Anglo-Chinese School (Junior)
Anglo-Chinese School (Primary)

PRELIMINARY EXAMINATION 2018
PRIMARY SIX
SCIENCE
BOOKLET A

Name:

Class: Primary 6

Date: 28 August 2018

Duration of paper: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, register number and class.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.
6. This question paper consists of **16** printed pages including this cover page.

PART I

For each question from 1 to 28, 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. (56 marks)

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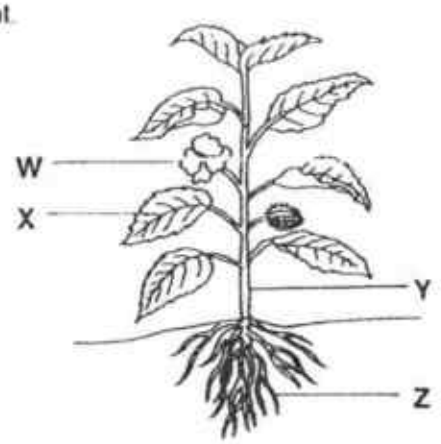
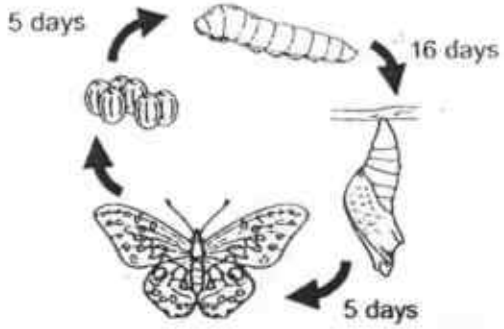
1 The diagram shows a plant.



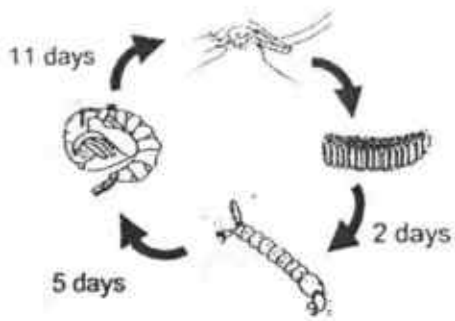
Which parts of the plant work together to enable it in make food?

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

2 The diagrams show the life cycles of organisms M and N.



Organism M



Organism N

Based on the information above only, which of the following statement(s) about organisms M and N is/are true?

A The young of N resembles its adult but the young of M does not.
B The pupa of N takes a longer time to develop into an adult than M.
C The larva of N takes a longer time to develop into an adult than M.
D The young of N feeds on leaves only but the young of M does not.

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

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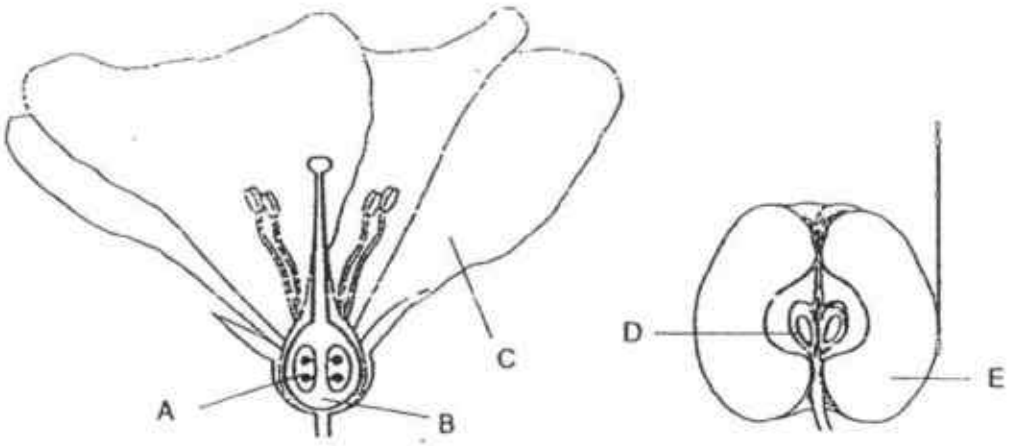
3 The diagram below shows the cross section of the parts of a flower and a fruit.



flower fruit

Which of the following statement(s) is/are correct after fertilisation has taken place in the flower in order to form the fruit?

X Part C wilts and falls off.

Y Part A develops into part D.

Z Part B develops into part E.

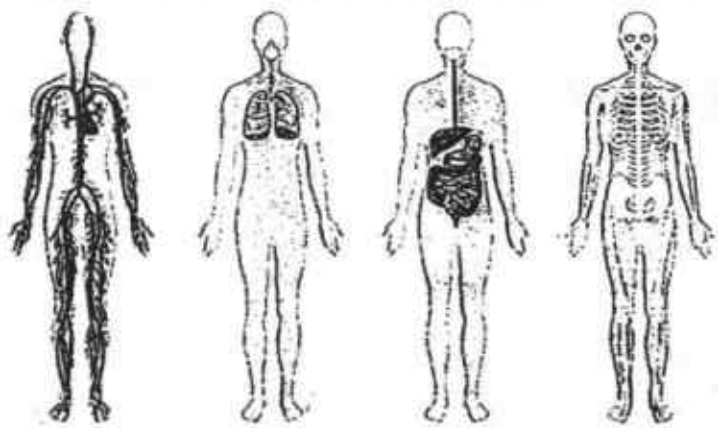
(1) Z only

(2) X and Y only

(3) Y and Z only

(4) X, Y and Z

4 Which of the following human body system(s) work together to provide energy for daily activities?



A B C D

(1) D only

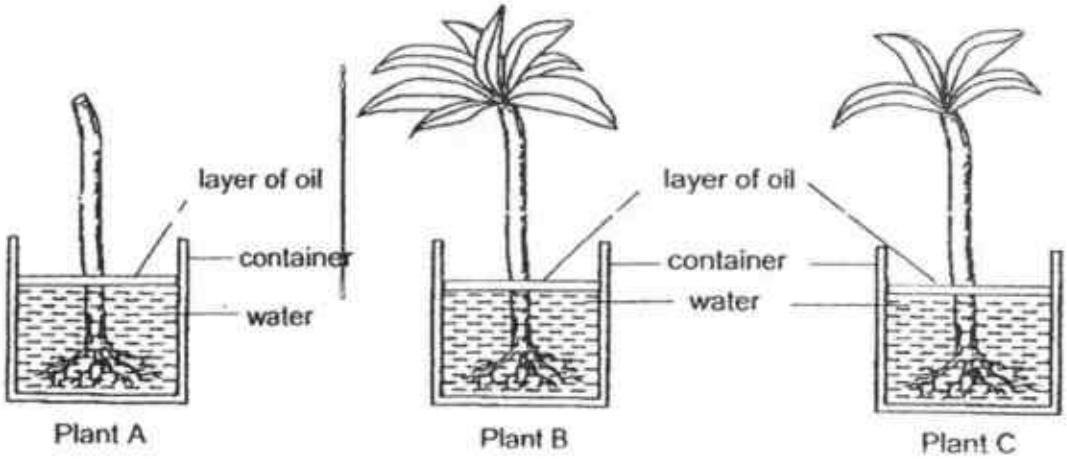
(2) B and C only

(3) A and D only

(4) A, B and C only

(Go on to the next page)

5 Charles used three similar plants, A, B and C, to conduct an experiment. He removed all the leaves from Plant A, and some leaves from Plant C. He then put the three plants in three identical containers with the same amount of water and placed them in the same location. After five days, Charles measured the height of the water in each container.



The aim of his experiment is to find out if _____.

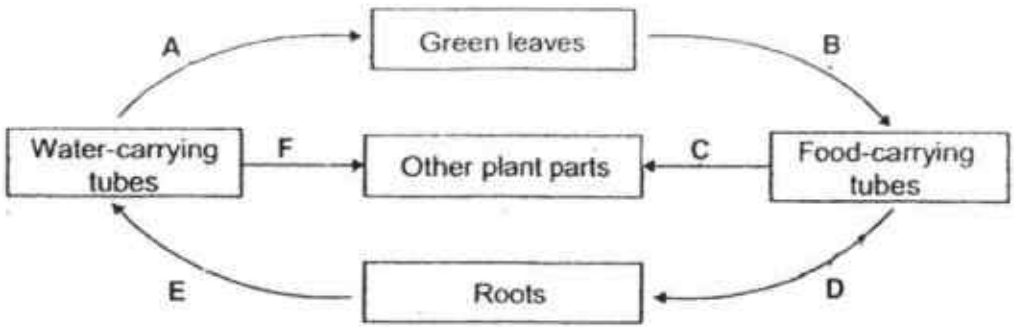
(1) the leaves of the plant absorb water

(2) the plant needs roots to absorb water

(3) the stem of the plant helps to transport water from the roots to the leaves

(4) the number of leaves affects the rate of water absorbed by the roots of the plant

6 The diagram shows the movement of food and water in a plant.



Which arrows represent the movement of water?

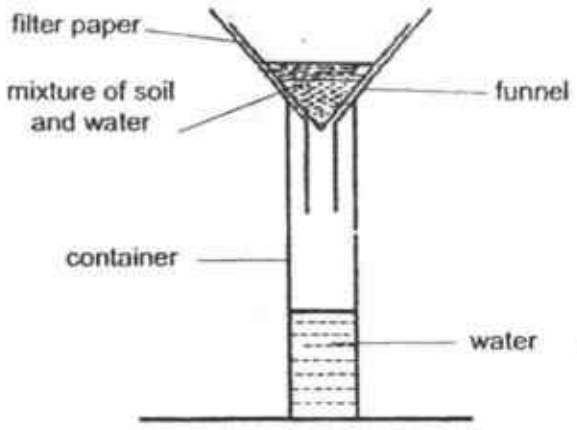
(1) A B and C only

(2) A, E and F only

(3) B, C and D only

(4) D, E and F only

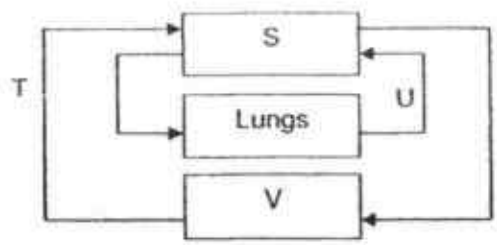
7 The diagram shows how water can be separated from a mixture of soil and water using a filter paper.



Which part of the cell has same function as the filter paper?

(1) nucleus
(2) cell wall
(3) cytoplasm
(4) cell membrane

8 The arrows in the diagram represent blood vessels. S and V are parts of the body.



What do S, T, U and V represent?

	S	T	U	V
(1)	Rest of body	Carries blood rich in oxygen	Carries blood poor in oxygen	Heart
(2)	Heart	Carries blood poor in oxygen	Carries blood rich in oxygen	Rest of body
(3)	Heart	Carries blood rich in oxygen	Carries blood poor in oxygen	Rest of body
(4)	Rest of body	Carries blood poor in oxygen	Carries blood rich in oxygen	Heart

9 A coconut seedling was found on the beach as shown in the picture.

Which one of the statements below is true about the seeding?

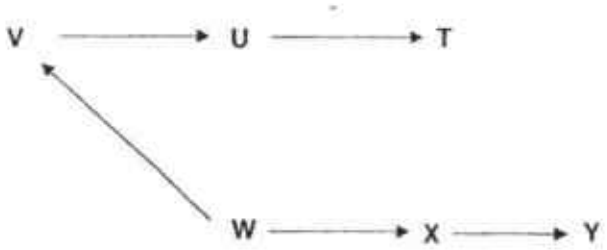
(1) The seedling can start making food.

(2) Fertilisation can take place at this time.

(3) The seedling can only grow in the water.

(4) The leaves can absorb water from the sea to make food.

10 Study the food web.



Based on the food web, which organisms will be affected immediately when all of organism U die?

(1) V and T only

(2) V and X only

(3) W and Y only

(4) T and Y only

11 A farmer used a certain amount of fertiliser on his farm. Some of this fertiliser flowed into a nearby river which contained some bacteria, plants and fish. The water in the river became very murky and a number of events happened after that.

The table shows the events that happened in the river after that but they are not in the correct order.

Event	Description
A	The population size of the fish decreased.
B	Bacteria used the nutrients to reproduce faster.
C	The amount of oxygen in the river decreased.
D	The amount of nutrients increased.

Arrange the events in the correct order of its occurrence (first to last)

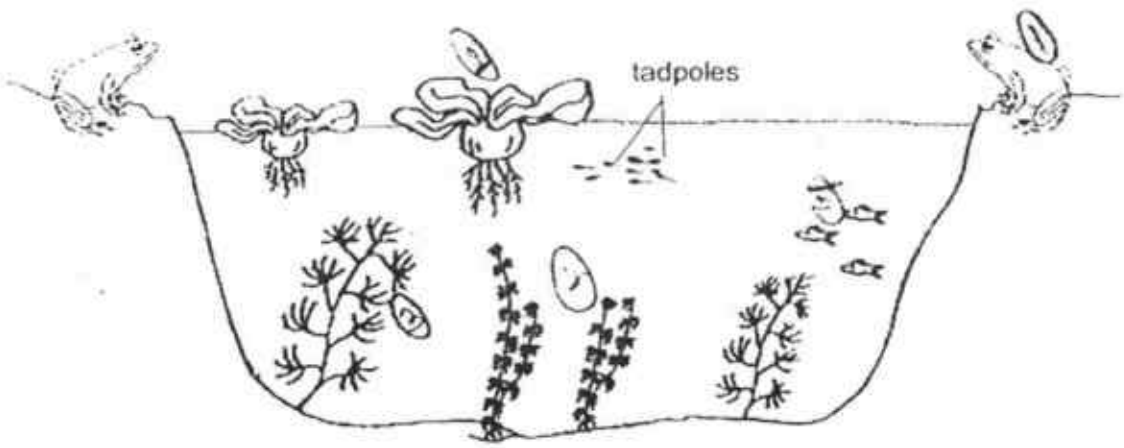
(1) A, D, B, C

(2) B, A, C, D

(3) C, A, B, D

(4) D, B, C, A

12 The diagram shows the organisms living in a pond.



How many populations can you observe from the diagram?

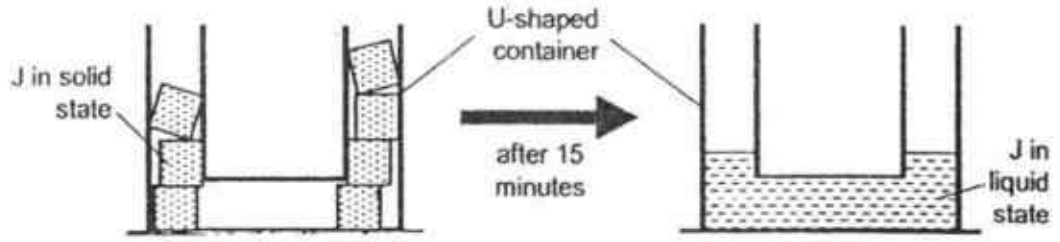
(1) 3

(2) 5

(3) 6

(4) 17

13 Some solid pieces of substance J were taken out of a freezer and placed in a U-shaped container. After 15 minutes, it was observed that all of the solid substance J had melted completely as shown.



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

A J in the solid state has no definite shape.

B J in the liquid state has a definite volume.

C J in the liquid state has no definite shape.

D J in the solid state has no definite volume.

(1) A and B only

(2) C and D only

(3) B and C only

(4) A, B and D only

14 Which of the following actions would help to conserve water?

P Taking long showers on a hot day.

Q Turn off the running tap while brushing your teeth.

R Reuse water used for washing rice to water plants.

S Using the washing machine to wash a dirty pair of socks.

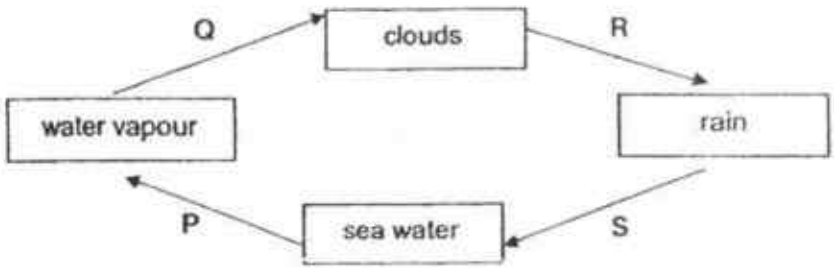
(1) P and Q only

(2) Q and R only

(3) P, R and S only

(4) Q, R and S only

15 The diagram represents the water cycle.



Based on the diagram, which letter(s), P, Q, R and/or S, represent(s) the process where heat is lost?

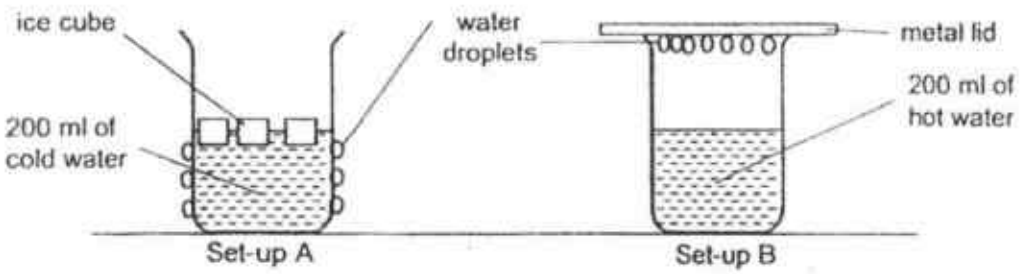
(1) R only

(2) Q only

(3) P and S only

(4) Q and R only

16 Two set-ups, A and B, were placed in a classroom as shown in the diagram.



Where did the water droplets in set-up A and B come from?

	Set-up A	Set-up B
(1)	ice cubes	water vapour in the beaker
(2)	cold water	hot water
(3)	ice cubes	surrounding air
(4)	surrounding air	water vapour in the beaker

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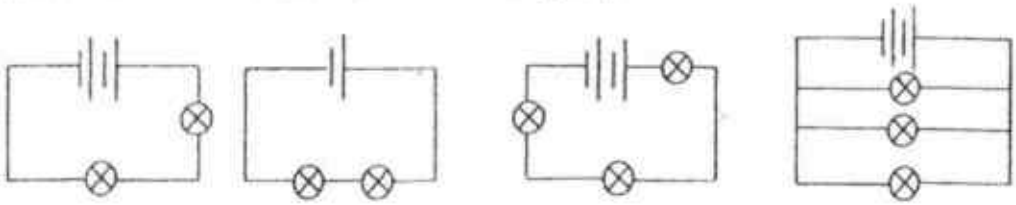
17 The diagrams below shows four circuits, A, B, C and D with different arrangements of identical batteries and bulbs. The bulbs in all four circuits light up.

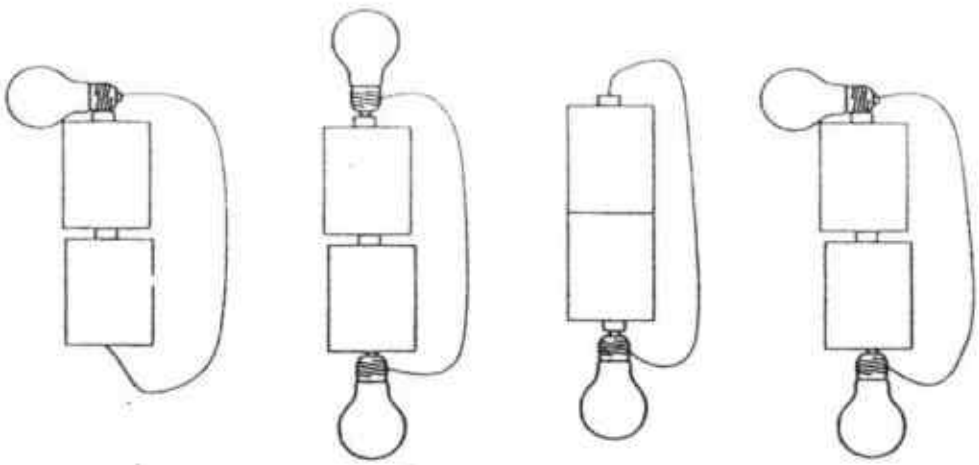


A B C D

Which one of the following shows the correct brightness of the bulbs?

	Brightness of bulb			
	Dimmest →			Brightest
(1)	A	B	C	D
(2)	B	C	A	D
(3)	C	B	A	D
(4)	B	C	D	A

18 The diagram shows four different set-ups of identical batteries, bulbs and wires that are in working condition.

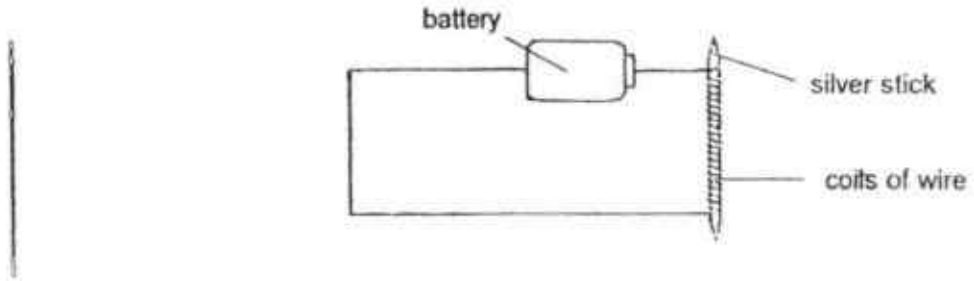


Set-up A Set-up B Set-up C Set-up D

In which set-ups, A, B, C and D will the bulb(s) light up?

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

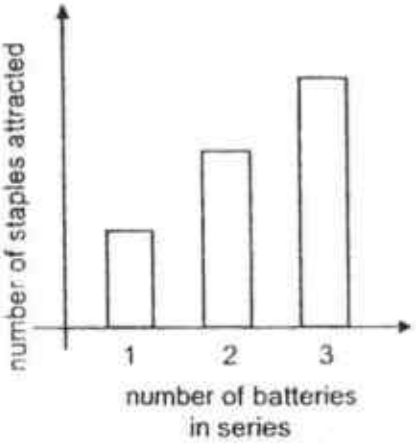
19 Pei Ling used a silver stick, a battery and some wires to set up the circuit as shown.



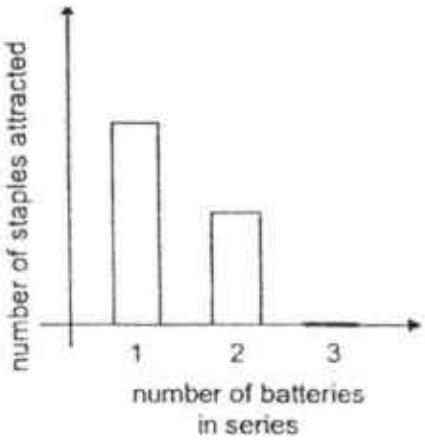
She then increased the number of batteries connected in a series in the circuit from one to two and then three. She then counted the maximum number of staples attracted to the silver stick each time.

Which one of the following bar graphs shows the results she will obtain?

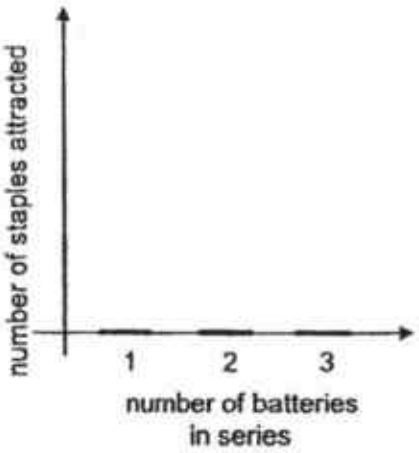
(1)



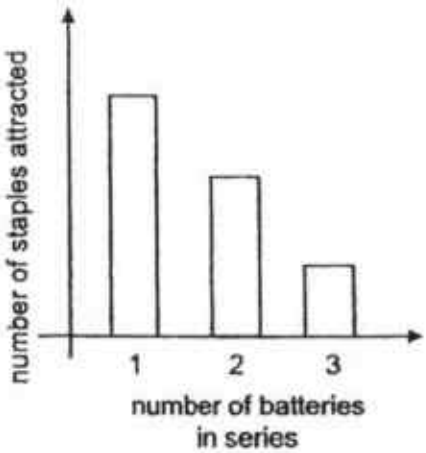
(2)



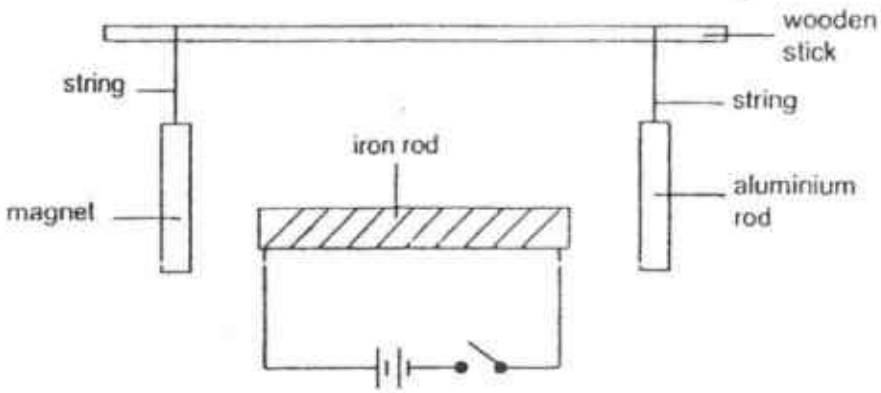
(3)



(4)



20 Devi set up an electromagnet and placed it in between an aluminium rod and a magnet as shown.



When the switch is closed, which of the following are possible observations she will make?

A The magnet moves to the left.

B The magnet moves to the right.

C The aluminium rod moves to the left.

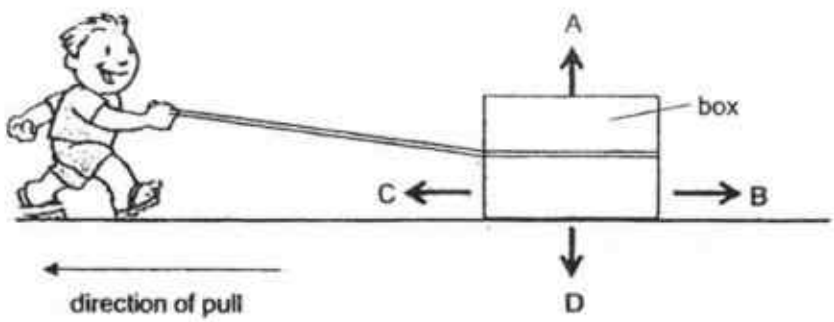
(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

21 The diagram shows a box being dragged along the ground by a boy.

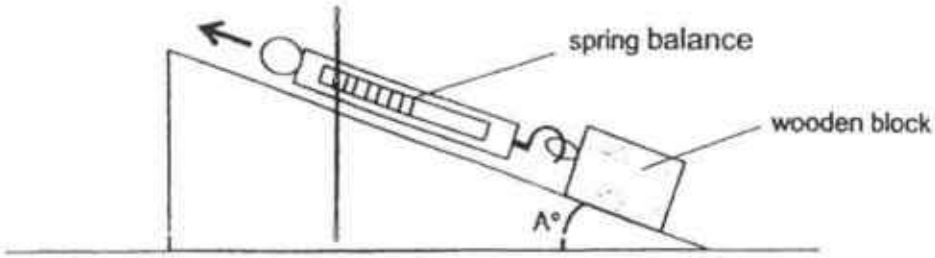


Which of the arrows above show correctly the directions that frictional force and gravitational force are acting on the box?

	Frictional Force	Gravitational Force
(1)	B	D
(2)	C	D
(3)	A	C
(4)	B	A

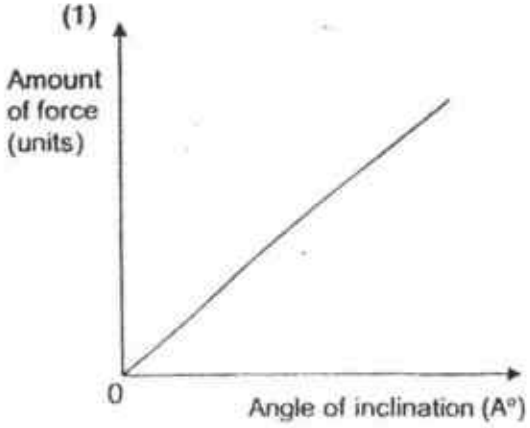
(Go on to the next page)

22 A wooden block was pulled up a ramp using a spring balance as shown below and the amount of force needed to pull it was then recorded. The experiment was repeated but the angle of inclination (A°) was increased by 5° each time.

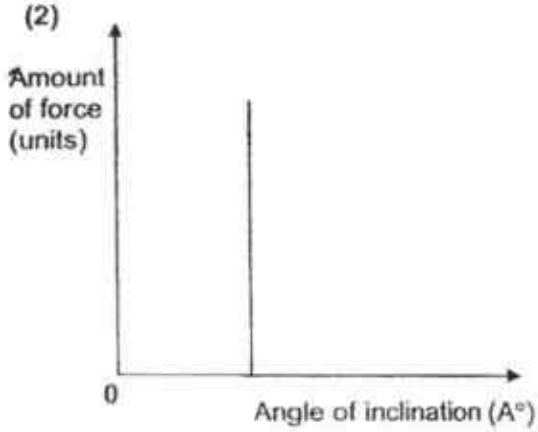


Which one of the following graphs correctly shows the results of the experiment above?

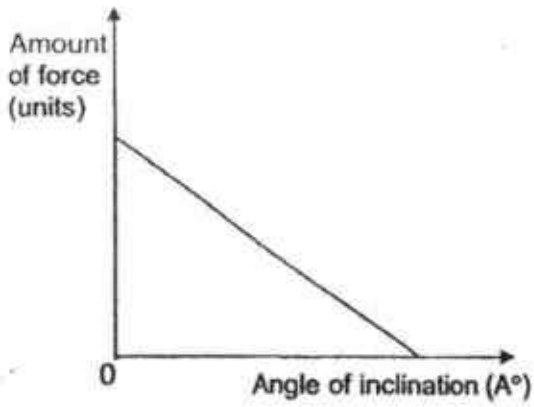
(1)



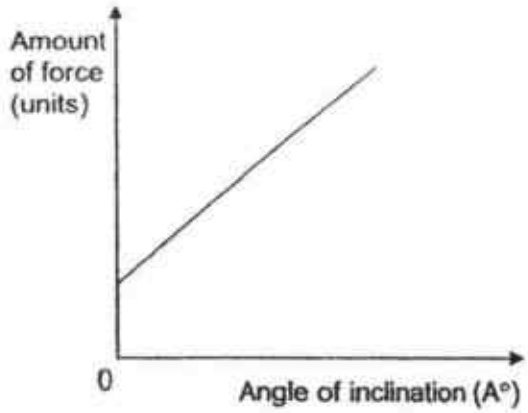
(2)



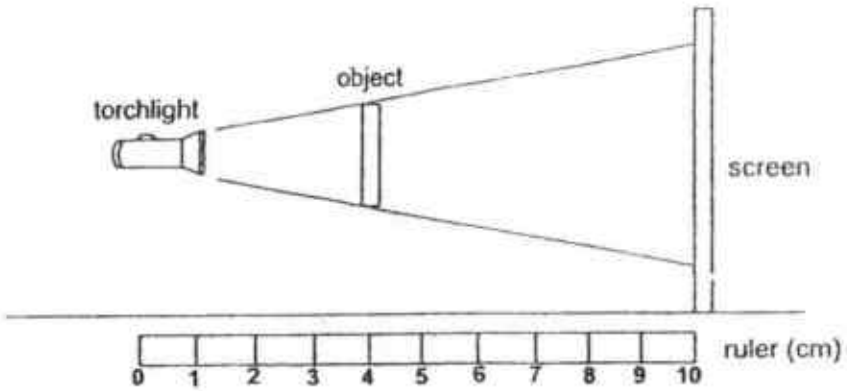
(3)



(4)



23 Tom placed a torchlight at the 1 cm mark of a ruler. It shone at an object that was placed at the 4 cm mark of the ruler as shown. A shadow was cast on the screen.



Tom adjusted the position of the torchlight and/or object. Which of the following two combinations of the positions of the torchlight and object will cast a smaller shadow on the screen?

	Position of torchlight (cm)	Position of object (cm)
A	0	4
B	1	3
C	2	4
D	1	5

(1) A and B

(2) B and C

(3) C and D

(4) A and D

24 Study the actions listed below.

A Burning a log of wood.

B Dropping a ball onto the floor.

C Rubbing your hands together.

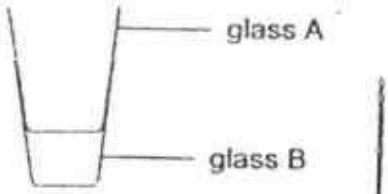
D Switching on an electric table fan.

Which of the following shows the energy conversions in all the actions correctly?

	A	B	C	D
(1)	Kinetic energy to heat energy	Potential energy to heat energy	Kinetic energy to electrical energy	Kinetic energy to potential energy
(2)	Potential energy to heat energy	Potential energy to kinetic energy	Kinetic energy to heat energy	Electrical energy to kinetic energy
(3)	Kinetic energy to heat energy	Potential energy to heat energy	Potential energy to kinetic energy	Electrical energy to kinetic energy
(4)	Kinetic energy to heat energy	Kinetic energy to potential energy	Potential energy to heat energy	Kinetic energy to electrical energy

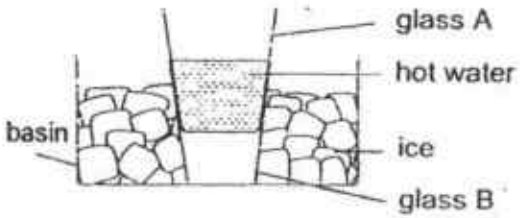
(Go on to the next page)

25 Two glasses, A and B were stuck together as shown in the diagram.

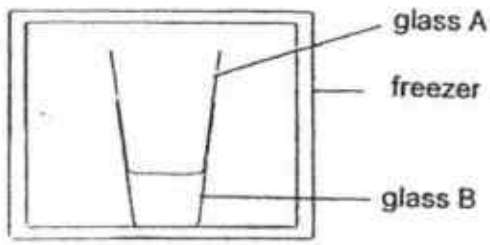


Which of the methods shown below would enable glass A to be separated from glass B in the shortest possible time?

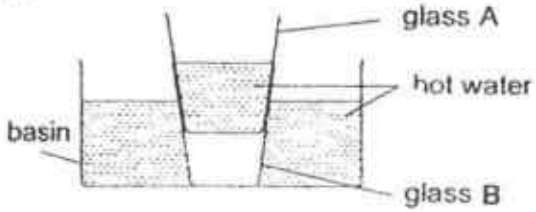
(1)



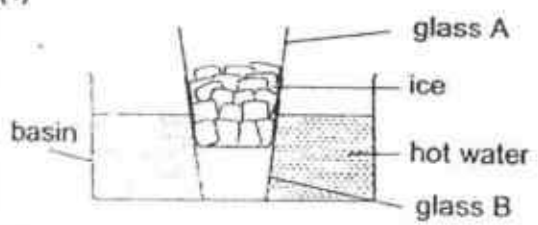
(2)



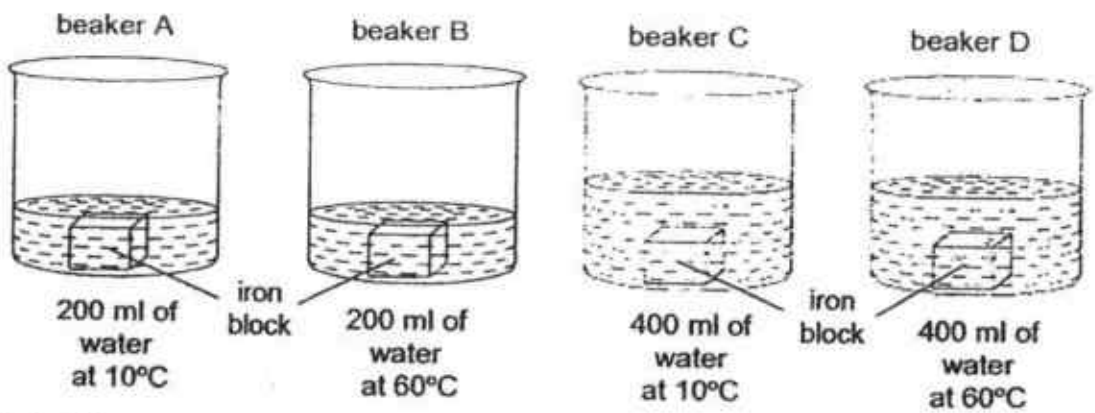
(3)



(4)



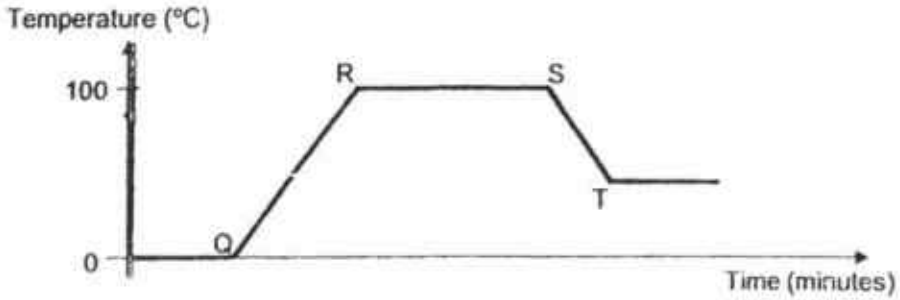
26 Four identical iron blocks were heated to a temperature of 90°C. Each block was then dropped into a beaker of water as shown in the diagrams.



Which of the following correctly indicates the beakers with water at the lowest and highest temperature two minutes after the blocks were dropped in them?

	Beaker of water with the lowest temperature	Beaker of water with the highest temperature
(1)	A	D
(2)	B	C
(3)	C	B
(4)	D	A

27 A beaker of ice was heated over a bunsen burner, with the temperature of the contents taken and recorded over time. The results were plotted in the graph.



Which of the following statements are true?

A The water stopped boiling after S.

B The ice was completely melted at Q.

C The bunsen burner was turned off at R.

D There was no change of state in the water from Q to R.

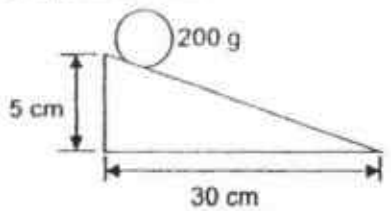
(1) A and B only

(2) B and C only

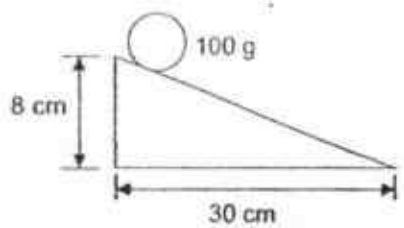
(3) C and D only

(4) A and D only

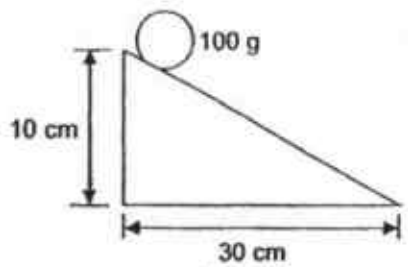
28 Ryan wanted to investigate if the mass of an object affects the amount of energy it possesses, using the set-ups as shown.



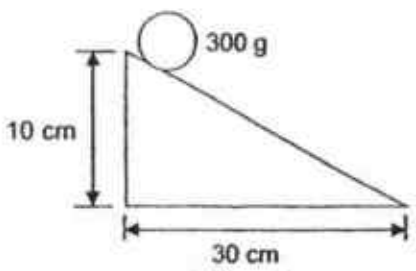
Set-up A



Set-up B



Set-up C



Set-up D

Which of the following set-ups should he use in his experiment?

(1) A and B only

(2) B and C only

(3) C and D only

(4) A and D only

(Go on to booklet B)

Anglo-Chinese School (Junior)
Anglo-Chinese School (Primary)

PRELIMINARY EXAMINATION 2018
PRIMARY SIX
SCIENCE
BOOKLET B

Name:

Class: Primary 6

Date: 28 August 2018

Duration of paper: 1 h 45 min

Parent's/Guardian's Signature

INSTRUCTIONS TO CANDIDATES

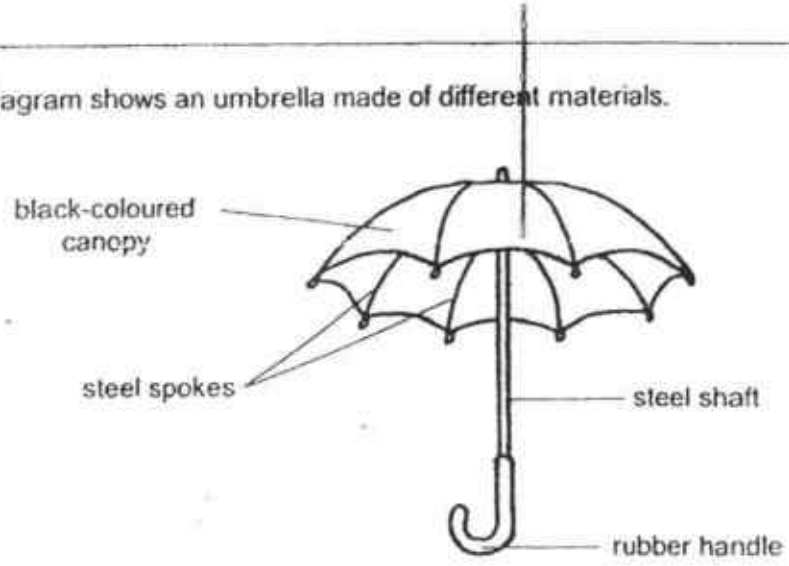
1. Write your name, register number and class.
2. Do not turn this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.
6. This question paper consists of **16** printed pages including this cover page.

BOOKLET	POSSIBLE MARKS	MARKS OBTAINED
A	56	
B	44	
Total	100	

PART II

For questions 29 to 40, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 The diagram shows an umbrella made of different materials.



(a) State an important property that the material of the canopy must possess that makes it suitable for use in an umbrella. Explain clearly why the property is required in an umbrella. [1]

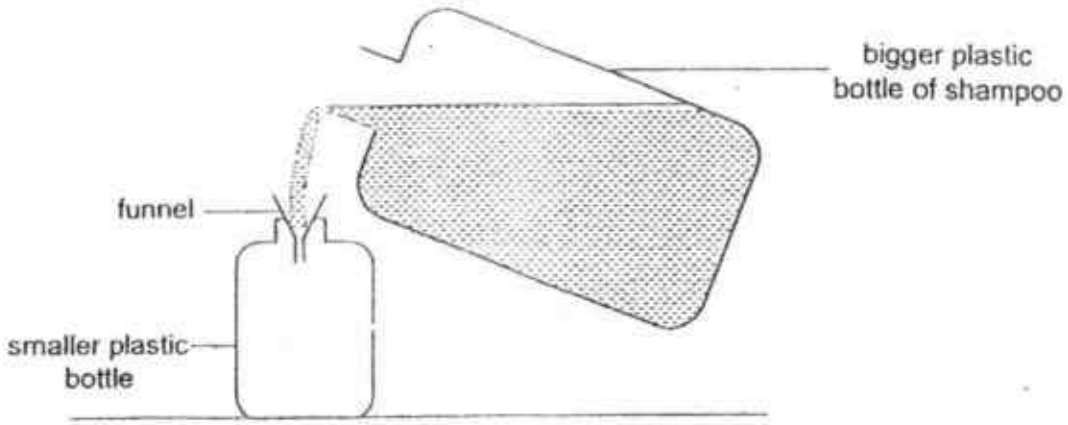
(b) In what way is rubber a more suitable material than steel to make the handle? Explain your reasoning clearly. [1]

(c) What would be an advantage to the user if the canopy is made of a transparent material ? Explain your answer clearly. [1]

(Go on to the next page)

SCORE	
	3

30 Lynn wanted to transfer some shampoo from a bigger plastic bottle into a smaller plastic bottle as shown.



She started to pour the shampoo carefully into the smaller bottle using a funnel. At first, she noticed that some shampoo entered the smaller bottle easily. However, after a while, she noticed that the shampoo did not flow into the smaller bottle but overflowed instead even though the smaller bottle was obviously still not full.

(a) State the property of the shampoo which allowed it to be poured into the smaller bottle. [1]

(b) Explain why the shampoo overflowed even though the smaller bottle was not full yet. [2]

(c) Suggest an action she can take to fill the smaller bottle faster without causing any damage to the bottle and funnel. [1]

(Go on to the next page)

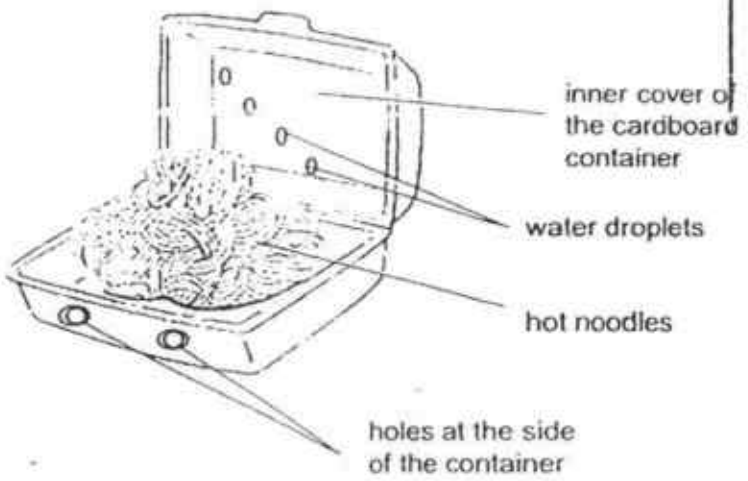
SCORE /

31 (a) State one difference between evaporation and boiling. [1]

_____

_____

(b) Sam bought some hot fried noodles which were placed in a cardboard container as shown.



He opened the cover after five minutes and observed that there were water droplets formed on the inner portion of the cover of the cardboard container. Explain how the water droplets were formed. [2]

_____

_____

_____

(c) Sam observed that there were holes at the side of the cardboard container. He suggested increasing the size of the holes. How will this make the noodles cool down faster? Explain your answer. [1]

_____

_____

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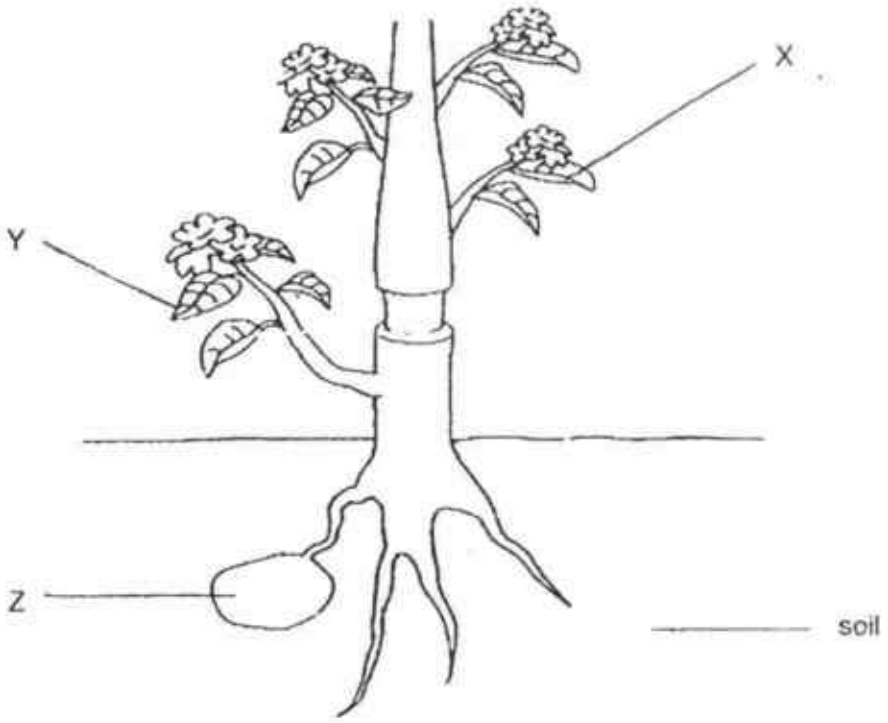
SCORE	4

32 A thick ring of a stem of a plant was removed as shown in the diagram below. As a result, the tubes carrying food and water were removed.



(a) What is needed for photosynthesis to take place? [1]

_____

_____

(b) After a week, it was observed that the leaves at X turned yellow and wilted but the leaves at Y remained green. Explain clearly what caused the leaves at X to turn yellow and wilt, and why the leaves at Y could remain green. [2]

_____

_____

_____

(c) Struture Z is where the plant stores its food. Predict whether Z will grow bigger or smaller after the thick ring of the stem is removed, explaining clearly the reason why this happens. [1]

_____

_____

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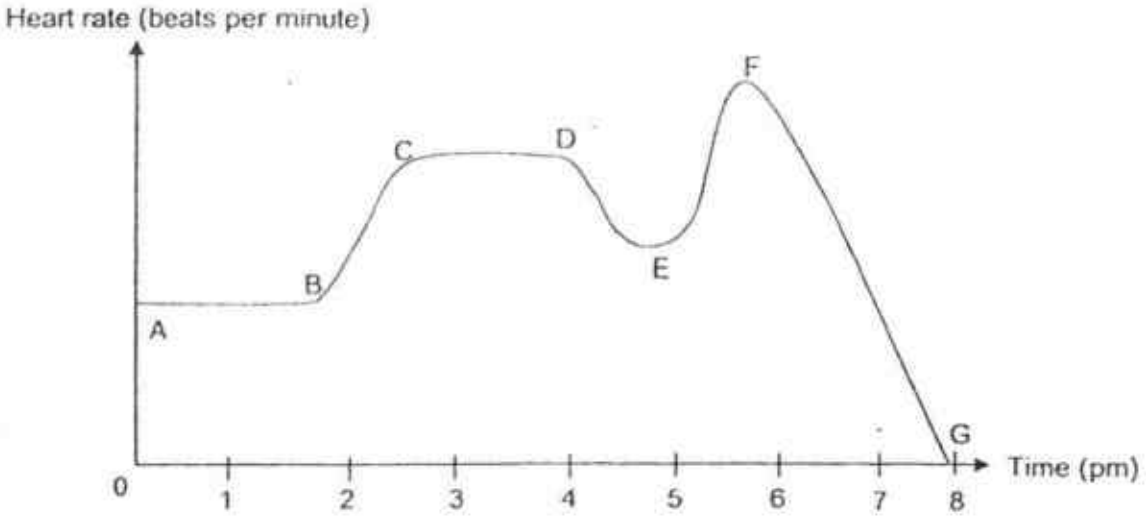
SCORE	4

33 The graph shows Mike's heart rate for a period of time as he went about his daily activities.



(a) Which part of the line graph is incorrect? Explain why. [1]

_____

_____

(b) Explain why his heart rate increased as the intensity of his activities increased. [2]

_____

_____

_____

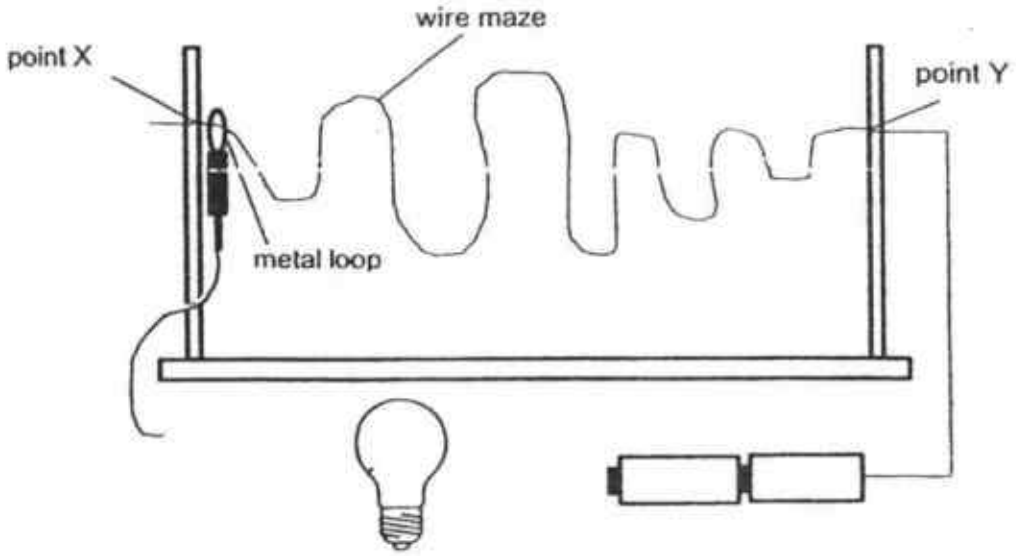
_____

(Go on to the next page)

SCORE	
	3

34 Billy plays a game called "Buzz Wire" which has a bulb and batteries which are new and in working condition. He has to guide the metal loop through the wire maze from point X to point Y without touching the metal loop against the wire maze. If the metal loop touches the wire maze, the bulb will light up.

(a) Complete the diagram below, by drawing wires to connect the components so that the game will work. [1]



(b) Why did the bulb light up when the metal loop touched the wire maze? [1]

_____

_____

When Billy added another bulb to the "Buzz Wire", he observed that the two bulbs became dimmer.

(c) Give a reason why the bulbs were dimmer. [1]

_____

(d) After a few minutes, Billy noticed that the bulbs did not light up when the metal loop was in contact with the wire maze. Suggest a possible reason for this. [1]

_____

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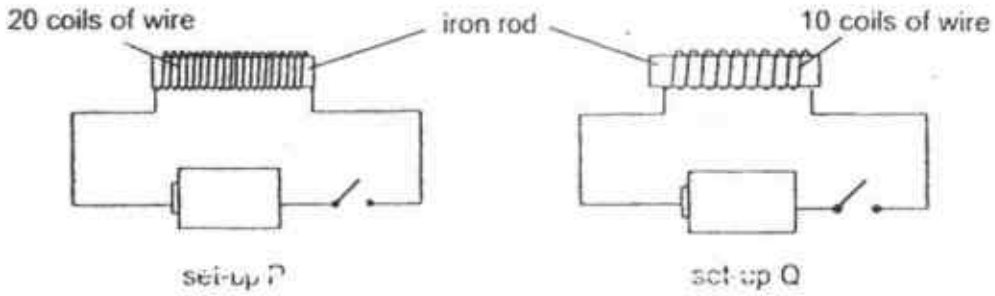
SCORE	
	4

35 Victor conducted an experiment by using steel clips, two identical iron rods, wires and batteries for set-ups P and Q as shown.



When each switch was closed, he observed some steel clips were attracted and counted the number of steel clips each iron rod attracted.

(a) Based on the diagram above, state the aim of his experiment. [1]

_____

_____

(b) Using only the materials in the experiment above, suggest and explain another method that Victor can use to decide which electromagnet is stronger? [2]

_____

_____

_____

_____

(c) State one other action Victor can take to further increase the magnetic strength of the electromagnet in set-up Q. [1]

_____

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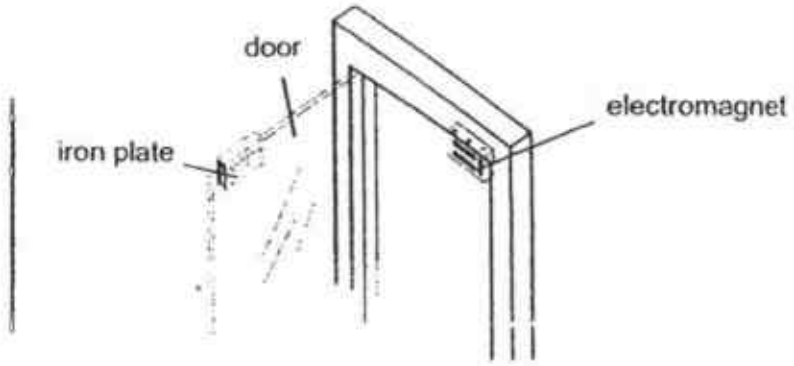
SCORE	
	4

(d) Electromagnets are often used to lock doors as shown in the diagram.



Explain why an electromagnet is used instead of a permanent magnet for such doors. [1]

_____

_____

SCORE	1

36 A marble was pushed with the same amount of force across four different types of surfaces, Q, R, S and T. For each surface, the experiment was repeated a few times and the table shows the average distance travelled by the marble before it came to a stop.

Surface	Q	R	S	T
Average distance travelled by the marble (cm)	78	19	28	55

(a) Using the results from the table above, state which surface could be the roughest. Give a reason for your answer. [1]

_____

_____

(b) Why is there a need to repeat the experiment a few times and to calculate the average distance travelled by the marble for each surface tested? [1]

_____

_____

Michael recently visited his grandmother in the hospital and saw that she was wearing special socks to prevent falls as shown in the picture.

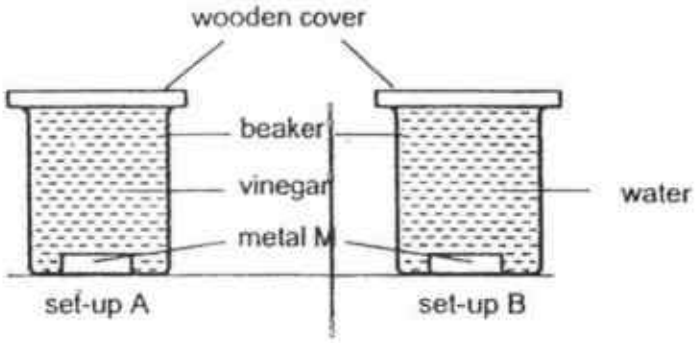
(c) How does wearing these special pairs of socks prevent falls? [1]

_____

_____

SCORE	
	3

37 Ali prepared two set-ups to find out if the amount of vinegar affects the amount of paint to come off metal M.

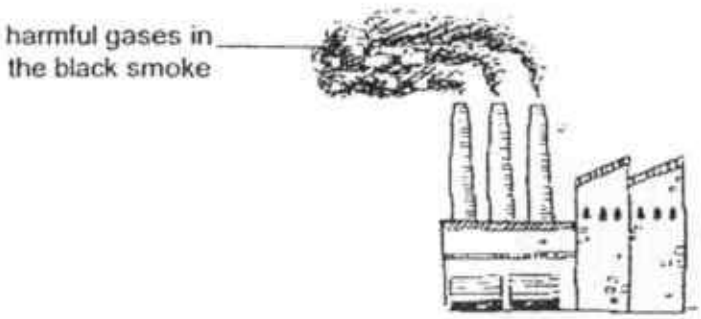


(a) What should Ali change in set-up B to carry out a fair test? [1]

_____

_____

The diagram below shows black smoke coming out from the chimneys of a factory.



(b) It was observed that the paint from the bodies of cars near this factory came off during the rainy season. Explain how the harmful gases present in the black smoke from the factory may have caused this. [2]

_____

_____

_____

_____

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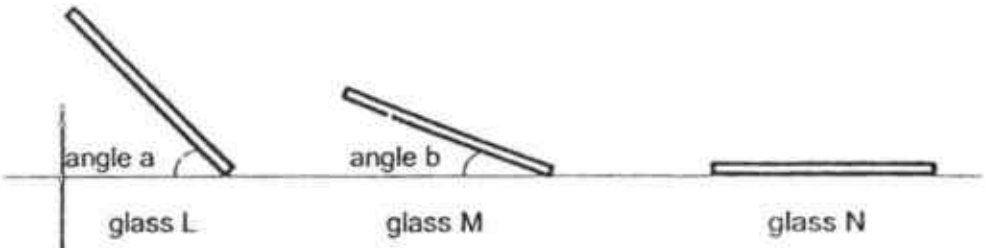
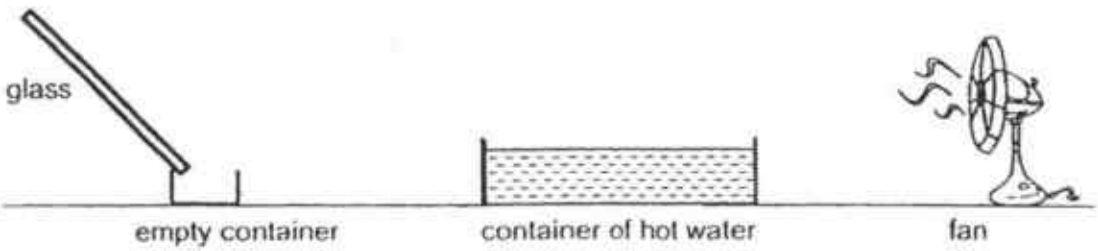
SCORE	
	3

38 Danny conducted an experiment using three identical pieces of glass, L, M and N. They were tilted at different angles as shown below. Glass N was not tilted.



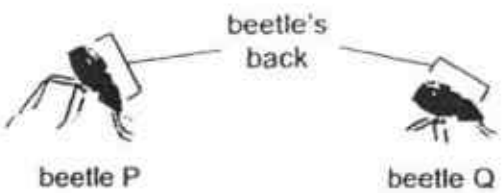
Danny prepared the setup as shown for each piece of glass. He allowed the fan to blow at the surface of the hot water for the same duration of time. He observed water droplets forming on each glass and flowing down the glass pieces. He measured and recorded the amount of water collected in the empty container.



The table below shows his result.

Glass	L	M	N
Amount of water collected in the empty container (ml)	20	12	4

Two beetles of the same kind and size, P and Q, obtain water by sticking their rear ends up in the air so that they face the wind which is rich in water vapour as shown in the diagram. The water collected on their backs flows down towards their head and mouth.



(a) Based on the results of Danny's experiment, explain how beetle P obtained more water than beetle Q. [2]

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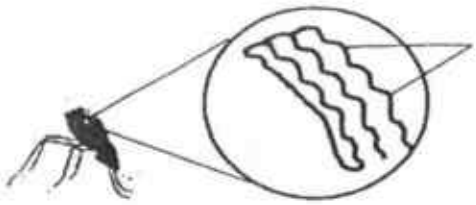
SCORE	2

(b) In addition, it was observed that Beetle P's back also has many bumps as shown in the diagram.



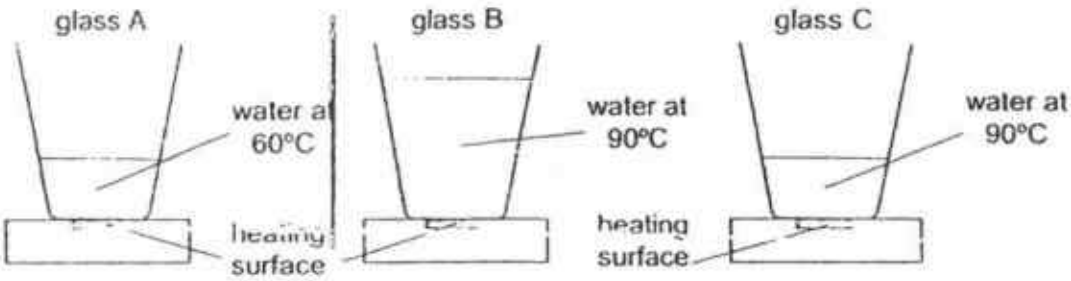
Explain how this enables Beetle P to obtain more water from the environment? [1]

_____

_____

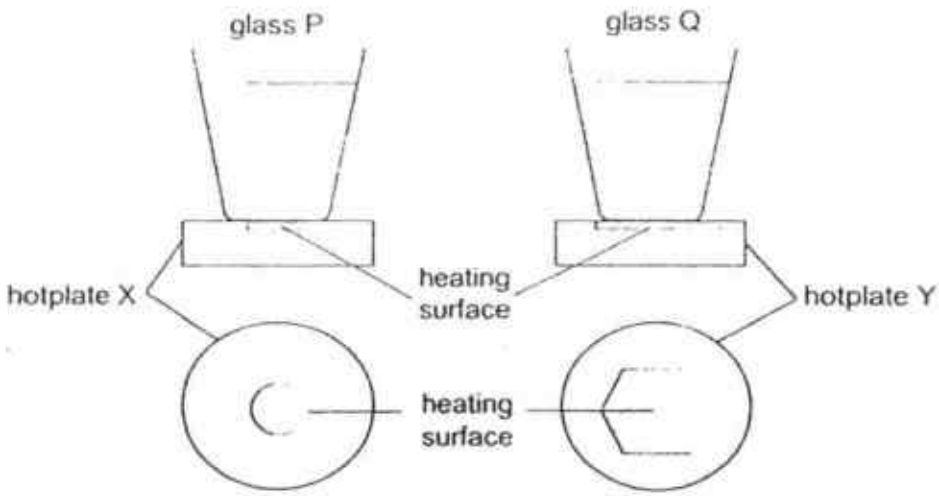
SCORE	0 /

39 The diagram below shows three identical glasses, A, B and C, filled with different amounts of water at different temperatures, placed on three identical hotplates. The water in the three glasses were originally at 30°C, before the glasses were placed on the electrical hotplates and heated at the same starting time, to reach their final temperatures.



(a) In which glass did the water take the longest time to reach the stated temperature? Explain your answer. [1]

In another experiment, another two identical glasses, P and Q, were filled with the same amount of water and placed on hotplates as shown below. The hotplates were the same except for their heating surfaces, which were of different shapes.



View of hot plates as seen from the top

(b) In which glass would the water boil first? Explain why. [2]

(Go on to the next page)

SCORE	3

During the day in a desert, a lizard was seen standing on the sand with its right fore-limb and left hind-limb raised in such a manner so that its body did not touch the hot sand.

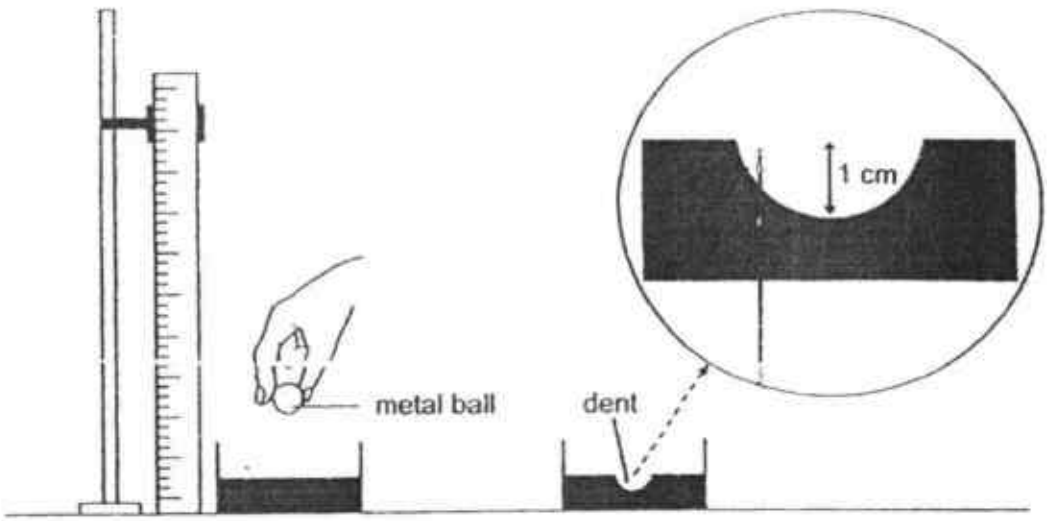
(c) Why did the lizard raise its body above the hot sand? [1]

After a few seconds, the lizard would switch to standing on the hot sand with its left fore-limb and right hind-limb raised instead, so that its body was again above the hot sand. The lizard switched between using its two different sets of limbs approximately every few seconds.

(d) Why did the lizard switch between using its two different sets of limbs approximately every few seconds? [1]

SCORE	2

40 Jack carried out an experiment using a metal ball as shown in the diagram.

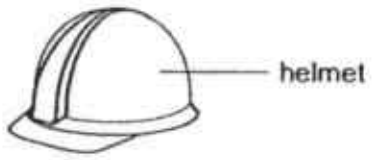


He released the ball from a height of 20 cm onto a container of sand. The ball created a dent in the sand which was 1 cm deep.

(a) Jack released the metal ball from different heights. Based on his experiment, infer how the depth of the dent in the sand would change with the different heights he released the ball from [1]

(b) Give a reason for your answer in (a). [1]

(c) A worker in a building construction site wears a helmet as shown. Explain how wearing a helmet protects his head from a falling object. [1]



End of Paper

SCORE	
	3

EXAM PAPER 2018

LEVEL : PRIMARY 6

SCHOOL : ANGLO-CHINESE SCHOOL (JUNIOR)

SUBJECT : SCIENCE

TERM : PRELIMINARY EXAM

BOOKLET A

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

BOOKLET B

Q29. (a) The canopy has to be waterproof for water droplets to not be absorbed by the canopy and instead roll off the canopy, thus the user will not become wet.

(b) Rubber is a poor conductor of electricity, unlike steel. Thus, the user will not be electrocuted if he is struck by lightning.

(c) It allows the user to look around him, thus he will be aware of his surroundings and not bump into anything.

Q30. (a) Shampoo has no definite shape.

(b) Air in the smaller bottle occupied the remaining space in the bottle and could not escape, preventing the shampoo from entering the bottle. Thus the shampoo overflowed even though the bottle was not full yet.

(c) She could lift the funnel slightly above the mouth of the smaller plastic bottle.

Q31. (a) Evaporation takes place at the surface of the liquid but boiling takes place throughout the liquid.
OR
Evaporation can take place at any temperature while boiling can only take place at the boiling point.

(b) The water in the hot noodles gained heat from the hot noodles and evaporated into warm water vapour. The warm water vapour lost heat to the cooler inner portion of the cardboard cover and condensed to form water droplets.

(c) The hot noodles would continuously lose more heat to the cooler surrounding air, thus the hot noodles would cool down faster.

Q32. (a) Water, carbon dioxide, presence of both light and chlorophyll in the leaves.

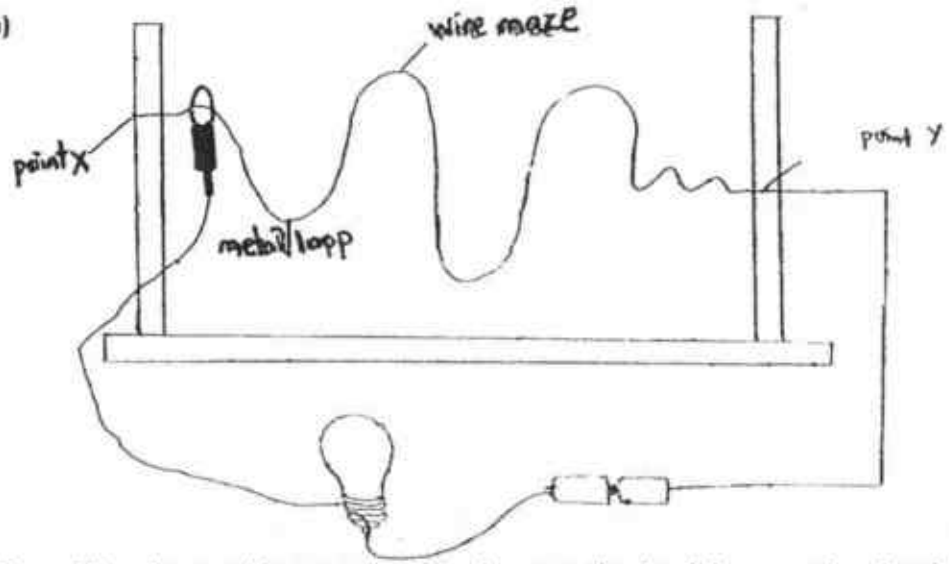
(b) Water absorbed by the roots cannot be transported to the leaves at X due to the absence of water-carrying tubes, thus causing them to be unable to photosynthesise and hence wilt. At Y, the leaves were able to photosynthesise as water could be transported to them. As such, the leaves at Y could remain green.

(c) It will become smaller. Food produced in the leaves could not be transported to the roots, thus the roots would use up the food stored in Z for its survival. Since the amount of food stored decreases, the size of Z decreases.

Q33. (a) Part G. At G, Mike's heart rate would be at 0 beats per minute, which is impossible as he still needs his heart to pump blood to the rest of his body.

(b) As the intensity of his activities increased, his heart pumped more blood rich in oxygen at a faster rate to the rest of his body, thus respiration can take place at a faster rate and more energy is produced. At the same time, blood rich in carbon dioxide is pumped to the lungs and expelled at a faster rate, thus his heart rate increased.

Q34. (a)



(b) When the metal loop touched the wire maze, the circuit becomes closed and electricity can flow through the circuit, thus the bulb lights up.

(c) The bulbs are arranged in series.

(d) The wires were not properly connected to the bulbs.

Q35. (a) To find out of the number if coils of wire around the iron rods affects the strength of the electromagnets.

(b) He can measure the greatest distance at which each electromagnet can attract a steel clip. The stronger electromagnet is able to attract the steel clip at a greater distance compared to the weaker electromagnet.

(c) Add more batteries to set-up Q.

(d) If an electromagnet is used, the door can be locked and unlocked using a switch. However, if a permanent magnet were used, the door can only be locked.

Q36. (a) R. The marble travelled the shortest distance, showing that the friction between surface R and the marble is the greatest and hence R is the roughest.

(b) This is to reduce human error and obtain more reliable results.

(c) The tiny bumps increase the friction between her feet and the floor, thus reducing the chances of her slipping and falling.

Q37. (a) Add some vinegar into set-up B

(b) The harmful gases present in the black smoke are soluble in rainwater and give a solution that is similar to vinegar. During the rainy season, since the rain that falls is similar to that of vinegar, it will cause the paint from the bodies of cars to come off.

Q38. (a) Beetle P had its back tilted at a greater angle than that of beetle Q, thus the amount of exposed surface area to the wind is greater than that of beetle Q. More water vapour loses heat and condenses to form water droplets on the back of beetle P than that of beetle Q.

(b) The bumps further increase the exposed surface area available for water vapour to lose heat and condense to form water droplets, thus enabling beetle P to obtain more water from the environment.

Q39. (a) Glass B. It contained the most amount of water and was at a higher temperature, thus more heat is required to heat glass B and hence it takes the longest time to reach the stated temperature.

(b) Glass Q. The heating surface of hotplate Y is larger than that of hotplate X, thus the water in glass Q gaindd heat at a faster rate than in glass P. Hence, the water in glass Q would boil first.

(c) It is so as to reduce the amount of exposed surface area of the lizard's body to the hot sand, thus it gains heat at a slower rate and can survive the heat.

(d) It allows one set of limbs to lose heat to the surrounding air and cool.

Q40. (a) The higher the height from which the ball is released, the greater the depth of the dent in the sand.

(b) At a higher height, the ball would have more gravitational potential energy which is converted to kinetic energy as the ball falls, thus more energy is transferred from the ball to the sand. Hence the ball has a greater force of impact and the depth of the dent increases.

(c) Some of the kinetic energy possessed by the falling object is converted to heat and sound energy when it comes into contact with the helmet. Thus the kinetic energy possessed by the falling object and hence the force of the impact decreases.

End

Index No. [ ][ ][ ][ ][ ]-[ ]

MAHA BODHI SCHOOL
2018 PRELIMINARY EXAMINATION
PRIMARY 6
SCIENCE
(BOOKLET A)

Name : _____ ( )

Class : Primary 6 _____

Date : 14 August 2018

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 23 printed pages.

BOOKLET A : **[28 x 2 marks = 56 marks]**

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade your answer on the Optical Answer Sheet.**

---

1. Which of the following characteristics are most likely to be observed in each type of flower?

	wind-pollinated flower	insect-pollinated flower
(1)	large petals	small petals
(2)	feathery stigma	sticky stigma
(3)	produces nectar	does not produce nectar
(4)	gives off unpleasant smell	gives off pleasant smell

2. Which of the following cannot be found in the human circulatory system?

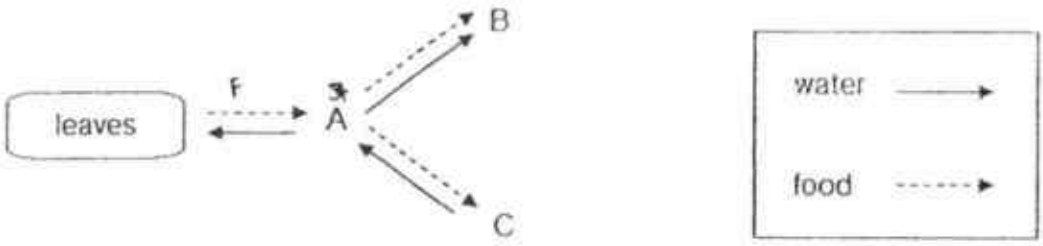
(1) water

(2) oxygen

(3) carbon dioxide

(4) undigested food

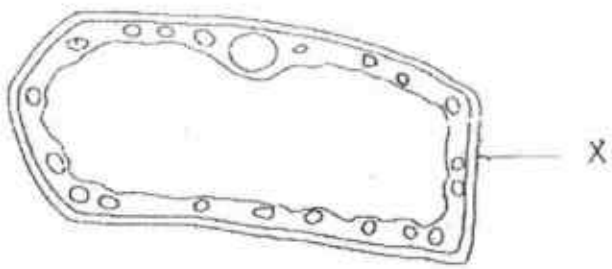
3. The diagram below shows how water and food are transported in a plant.



Which of the following shows the parts of the plant correctly?

	A	B	C
(1)	flowers	roots	stem
(2)	roots	stem	flowers
(3)	stem	flowers	roots
(4)	leaves	stem	leaves

4. The diagram below shows a cell.



What is the function of the part labelled X?

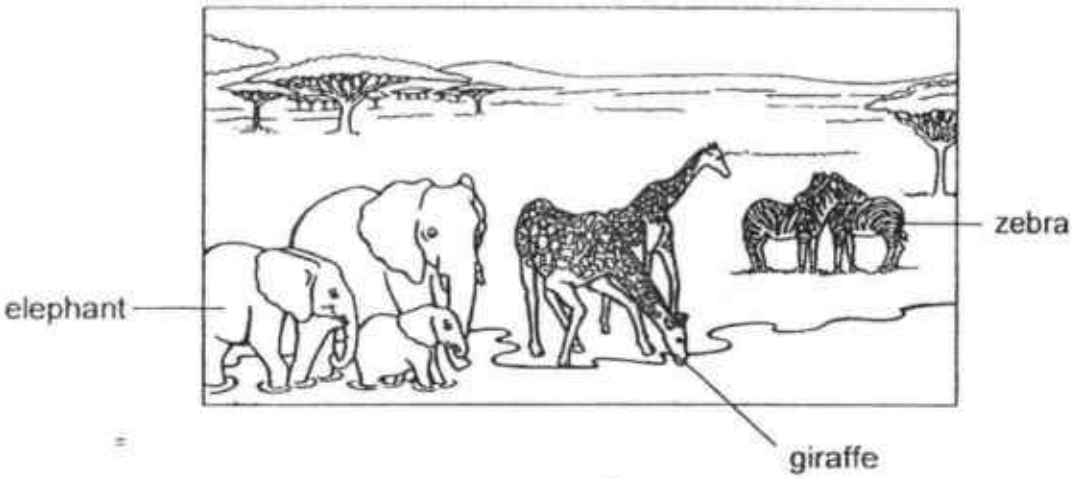
(1) To trap sunlight to make food.

(2) To control all activities in the cell.

(3) To allow activities to take place there.

(4) To support and give the cell its shape.

5. The diagram below shows a picture of a habitat.



Which of the following statements is true?

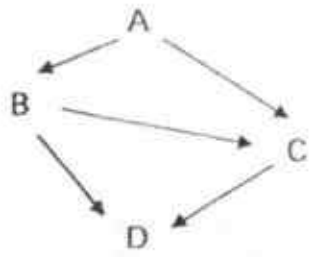
(1) The group of elephants form one community.

(2) The elephants, giraffes and zebras form 7 populations.

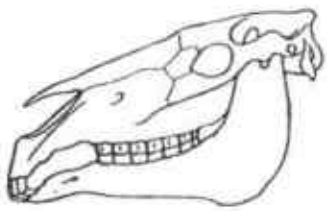
(3) The groups of elephants, giraffes and zebras form one population.

(4) The groups of elephants, giraffes and zebras form one community.

6. The diagram below shows a food web in a habitat.



A skull of an organism is found in that habitat.



skull

Based on the information above, which organism, A, B, C or D is most likely to have such a skull?

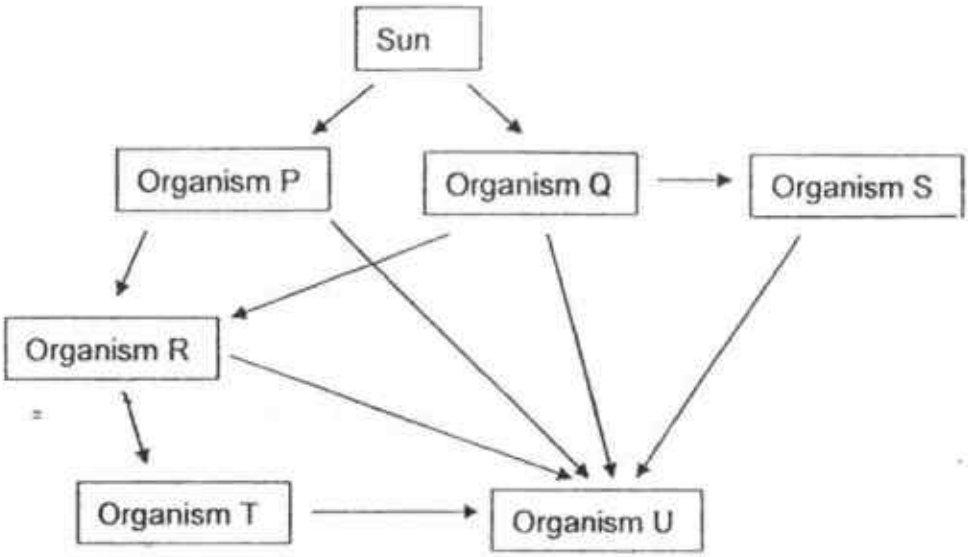
(1) A

(2) B

(3) C

(4) D

7. Study the transfer of energy shown in the diagram below.



Which of the following statements are true?

A. Organism U is a decomposer.

B. Organism T is an animal eater.

C. There are three food producers.

D. Organisms R and S are plant-and-animal eaters.

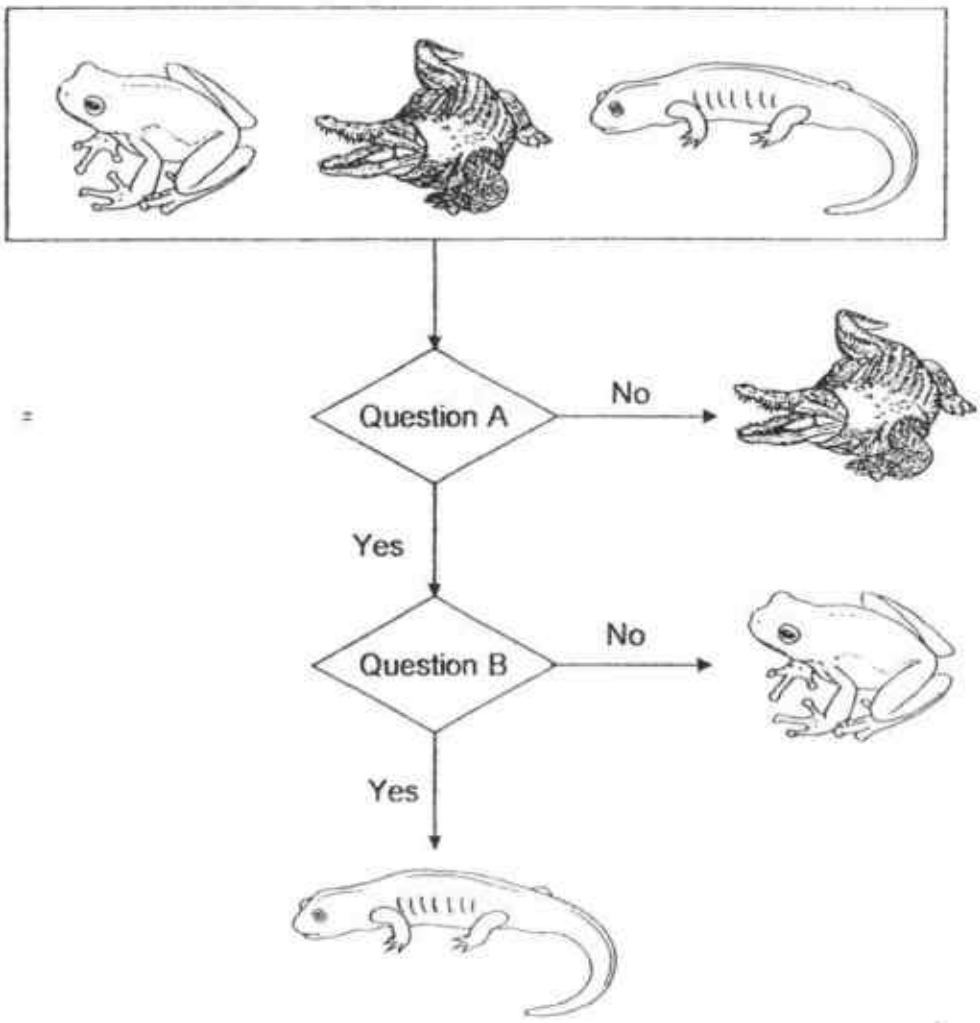
(1) A and B only

(2) C and D only

(3) B, C and D only

(4) A, B, C and D

8. Eva classified three animals using the chart shown below.



What are the two questions, A and B?

	Question A	Question B
(1)	Lays eggs?	Breathes through lungs?
(2)	Has moist skin?	Has scales?
(3)	Has moist skin?	Does the adult have a tail?
(4)	Breathes through skin?	Lays eggs?

9. Devi grew some seeds on four trays of cotton wool inside a room. The experimental conditions and results are shown in the table below.

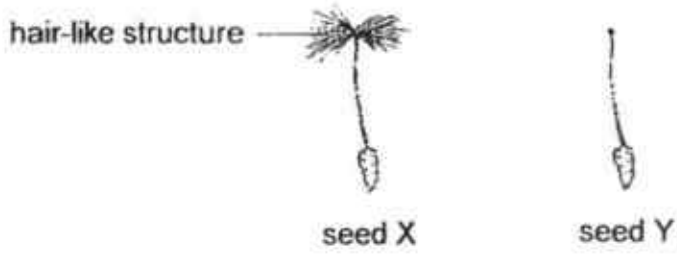
Tray	Presence of light	Presence of warmth	Average length of root (cm)
W	no	no	0
X	yes	yes	3
Y	yes	no	0
Z	no	yes	2

Devi wanted to confirm if germination would require light and warmth.

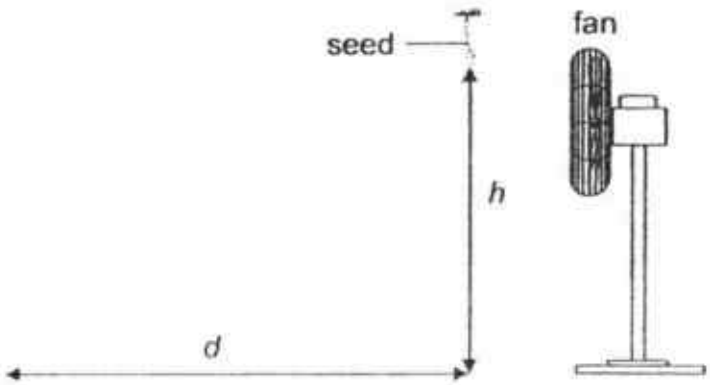
Which sets of trays should she compare in her investigation?

	Germination requires	
	light	**warmth**
(1)	W and X	Y and Z
(2)	W and Y	W and X
(3)	X and Z	W and Z
(4)	Y and Z	X and Y

10. Gina conducted an experiment using two seeds of similar size to find out how the height at which they were dropped would affect the distance they travelled. One of the seeds had its hair-like structure removed.



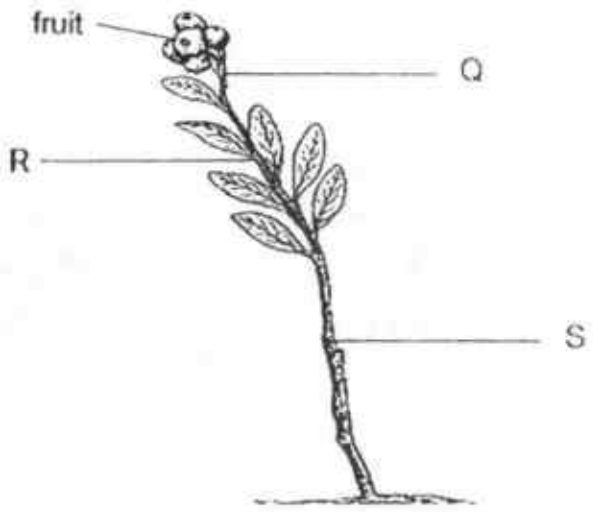
She dropped seed X from different heights, *h*, in front of a fan as shown. She measured the distance, *d*, travelled by seed X. She repeated the experiment with seed Y.



Which of the following distances were most likely to be observed by Gina?

	seed X		seed Y	
	***h* = 120 cm**	***h* = 60 cm**	***h* = 120 cm**	***h* = 60 cm**
(1)	30 cm	60 cm	20 cm	10 cm
(2)	30 cm	60 cm	10 cm	20 cm
(3)	60 cm	30 cm	10 cm	20 cm
(4)	60 cm	30 cm	20 cm	10 cm

11. The diagram below shows a plant which is bearing fruits. The plant has thick and long roots in the ground.



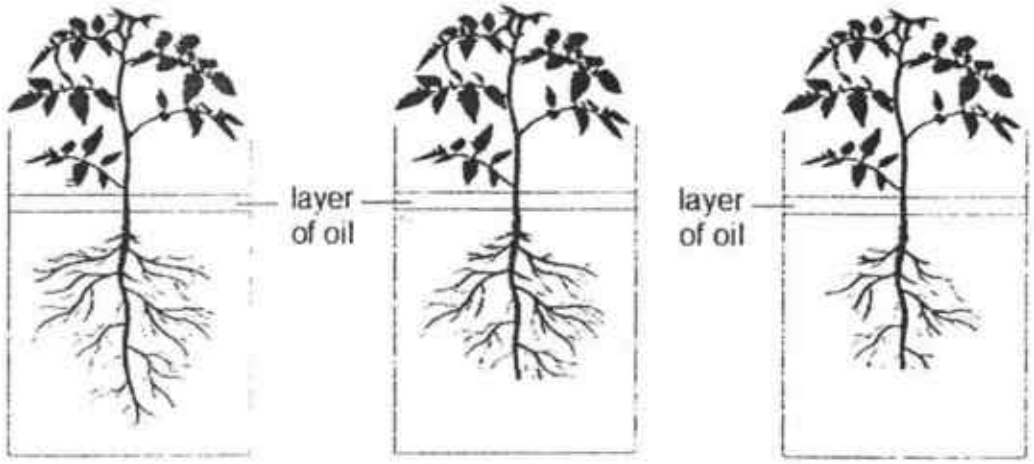
Position Q, R and S are locations where the food-carrying tube can be removed from the plant by cutting away the outer ring of its stem.

Which of the following shows correctly where the food-carrying tubes have been removed from the plant which results in the observations made?

	Observations about the plant	
	the fruit becomes the biggest	**the plant wilts the fastest**
(1)	Q	R
(2)	R	S
(3)	S	Q
(4)	S	S

12. Kelly conducted an experiment using the set-ups shown below. She placed three similar plants in identical containers with equal amounts of water. She added a layer of oil on the water surface.

She then coated some surfaces of the leaves with oil and trimmed off some of the roots, as shown below, before placing all the containers in the same location.



Container A (no oil coated on the leaves)

Container B (oil coated on the leaves)

Container C (no oil coated on the leaves)

The amount of water left in each container after one day was recorded.

Which of the following statements about the amount of water left in the container is/are true?

A. Container A has the most amount of water left.

B. Container B has the least amount of water left.

C. Container C has the least amount of water left.

D. It cannot be determined if Container B has more water than Container C.

(1) C only

(2) D only

(3) A and D only

(4) A and B only

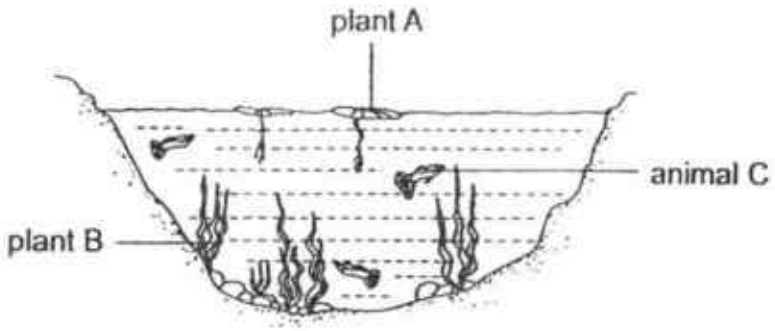
13. The following relationships were observed among five organisms P, Q, R, S and T.

S is eaten by Q and R.
P feeds on T and R.
Q is eaten by R and T.

Which one of the following classifications is correct?

	plant-eater	animal-eater	plant and animal eater
(1)	Q	T	R
(2)	Q	P and T	R
(3)	R	P	Q
(4)	R and T	Q and S	-

14. A large amount of animal waste flowed into a pond.



After some time, the population of plant B decreased.

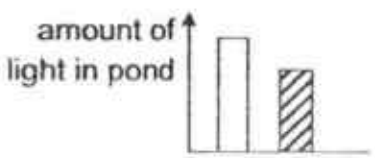
Which pair of graphs does not represent the effect of animal waste entering the pond?

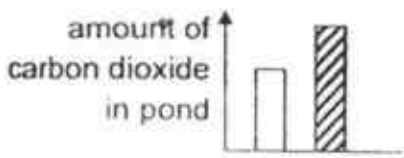
Key

□ before animal waste entered the pond

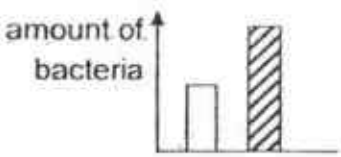
▨ after animal waste entered the pond

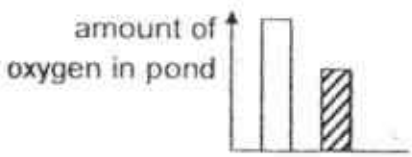
(1)



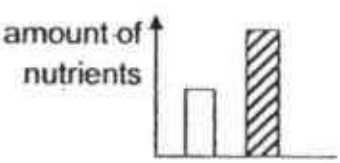


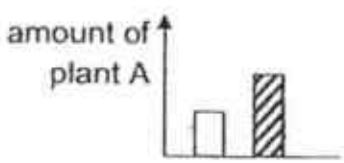
(2)



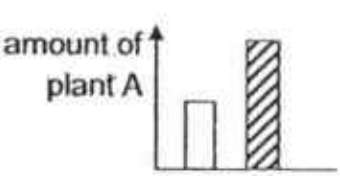


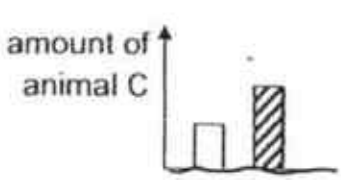
(3)



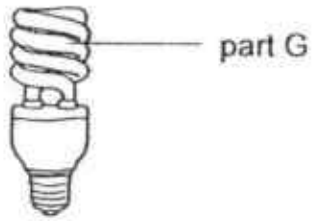


(4)





15. The diagram below shows a light bulb that gives off a lot of light when it is switched on.



Which property of part G enables the bulb to light up a room?

(1) flexible

(2) conductor of electricity

(3) good conductor of heat

(4) allows light to pass through

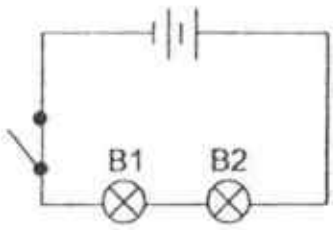
16. Alex prepared a classification table as shown below.

Group A	Group B
a tree an apple ink from a pen a metal ruler	heat from a flame sound from a police siren shadow of a dog

Which of the following shows the correct heading for each group?

	Group A	Group B
(1)	solids	non-solids
(2)	matter	non-matter
(3)	has definite shape	has no definite shape
(4)	has definite volume	has no definite volume

17. Study the circuit shown below.



Which of the following would make bulb B2 less bright?

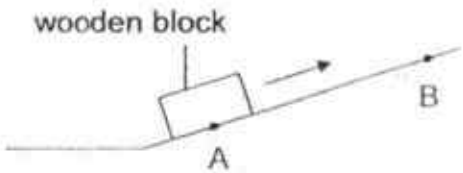
(1) Add a bulb in series arrangement

(2) Add a bulb in parallel arrangement.

(3) Add a battery in series arrangement.

(4) Replace bulb B1 with a piece of wire.

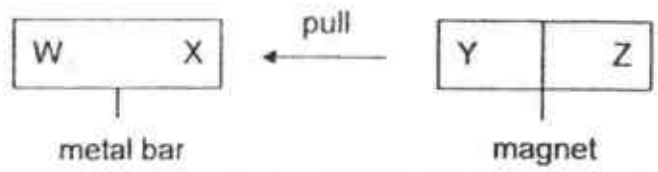
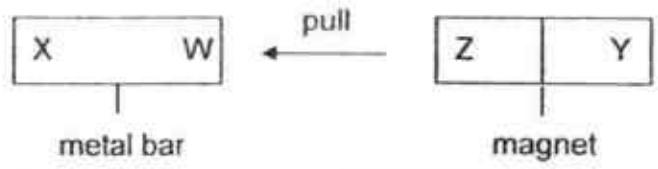
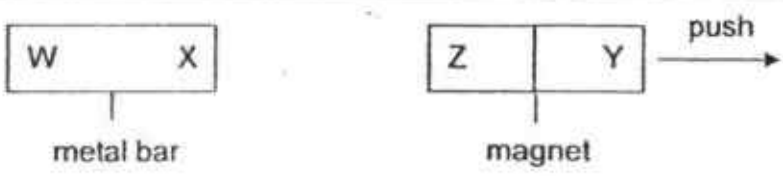
18. A wooden block was pushed up a slope as shown.



Which of the following about the amount of gravity and the direction of friction acting on the wooden block is correct as the block moved from A to B?

	Amount of gravity	Direction of friction
(1)	increased	→
(2)	increased	←
(3)	remained the same	→
(4)	remained the same	←

19. Lisa wanted to find out if a metal bar is a magnet. She drew four diagrams A, B, C and D as shown below.

Diagram A	
Diagram B	
Diagram C	
Diagram D	

Which pair of diagrams allows her to confirm that the metal bar is a magnet?

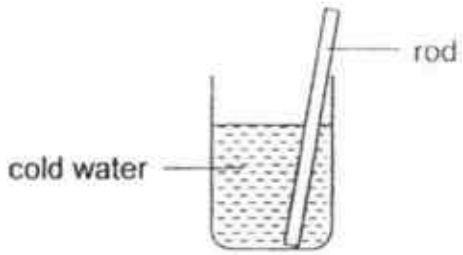
(1) A and B

(2) A and D

(3) B and C

(4) C and D

20. Hugo placed a metal rod into a container of cold water as shown below. After some time, his hands felt cold when he touched the rod.



Which one of the following correctly explains Hugo's observation?

(1) The rod lost heat to the water and to his hand.

(2) The rod gained heat from the water and from his hand.

(3) The rod lost heat to the water and gained heat from his hand.

(4) The rod gained heat from the water and lost heat to his hand.

21. The table below shows the properties of a substance at different temperatures.

Temperature (°C)	Has fixed volume?	Has fixed shape?
0	Yes	Yes
100	Yes	Yes
150	Yes	No
250	No	No

Which of the following statements about the substance is/are definitely true?

A. It is water.

B. It melts at 150°C.

C. It is a gas at 250°C.

D. Its freezing point is lower than 150°C.

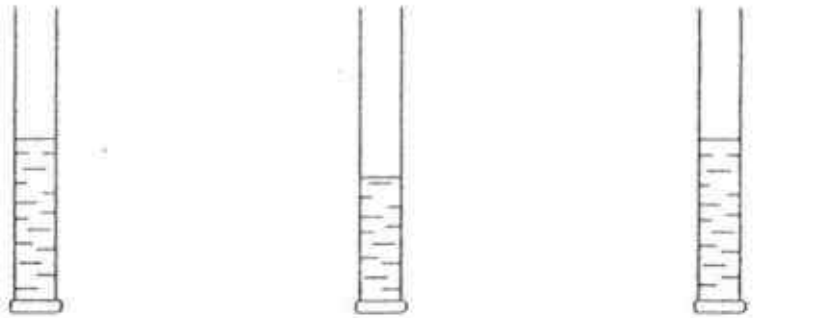
(1) A and D only

(2) B and C only

(3) C and D only

(4) B, C and D only

22. An experiment was conducted to determine the factors that affect the rate of evaporation of water. Three set-ups were used in the experiment, as shown below.



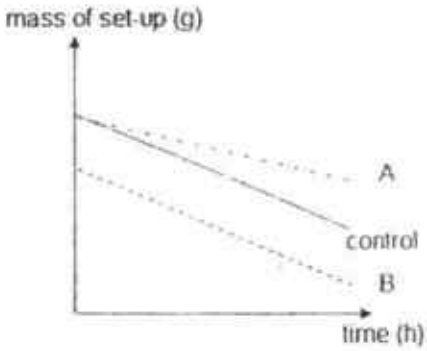
Control
70 ml of water
30°C

A
50 ml of water
30°C

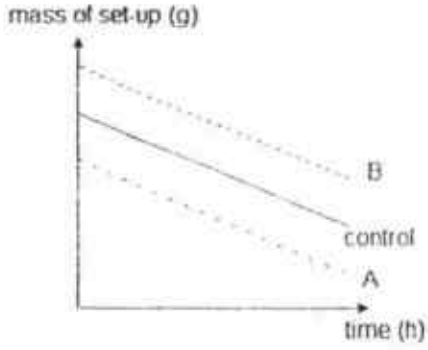
B
70 ml of water
40°C

Which of the following graphs shows most accurately, the change in mass of the set-ups over a period of time?

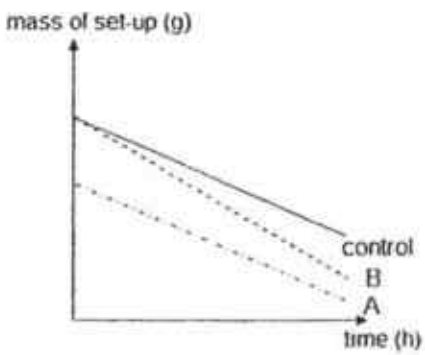
(1)



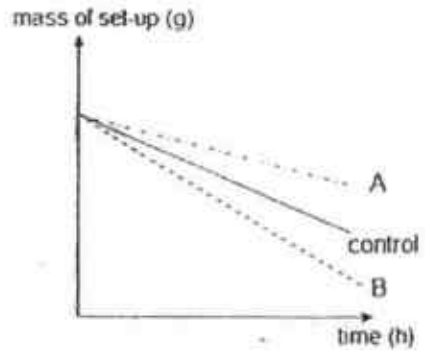
(2)



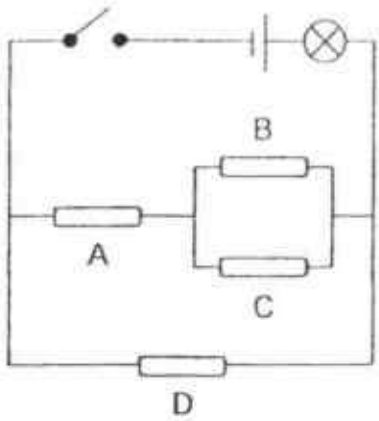
(3)



(4)



23. Beverly wanted to investigate whether four rods, A, B, C and D were electrical insulators. She used the circuit as shown below.



The bulb lighted up when the switch was closed.

The table below shows what happened when the switch was closed and certain rod(s) was/were removed.

Rod(s) removed from circuit	Did the bulb light up?
A	yes
D	yes
B and D	yes
C and D	no

Which rod(s) was/were electrical insulator(s)?

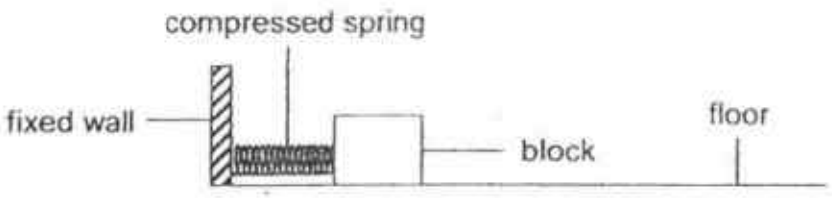
(1) B only

(2) A and B only

(3) B and D only

(4) C and D only

24. Megan conducted an experiment to find out how mass affected friction.



She pushed the block against the spring at a fixed length before releasing it. She measured the distance moved by the block. She repeated the experiment using blocks made of the same material but of different mass.

Her results are shown below.

Block	Length of compressed spring (cm)	Distance moved by block (cm)
A	8	12
B	6	15
C	8	15
D	4	12

Based on the results, which of the following is true?

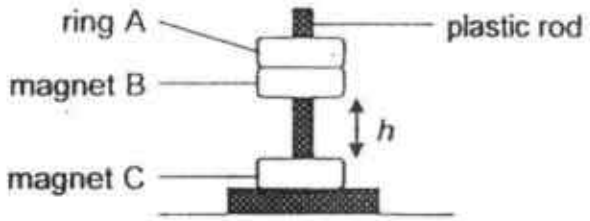
(1) Block C was the lightest in mass.

(2) Block A was the heaviest in mass.

(3) There was more gravity acting on block B than on block C.

(4) The amount of friction acting on blocks A and D was the same.

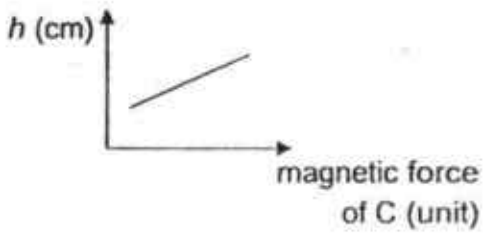
25. In the set-up below, three rings, A, B and C passed through a smooth plastic rod.

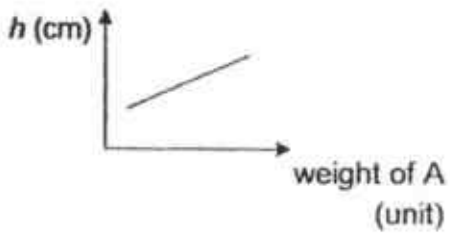


Height *h* represents the distance between the two ring magnets.

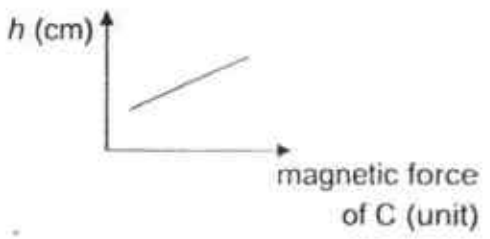
Which pair of graphs correctly shows the relationships between the forces acting on magnet B and height *h*?

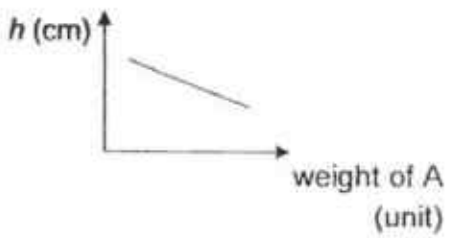
(1)



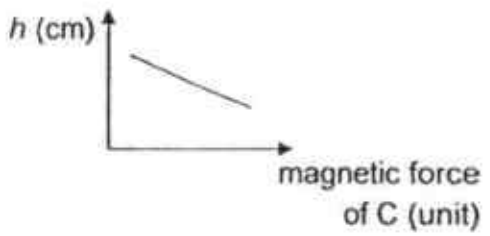


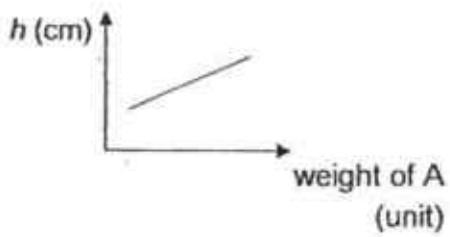
(2)



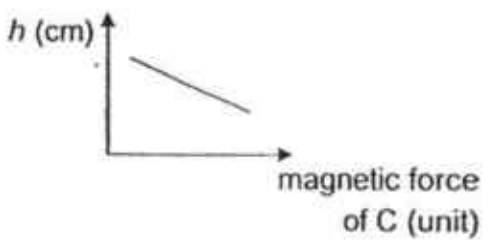


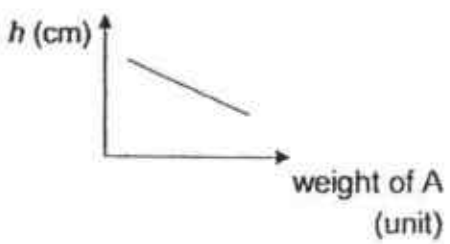
(3)





(4)





26. A steel bar AB was magnetised using the "stroke" method as shown in Diagram 1 below. A compass was then placed near end B and the north pole of the compass needle faced end B as shown in Diagram 2.

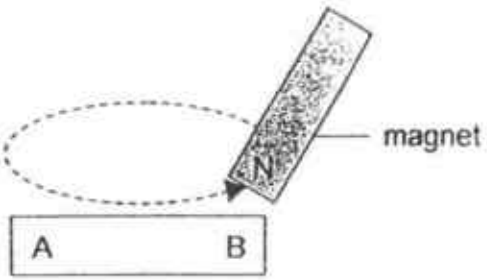


Diagram 1

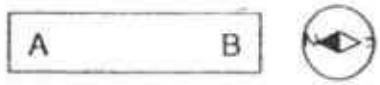


Diagram 2

Another steel bar CD was magnetised using a magnet as shown in Diagram 3.

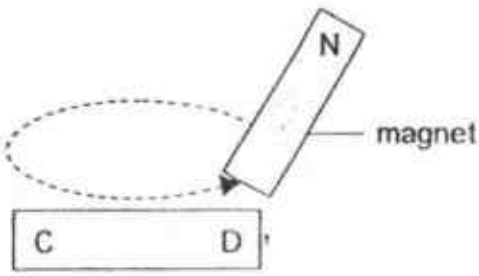
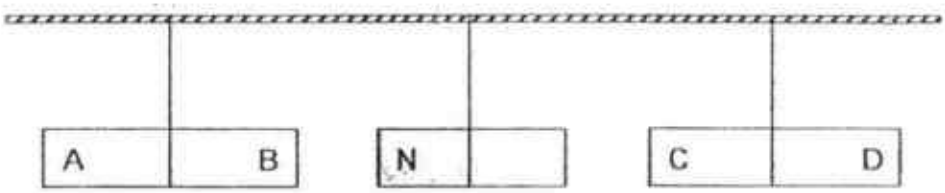


Diagram 3

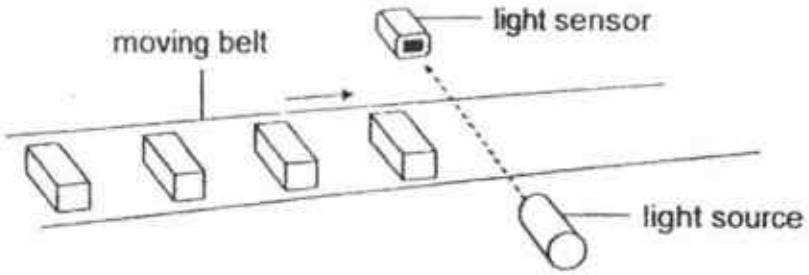
The magnet and the two magnetised steel bars were then suspended by metal wires as shown below.



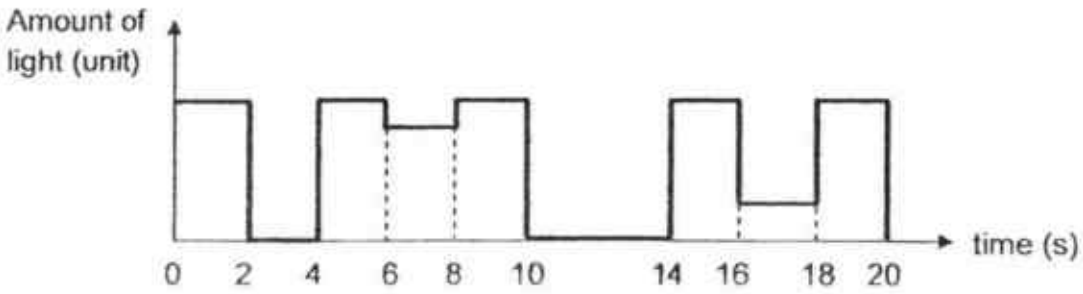
What would most likely to be observed for steel bars AB and CD?

	steel bar AB	steel bar CD
(1)	attracted to magnet	attracted to magnet
(2)	attracted to magne	repelled by magnet
(3)	repelled by magnet	attracted to magnet
(4)	repelled by magnet	repelled by magnet

27. The set-up below uses a light sensor to count the number of objects on a moving belt. The objects are of the same size.



The graph below shows the data recorded when the objects passed the light sensor within a period of 20 seconds.



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

A. Five objects moved past the light sensor

B. The belt did not move at a constant speed

C Two of the objects were placed further apart.

D All the objects allowed same amount of light to reach the sensor.

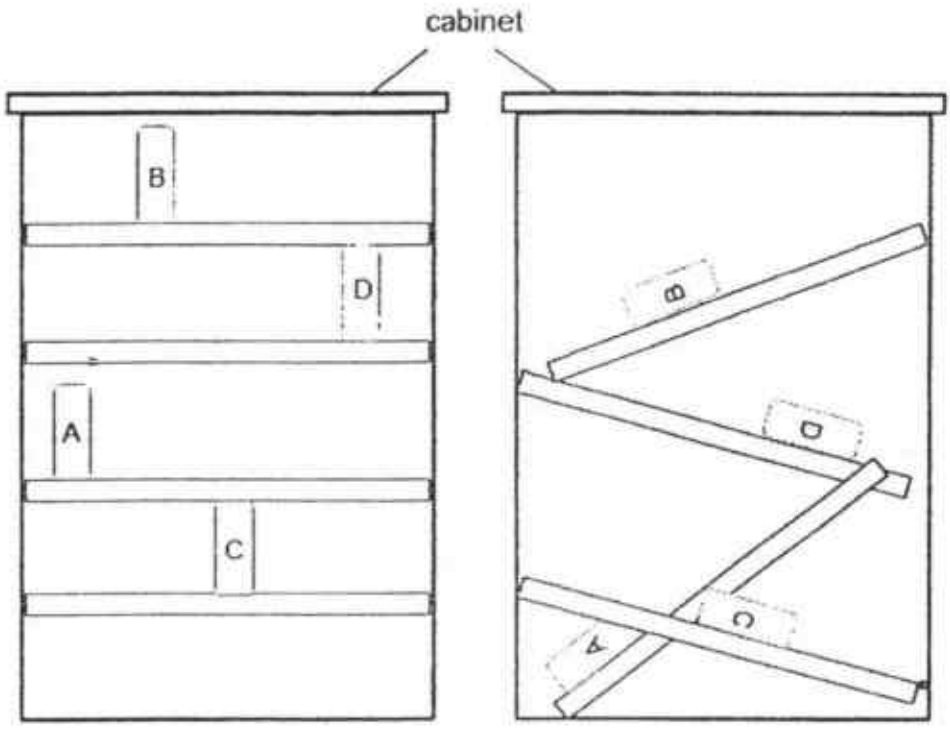
(1) B only

(2) A and C only

(3) B and D only

(4) A, C and D only

28. Four books, A, B, C and D, of equal mass and size were placed in a cabinet. The support for the shelves in the cabinet broke and the books came falling down with the shelves.



before the shelves fell

after the shelves fell

Which of the books lost the greatest amount of energy when the shelves fell as shown in the second diagram above?

(1) A

(2) B

(3) C

(4) D

END OF BOOKLET A

GO ON TO BOOKLET B

Index No. | | | | | | – | |

MAHA BODHI SCHOOL
2018 PRELIMINARY EXAMINATION
PRIMARY 6
SCIENCE
(BOOKLET B)

Name : _____ ( )

Class : Primary 6 _____

Date : 14 August 2018

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

---

5. Write all your answers in this booklet.

Booklet	Marks Obtained	Max Marks
A		56
B		44
Total		**100**

Parent's Signature : _____

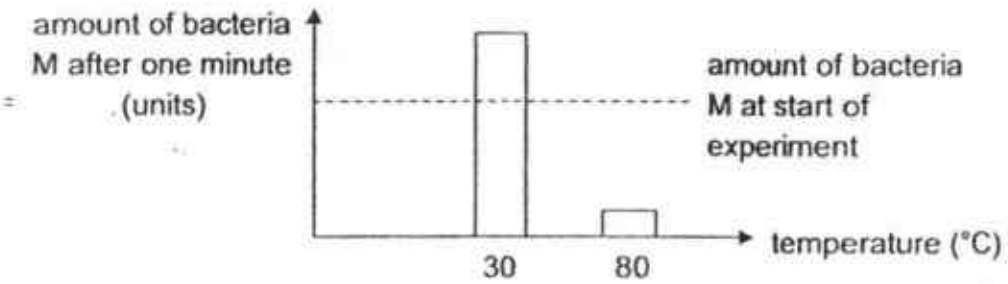
This booklet consists of **20** printed pages.

BOOKLET B : **[44 marks]**

For questions 29 to 41, 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.

29. (a) Andrew carried out an experiment to find out the growth rate of bacteria M. He prepared the same amount of bacteria at different temperatures and monitored them for one minute. His results are shown below.



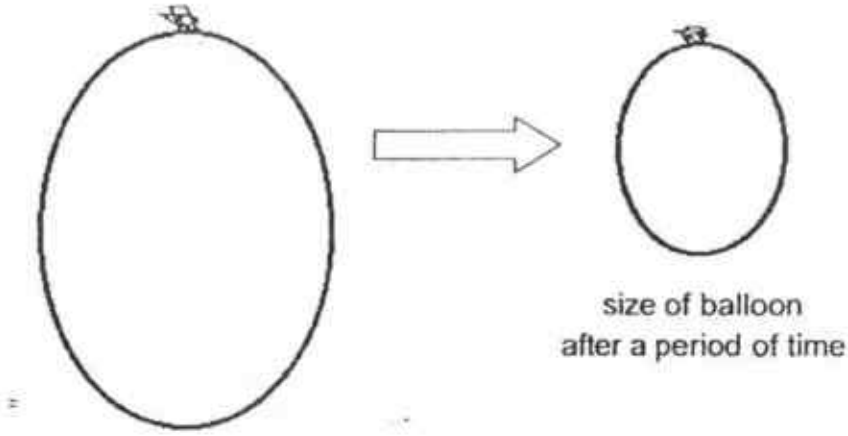
Based on the results, explain why it would be safer to eat food that is constantly heated than to eat food that is kept at room temperature. [1]

(b) (i) Some food packets have all the air removed from their packaging. Explain how this way could prevent the food in the packet from spoiling. [1]

(ii) Besides the factors mentioned above, name and explain how another factor could prevent the food in the packet from spoiling. [1]

Marks : / 3

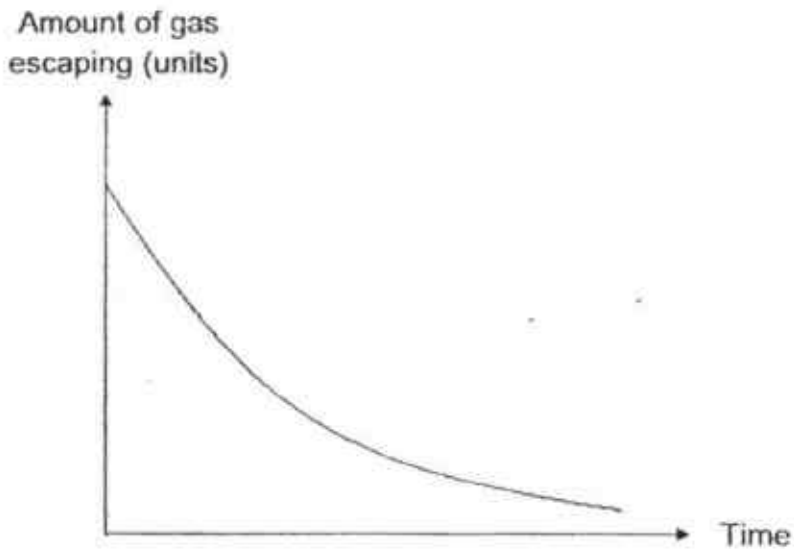
30. The diagram below shows the change in size of a balloon when gas escaped from the entire surface of a balloon over a period of time.



size of balloon
after a period of time

size of balloon
at the beginning

The amount of gas escaping from the balloon was recorded over a period of time and represented in the graph below.



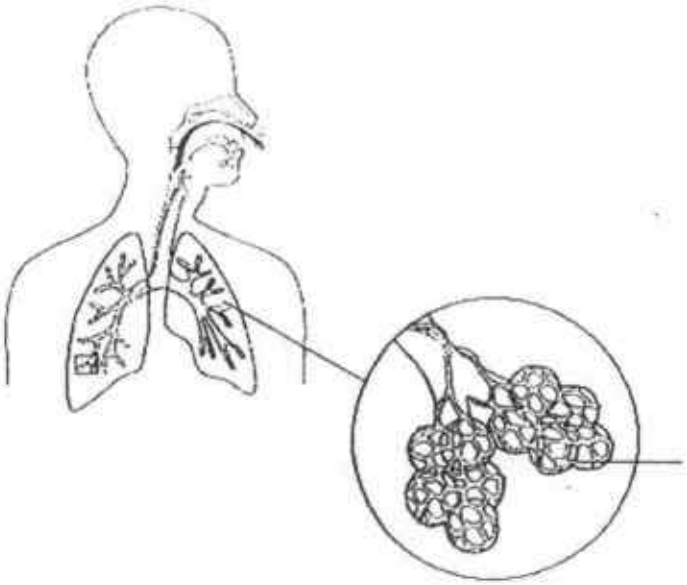
(a) Based on the above results, how would the size of the balloon affect the rate at which gas escaped from the balloon? [1]

_____

_____

Marks : / 1

(b) The diagram below shows a close-up diagram of the human lungs.



The human lungs have numerous tiny air sacs which allow the exchange of gases.

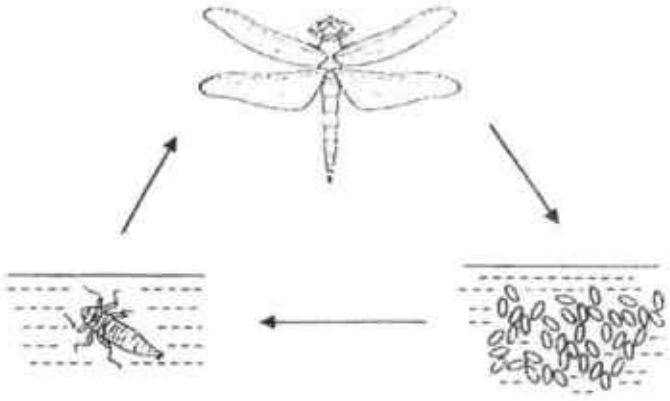
(i) Explain the purpose of the blood vessels surrounding the air sacs. [1]

(ii) In some patients with lung diseases, the tiny air sacs become smaller.

Explain how this affects the rate of absorption of oxygen. [1]

Marks : / 2

31. The diagram below shows the life cycle of insect X.



(a) Explain how by laying many eggs each time can help insect X in their survival. [1]

_____

_____

(b) The nymphs of insect X live in water while the adult insect X lives out of water. This helps insect X to survive better.

Suggest two advantages for the young and the adult to live in different surroundings. [2]

Advantage 1 : _____

_____

Advantage 2 : _____

_____

Marks : / 3

32. Plant R bears flowers that look and smell like female bees.

(a) Explain how these structural adaptations enhance the survival of plant R. [1]

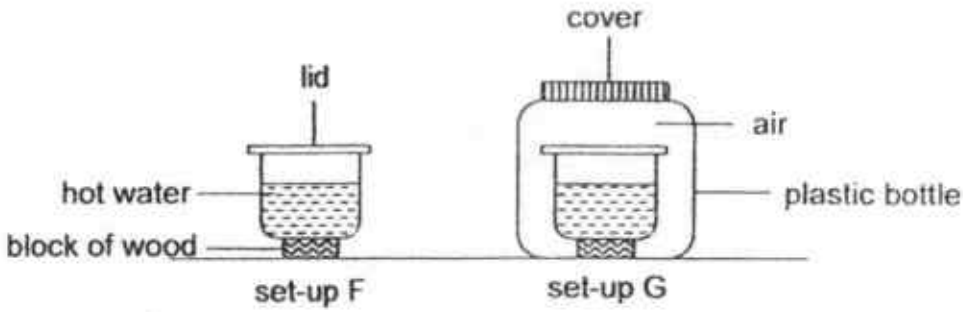
(b) Animal Q is a predator of bees.

(i) Explain how animal Q, by building its nest near plant R, can enhance its own survival. [1]

(ii) With animal Q living in the same habitat, how would the population of plant R change after some time? Explain your answer. [1]

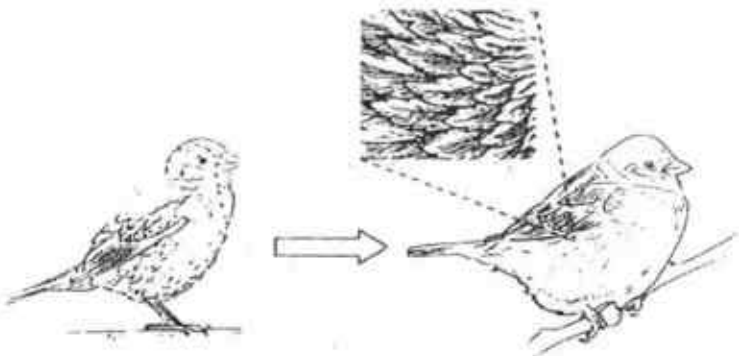
Marks : / 3

33. Jacky conducted an experiment using the set-ups shown. The two containers were identical and contained hot water at the same temperature.



(a) After some time, Jacky observed that the temperature of water in set-up G was higher than that in set-up F. Explain Jacky's observation. [2]

(b) On cooler mornings, bird W puffs up its feathers.



puffs up its feathers

Based on the results of Jacky's experiment, explain how puffing up the feathers of bird W would help to keep it warm. [1]

Marks : / 3

(c) Bird W can coat special oil on its feathers so that they could become waterproof.

uncoated feather

coated feather

Suggest two reasons how coating feathers helps to keep bird W warm.

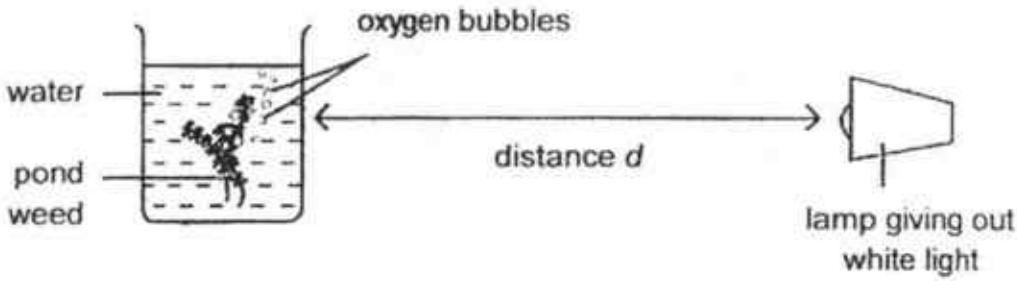
[2]

Reason 1:

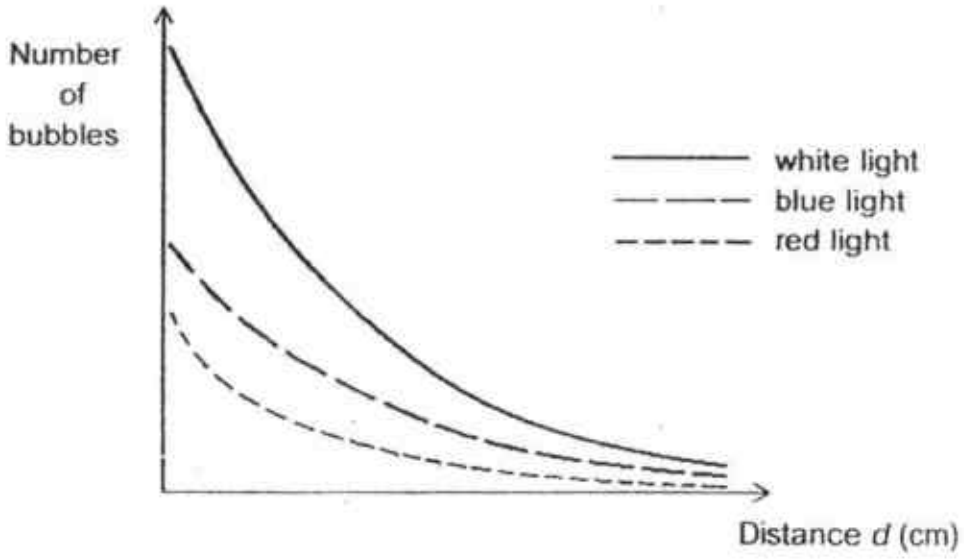
Reason 2:

Marks : /2

34. Tom wanted to investigate the effect of the intensity of different coloured lights on the rate of photosynthesis. The experiment was set up as shown below.



He measured the number of bubbles given out at different distances. He repeated the experiment using blue and red light. The results are shown in the graph below.



(a) Explain why the number of bubbles decreased as distance *d* increased.

[1]

_____

_____

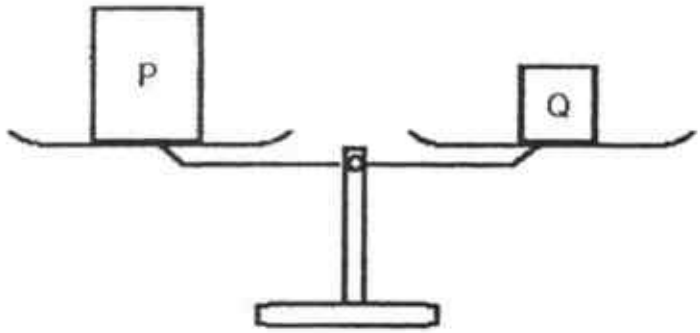
Marks : / 1

(b) Tom had some fishes and pond weeds in his aquarium at home.
Based on the results, which coloured light was most suitable for the survival of the fishes? Explain your answer. [1]

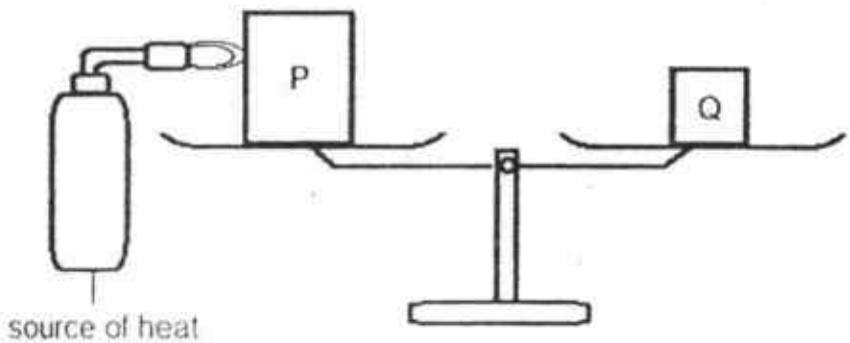
(c) Explain how the number of bubbles given out by the plant would be affected if more fish are added into the aquarium. [1]

Marks : /2

35. The diagram below shows a beam balance with two metal blocks, P and Q. The beam is horizontal.



Metal P is then heated as shown in the next diagram below.

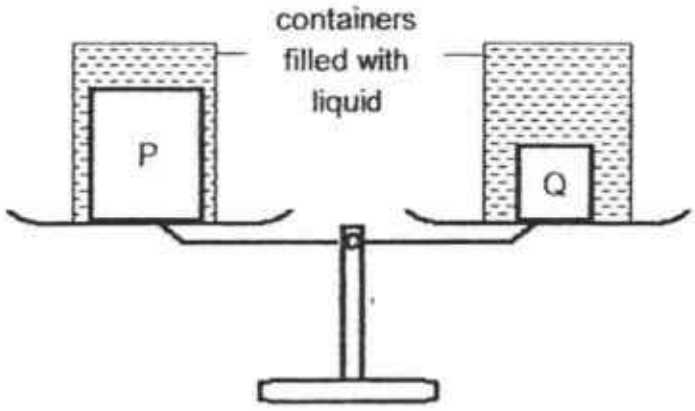


(a) State what would happen to metal block P after heating it for some time. [1]

(b) Would metal block P move up, move down or remain stationary on the beam balance as it is being heated? Explain your answer. [1]

Marks : / 2

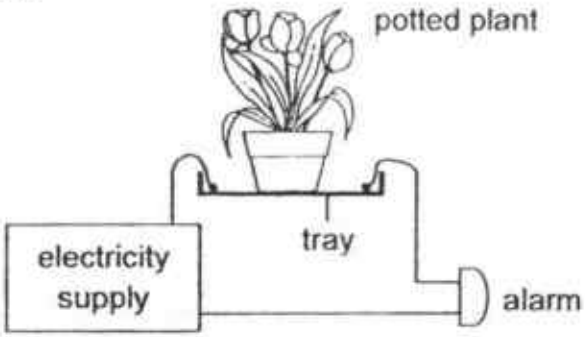
(c) The metal block Q and the heated metal block P are now placed inside identical containers filled to the brim with a liquid and placed on the beam balance. The liquid is able to maintain the temperature of the metal blocks.



Would metal block P now move up, down or remain stationary on the beam balance? Explain your answer. [1]

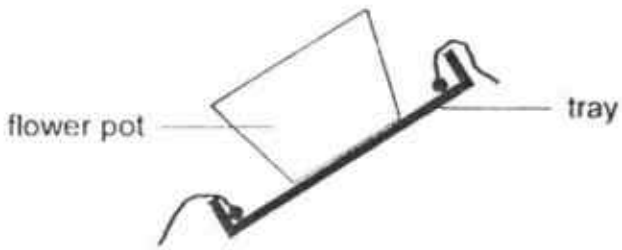
Marks : / 1

36. Francis designed a set-up that could alert him if water was collected in the tray of the potted plant. The alarm would sound off when the metal contacts were in contact with water.



(a) State a property of the material of the tray that allowed the set-up to work properly. [1]

(c) The tray was tilted and the flower pot was secured so that it did not slide downwards.



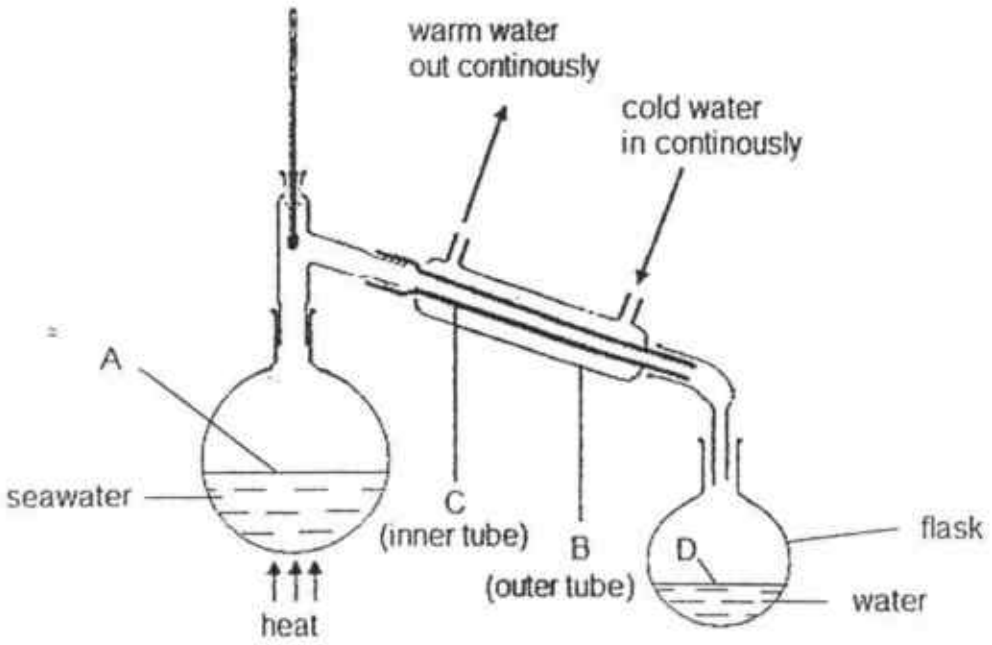
Would the set-up still work if water continued to be collected in the tilted tray? Explain your answer. [1]

(b) The set-up was unable to work properly if too little water flowed out from the flower pot.

Without adding or removing any parts in the set-up, suggest a way to make the alarm give off sound when less water is collected in the tray. [1]

Marks : / 3

37. The diagram below shows a set-up used to obtain water by heating sea water. Cold water is passed through the outer tube continuously. Water is then collected in the flask.



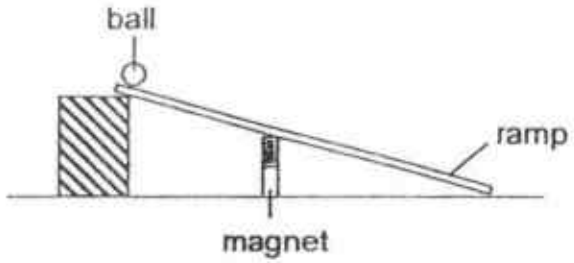
(a) In which part of the set-up labelled A, B, C or D, does evaporation and condensation take place? [1]

Evaporation	
Condensation	

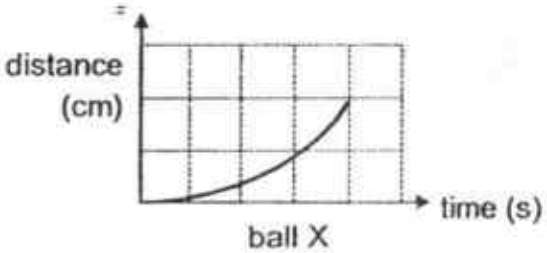
(b) Explain why the rate at which water collected in the flask decreases when cold water stops flowing through the outer tube. [2]

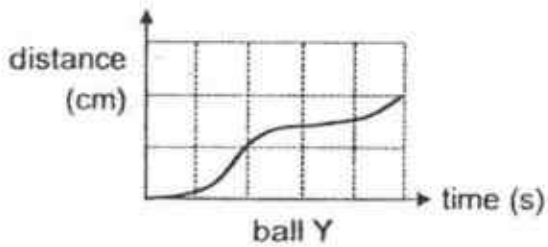
Marks : / 3

38. Kathy wanted to compare how fast different metal balls can move using the set-up below. She released the ball, measured the distance moved by the ball down the ramp and the time taken to reach to the end of the ramp.



Her results are shown in the graph below.





(a) Both metal balls X and Y had the same mass and size.
State the property of the material of each of the two balls that caused the difference in the results. [1]

Ball X: _____

Ball Y: _____

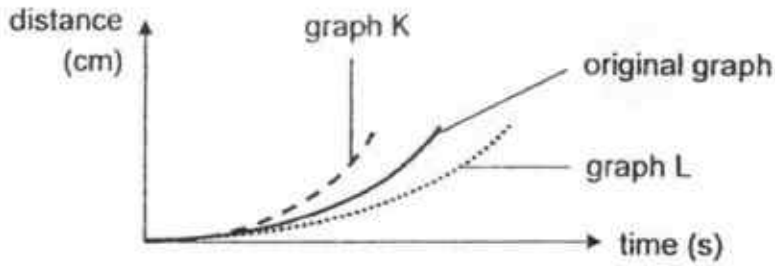
(b) Based on the results, how could Kathy tell that a different force had acted on ball Y? [1]

_____

_____

Marks : / 2

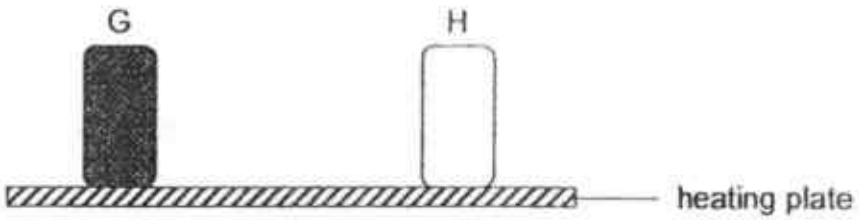
(c) Kathy also wanted to compare how fast ball X can move on different ramps. She conducted the experiment using different ramps of the same length. The results are shown below.



Which graph, K or L, shows the correct results when a rougher ramp was used? Explain your answer. [1]

Marks : / 1

39. Irene conducted an experiment using two identical sealed metal containers, G and H, as shown. Container G had a surface painted black while Container H had a surface painted white.



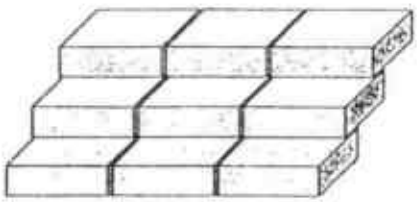
Before heating, the temperatures of air in the containers were the same. After heating the containers for some time, Irene observed that the temperature in container G was higher than that in container H.

(a) Based on her observation, what could Irene conclude about the difference between the surface of containers G and H? [1]

_____

_____

(b) (i) Irene observed that a building has thick black tiles on the roof.



Based on Irene's experiment, explain why it is more likely for the thick black tiles to crack on a very hot day. [1]

_____

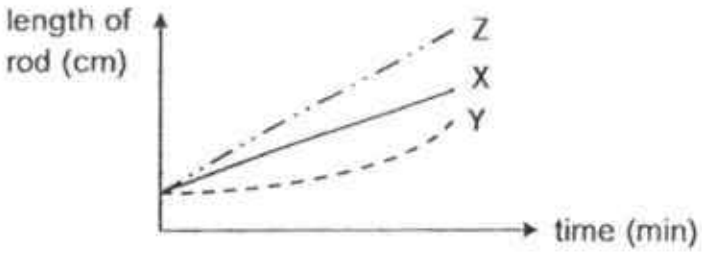
_____

(ii) Suggest one change to the roof tiles so that they would not crack easily on a very hot day. [1]

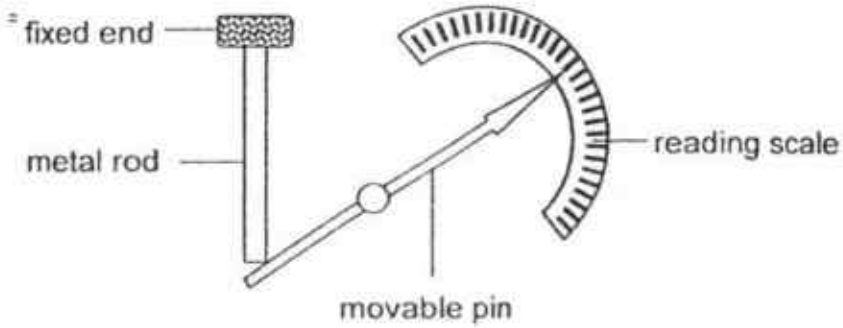
_____

Marks : ____ / 3

Irene conducted another experiment by heating three similar metal rods, X, Y and Z for a period of time. The results are shown in the graph below.



Irene made a model of a thermometer shown below.



When the metal rod expands, it pushes the end of the pin down. The pin will then move and point to a marking on the reading scale.

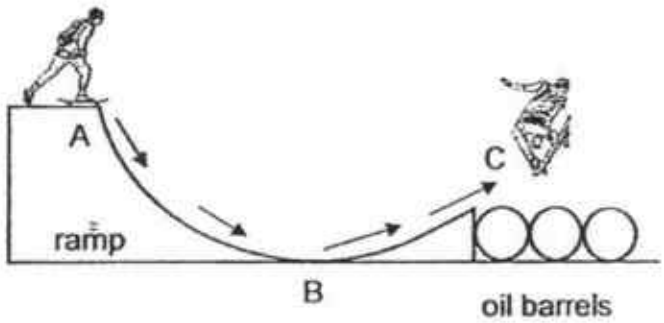
(c) (i) Based on the results of the experiment, explain why metal rod Z is more suitable to be used in the model. [1]

(ii) Based on the results of the experiment, give a reason why using metal rod Y in the model would give inaccurate reading. [1]

Marks : / 2

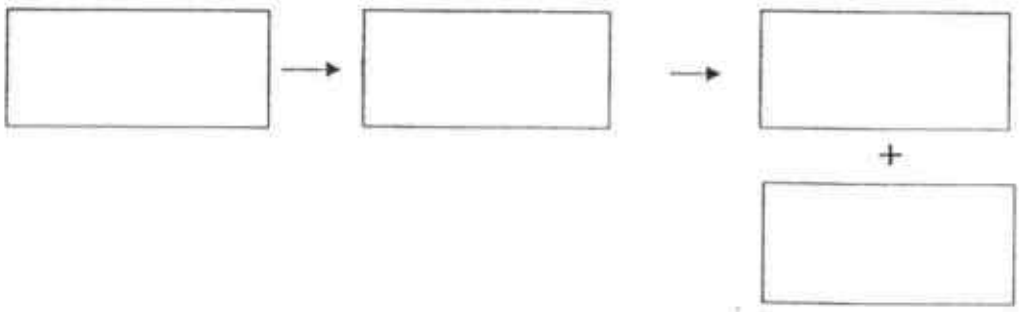
40. A stuntman did a jump over three oil barrels on his skateboard.

He was balancing at the edge of the top of the ramp before he moved down as shown in the diagram below. He took off into the air when he reached the end of the ramp.

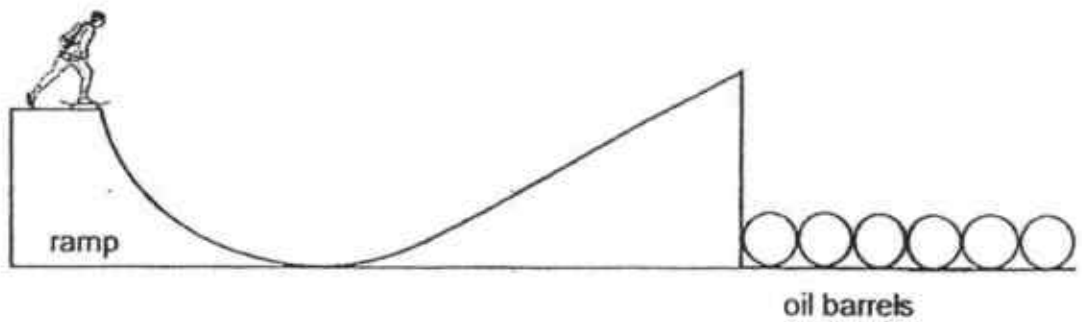


(a) State the energy conversion that took place from point A to point C. [1]

Energy at A: Energy at B: Energy at C:



The stuntman wanted to jump over six oil barrels on his skateboard. He extended the ramp to go further and higher.



Marks : / 1

(b) Explain why the stuntman would not succeed in jumping over the six oil barrels. [2]

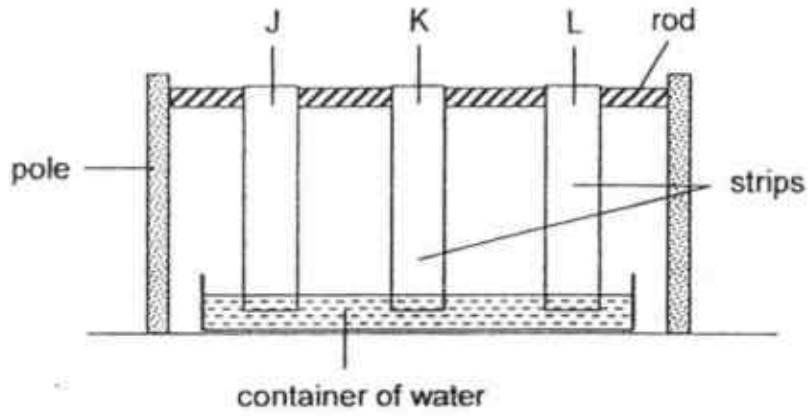
(c) Suggest what the stuntman could do in order to jump successfully over the six oil barrels using the same ramp in part (b). [1]

(d) A thin coat of oil is applied on the ramp.

Explain how this coat of oil enables the stuntman to jump higher in terms of energy changes. [1]

Marks : / 4

41. Calvin set up an experiment as shown below to find out how fast materials, J, K and L, would absorb water. One end of each strip of material was hung on a rod while the other end was soaked in water.



The distance travelled by the water up each strip of material at the end of the experiment is shown in the table below.

Material	J	K	L
Distance travelled by water (cm)	5	9	7

(a) Based on the results, which material can dry a table in the shortest time? Explain your answer. [1]

_____

_____

(b) Explain how using a stiff rod makes the experiment a fair test. [1]

_____

_____

~ END OF PAPER ~

Marks : ____ / 2

ANSWER KEY

YEAR : 2018
LEVEL : PRIMARY 6
SCHOOL : MAHA BODHI SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

Q1	2	Q2	4	Q3	3	Q4	4	Q5	4
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Q11	4	Q12	2	Q13	2	Q14	4	Q15	4
Q16	2	Q17	1	Q18	4	Q19	3	Q20	3
Q21	3	Q22	3	Q23	1	Q24	1	Q25	2
Q26	2	Q27	1	Q28	1				

BOOKLET B

Q29a) More bacteria are killed, so there is less bacteria in the food.

Q29b) i: Without air, bacteria cannot reproduce because they need air to respire.

ii: Presence of water. Decomposers need water to survive.

Q30a) The smaller the size of the balloon, the slower the rate of gas escaping from the balloon.

Q30b) i: To allow oxygen in the lungs to enter the blood vessels and be carried to other plants of the body and carbon dioxide in the blood vessels to enter the lungs.

ii: The rate of absorption of oxygen is decreased as the surface area / area of contact between the air sacs and the blood vessels for absorption becomes smaller.

Q31a) It increases the chance of eggs hatching and growing into adults to continue the life cycle.

Q31b) i: Less competition for food

ii: When one habitat becomes unfavourable, the other stage of insect X can still survive.

Q32a) Male bees or predators of bees will be attracted to the flower and help in the pollination of flowers.

Q32b) i: When bees visit the flowers of plant R, animal Q is nearby and can eat the bees. This ensures animal Q gets its food easily.

ii: Population of plant R would decrease. With fewer bees to pollinate the flower, reproduction of the plant cannot take place.

Q33a) The air in the bottle is a poor conductor of heat. The air slowed down heat loss from the hot water.

Q33b) When the bird puffs up its feathers, more air is trapped. Air reduces the loss of heat from the body.

Q33c) i: Water would not reach the body, so no water can gain heat from the body to evaporate.

ii: The feathers can trap more air to reduce loss of heat from the body.

Q34a) The intensity of light decreased and this led to a decrease in the rate of photosynthesis.

Q34b) White light was most suitable (Claim) because the most number of bubbles were produced. (Evidence) The amount of oxygen produced for the fruit to breathe would be the highest.

Q34c) The number of bubbles would increase. More fish would produce carbon dioxide which would increase the rate of photosynthesis.

Q35a) The metal will gain heat and expand.

Q35b) The metal block P remain stationary. There is no change in weight/mass when the metal block P expands.

Q35c) The metal block P moves up as there is less liquid in the container.

Q36a) The tray is not a conductor of electricity.

Q36b) No, the set-up will not work. Only one end of the wire would be in contact with the water, resulting in an open circuit.

Q36c) Place the wires closer to the pot. Tilt the tray. Place both wires at the lower end of the tilted tray.

Q37a) i: A or D or both
ii: C or B or both

Q37b) When the cold water stops flowing, the temperature of C gradually increases and heat is not removed. As the water vapour loses less heat, less water vapour condenses to form water.

Q38a) Ball X: non-magnetic
Ball Y: magnetic

Q38b) The magnetic force slowed down the ball as it moved down the ramp, so it took a longer time to reach the end of the ramp.

Q38c) Graph L. The ball took a longer time to move down the ramp. There was more friction on the rougher ramp to slow down the ball.

Q39a) Black surface absorbs / gains more heat than a white surface.

Q39b) i: The top surface of the block tile will gain more heat than the bottom surface and so expand more. The uneven expansion causes the tile to crack.

ii: Change to white / lighter coloured tiles

Q39c) i: Metal rod Z increased in length the most. The thermometer will be able to detect the change in temperature more accurately.

ii: Rod Y did not expand at the same rate.

Q40a) gravitational potential energy → kinetic energy → Gravitational potential energy → kinetic energy.

Q40b) The end of the ramp is higher than where he started out from. He would not have enough gravitational potential energy converted into kinetic energy to go higher than his starting height to the top.

Q40c) Applying a push when he comes down the ramp.

Q40d) The layer of oil will reduce the friction between the skateboard and the ramp. This reduces the amount of energy lost as heat. So more kinetic energy will be converted to gravitational potential energy.

Q41a) Material K. Water travelled the longest distance. Material K absorbed most amount of water.

Q41b) The rod will not bend. This ensures the area of cloth in contact with the water remains the same. Hence only one variable, the material of the strip, is changed.

END

METHODIST GIRLS' SCHOOL

Founded in 1887

PRELIMINARY EXAMINATION 2018
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 : 6 August 2018

This booklet consists of 14 printed pages including this page.

For each question from 1 to 14, 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). [28 marks]

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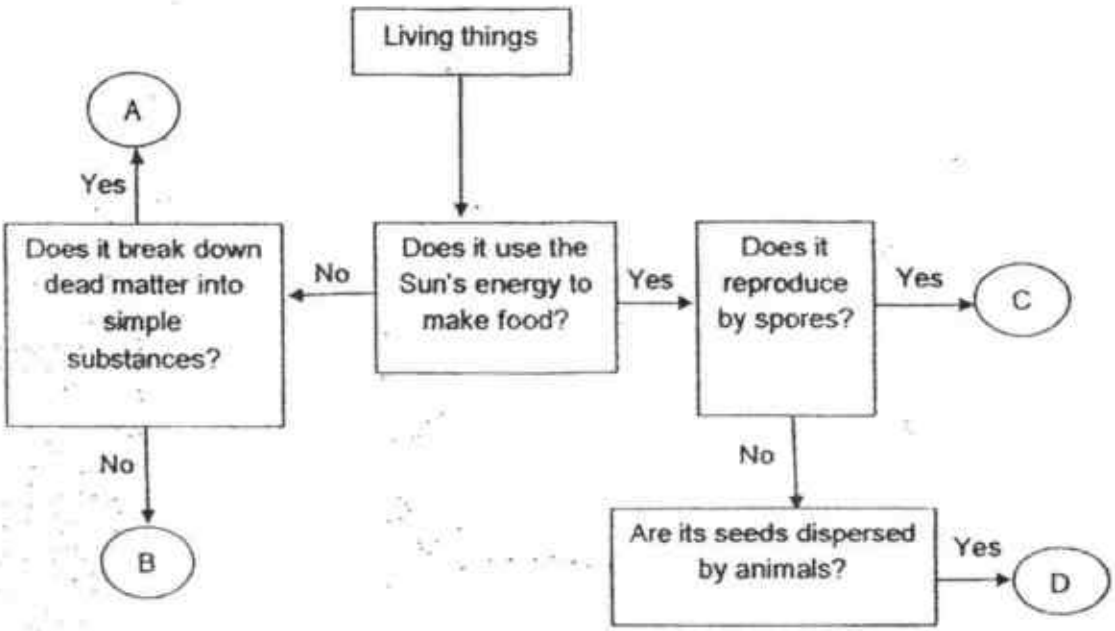
1 The following flowchart shows the characteristics of four different organisms.

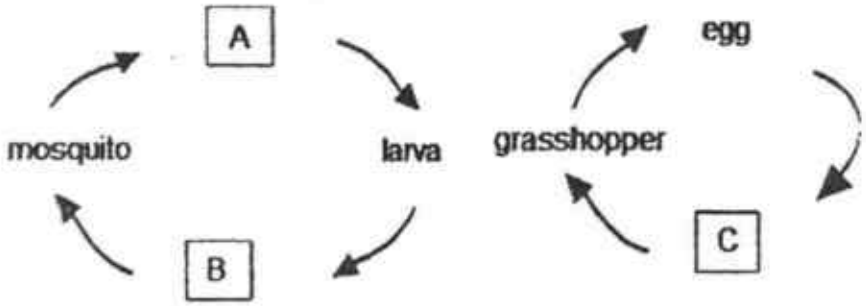


Which of the following correctly identify organisms A, B, C and D?

	A	B	C	D
(1)	Bird's nest fern	Bracket fungus	Mushroom	Papaya plant
(2)	Bracket fungus	Centipede	Bird's nest fern	Mimosa plant
(3)	Bacteria	Earthworm	Moss	Coconut tree
(4)	Termite	Moss	Mould	Mango tree

(Go on to the next page)

2 Study the diagrams of the two life cycles as shown below.



Which of the following describe the characteristics at stages A, B and C, respectively?

	A	B	C
(1)	floats in the water	moults	does not have wings
(2)	moults	lives in water	does not have wings
(3)	floats in the water	mass is the same	resembles the adult
(4)	moults	inactive	resembles the adult

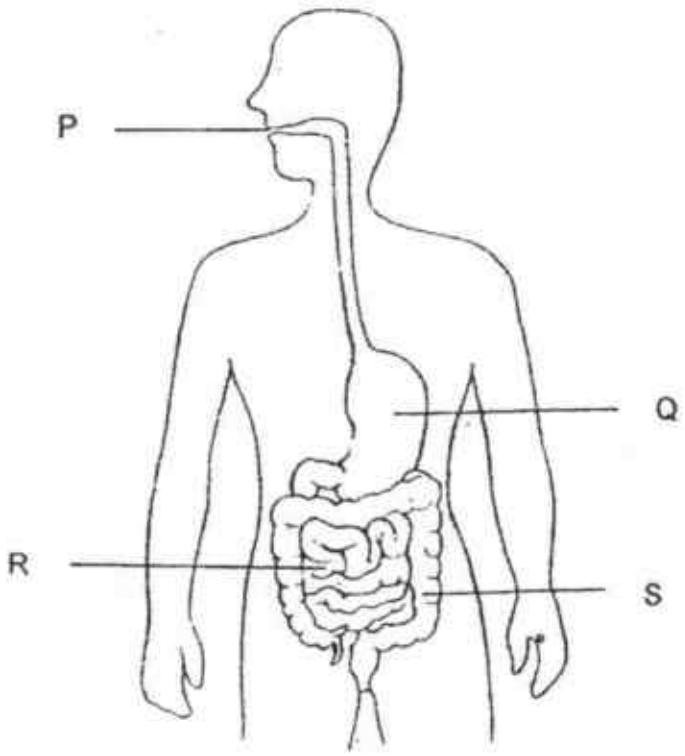
3 Three cells are as shown below.

Which one of the following shows the correct classification and common parts found in all cells?

	Plant cell	Animal cell	Common parts found in all cells
(1)	K	L, M	cell membrane, cytoplasm, nucleus
(2)	K, L	M	cytoplasm, nucleus, cell membrane
(3)	K, L, M	-	cell wall, chloroplasts, nucleus
(4)	K, L	M	nucleus, cell wall, cytoplasm, cell membrane

(Go on to the next page)

4 The diagram below shows parts of the human digestive system, P, Q, R and S.



Which one of the following shows the correct classification of the parts to the functions?

	Removes water from undigested food	Adds digestive juices to break down food	Passes digested food to the bloodstream
(1)	S ✓	P, Q, R	R
(2)	Q	P, Q, R	S
(3)	R	P, Q, R, S	S
(4)	S ✓	P, Q	R

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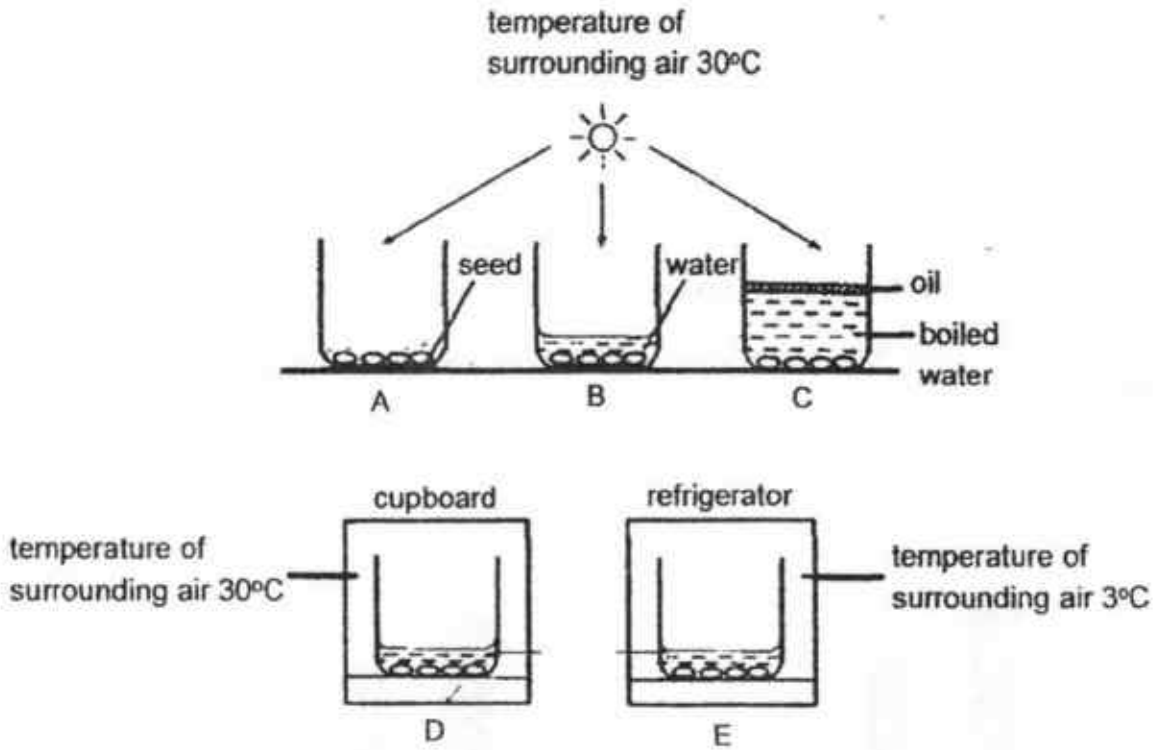
5 Nilam carried out an experiment to investigate the conditions necessary for seed germination. Set-ups A to E below show the different conditions in which the seeds were placed.



In which of the set-ups would Nilam observe the seeds germinating after two days?

(1) A and C only

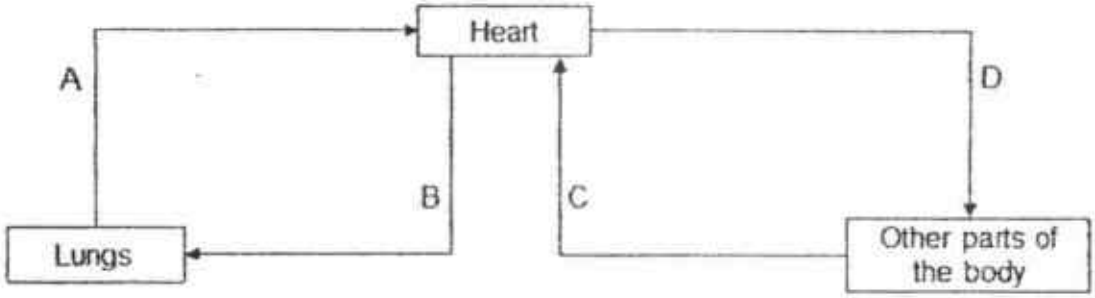
(2) B and D only

(3) D and E only

(4) B, C and D only

(Go on to the next page)

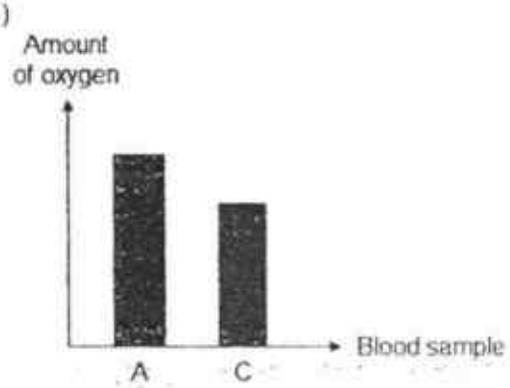
6 The diagram below shows the direction of the blood flow in some parts of the body.



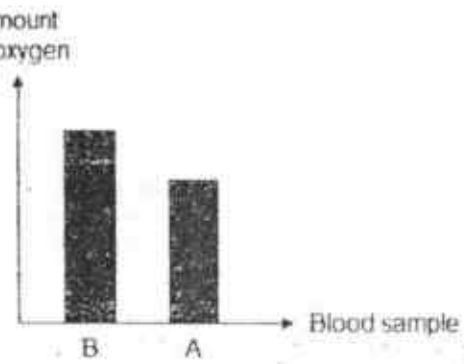
The same amount of blood was taken from A, B, C and D.

Which chart shows the correct comparison of the amount of oxygen in the blood samples?

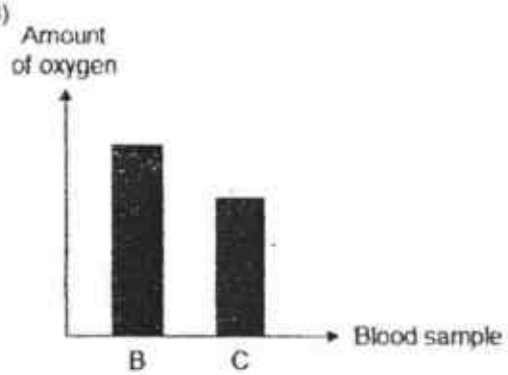
(1)



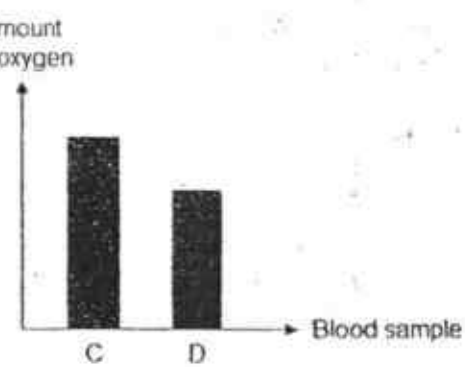
(2)



(3)



(4)



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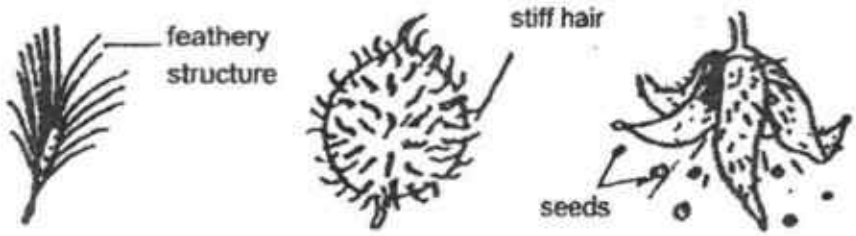
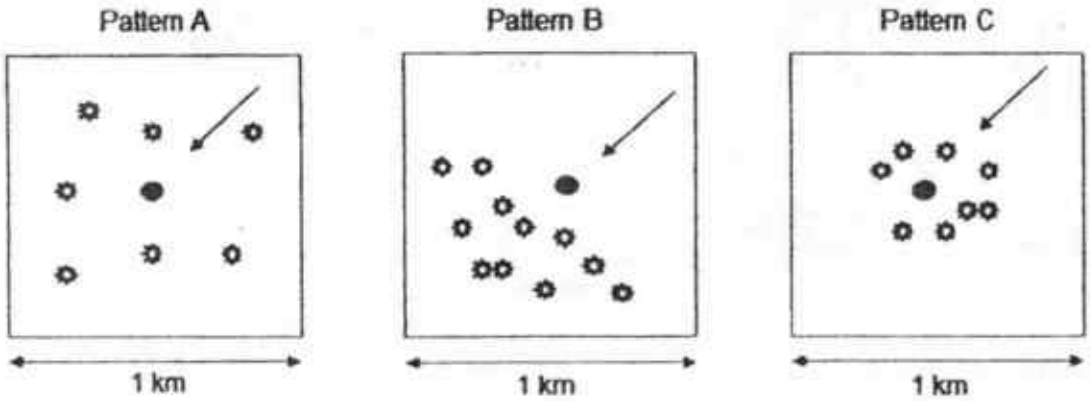
7 The diagrams below show the fruits of three species of plants, X, Y and Z.



Species X **Species Y** **Species Z**

The dispersal patterns of these three plants, A, B and C, are shown below.



Key:

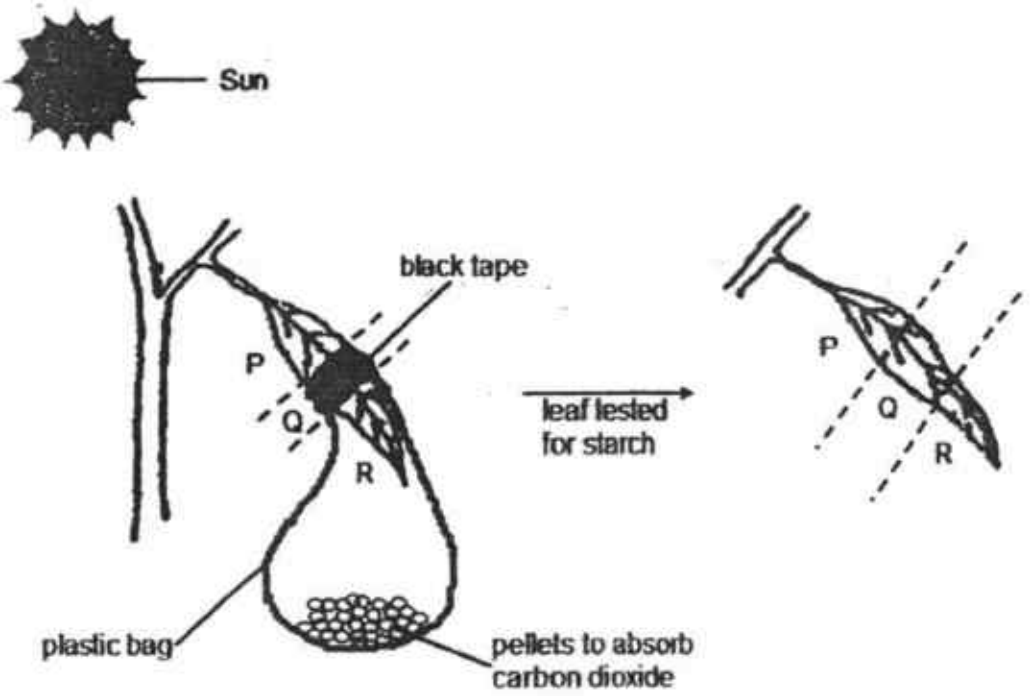
●	parent plant
✿	seedlings
↙	direction of wind

Which species of plants best match the dispersal patterns respectively?

	Species X	Species Y	Species Z
(1)	B	A	C
(2)	C	B	A
(3)	A	B	C
(4)	B	C	A

(Go on to the next page)

8 Suresh prepared the set-up below and left it under the sun for 8 hours. Then he tested the leaf for the presence of starch using iodine solution.

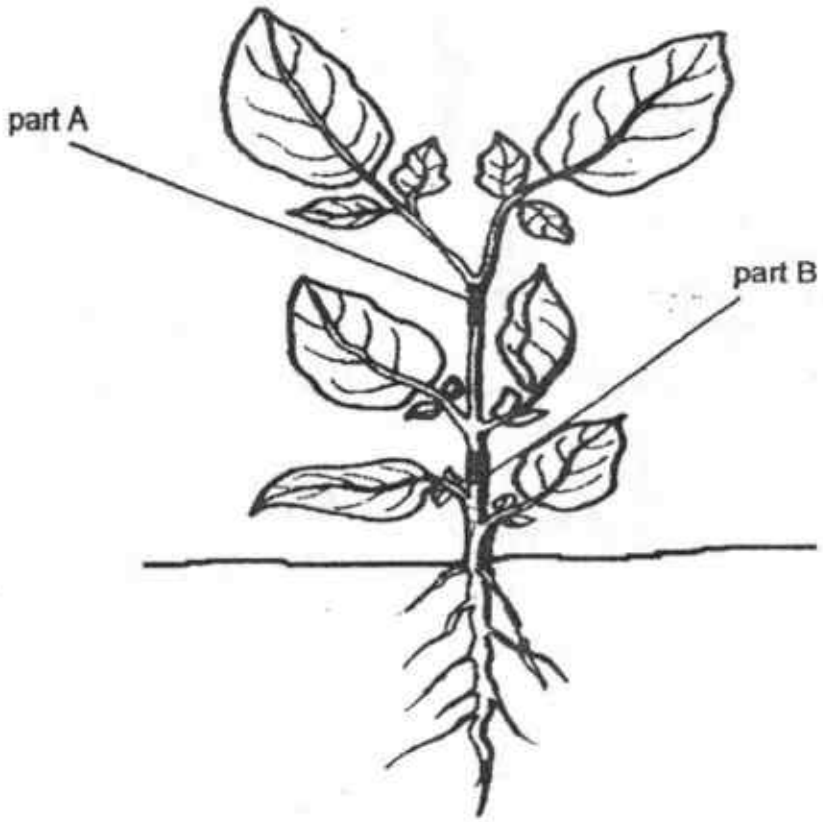


What would Suresh observe about the colour of iodine when he added it to parts P, Q and R of the leaf after 8 hours?

	P	Q	R
(1)	brown	dark blue	dark blue
(2)	dark blue	dark blue	brown
(3)	dark blue	brown	brown
(4)	dark blue	brown	dark blue

(Go on to the next page)

9 The diagram below shows a plant that has been cut at part A and B. At part A, a cut was made to remove the food-carrying tubes. At part B, a cut was made to remove both tubes carrying water and food.



Which of the following is/are likely to happen after three days?

A The leaves growing below part A will wither.

B The leaves growing above part B will wither.

C All the leaves growing on the plant will wither.

(1) B only

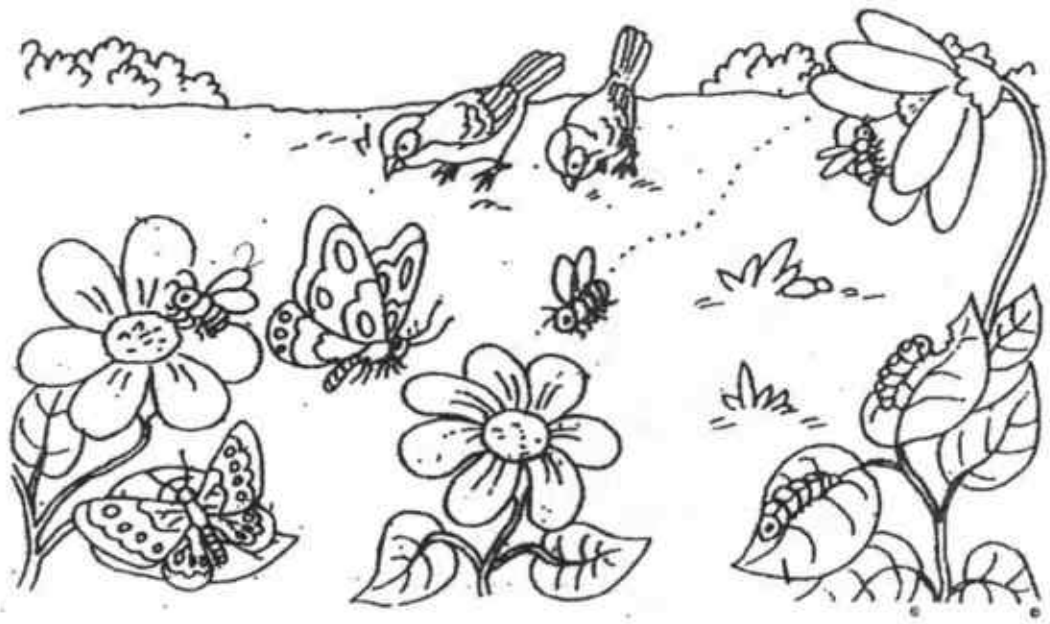
(2) C only

(3) A and B only

(4) B and C only

(Go on to the next page)

10 The diagram below shows the organisms in a garden.



Which of the following statements are true?

A All the consumers can fly.

B There are three populations of consumers.

C There is an animal population to help disperse the seeds.

D The plants depend on three animal populations for pollination.

(1) A and D only

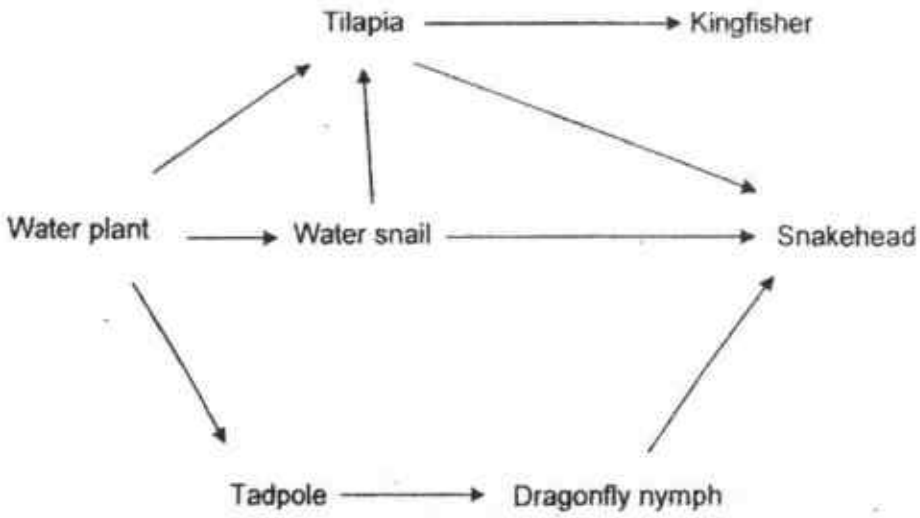
(2) B and C only

(3) A, B and C only

(4) A, C and D only

(Go on to the next page)

11 Study the food web of a pond community as shown below.



Which of the following statements about the food web are **not** true?

A There are six consumers.

B The water plant is a source of food for three plant eaters.

C The dragonfly nymph and the tilapia are both prey and predators.

D All the energy in the tadpole is transferred to the dragonfly nymph.

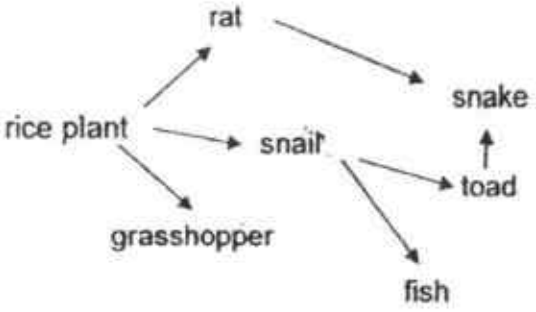
(1) A and C only

(2) A and D only

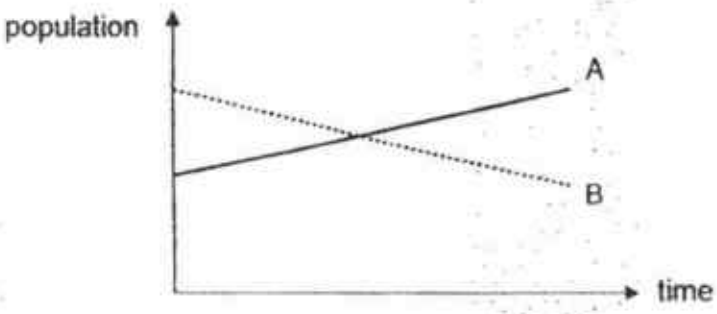
(3) A, B and C only

(4) B, C and D only

12 The food web below illustrates the relationship among several different organisms in a rice field.



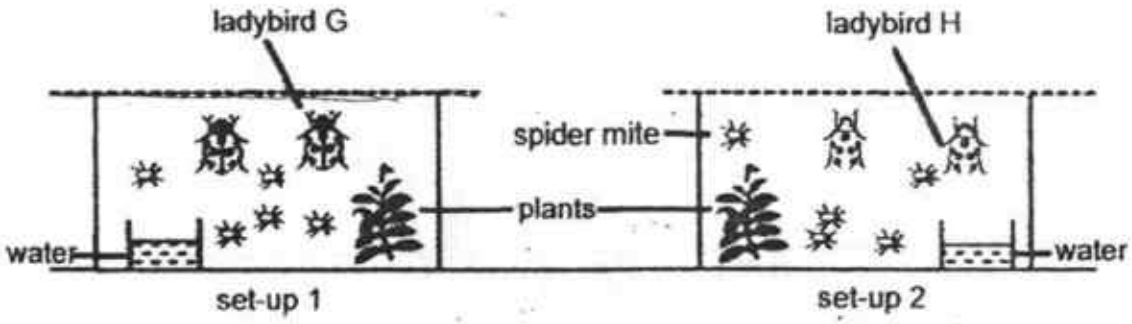
A population of Animal Z was then introduced into the rice field. The graph below shows what happened to the populations of two organisms, A and B, after Animal Z preyed on an animal in the food web.



Which of the following correctly shows the prey of Animal Z and resulted in the change of population sizes for two of the organisms, A and B?

	Prey of Animal Z	Organism A	Organism B
(1)	rat	toad	rice plant
(2)	toad	snail	rat
(3)	snake	snail	toad
(4)	snail	snake	fish

13 Mr Singh conducted an experiment to find out which species of ladybird, G or H, could better control the population of spider mites in his farm. He put two ladybirds G into set-up 1 and two ladybirds H into set-up 2. He also put five spider mites into each set-up and left them undisturbed for 3 hours.

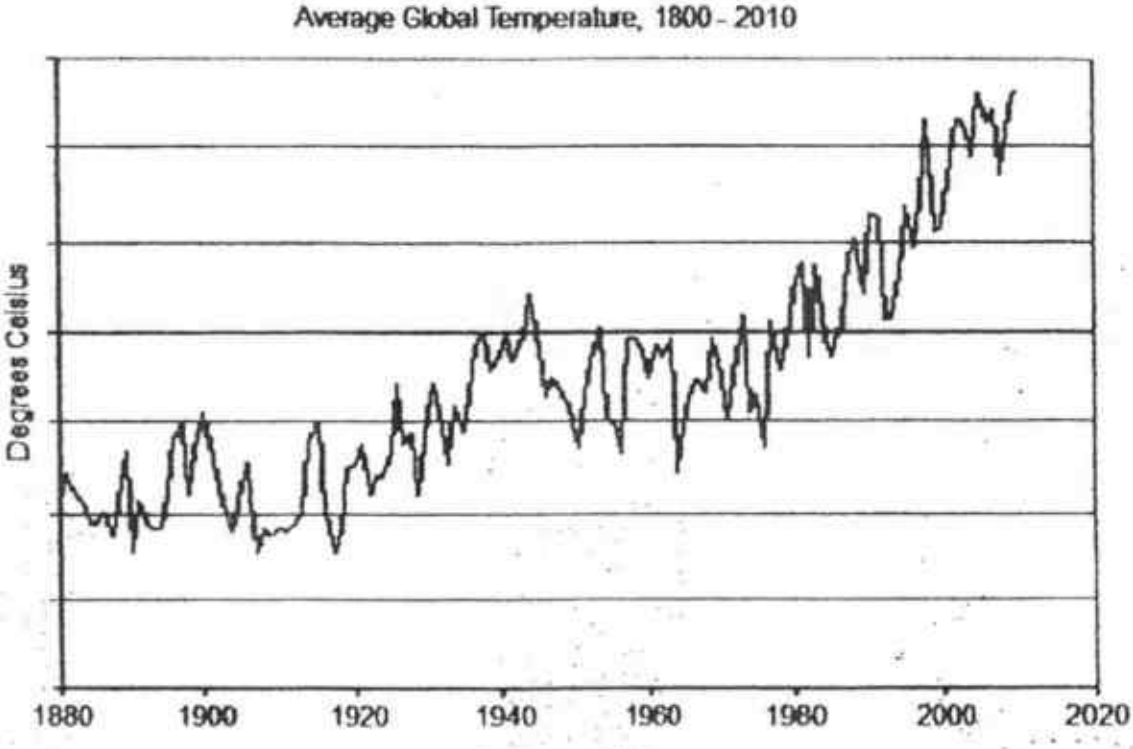


Which one of the following will help Mr Singh to draw a conclusion at the end of his experiment?

	Control set-up	Data for collection
(1)	water, 1 plant, 5 spider mites	The amount of water left in each set-up.
(2)	water, 1 plant, 1 ladybird G, 1 ladybird H	The number of ladybirds left in each set-up.
(3)	water, 1 plant, 2 spider mites	The number of leaves left on the plant in each set-up.
(4)	water, 1 plant, 5 spider mites	The number of spider mites left in each set-up.

(Go on to the next page)

14 Abigail found a graph on the internet that shows the average global temperature over time.



Which of the following correctly show the cause and the effect of the trend shown in the graph?

	Cause	Effect
(1)	Burning more forests	More haze
(2)	More pollutants released by vehicles and factories	More air pollution
(3)	Increased burning of fuels	More floods and droughts
(4)	More deforestation	More soil erosion and landslide

End of Booklet A1

METHODIST GIRLS' SCHOOL
Founded in 1887

PRELIMINARY EXAMINATION 2018
PRIMARY 6
SCIENCE

BOOKLET A2

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

INSTRUCTIONS TO CANDIDATES
Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Shade your answers in the Optical Answer Sheet (OAS) provided.

Name: _____

Class: Primary 6._____

Date : 6 August 2018

This booklet consists of 14 printed pages including this page.

For each question from 15 to 28, 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).

[28 marks]

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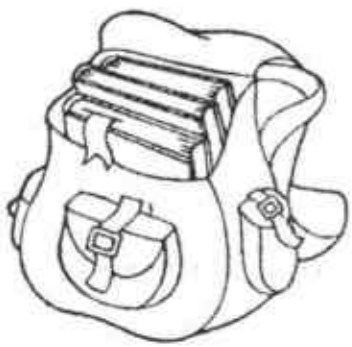
15 The table below shows the properties of four different materials.

Material	Flexible	Good conductor of heat	Strong	Waterproof
W	✓	✓	✓	✓
X		✓		✓
Y	✓	✓	✓	✓
Z	✓		✓	

Ashraf wanted to bring some cold water to school. He needed a bottle which he could squeeze into his small bag together with his books without the bottle breaking.



Which one of the materials is most suitable for making Ashraf's bottle?

(1) W

(2) X

(3) Y

(4) Z

[Go on to the next page

16 Which of the following is/are (an) example(s) of effects of a force?

A a closed door blocking noise from a television

B a thick piece of glass blocking heat from the stove

C a window glass stopping wind from entering the house

D a piece of wood stopping current from passing through a circuit

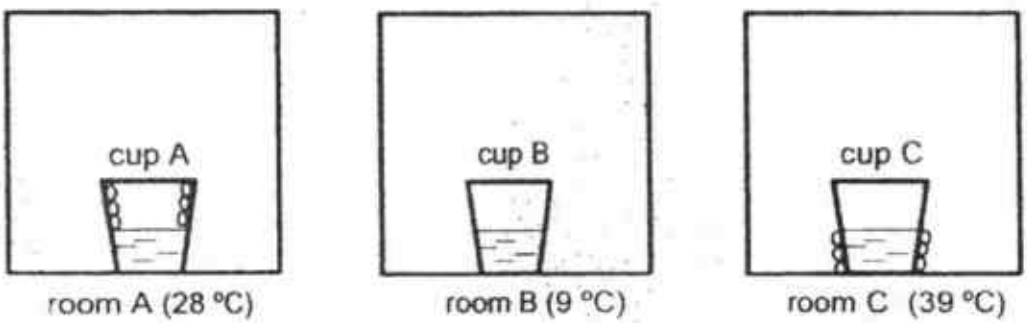
(1) C only

(2) C and D only

(3) A, B and D only

(4) A, B, C and D

17 Samy poured water of different temperatures into three identical cups and put them each into three identical rooms with different room temperature. After some time, Samy observed very tiny water droplets forming on cups A and C as shown below.



Which one of the following shows correctly the temperature of the water in each of the cups?

	Temperature of water in cup A (°C)	Temperature of water in cup B (°C)	Temperature of water in cup C (°C)
(1)	9	27	39
(2)	27	39	9
(3)	40	9	39
(4)	39	9	27

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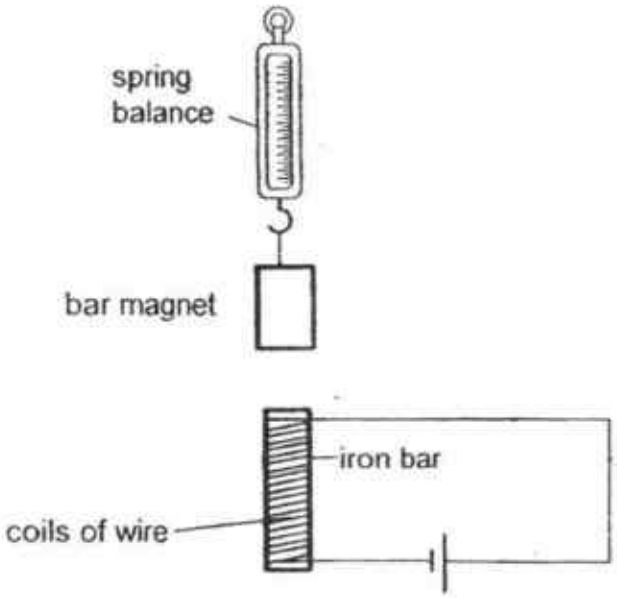
18 Keng Siong prepared a set-up as shown below.



He then made some changes to the value of a variable, S, in the set-up above and recorded the corresponding readings on the spring balance as shown in the graph below.

Based on the above results, which of the following represent variable S?

A Amount of heat applied to the bar magnet.

B Number of coils of wire around the iron rod.

C Number of batteries connected in series with the iron bar.

(1) A and B only

(2) A and C only

(3) B and C only

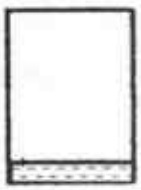
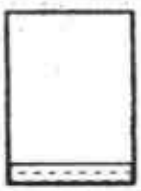
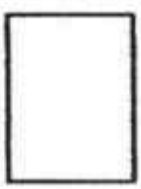
(4) A, B, C

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

Substance	Freezing Point (°C)	Boiling Point (°C)
S	20	30
T	3	22
U	67	150

Ali put the three substances into three identical sealed containers and left them in a room with a temperature of 30°C. The following diagram shows the three substances at the start of the experiment.

Which of the following would Ali observe after some time?

	Container with substance S	Container with substance T	Container with substance U
(1)			
(2)			
(3)			
(4)			

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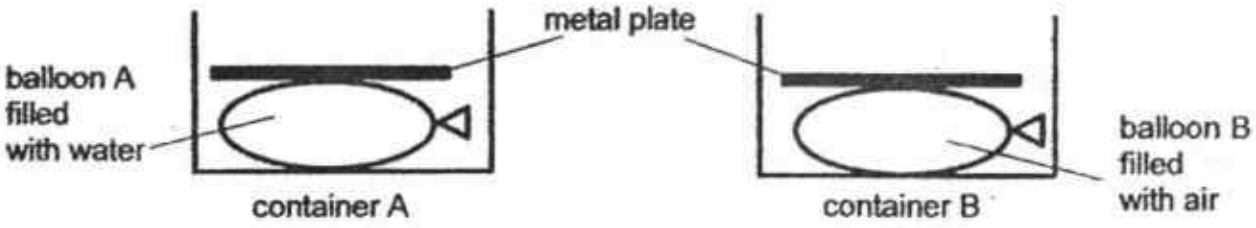
20 Sally filled balloon A with 500 ml of water and another identical balloon B with 500 ml of air. She then put each balloon into two identical containers of capacity 1000 ml. Two identical metal plates were each placed on the balloons as shown below.



Next, she added 1000 ml of water into each of the containers.

Which one of the following statements is correct?

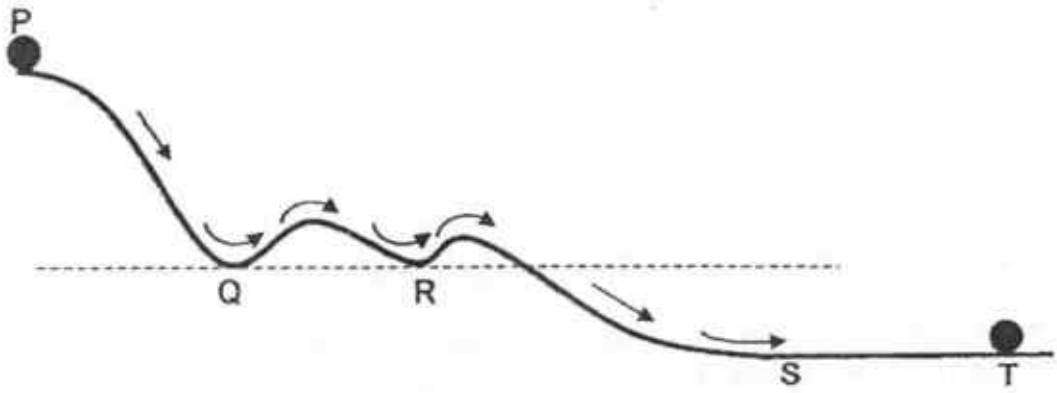
(1) Exactly 500 ml of water would overflow from both containers.

(2) More water would overflow from container A than container B.

(3) More water would overflow from container B than container A.

(4) The same amount of water would overflow from containers A and B.

21 Jane released a ball from the top of a slope at P. The diagram below shows the path taken by the ball before it comes to rest at T.



Which of the following statements about the ball is/are correct?

A It comes to rest at T when all its energy has been used up.

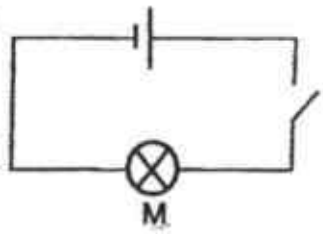
B It has maximum gravitational force at P and no gravitational force at S and T.

C It possesses only kinetic energy and no gravitational potential energy between S and T.

D The kinetic energy of the ball at Q is the same as its kinetic energy at R.

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

22 Jackson conducted an experiment using the set-up as shown below.



He measured the amount of light given off by bulb M.

In his second experiment, he connected another identical bulb N and a switch to the circuit above. He measured the amount of light produced by bulb M again and found that the amount of light produced by bulb M is different.

Which of the following statement(s) about the circuit in Jackson's second experiment is/are correct?

A Each bulb can be switched on or off independently.

B When one bulb is spoilt, the other bulb can still light up.

C There is only one path for current to flow through the circuit.

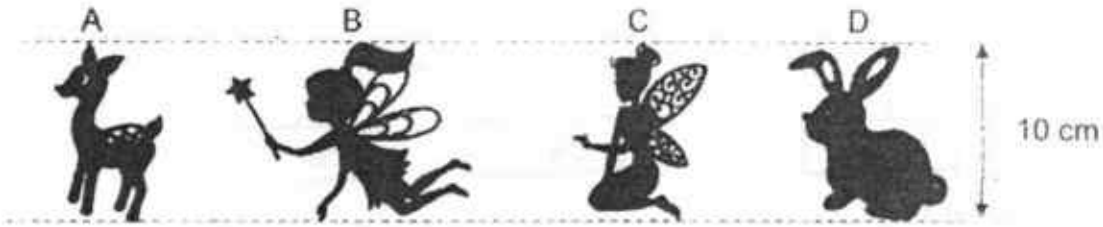
(1) A only

(2) C only

(3) A and C only

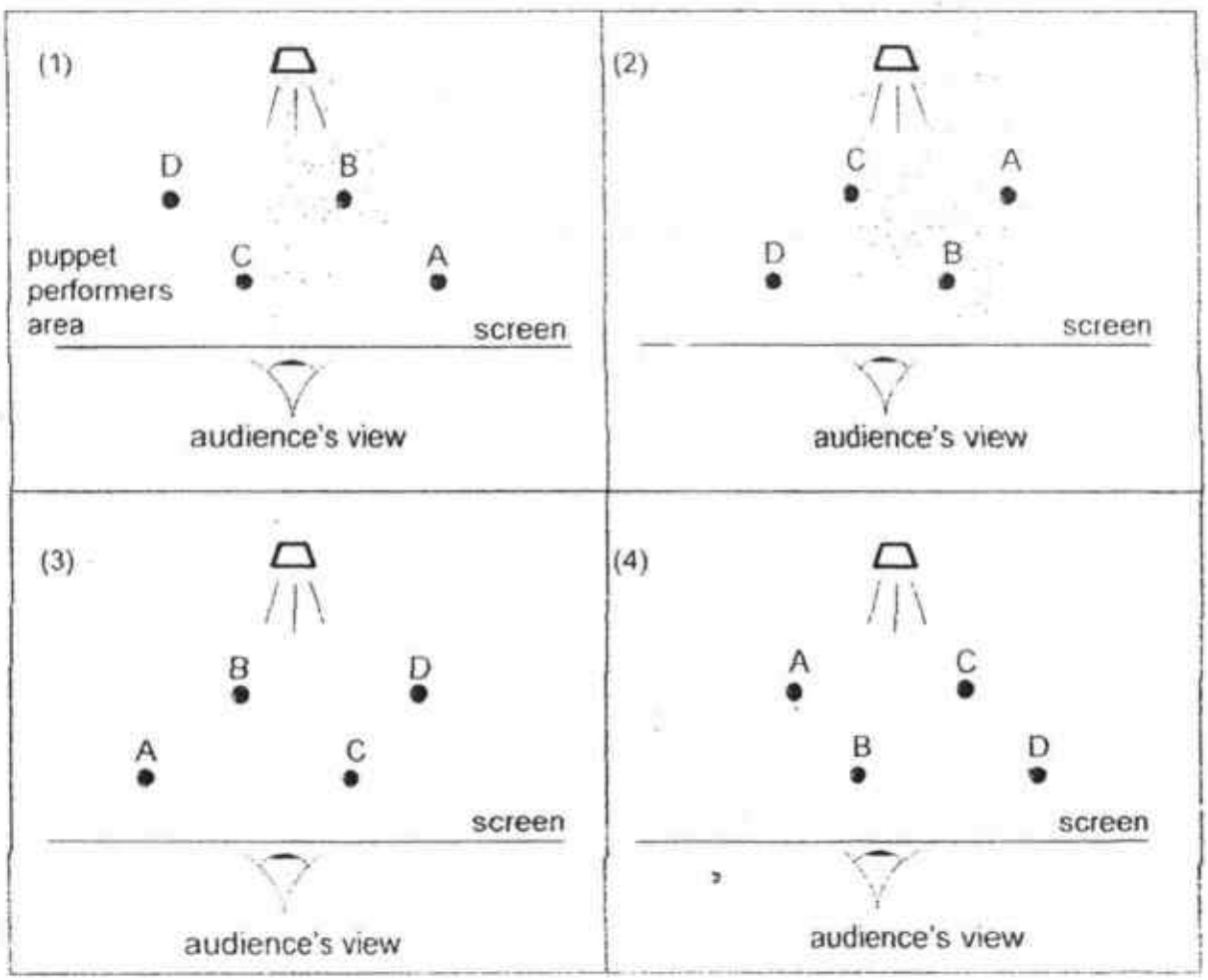
(4) B and C only

23 The following diagram shows the cut-outs A, B, C and D, that Hannah prepared for a puppet show.

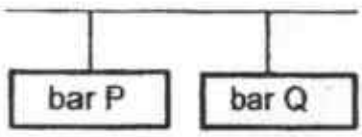


She wants to use the puppets to create the following scene for her audience.

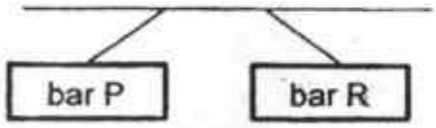
Which one of the following shows the correct positions of the puppets?



24 Mei Feng suspended three bars freely using two different set-ups and obtained the results as shown below.

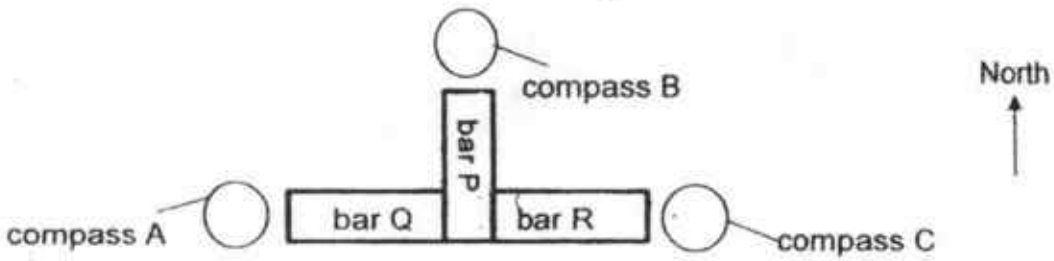


Set-up 1



Set-up 2

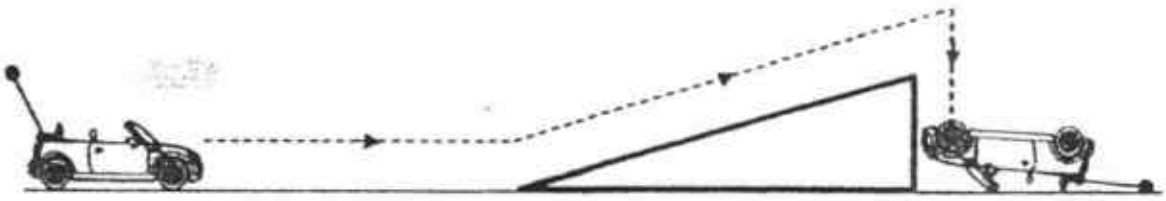
She then arranged the three bars and put three compasses at three different positions as shown below.



Which one of the following shows the direction which each compass would point to?

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

25 Fatimah left a remote control car near the bottom of a slope as shown below.



Once she pressed the "Forward" button on her remote control, the car moved forward. She then pressed the "Stop" button on the remote control but the car continued to move forward and up the slope before falling to the floor.

Which one of the following correctly shows the energy conversion in the car after she had pressed the "Forward" button on her remote control?

(1) kinetic energy → potential energy → kinetic energy → sound + heat energy

(2) electrical energy → kinetic energy → potential energy → kinetic energy → sound + heat energy

(3) potential energy → electrical energy → kinetic energy → potential energy → kinetic energy → sound + heat energy

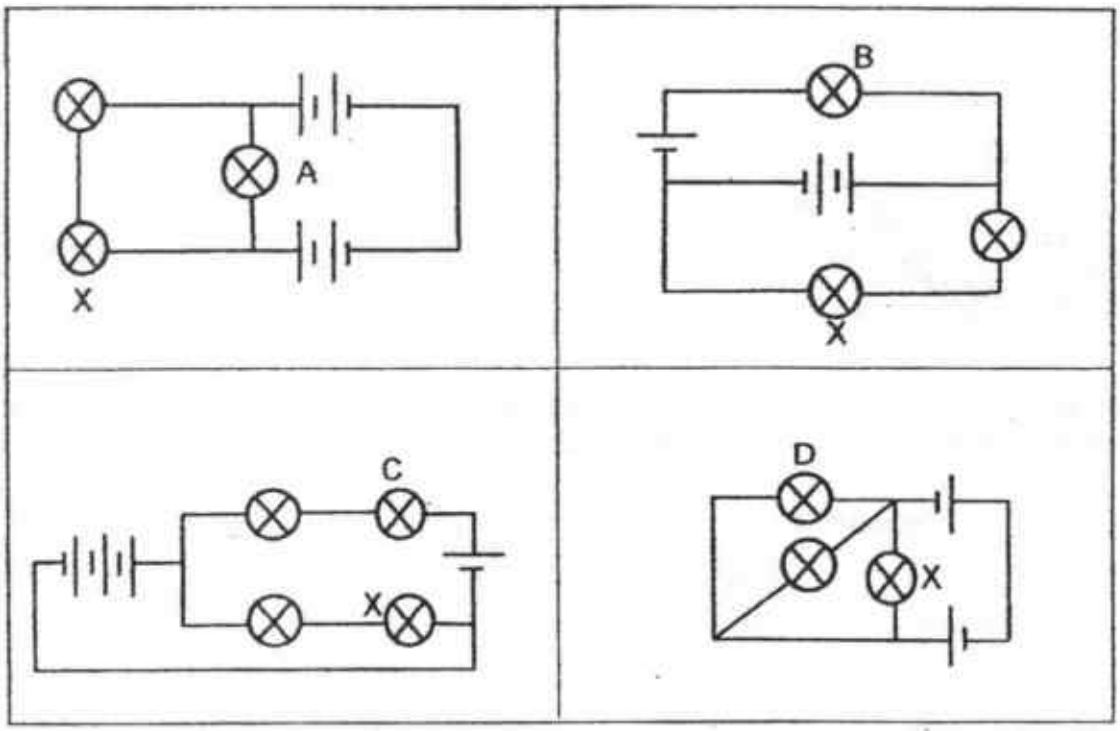
(4) potential energy → electrical energy → kinetic energy → potential energy → kinetic energy → sound energy → heat energy

26 Mike was in an enclosed bath room. He poured some tap water onto a pile of hot stones, which were at a temperature of 200 °C. Immediately, he observed a lot of mist forming above the stones.

Which one of the following correctly explains the temperature of the room after water was poured onto the stones?

	Temperature of the room	**Explanation**
(1)	decreased	The stones lost heat to the water and became cooler.
(2)	decreased	The surrounding air lost heat to the cooler stones and became cooler.
(3)	increased	Water gained heat from the stones and became hot water vapour.
(4)	increased	The surrounding air gained heat from the water and became warmer.

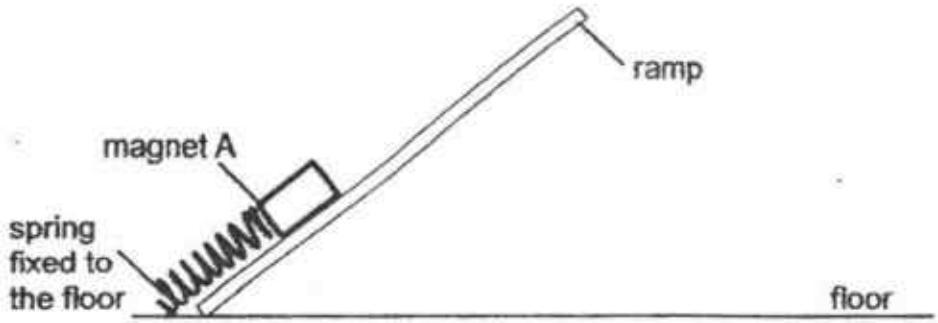
27 Chee Meng set up four electrical circuits as shown below. The batteries and bulbs are all identical and working properly.



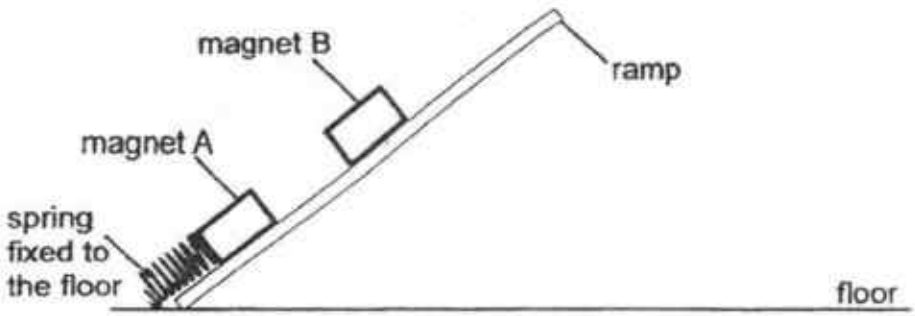
Which bulb would light up the brightest after bulb X is removed from each of the circuits?

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

28 Boon Tiong attached one end of a spring to the floor. The other end of the spring was attached to a bar magnet, A, as shown below.



When he placed magnet B on the top of the ramp, it slid down the ramp and stopped at the position as shown in the diagram below.



Which of the following is correct about the forces acting on magnet B?

	Elastic spring force	Frictional force	Gravitational force	Magnetic force
(1)	Present and acts in this direction ↗	Present and acts in this direction ↙	Present and acts in this direction ↙	Present and acts in this direction ↗
(2)	Present and acts in this direction ↙	Present and acts in this direction ↗	Present and acts in this direction ↓	Present and acts in this direction ↙
(3)	Absent	Present and acts in this direction ↗	Present and acts in this direction ↓	Present and acts in this direction ↗
(4)	Absent	Present and acts in this direction ↗	Present and acts in this direction ↙	Present and acts in this direction ↗

End of Booklet A2

METHODIST GIRLS' SCHOOL

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PRELIMINARY EXAMINATION 2018
PRIMARY 6
SCIENCE

BOOKLET B1

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

INSTRUCTIONS TO CANDIDATES

Do not turn over this page until you are told to do so.
Follow all instructions carefully.
Answer all questions.
Write your answers in this booklet.

Name: _____ ( )

Class: Primary 6._____

Date : 6 August 2018

Booklet A1 & A2	56
Booklet B1	22
Booklet B2	22
Total	100
Parent's Signature	

This booklet consists of 9 printed pages including this page.

For questions 29 to 35, 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. [22 marks]

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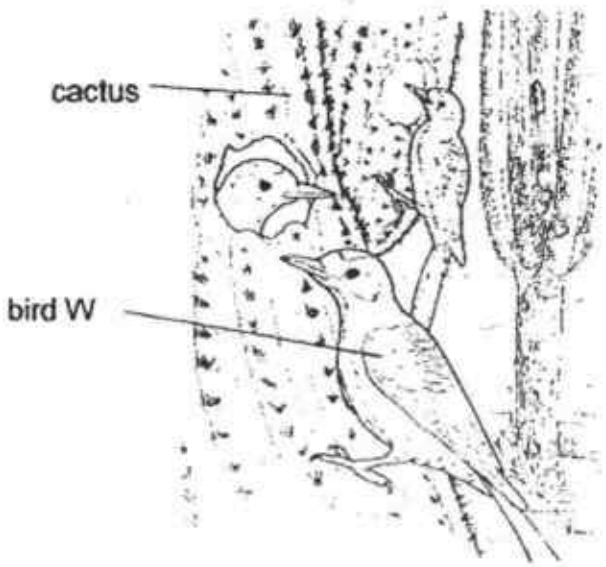
29 Bird W lives in a desert and mainly eats beetles, grasshoppers and mealy bugs. It usually makes its nest in a species of cactus as shown below.



(a) Suggest two ways in which the cactus benefits from bird W. [2]

Benefit 1: _____

_____

Benefit 2: _____

_____

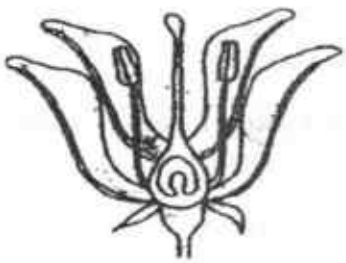
(b) How does laying eggs in the nest built in the cactus help bird W to protect its eggs? [1]

_____

_____

SCORE	3

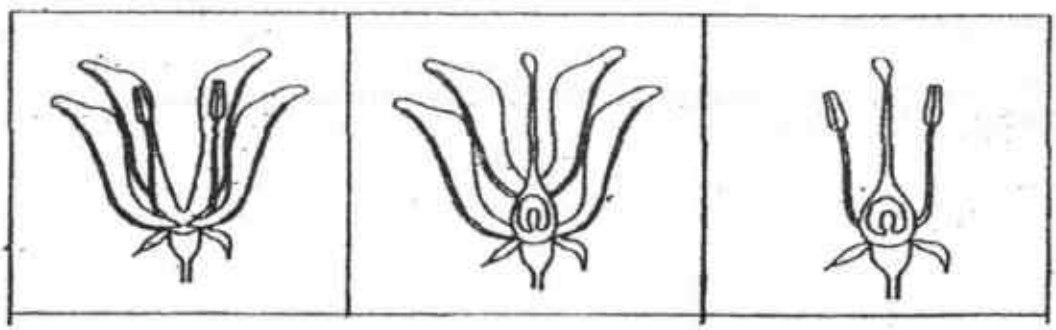
30 Samantha grew plant H in her garden which bore bright and colourful flowers. The fruits were fleshy and had a sweet smell. The diagram below shows the cross section of the flower.



Flower of plant H

(a) Explain how the bright and colourful petals of the flower could help plant H to reproduce. [1]

Samantha then removed different parts from flowers, X, Y and Z, as shown below and left them to grow on the plant.



Flower X Flower Y Flower Z

(b) Which flower(s) would most likely develop into fruits? Explain your answer. [1]

SCORE | /2

(Go on to the next page)

After some time, Samantha observed some seedlings of plant H growing and she recorded the characteristics of the seedlings in a Biology book.

	Observation 1	**Observation 2**
Appearance of leaves	Broad, thick and of a dark green colour	Narrow, thin and with a pale green colour
Appearance of stems	Short and thick	Tall and thin

(c) *Which one of the above observations correctly describes the characteristics of* the seedlings of plant H? Explain your answer. [1]

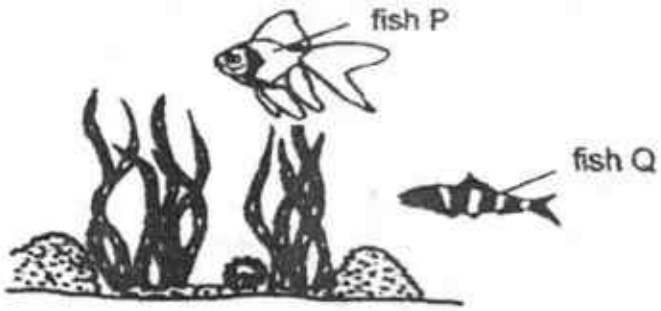
A few months later, Samantha noticed that the seedlings had grown into adult plants as they started to bear fruits.

(d) Explain why these new adult plants bore fruits that were fleshy and sweet smelling, just like plant H. [1]

SCORE	2

(Go on to the ne

31 The diagram shows fish P and Q living amongst water plants in a river.



Animal X, a predator of fish P and Q, was then introduced into the river.

(a) Which fish would survive better after the introduction of Animal X? Identify two structural adaptations and explain your answer. [2]

(i) _____

_____

(ii) _____

_____

Animal Y is at the young stage of its life cycle and also lives in the river.

(b) Why is animal Y able to breathe in the water like the fish? [1]

_____

_____

(c) Which animal group does animal Y belong to? State a characteristic that is unique to this animal group. [1]

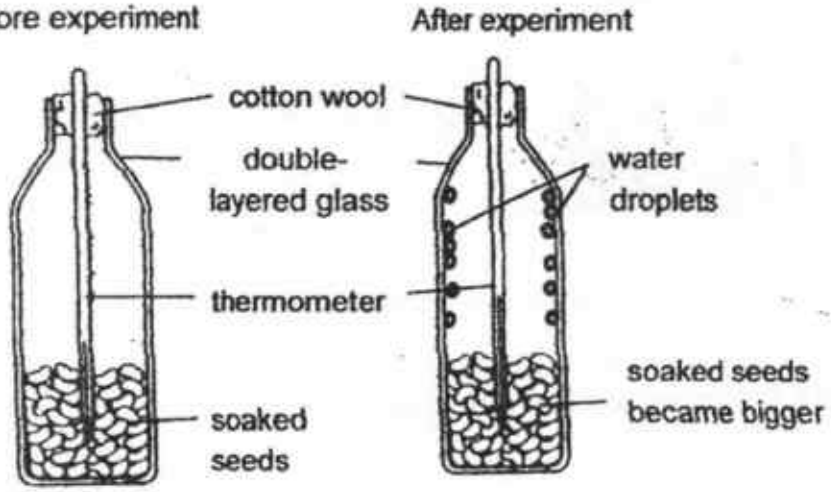
_____

_____

SCORE	/ 4

(Go on to the next page)

32 Keming soaked some seeds in water before placing them in a glass container. He also inserted a thermometer into the container and covered the mouth of the glass container with some cotton wool. The diagram below shows Keming's observations.



(a) Name the two life processes which took place in the soaked seeds. [1]

(i) _____

(ii) _____

(b) Based on Keming's observations, explain why there were water droplets formed on the glass surface and a rise in temperature at the end of the experiment. [1]

_____

_____

_____

(c) How does using the double-layered glass containers and cotton wool ensure Keming gets a more accurate results? [1]

_____

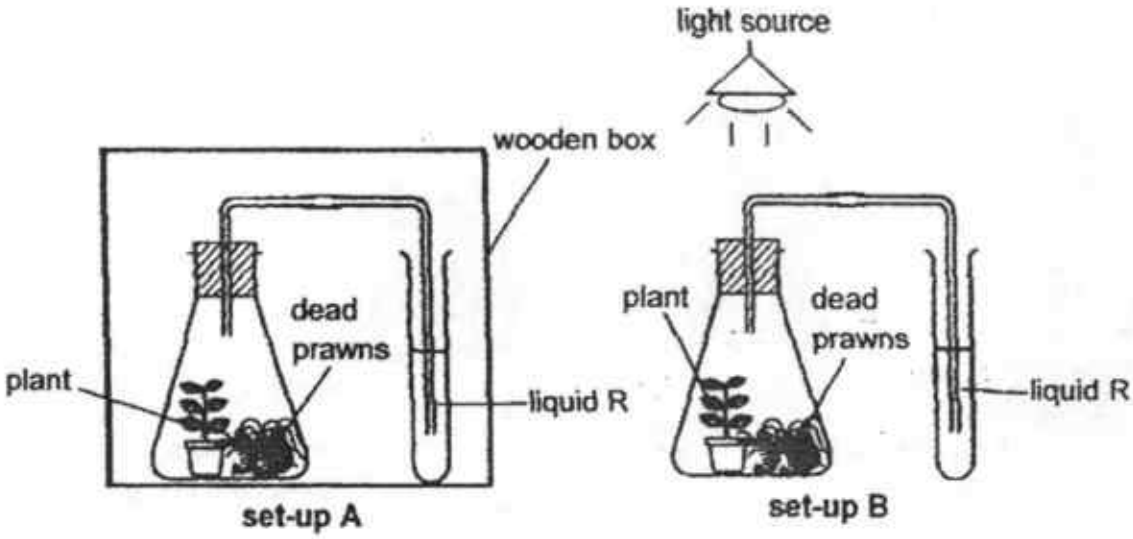
_____

_____

SCORE	3

(Go on to the next

33 Study the two set-ups, A and B, as shown below.



Liquid R is an indicator which will change its colour when it comes into contact with different amount of carbon dioxide and the table below shows its colour change.

Colour of liquid R	Purple	Red	Yellow
Amount of carbon dioxide	less than normal	normal	higher than normal

(a) What would be the colour of liquid R in both set-ups after six hours? [1]

Set-up A: _____

Set-up B: _____

(b) Explain what had caused the change in the colour of liquid R in each set-up. [2]

Set-up A: _____

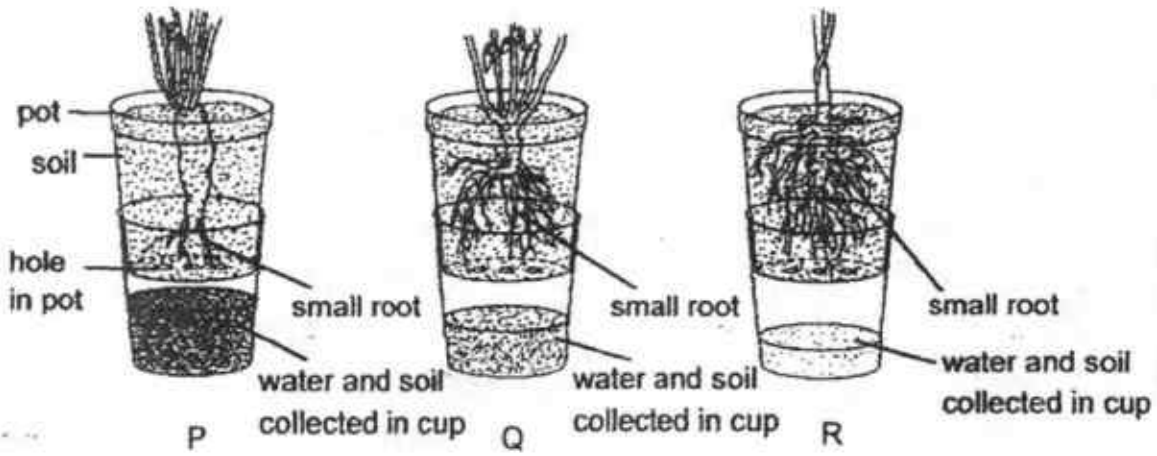
_____

Set-up B: _____

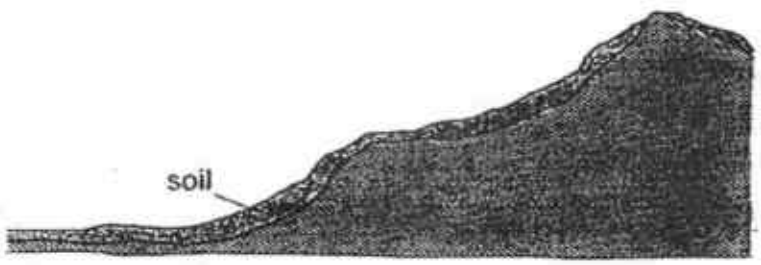
SCORE	3

(Go on to the next page)

34 A farmer poured the same volume of water into each of the set-ups with plant P, Q and R. He observed the volume of water and the amount of soil collected in each cup after five minutes and his results were shown below.



The diagram below shows part of a small hill located in an area which experienced a high rainfall.



(a) Based on the results above, which plant, P, Q or R should the farmer grow on the hill? Explain your answer clearly. [1]

_____

_____

_____

(b) How does growing more plants affect the rate of global warming? Explain your answer. [1]

_____

_____

_____

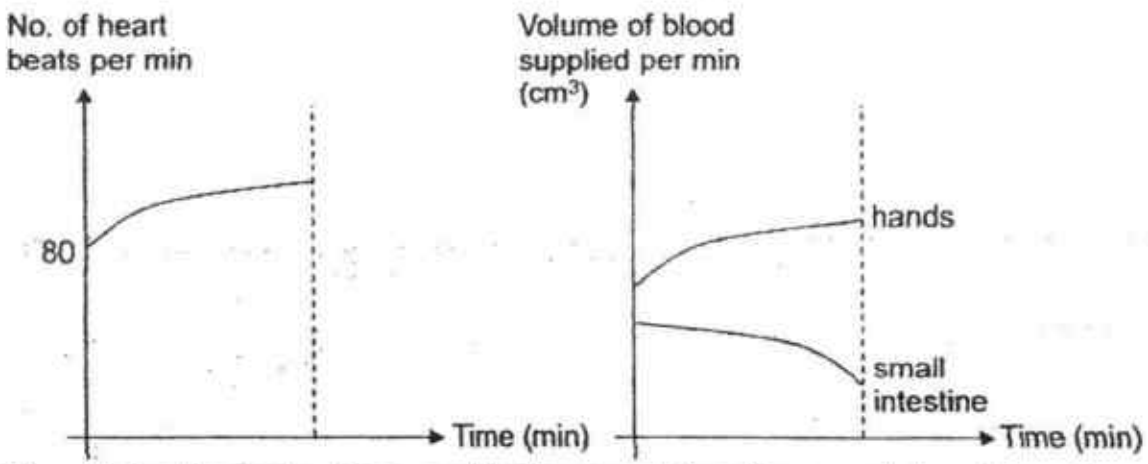
SCORE 2

(Go on to the next page)

35 After having his meal, Bala went to the playground to exercise as shown below.

(a) Describe how oxygen in the environment reached Bala's hands. [2]

The graphs below show how Bala's heart rate and volume of blood supplied to two parts of his body change over time.



(b) Using the graphs above, explain how exercising after a meal slowed down the rate of digestion in Bala's body. [1]

End of Booklet B1

SCORE	3

METHODIST GIRLS' SCHOOL

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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.

Name: _____

Class: Primary 6._____

Date : 6 August 2018

Booklet B2	22

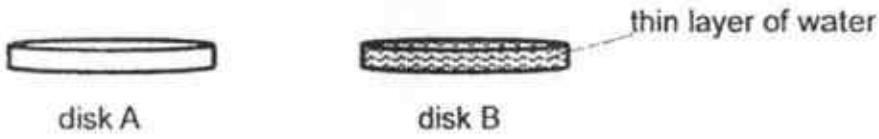
This booklet consists of 12 printed pages including this page.

For questions 36 to 41, 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.

[22 marks]

---

36 Joo Xiong heated two identical metal disks, A and B, to a temperature of 40°C. He then sprayed the surface of disk B with a thin layer of water and left both disks out in the open.



(a) Explain why the temperature of disk B became lower faster than disk A after some time. [1]

_____

_____

Animal P can often be seen licking its forearms during very hot weather.

(b) Explain how this adaptation helps animal P to survive better in a hot climate. [1]

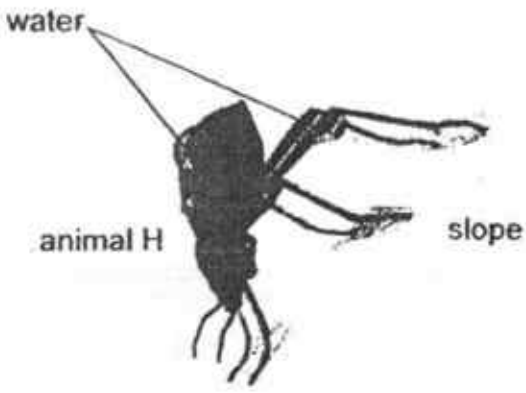
_____

_____

SCORE	2

(Go on to the next page)

Animal H lives in a very dry desert which does not rain at all. In the mornings, it positions itself as shown in the diagram below. Soon, water starts to collect on its body and moves down its body towards its mouth.



It has a hard outer covering which is cooler than the surroundings.

(c) Explain how water is collected on the body of animal H. [1]

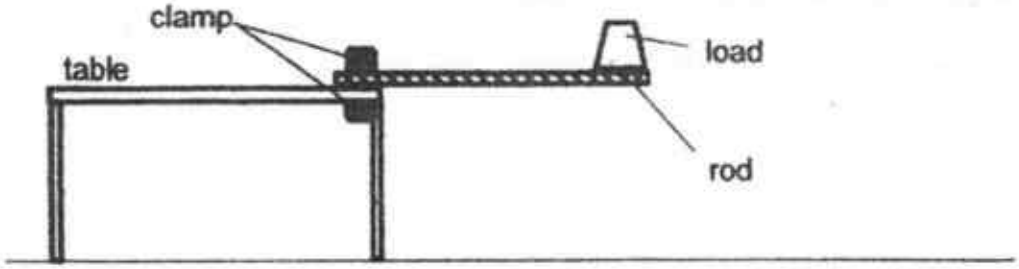
_____

_____

SCORE	1

(Go on to the next page)

37 Nassim used the set-up below to study a certain property of three rods.

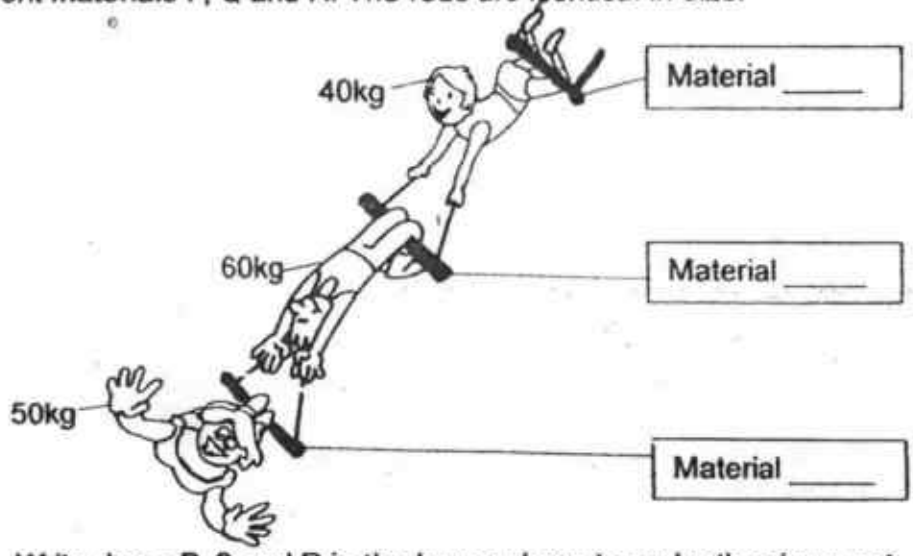


In his study, he used rods made of different materials, P, Q and R. He increased the amount of load until each rod broke. His results are shown below.

Material	Amount of load when rod broke
P	130kg
Q	160kg
R	60kg

(a) Name the property of material that Nassim studied. [1]

Three acrobats performed the following act in a circus using rods made of different materials P, Q and R. The rods are identical in size.



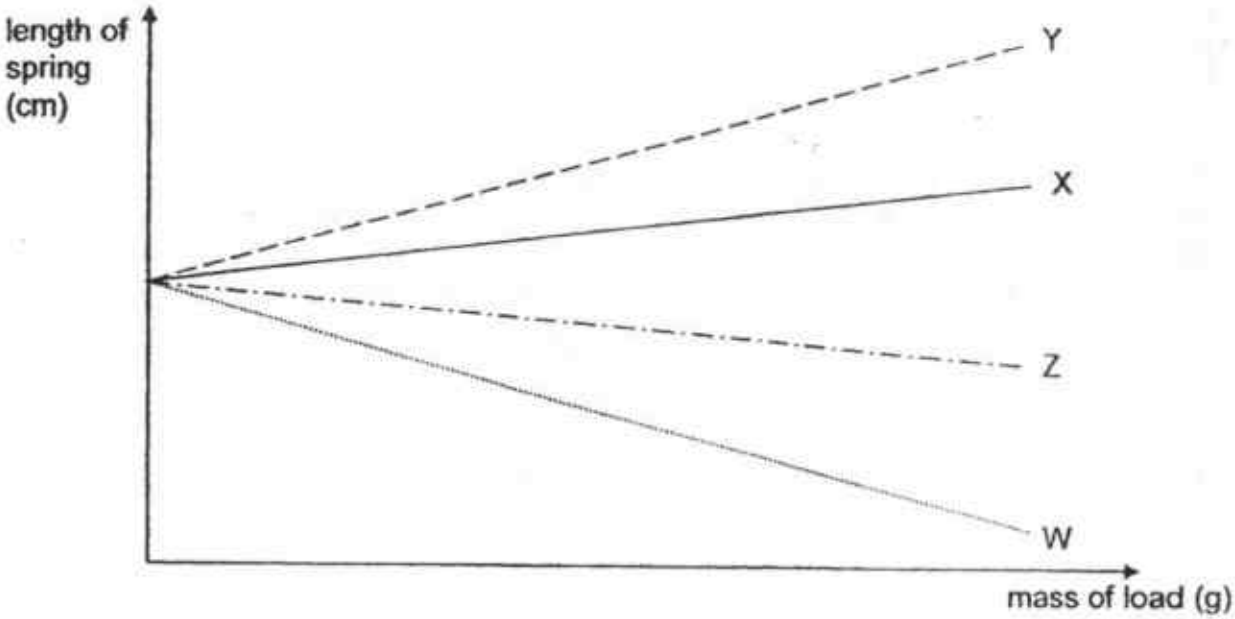
(b) Write down P, Q and R in the boxes above to make the circus act possible. [1]

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

SCORE 3

(Go on to the next page)

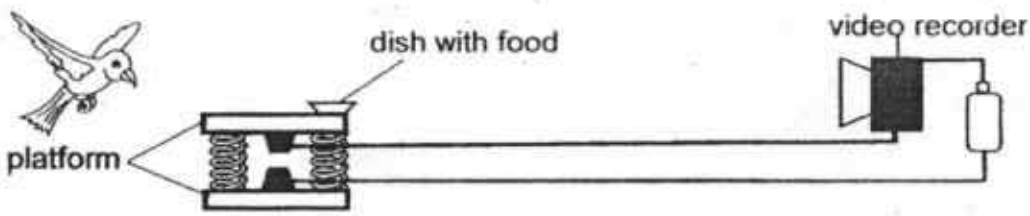
38 Santha conducted an experiment on four different types of springs, W, X, Y and Z. She added 50 g loads, one at a time, on each spring and measured the length of the spring. The results are shown in the graph below.



(a) Name the force(s) that acted on the loads. [1]

_____

Santha designed a set-up to record videos of migratory birds as shown below.



(b) Which spring, W, X, Y or Z, is most suitable to be used to ensure that her set-up can capture video recordings of even birds of small masses? Explain your answer. [1]

_____

_____

SCORE	2

(Go on to the next page)

Santha had a toy as shown below. When she opened the cover of the toy, the clown, which is not attached to the box, jumped out of the box completely.

(c) Which spring, W, X, Y or Z, is most suitable to be used for this toy to allow the clown to jump out of the box higher?
Explain your answer clearly. [2]

_____

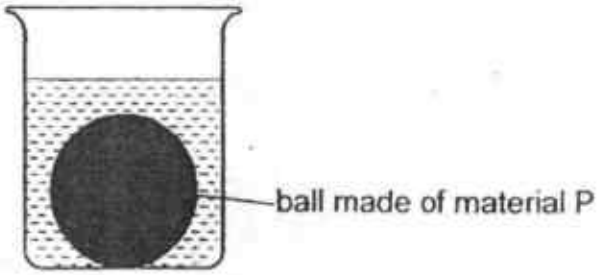
_____

_____

_____

SCORE	2

39 Sam wanted to find out which material, P, Q or R, is a better conductor of heat. He heated a solid ball, made of material P, to a certain temperature and left it in a beaker of water as shown below.



He then measured the temperature of the water every 1 minute. He repeated the experiment for another two balls of the same size, using materials Q and R. The table below shows his results.

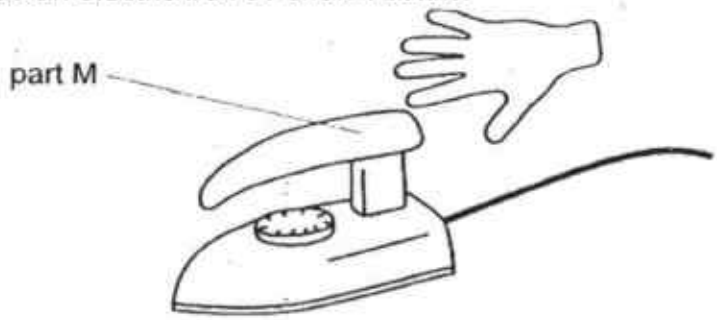
Time (min)	Temperature of water containing P (°C)	Temperature of water containing Q (°C)	Temperature of water containing R (°C)
0	30	30	30
1	32	38	43
2	32	45	56
3	33	51	69
4	33	57	77

(a) How does using equal volume of water for each material help ensure a fair test? [1]

_____

_____

Sam wanted to use an electric iron as shown below.



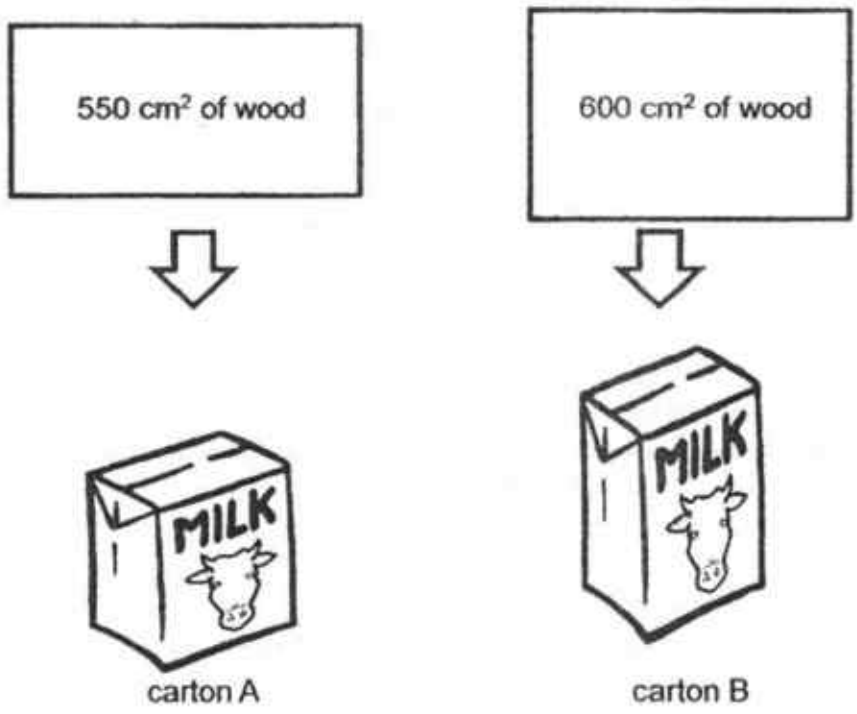
(b) Based on his results, which material, P, Q or R, is most suitable for making part M? Explain your answer. [2]

_____

_____

SCORE	3

A factory manufactured two different milk cartons, A and B, using different sizes but the same type of wood as shown below.



carton A carton B

The two cartons are of the same thickness and each contains exactly 1 litre of the same type of milk.

Sam put the two milk cartons into the refrigerator.

(c) Which carton, A or B, would contain colder milk after 15 minutes? Explain your answer. [1]

_____

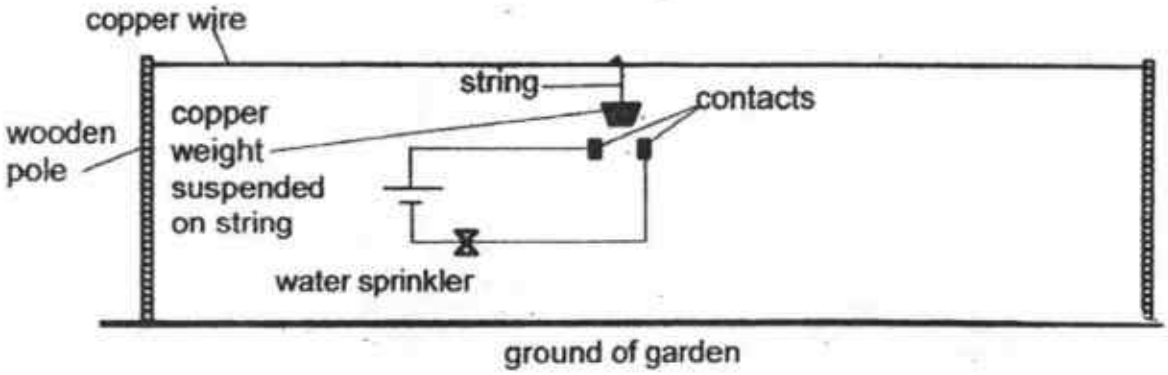
_____

SCORE	1

(Go on to the next page)

40 Kuan Long used the set-up in **Diagram 1** below to ensure that the plants in his garden do not overheat during hot days.

Diagram 1



(a) Explain how the water sprinkler gets switched on during long periods of hot temperature during the day. [2]

_____

_____

_____

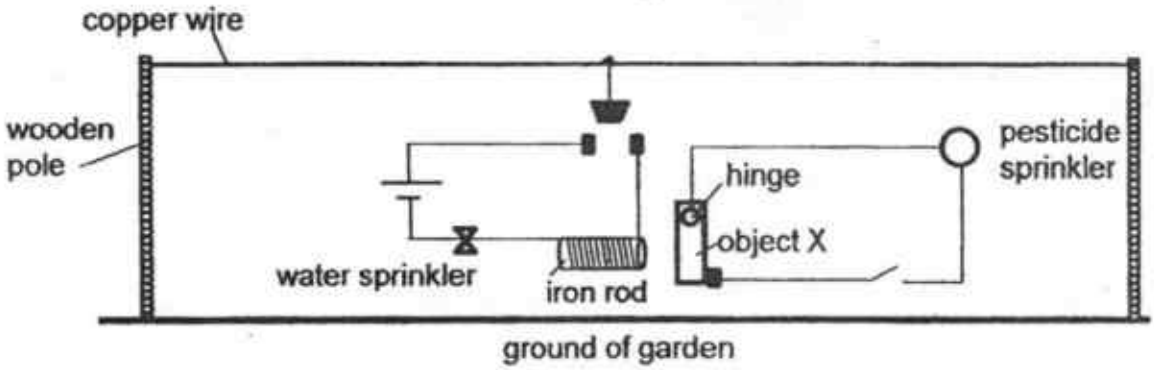
_____

SCORE	
	2

(Go on to the next page)

Kuan Long then re-connected his circuit and added another circuit for his pesticide sprinkler as shown in **Diagram 2** below.

Diagram 2



Object X is free to rotate about the hinge.

(b) Explain clearly how the iron rod in **Diagram 2** is used to ensure that the pesticide sprinkler cannot be switched on when the water sprinkler is in operation. [2]

_____

_____

_____

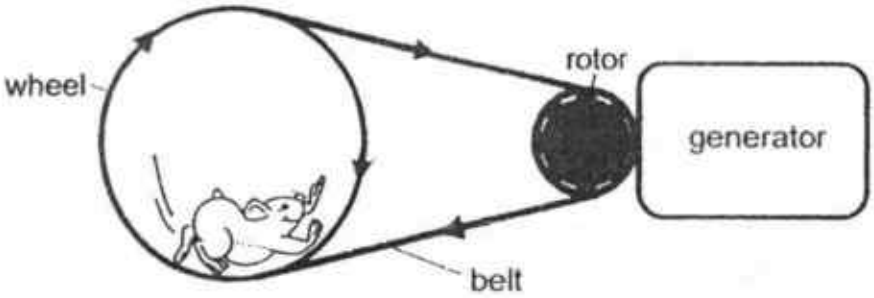
(c) State two properties of the material used to make object X which allows the set-up to work. [1]

_____

SCORE	3

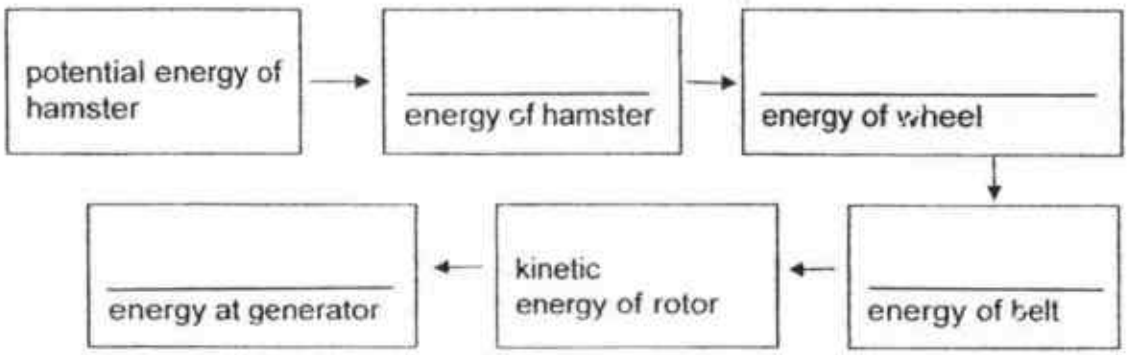
(Go on to the next page)

41 Henry designed the following set-up.

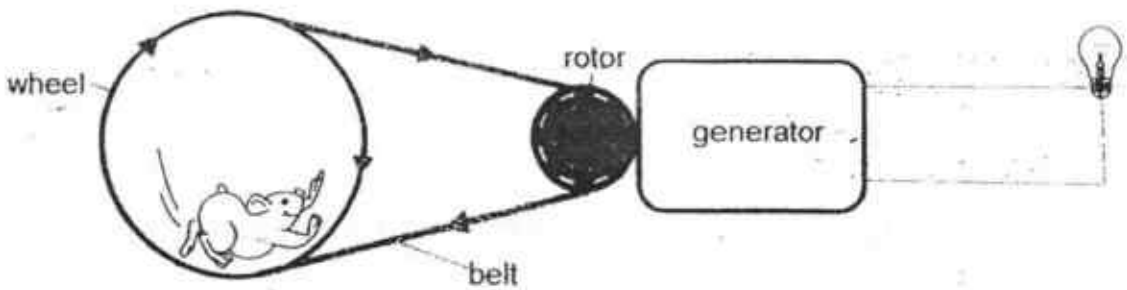


When the hamster ran on the wheel, the wheel spun and the belt moved as well to turn the rotor, which was connected to a generator.

(a) Fill in the blanks below to show the energy conversion. [1]



A bulb was then connected to the generator.



(b) Henry noticed that the bulb did not always light up even when his hamster was running on the wheel. All the components in the set-up were in good working condition. Explain why. [1]

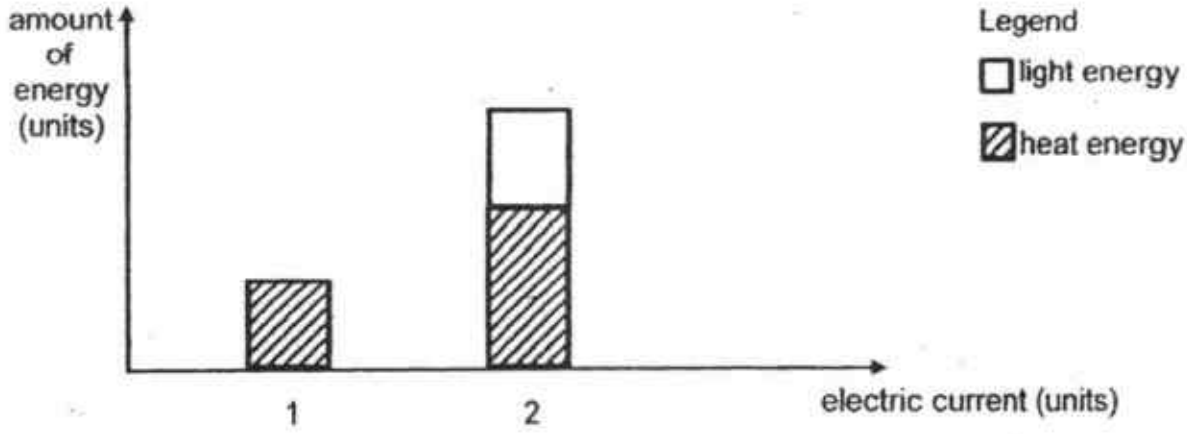
_____

_____

SCORE	2

(Go on to the next page)

Henry measured the amount of electric current and the amount of energy generated during the experiment. His results are shown below.



(c) The energy conversion in the bulb when the current is 1 unit is different from the energy conversion when the current is 2 units.
How are they different? [1]

_____

_____

SCORE	1

End of Booklet B2

ANSWER KEY

YEAR : 2018
LEVEL : PRIMARY 6
SCHOOL : METHODIST GIRLS' SCHOOL (PRIMARY)
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAM

BOOKLET A1 & A2

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

BOOKLET B1

Q29a) Benefit 1: Bird W can protect it from insects such as beetles, grasshoppers and mealy bugs.

Benefit 2: Bird W can help to disperse the seeds of the cactus.

Q29b) The cactus has shark pointy leaves. Hence predators will not come close to the cactus and the eggs of Bird W will be safe.

Q30a) The bright and colourful petals will attract pollinators to the flowers and the flower will be pollinated.

Q30b) Y and Z would develop into fruits. The female parts of these two flowers were not removed so fertilisation could take place.

Q30c) Observation 1 as the seeds of H are dispersed by animals, they do not need to compete for sunlight, water and nutrients and space, so they will grow more healthily.

Q30d) The seedlings inherited genetic characteristics of H, hence the new adult plants bore fleshy and sweet smelling fruits as well.

Q31a) i: Q as it has streamlined body that will enable it to swim away from X faster.

ii: Q as it has stripes on its body which will serve as camouflage so that it can blend in with its surroundings and will not be spotted easily by X.

Q31b) It has gills to take in dissolved oxygen.

Q31c) It is ha amphibian and all amphibians have moist skin as an outer-covering.

Q32a) i: Respiration
ii: Germination

Q32b) Water in the soaked seeds gained heat and evaporated. When the warm water vapour eame into contaet with the cool inner surface of the bottle, it lost heat and condensed into water droplets. There was a rise in temperature as the seeds carried out respiration.

Q32c) It ensures that no excess heat from the surroundings gets conducted into the bottle and no heat in the bottle gets conducted out of the bottle as both cotton wool and double-layered glass contains air pockets and air is a poor conductor of heat, and reduces heat loss.

Q33a) Set-up A: Yellow
Set-up B: Red

Q33b) Set-up A: The dead prawns gave out carbon dioxide while decomposing. The plant was respiring and also gave out carbon dioxide. Hence a combination of both caused the amount of CO_2 to be higher than normal.

Set-up B: The dead prawns gave out carbon dioxide while decomposing, but the plant was taking in carbon dioxide as it was photosynthesizing in presence of sunlight. Hence the level of CO_2 was normal.

Q34a) R as it has many long roots that hold the soil firmly together thus the least amount of water and soil was collected in the cup. By planting R, the roots can help to prevent soil erosion and landslides even during high rainfalls.

Q34b) Growing more plants reduces the rate of global warming as plants take in carbon dioxide and give out oxygen during photosynthesis. The lack of plants causes carbon dioxide build-up which is a greenhouse gas that traps heat, contributing to global warming.

Q35a) He breathed in oxygen through his nose. The oxygen reached his lungs where it was absorbed into the blood stream. His heart then pumped the oxygen rich blood to his hands.

Q35b) By exercising after a meal, more blood is pumped to the other parts of the body and less blood is supplied to the small intestines. Hence, less digested food will be absorbed into the blood stream.

BOOKLET B2

Q36a) The water gained heat from B and evaporated, taking away some heat with it. Hence the temperature of B became cooler faster than A.

Q36b) By licking its forearms, P is putting a layer of water on it. The water will gain heat from P's body and evaporate, taking some heat away with it.

Q36c) Warm water vapour in the surrounding air comes into contact with the cooler surface of H and loses heat to condense into water droplets.

Q37a) Strength

Q37b) 40kg: Material Q
60kg: Material P
50kg: Material R

Q37c) Each rod must be able to withstand the weight pulling it down and must be able to withstand the gravitational force acting on it.

Q38a) Gravitational force and elastic spring force.

Q38b) W as it compressed the most with the same amount of load on it which means that it is the most elastic and will compress the most with the smallest load.

Q38c) Z. It has the stiffest compression spring and would push the clown out of the box with greater force.

Q39a) Different amounts of water would require different amounts of heat energy to raise its temperature.

Q39b) P as it is the poorest conductor of heat as the temperature of the water containing P increased the least which means that it will not conduct heat from the iron to M as fast, so Sam's hand will not be scalded

Q39c) B. It has a larger surface area in contact with the cold air in the refrigerator and loses heat to the cold air faster.

Q40a) The copper weight will gain heat from its surroundings and expand. It will be connected to the contacts and complete the circuit so electricity can flow through the circuit and the sprinkler will be switched on.

Q40b) When the sprinkler is in operation, electricity will flow through the iron rod and make it a temporary magnet which will attract X and prevent it from completing the circuit so the pesticide sprinkler will not function.

Q40c) Magnetic material, conductor of electricity.

Q41a) Potential energy of hamster → Kinetic energy of hamster → kinetic energy of wheel

Electrical energy at generator ← Kinetic energy of rotor ← Kinetic energy of belt

Q41b) His hamster may not have been running fast enough so not enough kinetic energy could be converted to electrical energy to light up the bulb.

Q41c) When the current was 1 unit, the electrical energy was converted to only heat energy.

END

Index No. | | | | | | – | |

PEI CHUN PUBLIC SCHOOL

PRELIMINARY EXAMINATION 2018

SCIENCE

SECTION A

Time: 1 h 45 min

Name : _____ ( )

Class : Primary 6 / ( ) _____

Date : 3 August 2018

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.

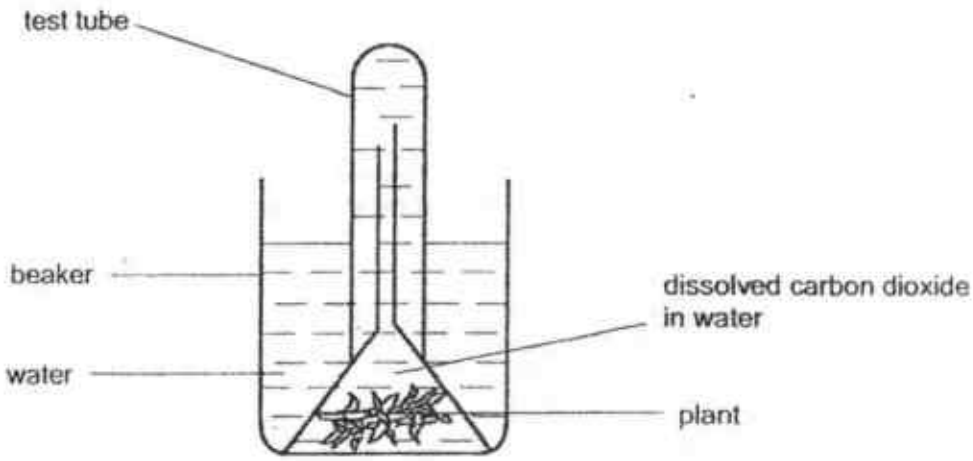
SHADE YOUR ANSWERS ON THE OPTICAL ANSWER SHEET (OAS) PROVIDED.

Section A (28 × 2 marks)
For questions 1 to 28, choose the most suitable answer and shade its number (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

1. Leslie saw an animal for the first time. He concluded that it is a bird. Which of the following characteristics helped him conclude that the animal is a bird?

(1) It can fly.
(2) It has a beak.
(3) It stands on two legs.
(4) It is covered in feathers.

2. Derek set up an experiment to find out if the amount of dissolved carbon dioxide in water affects the rate of photosynthesis. He prepared four set-ups A, B, C and D. Different amounts of baking soda are added to the set-ups to increase the amount of dissolved carbon dioxide in the water. The diagram below shows one of the set-ups.



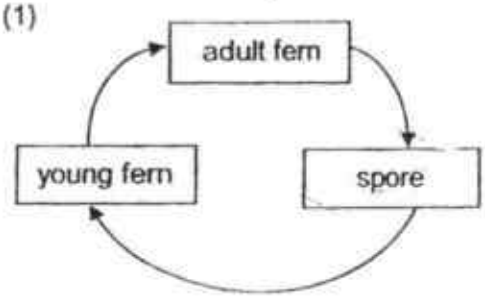
Which two set-ups should he use for his experiment?

Set-up	Amount of baking soda added (g)	Mass of plant (g)	Amount of water (ml)	Size of beaker (ml)
A	20	10	100	100
B	20	15	50	100
C	10	20	100	200
D	10	15	50	200

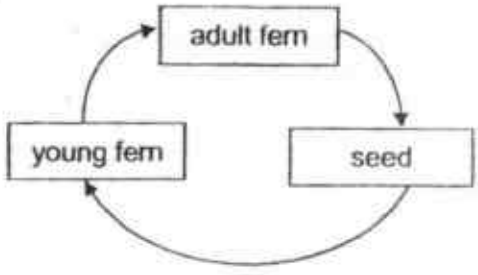
(1) A and B
(2) A and C
(3) B and C
(4) B and D

3. Which of the following best describes the stages of development in the life cycle of a ladder fern?

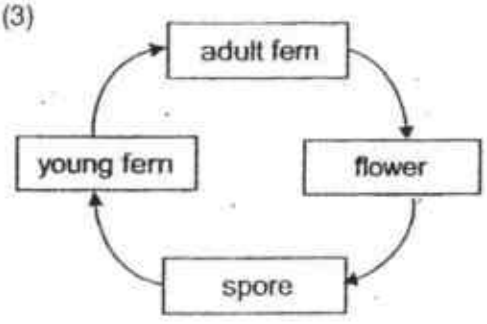
(1)



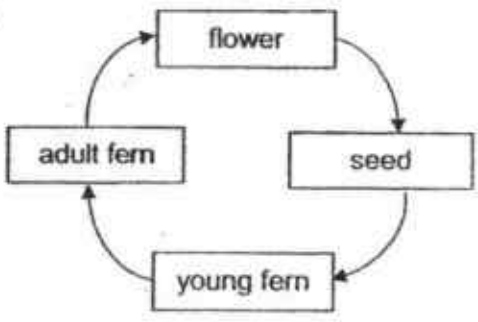
(2)



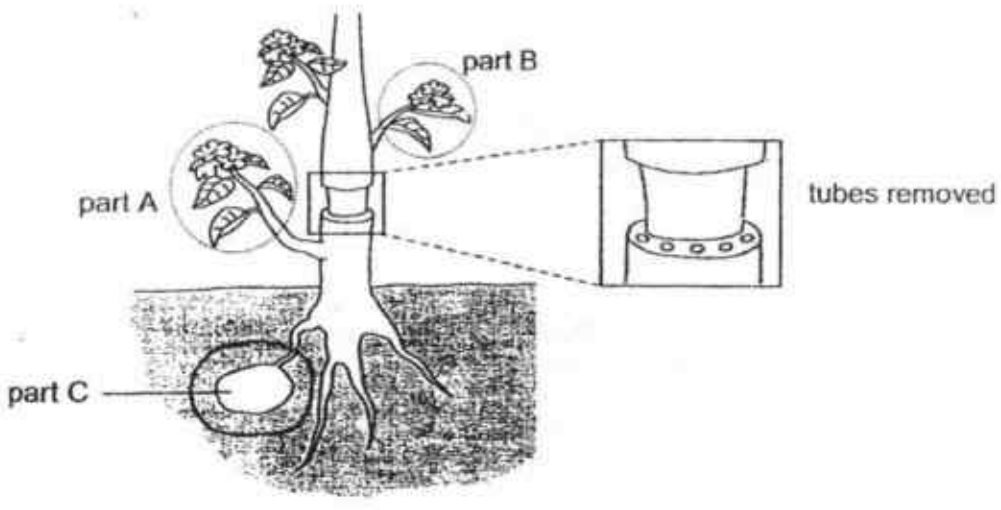
(3)



(4)



4. The outer ring of a stem was removed from a plant as shown below.
Both the water-carrying tubes and food-carrying tubes were removed.



It was observed that part C grew bigger after a week.
Which of the following statements best explains the observation?

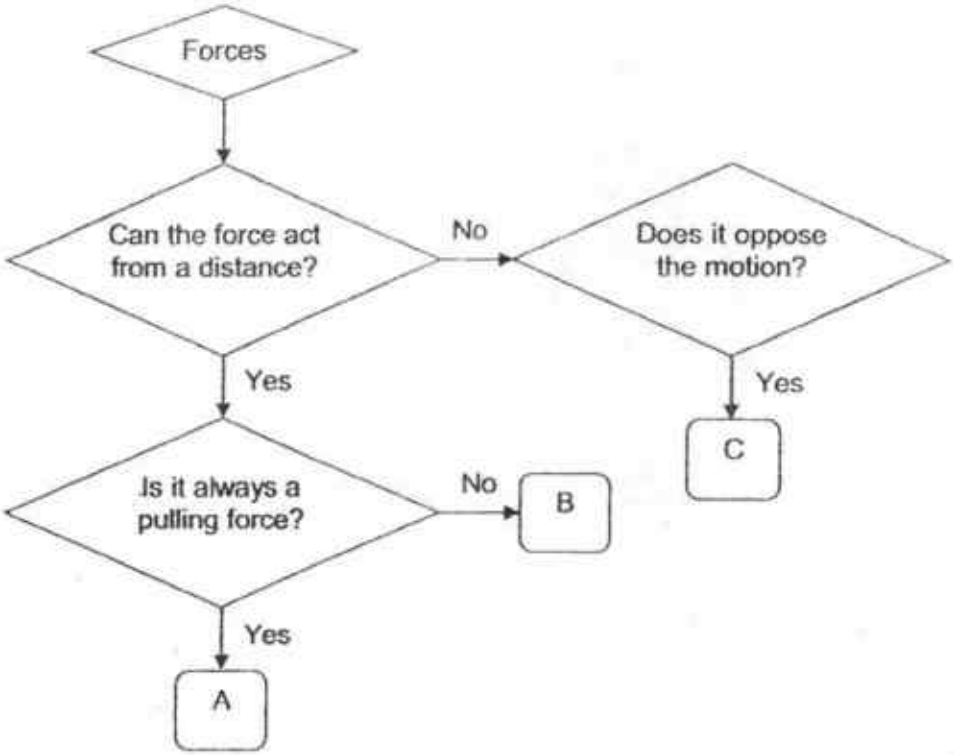
(1) Food made in A is stored in C.

(2) Food made in B is stored in C.

(3) Food is absorbed by C from the soil.

(4) Food made in A and B is stored in C.

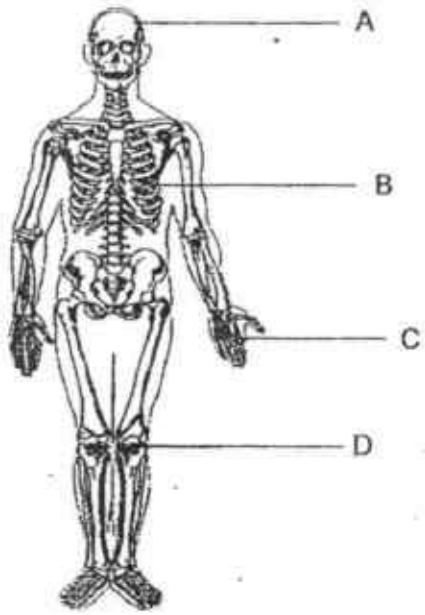
5. Look at the flow chart below.



Which of the following correctly identify the types of forces?

	A	B	C
(1)	magnetic	gravitational	frictional
(2)	magnetic	elastic spring	frictional
(3)	gravitational	elastic spring	magnetic
(4)	gravitational	magnetic	frictional

6. The diagram below shows the human skeletal system with some parts labelled A, B, C and D.



Which of the following parts help(s) to protect our organs?

(1) A only

(2) A and B only

(3) B and D only

(4) A, B, C and D

7. At which parts of the human digestive system are digestive juices **not** added to the food?

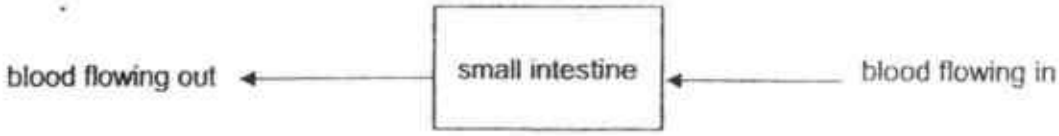
(1) mouth, gullet

(2) gullet, large intestine

(3) gullet, stomach, small intestine

(4) mouth, stomach, small intestine

8. The diagram shows blood flow in a part of the human digestive system about six hours after a meal.

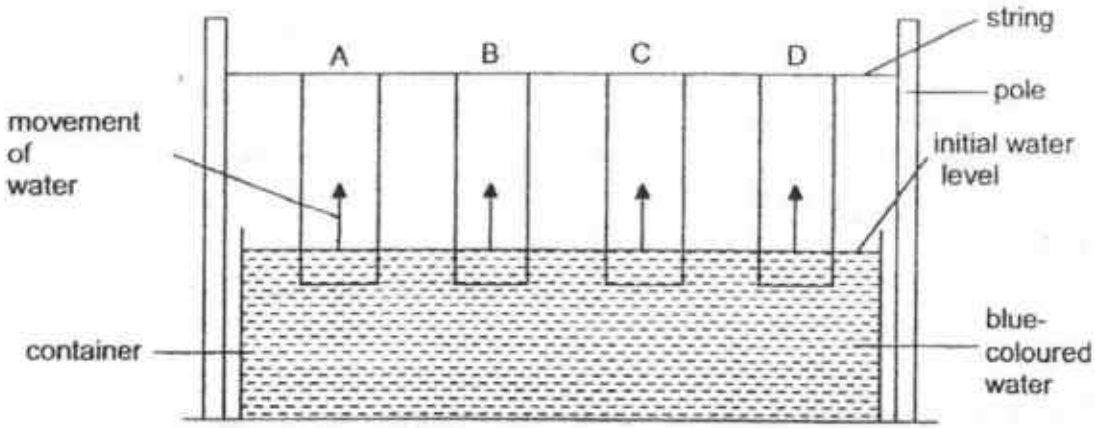


The amount of oxygen, carbon dioxide and digested food in the blood flowing out was compared with that of the blood flowing in.

Which of the following shows the correct comparison?

	Blood flowing out has		
(1)	more oxygen	less carbon dioxide	more digested food
(2)	more oxygen	more carbon dioxide	less digested food
(3)	less oxygen	more carbon dioxide	more digested food
(4)	less oxygen	less carbon dioxide	less digested food

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



After 5 minutes, Jacob measured X, the distance travelled by the water up each material.

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

Which material is the most suitable for making a towel?

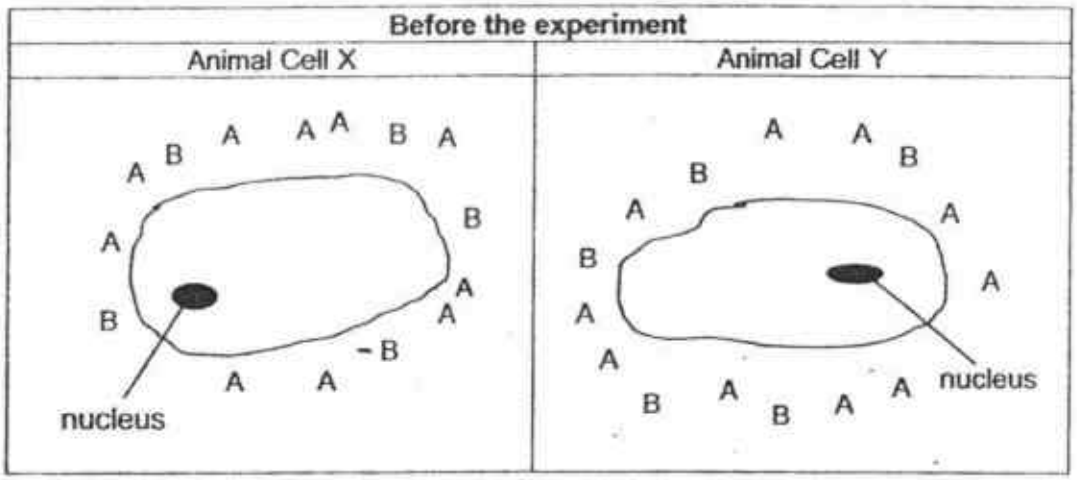
(1) A

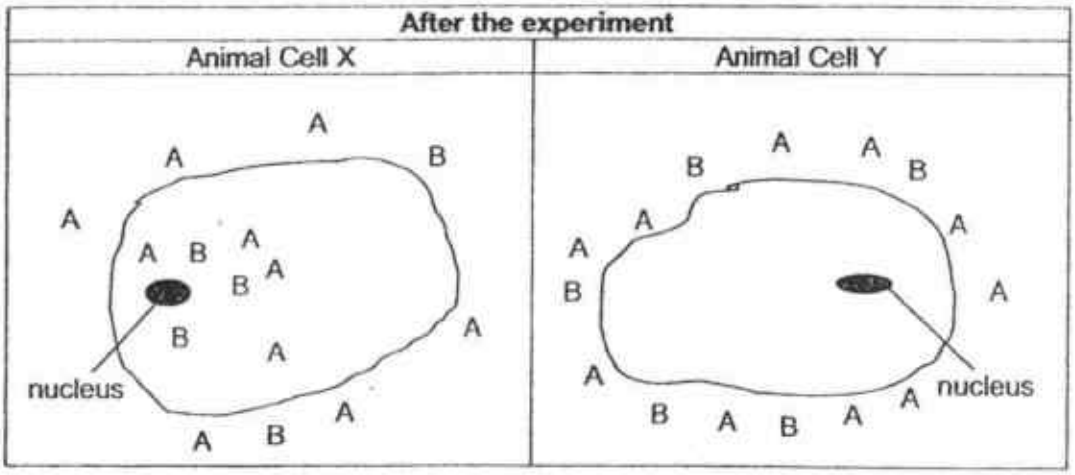
(2) B

(3) C

(4) D

10. Kala placed two animal cells X and Y in two beakers of water with the same amount of dissolved substances, A and B, respectively. An animal cell can expand when water is taken in.





At the end of the experiment, both cells were bigger. Which of the conclusions made by Kala is correct?

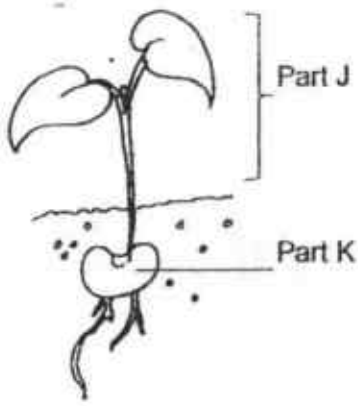
(1) Cytoplasm of cell X only allowed water to enter.

(2) Cell membrane of cell Y allowed water to enter.

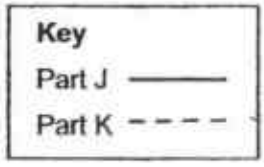
(3) Nucleus of cell X controlled the movement of A and B.

(4) Cell wall of cell Y prevented A and B from entering.

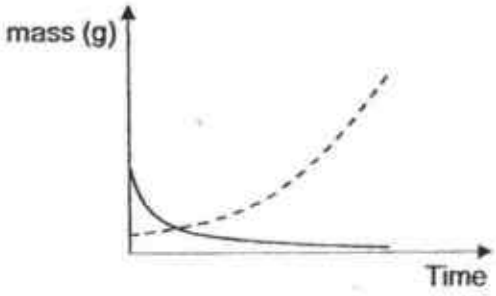
11. The diagram below shows a young plant. The young plant is watered daily.



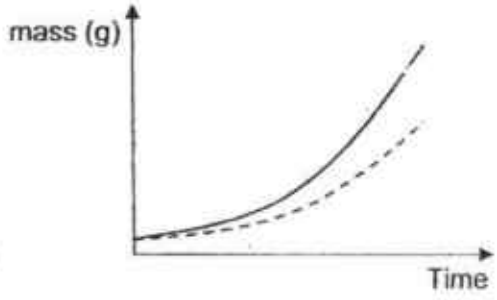
Which one of the following graphs correctly shows the mass of parts J and K over a period of one week?



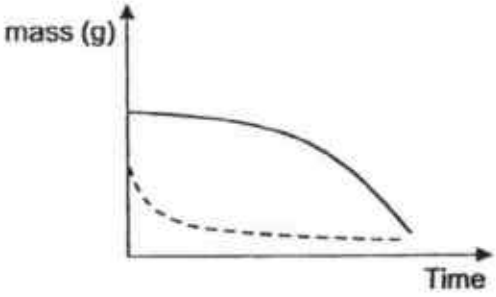
(1)



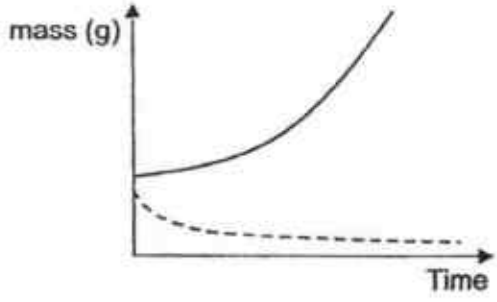
(2)



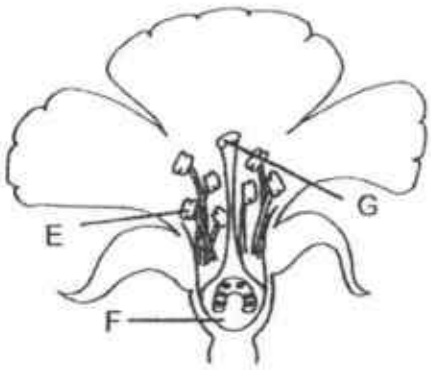
(3)



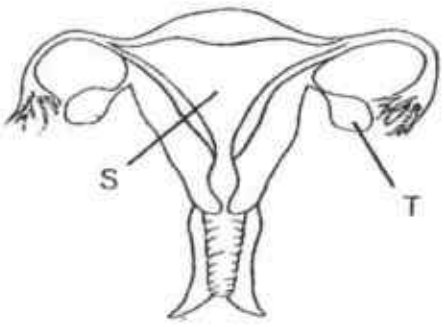
(4)



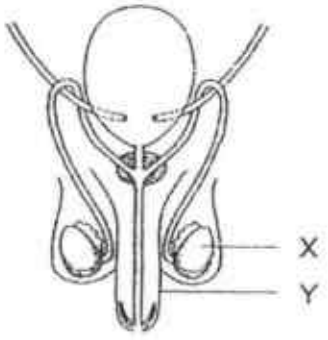
12. The diagrams show the reproductive systems of a flowering plant and human.



flower reproductive system



human female reproductive system

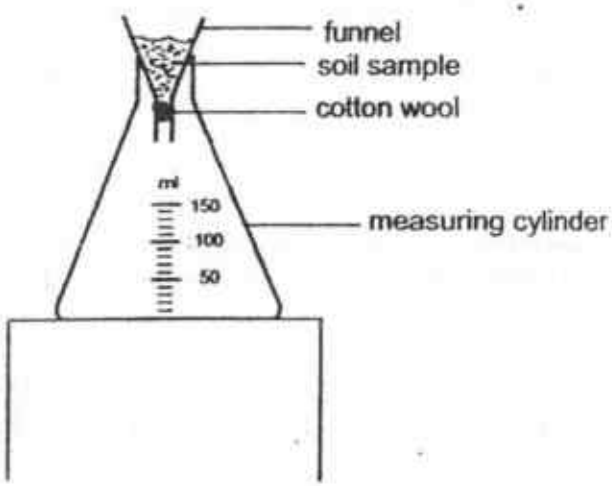


human male reproductive system

Which of the following parts have the same function?

(1) E and X
(2) E and Y
(3) F and S
(4) G and T

13. Darren collected soil samples A, B, C and D. He prepared the set-up as shown below and poured 80 ml of water onto sample A during the experiment. He repeated the experiment using soil samples B, C and D.



Darren measured the amount of water collected in the measuring cylinder after 2 minutes and recorded the results for all four samples.

Sample	Amount of water collected (ml)
A	70
B	20
C	50
D	75

In a rice plantation, a flooded paddy field is needed for the seedlings to grow.

Based on the above results, which type of soil sample; A, B, C or D, is the most suitable for use in the paddy field?

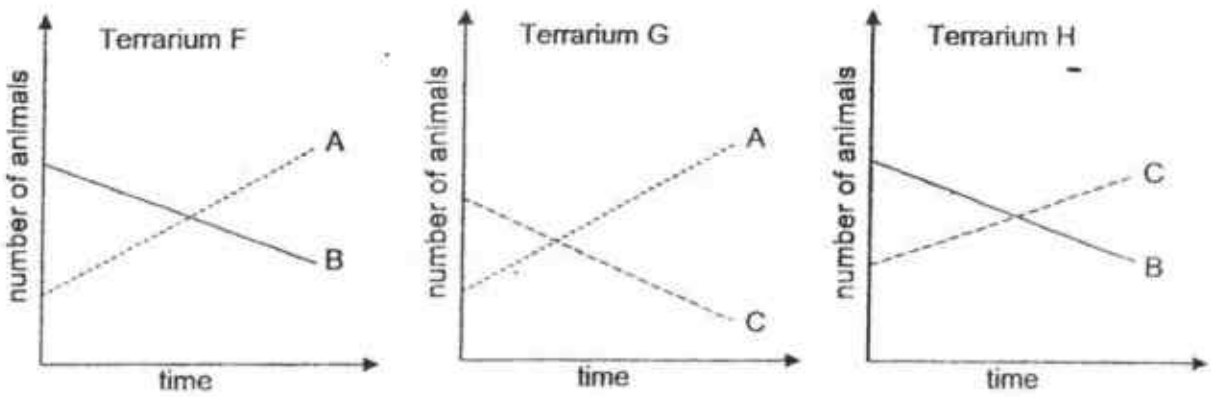
(1) A (2) B

(3) C (4) D

14. Anita decided to study the food relationship among three types of animals, A, B and C. She placed the animals in three similar terrariums, F, G and H, that are similar to their natural habitat. She then placed a number of the animals in the terrariums in the following arrangement. No additional animals were added in each terrarium.

Terrarium	Animals
F	A and B only
G	A and C only
H	B and C only

For a month, Anita counted the number of each type of animal in the terrariums every two days. She plotted three graphs, as shown below, to illustrate the results that she had recorded.



Based on the graphs, which of the following statements correctly explains a possible food relationship between the animals?

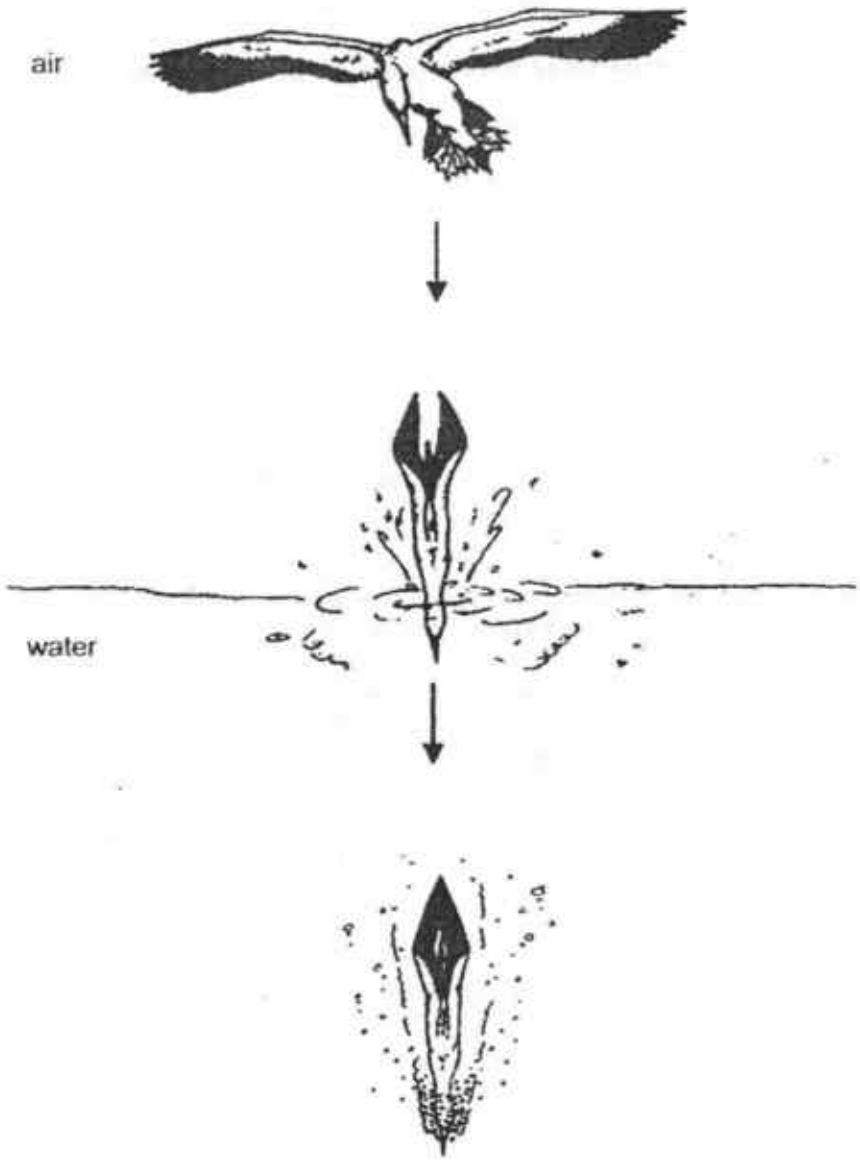
(1) A is the prey of C.

(2) B is the predator of A.

(3) C is the predator of B.

(4) B is both a predator and a prey

15. The diagram shows a bird diving into water quickly to catch its prey more easily in the water.



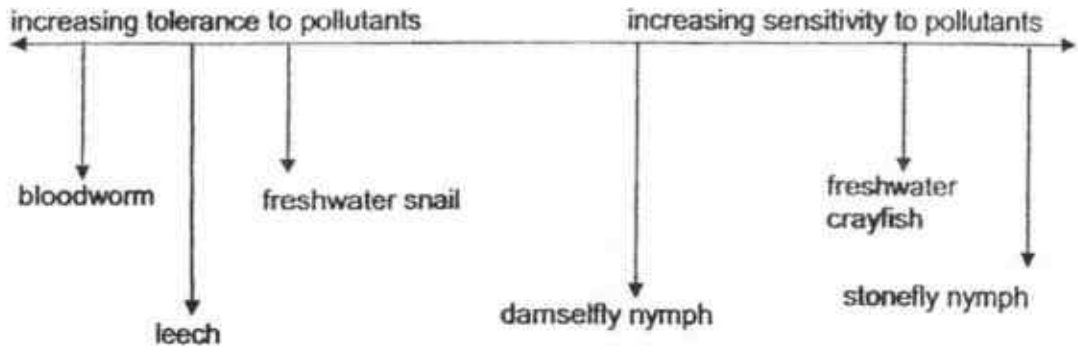
Which of the following features would enable the bird to catch its prey more easily in the water through its diving?

A : webbed feet
B : hollow bones
C : streamlined body
D : well-developed wings

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

16. Different aquatic animals are able to tolerate different levels of pollutants. As the level of pollutants increases, the number of animals sensitive to the pollutants will decrease and the number of animals tolerant to the pollutants will increase.

The chart below shows the tolerance of some aquatic organisms to water pollutants.



An investigator counted the number of individual organism in samples from four different streams and recorded his findings in the table below.

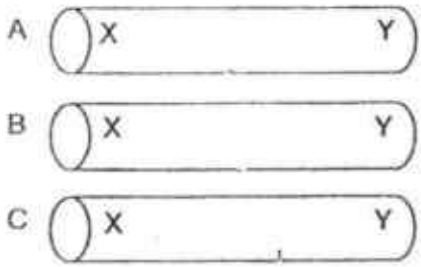
Stream	Bloodworm	Leech	Fresh-water snail	Damselfly nymph	Fresh-water crayfish	Stonefly nymph
A	4	5	4	5	5	3
B	2	2	4	4	6	5
C	6	4	4	3	2	0
D	7	5	4	6	0	0

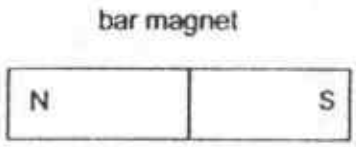
Which of the following shows the streams arranged from the most polluted to the least polluted?

most polluted ← → least polluted

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

17. Lionel had three rods, A, B and C, of equal length and thickness. The ends of each rod were labelled X and Y. He brought a bar magnet near to the rods and recorded his observations in the table below.





Rod	Observations
A	X was attracted to the south pole of the magnet but Y repelled it.
B	X was attracted to the two poles; Y was also attracted to the two poles.
C	Both X and Y were not attracted to both poles of the magnet.

Which of the following statements best describes the rods?

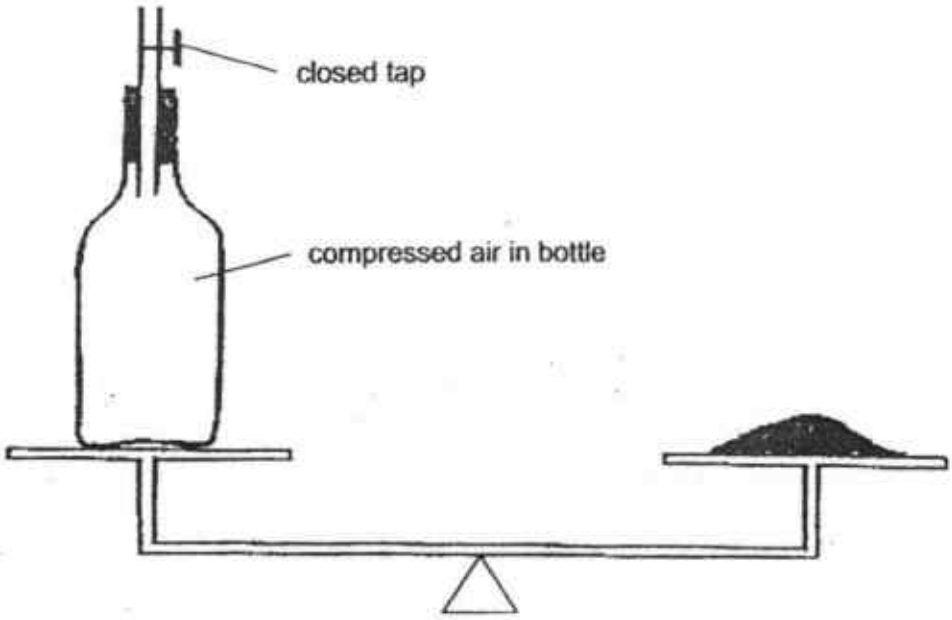
(1) Rod B is a magnet

(2) Rod C is not made of metal.

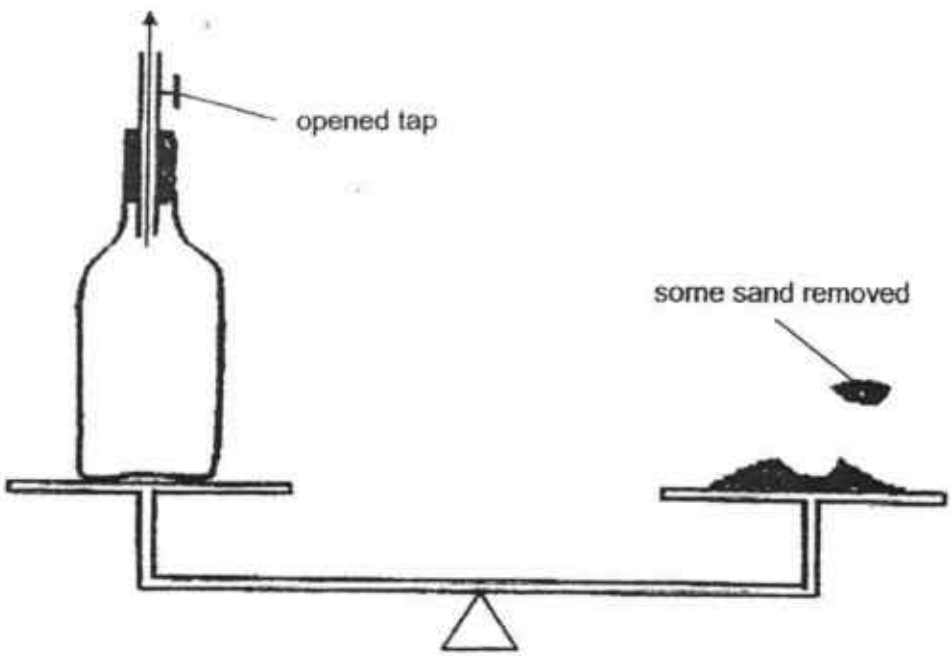
(3) Both rods A and B are magnets.

(4) Rods A and B are made of magnetic materials.

18. Jay balanced a bottle containing compressed air with some sand as shown below. The closed tap stopped air in the bottle from escaping.



He then opened the tap, allowing some of the air in the bottle to escape through the mouth of the bottle. He removed some sand to keep the bottle balanced with the remaining sand.



Which of the following can be concluded from the sand that was removed?

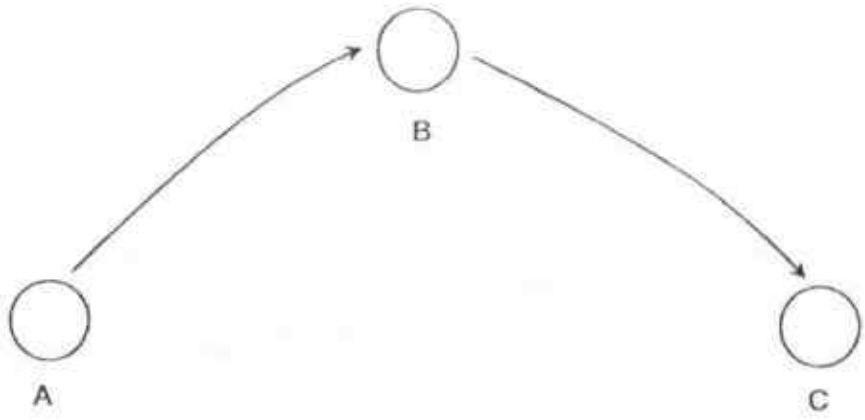
(1) Air has mass.

(2) Air occupies space.

(3) Air can be compressed.

(4) Air takes the shape of its container.

19. When a ball was thrown into the air from point A, it reached a maximum height above the ground, B, before falling to the ground at point C.



Which of the following statements correctly describes what was happening to the moving ball?

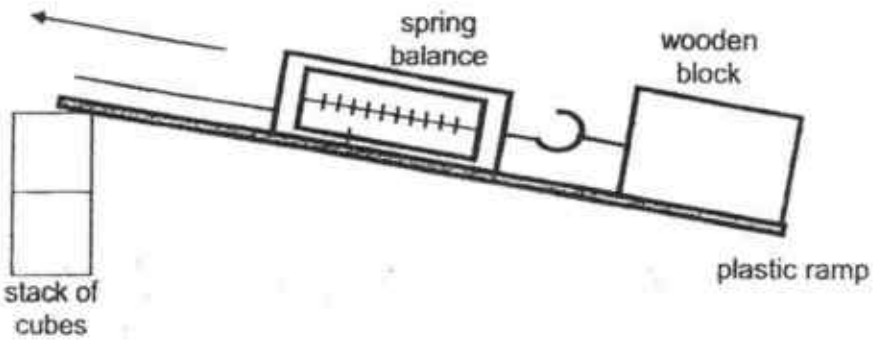
(1) Gravity was acting on the ball at all times.

(2) There was no force acting on the ball when it reached B.

(3) Gravity began acting on the moving ball only after it reached B so it started falling to the ground.

(4) The speed of the moving ball increased as it travelled from point A to B and decreased as it travelled from point B to C.

20. Marcus wanted to find out if the length of a ramp affects the amount of force required to move a wooden block up the ramp. He set up the experiment as shown in the diagram below. The amount of force required to move the block is shown on the spring balance.



Which of the following should he keep the same to ensure that the experiment is fair?

A : material of the ramp

B : number of cubes in the stack

C : length of the ramp

D : surface area of the wooden block in contact with the ramp

(1) A and B only

(2) A and D only

(3) B and C only

(4) C and D only

21. The table below shows the melting points and the boiling points of substances J and K.

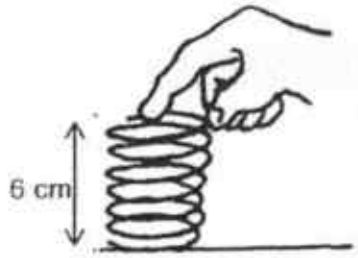
Substance	Boiling point (°C)	Melting point (°C)
J	330	11
K	165	43

Which of the following shows the correct state(s) of J and K at 20 °C?

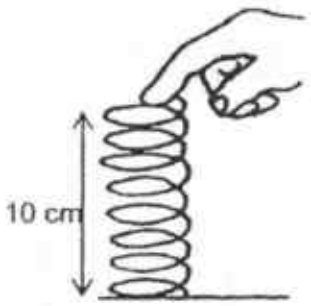
	J	K
(1)	gas	solid
(2)	liquid	liquid
(3)	liquid	solid
(4)	gas	liquid

22. Roy applied forces to a 10 cm spring in different ways as shown in the diagrams below.

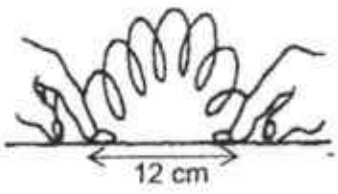
A



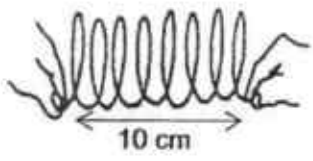
B



C



D



In which of the above diagrams do the spring possess elastic potential energy?

(1) A and C only

(2) A and D only

(3) C and D only

(4) A, B, C and D

23. Kim carried out an experiment by placing four bottles, A, B, C and D, made of different materials in a room. Each bottle was filled with cold water at 5 °C. After fifteen minutes, the temperature of the water in each bottle was taken and recorded as shown in the table.

Bottle	Temperature recorded (°C)
A	20
B	9
C	26
D	17

Kim wanted to choose a bottle that could keep hot drinks hot for as long as possible. Which is the most suitable bottle for Kim?

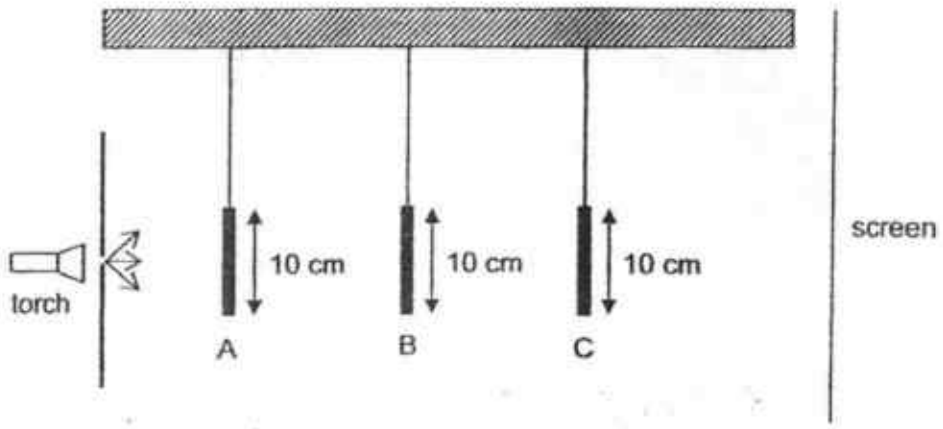
(1) A

(2) B

(3) C

(4) D

24. The set-up below shows light shining on three wooden objects A, B and C. They are placed at different distances from the torch.

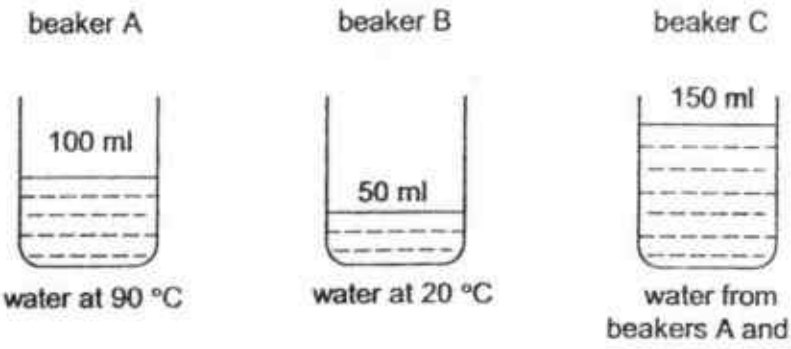


The diagram below shows the shadow of the objects on the screen.

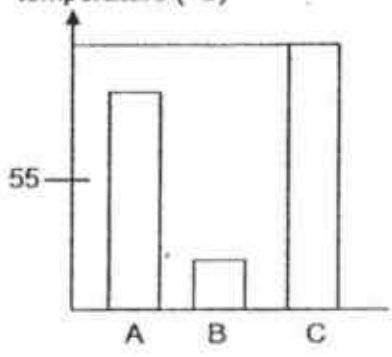
What are objects A, B and C?

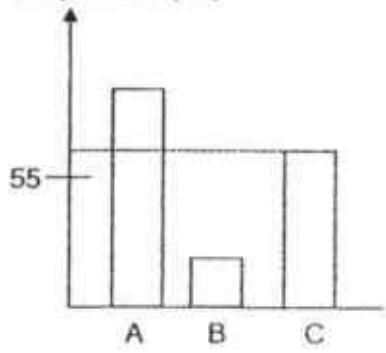
	A	B	C
(1)	○	▮	▲
(2)	▮	▲	○
(3)	▮	○	▲
(4)	▲	○	▮

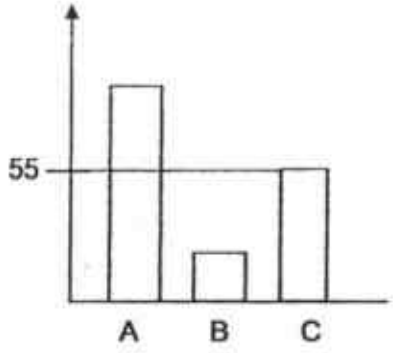
25. Lina used a thermometer to measure the temperatures of the water in beakers A and B. She then poured all the water from both beakers into beaker C and measured the temperature of the mixture.

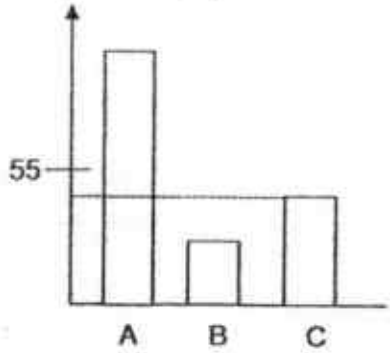


Which of the following graphs correctly shows the temperatures of the water in beakers A, B and C?

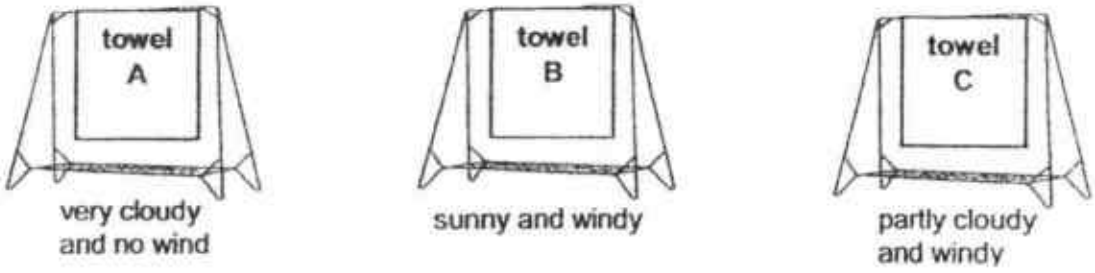
(1)


(2)


(3)


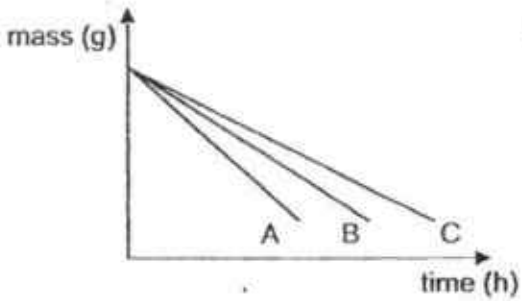
(4)


26. Harry wanted to find out if different weather conditions can affect the rate of evaporation of water. He soaked three wet identical towels, A, B and C, in the same volume of water before hanging them out to dry at different locations as shown below.

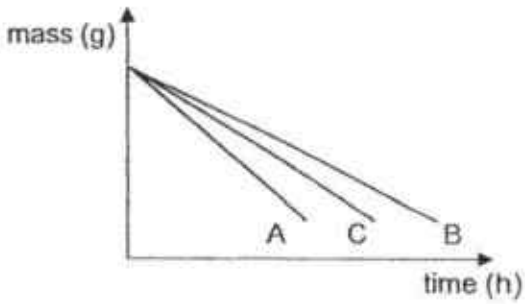


Which one of the following graphs shows the change in the mass of the towels over time?

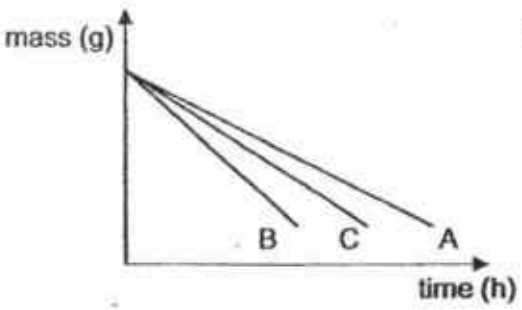
(1)



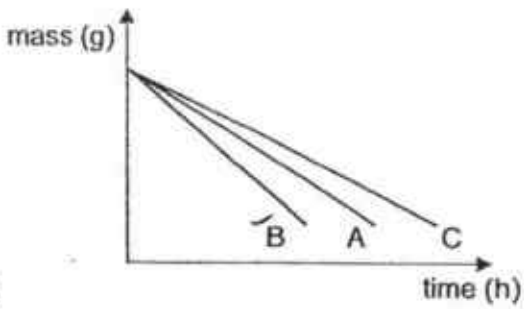
(2)



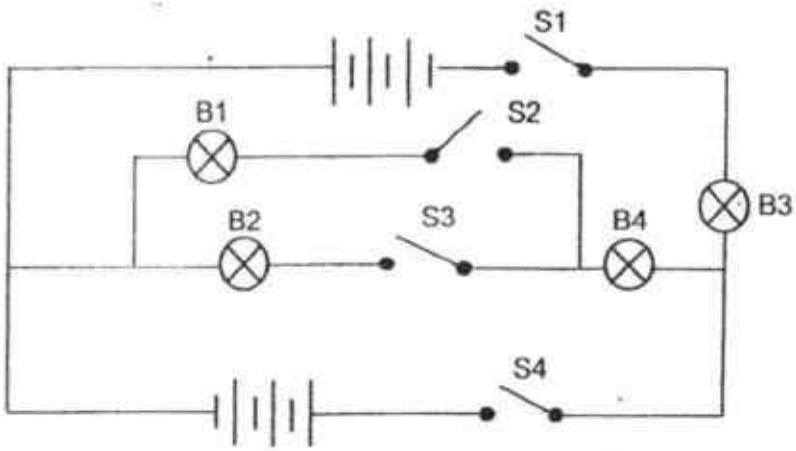
(3)



(4)



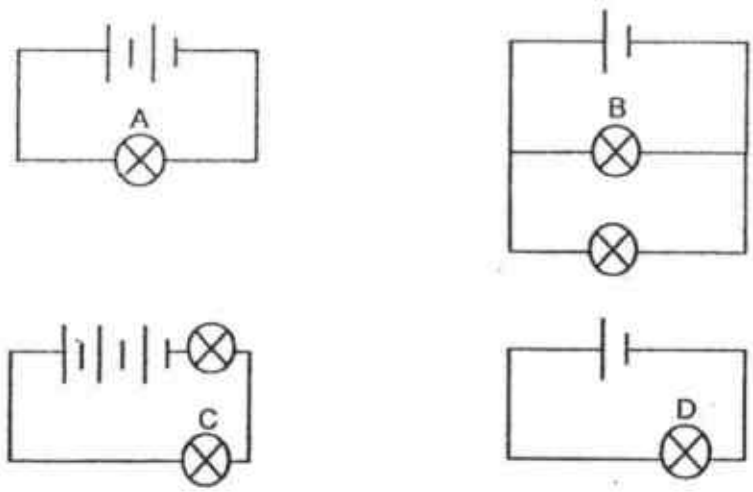
27. Study the circuit shown below.



Which of the following is correct?

	Switches closed	Bulbs that would light up
(1)	S1 and S4	B3 and B4
(2)	S2 and S3	B1 and B2
(3)	S1, S2 and S3	B1, B2, B3 and B4
(4)	S2, S3 and S4	B2, B3 and B4

28. In the four circuits, all the bulbs and batteries are new and identical.



Which two bulbs have the same brightness?

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

End of Section A

Index No. [ ][ ][ ][ ][ ][ ] – [ ]

PEI CHUN PUBLIC SCHOOL

PRELIMINARY EXAMINATION 2018

SCIENCE

SECTION B

Time: 1 h 45 min

Name : _____ ( )

Class : Primary 6 / ( )

Date : 3 August 2018

Parent's Signature: _____

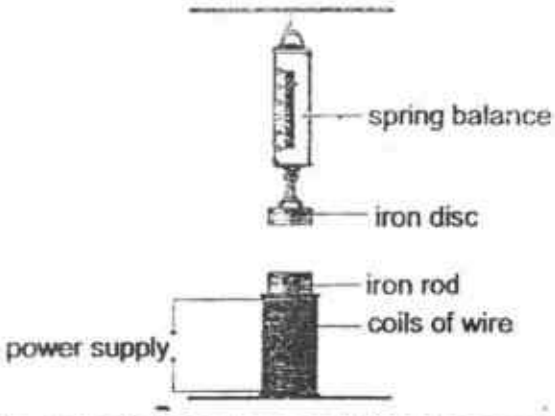
SECTION A	/56
SECTION B	/44
TOTAL	/100

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 (44 marks)
For questions 29 to 40, write your answers in the spaces provided.

29. Amelia set up an experiment as shown below. The spring balance showed a reading of 1 unit when the iron disc was hung on it and the power supply was switched off.



a) The reading on the spring balance increased when the power supply was switched on. Give a reason for this observation. [1]

_____

_____

b) Amelia repeated the experiment by changing the material the rod was made of and the number of coils around the rod. She recorded the readings in the table below.

Material the rod is made of	Number of coils of wire around the rod	Reading on spring balance
A	100	5
B	75	3
C	50	5
D	100	4

Based on the results, can you conclude which rod created the weakest electromagnet? Explain your answer. [2]

_____

_____

c) The experiment was repeated with materials P and Q. The power supply was then switched off. The table below shows the readings for materials P and Q after the power supply was switched off.

Material the rod is made of	Number of coils of wire around the rod	Reading on spring balance after power supply was switched off
P	100	1
Q	100	3

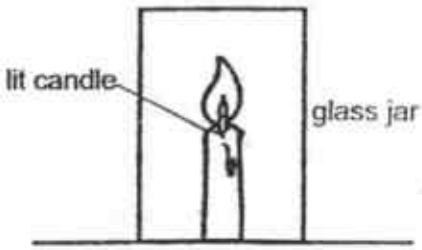
Which material, P or Q, is more suitable to be used in an electromagnet? Give a reason for your answer. [1]

_____

_____

SCORE	

30. Angie conducted an experiment to test if oxygen is needed for burning to take place. She placed a 100 cm^3 glass jar over a lit candle as shown in the diagram below. The candle flame went out after three seconds.



a) Why did the candle flame go out? [1]

b) Angie then used jars of different sizes and placed them over the lit candle. She measured the amount of time taken for the candle flame to go out each time and recorded her results in the table below.

Size of glass jar (cm^3)	Time taken for flame to go out (seconds)
200	5
500	14
1000	28

What conclusion can you make from her results? [1]

c) Suggest how Angie can make her results more reliable.

SCORE

31. At the beginning, an island had high populations of plant M and animal P. Plant M had seeds covered with hooks. Animal P was covered with fur.

When animal P moved around, it carried the seeds of plant M that clung on its fur.

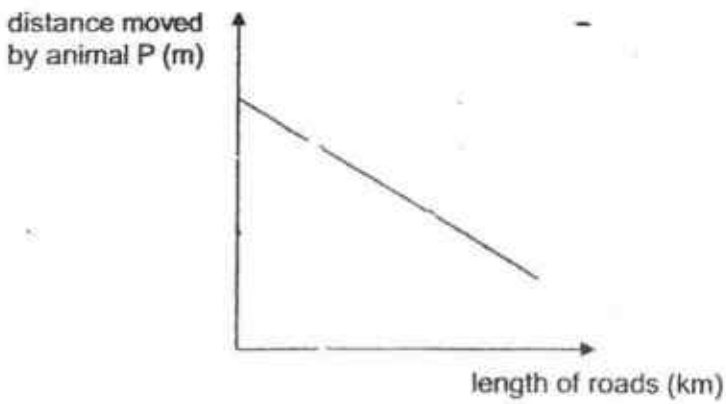
a) State one benefit for plant M when its seeds get dispersed by animal P. [1]

_____

_____

Roads began to be built on the island.

A scientist found out how the length of roads built affected the distance moved by animal P. His results are shown in the graph below.



Over the next few years, the scientist observed that the number of young plant M decreased when the length of roads built increased.

b) Using the information provided, explain this observation. [2]

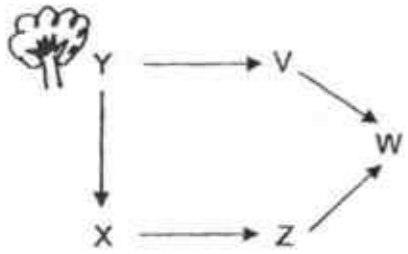
_____

_____

_____

SCORE	

32. The diagram below shows a food web in a certain community. Y is a tree.



a) State two benefits that tree Y can provide for animal X. [1]

_____

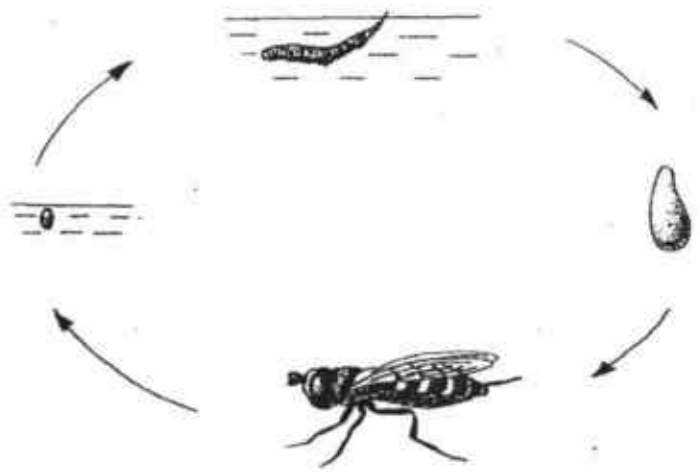
_____

b) A disease wiped out the whole population of animal Z.
Explain how this would affect the population of animal V. [2]

_____

_____

33. The diagram below shows the life cycle of insect X.



a) The young of insect X lives in water and feeds on decaying matter while the adult of insect X lives on land and feeds on nectar.

Suggest one advantage for the young and the adult to live in different surroundings. [1]

_____

_____

_____

SCORE	

b) Insect X looks like insect Y. Both live in the garden habitat. Insect X does not sting. However, predators remember that insect Y stings.

Insect X

Insect Y

Give a reason why it is an advantage for insect X to look like insect Y. [1]

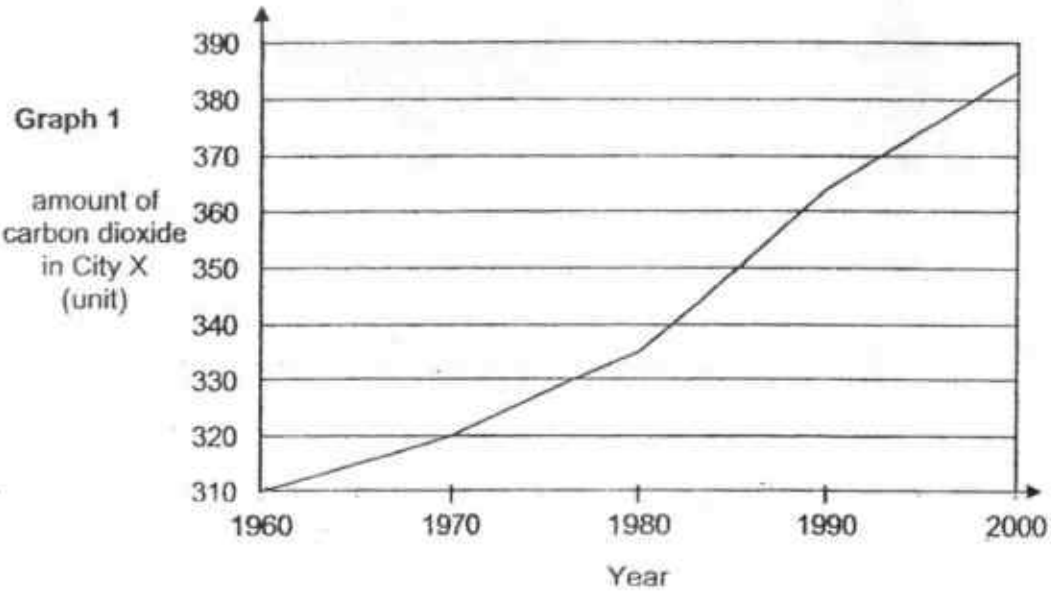
_____

_____

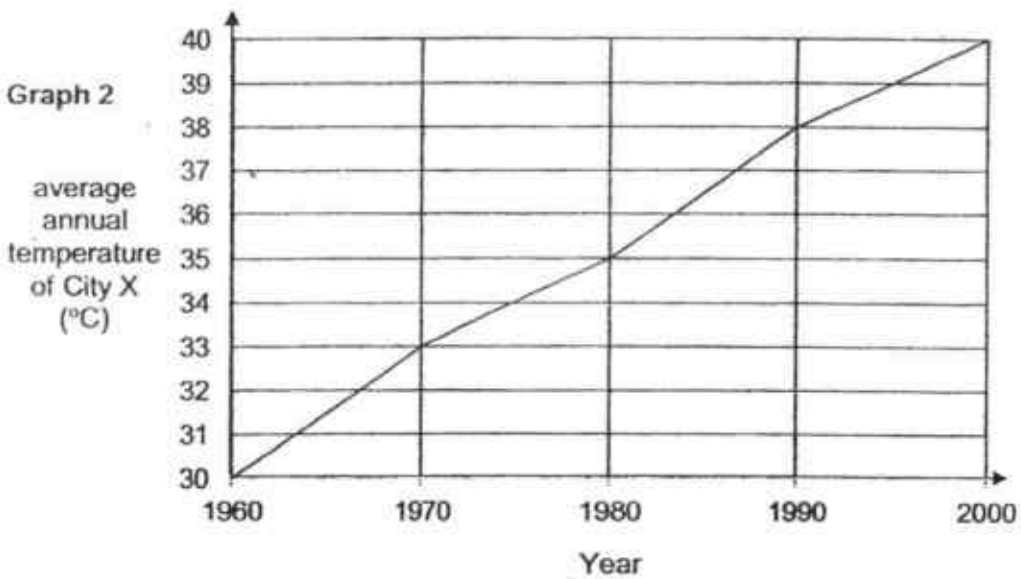
SCORE

34. Study the two graphs below. Graph 1 shows the amount of carbon dioxide measured in City X from 1960 to 2000. Graph 2 shows the average annual temperature readings in City X over the same time period.

Graph 1



Graph 2



a) Based on graph 1, describe how the amount of carbon dioxide in City X changed. [1]

_____

_____

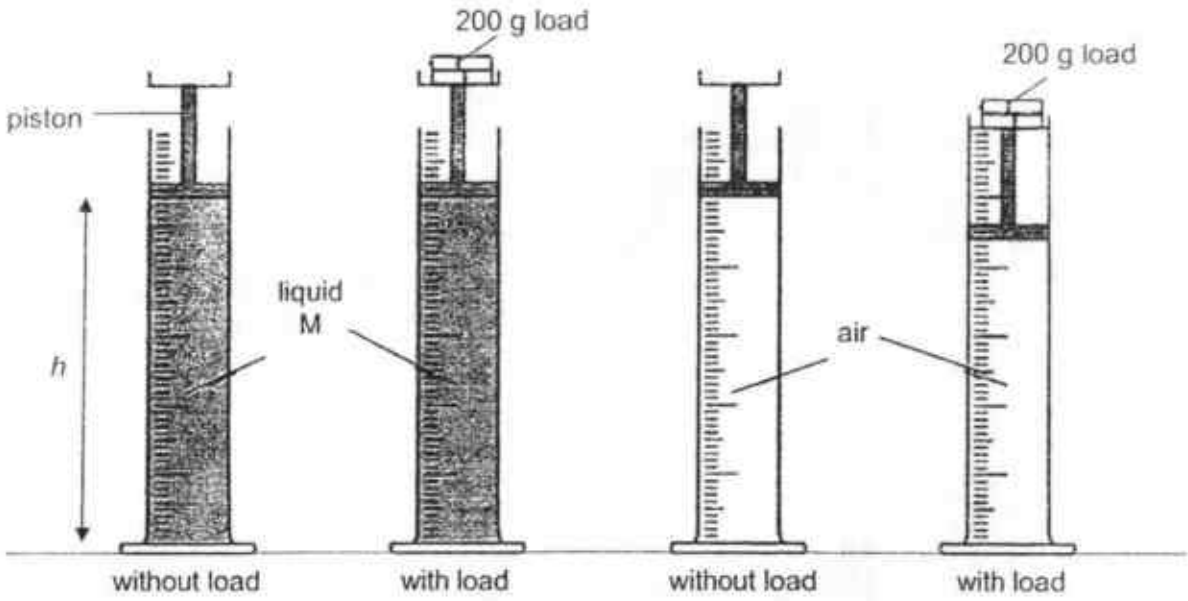
b) Based on the given data, explain how the increase in the amount of carbon dioxide in the atmosphere leads to global warming. [1]

_____

_____

SCORE	

35. Jake set up an experiment as shown below. He measured the height, *h*, of liquid M and air in the cylinders before and after a 200 g load was added to the piston.



The results of his experiment are shown in the table below.

	Height , *h* (cm)	
	cylinder containing M	**cylinder containing air**
After 200 g load was added to the piston	remained the same	decreased

a) Based on the results of Jake's experiment, what can he conclude about the property of liquid M and air? [2]

Liquid M : _____

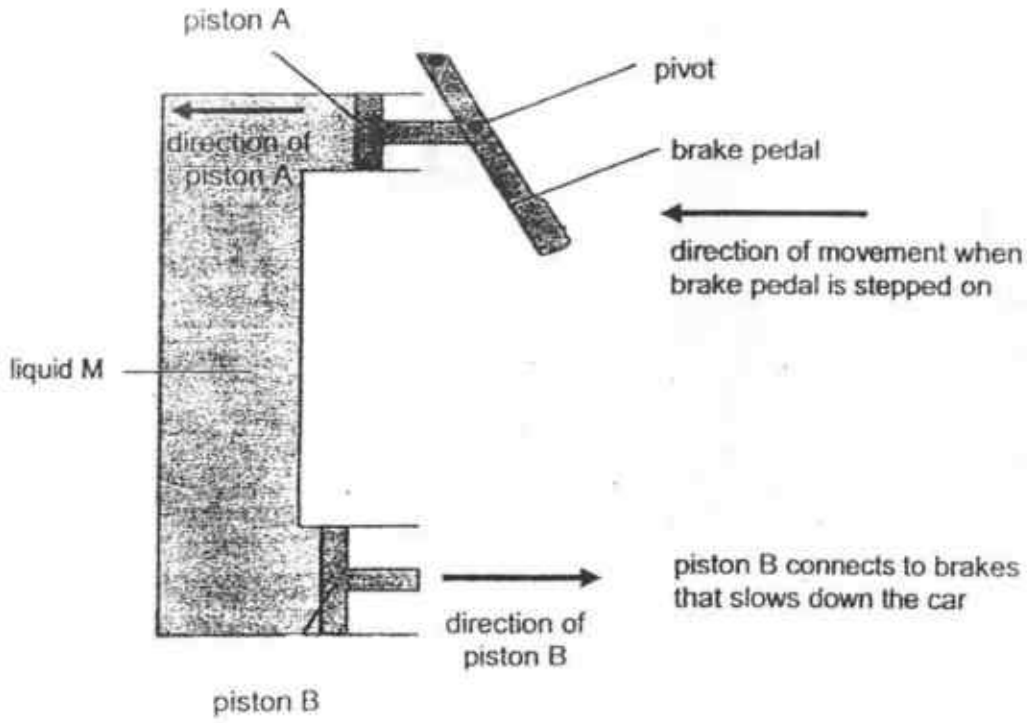
_____

Air : _____

_____

SCORE

The diagram below shows a brake system in a car. When the brake pedal is stepped on, the car slows down. The brake system has a container filled with liquid M. When the brake pedal is stepped on, pistons A and B move in the directions as shown in the diagram below.



b) State two properties of liquid M that allow the brake system to work. [2]

Property 1 : _____

_____

Property 2 : _____

_____

c) If there are air bubbles trapped in liquid M, the brake will not work properly. Give a reason for this. [1]

_____

_____

SCORE	

36. Gabriel ensured that his goggles was tight and no water from the pool could enter his goggles before he started swimming. After swimming for a while, the inner lenses of his goggles were covered with white mist and he had difficulty seeing clearly in water.

a) What state of matter is the white mist in? [1]

_____

b) Explain why his goggles were covered with white mist after swimming for a while. [2]

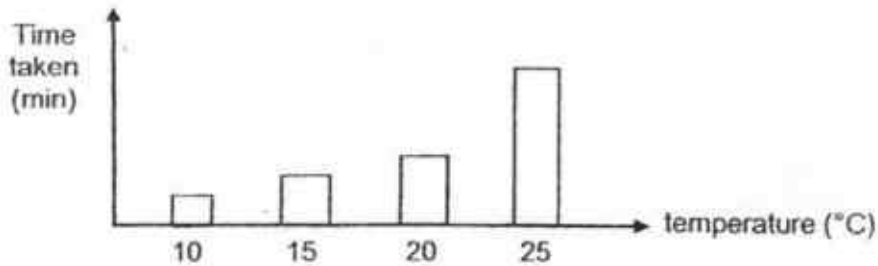
_____

_____

_____

_____

Gabriel then carried out an experiment to find out if the temperature of the water in the pool affects the time taken for his goggles to become misty. The graph below shows his results.



c) What is the relationship between the temperature of the water in the pool and the time taken for the goggles to become misty? [1]

_____

_____

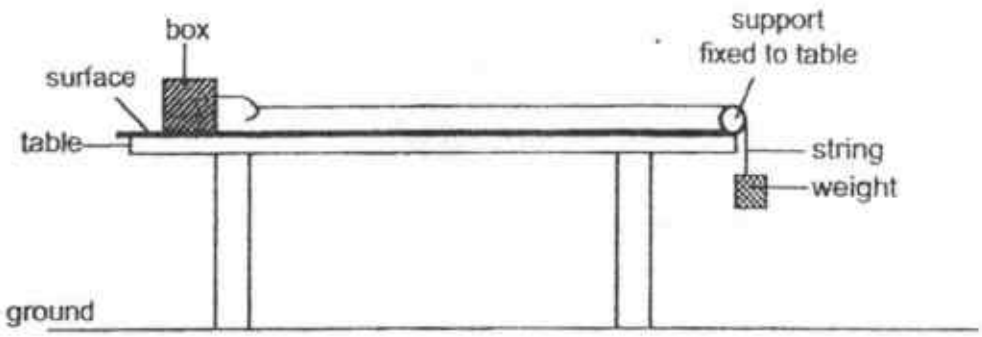
d) Explain why it is less likely for goggles to become misty when swimming in a heated pool. [1]

_____

_____

SCORE	

37. Edison used the set-up below to investigate the number of iron weights needed to move the box across three different surfaces, A, B and C.

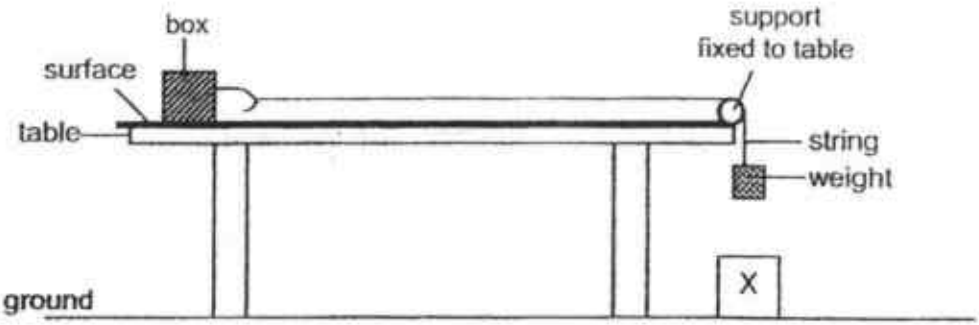


He recorded his results in the table below.

Surface	Number of iron weights
A	8
B	5
C	3

a) Based on the experimental results, which surface, A, B or C, showed the most amount of friction between it and the surface of the box? Give a reason for your answer. [1]

b) Edison repeated the experiment by adding object X to the setup. He noticed that less weights were needed to move the box across the surface.

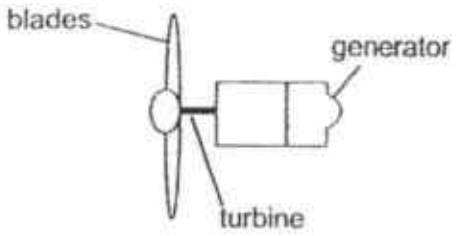


c) What could object X be? Give a reason for your answer. [1]

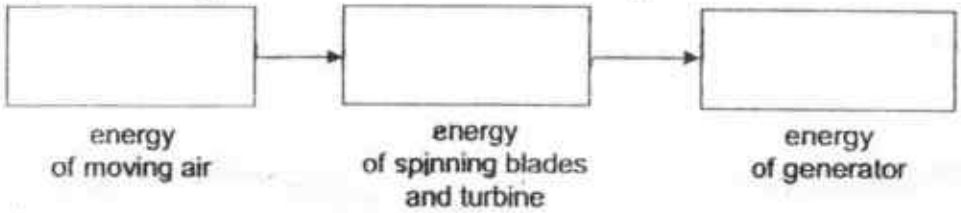
d) Using the same type of iron weights and without lifting the box, suggest one way to move the same box across each surface using less iron weights than the number of weights recorded in the above table.
Explain your answer. [2]

SCORE

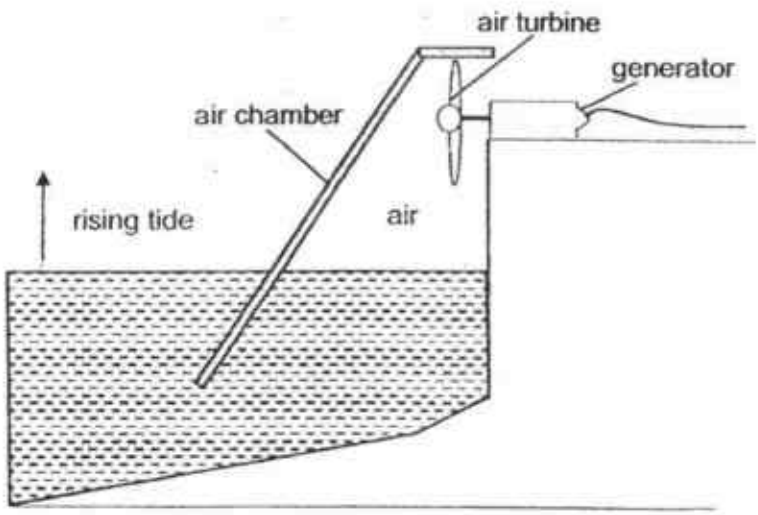
38. The diagram below shows an air turbine which produces electricity when moving air spins the blades.



a) Complete the energy conversion to show how this happens. [1]



The diagram below shows a tidal generator which produces electricity from the rising of tides. Tides are the rising and falling of the sea.



b) Electricity is generated by the generator when the tide rises.
Explain how this happens. [2]

_____

_____

_____

c) More electricity is generated when the tide rises faster.
Explain how this happens. [1]

_____

_____

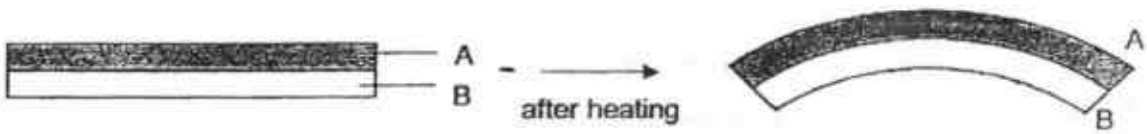
SCORE	

d) State one **disadvantage** of the tidal generator compared to a power plant which uses fossil fuel for producing electricity. [1]

_____

_____

39. Rashid conducted an experiment by heating a strip, which is made up of metals A and B fixed together, for 20 minutes. He observed that the strip bent as shown in the diagram below.



He also recorded the length of each metal before and after heating in the table below.

Metal	Length before heating (mm)	Length after 20 min of heating (mm)
A	200	210
B	200	205

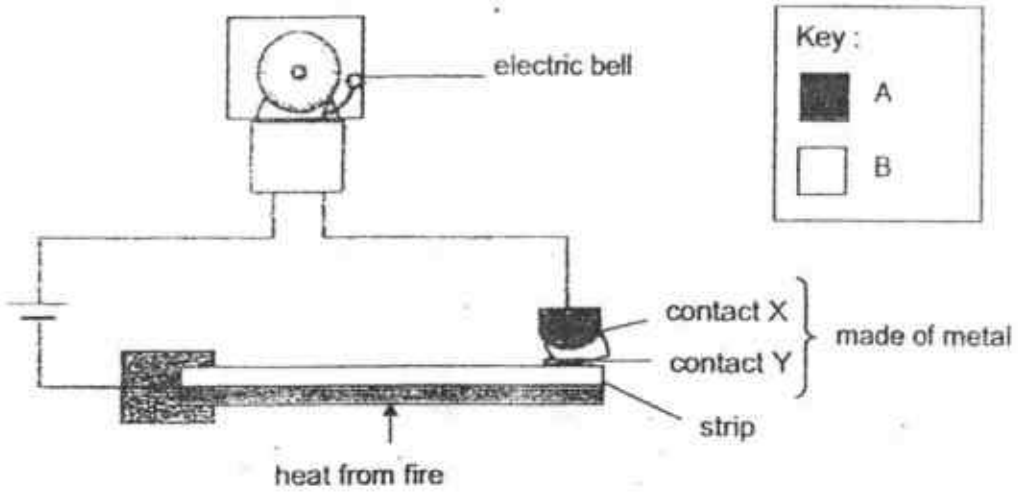
a) Rashid observed that the length of metal A was longer than that of metal B after heating.
Give a reason for this observation. [1]

_____

_____

SCORE

The same strip was used in the fire alarm system as shown below.



b) When the strip was heated by a fire the electric bell rang. Explain how. [2]

_____

_____

_____

c) Metals A and B have high melting points. When there is a fire, metals A and B are heated to a high temperature.

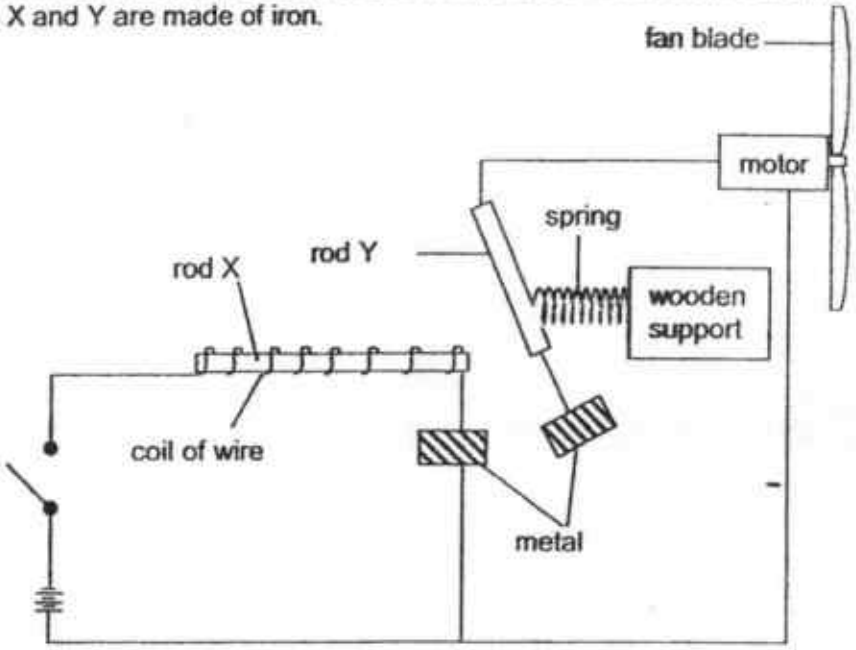
Explain why the fire alarm system will not work if metals with low melting points are used for the strip. [1]

_____

_____

SCORE	

40. Jack made an electrical system for a school project. The circuit is as shown below. Rods X and Y are made of iron.



a) When the switch is turned on, the motor turns the fan blades. Explain how this happens. [2]

b) Jack replaced rod Y with a gold rod. Describe what he would observe and explain why. [2]

End of Section B

SCORE

EXAM PAPER 2018

LEVEL : PRIMARY 6
SCHOOL : PEI CHUN PUBLIC SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAM

BOOKLET A

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

BOOKLET B

Q29. (a) The electromagnet attracted the iron disc

(b) No. B had a lower reading than D but had fewer coils around it than D. The number of coils around the materials needs to be the same so that we can compare the reading shown.

(c) P, It does not exert a force of attraction once it is switched off.

Q30. (a) There was no more oxygen in the glass jar.

(b) When there is more oxygen in the glass jar, the flame takes a longer time to go out.

(c) She should repeat the experiment and find the average of her results.

Q31. (a) It prevents overcrowding. OR When the seeds grow into young plants, they will compete less with one another for water, sunlight, space and nutrients.

(b) As the length of roads increase, the distance moved by animals P decrease. Fewer seeds were dispersed/carried by animals, thus plants M were overcrowded and hence the number of young plant M decreased.

Q32. (a) Tree Y could provide food and shelter for animal X.

(b) Animal V's population will decrease. Animal V feeds on Y and is eaten by animal W. Animal W is a predator for animals V and Z. Since animal Z has been wiped out, there will be less food for animal W. Thus, animal W will prey on more animal V, causing the population of animal V to decrease.

Q33. (a) The young and the adult will not compete for food since they are in different surroundings. OR The predators of the adult will not be able to consume the young, as they are not in the same habitat. OR Either the young or the adult will survive when one of the environments become unsuitable for survival. OR Young and adult will not compete for space with each other.

(b) Predators of X will mistake X for Y, thinking that X stings, so the predators will not feed on X.

Q34. (a) The amount of carbon dioxide in City X increased from the years 1960 to 2000.

(b) Carbon dioxide is a greenhouse gas and traps heat, therefore the average annual temperature of city X increased as the amount of carbon dioxide increases.

Q35. (a) Liquid M: cannot be compressed/has a definite volume.

Air: can be compressed/has no definite volume.

(b) Definite volume. No definite shape.

(c) The air bubbles can be compressed and piston B may not move as much as when piston A moves.

Q36. (a) Liquid.

(b) The warm water vapour in the goggles lost heat and condensed on the cooler inner lenses, forming the whit mist.

(c) As the temperature of the water in the pool increases, the time taken for the goggles to become misty increases.

(d) The goggles are not cold enough, so condensation is less likely to take place.

Q37. (a) A. The greatest amount of force was required to move it across the surface.

(b) X could be a magnet. It attracted the iron weight.

(c) Apply lubricants on the surface. It reduces the amount of friction between the box and the surface, thus less force is required to move the box.

Q38. (a) Kinetic → Kinetic → Electrical

(b) When the tide rises the water pushes the air up in the air chamber which spins the turbines and produces electricity in the generator.

(c) When the tide rises faster, the rising water has more kinetic energy, which will be converted to more electrical energy.

(d) Electricity can only be produced when the tide is rising or falling

Q39. (a) Metal A expanded more than metal B after heating.

(b) When heated, the strip bent. So contact Y moved towards contact X and touched it, forming a closed circuit for the bell to ring.

(c) The metal will melt. So the circuit is open and the bell will not ring.

Q40. (a) Rod X will become an electromagnet and will attract rod Y. The circuit will be closed for the motor to turn the fan blades.

(b) The fan blade will not spin. Rod X will not attract the gold rod as gold is a non-magnetic material. The metal contacts will not touch each other and the circuit is open.

PEI HWA PRESBYTERIAN PRIMARY SCHOOL

PRELIMINARY EXAMINATION

PRIMARY 6

SCIENCE

(BOOKLET A)

24 AUGUST 2018

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 15 printed pages, excluding the cover page.

For each question from 1 to 28, 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. (56 marks)

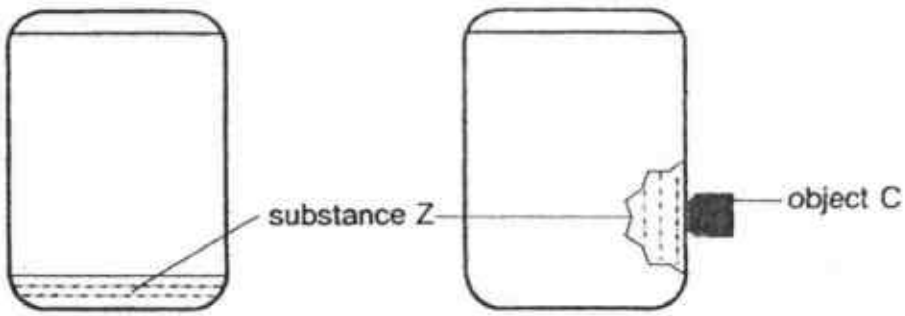
1 Which of the following characteristics should be used to identify a flowering and non-flowering plant?

(1) size of leaves
(2) type of flowers
(3) presence of pollens
(4) presence of chloroplasts

2 Ahmad has some substance X. Which of the following equipment would be best to determine the state of matter of substance X at room temperature?

(1) ruler
(2) syringe
(3) data logger
(4) electronic balance

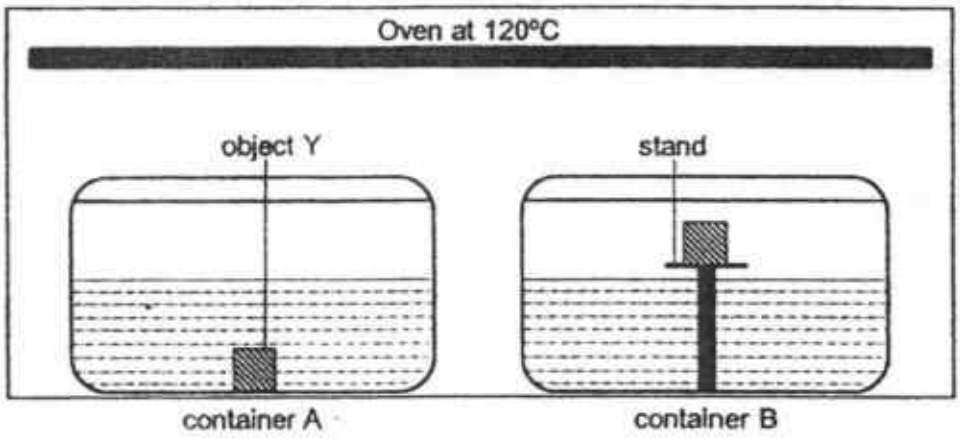
3 Devi poured in substance Z into a container and sealed it. She then placed object C close to the side of the container and noticed substance Z moved to the side as shown below.



What property of substance Z allows for Devi's observation?

(1) magnetic
(2) light-weight
(3) ability to float
(4) definite shape

4 Xinli had two similar containers, A and B. She placed a stand made of poor conductor of heat in container B only. She then poured 80ml of water and placed object Y in both containers. She sealed and placed both containers into an oven set at 120°C as shown below.

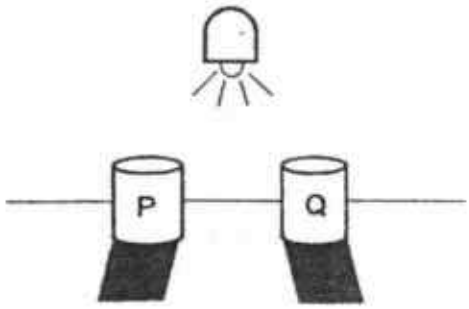


gaseous stat
↳ temp can
rise above 10

After 3 minutes, both containers were removed from the oven and there was 50ml of water left. Xinli then measured the temperature of object Y in both containers. Which of the following about the temperature of object Y in both containers is most likely correct?

	Temperature of object Y in	
	Container A	**Container B**
(1)	120°C	120°C
(2)	Higher than in B	Lower than in A
(3)	Lower than in B	Higher than in A
(4)	Room temperature	Room temperature

5 Thomas placed 2 similar objects of different materials, P and Q, at equal distance away from a light source. He observed that the shadows made by the objects were different as shown below.



Why was there a difference in the shadows?

(1) The amount of light received by P and Q was different.
(2) P reflected some light away but Q did not reflect any light away.
(3) Q allows most light to pass through but P did not allow light to pass through.
(4) P allows some light to pass through but Q did not allow light to pass through.

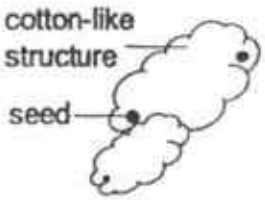
6 Yun Zhao made three statements about sexual reproduction in humans.

A Testes produces the female reproductive cell.
B Fertilised egg develops in the ovary.
C Fertilisation occurs when a sperm and egg cell fuses.

Which of the above statements is/are correct?

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

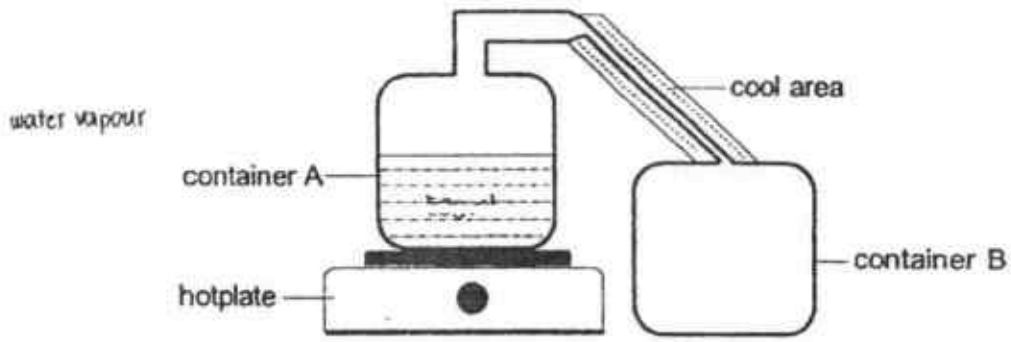
7 Kelly found a seed with white cotton-like structure as shown below.



What is the likely method of dispersal of the seed?

(1) wind
(2) water
(3) animal
(4) explosive action

8 Priya conducted an experiment using a sealed set-up as shown below. Container A is filled with 500ml of water and was heated till the water boiled. The cool area is kept cool throughout the experiment.



At the end of the experiment, there was no water left in container A. What is the maximum amount of water she would collect in container B at the end of the experiment?

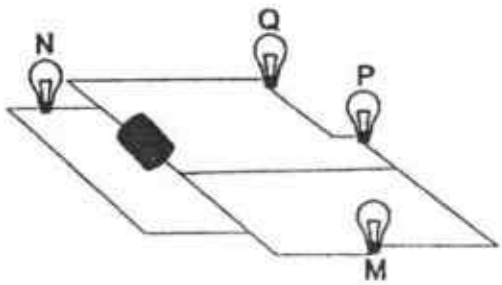
(1) 1ml
(2) 201ml
(3) 301ml
(4) 501ml

9 When Ali jumped into cool water, he realised that he was able to hold his breath longer in water as compared to when he was out of water. Ali found that when he is in cool water, his blood vessels contracts.

How did the blood vessels contracting help him hold his breath longer in water?

(1) less carbon dioxide will be used by the body
(2) more carbon dioxide will be conserved by the body
(3) more blood rich in oxygen will be pumped by the heart
(4) less blood rich in oxygen will reach to all parts of the body

10 Study the circuit below. All bulbs and battery are new and identical.

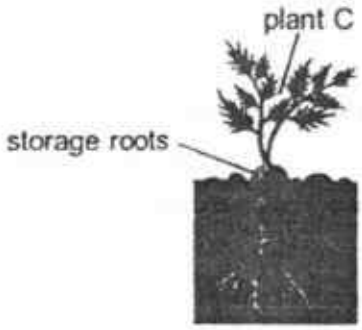


Which bulb(s) will still light up if bulb M fuses?

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

11 A farmer found out that plant C, shown below, will produce sweeter storage roots during colder months as compared to warmer months even though during colder months, the sun shines for only six hours daily.

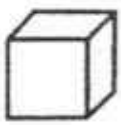
less daylight



Which statement best explains why plant C produces sweeter storage roots during colder months?

(1) In warmer months, plant C loses more water.
(2) In colder months, plant C needs more sugar to survive.
(3) In warmer months, plant C's food and water-carrying tubes expand.
(4) In colder months, plant C receives more light to photosynthesize more.

12 Claire has a cube magnet as shown below.



Without using any other equipment, how can she determine the 2 poles on the cube magnet, if she only has paper clips with her?

(1) Check for repulsion between the magnet and a paper clip.
(2) Count the number of paper clips attracted by each face of the magnet.
(3) Allow the magnet to hang freely from the paper clips so that it will face the north-south direction.
(4) Stroke one paper clip till it becomes a temporary magnet and check for attraction between the paper clip and the magnet.

13 Which of the following does not help in the conservation of energy?

(1) Use solar-powered cars.
(2) Eat less food and throw the rest away.
(3) Switching off all electrical appliances when not in use.
(4) Take public transport instead of driving your own vehicle.

14 Wee Chiong observed the following pod-like structure as shown below.

After some days, the pod-like structure dries up and the contraction of the pod results in a push which forces the seeds out, dispersing them a distance away.

Which one of the following correctly explains how the seeds are dispersed, in terms of energy?

(1) Kinetic energy of the pod drying up is transferred to kinetic energy of the seeds dispersed.

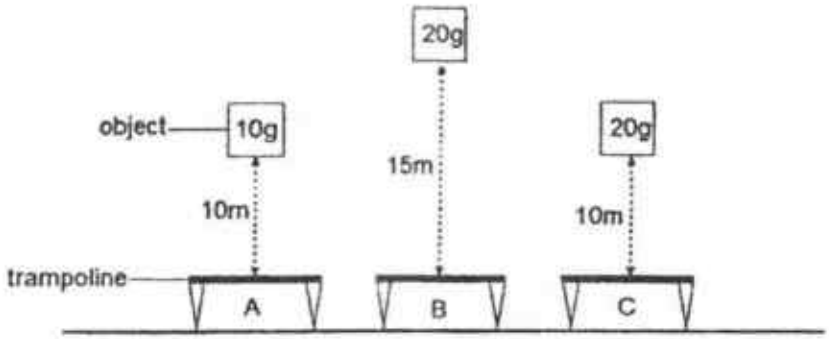
(2) Heat energy from the sun dries up the pod and is converted to kinetic energy as the seeds dispersed.

KE of Pod drying up

(3) Elastic potential energy of the pod, converted to kinetic energy of the pod and is transferred to kinetic energy of the seeds dispersed.

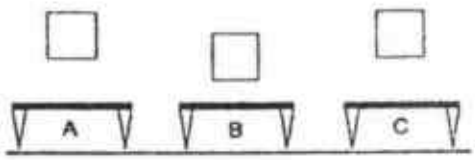
(4) Gravitational potential energy in the pod, converted to kinetic energy of the pod and is transferred to kinetic energy of the seeds dispersed.

15 Kim dropped 3 objects of same size but of different mass onto 3 similar trampolines as shown in the diagram below.

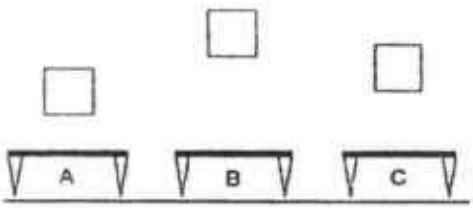


Which one shows the maximum height of the 3 objects after they bounced off the trampoline once?

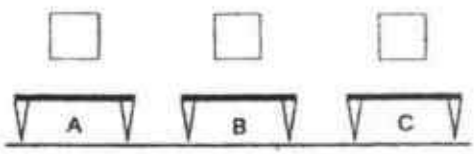
(1)



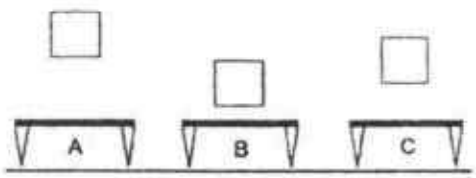
(2)



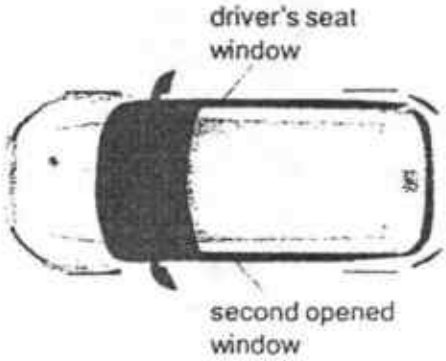
(3)



(4)



16 Yan yue was driving his car and decided to lower down the driver's seat window. He realised that even as he was driving at high speeds, very little wind entered his car. His daughter asked him to lower down another window.



How does lowering down 2 windows allow more wind to enter the car?

(1) More wind can enter from both sides.
(2) It allows for air in the car to escape and more wind to enter.
(3) It will not allow more wind to enter the car as there is no difference.
(4) The opening creates more friction causing more wind to be formed.

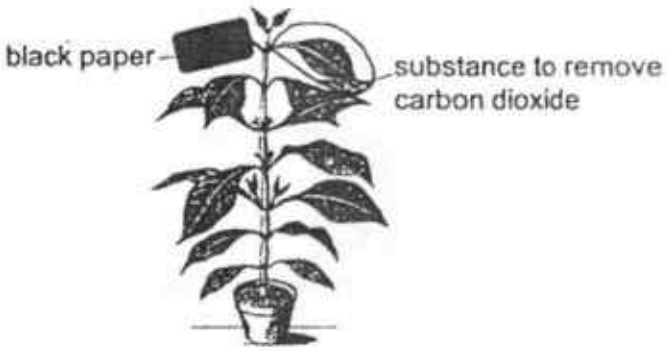
17 Which two statements are true of both plants and animals?

A Both need energy to survive.
B Both can make their own food.
C Both need the sun directly to have energy.
D Both can store energy if there is excess.

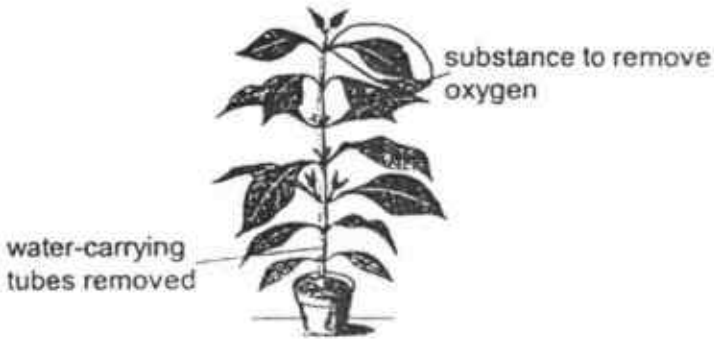
(1) A and C
(2) A and D
(3) B and C
(4) B and D

18 Andy wanted to find out if carbon dioxide and water affects photosynthesis of a plant. Which set up should he use to carry out his experiment?

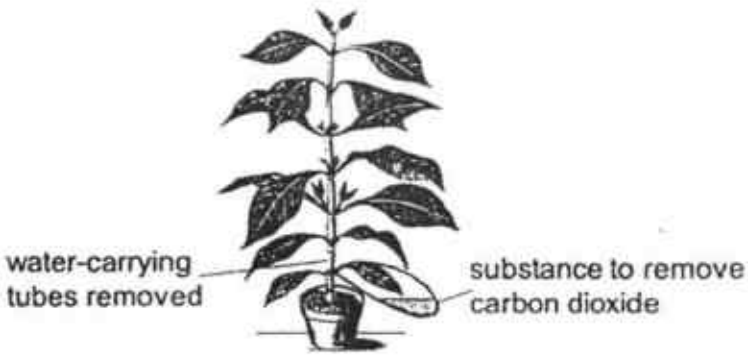
(1)



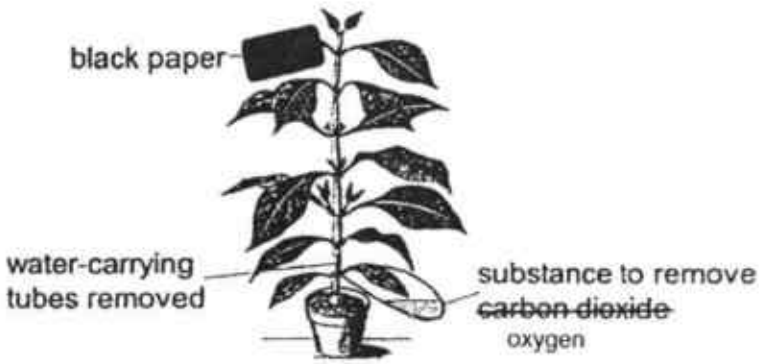
(2)



(3)



(4)



19 Magnet L was clamped on a retort stand. Val placed magnet M near magnet L and it was attracted to magnet L as shown in Diagram 1. However, when magnet N was attracted to magnet M, both magnet M and N fell to the ground as shown in Diagram 2.

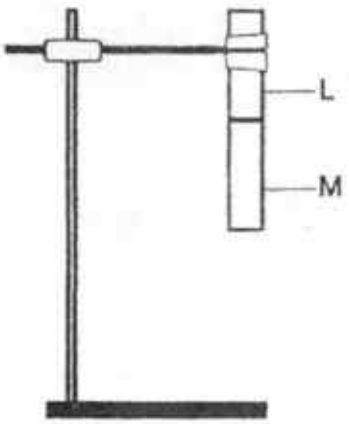


Diagram 1

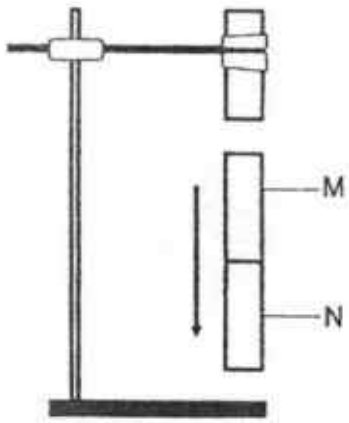


Diagram 2

Which one of the following explains why M and N fell?

(1) N has greater magnetic force than L, pulling M down.
(2) M's magnetic force was less than L's and N's magnetic force.
(3) N's weight is more than the magnetic force between M and N.
(4) M and N's total weight is greater than magnetic force between L and M.

20 Brayden went skydiving. At the start, he was moving very fast towards the ground as shown in Diagram 1. Once his parachute opened, he was moving slower towards the ground as shown in Diagram 2.

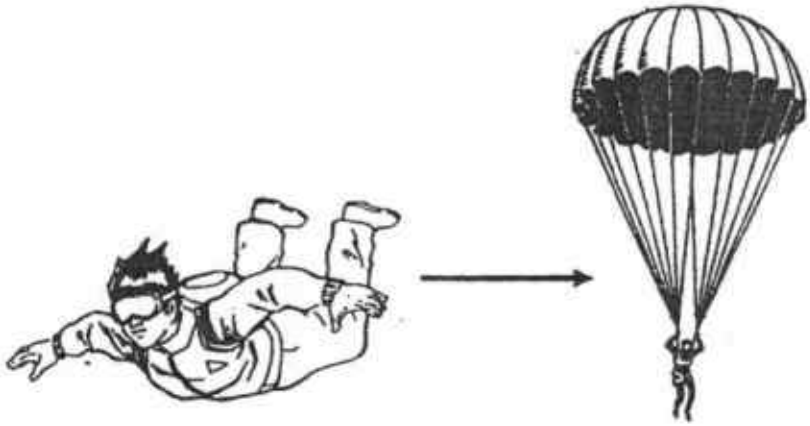
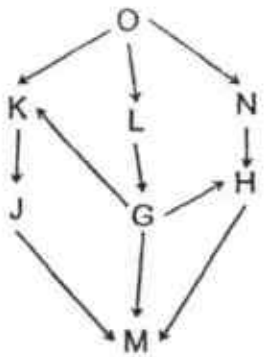


Diagram 1 Diagram 2

Which one of the following explains why Brayden moved slower when the parachute opened?

(1) Frictional force increased as the parachute opened.
(2) Brayden's weight decreased as the parachute opened.
(3) Gravitational force decreased as the parachute opened.
(4) Gravitational potential energy was converting to kinetic energy.

21 The diagram below shows a food web in a community.



How many food chains are there that ends with 'M'?

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

22 What are the physical characteristics of the environment that will ensure the survival of organisms living in a habitat?

A Amount of water
B Type of food
C Amount of light
D Type of water
E Other organisms placed in environment

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

23 During a study of the forest habitat, Mira was able to identify the food relationship between three organisms as shown.

After some time, Mira observed that the population of organism B increased and the population of organism A decreased.

What can she introduce to increase the number of organism A?

(1) a predator for C
(2) more organism C
(3) another herbivore
(4) more food producers

24 Study the diagram of plant H which survives **well** in a place of high temperature.

Plant H

Which structural adaptation allows it to survive **well** in very high temperatures?

(1) swollen stems to trap air
(2) spines which protects the plant H
(3) modified leaves to reduce water loss
(4) roots that spread out at the surface of the soil and deep underground

25 Yani found an animal P which is able to survive in extreme cold temperatures.

Which is a possible behavioural adaptation that the animal has which allows it to survive in that environment?

(1) hollow hair
(2) thick layer of fats
(3) huddling together
(4) replacing body covering

26 Country A has been having increasing temperatures and frequent soil erosion in many areas. What can the government do to reduce the two negative impacts in Country A?

(1) carry out reforestation
(2) stop the selling of cars
(3) build barriers around the soil
(4) install more air-conditioners in the country

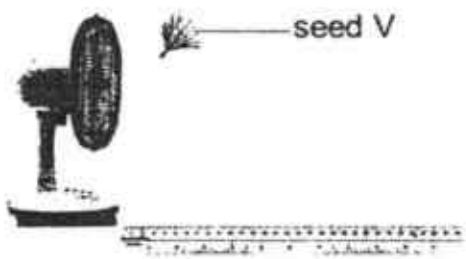
27 Malcom wanted to find out which soil, X, Y or Z would be best to grow a plant. He listed some of his steps in the table below.

Steps	Instructions
A	Place all 3 set-ups in the open field
B	Prepare 3 similar pots and put 100grams of soil X, Y and Z
C	Water each pot with 20ml of water daily
D	Observe and record the growth of all plants daily
E	Place similar seedlings into each soil

In which order should the steps be carried out?

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

28 Julia carried out an experiment as shown below.



Julia wanted to find out how far seed V would travel with different wind speed.

What can Julia do to increase the accuracy of her results?

(1) repeat the experiment a few more times
(2) ensure that the amount of wind is the only changed variable
(3) use a stopwatch to collect the time it takes for the seed to travel
(4) carry out the experiment in an enclosed room with no other wind sources

PEI HWA PRESBYTERIAN PRIMARY SCHOOL

PRELIMINARY EXAMINATION

PRIMARY 6
SCIENCE
(BOOKLET B)

24 AUGUST 2018

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.

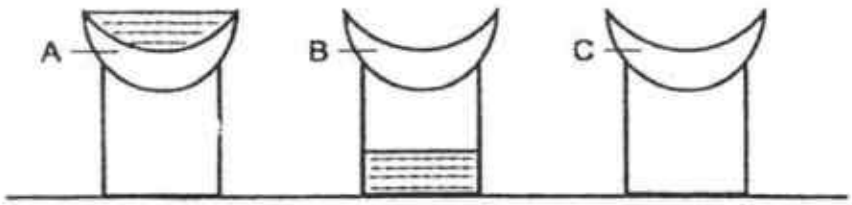
Marks (Booklet A) :	56
Marks (Booklet B) :	44
Total Marks (Booklets A & B) :	100

This booklet consists of 13 printed pages, excluding the cover page.

For questions 29 to 41, write your answers in the booklet.

The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

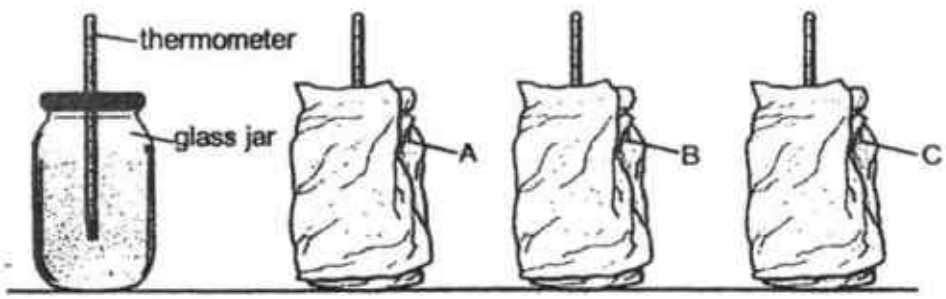
29 Mr Tan carried out an experiment to examine the property of 3 materials. He poured 100ml of water at 20°C through each material. The diagram below shows his observation at the end of the experiment.



Contextual Evidence

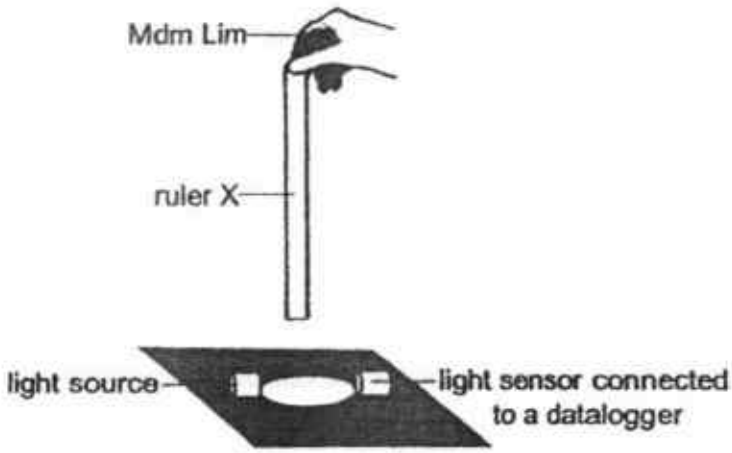
(a) Based on the observation above, what can he conclude about the 3 materials? [2]

Mr Tan removed the 3 materials from the above experiment and used them to wrap around 3 glass jars filled with water at 80°C as shown below.

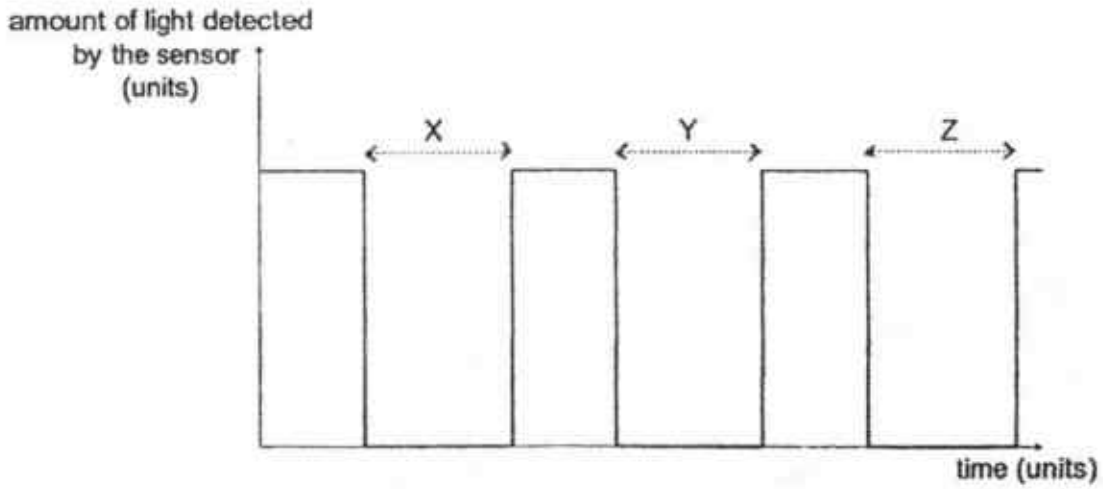


(b) After 3 minutes, which container, A, B or C will have water at the lowest temperature? Explain why. [2]

30 Mdm Lim wanted to find out if the mass of an object would affect how fast it moves when dropped. She used three 30cm rulers, X, Y and Z of similar sizes but of different mass and a light sensor to collect the time it took for the ruler to pass through a hole as shown below.



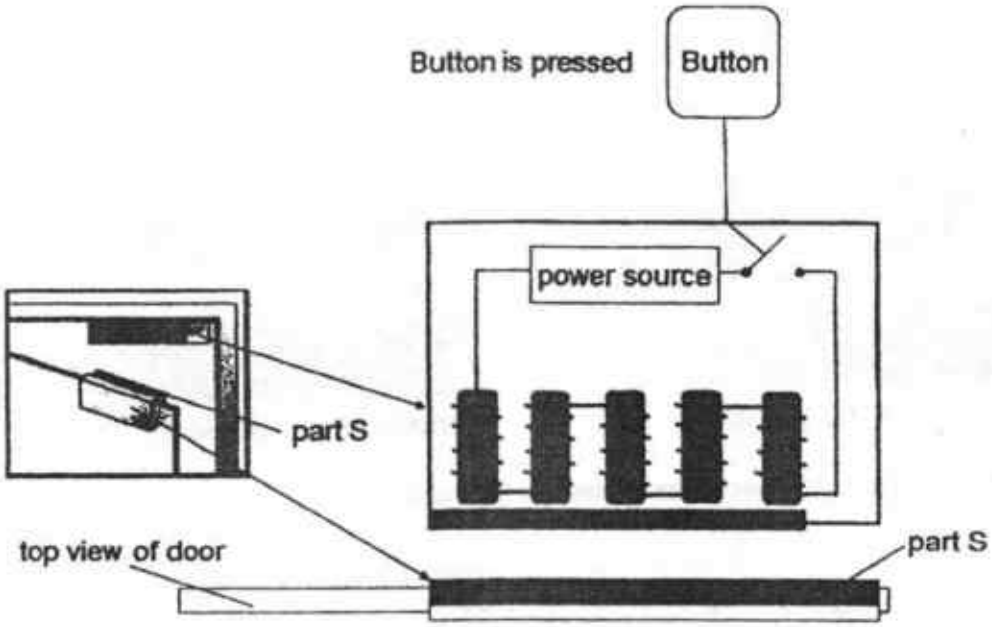
She released rulers X, Y and Z one at a time and recorded the following results.



(a) What can Mdm Lim conclude from the results? [1]

(b) Explain why the results is so. [2]

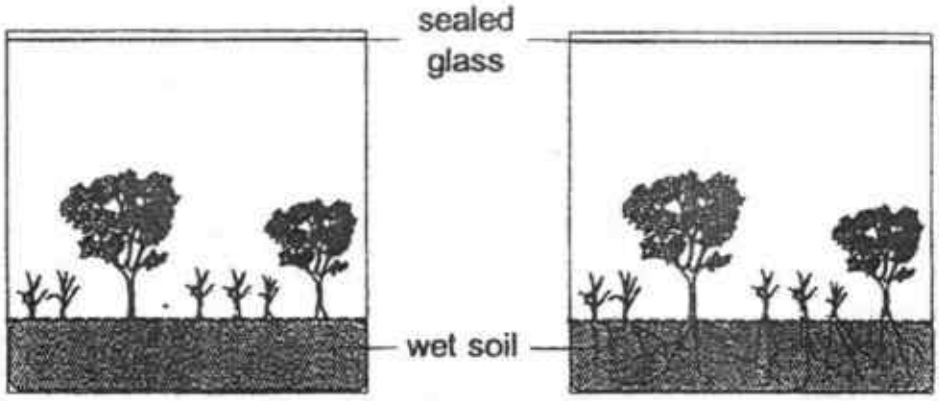
31 Jamie wanted to find out how the door in the Science Lab would unlock when the button was pressed. She took apart the device that kept the door shut and drew out a simple diagram of the parts in the device when the button is pressed as shown below.



(a) Describe how the door was unlocked when Jamie pressed the button. [2]

(b) Jamie replaced part S with a permanent magnet. Will the device still work as it should? Explain your answer. [1]

32 Linsey wanted to find out how plants affected the natural process of the water cycle. She created two models in tanks as shown below and filled them with the same amount of water. She sealed the tank and measured the amount of water that would form on the underside of the sealed glass.



She collected the following results as shown in the table below.

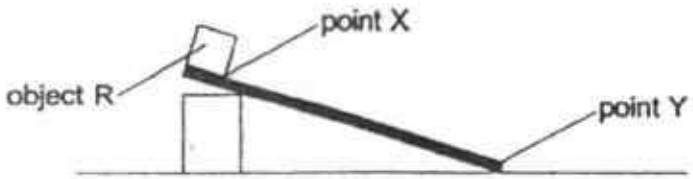
	Amount of water (ml) collected at the end of		
	Day 1	Day 2	Day 3
Model A	20	30	24
Model B	40	45	41

(a) Describe how water is collected on the underside of the sealed glass in Model A. [2]

(b) Explain why Model B has more water collected than Model A. [2]

(c) Explain how the clearing of forest will lead to global warming. [1]

33 Ahmad carried out an experiment as shown below. He had three similar objects of the same mass and size but made of different materials, R, S and T. He placed the object at point X and released it. He measured the time it took for the object to reach point Y.



He collected the results as shown in the table below.

	Time taken for object to reach point Y (s)		
Objects	1st try	2nd try	3rd try
R	3	4	4
S	10	13	11
T	14	16	16

(a) Arrange the objects, R, S and T, starting with the roughest material. [1]

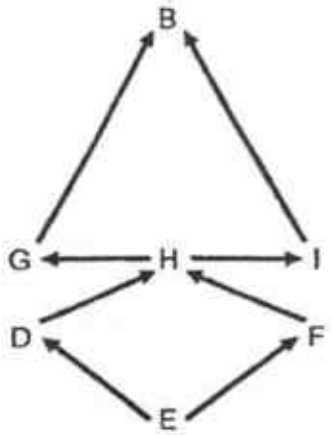
Roughest ⟶ Smoothest

(b) Explain how keeping the mass of the 3 objects the same makes the experiment fair. [1]

Ahmad usually plays at the slide as shown below.

(c) On days Ahmad wore clothes made of material R, he slid down faster than on days when he wore clothes made of material T. Explain why. [2

34 The food web below represents the organisms' interactions in a habitat.

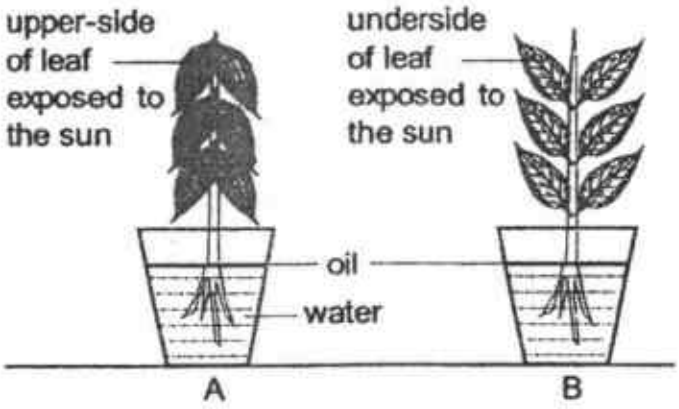


(a) When a predator for organism H was introduced, the population of H decreased. Describe how this affects the population of organism B. [2]

(b) Classify all the organisms in the habitat in the classification chart below. [1]

Producer	Plant-eater	Animal-eater	Plant-and-animal eater

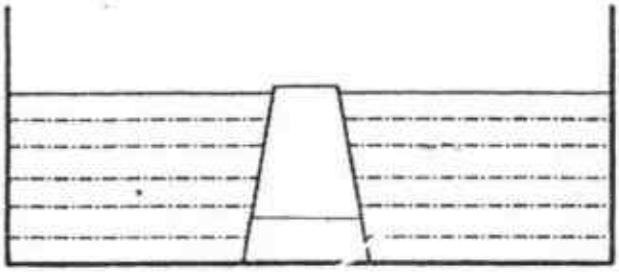
35 David used 2 similar plants, A and B. He positioned the leaves of each plant differently as shown in the diagrams below. David ensured that the 2 different positions of the leaves would allow sunlight to shine on a specific side of the leaves. He placed each plant in 100ml of water and measured the amount of water left after 12 hours in a field.



a) The results show that plant B absorbed more water. Explain why. [2]

b) State an environment where the positioning of the leaves, similar to that in plant A, would be advantageous for the plant's survival. Explain how this is so. [2]

36 Gary prepared a basin of water and a cup. He then pushed the cup into the basin as shown below.



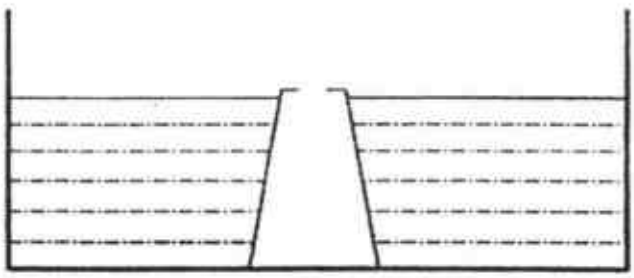
(a) In the diagram above, **draw** a line in the cup and **label "water level"** to represent the water level in the cup. [1]

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

_____

_____

While holding the cup in the basin of water, Gary then poked a hole in the cup as shown in the diagram below.

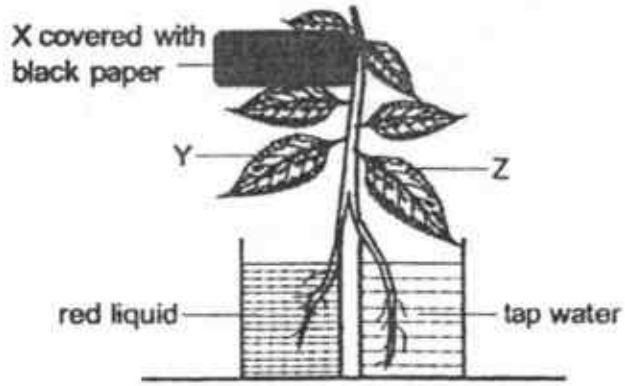


(c) Explain what would happen to the water in the cup when the hole is made. [2]

_____

_____

37 Charlie kept a plant in a dark room for 48 hours. He then prepared the setup as shown below and placed it under the sun.



After a few days, he plucked out leaves X and Y to conduct a starch test with iodine solution. In the presence of starch, the yellowish-brown colour of the solution will turn blue-black.

(a) Explain how keeping the plant in a dark room for 48 hours increases the accuracy of the results. [1]

_____

_____

(b) Put a tick (✓) in the correct box to show the colour of the iodine solution for leaves X and Y after the starch test. [2]

		Yellowish-brown	Blue-black
i)	**Leaf X**		
ii)	**Leaf Y**		

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

_____

_____

(d) He noticed that leaves X and Y were stained red but not leaf Z.
Explain why Leaf Z did not turn red. [1]

_____

_____

38 Lily found an organism Q with the characteristics listed in the table below.

It has lungs and nostril which it uses on land.
It can live on land and in water.
It can swim and lay eggs in the water.
The egg cannot survive outside water and can hatch very quickly after being laid.

(a) In which animal group should Lily classify organism Q? [1]

_____

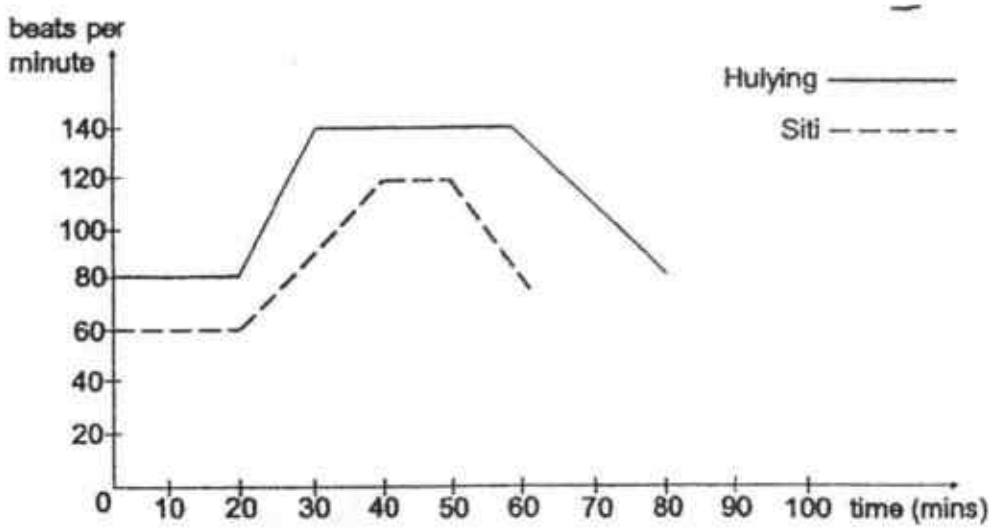
After further research on organism Q, Lily found that the organism lives in a habitat that has little rainfall yearly. When it rained, the puddles of water that formed dried up after a few days.

(b) From the information above, state how organism Q has adapted to reproduce in such an environment. [1]

_____

_____

39 The graph below shows Siti's and Huying's heart rate during their running race.



(a) Who completed the race first? [1]

_____

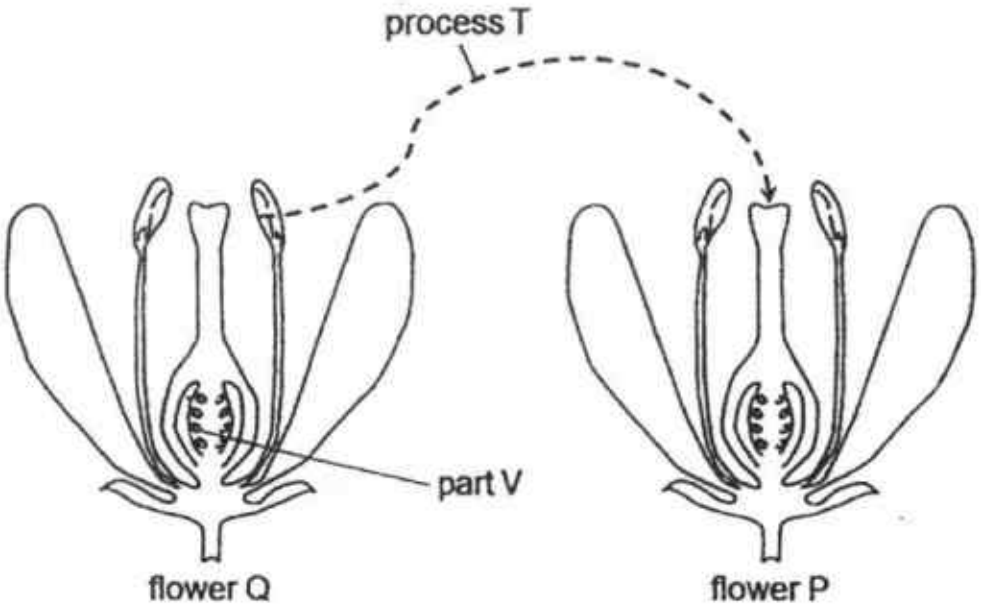
(b) Explain why Siti's and Huying's heart rate increased when they started running after the 20th-minute. [2]

_____

_____

_____

40 Study flower Q and flower P.



(a) Describe process T. [1]

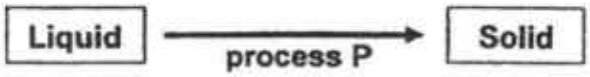
_____

_____

(b) What happens to part V after fertilisation? [1]

_____

41 The diagram below shows process P.



(a) State and explain process P. [1]

(b) Mr Chua has liquid K and liquid T mixed in a glass beaker. Liquid K boils at 60°C while liquid T boils at 120°C. Describe how he could obtain only liquid T in the glass beaker. [1]

-- END OF PAPER --

ANSWER KEY

YEAR : 2018
LEVEL : PRIMARY 6
SCHOOL : PEI HWA PRESBYTERIAN PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

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

BOOKLET B

Q29a) A is water proof, B allows most water to pass through and C absorbs the most amount of water.

Q29b) C. It absorbs the most amount of water, so the water will gain the most amount of heat from the glass jar, causing the temperature of water in the glass jar C to lose heat the fastest and decrease the most.

Q30a) The mass of the ruler will not affect how fast it drops down.

Q30b) The size of the rulers are the same, so the amount of air resistance acting against the ruler is the same. Hence, the rulers drop at the same speed.

Q31a) When the button is pressed, the switch is opened, so the circuit is opened and electricity cannot flow through. The electromagnet will not work and part S will not be attracted.

Q31b) No. The permanent magnet will either attract repel the device, keeping the door locked unlocked, when the button is not pressed pressed.

Q32a) Water from the wet soil gained heat and evaporated into water vapour. The water vapour touches the cooler underside of the sealed glass, lost heat and condensed to form water droplets.

Q32b) Model B has real plants which loses water vapour through their stomata. Water from the wet soil will also evaporate into water vapour. So there is more water vapour in Model B to be condensed into water droplets.

Q32c) When there are less trees, less carbon dioxide is taken in, so there will be more carbon dioxide in the air, trapping more heat, increasing the temperature.

Q33a) T, S, R

Q33b) It ensures that the amount of gravitational potential energy of the 3 objects is the same at X.

Q33c) R is smoother than T, so there is less friction between clothes made of material R and the slide, so he takes a shorter time to slide down.

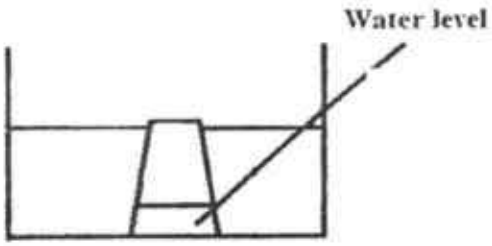
Q34a) When H decrease, G and I will have less food to feed on, so both G and I will decrease. Then B will have less of G and I to feed on, and the population of B will decrease.

Q34b) Producer: E
Plant-eater: D, F
Animal-eater: B, G, H, I
Plant-and-animal eater: NONE

Q35a) Most stomata are found on the underside of the leaves, so plant B will lose more water vapour through its stomata as they are facing the sun, causing plant B to absorb more water.

Q35b) A hot environment. It helps the plant to reduce the amount of water loss.

Q36a)



Q36b) There is air in the cup, which takes up space and can be compressed, so only some water is able to enter the cup.

Q36c) The water level in the cup will rise, because the hole allows the air in the cup to escape, allowing water to take up the space in the cup.

Q37a) To ensure that all the leaves will not have any starch in them at the end of the experiment.

Q37b) Leaf X: Yellowish brown
Leaf Y: Blue-black

Q37c) X did not receive any sunlight, so it cannot make food and starch is not formed, so iodine solution is yellow. But Y can receive sunlight, so it can make food and starch is formed, so iodine solution is blue-black.

Q37d) Z has tap water absorbed by the roots and transported in separate water-carrying tubes from X and Y.

Q38a) Amphibian

Q38b) Q's eggs can hatch very quickly after being laid.

Q39a) Siti

Q39b) Their bodies need more energy when they run. So their heart rate increased to pump blood containing oxygen and digested food to all parts of the body faster.

Q40a) Pollen from the anther is transferred to the stigma.

Q40b) Develops into a seed.

Q41a) Freezing.

Liquid loses heat until a certain temperature and changes state from liquid to solid.

Q41b) Heat up liquid K and T at 60° c, until all K boils and evaporates.

END

Rosyth School
Preliminary Examination 2018
SCIENCE
Primary 6

Total Marks: / 56

Name: _____

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

Date: 24 Aug 2018 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 29 to 40, give your answers in the spaces given in Booklet B.

* This booklet consists of 20 printed pages (including cover page).

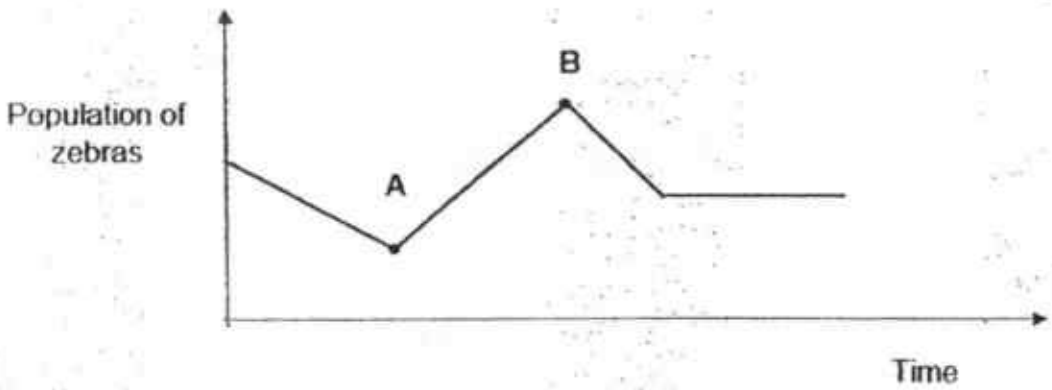
Part I

For each question from 1 to 28, 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.** **(56 Marks)**

1 Which of the following characteristic is found in insects, but not in other animals?

(1) They lay eggs.
(2) They have wings.
(3) They have feelers.
(4) They have three body parts.

2 The graph below shows the change in the population of zebras in a grassland habitat over a period of time. Zebras feed on grass only.



Which of the following events most likely could have led to the change in the zebra population from Point A to Point B?

(1) There was a drought in the grassland.
(2) There was an introduction of a new disease.
(3) There was overeating of grass by animals in the grassland.
(4) There was a decrease in the population of the zebra's predators.

3 Which of the following shows how the carbon dioxide is removed from a human body?

(1) bloodstream → windpipe → lungs → nose
(2) bloodstream → lungs → windpipe → nose
(3) windpipe → lungs → bloodstream → nose
(4) nose → windpipe → lungs → bloodstream

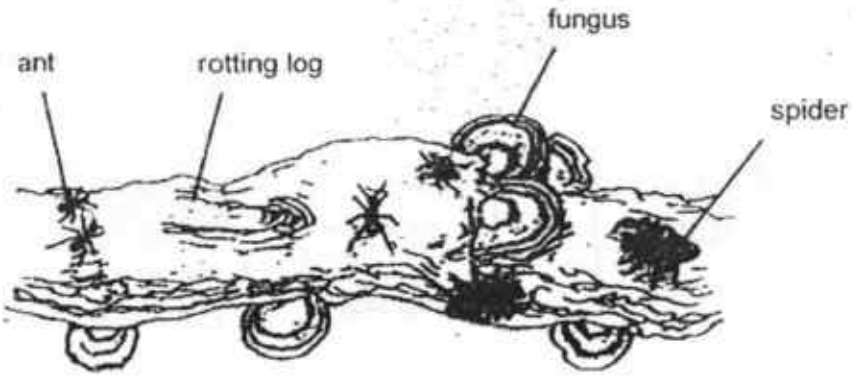
4 The following relationships were observed among five organisms, A, B, C, D and E living in a habitat.

C feeds on A, B and D.
B feeds on A.
E feeds on C.

Which one of the following is correct?

	Producer	Prey	Prey and predator	Predator
(1)	A,D	B	C	E
(2)	A	B,D	C	E
(3)	A,D	C	B	E
(4)	D	A,C	E	B

5 The diagram below shows a rotting log.



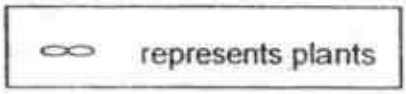
Based only on the diagram, which one of the statements is correct?

(1) The population size of the fungus is two.
(2) The rotting log is an example of a single plant population.
(3) There is only one population of insect living on the rotting log.
(4) There are two populations of organisms living on the rotting log.

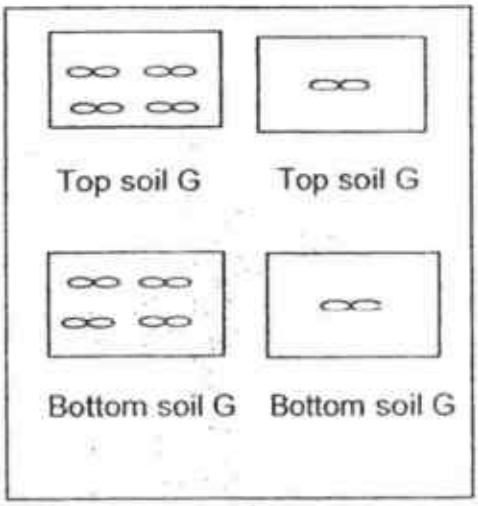
6 A farmer has two different types of soil, G and H. Each soil was taken from two different layers, top or bottom soil.

He predicted that plants will grow more healthily in soil G while his friend predicted that plants will grow more healthily in the top soil of soil H.

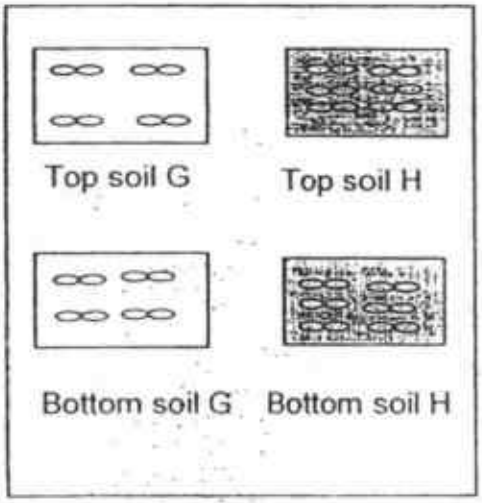
Which of the following set-ups should the farmer use to provide a correct test for both their predictions?



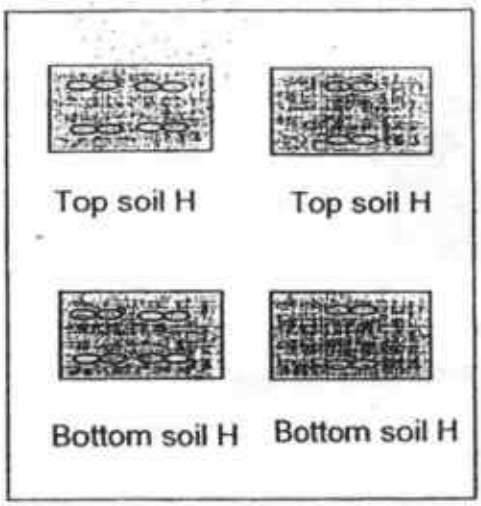
(1)



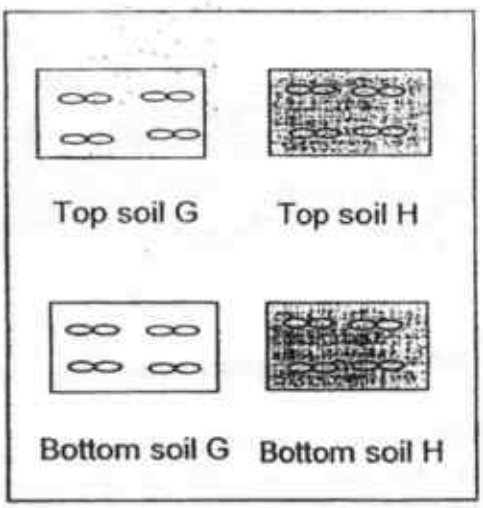
(2)



(3)



(4)

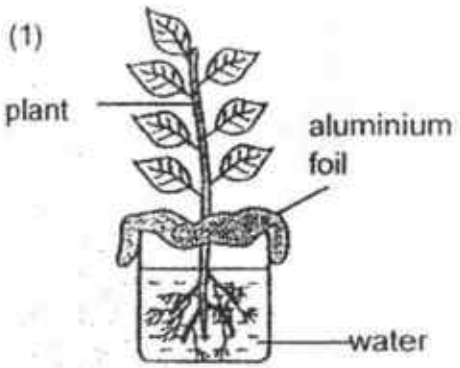


7 Which one of the following causes increased greenhouse effect?

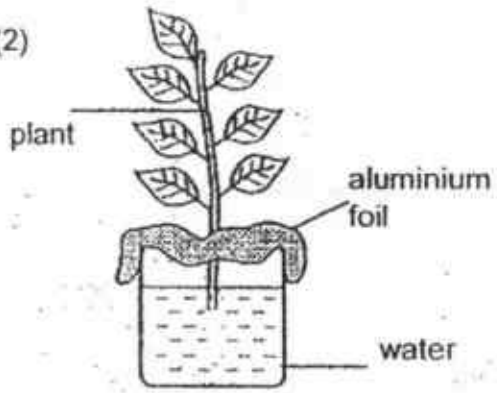
(1) Oil spill
(2) Soil erosion
(3) Deforestation
(4) Global warming

8 Dennis wanted to find out if plant takes in water through its roots.
Which one of the following should Dennis use as an experimental set-up?

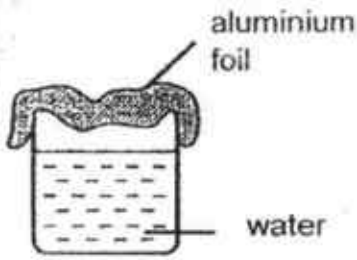
(1)



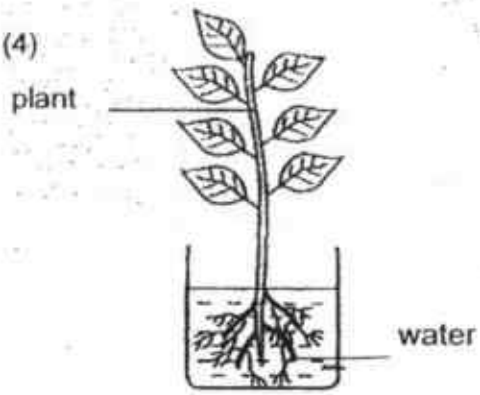
(2)



(3)



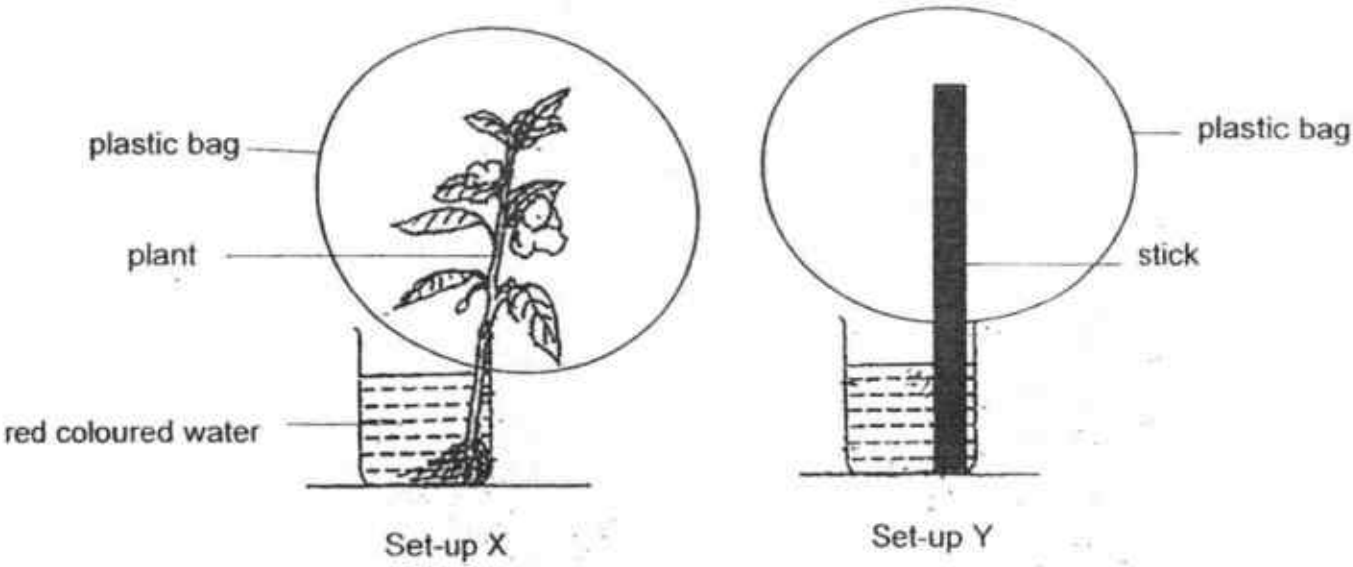
(4)



9 What is the function of cytoplasm in animal cell?

(1) Controls cell activities
(2) Controls inheritance from one generation to another
(3) Controls the movement of substances within the cell
(4) Controls the movement of substances in and out of the cell

10 Wei Liang prepared two set-ups, X and Y for an experiment. In Set-up X, he put a plant into a container of red coloured water and covered the plant with a plastic bag. In Set-up Y, he replaced the plant with a stick instead and covered it with a plastic bag. The two set-ups were placed in the same location.



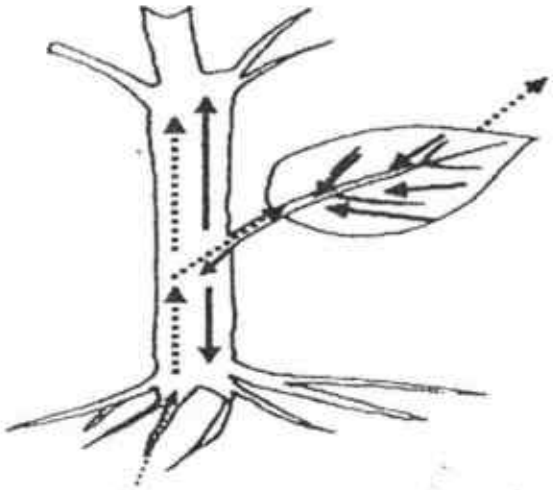
Set-up X Set-up Y

An hour later, the water level in Set-up X was less than before. Wei Liang also found tiny water droplets on the inner surface of the plastic bag in Set-up X but not in Set-up Y.

Based on Wei Liang's observation, what conclusion could he make from his experiment?

(1) Water is absorbed through its roots.
(2) Water in both containers is lost through evaporation.
(3) Water droplets formed is due to the presence of the plant.
(4) Water droplets formed is due to the presence of air in the plastic bag.

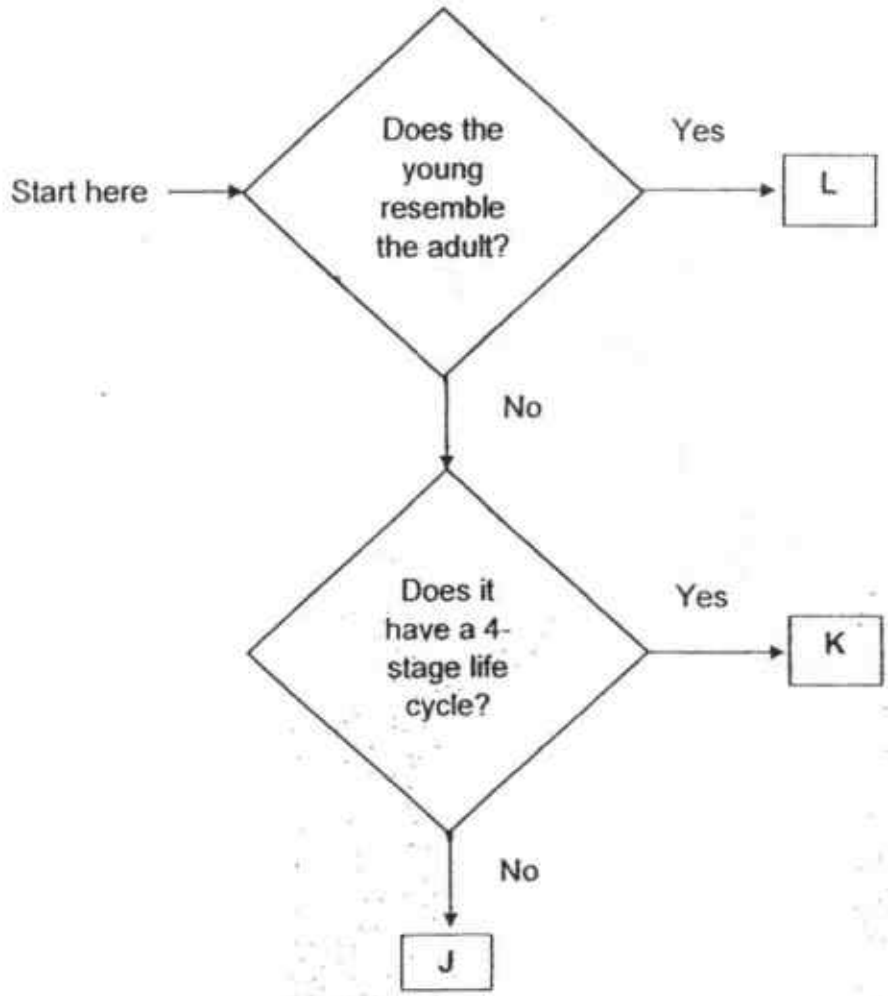
11 Study the diagram below which shows the movement of substances in the plant.



Which one of the following shows the correct movement of substances in the plant?

	——►	·····►
(1)	starch	water
(2)	sugar	water
(3)	food	oxygen
(4)	oxygen	carbon dioxide

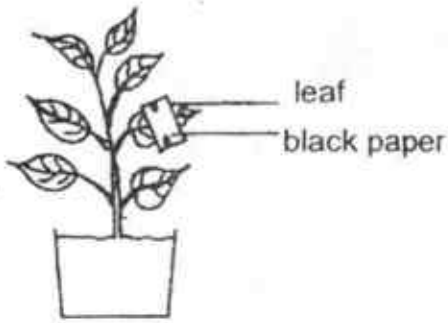
12 The chart below shows the characteristics of different organisms J, K and L.



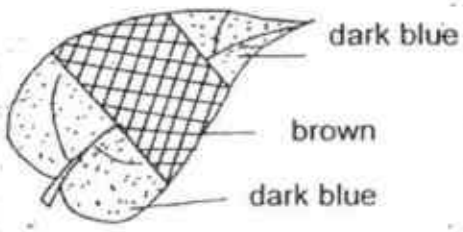
Which of the following represents the life cycle of organisms J, K and L?

	J	K	L
(1)	Butterfly	Cockroach	Chicken
(2)	Frog	Butterfly	Cockroach
(3)	Chicken	Butterfly	Mealworm Beetle
(4)	Frog	Cockroach	Chicken

13 Meng Li placed a plant in the dark for 48 hours and then partially covered one of the leaves with black paper. After doing so, he placed the plant under the sun for another 5 hours as shown below.



He tested the leaf for starch by using iodine solution and observed the leaf as shown below.

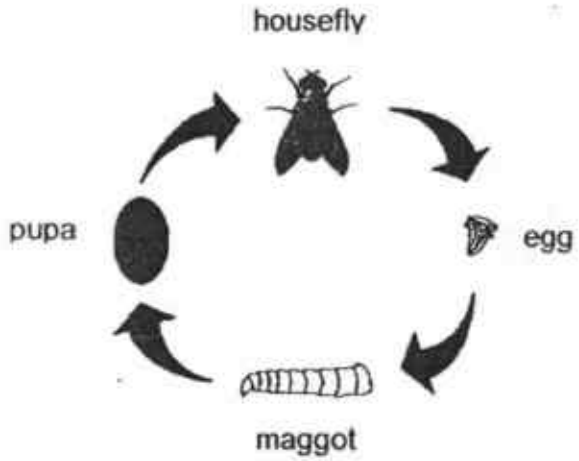


Which of the following can be deduced from the above experiment?

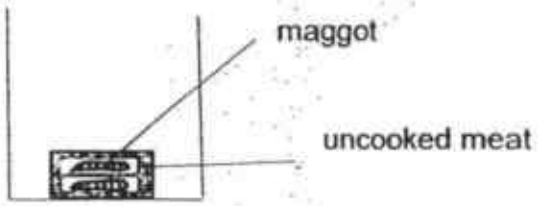
A: Air is needed for photosynthesis.
B: Sunlight is needed for photosynthesis.
C: Chlorophyll is needed for photosynthesis

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

14 Study the life cycle of a housefly.



A beaker containing a piece of uncooked meat was left in a room for a week. After a week, maggots were observed on the meat as shown below.

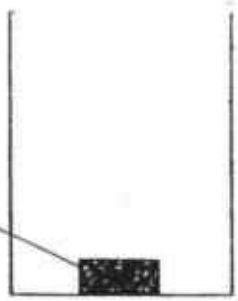


Edina wanted to set up the experiment which would show that the maggots did not come from the meat.

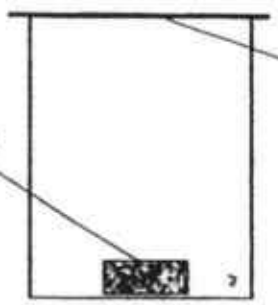
Which set-up should Edina use?

(1)

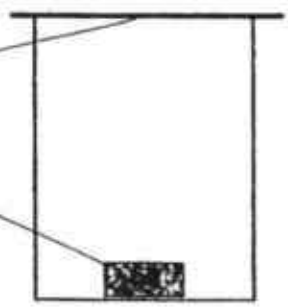
(2)



(3)



(4)



15 Jim noted down the properties of two objects, A and B.

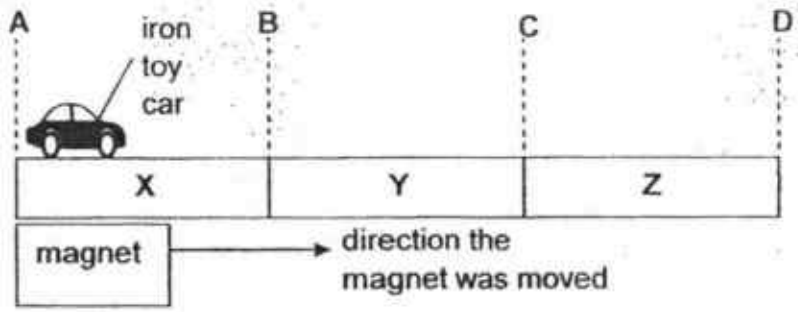
He put a tick (√) for the property that each object has in the table below.

property	A	B
It is fragile.	√	
It is flexible.		√
It is opaque.	√	√
It is able to sink in water.	√	√

Which one of the following best identifies objects A and B?

	A	B
(1)	metal ruler	rubber band
(2)	newspaper	plastic scissors
(3)	wooden pencil	plastic ruler
(4)	ceramic spoon	rubber boots

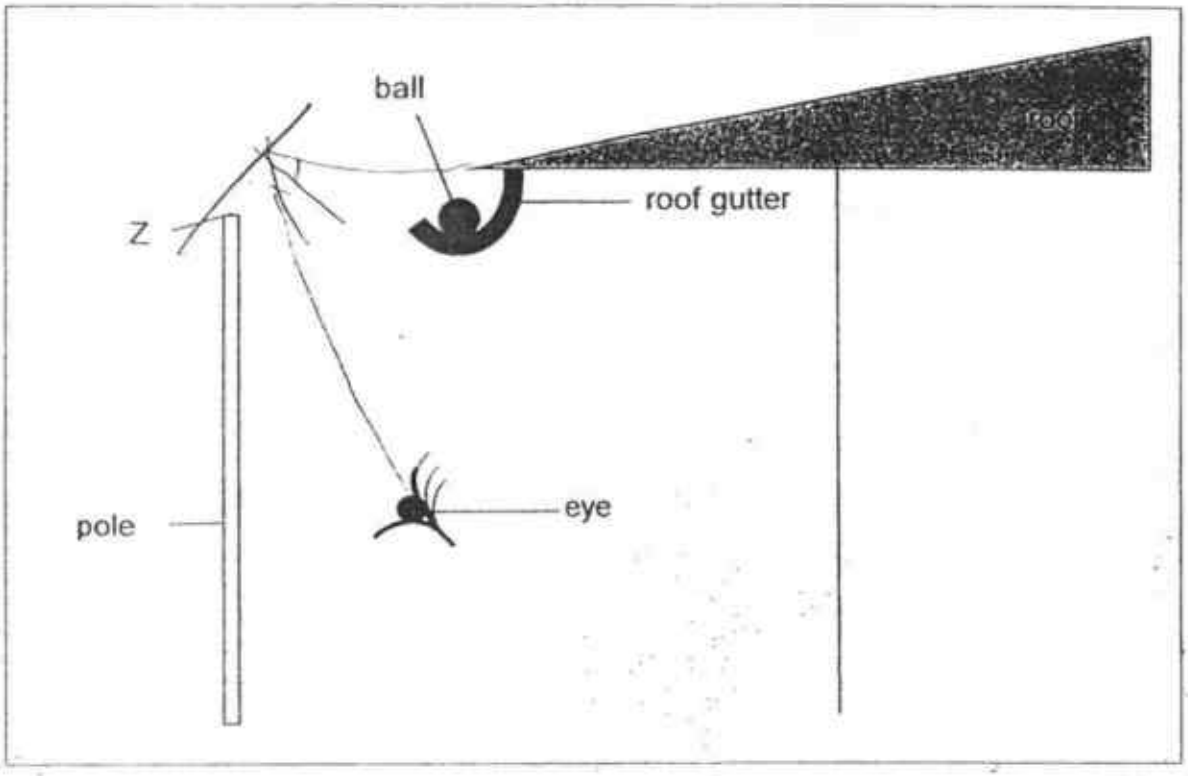
16 Bob placed an iron toy car on a board made from three different materials, X, Y and Z, which were glued together. He used a magnet to move the car from point A to point D. However, the car came to a stop at point C.



What could materials X, Y and Z be made of?

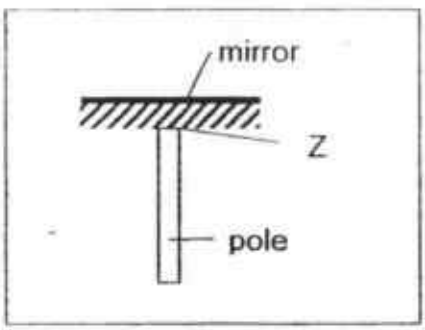
	X	Y	Z
(1)	iron	copper	plastic
(2)	glass	iron	steel
(3)	copper	plastic	steel
(4)	steel	iron	glass

17 Roy threw a ball and it landed in the roof gutter. To find the ball, he attached a mirror to a pole at Point Z.

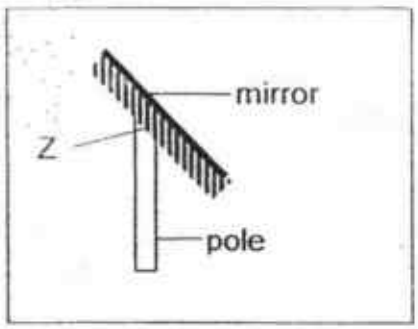


Which one of the following diagrams shows the correct position of the mirror that will allow Roy to see the ball in the gutter?

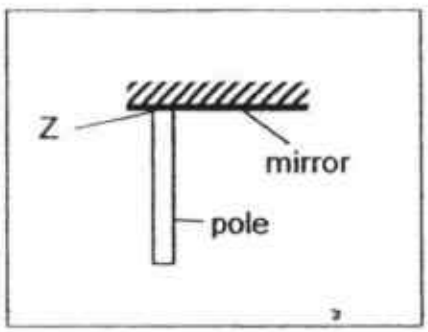
(1)



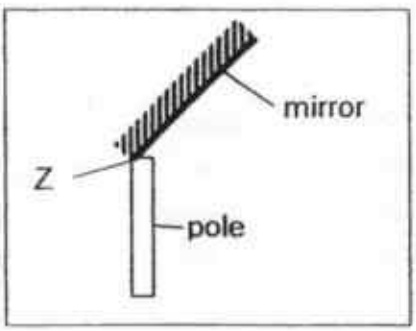
(2)



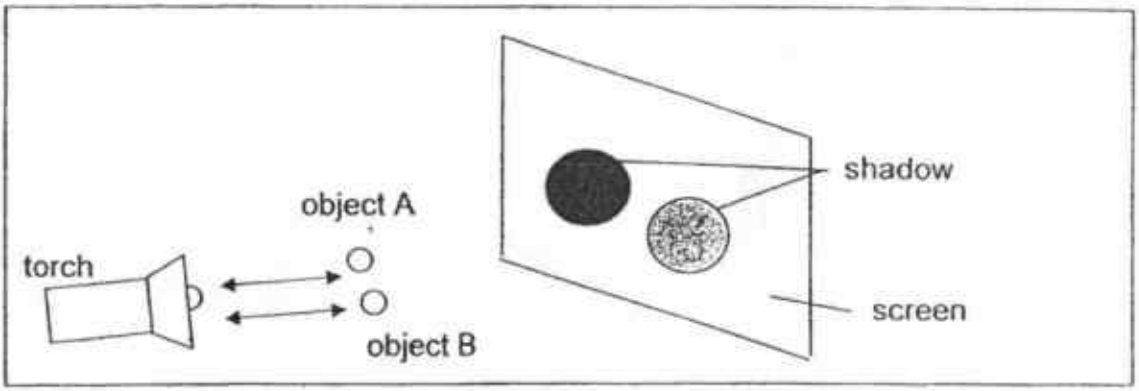
(3)



(4)

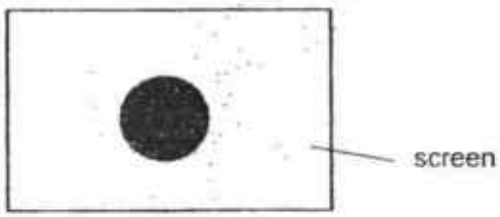


18 Martin shone a torch onto two objects, A and B, as shown in the diagram below. Objects A and B were placed at equal distance from the torch.



The shadows cast by objects A and B are of similar size but the shadow of object A is darker than the one cast by object B.

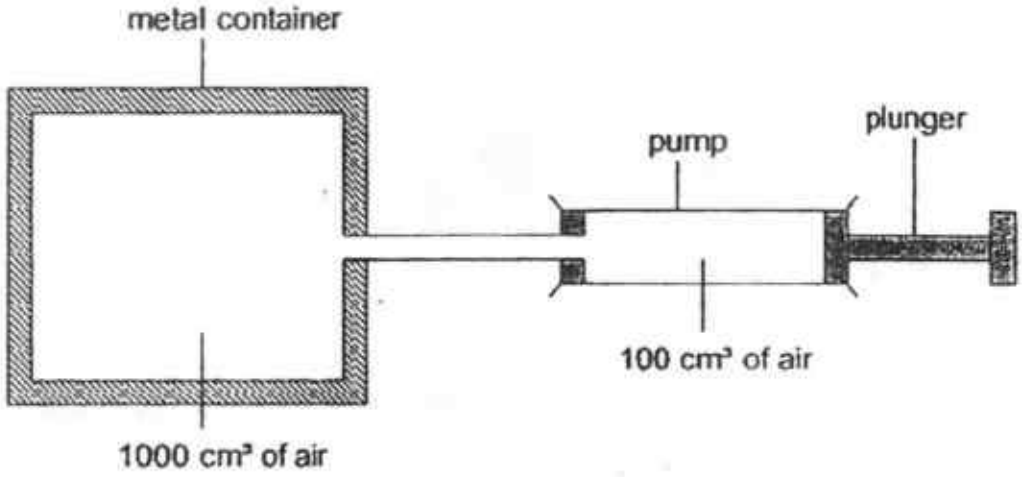
Martin wanted the shadow formed to be as shown below.



Which one of the following changes should he do before he aligns the objects in a straight line?

(1) Move object A nearer to the torch
(2) Move object A nearer to the screen
(3) Move object B nearer to the screen
(4) Move objects A and B nearer to the torch

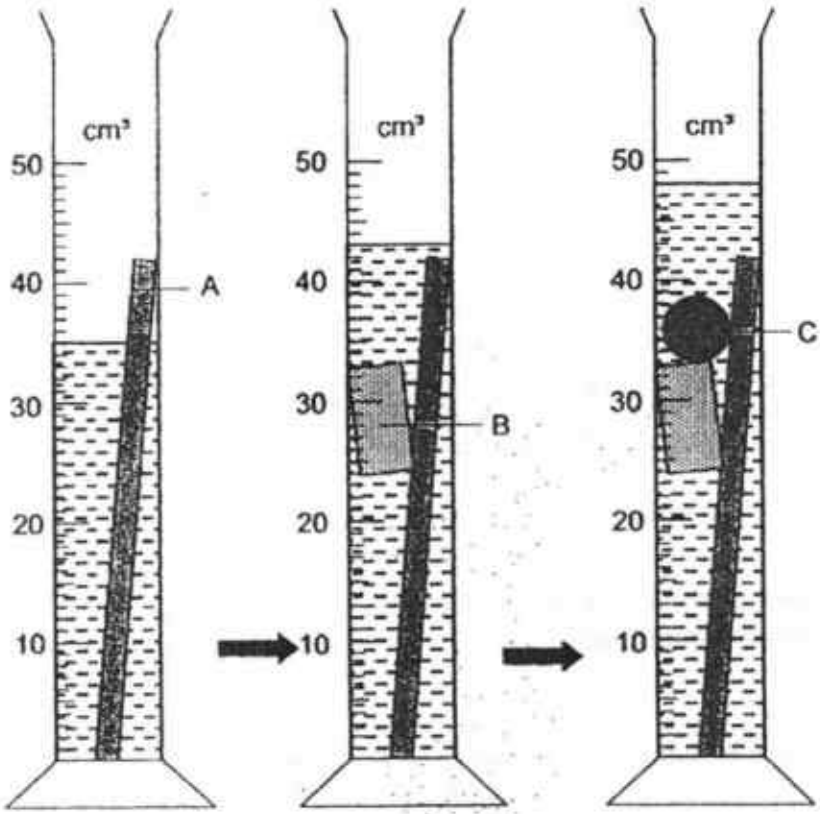
19 Study the diagram below. When the plunger is pushed all the way in, all the air from the pump goes into the metal container.



Which one of the following shows what happens to the volume and mass of air in the metal container when the plunger is pushed all the way in?

	Volume of air in the metal container	**Mass of air in the metal container**
(1)	increases	Increases
(2)	remains the same	remains the same
(3)	remains the same	increases
(4)	Increases	decreases

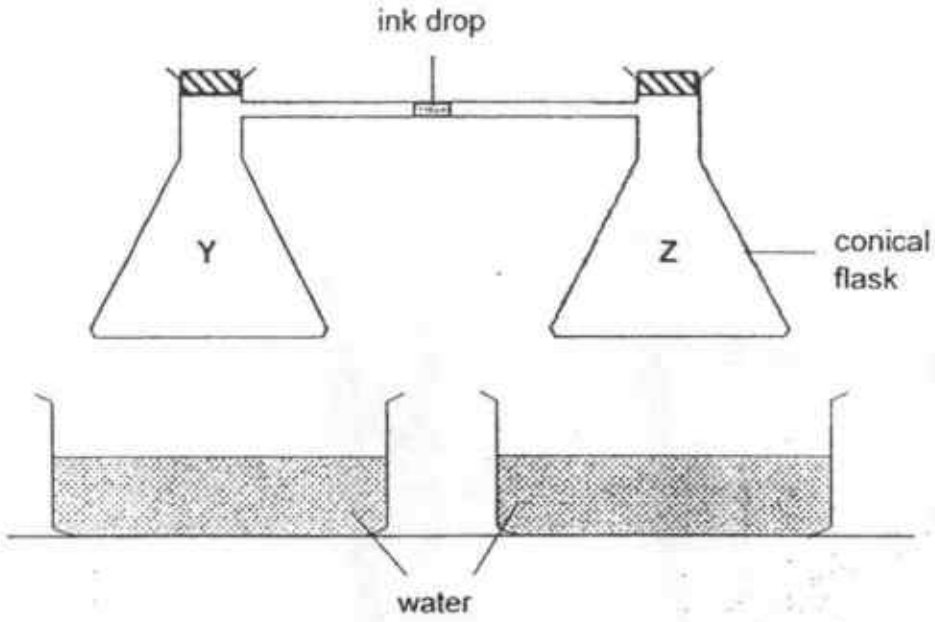
20 Ravi has three objects, A, B and C. He puts object A into a measuring cylinder containing some water. Then he puts object B and then followed by object C. The diagram below shows how the water level changes after each object is placed in.



Using only information from the diagram above, Ravi will be able to find the volume of object(s) _____.

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

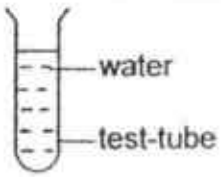
21 In the set-up below, a drop of red ink is placed in the glass tube connecting the two conical flasks, Y and Z. Each flask is then placed in a basin of water at different temperatures.



In which one of the following arrangements will the drop of red ink move the furthest from flask Z in the shortest time?

	Temperature of water flask Y is placed in _____	**Temperature of water flask Z is placed in _____**
(1)	water at 3°C	water at 90°C
(2)	water at 3°C	water at room temperature
(3)	water at room temperature	water at 90°C
(4)	water at room temperature	water at 3°C

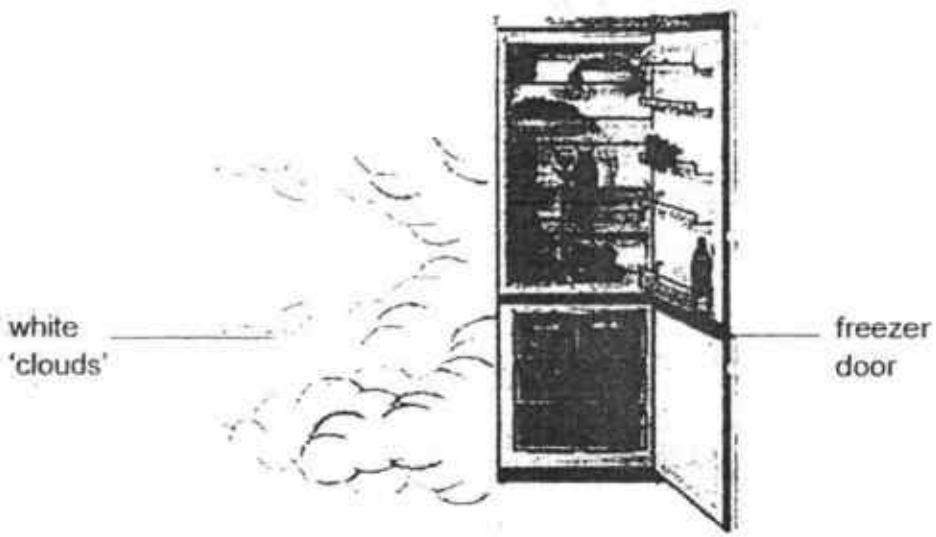
22 Sue was given a test-tube of water as shown below.



What should Sue do in order to allow the water in the test-tube to take a shorter time to evaporate?

(1) Remove all fans at the location
(2) Put an ice cube into the test-tube of water
(3) Seal the mouth of the test-tube with plasticine
(4) Transfer all the water from the test-tube to a tray

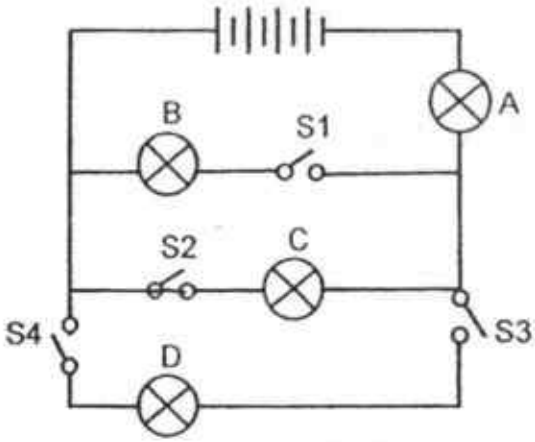
23 Minnie opened the freezer door and observed white 'clouds' escaping from the freezer.



Which one of the following is a true statement about the white 'clouds' seen?

(1) The 'clouds' seen is steam formed during the process of condensation.
(2) Water droplets from in the refrigerator evaporated to form the 'clouds'.
(3) Water vapour from the cold air lost heat to the warmer surrounding air and condensed to form the 'clouds'.
(4) Warmer water vapour from surrounding air lost heat to the cold air and condensed to form the 'clouds'.

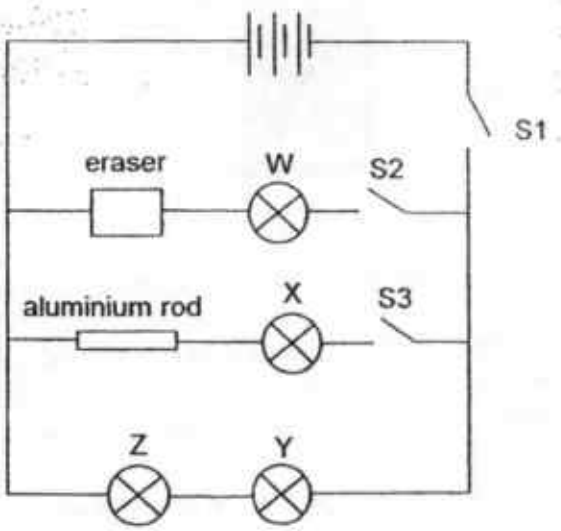
24 The diagram below shows an electric circuit with four identical bulbs, A, B, C and D, and four switches, S1, S2 , S3 and S4.



What is the least number of switches that must be closed to light up bulbs A and C?

(1) 1
(2) 2
(3) 3
(4) 4

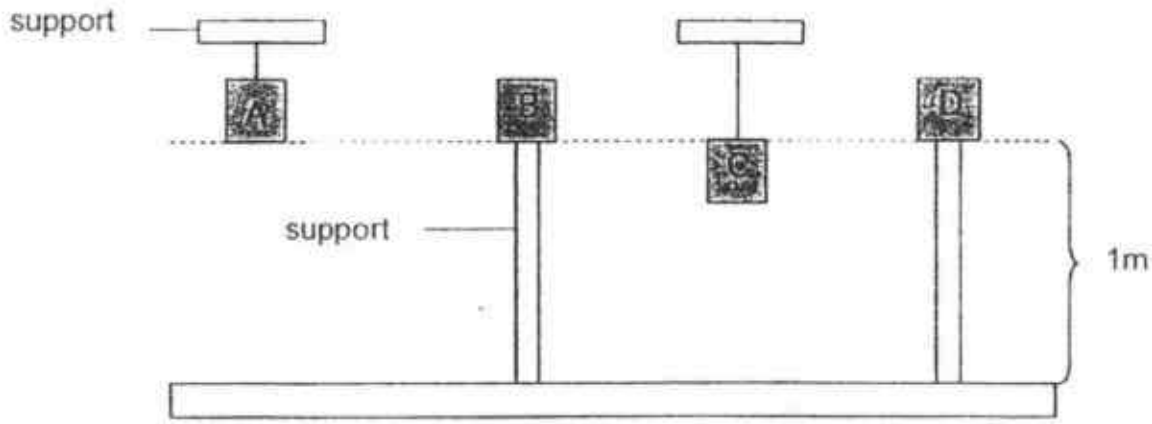
25 The circuit diagram below shows how the various components are connected together.



Which one of the following observations is correct?

(1) When only S1 and S2 were closed, bulb W was lit.
(2) When only S1 was closed, all the bulbs were lit.
(3) When only S3 was closed, bulbs X, Y and Z were lit.
(4) When only S2 and S3 were closed, none of the bulbs lit up.

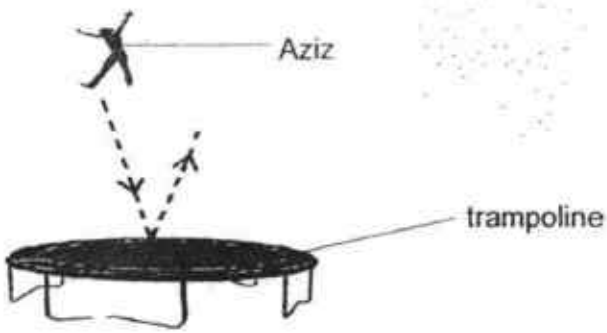
26 The diagram below shows 4 cubes of equal mass supported in different ways. Cubes A and C are hung from a support while B and D are balanced on their support.



Which one of the following statements is true about the amount of gravitational potential energy the cubes possess?

(1) A is equal to B
(2) A is greater than B
(3) C is greater than D
(4) All the cubes have the same amount

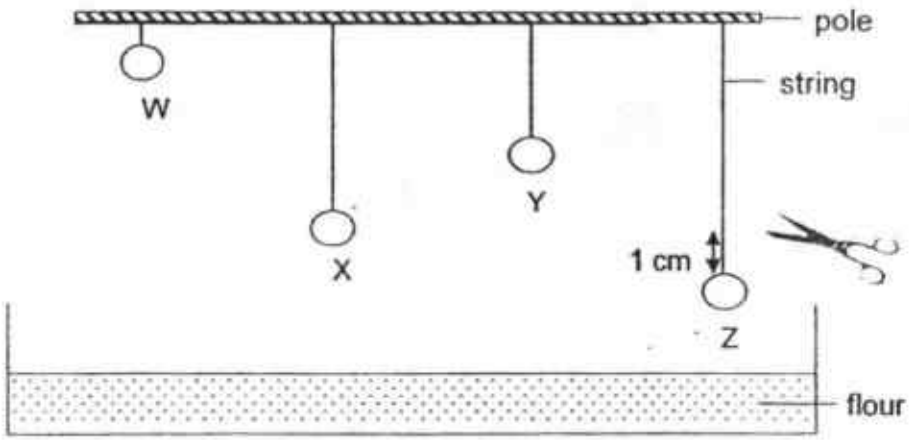
27 When Aziz jumped on the trampoline, he noticed that there was a force which pulled him downwards and then another force which pushed him upwards.



Identify the forces which pulled him downwards and pushed him upwards respectively.

	Force which pulled him downwards	**Force which pushed him upwards**
(1)	Elastic Spring Force	Magnetic Force
(2)	Gravitational Force	Gravitational Force
(3)	Gravitational Force	Elastic Spring Force
(4)	Frictional Force	Gravitational Force

28 Four identical balls, W, X, Y and Z, were hung from a pole using strings of different lengths as shown in the diagram below.



Each string was cut 1 cm above each ball. The balls landed in a container of flour placed directly below. Four dents of different depths were created in the flour by the four balls.

Which one of the following diagrams shows correctly the four dents in the flour made by the four balls respectively?

(1)

(2)

(3)

(4)

End of Booklet A

Rosyth School
Preliminary Examination 2018
SCIENCE
Primary 6

Total Marks: ____ / 100

Name: _____

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

Date: 24 Aug 2018 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 29 to 40, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

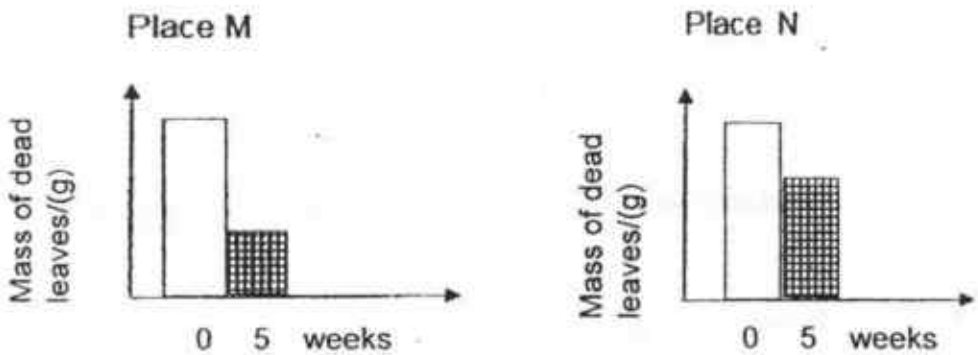
*** This booklet consists of 17 printed pages (including cover page).**

Part II

For questions 29 to 40, write your answers in the space provided. **(44 Marks)**

---

29 A group of scientists studied the mass of similar type of dead leaves at two places M and N. Process A took place and the mass of leaves decreased over a period of five weeks. The results are as shown below.



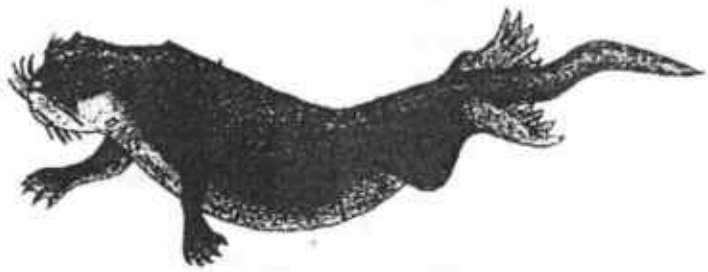
(a) Name the process A. [1]

The mass of dead leaves decreased in both places over the period of 5 weeks.

(b) Explain how a physical factor in the environment has caused a difference in the decrease of mass of the dead leaves in the two places M and N. [2]

(c) Other than process A, evaporation could also cause the decrease in the mass of dead leaves. Explain why. [1]

30 David read about an animal P in his book.



(a) Animal P is a mammal. State a physical characteristic that helped to classify it as a mammal. [1]

_____

Animal P lives near a river. The young of animal P are born in a burrow under the ground as shown below.

(b) Suggest why is it an advantage for survival of the young. [1]

_____

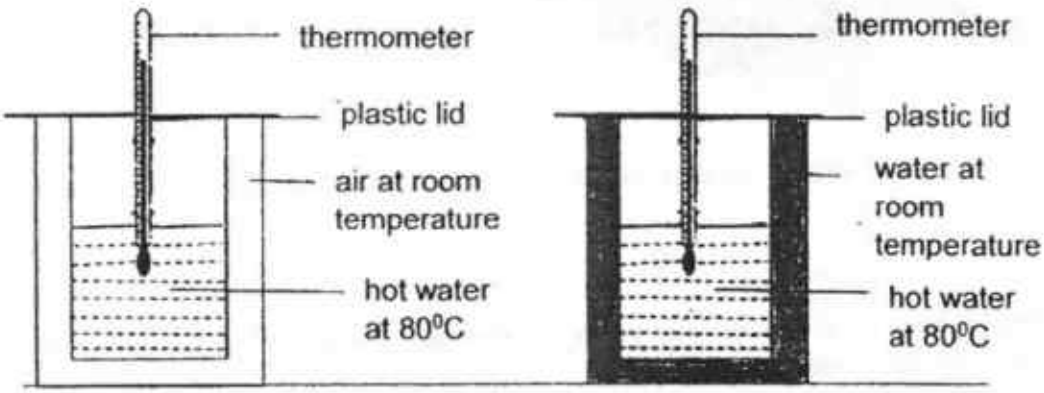
_____

Animal P spends most of its time in water. It usually keeps its feet above water as shown below. David predicted that this behaviour is to keep itself warm in a very cold water.

feet above water

Question 30 is continued on page 4

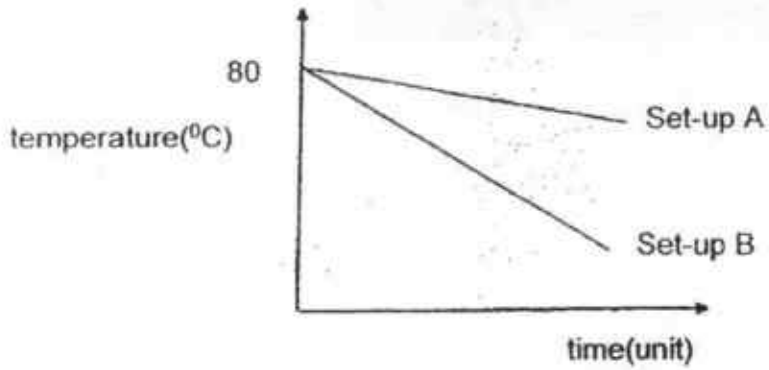
To prove his prediction, David conducted an experiment using set-ups A and B as shown below. A and B are double glass beakers, A filled with air in-between while B is filled with water. Both beakers filled with hot water at 80°C as shown below.



Set-up A

Set-up B

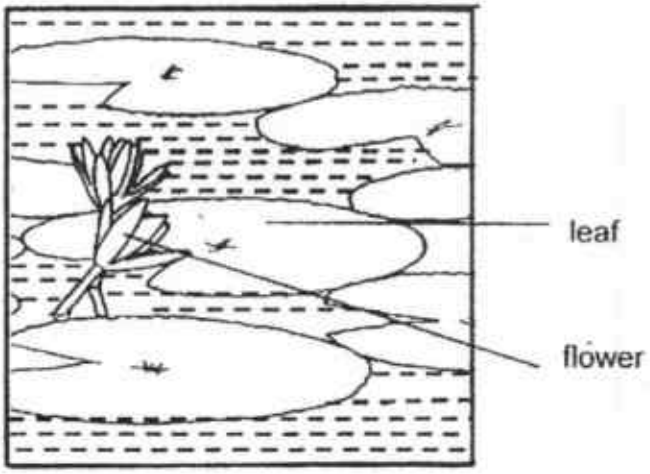
David measured the temperatures of the hot water in the beakers at different times and plotted his results in the graph shown.



(c) Based on the graph, what is the relationship between the temperature of hot water and time? [1]

(d) Using the results, explain how animal P keeps itself warm by putting its feet above water [1]

31 Plant X floats on the surface of a pond as shown below.

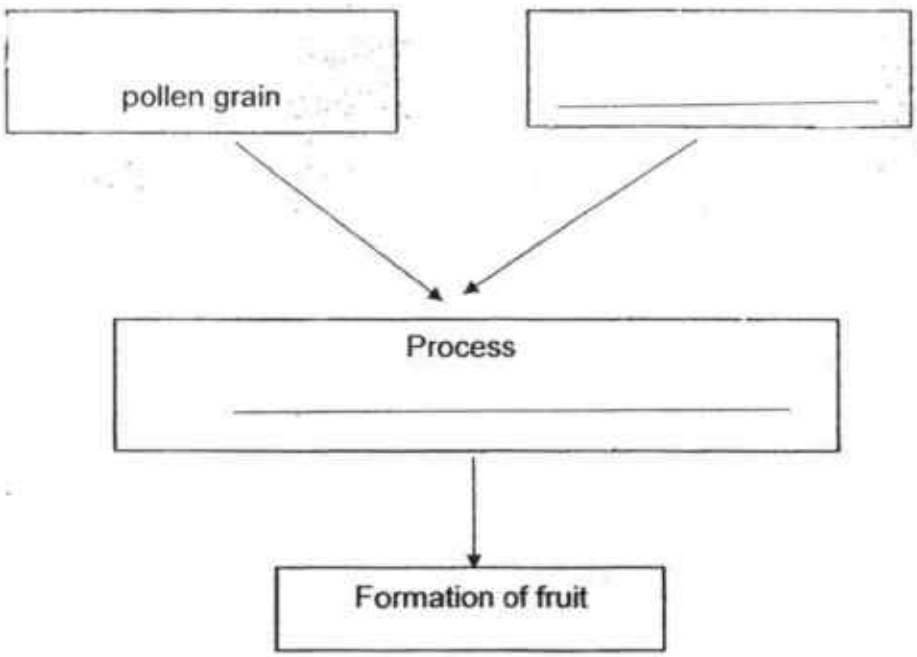


(a) Devi noticed that flowers of plant X were above the water.
How does this characteristic help plant X in its reproduction? [1]

_____

_____

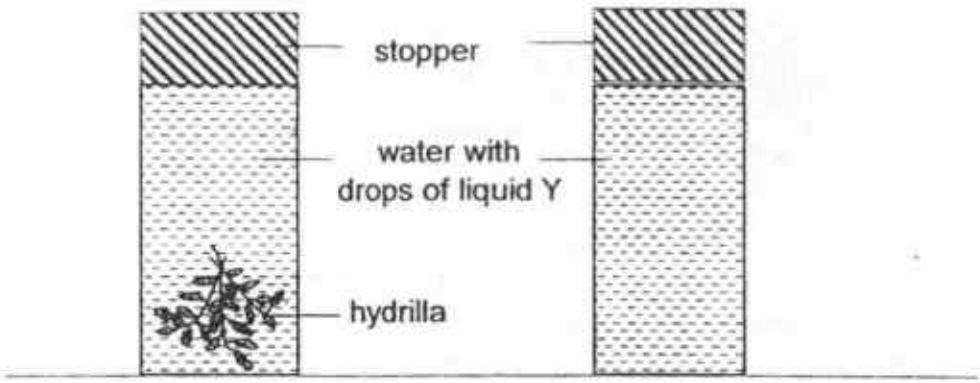
(b) Complete the boxes below to state the other part and process involved for flowers of plant X to become fruits. [2]



(c) Fruits help to protect the seeds inside. State another function of fruits. [1]

_____

32 Wen Hui wanted to find out if oxygen is released by a water plant during photosynthesis. He set up an experiment as shown in the diagram below in a lit room.

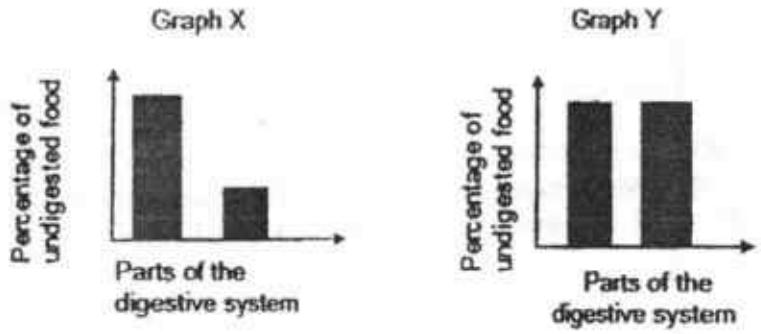


Liquid Y is used as an indicator of oxygen. It turns from blue to red when the amount of oxygen increases. The indicator was blue at the start of the experiment.

(a) Why was the experiment conducted in a lit room? [1]

(b) Wen Hui's friend said that Cylinder B was not needed for his experiment
Do you agree with his friend? Explain why. [1]

33 Rina measured the amount of undigested food in each part of a human digestive system just before it entered the next part. She wanted to show the comparison of undigested food between the mouth and gullet using a graph.She drew two graphs, X and Y, as shown below.



(a) Which graph X or Y represents the comparison between the mouth and gullet correctly? Give a reason. [1]

_____

_____

_____

(b) Besides the mouth and small intestine, which other part of the human digestive system produces digestive juice? [1]

_____

Question 33 is continued on page 8

Study the food chain shown below.

plant ⟶ **insect M** ⟶ **bird**

Adult female insect **M** is always filled with fertilised eggs. The eggs are not digestible.

(c) Using the information above, describe what would happen to the insect and the eggs in the bird's digestive system starting from the small intestine. The digestive system in the bird is similar in function to the human digestive system. [2]

Insect: _____

_____

Eggs: _____

_____

Birds feed on many insects **M** before migrating to another place.

(d) How does Insect **M** benefit from this relationship? [1]

_____

_____

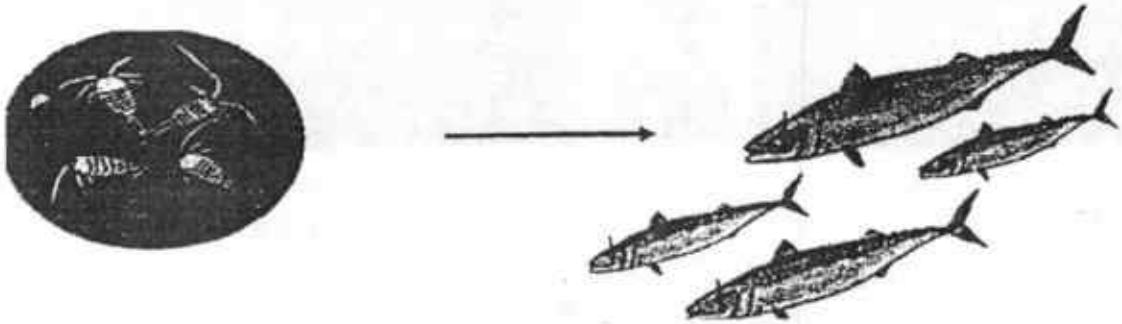
34 Recent studies have shown that there is a large amount of microscopic plastics known as micro-plastics in oceans.

(a) Name the type of pollution. State one way to reduce it. [2]

_____

_____

Study the food chain in a habitat.



micro-plastics present alongside with microscopic organisms

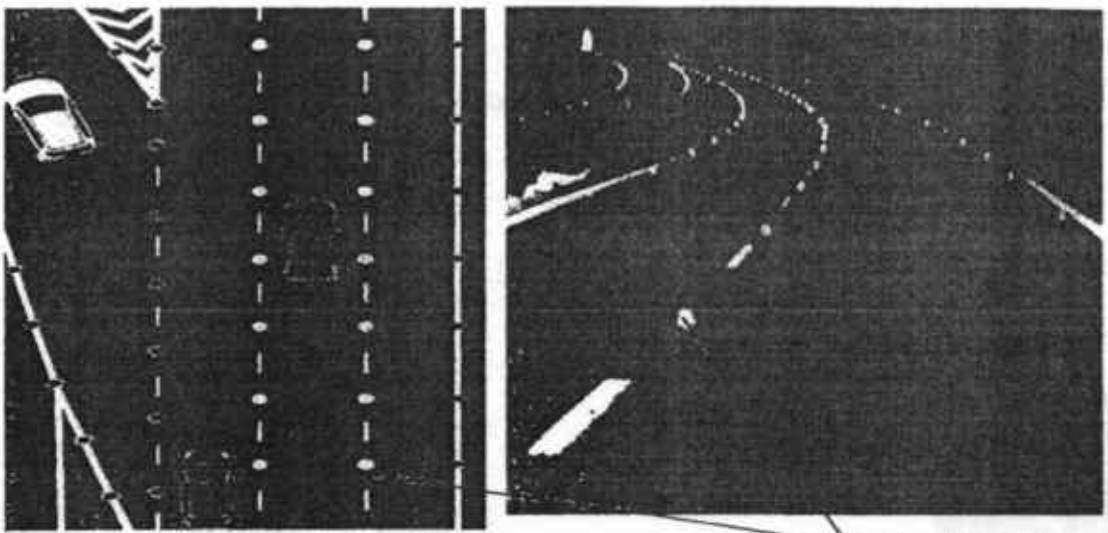
fish R feeds on the micro-plastics present alongside with microscopic organisms

Animal S lives in the same habitat as the fish. A marine scientist found micro-plastics in the stomach of animal S.

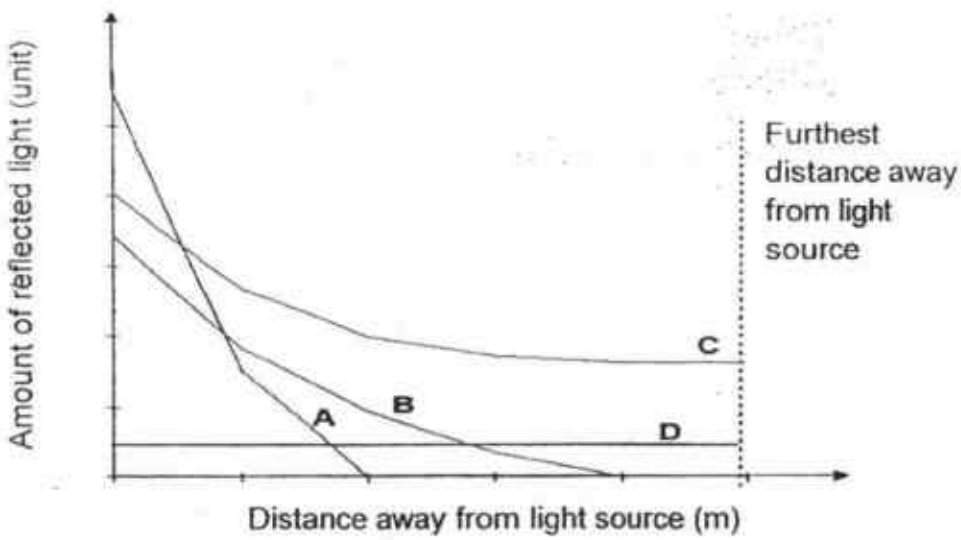
(b) State a possible relationship between the fish R and animal S in the above food chain. [1]

_____

35 Reflective studs are used to mark roads in unlit areas as shown below.



Ahmad conducted an experiment with four different materials, A, B, C and D. He used a light sensor to determine the amount of light that was reflected by the materials from the light source at various distance. He recorded the results in the graph below.



Question 35 is continued on page 11

(a) Using the results, which material is most suitable for making the reflective studs? Explain why. [2]

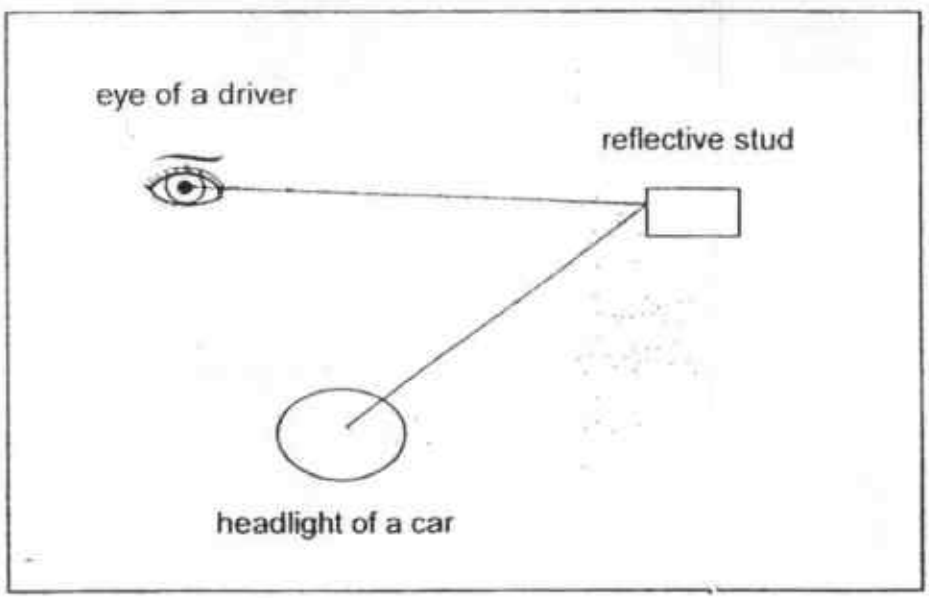
_____

_____

_____

_____

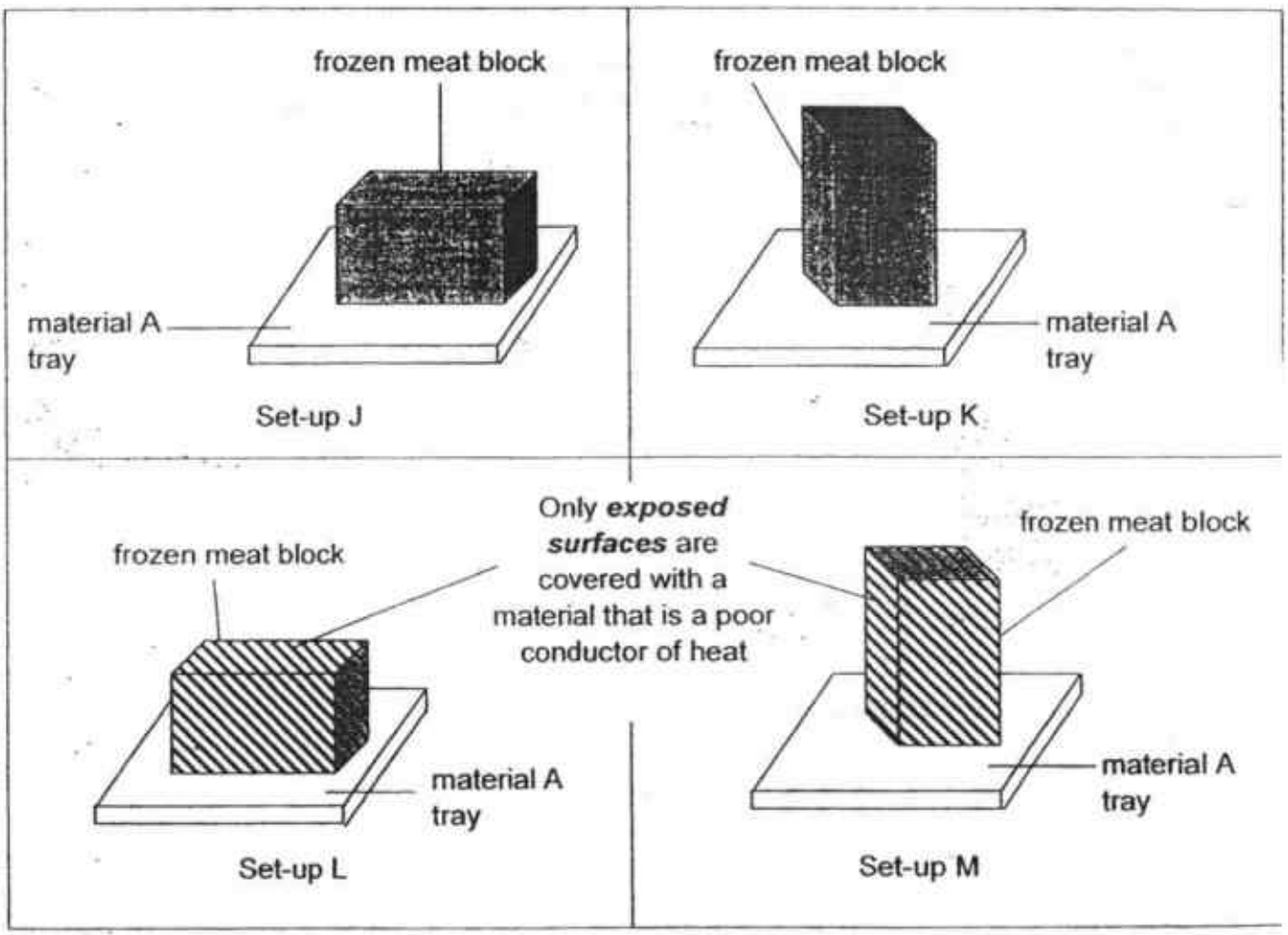
(b) Draw the pathway of light using arrows (⟶) to show how light travels to enable driver of a car to see the lit reflective stud on the road in the diagram below. [1]



36 Jane wanted to conduct an experiment to find out if the surface area of a block of frozen meat in contact with material A affects its rate of melting to defrost the meat.

In her experiment, she used two similar frozen meat blocks and two similar trays of Material A. Material A is a good conductor of heat. She left both set-ups by the window and recorded the time taken for each frozen meat block to defrost completely.

The possible set-ups of her experiment are shown below.



(a) Which two set-ups, J and K or L and M should Jane use to carry out a fair experiment? [1]

Set-ups _____ and _____

Question 36 is continued on page 13

(b) Explain your choice in (a). [2]

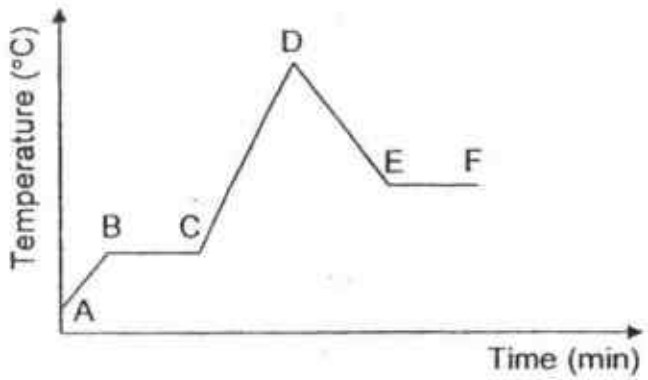
(c) Suggest a material that can be used to cover the exposed surface areas of frozen meat blocks in set-ups L and M. [1]

(d) Jane then carried out another experiment to determine how well heat is conducted through tray materials A and B. She obtained the results as shown in the table below.

Material of tray	Time taken for ice block to melt completely / min
Material A	56
Material B	34

Based on the results shown above, what conclusion can Jane make about how materials A and B conduct heat? [1]

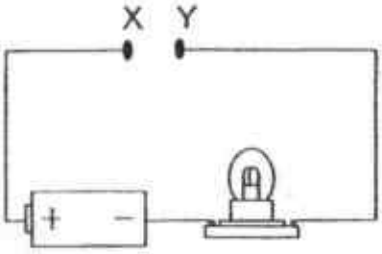
37 A beaker of solid substance W was heated on a stove till it melted at B. Heating continued for some time and then it was removed from the stove to cool on a table. The graph below shows the change of temperature of substance W over the period of time.



Based on the information above, put a tick (√) in the correct box for each statement. [4]

		True	False	Not possible to tell
(a)	From points B to C, substance W is gaining heat.			
(b)	At D, substance W reaches its boiling point.			
(c)	Substance W takes the shape of the beaker from points D to E.			
(d)	From points E to F, substance W loses heat and freezes.			

38 The diagram below shows a circuit. The table shows what happens to the light bulb when four different rods A, B, C and D are connected one at a time to the contact points X and Y.



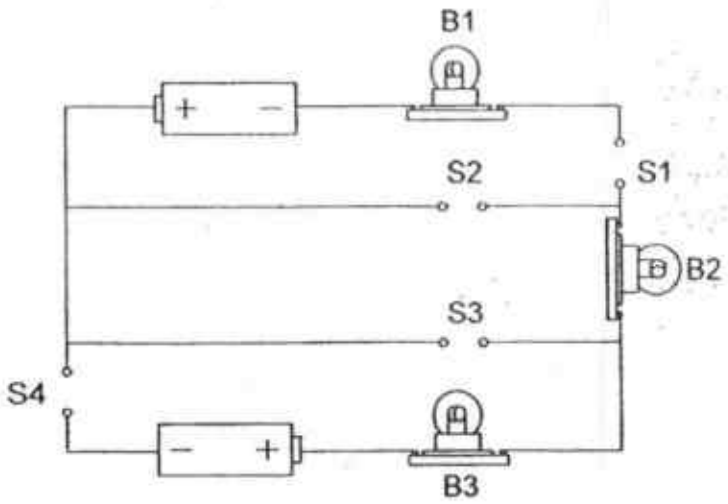
Rod that connects X and Y	Did the bulb light up?
A	yes
B	no
C	no
D	yes

(a) What can be said about the rods A, B, C and D from the results above? [2]

_____

_____

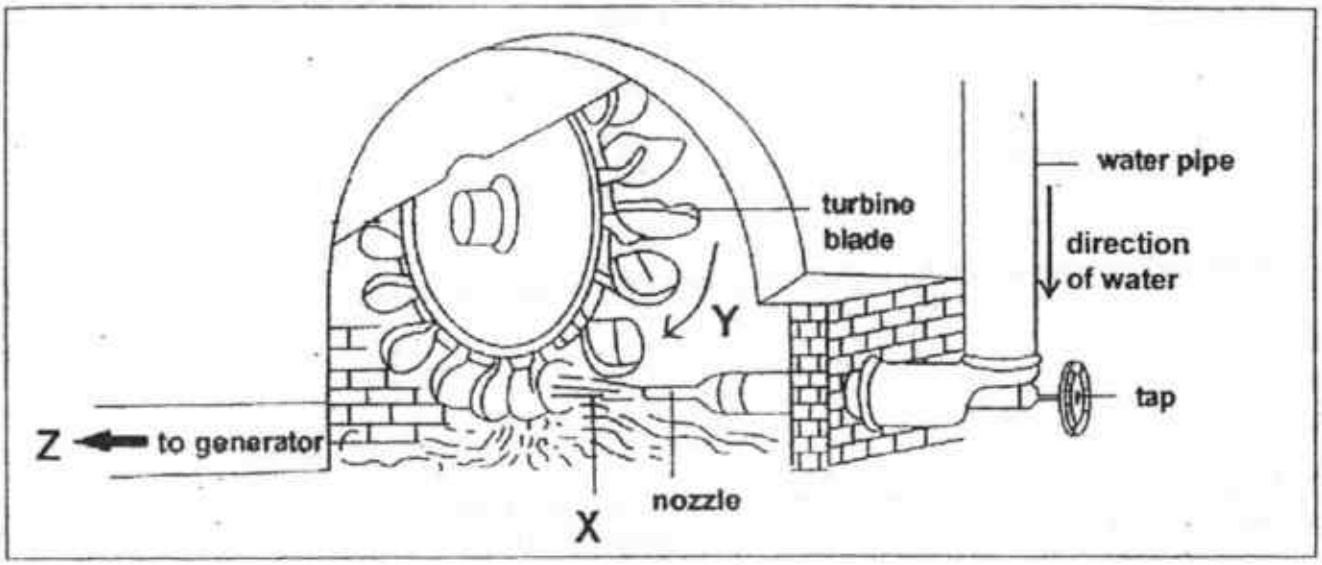
In another experiment, the same four rods A, B, C and D were placed at different positions S1, S2, S3 and S4 in the following circuit.



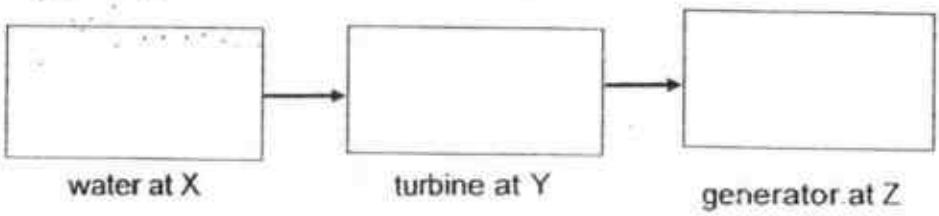
(b) Complete the following table. Put a tick (✓) in the box to show that the bulb lit up. [1]

Position where each rod was placed				Bulbs		
S1	S2	S3	S4	B1	B2	B3
rod B	rod D	rod C	rod A			

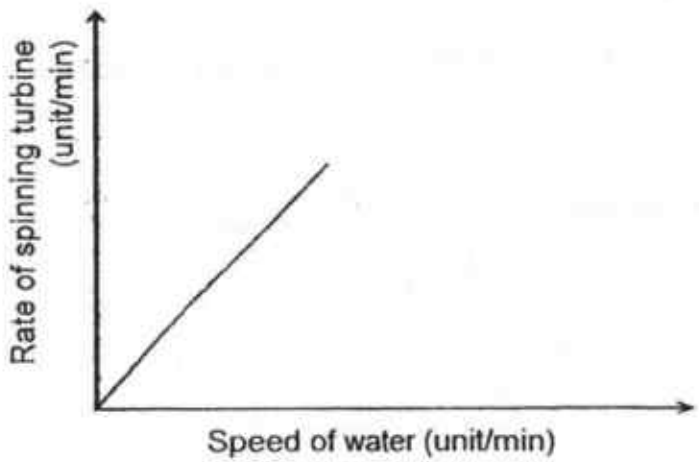
39 The diagram below shows a water turbine found in a hydroelectric power station. When the tap is turned on, water flows down from the water pipe and gushes out through the nozzle. The gushing water in turn causes the blades of the turbine to spin which then generates electricity in the generator.



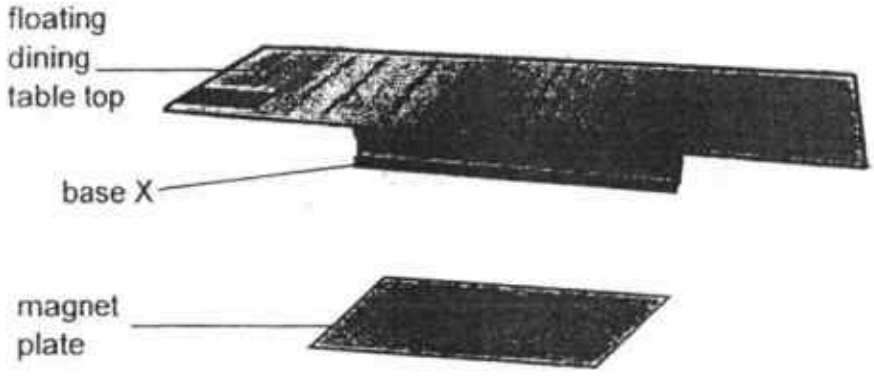
(a) State the useful energy changes that take place in the set-up above to generate electrical energy. [1]



(b) Draw the graph to show the relationship between the speed of water (unit/min) that passes through the pipe and the rate of spinning turbine (unit/min). [1]



40 The diagram below shows a floating dining table.



The floating dining table consists of a magnet plate on the floor and a special base X. Base X must be present in order for the table top to float.

(a) Identify what base X is. [1]

_____

(b) Describe how the dining table is able to float. [2]

_____

_____

_____

It is not recommended to place items with a total mass of greater than 150kg on the table top as it will not be able to float.

(c) Why does the dining table not float when the mass placed on it is greater than 150 kg? [1]

_____

_____

(d) Suggest a way that would allow the table top to float while holding items with a mass greater than 150kg.

_____

ANSWER KEY

YEAR : 2018
LEVEL : PRIMARY 6
SCHOOL : ROSYTH SCHOOL
SUBJECT : SCIENCE
TERM : PRELIMINARY EXAMINATION

BOOKLET A

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

BOOKLET B

Q29a) Decomposition

Q29b) Place M may have contained more moisture than Place N, causing the leaves to decompose faster, hence the difference in mass of dead leaves in both places.

Q29c) The dead leaves contain water that contributes to overall mass. The water in the leaves can gain heat from the surroundings and then evaporate, causing the leaves to lose the water, and the mass of it.

Q30a) It has hair.

Q30b) It is harder for the predators of the young of animal P to find them and feed on them.

Q30c) As the time increases, the temperature of hot water in set-ups A and B decreases.

Q30d) The temperature of hot water in set-up B was cooler than that of set-up A at the end of the experiment. This shows that water is a better conductor of heat than air. So by putting its feet above water, it will lose heat to the water at a slower rate, allowing P to keep itself warm.

Q31a) The flowers will be more visible to animal pollinators if above water, allowing pollination to occur more frequently.

Q31b) Ovule, Fertilisation

Q31c) To help disperse the seeds.

Q32a) This allows photosynthesis to take place as the plant needs light to do so.

Q32b) No. Cylinder B is a control set-up that will confirm that the only variable affecting the colour of liquid Y is the occurrence of photosynthesis.

Q33a) Y. It shows that the percentage of undigested food that left the mouth and gullet remained the same. Digestion does not occur in the gullet, hence Y is correct.

Q33b) Stomach.

Q33c) The insect will be digested and broken down into simpler substances and then absorbed by the small intestines into the bloodstream.

The eggs will be passed into the large intestines and then passed out along with the bird droppings as they are not digestible.

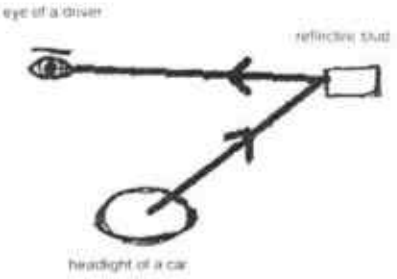
Q33d) Migration helps to disperse the eggs to further places, ensuring more space covered. This gives the eggs more food to survive.

Q34a) Water pollution. Do not throw litter into the sea.

Q34b) Animal S is the predator of fish R.

Q35a) Material C. Material C showed it reflected the most amount of light from the furthest distance. This is ideal because it means that drivers can notice the reflected lights from far away and this will ensure better road safety.

Q35b)



Q36a) Set-ups L and M

Q36b) By choosing both set-ups, the only variable affecting the result is the surface area of the block in contact with A. The exposed surface areas are covered with a poor conductor of heat to ensure most heat gain is largely due to the surface area in contact with A. This perfectly represents the objective.

Q36c) Rubber

Q36d) B is a better conductor of heat than A.

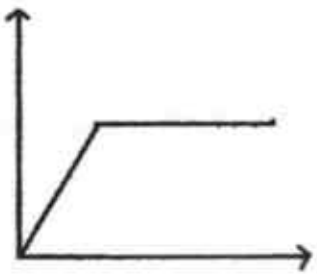
Q37) a: True
b: Not possible to tell
c: True
d: False

Q38a) A and D are conductors of heat but B and C are not.

Q38b) Bulbs B2 and B3

Q39a) kinetic energy → kinetic energy → Electrical energy

Q39b)



Q40a) Magnet

Q40b) Base X is a magnet with its like poles facing the magnet. Since like poles repel, base X was repelled by the magnet plate, and the magnetic force is stronger than the gravitational pull, allowing the table to float.

Q40c) When 150kg is added to the table, the magnetic force is unable to overcome the gravitational pull as the gravitational force has increased due to additional mass.

Q40d) Replace the current magnet with a stronger one

END

Name: _____ ( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Preliminary Examination
SCIENCE

BOOKLET A

24 August 2018

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

28 questions
56 marks

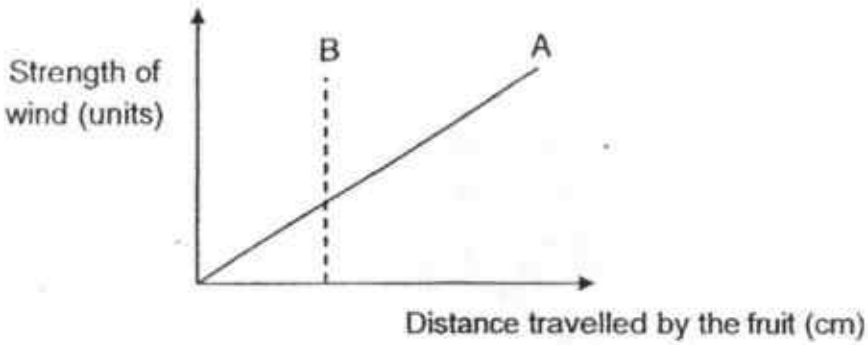
Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 21 printed pages.

Section A (28 x 2 marks = 56 marks)

For each question from 1 to 28, 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.**

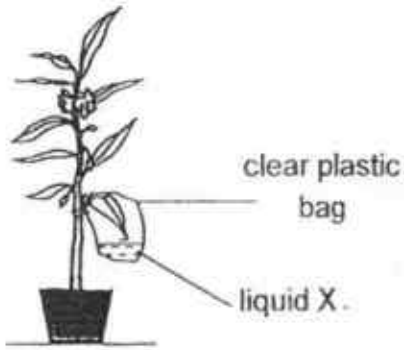
1. The graph below shows the effect of wind on the distance travelled by the fruits A and B.



Based on the graph above, what could fruits A and B most likely be?

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

2. The diagram below shows a potted plant in the garden. One of the leaves is placed in a clear plastic bag containing liquid X.



The table below shows the changes in the colour of liquid X with different amounts of oxygen present in the bag.

Colour	Amount of oxygen
blue	less than the amount in the air
red	same as the amount in the air
orange	more than the amount in the air

What would be the colour of liquid X at 11 am and 11 pm respectively?

	11 am	11 pm
(1)	orange	blue
(2)	orange	red
(3)	blue	orange
(4)	red	orange

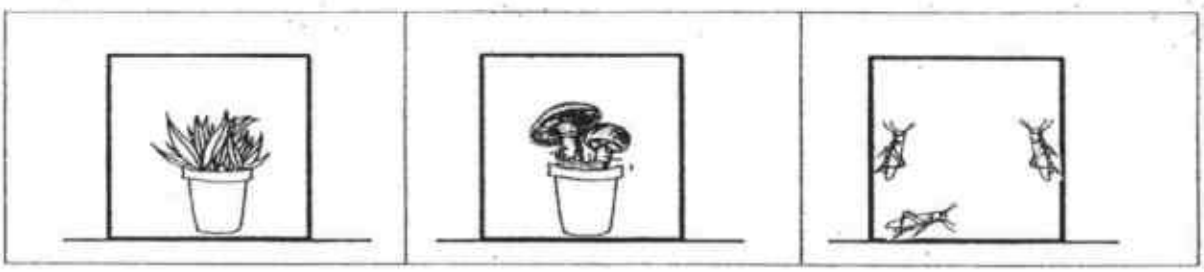
3. Which of the following about photosynthesis is correct?

	gas taken in	gas given out	light needed
(1)	carbon dioxide	oxygen	no
(2)	carbon dioxide	oxygen	yes
(3)	oxygen	carbon dioxide	no
(4)	oxygen	carbon dioxide	yes

4. Hummingbirds visit flowers. The hummingbirds benefit directly by_____.

(1) dispersing the seeds
(2) pollinating the flowers
(3) feeding on the nectar
(4) laying eggs on the flowers.

5. The diagram below shows three glass tanks A, B and C each containing different organisms. There was same amount of carbon dioxide in each tank.

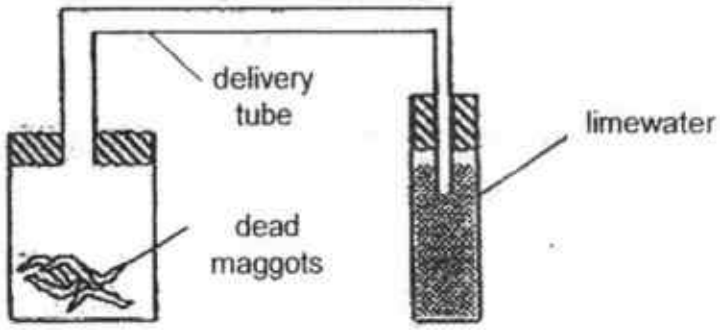


A B C

The three glass tanks were sealed and placed in the garden on a sunny day for five hours. In which of the tanks would there be an increase in carbon dioxide after five hours?

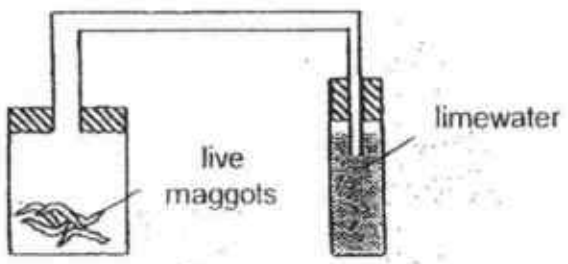
(1) A only
(2) C only
(3) A and B only
(4) B and C only

6. Sally wanted to find out if dead maggots produce carbon dioxide. She placed some dead maggots in a container and attached a delivery tube to a test-tube of limewater as shown below.

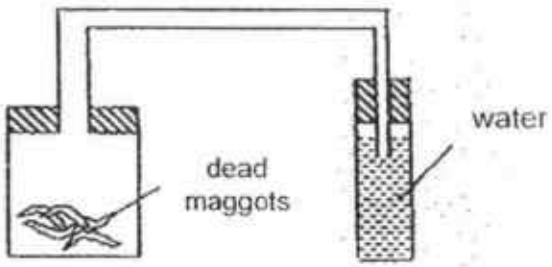


Which one of the following set-ups could be used as a control for her experiment?

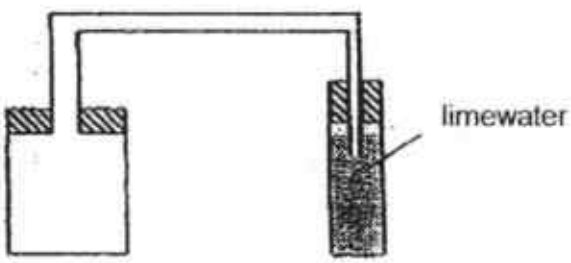
(1)



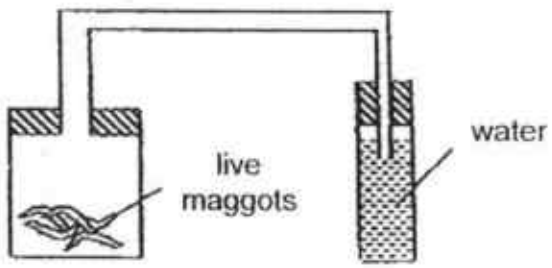
(2)



(3)



(4)

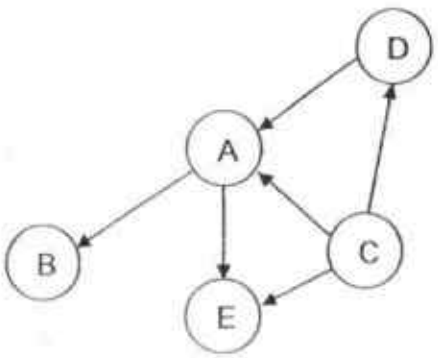


7. There are five organisms A, B, C, D and E in a food web.

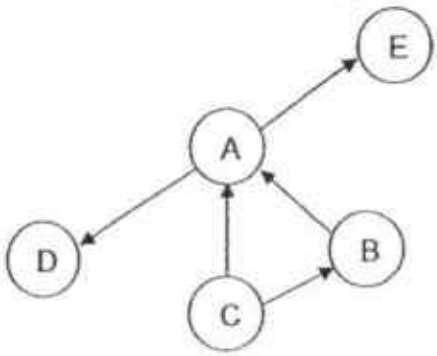
B is the prey of A
B is a plant eater
D is a meat eater
C is a food producer
D and E are predators of A
A and E are plant and animal eaters

Which one of the following food webs represents the food relationships of the five organisms?

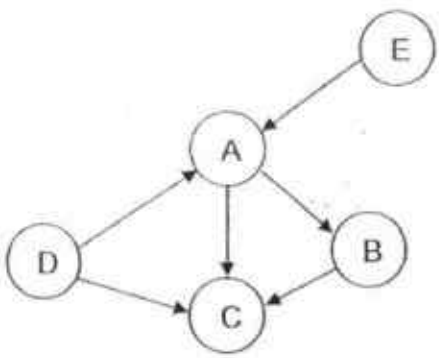
(1)



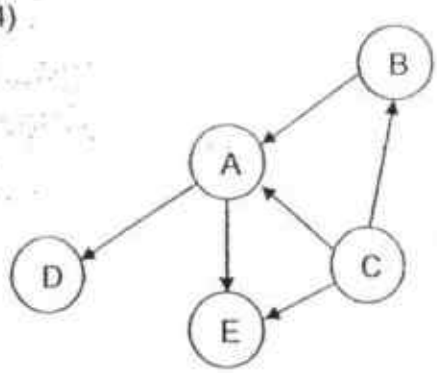
(2)



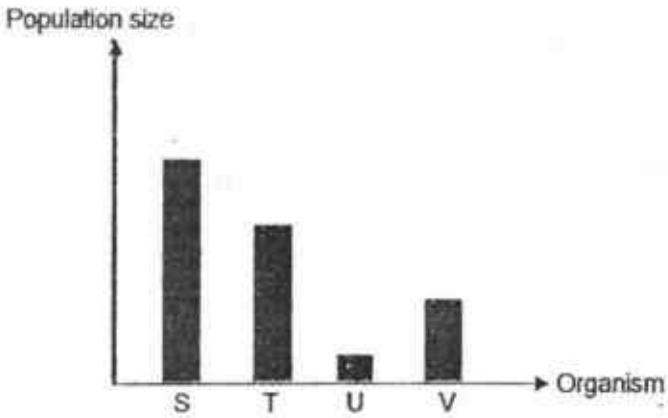
(3)



(4)



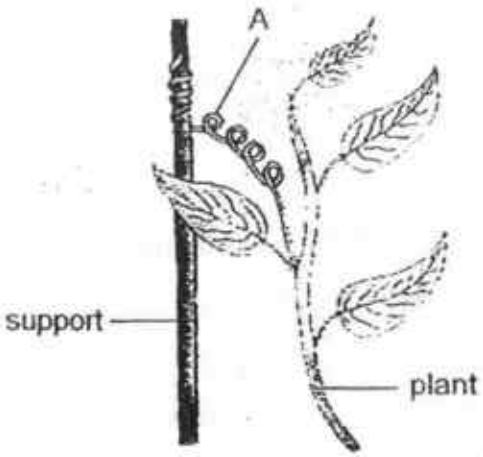
8. The graph below shows the populations of different organisms found in a food chain.



Based on the information above, which one of the following is most likely a predator of organism V?

(1) S
(2) T
(3) U
(4) V

9. The diagram below shows a plant with an adaptive feature labelled A.



Which one of the following statements about the adaptive feature shown above is correct?

(1) Part A helps the plant to absorb water.
(2) Part A helps the plant to attract pollinators.
(3) Part A helps the plant to reach for more sunlight.
(4) Part A helps the plant to transport food and water to all parts of the plant.

10. Feathers from four different birds were dipped into water and hung on a string to dry. The table shows the time taken for each feather to dry completely.

Feather	Time taken to dry completely (min)
A	12
B	8
C	1
D	4

Bird Z spends most of its time in the water looking for food. Which one of the above feathers most likely belong to bird Z?

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

11. Which one of the following adaptive features of the various organisms is correctly matched to its function?

	Organism	Adaptive feature	Function of adaptive feature
(1)	Polar bear	White fur	To enable it to be seen clearly
(2)	Arctic fox	Small ears	To lose less heat to the surroundings
(3)	Camel	Hump on the back	To store water
(4)	Eagle	Sharp claws	To tear the flesh of its prey

12. Which of the following are positive benefits brought about by the developments in science and technology?

A Production of sweeter and juicier fruits.
B Increase in the amount of carbon dioxide in the air.
C Production of new medications to fight dangerous viruses.
D Communicate with people from other countries more quickly and efficiently.

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

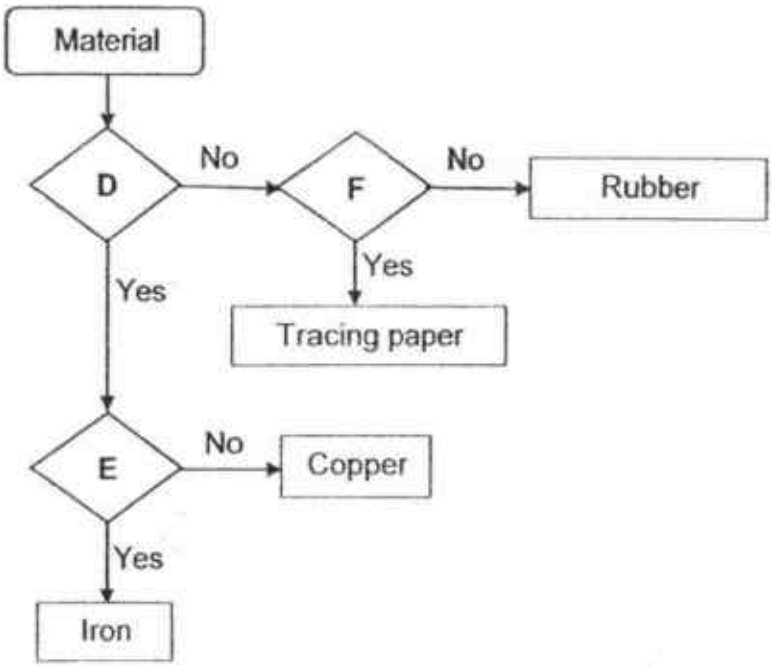
13. A scientist observed that the temperature of the air on Earth has increased over the last ten years.

Which of the following activities could have caused the increase in the temperature?

A An increase in the planting of trees.
B An increase in the use of air-conditioners.
C An increase in the use of solar energy.
D An increase in the number of vehicles on the road.

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

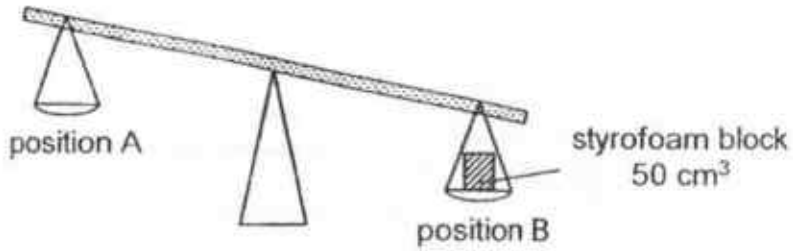
14. The flow chart below shows the classification of some materials.



Which one of the following is correctly represented by D, E and F in the chart above?

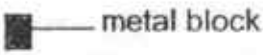
	D	E	F
(1)	Conducts electricity	Magnetic	Allows light to pass through
(2)	Flexible	Conducts heat	Non-magnetic
(3)	Allows light to pass through	Magnetic	Electrical insulator
(4)	Electrical insulator	Allows light to pass through	Waterproof

15. The diagram below shows a lever balance with a styrofoam block placed on a pan at position B.



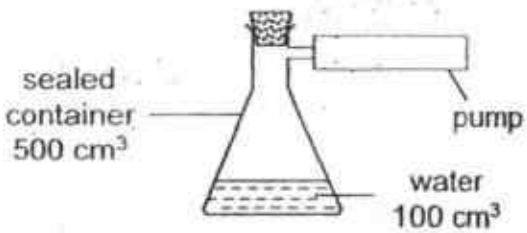
A lever balance

What would happen to the lever balance when a metal block of the same mass is placed on the pan at position A?



(1) Both pans will move up and down continuously.
(2) The pan at position A will be lower than the pan at position B.
(3) The pan at position B will be lower than the pan at position A.
(4) The pan at position A will be of the same height as the pan at position B.

16. Jerome poured 100 cm^3 of water into a sealed container as shown below. He then used the attached pump to remove 150 cm^3 of air from the container.

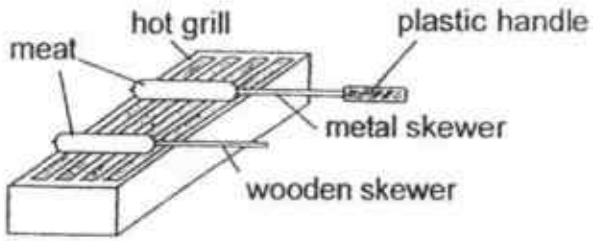


Which of the following statements is/are true of the set-up at the end of his experiment?

A The water level will increase..
B 250 cm^3 of air is left inside the container.
C Some water took the place of the air that was pumped out.
D The volume of air inside the container remains the same as before.

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

17. The diagram below shows some meat being cooked using a wooden skewer and a metal skewer.



After some time, part of the wooden skewer was burnt but not the metal skewer.

Based on the observation above, which of the following best explain(s) this difference?

A Metal skewer is stronger than wooden skewer.
B Wooden skewer is shorter, thus it absorbs heat faster.
C Metal skewer is a better conductor of heat than wooden skewer.
D Wooden skewer does not have a handle to protect it from the heat.

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

18. The diagram below shows a drink stallholder pouring hot tea from one mug to another several times before serving it to the customer.

How does her action help to cool the tea?

(1) The tea loses heat faster when the mug is lifted higher.
(2) When the tea flows from one mug to another, it reduces heat loss.
(3) The tea has a bigger surface area to lose heat to the surroundings.
(4) The tea loses heat faster when it flows from a higher to a lower position.

19. The table below shows 3 steel balls X, Y and Z of different sizes and temperatures.

Ball	Volume (cm^3)	Temperature of the ball (°C)
X	50	45
Y	90	45
Z	50	80

The three balls are left in a room to cool down.

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

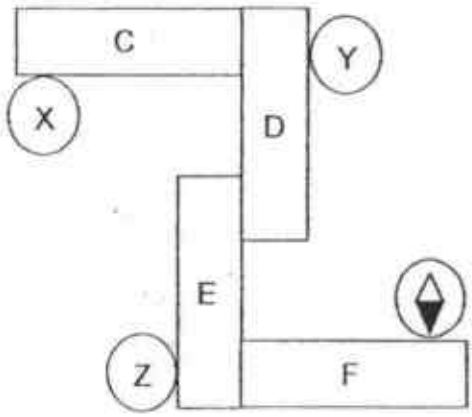
A Ball X has the least amount of heat.
B Ball Z takes a longer time to cool down to room temperature than ball X.
C Ball Y takes a longer time to cool down to room temperature than ball X.
D Balls X and Z take the same amount of time to cool down to room temperature.

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

20. The diagram below shows a compass.

compass

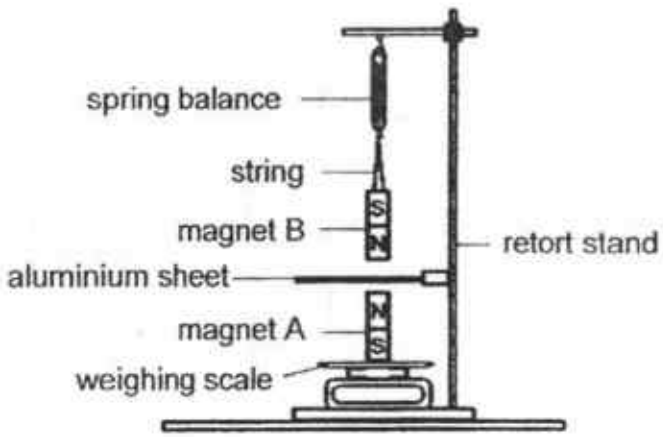
Four bar magnets C, D, E and F were positioned as shown in the diagram below.



Which one of the following shows the correct position of the needle when the compass is placed at positions X, Y and Z?

	X	Y	Z
(1)			
(2)			
(3)			
(4)			

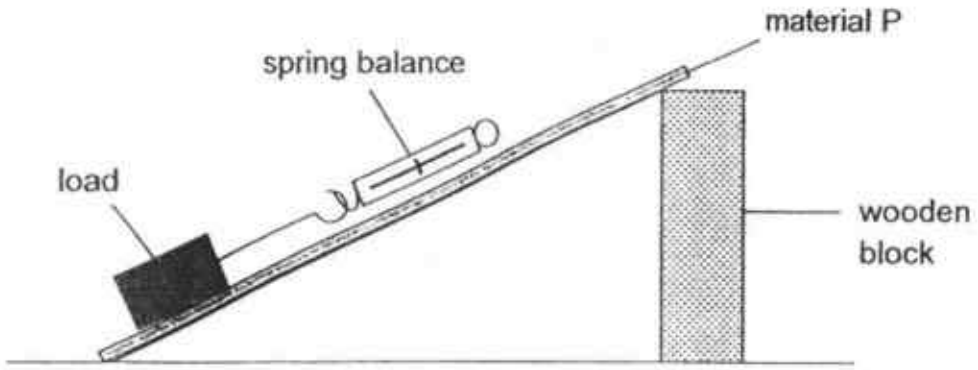
21. Malek set up an experiment using two identical bar magnets as shown below. Both magnets have a weight of 300 g each.



Which one of the following sets of readings on the weighing scale and spring balance is most likely to be the results that Malek had recorded?

	Reading on spring balance	Reading on weighing scale
(1)	More than 300 g	Equal to 300 g
(2)	More than 300 g	More than 300 g
(3)	Less than 300 g	Less than 300 g
(4)	Less than 300 g	More than 300 g

22. Donny set up a ramp with a piece of material P and a wooden block as shown below.



He pulled a load up the ramp using a spring balance.
He repeated the experiment using three different types of materials Q, R and S. The results obtained are shown in the table below.

Material	Amount of force used to pull the load (g)
P	55
Q	70
R	25
S	40

Based on the results, which material P, Q, R or S would be most suitable for making playground slides?

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

23. Harry created two puddles of water on a concrete floor using the same volume of water. After each hour, he used a marker to draw a line on the floor around the perimeter of each of the puddles until all the water had evaporated. The concrete floor did not absorb any water. The diagrams below show the results of his experiment.

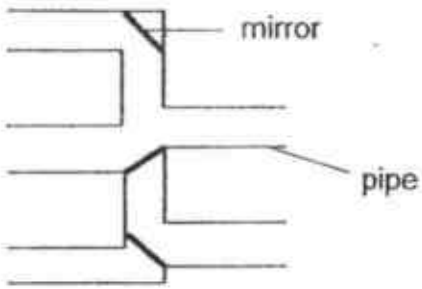
water puddle X

water puddle Y

Based on the results of his experiment, what conclusion can he draw?

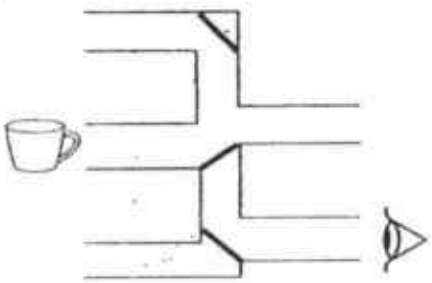
(1) The water from puddle X and puddle Y evaporated at the same rate.
(2) The greater the volume of water in the puddle, the slower it will evaporate.
(3) The greater the surface area of the puddle, the faster the water will evaporate.
(4) The water from puddle X evaporated at a slower rate than the water from puddle Y.

24. The diagram below shows some pipes connected to each other. Three mirrors are positioned inside the pipes.

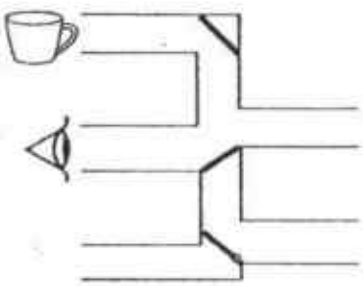


In which one of the following set-ups would Tom be able to see the cup?

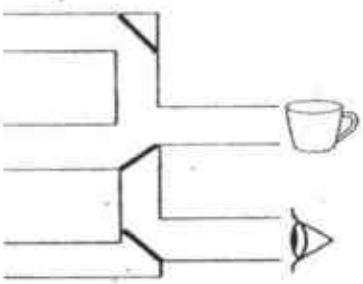
(1)



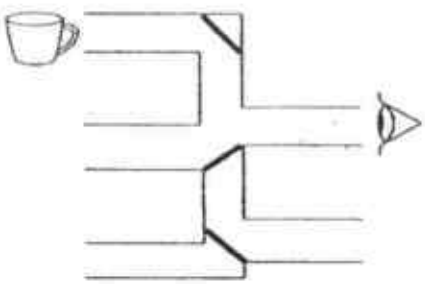
(2)



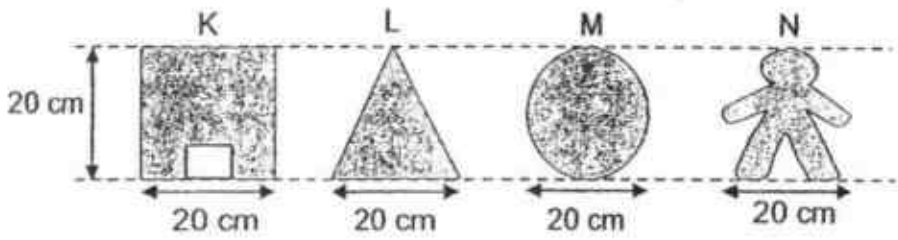
(3)



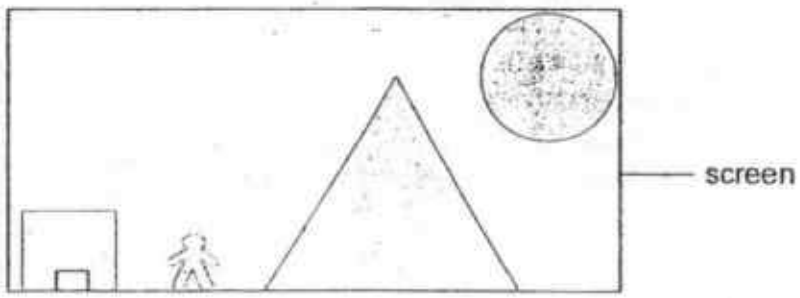
(4)



25. The diagram shows four cut-outs K, L, M and N from a piece of cardboard.



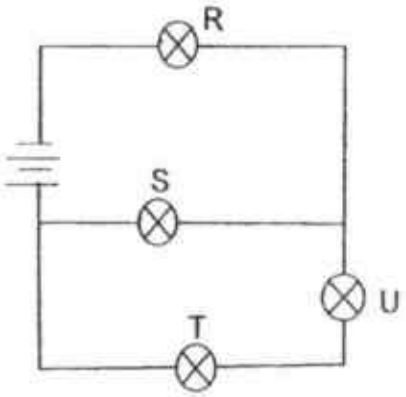
The shapes were then used to create a scene in a shadow puppet show as shown below. The positions of both the light source and the screen were fixed.



Which one of the following shows the correct order of the shapes starting from the one nearest to the screen to the one furthest from the screen?

	Nearest ⟶ Furthest			
(1)	M	L	N	K
(2)	L	M	K	N
(3)	N	K	M	L
(4)	K	N	L	M

26. A circuit is set up using four bulbs R, S, T, U and two batteries.



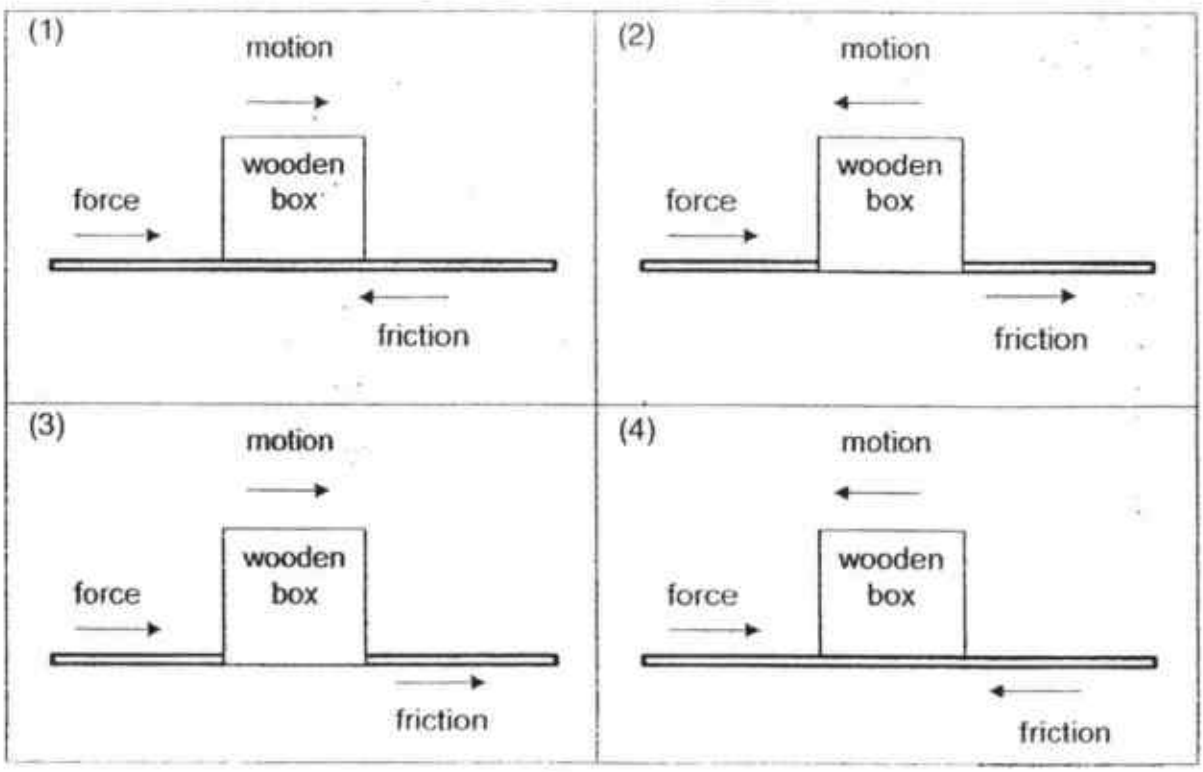
Parallel

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

A When bulb R fuses, none of the other bulbs will light up.
B When bulb S fuses, all the other bulbs will remain lighted.
C When bulb T fuses, all the other bulbs will remain lighted.
D When bulb U fuses, all the other bulbs will remain lighted.

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

27. A force was applied to move a wooden box.
Which of the following shows the direction of motion and the direction of friction acting on the wooden box?

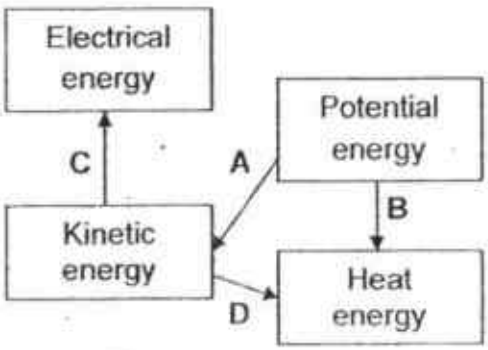


28. Some processes involving energy changes are listed below.

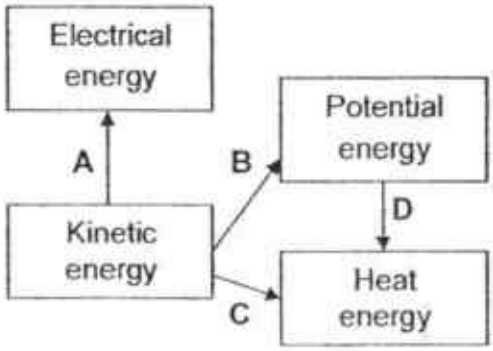
A Burning of natural gas
B A coconut dropping from a tree
C Polishing a piece of wood with sandpaper
D Using running water to spin a turbine connected to a generator

Which one of the following diagrams correctly shows the energy changes in the processes above?

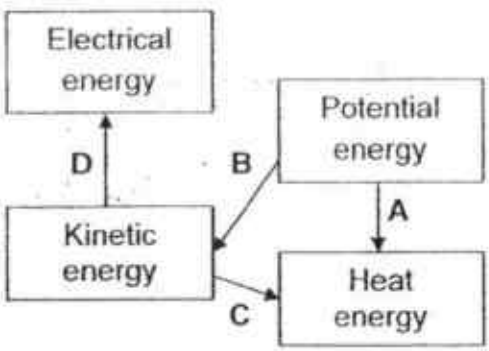
(1)



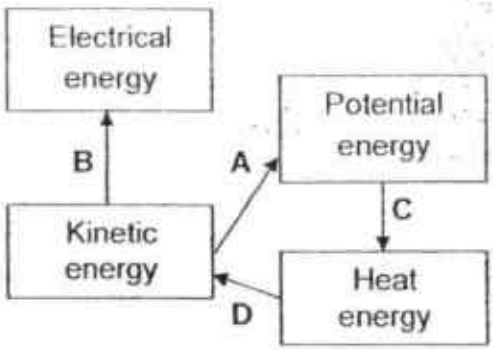
(2)



(3)



(4)



~~ End of Section A ~~

Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6

Preliminary Examination
SCIENCE

BOOKLET B

24 August 2018

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

13 questions
44 marks

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

This paper consists of 17 printed pages.

Booklet A	56
Booklet B	44
Total	100

_____

Parent's Signature

Section B (44 marks)
For questions 29 to 41, 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.

29. The diagram below shows two flowers from plant Q.

flower S flower T

(a) On the diagram above, draw an arrow (⟶) to show how pollination can take place between flowers S and T. [1]

(b) Based on your answer in (a), which one of the flowers can develop into a fruit? Explain your answer. [1]

_____

_____

_____

(c) Fruits produced by plant Q contain many seeds. Birds help to disperse the seeds of plant Q by eating its fruits and passing the undigested seeds out through their droppings.

Suggest and explain **two** benefits for plant Q to disperse its seeds this way. [2]

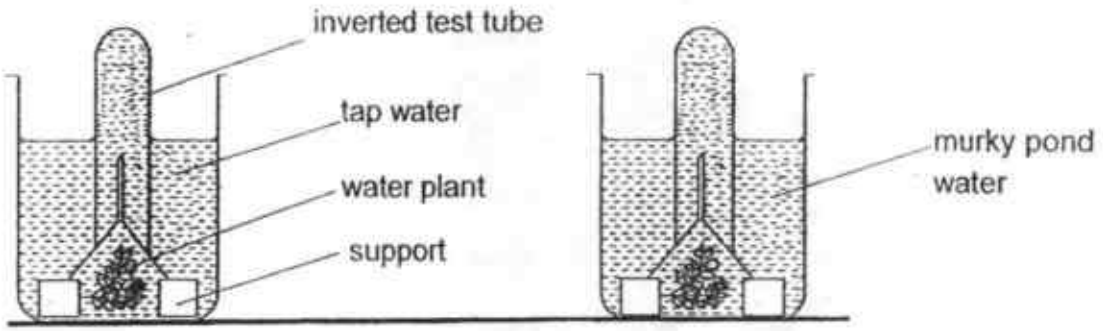
Benefit 1: _____

_____

Benefit 2: _____

_____

30. Nicole conducted an experiment to find out how murky pond water affects the rate of photosynthesis in a water plant. She placed the two set-ups in a bright room for a period of time.



(a) What would Nicole observe in terms of the number of bubbles produced by the two water plants? [1]

_____

_____

(b) Explain the observation in (a). [1]

_____

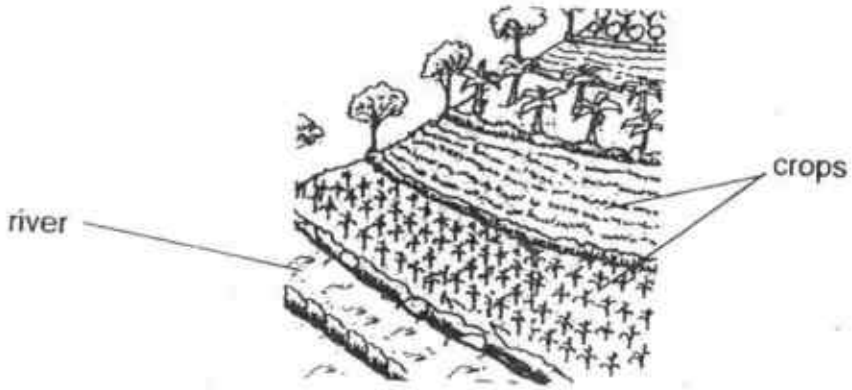
_____

(c) State two variables Nicole must keep constant to ensure that the experiment is a fair one. [2]

Variable 1: _____

Variable 2: _____

31. Farmer Y planted his crops on a slope as shown below.



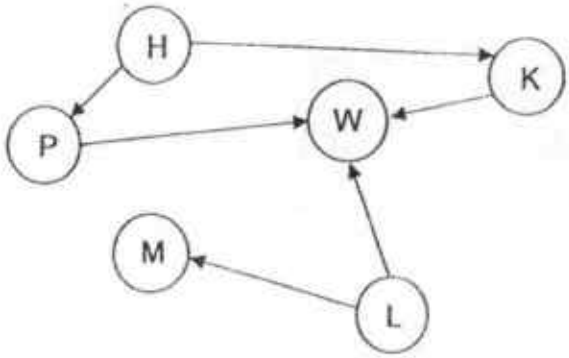
He used excessive amount of pesticides to increase his harvest and to have better quality crops. Pesticides are substances used to kill the pests and insects which attack crops.

(a) Explain how the aquatic life in the river would be affected by Farmer Y's excessive use of pesticides on his crops?

[1]

(b) Explain how planting crops on the slopes helps to prevent soil erosion. [1]

32. The food web below shows the organisms in community A.



(a) Based on the food web above, identify the producer(s). Explain your answer. [1]

_____

_____

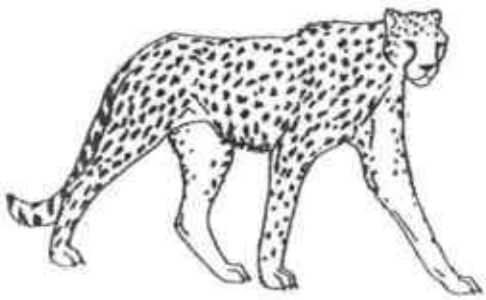
(b) Organism D which feeds on organism W was introduced into the community. How will this affect the population of organism H? Explain your answer. [2]

_____

_____

_____

33. Organism P lives in the grasslands. It has patterns on its body to blend in with its surroundings. It has strong, long limbs to run very fast but can only do so for less than a minute. As such, it usually tries to get closer to its prey before chasing it. It has keen eyesight and hunts during the day.



organism P

(a) Based on information above, state one structural and one behavioural adaptation of organism P that allows it to hunt for food. [2]

Structural adaptation: _____

_____

Behavioural adaptation: _____

_____

(b) After a speedy chase, organism P will not be able to move much and needs to rest for about half an hour. Explain why this could be a disadvantage for organism P. [1]

_____

_____

_____

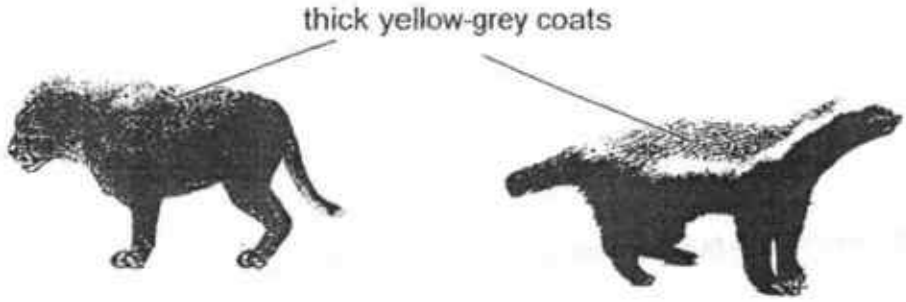
(c) Organism P sometimes hunt for prey in a group. State one advantage of hunting for food in this manner. [1]

_____

_____

_____

(d) The young of organism P is not able to run as fast as the adult but it has a thick yellow-grey coat on its back which resembles that of organism Q. Organism Q is known to be very aggressive when provoked. The young of organism P is often left alone when the adults go hunting for food.



young of organism P

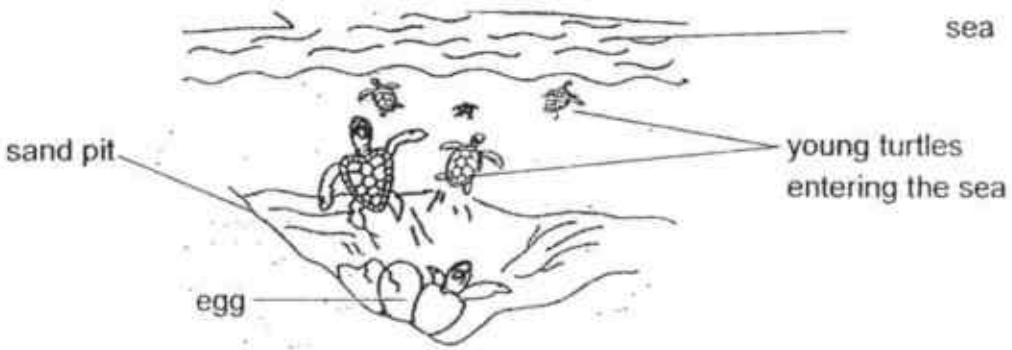
young of organism Q

Suggest a reason why having a thick yellow-grey coat is an advantage for the young of organism P. [1]

34. The ice sheets in Antarctica are melting increasingly faster as a result of global warming.

(a) Describe one negative impact of the melting of the ice sheets. [1]

Sea turtles live in the sea but they lay their eggs on beaches.

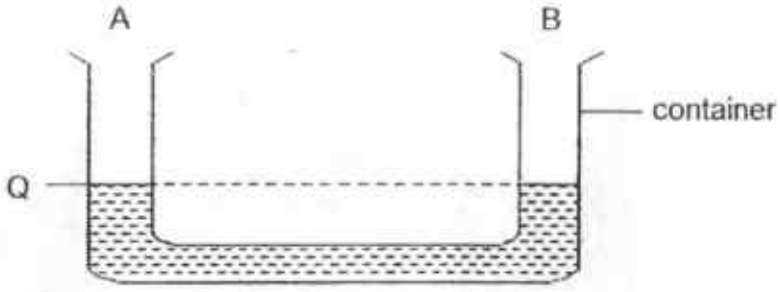


(b) Explain how the negative impact in (a) affects the population of the turtles. [1]

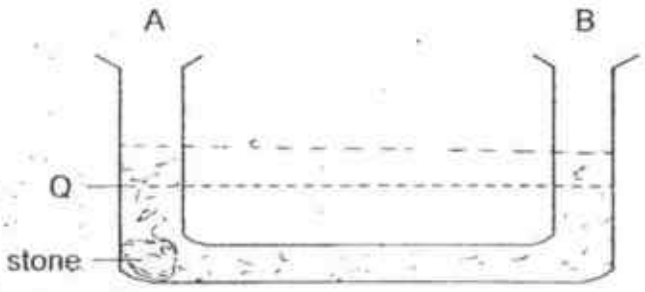
Dumping of litter, especially plastics, into the sea affects many marine organisms, including the sea turtles.

(c) Give an example of how the marine organisms will be affected by the dumping of plastics into the sea. [1]

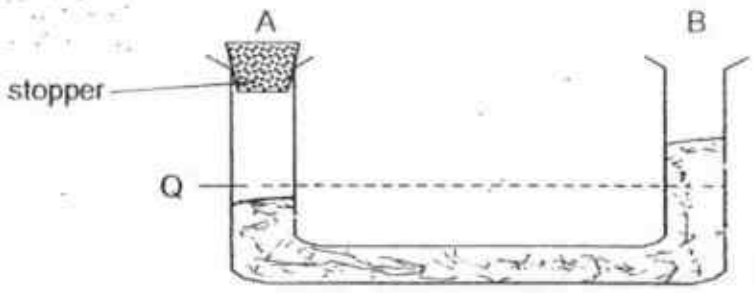
35. Li Min poured 500 ml of water into a container until the water level reached point Q as shown below.



(a) She then lowered a stone into the container through the opening at A. Draw in the diagram below to show the water level in the container after the stone was lowered into the container. [1]

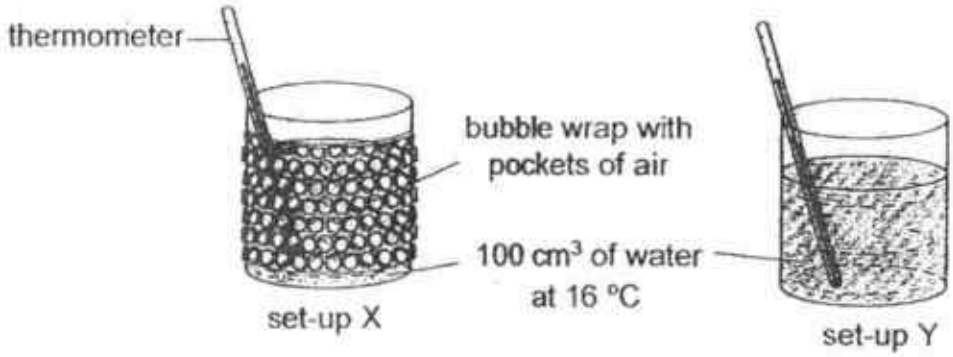


(b) Next, she emptied the container and placed a stopper at opening A of the container. Then she poured 500 ml of water into the container through opening B. Draw in the diagram below the water level in the container. [1]



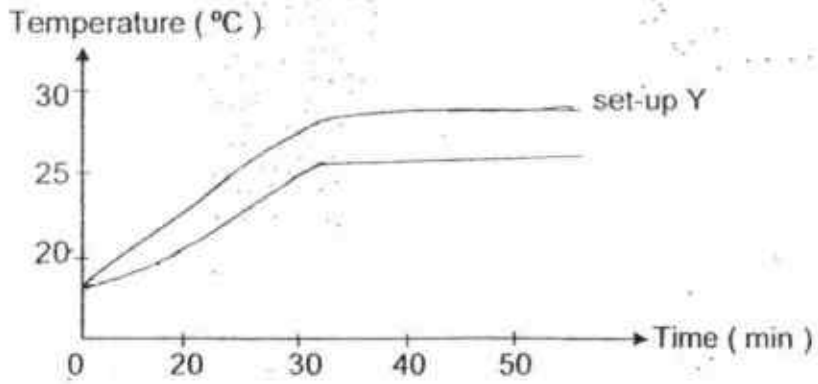
(c) Explain your answer for part (b). [1]

36. Shi En conducted an experiment in a classroom as shown below.



(a) What is the aim of Shi En's experiment? [1]

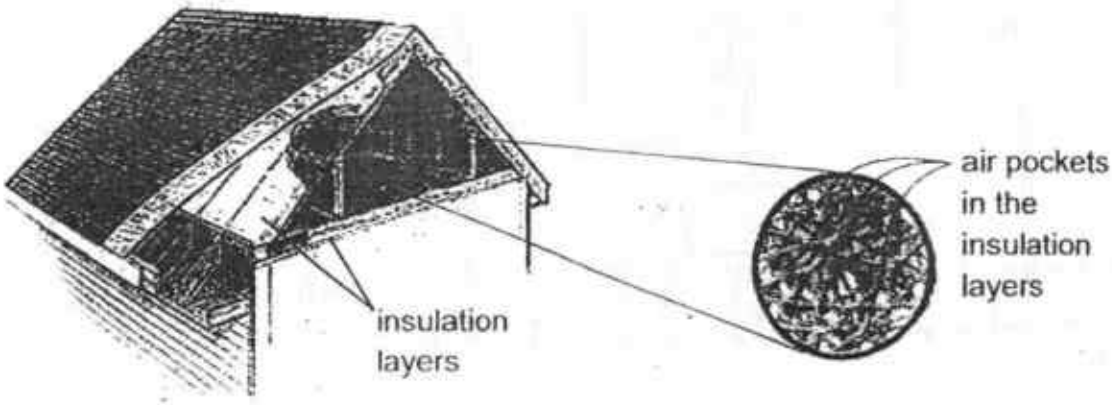
The graph below shows the changes in temperature of water in set-up Y.



(b) In the graph above, **draw the line** that represents the temperature changes in the water in **set-up X.** [1]

(c) Shi En replaced the water in both set-ups with 100 cm³ of water at 100 °C. In which set-up will the water be warmer after 30 minutes? Explain your answer. [1]

Houses in countries where there are four seasons usually install insulation layers between their inner roof and ceilings as shown below.

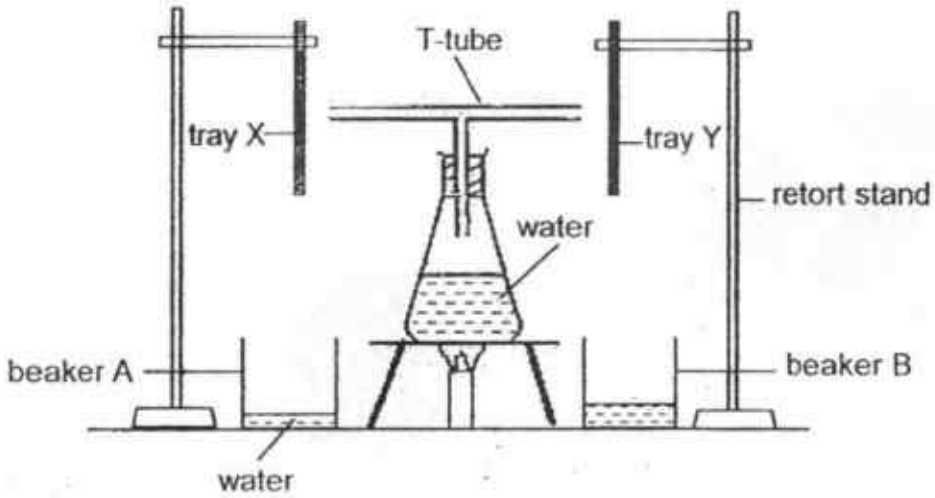


(d) Explain how these air pockets benefit the people living in the house during the hotter and colder months of the year. [2]

Benefit for the people during **cold** weather.	

Benefit for the people during **hot** weather.	

37. Jane suspended two trays X and Y of the same size at the same distance from the ends of a T-tube. The T-tube is attached to a conical flask which contains some water.

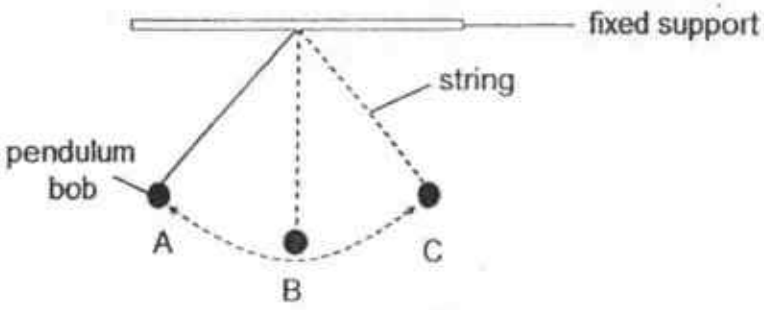


The two beakers were empty at the start of the experiment. Jane heated up the water in the conical flask until it came to a boil. After 5 minutes, she observed that more water was collected in beaker B than in beaker A as shown above.

(a) What could have caused more water to be collected in beaker B than in beaker A? [2]

(b) At the end of 10 minutes, Jane noticed fewer water droplets forming on both trays X and Y. Give a reason for her observation. [1]

38. The diagram below shows a swinging pendulum bob.

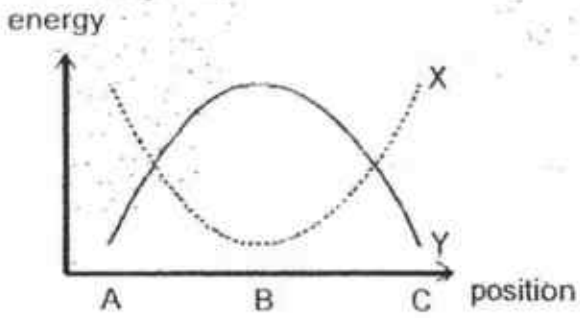


When the pendulum bob is released, it swings from A to B to C and back again to A.

(a) What is the force that causes the pendulum bob to swing back and forth? [1]

_____

The graph below shows how the amount of kinetic and gravitational potential energy changes as the pendulum bob moves from A to C.



(b) Based on the graph above, what type of energy, gravitational potential energy or kinetic energy, do X and Y represent? [1]

X : _____

Y : _____

39. Xue Fei conducted an experiment on four objects made of different materials A, B, C and D. She positioned them in different parts of an electric circuit as shown in diagram 1 and observed if the light bulbs W, X, Y and Z lit up.

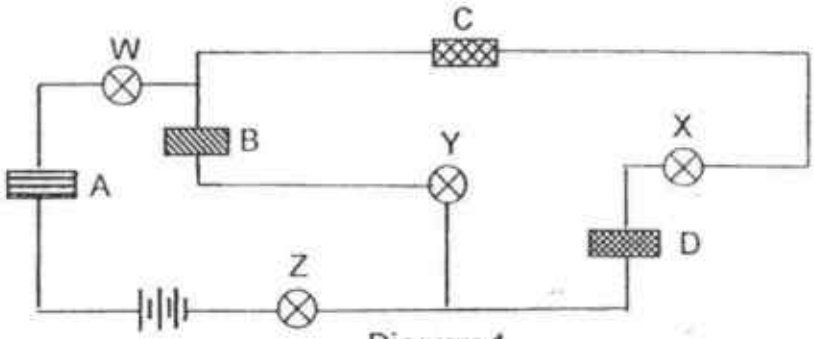


Diagram 1

The table below shows the results.

Bulb(s) lit up	W, Y and Z
Bulb(s) did not light up	X

She then rearranged the four objects in different parts of the electric circuit as shown in diagram 2 below.

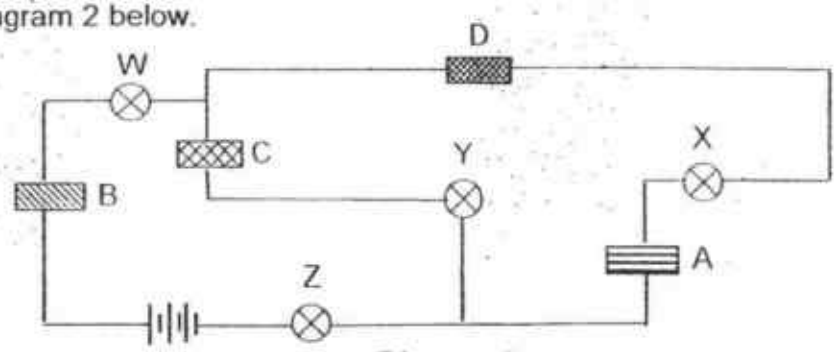


Diagram 2

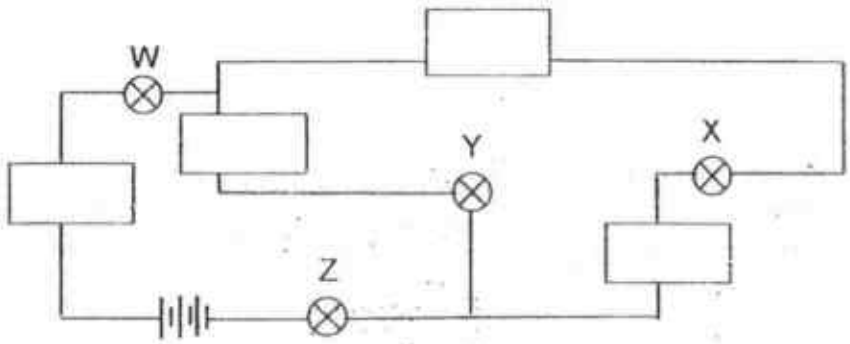
The table below shows the results.

Bulb(s) lit up	W, X and Z
Bulb(s) did not light up	Y

(a) Based on the results of her experiment, what conclusion can Xue Fei draw about the electrical conductivity of materials A, B, C and D? [1]

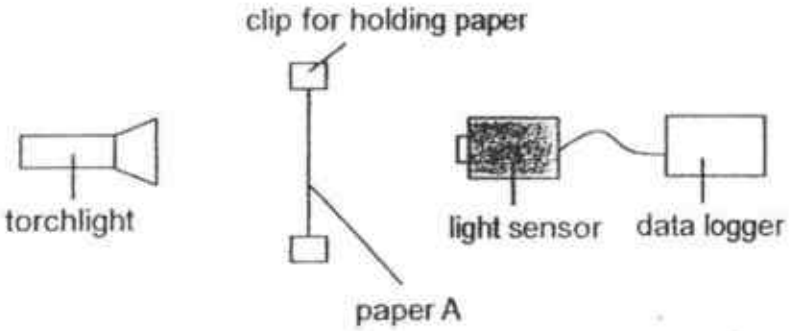
(b) When Xue Fei rearranged materials A, B, C and D the third time on the circuit, she found that **none** of the bulbs light up.

Write in the boxes shown in the circuit below how Xue Fei may have arranged the materials A, B, C and D the third time. [1]



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

40. The diagram below shows a paper counting system made up of a data logger and a light sensor. Paper A is placed at a fixed distance between the light source and the light sensor. Light passing through the paper is measured by the light sensor and the number of sheets of paper A is shown on the data logger.



The table below shows the number of sheets of paper A and the amount of light measured by the light sensor. The data logger will display the word 'error' when it is unable to count the number of sheets of paper.

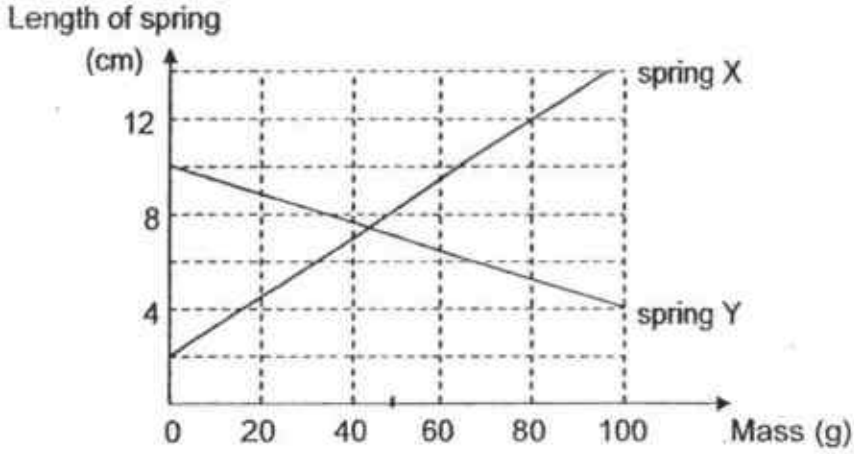
No. of sheets of paper A counted by the data logger	Amount of light measured by the light sensor (lux)
0	120
1	80
3	35
5	10
*error	0

(a) State a property of paper A. [1]

(b) Explain why it is not possible for the data logger to count more than 5 sheets of paper A at a time? [1]

(c) Other than keeping the distance between the light source and the light sensor fixed during counting, state another constant variable such that the counting system is fair. [1]

41. The graphs below show the changes in the length of two springs X and Y, when various weights are attached to them.



(a) From the graph, what will be the extension of spring X when a 50g-weight is attached to the spring? [1]

_____

The diagram below shows a spring balance.

(b) Which spring X or Y is used in the spring balance above? Explain your answer. [2]

_____

_____

(c) For spring Y, what is the relationship between the length of the spring and the mass hung on the spring? [1]

_____

_____

~~ End of Paper ~~

ANSWER KEY

YEAR	:	2018
LEVEL	:	PRIMARY 6
SCHOOL :	:	CHIJ ST NICHOLAS GIRLS'
SUBJECT :	:	SCIENCE
TERM	:	PRELIMINARY EXAMINATION

Booklet A

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

Booklet B

Q29 (a)

(b) **Flower T. Flower T will receive pollen grains on its stigma from the anther of flowers. These pollen grains will travel down the style to the ovary to fuse with the ovules, thus, fertilization would have occurred, enabling flower T to develop into a fruit.**

(c) **Benefit 1:** **The droppings of the bird will enrich the soil that the seeds land on, giving the young plant a better chance to grow.**

Benefit 2: **The seeds in the droppings are dispersed far away from parent plant, preventing competition between parent plant and young for space, water, sunlight and nutrients.**

Q30 (a) **She will observe that more bubbles will be produced by the water plant in tap water compared to the water plant in murky pond water.**

(b) **The tap water allows more light to pass through to reach the water plant so the water plant photosynthesizes more.**

(c) **Variable 1: Amount of water in both set-ups must be the same.**

Variable 2: Number of water plants.

Q31 (a) **The** excessive pesticides may be washed down to the river by rain and cause water pollution. This will kill the fish in the river.

(b) **The** roots of all the crops will hold the soil together so the soil will not be easily removed thus preventing soil erosion.

Q32 (a) **Organisms H and L. They do not prey on other organisms indicating that they can make their own food.**

(b) **The population of H will decrease. There will be more organism D to feed on organism W, resulting in population of organism W decreasing, with lesser organism W to prey on organism K, population of organism K will increase, with more organism K to prey on organism H, population of organism H will decrease.**

Q33 (a) **Structural adaptation: The patterns on organism P's body helps it to stay unnoticed by its prey.**

Behavioural adaptation: Organism P will get closer to its prey before chasing it since it can only chase it for less than a minute.

(b) **During the half hour that P is resting, P's predators will hunt it down since P cannot move to escape its predators so P will be eaten by its predators.**

(c) **Hunting in groups increases the chances of catching prey compared to only 1 hunting for a group of prey.**

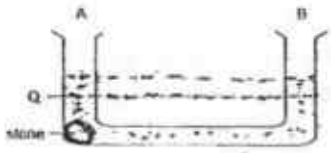
(d) **Predators of the young of organism P may mistake them as organism Q and would not hunt it thus they have a higher chance of survival.**

Q34 (a) **The ice sheets will melt into a lot of water, flooding the seas of different countries.**

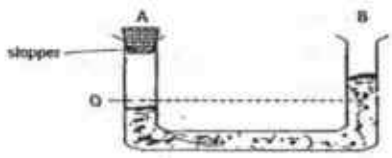
(b) **The sea will be flooded and water will enter the sand pits, washing the turtle eggs away so the eggs may get destroyed and population of turtles will decrease as lesser young survives.**

(c) **Some marine organisms will swallow litter, thinking that it is food and the litter may clog up its respirator system hence the marine organisms cannot respire and thus die.**

Q35 (a)



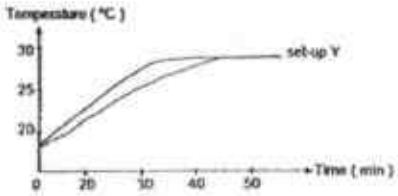
(b)



(c) **The air inside the container could not escape through the opening at A as it was sealed with a stopper. Since air occupies space, the water level was lower at A than B.**

Q36 (a) **To find out if air in the bubble wrap affects temperature of water.**

(b)



(c) **Set-up X. The rate of heat lost from the hot water to the surroundings is slower as the layer of bubble wrap has air in it and air is a poor conductor of heat.**

(d)

Benefit for the people during cold weather	**The warmth inside the house will be transferred at a slower rate to the cooler surrounding outside the house.**

Benefit for the people during hot weather	**Less warmth from the hotter outside surroundings into the cooler inside of the house.**

Q37 (a) **Tray Y is a better conductor of heat than tray X so it conducts heat away from the hot water vapour faster. This causes the water vapour to condense on the tray faster and hence more water is collected in beaker B.**

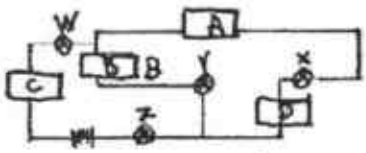
(b) **After 10 minutes, both trays have become hotter due to heat gained from the hot water vapour. Hence the rate of condensation is lower so fewer water droplets are formed.**

Q38 (a) **Gravitational force.**

(b) **X : Gravitational potential energy**
Y : Kinetic energy

Q39 (a) **Materials A, B and D are conductors of electricity while material C is an insulator of electricity.**

(b)



(c) **The circuit is open thus no electricity can flow through the circuit. Hence no bulb will light up.**

Q40 (a) **Translucent**

(b) **There is no light passing through as the paper is too thick.**

(c) **The thickness of each paper used.**

Q41 (a) **6 cm**

(b) **Spring X. The graph shows that spring X stretched as the mass attached to the spring. When a load is attached to the hook of the spring balance, the spring will extend Therefore spring X is used in the spring balance.**

(c) **The longer the length of spring, the lighter the mass hung on the spring.**

End

PRIMARY 6 PRELIMINARY EXAMINATION 2018

Name : _____ Date: 2 AUGUST 2018

Class : Primary 6 ( ) Duration: 1h 45min

Parent's Signature : _____ Marks: _____ / 56

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

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

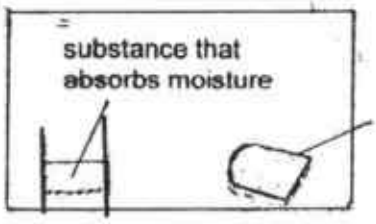
Booklet A (28 x 2 marks)

For each question from 1 to 28, 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.

---

1. Mary placed four slices of the same type of bread in four set-ups at room temperature. In which set-up would fungus first appear on the slice of bread?

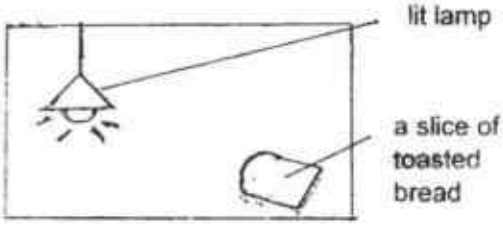
(1)



Set-up A

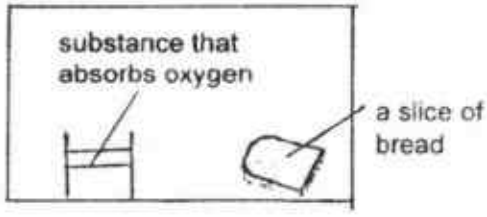
(2)

(3)



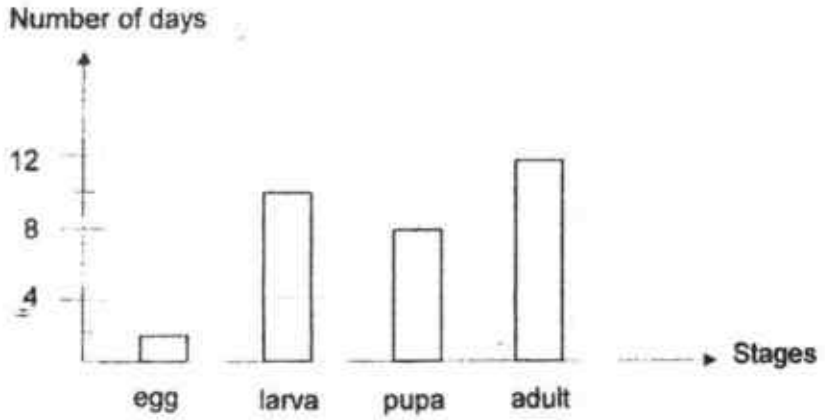
Set-up C

(4)



Set-up D

2. The graph below shows the duration of each stage of the life cycle of a mosquito.



How many days did it take the egg to develop into an adult after it has been laid?

(1) 18
(2) 20
(3) 22
(4) 30

3. Ali made three statements about sexual reproduction in plants and humans.

Male reproductive cells are produced in the male reproductive parts.

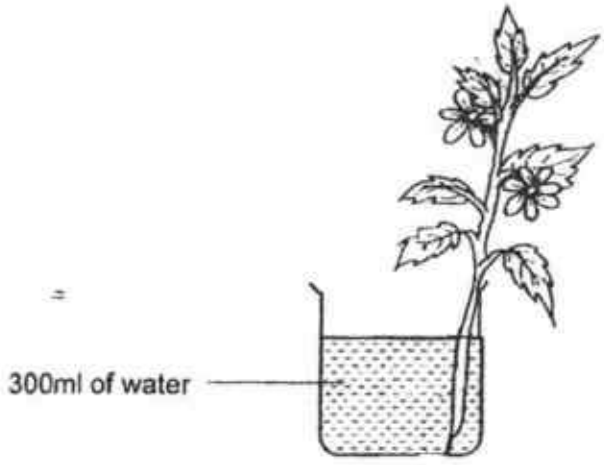
B The fertilised egg develops in the ovary.

Fertilisation occurs in the ovary.

Which of the following is correct?

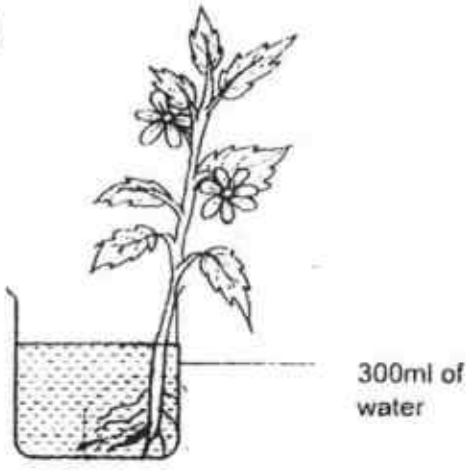
	Humans	Plants
(1)	B	A, C
(2)	A	A, B, C
(3)	A, C	B, C
(4)	A, C	A, B

4 Haoming sets up an experiment as shown below to find out if the absence of roots affects the amount of water absorbed.

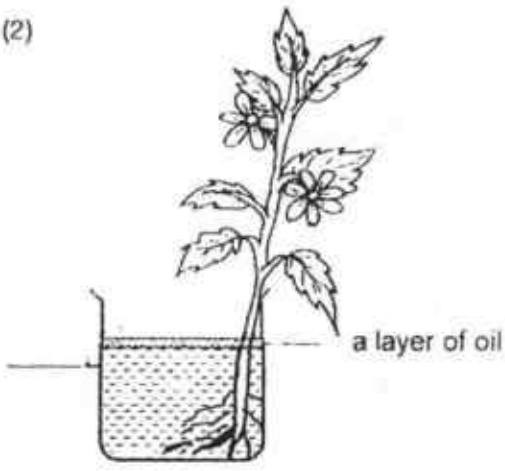


Which of the following should Haoming use as the control set-up for his experiment?

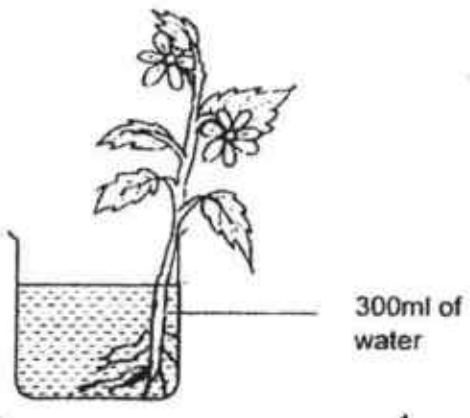
(1)



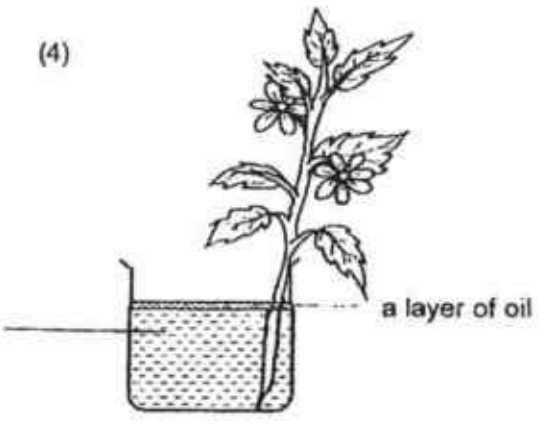
(2)



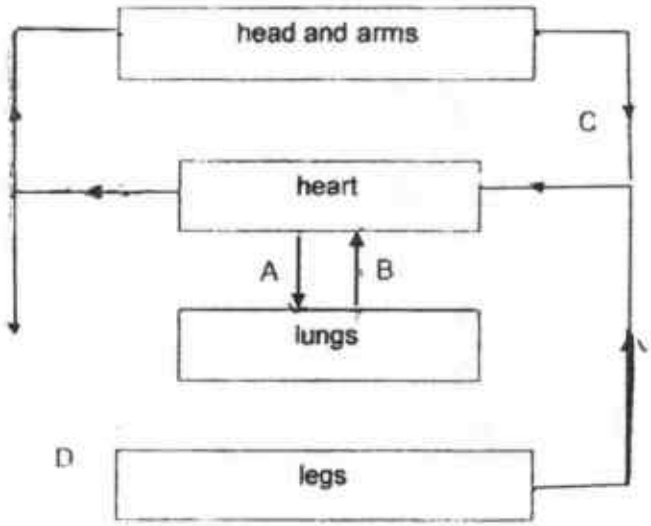
(3)



(4)



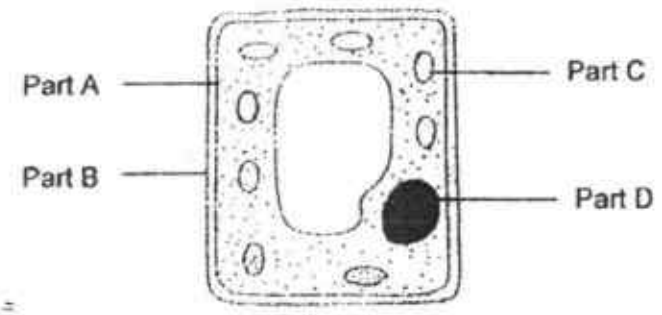
5. The diagram below shows the movement of blood in pathways, A, B, C and D, of the human circulatory system.



Which of the following correctly shows the pathways where blood is rich in oxygen or carbon dioxide?

	Blood rich in oxygen	Blood rich in carbon dioxide
(1)	A	C
(2)	B	D
(3)	C	B
(4)	D	A

6. Cells X shown below has been taken from a plant.

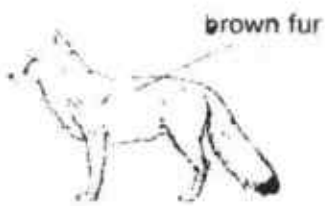


Cell X

Which of the following is true about cell X?

(1) Part A gives cell X its regular shape.
(2) Part C contains genetic information for cell X.
(3) Part D controls all the activities that take place in cell X.
(4) Part B controls the substances entering and leaving cell X.

7. Animal Q below lives in cold countries. It has a thick layer of fur on its body.



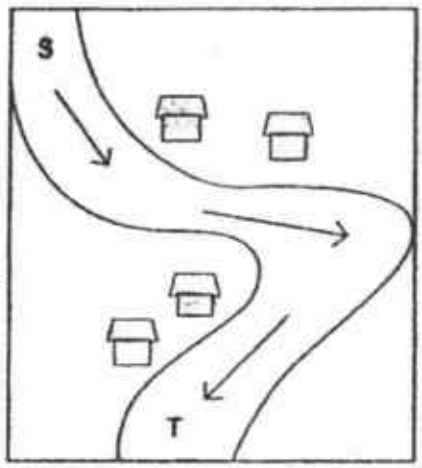
Animal Q

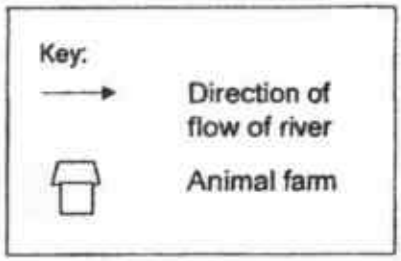
brown winter coat made using fur from Animal Q

Why is the fur of Animal Q used as a coat for people in winter?

(1) The fur helps the wearer to blend in with white walls.
(2) The fur is dark coloured so it gains less heat from the sun.
(3) The fur traps air so the wearer will lose less heat to the surroundings
(4) The fur helps the wearer gain more heat from the cold air to keep warm.

8. The map below shows the location of some animal farms along a river. The animal waste from the farms flowed into the river.

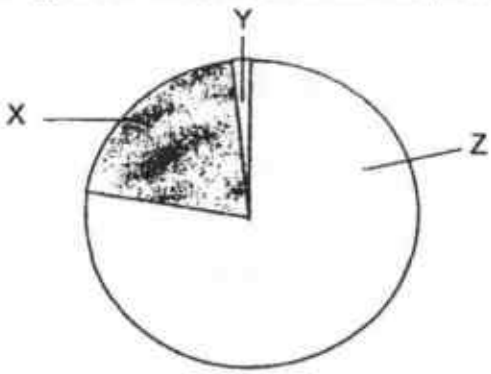




Which of the following would be less in amount at point T than at point S?

(1) fish
(2) bacteria
(3) nutrients
(4) carbon dioxide

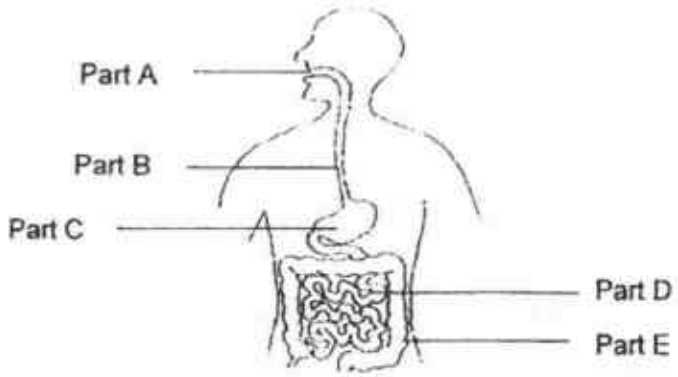
9. The amount of different gases in the air is shown in the pie chart below.



Which of the following statements is true?

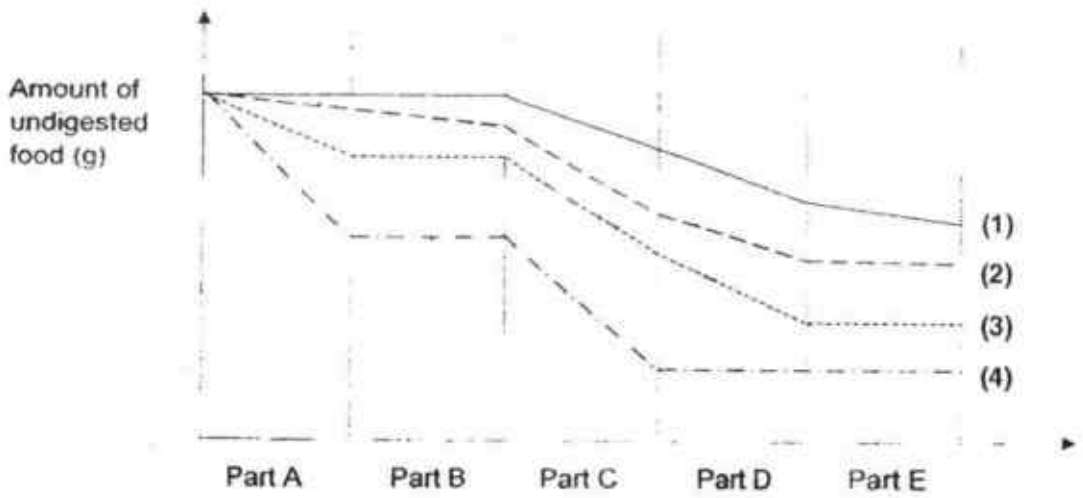
(1) Plants take in only Z when there is light.
(2) Plants produce Z during photosynthesis.
(3) There is less X in exhaled air than in inhaled air.
(4) There is more Y in inhaled air than in exhaled air

10. Five samples of food were taken from the following five parts, A, B, C, D and E, of the human digestive system.

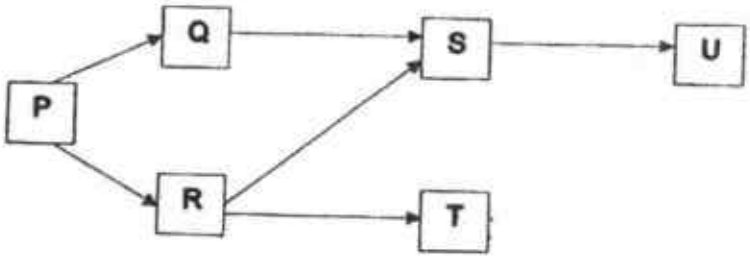


The amount of undigested food at the five parts was plotted in the graph shown below.

Which line in the graph below represents the amount of undigested food in the five parts, A, B, C, D and E?



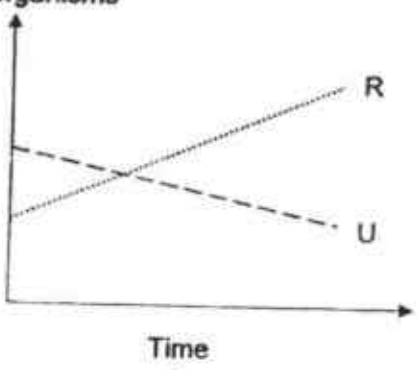
11. Study the food web below.



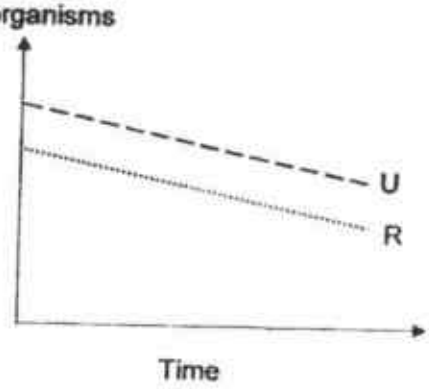
Organism X, which only feeds on U, was introduced into the habitat.

Which of the following graphs shows how the populations of R and U are most likely to be affected?

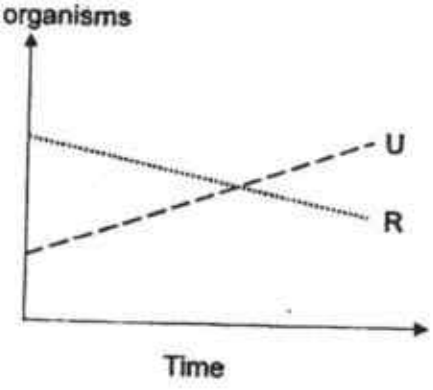
(1)



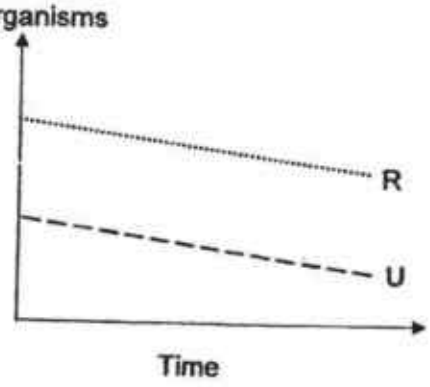
(2)



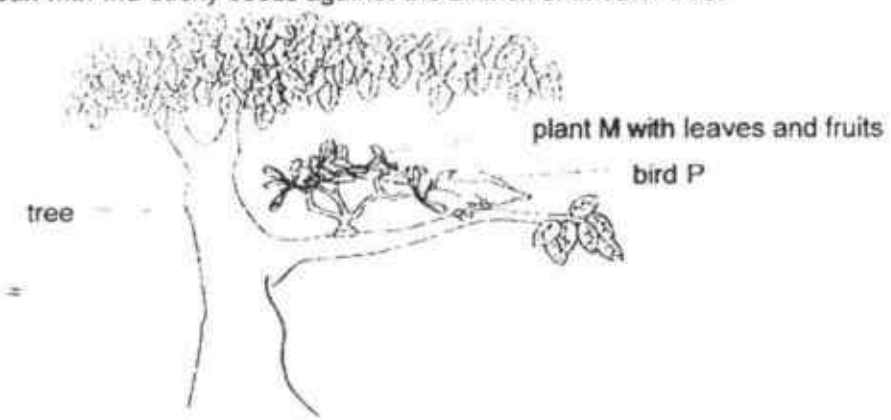
(3)



(4)



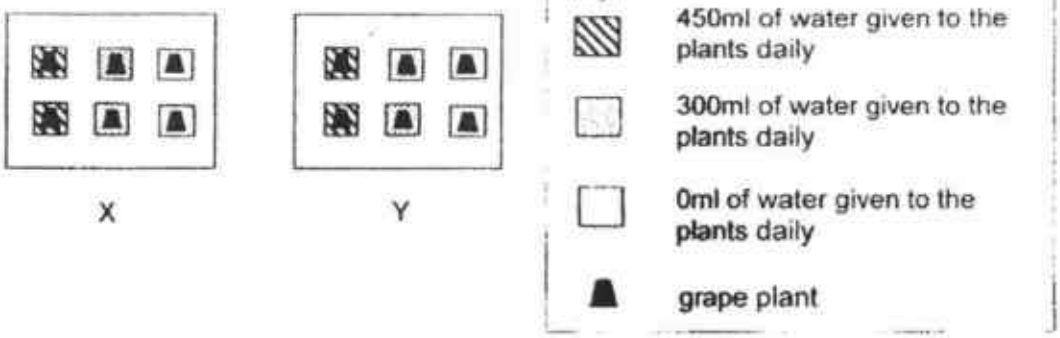
12. The diagram shows plant M which can only grow on tree branches. Bird P feeds on the fruits of plant M which have sticky seeds. When bird P flies away, it rubs its beak with the sticky seeds against the branch of another tree.



Based on the information above, which statement about plant M is correct?

(1) Fruit of plant M are dispersed by wind.
(2) Plant M grows on tree branches so that it can avoid birds
(3) Plant M gets its food and water from the branches of the tree.
(4) Bird P helps to disperse the seeds of plant M from one tree to another tree

13. A farmer has two plots of land, X and Y, growing similar grape plants as shown below



Which of the following is/are the possible aim(s) of his experiment when he planted the grape plants on the two plots of land?

A To find out if water is needed for the plant growth.
B To find out how the amount of water helps in plant growth.
C To find out if the soil in plot X has more nutrients than the soil in plot Y.

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

14. Rui En filled three identical containers with an equal amount of water taken from a river. All the containers were placed in a well-lit room filled with different number of similar type of fish and water plants.

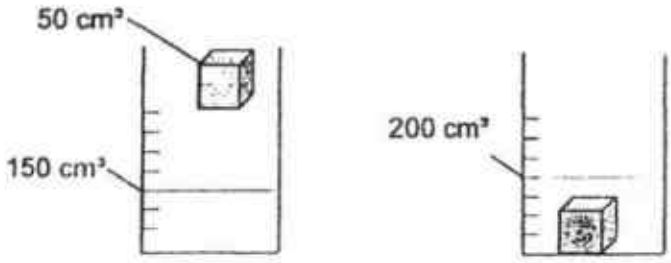
The water in all the containers have the same amount of oxygen at the start of the experiment. After 5 hours, she recorded the amount of dissolved oxygen in the water in container Y.

Time	After 5 hours
Amount of dissolved oxygen (units per litre)	12.0

Which of the following would be the correct amount of dissolved oxygen in the water in containers X and Z after 5 hours?

	Amount of dissolved oxygen in the container (units per litre)	
	X	Z
(1)	10.0	11.5
(2)	10.0	12.5
(3)	13.0	11.5
(4)	13.0	12.5

15. A solid metal cube of 50 cm^3 was put into a measuring cylinder containing 150 cm^3 of water. The water level rose as shown.



What can we conclude from the above experiment?

(1) A solid has a definite volume and a definite shape.
(2) A solid has a definite volume but no definite shape.
(3) A solid has no definite volume and no definite shape.
(4) A solid has no definite volume but has a definite shape.

16. Which of the following requires only a pulling force?

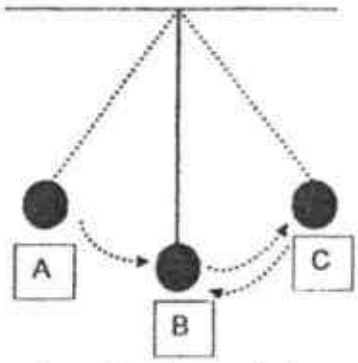
(1) inflating a balloon

(2) knocking on a door

(3) lifting a box

(4) wringing a wet cloth

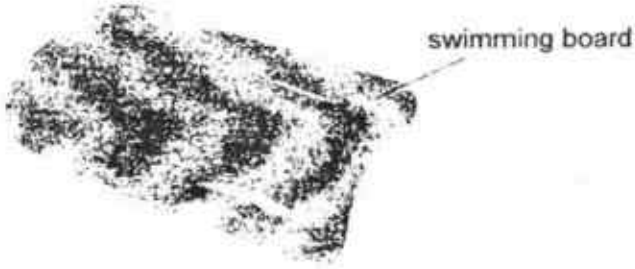
17. The diagram below shows a pendulum swinging from position A to position B to position C and then back to position B.



Which of the following shows the change in the amount of potential energy and kinetic energy in the pendulum?

	Potential energy from A → B	Kinetic energy from C → B
(1)	Decrease	Decrease
(2)	Decrease	Increase
(3)	Increase	Increase
(4)	Increase	Decrease

18. Peter wants to make a swimming board.



Which of the following is the **most important** property of the material to make the swimming board?

(1) strong
(2) flexible
(3) transparent
(4) cannot sink in water

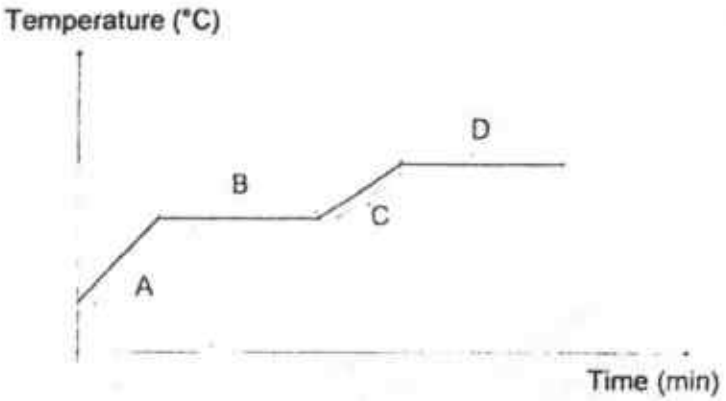
19. Study the table below.

	Freezing Point (°C)	Boiling Point (°C)
Substance X	5	80
Substance Y	40	105
Substance Z	16	118

Which of the following is true?

(1) X and Z are solids at 10°C.
(2) Y and Z are liquids at 20°C.
(3) Y and Z are liquids at 80°C.
(4) X and Y are gases at 100°C

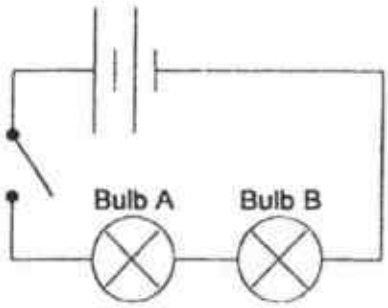
20. Substance X was heated for a period of time. The graph below shows the temperature change of substance X over time during the heating process.



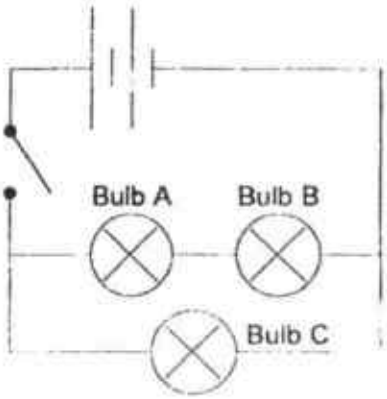
Which part of the graph, A, B, C or D, represents the melting process?

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

21. Two identical bulbs, Bulb A and Bulb B, are connected in a circuit as shown below. Both bulbs light up with equal brightness when the switch is closed.



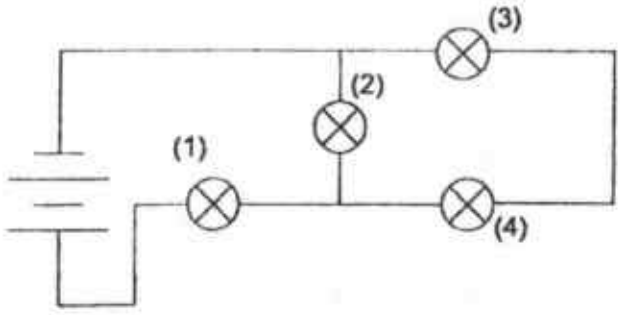
Another similar bulb, Bulb C, is then connected to the circuit as shown below.



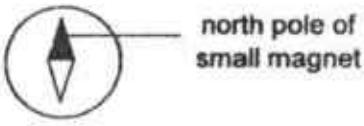
Which of the following correctly describes Bulb C?

(1) Bulb C does not light up.
(2) Bulb C is as bright as Bulb A.
(3) Bulb C is dimmer than Bulb B.
(4) Bulb C is brighter than Bulb A.

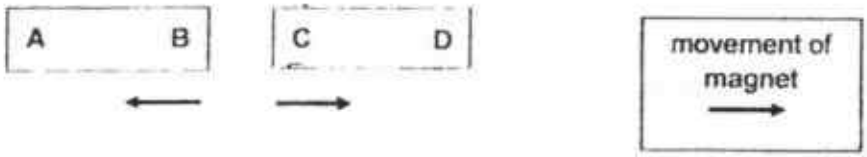
22. The circuit diagram shows two batteries connected to four bulbs. When one of the bulbs fuses, the other three bulbs still remain lit. Which bulb is this?



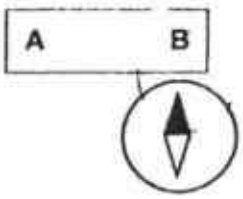
23. A compass has a small magnet that can rotate freely as shown.



Andy brought 2 magnets near each other. He observed their movements as shown below.



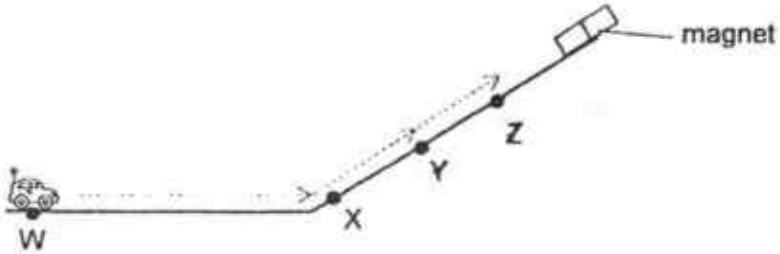
He placed a compass at B and observed the position of its needle which is as shown below.



Which of the following are possible poles of A and C?

	Pole at A	Pole at C
(1)	South	South
(2)	South	North
(3)	North	North
(4)	North	South

24. Sally pushed a toy car from point X to point Y to point Z as shown below.



When the toy car was released at point Y, it would roll down the slope. When the toy car was released at point Z, it continued to move up the slope. Which are the forces acting on the toy car at points X and Z?

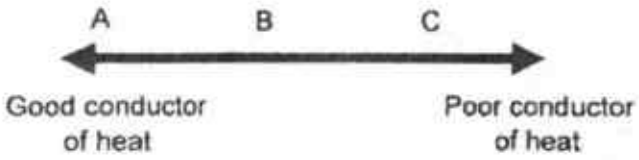
	X			Z		
	frictional force	**gravity**	**magnetic force**	**frictional force**	**gravity**	**magnetic force**
(1)	✓	✓		✓	✓	✓
(2)	✓	✓	✓	✓		✓
(3)	✓	✓	✓	✓	✓	✓
(4)		✓		✓		✓

25. A man was pedalling a bicycle up and down a slope of a cemented road.

Which of the following explains why his speed increases as he moves down the slope?

(1) His weight increases.
(2) More gravity is pulling the man and the bicycle.
(3) There is less frictional force between the bicycle and the slope.
(4) The man and the bicycle are moving in the same direction as gravity.

28. Three conductors of heat, A, B and C, have been arranged according to how well they conduct heat as shown below.

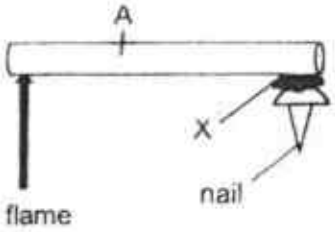


The freezing points of three substances, X, Y and Z are shown in the table below.

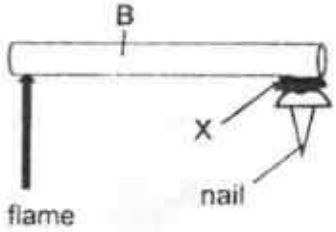
Freezing point of substances		
X	Y	Z
43°C	116°C	146°C

A nail with substances X, Y or Z was glued onto conductors A, B or C at equal distance from the flame as shown below. Which nail will be the first to drop?

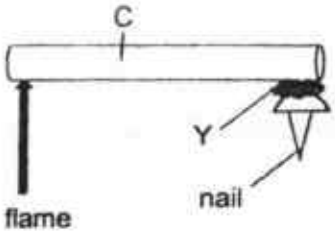
(1)



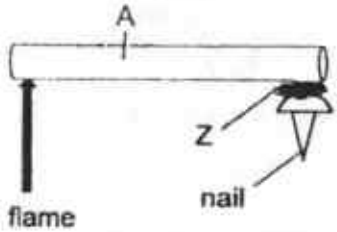
(2)



(3)



(4)



27. A shadow is shown in the diagram below.

Which of the following objects can cast the shadow shown?

(1) 

(2) 

(3) 

(4) 

28. In the diagram below, a boy is pushing a trolley.

Which is the energy conversion shown above?

(1) potential energy of boy → kinetic energy of trolley

(2) kinetic energy of boy → potential energy of trolley → kinetic energy of trolley

(3) potential energy of boy → kinetic energy of boy → kinetic energy of trolley

(4) kinetic energy of boy → potential energy of boy → kinetic energy of trolley

PRIMARY 6 PRELIMINARY EXAMINATION 2018

Name : _____ ( )

Date: 2 AUGUST 2018

Class : Primary 6 ( )

Duration : 1h 45min

Parent's Signature : _____

Marks: _____ / 44

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

Booklet A	**56**
Booklet B	**44**
Total	**100**

Section B

For questions 29 to 41, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question.

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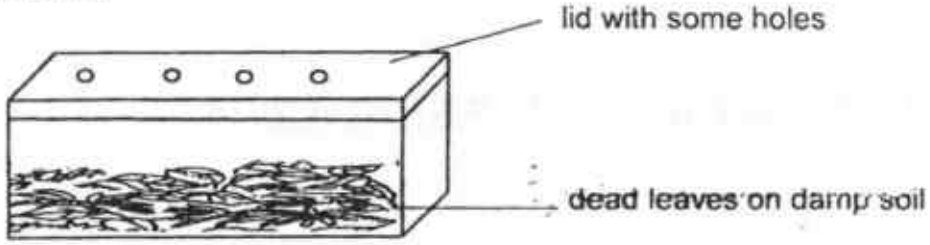
29. Simon carried out an experiment to study the effect of some environmental factors on dead leaves. He placed the dead leaves and some damp soil in a container as shown below.



After a few weeks, the dead leaves turned into a damp black substance which could be used as fertiliser.

(a) Name the process that caused the dead leaves to turn into a damp black substance. [1]

(b) Without changing any of the apparatus used nor adding water, suggest two methods how Simon could make the dead leaves turn into the black substance faster. plain your answer. [3]

Method 1: _____

Explanation: _____

_____

Method 2: _____

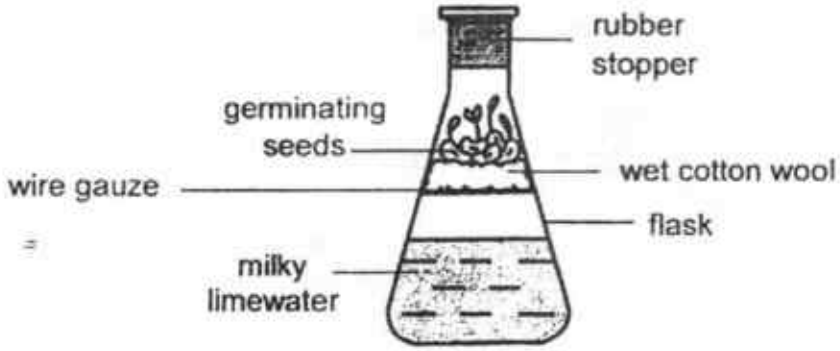
Explanation: _____

_____

Score	/ 4

30. Ahmad prepared a set-up to find out whether germinating seeds produce carbon dioxide. He soaked five seeds in water before placing them in the flask. He left the set-up in a warm and dark place for two days.

After two days, he observed that some of the seeds in the set-up germinated and the limewater turned milky. Limewater turns milky in the presence of carbon dioxide.



(a) Explain why the limewater turned milky. [1]

_____

_____

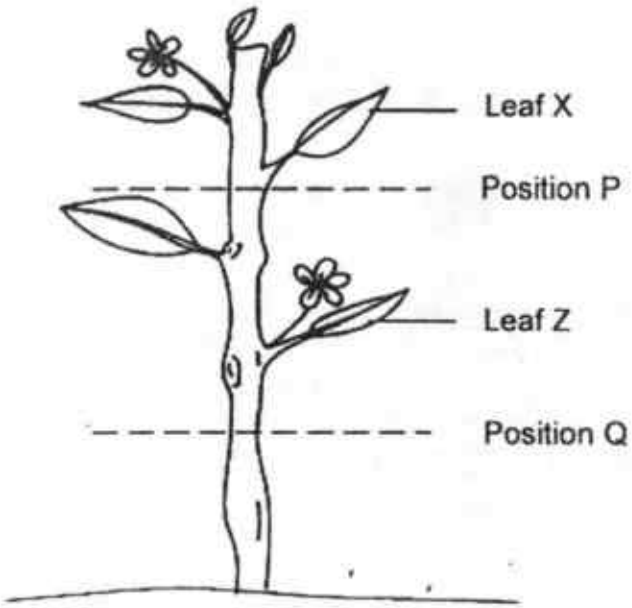
(b) Some of the seeds did not germinate. What will happen to these seeds after a week? Explain your answer. [2]

_____

_____

Score	/ 3

31. Emily removed the food and water-carrying tubes from the stem of a plant at position P and the food-carrying tubes from the stem at position Q.



(a) After some time, Emily observed that Leaf X had withered but not Leaf Z. Give an explanation for her observation. [1]

_____

_____

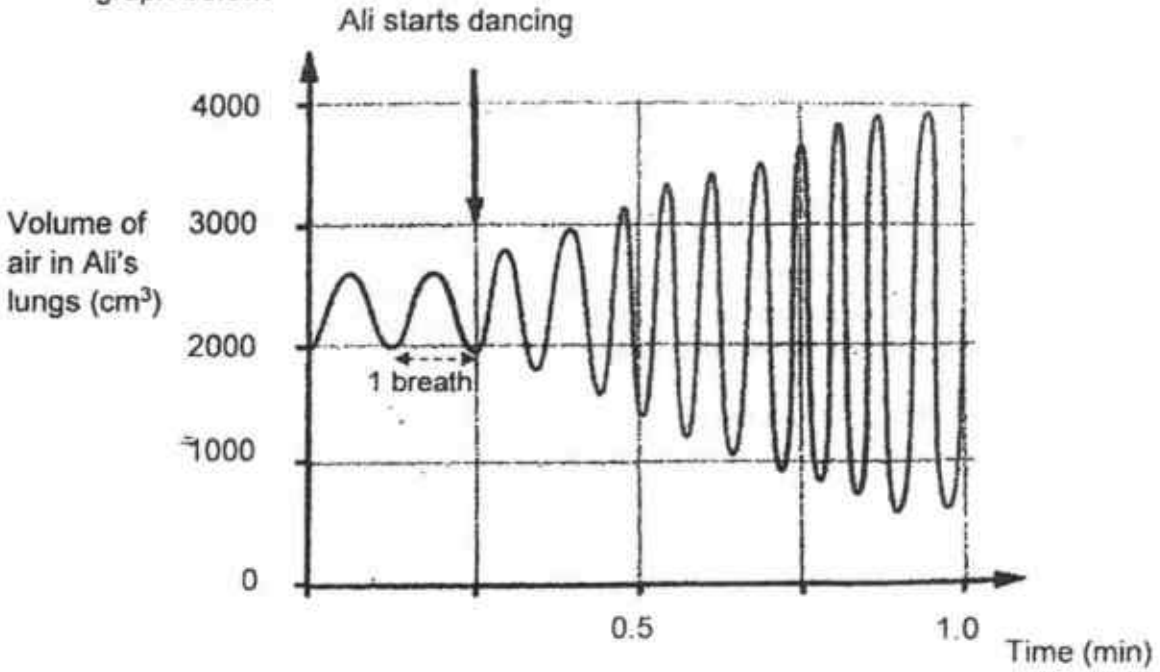
(b) At the same time, Emily also observed a swelling in the stem above the cut at position Q. After a week, the plant died. Explain why this happened. [1]

_____

_____

Score	/ 2

32. Ali is a dancer. As he dances, his rate of breathing changes as shown in the graph below.



(a) From the graph above, describe the changes in the following when Ali dances:

(i) Volume of air taken in [1/2]

_____

(ii) Ali's breathing rate [1/2]

_____

(b) Describe how oxygen in the environment reaches Ali's legs as he dances. [2]

_____

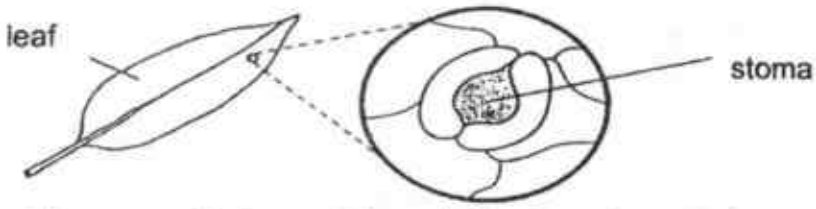
_____

_____

_____

Score	3

33. Leaves have tiny openings called stomata on their surfaces.



Some of the gases that move through the stomata are oxygen, carbon dioxide and water vapour.
Meimei measured the changes in the size of the stomata of a plant placed by the window at different times of a particular day. She calculated the average size of the stomata and recorded them in the table below.

Time of the day	Average size of stomata (units)
2 a.m.	1
6 a.m.	1
8 a.m.	2
10 a.m.	4
2 p.m.	4
4 p.m.	4
6 p.m.	2
10 p.m.	1

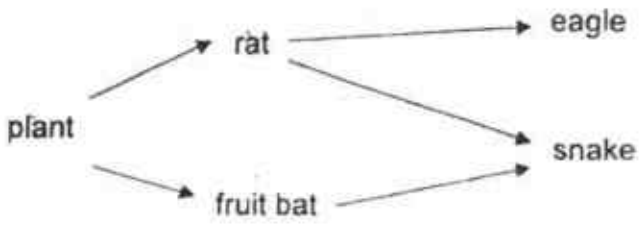
(a) Based on the table above, the plant photosynthesises the most from 10 a.m. to 4 p.m. Explain why. [1]

(b) Explain how the change in the size of the stomata in the presence of light can be a disadvantage to a plant growing in a desert. [1]

(c) What do you think Meimei did in the experiment to ensure that her results were reliable? [1]

Score 3

34. The food web below shows the food relationships between organisms found on an island.



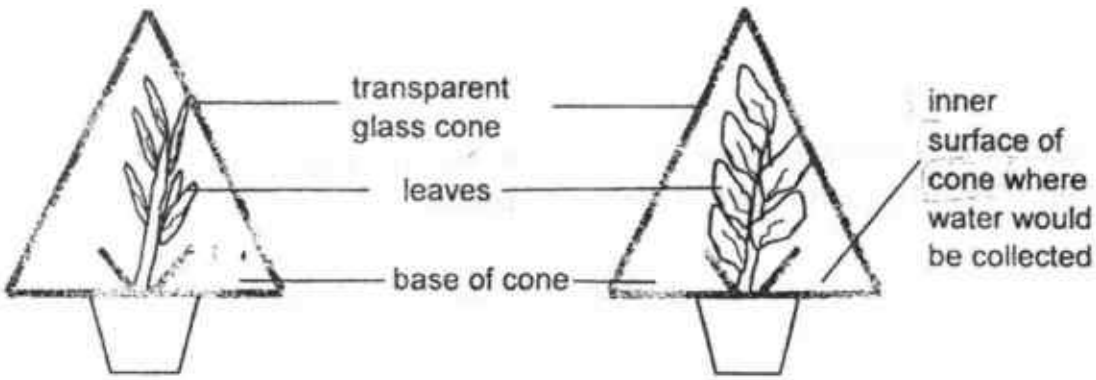
(a) A large number of snakes were killed by some hunters. Explain how this activity affected the population of the food producer. [1]

(b) A huge forest fire broke out on the island. Two consumers were able to escape to another island. Which are the two consumers and give a reason for your answer.

[2]

Score	3

35. Jack conducted an experiment using two similar types of plants for pots G and H, with different sizes of leaves. The two pots of plants with the same amount of soil were placed in a garden and watered with the same amount of water at the start of the experiment. A transparent glass cone was placed over each plant where water would be collected at the base as shown.



After one day, Jack measured the volume of water collected and recorded the results as shown below:

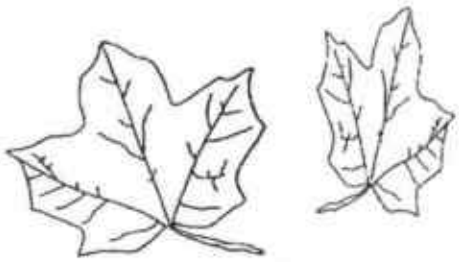
Pot	Volume of water at the base (cm^3)	
	at the beginning	after one day
G	0	20
H	0	40

(a) Which pot, G or H, collected more water? Explain why more water was collected at its base of the cone. [2]

Score / 2

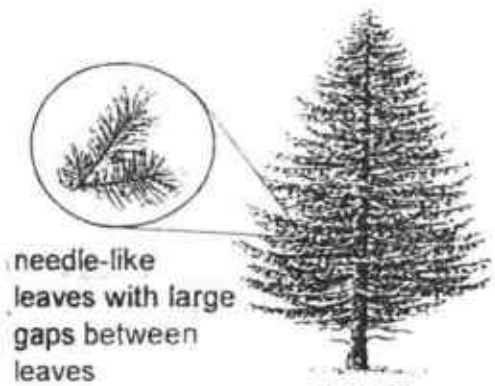
The diagram below shows two types of leaves found growing on different trees, X and Y. During winter, the water stays frozen as snow on the ground and very little water reaches the roots of the trees.

Leaves from Tree X

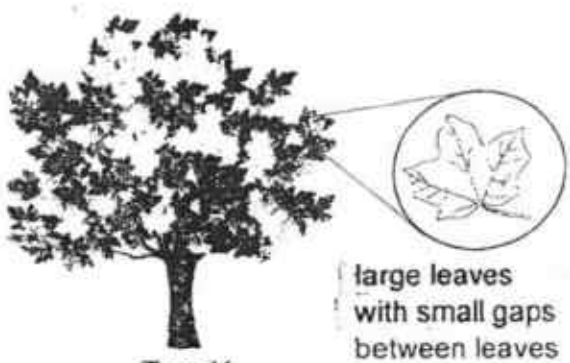


Leaves from Tree Y

(b) Which tree, X or Y, will not need to shed its leaves during winter? Explain your answer. [1]



Tree X

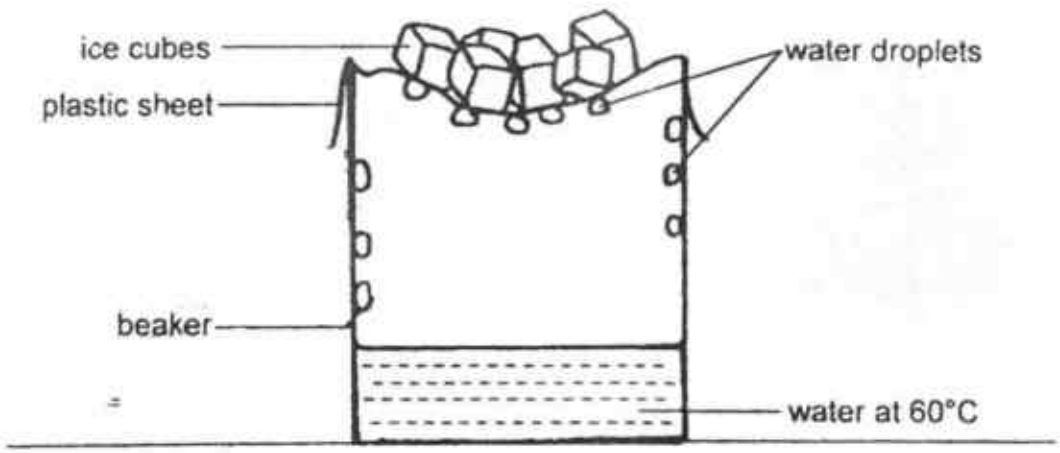


Tree Y

(c) Strong winds can cause tree branches to break. Branches of which tree, X or Y, would more likely break when there is a strong wind? Explain why. [1]

Score		2

36. The following set-up represents the water cycle.

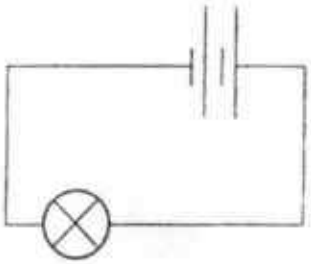


(a) Explain how the water droplets are formed on the underside of the plastic sheet. [2]

(b) What would happen to the **rate** at which the water droplets are formed if the temperature of the **water placed** in the beaker was **increased** to 95°C? Explain your answer. [2]

Score		4

37. Ahmad set up the following circuit.



He measured the brightness of the bulb with a light sensor. He then added another battery and measured the brightness of the bulb. He repeated the experiment for different number of batteries and recorded his measurements in the table below.

Number of batteries	Brightness of bulb (units)
2	1 000
3	?
4	3 000
5	0
6	0

(a) What is a possible measurement for the brightness of the bulb when three batteries were used? [1]

_____

(b) Based on the results, when the number of batteries used is four or below, what is the relationship between the brightness of the bulb and the number of batteries? [1]

_____

_____

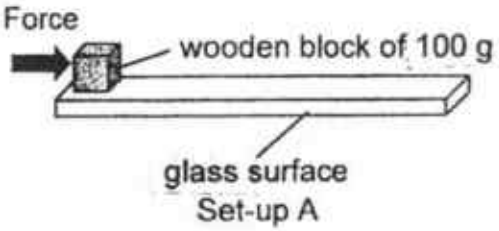
(c) Give a reason why the brightness of the bulb is zero when five batteries were used. [1]

_____

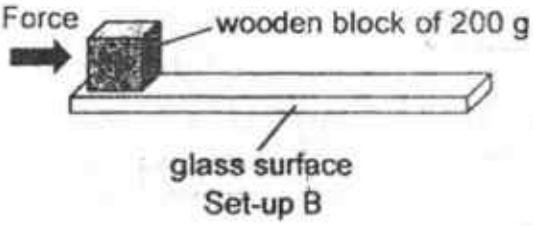
_____

Score	3

38. Matthew had 2 set-ups, A and B, to find out how the type of surface affects the distance moved by an object on the surface. He applied equal force on each of the blocks and measured the distance travelled by them.



Set-up A



Set-up B

(a) Matthew's teacher said that his set-ups were incorrect. Describe two changes that Matthew should make to Set-up B so that he can test his aim correctly. [2]

i) _____

_____

ii) _____

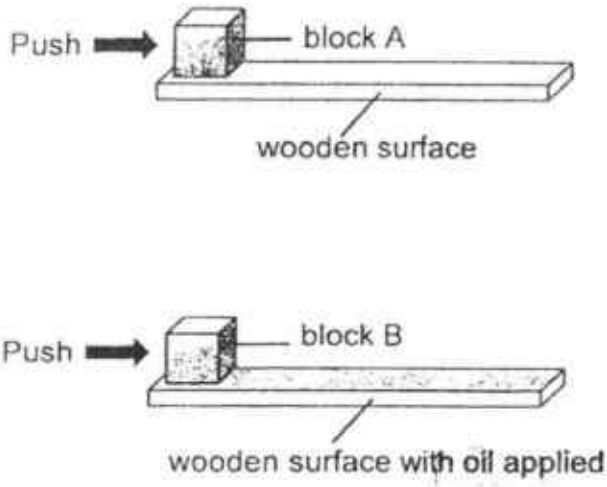
_____

(b) Besides friction and the force exerted by Matthew, which other force is present in this experiment? [1]

_____

Score	3

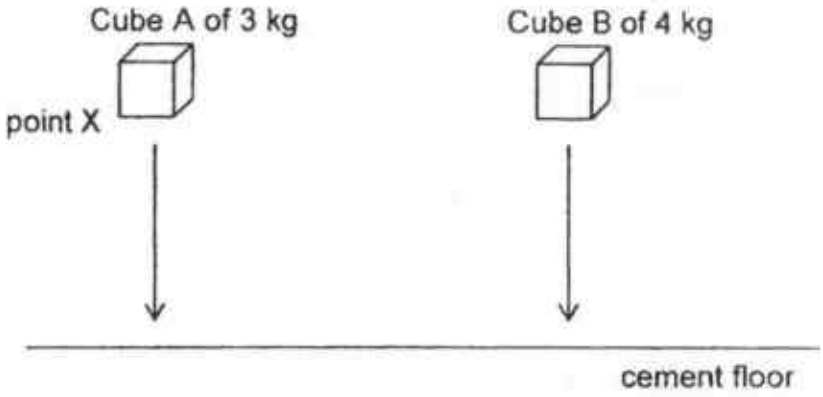
Matthew now placed **two identical blocks**, A and B, each on a wooden **surface**. He applied oil onto one of the wooden surfaces as shown below.



(c) Which block, A or B, would require less force to move? Explain why. [2]

Score	2

39. The diagram below shows two similar sized iron cubes released from point X. There was a loud thud when the cubes landed on the cement floor.



(a) State the energy conversion when Cube A was released from the height and landed on the cement floor. [1]

_____	→	_____	→	_____	+	Heat	
energy in Cube A at point X		energy in Cube A when it falls		energy in Cube A when it lands		energy in Cube A when it lands	

(b) Which cube, A or B, will produce a louder sound? Explain your answer. [2]

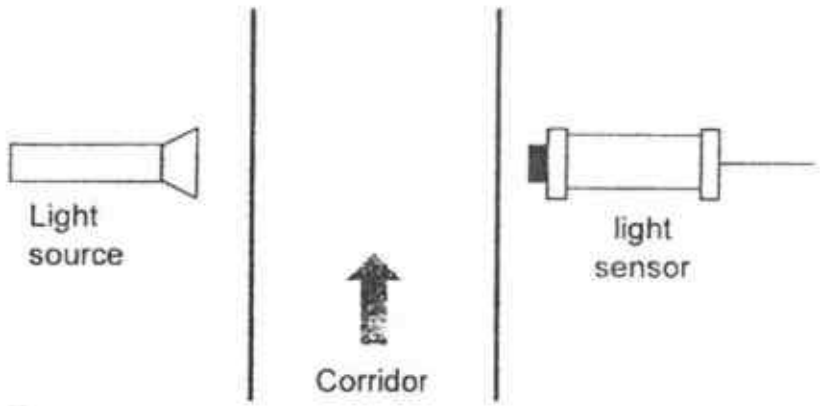
_____

_____

_____

Score	/ 3

40. The following set-up is installed along a corridor to count the number of students walking along the corridor into a classroom.



The following table shows the light sensor readings when the set-up is working.

	Amount of light detected (units)
When someone walks and enters the classroom along the corridor	X
When no one is present	300

(a) State the value of X. [1]

_____ unit(s)

(b) Explain how the above set-up is able to detect the number of people walking past the corridor. [2]

_____

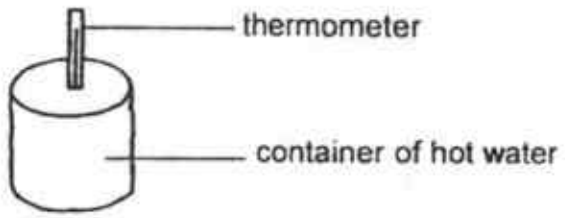
_____

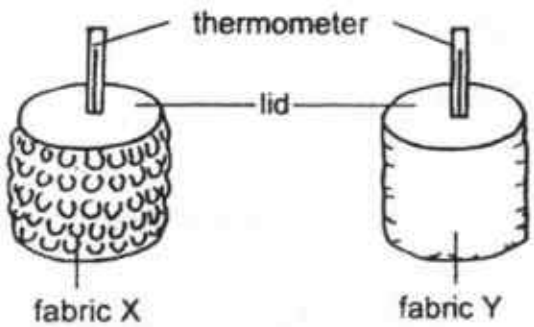
_____

_____

Score	3

41. Meiling used two fabrics, X and Y, to wrap around similar containers of hot water.





She recorded the temperature of the water at regular intervals in the table as shown below.

	0 min	5 min	10 min	15 min	20 min
Temperature of water in container wrapped with Fabric X (°C)	70	68	63	60	55
Temperature of water in container wrapped with Fabric Y (°C)	70	62	55	49	45

(a) How does the temperature of the water in the container wrapped with Fabric X change as the time increases? [1]

_____

(b) Which fabric should Meiling use to make a shirt to keep a person cooler in a warm surrounding? Explain your choice. [2]

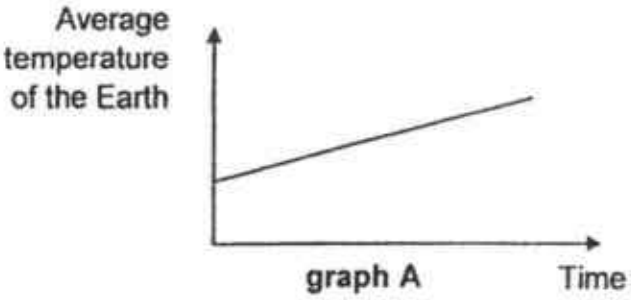
_____

_____

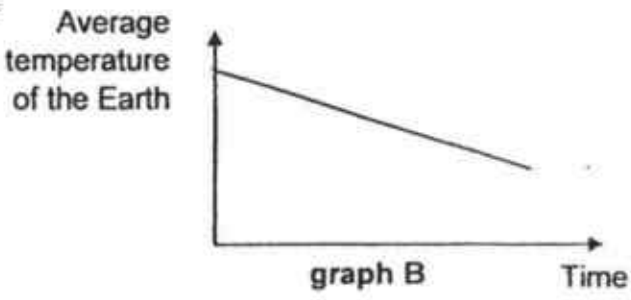
_____

Score	

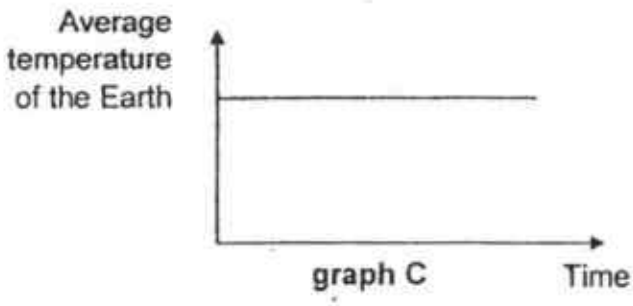
Carbon dioxide is a greenhouse gas. An increase in the amount of carbon dioxide in the Earth's atmosphere results in global warming. Study the three graphs shown below on the change in the average temperature of the Earth over a period of time.



graph A



graph B



graph C

(c) Which graph, A, B or C, shows the correct change in the average temperature of the Earth if the amount of carbon dioxide increases over time? Explain your answer. [1]

_____

_____

End of Booklet B

Score	/ 1

EXAM PAPER 2018

LEVEL : PRIMARY 6

SCHOOL : TAO NAN SCHOOL

SUBJECT : SCIENCE

TERM : PRELIMINARY EXAM

BOOKLET A

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

BOOKLET B

Q29. (a) Decomposition.

(b) Method 1: Place the apparatus in a warmer place.

Explanation: In a warmer place, the decomposition would occur at a faster rate.

Method 2: Poke more holes to the lid.

Explanation: More air can enter and increase the rate of decomposition.

Q30. (a) When the seeds germinated, they produced carbon dioxide which came into contact with the limewater and caused it to turn milky.

(b) The seeds would die and decompose. The presence of warmth, water and air allowed the bacteria in the flask to decompose the dead seeds.

Q31. (a) Water can be transported from the roots to Leaf Z but not Leaf X, thus Leaf X could not photosynthesise and hence it withered.

(b) There is swelling as the food produced by the plant during photosynthesis cannot be transported to the roots, causing them to die. Therefore, the roots can no longer absorb water and the plant died.

Q32. (a) (i) The volume of air taken in increases.

(ii) His breathing rate increases.

(b) Ali takes in oxygen through his mouth and nose, which enters his lungs where it is absorbed by the air sacs. The heart then pumps the oxygen-rich blood to his legs.

Q33. (a) The average size of the stomata is the biggest hence the most carbon dioxide is taken in.

(b) When there is a huge amount of light, the size of the stomata of the desert plant increases, resulting in an increase in the amount of water loss.

(c) She measured the size of at least 3 stomata for each timing.

Q34. (a) Decreases. There are fewer snakes to feed on rats and fruit bats. Hence their population increases and they feed n more plants.

(b) The eagle and fruit bat. Both of them have wings that allow them to fly and escape to another island, while the rat and snake are unable to fly.

Q35. (a) Pot H. The leaves have a bigger exposed surface area. There is more stomata hence more water is lost. More water vapour condensed into the cooler inner surface of the cone.

(b) Tree x. The leaves have a smaller exposed surface area. There are fewer stomata, hence the rate of transpiration decreases.

(c) Tree Y. There are smaller gaps between the leaves compared to that of Tree X, thus wind cannot blow through Tree Y as easily and hence the branches are more likely to break.

Q36. (a) The hot water evaporated to become water vapour, which condensed on the cooler underside of the plastic sheet

(b) Increase. Water would evaporate faster and more water vapour would condense on the cooler underside of the plastic sheet.

Q37. (a) 2000 units.

(b) As the number of batteries increases, the brightness of the bulb increases.

(c) There is too much electrical energy passing through the circuit, causing the bulb to fuse.

Q38. (a) (i) Use the same wooden block as set-up A.

(ii) Change the glass surface to a metal surface.

(b) Gravity.

(c) Block B. The oil reduced the friction between block B and the wooden surface, thus less force is required to move.

Q39. (a) Gravitational potential → Kinetic → Sound

(b) Cube B. It has a greater mass than cube A, thus it possess more gravitational potential energy, which is converted to more kinetic energy when it falls and hence more sound energy when it lands.

Q40. (a) 0 unit(s).

(b) When someone walks pass the light sensor, the light is blocked as the person is opaque and the sensor detects 0 units of light. By recording the number of times the sensor detects no light, the number of people walking past the corridor can be detected.

Q41. (a) As the time increases, the temperature of the water in the container wrapped with Fabric X decreases.

(b) Fabric Y. The water in the container wrapped with Fabric Y had a lower temperature after 20 minutes. It is a better conductor of heat and will increase the amount of heat loss from the person to the surroundings.

(c) Graph A. If there is more carbon dioxide, more heat would be trapped in the Earth's atmosphere and thus the average temperature of the Earth increases.

Temasek Primary School

Preliminary Examination

Primary Six Standard

2018

SCIENCE

(BOOKLET A)

Name: _____ ( ) Class: 6 ( )

Date : 27 August 2018

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

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers on the Optical Answer Sheet (OAS) provided.
5. This booklet consists of 23 printed pages and 1 blank page.

For each question from 1 to 28, 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.

(56 marks)

---

1. What is the function of the large intestine in our digestive system?

   (1) It digests the food.

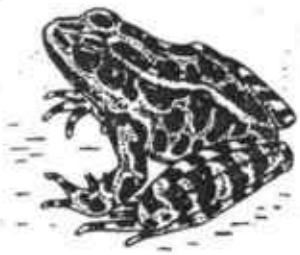
   (2) It passes the digested food to the blood.

   (3) It takes away water from the undigested food.

   (4) It passes the undigested food out of the body.

2. Study the two organisms, A and B, below.

Animal A



Animal B

Which of the following correctly describes animal A or B?

	Animal	Covered with scales	Lays eggs	Gives birth to young alive
(1)	A	No	No	Yes
(2)	A	Yes	Yes	No
(3)	B	Yes	Yes	No
(4)	B	No	No	Yes

(Go on to the next page)

3. The lungs and the heart are two organs in the human body. Which one of the following statements on the functions of the lungs or the heart is true?

(1) The lungs remove carbon dioxide from the body.

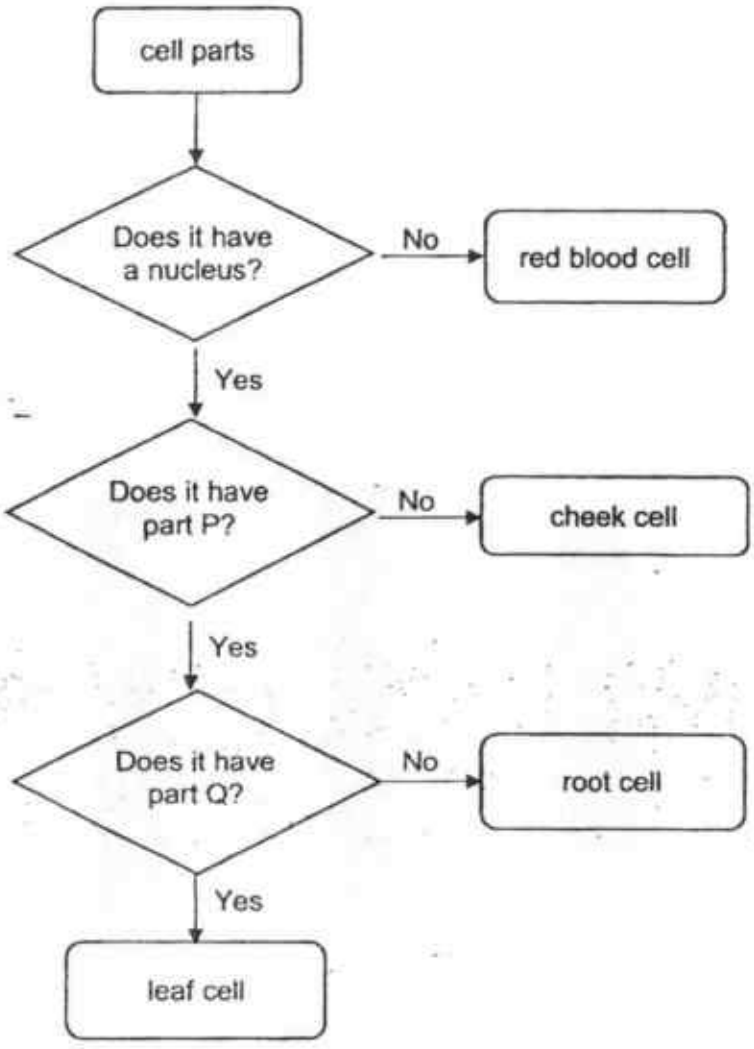
(2) The heart removes carbon dioxide from the lungs.

(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)

4. Study the flow chart below.

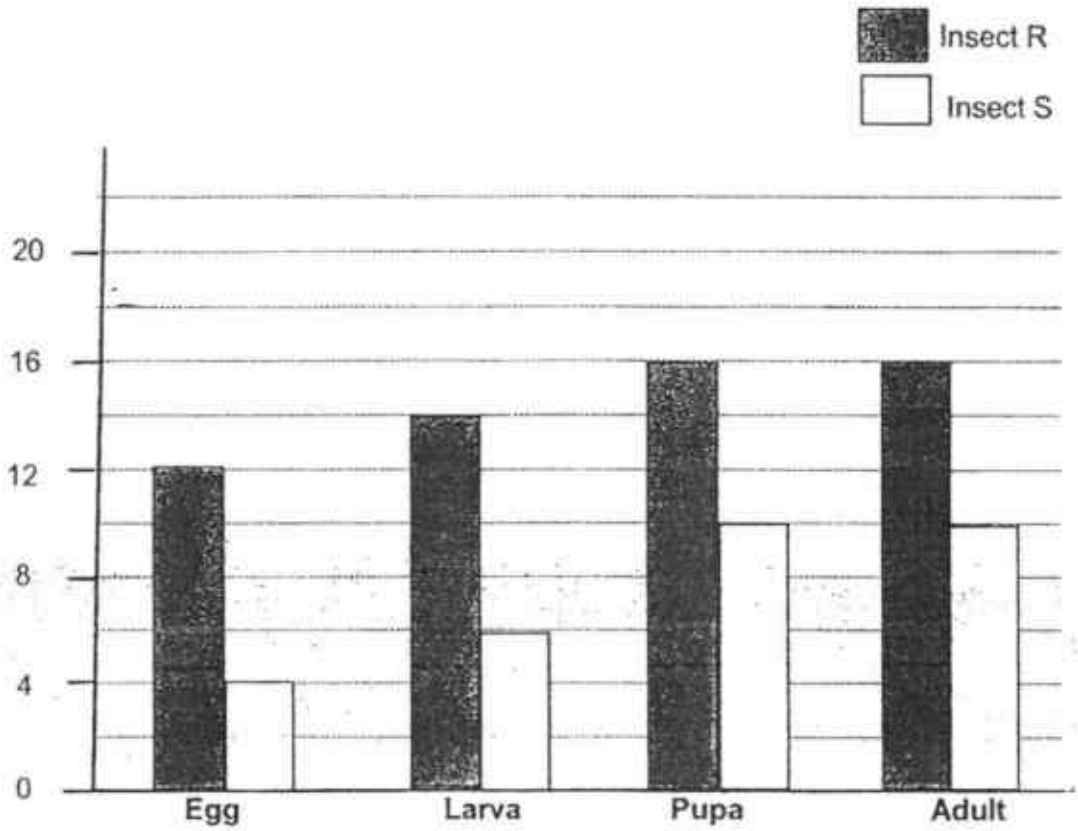


Which one of the following correctly identifies parts P and Q?

	Part P	Part Q
(1)	chloroplast	cytoplasm
(2)	chloroplast	cell wall
(3)	cell membrane	chloroplast
(4)	cell wall	chloroplast

(Go on to the next page)

5. The graph below shows the number of days in each stage of the life cycle of Insect R and Insect S.



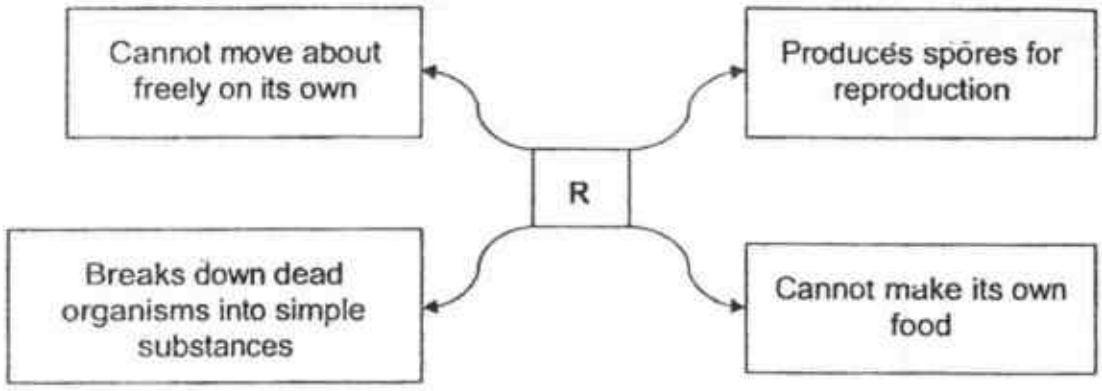
Stages of a Life Cycle

At which stage would Insect R and Insect S be on the 20th day after the eggs hatched?

	Insect R	Insect S
(1)	Larva	Pupa
(2)	Larva	Adult
(3)	Pupa	Pupa
(4)	Pupa	Adult

(Go on to the next page)

6. The diagram below shows the characteristics of an organism R.



What can organism R be?

A bacteria
B mould
C fungus
D fern

(1) A and B only

(2) B and C only

(3) A, B and C only

(4) A, C and D only

7. Study the food chain below carefully.

A ⟶ B ⟶ C ⟶ D

Based on the food chain above, which one of the following statements is correct?

(1) Organism D is likely to have the highest population among A, B, C and D.

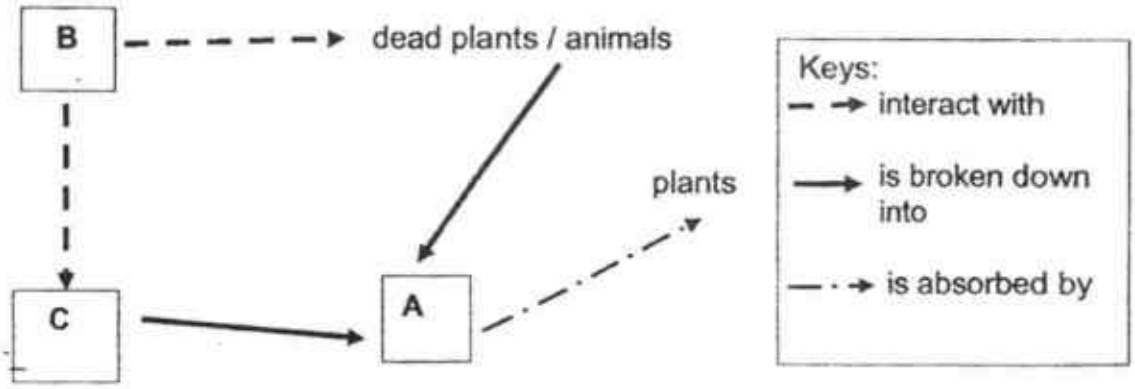
(2) Organisms B, C and D get equal amount of energy from organism A.

(3) Organism C is likely to have a lower population than organism B.

(4) Organism A does not have any energy to stay alive.

(Go on to the next page)

8. Decomposers enrich the soil with nutrients for the plants to grow well. The diagram below shows how decomposers interact with dead matter and change them into simpler substances.



Which of the following best represent A, B and C respectively?

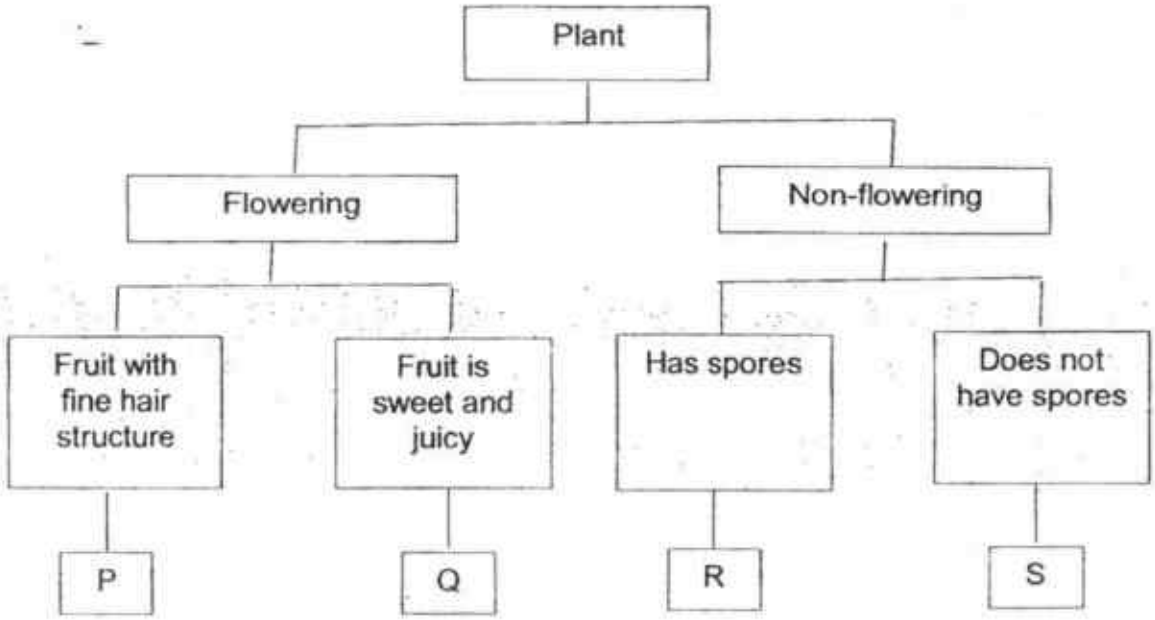
	A	B	C
(1)	carbon dioxide	predators	nutrients
(2)	water	fungi	nutrients
(3)	nutrients	prey	animal wastes
(4)	nutrients	bacteria	animal wastes

(Go on to the next page)

9. The table below shows the characteristics of two plants A and B.

Plant / Characteristics	A	B
Does it disperse by wind?	No	Yes
Does it reproduce from seeds?	No	Yes

Using the information given above, identify the group Plant A and B belong to in the classification table below.



	Plant A	Plant B
(1)	Q	R
(2)	Q	S
(3)	S	P
(4)	R	P

10. Jasmine placed identical number of seeds over cotton wool in 5 identical jars, A, B, C, D and E. The seeds in each jar are exposed to the conditions as shown in the table below.

Jar A	Jar B	Jar C	Jar D	Jar E
sealed	sealed	open	open	open
damp cotton wool	damp cotton wool	damp cotton wool	damp cotton wool	dry cotton wool
in the garden	in the garden	in the freezer	In the cupboard	in garden
contained substance to absorb carbon dioxide	contained substance to absorb oxygen			

In which of the jars would the seeds most likely germinate?

(1) A and D only

(2) B and D only

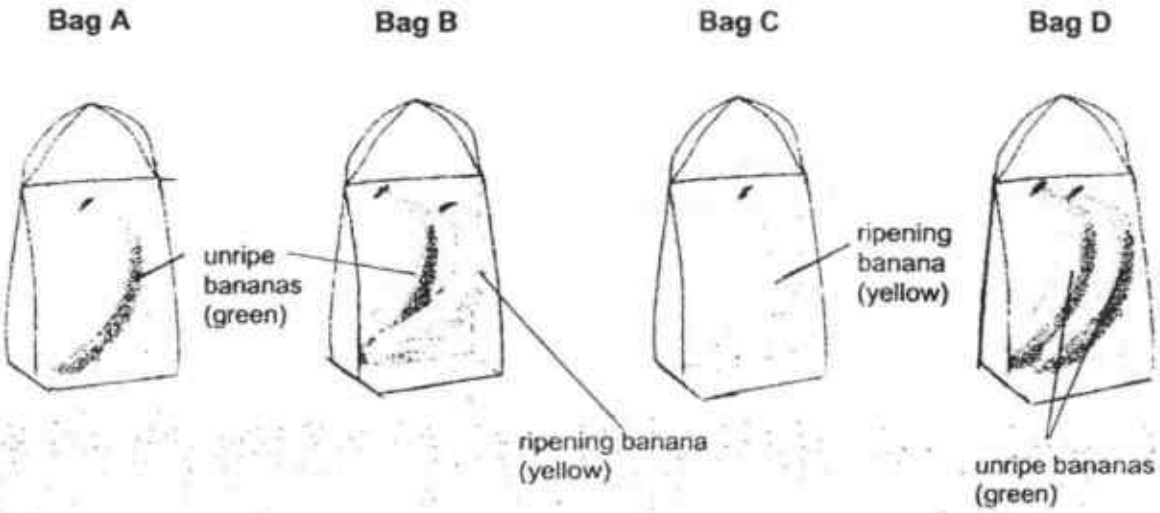
(3) A, C and D only

(4) B, C and E only

(Go on to the next page)

11. Bananas change colour from green (unripe) to yellow (ripening) as they ripen. Fruits produce a certain gas when ripening. This gas speeds up the ripening of the fruit.

Jerry wanted to see if he could make a banana ripen faster.
He took four similar plastic bags A, B, C and D and placed bananas in them as shown in the diagrams below. The bags are sealed.

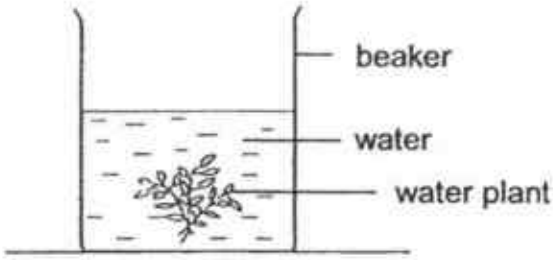


Which of the following shows the bags must Jerry use and the correct reason for his choice to make his investigation a fair test?

	Bags	Reason
(1)	A and C	to find out which banana ripens first
(2)	B and C	to find out which banana ripens first
(3)	A and D	to find out if a ripening banana makes a difference to the ripening of an unripe banana
(4)	B and D	to find out if a ripening banana makes a difference to the ripening of an unripe banana

(Go on to the next page)

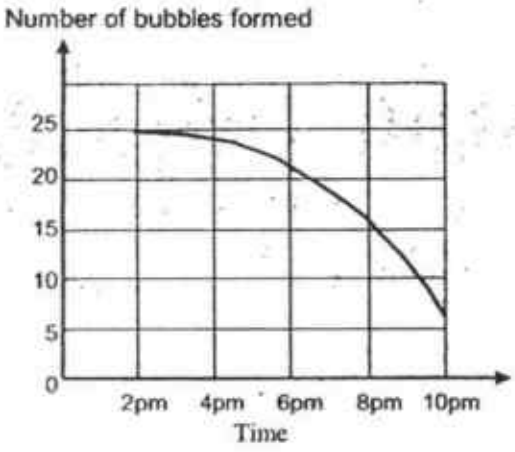
12. Jasmine set up the experiment as shown below and left it to stand in an open field from 1.30 p.m. to 10 p.m.



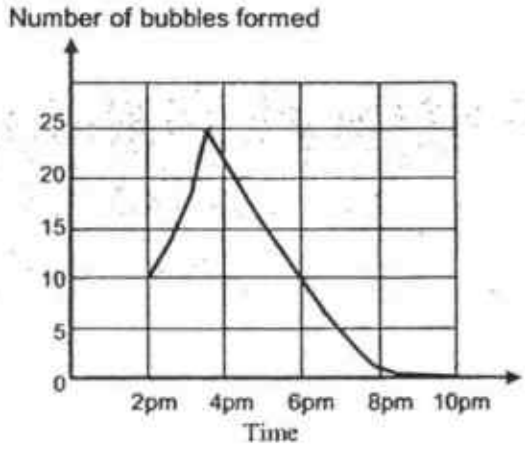
At 2 p.m., she noticed that air bubbles began to form on the leaves.

Which one of the graphs below most likely shows the rate at which the number of air (oxygen) bubbles were formed between 2 p.m. and 10 p.m.?

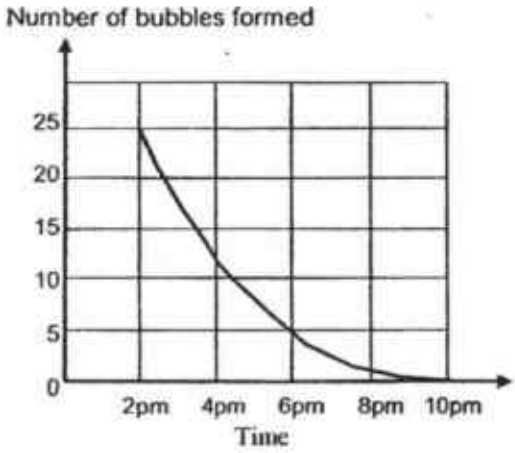
(1)



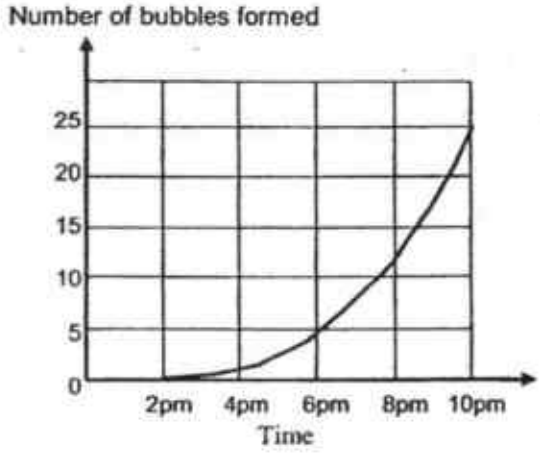
(2)



(3)



(4)



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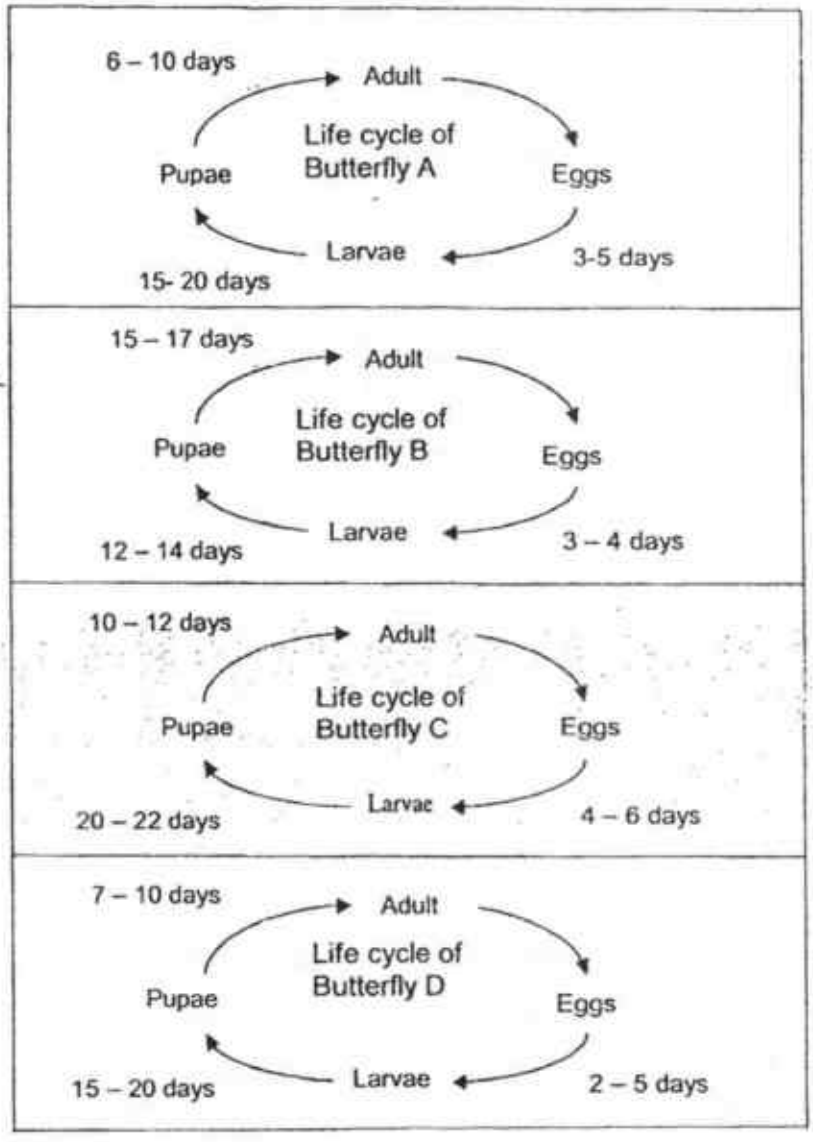
13. Study the life cycles of four species of butterflies, A, B, C and D. The young of the butterflies feed on the leaves of green plants.

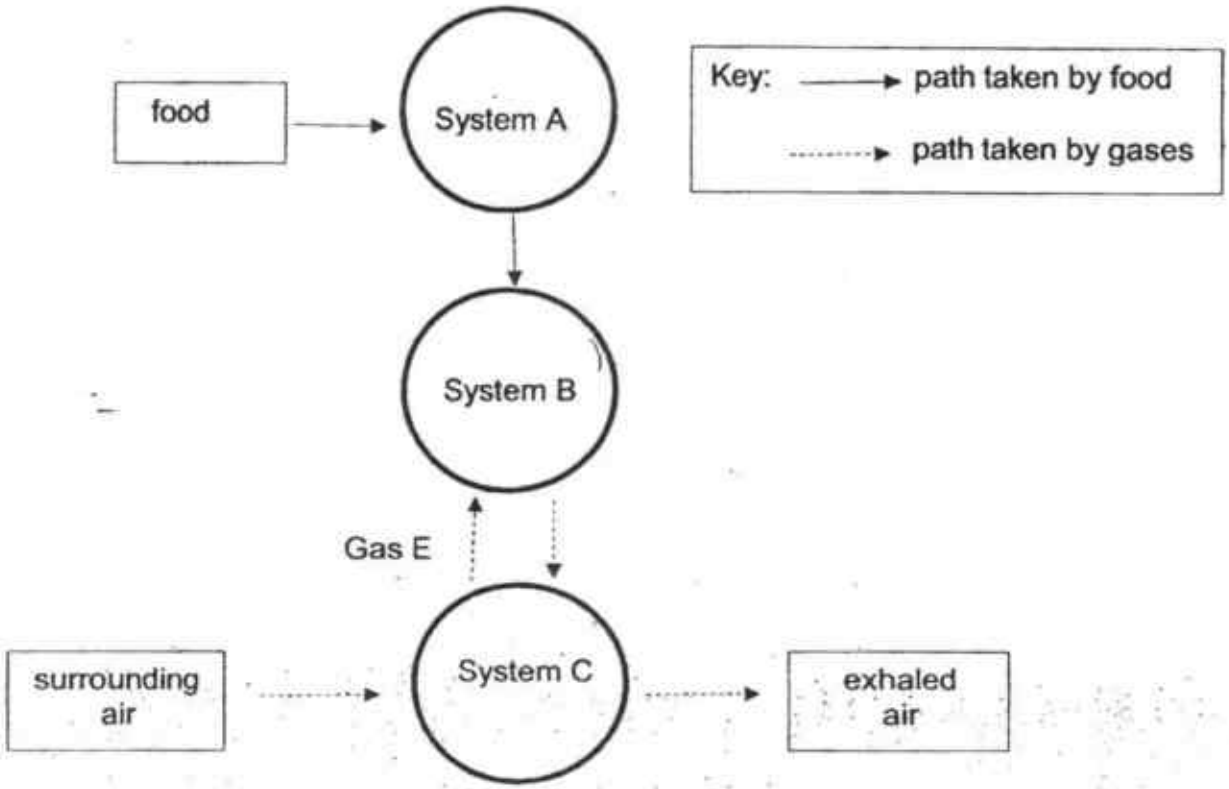


Based on the information given, which species of butterfly is the most and the least destructive to the leaves of the green plants?

	Most destructive	Least destructive
(1)	A	D
(2)	B	C
(3)	C	B
(4)	D	A

(Go on to the next page)

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

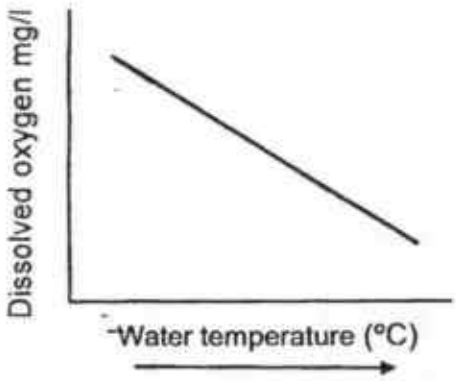


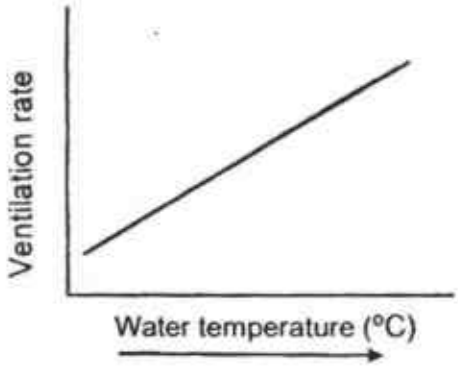
Which systems do A, B and C represent and what is gas E?

	System A	System B	System C	Gas E
(1)	circulatory	respiratory	digestive	carbon dioxide
(2)	digestive	circulatory	respiratory	oxygen
(3)	circulatory	digestive	respiratory	oxygen
(4)	digestive	respiratory	circulatory	carbon dioxide

(Go on to the next page)

15. Water contains dissolved oxygen. Fish extract the oxygen they need by passing water over their gills. Ventilation rate refers to how fast fish pass water over their gills.





Based on the graphs above, which of the following correctly shows the relationship between the changes in water temperature, dissolved oxygen and the ventilation rate in fish?

	Water temperature	Dissolved oxygen	Ventilation rate
(1)	decreases	increases	increases
(2)	increases	increases	increases
(3)	decreases	decreases	decreases
(4)	increases	decreases	increases

16. Which of the following will **least** likely cause the greenhouse effect?

(1) flooding

(2) heavy traffic

(3) deforestation

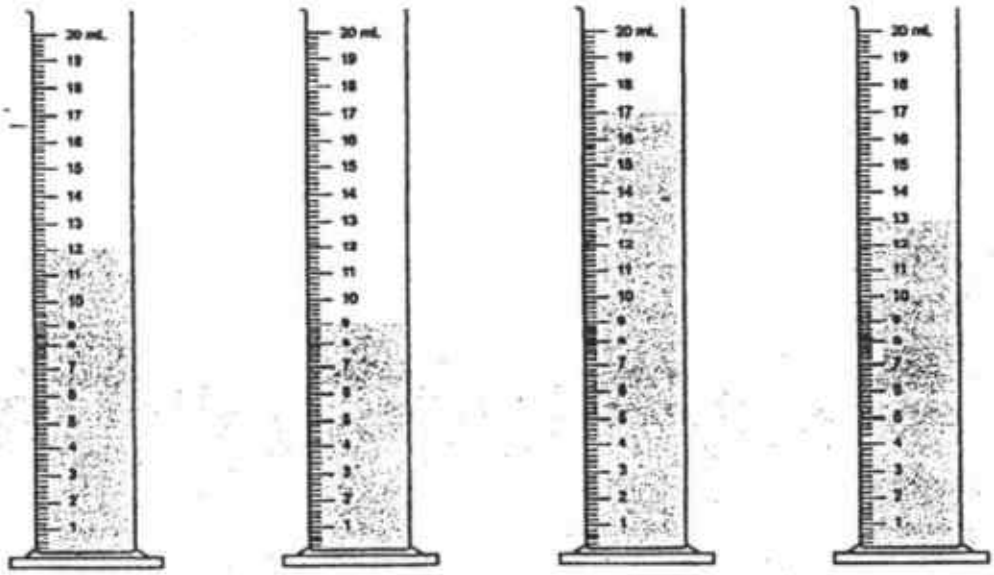
(4) use of air conditioners

(Go on to the next page)

17. Two students wanted to compare the absorbency of four different brands of paper towel. They had equal-sized paper towels of different brands W, X, Y and Z. They prepared four measuring cylinders each with 20 ml of water.

They then poured water onto each paper towel until the paper towel could not absorb any more.

The diagram below shows the amount of water left in the measuring cylinders after they had stopped pouring water onto the paper towels.



Was their test a fair one?

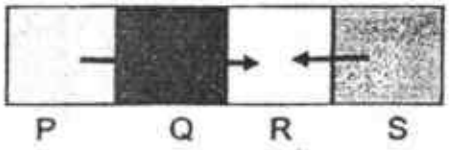
(1) Yes, because they used the same amount of water on each paper towel each time.

(2) No, because each paper towel soaked up different amounts of water.

(3) No, because the paper towels were all of different brands.

(4) Yes, because each paper towel was of the same size.

18. Four objects P, Q, R and S are arranged in a line as shown below. The arrows show the direction in which the heat energy travels between the objects.



Which of the following statements about the temperature of the objects is correct?

(1) R is the hottest object.

(2) P is colder than Q and R.

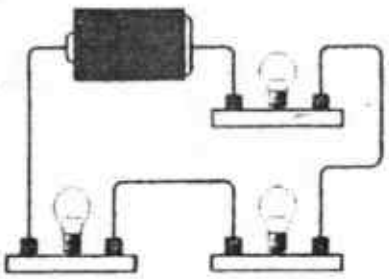
(3) S and R have the same temperature.

(4) Q is hotter than R but colder than P.

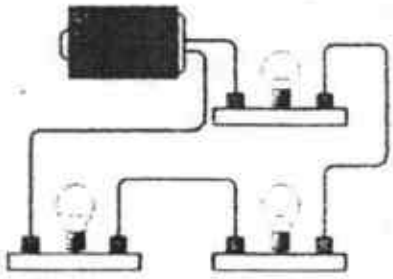
19. Some students set up four electrical circuits. Each circuit was made of a battery, three light bulbs and connecting wires. The students made sure that the light bulb and the batteries were in working conditions.

In which circuit will all the light bulbs light up?

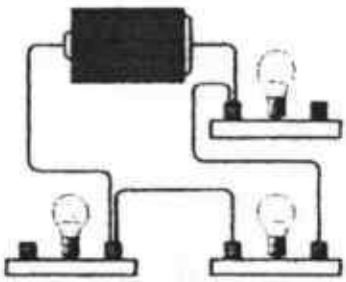
(1)



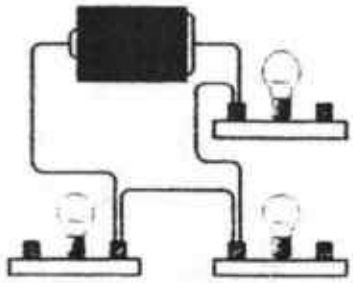
(2)



(3)



(4)



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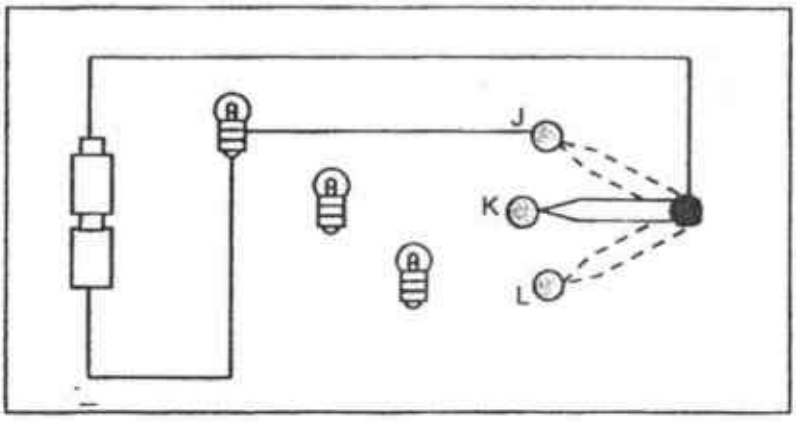
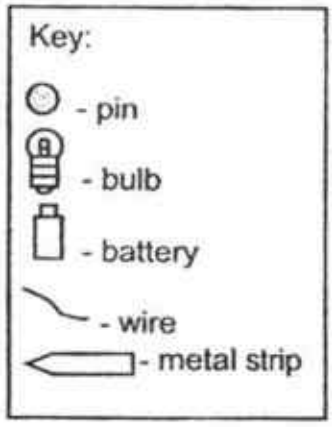
20. Ashley has an incomplete circuit set-up as shown below. The three-way switch was made using four pins and a metal strip.

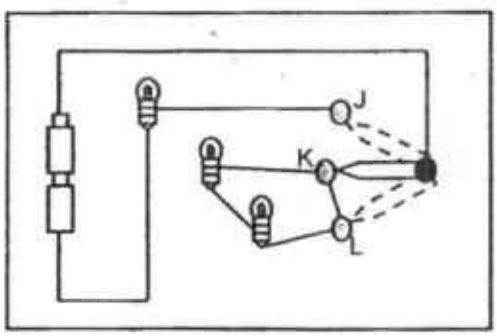




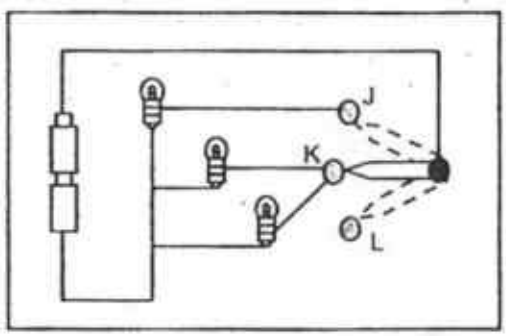
She had to add four wires to the circuit so that when the metal strip is moved to touch each of the pins J, K and L, only one bulb will light up at a time.

Which diagram correctly shows how Ashley should connect the four wires?

(1)



(2)



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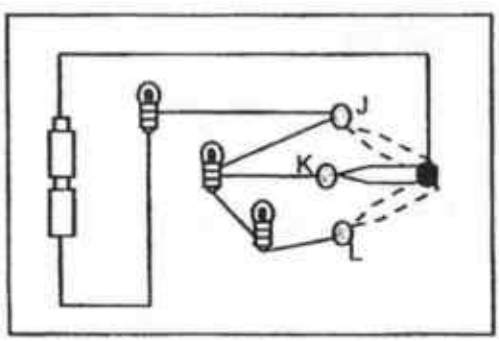
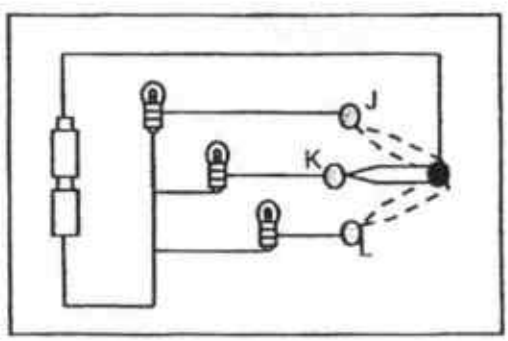


(4)



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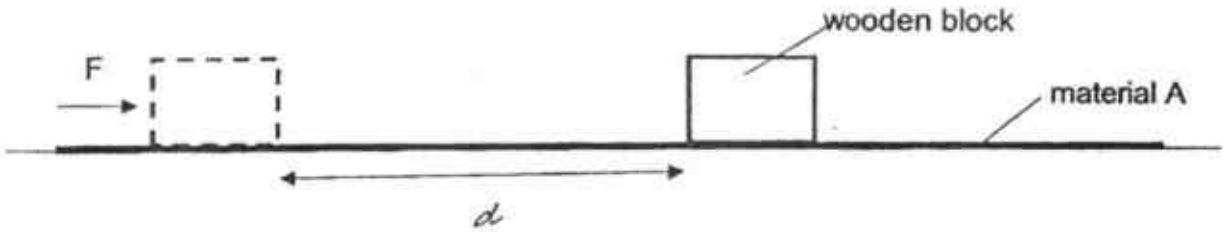
21. Marcus conducted an experiment. He placed a wooden block on a flat sheet made of material A. He then applied a force F to give the wooden block a push. The block moved forward and stopped at a distance d as shown.



Marcus repeated the experiment with two other flat sheets of materials B and C. He used the same wooden block and the same force F. He recorded his results in the table below.

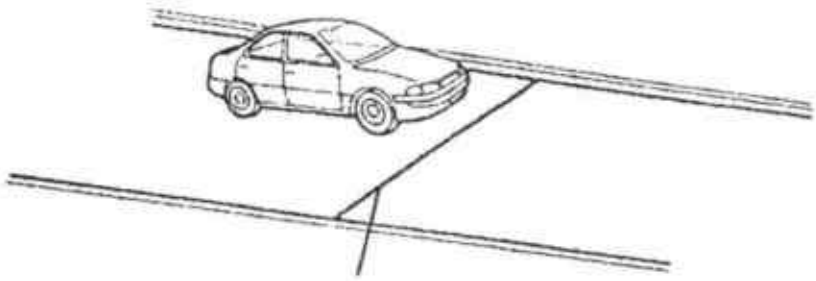
Materials	**A**	**B**	**C**
Distance d(cm)	10	7	18

Based on his results, which material should he choose (from the best to the worst) to cover the floor of a bathroom?

	best choice ⟶		**worst choice**
(1)	B	A	C
(2)	C	B	A
(3)	B	C	A
(4)	C	A	B

(Go on to the next page)

22. A gap is left between the two metal halves of a bridge. The gap contains air.



gap in bridge

What happens to the gap as the temperature rises and why?

(1) The gap becomes larger because the metal contracts.

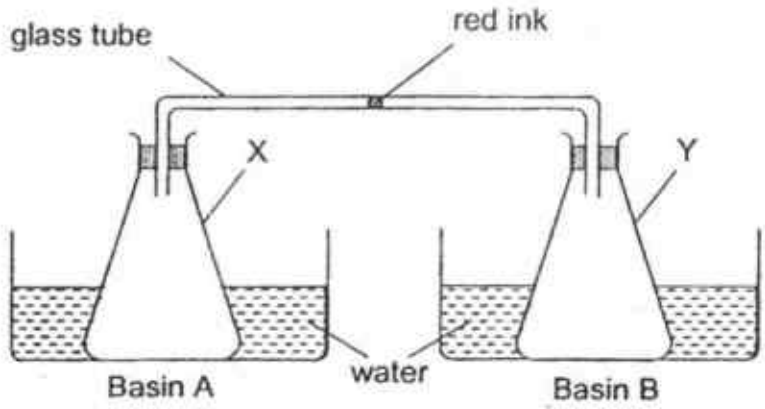
(2) The gap becomes smaller because the metal expands.

(3) The gap becomes larger because the air expands.

(4) The gap becomes smaller because the air contracts.

(Go on to the next page)

23. An experiment is set up as shown below.



A drop of red ink is placed in the glass tube which connects the two flasks, X and Y.
The flasks are then placed in basins of water at different temperatures.
Which one of the following will cause the drop of ink to move nearest to Flask X?

	Basin A	Basin B
(1)	Water at 10 °C	Water at 90 °C
(2)	Water at 10 °C	Water at 30 °C
(3)	Water at 90 °C	Water at 90 °C
(4)	Water at 90 °C	Water at 10 °C

24. Substance T freezes at 65°C and boils at 695°C.
Which one of the following shows the correct state of substance T at 75°C and at 450° C?

	State of substance T at	
	75°C	450°C
(1)	solid	gas
(2)	solid	liquid
(3)	liquid	liquid
(4)	liquid	gas

(Go on to the next page)

25. Terry had two boxes, P and Q, of the same size. P was heavier than Q. He glued P and Q together to form one block.
With Q on top of P, the block tilted until it fell as shown in Diagram 1 below.

He then repeated the experiment with P on top of Q.
The block was tilted until it fell as shown in Diagram 2.

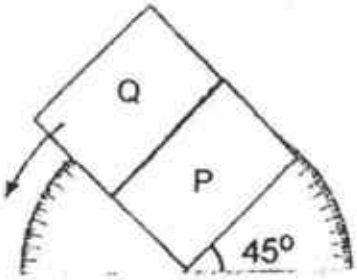


Diagram 1
block fell over at 45°

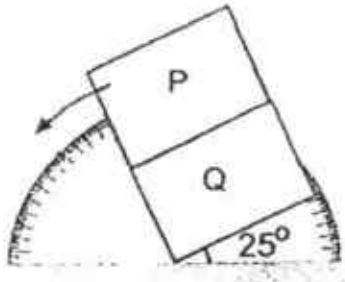
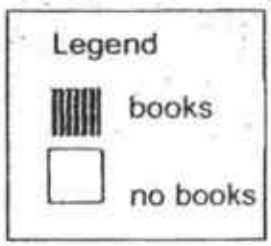
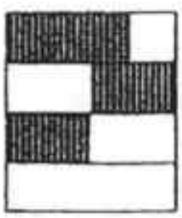


Diagram 2
block fell over at 25°

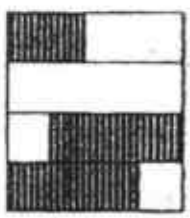
The diagram below shows four similar bookcases with the books arranged on the shelves.
Based on the information above, which bookcase shown below is most likely to topple when pushed?



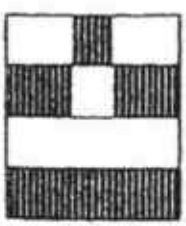
(1)



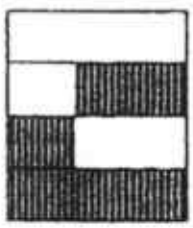
(2)



(3)



(4)



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26. Diagram 1 below shows a ring magnet lowered onto a tray of pins. Diagram 2 shows the bottom view of the magnet.

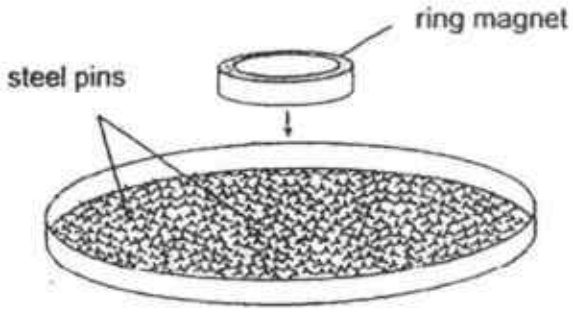


Diagram 1

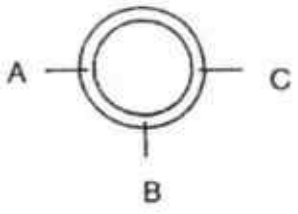


Diagram 2

Which one of the following most likely shows the number of pins attracted to the bottom of the ring magnets A, B and C?

	A	B	C
(1)	6	18	6
(2)	12	6	12
(3)	15	10	5
(4)	10	10	10

27. Benjamin placed two identical open bottles near a window where there was sunlight. He filled one bottle completely with liquid A and filled the other bottle completely with liquid B. The next day he observed that the bottles were no longer full.

What can Benjamin conclude from his observation?

A Presence of sunlight increases the rate of evaporation.

B Liquid A evaporates faster than liquid B.

C Both liquids evaporate.

(1) C only

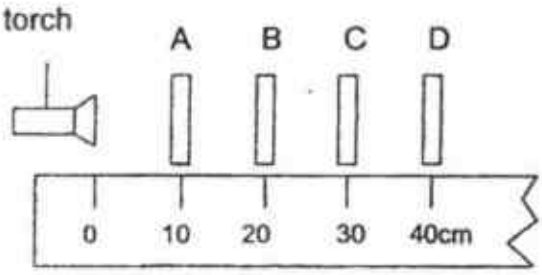
(2) A and B only

(3) B and C only

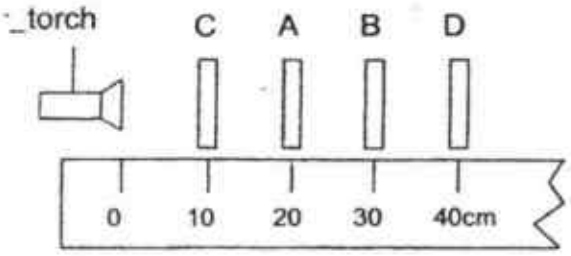
(4) A, B and C

(Go on to the next page)

28. An experiment was conducted to investigate whether light can pass through four sheets A, B, C and D made of different materials. The sheets were arranged in two set-ups P and Q as shown below.

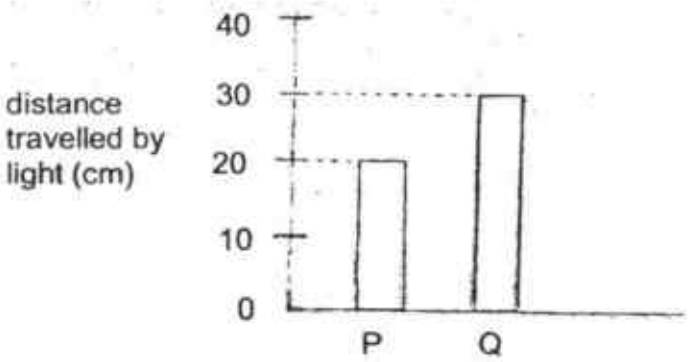


Set-up P



Set-up Q

The distance travelled by the light for each set-up was measured and the results are shown in the chart below.



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

	Does it allow light to pass through?			
	A	**B**	**C**	**D**
(1)	no	not possible to tell	yes	no
(2)	not possible to tell	yes	no	yes
(3)	yes	no	yes	not possible to tell
(4)	yes	no	not possible to tell	no

(Go on to Booklet B)

Temasek Primary School

Preliminary Examination

Primary Six Standard

2018

SCIENCE

(BOOKLET B)

Name: _____ ( ) Class: 6 ( )

Date : 27 August 2018

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

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Write your answers in this booklet.
5. This booklet consists of 23 printed pages and 1 blank page.

Paper	Max Mark	Score
Booklet A	56	
Booklet B	44	
Total Mark	100	

Parent's Signature/Date: _____

For questions 29 to 41, write your answer in this booklet.

The number of marks available is shown in the brackets [ ] at the end of each question or part question. (44 marks)

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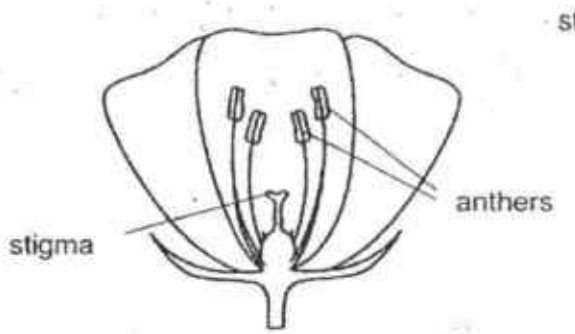
29. The table below shows the characteristics of three different plants A, B and C.

Plant	Does it have flowers?	Can the flower develop into a fruit?
A	Yes	Yes
B	Yes	No
C	Yes	Yes

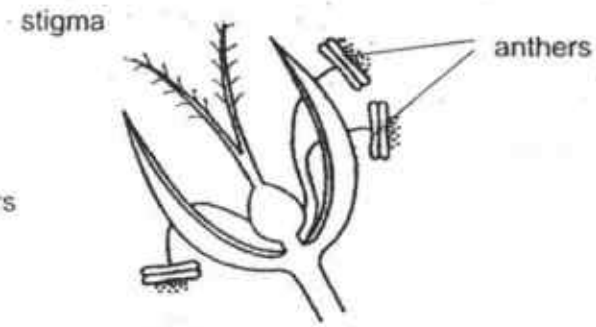
(a) The flower of plant B cannot develop into a fruit. Give a possible reason. [1]

_____

_____



Flower Of plant X



Flower of plant Y

(b) State the most likely method of pollination for plant X and plant Y. [1]

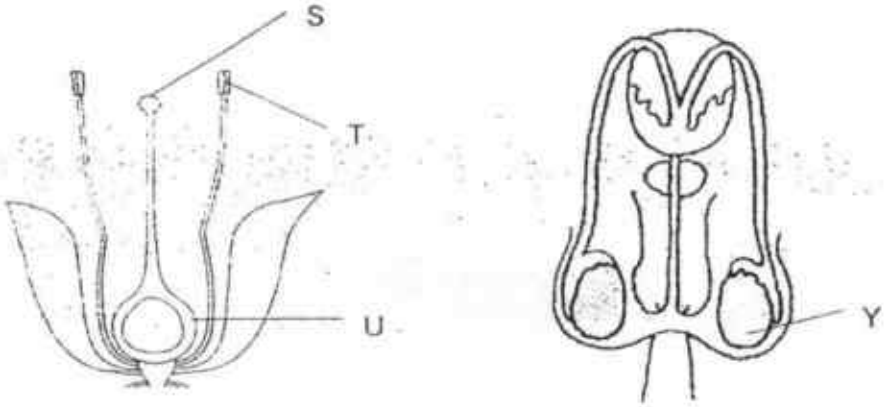
(i) X _____

(ii) Y _____

(Go on to the next page)

(c) Describe how the characteristics of the parts of the flower in (b) (ii) helps it to be pollinated. [1]

(d) Give one advantage of seed dispersal for plants. [1]

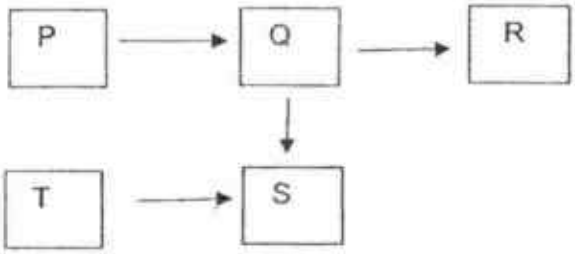


(e) One of the above parts S, T or U has the same function as part Y in the male human reproductive system. State the letter representing this part and its function. [1]

(Go on to the next page)

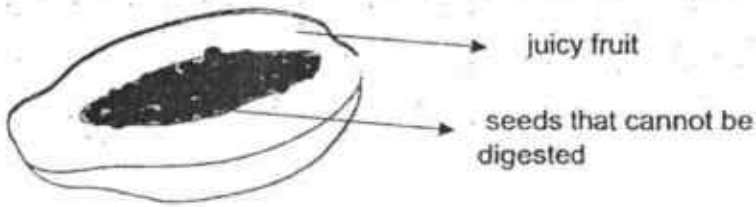
SCORE	5

30. The food web below shows the food relationships of organisms P, Q, R, S and T. Study the food web to answer questions (a) and (b).



(a) How would the decrease in the number of organism R cause the number of organism S to increase? [1]

(b) The diagram below shows the seeds of organism P.

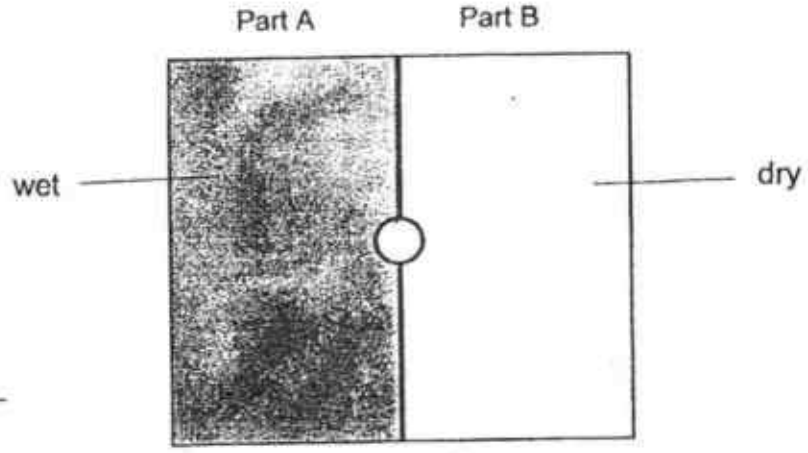


Explain how organism Q is able to help organism P in the dispersal of its seeds. [1]

(Go on to the next page)

SCORE	2

31. Carmen wanted to find out the suitable living conditions for organism X. She used a tray consisting of two parts A and B. She filled part A with wet soil and part B with dry soil.



She placed a number of organism X in the middle of the tray in the area marked by the circle. After half an hour, most of the organisms were found in part A.

(a) From the results, state the living condition suitable for organism X. [1]

_____

_____

(b) Why did Carmen release organism X in the middle of the tray in the area marked by the circle? [1]

_____

_____

(Go on to the next page)

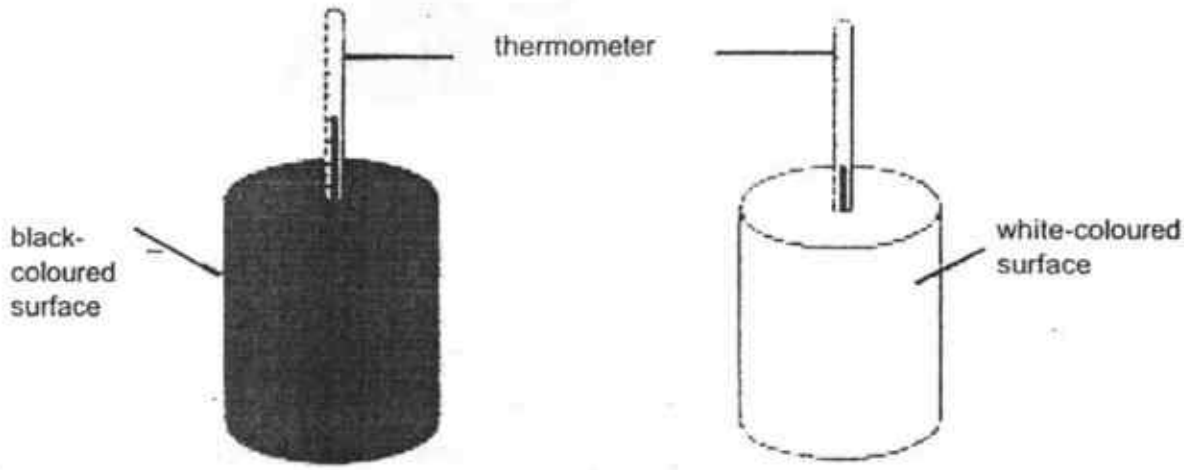
(c) An organism Y can survive well in dry soil. Carmen thought that the organisms might prefer dark conditions.

Given a piece of dark cloth and an identical tray with dry soil, describe an experiment for her to find out if organism Y prefers dark conditions. [1]

(Go on to the next page)

SCORE	/3

32. Carol conducted an experiment using two identical air-tight containers, A and B, as shown in the diagram below. Container A has a black surface while Container B has a white surface. She placed the containers under the sun. At first the thermometers showed the same reading.



After a few hours, she observed that the temperature of air in container A was higher than that in container B.

(a) What could Carol conclude from this observation? [1]

_____

_____

Bird P

(b) Bird P lives in a very cold environment and usually stands with its back facing the sun. Suggest a reason for such behaviour. [1]

_____

_____

(Go on to the next page

(c) Bird P lives in large groups, staying very close to one another. Explain how staying very close to one another helps keep them warm. [1]

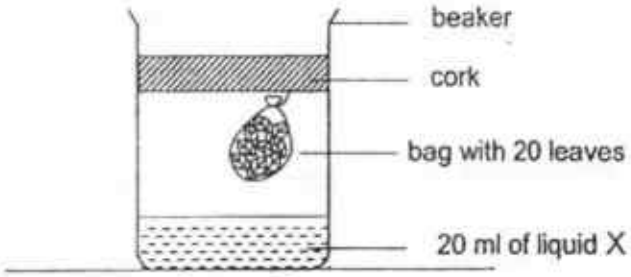
Bird Q also lives in a very cold environment. Bird Q sits close together, all facing outwards.

(d) Besides keeping warm, give a reason why sitting together like this helps Bird Q to survive. [1]

(Go on to the next page)

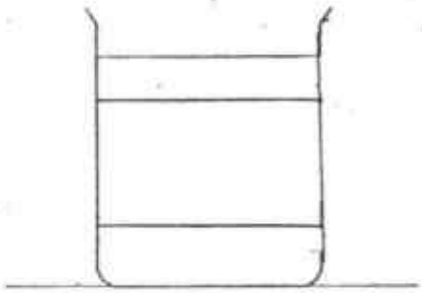
SCORE	4

33. Liquid X is red in colour and it turns yellow when the amount of carbon dioxide increases.
Anna wanted to investigate the effect of dead leaves on liquid X. She wrapped 20 fallen leaves in a bag with tiny holes and then hung it in a beaker as shown below.



Set-up T

(a) Anna's teacher commented that she needed a control set-up for her experiment.
Draw and **label** the control set-up for her experiment below. The beaker has been drawn for you. [1]



Control setup

Anna left both set-up T and the control set-up in a room with a temperature of 25°C for 5 days. She observed that liquid X in set-up T turned yellow on day 5 but not in the control set-up.

(b) Explain why there was a change in the colour of liquid X in set-up T. [1]

_____

_____

(Go on to the next page)

(c) Anna prepared another two set-ups, A and B, which were similar to set-up T.

Set-ups	No of leaves	Temperature	No of days for liquid X to turn yellow
T	20	25°C	5 days
A	20	35°C	?
B	10	25°C	?

Would liquid X take '**less than 5 days**' or '**more than 5 days**' to turn yellow for each set-up? [2]

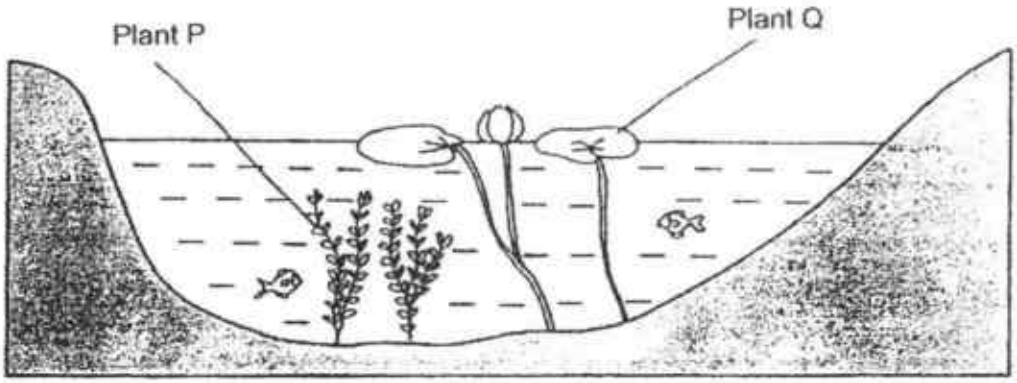
(i) Set-up A _____

(ii) Set-up B _____

(Go on to the next page)

SCORE	/ 4

34. Study the picture of a pond below carefully.



(a) Besides providing food for the animals in the pond, suggest another reason why plant P and plant Q are important to the animals in the pond. [2]

Plant P:

_____

_____

Plant Q:

_____

_____

(b) Sally found that when the population of plant Q increases, the population of plant P decreases. Suggest a reason for the decrease in the population of plant P. [1]

_____

_____

(c) When a lot of plant P die and start to rot, the level of oxygen in the pond decreases. Give a reason why the rotting plants cause a decrease in the level of oxygen. [1]

_____

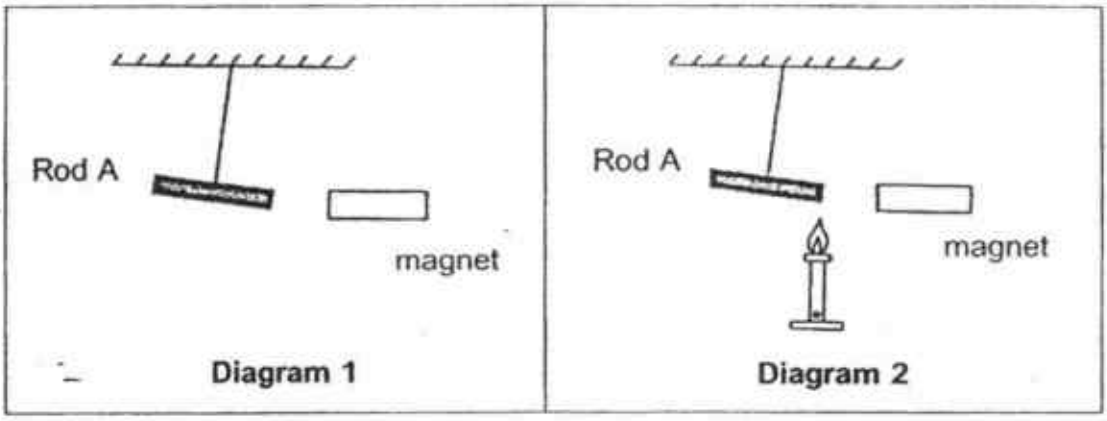
_____

_____

(Go on to the next page)

SCORE	/ 4

35. A magnet was brought near Rod A which was tied to a string as shown in Diagram 1. A flame was then placed at one end of Rod A as shown in Diagram 2. After a while, Rod A started to move towards the magnet.



(a) Explain why Rod A moved away when a magnet was brought near it as shown in Diagram 1. [1]

(b) Explain why Rod A started to move towards the magnet in Diagram 2. [1]

(Go on to the next page)

SCORE	2

36. Ali placed a spring over a wooden rod. He pressed the spring down 2cm as shown in Diagram 2. Diagram 3 shows the height of the spring when Ali let go of it.

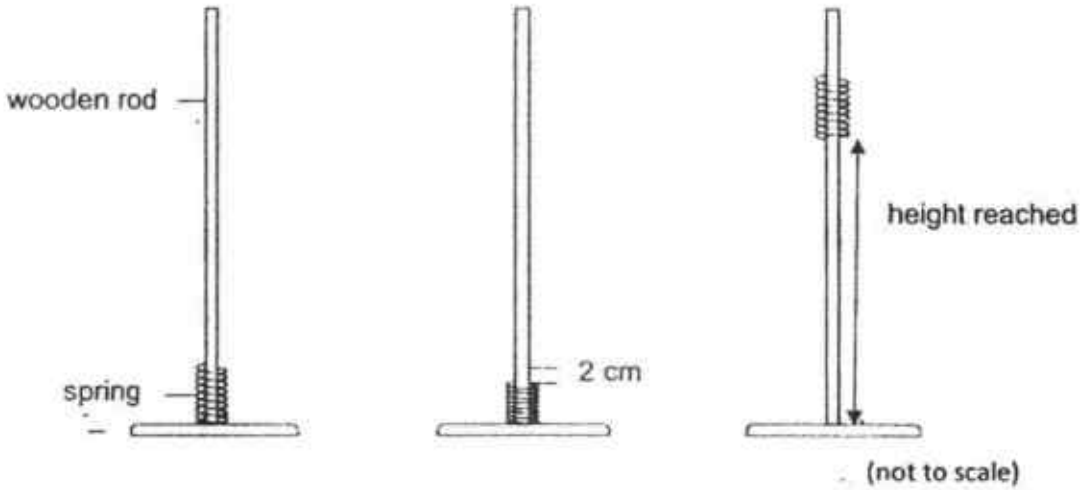
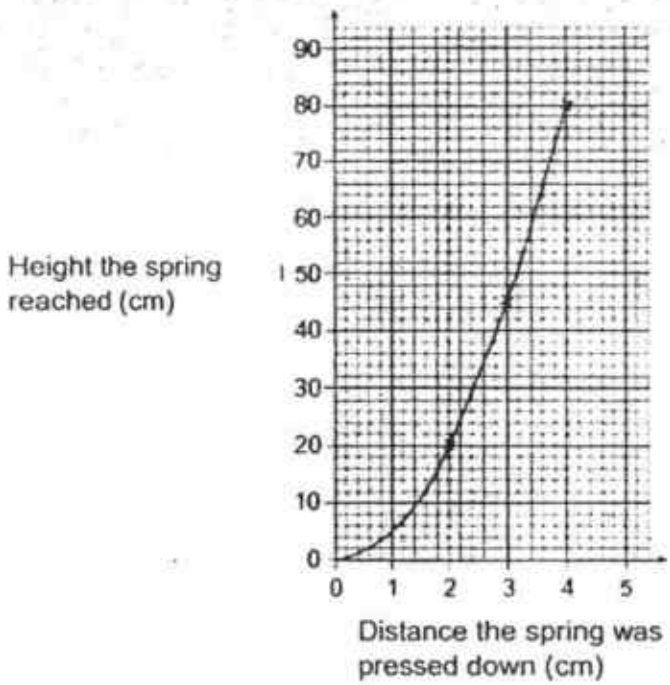


Diagram 1 **Diagram 2** **Diagram 3**

He repeated the experiment . He pressed the spring down more each time. His results are shown in the graph below.



(a) Write down the energy conversion that takes place in Ali's experiment.

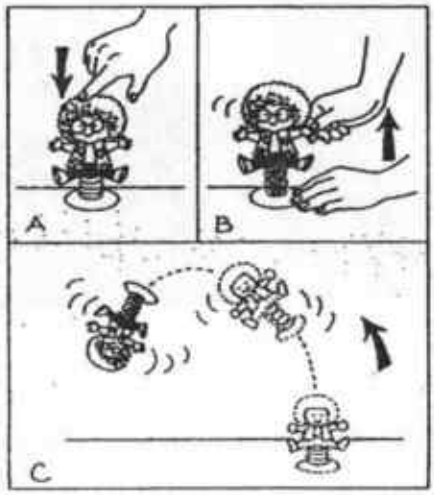
[1]

(Go on to the next page)

(b) Ali predicted that if he doubled the distance he pressed the spring down, the height the spring would reach would also be doubled.

How do the results in the graph show that his prediction was not accurate? [1]

The diagram below shows how a toy with spring works.



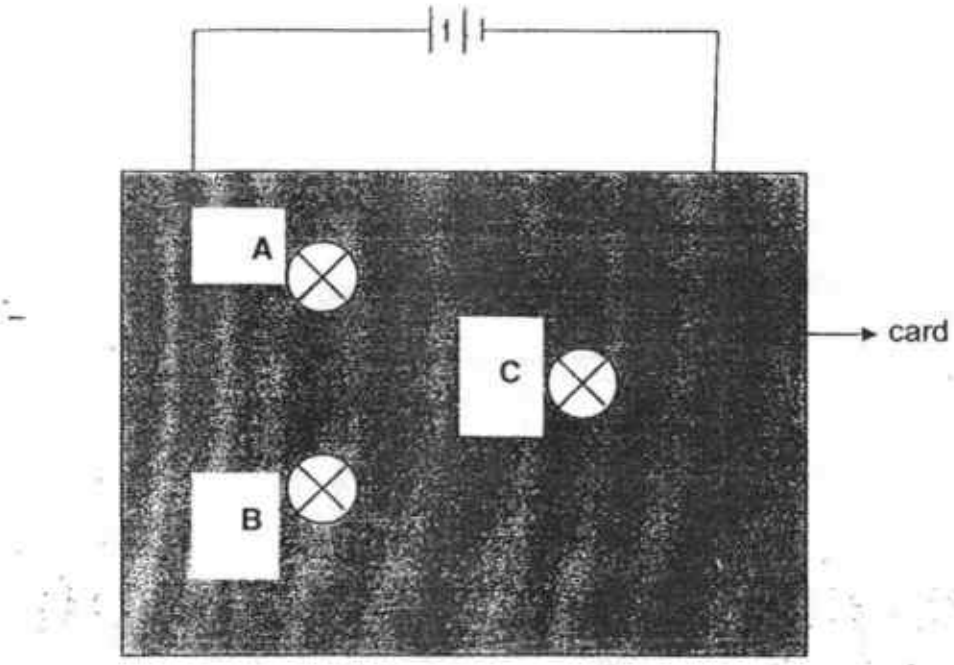
Ali wants to modify the toy so that the toy can reach a higher height when he releases the spring.

(c) Suggest what type of spring he should use. Explain why he chooses the spring. [1]

(Go on to the next page)

SCORE	/ 3

37. Alan set up a circuit with three identical bulbs and two batteries. He covered the connections to the bulbs with a piece of card as shown below. The bulbs could be seen through the holes in the cards.

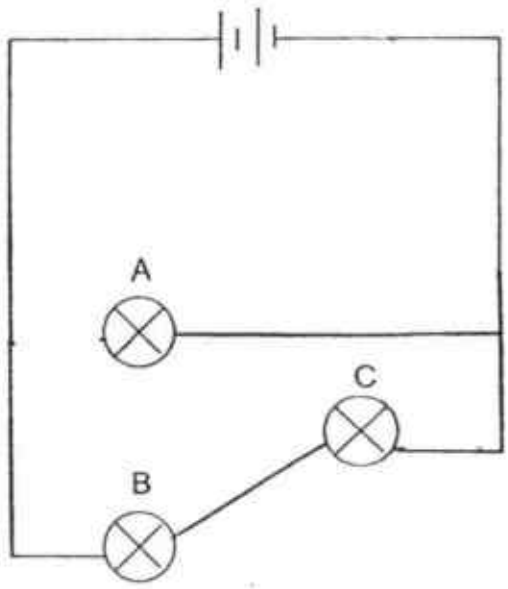


All the bulbs were lighted but their brightness was different.
Alan removed bulbs A, B and C one at a time. Before connecting each bulb back into the circuit, he observed the effect of the other two bulbs. He recorded his observation in the table below.

Bulb removed	Observation
A	Bulbs B and C lighted up.
B	Bulb C did not light up. Bulb A lighted up.
C	Bulb B did not light up. Bulb A lighted up.

(a) Complete the circuit diagram below to show how the three bulbs could be connected.

[1]



(b) Which bulb was the brightest? Give a reason for your choice. [1]

_____

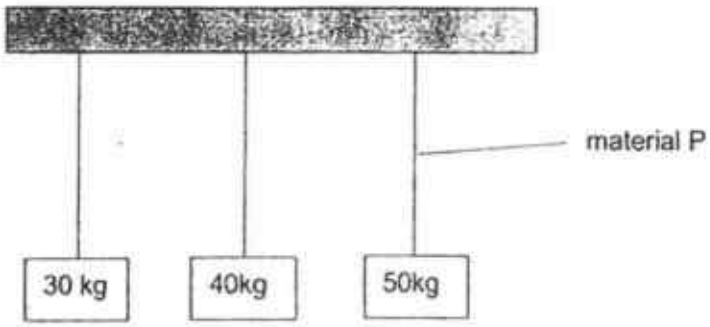
_____

(c) Alan added a switch to the circuit so that he could turn all the bulbs on and off at the same time.
Mark with an '**X**' against it on your circuit diagram in (a) where the switch could be placed. [1]

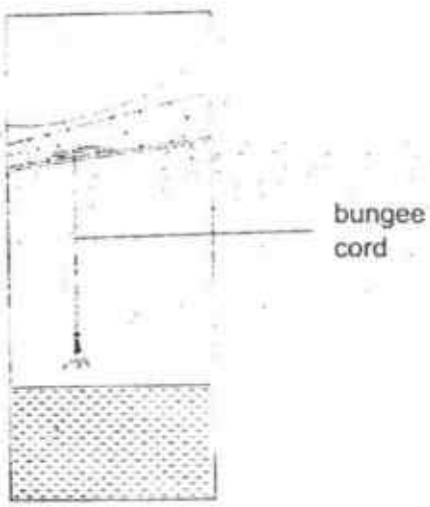
(Go on to the next page)

SCORE	/ 3

38. Sam wanted to find out the strength of material P. He attached different loads up to 50 kg to material P as shown below.



He observed that the material did not break. He concluded that the material could be used to make the bungee cord for bungee jumping.



(a) His friend suggested that it cannot be concluded that material P is a good choice for a bungee cord based on his investigation. Explain why. [1]

_____

_____

(b) What could Sam have done further to test the strength of material P before deciding to use it as a bungee cord? [1]

_____

_____

(c) Suggest one property, other than strength, that material P should have in order for it to be used as a bungee cord. [1]

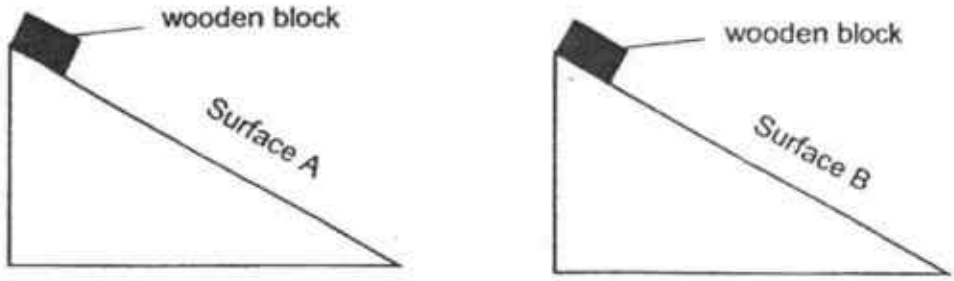
_____

_____

(Go on to the next page)

SCORE	/ 3

39. Boon Leng set up an experiment to find out if the surface of the ramp affects the time taken for a wooden block to slide down.
The diagrams below show the set-up of his experiment.



He recorded the time taken for the wooden block to slide from the top to the bottom of each ramp in the table below.

	Time taken to reach the bottom of the ramp(s)			
Type of surface	**1st reading**	**2nd reading**	**3rd reading**	**Average**
Surface A	5	5	5	5
Surface B	10	10	10	10

(a) Based on the results, what is the difference between Surface A and B? Explain your answer. [1]

_____

_____

(b) Name the two forces acting on the wooden block as it was sliding down the ramp. [1]

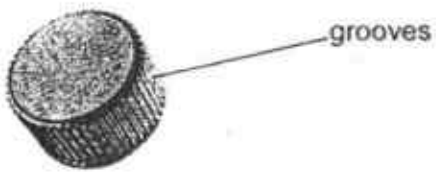
(i) _____

(ii) _____

(c) Suggest how Boon Leng should change the set-up to find out if the height of the ramp affects the time taken for the wooden block to reach the bottom of the ramp.

[1]

Boon Leng noticed when his hands were wet, it was easier for him to twist open a bottle cap with grooves, as shown in the diagram below, than a bottle cap without grooves.



(d) Explain why it was easier for him to twist open a bottle cap with grooves

[1]

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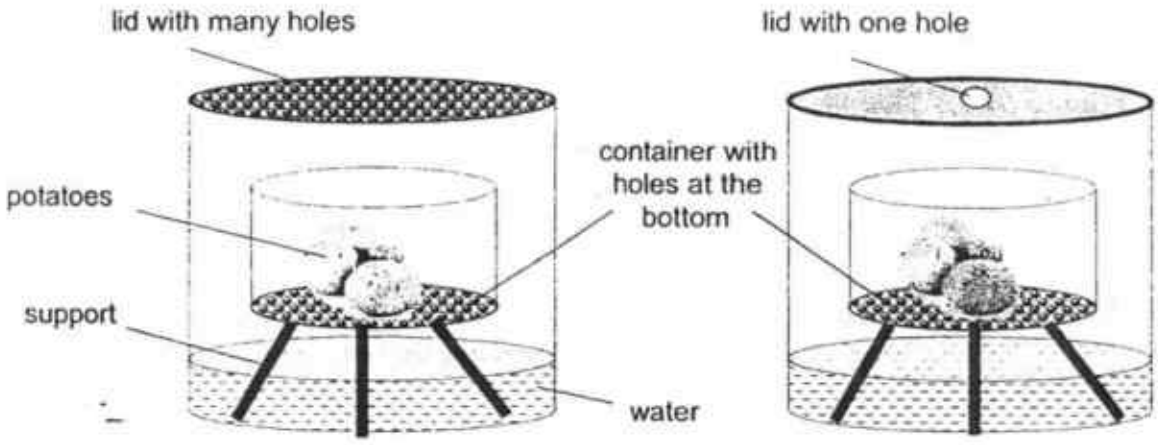
SCORE	4

40. Alexis wanted to cook some potatoes using steamers X and Y as shown below.



She placed both steamers over a heat source.

(a) Alexis observed that she needed to top up water in one of the steamers after some time.
Which steamer, X or Y, did she add more water to? Give a reason for your answer. [2]

_____

_____

_____

(b) Without making any changes to the steamer, suggest one way in which Alexis can help make the potatoes cook faster in both steamers. [1]

_____

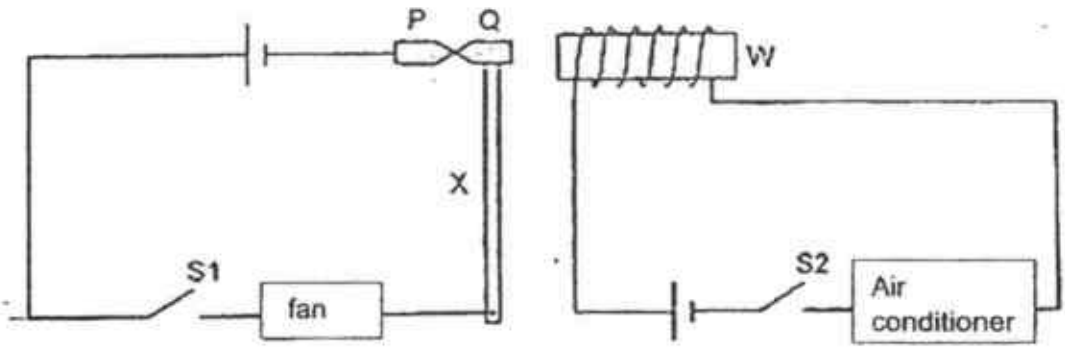
_____

(Go on to the next page)

SCORE	3

41. Peter designed an electrical system for a fan and an air conditioner in his room shown below. The system prevents both the fan and air conditioner from being turned on the same time.

W is an iron bar placed inside a coil of wire. P and Q are two iron pins in contact with each other. Pin Q is attached to a metal rod X and can move sideways.



On a hot afternoon, Peter closed switch S1 to turn the fan on.
His friend, Jack felt that the room was still too warm and closed switch S2 to turn the air conditioner on.

(a) What would happen to pin Q after switch S2 was closed? Give a reason for your answer. [2]

_____

_____

(b) Give a reason why the fan was turned off when Jack closed the switch S2. [1]

_____

_____

(c) Suggest a reason why Peter designed the system so that the fan and air conditioner would not be turned on at the same time. [1]

_____

_____

End of paper

SCORE	4

EXAM PAPER 2018

LEVEL	:	**PRIMARY 6**
SCHOOL	:	**TEMASEK PRIMARY SCHOOL**
SUBJECT	:	**SCIENCE**
TERM	:	**PRELIM**

SECTION A

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

Section B

Q28. (a) Plant B is probably a male plant that does not have an ovary and ovules to grow into a fruit. Hence i does not develop into a fruit.

(b) (i) X Animal pollination
(ii) Y Wind pollination

(c) The anther hangs outside the flower so that the pollen grain can be blown away by the wind.

(d) The young do not grow near the parent plant to prevent overcrowding.

(e) Part T. It produces male reproductive cells.

Q30. (a) Both organisms S and R feeds on organisms Q indicating that when organisms R decrease, there would be lesser competition between organisms R and S hence organisms S has more food to eat and increase

(b) When organisms Q eat organisms P, the seeds wiil go inside organisms Q's digestive system and would not digest. Once organisms, Q waste come out, the seeds would be carried away from its parent plant.

Q31. (a) Organism X prefers to live in wet soil than dry soil.

(b) The organisms have to move the same distance while searching for a suitable condition.

(c) She should cover half of the dry soil with dark cloth and wait for a certain period of time. Then she should count the number of organism Y on both sides and compare.

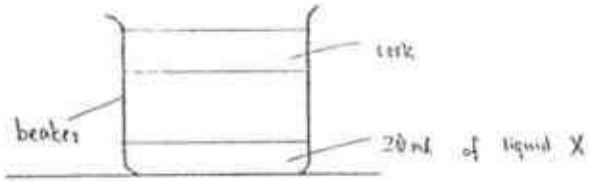
Q32. (a) Dark coloured surface absorb more heat than light coloured surface.

(b) Bird P lives in a very cold environment and needs warmth. When the dark coloured back face the sun, it absorbs heat for Bird P.

(c) Less exposed surface area to a surrounding will lead to less heat loss from body to surrounding.

(d) When keeping warm, Bird Q would also be able to spot predators easily and alert the other Bird Q to escape from the predator hence they would not be caught by the more predator easily.

Q33. (a)



(b) In set-up T, there was leaves for decomposition to occur, during decomposition, the leaves releases carbon dioxide hence liquid X would turn yellow.

(c) (i) Set-up A less than 5 days
(ii) Set-up B more than 5 days.

Q34. (a) Plant P: It releases oxygen during photosynthesis for the animals in the pond.

Plant Q: It provides shelter for the animals.

(b) When the population of Plant Q increases, there are more Plant Q to block sunlight from reaching, Plant P, preventing Plant P to photosynthesis of plant P decreases.

(c) The rotting plants are decomposing, competing for oxygen require for decomposition. Hence the level of oxygen decreases.

Q35. (a) Rod A was a magnet and repelled when their like poles face each other hence it moved away.

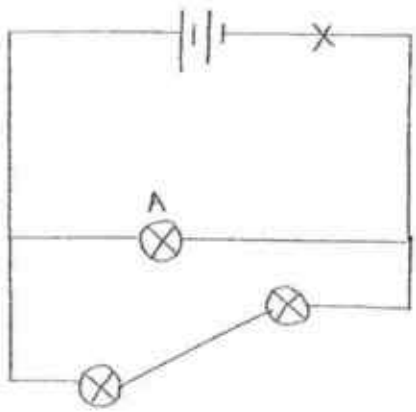
(b) The flame demagnetize Rod A causing Rod A to become a magnetic material hence it will be attracted.

Q36. (a) elastic potential energy → gravitational potential energy.

(b) When Ali doubled the distance, he pressed the spring down, more elastic potential energy was converted to more gravitational potential energy. Hence the spring would reach a higher height.

(c) He should use a longer spring. A longer spring would have more elastic potential energy and convert to more gravitational potential energy.

Q37. (a)



(b) Bulb A. It has the most current passing through.

Q38. (a) The person who is heavier than 50kg may break the bungee cord if material P breaks when it is heavier than 50kg.

(b) Apply mass to material X until it breaks.

(c) Elexibility

Q39. (a) Indicating that there is less friction between the surface of the wooden block and surface A.

(b) (i) Gravitational force
(ii) Friction force

(c) Boon Leng should use a ramp with a greater height but same material.

(d) The grooves increases friction between the bottle cap and the hand, making easier to twist open the bottle cap.

Q40. (a) Steamer X. Steamer X has more than Steamer Y holes, allowing evaporated water vapour to escape more quickly through the hole. Therefore Alexis has to top up water.

(b) She should add hot water into the steamer.

Q41. (a) After switch S2 is closed, the iron bar would be magnetized and become an electromagnet, attracting pin Q.

(b) When switch S2 is closed, pin Q is attracted to W, which is an electromagnet. This caused the circuit with the fan to become open, thus the electric current cannot flow and the fan is turned off.

(c) It is to conserve energy and prevent global warming.