METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2019
PRIMARY 6
SCIENCE

BOOKLET A

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 : 16 May 2019

This booklet consists of 19 printed pages including this page.

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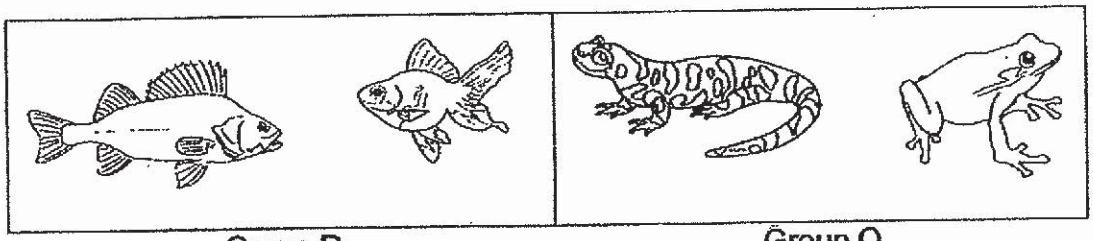
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For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS).

[28 marks]

---

1 Study the two groups of organisms, P and Q shown below.



Group P Group Q

Based on the diagram, some pupils made the following comparisons between the two groups of organisms in the table below.

Amirul	The organisms in Group P breathe through gills but organisms in Group Q breathe through lungs and moist skin.
Bo Zhang	The organisms in Group P give birth but the organisms in Group Q lay eggs.
Chloe	The organisms in Group P and Q have scales as their outer covering.

Which of the pupil(s) made a **correct** comparison?

(1) Amirul only
(2) Bo Zhang only
(3) Amirul and Chloe only
(4) Bo Zhang and Chloe only

2 Which of the following statement(s) about fungi is/are true?

A All fungi are microorganisms.
B Fungi are non-flowering plants.
C Fungi reproduce through spores.
D Fungi can make food in the presence of sunlight.

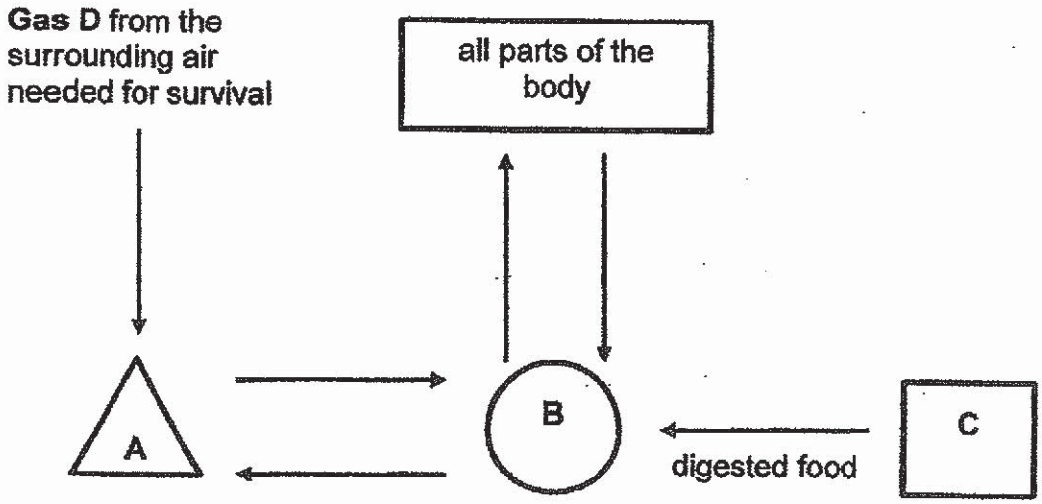
(1) B only
(2) C only
(3) A and C only
(4) B and D only

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3 The diagram below shows how the various body systems work together in a human body.



Which of the following identifies body systems A, B, C and Gas D?

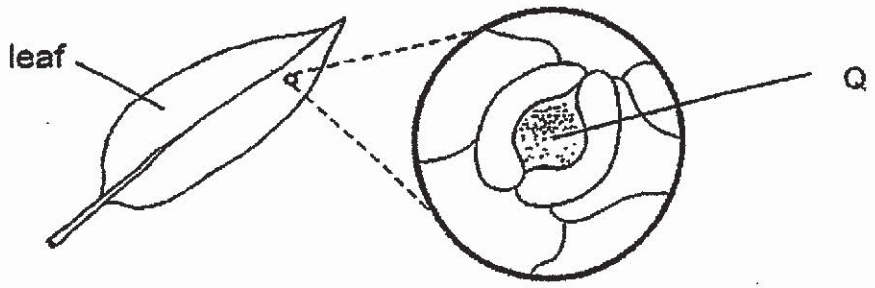
	System A	System B	System C	Gas D
(1)	digestive	circulatory	respiratory	oxygen
(2)	respiratory	digestive	circulatory	carbon dioxide
(3)	circulatory	respiratory	digestive	carbon dioxide
(4)	respiratory	circulatory	digestive	oxygen

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4 The diagram below shows Part Q which is found on the leaves of a land plant.



Some pupils made the following statements shown in the table below.

Jaya	More of Part Q can be found on the underside of the leaf.
Fatimah	Part Q helps the plant absorb sunlight during photosynthesis.
Rose	Part Q allows gaseous exchange for the plant.

Which of the pupil(s) is/are correct?

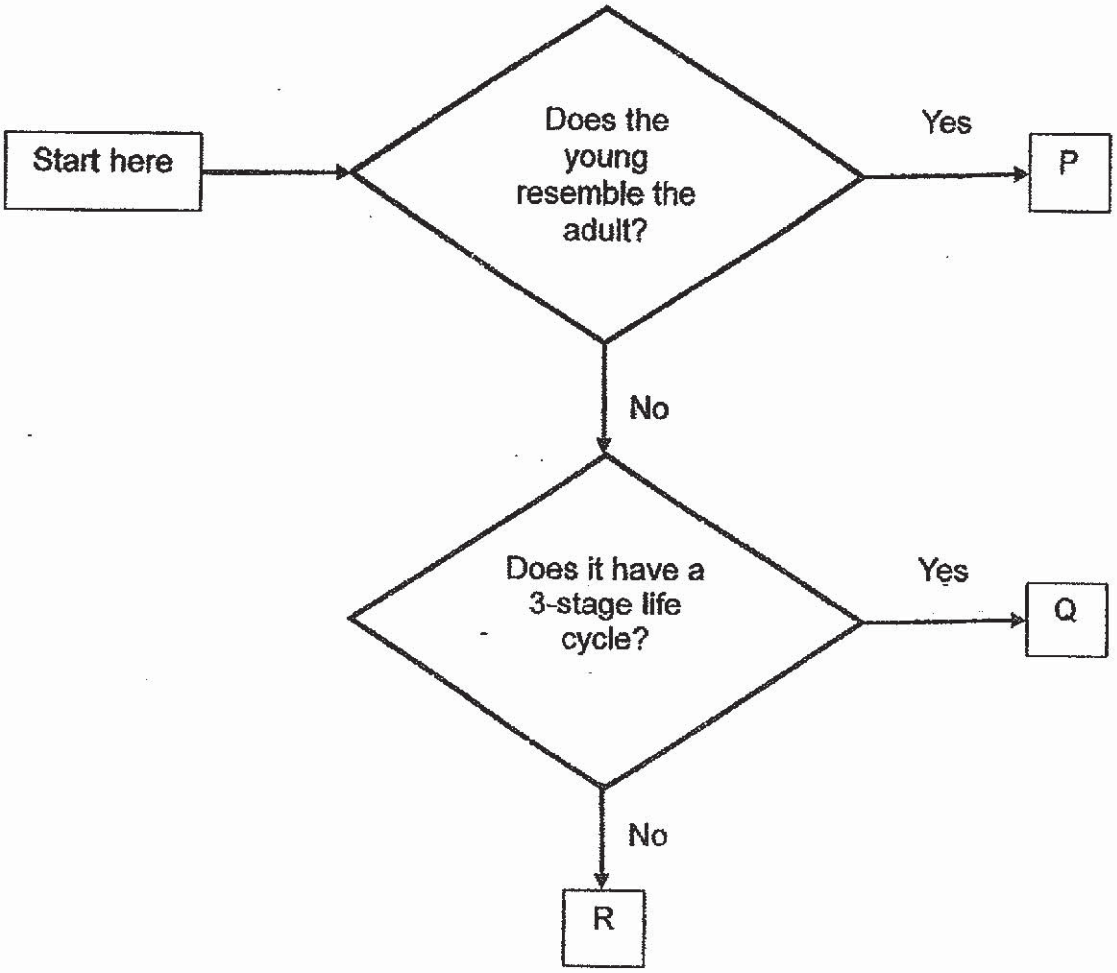
(1) Jaya only
(2) Fatimah only
(3) Jaya and Rose only
(4) Jaya and Fatimah only

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5 The flow chart below shows the characteristics of organisms P, Q and R.



Which of the following best represents organisms P, Q and R?

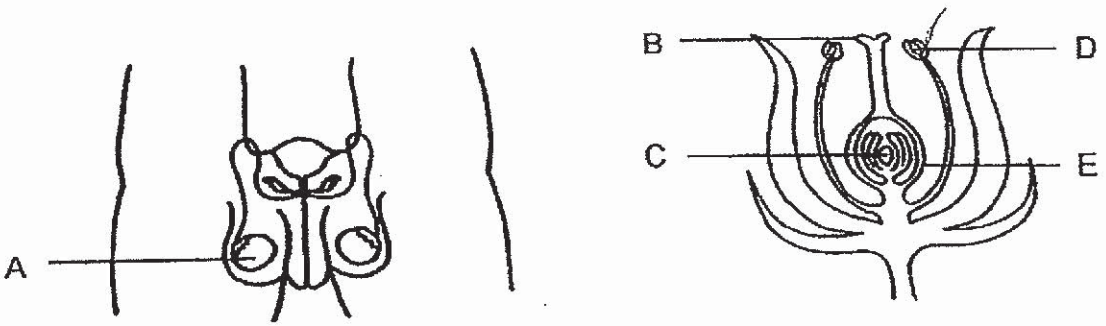
	P	Q	R
(1)	chicken	mosquito	butterfly
(2)	chicken	frog	grasshopper
(3)	grasshopper	chicken	beetle
(4)	cockroach	frog	mosquito

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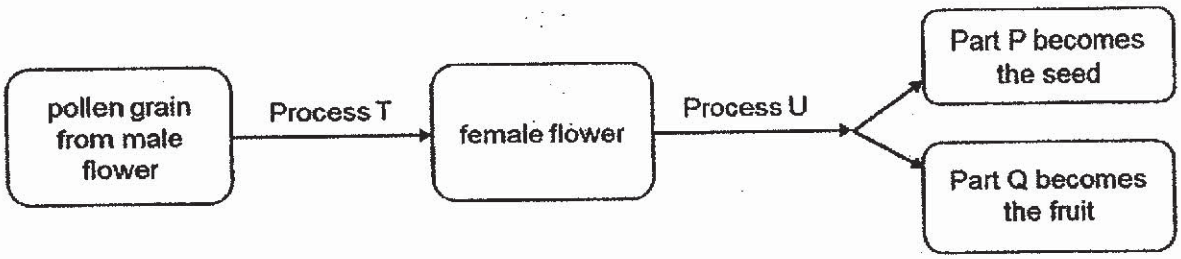
6 The diagrams below show the parts of the reproductive systems of a human and a plant.



Which part of the flower has a similar function as Part A?

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

7 The diagram below shows the processes that a flowering plant undergoes to become Part P and Q.



Which one of the following represents Process T, U and Part P, Q correctly?

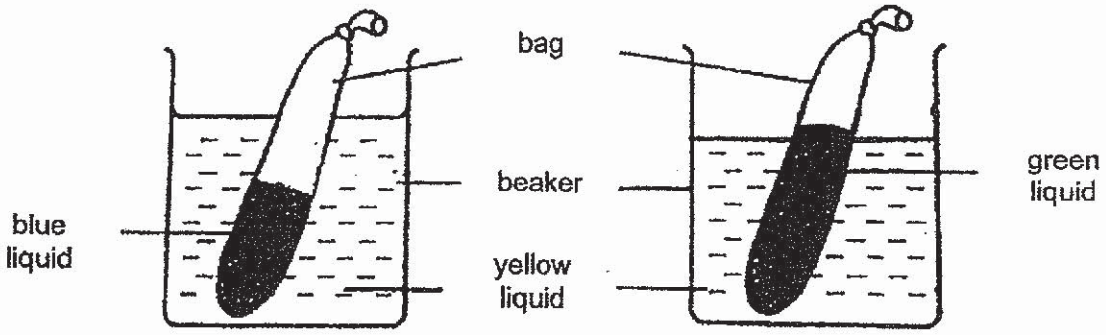
	Process T	Process U	Part P	Part Q
(1)	pollination	fertilisation	ovule	ovary
(2)	fertilisation	pollination	ovule	ovary
(3)	germination	dispersal	ovary	ovule
(4)	pollination	germination	ovary	ovule

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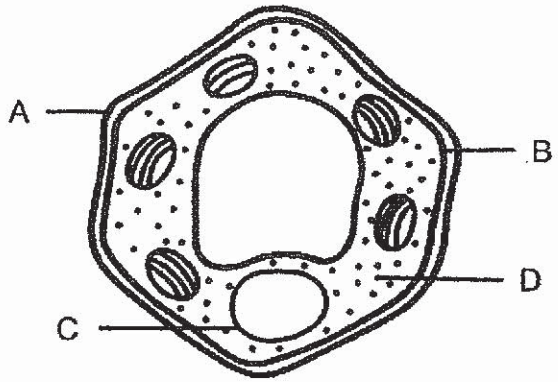
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8 Jimin added some blue liquid into a bag. He placed the bag into a beaker of yellow liquid as shown below.



After 30 minutes, the liquid in the bag increased in volume and turned green. He learnt in his art lesson that when blue and yellow paint are combined, it becomes green paint. The liquid in the beaker remained yellow but decreased in volume.

Which part of the plant cell, A, B, C or D functions in a similar way to the bag in the experiment?



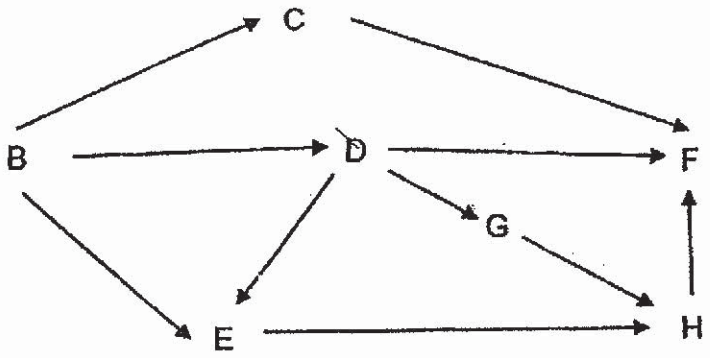
(1) A
(2) B
(3) C
(4) D

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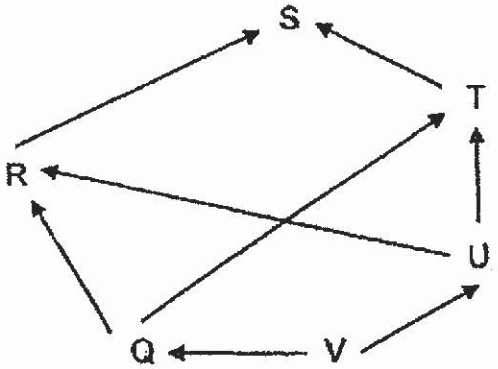
9 Study the food web below.



If the whole population of D is killed by a disease, which of the following population will decrease the most?

(1) B
(2) E
(3) F
(4) G

10 Study the food web below.



Which of the organisms are both prey and predator?

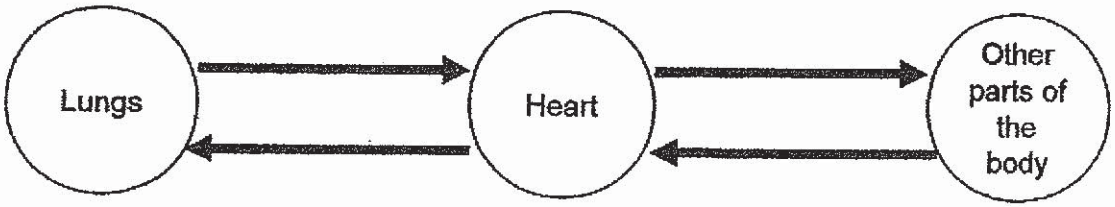
(1) Q and U only
(2) U and T only
(3) R and T only
(4) P and S only

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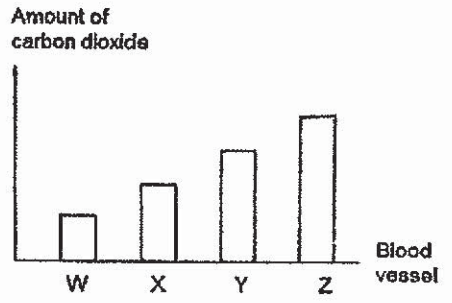
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11 The diagram below shows the direction of blood flow in the blood vessel, W, X, Y and Z. They carry blood from one part to another part of the body. The arrows indicate the blood flow.

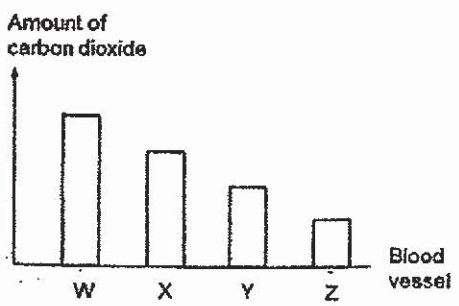


Which one of the following graphs represents the amount of carbon dioxide in blood vessels W, X, Y and Z?

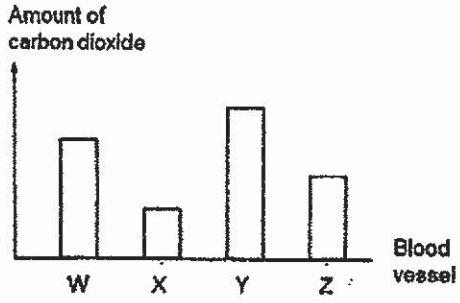
(1)



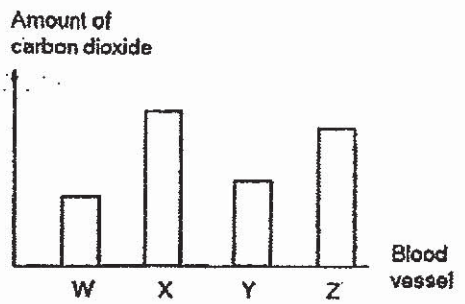
(2)



(3)



(4)

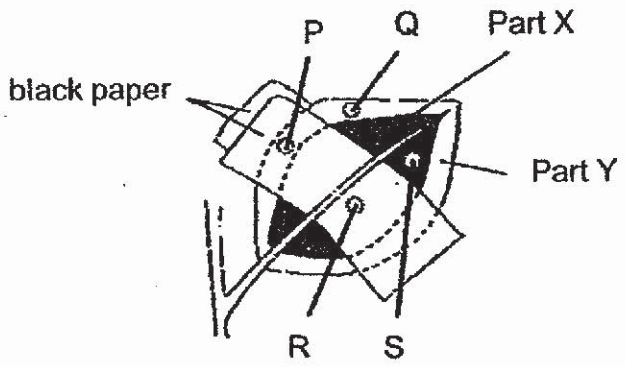


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12 Study the diagram below.

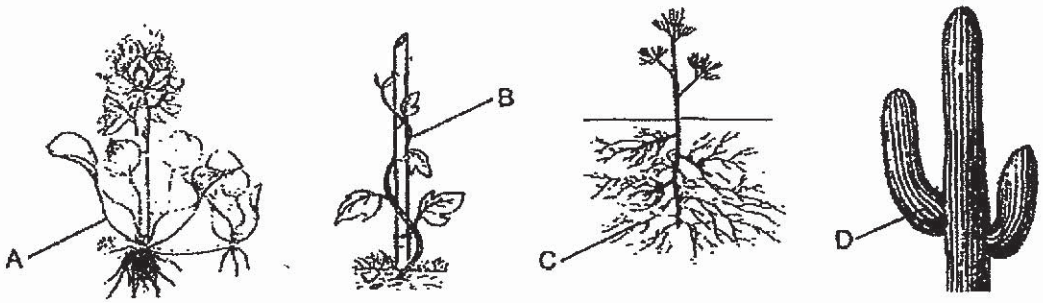


The leaf did not contain any starch at the beginning of the experiment. Part X contains chlorophyll but Part Y does not. The plant was placed under sunlight for six hours. P, Q, R and S were removed from the leaf in the positions shown above and were tested for starch using iodine solution.

Which one of the following correctly shows the colour change of P, Q, R and S after the iodine test?

	Dark blue	**Brown**
(1)	R and S	P and Q
(2)	P, Q and R	S
(3)	S	P, Q and R
(4)	Q and S	P and R

13 The diagrams below show the examples of adaptations A, B, C and D in plants.



Which of the adaptation(s) help(s) the plant receive more water?

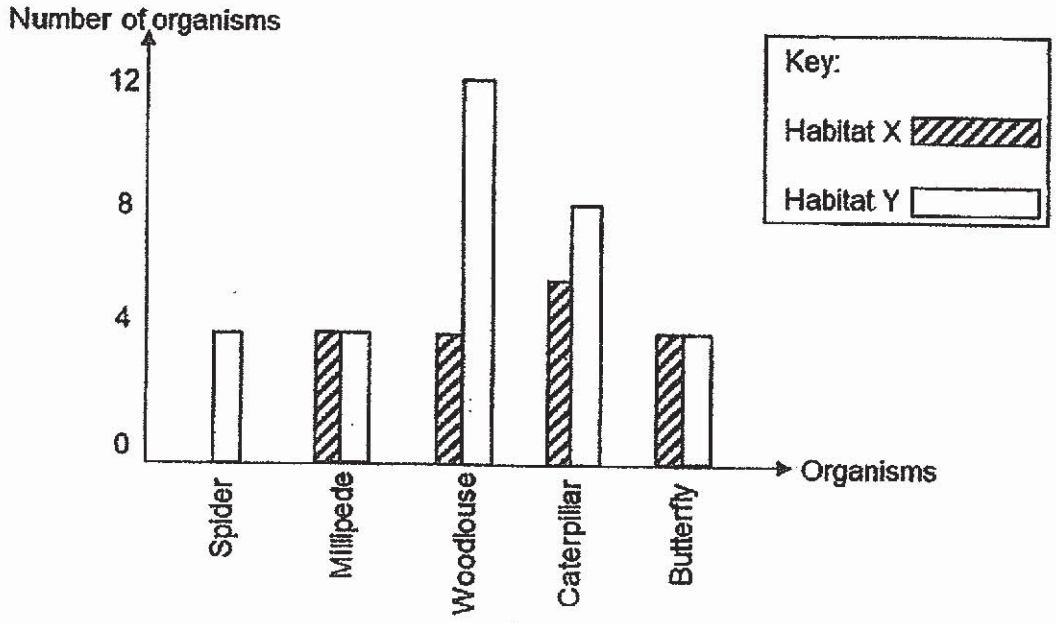
(1) C only
(2) D only
(3) A and C only
(4) B and D only

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14 The bar graph below shows the number of different organisms living in habitat X and Y.



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

A There are five populations of organisms in habitat Y.
B There are three populations of organisms in habitat X.
C Habitat Y has more populations of organisms than habitat X.
D The populations of the different organisms above form a habitat.

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

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15 Rae tested four blocks, W, X, Y and Z, which are made of different materials. The properties of the four blocks are given in the table below.

Property	W	X	Y	Z
It conducts electricity	no	yes	yes	no
It is attracted by magnet	no	yes	no	no
It floats in water	no	no	no	yes

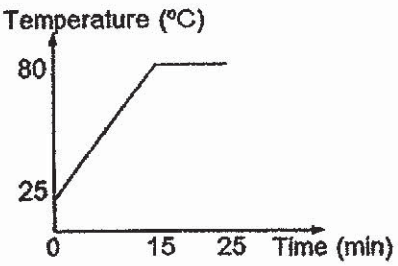
Which block(s) is/are made up of metal?

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

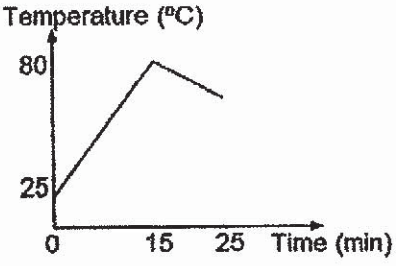
16 A steel bar was heated for 15 minutes and put into cold water for 10 minutes.

Which one of the graphs below shows how the temperature of the iron bar changed with time?

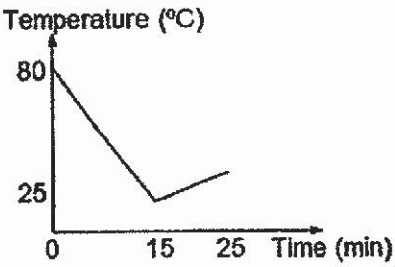
(1)



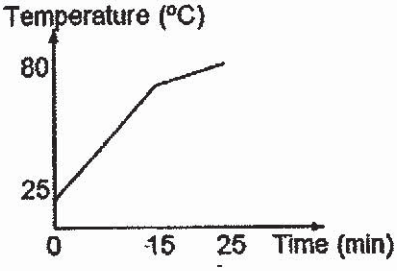
(2)



(3)



(4)

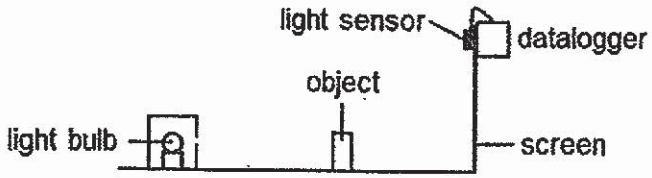


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17 Xiao Ming set up an experiment as shown below. A light sensor was mounted above the screen.



He recorded the reading from the datalogger before placing the object and measured the length of the shadow at each position. The results are shown below.

Light sensor reading (units)	Length of shadow (cm)
110	6
160	9
250	13

What change did Xiao Ming make?

(1) He moved the torch nearer to the object.
(2) He moved the screen nearer to the torch.
(3) He moved the object away from the torch.
(4) He moved the torch away from the screen.

18 Which of the following statements about condensation and evaporation are correct?

A Both processes involve a change in state.
B Both processes occur at fixed temperatures.
C The rate for both processes are affected by the surrounding temperature.
D One process involves heat loss to the surrounding while the other involves heat gain from the surrounding.

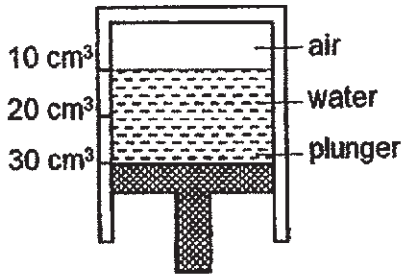
(1) A and B only
(2) B and D only
(3) A, C and D only
(4) B, C and D only

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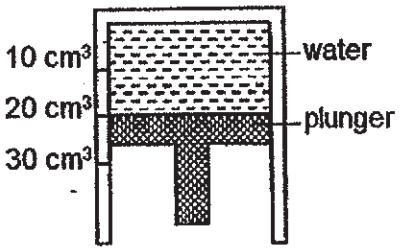
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19 Rosie filled the cylinder with 20 cm^3 of water, leaving 10 cm^3 of air and covered it with a plunger as shown below. She then turned it upside down.

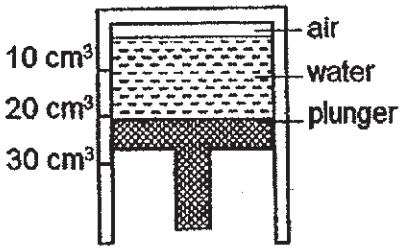


Which diagram below shows Rosie's observation after she pushed the plunger upwards as far as she could without any air or water escaping?

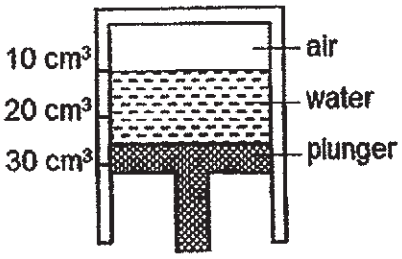
(1)



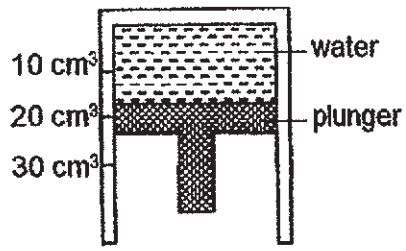
(2)



(3)



(4)



20 Which of the following are advantages of using hydropower to generate electricity?

A Hydropower does not cause air pollution.
B The construction of large dams destroys wildlife and its habitat.
C Hydropower is a renewable energy source.
D Hydropower changes the temperature of the water and the river's flow.

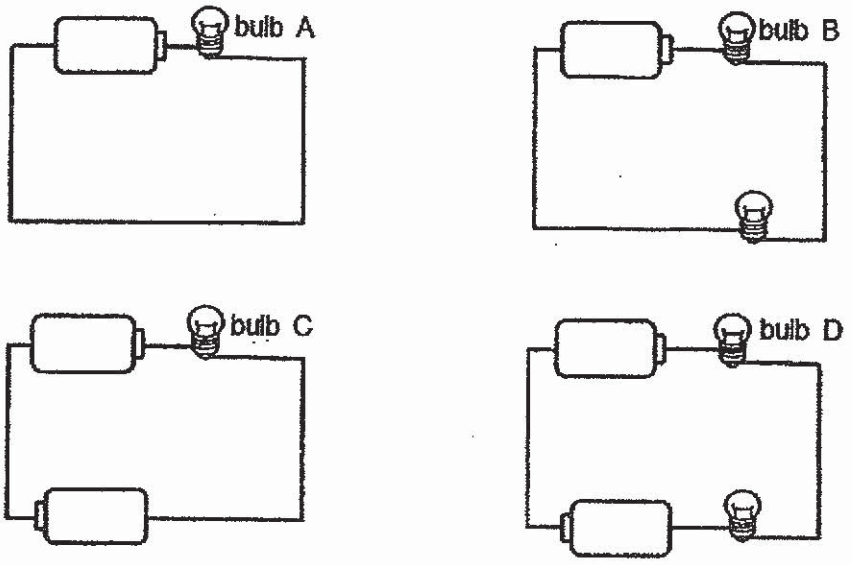
(1) A and C only
(2) A and D only
(3) A, B and D only
(4) A, C and D only

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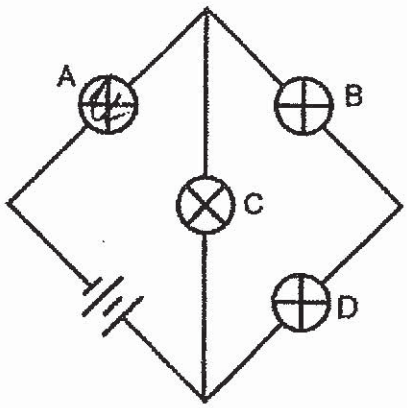
21 Study the four circuits below carefully.



Which of the following two bulbs have the same brightness?

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

22 After one of the bulbs in the circuit below had blown, all the other bulbs did not light up.



Which bulb had blown?

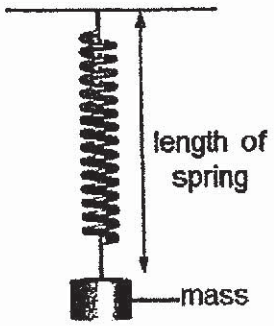
(1) A
(2) B
(3) C
(4) D

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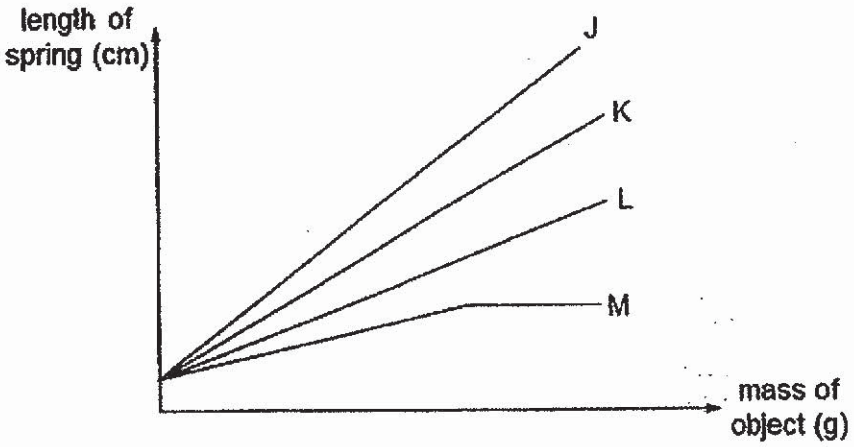
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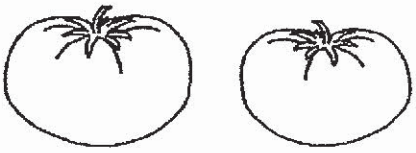
23 Alex used the set-up below to compare four types of springs, J, K, L and M.



He placed different masses on each spring and measured the length of the spring. The results are as shown in the graph below.



Using the same set-up, Alex wanted to find the small difference in mass between the two tomatoes below.



Which spring, J, K, L or M, would be the most suitable for his set-up?

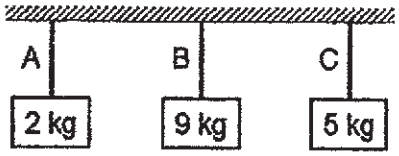
(1) J
(2) K
(3) L
(4) M

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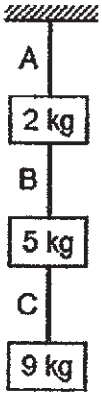
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24 Ravi tested the strength of three types of string, A, B and C, by hanging weights on each string. The maximum mass that each string could hold before breaking is shown below.

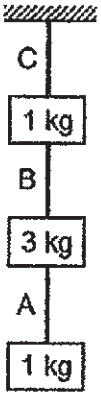


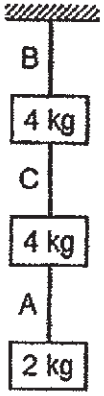
Ravi then tried a few arrangements of hanging different weights.

Which one of the following arrangements would be possible?

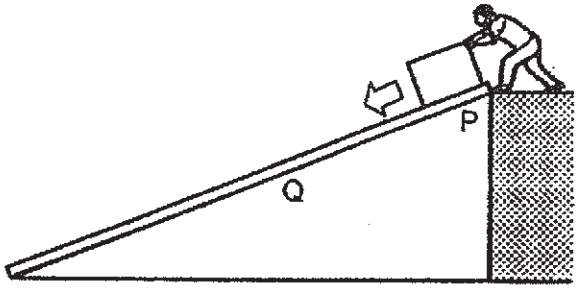
(1)


(2)


(3)


(4)


25 Bala wanted to move a box down a ramp. He gave a push to the box at position P, causing the box to slide down and stop at position Q.



Which of the following statements are correct?

A The box stopped at position Q because of friction.
B The box stopped at position Q because it has used up its energy.
C The amount of gravitational force acting on the box remained the same at position P and position Q.

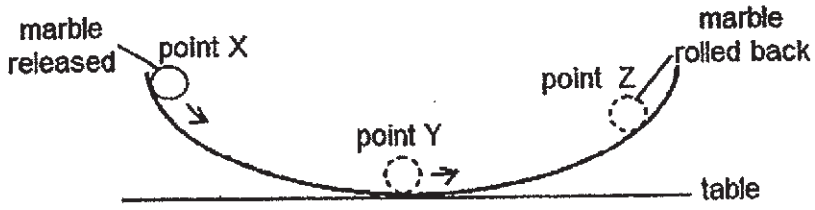
(1) A and B only
(2) A and C only
(3) B and C only
(4) A, B and C

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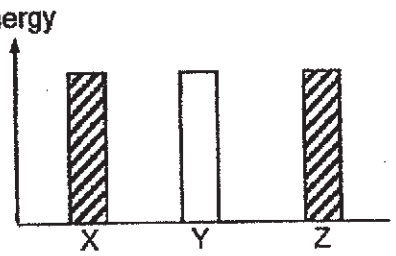
26 The diagram below shows a marble being released at point X on the rim of a bowl.



When it was released at point X, it rolled down the bowl to point Y and then moved up to point Z on the other side of the bowl before rolling back to point Y.

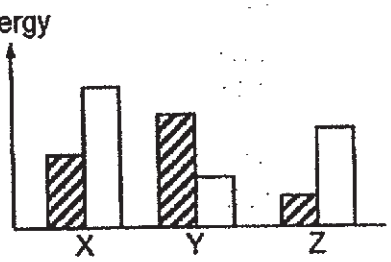
Which one of the following graphs shows the energy the marble possessed at point X, Y and Z when the marble rolled from X to Y and then Z?

(1)

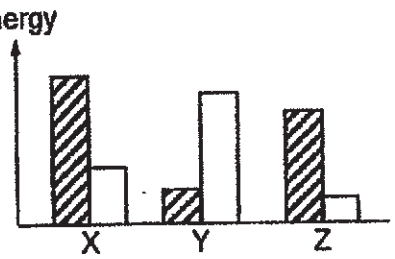


Legend:
Potential energy
Kinetic energy

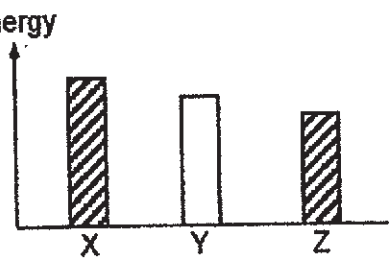
(2)



(3)



(4)

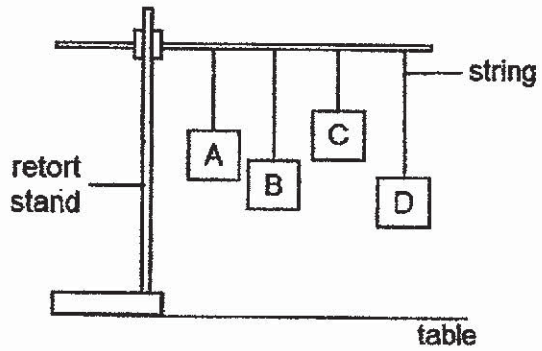


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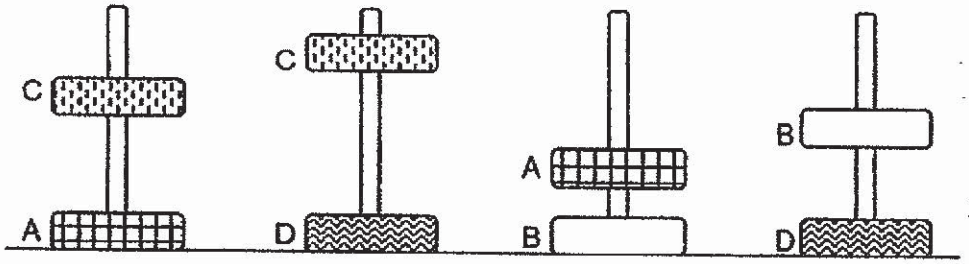
27 Four boxes of the same mass, A, B, C and D, were hung from a retort stand as shown below. The strings were then cut and the boxes fell to the table.



Which one of the boxes would have the least kinetic energy just before it hit the table?

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

28 James set up an experiment to study some ring magnets as shown below.



Which one of the following statements are correct?

A Magnet A has a stronger force than Magnet B
B Magnet B has a stronger force than Magnet C
C Magnet C has a stronger force than Magnet B
D Magnet D has a stronger force than Magnet A

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

End of Booklet A

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METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2019
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.

Name: _____ ( )

Class: Primary 6._____

Date : 16 May 2019

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

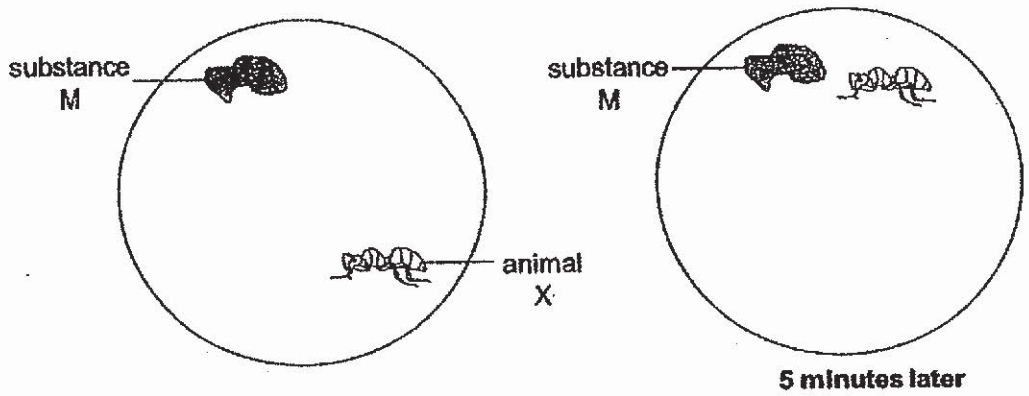
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For questions 29 to 34, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [22 marks]

29 Jin placed animal X on a dish as shown below and observed its behaviour for five minutes.



(a) Living things need air, food and water to survive. Identify two other characteristics of living things that are demonstrated by animal X in the experiment. [1]

(i) _____

(ii) _____

Jin wanted to investigate the effects of surrounding temperature on animal X. He placed 30 animal X in each of the boxes P, Q, R and S. He then exposed the boxes P, Q, R and S to different temperatures. After 15 minutes, he recorded his results in the table below.

Box	Temperature (°C)	Number of active animal X
P	15	3
Q	20	12
R	25	26
S	30	28
T	35	24

(b) Based on the information above, how does the surrounding temperature affect the number of active animal X? [1]

_____

_____

2

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Jin conducted another experiment to find out if animal X prefer to feed on substance M or L. He recorded the number of animal X attracted to substance M or L in the table below.

Substance	Number of animal X attracted
M	10
L	28

Jin wanted to kill animal X using a poison, chemical P in his home. He prepared the following set-ups, A, B, C and D as shown below.

Set-up	Temperature (°C)	Amount of chemical P (g)	Amount of substance M (ml)	Amount of Substance L (ml)
A	20	5	0	100
B	20	5	100	0
C	30	5	0	100
D	30	5	100	0

(c) Based on all the results of Jin's experiments, in which set-up, A, B, C or D, would he observe the most number of dead animal X? Explain your answer. [1]

Jin found some animal X in a packet of sweets. His friend, Roy, suggested that he should spray chemical P on the packet of sweets so as to kill animal X immediately.

(d) Give a reason why Roy's suggestion could not be accepted. [1]

2

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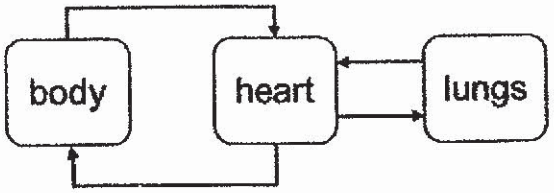
30 The diagram below shows the movement of water in a plant.



(a) What is Part M? State one function of Part M. [1]

(b) Some insects ate their way into Part M of the plant. Explain how they affected the growth of the roots of the tree. [1]

The arrows below show the flow of blood in a human body.



(c) What is the difference between the direction of movement of water in plants and the direction of movement of blood in the body? [1]

3

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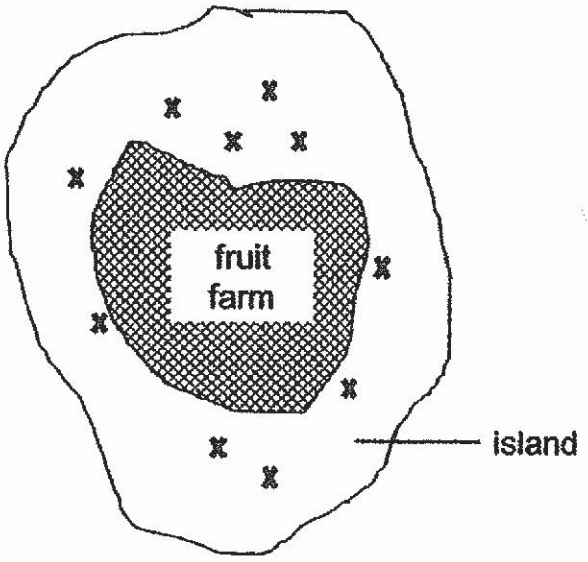
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31 A farmer bought a piece of land on an island. He started planting some young plants far apart in his fruit farm.

(a) What is the advantage of planting the young plants far apart? [1]

After some time, the farmer noticed that the plants from the fruit farm could be found in the other parts of the island as shown below. The plants growing outside the fruit farm are indicated by ✖ in the diagram.



(b) Suggest how the fruits of this plant are adapted to help it reproduce. [1]

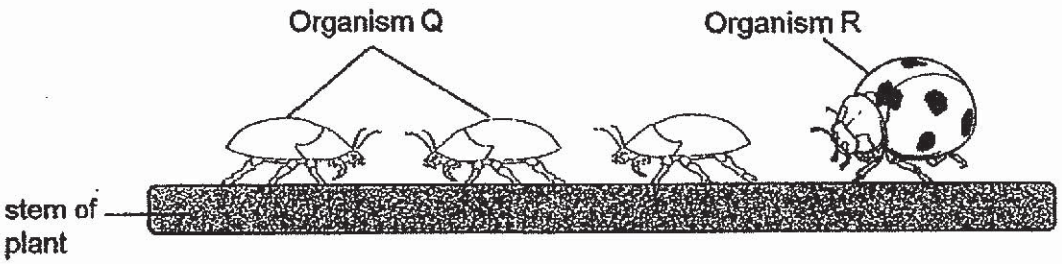
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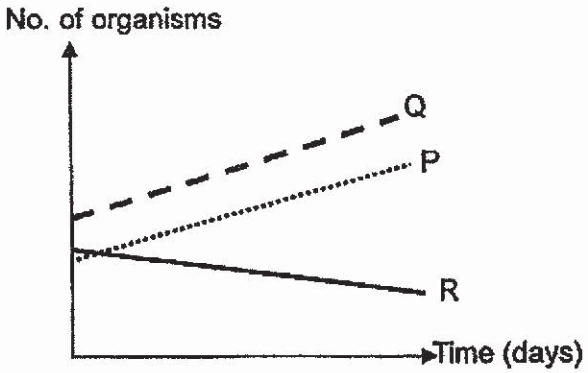
The farmer found many organism Q on the stems of his plants as shown below. He then released a population of organism R in his farm and found out that the population of organism Q decreased.



(c) Based on the information provided, complete the food chain below. [1]



During summer, organism P on the island increased in population. The graph below shows the population of organism P, Q and R.



(d) How did organism P affect the population of the farmer's plants? Explain your answer. [2]

_____

_____

_____

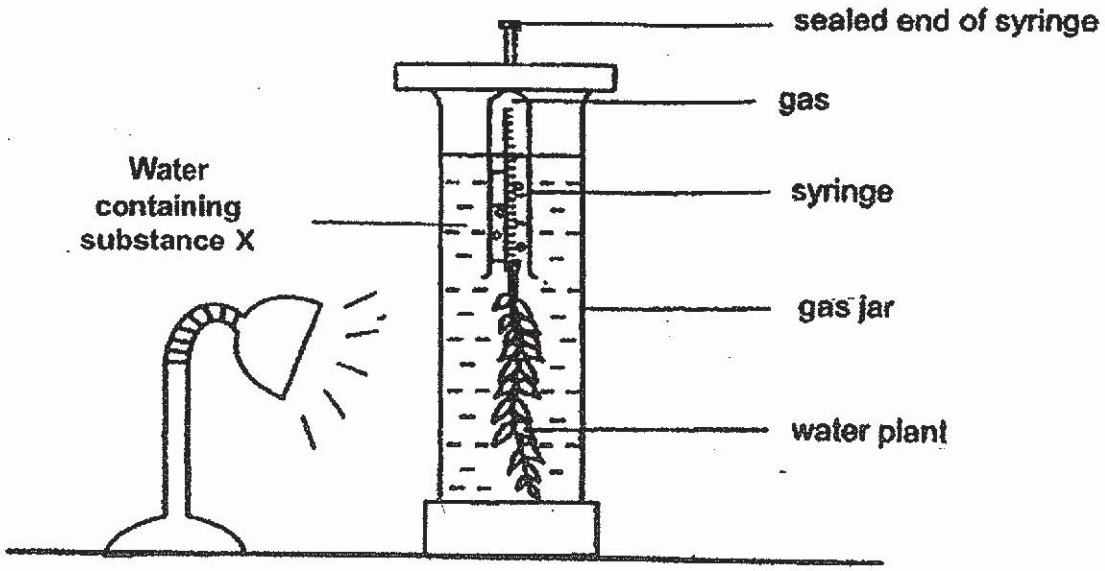
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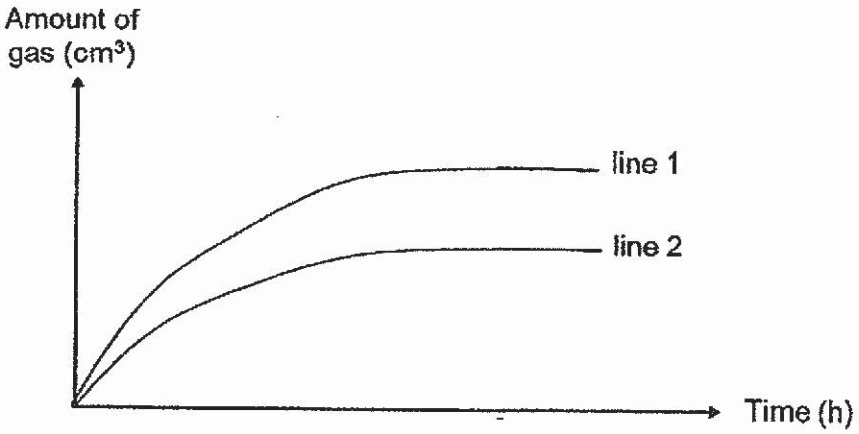
32 Renee wanted to find out if the amount of carbon dioxide in the water affects the rate of photosynthesis. Substance X was added to the water to increase the amount of carbon dioxide in the water. She set up the experiment shown below and measured the amount of gas produced over a fixed period of time. She then repeated the experiment with different amounts of substance X in the water.



She recorded the readings as shown below.

Set-up	Amount of substance X (g)	Amount of gas produced (cm^3)		
		1st try	2nd try	3rd try
A	1	40	50	50
B	3	80	75	70

The graph below shows the result of her experiment.



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(a) Which line, 1 or 2, represents the results of Set-up B? Explain your answer. [1]

(b) Renee prepared another identical set-up but she did not put any substance X into the water. Explain why there is a need for the set-up. [1]

(c) Why did Renee repeat the experiment for each set-up? [1]

(d) Describe the process of photosynthesis in green plants. [1]

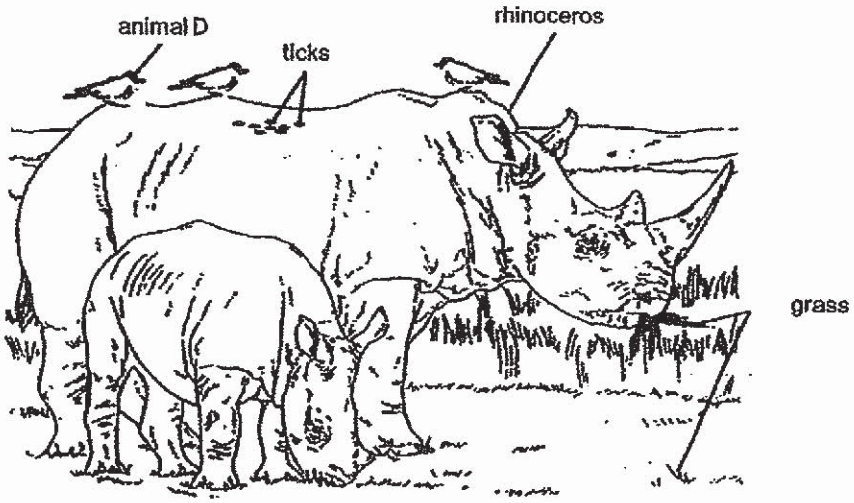
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33 Animal D can be found on the bodies of the rhinoceros during the day as shown below. When animal D senses danger, it makes a loud hissing sound. It also feeds on ticks on the rhinoceros.



(a) Suggest two ways in which the rhinoceros benefits from animal D. [2]

Benefit 1:

Benefit 2:

The pictures below show three different types of beaks.



Beak X Beak Y Beak Z

(b) Which beak, X, Y or Z, would animal D most likely have? Give a reason for your answer. [1]

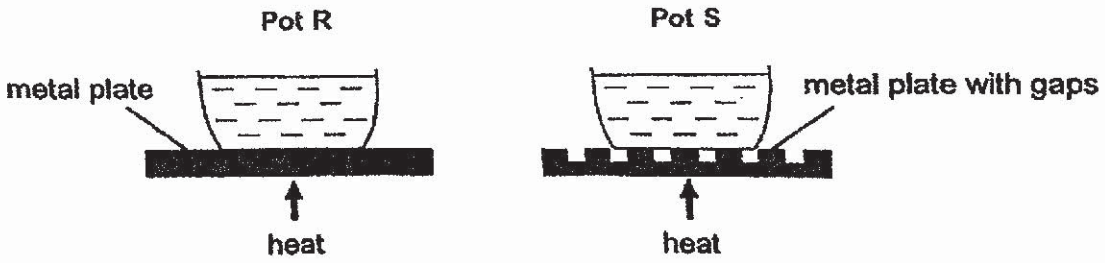
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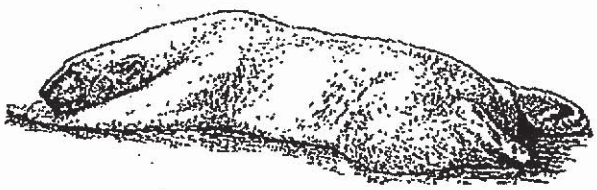
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34 Ahmad placed two identical pots, R and S, containing the same amount of water on two metal plates as shown below. The metal plates are made of the same material but their surfaces are different.



(a) Which pot, R or S, would the water boil first? Give a reason for your answer. [1]

Animal G lives in a cold environment. The picture below shows how animal G behaves during summer time. Although it is warmer in the summer months, the ground remains frozen.



(b) Explain why animal G spreads itself out on the frozen ground during the summer months. [1]

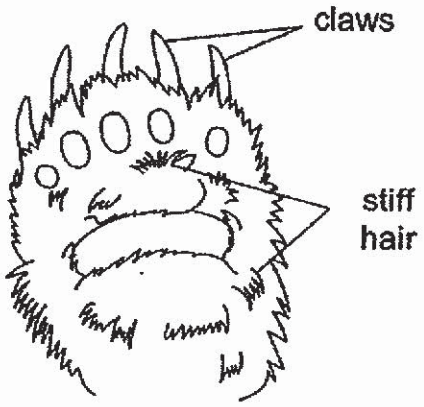
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Animal G walks on ice as it moves from place to place. The underside of the paw of animal G is shown below.



(c) Explain how animal G is adapted to walk on ice. [1]

_____

_____

1

End of Booklet B1

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METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2019
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 : 16 May 2019

Booklet B2	22

This booklet consists of 12 printed pages including this page.

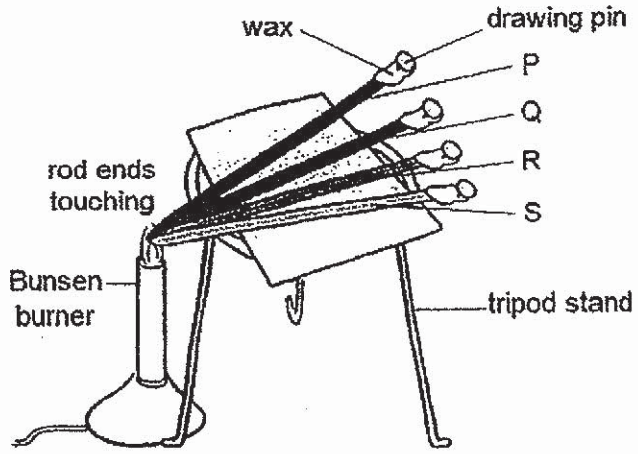
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For questions 35 to 40, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question.
[22 marks]

---

35 Four rods of identical diameters and lengths, P, Q, R and S, are made of different materials. An equal amount of wax was put at one end of each rod while the other end was heated by a Bunsen burner.



The time taken for the wax on each rod to melt completely is recorded in the table below.

Rod	Time taken for wax to melt completely (min)
P	13
Q	25
R	7
S	32

(a) Based on the results, which rod, P or S, is a better conductor of heat? Explain your answer. [1]

_____

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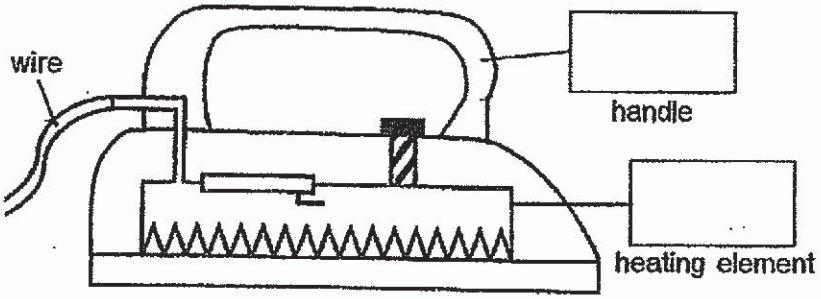
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(b) Which one of the four materials is most suitable for making the handle and heating element of the electric iron? Write P, Q, R or S in the two boxes provided. [1]



(c) Based on the results, explain your choice of material for the handle of the iron. [1]

_____

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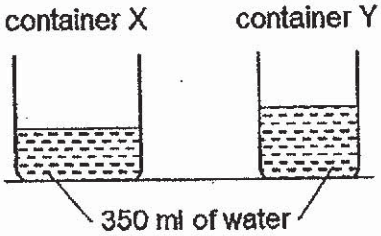
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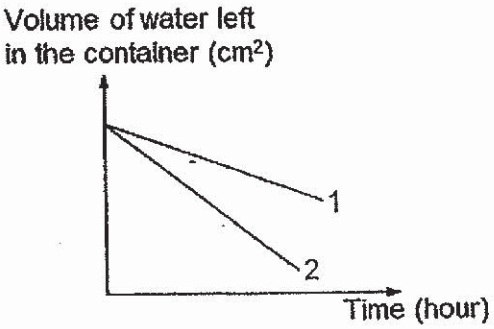
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36 Zac wanted to find out how the exposed surface area of the water affects the rate of evaporation. He used two containers, X and Y, and poured 350 ml of water into each container.

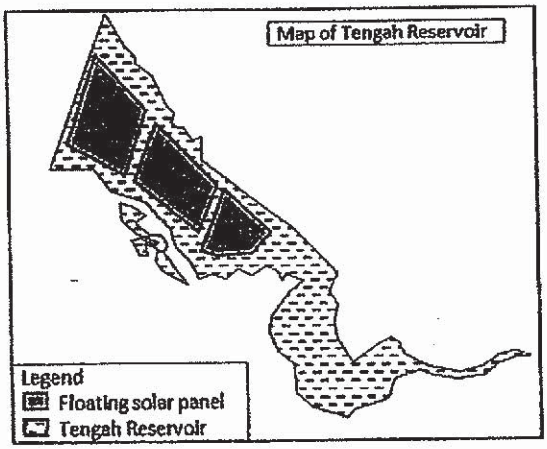


Zac then plotted a graph based on the amount of water left in the containers over time. The graph is as shown below.



(a) Which line, 1 or 2, represent the volume of water left in container Y? Explain your answer. [1]

Tengah Reservoir in Singapore has a floating solar energy system which is made up of an array of solar panels on a structure that floats on top of the reservoir. The system covers 33% of the reservoir.



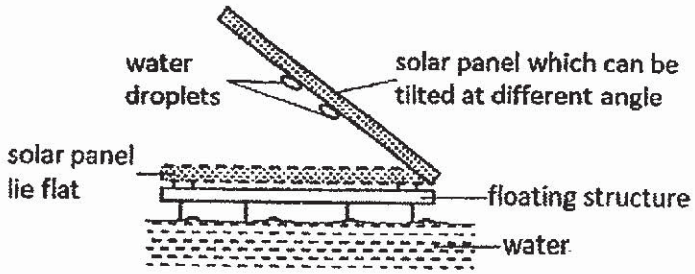
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Zac observed that the solar panels are adjusted to lie flat on the floating structure from 11 am to 2 pm.



(b) How does this action affect the rate of evaporation of water in Tengah Reservoir? Explain your answer. [1]

(c) Water droplets are seen at the underside of the solar panel every morning. Explain how the water droplets are formed. [2]

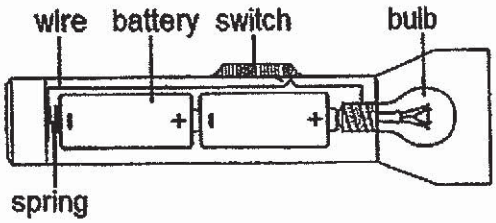
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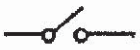
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37 Hamid bought a torch with a diagram printed on the packaging as shown below.



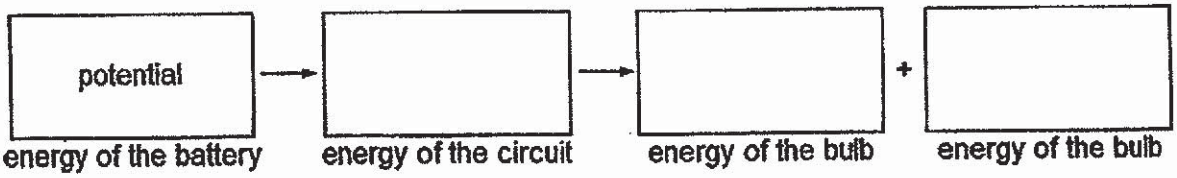
(a) In the diagram below, draw wires to connect the components and complete the circuit diagram of the torch. [1]







(b) Fill in the boxes below to show the energy conversion when Hamid switched on the torch. [1]



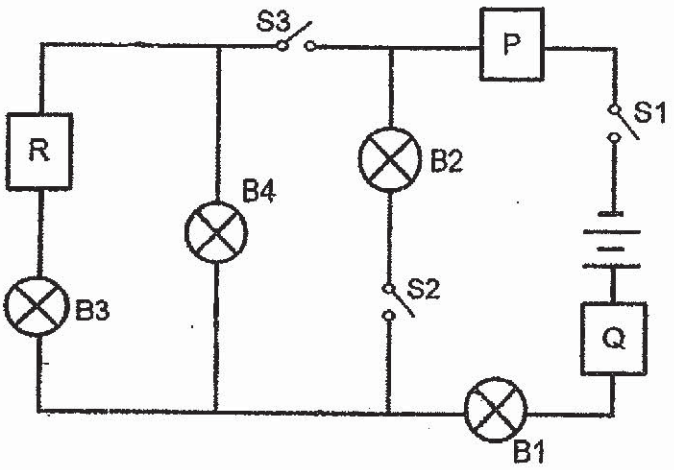
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Hamid set up an electrical circuit as shown in the diagram below. The three objects P, Q and R, were made of different materials. He noticed that when he closed two switches at the same time, only some bulbs were lit.



The table below shows the combination of switches that were closed and the bulbs that lit respectively.

Switches closed	Bulbs lit
S1, S3	B1, B4
S1, S2	B1, B2

(c) What could Hamid conclude about the property of objects, P, Q and R, based on his observations above? [1]

(d) Hamid wanted to place a buzzer in the circuit so that when he closes switches S1 and S3, the buzzer will ring.

In the diagram above, indicate with a cross, '**X**', to show where Hamid should place the buzzer. [1]

2

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38 Sulaiman filled a container with some marbles. He placed the container into a beaker of water. The container floated as shown in Diagram 1.

When he filled the container with more marbles and placed it into the beaker of water, the container sank as shown in Diagram 2.

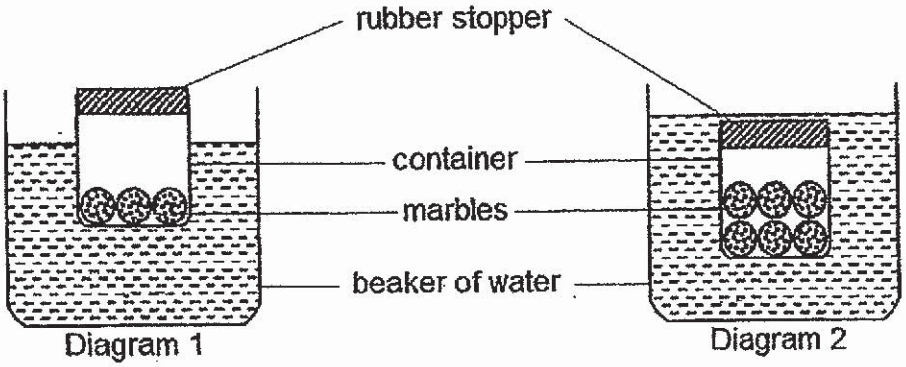


Diagram 1 Diagram 2

(a) Give a reason why the container sank when it was filled with more marbles. [1]

_____

_____

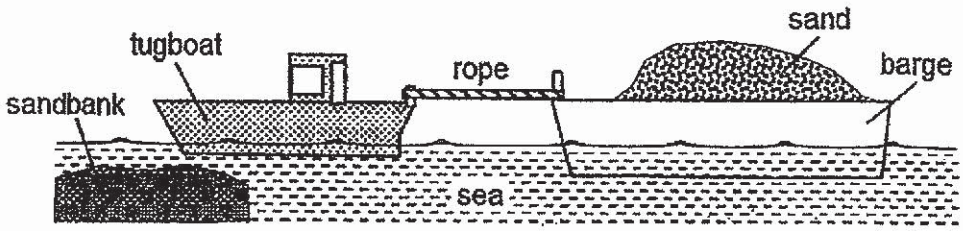
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A tugboat is a small and powerful watercraft which pulls barges and large ships near the shore. The diagram below shows a tugboat pulling a barge filled with sand. They are approaching a sandbank and the barge will be stuck.



(b) Other than the pull from the tugboat, there are other forces acting on the barge.

State two other forces which are acting on the barge when the tugboat is pulling the barge. [1]

(c) Suggest one way the barge could float above the sandbank. Explain your answer clearly. [1]

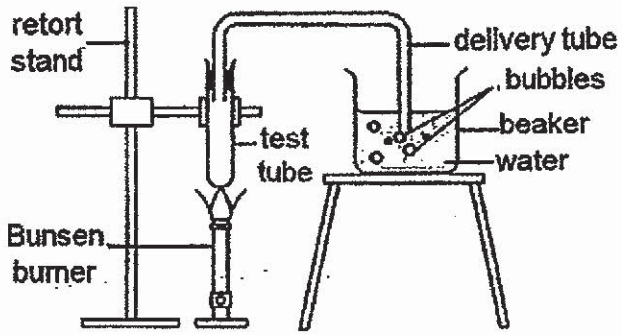
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39 Vani set up an experiment as shown below. She observed bubbles in the beaker of water when the test tube was heated over a Bunsen burner.



(a) Why were bubbles observed in the beaker of water? [2]

Vani noticed that the pot she bought had the following picture printed in the manual. It indicated the maximum level at which she should fill the pot.



(c) What would happen if Vani filled the pot to the brim when she used it to boil soup? Explain your answer. [1]

3

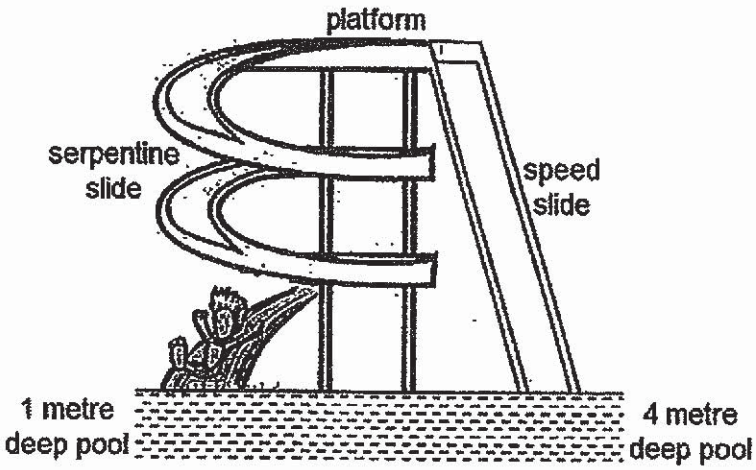
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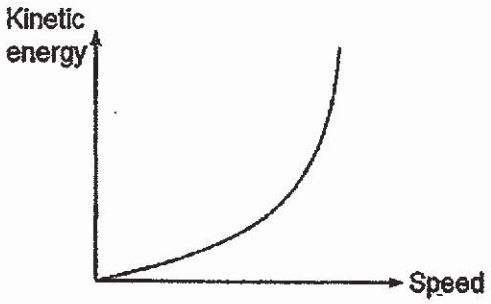
40 At the water theme park, two types of slides can be found. Serpentine slides take riders around a series of sharp curves while speed slides plummet riders straight down a slide and delivers them to a pool.

The diagram below shows Alex sliding down a serpentine slide.



(a) State two important properties of the material used for making the slides. [1]

Alex constructed a graph below to show the effect of speed on the kinetic energy possessed by a falling object.



(b) Based on the graph, what is the relationship between the speed and kinetic energy of a falling object? [1]

2

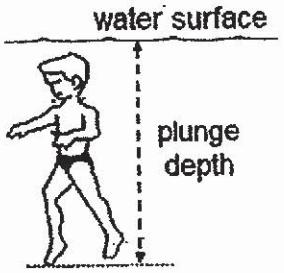
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At the end of the slide, the plunge depth was recorded. Next, Alex took the speed slide and the plunge depth was also measured. The results are as shown in the table below.

Type of slide	Plunge depth (m)		
	1st reading	2nd reading	3rd reading
Serpentine	0.50	0.60	0.70
Speed	2.70	2.60	2.80



(c) Describe the energy change as Alex slid down the speed slide from the top. [1]

(d) Why was the plunge depth for the speed slide greater than that for the serpentine slide? Explain your answer. [1]

(e) Alex observed that both water slides have water flowing down the slides continuously. Why is this necessary? [1]

3

End of Booklet B2

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SCHOOL : MGS PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2019 SA1

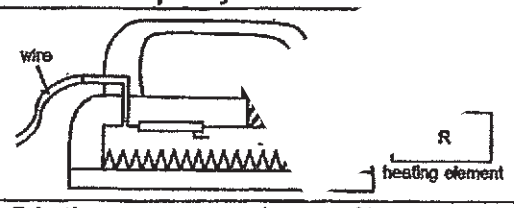
SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	4	3	4	3	1	2	4	3
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	3	1	3	3	2	1	3	2	1
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	1	1	3	2	4	4	4		

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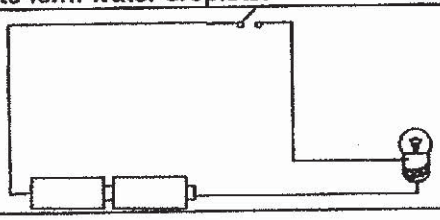
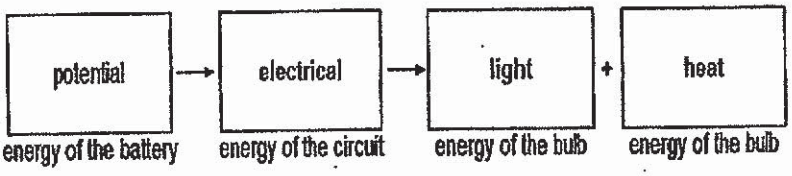
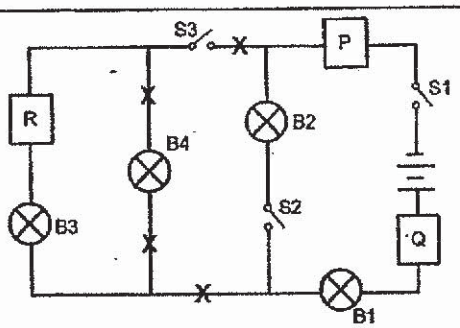
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Methodist Girls' School (Primary)
Mid-Year Examination 2019
Primary 6 Booklet B Answer Key

Qn	Answer
29a	Living things can move by themselves. Living things can respond to changes around them.
29b	As the temperature increases, the number of active animal X increases until temperature reaches 30°C, the number of active animal X then decreases.
29c	Set-up C. More animal X would be attracted to a higher temperature of 30°C and substance L. Thus, the presence of chemical P would kill the most number of animal X in set-up C.
29d	Spraying chemical P on the sweets will harm/kill/poison the person eating the sweets.
30a	Part M is the stem. It helps to hold the plant upright / OR It transports food from the leaves to other parts of the plant/ OR It transports water and mineral salts from the roots to other parts of the plant.
30b	The food-carrying tubes were damaged so food from the leaves cannot be transported to the roots and affected the growth of the roots of the tree.
30c	The water in plants moves in one direction upwards but the blood in the human moves in two directions /circulates throughout the body.
31a	The plants are planted far apart to prevent overcrowding so as to reduce competition of sunlight, space and water.
31b	It is sweet / fleshy / brightly coloured/ has small indigestible seeds so that animals will eat it and pass it out as droppings / throw the seeds after eating the fruits.
31c	Plant → Q → R
31d	The population of farmer's plants would decrease. The increase in the population of organism P would decrease the population of organism R as P feeds on R. This caused an increase in population Q as there is less organism R to feed on organism Q. As there is more organism Q to feed on the farmer's plants, the population of the plants decreases.
32a	Line 1. As the amount of substance X increases, the amount of gas / oxygen produced increases at a higher rate.
32b	To serve as a control so as to confirm that the results are due to the presence of substance X.
32c	To ensure reliability / consistency of results.
32d	Plants take in water and carbon dioxide from the surrounding and in the presence of sunlight and chlorophyll, it produces sugar and gives out oxygen during photosynthesis.
33a	The hissing sound of animal D would alert the rhinoceros of danger. Animal D helps to clean the body of the rhinoceros as it removes / eat the pests / ticks of its body.
33b	Beak Y. It is short and pointed to help the bird feed on the ticks on the rhinoceros.
34a	Pot R. Pot R has a greater surface area in contact with the metal plate so it will gain heat faster than Pot S.
34b	Animal G spreads out on the ice to increase the surface area of its body in contact with the ice so that its body will lose heat faster to cool itself down.
34c	Animal G has stiff hair which increases friction between its paw and the ice so that it does not slip easily on ice / helps animal G to have a better grip when walking on ice.
35a	Rod P. It gained heat /conducted heat faster than rod S as it took a shorter time for the wax on it to melt completely.
35b	
35c	S is the poorest conductor of heat because the wax on rod S took the longest time to melt. It will prevent the users from getting burnt.
36a	Line 1. Container Y has a smaller exposed surface area of water so the rate of evaporation is less/ slower, therefore more water is left in container Y.

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36b	When the solar panels lie flat, they reduce the exposed surface area of Tengah Reservoir so the rate of evaporation water decreases.
36c	At night, the solar panels cool down and the water in the reservoir evaporate to form water vapour. The warmer water vapour touches the cooler surface of the solar panel, loses heat and condenses to form water droplets.
37a	
37b	
37c	P and Q are conductors of electricity. R is insulator of electricity.
37d	 any one position marked X
38a	When more marbles are added, the total mass increased which resulted in greater gravitational force pulling the container down into the water.
38b	Gravitational force and frictional force.
38c	Transfer some sand from the barge to the tugboat. This will reduce the mass of sand in the barge and less gravitational force will act on the barge and the barge will float higher.
39a	The air in the test tube gained heat and expanded. It travelled/ escaped through the delivery tube into the beaker of water and appeared as bubbles.
39b	The soup in the pot would gain heat and expand /increase in volume when it is boiling. The soup would spill out of the pot as there is not enough space in the pot.
40a	Strong / stiff / waterproof
40b	The greater the speed of the falling obje[illegible] more kinetic energy it possesses.
40c	Alex has (gravitational) potential e[illegible] of the slide. As he slid down, the gravitational potential energy is converted t[illegible] at energy and sound energy.
40d	The speed of users on sp[illegible] those on serpentine slide. Thus, (gravitational) potential energy is [illegible] energy and users plunge deeper into the pool.
40e	Water acts as a lu[illegible] riction between the slide and the person sliding.

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