

**PRELIMINARY EXAMINATION  
2016  
PRIMARY SIX  
SCIENCE**

**BOOKLET A**

Name: \_\_\_\_\_ (   )

Class: Primary 6 - \_\_\_\_\_

30 questions

60 marks

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

**INSTRUCTIONS TO CANDIDATES**

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

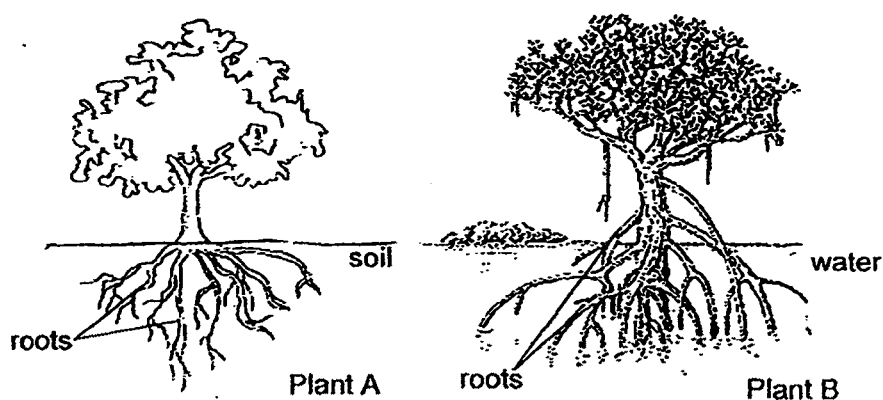
Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 21 printed pages, excluding the cover page.

**Booklet A (30 × 2 marks)**

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

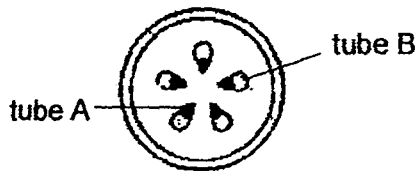
- 1 The diagram below shows Plants A and B.



Which one of the following correctly describes the similarity between the roots of plant A and plant B?

- (1) Both grow completely underground.
- (2) Both take in water and mineral salts.
- (3) Both climb on other plants for support.
- (4) Both are green due to presence of chlorophyll.

- 2 3 pupils left plant X in a beaker of red-coloured water. 5 hours later, they cut a cross-section of plant X and observed that tube A had turned red but not tube B.

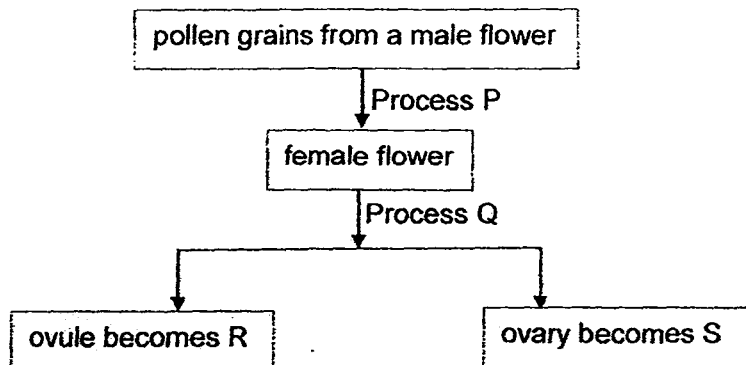


Based on their observations, the pupils made the following statements:

- Julie The plant depended on tube A to transport food to all its other parts.  
 Mark Tube A ensured that water from the roots was transported to all parts of the plant.  
 Ravi The plant depended on tube B to transport water from its roots to some parts of the plant.

Which pupil(s) made the correct statement(s)?

- (1) Julie only  
 (2) Ravi only  
 (3) Mark only  
 (4) Julie and Ravi only
- 3 The diagram below shows how a flowering plant reproduces.



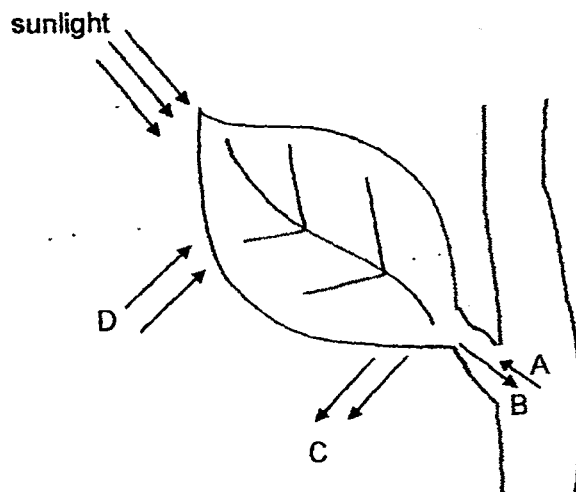
Which of the following do P, Q, R and S represent?

	Process		Parts of the plant	
	P	Q	R	S
(1)	fertilisation	pollination	fruit	seed
(2)	pollination	fertilisation	fruit	seed
(3)	pollination	fertilisation	seed	fruit
(4)	fertilisation	pollination	seed	fruit

- 4 Which of the following shows the characteristics of a flower that is pollinated by an insect?

	Smell of flower	Colour of petals	Size of petals
(1)	scented	dull	small
(2)	scented	brightly-coloured	big
(3)	unscented	dull	small
(4)	unscented	brightly-coloured	big

- 5 The diagram below shows a process being carried out by a green leaf on a plant.



Which of the following do A, B, C and D represent?

	A	B	C	D
(1)	sugar	water	carbon dioxide	oxygen
(2)	sugar	carbon dioxide	water	oxygen
(3)	water	carbon dioxide	sugar	oxygen
(4)	water	sugar	oxygen	carbon dioxide

6 Which of the following statements are correct about sexual reproduction in both plants and animals?

- A Pollination takes place before fertilisation.
- B The female egg cells are stored in the ovary.
- C The male reproductive cells are called sperms.
- D The male and female reproductive cells have to fuse for fertilisation to take place.

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

7 Luke sets up 4 containers of leaf litter, W, X, Y and Z, of the same size and left them in 4 different places. The table below shows the condition in each container of leaf litter.

Container of leaf litter	Location	Temperature	Condition in the leaf litter
W	under a tree	25°C	damp
X	in the middle of the basketball court	37°C	dry
Y	in the middle of the school field	38°C	damp
Z	beside a window	28°C	dry

In which container, W, X, Y or Z, will Luke find the greatest number of populations of animals after 2 months?

- (1) W
- (2) X
- (3) Y
- (4) Z

- 8 Betty carried out an experiment to find out the effects of carbon dioxide on 4 organisms, W, X, Y and Z living in a pond. 4 similar set-ups for each of the organisms were kept over a period of 5 months. Different concentration of carbon dioxide were given to the 4 set-ups and she recorded her observations in the table below.

Concentration of carbon dioxide (units)	Size of population			
	Organism W	Organism X	Organism Y	Organism Z
1	75	107	99	213
5	75	105	95	257
10	75	100	86	274
15	80	95	80	289

Which one of the organisms could most likely be water plants found inside the pond?

- (1) W  
 (2) X  
 (3) Y  
 (4) Z
- 9 Lily did a study on 3 animals, S, T and U. She placed a tick (✓) in the box when she made the observation. At the end of her study, she completed the table as shown:

Observations	Animal S	Animal T	Animal U
Young looks like the adult			✓
Gives birth to young alive			✓
3 stages in the life cycle	✓		
Moults several times at one stage in its life cycle		✓	

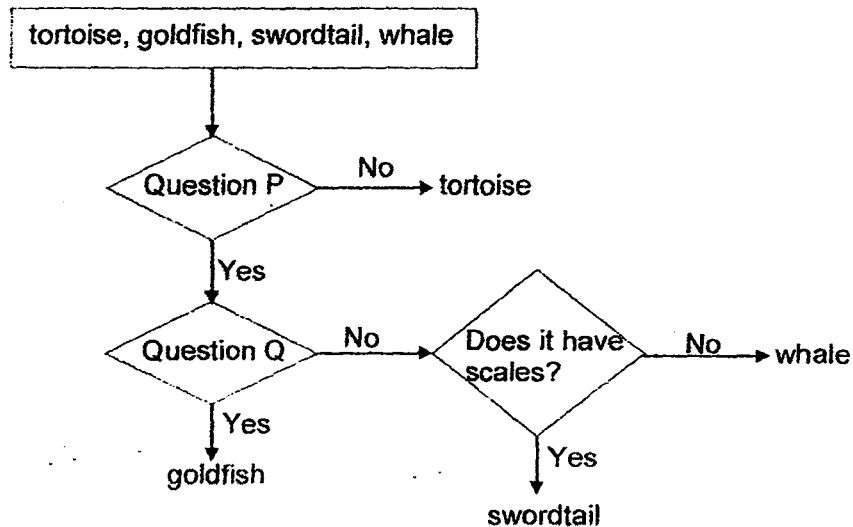
Which of the following could be Animals S, T and U?

	Animal S	Animal T	Animal U
(1)	hen	frog	cat
(2)	cat	dog	cockroach
(3)	frog	butterfly	dog
(4)	cockroach	mealworm	grasshopper

- 10 Ali classified four organisms, tortoise, goldfish, swordtail and whale.



He classified them according to the flowchart below.



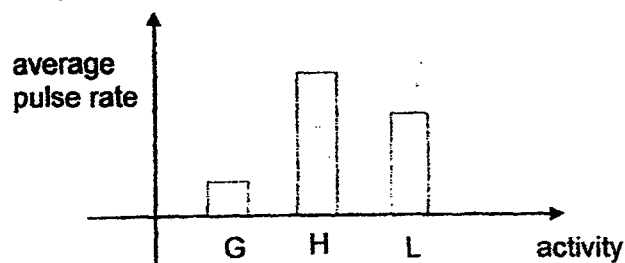
What were the two questions, P and Q?

	Question P	Question Q
(1)	Does it live only on land?	Does it grow?
(2)	Does it live only in water?	Does it lay eggs?
(3)	Does it feed on smaller animals?	Does it give birth alive?
(4)	Does it respond to changes around it?	Does it move about freely?

- 11 What is the function of the large intestine in the human digestive system?

- (1) It digests food.
- (2) It passes the digested food to the blood.
- (3) It absorbs water from the undigested food.
- (4) It passes the undigested food out of the body.

- 12 Krishnan completed several activities, G, H and L. The graph below shows Krishnan's average pulse rate during each activity.



Which of the following best describes the activities, G, H and L?

	G	H	L
(1)	running	reading	strolling
(2)	reading	running	walking
(3)	swimming	sleeping	walking
(4)	resting	strolling	swimming

- 13 5 pupils observed some plant and animal cells under the microscope. They recorded their observations and conclusions in the table below.

Name of pupil	Observation on cell parts	Conclusion on type of cell
Ali	cytoplasm, nucleus, cell membrane	animal
Meiling	nucleus, cell wall, cell membrane, chloroplasts	plant
Emily	cell membrane, nucleus, chloroplasts	animal
Ben	cell membrane, cell wall, nucleus	animal
Nancy	cell membrane, cell wall, nucleus, cytoplasm	plant

Which pupils made the correct conclusions?

- (1) Ali, Emily and Ben
- (2) Ali, Meiling and Nancy
- (3) Emily, Ben and Nancy
- (4) Meiling, Emily and Ben



- 14 The following table shows the number of animals in a particular community.

Animal	Number of organisms
spider	10
snail	12
butterfly	8
earthworm	5
caterpillar	5

How many populations of organisms are there in this community?

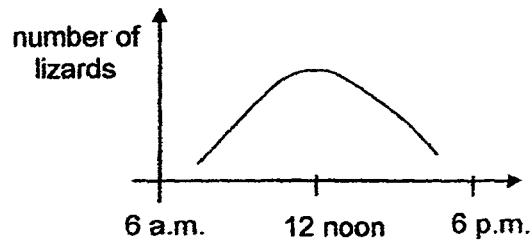
- (1) 4
  - (2) 5
  - (3) 13
  - (4) 40
- 15 Which of the following statements correctly describes the structural and behavioural adaptations of some organisms?

	Structural adaptation	Behavioural adaptation
(1)	lays eggs in corners to increase the chances of survival	lays many eggs to increase the chances of survival
(2)	moves slowly to avoid predators	coils up to avoid predators
(3)	uses big eyes to hunt in darkness	uses big ears to hunt in darkness
(4)	uses stripes on the body to blend in with the surroundings	uses twigs to decorate its shells to blend in its surroundings

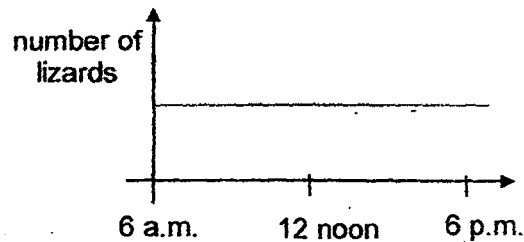
- 16 In the early morning, lizards will lie on surrounding rocks to warm their bodies. At noon, the hottest part of the day, the lizards will hide under rocks to cool their bodies. Xiao Ling went to area X to observe the number of lizards she could spot.

Which one of the following graphs correctly shows the number of lizards Xiao Ling spotted in area X throughout the day?

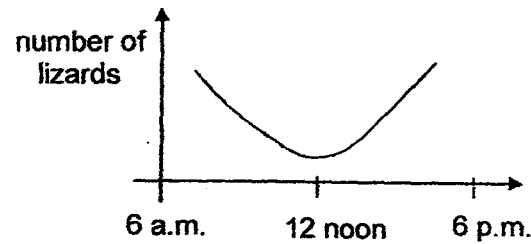
(1)



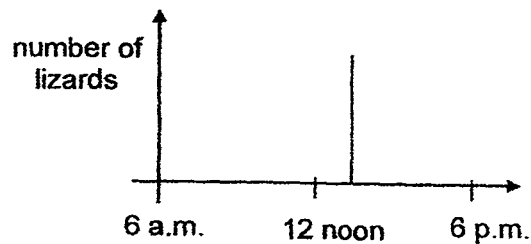
(2)



(3)



(4)

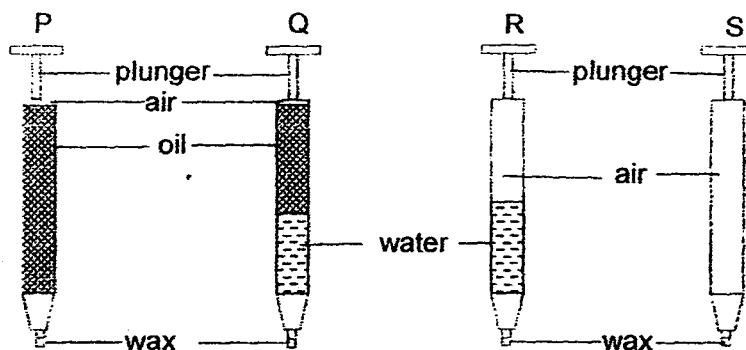


- 17 Salleh fully dipped 4 different fabric, R, S, T and U, of the same size into 4 containers containing the same amount of water. He recorded the amount of water in each container after dipping the fabric into the containers. His results are shown in the table below.

	Container for fabric R	Container for fabric S	Container for fabric T	Container for fabric U
Amount of water in the container at the beginning (ml)	200	200	200	200
Amount of water in the container at the end (ml)	200	80	185	145

Based on the results above, which fabric should Salleh choose to make an umbrella?

- (1) Fabric R
  - (2) Fabric S
  - (3) Fabric T
  - (4) Fabric U
- 18 Ahmad set up 4 syringes as shown in the diagram below. The ends of the syringes were sealed with some wax.

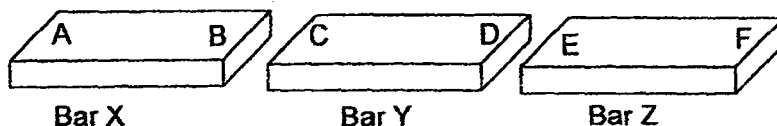


Which of the two plungers cannot be pushed inwards easily?

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

- 19 Bob had 3 bars, X, Y and Z. Their ends were labelled A, B, C, D, E and F respectively.

He brought the ends of Bar X, Bar Y and Bar Z close to one another to find out if they would attract or repel.



The results of Bob's experiment is as shown below:

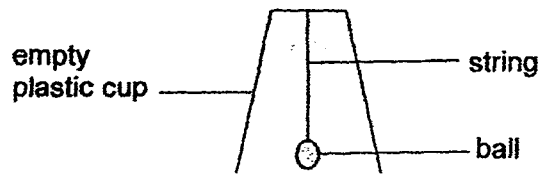
		Bar Y		Bar Z	
		C	D	E	F
Bar X	A	attract	attract	attract	attract
	B	attract	attract	attract	attract
Bar Y	C			attract	repel
	D			repel	attract

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

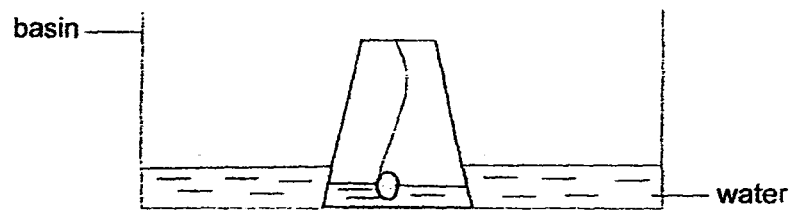
- A Bars X, Y and Z are magnets.
- B Only Bars Y and Z are magnets.
- C Only Bars X and Y are magnetic materials.
- D Bars X, Y and Z are made of magnetic materials.

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

- 20 Johari attached a small ball to the base of an empty plastic cup as shown below.



He placed the plastic cup with the attached small ball into a basin of water and pushed the cup downwards.

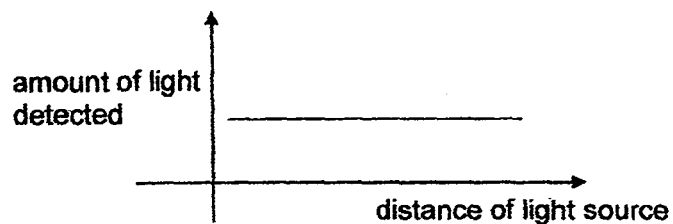


Which one of the following statements best explains the difference in the water level inside the plastic cup and the water level in the basin?

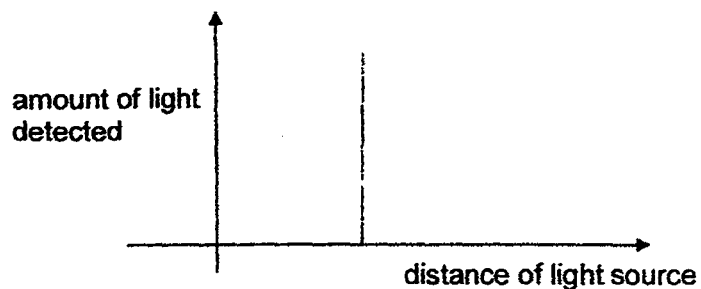
- (1) The ball took up space in the plastic cup.
- (2) The ball got the water out of the plastic cup and into the basin.
- (3) Some air was trapped in the plastic cup and could not escape out of it.
- (4) The plastic cup occupied space in the basin and caused the water in it to rise.

- 21 The light sensor in a datalogger measures the amount of light that it is exposed to. Which one of the following graphs shows how the reading of the datalogger changes as the light source is placed further away from the light sensor?

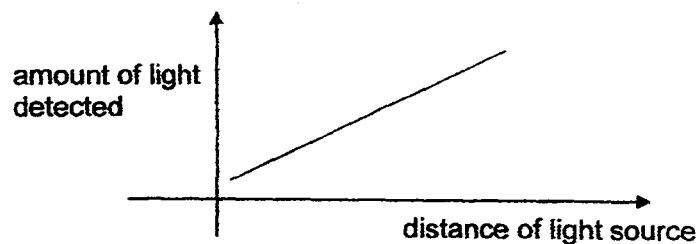
(1)



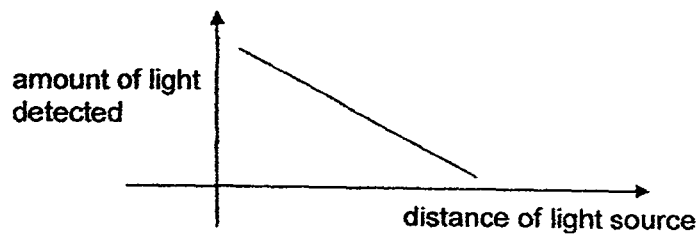
(2)



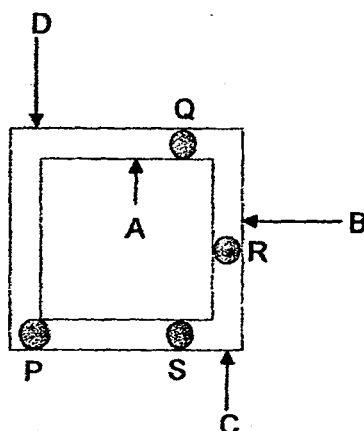
(3)



(4)



- 22 The diagram below shows a square metal frame with four drops of wax attached at P, Q, R and S.



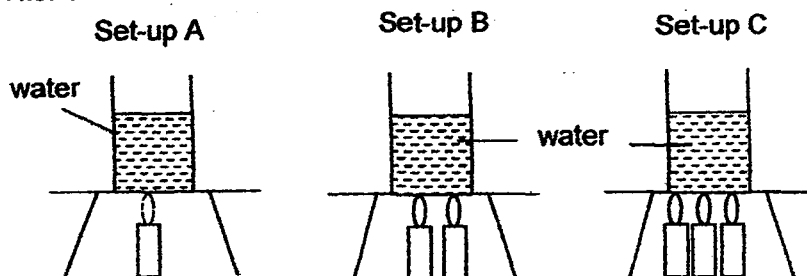
Zainal heated the metal frame at one of the points, A, B, C or D, and recorded the time taken for the drops of wax to melt in the table below.

Position of wax	Time taken for wax to melt (seconds)
P	107
Q	24
R	56
S	97

At which point, A, B, C or D, did Zainal heat the metal frame?

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

- 23 Jaspir heated 3 identical beakers containing equal amount of water with different number of identical heat sources as shown below. He heated each beaker of water until it boiled.

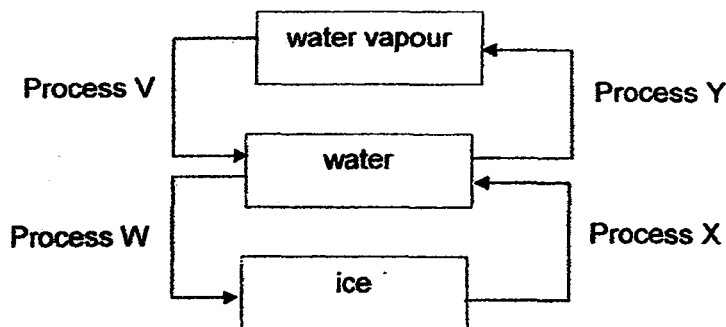


At the end of the experiment, he made 3 statements. Which statement(s) was/were correct?

- A The final temperature of water in all the 3 set-ups was the same.
- B The water in set-up C reached the highest temperature in the shortest time.
- C The water in set-up A was of a lower final temperature than the water in set-up B.

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

- 24 Water changes from one state to another through some processes as shown.

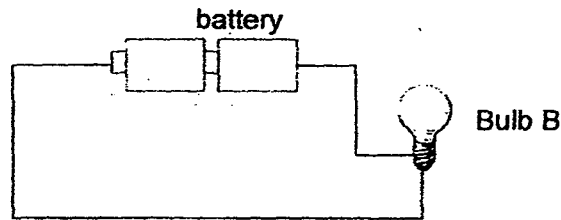


What do processes V, W, X and Y represent?

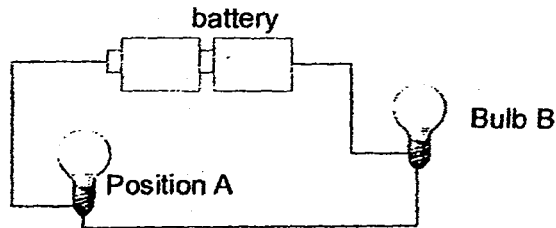
	Process V	Process W	Process X	Process Y
(1)	condensation	freezing	melting	evaporation
(2)	evaporation	melting	freezing	condensation
(3)	freezing	melting	boiling	evaporation
(4)	melting	evaporation	condensation	boiling



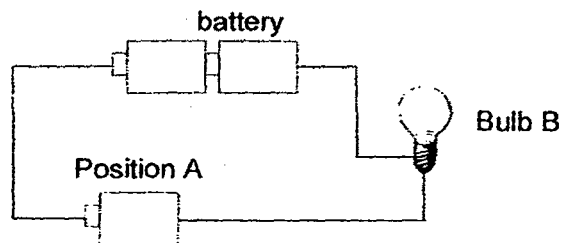
- 25 Sally set up the circuit as shown below. She observed the brightness of Bulb B.



She connected another bulb at Position A as shown below and observed the brightness of Bulb B.



Then, she removed the bulb at Position A and replaced it with a battery as shown below and made her observations again.

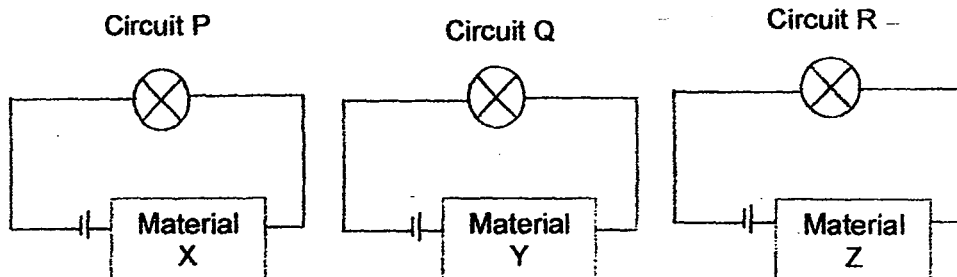


All parts of the circuit were connected properly.

Which of the following shows the correct observation of the brightness of Bulb B when another bulb or battery was connected at Position A respectively?

	Bulb at Position A	Battery at Position A
(1)	dimmer	brighter
(2)	dimmer	remains the same
(3)	remains the same	brighter
(4)	remains the same	remains the same

- 26 Ramesh set up 3 similar circuits P, Q and R with different objects made of materials X, Y and Z as shown below.



Ramesh made the following observations:

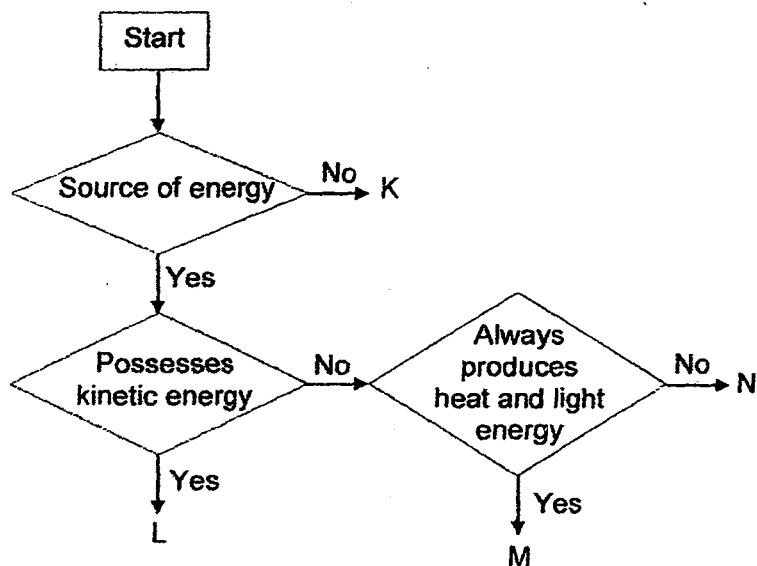
- The bulb in circuit R did not light up.
- The bulbs in circuits P and Q lighted up.
- The bulb in circuit Q was brighter than the bulb in circuit P.

What can Ramesh conclude about the materials X, Y and Z?

- A Z is a metal.
- B Z is a non-conductor of electricity.
- C X is a better conductor of electricity than Y.
- D Both X and Y are good conductors of electricity.

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

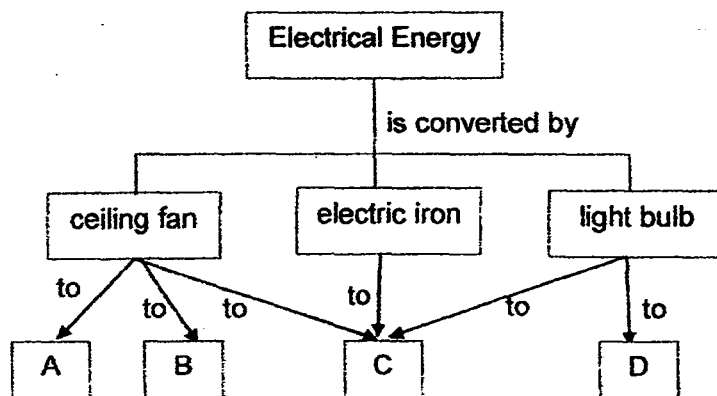
27 Study the flowchart below.



What could L and M represent?

	L	M
(1)	bouncing ball	coal
(2)	running water	sun
(3)	rolling ball	oil
(4)	wind	moon

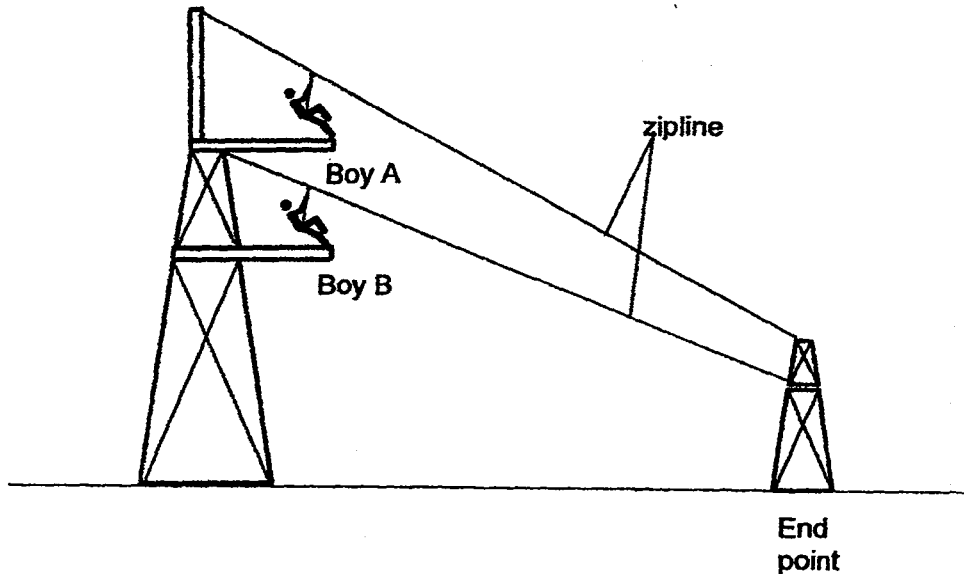
- 28 The diagram below shows the conversion of electricity to other forms of energy, A, B, C and D, by some household electrical appliances.



Identify the forms of energy A, B, C and D.

	A	B	C	D
(1)	heat	light	sound	kinetic
(2)	kinetic	sound	heat	light
(3)	kinetic	potential	light	heat
(4)	sound	chemical	heat	light

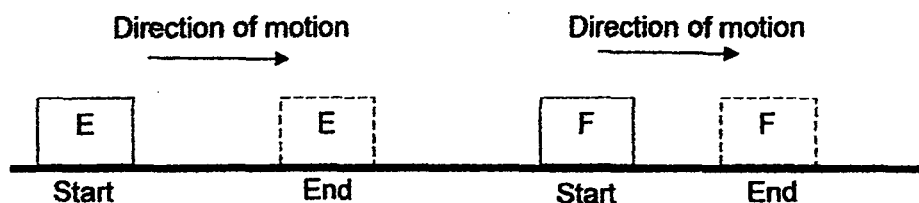
- 29 The diagram below shows a zipline in an adventure camp. 2 boys, A and B, started to slide down the zipline from 2 different heights.



Which one of the following statements best describes the gravitational force possessed by the 2 boys of similar built and at similar starting point but different height?

- (1) Both boys have no gravitational force acting on them.
- (2) Boy A has less gravitational force acting on him than Boy B.
- (3) Boy A has more gravitational force acting on him than Boy B.
- (4) Both boys have the same amount of gravitational force acting on them.

- 30 The diagram below shows two identical blocks, E and F, of the same material being pushed along the same surface. Block F was observed to travel a shorter distance.



Which of the following statements is/are possible explanations for the observation?

- A Block E and Block F are moving on ice.
- B Block F has greater mass than Block E.
- C A layer of oil was spread below Block E.
- D A greater force was used to push Block E.

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

**End of Booklet A**

**PRELIMINARY EXAMINATION  
2016  
PRIMARY SIX**

**SCIENCE**

**BOOKLET B**

Name: \_\_\_\_\_ (   )

Class: Primary 6 - \_\_\_\_\_

Parent's Signature: \_\_\_\_\_

<b>Booklet A</b>	<b>60</b>
<b>Booklet B</b>	<b>40</b>
<b>Total</b>	<b>100</b>

14 questions

40 marks

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

**INSTRUCTIONS TO CANDIDATES**

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

Write your answers in this booklet.

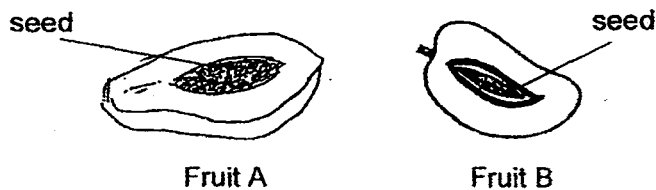
This booklet consists of 14 printed pages, excluding the cover page.

**Booklet B (40 marks)**

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

The number of marks available is shown in brackets [ ] at the end of each question or part question. (40 marks)

31 Alice opened 2 sweet, juicy and fleshy fruits as shown below.



- (a) Explain why it is important for seeds to be dispersed far away from the parent plant. [1]

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- (b) The seeds of fruit A are tiny and not digestible. The seed of fruit B is large and hard. Compare the difference in the process of seed dispersal for the 2 fruits. [1]

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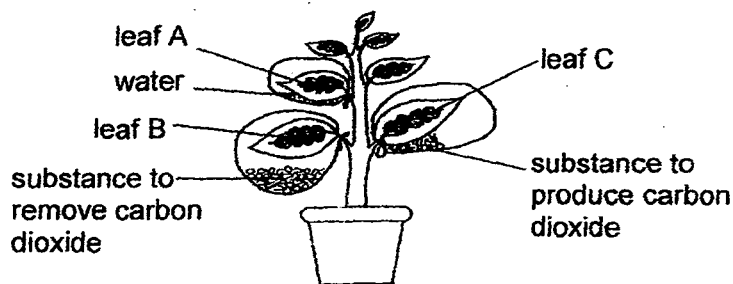
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SCORE	2
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- 32 Abdul wanted to find out the rate of photosynthesis of a plant. He placed a potted plant in the dark for 48 hours. After that he wrapped three leaves A, B and C using clear plastic bags with different substances as shown below. Then he placed the potted plant in the garden and watered it.



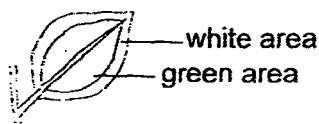
- (a) In which leaf will the rate of photosynthesis be the fastest? Give a reason. [1]

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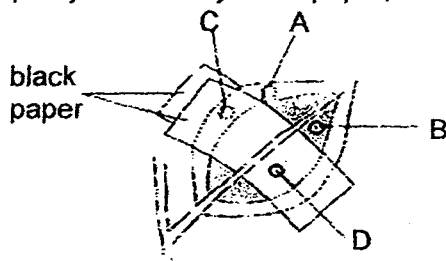


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In another experiment, Abdul wanted to find out if plants make food during the process of photosynthesis. Diagram 1 below shows a leaf on a plant. At the start of the experiment, there was no food on the leaf.



Next, the leaf was partly covered by black paper, as shown in Diagram 2.



The plant was then put in the sun. After several hours, the leaf was plucked off and the black paper was removed. The leaf was tested for food.

- (b) In which of the areas labelled A, B, C and D is food mostly found? Explain. [1]

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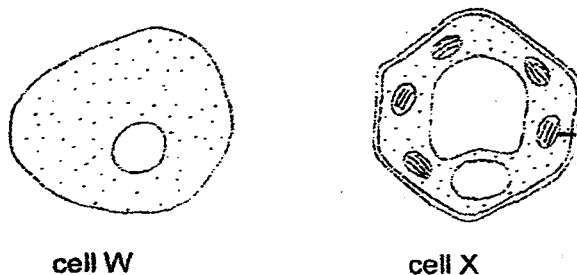


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SCORE	2
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33 Hafiz observed 2 cells as shown below.



(a) From the above diagram, identify the plant cell and the animal cell. [1]

Plant cell: \_\_\_\_\_

Animal cell: \_\_\_\_\_

(b) A certain part in the cytoplasm of the plant cell is not found in the animal cell.

(i) Name this part. [1]

\_\_\_\_\_

(ii) What is the function of this part? [1]

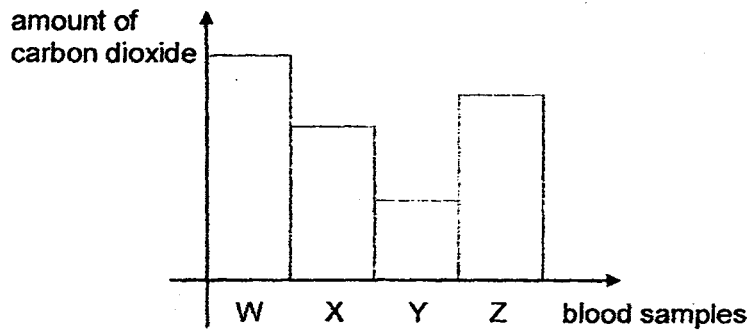
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(iii) Label the part named in (i) in the diagram above. [1]

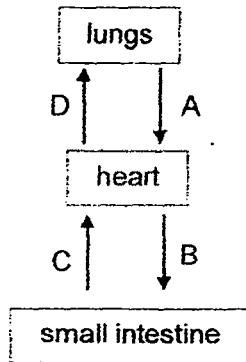
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SCORE	<div></div>
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- 34 The bar graph below shows the amount of carbon dioxide in 4 blood samples taken at the same time from different blood vessels in different parts of the circulatory system.



The following diagram shows the different organs linked by different blood vessels, A, B, C and D.



- (a) Fill in, A, B, C and D, correctly in the table below to show which blood vessels, A, B, C and D, are blood samples, W, X, Y and Z taken from. [2]

Blood Sample	Blood vessel
W	
X	
Y	
Z	

- (b) What role does the circulatory system play in the digestion of food? [1]

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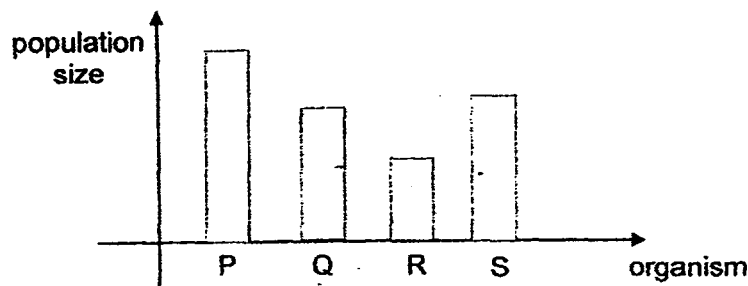


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SCORE	3
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- 35 A food web consists of 4 organisms, P, Q, R and S. The bar graph below shows the population of the 4 organisms at a particular time.



There is only one food producer in this food web.

- (a) Based on the graph above, name the organism that is most likely the food producer. Give a reason. [1]

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The box below contains additional information about the 4 organisms.

- ✓ S eats Q.
- ✓ There is one meat-eater, one meat-and plant-eater and one plant-eater.
- ✓ The meat-eater eats two of the other three organisms.
- ✓ R feeds on S and Q.

- (b) Using the bar graph and the additional information above, draw a food web for organisms, P, Q, R and S, in the space provided below. [2]

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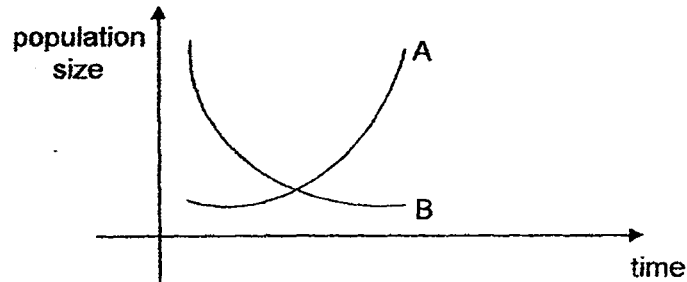
SCORE	3
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36 The diagram below shows Organism R.



Farmers in area X realised that too many Organism R had been eating their chickens on their farm. They started killing off Organism R.

The graph below shows the changes in the population of Organism R and population of chickens on their farm.



- (a) Which line, A or B, shows the changes in the population of Organism R? Explain. [1]

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- (b) How did the change in the population of Organism R affect the population of chicken? Give a possible reason for the change. [2]

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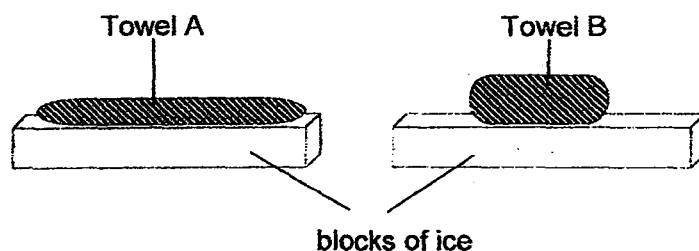
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SCORE	3
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- 37 Jane set up an experiment as shown below to find out about heat loss. 2 similar towels, A and B, were heated to a temperature of  $50^{\circ}\text{C}$  and placed on 2 similar blocks of ice. Towel B was folded before being placed on the block of ice. The amount of time taken for the towels to reach a temperature of  $30^{\circ}\text{C}$  was noted down.



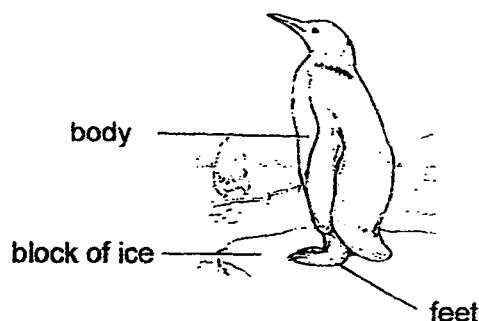
- (a) Which towel took a shorter time to reach a temperature of  $30^{\circ}\text{C}$ ? [1]  
Explain.

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The diagram below shows a penguin standing on a block of ice.



- (b) Penguins do not usually lie down. Most of the time, they stand on their feet on the cold ice. Why does a penguin spend more time standing on its two feet? [1]

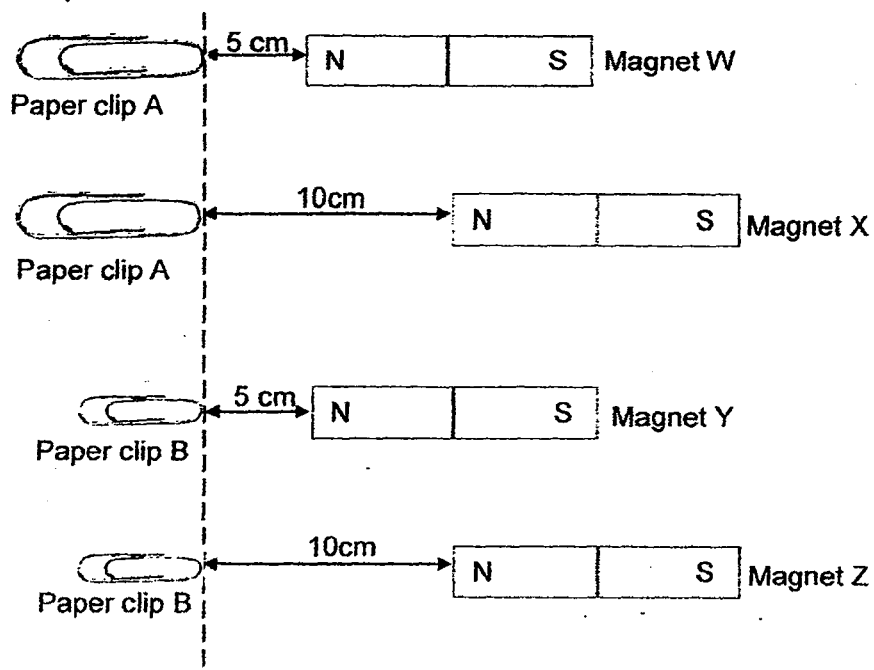
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SCORE	2
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- 38 Khalid set up an experiment to find out the strengths of magnets W, X, Y and Z. The diagram below shows the greatest distance at which the magnets will attract paper clips A and B. Paper clip A is twice as heavy as paper clip B.



- (a) Khalid wants to compare magnets W and Y to find out which magnet is stronger. What should he do to ensure a fair test? [1]

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

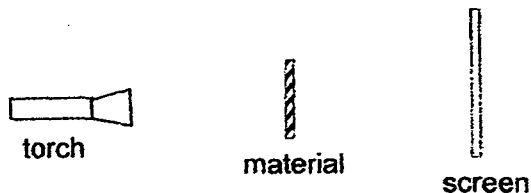
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SCORE	2
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- 39 Mrs Lim wants to find out the most suitable material for making a curtain to keep the room dark. She has materials A, B and C. The experiment is conducted in the same room using the same torch. The distance between the torch and the material has been kept the same. The set-up is as shown below.



- (a) Besides the size and thickness of material, give one other variable that is needed to be kept constant. [1]

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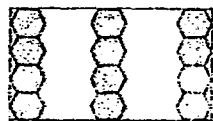
- (b) What should she look out for so that she can choose the most suitable material to be made into the curtain? Explain. [1]

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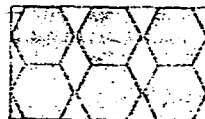
Mrs Lim decides to use a type of plastic window film that can be pasted on windows to block out light in a room.



The clear plastic window film comes with 2 different patterns as shown below. Both patterns have the same colour.



Pattern 1



Pattern 2

- (c) Which pattern (Pattern 1 or 2) will be more suitable for pasting on the windows to keep Mrs Lim's room shady? Explain. [1]

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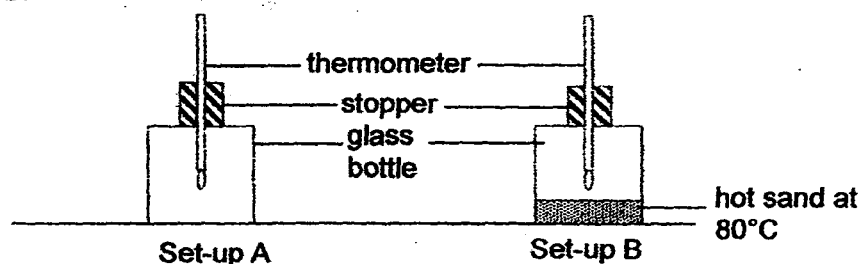
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SCORE	3
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- 40 Rick recorded the temperature of air in a glass bottle in set-up A as shown below. Then he heated some sand and poured them into the bottle. After 15 minutes, he recorded the temperature of air in the bottle as shown in set-up B.



The results are as shown in the table below.

Temperature of air in the glass bottle	
Set-up A	Set-up B
30°C	40°C

- (a) Explain why there was an increase in the temperature of the air in Set-up B. [1]

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- (b) Set-up A is a control. What is the purpose of a control? [1]

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In another experiment, Rick carried out the same experiment with metal bottles. The table below shows the new results.

Temperature of air in the metal bottle	
Set-up A	Set-up B
30°C	33°C

- (c) Explain why the temperature was lower in Set-up B when the metal bottles were used. [1]

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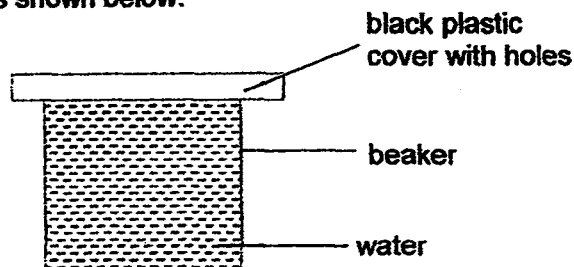


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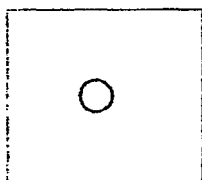
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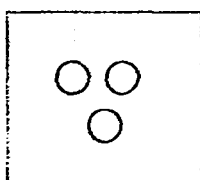
- 41 Rizal wanted to find out how one factor affects the rate of evaporation. He prepared a set-up as shown below.



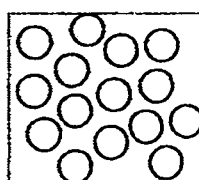
He had 3 similar black plastic covers with different number of holes as shown below. Each cover was placed over a beaker filled with water of the same temperature. The beakers were placed in the same room.



Cover A



Cover B



Cover C

- (a) Which factor of evaporation is tested by Rizal in the above set-up? [1]

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- (b) What needs to be measured to determine the rate of evaporation? [1]

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- (c) In which of the above set-up (Cover A, B or C) will the rate of evaporation be the greatest? Explain. [1]

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- (d) Why must the temperature of water be the same? [1]

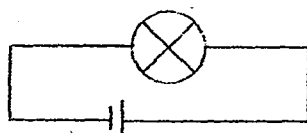
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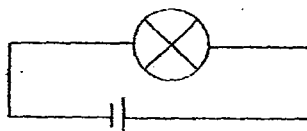
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- 42 Dora wanted to find out how the arrangement of bulbs affects the brightness of the bulbs in a closed circuit. Her set up was as shown below at the start of the experiment. The bulbs and batteries used were similar.



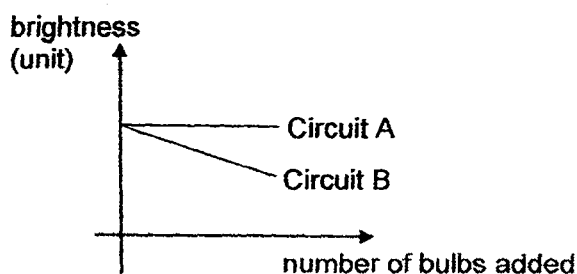
Circuit A



Circuit B

Then she added one bulb to each circuit and observed the brightness of each bulb in each circuit. After that, she added another bulb to each circuit again. She observed the brightness of each bulb again.

The results are as shown below.



- (a) Give a possible explanation for the difference in the brightness of bulbs as shown in the graph. [2]

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- (b) Based on your answer in (a), what will happen to the rest of the bulbs in each circuit when one bulb in each circuit blows? [1]

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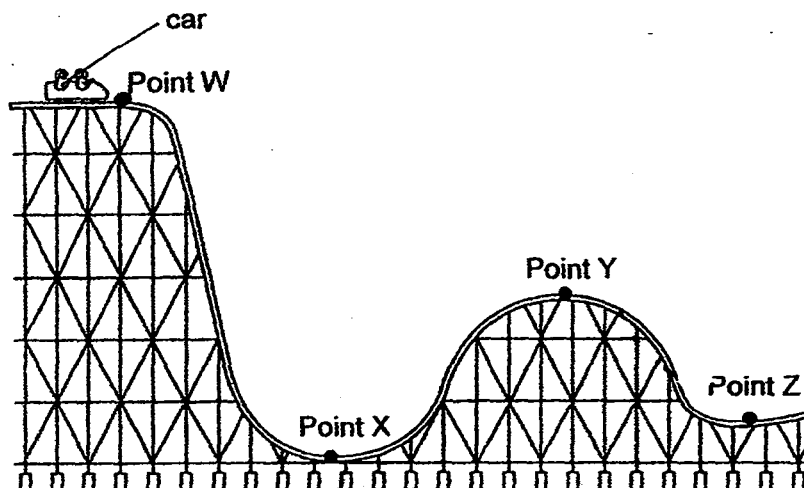


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SCORE	3
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- 43 The diagram below shows a car on a roller coaster that starts at point W and stops at point Z.



- (a) Point W is the highest point on the roller coaster. Explain in terms of energy why the car must be at point W. [1]

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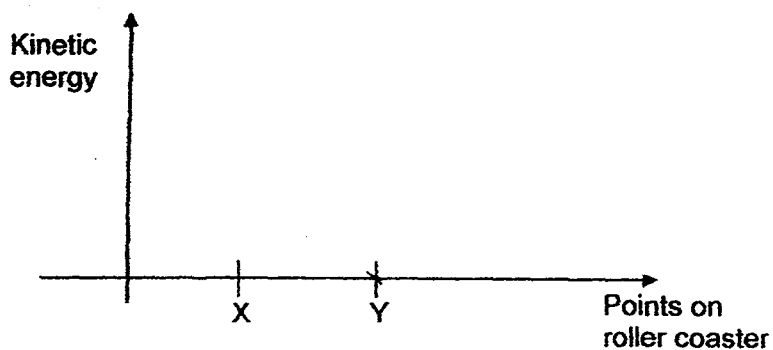
- (b) Explain why eventually, without applying any brakes, the car on the roller coaster will come to a stop at point Z. [1]

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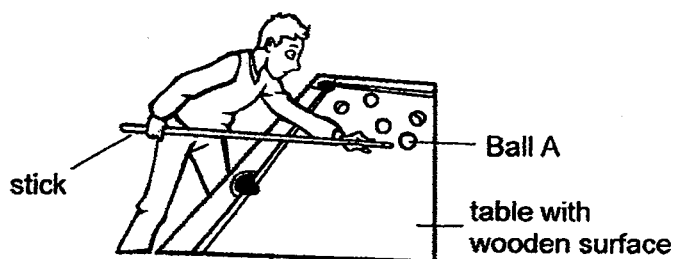
- (c) In the graph below, draw a line graph to show the conversion of kinetic energy of the car as it goes through from points X to Y in the roller coaster ride. [1]



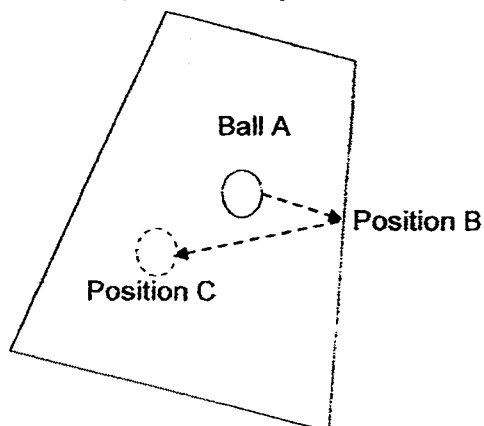
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SCORE	3
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- 44 Sam pushes a stick gently to strike Ball A.



The diagram below shows the path taken by Ball A.



- (a) State the force(s) that is/are acting on Ball A as it moves from B to C. [1]

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- (b) What can Sam do to the table if he wants Ball A to move further than Position C using the same amount of force to push the stick? [1]

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

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End of Booklet B

SCORE	3
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## EXAM PAPER 2016

SCHOOL : CATHOLIC HIGH SCHOOL  
SUBJECT : PRIMARY 6 SCIENCE

### Booklet A

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

### Booklet B

- Q31 (a) To reduce/avoid overcrowding so that plants will not compete for sunlight, nutrients, space and water with other plants.  
(b) Seeds of fruit A are tiny and so can be swallowed and the seeds are not digestible so can be passed out through droppings by the animals. Seeds of fruit B are too large and hard to be swallowed and are spitted by the animals.

- Q32 (a) Leaf C. It is the only leaf among the three leaves that have access to carbon dioxide that is needed for photosynthesis.  
(b) Area B. Area B is exposed to most amount of sunlight. Since area B is green and contains chlorophyll which can trap most amount of sunlight to make most food for the plant.

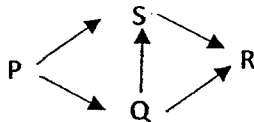
- Q33 (a) Cell X  
Cell W  
(b)(i) Chloroplasts  
(ii) Chloroplast contains chlorophyll that trap sunlight to make food.

- Q34 (a) 

D
B
A
C

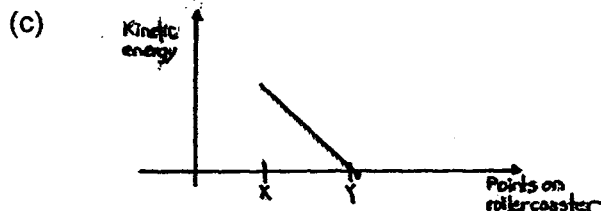
  
(b) It transports digested food to other parts of the body.

- Q35 (a) Organism P. It has the greatest population size.  
(b)



- Q36 (a) Line B. Organism R were killed leaving no predators for chickens, thus chickens would increase and organism R would decrease.  
(b) When the population size of R is decreasing, the population of chickens will increase. Organism R are eating the chickens so when there are less of organism R, more chickens can reproduce and increase in population size.

- Q37 (a) Towel A. It has a larger surface area exposed to the block of ice, thus losing heat quicker than towel B.  
 (b) Standing on its two feet reduces body contact with the ice. Less area of the penguin's body is touching the ice, so less body heat is lost.
- Q38 (a) He should replace paper clip B with paper clip A.  
 (b) This is to ensure any difference in the distance at which the magnet attracts the paper clips is due only to the strength of the magnets and not the mass of paper clips.
- Q39 (a) The distance between the screen and the material.  
 (b) She should look out for the darkness shadow. The darkest shadow cast is the most suitable as it blocks out the most light.  
 (c) Pattern 2. The pattern on Pattern 2 blocks out more light than Pattern 1 as the pattern cover a large area.
- Q40 (a) The heat travelled/flow from the hot sand to the air in the bottle.  
 (b) To compare and confirm that any change in the temperature of air in the bottle is only due to the heat loss from the hot sand and not any others variables.  
 (c) Metal is a better conductor of heat so more heat is lost to the surrounding air faster outside the bottle.
- Q41 (a) Area of exposed surface of water.  
 (b) The amount of water left in the beaker after a stated period of time.  
 (c) C. C has the most number of holes on the cover so it has the largest exposed surface area, thus, most amount of water evaporated.  
 (d) To ensure that the difference in the amount of water left is only affected by the exposed surface of the water and not the temperature of water.
- Q42 (a) Given the same number of batteries in A, the brightness of the bulbs is the same so bulbs are arranged in parallel while in B, the brightness of bulbs decreases, so the bulbs are arranged in series.  
 (b) The rest of the bulbs in A will still light up while all the bulbs in B will not light up.
- Q43 (a) W is the highest point so there is the greatest amount of gravitational potential energy that can be converted to greatest amount of kinetic energy for the car to reach point Z.  
 (b) The kinetic energy in the car has been converted to heat energy and sound energy.



- Q44 (a) Gravitational force and frictional force.  
 (b) Apply lubricant like oil.  
 (c) With a layer of oil, the table is smoother as the oil reduced the frictional force between ball A and the surface of the table.