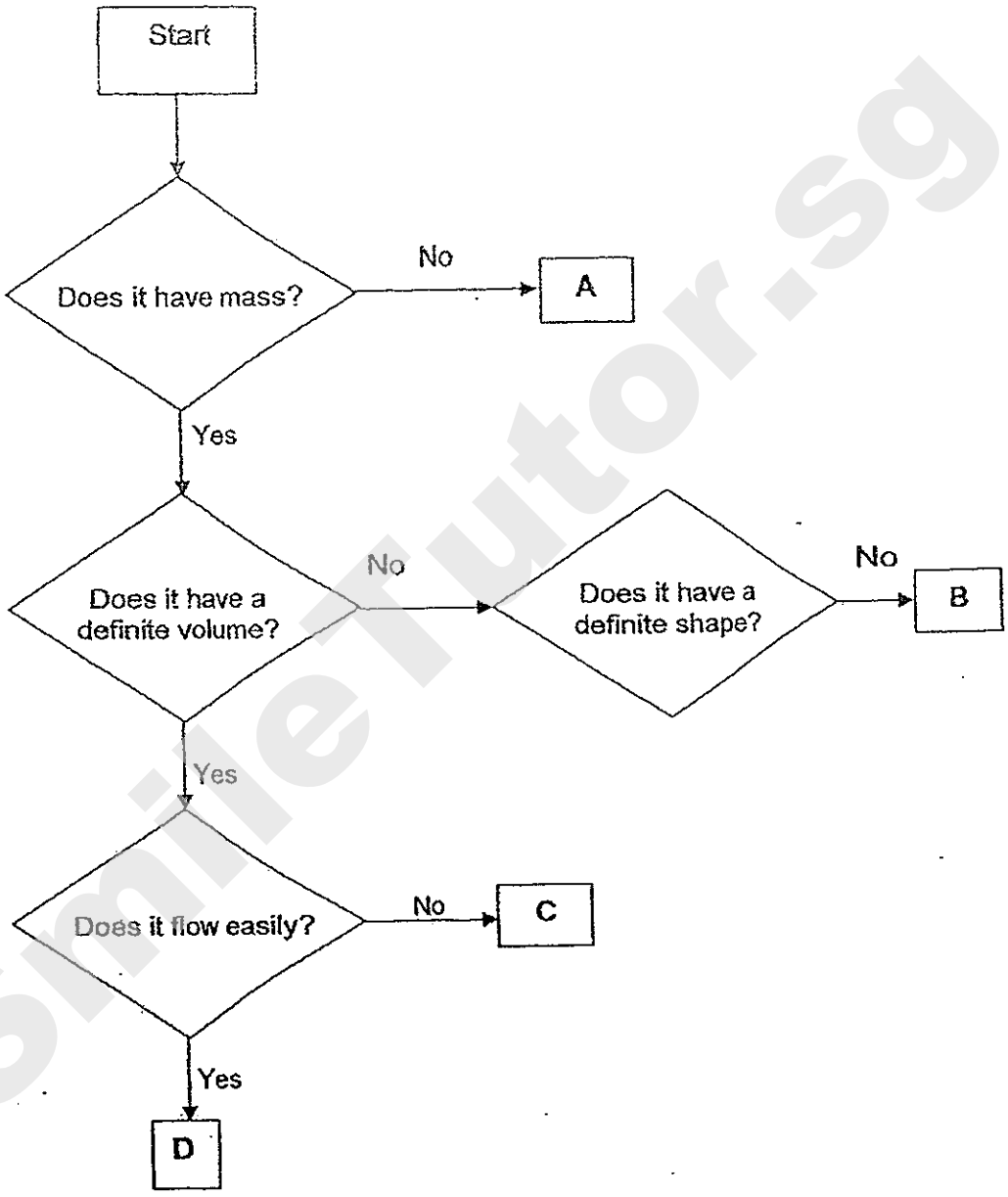
9. Expansion has its usefulness but it also causes some problems in everyday life. Which one of the examples given below is **NOT** caused by expansion?

(1) Buckling of railway lines on a hot day.
(2) Snapping of overhead wires in cold weathers.
(3) Cracking of sealed bottle full of water when left in the freezer.
(4) Returning a dented ping pong ball to its original shape by dipping it in hot water.

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10. The flowchart below shows the properties of A, B, C and D.



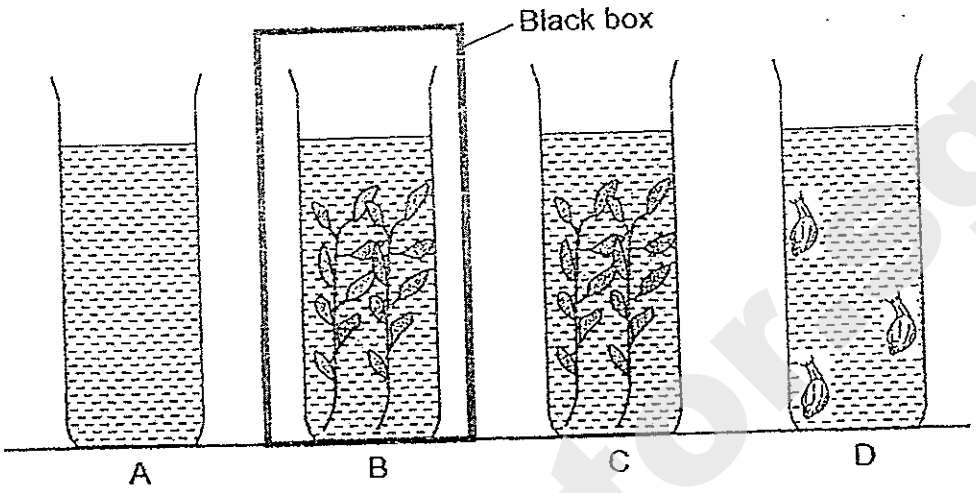
What could A, B, C and D be?

	A	B	C	D
(1)	heat	water vapour	ice cube	honey
(2)	shadow	water vapour	honey	ice cube
(3)	oxygen	heat	tap water	rock
(4)	nitrogen	air	rock	tap water

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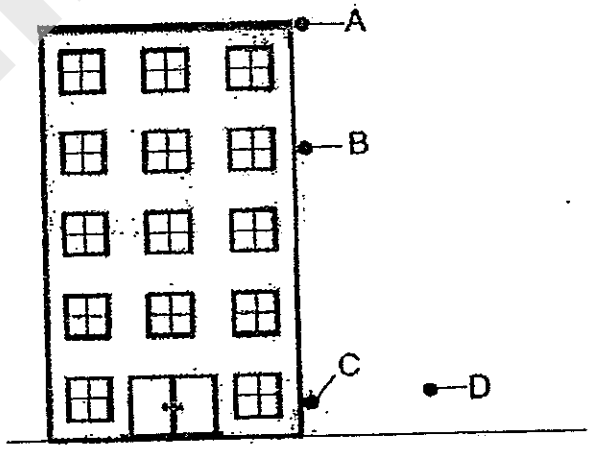
11. The diagram below shows 4 beakers, A, B, C and D, with an equal volume of water. The 4 beakers were placed in the sun for 12 hours.



Which one of the following shows the amount of carbon dioxide in each beaker after 12 hours, starting from the most carbon dioxide to the least?

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

12. A ball is dropped from the roof of a building. Points A, B, C and D in the diagram below represent positions of the ball as it falls.

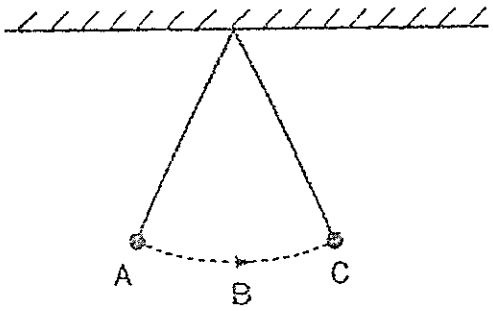


At which position will the ball have the greatest kinetic energy?

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

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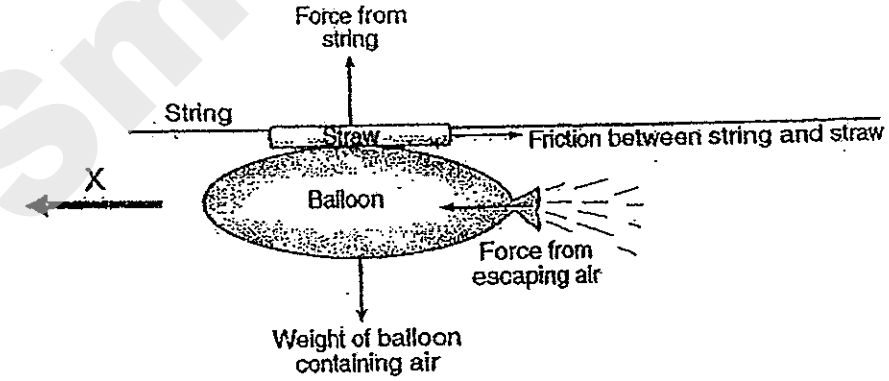
13. In the diagram below, a pendulum released from position A swings freely to position C.



As the pendulum swings from A to C, what are the changes to its gravitational potential energy and kinetic energy from A to B and B to C respectively?

	Gravitational potential energy		Kinetic energy	
	A to B	B to C	A to B	B to C
(1)	Increases	Decreases	Decreases	Increases
(2)	Decreases	Increases	Increases	Decreases
(3)	Increases	Decreases	Increases	Decreases
(4)	Decreases	Increases	Decreases	Increases

14. The diagram below shows an inflated balloon attached to a straw that is moving along a string. Some forces that are acting on the straw are shown by the labelled arrows.

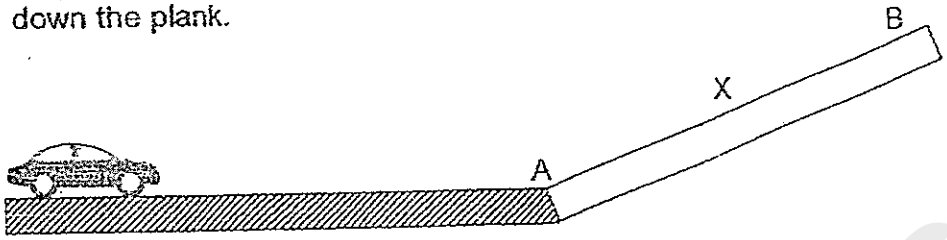


When air was allowed to escape from the balloon, the force caused the balloon and the straw to move in direction X because this force was greater than the _____.

(1) force from the string
(2) weight of balloon containing air
(3) friction between string and straw
(4) friction between the balloon and straw

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15. A toy car was pushed towards a wooden plank AB as shown in the diagram below. It moved up the plank, stopped at X and then it rolled down the plank.



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

A The car stopped at X because it has lost its energy.
B The car stopped at X because there were no forces acting on it.
C The car rolled down the slope from X because of gravitational force.
D The car slowed down as it moved up the slope because it is going against gravity.

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

16. The table below shows the characteristics of four different habitats A, B, C and D found in an environment.

Characterisics of the habitat	Habitat			
	A	B	C	D
Temperature	Fluctuates widely	Fluctuates widely	Some changes	Little or no change
Presence of moisture	Dry	A little damp	Very wet	Damp
Light intensity	High	Low	High	Low

Jenny found an organism in one of the habitats. She observed and recorded the characteristics of the organism as shown below.

✓ *It is sensitive to light.*
✓ *It feeds on dead matter.*

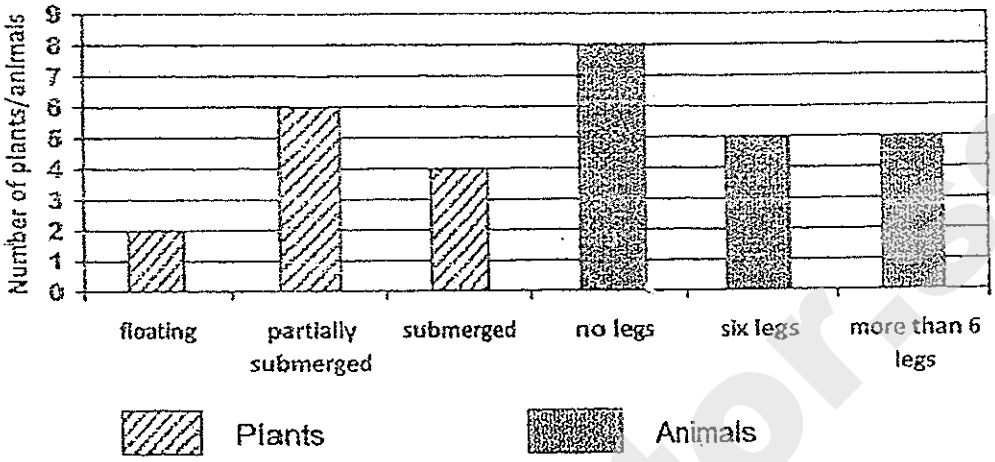
In which one of the following habitats was the above organism most likely to be found?

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

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17. A group of P6 pupils counted the plants and animals in the school pond. They plotted their results in a bar graph as shown below.



Which of the following statements about the plants and animals are definitely true?

A There are 6 communities in the pond.
B There is a total of 30 organisms in the pond.
C There are at least six populations of plants and animals in the pond.
D There is a total of five populations of animals with 6 legs in the pond.

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

18. A student is trying to determine if beetles will help control the population of a harmful plant. Which sequence would be best suited for his investigation?

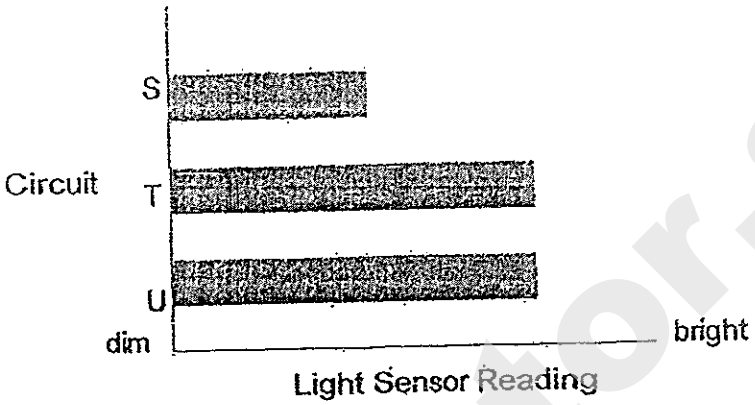
(1)	State an aim ↓ Conduct an experiment Formulate a hypothesis Make a conclusion Analyze data	(2)	Formulate a hypothesis ↓ Make a conclusion State an aim Analyze data Conduct an experiment
(3)	Make a conclusion ↓ Conduct an experiment State an aim Formulate a hypothesis Analyze data	(4)	State an aim ↓ Formulate a hypothesis Conduct an experiment Analyze data Make a conclusion

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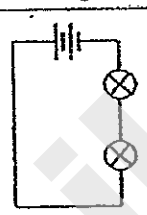
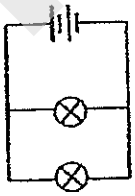
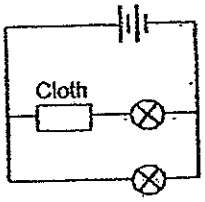
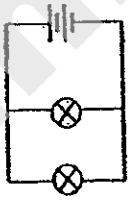
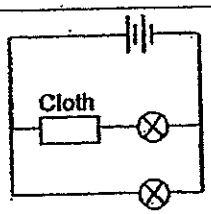
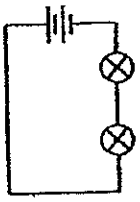
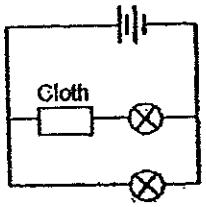
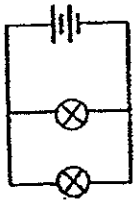
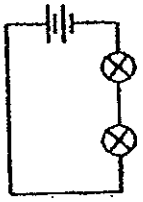
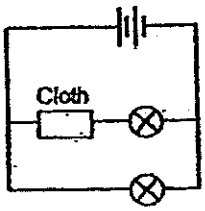
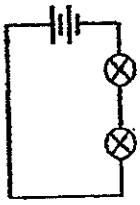
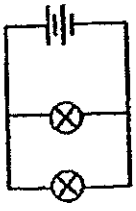
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19. James made three new circuits. He used a light sensor to measure the brightness of one of the lit bulbs in each circuit.

The sensor gave the results on the graph below.



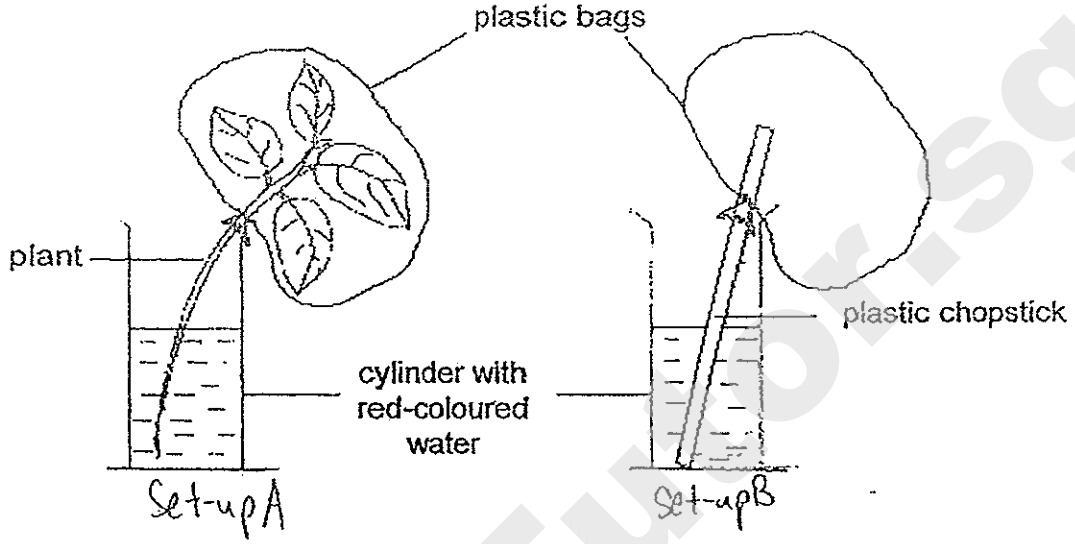
Based on the graph above, which of the following shows the correct setup for each circuit?

	S	T	U
(1)			
(2)			
(3)			
(4)			

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20. Maggie placed a plant in a cylinder of red-coloured water and covered the leaves with a clear plastic bag as shown below. She also used an identical cylinder and the same amount of red-coloured water to make Setup B. Both setups were placed near a window.



Which of the following could she **observe** after 3 hours?

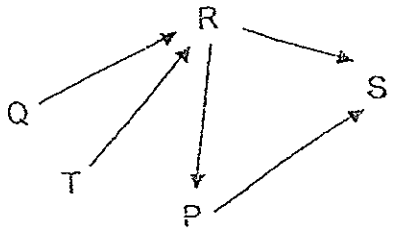
A The leaves in Setup A have turned red.
B There is more water left in Setup A than B.
C The leaves in Setup A released water vapour
D There are water droplets inside the plastic bag of Setup A but not Setup B.

(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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21. The following relationships were observed among 5 living things P, Q, R, S and T.



Which one of the following classifications is correct?

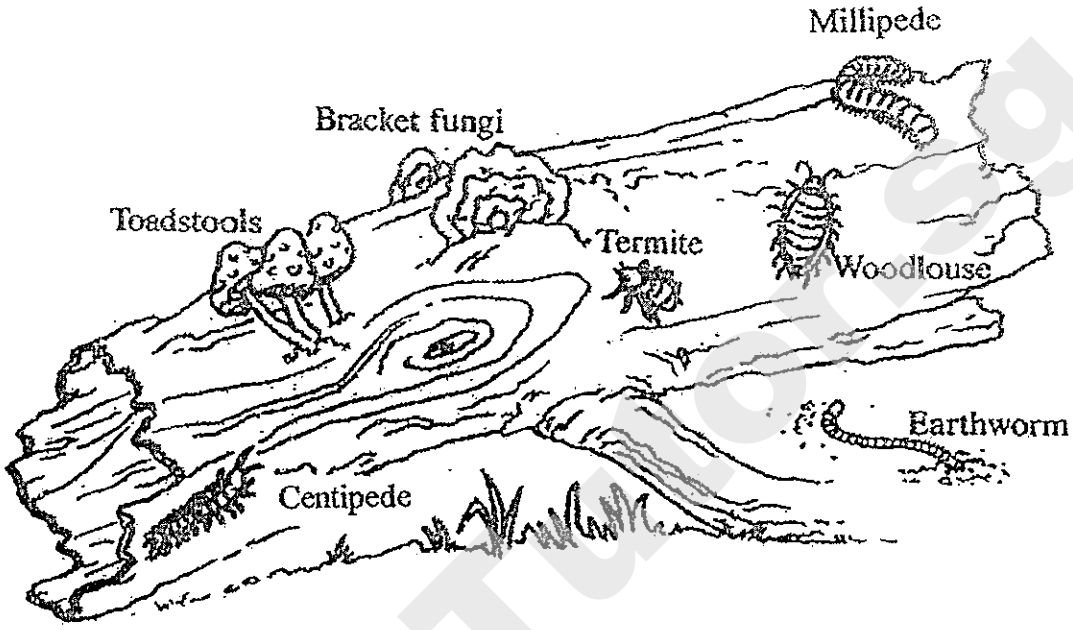
	Producer	Prey	Predator and Prey	Predator
(1)	Q, T	S	P	R
(2)	S	P, T	R	Q
(3)	Q, T	R	P	S
(4)	S	Q	R	P, T

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22. Chee Han found a rotting log in a park.

He recorded the following statements about the rotting log in his notebook.



A The rotting log is a community.
B The rotting log is a living thing.
C The toadstool and earthworm are decomposers
D The termites and woodlouse help to speed up decomposition.

Which of the above statements are correct?

(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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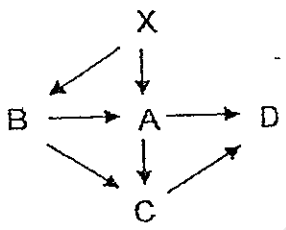
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23. A, B, C and D are four living organisms in a community. The table below shows the food of these four organisms.

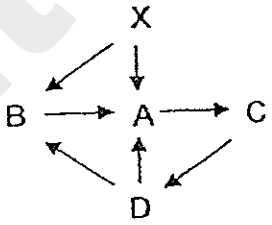
Food consumer	Food
A	X
B	X and A
C	B and D
D	A and B

Which of the following food webs is found in this community?

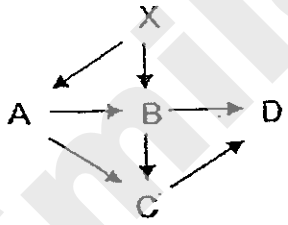
(1)



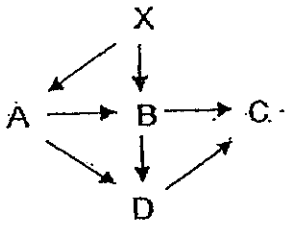
(2)



(3)



(4)



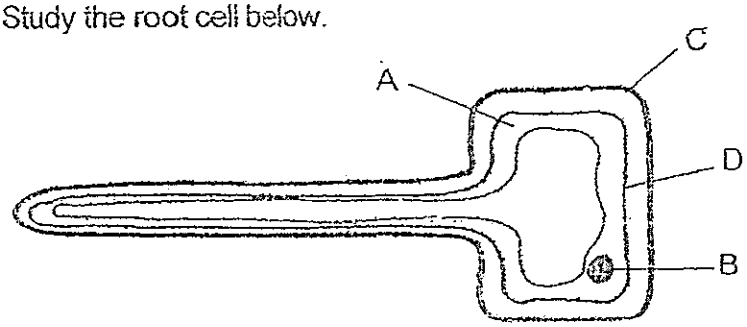
24. Which pathway do most nutrients take after a person takes a bite of food?

(1) digestive system → circulatory system → body cells
(2) circulatory system → body cells → digestive system
(3) digestive system → body cells → circulatory system
(4) circulatory system → digestive system → body cells

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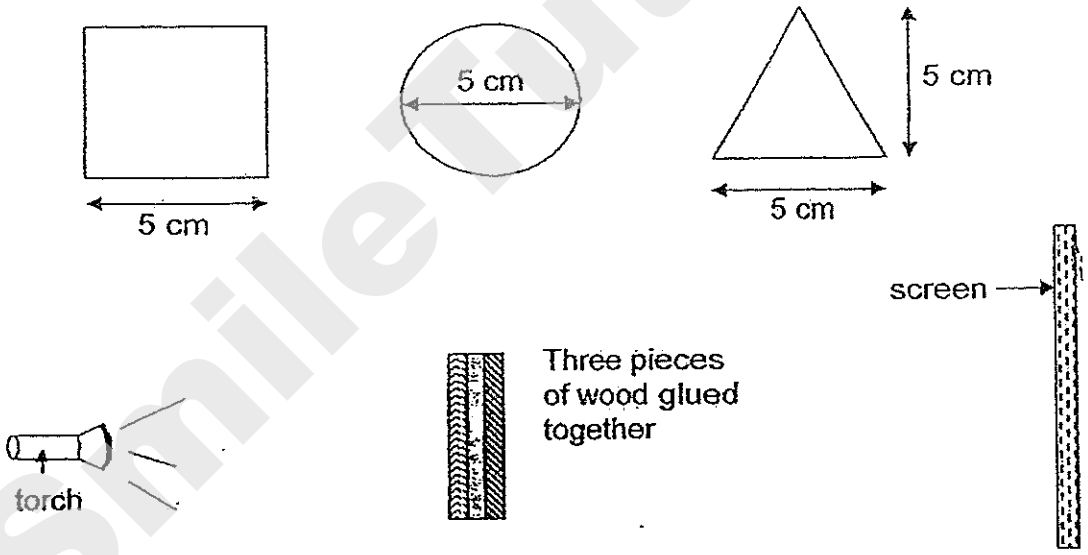
25. Study the root cell below.



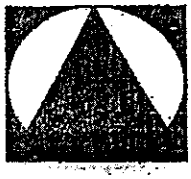
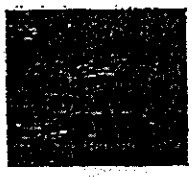
Which parts of the cell above are also present in all animal cells?

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

26. The diagram below shows 3 pieces of wood of different shapes.



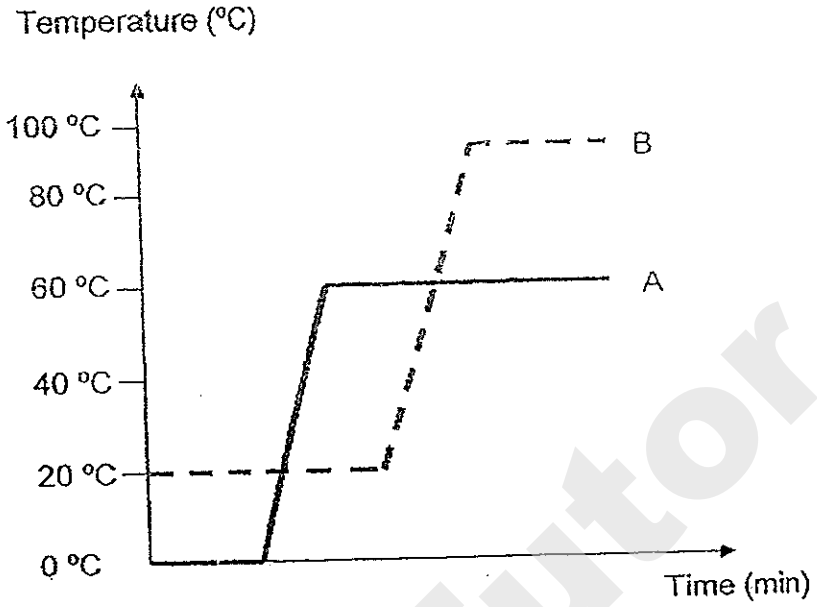
Which of the following shadows would be observed on the screen?

(1)		(2)	
(3)		(4)	

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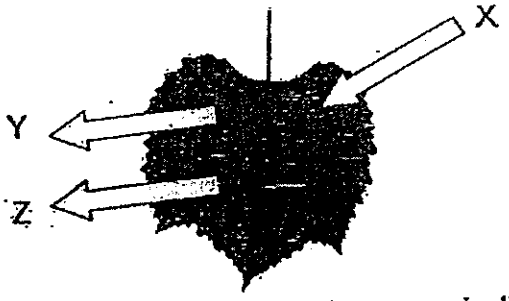
27. The graph shows the melting point and boiling point of two substances A and B.



When the surrounding temperature is 50°C what is the state of A and B?

	A	B
(1)	Solid	Liquid
(2)	Liquid	Solid
(3)	Liquid	Liquid
(4)	Gas	Gas

28. The diagram below shows the movement of gases in and out of a leaf which is growing on a potted plant left in a dark room.



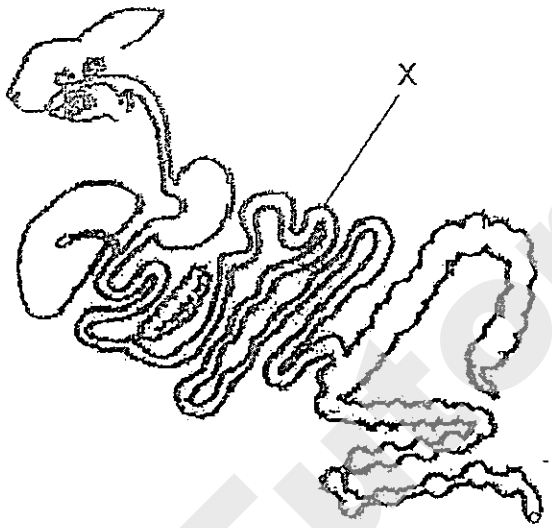
Which of the following correctly shows the gases indicated by the arrows?

	X	Y	Z
(1)	Carbon dioxide	Oxygen	Water vapour
(2)	Oxygen	Water vapour	Carbon dioxide
(3)	Water vapour	Carbon dioxide	Oxygen
(4)	Water vapour	Oxygen	Carbon dioxide

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29. The diagram below shows the digestive system of a rabbit. Katherine and her classmates were told that the digestive system of a rabbit is very similar to that of a human being.



Blood leaving X carries more _____ than the blood entering it.

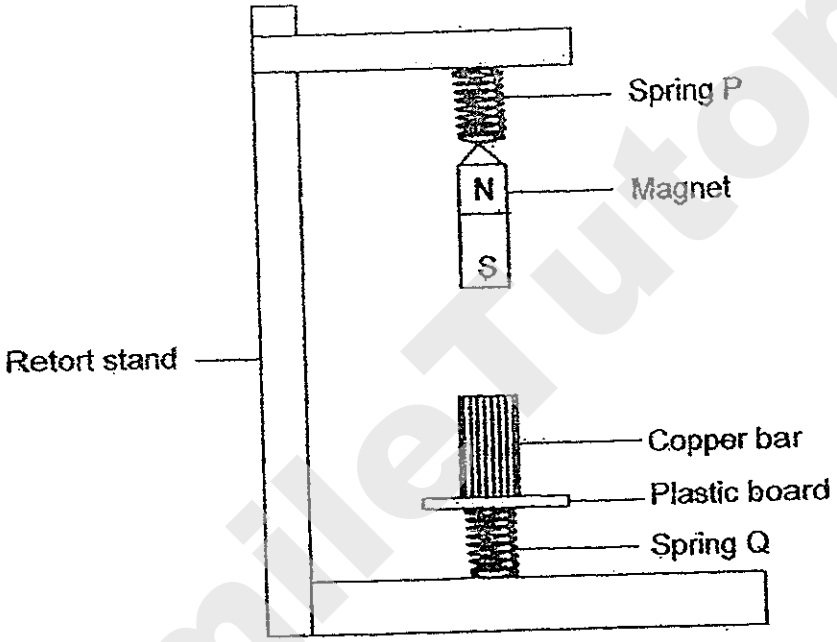
A oxygen
B digested food
C carbon dioxide

(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. Mr Cheng set up an experiment as shown below to find out how a copper bar would interact with a magnet hanging from Spring P which is attached to the top of the retort stand.
Another spring, Spring Q, was attached securely onto the plastic board and placed at the base of the retort stand.
Both springs have an original length of 4cm
He then placed a copper bar onto the plastic board and measured the length of both the springs.



Which one of the following sets of results shows how the copper bar will interact with the magnet?

	Length of Spring P	Length of Spring Q
(1)	3cm	4cm
(2)	4cm	4cm
(3)	5cm	3cm
(4)	5cm	5cm

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NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2014
PRIMARY 6

SCIENCE

BOOKLET B

14
~~16~~ 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 _____

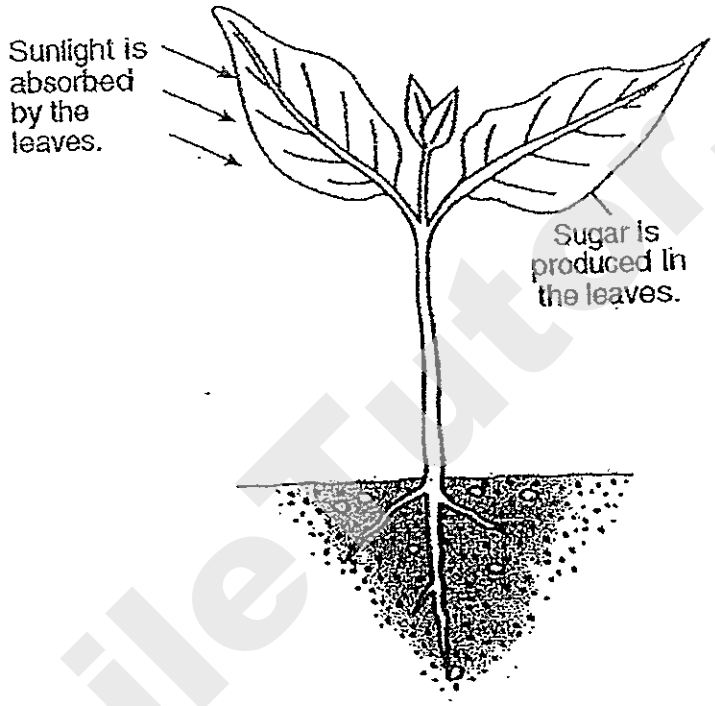
Date : 16 May 2014 Parent's Signature: _____

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

31. The diagram below shows a plant carrying out photosynthesis.



(a) Other than sunlight, name 2 other substances that are also taken in by the plant to make food. [1]

_____

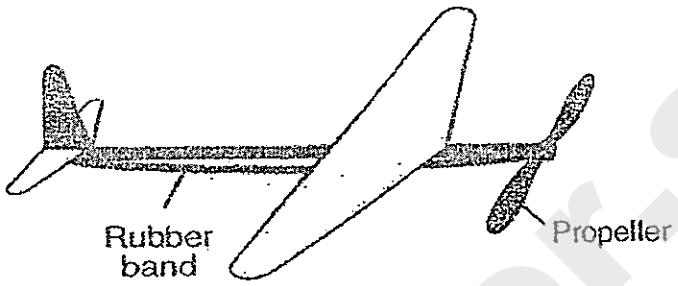
(b) State one way the plant uses the sugar that is produced in the leaves. [1]

_____

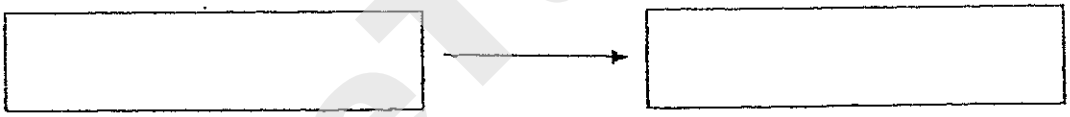
Score	2

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32. The diagram below shows a toy airplane. The propeller is turned 20 times which twists the rubber band connected to it. When the propeller is released the rubber band unwinds and the propeller turns at a high speed, enabling the airplane to move forward.



(a) State the energy conversion when the rubber band unwinds and the propeller turns enabling the toy airplane to move forward. [1]



(b) Without making any changes to the toy airplane, identify one change that could be made to make the airplane move further? [1]

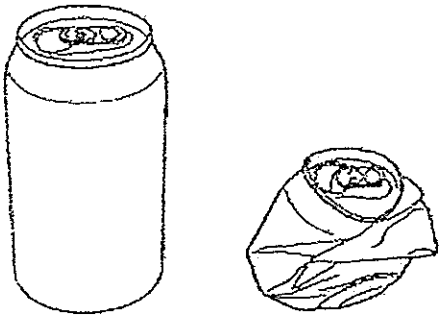
_____

Score	2

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33. The diagram below shows an empty aluminium can before and after it was crushed.



Before After

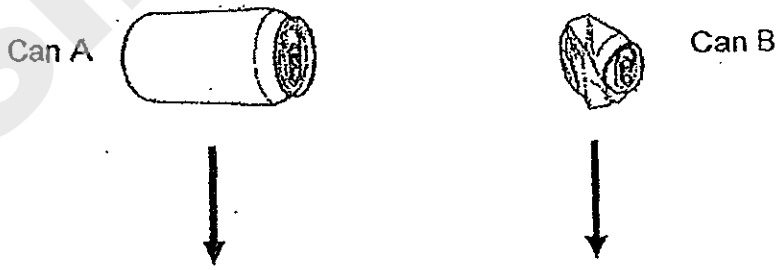
(a) What force is exerted on the can to cause the change? [1]
Put a tick in the correct box.

☐ Push ☐ Pull

(b) What effect does the force mentioned in (a) have on the can? [1]

_____

(c) Sally took 2 other empty identical aluminum cans and labelled them Can A and Can B. She crushed Can B like the diagram above. Then she dropped both cans from the same height in the direction as shown in the diagram below.
Which can, A or B, will reach the ground first? Explain your answer. [2]



_____

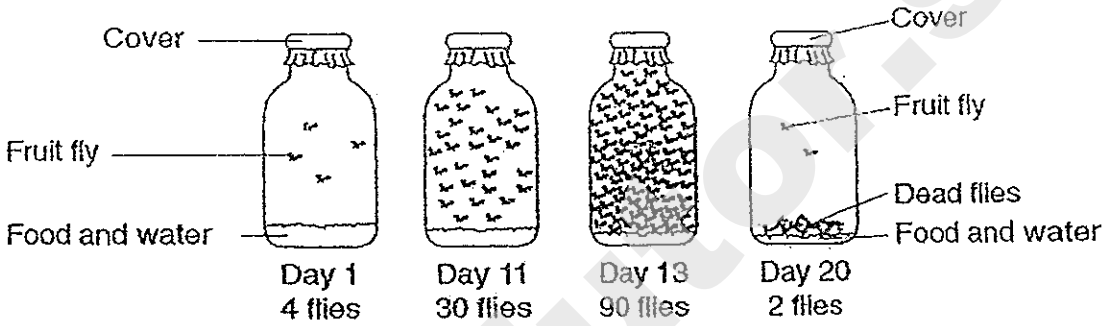
_____

_____

Score	/ 4

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34. The diagram below shows the results of a fruit fly activity that took place over a 20-day period. On Day 1, four fruit flies were placed in a jar containing food and water. The jar had a cover that allowed enough air exchange for the fruit flies to survive, but would not allow them to escape or other flies to enter. The number of flies observed in the jar during the 20-day period is shown.



(a) What is the process responsible for the population change that occurred from Day 1 to Day 13? [1]

_____

(b) State two possible reasons why many of the fruit flies died from Day 13 to Day 20. [1]

_____

_____

_____

Score	2

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35a. Study the information given below.

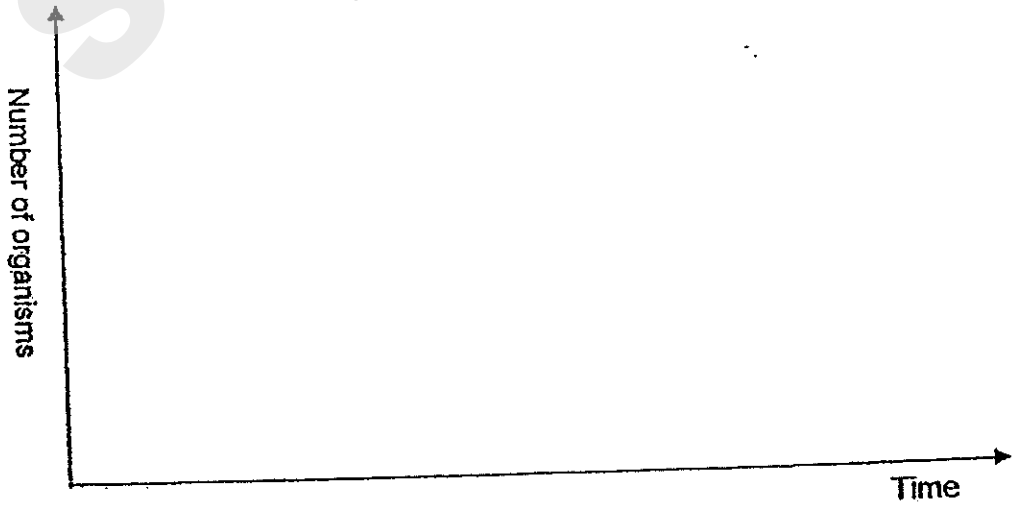
T feeds on R.
S has no predator.
S feeds on Q and T.
P is eaten by Q and R.

Using the information given, draw a food web in the box below. [1]

35b. Study the food chain below..

plant ⟶ rabbit ⟶ snake ⟶ hawk

If all the rabbits were removed, sketch a graph below to show the immediate effect on the populations of the organisms in the food chain. Label your graph clearly. [2]

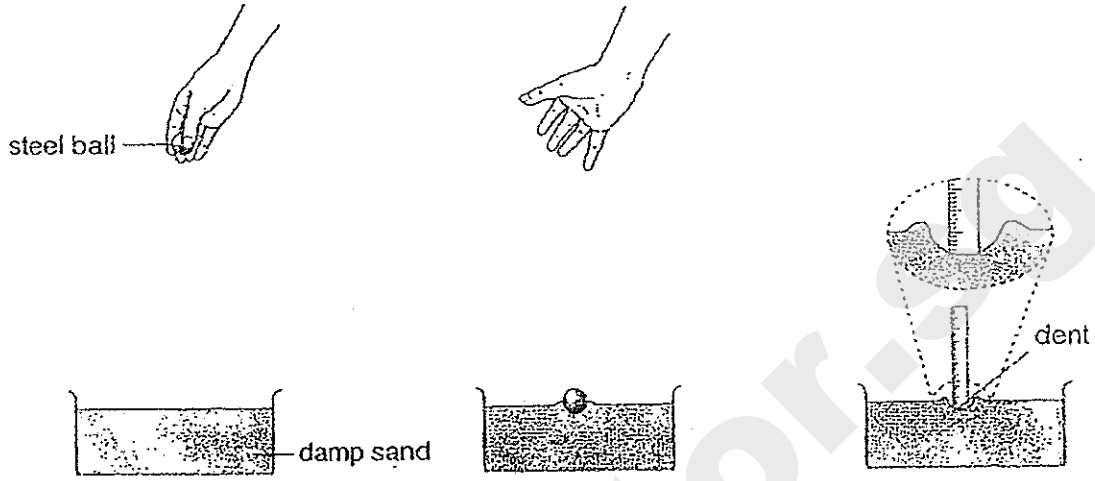


Score 3

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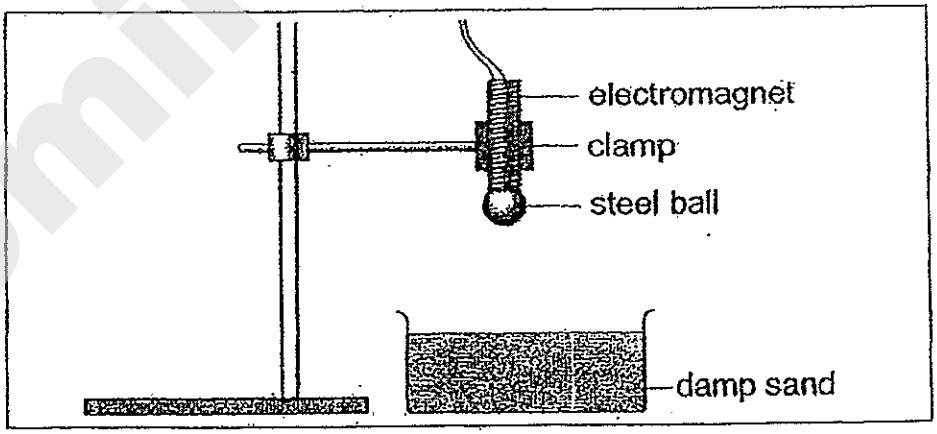
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36. Jack dropped a steel ball into a tray of damp soil as shown below. He measured the depth of the dent made in the damp soil.



(a) Jack dropped the steel ball from different heights. Predict how the depth of the dent would change with the height of drop. Give a reason for your answer. [2]

(b) Jack's friend said that the ball could be dropped using an electromagnet instead of dropping it by hand.

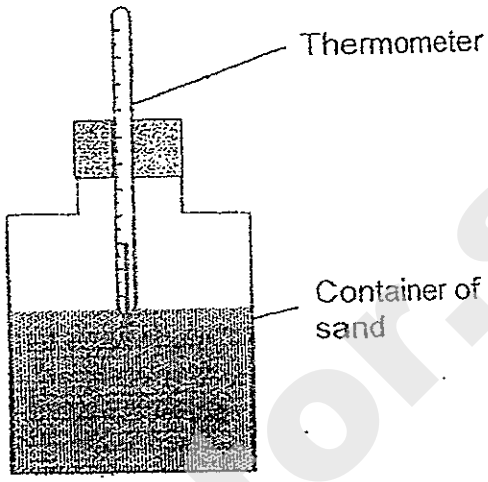


Explain why this would improve the investigation. [1]

Score	3

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37. Ming found out that shaking a container of sand would cause the temperature of the sand to rise.



(a) Explain why the shaking would cause the temperature of sand to rise. [2]

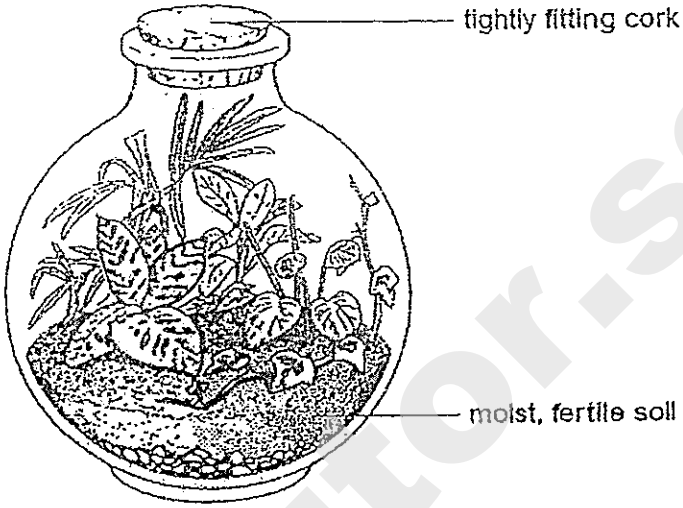
(b) He then performed a new experiment to see if shaking a container of small rubber balls would cause the temperature of the rubber balls to rise.
Describe how you would find out if shaking a container of small rubber balls would affect its temperature. [2]

Score	4

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38. The diagram below shows a bottle garden which is kept in a brightly lit room.



(a) Explain why the plants can survive in the bottle for years without any watering. [1]

_____

_____

(b) Cross-pollination is the transfer of pollen grain from one plant to another.
Give two reasons why cross-pollination is less likely to happen in this bottle garden than in an outdoor garden. [2]

_____

_____

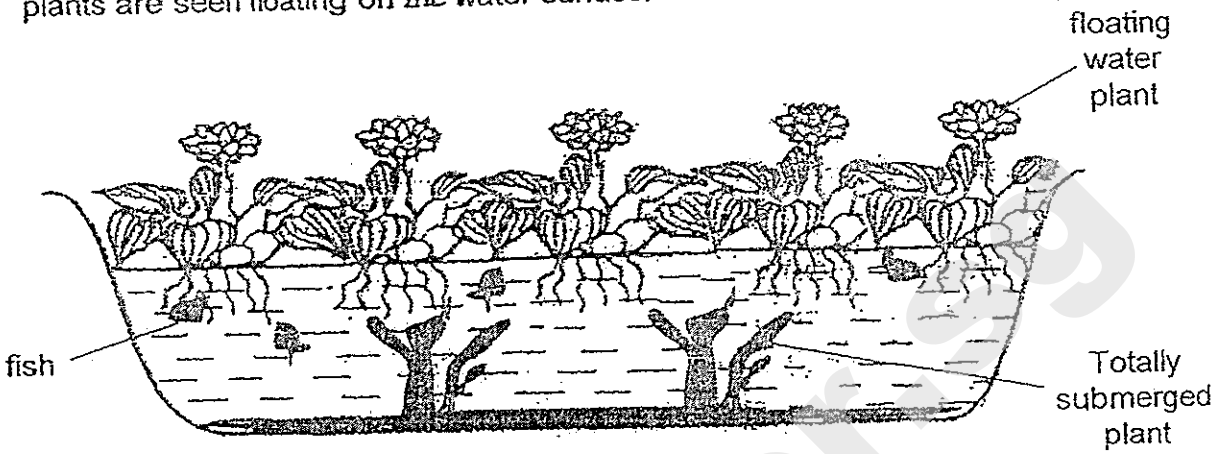
_____

Score	/ 3

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39. The diagram below shows the cross section of Jamie's school pond. Many water plants are seen floating on the water surface.



(a) Jamie's classmate said that the school should remove some of the floating water plants as it will affect the totally submerged plants. Do you agree? Explain your answer. [1]

_____

_____

(b) Give a reason each to explain how the fish and the totally submerged water plants are interdependent on each other. [2]

_____

_____

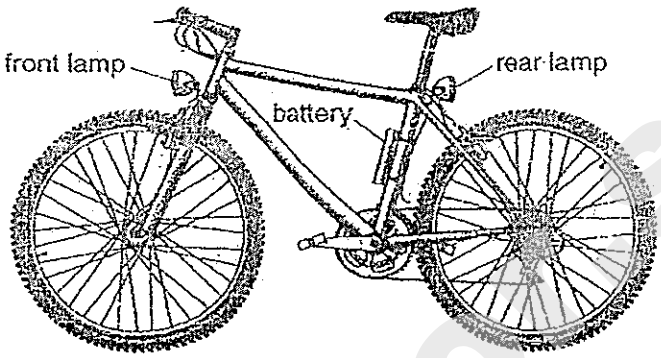
_____

Score	3

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40. Jaron's bicycle has a front lamp and a rear lamp. Both lamps are connected to the same battery.



(a) Draw 2 circuit diagrams below to show how:
(i) One switch can turn both lamps on and off at the same time.
(ii) Two switches can turn the front and rear lamps on and off independently. [2]

(i)	(ii)

(b) Jaron replaces the battery with a generator called a dynamo. When he pedals his bicycle, the back wheel turns the generator and light up the lamps. Complete the energy conversion below to show how the lamps are lit. [1]

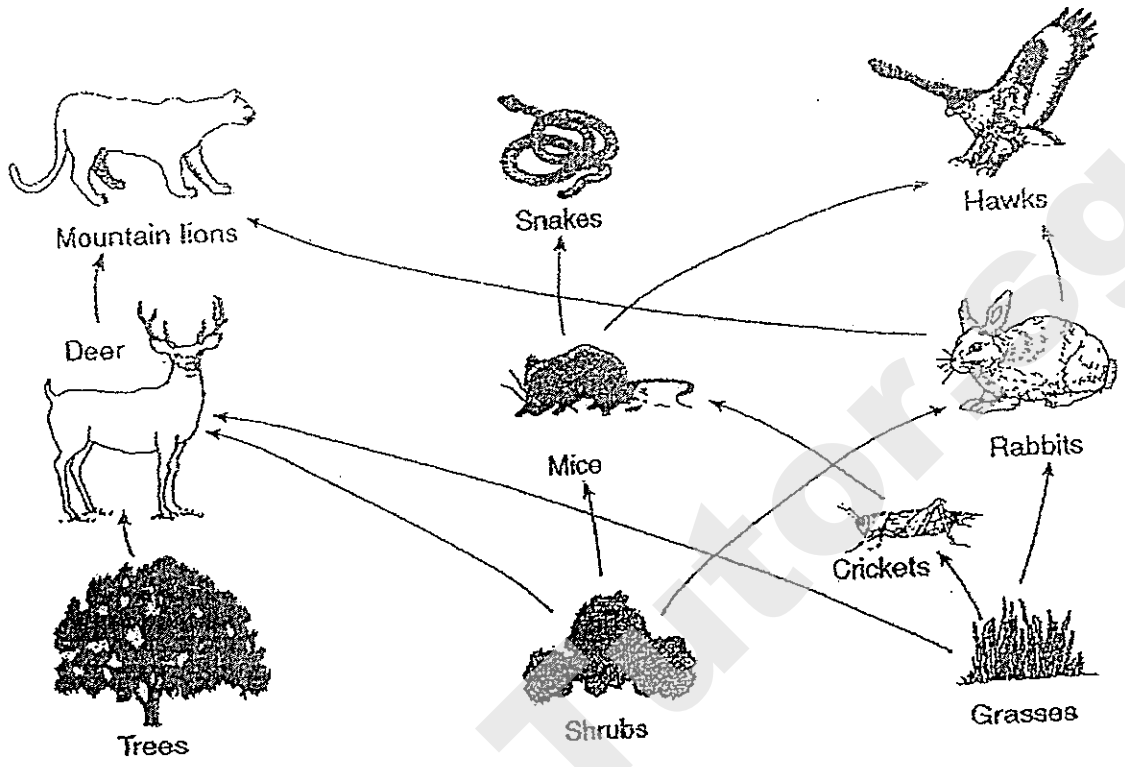
_____ → _____ → _____ → _____

(of muscles) (of lamp)

Score	3

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41. The diagram below shows part of a food web.



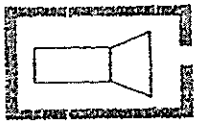
(a) Explain clearly how an increase in the number of rabbits will cause an increase in the population of mice. [2]

(b) Rat poison can be used to control the population of mice. After some time, each snake contains more poison than each mouse. Explain why each snake contains more poison than each mouse. [1]

Score	3

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42. Samantha wanted to find out how well the different types of paint reflect light. She painted four similar pieces of wood with the same colour but of different type of paints.





(a) Put a 'X' to indicate in the diagram above to show where Samantha should place the light sensor to measure the light reflected by the paint. [1]

(b) Why should Samantha conduct her experiment in a dark room? [1]

_____

_____

(c) She carried out the experiment with 4 types of paint and recorded her results in the table below.

Type of paint	Amount of light retlected (lux)
A	100
B	30
C	60
D	80

Which type of paint should she use to paint a banner so that it will be the most visible to the pedestrians at night? Give a reason for your answer. [1]

_____

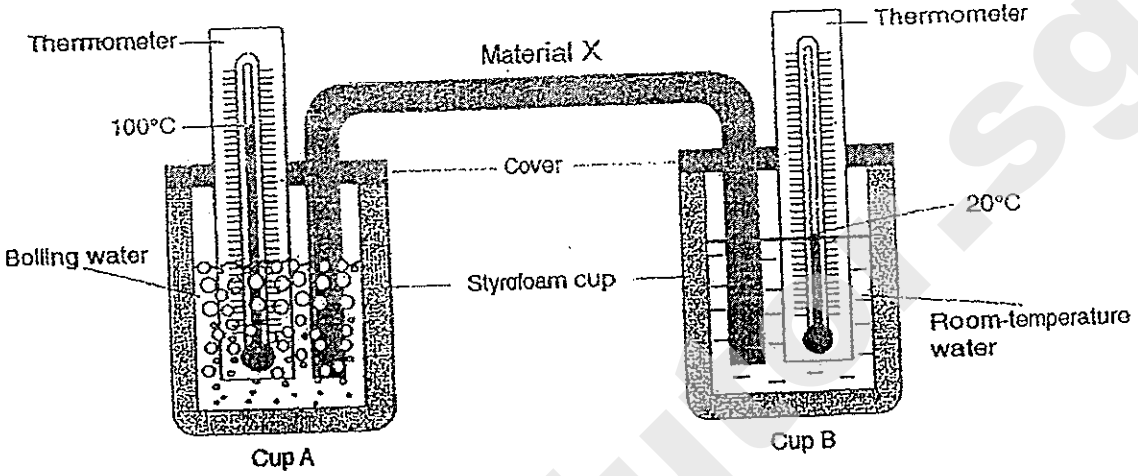
_____

Score 3

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43. Chee Wai wanted to investigate the heat conductivity of different materials. The diagram below shows how he connected two insulated styrofoam cups of water with Material X. The thermometers show the temperature of the water in Cup A and Cup B at the beginning of the experiment.



He measured and recorded the temperature of the 2 cups after 15 minutes. Then he repeated the experiment using Material Y and Z respectively. The results of his experiment are shown below.

Material	Temperature of Cup A after 15 minutes	Temperature of Cup B after 15 minutes
X	80°C	24°C
Y	60°C	30°C
Z	90°C	22°C

(a) Based on the results, which material is the best conductor of heat? Give a reason for your answer. [1]

_____

_____

(b) If Chee Wai wanted to choose a material to make an ice-box for storing cold drinks, which material is the most suitable? Explain your answer. [1]

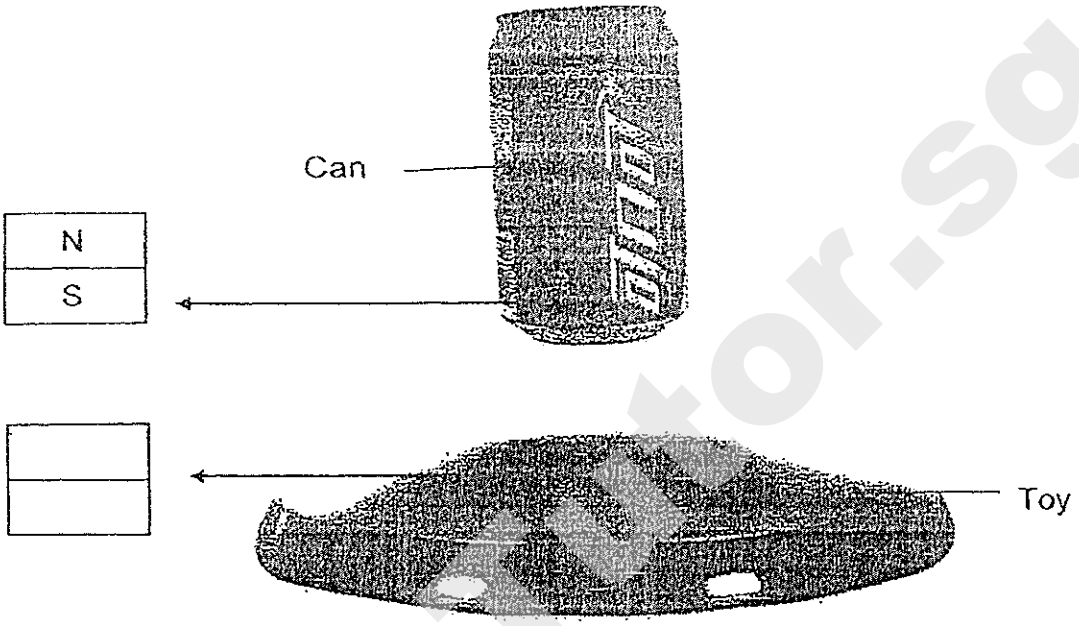
_____

_____

Score 2

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44. The diagram below shows a toy. Both the toy and the can have magnets inside them. The can appears to be 'floating' in the air.



(a) Label the poles of the magnet in the toy in the diagram above so that the can is able to 'float' in the air. [1]

(b) Explain clearly why the can drops to the floor when the toy is removed. [2]

Score 3

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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : NAN HUA
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	2	2	2	1	1	1	4	3	1	2	3	2	3	3	4	2

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	1	3	3	1	4	1	3	2	3	2	3	3

31)a)Water and Carbon dioxide.
b)Growth.

32)a)Elastic Potential Energy→Kinetic Energy.
b)Increase the number of times the propeller is turned.

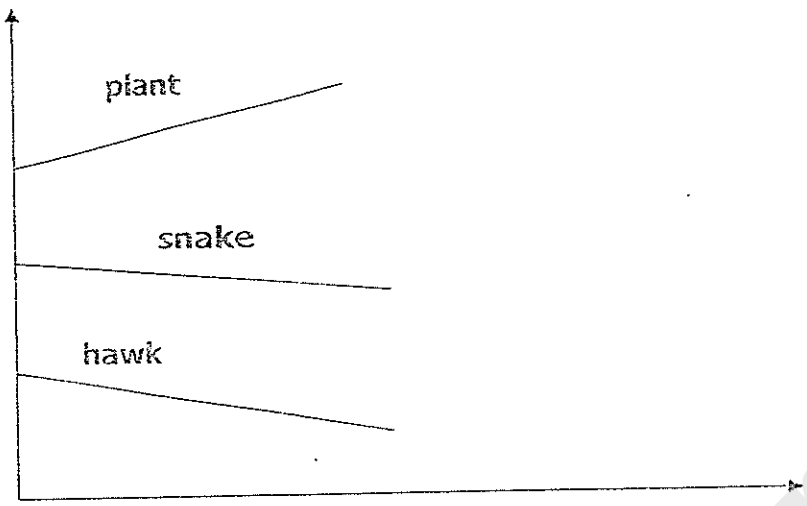
33)a)Push
b)It changes the shape of the can.
c)Can B will reach the ground first as it has less surface area in contact with air and will encounter less air resistance.

34)a)Reproduction.
b)1)There could have been a lack of oxygen.
2)The food and water might have ran out.

35)a) R→ T→ S
P→Q

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35)b)



36)a)The higher the position the steel ball is dropped, the deeper the dent would be. There is more gravitational potential energy to be converted to kinetic energy at a higher position so the dent will be deeper.

b)It ensures that the force user to drop the steel ball will be the same in energy try so that the results of the experiment will not be affected.

37)a)When the sand is shaken, the friction between the grains of sands produces heat which increases the temperature.

b)1)Using the thermometer, measure the temperature of the container of rubber balls.

2)After recoding down the temperature, shake the container of rubber balls.

3)Repeat step 1 and note down the temperature.

4)Compare the two temperature and then conclude results.

38)a)Water will evaporate from the moist soil to water vapour. When the water vapour comes in contact with the cool inner surface of the bottle, the water vapour will condense back into droplets and drip back to the soil.

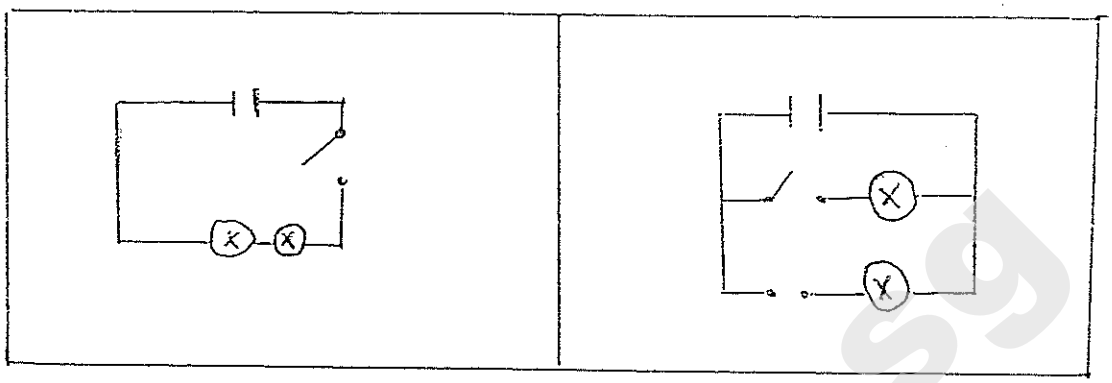
b)There are no pollinations to transfer the pollen grains. There is no in to transfer the pollen grains.

39)a)Yes. Too many floating plants will prevent sunlight from reaching the totally submerged plants with less sunlight, the totally submerged plants will make less food and some will die.

b)In the presence if sunlight, the plants photosynthesis and produce oxygen for the fish to respire. During respiration the fish release carbon dioxide which the plants take in for photosynthesis.

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40)a)i) ii)

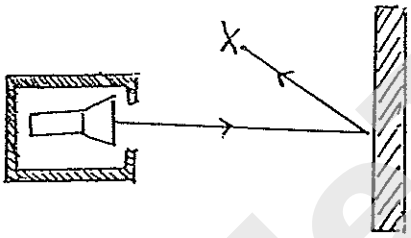


b)Kinetic energy→Kinetic energy→Electrical energy→light energy

41)a)When the population of rabbits increase, there will be more food for the hawks, so less mice will be enter by the hawks. The mice reproduces and increase in population.

b)The snake had to eat many mice to get sufficient energy and the poison from many mice accumulated in the body.

42)a)



b)It is to ensure that the light collected from the light sensor is collected from the reflected light of the surface rather than other reasons.

c)Type A of paint Type A paint reflected the most amount of light so more light will be reflected into the pedestrian's eyes, allowing them to notice the banner easily.

43)a)

b)Material Z. It is the poorest conductor of heat and will allow the least heat transfer from the surrounding to the ice-box there by keeping the drinks cold.

44)a)SN

b)The can floats as like poles of the can and toy were facing each other. The can dropped to the floor when the magnetic force of repulsion was gone when the toy was removed. Gravitational force acting on the can caused to drop to the floor.

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2014

BOOKLET A

Date : 8 May 2014

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 19 printed pages including this cover page.

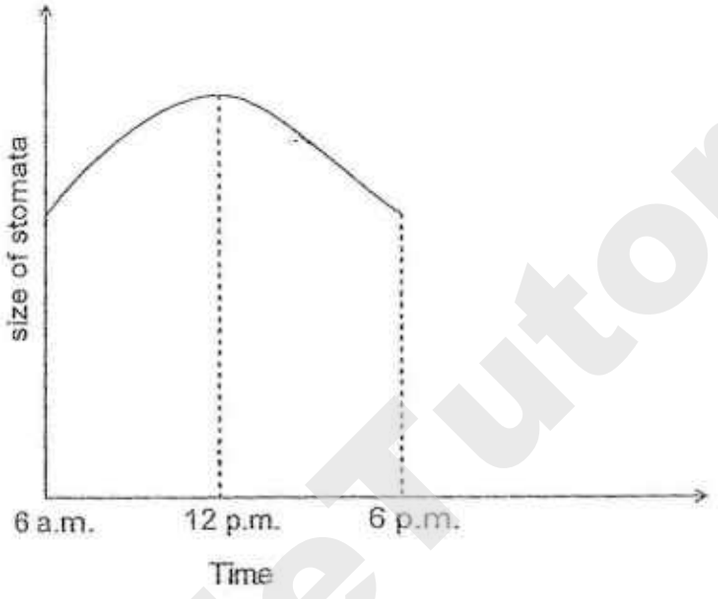
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Section A (30 x 2 marks = 60 marks)

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. The graph below shows the average size of the opening of stomata found on the leaves of green plants over a period of 12 hours.



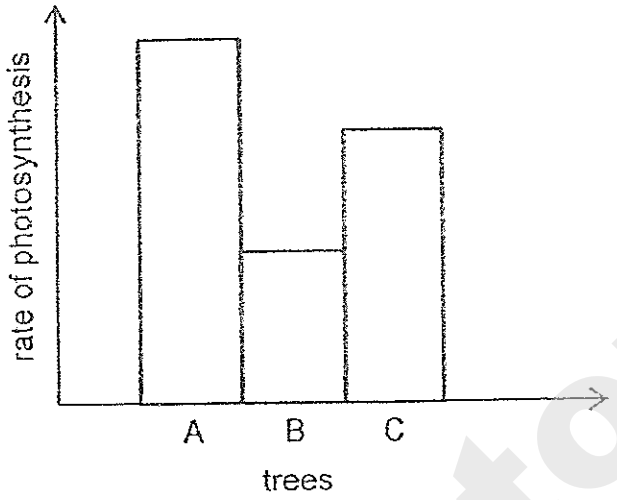
Which of the following is the main reason for the change in the size of the opening between 6 a.m. and 6 p.m?

(1) To allow the leaves to take in more oxygen.
(2) To allow the leaves to take in more sunlight.
(3) To allow the leaves to take in more carbon dioxide.
(4) To allow the leaves to release excess water in the form of water vapour.

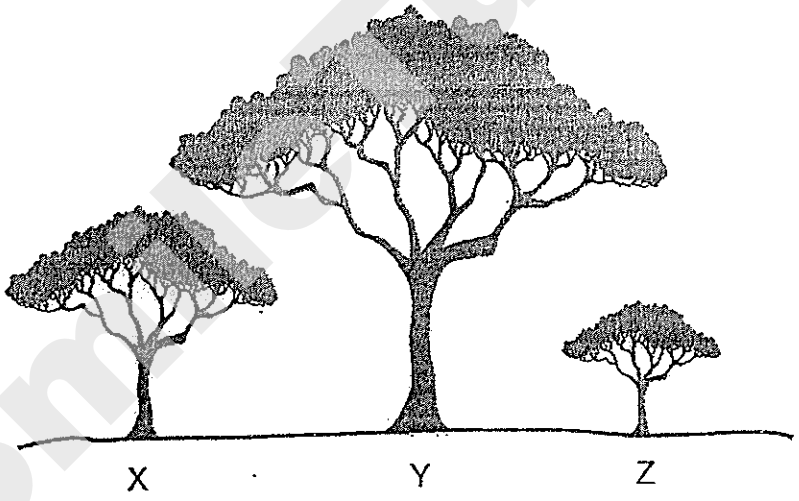
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2. The graph below shows the rate of photosynthesis for trees A, B and C, which had been grown at an open space in the same habitat and exposed to similar conditions.



The diagram below shows the size and position of each of the trees within their habitat.

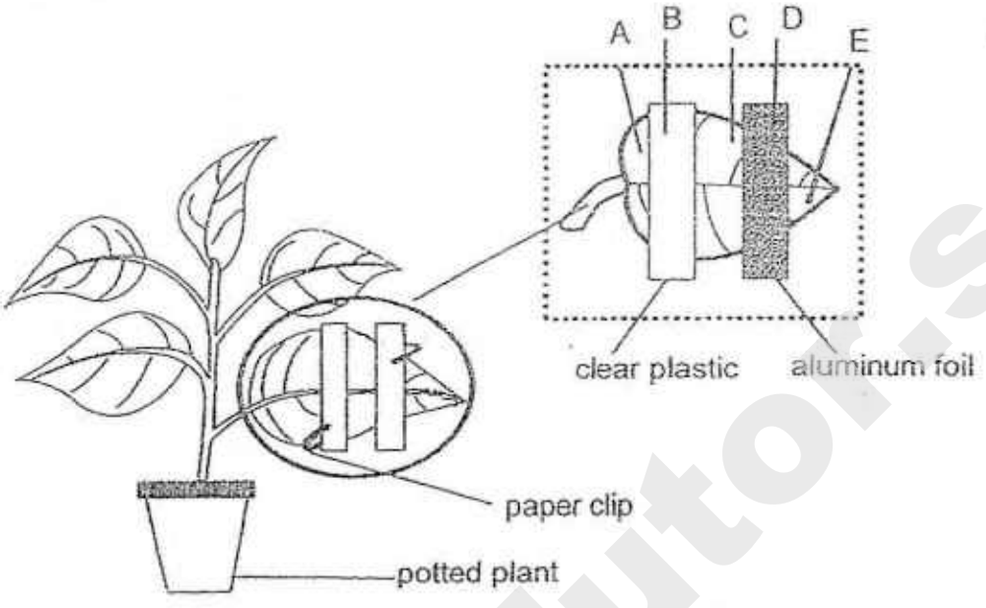


Which of the following correctly matches the trees X, Y and Z to the rate of photosynthesis shown in the graph above?

	A	B	C
(1)	Z	X	Y
(2)	X	Z	Y
(3)	Y	Z	X
(4)	X	Y	Z

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3. Michael covered different parts of a leaf with different materials as shown in the diagram below. The plant was left in the open for two days before Michael tested the leaf for the presence of starch using some iodine solution.



Which of the following correctly shows the most likely colour of iodine solution on the leaf?

	A	B	C	D	E
(1)	turned dark blue	remained yellowish brown	turned dark blue	remained yellowish brown	turned dark blue
(2)	remained yellowish brown	remained yellowish brown	turned dark blue	turned dark blue	remained yellowish brown
(3)	turned dark blue	turned dark blue	turned dark blue	remained yellowish brown	turned dark blue
(4)	remained yellowish brown	turned dark blue	remained yellowish brown	remained yellowish brown	turned dark blue

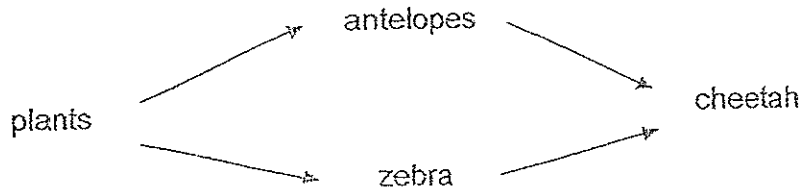
4. Which of the following habitats are suitable for earthworms to live in?

A leaf litter
B garden
C desert

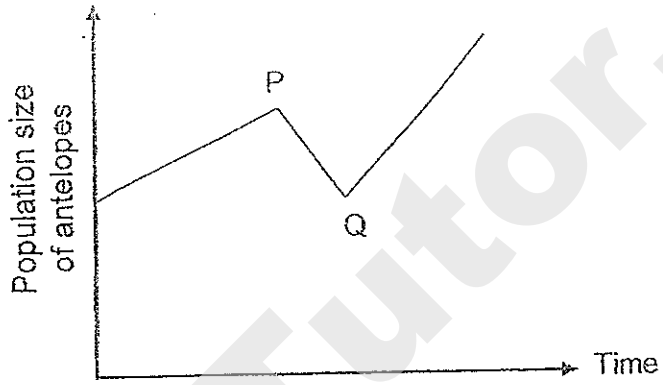
(1) A only
(2) A and B only
(3) A and C only
(4) B and C only

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5. The diagram below shows a food web in a grassland community.



The following graph shows a change in the population size of antelopes in the community.



Which two of the following events could have caused the change between points P and Q?

A There was a decrease in the amount of rain.
B There was a decrease in the population of zebras.
C There was an increase in the population of plants.
D There was an increase in the population of cheetahs.

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

6. Which of the following statements about a pond habitat and a single tree habitat are **true**?

A The plants in both habitats need sunlight to survive.
B An organism taken from the single tree can live inside the pond
C The organisms in the pond need more water than those in the single tree.
D There is more oxygen available in the pond as compared to the single tree.

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

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7. Study the food chain below

A ⟶ B ⟶ C ⟶ D

Based on the food chain, which one of the following organisms correctly represents organism A, B, C and D?

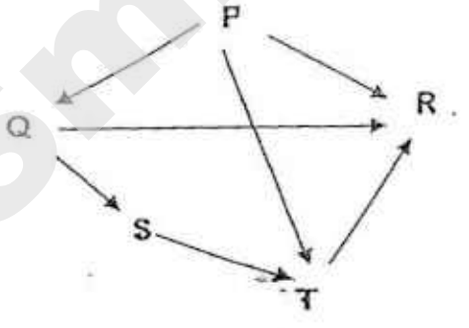
	A	B	C	D
(1)	eagle	snake	rabbit	grass
(2)	grass	rabbit	snake	eagle
(3)	grass	snake	rabbit	eagle
(4)	snake	grass	eagle	rabbit

8. The following statements on food chains were made by some pupils. Which pupil had made an **incorrect** statement?

Peter: A food chain consists only of food consumers
Ailing: A food chain shows predator-prey relationship.
Rizar: A food chain must always end with the last consumer
Devi: A food chain must always begin with a food producer

(1) Peter
(2) Ailing
(3) Rizar
(4) Devi

9. Study the food web below.

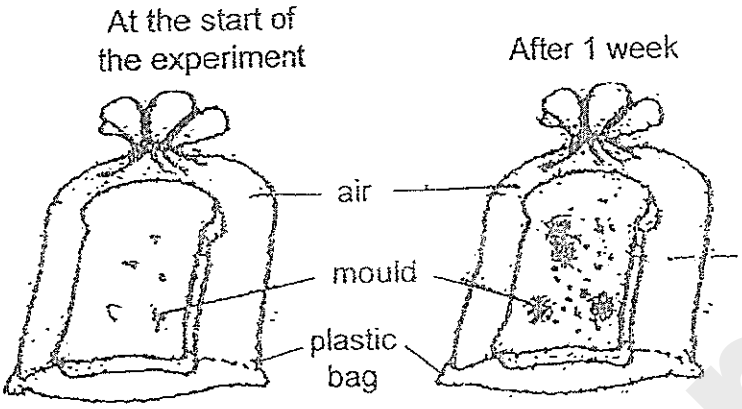


Which one of the following statements can be concluded based on the food web?

(1) R is a carnivore.
(2) T is a herbivore.
(3) P and Q are food producers.
(4) S is a prey of T but a predator of Q.

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10. Serene placed a slice of moist bread inside a transparent plastic bag as shown below.



After 1 week, she made the following observations:

- The bread had shrunk in size.
- The bread had become very soggy.
- The bread was covered with green mould.

Which one of the following can be concluded based on her observations?

(1) Bread mould gets water from the bread it grows on.
(2) Bread mould makes food for the bread it grows on.
(3) Bread mould breaks the bread into smaller pieces.
(4) Bread mould breaks down the bread and releases water.

11. Jonathan had a discussion with his classmates on ways to conserve water. The following suggestions were made:

A Fixing a leaking pipe.
B Turning off the shower when soaping.
C Using a basin of water to wash kitchen utensils.
D Decreasing the time between one car wash session to the next car wash session.

Which of the above suggestions would help to conserve water?

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

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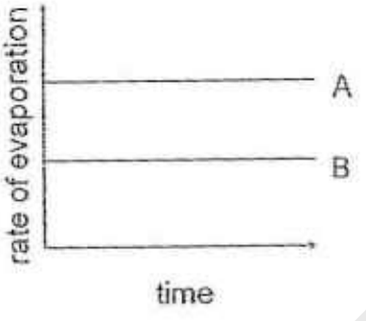
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12. Two identical towels soaked with an equal amount of water were spread out on identical trays. They were exposed to different conditions as shown below.

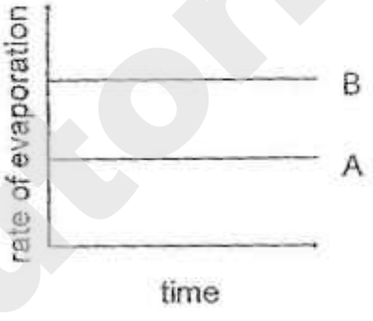
	Towel A	Towel B
Temperature of surrounding	32°C	25°C
Wind	Present	Not present

If the conditions of the surrounding remain constant, which of the following graphs correctly shows the rate of evaporation of water for each towel over a period of two hours?

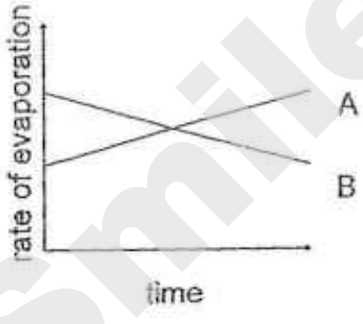
(1)



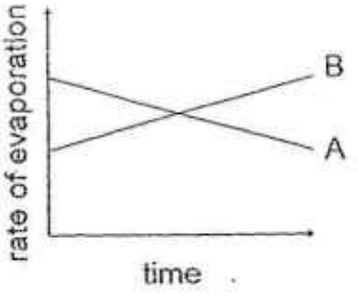
(2)



(3)



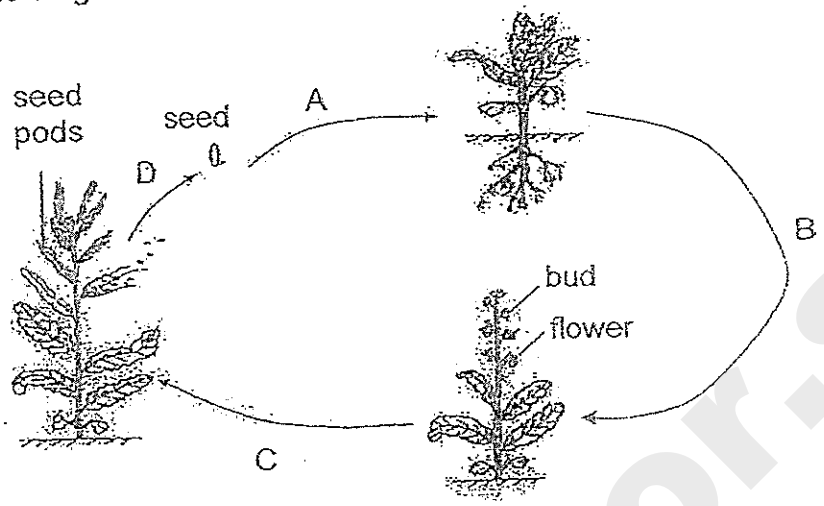
(4)



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13. The diagram below shows the stages of growth of a flowering plant.



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

	Seed dispersal	Germination	Becoming an adult plant	Pollination and fertilisation
(1)	D	B	A	C
(2)	B	D	C	A
(3)	D	A	B	C
(4)	C	A	D	B

14. Mei Mei conducted an experiment with flower P on a plant. She removed some parts of the flower. Then, she transferred pollen to the remaining parts of flower P. The flower no longer becomes a fruit after that.

Mei Mei then conducted another experiment with flower Q on the same plant. She removed some parts of flower Q. Then, she transferred pollen to the remaining parts of flower Q. After some time, flower Q formed a fruit.

Which one of the following correctly shows the parts that had most likely been removed from flowers P and Q?

	Flower P	Flower Q
(1)	stigma	anther
(2)	anther	stigma
(3)	anther	ovary
(4)	ovary	stigma

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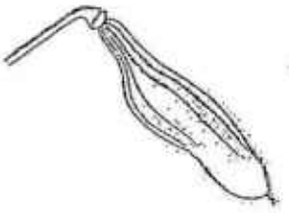
15. Ahmad had to classify the seeds of three different flowering plants.



coconut

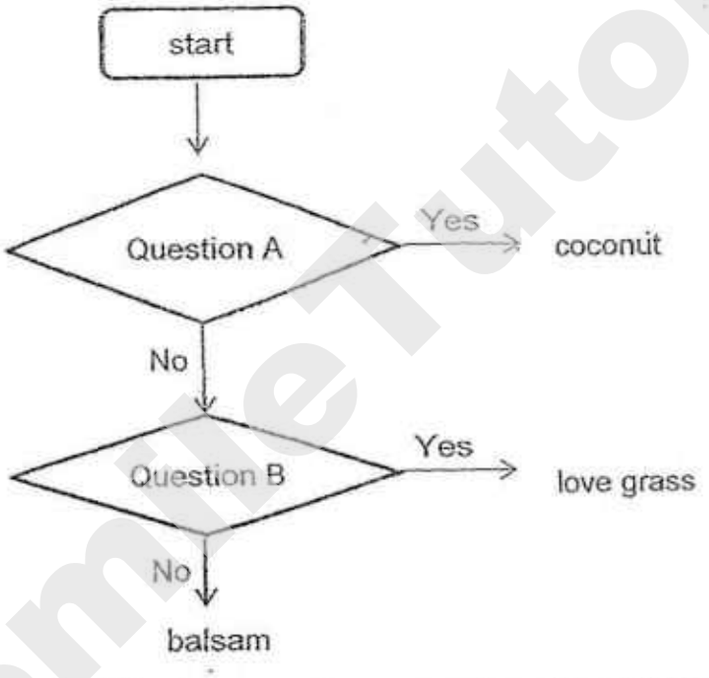


love grass



balsam

He classified them with the help of the chart below.



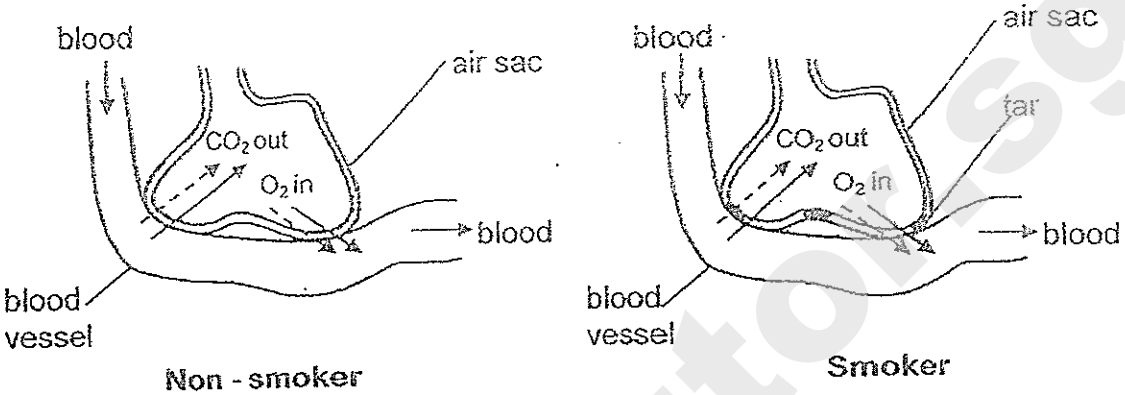
Which of the following correctly represent questions A and B?

	Question A	Question B
(1)	Are wing-like structures present?	Is a fibrous husk present?
(2)	Is a fibrous husk present?	Are wing-like structures present?
(3)	Are hooks present?	Is a fibrous husk present?
(4)	Is a fibrous husk present?	Are hooks present?

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16. The diagram below shows the air sacs of the lungs of a smoker and a non-smoker. Cigarettes contain a substance known as tar which blocks the walls of the air sacs and prevents substances from passing through it.

CO_2 : carbon dioxide
O_2 : oxygen



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

A The air sacs of smokers will allow less oxygen to enter the bloodstream.
B The oxygen that enters the bloodstream of smokers will be mixed with tar.
C Blood flowing in the blood vessels of a smoker is mixed with tar.
D To get the same amount of oxygen as a non-smoker, the smoker will have to breathe faster.

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

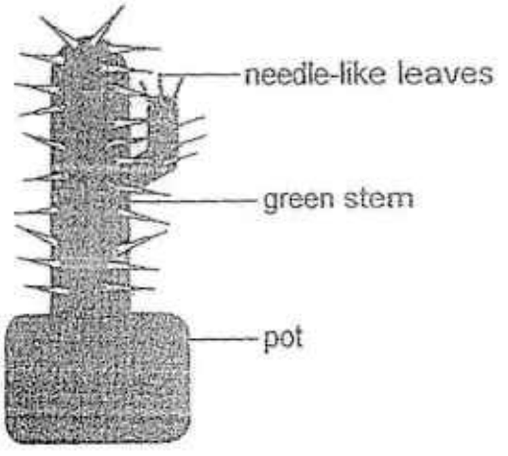
17. A few passengers were trapped in a lift. The fan in the lift was not working and the lift was tightly shut.

Which one of the following correctly shows the change in the amount of air, oxygen and carbon dioxide in the lift when the passengers were trapped for 2 hours?

	amount of air	amount of carbon dioxide	amount of oxygen
(1)	decreased	decreased	increased
(2)	decreased	increased	decreased
(3)	unchanged	decreased	increased
(4)	unchanged	increased	decreased

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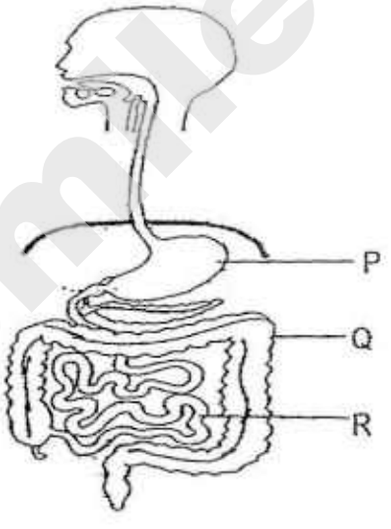
18. The diagram below shows a cactus plant. This desert plant has white needle-like leaves to help it reduce water loss.



Which of the following is not found in the leaf cells of the cactus plant?

(1) cell wall
(2) nucleus
(3) chloroplast
(4) cell membrane

19. Study the diagram below which shows parts of the digestive system.



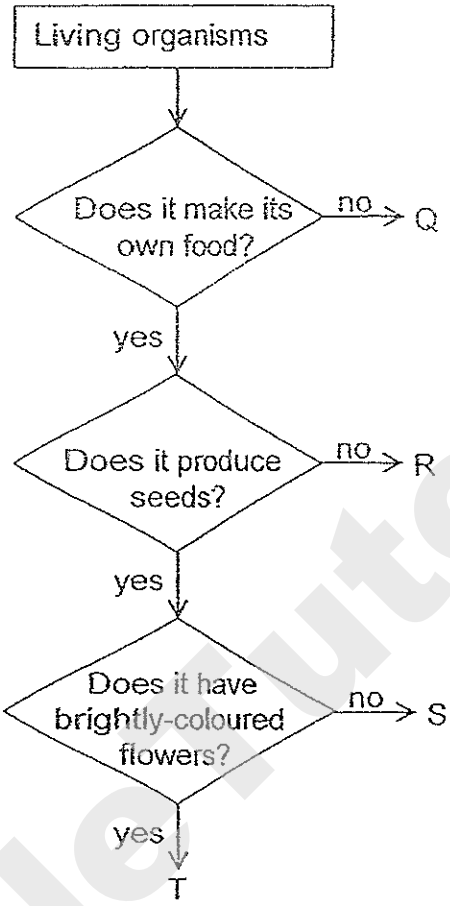
Which one of the following has been correctly matched to its function?

	absorption of digested food	absorption of water
(1)	P	Q
(2)	R	P
(3)	Q	R
(4)	R	Q

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20. Study the chart below.



Which one of the following correctly identifies Q, R, S and T?

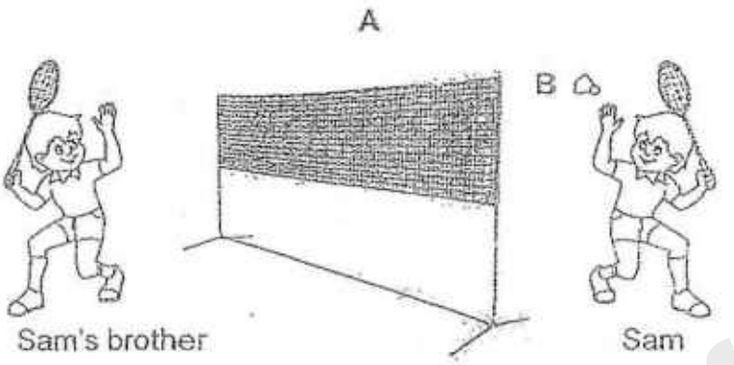
	Q	R	S	T
(1)	toadstool	fern	spider lily	sunflower
(2)	mushroom	moss	hibiscus	rose
(3)	fern	toadstool	spider lily	hibiscus
(4)	moss	mushroom	sunflower	spider lily

21. Which one of the following shows the correct energy conversion when a television is switched on?

(1)	Electrical Energy	→	Sound Energy	+	Heat Energy	+	Kinetic Energy
(2)	Chemical Potential Energy	→	Kinetic Energy	+	Heat Energy	+	Light Energy
(3)	Electrical Energy	→	Sound Energy	+	Light Energy	+	Heat Energy
(4)	Chemical Potential Energy	→	Kinetic Energy	+	Heat Energy	+	Sound Energy

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22. Sam was playing badminton with his brother. They hit the shuttlecock between each other.



Which of the following is true when the shuttlecock moved from point B to point A?

(1) The amount of gravitational potential energy of the shuttlecock is less at point A than at point B.

(2) The amount of gravitational potential energy of the shuttlecock is more at point A than at point B.

(3) The amount of gravitational potential energy of the shuttlecock is zero at both point A and point B.

(4) The amount of gravitational potential energy of the shuttlecock is the same at both points A and B.

23. A fruit dropped from a tall tree with a loud "thud" and then rolled away on the ground.

Which of the following statements correctly states the energy changes that had taken place?

(1) Some of the kinetic energy in the fruit had been converted into heat energy.

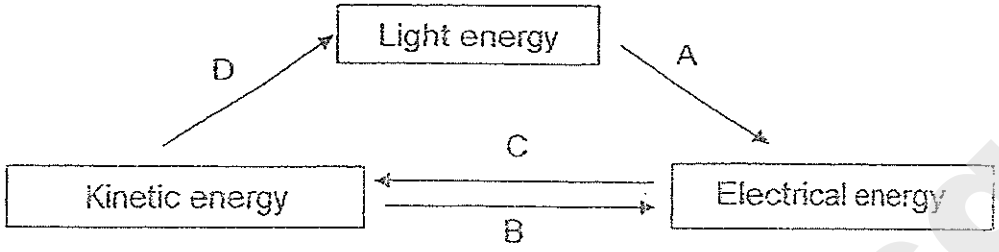
(2) Some of the kinetic energy in the fruit had been converted into sound energy and kinetic energy.

(3) Some of the gravitational potential energy in the fruit had been converted into sound energy and kinetic energy.

(4) Some of the gravitational potential energy in the fruit had been converted into heat energy and light energy.

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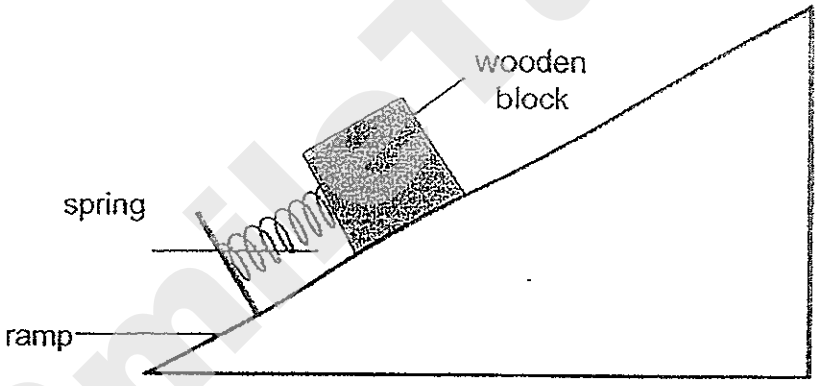
24. The diagram below shows different energy conversions.



Which one of the following devices shows both energy conversions A and C when it is in use?

(1) a torchlight
(2) a solar-powered calculator
(3) a battery-powered toy car
(4) a solar-powered toy car

25. Marcus conducted an experiment as shown in the diagram below. The wooden block is not attached to the spring.



Marcus pushed the wooden block against the spring until it is fully compressed before releasing the wooden block. He then measured the distance travelled by the wooden block along the ramp. He repeated the experiment several times and found that the wooden block could only travel a maximum distance of 13 cm away from the spring.

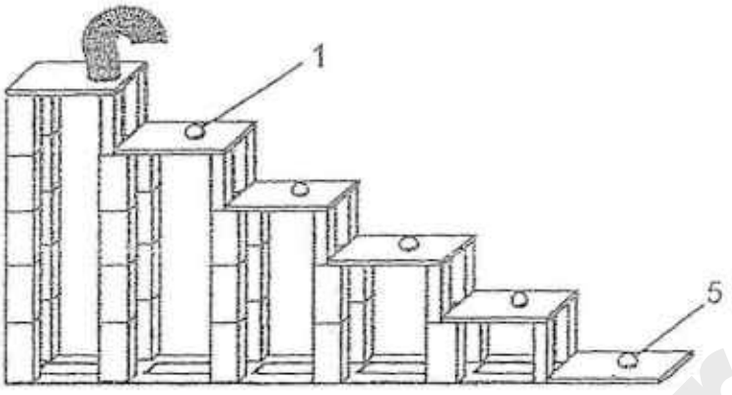
Which of the following changes would enable the wooden block to travel a longer distance?

A Use a longer spring of the same elasticity.
B Apply lubricant to the surface of the ramp.
C Use a spring that is more easily compressed.

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

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26. The diagram below shows a toy known as "spring rainbow". By pulling one end of the spring towards position 1, the toy would start moving downwards continuously on its own until it reaches position 5.



Which of the following forces are acting on the toy as it moves towards position 5?

A Frictional force
B Magnetic force
C Gravitational force
D Elastic spring force

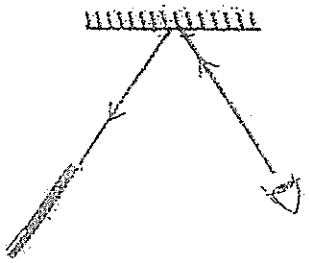
(1) A and C only
(2) B and D only
(3) A, C and D only
(4) B, C and D only

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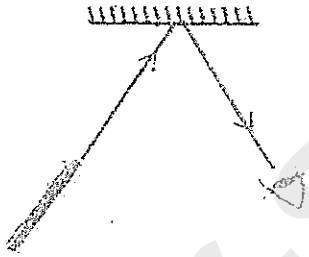
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27. Sining shone a laser pointer at a mirror as shown in the diagrams below. Which diagram correctly shows the path of a ray of light from the laser pointer?

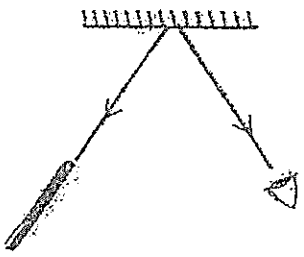
(1)



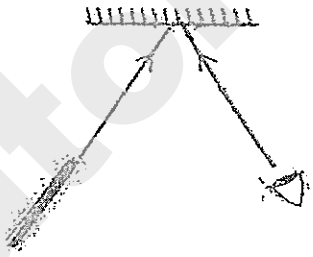
(2)



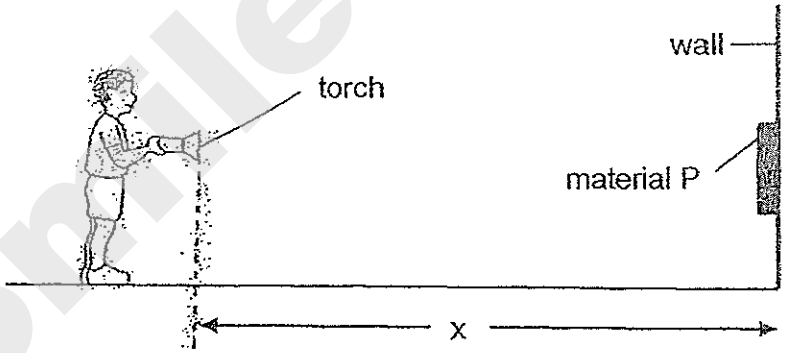
(3)



(4)



28. Zachary wanted to investigate which material was best at reflecting light. He set up his experiment in a dark room as shown below.



Zachary shone a lighted torch onto the wall and walked towards it. When he could clearly see material P hung on the wall, he stopped and measured the distance *x*. He repeated the experiment with materials Q, R and S each time. His results were shown below.

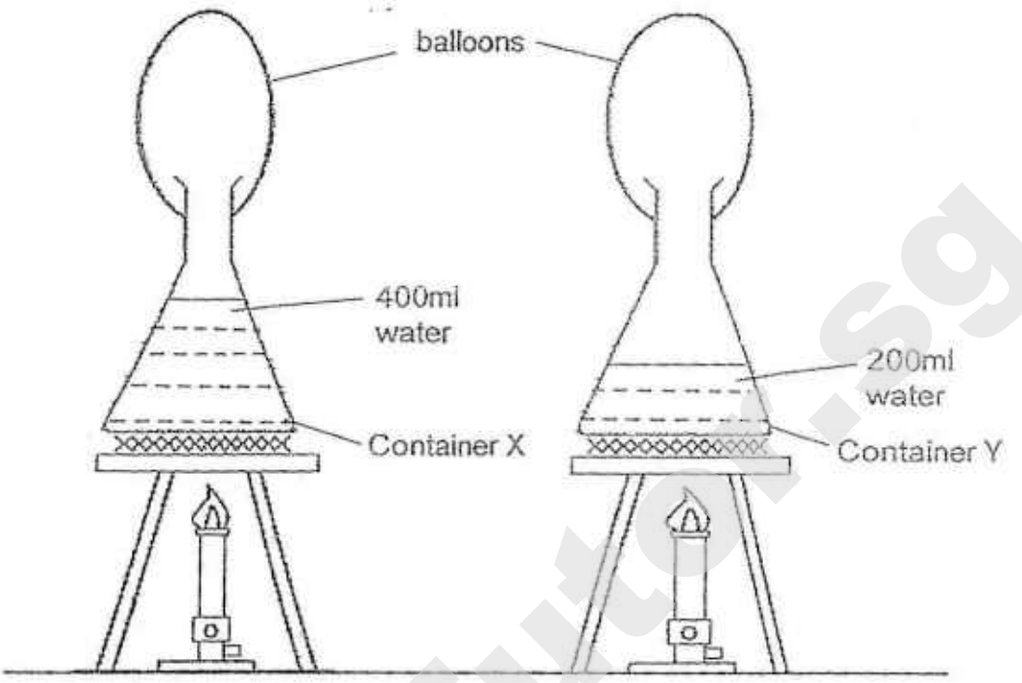
Material	P	Q	R	S
x (cm)	190	330	250	280

Based on Zachary's results, which is the best material to be used to make a safety vest for cyclists to wear at night?

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

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29. Liam set up the experiment as shown below.



He noticed that the balloons on both set-ups took the same amount of time to be inflated to the same size.

Which of the following are possible reasons for Liam's observation?

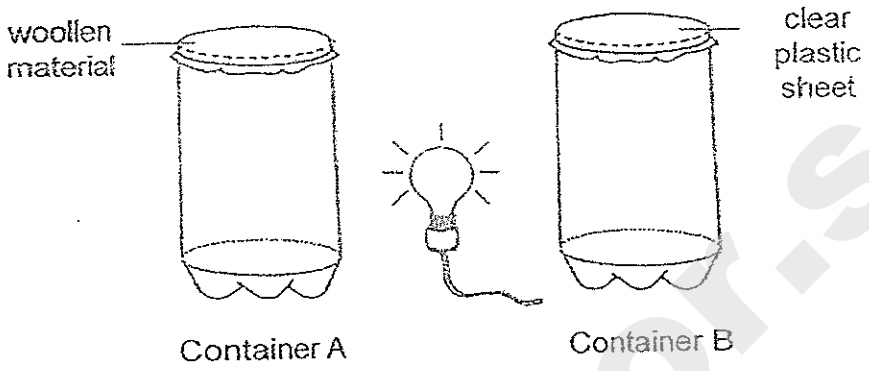
A Water in Container X is cooler than Container Y.
B Container X conducts heat better than Container Y.
C Container X is heated by a stronger flame than container Y.

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

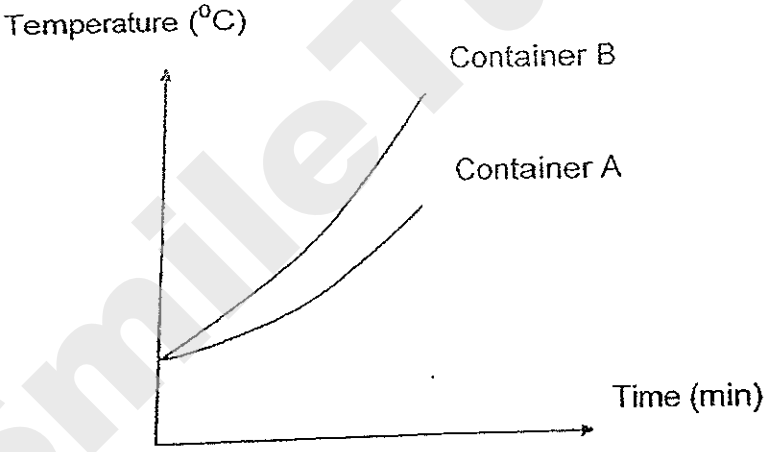
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30. The diagram below shows a lamp placed at the same distance from two identical glass containers A and B. Container A is covered with a piece of woollen material while container B is covered with a clear plastic sheet.



The temperature measured in both containers are recorded as shown in graphs P and Q below.



Which one of the following statements correctly explains the results as shown in the graph?

(1) More heat is trapped in container B as plastic is a poorer conductor of heat than wool.

(2) More heat is trapped in container A as wool is a poorer conductor of heat than plastic.

(3) Less heat is trapped in container B as plastic is a better conductor of heat than wool.

(4) Less heat is trapped in container A as wool is a better conductor of heat than plastic.

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2014

BOOKLET B

Date : 8 May 2014

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 20th May 2014. 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: .....

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FOLLOW ALL INSTRUCTIONS CAREFULLY.

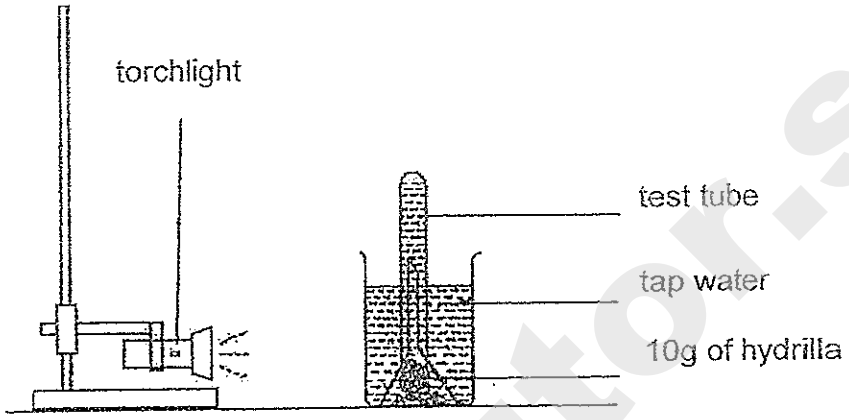
Booklet B consists of 15 printed pages including this cover page.

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

31. Michelle was asked by her teacher to carry out the following experiment using two of the set-ups as the one shown below.



She carried out the following steps to conduct her experiment.

Step 1	Place a torchlight 30 cm away from each set-up
Step 2	Shine a torchlight that gives out red light at one of the set-ups. Measure the height of the gas column in the test-tube after two hours.
Step 3	Shine a torchlight that gives out blue light at the other set-up. Measure the height of the gas column in the test-tube after two hours.

(a) State the aim of Michelle's experiment. [1]

_____

_____

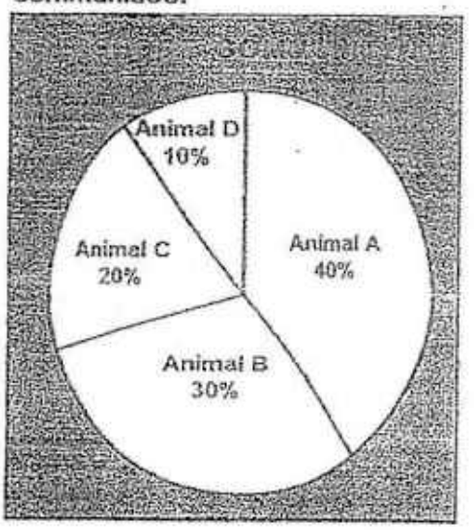
(b) Explain why Michelle should conduct her experiment in a darkened room. [1]

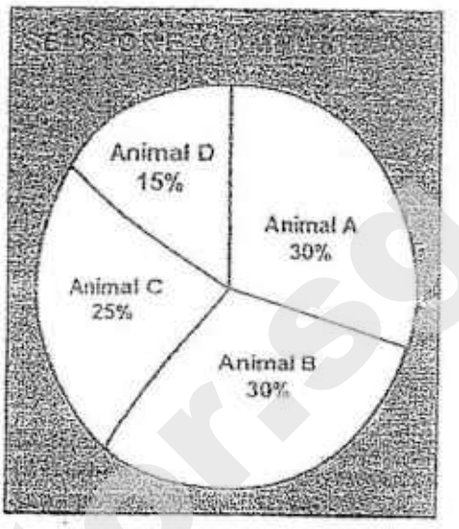
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32. The pie charts below show the percentage of animals in two seashore communities.





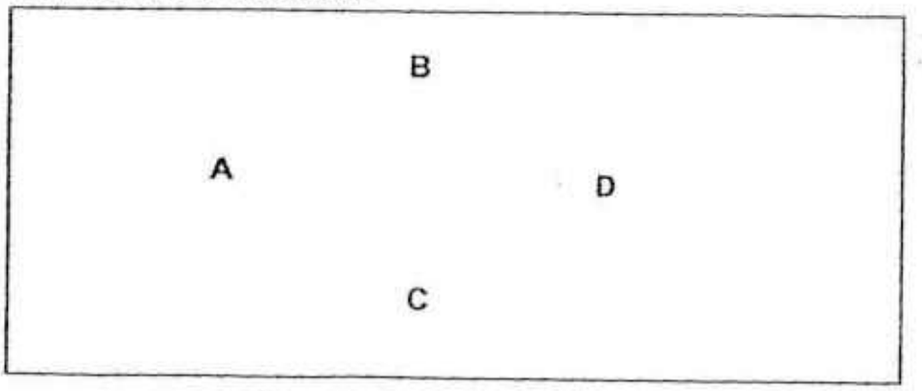
(a) Study the statements in the table below carefully and use a tick (√) to indicate whether they are "True", "False" or "Not possible to tell". [1]

Statements	True	False	Not possible to tell
(i) There is a higher percentage of Animal C in community Y than in community X.			
(ii) The number of animals in community X is the same as in community Y.			

(b) The following observations are made of the animals in these communities:

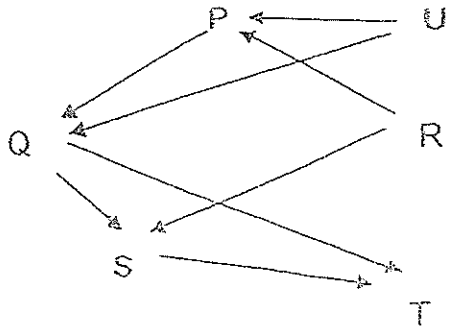
- Animal A is eaten by animals B and C.
- Animal C is the prey of animal D and a predator of animal B.
- Animal D eats animal B.

Based on the information above, **draw** arrows to complete the food web in the box below. [2]



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33. Study the food web below



(a) Identify the food producer(s) in this community. [1]

_____

(b) Which organism(s) is/are both a prey and a predator? [1]

_____

(c) Explain the food relationship between organisms Q, R, S and T. [1]

_____

_____

(d) State what happens initially when population of organism S is removed from the food web.

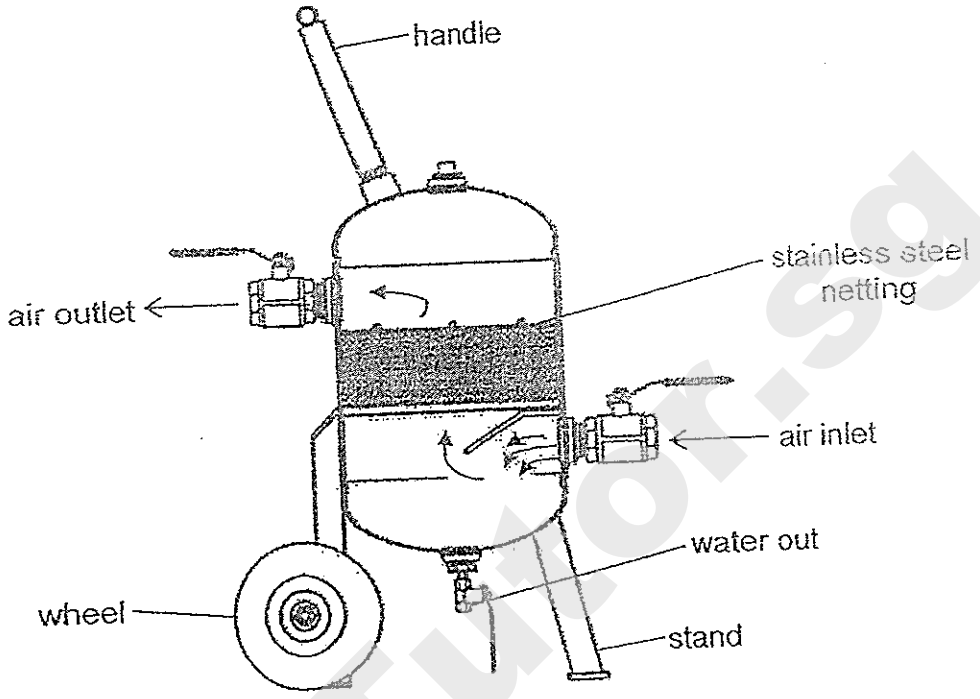
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34. The machine shown below is able to produce water from the air that passes through it.



Air enters through the inlet and passes through a sheet of cold stainless steel netting before leaving through the outlet. This netting is cooled by a special liquid. When the machine is switched on, the temperature of the netting is kept at 10°C.

(a) Explain how this machine is able to produce water from the air that passes through it. [2]

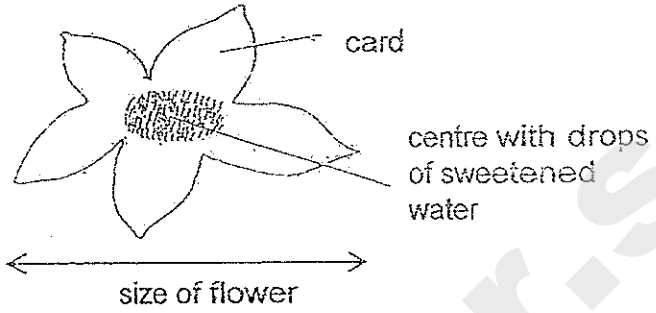
(b) One way to collect more water using this machine is to pass more air through the inlet. Suggest **two other changes** to the machine that would enable it to collect more water over a fixed period of time. [2]

(i)

(ii)

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35. Diana wanted to find out the size of flowers which most butterflies prefer. She made some model flowers using cards of different sizes. She put 10 drops of sweetened water in the centre of each flower. The model flowers were then left in an open field.



Diana then counted the number of butterflies that visited the model flowers over 1 hour. The results were recorded in the table below.

Size of flower	Number of butterflies
5 cm	7
10 cm	14
15 cm	20

(a) Based on Diana's result, what is the relationship between the size of the flowers and the number of the butterflies visiting them? [1]

_____

_____

(b) Ming Hui wanted to find out the relationship between the colour of the flowers and the number of butterflies visiting the flowers. She decided to use a few 10-cm flowers from Diana's experiment to carry out her own experiment.

In the table below, put a (√) to indicate the variable(s) that she has to keep the same to ensure a fair test. [1]

	The colour of the flowers
	The duration of the experiment
	The number of drops of sweetened water

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36. Ding Li wanted to find out the rate of germination of some seeds. He planted 25 dried seeds on a piece of cotton wool and watered them daily. He recorded the following information over a period of 6 days.

Day	Number of seeds germinated
1	0
2	1
3	3
4	6
5	7
6	8

(a) Suggest a possible reason why no seeds germinated on the first day. [1]

_____

_____

Ding Li wanted to find out whether seeds need warmth to germinate. She used two opaque jars, P and Q, and filled them with equal amount of moist garden soil. She placed six seeds in each jar.

(b) State a suitable location where Ding Li should place each container. [1]

Container	Location
P	
Q	

(c) Based on your answer in (b), what observation would enable her to conclude that seeds need warmth to germinate? [1]

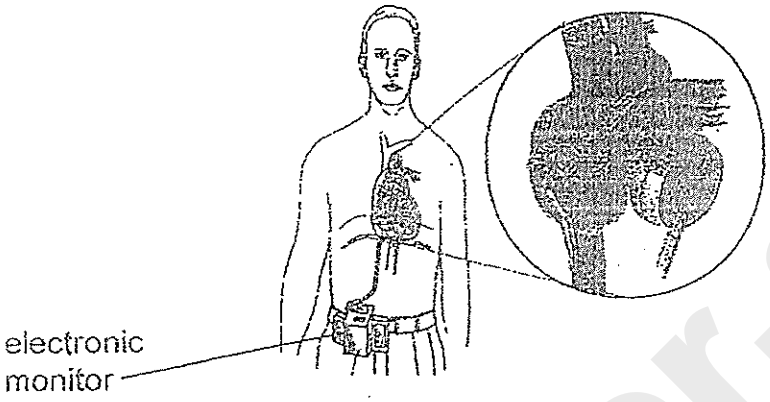
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37. The diagram below shows a man with an artificial heart. This artificial heart is connected to an electronic monitor which is strapped around his waist. This electronic monitor indicates his heart rate.

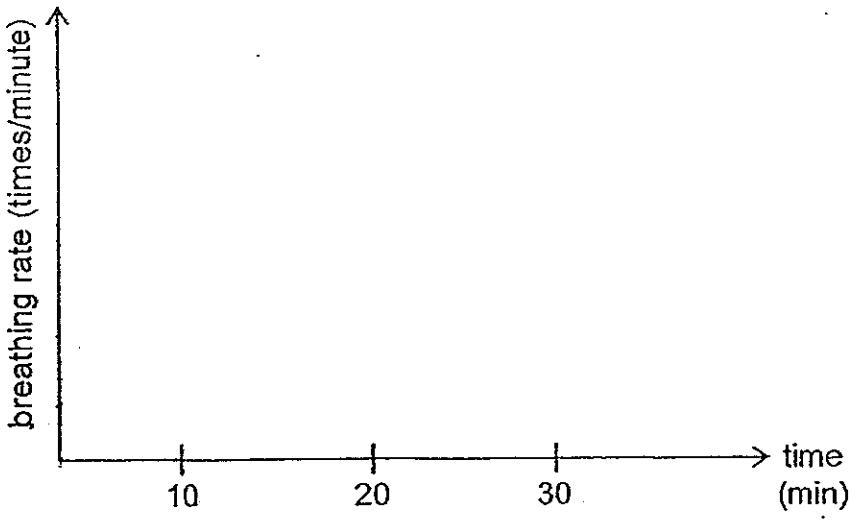


The table below shows the measurement indicated in the electronic monitor when the man carries out different activities.

	Reading	Jogging
Heart rate (beats per min)	70	110

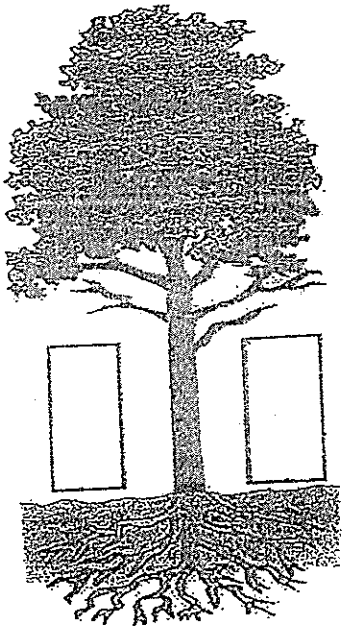
(a) Explain what this information indicates about his heart rate when he jogs and the reason that causes this change in his heart rate. [2]

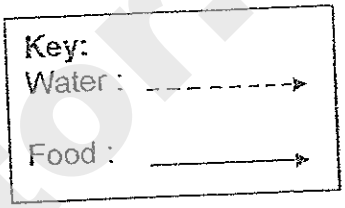
(b) Label and complete the line graph below to show the breathing rate of the man when he jogs for 20 minutes at constant speed before cooling down for 10 minutes. [1]



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38. Study the diagram of a tree below.





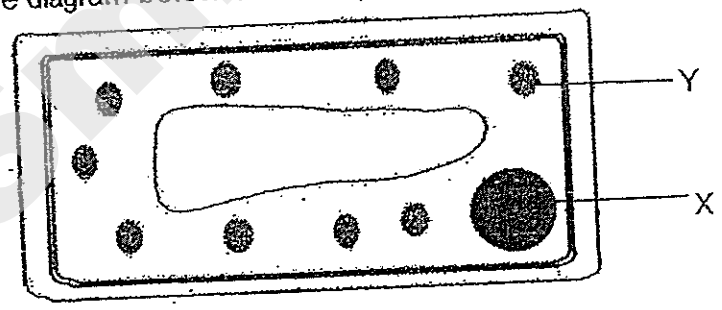
(a) In the empty boxes above, draw and label arrows to show the direction of the flow of water and food using the key provided. [1]

(b) Explain how the tree loses water. [1]

_____

_____

39. The diagram below shows a plant cell.



(a) Identify and state the function of Part X. [1]

_____

_____

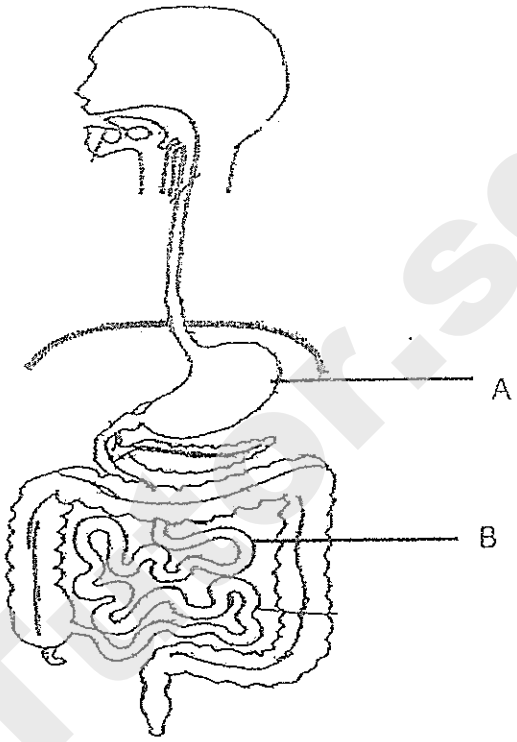
(b) What happens to the plant when all of parts Y are removed? [1]

_____

_____

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40. The diagram below shows parts of the human digestive system.



(a) Mark and label parts, X and Y, clearly on the diagram to show where each of the following processes takes place: [1]

i) X, where digestion starts

ii) Y, where digestion ends

(b) A liquid is present in the organs labelled A and B above. Explain how this liquid helps in the digestion of food. [1]

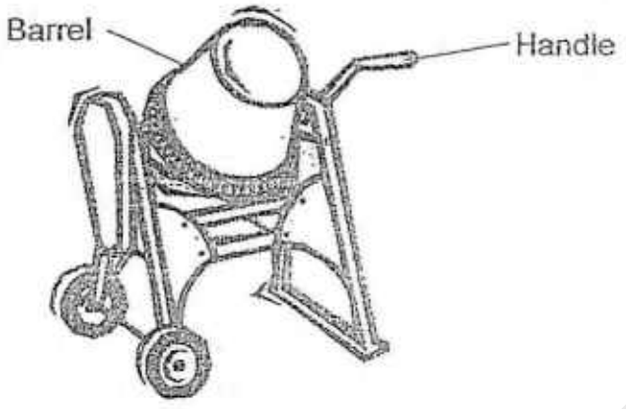
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41. The diagram below shows a manual compost mixer. It is used by farmers to mix soil and compost together before he uses it in his farm

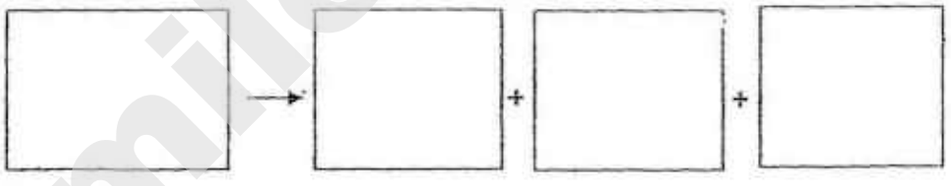


The farmer will pour the soil and compost into the barrel and turn the handle to mix them together.

(a) What energy does the farmer possess before he turns the handle? [1]

_____

(b) State the correct energy conversion that takes place when the farmer turns the handle. [2]



The compost contains decomposers and dead organisms. The farmer accidentally dropped a lighted match on a pile of compost. The compost then burst into flame.

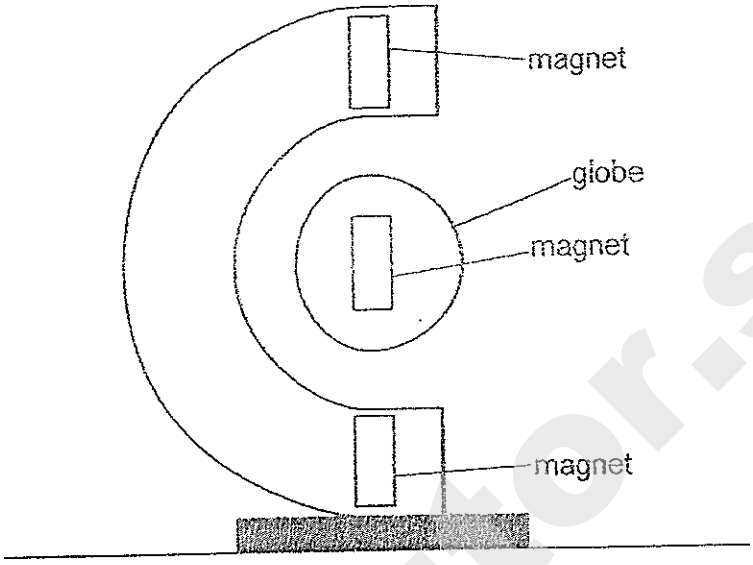
(c) Based on his observation, what form of energy does the compost possess before it was lit up? [1]

_____

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42. The diagram below shows a toy. It is made up of a C-shaped section with a globe floating in the middle.



The globe is able to float between the C-shaped section.

(a) Name the two forces which are acting on the globe. [1]

_____

_____

(b) In the diagram above, **label the poles of the magnets** which enable the globe to float. [1]

(c) Describe what would likely happen if a heavier globe is used. [1]

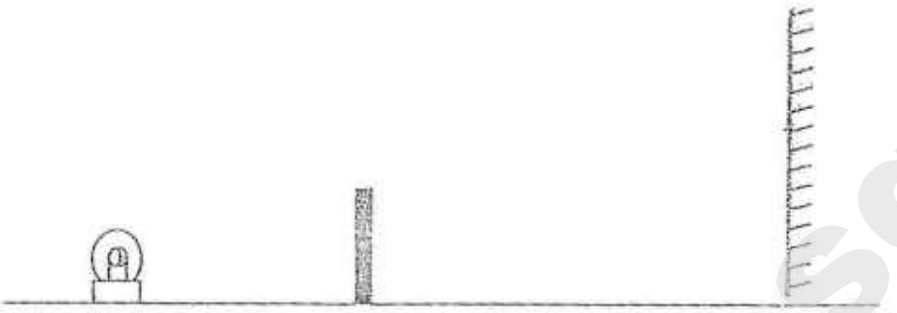
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43. Emily set up an experiment in a dark room as shown below using similar rods made of different materials.



Set up A



Set up B

A dark shadow was observed on screen B but a very faint shadow was observed on screen A.

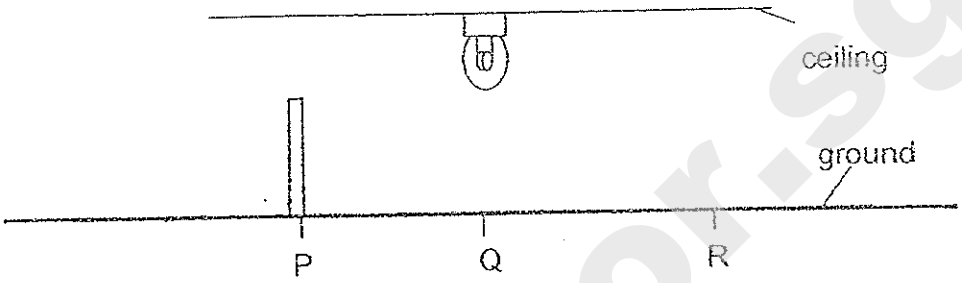
(a) Give an explanation to the above observation. [2]

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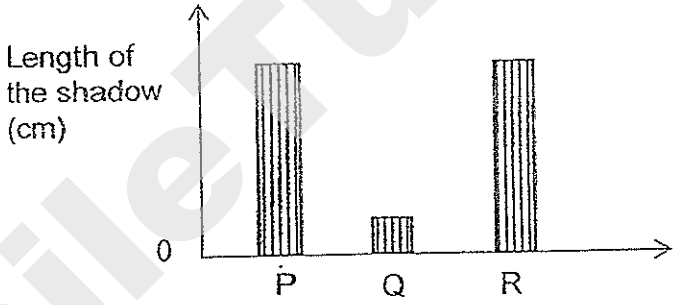
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Emily then used a wooden rod and set up another experiment as shown below. She switched on the light and placed the rod at position P. She then measured the length of the shadow formed.

(b) In the diagram below, mark the position of the shadow on the ground with an 'X'. [1]



The graph below shows how the length of the shadow of the wooden rod changed when Emily placed it at the three different positions.



(c) Based on the graph above, describe the change in the length of the shadow of the wooden rod when it was placed at the different positions. [1]

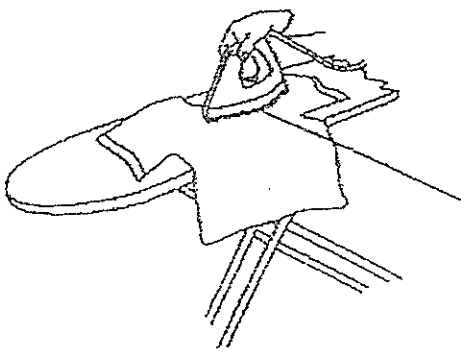
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44. An electric iron is used to remove creases in a shirt as shown below.



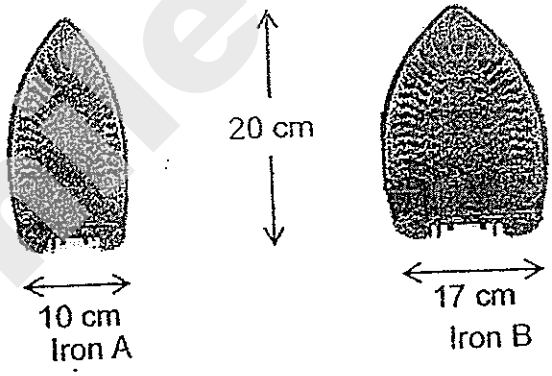
The base of the electric iron is made of a strong and hard metal.

(a) State another property of a metal that makes it suitable for use as the base of an electric iron. [1]

_____

_____

Keith used two identical irons made of metal plates of the same material but with different surfaces as shown below.



(b) Which iron, A or B, would allow Keith to iron his clothes in a shorter time? Give a reason for your answer. [1]

_____

_____

~ End of Paper ~

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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : NANYANG
PRIMARY : P6
SUBJECT : SCIENCE
TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	3	3	2	2	1	2	1	4	4	3	1	3	1	4	3	4

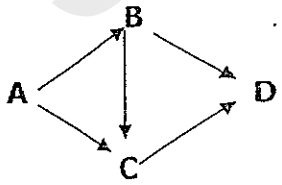
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
3	4	1	3	2	3	4	2	3	2	2	3	1

31)a)To find out how the rate of photosynthesis of hydrilla is affected by red or blue light.

b)To ensure that the results of the experiment is caused only by the coloured lights.

32)a)i)T ii)Not

b)



33)a)V and R

b)S and Q

c)R is eaten by S and Q is also eaten by S. T eats both S and Q.

d)U, R and Q will increases in population while T and P decreases in population.

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34)a)The water vapour in the air touches the cooler steel netting and condenses to form tiny droplets of water.

b)i)Increase the surface area of the netting.

ii)Make the netting colder.

35)a)The bigger the size of the flowers the more the number of butterflies.

b)The duration of the experiment

The number of drops of sweetened water

36)a)The seeds need time to absorb water.

b)P: Under the sun.

Q: fridge

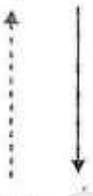
c)More seeds will germinate in P than Q.

37)a)The heart rate increases to supply more oxygen and digested food to all parts of the body and remove more carbon dioxide from all parts of the body.

b)



38)a)



b)It loses water through the stomata.

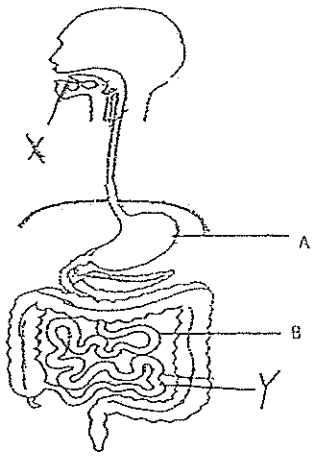
39)a)Nucleus. It controls all the activities in the cell.

b)The plant will not be able to photosynthesise and cannot make food hense the plant will die.

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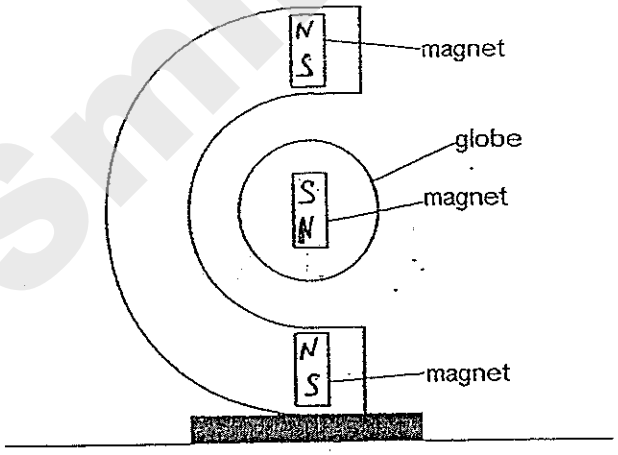
40)a)i)ii)



b)The liquid breaker down the food into simpler substances.

41)a)Chemical potential energy.
b)Kinetic energy→Kinetic energy + Heat energy + Sound energy
c)Chemical potential energy.

42)a)Magnetic force and gravitational force.
b)



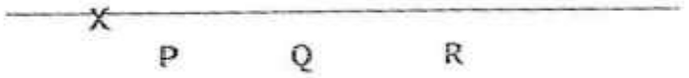
c)It will not be floating any more.

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43)a)Rod A is a translucent object and Rod B is an opaque object.

b)b)



c)The length of the shadow at P and R is the same while it is shorter at Q.

44)a)Metal is a good conductor of heat.

b)Iron B. As its surface area is bigger, so it can iron his clothes faster.

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RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1)
2014

Section A	60
Section B	40
Your score out of 100 marks	
Parent's signature	

Name : _____ Index No: _____ Class: P6 ___

6 May 2014 **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	Can make its own food	Can reproduce from spores
X	✓	
Y		✓
Z	✓	✓

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

A X, Y and Z are plants.
B X and Z contain chlorophyll.
C Y and Z are non-flowering plants.

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

2. Tom caught organism P in the garden.

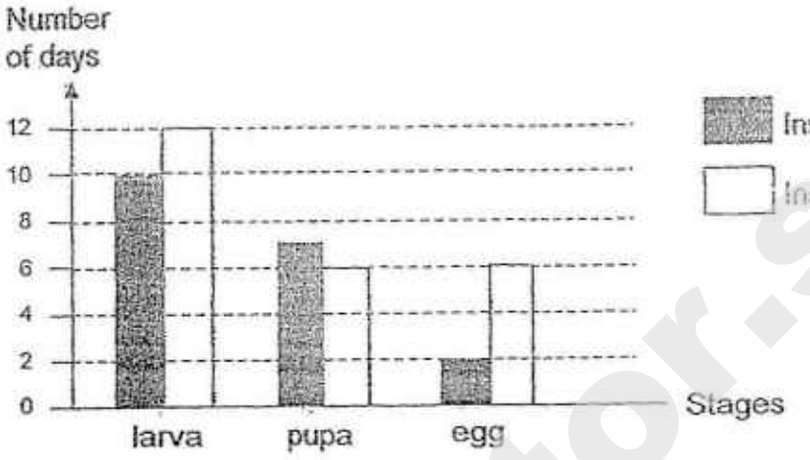
Which of the following method(s) could he use to determine if organism P is an insect?

A Observe if organism P has 3 pairs of legs.
B Measure the length of the body of organism P.
C Examine organism P to find out if it has 3 body parts.

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

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3. The graph below shows the number of days for each stage of the life cycles of insects A and B.



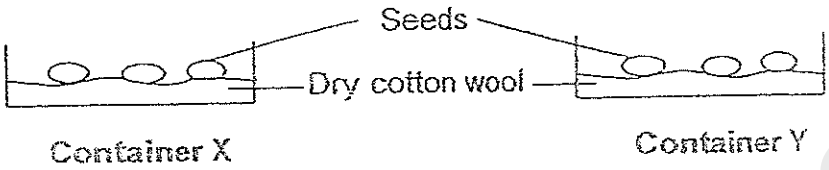
Which one of the following shows the stages that insects A and B would be on the 11th day after the eggs have hatched?

	Insect A	Insect B
(1)	Pupa	Pupa
(2)	Larva	Larva
(3)	Larva	Pupa
(4)	Pupa	Larva

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4. Joelle placed an equal number of the same type of seeds in containers X and Y as shown below.

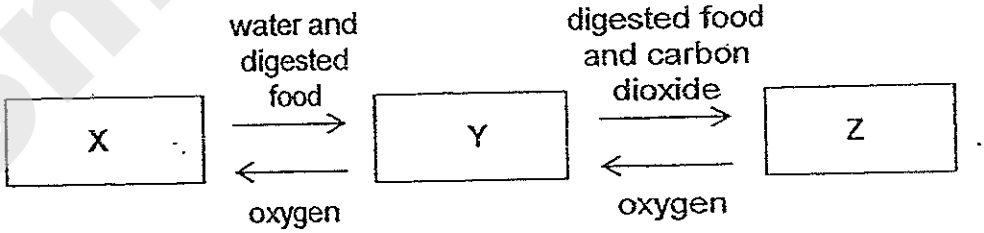


He exposed Container X and Y to different conditions. After one week, she observed that only the seeds in Container Y germinated.

Which one of the following best describes the conditions which the seeds were exposed to in each container?

	Container X	Container Y
(1)	• placed in the garden • watered daily	• placed in a dark cupboard • no water given
(2)	• placed under the sun • watered daily	• placed in the refrigerator • watered daily
(3)	• placed in the refrigerator • watered daily	• placed in a dark room • watered daily
(4)	• placed in a dark room • no water given	• placed in an air-tight container • no water given

5. The diagram below shows how some substances are transported in the human body.

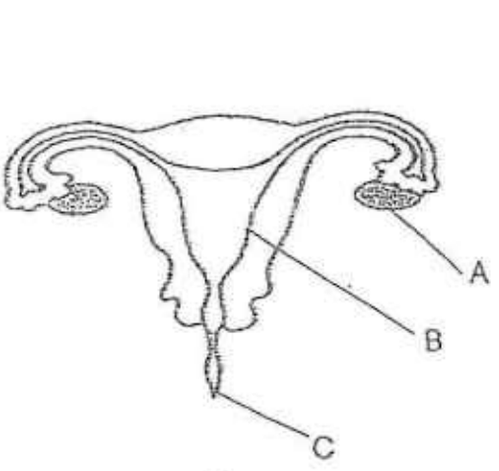


Which one of the following shows the body systems represented by X, Y and Z?

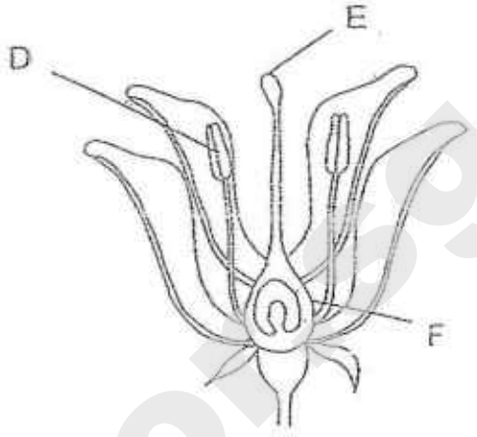
	X	Y	Z
(1)	respiratory system	circulatory system	digestive system
(2)	circulatory system	digestive system	respiratory system
(3)	digestive system	respiratory system	circulatory system
(4)	digestive system	circulatory system	respiratory system

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6. The diagram below shows the cross sections of a human female reproductive system, X, and a flower, Y.



X



Y

Which one of the following shows where the female sex cells are found and produced in both X and Y?

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

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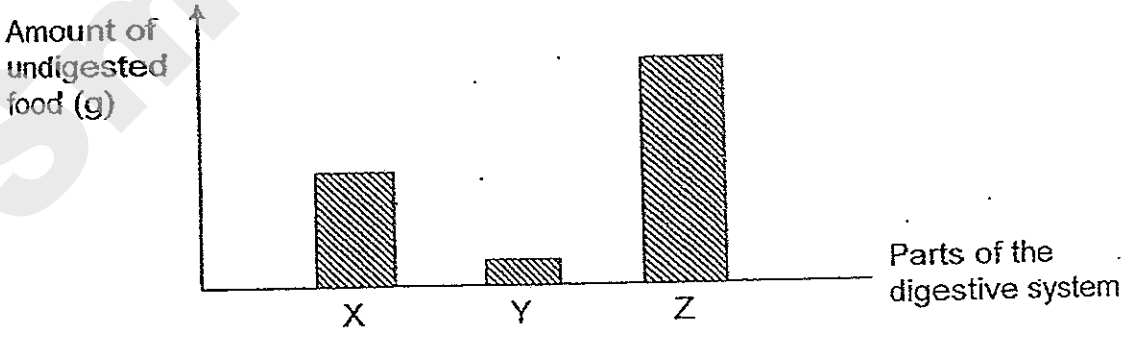
7. Joan carried out an experiment on five fruits, A, B, C, D and E which were obtained from the same parent plant. She exposed the fruits to different temperatures and observed the fruits for 12 hours. She recorded her observations in the table below.

Fruit	Temperature at which fruit was subjected to (°C)	Observations on fruit	Average distance of scattered seeds from each fruit (m)
A	20	did not split	–
B	25	split after 10 hours	1
C	30	split after 3 hours	1.5
D	35	split after 2 hours	2.5
E	40	split after 0.5 hours	4

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

(1) Fruit A split open with the least force.
(2) The minimum temperature needed for the fruit to split is 20°C.
(3) The greatest distance that seeds of fruit E can be scattered is 4m.
(4) The higher the temperature at which the fruit was exposed to, the shorter the time taken for it to split.

8. The graph below shows the amount of undigested food in different parts of the human digestive system just before it travels to the next part of the system.

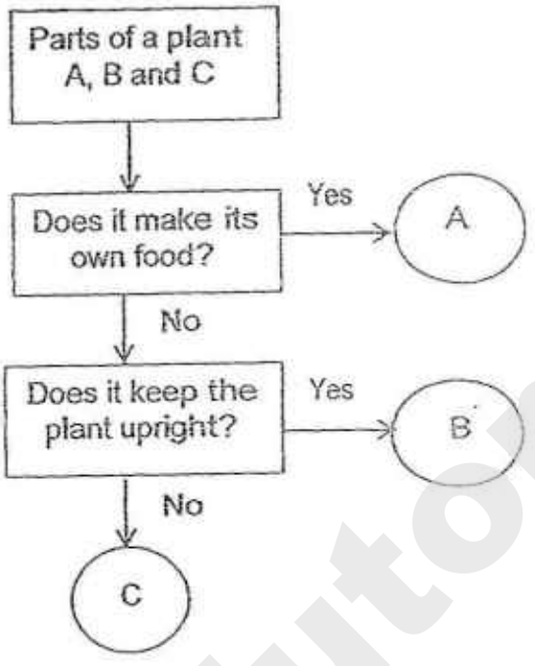


Which one of the following correctly identifies organs X, Y and Z?

	X	Y	Z
(1)	gullet	stomach	small intestine
(2)	stomach	large intestine	gullet
(3)	small intestine	mouth	large intestine
(4)	large intestine	stomach	mouth

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9. The diagram below shows a flow chart.



Based on the flowchart, which one of the following correctly identifies A, B and C?

	A	B	C
(1)	flower	stem	leaves
(2)	leaves	flower	stem
(3)	flower	roots	stem
(4)	leaves	stem	roots

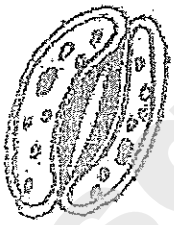
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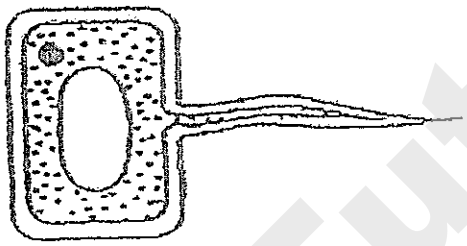
10. The diagrams below show four different types of cells.



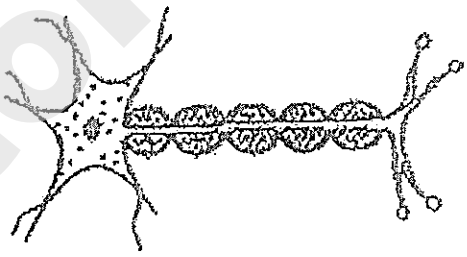
A



B



C



D

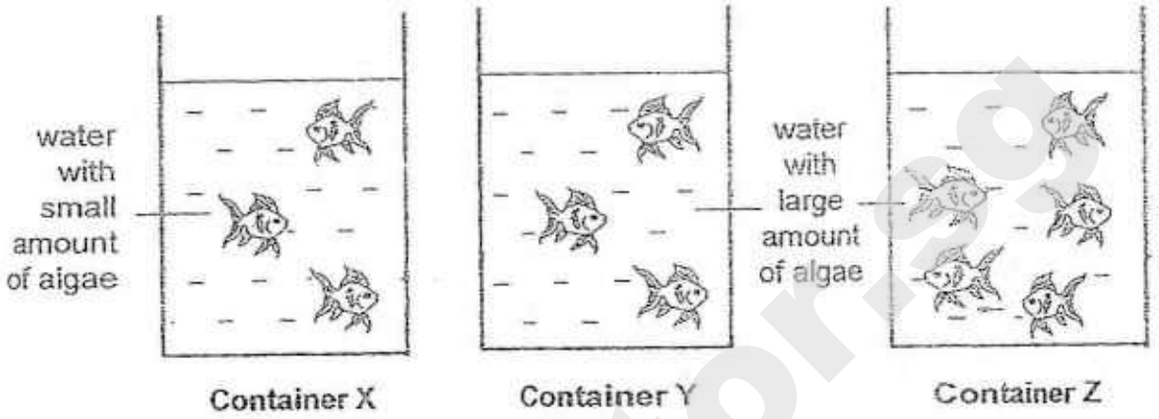
Which one of the following correctly identifies the cells?

	Animal Cells	Plant cells
(1)	A, C and D	B
(2)	A and D	B and C
(3)	B and C	A and D
(4)	A	B, C and D

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11. Tony filled three identical containers with an equal amount of water and placed different amount of algae and fishes into each container as shown below. All the containers were placed in a dark room.



He recorded the amount of dissolved oxygen in the water in container Y from 9 p.m. to 3 a.m. at every three hour interval in the table below.

Time	9 p.m.	12 a.m.	3 a.m.
Amount of dissolved oxygen (unit per litre)	8.0	7.5	7.0

Which one of the following shows the correct amount of dissolved oxygen in the water in container X and Z at 3 a.m.?

	Amount of dissolved oxygen in container (unit per litre)	
	X	Z
(1)	6.0	6.5
(2)	6.0	7.5
(3)	8.0	6.5
(4)	8.0	7.5

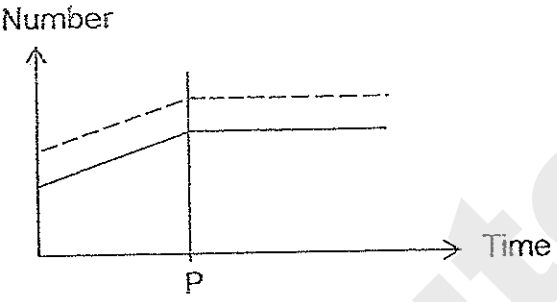
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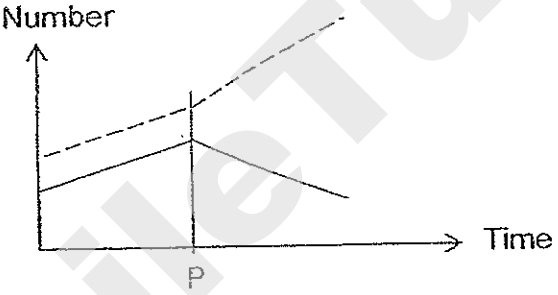
12. The adults of butterfly B feed on the nectar of flowers of plant A in a garden. When a certain type of pesticide was sprayed in the garden, all the caterpillars of butterfly B were killed immediately. The pesticide did not harm or kill the adults of butterfly B and plant A.

Which one of the following graphs correctly shows how the numbers of butterfly B and the fruits of plant A are affected before and immediately after the pesticide was sprayed at point P?

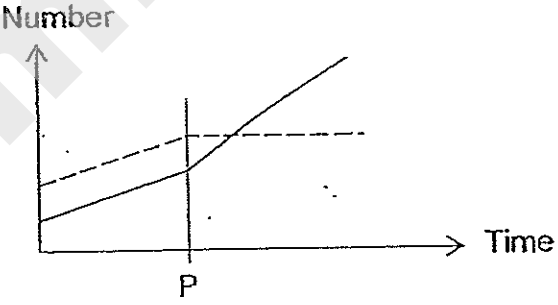
(1)



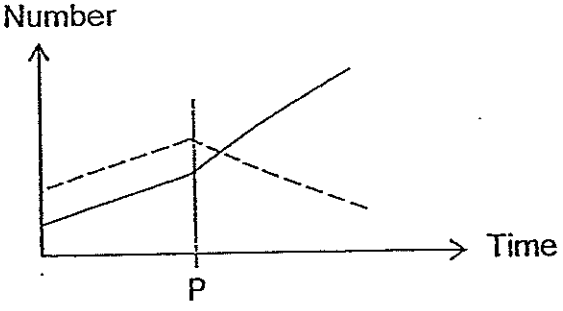
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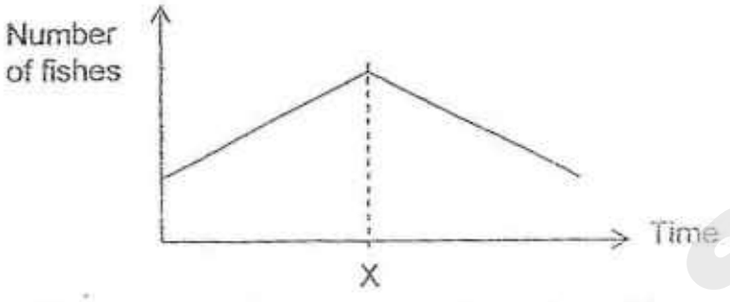
(4)



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13. The graph below shows the number of fishes in a pond over a period of time. Some organisms P were added into the pond at point X as shown in the graph.



Which one of the following is/are true about Organisms P?

A They are aquatic plants.
B They are prey for the fishes.
C They are predators of the fishes.
D They are infected with a disease.

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

14. Some pupils counted the organisms found in their school garden. They recorded the findings in the table below. There were altogether 100 organisms in that habitat.

Types of organisms	Number of organisms
fungi	5
animals with 4 legs	10
animals with 6 legs	30
animals with more than 6 legs	10
flowering plants	20
non-flowering plants	25

Four pupils made the following statements in their Science journal :

Ashley : There are at least 6 populations of organisms.
Bernice : There are more plants than animals in this community.
Peter : This garden community is made up of plants and animals only.

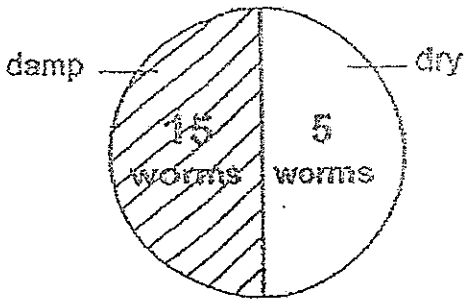
Which of the following pupils' statement(s) is/are correct?

(1) Ashley only
(2) Bernice only
(3) Ashley and Bernice only
(4) Bernice and Peter only

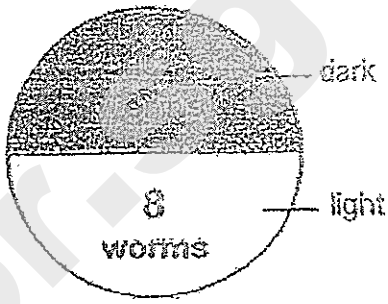
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15. Lily conducted an experiment to study the conditions that worms prefer to live in. She placed 20 worms in each of two dishes, A and B.

After 15 minutes, she counted the number of worms in each section of each dish and recorded her observations as shown below.

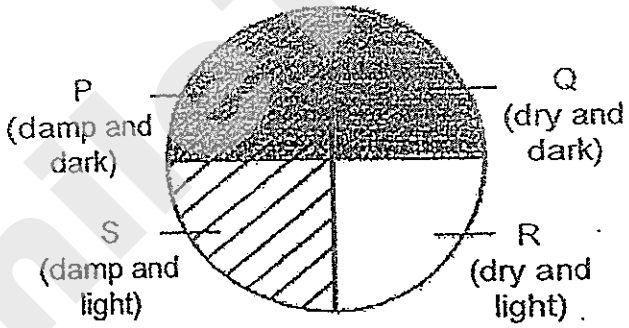


Dish A



Dish B

Next, Lily placed 20 worms in another dish, C as shown below.



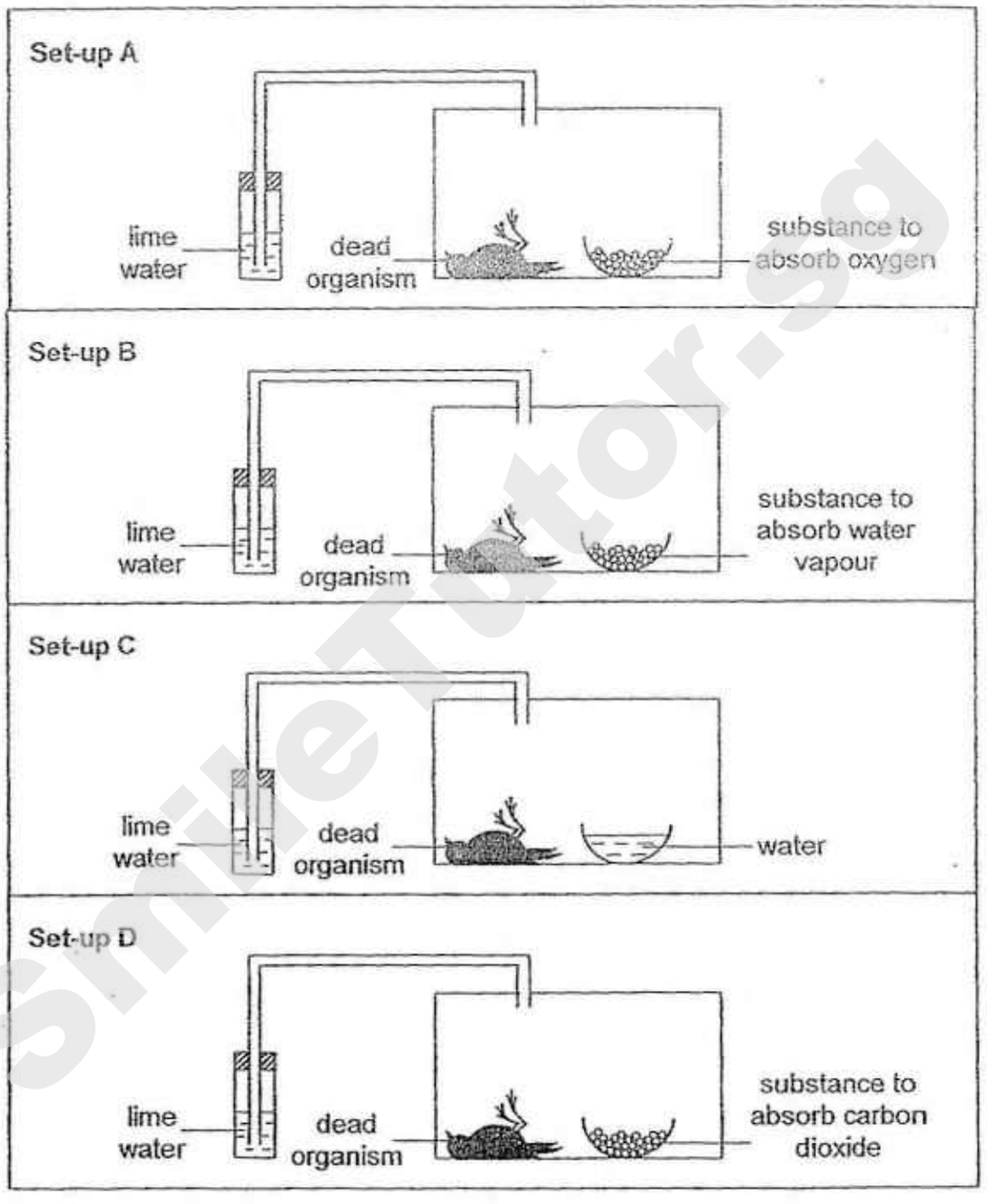
Dish C

Which one of the following section of dish C would Lily observe the most worms after 15 minutes?

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

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16. Wallace wanted to find out whether the presence of moisture affects the rate of decomposition. He prepared four set-ups as shown below.



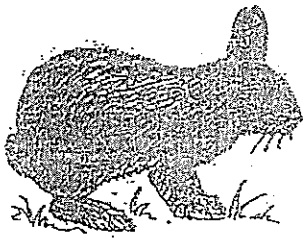
Which set-ups should he use for his investigation to ensure a fair test?

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

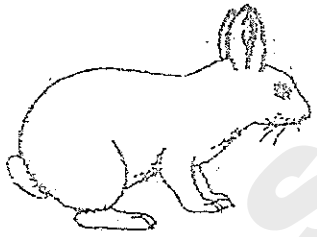
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17. The diagrams below shows a type of hare found in a certain habitat during summer and during winter. The habitat consists of mainly green grass and rocks during summer and mainly snow during winter.



In summer, fur of hare turns brown



In winter, fur of hare turns white

Which of the following is/are reason(s) for the change in the colour of the fur of the hare?

A To keep itself warm in the cold weather.
B To blend in with the surrounding to catch its prey more easily.
C To blend in with the surrounding to avoid being spotted by its predators.

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

18. Which of the following actions are harmful to the environment?

A Burning of forest to clear land for housing.
B Oil spill during extraction of oil from seabed.
C Recycling of used aluminium cans and plastic bottles.
D Use of solar panels to provide electricity for lightings in a building.

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

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19. Sarah used a swimming board at a swimming pool as shown below. The swimming board was made of material X.

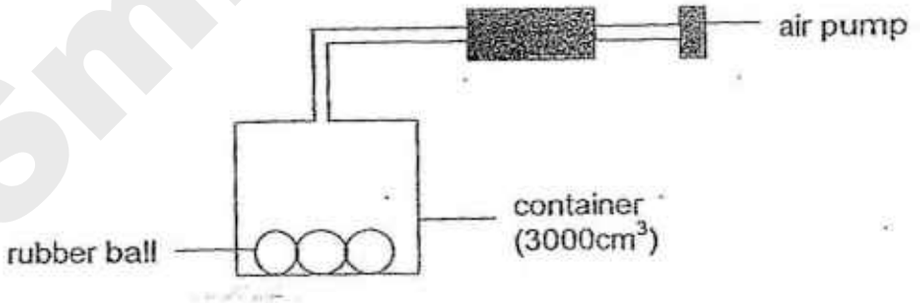


Which of the following properties are important for consideration when choosing material X to make the swimming board?

A Flexible
B Waterproof
C Easy to break
D Float in water

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

20. The diagram below shows a container which has a capacity of $3000cm^3$. Three rubber balls, each of a volume of $200cm^3$, were placed in it.



What is the volume of air in the container after $500cm^3$ of air was pumped into the container?

(1) $2400\ cm^3$
(2) $2900\ cm^3$
(3) $3300\ cm^3$
(4) $3500\ cm^3$

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21. A plastic cube was placed in a beaker of water as shown in Diagram 1 below. Next, a metal ball was added to the same beaker, as shown in Diagram 2 below.

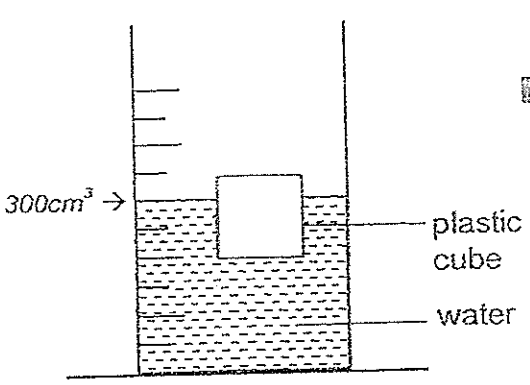


Diagram 1

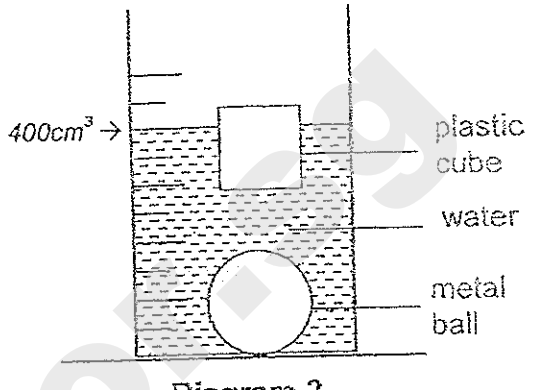


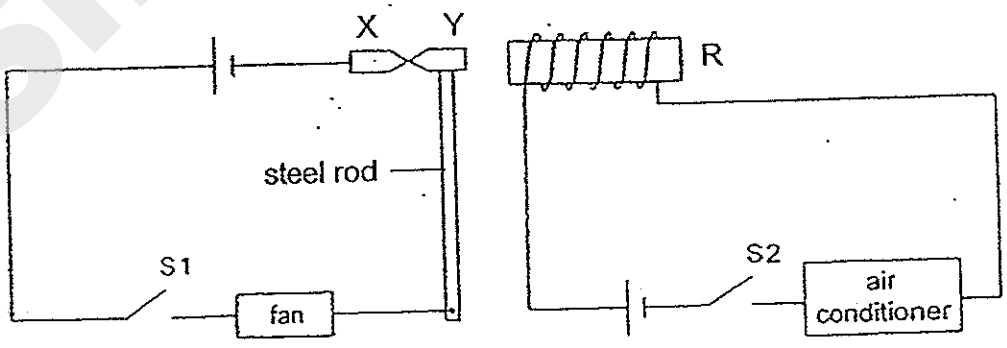
Diagram 2

Which one of the following statements is true?

(1) The volume of water is $300cm^3$.
(2) The volume of the metal ball is $150cm^3$.
(3) The volume of the metal ball is the same as the volume of plastic cube.
(4) The total volume of the water and plastic cube is greater than the volume of metal ball.

22. Shania installed an electrical system in her room as shown below.

R is an aluminium bar placed inside a coil of wire.
X and Y are made of iron and are in contact with each other.
X is fixed. Y is attached to a steel rod and can move sideways.

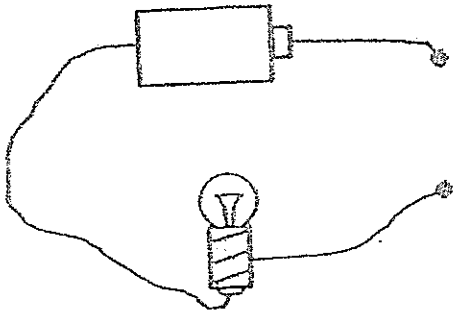


When Shania closed switches S1 and S2 at the same time, which one of the following observations would she make?

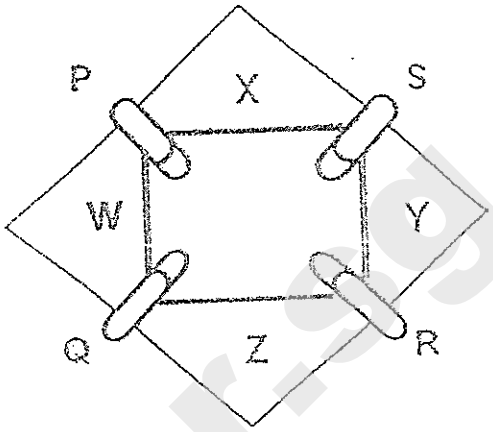
(1) Only the fan will be switched on.
(2) Only the air conditioner will be switched on.
(3) Both the fan and the air conditioner will not work.
(4) Both the fan and the air conditioner will be switched on.

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23. Claire set up a circuit card and a circuit tester as shown below. Paper clips P, Q, R and S are connected by 4 strips, W, X, Y and Z which are made of different materials.



Circuit tester



Underside of a circuit card

Claire connected the circuit tester to the various paper clips and recorded the results in the table below.

Paper clips connected to circuit tester				Did the bulb light up?
P	Q	R	S	
	✓		✓	Yes
✓		✓		No
	✓	✓		No

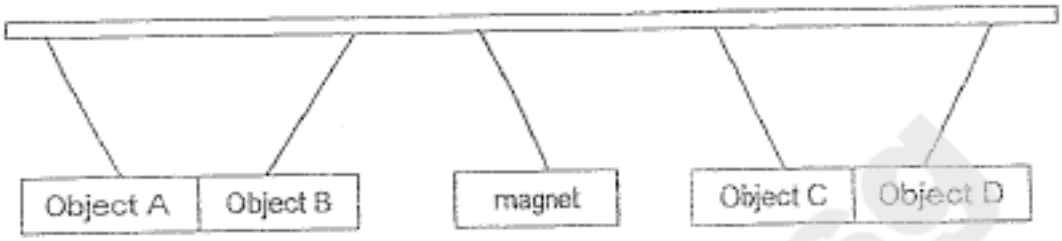
Based on the results above, which one of the following correctly matches W, X, Y and Z to their properties?

	Conductor of electricity	Non-conductor of electricity
(1)	X	W, Y, Z
(2)	W, X	Y, Z
(3)	W, Z	X, Y
(4)	Y, Z	W, X

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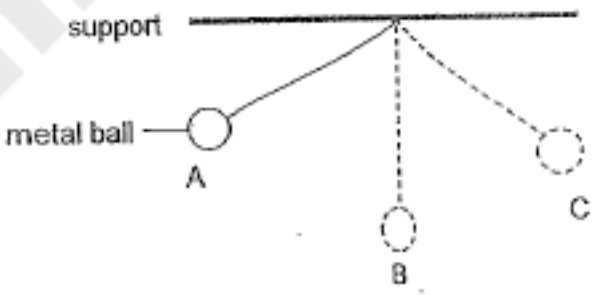
24. Tom hung a magnet and four other objects, A, B, C and D on a rod, as shown below.



Which one of the following best describes the four objects?

	Object A	Object B	Object C	Object D
(1)	Magnet	Non-magnetic material	Non-magnetic material	Magnetic material
(2)	Magnetic material	Magnet	Magnetic material	Non-magnetic material
(3)	Magnetic material	Magnet	Magnet	Magnetic material
(4)	Non-magnetic material	Magnetic material	Magnetic material	Non-magnetic material

25. The diagram below shows a metal ball which is hung from a support with a string.



When the metal ball is released from point A, it swings to point B and then to point C.

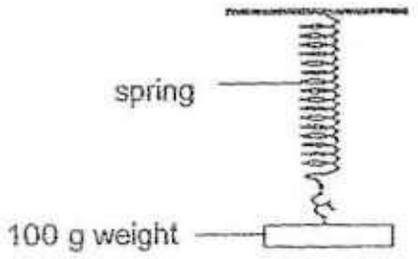
Which of the following statement(s) is/are true?

A There is no force acting on the metal ball at B.
B Gravitational force acted on the metal ball from A to C.
C More gravitational force acted on the metal at A than at B.

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

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26. Kate hung a 100 g weight on a spring as shown in the diagram below.

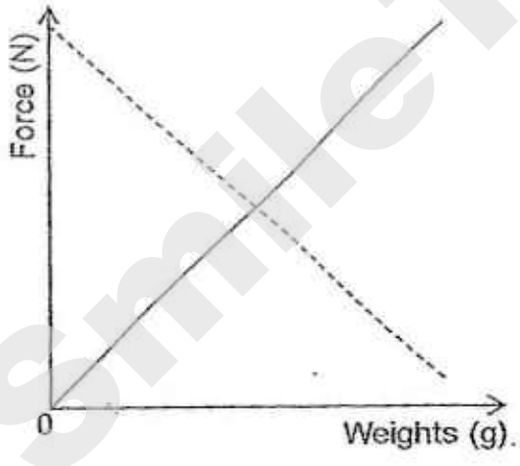


She added three more identical 100 g weights on the spring, one at a time, until four identical 100 g weights were hanging on the spring. The spring returned to its original length when all the weights were removed.

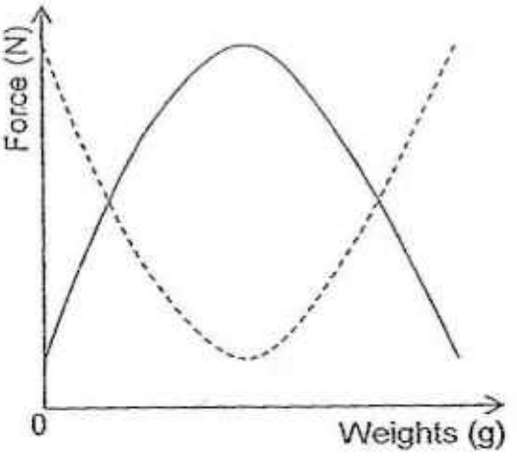
Which one of the following graphs shows how the amount of weight attached to the spring affects the elastic spring force exerted by the spring and the gravitational force acting on the spring only?

Key: ---------- gravitational force
——— elastic spring force

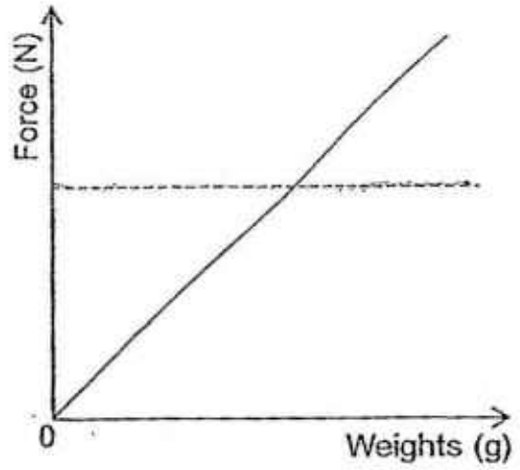
(1)



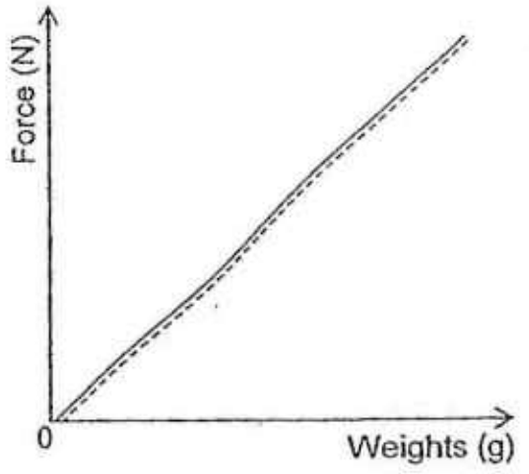
(2)



(3)



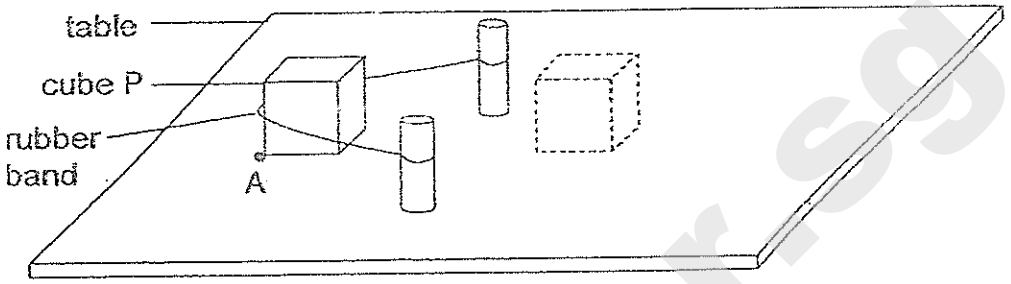
(4)



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27. John conducted an experiment on cube P using the set-up shown below. John pulled the rubber band backwards, together with the cube to position A. When he released the cube, it moved across the table.



John repeated the experiment with cube Q instead of cube P. The mass of cubes P and Q were 1kg and 2kg, respectively. Both cubes were wrapped with the same type of material and are identical in size.

He observed that cube P travelled a greater distance than cube Q.

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

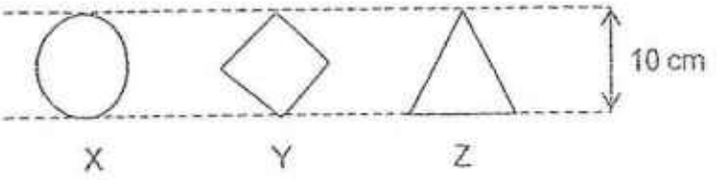
A The surface of cube P is smoother than the surface of cube Q.
B Less force is needed to move cube P than cube Q over the same distance.
C The rubber band and cube P must be stretched further away than position A to reach the same distance as cube Q.

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

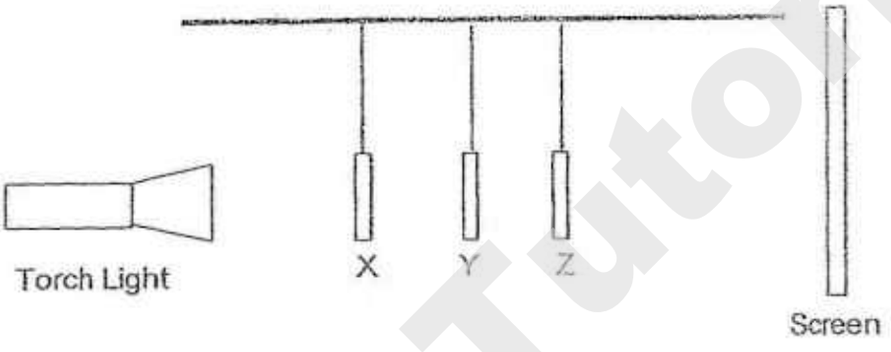
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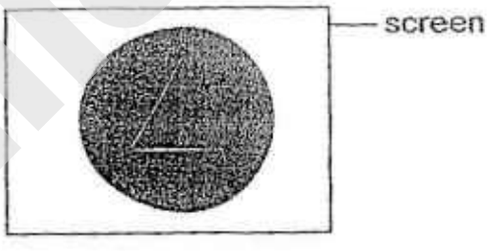
28. Fatimah cut out different shapes, X, Y and Z, made of different materials, as shown below.



Next, Fatimah shone light on the three shapes using the set-up below. The three shapes are places at different distances from the torch.



The diagram below shows what was seen on the screen.



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

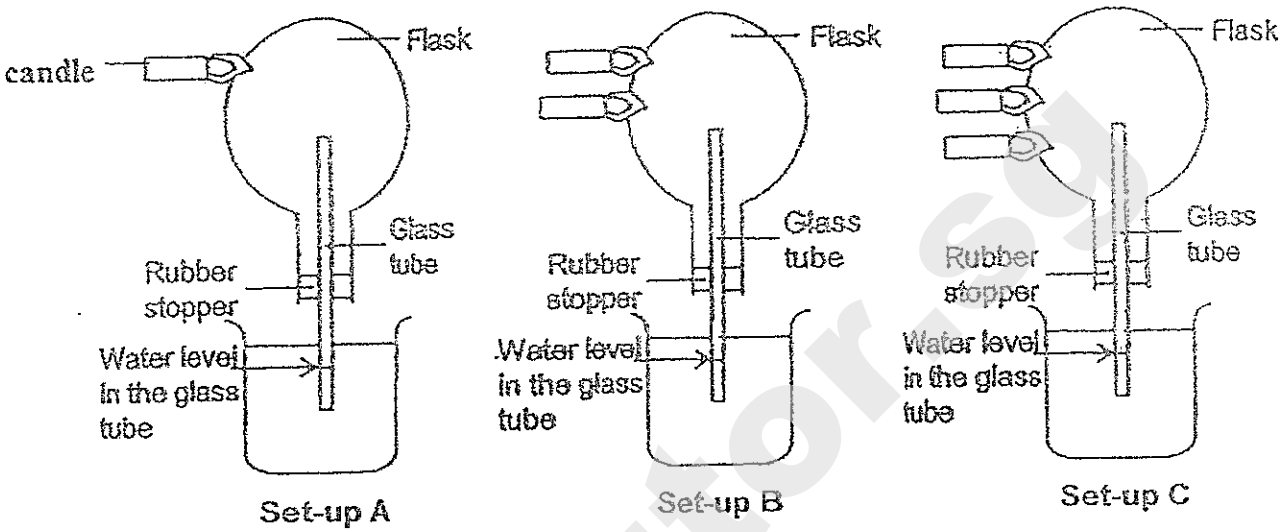
A X allows some light to pass through it.
B Y does not allow light to pass through it.
C The further the shape is from the screen, the bigger the shadow cast.

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

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29. Lauren carried out an experiment using set-ups A, B and C as shown below.



The water levels in the 3 glass tubes in the 3 set-ups were the same at the start of the experiment.

After Lauren heated each flask with different number of candles for one minute, she left the set-ups in the room for 10 minutes.

Which of the following observations would she make as the flasks were left to cool?

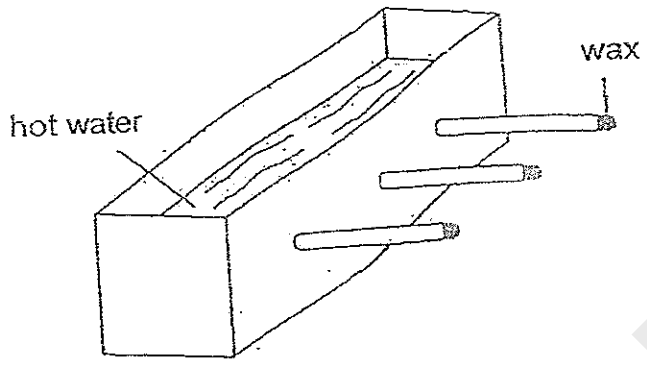
A Bubbles would escape through all the glass tubes.
B The water level in all the glass tubes would increase.
C The water level in the glass tube in set-up A would be the highest after 10 minutes.

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

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30. Izumi carried out an experiment using the set-up below to find out how the thickness of a rod of material X affects the conduction of heat through it.



Which of the following variables Izumi must keep constant to ensure a fair test?

A length of the rods
B material of the rods
C thickness of the rods
D time taken for the wax to melt

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

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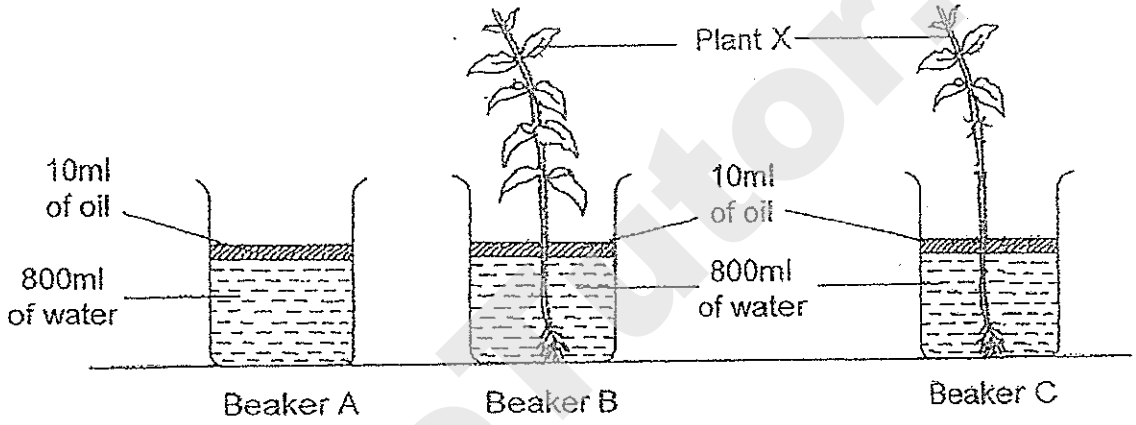
Name : _____ Index No : _____ Class : P6 ___

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. Rachel carried out an experiment as shown below. Both beakers were left near the window for a week.



Rachel 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	800	800
B	800	550
C	800	650

(a) Compare the change in the volume of water between beaker B and C over the seven days and explain the difference in the results. [2]

_____

_____

(b) What is the purpose of setting up beaker A? [1]

_____

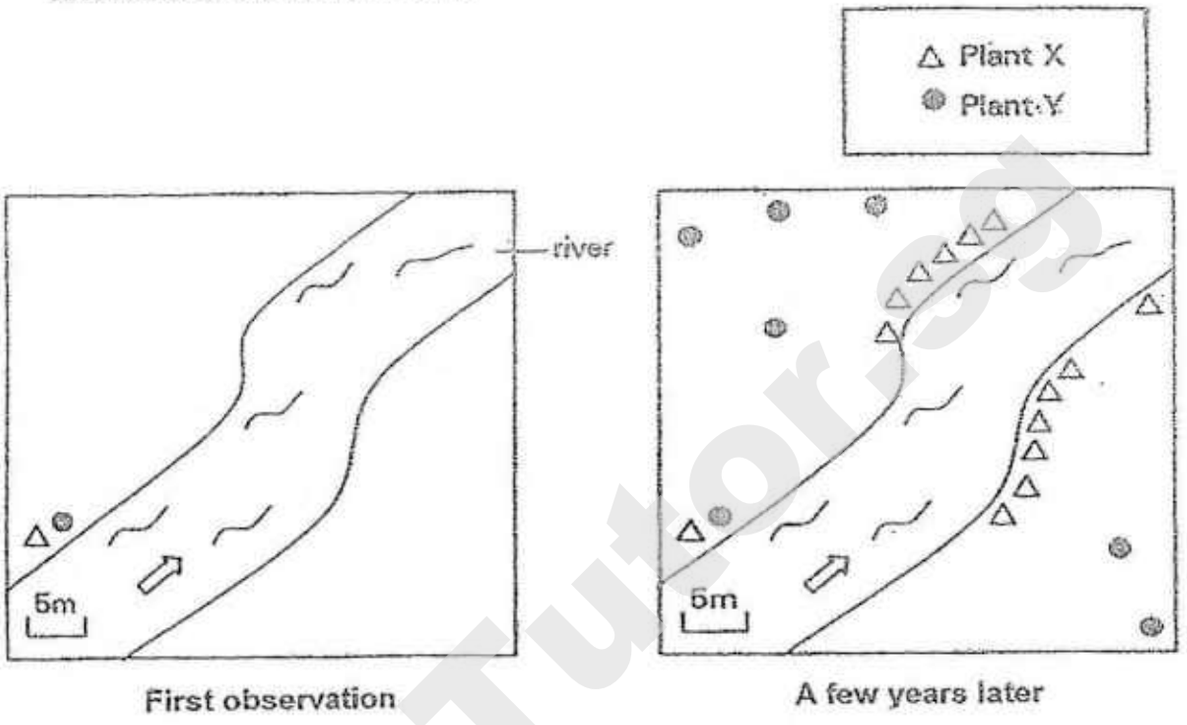
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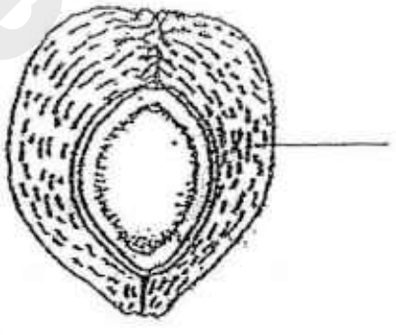
Score 3

32. Reina observed and recorded the number of plants, X and Y, on a piece of land. After a few years, she examined the same piece of land again. Her observations are shown below.



First observation A few years later

Reina picked up a fruit on the same piece of land as shown below.



(a) Which plant, X or Y, does the above fruit most likely belong to? [1]

_____

(b) What is the most likely method of dispersal for the above fruit? Besides observing the outer covering of the fruit, suggest what Reina could do with the fruit to confirm its method of dispersal. [1]

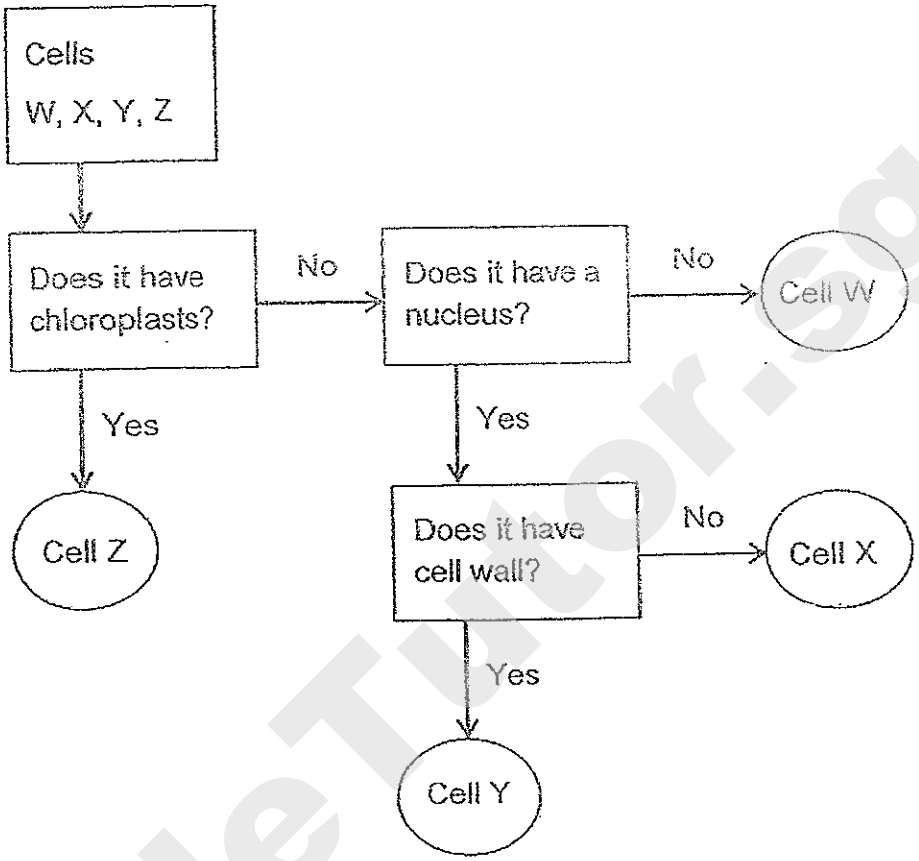
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Score /2

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33. The following chart classifies four cells, W, X, Y and Z.



(a) Based on the information above, state one similarity and one difference between cell W and cell X. [1]

_____

_____

(b) Which cell, W, X, Y or Z is most likely taken from a pollen grain of a flowering plant?
Explain your answer. [1]

_____

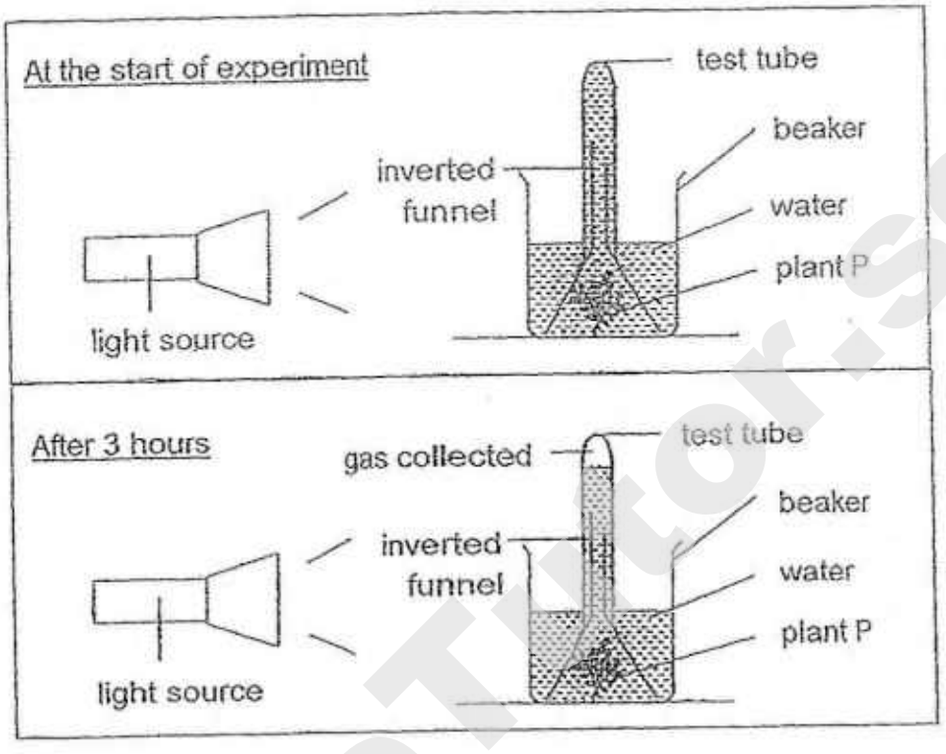
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Score 2

34. Ian carried out the experiment shown below in a dark room. He measured the amount of gas collected in the test tube after shining different coloured light at plant P for 3 hours.



He repeated the experiment with blue light and then green light. His results were recorded in the table below.

Colour of the light	Amount of gas collected in 3 hours (cm^3)
White	3
Blue	7
Green	2

(a) Name the gas collected in the test tube. [1]

_____

(b) Ian has an aquarium containing some plant P and some fishes. There is no 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]

_____

_____

_____

Score ___/3

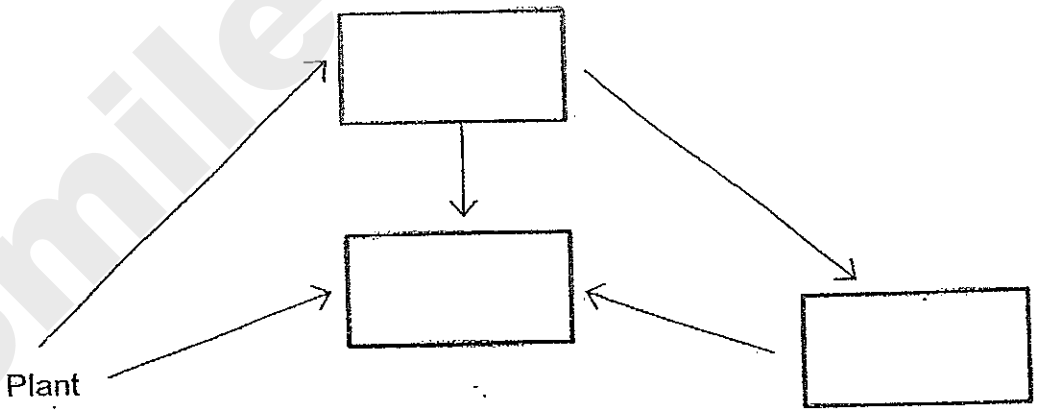
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35. Danielle wanted to study the food relationships among the organisms found in habitat X. The organisms in habitat X consists of a plant and three other organisms A, B and C.

Danielle prepared two set-ups. In each set-up, different organisms and/or parts of plants were placed in an enclosed tank for a period of three days. She recorded her results in the table below.

Set-up	Observations	
	Day 1	Day 3
1	• five freshly-plucked leaves from the same plant • one living organism B	• broken pieces of leaves • one living organism B
2	• one living organism A • one living organism B • one living organism C	• one living organism C

(a) Based on the above observations, complete the food web below by writing A, B and C in the correct boxes. [2]



(b) Which organism(s) A, B or/and C, is/are both a prey and predator? [1]

_____

(c) Which organism(s), A, B or/and C, depend(s) only on plants for food? [1]

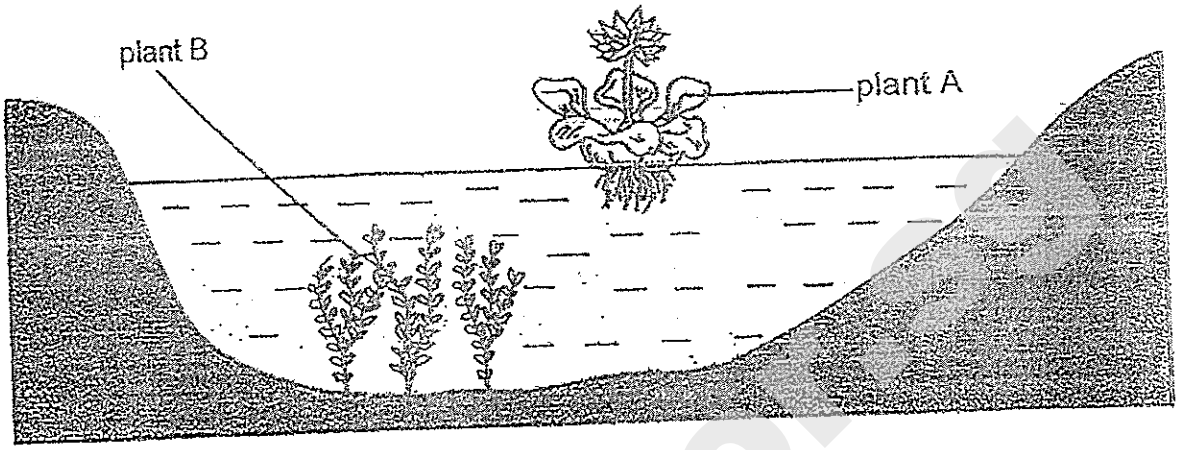
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Score: /3

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36. The diagram below shows a pond with two types of aquatic plant, A and B.



(a) Explain how would an increase in the population size of plant A affects the survival of plant B. [2]

(b) When a lot of plant B die, the level of carbon dioxide in the pond water increases. Give a reason why the dead plants cause an increase in the level of carbon dioxide in the pond water. [1]

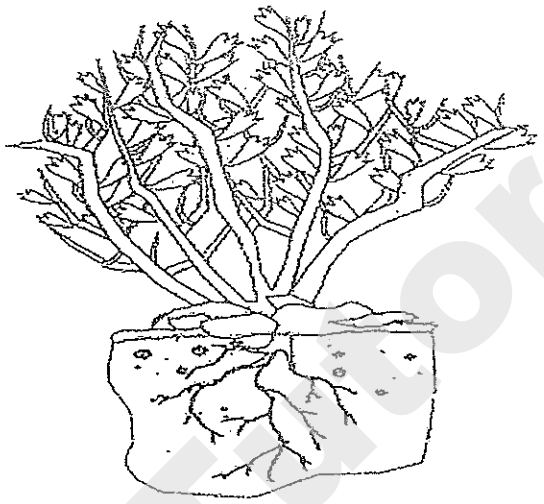
Score /3

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37. The diagram below shows plant X which is able to survive in areas with little rainfall. Water in these areas can be found deep underground.

Plant X has two sets of roots. One set of roots grows deep downwards into the soil while the other set of roots grows widespread near the surface of the soil.



Plant X

(a) Give one reason why plant X is able to survive long periods of little rainfall. [1]

_____

_____

(b) It was observed that many of the larger leaves of plant X dropped off during hot and dry seasons, leaving only the smaller leaves on the plant.
Explain how this helps the plant to survive in the hot and dry condition. [2]

_____

_____

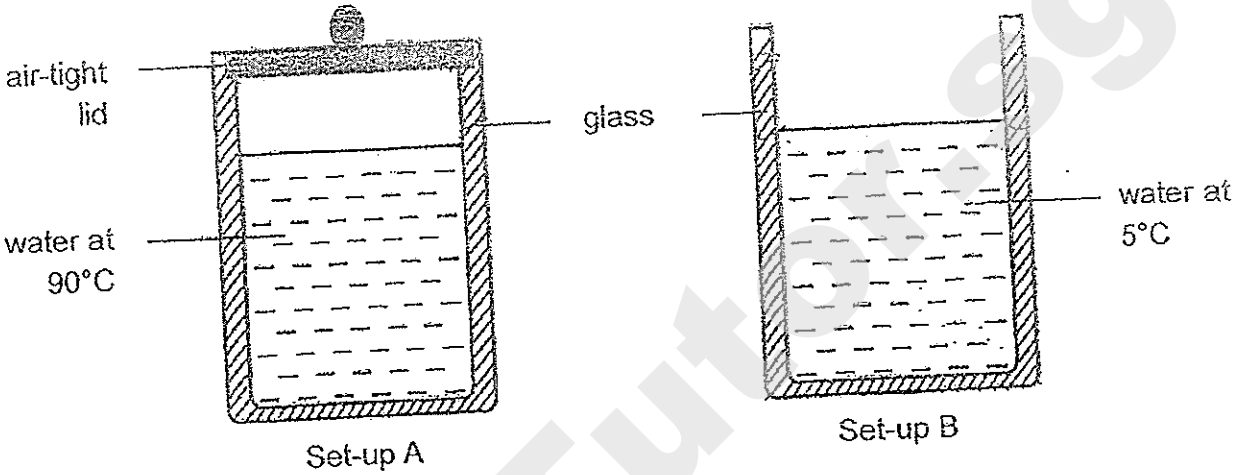
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Score: 3

38. Mary poured 300ml of hot water at 90°C into one glass and 300ml of cold water at 5°C into another identical glass, as shown in the diagrams below. She covered the glass in set-up A with an air-tight lid.



Two minutes later, she observed that water droplets were formed in the two set-ups.

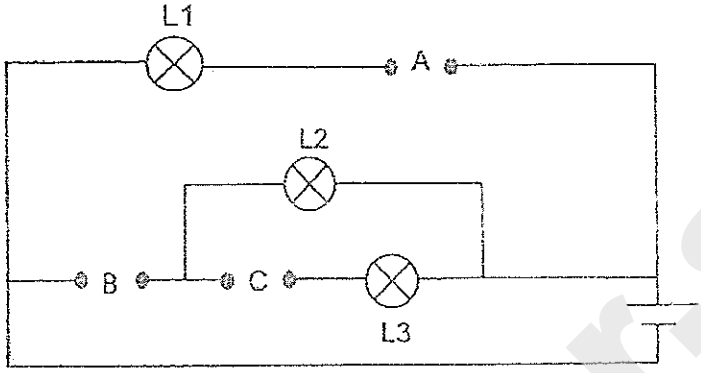
(a) Draw in the diagrams above to show where the water droplets will be formed after two minutes. [1]

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

Score 3

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39. Jazlyn was given three different materials, iron, steel and plastic. She was asked to connect them in positions A, B and C in the circuit shown below.



(a) Jazlyn placed the 3 materials at positions A, B and C to light up bulbs L1 and L2 only. Complete the table below by writing "iron", "steel" and "plastic" in the correct blanks such that only bulbs L1 and L2 light up. [1]

Positions	A	B	C
Materials			

Next, Jazlyn was given another 3 objects - a magnet, a bulb and a battery. All three objects are in working condition.

When she connected one of the three objects at position A in the same circuit above while leaving B and C open, she observed that none of the bulbs lighted up.

However, when she connected the same object at position C while leaving A and B open, bulbs L2 and L3 lighted up.

(b) Which one of the objects, magnet, bulb or battery, did she use in order for her to make the above observations? Explain your answer. [2]

_____

_____

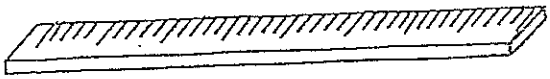
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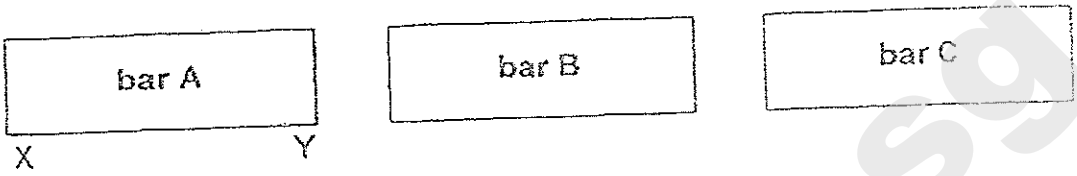
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Score 3

40. Ali has three iron bars, A, B and C. Two of the iron bars are magnets.



metre ruler



(a) Ali wants to find out which bar is not a magnet.
Describe how he can carry out his experiment by adding two more steps to complete the procedure. [2]

Step	Procedure
1.	Place bar A and bar B 10cm apart such that end X of bar A is facing one end of bar B.
2.	
3.	
4.	Repeat step 1 to 3, replacing bar B with bar C.

(b) What observation would Ali make on the bar that is **not** a magnet? [1]

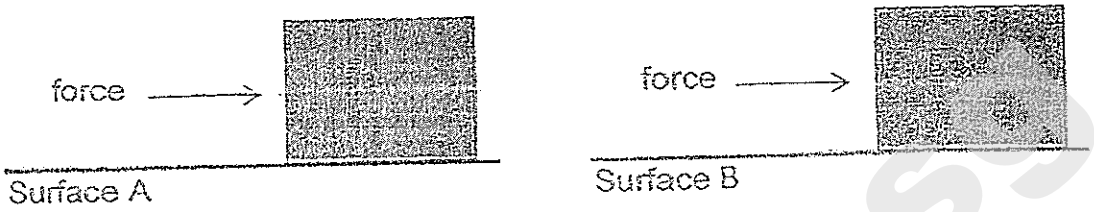
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_____

Score 3

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41. Tom exerted an equal amount of force on two identical metal blocks over an equal distance across two types of surfaces, A and B.



(a) After the metal blocks had been moved, Tom felt that the base of Box Y felt warmer than the base of Box X. Explain why this is so. [2]

_____

_____

(b) Suggest what Tom could do to reduce the amount of force needed to push each box over the same distance without lifting it above the ground. [1]

_____

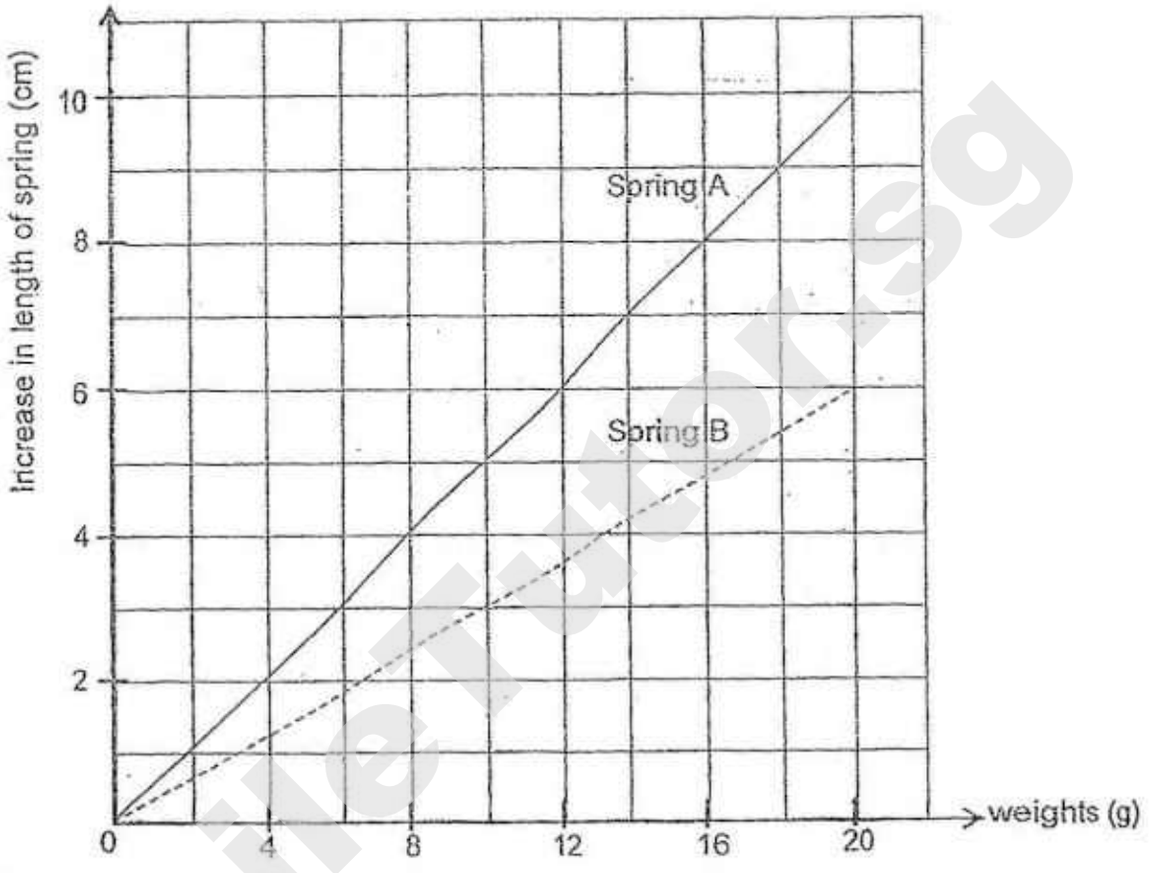
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Score 3

42. Jimmy hung different weights on two springs, A and B. The graph below shows the increase in length of the springs when different weights were hung on them. The original length of each spring was 10cm.



(a) What was the length of spring A when 16g of weights were hung on it? [1]

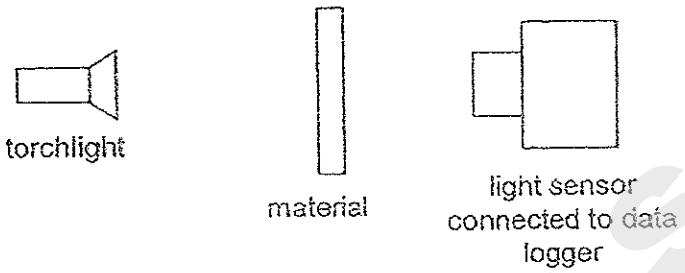
(b) When Jimmy hung an equal amount of weights on each spring, the difference in their length was 2cm. What was the amount of weight hung on each spring? [1]

(c) Which spring, A or B, can be stretched more easily? Give a reason for your answer. [1]

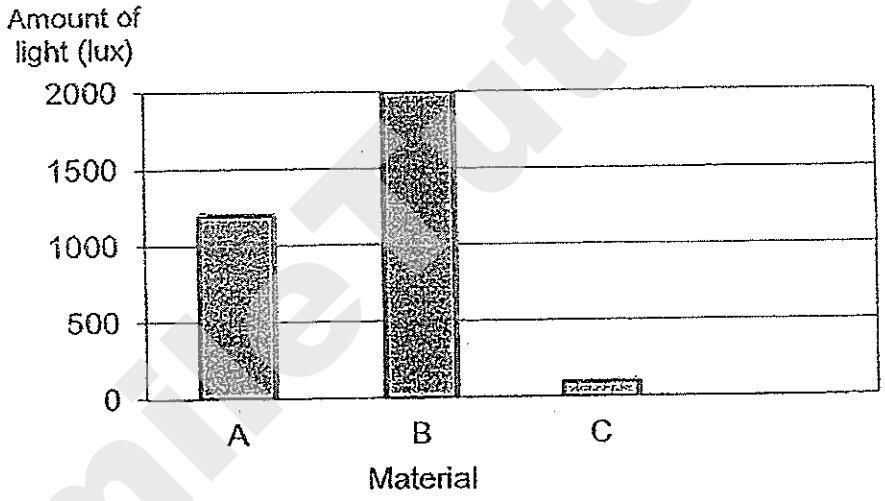
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43. Peter used the set-up below to measure the amount of light that passed through three different materials, A, B and C which are of the same thickness.



The amount of light detected by the light sensor for each material was represented in the graph below.



(a) Peter wanted to make a shadow puppet. Based on the results above, which material, A, B or C, should he use for his shadow puppet such that it can cast the darkest shadow on the screen? Explain your answer. [2]

(b) During his shadow puppet performance, suggest one way for Peter to increase the size of the shadow cast on the screen without moving the screen and the light source. [1]

Score 3

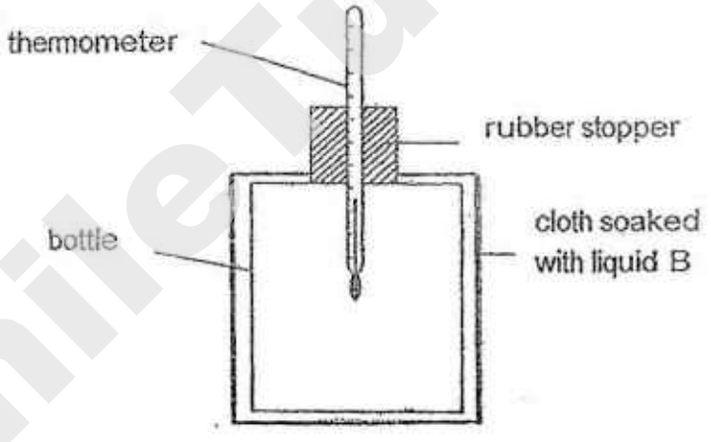
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44. Amber filled two identical beakers with liquid A and liquid B, respectively. She left the two beakers near the window on a hot day for two hours.
She recorded the results of her experiment in the table below.

Liquid	Volume of liquid before the start of the experiment (ml)	Volume of liquid at the end of the experiment (ml)
A	10	7
B	10	2

(a) Explain the difference in the results between A and B. [2]

Amber carried out another experiment using the set-up below.



She placed the set-up near the window for 30 minutes.
She recorded her results as shown below.

Temperature of air in the bottle (°C)	
At the start of the experiment	At the end of the experiment
30	20

(b) Give a reason for the decrease in the temperature of the air at the end of the experiment. [1]

- END OF PAPER -

Score /

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Setter : Ms Lim Siew Hoon, Mrs Christina Lim and Ms Lim Li Shan

ANSWER SHEET

EXAM PAPER 2014
SCHOOL : RAFFLES GIRL'S
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
1	3	4	3	4	4	4	2	4	2	3	1	3	1	1	3	2

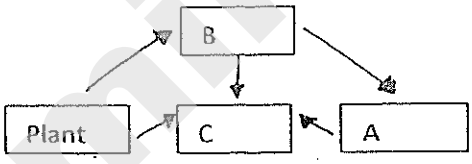
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	2	1	4	4	2	3	1	3	2	3	2	1

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31a)	There is a greater drop in the volume of water in beaker B than beaker C. The plant in beaker B has more leaves, hence it will take in more water through the roots and lost more water through the stomata on the leaves than the plant in beaker C.
31b)	It is to serve as a control to show that the water loss is due to the plants taking in water.
32a)	X
32b)	It is dispersed by water. Place the fruit in a pail of water. If it floats, then it is dispersed by water.
33a)	Similarity : Both cell W and X does not have chloroplasts . Difference : Cell W does not have a nucleus but cell X has.
33b)	Cell Y. It does not have chloroplast as it cannot make food but has a cell wall as it is a plant cell.
34a)	Oxygen
34b)	Blue light. It allowed the aquatic plant to have the highest rate of photosynthesis, producing greatest amount of oxygen so that the fish can respire.
35a)	
35b)	A
35c)	B
36a)	Plant B decreases in population. More plant A would block most sunlight from reaching plant B so plant B would photosynthesize slower.
36b)	The decomposers release carbon dioxide in the pond water during decomposition of plant B.
37a)	The roots that grow deep downwards absorb water deep underground.
37b)	Leaving only the smaller leaves behind reduce total exposed surface area of the leaves. Hence, the plant will lose less water as water vapour through the stomata of the leaves.

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38a)	Set-up A : Underside of lid Set-up B : On the outer glass
38b)	The water in the glass evaporated to form water vapour which loses heat to the cooler lid and condenses to form water droplets.
39a)	A/B : iron/steel C : plastic
39b)	Battery At position A, the positive terminal of the battery was facing the positive terminal of the battery in the circuit, so L1 did not light up. At position C, the battery and the two bulbs, L2 and L3 formed a closed circuit, hence lighting up L2 and L3.
40a)	Step 2: Observe if A repels/attracts B. Step 3: Flip bar A such that end Y is facing the same end of bar B and observe if A repels/attracts B.
40b)	The bar that is not a magnet would have both of its ends attracted to another bar.
41a)	Surface B is rougher than surface A. Hence, there was more friction between Box Y and surface B which produced more heat as compared to the friction between Box X and surface A.
41b)	Apply lubricant on the floor.
42a)	18 cm
42b)	10 g
42c)	A. The increase in length is greater for spring A when the same amount of weight was hung on both springs.
43a)	C The amount of light detected by the light sensor was the least for C. C will block most light, hence casting the darkest shadow.
43b)	Move the puppet further away from the screen.
44a)	The decrease in volume for B is greater than A as B evaporates faster than A.
44b)	Air in the bottle lost heat to liquid B as liquid B evaporates.

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Rosyth School

First Semestral Examination for 2014

STANDARD SCIENCE

Primary 6

Name: _____

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

Date: 15 May 2014 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, write your answers in the spaces given in Booklet B.

***This booklet consists of 19 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. (60 marks)

1 Which one of the following does not undergo cell division?

(1) 

A seed

(2) 

A ball

(3) 

A goat

(4) 

A fish

2 Natasha made the following observations of the characteristics of animal X.

- It produces milk.
- It has no feathers.
- It gives birth to its young alive.

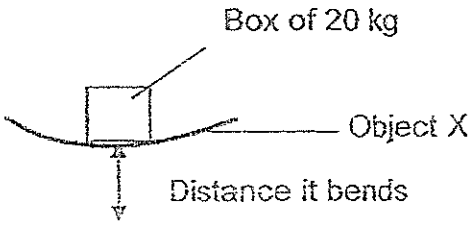
Which one of the following is another characteristic of animal X?

(1) It has gills.
(2) It has a beak.
(3) It has hair for its body covering.
(4) It breathes through its moist skin.

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3 Dylan placed a 20 kg box on Object X as shown below.



He then increased the weight of the box and measured the distance Object X bends. The experiment is repeated with boxes of different weights. He recorded his results in a table as shown below.

Weight of Box (kg)	Distance Object X bends (cm)
20	10
25	12
30	15
35	18

Which property of Object X is James trying to test?

(1) Elasticity
(2) Flexibility
(3) Strength
(4) Durability

4 The developmental stages of a frog are described as below.

A	The eggs are found in water.
B	Back limbs appear and the tail becomes shorter.
C	The tadpoles hatch from the eggs and swim to look for food.
D	Front and back limbs are developed fully and the tail disappears.

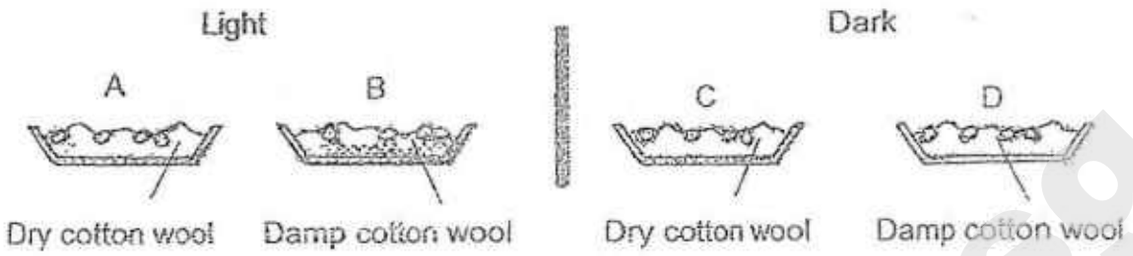
The developmental stages are not in order. Which of the following is the correct order?

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

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5 James set up an experiment as shown below.



He placed set-ups A and B in the light and set-ups C and D in the dark.

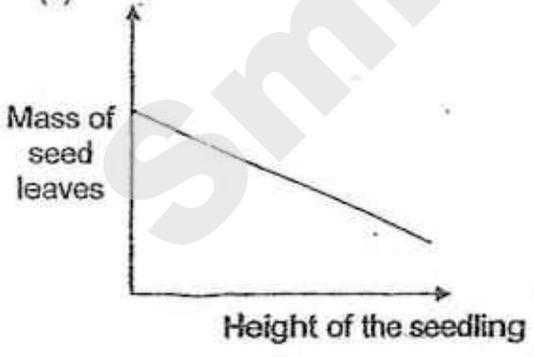
What was he trying to find out?

A To find out if seeds need light to germinate.
B To find out if seeds need water to germinate.
C To find out if seeds can germinate in cotton wool.
D To find out if seeds need water, light and cotton wool to germinate.

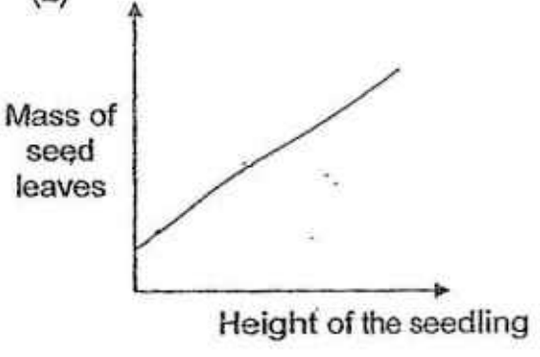
(1) C only
(2) D only
(3) A and B only
(4) A and D only

6 Which one of the following graphs correctly shows the relationship between the mass of the seed leaves and the height of the seedling?

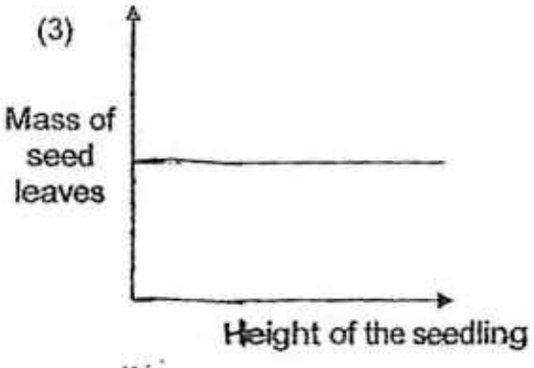
(1)



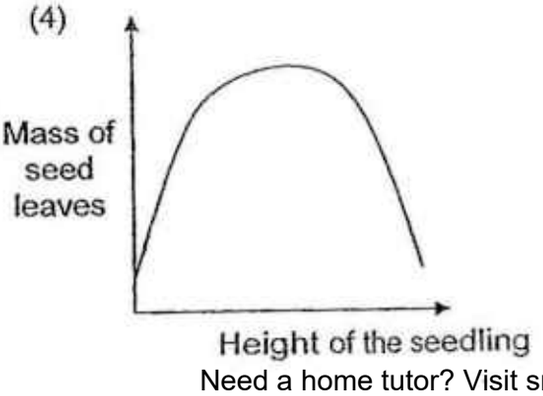
(2)



(3)



(4)



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7 Janet conducted an experiment by planting one string bean seedling each in 5 identical pots A, B, C, D and E. She planted each seedling in the same amount of identical garden soil under various conditions as shown in the following table. She recorded their growth in height after two weeks, as shown below.

	Pot A	Pot B	Pot C	Pot D	Pot E
Height of plant (cm)	10	20	30	15	45
Amount of fertilizer added (grams)	1	4	6	2	8
Amount of water given daily (ml)	55	55	55	55	55

Based on the information shown, what conclusion can she draw from the experiment?

(1) The plant needs water and fertilizer for healthy growth.
(2) The plant would not grow if no fertilizer was added to the soil.
(3) The plant grew faster when more fertilizer was added to the soil.
(4) Different amounts of fertilizer affects plant growth more than different amounts of water.

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8 The table below shows information about the life cycles of organisms, X, Y and Z.

	Organism X	Organism Y	Organism Z
Number of eggs	2000-3000	Usually 1	20 -30
Period of time care given to the young	None	Parent cares for 1½ years	Parent cares for 2 weeks
Predators which preys on the eggs or the young	Sea Birds	Foxes and eagles	Crocodiles

What can be deduced about organisms X, Y and Z from the table above?

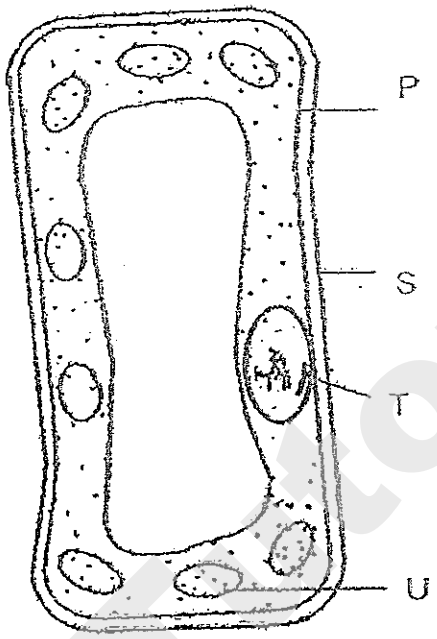
A The habitats of organisms X and Z are likely near the water.
B The life cycles of organisms Y and Z are likely to be 3-stage cycles.
C The more eggs the organisms produced, the shorter the parents care for their young.

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

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9 The diagram below shows a plant cell with some parts, labelled P, S, T and U.



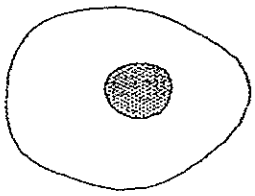
Which one of the following match the functions to the correct cell parts?

	Functions of cell parts			
	Surrounds and holds the cytoplasm inside.	Supports and gives the cell its shape	Controls the activities of the cells.	Traps light energy to make food.
(1)	S	P	T	U
(2)	P	S	T	U
(3)	U	S	P	T
(4)	P	T	S	U

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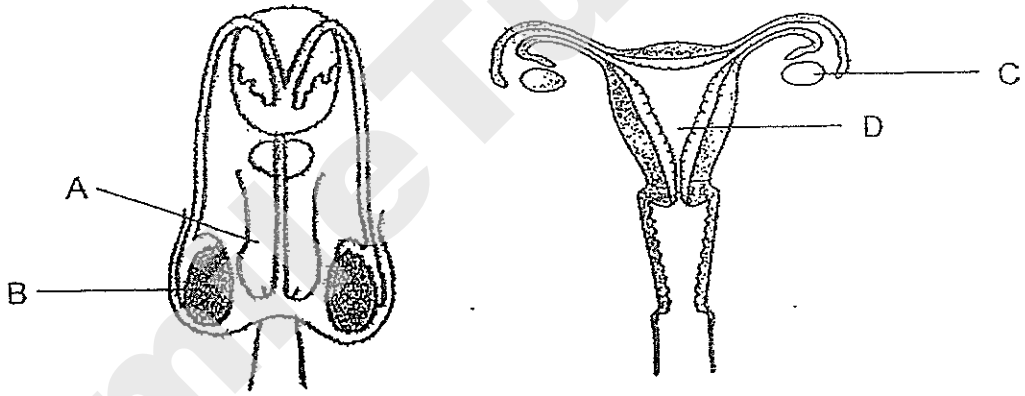
10 The diagram below shows a cell from an organism.



Which of the following is the cell likely to be found in?

(1) Fish scale
(2) Apple skin (Plant)
(3) Hydrilla leaf
(4) Mango seed

11 The diagrams below show the human reproductive systems.



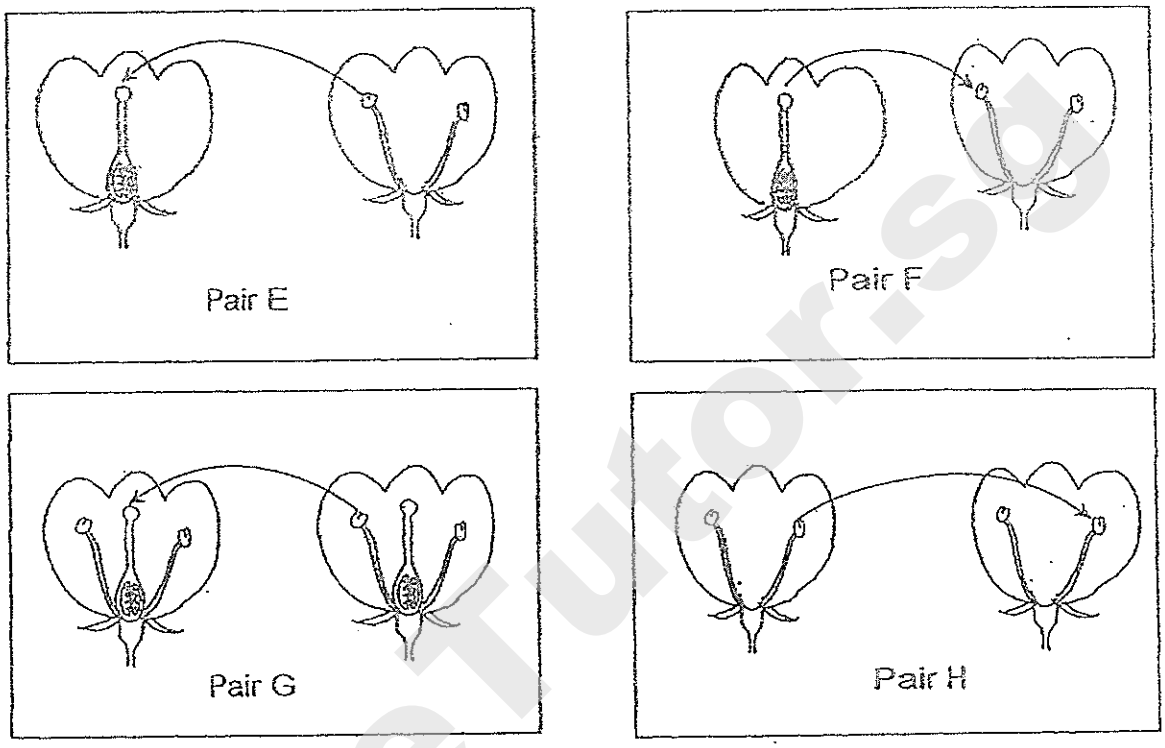
Which parts of the systems produce the reproductive cells?

(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 The diagrams below show the process of pollination.



Which pair(s) of flowers is/are most likely to develop into fruits?

(1) Pair E only
(2) Pairs E and G only
(3) Pairs E, G and H only
(4) Pairs E, F, G and H only

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13 Study the diagram below.



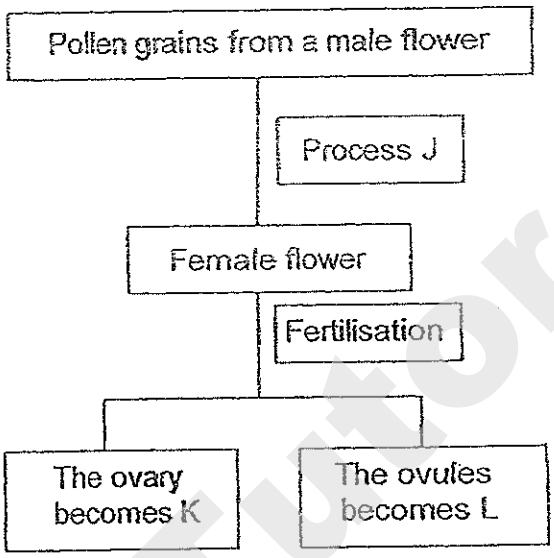
Which one of the following stages shows that the seed has germinated?

(1) stage 2
(2) stage 3
(3) stage 4
(4) stage 5

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14 The flow chart below shows the reproduction process in flowering plants.



Which one of the following correctly represents J, K and L?

	Process	Parts of a flower	
	J	K	L
(1)	Pollination	Fruit	Seed
(2)	Pollination	Seed	Fruit
(3)	Germination	Fruit	Seed
(4)	Seed Dispersal	Fruit	Seed

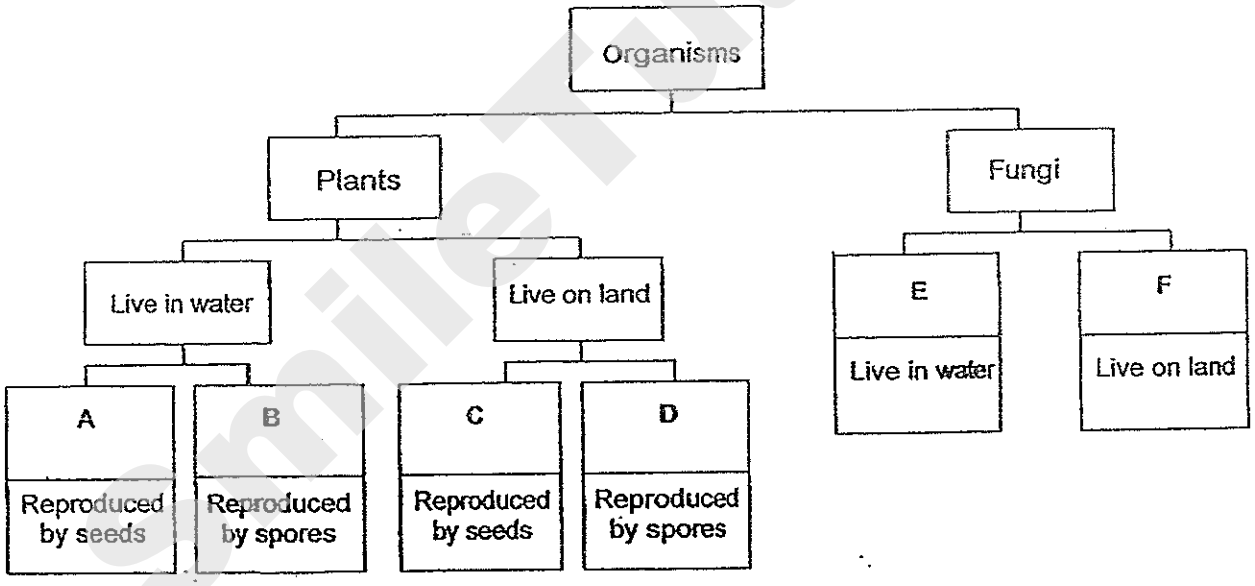
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15 The table below shows some information on four organisms, W, X, Y and Z, based on 3 characteristics. A tick (✓) shows that the organism has the characteristics while a cross (x) shows that the organism does not have the characteristics.

	Characteristics		
	Flowering Plant	Can make its own food	Grows on land
Organism W	✓	✓	✓
Organism X	x	✓	x
Organism Y	✓	✓	x
Organism Z	x	x	✓

The information above is used to classify the organisms according to groups A, B, C, D, E and F according to the diagram below.

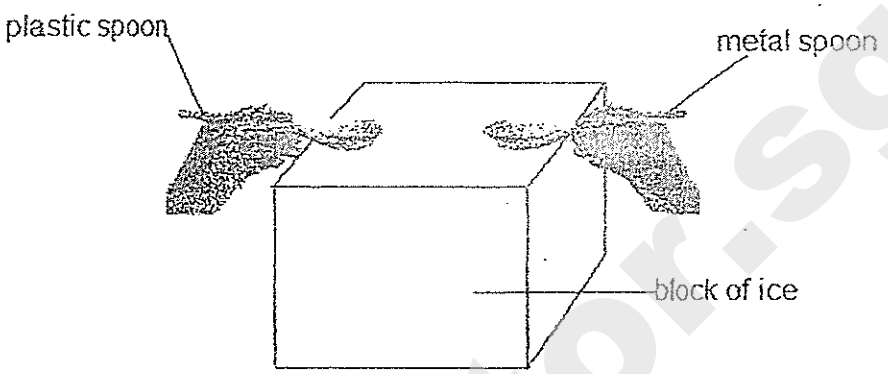


In which groups do organisms W, X, Y and Z belong to?

	Organism W	Organism X	Organism Y	Organism Z
(1)	A	D	B	E
(2)	C	B	A	F
(3)	C	A	B	E
(4)	B	E	A	D

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16 Sam placed a metal spoon and a plastic spoon on an ice block as shown below.

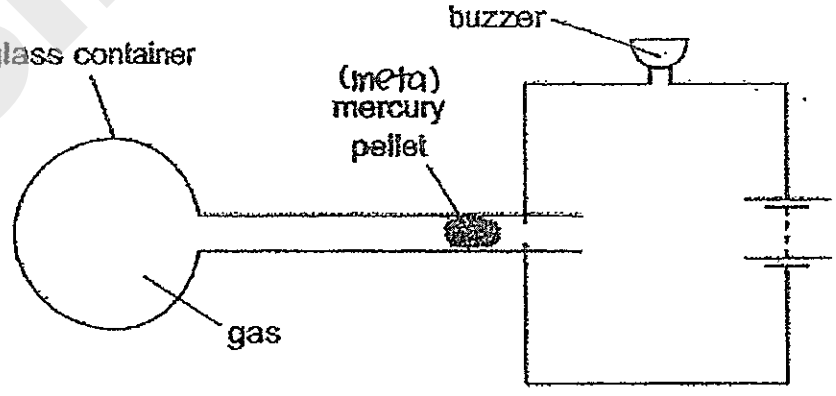


Which of the following observations would Sam most likely make after some time?

A. Water would be formed around the ice block.
B. Water droplets would be formed on the spoons.
C The plastic spoon would feel as cold as the metal spoon.
D. The plastic spoon would feel warmer than the metal spoon.

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

17 The diagram below shows a fire alarm.



It was observed that the mercury pellet moves and completes the circuit to sound the alarm when there was a fire.
Which of the following property of gas explains the above observation?

(1) Gas can be compressed.
(2) Gas has indefinite shape.
(3) Gas expands when heated.
(4) Gas contracts when cooled.

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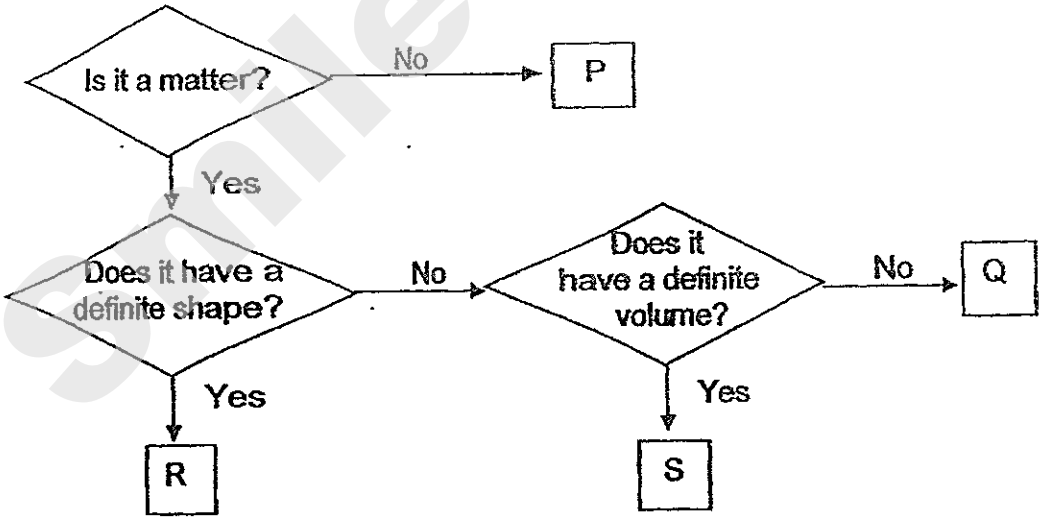
18 The table below shows the state of four substances P,Q,R and S, at different temperatures.

Substance	State of substance at		
	10°C	30°C	50°C
P	liquid	liquid	liquid
Q	solid	solid	liquid
R	solid	liquid	liquid
S	solid	solid	solid

Which of the following statements is correct?

(1) Substance P has the lowest melting point .
(2) The melting point of Substance Q is 50°C.
(3) The freezing point of Substance Q is 10°C.
(4) Substance S has the lowest freezing point.

19 Study the flow chart below.



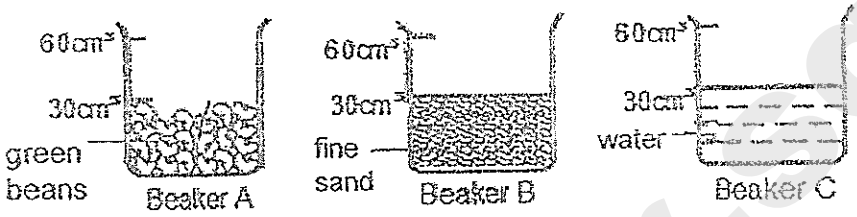
Which one of the following best represents water vapour in the flow chart?

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

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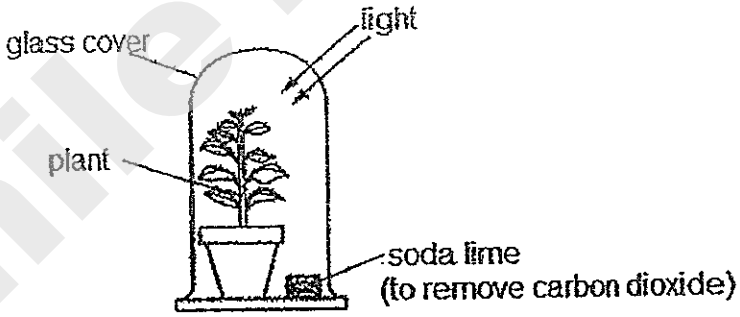
20 Beaker A contains 30 cm^3 of green beans. Beaker B contains 30 cm^3 of fine sand. Beaker C contains 30 cm^3 of water.



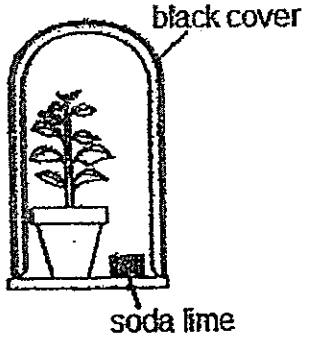
What would be the possible volume if the contents of Beaker A, B and C are poured into a measuring cylinder?

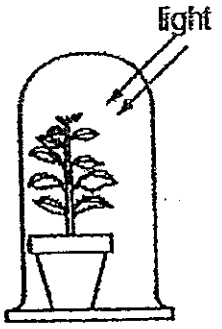
(1) 60 cm^3
(2) 70 cm^3
(3) 90 cm^3
(4) 120 cm^3

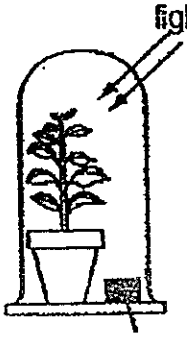
21 The diagram below shows an experiment to find out if carbon dioxide is needed for photosynthesis.



Which one of the following is a suitable control for the experiment?

(1)


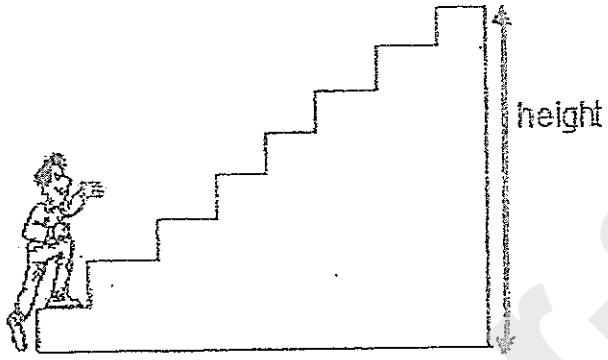
(2)


(3)


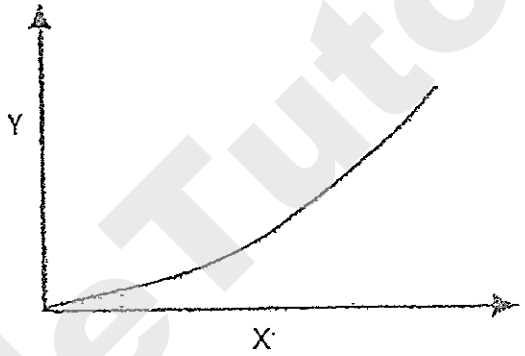
(4)


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22 Peter walks up a flight of stairs as shown in the diagram below.



The graph below shows the relationship between X and Y as he walks up the stairs.



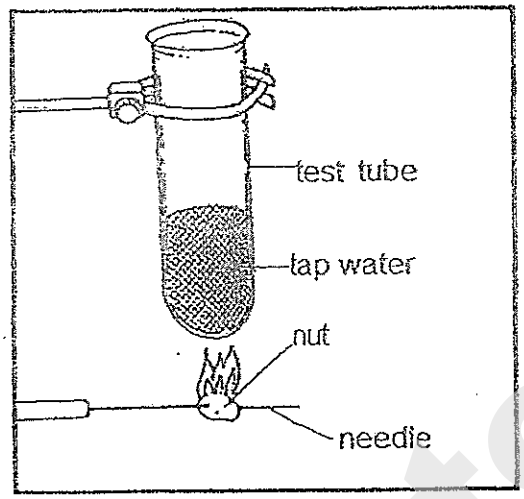
Which one of the following shows the correct labels for X and Y respectively?

	X	Y
(1)	height	time
(2)	potential energy	time
(3)	time	potential energy
(4)	height	potential energy

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Refer to the diagram below and answer questions 23 and 24.



The cashew nut was carefully pierced through the end of a mounted needle. The nut is ignited using a Bunsen burner and immediately held about 1 cm below a test tube half-filled with water. When the nut stops burning, the temperature of the water was measured. The experiment was then repeated with a peanut and then an almond nut.

The results were tabulated as shown below.

Type of food	Final temperature of water
peanut	35°C
almond nut	50°C
cashew nut	65°C

23 What could you infer from the results of the experiment?

A. The three types of nuts are sources of energy.
B The three types of nuts are renewable sources of energy.
C Cashew nut produced more energy than peanut and almond nut.

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

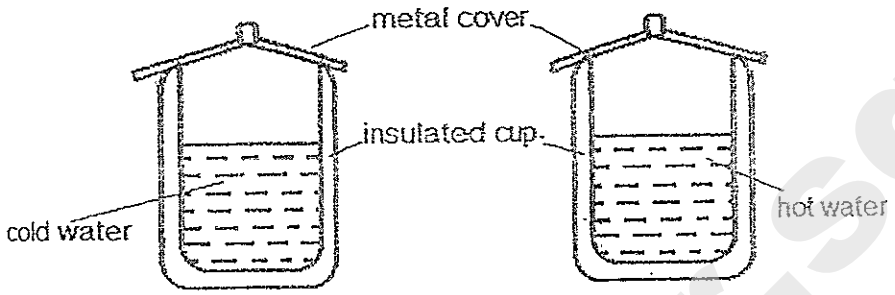
24 Which one of the following variables should be kept constant to ensure a fair experiment?

A. Size of the needle
B Mass of the nut
C Intensity of the flame
D. Amount of water in the test tube

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

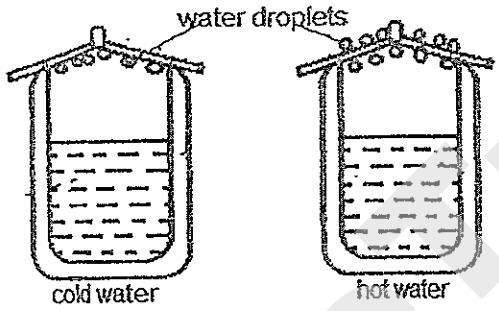
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25 A cup of hot boiling water and a cup of ice-cold water were covered and left on the table as shown in the diagram below.

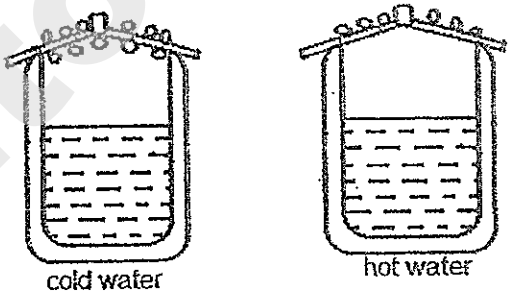


Which one of the following will be observed after 5 minutes?

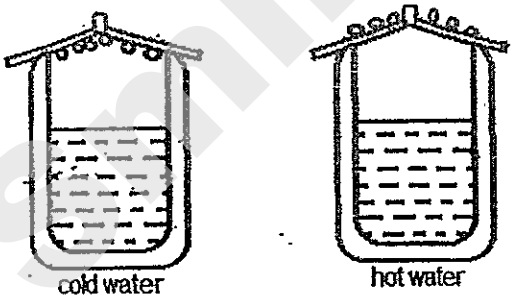
(1)



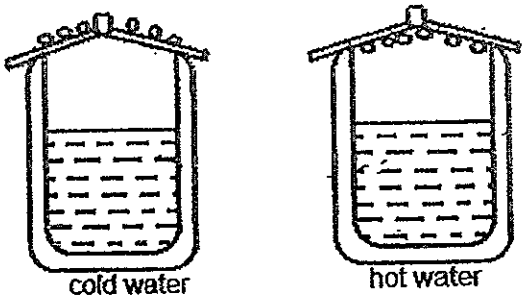
(2)



(3)

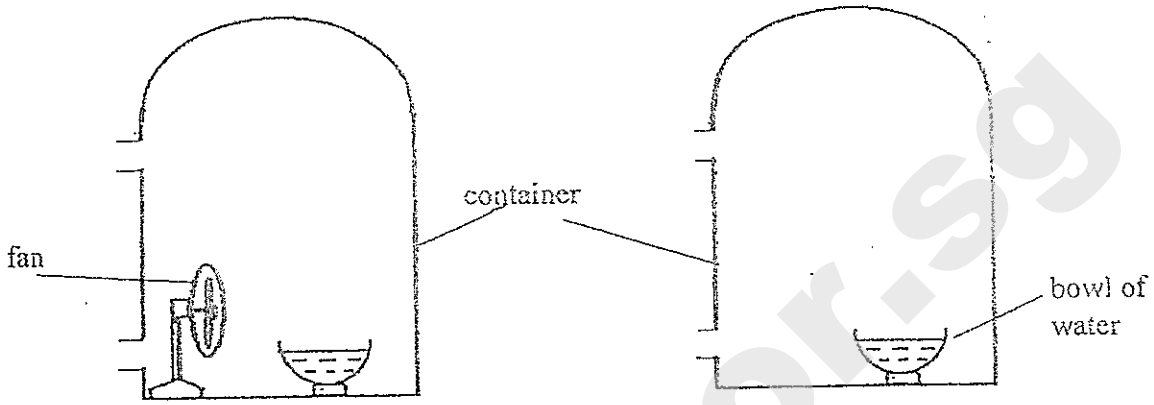


(4)



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26 Peter carried out an experiment using set-up A and set-up B as shown. After three hours, she compared the amount of water left in each bowl.



Set-up A Set-up B

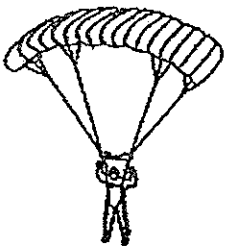
The amount of water left in the bowl in set-up B is _____.

(1) less because the water evaporates faster
(2) less because the water evaporates slower
(3) more because the water evaporates faster
(4) more because the water evaporates slower

27 Which one of the following energy changes takes place when a metal spoon is rubbed on the table?

(1) kinetic energy → sound energy
(2) potential energy → heat energy
(3) potential energy →heat energy + sound energy
(4) kinetic energy → heat energy + sound energy

28 A parachutist has opened his parachute and is falling to Earth at constant speed.

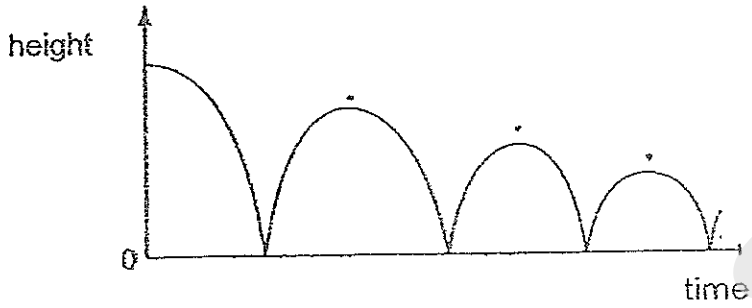


What is the energy conversion taking place as he falls?

(1) kinetic energy → potential energy
(2) kinetic energy → heat energy
(3) potential energy → kinetic energy
(4) potential energy → heat energy

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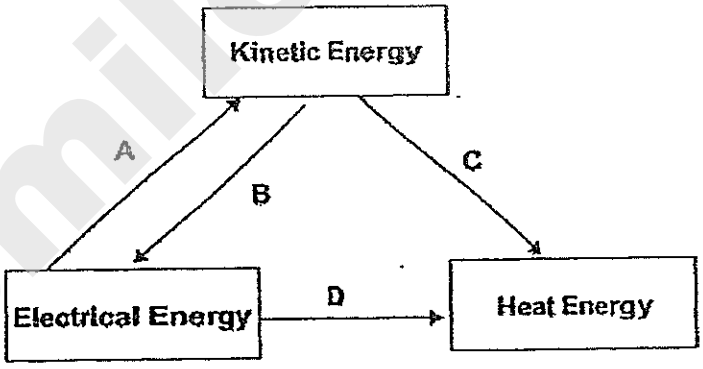
29 The graph shows how the height of a bouncing ball changes with time.



Which statement explains why the height of each peak decreases with time?

(1) All of the kinetic energy is converted to potential energy at each bounce.
(2) Some of the potential energy is converted to kinetic energy at each bounce
(3) Some of the kinetic energy is converted to heat and sound energy at each bounce.
(4) All of the potential energy is converted to heat and sound energy at each bounce.

30 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	D
(1)	Turning a wind turbine	Rubbing two hands together	Using an electric oven	Using an electric fan
(2)	Rubbing two hands together	Using an electric oven	Using an electric fan	Turning a wind turbine
(3)	Using an electric oven	Using an electric fan	Turning a wind turbine	Rubbing two hands together
(4)	Using an electric fan	Turning a wind turbine	Rubbing two hands together	Using an electric oven

End of Booklet A

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Rosyth School

First Semestral Examination for 2014

STANDARD SCIENCE

Primary 6

Total Marks: ____ / 100

Name: _____

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

Date: 15 May 2014 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 31 to 44, write your answers in the spaces given in this booklet.

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

*** This booklet consists of 12 pages.**

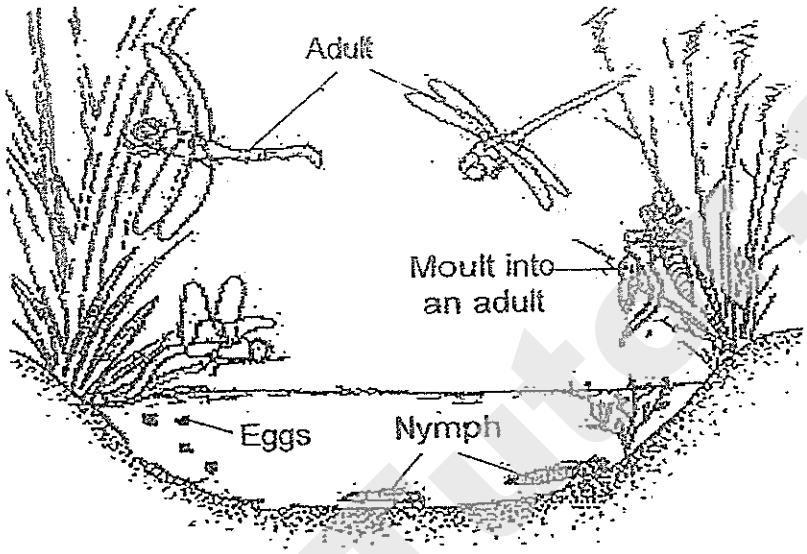
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For questions 31 to 44, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question.

(40 marks)

31 The diagram below shows the development of the dragonfly.



(a) Based on the diagram above, draw the life cycle of the dragonfly in the space provided below. Name the stages of the life cycles. [1]

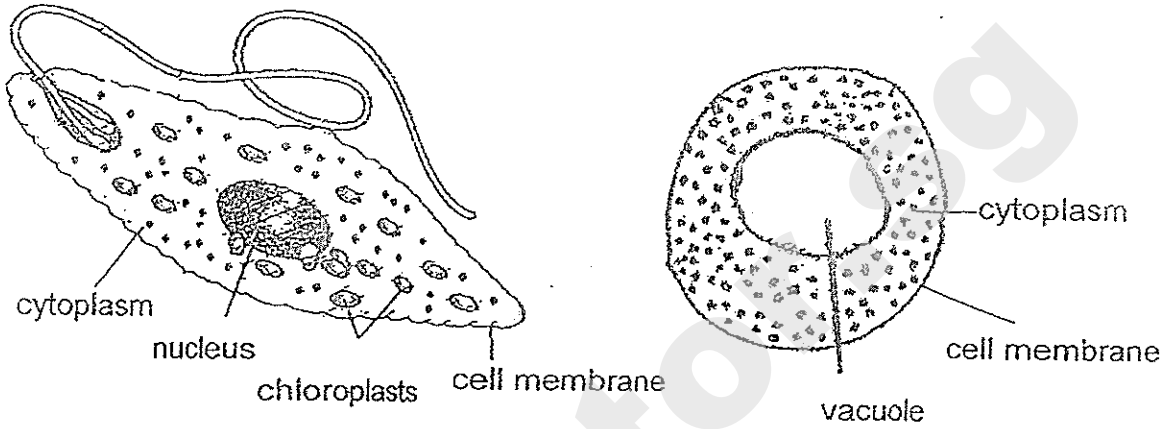
(b) What is the advantage of having part of the life cycle in land and water? [1]

_____

_____

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32 The diagram below shows two cells, Cells P and Q.



Cell P

Cell Q

(a) Based on your observations of the diagram above, how is Cell P different from a plant cell? [1]

_____

_____

(b) Is Cell Q a unicellular organism? Explain your answer. [2]

_____

_____

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33 Sam wanted to investigate if liquid X affects the rate of cell division in cheek cells. He prepared his experiment and recorded the results of two set-ups, A and B as shown below.

Set-up	Set-up A	Set-up B
Type of cells	Cheek cells	Cheek cells
Amount of Liquid X (ml)	50	?

(a) What is the amount of liquid X that he should put in set-up B? [1]

_____

(b) Support your choice in (a). [1]

_____

(c) Sam recorded the results of the experiment over 4 intervals in a table as shown below. [1]

Set-Up	Number of cheek cells			
	Interval 1	Interval 2	Interval 3	Interval 4
A	1	3	5	8
B	1	2	2	3

Based on the results above, what can he conclude from the experiment?

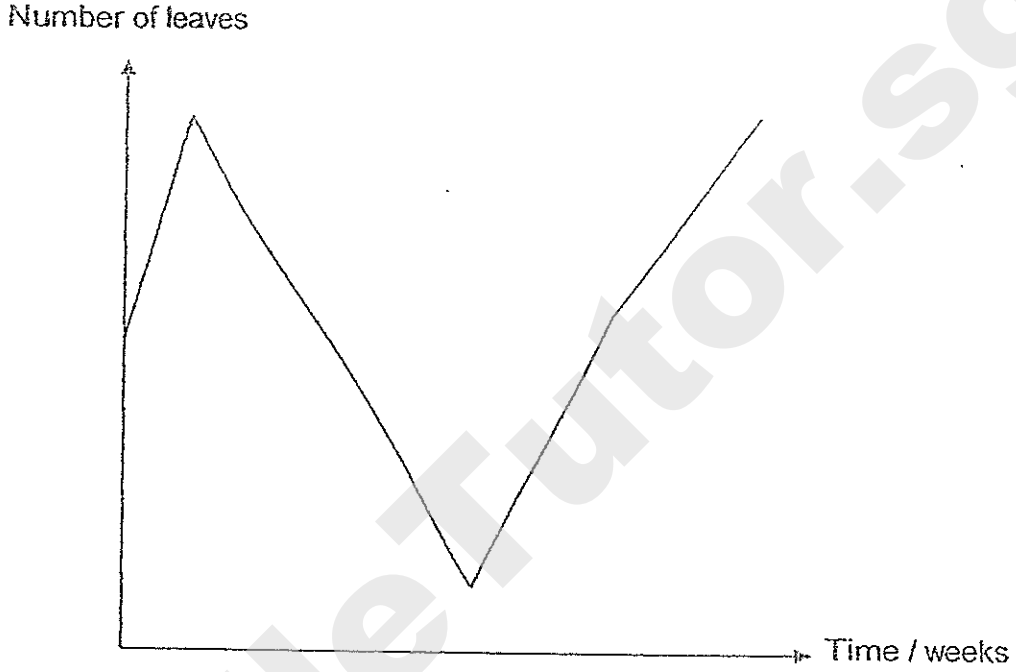
_____

_____

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34 The graph below shows the number of leaves of Plant Q over a period of time. Plant Q is in a garden where butterflies are found.



(a) Put an 'X' on the graph to show the butterfly in its larva stage. [1]

(b) There was a sudden decrease in the number of caterpillars. Describe how would this affect the flowering plant Q over a long period of time? [2]

_____

_____

_____

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35 Ali wanted to test if butterflies are attracted to sugar solution. He used 2 similar flowers of different colours and sprayed each of them with 5 ml of sugar solution as shown below. He then left his set-up in an open garden.



State 2 changes Ali had to make for his experiment. [2]

(i) _____

_____

(ii) _____

_____

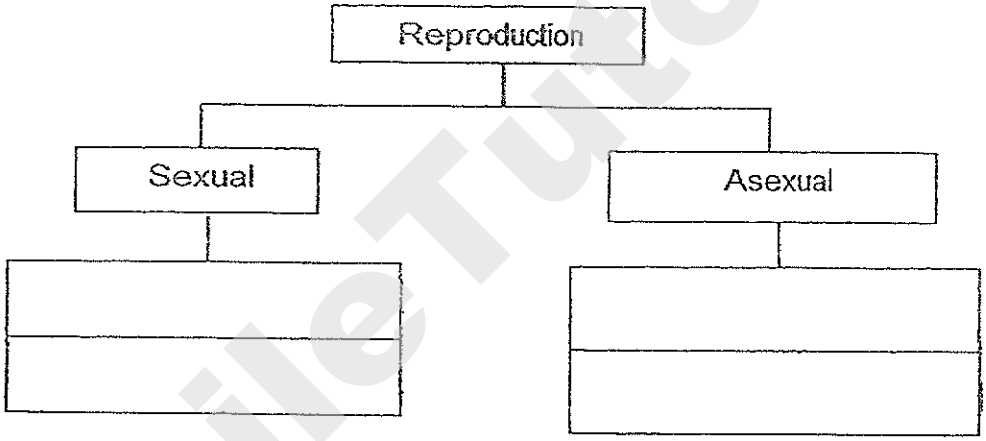
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36 Refer to the reproductive processes in the table below.

• Budding
• Binary Fission
• Pollination
• Fertilisation

(a) Classify the above processes in the classification chart as shown below. [2]



(b) Would the young of an amoeba look similar to its parent? Explain your choice. [1]

_____

_____

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37 Judy set up an experiment to find out if the amount of water would affect the growth of balsam plants. She planted balsam plants of the same height at the beginning of the experiment. She then drew up a table to record her results as shown below.

Pots	Amount of water daily (ml)	Height of the balsam plant (cm)
P	0	2
Q	30	5
R	40	8

(a) In the space below, draw how the control set up would look like. [1]

(b) What would Judy notice about the leaves of the balsam plant in Pot P after the experiment? [1]

_____

(c) It had not rained for two months in Singapore. How would this affect the plants and animals in Singapore? [2]

_____

_____

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38 Benny and his father ordered a glass of 'teh tarik' or tea with milk. He noticed that the drink was made by pouring the mixture of tea and milk up and down between two metal containers repeatedly. His father explained that this action of pouring mixes the tea and milk.



(a) Would the tea cool faster when he pours the tea up and down as shown above? Explain why. [2]

_____

_____

(b) How does the use of metal containers instead of plastic containers affect the temperature of the tea? Explain your answer. [1]

_____

_____

39 Write down the energy required and the sources of energy for each of the following objects. [2]

(a)

object	Type of energy required for the desktop computer to work	Source of energy
 Desktop computer		

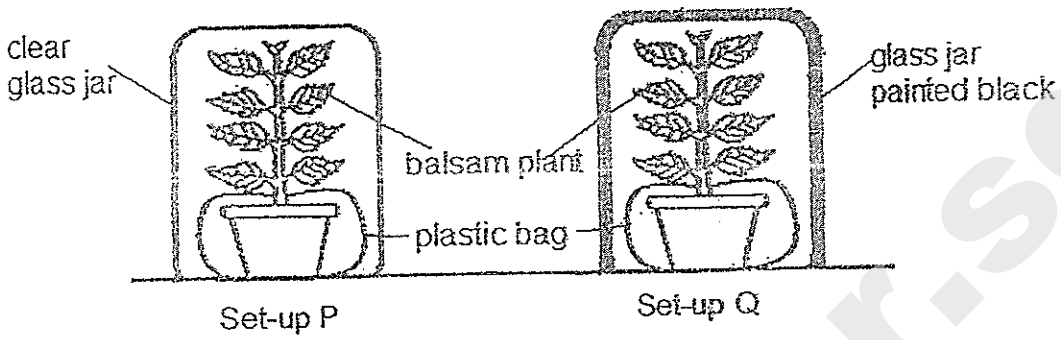
(b)

object	Type of energy required for the boy to swim	Source of energy
 Boy swimming in the pool		

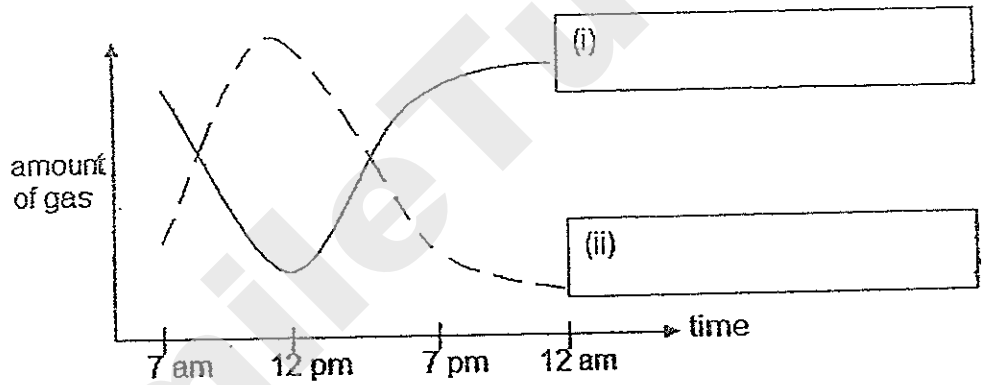
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40 Edwin prepared two set-ups, P and Q as shown in the diagram below. He gave the balsam plants the same amount of water. Both set-ups were placed in the field under the sun from 7am to midnight.



(a) The graph below shows the change in the amount of gases in set-up P throughout the experiment. Label the gases in the boxes provided. [2]

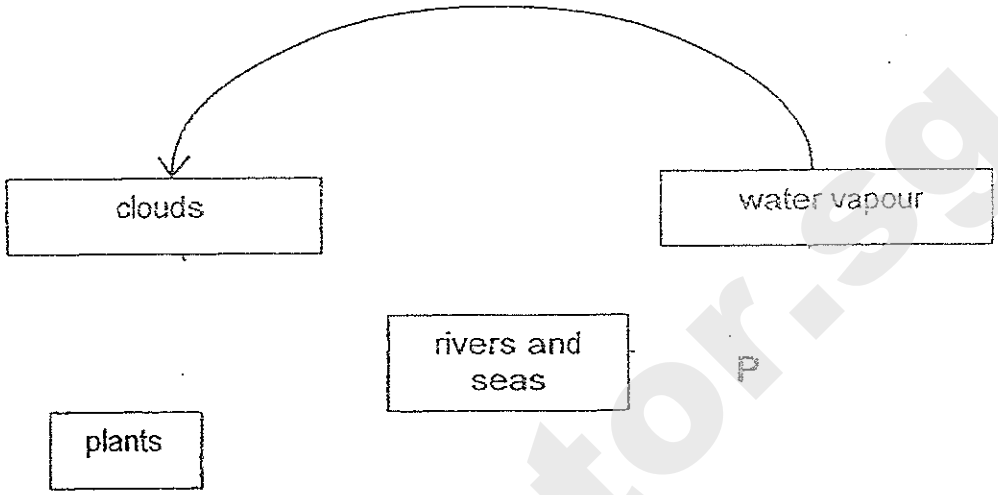


(b) How would the amount of oxygen in set-up Q change from the start to the end of the experiment? Explain your answer. [2]

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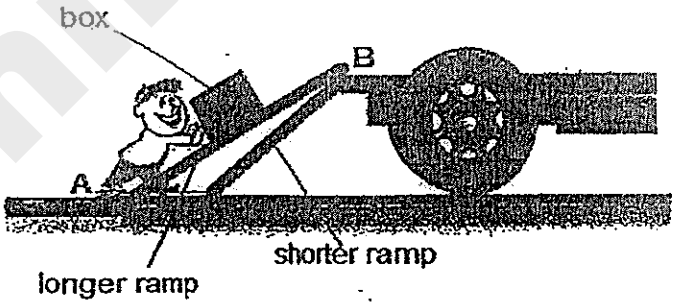
41 The diagram below shows part of the water cycle.



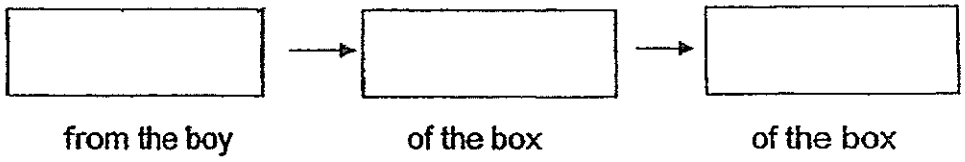
(a) In the diagram, draw two arrows to show how plants can be part of the water cycle. [1]

(b) Name the process at P. _____ [1]

42 John pushed a box up a ramp from the ground to the back of a lorry, as shown in the diagram below.



(a) Describe the energy conversion that occurred when the box was moved from Point A to B of the longer ramp. [1]



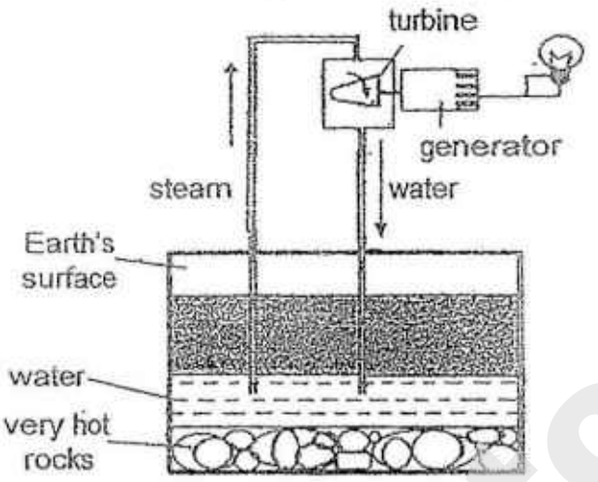
(b) Later, a shorter ramp was used to move the same box as shown in the above diagram. Would the amount of potential energy of the box at Point B be the same as when the longer ramp was used? Explain why. [1]

_____

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_____

43 The diagram below shows a geothermal power station which uses heat energy below the earth's surface to generate electricity.



Geothermal power plant

(a) Study the diagram and explain how the geothermal power station is able to generate electricity. [2]

(b) State two other natural sources of energy. [1]

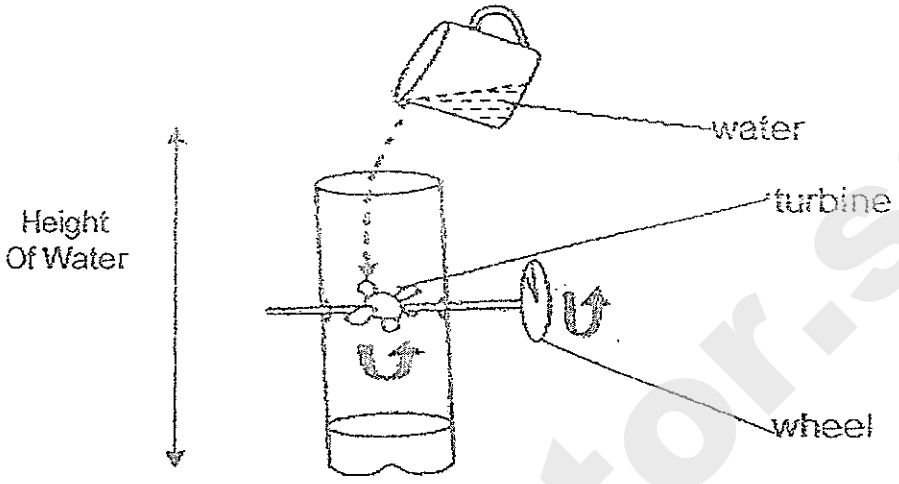
(i) _____

(ii) _____

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44 Aminah prepared the following set-up to make a water wheel.



(a) What will Aminah observe when the water is poured? [1]

Using the same set-up, Aminah poured the same amount of water from different heights each time and recorded her observations below.

Height of water	Number of turns of wheel
50 cm	6
80 cm	14
100 cm	21

(b) State the relationship between the variables based on the results above? [1]

(c) Explain your answer in (b) in terms of energy transfer. [2]

End of Paper

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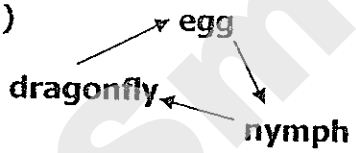
ANSWER SHEET

EXAM PAPER 2014
SCHOOL : ROSYTH
PRIMARY : P6
SUBJECT : SCIENCE
TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
2	3	2	2	3	1	3	4	2	1	3	2	1	1	2	4	3

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	2	2	2	4	3	2	4	4	4	3	3	4

31)a)



b)The adult and young do not compete for food.
Or)The species has a better chance of survival.

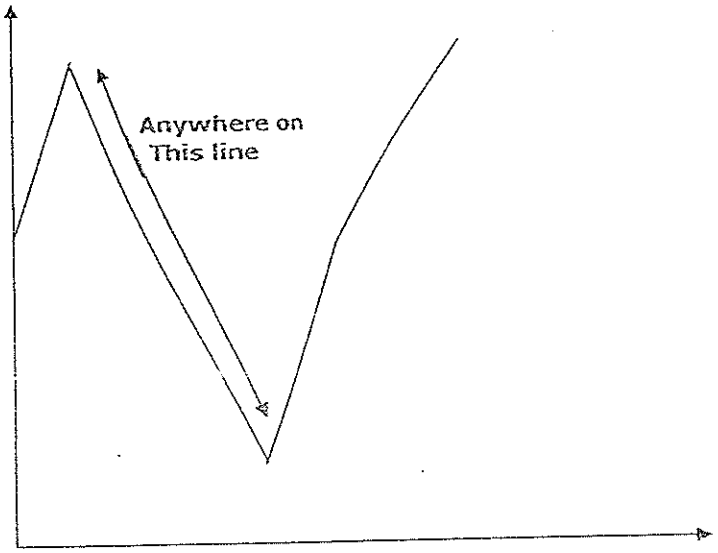
32)a)It does not has a wall.
b)No. It does not have a nucleus to allow it to reproduce.

33)a)0 ml.
b)It is to prove/ensure that Liquid X is the only variable affecting the rate of cell division in the cheek cell.
c)Liquid X causes the rate of cell division to be higher as the number of cheek cells increased faster

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34)a)



b)Number of butterflies decreases and pollination occurs less. Therefore fertilization occurs less and number of plant Q decreases.

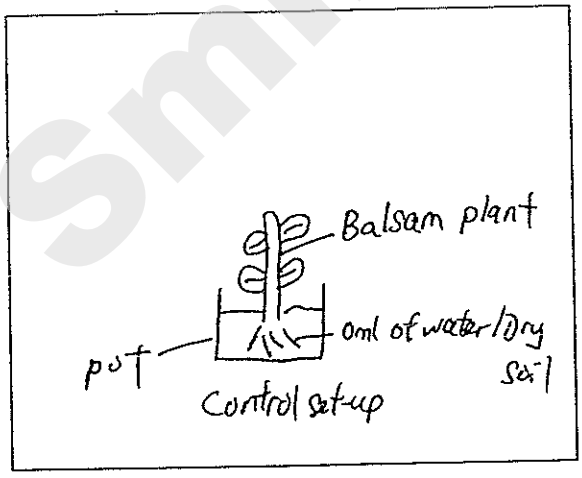
35)i)Change colour of flower to the same colour.
ii)Spray sugar solution on 1 flower and no sugar solution on the other flower.

36)a)

Sexual	Asexual
Pollination	Budding
Fertilization	Binary fission

b)Yes. It has the same genes/DNA as its parent.

37)a)



b)The leaves turn yellow.
c)Without water, plants cannot make food. Animal will not get enough food and oxygen. Plant and animals cannot have enough water to survive.

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38)a)Yes. Exposed surface area is greater , so tea loses heat to the surrounding air faster.

b)Metal is a better conductor of heat, so temperature of tea reduces faster.

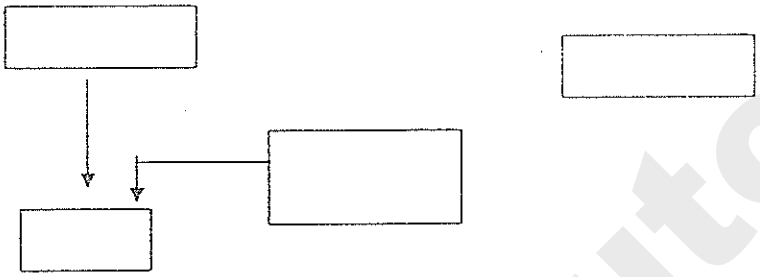
39)a)electrical energy fossil fuels

b)Chemical potential energy Food

40)a)i)Carbon dioxide ii)oxygen

b)The amount of oxygen decreases. Without sunlight, the plant cannot photosynthesis and produce oxygen.

41)a)



b)evaporation

42)a)Chemical potential energy→Kinetic energy→Gravitational potential energy

b)Yes. The box is still moved to the same height above the ground.

43)a)Water is heated up by hot rocks, and turns into steam. Steam rises passes through turbine and turns it. Kinetic energy from turbine is converted into electrical energy in the generator.

b)i)Coal ii)Natural gas

44)a)The water turns the turbine, which turns the wheel.

b)As the height of water increases, the number of turns of wheel increases.

c)Greater potential energy of water is converted to greater kinetic energy of water, which is converted to greater kinetic energy of the wheel.

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PRIMARY 6 MID-YEAR EXAMINATION 2014

Name : _____ ( ) Date: 19 MAY 2014

Class : Primary 6 ( ) Time: 8.00a.m. to 9.45 a.m.

Parent's Signature : _____ Duration: 1h 45min

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.

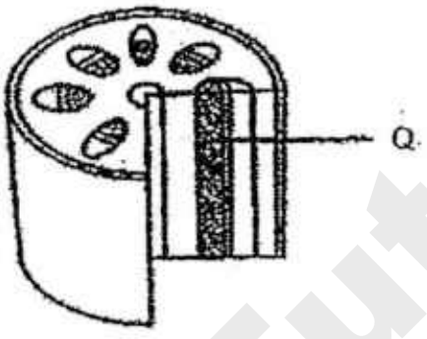
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Booklet A (30 x 2 marks)

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 (OAS) provided.

1. The diagram shows a section through a stem.



Which is the main transport function of tissue Q?

	Substance transported	Carried from	Carried to
(1)	sugar	roots	leaves
(2)	sugar	leaves	roots
(3)	water	roots	leaves
(4)	water	leaves	roots

2. Which of the following statements about dispersal is correct?

(1) Dispersal only occurs in plants with seeds.

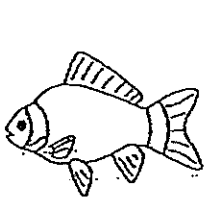
(2) All dispersed seeds will grow into new plants.

(3) Seeds that are dispersed by animals can be edible or inedible.

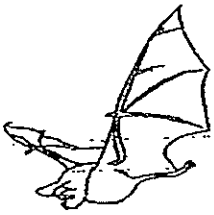
(4) Dispersal has occurred when seeds are transferred from the anthers to the stigmas.

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3. Jane had to classify the four animals shown.



fish



bat

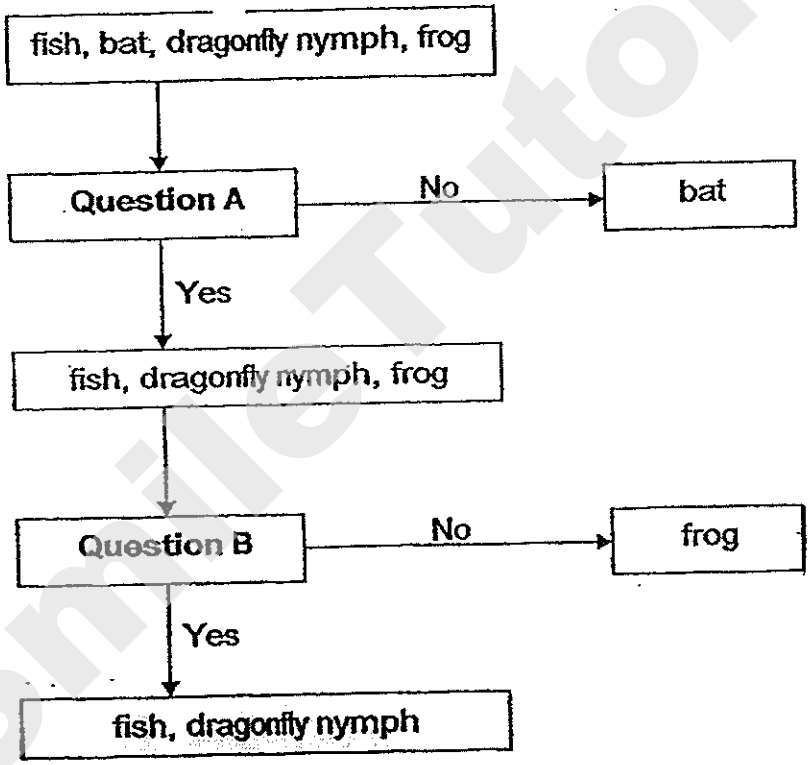


dragonfly nymph



frog

She classified them with the help of the chart below.

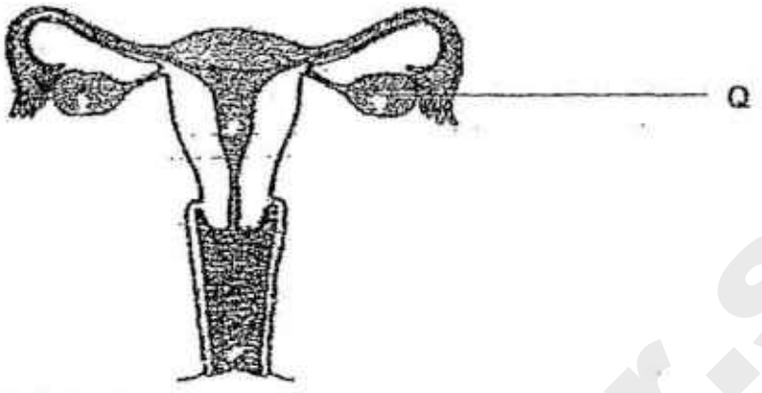


What were the two questions, A and B?

	Question A	Question B
(1)	Do they lay eggs?	Do they take care of their young?
(2)	Do they breathe underwater?	Do they have gills?
(3)	Do they have a tail?	Do their young spend part of their life cycle in water?
(4)	Do they have a 3-stage life cycle?	Do their young feed on insects?/

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4. Study the diagram of the female reproductive system of a human below.



Which of the following occurs at Q?

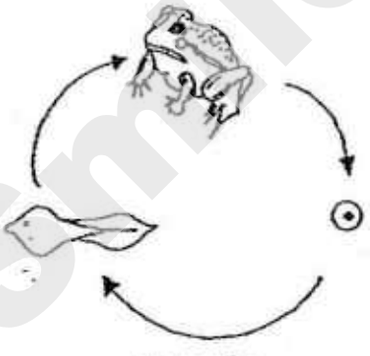
(1) Eggs are released.

(2) The sperm fuses with the egg.

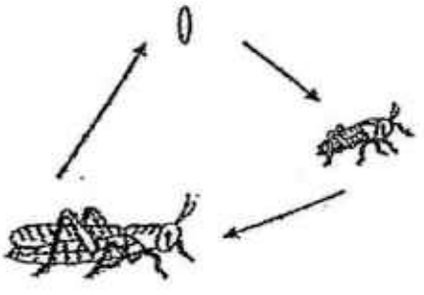
(3) The fertilised egg develops into a foetus.

(4) The foetus gets its digested food and oxygen from its mother.

5. Study the life cycles of Animal X and Animal Y below.



Animal X



Animal Y

Which of the statements is true of the life cycles shown above?

(1) Only the young of Animal X resembles the adult.

(2) Animal X lays eggs while Animal Y gives birth to young alive.

(3) Both Animal X and Animal Y have a larval stage in their life cycles.

(4) Both Animal X and Animal Y have the same number of stages in their life cycle.

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6. Study the food chain as shown below carefully.

Grass → Grasshopper → Frog → Snake

Which of the following is definitely true about the food chain?

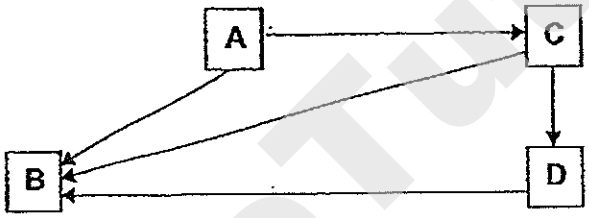
(1) The grasshopper is both a prey and predator.

(2) The snake gets its energy directly from the sun.

(3) The frog feeds on the grasshopper and the grass.

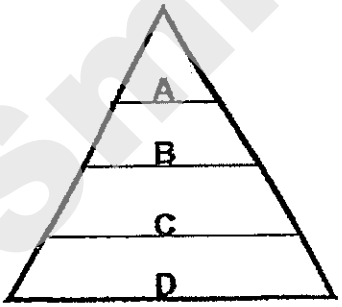
(4) The grasshopper is an indirect source of food for the snake.

Study the food web below carefully. Organisms A, B, C and D belong to the same community. Use it to answer questions 7 and 8.

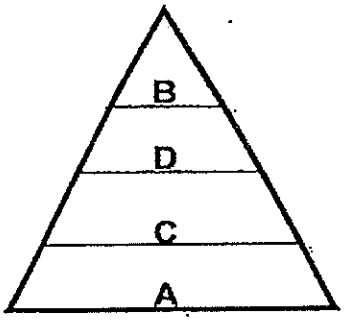


7. Which of the following food pyramids correctly shows the balanced food relationship, in terms of energy transfer, among the organisms above?

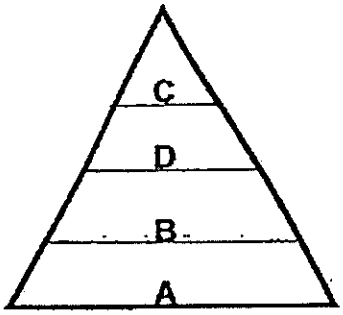
(1)



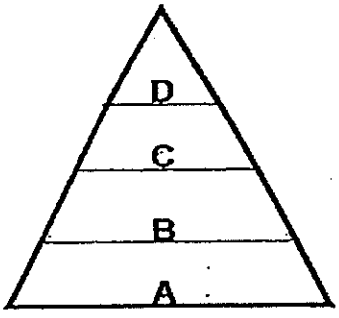
(2)



(3)



(4)



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8. A new organism is introduced into the habitat. It also feeds on Organism C and has no predators. Which of the following would most likely occur?

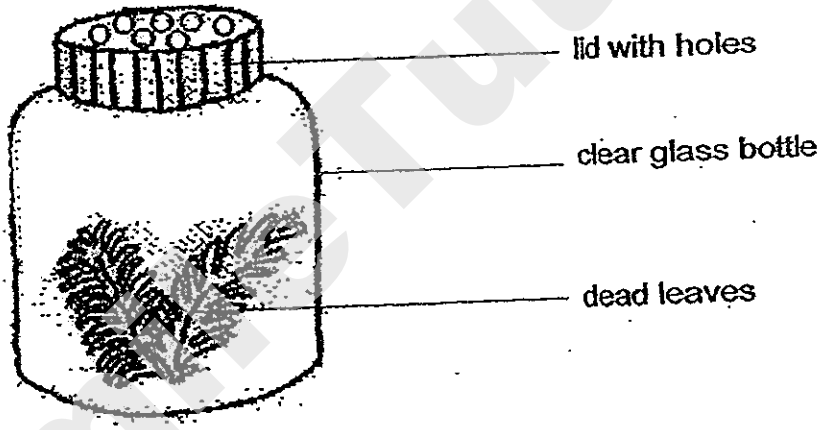
(1) The population size of Organism B will increase.

(2) The population size of Organism D will decrease.

(3) The population size of Organism A will not be affected.

(4) The population size of Organsim C will increase, then decrease.

9. Shane carried out an experiment to study the decomposition of dead leaves. He placed some dead leaves in a container as shown below and placed it in a cupboard. After 2 weeks, he noticed that no decomposition had taken place.



What change should he make to the set up so that it will work?

(1) Add some water.

(2) Add more dead leaves.

(3) Remove the lid of the container.

(4) Place the set-up in an air-conditioned room.

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10. Jessica counted the number of different organisms in a tree and recorded the data in the table below.

Organism	Number of organisms
Ant	25
Aphid	15
Mould	5
Spider	2
Butterfly	3
Caterpillar of butterfly	8

Based on the table above, which of the following is correct?

(1) There are 6 communities.

(2) There is one community with 5 populations.

(3) There are a total of 53 organisms living on the tree.

(4) There are six populations with a total of 58 organisms.

11. Which of the following is a behavioural adapation of the camels to survive in the desert?

(1) Store fat reserves in the humps.

(2) Long eyelashes to block out sand.

(3) Drink up to 200 litres of water in one day.

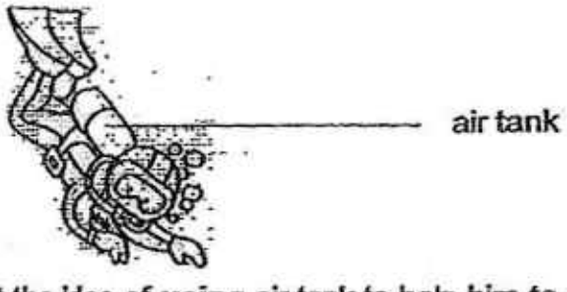
(4) Large padded feet to prevent sinking when walking on soft, deep sand.

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12. The table below shows the characteristics of the environment found in 4 different habitats. In which of the habitats would centipedes, ants and earthworms, most likely be found?

	Characteristics of the environment		
	Temperature	Amount of water	Amount of light
(1)	Moderate	Little	Very little most of the time
(2)	Low most of the time	A lot	Only present in small amounts during the summer months
(3)	Higher in the day than at night	A lot	More on the surface and less below the surface
(4)	Very high in the day, very low at night	Very little	Abundant in the day

13. Some inventions of Man imitate the adaptations of animals. Scuba divers control their position in the water by breathing in air from the air tank and breathing out. They breathe in to go higher in the water and breathe out to go lower in the water. The diagram below shows a man in scuba diving gear and air tank under water.



Which animal did Man get the idea of using air tank to help him to go higher or sink lower in the water?

(1) Duck

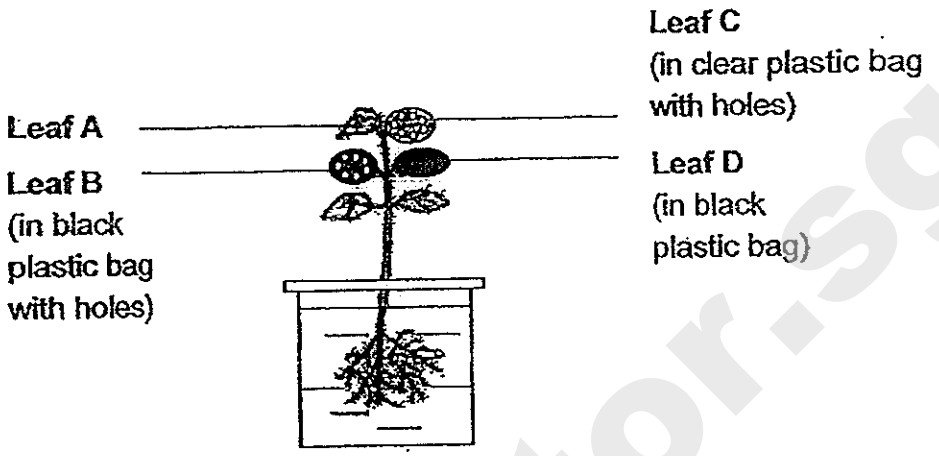
(2) Goldfish

(3) Playtpus

(4) Water scorpion

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14. Joyce set up an experiment. She wrapped 3 similar leaves, Leaf B, Leaf C and Leaf D, in different types of bags as shown. The bags were of the same size and thickness. She left the plant in the open for several hours.



Which of the following shows the correct order of the amount of starch found in each leaf after several hours?

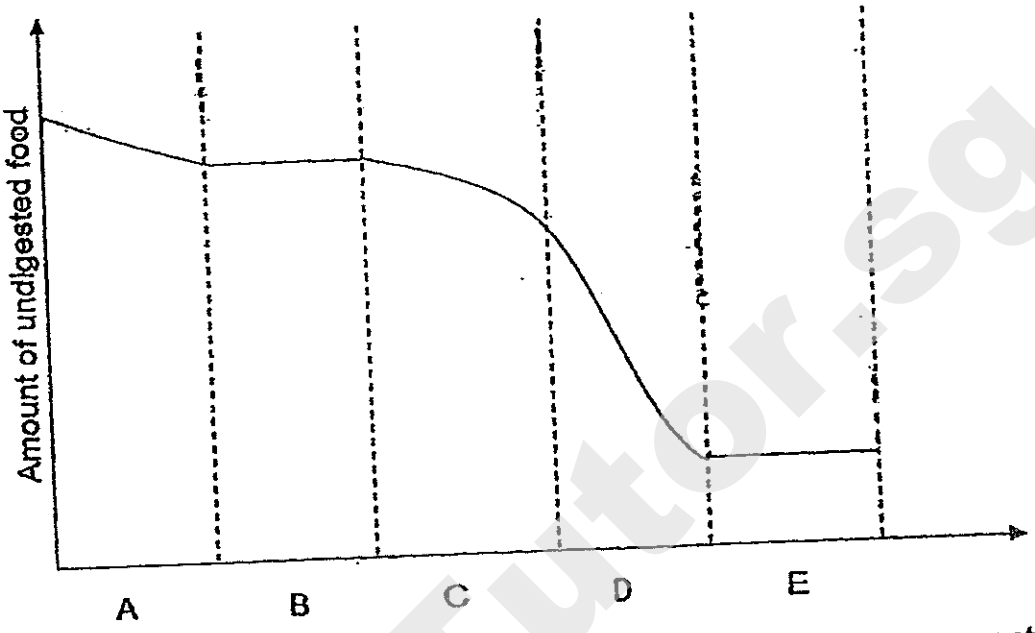
	Greatest amount of starch → Least amount of starch			
(1)	A	C	B	D
(2)	C	B	A	D
(3)	C	A	B	D
(4)	D	C	B	A

15. Albert took a sample of the air breathed out during his exercise. The table below shows the percentage composition of four samples of air. Which is the sample which Albert had taken to test the percentage composition?

	Sample	Percentage Composition			
		Carbon dioxide	Nitrogen	Oxygen	Water Vapour
	Normal air	Less than 1	78	21	Less than 1
(1)	1	0	83	17	0
(2)	2	5	80	15	0
(3)	3	4	78	15	3
(4)	4	0	78	21	1

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16. Sam had a sandwich for lunch. The graph below shows how the amount of undigested food changes in his digestive system after lunch. A, B, C, D and E are parts of his digestive system.



Based on the graph above, at which part of the digestive system was most food digested?

(1) A

(2) C

(3) D

(4) E

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17. Shaun wanted to carry out an investigation. At the beginning, he took his pulse rate and breathing rate. Then he exercised vigorously for five minutes. Finally, he recorded his pulse rate and breathing rate for the subsequent five minutes at a one-minute interval in the table below.

Minute intervals		Pulse rate / beats per minute	Breathing rate / breaths per minute
Before exercise		80	15
After exercise	1	155	42
	2	145	36
	3	130	30
	4	110	20
	5	80	15

What do you think is ~~Albert's~~ Shaun's aim for this investigation?

A : To find out how exercise affects his pulse and breathing rates.
B : To compare his pulse rate with his breathing rate after an exercise.
C : To show that his pulse and breathing rates begin and end with the same values.
D : To show that his pulse rate increases faster than his breathing rate after his exercise.

(1) A only

(2) A and C only

(3) B and C only

(4) B, C and D only

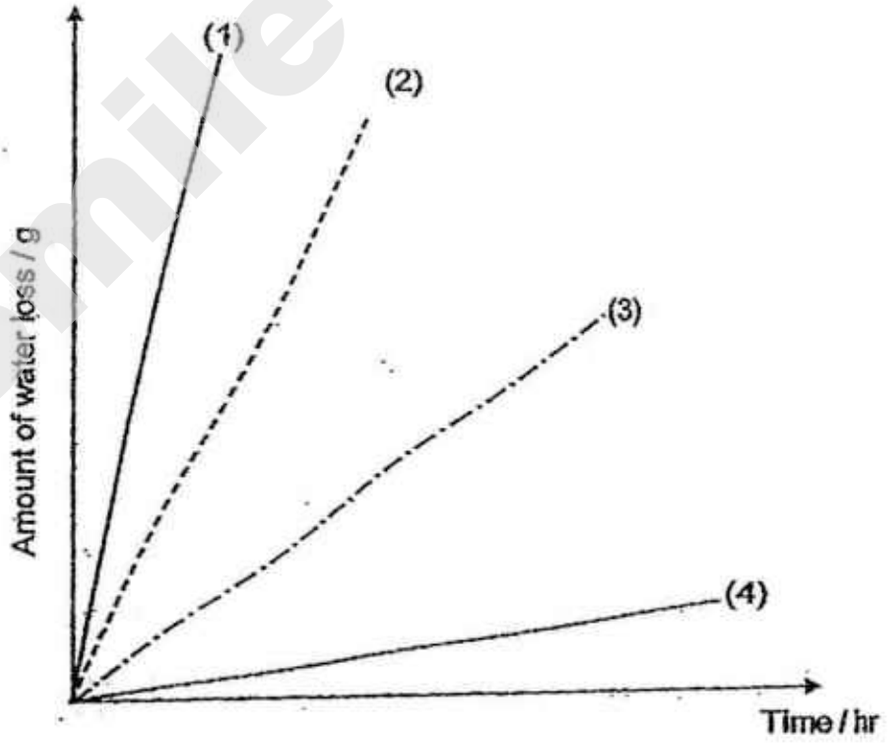
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18. Michelle conducted an experiment on the loss of water through leaves. She plucked 4 similar leaves, A, B, C and D, and recorded their initial mass. She then coated 3 of the leaves with oil (as specified in the table below) and allowed all the 4 leaves to hang in the open for a day. Finally, she recorded the final mass of the leaves.

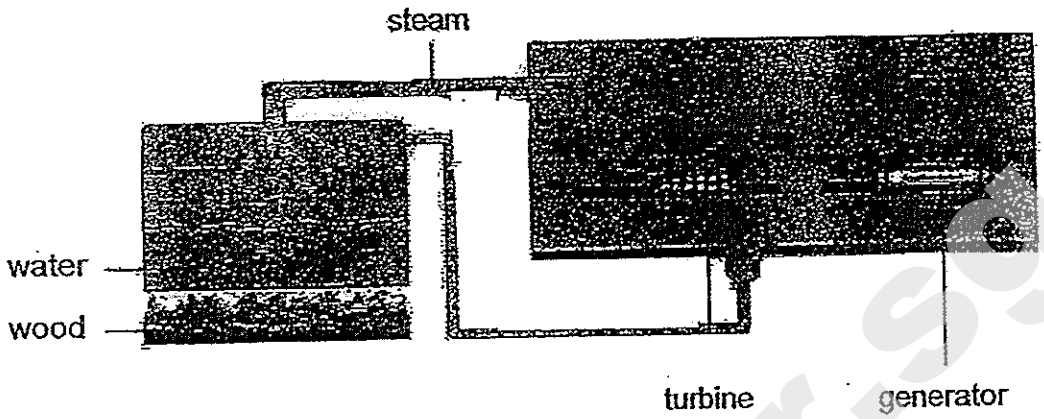
Leaf	Upper surface coated with oil	Lower surface coated with oil
A	No	Yes
B	Yes	Yes
C	Yes	No
D	No	No

The graph below shows the amount of water loss by the four leaves A, B, C and D. Which one of the line graphs best represents Leaf B?



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19. The diagram below shows how electricity is produced.



What is the source of energy for the set-up above?

(1) Wood

(2) Water

(3) Steam

(4) Electricity

20. The table below shows the melting and boiling points of Substances X, Y and Z.

Substances	Melting Point (°C)	Boiling Point (°C)
X	55	92
Y	40	80
Z	32	60

At which one of the following temperatures are the three substances X, Y and Z in the same state?

(1) 38°C

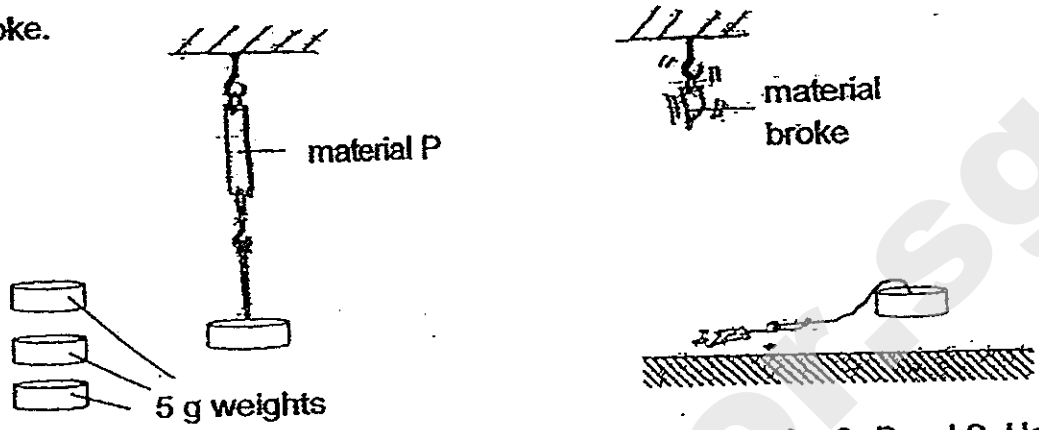
(2) 48°C

(3) 58°C

(4) 78°C

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21. Sean set up an experiment using four materials of similar length and thickness (P, Q, R and S), as shown in the diagram below. He hung material P from a hook. Then he hung 5-gram weights on it, one at a time, until it broke.



He repeated the steps for each of the other three materials, Q, R and S. He recorded the mass of weight that could be hung on the material before it broke for each material in a table as shown below.

Material	Mass of weight that could be hung on each material before it broke(g)
P	60
Q	15
R	30
S	90

Based on the results of the above experiment, which of the following statements about the materials is/are true?

A P is lighter than S.

B R is weaker than P

C Q is the softest material.

D S is the strongest material.

(1) A only

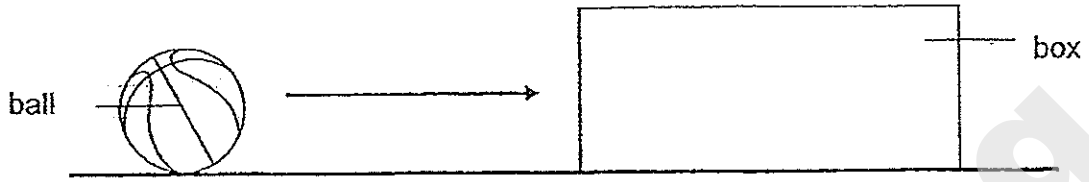
(2) B and D only

(3) C and D only

(4) B, C and D only

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22. June wanted to find out how the speed of a ball affects the distance moved by an empty box. She set up the experiment as shown below.



The results of the experiment are shown in the table below.

Speed of ball (cm/s)	Distance moved by the box (cm)
10	5
20	9
30	15
40	21

Which of the following statements is correct?

(1) The slower the speed of the ball, the further the distance moved by the box.

(2) The gravitational potential energy of the ball increases as its speed increases.

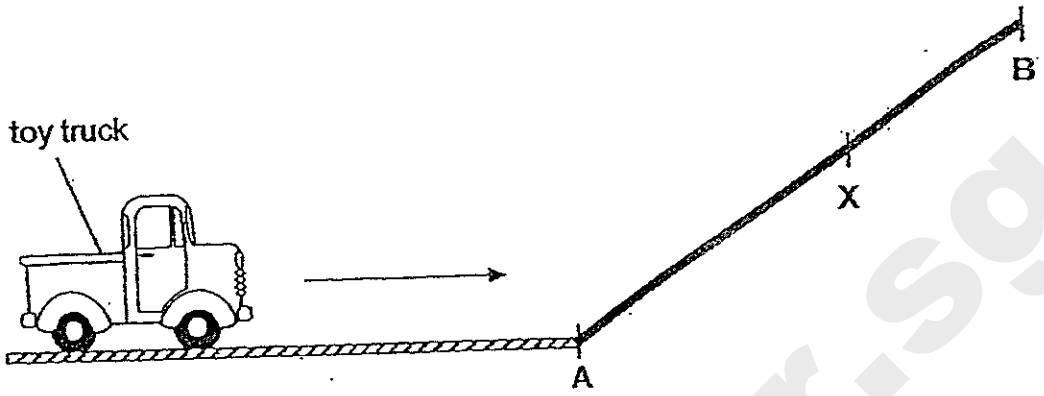
(3) The kinetic energy of the box increases as the speed of the ball increases.

(4) The kinetic energy of the ball is converted into chemical potential energy in the box for it to move.

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23. A toy truck was pushed towards a plank, AB, as shown in the diagram below. It moved up the plank, stopped at X, and then rolled down the plank.



Which of the following statements about the movement of the toy truck is true?

(1) The toy truck stopped at X because it had lost all its kinetic energy.

(2) The toy truck rolled down from X because it still had kinetic energy from the start of the experiment.

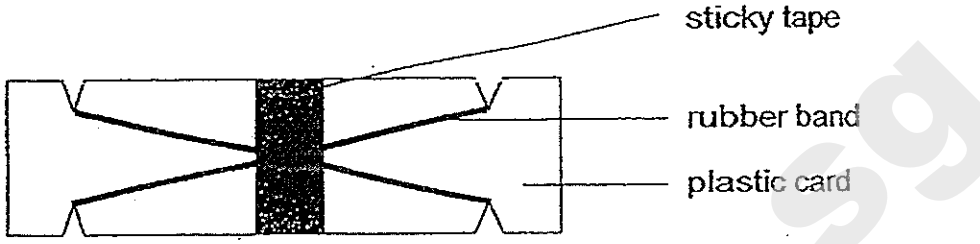
(3) The toy truck rolled down from X because its gravitational potential energy had been converted into kinetic energy.

(4) The toy truck stopped at X because all its kinetic energy had been converted into sound energy and heat energy.

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24. Ben made a jumping toy using two pieces of strong plastic cards, sticky tape and a rubber band as shown below. He stretched the rubber band, pressed the toy down and measured the height in which the toy jumped to once he released his finger.



Which of the following correctly shows the energy conversion in the toy when Ben released his finger?

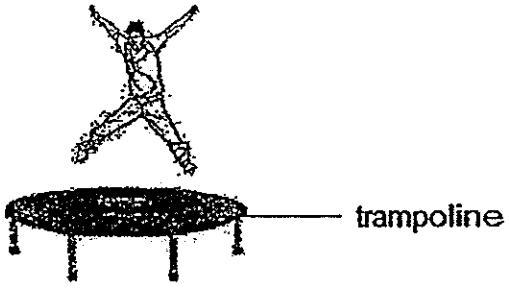
(1) elastic potential energy → kinetic energy → gravitational potential energy

(2) gravitational potential energy → kinetic energy → sound energy + heat energy

(3) chemical potential energy → gravitational potential energy → kinetic energy

(4) chemical potential energy → elastic potential energy → kinetic energy → sound energy + heat energy

25. James was jumping on the trampoline. He was being pulled down by Force A. When he landed on the trampoline, he was being pushed upwards by Force B.

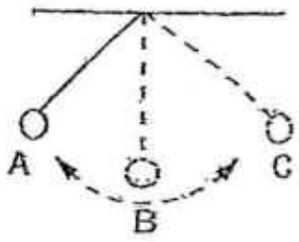


Which of the following correctly identifies Force A and Force B?

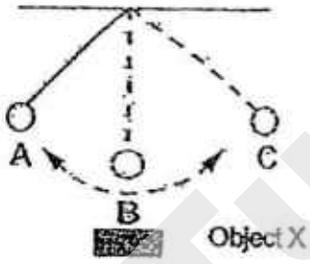
	Force A	Force B
(1)	Magnetic force	Gravitational force
(2)	Frictional force	Elastic spring force
(3)	Elastic spring force	Gravitational force
(4)	Gravitational force	Elastic spring force

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26. Fang Li set up an experiment by letting a steel ball swing from point A to point C. It took 18 seconds to come to rest at position B.



She repeated the experiment by placing different objects X, Y and Z under position B respectively, using similar steel ball and similar length of strings.



The results were tabulated in the table shown below.

Object	Time taken for the ball to come to a complete stop at B (s)
X	3
Y	13
Z	18

Which of the following statements is true?

(1) Objects X, Y, Z are magnets.

(2) Object Y is a weaker magnet than object X.

(3) There are 3 different forces acting on the steel ball all the time.

(4) Object X increases the gravitational force acting on the steel ball.

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27. The table below shows examples of activities involving forces.

Action	Gravitational Force	Frictional Force	Magnetic Force
A	✓	✓	
B	✓		✓
C	✓	✓	

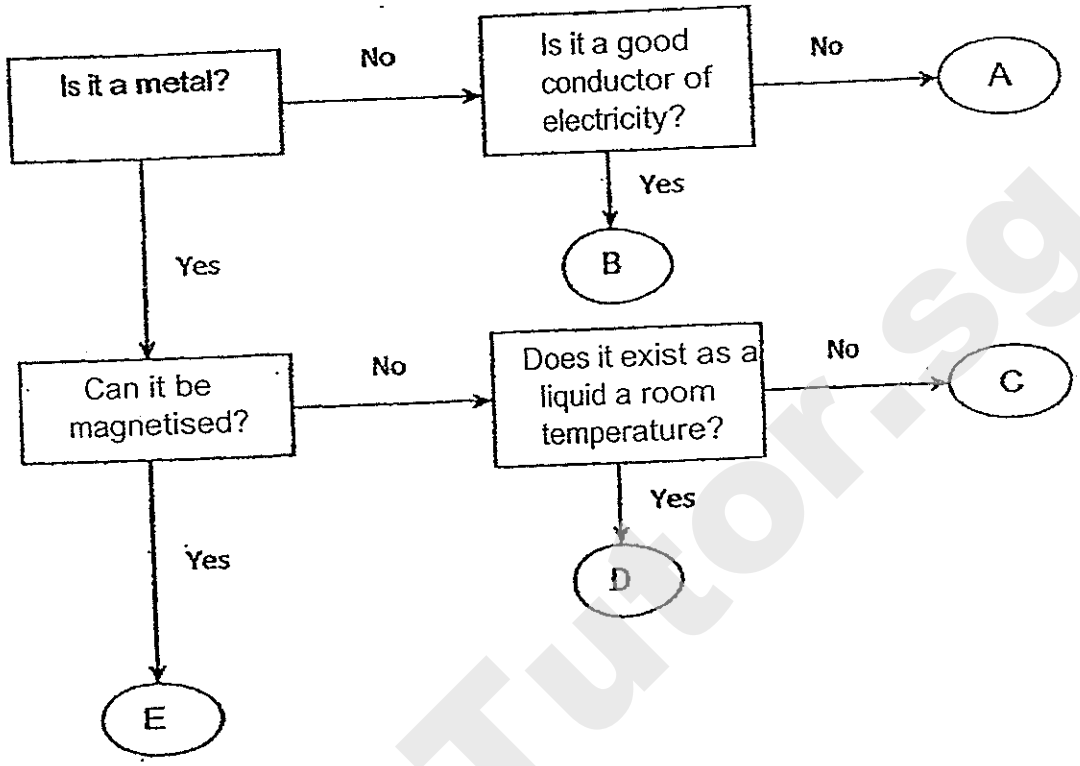
Which of the following correctly shows the forces in action?

	A	B	C
(1)	Skating up a ramp	Dropping a piece of bar magnet onto a copper plate	Walking on a road
(2)	Walking along a winding path	Dropping an apple from the second level of a building	Writing with a pencil
(3)	Riding up a slope on a horse	Holding a piece of magnet with pins attracted	Pushing a chair across the classroom
(4)	Stretching a rubber band	Swimming in a pool	Applying brakes to a moving car

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28. Study the flowchart below.



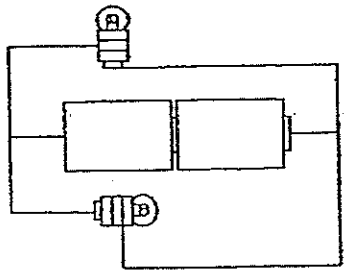
Which one of the following correctly represents A, B, C, D and E?

	A	B	C	D	E
(1)	wood	diamond	iron	mercury	steel
(2)	glass	plastic	aluminium	water	copper
(3)	plastic	rubber	copper	silver	nickel
(4)	rubber	graphite	gold	mercury	iron

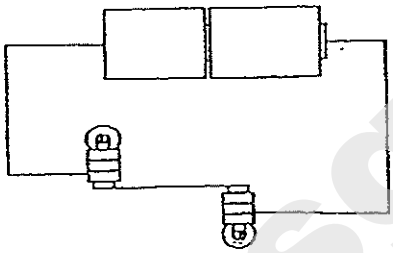
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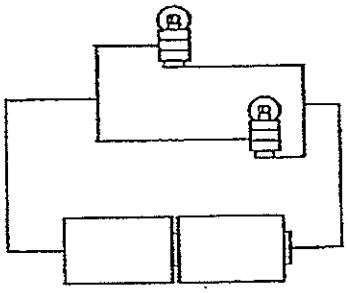
29. Study the electric circuits below carefully.



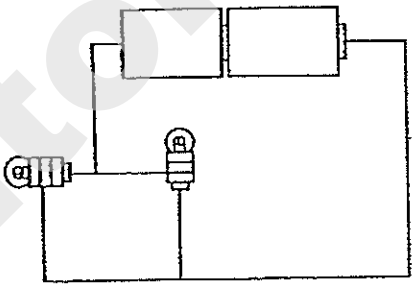
A



B



C



D

In which set-up, A, B, C or D, would the other bulb not light up when one bulb is removed?

(1) A

(2) B

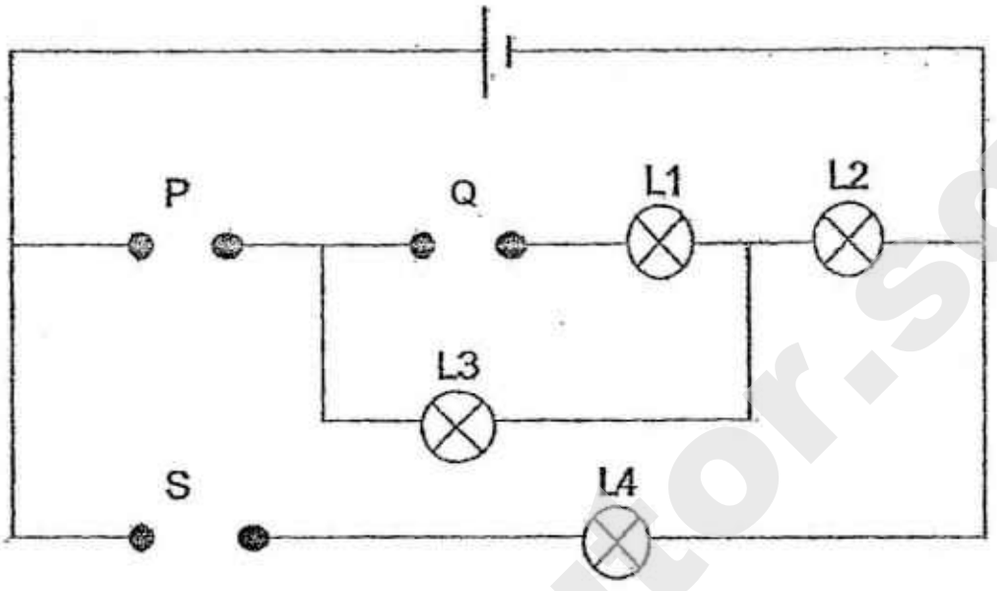
(3) C

(4) D

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30. Weili has 3 rods, X, Y and Z, of unknown materials. She placed them in various positions, P, Q and S, of the circuit shown below.



The results of the experiment were shown in the table below. When any of the lamps, L1, L2, L3 or L4, lit up during the experiment, a tick (✓) was placed in the box.

Positions where rods were placed			Lamp			
P	Q	S	L1	L2	L3	L4
X	Y	Z	✓	✓	✓	

Which one of the following shows the correct result if the rods, X, Y and Z, were placed at different positions?

	Positions where rods were placed			Lamp			
	P	Q	S	L1	L2	L3	L4
(1)	Z	X	Y		✓	✓	
(2)	Y	Z	X		✓	✓	✓
(3)	Z	Y	X	✓	✓	✓	
(4)	Y	X	Z				✓

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PRIMARY 6 MID-YEAR EXAMINATION 2014

Name : _____ ( ) Date: 19 MAY 2014

Class : Primary 6 ( ) Time: 8.00a.m. to 9.45 a.m.

Parent's Signature : _____ Duration: 1h 45min

Marks: _____ / 40

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.

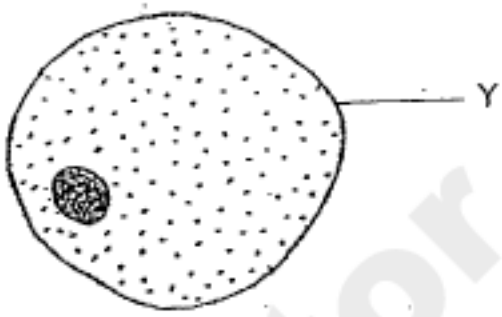
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Booket B (40 marks)

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

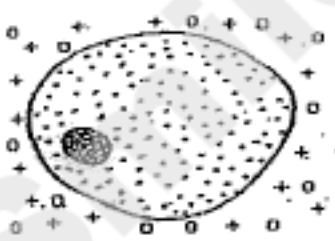
31. The diagram below shows an animal cell.



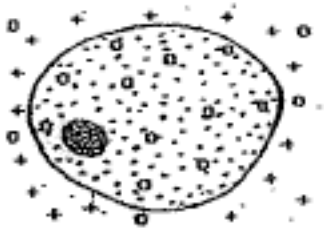
(a) Name part labelled Y. [1]

_____

The animal cell is then placed in a new environment. Two diagrams below show the cell before and after it has been introduced into its new environment.



When the cell is just introduced to the new environment.



One hour later

Key

o : Water molecules

+ : Other molecules

(b) What can you conclude about the function of Y from the diagrams above? Explain your answer. [1]

_____

_____

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32. Ken observed the different stages of development of a tomato plant for some time and recorded his observations as shown below.

Date	Observation
1 May	The seed coat cracked.
5 May	The shoot appeared.
15 May	The roots appeared.
25 May	First leaves appeared.

(a) Ken's mother told him that he had made an error in his recording. What was wrong with his recording? [1]

_____

Three months later, Animal X was observed to be feeding on the leaves of the tomato plants. Ken sprayed pesticide on the leaves to prevent Animal X from eating them. The table below shows the number of tomatoes produced when different amounts of pesticide were used for the similar tomato plants.

Amount of pesticide used (ml)	Amount of tomatoes produced (kg)
70	2
80	4
90	6
110	4
130	2

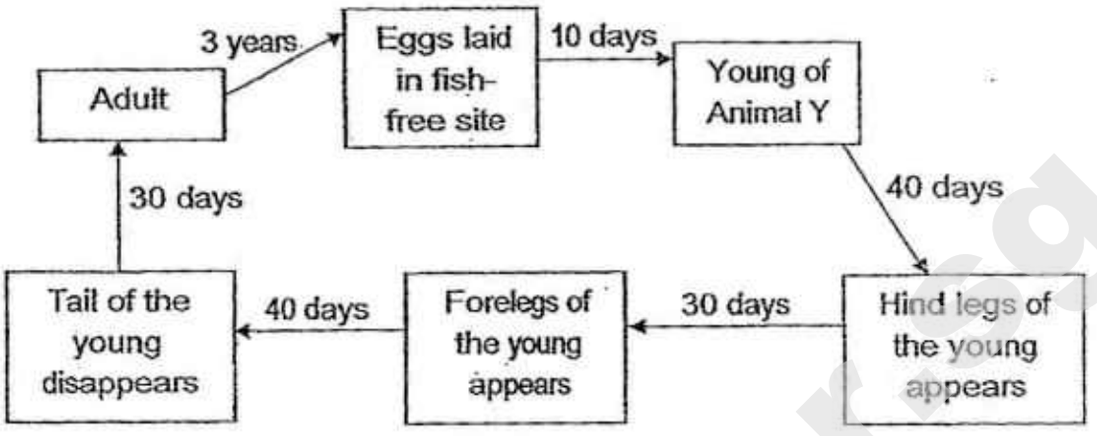
(b) Give a reason why the amount of tomato produced decreased when the amount of pesticide increased? [1]

_____

_____

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33. The diagram below shows the life cycle of Animal Y.



(a) How many stages are there in the life cycle of animal Y? [1]

(b) How long does it take for the young to become an adult? [1]

(c) The young of Animal Y lives in water while the adult lives on land. List one advantage for the young and the adult to live in different surroundings. [1]

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34. The diagram below shows two types of fishes, P and Q, and their young Fish R.

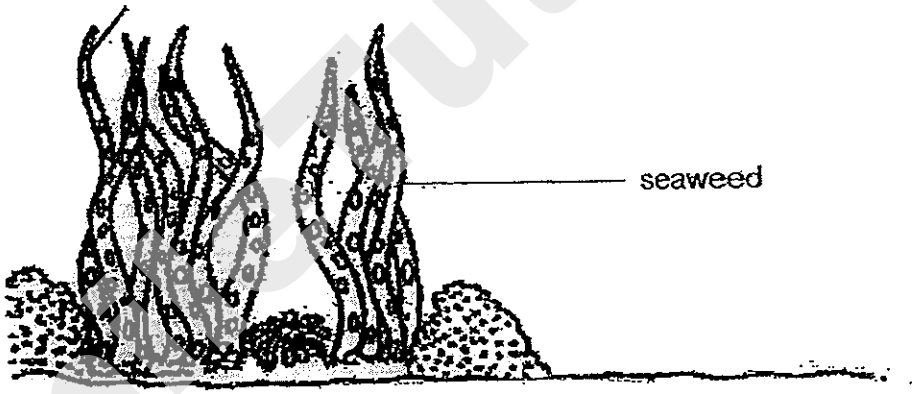


Fish P Fish Q Fish R

(a) What characteristic has been passed down from Fish P to Fish R? [1]

_____

The fishes live amongst the seaweed as shown below and a predator of all 3 fishes was introduced into the habitat.



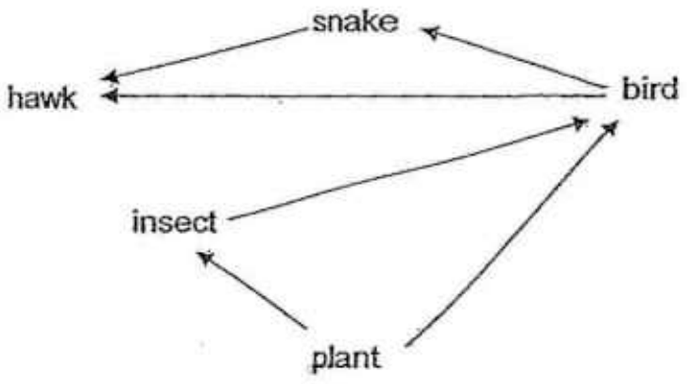
(b) Which fish, P, Q or R, would be least preyed upon? Why? [1]

_____

_____

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35. Study the food web below carefully.



(a) Write down one food chain that has 4 organisms in it. [1]

_____

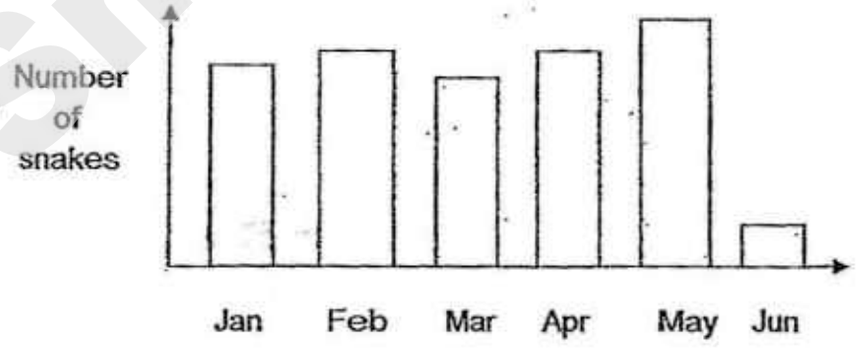
(b) Based on the food chain you have given in (a) which organism is/are both a prey and predator? Explain your answer. [1]

_____

_____

_____

There was a drastic decrease in the population size of the snakes after half a year.



(c) State a possible reason for this occurrence. [1]

_____

_____

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36. Clownfish and sea anemones are usually found together. They depend on each other for survival. The following article describes the characteristics of both organisms.

Clownfish and sea anemones help one another to survive in their habitat. The sea anemone has stinging tentacles. The clownfish has a slimy mucus coating that protects itself. The clownfish feeds on parasites, dead tentacles and food scraps.



(a) How do clownfish and sea anemone benefit from this relationship? [2]

(i) Benefit for clownfish:

_____

_____

(ii) Benefit for sea anemone:

_____

_____

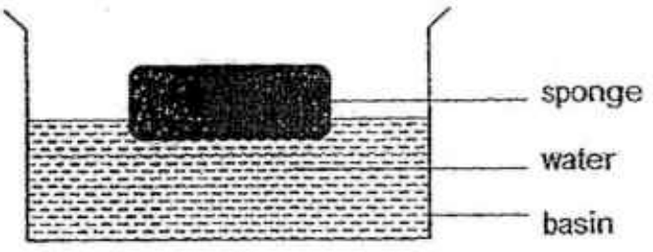
(b) Both the clownfish and sea anemone are part of a food web. What role do they play in the food web? [1]

_____

_____

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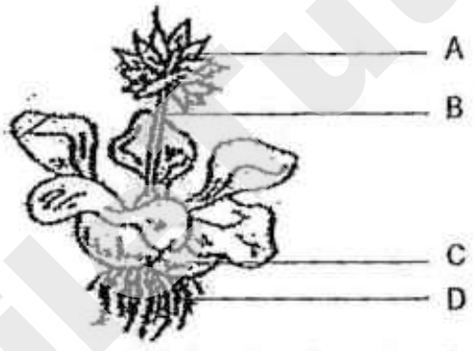
37. Mike placed a sponge in a basin of water as shown below.



(a) When he pushed the sponge into the water, he observed bubbles escaping from the sponge. What do the bubbles contain? [1]

_____

The diagram below shows a water hyacinth plant. It is commonly found floating in ponds.



(b) Which part of the plant, A, B, C or D, allows it to float in water? [1]

_____

(c) Explain how the sponge and the part that you have selected in (b) allow both the sponge and the water hyacinth plant to float in water. [1]

_____

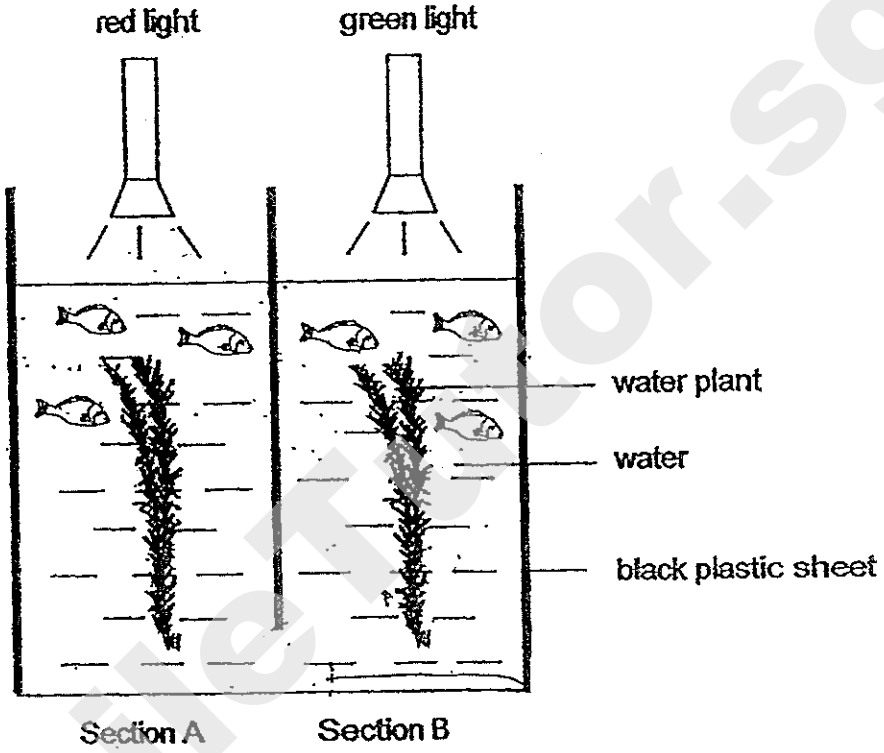
_____

(d) Name another characteristic of the plant that helps it to float in water. [1]

_____

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38. Joy set up an experiment in a dark room to find out which coloured lights, red or green could be used for photosynthesis. She used a tank divided into 2 sections, A and B, by black plastic sheets as shown in the diagram below. The coloured lights were of the same brightness. She also placed an equal number of fishes in each section at the start of the experiment.



(a) What should Joy observe about the fishes to find out if the plants have photosynthesised? [1]

_____

_____

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

_____

_____

_____

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The table below shows the results of her experiment.

Section	Type of light used	Number of fishes found in each section
A	Red light	5
B	Green light	1

(c) Which light should Joy use for her aquarium if she wants the plants to photosynthesise at a faster rate? Explain your choice. [1]

_____

_____

(d) Name one variable that ought to be kept constant for the experiment. [1]

_____

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39. Hazri conducted an experiment to find out which of the two materials, R or S, was better in preventing a block of ice from melting too fast. He used each material of similar size and thickness to wrap around identical blocks of ice respectively. He recorded the time taken for each ice to completely melt into water.

Materials	Time taken for the ice to melt completely (min)
R	81
S	23

(a) Based on the table above, which material is a better conductor of heat? Explain your answer. [1]

_____

_____

Hazri wanted to select a material to make the lining of a winter jacket.



(b) Which material, R or S, should he choose as the lining? Explain your answer. [1]

_____

_____

_____

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40. Kai Wen placed a plastic block on the floor. He gave it a push. The block moved and came to a stop after 90 cm.



(a) Name the force that caused the block to stop moving. [1]

_____

(b) Kai Wen sprayed some water on the floor. He pushed the plastic block with the same amount of force as before. This time, the block moved to 140 cm before coming to a stop. [1[

Give a reason why the block could move further when the floor was wet.

_____

_____

_____

On rainy days, some shopping centres provide plastic bags for shoppers to put their wet umbrellas in, as shown in the picture below.



(c) Based on Kai Wen's experiment, give a reason why shoppers should keep their wet umbrellas in the plastic bag when they enter the shopping centre. [1]

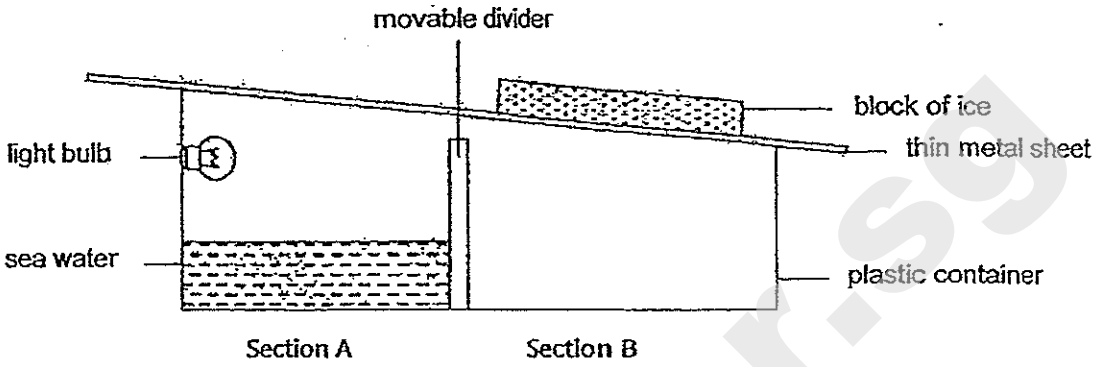
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_____

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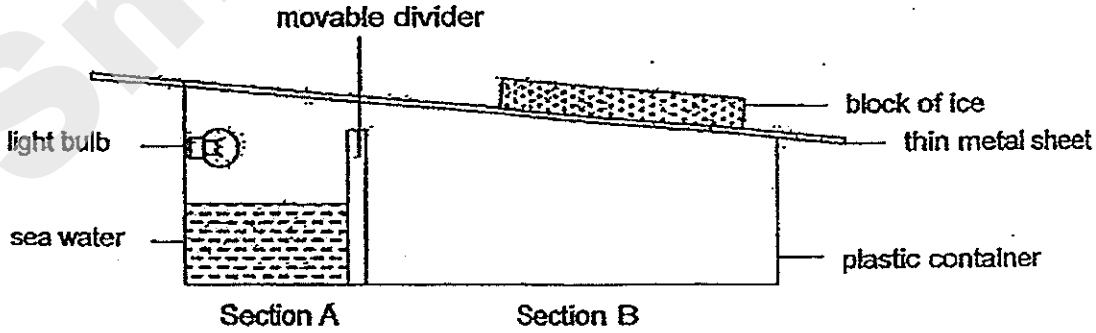
41. Kai Cheng placed some sea water in the Section A of a plastic container. He then covered the container with a thin metal sheet and placed a block of ice above the thin metal sheet as shown below.



He switched on the electric light bulb and after three hours, some water could be found in Section B of the plastic container.

(a) Explain why there is water in Section B of the container. [2]

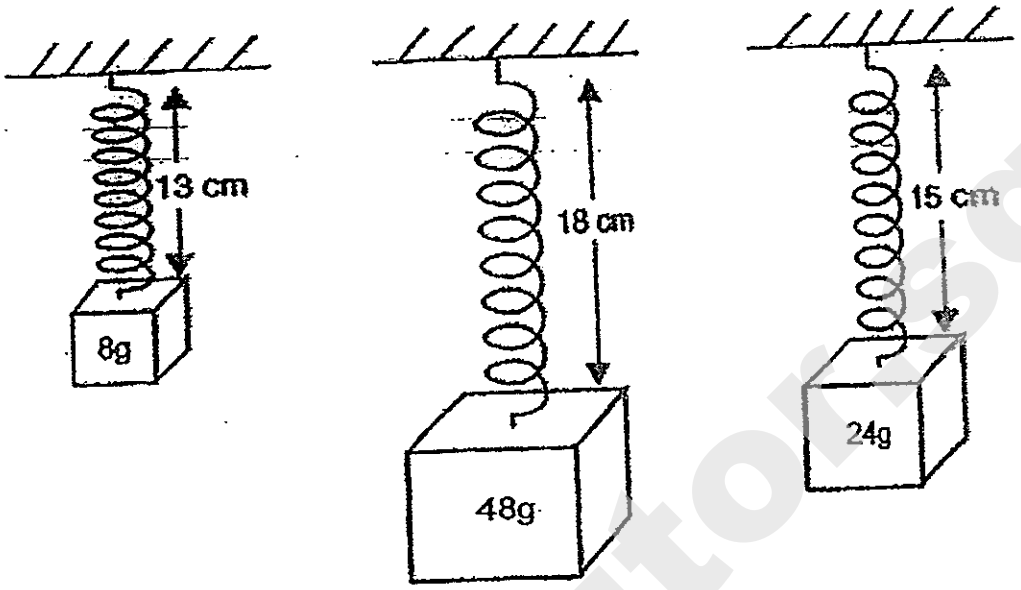
Kai Cheng repeated his experiment. This time, he wanted to increase the amount of water collected in Section B of the container. He placed the same amount of sea water in Section A but moved the divider to the left such that there was now more space in Section B as shown in the diagram below.



(b) Will the amount of water collected in Section B after three hours increase, decrease or remain the same after the change? Explain your answer. [1]

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42. Using the same spring, Ruixiang hung 3 objects of masses, 8g, 48g and 24g. The spring extended as shown in the diagram below.



(a) What is the original length of the spring? [1]

_____

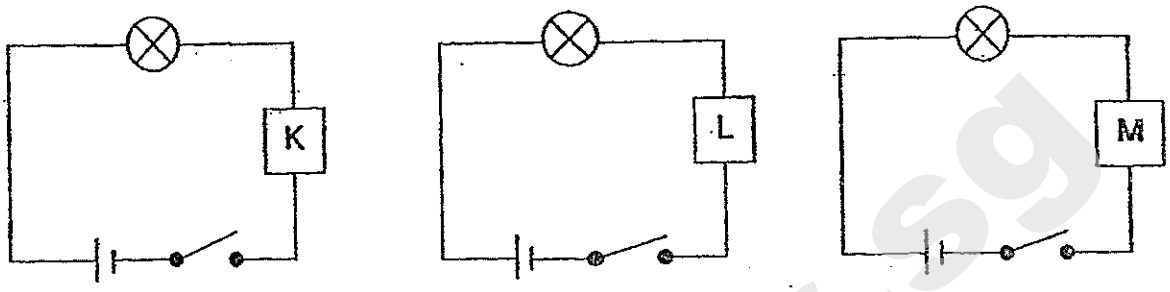
(b) What is the extension of spring when a 32 g load is hung on it? [1]

_____

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43. Randy set up 3 similar circuits using identical bulbs, batteries and objects, K, L and M, as shown below. The objects are of the same size but made of different materials.



Circuit A Circuit B Circuit C

He made the following observations when the switch for each circuit was closed at the same time.

Circuit	Observation
A	Bulb lighted up dimly
B	Bulb did not light up
C	Bulb lighted up brightly

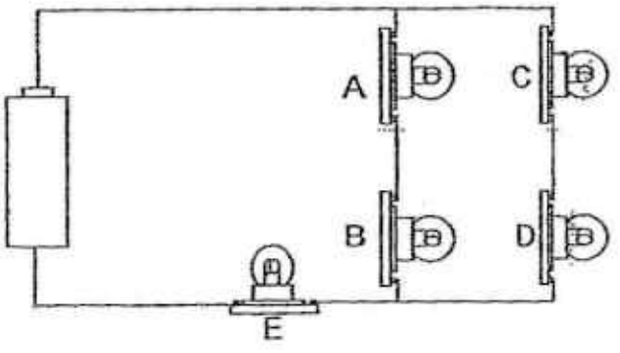
Based on the observations made by Randy, which of the following statements is/are true, false or not possible to tell. Put a tick (✓) in the correct box below. [4]

	Statements	True	False	Not possible to tell
(a)	M is a magnet.			
(b)	K is made of iron.			
(c)	K is a better conductor of electricity than M.			
(d)	L is an electrical insulator.			

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44. Alice set up the circuit shown below with identical bulbs, bulb holders and batteries.



(a) Alice removed one of the above bulbs from the bulb holders and none of the rest of the bulbs remains lit. Which bulb did she remove? [1]

_____

(b) Alice wants all the bulbs, A, B, C, D and E, to light up as brightly as possible. Rearrange the electrical circuit using the same electrical components. Using the symbols given below, draw the correct circuit diagram in the box provided. [2]



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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : TAO NAN
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	3	2	1	4	4	2	2	1	2	3	1	2	1	3	3	1

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
4	1	3	2	3	3	1	4	2	3	4	2	2

31)a)Cell membrane.
b)Y only allows water molecules to enter.

32)a)The roots should appear before the shoot.
b)Pesticide kills pollinators and hence reduce fertilization of the flowers.

33)a)There are 3 stages in the life cycle of animal Y.
b)140 days.
c)No competition for food as they have a different food source.

34)a)Stripes on the body.
b)R. It has stripes and spots to camouflage amongst the seaweed hence it is not easily spotted and eaten by predators.

35)a)Plant→bird→snake→hawk.
b)The snake is both a prey and a predator. The snake eats the bird so it is a predator and the hawk eats the snake which makes the snake a prey too.
c)Migration of birds to another place and there is less food available.

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36)a)i)The clownfish can eat the parasites on the sea anemone.
ii)The sea anemone can get rid of the parasites on it with the help of the clownfish.
b)They are food consumers.

37)a)The bubbles contain air.
b)Part C.
c)Air spaces trap air so they are lighter than water.
d)Waxy leaves.

38)a)Swim towards the plants instead of the surface of the water.
b)Plants give off oxygen when they photosynthesis. The fishes take in the oxygen for respiration.
c)Red light more fishes are found in the section which means the plants photosynthesis at a faster rate and gave off more oxygen.
d)The type of plants she used.

39)a)Material S. The ice that was wrapped with Material S melted the faster which means material's is a better conductor of heat then Material R.
b)This will keep the person who is wearing the jacket warm. Material R as it took a longer time for the ice to gain heat from the surroundings and melt, hence it is a poorer conductor of heat.

40)a)It is frictional force.
b)Water reduces the friction between the bottom of block and the surface of the floor.
c)Water from the wet umbrella will chip onto the floor. As water reduces friction between the surface of the floor and sloes of the shoes, the shoppers may slip and fall more easily.

41)a)Heat from the light bulb causes the water in sea water to evaporate into water vapour which upon coming into contact with the cooler surface of the thin metal sheet loses heat and condenses to form water droplet. As more water droplets are formed, they accumulate and become heavier. Hence dripping in side B of the container.
b)The exposed surface area of the sea water has decreased hence the rate of evaporation of water also decreased.

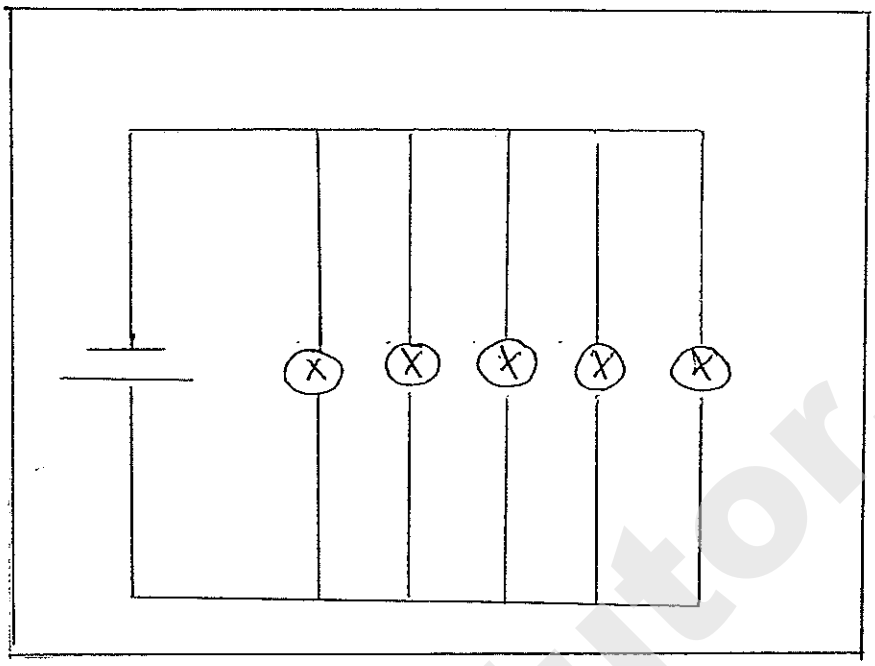
42)a)12cm.
b)4cm.

43)a)Not
b)F
c)F
d)T

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44)a)She removed bulb E.

b)



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Index No. | | | | | | | — | |

ANGLO-CHINESE SCHOOL (JUNIOR)
ANGLO-CHINESE SCHOOL (PRIMARY)

COMBINED PRELIMINARY EXAMINATION 2014

SCIENCE

BOOKLET A

22 August 2014 1 hour 45 minutes

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 30 questions in this booklet.
Answer ALL questions.

INFORMATION FOR PUPILS

The total marks for this booklet is 60.
The total time for Booklets A and B is 1 hour 45 minutes.
This question paper consists of 17 printed pages (inclusive of 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 and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

(60 marks)

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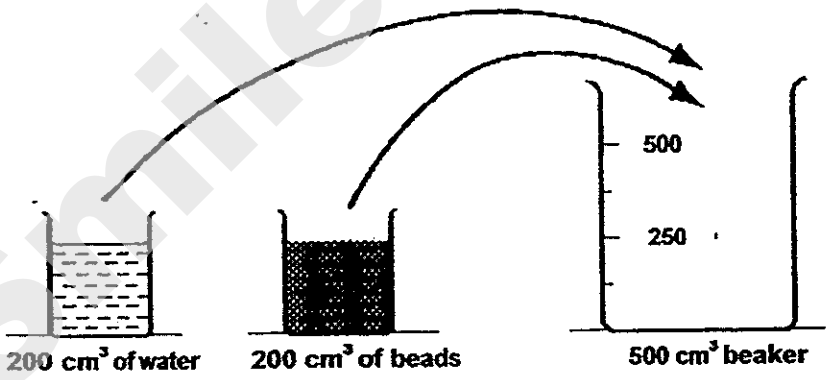
1 Study the information below about two substances, A and B.

Substance A	It occupies space. It has no definite shape.
Substance B	It has mass. It has no definite volume.

Which one of the following shows what A and B are **most** likely to be?

	Substance A	Substance B
(1)	Ice	Oil
(2)	Air	Ice
(3)	Oil	Water
(4)	Water	Air

2 Susan had a beaker of 200 cm^3 of water and another beaker of 200 cm^3 of small beads. She poured all the water and small beads into a 500 cm^3 beaker as shown below.

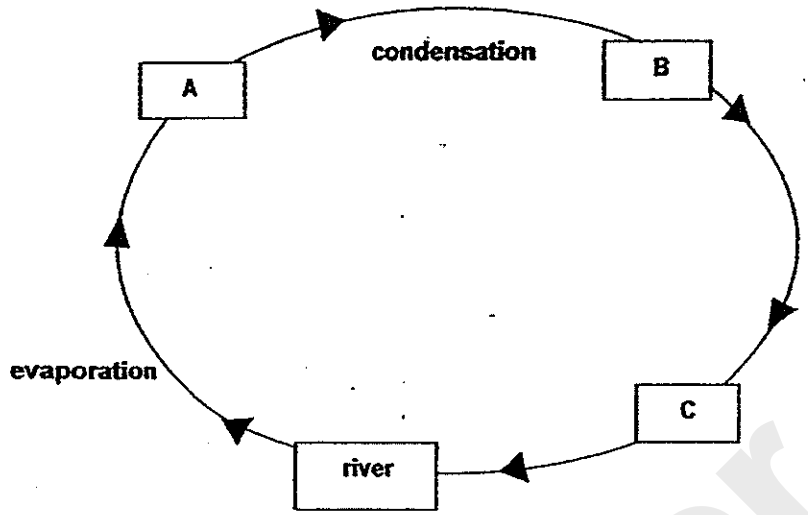


What is most likely the volume of the water and beads in the 500 cm^3 beaker?

(1) 200 cm^3
(2) 400 cm^3
(3) More than 400 cm^3
(4) Between 200 cm^3 and 400 cm^3

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3 The diagram below shows the water cycle.



Which one of the following represents A, B and C?

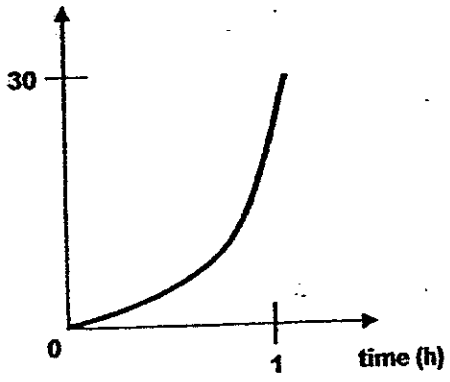
	A	B	C
(1)	Rain	Clouds	Water vapour
(2)	Water vapour	Clouds	Rain
(3)	Clouds	Rain	Water vapour
(4)	Water vapour	Rain	Clouds

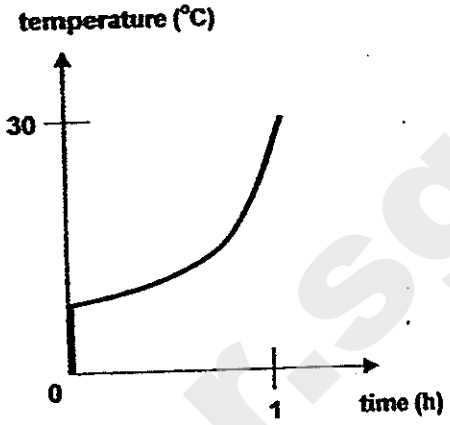
4 The table below shows the characteristics of four flowers, A, B, C and D. Which flower is most likely to be self-pollinated?

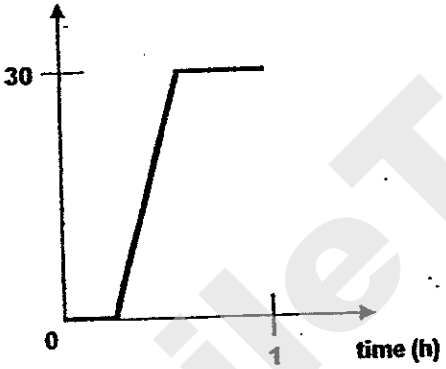
	Flower	Petals		Smell
		Size	Colour	
(1)	A	Small	White	Unscented
(2)	B	Small	White	Scented
(3)	C	Large	Brightly coloured	Scented
(4)	D	Small	Brightly coloured	Unscented

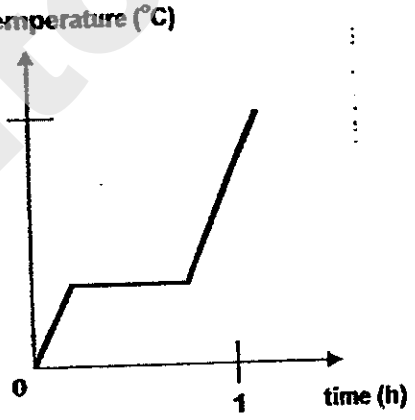
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5 Paul took out some ice from the freezer and placed them in a glass cup. After an hour, the ice had changed its state completely. Which one of the following graphs best represents the temperature changes of ice over time within the one hour?

(1)


(2)


(3)


(4)


6 Which of the following statements about reproduction in humans are **correct**?

A One sperm can fertilise many eggs.
B The fertilised egg will develop in the womb.
C The umbilical cord carries digested food to the foetus.
D The sperms are transferred to the egg through the testes.

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

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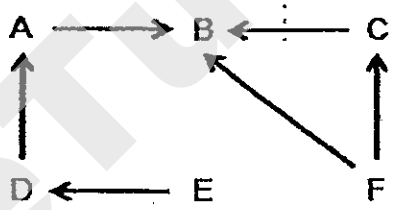
7 The table below shows some characteristics of William's parents.

Characteristic	Mother	Father
Height	Short	Tall
Hair	Straight and black	Curly and brown
Dimples	No dimples	No dimples
Skin Tone	Fair	Dark
Interest	Plays the piano	Plays tennis

Based only on the information above, which of the characteristics can William inherit from his parents?

(1) Being tall, fair and with dimples
(2) Being short, dark and playing tennis
(3) Being tall, having brown hair and with no dimples
(4) Being short, having black hair and playing the piano

8 The diagram below shows a food web where A to F represent living things.

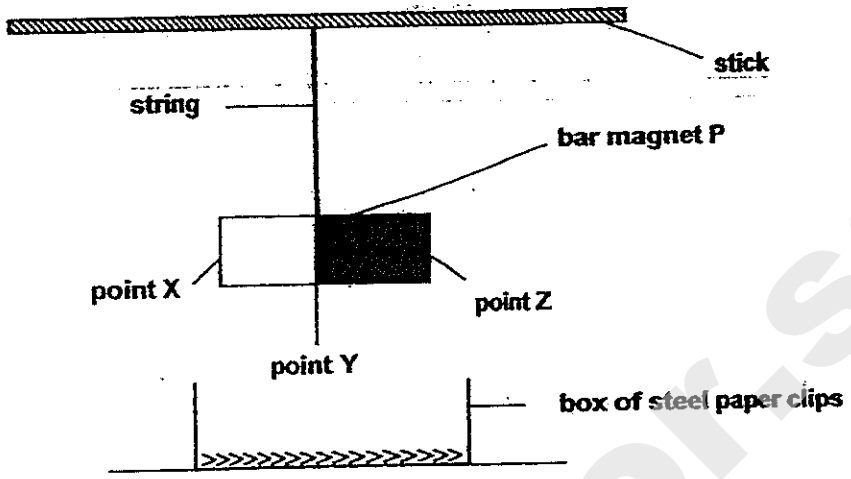


Which one of the following is true about the living things in the food web?

	Food Producer	Prey only	Predator Only	Prey and Predator
(1)	E	C, D, F	A, B	None
(2)	E	C, D, F	B	A
(3)	E, F	C, D	None	A, B
(4)	E, F	C, D	B	A

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9 Amanda conducted an experiment by lowering a bar magnet, P, into a box of steel paper clips. She labelled each part of the bar magnet as points X, Y and Z as shown in the diagram below.



She then repeated the experiment using two other magnets of the same size, Q and R, and recorded the number of paper clips attracted in the table below.

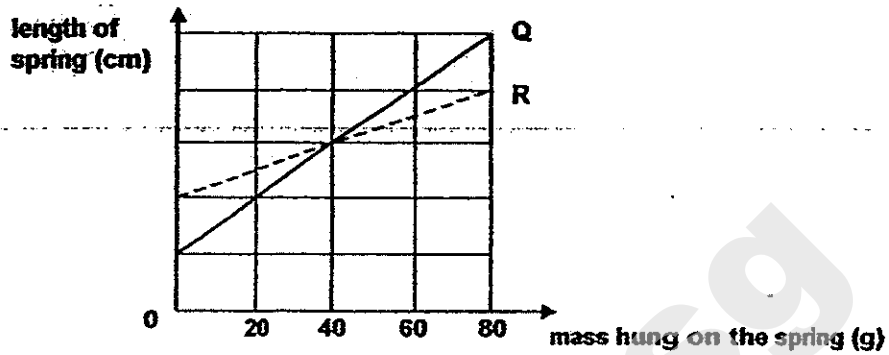
	Number of paper clips attracted at...		
	point X	point Y	point Z
Magnet P	15	4	15
Magnet Q	7	1	7
Magnet R	11	5	11

Based on the results above, which one of the following conclusions is most likely true?

(1) Magnet R is the weakest.
(2) Magnet Q is the strongest.
(3) The magnetic force is stronger at Point X than at Point Z of the magnets.
(4) The magnetic force is stronger at Point Z than at Point Y of the magnets.

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10. The graph below shows how the length of two springs, Q and R, changed when different amounts of mass were added to each spring.



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

A The original length of Spring R is longer than the original length of Spring Q.

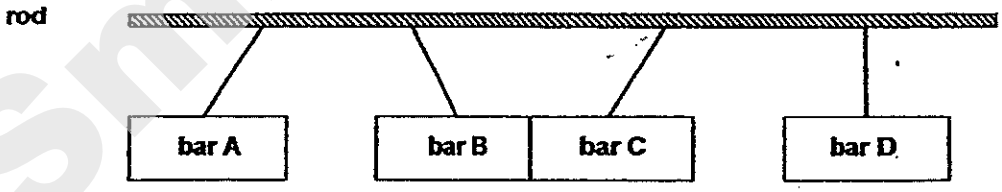
B The original length of Spring R is shorter than the original length of Spring Q.

C When a 40 g mass was hung on both springs, their lengths became the same.

D When a 40 g mass was hung on both springs, the length of Spring Q was more than the length of Spring R.

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

11 Tom stroke four metal bars, A, B, C and D, with a magnet 20 times each. He then hung them next to one another from a rod. It was observed that only one of the bars remained stationary while the rest either swung away from or towards one another as shown in the diagram below.



Based on the above diagram, which one of the following shows the most likely materials that bars A, B, C and D are made of?

	bar A	bar B	bar C	bar D
(1)	Copper	Nickel	Aluminium	Iron
(2)	Iron	Aluminium	Steel	Copper
(3)	Iron	Steel	Nickel	Copper
(4)	Nickel	Aluminium	Steel	Iron

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12 Carrie wanted to find out which part of her school has the most polluted air. She prepared three pieces of glass coated with a thin layer of adhesive and placed one each in the canteen, carpark and school field. After some time, Carrie collected the pieces of glass and observed them under a microscope. She observed that the piece of glass which was placed in the carpark collected the most dust particles and concluded that the carpark has the most polluted air.

Which of the following variables should Carrie keep constant so that her experiment is fair?

A The size of the glass pieces

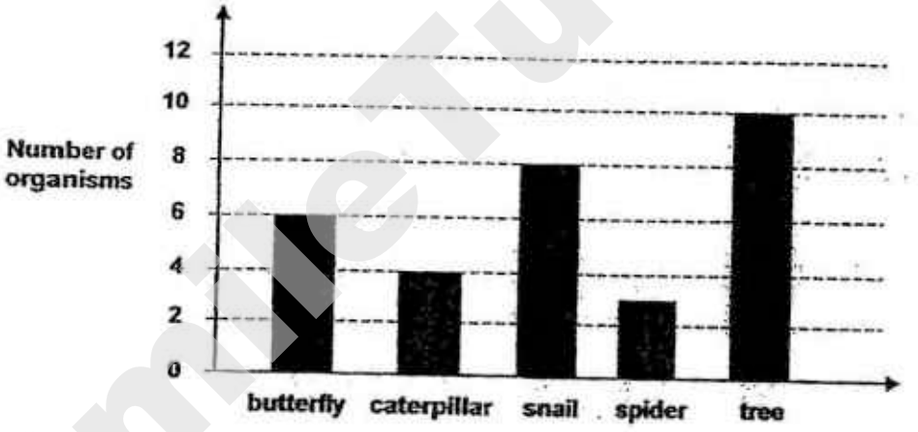
B The duration of the experiment

C The start time of the experiment

D The number of cars in the carpark

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

13 Benedict observed the organisms found in a garden and recorded the number of each organism in a graph as shown below.



Based on the information given above, which of the following statements are definitely correct?

A The garden is the habitat of the organisms.

B There are ten populations of trees in the garden.

C There is a total of 31 populations of organisms in the garden.

D There are only three populations of animals living in the garden.

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

(Go on to the next page)

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14 The following information is extracted from the website of National Wildlife Federation.

"Scientists are still assessing the effects of the estimated 640 million litres of oil that flooded into the sea after the explosion of an oil rig. Thousands of seabirds, which feed on fishes in the region, were found dead in the six months after the spill."

Which of the following reason(s) is/are likely cause(s) of the death of the seabirds?

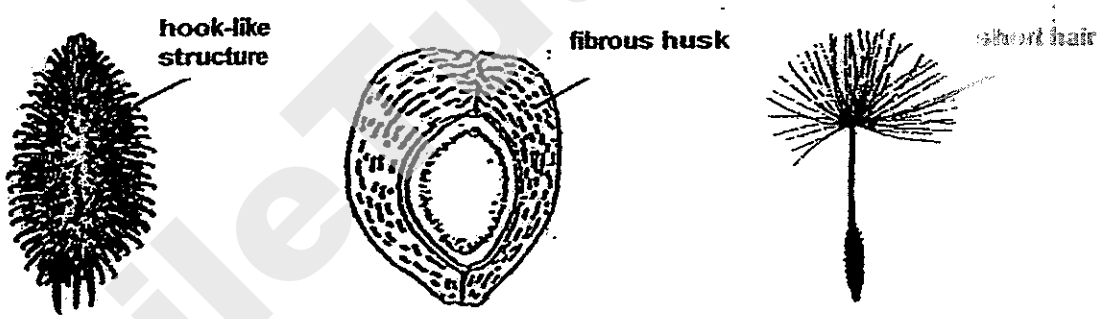
A The seabirds were unable to find suitable mates for reproduction.

B The seabirds were unable to find any fish as the surface of the sea was covered by the oil spill.

C The seabirds' feathers were stained with oil which made their feathers stick together and causing the seabirds unable to fly.

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

15 The diagrams below show three different samples taken from three different plants.

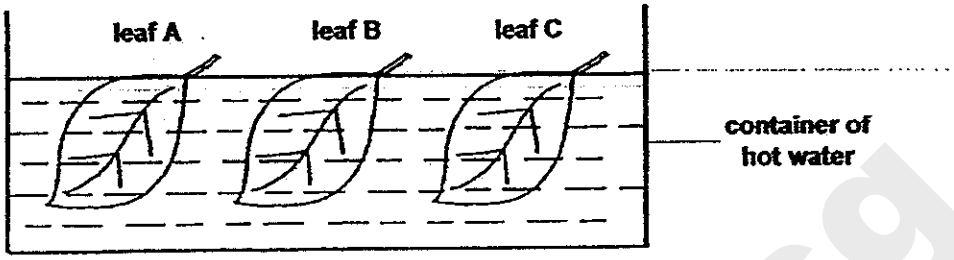


Which one of the following best matches the samples to their method of dispersal?

	Sample A	Sample B	Sample C
(1)	By wind	By animals	By water
(2)	By water	By wind	By splitting
(3)	By animals	By water	By splitting
(4)	By animals	By water	By wind

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16 Mr Lim placed three different leaves of the same size into a container of hot water at the same time as shown in the diagram below. He asked Avi, Ben, and Carl to observe whether more bubbles gathered on the upper surface or lower surface of each leaf.

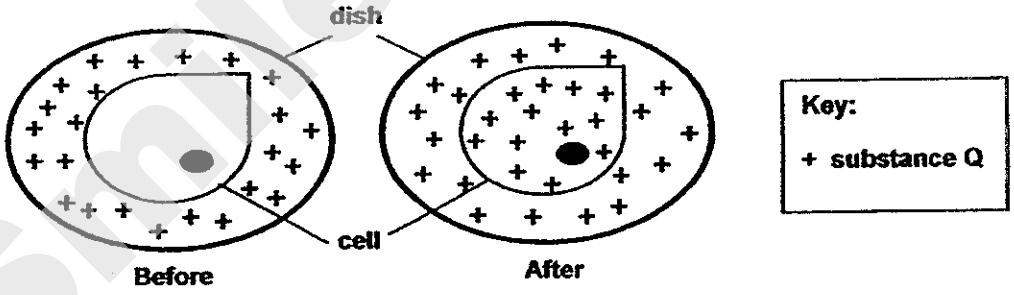


Avi : Leaf A had more bubbles on the upper surface.
Ben : Leaf B had more bubbles on the lower surface.
Carl : Leaf C had more bubbles on the lower surface.

Based on the observations of Avi, Ben and Carl, which one of the following is the most accurate conclusion?

(1) Stomata are found on both surfaces of the leaves.
(2) Stomata are found only on the lower surfaces of the leaves.
(3) Stomata are found only on the upper surfaces of the leaves.
(4) Stomata are found more on the upper surfaces than lower surfaces of the leaves.

17 The diagram below shows a cell before and after it was placed into a dish of substance Q.



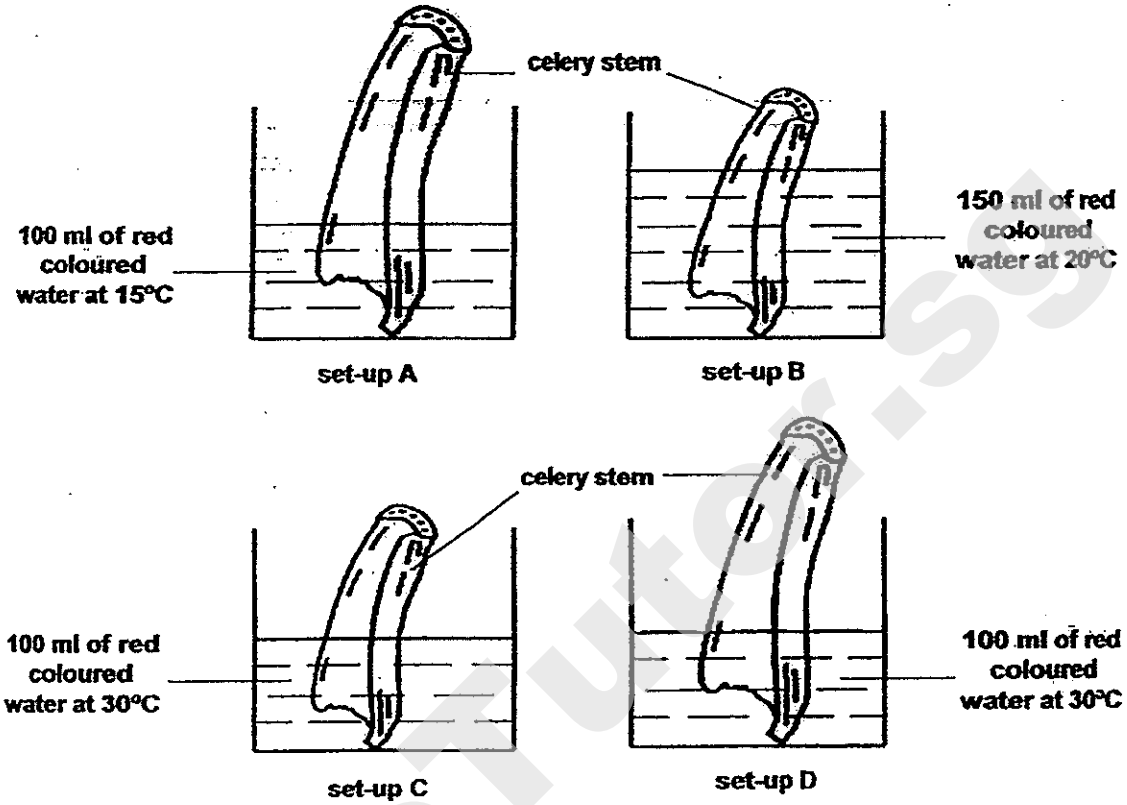
Which of the following conclusion(s) is/are correct?

A Substance Q could move in and out of the cell.
B The nucleus controls Substance Q moving into the cell.
C The cell membrane allows Substance Q to go into the cell.

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

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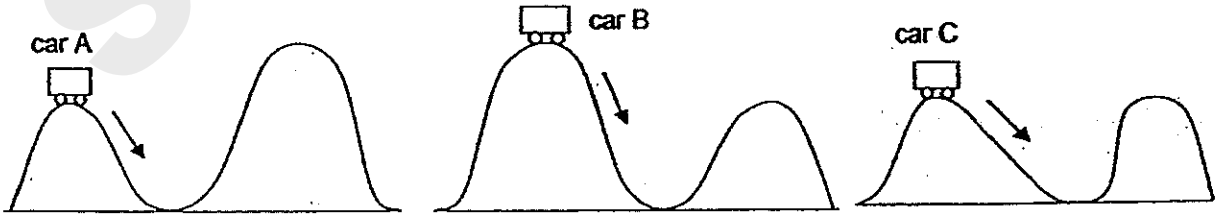
18 James conducted an experiment to find out if celery stems transport warm water faster than cold water.



Which of the following set-ups are suitable for his experiment?

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

19 The diagram below shows three identical toy cars being released from three different heights.



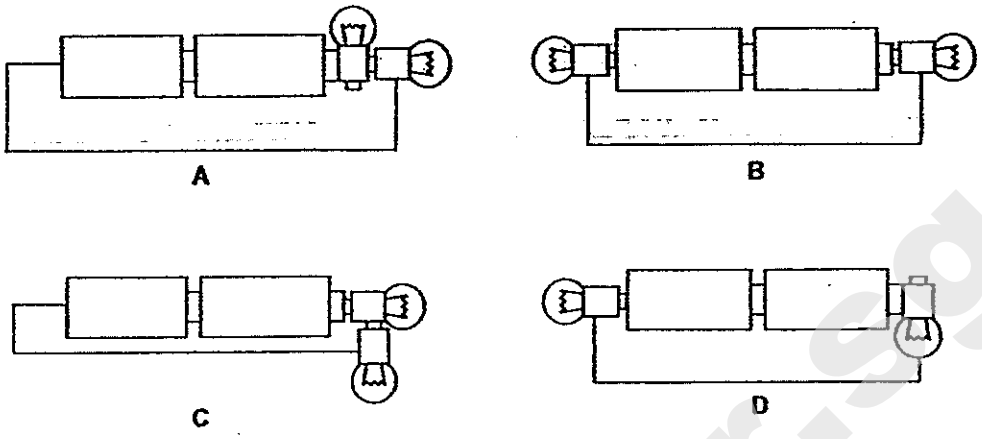
Which car(s) will definitely <u>not</u> have enough kinetic energy to go over the second hill?

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

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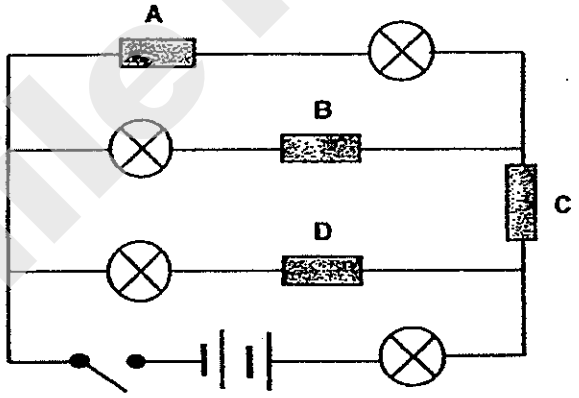
20 Peter arranged four circuits using similar bulbs and batteries as shown below. All bulbs and batteries are functioning well.



Which circuit(s) will allow both bulbs to light up?

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

21 Study the circuit diagram below carefully.

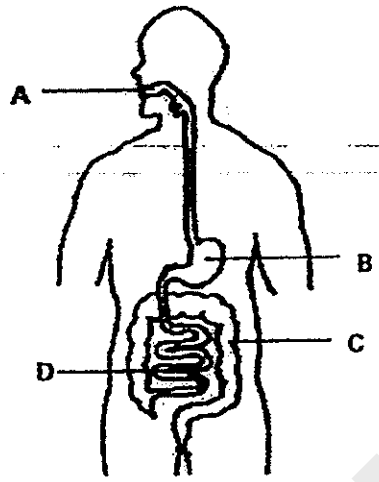


There are four objects A, B, C and D. Only one of the objects is an insulator of electricity, while the others are conductors of electricity. When the switch is closed, only two bulbs light up. Which one of the objects is an insulator of electricity?

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

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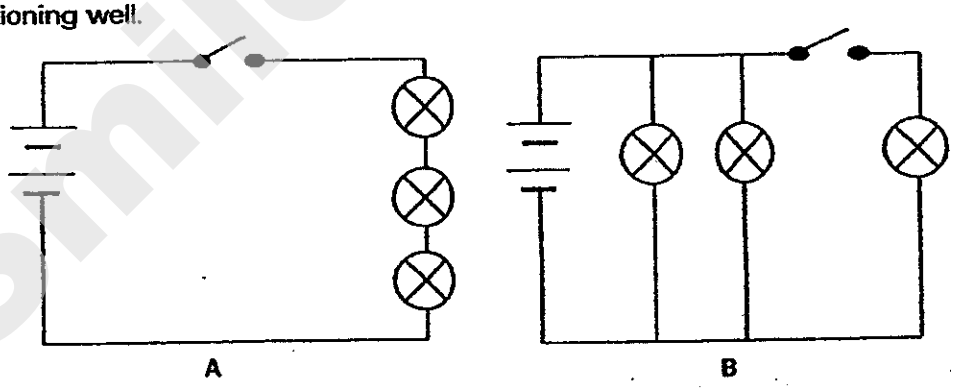
22 The diagram below shows the digestive system of the human body.



Which one of the following best describes the function of parts A, B, C and D?

	Digestion takes place at ...	Absorption of water takes place at ...	Absorption of digested food takes place at ...
(1)	A	B and C	C and D
(2)	B and D	A and C	C
(3)	A, B and D	C	D
(4)	A, B and D	C	C and D

23 The two circuits below use the same type of bulbs and batteries. All bulbs and batteries are functioning well.

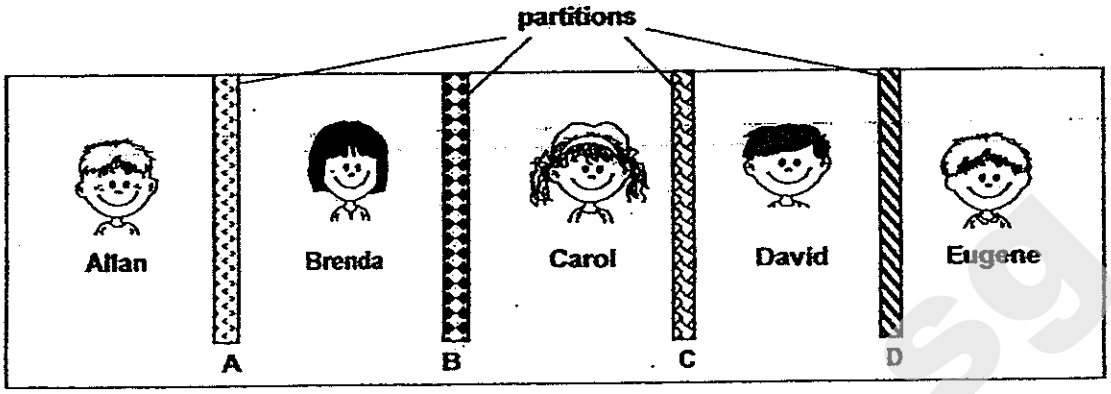


Which one of the following statements about the circuits is correct?

(1) Only one bulb in Circuit B will light up when the switch is open.
(2) All the bulbs in Circuit A will not light up when the switch is open.
(3) If one bulb in Circuit A fuses, the other bulbs will continue to light up.
(4) The bulbs in Circuit A are brighter than the bulbs in Circuit B when their switches are closed.

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24 The diagram below shows five children in a playroom separated by four partitions made from different materials.



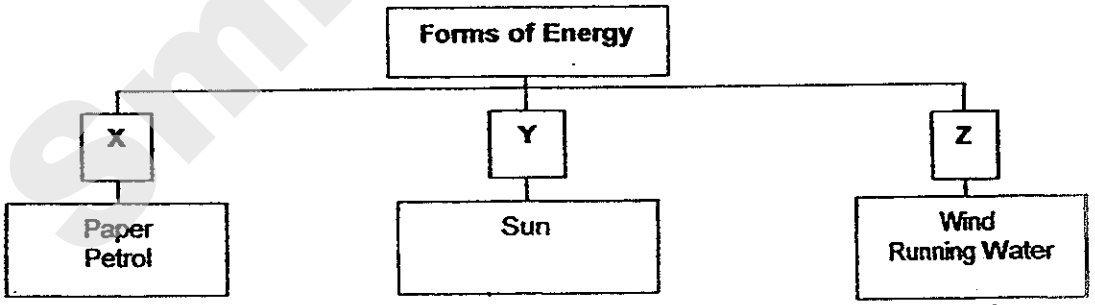
Some children noted their observations below.

Allan : I can only see Brenda.
Carol : I can see David clearly but I am not sure who is beside him.

What materials could the partitions possibly be made of?

	A	B	C	D
(1)	Tracing paper	Clear glass	Wood	Tracing paper
(2)	Clear glass	Wood	Clear glass	Tracing paper
(3)	Tracing paper	Wood	Tracing paper	Clear glass
(4)	Clear glass	Clear glass	Tracing paper	Wood

25 Study the classification table.

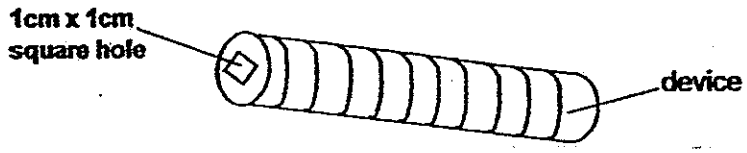


Match X, Y and Z to the forms of energy they represent.

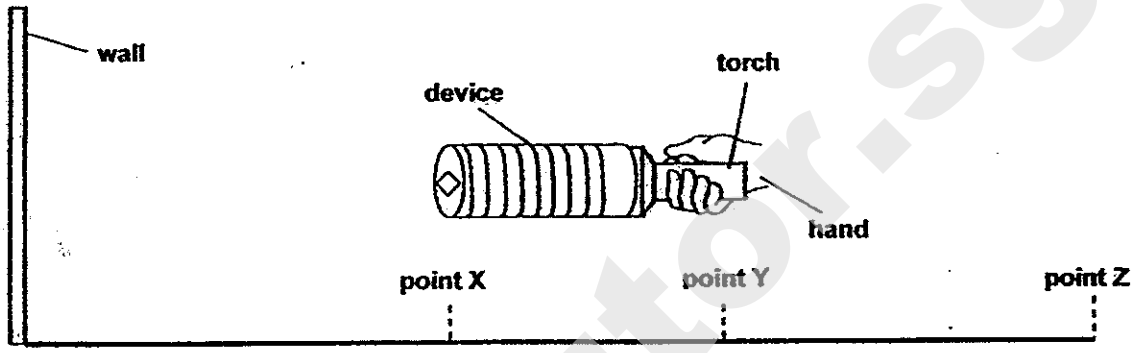
	X	Y	Z
(1)	Potential	Heat and Light	Kinetic
(2)	Heat	Heat	Potential
(3)	Potential	Heat and Light	Potential
(4)	Heat	Light	Kinetic

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26 Shaun, Aoden and Danny made a device as shown below.



Next, they inserted a torch into the device. They then drew the curtains in the room and switched off all the lights and the room was in total darkness. They then switched on the torch. They shone their lighted device at 3 different distances, X, Y and Z, in front of a wall as shown below.



The boys saw a patch of light on the wall and made the statements below.

Aoden	The further the device was from the wall, the bigger the patch of light on the wall.
Danny	The patch of light looks equally clear from Points X and Y.
Shaun	When I held the device at Point Y, the patch of light was clearer than at Point Z.

Which boys made correct observations about the patch of light on the wall?

(1) Aoden and Danny
(2) Aoden and Shaun
(3) Danny and Shaun
(4) Aoden, Danny and Shaun

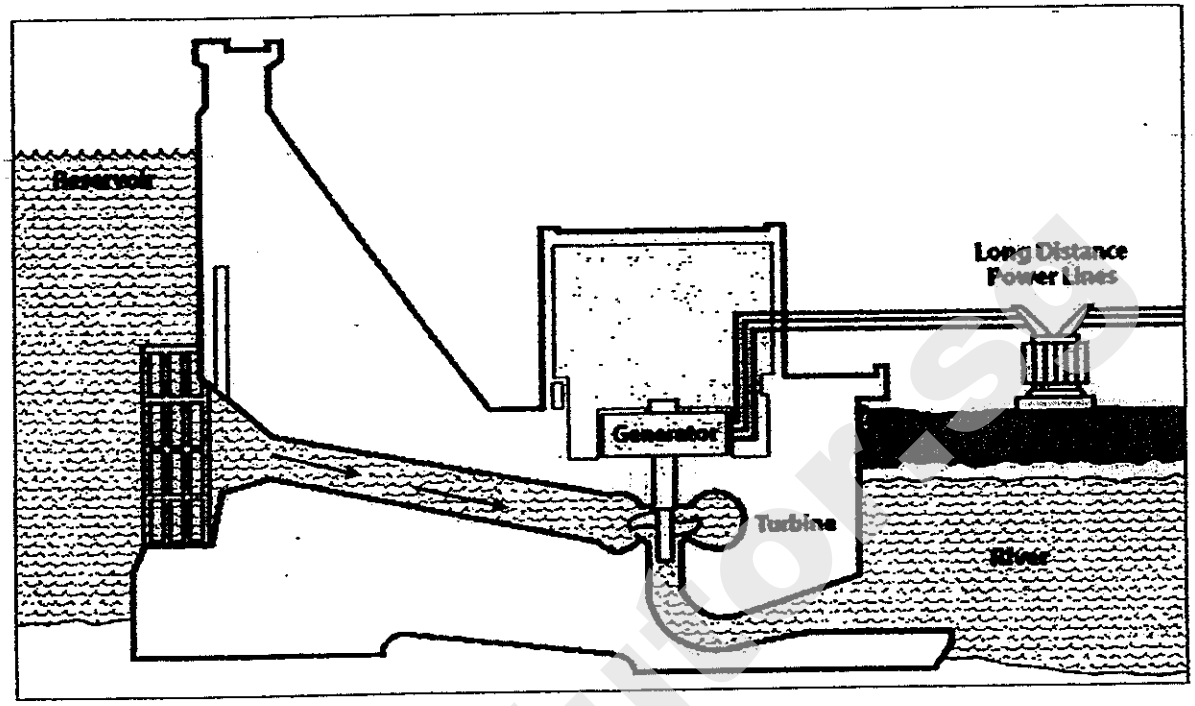
27 Which of the following statement(s) is/are true?

A All living things depend directly on plants for food.
B The Sun is the main source of energy for all living things.
C Energy is transferred from the Sun to plants during photosynthesis.
D Oxygen, water and sunlight are combined in a green leaf to make food.

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

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28 The diagram below shows a hydro-electric power station.



Hydroelectricity is electricity generated through the use of the gravitational force of falling or flowing water.

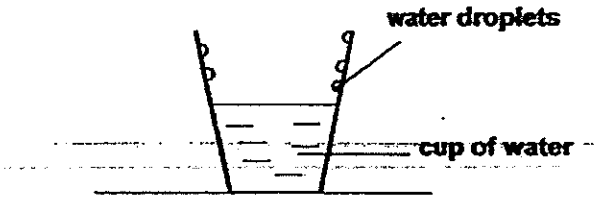
Which one of the following correctly shows the forms of energy at the various locations in the hydro-electric power station?

	Reservoir	Turbine	Generator
(1)	Gravitational potential energy	Kinetic energy	Electrical energy
(2)	Gravitational potential energy	Kinetic energy	Kinetic energy
(3)	Kinetic energy	Kinetic energy	Electrical energy
(4)	Kinetic energy	Electrical energy	Sound energy

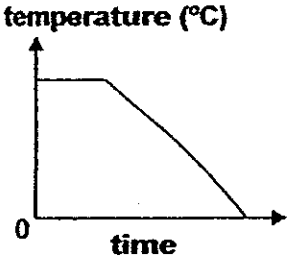
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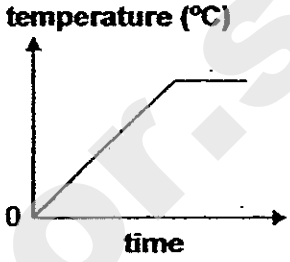
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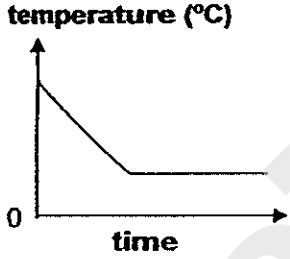
29 Ryan placed a cup of water on the table as shown below.

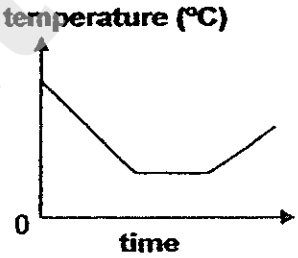


Which one of the following graphs correctly shows the change in temperature of the cup of water over time?

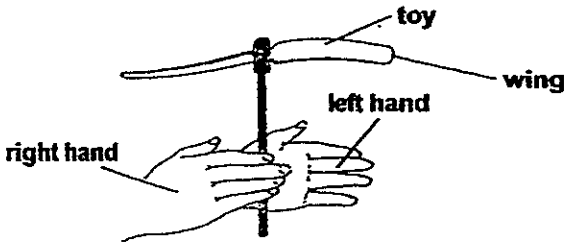
(1)


(2)


(3)


(4)


30 Isaac held a toy between his hands as shown below. He rotated the toy by sliding his right hand forward and his left hand backwards at the same time before releasing it. The toy flew to a high height after it left his hands.



He rotated the same toy at the same starting point again. However, he noticed that the toy flew to a lower height than the first try. Which one of the following best explains why the toy could fly higher the first time?

(1) The toy had a smaller mass.
(2) The toy was spun more slowly.
(3) The toy had more kinetic energy.
(4) The toy had more gravitational potential energy.

End of Booklet A

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Index No. | | | | | | – | |

ANGLO-CHINESE SCHOOL (JUNIOR)
ANGLO-CHINESE SCHOOL (PRIMARY)

COMBINED PRELIMINARY EXAMINATION 2014

SCIENCE

BOOKLET B

22 August 2014 1 hour 45 minutes

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 ~~16~~ 14 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 40.

The total time for Booklets A and B is 1 hour 45 minutes.

This question paper consists of 14 printed pages (inclusive of cover page).

BOOKLET A	/ 60
BOOKLET B	/ 40
TOTAL	/ 100
Parent's signature/ Date:	

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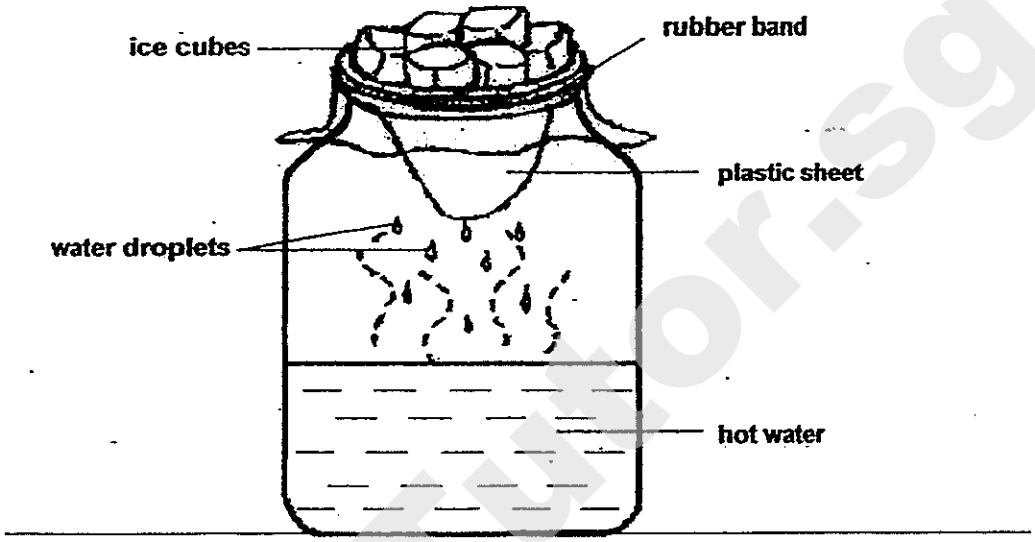
For questions 31 to 44, write your answers in the spaces provided in this booklet.

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

(40 marks)

---

31 Roy set up a model to show the water cycle. He poured some hot water into a bottle and covered it with a plastic sheet. Then, he placed some ice cubes on top of the plastic sheet as shown in the diagram below and observed the set-up for five minutes.



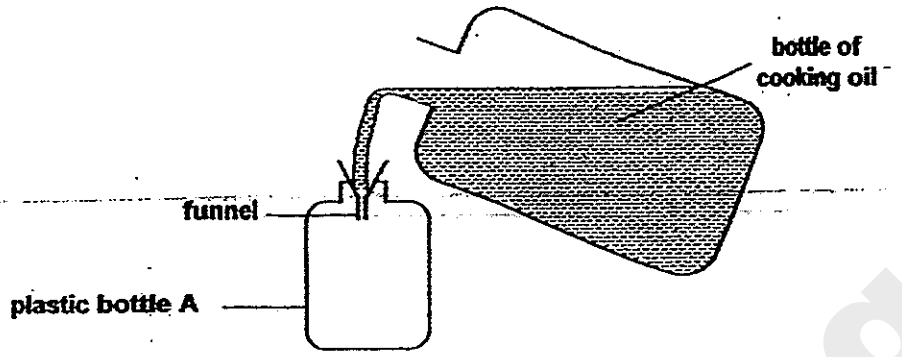
(a) He observed water droplets dripping from the plastic sheet into the bottle. Explain how the water droplets were formed on the plastic sheet in the bottle. [2]

(b) Roy repeated the experiment and replaced the hot water with cold water at 5°C. This time, he did not observe any water droplets forming inside the bottle. Give a reason for his observation. [1]

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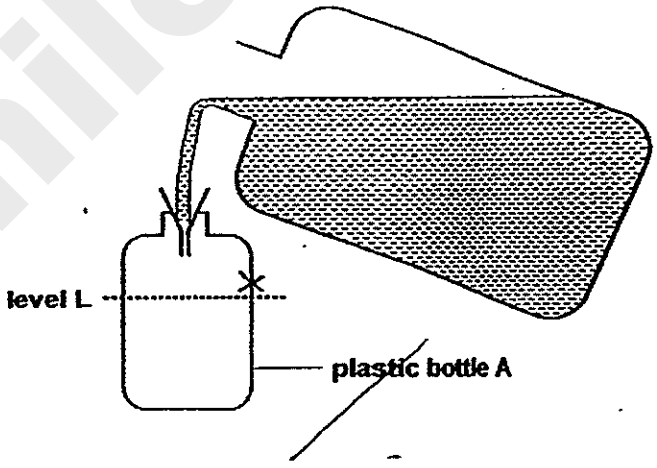
32 Lionel transferred some cooking oil into a plastic bottle, A, as shown in the diagram below.



He started to pour the cooking oil carefully into plastic bottle A using a funnel. At first, he noticed some cooking oil flowing into the plastic bottle A. However, after a while, the cooking oil did not flow into the bottle but overflowed instead even though bottle A was not yet full.

(a) Explain why the cooking oil overflowed even though plastic bottle A was not yet full. [1]

(b) Lionel decided to make a small hole in the plastic bottle A so that the cooking oil can flow in up to level L faster. Mark on the diagram below with a letter "X" to indicate where he should create the small hole. [1]

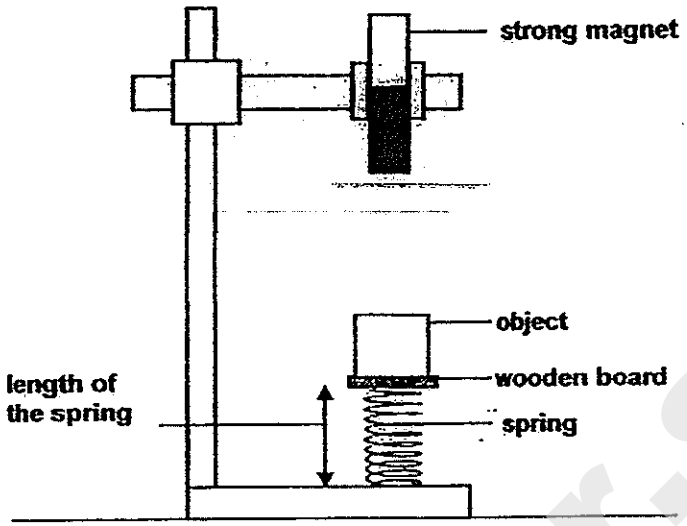


(c) Suggest another method Lionel can use to fill up plastic bottle A faster without changing the bottle. [1]

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33 Alex set up an experiment as shown in the diagram below.



He attached three different objects, X, Y and Z of the same mass and shape to the spring (by fastening them to a piece of wooden board using some tape) one at a time and recorded his observations as shown in the table below. The original length of the spring was 10 cm.

Object	Length of spring (cm)
X	15
Y	5
Z	9

(a) If object Z is made of plastic,

(i) What material could object X be?

X: _____ [1]

(ii) What is object Y likely to be?

Y: _____ [1]

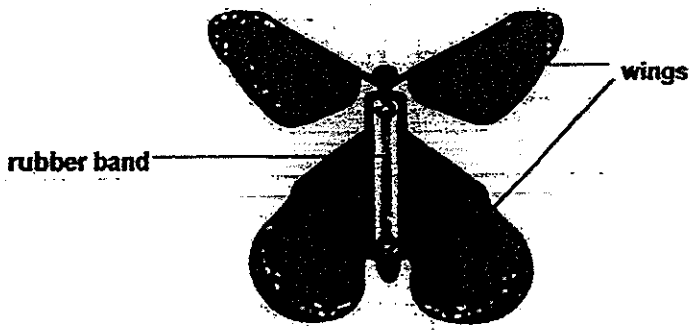
(b) Give a reason for your answer in (a) part (ii). [1]

_____

_____

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34 Nathan bought a toy butterfly as shown in the diagram below.



He turned the rubber band a few times before releasing the toy into the air. The toy then flew a short distance before falling to the ground. He measured the distance travelled by the toy and recorded it in a table as shown below.

He repeated the activity by increasing the number of turns made on the rubber band each time.

Number of turns on the rubber band	5	10	15	20	25	30
Distance travelled by the toy (cm)	50	100	150	200	200	200

(a) State the force that causes the toy to flap its wings when released. [1]

_____

(b) Based on the results in the table above, what is the relationship between the number of turns on the rubber band and the distance travelled by the toy? [1]

_____

_____

_____

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(c) Suggest one modification that can be done to the wings of the toy so that it can travel a distance of more than 200 cm. [1]

_____

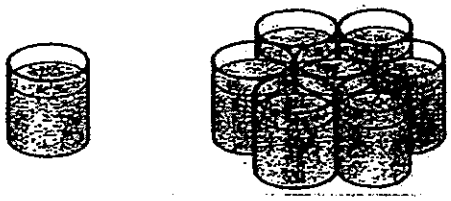
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SCORE / 2

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35 Matthew carried out an investigation as shown below. All the beakers used are identical.



beaker P

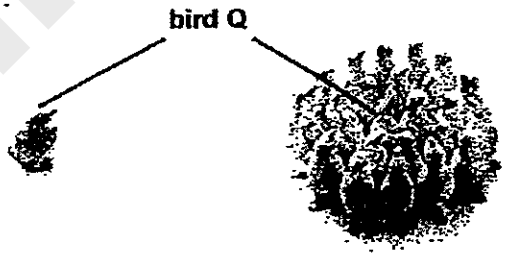
beaker Q in center, surrounded by six other similar beakers of water

He filled beaker P with 200 ml water at 90°C. He measured the temperature of water in beaker P every 5 minutes for 20 minutes. Next, he also filled beaker Q with 200 ml water at 90°C and surrounded beaker Q with six other similar beakers, each also filled with 200 ml water at 90°C. He recorded his results in a table below.

	Time (minutes)				
	0	5	10	15	20
Temperature of water in beaker P (°C)	90	81	73	66	60
Temperature of water in beaker Q (°C)	90	89	88	86	85

(a) Based on the data recorded, what can Matthew conclude from his experiment? [1]

The birds shown below live in a cold environment and they behave in a special way in order to survive the cold weather.



situation A

situation B

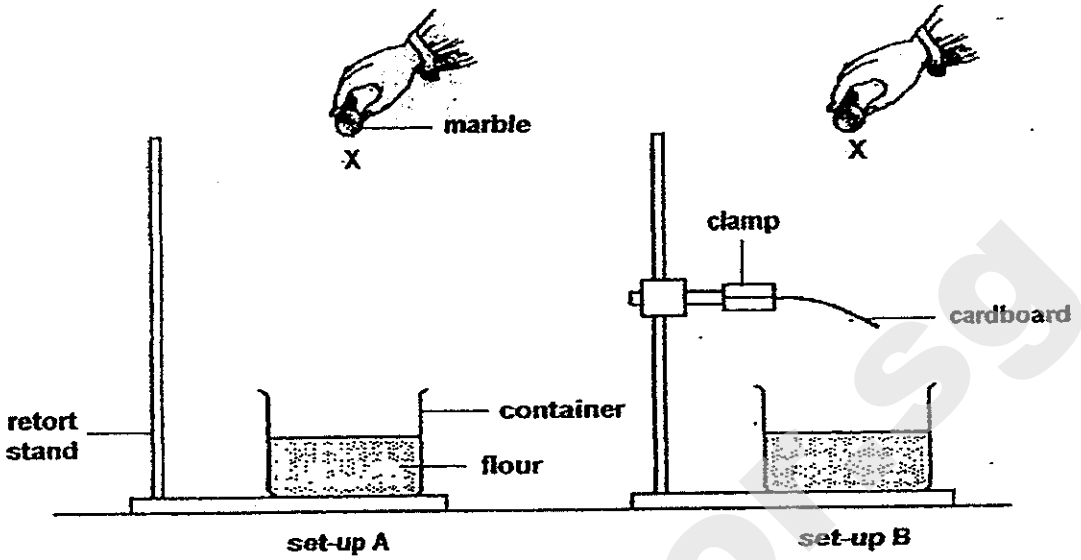
(b) Explain how bird Q in situation B has a higher chance of survival, as compared to if it is in situation A, when the temperature in the environment it lives in becomes low. [2]

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SCORE

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36 Sean wanted to find out how to reduce the impact of a falling object. He set up an experiment as shown below.



Sean dropped the marble from point X as shown in set-up A. He then measured the depth of the depression in the flour made by the marble. Next, he placed a clamp holding a cardboard on the retort stand as shown in set-up B. He dropped the same marble from point X, making sure the marble hits the cardboard before landing on the flour.

(a) What difference would Sean observe in the depth of depressions made in the set-ups? [1]

Soil erosion occurs when a sloping ground becomes bare and exposed to the rain. One way to prevent this is to plant grass on the sloping ground.

(b) Other than having the grass to hold the soil together, based on Sean's experiment, explain how grass can help to prevent erosion when there is heavy rain. [2]

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37 Plant X produces seeds that have sweet fleshy structures attached to the seeds. These structures attract different species of ants to the seeds. The ants will carry the seeds back to their underground nest to feed their young. The young only feed on the sweet fleshy structures but not on the seed.

(a) State one benefit for the ants when they carry the seeds back to their underground nest. [1]

_____

_____

(b) State and explain a benefit for plant X when the different species of ants carry the seeds back to their underground nest. [2]

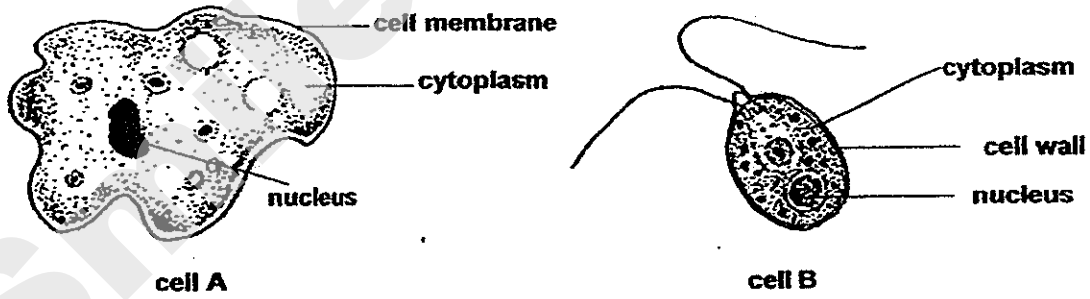
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_____

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_____

38 The following diagram shows two single-celled organisms that are found in ponds and streams.



(a) Which cell is likely to be a plant cell? Give a reason for your answer. [1]

_____

_____

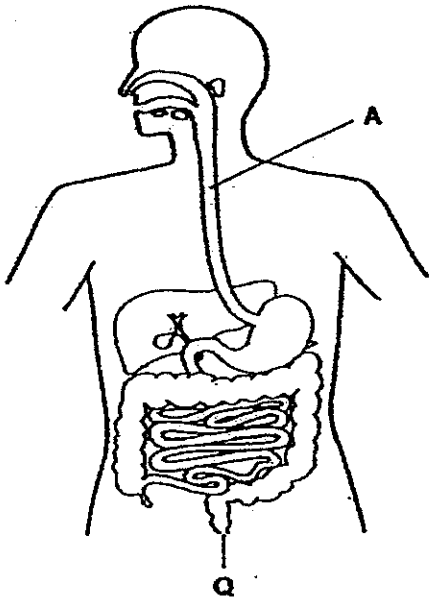
(b) What are the two main functions of a nucleus?

_____

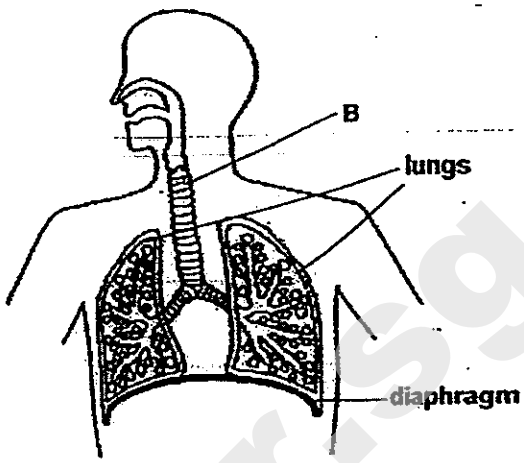
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39 The diagrams below show the digestive and respiratory systems in a human.



Digestive system



Respiratory system

(a) What is the difference in the function of parts A and B? [1]

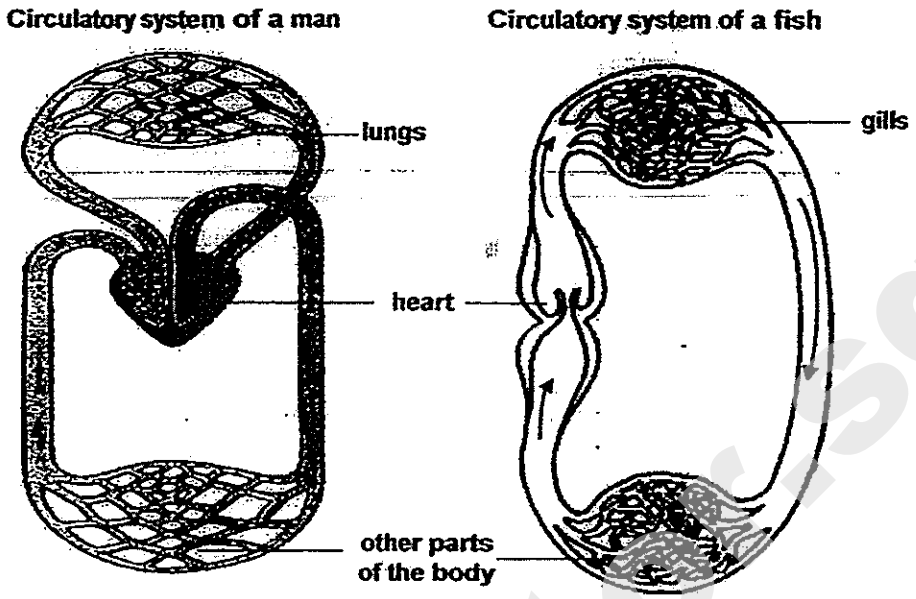
(b) State the function of part Q. [1]

(c) Based on the diagram of the digestive system, what will happen if the small intestine is the same length as the large intestine? Give a reason for your answer. [1]

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40 The diagrams below show the circulatory system of a man and that of a fish.



(a) Based on the diagrams above, state one difference between the direction of flow of blood in man and in fish. [1]

_____

_____

(b) Man and fish need oxygen for breathing. Describe how man and fish absorb oxygen into their blood stream. [1]

_____

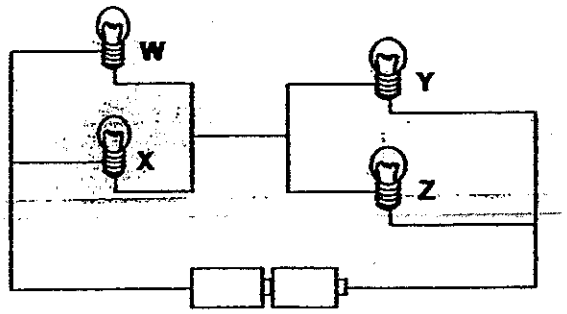
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41 Study the diagram below.



Circuit A

(a) Which bulb(s) will remain lit if bulb X in the circuit above blows? [1]

_____

(b) Draw a circuit diagram, Circuit B, below to show how three bulbs can be lit individually using appropriate number of switches. The batteries have been drawn for you. [1]

Circuit B

(c) Besides being able to control each bulb individually, state another advantage of Circuit B compared to Circuit A. [1]

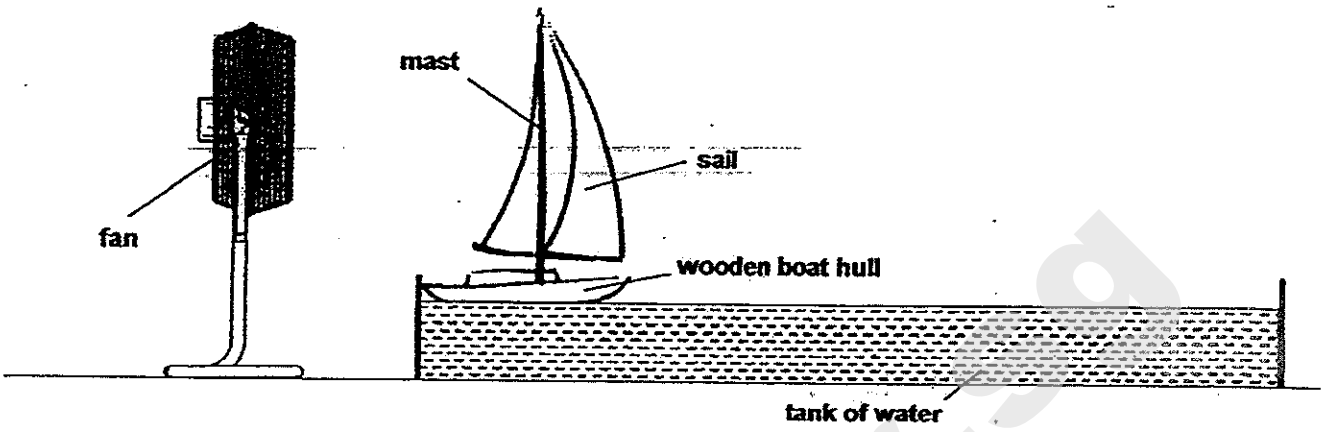
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42 Ivan wanted to find out how the area of the sail affects the time taken for the toy boat to move a certain distance. He made a toy boat as shown below.



He placed the toy boat in a large tank of water. He switched on the fan and recorded the time taken by the toy boat to travel a distance of 100 cm. He recorded his results in the table below.

Area of the sail (cm^2)	Time taken to travel 100 cm (s)
20	32
30	20
40	12

(a) What conclusion can Ivan make from the results of his experiment? [1]

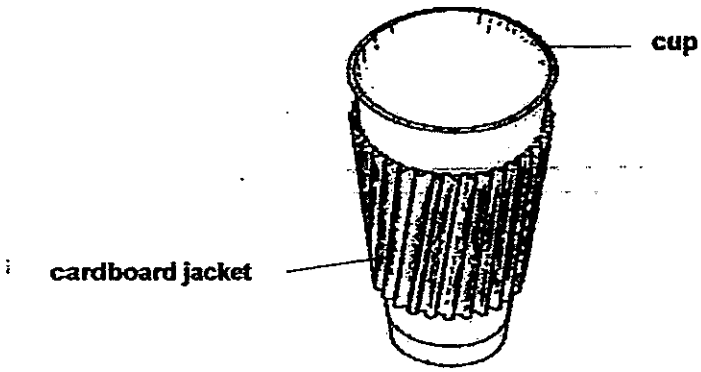
(b) Ivan kept the speed of the fan the same during his experiment. How would this ensure a fair test? [1]

(c) Describe what Ivan should do to the current set-up to find out if the material of the sail affects the time taken for the toy boat to travel a distance of 100 cm. [1]

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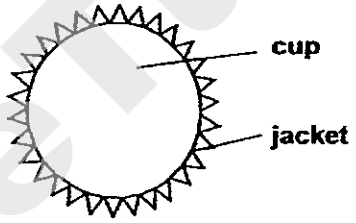
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43 Regan noticed that coffee outlets usually wrap a cardboard jacket around the cup of hot coffee for their customers to take away as shown below.



(a) How does the cardboard jacket prevent customers from burning their hands? [1]

(b) Regan observed the structure of the jacket from the top view as shown below.



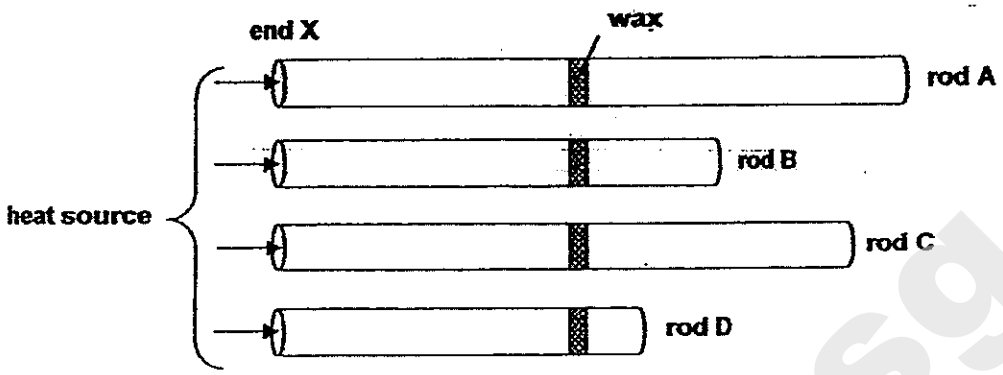
How does the structure of the cardboard jacket help to serve its purpose? [1]

(c) Other than your answer in (a), state two properties of cardboard that makes it suitable for making the jacket. [1]

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44 Kenny used four rods of identical diameters for an experiment. The rods were made of different materials. He put a ring of wax around each of them and heated each rod at end X with the same amount of heat. He recorded the time it took for each ring of wax to melt off.



Rod	Time taken for wax to melt completely (minutes)
A	12
B	15
C	6
D	21

(a) Based on the results of Kenny's experiment, what was he trying to find out? [1]

(b) Compare the results for Rod B and Rod D. Which rod is a better conductor of heat? Give a reason for your answer. [1]

(c) If he increased the thickness of Rod C and repeated the experiment, would the time taken for the ring of wax to melt be longer or shorter? Explain your answer. [1]

End of Booklet B

SCORE / 2

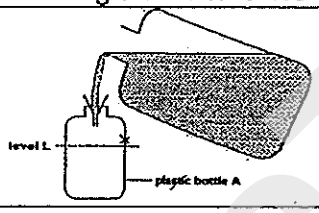
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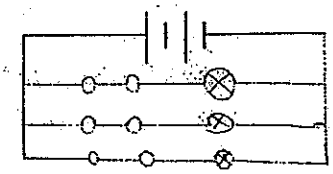
EXAM PAPER 2014
LEVEL : PRIMARY 6
SCHOOL : ACS (JUNIOR)/(PRIMARY)
SUBJECT : SCIENCE
TERM : PRELIMINARY

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

Q31	(a)	The hot water evaporated and formed the water vapour which rose and touched the cooler surface of the plastic sheet causing it to form water droplets.
	(b)	The temperature difference was smaller so condensation happened slower.
Q32	(a)	The air inside plastic bottle A occupied the space in the bottle not allowing the oil to enter.
	(b)	
	(c)	He can remove the funnel.
Q33	(a)	X : Iron Y: Magnet
	(b)	Like poles of 2 magnets will repel. Thus when the magnet repel, the spring will be compressed and so the length of the spring will be much shorter than the original length.
Q34	(a)	Elastic force
	(b)	The higher the number of turns on the rubber band, the further the toy butterfly travel in the air.
	(c)	Use bigger wings.
Q35	(a)	Beaker P is losing heat to the surrounding faster than Beaker B as Beaker Q is surrounded by six other similar beakers of water.
	(b)	In situation B, Q stays close together with other birds, hence its surrounding temp is higher and body loses heat slower than in situation A.
Q36	(a)	The depression in set up B will be shallower than that in set-up A.
	(b)	The grass helps to cushion the falling raindrops so the raindrops would not loosen the soil when they hit the ground.

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Q37	(a)	They got to feed on the sweet flesh.
	(b)	The plants are dispersed further away from the parent plant so they do not have to compete for sunlight, water, nutrients and space to allow each plant to grow better.
Q38	(a)	Cell B. It Has a cell wall which only plant cells have.
	(b)	It controls activities with the cell.
Q39	(a)	Part A transports food from the mouth to the stomach while Part B transports air to and from the nose and the lungs.
	(b)	It removes the waste from the body.
	(c)	The small intestine would absorbs less digested food as the surface decreases.
Q40	(a)	The direction of flow of blood in a man forms an '8' while the direction of flow of blood for fish is in 1 direction.
	(b)	Man uses lungs while fish uses gills.
Q41	(a)	Bulb W, Y and Z
	(b)	
	(c)	If one light bulb fused, the other two bulbs will remain lit.
Q42	(a)	Ivan can conclude that a sail with larger area on a boat will use shorter amount of time to travel.
	(b)	The speed of the fan affects the results. Since the variable is the area of the sail, the speed of the fan should not be changed.
	(c)	Different materials should be used but the area for each material to remain the same.
Q43	(a)	The cardboard reduces the conductivity of heat from the hot coffee in the cup to our hands.
	(b)	The jacket provided less surface area of contact between the finger/hand and the cup, hence, there is less heat gain by the fingers. The customer would be able to hold the cup more comfortably for longer period of time without being burnt or feeling hot.
	(c)	It is a poor conductor of heat and it is light.
Q44	(a)	He was trying to find out if the material of the rod will affect the conductivity of heat.
	(b)	Rod B is a better conductor of heat thus the wax took a shorter time to melt.
	(c)	It would be longer. The rod would have to conduct more heat.

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CATHOLIC HIGH SCHOOL
PRELIMINARY EXAMINATION 2
2014
PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____ ( )

Class: Primary 6 - _____

Date: 25 August 2014

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 26 printed pages, excluding cover page.

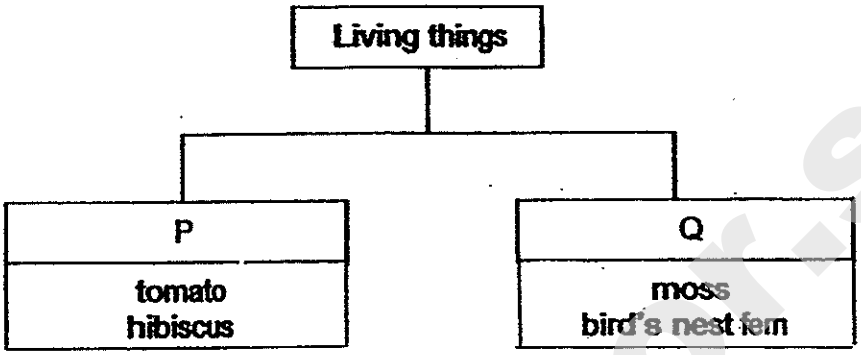
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Booklet A (30 × 2 marks)

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 chart below shows how some living things can be grouped.



Which one of the following correctly shows the characteristics of P and Q?

	P	Q
(1)	Grow on land	Grow in water
(2)	Make their own food	Do not make their own food
(3)	Reproduce from seeds	Reproduce from spores
(4)	Have fruit with many seeds	Have fruit with no seeds

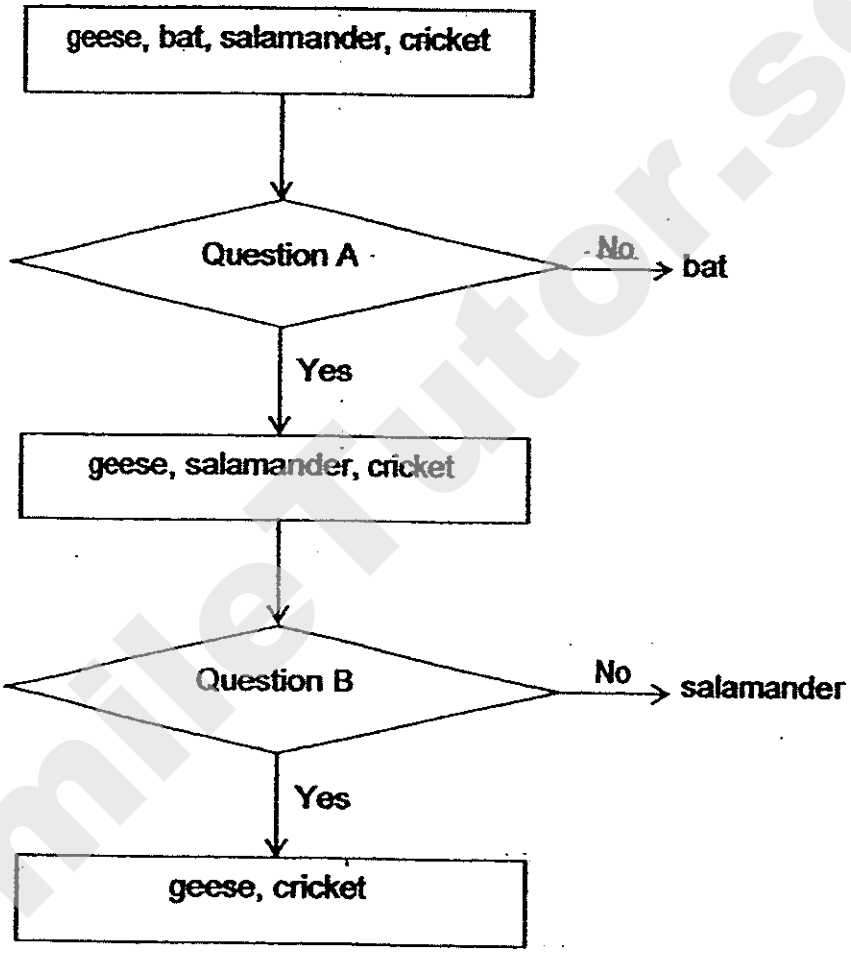
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2 Abel classified the four animals in the flow chart as shown below.



geese bat salamander cricket

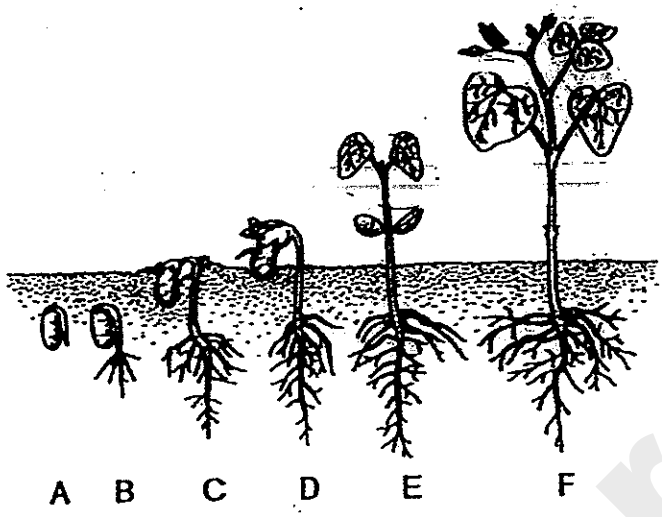


What were the two questions, A and B?

	Question A	Question B
(1)	Do they have wings?	Do they lay eggs?
(2)	Do they lay eggs?	Do they have wings?
(3)	Do they have wings?	Do they have a hard outer covering?
(4)	Do they lay eggs?	Do they have a hard outer covering?

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3 The diagram below shows the different stages of the growth of a seed into a seedling.



At which stage(s) can the seedling make its own food?

(1) E only
(2) F only
(3) E and F only
(4) D, E and F only

4 The table below shows the survival rate of organism Y in four habitats, P, Q, R and S.

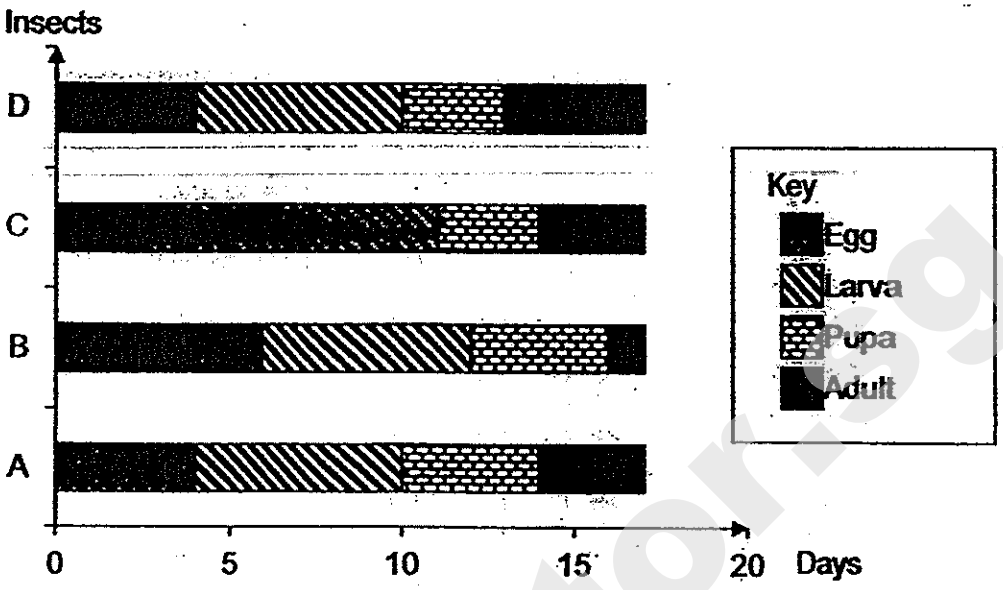
Type of habitat	Number of organism Y hatched from eggs	Number of developing young	Number of adults formed
P	39	37	36
Q	39	37	25
R	37	3	0
S	38	33	30

Which habitat is the most suitable for organism Y to survive in?

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

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5 The graph below shows the length (number of days) of the stages in the life cycle of four insects, A, B, C, and D



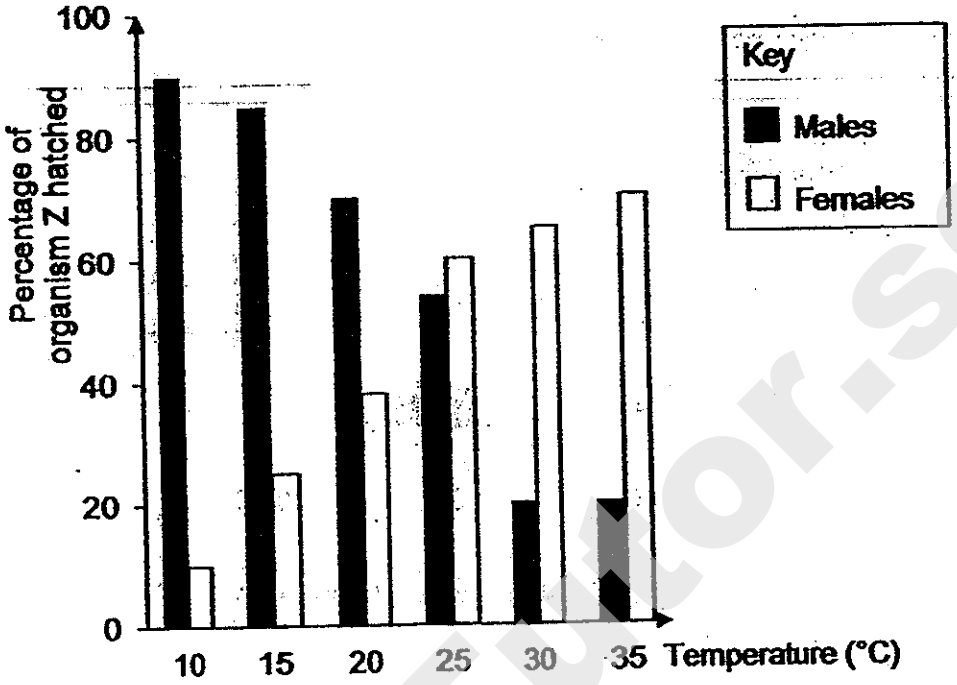
This insect is the most active in the larval stage and will feed on the leaves of crop X.
Which one of the insects above will cause the greatest damage to the farmer?

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

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6 Organism Z is found in habitat X The graph below shows the temperature of habitat X in a particular year and the percentage of males and females hatched from the eggs of organism Z.



Which one of the following relationships between the percentage of females or males of organism Z hatched and the temperature is correct?

(1) As the temperature increases, the percentage of males hatched increases.

(2) As the temperature decreases, the percentage of males hatched decreases.

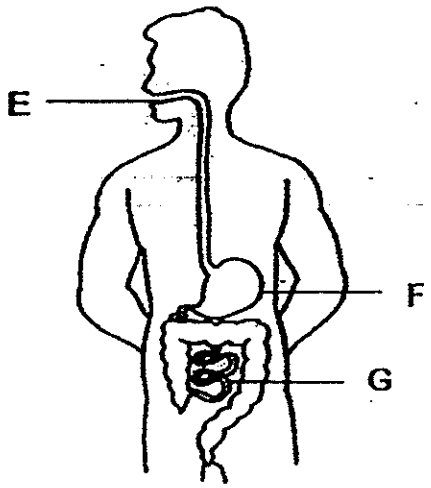
(3) As the temperature increases, the percentage of females hatched increases.

(4) As the temperature decreases, the percentage of females hatched increases.

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7 The diagram below shows the digestive system of a human.



Which one of the following correctly matches the parts, E, F and G, of the human digestive system to their functions?

	Breaking food into smaller pieces	Release of digestive juices	Absorption of most amount of digested food
(1)	E	E, F, G	G
(2)	F	F, G	E
(3)	E, F	F, G	G
(4)	E, F	E, F, G	F, G

8 Which of the following statements about cell is/are false?

A Cells are the basic unit of all living things.

B As an organism grows, the number of cells increases.

C The size of a cell depends on the size of the organism.

(1) A only

(2) C only

(3) A and B only

(4) B and C only

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9 Jin Xian carried out an experiment using four similar pots of small plants. He watered them with different amounts of water daily for two weeks.

Set-up	Amount of water (ml)
A	25
B	60
C	80
D	150

He then measured the heights of the plants on the 5th 10th and 14th day. The results are shown in the table below. The plants are considered to be growing well if they have grown by at least 10 cm after two weeks.

Day	Average height of plants (cm)			
	Set-up A	Set-up B	Set-up C	Set-up D
0	5	5	5	5
5	9	12	12	11
10	12	19	18	19
14	14	22	25	27

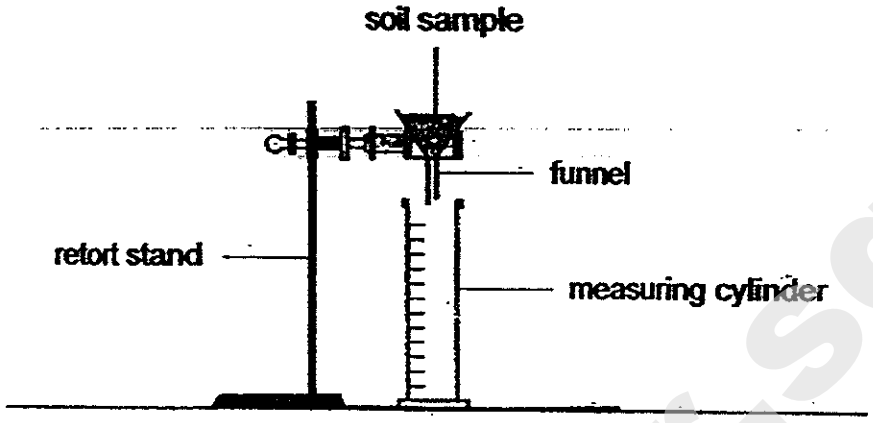
What is the least amount of water to be given daily to the plants to ensure that they will grow well?

(1) 25 ml
(2) 60 ml
(3) 80 ml
(4) 150 ml

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10 Nora collected four soil samples, K, L, M and N. She then poured water through the four soil samples, one at a time, using the set-up as shown below.



The average time taken for her to collect 20 ml of water was recorded in the table below.

Soil sample	Average time taken to collect 20 ml of water (s)
K	14
L	35
M	29
N	41

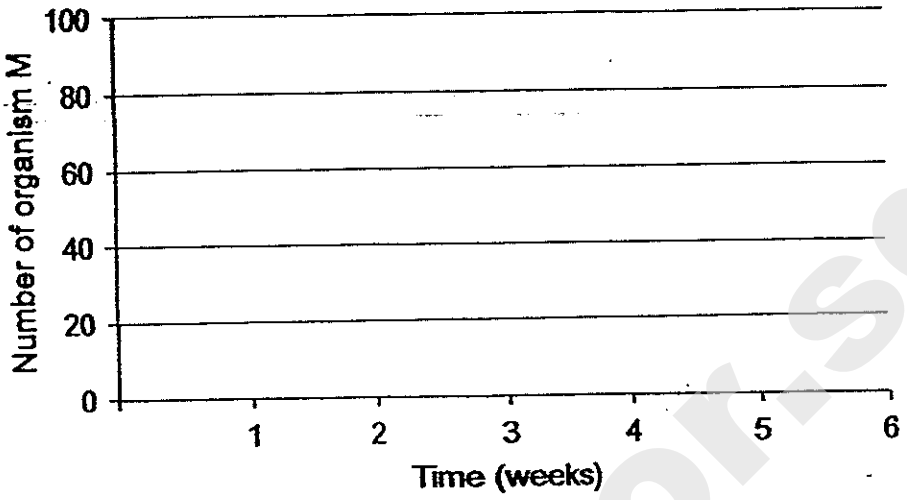
Which one of the following correctly shows the size of the soil particles in soil samples, K, L, M and N, in decreasing order?

(1) K, M, L, N
(2) K, L, M, N
(3) N, L, M, K
(4) N, M, L, K

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11 Eugene introduced a population of 100 organism M into his garden. The graph below shows how the population of organism M changed over a period of 6 weeks.



Which of the following statements is/are true about the population of organism M?

A The population of organism M decreases most in the second week.

B The population of organism M remains constant for two weeks after the fourth week.

C The population of organism M decreases more in the third week than in the fourth week.

D The population of organism M decreases more in the first three weeks than in the last three weeks.

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

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12 The table below shows the characteristics of four different habitats, A, B, C and D, in an environment.

Characteristics of the habitat	Habitat			
	A	B	C	D
Temperature	Fluctuates widely	Fluctuates widely	Little or no change	Some changes
Light Intensity	High	Low	High	Low
Presence of water	Dry	A little damp	Damp	Very wet

Xue Ting found an organism in one of the habitats. She observed the following characteristics of the organism:

- Has an ability to store water
- Needs light for survival
- Has a waxy outer surface

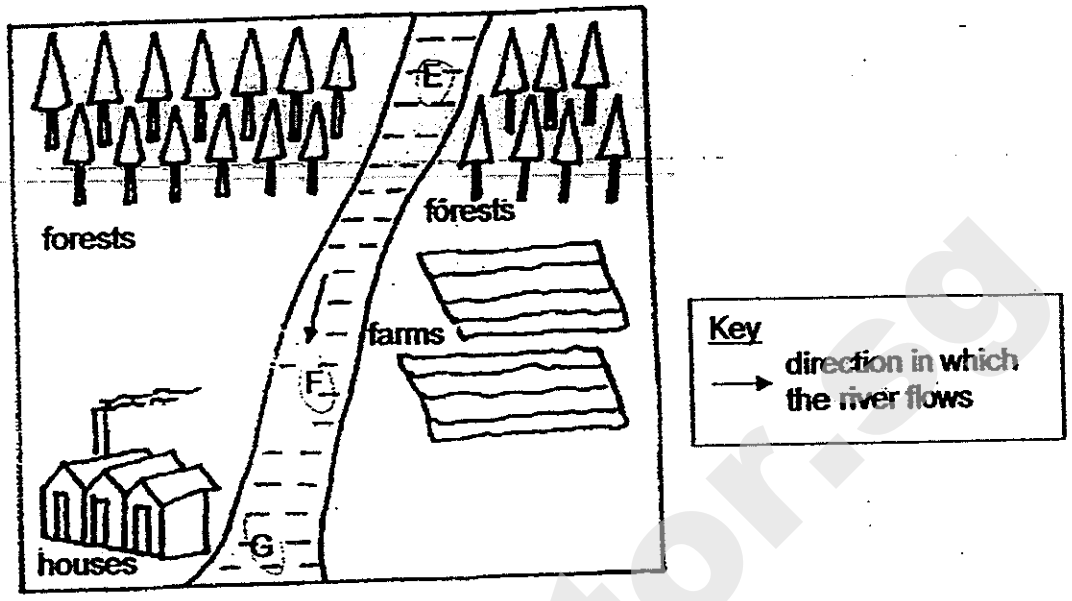
In which habitat did she most likely find the organism?

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

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13 A river runs through a forest as shown in the diagram below.



Water samples were collected at positions, E,F and G, in the river and analysed for the amount of bacteria found in the water.

Which one of the following shows the correct order of the samples of water with increasing amount of bacteria in them?

	Increasing amount of bacteria in the water samples →		
(1)	G	F	E
(2)	E	F	G
(3)	E	G	F
(4)	F	E	G

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14 A plant with leaves of green and white areas was left in a dark cupboard for 48 hours. Diagram 1 shows one of its leaves.

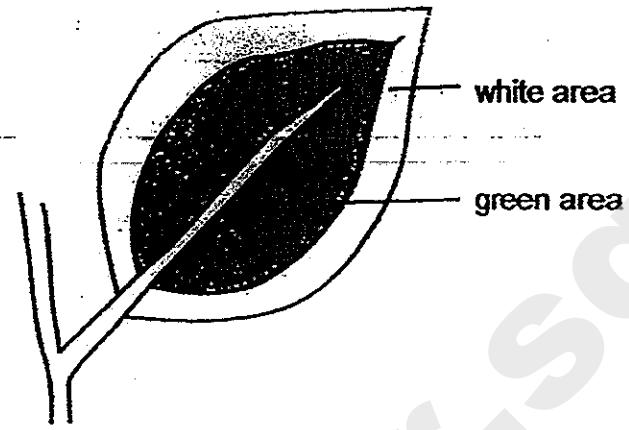


Diagram 1

Next, the top and underside of the leaf was each partially covered by a strip of black paper, as shown in Diagram 2 below.

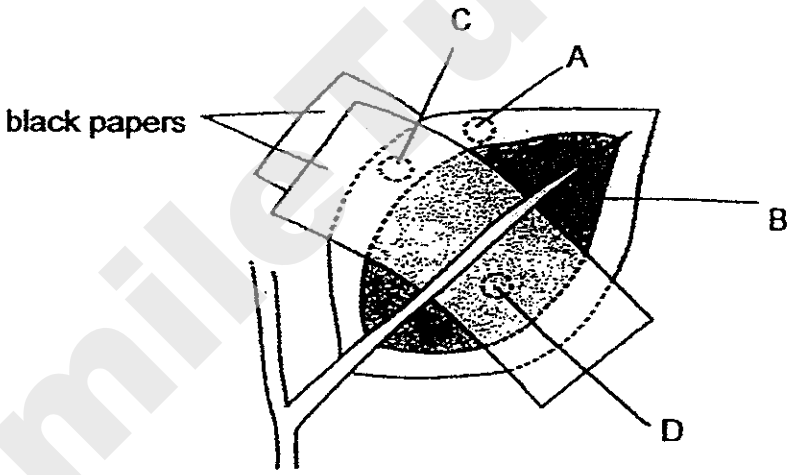


Diagram 2

The plant was then left in the sun. After a day, the leaf was plucked off and the strips of black paper were removed from both sides of the leaf. The leaf was then tested for the presence of food. In which of the areas labelled A, B, C and D is food mostly found?

(1) A only

(2) B only

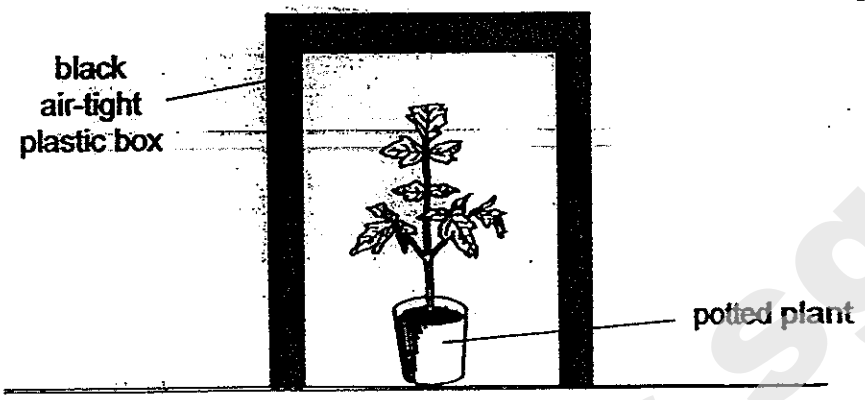
(3) A and B only

(4) C and D only

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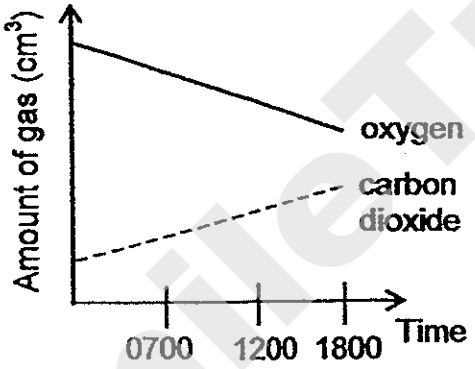
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15 A potted plant was given sufficient amount of water and placed in a black air-tight plastic box for a day in a garden as shown below.

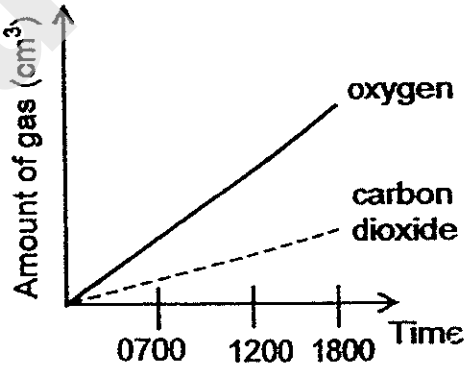


Which one of the following graphs shows the changes in the amount of oxygen and carbon dioxide present in the box during the day?

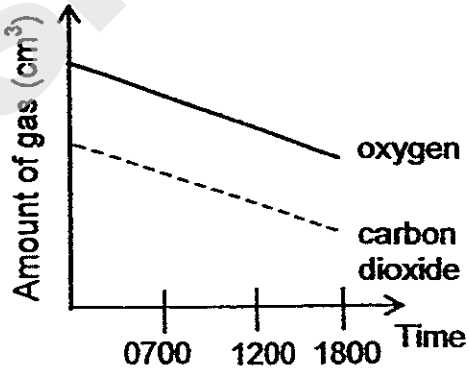
(1)



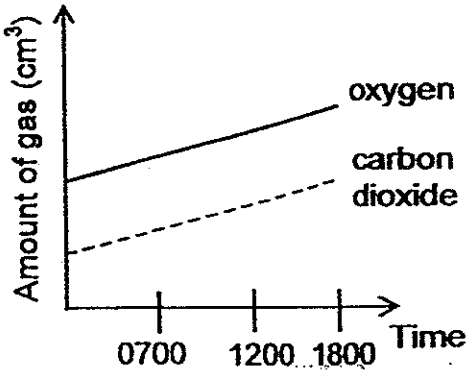
(2)



(3)



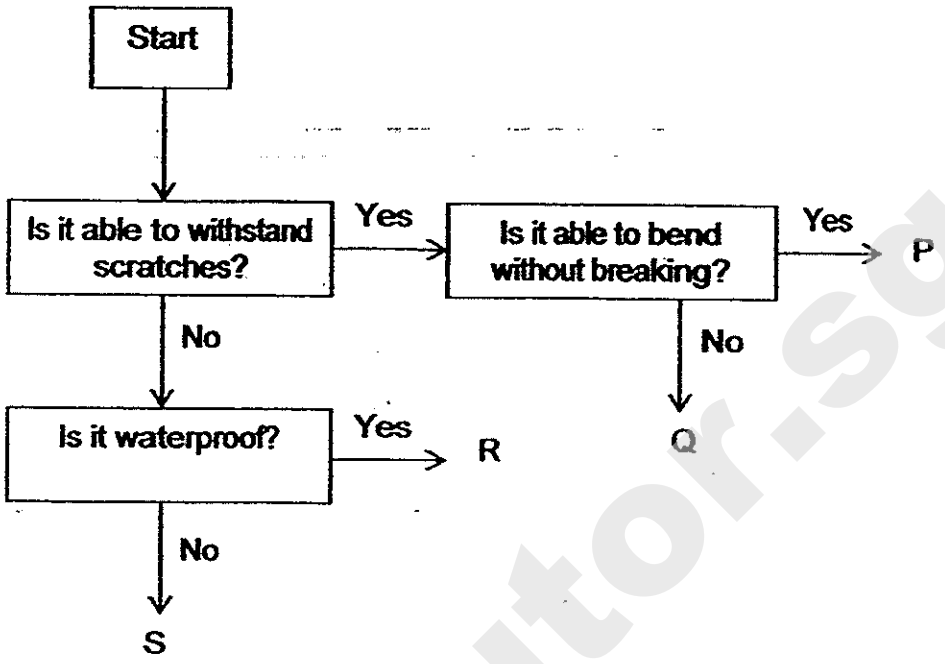
(4)



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16 The flow chart below shows how four different objects, P, Q, R and S, are classified.



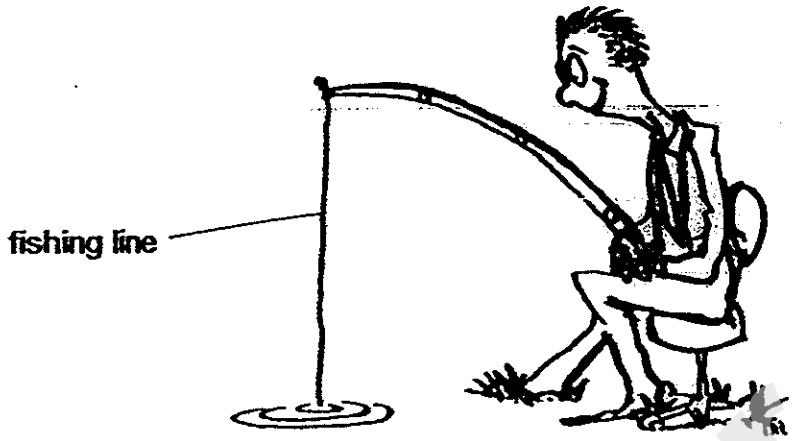
Based on the flow chart above, which of the objects, P, Q, R or S, best represents a towel?

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

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17 Thomas carried out an experiment to test the strength of four materials, A, B, C and D, used to make fishing lines. He added weights of 5 kg at a time to each of the four materials.



He recorded the number of weights needed for each material to break in the table below.

Materials	Number of weights added just before the material broke
A	4
B	9
C	6
D	2

Which of the materials should he choose that would allow him to catch a fish of about 40 kg?

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

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18 The table below shows the state of four substances, A, B, C and D, at different temperatures.

Substance	State of substance at		
	20°C	40°C	60°C
A	solid	solid	solid
B	solid	liquid	liquid
C	solid	solid	liquid
D	liquid	liquid	liquid

Which one of the following statements is correct?

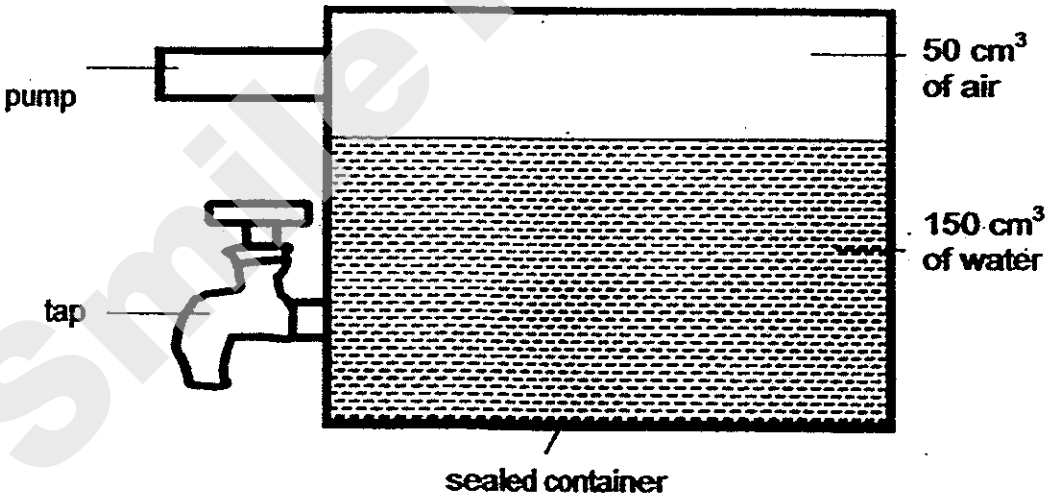
(1) The boiling point of Substance C is 60°C.

(2) Substance D has the lowest boiling point.

(3) The freezing point of Substance B is 60°C.

(4) Substance A has the highest freezing point.

19 Kelvin conducted an experiment using the set-up as shown below.



He turned on the tap to drain out 20 cm^3 of water. Next, he used the pump to pump in 15 cm^3 of air into the sealed container.

What was the final volume of air in the sealed container?

(1) 50 cm^3

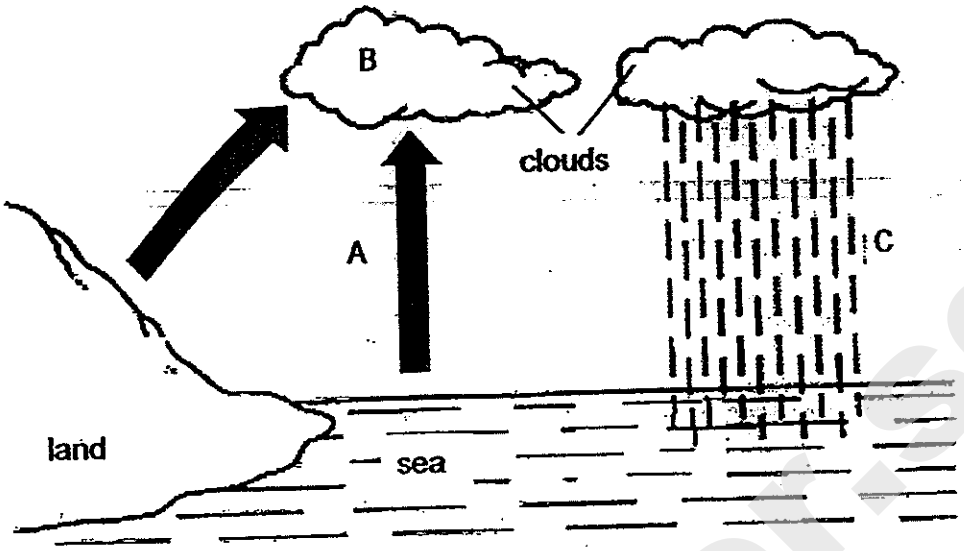
(2) 65 cm^3

(3) 70 cm^3

(4) 95 cm^3

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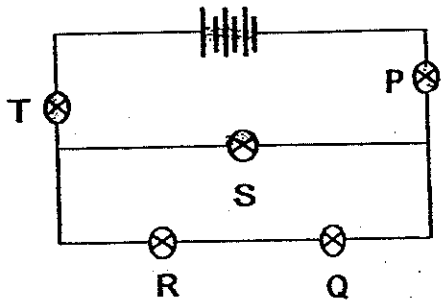
20 The diagram below shows the water cycle.



Which states of matter of water do A, B and C represent?

	State of matter		
	A	B	C
(1)	gas	gas	liquid
(2)	solid	solid	liquid
(3)	gas	liquid	liquid
(4)	liquid	liquid	gas

21 Felicia set up five bulbs, P, Q, R, S and T, in the circuit as shown below.



How many bulbs will remain lit when bulb Q fuses?

(1) 1

(2) 2

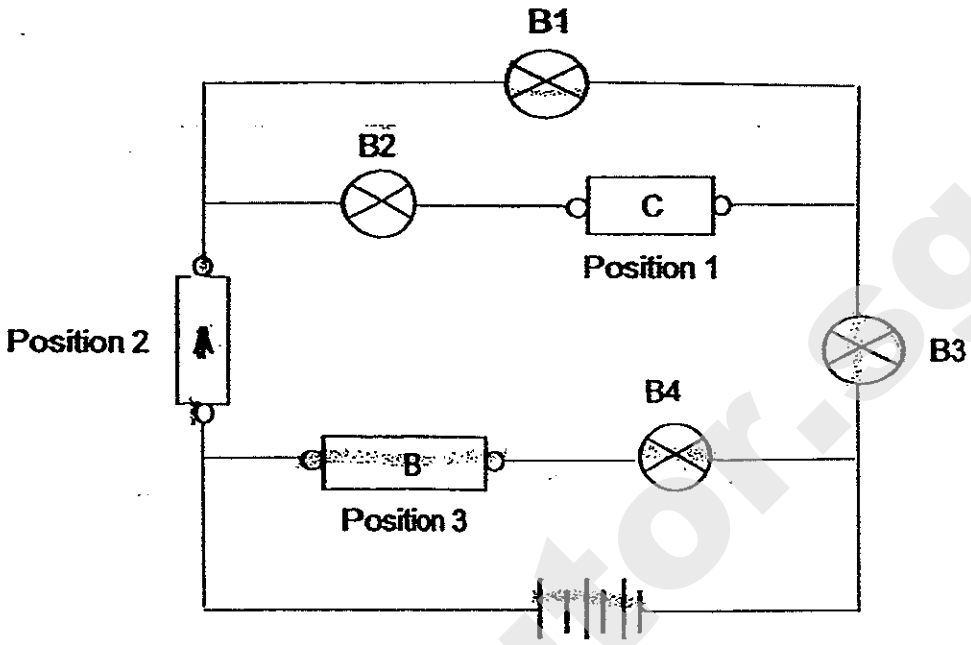
(3) 3

(4) 4

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22 Han Yu had three rods, A,b and C, made of different materials. He wanted to test the electrical conductivity of the rods using an electrical circuit by placing them at various positions as shown in the diagram below.



The table below shows his observations.

Bulbs	B1	B2	B3	B4
Did the bulb light up?	Yes	No	Yes	Yes

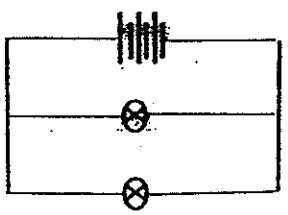
Which one of the following correctly shows the electrical conductivity of the rods A, B and C?

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

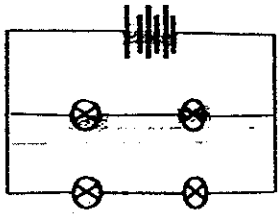
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23 The circuit diagrams below show four circuits, P, Q, R and S. The batteries and bulbs used are identical and are all working properly.



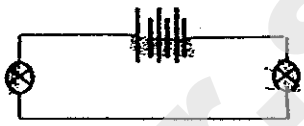
Circuit P



Circuit Q



Circuit R



Circuit S

Which of the following statements about the brightness of the bulbs is/are correct?

A Each bulb in circuit P is as bright as the bulb in circuit S.

B Each bulb in circuit P is as bright as the bulb in circuit R.

C Each bulb in circuit S is as bright as the bulb in circuit Q.

(1) B only

(2) C only

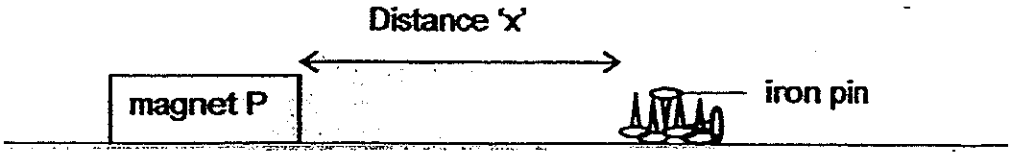
(3) B and C only

(4) A, B and C

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24 Tricia carried out an experiment to find out the magnetic strength of the three magnets, P, Q and R, using the set-up as shown below.



She slowly moved magnet P towards some iron pins until the magnet first attracted the pins from a distance, X. She then repeated the procedure twice and calculated the average distance. The experiment was then repeated with two other magnets, Q and R.

The results are shown in the table below.

Magnet	Distance 'x' (cm)			
	First attempt	Second attempt	Third attempt	Average
P	3.5	4.0	3.9	3.8
Q	1.2	1.5	1.8	1.5
R	2.4	2.2	2.6	2.4

Which one of the following shows the correct order of the magnetic strength of the magnets, P, Q and R, from the strongest to the weakest?

(1) P, R, Q

(2) P, Q, R

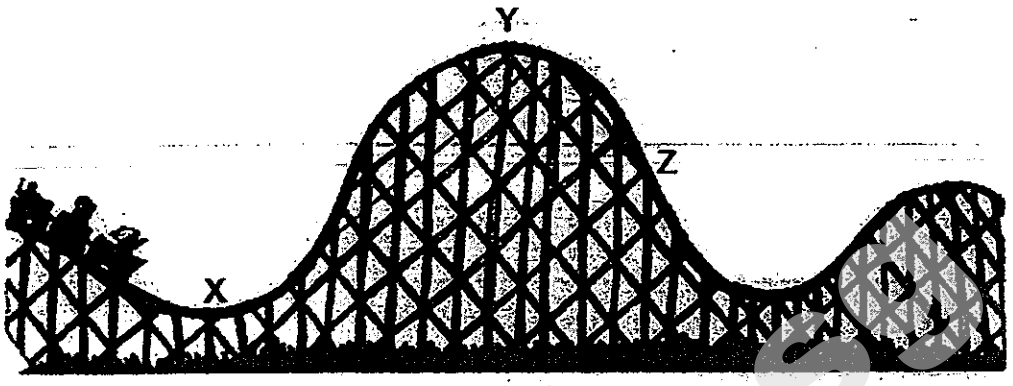
(3) Q, R, P

(4) R, Q, P

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25 A group of children took a roller coaster ride.



Which one of the following correctly identifies the forces that are present at positions X, Y and Z?

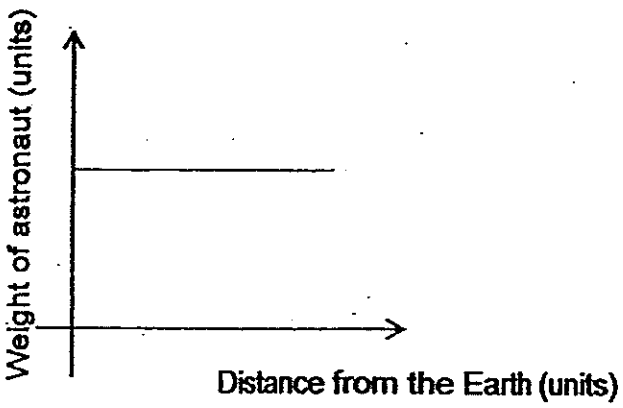
	X	Y	Z
(1)	Frictional force only	Frictional and Gravitational forces	Gravitational force only
(2)	Frictional force only	Gravitational force only	Frictional force only
(3)	Frictional and Gravitational forces	Gravitational force only	Frictional and Gravitational forces
(4)	Frictional and Gravitational forces	Frictional and Gravitational forces	Frictional and Gravitational forces

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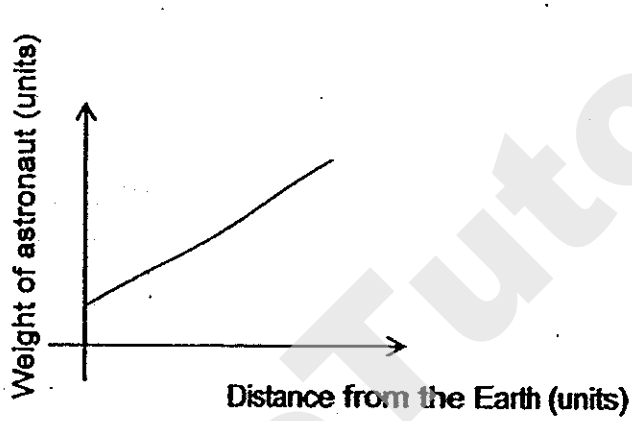
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26 An astronaut in a rocket was travelling from the Earth to the Moon. Which one of the following graphs correctly shows how his weight changes as he travelled from the Earth to the Moon?

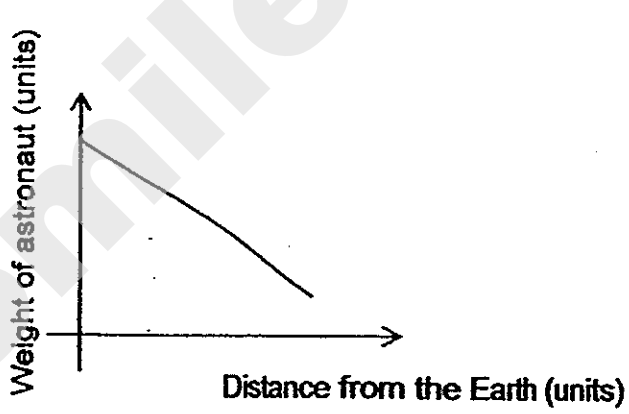
(1)



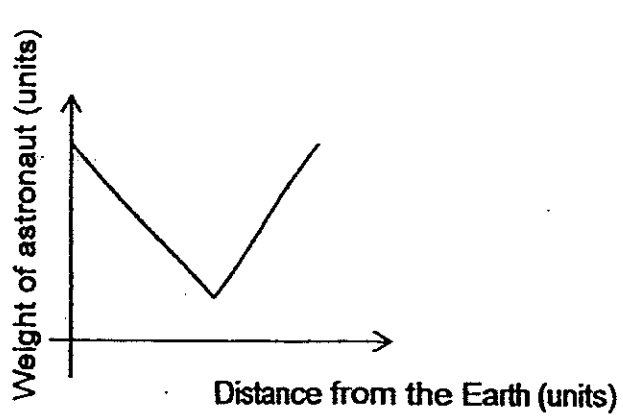
(2)



(3)



(4)

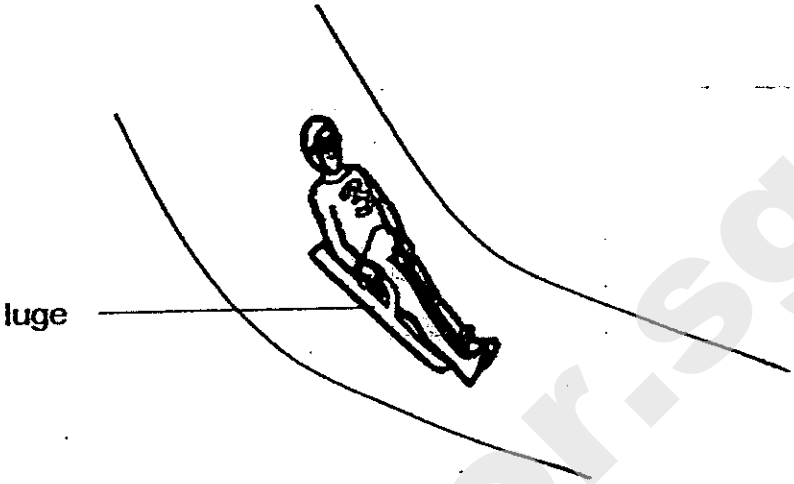


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27 A luge is a small one-or-two-person sled on which one sleds facing up and feet first.

The diagram below shows a luge athlete on a luge going down a slope.



Which one of the following statements is true about how gravitational force acting on the athlete changes while he sleds down the slope?

(1) The gravitational force acting on the athlete increases while he sleds down the slope.

(2) The gravitational force acting on the athlete decreases while he sleds down the slope.

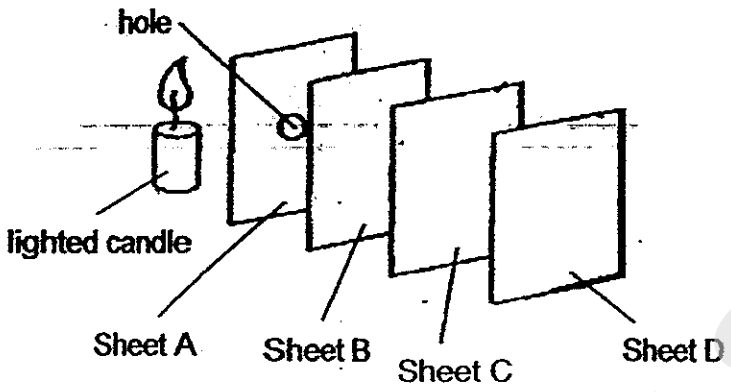
(3) The gravitational force acting on the athlete remains the same while he sleds down the slope.

(4) The gravitational force acting on the athlete first increases then decreases while he sleds down the slope.

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28 The experiment shown below is carried out in a dark room. Sheets A, B, C and D are arranged in a straight line. When the candle is lighted, a bright circular patch of light is seen on sheet C only



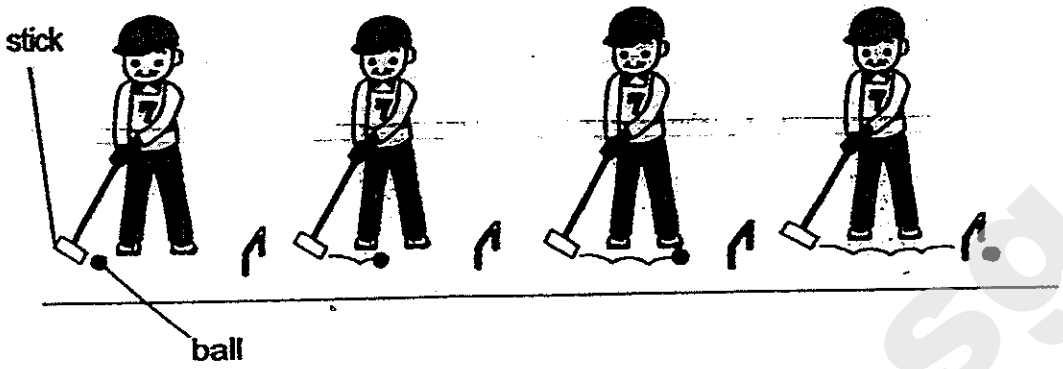
Which one of the following correctly describes the properties of the materials that sheets A, B, C and D are made of?

	Allows light to pass through	Does not allow light to pass through	Unable to tell
(1)	B	C	A and D
(2)	B	A and C	D
(3)	A and B	D	C
(4)	A and D	C	B

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29 The diagrams below show the process of how james plays a game of gateball.



Which one of the following best shows the energy conversions when james uses the stick to hit the ball?

(1) kinetic energy (stick) → kinetic energy (ball) → sound energy (ball)

(2) kinetic energy (stick) → kinetic energy (ball) + sound energy (ball)

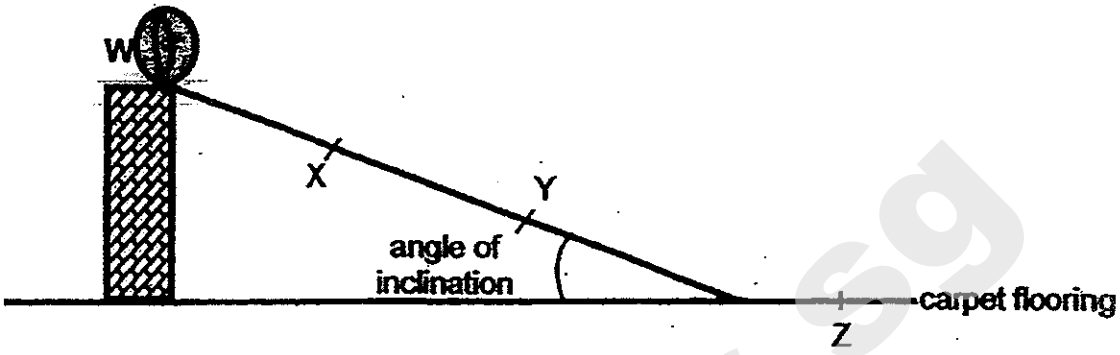
(3) chemical potential energy (James) → kinetic energy (stick) + kinetic energy (ball) + sound energy (ball)

(4) chemical potential energy (James) → kinetic energy (stick) → kinetic energy (ball) + sound energy (ball) + heat energy (ball)

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30 Alice, Bryan, Calvin and Davy took turns to release a marble from Point W as shown in the diagram below. It rolled down the slope, moved along the carpeted floor and stopped at Point Z.



The following statements were made by the four pupils.

Alice	At Points X and Y, the ball only has kinetic energy.
Bryan	The ball has the greatest amount of gravitational potential energy at Point W.
Calvin	The ball would have rolled further if the experiment had been done on a marbled floor.
Davy	The ball would have rolled faster if the angle of inclination had been greater

Who had made the correct

(1) Alice and Bryan only

(2) Bryan and Calvin only

(3) Alice, Calvin and Davy only

(4) Bryan, Calvin and Davy only

End of Booklet A

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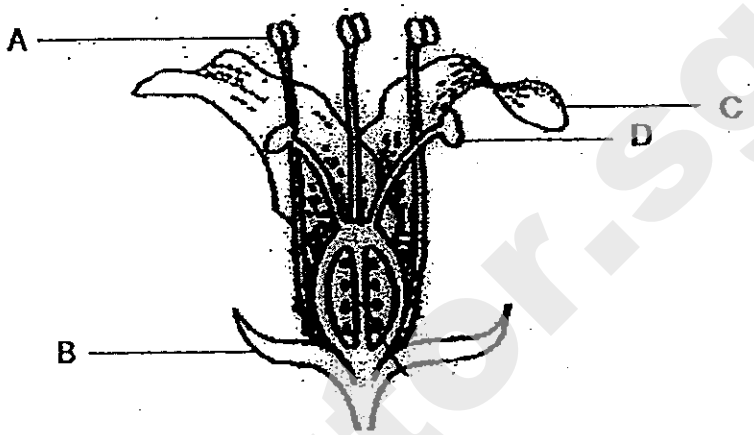
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Booklet B (40 marks)

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 Melissa conducted an experiment with a flower on plant H as shown in the diagram below.



(a) Which parts of the flower would be involved when pollination occurs? [1]

_____

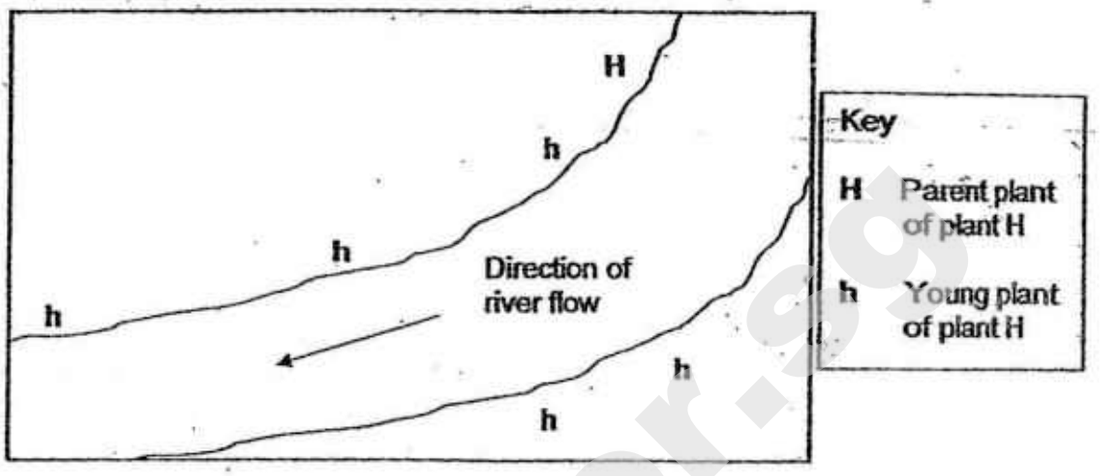
(b) Which part of the flower would develop into a fruit after fertilisation? Label that part of the flower in the diagram above using the letter, 'F'. [1]

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Continue from Q31

(c) The diagram below shows the location of the young of plant H over a period of six months



(i) How does plant H disperse its fruits? [1]

(ii) State one characteristic of the fruits of plant H that enabled it to be dispersed away from the parent plant by the method mentioned in (c)(i). [1]

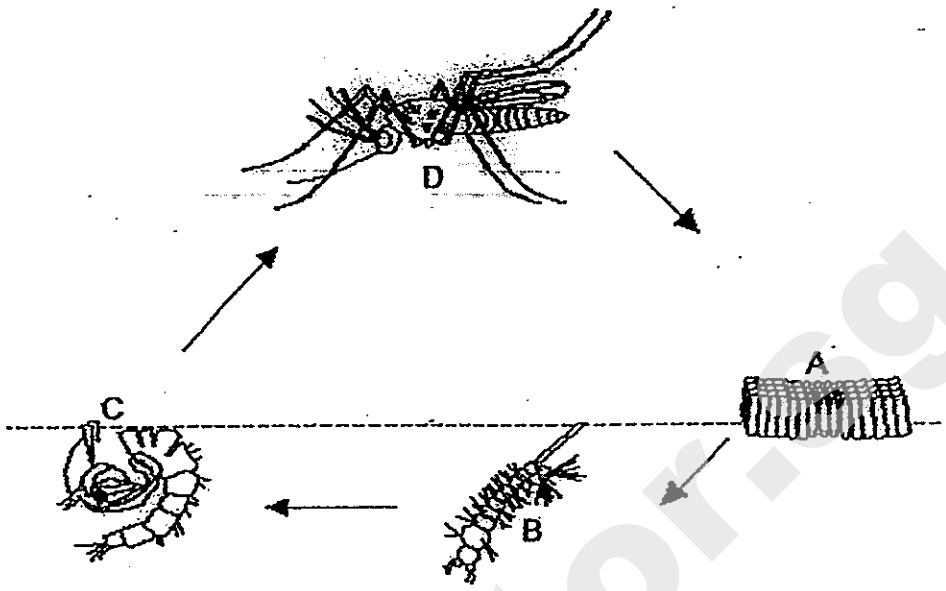
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SCORE 2

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32 The diagram below shows the life cycle of a mosquito.



(a) How does laying many eggs each time help the mosquitoes in their survival? [1]

_____

_____

(b) Suggest an advantage for the young and the adult to live in different surroundings. [1]

_____

_____

(c) At which stage of the life cycle, A, B, C or D, is the mosquito most difficult to kill? Why? [1]

_____

_____

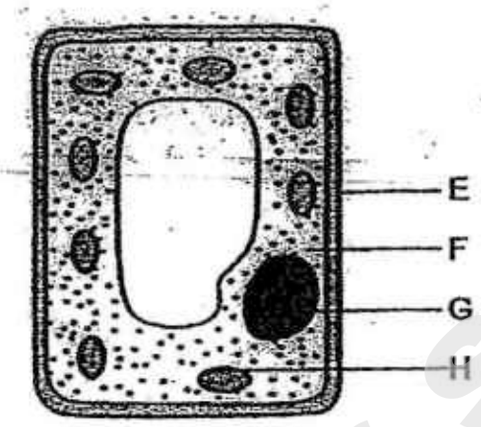
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SCORE 3

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33 The diagram below shows a typical plant cell



(a) Which part of the cell, E, F, G or H, controls all the activities in the cell? [1]

_____

(b) State another function of the part mentioned in (a). [1]

_____

_____

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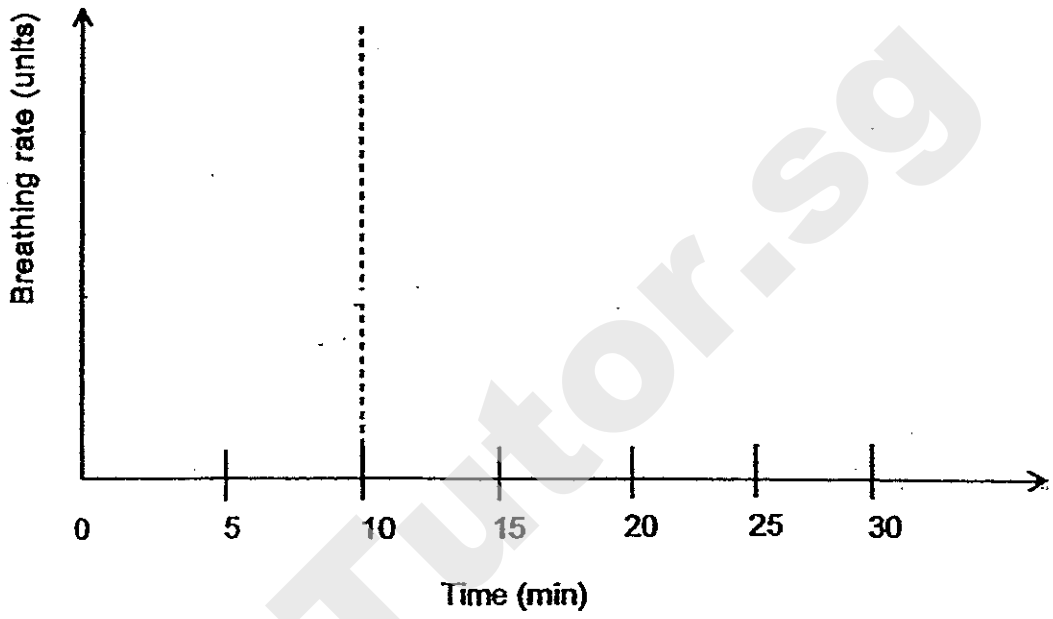
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SCORE 2

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34 During a physical education lesson, Jessica remained seated for the first 10 minutes to listen to her teacher's instruction. She then played frisbee with her friends for the next 15 minutes before resting immediately on a bench for 5 minutes.

(a) Complete the graph below to show how Jessica's breathing rate changed over the period of 30 minutes. [1]



(b) Jessica's pulse rate increased while playing frisbee with her friends. Explain why this happened. [2]

_____

_____

_____

_____

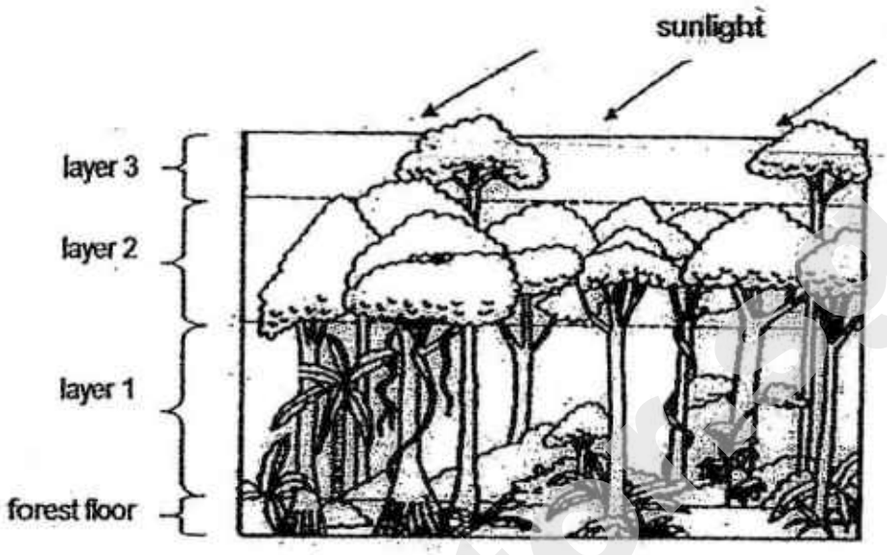
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SCORE 3

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35 The diagram below shows four different layers in a typical rainforest.



(a) How would the level of intensity of light and temperature in the rainforest change as you move upwards from the forest floor? [1]

_____

_____

(b) It is observed that very little light reaches the forest floor in the rainforest.
State one way how the plants found on the forest floor adapt themselves for survival. [1]

_____

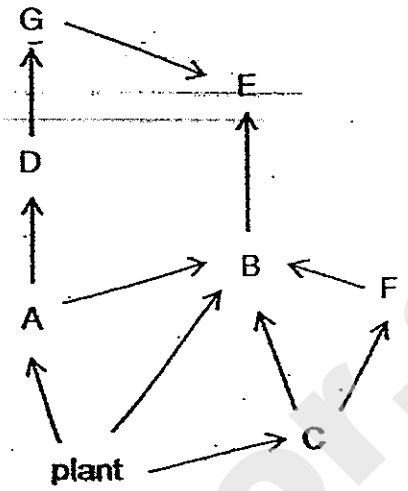
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SCORE 2

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36 The diagram below shows the relationship of organisms A to G in a food web.



(a) Which organisms are both a prey and predator in the food web above? [2]

_____

(b) Fungi and bacteria are decomposers.

In what way are decomposers important to the plant when organisms A to G die? [1]

_____

_____

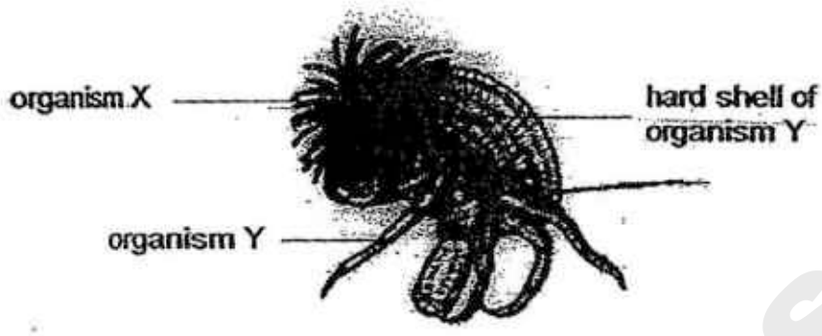
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SCORE 3

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37 Organism X which has long stinging tentacles attaches itself to the hard shell of organism Y as shown in the diagram below.



(a) The long stinging tentacles of organism X dangle over organism Y, covering much of the hard shell of organism Y.

How does this benefit organism Y? [1]

_____

_____

(b) Organism X moves very little on its own. However, it gets to be carried to many places when organism Y moves around.

How does organism X benefit from this? [1]

_____

_____

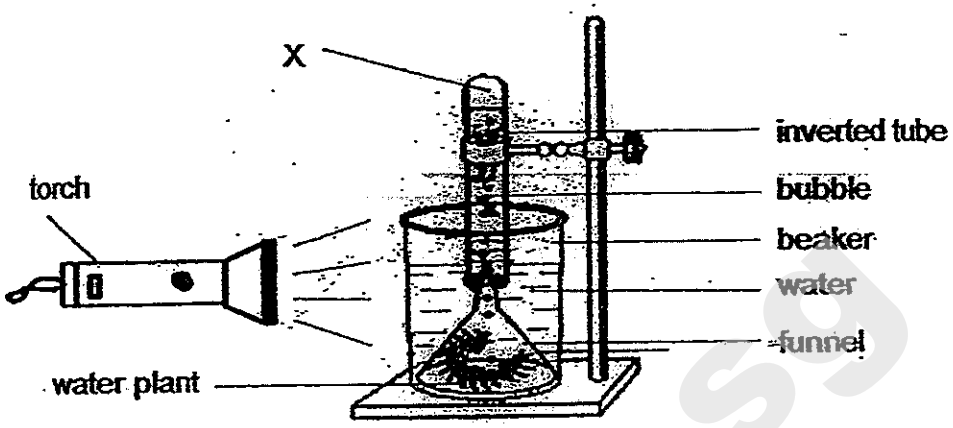
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SCORE / 2

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38 Evelyn set up an experiment as shown in the diagram below.



She placed a clear filter in front of the torch and counted the number of bubbles produced in an hour. The plant produced 21 bubbles in an hour. She repeated the experiment by changing the colour of the filter. She recorded the results in the table below.

Type of filter	Number of bubbles per hour
A	19
B	15
C	0
D	10
E	19

(a) What was Evelyn trying to find out from her experiment? [1]

_____

_____

(b) Identify the gas collected at X.

_____

(c) After some time, Evelyn realised that fewer bubbles were produced for all the filters. Give a reason for her observation. [1]

_____

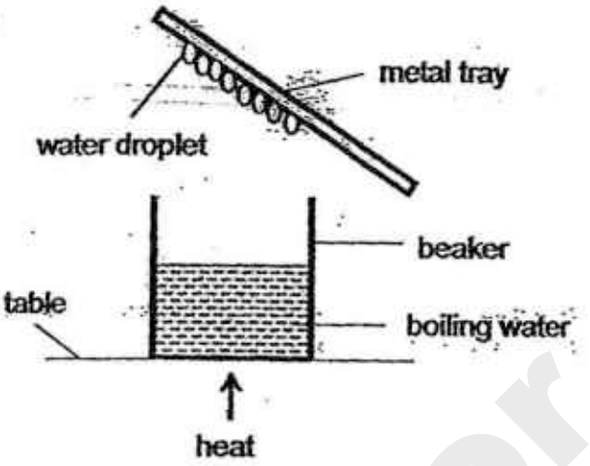
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SCORE / 3

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39 The diagram below shows a set-up that was placed on a table top in a room of surrounding temperature at 15°C.



(a) After five minutes, water droplets were formed on the metal tray. Explain the observation. [2]

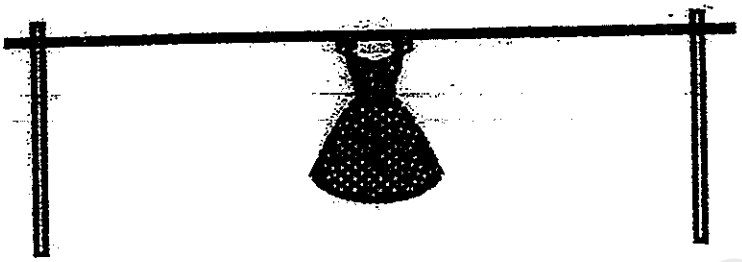
(b) When the set-up was placed in a room of surrounding temperature at 35°C, less water droplets were formed on the metal tray. Explain why this w

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40 Lynn washed her dress and hung it on a clothes line as shown in the diagram below.



After hanging her dress on a clothes line, Lynn weighed it every 15 minutes. She recorded her results in the table below.

Time (min)	Mass of dress (g)
0	850
15	600
30	520
45	480
60	420
75	380
90	350
105	320
120	320

(a) At the 105th minute, the mass of her dress was 320g. Based on her results above, how does she know that her dress was completely dry after the 105th minute? [1]

_____

_____

(b) Lynn repeated her experiment the next day. She discovered that her dress dried faster this time round. Besides leaving the dress out to dry under a windy and sunny place, suggest one other way she could do to dry the dress more quickly. [1]

_____

_____

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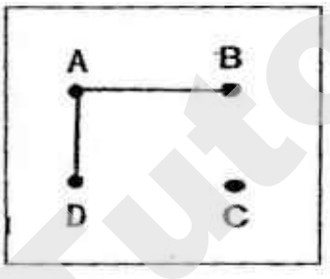
SCORE 2

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41 Samuel tested a circuit card with a circuit tester. The results are recorded in the table below.

Clips tested	Did the bulb light up?
A and B	Yes
A and C	No
A and D	Yes
B and C	No
B and D	Yes
C and D	No

(a) Complete the circuit card below using only two lines to show how the wires are connected based on the results recorded in the table above. [1]



(b) Samuel set up another electrical circuit using two similar light bulbs and two batteries. The table below shows the results he obtained.

Switch P	Switch Q	Number of bulbs that lit up
closed	closed	2
closed	open	1
open	closed	2
open	open	0

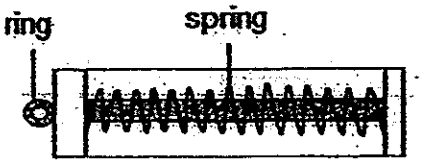
Based on the results above, draw a circuit diagram of the electrical circuit that Samuel set up in the space below. [2]

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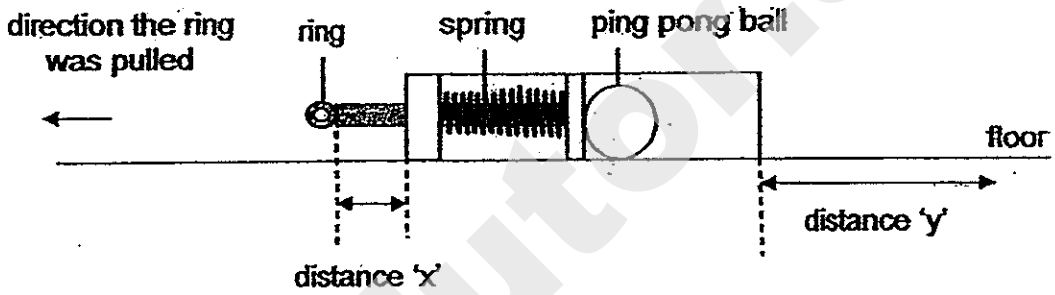
SCORE / 3

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42 Lionel wanted to conduct an experiment using a toy he made as shown in the diagram below.



He 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.



When he released the ring, he measured the distance 'y' travelled by the ping pong ball on the floor. He recorded the data as shown in the table below.

Distance 'x' (cm)	Distance 'y' (cm)
3	11
8	20
12	31

(a) Why did distance 'y' increase with increasing distance 'x'? [1]

(b) Lionel's Science teacher suggested that he should repeat his experiment a few more times. Why?

(Go on to the next page)

SCORE / 2

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Continue from Q42

(c) Lionel conducted another experiment using a ping pong ball that was totally filled with plasticine. Each time when he pulled the ring back over the same distance 'x' as the previous experiment, he observed that the distance 'y' measured was always less than what he recorded previously.

Why was that so? [1]

_____

_____

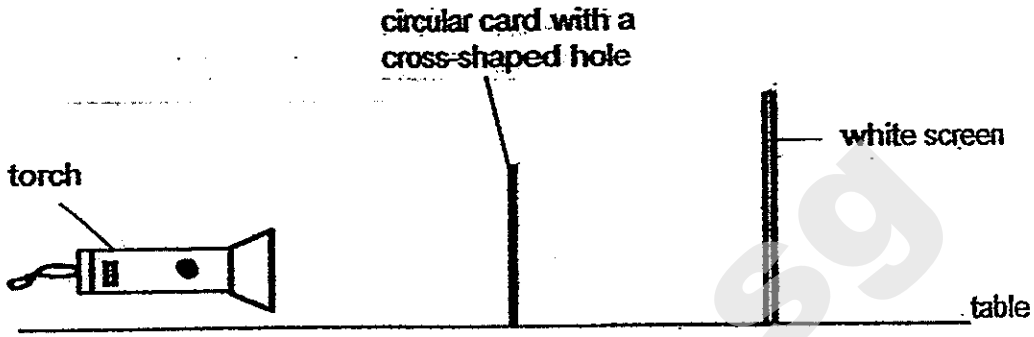
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SCORE	/ 1

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43 Janice carried out the following experiment using the set-up below. She shone the torch at the circular card.



The diagram below shows the circular card that was used in her set-up.



(a) Draw clearly what she would see on the white screen in the space provided below. [1]

(b) What property of light is shown in this experiment? [1]

_____

(c) If Janice were to move the circular card towards the torch, what change would she see in her observation on the white screen? [1]

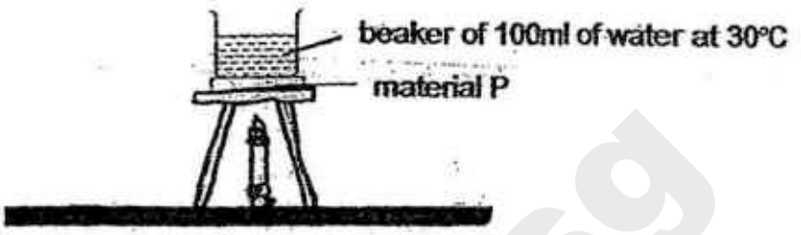
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15

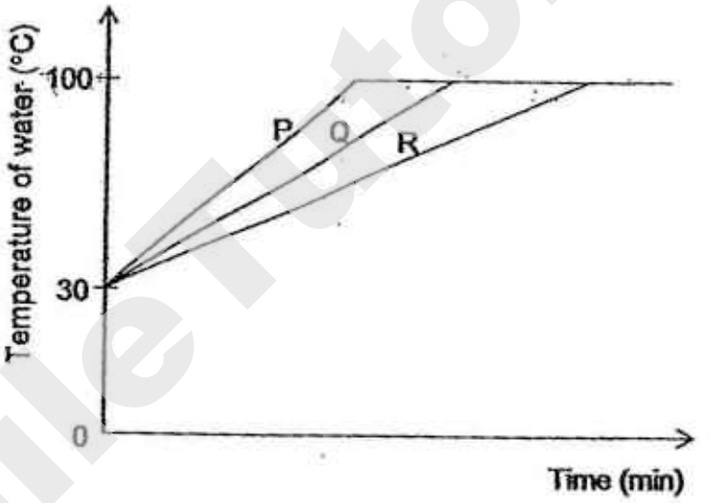
SCORE	/ 3

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44 Matthew conducted an experiment to compare the heat conductivity of materials, P, Q and R. He placed material P below the beaker of water before heating it as shown in the diagram below. He then recorded the time taken for the water to boil.



He repeated the experiment using materials, Q and R. The graph below shows the results he collected.



(a) Give a reason why the thickness of materials, P, Q and R, must be kept the same. [1]

_____

_____

(b) What can you conclude about the heat conductivity of the three materials, P, Q and R? [1]

_____

_____

(Go on to the next page)

16

SCORE 2

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Continue from Q44

(c) Matthew wanted to bring hot food and cold drinks for a picnic. He wanted to keep the food hot and the drinks cold.

(i) Which material(s) would be most suitable to make the containers? Write your answer in the boxes below. [1]

Material for container carrying hot food	
Material for container carrying cold drinks	

(ii) Explain your answer. [1]

_____

_____

End of Booklet B

SCORE / 2

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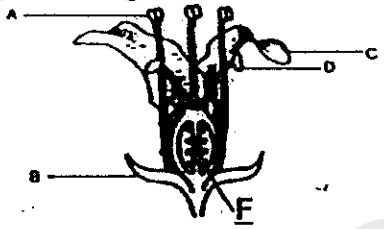
Booklet A

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

Booklet B

31 a A (stigma) and D (anther)

b label the ovary (F) in the diagram as shown:



c (i) It disperse its fruits through water.

(ii) It has fibrous husks.

32 a As some eggs may be eaten by predators, laying many eggs ensures that some eggs may hatch and grow into adults

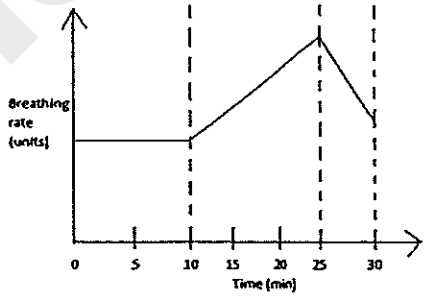
b Both the young and the adult will not compete for the same type of food.

c D. The mosquito has developed wings and can fly while the other 3 stages are spent in water.

33 a G (nucleus)

b It contains genetic materials to be passed down to the next generation (determines heredity).

34 a (Note: Breathing rate will slow down to almost the breathing rate at rest.)



b Her heart has to beat faster to pump blood faster to other parts of her body so that more oxygen and more digested food can be supplied to provide her body with more energy (via respiration) to support Jessica's more strenuous actions of playing frisbee.

35 a The intensity of light and temperature increases as one moves upwards from the forest floor.

b Their leaves have large surface area.

36 a B, D, F, G

b They break down dead matter into simple substances such as mineral salts or nutrients which is used to help the plants grow well.

37 a The stinging tentacles help to protect organism Y by acting as a protective mechanism that will sting predators of organism Y, deterring potential predators.

b X can obtain food easily as Y moves around.

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38 a She was trying to find out if the colour of the filter affects the rate of photosynthesis.

b Oxygen

c The carbon dioxide in the water had almost been used up so rate of photosynthesis decreases, thus fewer air bubbles were produced.

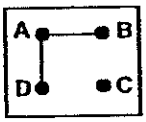
39 a The boiling water gained heat and evaporated to form steam that would come into contact with the cooler surface of the metal tray, lost heat and condensed on the metal tray.

b The tray was not as cold as before therefore the temperature difference between the water vapour and the tray decreased allowing lesser water vapour to condense on the metal tray.

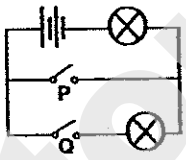
40 a The mass of the dress remained constant at 320 g which would be the mass of the dry dress as all the water must have completely evaporated off.

b Put the dress at a place that is less humid.

41 a



b



42 a When distance 'x' increases, the spring will be compressed more, so there will be more elastic spring force to push the ping pong ball across a greater distance 'y' when released.

b The experiment results will be more reliable.

c The ping pong ball filled with plasticine is heavier. Thus, there was more elastic spring force required to push it to the same distance 'y' measured previously.

43 a



b Light straights in a straight line.

c The shadow will become bigger and more faint/dimmer.

44 a This ensures that it is a fair test in which all the variables are kept the same except for the independent variable, materials used, that is investigated in this test. Hence any difference in the changes in the temperature of water is due to the different materials P, Q and R (independent variable) used and not the thickness of the materials.

b P is the best conductor of heat, followed by Q and R.

c (i)

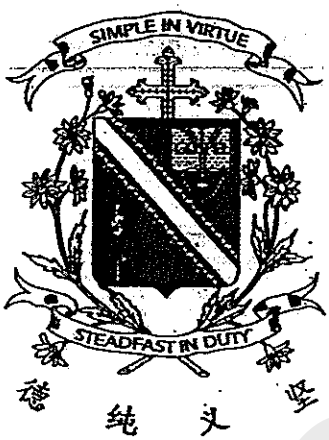
Material for container carrying hot food	R
Material for container carrying cold drinks	R

(ii) When R was used, it took the longest time for the temperature of the water to rise hence R conducted heat from the Bunsen burner flame to the water the slowest. Thus, R is the poorest conductor of heat and can conduct heat from the surroundings to the cold drinks the slowest and conduct heat from the hot food to the surroundings the slowest.

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CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6

PRELIMINARY EXAMINATION – 2014

SCIENCE

BOOKLET A

21 August 2014

NAME: _____ ( )

CLASS: Primary 6__

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.

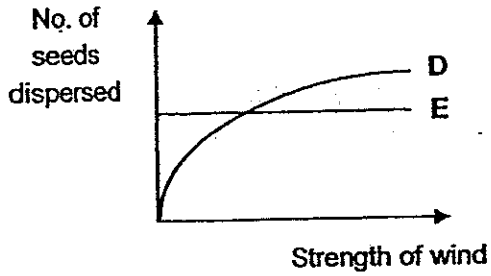
This booklet consists of __21__ printed pages.

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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 graph below shows how the strength of wind affects the dispersal of fruits of plants D and E.



Which one of the following shows what the fruits of plant E probably look like?

(1)



(2)



(3)



(4)



2. Which of the following statements about a spore and a pollen grain is/are true?

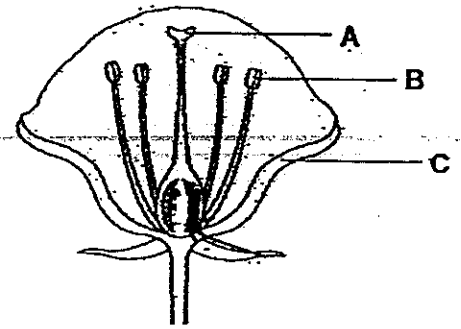
A Both are required for reproduction.
B Both can be dispersed by wind only
C Both are produced by flowering plants.
D Both fuse with the ovule during

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

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3. The diagram below shows the cross-section of a flower.



Based on the diagram above, which one of the following statements is definitely true?

(1) The flower will develop into a bunch of fruits.
(2) The presence of parts A and C attract insects to the flower.
(3) Many seeds can be found in the fruit that will develop after fertilisation.
(4) The flower is wind-pollinated because part B is sticking out from the flower.

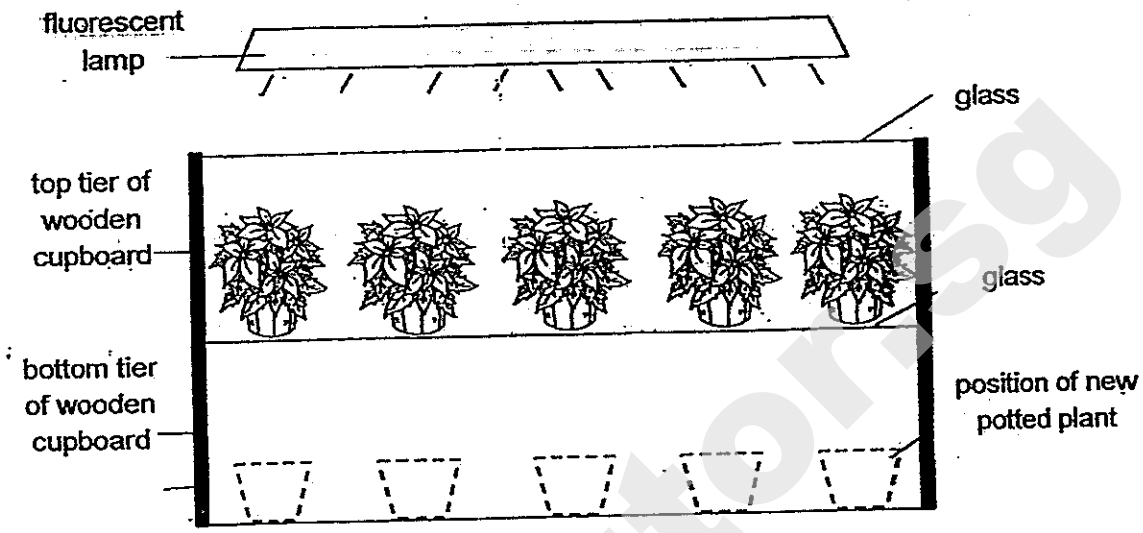
4. Which of the following statement(s) about the process of human fertilisation is/are true?

A The fertilized egg develops in the uterus of the female reproductive system.
B All the eggs produced by the ovaries will eventually develop into young organisms.
C Usually more than one sperm will enter the egg to increase the chances of fertilization.
D Fertilisation starts when the cell membrane of the sperm fuses with the cell membrane of the egg.

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

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5. Mrs Potts wanted to grow some potted plants in a two- tiered wooden cupboard as shown below. Certain parts of the cupboard were made of glass as indicated. The cupboard was located directly under a fluorescent lamp. She bought some plants to put on the top tier of the glass cupboard as shown below.



If she wants to put another row of plants at the bottom tier of the glass cupboard, which one of the following type of plants will be able to grow most healthily when placed at the bottom tier?

(1)

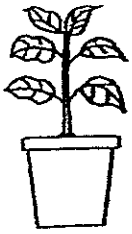


(2)



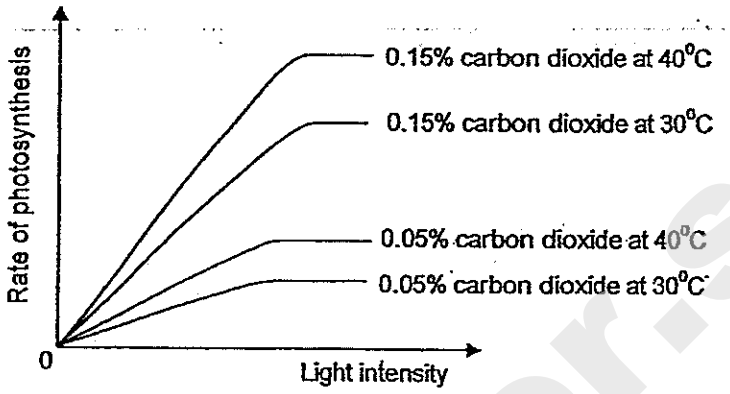
(3)





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6. Harriet carried out an experiment to find out the effects of light intensity, amount of carbon dioxide and temperature on the rate of photosynthesis. She obtained the following results.



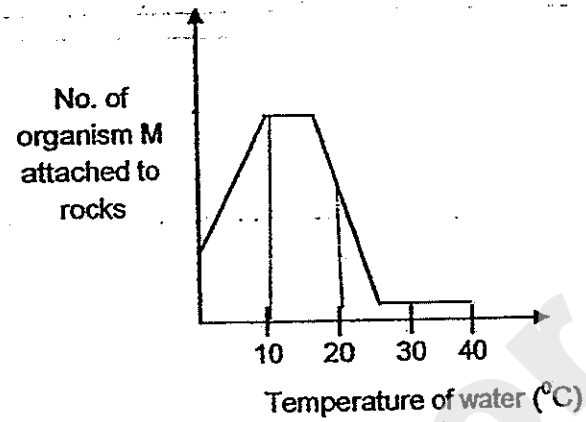
Which one of the following statements about the effects of external factors on the rate of photosynthesis is false?

(1) Rate of photosynthesis increases with increasing light intensity until it is limited by other factors.
(2) Temperature will be a factor affecting the rate of photosynthesis in an environment rich in carbon dioxide.
(3) At the same temperature, the rate of photosynthesis is not affected by the amount of carbon dioxide present.
(4) At the same light intensity, the rate of photosynthesis is less affected by a change in temperature than a difference in the amount of carbon dioxide present.

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7. Organism M lives in the coastal region It produces a glue-like substance to attach itself to rocks so that it does not get washed off easily by strong waves. A scientist conducted an experiment to find out how temperature affects the effectiveness of the glue-like substance that helps organism M attach to the rocks. His results are shown in the graph below.



The table below shows the temperature range of four different coastal regions, W, X, Y and Z.

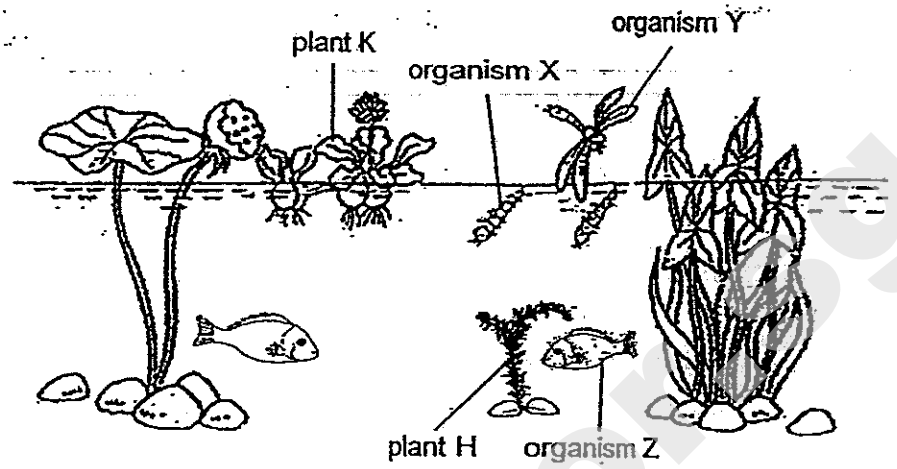
Location	W	X	Y	Z
Temperature range	10^0C to 20^0C	21^0C to 26^0C	-4^0C to 9^0C	28^0C to 35^0C

Which one of the above coastal regions would the most number of organism M likely be found?

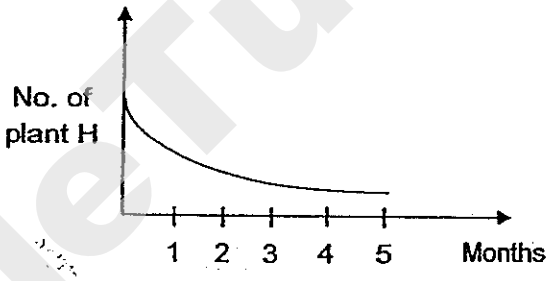
(1) W
(2) X
(3) Y
(4) Z

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8. The diagram below shows the cross-section of a pond. Organisms Y and Z feed on organism X only.



The graph below shows how the number of plant H changes over 5 months



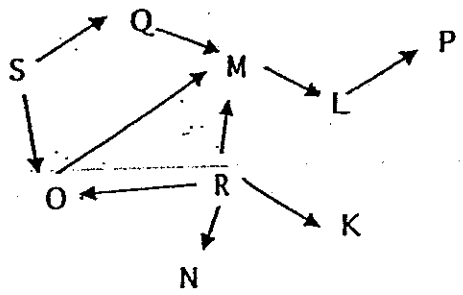
Based on the graph above, which one of the following statements is most likely the cause for the change in the number of plant H?

(1) The population of plant K has increased.
(2) The population of organism Y has increased.
(3) The population of organism Z has increased.
(4) The population of organism X has increased.

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9. The diagram below shows a food web.



Based on the food web above, which one of the following is correct?

	Prey only	Both a prey and a predator	Predator only
(1)	R, S	M, O, Q	K, L, N, P
(2)	Q, O	L, M	P
(3)	R, S	L, M, O, Q	K, N, P
(4)	Q, O, M	L	P

10. Siva placed the same mass of dried apple slices into 3 similar glass jars as shown in the table below. The 3 jars were then sealed and placed in the cupboard.

Jar 1	Jar 2	Jar 3
A few drops of water were added to the dried apple slices.	A packet of silica gel was added to the dried apple slices.	Contains only the dried apple slices

A few days later, Siva observed that there were green patches on the apple slices in Jar 1. After 2 weeks, similar green patches were also observed on the apple slices in Jar 3. The apple slices in Jar 2 still looked the same as before after 2 weeks.

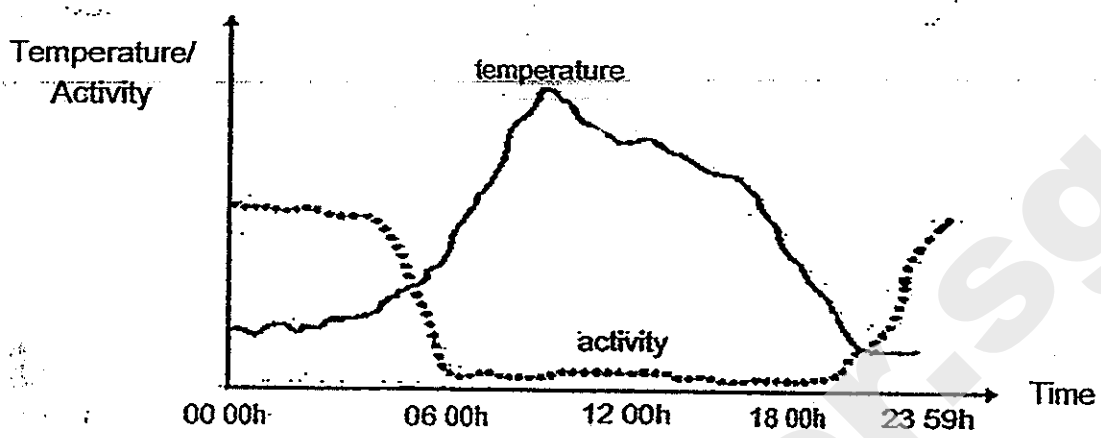
Based on her results, what conclusion(s) can she make?

A Food that is moist decompose faster.
B Food can only decompose in the dark.
C Decomposers prefer to live in warm places.
D Silica gel absorbs most of the moisture in the jar.

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

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11. Organsim G lives in the desert. The two line graphs below show the relationship between the behavioural patterns of the Organism G and the temperature changes of the desert in a day.



Based on the graph above, what conclusions can you make about organism G?

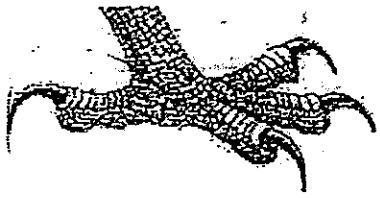
A It is structurally adapted to survive in the hot desert.
B Its activity level increases when the temperature is lower.
C Its behavioural adaptation helps it to survive in the hot desert
D It is structurally adapted to survive through long periods of drought.

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

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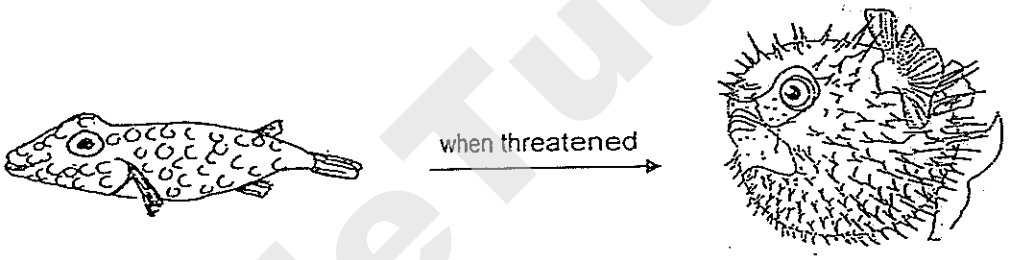
12. The diagram below shows a foot belonging to bird P.



Which one of the following statements best describes the function of bird P's feet?

(1) Bird P uses its feet for tearing food to eat.
(2) Bird P uses its feet to swim quickly in water.
(3) Bird P uses its feet to run very quickly on land.
(4) Bird P uses its feet to catch and hold on to its prey.

13. The diagram below shows a sea organism. It has a swim bladder that expands when it is being threatened. It has bright colours to indicate the large quantity of toxin it is capable of producing.



Based on the above diagram, which one of the following is not a structural adaptation of the organism to avoid being eaten by predator?

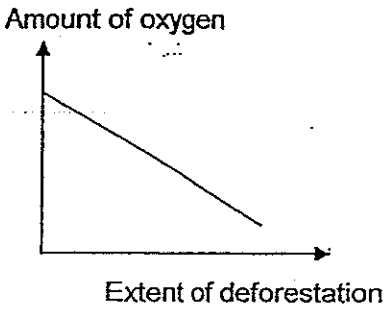
(1) Spikes on its body.
(2) Special swim bladder.
(3) Bright colours of the skin.
(4) Body able to expand and increase in size quickly.

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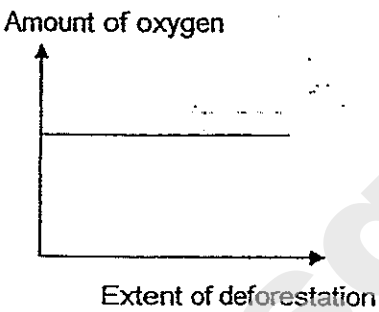
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14. Which one of the following graphs shows the correct relationship between deforestation and the amount of oxygen in the air?

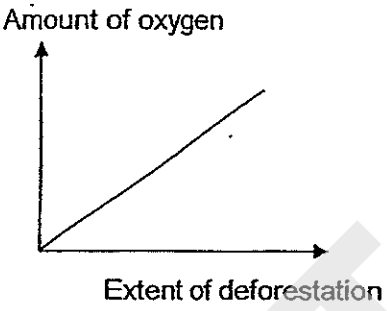
(1)



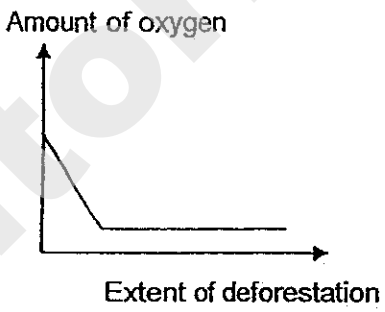
(2)



(3)



(4)



15. Geraldine conducted an experiment to find out which location in her school is the most polluted. She placed four similar glass slides smeared with the same amount of oil at four different locations for a day. She then compared the amount of dust particles found on the slides and ranked the locations in order of how polluted they were, with 1 being the most polluted and 4 being the least polluted.

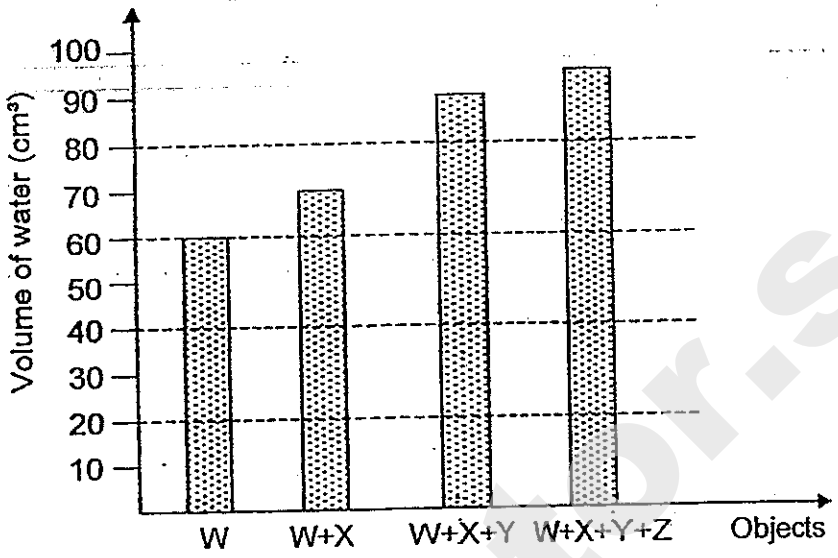
Location	Ranking
bus bay	1
classroom	3
canteen	2
eco-garden	4

However, her teacher told her that her experimental results were not reliable. Which one of the following reasons could be why her teacher made that comment?

(1) There was more than one variable changed.
(2) The duration of the experiment was too short.
(3) She did not repeat the experiment again over the next few days.
(4) She should use water instead of oil to trap the dust particles properly.

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16. There are four objects, W, X, Y and Z. When object W is placed into a measuring cylinder containing 50 cm^3 of water, the water level rises to 60 cm^3. Next, object X is added into the cylinder followed by object Y, and finally object Z. The graph below shows the water level after each object has been added into the cylinder.



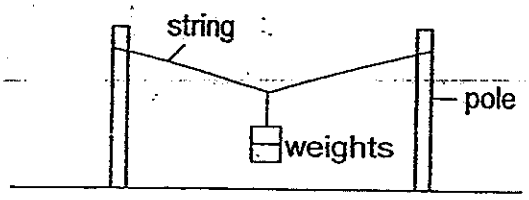
Based on the results shown in the graph above, which one of the following statements is true?

(1) The volume of object W is 60 cm^3
(2) Object Y has a larger volume than object Z.
(3) Object W and object X have the same mass.
(4) The volume of water in the cylinder increases after each object is added into it.

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17. James set up an experiment as shown below. He stretched a string tightly across two poles and hung weights on the string until it broke. He then recorded his observation. He repeated the process with two other strings made from different materials and tabulated his results as shown below.

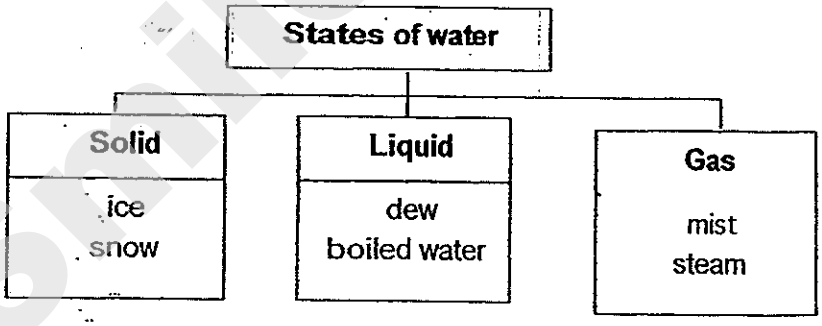


Material of string	Weights needed to break the string (g)
X	200
Y	550
Z	280

Based on his observations, which one of the following conclusions is correct?

(1) Material Y is the strongest.
(2) Material X is the least flexible.
(3) Material Z is harder than material X.
(4) Material Y is more durable than materials X and Z.

18. Study the classification chart below.

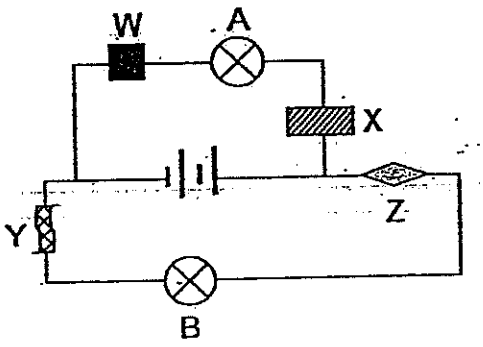


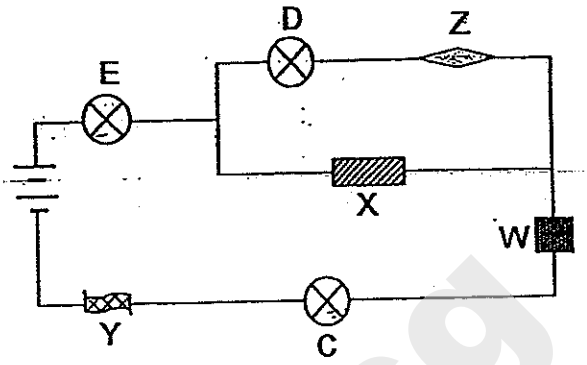
Which one of the above states of water is wrongly classified?

(1) dew
(2) mist
(3) snow
(4) steam

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19. Alice set up the following electric circuits to find out if materials, W, X, Y and Z, were electrical conductors or insulators.





The table below shows the results of her test.

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

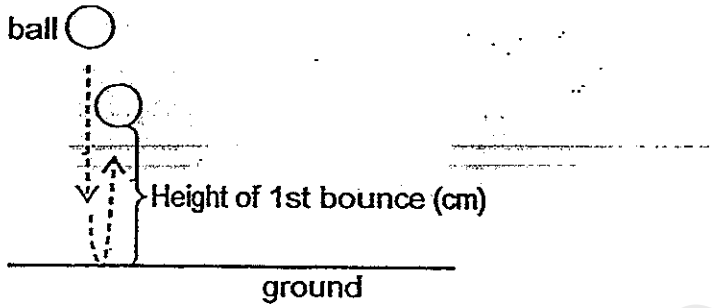
Which one of the following correctly identifies the conductors and insulators of electricity?

	Conductors of electricity	Insulators of electricity
(1)	Z	W,X, Y
(2)	W, X	Y, Z
(3)	W, Z	X, Y
(4)	W, X, Y	Z

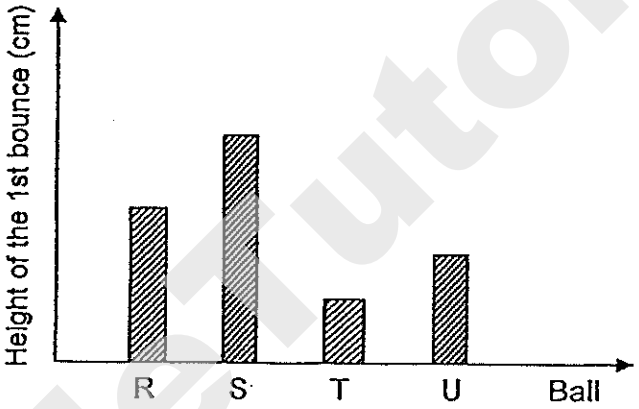
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20. Salleh conducted an experiment with 4 balls, R, S, T and U, which were made of different materials. He released each ball from the same height and recorded the height of the first bounce from the ground as shown in the diagram below.



The results of his experiment are presented in the bar graph below.



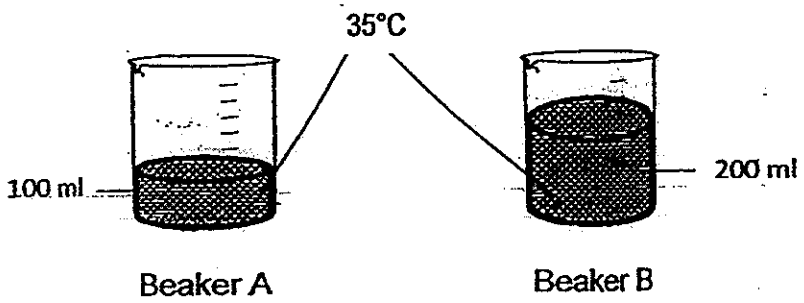
What could Salleh infer from the results?

A Ball U was bigger than ball T.
B Ball S most likely can bounce the most number of times before stopping.
C Ball R had less kinetic energy than Ball U when it bounced up from the ground.
D Ball T had the least gravitational potential energy compared to the other balls after the first bounce.

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

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21. Sara poured 100ml of water into Beaker A and 200ml of water into Beaker B, as shown in the diagram below. The temperature of the water in both beakers was the same.

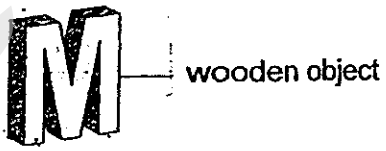


She heated the water in Beaker A for 5 minutes and immediately recorded the temperature of the water using a thermometer. She repeated the experiment with Beaker B.

Which one of the following are possible temperatures of the water recorded in both beakers?

	Beaker A	Beaker B
(1)	35°C	35°C
(2)	75°C	55°C
(3)	55°C	75°C
(4)	55°C	55°C

22. Mary carried out an experiment to study the shadows formed by the wooden object shown below.



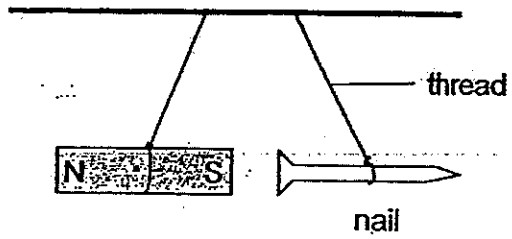
Which of the following shadows can be cast by the object?



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

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23. The diagram below shows a bar magnet and a nail suspended on a support.

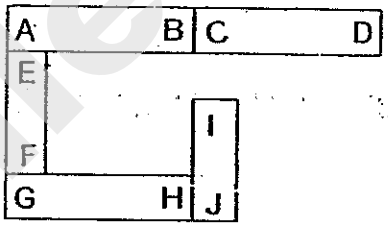


Based on the observation above, what were the forces acting on the magnet and the nail?

A gravitational force
B elastic spring force
C magnetic force of attraction
D magnetic force of repulsion

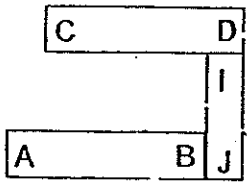
(1) D only
(2) A and D only
(3) B and C only
(4) A, B and D only

24. Five magnets with their ends marked A to J are joined together as shown.

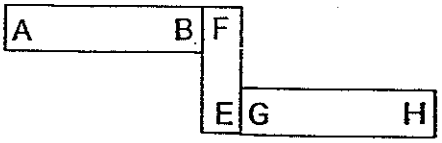


Which one of the following diagrams is a possible arrangement of three of the magnets?

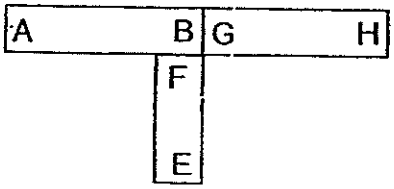
(1)



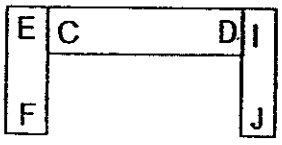
(2)



(3)



(4)

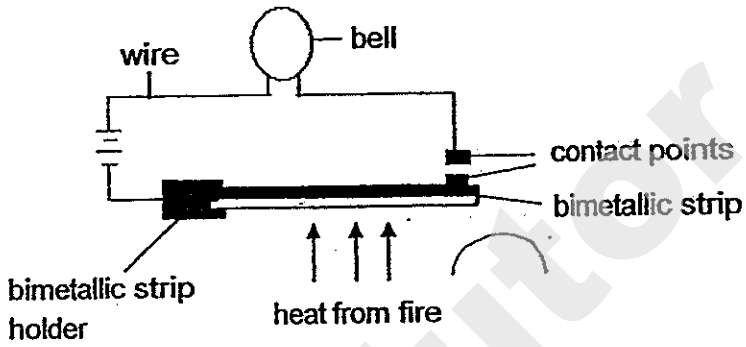


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25. A bimetallic strip consists of two metals attached firmly to each other. In the bimetallic strip below, metal X expands at a faster rate than metal W when it is heated.



Ken wanted to use the same type of bimetallic strip to construct a fire alarm system for his science project shown below.

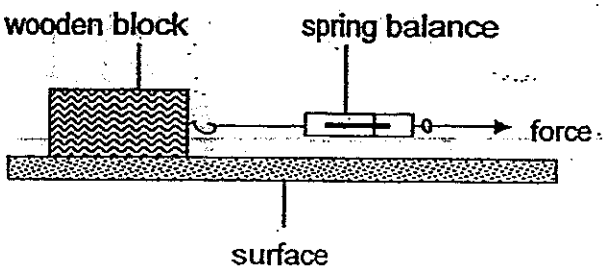


When the bimetallic strip gets heated up by the fire, it will bend and the two contact points will touch and the circuit will be closed. This will cause the bell to ring. However, Ken's teacher commented that there was a mistake in his set-up. What was his mistake?

(1) Metal X should be thicker than metal W.
(2) Metal W should be shorter than metal X.
(3) The strip should be made of metal X only.
(4) The bimetallic strip should be reversed with metal W on top.

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26. A block of wood was pulled across 3 different surfaces, E, F and G, as shown in the diagram below. The force needed to pull the block on each surface was measured.



The results are shown in the table below.

Surface Tested	Force needed (Newton)
E	18
F	13
G	24

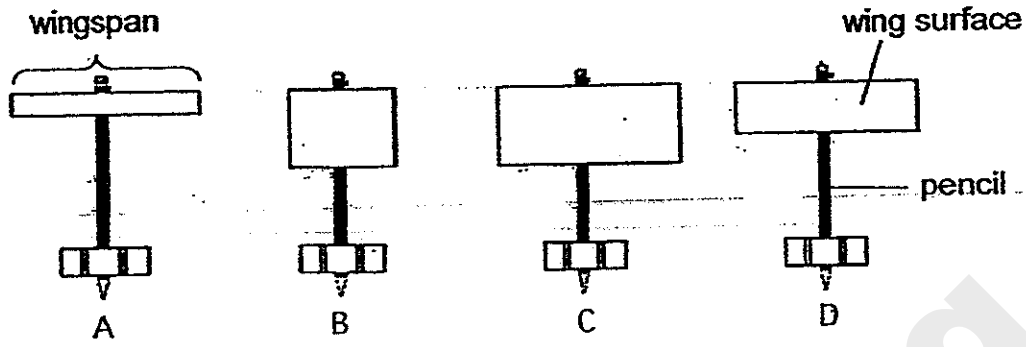
Which one of the following best represents E, F and G respectively?

	Surface E	Surface F	Surface G
(1)	cardboard	glass	sandpaper
(2)	sandpaper	cardboard	glass
(3)	glass	cardboard	sandpaper
(4)	glass	sandpaper	cardboard

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27. Ben constructed four model planes, A, B, C and D, using pencils and construction paper. The diagram below shows the top views of his model planes.



He took turns to throw each plane with the same force from the same position to find out the greatest distance it could travel. Which model planes must he compare if he wanted to find out the effect of the wingspan on the distance the planes travelled?

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

28. Mengli set up the experiment with two identical metal cans as shown in diagram 1 below. Both cans were filled with the same amount of hot water. She plotted the graph to show the changes in temperature of the water in cans X and Y.

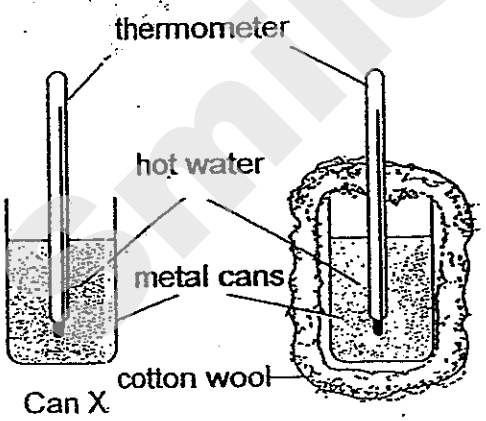
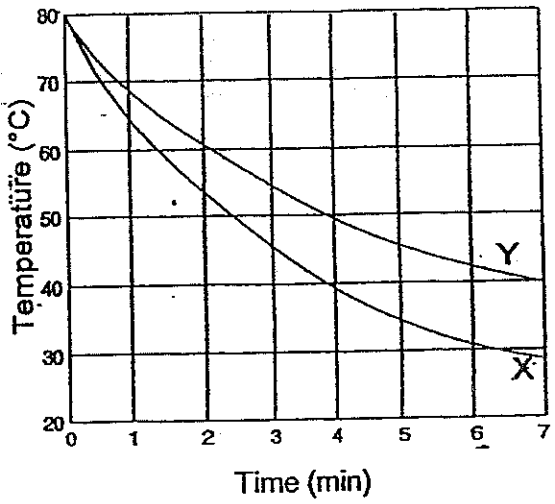


Diagram 1

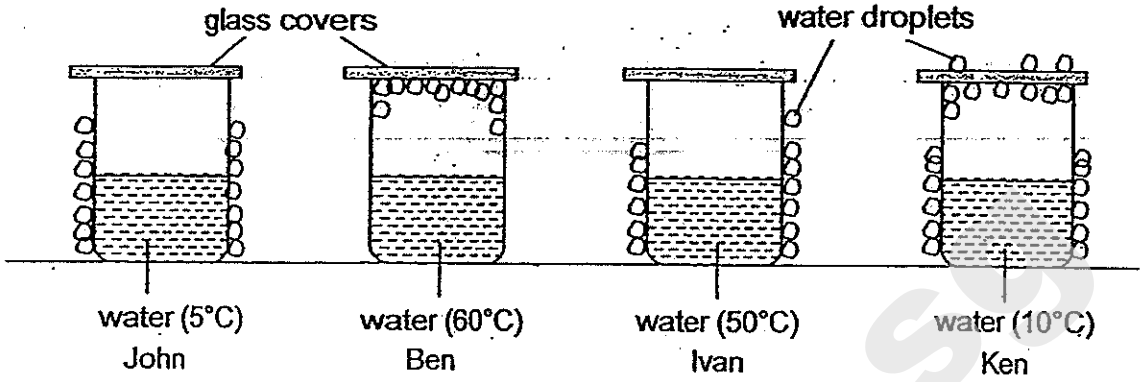


What was the aim of her experiment?

(1) To show that can X retains heat better than can Y.
(2) To find out which can is a better conductor of heat.
(3) To show that cotton wool can affect the time taken for water to cool down.
(4) To measure the time it takes for water to cool when wrapped in cotton wool.

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29. Four students, John, Ben, Ivan and Ken, were each given a beaker containing the same amount of water at different temperatures to observe the formation of water droplets. They presented their observations in the diagrams below.



Whose observations are correct?

(1) Ben and Ivan only
(2) John and Ken only
(3) John and Ben only
(4) Ivan and Ken only

30. Figure 1 below shows a flask with a thin glass tube. The flask is filled with tap water.

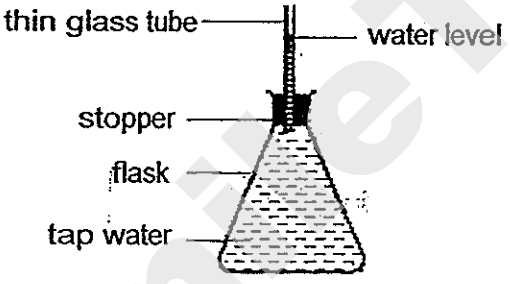


Figure 1

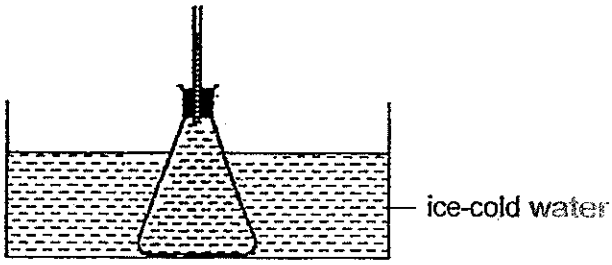


Figure 2

Which one of the following explains correctly what will happen when the flask is lowered into a trough of ice-cold water as shown in Figure 2?

	Observation of water level in the glass tube	Reason
(1)	drops immediately	The water in the flask loses heat and contracts.
(2)	drops immediately	The flask loses heat and contracts
(3)	drops first and then rises	The flask loses heat and contracts while the water in the flask gains heat and expands.
(4)	rises first and then drops	The flask contracts before the water in the flask contracts.

— End of Section A —

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CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6

PRELIMINARY EXAMINATION – 2014

SCIENCE

BOOKLET B

21 August 2014

NAME: _____

CLASS: Primary 6

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 14 printed pages.

Booklet A	60
Booklet B	40
Total	100

_____

Parent's Signature/Date

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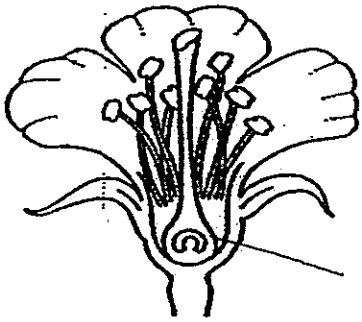
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Section B (40 marks)

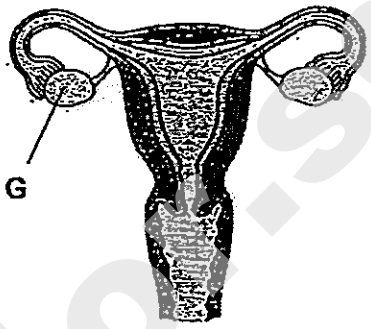
For questions 31 to 44, write your answers in this booklet.

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

31. The diagrams below show flower M and the female reproductive system.



flower M



female reproductive system

(a) In the above diagram of the flower, identify the part that has a similar function to part G of the female reproductive system and label it as 'Y'. [1]

(b) Organism B can be found visiting flower M very often.



organism B

How does flower M and organism B benefit from this relationship? [2]

(i) Benefit for flower M: _____

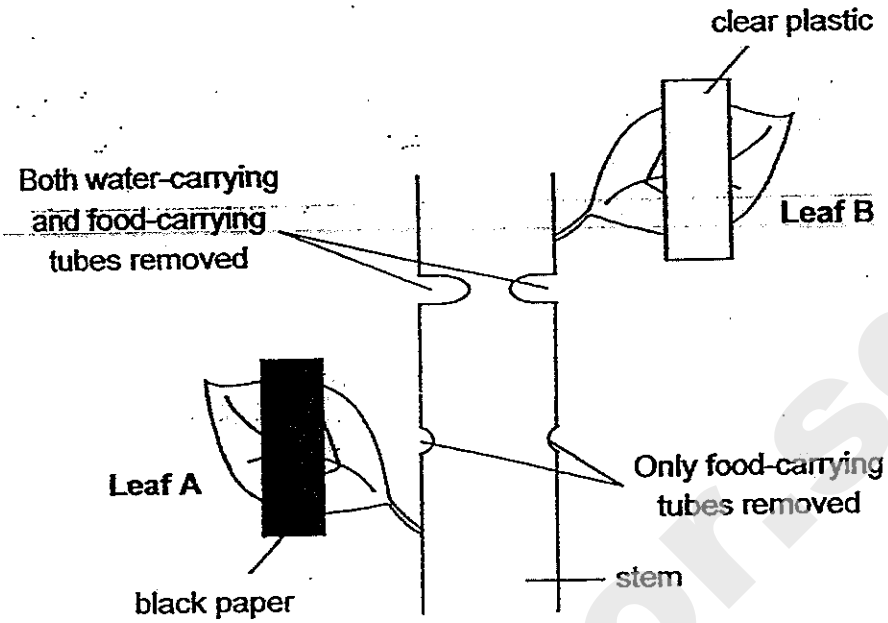
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(ii) Benefit for organism B: _____

_____

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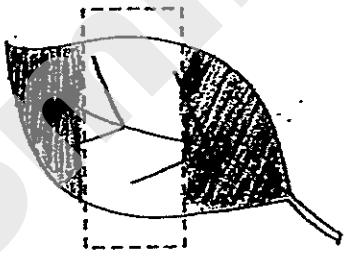
32. The diagram below shows a portion of a plant. Rings of different thickness were removed from two different parts of the stem as shown below.



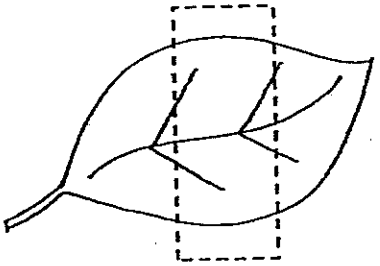
The plant was kept in the dark for 2 days and watered daily before leaves, A and B, were covered on both sides with clear plastic and black paper respectively as shown above. The plant was then placed under bright sunlight for a day.

Both leaves were then tested for the presence of starch.

(a) On the leaves below, shade fully the parts to show where iodine solution would turn dark blue. [1]



Leaf A



Leaf B

(b) Explain your answer for the shading on leaf A above. [1½]

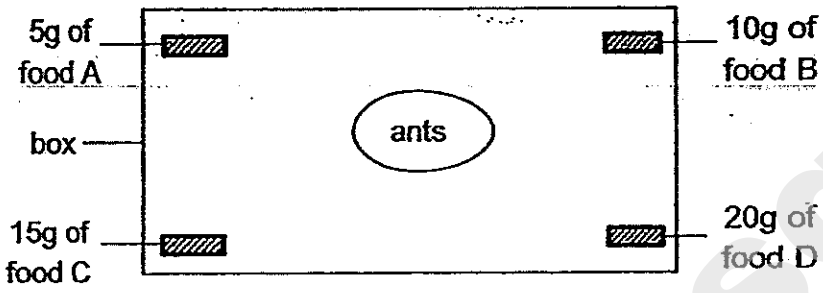
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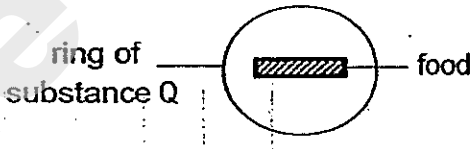
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33. Hassan conducted an experiment to investigate the type of food ants prefer. He placed four different types of food, A, B, C and D, at the four corners of the box before releasing 20 ants at the centre. He observed the set-up for 15 minutes and recorded his observations. A diagram of his set-up is shown below.

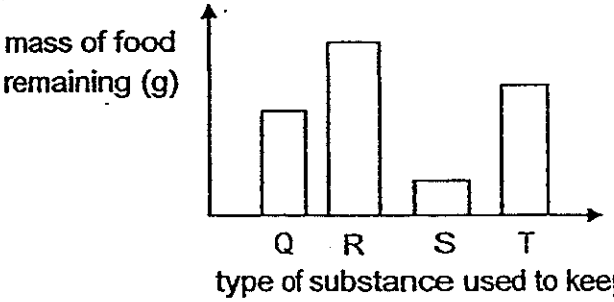


(a) He observed that more ants moved to food D and concluded that ants prefer food D to the rest. Do you agree with him? Why? [1]

(b) Hassan conducted another experiment to investigate which one of the substances, Q, R, S or T, was most effective in keeping ants away from food. He set up the experiment as shown below with the same amount of food and substance Q. He repeated the experiment using substances R, S and T.



The graph below shows the mass of the food remaining at the end of the experiment.



Based on Hassan's results, which substance, Q, R, S or T, was the most effective in keeping the ants away from the food? Give a reason for your answer. [1]

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34. Farmer Thomas used a chemical substance, X, to kill the caterpillars that were eating the cabbage he was growing. After a few days, he found several birds which are natural predators of caterpillars dead in his farm.

(a) Using the above information, complete the food chain below: [1]



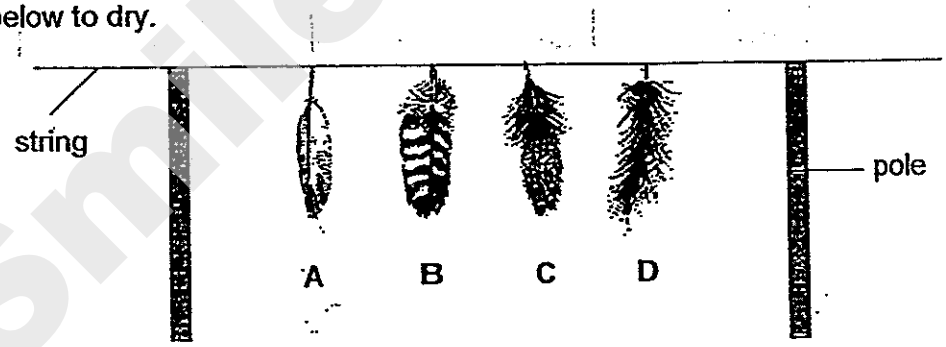
(b) Farmer Thomas did not want to harm the birds and decided to spray a natural substance, Y, on his cabbage to keep butterflies away from them instead.

Why did Farmer Thomas want to keep the butterflies away? [1]

(c) More and more farmers are using natural substances rather than harmful chemicals to control and keep pests away from their farms. State one advantage of such a decision.

[1]

35. Farah dipped feathers, A, B, C and D, from four different birds into a tub of water for 10 seconds. She then took them out and hung them as shown below to dry.



The time taken for the feathers to dry are as shown below.

Feather	A	B	C	D
Time taken to dry	2 min	3 min	20 s	50 s

Based on the above results, which one of the feathers, A, B, C or D most likely belong to a bird that is well-adapted to hunting for food in the water? Explain your answer. [2]

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36. The Caribbean Flamingos are found in water bodies of high salt content where few organisms can survive. They feed on the brine shrimps and brine flies that manage to live in such water bodies. Flamingos also have very tough skin on their legs and an organ to remove any excess salt from their bodies. They can also stand on one leg in the cold waters.

(a) From the information given above, identify one structural and one behavioural adaptation that allows the flamingo to survive in that environment. [2]

(i) Structural adaptation: _____

_____

(ii) Behavioural adaptation: _____

_____

(b) Explain how the behavioural adaptation in part (a) helps the flamingo to survive in the cold waters. [1]

_____

_____

_____

(c) Predators of the flamingos do not have tough skin on their legs that can withstand the corrosive action of the salty waters like the flamingos.

Suggest why it is an advantage for the flamingos to be able to stay in salty waters. [1]

_____

_____

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37. Every year, million tonnes of rubbish are being disposed in landfill sites. Much of this waste comes from plastic which takes a long time to break up. Recently, a scientist invented a machine that can melt plastic waste and convert the toxic gas produced into useful oil that can be further processed to make petrol, diesel and kerosene.

(a) What effect will the machine have on the limited natural resources available? [1]

_____

_____

(b) Suggest two other benefits to the environment if the scientist's invention was widely put to use. [2]

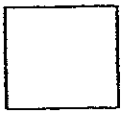
(i) _____

_____

(ii) _____

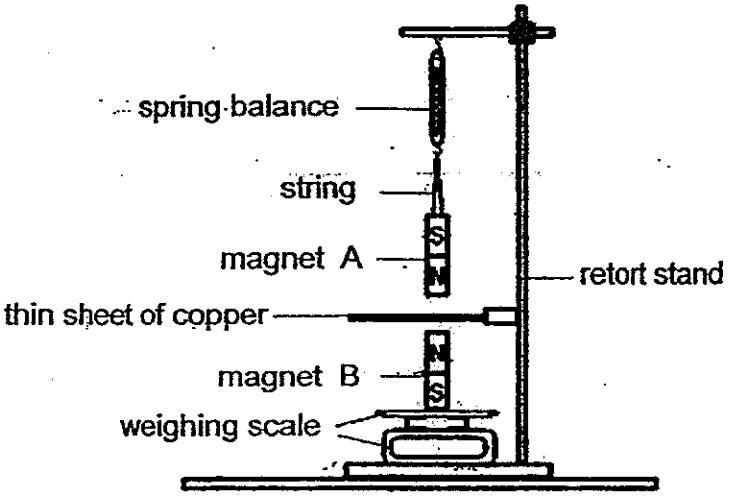
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38. David set up an experiment using two identical bar magnets as shown in the diagram below. Magnets A and B have a mass of 50g each.



(a) What would be the readings for the two magnets on the weighing scale and the spring balance respectively? [1]

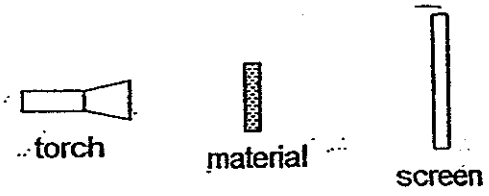
Magnet	Readings on weighing scale/spring balance (Tick the appropriate boxes)		
	50g	More than 50g	Less than 50g
A			
B			

(b) How will the reading on the spring balance be affected if the thin sheet of copper is replaced by a thin sheet of iron? Explain your answer. [2]

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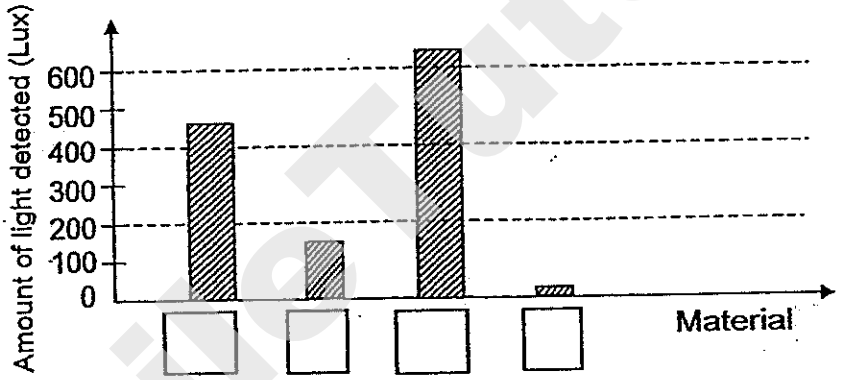
39. Study the setup below. Shawn carried out an investigation in a dark room to study the shadows formed by four different materials, A, B, C and D, as shown in the diagram below. The materials are of the same size and thickness.



He recorded his observations in the table below.

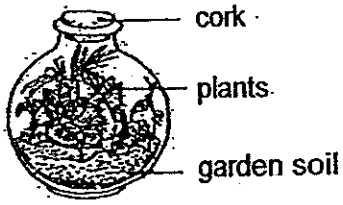
Material	Shadow formed
A	Faint
B	Very dark
C	Very faint
D	Dark

Shawn repeated his investigation by replacing the screen with a light sensor. The results are shown in the bar graph below.



(a) Based on Shawn's observations of the shadows cast on the screen, fill in the boxes above with A, B, C and D. [2]

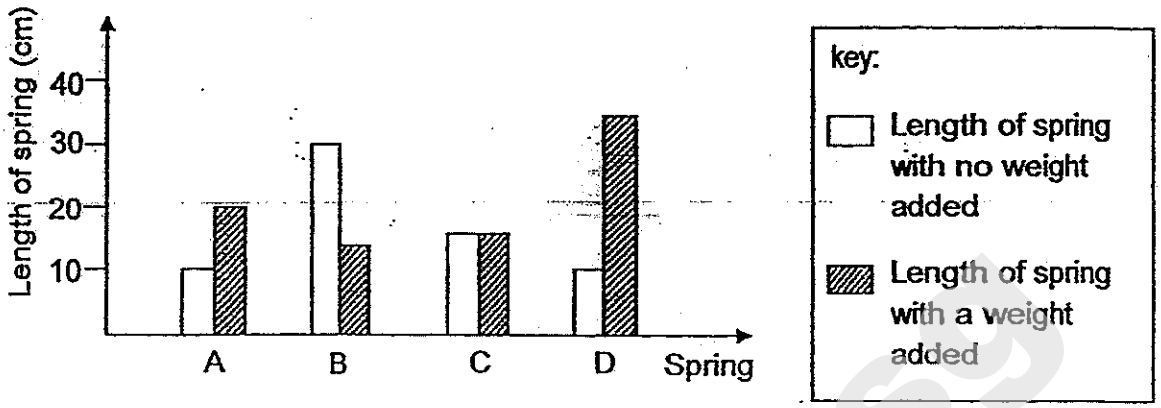
The diagram below shows a bottle garden with plants that thrive in a sunny and warm climate.



(b) Which material, A, B, C or D, would be the most suitable for making the container? Explain your answer. [2]

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40. The graph below shows how the lengths of different springs, A, B, C and D, in different weighing scales change when the same weight is added to each spring.



(a) Based on information from the above graph, what can you observe about Spring C? [1]

_____

_____

(b) Give a reason for the observation stated in (a). [1]

_____

_____

(c) The diagram below shows a kitchen scale. Figure 2 shows the spring inside the kitchen scale.

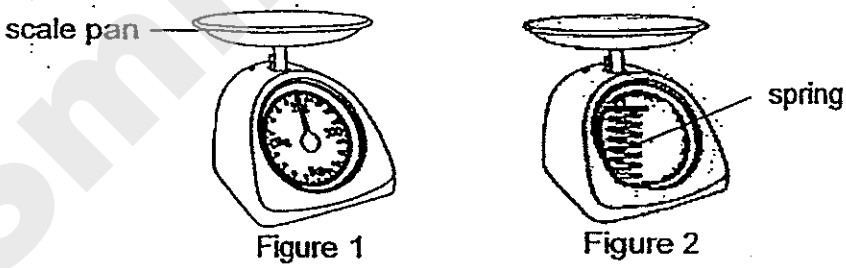


Figure 1 Figure 2

(i) Which spring above, A, B, C or D, is most likely used in the scale? [1]

_____

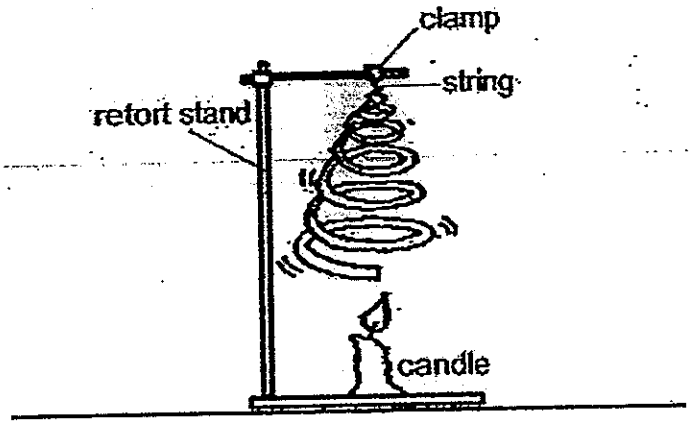
(ii) Explain your answer in (i) above. [1]

_____

_____

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41. Sam set up an experiment as shown below.



He observed that the paper spiral started to spin when the candle was lit.

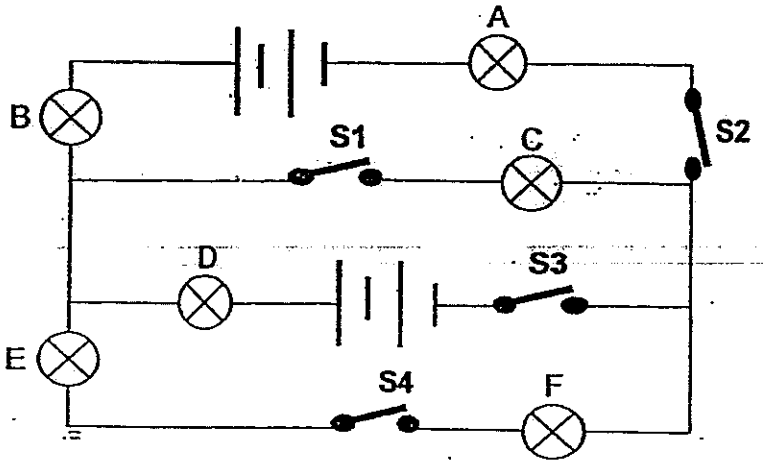
(a) Explain why the paper spiral started to spin when the candle was lit. [2]

(b) State the conversion of energy, beginning with the candle that caused the paper spiral to spin. [1]

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42. The bulbs and batteries in the circuit below are identical.



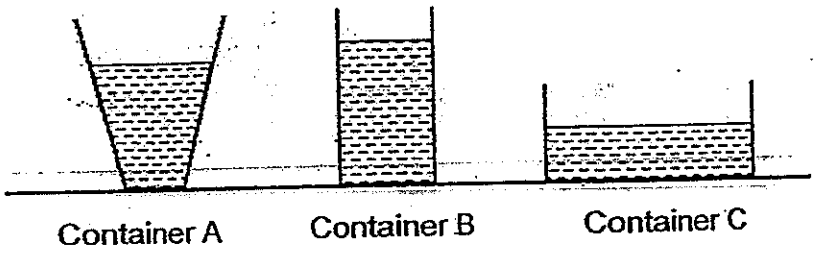
Complete the table below by writing the letter representing each of the bulbs that will light up when the stated switches are closed. [2]

Switches that are closed	Bulb(s) that light up
S1 & S4	
S1 & S3	
S2 & S3	
S2 & S4	

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43. Usha wanted to find out how the exposed surface area of water affects the rate of evaporation. She filled the following containers with the same amount of water to carry out her experiment.



(a) Explain why Container A is not suitable for the experiment? [1]

_____

_____

(b) Besides the exposed surface area of water, state two other factors that affect the rate of evaporation. [1]

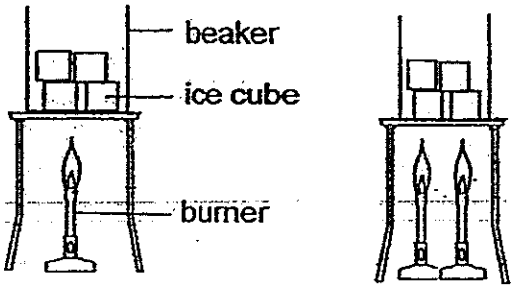
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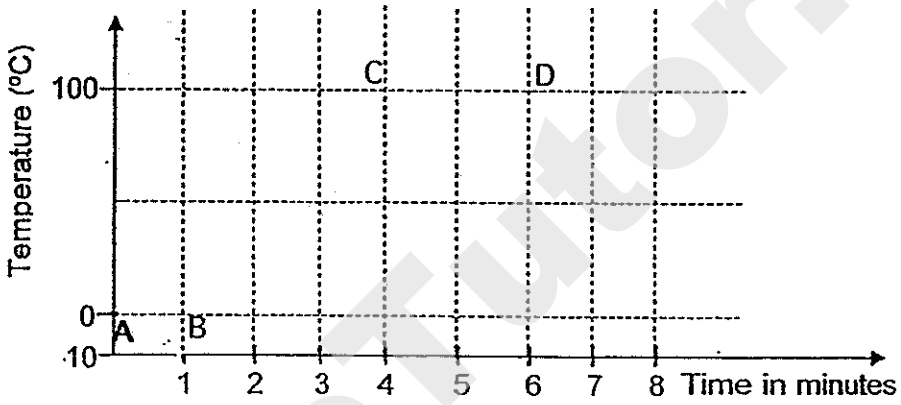
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44. Two identical beakers containing equal amount of ice cubes were heated as shown in the diagram below.



Set-up 1 Set-up 2

The graph below shows the changes in temperature of ice cubes in set-up 2, over a period of 6 minutes.



(a) Using the same grid above, **draw** another line graph to show the changes in temperature of the ice cubes in set-up 1, over a period of 8 minutes. [1½]

(b) State two similarities between the two processes as shown in AB and CD of the graph. [1]

(i) _____

(ii) _____

~~ End of paper ~~

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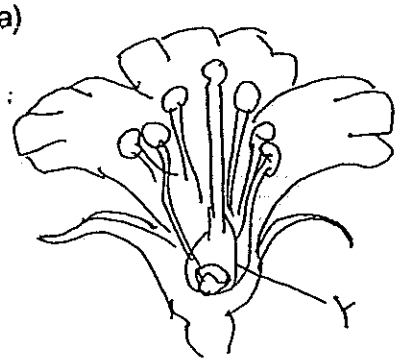
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Subject: PRIMARY 6 SCIENCE
Term: PRELIM

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

31. (a)



(b) i. Organism B helps to pollinate the flower when stepping on the stigma while sucking nectar.

ii. Flower M provides nectar for organism B to feed on.

32. (a) Sunlight was not able to reach the part of the leaf covered by the black paper, so it cannot make food and hence starch is absent for that part.

(b) As only the food carrying tube is removed, leaf A still has enough water to photosynthesis, but part of it was covered with black paper, so that part of the leaf would not be able to photosynthesis and produce glucose which will then convert into starch to store.

33. (a) No. He did not use the same amount of food for each container. There are more than 1 variable changed in the setup.

(b) Substance R. It had the most food left at substance R, which means that not many ants had come to eat it.

34. (a) cabbage → caterpillar → birds

(b) So that the butterflies would not lay eggs on the cabbage and the caterpillars would not hatch from it and feed on the cabbage.

(c) The natural substances may not cause pollution or harm to other organisms.

35. Feather C. C dried the fastest showing that it is the most waterproof. Thus, the bird can keep itself warm/ the bird can fly away from the water the fastest.

36. (a) i. The flamingos have very tough skin on their legs.

ii. They stand on one leg in the cold waters.

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(b) By standing on one leg, lesser surface area is exposed an in contact with the cold waters, so lesser heat will be lost, keeping the warm enough to survive.

(c) So they can stay safe from predators.

37. (a) It can help to conserve the amount of natural resources available.

(b) i. Lesser landfill sites will be used as plastic will be burnt instead of buried.

ii. No air pollution from burning plastics to get rid of them.

38. (a) A - Less than 50g.

B - More than 50g.

(b) The reading of the spring balance becomes more than 50g. As iron is a magnetic material, the repulsion force between the two magnets cannot pass through it, but instead, magnet A would be attracted to the iron, thus pulling the spring balance down, making it show more than 50g.

39. (a) ADCB

(b) Material C. It allows the most light to pass through so the plants will be able to receive most sunlight to carry out photosynthesis.

40. (a) The length of spring C does not change even with a weight.

(b) The weight attached is not strong enough to stretch the spring.

(c) i. Spring B

ii. When a weight is added the scale pan will move downward. This means that the spring will get shorter. The graph shows that spring B get shorter when a weight is attached, it must be the one used in the kitchen scale.

41. (a) When the candle was lit, it produced heat, causing the surrounding air to gain heat, thus the warmer air rises, pushing the string, making it move.

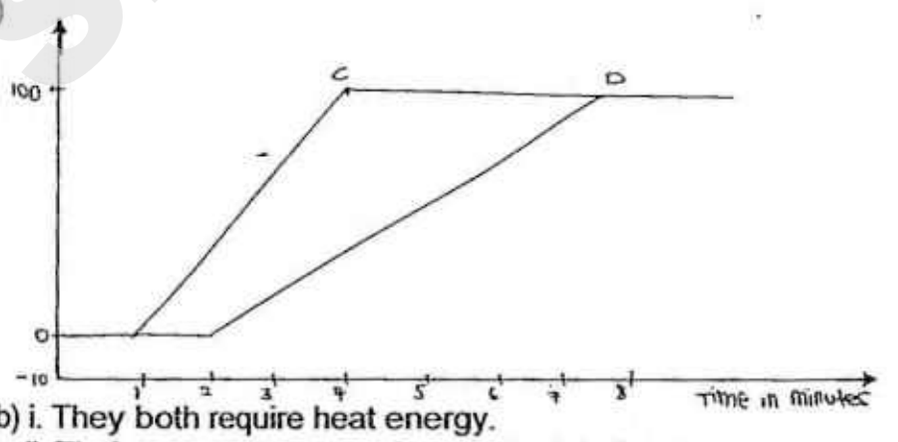
(b) Chemical potential energy of the candle → heat energy (air) → kinetic energy (hot air) → kinetic energy (string)

42. None; C and D; none; A, B, E and P

43. (a) The exposed surface area keeps changing as the water evaporates.

(b) The temperature and the amount of wind present.

44. (a)



(b) i. They both require heat energy.

ii. Their temperature remains constant during the process.

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HENRY PARK PRIMARY SCHOOL

2014 PRELIMINARY EXAMINATION

PRIMARY 6 SCIENCE

Booklet A

Name: _____( )

Class: Primary 6 _____

60

30 Questions
60 Marks

Total Time for Booklet A and B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

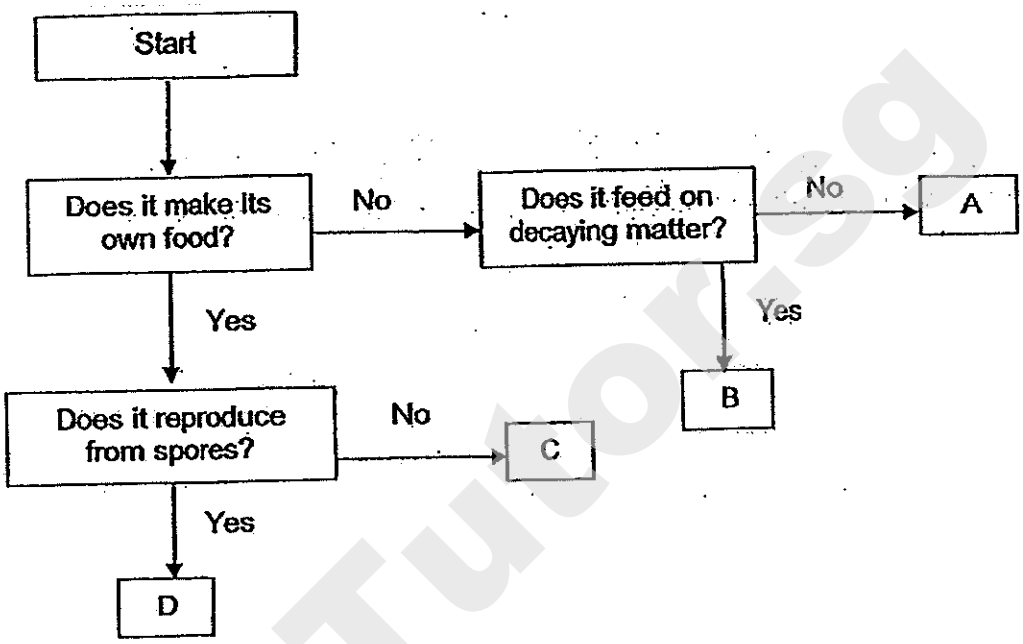
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Booklet A (60 marks)

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

1. The flowchart below shows the characteristics of four living things, A, B, C and D.



Which of the following living things is/are ~~definitely~~ a plant(s)?

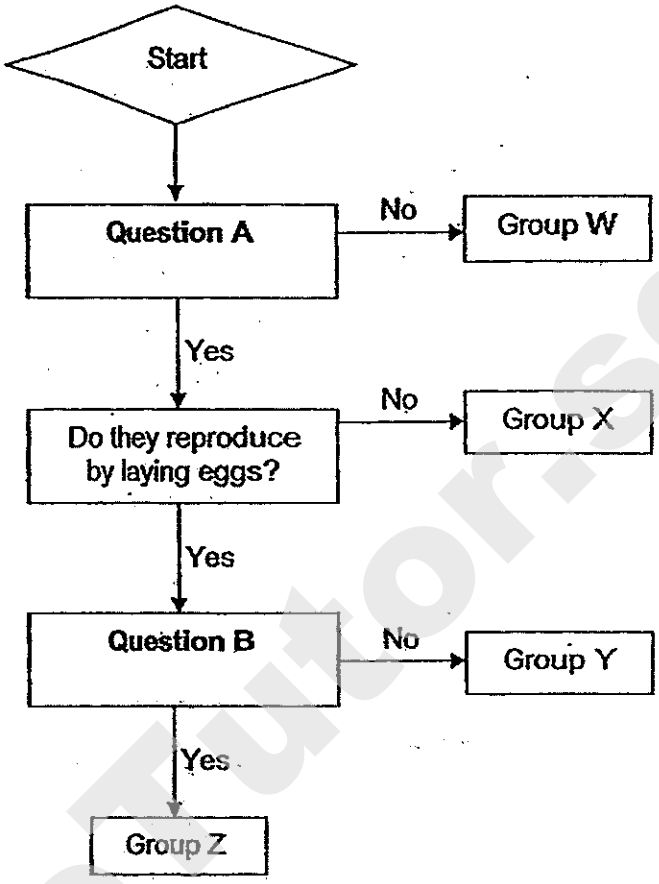
(1) C only
(2) A and B only
(3) C and D only
(4) A, B and D only

( )

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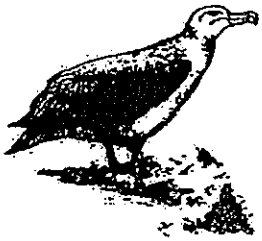
2. The flowchart below shows how some animals are grouped.



Animals G and H below can both be placed in Group Y.



Animal G



Animal H

What could questions A and B be?

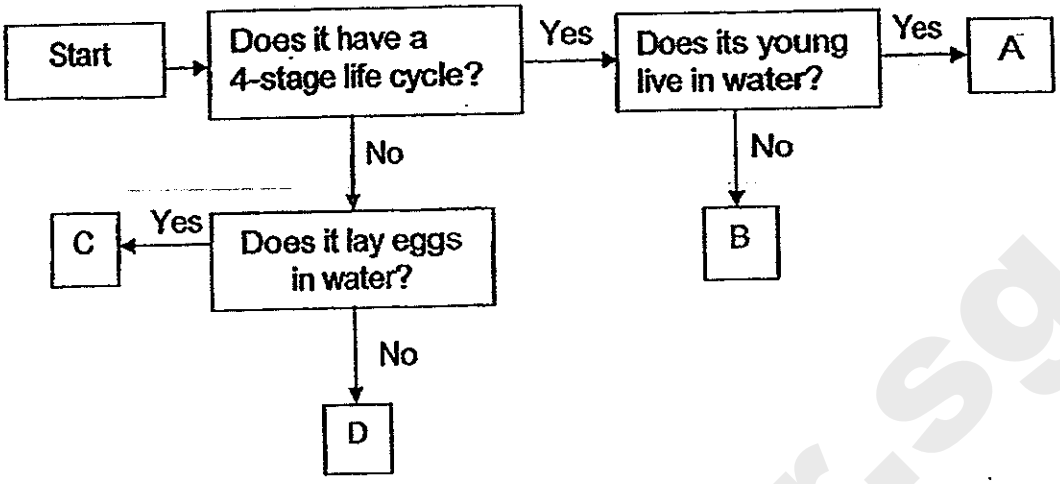
	Question A	Question B
(1)	Do they have wings?	Do they produce milk for their young?
(2)	Do they produce milk for their young?	Do they have wings?
(3)	Do they have wings?	Do they have feathers?
(4)	Do they have feathers?	Do they have wings?

( )

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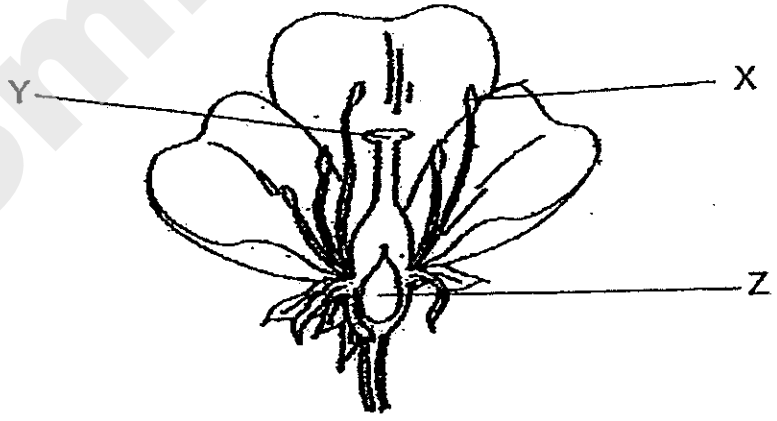
3. The flowchart below shows how some animals are classified.



Which of the following organisms best represent A, B, C and D respectively?

	A	B	C	D
(1)	frog	chicken	mosquito	mealworm beetle
(2)	mosquito	mealworm beetle	frog	chicken
(3)	mosquito	mealworm beetle	chicken	frog
(4)	mealworm beetle	mosquito	frog	chicken

4. The diagram below shows parts of a flower that has been cut into half. ( )



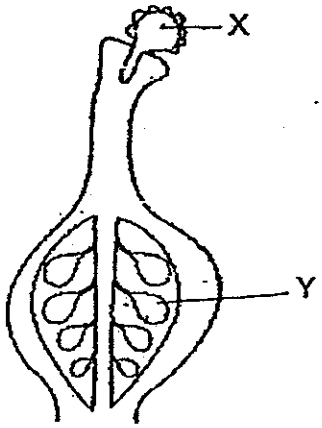
Process A is needed for both plant and human reproduction.

Which part(s) of the flower does Process A take place in?

(1) X only
(2) Z only
(3) X and Y only
(4) Y and Z only

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5. The diagram shows parts of a flower at a particular stage during reproduction.



Which of the following best describes structures X and Y?

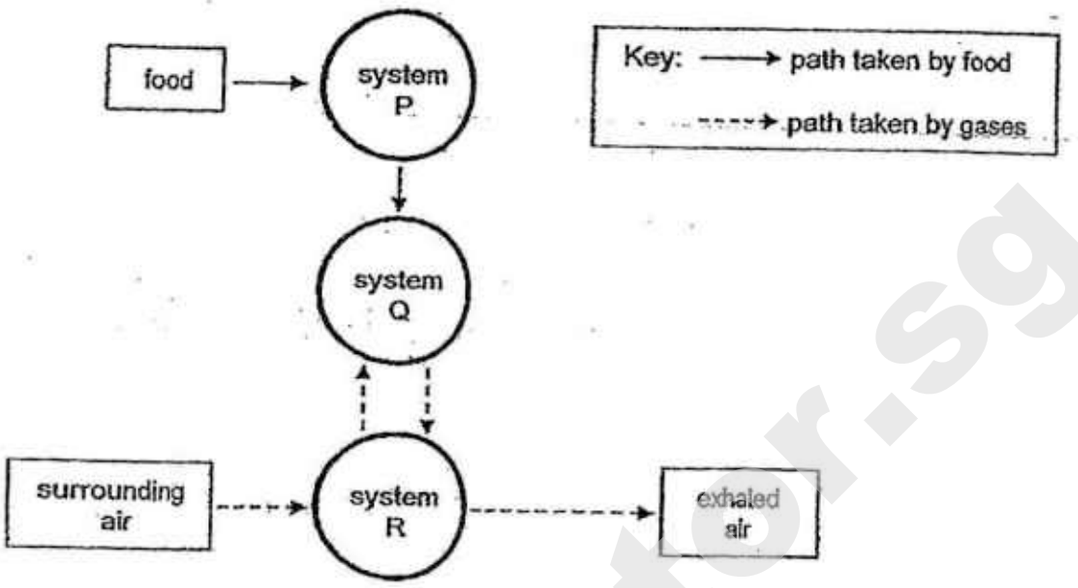
	Structure	
	X	Y
(1)	A pollen after pollination but before fertilisation	A seed after pollination and fertilisation
(2)	A pollen after pollination but before fertilisation	An ovule after pollination but before fertilisation
(3)	A pollen before pollination but after fertilisation	A seed after pollination and fertilisation
(4)	A pollen before pollination but after fertilisation	An ovule after pollination but before fertilisation

( )

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6. The diagram below shows how food and gases are transported in the human body.



Which of the following correctly shows the organ found in system P, Q and R?

	System P	System Q	System R
(1)	Mouth	Nose	Lungs
(2)	Nose	Lungs	Stomach
(3)	Stomach	Heart	Lungs
(4)	Mouth	Stomach	Nose

( )

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7. Xiaoting wanted to find out what would happen to a plant if part of its stem was removed as shown in Diagram 1.

After some time, she noticed a bulge at part Y of the stem as shown in Diagram 2.

Diagram 1

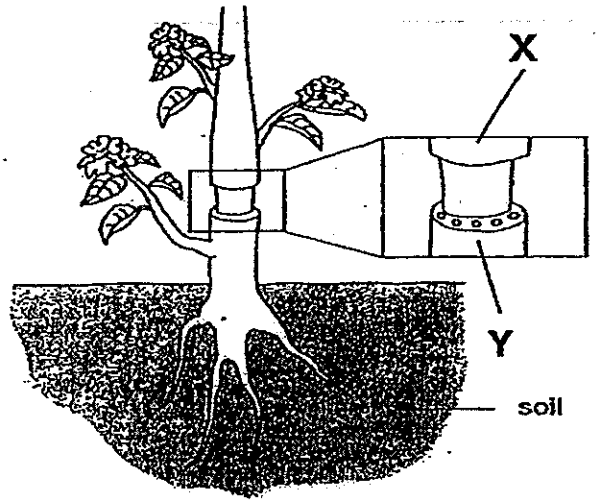
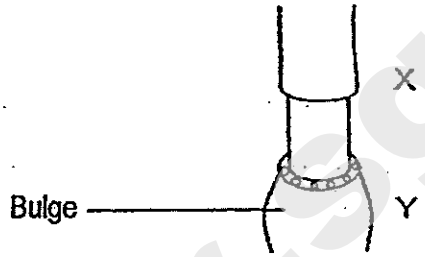


Diagram 2



Based on the above experiment, which one of the following statements is true?

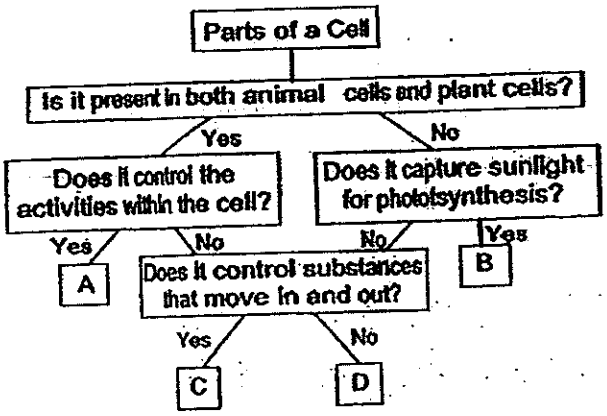
(1) The plant will not be affected by the cut in the stem at all.
(2) The plant will die after some time as water from the roots cannot reach the other parts of the plant.
(3) The plant will die after some time as food from the leaves cannot reach the roots.
(4) The plant will die after some time as both food and water cannot be transported around the plant.

( )

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8. The diagram below can be used to identify part A, B, C and D of a cell.

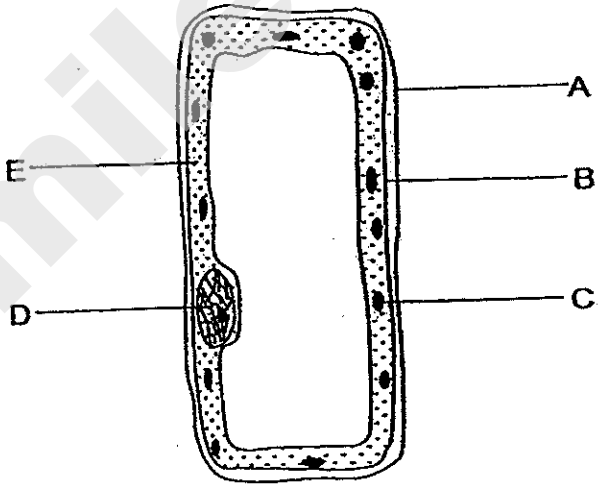


Which of the following correctly represents part A, B, C and D?

	A	B	C	D
(1)	nucleus	chloroplasts	cell wall	cell membrane
(2)	cytoplasm	nucleus	cell membrane	chloroplasts
(3)	cytoplasm	cell membrane	nucleus	chloroplasts
(4)	nucleus	chloroplasts	cell membrane	cell wall

( )

9. The diagram below shows a plant cell.



Which of the following parts of the plant cell, A, B, C, D, E, are **not** found in an animal cell?

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

( )

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10. Which of the following are produced when plants carry out photosynthesis?

(1) oxygen and water

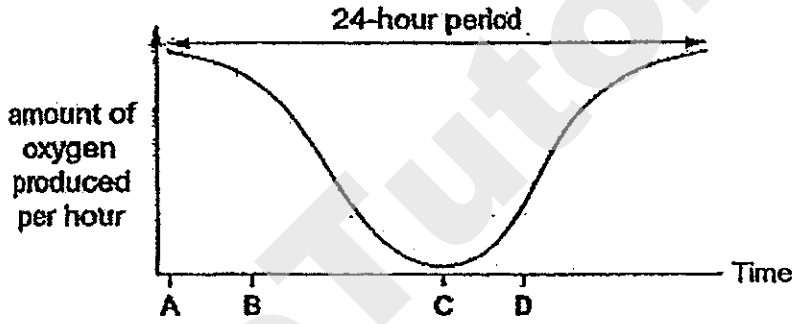
(2) oxygen and sugar

(3) oxygen and starch

(4) carbon dioxide and sugar

11. An experiment was carried out in a garden with a green plant.

The graph below shows the amount of oxygen produced by the green plant during a period of 24 hours.



Which of the letters, A, B, C or D, on the graph represent the amount of oxygen produced at 12.00 am and 12.00 pm on a bright day?

	Amount of oxygen produced at	
	12.00 am	12.00 pm
(1)	A	D
(2)	A	C
(3)	B	A
(4)	C	A

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12. Group X and Group Y shown below represent two different groups of organisms.

Group X	Group Y
lizards, snakes, scorpion, cactus	ants, millipede, wood lice, fallen dead leaves

The table below shows the characteristics of the environment found in four different habitats.

Habitat	Characteristics of the Environment		
	Temperature of surrounding air	Presence of Water	Presence of Light
A	Very low all the time	Found as icebergs, in icy streams and seas	Only during certain months of the year
B	Moderate	Found in damp soil	Very little most of the time
C	Very high in the day, very low at night	Found as puddles	Plentiful in the day
D	Higher in the day than at night	Completely covered in water	More on the surface and less below the surface

In which of the habitats, A, B, C or D, would the organisms in Group X and Group Y most likely be found?

	Organisms in	
	Group X	Group Y
(1)	A	D
(2)	B	C
(3)	C	B
(4)	D	B

( )

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13. The food chain shown below represents a food relationship in a particular pond community. N is a water plant.



A large population of Q is accidentally introduced into the pond. Q does not have any predators in the pond.

What is likely to happen immediately if Q feeds on M only?

A: The population of N will decrease.

B: The population of M will decrease.

C: The population of P will decrease.

D: The population of Q will decrease.

(1) A and B only

(2) B and C only

(3) C and D only

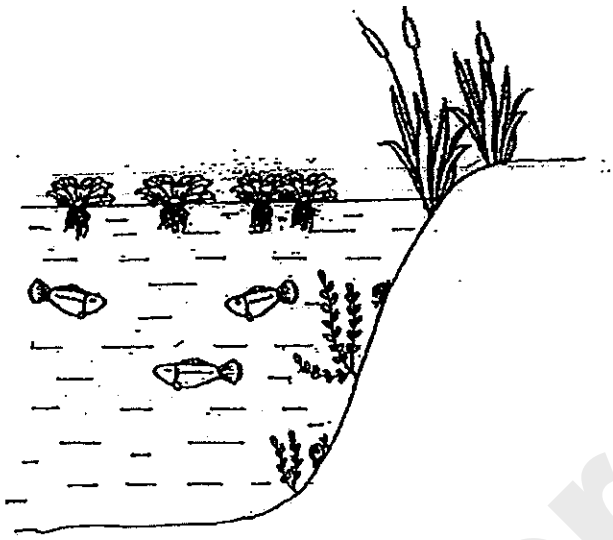
(4) B, C and D only

( )

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14. The diagram below shows part of a pond and the organisms living in it.



Which one of the following shows correctly the number of different types of producers, consumers, populations and communities in the pond?

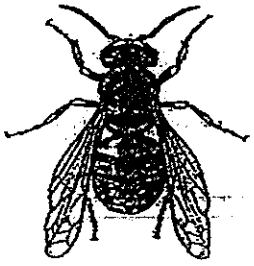
	Number of type of producers	Number of type of consumers	Number of populations	Number of communities
(1)	2	2	5	1
(2)	3	2	5	1
(3)	3	5	8	1
(4)	3	5	12	5

( )

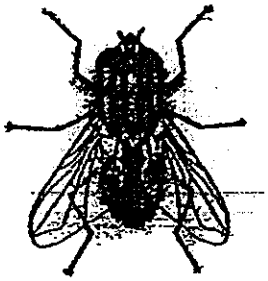
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15. The diagram below shows two animals, P and Q.



Animal P



Animal Q

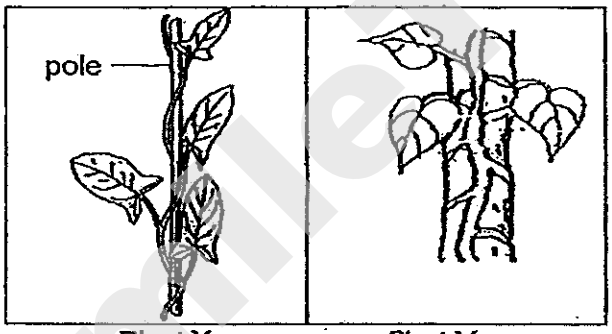
Animal P stings and feeds on small organisms like ants and spiders.
Animal Q looks like animal P, feeds on nectar but does not sting.

Which one of the following describes the advantage for animal Q to resemble animal P?

(1) Animal Q would be able to feed on prey of Animal P easily.
(2) Animal P would be able to mate with animal Q to reproduce.
(3) Predators of animal P would be able to prey on animal Q as well.
(4) Predator of animal Q would avoid preying on it, mistaking it for animal P.

( )

16. The diagram below shows two plants, X and Y, which have special adaptations to allow them to survive in their environment.



Plant X Plant Y

Based on the diagram shown, which of the following statements about plant X and Y are correct?

A: Both plants have creeping stems.
B: Both plants need support to grow upwards.
C: Both plants are trying to obtain more sunlight.
D: Plant X has stronger stem than Plant Y.

(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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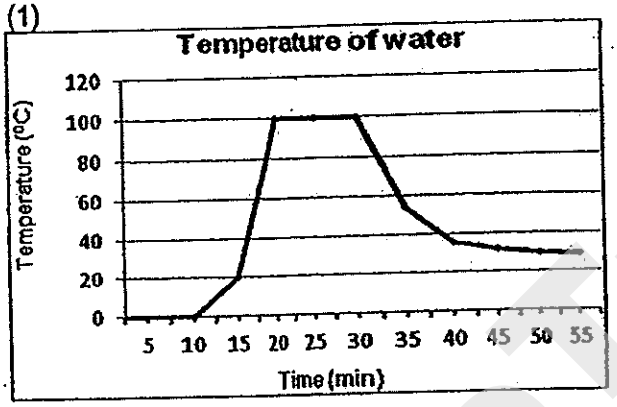
17. John conducted an experiment to find out changes in temperature of water. He wrote the procedure in the table as shown below.

Step 1	*Place a beaker of ice, 10 g in mass, at room temperature of 29°C to melt completely. Record temperature.*
Step 2	*Then heat the same beaker of water over a burner till it reaches boiling point. Record temperature.*
Step 3	*Continue boiling water for 5 minutes. Record temperature.*
Step 4	*Remove beaker from burner to allow water to cool to room temperature of 29°C. Record temperature.*

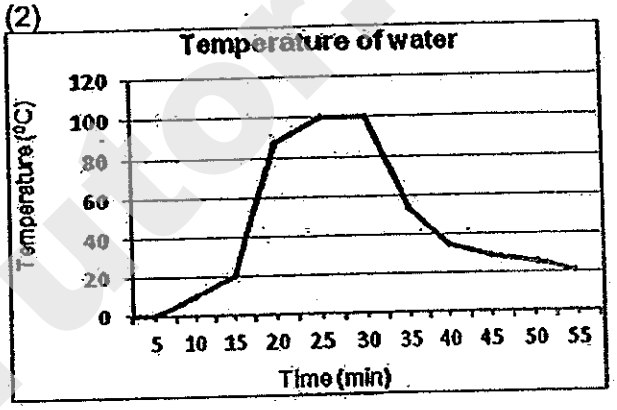
He recorded his data in a graph after each step.

Which one of the following graphs most likely represents the changes in temperature of water over the duration of his experiment?

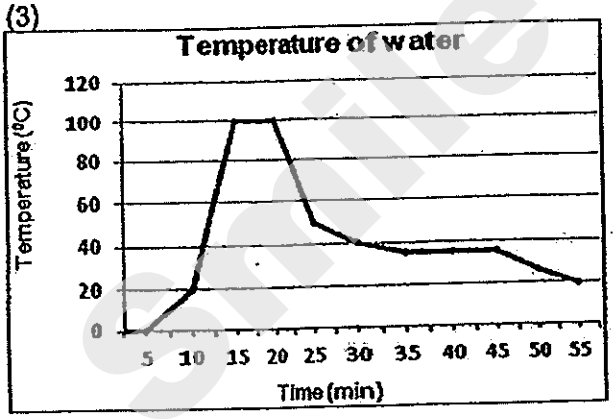
(1)



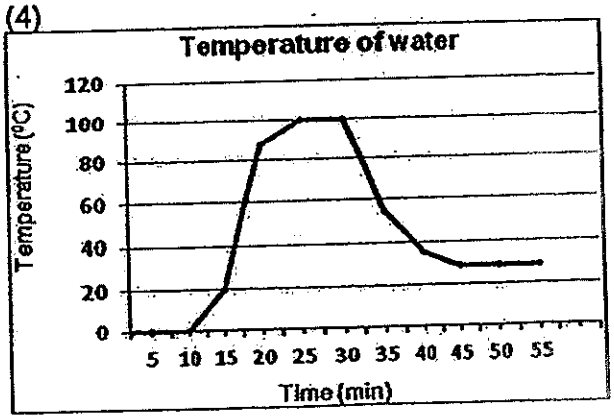
(2)



(3)



(4)

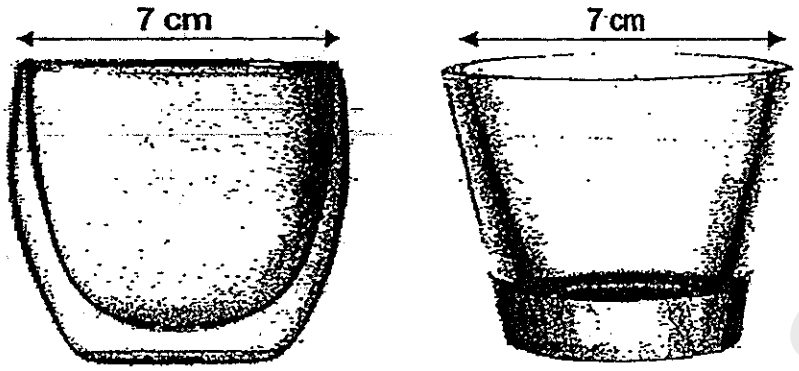


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18. The diagrams below show two types of glasses with different designs. Design A has a double layer of glass as compared to Design B which has a single layer of glass.

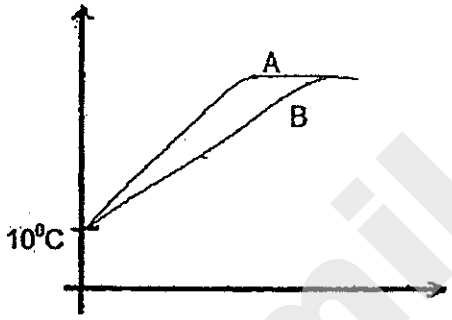


Design A Design B

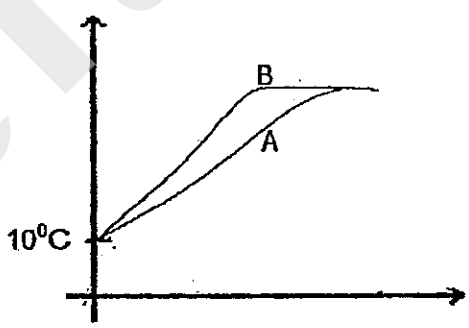
Ahmad poured water at 10°C into both glasses and left them in the same room.

Which one of the following graphs correctly shows how the temperature of water changes with time in each type of glass?

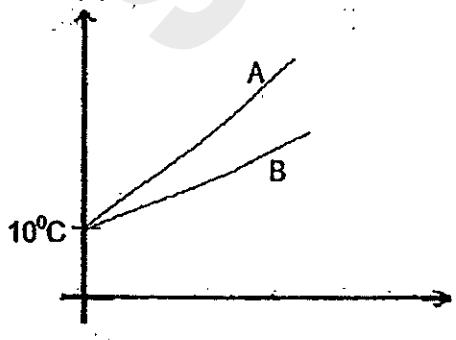
(1)



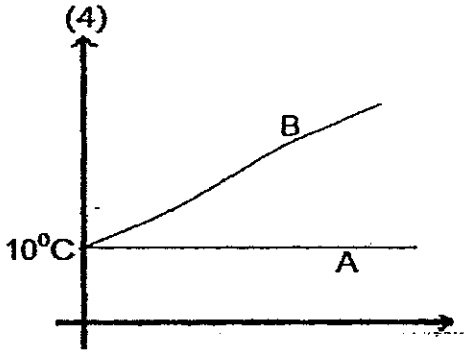
(2)



(3)



(4)



( )

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19. Substance A and Substance B are in two different states of water.

The diagram below shows the properties of Substances A and B.

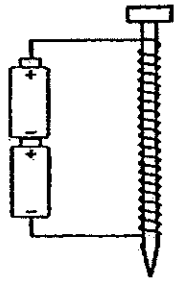
Substance A		Substance B
Has no definite shape, Has definite volume	→	Has no definite shape, Has no definite volume

What process takes place as Substance A changes into Substance B?

(1) Boiling
(2) Melting
(3) Freezing
(4) Condensation

( )

20. An electromagnet can be made using two batteries, wires and an iron nail as shown in the diagram below.



In a closed circuit, the iron nail becomes an electromagnet.

How can the strength of the electromagnet be increased?

A: Use a longer nail.

B: Increase the length of wire used.

C: Increase the number of batteries in series.

D: Increase the number of turns of wire around the nail.

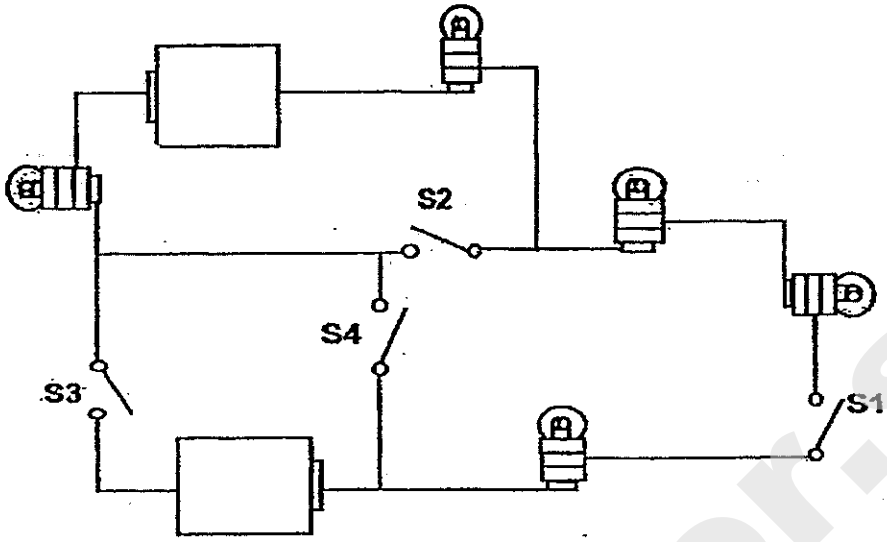
(1) A and B only
(2) C and D only
(3) A, C and D only
(4) A, B, C and D

( )

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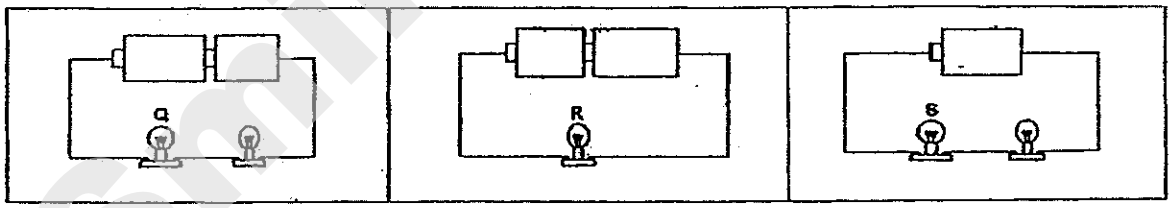
21. The diagram below shows four bulbs connected together in a circuit.



Which of the switches, S1, S2, S3, S4, should be closed for all the bulbs to light up?

(1) S1 and S2 only
(2) S1 and S3 only
(3) S1, S2 and S4 only
(4) S2, S3 and S4 only

22. The diagram below shows three circuits with different arrangements of identical batteries and bulbs. The bulbs in all three circuits light up.



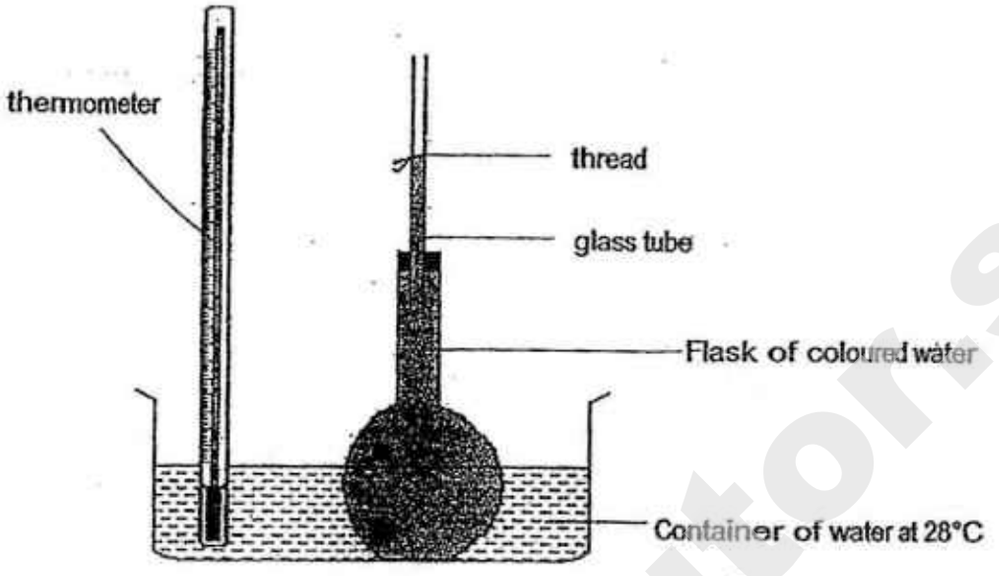
Arrange the bulbs, Q, R and S, in the order of brightness, starting with the bulb which was the brightest.

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

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23. The container below was filled with tap water of room temperature at 28°C. A flask of coloured water was then placed into the container. The water level in the glass tube was marked out with a thread.



Ice cubes were added in the container and a change in temperature of water was recorded.
Which one of the following correctly describes the level of water in the tube after ice cubes were added and the reason for the observation?

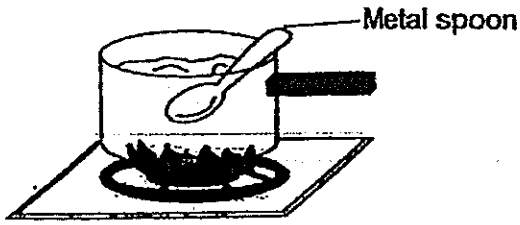
	Water Level in the tube	Reason for observation
(1)	Falls	Water in the flask loses heat and contracts
(2)	Rises	Water in the flask gains heat and expands
(3)	Rises	Ice cubes gain heat and melt to become water
(4)	Remains the same.	Water in the flask neither gains nor loses heat.

( )

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24. The diagram below shows a metal spoon left in a pot of hot soup over a stove by Mrs Leong.



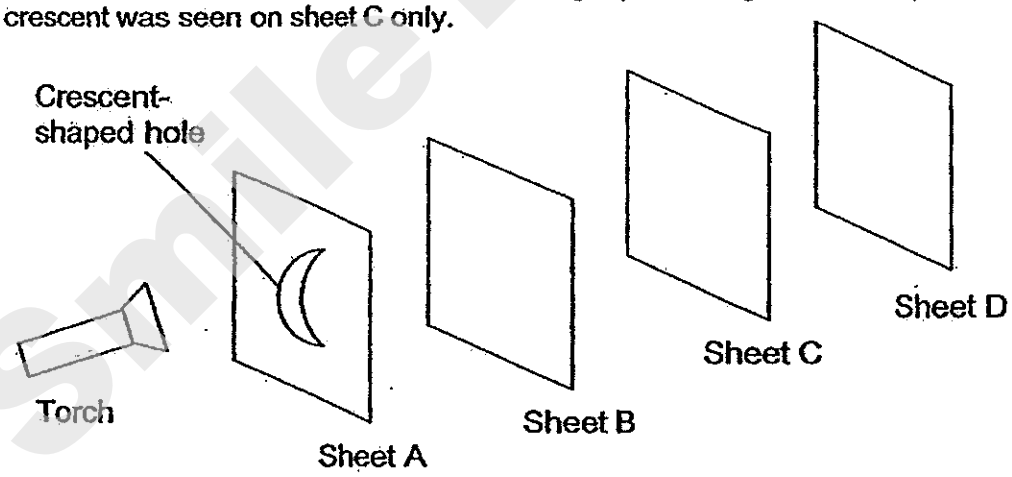
After 20 minutes, Mrs Leong used her hands to remove the metal spoon from the pot. The metal spoon burned her hand. Which of the following explains why the metal spoon burned her hand?

A: Mrs Leong's hand lost heat to the spoon.
B: Mrs Leong's hand gained heat from the spoon.
C: The heat on Mrs Leong's hand transferred to the spoon.
D: The spoon gained heat from the hot soup then lost heat to Mrs Leong's hand.

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

( )

25. Martin carried out an experiment in a dark room with the set-up as shown below. He arranged 4 sheets of different materials A, B, C and D in a straight line. When the torch was switched on, he observed that a bright patch of light in the shape of a crescent was seen on sheet C only.



Which of the following statements is/are definitely true about the sheets used above?

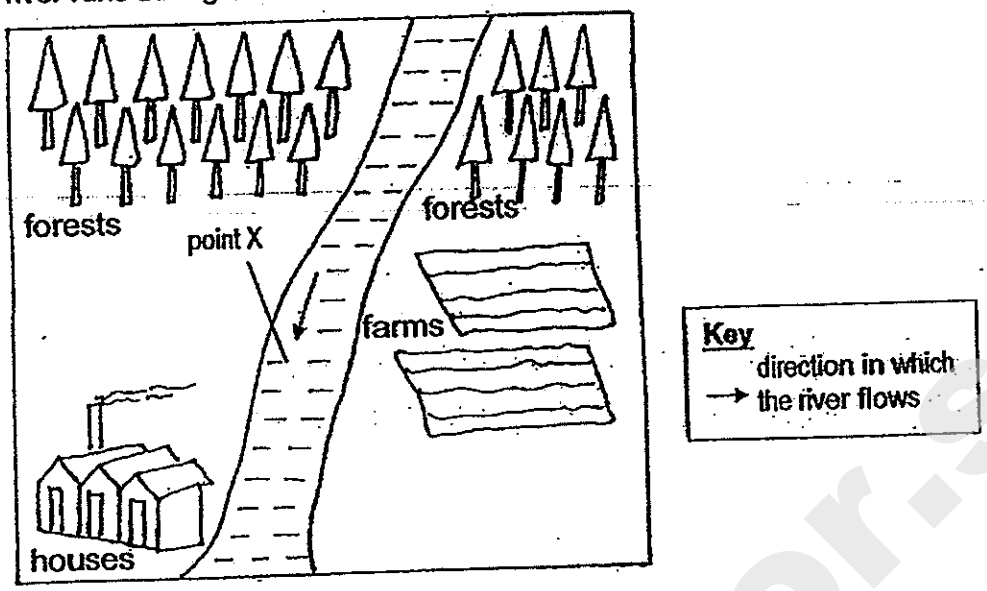
A: Sheet A is opaque
B: Sheet B is transparent.
C: Sheet C is transparent
D: Sheet D is translucent.

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

( )

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26. A river runs through a forest as shown in the diagram below.



Which of the following will most likely decrease the amount of pollutants in the river at point X?

A: Plant more trees nearer to point X.
B: Minimise use of pesticide in the farm.
C: Stop dumping of sewage from the houses into the river.

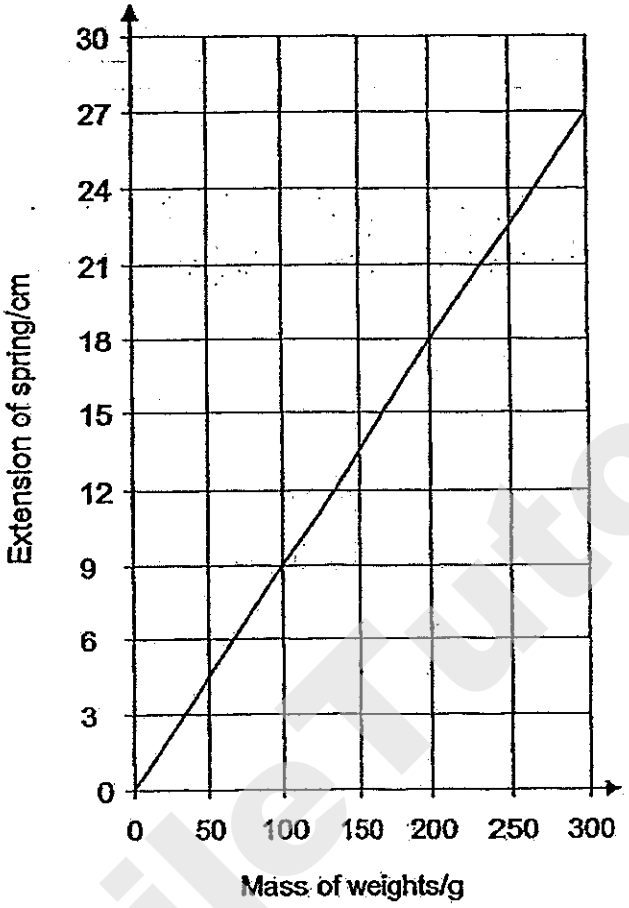
(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C only

( )

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27. Dora had a spring with an original length of 15 cm. She wanted to find out the relationship between the extension of the spring and different weights. She hung different weights on the spring, one at a time, and measured its extension. She recorded and plotted the results on the graph below.



Based on the graph, what would be the length of the spring when a 200g weight was hung on it?

(1) 18 cm
(2) 24 cm
(3) 27 cm
(4) 33 cm

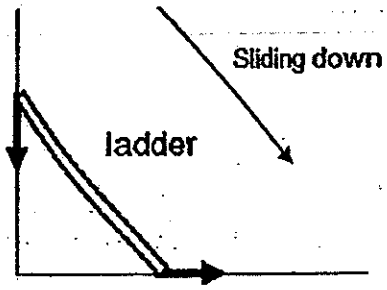
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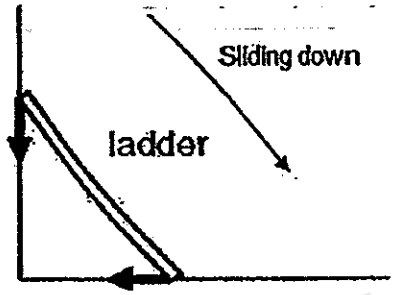
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28. A ladder is placed leaning against a wall as shown below.
Which one of the following shows correctly the direction of frictional force acting on the ladder when it is **sliding down** from the wall?

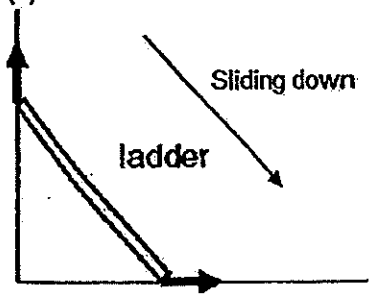
(1)



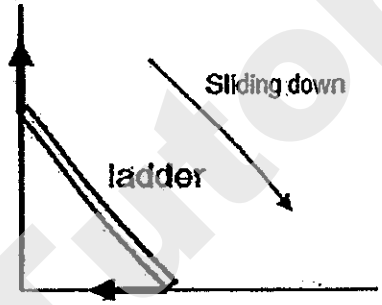
(2)



(3)



(4)

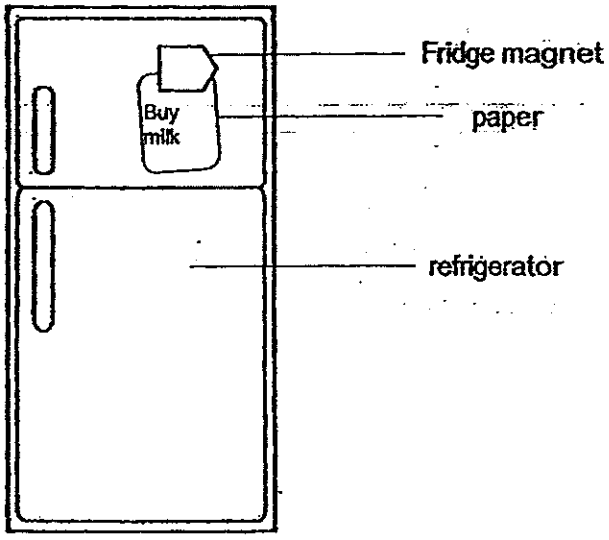


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29. Susan used a fridge magnet to attach a piece of paper on the door of the refrigerator as shown in the diagram below.



When she attached a thin piece of paper, the magnet was able to hold it onto the refrigerator's door.

When a thicker piece of paper was used, both the magnet and the paper fell onto the floor.

Based on the above information, which of the following statements are **not** correct?

A: Paper is a material that prevents magnetic force from passing through.

B: The surface of the refrigerator's door is made of a magnetic material.

C: Force of gravity is only acting on the thicker paper but not on the thin paper.

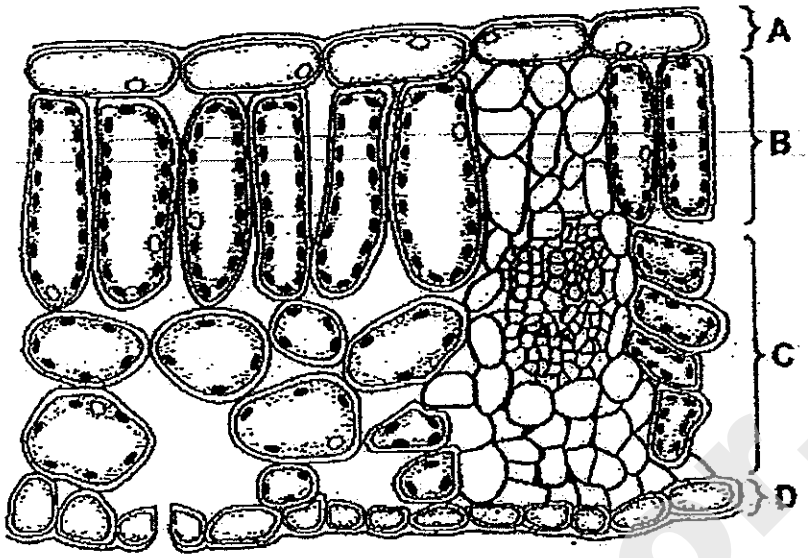
(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

( )

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30. The diagram below shows layers of cells in a leaf.



In which of the layers of cells, A, B, C or D, will conversion of energy from one form to another take place?

	Layers of cells	Conversion of energy from one form to another
(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 → chemical potential energy
(4)	B, C and D only	light energy → chemical potential energy

( )

End of Booklet A

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HENRY PARK PRIMARY SCHOOL

2014 PRELIMINARY EXAMINATION

PRIMARY 6 SCIENCE

Booklet B

/40

Name: _____ ( )

Class: Primary 6 _____

14 Questions
40 Marks

Total Time for Booklet A and B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

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Booklet B (40 marks)

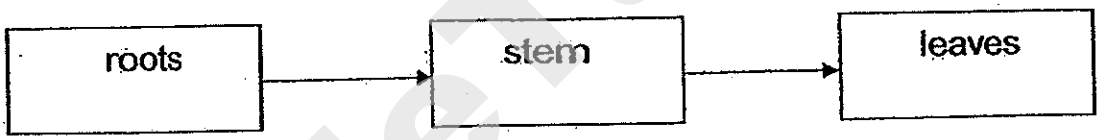
Write your answers to questions 31 to 44 in the spaces given.

31. The table below shows the properties of material S, T, U and V.

Material	Waterproof	Flexible	Conductor of heat
S	Yes	No	Poor
T	Yes	Yes	Good
U	Yes	No	Good
V	No	Yes	Poor

Which material, S, T, U or V, should Sammy choose to make a cooking pot? Explain your answer.

32. The diagram below shows the movement of water in a plant.



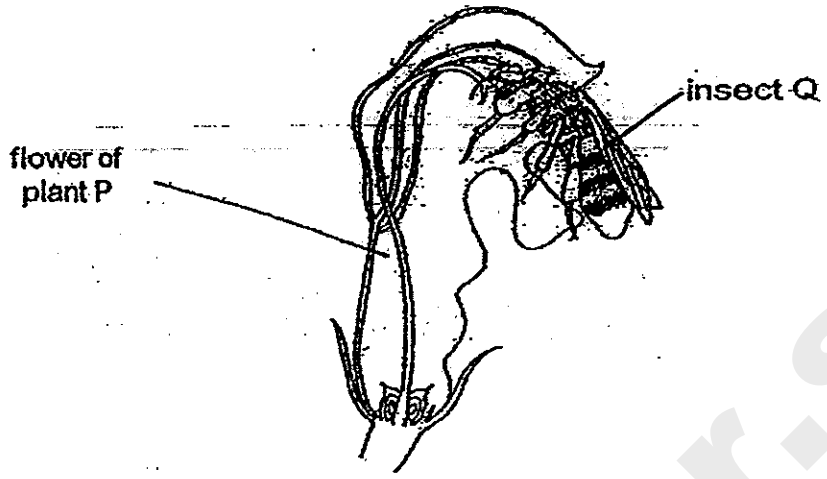
a) In the diagram above, draw the movement of food in a plant using the correct dotted arrows (⇢ ⇠). *(1m)*

b) Why would a plant eventually die if the roots were removed? *(1m)*

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33. The diagram below shows Process X being carried out in a flowering plant.



a) Name process X. *(1m)*

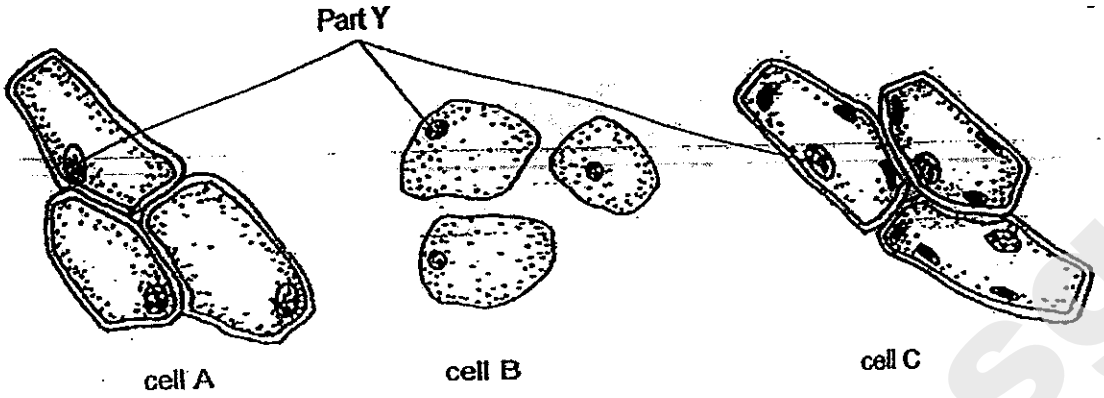
b) Describe how insect Q helps the plant to carry out process X. *(2m)*

c) If process X is not carried out, flowering plants may not be able to reproduce. Explain why this is so. *(1m)*

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34. The diagram below shows cell A, B and C.



a) Part Y can be found in all three cells. State a function of part Y. *(1m)*

_____

_____

_____

b) Which 2 cells, A, B and/or C, came from the same **group** of organism?

(i) Cell _____ and cell _____ *(1m)*

(ii) Name the **group** of organism the two cells belong to. *(1m)*

_____

c) Explain your answer in (b)(ii). *(1m)*

_____

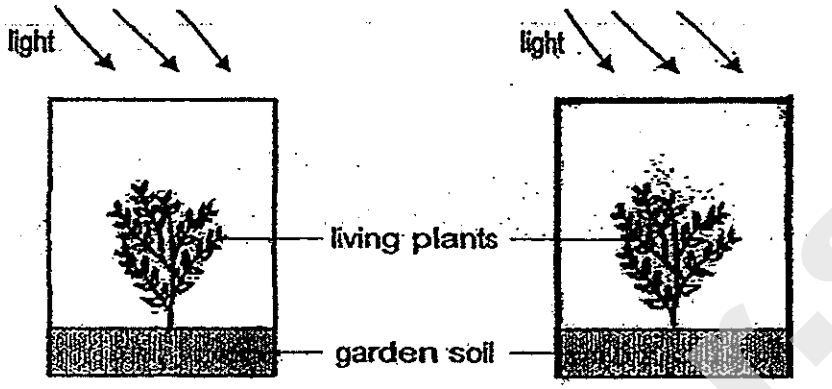
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35. Cheryl wanted to investigate how the amount of light affects the rate of photosynthesis in plants and prepares three set-ups, A, B and C.

The diagram below shows set-ups A and B in a clear glass tank after the plants have been de-starched for 48 hours.



Set-up A **Set-up B**

She has also prepared **set-up C** for the same experiment.

a) Tick (✓) in the appropriate boxes below to show what Cheryl should use in Set-up C. *(1m)*

Items for Set-up C	Tick
Clear glass tank	
Tracing paper	
Black paper	
Living plants	
Garden soil	
Light	

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Question 35 continued

A starch test was carried out on the leaves of each plant from Setup A, B and C. Cheryl recorded her results in a table as shown below.

Setup	Observations of starch test
A	Dark blue
B	Yellowish-brown
C	Darker blue

b) Based on her observations, state a possible conclusion for her experiment. *(1m)*

_____

_____

c) Using information from the table above, explain your answer in (b). *(1m)*

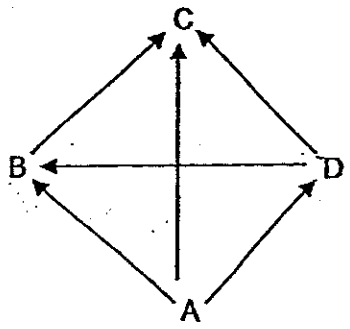
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36. The diagram below shows how four organisms, A, B, C and D, interact with one another in a natural environment.
The arrows in the diagram show the direction of the flow of energy.



a) Use the letters, A, B, C or D, to identify the following organisms : *(1m)*

Producer : _____

Decomposer : _____

b) What is the main role of the decomposer in the natural environment? *(2m)*

_____

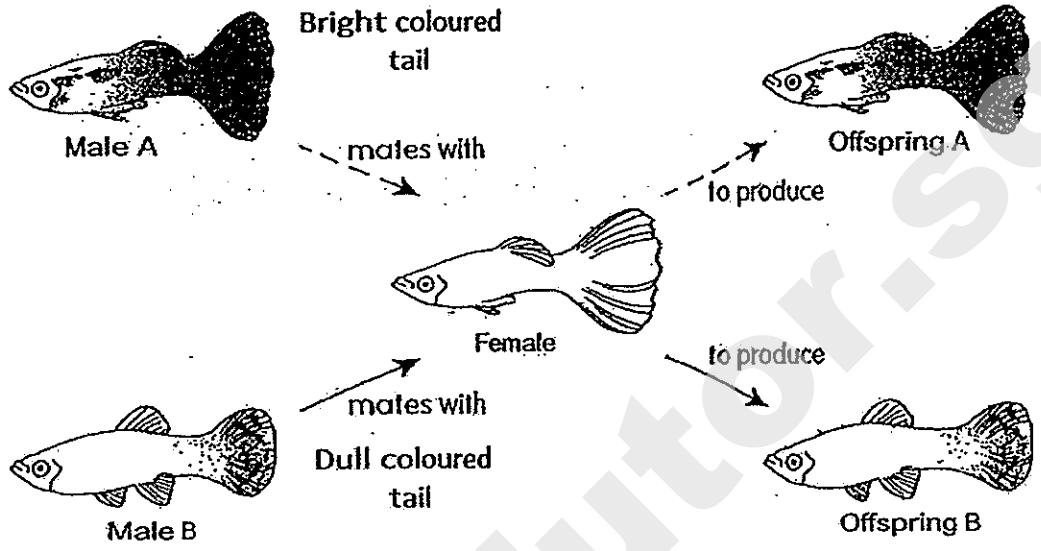
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37. In an aquatic habitat, two types of male guppies are found in about equal numbers initially. The type A male guppies have bright coloured tails while type B male guppies have dull coloured tails.

However, there is only one type of female guppies in the same habitat as shown in the diagram below.



a) After six months, it was found that the population of Offspring A was much greater than that of Offspring B. *(1m)*

Give a possible reason why this was observed.

_____

_____

b) When G, an organism that preys on guppies, was introduced into the habitat which type of offspring, A or B, is likely to show a greater rate of decrease? *(2m)*

Explain your answer clearly.

_____

_____

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38. The table shows the state of four substances A, B, C and D, at different temperatures. *(2m)*

Substance	State of substance at:		
	20°C	40°C	60°C
A	Solid	Solid	Solid
B	Solid	Liquid	Liquid
C	Solid	Solid	Liquid
D	Liquid	Liquid	Liquid

Based on the information given above, put a tick (✓) in the correct column in the table below.

Statement		Put a tick in the correct column		
		True	False	Not possible to tell
(i)	C is a solid at 2°C.			
(ii)	A and B are both liquids at 80°C			
(iii)	D is a gas at 50 °C.			
(iv)	A, B and C are solids at 0°C			

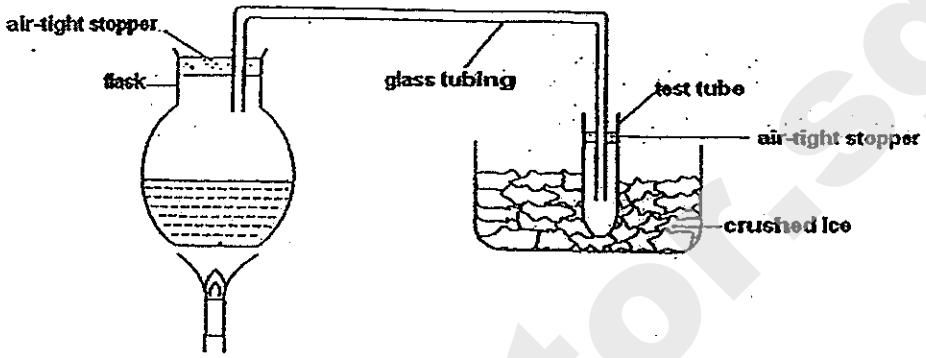
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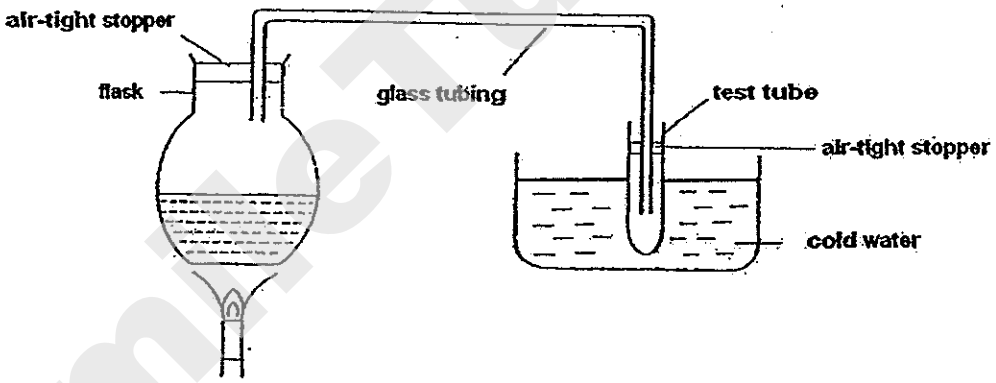
39. In set-ups A and B below the water in the flasks are being heated.

Set-ups A and B are similar except that in set-up A, the test tube is put in crushed ice, while in Set-up B, the test tube is put in cold water. The amount of water collected in the test tubes is compared.

Set-up A (With crushed ice)



Set-up B (With cold water)



a) State if the amount of water collected in Set-up A will be greater, smaller or the same as that in Set-up B. *(1m)*

_____

_____

b) Give a reason for your answer in (a). *(2m)*

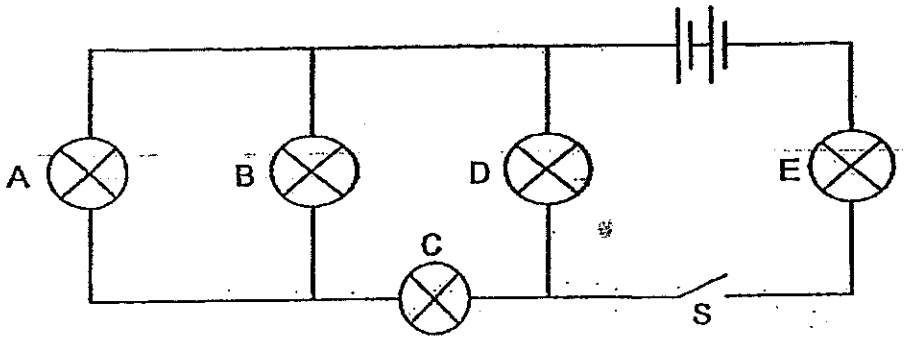
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40. Ah Meng set up circuit as shown below.



circuit

He closed switch S and observed that all the bulbs lighted up.
However, after 30 seconds, one of the bulbs fused and all the bulbs did not light up.

Identify the bulb which most likely has fused.
Explain why all the other bulbs were unable to light up as well.

(a) Bulb which most likely has fused: Bulb_____ *(1m)*

(b) Explanation : *(1m)*

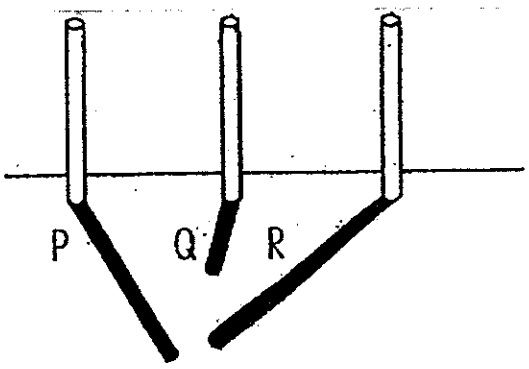
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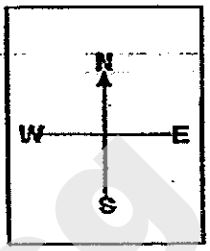
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41. The diagram below shows the shadows of poles, P, Q and R, cast at different times of the day. Shadows for Rod P and Rod R were cast in the evening and early morning respectively.





a) Label 'X' on the diagram above to show the position of the light source of Rod Q. *(1m)*

b) Explain how shadows are formed. *(1m)*

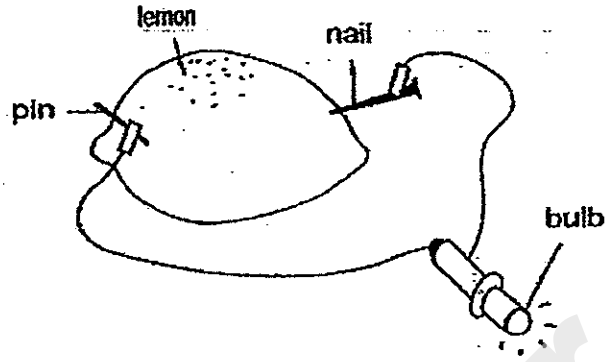
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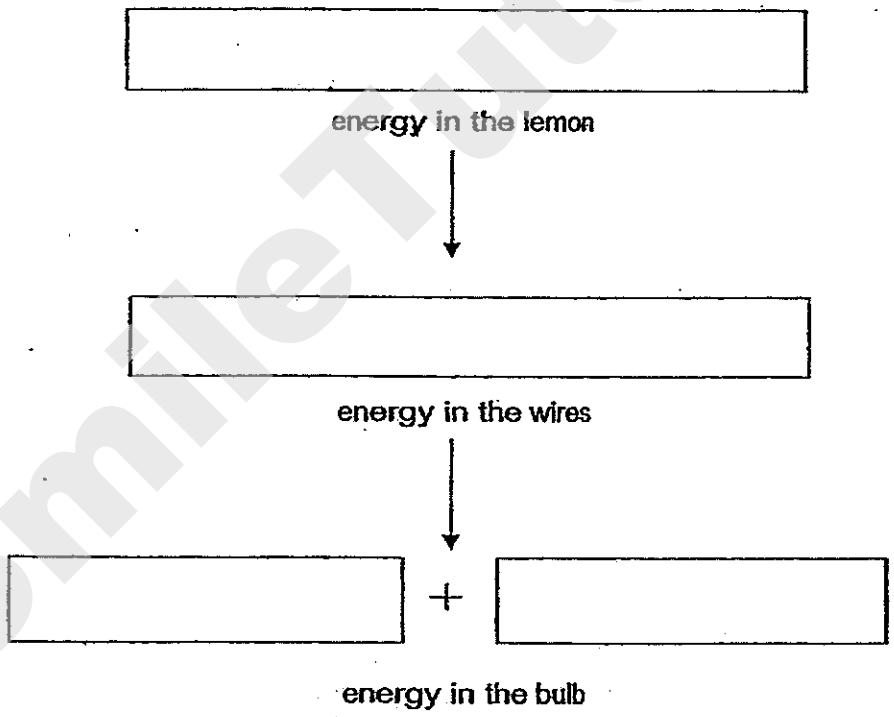
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42. Oliver set up a circuit as shown below using a lemon, a nail, a pin, a light bulb and some wires. The bulb lighted up.



a) State the energy conversion of the above set-up by filling in the boxes below. *(2m)*



b) After some time, the bulb became dimmer. *(1m)*
Explain why this is so.

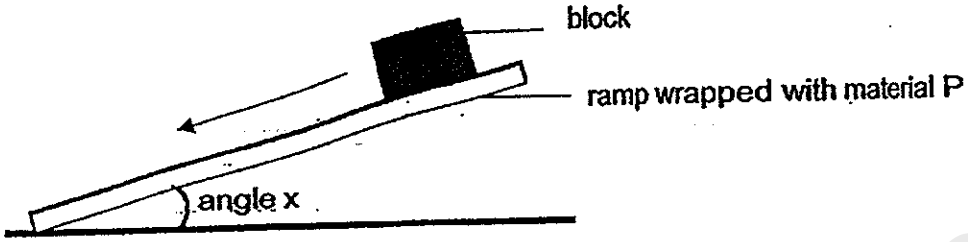
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43. Gabriel wanted to investigate the frictional force between a block and ramps wrapped with different materials, P, Q, R and S, using the set-up shown below.



Gabriel placed the block on one end of the ramp wrapped with material P and tilted the ramp until the block started to move. He measured the angle x at the point when the block started to move.

He repeated the experiment with the ramps wrapped with material Q, R and then S, one at a time. He recorded his results in the table below.

Type of material	Angle x at which the block starts to move (°)
P	15
Q	25
R	10
S	40

a) Based on the results of Gabriel's experiment, arrange the materials, P, Q, R and S, starting with the material which is the roughest. *(1m)*

_____

b) How does using the same block ensure that the experiment is a fair test? *(1m)*

_____

_____

_____

c) A similar block of a greater mass was placed on the ramp wrapped with material Q. The ramp was tilted once again until the block started to move. *(1m)*

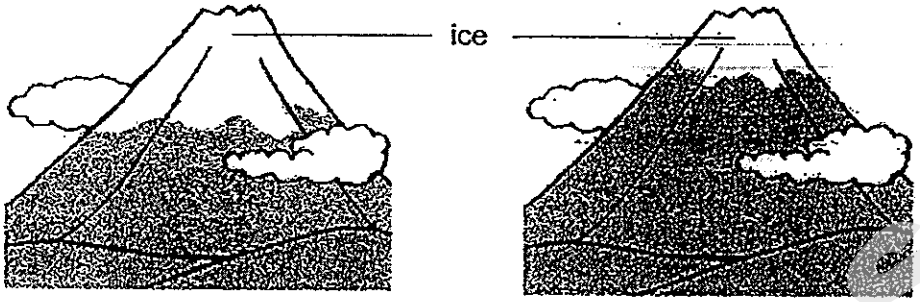
Predict the angle x at which the block will start to move.

_____

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44. The pictures below show a mountain with the amount of ice on it in March 1979 and September 1998.

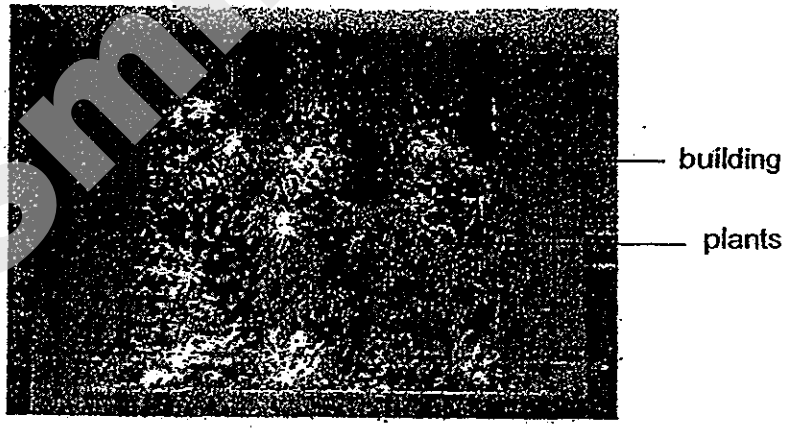


March 1979 September 1998

a) From the pictures above, explain the change in the amount of ice on the mountain from March 1979 to September 1998. *(1m)*

b) From the observation in (a), what can you infer about the average temperature of the earth in recent years? *(1m)*

The picture below shows plants growing vertically on the wall of a building to maximise space in a small, populated city with many factories that let out greenhouse gases.



c) State **one other advantage** of growing plants vertically. *(2m)*

End of Booklet B

Setters: Mr Tan JN, Mrs Liu YH, Mrs Seow JJ and Mdm Cecilia Quah

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ANSWER SHEET

EXAM PAPER 2014
SCHOOL : HENRY PARK
PRIMARY : P6
SUBJECT : SCIENCE
TERM : SA2

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
3	1	2	2	2	3	2	4	1	2	4	3	2	2	4	2	4

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	2	2	4	1	3	2	2	4	4	2	3

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Section B (Prelims Science) Suggested Answer and Correction

Q	Answers	
31	Material U, it is **waterproof, not flexible** and is a **good conductor of heat.**	
32	(a) 	
	(b) The plant is not able to take in water (½) to carry out photosynthesis/to make food (½).	
33	(a) Pollination	
	(b) Insect Q **carries pollen grains** from another flower and **when it rests on plant P to collect** nectar, pollen grains on its body is rubbed off the **stigma of plant P.**	
	(c) fertilisation cannot take place (1/2) and seeds cannot be formed (1/2).	
34	Part Y controls the activities in a cell.	
	(a) (i) Cell A and C. (must get both correct, NO ½) (ii) A plant.	
	(b) Cell A and C have a cell wall (½) and plants have cell wall (½)	

35.	(a)	

Items for Setup C	Tick
Clear glass tank	/
Tracing paper	
Black paper	
Living plants	/
Garden soil	/
Light	/

(b) The greater / smaller the amount of light, the greater / slower the rate of photosynthesis.

(c) Most (more) sugar is produced which gets converted to most (more) starch

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36. (a) Producer : A Decomposer : C

(b) The decomposer breaks down dead organism (½) into simple substances (½) which provide nutrients to plants for healthy growth

37. (a)Male guppies of type A has bright coloured tails [½] and attracted more female guppies more easily for mating/reproduction. [½]

(b)Offspring A. [½] Offspring A has bright coloured tail [½] which allowed it to be spotted (more) easily [½] and preyed upon/ eaten.[½]

38.

Statement		Put a tick in the correct column		
		True	False	NP
(i)	C is a solid at 2°C.	√		
(ii)	A and B are both liquids at 80°C			√
(iii)	D is a gas at 50 °C.		√	
(iv)	A, B and C are solids at 0°C	√		

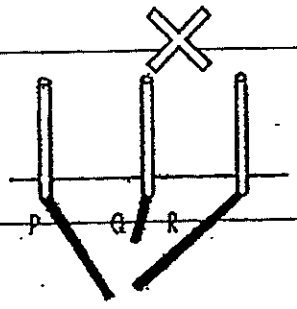
39. a) Greater amount of water will be collected in the test tube in set-up A versus set-up B.

b) The crushed ice in set-up A is colder/(or has lower temperature)/ has less heat than cold water (1m) than the cold water in set-up B. This will cause more water vapour to condense faster. (1m).

40. (a) Bulb E (1m)

(b) It becomes an opened circuit / electricity cannot pass through/incomplete circuit/no other path for electricity to flow/ (1m)

41. (a)



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	(b) (Path of) light is blocked by objects/rods. The objects/rods are opaque and prevent/do not let light pass through.	
42.	(a) chemical /chemical potential/potential, electrical, heat + light or light + heat (b) Most/less of the chemical potential energy/energy has been converted to / change to light and heat at the light bulb.	
43.	(a) S, Q, P, R (b) Using the same block ensures that only the texture of the material affects frictional force between the block and ramp / the angle x at which block starts to move. (c) any angle greater than 25° (accept any value between 25° and 90°)	
44.	a) Ice on March 1979 has melted (1/2) and so amount of ice decreased (1/2) by September 1998 b) The surrounding temperature on earth has increased. c) More plants (1) can be grown to release more oxygen (1) into the air OR take in/remove more carbon dioxide from the air.	

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MARIS STELLA HIGH SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION

SCIENCE

22 AUGUST 2014

BOOKLET A

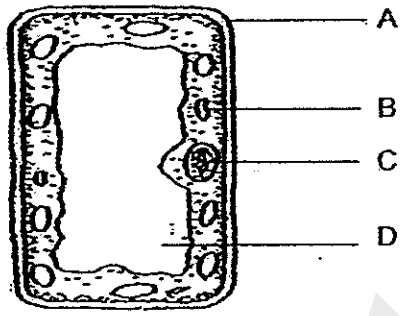
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For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet (OAS). (30 x 2 marks)

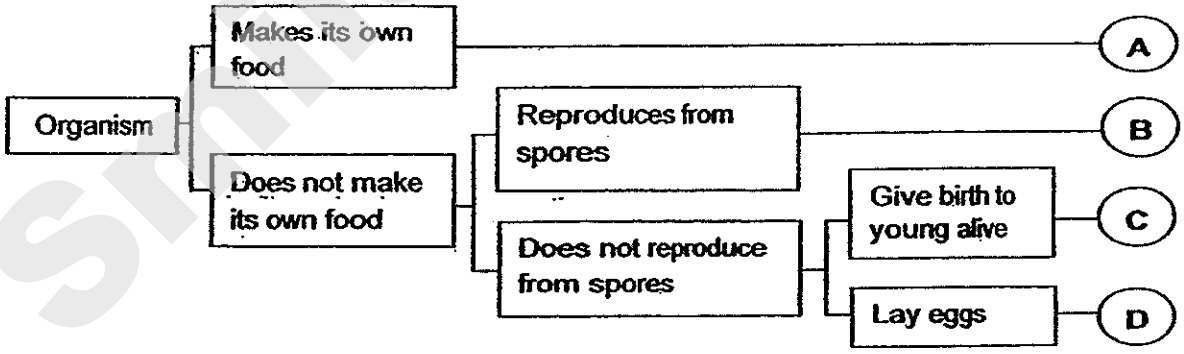
1. Javan ate a delicious mango and decided to plant the mango seed in his garden. He hopes it will grow into a mango tree that bears sweet fruits like the one he has just eaten.

Which part of the cell will enable the new mango tree to bear the type of fruits that Javan hopes for?



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

2. Study the flow chart below.

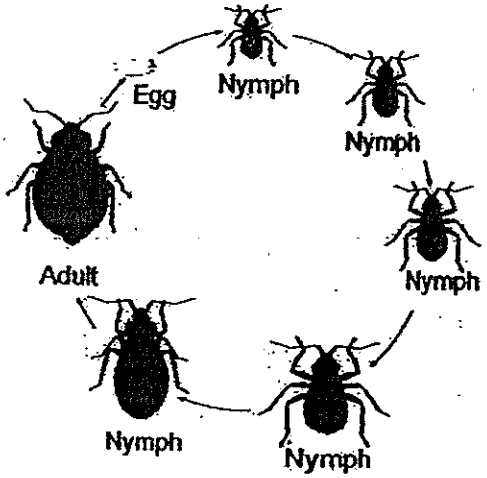


Based on the flowchart, which one of the following statements is not true?

(1) Organism A is a plant.
(2) Organism B is a fern.
(3) Organism C is a mammal.
(4) Organism D is a mammal.

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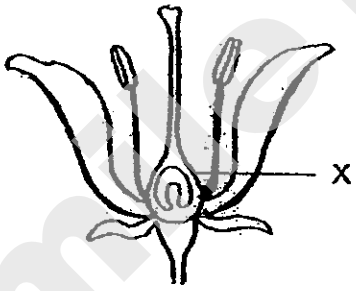
3. The diagram below shows the development and life cycle of an insect.



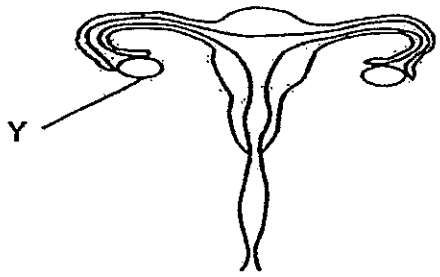
Based only on the information gathered above, which one of the following statements about the insect is definitely true?

(1) It lays eggs on land.
(2) It has a 7-stage life cycle.
(3) Its young resemble the adult.
(4) Its life span is at least 7 days long.

4. Study the reproductive parts of the flowering plant and female human below.



Reproductive parts of flowering plant



Reproductive parts of female human

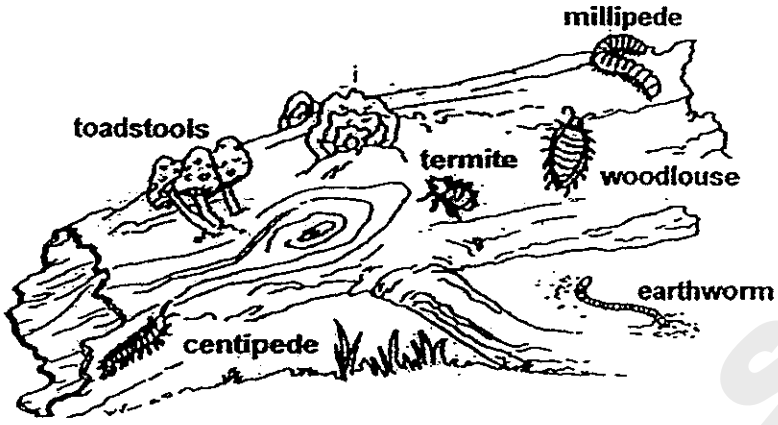
Based on the functions of X and Y, which one of the following best describes their similarity?

(1) Both are the female sex cells.
(2) Both contain the female sex cells.
(3) Both will be fertilised by the male sex cells.
(4) Both will develop into a new organism after fertilisation.

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5. Joel spotted a rotting log community as shown in the diagram below. He recorded the following statements about the rotting log in his journal.



A: The rotting log was once alive.

B: The termite and woodlouse help speed up decomposition.

C: The toadstool and millipede found on the rotting log were decomposing the log.

Which of the above statements are correct?

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

6. The picture below shows the fruit and seeds of the Fruit X. The seeds have wing-like seed coats and the fruits have capsules which are hard and dry when it is ready for dispersal.



Fruit X

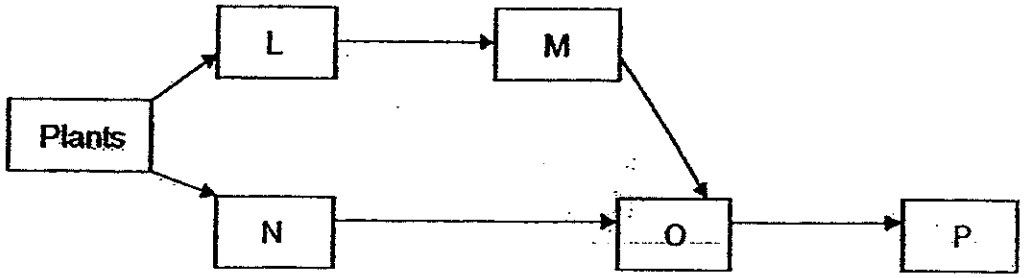
How does the Fruit X disperse its seeds?

A: By wind
B: By splitting
C: By animal

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

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7. L, M, N, O and P are organisms found in a certain community.



Which one of the following best represents how populations of organisms M and N would immediately be affected if population of organism L is wiped out by a disease?

	Organism M	Organism N
(1)	decrease	increase
(2)	increase	decrease
(3)	decrease	remains the same
(4)	remains the same	decrease

8. Which one of the following about the gaseous exchange of a plant and a fish is correct?

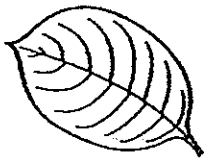
	Plant	Fish
(1)	Involves taking in of carbon dioxide only	Involves taking in of oxygen and giving out of carbon dioxide
(2)	Involves taking in and giving out of carbon dioxide and oxygen	Involves taking in of oxygen and giving out of carbon dioxide
(3)	Takes place on the leaves	Takes place in the mouth
(4)	Water-carrying tubes transport carbon dioxide to all parts of the plant	Blood vessels transport carbon dioxide to all parts of the body

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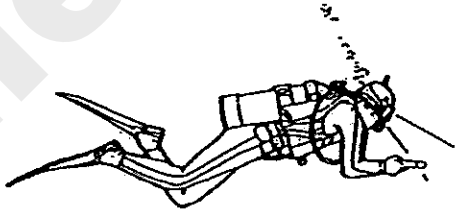
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9. Which one of the following best describes the functions of the structural adaptation in the leaves of the following four plants?

	 needle-like leaves	 thick succulent leaves	 waxy leaves	 purple leaves around small white flowers
(1)	self-defence	food storage	reduce water loss	absorb more light
(2)	prevent water accumulation	water storage	self-defence	absorb more light
(3)	reduce water loss	water storage	prevent water accumulation	help attract pollinators
(4)	hook on support	prevent water accumulation	absorb more light	help attract pollinators

10. Study the picture of the diver.



From which animals did Man most likely get the idea of the different equipment used by the diver to increase his efficiency in moving underwater?

A: Frog

B: Tadpole

C: Water stick insect

D: Great diving beetle

(1) A and C

(2) A and D

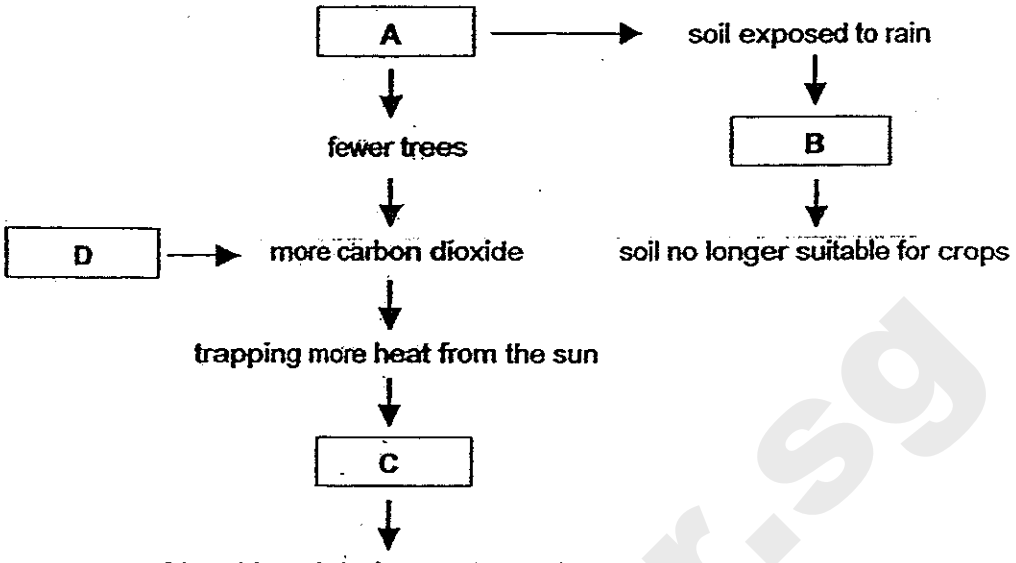
(3) B and C

(4) B and D

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11. The diagram below shows the negative impacts on the environment due to some human activities.



Which one of the following best represents A, B, C and D?

	A	B	C	D
	Deforestation	Soil erosion	Global warming	Soil erosion
	Burning fossil fuel	Burning fossil fuel	Deforestation	Global warming
	Global warming	Deforestation	Burning fossil fuel	Soil erosion
(4)	Deforestation	Soil erosion	Global warming	Burning fossil fuel

12. Food relationships between three organisms (X, Y and Z) are shown in the food chain below.

X → Y → Z

Which one of the following statements about the above food chain is true?

A: Y is both a prey and predator.

B: X gets its energy from the sun.

C: Z depends on X indirectly for food.

(1) A and B only

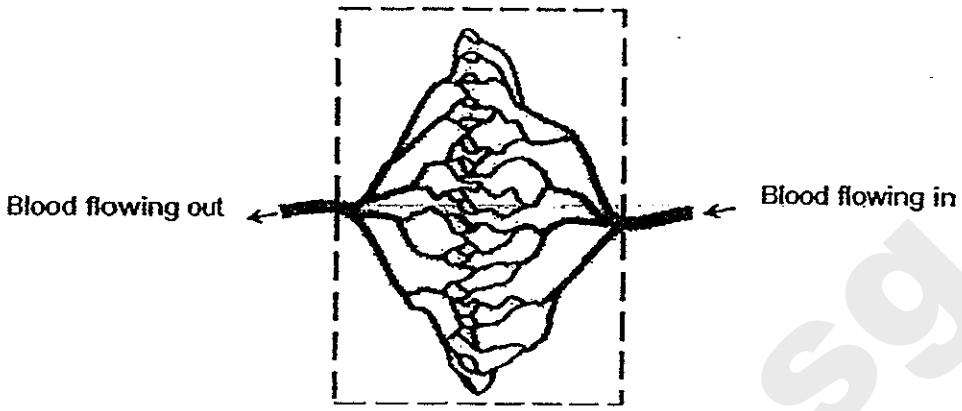
(2) A and C only

(3) B and C only

(4) A, B and C

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13. Study the diagram below.



Blood vessels in the small intestine

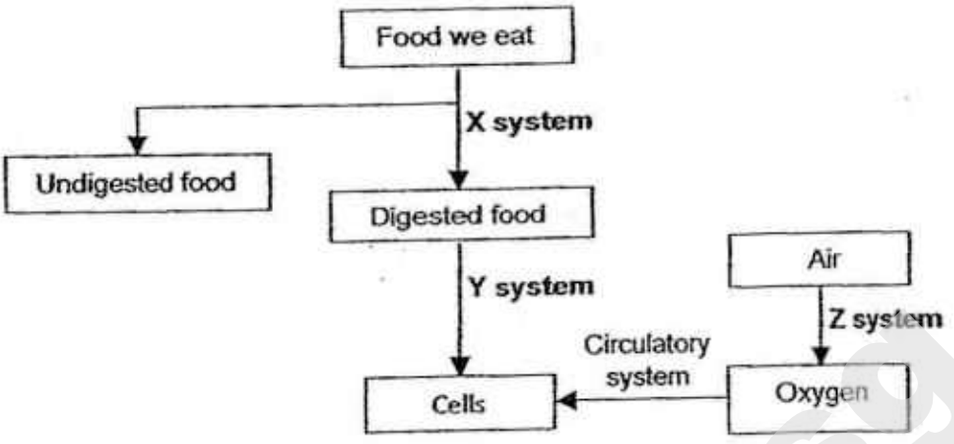
Which one of the following correctly states the changes in substances carried by the blood as it flows out of the small intestine?

	Oxygen	Carbon dioxide	Digested food
(1)	Decreases	Increases	Increases
(2)	Increases	Decreases	Unchanged
(3)	Increases	Decreases	Decreases
(4)	Decreases	Increases	Unchanged

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14. Study the flow chart below.



Identify the three systems, X, Y and Z.

	X system	Y system	Z system
(1)	digestive system	digestive system	respiratory system
(2)	digestive system	circulatory system	respiratory system
(3)	respiratory system	circulatory system	digestive system
(4)	respiratory system	digestive system	circulatory system

15. Rachael cut out three stalks of white flowers, A, B and C, from the same plant and placed each of them in identical beakers containing red-coloured water at different temperatures. The temperature of the red-coloured water was maintained throughout the experiment.

Rachael observed the flowers over the next few days and recorded her results in the table below.

Flower	A	B	C
Temperature of red-coloured water (°C)	15	20	25
Time taken for flower to turn red (days)	4	2.5	1.5

Based on the information given above, which one of the following statements is **incorrect**?

(1) The stem of the flower contains water-carrying tubes.

(2) The petals of the flower contain water-carrying tubes.

(3) The type of flower used affects the time taken for the flower to turn red.

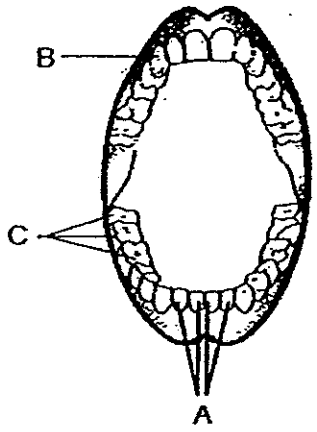
(4) The temperature of coloured water affects the speed water is taken up by the flower.

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16. The diagram below shows the different types of teeth of a human. Humans need teeth to tear meat and grind vegetables.



The table below describes the function of each of the tooth type.

Tooth type	A	B	C
Function of tooth	picking up / cutting food	gripping / tearing food	grinding of food

The tables below shows the number of the different types of teeth found in animal P and Q.

Animal P

Tooth type	A	B	C
Upper jaw teeth	0	0	6
Lower jaw teeth	6	0	6

Animal Q

Tooth type	A	B	C
Upper jaw teeth	6	2	8
Lower jaw teeth	6	2	8

Based on the information above, what can we conclude about the two animals?

(1) Animal P and Animal Q are both herbivores.

(2) Animal P and Animal Q are both omnivores.

(3) Animal P is an herbivore while Animal Q is an omnivore.

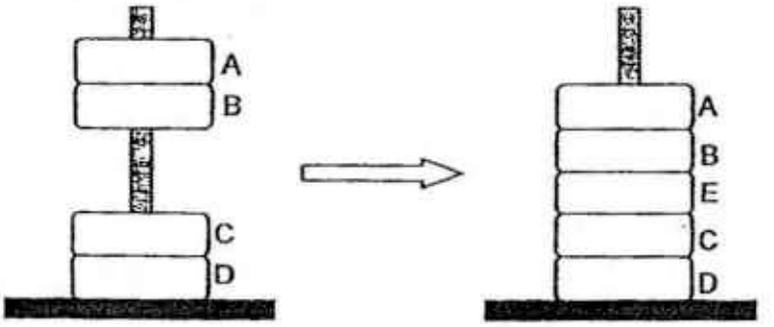
(4) Animal P is an omnivore while Animal Q is an herbivore.

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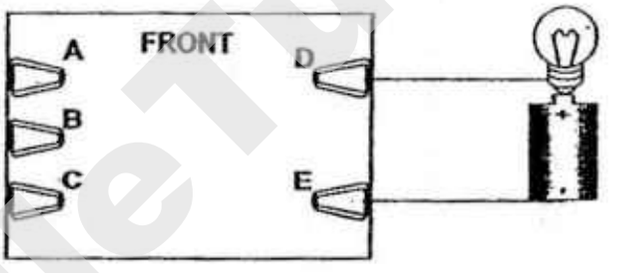
17. Jia Wen put four rings, A, B, C and D, through a wooden rod. A and B "floated" above C and D as shown below. Next, Jia Wen removed A and B. Then, she placed a new ring, E, before putting back rings A and B without flipping them over.



Which one of the following is possible?

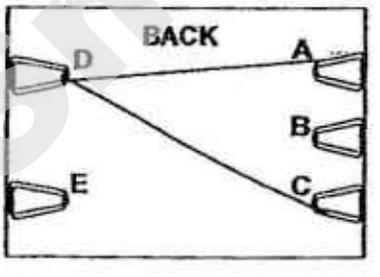
	ring magnet(s)	steel ring(s)	copper ring(s)
(1)	E	B, C	A, D
(2)	B, C	A, D	E
(3)	B, C	E, D	A
(4)	B, C, E	D	A

18. Kumar connected a battery and a bulb using a circuit card as shown below. The bulb lit up.

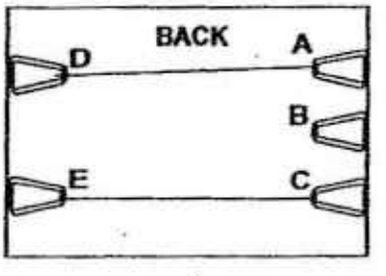


Which one of the following diagrams shows the correct arrangement of the wires at the back of the circuit card?

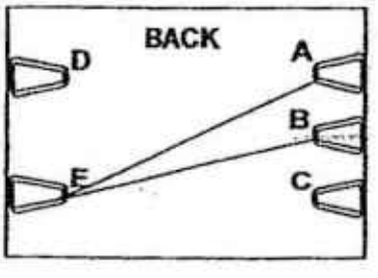
(1)



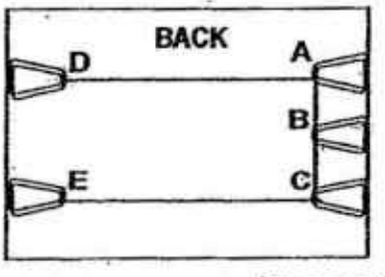
(2)



(3)



(4)

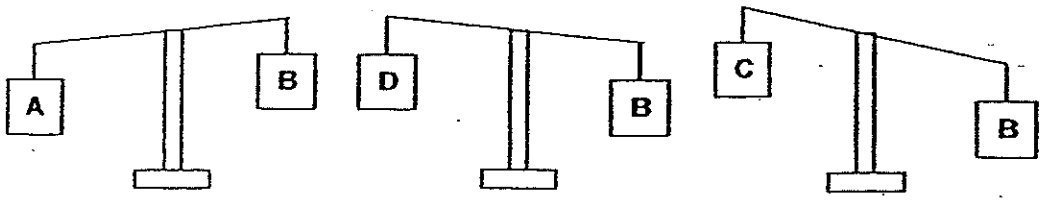


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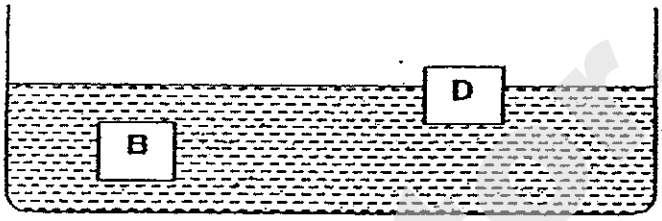
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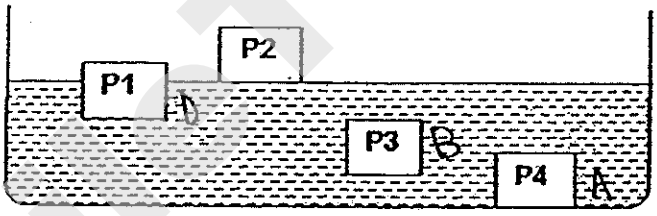
19. The diagrams below show the mass of four objects, A, B, C and D. They have the same volume.



The diagram below shows the positions of objects B and D when they are placed in water.



In the diagram below, P1, P2, P3 and P4 represent the positions of the objects (A, B, C and D) when placed in water.



Which one of the following shows the correct positions of Objects A and C when placed in water?

	Object A	Object C
(1)	P2	P1
(2)	P3	P1
(3)	P4	P2
(4)	P4	P3

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20. The freezing point and boiling point of substances X and Y are shown below.

Substance	X	Y
freezing point (^{0}C)	43	6
boiling point (^{0}C)	181	80

Which of the following statements are true?

A: X is a solid at 40°C.

B: Y is a solid at 90°C.

C: X is a gas at 100°C.

D: Y is a liquid at 10°C.

(1) A and B only

(2) A and D only

(3) B and C only

(4) C and D only

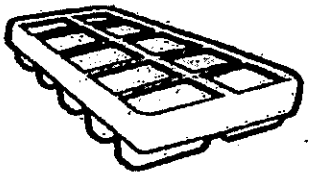
21. Which one of the following objects can be used to show the presence of water vapour in the air around us?

(1)



ice left at room temperature

(2)



a tray of water left in the freezer

(3)



a cup of hot tea left at room temperature

(4)



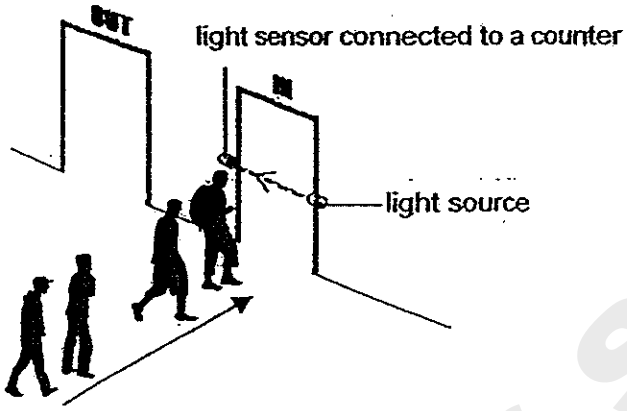
a can of cold drink left at room temperature

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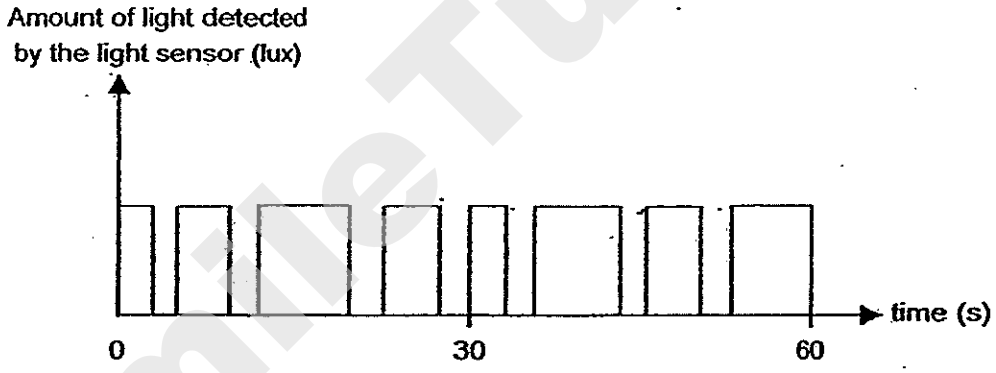
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22. The set-up below uses a light sensor to count the number of people entering an office building.



Only one person can pass through the doorway each time. When a person is between the light source and the sensor, his body blocks the light from reaching the sensor.

The line graph below shows the amount of light detected by the light sensor over a period of 60 seconds.



Based only on the information given above, which one of the following statements is true?

(1) Eight people walked through the doorway in the 60 seconds recorded.

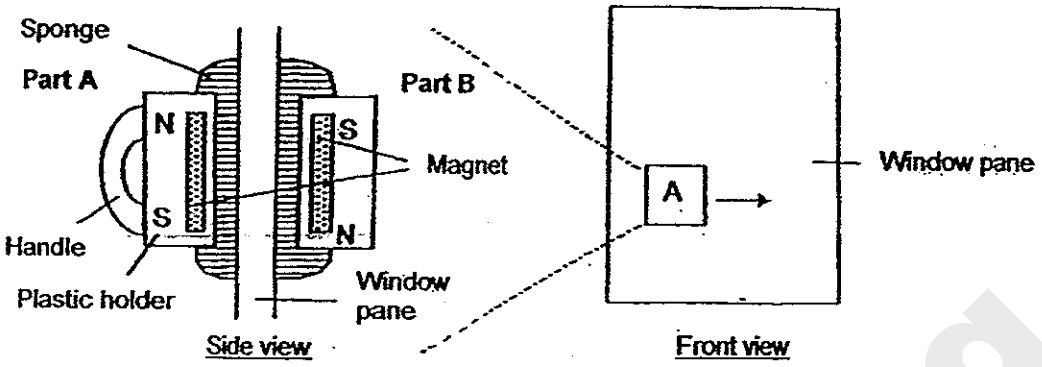
(2) Seven people walked through the doorway in the 60 seconds recorded.

(3) The light sensor detects light when someone walks through the doorway.

(4) The light sensor does not detect any light when no one passes through the doorway.

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23. The diagram below shows a two-piece tool designed to clean both sides of a window pane at the same time.



When Part A moves over the inner surface, Part B follows it and moves over the outer surface.

What properties of a magnet are applied in this tool?

A: Magnets repel each other.
B: Magnets attract each other.
C: The pull of a magnet is strongest at its poles.
D: Magnetic force can pass through some materials.

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

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24. Diagram A shows a balloon inside a bottle with its opening stretched over the mouth of the bottle. Diagram B shows that the same balloon becoming slightly inflated with air after the bottle was placed in a container of ice cubes for some time.

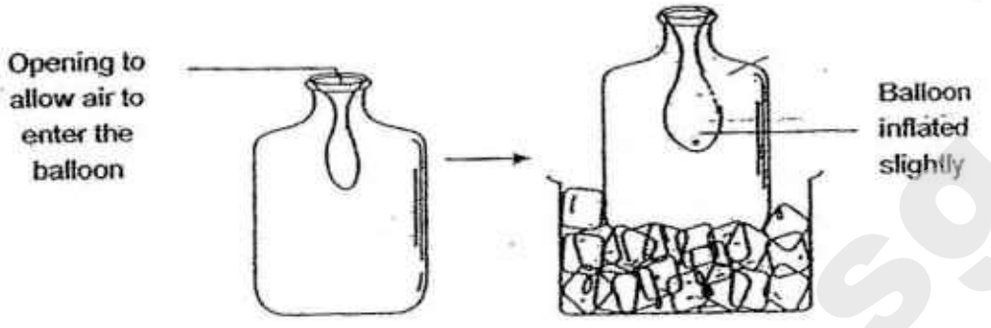


Diagram A Diagram B

Which one of the following explains why the balloon became inflated inside the bottle?

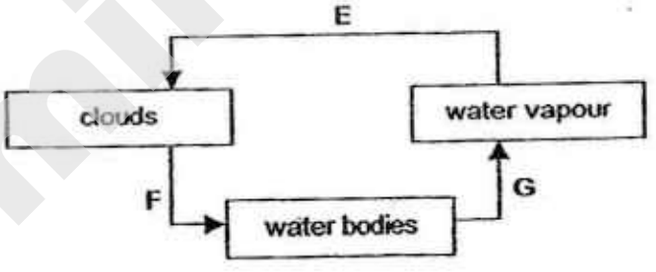
(1) The bottle contracted and caused the air in the bottle to take up more space.

(2) The bottle expanded and caused the air outside the bottle to enter the balloon.

(3) The air inside the bottle contracted and caused the air outside the balloon to enter the balloon.

(4) The air inside the balloon expanded and caused the air outside the balloon to enter the balloon.

25. Study the water cycle below.



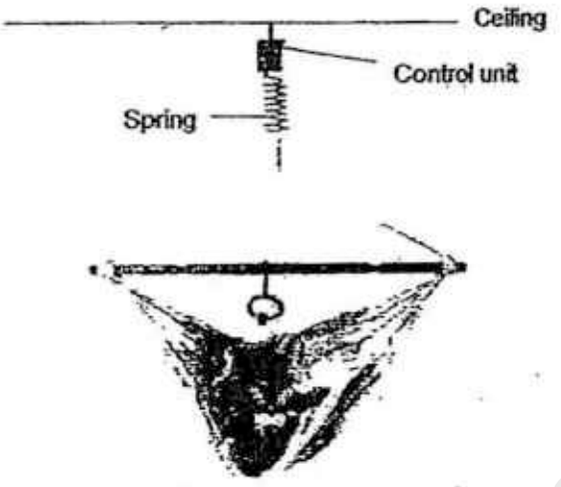
Which one of the following correctly describes E, F and G?

	No change in state	Change from gas to liquid	Change from liquid to gas
(1)	E	F	G
(2)	F	G	E
(3)	E	G	F
(4)	F	E	G

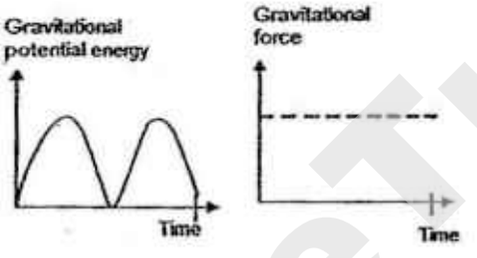
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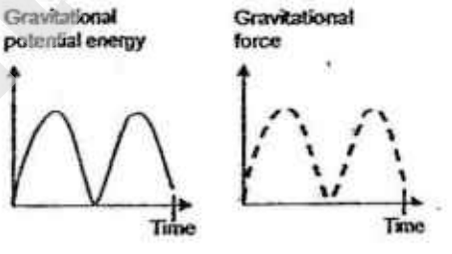
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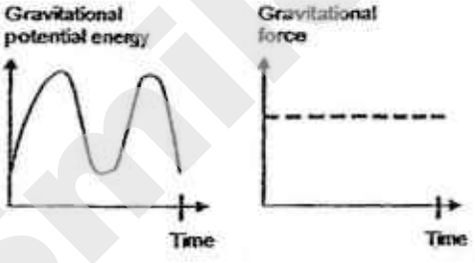
26. The diagram below shows an electric baby hammock that would move the baby up and down to the same height in order to put the baby to sleep. The control unit was set to move the spring up and down for a period of 1 hour.

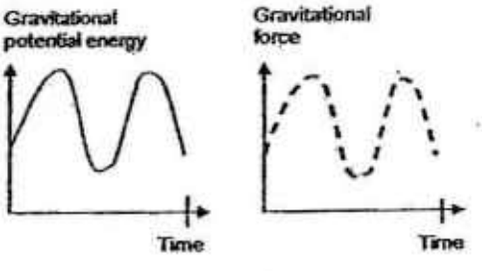


Which one of the following pairs of graphs correctly shows the gravitational potential energy possessed by the baby and the gravitational force that is acting on the baby over a period of time?

(1)


(2)


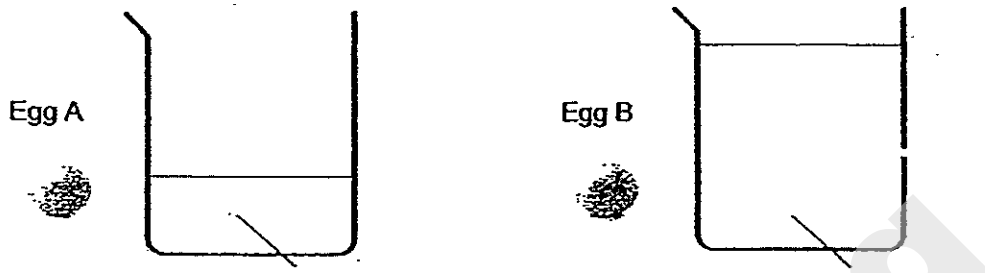
(3)


(4)


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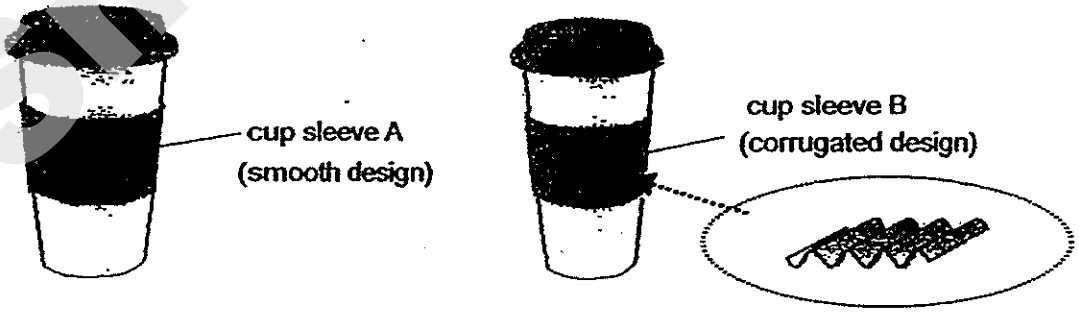
27. When egg is cooked, its watery uncooked egg white and yolk turn solid. A raw egg of the same size was placed into each of the beakers below.



After ten minutes, both eggs were removed from the beaker, cracked open and observed. What is the most likely observation and reason for John's observation?

	Observation	Reason
(1)	Both eggs are uncooked.	Heat cannot be transferred to the egg as the shell is a poor conductor of heat.
(2)	Egg B is less watery than Egg A.	More heat is transferred to cook the egg at a faster rate by a larger volume of water.
(3)	Egg A is less watery than Egg B.	More heat is transferred to cook the egg at a faster rate by a smaller volume of water.
(4)	Both eggs are cooked to the same degree.	The amount of heat transferred to both eggs is the same as water in both beakers have the same temperature.

28. Cup sleeves are used to reduce scalding of hands when hot drinks are served to customers on the go. There are two types of cup sleeves shown below. Both are made of the same material but have different designs.



Which one of the following best explains why cup sleeve B is more effective in preventing scalding?

(1) It has a larger surface area to lose heat to the surrounding air.

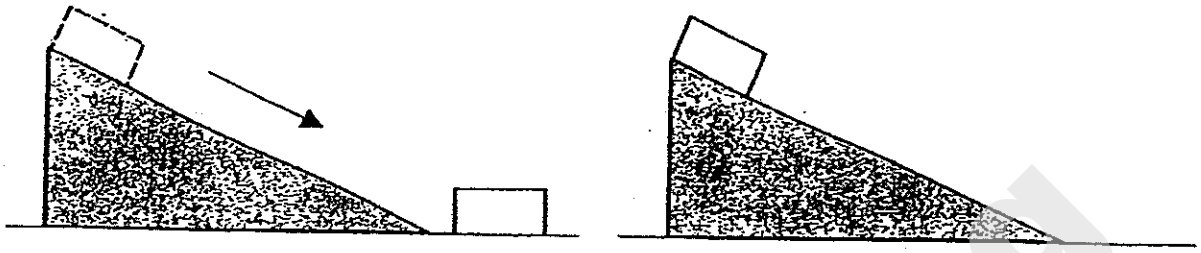
(2) It has a smaller surface area to lose heat to the surrounding air.

(3) There is less area of contact between the cup sleeve and the hand.

(4) There is more area of contact between the cup sleeve and the hand.

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29. Two identical blocks are placed on 2 ramps of the same size. The blocks were released from the same height. The block in set-up A slid down but the block in set-up B did not move.



Set-up A

Set-up B

Which one of the following statements are likely explanations for the observations?

A: The ramp in set-up A has a smoother surface than set-up B.

B: Frictional force is present between the block and the ramp in set-up B but not present in set-up A.

C: The block in set-up A had more gravitational potential energy than the block in set-up B before each was released.

(1) A only

(2) A and C only

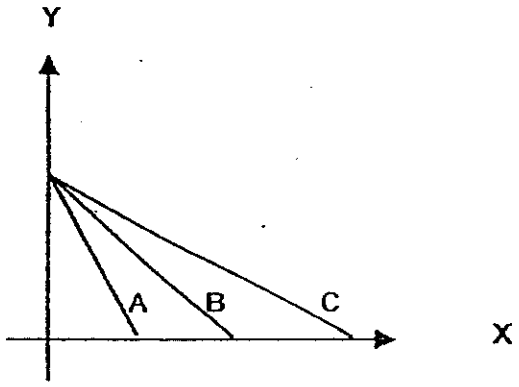
(3) B and C only

(4) A, B and C

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30. Mary dried three identical towels, A, B and C, containing the same amount of water in the sun. Each towel was folded to expose a different amount of surface area. The three towels were weighed at regular intervals until all of them were dried. Mary plotted her results on a graph.



Which one of the following gives the most suitable labels for X and Y of the graph Mary plotted?

	X	Y
(1)	Surface area of towel (cm^2)	Mass of towels (g)
(2)	Surface area of towel (cm^2)	Time (min)
(3)	Time (min)	Surface area of towel (cm^2)
(4)	Time (min)	Mass of towels (g)

END OF BOOKLET A

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PSLE Index Number: | | | | | | — | |

MARIS STELLA HIGH SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION

SCIENCE

22 AUGUST 2014

BOOKLET B

NAME: ( )

CLASS: Primary 6 ( )

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.

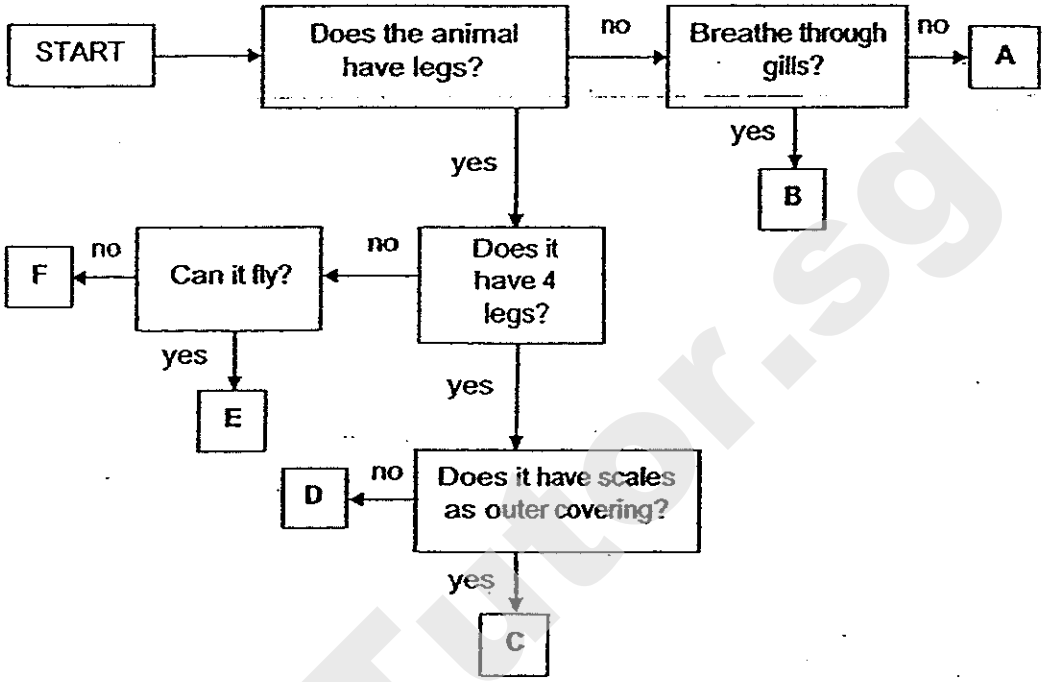
FOLLOW ALL INSTRUCTIONS CAREFULLY.

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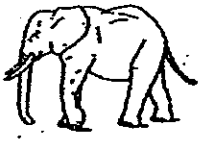
For questions 31 to 44, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question. [40 marks]

31. Study the flowchart below. Letters A to F represent different animals.



(a) Based on the flowchart above, state one similarity of animals C and E. [1]

(b) Write down the letters (A, B, C, D, E or F) that best represent each of the following animals. [2]

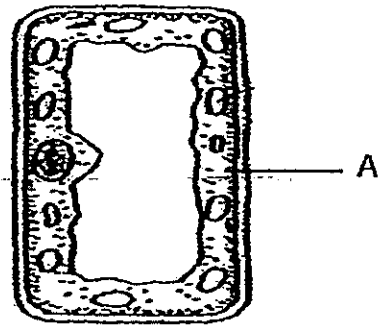
Animal	Letter
 dolphin	
 eagle	
 elephant	
 penguin	

3

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32. Ryan wanted to find out if a cell sample he had was from the skin of a potato. A potato is a underground storage stem. He observed the cell under a microscope and below is what he observed.



(a) Ryan concluded that the cell was not from the skin of a potato.

Explain how Ryan came up with the conclusion. [1]

(b) Name and state one function of the cell part labelled A. [1]

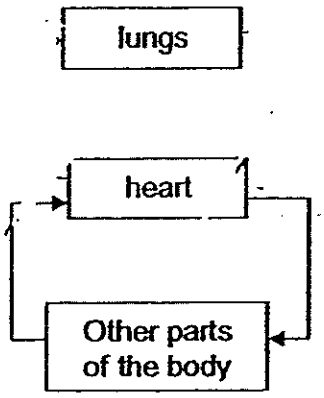
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33. The diagram below represents the human circulatory system.



human circulatory system

(a) Draw the two missing arrows (→) in the human circulatory system above. [1]

(b) Complete the comparison table between the plant and human transport systems. [2]

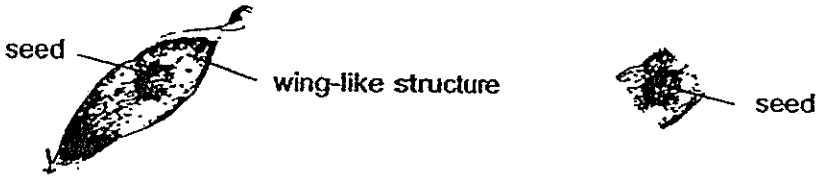
	Plant transport system	Human circulatory system
Name 2 important substances transported that is needed for survival	(i) _____ (ii) _____	(iii) _____ (iv) _____
Name the main transporting tube(s)	(v) _____ (vi) _____	(vii) _____

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34. Chee Beng was given two identical fruits from plant G. He left the wing-like structure of one of the fruits intact and cut off the wing-like structure of the other fruit.



Chee Beng dropped the fruits, one at a time, from a height of 10-metres and recorded the time taken for the fruits to reach the ground. The results are shown in the table below.

	Time taken for fruit to reach the ground (s)			
	1st try	2nd try	3rd try	Average
Fruit with wing-like structure	8.6	8.1	8.5	8.4
Fruit without wing-like structure	4.5	4.8	4.2	4.5

(a) Based on the results above, explain how the fruit's wing-like structure helps the fruit in dispersal and prevention of overcrowding of its young. [1]

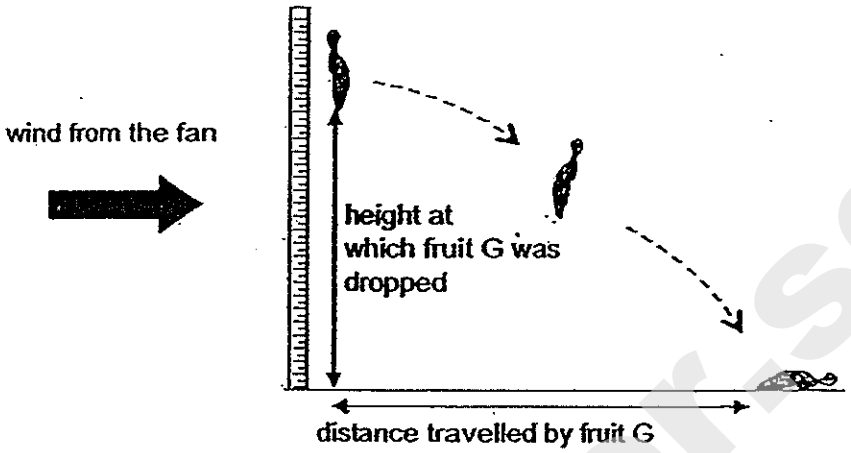
(b) Instead of dropping the fruits one at a time, Chee Beng was told that he should drop both the fruits at the same time for each try.

How would dropping both fruits at the same time make his experiment more valid? [1]

2

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(c) Chee Beng also wanted to find out how the distance travelled by the fruit of Plant G is affected by the height at which it was dropped. He conducted the experiment as shown below.



Which of the following variables must be kept the same to ensure a fair test? Put a tick (✓) in the appropriate boxes. [1]

(i)	mass of fruit G	
(ii)	speed of wind from the fan	
(iii)	distance travelled by fruit G	
(iv)	height at which fruit G was dropped	

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1

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35. Flamingos live near water and have long necks and legs that are structural adaptated to help them feed and stay warm. They feed on tiny organisms found deep underwater.



(a) Explain how the flamingo s long neck help it in feeding. [1]

_____

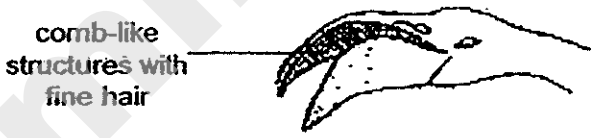
_____

(b) Explain how the flamingo's long legs help it stay warm while feeding. [1]

_____

_____

In the beaks of flamingos are comb-like structures covered with fine hair. During feeding, flamingos would place their beaks upside down into the water and pump in water containing tiny organisms. Water pumped into their mouths passes through the comb-like structures before it is released.



Flamingo's head

(c) How do the comb-like structures help a flamingo in its feeding? [1]

_____

_____

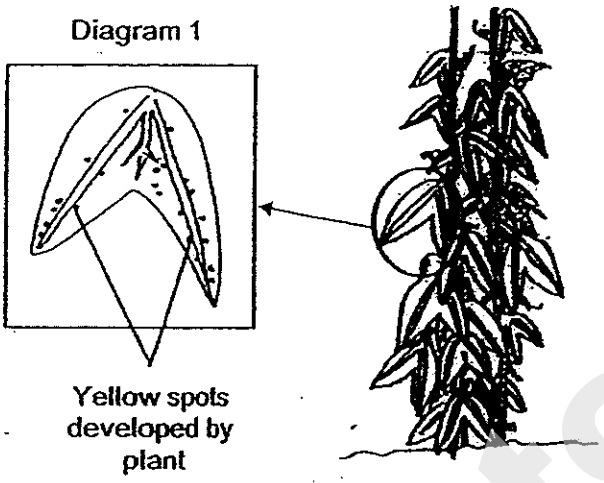
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36. Butterfly B lays its eggs on the leaves of Plant Z. This is to ensure that its young will have food to feed on once they hatch.

Diagram 1



Plant Z

(a) Plant Z is able to develop yellow spots as shown in diagram 1. These spots look similar to the eggs of Butterfly B and are harmless to the plant.

Give a reason why this is an advantage for Plant Z. [1]

(b) Animal Y is commonly found on Plant Z and feeds on eggs and young of Butterfly B as well as the plant sap that Plant Z produces.

How do Plant Z and Animal Y benefit from this relationship? [2]

(i) Benefit for Plant Z:

(ii) Benefit for Animal Y:

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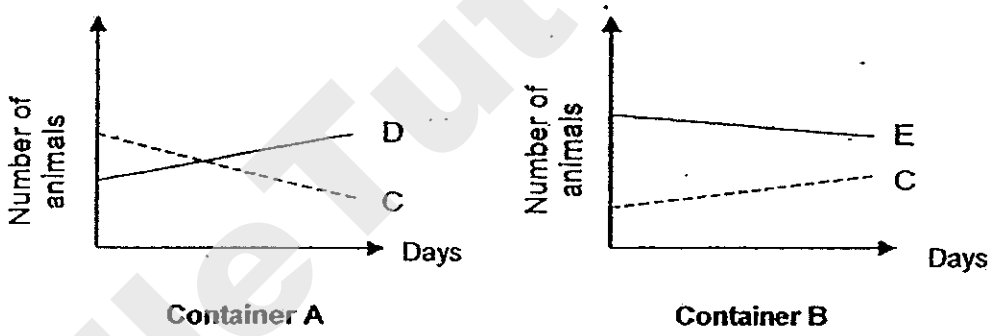
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37. Fandi found 3 different types of animals, C, D and E, in the garden. He recorded his observations of the animals in the table below.

Animal	Observations
C	• Has 3 body parts • Has 6 legs
D	• Crawls with its 4 legs • Has a long tail
E	• Feeds on fruits only • Moves very slowly

Fandi placed animals, C and D, in Container A and animals, C and E, in Container B. Some plants and water were also placed in both containers. He also replenished the plants and water in both containers every day.

Fandi counted the number of animals left in each container daily, for a week, and plotted his results as shown in the graphs below. Throughout the experiment, he did not add any animals in the containers and no dead animals were found in both containers.



(a) Fill in the boxes with letters, C, D and E, to show a possible food relationship involving the 3 animals. [1]



(b) If plants were not added into container A, would the results as shown in the graph above be different? Give a reason. [1]

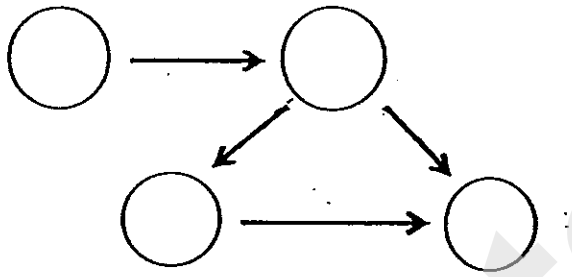
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(c) Fandi studied another community and found 4 living things, V W, X and Y.
The following is information about these living things.

- X feeds on Y.
- Y is the predator of V.
- V gets its food from W.
- X feeds on V but not on W.

(i) Use the information to help you to complete the food web below.
Write the correct letter, V, W, X and Y, in each circle. [1]



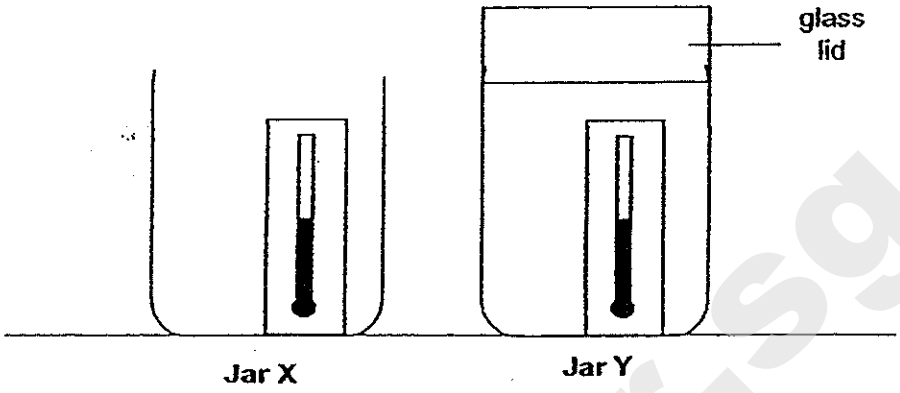
(ii) Fill in the correct living things (V, W, X or Y) into the table below. [1]

Prey only	Predator only

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38. Marianne placed two glass jars, X and Y, in the sun. She placed a thermometer in each jar so that she could read the temperature of the air in the glass jars. Then, she covered Jar Y with a glass lid. The jars are set up as shown below.



After 15 minutes, Marianne observed that the temperature in Jar Y was higher than the temperature in Jar X.

(a) What is the positive environmental impact demonstrated in this experiment? [1]

_____

(b) Name the gas found in our atmosphere that is the main contributor of the environmental impact named in (a). [1]

_____

(c) Explain how deforestation and the burning of fossil fuels can turn the positive environmental impact named in (a) into a negative impact. [1]

_____

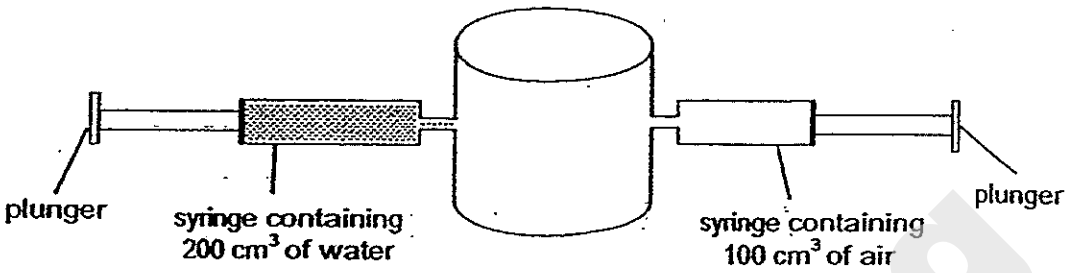
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39. Two syringes were fitted to a container with a capacity of 800 cm^3 as shown in the diagram below.



Container with two openings for fitting the syringes

(a) The plungers of both syringes were pushed in completely and then pulled back completely to their original positions.

What is the volume of air in the container after the actions above were taken? [1]

_____

(b) Name the two properties of liquid demonstrated in the above. [2]

(i) _____

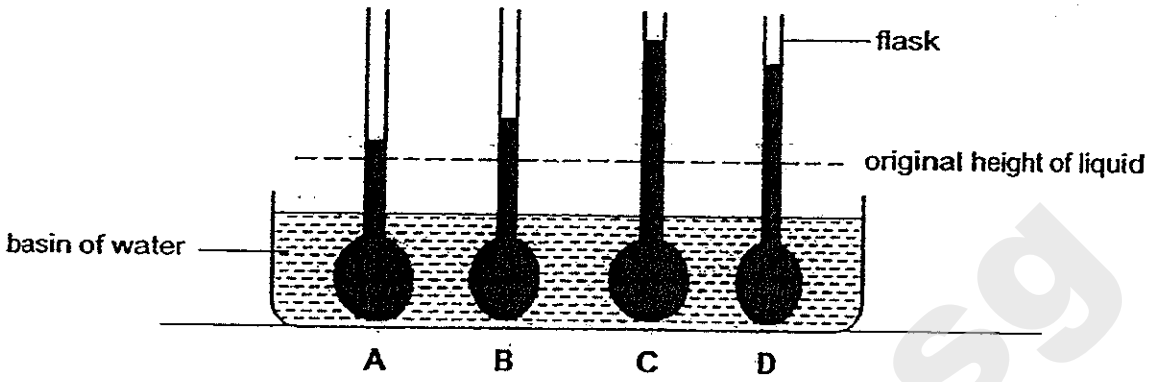
(ii) _____

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40. Four flasks were filled with the same amount of four different liquids, A, B, C and D. The diagram below shows the change in the heights of the liquids after the flasks were placed in a basin of water.



(a) Based on the changes observed, what can you infer about the difference in the temperature of the water in the basin and the 4 liquids? [1]



(b) Which one of the liquids (A, B, C or D) is the most suitable to be used as the liquid component of a laboratory thermometer? Give a reason. [1]

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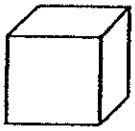
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41. Javier bought a new ice tray that can make X-shaped ice pieces. His old ice tray makes ice cubes which has square faces. Both the X-shaped ice piece and the ice cube use the same amount of water to make and freezes to look like the ones shown below.



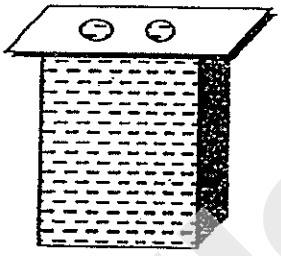
X-shaped ice



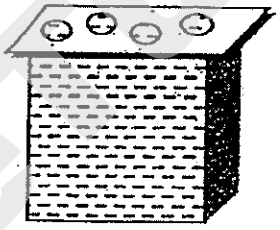
Ice cube

(a) Explain why Javier's drink is able to cool faster when he uses the X-shaped ice instead of the ice cube. [1]

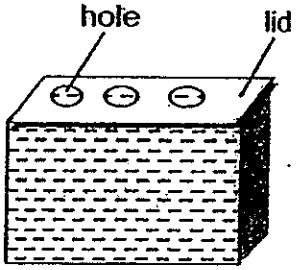
Containers A, B and C are made of the same material, filled with the same amount of water. Each container is covered with identical plastic lids except for the number of holes in each lid. The holes are of the same size and are above the openings of the containers.



Container A



Container B



Container C

(b) Which container has the least amount of water left after 6 hours? Explain your answer. [1]

(c) Name another important variable that must be kept constant for a fair test. [1]

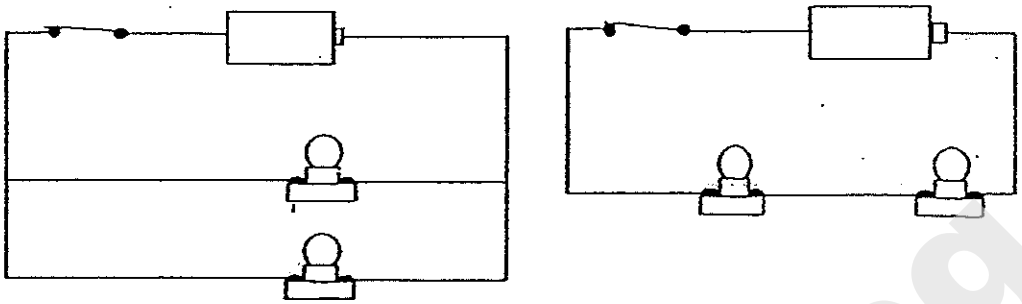
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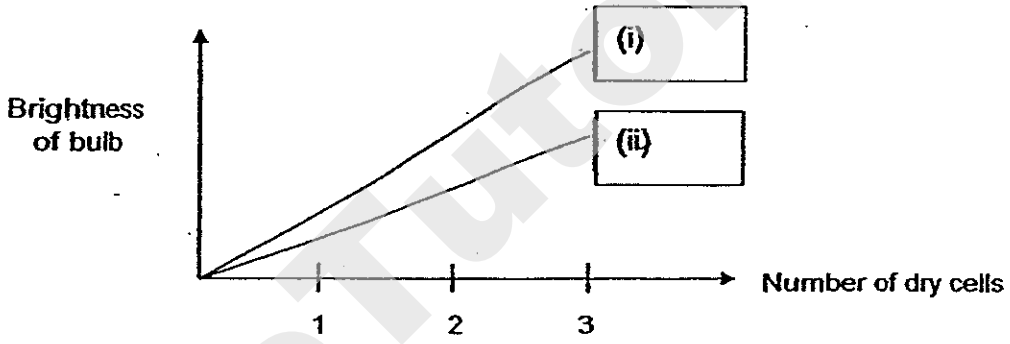
42. Study the two circuits A and B below. The type of batteries and bulbs used in the both circuits are the same.



Circuit A

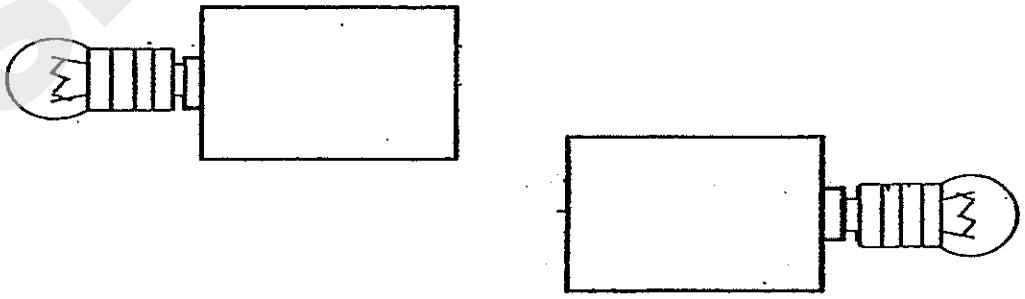
Circuit B

The graph below shows how the arrangement of the bulbs in a circuit can affect the brightness of a bulb.



(a) Indicate in the boxes above which circuits, A or B, the lines represent. [1]

(b) Draw the **wires** below to show how you can connect the dry cells and the bulbs so that the bulbs will light up the brightest. [1]



	2

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43. Leroy wanted to create a similar toy as shown below. He can make the toy by attaching a toy clown to one end of a steel spring and attaching a knob to the spring. When the knob is turned to the maximum and the lid opened, the toy clown in the box would pop up.



(a) State the source of energy that caused the toy clown to pop up. [1]

Leroy can use one of the 3 steel springs, A, B or C, to construct his toy.



(b) Which steel spring, A, B or C, should Leroy use if he wants his toy clown to pop up to the highest height when the lid is opened? Explain your choice in terms of energy conversion. [2]

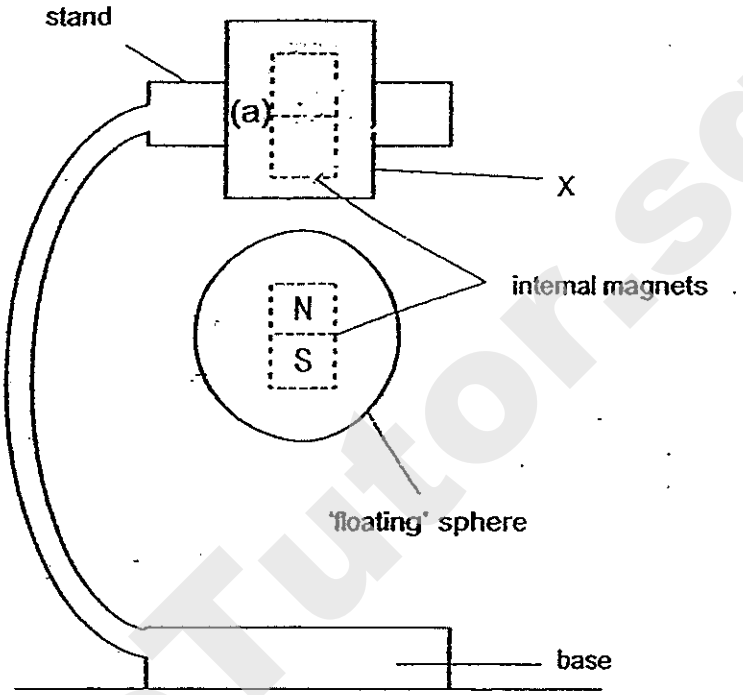
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44. The diagram below shows a picture of a toy. The toy is made up of a stand and a sphere. The stand has a piece of iron bar inside it and the sphere has a magnet inside it. Part X of the stand is made of plastic. When the switch on the toy is turned on, the iron bar becomes an electromagnet and the sphere appears to be 'floating' in the air. The base of the stand does not contain any magnets.



(a) Label the poles of the electromagnet in the stand such that the sphere is able to 'float' in the air. [1]

(b) It is observed that when the switch of the toy is turned off, the sphere drops to the ground. Explain the observation. [1]

(c) Will the toy still work (sphere "float" in the air) if part X of the stand is made of rubber? Explain your answer. [1]

End of Booklet B

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Booklet A

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

Booklet B

31 a Both animals C and E have legs.

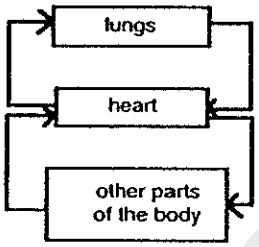
b

Animal	Letter
Dolphin	A
Eagle	E
Elephant	D
Penguin	F

32 a The cell contains chloroplasts that is absent in the cell of potato skin as potato is found underground and is not exposed to sunlight. Hence its skin cell does not need to have chloroplasts.

b A is the cell membrane. The cell membrane controls the movement of substances moving in and out of the cell.

33 a



b

Plant transport system	Human circulatory system
(i) water (ii) food	(iii) water (iv) digested food
(v) xylem tubes (water-carrying tubes) (vi) phloem tubes (food-carrying tubes)	(vii) blood vessels

34 a The wing-like structures enables the seed to float in the air/ stay air-borne for a longer period of time hence can be dispersed further away by the wind.

b Dropping both fruits at the same time helps ensure that the amount of wind present will be the same/constant.

c

(i)	✓
(ii)	✓
(iii)	
(iv)	

35 a Its long neck allows its beak to go deep underwater to look for food.

b The long legs of the flamingo keeps its out of the water, allowing smaller surface area of contact between the flamingo and the water, hence the flamingo will lose heat to the water slower.

c The comb-like structures increases the surface area so more organisms will get stuck to fine hair and get eaten by the flamingo.

36 a The yellow spots present will cause Butterfly B to think that there are already eggs on Plant Z and hence it will not lay eggs on Plant Z. This is advantageous for Plant Z as there will be lesser young of Butterfly B that will feed on it.

b (i) Less of Plant Z's leaves will be eaten by Butterfly B, hence Plant Z can continue to photosynthesize more effectively to produce more food.

(ii) Animal Y will have more food to eat.

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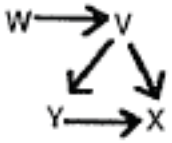
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37 a Plants → E → C → D

b No. Animals C and D do not feed on the plants directly.

c (i)



(ii)

Prey only	Predator only
V	X

38 a Increase in the temperature of the surroundings

b Carbon dioxide

c More carbon dioxide (greenhouse gas) will be present in the atmosphere to trap more heat, resulting in global warming.

39 a 600 cm^3

b Accept the following 2 properties:

(i) Liquid had a definite volume / occupies space.

(ii) Liquid has an indefinite shape.

40 a The temperature of the water is higher than the liquids.

b Liquid C. It expands the most when it gains heat from the basin of water and will be most sensitive to the temperature changes in the surroundings.

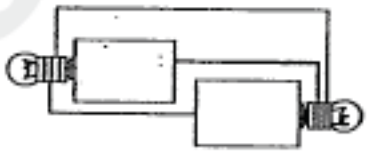
41 a X-shaped ice has a greater surface area exposed to the drink, so it will gain more heat from the drink and melts faster to cool the drink faster.

b Container B. It has a larger exposed surface area to the surroundings so most water will evaporate from it.

c Location of the experiment must be kept constant.

42 a (i) A (ii) B

b Accept any correct connections of the circuit that connect the dry cells in series and light bulbs in parallel to each other: e.g.



43 a Compressed spring

b Spring B. It can be compressed the most and have the most elastic potential energy converted to more kinetic energy which is then transferred to the toy clown.

44 a (a)



b It will be an open circuit so electricity cannot flow through and the electromagnet will lose its magnetism hence it cannot attract the sphere, causing it to drop to the ground.

c Yes. Rubber is a non-magnetic material and since magnetism can pass through non-magnetic material, the electromagnet can still attract the sphere through part X.

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