CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6

PRELIMINARY EXAMINATION – 2015

SCIENCE
BOOKLET A

27 August 2015

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 paper consists of 20 printed pages.

Booklet A	60
Booklet B	40
Total	100

_____

Parent's Signature/Date

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.**

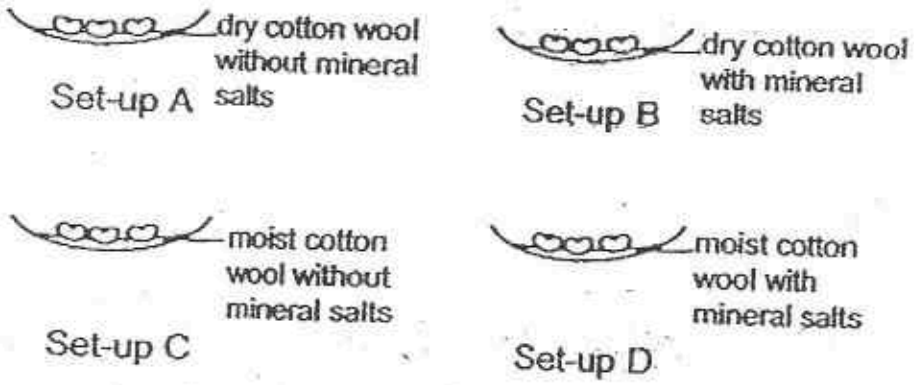
1. Ravi set up an experiment with four identical wind-pollinated flowers, P, Q, R and S in a field. The table below shows the different parts of the flowers that have been removed.

Flower	Anthers	Petals	Stigma
P	removed	not removed	not removed
Q	removed	removed	not removed
R	not removed	removed	removed
S	not removed	not removed	removed

Which flowers are able to develop into fruits?

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

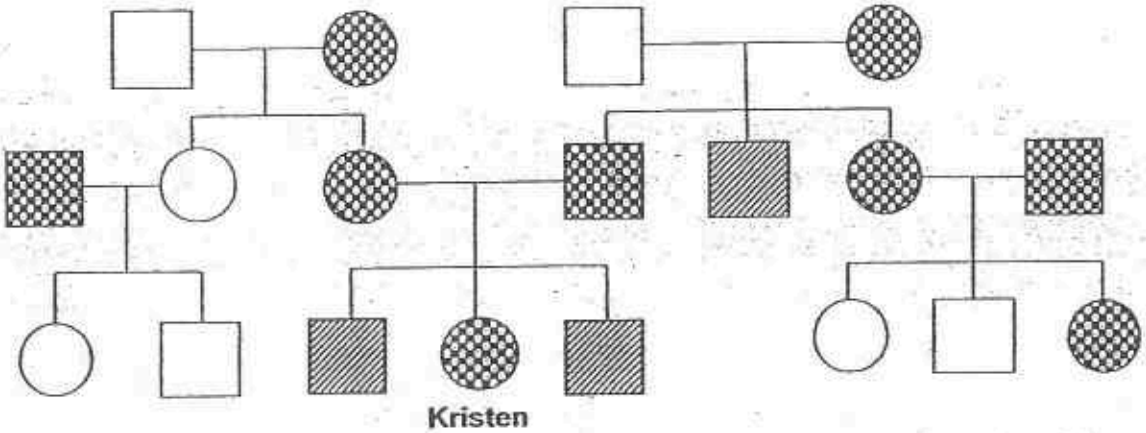
2. Petrina wanted to find out if mineral salts are needed for seeds to germinate.

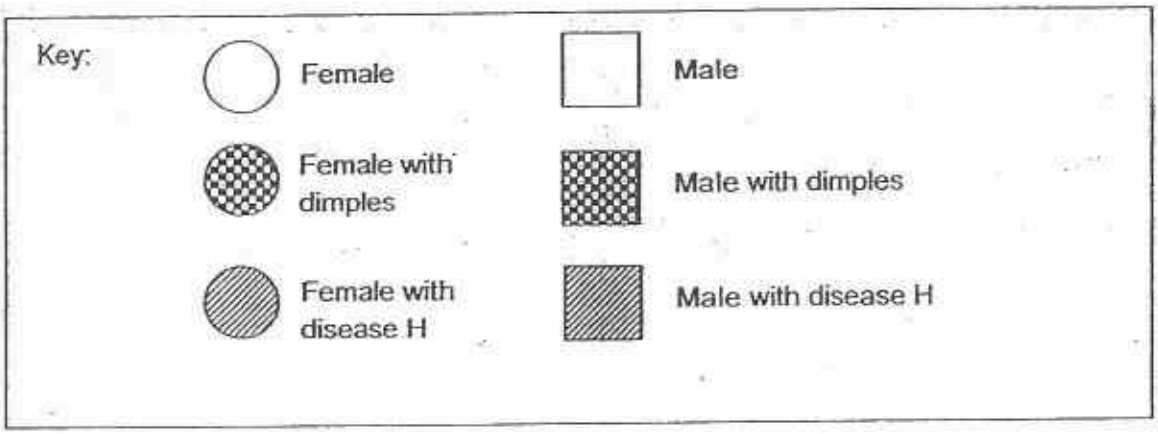


Look carefully at the set-ups above, which two of the following set-ups should she use to carry out a fair test?

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

3. The diagram below shows Kristen's family tree.



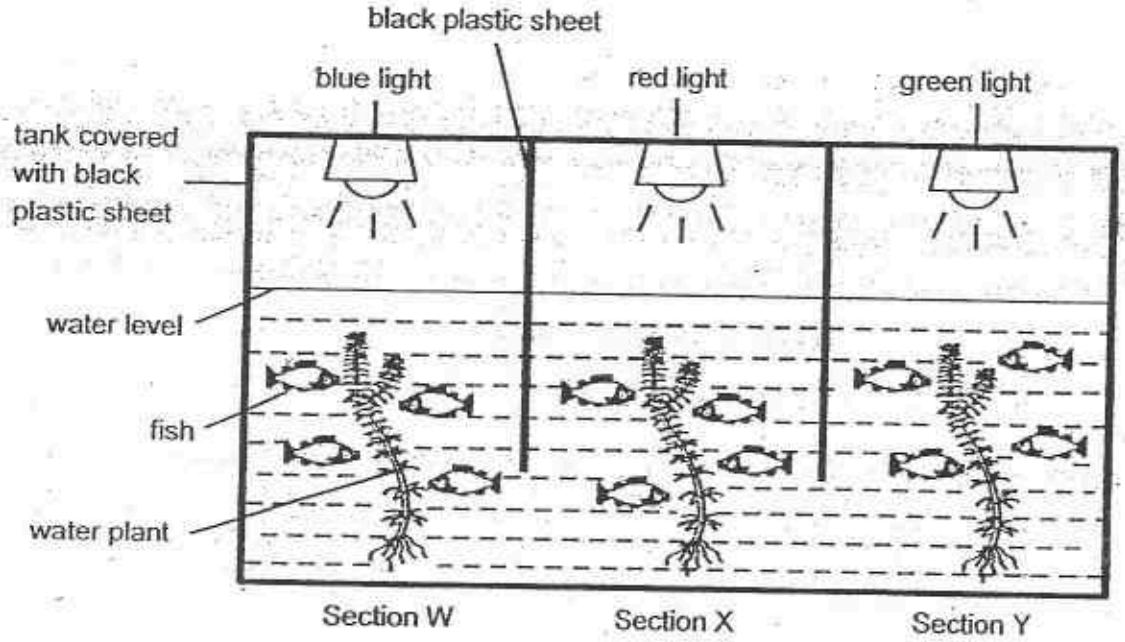


Based on the information provided above, which of the following statements are true?

A None of Kristen's cousins have disease H.
B Both Kristen's paternal uncles have dimples.
C Kristen's maternal grandmother has disease H.
D The gene that causes disease H only affects the male members of the family.

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

4. Nathaniel conducted an experiment using the set-up below.



After some time, he observed that there were only fish in sections W and X.

Which one of the following is a possible aim of Nathaniel's experiment?

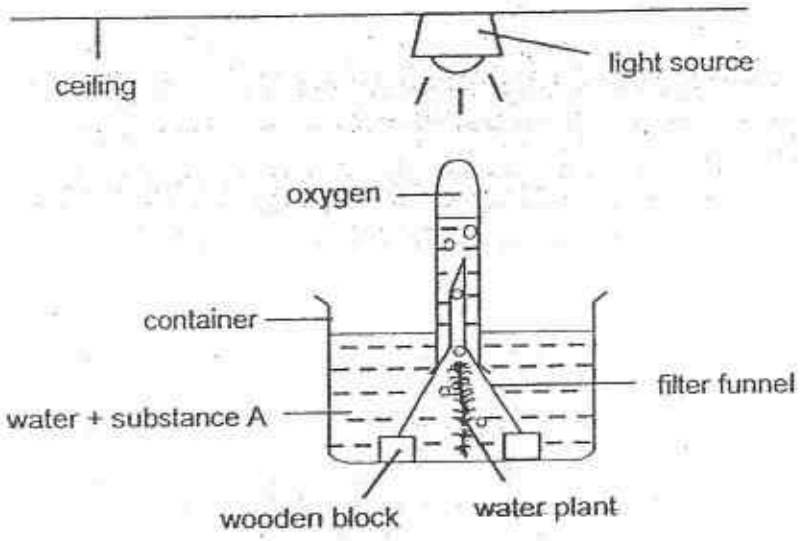
(1) To find out if light is needed for photosynthesis.

(2) To find out if water is needed for living things to survive.

(3) To find out if the presence of light affects the survival of the fish.

(4) To find out which coloured light(s), blue, red or green, could be used for photosynthesis.

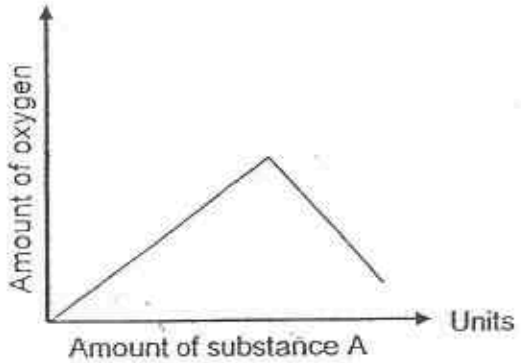
5. Muthu set up the following experiment to investigate the effect of substance A on the rate of photosynthesis. Substance A gives off carbon dioxide in water.



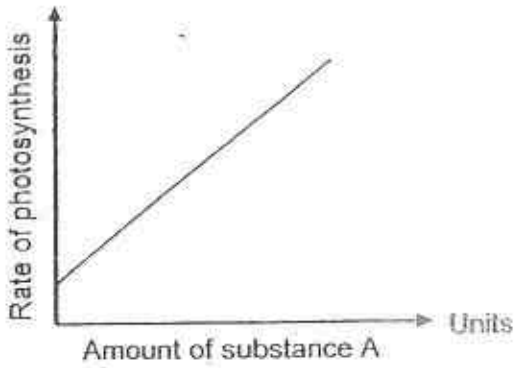
The experiment is repeated with 2 similar set-ups, each time increasing the amount of substance A added to the water.

Which one of the following graphs best represents the results of the experiment?

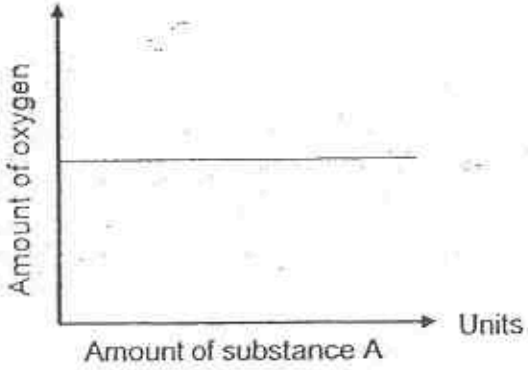
(1)



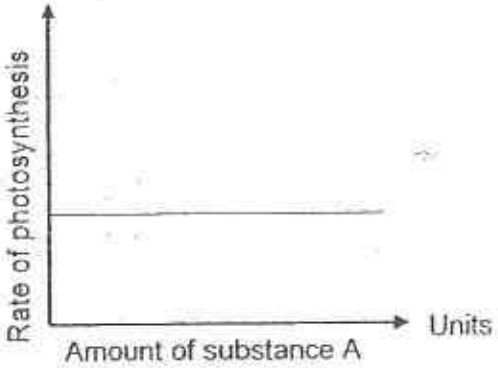
(2)



(3)



(4)

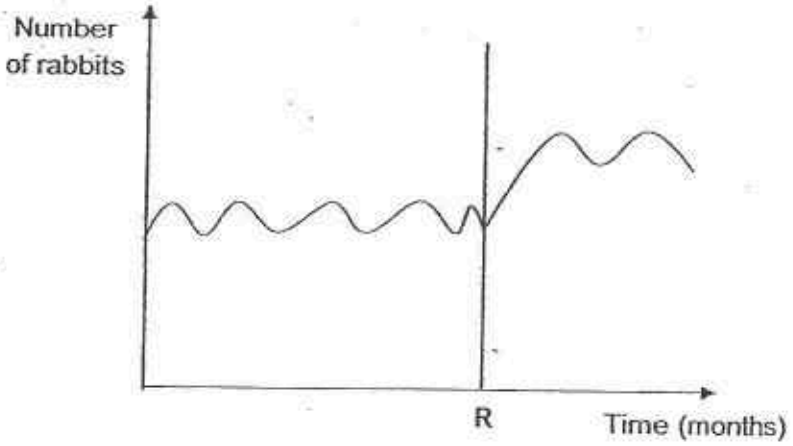


6. The camel has adaptations that enable it to survive in the desert environment. These adaptations are _____.

A having humps to store water
B having long eyelashes to block out sand
C having thick fur to protect against sand storms
D sweating and urinating very little in order to retain as much water as possible

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

7. The graph shows the population of rabbits in a rainforest over time.

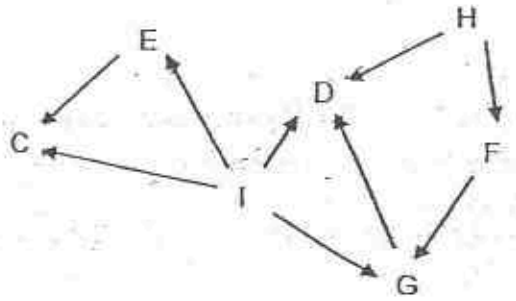


Which of the following statements below likely explain(s) for the change in the population of rabbits after Month R?

A More rabbits migrated to the rainforest.
B There was not enough food for the rabbits.
C The population of predators of the rabbits decreased.
D The number of rabbits that died was greater than the number that was born.

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

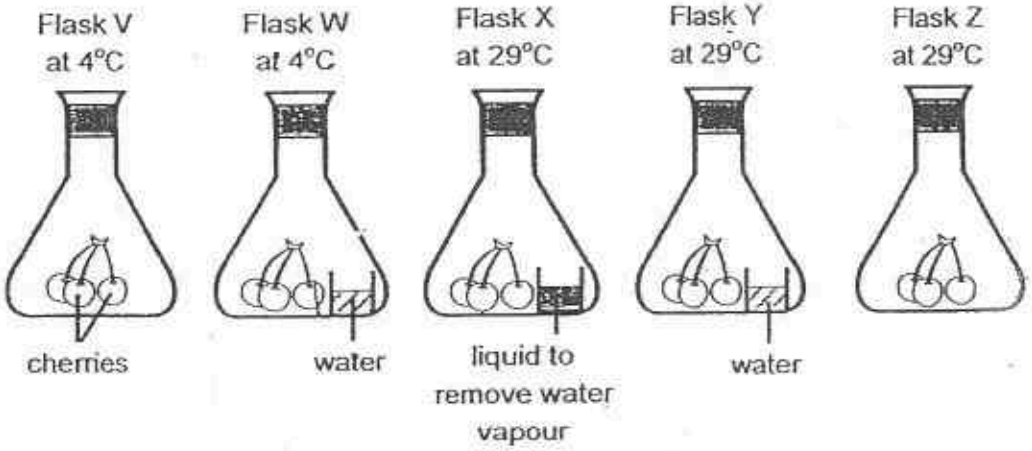
8. The food web below shows the relationships between organisms, C, D, E, F, G, H and I.



Based on the food web above, which one of the following statements is true?

(1) Organisms D, E and F are herbivores.
(2) Organism F is both a prey and predator.
(3) If the population of organism C decreases, there will be lesser food for organism E.
(4) Both organisms H and I would benefit directly if the level of carbon dioxide in the environment increases.

9. Reiya conducted an experiment using the set-ups as shown below. Three cherries were placed in each of the flasks, V, W, X, Y and Z, and kept under different conditions as shown below.

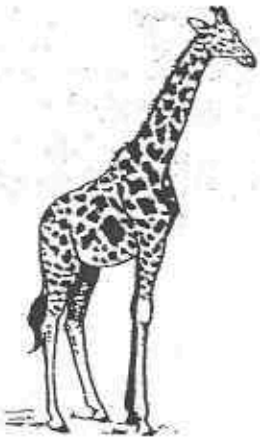


After one week, only the cherries in flasks W, Y and Z showed signs of decomposition.

Based on the results of the experiment above, which one of the following conditions would allow the cherries to be kept as fresh as possible during transportation from an overseas cherry farm to Singapore?

(1) A dry environment
(2) A dry environment with a temperature of 29 °C
(3) A dry environment with a temperature of 4 °C
(4) A moist environment with a temperature of 4 °C

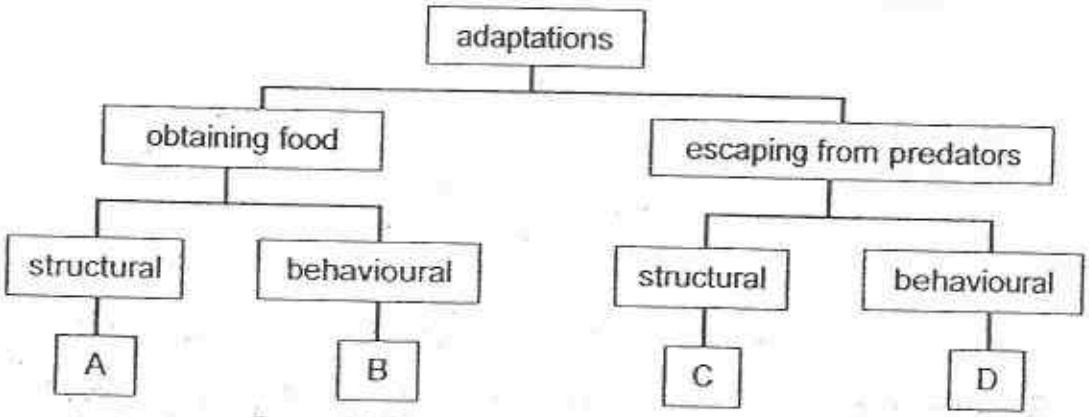
10. The diagram below shows a giraffe. It can be found in the grasslands of Africa. It likes to feed on leaves of tall trees. Lions, elephants and zebras can also be found in the same habitat as the giraffe.



Which one of the following is **not** a likely reason why giraffes have longer necks compared to other animals living in the same habitat?

(1) To appear larger in size.
(2) To reduce competition for food.
(3) To spot predators from a distance.
(4) To attract female giraffes for mating.

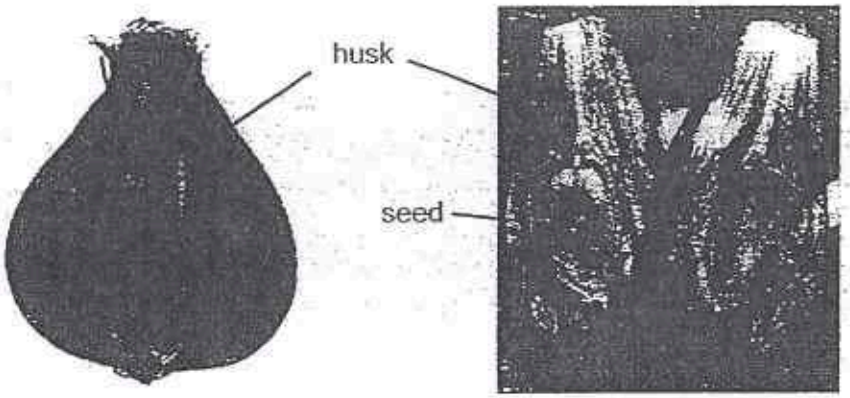
11. Study the classification chart below carefully.



Based on the chart above, which one of the following classifies the adaptations correctly?

	Group	Adaptations
(1)	A	sharp claws, long beaks, sharp teeth
(2)	B	presenting gifts, fighting to show strength, living in herds
(3)	C	mimicry, long and deep roots, camouflage
(4)	D	hard shells, spines, using poisons

12. The diagrams below show how fruit H looks like.



uncut fruit H fruit H cut in half

Based on the diagrams above, which one of the following statements about fruit H is true?

(1) It has a dry seed pod which splits open when ripe.
(2) It has tiny hairs to allow it to float in the air for a longer time.
(3) It has a fibrous husk to trap air so that it can float on the water.
(4) It has juicy flesh to attract animals to eat it and disperse its seeds.

13. Which one of the following actions **does not** contribute to global warming?

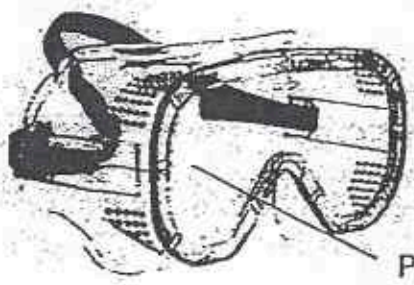
(1) Driving a car to work.
(2) Growing vegetables in the garden.
(3) Using non-biodegradable products.
(4) Using the air conditioner to cool down a room.

14. Deforestation by burning down forests is harmful to our environment. Which of the following statements about deforestation by burning is **true**?

A It results in more rainfall.
B It results in loss of habitats.
C It causes more soil to be washed away by rain.
D It results in more oxygen in the air that may result in global warming.

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

15. Study the properties of the four materials shown below.



Materials	Waterproof	Transparent	Flexible	Hard
P	√		√	
Q	√	√		
R	√	√		√
S			√	

Which one of the materials is most suitable for making part Z of the safety goggles shown above?

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

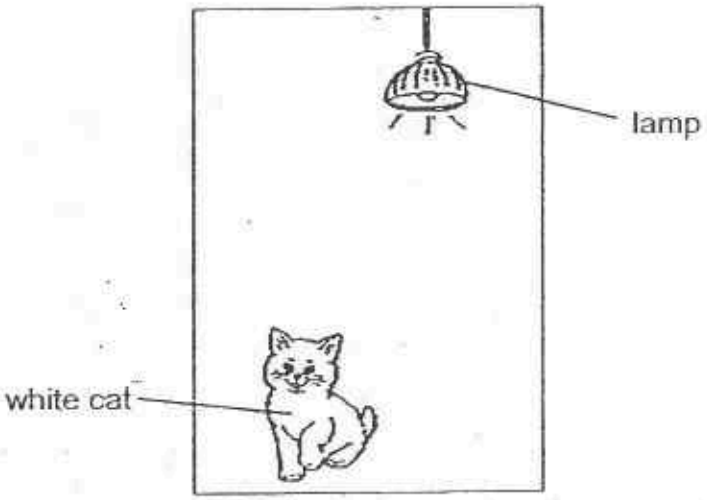
16. The diagram below shows a cup.

Which of the following shadows can be cast by the cup when a torch is shone at it from different directions?

A B C D

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

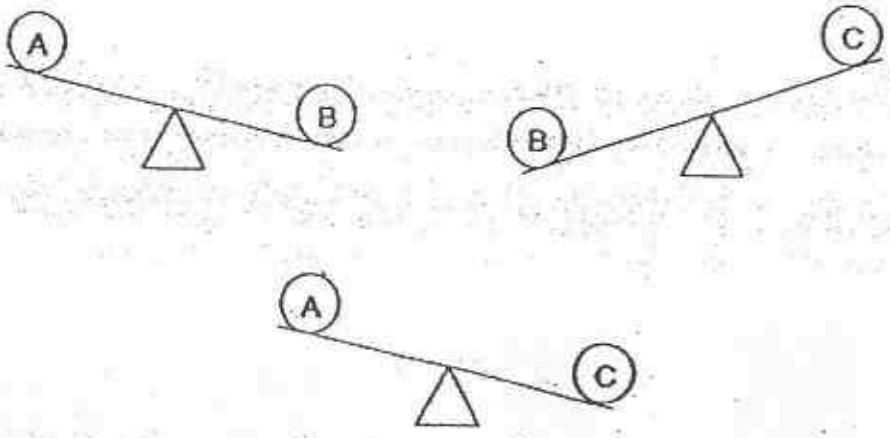
17. The diagram below shows a white cat in a room where the only light source is a lamp.



Which one of the following statements best explains why we are able to see the white cat in the room?

(1) White reflects light very well.
(2) The light from the lamp enters our eyes.
(3) The light from the lamp bounces off the cat.
(4) The cat reflects light from the lamp into our eyes.

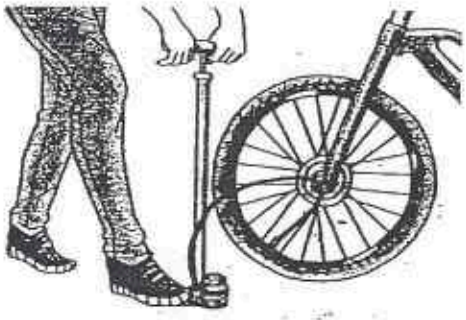
18. Peter compared the masses of 3 objects, A, B and C on balances as shown below.



Arrange the objects according to their masses from the lightest to the heaviest.

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

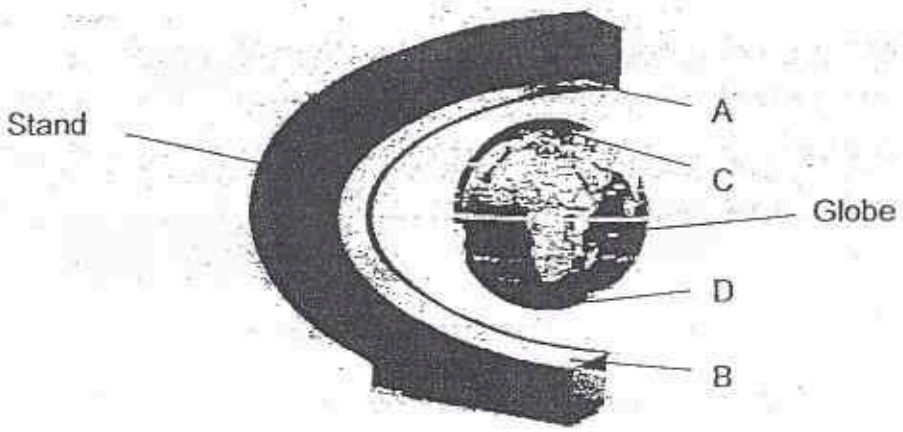
19. The diagram below shows a fully inflated bicycle tyre. The capacity of the bicycle tyre is 5000 cm^3.



Given that 500 cm^3 of air is pumped into the tyre with each pump, what is the total volume of air in the bicycle tyre after pumping it twice?

(1) 1000 cm^3
(2) 4000 cm^3
(3) 5000 cm^3
(4) 6000 cm^3

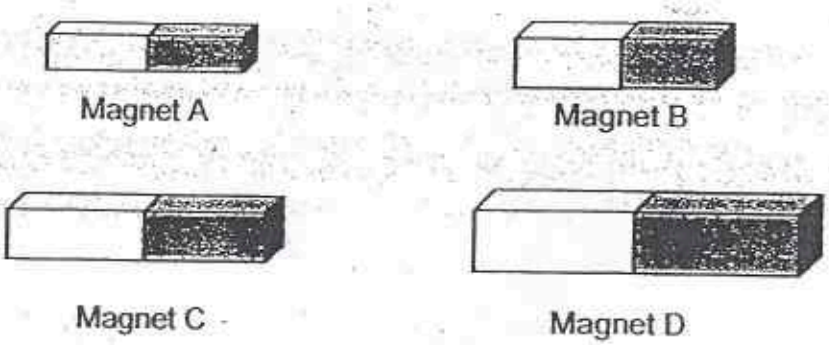
20. The diagram below shows a floating magnetic globe. The globe is able to float by using three magnets, one in the globe and two in the stand.



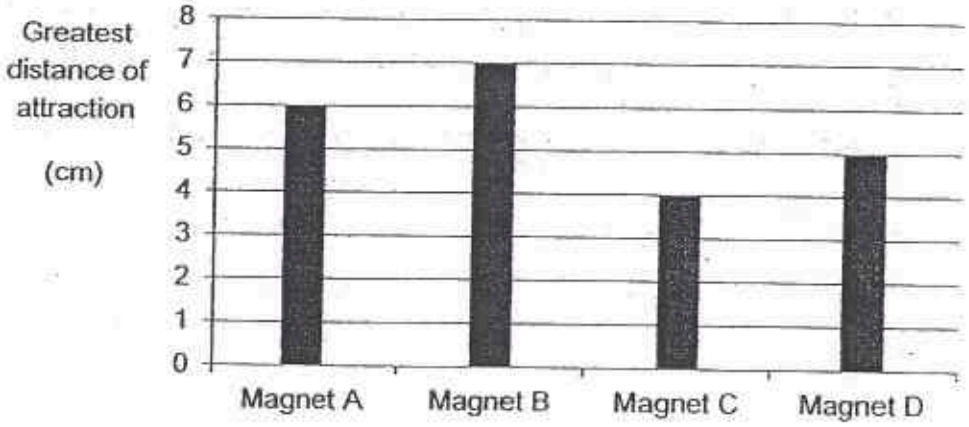
Which one of the following shows the possible arrangement of the poles of the magnets in order for the globe to float?

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

21. Leo had 4 different bar magnets. He conducted an experiment to record the greatest distance at which the magnets, A, B, C and D, will attract some paper clips.



The bar graph below shows the results of his experiment.

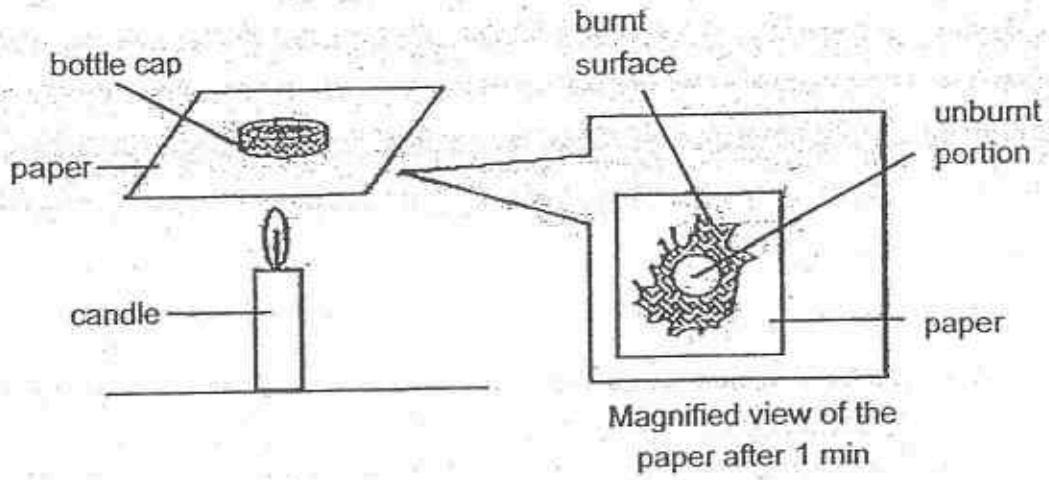


Based on the bar graph above, which of the following statements are true?

A Magnet B is stronger than A.
B The bigger the size of the magnet, the stronger the magnet.
C Only Magnet D can attract paper clips that are placed 5 cm away.
D Magnet D can attract more paper clips than Magnet C when the paper clips are placed 2 cm away from the magnets.

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

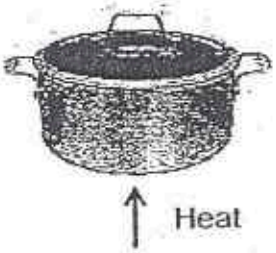
22. Wei Ming conducted an experiment as shown in the diagram below. He placed a metal bottle cap on a piece of paper and held the paper over a flame. After 1 minute, he observed that the paper around the bottle cap was burnt but the paper under the cap was not burnt at all.



Which one of the following explains why the portion of paper under the bottle cap did not get burnt?

(1) The paper gained heat from the flame and was burnt.
(2) The bottle cap did not gain too much heat, so it did not get burnt.
(3) The bottle cap gained heat and expanded so heat did not travel to the paper.
(4) Metal is a good conductor of heat so heat was conducted away from the paper.

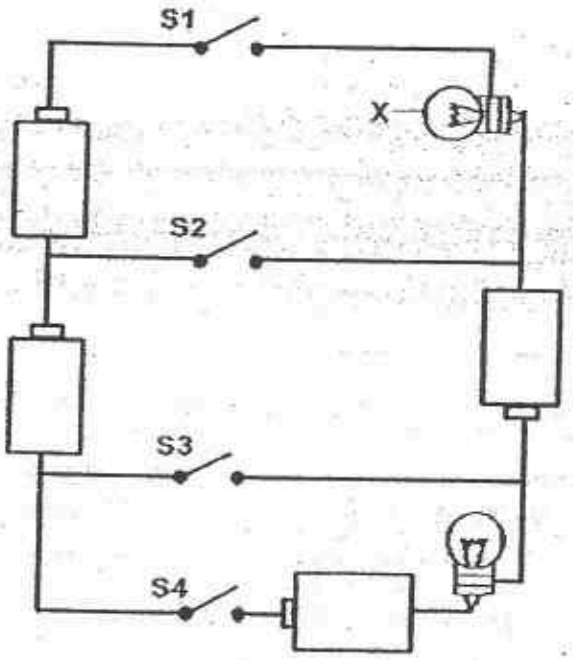
23. Diana wanted to cook porridge using the pot below.



She observed that the porridge cooked faster when boiled in the pot with the lid covering it. Which one of the following is the best explanation for her observation?

(1) The lid prevented the porridge from overflowing so it would boil faster.
(2) The lid was a good conductor of heat so heat would travel to the porridge faster.
(3) The lid trapped heat in the pot so the porridge would gain more heat and boil faster.
(4) The water vapour from the boiling porridge would not condense on the cool inner surface of the lid and drip back into the porridge.

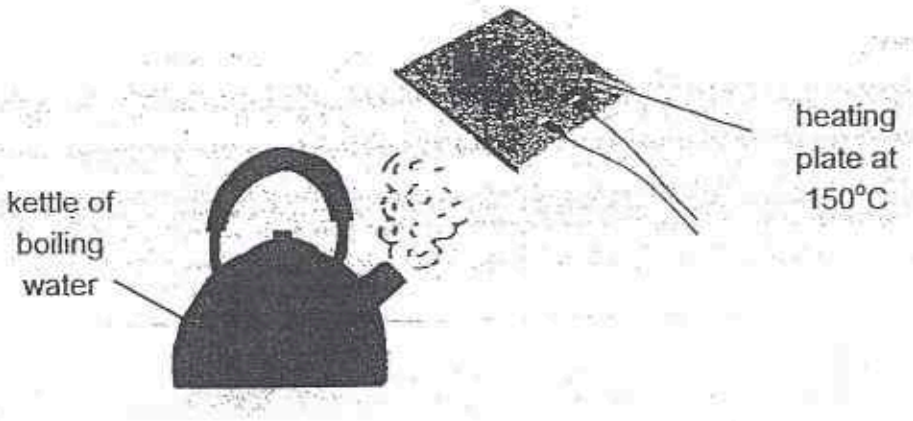
24. The diagram below shows an electric circuit.



Based on the circuit above, which one of the following would result in Bulb X being 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

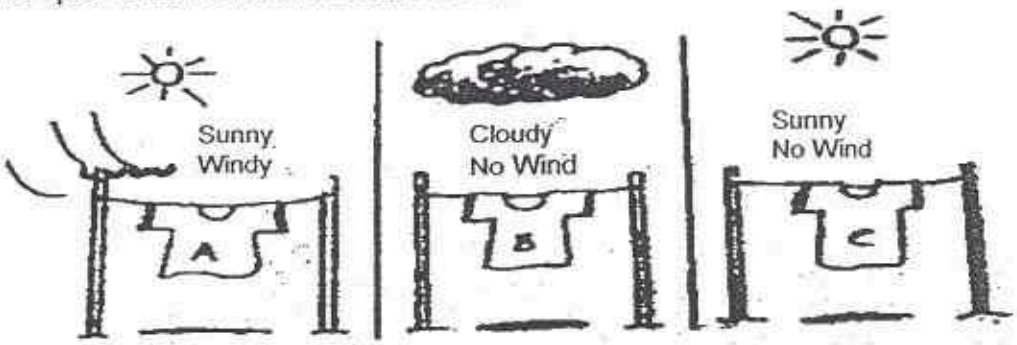
25. A kettle of water was heated until the water in it boiled. A heating plate with a temperature of 150°C was held above the kettle spout.



What could be observed on the heating plate after 2 minutes?

(1) The heating plate became foggy due to the steam from the boiling water.
(2) Hot water vapour condensed to form tiny water droplets on the heating plate.
(3) No condensation took place on the heating plate as the hot water vapour could not lose heat to the hotter heating plate.
(4) No condensation took place on the heating plate at first but when the hot water vapour gained more heat, it was able to condense on the heating plate to form tiny water droplets.

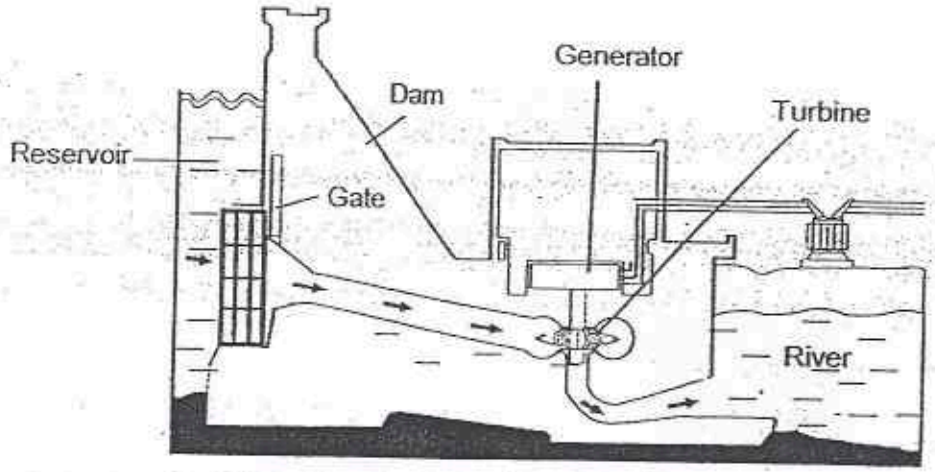
26. Three similar T-shirts, soaked in the same amount of water, were left to dry in the open under different conditions shown below.



Arrange the three T-shirts in order, beginning with the one that will take the longest time to dry to the one that would take the shortest time to dry.

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

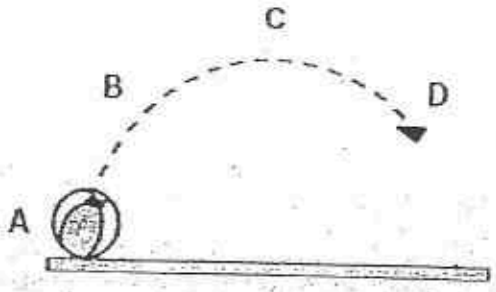
27. The diagram below shows a hydroelectric power station.



Which one of the following shows the energy changes when the gate of the dam is lifted and the water from the reservoir flows through the channel till electricity is generated?

(1) Gravitational potential energy → Kinetic energy of turbine → Electrical energy
(2) Gravitational potential energy → Kinetic energy of water → Kinetic energy of turbine → Electrical energy
(3) Gravitational potential energy → Kinetic energy of water → Electrical energy → Kinetic energy of turbine
(4) Kinetic energy of water → Gravitational potential energy → Kinetic energy of turbine → Electrical energy

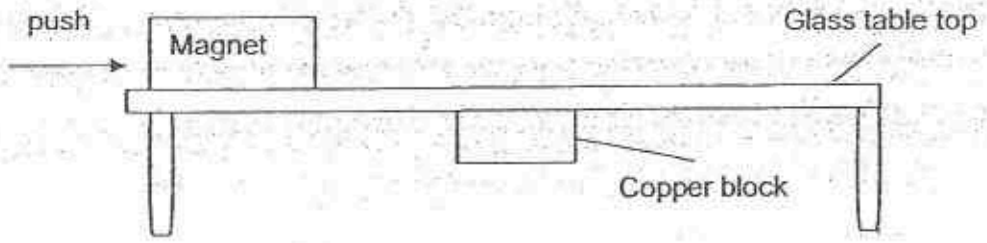
28. The diagram below traces the path of a ball in motion as it was thrown into the air.



The ball has the maximum amount of gravitational potential energy at position _____.

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

29. A magnet was placed on a glass table as shown below. A copper block was attached to the bottom of the table. The magnet was given a push to move along the table.



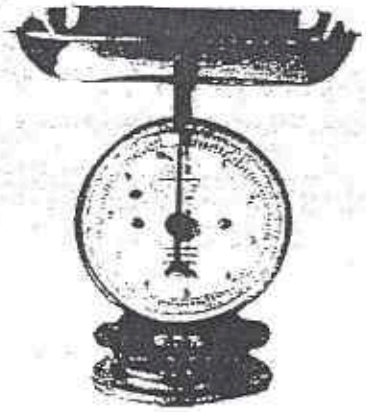
The following are the different types of forces that can act on an object:

P Magnetic force
Q Gravitational force
R Frictional force

Which of the above force(s) must be overcome in order for the magnet to move along the table?

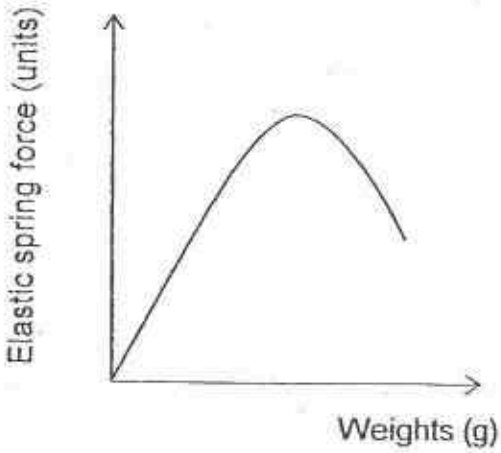
(1) P only
(2) R only
(3) P and R only
(4) P, Q and R

30. The weighing scale in the diagram below consists of a spring which compresses when an object is placed in the pan.

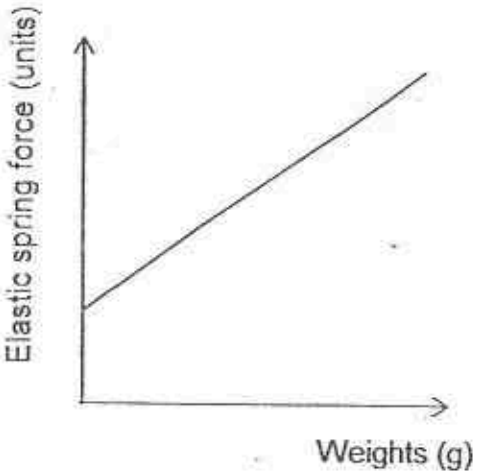


Which one of the graphs below shows the relationship between the amount of elastic spring force and the weights placed on the weighing scale?

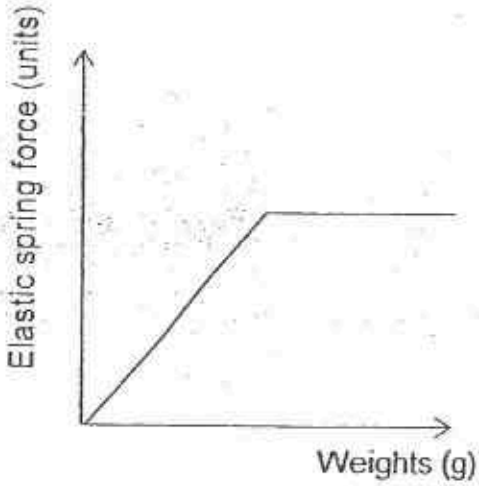
(1)



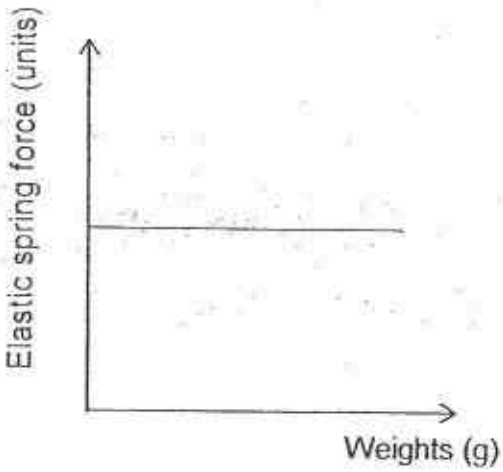
(2)



(3)



(4)



End of booklet A

CHIJ ST NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE

STEADFAST IN DUTY

纯 义

Primary 6

PRELIMINARY EXAMINATION – 2015

SCIENCE
BOOKLET B

27 August 2015

NAME: _____ ( )

CLASS : Primary 6 _____

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.

_____

Parent's Signature/Date

This paper consists of 17 printed pages.

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PAGE

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.

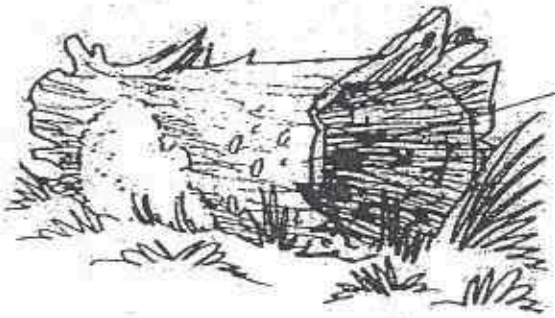
31. Every year thousands of trees are cut down in tropical rainforests.

(a) How does the above activity cause global warming? [1]

_____

_____

(b) In the forests, fallen tree trunks and branches are left on the ground.



Some organisms feed on these tree trunks and release nutrients or minerals back into the soil.

(i) Why is it important that the nutrients or minerals are released back into the soil? [1]

_____

_____

(ii) Centipedes can be found in a rotting log community. Are they decomposers? Explain your answer. [1]

_____

_____

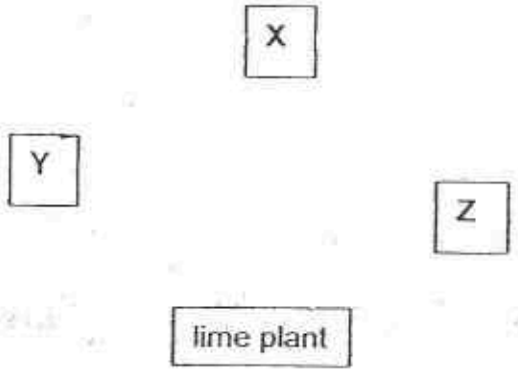
_____

32. David conducted four experiments on food relationships in a garden community made up of a lime plant and three other organisms, X, Y and Z.
The table below shows the observations from the experiments conducted over three days.

Experiment	Observations	
	Start of experiment	End of experiment
(i)	5 freshly plucked lime leaves 5 living organism Z.	Bits of leaves left 5 living organism Z
(ii)	5 living organism X 5 living organism Y 5 living organism Z	5 living organism Y 1 living organism Z
(iii)	5 freshly plucked lime leaves 5 living organism X 5 living organism Y	5 leaves left 5 living organism Y
(iv)	5 freshly plucked lime leaves 5 living organism X 5 living organism Z	5 leaves left 5 living organism X

(a) Based on the observations above, complete the food web shown below by drawing four arrows to connect the organisms to show the possible food relationships among the lime plant and organisms, X, Y and Z.

[2]



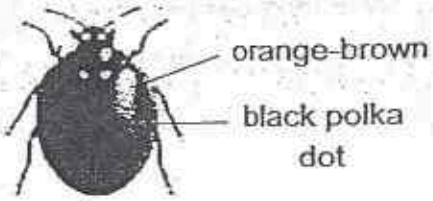
(b) Why is the lime plant important in the garden community? [1]

_____

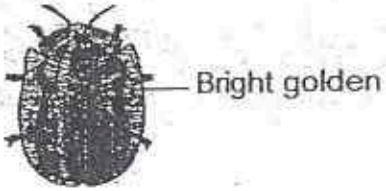
_____

33. Birds feed on all kinds of beetle but many do not like to eat the ladybird beetle. Ladybird beetles are brightly- coloured; orange-brown with black polka dots. Predators usually avoid eating the ladybird beetles because they contain bitter-tasting chemicals.

Golden tortoise beetle is usually bright golden in colour. However, it can change from bright golden to orange-brown with dark spots within a short time period.



ladybird beetle



golden tortoise beetle

(a) Ladybird beetle is brightly-coloured. How does this adaptation help in the ladybird beetle's survival? [1]

_____

_____

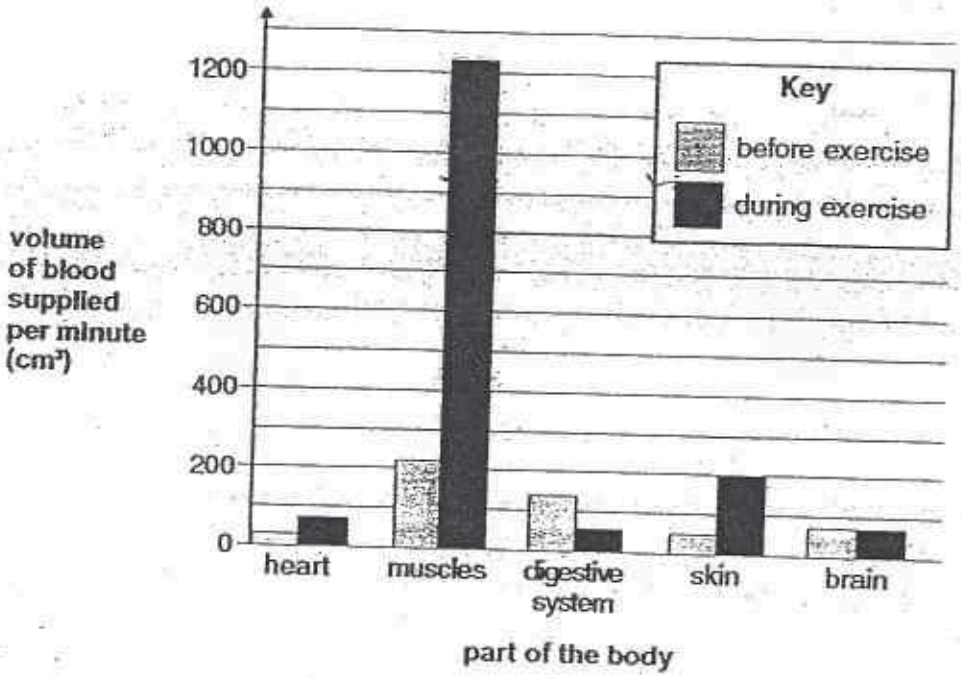
(b) The golden tortoise beetle is able to alter its colour within a short time period. How does this help it to survive better? [1]

_____

_____

_____

34. When we exercise, the volume of blood per minute needed to supply different parts of our body changes. This is shown in the bar chart below.



(a) Explain why our muscles need more blood during exercise. [2]

_____

_____

_____

(b) Based on the bar chart, explain why we should **not** go for a long run just after eating a meal. [1]

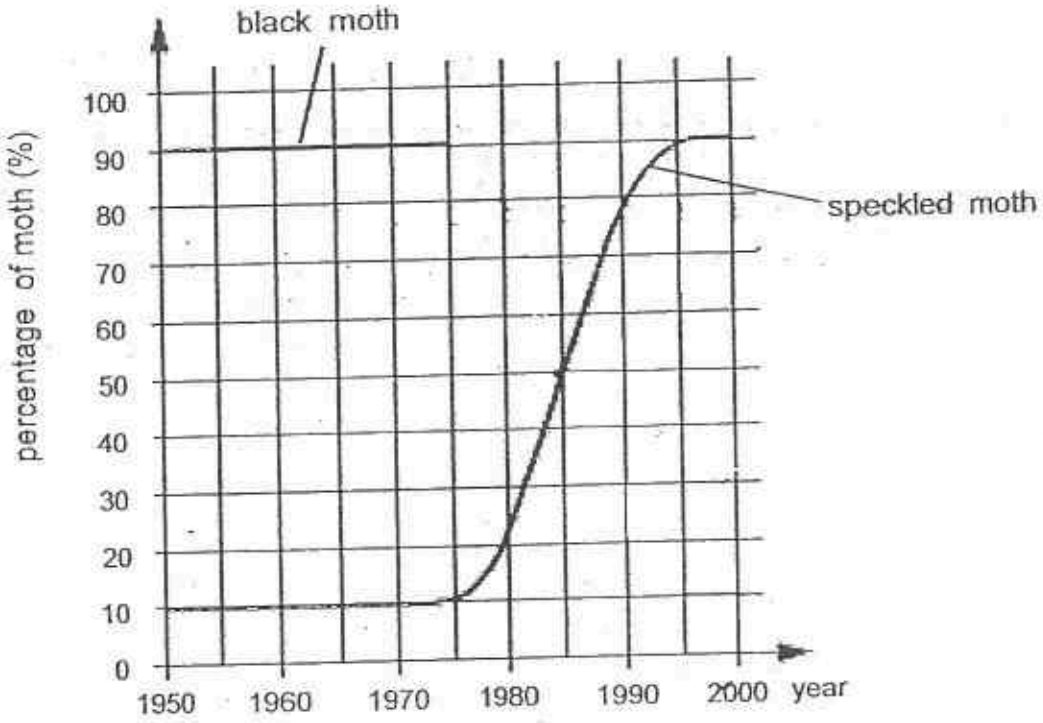
_____

_____

_____

35. The diagram below shows two different types of moth of the same species. The moths are either speckled or black. It is observed that when there is an increase in the speckled moth population there will be a decrease in the black moth population.

The graph below shows how the percentage of speckled moths changed between 1950 and 2000 in one city.

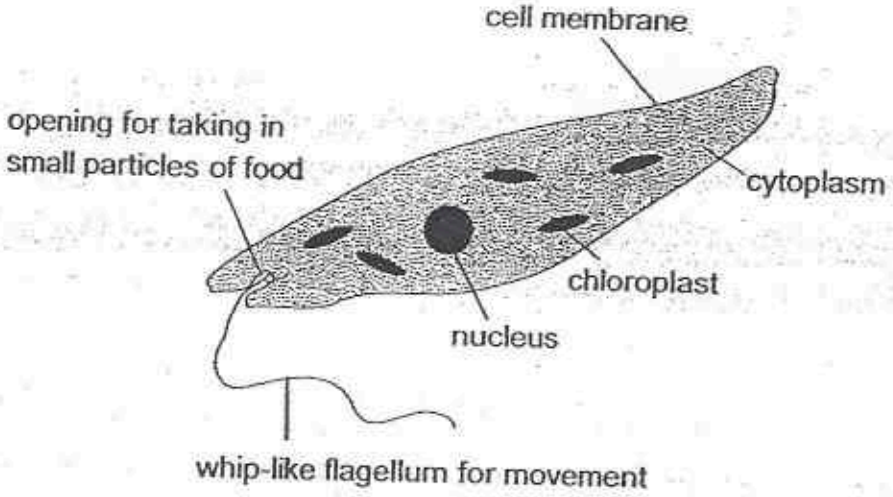


(a) Using the graph above, complete the table below with the **missing year and percentage.** [2]

Year	Percentage of speckled moths (%)	Percentage of black moths (%)	Total percentage (%)
1970	10	90	100
	50	50	100
1990	78	( )	100

(b) The percentage of black moths from 1950 to1980 is also shown on the same graph. Based on the table in (a), complete the line graph to show how the percentage of black moths had changed between 1980 and 2000. [1]

36. The diagram below shows an organism called Euglena. It is made up of only one cell. It lives in ponds and streams. Euglena has features of both plants and animals.



(a) From the diagram above, give two reasons why the Euglena can be considered an animal cell.

Reasons: [2]

(i) _____

(ii) _____

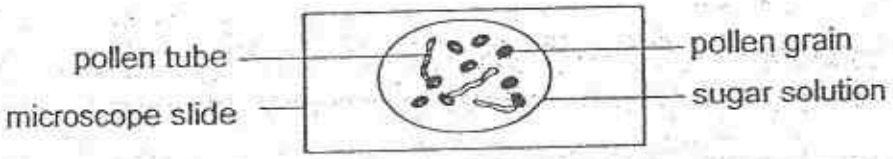
(b) Based on the diagram above, where does the Euglena get its energy and food from? [1]

_____

_____

_____

37. Amy conducted an experiment to find out how sugar affects the growth of pollen grains. She observed the growth of pollen grains under a microscope over a period of time.



This is what Amy did:

1. Add one drop of different concentrations (0%, 5%, 10%, 15%, 20% and 25%) of sugar solution to each microscope slide.
2. Add the same amount of pollen grains to each drop of sugar solution in each microscope slide.
3. Count how many pollen grains have started to grow after an hour.
4. Calculate the percentage of growth of pollen grains.

(a) Why did Amy set up a slide with 0% sugar solution? [1]

_____

_____

The table below shows the results of Amy's investigation.

Concentration of sugar solution (%)	Percentage of pollen grains that had started to grow (%)
0	0
5	30
10	100
15	30
20	10
25	0

(b) Based on the results above, what conclusion can Amy draw? [2]

_____

_____

_____

38. The diagram below shows a puddle of water on the street after the rain.

The puddle of water disappeared after some time.

(a) Explain why the puddle disappeared after some time. [1]

_____

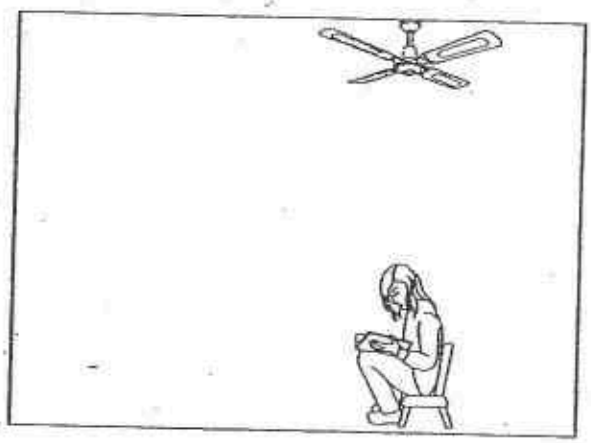
_____

(b) Give two factors that can cause the puddle of water to disappear faster. [1]

_____

_____

The diagram below shows Alice in a room on a hot day. The air in the room has a temperature of 32°C.



Alice

Alice felt cooler sitting under the moving fan than in any other areas in the room.

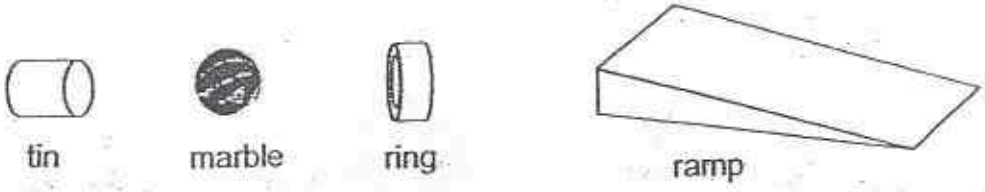
(c) Explain why sitting under the fan made Alice feel cooler?

_____

_____

_____

39. Elsa conducted an experiment with the objects shown below.



She rolled the tin down the ramp and recorded the time taken for the tin to reach the floor. She repeated the experiment with the marble and the ring. The experiment was carried out three times with each object. The table below shows the results of the experiment.

Object	Time taken (s)		
	1st try	2nd try	3rd try
Tin	2.3	3.2	1.7
Marble	2.6	2.7	2.4
Ring	3.3	3.5	3.4

(a) What are the forces that act on the objects as they roll down the ramp? [1]

_____

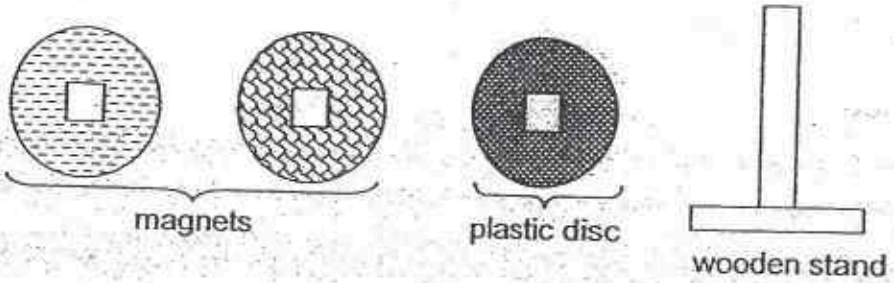
_____

(b) Elsa realised that she had made a mistake while carrying out the experiment on one of the objects. Which object would that be? List 1 mistake she could have made. [1]

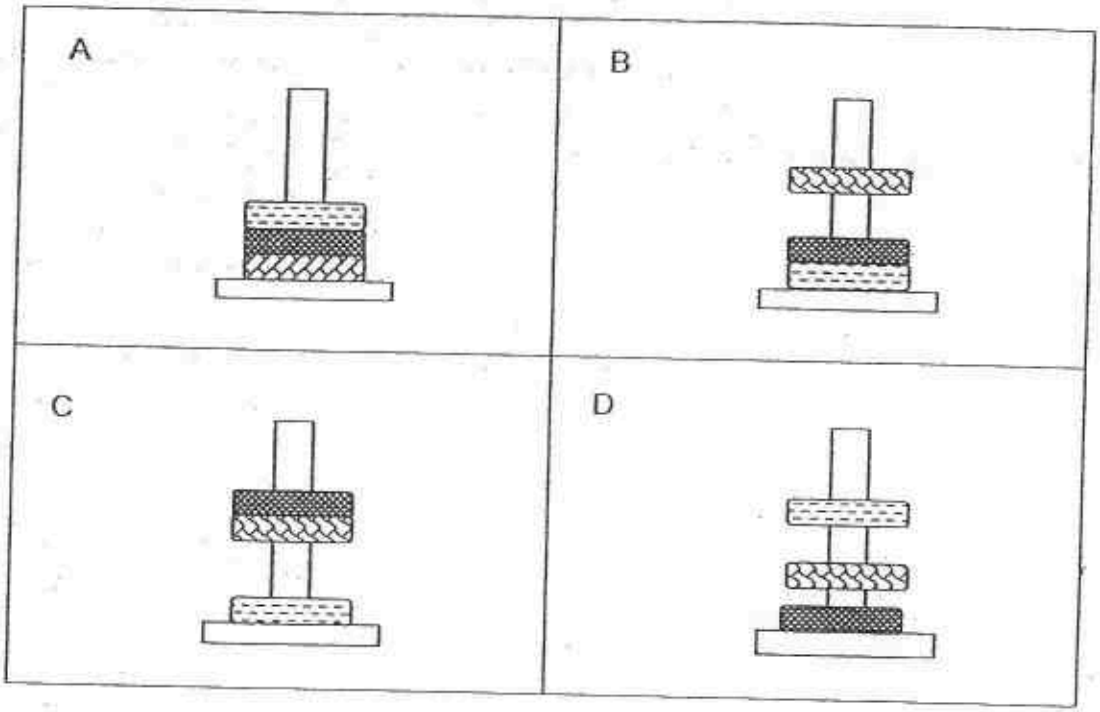
_____

_____

40. The diagram below shows three discs of similar size, each with a square hole in the centre. One of the discs is a plastic disc and the other two are magnets.



The diagrams below show the positions of the three discs when they are placed on top of one another through the wooden stand.



(a) Which one of the above arrangements would <u>not</u> be a possible observation? Explain your answer. [1]

_____

_____

A magnet was brought near Rod A which was suspended on a support and Rod A moved upwards to the position shown in Diagram 1. A flame was then placed at one end of the Rod A as shown in Diagram 2. After a while, Rod A started to move towards the magnet.

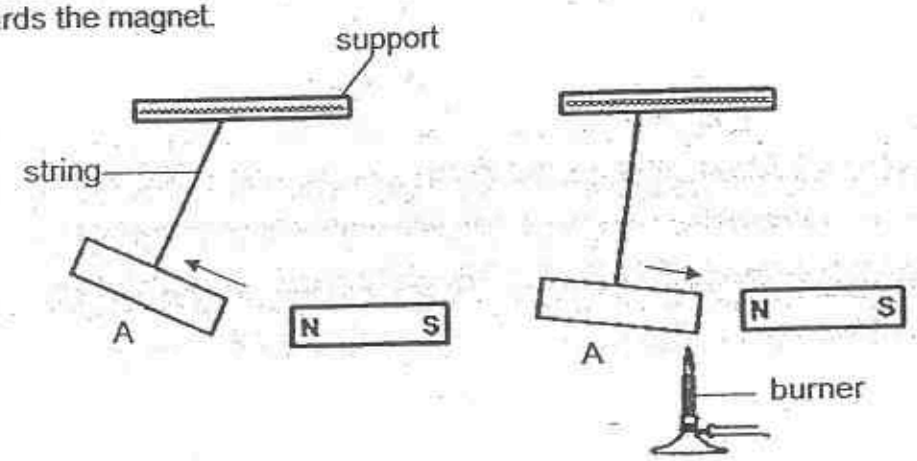


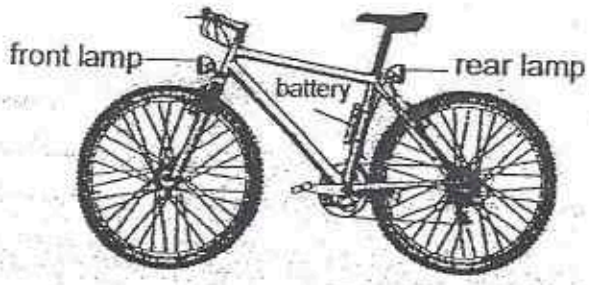
Diagram 1 **Diagram 2**

(b) What caused rod A to move towards the magnet? Give one reason. [1]

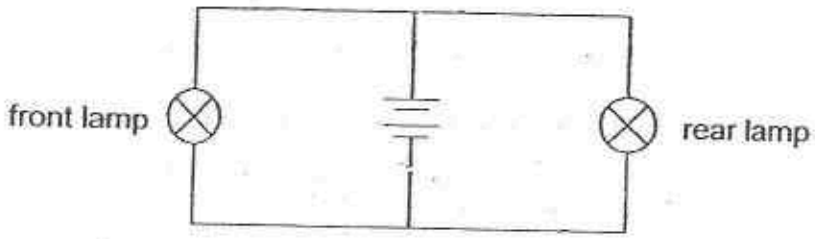
_____

_____

41. The diagram below shows a bicycle with a front and a rear lamp. Both lamps are connected to the same battery.



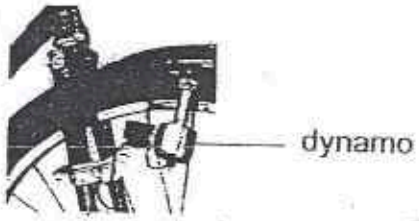
(a) The circuit diagram for the lamps is drawn below. [2]



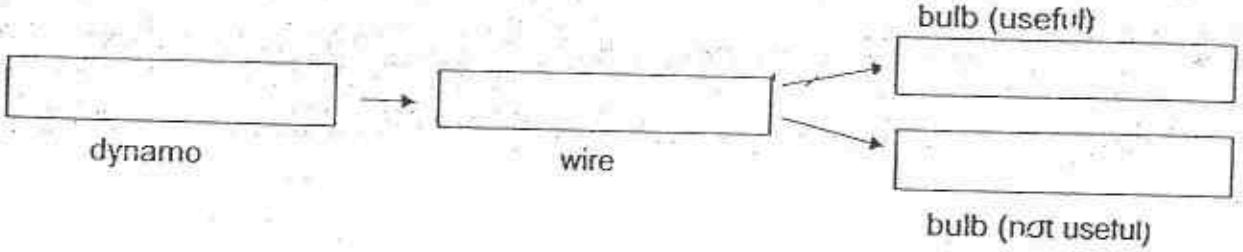
(i) On the circuit diagram above, place a letter X to show the position of a switch that would turn only the front lamp on and off.

(ii) On the circuit diagram above, place a letter Y to show the position of a switch that would turn both lamps on and off at the same time.

The battery in the bicycle can be replaced with a dynamo as shown in the diagram below. A dynamo is a small generator able to provide electricity when the wheels of the bicycle are turned.



(b) Fill in the boxes below with the correct form of energy to show the energy conversion when the dynamo is used. [1]



(c) What effect will it have on the light bulb if we pedal faster? [1]

_____

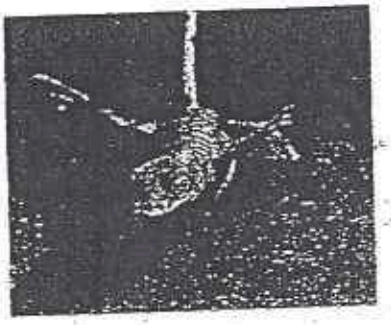
42. The diagram below shows two cups of the same material and diameter. The cups were filled with the same amount of hot water at 90°C.

cup A cup B

Alan wanted to find out the length of time he could hold onto each cup with his bare hand until it was too hot for him to hold on.

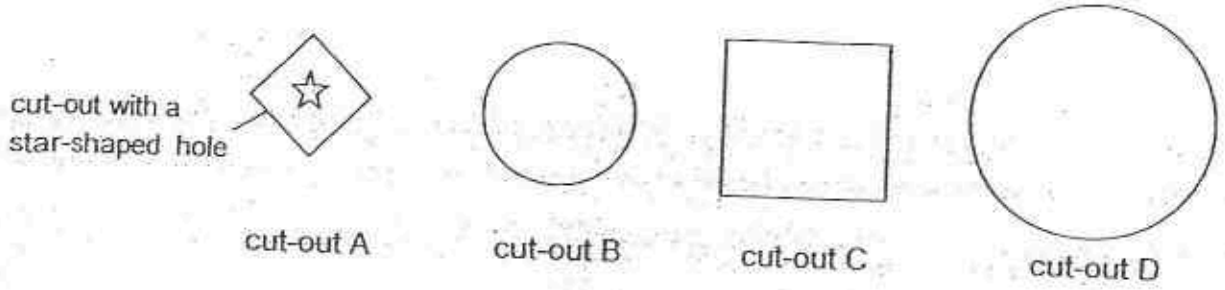
(a) Which cup could he hold for a longer period of time before it was too hot for him to hold on? Explain your answer. [2]

The picture below shows a shovel-snouted lizard which lives in the desert. It often performs a 'thermal dance' by raising one of its front and back legs diagonally at the same time and then repeated it with the other two legs during the day.

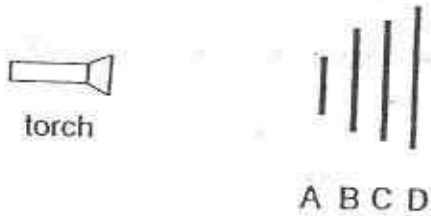


(b) Explain how by behaving this way enables it to survive in the hot desert. [1]

43. Fauzi had 4 cut-outs made of different materials as shown below. The diagrams are drawn to scale.



He placed the four cut-outs in front of a torch as shown in the diagram below.



Fauzi turned on the torch and recorded his observation on cut-out C as shown below.

shadow on cut-out C

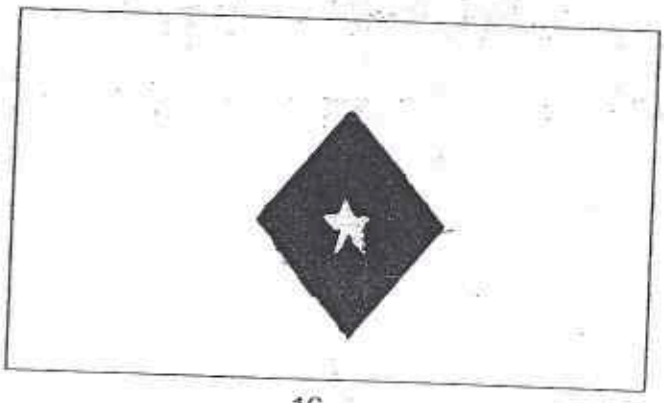
(a) Based on Fauzi's observation, state whether materials A and B are opaque or transparent.

[1]

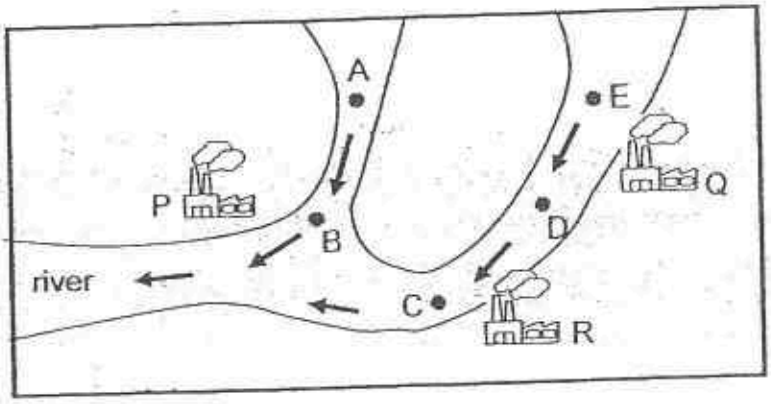
Cut-out	Material
A	
B	

(b) If cut-out D is made of an opaque material, draw the shadow cast on cut-out D in the space provided below.

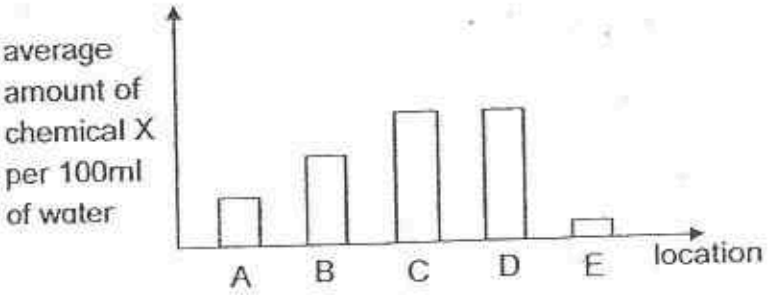
[1]



44. The map below shows the location of three factories, P, Q and R, by the river. The arrows show the direction of water flow in the river.



It is suspected that these factories discharge harmful chemical X into the river. Water samples are collected from five locations, A, B, C, D and E, of the river for analysis. The results of the analysis are plotted in the graph below.



(a) Based on the graph above. Which factory, P, Q or R, is the least likely to have discharged chemical X into the river. Explain your answer. [2]

_____

_____

_____

_____

(b) The water from the river needs to be treated in a water treatment plant before it can be pumped to the neighbourhood for human consumption. Mark 'X' on the map above to indicate the most suitable place where a water treatment plant should be built so that the cost to treat the water will be the lowest. [1]

– End of Paper –

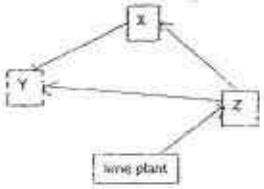
EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : CHIJ ST NICHOLAS GIRLS' SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

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

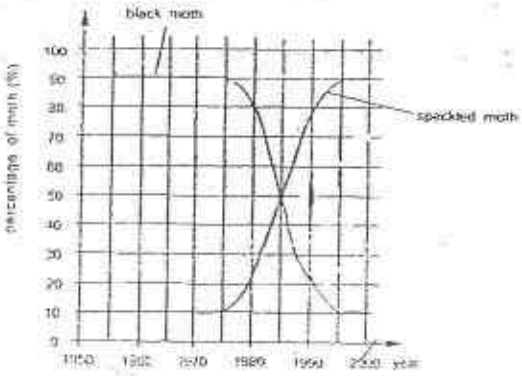
BOOKLET B

Q31a. There will be lesser trees, so less photosynthesis would occur, hence less carbon dioxide is taken in by trees so there would be more carbon dioxide in the surroundings. Carbon dioxide is a greenhouse gas that traps heat , so more heat will be trapped, leading to global warming.
Q31bi) To replace the nutrients / minerals that are used up. Other plants can use the nutrients / minerals. Q31bii) Decomposers feed on decaying matter by turning them into simpler substances before returning the minerals and nutrients to soil. Centipedes are carnivores and do not decay matter.
Q32a. **SEE PICTURE** Q32b. The lime plant is the food producer. Other organisms directly or indirectly depend on the lime plant for food. Without the lime plant, the other organisms will have lesser and lesser food to consume, leading to death eventually , and the population ~~might die out, so the lime plant~~ is important.



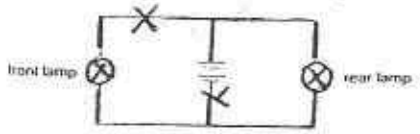
lime plant

Q33a. As it is brightly coloured, it can lure its prey as well as warn predators not to eat them as they are bitter tasting.
Q33B. It can pretend to be a ladybird beetle as it changes its colour to look like a ladybird beetle. Predators avoid eating ladybird beetles as they contain bitter – tasting chemicals so the golden tortoise beetle's predators will avoid eating the golden tortoise beetle as they mistake it for a ladybird beetle, hence less golden tortoise beetle is taken by predator helping it to survive better.
Q34a. Our muscles enable us to move and exercise. When exercising, Our muscles will need more energy. More blood containing oxygen and digested food needs to be pumped to the muscles for respiration to occur, so that the muscles have energy for us to exercise.
Q34b. During exercise, more blood is pumped to the muscles and lesser blood is pumped to the digestive system. Thus, this will reduce / affect the amount of digested food absorbed and transported by the blood **Q35a. SEE PICTURE** Q35b. Year : 1985, percentage of black moths (%) – 22

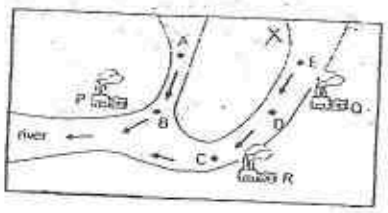


Q36a i) It has no cell wall like animal cells. Q36aii) It fees on other organisms for foods.
Q36b. The Euglena has an opening to take in small particles of food. It also has chloroplast that contains chlorophyll to trap light energy to phtosynthesise.
Q37a. That slide is the control set up. Its result is used to compare with the other slide's result so as to confirm that the difference in number of pollen grains grown is due to the ~~amount of sugar solution.~~
Q37b. When the concentration of sugar solution from 0% to 10% increase, the percentage of pollen grains that started to grow increase. When the concentration of sugar solution from 10% to 25% increases, the percentage of pollen grains that had started to grow decreases.
Q38a. The water had gained heat from the surroundings that evaporated into water vapor.
Q38b. Stronger wind and increase in temperature. Q38C. The fan circulates the air under the fan the most. The circulated air is wind. With stronger wind, Alice's seat will gain heat from her body at a faster rate. When her sweat evaporates, the heat around her is absorbed too, so Alice felt cooler when she sat under the fan.
Q39a. Frictional force, gravitational force. Q39b. She might have given the tin a push instead of just releasing it at the top of the ramp for different tries.
Q40a. D. One of the magnets was floating above the plastic disc. Only magnets repel and the plastic disc is not a magnet so the magnet will not repel the plastic disc, hence the magnet would not float above the plastic discs. Q40b. A is a magnet. Magnets lose their magnetism when heated. A was heated , so its magnetism weakened, causing it to not be able to repel the magnet as much as before, so it moved towards the magnet.
Q41a. SEE PICTURE Q41b. KINETICE ENERGY → ELECTRICAL ENERGY → bulb (useful) light energy → bulb (not useful) heat energy. Q41c. The light bulb will light up brighter.

(a) The circuit diagram for the lamps is drawn below.



Q42a. A. Cup A has a jagged outer layer so when he holds it, less surface area of A is in contact with his hand compared to B, hence heat was conducted from the hot water to his hand at a slower rate for cup A, so he was able to hold cup A longer. Q42b. With only two legs in contact with the hot sand at one time, there is lesser surface are of the lizard's body in contact with the hot sand. So heat from the hot sand will be conducted to the lizard's body at a slower rate, so its body will not gain too much heat.
Q43a. A – opaque Q43a. B – transparent Q43b Answer not available
Q44a. R. Water at D is between Q and R. Water at C is after R. The amount of X per 100ml of water from D and C did not change at all, meaning that R did not discharge X into the river.
Q44b. SEE PICTURE.



THE END

De La Salle School | St Anthony's Primary | SJI Junior | St Stephen's School

CHRISTIAN BROTHERS' SCHOOLS
PRELIMINARY EXAMINATION
2015
STANDARD SCIENCE
PRIMARY 6

BOOKLET A

NAME : _____

CLASS : _____

1 hour 45 minutes

Instructions to Candidates:

- Do not open this booklet until you are told to do so.
- You are allowed 1 hour 45 minutes to answer all the questions.

SECTION	MARKS	
	POSSIBLE	ACTUAL
A	60	
B	40	
TOTAL	100	

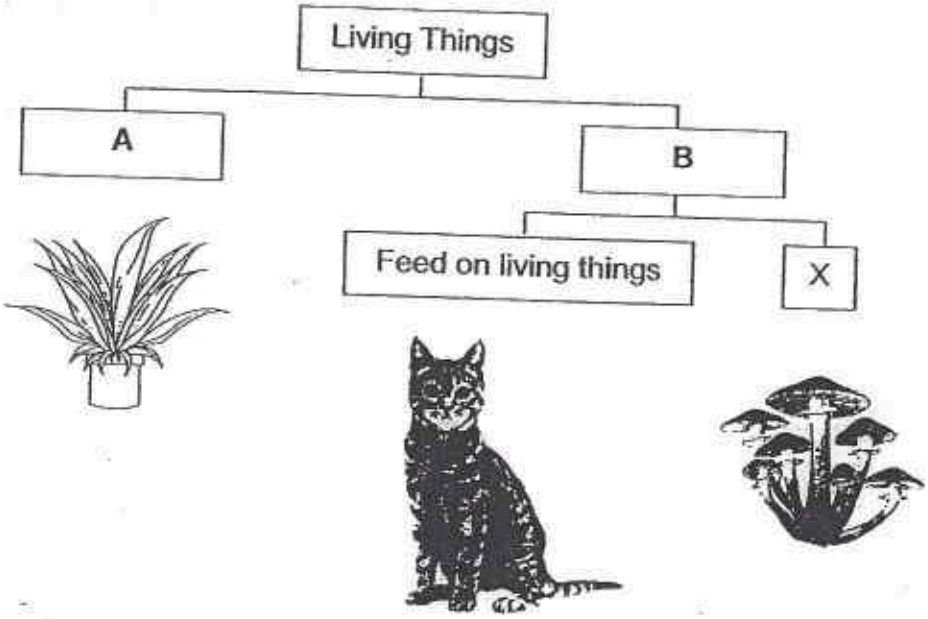
This booklet consists of 27 printed pages.

Parent's Signature : _____

SECTION A: (30 X 2 = 60 MARKS)

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

1. The classification chart below shows how some living things are grouped.



Which one of the following best represents A, B and X?

	A	B	X
(1)	reproduce from seeds	reproduce from spores	do not reproduce from seeds
(2)	need air and water	do not need air and water	absorb nutrients from decaying matter
(3)	make their own food	absorb nutrients from decaying matter	do not make their own food
(4)	have chlorophyll	have no chlorophyll	absorb nutrients from decaying matter

2. Paul conducted an investigation on four flowers of Plant X to find out if a fruit can be produced when certain parts of a flower are removed. Plant X produces flowers which have male and female parts in the same flower.

The table below shows parts which have been removed from each of the four flowers.

	Anthers removed	Stigma removed	Petals removed
Flower A	✓		
Flower B		✓	
Flower C			✓
Flower D	✓		✓

Which groups of flowers are still able to develop into fruits?

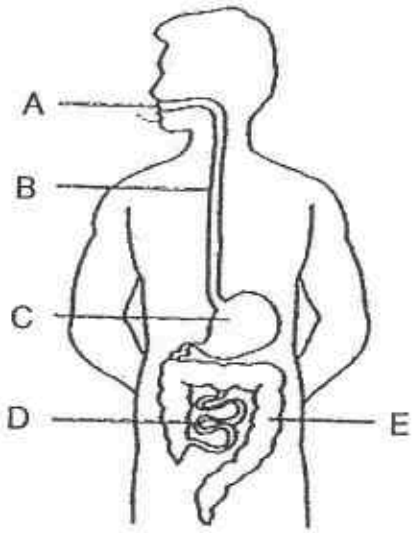
(1) A and D only
(2) B and C only
(3) A, B and D only
(4) A, C and D only

3. Which of the following statements about human reproduction is **FALSE**?

A: Eggs are produced by females.
B: Fertilisation involves a male and a female sex cell.
C: After fertilisation, the egg will develop into a young.
D: During fertilisation, one egg is fertilised by many sperms.

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

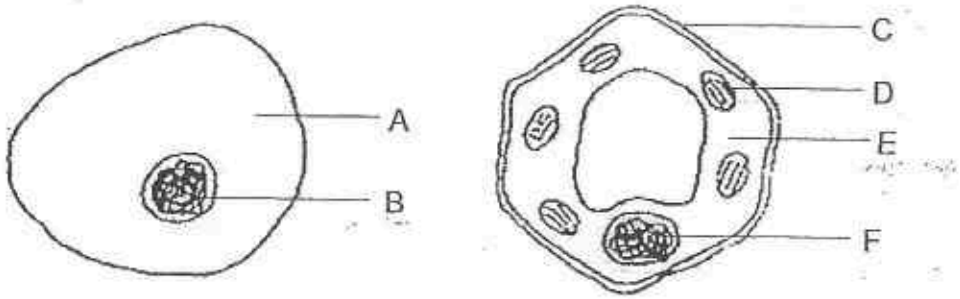
4. The diagram below shows the human digestive system.



Which one of the following correctly identifies where digestion of food takes place?

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

5. Study the diagram of an animal and a plant cell as shown below.



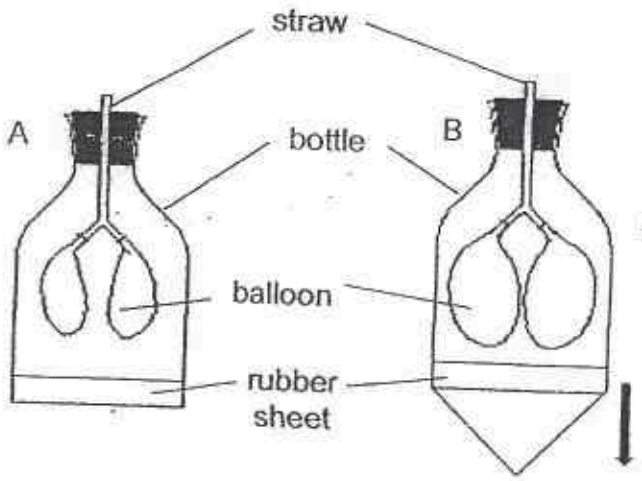
Four children made the following comments.

Will : B and F perform similar functions.
Xinyi: A and E allow substances to enter the cells.
Yani : C provides a regular shape for the plant.
Zen : D is found in plant cells but not in animal cells.

Which of the following children made the correct comment(s)?

(1) Zen only
(2) Yani only
(3) Will and Xinyi only
(4) Will, Yani and Zen only

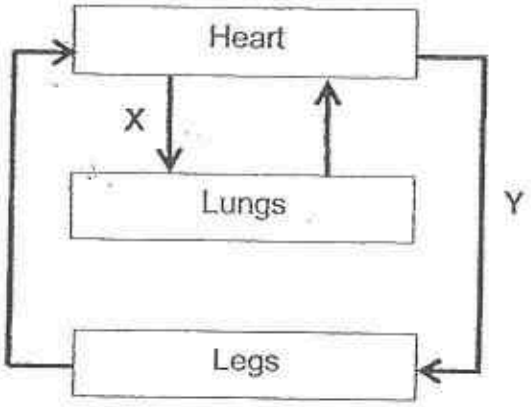
6. A lung model was created as shown in Diagram A. When the rubber sheet was pulled down, an observation was seen as shown in Diagram B.



Which of the following correctly represents the parts of the human respiratory system?

	balloon	bottle	straw
(1)	ribcage	lungs	windpipe
(2)	windpipe	lungs	ribcage
(3)	lungs	windpipe	ribcage
(4)	lungs	ribcage	windpipe

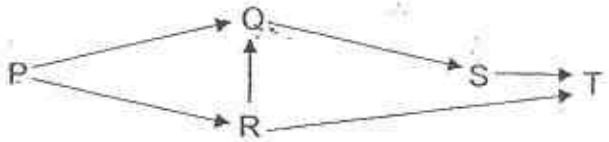
7. The diagram below shows how blood flows in certain parts of the body.



Which one of the following about the blood in blood vessels X and Y is correct?

	X	Y
(1)	rich in carbon dioxide	rich in oxygen
(2)	poor in carbon dioxide	poor in oxygen
(3)	rich in carbon dioxide	poor in oxygen
(4)	poor in carbon dioxide	rich in oxygen

8. Study the diagram of a food web in a community shown below.

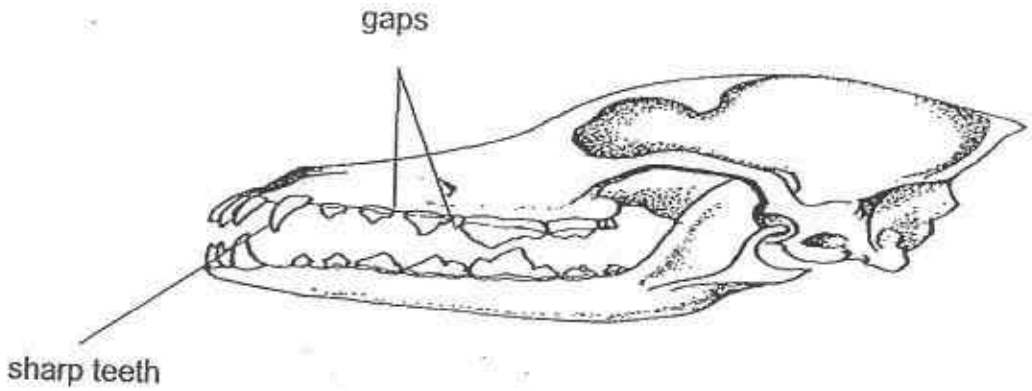


A sudden forest fire took place in the community, causing many trees to be burnt down.

As a result of the fire, which one of the following populations of organisms will decrease the most?

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

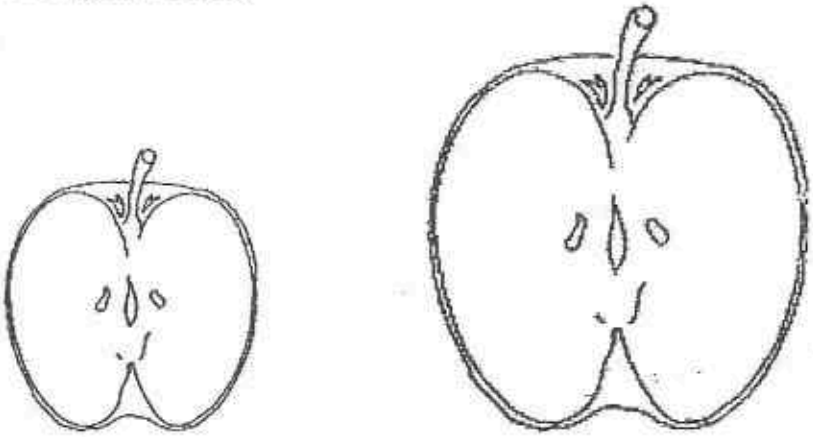
9. Jie Lun found the skull of Animal X, shown below, during a camping trip. He concluded that the skull belonged to an animal that preyed on other animals.



Which one of the following observations helped Jie Lun arrive at this conclusion?

(1) The skull is hard.
(2) The teeth are sharp.
(3) The skull is long and pointed.
(4) There are big gaps between the teeth.

10. Study the diagram below.

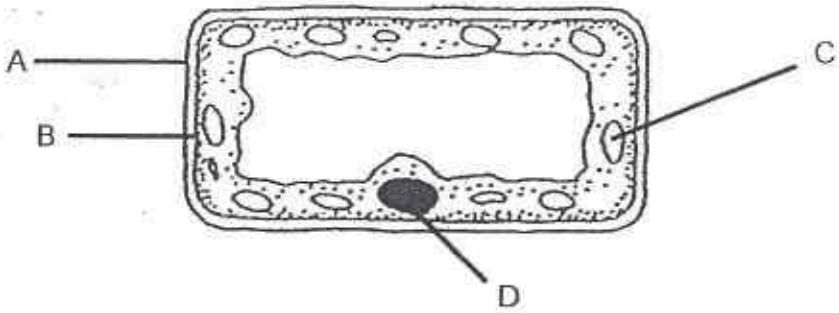


Apple A Apple B

The table below shows some characteristics of apples A and B.

Characteristics	Apple A	Apple B
Size	Small	big
Taste	bland and juicy	sweet
Days to ripe	10	8

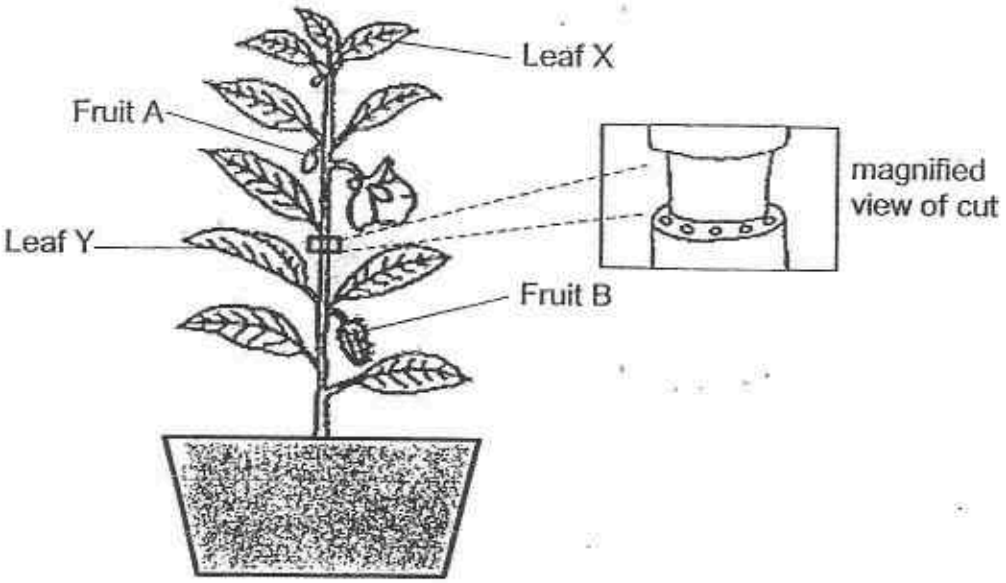
Scientist Lim wanted to create a type of apple that is big, sweet and juicy and takes the shortest days to ripen. She took out a cell from apple A as shown.



Which one of the following cell parts should Scientist Lim make changes to so that she will achieve her aim?

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

11. Khairul removed an outer ring from a plant, as shown below. The food and water carrying tubes have been removed. The plant was watered regularly for two weeks.



He observed that Fruit B grew bigger after one week while Fruit A and Leaf X withered.

Which one of the following statements best explains his observation?

(1) Food is made by Fruit B itself.
(2) Food is absorbed by Fruit B from the soil.
(3) Food is transported from Leaf Y to Fruit B.
(4) Food is transported from Leaf X to Fruit B.

12. A group of students counted the animals and plants in the school garden. The results are shown in the table below.

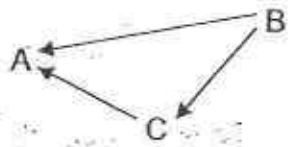
Organism	Earthworm	Hibiscus Plant	Sparrows	Banana Plant
Number	8	18	4	2

Based on the table above, which of the following statement(s) about the plants and animals in the school garden is/are **TRUE**

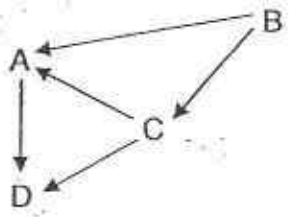
A: There are four populations of animals.
B: There are two populations of plants and animals each.
C: A school garden community is represented in this table.

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

13. Study the food web shown below.



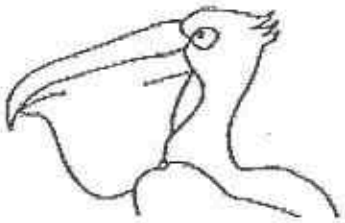
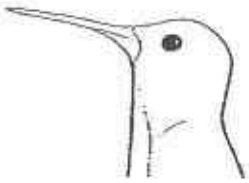
After some time, a large number of D was introduced into the community and the relationships among the organisms changed as shown below.



Which one of the following correctly shows the changes in populations of organisms A, B and C when a large number of D was introduced?

	Organism A	Organism B	Organism C
(1)	decrease	increase	remain the same
(2)	remain the same	increase	increase
(3)	increase	decrease	increase
(4)	decrease	increase	decrease

14. Birds have different types of beaks to help them adapt to their environment.

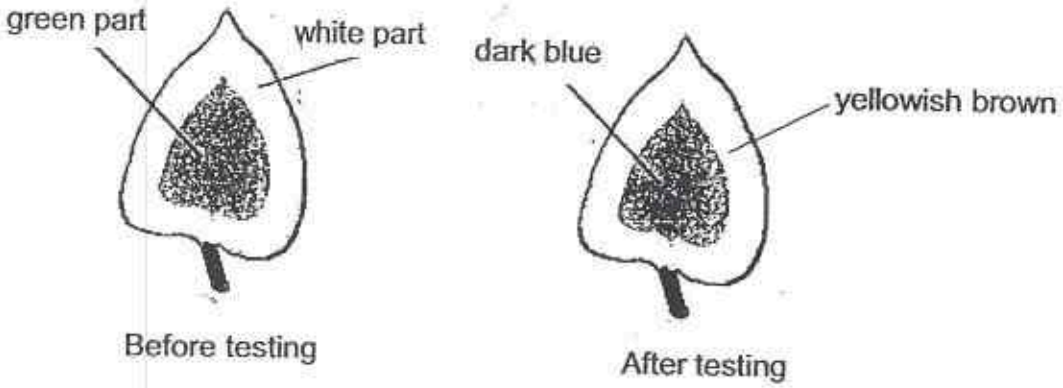
Beak	Example of Bird	Function
A		To scoop fish out of the water
B		To peck the ground for insects
C		To draw nectar from flowers
D		To crush hard seeds and nuts

Which beak(s) has/have been correctly matched to its/their functions?

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

15. Willy carried out an iodine test with a leaf plucked from a plant that had been exposed to sunlight for several hours. Iodine is a yellowish brown liquid that turns dark blue in the presence of starch.

The diagram below shows the results of his test.

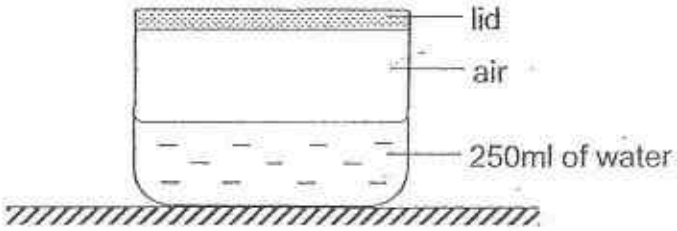


Which of the following conclusions can be made from the test?

W: Starch is present only in the green part of the leaf.
X : Starch is present in both green and white parts of the leaf.
Y : Starch is present in all parts after the leaf is exposed to sunlight.

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

16. Jeevan set up an experiment using a 500ml container. He filled it with 250ml of water as shown below.

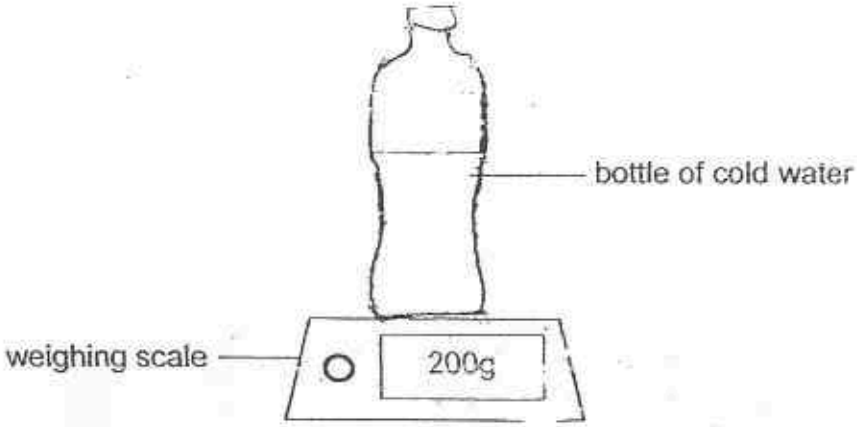


He opened the lid, poured another 100ml of water into the container then closed it with the lid.

Which one of the following correctly represents the total volume of air in the container?

(1) 150ml
(2) 250ml
(3) 350ml
(4) 400ml

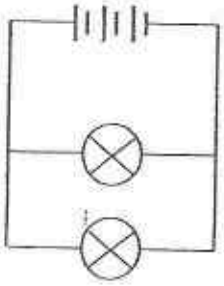
17. A bottle of cold water was taken out of the refrigerator and placed on top of an electronic weighing scale at room temperature. The initial mass of the bottle was 200g as shown below.



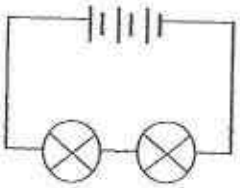
Which of the following correctly shows the changes in the mass recorded and the temperature of the cold water after five minutes?

	Mass	Temperature of the cold water
(1)	less than 200g	decrease
(2)	more than 200g	increase
(3)	200g	increase
(4)	200g	remain the same

18. Fazly set up an experiment using the electric circuits, X and Y as shown below.



Circuit X

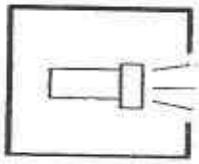


Circuit Y

Which one of the following shows what Fazly wants to find out through this experiment?

✓(1) The effect of arrangement of bulbs on brightness.
(2) The effect of number of bulbs used on brightness.
(3) The effect of arrangement of batteries on brightness.
(4) The effect of number of batteries used on brightness.

19. The set-up below shows light shining on a wooden ball.



torch

wooden ball

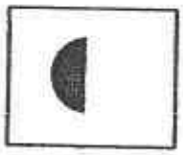
screen

Which one of the following is likely be seen on the screen when the torch is turned on?

(1)

(2)

(3)



(4)

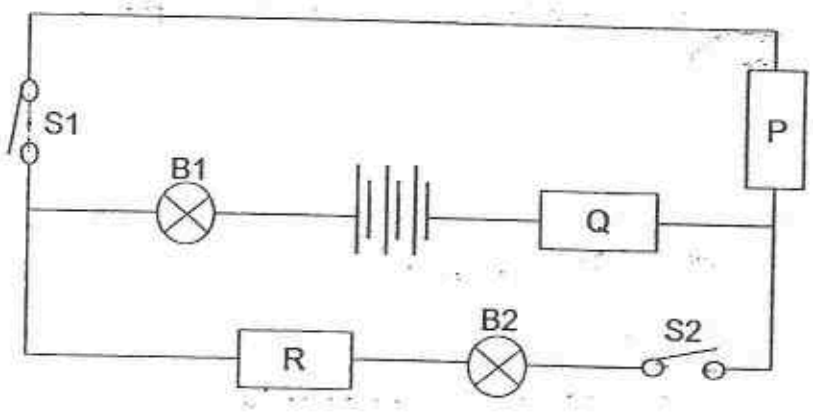
20. The table below shows the freezing points of three substances, A, B and C.

Substance	Freezing Point (°C)
A	7
B	33
C	150

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

(1) A is a solid at 3°C.
(2) A and B are both liquids at 29°C.
(3) B and C are both solids at 160°C.
(4) C can be a liquid or a gas at 150°C.

21. Wen Hao carried out an experiment as shown below to find out the electrical conductivity of materials P, Q and R.



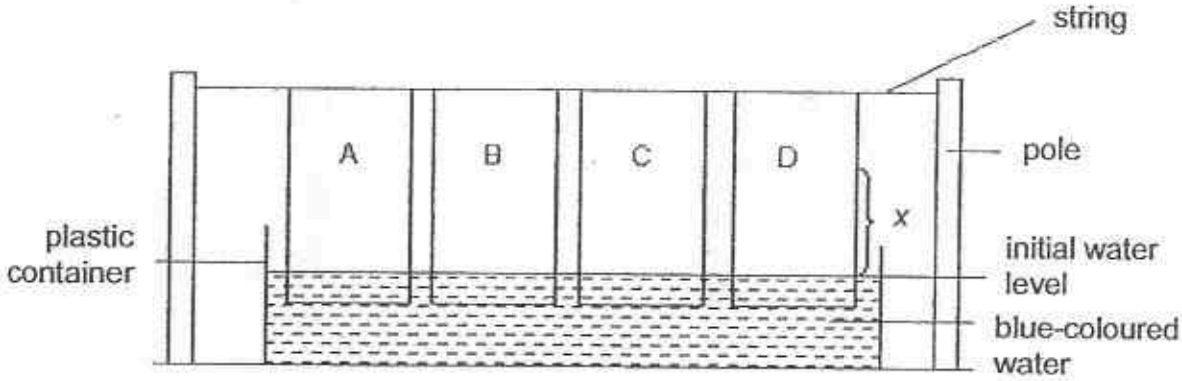
The table below shows the results of his experiment.

Switch that is closed	Bulb that lights up
S1	None
S2	B1 and B2
S1 and S2	B1 and B2

Which of the following correctly describes materials P, Q and R?

	Material P	Material Q	Material R
(1)	conductor	conductor	non-conductor
(2)	conductor	non-conductor	conductor
(3)	non-conductor	conductor	conductor
(4)	non-conductor	non-conductor	non-conductor

22. Jane conducted an experiment, as shown below, to find out which material, A, B, C or D, is the most absorbent to be made into a towel. The materials used in the experiment were of the same shape and same size.



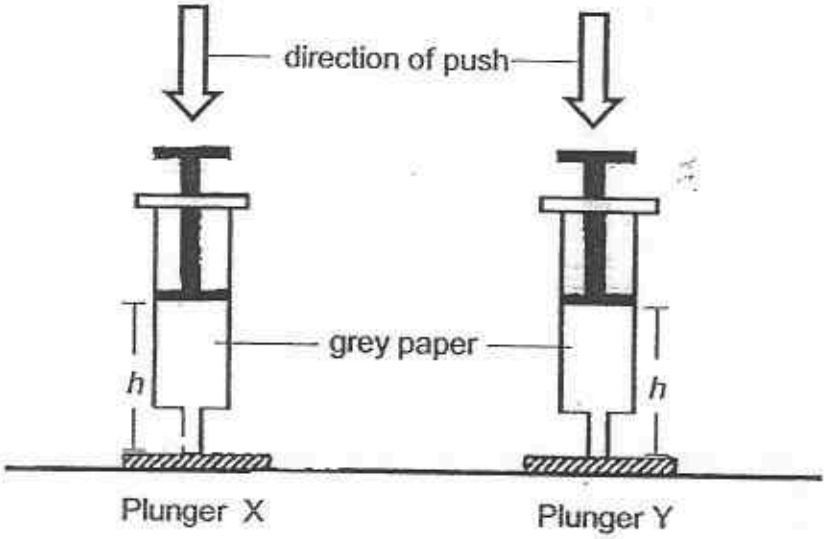
After 10 minutes, Jane measured the distance, *x*, which the water had travelled through each material. She recorded the results in the table below.

Material	Distance of water travelled, *x* (cm)
A	10
B	12
C	6
D	8

Which is the most absorbent material to be made into a towel?

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

23. Ally carried out an experiment, as shown below, using plungers X and Y wrapped in grey paper. Plungers X and Y contained substances at different states.



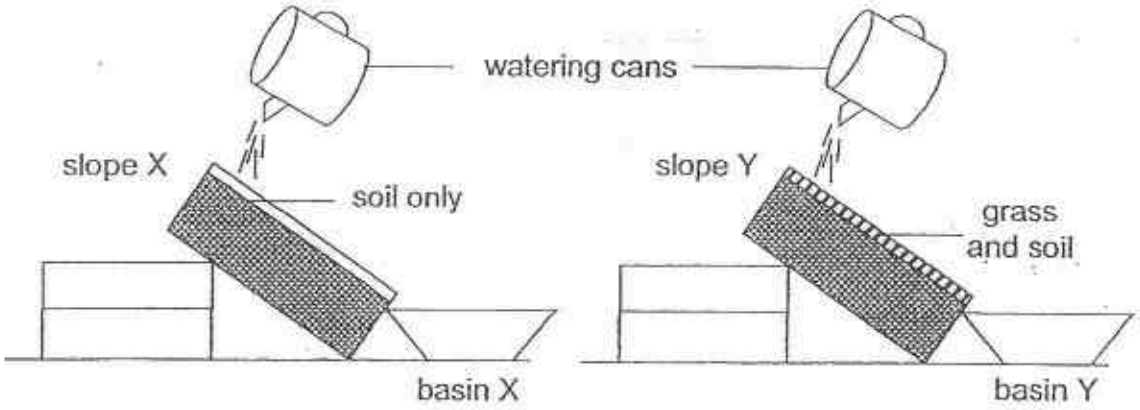
She pushed both plungers downwards and recorded the heights of *h* in the table below. She repeated her experiment three times.

	Height of *h* (cm)		
	Initial	**Plunger X**	**Plunger Y**
1st try	8	5	8
2nd try	8	4	8
3rd try	8	4	8

Which one of the following correctly describes the state of the substance contained in Plunger X and Y?

	State of substance in Plunger X	**State of substance in Plunger Y**
(1)	Gas	Gas
(2)	Solid	Solid
(3)	Gas	Liquid
(4)	Liquid	Solid

24. Rita set up an experiment as shown below to find out the effects of deforestation.



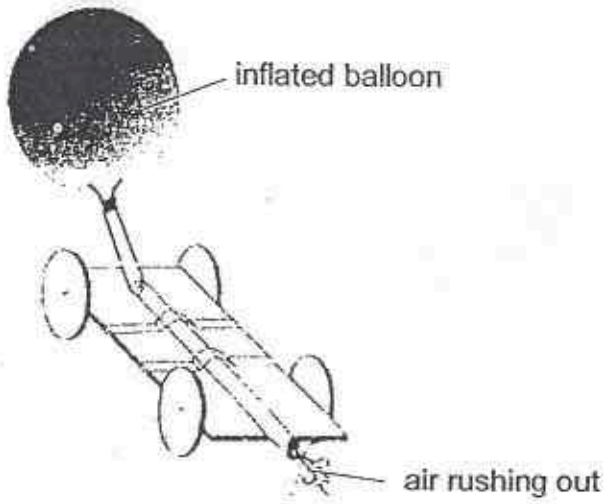
Rita then poured 500ml of water over both set-ups and made some observations of both basins X and Y.

Which of the following observations could Rita have made?

A: The water collected in basin Y would be the highest.
B: Highest mass of soil will be found in the water collected in basin X.
C: Both basins have the same amount of soil and water collected.

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

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



When she released the balloon, air rushed out of the balloon, producing a force. However, the car did not move forward as Indrani had expected.

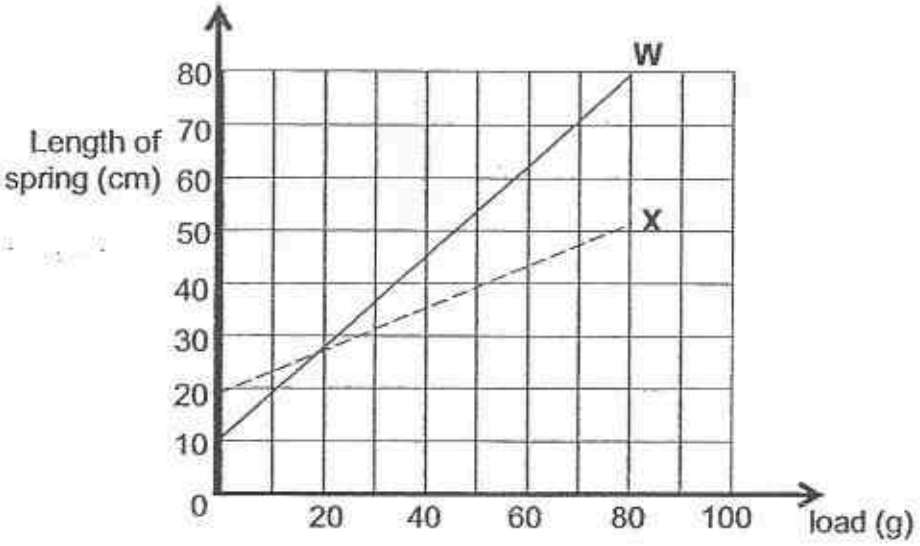
Which of the following explains Indrani's observation?

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

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

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

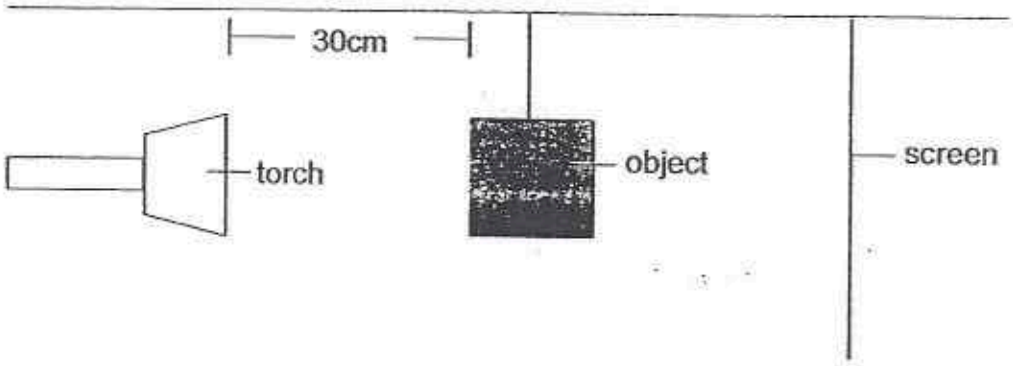
26. Nisha conducted an experiment on Springs W and X. She hung various loads one at a time and recorded the length of the spring. She plotted her results in the graph below.



Which one of the following correctly represents the conclusion that Nisha can draw from her experiment?

	Spring with shorter length at start of experiment	Spring that can be stretched more with the same load
(1)	W	W
(2)	X	W
(3)	W	X
(4)	X	X

27. Aryan set up an experiment to find out how the distance between a torch and an object will affect the height of the shadow formed.

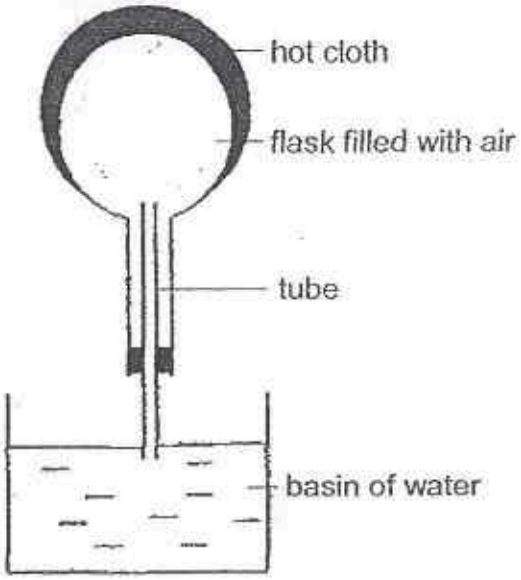


When he placed the torch at a distance of 30cm from the object, the height of the shadow formed by the object is 8cm.

Based on Aryan's aim, which set of data is possible?

	Distance between torch and object (cm)	Height of shadow formed (cm)
(1)	5	8
(2)	50	30
(3)	40	10
(4)	12	26

28. Study the set-up below.

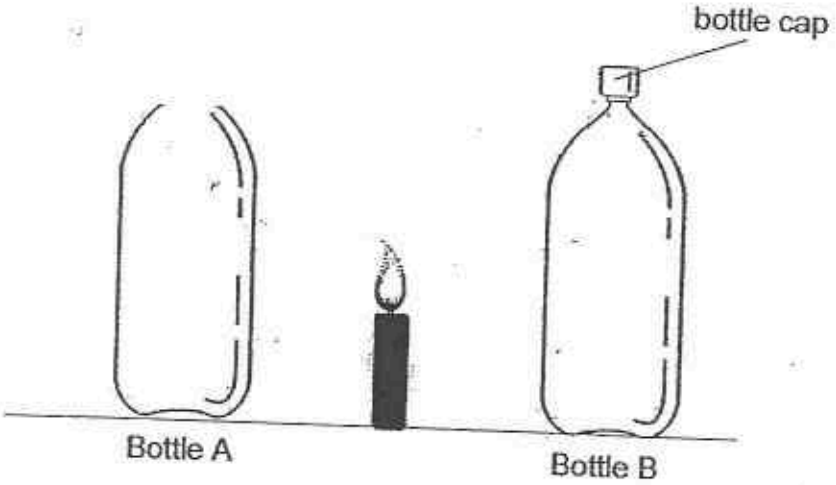


Based on the above set-up, which of the following statement is true?

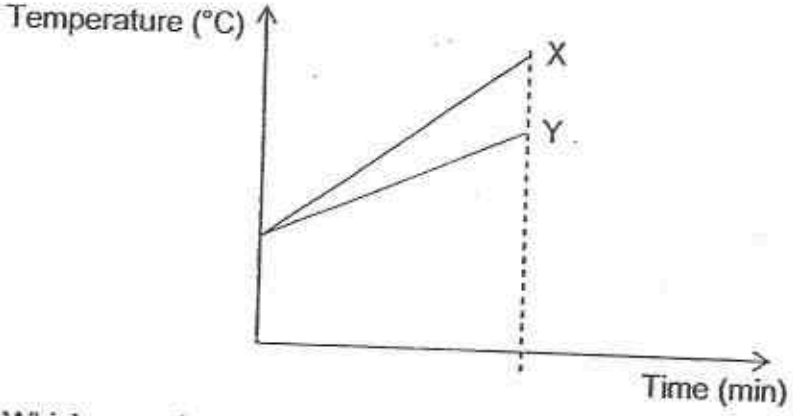
P: Air in the flask gained heat from the cloth.
Q: Water gains heat from the air in the flask.
R: Air bubbles are seen in the water.
S: Hot cloth gains heat from the surroundings.

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

29. The diagram below shows a candle flame placed at the same distance from two identical clear glass bottles A and B. Bottle A is left open while bottle B is covered with a bottle cap.



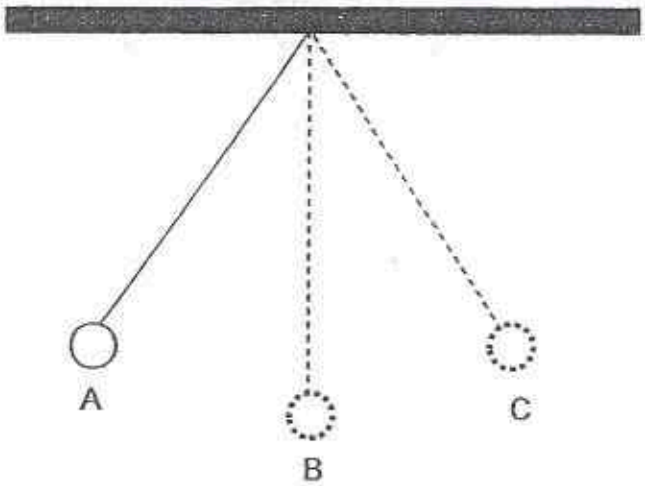
The temperature change in both containers is shown in the graph below.



Which one of the following shows correctly the graph and the reason for the bottle A?

	Graph	Reason
(1)	X	more heat is trapped
(2)	Y	more heat is trapped
(3)	X	less heat is trapped
(4)	Y	less heat is trapped

30. The diagram below shows a pendulum bob hanging from a string



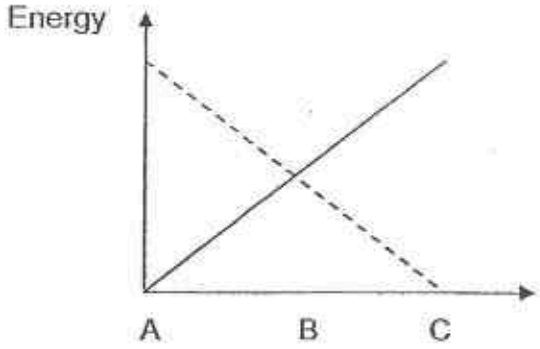
Which one of the following grapns correctly shows how the gravitational potential energy and kinetic energy of the pendulum bob change as it moves from A to C?

Key

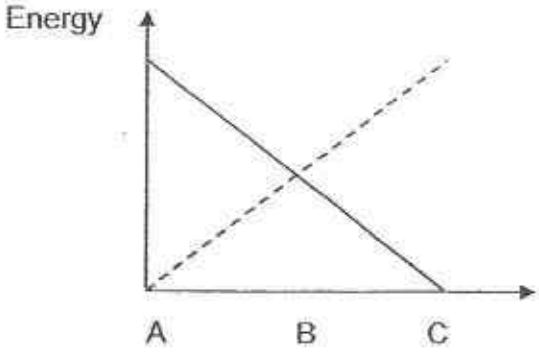
——— Gravitational potential energy

--------- Kinetic Energy

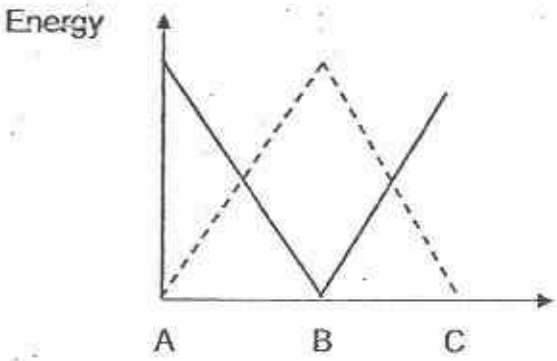
(1)



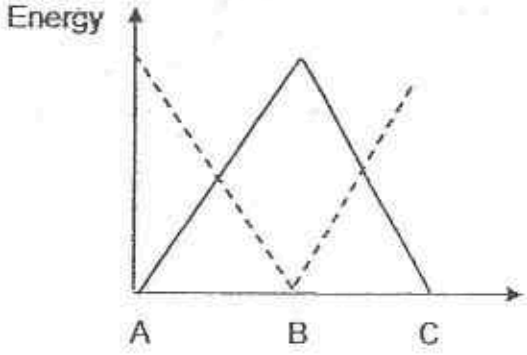
(2)



(3)



(4)



End of Booklet A

De La Salle School | St Anthony's Primary | SJI Junior | St Stephen's School

CHRISTIAN BROTHERS' SCHOOL
PRELIMINARY EXAMINATION
2015
STANDARD SCIENCE
PRIMARY 6

BOOKLET B

NAME : _____

CLASS : _____

1 hour 45 minutes

Instructions to Candidates:

- Do not open this booklet until you are told to do so.
- You are allowed 1 hour 45 minutes to answer all the questions.

SECTION	MARKS	
	POSSIBLE	ACTUAL
B	40	

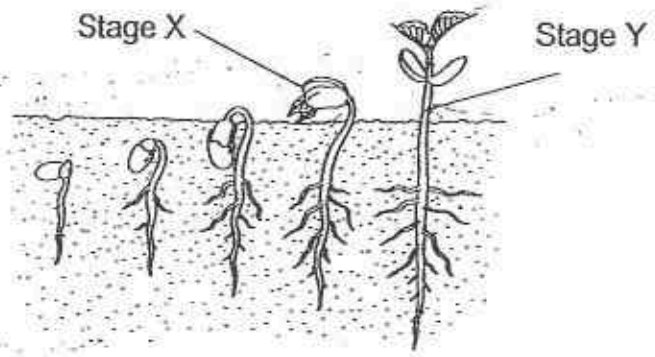
This booklet consists of 15 printed pages.

Parent's Signature : _____

SECTION B: 40 MARKS

Read questions 31 to 44 carefully and write your answers in the spaces provided.

31. The diagram below shows the life cycle of a plant.

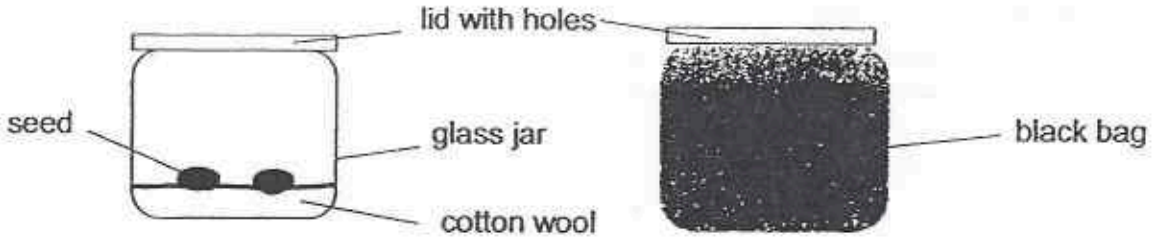


(a) State one difference between the way the plant obtains food in Stage X and Stage Y. [1m]

_____

_____

John put some wet cotton wool into two glass jars. He placed some seeds on the cotton wool in each jar. He covered one of the glass jars with a black bag as shown below.



(b) What was John trying to find out? [1m]

_____

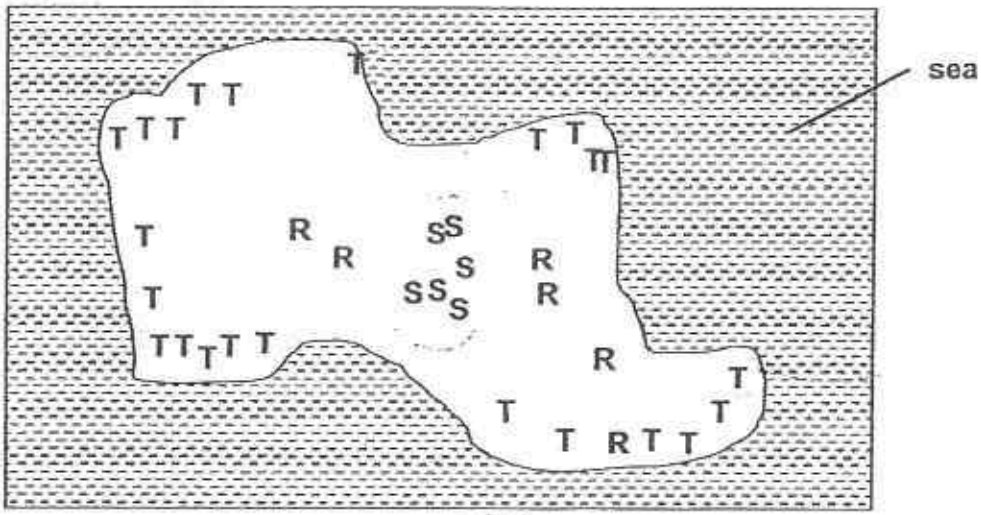
_____

(c) State one other variable that John must keep the same in his experiment. [1m]

_____

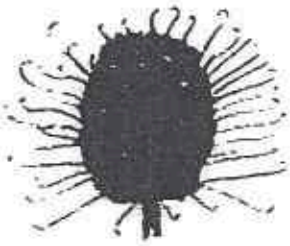
2

32. The diagram below shows the map of an island with different kinds of plants, R, S and T. Some animals also live on the island.



(a) From the diagram above, which type of plant, R, S or T is most likely to be dispersed by splitting? Explain why. [1m]

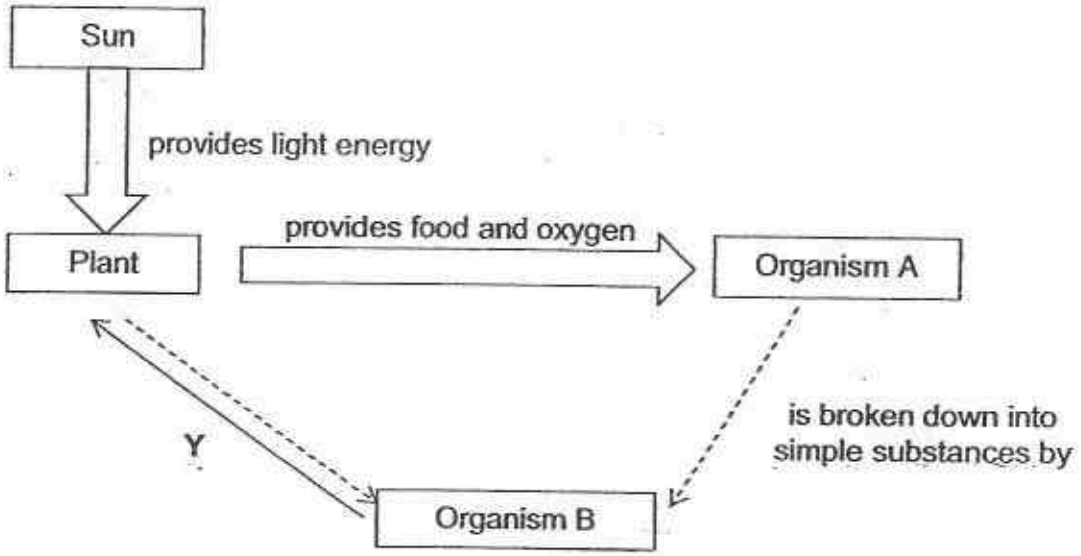
The picture below shows a magnified view of a fruit.



Magnified view of the fruit

(b) Which type of plant, R, S or T is this fruit from? Explain how it is dispersed on the island. [2m]

33. Siti drew the following diagram below which shows the transfer of energy from one organism to the next.



Siti predicted that organism B could be an earthworm.

(a) Explain why Siti's prediction is **INCORRECT**. [1m]

_____

_____

(b) Arrow Y shows the relationship between organism B and plants.
State **two** ways in which plants benefit from this relationship. [2m]

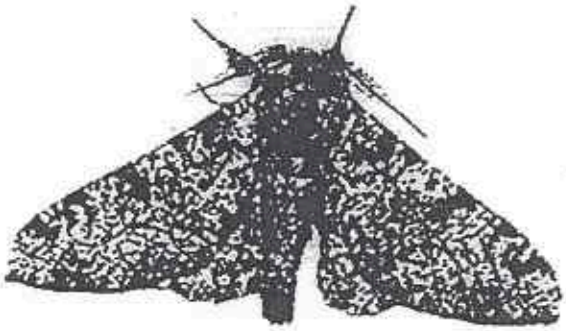
Benefit 1: _____

_____

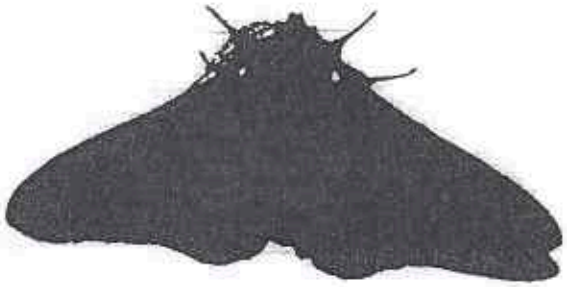
Benefit 1: _____

_____

34. Li Sheng found two different types of moths, X and Y, when he was walking in the forest. Moth X is light-coloured and Moth Y is dark-coloured. The moths are food for predators like birds.

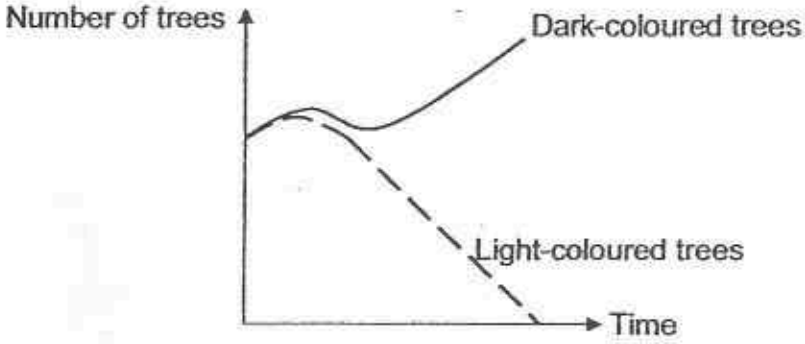


X
Light-coloured Moth



Y
Dark-coloured Moth

In the same habitat, there are trees with light-coloured trunks and trees with dark-coloured trunks. Over a period of time, the populations of the trees change as shown below in the graph below.



Which moth, X or Y would more likely to survive in this new condition? Explain your answer. [2m]

_____

_____

35. The table below compares the difference in the amount of each type of gas between inhaled and exhaled air.

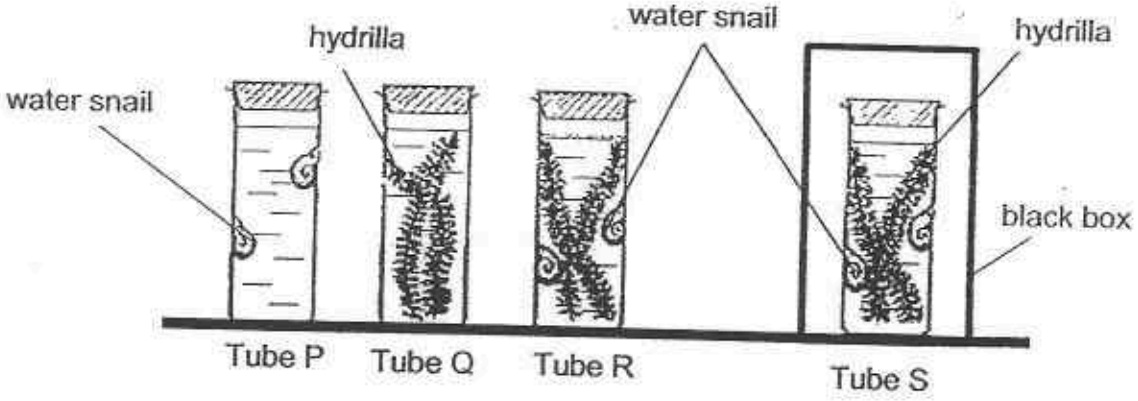
Gas	Inhaled air	Exhaled air
A	less	more
B	less	more
C	remain the same	remain the same
D	more	less

(a) Fill in the blanks below with the correct gas A, B, C or D. [1m]

Nitrogen : _____

Oxygen : _____

The diagram below shows four glass tubes, P, Q, R and S, each containing different organisms.



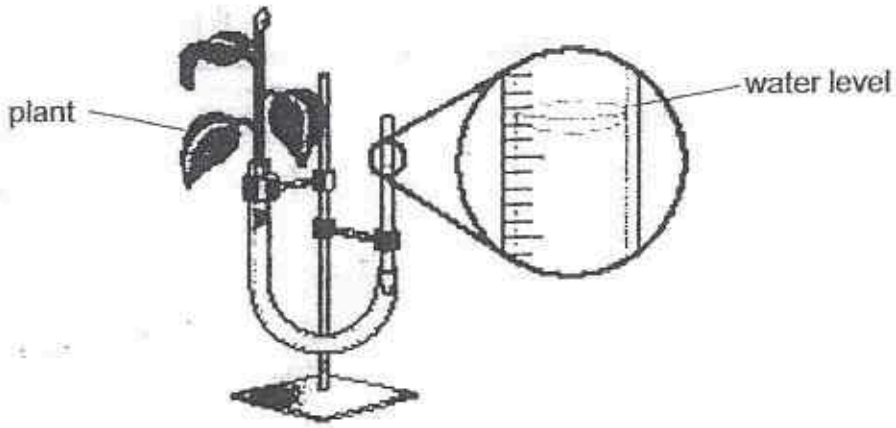
The four tubes were sealed and kept in a well-lit room for six hours.

(b) In which tube would there be the highest increase in carbon dioxide after six hours? Explain your answer. [2m]

_____

_____

36. Janet used the set-up below to measure the rate at which plants take in water.

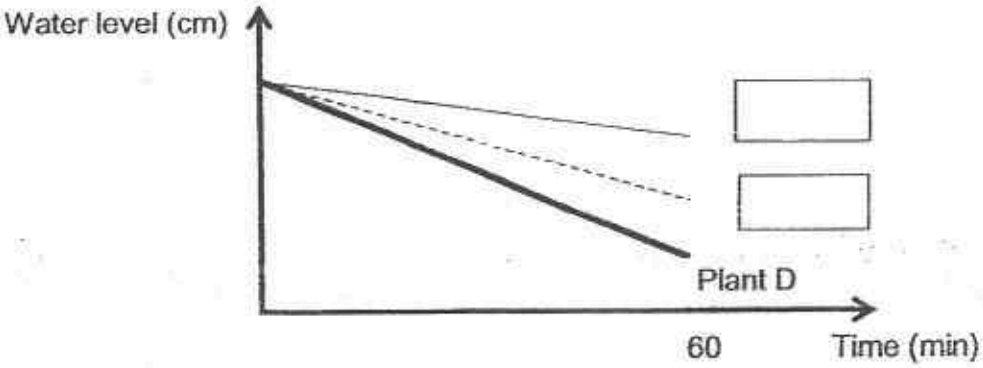


She used four identical plants for her experiment. Some transparent oil was applied on some of the leaf surfaces as shown below. She placed all the set-ups under sunlight.

Plant	Surface(s) covered with oil
A	Top only
B	Bottom only
C	Both top and bottom
D	None

The graph below shows the change in water level for the four plants, A, B, C and D over 60 minutes.

(a) Fill in the boxes with "Plant A" and "Plant B" to label the line graphs that show the correct water levels. [1m]

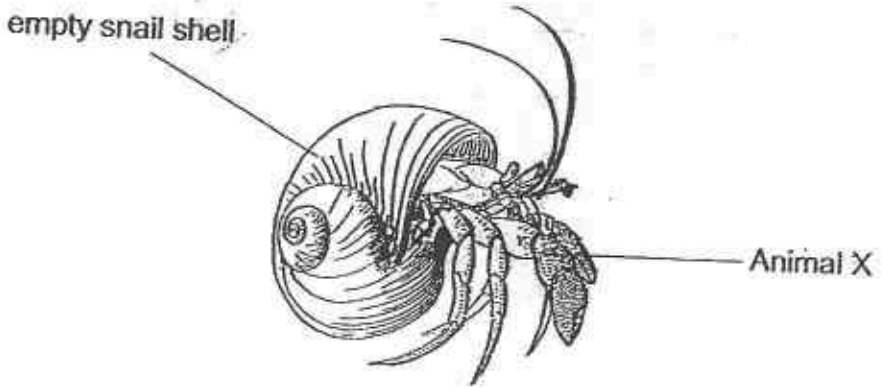


(b) Janet observed that plant C withered after a few days. Explain why. [1m]

_____

_____

37. Animal X can be found in the seas. It looks for empty shells to live in as shown in the diagram above.

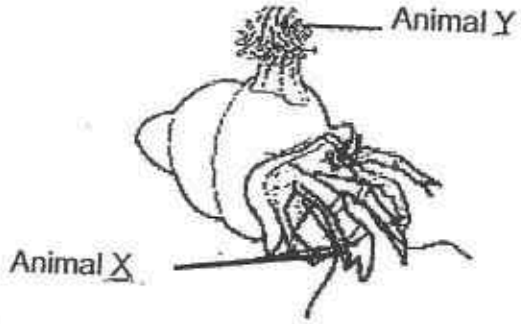


(a) Based on the information given, explain how living in empty snail shells helps Animal X survive. [1m]

_____

_____

The diagram below shows Animal Y. It usually attaches itself to the shells of Animal X.

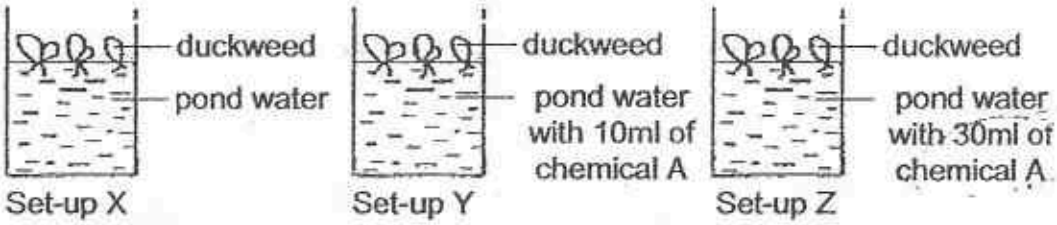


(b) Given that animal Y does not move freely from one place another, state how Animal X enables Animal Y survive in its environment. [1m]

_____

_____

38. Aini set up an experiment, as shown below, to find out how the amount of chemical A will affect the growth of duckweeds.



She placed the set-ups under the sun for a week and recorded her results in the table below.

	Initial no. of duckweeds	Final no. of duckweeds
Set-up X	20	20
Set-up Y	20	15
Set-up Z	20	4

(a) Based on Aini's results, state the relationship between the amount of chemical A present in pond water and the population of the duckweeds. [1m]

_____

_____

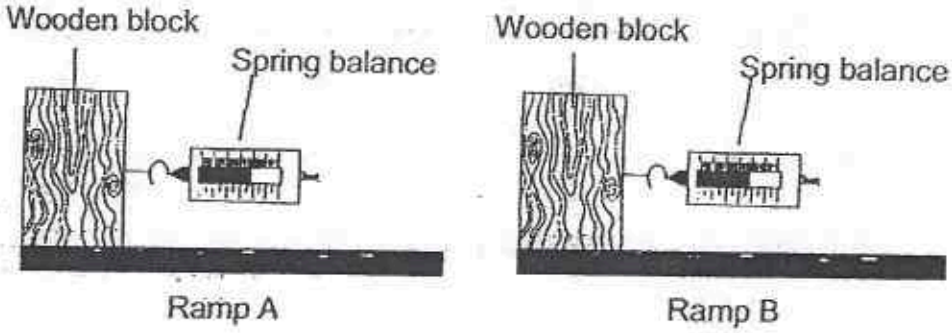
(b) What will happen to the population of aquatic animals in the sea when there is a large spillage of chemical A? Explain why. [2m]

_____

_____

3

39. Charles set up an experiment as shown below. He used a spring balance to pull two identical wooden blocks across ramp A and ramp B.

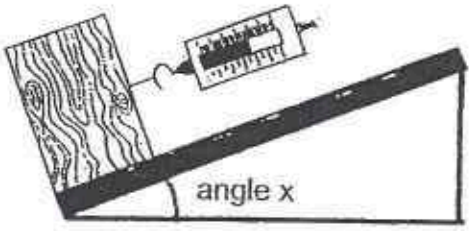


(a) Charles noticed that more force was required to move the wooden block across ramp A than ramp B. Given a reason for his observation. [1m]

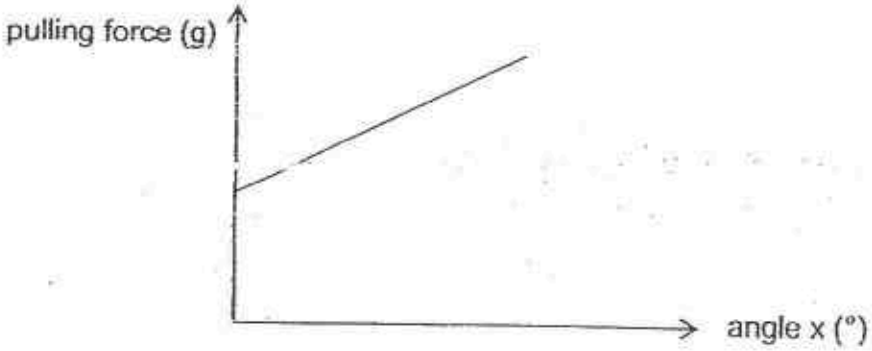
_____

_____

Charles repeated his experiment using ramp A as shown below. He measured the force needed to pull the wooden block using different angle x.



The graph below shows his results.

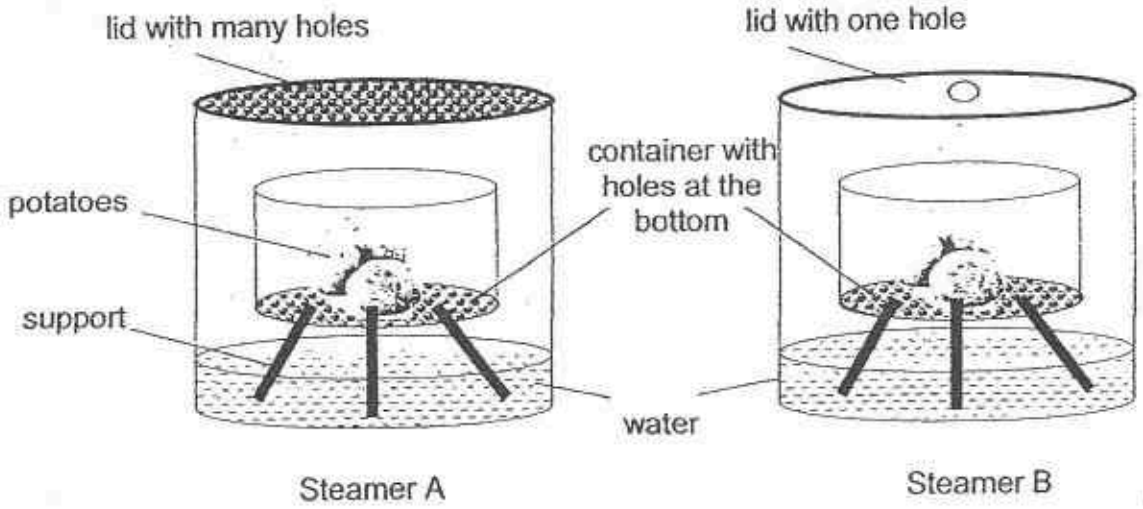


(b) State how the pulling force changes with angle x. [1m]

_____

_____

40. Fiona wanted to cook some potatoes using steamer A and B as shown below.



She placed both steamers over a heat source.

(a) Fiona observed that she needed to top-up the water in one of the steamers after some time.

Which steamer, A or B, did she add more water to? Give a reason for your answer. [2m]

_____

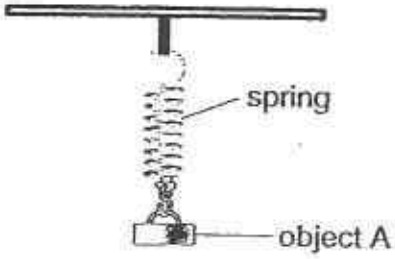
_____

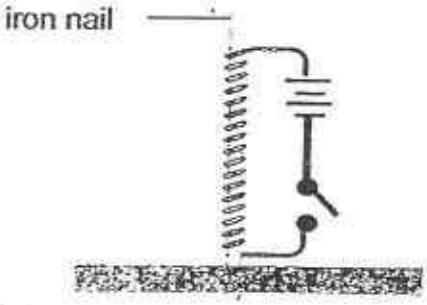
(b) Suggest one thing that Fiona can do to ensure that the potatoes steam faster in both steamers, without changing any part of the steamer. [1m]

_____

_____

41. Su Ying hung object A on a spring as shown below. She placed an electromagnet below the object and recorded the length of the spring. She repeated the experiment with objects B and C.





The table below shows the length of the spring when the switch was closed each time.

Object	Length of spring when switch was opened (cm)	Length of spring when switch was closed (cm)
A	10	8
B	10	10
C	10	14

(a) Which object is definitely a magnet? Give a reason for your answer. [2m]

_____

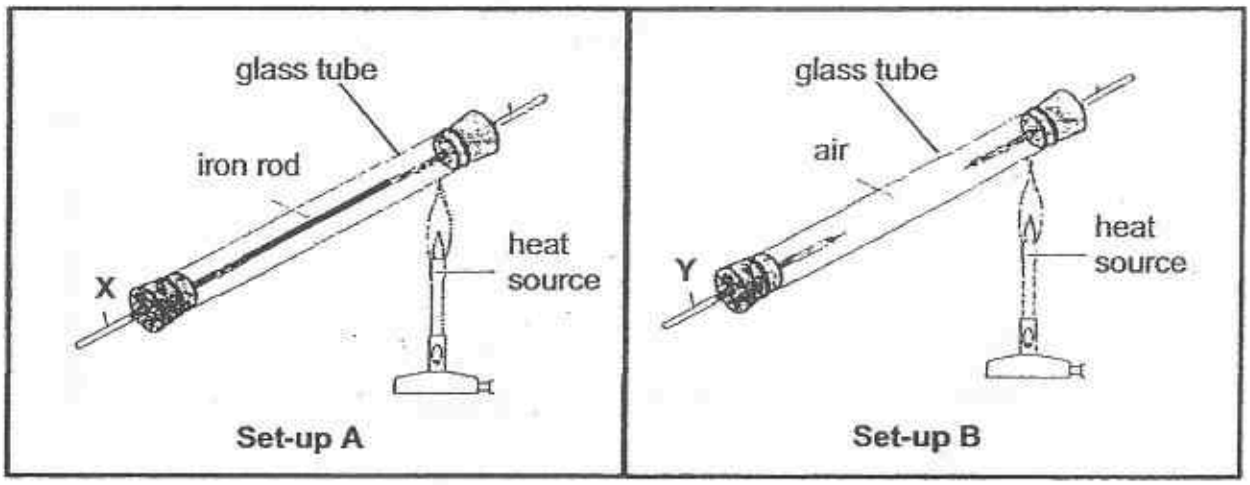
_____

(b) What can you conclude about the property of the material used to make object C? Give a reason for your answer. [2m]

_____

_____

42. Jamal set up an experiment as shown below.



He heated one side of the glass tubes in set-ups A and B for 15 minutes. He recorded the temperatures at points X and Y over 15 minutes as shown in the table.

Time (min)	Temperature at X (°C)	Temperature at Y (°C)
0	25	25
5	40	35
10	60	45
15	80	55

(a) Based on his results, what can you conclude about the heat conductivity of an iron rod and air? Give a reason for your answer. [2m]

_____

_____

Birds are often seen with their feathers fluffed up during winter months as shown in the pictures below.

sparrow in warm weather

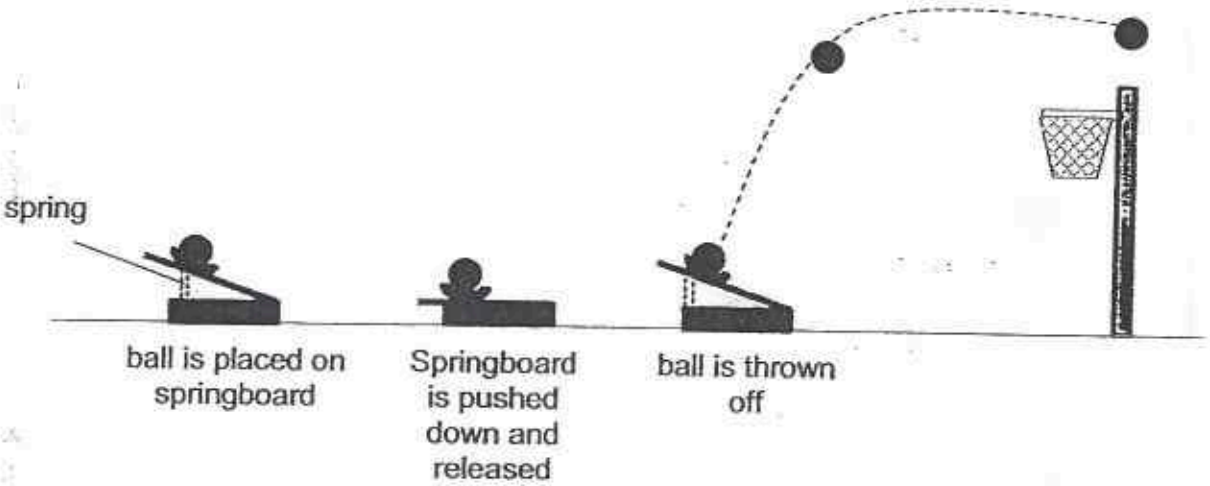
sparrow in cold weather

(b) Explain how fluffing up their feathers help to keep the birds warm during the cold weather. [2m]

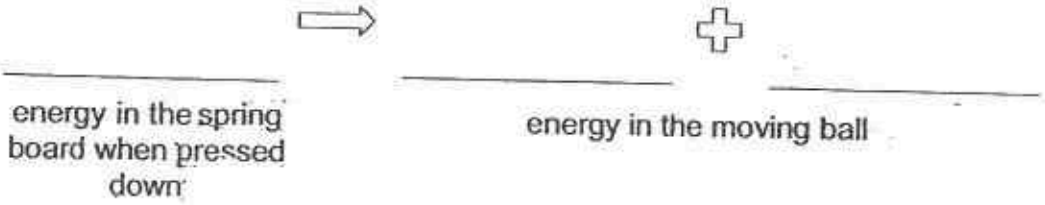
_____

_____

43. Sunita was playing a game of Mini Shoot Basket with her brother. The diagram below shows how the game is played.



(a) Complete the energy conversion below when the springboard was pressed and released. [2m]



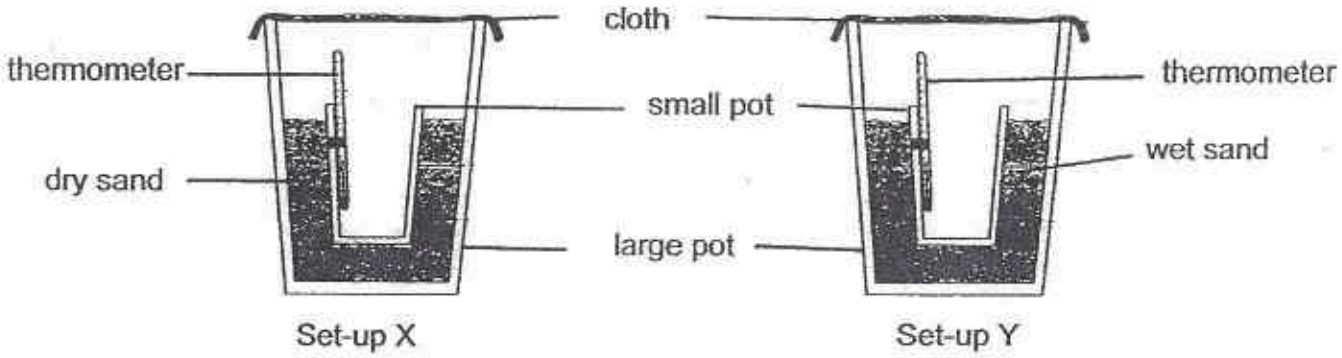
(b) Sunita observed that the ball always flew over the basket but did not land in the hoop when she pushed the springboard down and released it.

Suggest one way in which Sunita can ensure that the ball will land in the basket. [1m]

_____

_____

44. Rahim set up the experiment as shown below.



He placed the set-ups in a dry place and recorded the temperature of the air inside the small pot for 20 minutes. The table below shows his results.

Time (min)	Set-up X (°C)	Set-up Y (°C)
0	30	30
20	30	22

(a) Rahim observed that the cloth placed over the large pot in set-up Y had become wet at the end 20 minutes. Give a reason for his observation. [2m]

_____

_____

(b) Explain why the temperature of air in set-up Y decreased over time. [1m]

_____

_____

3

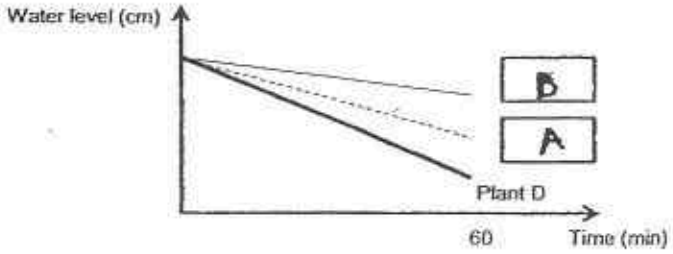
End of Paper

EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : CHRISTIAN BROTHERS' SCHOOLS
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
4	4	2	1	4	4	1	2	2	4
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
3	2	4	1	1	1	2	1	4	1
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
3	2	3	2	2	1	4	3	4	3

Q31a. At stage X, the seeding depends on its leaves to provide food while at stage Y it can make its own food by photosynthesizing. Q31b. If light is needed for germination. Q31c. Temperature of surrounding.
Q32 a) S. It is very close to its parent plant.
Q32 b) R. It has hook-like structures that will hook or cling onto the fur of animals living on the island.
Q33a. B only breaks down dead organisms into simpler substances by decomposition which cannot be carried out by earthworms. Earthworms do not break down dead matter into simpler substances, as they are not decomposers.
Q33b. Benefit 1 : The simple substances can be used as fertilizer.
Q33b. Benefit 2 : X releases carbon dioxide or water which is used by plants for photosynthesis.
Q34. Y. Y will have more places to camouflage themselves so they will not be easily spotted
Q35a. Nitrogen : C Oxygen : D
Q35b. S. Both the snail and hydrilla will respire and give out carbon dioxide but the photosynthesis by the plant due to the absence of light.
Q36a. See Picture Q36. Plant C cannot photosynthesize as no gaseous exchange could take place.



Q37a. The shell protects itself from predators. Q37b. Y will have access to more food as it is carried from one place to another by X.
Q38a. The larger the amount of chemical A present in pond water, the smaller the population of the duckweeds. Q38b. They will die. The aquatic animals may die when chemical A is consumed
Q39a. Surface of A is rougher than B. Q39b. When angle X increase, the pulling force increase.
Q40a. A. More water vapour escaped in A than in B as there were more holes.
Q40b. Increase the heat source.
Q41a. A. The spring became shorter as A was repelled by the electro-magnet.
Q41b. C is made of a magnetic material as it was attracted by the electro-magnet.
Q42a. Iron rod is a better heat conductor than air. Heat flowed faster through the iron rod than the air.
Q42b. Air trapped in the fluffed up feathers helps to slow down heat loss from the bird's body to the surrounding.
Q43a. Elastic potential → Kinetic + Gravitational potential
Q43b. Do not push springboard too low.
Q44a. Water in the sand evaporated and turned into water vapour. The water vapour rose and condensed on the surface of the cloth to form water droplets.
Q44b: As the water in the sand evaporated, it gained heat from the surrounding air.

THE END

HENRY PARK PRIMARY SCHOOL

2015 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.

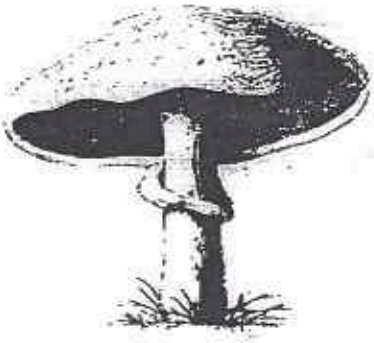
READ AND FOLLOW INSTRUCTIONS CAREFULLY.

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 diagram below shows Organism Y.



Organism Y

Which of the following statements about Organism Y are correct?

A: It reproduces from spores.
B: It is a non-flowering plant.
C: It does not make its own food.

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

2. Paul observed some mould growing on a slice of bread.

Which of the following must be present for the mould to grow?

A: Light
B: Water
C: Warmth
D: Oxygen

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

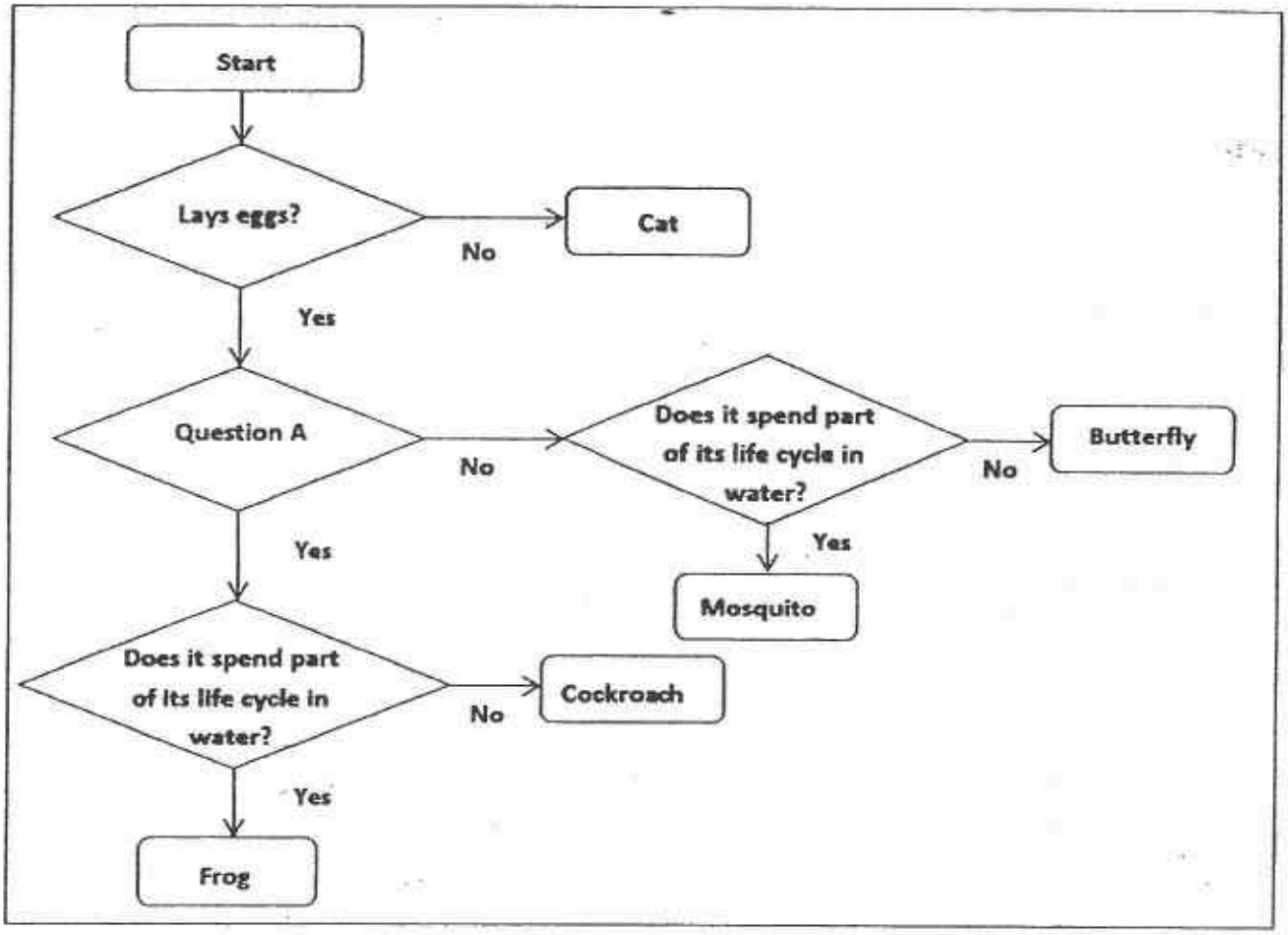
3. Study the table below carefully.

	Animal	Plant
Male reproductive part	Testis	N
Female reproductive part	M	Ovule

What are **M** and **N**?

	M	N
1)	Stigma	Anther
2)	Ovule	Ovary
3)	Ovary	Anther
4)	Stigma	Ovary

4. Study the flow chart below.



What could Question A be?

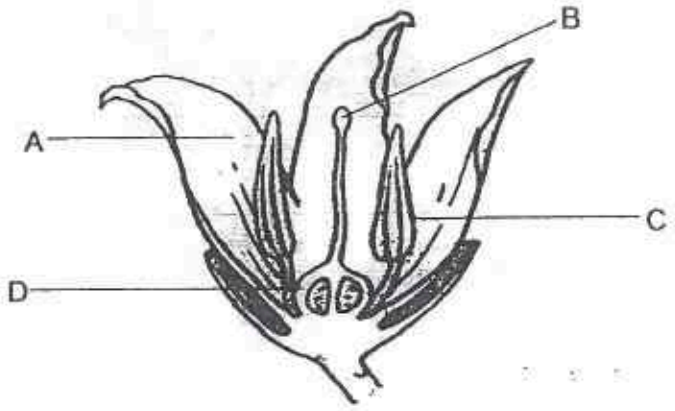
(1) Has four stages in its life cycle?
(2) Are the eggs laid on land?
(3) Has three stages in its life cycle?
(4) Does the young have wings?

5. Which of the following characteristics are **common** among mammals?

A: They have hair.
B: They have wings.
C: They reproduce by laying eggs.
D: They feed their young with milk.

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

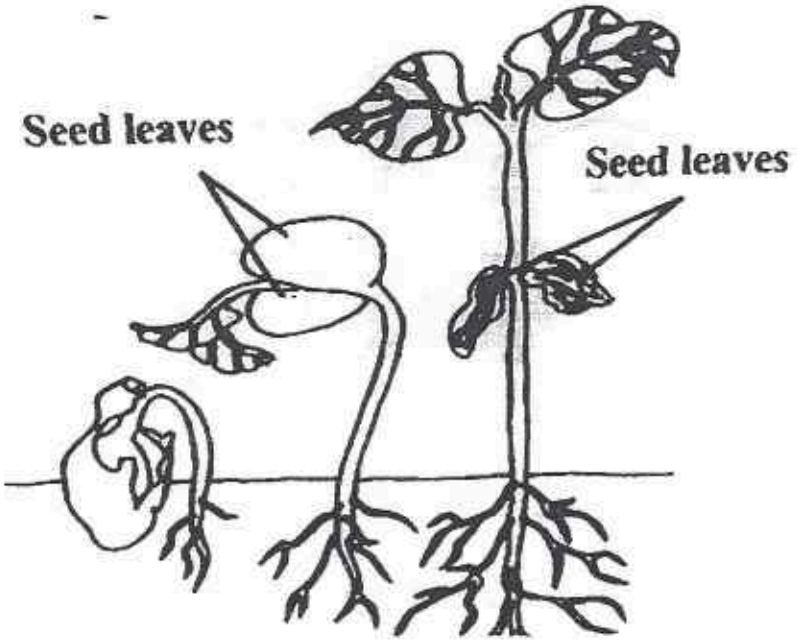
6. The diagram below shows parts of a flower.



Which of the following parts and functions are **incorrectly** matched?

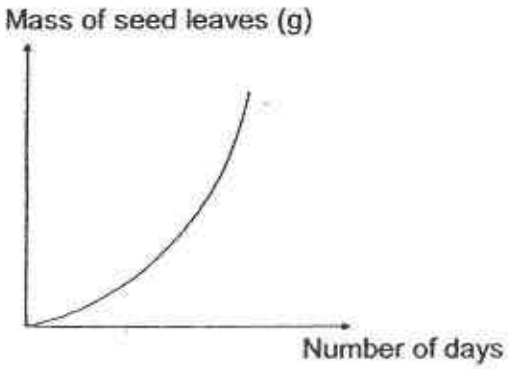
	Part	Function
(1)	A	Attracts insects
(2)	B	Produces ovules
(3)	C	Produces pollen grains
(4)	D	Develops into a fruit

7. The diagram below shows the growth of a seedling over a number of days.

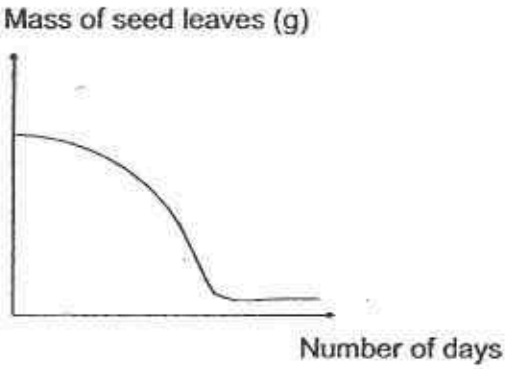


Which one of the following graphs correctly shows the change in the mass of the seed leaves?

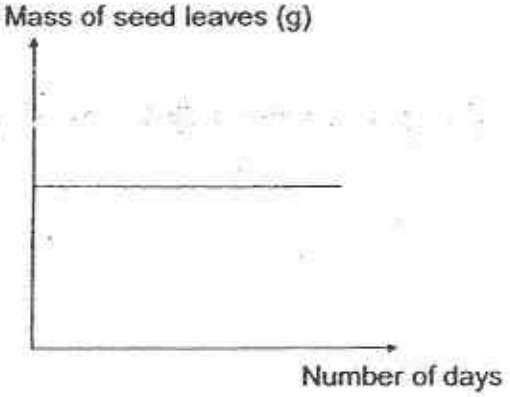
(1)



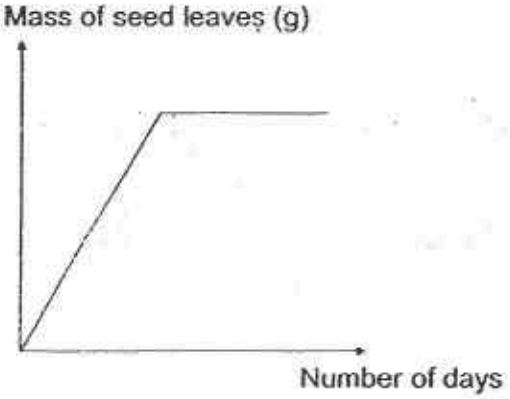
(2)



(3)



(4)



8. Sze Ann conducted an investigation on two similar flowers, **A** and **B**, which have not been pollinated yet. Both flowers are from the same plant.

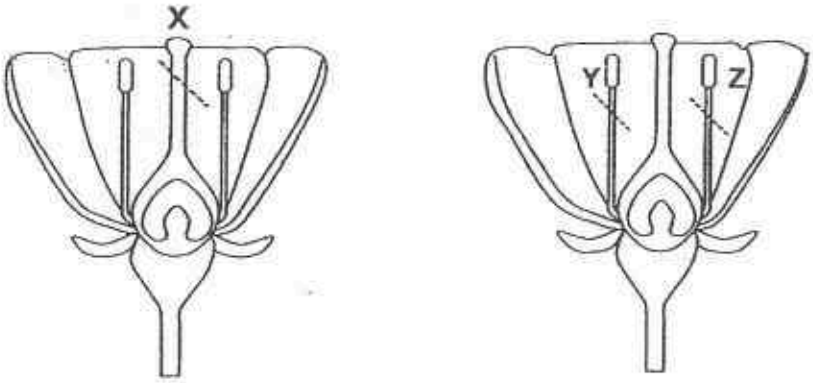
The following is the procedure of her investigation.

Step 1: Remove Part **X** from Flower **A**.

Step 2: Remove Parts **Y** and **Z** from Flower **B**.

Step 3: Place the plant in a garden that has similar plants.

Step 4: Water the plant daily.

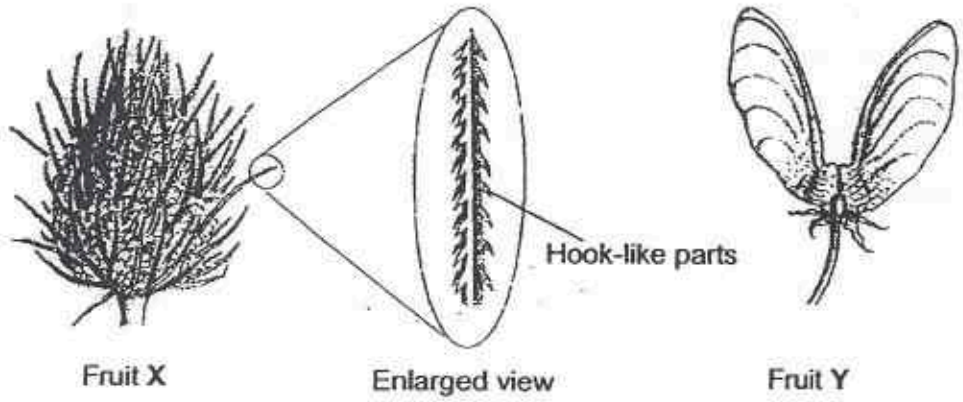


Flower **A** Flower **B**

Sze Ann predicts that the following observations will be made after some time. Which of her predictions are likely to be correct?

	Flower **A**	Flower **B**
(1)	It will develop into a fruit.	It will develop into a fruit.
(2)	It will develop into a fruit.	It will not develop into a fruit.
(3)	It will not develop into a fruit.	It will develop into a fruit.
(4)	It will not develop into a fruit.	It will not develop into a fruit.

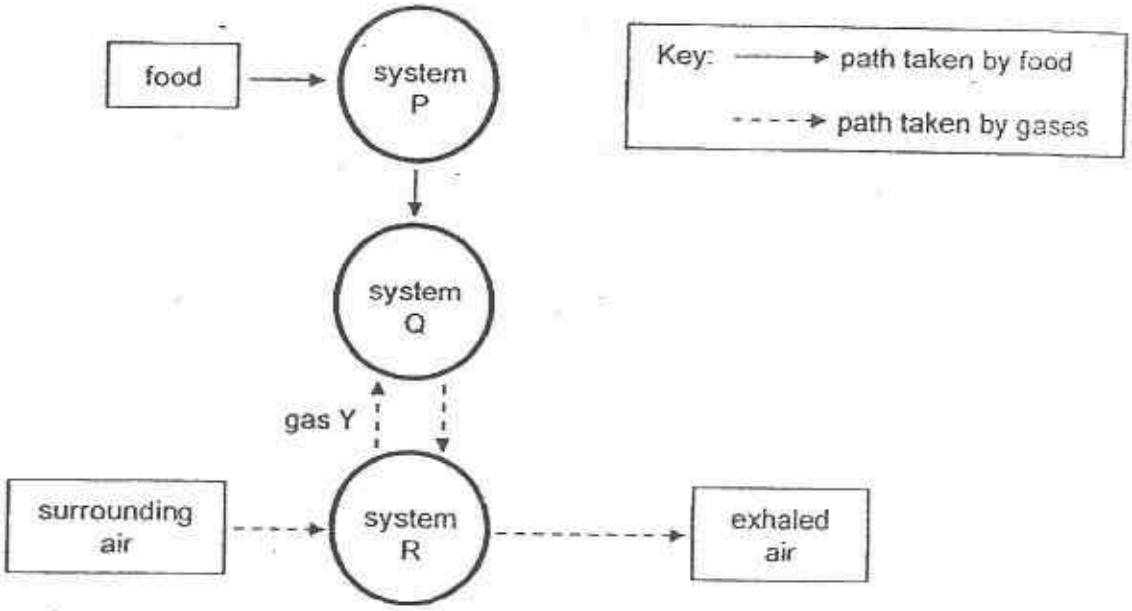
9. The diagram below shows the fruits from two different plants.



Which of the following shows the correct method of dispersal of fruits **X** and **Y**?

	Method of dispersal of	
	Fruit X	**Fruit Y**
(1)	Animals	Wind
(2)	Animals	Splitting action
(3)	Wind	Splitting action
(4)	Wind	Water

10. The diagram below shows how food and gases are transported in the human body.



Which systems do P, Q, and R represent and what is gas Y?

	System P	System Q	System R	Gas Y
(1)	Circulatory	Respiratory	Digestive	Carbon dioxide
(2)	Digestive	Respiratory	Circulatory	Carbon dioxide
(3)	Circulatory	Digestive	Respiratory	Oxygen
(4)	Digestive	Circulatory	Respiratory	Oxygen

( )

11. The following food relationships were observed among four organisms, P, Q, R and S in a certain habitat.

S feeds on P. Q is eaten by R. P is a predator of R. S does not feed on R but feeds on Q.

Which of the following roles in a food web are correctly matched with the organisms?

	Producer	Consumer	Both a prey and a predator
(1)	P	R	Q
(2)	R	Q	P
(3)	Q	S	P
(4)	Q	P	S

( )

12. The diagram below shows a penguin swimming in the water.

Which of the following characteristics help the penguin swim fast in the water?

	Characteristics	
	Webbed feet	Streamlined body
(1)	Yes	Yes
(2)	Yes	No
(3)	No	Yes
(4)	No	No

( )

13. Which of the following examples of behavioural and structural adaptations are correct?

	Behavioural Adaptation	Structural Adaptation
(1)	Camels search for food at night to avoid the Sun's heat.	Camels hide in the shade to avoid the Sun's heat.
(2)	Owls have sharp claws to grab their prey while flying.	Owls' keen eyes enable them to see clearly in the dark
(3)	Adult elephants form a protective circle around the young when threatened by predators.	Elephants have long and flexible trunks to reach tall trees for food.
(4)	Wolves have sharp teeth to tear the flesh of their prey.	Wolves hunt in groups to catch a prey that is larger.

( )

14. Eldric carried out an investigation on the number of birds that visited his school garden at different times of the day.

The table below shows the number of birds Eldric observed at the school garden at different times of the day, from Monday to Wednesday.

Use the information given in the table to answer questions **14** and **15**.

Time of observation	Number of birds observed at the school garden		
	Monday	Tuesday	Wednesday
9.00 am	23	25	21
1.00 pm	8	13	10
5.00 pm	17	15	12

Which one of the following is the best conclusion that can be made based on the information in the above table?

(1) Birds are most active in the morning.
(2) Birds prefer a warm surrounding to a cool surrounding.
(3) The temperature at the school garden on Wednesday was the highest.
(4) The time of the day does not affect the number of birds observed at the school garden.

( )

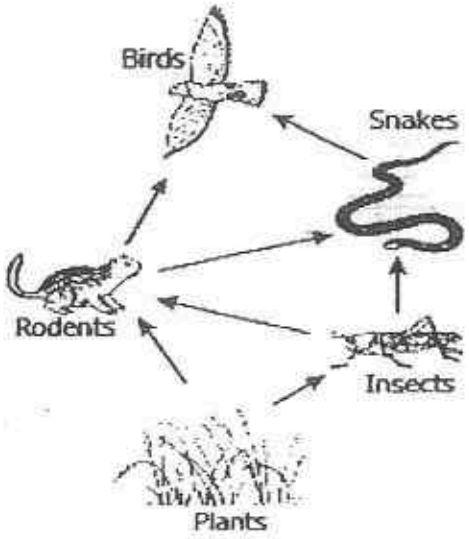
15. Which of the following steps will help to improve the reliability of the information Eldric has gathered during his investigation?

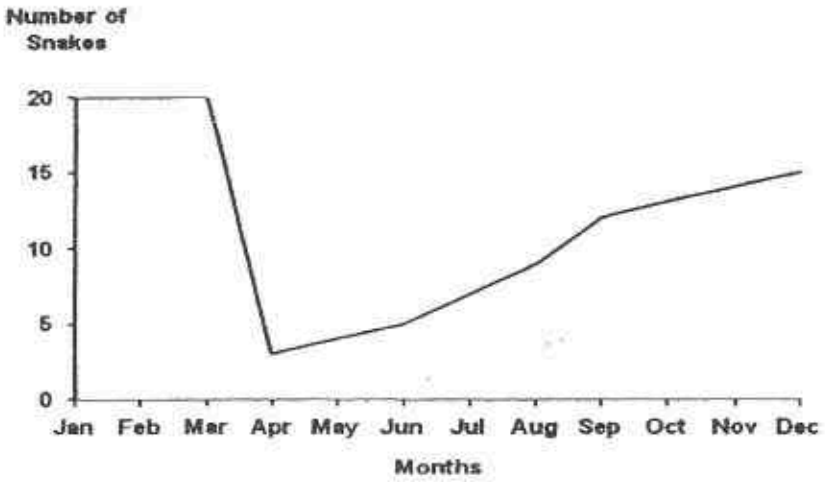
A: Count the number of birds before and after a rainfall.
B: Count the number of birds at the gardens of two other schools.
C: Count the number of birds at the school garden for another three days.
D: Count the number of birds at the school garden at 11 am and 3 pm as well.

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

( )

16. Study the food web below carefully. The organisms below were all found in a forest.





Tom recorded the number of snakes in the forest over a period of 12 months and plotted the graph above.

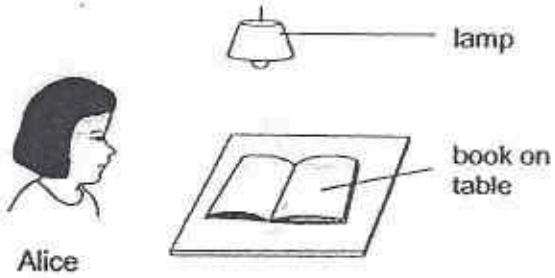
Based on the food web and the graph, which of the following are likely the reasons for the sudden drop in the number of snakes between March and April?

A: Many of the snakes died due to a disease.
B: Many new plants were planted in the forest.
C: Many of the same species of birds migrated to the forest.

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

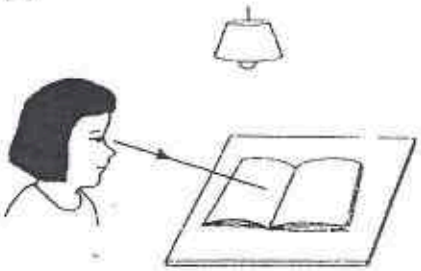
( )

17. Look at the diagram below.

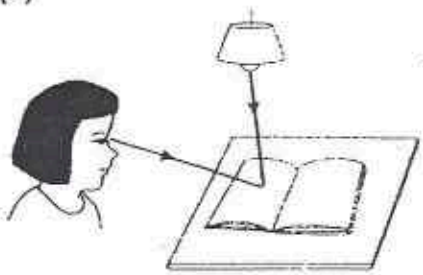


Which one of the following explains why Alice can see the book on the table?

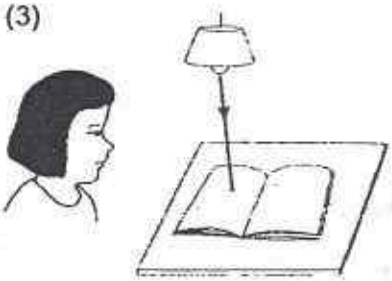
(1)



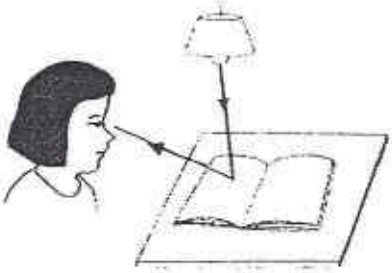
(2)



(3)

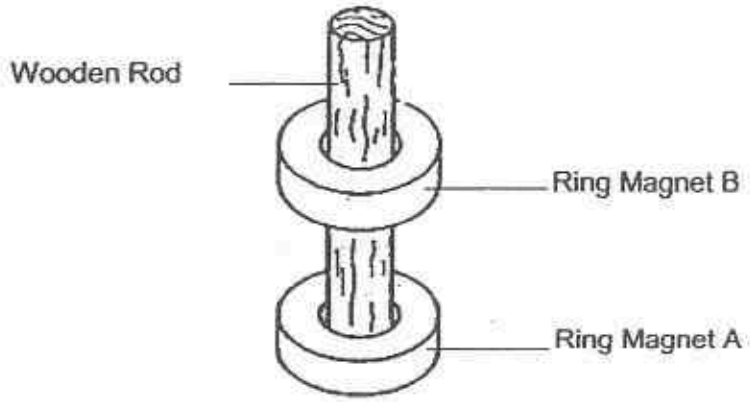


(4)



( )

18. Molly had an experimental set-up shown below. She noticed that magnet B 'floated' above magnet A.

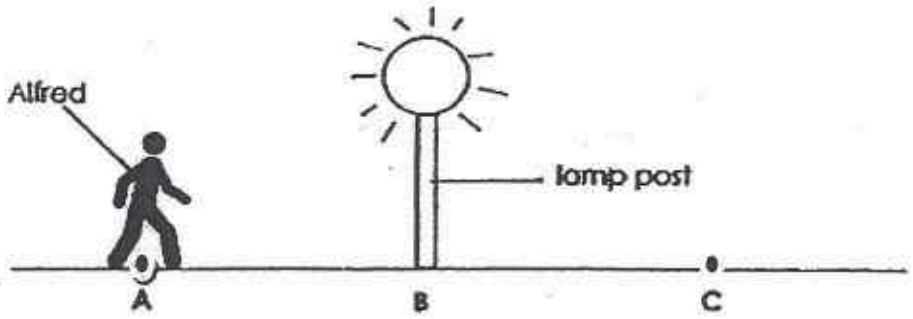


Based on the set-up above, which of the following statements are correct?

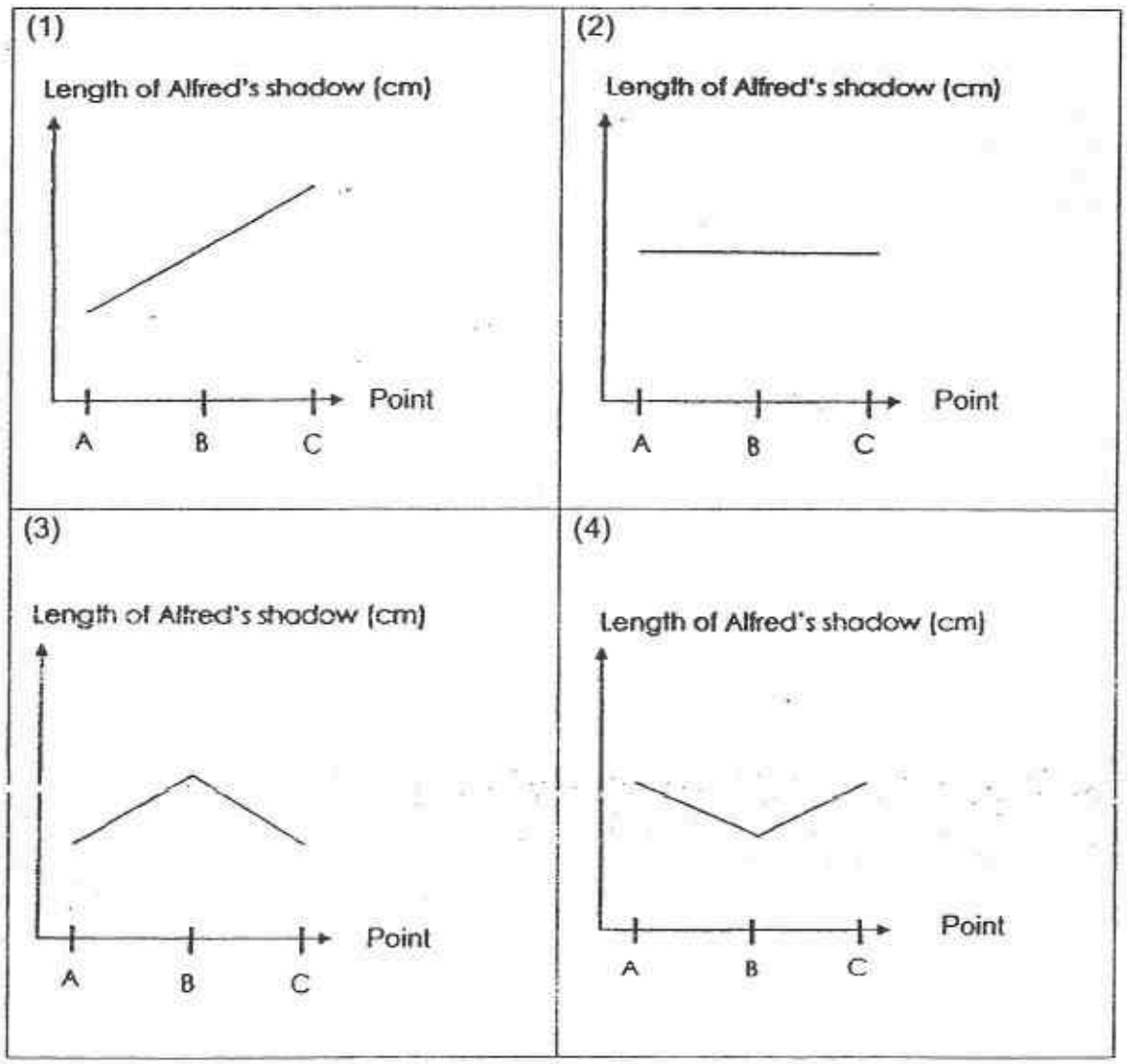
A: Magnetic force acts at a distance.
B: The like poles of the ring magnets are facing each other.
C: The unlike poles of the ring magnets are facing each other.

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

19. One night, Alfred walked from point A to point C, passing a lamp post at point B as shown in the diagram below.

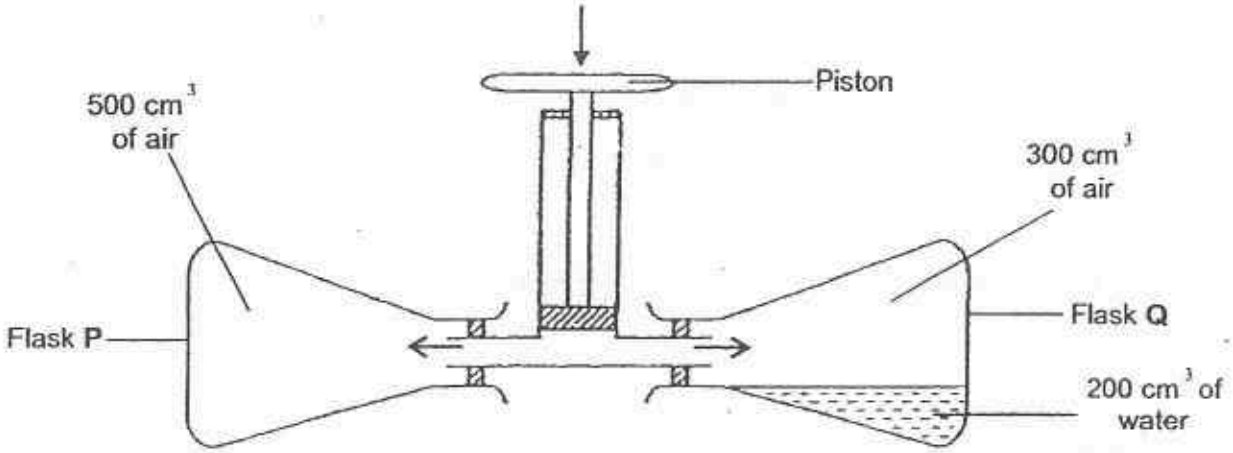


Which one of the following graphs represents the length of Alfred's shadow from point A to point C?



( )

20. The set-up below contains 2 conical flasks, P and Q, each with a volume of 500 cm^3. The conical flasks are connected to a piston.



Each time the piston is pushed down, 50 cm^3 of air is forced into each conical flask.

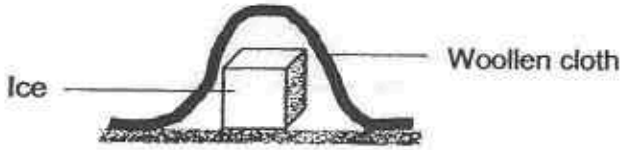
Which of the following statements about the conical flasks, P and Q, are **not** correct when the piston is pushed down?

A: Water in conical flask Q will be compressed.
B: The volume of air in each conical flask will increase.
C: The mass of air in each conical flask will increase.

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

( )

21. Which of the following correctly describes and explains what happens when a piece of ice is covered with a thick layer of woollen cloth?

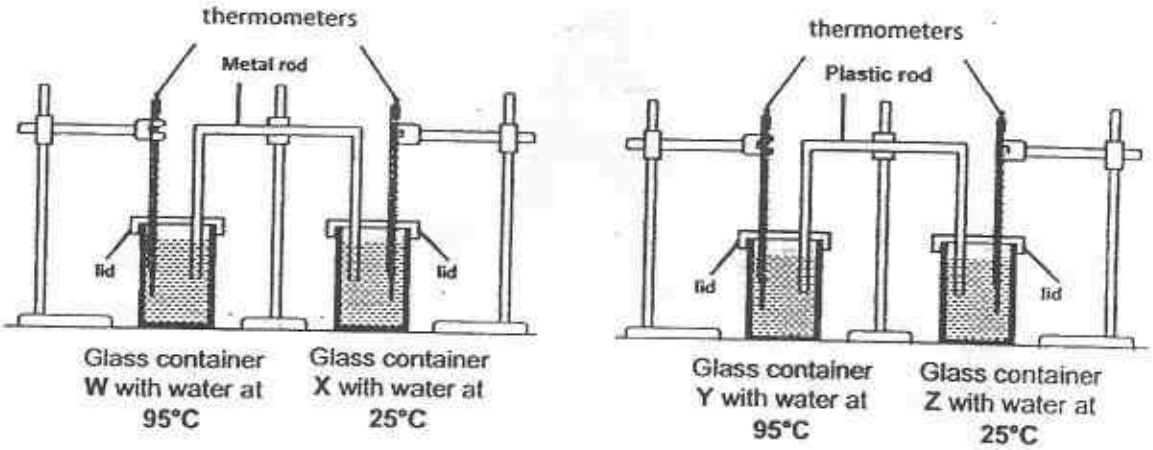


	What happens to ice	Explanation
(1)	Melts more slowly	Woollen cloth slows down heat loss from the ice
(2)	Melts more slowly	Woollen cloth slows down heat gain by the ice
(3)	Melts more quickly	Woollen cloth traps more heat to melt the ice
(4)	Melts more quickly	Woollen cloth quickens heat gain by the ice

( )

22. Matthew set up an experiment using four identical glass containers and lids at a room temperature of 30^0C.

The diagram below shows the set-ups at the start of the experiment.



The metal and plastic rods used in the set-ups above are of the same thickness and length.

Based on the above experiment, which of the following statements are likely to be correct about the temperature of water in each cup after five minutes?

A: Water in glass container W will be the hottest.
B: Water in glass container Y will be hotter than that in glass container W.
C: Water in glass container X will have the lowest temperature.
D: Water in glass container X will be hotter than that in glass container Z.

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

( )

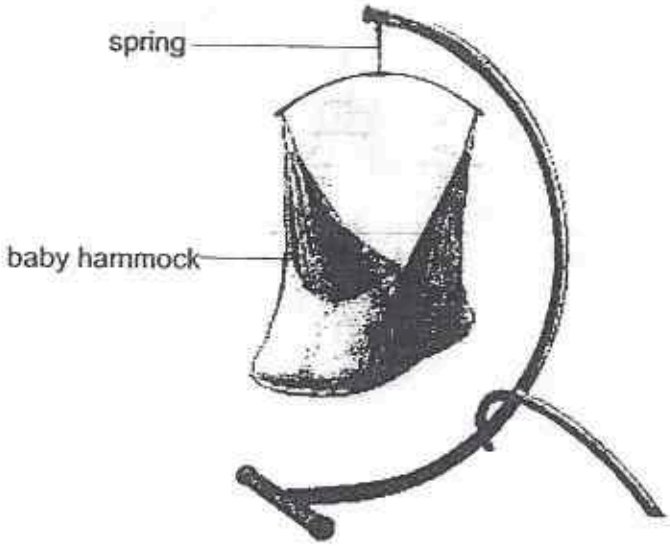
23. The diagram below shows a person playing floor ball.

Which of the following best represents the energy conversion when the person hits the ball with his stick?

	Hand with stick		Ball
(1)	Potential energy	→	Kinetic energy
(2)	Kinetic energy	→	Kinetic energy + sound energy
(3)	Kinetic energy	→	Potential energy
(4)	Potential energy	→	Kinetic energy + sound energy

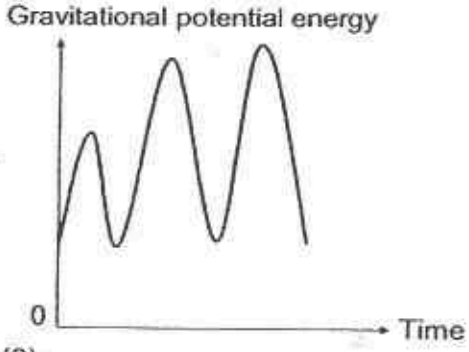
( )

24. The diagram below shows a baby hammock that will move the baby up and down to the **same height** each time to put the baby to sleep.

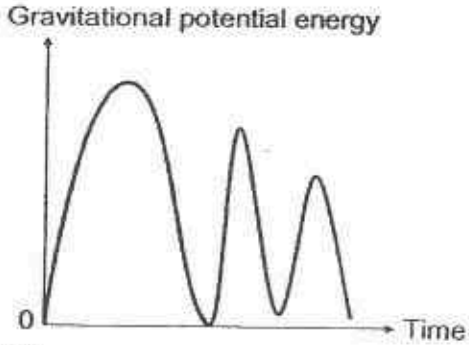


Which one of the following graphs correctly represents the amount of gravitational potential energy possessed by the baby over a period of time?

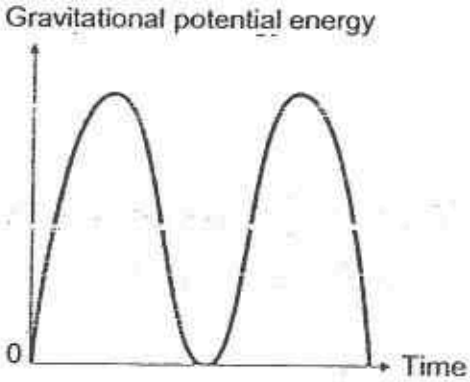
(1)



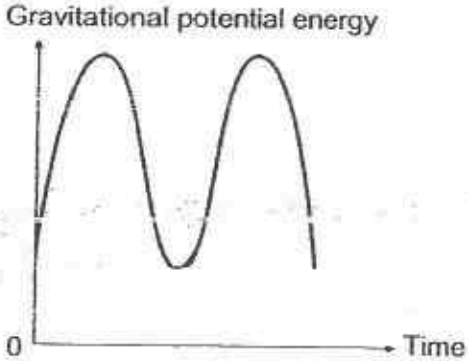
(2)



(3)

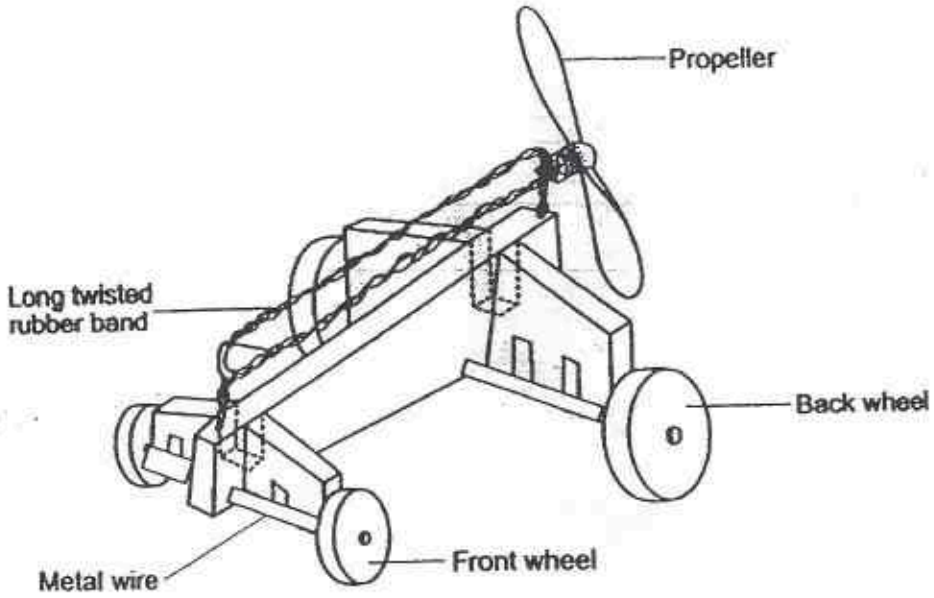


(4)



( )

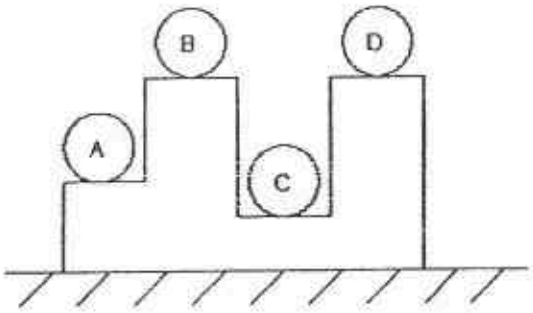
25. Study the diagram of a toy car below.



Which part of the toy car possesses the energy which enables it to move?

(1) Wheels
(2) Propeller
(3) Metal wire
(4) Twisted rubber band ( )

26. The diagram below shows four wooden balls of the same volume.
Balls A and B are 3 kg each while balls C and D are 2 kg each.



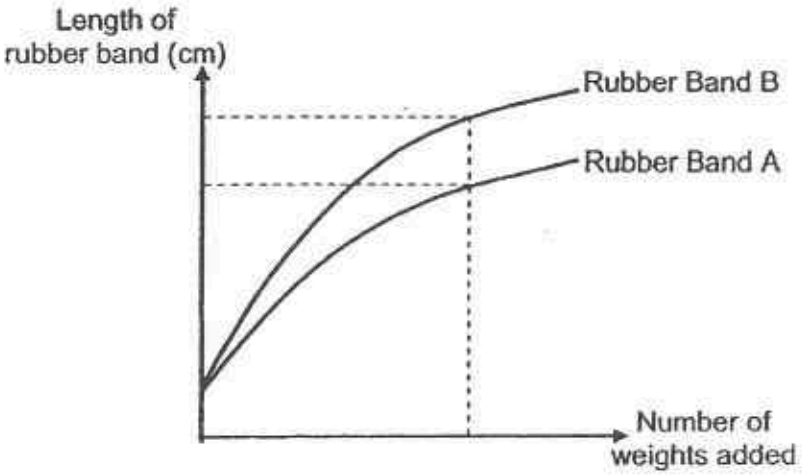
Which wooden ball possesses the **greatest amount** of potential energy?

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

( )

27. Weights are added to 2 rubber bands, A and B.

The length of each rubber band, as weights are added to them, is shown on the graph below.



Based on the graph, what can be concluded about the rubber bands A and B?

(1) Both rubber bands stretch to the same length when the same number of weights is added to each.

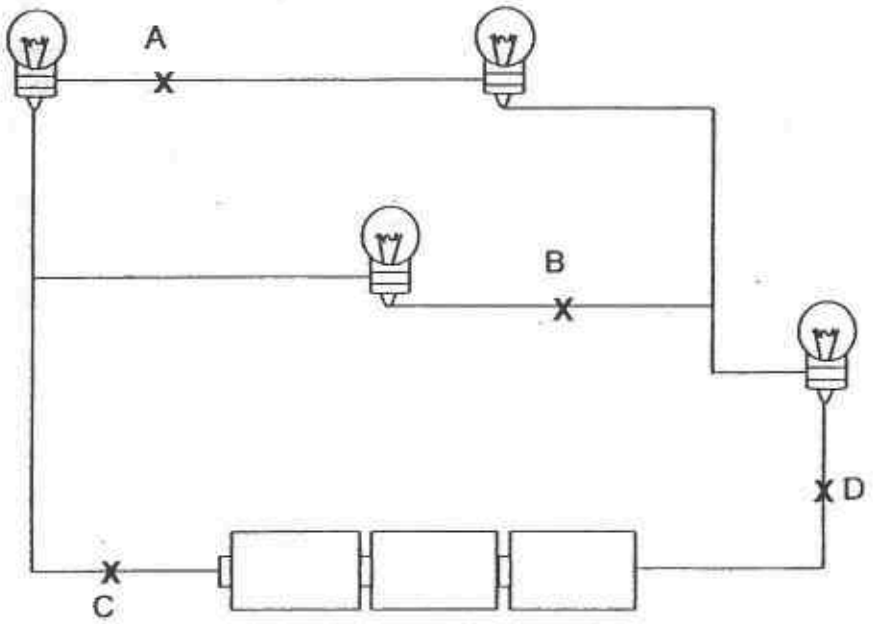
(2) B requires more weights to be added before it stretches to the same length as A.

(3) A requires more weights to be added before it stretches to the same length as B.

(4) When the same number of weights is added to the rubber bands, A would stretch longer than B.

( )

28. The diagram shows four lighted bulbs in a circuit. A switch is to be placed in the circuit so that only 2 bulbs will not light up when the switch is open.

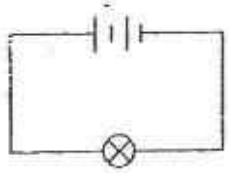


At which position, A, B, C or D, should the switch be placed?

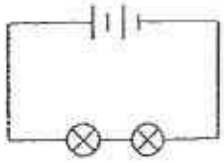
(1) A
(2) B
(3) C
(4) D

( )

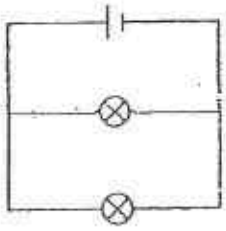
29. Study the four circuits, A, B, C and D, shown below.



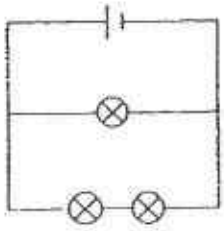
circuit A



circuit B



circuit C



circuit D

The bulbs and the batteries in the four circuits are identical. All the bulbs are lit up.

Which of the following statements about the brightness of the bulbs is correct?

(1) The bulb in circuit A is as bright as each bulb in circuit C.
(2) The bulb in circuit A is as bright as each bulb in circuit D.
(3) Each bulb in circuit B is dimmer than the bulb in circuit A.
(4) Each bulb in circuit B is dimmer than each bulb in circuit D.

( )

30. Tim breathed onto a mirror and it turned "misty".
A few minutes later, the "mist" cleared up and he was able to see himself in the mirror again.

What is the explanation for his observation?

	The "mist" on the mirror is _____.	The mirror cleared up after the "mist" had _____.
(1)	water vapour	evaporated
(2)	water vapour	condensed
(3)	water droplets	evaporated
(4)	water droplets	condensed

( )

End of Booklet A

HENRY PARK PRIMARY SCHOOL

2015 PRELIMINARY EXAMINATION

PRIMARY 6 SCIENCE

Booklet B

Name: _____ ( )

40

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.

Booklet B (40 marks)

Write your answers to questions 31 to 44 in the spaces given.

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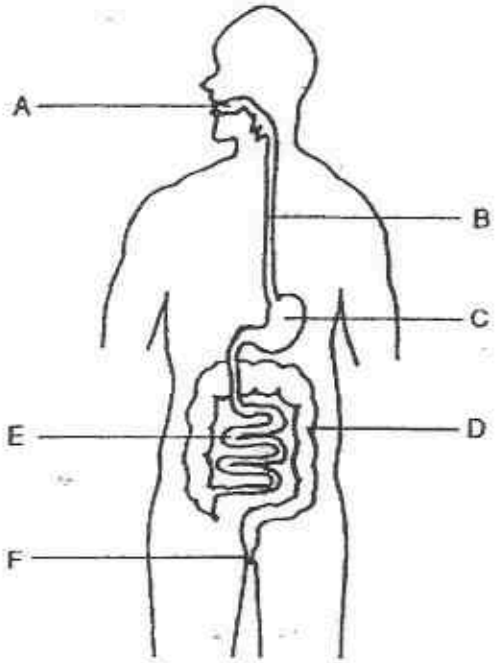
31. The diagram below shows parts of the human digestive system.



a) Name the part(s), A, B, C, D, E or F, where digestion takes place. *(1m)*

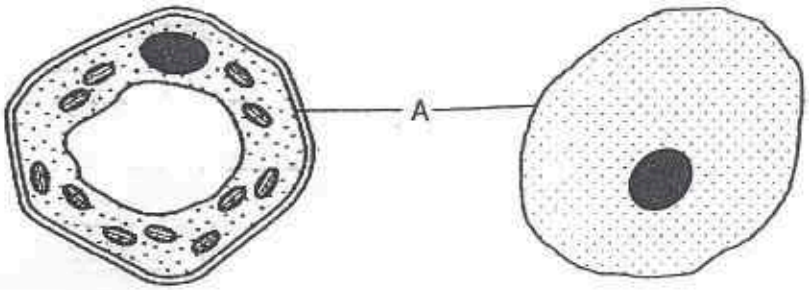
_____

b) What is the main function of organ D?

_____

_____

32. The diagram below shows two types of cells, X and Y.



Cell X Cell Y

a) What is the main function of part A? *(1m)*

_____

_____

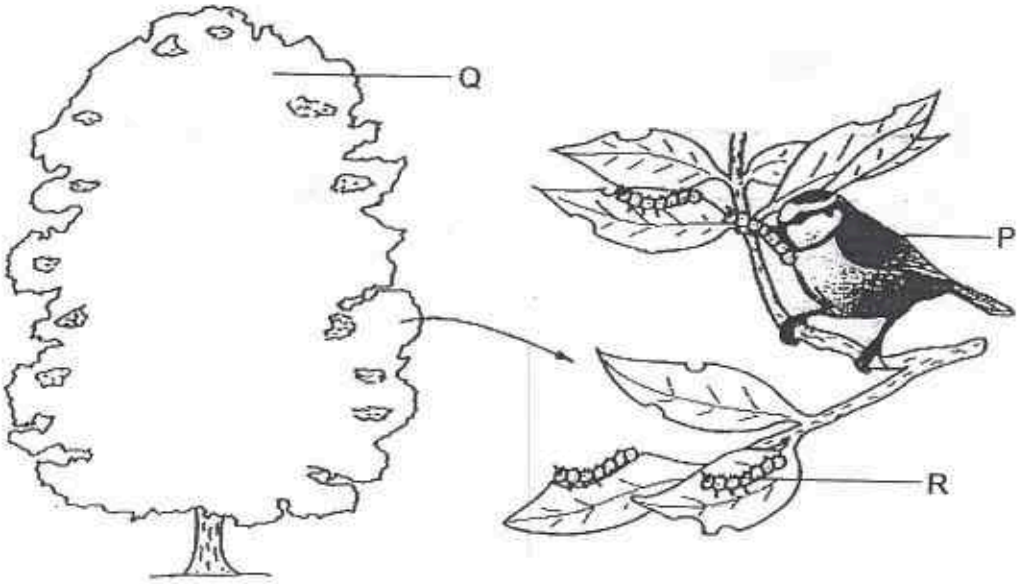
b) Energy conversion takes place during a process in one of the cells.

Write the cell, X or Y, in the blank and fill up the boxes to show the energy conversion during this process below.

energy from the Sun energy in *(1m)*

cell _____ *(1m)*

33. The diagram below shows some organisms living together in a particular habitat.



a) State one characteristic of organism P that classifies it as a bird only. *(1m)*

_____

_____

b) What is the name given to a collection of different organisms living and interacting in the same habitat? *(1m)*

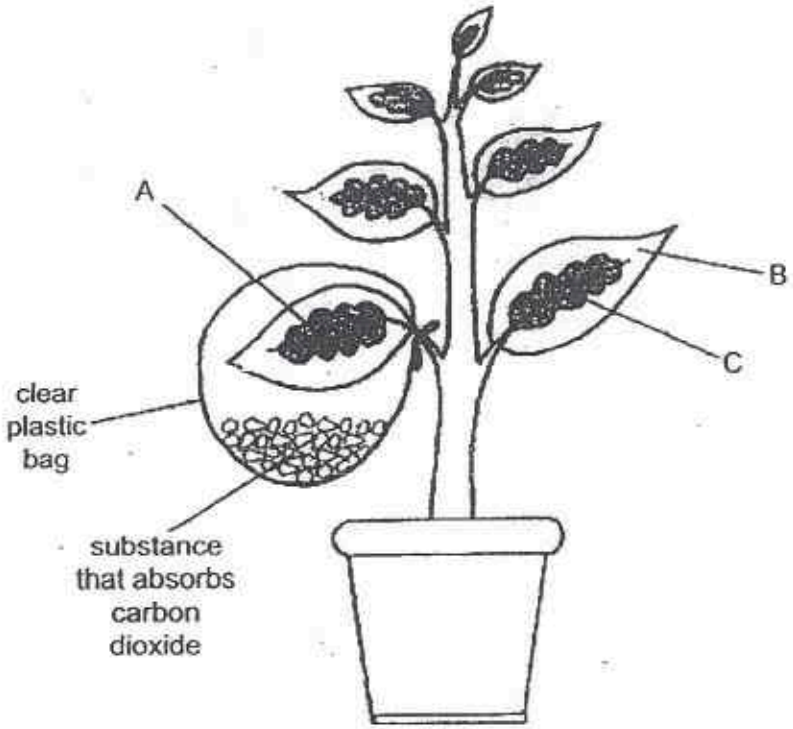
_____

c) Using the letters, P, Q and R, draw a food chain involving these organisms. *(1m)*

34. Sophia set up an experiment to find out whether carbon dioxide is needed for photosynthesis.

She used a plant with leaves that had green parts in the middle and white parts round the edges as shown in the diagram below.

The set-up was placed in the sunlight.



a) A starch test was carried out on the leaves with parts labelled, A, B and C. *(1m)*

State the part(s), A, B or C , of the leaves where :

(i) Iodine turned dark blue : _____

(ii) Iodine remained dark brown : _____

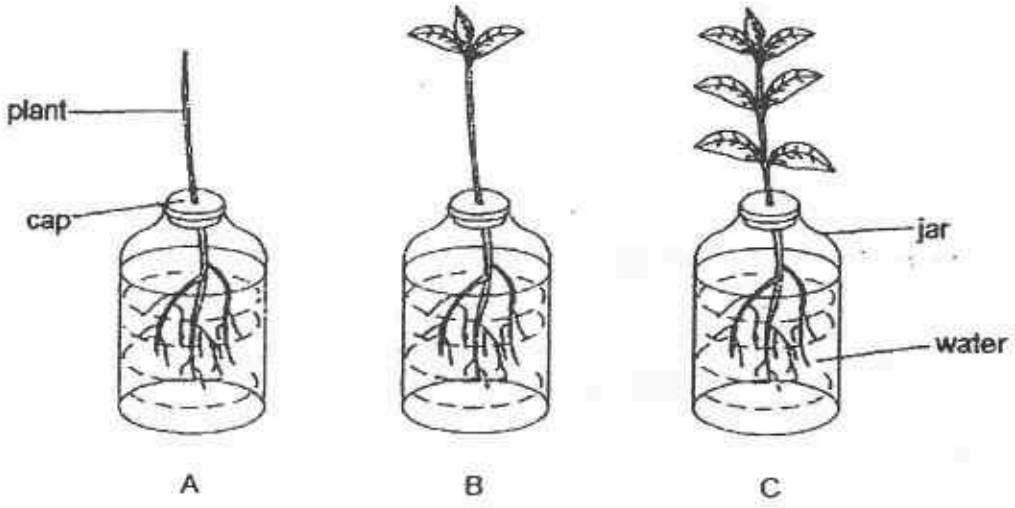
b) Give a reason for your answer in (a)(i).

_____

_____

35. Dawson carried out an experiment with three similar plants, A, B and C, to find out how the number of leaves of plants affects the amount of water taken in.

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



After two days, he measured the amount of water left in each of the jars.

The results of his experiment are shown below.

Plant	Number of leaves	Amount of water in each jar (ml)	
		Start of the experiment	After 2 days
A	0	200	195
B	3	200	180
C	7	200	143

a) Explain the purpose of setting up plant A. *(2m)*

_____

_____

b) From the results, what can Dawson conclude about his experiment? *(1m)*

_____

_____

36. Deforestation occurs in order to make land available for farming and building roads.

a) State if the amount of carbon dioxide in the atmosphere will **increase, decrease** or **remain the same** due to deforestation. *(1m)*

_____

b) Give a reason for your answer in part (a). *(2m)*

_____

_____

_____

37. Two snakes, F and G, look similar. Predators are aware that snake G is poisonous.

Snake F

Snake G

a) How does snake F benefit from looking like snake G? *(1m)*

_____

_____

b) Over a long period of time, due to the absence of snake G, it is possible for snake F to look less like snake G. *(2m)*

As a result, the population of snake F may start to decrease.

Explain why the population of snake F may decrease.

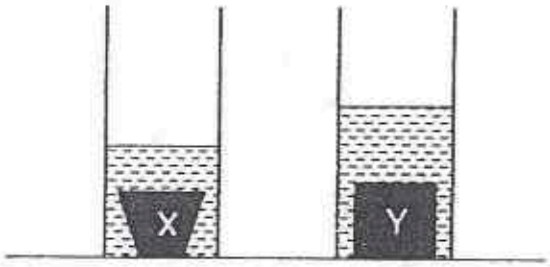
_____

_____

_____

38. Earlwin placed two different objects, X and Y, each into two similar measuring cylinders containing equal amounts of water.

The diagram below shows his observation of the objects in the measuring cylinders.



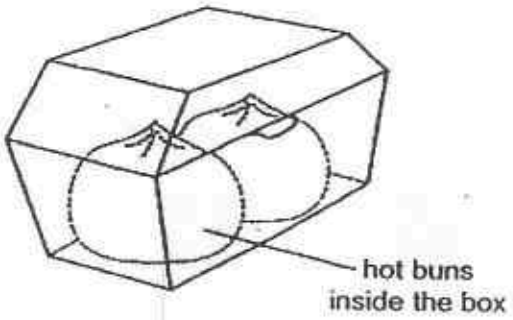
Which object, X or Y, has a greater volume? Explain your answer. *(2m)*

Object: _____

Explanation: _____

_____

39. Annabelle bought some hot buns from a store. The hot buns were placed in a box as shown below.



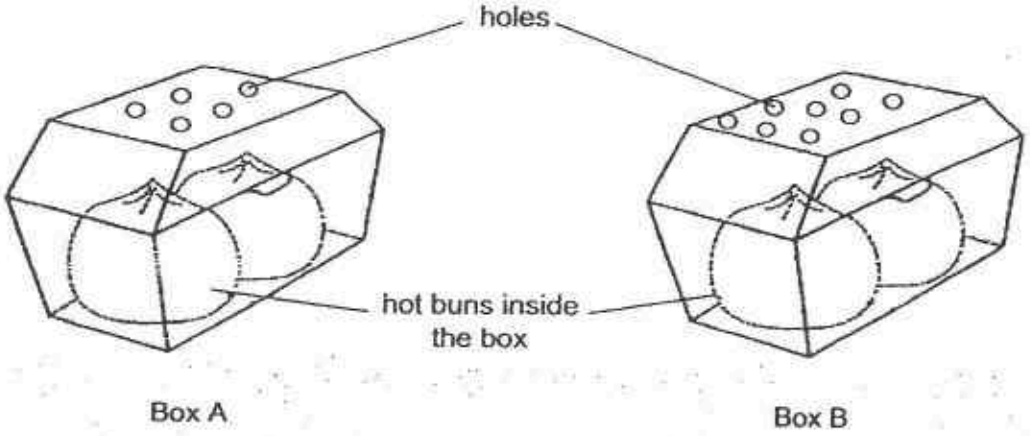
When she opened up the box, she observed that the buns were wet.

a) Explain why the hot buns in the box became wet. *(2m)*

_____

_____

At the next visit to the same store, she bought two boxes of hot buns, A and B. Then, she asked the stallholders to poke holes on the boxes as shown in the diagram below.



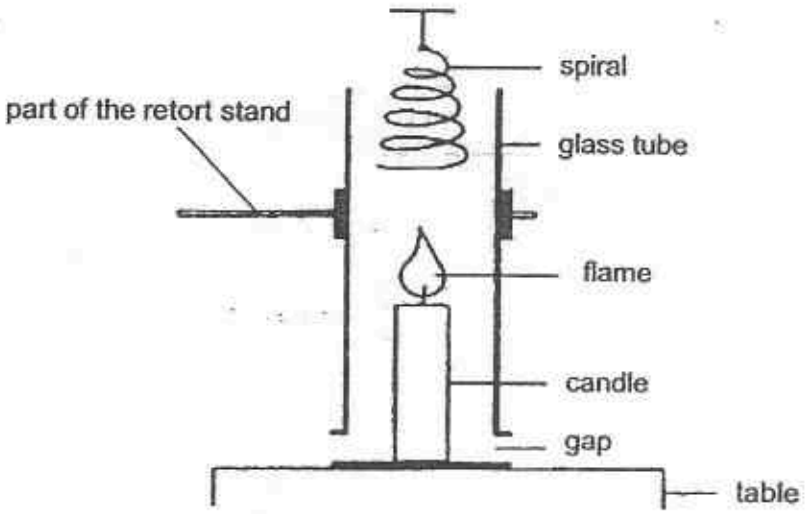
When she opened up the boxes, she observed that the buns in box A were wetter than the buns in box B.

b) Explain why this is so. *(2m)*

_____

_____

40. In the experiment below, the spiral starts to spin when the candle is lighted.



a) What energy does the candle possess?

_____

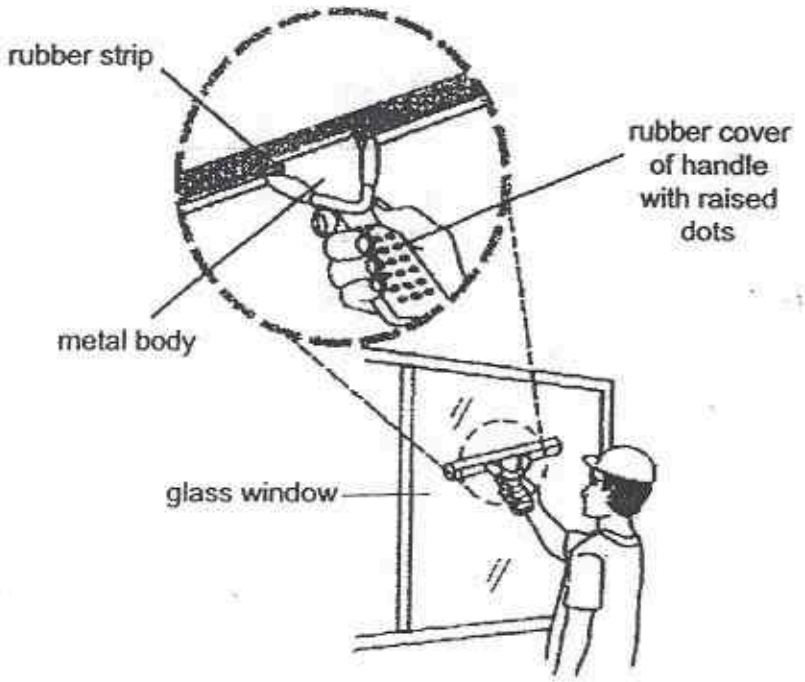
b) Explain how the heat from the flame causes the spiral to spin.

_____

_____

_____

41. The diagram below shows a worker cleaning a glass window with a tool.



a) The rubber strip of the tool does not scratch the glass window. *(1m)*

What property of the glass prevents it from being scratched by the rubber strip?

_____

_____

b) There are many raised dots on the rubber cover of the handle. *(1m)*

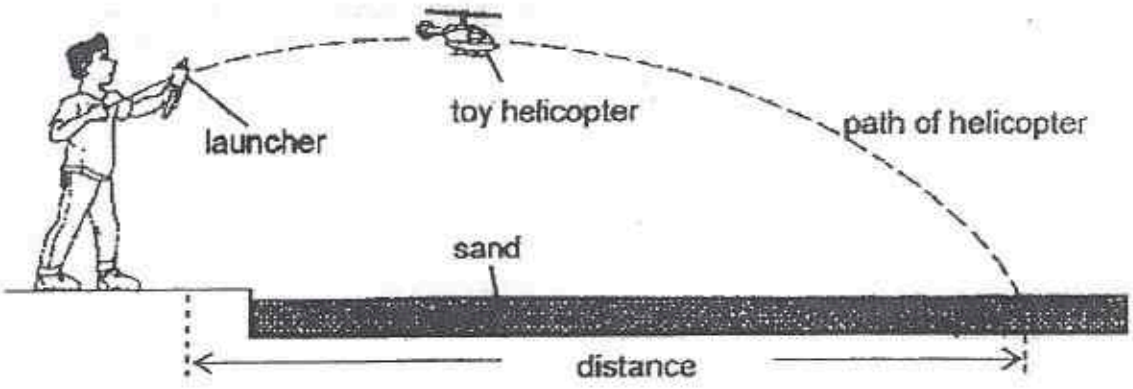
Explain how these raised dots help the worker to have a better grip of the tool while using it to clean the window.

_____

_____

_____

42. Daniel carried out an experiment with three different toy helicopters, P, Q and R, each of similar size and mass using the set-up as shown below.



He launched the helicopter and measured the distance it travelled when it lands on the sand. The results of his experiment are shown below.

Helicopter	Mass of helicopter (g)	Distance travelled (cm)		
		1st Try	2nd Try	3rd Try
P	200	220	250	241
Q	200	350	343	365
R	200	300	310	290

a) Why did Daniel carry out the experiment three times? *(1m)*

_____

b) Give a possible reason why the distance travelled by each of the helicopters of the same mass was different for each try. *(1m)*

_____

_____

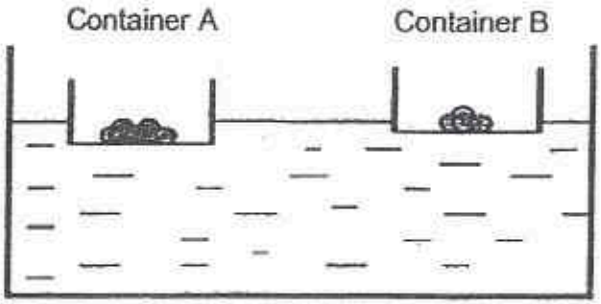
c) Sand was used for each helicopter to land after each time it was launched. *(1m)*

Explain how sand helps to measure the distance travelled by the helicopters more accurately.

_____

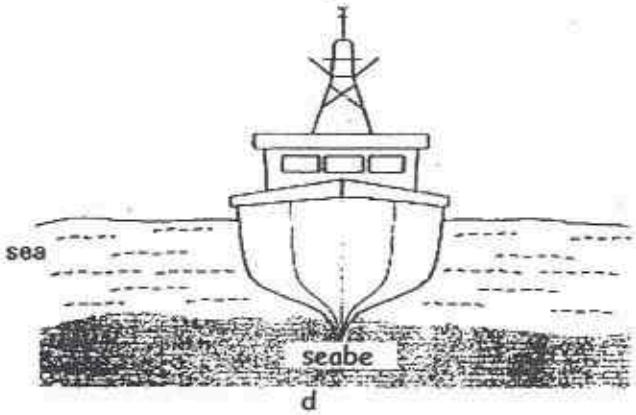
_____

43. William carried out an experiment with some pebbles and two similar containers, A and B. The diagram below shows his observation of his set-up.



a) Based on his observation, what could William conclude about the relationship between the number of pebbles in a container and how low the container sinks in the water? *(1m)*

A boat carrying a full load of fish was stuck on the seabed as shown in the diagram below.

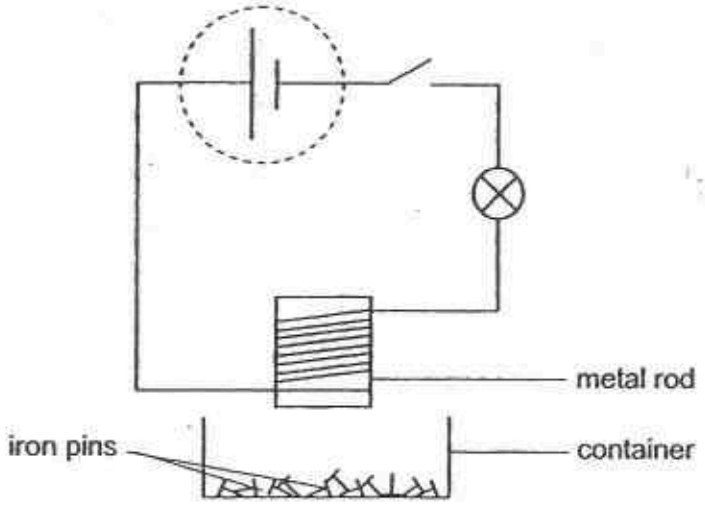


b) What could be done so that the boat could lift off the seabed and move forward? *(1m)*

c) Explain your answer in (b). *(1m)*

44. Xavier set up an experiment to find out whether, iron or steel, is a better metal to make electromagnets.

The diagram shows his experimental set-up.



a) Xavier used metal rods of the same size, state **another** variable of the rod that he must keep the same in order to ensure a fair test. *(1m)*

_____

b) What can be observed about the following items when the switch is closed? *(1m)*

Iron pins : _____

Bulb : _____

c) Suggest what can be done to the part of the circuit, circled in dotted line, to increase the magnetic strength of the metal rod. *(1m)*

_____

End of Booklet B

Setters:

Mr Tan Joo Nam
Ms Ruchika
Ms Grace Chan

EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : HENRY PARK PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
4	4	3	3	2	2	2	3	1	4
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
3	1	3	1	4	2	4	1	4	2
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
2	3	2	4	4	3	3	1	3	3

BOOKLET B - SEE ATTACHED COPY

THE END

Prelim Science – Suggested Answers for CORRECTION **Name** _____

	Answers	CORRECTIONS
31	(a) A, C, E (b) To absorb water from the undigested food.	
32	(a) Controls substances moving in and out of the cell (b) Light, Chemical potential, cell X	(b) Chemical potential
33	(a) P has feathers. (b) Community (c) Q ⟶ R ⟶ P	
34	(a) (i) C (ii) A and B (b) Green part contains chlorophyll which traps light and photosynthesises in the presence of carbon dioxide.	(b) Green part contains chlorophyll which traps light and photosynthesises.
35	(a) It is a control set-up to compare and confirm that it is the number of leaves that causes the plant to take in different amounts of water. (b) The greater the number of leaves, the greater the amount of water taken in by the plants.	
36	(a) Increase. (b) As the trees are cut down, there is less carbon dioxide being absorbed by the trees.	
37	(a) Predators will not eat snake F. (b) Predators will not mistake snake F as poisonous and start to feed on them.	
38	Object: Y Explanation: The water level is higher as the space occupied by object Y is greater.	

39	(a) Hot water vapour (from the hot buns) condensed on the inner surface of the box and the water droplets fell on the buns. (b) Less hot water vapour could escape in box A since there were fewer holes on the box.	
40	a) Chemical Potential Energy b)The surrounding air gains heat from the flame, (expands) and rises. The rising air caused the spiral to spin.	
41	(a) Glass is harder (than rubber). (b) They help to increase the friction between the hand and the handle.	
42	(a) It is to ensure the results are (more) reliable. (b) The amount of force used to launch the helicopter is different. (c) Amount of friction is increased between the helicopter and the sand so the helicopter is will not slide when it lands.	
43	(a) As the number of pebbles in the (or a) container increases, the deeper the container sinks. (b) Throw away some fish. (c) Weight of the boat is reduced.	
44	(a) Temperature of the rod. (b) Iron pins: The iron pins will be attracted by the rod. Bulb: It lights up. (c) Add more batteries (in series).	

Index No. | | | | | | – | |

MAHA BODHI SCHOOL
2015 PRELIMINARY EXAMINATION
PRIMARY 6
SCIENCE
(BOOKLET A)

Name : _____ ( )

Class : Primary 6 ( )

Date : 18 August 2015

Total Duration for Booklets A and B : 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

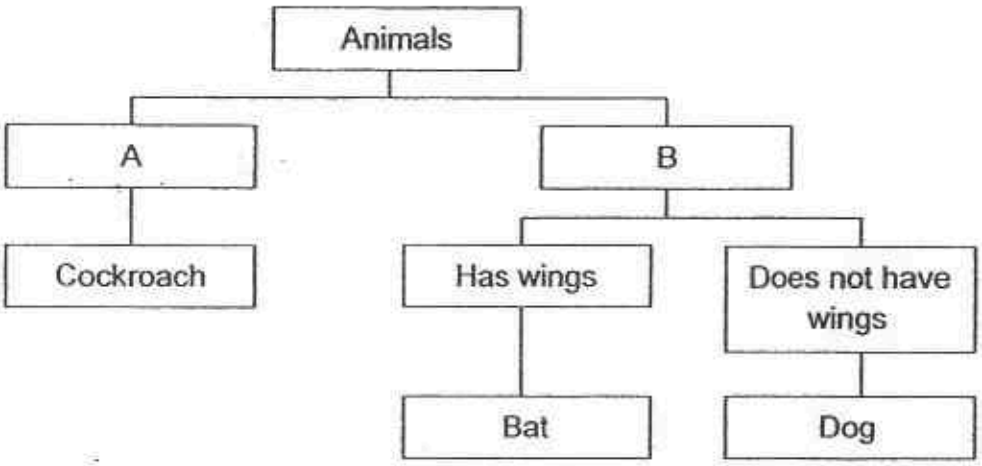
1. Write your Index No. in the boxes at the top right hand corner.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 21 printed pages.

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. Study the classification chart below.



Which of the following represents A and B correctly?

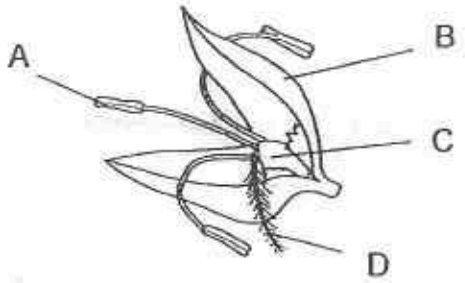
	A	B
(1)	Lives on land	Lives in water
(2)	Has wings	Does not have wings
(3)	3-stage life cycle	4-stage life cycle
(4)	Does not have hair	Has hair

2. Which of the following statements is/are true of a frog and a grasshopper?

A. The adult has wings.
B. The adult has four legs.
C. The young looks like the adult.
D. They have three stages in their life cycles.

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

3. The diagram below shows a wind-pollinated flower.

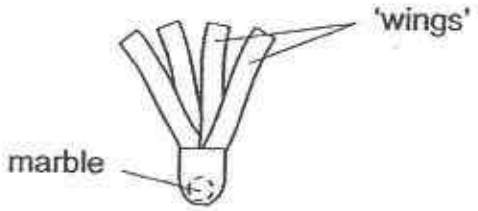


After Hazel transferred pollen grains onto one part of the flower, the flower developed into a fruit.

Which part of the flower, A, B, C or D, did she transfer the pollen grains to?

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

4. Mun-Hee wanted to find out how the structure of a fruit would affect the time it stayed in the air. She made fruit models with different number of 'wings'. Each fruit model contained a marble to represent the seed. The diagram below shows one of the fruit models used.

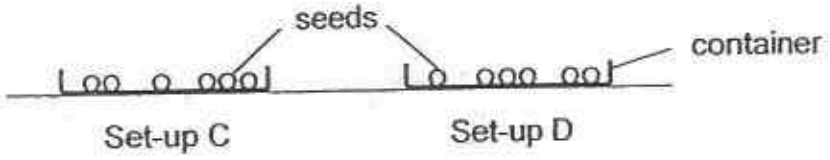


Which of the following variables should Mun-Hee keep the same to ensure a fair test?

A. Number of 'wings'
B. Size and weight of the marble
C. Height at which the fruit model was dropped
D. Time taken by the fruit model to stay in the air

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

5. Varij conducted an experiment by placing the same number of seeds in two containers on his study room table as shown below.



Varij did something to set-up C only.

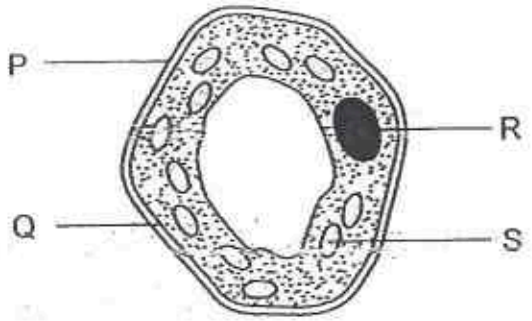
The table below shows the results of his experiment after a few days.

	Number of seeds that developed roots	
	Set-up C	Set-up D
At the beginning	0	0
In the end	5	0

Which of the following had Varij done to set-up C?

(1) Added water
(2) Blew a fan at the set-up
(3) Added some dry cotton wool
(4) Placed the set-up under a lit lamp

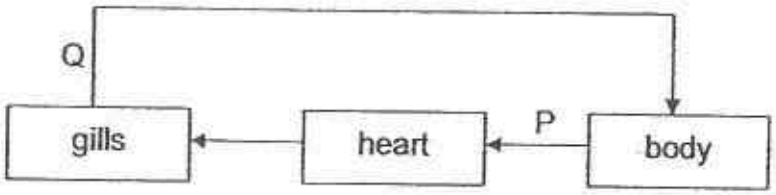
6. The diagram shows a plant cell.



Which two parts are not found in animal cells?

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

7. The diagram below shows how blood flows in a fish.



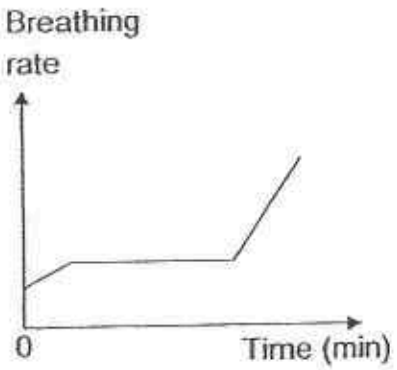
Which of the following is true?

	Blood in P	Blood in Q
(1)	Low in oxygen	Low in carbon dioxide
(2)	High in oxygen	Low in carbon dioxide
(3)	Low in oxygen	High in carbon dioxide
(4)	High in oxygen	High in carbon dioxide

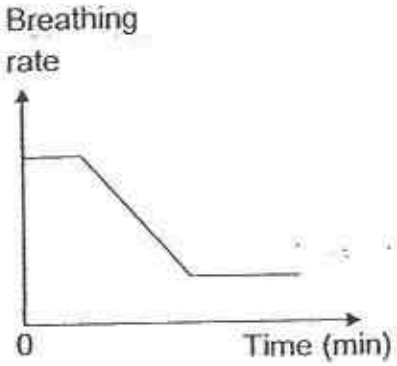
8. Tom took a slow walk for 10 minutes. He then started running continuously for 20 minutes before resting.

Which of the following graphs correctly show his breathing rate?

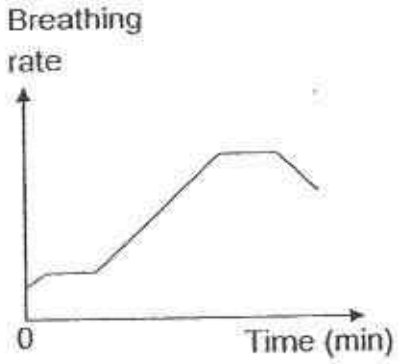
(1)



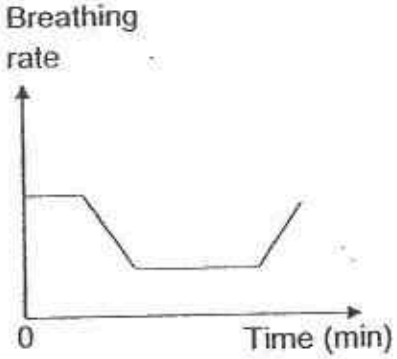
(2)



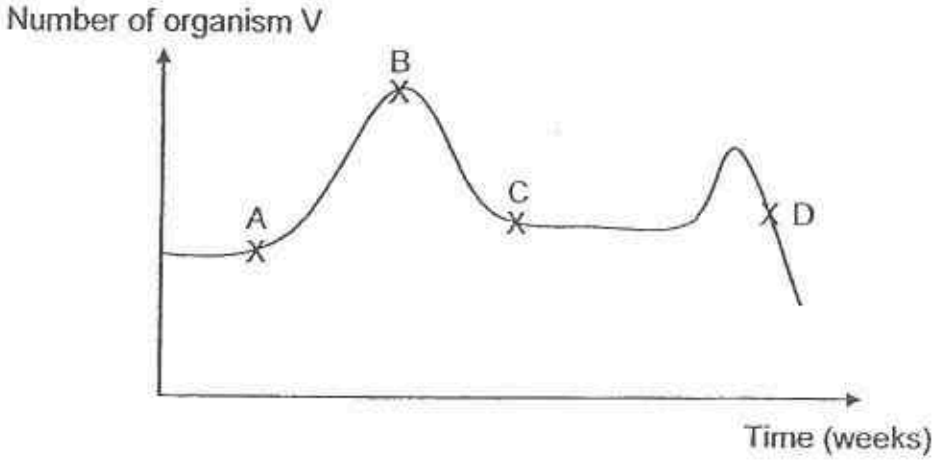
(3)



(4)



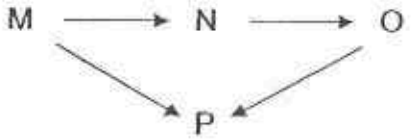
9. The graph below shows the number of organism V living in a river over a period of time.



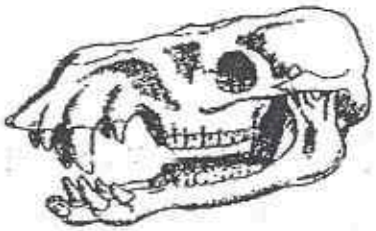
At which point of the graph was drought most likely to have started?

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

10. The diagram below represents a food web of four populations living in the same habitat.



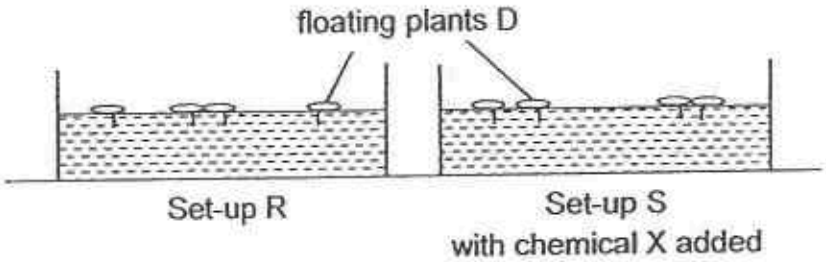
An animal skull as shown below was found in the same habitat.



Based on the food web, which population would the skull most likely belong to?

(1) M
(2) N
(3) O
(4) P

11. Eshal carried out an experiment to find out how chemical X affected the growth of floating plants D as shown below.



The table below shows the results of her experiment after a few days.

	Number of floating plants D	
Set-up	At the beginning	In the end
R	4	8
S	4	15

After the experiment, Eshal noticed floating plants D growing in a pond. There were also submerged plants growing in the same pond. A nearby factory discharged chemical X into the pond regularly. Chemical X had no effect on the submerged plants.

Based on the information above, infer how the characteristics of the pond water would change over time?

A. Temperature of water would decrease

B. Amount of oxygen in the water would decrease

C. Amount of light entering the water would decrease

D. Amount of carbon dioxide in the water would decrease

(1) A, B and C only

(2) A, B and D only

(3) B, C and D only

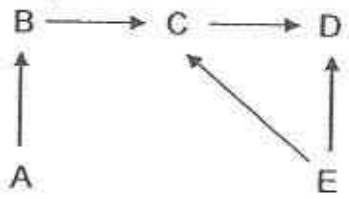
(4) A, B, C and D

12. Tian Yang observed the relationships of five different populations, A, B, C, D and E, from the same community. He classified four populations in the table below. He was unable to classify population A into the table.

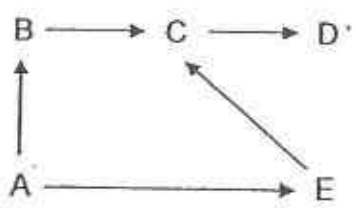
prey	prey and predator	predator
B, E	C	D

Which of the food webs would most likely represent the relationships between A, B, C, D and E in the community?

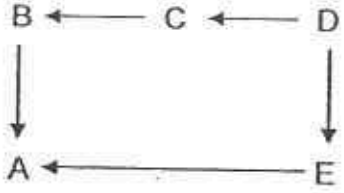
(1)



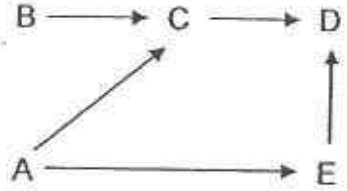
(2)



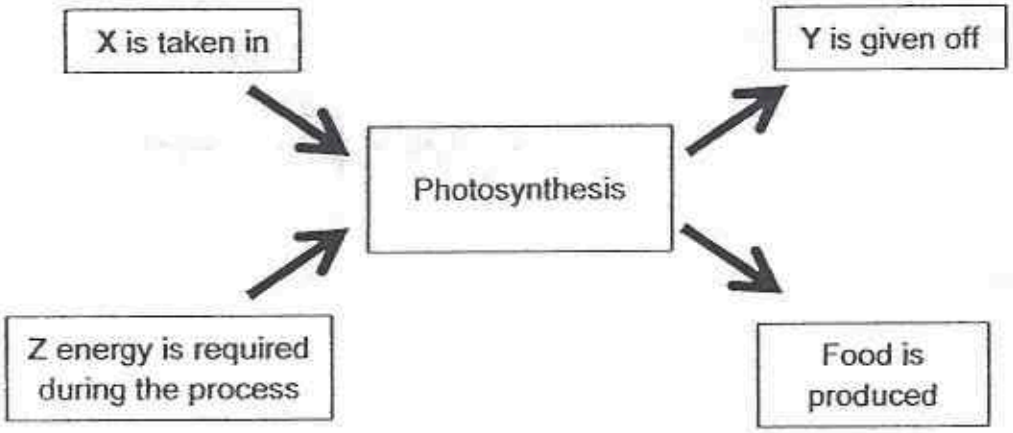
(3)



(4)



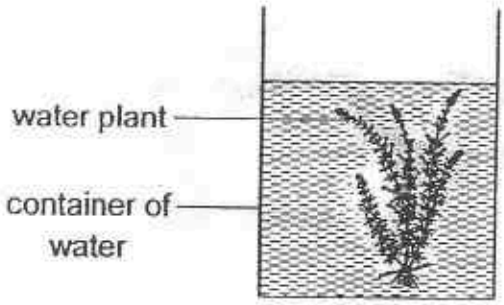
13. The diagram below shows what happens during photosynthesis.



Which of the following correctly shows what X, Y and Z represent?

	X	Y	Z
(1)	oxygen	carbon dioxide	light
(2)	carbon dioxide	oxygen	heat
(3)	oxygen	carbon dioxide	heat
(4)	carbon dioxide	oxygen	light

14. Louis placed a water plant in a container of water and placed the set-up outdoors.



He took samples of the water at different times of the day and added a few drops of liquid Z to the water.

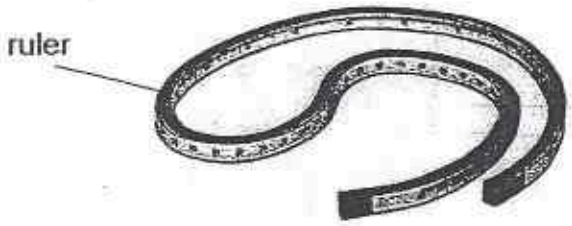
Liquid Z changes colour as shown below.

Amount of carbon dioxide in water	higher than normal	lower than normal
Colour of water with liquid Z	red	yellow

What colour would the water with liquid Z be for water samples taken at noon time and at midnight?

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

15. The picture shows a type of ruler that is able to measure the length of lines that are curved.



The ruler must be _____ in order to trace out different curved lines.

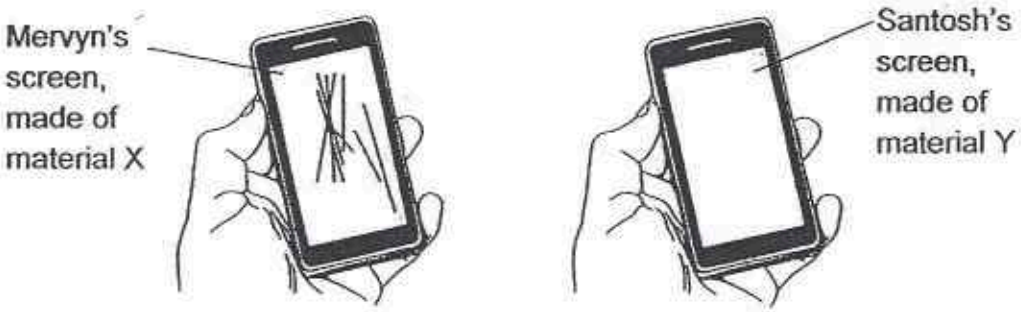
(1) hard

(2) light

(3) flexible

(4) able to float on water

16. Mervyn and Santosh dropped their mobile phones on the beach. As they wiped off the sand, Mervyn noticed many scratches on his mobile phone screen and none on Santosh's mobile phone screen.



Based on the above information, which of the following statements are correct?

A. Material X is harder than sand.
B. Material Y is harder than sand.
C. Material X is harder than material Y.
D. Material Y is harder than material X.

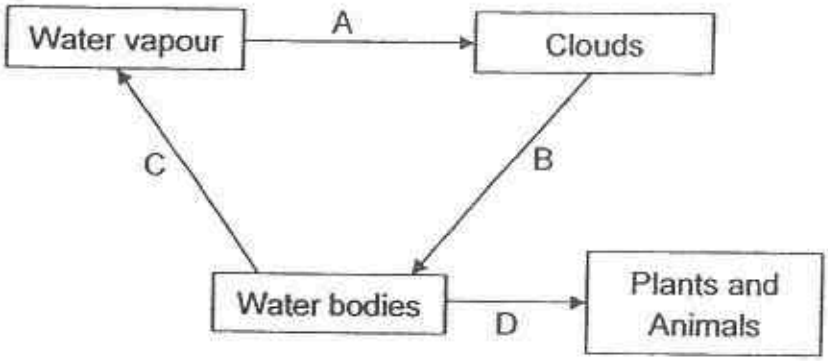
(1) A and B only

(2) A and C only

(3) B and D only

(4) A, B and C only

17. The diagram below shows part of the water cycle.



Which of the following correctly shows the change in state of water?

	A	B	C	D
(1)	No change	Gas to liquid	No change	Liquid to gas
(2)	No change	Gas to liquid	Liquid to gas	No change
(3)	Gas to liquid	No change	Liquid to gas	Liquid to gas
(4)	Gas to liquid	No change	Liquid to gas	No change

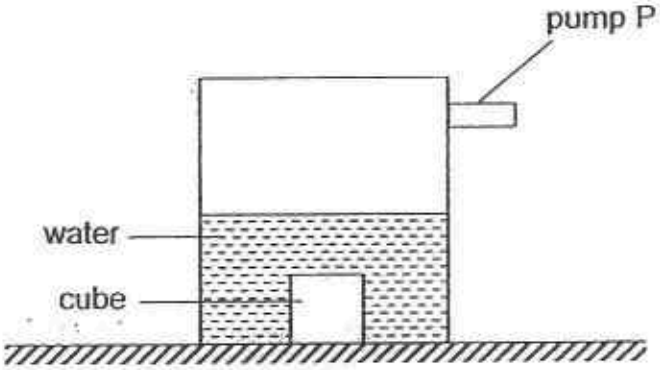
18. The table below shows the melting point and boiling point of two substances, L and M.

Substance	Melting Point (°C)	Boiling Point (°C)
L	5	250
M	20	520

Which of the following shows the correct state of substances L and M at 0°C and 400°C respectively?

	State of Substance L		State of Substance M	
	0°C	400°C	0°C	400°C
(1)	Solid	Liquid	Solid	Liquid
(2)	Solid	Gas	Solid	Liquid
(3)	Solid	Gas	Liquid	Gas
(4)	Liquid	Liquid	Liquid	Gas

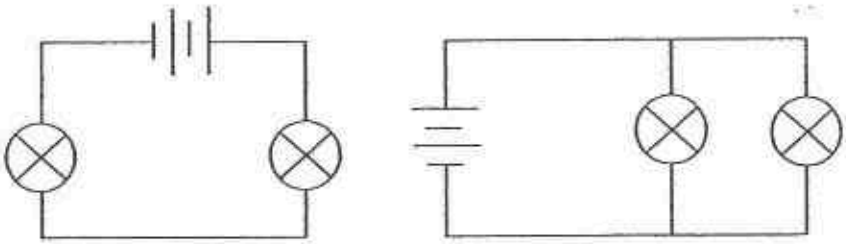
19. A container has a capacity of 500 cm^3. It contains 200 cm^3 of water and a 50 cm^3 solid cube as shown below. Another 30 cm^3 of air is pumped into the container using pump P.



What is the final volume of air in the container?

(1) 30 cm^3
(2) 250 cm^3
(3) 280 cm^3
(4) 300 cm^3

20. Irfan sets up the two circuits below.



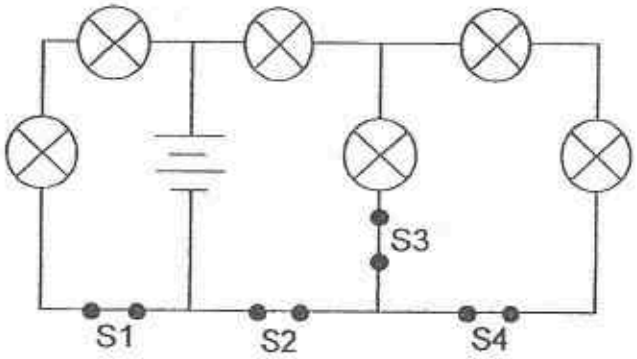
circuit A circuit B

Which of the following statements about the circuits are correct?

A. The bulbs in circuit A are as bright as the bulbs in circuit B.
B. The bulbs in circuit A are dimmer than the bulbs in circuit B.
C. When one bulb blows in circuit A, the other bulb will not light up.
D. When one bulb blows in circuit B, the other bulb will not light up.

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

21. Lu Yee set up the circuit as shown below.



All six bulbs were lit when the switches were closed.

Which switch should she open if she wanted the fewest number of bulbs to be lit?

(1) S1

(2) S2

(3) S3

(4) S4

22. A balloon filled with air, was pushed downwards into a container of water as shown in Figure 1. Figure 2 shows the same balloon floating on water in the container after the hand was released.

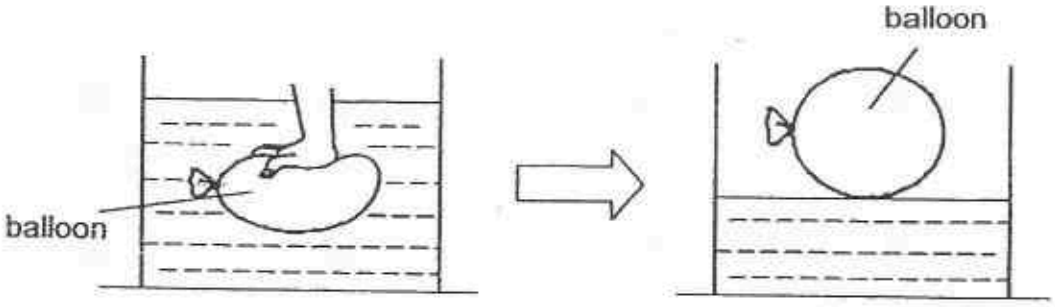


Figure 1 Figure 2

Which one of the following statements about the activity is true?

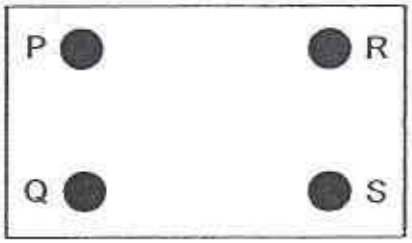
(1) Magnetic force of repulsion was pushing the hand in Figure 1.

(2) There was more friction between the balloon and the water in Figure 2 than that in Figure 1.

(3) The balloon in Figure 2 exerted less force on the water than the balloon in Figure 1.

(4) Less gravity acted on the balloon in Figure 1 than the balloon in Figure 2.

23. Melissa set up a circuit board with four metal buttons, P, Q, R and S, as shown. Wires were used to connect some of the buttons together under the board.

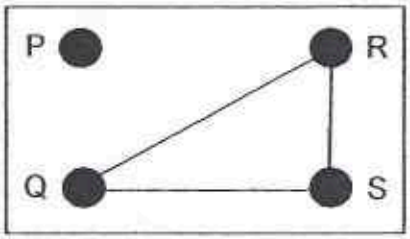


Melissa used a circuit tester to find out how the buttons were connected and recorded her results in the table below.

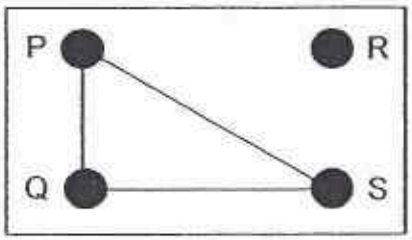
Buttons tested	Did the bulb light up?
P and Q	Yes
P and R	No
P and S	Yes
Q and R	No
Q and S	Yes
R and S	No

Which of the following are possible connections between the metal buttons?

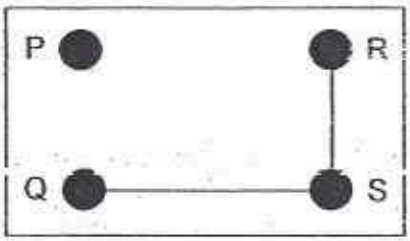
A.



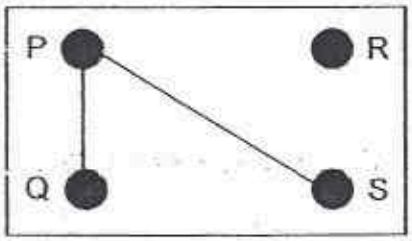
B.



C.



D.



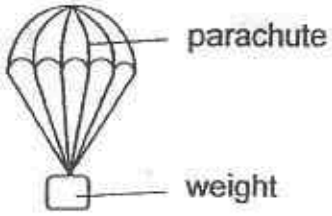
(1) A only

(2) B only

(3) A and C only

(4) B and D only

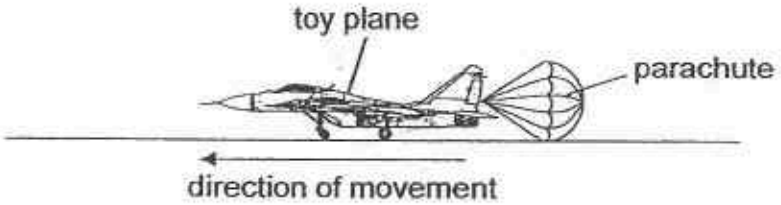
24. Felicia conducted an experiment. She attached a parachute of area J cm^2 to a weight and dropped the set-up from a certain height. She recorded the time taken for the set-up to reach the ground.



Felicia repeated the experiment with two parachutes of other areas, K cm^2 and L cm^2. She used the same weight and dropped it from the same height. Her results are shown in the table below.

Area of parachute (cm^2)	J	K	L
Time taken to reach the ground (s)	6	2	10

Based on her results, which area of parachute should she choose (from best to worst) to slow down her moving toy plane?



	best choice →		worst choice
(1)	J	K	L
(2)	K	J	L
(3)	K	L	J
(4)	L	J	K

25. A bar magnet was taped onto the top of toy car X. Object Z was taped onto the top of another similar toy car Y as shown in Diagram 1.

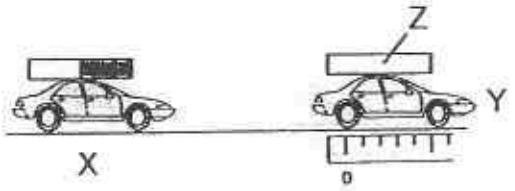


Diagram 1

Car X was pushed towards car Y. When car X went very near to car Y, car Y started moving and travelled about 5 cm as shown in Diagram 2.

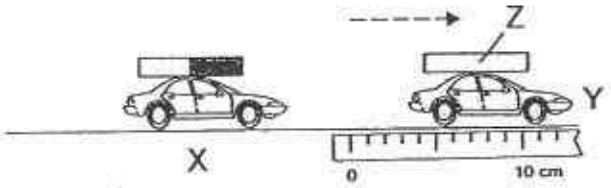


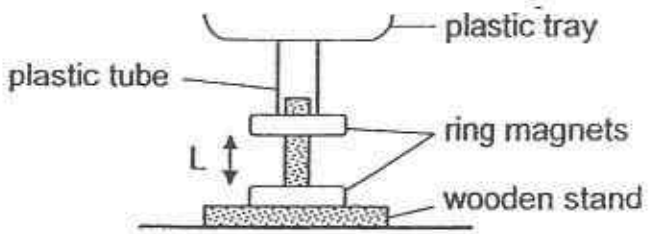
Diagram 2

Which of the following actions would make car Y move further than 5 cm when the experiment was repeated?

A. Hit object Z many time
B. Add water to the surface
C. Turn the bar magnet around
D. Use similar but heavier cars X and Y

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

26. Muthu uses the following set-up in an experiment.



He places stones, each of a different mass onto the tray and measures length L. The results are shown in the table below.

Stones placed on tray	Length L (cm)
P	1.0
Q	3.0
Q and R	2.0

Based on Muthu's results, which of the following is a possible value of length L when only stone R is placed onto the tray?

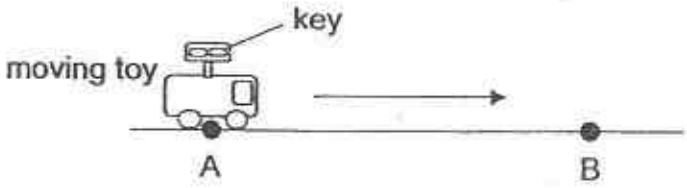
(1) Less than 1 cm

(2) Between 1 cm and 2 cm

(3) Exactly 2 cm

(4) More than 3 cm

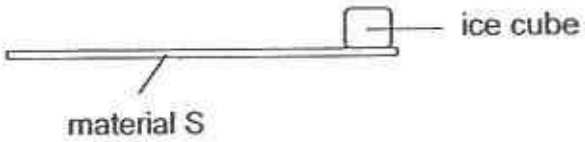
27. A wind-up toy, at point A was moving forward until it stopped at point B.



Compare the potential energy and kinetic energy of the toy at points A and B. Which one of the following is correct?

	potential energy at B compared to A	kinetic energy at B compared to A
(1)	less	less
(2)	less	more
(3)	more	less
(4)	more	more

28. Simon placed an ice cube at one end of material S. He measured the time taken for the temperature of the other end of material S to drop by 5°C.



He repeated the experiment using material T. His results are shown in the table below.

Material	Time taken (min)
S	10
T	35

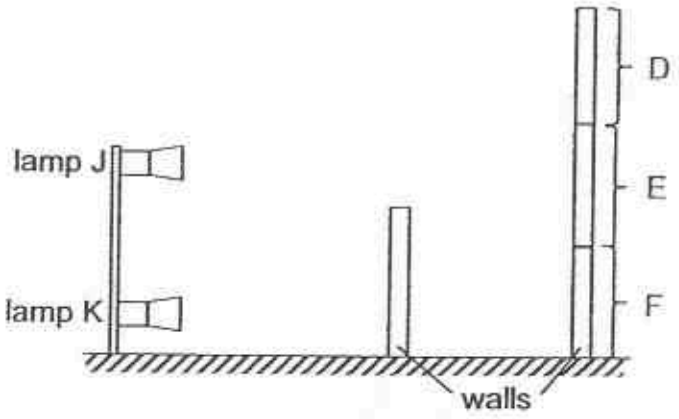
Simon wanted to pack hot food and cold drinks for lunch in containers. The containers should be able to keep the food hot and the drinks cold.

Which material(s) would be more suitable for the containers?

	Material for container carrying	
	hot food	cold drinks
(1)	S	S
(2)	S	T
(3)	T	S
(4)	T	T

29. Study the set-up below. Lamps J and K are identical and each lamp gives out the same amount of light when it is lit.

D, E and F represent three sections of a wall.

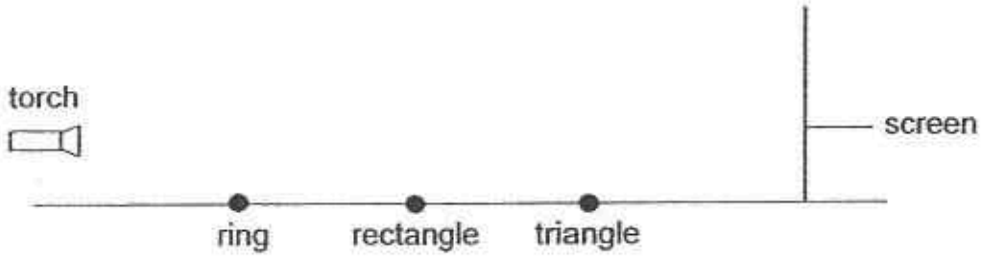


If only lamp K is lit, only section D receives light.

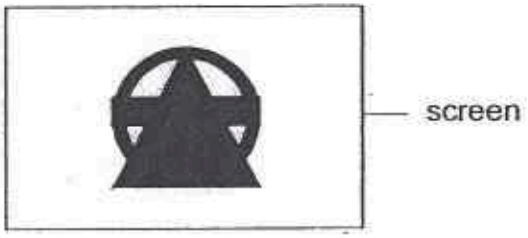
If both lamps J and K are lit, which one of the following shows the correct order of increasing amount of light received for sections, D, E and F?

	Amount of light received by sections		
	Least →		Most
(1)	E	F	D
(2)	F	E	D
(3)	F	D	E
(4)	D	E	F

30. Benny conducted an experiment using a torch and three shapes, a ring, a rectangle and a triangle made of cardboard. They were placed at different positions away from the torch.



The diagram below shows what was seen on the screen.



Benny used a rectangle cardboard of length 10 cm.

Which of the following shows correctly the diameter of the ring and the base of the triangle cardboards?

	Diameter of ring	Base of triangle
(1)	10 cm	10 cm
(2)	Shorter than 10 cm	10 cm
(3)	Shorter than 10 cm	Longer than 10 cm
(4)	Longer than 10 cm	Shorter than 10 cm

END OF BOOKLET A

GO ON TO BOOKLET B

Index No. | | | | | | – | |

MAHA BODHI SCHOOL
2015 PRELIMINARY EXAMINATION
PRIMARY 6
SCIENCE
(BOOKLET B)

Name : _____ ( )

Class : Primary 6 ( )

Date : 18 August 2015

Total Duration for Booklets A and B : 1 h 45 min

INSTRUCTIONS TO CANDIDATES:

1. Write your Index No. in the boxes at the top right hand corner.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answers in this booklet.

Booklet	Marks Obtained	Max Marks
A		60
B		40
Total		**100**

This booklet consists of 17 printed pages.

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.

(40 marks)

31. Luther applied an increasing amount of force on material W. He recorded the amount of force needed to break the material. He repeated the experiment with materials X, Y and Z.

He recorded his results in the table below.

Material	Colour of material	Thickness of material (mm)	Force needed to break material (unit)
W	Red	10	100
X	Blue	11	150
Y	Yellow	12	200
Z	White	13	200

(a) What property of the materials was being tested? [1]

_____

(b) One of the variables in the test above made this an unfair test. Which variable made this test unfair? [1]

_____

(c) Luther wanted to test the relationship between the variable in (b) and the amount of force needed to break the material.

What changes to the experiment should Luther make? [1]

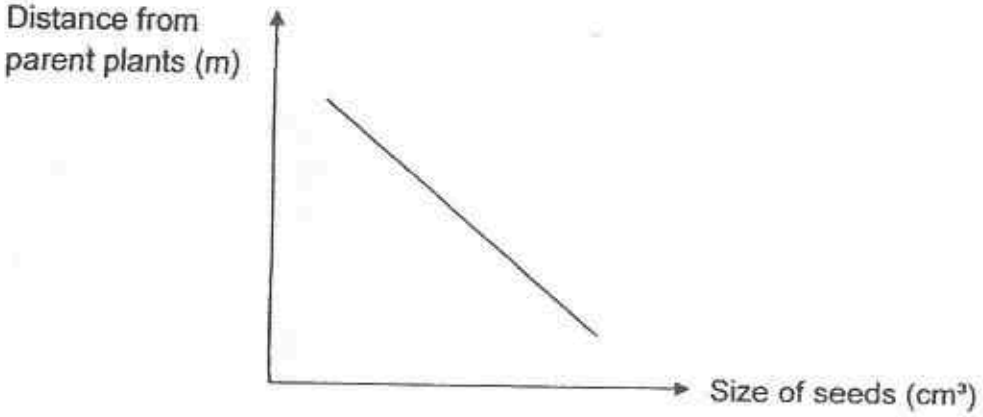
_____

_____

_____

Marks : / 3

32. Devi observed how the size of seeds of plant Z affected the distances they were away from their parent plants. She plotted her results as shown below.



(a) Based on her results, what could Devi conclude about the size of seeds and the distance they were away from parent plants? [1]

_____

_____

(b) State one benefit for plant Z when the seeds are smaller in size. [1]

_____

_____

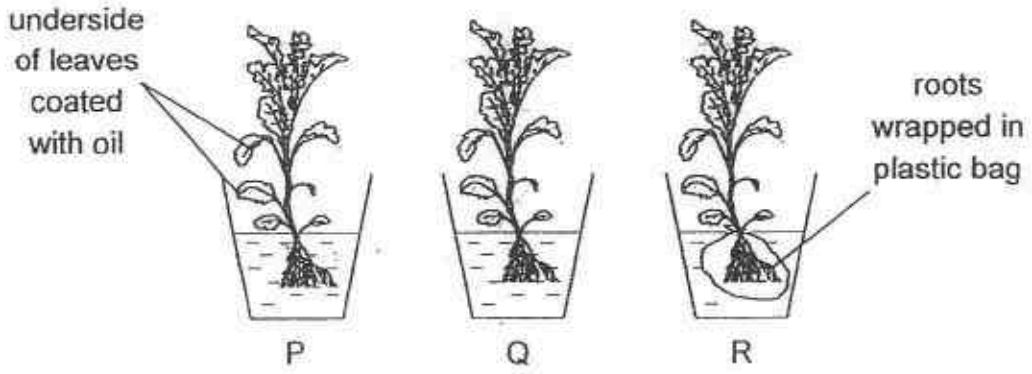
(c) After germination, Devi observed that bigger seeds could survive for a longer period of time without light.
Give a reason for Devi's observation. [1]

_____

_____

Marks : / 3

33. Three plants were placed in similar containers of water containing the same amount of water as shown below.



The amount of water left in each container was measured after three days.

(a) In which set-up would there be the most amount of water left? Explain your answer. [1]

_____

_____

_____

(b) In which set-up would there be the least amount of water left? Explain your answer. [1]

_____

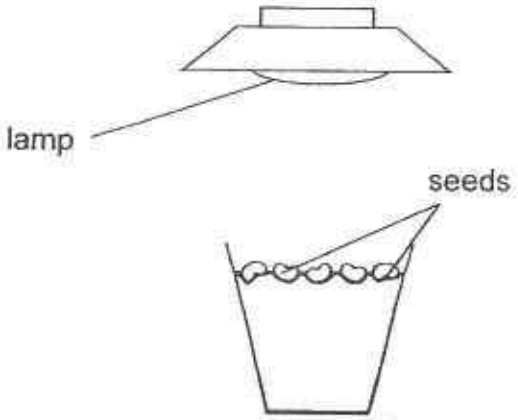
_____

_____

Marks : / 2

34. Joshua wanted to test how the amount of light affects the length of the stem of bean plants.

He planted five seeds in each of the three pots of soil and placed them under lamps of different light intensity. The diagram below shows one of the set-ups.



After a period of time, he measured the length of the stems of the bean plants and recorded his results as shown in the table below.

Pot	Amount of light (units)	Average length of stem (cm)
A	26	5.9
B	560	4.1
C	4285	3.5

(a) How did the amount of light affect the length of the stem? [1]

_____

(b) Explain the relationship between the length of stem and amount of light in (a). [1]

_____

_____

(c) Four weeks after germination, only the plants in pot A died even though they were watered regularly. Explain why the plants died. [1]

_____

_____

Marks : / 3

35. Insect S is usually found on the underside of leaves. One of its predators is birds.

(a) Explain how this behaviour of insect S helps to enhance its survival? [1]

_____

_____

Adults of insect S are predators that feed on caterpillars and other insects. These adults are observed to stay in groups.

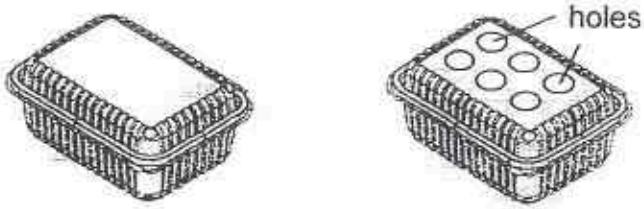
(b) How does staying in groups help adults of insect S to obtain food? [1]

_____

_____

Marks : /2

36. (a) Rizwan used two containers, F and G, to pack his piping hot rice as shown below.



container F container G

After packing, he closed both containers and left them untouched on his kitchen table.

(i) Rizwan observed that the rice in container G became cooler than the rice in container F after some time. Give a reason for his observation. [1]

_____

_____

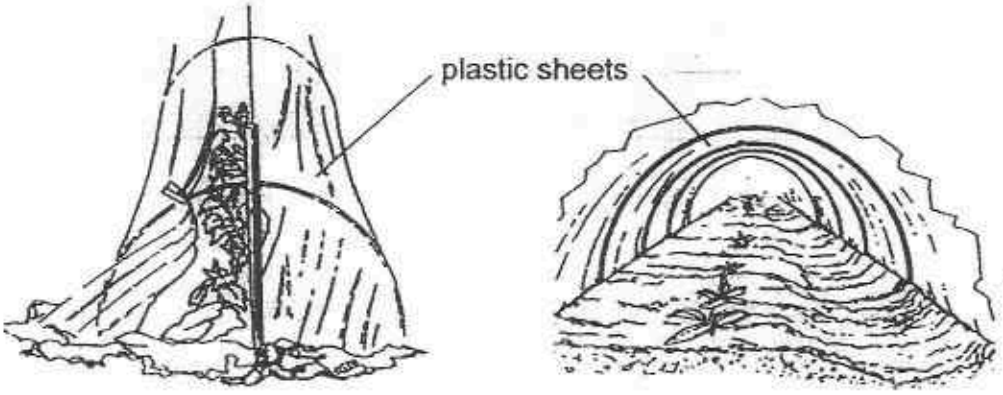
(ii) Rizwan also observed that water droplets were formed on the inside of container F after some time. Give a reason for the formation of the water droplets. [1]

_____

_____

Marks : / 2

(b) In dry and cold places, farmers practice tunnel farming by covering parts of their land with plastic sheets as shown in the diagram below.



View from outside View from inside

By using this farming method, seeds take a shorter time to germinate.

Suggest two reasons why the use of the plastic sheets as covers can help the seeds to germinate earlier. [2]

Reason 1:

_____

_____

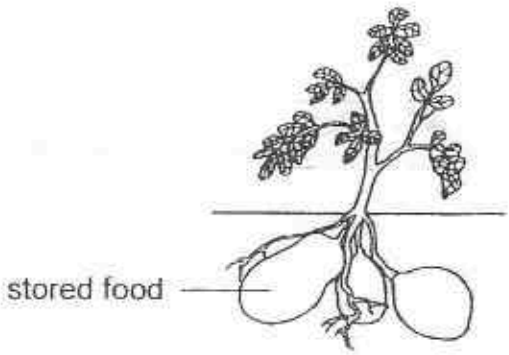
Reason 2:

_____

_____

Marks : / 2

37. The plant below stores food in parts of the stem underground as shown below.



The food is farmed and eaten by people.

(a) Explain how the food is made and stored in the parts of the stem underground. [1]

_____

_____

(b) At one farm, the farmers grow the plants in an area with a higher level of carbon dioxide in the air.

With all other conditions being the same, will the amount of food obtained from the plants over the same period be more, less, or the same? Explain your answer. [2]

_____

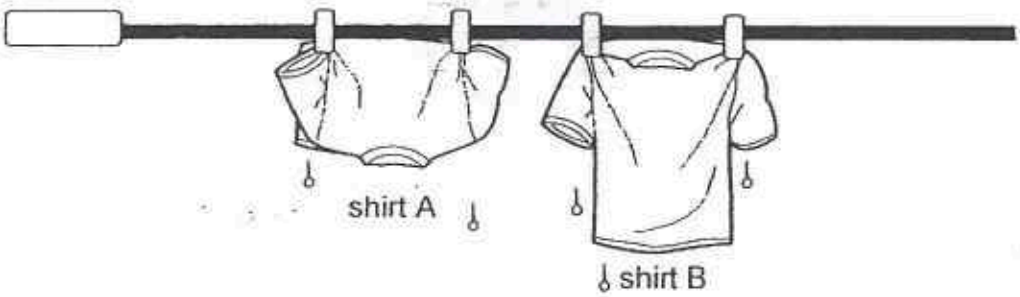
_____

_____

_____

Marks : / 3

38. Sam wanted to test how the way a wet shirt is hung will affect the time it takes to dry. Two similar shirts were hung on a pole in the sun after washing as shown below.



(a) Which shirt would dry faster? Explain your answer. [1]

_____

_____

(b) Explain how hanging the shirts at the same location make this a fair test? [1]

_____

_____

_____

Marks : /2

39. (a) The diagram below shows two similar empty glass dishes, X and Y. Dish X was placed in a refrigerator while dish Y was placed in an oven.

Dish X
3°C
(taken out from refrigerator)

Dish Y
120°C
(taken out from oven)

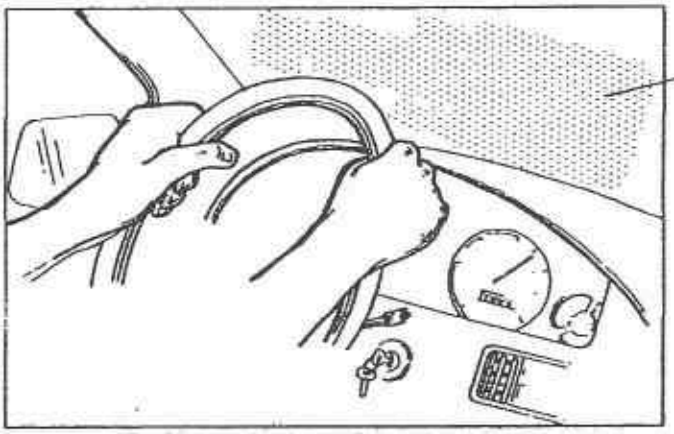
After one hour, both dishes were removed from the refrigerator and oven respectively, and placed on a table in a room of 30°C.

On which one of the dishes, X or Y, would water droplets be observed after some time? Explain your answer. [1]

_____

_____

(b) Sharon was driving when it started to rain. She noticed a layer of mist forming on the inner windscreen of her car.



mist forming on the inner surface of the windscreen

(i) What could ~~Laoran~~ sharon infer about the temperatures inside and outside her car? [1]

_____

_____

Marks : / 2

(ii) Sharon decided to increase the fan speed of the air-conditioner in her car. Based on your answer in (i), explain how this would help to stop more mist from forming on the windscreen. [2]

_____

_____

_____

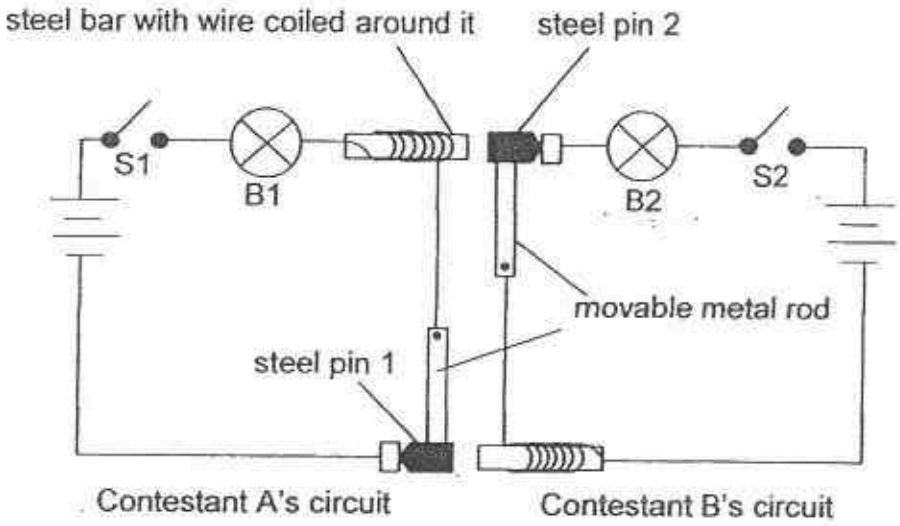
_____

_____

Marks : /2

40. In a quiz show between two contestants, the contestant who wants to answer a question first has to close his switch first.

The two circuits, one for each contestant, are shown below.



Each circuit consists of a movable metal rod fixed to one end to the circuit. The other end of the rod is attached to a steel pin which is not fixed to the circuit. The wire of each circuit is coiled around a steel bar. When both switches are open, a spring mechanism (not shown in the diagram) moves the metal rods to their original position.

(a) What happens to the bulbs if only S2 is closed? [1]

_____

(b) For a particular question, Contestant A closes his switch before Contestant B.

When Contestant B closes his switch, will B2 light up? Explain your answer. [2]

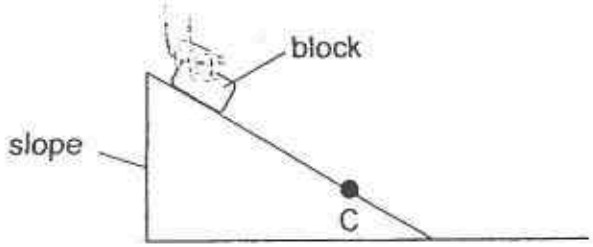
_____

_____

_____

Marks : / 3

41. Jae Woo placed a block on a slope as shown in the diagram below.



When Jae Woo released the block, it slid downwards. After a while, the block slowed down and stopped at point C.

(a) Give a reason why the block slid downwards after Jae Woo released it. [1]

_____

_____

Jae Woo repeated the activity using another similar-sized block made of a different material. After the block was released, it slid and stopped before point C.

(b) Jae Woo concluded that the two blocks stopped moving because there were no forces were acting on the blocks.
Give two reasons why he could not make such a conclusion. [2]

Reason 1: _____

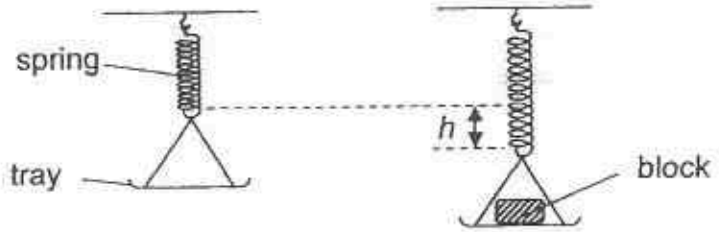
_____

Reason 2: _____

_____

Marks : / 3

42. Hsiao Chi conducted an experiment using the set-up shown below.



She measured length *h* after the block was placed on the tray. She repeated the experiment using blocks of various mass and volumes. Her results are shown below.

Block	Mass (g)	Volume (cm^3)	*h* (cm)
X	25	80	0.5
Y	75	80	1.5
Z	75	100	1.5

(a) Based on Hsiao Chi's results, did the volume of the block affect the amount of force acting on the spring? Explain how you came to your conclusion. [1]

_____

_____

(b) Hsiao Chi repeated the same experiment using another block W. The mass of W was 25 g and its volume was 100 cm^3.
What could the value of *h* be? [1]

_____

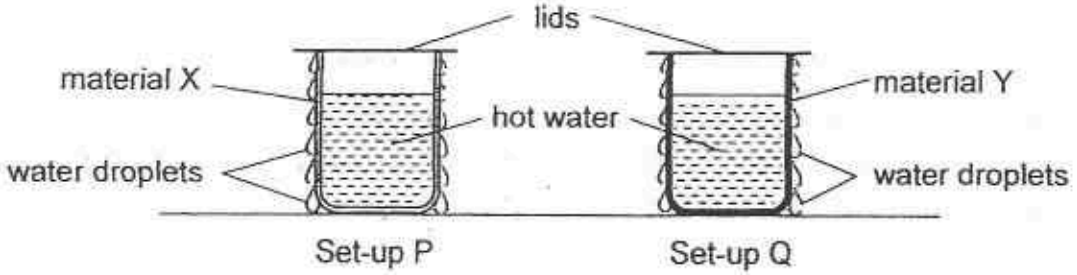
(c) At the end of the experiment, the tray was emptied. Hsiao Chi observed that *h* was 0 cm.
Based on this observation, state the property of the spring. [1]

_____

_____

Marks : /3

43. Aminah conducted an experiment using set-ups P and Q, as shown below. The containers were made of different materials, X and Y. She filled both containers with the same volumes of hot water at 80°C. She sprayed the same amount of water on the outer surface of each container.



Aminah measured the time taken for all the water droplets to disappear from the outer surfaces of the containers. Her results are shown in the table below.

Set-up	Time taken (min)
P	3
Q	9

(a) Aminah observed that the temperatures of the hot water in both containers were decreasing as water droplets disappeared from the outer surfaces of the containers. Explain Aminah's observation. [1]

_____

_____

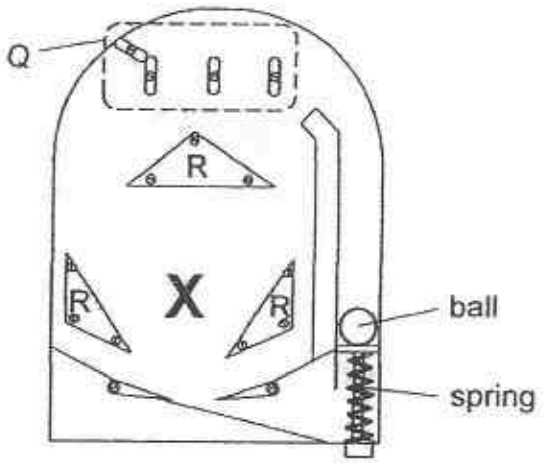
(b) Based Aminah's results, what could she conclude about the property of materials X and Y? [1]

_____

_____

Marks : / 2

44. Li Xue made a pinball game and placed it flat on a table. The diagram shows the top view of the game board she made.



(a) To begin the game, Li Xue had to first compress and then release the spring so that the ball could start to move.
Based on the information, show the energy conversion by filling each box with the correct form of energy. [1]

	→	
energy of the spring		energy of the ball

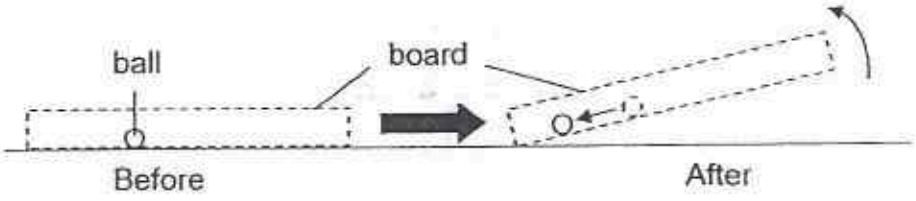
(b) As the ball moved, it hit a few structures Q and R. The ball then moved slower.
Explain why the ball moved slower after hitting structures Q and R. [1]

_____

_____

Marks : / 2

(c) The ball eventually came to a stop at position X. Li Xue tilted the board at an angle and the ball moved out of position X.



Explain why the ball moved again after the board was tilted. [1]

_____

_____

~ END OF PAPER ~

Marks : / 1

EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : MAHA BODHI SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
4	1	4	2	1	2	1	3	2	4
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
1	2	4	3	3	3	4	2	2	3
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
2	3	4	4	1	4	1	4	2	3

Q31a. The material's strength. Q31b. Thickness of the material Q31c. Luther should make the thickness of the different material the same.
Q32a. The larger the size of the seeds, the shorter the distance from the parent plants.
Q32b. Smaller seeds will be dispersed farther from their parent plants, when the seeds are smaller in size, the distance from parent plants is further which would prevent competition with parent plant for air, water, nutrients and sunlight.
Q32c. The bigger seeds contain more nutrients and could survive longer without light compared to the smaller seeds.
Q33a. Set up R. The roots of the plant are wrapped in the plastic bag, the roots will not be able to take in water and there would be the most amount of water left.
Q33b. Set up Q. The roots could still take in water and lose more water through their stomata.
Q34a. The length of the stem was shorter when there is more light.
Q34b. When there is less light, the plant has to grow taller to get more light.
Q34c. There was not enough light for the plants to make food.
Q35a. Staying in groups enables insects to co-operate in their attact and increase their chances of killing a bigger prey.
Q35b. When it hides on the underside of leaves, the predator would not be able to spot it.
Q36ai) The heat in container G could escape through the holes in container G.
Q36aii) Heat can escape G through the holes.
Q36b. Reason 1 : The heat will be trapped inside and there would be enough warmth for the plants to grow. Q36b. Reason 2 : The water evaporates and condenses on the inner surface of the plastic sheet,
Q37a. The leaves take in sunlight and makes food, the food – carrying tubes will then carry the food to all parts of the body and the extra food will be stored in the stem.
Q37b. More. More carbon dioxide will be taken in by the plant, photosynthesis will happen at a faster rate and more food will be stored at the stem.
Q38a. B has a larger ESA so water evaporate faster.
Q38b. Small location means wind and heat and temperature.
Q39a. Dish X. The surrounding water vapor will condense on the cooler outer surface of dish X.
Q39b i) The temperature inside her car is higher than the temperature outside.
Q39b ii) The temperature inside her car would be lower and the water vapour in her car would not condense on the inner surface of the windscreen.
Q40a. Bulb B2 would light up while Bulb B1 would not light up.
Q40b. No. There will be not be a closed circuit for the current to flow through and B2 will not light up.
Q41a. Gravity is acting on the block.
Q41b. Reason 1 : No answers available.
Q41b. Reason 2 : The blocks stopped before it reached the ground because friction is acting on them.
Q42a. NO. Even though both (Y and Z) are different, h, which is the elastic spring force, does not change.
Q42b. 0.5cm Q42c. The spring is elastic.
Q43a. The hot water lost heat to the water droplets outside of the container.
Q43B. Material X is a better heat conductors.
Q44a. Elastic Potential → Kinetic
Q44b. Some of the kinetic energy of the ball is converted to heat and sound energy.
Q44c. The ball has more GPE to convert to KE.

THE END

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2015
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. _____

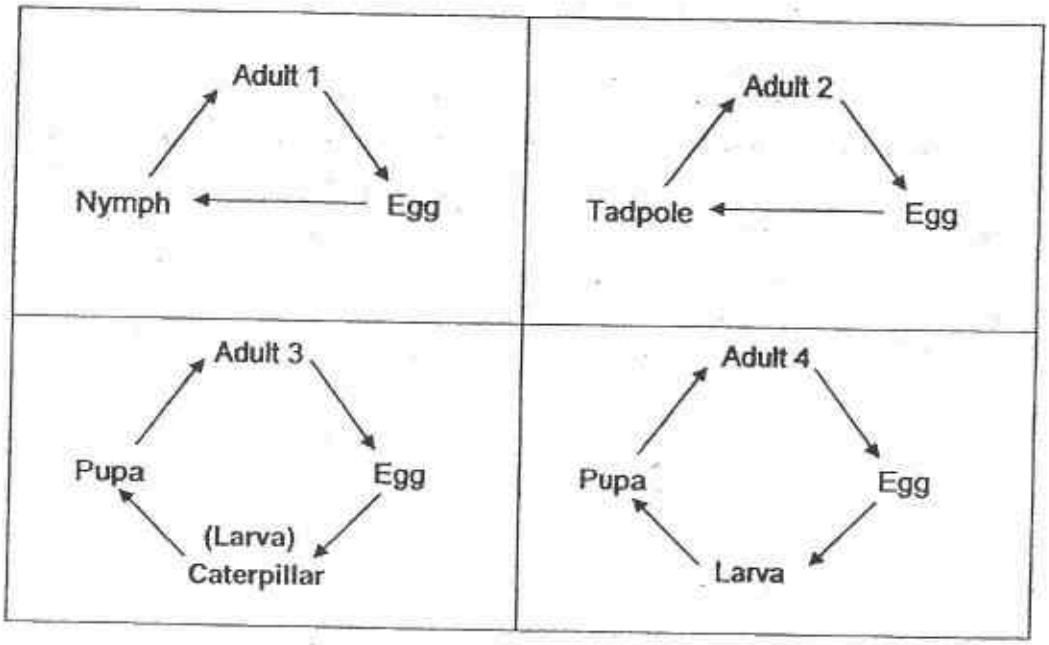
Date : 27 August 2015

This booklet consists of 16 printed pages including this page.

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

[30 marks]

1. Study the life cycles of some animals as shown below.



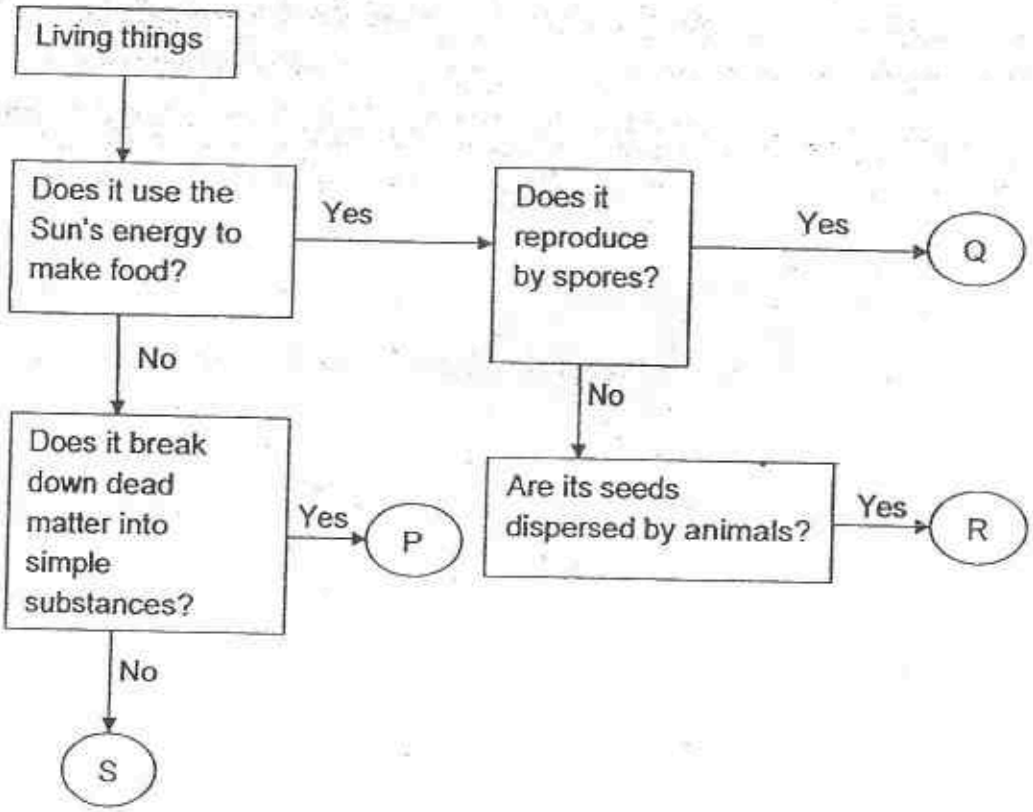
Which of the following statements are true of the above life cycles of animals?

A: All the adults have wings.
B: Adult 1 could be a dragonfly.
C: All the animals develop from eggs.
D: Both Adult 3 and Adult 4 could be moths.

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

(Go on to the next page)

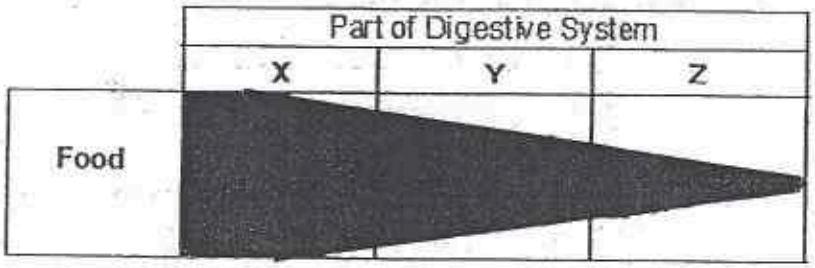
2. The following flowchart shows the characteristics of four different organisms, P, Q, R and S.



Which one of the following options correctly identifies organisms P, Q, R and S?

	P	Q	R	S
(1)	Toadstool	Bracket fungi	Mimosa	Millipede
(2)	Bracket fungi	Bird's nest fern	Mango tree	Termite
(3)	Grass	Mushroom	Coconut tree	Termite
(4)	Bird's nest fern	Grass	Mango tree	Millipede

3. The chart below shows how a certain type of food is digested in some parts of the human body, X, Y and Z. The width of the band (black shaded region) shows the amount of undigested food present in each part of the digestive system.

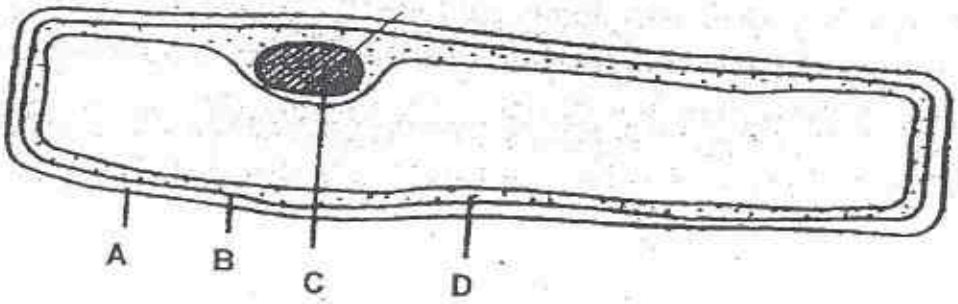


Which organs of the digestive system are correctly represented by Parts X, Y and Z?

	Part X	Part Y	Part Z
(1)	mouth	stomach	small intestine
(2)	stomach	small intestine	large intestine
(3)	mouth	gullet	stomach
(4)	small intestine	stomach	mouth

(Go on to the next page)

4. The diagram below shows parts A, B, C and D of a cell.



Which one of the following options correctly describes the labelled parts?

	Part A	Part B	Part C	Part D
(1)	Gives the cell its shape	Holds the cytoplasm	Keeps the cell firm	Keeps the plant upright
(2)	Is present only in a plant cell	Is present in an animal cell	Makes food for the plant	Food and oxygen can be found here
(3)	Allows all substances to pass through	Controls the transfer of substances in and out of the cell	Controls everything that happens in the cell	Is held by the cell membrane
(4)	Makes food for the plant	Functions as the skeletal system for the plant	Is found in the cytoplasm	Allows substances to move around in the cell

(Go on to the next page)

5. Four children observed two adult cats and their kitten. The table below shows the characteristics of the cats.

Characteristics	Male Adult Cat	Female Adult Cat	Kitten
Colour of fur	Orange	Orange	Orange
Colour of eyes	Brown	Blue	Blue
Presence of stripes	No	Yes	Yes
Presence of fleas	Yes	No	Yes

The four children then gave statements on their observations about the cats.

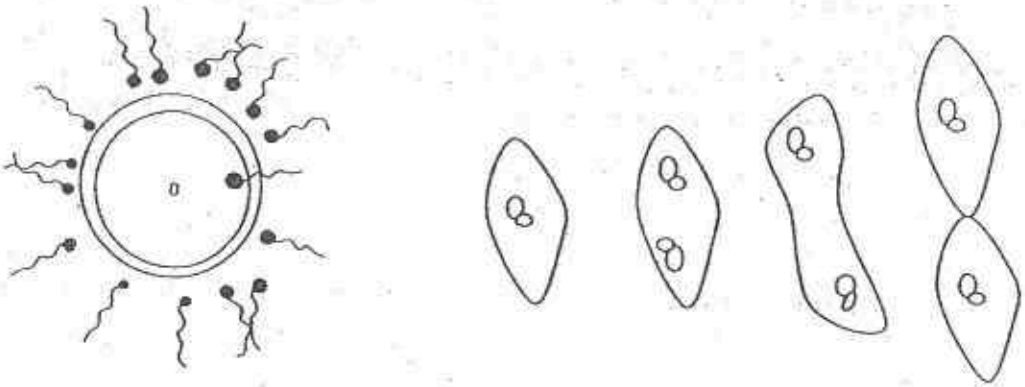
Aruna: The kitten inherited two characteristics from its father.
Bala: The kitten inherited the colour of its eyes from its mother.
Charlie: The kitten inherited at least one characteristic from each of its parents.
Debbie: The female adult cat shared three common characteristics with the kitten.

Based on the table above, whose statements are correct?

(1) Aruna only
(2) Bala and Charlie only
(3) Bala, Charlie and Debbie only
(4) Aruna, Bala, Charlie and Debbie

(Go on to the next page)

6. The diagram below shows two methods of reproduction, X and Y.



Method X (Human)

Method Y (Paramecium)

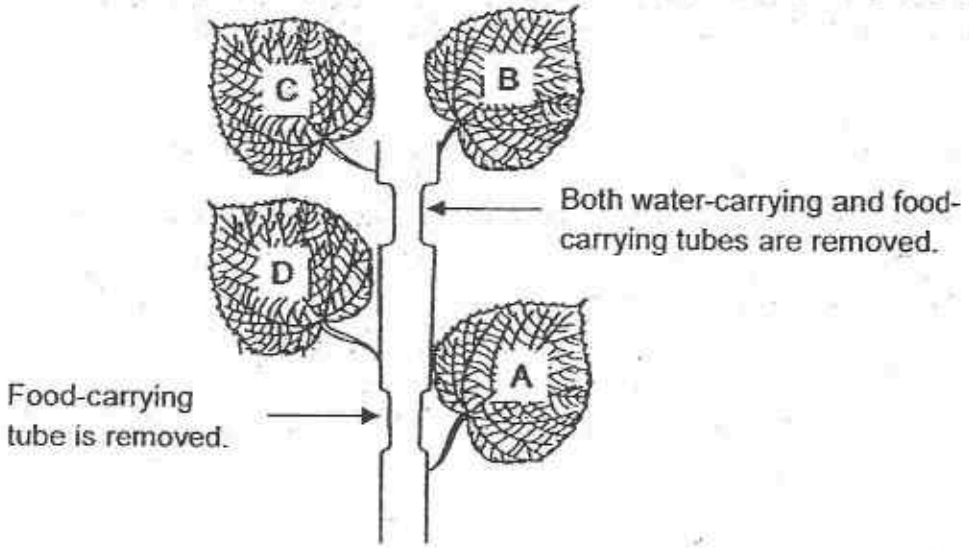
Which of the following statements about the two methods of reproduction, X and Y, are correct?

A: Fertilization takes place in both Method X and Y.
B: For Method X, two parents, a male and a female, are involved while for Method Y, only one parent is involved.
C: For Method X, the young has the same characteristics as the parents but for Method Y, the young does not have the same characteristics as its parent.

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

(Go on to the next page)

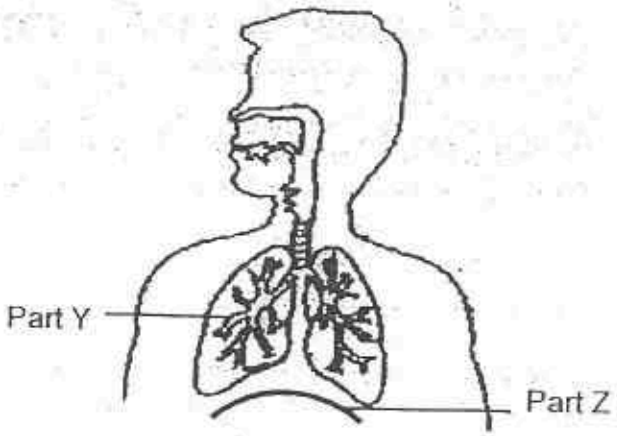
7. Two rings of different thickness were cut and removed from the stem of a plant as shown below. The plant was left under the sun for a week before the leaves, A, B, C and D were plucked out. A starch test was then conducted on the leaves.



Which one of the following options correctly shows the colour of iodine solution when it interacted with each leaf?

	Leaf A	Leaf B	Leaf C	Leaf D
(1)	blue	blue	blue	blue
(2)	brown	blue	blue	brown
(3)	blue	brown	brown	brown
(4)	blue	brown	brown	blue

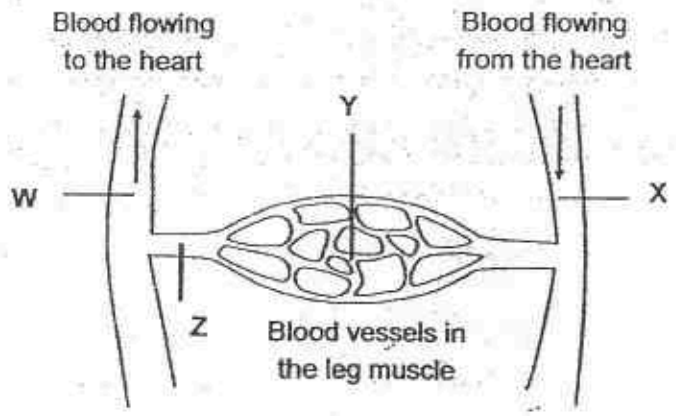
8. The diagram below shows the human respiratory system.



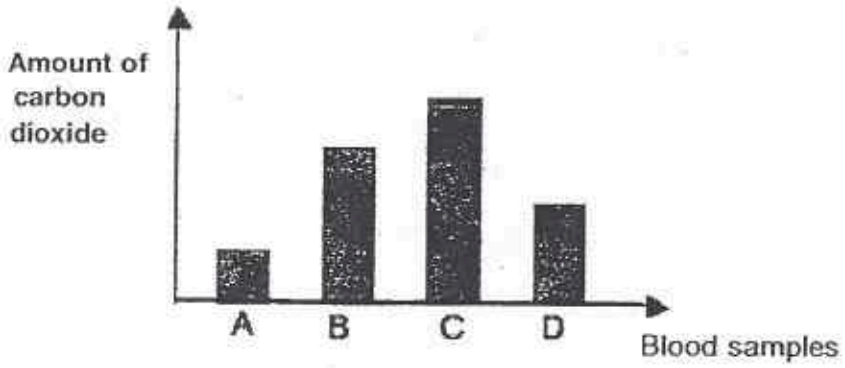
What will happen to Part Y and Part Z when air is exhaled?

	Part Y	Part Z
(1)	expands	moves up
(2)	expands	moves down
(3)	contracts	moves up
(4)	contracts	moves down

9. Study the diagram below which represents blood flowing through the body.



Blood samples of an equal amount, A, B, C and D, were taken from blood vessels at positions W, X, Y and Z in the body. The graph below shows the amount of carbon dioxide present in each of the blood sample.

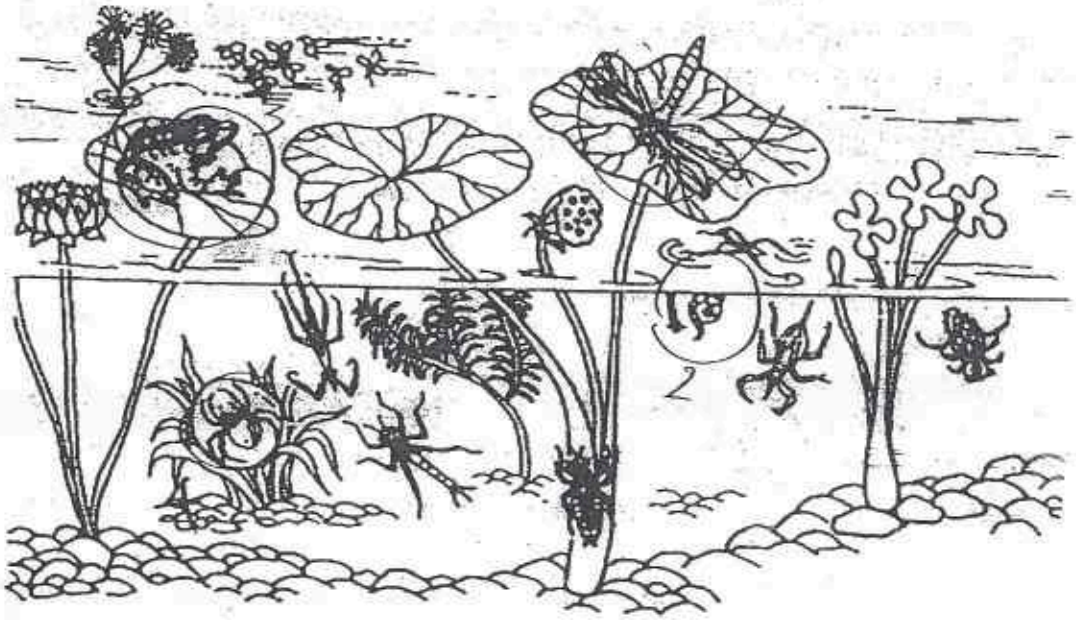


Which one of the following options correctly shows where the blood samples were taken from?

	Position W	Position X	Position Y	Position Z
(1)	Sample D	Sample A	Sample B	Sample C
(2)	Sample C	Sample A	Sample D	Sample B
(3)	Sample C	Sample D	Sample A	Sample B
(4)	Sample D	Sample C	Sample B	Sample A

(Go on to the next page)

10. The diagram below shows the different organisms living in a pond.



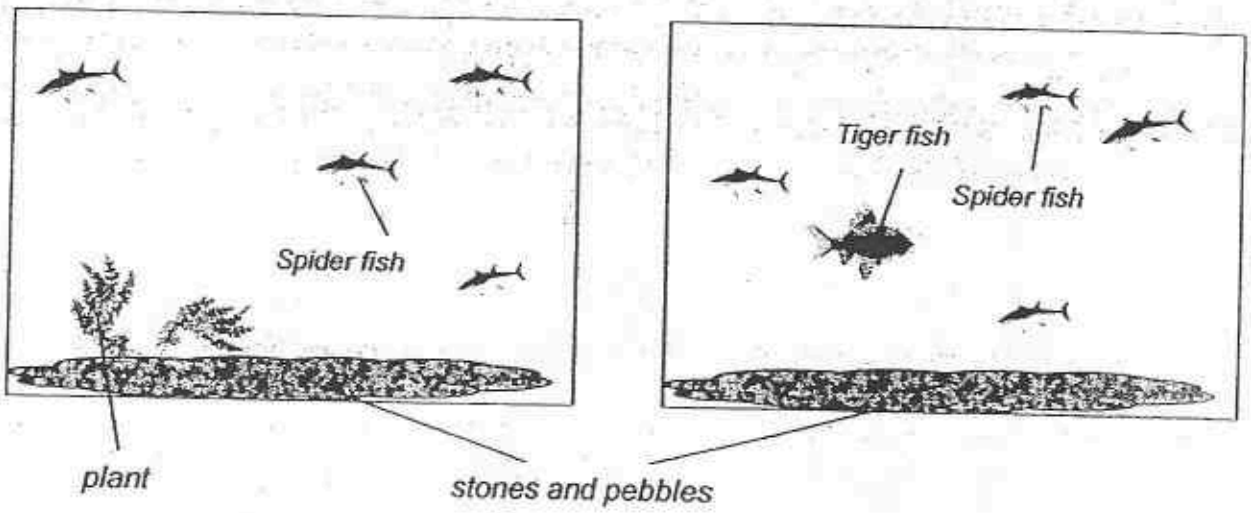
Which of the following statements are correct?

A: There are four animal populations.
B: There are at least two different species of submerged plants.
C: All the organisms living together are independent of one another.
D: There are at least two animal populations which spend part of their life cycles in water.

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

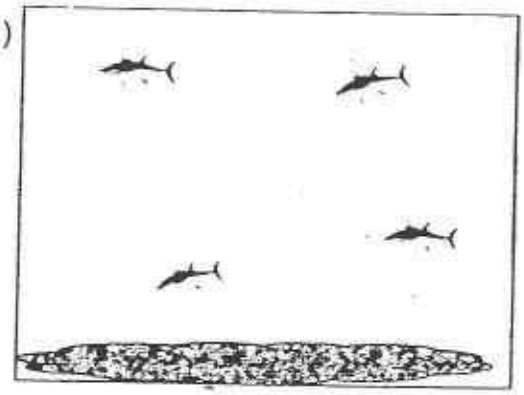
(Go on to the next page)

11. Ronaldo prepared two set-ups as shown below to investigate how the introduction of the aquatic plant and Tiger fish, respectively, would affect the population of the Spider fish.

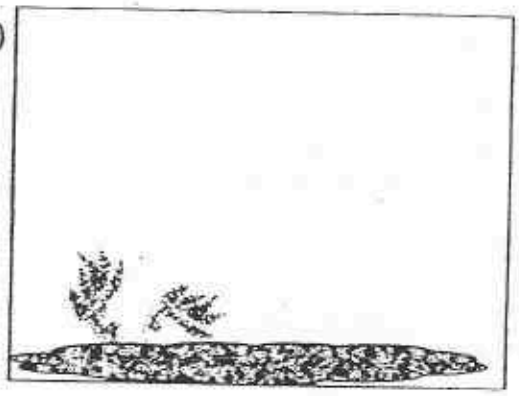


Which one of the following set-ups should Ronaldo use as a control for his experiment?

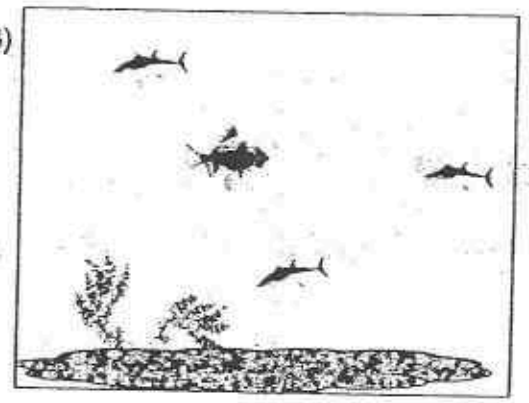
(1)



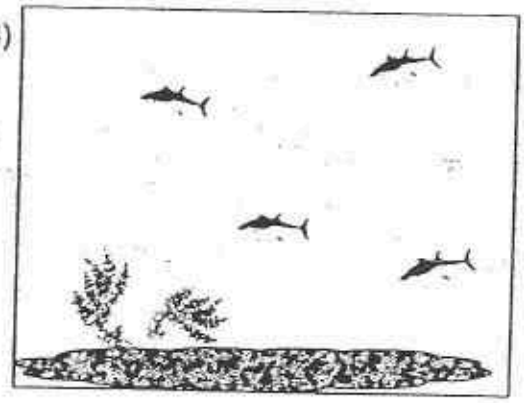
(2)



(3)



(4)



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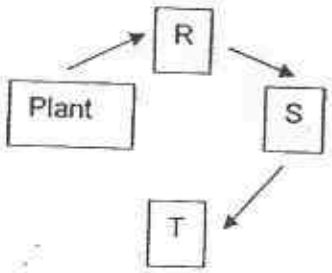
12. Aiden conducted three experiments on food relationships in a community that consisted of a population of a plant and three populations of consumers R, S and T. He set up the experiments and tabulated his results as follows:

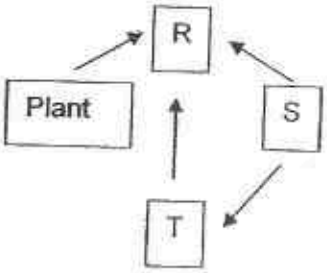
Experiment	Organisms	Population size at the end of experiment
A	Plant	decrease
	R	remains the same
	S	remains the same
B	Plant	decrease
	R	decrease
	T	remains the same
C	Plant	decrease
	S	decrease
	T	remains the same

Based on the above results, which one of the following shows a possible food relationship among the plant and the three animals R, S and T?

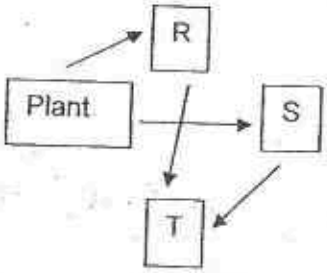
(1)



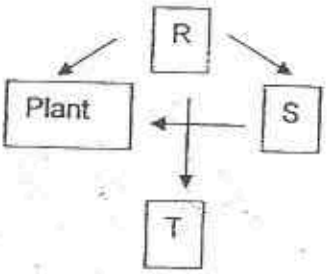
(2)



(3)



(4)



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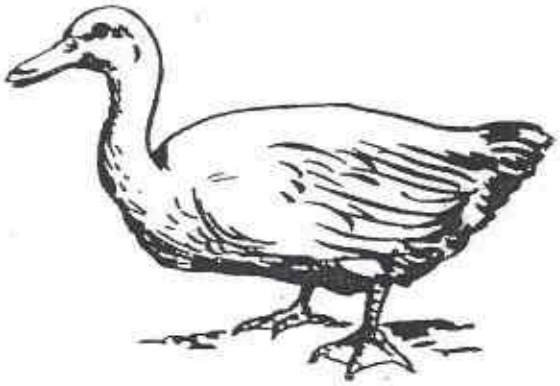
13. Mr Poh went to the Jurong Bird Park and obtained feathers from four different birds. He dipped the four feathers in water and recorded the time taken for each of them to dry in the table below

			
Feather P	**Feather Q**	**Feather R**	**Feather S**
200 seconds	100 seconds	30 seconds	80 seconds

Bird Z as shown below can be found near a river.



Which one of the following feathers would most likely belong to Bird Z?

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

14. Study the table below carefully.

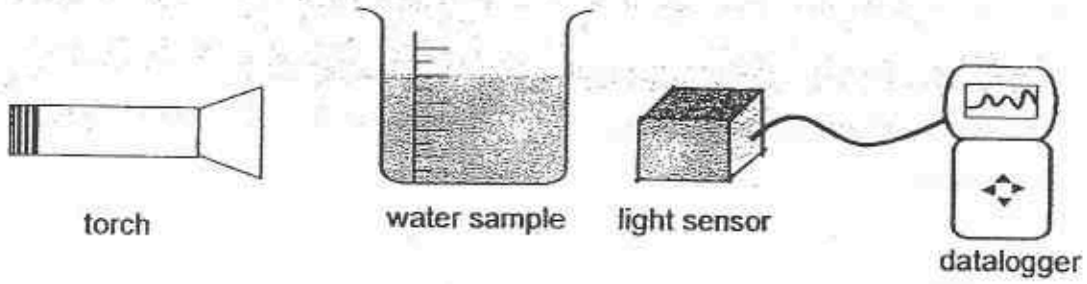
	Positive impact on the environment	Negative impact on the environment	Activities that cause pollution	Prevention
A:	Using a CFC-free hair spray	Using leaded petrol	Lead poisoning from burning of fuels	Use unleaded petrol
B:	Burning trees to clear the land for plantations	Planting trees in previously deforested areas	Emission of greenhouse gases	Increase the use of fossil fuels
C:	Taking a taxi to work instead of a bus	Treating sewage before disposal	Soil erosion	Reduce the use of pesticides
D:	Using genetic selection to increase crop yield	Burning trees to clear the land for plantations	Excessive use of pesticide	Use natural predators to control pests

Which of the following options have activities that are wrongly classified ?

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

(Go on to the next page)

15. Joyce collected a sample of water from a stream flowing near a farm each month and measured the amount of light that could pass through it using a light sensor connected to a datalogger as shown in the diagram below.



The readings for the month of January to June are recorded in the table below.

Month	Jan	Feb	Mar	Apr	May	June
Amount of light (lux)	25	26	30	25	9	5

Which one of the following reasons best explains the drastic change in the readings in May and June?

1) The farmers reduced the amount of fertilizers added to the soil.
2) A factory situated near the farm released thick fumes through a tall chimney.
3) Many crops were harvested and no new crops were grown before a rainstorm.
4) More harmful UV rays enter the stream due to the depletion of the ozone layer.

End of Booklet A1

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2015
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.
Write your answers in this booklet.

Name: _____ ( )

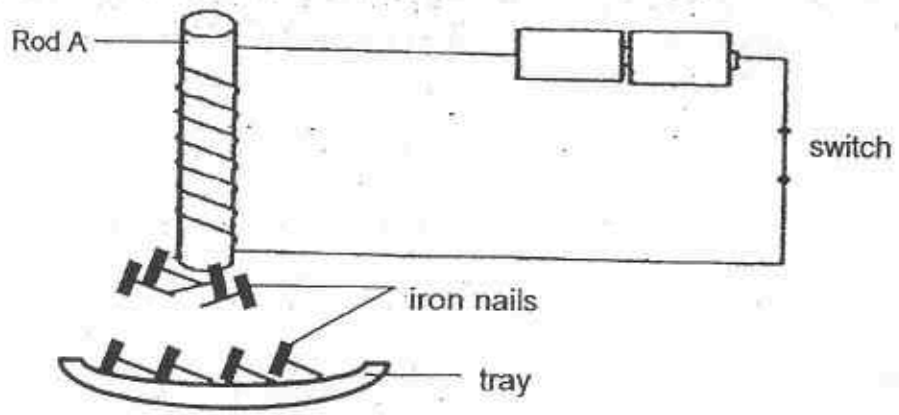
Class: Primary 6. _____

Date : 27 August 2015

This booklet consists of 16 printed pages including this page.

For each question from 16 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS). [30 marks]

16. Jason set up an experiment as shown below. When the switch was closed, the rod attracted some iron nails while the rest remained on the tray. He then repeated the experiment using the same set up with rods,B,C and D.



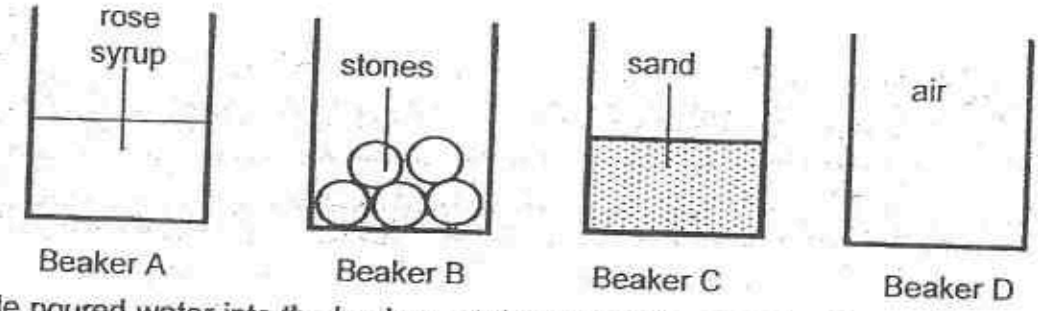
Jason then recorded the results as shown in the table below.

Rod	Number of nails left on the tray
A	26
B	30
C	29
D	10

Based on the above results, which rod would be the most suitable for making an electromagnet to separate magnetic from non-magnetic material?

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

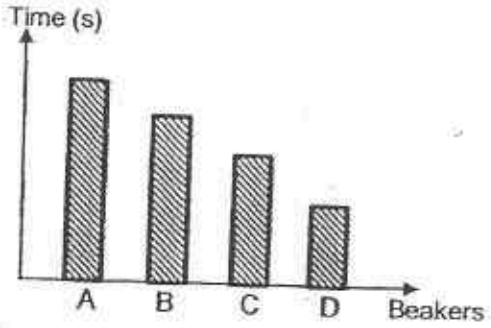
18. Hashim was given 4 similar beakers, A, B, C and D. Each beaker was filled with different substances as shown in the following diagram.



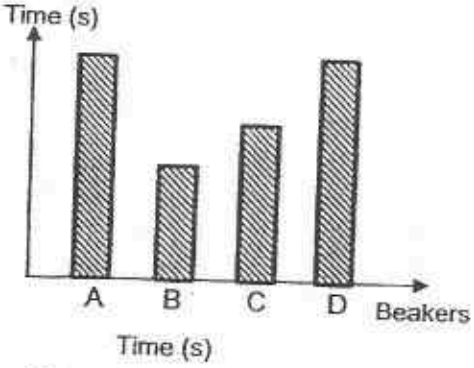
He poured water into the beakers at the same rate, one at a time and measured the time taken for the content in each beaker to overflow.

Which one of the following graphs shows the time taken for the content to overflow?

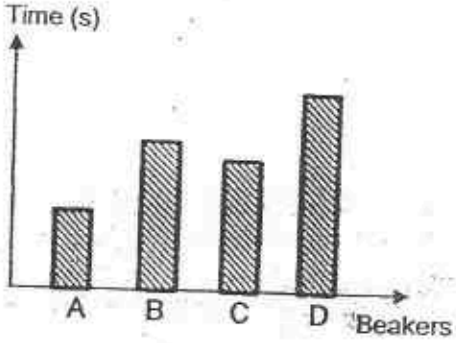
(1)



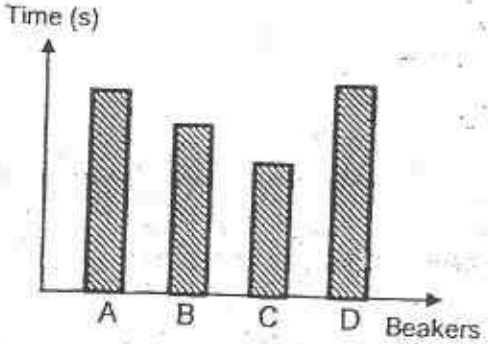
(2)



(3)

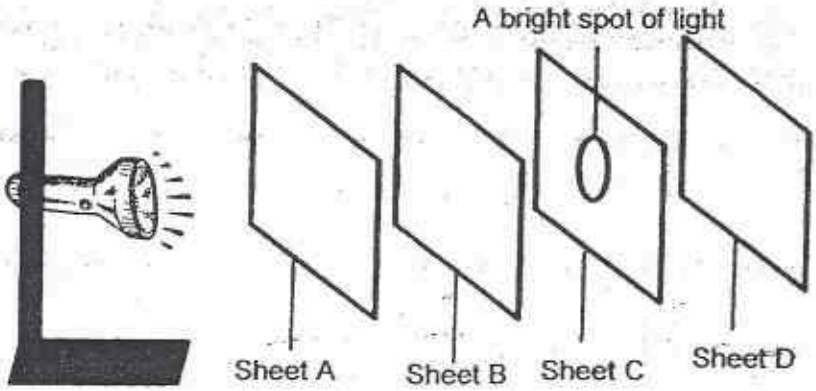


(4)

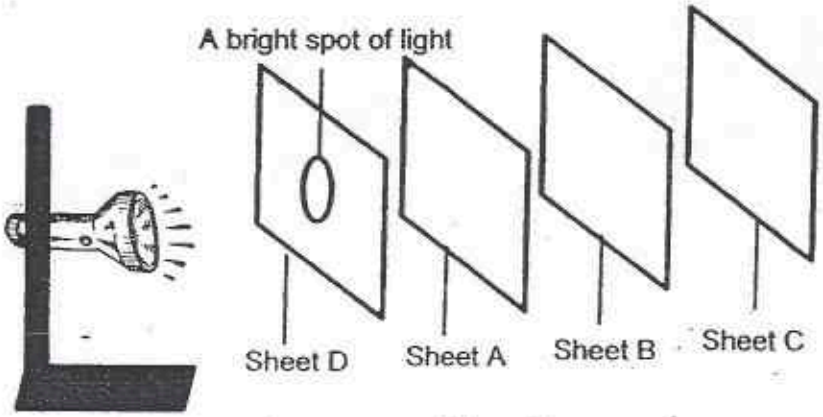


17. An experiment was conducted to investigate whether light can pass through sheets A, B, C and D which were made of different materials. The sheets were arranged at equal interval in two set-ups, X and Y as shown.

A bright spot of light was observed on Sheet C in Set-up X and Sheet D in Set-up Y.



Set-up X

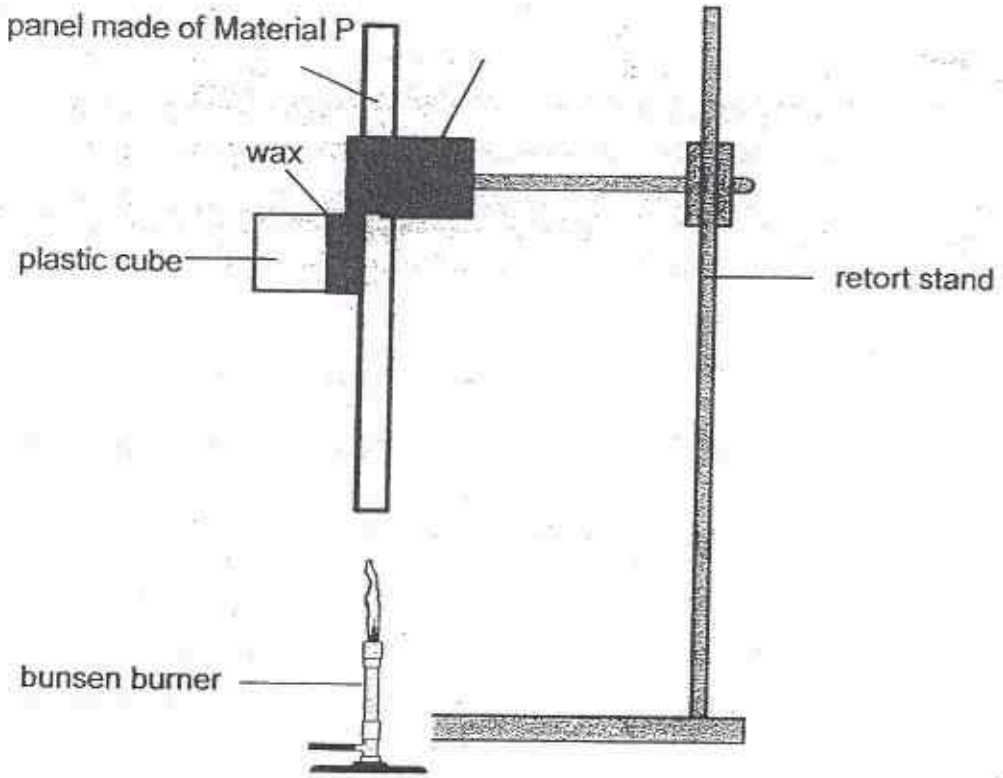


Set-up Y

Based on the results. which one of the following options correctly shows the property of the materials that sheets A, B,C and D are made of?

	Does it allow light to pass through?			
	A	B	C	D
(1)	Yes	No	Yes	No
(2)	Yes	Yes	No	No
(3)	Yes	No	Yes	Yes
(4)	Yes	No	Yes	No

19. Christie used wax to attach a plastic cube onto a panel made of Material P as shown below.



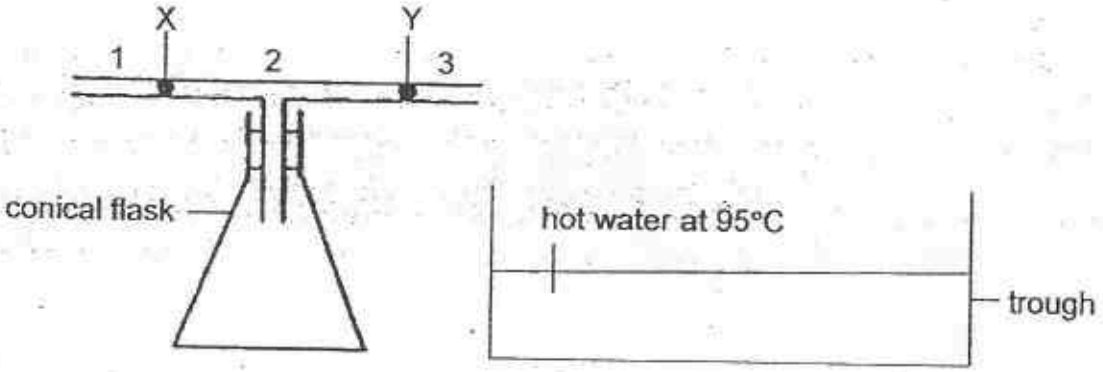
Christie recorded the time taken for the plastic cube to slide down the panel. She repeated the experiment using similar panels of equal thickness but made of different materials, Q, R and S. The results are shown in the table below.

Material	Time taken for plastic cube to slide down the panel (s)
P	50
Q	80
R	100
S	75

Based on the above results, which of these materials are the most suitable to make the following items?

	Base of an electric iron	Handle of a frying pan
(1)	R	P
(2)	R	S
(3)	P	Q
(4)	P	R

20. The diagram below shows an empty conical flask with a T-shaped tube. X and Y are two drops of ink in the tube. The conical flask was then immersed in a trough of hot water at 95°C



What will be observed after the conical flask is immersed into the hot water for 10 minutes?

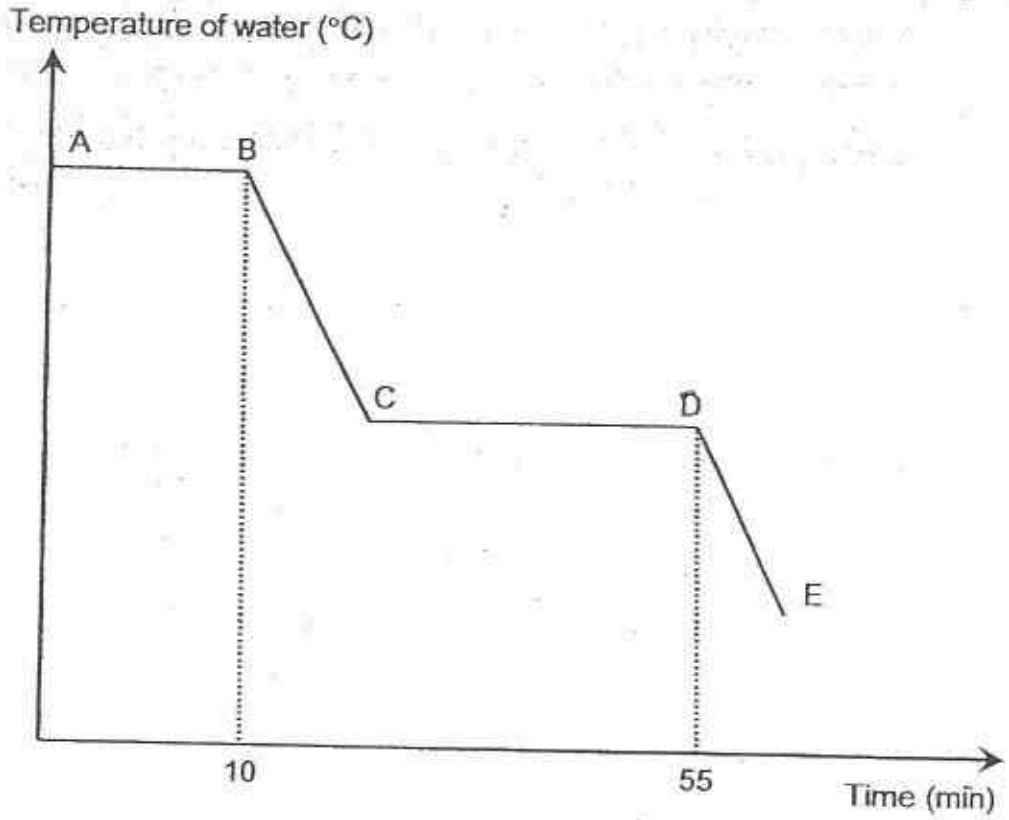
(1) X will move towards Position 1 and Y will move towards Position 2.

(2) X will move towards Position 2 and Y will move towards Position 3.

(3) X will move towards Position 2 and Y will move towards Position 2.

(4) X will move towards Position 1 and Y will move towards Position 3.

21. **A beaker of boiling water was left to boil for 10 minutes. It was then left on a table to cool down. When the water reached room temperature for a while, some ice cubes are added. The following graph was plotted to show the change in temperature.**



Based on the above graph, four students each made a statement.

Winnie: Ice cubes were added at Point D of the graph.

Xue Min: No condensation occurred during the experiment.

Yahya: There was a change of state at Point A to B in the experiment.

Zoe: The water eventually changed to solid state after 55 minutes.

Whose statement(s) is/are correct?

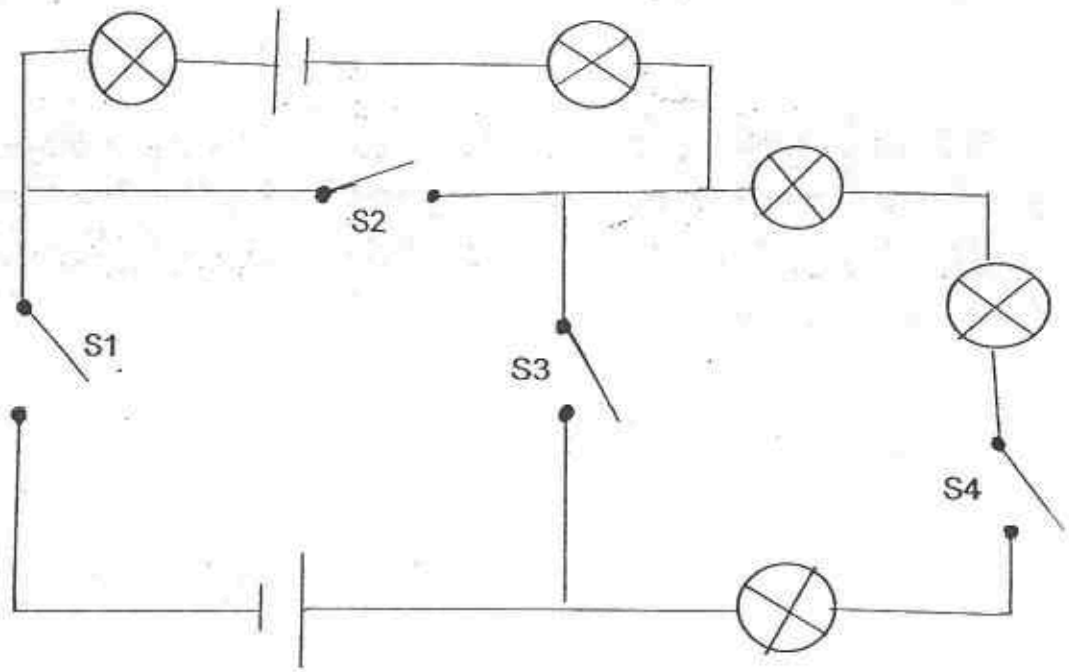
(1) Winnie only

(2) Xue Min only

(3) Winnie and Yahya only

(4) Winnie, Yahya and Zoe only

22. Study the following electrical circuit.



Which of the following switches S1, S2, S3 and S4 must be closed for all the bulbs to light up?

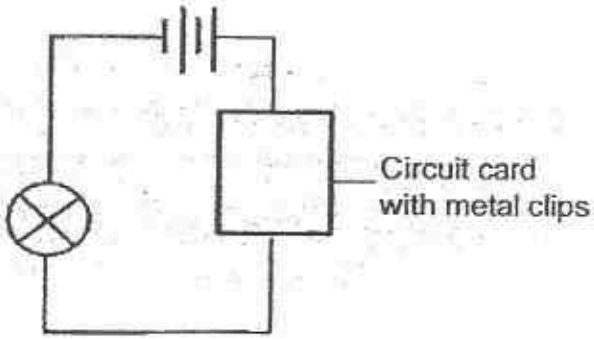
(1) S1 and S4 only

(2) S2 and S4 only

(3) S2 and S3 only

(4) S3 and S4 only

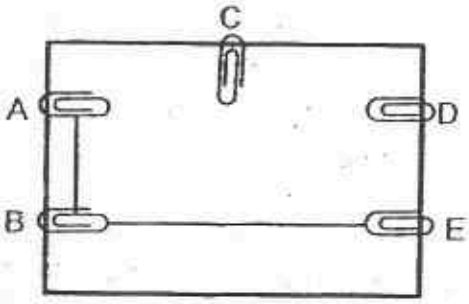
23. Anne used a circuit tester to test a circuit card as shown below. She recorded her observations in the table below.



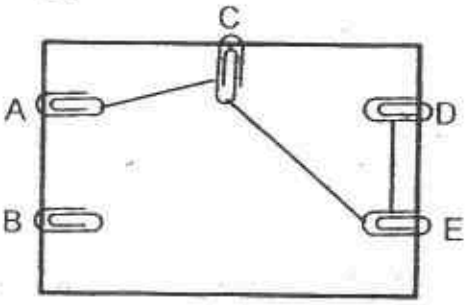
Metal clips tested	Bulb of circuit tester
A and B	Does not light up
A and C	Lights up
C and D	Lights up
B and C	Does not light up
B and E	Does not light up
A and D	Lights up

Based on the above results, which one of the following represents the correct circuit card?

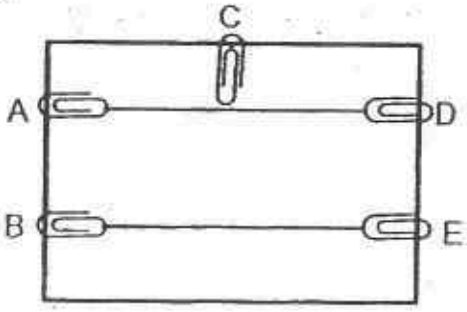
(1)



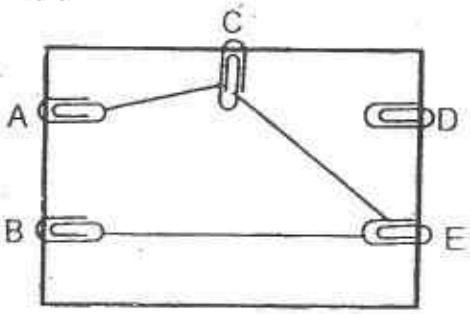
(2)



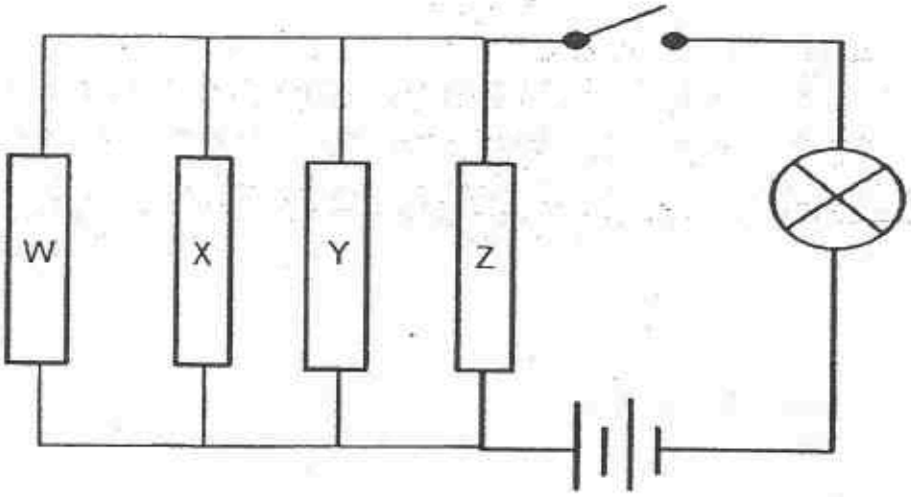
(3)



(4)



24. Sam carried out an experiment to find out the electrical conductivity of rods W, X, Y and Z as shown below.



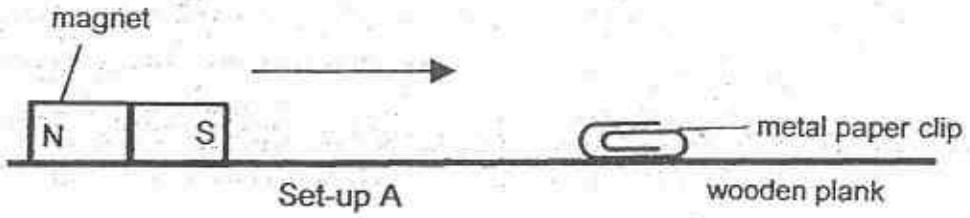
His findings, when the switch was closed, were shown in the table below.

Rods removed from the circuit	Did the bulb light up?
W	yes
X and Y	yes
W, X and Y	no
W, Y and Z	no

Based on the above results which one of the following correctly represents the materials of rod W, X, Y and Z?

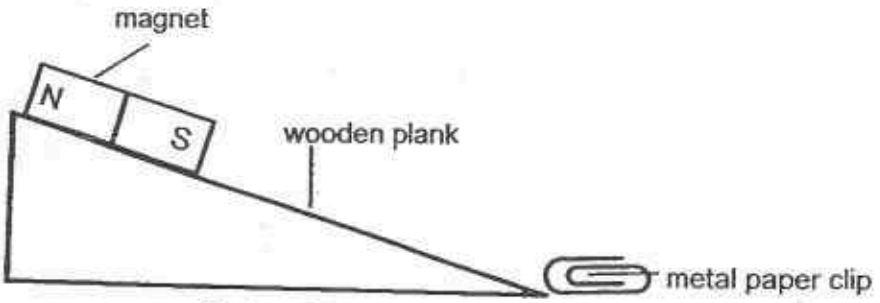
	W	X	Y	Z
(1)	steel	glass	copper	plastic
(2)	copper	wood	ceramic	glass
(3)	steel	plastic	glass	copper
(4)	copper	steel	plastic	glass

25. Devi set up the experiment as shown in Set-up A. She slid the magnet slowly towards the metal paper clip until the paper clip was attracted to magnet. She recorded the distance between the magnet and the metal paper clip when the attraction occurred.



Set-up A

Devi then repeated the experiment by using the same wooden plank which is raised to a height as shown in Set-up B. For each set-up, the experiment is repeated twice.



Set-up B

She then recorded the experiment results in the table below.

	Set-up A		Set-up B	
	1st try	2nd try	1st try	2nd try
Distance (cm)	1.6cm	1.5cm	0.8cm	0.7cm

Based on the results in the table, which of the following statement(s) is/ are correct?

A: The magnetic force of attraction can act at a distance.

B: The magnetic force of attraction is weaker in Set-up A than in Set-up B.

C: The force of gravity acting on the paper clip in Set-up B is more than Set-up A

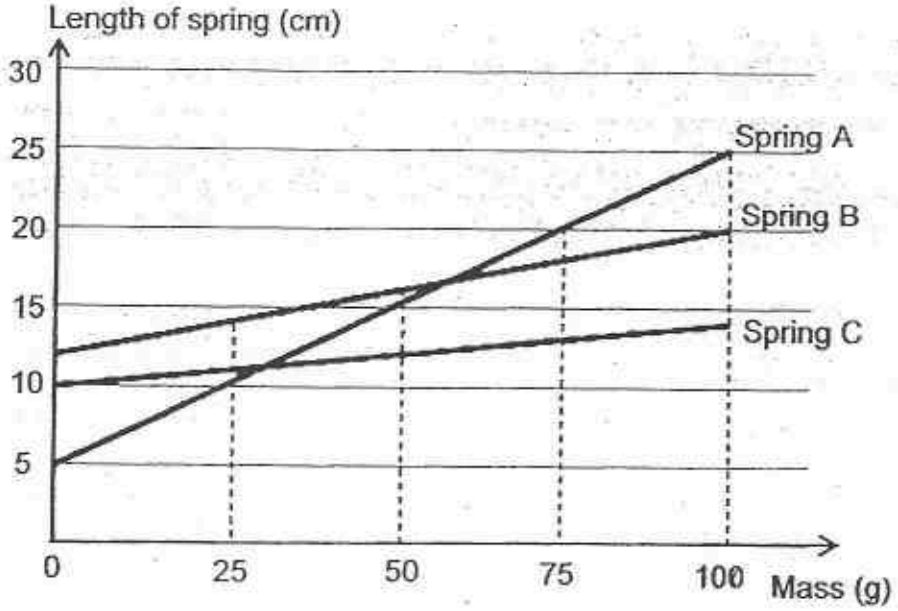
(1) A only

(2) A and B only

(3) C and D only

(4) A, B, C and D

26. Ah Soon carried out an experiment with three different springs in which he hung masses on them. Based on his results, he plotted the line graphs as shown below.



What could Ah Soon conclude from the line graphs above?

A: Spring C is the least elastic.

B: When the mass is doubled, the length of Spring A is also doubled.

C: The extension of Spring A is the same with every 25g of mass added.

D: When a mass of 100g is hung on Spring B, the extension of the spring is 20cm.

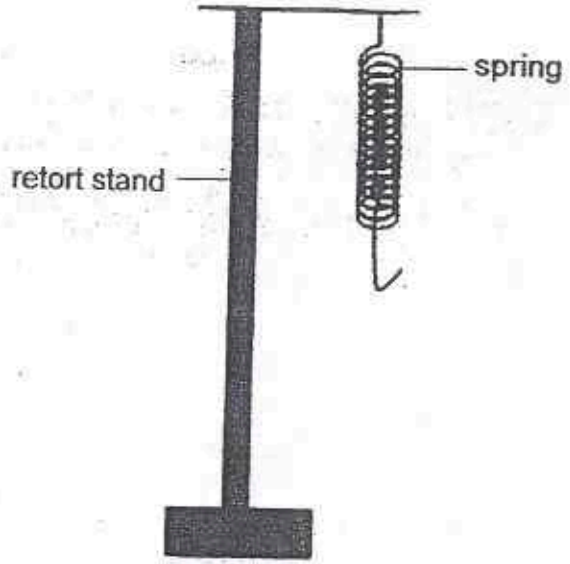
(1) A only

(2) A and C only

(3) B and C only

(4) A, B and D only

27. Marie set up a spring suspended on a retort stand as shown in the following diagram. The original length of the spring is 5 cm.



She then hung four different objects, A, B, C and D in different combinations on the spring and recorded her results in the table below.

Object(s) hung on the spring	Length of the spring (cm)
A	10
A and B	20
B and D	18
A, C and D	25

Based on the above results, arrange the objects according to their mass, from the **lightest to heaviest**.

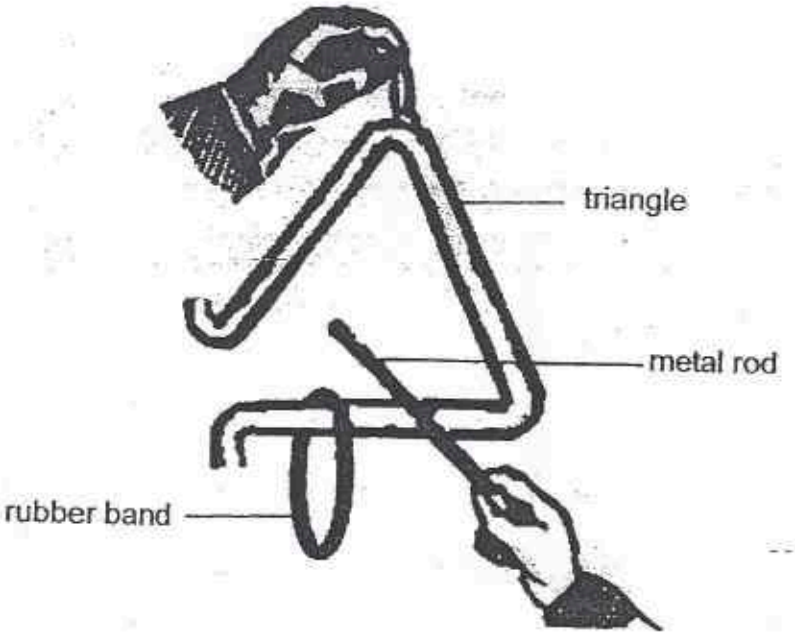
(1) A, B, D and C

(2) C, D, B and A

(3) D, C, A and B

(4) D, A, B and C

28. Wei Wei hung a rubber band on a triangle which is a percussion instrument and then hit it with a metal rod as shown in the diagram below.



After hitting for several minutes, the rubber band dropped off the triangle.

Which one of the following options shows the energy conversion from the time the triangle was hit by the metal rod to the point when the rubber band dropped?

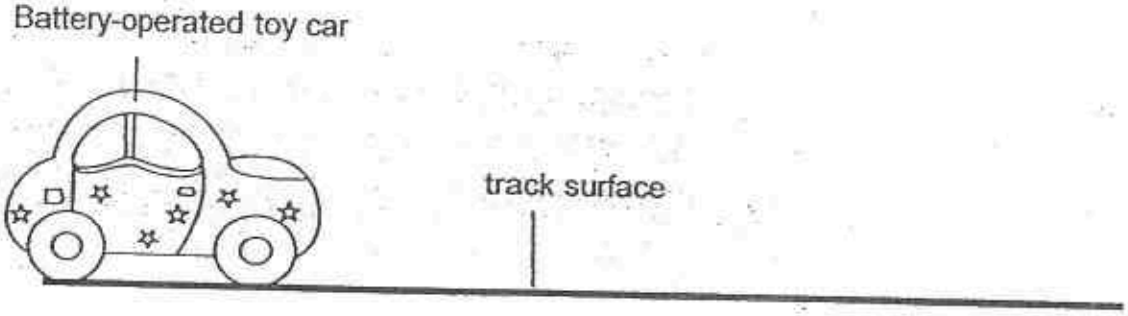
(1) sound energy → potential energy + kinetic energy
(metal rod) (triangle and rubber band)

(2) kinetic energy → kinetic energy + potential energy
(triangle) (metal rod) (rubber band)

(3) kinetic energy → sound energy + kinetic energy
(metal rod) (triangle) (triangle and rubber band)

(4) sound energy → potential energy + kinetic energy
(triangle) (rubber band)

29. Thomas carried out an investigation to measure the distance travelled by a battery operated toy car in 1 minute along different track surfaces made of materials A, B, C and D.



He then recorded the results of the investigation in the following table.

Track surface	Distance travelled by toy car (m)
A	37.5
B	40.2
C	35.3
D	29.6

Based on the results, which one of the track surfaces would be the most suitable to make the surface of a slide in the playground?

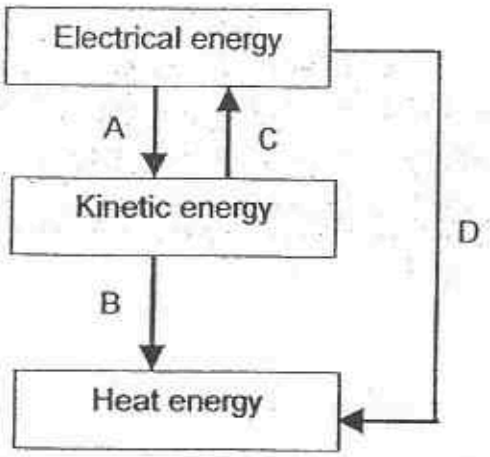
(1) A

(2) B

(3) C

(4) D

30. Study the diagram below which shows the energy conversion for activities A, B, C and D.



Which one of the following options best describes activities A, B, C and D?

	A	B	C	D
(1)	switching on a ceiling fan	striking a matchstick	operating a turbine	switching on a toaster
(2)	switching on an iron	pressing a doorbell	running on treadmill	rubbing hands together
(3)	pressing a doorbell	beating an egg	striking a matchstick	switching on the television
(4)	operating a turbine	rubbing hands together	beating an egg	switching on a toaster

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2015
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: _____

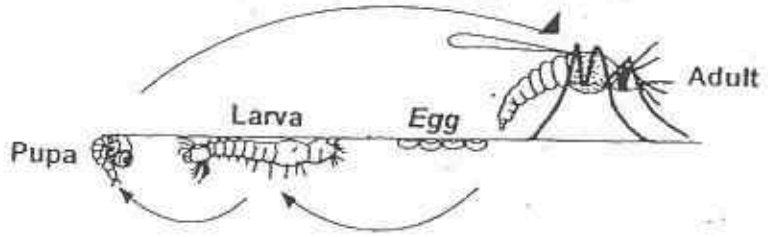
Class: Primary 6_____

Date : 27 August 2015

This booklet consists of 8 printed pages including this page.

For questions 31 to 37, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [20 marks]

31. Dengue fever is an illness caused by infection with a virus transmitted by the *Aedes* mosquito. Researchers carried out an experiment on some mosquitoes kept at different temperatures. They then observed and recorded the duration of each stage of their life cycle.



The results are shown in the table below:

	Duration of stage at different temperatures (Days)			
	26°C	28°C	30°C	32°C
Egg	2	2	2	2
Larva	9	8	7	6
Pupa	2	2	2	2

(a) Based on the results above, suggest how global warming would affect the number of dengue fever cases. Explain your answer clearly. [1]

(b) Suggest two advantages to the species if the young and the adult mosquito lived in different surroundings. [2]

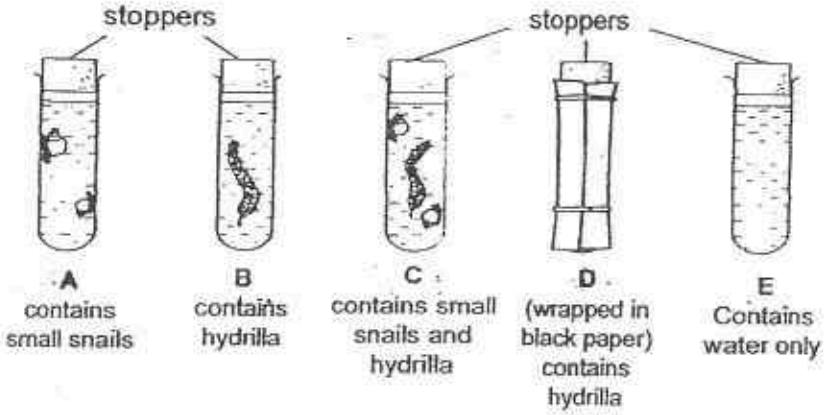
Advantage 1: _____

Advantage 2: _____

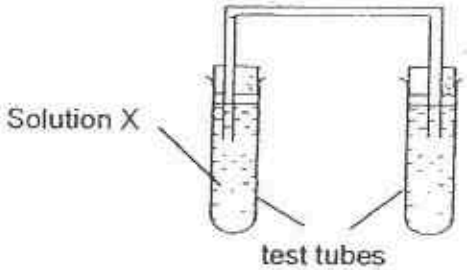
32. Solution X is orange in colour. The table below shows what happens when Solution X reacts with different amounts of carbon dioxide dissolved in it.

Colour of Solution X	Amount of dissolved carbon dioxide
orange	same amount of carbon dioxide as in the air
yellow	more carbon dioxide than in the air
purple	less carbon dioxide than in the air

Five test-tubes, A, B, C, D and E were used in the experiment conducted in a science laboratory. Each of the test tubes contains the same amount of water.



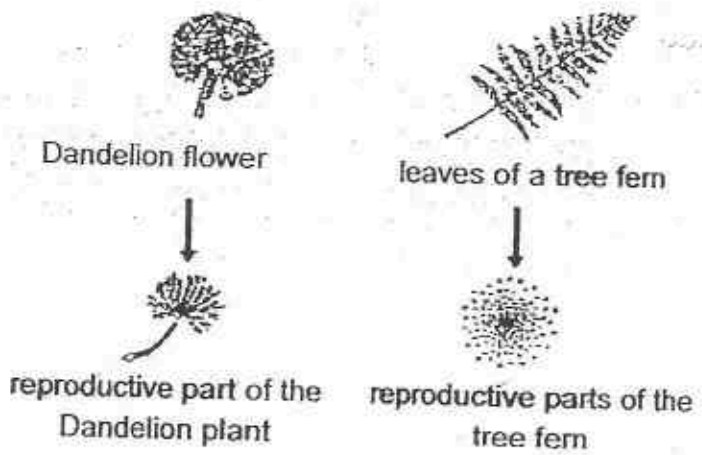
Each of the test tubes was set up as shown below and left in the sun for two hours.



(a) In which test tubes, A, B, C, D or E would Solution X turn yellow after two hours? Explain your answer [2]

(b) What would the colour of Solution X be in Set-up E after two hours? Give a reason for your answer. [1]

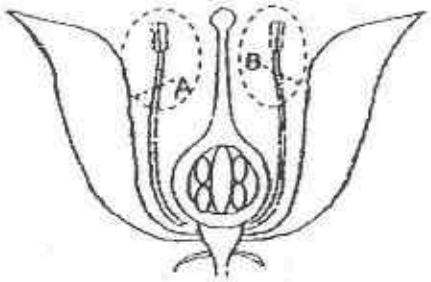
33. Fandi went on a Science trail in his school garden and he drew the following diagram in his Biology notebook.



(a) Do both the plants reproduce in the same way? Explain your answer. [1]

(b) Based on the diagram above, infer the method of dispersal for the reproductive parts of ~~Plant X and Plant Y.~~ Give a reason for your answer. [1]

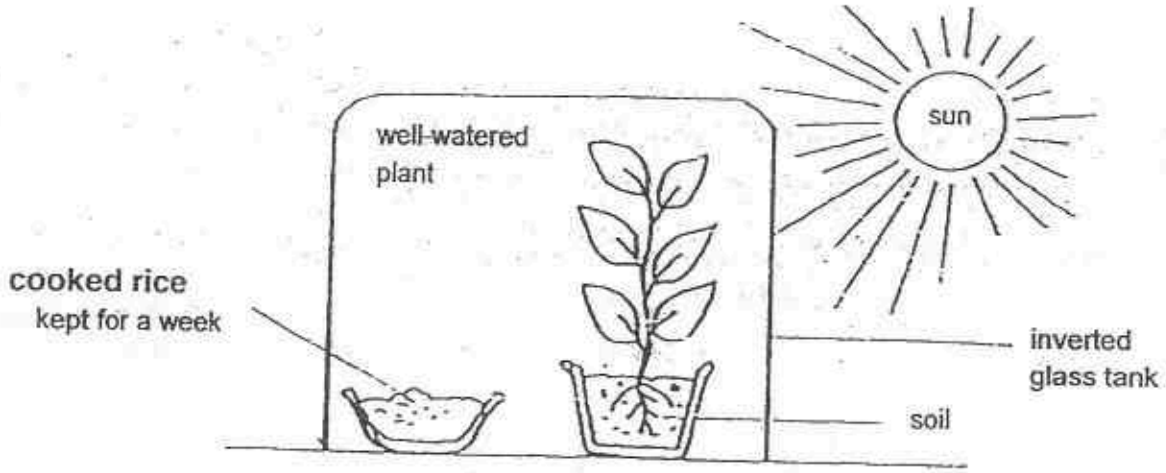
Fandi then saw Flower Z as shown below. He decided to carry out an investigation to see what would happen to the flower if he removed parts A and B



(c) At the end of the week, he was surprised to see a fruit develop from the flower. Describe a feature of Flower Z to explain how the fruit could have developed. [1]

3

34. Ryan set up an experiment as shown below.



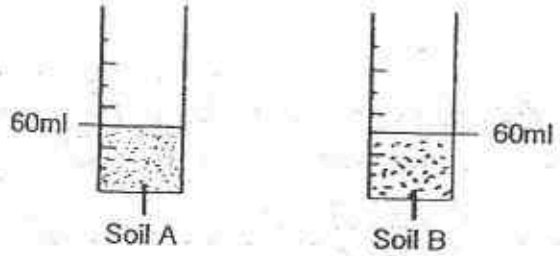
(a) Describe what you would observe about the cooked rice at the end of the week? Give a reason for your answer. [1]

(b) How does the presence of the plant affect the speed of the process taking place in the cooked rice? Explain your answer. [1]

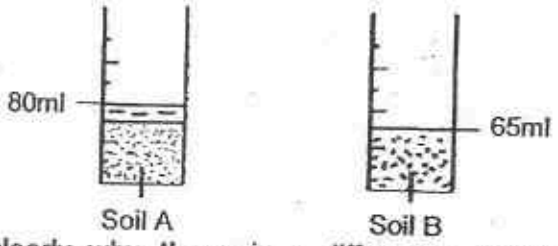
(c) Suggest what Ryan could add to the cooked rice to speed up the process taking place in the cooked rice. Explain your answer. [1]

3

35. Siva poured the same amount of soil A and soil B into two measuring cylinders as shown in the diagram below.



He then poured 30ml of water into the two measuring cylinders at the same time. The diagrams below show the results of the two set-ups after the water was poured into each cylinder of soil.

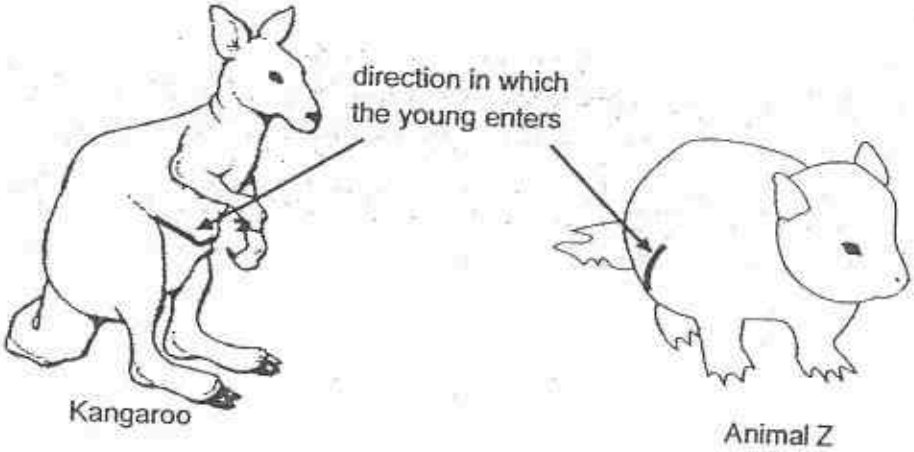


(a) Explain clearly why there is a difference between the water levels in the two measuring cylinders. [2]

Siva then visited Sungei Buloh Park and saw Tree P as shown below.

(b) Which type of soil is more suitable for Tree P? Based on your choice, describe the structural adaptation of Tree P. [1]

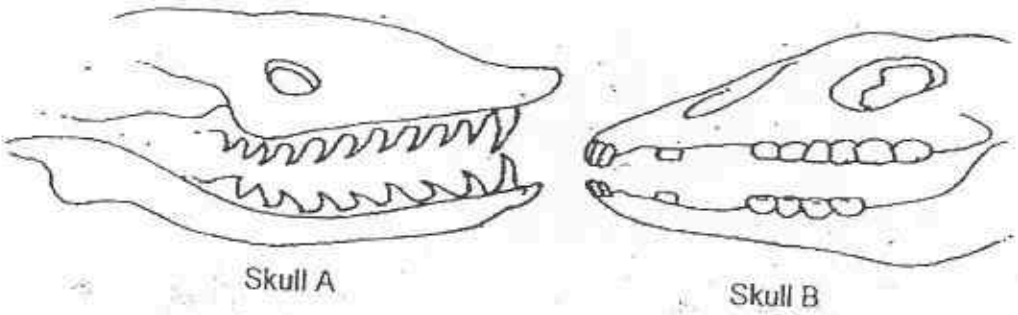
36. Like the kangaroo, Animal Z is a plant eater. It also has a pouch to carry its young. However, the pouch of Animal Z is backward-opening instead of forward-opening.



(a) Animal Z burrows in the soil. Explain an advantage for Animal Z in having a backward-opening pouch instead of a forward-opening pouch. [1]

(b) Animal Z is a slow-moving mammal which comes out only at night. Give a reason why this behavioural adaptation is an advantage to Animal Z. [1]

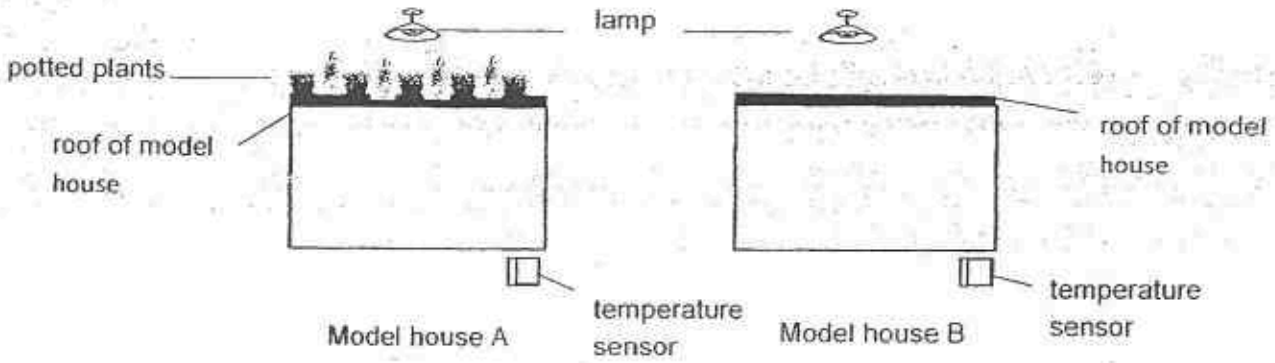
The animal skulls below were found in an area inhabited by a number of animals, including Animal Z.



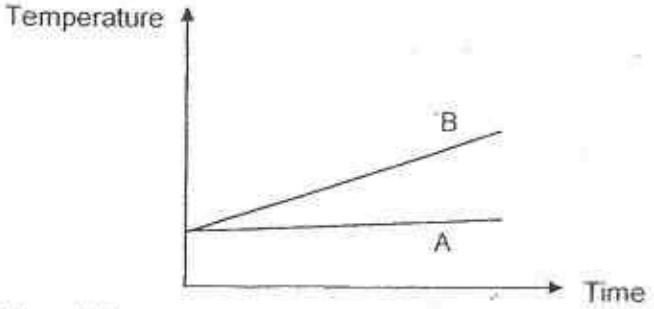
(c) Which one of the skulls, A or B, belongs to Animal Z? Explain your answer. [1]

3

37. Michelle conducted an experiment to find out if the presence of plants affects the temperature of the model houses as shown in the diagram below.

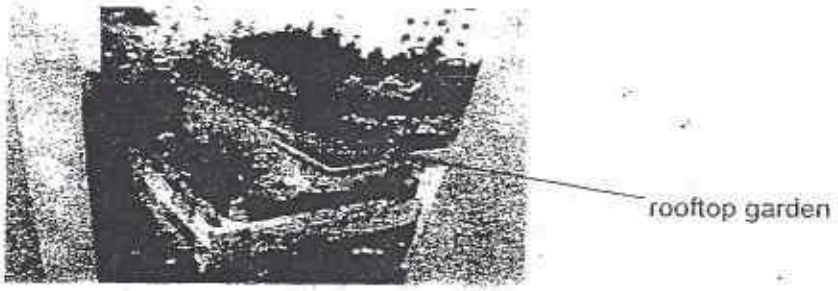


The graph below shows the change of temperature in each of the model house over time.



(a) What could Michelle conclude based on the graph shown above? [1]

The diagram below shows a rooftop garden found in a block of apartment.



(b) How would the surrounding temperature be affected by the construction of a rooftop garden? Give a reason for your answer. [1]

METHODIST GIRLS' SCHOOL
Founded in 1887

PRELIMINARY EXAMINATION 2015
PRIMARY 6
SCIENCE

BOOKLET B2

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

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____

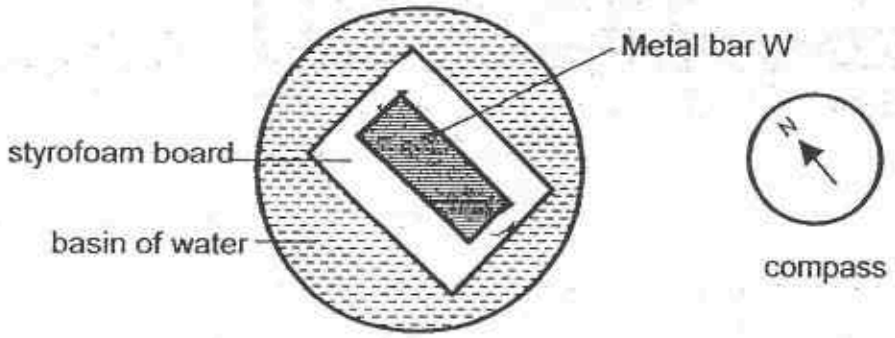
Class: Primary 6._____

Date : 27 August 2015

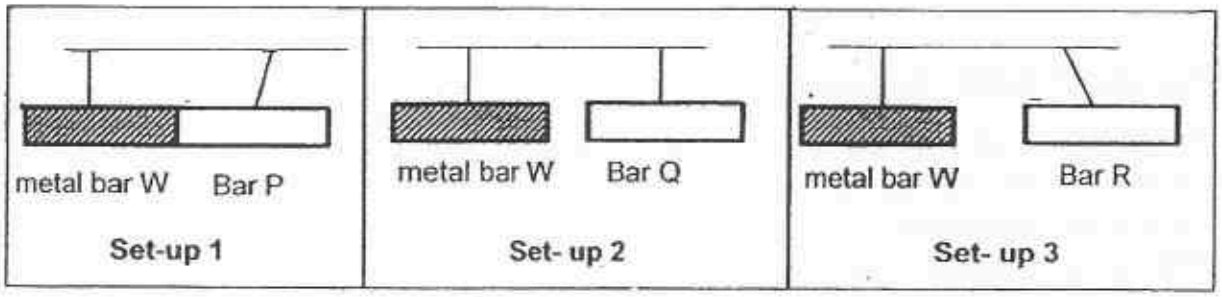
This booklet consists of 9 printed pages including this page.

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. Jessica placed a metal bar W, on a rectangular piece of styrofoam board in a basin of water. A compass was then placed beside the basin of water. After 5 minutes, Jessica observed that the metal bar came to a rest as shown in the diagram below.



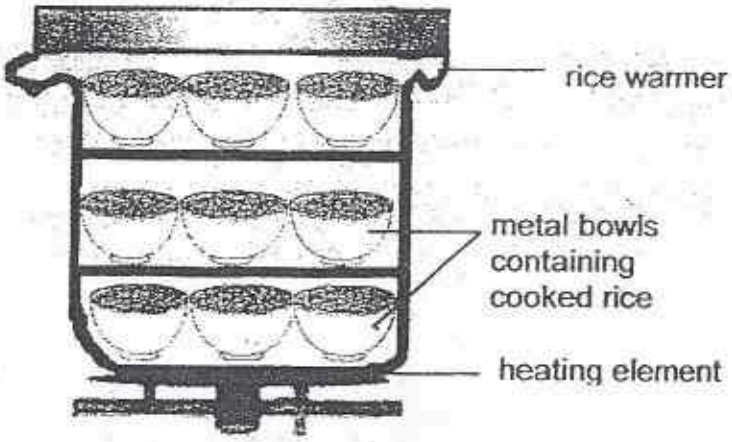
Jessica then introduced three different bars, P, Q and R and suspended them separately in three different set-ups as shown below. The following results were observed.



(a) What would happen when Bar Q is brought close to Bar R? Give a reason for your answer. [1]

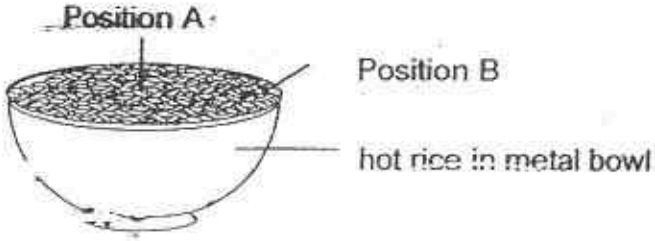
(b) Jessica concluded that Bar P is a magnet. Do you agree with her? Explain your answer. [1]

39. Mr Kim sells Korean cuisine in an air-conditioned food court. He stored cooked rice in metal bowls which were stacked together in a large rice warmer before serving them to his customers.



(a) What is one advantage of using metal bowls instead of plastic bowls? Explain your answer clearly. [1]

Mrs Tan serves rice to her toddler who prefers to have her food slightly colder. There are two positions in the bowl, A and B which Mrs Tan can scoop to feed her toddler.

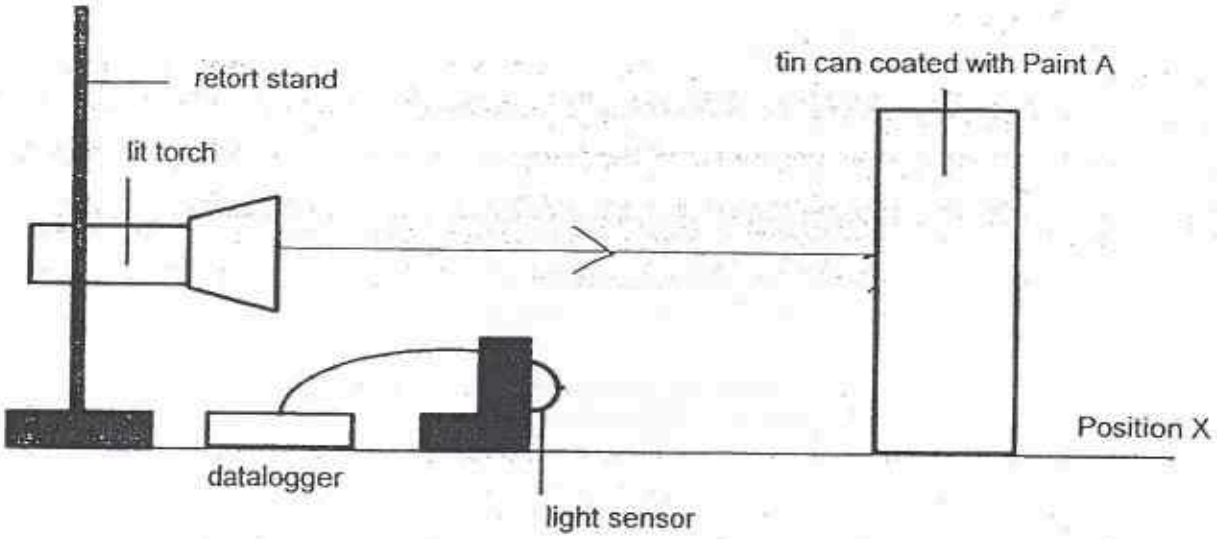


(b) Assuming that Mrs Tan scoops rice at the same depth, at which position should Mrs Tan start scooping the rice to feed her toddler? Give a reason for your answer. [1]

(c) Mr Kim suggested pouring the rice onto a serving plate to cool it down faster. Do you agree with him? Give a reason for your answer. [1]

3

40. Danny carried out an experiment to measure the amount of light in the following set up. Four identical tin cans were each coated with one type of paint. The experiment is carried out in a completely dark room.



Danny repeated the experiment and recorded his results in the table below.

Type of paint	Amount of light (Lux)
A	20
B	10
C	5
D	35

(a) On the diagram above, **draw** arrows to indicate how light from the torch is reflected from the tin can to the light sensor. [1]

(b) How would the results change if the light sensor is placed at position X? Explain your answer. [1]

_____

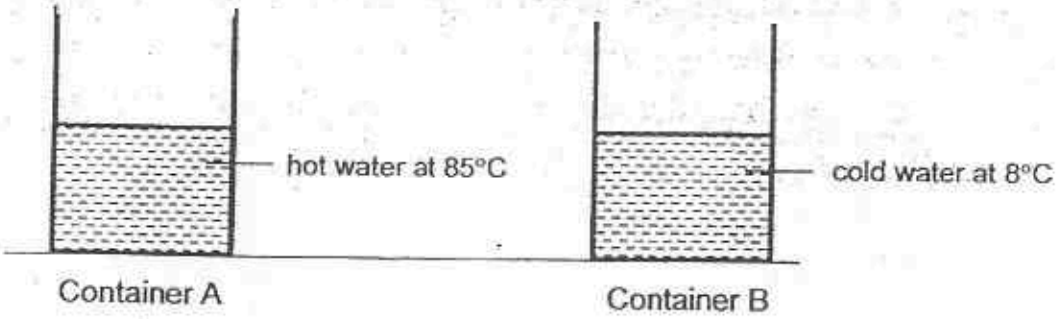
_____

(c) Which type of paint would be the most suitable for painting road signs so that drivers can see clearly at night? Explain why. [1]

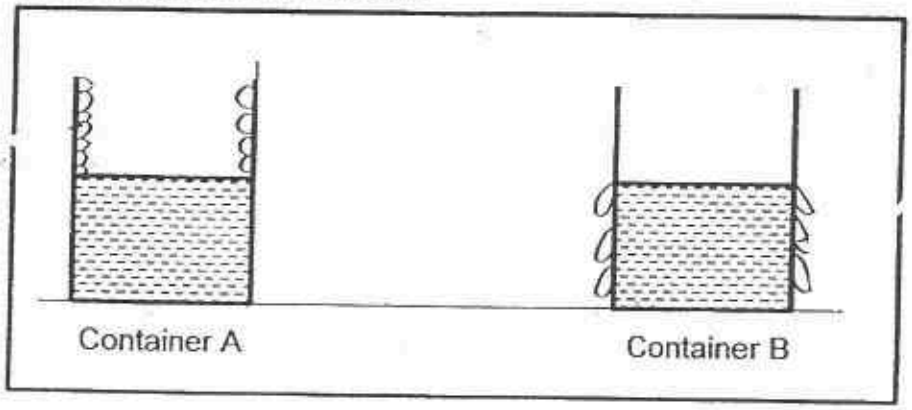
_____

_____

41. Benny poured the same amount of water at different temperatures, 85°C and 8°C, into two identical metal containers, A and B as shown. The containers were left on the table in the science laboratory at room temperature. After 6 hours, he measured the amount of water left in each container.



(a) Condensation occurred in both containers and water droplets were formed. Indicate where the water droplets were formed after 5 minutes by drawing them in the containers below. [1]



(b) Give a reason how each of the following actions helps to make Benny's experiment a fair test. [2]

(i) using similar containers

_____

_____

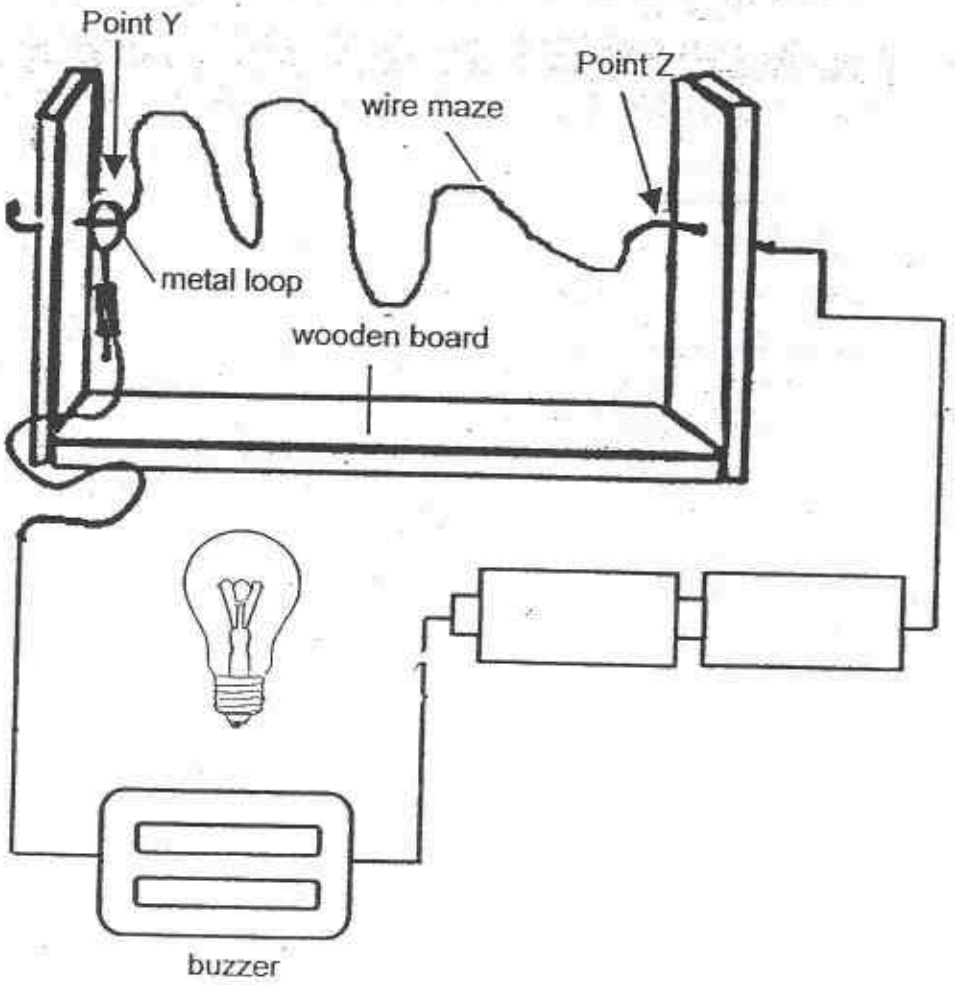
(ii) placing the two containers at the same place

_____

_____

42. In a Science fair, Ahmad came across an electric circuit game, "Buzz Wire". The objective of the game was to guide the metal loop through the wire maze from Point Y to Point Z without touching the loop against the metal maze. If the metal loop touched the maze, the buzzer would sound and the bulb would light up.

(a) In the following diagram, **draw two lines** to represent wires to connect the components so that the circuit game will work properly. [1]

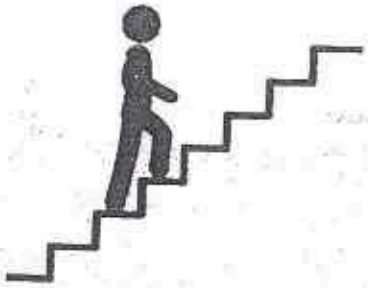


Ahmad modified the electrical circuit game at home by adding another bulb in series to the circuit while keeping the other variables constant. He found that the bulbs did not light up even though all electrical components are connected properly.

(b) Explain clearly why the bulbs did not light up. [1]

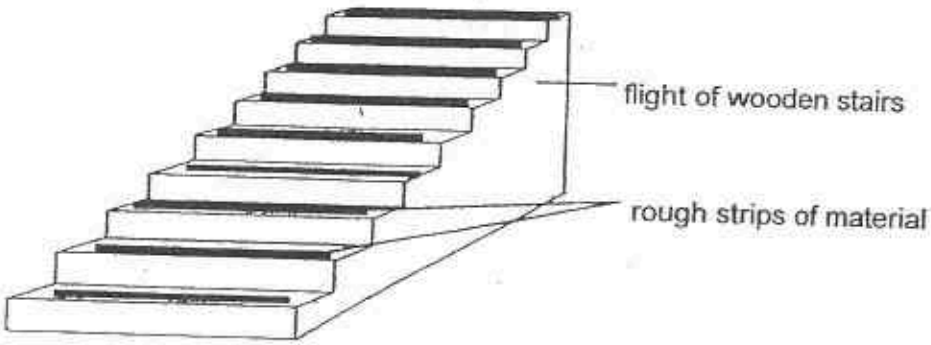
(c) Suggest how he can make the circuit work if he wants to include an additional bulb. [1]

43. The diagram below shows Mr Aariz climbing up the stairs.



(a) Mr Aariz found that it requires more effort to climb up the stairs compared to going down. Give a reason for your answer. [1]

(b) The diagram below shows a flight of wooden stairs in an elderly nursing home.

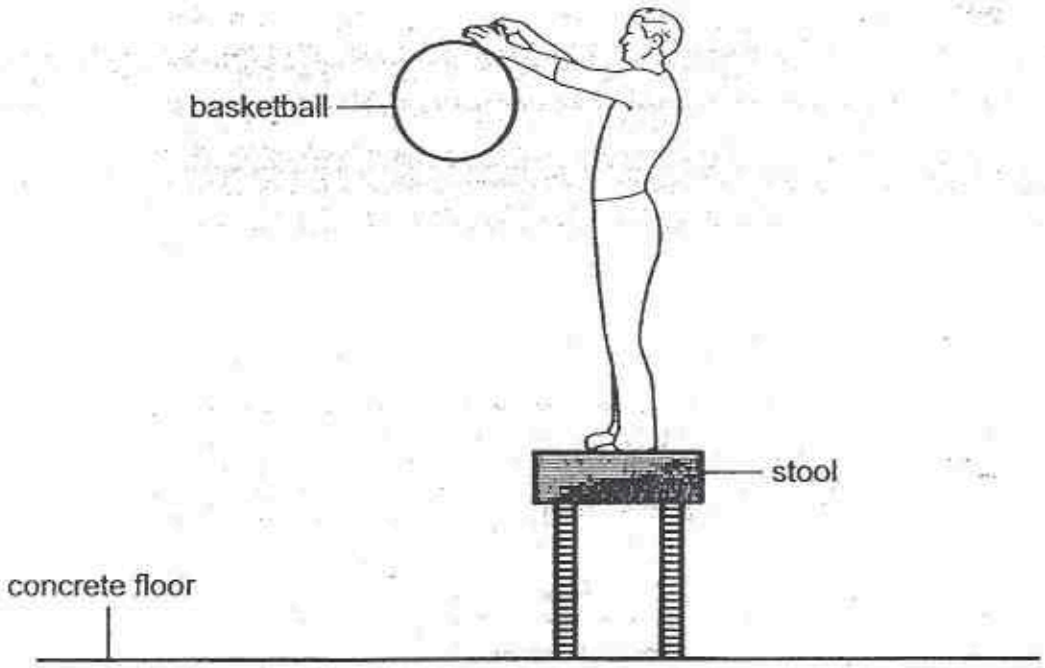


(i) What is the function of the rough strips of material which are mounted on the stairs? Explain your answer clearly. [1]

(ii) After several years of use, it was observed that some patients would slip occasionally as they went up or down the stairs. What could be a possible reason for this? [1]

3

44. Mr Koh dropped a basketball from a height on a concrete floor as shown. He then measured the height at which the basketball bounced back. He then repeated the experiment with a table tennis ball.



(a) Why were both balls unable to bounce back to the original height from which they were dropped? Explain in terms of energy conversion. [1]

_____

_____

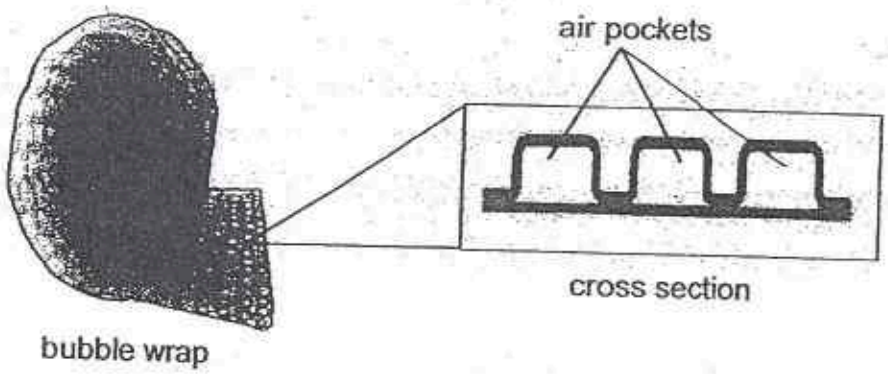
(b) Mr Koh repeated the experiment by letting the balls drop on a tray of sand. All the other variables were kept constant. How would the results of the experiment change? Explain your answer clearly. [1]

_____

_____

_____

The diagram below shows a roll of bubble wrap and its cross section. It is usually made of a transparent plastic material,and is often used for packing items in house mover companies.



(c) What is the advantage of using bubble wrap to pack fragile items? Explain your answer clearly. [1]

_____

_____

_____

EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : METHODIST GIRLS SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

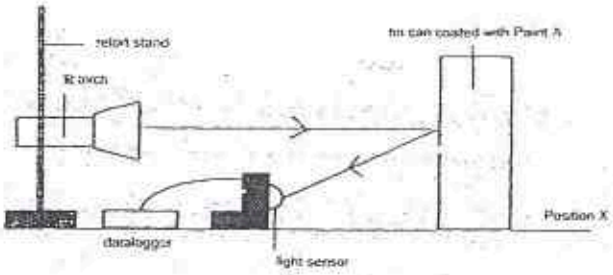
BOOKLET A

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
3	2	1	3	3	2	1	2	2	4
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
1	3	3	2	3	4	2	3	4	4
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
3	1	2	1	1	2	4	3	2	1

BOOKLET B

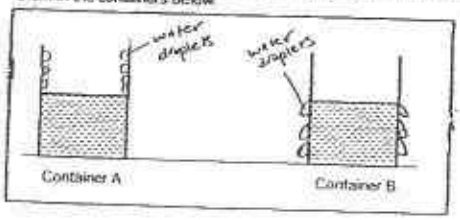
Q31a. Global warming causes the Earth's temperature to rise which would cause the number of dengue fever cases to increase. The higher the temperature of the surroundings, the faster the mosquito lava will become a pupa and into an adult thus causing more larva will become a pupa and into an adult thus causing more dengue fever cases.
Q31b. Advantage 1 : Living in surroundings increase its chance of survival s they have different predators. Q31b. advantage : The young mosquito and adult mosquito do not need to compete for food.
Q32a. Test tubes A and D. Test tube A only has snails which produces more carbon dioxide than the amount of carbon dioxide in the air while in Test tube D, the hydrilla would not be able to phtosynthesise thus producing more carbon dioxide than the amount of carbon dioxide in the air.
Q32b. The colour would be orange. The water does not produce oxygen or carbon dioxide thus there would be the same amount of carbon dioxide as in the air.
Q 33a. No. Plant X reproduces with seeds but Plant Y reproduces with spores.
Q33b. The reproductive parts of the plants. The Dandelion flower and tree fern are dispersed by the wind. The reproductive part of the Dandellion plant was a wing like structure while the reproductive parts of the tree fern are light, thus, they are both dispersed by the wind.
Q33c. The stigma transports the pollen grain from another flower of the same species to the ovary which contains the ovule and when the ovule is fertilized, the ovary develops into a fruit.
Q34aThere would be mould growing on the cooked rice. As the cooked rice is moist, mould would start to grow on it. Q34b.The presence of the plants increases the speed of the process. The plant gives out oxygen produced during photosynthesis which increase the speed of the process taking place in cooked rice. Q34c. Ryan could add water on the cooked rice. Mould grows in place that are moist and adding water to the cooked rice would cause it to be moist.
Q35a. Soil A has smaller air particles which does not allow some water to enter while Soil B has bigger air particles to allow all the water to enter the soil.
Q35b. Tree P is most likely to grow in soil A as it has roots growing above the soil to breathe
Q36a. A backward - opening pouch will prevent dirt from getting to the young when burrowing in the soil. Q36b. At night, there would be less predators and as animal Z moves slowly, it would increase its chances of survival than coming out in the day. Q36c. Skull B. Animal Z is a plant eater which means it has flat teeth to eat plants unlike Skull A which has sharp teeth.
Q37a. The presence of plants causes the temperature of the model house to remain constant.
Q37b The surrounding temperature would be lower. The plants take in the surrounding carbon dioxide which lowers the Earth's temperature.
Q38a. Nothing would happen. Bar Q is not a magnetic material thus, when Bar Q is brought close to Bar R, which is a magnet , nothing would happen.
Q38b. No. Bar P may be a magnetic material and not necessarily a magnet as there is only attraction shown between metal bar W and Bar P.
Q39a. Metal is a better conductor of heat than plastic. The metal would gain heat faster, thus caused the cooked rice to heat up while plastic would gain heat slower thus cause the cooked rice to take a longer time to heat up. Q39b. Position B, because it is located at the extreme and of the fmetal bowl where heat will be conducted away from the hot rice to the metal bowl more will be quickly to the surrounding air faster. Q39c. Yes, I agree with Mr Kim. Pouring the rice onto a plate increases the surface area so that heat can be lost to the surrounding air more quickly.

Q40a. SEE PICTURE. Q40B. The amount of light recorded would decrease. At a further distance less light would be reflected off the tin can and to the light sensor. Q40c. Paint D as the most amount of light was recorded. When driving at night, bright lights would be needed to see in the dark thus Paint D would be the most suitable.

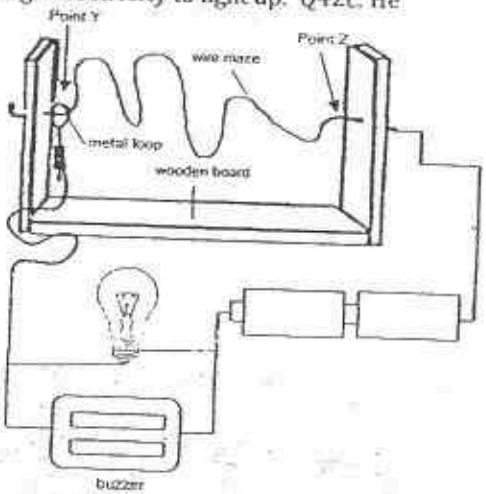


Q41a. SEE PICTURE Q41b.i) To ensure that the temperature of both containers would gain heat or lose heat equally. Q41bii) This ensures that both containers are under the same conditions such as temperature, humidity and presence of wind that affect the rate of evaporation.

(a) Condensation occurred in both containers and water droplets were formed. Indicate where the water droplets were formed after 5 minutes by drawing them in the containers below. [1]



Q42a. SEE PICTURE Q42b. The bulbs did not receive enough electricity to light up. Q42c. He should connect the bulbs in a parallel circuit.



Q43a. Climbing up the stairs is going against the direction of gravity acting on a person. While going sown the stair is following the direction of gravity acting on a person.
Q43bi) The strips are to increase the amount of friction between the person and the stairs to prevent the person from falling. Q43bii) The roughness of the strips were worn out and less friction was produced over time thus causing some people to skip.
Q44a. Gravitational potential energy from the balls is converted to kinetic energy as the balls hit the ground. Some kinetic energy so it is unable to bounce back to its original height. Q44b. The balls will rebound to a lower height. The basket ball will rebound to a lower height and the table tennis ball will not bounce back. Q44c. The air pockets prevent the fragile item form breaking as it cushions the item thus, when dropped the air pockets might burst but leaving the bulb not broken.

THE END

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION

2015

BOOKLET A

Date : 27 August 2015
Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

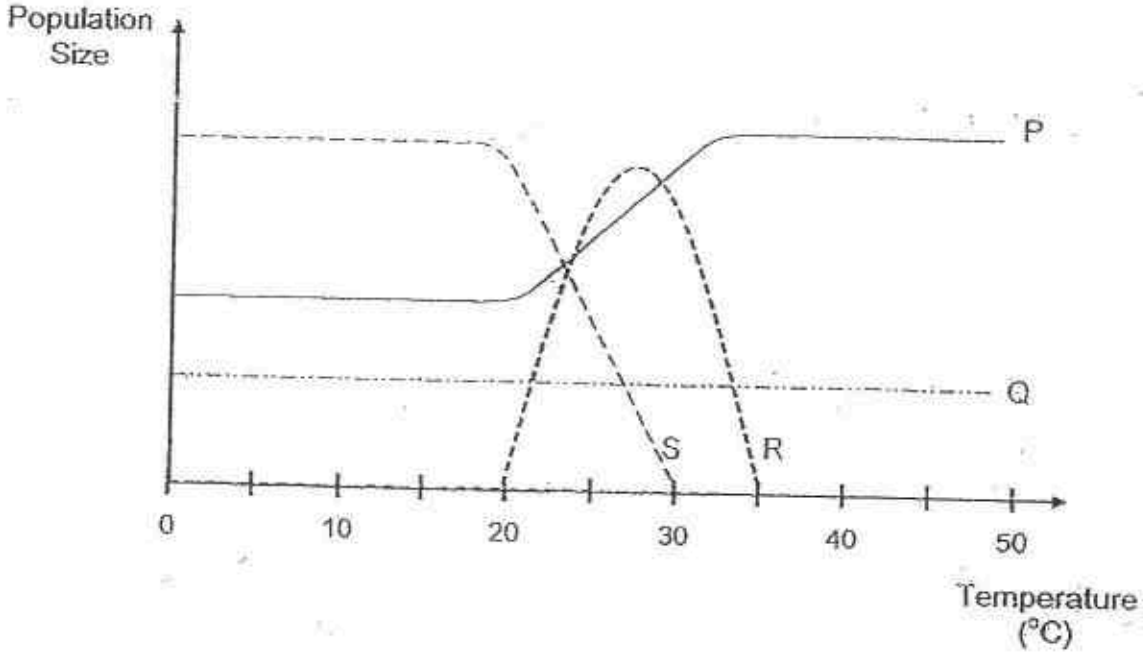
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A consists of 24 printed pages including this cover page.

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.**

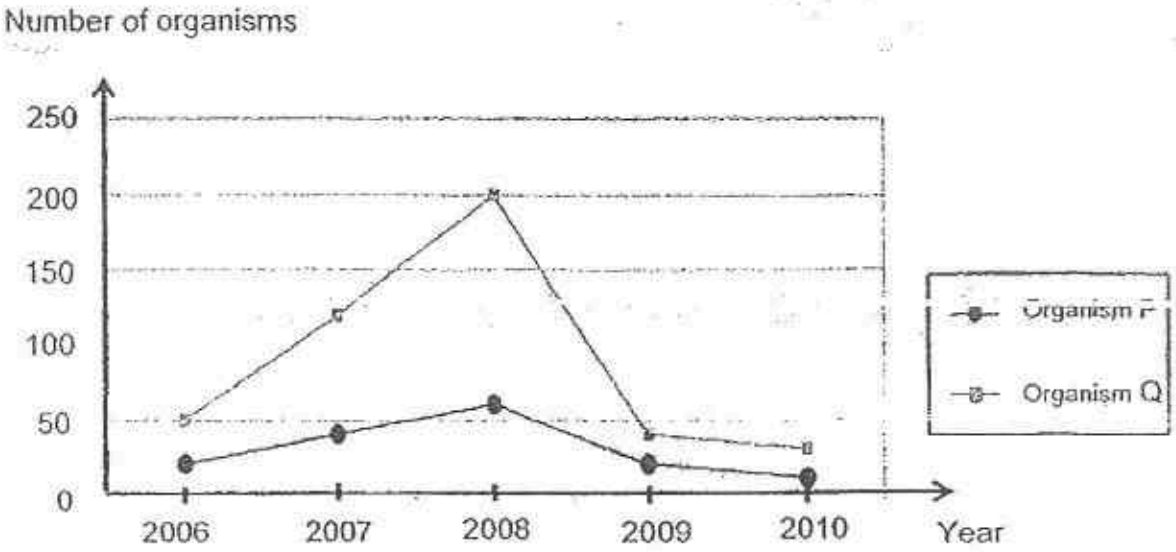
1. The graph below shows the effect of temperature of the environment on the populations of 4 different organisms. P, Q, R and S.



Which one of the following statements is correct?

(1) Both organisms R and S survive best at 20°C.
(2) Organism Q is not affected by temperature change.
(3) Organism P survives better when the temperature is below 30°C.
(4) Organism S is the most sensitive to temperature change as compared to other organisms.

2. Some scientists conducted a study on two types of organisms, P and Q, which were found in a community. The graph below shows how the number of organisms changed over time.



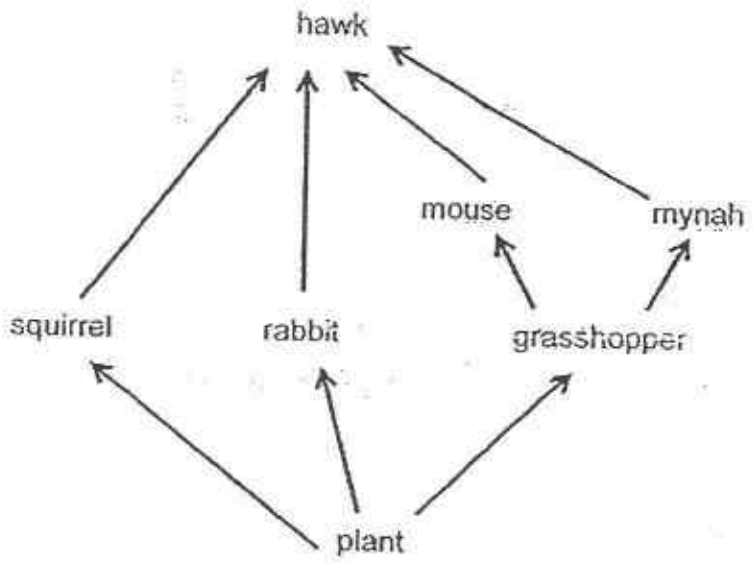
Based only on the information from the graph above, the scientists wrote the following statements.

Daniel	The number of P and Q was the highest in 2008.
Andrew	The population of Q increased more than the population of P between 2006 and 2008.
Thaddeus	The decrease in the number of P and Q from 2008 to 2010 could be due to P preying on Q.
Creighton	The introduction of a prey into the community caused the sudden decrease in the population of P and Q from 2008 to 2009.

Which of the following scientists made the correct statements?

(1) Andrew and Daniel only
(2) Daniel and Thaddeus only
(3) Andrew and Creighton only
(4) Creighton and Thaddeus only

3. Study the food web below.

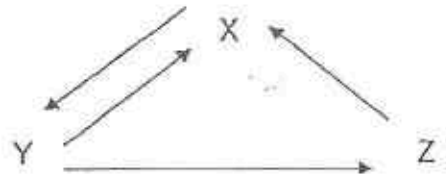


Which of the following statements are true about the food web?

A	There are only 2 organisms which are both a prey and a predator.
B	The hawks feed on more mice than mynahs.
C	The population of rabbits is only affected by the population of plants.
D	When the population of plants decreases, the populations of other organisms would decrease too.

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

4. The letters, X, Y and Z, represent 3 organisms in a community while the arrows show the direction of the flow of energy.



Which one of the following represents X, Y and Z in this community?

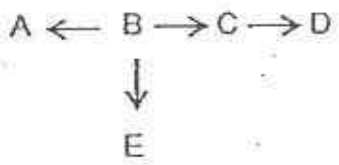
	X	Y	Z
(1)	producers	decomposers	consumers
(2)	producers	consumers	decomposers
(3)	consumers	decomposers	producers
(4)	decomposers	producers	consumers

5. In order to reduce the population of C within a short period of time, the following is done to the habitat.

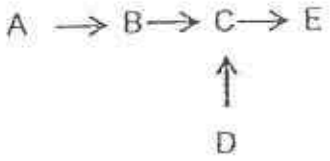
- Introduce more organism B.
- Introduce more organism E.
- Reduce the number of organism A

Which one of the following shows the food relationships of organisms A, B, C, D and E?

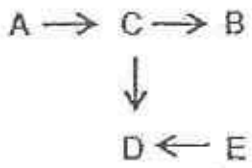
(1)



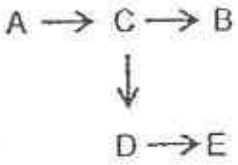
(2)



(3)



(4)



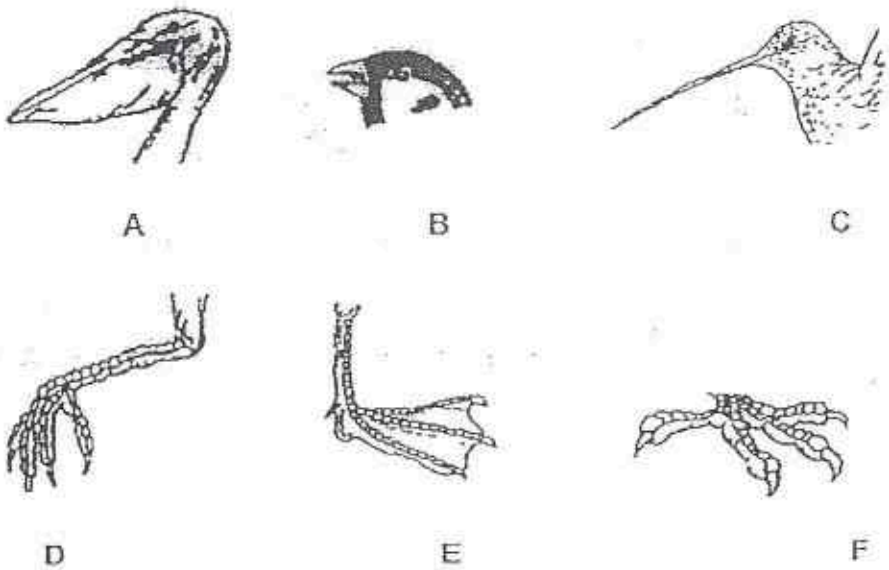
6. The table below provides some information on three different types of organisms K, L and M.

Organism	Information
K	- has a weak stem - flowers pollinated by birds
L	- walks on sand - breathes on land and in water
M	- feeds on small animals - hunts only at night

Which one of the following shows the correct adaptations of organisms K, L and M based only on the information given?

	Organism K	Organism L	Organism M
(1)	- has climbing stems - presence of nectar	- has thin, pointed legs - presence of gills and gill chamber	- has sharp claws - has good night vision
(2)	- has climbing stems - absence of nectar	- has padded feet - presence of lungs	- has a curved beak - has good night vision
(3)	- has thorns on stem - has brightly-coloured flowers	- has thin, pointed legs - has moist skin	- has sharp claws - has streamlined body
(4)	- has clasping roots - has brightly-coloured flowers	- has padded feet - presence of lungs	- has a curved beak - has hollow bones

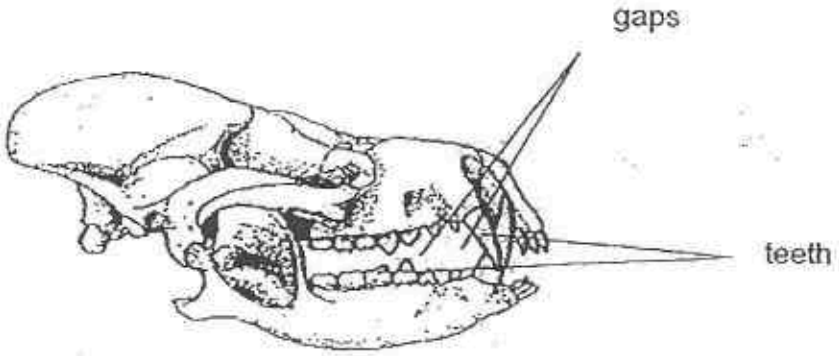
7. The diagrams below show the different types of beak and feet that birds have to help them survive in different environments.



Which one of the following beaks and feet is correctly matched to the diet of the bird and the type of habitat where it is found?

	Beak	Foot	Diet of the bird	Habitat
(1)	A	D	Fruit	Aquatic
(2)	B	E	Grains	Land
(3)	C	F	Nectar	Land
(4)	A	F	Meat	Aquatic

8. Matthew discovered a skull as shown below. He examined the skull and concluded that the animal fed on both plants and animals.



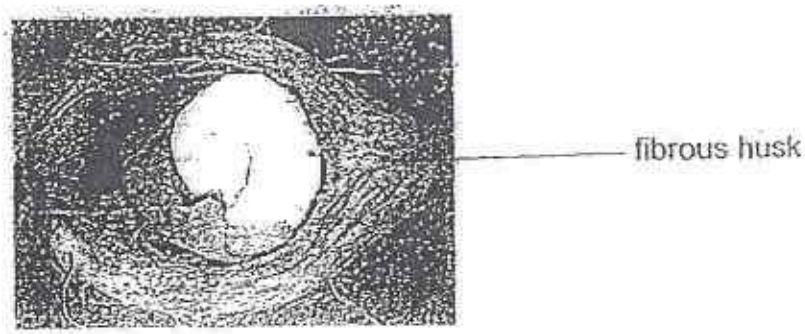
Which one of the following observations enabled Matthew to arrive at his conclusion?

(1) There are many teeth.
(2) There are two pairs of big and razor-like teeth.
(3) There are both blunt teeth and sharp, pointed teeth.
(4) There are huge gaps between the two rows of teeth.

9. Which one of the following statements below shows the structural adaptation of an earthworm?

(1) An earthworm has strong muscles that surround each body segment.
(2) An earthworm releases mucus to help it slide through the soil quickly.
(3) An earthworm can twist around wildly in an attempt to free itself from its predator.
(4) An earthworm stays beneath the soil surface in the day to hide from its predator.

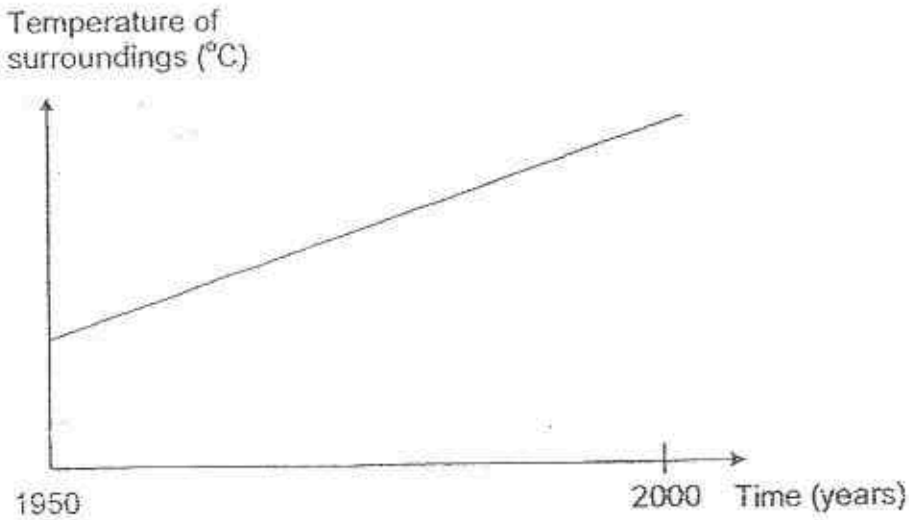
10. Study the fruit shown below.



Which of the following explains how the fruit is adapted for dispersal?

(1) The fruit splits open easily.
(2) The husk hooks onto the fur of other animals.
(3) The fruit traps air so that it can be carried by the wind.
(4) The husk traps air so that the fruit can stay afloat on water.

11. The graph below shows the changes in the temperature of the surroundings in a particular place over a period of time.



Based on the graph above, which of the following activities could have contributed to the change in temperature?

A An increased number of forest fires.
B More recycling activities were conducted.
C An increased number of vehicles on the road.

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

12. Shoppers are strongly encouraged to use fewer plastic bags. Which one of the following statements does not explain why fewer plastic bags should be used?

(1) They can be recycled.
(2) They are not easily broken down.
(3) They released toxic fumes into the air during burning.
(4) They caused suffocation to animals when disposed into a habitat.

13. The diagrams below show a moss and a fern.

moss

fern

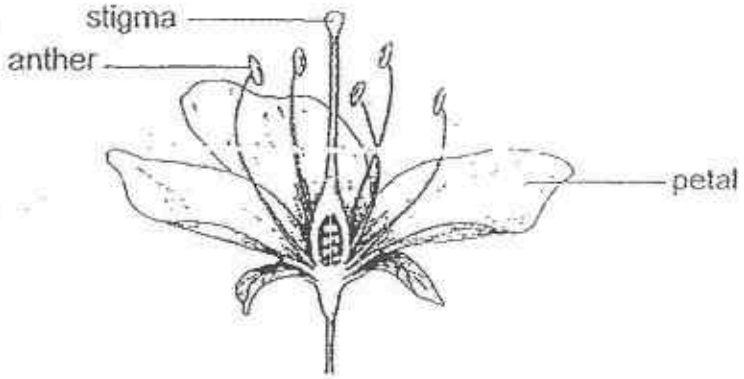
Which of the following statements correctly explain the similarities between a fern and a moss?

A Both have flowers.
B Both can make their own food.
C Both help in the decomposition of organisms.
D Both have spores which are dispersed by wind.

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

14. Ali wanted to find out which part of the flower of plant X affected the development of its fruit. The flower had both male and female parts. He selected four similar flowers from the same plant and named them, A, B, C and D, respectively. He removed different parts from each flower.

Ali then transferred some pollen grains from another flower of the same plant to flowers A, B, C and D.



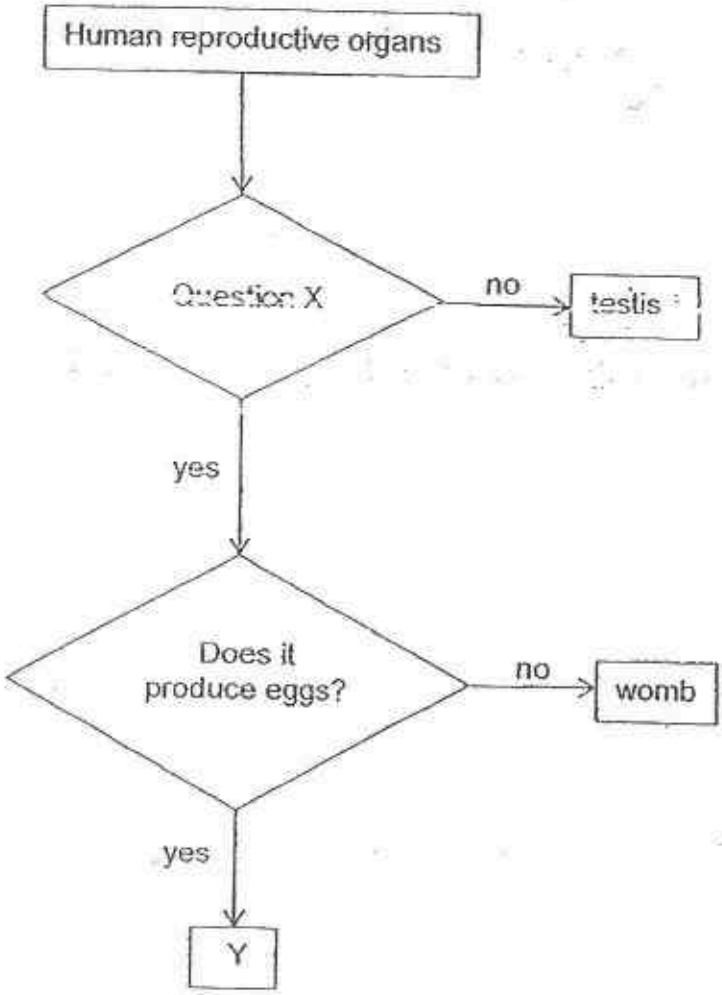
Flower of plant X

Flower	Parts removed
A	anthers
B	stigma
C	petals
D	anthers, stigma

Which flower(s) is/are most likely to develop into fruits?

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

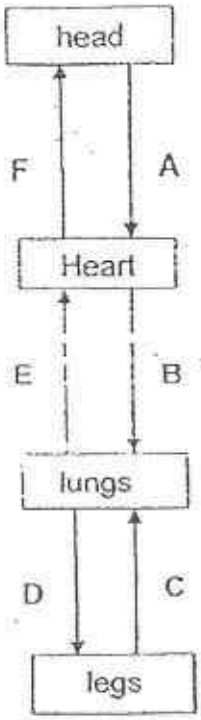
15. Study the flow chart below.



Which one of the following is correct?

	Question X	Y
(1)	Is it found in males?	ovule
(2)	Is it found in males?	ovary
(3)	Is it found in females?	ovary
(4)	Is it found in females?	ovule

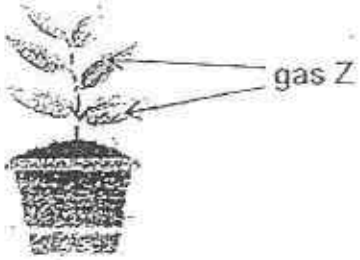
16. Peter drew a diagram to show the blood flow in a human. His teacher commented that there were some arrows which were drawn incorrectly.



Which of the above arrows were drawn correctly to show the flow of blood?

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

17. A pot of plant was placed in a dark room.

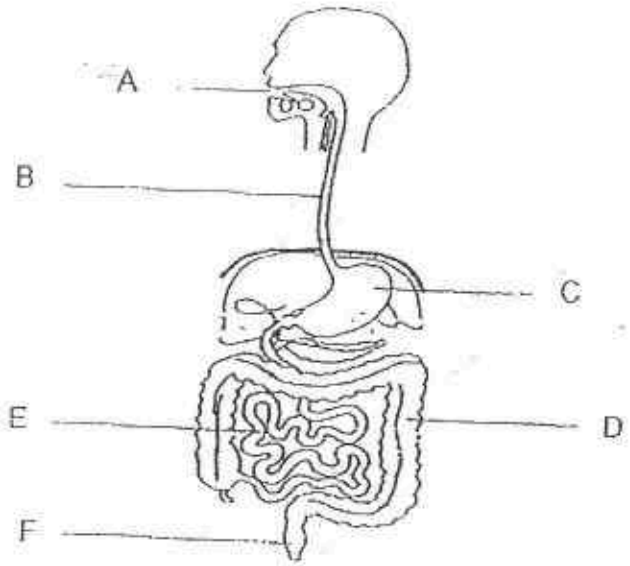


The plant went through a process, Y, and gas Z entered the leaves of the plant during this process.

Which one of the following correctly identifies process Y and gas Z?

	Process Y	Gas Z
(1)	photosynthesis	oxygen
(2)	photosynthesis	carbon dioxide
(3)	respiration	oxygen
(4)	respiration	carbon dioxide

18. The diagram below shows a human digestive system with some parts labelled A, B, C, D, E and F.



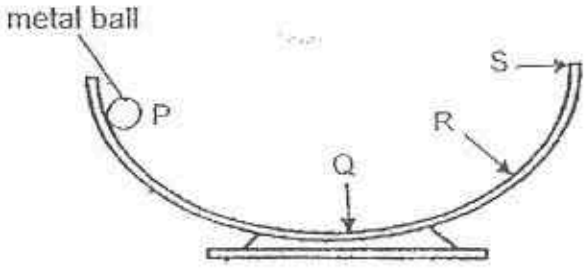
Joven, Yanti, Wallace and Meiqi each made a statement about the state of the food found at A, B, C, D, E and F.

Joven	No digestion takes place here.
Wallace	Most of the water from the food is absorbed here.
Meiqi	A large amount of the food is broken into smaller pieces.
Yanti	The undigested food found here has the least amount of nutrients.

Which one of the following correctly matches the labelled parts of the digestive system to each of the above statements?

	Joven	Wallace	Meiqi	Yanti
(1)	A	C	D	B
(2)	B	D	A	F
(3)	D	F	E	C
(4)	F	D	E	A

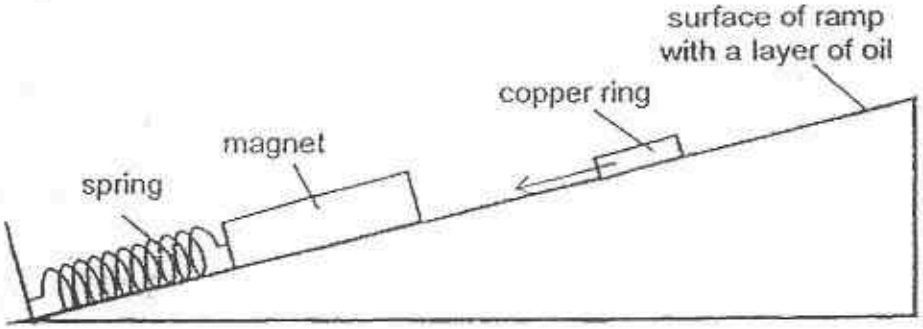
19. The diagram below shows a round glass bowl. A metal ball was held at point P. When the ball was released, it rolled down. The metal ball rolled to R and then rolled back. After some time, it stopped moving.



Which one of the following is correct when the metal ball rolled from P to R?

	Gravitational potential energy		Kinetic energy	
	P to Q	Q to R	P to Q	Q to R
(1)	decrease	increase	increase	increase
(2)	decrease	increase	increase	decrease
(3)	decrease	decrease	increase	increase
(4)	increase	decrease	decrease	increase

20. Vladimir attached a strong magnet to a spring and placed it at the bottom of a ramp. He added oil to the surface of the ramp and placed a copper ring at the top of the ramp. He then observed that the ring moved towards the magnet as shown below.

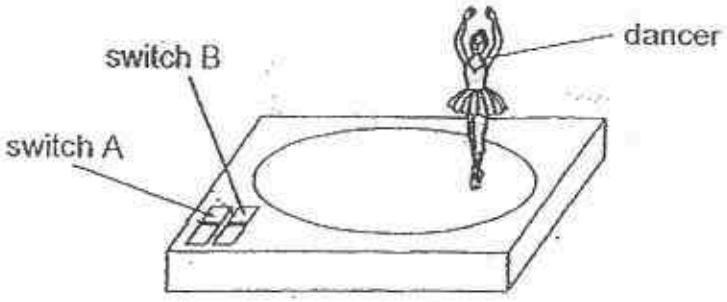


Based on the information above, what were the forces acting on the copper ring as it moved along the ramp?

A Magnetic force
B Frictional force
C Gravitational force
D Elastic spring force

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

21. The diagram below shows a toy which was bought by Sally. The toy is battery-operated.



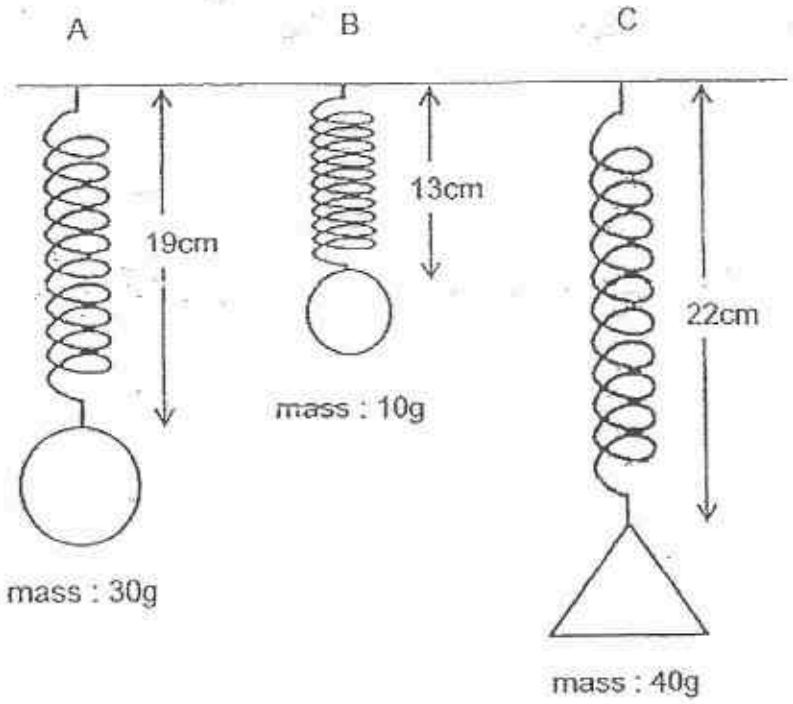
Sally made some observations on the toy.

Switched on	Observation
A only	The dancer did not move. There was music
B only	The dancer moved. There was no music
Both A and B	The dancer moved. There was music.

Which one of the following shows the correct energy conversions of the toy after both A and B are switched on?

(1)	Kinetic energy	→	Chemical Potential energy	→	Electrical energy	→	Kinetic energy		
(2)	Chemical Potential energy	→	Kinetic energy	→	Heat energy	→	Sound energy		
(3)	Chemical Potential energy	→	Electrical energy	→	Kinetic energy	+	Heat energy	+	Sound energy
(4)	Kinetic energy	→	Chemical potential energy	→	Electrical energy	→	Sound energy + Heat energy		

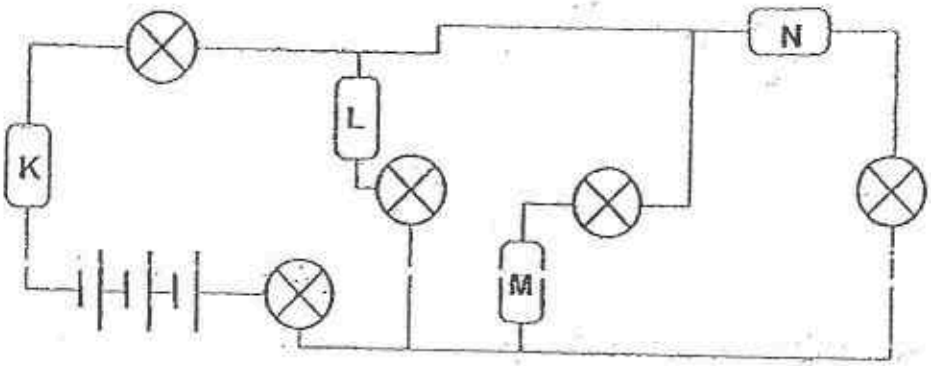
22. Modi hung loads of different mass and shape on three similar springs, A, B and C. The original length of each spring was 10cm. The diagram below shows the new length of each spring with different loads.



Based on the information given, which one of the following statements about the set-ups is false?

(1) Spring B exerted less elastic spring force than spring C.
(2) The shape of the load affected the extension of each spring.
(3) If the mass of the load was 50g, the new length of each spring would be 25cm.
(4) The load attached to spring A exerted more pulling force than the load attached to spring B.

23. Four objects, K, L, M and N, that were made of different materials were placed at different parts of the electrical circuit as shown below.



Given that all the light bulbs did not light up, which of the following combination(s) of materials is/are correct?

	Silver	Plastic	Rubber	Copper
A	M	N	L	K
B	L	K	M	N
C	N	M	K	L
D	K	L	N	M

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

24. Four metal pins, W, X, Y and Z, were fixed onto a cardboard as shown in Figure 1 below. Figure 2 shows a circuit tester consisting of a battery and a bulb connected to two wires, A and B.

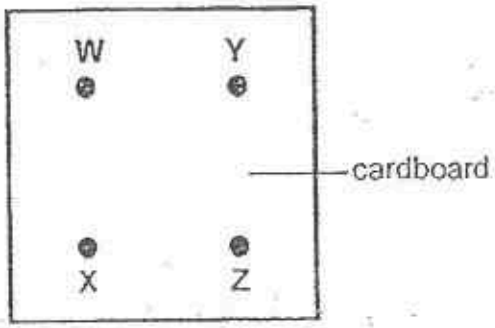


Figure 1

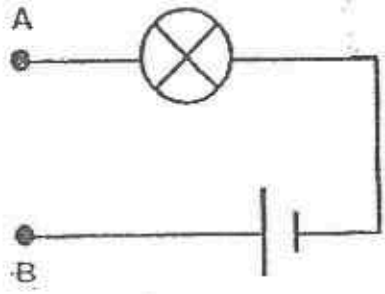


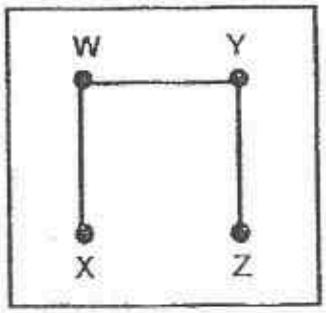
Figure 2

Zubair placed the 2 ends of the circuit tester to different pairs of pins on the circuit card. He recorded the results in the table shown below.

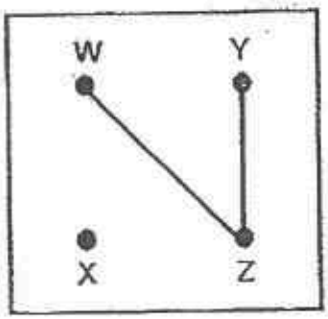
Pin connected to A	Pin connected to B	Did the bulb light up?
W	X	No
X	Y	Yes
Y	Z	Yes
Z	W	No

Based on his results above, which one of the following shows the correct arrangement of the wires in the circuit card?

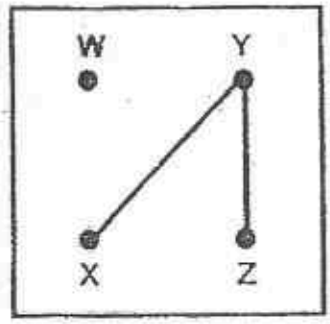
(1)



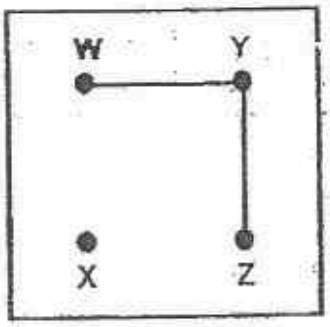
(2)



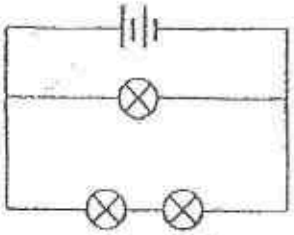
(3)



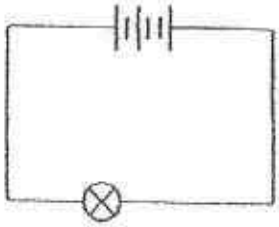
(4)



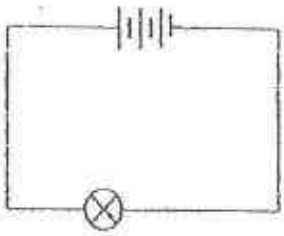
25. Miguel set up four electrical circuits as shown below.



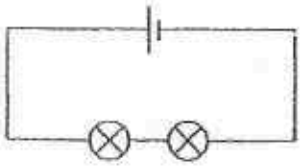
Circuit E



Circuit F



Circuit G



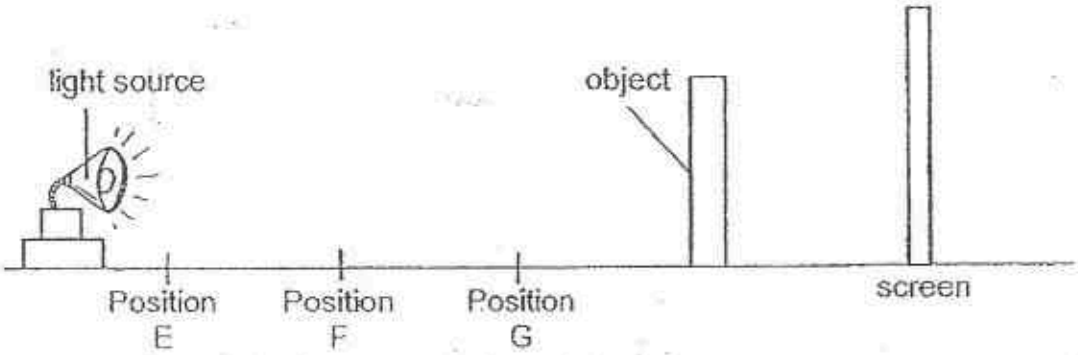
Circuit H

Which of the following experimental set-ups, A, B, C and D, correctly pairs the experimental aim to the circuits selected?

Set-ups	Experimental aim	Circuits
A	To find out how the number of bulbs affects the brightness of the bulb.	F and H
B	To find out how the number of bulbs affects the brightness of the bulb.	G and H
C	To find out how the arrangement of bulbs affects the brightness of the bulb.	E and H
D	To find out how the arrangement of batteries in series affects the brightness of the bulb.	F and G

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

26. Naveen used the set-up shown below to find out how the distance between an object and a light source affected the height of the shadow.

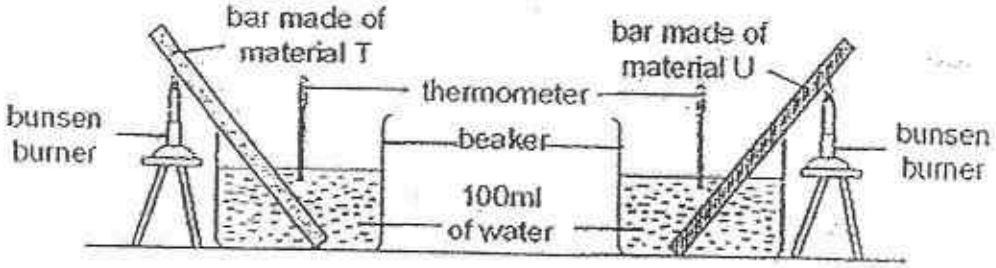


He placed the light source at different positions, E, F and G, and measured the respective heights of the shadow cast on the screen.

Which one of the following most likely shows the height of the shadow formed?

	Height of shadow formed (cm)		
	Position E	Position F	Position G
(1)	21	13	5
(2)	21	5	13
(3)	5	13	21
(4)	5	21	13

27. Ismail used the set-up shown below to find out how the material of a bar affected the temperature of water.

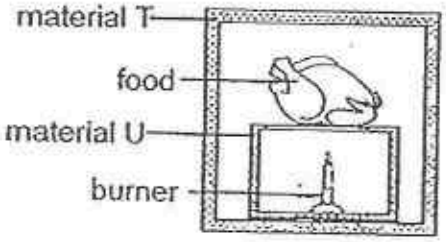


He heated up both bars for five minutes and recorded the temperature of the water in the beakers as shown in the table below.

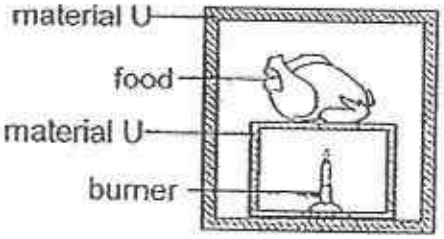
Material	Initial temperature of water (°C)	Final temperature of water (°C)
T	25	32
U	25	26

He then used both materials to make a container for keeping food warm. Which one of the following containers will keep food warm for the longest time?

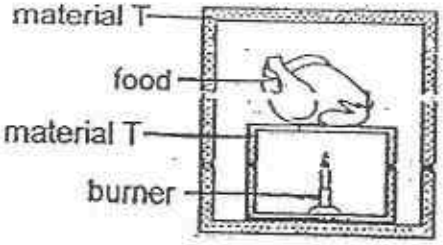
(1)



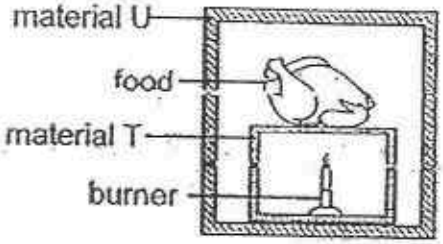
(2)



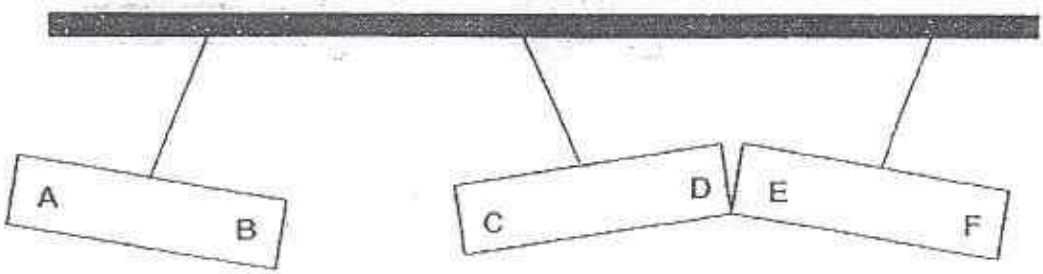
(3)



(4)

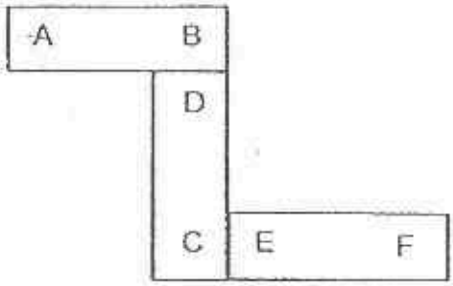


30. The diagram below shows what happened to 3 identical bar magnets when they were hung from a pole. The ends of the bar magnets are marked A to F.

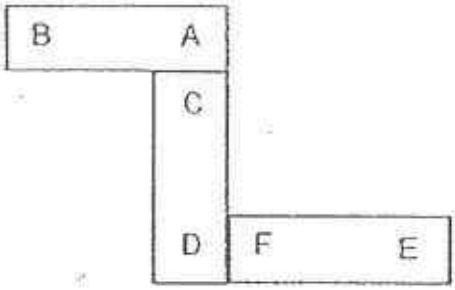


Which one of the following diagrams shows a possible arrangement of the three magnets?

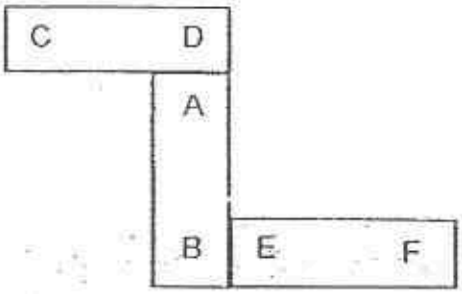
(1)



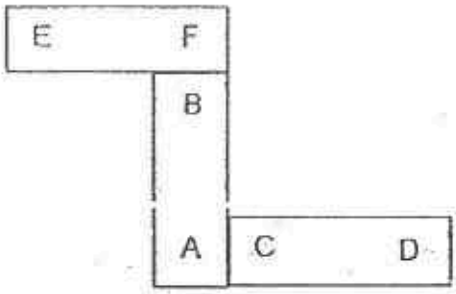
(2)



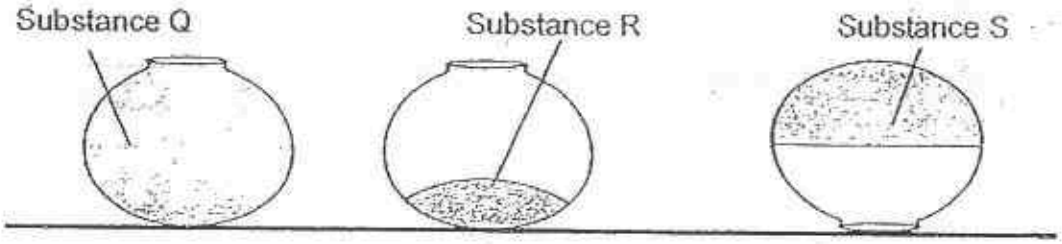
(3)



(4)



28. Thomas added three different substances, Q, R and S, into three similar containers as shown below.

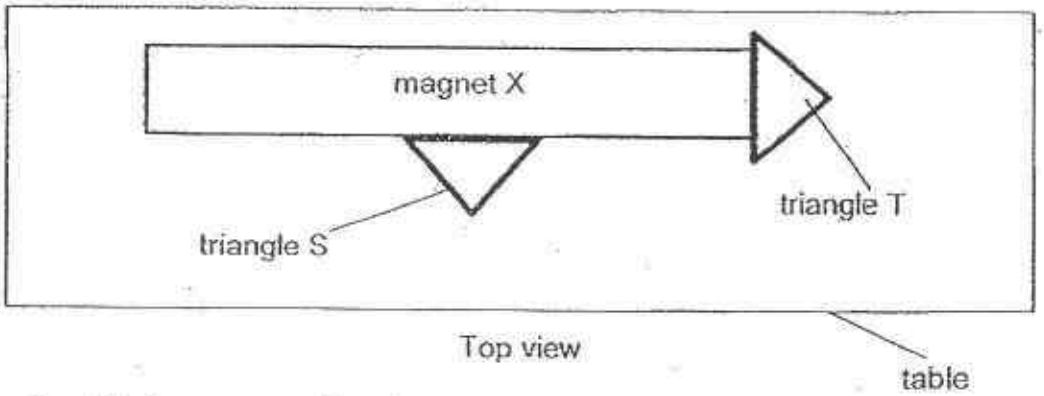


Based on the observations above, which of the following conclusions are correct?

A	Q can only be a gas.
B	R and S cannot be compressed.
C	Q and S must have a definite shape.

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

29. Ben placed bar magnet X on a table. He then attached two similar triangles, S and T, to magnet X as shown below.



Ben lifted up magnet X and observed that triangle T remained attached but triangle S dropped off after a while.

Which of the following statements best explain the above observations?

A Triangle S is made of magnetic material.
B Triangle T is attracted to the poles of the magnet X.
C Only the poles of magnet X have magnetic force of attraction.

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

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION

2015

BOOKLET B

Date : 27 August 2015

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 8 September 2015. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

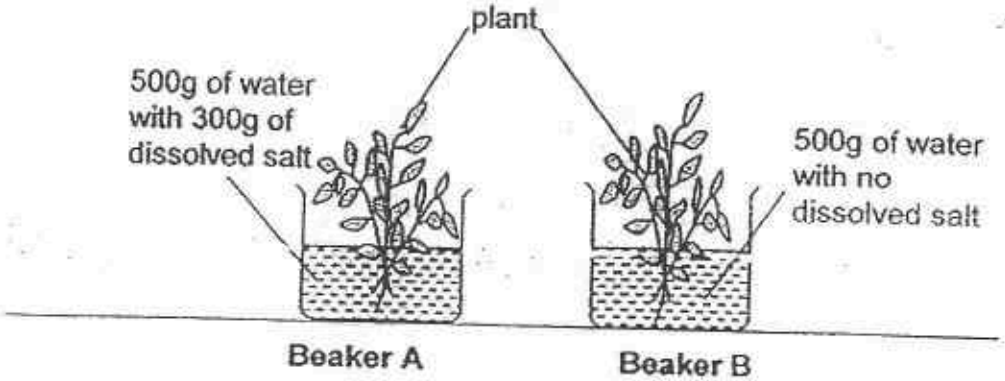
Parent's signature: .....

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

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

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

31. The following experiment was conducted as shown below.



Both beakers with similar plants were placed by the window and the number of leaves was observed and counted over 2 weeks.

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

_____

_____

The following table shows the results of the experiment.

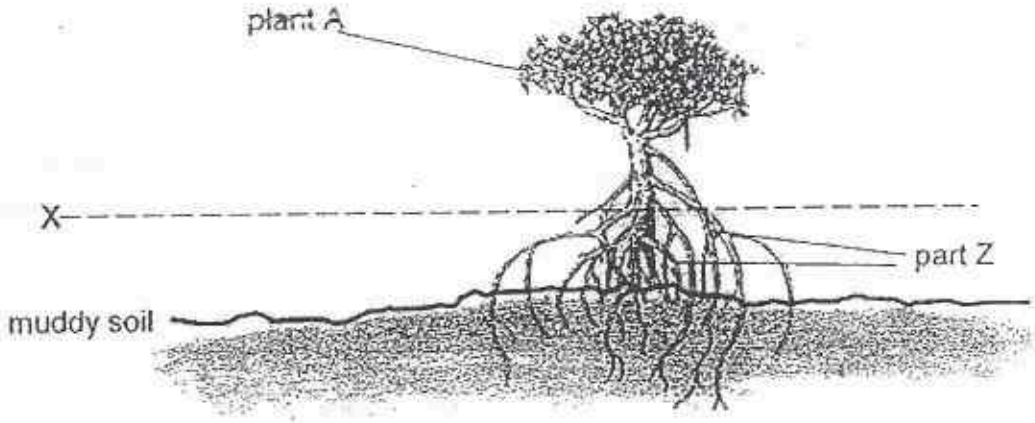
	Plant in Beaker A		Plant in Beaker B	
	Number of leaves	Colour of leaves	Number of leaves	Colour of leaves
Day 1	22	Green	22	Green
Day 3	23	Green	22	Green
Day 5	23	Green	24	Green
Day 7	20	Light Green	25	Green
Day 9	18	Light Green	25	Green
Day 11	15	Yellow	26	Green
Day 14	12	Yellow	26	Green

(b) What conclusion can be made from the results of the experiment? [1]

_____

_____

The following diagram shows plant A that is found at the seashore.



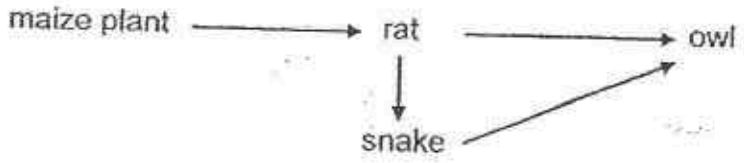
Line X shows the height of seawater during high tide. Plant A has an adaptation marked part Z to help it to adapt to the rise and fall of tides by keeping the trunk above X.

(c) What is another function of Part Z that helps Plant A to adapt to its habitat? [1]

_____

_____

32. Study the food web below.



(a) Based on the above food web, identify the organism which is both a prey and a predator. Explain your choice. [1]

_____

_____

(b) Farmer Amos noticed that his maize plantation had been infested by rats. Without introducing any new species into the food web, suggest a method that can help him overcome this problem. [1]

_____

_____

(c) The following year, Farmer Amos noticed a drastic decrease in the population of the owls. State two possible reasons for this occurrence. [1]

(i) _____

_____

(ii) _____

_____

33. The caterpillar of butterfly X releases a sweet substance which will attract ants. The ants feed on this sweet substance. The ants also fight off attacks from other insects that feed on the caterpillar.

(a) How do the caterpillar and the ants benefit from this relationship? [1]

(i) Benefit for the caterpillar:

_____

_____

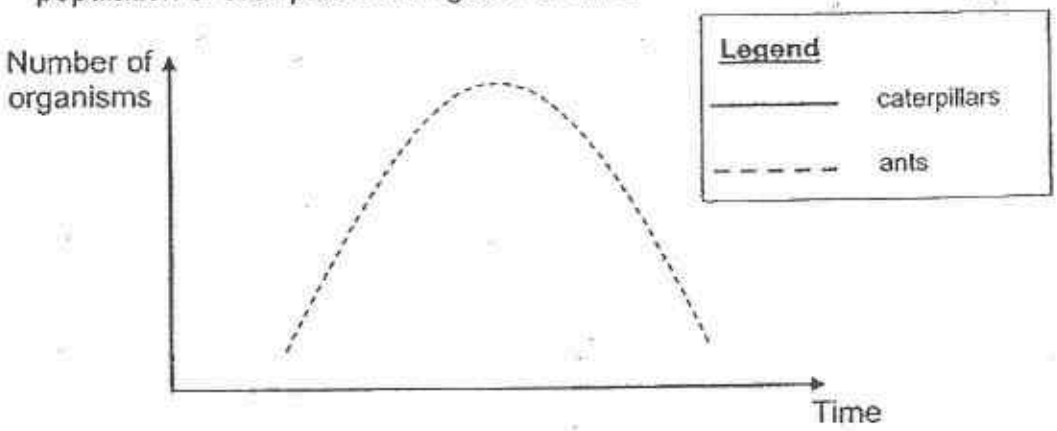
(ii) Benefit for the ants:

_____

_____

(b) The graph below shows how the population of ants changes over a period of time.

Using the legend provided in the box, draw on the <u>same graph</u> how the population of caterpillars changes over time. [1]



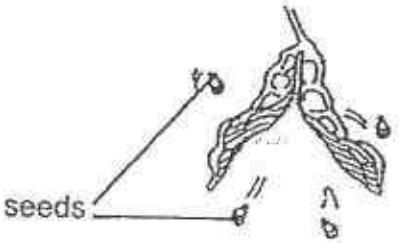
(c) Based only on the information provided, explain how the population of caterpillars would be affected if a disease struck and killed most of the ants. [1]

_____

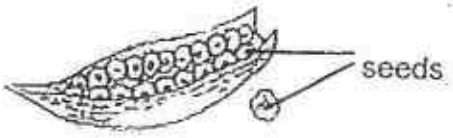
_____

_____

34. The diagram below shows two different kinds of fruits, Q and R.



Fruit Q



Fruit R

Bala made some observations on the seeds from both fruits and recorded them in the table shown.

Seeds from fruit Q	Seeds from fruit R
small and hard	light with transparent wings

(a) Based on the information above, explain how fruit R dispersed its seeds. [2]

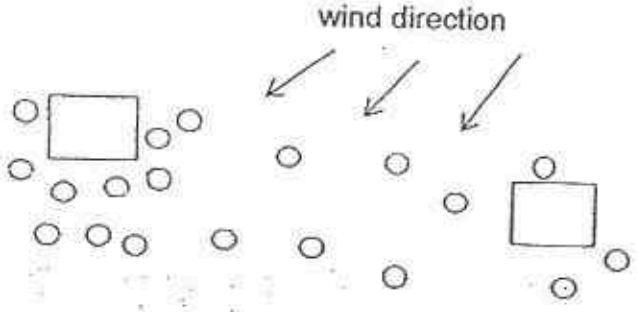
_____

_____

_____

(b)(i) After the seeds from fruits Q and R had been dispersed, the positions of their seedlings are indicated in the diagram below.

Place a tick (✓) in one box to identify the correct position of the parent plant of fruit Q. [1]

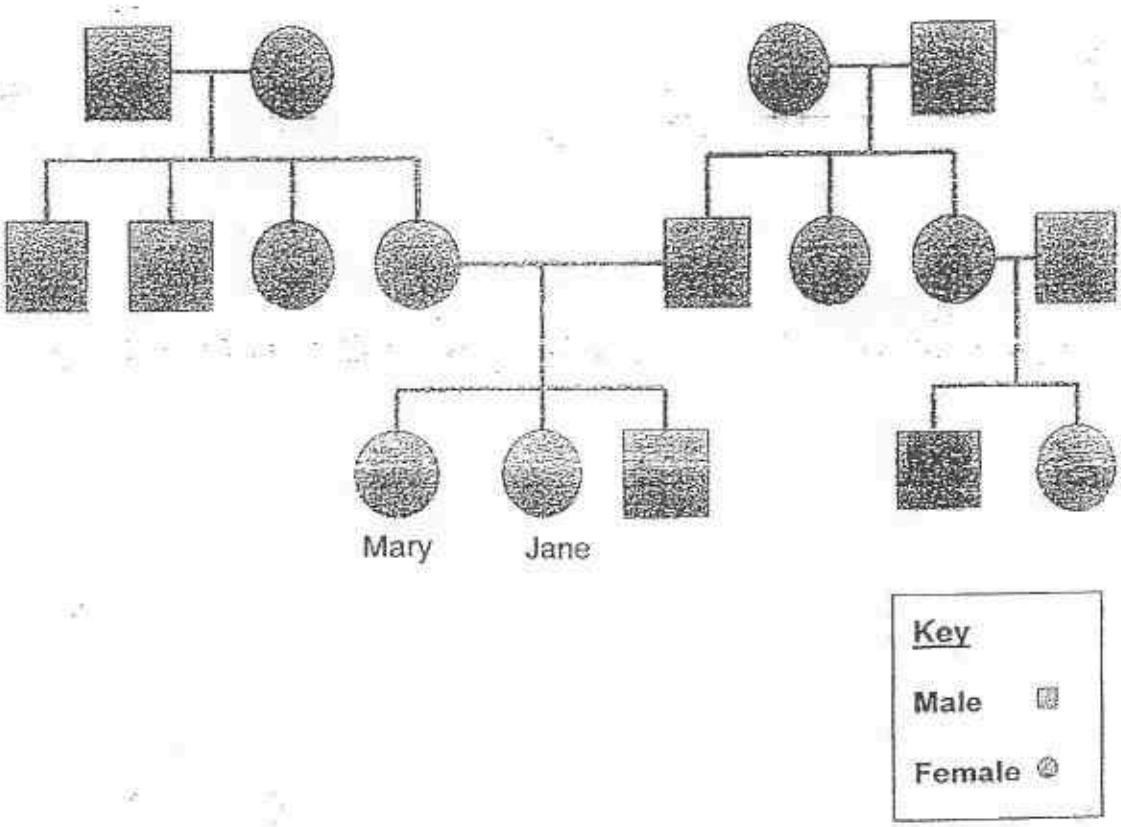


(ii) Explain your choice in (b)(i). [1]

_____

_____

35. Study the family tree of a pair of twins, Jane and Mary.



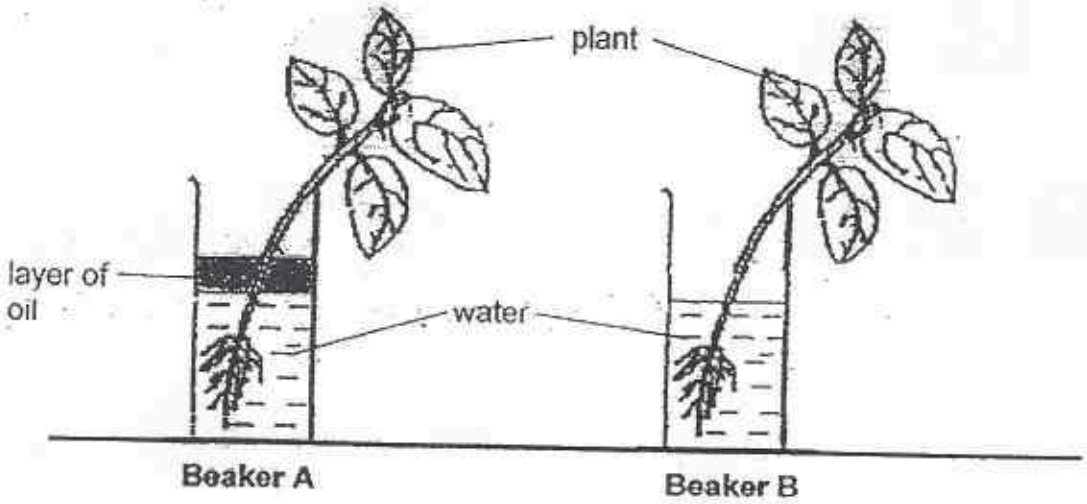
(a) State the number of generations in the family tree. [1]

_____

(b) How is Mary related to X? [1]

_____

36. Rita conducted the experiment as shown below. Beakers A and B contained two similar plants and the same amount of water. A layer of oil was added to beaker A. The two beakers were then left in the garden for two hours.



The table below shows the results for the experiment.

	Volume of water at the start of experiment (ml)	Volume of water at the end of experiment (ml)
Beaker A	50	40
Beaker B	50	20

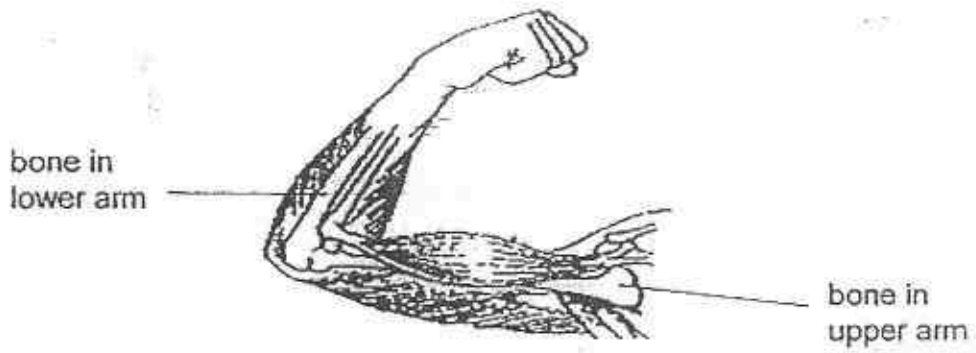
Based on the results above, explain the change in the volume of water in both beakers at the end of the experiment. [2]

_____

_____

_____

37. The diagram below shows a human arm.



(a) Based on the diagram above, which two systems are needed to work together to straighten the arm? [1]

(i) System 1: _____

(ii) System 2: _____

(b) Explain how the circulatory system works with the two systems mentioned in (a). [2]

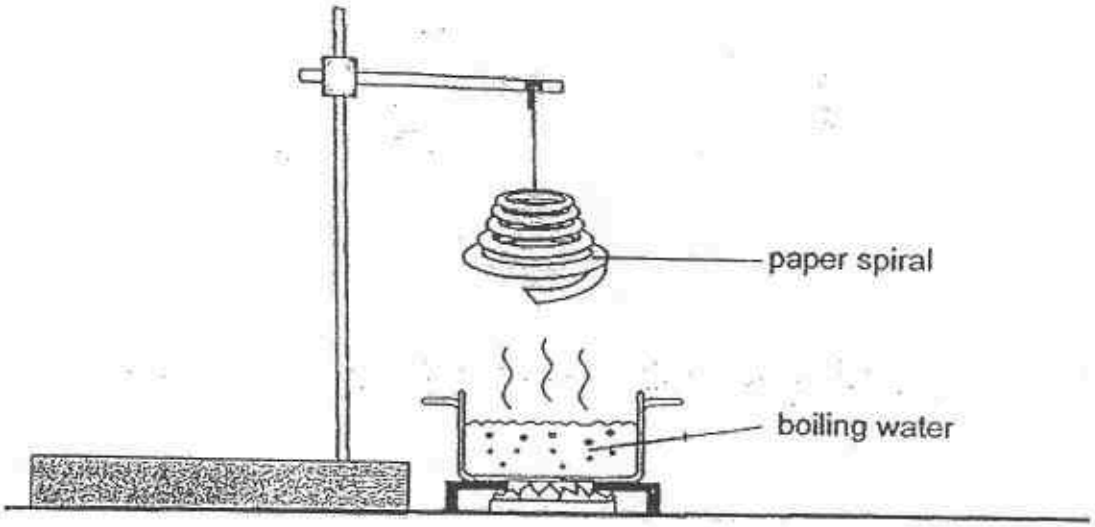
_____

_____

_____

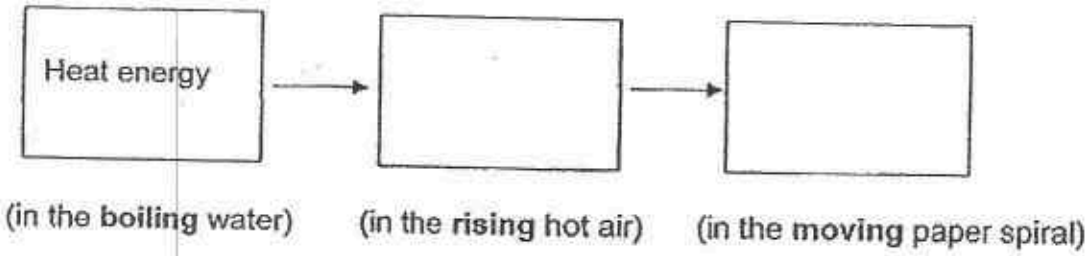
_____

38. Mary conducted an experiment as shown in the diagram below.



A paper spiral was hung above the pot of boiling water. After some time, the paper spiral started to spin.

(a) Fill in the blanks below to show the energy conversion. [1]



Mary decided to repeat the same experiment to find out how the exposed surface area of a container affected the average number of spins made by the paper spiral in one minute.

The table below showed the results.

Exposed surface area of container (cm^2)	Average number of spins (per minute)
200	3
400	5
600	8
800	12

(b) Based on the results above, state how the average number of spins changed with the exposed surface area of the container. [1]

_____ _____

_____

(c) Twenty holes were punched on the same paper spiral and the experiment was conducted again using a container with an exposed surface area of 800 cm^2.

(i) How would this change affect the average number of spins made by the paper spiral? [1]

_____

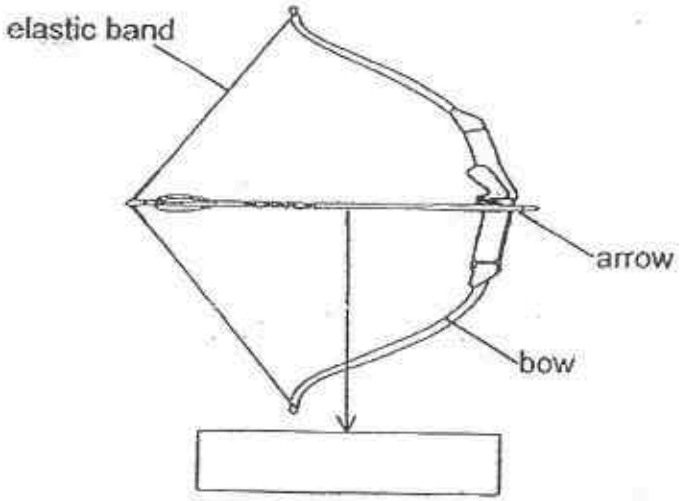
_____

(ii) Explain your answer in part (i) [1]

_____

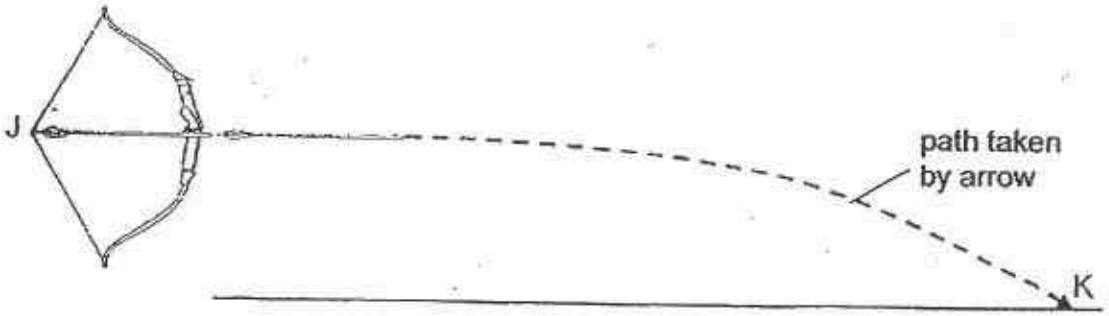
_____

39. The diagram below shows a bow and arrow and when the string of the bow was pulled back.



(a) Label the force acting on the arrow in the box provided above. [1]

When the string was released, the arrow travelled in the path as shown below before hitting the ground at point K.



(b) In terms of forces, explain the movement of the arrow from the point it was released at J till it hit the ground at K. [2]

_____

_____

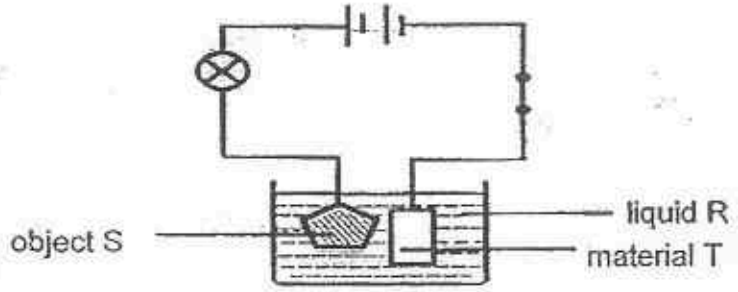
_____

(c) The activity was repeated with an arrow of a greater mass. Explain how this will affect the movement of the arrow.

_____

_____

40. Song Cho carried out an experiment using the set-up as shown below.



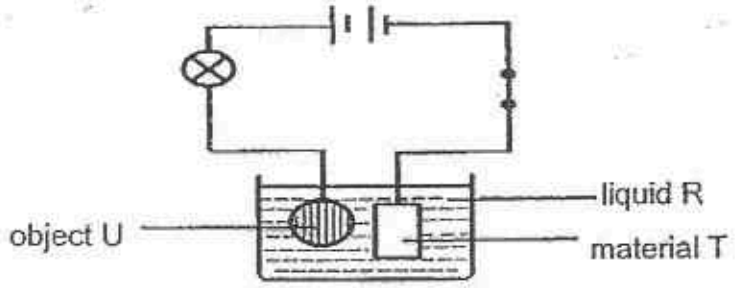
Experiment 1

When the switch was closed, he noted that the bulb lit up. After running the experiment for one hour, he also observed that object S was coated with a thin layer of material T.

(a) State one common property of liquid R, object S and material T. [1]

_____

He then decided to replace object S with object U as shown below.



Experiment 2

(b) After conducting experiment 2 for the same duration, he observed that the bulb did not light up and that there was no layer of material T found on object U. Explain his observation. [1]

_____

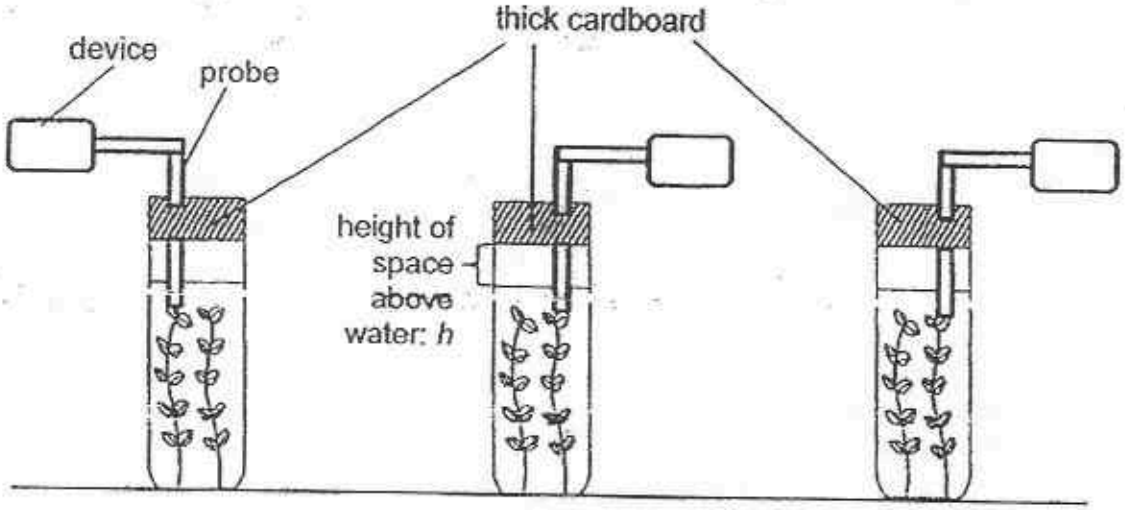
_____

(c) Suggest one modification to the set-up such that the bulb will light up. [1]

_____

_____

41. Vanda wanted to find out how different materials affect the growth of a water plant. She used three similar glass containers and wrapped each container with different materials, X, Y and Z. She then covered the opening of each container with thick cardboard as shown in the set-up below.



Container 1 (wrapped with Material X) **Container 2** (wrapped with Material Y) **Container 3** (wrapped with Material Z)

To measure the amount of carbon dioxide present in the water, she added a probe linked to a special device into each container to measure the amount of carbon dioxide. She then left the set-ups near the window for 4 hours and obtained the results as shown below.

Material	Initial amount of carbon dioxide (units)	Final amount of carbon dioxide (units)
X	12	1
Y	12	14
Z	12	5

(a) Based on the results above, put a tick (✓) in the correct column to indicate if each of the following statements is 'True' or 'False'. [2]

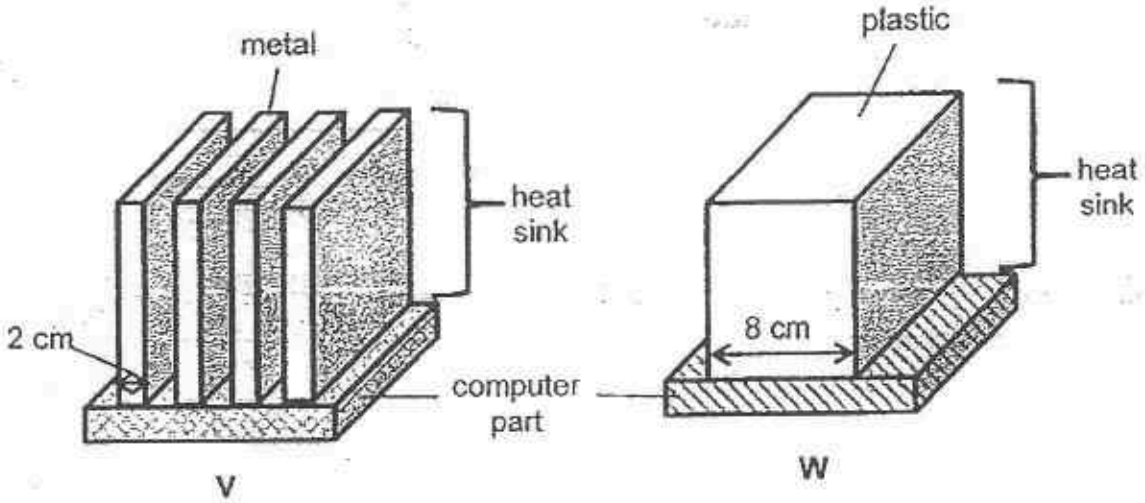
	Statement	True	False
(i)	Z could be made of cardboard.		
(ii)	Y is most likely a translucent material.		
(iii)	Z allows less light to pass through than X.		
(iv)	X can be used to make a windscreen of a car.		

(b) Vanda wanted to grow fully submerged water plants in a tank. Based on the results above, which one of the above materials is best suited for making the tank? Explain your choice. [1]

_____

_____

42. Heat sinks are often used in computers to prevent the parts inside the computers from overheating. The diagrams below show two heat sinks, V and W.



Which one of the above heat sinks (V or W) is better at reducing overheating of the computer parts? Explain your answer. [2]

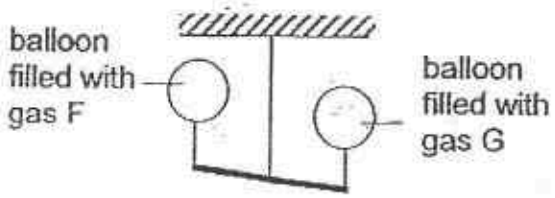
_____

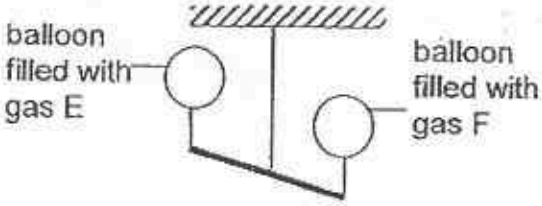
_____

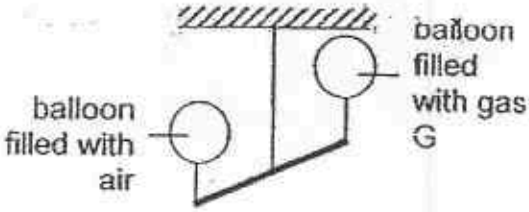
_____

_____

43. Nikita used some balloons and filled each with 200 cm^3 of different gases, E, F, G and air. He hung the balloons at two ends of the rod. The diagrams below show his observations.







(a) Use the results above to rank the gases, E, F, G and air, in the table below. [1]

Mass per 1cm^3	Greatest mass →			Smallest mass
Gas				

(b) He then pumped another 100 cm^3 of air into the balloon which was filled with air. Given that the balloon did not burst, what would be the new volume of air in the balloon? [1]

Tick (✓) the correct answer below.

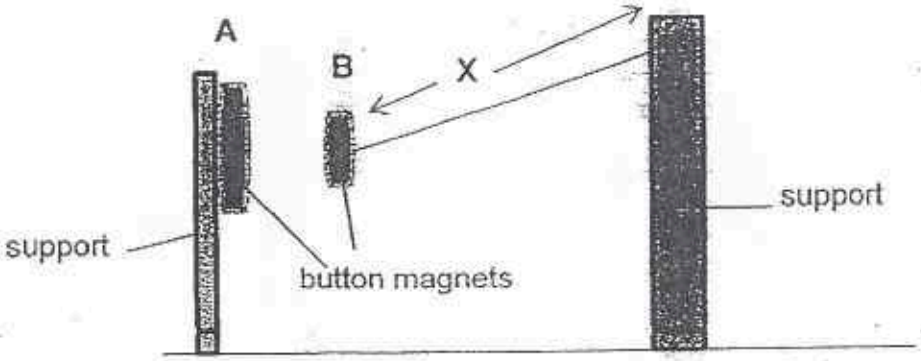
- [✓] 200 cm^3
- [ ] 200cm^3 - 300cm^3
- [ ] more than 300cm^3

Give a reason for your answer above.

_____

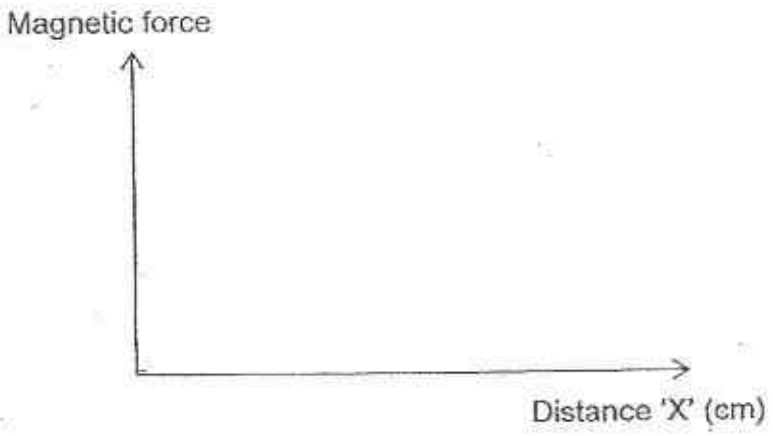
_____

44. Study the experimental setup as shown below.

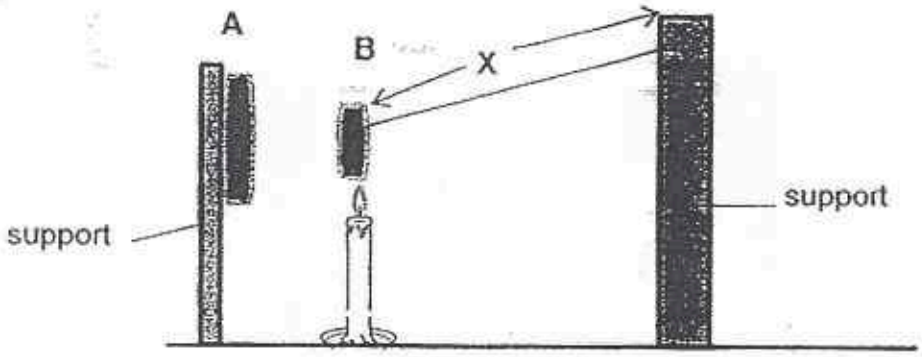


In the set-up above, 'X' is the distance of the string used to attach button magnet B to the support.

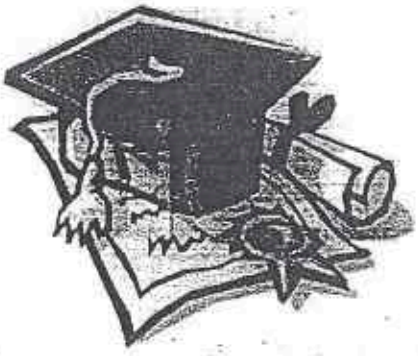
(a) Draw a line graph to show the relationship between the magnetic force acting on B and the distance 'X'. [1]



In the set-up below, a lighted candle was placed under button magnet B so that it was heated for some time.



(b) Predict what will happen to magnet B after some time. Explain your prediction. [1]



ANSWER SHEET

EXAM PAPER 2015

SCHOOL : NANYANG

SUBJECT : P6 SCIENCE

TERM : SA2

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

31)a)To find out if the presence of salt affects the grow of plants.

b)Plants grown with salt will not grow well.

c)Part Z help to anchor the plant firmly to the muddy soil.

32)a)Snake. The snake prey on the rate and its predator is an owl that feeds the snake.

b)Increase the number of snakes as the snake feeds on the rat.

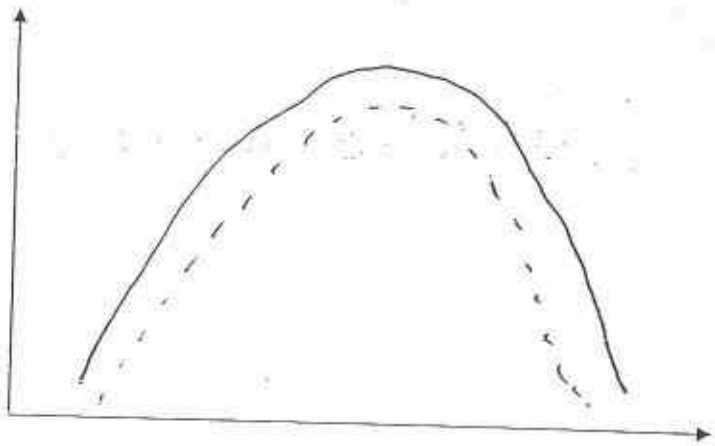
c)i)A disease out break.

ii)The snake and rat population decrease over time.

33)a)i)The caterpillar is able to survive as the ants would fight with the caterpillar's predator.

ii)Ants obtain their food from caterpillar.

b)



c)If the ants population decrease, the ants is not able to protect the caterpillar so the predators would feed on the caterpillars making it decrease.

34)a)The fruit will split open and the seeds will be dispersed by wind.

b)i)

ii)The seedlings are scattered hear its parent plant Q.

35)a)3 generations.

b)X is Mary's cousin.

36)In beaker A, the roots had absorbed all the water leaving 40ml of water but in beaker B, the roots is able to take in the water and evaporation can take as there is no layer of oil so beaker B has lesser in the end.

37)a)i)skeletal system. ii)Muscular system.

b)It provides the muscles with oxygen and digested food so that energy can be release and carbon dioxide is removed for the arm to straighten.

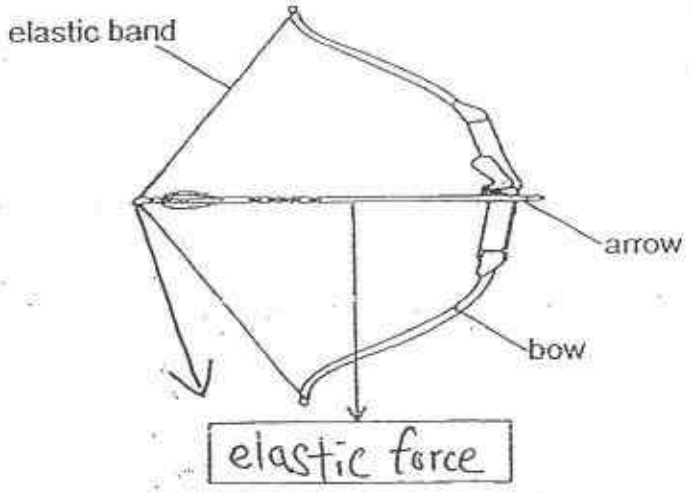
38)a)Kinetic energy→Kinetic energy

b)With a bigger exposed surface area, the paper spiral is able to spin in the air more number of times.

c)i)The paper spiral would spins lesser than 12.

ii)The paper spiral has less surface area for the rising hot air to push.

39)a)



b)The elastic spring force exerted on the arrow coil push it for ward and the gravitational force acting on the arrow will cause it to drop.

c)The arrow will land before K as it needs more elastic spring force is the same hence the distance travelled by the arrow is shorter.

40)a)All of them an conductor of electricity.

b)U is not a conductor of electricity and there will be an open circuit.

c)Put a layer of material T and around object U.

41)a)i) False ii)False iii)True iv)True

b)X. It allows the most amount of light to pass through and this will allow the plant to carry of the most amount of photosynthesis.

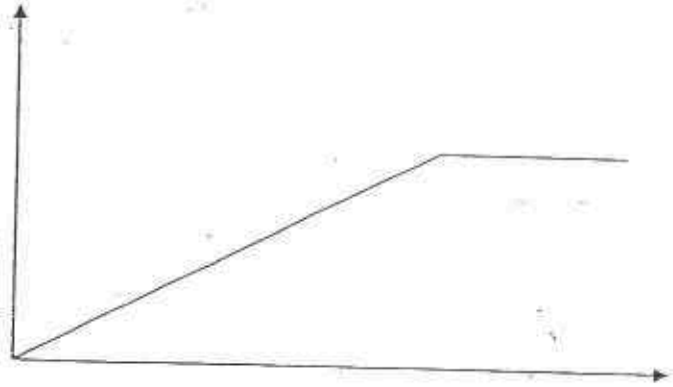
42)V. Metal is a better conductor of heat and V has a greater exposed surface area to lose more heat to the surroundings.

43)a)air / Gas G / Gas F / Gas E

b)200cm_3 – 300cm_3

c)Air can be compressed and the balloon is elastic.

44)a)



b)B remains attracted. As B is made of a magnetic material, it continues to be attracted to A even though it has already lost its magnetism.

PEI CHUN PUBLIC SCHOOL

SCIENCE PRELIMINARY EXAMINATION, 2015

SCIENCE

SECTION A

Time: 1 h 45 min

Name : _____

Class : Primary 6 ___

Date : 18 August 2015

Parent's Signature: _____

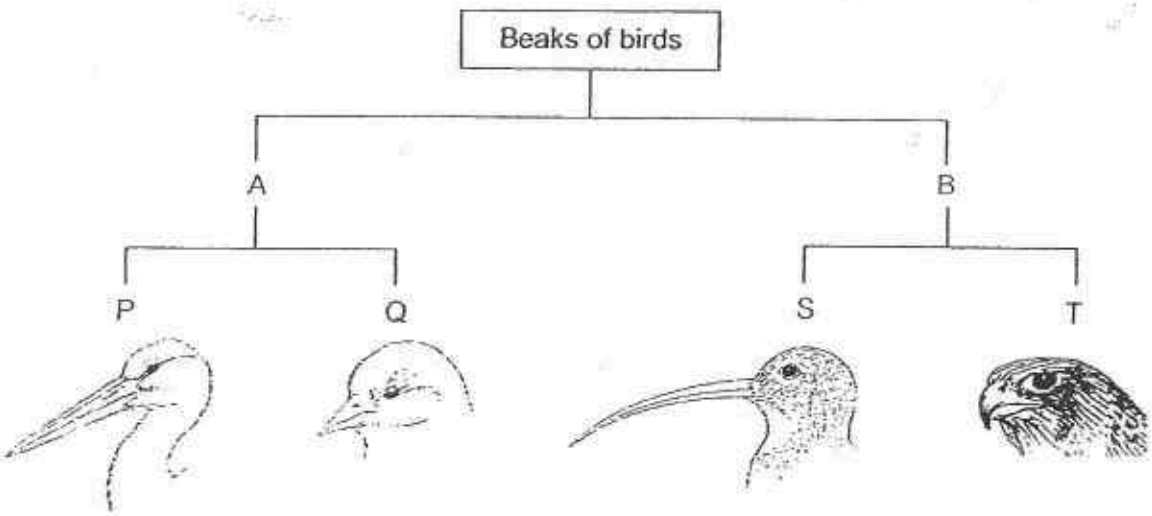
INSTRUCTIONS TO CANDIDATES

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.
ANSWER ALL QUESTIONS.
WRITE YOUR ANSWERS IN THIS BOOKLET.

Section A (30 × 2 marks)

For questions 1 to 30, choose the most suitable answer and shade its number (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

1. The diagram below shows how different groups of birds are classified according to certain characteristics, A, B, P, Q, S and T.



Which of the following correctly shows the characteristics A and T?

	A	T
(1)	straight beak	curved beak
(2)	straight beak	beak shorter than head
(3)	beak longer than head	curved beak
(4)	beak longer than head	beak shorter than head

2. Aini observed four materials P, Q, R and S and recorded her observations in the table below.

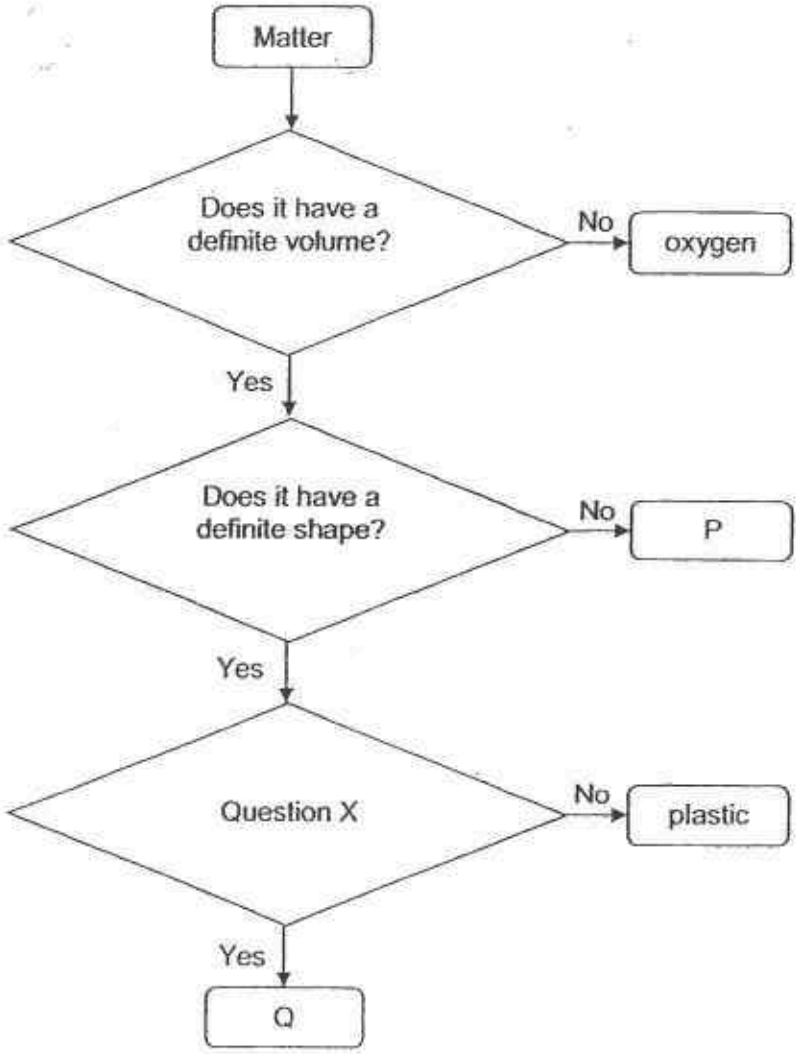
Material	Waterproof	Allow most light to pass through	Flexible
P	✓	✓	
Q	✓	✓	✓
R	✓		✓
S			✓

The diagram below shows a car.

Based on the information above, which of the following materials are most suitable for making parts Y and Z?

	Part Y	Part Z
(1)	R	P
(2)	P	S
(3)	Q	S
(4)	P	R

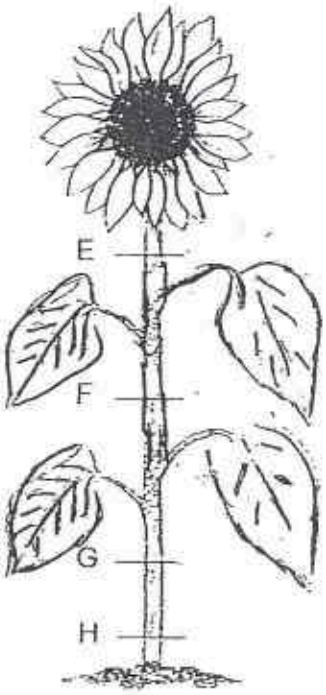
3. Study the diagram below.



Which of the following correctly states what P, question X and Q are?

	P	Question X	Q
(1)	air	Is it a good conductor of heat?	copper
(2)	water	Is it a good conductor of heat?	steel
(3)	carbon dioxide	Is it a magnetic material?	iron
(4)	oil	Is it a magnetic material?	copper

4. Nurul has a plant as shown below.



She removed an outer ring of the stem from the plant. As a result, the food-carrying tubes were removed while the water-carrying tubes remained in the stem.
The diagram below shows the appearance of the stem near the removed ring after one week.

At which part of the stem did Nurul most likely remove the outer ring?

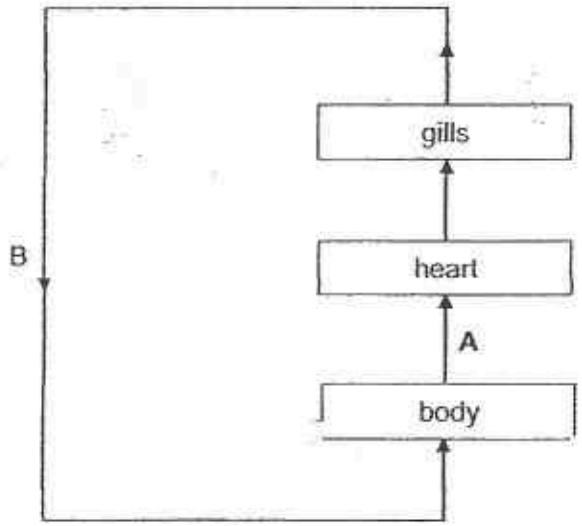
(1) E

(2) F

(3) G

(4) H

5. The figure below shows how gases are transported in the circulatory system of a fish.



When compared with the blood in B, the blood in A has _____.

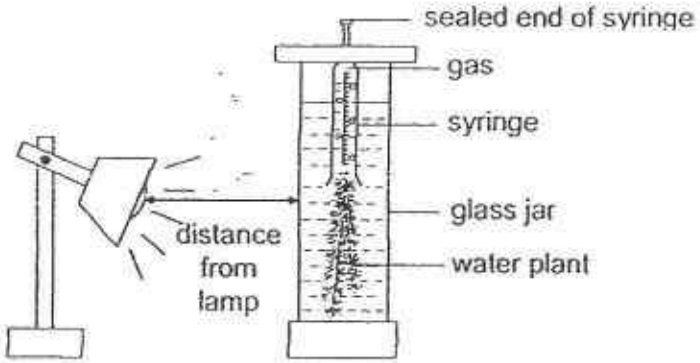
(1) less oxygen and less carbon dioxide

(2) less oxygen and more carbon dioxide

(3) more oxygen and less carbon dioxide

(4) more oxygen and more carbon dioxide

6. A class carried out an experiment on photosynthesis to find out if the **brightness of the light will affect the amount of gas produced.** The pupils set up the apparatus as shown below. When they put the set-up under the light, they observed bubbles in the water.



In order to ensure a fair test, the pupils should only change the _____.

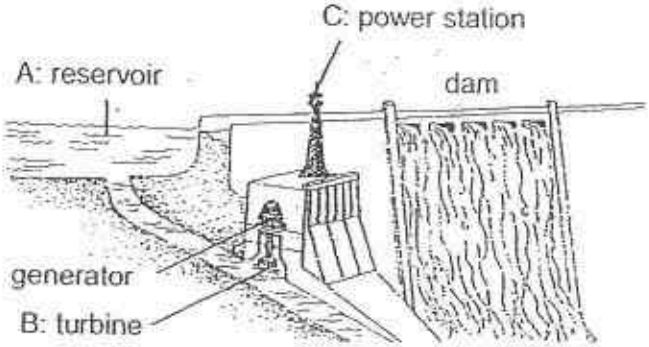
(1) amount of plant used

(2) type of water plant used

(3) amount of water in the glass jar

(4) distance between the lamp and the glass jar

7. The diagram shows a hydroelectric power station.



Which of the following best describes the energy changes that take place from part A to part B to part C as shown in the diagram?

(1) potential energy → kinetic energy → electrical energy

(2) chemical energy → kinetic energy → electrical energy

(3) kinetic energy → electrical energy → chemical energy

(4) potential energy → electrical energy → kinetic energy

8. Rubbish in a city was collected and disposed by burning, burying or dumping. The table shows that:

i) the amount of rubbish collected in 1998 was more than that in 1995.
ii) the amount of rubbish disposed of in 1998 was less than that in 1995.

Year	Rubbish (in million kg)	
	Collected	Disposed of
1995	4000	3900
1998	4100	3100

Which is the possible reason to explain why less rubbish was disposed of in 1998?

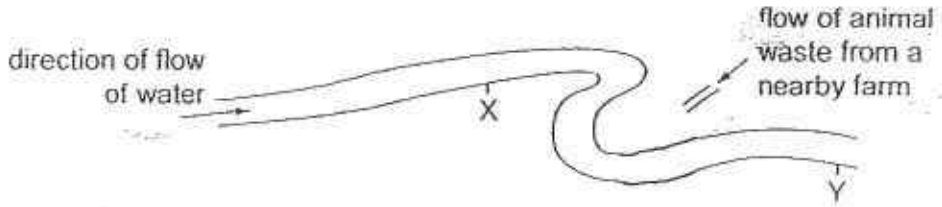
(1) The population in 1998 was smaller.

(2) More incinerators were built in 1998.

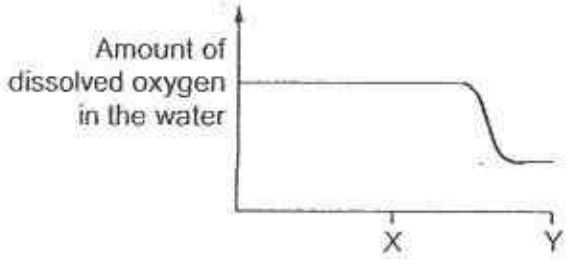
(3) More dumping grounds were available in 1998.

(4) More rubbish-recycling plants were built in 1998.

9. The diagram shows two points in a river, where water samples were taken.



The graph below shows the amount of dissolved oxygen in the river.



Which of the following best explains the change in the amount of dissolved oxygen in the river between point X and Y?

Point Y has _____ than point X.

(1) fewer fishes

(2) more bacteria

(3) fewer floating water plants

(4) more dissolved carbon dioxide

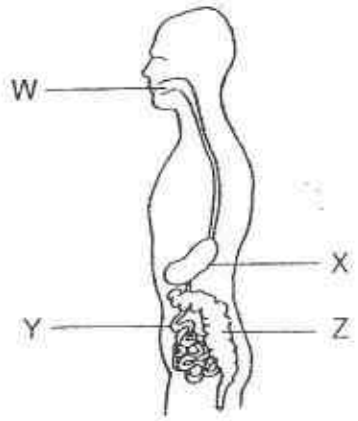
10. Gopal studied a community living in a leaf litter. He found the following organisms:

earthworms	woodlice	toadstools	moulds

Which of the following classification is correct?

	Decomposers	Organisms that help decomposers
(1)	toadstools, moulds	earthworms, woodlice
(2)	woodlice, toadstools	earthworms, moulds
(3)	earthworms, woodlice, toadstools	moulds
(4)	moulds, earthworms, toadstools	woodlice

11. The diagram below shows the human digestive system.



Where does digestion take place?

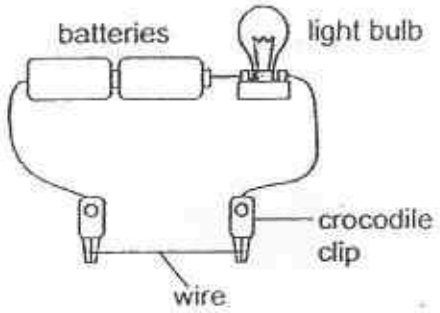
(1) X and Y only

(2) X and Z only

(3) W, X and Y only

(4) W, Y and Z only

12. Weiming wanted to find out how the amount of electric current flowing in a circuit is affected by the length of wire used in the circuit.



Which of the following should be kept constant for a fair test?

A : Length of wire

B : Thickness of wire

C : Number of batteries

D : Brightness of light bulb

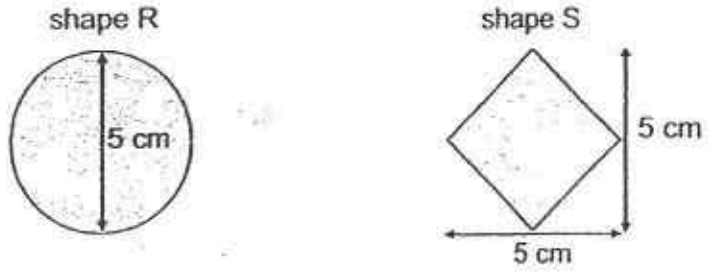
(1) A only

(2) B and C only

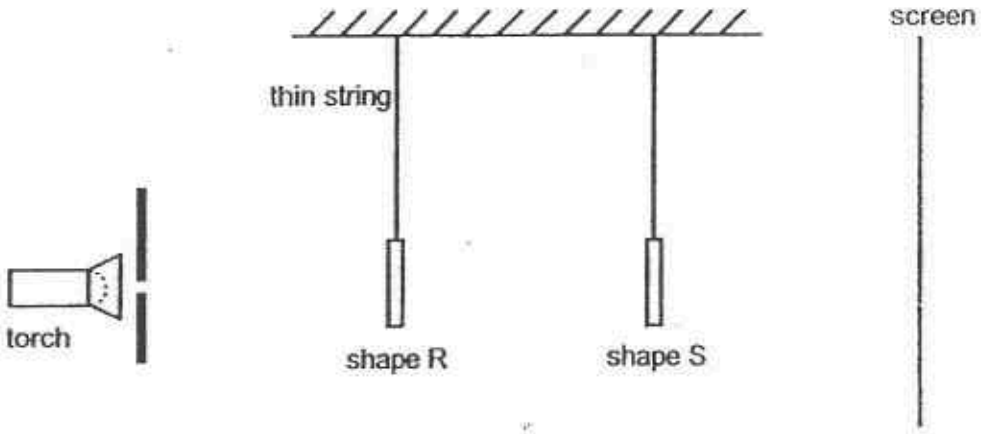
(3) A, C and D only

(4) B, C and D only

13. The diagram below shows two shapes, R and S, made of tracing paper.



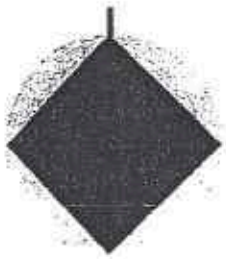
The two shapes are placed between a torch and a screen as shown below.



Which of the following correctly shows the shadow formed on the screen?

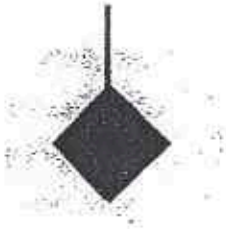
(1)

(2)

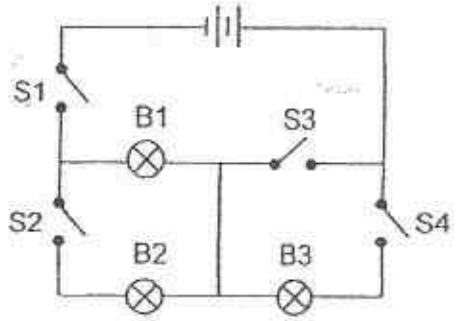


(3)

(4)



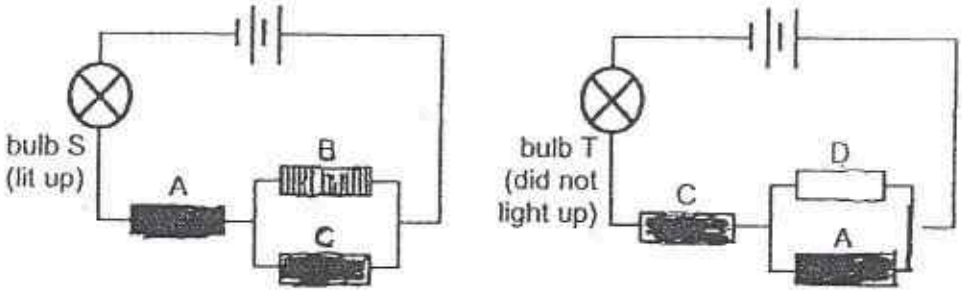
14. Bulbs B1, B2 and B3, and switches S1, S2, S3 and S4 are connected in a circuit as shown below. All the bulbs are working properly.



Which of the following observations is correct?

	S1	S2	S3	S4	Which of the bulbs is/are lit?
(1)	closed	closed	open	closed	B2 and B3 only
(2)	closed	closed	closed	open	B1 and B2 only
(3)	closed	open	open	closed	B1 only
(4)	open	closed	closed	closed	B1, B2 and B3

15. Si Qing had four rods, A, B, C and D, of unknown materials. She connected the rods in the two circuits shown below. Bulbs S and T were working properly.



She observed that only bulb S lit up.

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

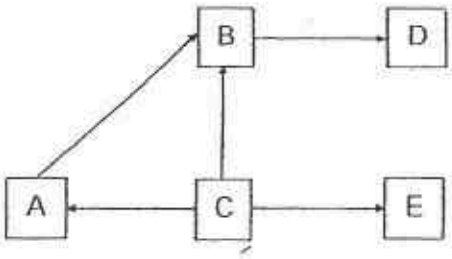
	Does it conduct electricity?			
	A	B	C	D
(1)	yes	yes	yes	no
(2)	yes	not sure	no	not sure
(3)	no	yes	yes	no
(4)	yes	yes	no	not sure

16. The diagram below shows a tree frog gliding from one tree to another.

Which of the following characteristics help the frog to stay longer in the air?

	Characteristics	
	streamlined body	**webbed feet**
(1)	yes	yes
(2)	yes	no
(3)	no	yes
(4)	no	no

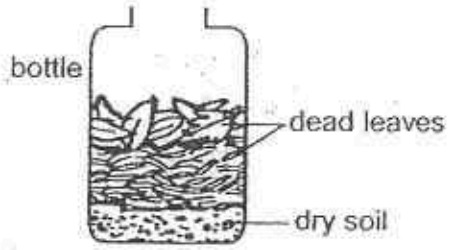
17. The food web shows the relationship between organisms A, B, C, D and E.



Which of the following classification is correct?

	prey	prey and predator	predator
(1)	A	B	D
(2)	A	B	D and E
(3)	A and E	B	D
(4)	C	A and B	D and E

18. Suzie carried out an experiment to study the decomposition of dead leaves. She placed some dead leaves and dry soil in a bottle as shown below.



Which of the following could Suzie possibly do to make the dead leaves decompose faster?

A : Use damp soil instead of dry soil.

B : Place the container in a cold and dark place.

C : Cover the opening of the container with a lid.

(1) A only

(2) A and C only

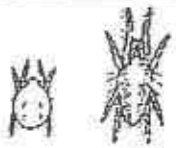
(3) B and C only

(4) A, B and C

19. The table below shows how some insects can be grouped.

	Has wings	Does not have wings
Has 3 stages in its life cycle	E	G
Has 4 stages in its life cycle	F	H

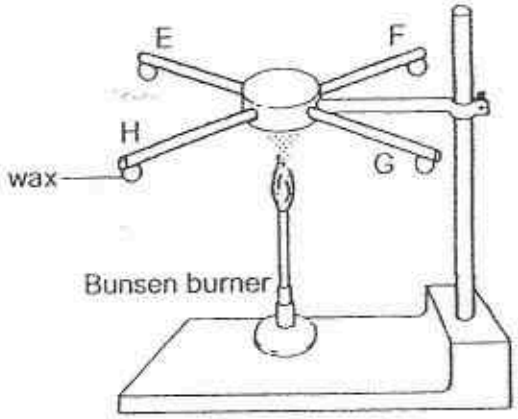
The diagrams below show insects X and Y.

Insect X	Insect Y
 young adult	 young adult

Which group, E, F, G or H, do insects X and Y belong to?

	Insect X	Insect Y
(1)	E	G
(2)	E	H
(3)	F	G
(4)	F	H

20. Four similar rods, E, F, G and H, of different materials are heated as shown below. The rods are of the same thickness and length. Each rod has the same amount of wax attached at one end.



The table below shows the time taken for each piece of wax to melt and drop.

Rods	Time taken for the piece of wax to melt and drop(s)
E	5
F	35
G	15
H	8

Based on the results above, which of the following statements is true?

(1) Rod F is the best insulator of heat.

(2) Rod H is the best conductor of heat.

(3) Rod E conducts heat slower Rod G.

(4) All the rods are metals as they are able to conduct heat.

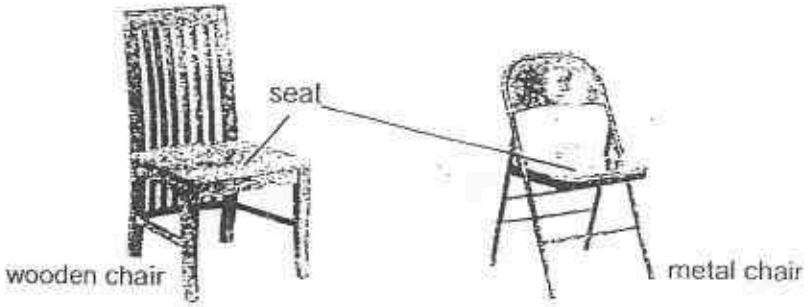
21. The table below shows the melting and boiling points of two substances, X and Y.

Substance	Melting Point (°C)	Boiling Point (°C)
X	35	250
Y	100	150

Which of the following shows the correct states of X and Y at 95 °C?

	X	Y
(1)	solid	liquid
(2)	solid	gas
(3)	liquid	liquid
(4)	liquid	solid

22. Rahim placed two chairs in his room as shown below.



He placed his left hand on the seat of the wooden chair and his right hand on the metal chair.

Which of the following correctly described his observation and reason?

	Observation	Reason
(1)	The wooden chair was warmer.	Wood is a better conductor of heat than metal.
(2)	The metal chair was cooler.	The metal chair gained heat from the hand faster than the wooden chair.
(3)	The metal chair was cooler.	The wooden chair gained heat from the hand faster than the metal chair.
(4)	Both chairs feel the same.	Both chairs were at room temperature.

23. The table below records the number of organisms that could be found near and in a pond community in half an hour.

Organisms	Number of organisms
cattail	3
dragonflies	8
dragonfly nymphs	7
frogs	12
hydrilla	11
mosquitoes	20
mosquito larvae	15
tadpoles	23

How many populations could be found in the above community?

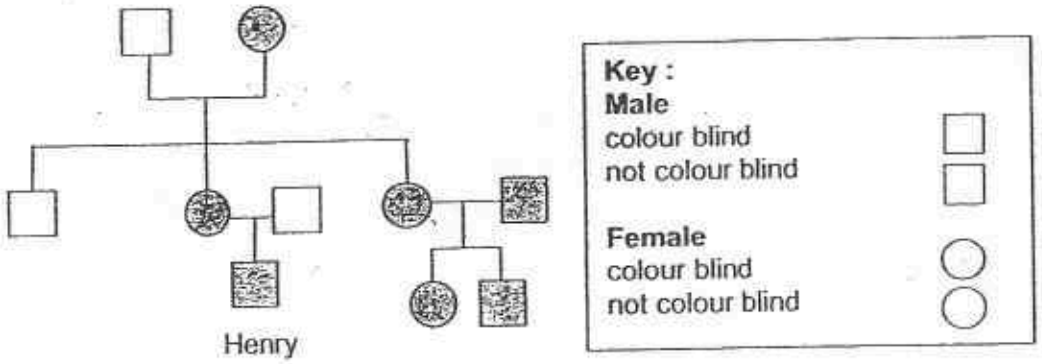
(1) 5

(2) 6

(3) 8

(4) 99

24. The diagram below shows the family tree of Henry.



A : All the males in the family are colour blind.

B : Henry has two aunts who are colour blind.

C : Henry inherited colour blindness from his mother.

D : Henry's grandfather has three grandchildren who are colour blind.

Based on the family tree, which of the above statements is/are correct?

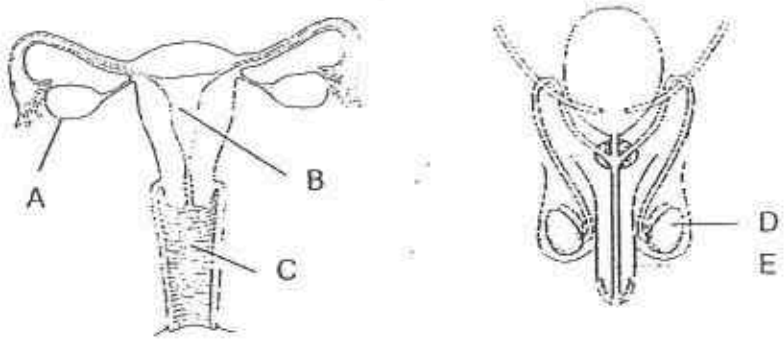
(1) A only

(2) B and C only

(3) C and D only

(4) A, C and D only

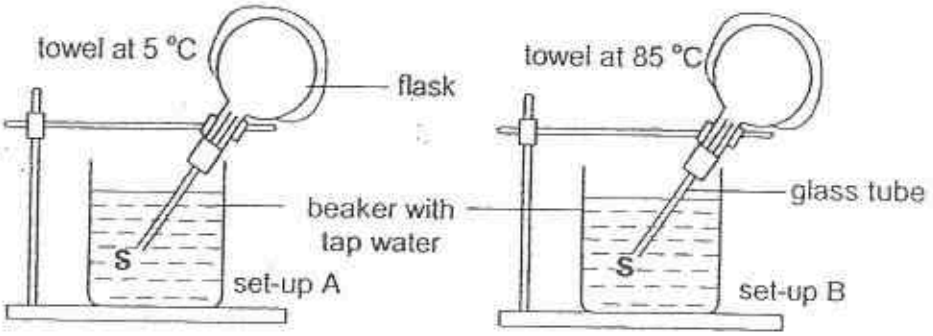
25. The diagrams below show the human reproductive systems.



Which of the following correctly shows where the reproductive cells are produced?

	Female reproductive cell	Male reproductive cell
(1)	A	E
(2)	A	D
(3)	B	D
(4)	C	E

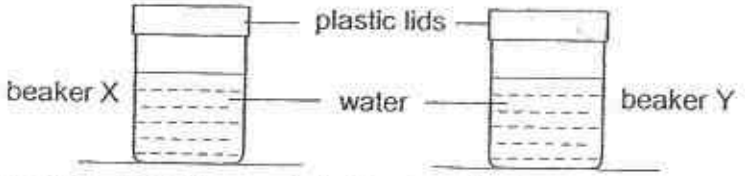
26. Study the set-ups A and B below. Identical flasks and glass tubes were used.



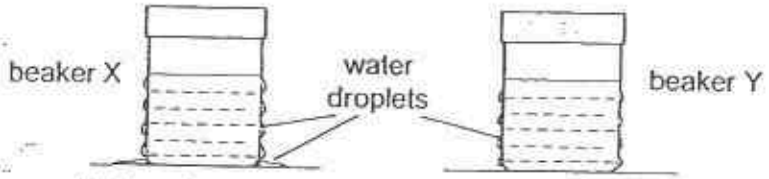
Which of the following could be observed a few minutes after the towels were placed on the flasks in set-ups A and B?

	Observation for A	Observation for B
(1)	water rises up the tube	water rises up the tube
(2)	water rises up the tube	bubbles escape from the tube at S
(3)	bubbles escape from the tube at S	water rises up the tube
(4)	bubbles escape from the tube at S	bubbles escape from the tube at S

27. Ben, May and Ron conducted an experiment as shown below. They poured the same amount of water of different temperatures into two identical beakers and left the beakers on the classroom table.



After a few minutes, they observed that water droplets were formed on the two beakers as shown below.



Three pupils gave their explanations of their observation.

Ben : The temperature of the water in beaker X was lower than room temperature.

May : Condensation took place faster on the outer surface of beaker X than on beaker Y.

Ron : The temperature of the water in beaker X was higher than that in beaker Y.

Which pupil gave the correct explanation?

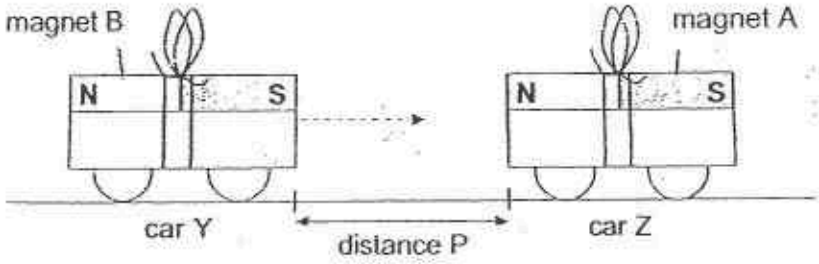
(1) Ben only

(2) Ron only

(3) Ben and May only

(4) May and Ron only

28. Richard secured two magnets, A and B, on top of two cars, Y and Z. The cars were placed facing each other at a distance, as shown below.



Richard pushed car Y slowly towards car Z. He recorded distance P where car Y and car Z started to move towards each other on their own.

He repeated his experiment with magnet C and magnet D on car Y.
The table below shows the results of his experiment.

Magnet	Distance P (cm)
B	6
C	4
D	8

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

A : Magnet C is weaker than magnet B.

B : Magnet B is stronger than magnet D.

C : Magnet D is stronger than magnets B and C.

D : Magnet D is the strongest of the four magnets.

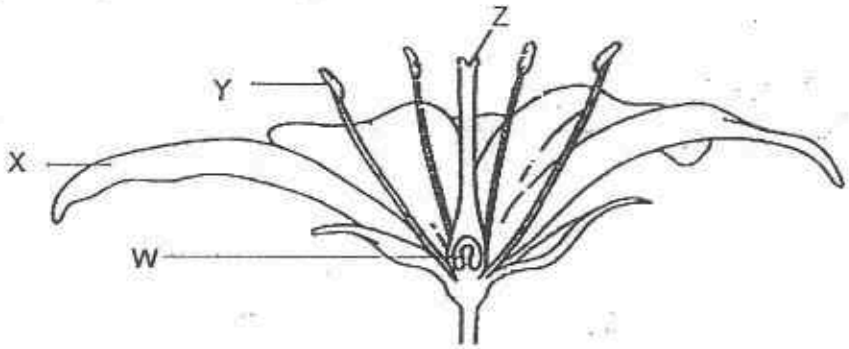
(1) B only

(2) A and C only

(3) B and D only

(4) A, C and D only

29. Study the diagram below.



A gardener carried out an experiment on four fully-bloomed flowers on the same plant. He removed different parts of the flowers and left the plant in the garden. The table below shows the parts which he removed from the flowers.

Parts of flowers	Flower A	Flower B	Flower C	Flower D
W				removed
X		removed	removed	
Y	removed	removed		
Z	removed		removed	removed

Based on the table above, which of the flowers has the highest chance of forming fruits?

(1) A

(2) B

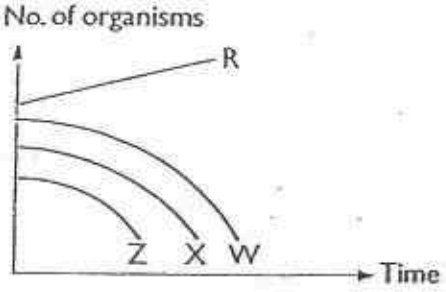
(3) C

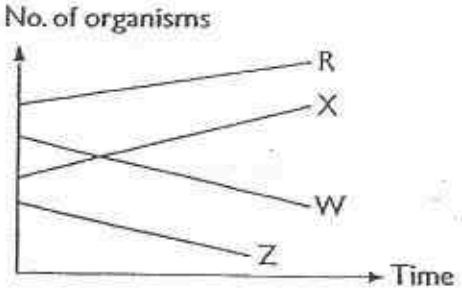
(4) D

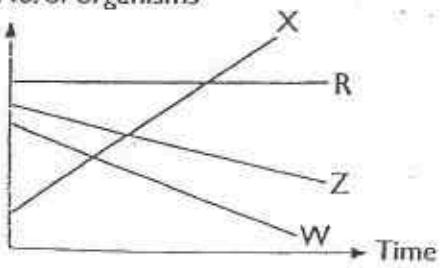
30. Study the food chain shown below carefully.

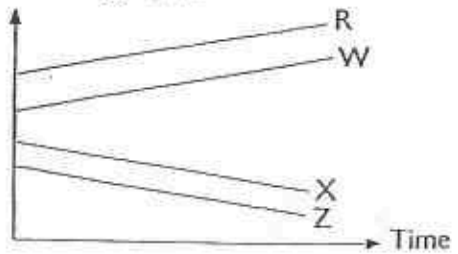
R ⟶ W ⟶ X ⟶ Y ⟶ Z

If Organism Y is removed from the above food chain, which one of the following graphs correctly shows the changes in the other populations?

(1)


(2)


(3)


(4)


PEI CHUN PUBLIC SCHOOL

SCIENCE PRELIMINARY EXAMINATION, 2015

SCIENCE

SECTION B

Time: 1 h 45 min

SECTION A	/60
SECTION B	/40
TOTAL	/100

Name : _____

Class : Primary 6 ____

Date : 18 August 2015

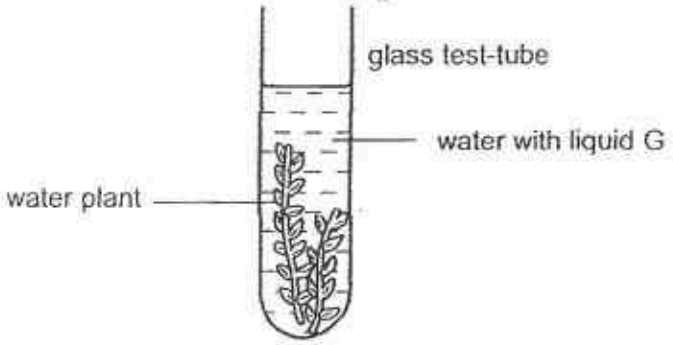
Parent's Signature: _____

INSTRUCTIONS TO CANDIDATES

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.
ANSWER ALL QUESTIONS.
WRITE YOUR ANSWERS IN THIS BOOKLET.

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

31. Gerald wanted to find out if water plants affect the amount of carbon dioxide in the water at different times of the day. He used the set-ups shown below.



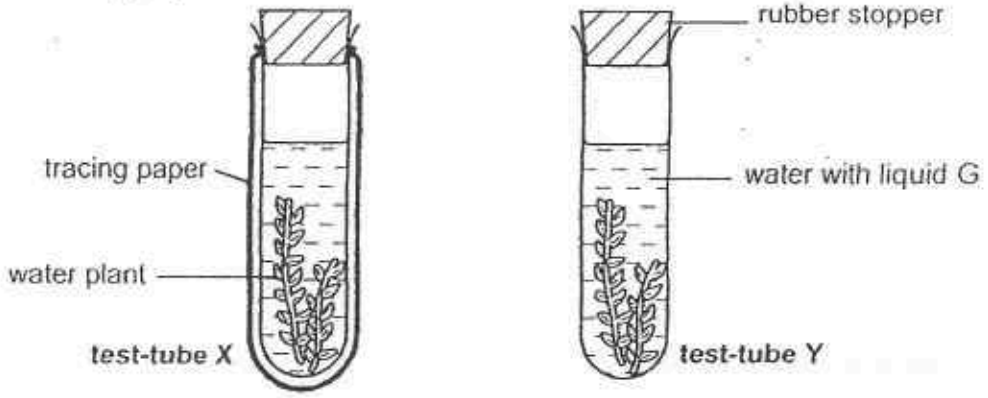
He placed the set-up near a window and added a few drops of liquid G to the water. Liquid G changes colour as shown below.

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

a) What colour would the water with liquid G be at 3 p.m. and 3 a.m.? Complete the table below. [2]

	Start (6 a.m.)	**3 p.m.**	**3 a.m.**
Colour of water with liquid G	red		

b) Gerald conducted another experiment as shown below. He added the same amount of water plants and water in two identical glass test-tubes. He wrapped test-tube X in a layer of tracing paper.

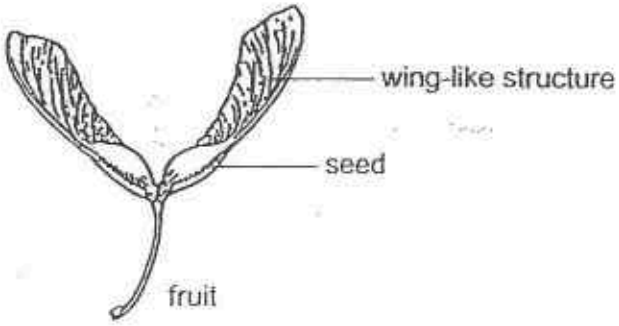


He added three drops of liquid G to the water in each test-tube before sealing them up with rubber stoppers. The two test-tube were placed the same distance away from a table-lamp that was switched on.

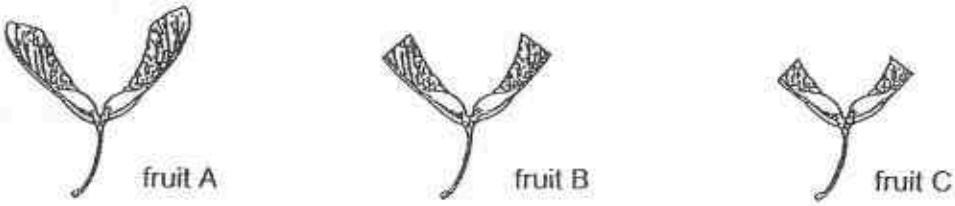
He observed that the time taken for the colour of the water in test-tube Y to change was shorter than that of test-tube X. Explain his observation. [1]

_____

32. Zainal picked up a fruit with a wing-like structure from the ground as shown below.



He decided to carry out an investigation on the fruit. He found three similar fruits, A, B and C, and cut off part of the wing-like structures on fruits B and C.



He then dropped each fruit from the same height and recorded the time taken for the fruit to reach the ground. He recorded his results in the table shown below.

Fruit	Surface area of the fruit (cm)	Time taken for the fruit to reach the ground (s)
A	7.9	4.7
B	5.4	3.1
C	3.8	2.6

a) What is the aim of Zainal's experiment? [1]

_____

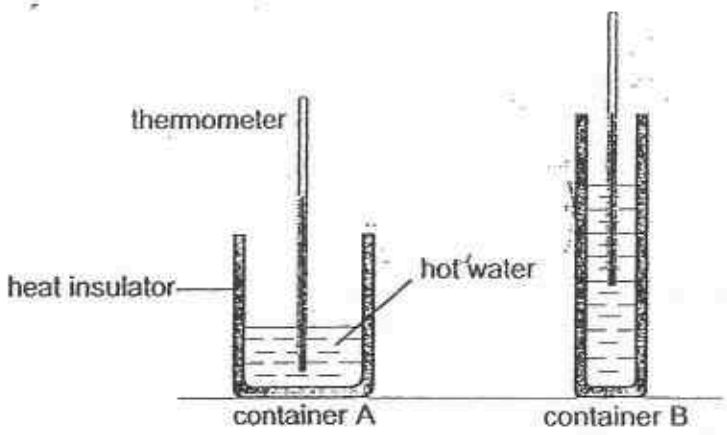
_____

b) What should Zainal do to ensure that the results of his experiment are more reliable? [1]

_____

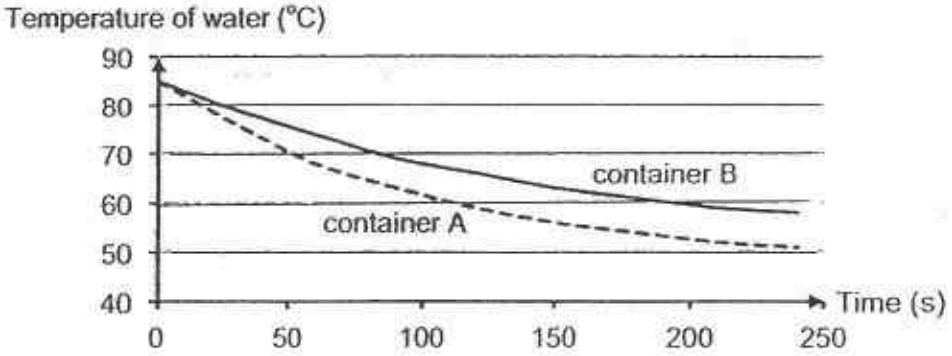
_____

33. Joshua wanted to investigate the effect of surface area of water exposed to the air on the rate of cooling of hot water. He poured an equal amount of hot water into two plastic containers, A and B, as shown below. Both containers were wrapped with the same heat insulator.



He placed the two containers side by side on a table and recorded the temperature of the water in each of the containers.

His results are shown below.



a) Explain why the temperature of the hot water decreased with time. [1]

_____

_____

b) Based on Joshua's results, state how the surface area of water exposed to the air affects the rate of cooling of hot water. [1]

_____

_____

c) The diagrams below show two animals, J and K. The two animals are of about the same mass and body size.

 **animal J** • big ears • short forelegs and long hindlegs • long tail	 **animal K** • small ears • short legs • short tail

Which animal, J or K, is able to survive better in a cold environment?
Based on Joshua's experimental findings, explain your answer. [2]

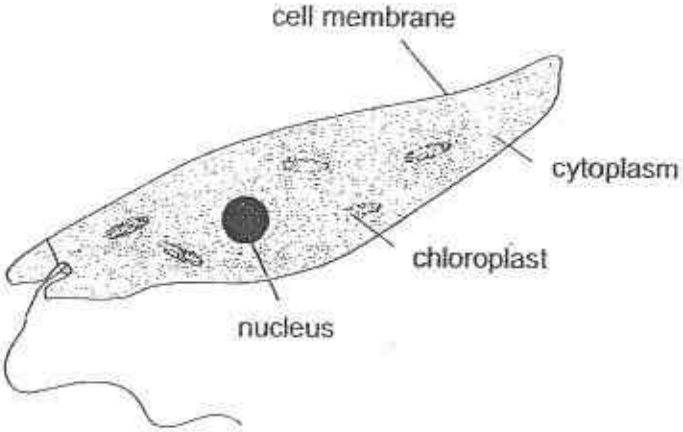
_____

_____

_____

_____

34. The diagram below shows a single-celled organism which lives in pond water.



Use the information in the diagram to answer the following questions.

a) Give a reason why this organism is more likely to be an animal cell than a plant cell. [1]

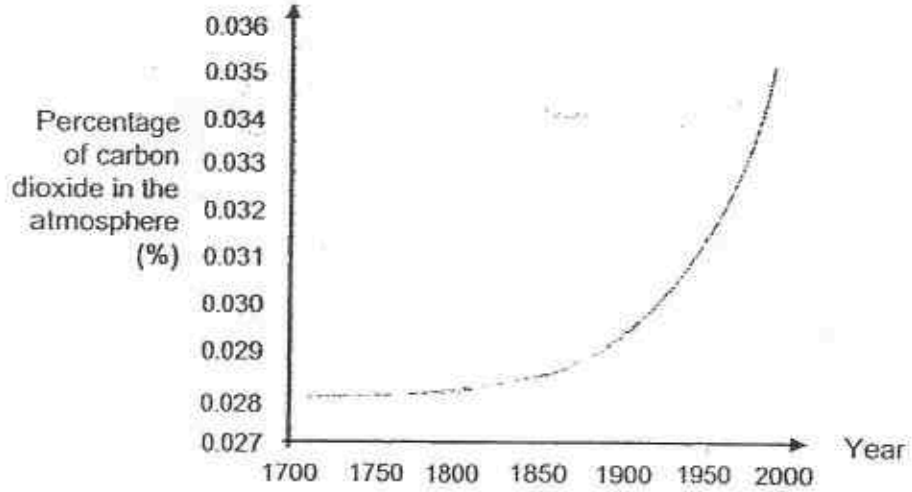
_____

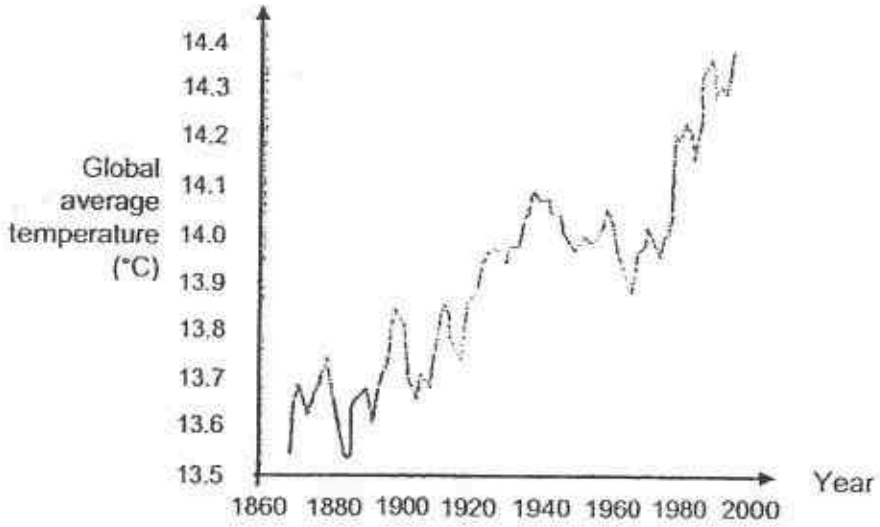
_____

b) State one part inside this organism that is not found in a typical animal cell. [1]

_____

35. Study the graphs below.

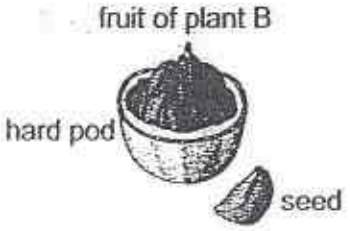


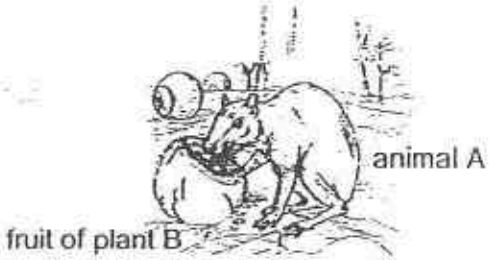


a) Describe the relationship between the global temperature and the amount of carbon dioxide in the air. [1]

b) Explain how removing a large number of trees from forests would lead to global warming. [2]

36. The fruit of plant B has a hard pod and has many seeds in the pod. Its seeds are a source of food for animal A.





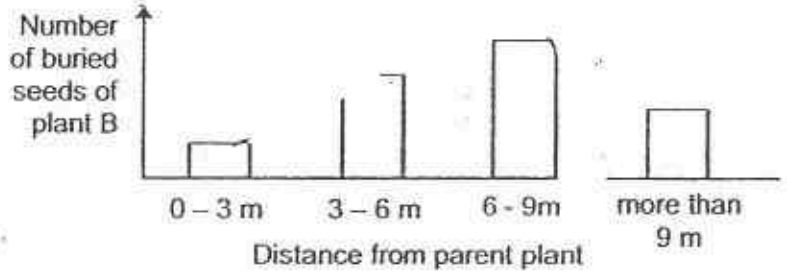
After animal A has eaten some of the seeds, it will store the rest of the seeds by burying them separately in a different place. It usually buries more seeds that it would eat later on.

a) Explain how having many seeds in one fruit helps plant B in its survival. [1]

_____

_____

b) A scientist counted the number of seeds buried by animal A at various distances from the parent plant. The results are shown below.



Based on the information given above, explain how animal A benefits plant B. [1]

_____

_____

c) State one benefit for animal A to bury each seed in a different place. [1]

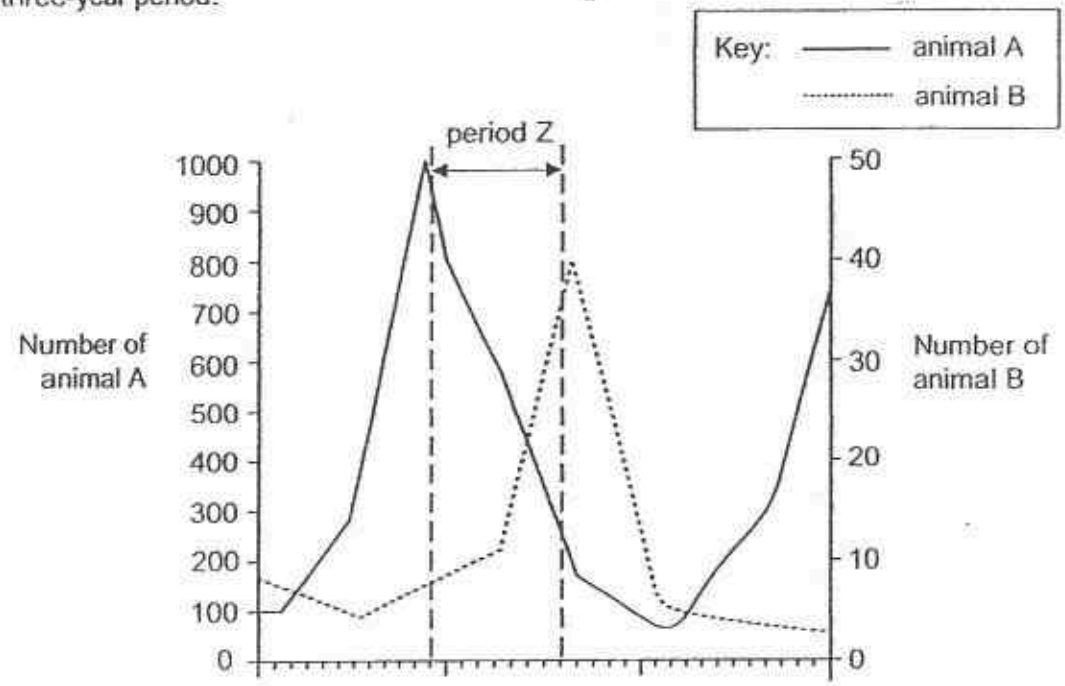
_____

_____

37. The diagram below shows a food chain in a forest.

plant X ⟶ animal A ⟶ animal B

The graph below shows the changes in the populations of animals A and B over a three-year period.



Using the information given in the food chain and the graph, suggest **two** possible reasons why the population of animal A decreased during period Z. [2]

Reason 1:

_____

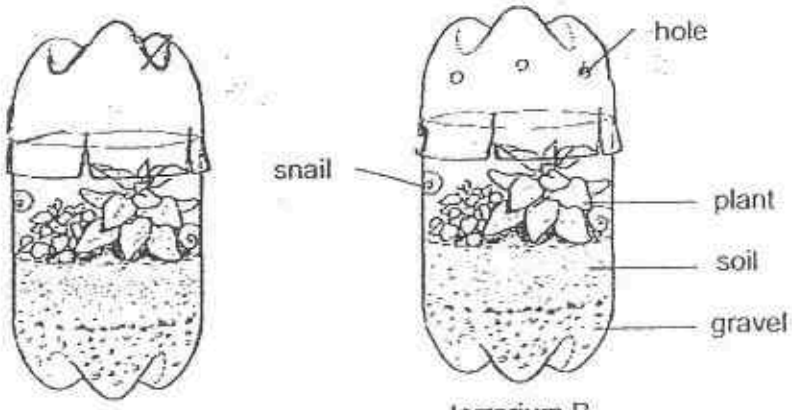
_____

Reason 2:

_____

_____

38. Alijah set up two similar terrariums and placed them in the cupboard. Terrarium A is airtight but terrarium B has holes.



terrarium A

terrarium B

a) Based on the set–ups above, which terrarium, A or B, would have a higher amount of carbon dioxide after five hours? Give a reason for your answer. [1]

_____

_____

_____

b) She realised that there were water droplets on the inner side of Terrarium A. Explain the observation that Alijah had from the set-up. [2]

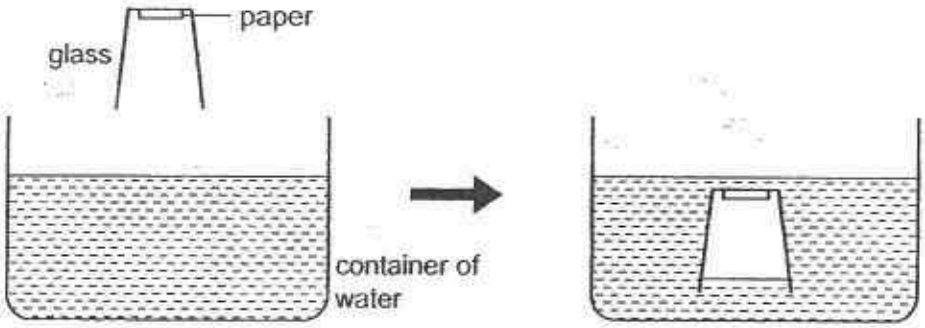
_____

_____

_____

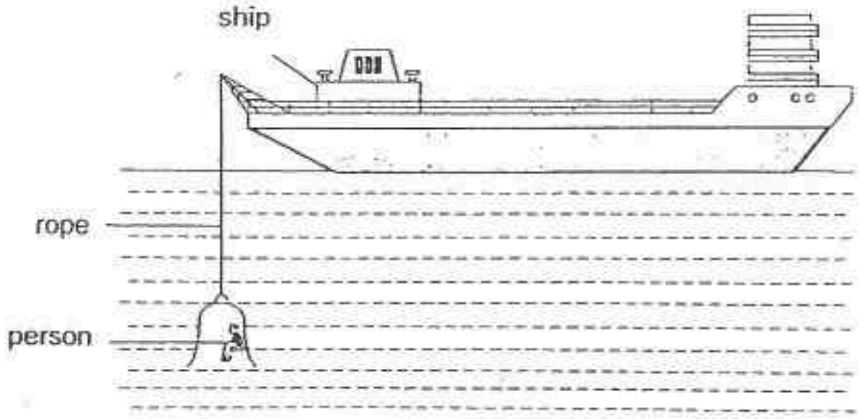
_____

39. Yelin lowered an empty glass into a container of water as shown below. She observed that the paper that was glued inside the glass remained dry.



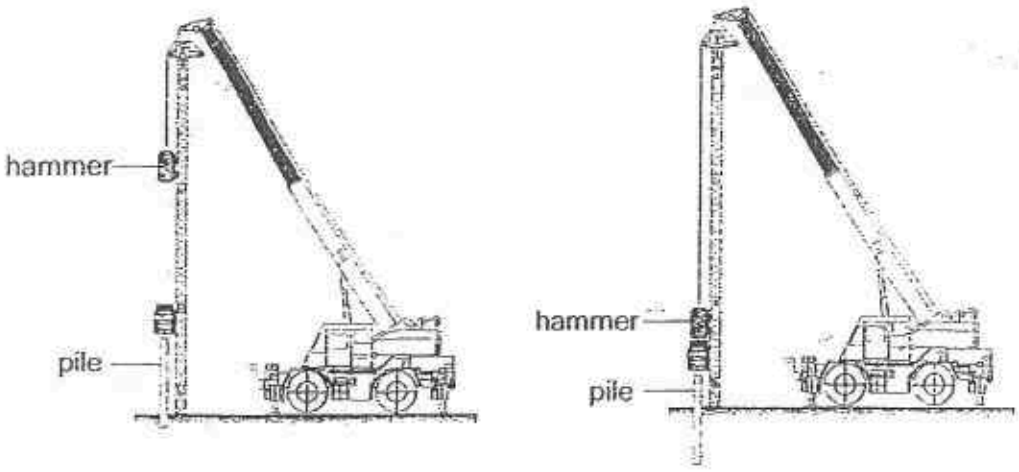
a) Give a reason for her observation. [1]

b) A large strong glass container is attached to a ship by a strong rope. It can be lowered into the sea until it is completely under water as shown below. A person sitting inside the glass container can study sea animals.



Give a reason why a person cannot remain in the glass container for a long period of time. [1]

40. The diagram below shows a piling machine. The hammer falls and drives the pile into the ground.



a) In the boxes below, write the energy changes when the hammer falls and drives the pile into the ground. [2]

_____ energy	→	_____ energy	→	_____ energy	+	_____ energy
(of hammer)		(of falling hammer)		(of moving pile)		+ _____ energy

b) Based on the diagram, suggest a change that could be made to the piling machine so that the pile can be driven deeper into the ground. Explain your answer. [2]

_____

_____

_____

_____

41. Benny constructed the electrical system shown below.
Diagram 1 shows the circuit when switch S is open.

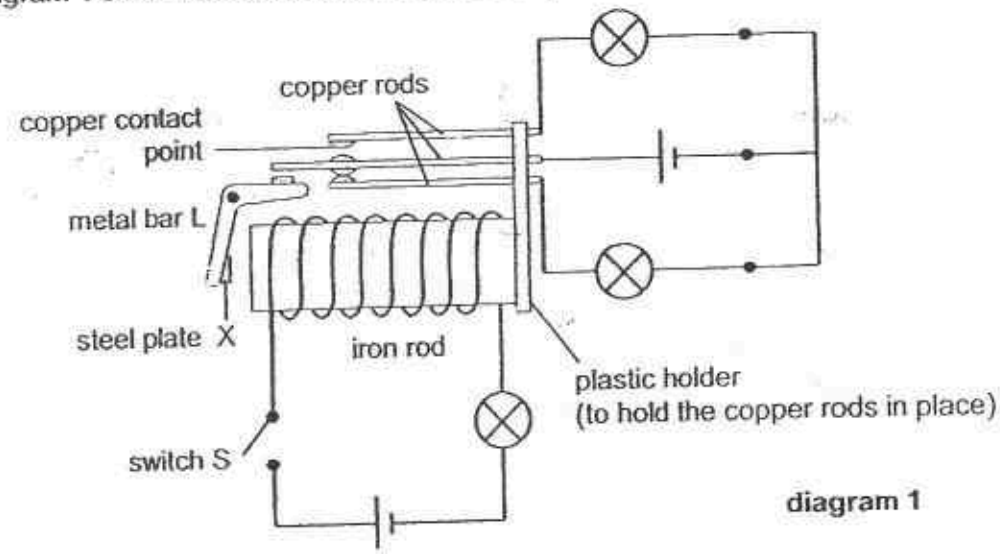


diagram 1

When Benny closed switch S, metal bar L, which was made of aluminium, moved as shown in diagram 2. There were two steel plates attached to the two ends of bar L.

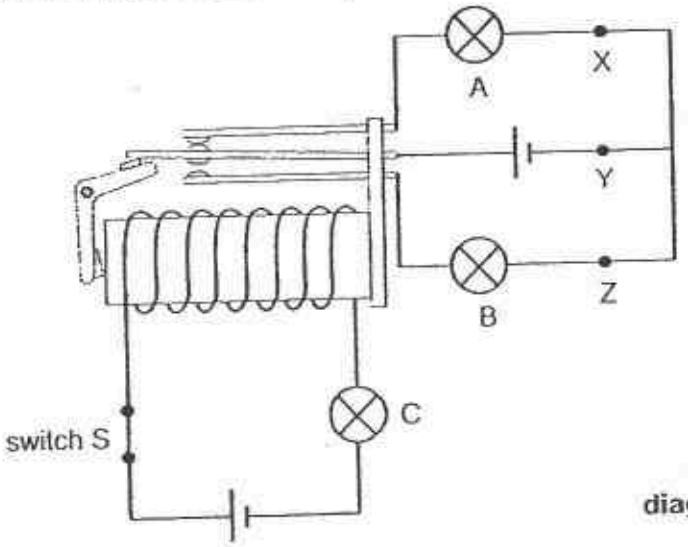


diagram 2

a) Explain why steel plate X of bar L touched the iron rod after Benny closed switch S. [1]

b) Which of the bulbs, A, B or C, would light up when switch S was closed? [1]

c) Benny wanted to add an electrical buzzer to his electrical system. He closed switch S and he wanted the buzzer to sound **only** when bulb C is fused.

At which position, X, Y or Z, should he place the buzzer? [1]

42. Rita wanted to find out how the boiling point of a liquid affects its rate of evaporation at room temperature.
She poured equal volume of liquids P, Q and R in three identical dishes as shown below and placed the dishes side by side in the open.

She recorded the volume of the liquid remaining in each of the dish after ten minutes. The table below shows her result.

Liquid	P	Q	R
Boiling Point (°C)	50	65	80
Volume of liquid at the start of experiment (ml)	10	10	10
Volume of liquid at the end of experiment (ml)	2	7	9

a) Based on the results, which liquid has the greatest rate of evaporation?
Give a reason for your answer. [1]

_____

_____

b) Describe the relationship between the boiling point of a liquid and its rate of evaporation. [1]

_____

_____

c) Give a reason how using identical dishes helps to make her experiment a fair test. [1]

_____

_____

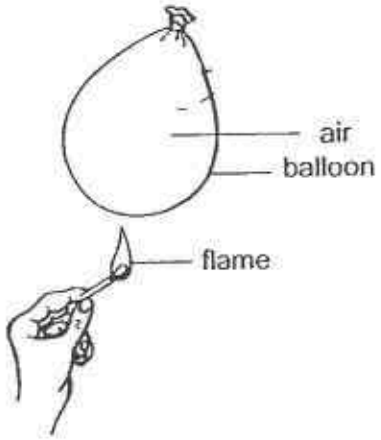
43. Rani heated some water in a pot. When the water started boiling, she put some meat into the pot and the water stopped boiling for a while.

a) Give a reason why the boiling stopped for a while. [1]

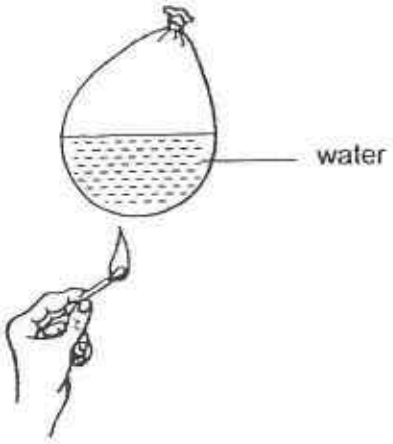
_____

_____

b) Rani heated a balloon with a matchstick and the ballon burst immediately.



She took another similar balloon, filled it with some water and heated it with another matchstick as shown below.



The balloon did not burst this time. Explain why this was so. [2]

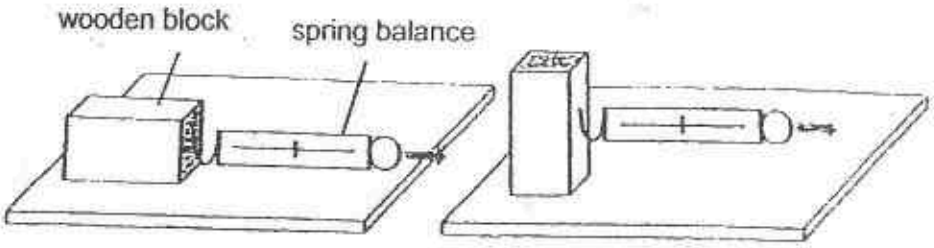
_____

_____

_____

_____

44. Kai carried out an investigation as shown below. He pulled the wooden block by placing its larger surface on the sheet of glass. He then measured the force needed to start moving the block along the glass surface. He repeated the experiment with the smaller surface of the wooden block on the sheet of glass.



larger surface of the wooden block on the glass sheet

smaller surface of the wooden block on the glass sheet

He recorded his results as shown below.

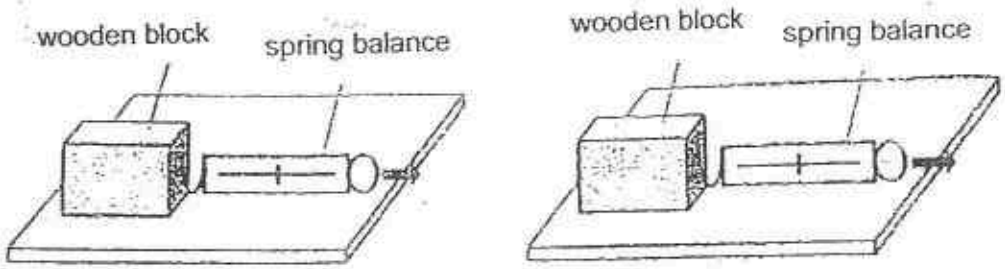
Surface area of the wooden block resting on the glass sheet	Force needed to move the block (units)			
	1st try	2nd try	3rd try	Average
smaller	4.5	4.3	4.4	4.4
larger	4.2	4.5	4.5	4.4

a) What can Kai conclude from the experiment? [1]

_____

_____

b) Kai wanted to choose a suitable type of floor tiles for the bathroom floor in his new flat. He repeated the earlier experiment using the same set-up, only replacing the glass sheet with floor tiles A and B as shown below.



floor tile A

floor tile B

He recorded his results as shown below.

Floor Tile	Force needed to move the block (units)			
	1st try	2nd try	3rd try	Average
A	5.3	5.4	5.5	5.4
B	8.5	8.5	8.2	8.4

Which type of floor tiles, A or B, should Kai use for the bathroom floor so that he will not slip and fall easily? Explain your answer. [2]

_____

_____

_____

_____

End of Section B

EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : PEI CHUN PUBLIC SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
2	4	2	1	2	4	1	4	2	1
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
3	2	4	2	4	3	1	1	3	1
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
4	2	1	3	2	2	3	2	2	3

Q31a. 3PM – YELLOW Q31a 3AM – purple
Q31b. The plants in Y received more light than the plants in X, so they photosynthesized faster.
Q32a. To find out how the surface area of the fruit affects the time taken for the fruit to reach the ground.
Q32b. Repeat the experiment two more times / a few times and calculate the average readings for each fruit.
Q33a. The hot water lost heat to the surroundings / surrounding air.
Q33b. As the surface area of water exposed to the air increase, the rate of cooling of hot water increases.
Q33c. K survives better. It has a smaller –exposed surface area of body to the surrounding than J. Si, it loses heat slower to the surroundings.
Q34a. I does not have a cell wall. Q34b. Chloroplasts.
Q35a. As the amount of carbon dioxide in the air increases, the global temperature increases.
Q35b. Less trees takes in less carbon dioxide during photosynthesis. So, more carbon dioxide in the air traps more sun's heat on earth, causing the Earth's temperature to rise, leading to global warming.
Q36a. Not all the seeds will be eaten by it, so the rest will germinate.
Q36b. Animal A disperses the seeds of plant B far away from the parent plant so that the young plant complete less with its parent plants / overcrowding is prevented .
Q36c. It prevents all seeds from being eaten by other animal at one time, so it still have some seeds as food.
Q37. Reason 1 : The population of B was increasing, so more animal B fed on A.
Q 37. Reason 2 : The population of A was increasing before period Z. So, there was not enough X for A to feed on.
Q38a. A would have more carbon dioxide. The plants and snails in A respired to give out carbon dioxide in the airtight terrarium could not escape.
Q38b. The plants gave out water vapor through the stomata of their leaves during evaporation. The warm water vapor lost heat and condensed on the cooler inner surface of A.
Q39a. Air occupied the space in the glass.
Q39b. The person uses up the oxygen in the container.
Q40a. Gravitational potential → Kinetic → Kinetic + heat + sound energy
Q40b. Use a heavier hammer. As the hammer is heavier, more potential energy of the hammer of the hammer is converted to more kinetic of the falling hammer which is transferred to cause a greater force to drive it deeper into the ground.
Q41a. In the closed circuit, the iron rod was magnetized and attracted steel plate X.
Q41b. A and C Q41c. Z
Q42a. P. It has the least volume of liquid at the end of the experiment.
Q42b. As the boiling point of a liquid increases, its rate of evaporation decrease.
Q42c. The exposed surface area of the liquids t the surrounding is the same.
Q43a. The water lost heat to the meat.
Q43b. Water is a better conductor of heat than air. So the water conduct the heat from the flames faster away from the balloon to the surroundings than the air.
Q44a. The surface area of the wooden blocks resting on the glass sheet does not affect the force needed to move the ground.
Q44b. He should use B. The force needed to move the block across B is the greatest. So, the friction between the wooden blocks surface and B's surface is the greatest.

THE END

PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATION

PRIMARY 6
SCIENCE
(BOOKLET A)

27 AUG 2015

Name: _____ ( )

Class: Resilience _____

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

This booklet consists of 19 printed pages, excluding the cover page.

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)

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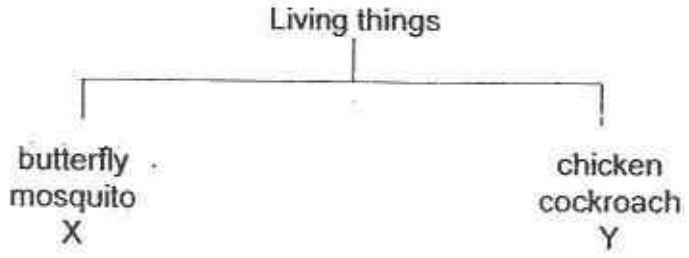
1 John classified the following living things as shown.



Which of the following correctly shows what X and Y could be?

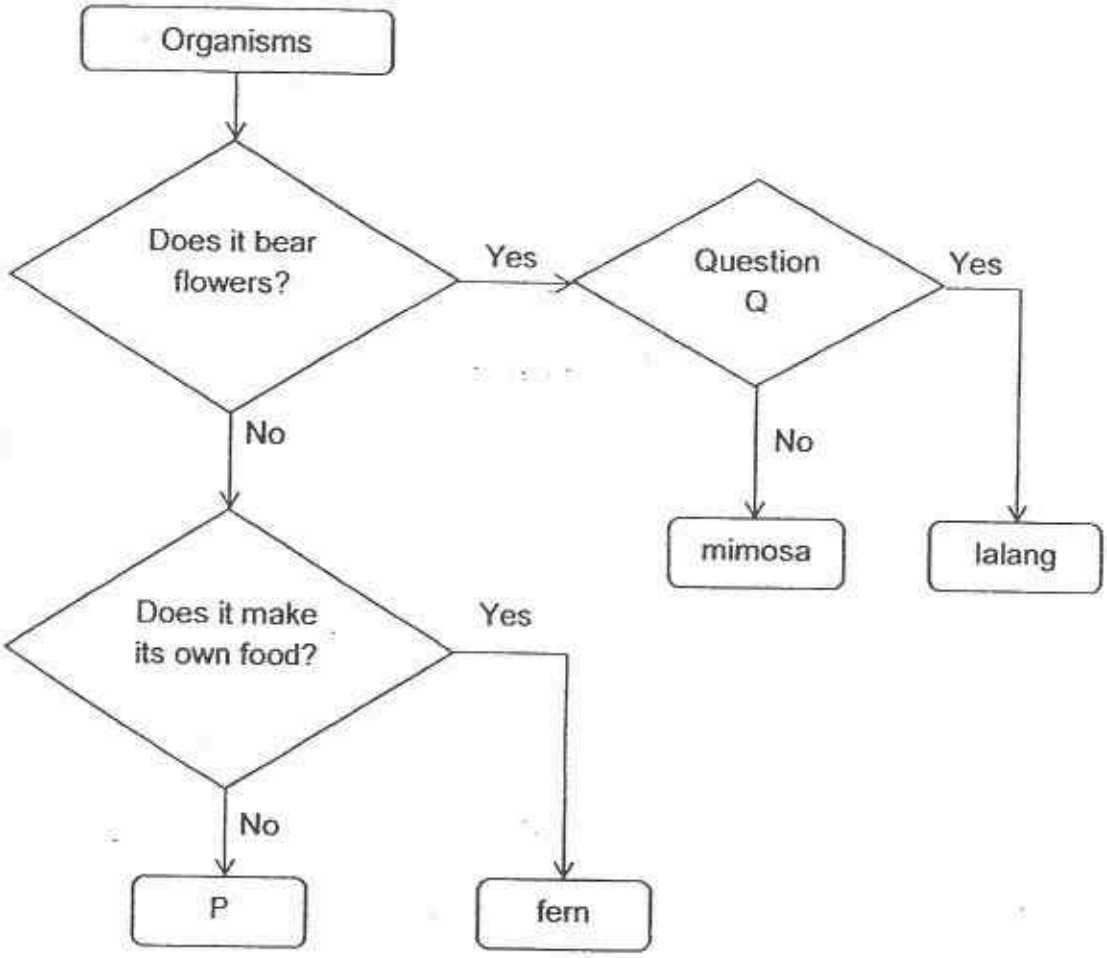
	X	Y
(1)	beetle	grasshopper
(2)	frog	sparrow
(3)	bat	ant
(4)	dragonfly	rabbit

2 Which of the following characteristics can be used to separate insects from mammals?

A Number of legs
B Presence of wings
C Number of body parts
D Type of body covering

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

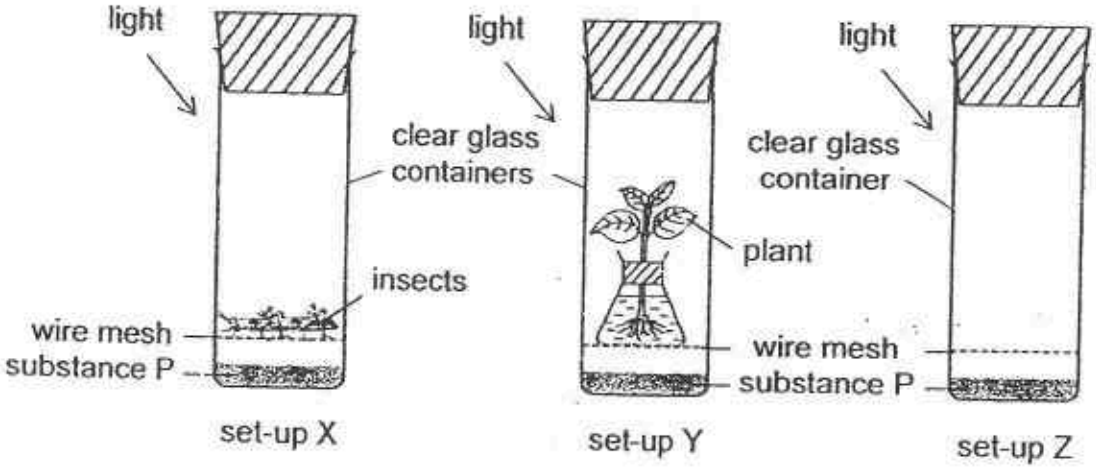
3 Study the flow chart below.



Which one of the following is correct?

	P	Question Q
(1)	P is a non-flowering plant	Are the seeds dispersed by wind?
(2)	P is not a plant	Are the seeds dispersed by animals?
(3)	P is a non-flowering plant	Are the seeds dispersed by animals?
(4)	P is not a plant	Are the seeds dispersed by wind?

4 Study the three set-ups X, Y and Z below.



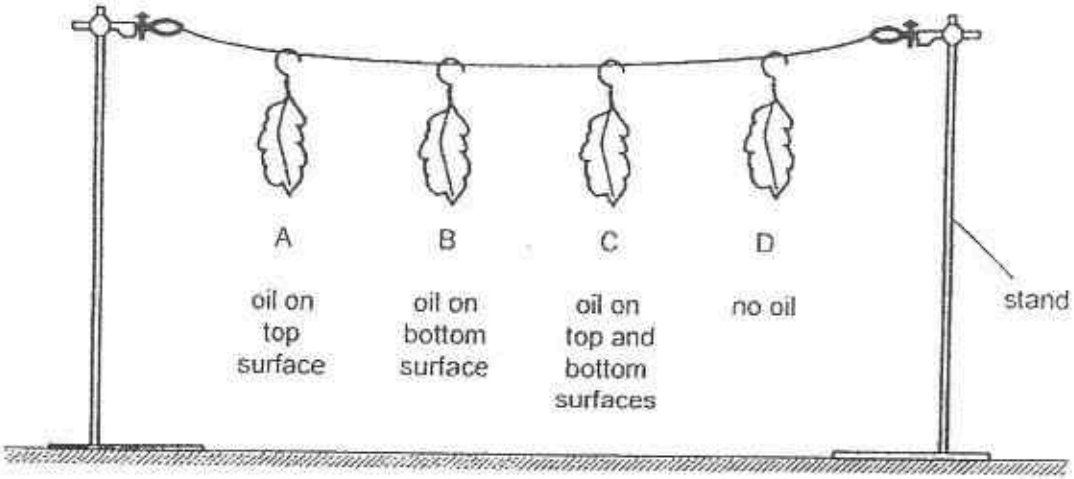
Substance P changes colour as shown below.

Amount of oxygen in the set-up	less than normal	normal	higher than normal
Colour of substance P	green	purple	yellow

What is the colour of substance P in each set-up after 6 hours?

	set-up X	set-up Y	set-up Z
(1)	green	purple	yellow
(2)	green	yellow	purple
(3)	yellow	green	purple
(4)	yellow	purple	green

5 Kevin set up an experiment using four similar leaves A, B, C and D. He coated some surfaces of the leaves with oil that did not drip. Each leaf was weighed and then hung up in an open area as shown below.



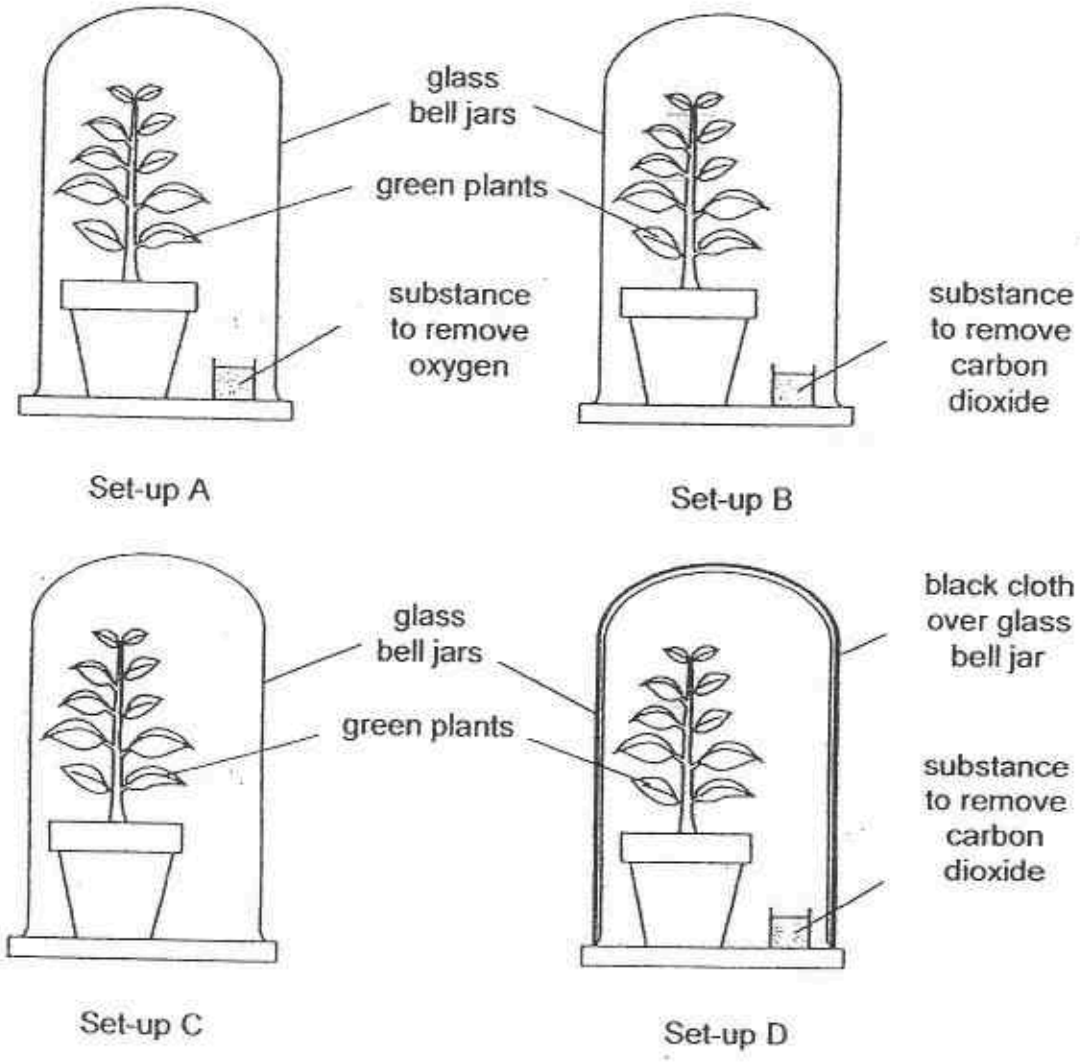
After 6 hours, each leaf was weighed again and the loss in mass was recorded in the table below.

	leaf A	leaf B	leaf C	leaf D
Loss in mass (g)	7	3	0	10

Which of the following can be concluded from the results?

(1) Leaf C lost the most amount of water.
(2) There are no stomata on the top surface of the leaves.
(3) There are more stomata on the bottom surface than the top surface of the leaves.
(4) Leaf D has the most amount of water in the leaf at the end of the experiment.

6 Jane conducted an experiment to find out if carbon dioxide is needed for photosynthesis. She prepared four set-ups shown below.

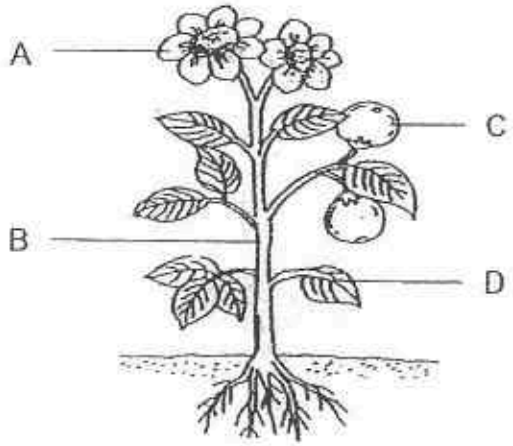


Which two set-ups should Jane use to carry out her experiment?

(1) Set-ups A and B
(2) Set-ups B and C
(3) Set-ups B and D
(4) Set-ups C and D

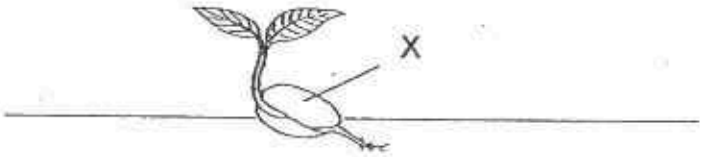
7 Plants take in water from the soil through their roots.

Where is the water transported to?



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

8 Samuel recorded the following information of the organism shown below in his notebook.

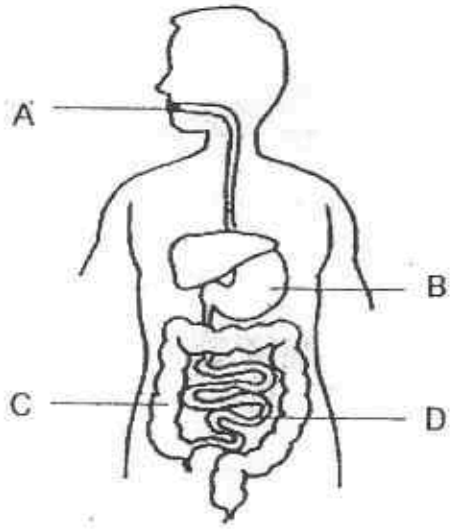


A This plant reproduces by seeds.
B The seed depends on part X to grow.
C The seed can only germinate when there is water and sunlight.
D Part X will continue to grow bigger as the seedling grows to an adult plant.

Which statement(s) is/ are correct about organism?

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

9 The diagram below shows the human digestive system.



In which parts, A, B, C or D, are digested food and water absorbed into the blood vessel?

	Part that absorbed	
	digested food	**water**
(1)	D	C
(2)	C	B
(3)	A	D
(4)	B	C

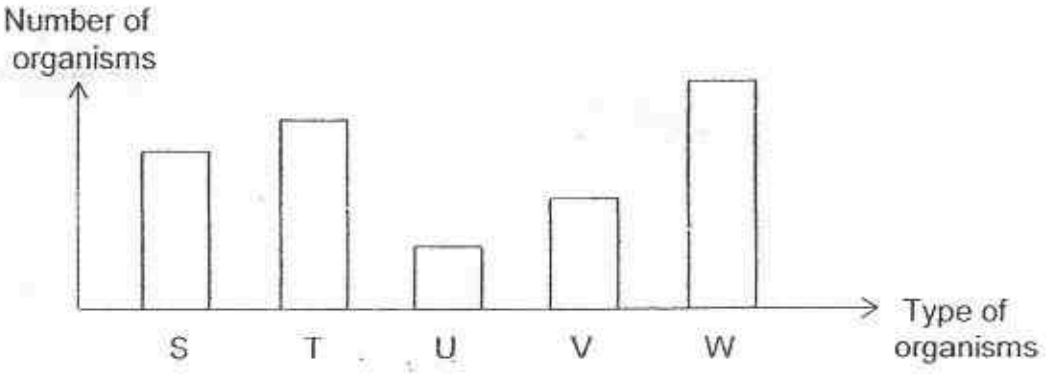
10 The following relationships were observed among four living things E, F, G and H.

E feeds on H.
G feeds on E and H.
H gets its food from F.

Which one of the following classifications is correct?

	producer	**prey**	**predator**	**prey and predator**
(1)	F	E	G	H
(2)	G	E	F	H
(3)	F	H	G	E
(4)	G	F	H	E

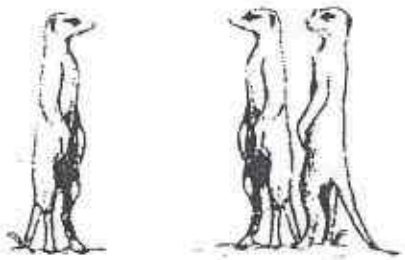
11 The graph below shows the five populations of organisms living in a community.



Based on the information above, which of the following food chain is **possible?**

(1) T → U → V
(2) W → S → U
(3) W → V → S
(4) U → T → W

12 The diagram shows a population of Animal M.

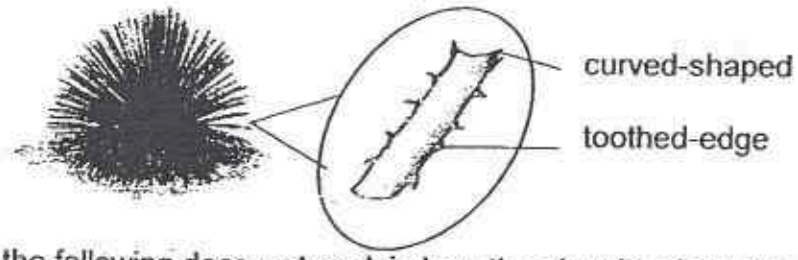


Several Animal M often stand on their rear legs and gaze alertly over the open area where they live. They watch the skies and give a sharp, shrill call when they see hawks and eagles. The other animals would then run and hide in **underground burrows.**

Which of the following statements show how the population of Animal M works together in numbers?

(1) Animal M gives a sharp, shrill call to alert others when they find food.
(2) Animal M stands guard to look out for birds that can snatch them from the ground.
(3) Animal M stands on their rear legs to warn other animals of their presence.
(4) Animal M gazes over the open area where they live to search for a hiding place.

13 The diagram below shows a plant with long roots and curved-shaped leaves. The leaves have small surfaces and are toothed-edge.



Which of the following does **not** explain how the plant is adapted to survive in the desert?

(1) The long roots go deep underground to absorb water.
(2) The toothed-edge leaves prevent animals from feeding on them.
(3) The curved-shaped leaves channel rain water to the stem and base.
(4) The small surfaces of the leaves reduce water loss through its stomata.

14 Bird P lives in a very cold environment.

Bird P

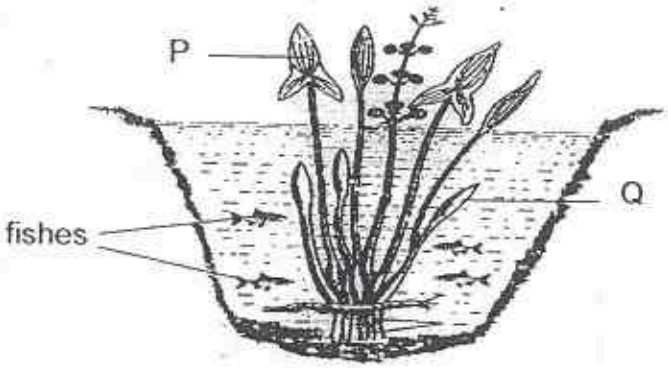
Bird P usually stands with its back facing the sun and stays close to another Bird P.

Which of the following are the reasons for such behaviour?

A Bird P stays close to one another to keep warm.
B Bird P stays close to one another for protection from predators.
C The black surface on Bird P's back absorbs the heat from the sun.
D The black surface on Bird P's back helps it blend in with the surrounding.

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

15 The diagram below shows a plant and some fishes in a pond.



Leaf P is growing above water and leaf Q is growing in the water. Small fishes swim among the submerged leaves.

Which one of the following statements about Leaf P and Leaf Q is **not** correct?

(1) Leaf Q provides shelter to the fishes.
(2) Leaf P is a source of food for the fishes.
(3) Leaf Q can absorb dissolved carbon dioxide from the water.
(4) Leaf P is broader than Leaf Q so that it can absorb more sunlight for photosynthesis.

16 The diagram below shows an eagle searching for food.

Which one of the following structural adaptations of the eagle is **not** correctly matched to its function?

	Structural adaptation	Function
(1)	good eyesight	to spot prey from far above the ground
(2)	sharp pointed beak	to catch and hold on to prey
(3)	layer of feathers	to trap air to keep warm
(4)	streamlined body shape	to use less energy to fly through the air

17 Fruit trees, vegetables and butterflies make up a community in a farm. The farmers sprayed insecticide on the vegetables when he found that they were eaten by caterpillars.

How would the spraying of insecticide affect the amount of fruits and vegetables produced and the population of butterflies?

	fruits	vegetables	butterflies
(1)	decrease	increase	decrease
(2)	increase	increase	decrease
(3)	decrease	increase	increase
(4)	increase	decrease	increase

18 The conditions in habitats S, T, U and V are given in a table below.

Habitat			
S	T	U	V
sunny	sunny	dark	shady
grassland	sandy soil	damp	muddy soil
moderate amount of water available	little rainfall throughout the year	a lot of dead plant matter	fresh water

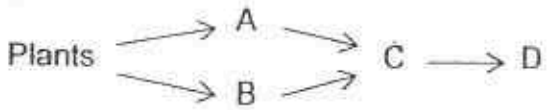
Organisms A and B have the following characteristics.

Organism A	Organism B
has swollen stem	feeds on wood
has needle-like leaves	hides under dead logs

In which habitat can we find the organisms A and B?

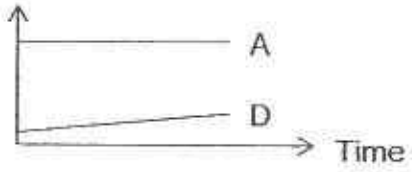
	Organism A	Organism B
(1)	V	T
(2)	S	V
(3)	U	S
(4)	T	U

19 Food relationships between some organisms are shown in the food web below.

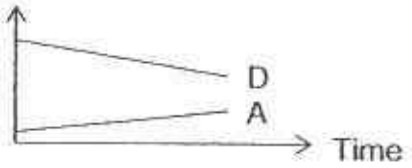


If the population of Animal C decreases, which of the following graphs shows the changes in the population of Animal A and D?

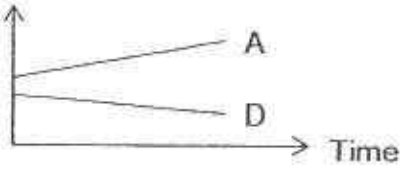
(1)



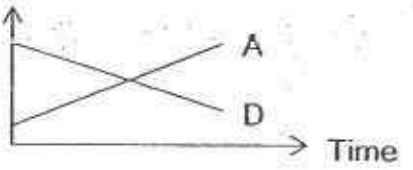
(2)



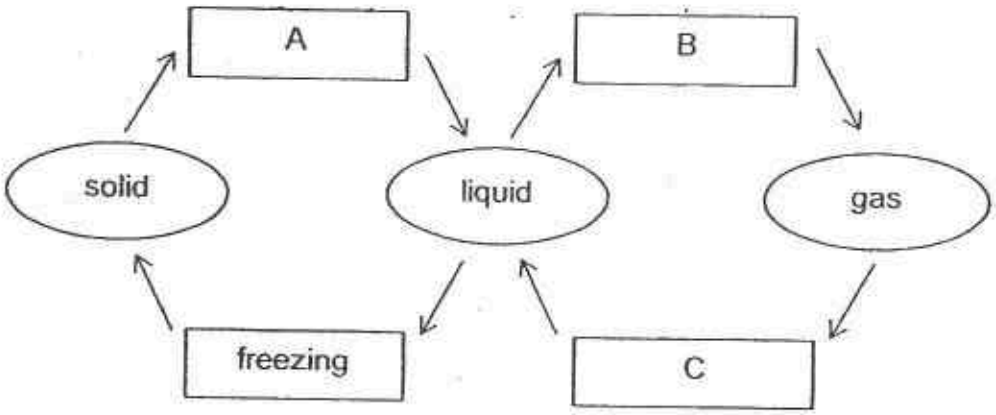
(3)



(4)



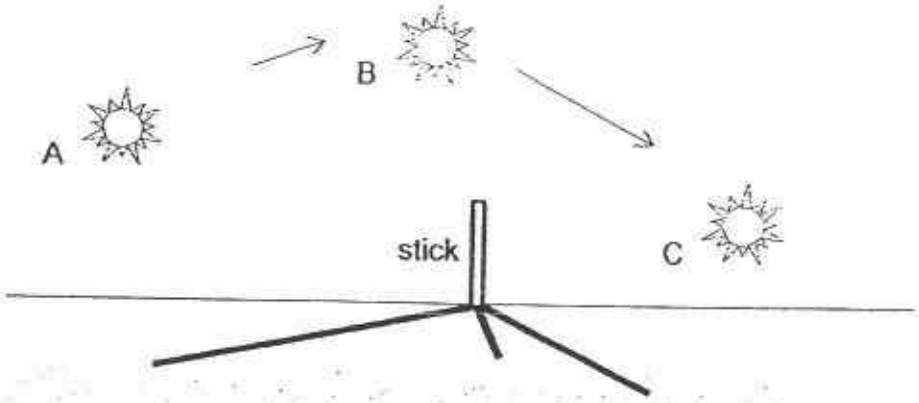
20 The diagram below represents the changes of state of water.



Which one of the following correctly describes the processes at A, B and C?

	A	B	C
(1)	melting	evaporation	condensation
(2)	condensation	evaporation	melting
(3)	melting	condensation	evaporation
(4)	condensation	melting	evaporation

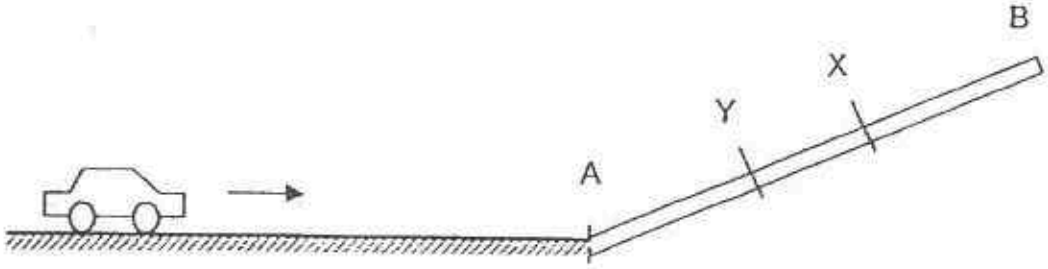
21 The diagram below shows the shadows of a stick as the Sun moves from position A to C.



As the Sun moves from position A to C, what can be said about the shadow of the stick?

(1) The shadow of the stick is the longest when the Sun is at A.
(2) The shadow of the stick is the shortest when the Sun is at C.
(3) The shadow of the stick formed when the Sun is at B is the same length as the stick.
(4) The shadow of the stick formed when the Sun is at A is longer than the shadow formed when the Sun is at B.

22 Samuel pushed a toy car towards a wooden plank AB as shown in the diagram. The toy car went up the plank, stopped at X and rolled down the plank.

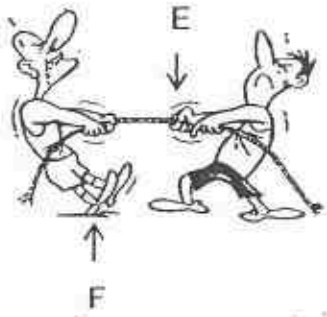


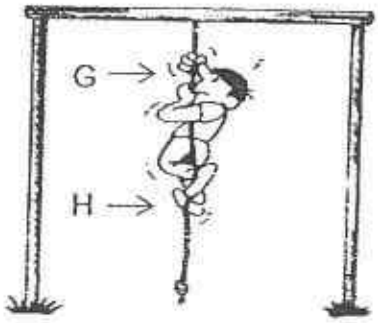
Samuel pushed the same toy car from the same starting point again. But this time, the toy car stopped at Y and rolled down the plank.

Which of the following could explain why the toy car did **not** reach X when Samuel pushed it the second time?

(1) The toy car has a smaller mass.
(2) The speed of the toy car was greater.
(3) The kinetic energy of the toy car was smaller.
(4) More kinetic energy was converted to gravitational potential energy.

23 Many of our activities involved pulling and pushing. E, F, G and H are the forces exerted by the men.

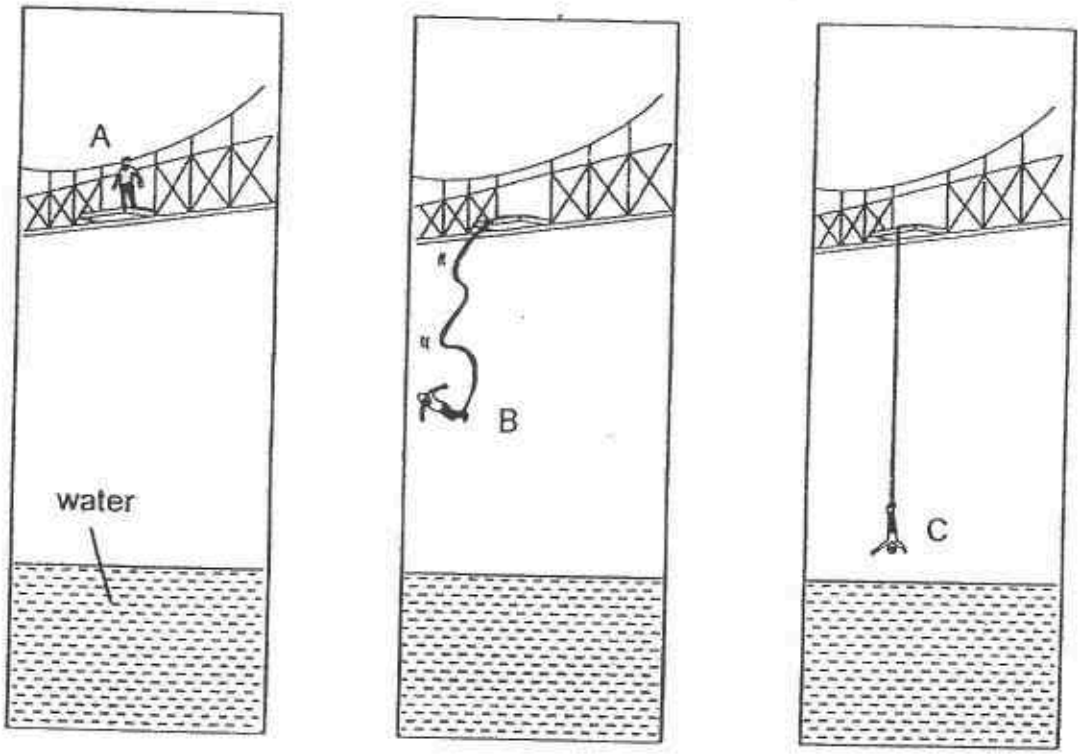




Which one of the following shows the correct force?

	Push		Pull	
(1)	F	H	E	G
(2)	E	G	F	H
(3)	F	E	H	G
(4)	G	H	E	F

24 A man did a bungee jump from a bridge as shown below.

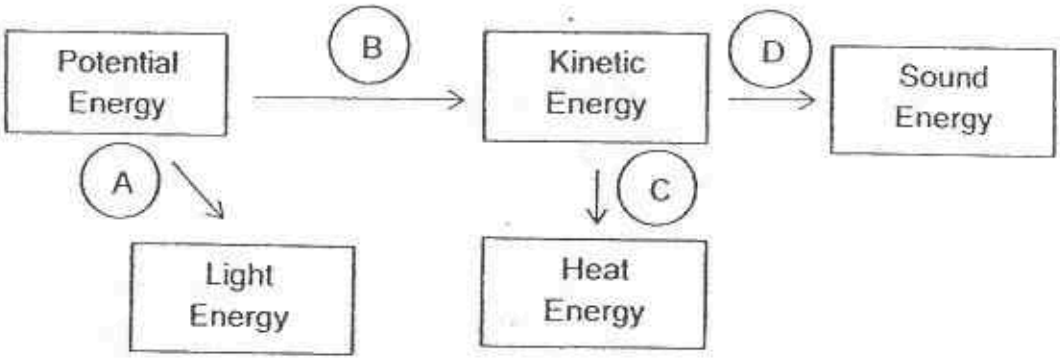


The man stood at A before jumping off the bridge. When he jumped off, he fell towards the water. After bouncing up and down a few times, he came to a stop at C.

Which one of the following statements about the man is correct?

(1) The amount of kinetic energy of the man at C is zero.
(2) The gravitational force acting on the man is the greatest at A.
(3) The amount of kinetic energy of the man is lower at B than at A.
(4) The amount of gravitational potential energy of the man is the lowest at B.

25 The diagram below shows some energy conversions.



A, B, C and D are 4 different actions as listed below.

A Burning a candle
B Roller coaster going up the track
C Rubbing your hands together
D Blowing a whistle

Which actions A, B, C and D are correctly represented in the diagram?

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

26 Deforestation is harmful to our environment.

What is the impact of deforestation?

A Less variety of animals
B More rainfall in the forest
C Less carbon dioxide in the air
D More soil being washed away by rain

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

27 The Earth has experienced an increase in the temperature of the air over the last ten years due to global warming.

Which of the following activities can contribute to global warming?

A Driving a petrol car to work
B Building more incinerators to burn rubbish
C Turning on the air-conditioner in the bedroom
D Growing different types of plants in the garden

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

28 Ahmad arranged four metal bars, EF, GH, WX and YZ, in the following ways. The bars attracted each other without any repulsion. Two bars are magnets and the other two bars are iron bars.

He was then told that EF is a magnet and E is the N-pole, and F will repel X when placed facing each other.

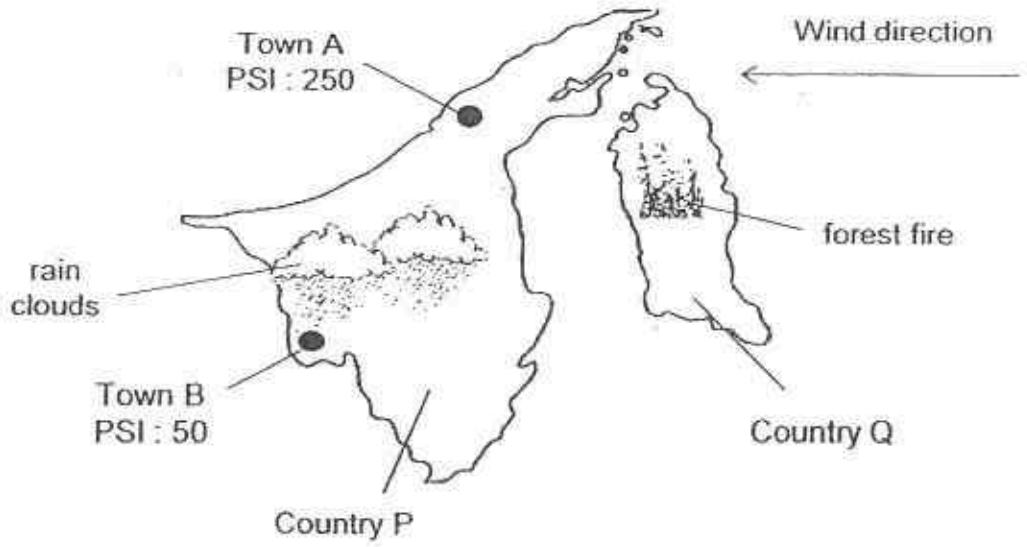
Based on the information given above, which two of the following statements would be true of the metal bars?

A YZ is an iron bar.
B H will be attracted to Z.
C GH is a magnet and G is the S-pole.
D WX is a magnet and W is the N-pole.

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

29 The Pollutant Standards Index (PSI) is a type of air quality index that indicates how polluted the air is.

The map below shows the PSI of different locations in Country P. Country P is experiencing hazy conditions due a forest fire in Country Q.

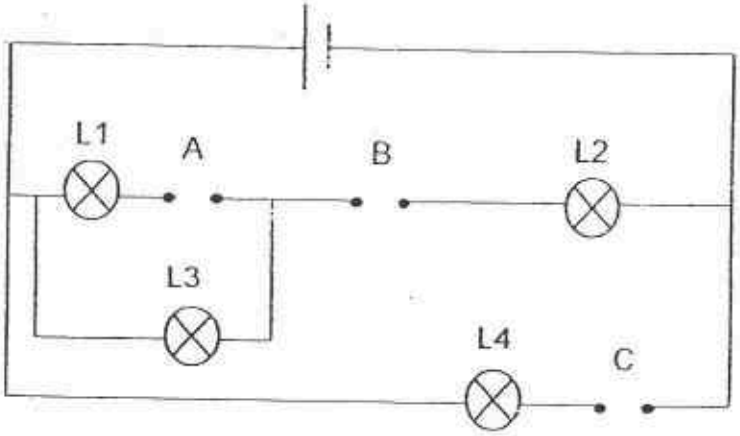


Which two of the following explain why the PSI at Town A is higher than the PSI at Town B?

A Country P is larger than Country Q.
B The rain has washed away some of the dust in the air.
C Town A is located further from the forest fire than Town B.
D The wind has blown the ash from the forest fire in Country Q to Town A.

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

30 Matthew had three bars, X, Y and Z, made of unknown materials. He placed them in various positions, A, B and C, of the circuit shown below.



The results of the experiment were shown in the table below. A tick (√) was placed in the box when any of the lamps, L1, L2, L3 or L4, lit up during the experiment.

Positions where bars were placed			Lamp			
A	B	C	L1	L2	L3	L4
X	Y	Z	√	√	√	

Which of the following would show the correct results if the bars X, Y and Z, were placed at different positions?

	Positions where bars were placed			Lamp			
	A	B	C	L1	L2	L3	L4
(1)	Y	X	Z	√	√		√
(2)	Z	Y	X	√		√	√
(3)	Z	X	Y	√	√	√	
(4)	X	Z	Y				√

PEI HWA PRESBYTERIAN PRIMARY SCHOOL

PRELIMINARY EXAMINATION

PRIMARY 6

SCIENCE

(BOOKLET B)

27 AUG 2015

Name: _____ ( )

Class: Resilience _____

Parent's Signature

Total time for Booklets A and B: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write all your answers in this booklet.

Marks (Booklet A) :	60
Marks (Booklet B) :	40
Total Marks (Booklets A & B) :	100

This booklet consists of 15 printed pages, excluding the cover page.

For questions 31 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.

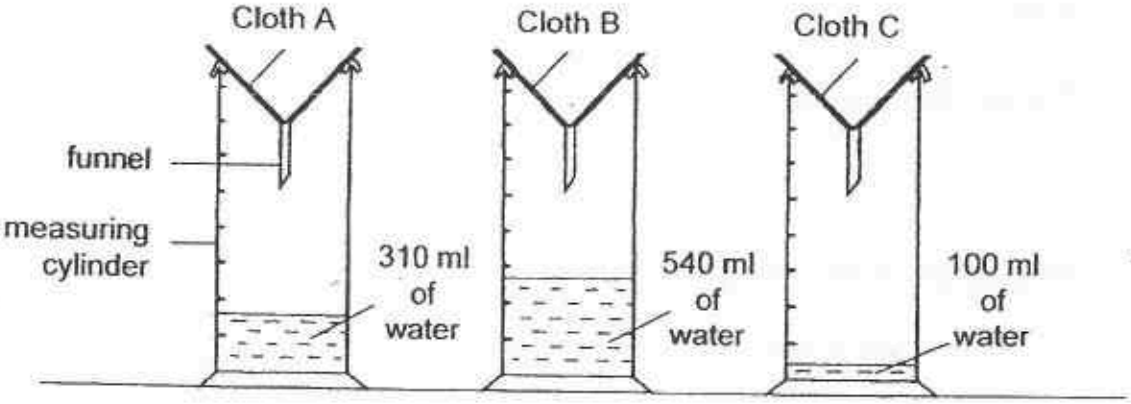
(40 marks)

---

31 Alice conducted an experiment with three different cloths, A, B and C. She wanted to find out how much water can be absorbed by the different cloths.

She lined 3 similar funnels with the cloths. She poured the same amount of water onto each cloth and allowed the water to flow through the cloth into 3 similar measuring cylinders.

The diagrams below show the results she obtained.



(a) Based on Alice's results, which one of the cloths, A, B or C, should she use to make a towel? Give a reason for your answer. [1]

_____

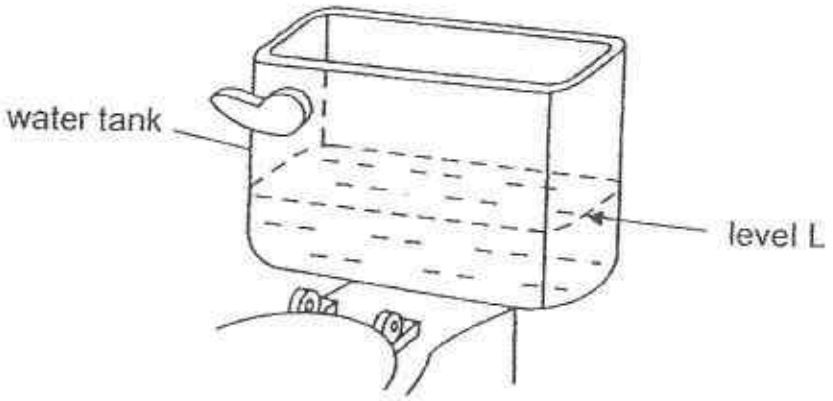
_____

(b) State one other variable that Alice should keep constant to make her experiment a fair test. [1]

_____

_____

32 A water tank used for flushing a toilet bowl is shown below. The flushing and re-filling system is not shown in the diagram.



After flushing, water enters and re-fills the tank. The tank will stop filling when the water reaches level L.

Michael wanted to use less water to flush the toilet bowl. Jenny suggested putting a sealed, empty plastic bottle into the water tank.

(a) However, Jenny's suggestion does not help to reduce the amount of water used to flush the toilet bowl. Give a reason **why her suggestions does not help.** [1]

_____

_____

(b) What should be done to make Jenny's suggestion work? [1]

_____

_____

(c) Jenny's suggestion is based on a property of matter. State this property. [1]

_____

_____

33 Figure 1 and 2 show how gases are transported in the circulatory system of a fish and a human respectively.

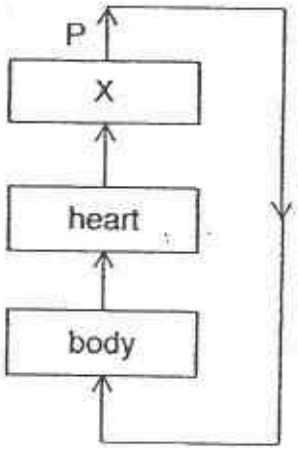


Figure 1 (fish)

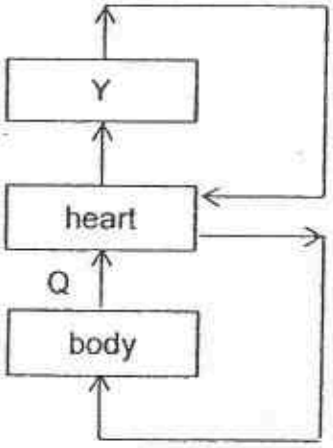


Figure 2 (human)

(a) Name the organs which X and Y represent. [1]

X : _____

Y : _____

(b) State one difference in terms of the amount of oxygen found in the blood flowing at P and Q. [1]

_____

_____

34 Samantha found 2 plant stems, A and B, in her garden.

She made a cut in the stems to obtain a sample of their cells. She observed them under a microscope and noticed some similarities and differences.

She recorded her observations in the table below.

Cell part	Cell A	Cell B
Cell wall	Yes	Yes
Nucleus	Yes	Yes
Cytoplasm	Yes	Yes
Chloroplasts	Yes	No
Cell membrane	Yes	Yes

(a) Samantha was told that one of the stems is from a cactus plant while the other one is from an onion.

Based on the observations in the table above, identify the stems, cactus or onion, from which Cell A and Cell B were taken from. [1]

Cell A : _____

Cell B : _____

(b) Explain why chloroplasts is present in Cell A but not in Cell B. [2]

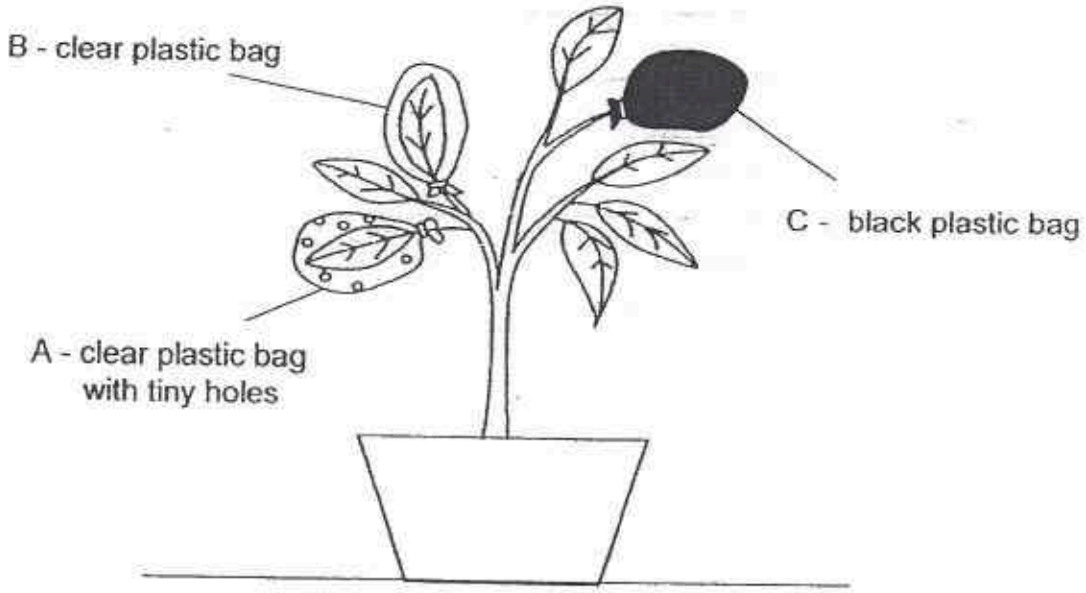
_____

_____

_____

_____

35 William set up an experiment. He wrapped three similar leaves in different types of plastic bags. The plastic bags are of the same size. He left the plant under bright light for a few hours.



(a) After 5 hours, which plastic bag will contain the most amount of carbon dioxide? Give a reason for your answer. [1]

_____

_____

(b) William found that the leaf in plastic bag A has the most starch. Explain why this is so. [2]

_____

_____

_____

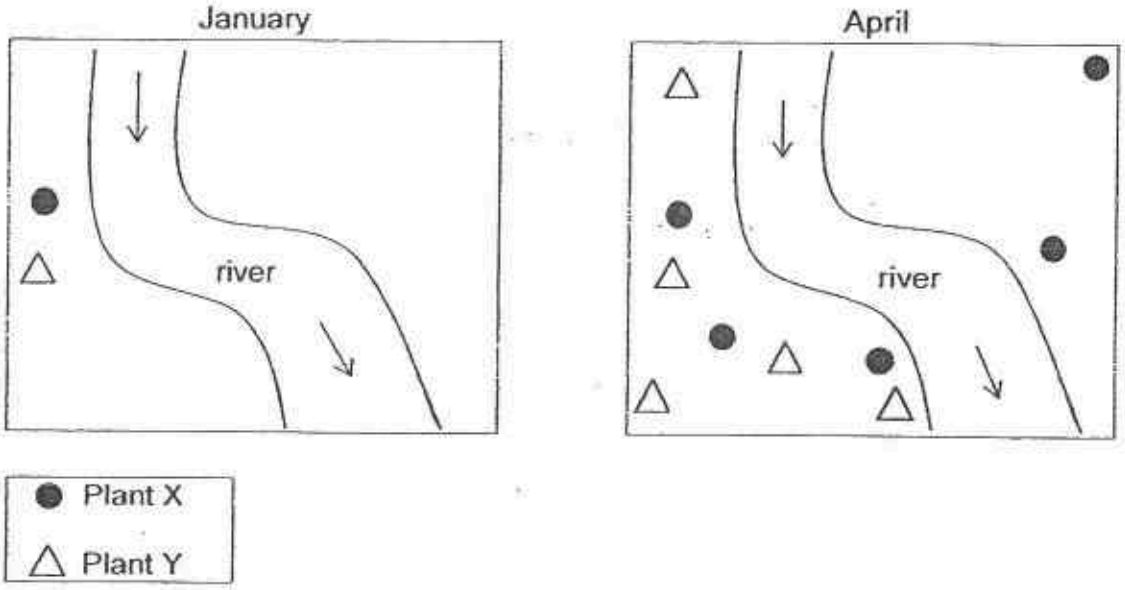
_____

_____

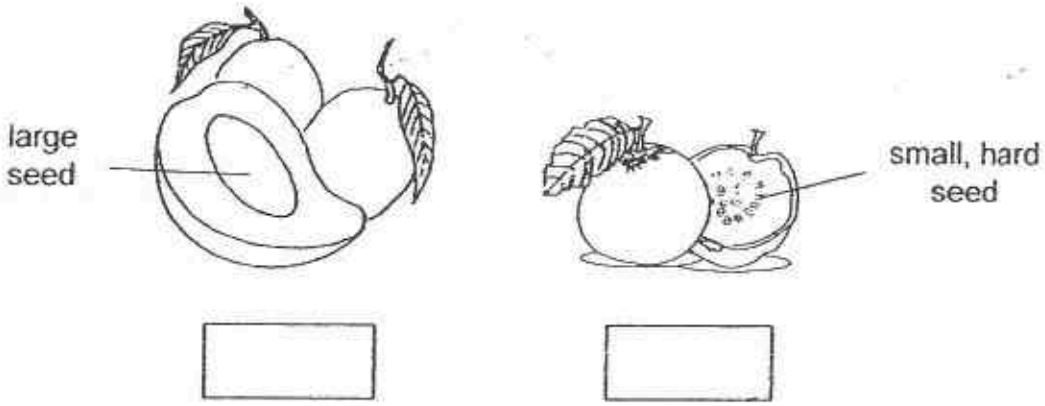
_____

36 The map below shows the number of wild plants X and Y on a piece of land over a period of time.

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



Which one of the following is likely to be the fruit of plant X?
Choose your answer and tick (√) in the box.



Explain your answer. [2]

_____

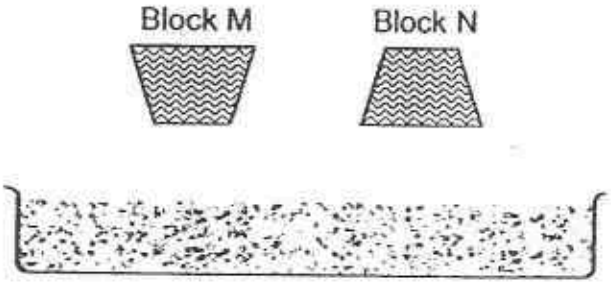
_____

_____

_____

37 Peter filled up a container with sand and dropped two wooden blocks, M and N, from the same height onto the sand as shown below. The two blocks have the same mass but have a different base area.

He measured the depth of the dents made by the blocks in the sand.



His results are shown below.

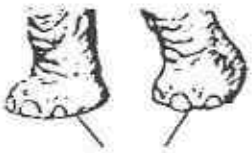
Block	Base area of block (cm^2)	Depth of dent (cm)
M	4	7
N	16	3

(a) From Peter's results, how would the base area of the block affect the depth of the dent made by the block in the sand? [1]

_____

_____

(b) Animal G can be found along the beach. It has feet with a large base.



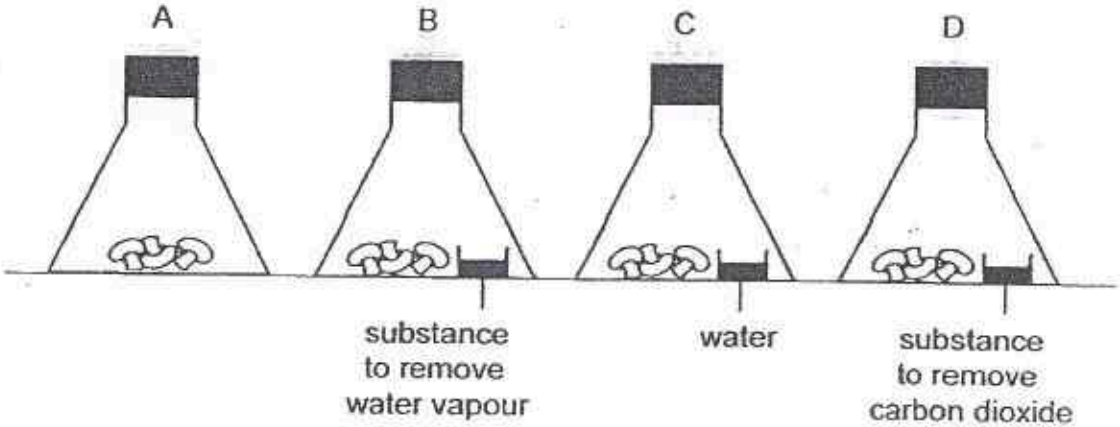
Animals G's feet

Based on Peter's experiment above, explain why having a large base for its feet is an advantage for animal G when it moves on the beach. [1]

_____

_____

38 Three mushrooms of the same type were placed in each of the flasks, A, B, C and D, and kept airtight as shown: The flasks were kept at different temperatures and observations of the mushrooms were recorded in the table below.



A (√) shows signs of decay while (X) shows no sign of decay.

Temperature (°C)	A	B	C	D
5	X	X	X	X
7	X	X	√	X
8	X	X	√	X
11	√	X	√	√
13	√	X	√	√
15	√	X	√	√

(a) State all the conditions that cause decay. [1]

_____

(b) Give a reason why the mushroom in flask B did not show signs of decay. [1]

_____

(c) Based on the table shown above, explain why the observation for the mushrooms in flasks A and D are the same at the different temperatures. [1]

_____

_____

39 The table below shows the freezing points of three substances X, Y and Z and their state at 75°C.

Substance	Freezing point (°C)	State of substance at 75°C
X	10	liquid
Y	45	gas
Z	80	solid

(a) Based on the given information, what could be the boiling point of substance Y? [1]

_____

(b) (i) Using the information given in the table, what is the maximum temperature at which all three substances be in the same state? [1]

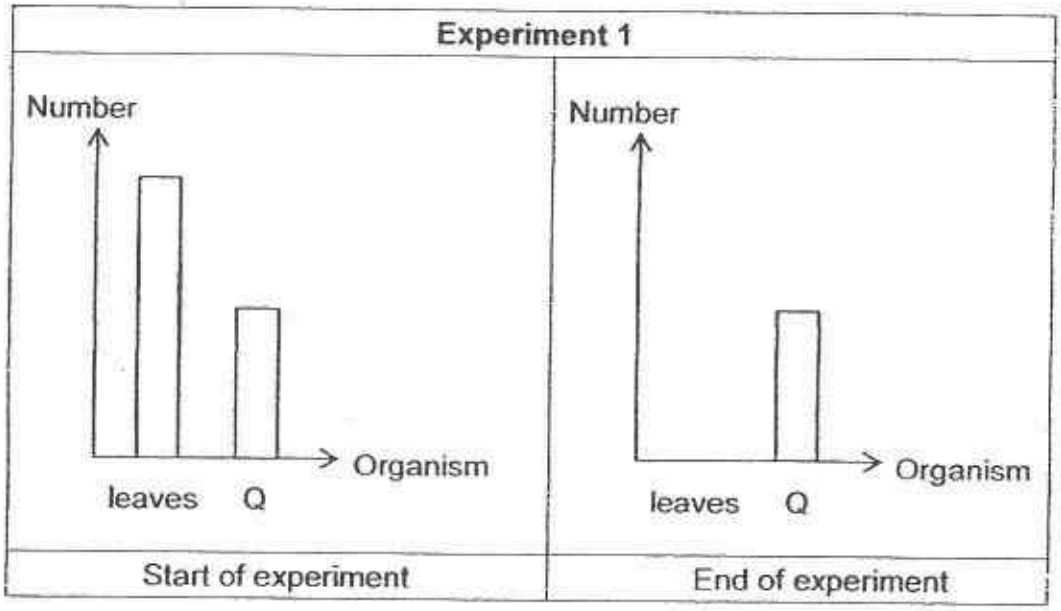
_____

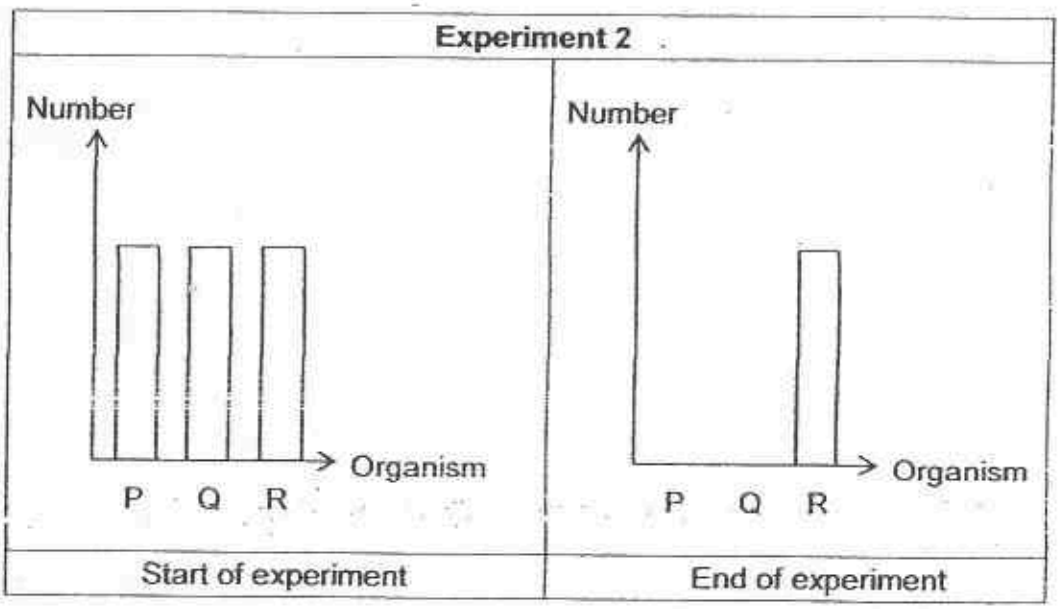
(ii) What will be the state of the three substances at the temperature mentioned in b(i)? [1]

_____

40 Patrick conducted two experiments to find out about the diet of organisms P, Q and R.

The graphs below shows the observations of the experiments conducted over a few days.





All organisms were healthy and they did not reproduce during the experiment.

Question 40 continues on page 11

(a) Given that organism P is a meat-eater, draw a possible food relationship among the plant, organism P, organism Q and organism R. [2]

Plant →

(b) In the wild, these organisms form a community.

Suggest what may happen to the population of organism P if organism R is removed from the environment. Explain your answer. [1]

_____

_____

41 The diagrams below show 2 examples of renewable sources of energy.

Light energy from the Sun	Kinetic energy from wind
	
solar panels at a solar farm	windmills at a wind farm
• Energy is collected during day time • Farms are found in open areas	• Energy is collected when it is windy • Farms are found near coastal area, on top of hills or large unobstructed areas

(a) State one advantage and one disadvantage of using renewable sources of energy. [2]

Advantage : _____

_____

Disadvantage : _____

_____

(b) The energy from the Sun is collected during day time. How can this energy be used at night? [1]

_____

_____

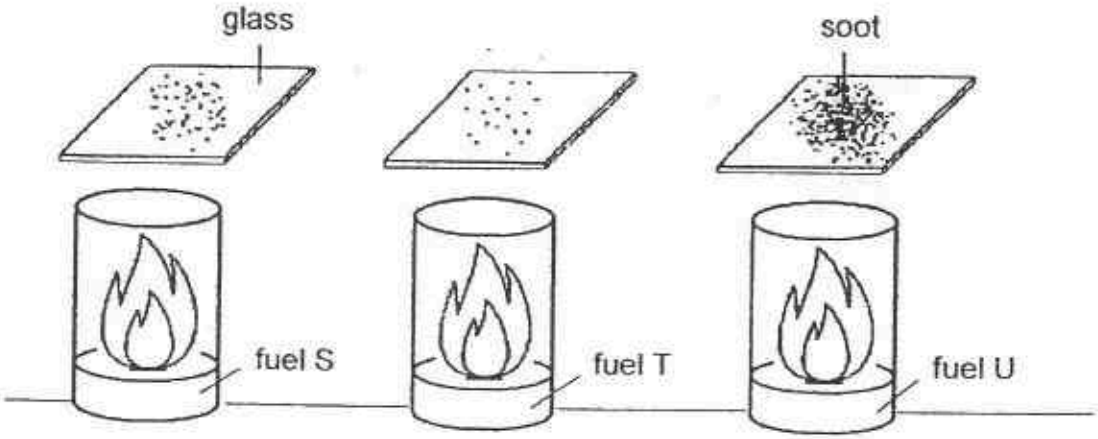
(c) Why are we unable to build a windmill farm in Singapore? [1]

_____

_____

42 An experiment was carried out to compare three types of fuel, S, T and U used in motorcars.

The same amount of the three fuels was burnt and a glass sheet was placed on top of the containers. The amount of soot collected after one minute is shown below. Soot is a black powdery substance that pollutes the air and is produced when fuels are burned.



(a) To reduce air pollution, which type of fuel would you recommend to motorist? Explain your answer [1]

_____

_____

(b) Plants growing near industrial estate usually have their leaves covered with soot.

Explain how the plants would be affected by the soot. [2]

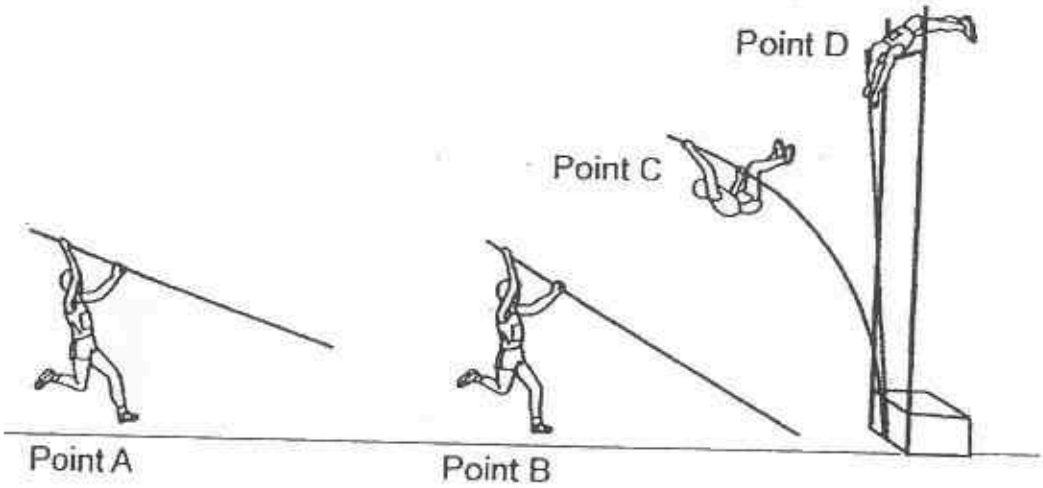
_____

_____

_____

_____

43 The diagram shows a man participating in a sport called pole vaulting. From point A, he will run towards point B and lunge up in the air with the help of a pole until he crosses a bar at point D, the highest point.



(a) State the main form of energy that the man possesses at : [2]

Point B : _____

Point D : _____

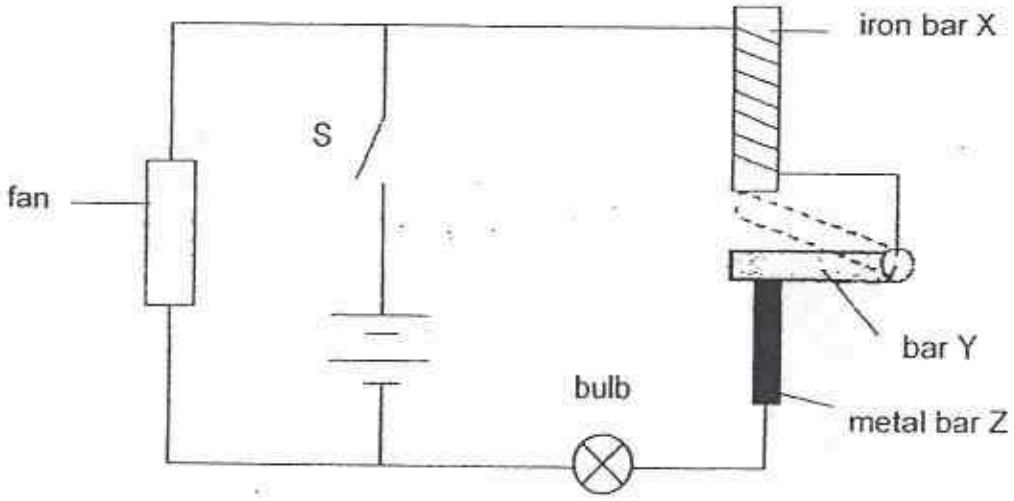
(b) The pole is made of a material that is flexible. Explain how this property of the material helps the man to pole vault over the bar. [1]

_____

_____

_____

44 Study the circuit shown below. When John closed switch S, he noted that the fan turned on and the light bulb turned on and off repeatedly.



(a) Explain how the light bulb was turned on and off repeatedly. [2]

(b) John replaced bar Y with a wooden bar. What happened to the fan and light bulb when he closed switch S? Explain your answer. [2]

End of paper

EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : PEI HWA PRESBYTERIAN PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
1	3	4	2	3	2	3	2	1	3
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
2	2	3	3	2	2	1	4	3	1
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
4	3	1	1	4	1	3	2	3	4

BOOKLET B

Q31a. Based on Alice's results, Alice should use cloth C to make a towel. A towel needs to be absorbent so that it can absorb the water. Cloth allows the least amount of water to pass through as compared to the other cloths, so it is the most absorbent.
Q31b. Thickness of the towel.
Q31a. The sealed empty plastic bottle will float on water.
Q31b. Fill the plastic with stones.
Q31c. Matter occupies space.
Q33a. X : Gills Y : Lungs Q33b. The amount of oxygen in the blood flowing at P is higher than the amount of oxygen in the blood flowing at Q.
Q34a. Cell A: Cactus Q34a. Cell B: Onion
Q34b. The stem in the cactus plant carries out photosynethesis. The onion, the stem cannot make food , so there is no chloroplast in the stem.
Q35a. After 5 hours, the black plastic bag, C will contain the most amount of carbon dioxide. No light is allowed to pass through the black plastic bag. However for the other plastic bags, light is allowed to pass through for the leaves to phtosynethesise and make food, since C cannot photosynethesize, it will respire instead and produce carbon dioxide. Hence, C will contain the most amount of carbon dioxide.
Q35b. The plastic bag A has holes for more carbon dioxide to enter. When there is more carbon dioxide, the leaf in plastic bag A will photosynthesize and make more food than the rest. However, plastic bag B has no holes so there is a limited amount of carbon dioxide for the leaf in B to photosynthesize. In C, the leaf cannot even photosynthesize, at all. Thus, the leaf in plastic bag A has the most starch.
Q36. The seed of Plant X was dispersed by the small birds on both sides of the land, however the seed of Plant Y was only found on one side. This means that one of the seeds were too hard to eat so the bird spit it out before travelling to the other side, which was Plant Y's seeds. Plant X 's seeds were small and hard so the bird only digest the seed and passed it out as faeces on the other piece of land.
Q37a. The least base area of the block will make a depth of bigger area in the sand.
Q37b. The least the base area of Animal G's feet, the greater the depth of the footprints made by animal G in the sand. Animal G's foot has a large base, so the footprint made by Animal G in the sand would be very little. This makes it easier for it to move around as its feet will not be stuck or sink into the footprints.
Q38a. Warmth, air, water Q38b. There was a substance of remove water vapor and without moisture, decay will not occur so the washroom in B did not show sights of decay.
Q38c. Carbon dioxide is not needed in decomposition.
Q39a. 75°C Q39bi) 10°C Q39bii) Solid
Q40a. **SEE PICTURE** Q40b. The population of organism P will increase. When R is removed from the environment, P has no predator to feed on it anymore and will not have a competitor for its food, Q.

Q40a.

PLANT: Q → P, Q → R, P → R

Q41a. Advantage : Does not cause harm to the environment.
Q41a. Disadvantage : Energy would not be collected when it is not windy or at night.
Q41b. The energy from the sun can be converted to electrical energy to be used at night.
Q41c. Singapore is a humid country and it is not very windy.
Q42a. I would recommend fuel T. It produces the least amount of soot and soot pollutes the air so I would choose a type of fuel which is T that produces the least amount of soot.
Q42b. The plant's chlorophyll and stomata would be blocked by the soot. This prevents the plants from receiving much light to photosynethesize and make food. The stomata will also be blocked and gaseous exchange would be difficult.
Q43a. Point B : Kinetic Energy, Point D : Gravitational potential energy
Q43b. The material can be bent easily and he can use it to help him plunge up in the air.
Q44a. When the switch is closed, the fan is turned on. The circuit is complete and electricity in the circuit magnetizes the iron bar and it becomes an electromagnet. Bar Y, a conductor of electricity and also a magnetic material was attracted to iron bar X , and the circuit was broken. When the circuit was broken, the iron bar X is demagnetized and bar Y moves back to its original position , completing the circuit again. This process is repeated, causing the light bulb to turn on and off repeatedly.
Q44b. *Answer not available.*

THE END

RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2015

Section A	60
Section B	40
Your score out of **100** marks	
Parent's signature	

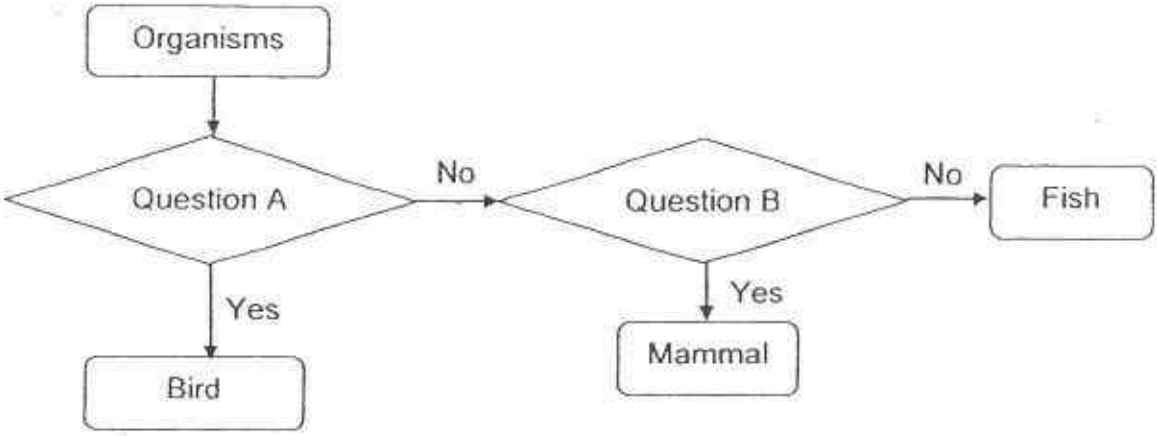
Name : _____ **Index No:** ____ **Class: P6** __

24 Aug 2015 **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.

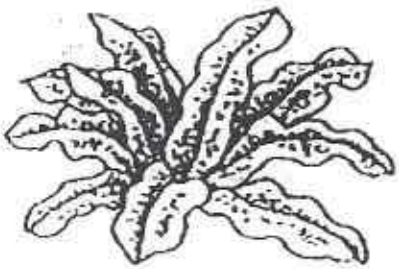
1. The flowchart below shows how some organisms are classified.



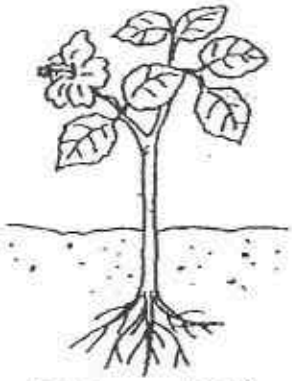
Which one of the following correctly identifies questions A and B?

	A	B
(1)	Does it have six legs?	Does it lay eggs?
(2)	Does it have wings?	Does it breathe through gills?
(3)	Does it breathe through lungs?	Does it have scales?
(4)	Does it have feathers?	Does it breathe through lungs?

2. The diagrams below show a fern and a hibiscus plant.



Fern



Hibiscus plant

Which of the following comparison(s) between the fern and the hibiscus plant is/are correct?

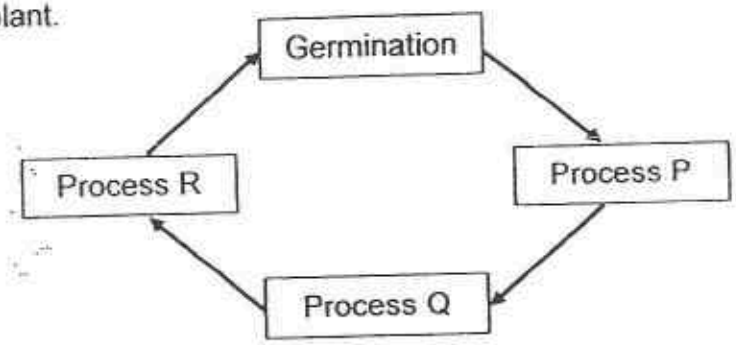
A Only the hibiscus plant can bear fruits.

B Both the fern and hibiscus plant can make their own food.

C Both the fern and hibiscus plant can reproduce from seeds.

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

3. The diagram below shows the processes involved in the reproduction of a flowering plant.



Which of the following correctly identifies processes P, Q and R?

	P	Q	R
(1)	Fertilisation	Seed dispersal	Pollination
(2)	Fertilisation	Pollination	Seed dispersal
(3)	Pollination	Fertilisation	Seed dispersal
(4)	Seed dispersal	Pollination	Fertilisation

4. The table below shows the characteristics of organisms A and B. A tick (✓) indicates the presence of the characteristic.

Characteristics	Organism A	Organism B
Lays eggs	✓	✓
Has six legs	✓	✓
Has a pupal stage	✓	
Has wings in adult stage	✓	✓

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

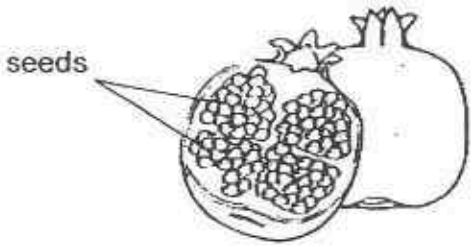
A Both organisms give birth to their young alive.

B Organism B lays more eggs than organism A.

C Organism A has a 4-stage life cycle while Organism B has a 3-stage life cycle.

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

5. Sophia cut a brightly coloured fruit in half and observed that it contained many seeds as shown in the diagram below.



Based only on her observation, which one of the following statements is definitely true about the flower that this fruit has developed from?

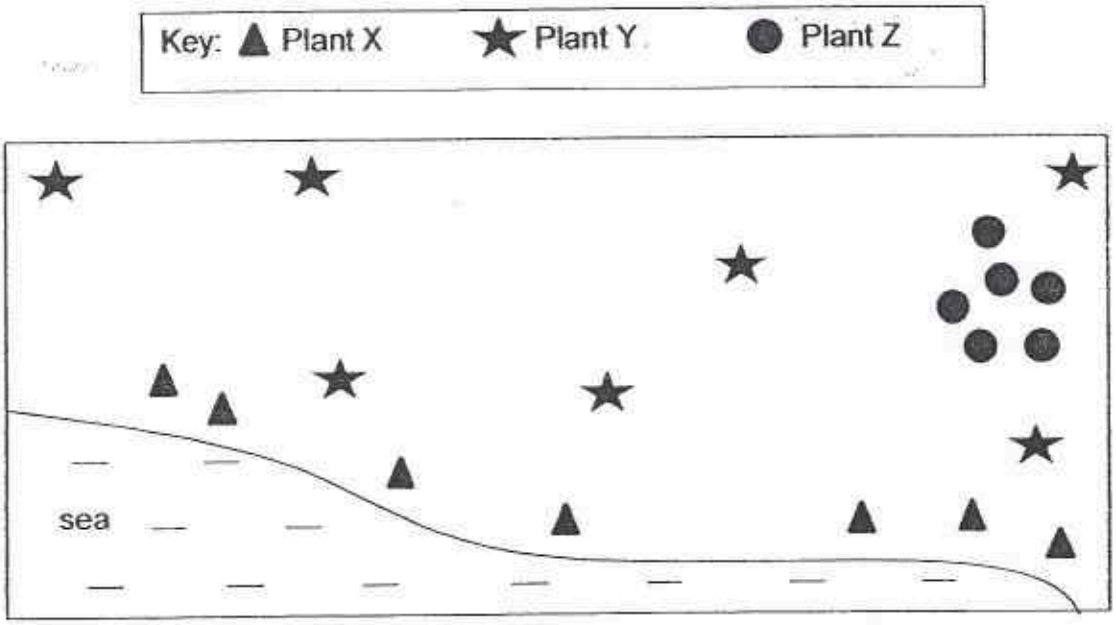
(1) The flower has many ovules.

(2) The flower has many ovaries

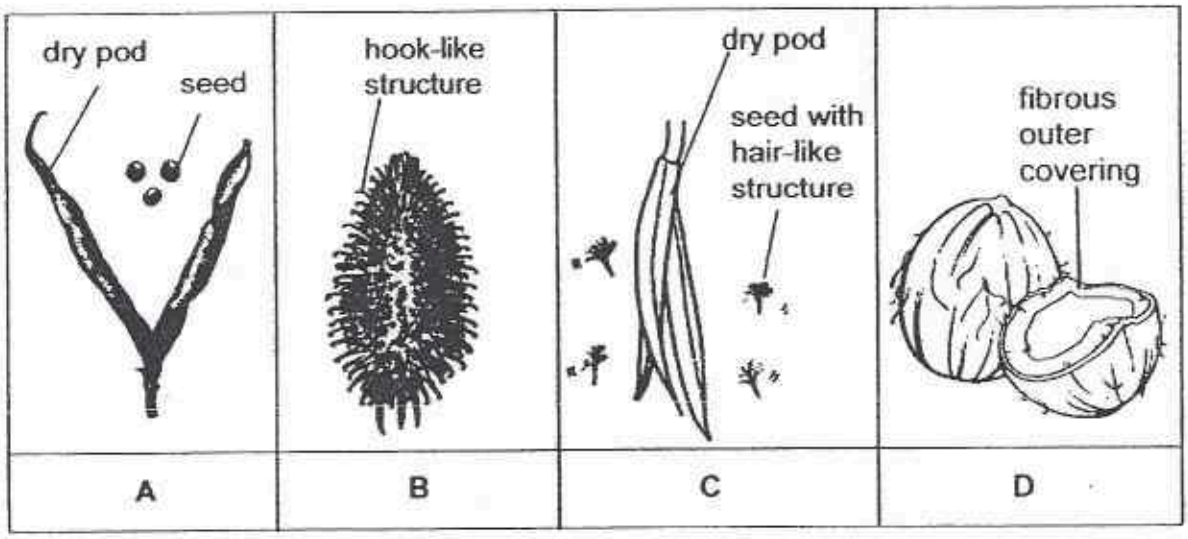
(3) The flower produced many pollen grains.

(4) The flower has been pollinated by animals.

6. The diagram below shows part of an island where three types of plants, X, Y and Z, are growing.



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



Which of the following fruits most likely belong to plants, X, Y and Z?

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

7. Neutering is the process of removing an animal's reproductive organ. This is a safe and quick procedure done by a veterinarian (animal doctor).

In some countries, due to the lack of space in animal shelters, millions of stray cats and dogs are killed each year.

Which of the following correctly explain how neutering helps to prevent the killing of stray animals?

A Neutering of animals enables the animals to reproduce faster.

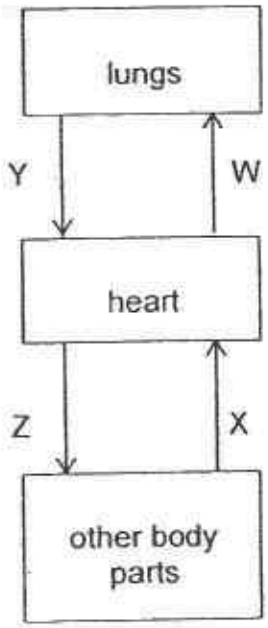
B The ovaries are removed so that fertilisation will not occur in the female body.

C The ovaries are removed so that fertilisation will only occur outside the female body.

D The testes are removed to prevent the release of male reproductive cells into the female body.

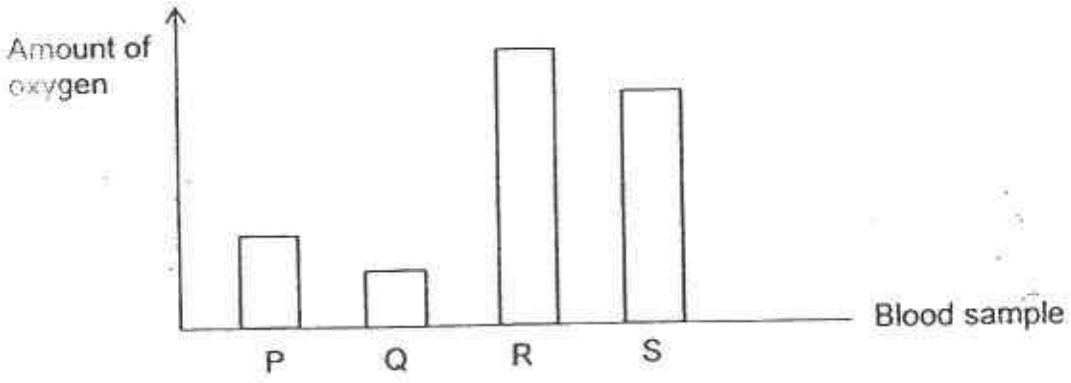
(1) A and B only
(2) A and C only
(3) B and D only
(4) C and D only

8. The diagram below shows how blood flows through the blood vessels, W, X, Y and Z, in the human body.



Four blood samples, P, Q, R and S were taken from the different blood vessels in the above diagram.

The following graph shows the amount of oxygen in each of these blood samples.



Which one of the following blood samples, P, Q, R or S, was most likely taken from the blood vessel W?

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

9. The diagram below shows the different parts of human digestive system.

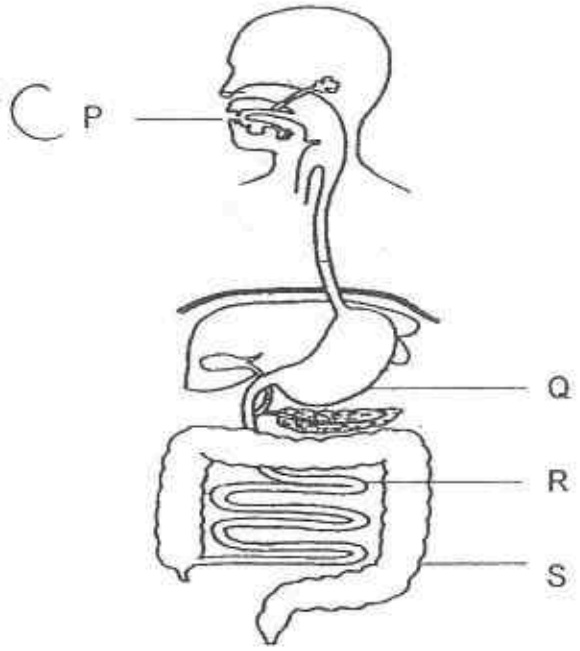
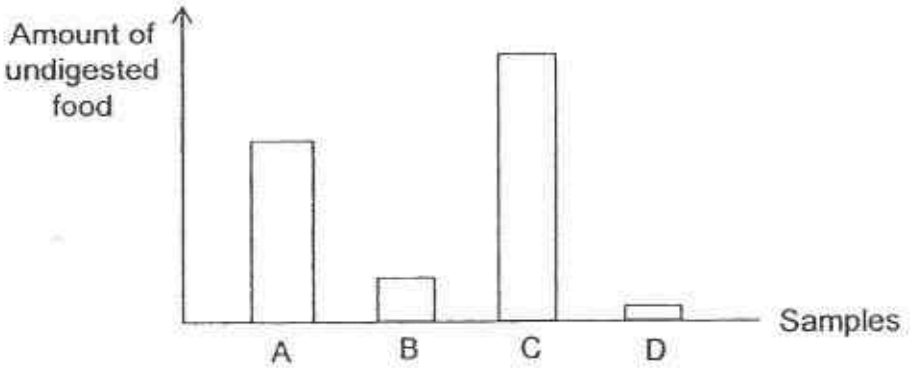


Diagram 1

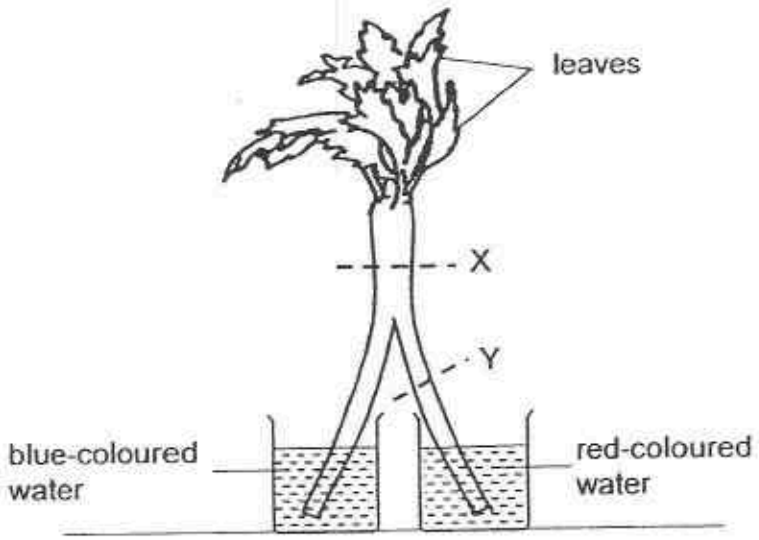
The graph below shows the amount of undigested food in the samples A, B, C and D obtained from different parts of the human digestive system in Diagram 1.



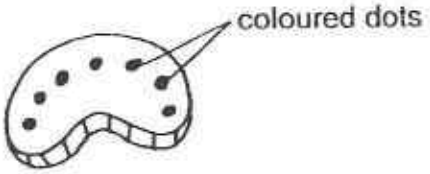
Which one of the following correctly matches the parts, P, Q, R and S, in Diagram 1 to the samples A, B, C and D, in the graph?

	Parts in Diagram 1	Samples in Graph
(1)	P	C
(2)	Q	D
(3)	R	A
(4)	S	B

10. Alice placed a partially split celery stalk into two beakers of coloured water as shown below. After half an hour, she cut across the stalks at positions, X and Y, as shown in the diagram below.



She observed that the cut sections, X and Y, had coloured dots.



Cut section of celery stalk

Which of the following observations is/are **not** possible?

A All the leaves appeared blue.

B All the dots on cut section Y were stained red.

C Cut section X had a mixture of red dots and blue dots.

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

11. Sarah observed three cells and recorded her observations in the table below. A tick (✓) indicates the presence of the cell structure.

Cell Structure	Cell W	Cell X	Cell Y
Nucleus	✓		✓
Cell wall	✓		✓
Chloroplast	✓		
Cell membrane	✓	✓	✓

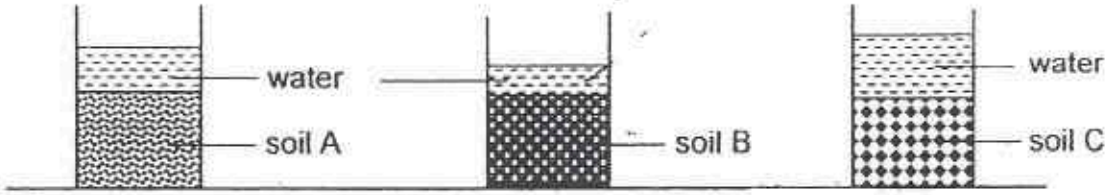
Which one of the following statements about the cells is correct?

(1) Only cells W and Y have fixed shape.
(2) Only cell W cannot carry out photosynthesis.
(3) Only cell X allows all substances to enter the cell.
(4) Cells W and X are plant cells and cell Y is an animal cell.

12. The table below shows the average size of soil particles suitable for growing plants X, Y and Z respectively.

Plant	Average size of soil particles
X	small
Y	medium
Z	large

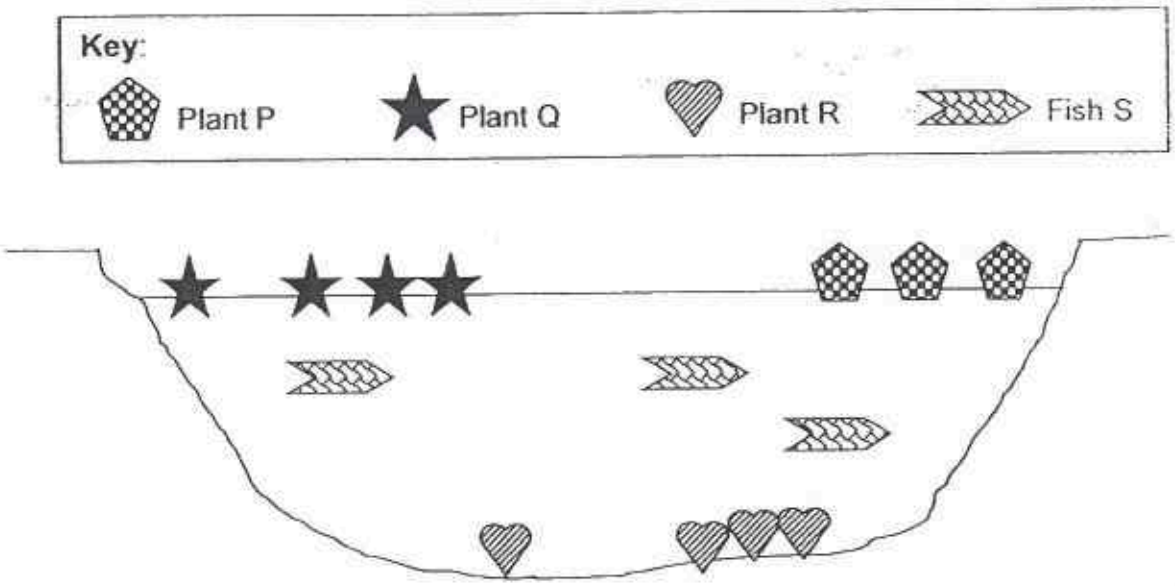
Natalie put equal amounts of soil samples, A, B and C, into 3 identical beakers. Then, she poured an equal amount of water into each beaker of soil at the same time. The diagrams below show the set-ups after the water was added.



Based on the observations above, which one of the following shows the soil sample that is most suitable for growing plants X, Y and Z respectively?

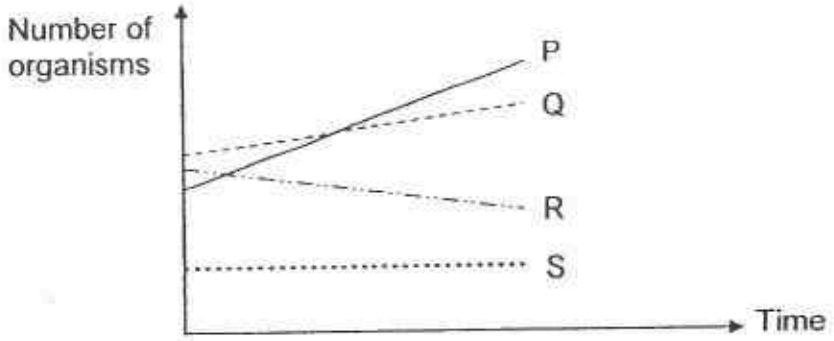
	Plant X	Plant Y	Plant Z
(1)	A	B	C
(2)	A	C	B
(3)	B	A	C
(4)	C	A	B

13. The diagram below shows 4 types of organisms living in a pond.



A farmer sprayed fertilizer on his vegetable farm which is just next to the pond.

The graph below shows the change in the number of the 4 types of organisms living in the pond over one month due to the runoffs and soil erosion from the fertilised vegetable farm during raining seasons.



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

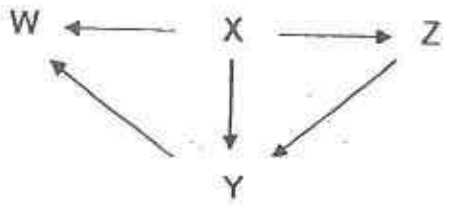
(1) Fish S depended on plants P and Q for food.

(2) The fertilizer from the vegetable farm harmed all the organisms in the pond.

(3) The amount of light received by Plant R increased over the one month period.

(4) The fertilizer from the vegetable farm helped plants P and Q to grow well but not plant R.

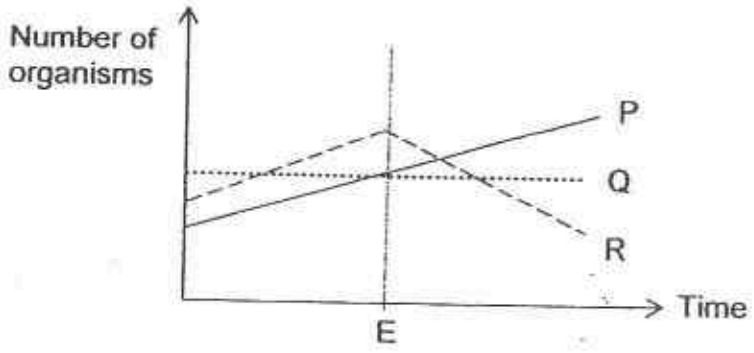
14. The diagram below shows a food web in a community.



Which one of the following correctly identifies organisms W, X, Y and Z?

	Producer	Prey	Prey and predator	Predator
(1)	X	Z	Y	W
(2)	X	W	Z	Y
(3)	W	X	Y	Z
(4)	W	Y	Z	X

15. The graph below shows how organisms P, Q and R in a habitat are affected when organism F is introduced at point E.



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

A R is eaten by F

B F is a food producer.

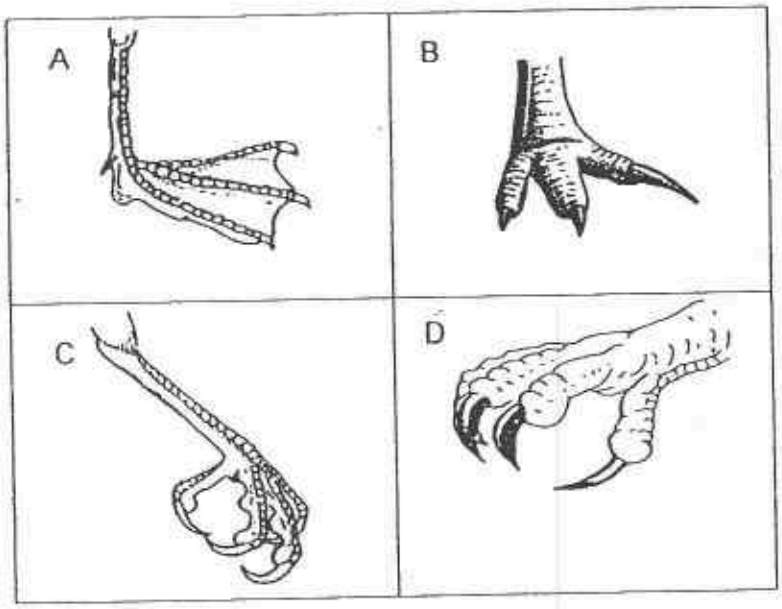
C P and Q compete with each other for food.

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

16. Susan recorded some information about the feet of birds X and Y as shown below.

- Bird X has muscular and powerful feet with sharp and curved claws to grab its prey firmly.
- Bird Y has webbed feet with a large surface area to help it paddle through water efficiently.

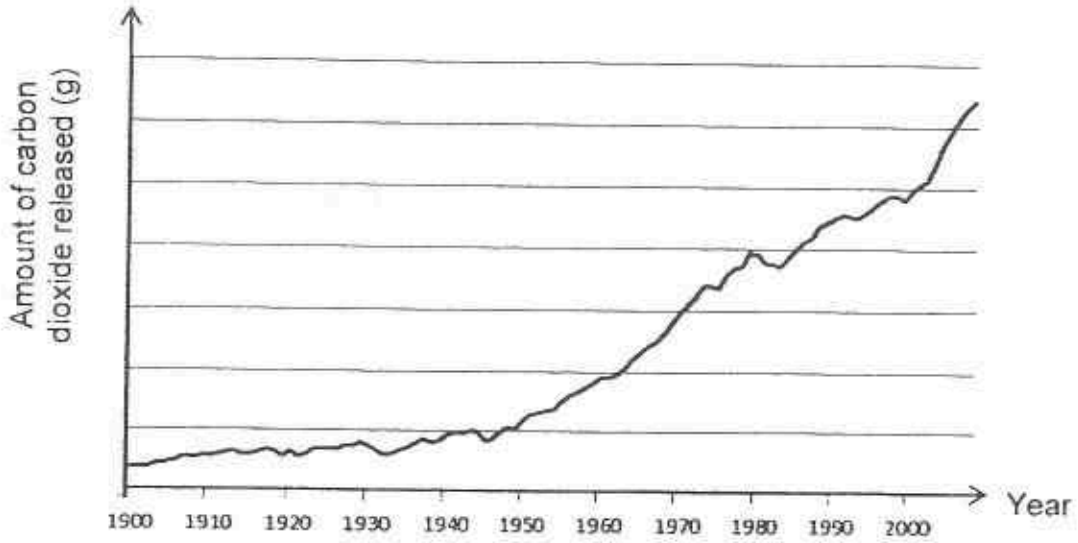
The diagrams below show different types of feet, A, B, C and D.



Which one of the following correctly matches the feet to birds X and Y?

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

17. The graph below shows the amount of carbon dioxide released into the atmosphere from the burning of fossil fuels since the year 1900



Which one of the following is a consequence of the change in the amount of carbon dioxide released into the atmosphere?

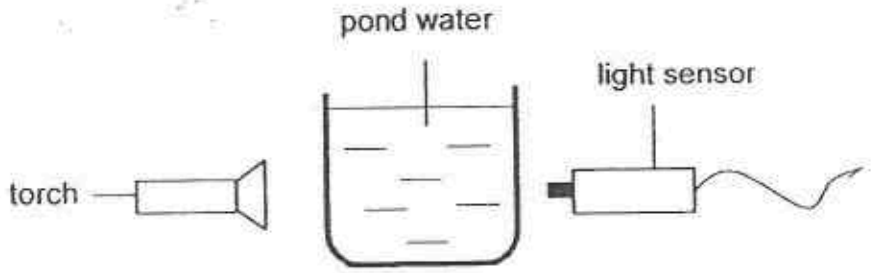
(1) Drop in sea level

(2) Melting of polar ice caps

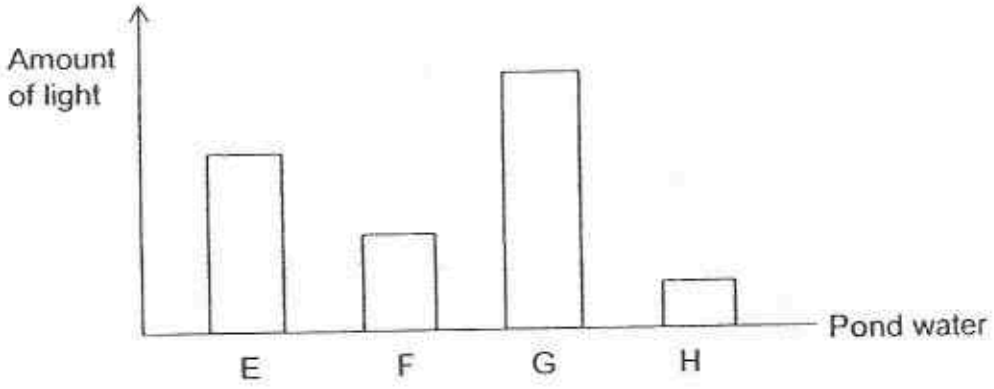
(3) Cutting down of more trees

(4) Increase in number of vehicles on the road

18. Jasmine collected four beakers of water from four ponds E, F, G and H. Using the set-up below, she measured the amount of light that passed through each beaker of pond water using a light sensor.



Jasmine presented her results on a graph as shown below.



Which one of the following pond water would be most suitable for fully submerged plants to grow well in?

(1) E
(2) F
(3) G
(4) H

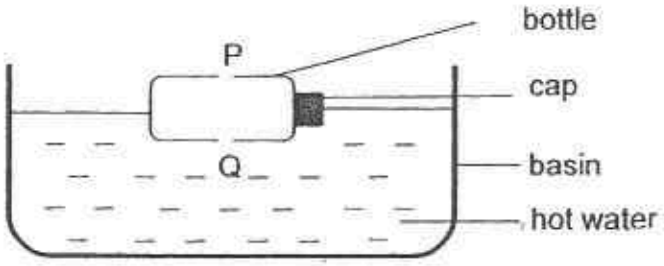
19. Siti was given a beaker containing a mixture of four substances P, Q, R and S. These substances cannot be dissolved in water. A tick (✓) indicates the presence of the property.

Substance	Float in water	Magnetic	Good heat conductor
P	✓		
Q			
R		✓	✓
S			

Based only on the above information, which two substances will Siti **not** be able to separate?

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

20. Megan placed an empty bottle with two holes at points P and Q into a basin of hot water as shown below.



Which of the following would Megan observe?

A The cap popped out.

B Air entered the bottle through P.

C Water entered the bottle through Q.

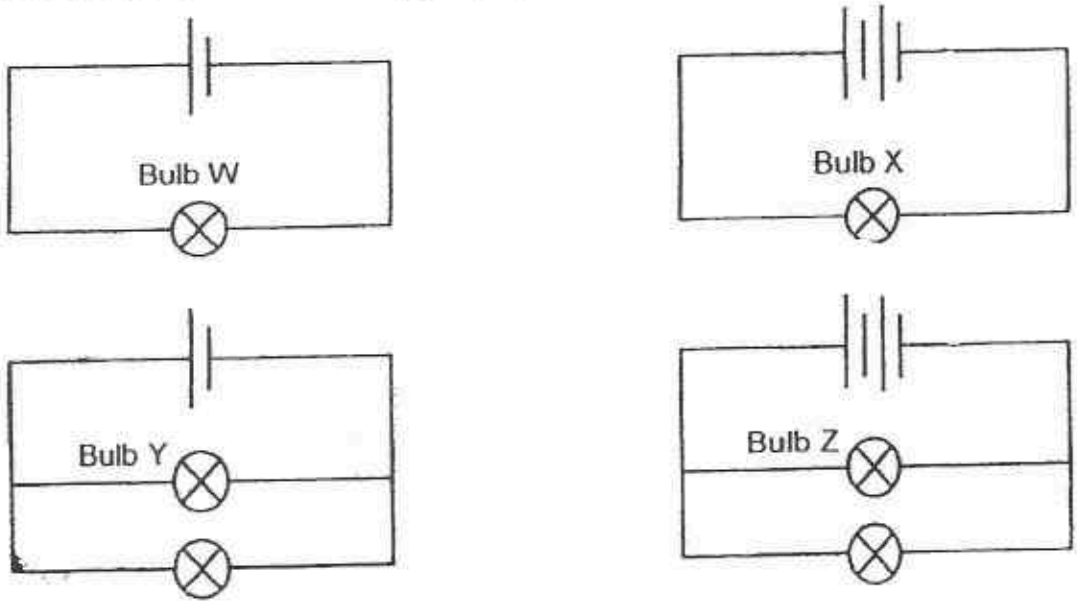
(1) A only
(2) C only
(3) B and C only
(4) A, B, and C

21. At 30°C, substance Z has a definite volume and does not take the shape of the container. However, at 200°C, substance Z can be compressed.

Which one of the following is most likely the melting point and boiling point of substance Z?

	Melting point of Z	Boiling point of Z
(1)	15	200
(2)	25	120
(3)	35	180
(4)	45	300

22. Vishnu set up four electrical circuits using identical batteries and identical bulbs. The batteries and bulbs are working properly.



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

A Bulb W is the brightest.

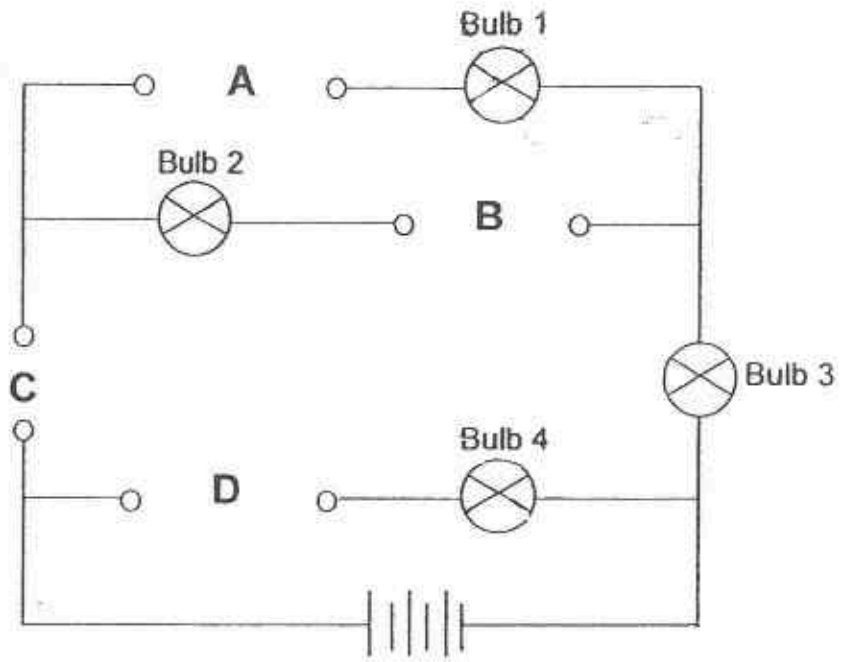
B Bulb Z is dimmer than Bulb W.

C Bulb Z is brighter than Bulb Y.

D Bulb X and Bulb Z have the same brightness.

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

23. Ethan set up the circuit below.

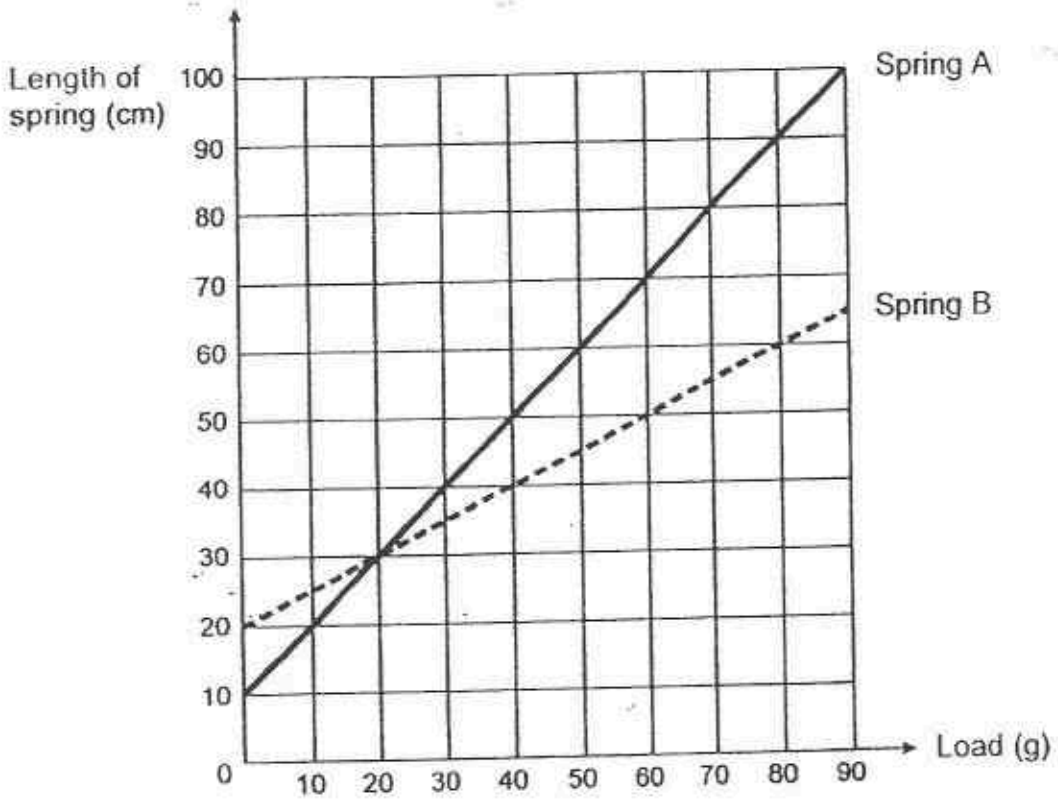


Ethan has 3 rods made of iron, copper and plastic respectively.

At which position, A, B, C or D, should Ethan place each rod respectively so that only Bulb 2 and Bulb 3 will light up?

	Copper rod	Iron rod	Plastic rod
(1)	B	A	D
(2)	C	A	B
(3)	C	B	A
(4)	D	B	C

24. Serene conducted an experiment on springs A and B. She hung different loads one at a time and recorded the length of the spring. Her results are shown in the graph below.



Which one of the following statements is true?

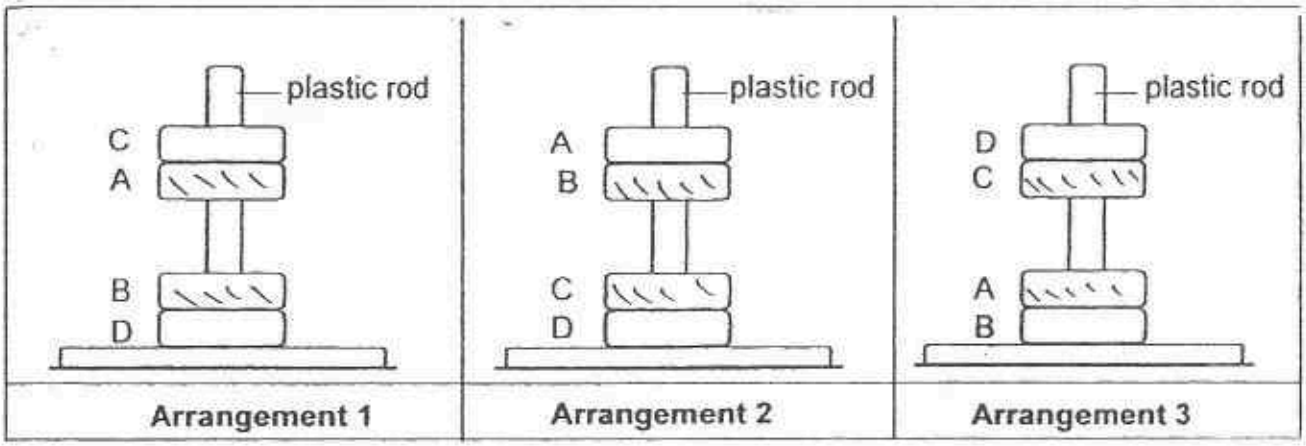
(1) Spring B extended by 50 cm when the load is 80 g.

(2) Spring B stretched more than Spring A for the same load.

(3) Spring A is longer than Spring B before the start of the experiment.

(4) Spring A and Spring B have the same length when the load is 20 g.

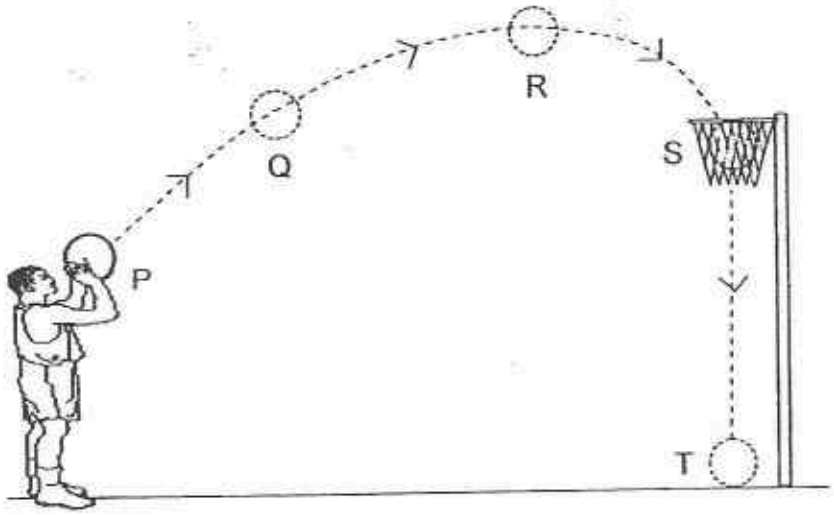
25. Chloe put four metal rings A, B, C and D through a smooth plastic rod in three different arrangements as shown below.



Based on the observations above, which of the following metal rings are definitely magnets?

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

26. Kim Huat threw a ball into the net as shown in the diagram below.



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

A There are no forces acting on the ball at T.

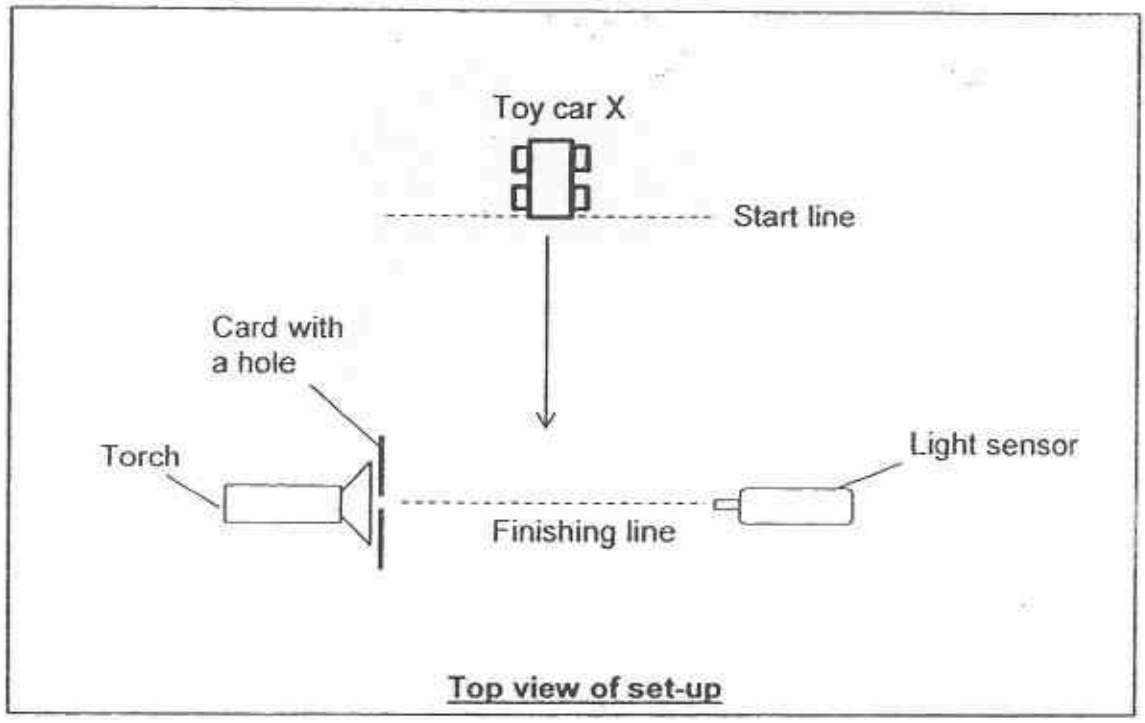
B Kim Huat exerted a force on the ball at P to move the ball.

C There is more gravitational force acting on the ball at R than at Q.

D The gravitational potential energy of the ball decreases from R to S only.

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

27. Chloe conducted the experiment in a completely dark room as shown below. She exerted a force on toy car X , such that it moved past the finishing line.



Chloe repeated the procedure with toy car Y, using the same amount of force. She recorded the amount of light detected by the light sensor over a period of time in the table below.

Time (s)	Amount of light detected by light sensor (Lux) after exerting a force on	
	Toy car X	Toy car Y
0	2000	2000
1	2000	2000
2	0	2000
3	2000	1000

Based on the above results, which of the following statement(s) is/are true?

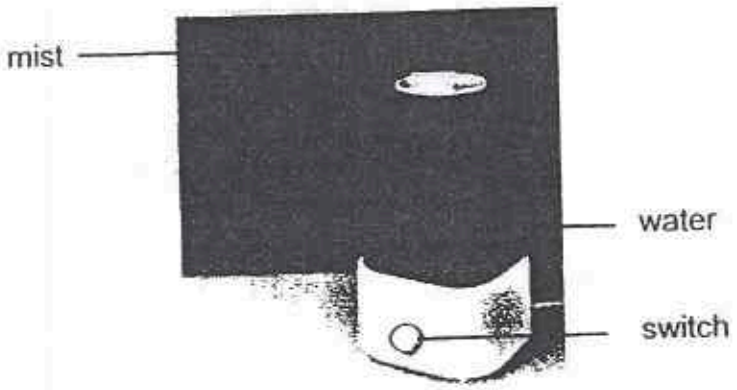
A Toy car X is opaque.

B Toy car Y is transparent.

C Toy car Y travels at a greater speed than Toy car X

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

28. Jasmine's mother bought a humidifier which releases tiny water droplets in the form of mist into the air, as shown below.



Jasmine advised her mother to switch off the humidifer when she mops the floor.

Which one of the following is the correct explanation for switching off the humidifer when mopping the floor?

(1) The water on the floor will gain more heat from the surrounding mist to evaporate faster.

(2) This will lower the temperature of the air, increasing the rate of evaporation of water on the floor.

(3) This will lower the amount of water vapour in the air, increasing the rate of evaporation of water on the floor.

(4) This will increase the amount of water vapour in the air, increasing the rate of condensation of water vapour on the floor.

29. David filled 4 containers, P, Q R and S, with equal amount of water at 75°C. The 4 containers are of the same size and shape but made of different materials. He left the 4 containers on a table in the Science laboratory with a constant room temperature.

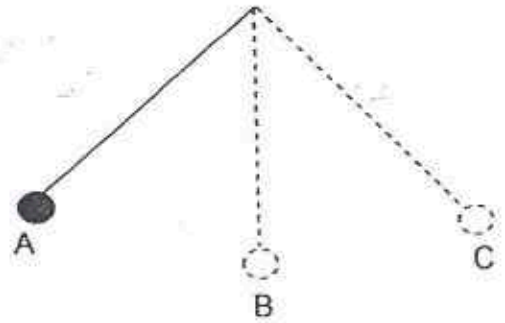
He recorded the time taken for the water in the containers to reach room temperature in the table below.

Material of the container	Time taken for water to reach room temperature (min)
P	28
Q	14
R	66
S	42

Based on the results above, which one of the following materials, P, Q, R or S, would be most suitable to make a mug to keep drinks cold for the longest time?

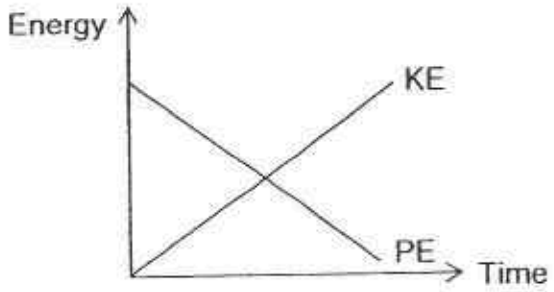
(1) P
(2) Q
(3) R
(4) S

30. Prithi released a bob at position A, which moved to position B and then to position C, as shown in the diagram below.

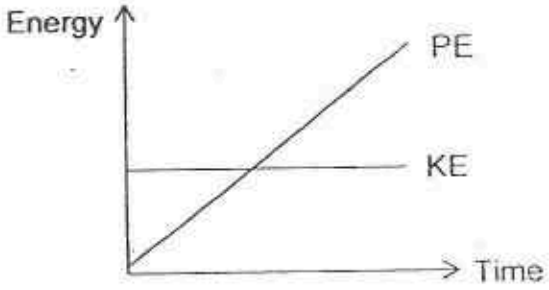


Which one of the following graphs correctly shows the change in kinetic energy (KE) and potential energy (PE) of the bob as it moved from B to C?

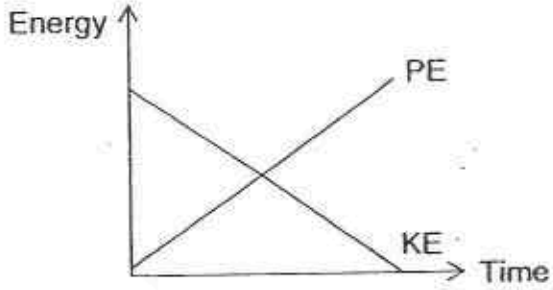
(1)



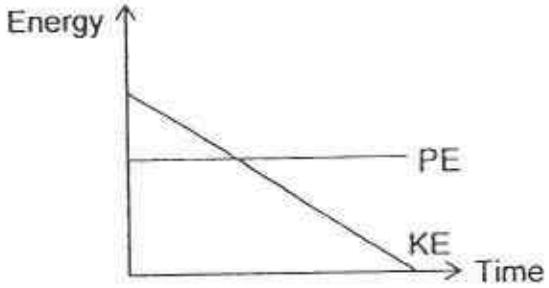
(2)



(3)



(4)



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. Sally prepared three identical set-ups by burying 20 seeds in the same amount of moist soil. Then she placed the three set-ups at different temperatures. She recorded her observations over a period of 6 days in the table below.

Temperature (^{o}C)	Total number of seeds germinated					
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6
5	0	0	?	0	1	1
15	0	0	0	1	?	9
25	0	2	8	13	17	19

(a) Predict the total number of seeds germinated: [1]

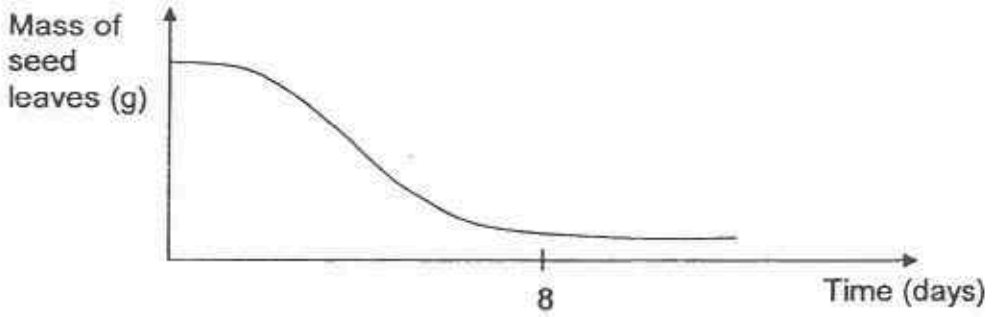
(i) at 5°C, on Day 3 : _____ (ii) at 15°C, on Day 5 : _____

(b) Based on the above information, what can Sally conclude about the effect of temperature on germination? [1]

_____

_____

The graph below show the changes in the mass of the seed leaves of a seed during germination.



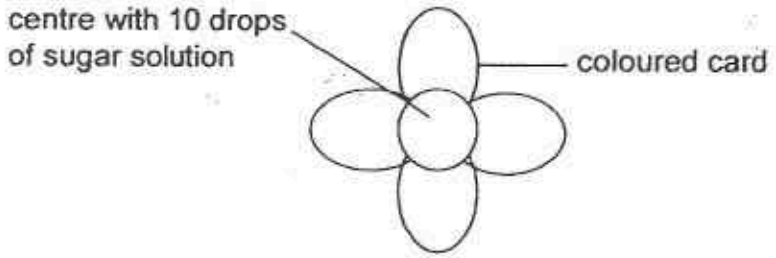
(c) How did the seedling get its food after day 8? [1]

_____

_____

Score 3

32. Wendy wanted to find out the colour of the flowers that insects X, Y and Z prefer. She used flowers made from different coloured cards. She put 10 drops of sugar solution in the centre of each flower. The flowers were left in the open field.



Wendy then counted the number of each type of insects that visited the flowers over 2 hours. The results were recorded in the table below.

Colour of flower	Number of insect visiting the flower		
	Insect X	Insect Y	Insect Z
Red	12	2	1
Yellow	4	16	3
White	3	2	11

(a) Based on Wendy's results, which colour attracted most insects? [1]

_____

(b) Using the same materials, what could Wendy do to ensure reliability of her results? [1]

_____

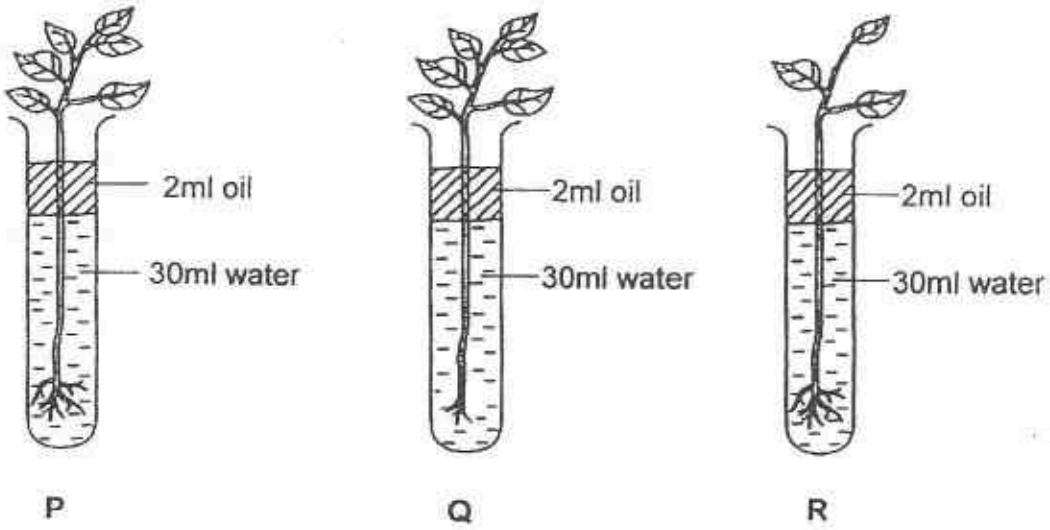
_____

(c) Wendy also wanted to find out the relationship between the size of the flowers and the number of the insect Z visiting the flowers.
Put a tick (✓) beside the variable(s) that should be kept constant to ensure a fair test. [1]

	Variables	To be kept constant
(i)	Size of flower	
(ii)	Colour of flower	
(iii)	Number of insect Z visiting each flower	
(iv)	Amount of sugar solution added to each flower	

Score	/ 3

33. Cathy prepared three set-ups, P, Q and R, using the same type of plants as shown below. Some roots were removed from the plant in set-up Q while some leaves were removed from the plant in set-up R.



Cathy placed all the set-ups in the open field for 4 hours.

Which set-up, P, Q or R would she observe the greatest decrease in the water level? Explain your choice clearly. [2]

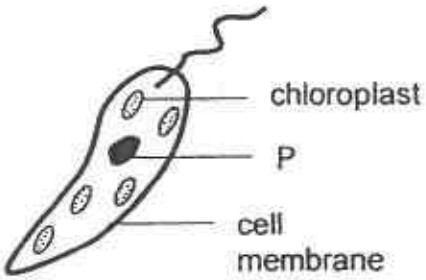
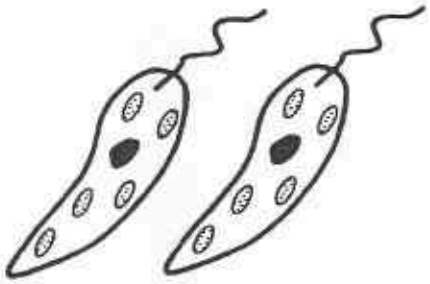
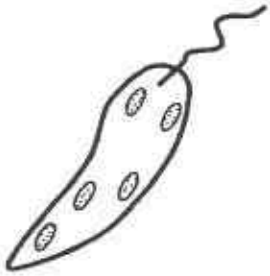
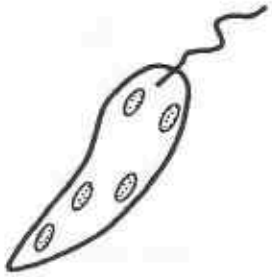
_____

_____

_____

Score	/ 2

34. Jack was given two single-celled organisms, X and Y, of the same species. Part P of organism Y has been removed. He observed the organisms for the same period of time and recorded his observations below.

Organism	At the start	After some time
X		
Y		

(a) Based on Jack's observation above, what can he conclude about the function of part P? [1]

_____

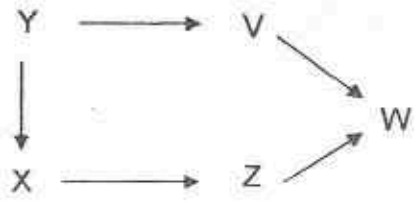
_____

(b) Identify one difference between organism X and a leaf cell. [1]

_____

Score	/ 2

35. The diagram below shows a food web in a certain community.



(a) State two benefits that tree Y could provide for animal X. [1]

_____

_____

Both animals X and V are found on Tree Y. Animal X lives in a large group but not animal V.

(b) What advantage does animal X have over animal V by living in a large group? [1]

_____

_____

(c) A disease wiped out the whole population of animal Z.
Explain how this would affect the population of animal V. [2]

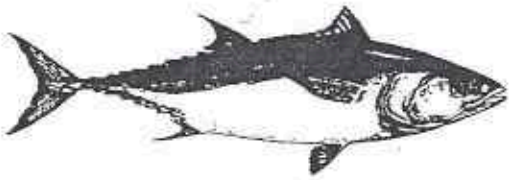
_____

_____

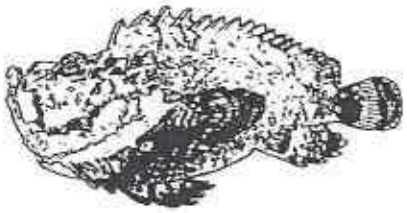
_____

Score	/ 4

36. The diagrams below show 2 fishes, A and B.



Fish A



Fish B

(a) Based on the diagrams above, explain why Fish A is a faster swimmer than Fish B. (Do not compare the texture of the body.) [1]

_____

_____

Fish B has a rough, brown-greenish body. Its diet consists of small fish and shrimps. It is normally found among corals, sand and rocks.

(b) Explain how having a rough, brown-greenish body helps Fish B in their survival. [1]

_____

_____

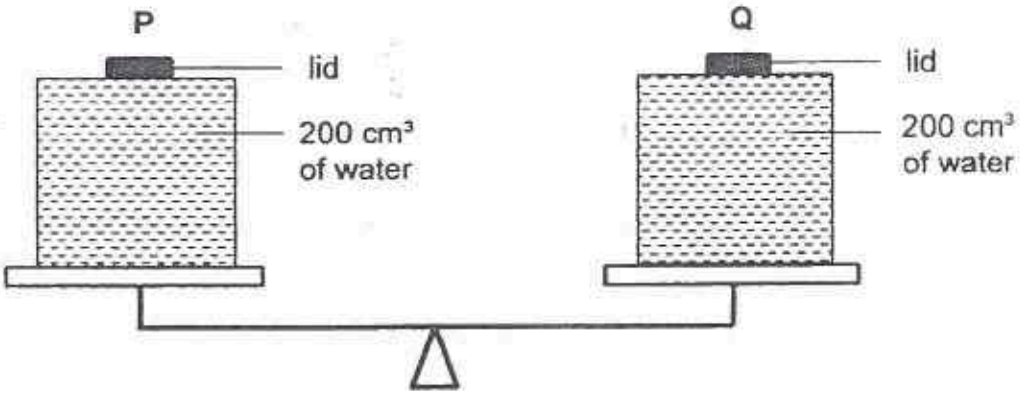
(c) Fish B is a slow swimmer. Suggest a behaviour of Fish B that can help it to increase its chance of catching its prey. [1]

_____

_____

Score	/ 3

37. Jason placed two identical containers, P and Q, on a balance as shown in the diagram below.



Jason poured away all the water in both containers. Then he pumped 300 cm³ of air into P and 100 cm³ of air into Q.

(a) Describe clearly what Jason would observe of the balance. [1]

_____

_____

(b) Give a reason for your answer in (a). [1]

_____

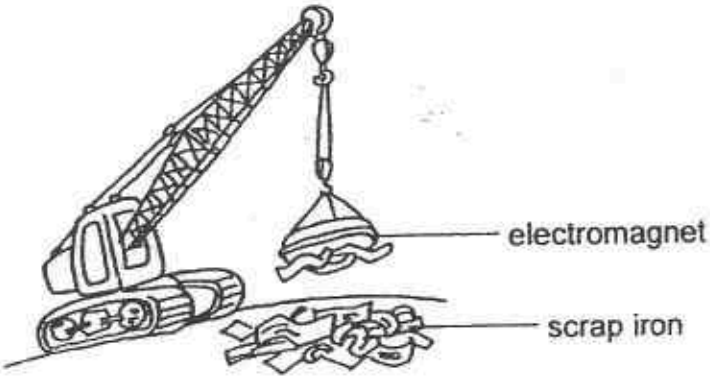
_____

(c) Fil in the table below to indicate the final volume of air in both containers. [1]

Volume of air (cm³)	
Container P	**Container Q**

Score	/ 3

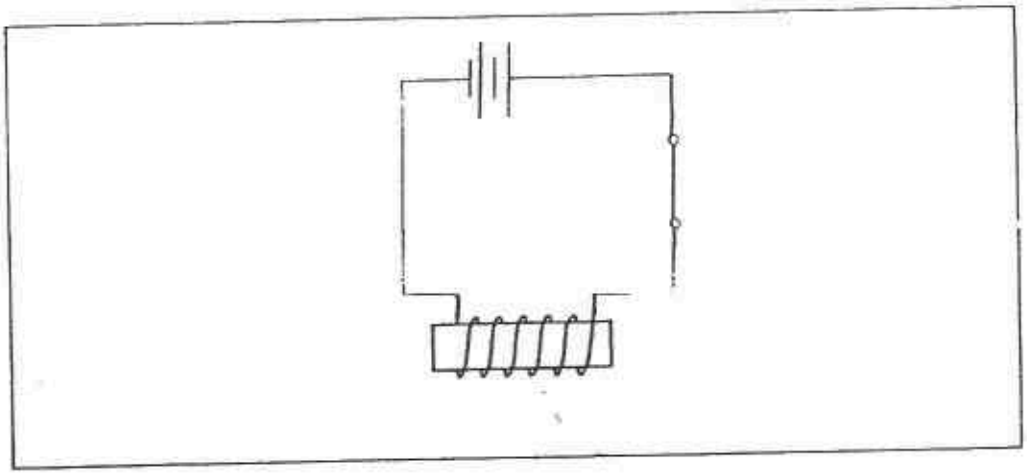
38. The diagram below shows a crane that is used to transfer heavy scrap iron from one place to another.



When the switch is closed, the electromagnet picks up the scrap iron. The crane will then transfer the scrap iron to another location. When the switch is opened, the scrap iron drops to the ground.

(a) Complete the circuit diagram below to show how the electromagnet works, using 2 batteries, 1 switch and wires.

An iron rod with a piece of insulated wire coiled around it, which forms part of the circuit, has been drawn for you. [1]



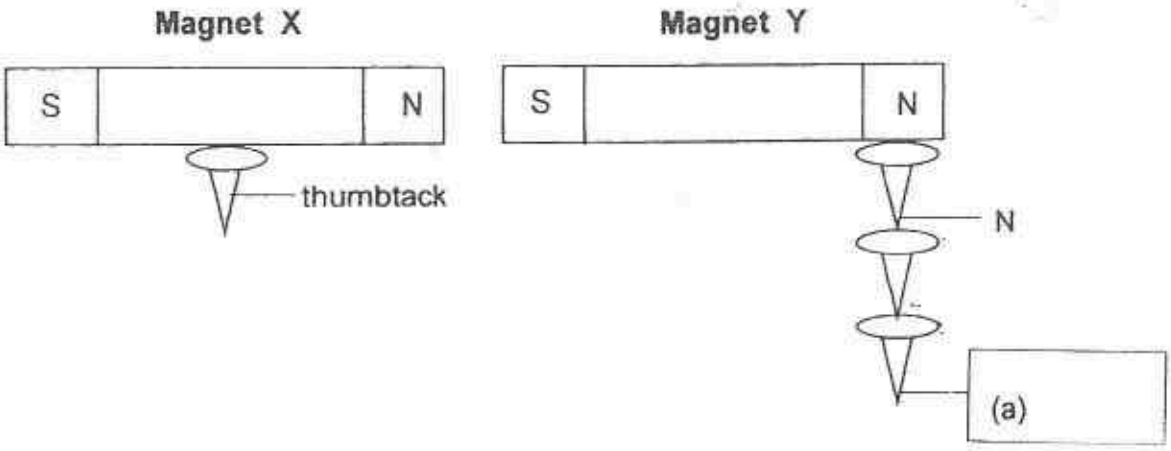
(b) Using the same type of batteries, switch, iron rod, wires and circuit arrangement in part (a), suggest 2 ways to enable the electromagnet to attract more scrap iron. [2]

(i) _____

(ii) _____

Score	/ 3

39. Angie wanted to find out which magnet, X or Y is stronger. She set up the experiment below.



(a) Label 'N' for north-seeking pole or 'S' for south-seeking pole in the box in the above diagram. [1]

(b) Angie observed that Magnet Y attracted more thumbtacks than Magnet X. She concluded that Magnet Y is stronger than Magnet X.

Explain why Angie cannot conclude that Magnet Y is stronger than Magnet X. [2]

_____

_____

_____

Score / 3

40. Jane's mass is 40kg. The table below shows how much Jane weighs on different planets.

Planets	Jane's weight (N)
Earth	400
Venus	362
Mars	150
Saturn	425
Jupiter	945

(a) Based on the information above, what can Jane conclude about the gravitational force acting on objects on different planets? [1]

_____

_____

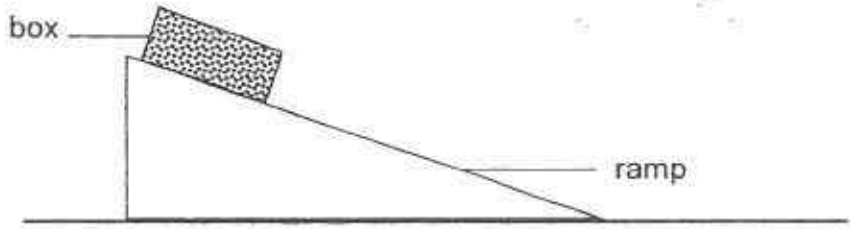
(b) What is Jane's mass on planet Mars? Give a reason for your answer. [1]

_____

_____

Score	/ 2

41. Siti wanted to find out if the surface texture of a box affects the time taken for it to slide down a ramp. She pushed 3 boxes, P, Q and R, made of different materials, down a ramp one at a time as shown in the set-up below.



Siti recorded her results in the table below.

	Time taken for box to reach the ground (s)			
Box	**1st try**	**2nd try**	**3rd try**	**Average**
P	5.5	6.2	4.9	5.53
Q	2.3	3.1	2.9	2.77
R	8.9	9.7	9.3	9.30

(a) Which box, P, Q or R, is the smoothest? Explain your answer. [2]

_____

_____

_____

(b) Siti kept the starting point of the box sliding down the ramp constant in her experiment.
How did this make her experiment a fair test? [1]

_____

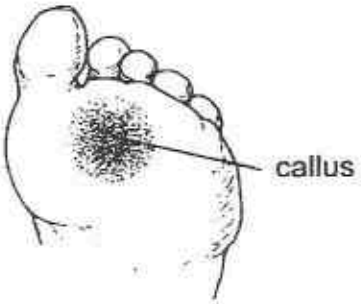
_____

Score	/ 3

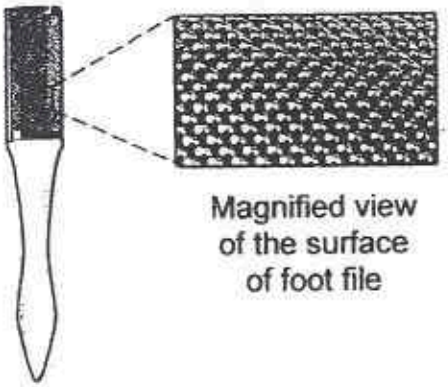
Continue on Pg 36

Continue from Pg 35

The diagram below shows the callus, a layer of hardened skin, on the sole of Siti's foot.



Siti wanted to remove the callus by rubbing it with a foot file, as shown in the diagram below.



Foot file

Siti has two foot files, X and Y. X has a rougher surface than Y.

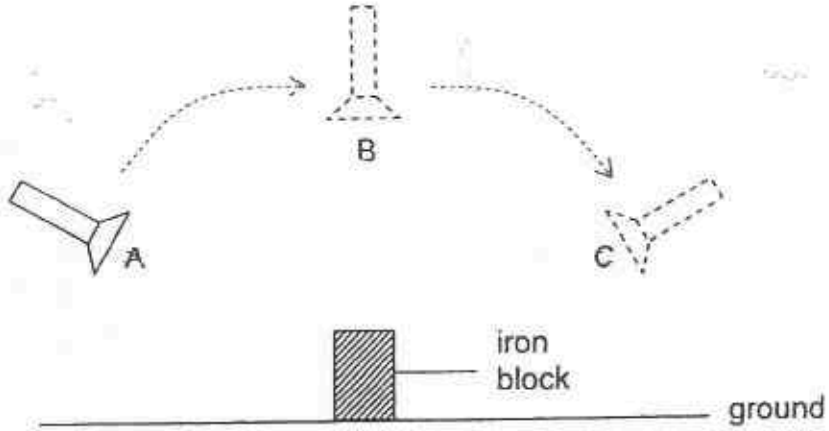
(c) Which foot file, X or Y, should she use to remove the callus more quickly? Explain your answer. [1]

_____

_____

Score	/ 1

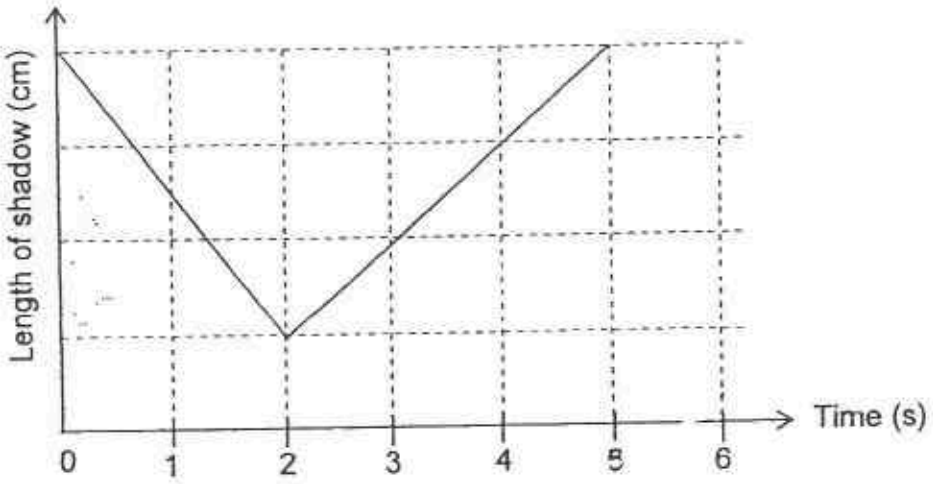
42. Monica conducted the experiment as shown below.



Monica took 2 seconds to move the torch from A to B, and then another 3 seconds to move the torch from B to C. She measured the length of the shadows cast by the iron block at the different positions of the torch.

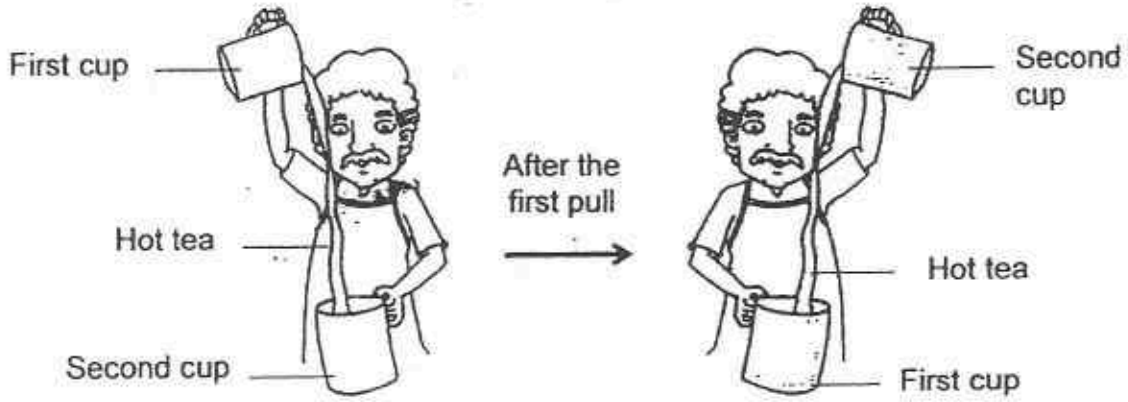
The distance between the torch and the iron block were kept the same at the different positions of the torch. Positions A and C have the same height from the ground.

Draw a line graph below to show how the length of the shadow changes when the torch moves from A to B and then to C. [2]



Score	/ 2

43. Esther noticed that her father poured hot tea from one cup to the other continuously for a few times as shown in the diagrams below. Her father explained that the hot tea will cool down more quickly after it was "pulled" several times.



(a) Explain why the hot tea will cool down more quickly this way. [2]

_____

_____

_____

Esther carried out another experiment using two cups of hot tea of the same temperature. She had two cubes of ice, X and Y, of the same mass. She placed ice cube X into a cup and crushed ice cube Y before putting it into another cup.

(b) Esther observed that the hot tea with crushed ice cube Y cool more quickly than the hot tea with ice cube X.

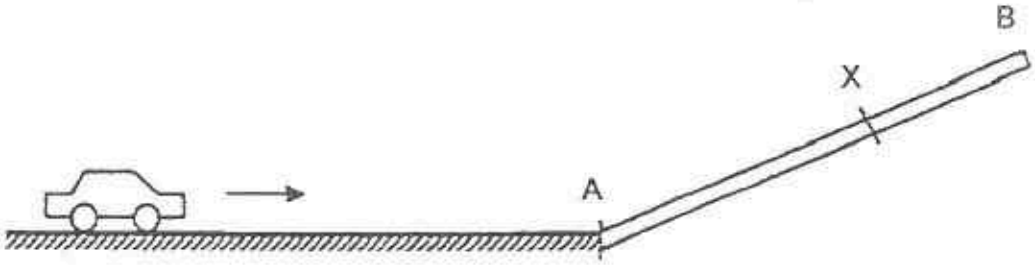
Give a reason for her observations. [1]

_____

_____

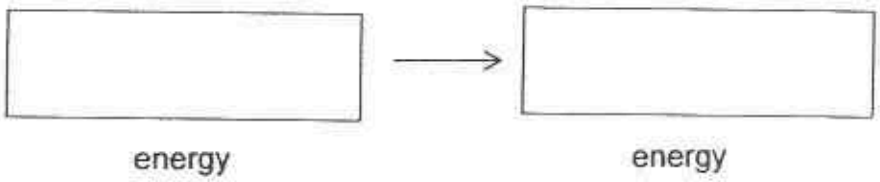
Score	/ 3

44. Joanna pushed a toy car towards a wooden plank AB as shown in the diagram below.



The toy car moved up the plank, stopped at X and then it rolled down the plank.

(a) State the energy conversion that took place when the car moved from A to X. [1]



(b) Explain why the toy car stopped at X clearly. [1]

_____

_____

(c) Explain why the toy car rolled down from point X. [1]

_____

_____

- END OF PAPER -

Setters : Mrs Christina Lim, Mdm Lim Sok Yen & Miss Ho Win Nie

Score	/ 3

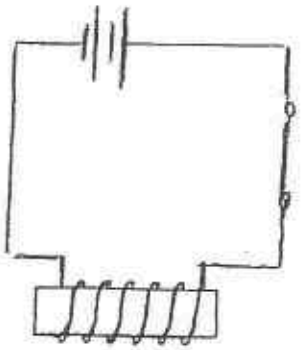
EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : RAFFLES GIRLS' PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

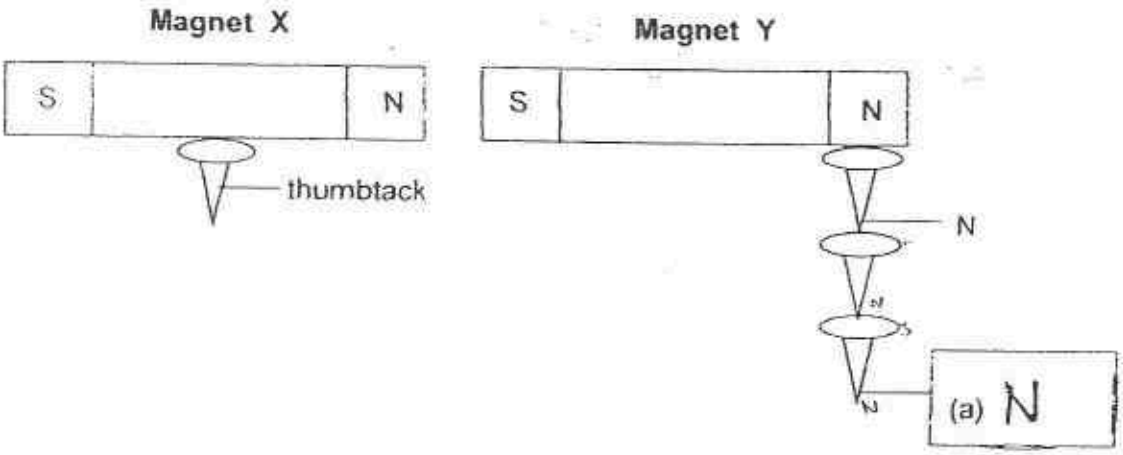
Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
4	3	3	2	1	4	3	2	1	1
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
1	4	4	1	1	4	2	3	3	2
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
3	2	3	4	3	1	1	3	3	3

BOOKLET B

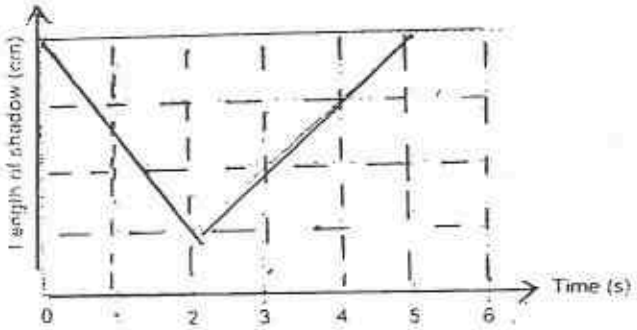
Q31a. i) 0 ii) 4 Q31b. The higher the temperature, the more the number of seeds germinated .
Q31c. The seeding had developed leaves. The chlorophyll in its leaves trapped light and the leaves made food for the seedling.
Q32a. Yellow Q32b. Repeat the experiment thrice and take the average of number of I sects visiting the flowers. Q32c. Colour of flower, Amount of sugar solution added to each flower.
Q33. P. The plant in P has more roots than the plant in Q to take in more water and more leaves than the plant in R for increased rate of transpiration. Thus, more water vapor will escape through the stomata.
Q34a. Part P controls cell division in cells. Q34b. A leaf cell has cell wall but organism X does not.
Q35a. It could provide food and shelter for animal X.
Q35b. Animal X has a better chance of fighting off other predators than Animal V.
Q35c. Animal V's population will decrease. Since animal Z has been wiped out, Animal v will have less source, Hence, it will rely on its other food source and will prey on a greater number of animal V, hence animal V's population will decrease.
Q36a. Fish A has a streamlined body to help it to reduce water resistance and so it can swim faster. Fish B, however does not have a streamlined body shape.
Q36b. Fish B is able to camouflage as its body is similar to the texture and colour of the cerals, rocks and sand it is normally found in. Therefore, fish B is less visible to predators and preys.
Q36C. It can stay still to blend in with its surroundings which are the corals, sand and rocks, toa void detection by their prey.
Q37a. The side of the balance holding container P will tip downwards, lower than the other side holding container Q.
Q37b. More air is pumped into container P than container Q, hence container P contains more mass of air thus it will tip towards the ground.
Q37c. Mass: Amount of matter / substance in an object . Volume : Amount of space a matter occupies.
Q38a. **SEE PICTURE** Q38bi) Increase the number of coils around the iron rod. Q38bii) Add more batteries to the circuit.



Q39a. **SEE PICTURE** Q39b. The thumbtack on Magnet X is placed in the middle of it, while the 3 thumbtacks on the Magnet Y are placed at the magnet's north pole as that is where the magnet is strongest. The thumbtacks should all be placed at the same part of the magnet, which are the poles, which are the strongest to ensure a fair test is carried out.



Q40a. The gravitational forces acting on objects on different planets are different.
Q40b. 40kg. Jane's mass, which is the amount of substance or matter she contains, remains constant wherever she goes, and whichever planet she is on.
Q41a. Box Q. It took the shortest time to reach the ground which means that the least amount of friction between the box Q and the camp. This shows that box Q was the smoothest.
Q41b. This ensures that the time taken for the box to reach the ground is only affected by the box surface and not affected by other factors.
Q41c. Foot file X. There is more friction between X and the callus and thus result in more wear and tear. Q42. **SEE PICTURE**



Q43a. The hot tea has more amount of exposed surface area to the surrounding air, when it is "pulled", so it will lose heat at a faster rate. Therefore, the hot tea will cool down more quickly this way. Q43b. There was more exposed surface areas of the crushed ice cube Y than ice cube X, allowing the cup of hot tea containing crushed ice cube Y to lose more heat to the crushed ice cube Y, thus losing heat at a faster rate.
Q44a. Kinetic energy → Gravitational Potential Energy
Q44b. All the kinetic energy has been converted to other forms of energy,which are, sound, heat, and gravitational potential energy.
Q44c. Gravitational force pulled the toy car down.

THE END

SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

PRIMARY SIX PRELIMINARY ASSESSMENT 2015

NAME: _____ ( ) DATE: _____

CLASS: PRIMARY

Parent's Signature:

_____

SCIENCE

BOOKLET A

30 questions

60 marks

Total time for Booklets A & B: 1 h 45 min

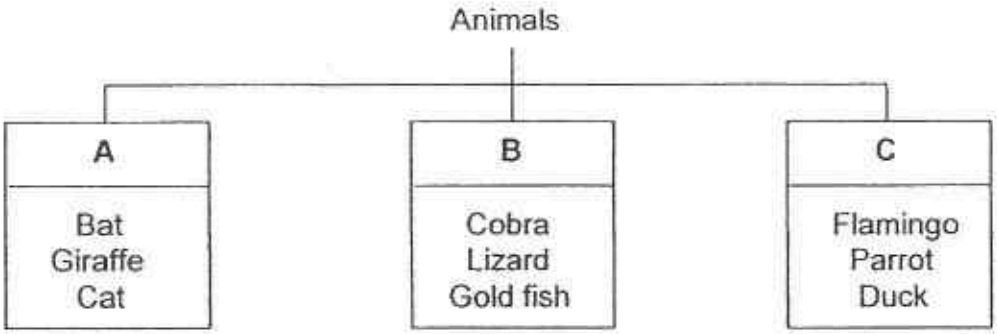
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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.**

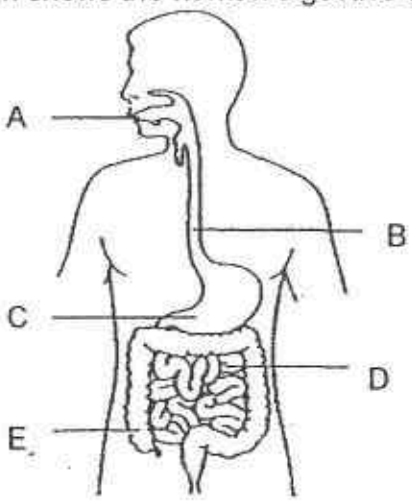
1.



Which of the following shows how the above animals are classified?

(1) Type of habitat
(2) Method of breathing
(3) Type of outer body covering
(4) Method of reproduction

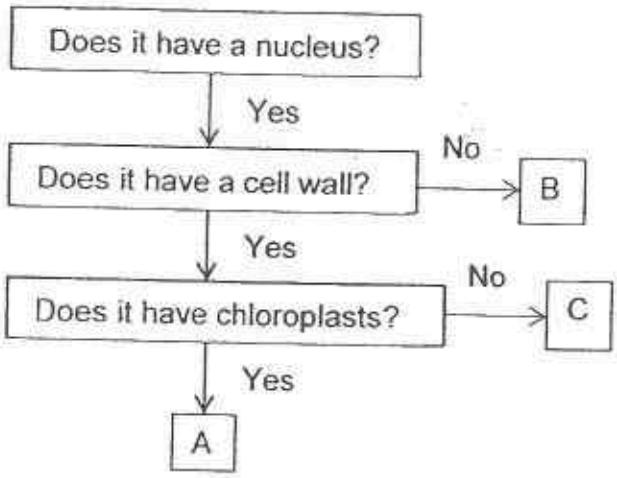
2. The following diagram shows the human digestive system.



Which of the following correctly matches the part to its function?

	Absorption of food	Absorption of excess water	Digestion of food
(1)	C and E only	A only	C only
(2)	D only	E only	A, C and D only
(3)	C only	D and E only	A only
(4)	E only	D only	C only

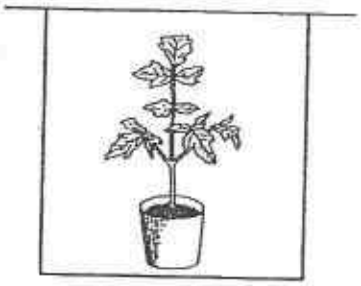
3. Study the flow chart below.



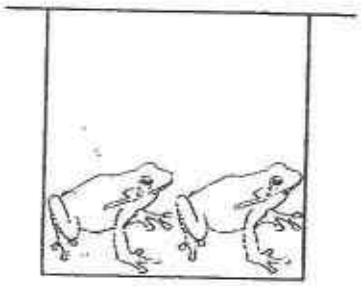
Which of the following is correct?

	Plant Cells	Animal Cells
(1)	A and C	B
(2)	B and C	A
(3)	A	B and C
(4)	A and B	C

4. Elise placed a potted plant in a sealed transparent container and 2 frogs in another sealed transparent container as shown below. The set-ups below were placed in a brightly lit place.



Set-up A

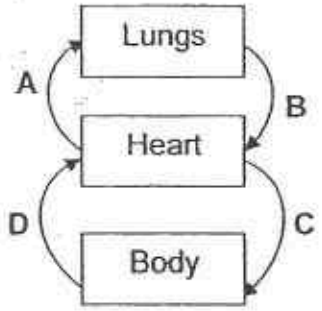


Set-up B

Which of the following shows how the amount of gases in the 2 containers changed after half an hour?

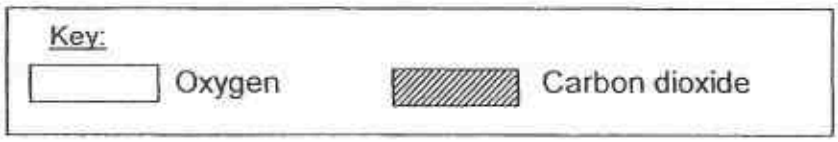
	Set-up A			Set-up B		
	Oxygen	Carbon dioxide	Water vapour	Oxygen	Carbon dioxide	Water vapour
(1)	Increase	Decrease	Decrease	Increase	Increase	Decrease
(2)	Decrease	Increase	Increase	Decrease	Increase	Increase
(3)	Increase	Decrease	Increase	Increase	Decrease	Increase
(4)	Increase	Decrease	Increase	Decrease	Increase	Increase

5. The diagram below shows the human circulatory system.

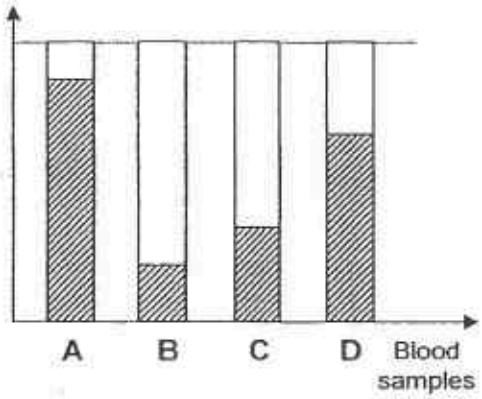


Blood samples were taken from blood vessels A, B, C and D to find out the proportion of oxygen and carbon dioxide in the human circulatory system.

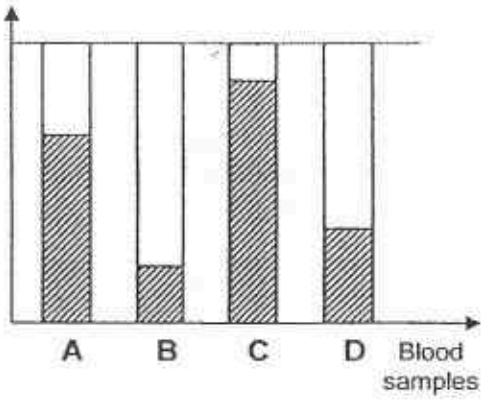
Which of the following correctly shows the blood vessels where the blood samples were taken from?



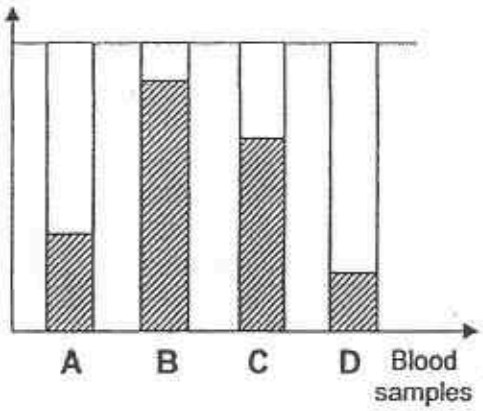
(1)



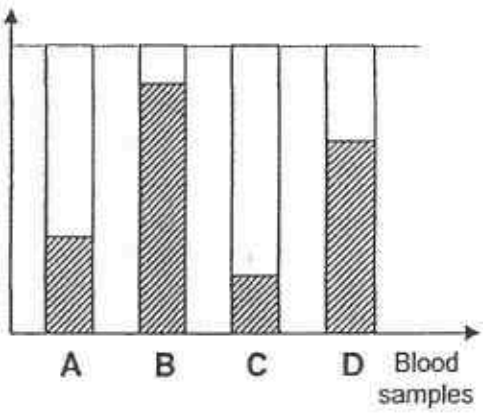
(3)



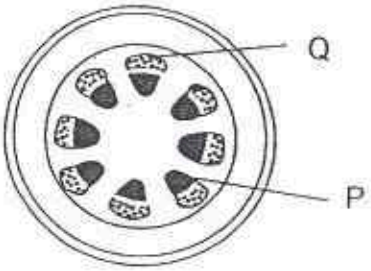
(2)



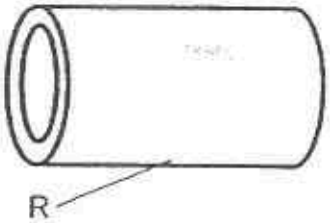
(4)



6. The diagrams below show the cross-section of a stem and part of a human blood vessel.



cross-section of stem



part of a human blood vessel

Which of the following correctly shows the functions of parts P, Q and R?

	P	Q	R
(1)	Transport food	Transport water	Transport food
(2)	Gaseous exchange	Transport food and water	Gaseous exchange
(3)	Transport water	Transport food	Transport water and food
(4)	Transport water and food	Gaseous exchange	Transport food

7. Jane conducted the experiment as shown below.

She got water from 3 different sources. X, Y and Z which was in Beakers A, B and C respectively.

She placed 2 similar water plants and 3 similar guppies into each of the beaker. All 3 beakers were kept near an open window and she fed the guppies with the same amount of food every day.

Beaker A

Beaker B

Beaker C

What is the aim of Jane's experiment?

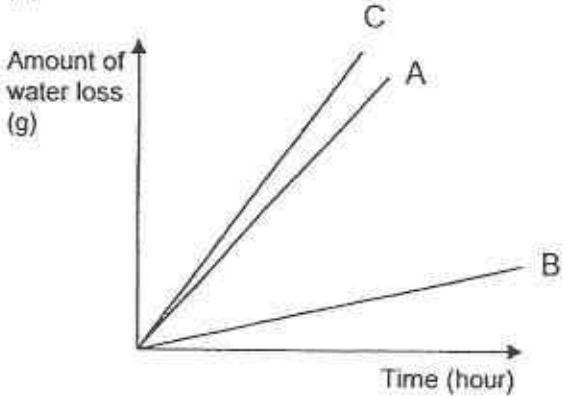
(1) To find out if light affects the growth of plants.
(2) To find out if type of water affects the growth of guppies.
(3) To find out if placing guppies with plants affect growth of the plants.
(4) To find out if feeding guppies increases rate of reproduction.

8. Kayla carried out an experiment to investigate the loss of water from 3 similar leafy plants placed in the same room. The leaves of the plants were treated as follows:

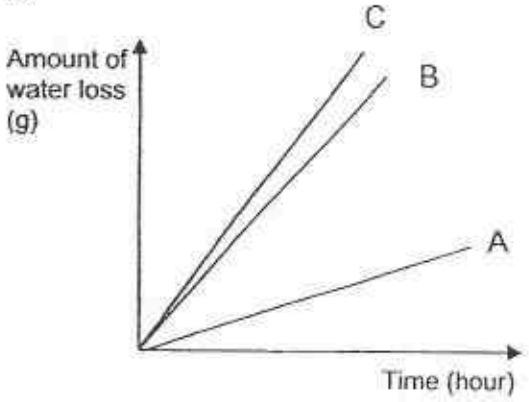
Plant	Treatment
A	Upper leaf surfaces were coated with a layer of oil.
B	Lower leaf surfaces were coated with a layer of oil.
C	Leaf not coated with any oil

Which of the following graphs correctly show the amount of water loss from the 3 plants?

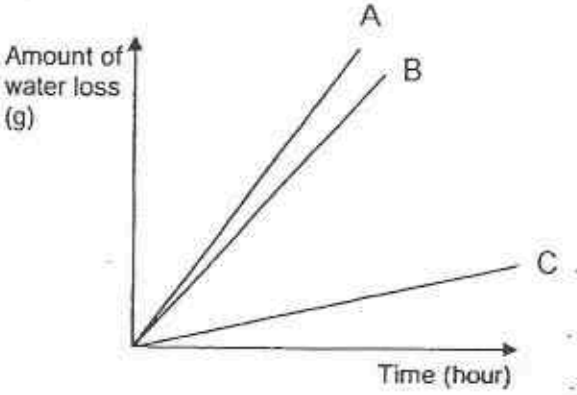
(1)



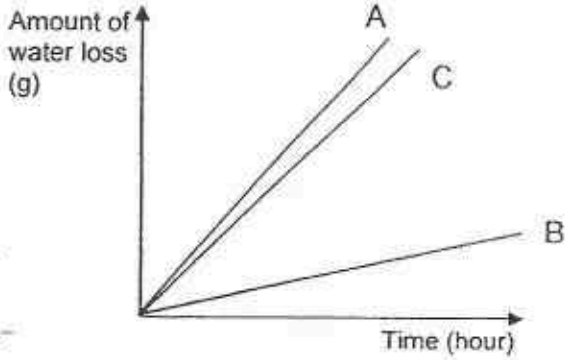
(3)



(2)



(4)



9. Jane studied the growth of Fern X on the trunks of trees under various habitat conditions. She recorded her findings as shown.

Conditions	Shady and dry	Bright and dry	Bright and moist	Shady and moist	Dark and moist
Area of trunk covered by Fern X (cm^2)	11	5	13	20	0

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

(1) Fern X has twining stems.
(2) Fern X cannot grow well in polluted environments.
(3) Fern X grows better in dry places than in moist places.
(4) Fern X grows better in shady places than in bright places.

10. Which of the following are true of food chains and food webs?

A: A food chain can only end with an omnivore.
B: Food chains always begin with a plant.
C: All carnivores get their energy indirectly from plants.
D: Omnivores get their energy only from herbivores or carnivores.

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

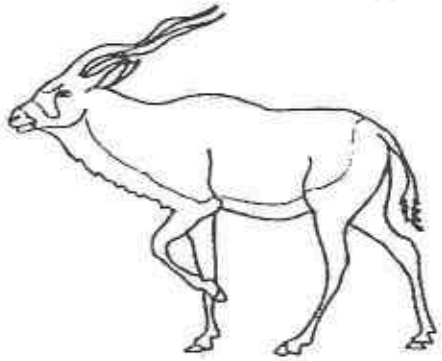
11. Stacey conducted an experiment to find out the conditions required for the germination of seeds. She used 4 similar seeds A, B, C and D, in her experiment. The table below shows the physical conditions that were provided for each of the seeds.

	Physical Conditions			
Seed	**Air**	**Water**	**Light**	**Temperature (°C)**
A	Absent	Present	Present	50
B	Present	Absent	Present	0
C	Present	Present	Absent	32
D	Absent	Present	Absent	25

Which of the following seeds germinated?

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

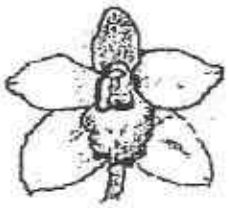
12. The animal below lives in one of the biggest deserts in the world where water is scarce and where there are no plants shading it from the harsh sunlight.



Are the features of the animal stated below "behavioural" or "structural" adaptations?

	Not needing to drink water for long periods	Changing colour of coat from white in Summer to brown in Winter
(1)	Behavioural	Structural
(2)	Structural	Structural
(3)	Structural	Behavioural
(4)	Behavioural	Behavioural

13. The following diagrams show the flower and seed of a new species of plant recently discovered by a group of scientists. The diagrams are not drawn to scale.



A flower from the plant

A seed from the plant

They analysed the structure of the flower, fruit and seed and found the following:

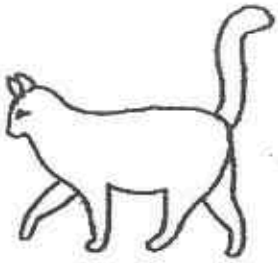
- The fruit is juicy and sweet.
- There are many small and hard seeds in each fruit.
- The flowers are small, colourful and grow in bunches.
- The flowers have sticky pollen grains.

Based on the information given above, what is the most likely way the seeds are dispersed?

(1) wind
(2) water
(3) splitting
(4) animals

14. Hannah has 2 adult pet cats with different characteristics as shown below.

Male
Black fur
Blue eyes
Short tail



Female
White fur
Green eyes
Long tail

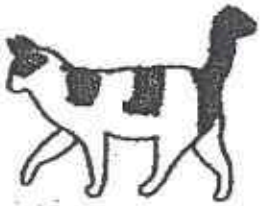
The female cat gave birth to only 3 kittens.

Which of the 4 kittens below is most likely **not** an offspring of Hannah's adult cats?

(1)

Kitten A
Female
Black fur with white spots
Green eyes
Long tail

(3)

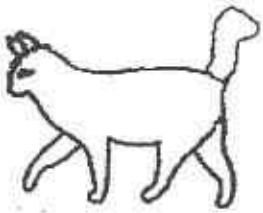


Kitten C
Male
White fur with brown stripes
Blue eyes
Short tail

(2)

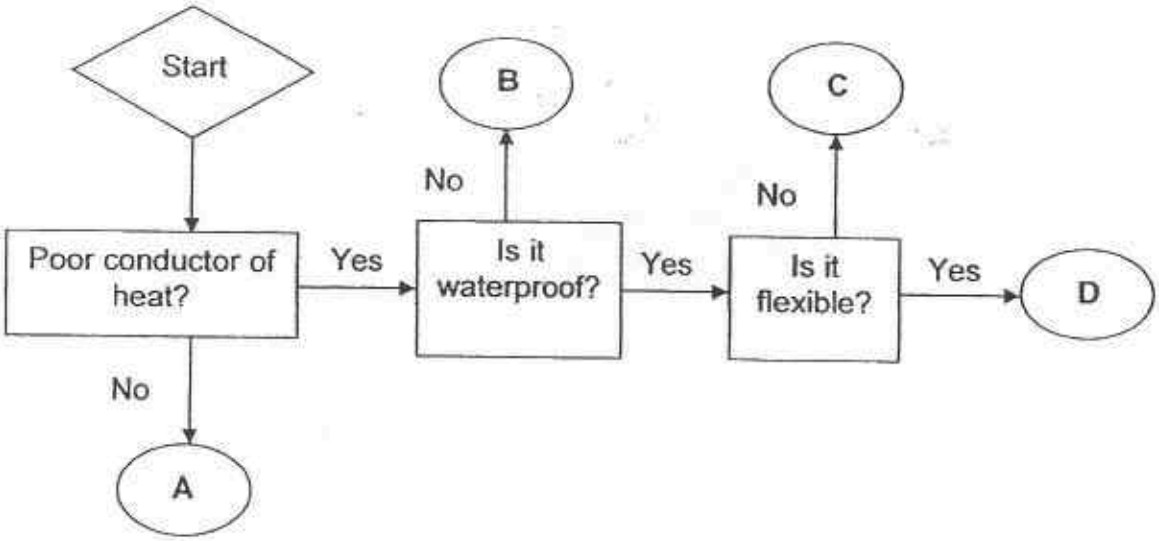
Kitten B
Female
White fur with black spots
Green eyes
Long tail

(4)



Kitten D
Male
White fur
Blue eyes
Short tail

15. Study the flowchart below.

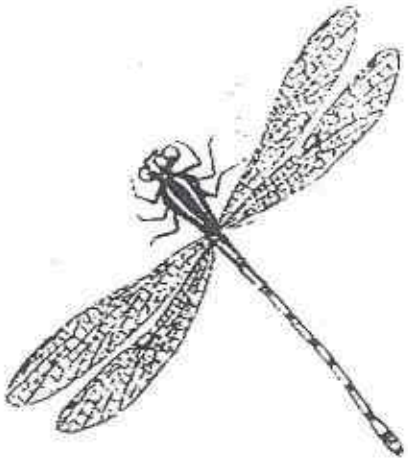


Which of the above is suitable for making parts X and Y of the cooking pot below?

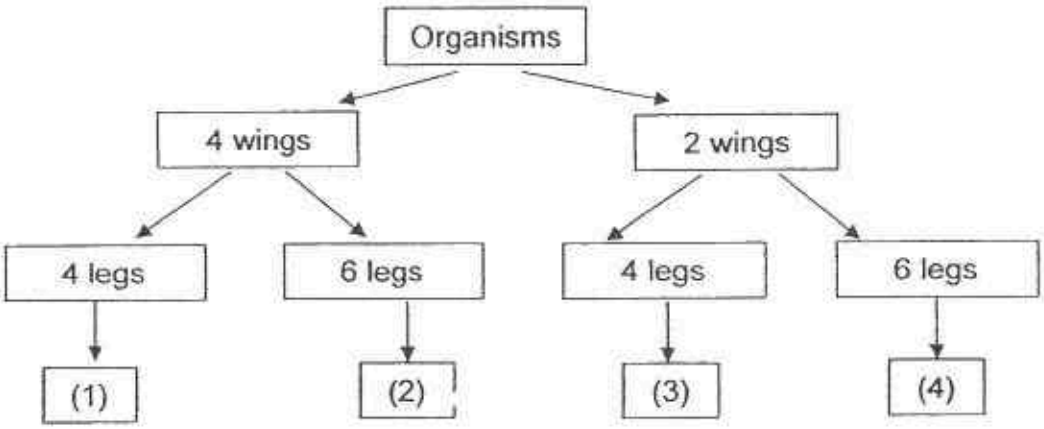
	X	Y
(1)	A	D
(2)	A	C
(3)	D	C
(4)	D	B

16. Study Organism X and the classification chart below.

Organism X



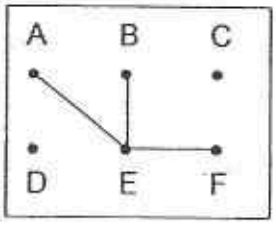
Based on the classification chart, which description (1), (2), (3) or (4) does Organism X belong to?

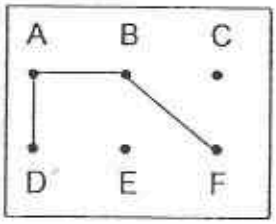


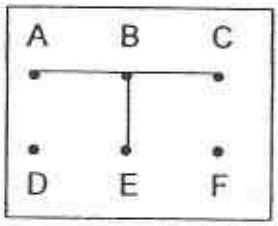
17. Gabrielle used a circuit tester to test different points of a circuit card. Her results are shown in the table below.

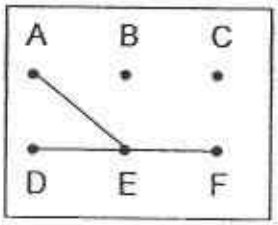
Points	Does the bulb light up?
AB	Yes
BC	No
CD	No
DE	No
EF	Yes
AF	Yes
BD	No

Which of the following circuit cards did she use to get the above results?

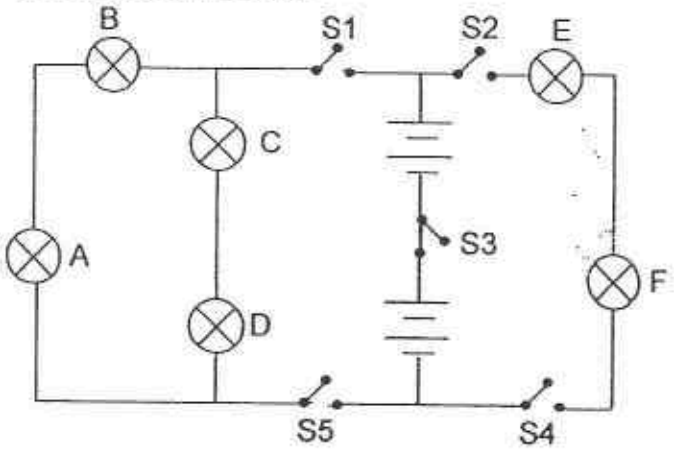
(1)


(2)


(3)


(4)


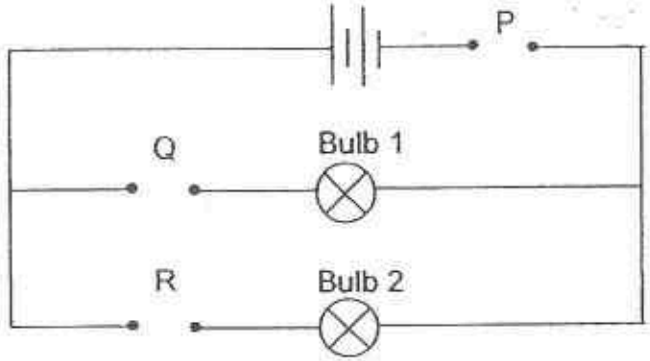
18. Study the circuit diagram below.



Which of the following switches must be closed so that only 4 bulbs will light up?

(1) S1, S3 and S5
(2) S2, S3 and S4
(3) S1, S2, S4 and S5
(4) S1, S2, S3, S4 and S5

19. Samantha set up the circuit below and connected different objects to the circuit at testing positions P, Q and R. She recorded her findings in the table below.



Objects placed at			Does the bulb light up?	
P	Q	R	Bulb 1	Bulb 2
A	B	C		
B	A	D		✓
C	D	A	✓	
A	B	D		

Which of the following object/s are conductors of electricity?

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

20. The table below shows the properties of 4 substances, P, Q, R and S.

Substance	Is it magnetic?	Can it float on water?
P	No	No
Q	Yes	No
R	No	No
S	Yes	Yes

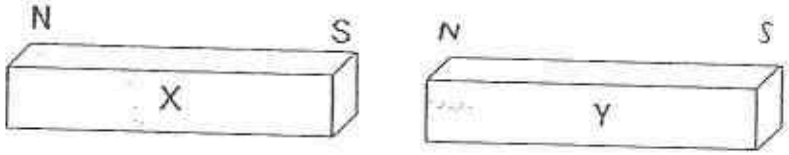
The substances are mixed together in a beaker and the following shows the steps Amanda took to separate the substances.

Step 1: Pour some water into the beaker.
Step 2: Use a spoon as a scoop.
Step 3: Place a magnet close to the mixture.

Which of the substances can be separated from the rest after Amanda has carried out the steps in the sequence above?

(1) Q only
(2) Q and S only
(3) P and S only
(4) None of the above

21. Shannon placed 2 magnets as shown below.
When the 2 magnets were brought together, they attracted each other.



She then heated Y for an hour. She then brought X near Y.

Which of the following is likely to happen?

	Action	Result
(1)	When X's North pole is facing Y	Will repel
(2)	When X's South pole is facing Y	Will neither attract or repel
(3)	When X's North pole is facing Y	Will neither attract or repel
(4)	When X's South pole is facing Y	Will attract

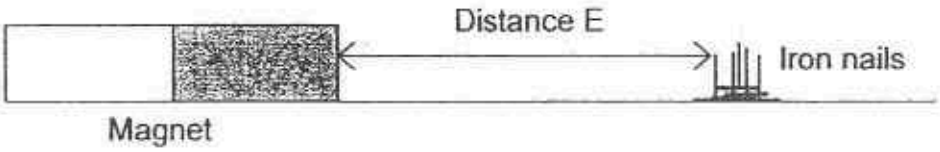
22. The following table shows the freezing and boiling points of 3 unknown substances, R, S and T.

Substance	Freezing Point (°C)	Boiling Point (°C)
R	30	85
S	22	115
T	18	70

Which of the following correctly shows the states of R, S and T at 110 °C ?

	R	S	T
(1)	solid	gas	liquid
(2)	gas	liquid	gas
(3)	solid	liquid	solid
(4)	gas	gas	gas

23. The experiment shown below is conducted with 4 different magnets, P, Q, R and S.
Distance E is the greatest distance between the magnet and the iron nails for attraction to take place.



The magnets are ranked according to their strength as shown below.

P , Q , R , S
Strongest ⟶ Weakest

The table below shows the results of the experiment.

Magnet	Distance E (mm)	Number of iron nails that moved towards the magnet
P	40	3
Q	X	3
R	25	3
S	Y	3

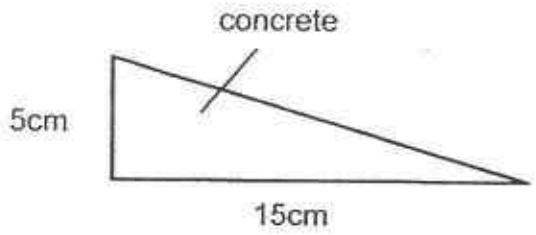
Which of the following are possible distances X and Y for magnets Q and S listed in the table above?

	X (mm)	Y (mm)
(1)	30	15
(2)	45	20
(3)	15	10
(4)	20	30

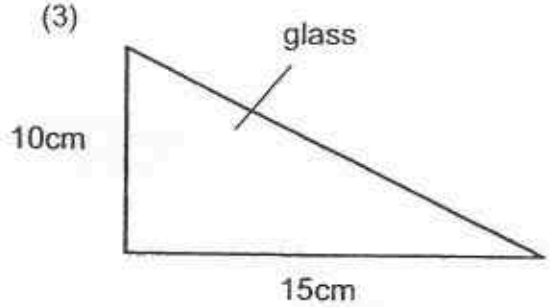
24. Hannah conducted an experiment using 4 ramps of different height and different material. She placed the same 2-kg wooden block on the top of the 4 ramps and pushed it down with the same amount of force.

On which of the following ramps will the wooden block move the furthest?

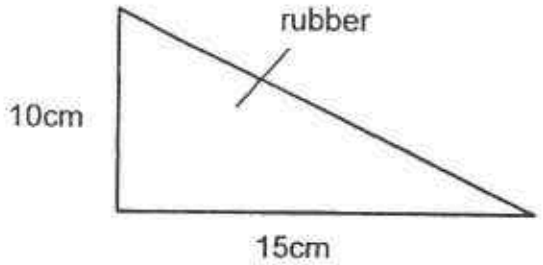
(1)



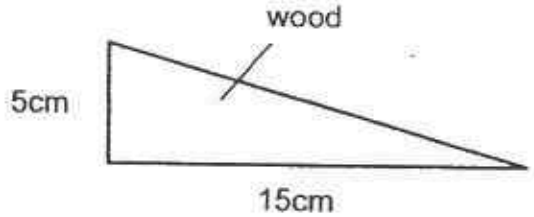
(3)



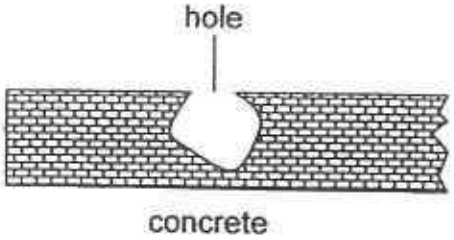
(2)



(4)



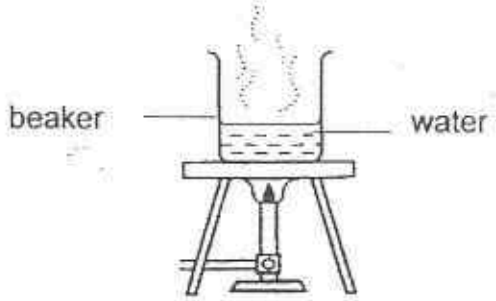
25. The diagram below shows a block of concrete with a hole in it.



Jemma wants to measure the volume of the hole in the concrete block. Which of the following best shows the apparatus she should use in order to do so?

(1) balloon, measuring tape
(2) marbles, weighing scale
(3) water, measuring cylinder
(4) measuring tape, calculator

26. Farah set up an experiment as shown in the diagram below.



The mass of the beaker was 100g. She added 100g of water at 25°C and started heating.
After every 10 minutes, she lifted the beaker and weighed it. She then quickly returned the beaker to the flame to continue heating till the 70th minute.

which of the following tables correctly shows the total mass of the water and the beaker throughout the experiment?

(1)

Time (min)	Total mass (g)
0	200
10	195
20	178
30	155
40	136
50	116
60	108
70	94

(3)

Time (min)	Total mass (g)
0	200
10	200
20	200
30	177
40	135
50	114
60	100
70	94

(2)

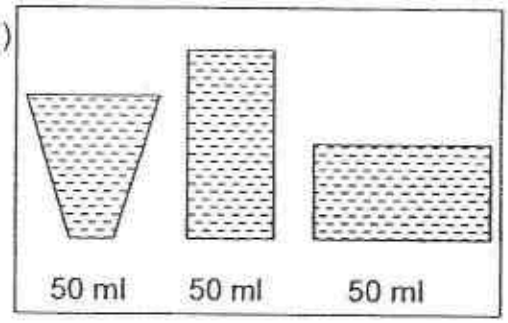
Time (min)	Total mass (g)
0	100
10	92
20	75
30	57
40	36
50	18
60	0
70	0

(4)

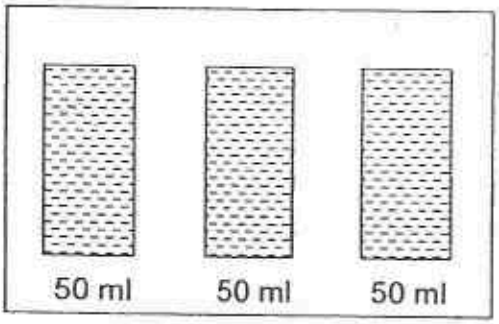
Time (min)	Total mass (g)
0	200
10	195
20	183
30	156
40	134
50	117
60	100
70	100

27. Danielle wants to investigate the effect of exposed surface area on the rate of evaporation. Which of the set-ups is the best for her experiment?

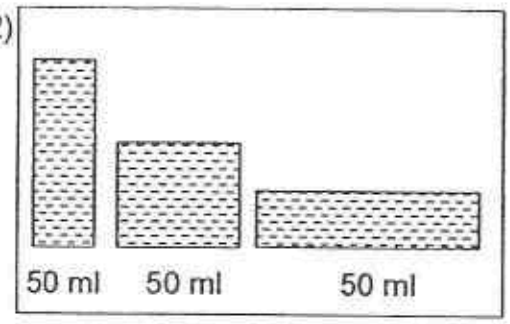
(1)



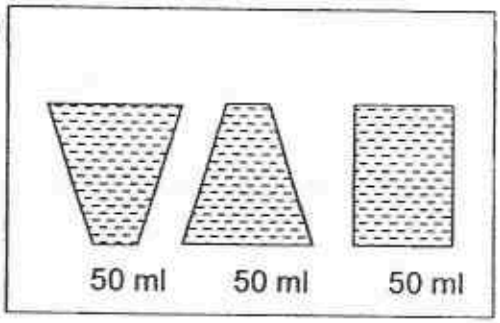
(3)



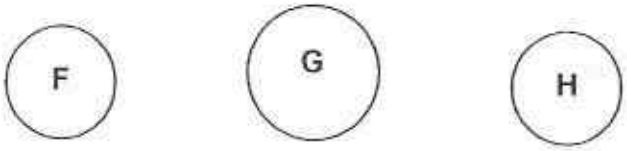
(2)



(4)



28. Alaina has 3 iron balls, F, G and H of different sizes and temperatures as shown in the table below.



Ball	Volume	Temperature
F	40 cm^3	45 °C
G	80 cm^3	45 °C
H	40 cm^3	80 °C

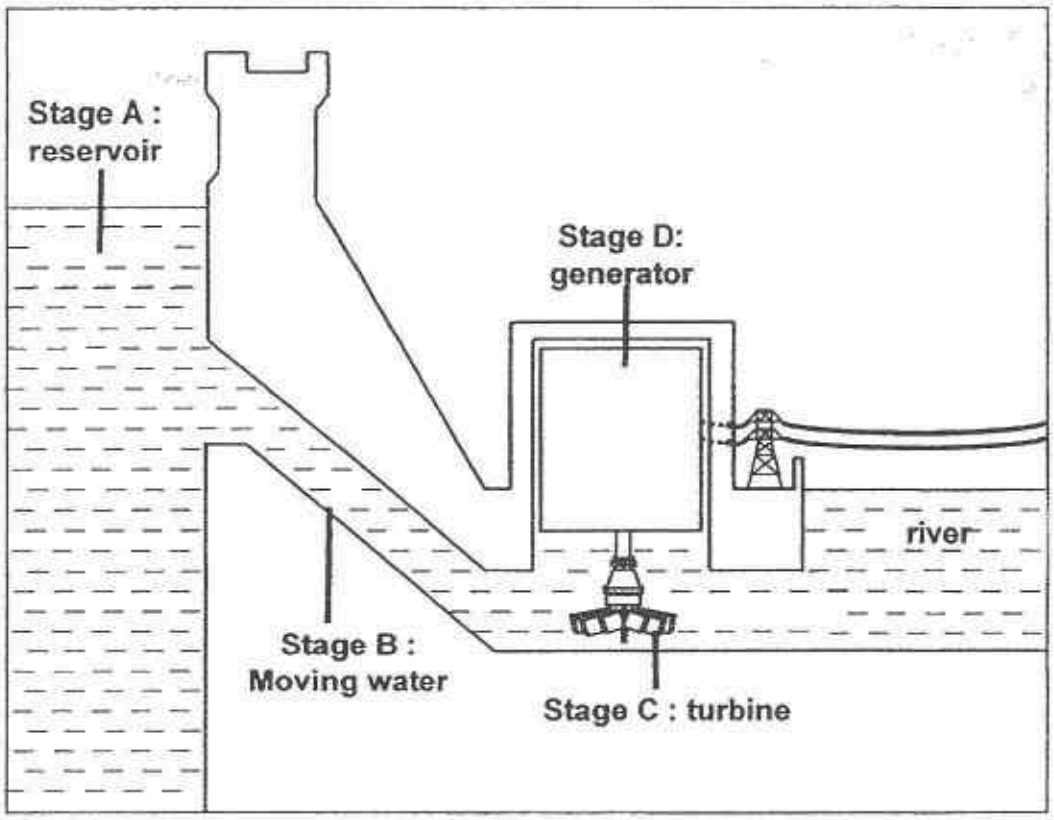
The 3 balls are left on the same table to cool.

Which of the following statements is/are correct?

A: Ball F has the least heat.
B: Ball G will take a longer time than Ball F to cool to 30°C.
C: Balls F and G will take the same amount of time to cool to 30°C.
D: Ball H will take a longer time than Ball F to cool to 30°C.

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

29. The diagram below shows a hydroelectric power station.



Below shows the energy conversions that may take place in some of the stages in the hydroelectric power station.

S: Kinetic Energy → Electrical Energy

T: Gravitational Potential Energy → Kinetic Energy

Which of the following matches the correct energy conversion with the correct stage at the power station?

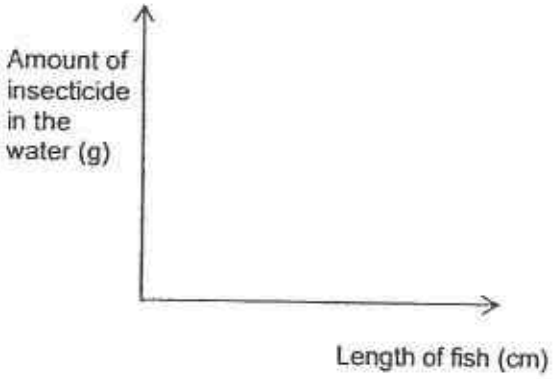
	S	T
(1)	Stage D	Stage B
(2)	Stage C	Stage A
(3)	Stage C	Stage B
(4)	Stage D	Stage C

30. Melissa wanted to find out the effects of varying amounts of insecticide on aquatic organisms in a river.

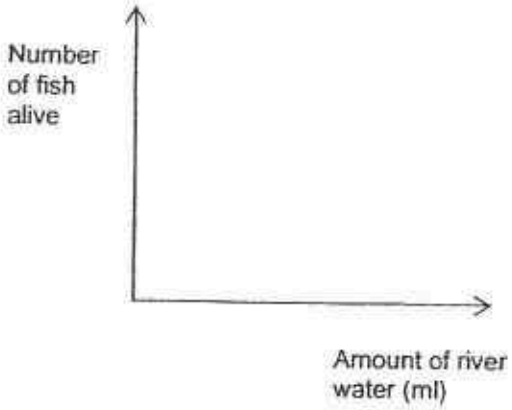
She conducted an experiment with 4 set-ups. Each set-up has 25 fish, 500 ml of water and a different amount of insecticide.

Which of the following shows the graph she should use to record the results of her experiment?

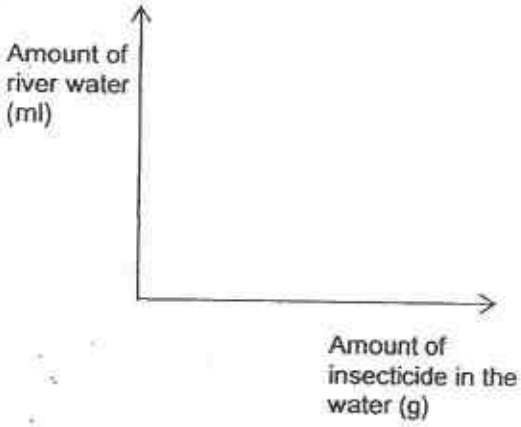
(1)



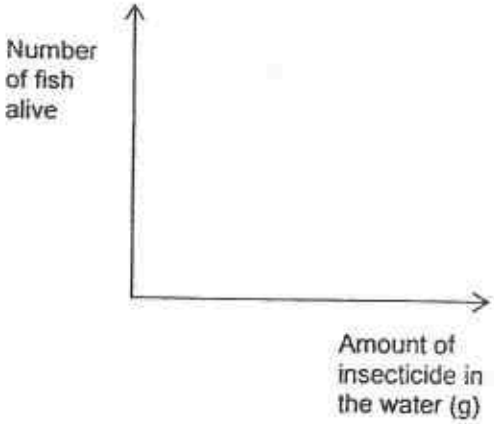
(3)



(2)



(4)



SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

PRIMARY SIX PRELIMINARY ASSESSMENT 2015

NAME: _____ ( ) DATE: _____

CLASS: PRIMARY

Parent's Signature:

_____

SCIENCE

BOOKLET B

	Total Actual Marks	Total Possible Marks
Booklet A		**60**
Booklet B		**40**
Total		**100**

14 questions

40 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

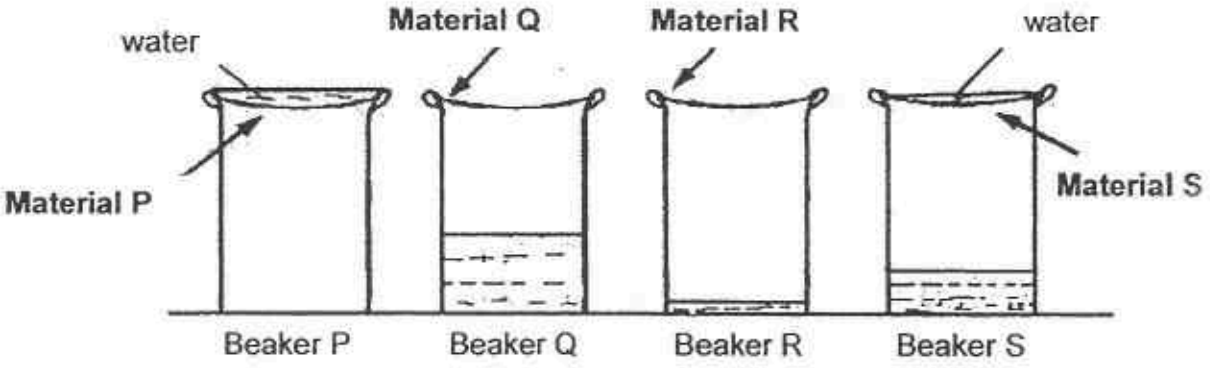
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Part II (40 marks)

Answer all the following questions.

31. Bernadette sets up an experiment to find out which material, P, Q, R or S, is most suitable for making a rain coat.

She pours water onto 4 sheets made of materials P, Q, R and S, that are secured at the rim of the beakers. The amount of water collected in each beaker and/or on each material is shown below.



a) State the variable that must be kept constant in Bernadette's experiment. (1m)

_____

b) Bernadette concluded that Material R is most suitable for making a raincoat. Her friend, Lilian disagrees.

Explain why Lilian is correct. (1m)

_____

c) State which material is most suitable for making a raincoat and explain your choice. (1m)

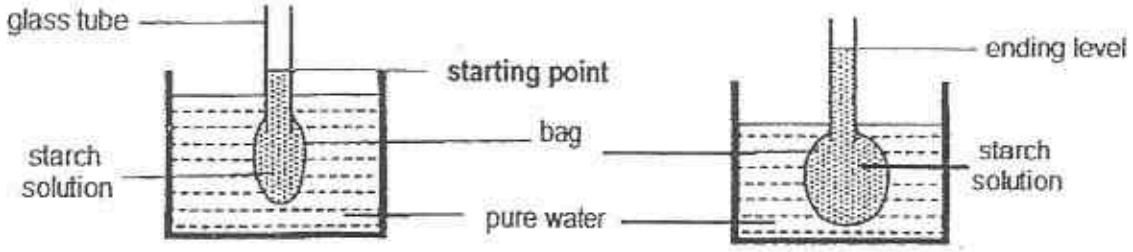
_____

_____

3

32. Patricia carried out an experiment as shown in the diagram below.

She attached a bag made of Material M to a glass tube and filled it with starch solution. She immersed the bag and glass tube into a trough of pure water.



At the Beginning of Experiment

At the End of Experiment

At the end of the experiment, Patricia noted the changes in the size of the bag and the water levels in the glass tube and the trough.

a) Tick (✓) the following conclusion/s she can make about Material M. (1m)

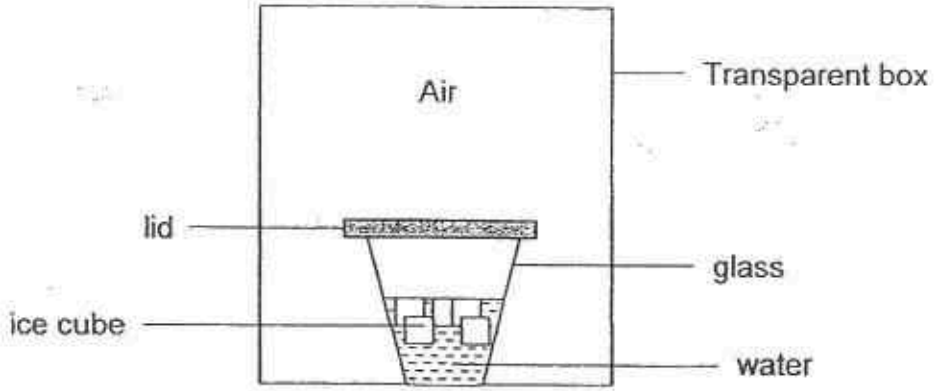
	Statement	(✓)
i)	Material M allows pure water to pass through.	
ii)	Material M allows starch solution to pass through.	
iii)	Material M does not allow pure water to pass through.	
iv)	Material M does not allow starch solution to pass through.	

b) Which part of a cell is similar in function to the bag in the above experiment? (1m)

_____

/ 2

33. Catherine placed a glass of cold water and ice cubes in a sealed transparent box as shown in the diagram below. She then waited for 10 minutes.

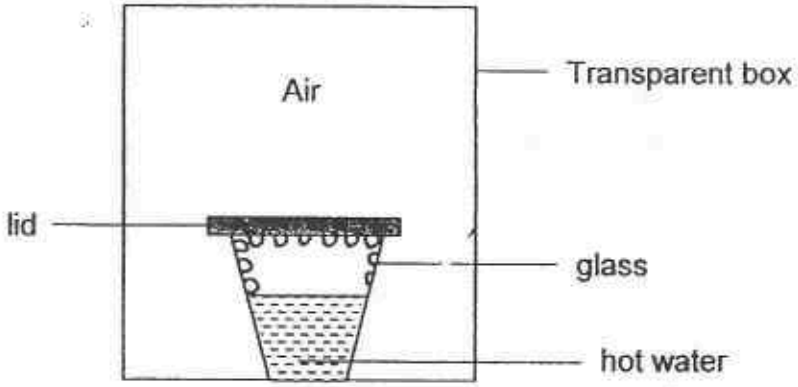


a) What happened to the amount of water vapour in the air in the box after 10 minutes? Explain. (2m)

_____

_____

Catherine then placed a hot glass of water in a similar sealed transparent box.



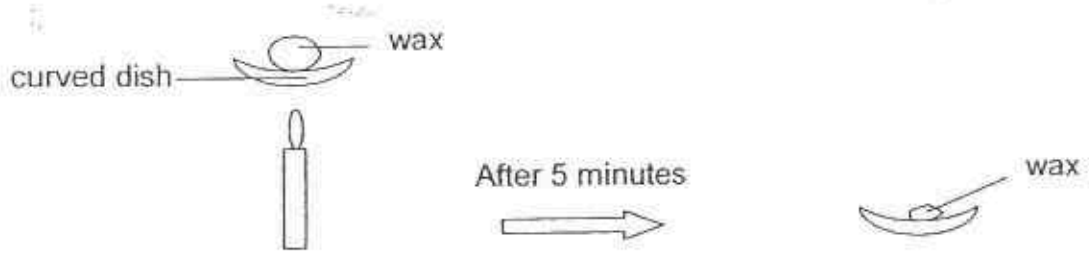
b) What happened to the amount of water vapour in the air in the box after 10 minutes? (1m)

_____

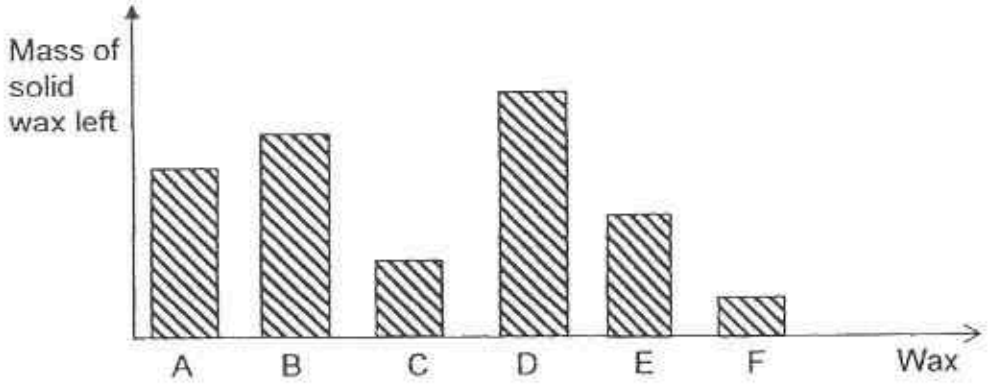
c) In the diagram with the hot water above, draw where the water droplets will be formed (1m)

4

34. Melanie heated 6 similar pieces of wax in 6 curved dishes A, B, C, D, E and F, made of different materials. She heated each piece of wax for 5 minutes.



She quickly separated the solid wax from the liquid wax and measured the mass of solid wax left. Her results are plotted in the graph as shown below.



Based on the results of her experiment, put a tick ( ) in the correct box to indicate whether each statement is True or False. (2m)

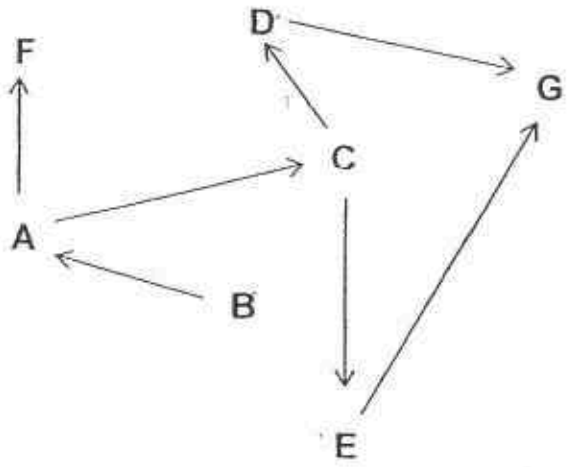
	Statement	True	False
(i)	Material C is a better conductor of heat than material A.		
(ii)	Material A is a better conductor of heat than material E.		
(iii)	Material B is a poorer conductor of heat than material F.		
(iv)	Material D is the best conductor of heat among all the materials.		

2

35. The food web below is incomplete.

a) Based on the information given in the table below, draw **four** more arrows to complete the food web. (2m)

Organism	Diet
C, E, F, D	A
G	E
G, E, D	C
G	D
C, A	B



b) State the food producer(s) in the above food web. (1m)

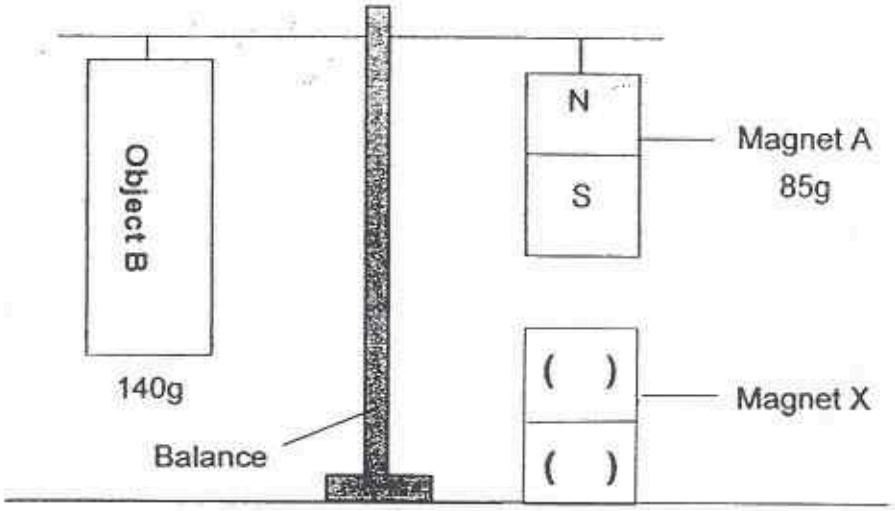
_____

c) Which organism has the greatest number of food sources? (1m)

_____

4

36. Audrey set up the experiment as shown in the diagram below. The masses of Magnet A and Object B are 85g and 140g respectively. Magnet X is fixed to the table.



a) In the diagram above, fill in "**N**" or "**S**" to show the poles of Magnet X. (1m)

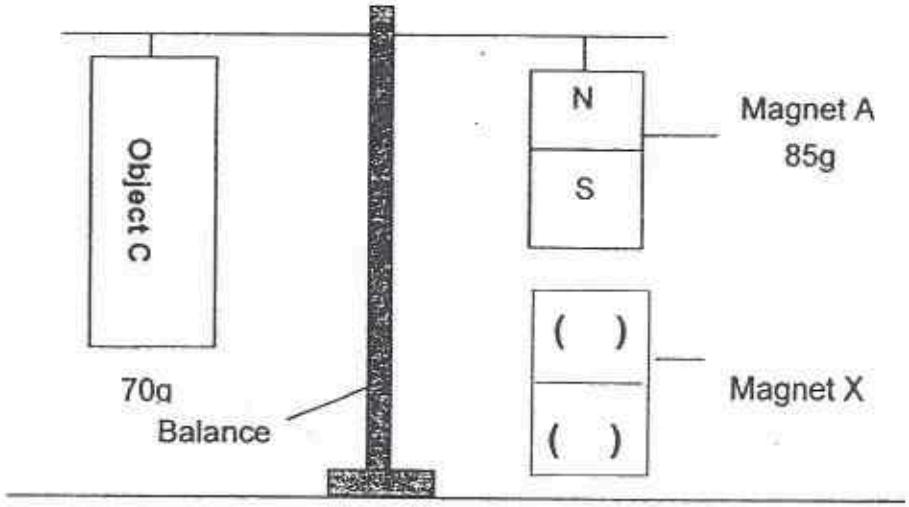
b) Explain how Object B is balanced by Magnet A. (1m)

_____

_____

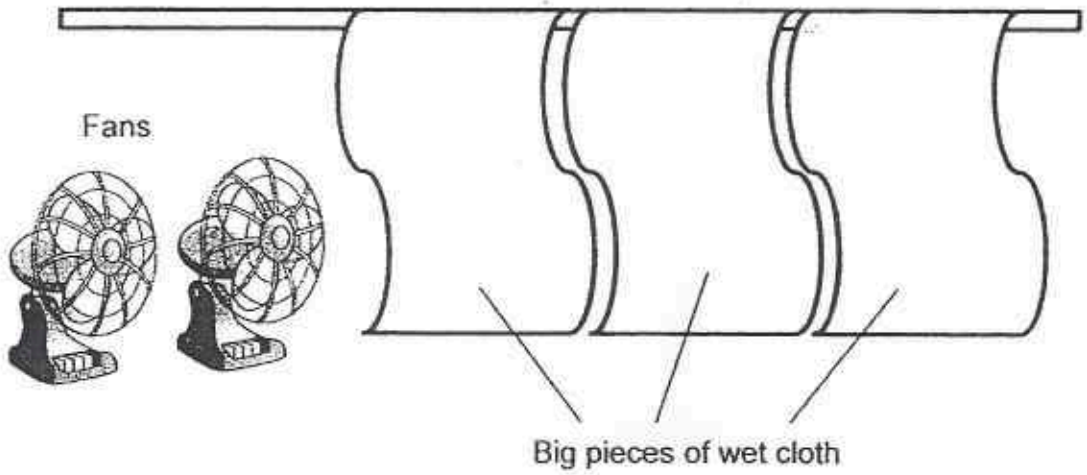
c) Object B is replaced by a similar-sized object C with a mass of 70g.

To balance Object C shown below, fill in "**N**" or "**S**" to show the poles of Magnet X in the brackets provided. (1m)



3

37. It was very hot and Mr Lin did not have air-conditioners in his room.
To cool his room, Mr Lin decided to hang 3 big pieces of wet cloth and **used 2 fans** to cool his room as shown in the diagram below.



To test his set-up, he closed the windows and switched on the fans. Mr Lin found that the temperature in his room decreased **by 2°C**
Explain how each of the following allowed the temperature of the room to become lower. (2m)

Wet Cloth:

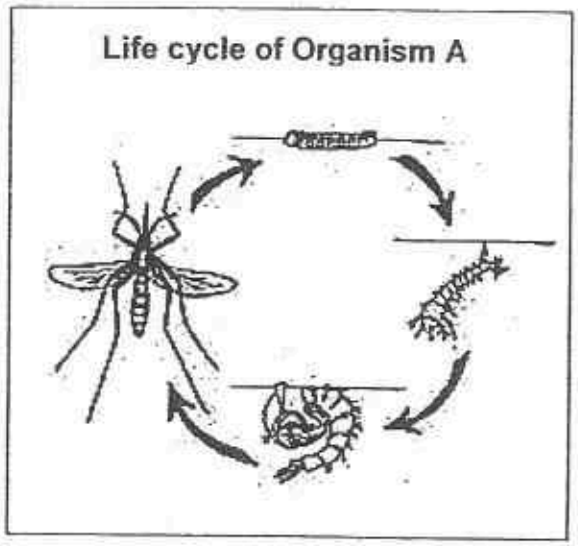
_____

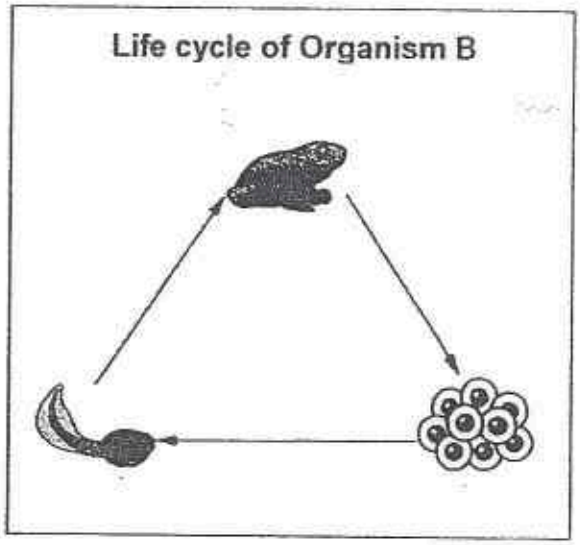
_____

_____

_____

38. The diagram below shows the life cycles of Organisms A and B.





a) State 1 difference in the life cycles of the 2 organisms. (1m)

_____

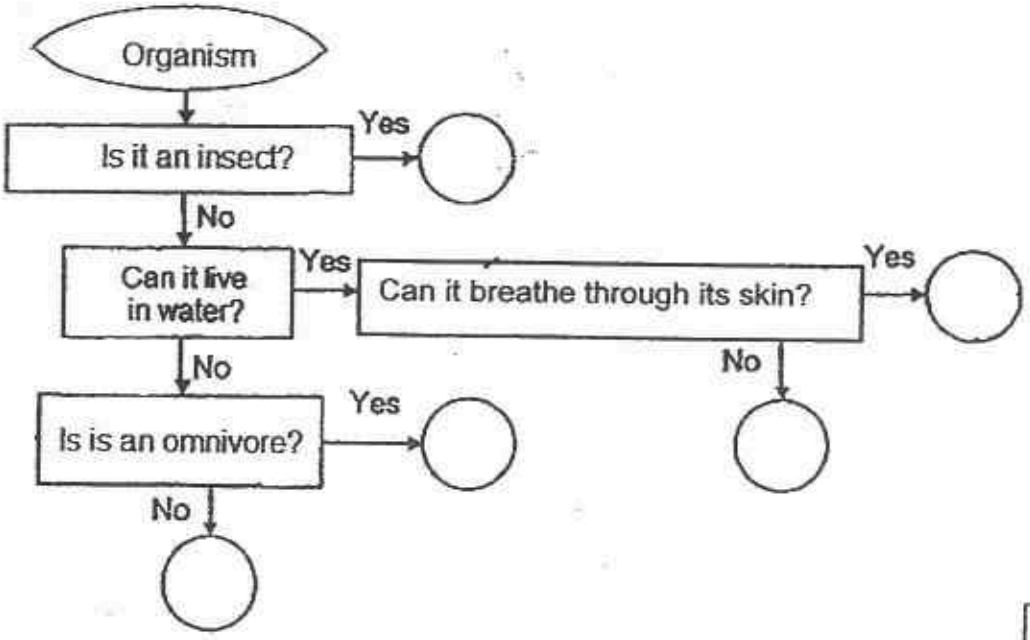
_____

b) Both Organisms A and B lay eggs in water.
State **another** similarity in the life cycles of the 2 organisms. (1m)

_____

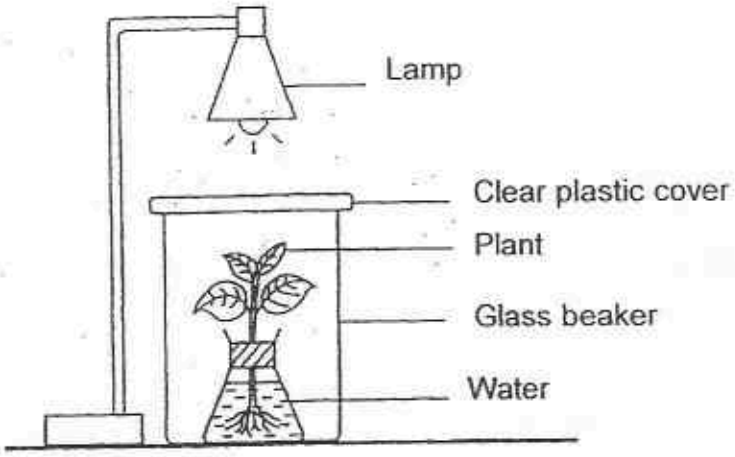
_____

c) Study the chart below. Fill in "**A**" or "**B**" in the correct circle to show where the **adult** of Organisms A and B belong on the chart. (1m)



3

39. Susan set up the experiment as shown below and placed it inside a cupboard.



After 6 hours, the rate of photosynthesis slowed down though the intensity of light from the lamp remains the same.

a) State what caused the rate of photosynthesis to slow down. (1m)

_____

b) Susan's friend said she should add something to her set-up to increase the rate of photosynthesis
She makes the following suggestions

- A: Adding one more lamp.
- B: Pouring more water to the flask.
- C: Placing a rat in the glass beaker.
- D: Putting fertilizers to the water in the flask.

Which one of the above suggestion, A, B, C or D, should Susan adopt to increase the rate of photosynthesis in her set-up? Explain. (2m)

_____

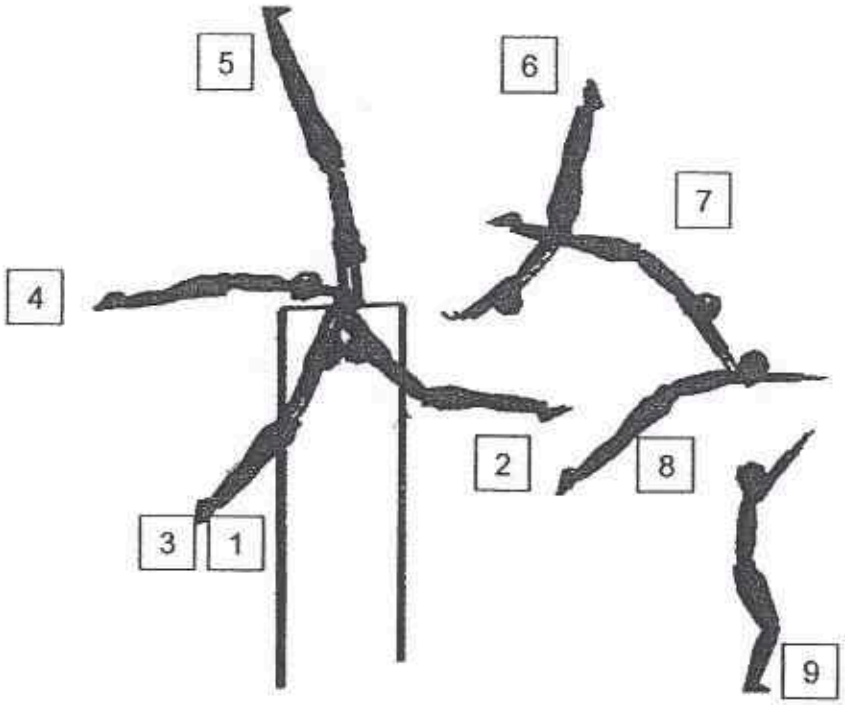
_____

_____

3

40. The diagram below shows a gymnast swinging on a horizontal bar.

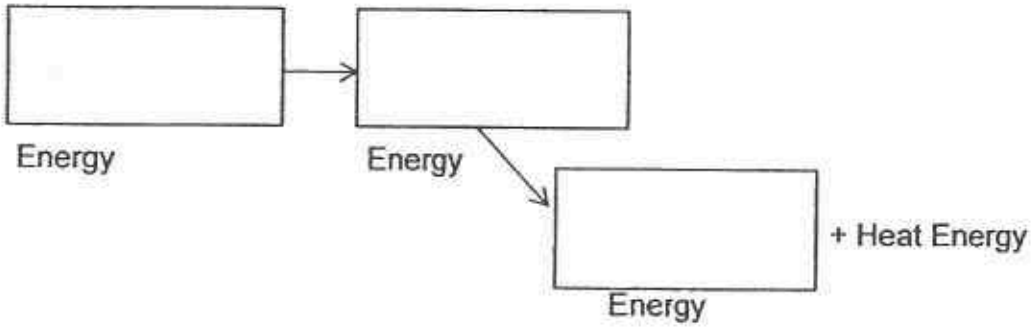
Position 1 shows her starting point, where she swings forward to Position 2 before swinging backwards and over the pole to Position 9 shows where she lands loudly with a thud.



a) At which position does the gymnast possess the most gravitational potential energy? (1m)

_____

b) Write the energy conversion from Position 8 to Position 9. (1m)

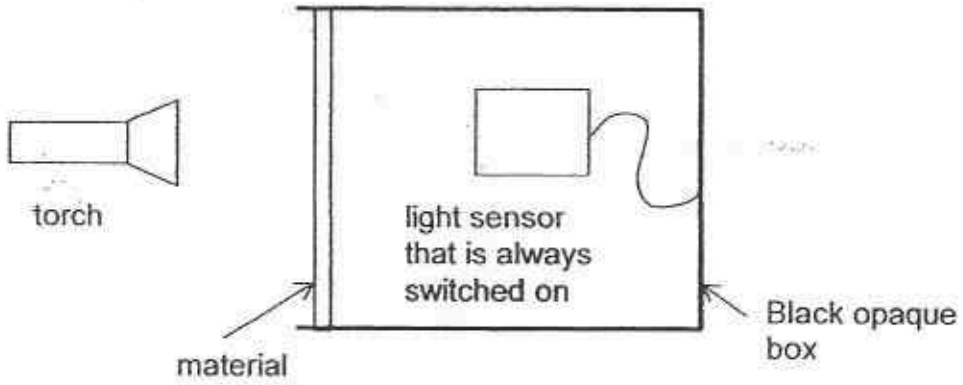


c) What is the source of the gymnast's energy? (1m)

_____

3

41. Hannah conducted an experiment in a dark room as shown in the diagram below.



She had 3 different materials, a frosted glass sheet, a clear plastic sheet and a metal sheet.

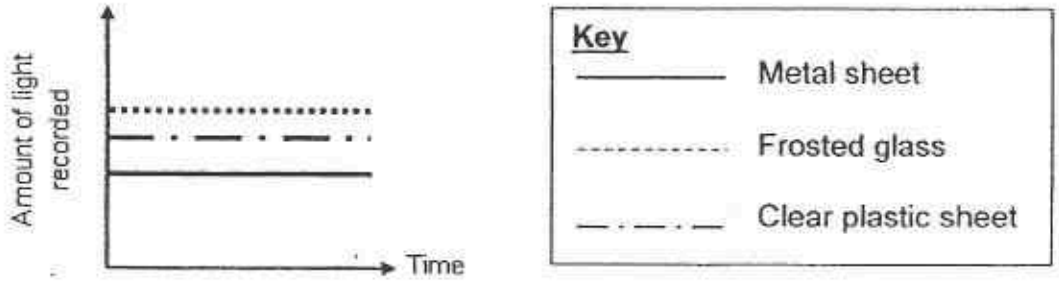
In the dark room, she placed one material at a time between the torch and the light sensor. Then, she recorded the amount of light that passed through each of them with the light sensor.

a) What is the aim of Hannah's experiment? (1m)

_____

_____

The graph below shows the results of Hannah's experiment.



b) Hannah's teacher looked at her results and told her she made 2 mistakes. State the 2 errors in her results and explain your answer. (2m)

i) Error 1: _____

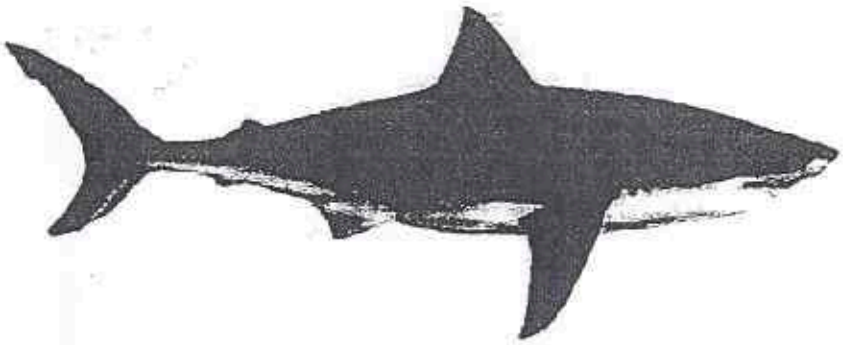
_____

ii) Error 2: _____

_____

3

42. The picture below shows a great white shark which lives in oceans.



a) The great white shark is a fish that is usually the final consumer in the food chain.
The shark has a dark-coloured back and a white belly. State why these characteristics are beneficial to the shark in its habitat.

i) Dark-coloured back (1m)

_____

_____

ii) White belly

_____

_____

b) The shark, like most fish, is highly adapted for movement in water.

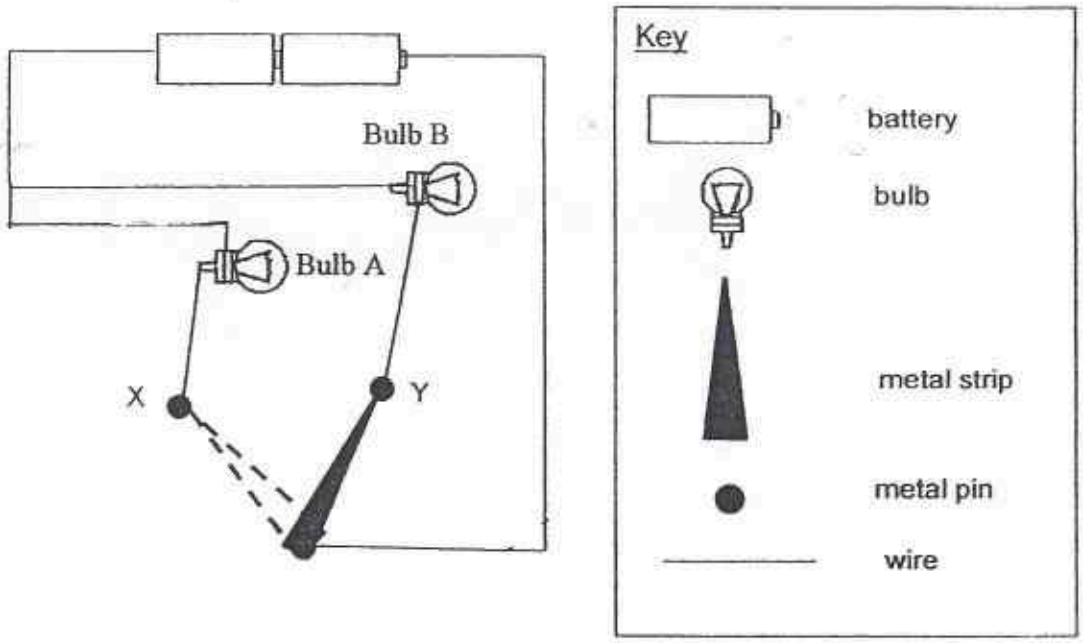
Explain how the shark's body shape helps it to move quickly in water. (1m)

_____

_____

3

43. Gabrielle set up an incomplete circuit as shown below.



The metal strip can be moved to touch the pins X and Y to act as a switch.

a) Draw 3 wires in the circuit above so that only Bulb A will light up when the metal strip is at X and only Bulb B will light up when the metal strip is at Y. (2m)

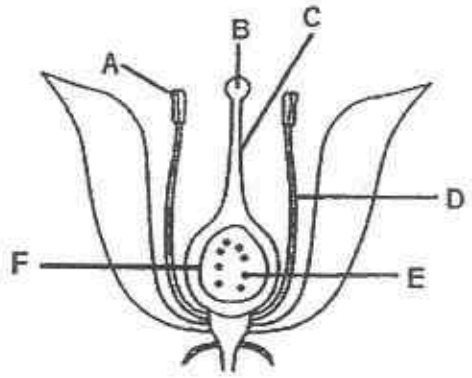
b) What is the disadvantage of using such a circuit in a household? (1m)

_____

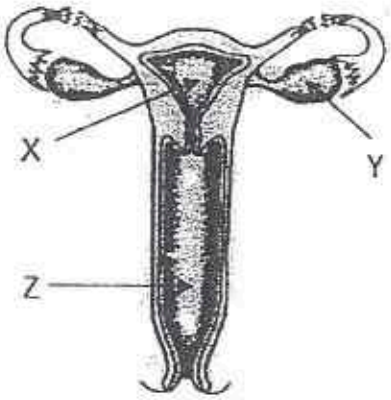
_____

3

44a) The diagrams below show the reproductive systems of a flower and the human female reproductive system.



Reproductive system of flower



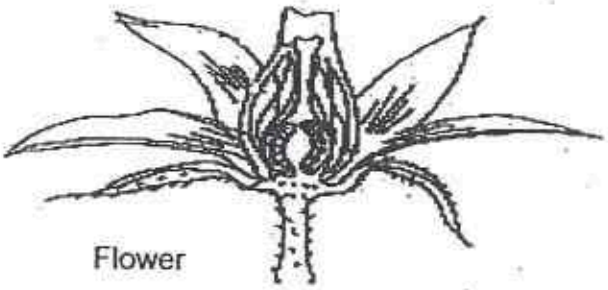
Human female reproductive system

Which parts of the 2 systems produce the female sex cells for fertilization? (1m)

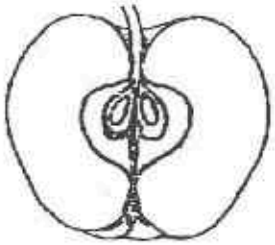
i) In the flower : Part _____

ii) In the female human: Part _____

44b) The diagram below shows a flower and 3 fruits, A, B and C.

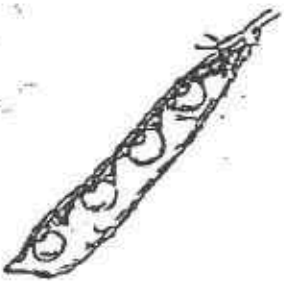


Flower



Fruit A

Fruit B



Fruit C

Which fruit, A, B or C, is most likely from the flower shown? (1m)

_____

2

SINGAPORE CHINESE GIRLS' SCHOOL
PRELIMINARY EXAMINATION 2015
PRIMARY 6 SCIENCE

Booklet A

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

Booklet B

	Suggested Answers
31a.	Amount / Volume of water poured onto the materials OR Thickness of material
31b	Size of material ----- ½ (not specific about the thickness, area does not affect results only thickness may)
31c	R is not suitable as it allows some water to pass through. P. It is (the only) waterproof material / did not allow any water to pass through at all.

32a.

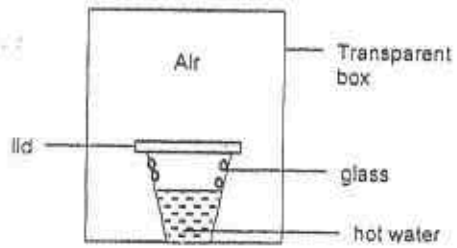
	Statement	(✓)
i)	Material M allows pure water to pass through.	✓
ii)	Material M allows starch to pass through.	
iii)	Material M does not allow pure water to pass through.	
iv)	Material M does not allow starch to pass through.	✓

32b. Cell membrane

33a. It decreases.(1/2m) The warmer water vapour (1/2m) loses heat and condenses (1/2m) into water droplets on the cooler outer surfaces of the glass(1/2m).

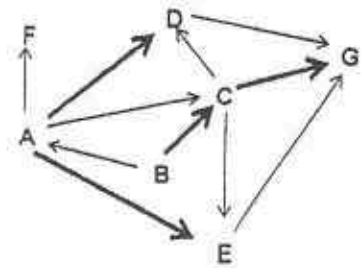
33b. It remains the same.

33c.



34. T , F , T , F

35a.



35b. B
35c. G

36a. N
S

36b. As Object B is heavier than Magnet A, Magnet A needs to be pulled downwards (1/2) to balance. Unlike poles attract (1/2)so Magnet A is pulled downwards to balance Object B.

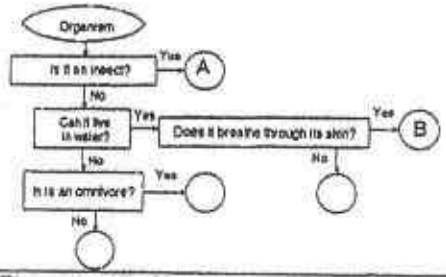
36c. S
N

37. Wet Cloth (1 m) -Evaporation of water from the wet cloth gains heat from / removes / takes in heat from the surrounding air (1).
Fan (1m) – Wind increased the rate of evaporation/ speed up evaporation. (1)

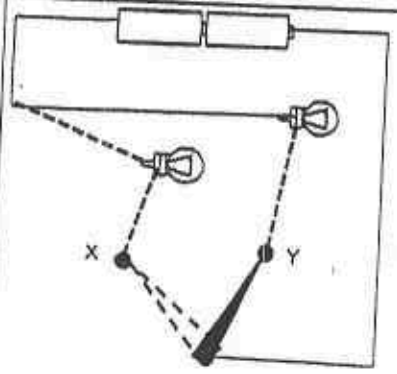
38a. A has 4 stages but B has 3 stages in their life cycles.
OR: The young of A moults, the young of B does not moult.

38b. The young does not resemble the adult. / Both the young do not look lik the adult.

38c.



39a. The amount of carbon dioxide is being depleted/ used up by photosynthesis.

39b	Partial (1/2 m) Lack/ less and less of carbon dioxide in the glass beaker. (reason for partial – did not explain why there is a lack of carbon dioxide) 'C' OR Placing a rat in the glass beaker. (1m) The rat will produce/ replenishes carbon dioxide (1/2) which the plant will take in/ requires/ needs for photosynthesis. (1/2)
40a.	Position 5
40b.	PE -> KE -> SE (+ HE - given)
40c.	From the food she eats
41a.	To find out which material allows the most light to pass through/ blocks out the most light.
41b.	Error 1: Clear plastic sheet is transparent while frosted glass is translucent. Therefore, more light should be able to pass through the clear plastic sheet than the frosted glass. Error 2: The styrofoam is opaque and light detected should be zero.
42a.	I) Dark-coloured back: Allows the shark to avoid being seen/ detected by prey from above (1/2) against the darker background of the sea (1/2) II) White belly : To avoid being seen / detected by prey from below (1/2) against the brighter background of the sky (1/2).
42b.	It has a <u>streamlined</u> body shape (1/2) to help to <u>reduce/ cut down on water resistance</u> (1/2) and move quickly in water.
43a.	 Check connection to the bulbs Check that it is a parallel arrangement for the circuit.
.	Only one bulb can be switched on at a time. OR: Both bulbs <u>cannot</u> be switched on at the same time.
.	Flower : Part E, Female Human: Part Y
.	B

Name:_____

Class: P6 _____

Reflection:

What are your major mistakes?

How do you plan to address them so that you reduce such mistakes in future?

Temasek Primary School

Preliminary Examination

Primary Six

2015

SCIENCE
(Booklet A)

Name: _____ ( )

Class: Primary 6 _____

Date: 27 August 2015

Parent's Signature: _____

60 Marks

Total Time for Booklet A and B: 1h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number in the spaces provided clearly.
2. Do not open this booklet 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.

PART 1

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

(60 marks)

---

1. Which one of the following is the basic unit of life for a fish and a plant respectively?

	Fish	Plant
(1)	cell	cell
(2)	nucleus	nucleus
(3)	nucleus	chloroplast
(4)	cell membrane	cell wall

2. The lungs and the heart are two organs in the human body. Which one of the following ststements on the functions of the lungs and the heart is true?

(1) The lungs remove carbon dioxide from the body.

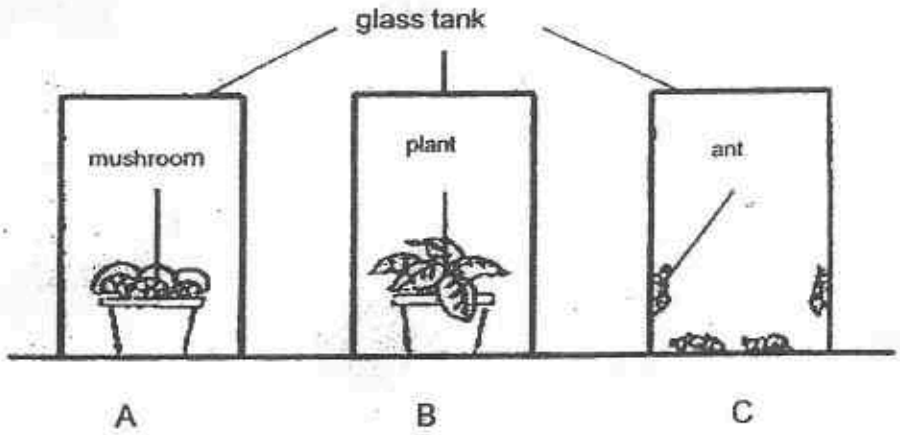
(2) The heart removes carbon dioxide from the lungs.

(3) The lungs transport oxygen produced by the heart.

(4) The heart takes in oxygen from the surroundings directly into the body.

(Go on to the next page)

3. The diagram below shows three glass tanks, A, B and C , each containing different organisms and with the same amount of carbon dioxide in each.



The three glass tanks were sealed and kept in a well-lit room for six hours.

In which of the tanks would there be an increase in carbon dioxide after six hours?

(1) B only

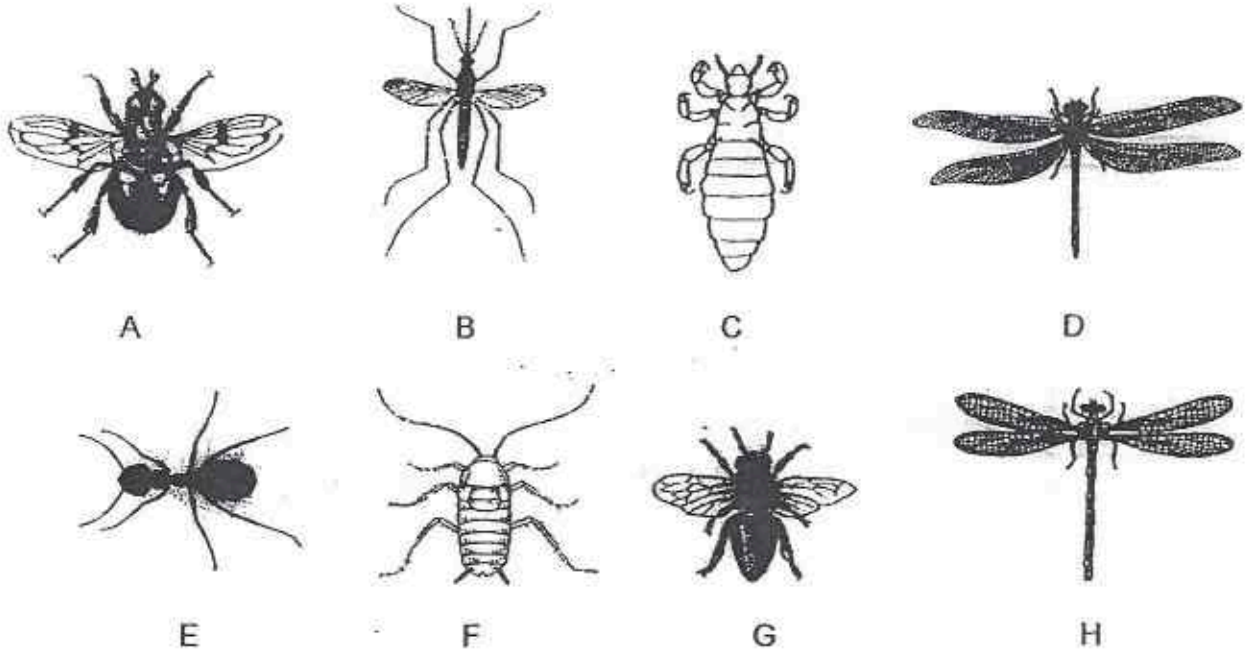
(2) C only

(3) A and C only

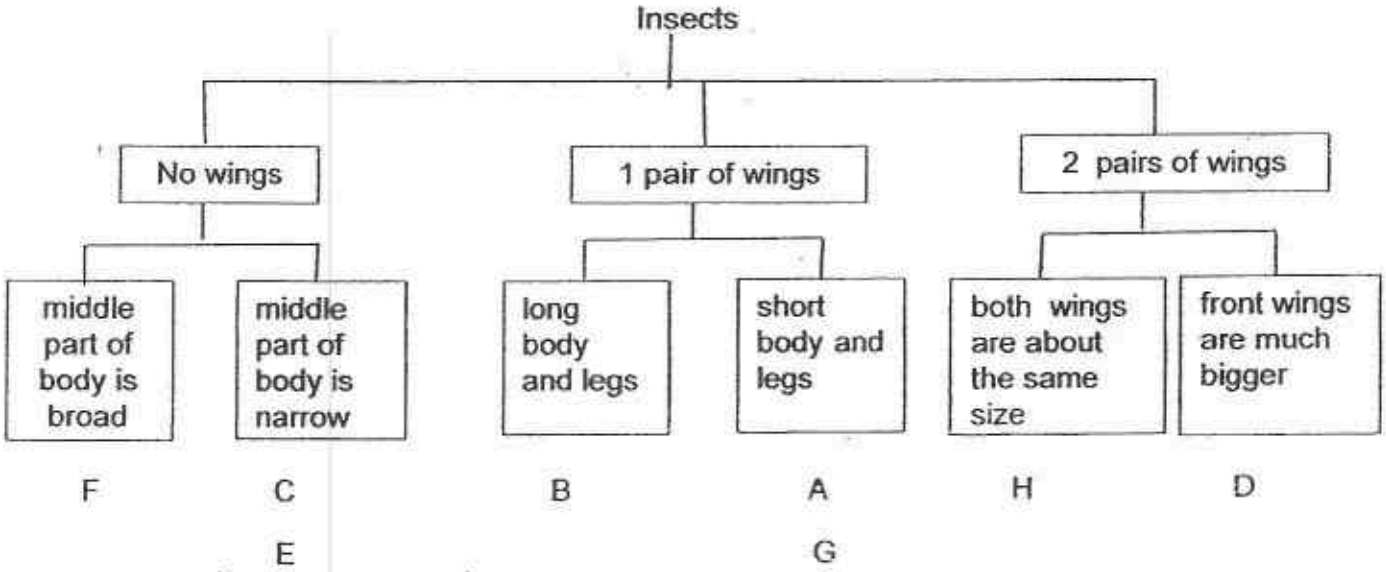
(4) A and B only

(Go on to the next page)

4. The diagrams below shows some insects, A, B, C, D, E, F, G and H.



The insects can be grouped according to the classification table shown below.



Which insects in the classification table have been grouped wrongly ?

(1) A and G

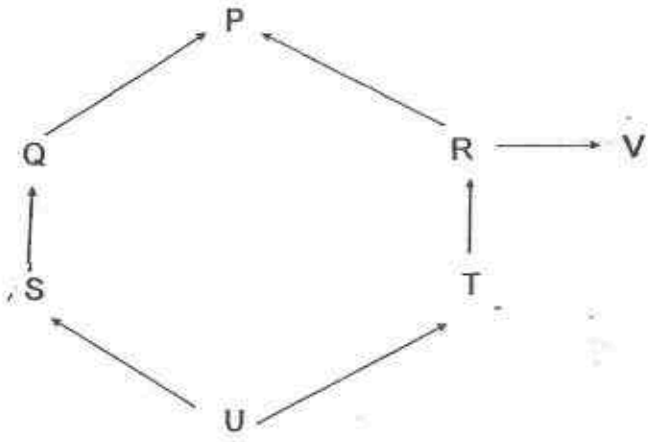
(2) F and H

(3) B and E

(4) C and D

(Go on to the next page)

5. In the food web below, which animal populations will increase in number if there is an increase in the population of P?



(1) R and V

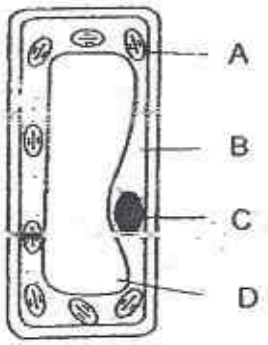
(2) Q and R

(3) S and T

(4) T and V

6. The diagram below shows a cell from the leaf of a plant.

Which part traps light energy?



(1) A

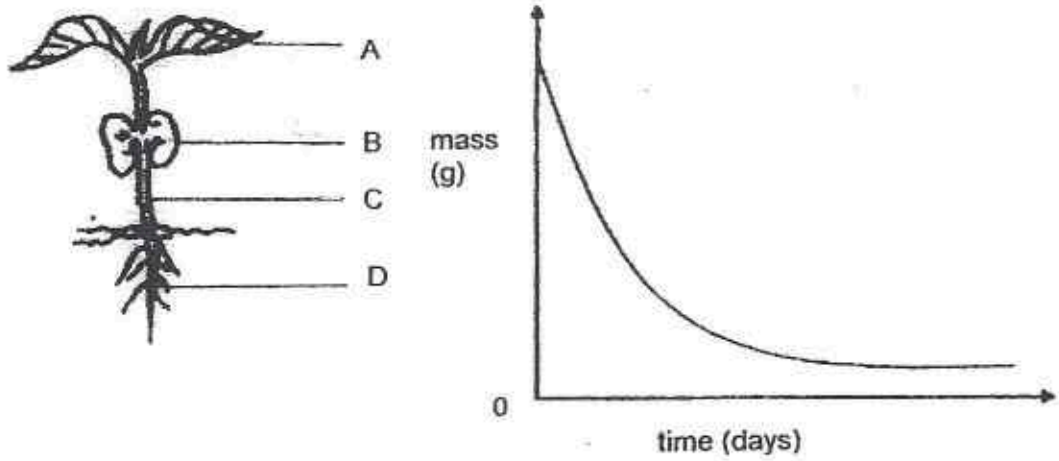
(2) B

(3) C

(4) D

(Go on to the next page)

7. The graph below shows the change in one of the plant parts as the plant develops from a seedling to an adult plant



Which of the above plant parts does the graph represent?

(1) A

(2) B

(3) C

(4) D

8. Which of the following statements are true when a comparison is made between the sperm of an animal and the pollen grains of a flower?

A Both will develop into an embryo.

B Both are found in the male reproductive organs of the organisms.

C Both help to fertilise the female reproductive cell of the organisms.

D Both contain information that is passed to the next generation.

(1) A, B and C only

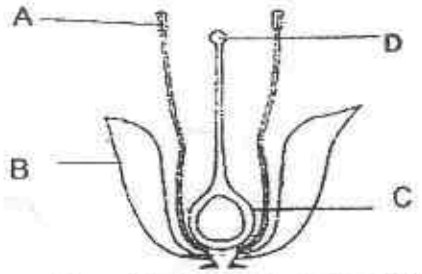
(2) A, C and D only

(3) B, C and D only

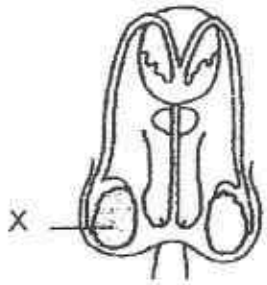
(4) A, B, C and D

(Go on to the next page)

9. The diagram below shows the reproductive system of a flower, a man and a woman.



Reproductive system of a flower



Reproductive system of a man

Reproductive system of a woman

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

	Male part X	Female part Y
(1)	B	D
(2)	A	C
(3)	C	B
(4)	D	A

(Go on to the next page)

10. An experiment was conducted to find out how the rate of photosynthesis in plants is affected by the presence of carbon dioxide and sunlight.
The table below shows the conditions under which four identical plants, W, X, Y and Z, were placed at the beginning of the experiment.

Plant	Conditions
W	Presence of carbon dioxide and placed in a dark cupboard
X	Presence of carbon dioxide and placed under the Sun
Y	Absence of carbon dioxide and placed in a dark cupboard
Z	Absence of carbon dioxide and placed under the Sun

Which of the following correctly matches the pair of plants that could be used to compare the results respectively?

(1)

Condition	Plant
Carbon dioxide	W
	X
Sunlight	Y
	Z

(2)

Condition	Plant
Carbon dioxide	X
	Z
Sunlight	W
	X

(3)

Condition	Plant
Carbon dioxide	W
	Y
Sunlight	Y
	Z

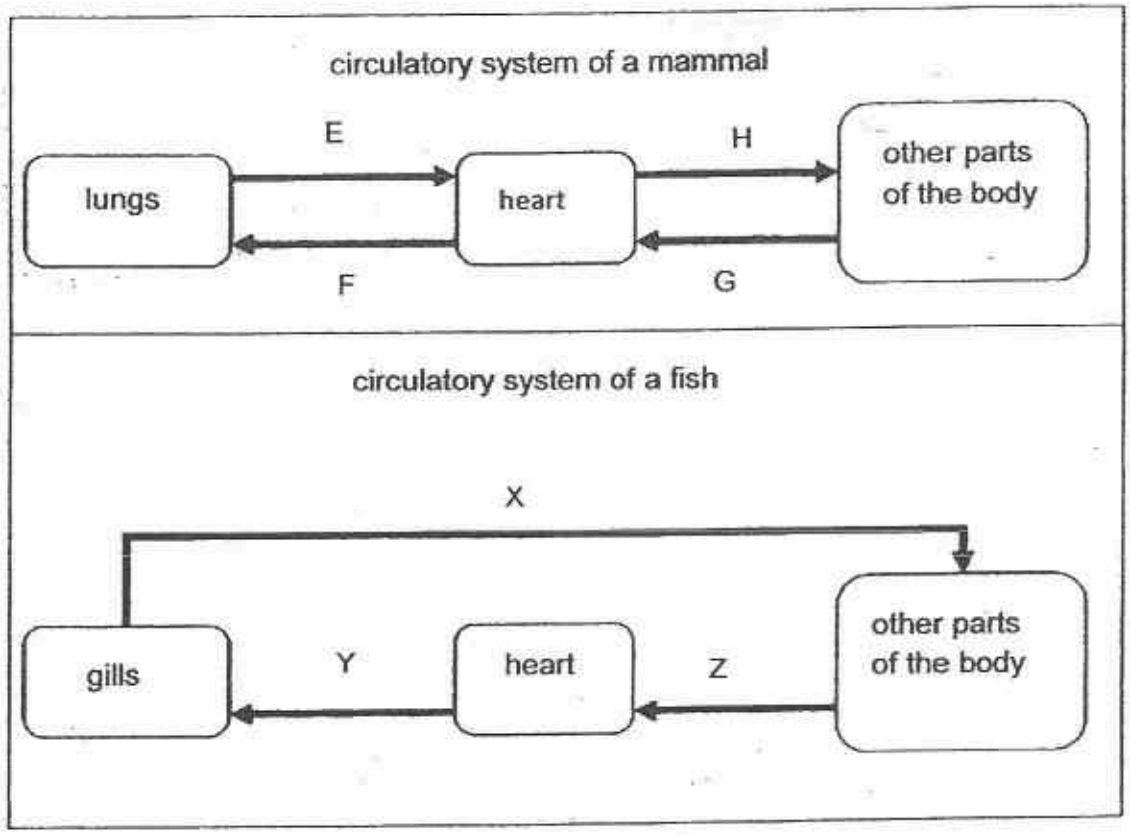
(4)

Condition	Plant
Carbon dioxide	W
	Z
Sunlight	Y
	Z

(Go on to the next page)

11. The diagrams below show the circulatory systems of two organisms, a mammal and a fish.

The arrows represent the blood vessels that carry blood from the lungs or the gills to the other parts of the body.



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

A Only blood vessels F, G, Y and Z carry blood with less oxygen.

B Only blood vessels E, H and X carry blood with more oxygen.

C Oxygen-rich blood from the gills goes to the heart like the blood in blood vessel E.

(1) A and C only

(2) A and B only

(3) B and C only

(4) A, B and C

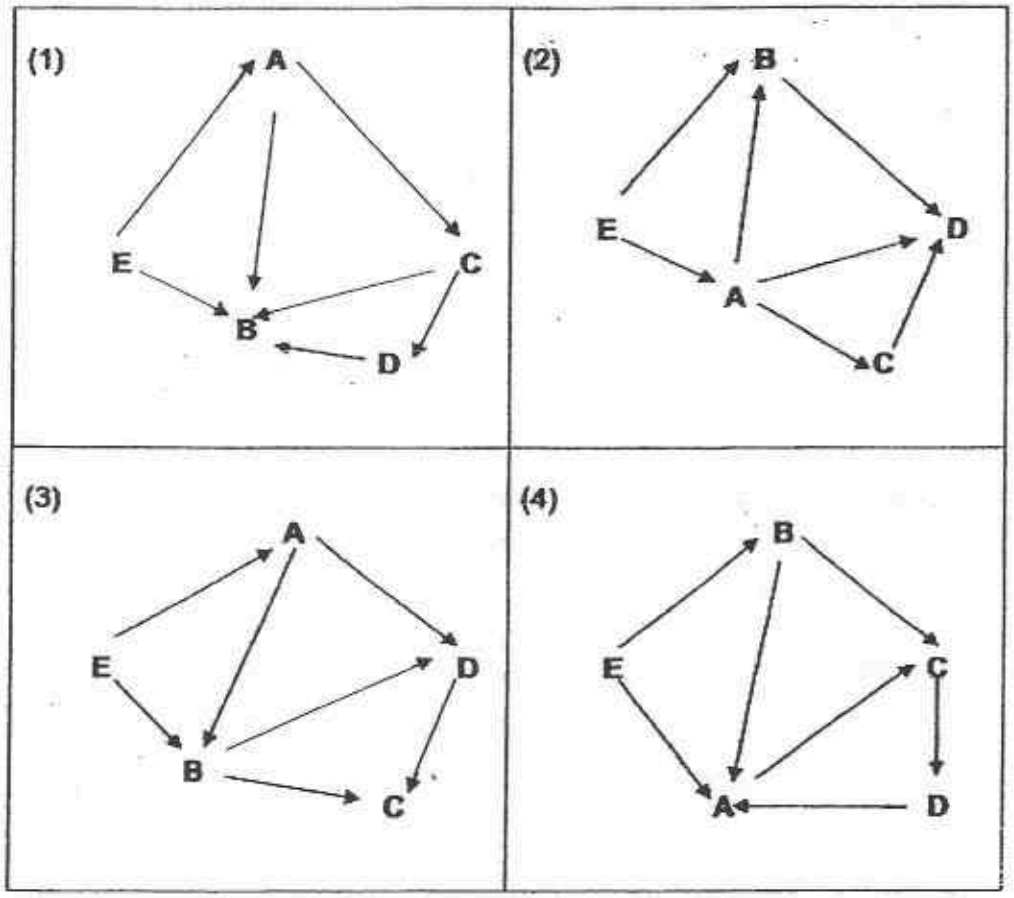
(Go on to the next page)

12. A, B, C , D and E are five organisms in a certain community.

The following is some information about these organisms.

- A has 2 predators.
- B is the only omnivore.
- B and D have 2 food sources.
- E is the only food producer.

Which of the following food webs is found in this community?



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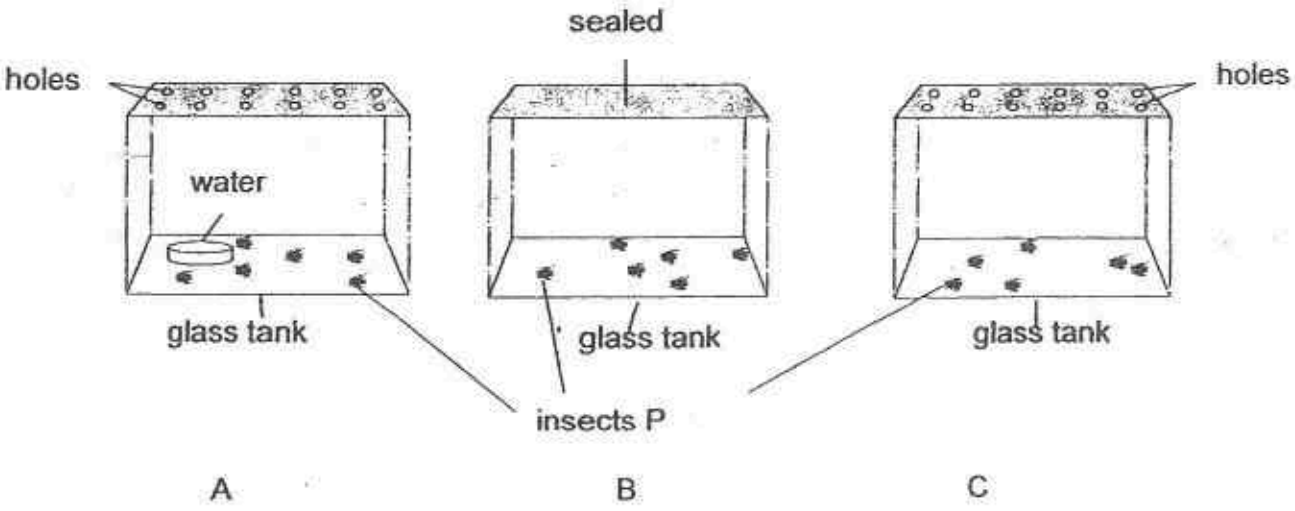
13. Guohua wanted to find out the fastest way to get rid of insect P. He thought of three possible ways A , B and C to get rid of insect P.



Which one of the following is correct?

	Most suitable way to get rid of insect P	Least suitable way to get rid of insect P
(1)	B	A
(2)	C	B
(3)	A	C
(4)	A	B

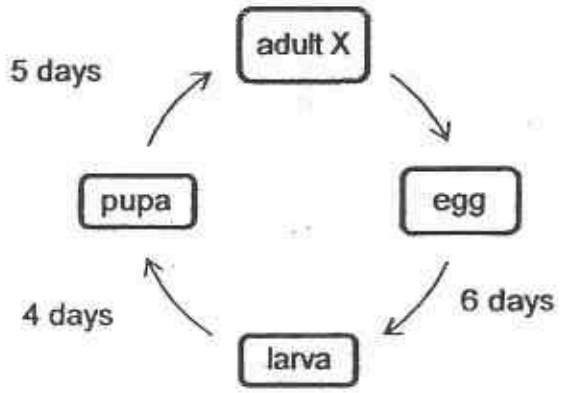
(Go on to the next page)

14. The table below shows how certain temperatures can affect organism X in the following ways.

- number of fertilised eggs laid by females each time
- length of its life cycle (from the time the eggs are laid to the end of its pupa stage)

temperature of the surroundings (° C)	number of fertilised eggs laid	length of life cycle of X (days)
18	50	25
22	110	15
26	140	13
30	225	10

At a certain time of the year, the life cycle of X is shown below.



Based on the information above, what could be possibly inferred about X during its life cycle?

A The surrounding temperature in which X lived was 22°C.

B It took 10 days for X to change from its larva to pupa stage.

C X could multiply quickly when it lived in warm surroundings of 22°C to 30°C.

(1) A and B only

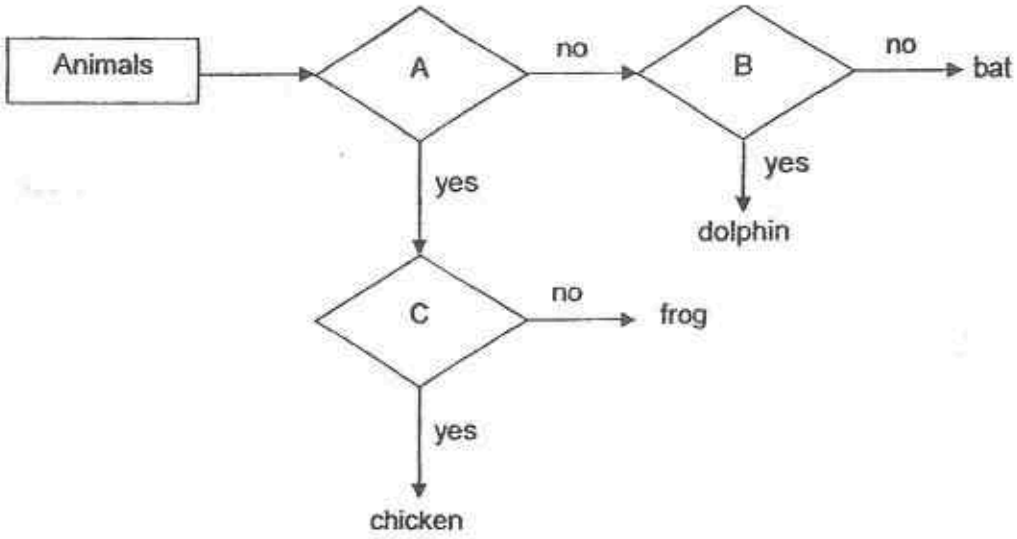
(2) A and C only

(3) B and C only

(4) A, B and C

(Go on to the next page)

15. The flow chart below compares the characteristics of four animals.



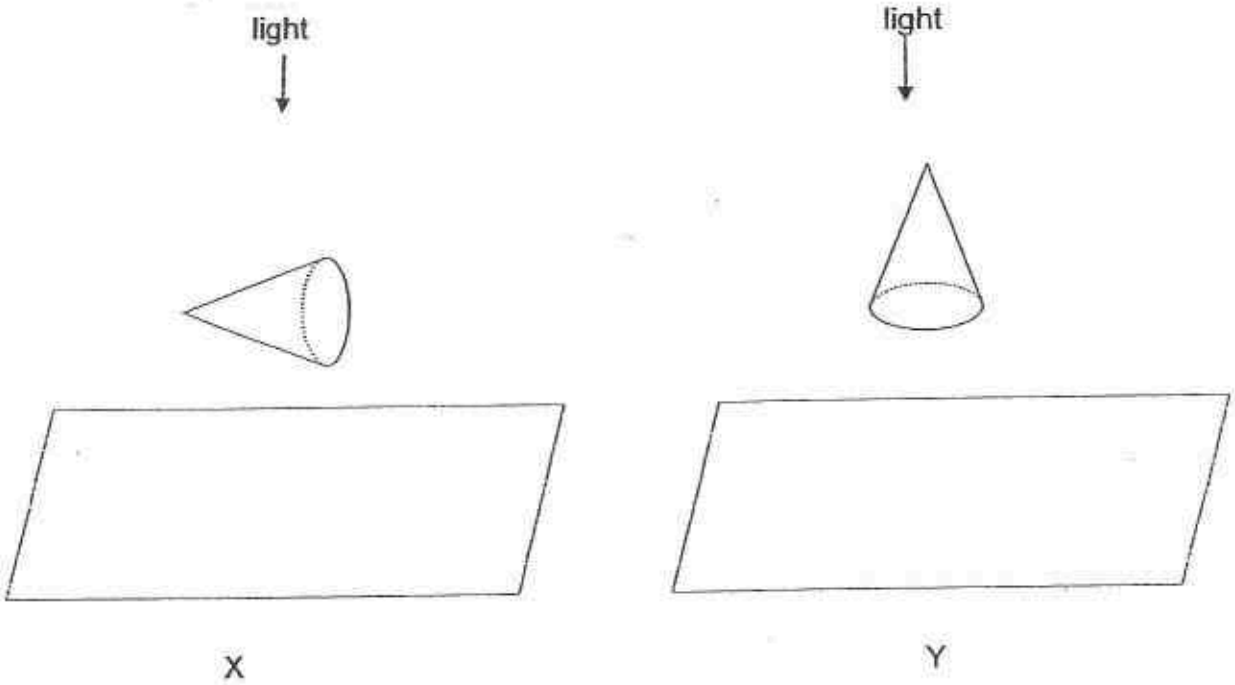
Based on the flow chart above, which one of the following correctly represents A, B and C?

	A	B	C
(1)	Can it swim?	Does it give birth to its young alive?	Does it live on land?
(2)	Does it live on land?	Does it lay eggs?	Can it fly?
(3)	Does it lay eggs?	Does its young live in water?	Does it have wings?
(4)	Does it have hair?	Can it swim?	Does it have feathers?

(Go on to the next page)

16. Alex conducted an experiment to study the shadows formed by two identical cardboard cones. The cones were placed in different positions under identical light sources in a dark room.

Shadows were formed on screens X and Y as shown below.



Which of the following shadows would be observed for each screen ?

	Screen X	Screen Y
(1)		
(2)		
(3)		
(4)		

(Go on to the next page)

17. The table below shows the state of four substances P, Q, R and S, at different temperatures.

Substances	State of substances at		
	20°C	40°C	60°C
P	solid	solid	solid
Q	solid	liquid	liquid
R	solid	solid	liquid
S	liquid	liquid	liquid

Which of the following statements is correct?

(1) Substance P has the highest freezing point.

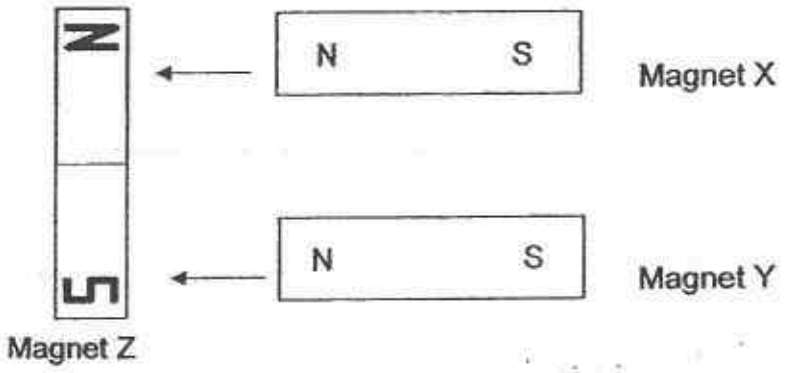
(2) The freezing point of substance Q is 20°C.

(3) The boiling point of substance R is 60°C.

(4) Substance S has the lowest boiling point.

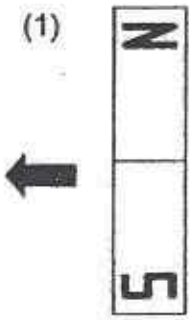
(Go on to the next page)

18. Max moved 2 similar magnets, X and Y, towards Magnet Z as shown below.

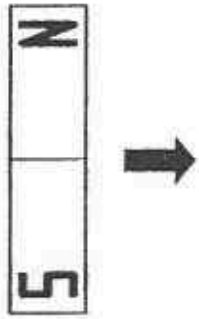


Which of the following shows the correct movement of magnet Z?

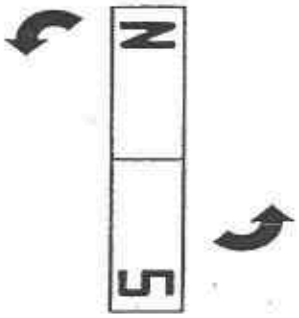
(1)



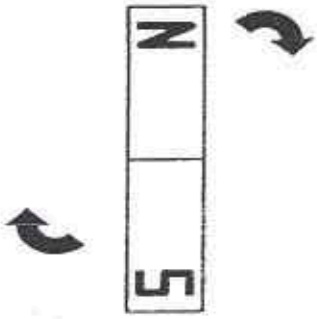
(2)



(3)



(4)



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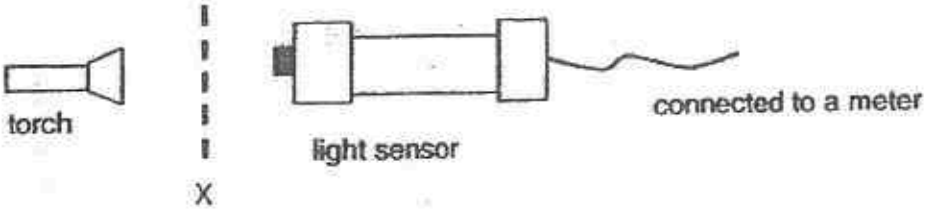
19. A model was designed to count sheets of paper of the same thickness.



The table shows the relationship between the number of sheets and the amount of light the light sensor recorded.

Number of sheets	Amount of light (units)
0	80
1	32
2	13
3	5
4	2
5	1
6	0
7	0
8	0

Which of the following statements about the experiment are not true?

A The set-up cannot be used to count more than 5 sheets of paper.

B When no paper is placed at position X, the light sensor does not allow any light to pass through.

C When the number of sheets increases, the amount of light passing through the light sensor increases.

(1) A and B only

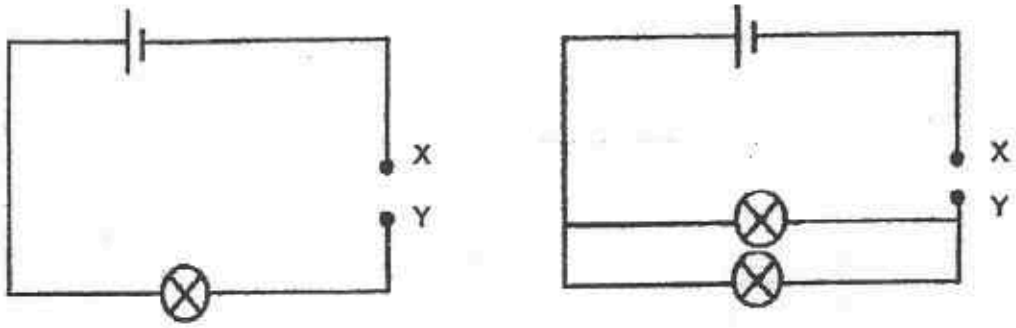
(2) A and C only

(3) B and C only

(4) A, B and C

(Go on to the next page)

20. Alexa set up the two circuits shown below. (All bulbs and batteries used are identical and in good working condition)



Circuit P

Circuit Q

If Alexa added another battery at XY in both circuits, which of the following observations would she make?

A The bulb in circuit P would be brighter than before.

B The bulbs in circuit Q would be brighter than before.

C The bulb in circuit P would not be as bright as those in circuit Q.

(1) A and B only

(2) B and C only

(3) A and C only

(4) All of the above.

(Go on to the next page)

21. Nancy did an experiment to test how well different materials slow down heat loss.

She wrapped three identical empty cans in three different materials, X, Y and Z.

She then put 60 ml of water at 50°C into each can.

After ten minutes, she measured the water temperature of water and recorded it in a table.

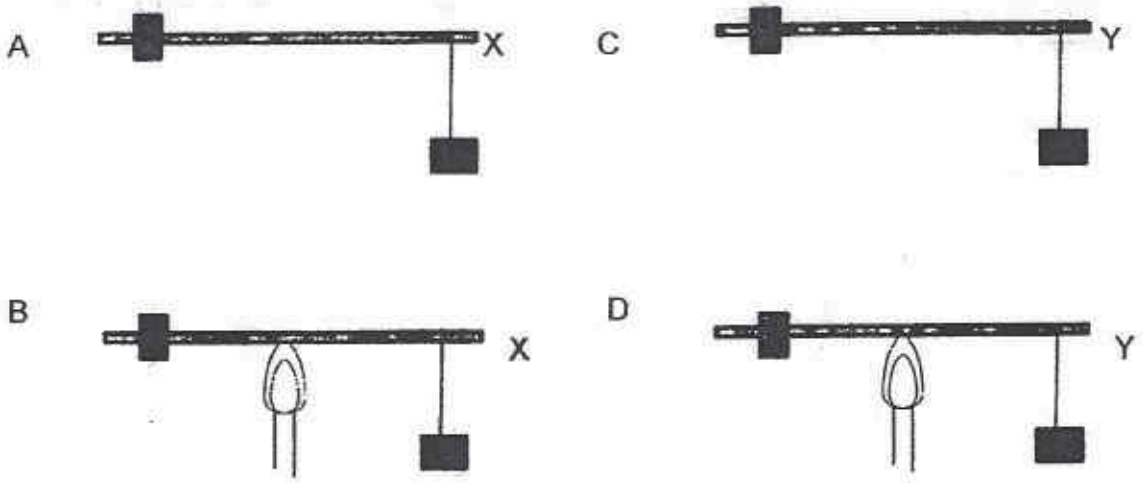
If Nancy wanted to set up a control experiment to compare her results, which of the following would be the most suitable?

	Amount of water	Temperature of water	Material for covering
(1)	50 ml	50°C	X
(2)	50 ml	40°C	Y
(3)	60 ml	40°C	Z
(4)	60 ml	50°C	no material

(Go on to the next page)

22. Ali found two types of metal rods, X and Y. She wanted to find out which rod X or Y would bend more easily when heated.

The diagrams below show four possible set-ups, A, B, C and D.



Which two set-ups should Ali compare so that he can make a conclusion?

(1) A and B

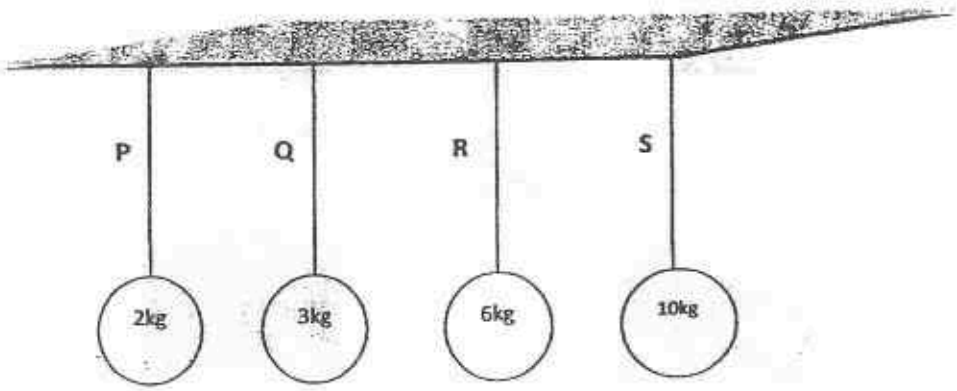
(2) A and C

(3) B and D

(4) C and D

(Go on to the next page)

23. The diagram below shows the maximum weight each of the four types of string labelled P, Q, R and S can support without breaking.



In which diagram(s) will all strings remain unbroken?

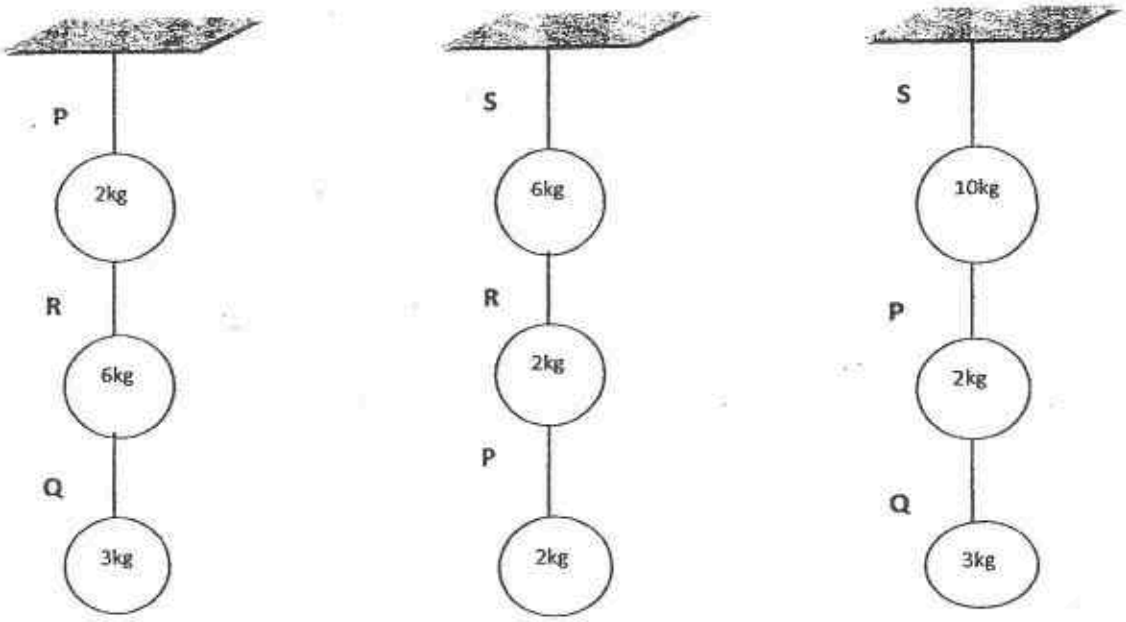


Diagram A Diagram B Diagram C

(1) A only

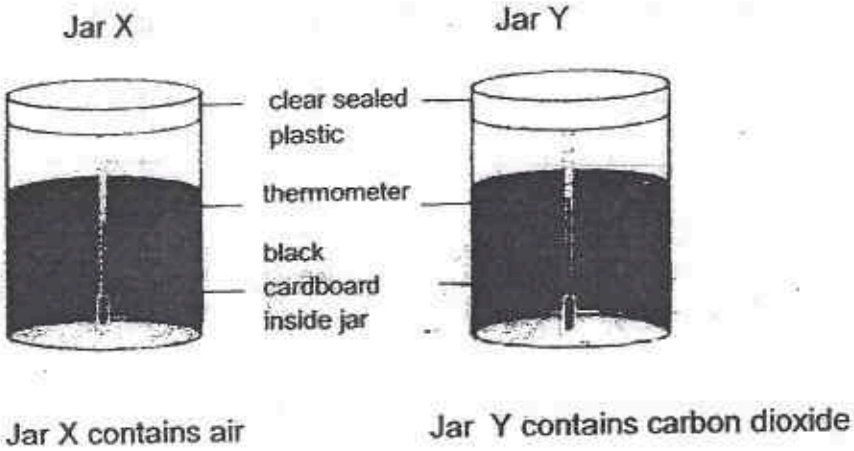
(2) B only

(3) B and C only

(4) A, B and C

(Go on to the next page)

24. Alaric set up two glass jars as shown and placed them in the Sun.



He recorded the temperature in each jar in the following table.

Time Taken (min)	Temperature (°C)	
	Jar X	Jar Y
0	29	29
5	31	34
10	33	38
15	36	43
20	40	45

What can he best infer from the above experiment?

(1) Dark coloured environments gain heat faster than light coloured ones.

(2) Air contributes more to the greenhouse effect than carbon dioxide.

(3) The jar with carbon dioxide increases in temperature faster than the jar with air.

(4) There is no difference in heat gained or heat loss since both jars contain carbon dioxide.

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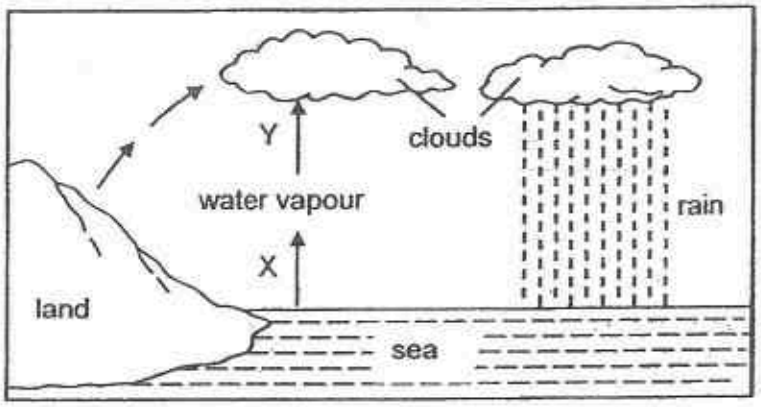
25. The diagram below shows the water cycle.



Which of the following statements about processes X and Y are **true**?

A Process X takes place when heat is gained.

B Process Y takes place when heat is gained.

C Process Y does not take place at a fixed temperature.

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

(Go on to the next page)

26 An iron bar AB was magnetised using the stroking method as shown in Diagram 1 below.

Diagram 2 shows the magnetised poles of bar AB after it was magnetised.

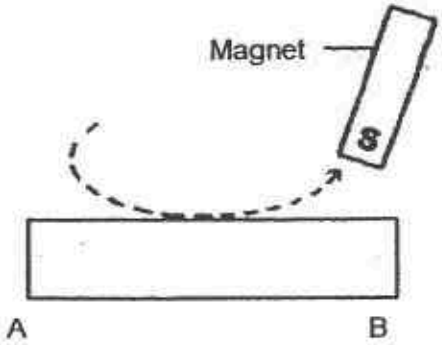


Diagram 1

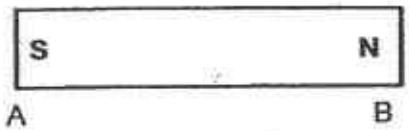


Diagram 2

Another iron bar, XY, was magnetised using two magnets as in Diagram 3.

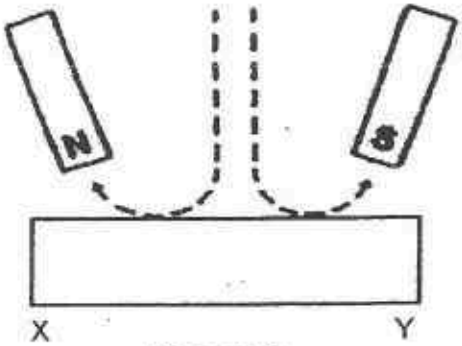
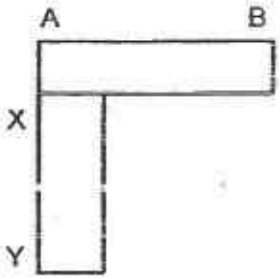
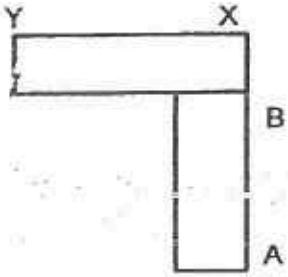
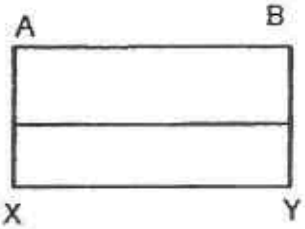


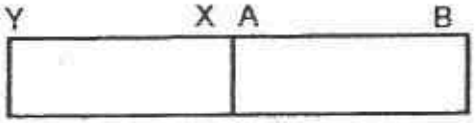
Diagram 3

Which one of the following diagrams shows a possible arrangement of the two bars after they were magnetised?

(1)


(2)


(3)


(4)


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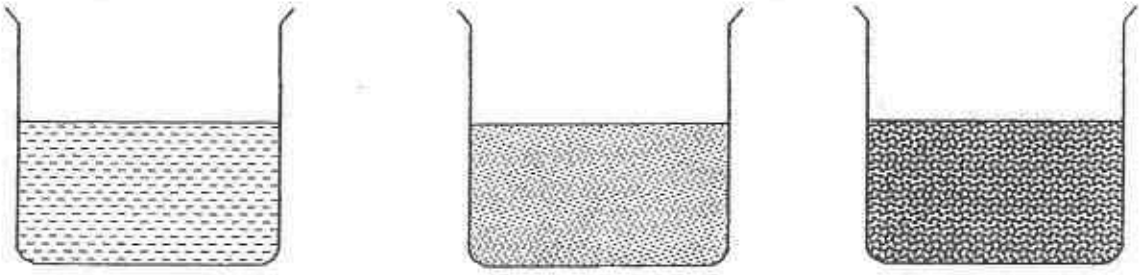
27. Jane did the following experiment on evaporation.

She fills three beakers with an equal volume of liquids X, Y and Z, as shown in the diagram.

She places the beakers side by side in the open, where it is sunny and windy.



liquid X liquid Y liquid Z

After a few hours, she records the volume of liquid remaining in each of the three beaker.

What does Jane want to find out from the experiment?

(1) Whether the liquids evaporate faster at a higher temperature.

(2) Whether the liquids evaporate faster when there is wind.

(3) Whether the liquids evaporate faster in the open.

(4) Whether the liquids evaporate at different rates.

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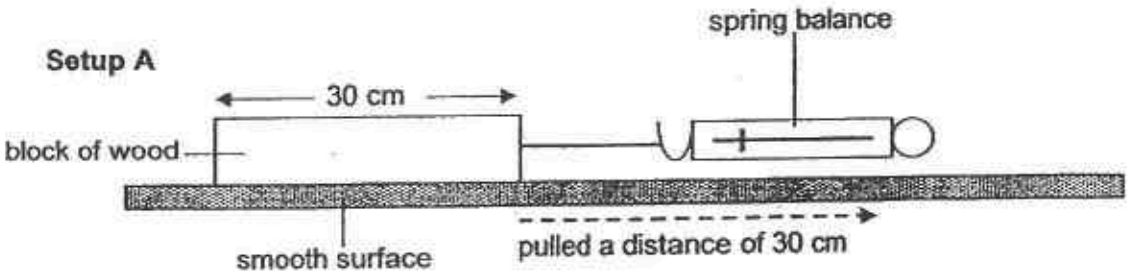
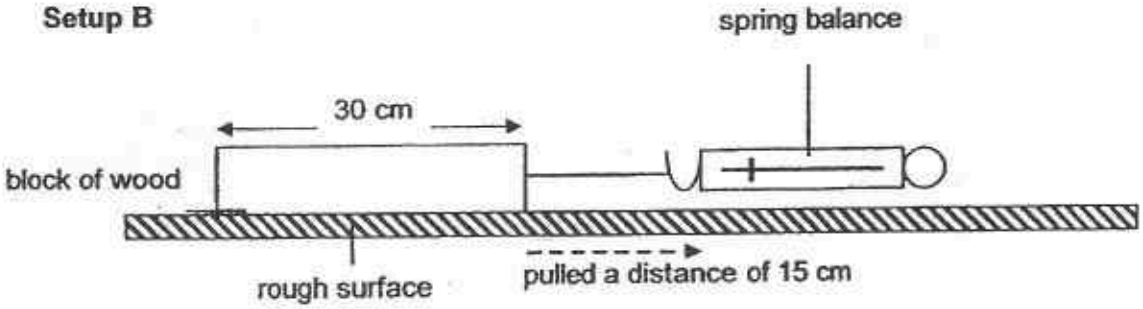
28. Richard wanted to find out if the size of surface area in contact with the table affects the amount of friction produced between them.

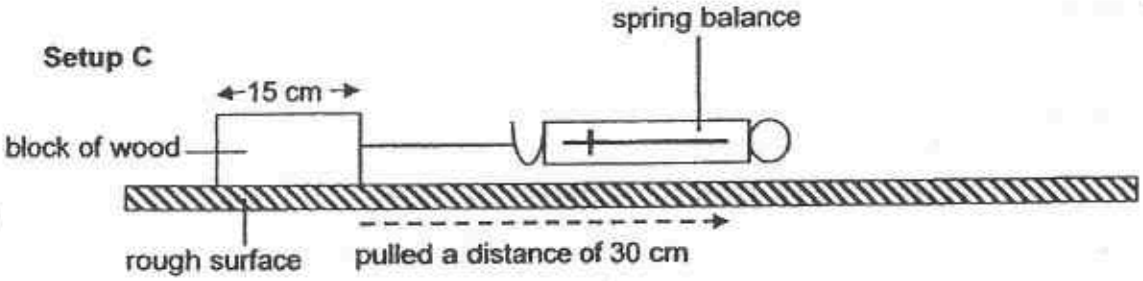
Setup A



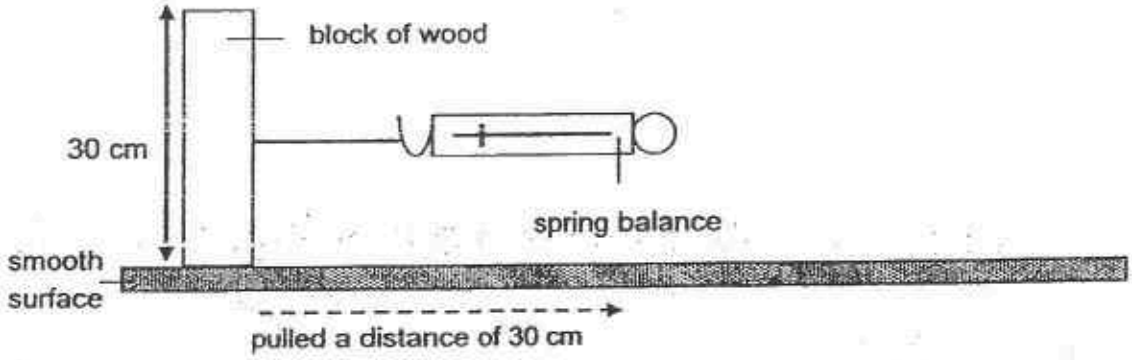
Setup B



Setup C



Setup D

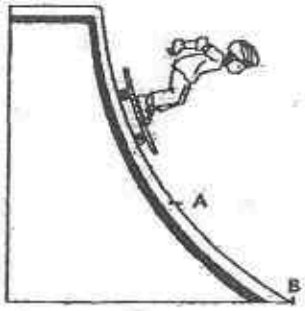


Which two setups above should Richard use to ensure a fair test?

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

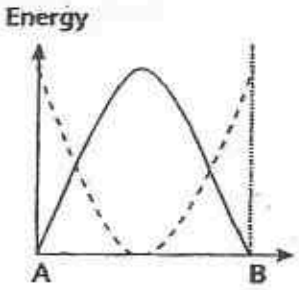
(Go on to the next page)

29. Kelvin rode on a skateboard down a ramp as shown in the diagram below.

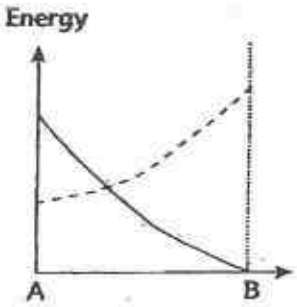


Which one of the following graphs describes the changes in potential energy (——) and kinetic energy (-------) from A to B?

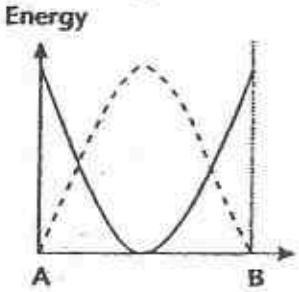
(1)



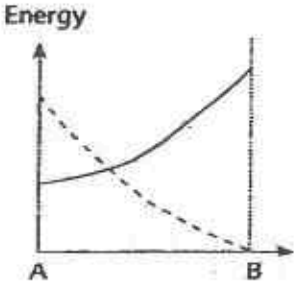
(2)



(3)



(4)



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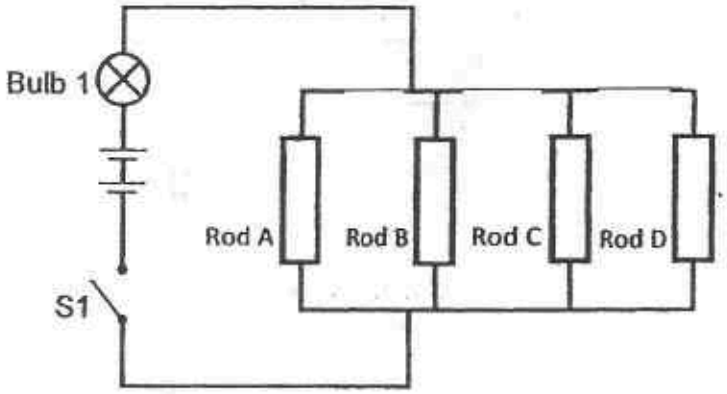
30. Jerry wanted to find out which of the following rods, A, B, C or D was/were electrical conductors.



The table below showed what happened when switch S1 was closed and some of the rods were removed.

Rod A	Rod B	Rod C	Rod D	Bulb 1 lighted up
removed	connected	connected	connected	Yes
connected	removed	removed	connected	Yes
removed	removed	removed	connected	No
removed	connected	removed	removed	No

Based on the information above, which one of the following conclusions is correct?

	Rod A	Rod B	Rod C	Rod D
(1)	electrical insulator	electrical conductor	electrical conductor	electrical conductor
(2)	electrical conductor	electrical insulator	electrical insulator	electrical insulator
(3)	electrical insulator	electrical conductor	electrical insulator	electrical conductor
(4)	electrical conductor	electrical insulator	electrical conductor	electrical insulator

(Go on to Booklet B)

Temasek Primary School

Preliminary Examination

Primary Six
2015

SCIENCE
(Booklet B)

Name: _____ ( )

Class: Primary 6 _____

Date: 27 August 2015

Parent's Signature: _____

Total Time for Booklet A and B: 1h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number in the spaces provided clearly.
2. Do not open this booklet until you are told to do so.
3. Follow all instructions carefully
4. Answer all questions.
5. Write your answers in this booklet.

Paper	Marks	Scores
Booklet A	60	
Booklet B	40	
Total	100	

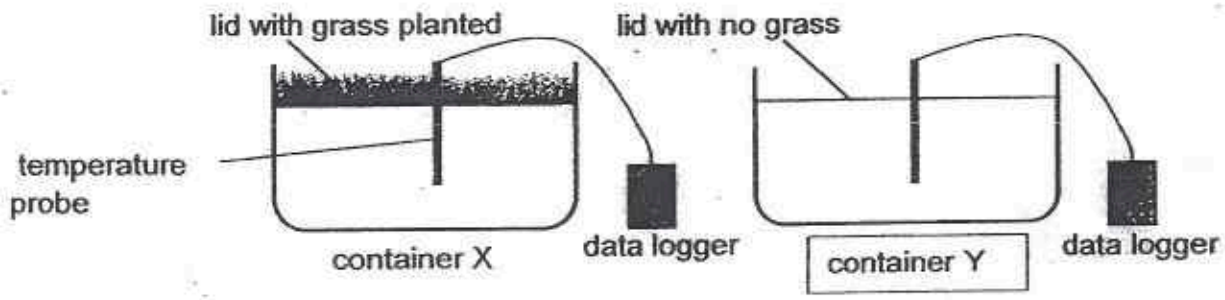
Part II

For questions 31 to 44, write your answer in the booklet.

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

(40 marks)

31. Tim set up an experiment as shown below. He measured the temperature of the air inside each identical container using a temperature probe attached to a data logger. The containers are left in the sun for a few hours.



The table shows his results.

Container	Temperature (°C)
X	29
Y	35

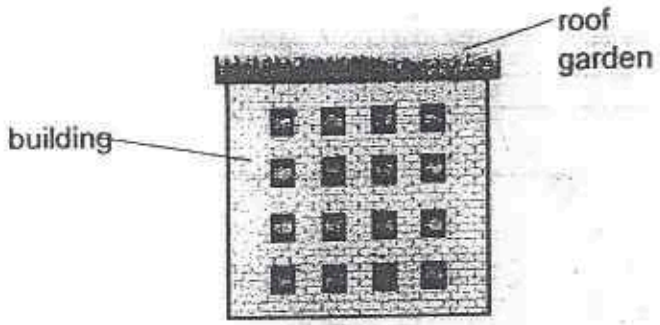
(a) Based on the results of his experiment, in what way does the presence of grass affect the temperature of the air inside the container? [1]

_____

_____

(Go on to the next page)

(b) Using the results from Tim's experiment, explain how planting plants on the roof helps in the conservation of energy. [1]



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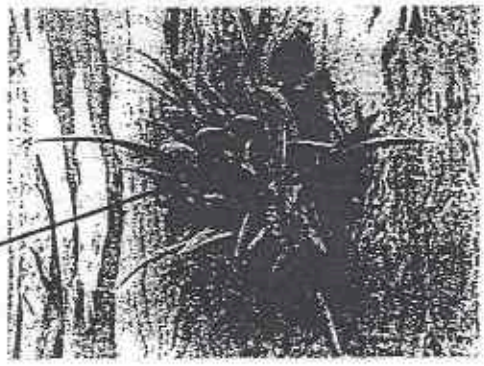
SCORE	/ 2

32. Hayati took a walk in the park. She noticed a plant X, growing on a high branch of a tree. She did not see any of the plant X growing on the ground.



(a) State an advantage plant X will have by growing high up on the tree. [1]

_____

_____

(b) Which method of dispersal could have helped the plant to land on the high branch of the tree? [1]

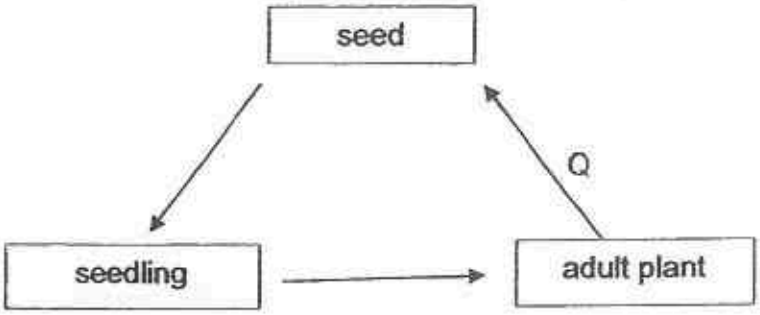
_____

_____

(Go on to the next page)

SCORE	/ 2

33. Study the life cycle of a flowering plant shown below.



(a) Besides seed dispersal, name two other processes that happen at Q. [1]

(i) _____

(ii) _____

(b) Ben wanted to find out the conditions that seeds need to grow into new plants. He prepared 4 set-ups W, X, Y and Z as shown in the table below.

Set-up	Number of seeds	Amount of water (ml)	Surrounding temperature(°C)	Presence of air	Presence of light
W	3	0	30	Yes	Yes
X	3	20	30	No	Yes
Y	3	20	8	Yes	No
Z	3	20	30	Yes	No

In which set-up would the seeds germinate after a week? Explain your answer. [1]

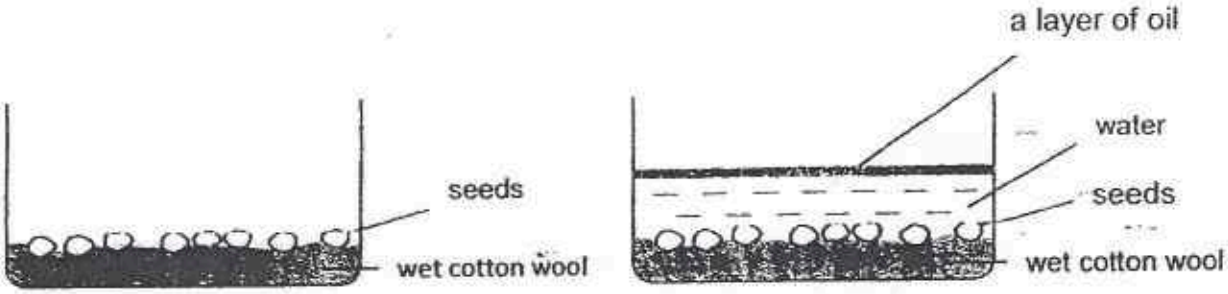
_____

_____

_____

(Go on to the next page)

Ben set up another experiment on the germination of seeds. He used two containers, X and Y as shown below.



Container X

Container Y

After two days, the seeds in one of the containers germinated.

(c) Based on the experiment above, in which container did the seeds germinate? Explain your answer. [1]

_____

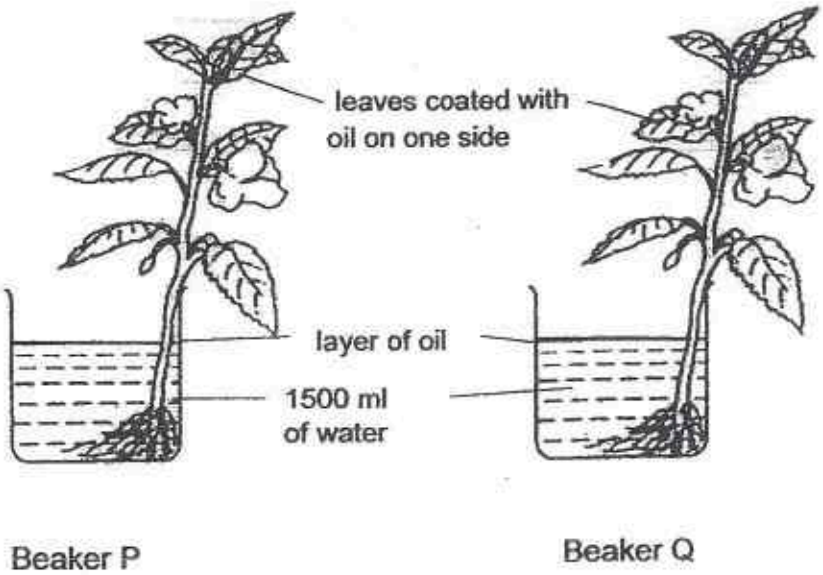
_____

_____

(Go on to the next page)

SCORE	/ 3

34. Two similar plants were placed in two identical beakers, P and Q. The leaves of both plants were coated with oil on one side.



The table below shows the volume of water in the beakers at the beginning and at the end of the experiment after a day.

Beaker	Volume of water(ml)	
	Start of experiment	End of experiment
P	1500	1250
Q	1500	1000

(a) Based on the results above, which beaker contained the plant with the leaves that were coated with oil on the underside of the leaves?
Explain your answer. [2]

_____

_____

_____

(Go on to the next page)

(b) A layer of oil is poured on top of the water in both beakers. What is the purpose of the layer of oil? [1]

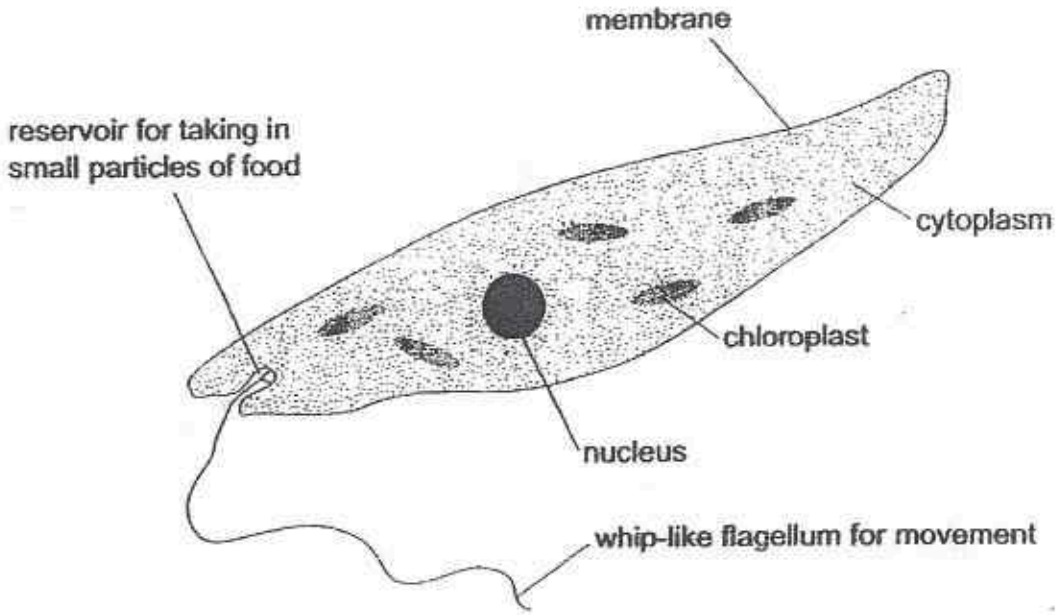
_____

_____

(Go on to the next page)

SCORE	/ 3

35. The diagram below shows an organism that is made up of only one cell. This organism has features of both plants and animals.



(a) Based on the information shown in the diagram, list two characteristics which show that the cell above is not a plant cell. [2]

(i) _____

(ii) _____

(b) Plant cells are able to make food in the presence of sunlight. What evidence in the diagram above shows you that this organism can make its own food? [1]

_____

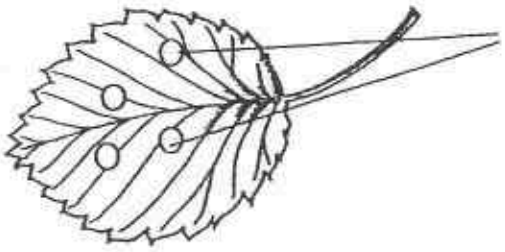
_____

(Go on to the next page)

SCORE	/ 3

36. Plant S has white spots on some of its leaves which resemble the eggs of butterfly N.

Leaf of plant S



white spots

When butterfly N sees the spots on the leaves, it will not lay its eggs on the leaves. Instead it lays eggs on leaves without the white spots.

(a) Based on the information provided above, state one reason why butterfly N does not lay her eggs on the leaves with the white spots. [1]

_____

_____

_____

(b) Flowers of plant S produces nectar that attracts a certain species of white ants. These white ants in turn attack the caterpillars of butterfly N.

How do plant S and the ants benefit each other from this relationship? [2]

(i) Benefit for plant S _____

_____

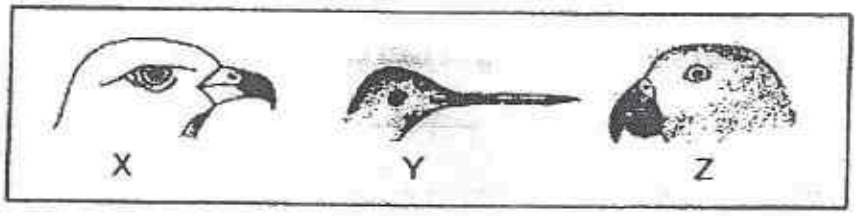
(ii) Benefit for the ants _____

_____

(Go on to the next page)

SCORE	/ 3

37. Bird A feeds on nectar in flowers.



(a) Which one of the beaks shown above belongs to bird A? Explain your answer. [1]

_____

_____

(b) How does the feeding of nectar of bird A benefit the flowers? [1]

_____

_____

(Go on to the next page)

Bird A is also known to lay her eggs in the nest of another bird, bird Q. The eggs of the two birds are shown below.

egg of bird A

egg of bird Q

Bird Q incubates the eggs for bird A and helps to take care of the baby birds.

(c) Give a reason why bird Q hatches the eggs for bird A. [1]

_____

_____

The young of bird A is much larger and often pushes the young of bird Q from its nest.

(d) Why is this an advantage to the young of bird A when there is limited food supply? [1]

_____

_____

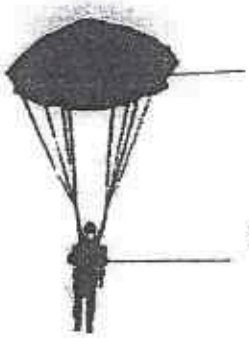
_____

(Go on to the next page)

SCORE	/ 4

38. Hafiz wanted to find out if the area of a plastic sheet affected the time a toy soldier took to fall vertically to the ground from a certain height.

The diagram below shows the set-up which was dropped from a certain height.



Hafiz recorded his readings in the table below.

Area of plastic sheet (cm^3)	Time taken to reach ground (s)
5	6
10	11
15	14
20	17

(a) Based on the information above, what could Hafiz conclude? [1]

_____

_____

(b) Describe how Hafiz would find out if the mass of the toy soldier would affect the time taken for it to reach the ground. [2]

_____

_____

_____

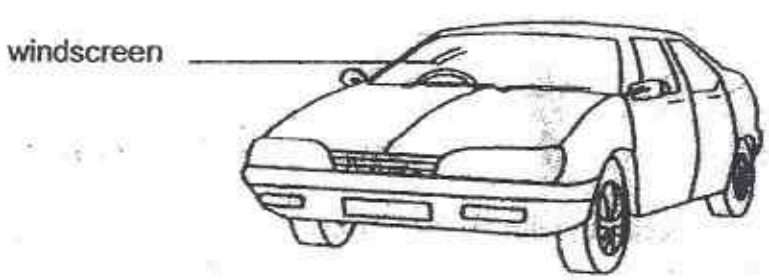
(Go on to the next page)

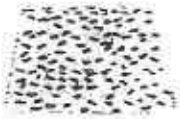
SCORE	/ 3

39. Jenny conducted an experiment to find out the period of the day when the air contained the most dust.

She asked her mother to park her car in the car park. The car was left in the car park without being moved or cleaned for twenty-four hours.

Jenny recorded the appearance of the windscreen of the car at different periods of the day



Appearance of windscreen			
Period	**8 am to 4 pm**	**4 pm to 12 midnight**	**12 midnight to 8 am**

She concluded that the air contained the most dust between 12 midnight and 8 am.

Her mother told her that her experiment was not a fair one.

(a) What should Jenny do to make her experiment a fair one? [1]

_____

_____

(b) Give a reason for your answer to (a). [1]

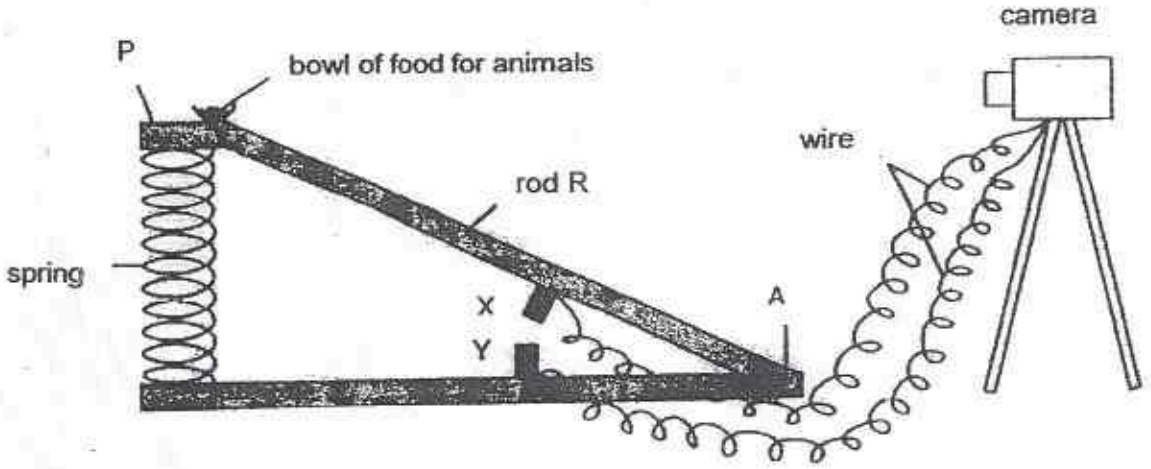
_____

_____

(Go on to the next page)

SCORE	/ 2

40. A photographer uses the set-up shown below to take photographs of animals automatically. R is a rod that is fixed at A but it is moveable. The contacts, X and Y are connected to a special camera by wires so that when X touches Y, the camera will take a photograph of the organism at P.



(a) Explain how this set-up enables the camera to take the photograph of an animal when it lands on P to eat the food. [2]

_____

_____

_____

(b) The set-up was placed in the garden. He noticed that small animals have been feeding on the food at P. However no photographs of the small animals were taken by the camera although it was working properly.

Describe one change that the photographer can make to the set-up so that the camera will take photographs of small animals as well. [1]

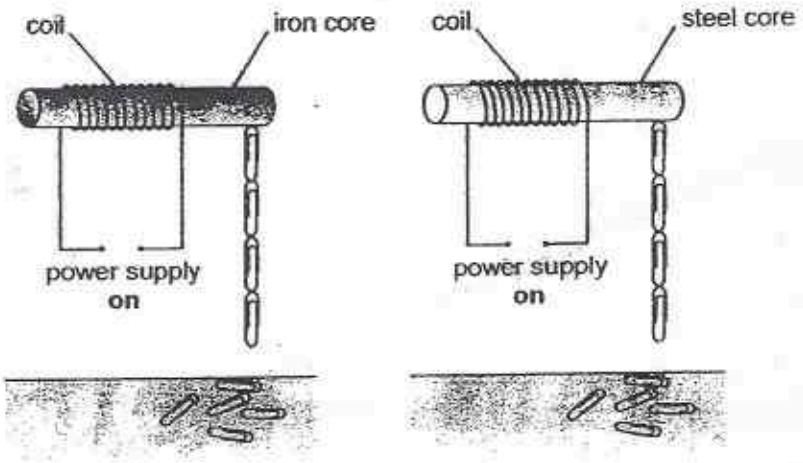
_____

_____

(Go on to the next page)

SCORE	/ 3

41. Alan made two electromagnets as shown below. He used paper clips to test the strength of each electromagnet. He switched on the power supply in both circuits.



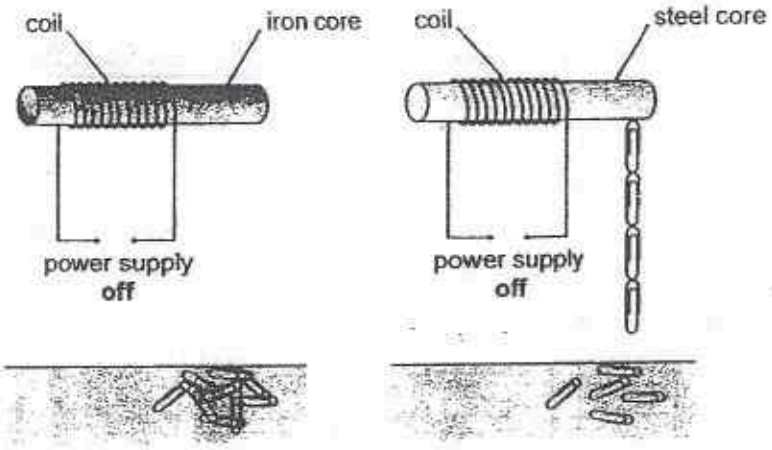
(a) How can you tell that the strength of both electromagnets is the same ? [1]

_____

_____

(Go on to the next page)

Alan switched off the power supply in both circuits. The paper-clips fell off the iron core, but **not** off the steel core.



(b) Why is iron used, rather than steel, for the core of an electromagnet in a can recycling plant?
Use the information in the diagrams to help you. [1]

_____

_____

_____

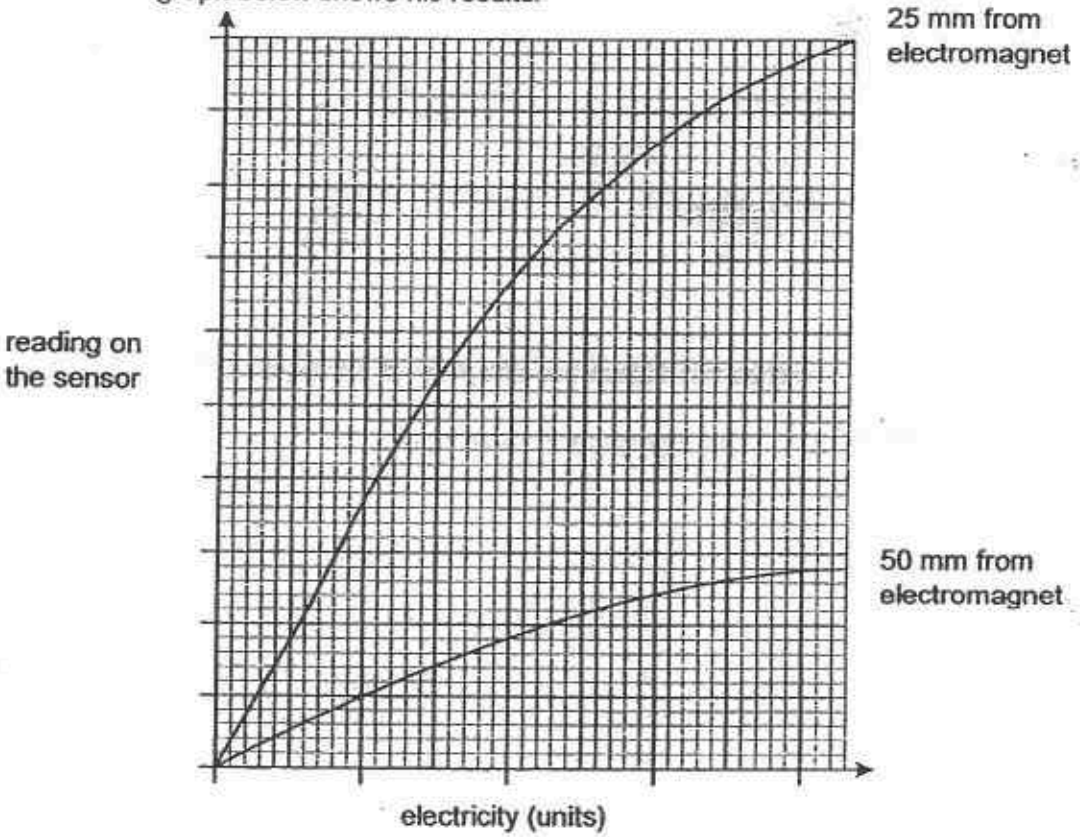
(Go on to the next page)

Alan used a sensor to measure the strength of an electromagnet.

He placed the sensor 25 mm from the electromagnet and increased the current in the coil.

He repeated the experiment with the sensor 50 mm from the electromagnet.

The graph below shows his results.



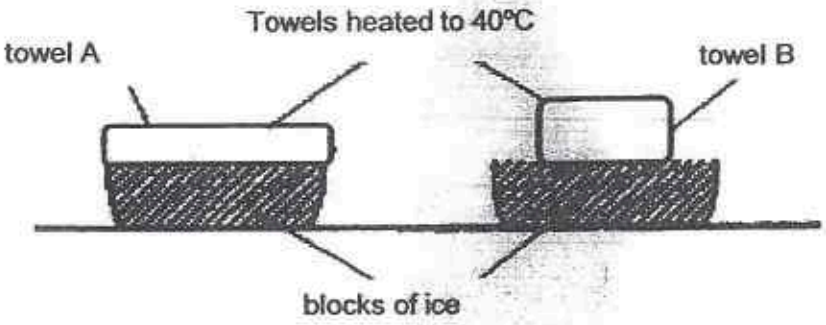
(c) How did the distance of the sensor from the electromagnet affect the reading on the sensor? [1]

(d) What can Alan do to increase the strength of the magnet? [1]

(Go on to the next page)

SCORE	/ 4

42. Ben set up the experiment shown below.



Towel A and B were of the same size. Both towels were heated to 40°C and towel B was folded before they were each placed on top of the blocks of ice. The time taken for the two towels to reach a temperature of 20°C was noted.

(a) Which of the two towels took a shorter time to reach of 20°C ? Explain your answer. [1]

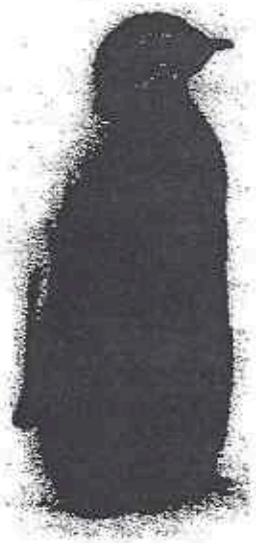
_____

_____

_____

(Go on to the next page)

Look at the picture of the penguin below.



(b) Based on your answer in (a), explain why penguins spend more time standing on ice using the two legs rather than lying down on the stomach. [1]

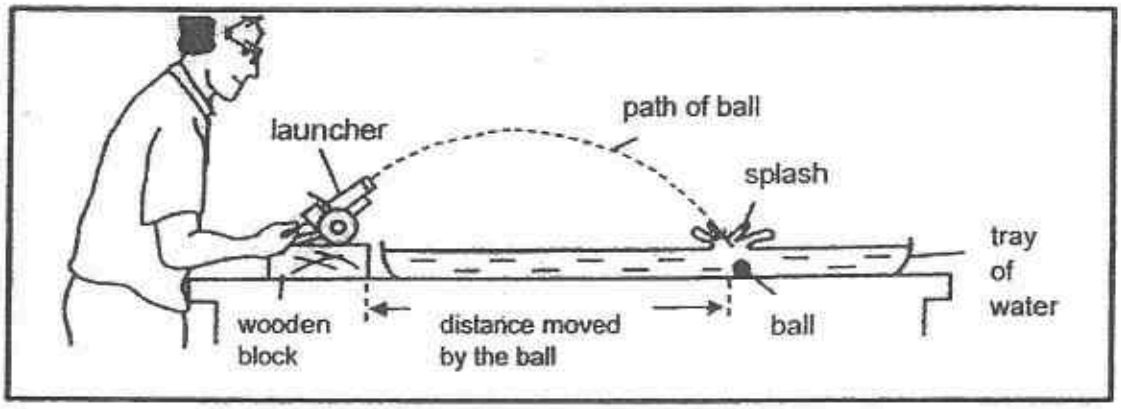
_____

_____

(Go on to the next page)

SCORE	/ 2

43. Alan used the set-up below to find the distance moved by three different balls, X, Y and Z. He observed the splash to measure the distance moved by the ball.



His results are shown below.

	Distance moved by ball (cm)		
	Ball X (mass= 1g)	**Ball Y (mass = 2g)**	**Ball Z (mass = 3 g)**
1st try	54	48	28
2nd try	58	44	32
3rd try	60	48	30

(a) Give a reason why it is difficult to measure the distance for ball X by observing the splash. [1]

_____

_____

(b) From the results, what is observed when the mass of the ball is increased?

[1]

_____

_____

(Go on to the next page)

(c) Alan replaced the water with sand in the tray. Explain how this will give more accurate results. [1]

_____

_____

_____

(Go on to the next page)

SCORE	/ 3

44. Tom noticed that the school attendant always puts up a sign outside the toilet after she has washed and mopped it.

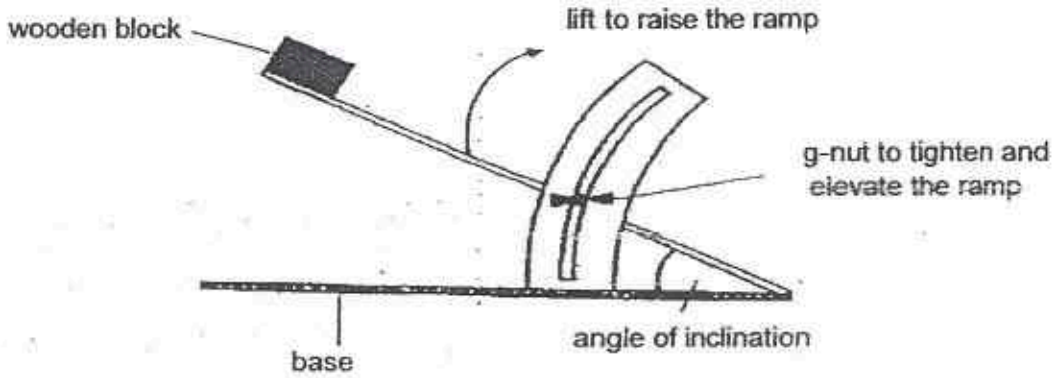
(a) Explain why someone could slip and fall when the floor is wet. [1]

_____

_____

Tom experimented with three types of anti-slips mats, S, T and U by placing them on an adjustable ramp.

He placed a wooden block on the ramp surface and raised the ramp until the wooden block started moving as shown below.



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He adjusted the angle of inclination of the ramp and recorded his results in the table below.

Anti-slip mat	Angle of inclination when wooden block starts to slide down
S	30°
T	65°
U	48°

(b) Based on Tom's results, which anti-slip mat is best at preventing people from slipping? Give a reason for your answer. [1]

_____

_____

(c) Put a tick (√) in the box for the variable that Tom should keep constant in his experiment. [1]

Variable	
Size of wooden block	
Surface of anti-slip mats	
Angle of inclination	
Starting position of wooden block	

End of Paper

SCORE	/ 3

EXAM PAPER 2015
LEVEL : PRIMARY 6
SCHOOL : TEMASEK PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

Q 1	Q 2	Q 3	Q 4	Q 5	Q 6	Q 7	Q 8	Q9	Q 10
1	1	3	4	3	1	2	3	2	1
Q 11	Q 12	Q 13	Q 14	Q 15	Q 16	Q 17	Q 18	Q 19	Q 20
2	3	1	2	3	2	1	3	3	1
Q 21	Q 22	Q 23	Q 24	Q 25	Q 26	Q 27	Q 28	Q29	Q30
4	3	2	3	4	2	4	3	2	4

BOOKLET B

Q31a. It reduces the amount of heat inside the container.
Q31b. If there is a roof garden, it might not be so hot. Hence, fewer people switch on their air –cons.
Q32a. It does not need to compete with plants on the ground for sunlight.
Q32b. Animal dispersal.
Q33a.i) Ferilisation Q33b.ii) Pollination
Q33b. Z. Seeds do not need light during germination and Z has all the necessary conditions , air, water and warmth for it to germinate.
Q33c. X. As container Y has a layer of oil on the water, there is no oxygen for the seeds to germinate.
Q34a. P. Q34b. To make sure that water does not evaporate from the beaker as it would not be a fair experiment.
Q35ai) It does not has a cell has a cell wall. Q35aii) It has a flagellum for movement when a plant does not move. Q35b. It has chloroplast that contains chlorophyll to make food.
Q36a. Butterfly N thinks that the white spots are eggs, so, to prevent competition for food, she would lay her eggs on the plants without the white spots.
Q36bi) Benefit for plant S – The ants helps them to get rid of caterpillars which eat their plants.
Q36ii) Benefit for the ants – They get nectar.
Q37a. Y. The beak is long so it can reach the nectar.
Q37b. Bird A becomes their agent of pollination.
Q37c. The two eggs are similar. Q37d. When there is limited food supply, there is not enough food to go around, so, when A pushes the younger of bird Q from its nest , it can get more food.
Q38a. The larger the area of the plastic sheet, the longer time is taken for the toy soldier to reach the ground.
Q38b. He would prepare toy soldiers of different weights, take a parachute and put the different weights on the parachute separately. Then, record the results and compare.
Q39a. After a period of time, Jenny should wipe the windscreen.
Q39b. It is because if she does not clean, the windscreen, the dust on the windscreen at the end of the 24 hours is from all the periods, not the last one.
Q40a. The bowl of food would attract animals and when they try to get the bowl of food, the spring would be compressed, X and Y would be connected and the circuit would be complete, activating the camera.
Q40b. He could use a string that is more easily compressed.
Q41a. They attracted the same number at paper clips.
Q41b. When the switch is switched off, the paper clips dropped off the iron core.
Q41c. The shorter the distance, the higher the strength of the electromagnet.
Q41d. He could increase the number of coils.
Q42a. A. Q42b. It has a larger exposed area so it will lose heat faster.
Q43a. There is less friction between the sides of the shoes and the wet floor.
Q43b. The distance moved by the ball decreased.
Q43C. The ball will make a dent in the sand and comparison.
Q44a. The friction is reduced when the floor is wet. Q41b. T. It has the largest angle.
Q44c. Size of wooden block. Q44c. Starting position of wooden block.

THE END