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

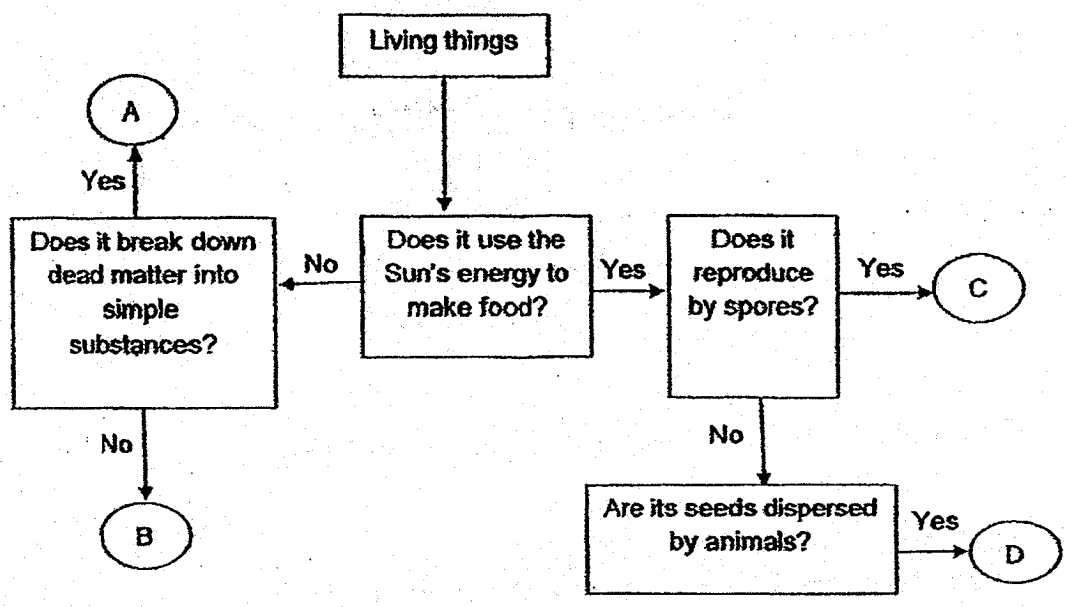
This booklet consists of 14 printed pages including this page.

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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.



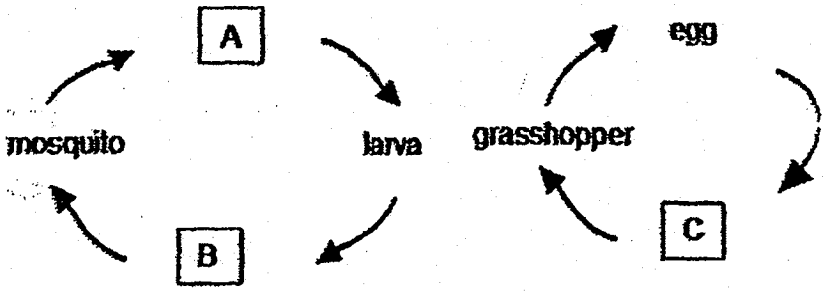
Which of the following correctly identify organisms A, B, C and D?

	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

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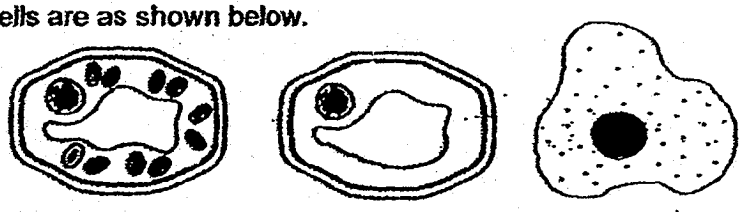
2 Study the diagrams of the two life cycles as shown below.



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.



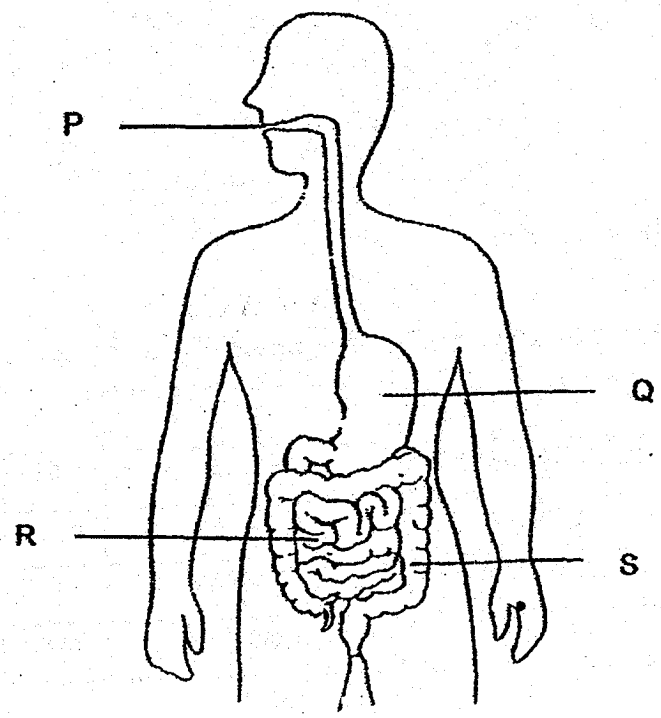
Which one of the following shows the correct classification and common parts found in all cells?

	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

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



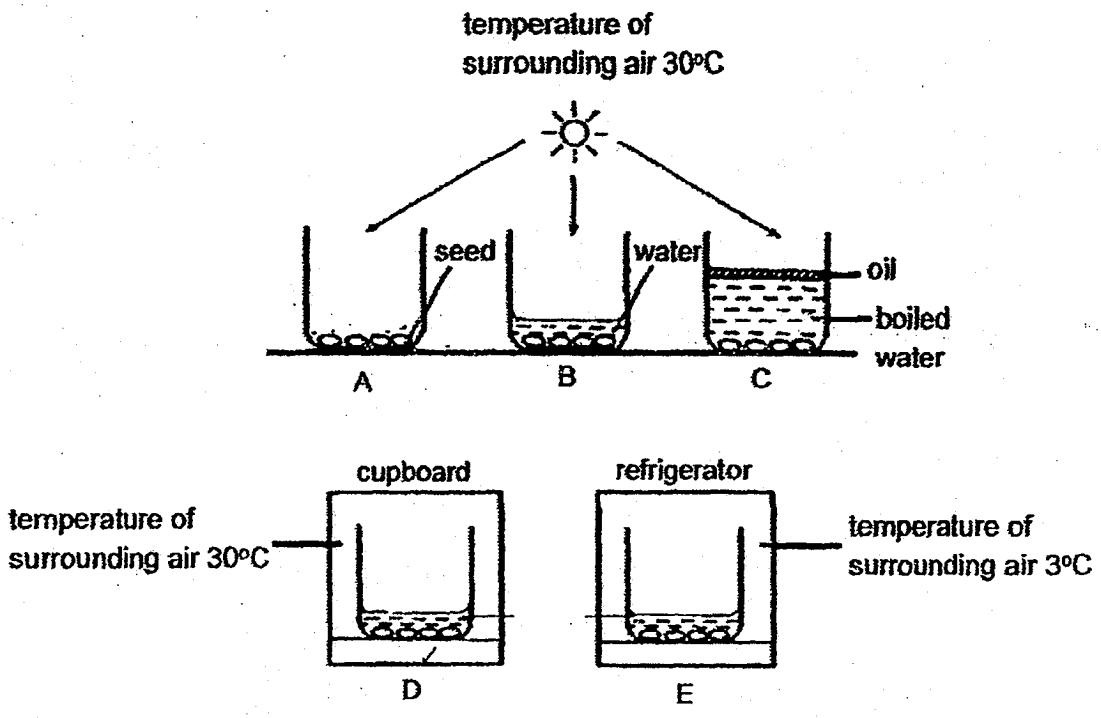
Which one of the following shows the correct classification of the parts to the functions?

	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.



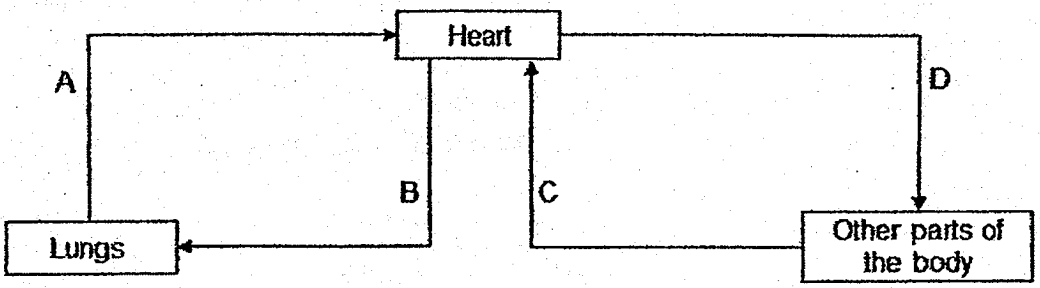
In which of the set-ups would Nilam observe the seeds germinating after two days?

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

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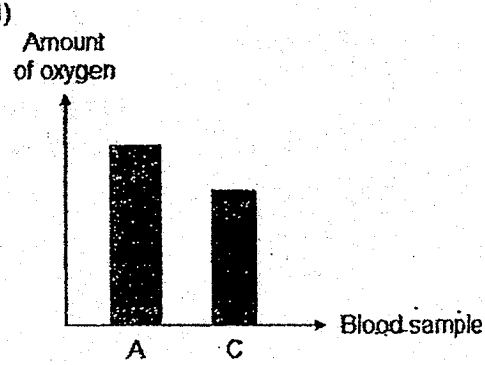
6 The diagram below shows the direction of the blood flow in some parts of the body.



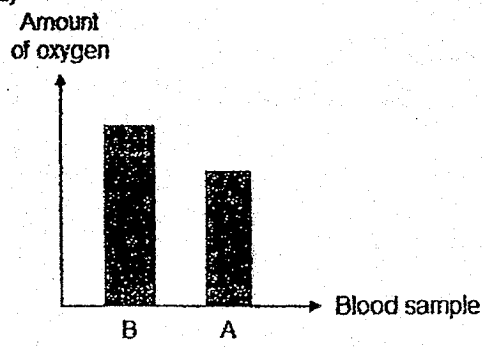
The same amount of blood was taken from A, B, C and D.

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

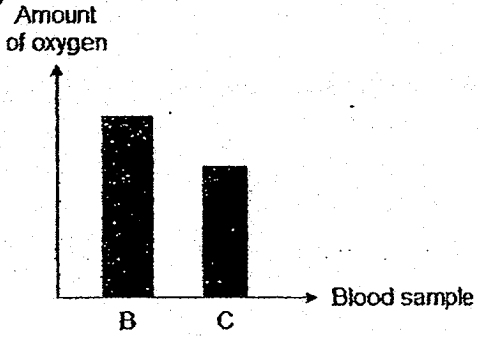
(1)



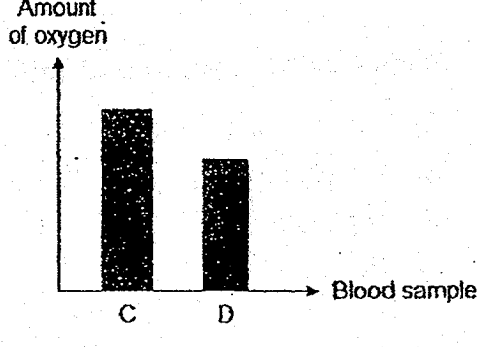
(2)



(3)



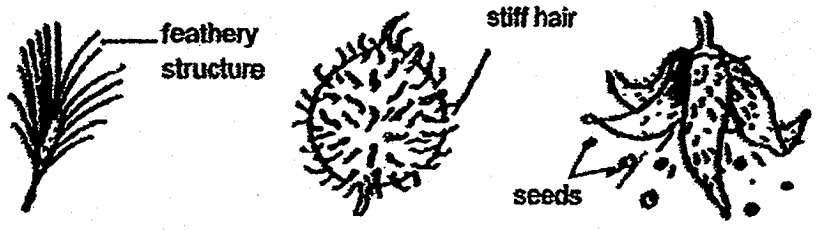
(4)



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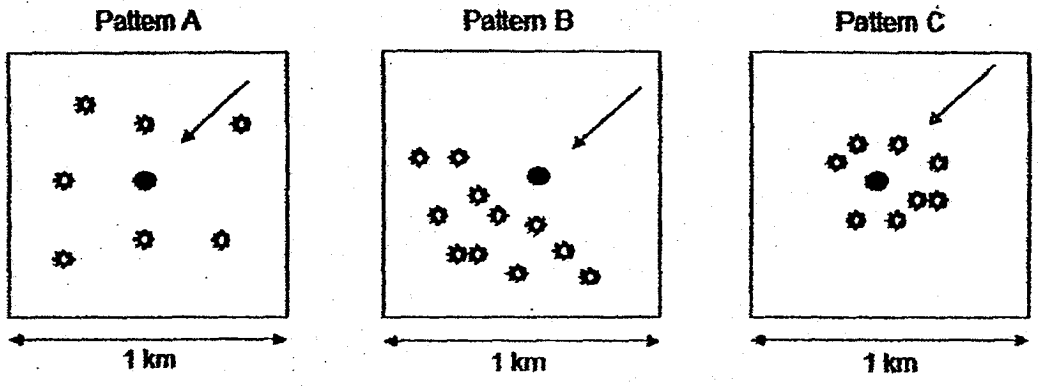
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7 The diagrams below show the fruits of three species of plants, X, Y and Z.



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

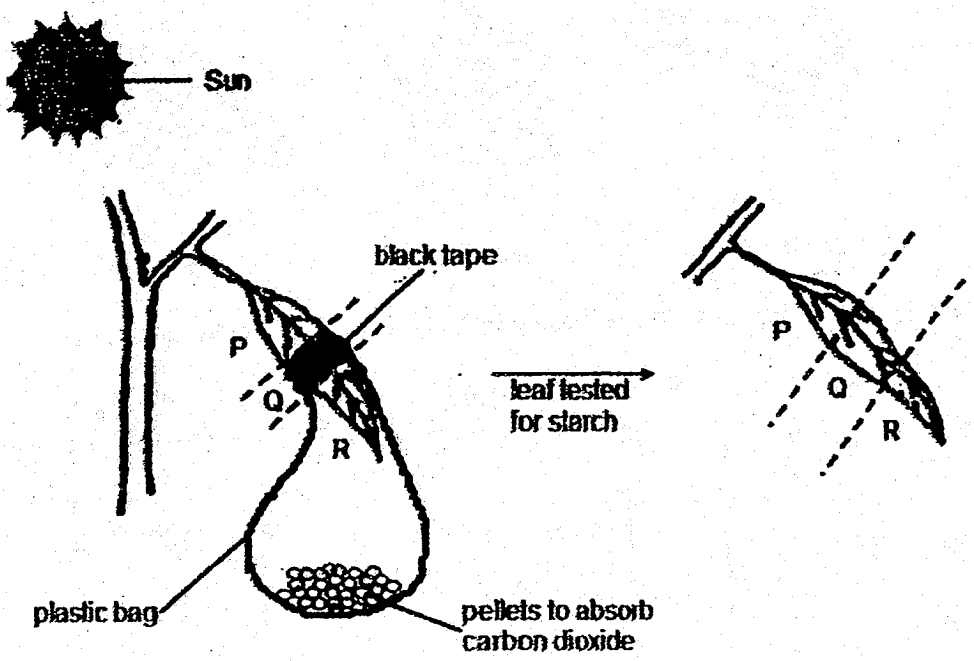
Which species of plants best match the dispersal patterns respectively?

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

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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.



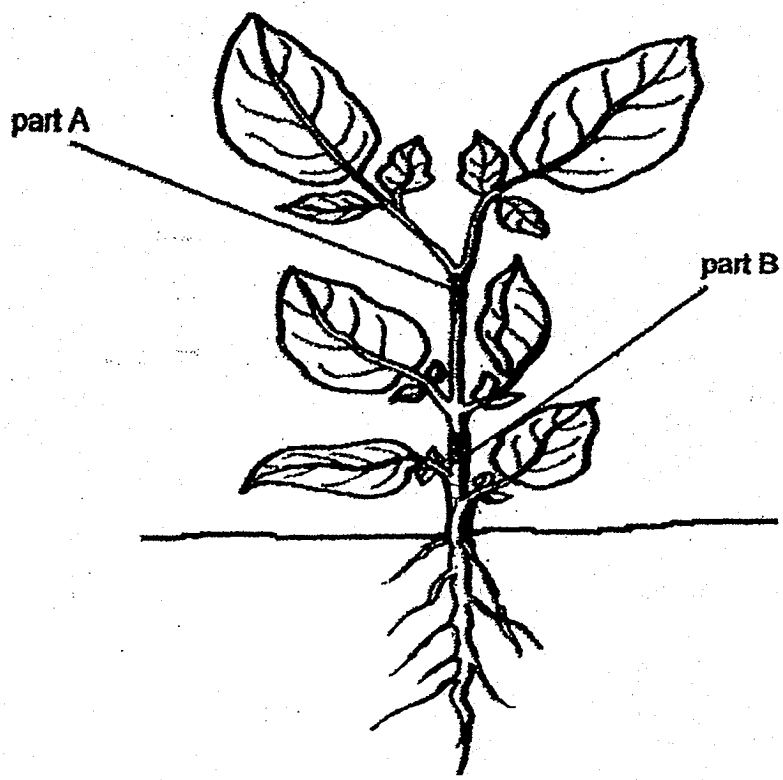
What would Suresh observe about the colour of iodine when he added it to parts P, Q and R of the leaf after 8 hours?

	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

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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

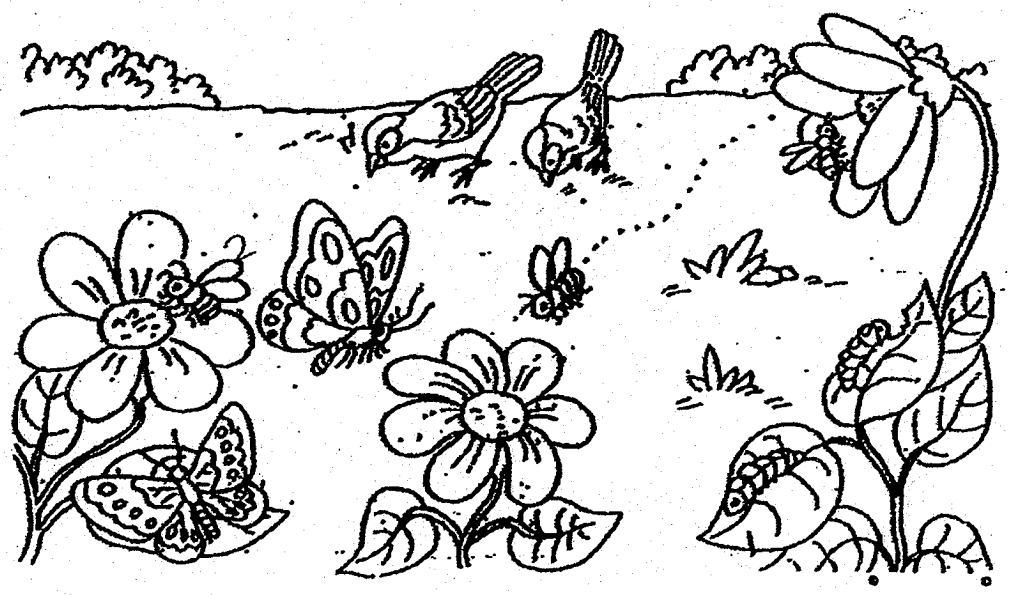
(3) A and B only

(4) B and C only

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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

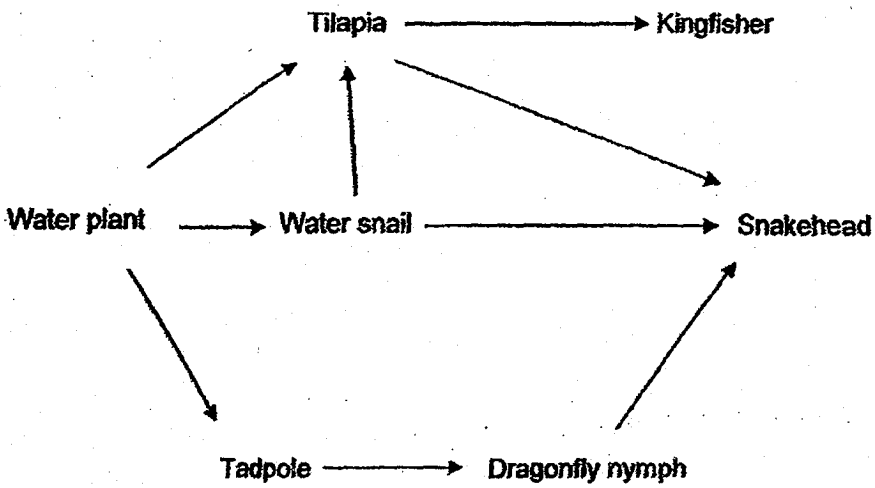
(3) A, B and C only

(4) A, C and D only

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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

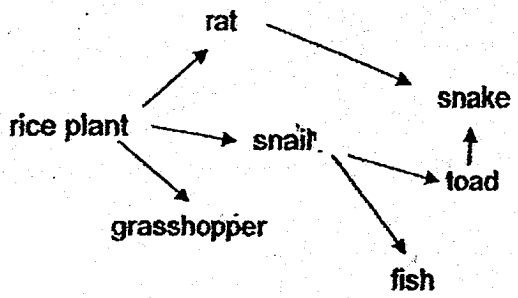
(3) A, B and C only

(4) B, C and D only

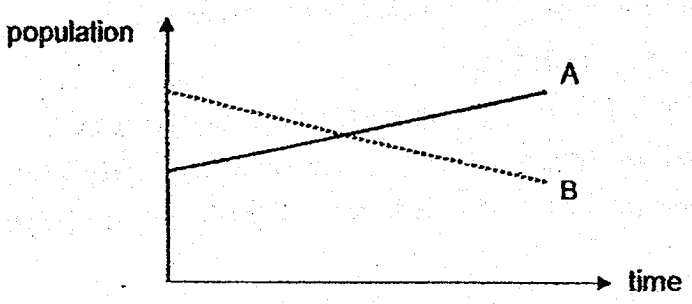
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12 The food web below illustrates the relationship among several different organisms in a rice field.



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.



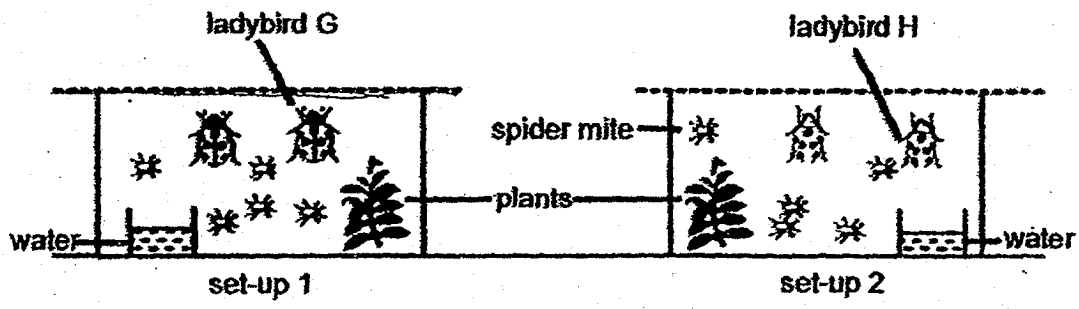
Which of the following correctly shows the prey of Animal Z and resulted in the change of population sizes for two of the organisms, A and B?

	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

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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.



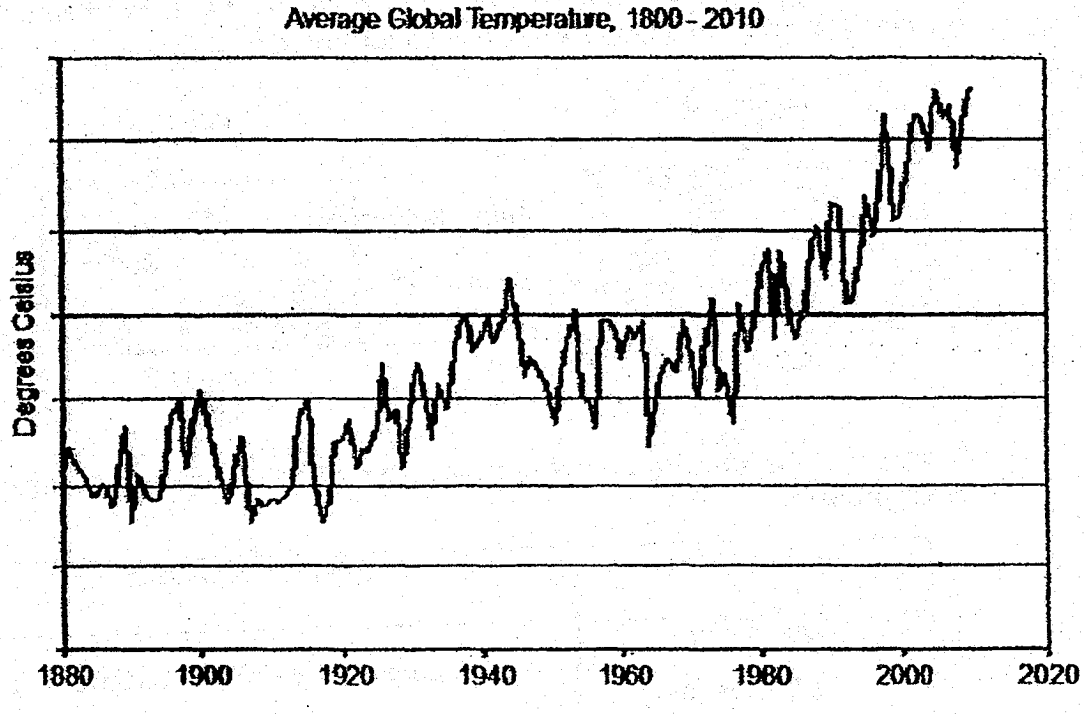
Which one of the following will help Mr Singh to draw a conclusion at the end of his experiment?

	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.

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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

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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

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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).

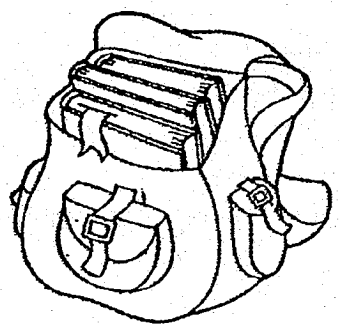
[28 marks]

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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

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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

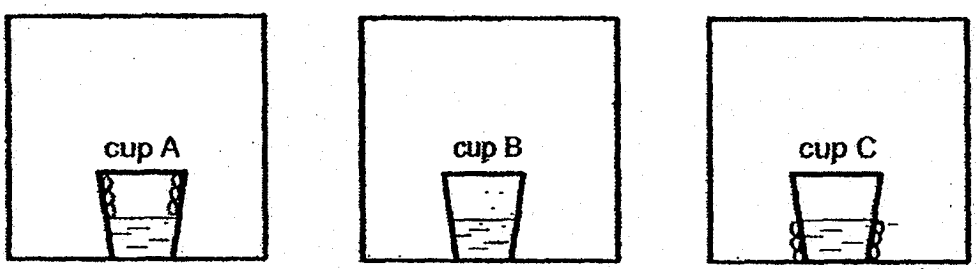
(1) C only

(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.



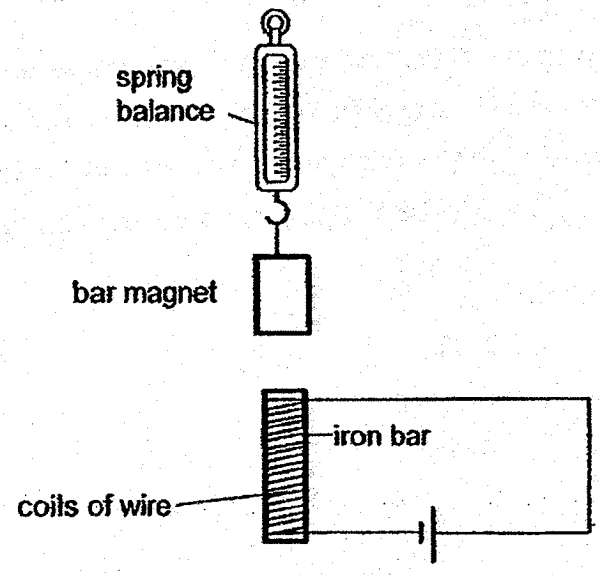
Which one of the following shows correctly the temperature of the water in each of the cups?

	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

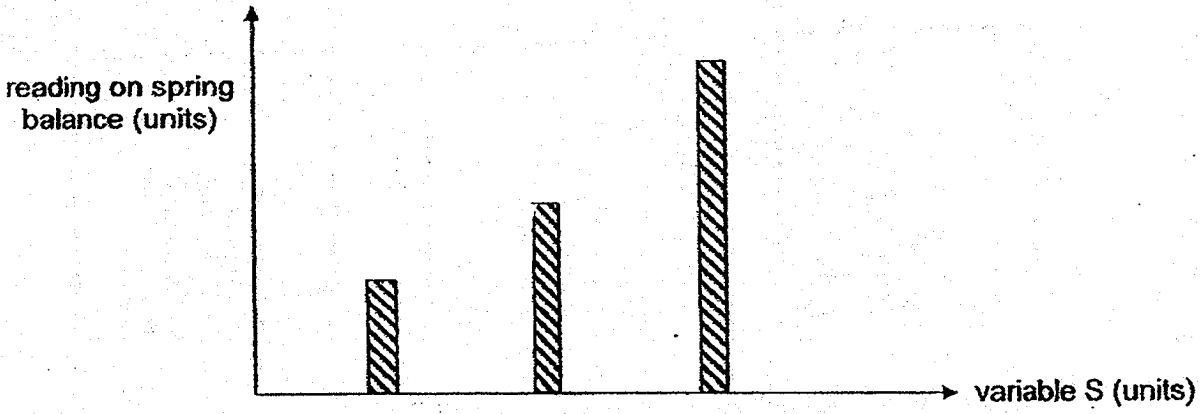
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18 Keng Siong prepared a set-up as shown below.



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

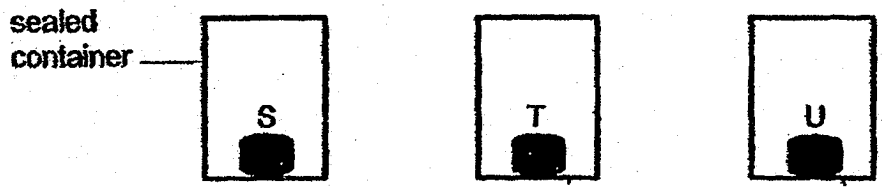
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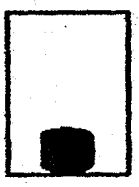
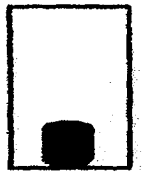
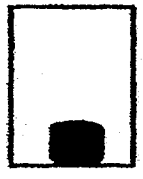
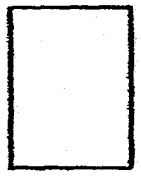
19 The table below shows the freezing and boiling points of three different substances.

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.

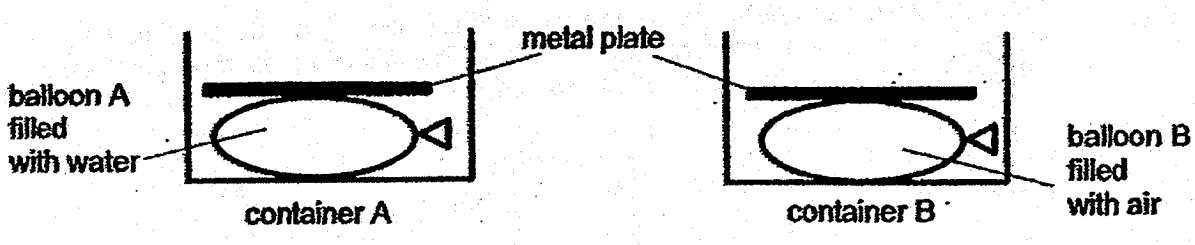


Which of the following would Ali observe after some time?

	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.

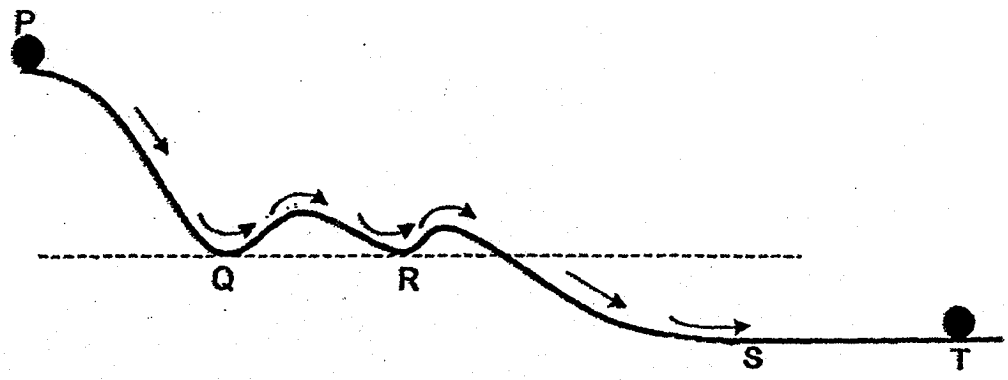
(2) More water would overflow from container A than container B.

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

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

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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.

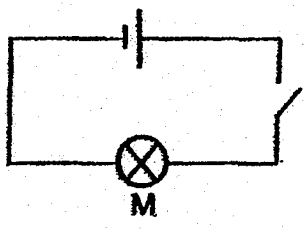
C It possesses only kinetic energy and no gravitational potential energy between S and T.

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

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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

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

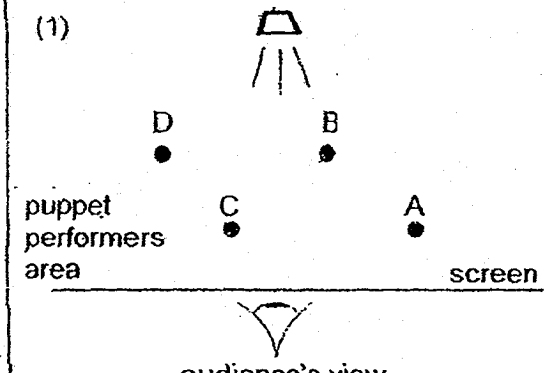


She wants to use the puppets to create the following scene for her audience.

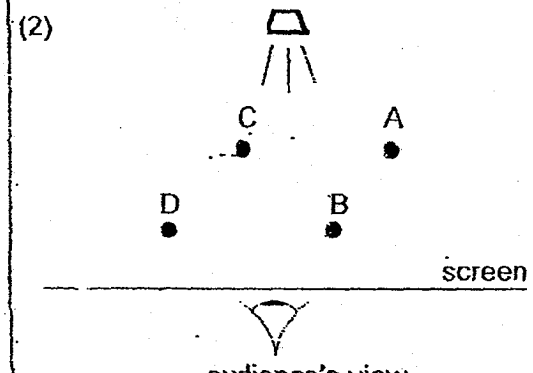


Which one of the following shows the correct positions of the puppets?

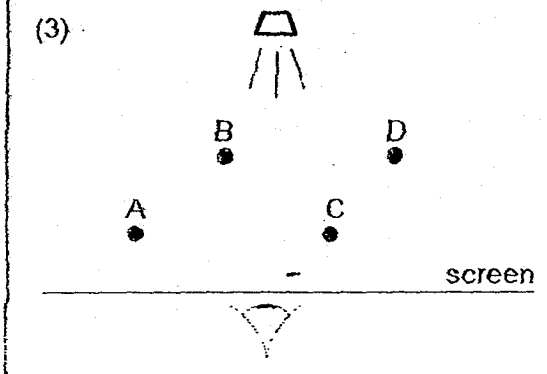
(1)



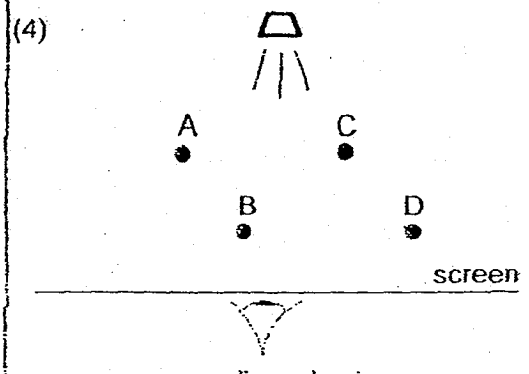
(2)



(3)



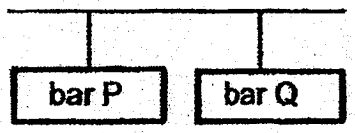
(4)



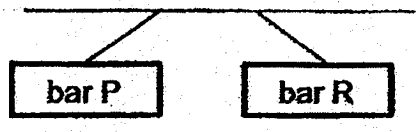
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24 Mei Feng suspended three bars freely using two different set-ups and obtained the results as shown below.

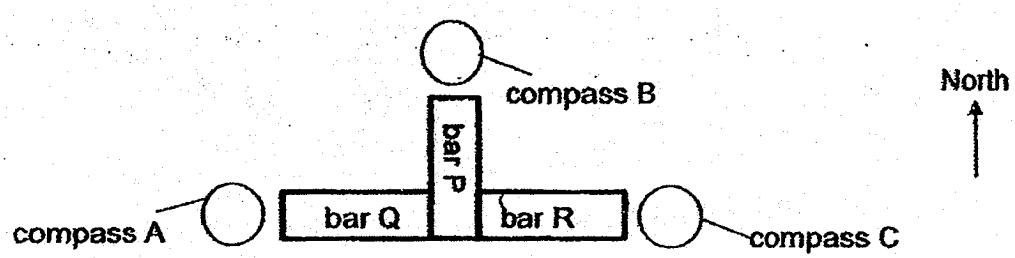


Set-up 1



Set-up 2

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



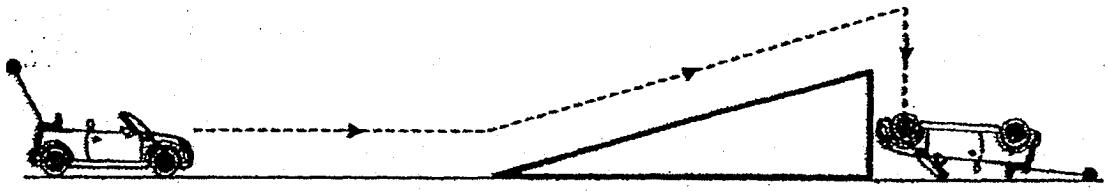
Which one of the following shows the direction which each compass would point to?

	Compass A	Compass B	Compass C
(1)	↑	↑	↑
(2)	→	↓	←
(3)	↑	↓	→
(4)	←	↓	←

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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

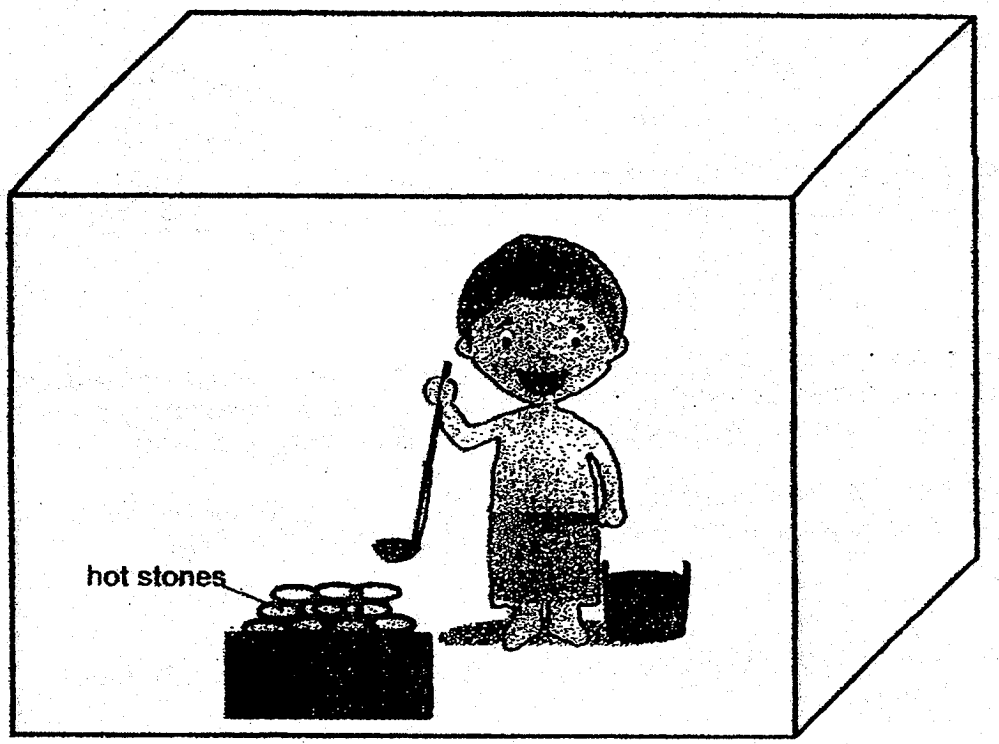
(3) potential energy → electrical energy → kinetic energy → potential energy → kinetic energy → sound + heat energy

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

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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.

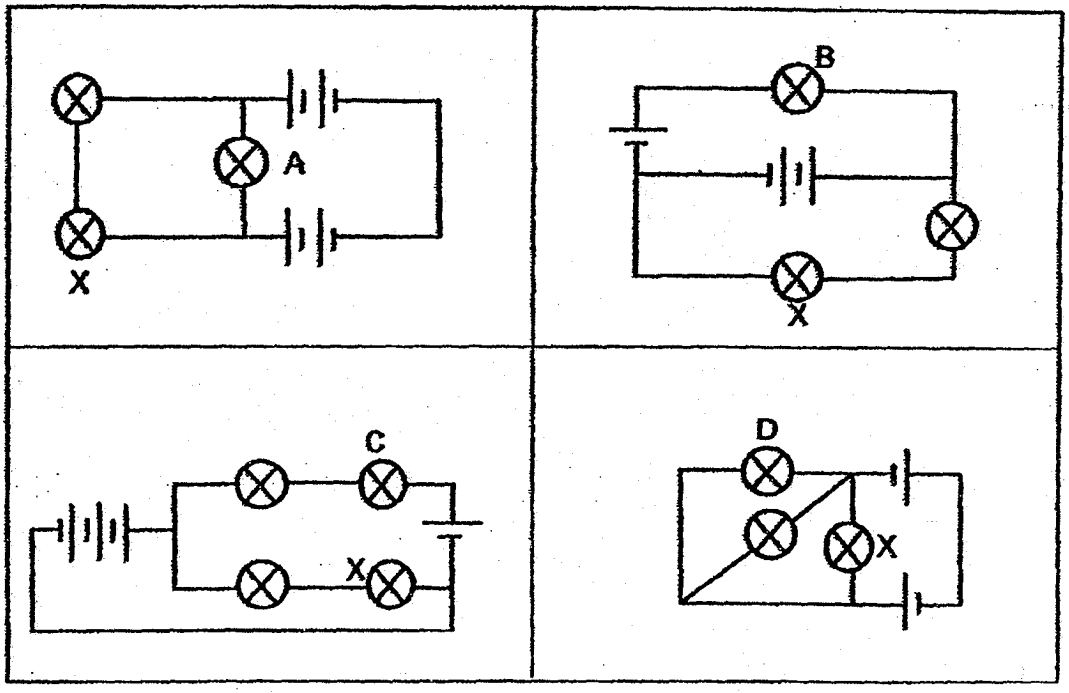


Which one of the following correctly explains the temperature of the room after water was poured onto the stones?

	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.

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

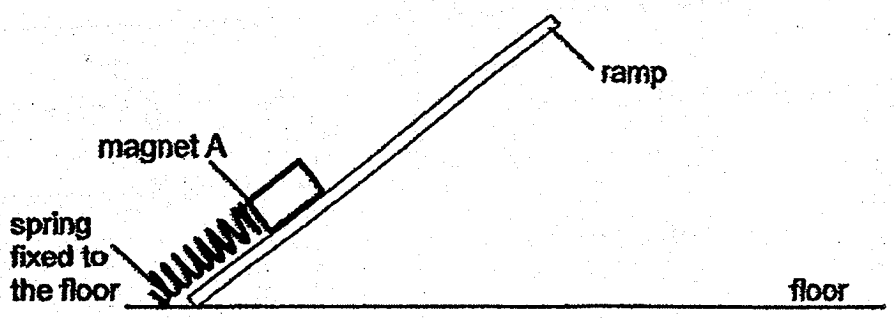


Which bulb would light up the brightest after bulb X is removed from each of the circuits?

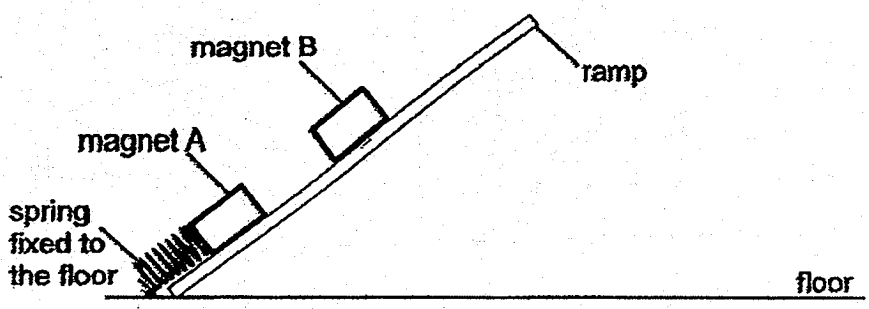
(1) A
(2) B
(3) C
(4) D

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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

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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	

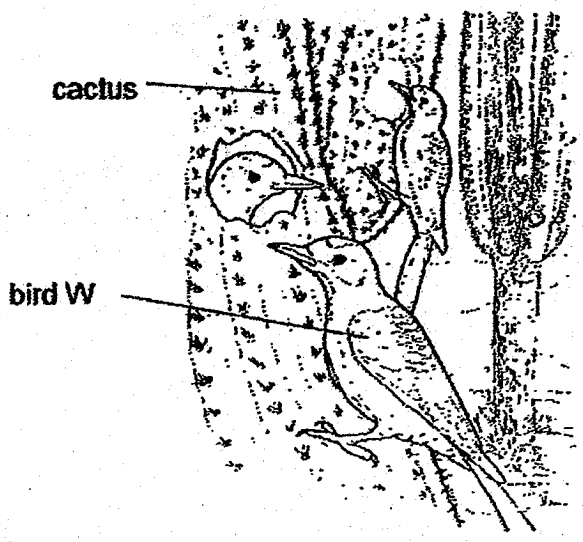
This booklet consists of 9 printed pages including this page.

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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]

---

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]

_____

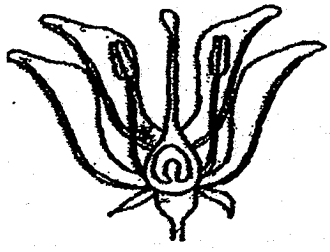
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SCORE	3

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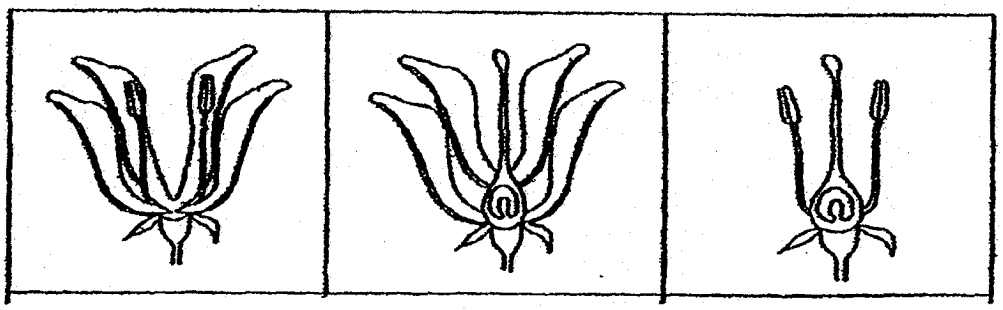
30 Samantha grew plant H in her garden which bore bright and colourful flowers. The fruits were fleshy and had a sweet smell. The diagram below shows the cross section of the flower.



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

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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]

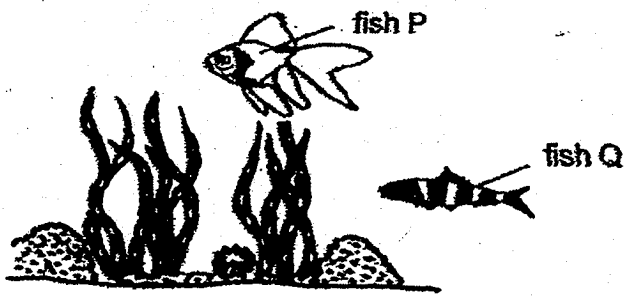
A few months later, Samantha noticed that the seedlings had grown into adult plants as they started to bear fruits.

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

SCORE 2

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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]

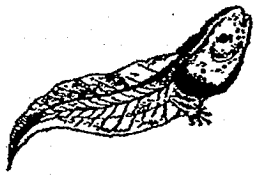
(i) _____

_____

(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]

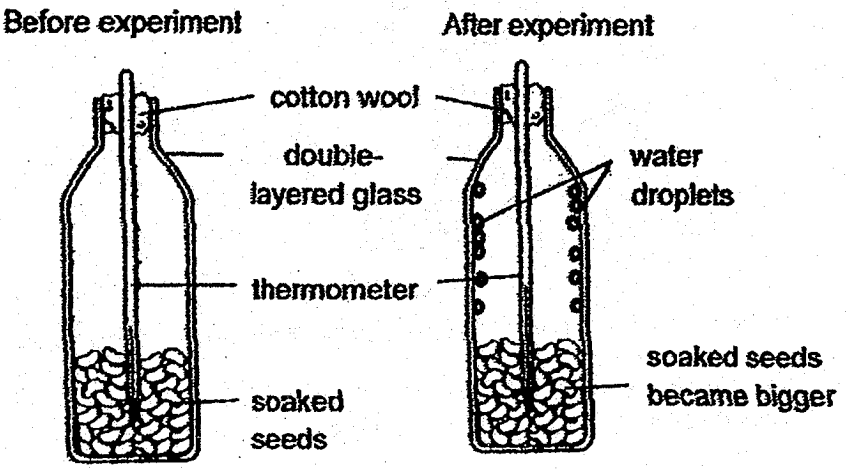
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SCORE	4

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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]

_____

_____

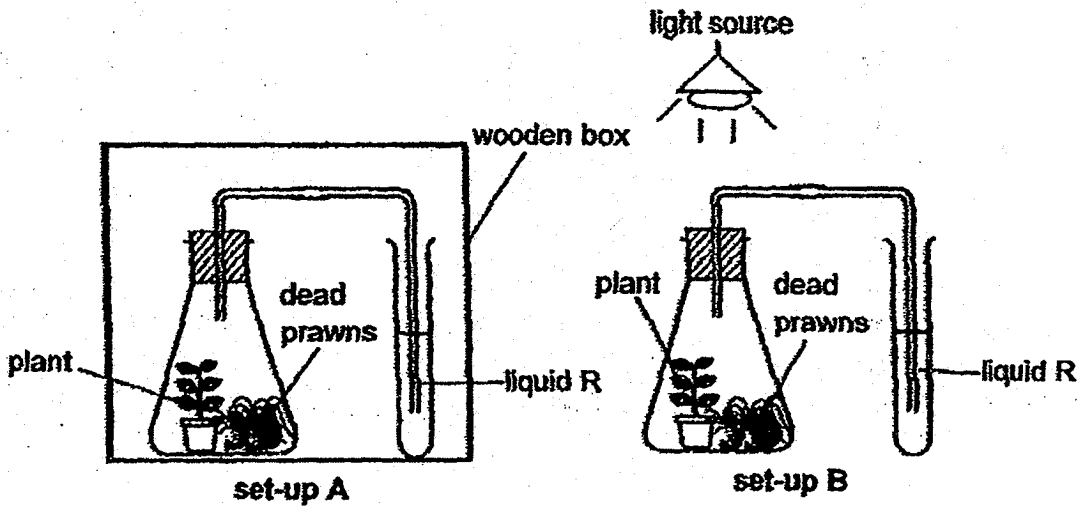
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SCORE 3

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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: _____

_____

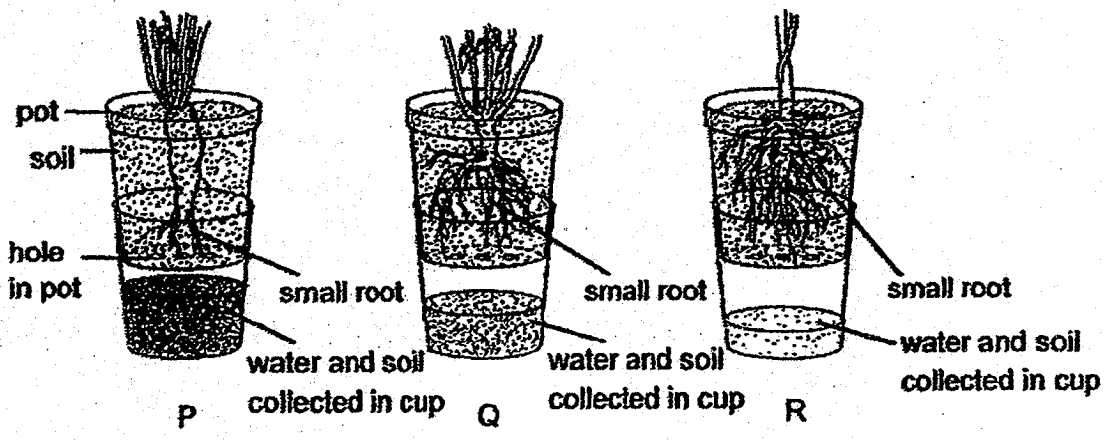
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SCORE	3

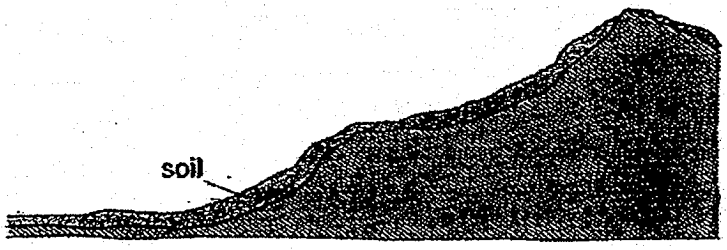
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34 A farmer poured the same volume of water into each of the set-ups with plant P, Q and R. He observed the volume of water and the amount of soil collected in each cup after five minutes and his results were shown below.



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]

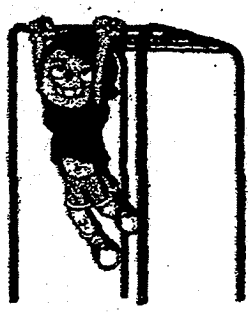
(b) How does growing more plants affect the rate of global warming? Explain your answer. [1]

SCORE 2

(Go on to the next page)

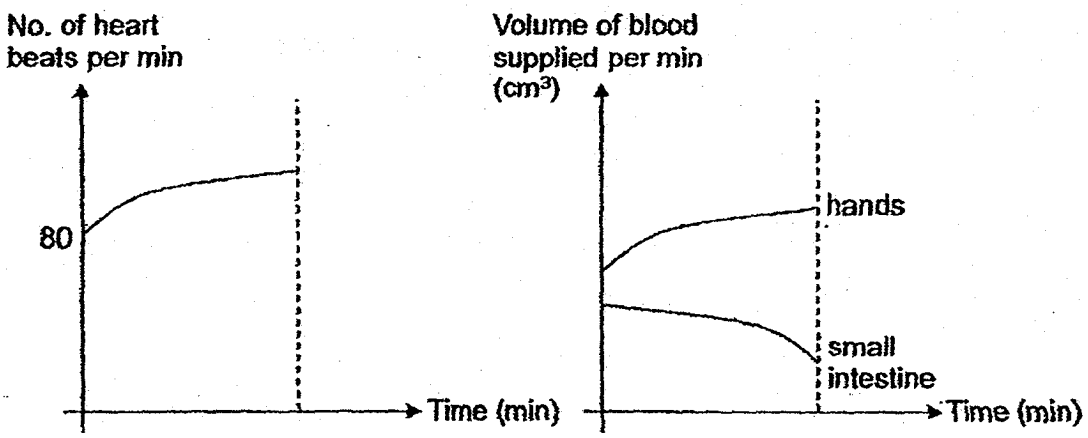
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35 After having his meal, Bala went to the playground to exercise as shown below.



(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

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METHODIST GIRLS' SCHOOL

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PRELIMINARY EXAMINATION 2018
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.

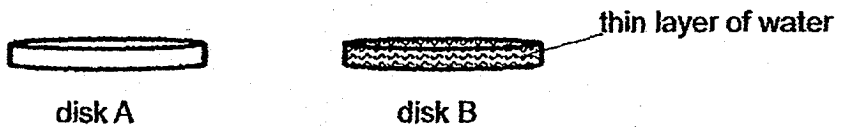
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For questions 36 to 41, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question.

[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]

_____

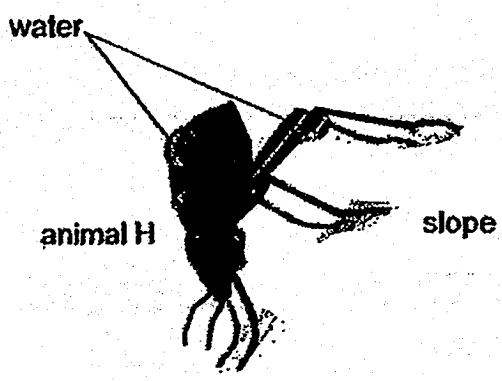
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SCORE	
	2

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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]

_____

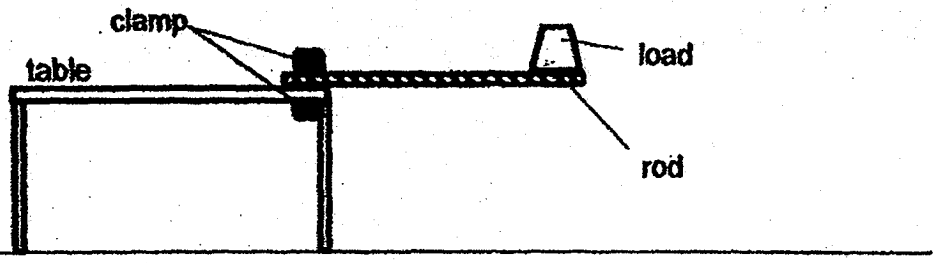
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SCORE	/ 1

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

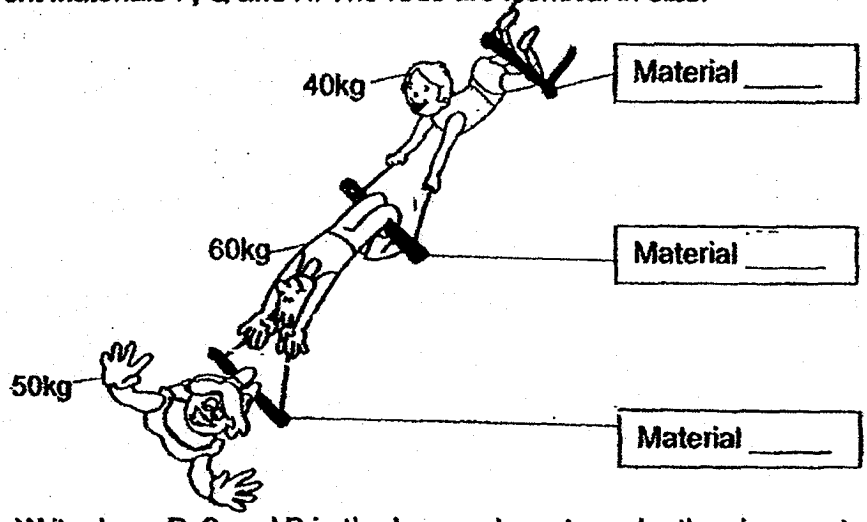


In his study, he used rods made of different materials, P, Q and R. He increased the amount of load until each rod broke. His results are shown below.

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.



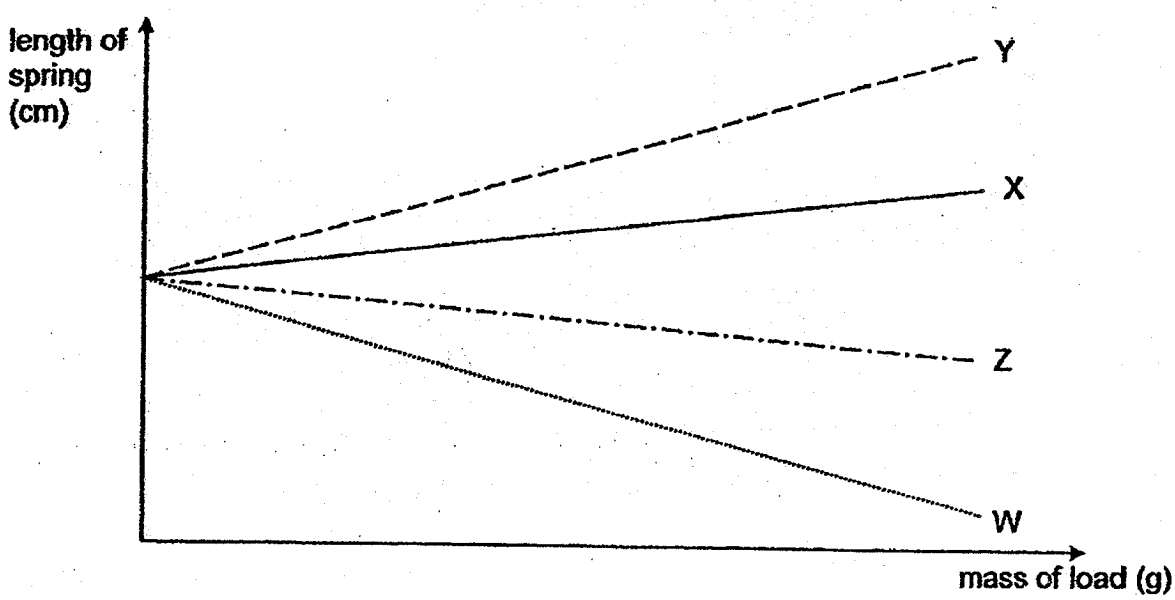
(b) Write down P, Q and R in the boxes above to make the circus act possible. [1]

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

SCORE 3

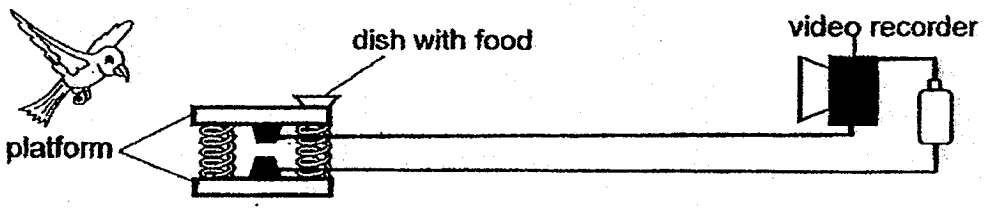
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38 Santha conducted an experiment on four different types of springs, W, X, Y and Z. She added 50 g loads, one at a time, on each spring and measured the length of the spring. The results are shown in the graph below.



(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.



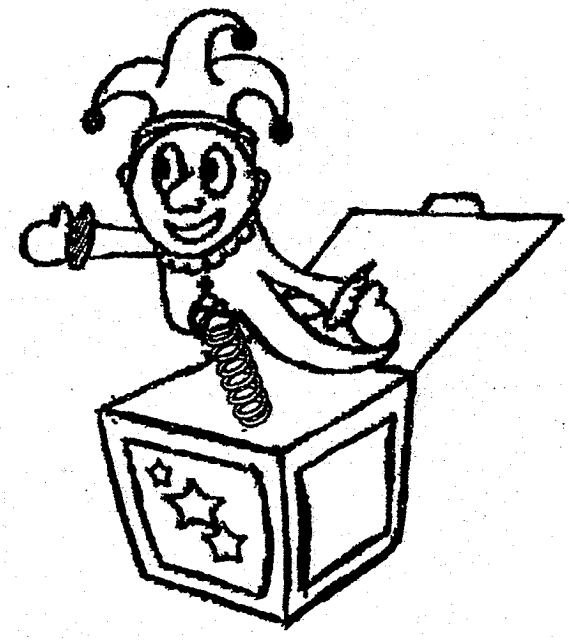
(b) Which spring, W, X, Y or Z, is most suitable to be used to ensure that her set-up can capture video recordings of even birds of small masses? Explain your answer. [1]

SCORE 2

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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.

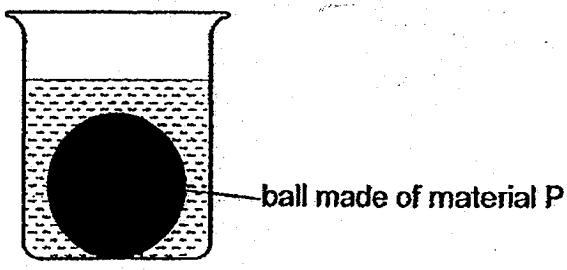


(c) Which spring, W, X, Y or Z, is most suitable to be used for this toy to allow the clown to jump out of the box higher?
Explain your answer clearly. [2]

SCORE	/ 2

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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.

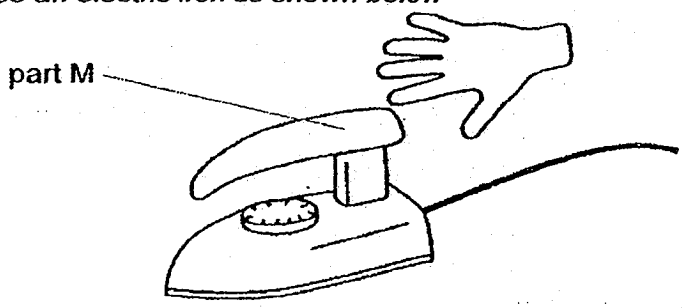
Time (min)	Temperature of water containing P (°C)	Temperature of water containing Q (°C)	Temperature of water containing R (°C)
0	30	30	30
1	32	38	43
2	32	45	56
3	33	51	69
4	33	57	77

(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]

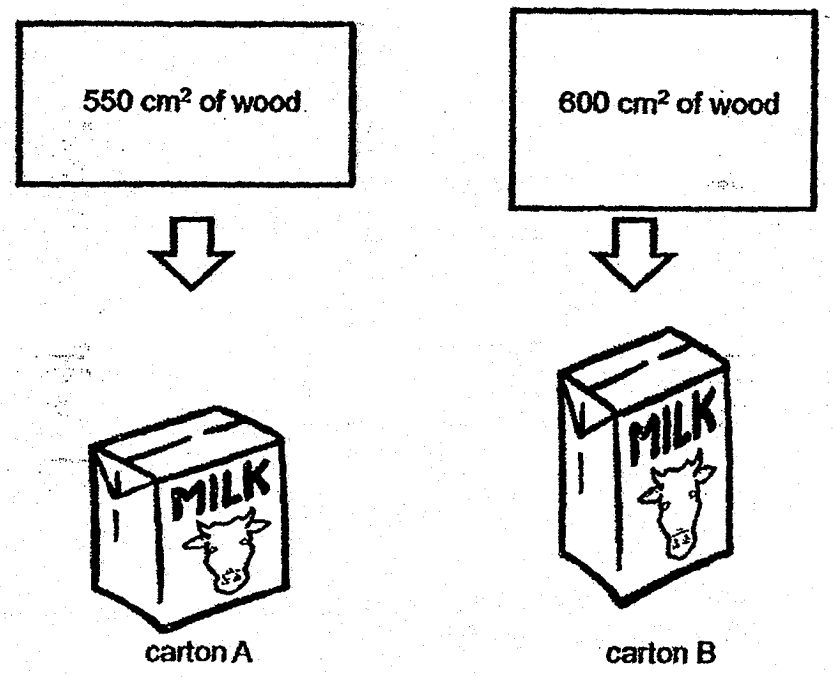
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SCORE	/ 3

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



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]

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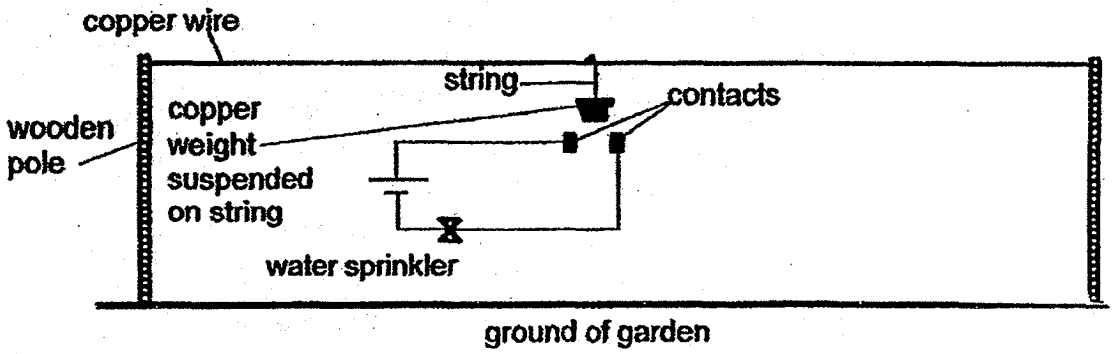
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SCORE	/ 1

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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]

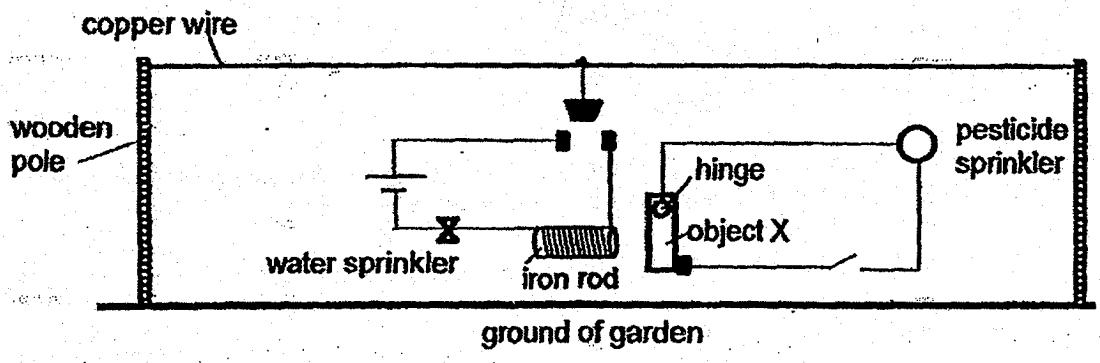
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Kuan Long then re-connected his circuit and added another circuit for his pesticide sprinkler as shown in **Diagram 2** below.

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]

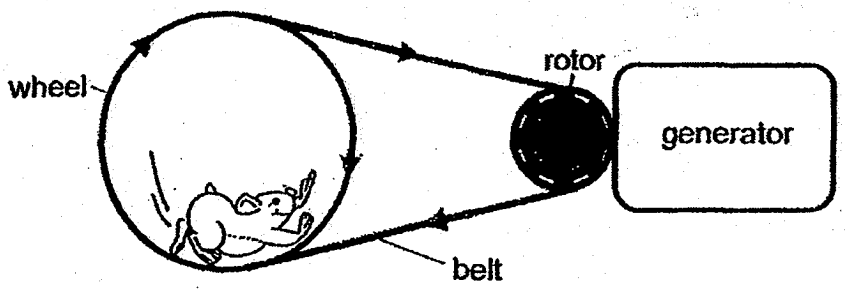
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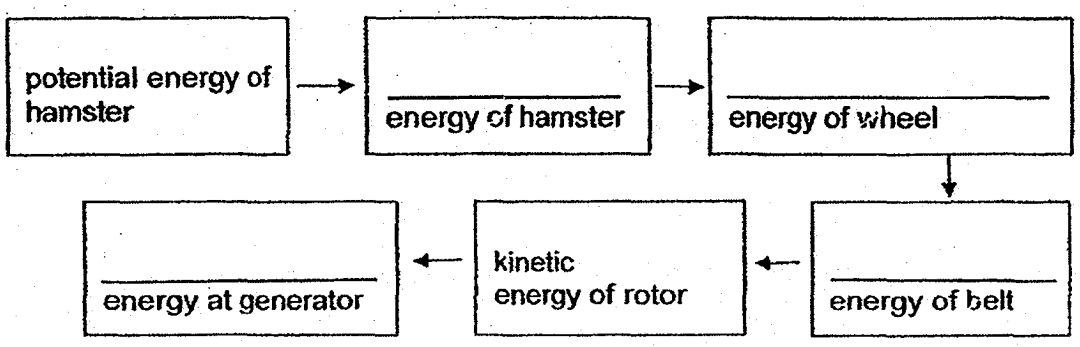
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41 Henry designed the following set-up.

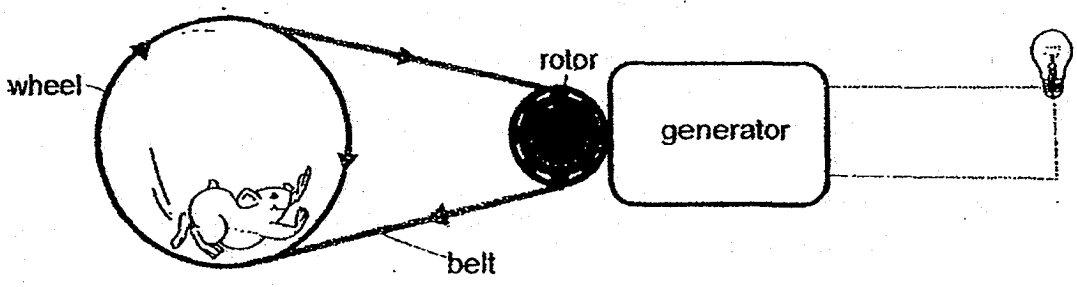


When the hamster ran on the wheel, the wheel spun and the belt moved as well to turn the rotor, which was connected to a generator.

(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]

_____

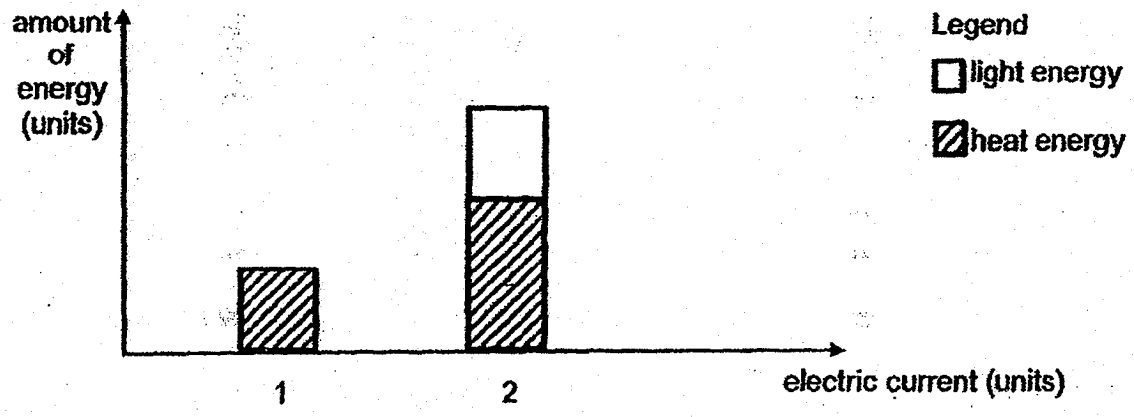
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Henry measured the amount of electric current and the amount of energy generated during the experiment. His results are shown below.



(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

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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.

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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.

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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.

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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

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