

2020

P6 Science

1.	Anglo Chinese School	
2.	Henry Park	
3.	Methodist Girls	
4.	Nan Hua	
5.	Nanyang	
6.	Pei Hwa Presbyterian	
7.	Raffles Girls	
8.	Red Swastika	
9.	Rosyth	
10.	Singapore Chinese Girls	
11.	Tao Nan	

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

**PRELIMINARY EXAMINATION 2020
SCIENCE
PRIMARY SIX
BOOKLET A**

Name: _____ ()

Class: Primary 6 _____

Date: 25 August 2020

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

Additional Materials: Optical Answer Sheet (OAS)

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the spaces provided.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.

This booklet consists of 24 printed pages including this cover page.

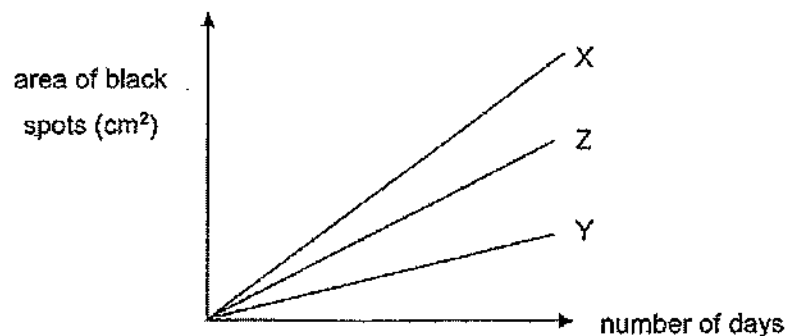
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet.

(56 marks)

- 1 Devi carried out an experiment on three similar slices of bread under different conditions.

Bread	Conditions
Slice A	Placed on a table in the kitchen
Slice B	Sprinkled with water and kept in the cupboard
Slice C	Put in an airtight container and kept in the refrigerator

She observed the three slices of bread for black spots over ten days and plotted the results in the graph.



Which slices of bread best represent X, Y and Z in the graph?

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

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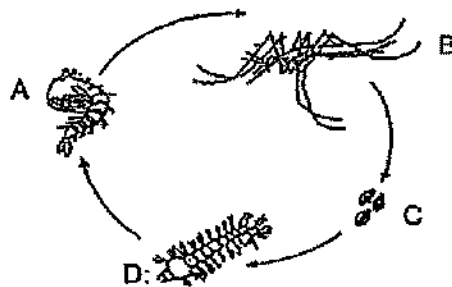
- 2 The table shows some characteristics of three organisms, P, Q and R. A tick (✓) indicates that the organism has that characteristic.

Organism	Can make its own food	Can reproduce by spores	Can be seen only under a microscope
P		✓	
Q	✓	✓	
R			✓

Which of the following correctly represents P, Q and R?

	P	Q	R
(1)	Cat	Rose plant	Mushroom
(2)	Mushroom	Bird's nest fern	Bacteria
(3)	Bacteria	Bird's nest fern	Rose Plant
(4)	Yeast	Mushroom	Bacteria

- 3 The diagram shows the life cycle of a mosquito. Tim sprayed oil onto the possible breeding grounds of mosquitoes in order to reduce the number of mosquitoes.



In which of the following two stages does this method help to reduce the number of mosquitoes?

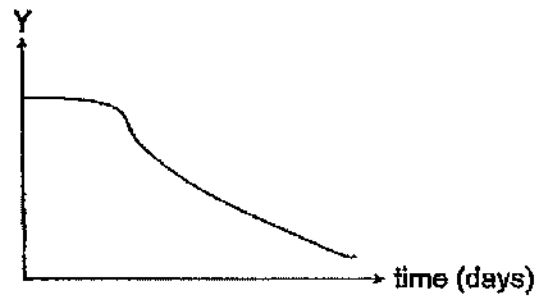
- (1) A and B
 (2) A and D
 (3) B and C
 (4) C and D

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- 4 The diagram shows a seedling.

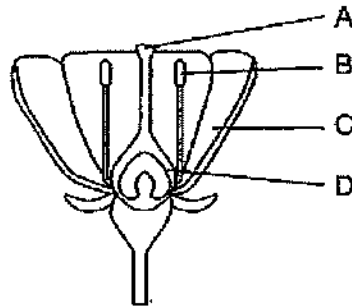


Ahmad observed the seedling for a few days and plotted the graph as shown.



What could the vertical axis, Y, of the graph represent?

- (1) Mass of the seedling.
 - (2) Height of the seedling.
 - (3) Length of the root of the seedling.
 - (4) Size of the seed leaves of the seedling.
- 5 The diagram shows a flower with parts labelled A, B, C and D.



During the process of pollination, pollen grains are transferred from part _____ to part _____.

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

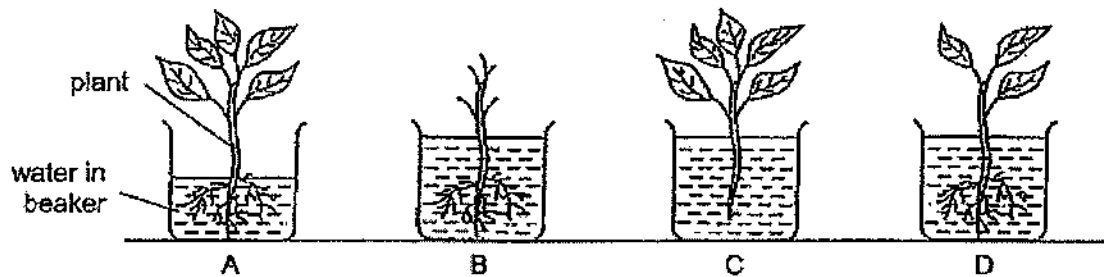
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6 Which of the following two traits can be passed on from parents to their young?

- A Eye colour
- B Hair length
- C Fingerprint
- D Ability to roll tongue

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

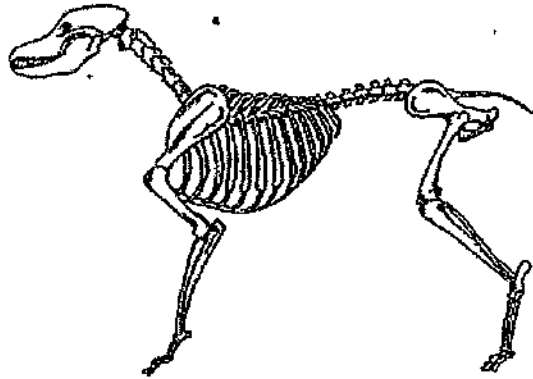
7 Kay prepared four set-ups with identical beakers to investigate whether a plant can survive without its leaves.



Which of the following pairs of set-ups should she choose to test her aim?

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

- 8 The diagram shows the skeleton of an animal.

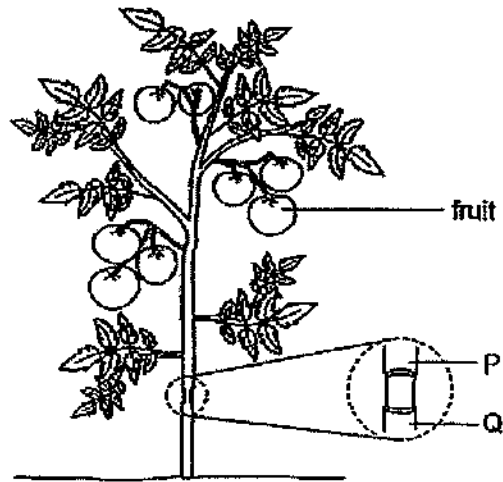


Which of the following is/are the function(s) of the skeleton?

- A Protects the vital organs.
 - B Allows the animal to move.
 - C Shows the outer covering of the animal.
 - D Provides structure and shape for the animal.
-
- (1) A only
 - (2) B and D only
 - (3) A, B and D only
 - (4) A, B, C and D

(Go on to the next page)

- 9 Jackie removed the outer ring of the stem from a plant between P and Q as shown. Only the food-carrying tubes were cut away with this outer ring.



After ten days, which of the following are likely observations that Jackie could make about the plant?

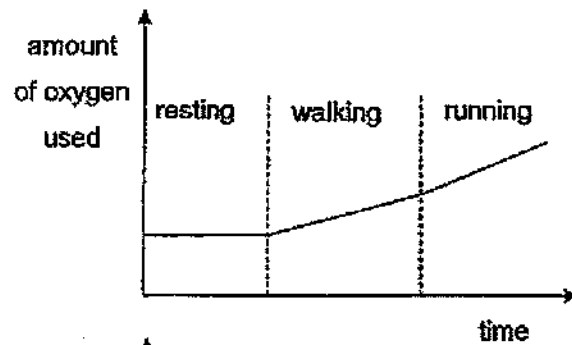
- A Part P will be swollen.
 - B Part Q will be swollen.
 - C The leaves have dried up.
 - D The fruits have grown bigger.
- (1) A and B only
(2) A and D only
(3) B, C and D only
(4) A, B, C and D

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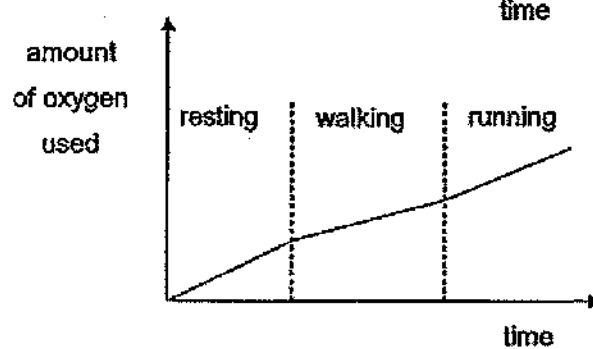
- 10 Jie Yong carried out three consecutive activities, resting, walking and running, over a period of time.

Which of the graphs best represents the amount of oxygen Jie Yong used during each activity?

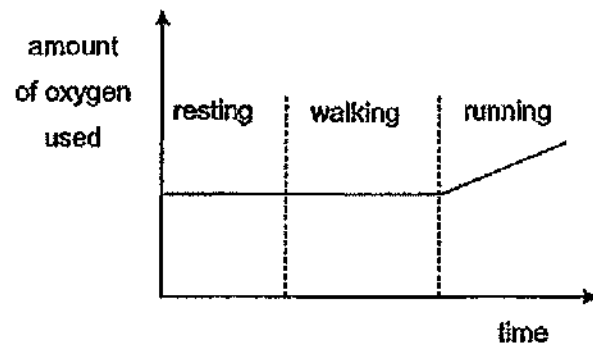
(1)



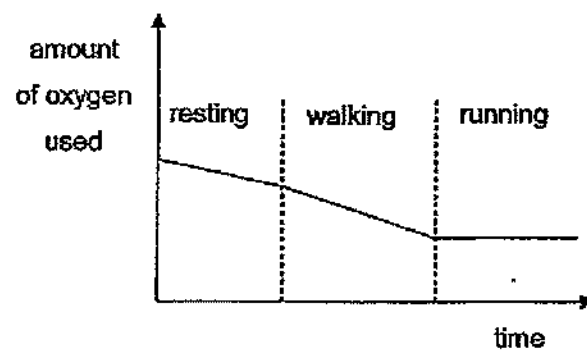
(2)



(3)



(4)



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- 11 The table shows the different cell parts present in cells P, Q, R and S. A tick (✓) indicates that the cell part is present.

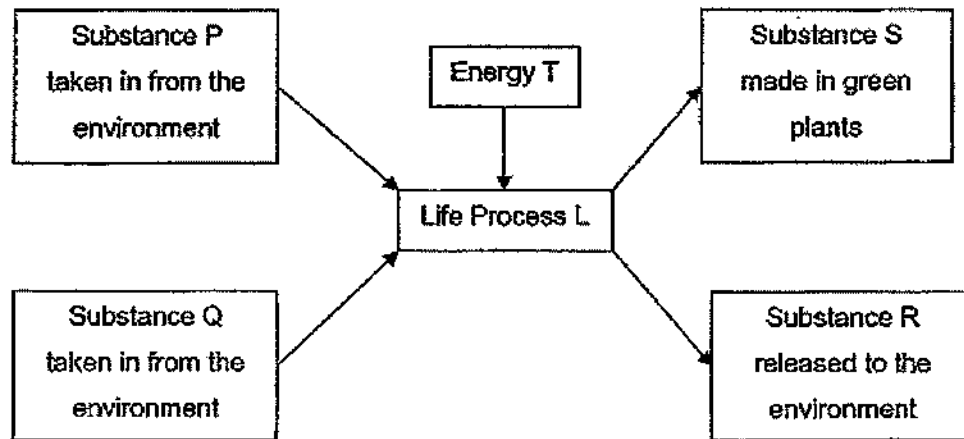
	Cell			
Cell part	P	Q	R	S
Nucleus	✓	✓	✓	✓
Cell Wall	✓		✓	
Cytoplasm	✓	✓	✓	✓
Chloroplast			✓	
Cell Membrane	✓	✓	✓	✓

Which cell, P, Q, R or S, is most likely from the root of a plant?

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

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- 12 The diagram represents a life process, L, which takes place in green plants.

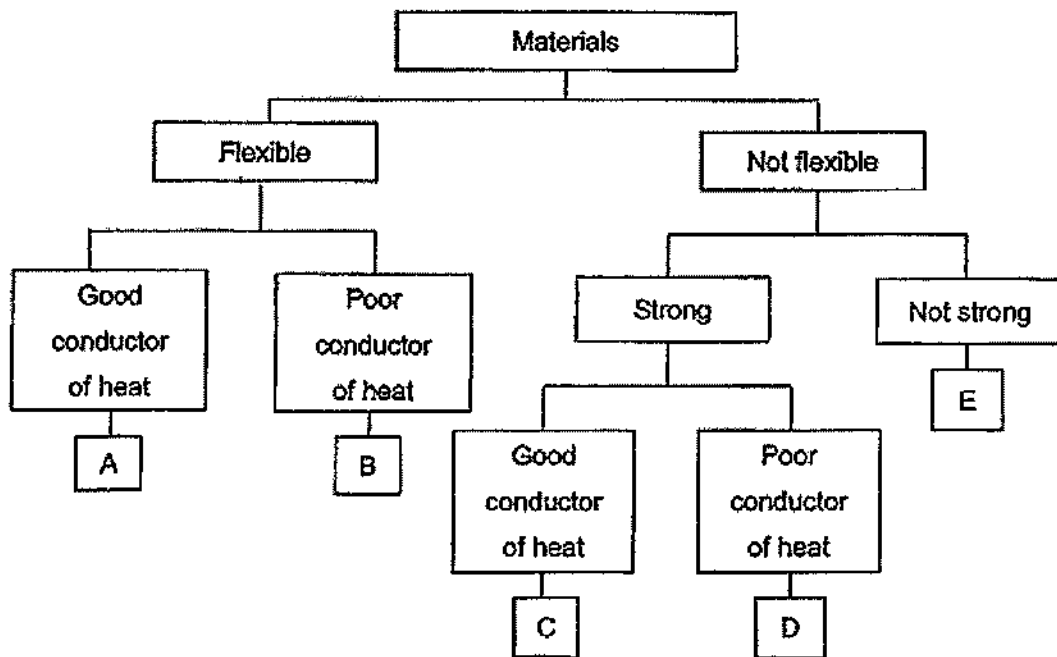


Which of the following represents P, Q, R, S and T?

	Substance				Energy T
	P	Q	R	S	
(1)	oxygen	water	carbon dioxide	food	heat
(2)	carbon dioxide	water	oxygen	food	light
(3)	oxygen	carbon dioxide	food	water	heat
(4)	food	carbon dioxide	oxygen	water	light

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13 Study the classification chart.

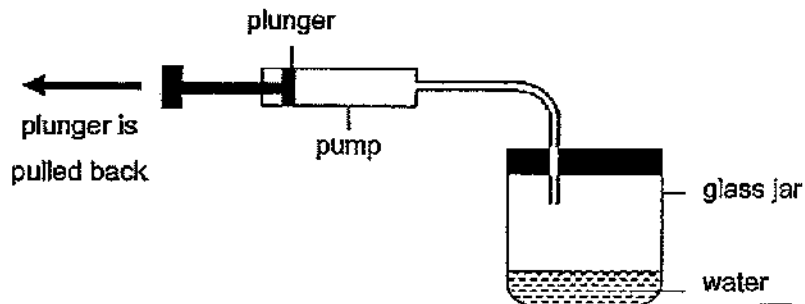


Which materials are most suitable for making oven gloves and baking trays when baking?

	Oven gloves	Baking trays
(1)	A	C
(2)	B	D
(3)	B	C
(4)	E	E

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- 14 The diagram shows a pump which is connected to a glass jar. The volume of the glass jar is 300 cm^3 and it contains 30 cm^3 of water.

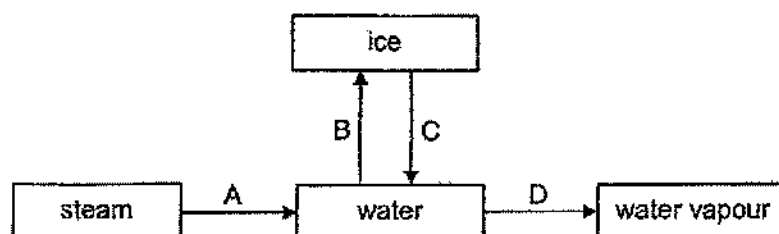


Each time the plunger of the pump is pulled back completely, 20 cm^3 of air would be drawn out of the glass jar.

Which of the following shows the correct volume of air and water in the glass jar after the plunger is pulled back completely once?

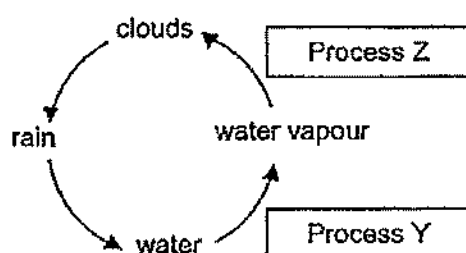
	Volume of air (cm^3)	Volume of water (cm^3)
(1)	250	50
(2)	250	30
(3)	270	30
(4)	290	10

- 15 The arrows in the diagram show some processes which involve the changes of state of water. Each process involves either a heat gain or heat loss.



Which pair of arrows represents the processes which involve heat gain?

- (1) A and B
 - (2) A and D
 - (3) B and C
 - (4) C and D
- 16 The diagram shows the water cycle.

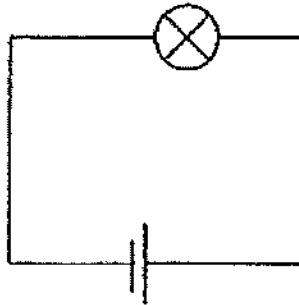


Which of the following statements about processes Y or Z in the water cycle is correct?

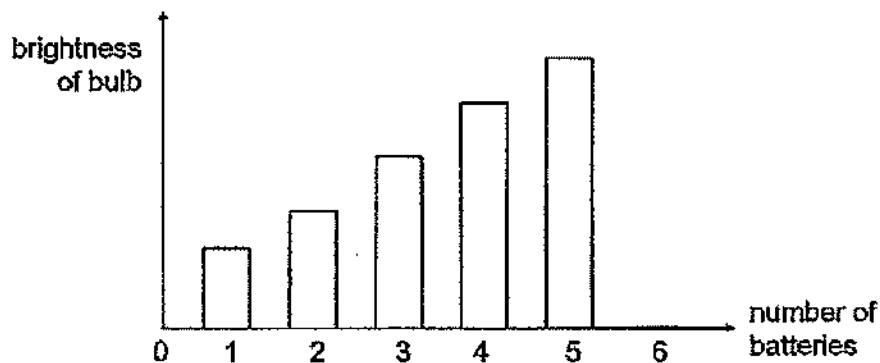
- (1) Heat is needed for process Z only.
- (2) Process Y occurs at any temperature.
- (3) Process Y occurs during day time only.
- (4) Process Z involves a liquid becoming a gas.

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- 17 The diagram shows a simple circuit.



Gregory added batteries, one at a time, in a series arrangement to the circuit and recorded the brightness of the bulb. The graph shows his results.

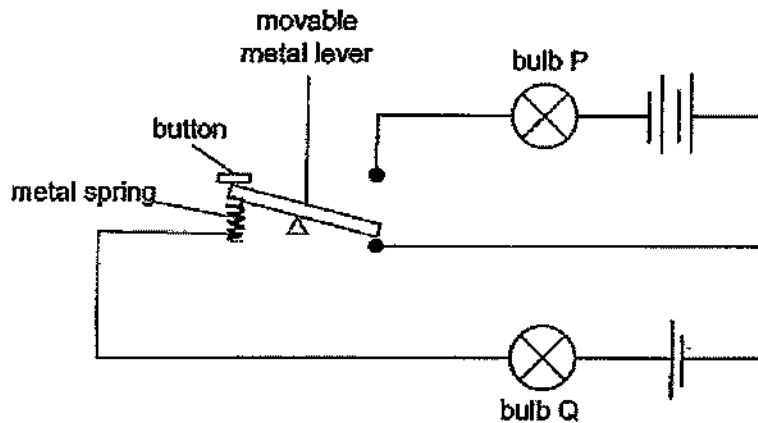


Which of the following is/are possible explanation(s) why the brightness of the bulb was zero when the sixth battery was added?

- A Too many batteries were added to the circuit.
 - B The sixth battery did not have any potential energy.
 - C The wire and the sixth battery were not connected properly.
- (1) A only
- (2) B only
- (3) A and C only
- (4) B and C only

- 18 The diagram shows how the brightness of the bulb(s) in a circuit is/are controlled by a button. The bulbs and batteries used are identical and are in working condition.

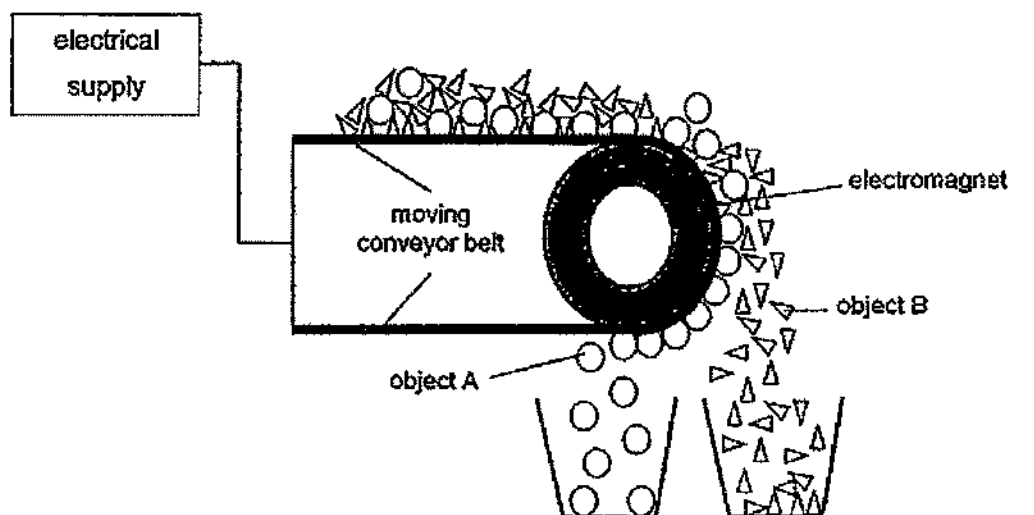
When the button is not pressed, only bulb Q lights up with a brightness of 10 units.



What would happen to the brightness of both bulbs P and Q if the button is pressed and held down?

	Bulb P	Bulb Q
(1)	10 units	0 units
(2)	more than 10 units	0 units
(3)	10 units	more than 10 units
(4)	more than 10 units	more than 10 units

- 19 The diagram shows how an electromagnetic conveyor belt is used to separate objects A and B.

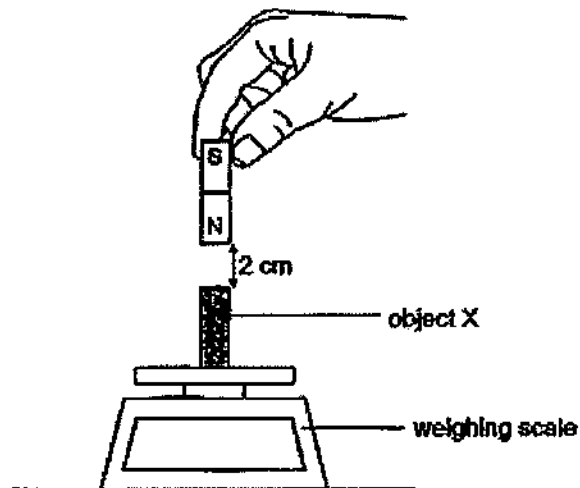


Based only on the above diagram, which of the following statements is likely to be true?

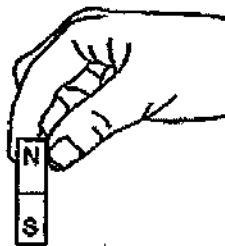
- (1) The electromagnet is made of aluminium.
- (2) Both objects A and B are conductors of electricity.
- (3) Both objects A and B are made of magnetic materials.
- (4) Object A is made of steel while object B is made of copper.

(Go on to the next page)

- 20 In an experiment, Mr Lim placed object X on the weighing scale and the scale showed a reading of 10 units. He then placed a bar magnet 2 cm directly above object X and the scale showed a reading of 12 units.



Next, Mr Lim flipped the bar magnet over and held it 2 cm directly above object X, as shown.

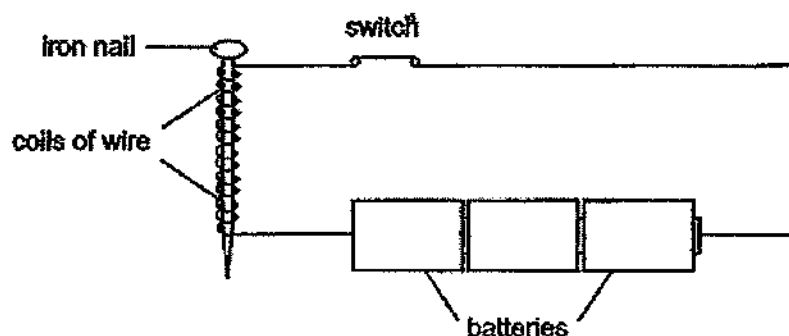


What would be the new reading on the weighing scale?

- (1) 0 unit
- (2) 10 units
- (3) 12 units
- (4) 22 units

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- 21 Kasheem conducted an experiment to find out how the number of coils of wire around an iron nail would affect the strength of the magnetised nail.



The strength of the magnetised nail is measured by the number of paper clips that it could attract. Kasheem recorded the results in the table.

Number of coils of wire around iron nail	Number of paper clips attracted
10	7
20	10
30	13
40	15
50	16
60	16
70	16

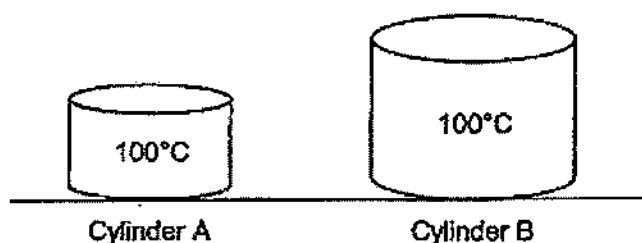
Based only on the results, which of the following conclusion(s) can be made?

- A The magnetised nail will be able to attract more than 16 paper clips if four batteries are used.
- B The maximum number of paper clips that can be attracted by the magnetised nail is 16.
- C After 50 coils of wire, the number of coils of wire around the nail will not increase the strength of the magnetised nail.

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

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- 22 The diagram shows two iron cylinders, A and B, heated to 100°C .



Which of the following is correct?

- (1) Cylinder A is hotter than Cylinder B.
 - (2) Cylinder A has less heat energy than Cylinder B.
 - (3) Both cylinders have the same amount of heat energy.
 - (4) Both cylinders will take the same amount of time to reach room temperature.
- 23 The picture shows a man pushing a box across the floor.



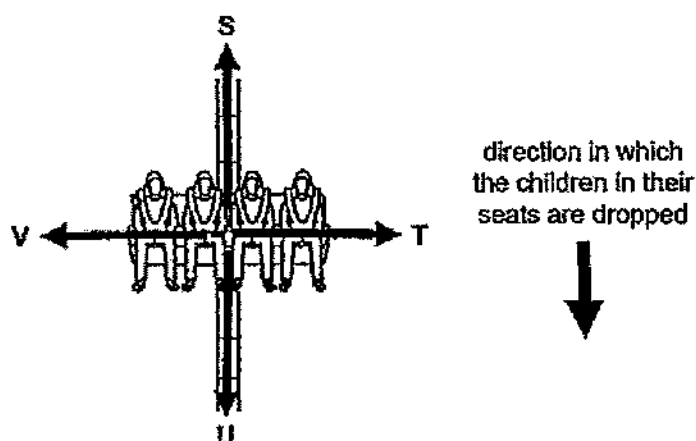
Which of the following makes it difficult for the man to push the box?

- A The mass of the box.
 - B The force the man used to push the box.
 - C The friction between the box and the floor.
 - D The friction between the man's feet and the floor.
- (1) A and B only
 - (2) A and C only
 - (3) B and D only
 - (4) A and D only

(Go on to the next page)

- 24 The picture shows several children sitting on a carnival ride. During one part of the ride, the children in their seats are dropped from a certain height.

S, T, U and V represent the direction of possible forces acting on the children during this part of the ride.

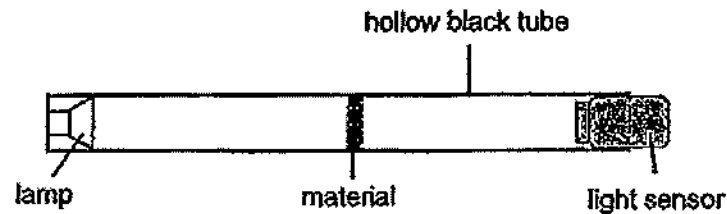


Which arrows show the direction of gravity and friction acting on the children respectively when the seats drop?

	Direction of gravity	Direction of friction
(1)	U	S
(2)	U	V
(3)	S	T
(4)	S	V

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- 25 Ephraim set up the following experiment to measure the amount of light that can pass through four materials, A, B, C and D using a light sensor.



He recorded the results in the table.

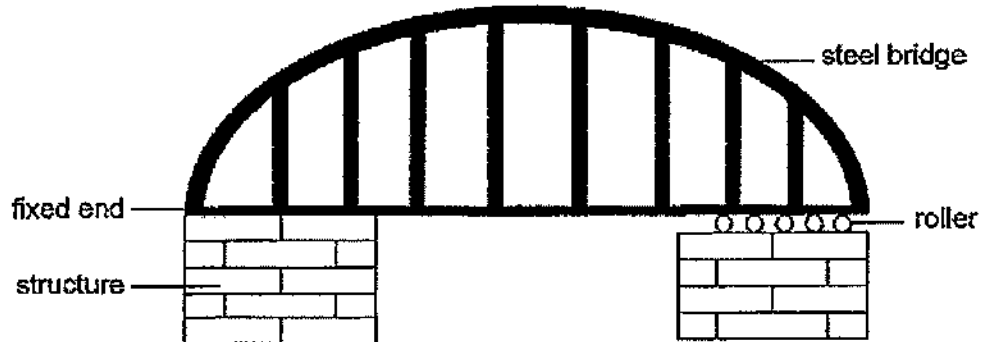
Material	Amount of light detected (units)
A	270
B	158
C	0
D	97

Which of the following shows the correct arrangement of materials from one that allows least light to pass through to one that allows most light to pass through?

	allows least light to pass through		allows most light to pass through
(1)	A	B	C
(2)	B	D	C
(3)	C	A	D
(4)	C	D	B

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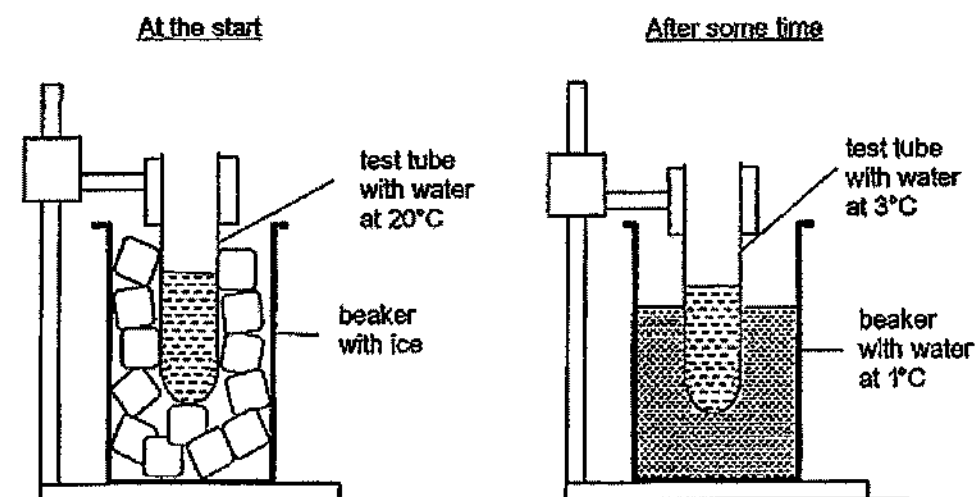
- 26 The diagram shows a steel bridge. One end of the bridge is fixed securely to the structure unlike the other end which is resting on rollers as shown.



Which of the following statement(s) explain(s) why one end of the bridge is resting on the rollers?

- A To reduce friction between the structure and the bridge.
 - B To allow the bridge to expand on hot days without damaging the structure.
 - C To allow the rollers to contract on cold days without damaging the structure.
- (1) B only
(2) C only
(3) A and B only
(4) A and C only

- 27 Shirleen carried out an experiment as shown. A test tube containing water at 20°C was placed in the centre of a beaker with some ice cubes. The beaker was then left in a room for some time.



Based on the experiment above, which of the following are correct?

- A The ice cubes gained heat from the surrounding and melted.
 - B The ice cubes lost heat to the water in the test tube and melted.
 - C The beaker gained heat from the surrounding and became cooler.
 - D The water in the test tube lost heat to the ice cubes and became cooler.
- (1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

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- 28 The diagram shows a man bowling.



Which of the following best shows the energy conversions when the bowling ball rolls on the ground and hits the pins down?

- (1) kinetic energy (bowling ball) \rightarrow heat energy (pins) \rightarrow kinetic energy (pins)
- (2) potential energy (man) \rightarrow kinetic energy (bowling ball) \rightarrow sound energy (pins) + heat energy (pins)
- (3) kinetic energy (bowling ball) \rightarrow kinetic energy (pins) + sound energy (pins) + heat energy (pins)
- (4) potential energy (bowling ball) \rightarrow potential energy (man) \rightarrow kinetic energy (bowling ball) \rightarrow sound energy (pins) + heat energy (pins)

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

PRELIMINARY EXAMINATION 2020
SCIENCE
PRIMARY SIX
BOOKLET B

Name: _____ ()

Class: Primary 6 _____

Date: 25 August 2020

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

Parent's/ Guardian's signature

INSTRUCTIONS TO CANDIDATES

1. Write your name, index number and class in the spaces provided.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

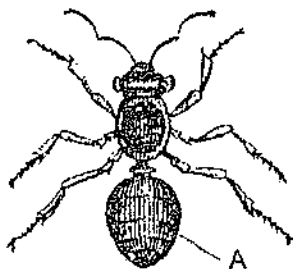
BOOKLET	MAX MARKS	MARKS OBTAINED
A	56	
B	44	
Total	100	

This booklet consists of 15 printed pages including this cover page.

For questions 29 to 40, write your answers in this booklet.

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

- 29 Two boys, Elliott and Jimmy, saw two animals in the garden as shown.



Animal X



Animal Y

Elliott said that both are insects but Jimmy said that only Animal X is an insect.

- (a) Based on your observation, who is correct? Give a reason for your answer. [1]

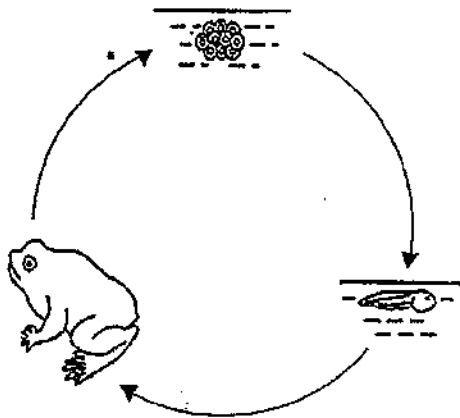
- (b) State a characteristic of insects that the boys might have learnt which is not observed from the above pictures. [1]

- (c) State a function of outer covering A. [1]

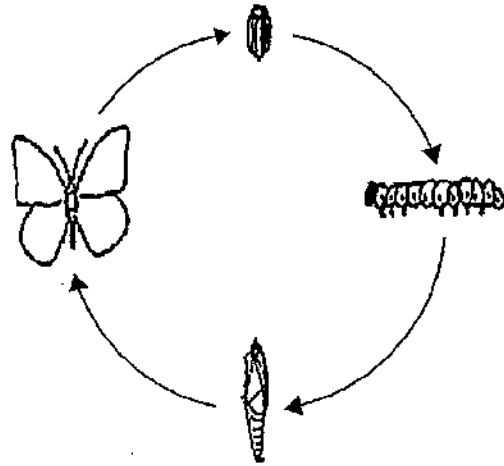
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Score	3
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- 30 The diagrams show the life cycles of a frog and a butterfly.



Life cycle of a frog



Life cycle of a butterfly

- (a) Based on the diagrams above, state one similarity between the life cycles of a frog and a butterfly. [1]

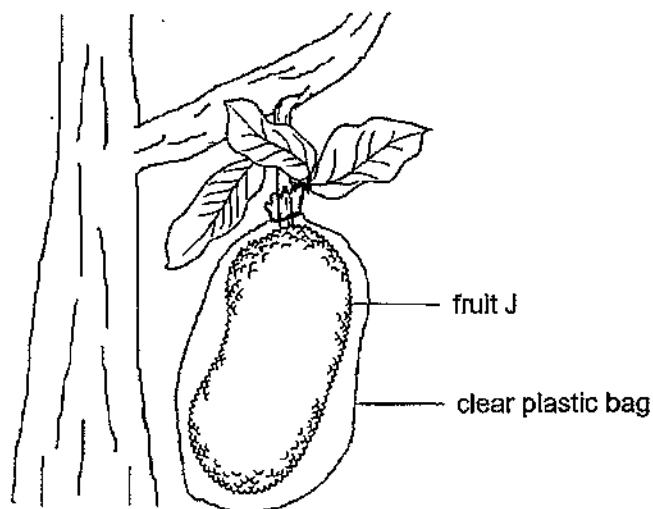
- (b) Both the frog and the butterfly lay many eggs at a time. Explain the advantage of laying many eggs at a time. [1]

- (c) How do the adult frog and its young breathe in water? [1]

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Score	3
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- 31 Fruit J produces a gas, ethylene, which causes it to ripen faster. As such, farmers usually wrap fruit J in a plastic or cloth bag as shown.



- (a) Explain how wrapping fruit J in bags will cause it to ripen faster. [1]

- (b) What is another advantage for farmers to wrap fruit J in bags? [1]

Martin said that fruit J will only grow if wrapped in a clear plastic bag so that it will still be able to make food.

- (c) Do you agree with Martin? Explain your answer. [1]

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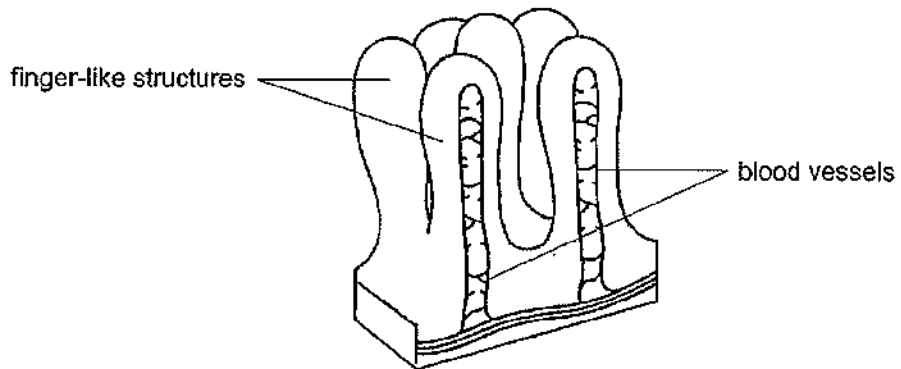
Score	3
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32 Eugene ate a meal of chicken rice.

- (a) Complete the table to show the amount of digested food leaving the gullet and small intestine of Eugene's digestive system after the meal. [1]

Name of organ	Amount of digested food leaving the organ (units)
mouth	10
gullet	
stomach	20
small intestine	

Inside the walls of the small intestine are finger-like structures as shown.



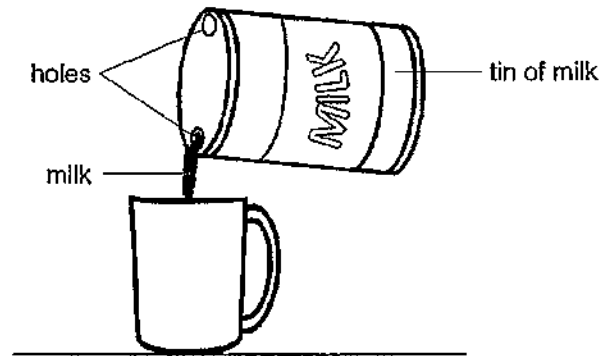
- (b) Explain how these finger-like structures affect the rate of absorption of digested food into the blood vessels. [1]

- (c) How do the blood vessels obtain and carry the digested food to all parts of the body? [2]

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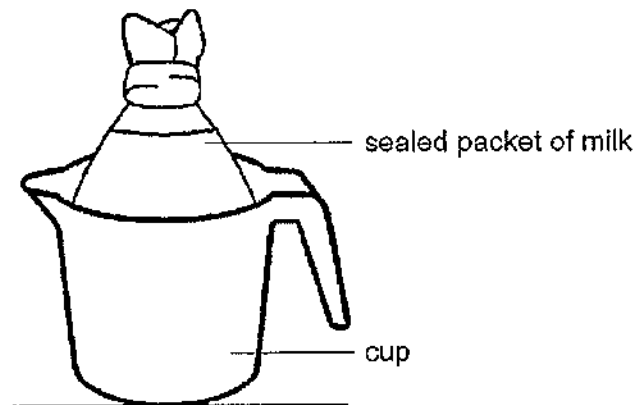
- 33 Gina made a hole in a tin of milk before pouring it out. When she went to a drink stall, she saw that the stallholder had made two holes instead of one in a tin before pouring out the milk as shown.



- (a) State a difference observed when the milk flowed out from a tin with one hole and a tin with two holes. [1]

- (b) Explain your answer in (a). [2]

Gina then bought a sealed packet of milk and placed it inside a cup as shown. Both the packet of milk and the cup have a volume of 300 ml.



- (c) What property of a liquid enabled the sealed milk to be placed in the cup as shown? [1]

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Score	4
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- 34 Mary stacked some wet plates, one on top of the other, and left them to dry as shown in diagram 1.

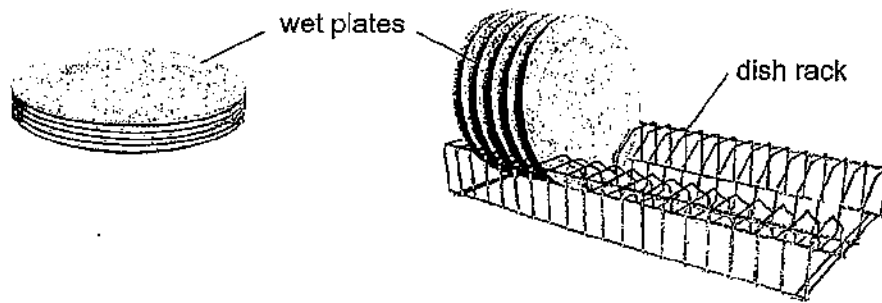


Diagram 1

Diagram 2

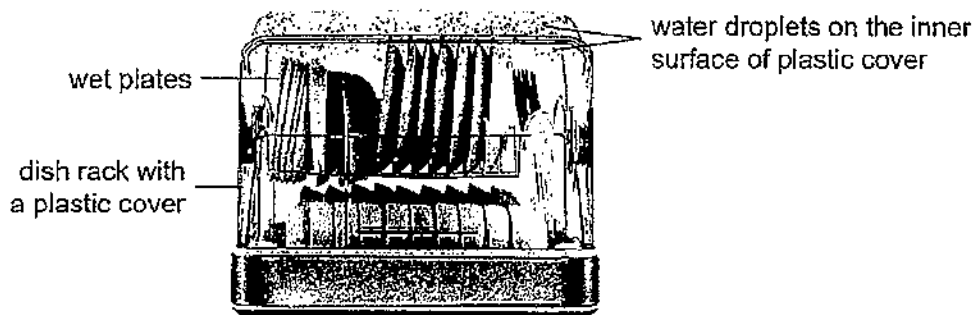
Her mother told her to place the wet plates on a dish rack, as shown in diagram 2, so that they could dry faster.

- (a) State two reasons why the wet plates in diagram 2 would dry faster. For each reason, explain your answer. [2]

1: _____

2: _____

Mary bought a dish rack with a plastic cover. She placed some wet plates onto the dish rack and closed the cover. After some time, she noticed water droplets on the inner surface of the plastic cover as shown.

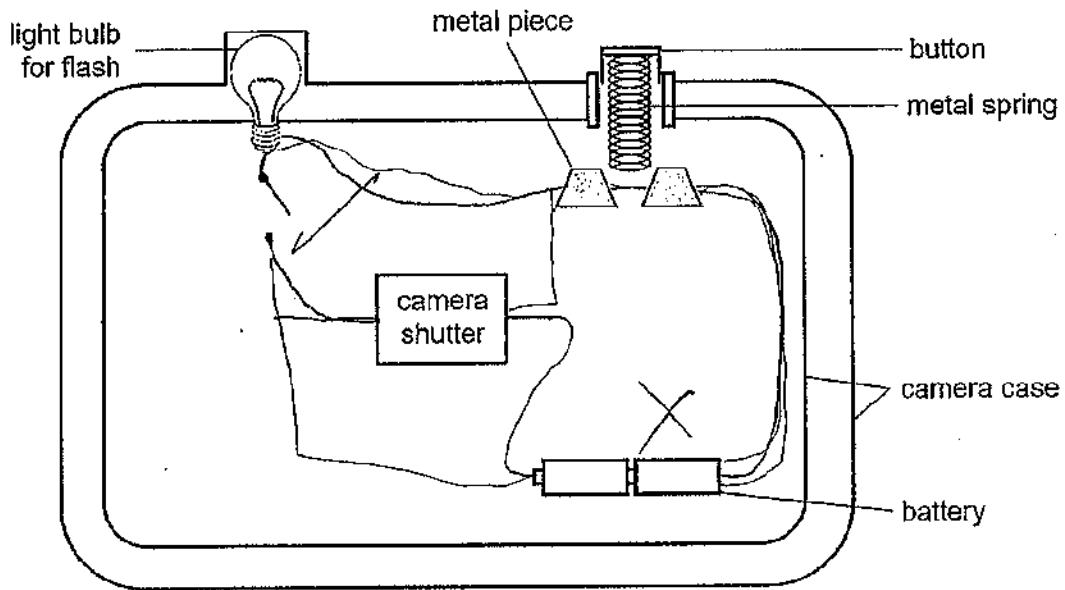


- (b) Explain how the water droplets were formed. [2]

(Go on to the next page)

Score	4
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- 35 The diagram shows part of a circuit in a camera.



To take a photograph, the camera shutter needs to be connected to a closed circuit with the button being pressed down. A photograph can also be taken by the camera with or without the use of flash.

- (a) Using a switch and some wires, complete the circuit in the diagram so that the camera will work as described above. [2]

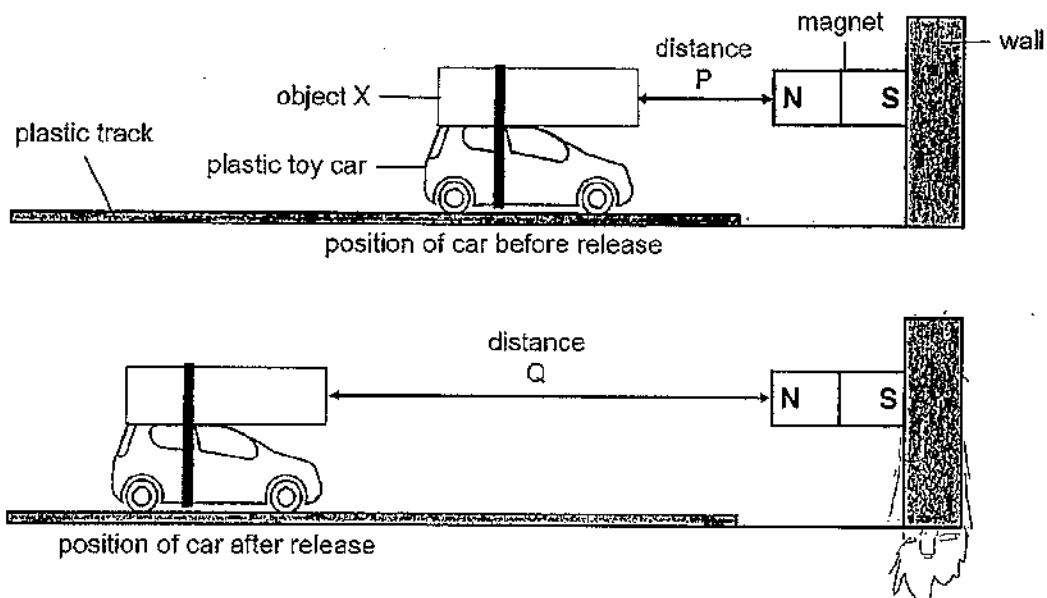
- (b) Suggest a disadvantage of the circuit above. [1]

- (c) If the metal pieces are switched to plastic pieces, will the camera still work? Explain your answer. [1]

(Go on to the next page)

Score	4
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- 36 Janesh tied object X on top of his plastic toy car. He placed them on a track which allowed the car to only travel in a straight line. At the end of the track, he attached a strong magnet to the wall as shown.



Janesh pushed the car with object X towards the magnet. At distance P, he released the car very gently. The car with object X was pushed back by the magnet and travelled a distance Q before stopping. He repeated the steps with decreasing distance P each time and measured the new distance Q.

- (a) Name one suitable material for object X. [1]

- (b) Explain why the car with object X was pushed back along the track when Janesh released it. [2]

- (c) State the relationship between distance P and distance Q. [1]

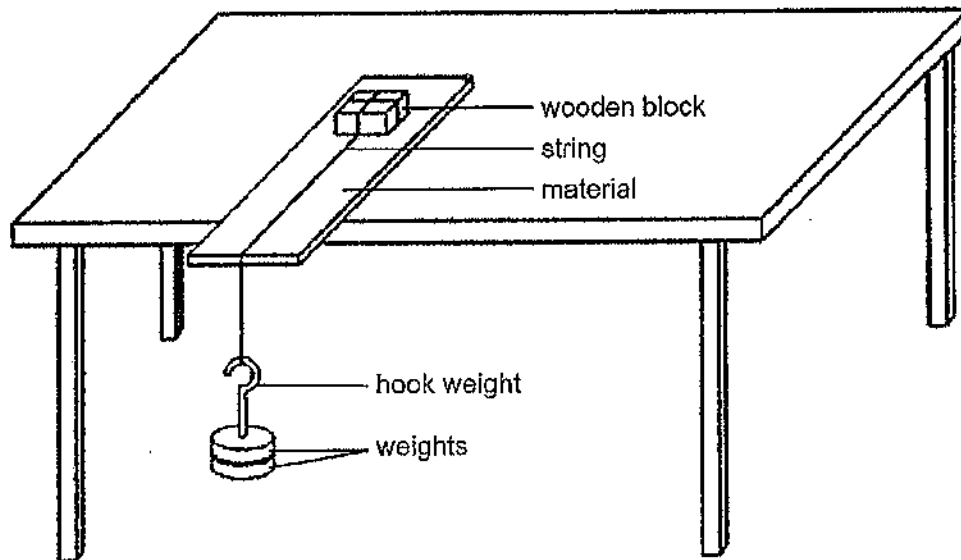
Janesh repeated the experiment using the same set-up, but he increased distance P instead. He observed that at a certain distance P, the car with object X did not move at all.

- (d) Explain Janesh's observation. [1]

(Go on to the next page)

Score	5
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- 37 Noel carried out an experiment using the set-up as shown. He tied a wooden block to a string and hung a hook weight on the other end. He placed the wooden block on different materials, X, Y and Z, and added weights until the wooden block started to slide.



He recorded his results in the table.

Material	X	Y	Z
Number of weights needed to cause the wooden block to slide	5	9	3

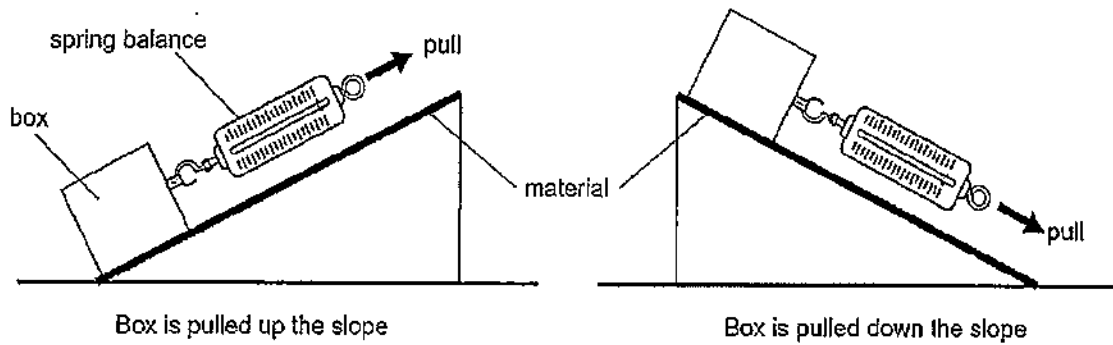
- (a) Name the two types of forces acting on the wooden block as it slid across each material. [1]

- (b) Based on Noel's results, which material was the smoothest? Explain why. [1]

(Go on to the next page)

Score	2
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Noel prepared a different set-up for another experiment. He used a spring balance to pull a box up the slope and then down the slope made of each material as shown.



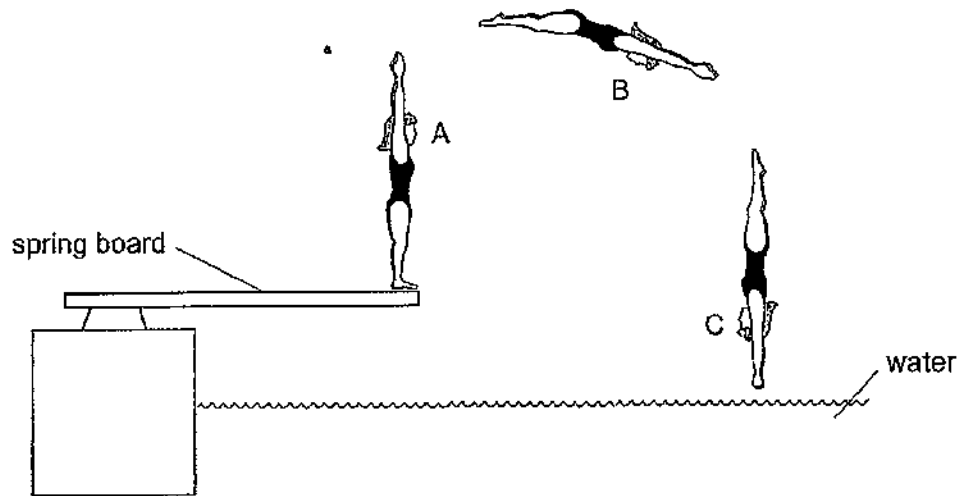
Noel noticed that for whichever material he used, more force was needed to pull the box up the slope than down.

- (c) Explain why a greater force was needed to pull the box up the slope. in a [1]

(Go on to the next page)

Score	1
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- 38 The diagram shows a diver diving into a pool. She jumps off the spring board at point A, reaches up into the air till point B and enters the water at point C.

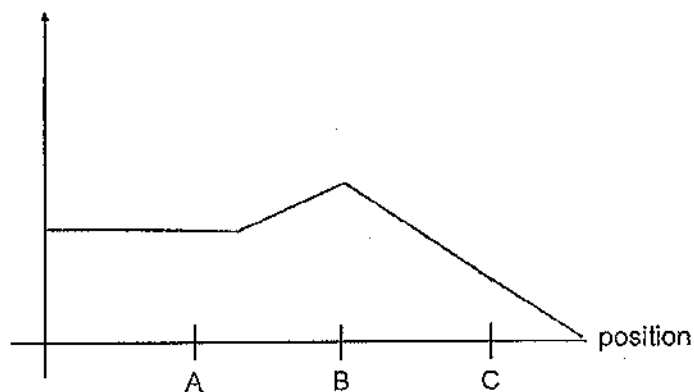


- (a) State the force which allows the diver to jump off at point A. [1]

- (b) Without changing the spring board, what can the diver do if she wants to reach a point higher than B? [1]

- (c) In the space below, draw a line graph to show the amount of gravitational force acting on the diver at positions A, B and C. [1]

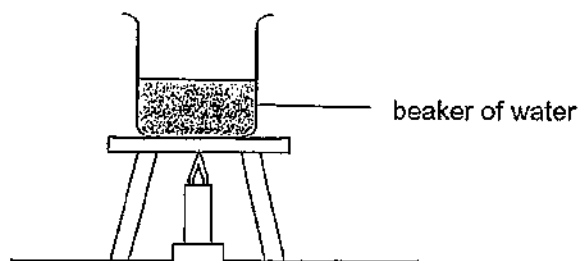
amount of gravitational force (units)



(Go on to the next page)

Score	3
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- 39 Mingzhe heated a beaker of water to find out how the volume of water affects the rate at which its temperature rises.



Mingzhe used four identical set-ups and filled each beaker with different volumes of water. He recorded the results of his experiment in the table.

Beaker	Volume of water at the start (cm ³)	Temperature at the start (°C)	Temperature at the 5 th min (°C)
A	30	15	65
B	50	15	50
C	65	15	Y
D	80	15	35

- (a) Predict the value of Y. [1]

- (b) What could Mingzhe conclude from the results above? [1]

- (c) Mingzhe continued to heat the water in beaker D. The table shows the results.

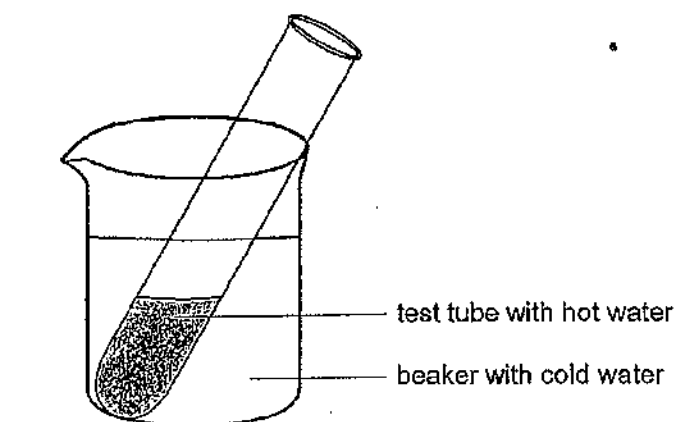
Time (min)	0	5	10	15	20	25	30
Temperature of water (°C)	15	35	60	85	100	100	No reading

- Why was there no reading at the 30th minute? [1]

(Go on to the next page)

Score	3
-------	---

In another experiment, Mingzhe poured some hot water into a test tube and placed it into a beaker of cold water, as shown.



- (d) What will happen to the temperature of the hot water in the test tube after some time? Explain why. [1]

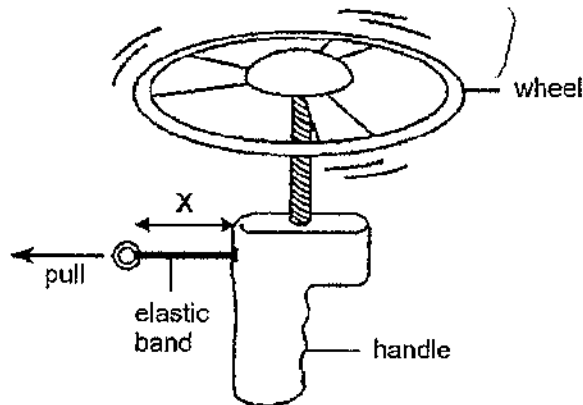
- (e) After three hours, the temperatures of the water in the test tube and beaker reached room temperature and remained at room temperature. Explain why. [1]

(Go on to the next page)

Score	2
-------	---

- 40 The diagram shows a toy. When the elastic band is pulled and then released, the wheel will spin before flying off. The greater the number of times the wheel spins, the further it travels.

Aishah wants to find out how the number of spins of the wheel changes when the elastic band is pulled to different lengths.



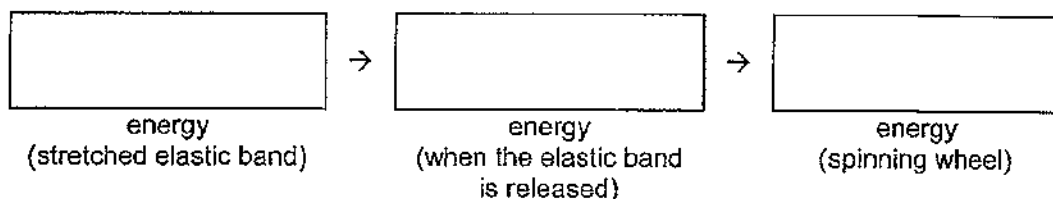
The table shows the results of her experiment.

Length of the elastic band when pulled, X (cm)	Number of times the wheel spins
4	2
8	4
12	6

- (a) Aishah used the same wheel throughout her experiment. Explain how this ensures a fair test. [1]

- (b) State the relationship between X and the number of times the wheel spins. [1]

- (c) Fill in the boxes below to show the energy conversion of the toy starting from the time Aishah releases the elastic band till the wheel spins. [1]



End of Paper

Score	3
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SCHOOL : ACS PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2020 PERLIM

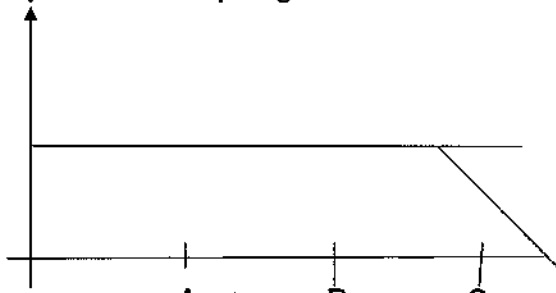
SECTION A

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

SECTION B

Q29)	<p>a)Elliott. Animal X and Y both have 3 body parts and 6 legs like a Insect.</p> <p>b)Insects has a exo skeleton</p> <p>c)To protect it's internal organs.</p>
Q30)	<p>a)They both have an egg stage.</p> <p>b)There will be a higher chance a egg will hatch and have continuity of it's own kind.</p> <p>c)Adult frog breathe through skin in water and young breathe through gills.</p>
Q31)	<p>a)Ethylene produced by the fruit will be trapped inside the bag causing, it to ripen faster.</p> <p>b)Animals will not be able to feed on J.</p> <p>c)No. Fruit J does not need sunlight as it is the leaves that need sunlight to make food.</p>

Q32)	<p>a)10</p> <p>b)There is a greater exposed surface area and can absorb faster.</p> <p>c)Digested food will be absorbed into the walls of the small intestine then absorbed into the blood stream where blood vessels will transport it to all parts of the body.</p>
Q33)	<p>a)Milk flowed out faster with 2 holes than 1 hole.</p> <p>b)With 2 holes, Air can enter and displace the milk and push it out of the tin that is flowing out of the hole.</p> <p>c)Liquid has no definite shape.</p>
Q34)	<p>a)1)There is a greater exposed surface area and can gain more heat.which increase the rate evaporation.</p> <p>2)The water droplets on the plate will get pulled down by gravity, so that there is less water left.</p> <p>b)Water droplets were formed when water from the wet dishes gained heat and evaporated causing water vapour to form. Once water vapour was formed water vapour condense on the cooler inner surface of plastic cover causing water droplets to form.</p>
Q35)	<div data-bbox="403 1451 997 1765" data-label="Diagram"> </div> <p>a)</p> <p>b)If the bulb fuses, the circuit will be opened and will not work.</p> <p>c)No. Plastic is not a conductor of electricity and the circuit will be opened and no electricity will flow.</p>

Q36)	<p>a)Steel.</p> <p>b)The like poles of X and the magnet was facing and repelled each other.</p> <p>c)The more distance P, the shorter distance Q.</p> <p>d)X was too far away from the magnet to be repelled.</p>
Q37)	<p>a)Friction and gravity.</p> <p>b)Z. It needed the least weight needed for the block to slide and it had the least friction between the block and the material.</p> <p>c)Pulling the block up the slope requires more force to go against gravity.</p>
Q38)	<p>a)elastic spring force</p> <p>b)Push down harder or apply greater downward force to increase compression of spring.</p> <p>c)</p>  <p>The graph shows a horizontal line starting from the vertical axis, extending to the right, and then sloping downward to the right. The horizontal axis has three points labeled A, B, and C. The vertical axis has an upward arrow.</p>
Q39)	<p>a)40°C</p> <p>b)The more volume of water at the start the temperature of water at the 5th min decreases.</p> <p>c)All the water had evaporated</p> <p>d)It will decrease. The water will lose heat to the cold water.</p> <p>e)The water in the best tube and the water in the beaker did.</p>
Q40)	<p>a)There will be only one changed variable and the number of spins of the wheel is only due to the length of the elastic band pulled and not other variables like the type of wheel.</p> <p>b)The more X, the more times the wheel spins.</p>

	c)elastic potential →kinetic → kinetic



HENRY PARK PRIMARY SCHOOL

PRELIMINARY ASSESSMENT 2020

PRIMARY 6

SCIENCE

BOOKLET A (56 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Shade your answers on the Optical Answer Sheet (OAS) provided.

Name: _____ ()

Class: Primary 6 ()

Date: 25 August 2020

Total Time: 1 h 45 min

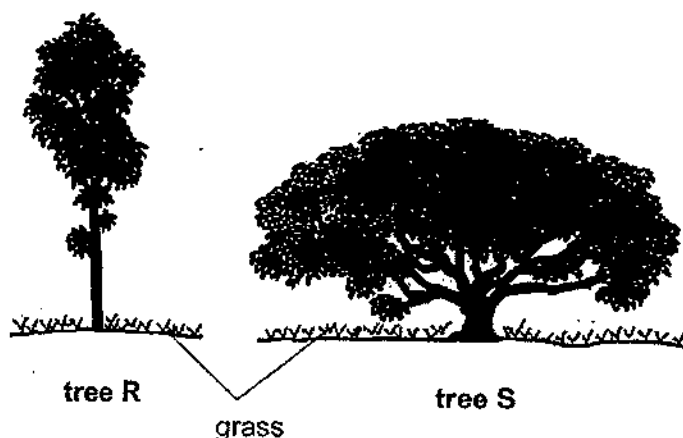
Booklet	Marks	
A		/ 56
B		/ 44
Total (A+B)		/ 100

Parent's Signature: _____

Booklet A (56 marks)

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

1. The diagrams show 2 trees, R and S, at the same location in a garden.



Jack noticed that the grass under one of the trees grew more healthily than that of the other.

Which of the following correctly shows the tree under which the grass was healthier and the reason?

	Tree	Reason
(1)	R	The grass gets more sunlight to make food.
(2)	R	Fewer animals can make their homes in the tree.
(3)	S	The temperature under the tree is lower.
(4)	S	The grass does not get beaten by the falling rain.



2. Joel saw animal X in a muddy area.









Animal X

Animal X has the following characteristics:

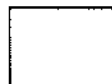
- A It has fins.
- B It lays eggs.
- C It breathes through gills.
- D Its body is covered with scales.

Joel was told to classify animal X in either Group P or Group Q as shown below.

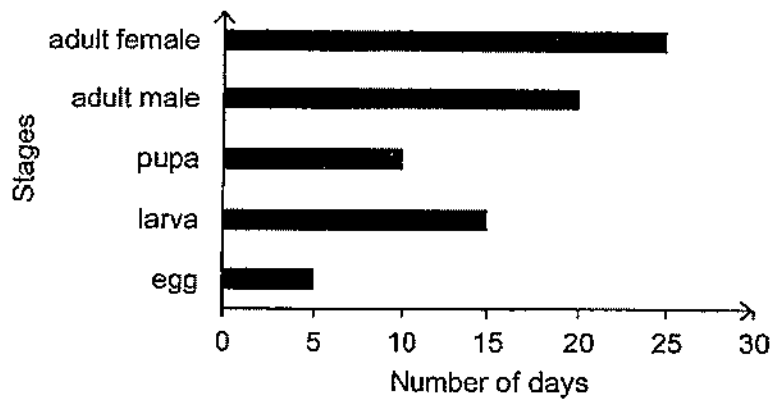
Group P	Group Q
	
	
	

Which of the characteristics of animal X would help Joel in his classification?

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



3. The graph below shows the number of days of each stage in the life cycle of an insect.

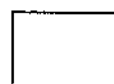


Based on the graph, Johari wrote the following statements.

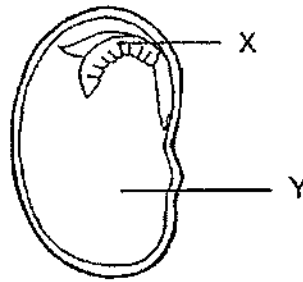
- A The larva takes 5 days to hatch from the egg.
- B The insect takes 40 days to become an adult.
- C The male insect dies soon after it fertilises the eggs.
- D The insect takes 25 days to change from larva to pupa.

Which of the above statement(s) is/are correct?

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

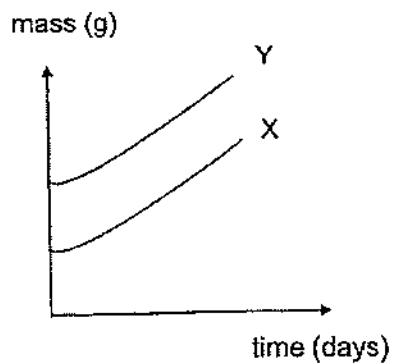


4. The diagram below shows what the inside of a seed looks like.

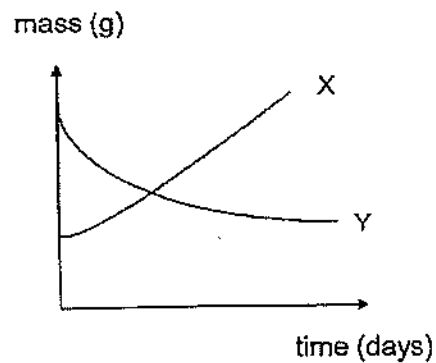


Which of the following graphs correctly shows the change in mass of parts X and Y if the seed is germinating and growing?

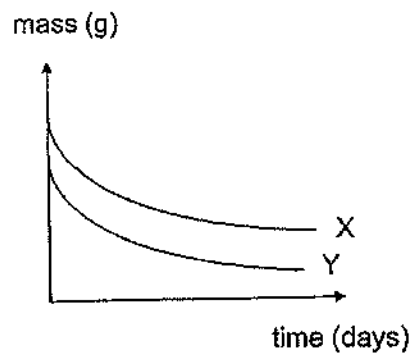
(1)



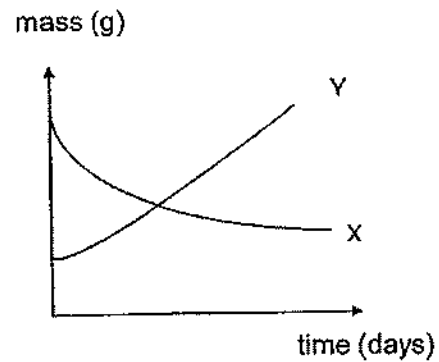
(2)



(3)



(4)



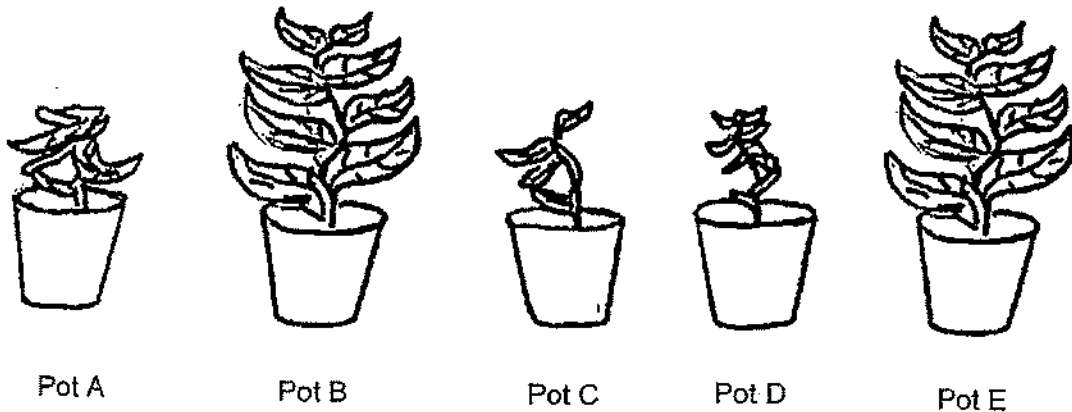
5. Dina placed five identical small plants into separate pots of the same size containing the same amount of soil.

She wanted to investigate how different conditions affect the growth of plants.

The different conditions are shown in the table below. A tick (✓) represents the presence of the factors.

Condition	Pot A	Pot B	Pot C	Pot D	Pot E
Presence of water	✓	✓	✓	-	✓
Presence of sand	✓	-	✓	✓	✓
Presence of light	✓	✓	-	✓	✓
Presence of minerals	-	✓	✓	✓	✓

The diagrams show Dina's plants after one week.

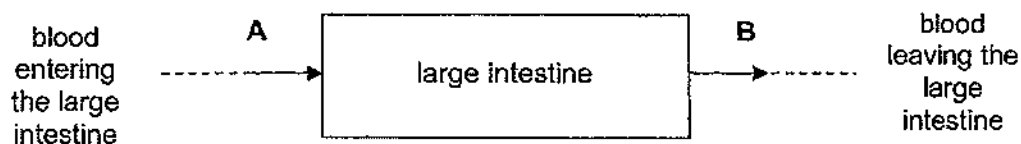


According to Dina's results, which factor has the least effect on plant growth?

- (1) water
- (2) sand
- (3) light
- (4) minerals



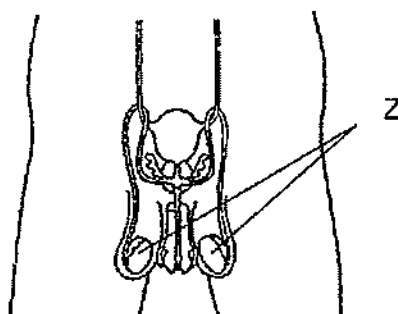
6. The diagram shows blood flowing through the large intestine of the human body.



Which of the following is correct about the amount of oxygen, carbon dioxide and water in the blood flowing in A as compared to B?

Blood flowing in A has			
(1)	more oxygen	less carbon dioxide	less water
(2)	more oxygen	more carbon dioxide	more water
(3)	less oxygen	more carbon dioxide	more water
(4)	less oxygen	less carbon dioxide	less water

7. The diagram below shows the male reproductive system in human.

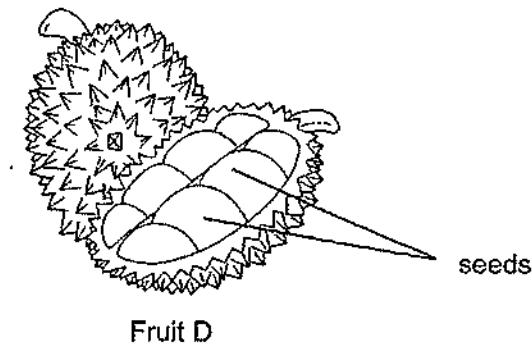


If parts Z are removed, what will most likely happen as a result?

- (1) The production of sperms will not take place.
- (2) The number of sperms produced will be reduced.
- (3) The sperms produced will not be able to fertilise the eggs.
- (4) The movement of sperms towards the eggs will be slower.



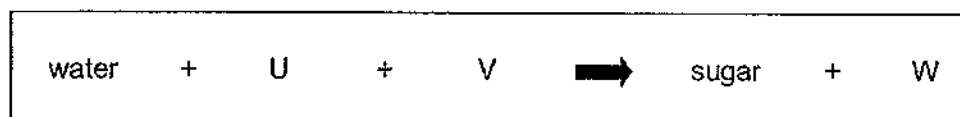
8. Ahmad opened up fruit D shown below and found many seeds inside.



Which of the following statements about fruit D are correct?

- A There were many ovules in the ovary of the flower.
 - B Pollination and fertilisation had taken place to form the fruit above.
 - C The strong smelling seeds attracted animals to eat and help dispersed them. ✓
- (1) A and B only
 - (2) A and C only
 - (3) B and C only
 - (4) A, B and C
9. The diagram shows process P carried out by plants.

Process P

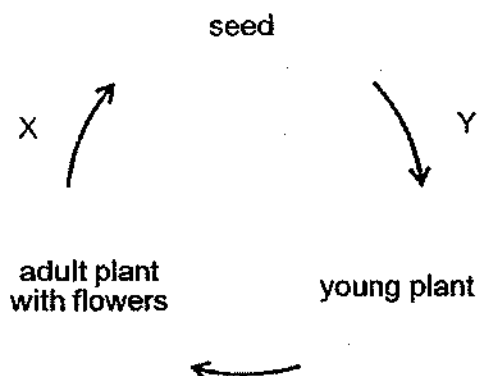


Which of the following correctly describes U, V and W?

	U	V	W
(1)	carbon dioxide	warmth	oxygen
(2)	oxygen	warmth	carbon dioxide
(3)	oxygen	light	carbon dioxide
(4)	carbon dioxide	light	oxygen

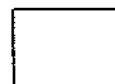


10. The diagram shows the stages and processes X and Y in the life cycle of a flowering plant.

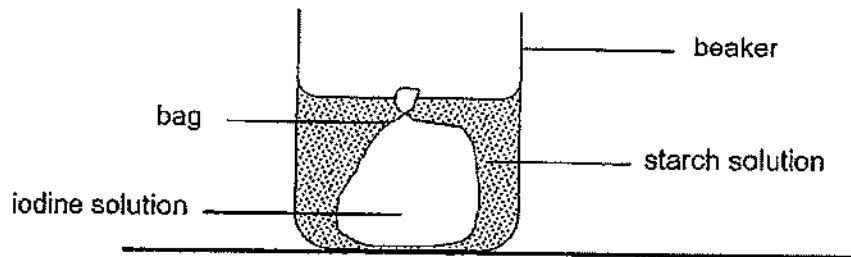


Which of the following correctly shows the possible process for X and Y?

	Process X	Process Y
(1)	germination	dispersal
(2)	fertilisation	pollination
(3)	fertilisation	germination
(4)	dispersal	pollination

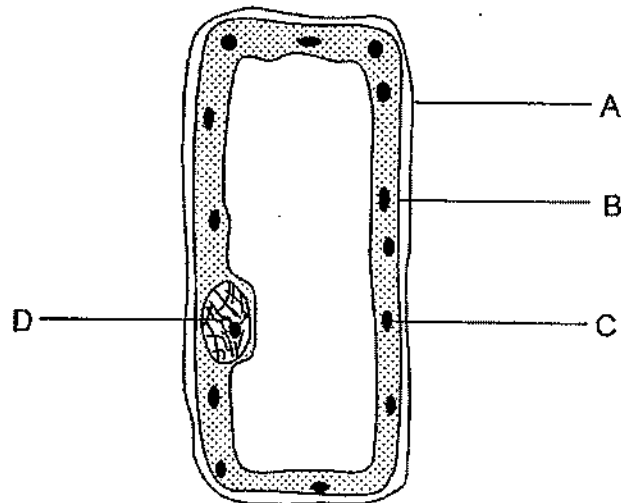


11. Mary set up an experiment as shown below.



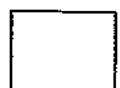
After a few hours, a dark blue coloration was observed in the starch solution outside the bag in the beaker.

The diagram below shows a plant cell.

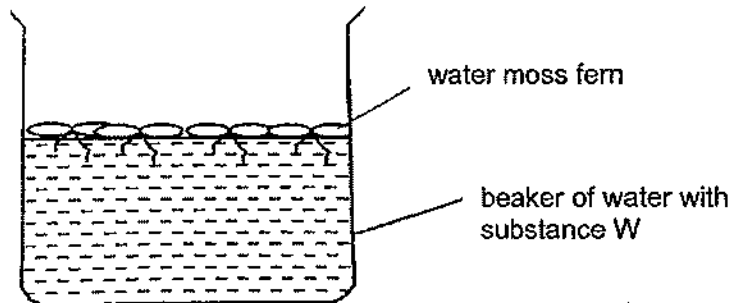


Which part of the cell, A, B, C or D, does the bag in Mary's experiment represent?

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



12. Hashim wanted to find out the effect of substance W on an aquatic plant. He placed some water moss fern in a beaker of water containing substance W as shown below.



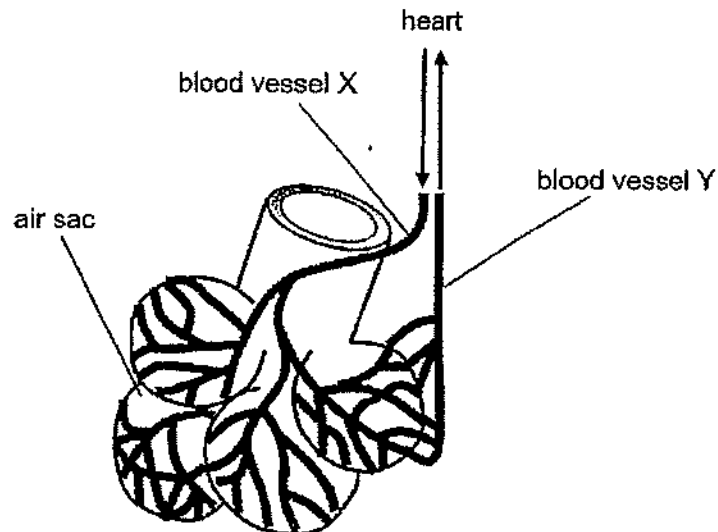
Which of the following should Hashim do to enable him to compare the effect of substance W on the water moss fern after two weeks?

- A Pour a layer of oil on the water at the start.
- B Set up a control beaker containing water and water moss fern only at the start.
- C Measure the mass of water moss fern after two weeks.
- D Count the number of water moss fern that are alive after two weeks.

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



13. The diagram below shows several air sacs, surrounded by blood vessels, which are found in our lungs. The blood vessel X carries blood from the heart while the blood vessel Y carries blood to the heart.



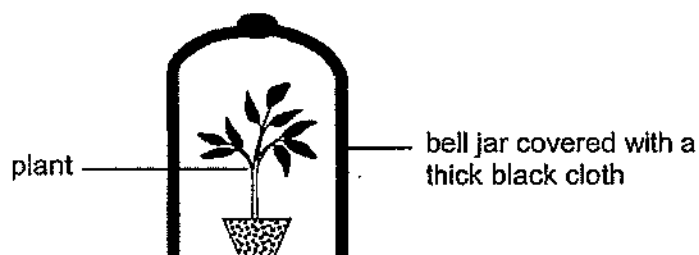
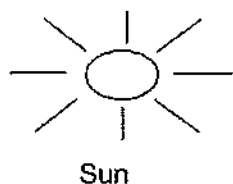
Which of the following statements are correct about X, Y and the air sac?

- A The blood in X is richer in oxygen than the blood in Y.
- B The blood in Y is poorer in carbon dioxide than the blood in X.
- C The air leaving the air sac and out of the lungs contains nitrogen.
- D The blood vessels around the air sac help to exchange gases efficiently.

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

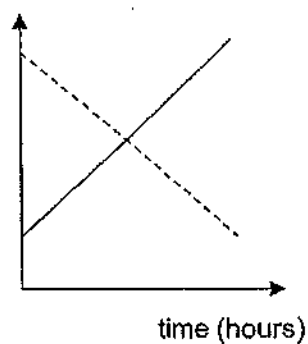


14. Ravi placed a bell jar over a plant which had been watered. He then covered the bell jar with a thick black cloth. Next, he placed his set-up under the sun from 9 a.m. to 12 noon.

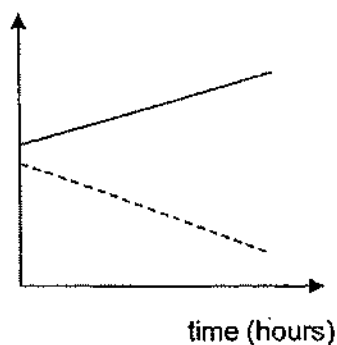


Which one of the following graphs shows correctly the changes in the amount of carbon dioxide and oxygen in the bell jar during the period of time?

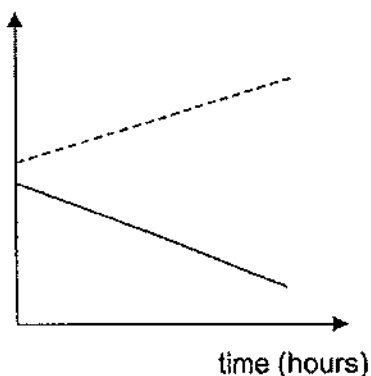
(1) amount of gas (cm^3)



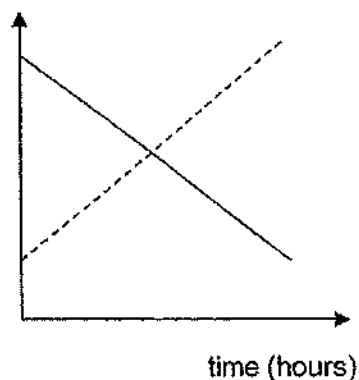
(2) amount of gas (cm^3)



(3) amount of gas (cm^3)



(4) amount of gas (cm^3)

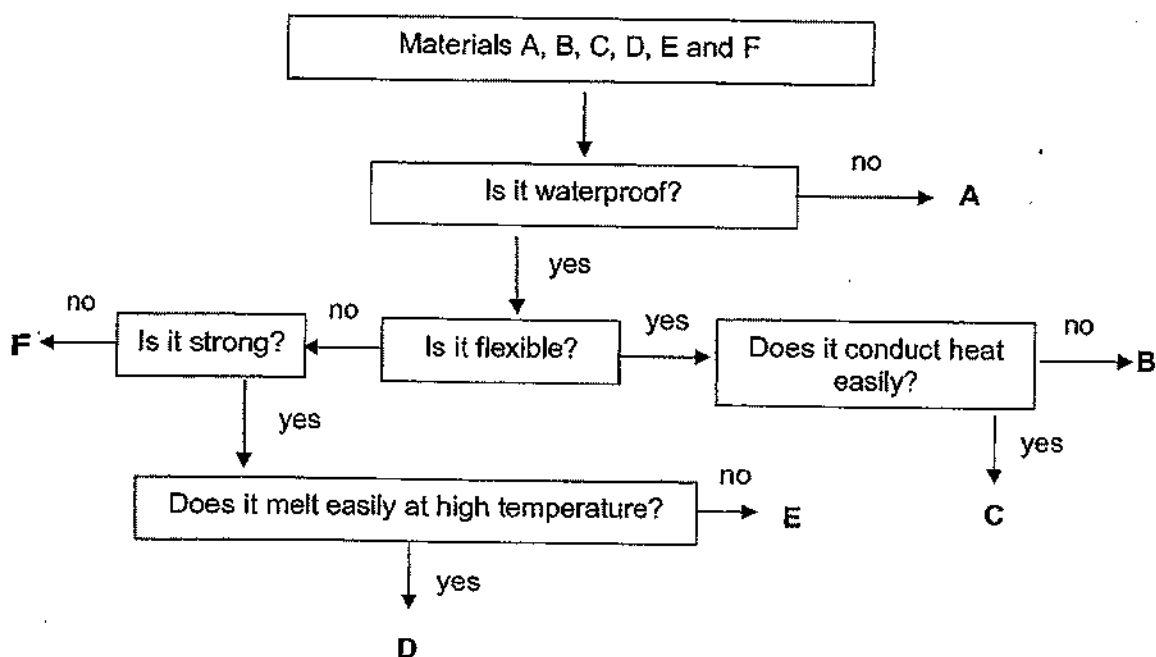


Key:

— oxygen
 - - - carbon dioxide



15. The flow chart below shows some properties of materials A, B, C, D, E and F.

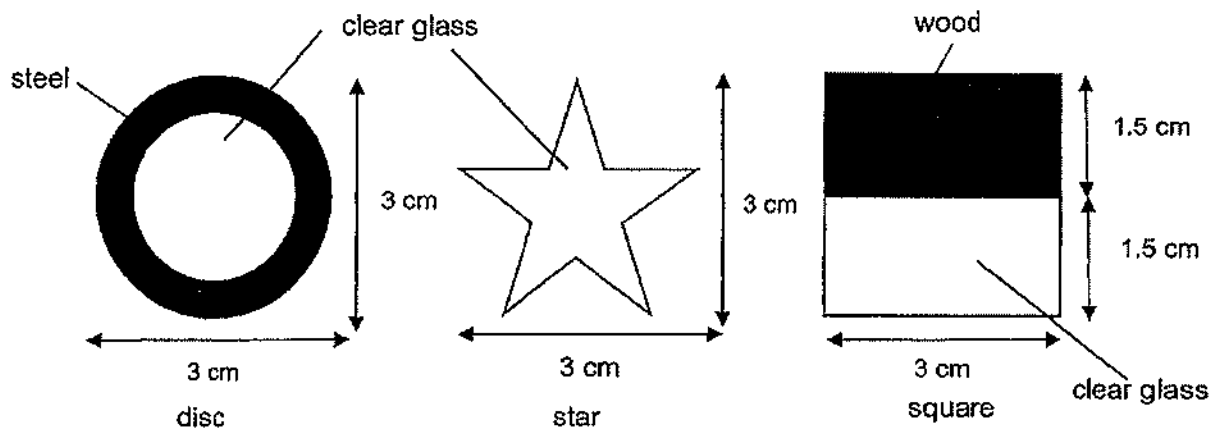


Based on the information above, which of the following shows the most suitable material for making gloves and helmets for firemen?

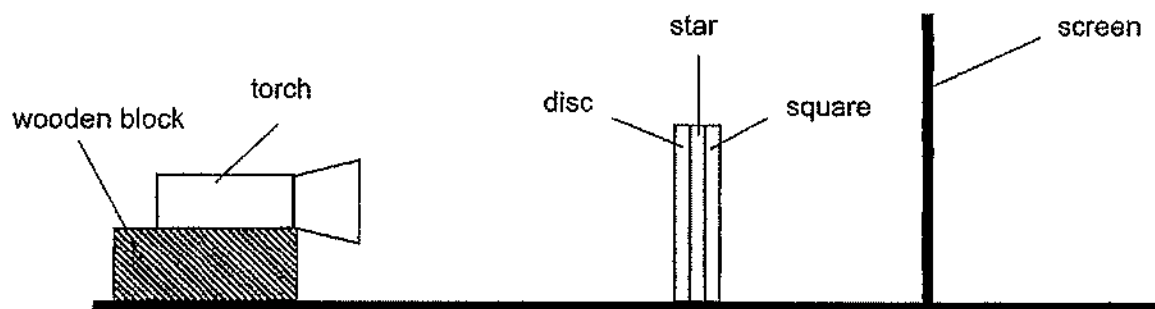
	Gloves	Helmets
(1)	A	C
(2)	B	D
(3)	B	E
(4)	C	F



16. The diagrams show three objects of different shapes and made of different materials.



The three objects were glued together. They were placed between a torch and a screen as shown below.



Which one of the following shows the shadow cast on the screen?

(1)



(2)



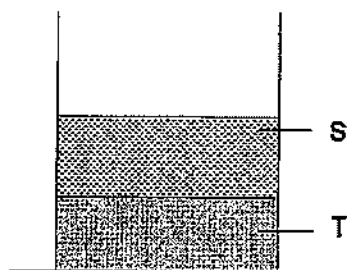
(3)



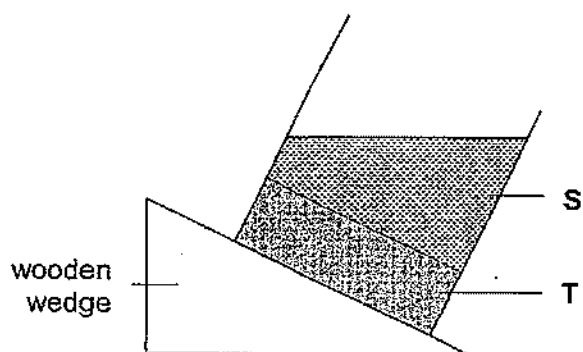
(4)



17. Two substances, S and T, were in a beaker placed on a table as shown below.



The same beaker was then placed on a wooden wedge as shown below.



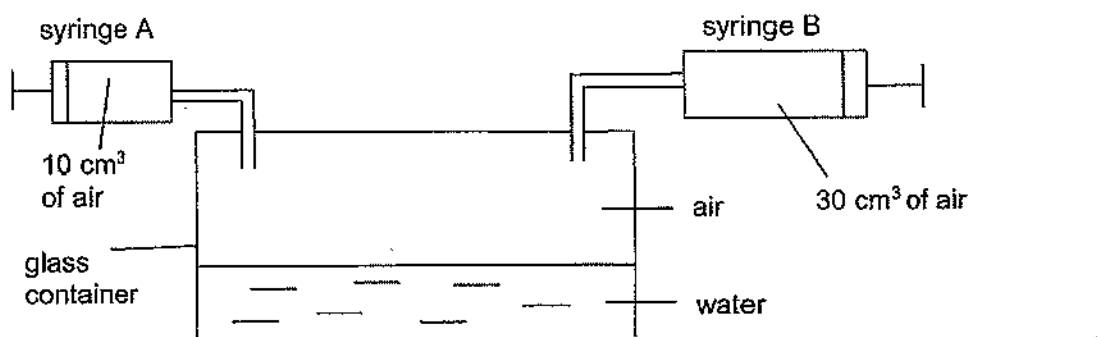
Based on the diagrams above, which of the following statements about substances S and T are correct?

- A Substances S and T occupy space.
- B Substances S and T have definite volumes.
- C Substance S cannot be compressed but substance T can.
- D Substance S has a definite shape but substance T does not.

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



18. Study the diagram below carefully. The capacity of the enclosed glass container is 800 cm^3 and it contains some water at the start.



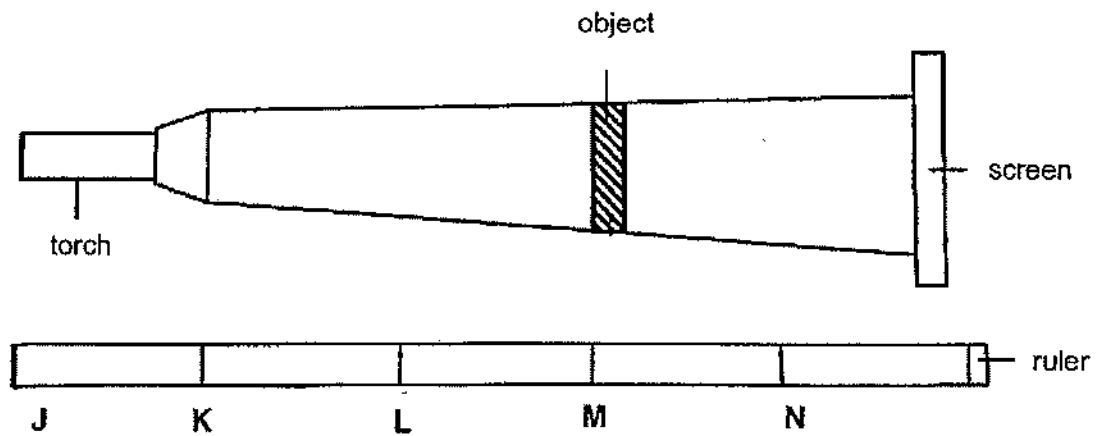
When syringes A and B are pushed in completely twice, the final volume of air in the glass container becomes 480 cm^3 .

What is the volume of water in the glass container before the syringes are pushed in?

- (1) 280 cm^3
- (2) 320 cm^3
- (3) 400 cm^3
- (4) 720 cm^3



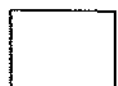
19. Roy placed a torch at position K. The torch shone at an object that was placed at position M as shown below. A shadow was cast on the screen.



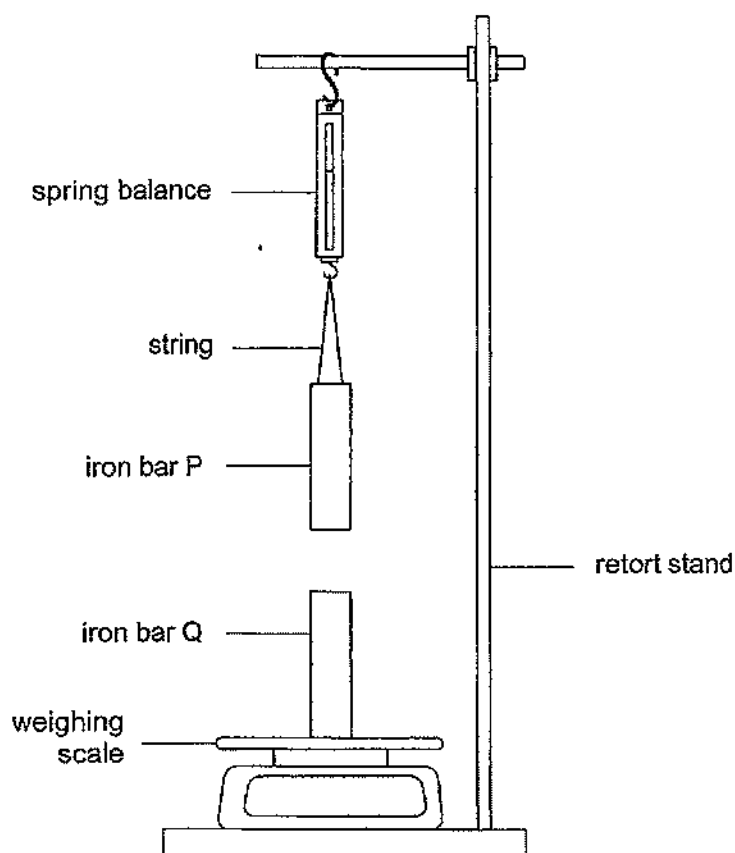
At which positions of the ruler should the torch and the object be placed so as to obtain a bigger shadow on the screen than before?

	Position of torch	Position of object
A	K	N
B	J	K
C	L	M
D	J	N

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



20. Anne set up an experiment as shown below using two iron bars, P and Q, which have a mass of 40 g each.

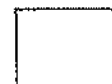


The table below shows the readings on the weighing scale and spring balance when the iron bars were arranged as shown above.

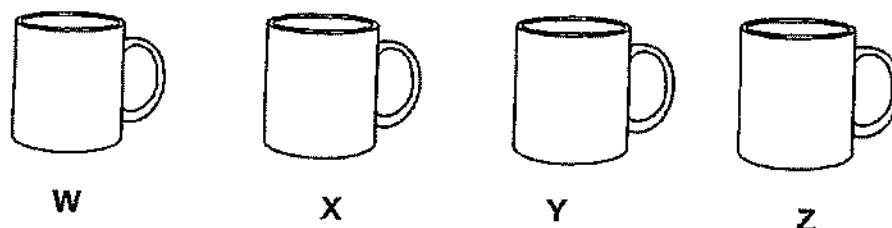
Reading on spring balance	Reading on weighing scale
Less than 40 g	More than 40 g

Based on the results in the table above, which one of the following statements is most likely to be correct?

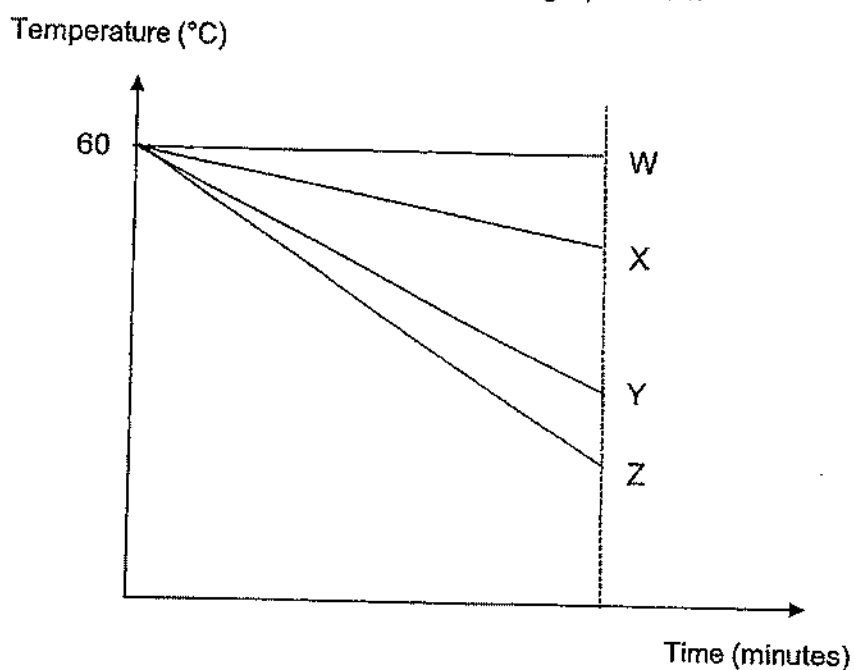
- (1) Iron bar P and iron bar Q are both magnets.
- (2) Iron bar Q can attract more iron nails than iron bar P.
- (3) There is force of attraction between iron bar P and iron bar Q.
- (4) When iron bar Q is turned upside down, the reading on the spring balance will decrease. ()



21. Sharon had four mugs of the same size and thickness. They were made of different materials W, X, Y and Z. She filled each mug with 250 ml of hot water at 60°C. The temperature of the water in the mugs was then measured every two minutes.



The results of the experiment were plotted on the graph below.



Which of the following statements about the four materials are correct?

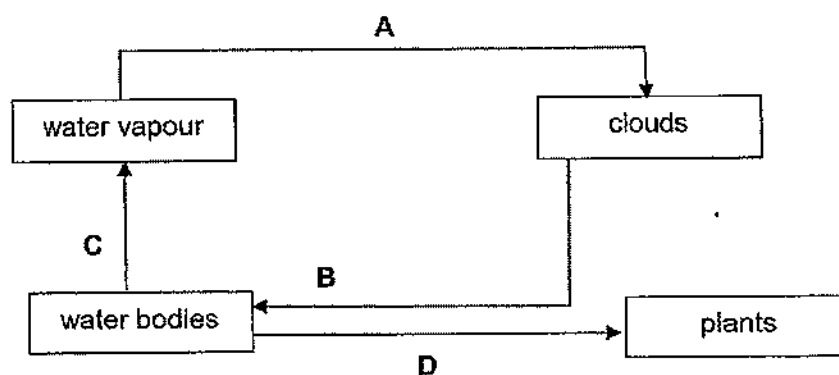
- A Material X is a poorer conductor of heat than material Z.
- B Material Z is the best conductor of heat among the four materials.
- C Water will heat up the fastest if it is placed in the mug made of material W.
- D Water remained hot for a longer period of time in the mug made of material Y than material X.

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

()



22. The diagram shows the movement of water in the environment.

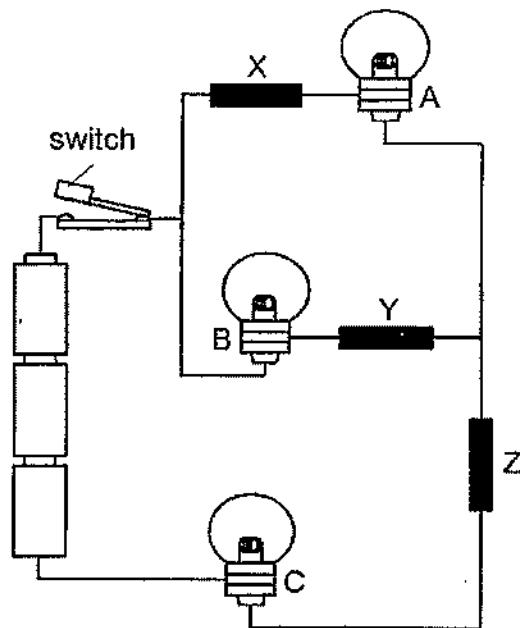


Based on the diagram given, which of the following correctly shows the change in state of water?

	From liquid to gas	From gas to liquid
(1)	B	D
(2)	C	A
(3)	C	A and B
(4)	A and D	B



23. John set up a circuit as shown below which consists of three bulbs, A, B and C, as well as three different materials, X, Y and Z.

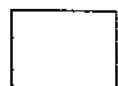


When the switch is closed, only bulbs B and C lit up.
What are some possible reasons for this observation?

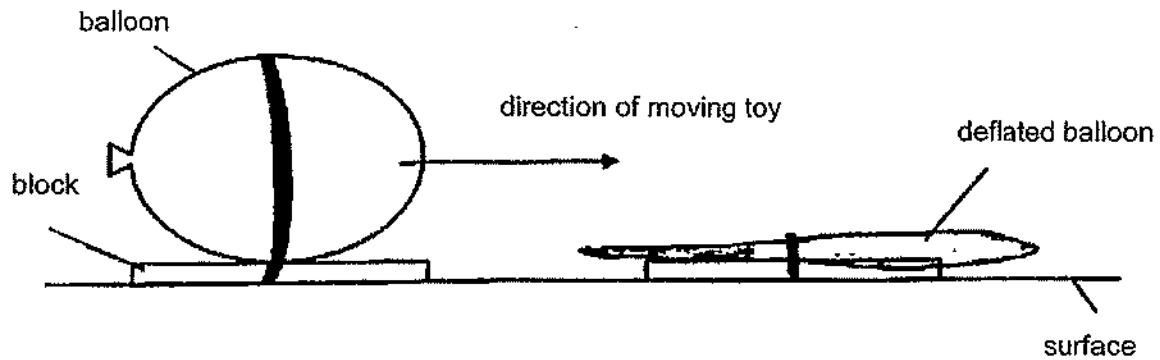
- A Bulb A has fused.
- B Material X cannot conduct electricity.
- C The batteries are not connected properly.
- D Materials Y and Z are conductors of electricity.

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

()



24. Joyce made a toy with a block and a balloon. She pumped air into the balloon and then released it. The toy moved on the surface of the table in the direction shown by the arrow in the diagram below. It came to a stop at position X.

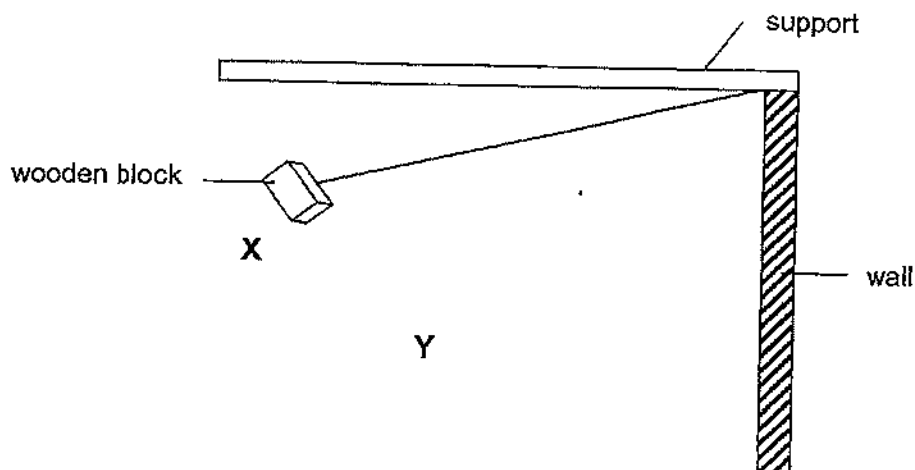


Which of the following correctly shows the energy conversion in the toy beginning with the balloon filled with air?

- (1) chemical potential energy \longrightarrow gravitational potential energy \longrightarrow heat energy + sound energy
- (2) gravitational potential energy \longrightarrow kinetic energy + heat energy + sound energy
- (3) gravitational potential energy \longrightarrow elastic potential energy + kinetic energy + heat energy + sound energy
- (4) elastic potential energy \longrightarrow kinetic energy \longrightarrow kinetic energy + heat energy + sound energy ()



25. Peter hung three wooden blocks, A, B and C, one at a time, from a string and released each one from either position X or Y as shown in the diagram below.



The mass of each block and the position from which it was released are shown in the table below.

Wooden block	Mass of wooden block (g)	Position from which it was released
A	100	X
B	200	X
C	100	Y

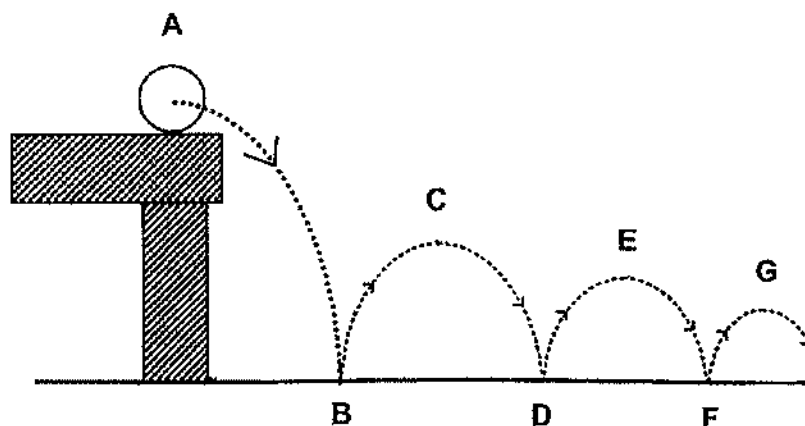
Each time the block hit the wall, a sound was produced. Peter measured the sound level using a data logger and recorded his findings. Which of the following correctly shows the sound level recorded for each wooden block?

Sound recorded in units			
	A	B	C
(1)	300	350	300
(2)	350	300	350
(3)	300	350	225
(4)	225	300	350

()



26. Arif dropped a ball from a table. The dotted lines shown in the diagram below represent the path that the ball took.



Based on the diagram, Arif wrote the following statements in his notebook.

- A The kinetic energy increases from A to B.
- B The kinetic energy decreases from D to E.
- C The potential energy remains unchanged from A to C.
- D The potential energy increases from F to G.

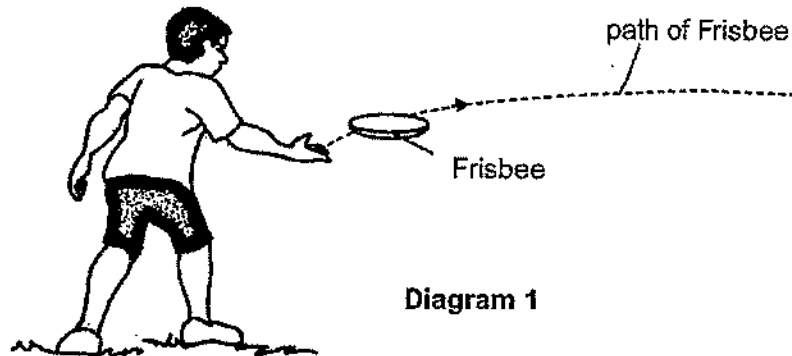
Which of the statements written by Arif are correct?

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

()



27. Kai and Don were playing a game of Frisbee (a light plastic disc). Kai threw the Frisbee as shown in diagram 1.



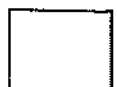
Don tried to catch the Frisbee as shown in diagram 2 but failed. He only managed to touch the Frisbee.



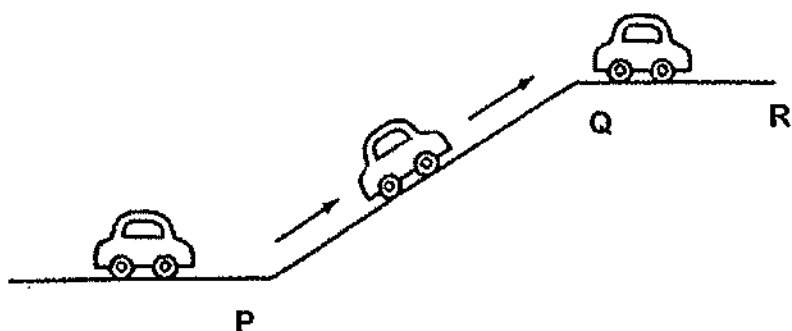
Which of the following statements about forces correctly explain the result of Kai's and Don's actions?

	Kai	Don
(1)	A force stops a moving object.	A force changes the direction of a moving object.
(2)	A force changes the speed of a moving object.	A force causes a stationary object to move.
(3)	A force causes a stationary object to move.	A force changes the speed of a moving object.
(4)	A force changes the shape of an object.	A force stops a moving object.

()



28. The diagram below shows a car driving up a slope.



Which of the following correctly shows the change in gravitational force as the car moves from P to Q and from Q to R?

	P to Q	Q to R
(1)	increases	increases
(2)	increases	remains unchanged
(3)	remains unchanged	increases
(4)	remains unchanged	remains unchanged

()

End of Booklet A





HENRY PARK PRIMARY SCHOOL

PRELIMINARY ASSESSMENT 2020

PRIMARY 6

SCIENCE

BOOKLET B (44 MARKS)

INSTRUCTIONS TO CANDIDATES

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.

Name: _____ ()

Class: Primary 6 ()

Date: 25 August 2020

Total Time: 1 h 45 min

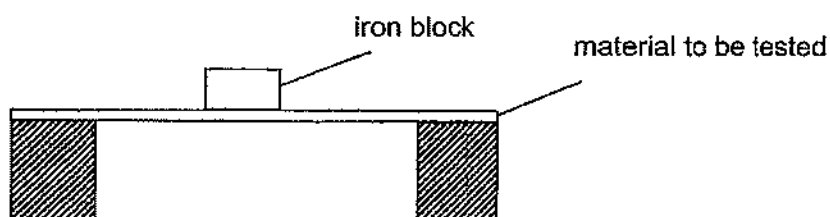
Marks for Booklet B: _____



Booklet B (44 marks)

Write your answers to questions 29 to 41 in the spaces given.

29. Shawn conducted an experiment as shown below.



He tested four materials, W, X, Y and Z, separately by placing iron blocks, each weighing 1 kg, on each material until it broke.

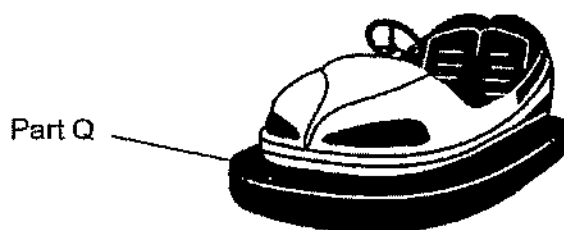
He recorded the results of his experiment in the table below.

Material	Number of iron blocks that caused the material to break
W	8
X	12
Y	15
Z	5

- (a) Which property of the materials was Shawn testing?

[1]

The diagram below shows a bumper car in an amusement park. The cars will bump into one another at part Q.

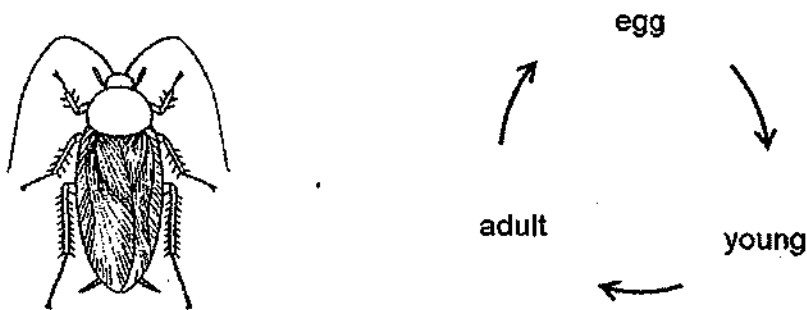


- (b) Which material, W, X, Y or Z, is the most suitable for making part Q of the bumper car? Give a reason for your choice of answer.

[2]



30. The diagrams show a cockroach and its life cycle.

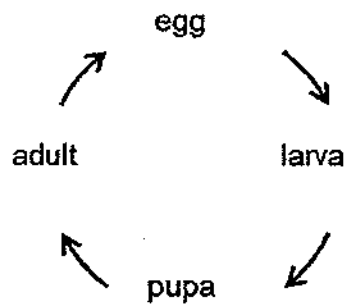


- (a) The cockroach lays many eggs at a time.

Explain how this helps the cockroach in the continuation of its kind.

[1]

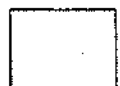
- (b) The diagram below shows the life cycle of insect X.



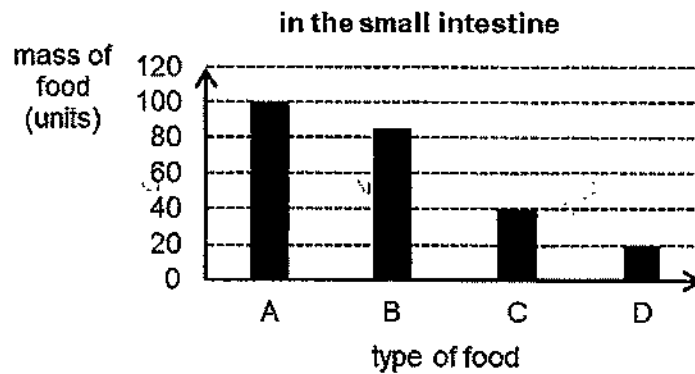
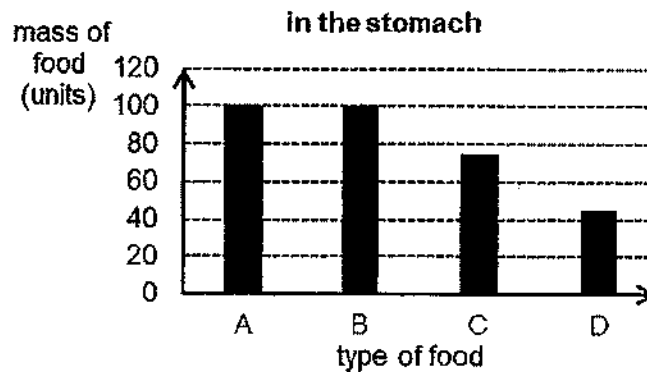
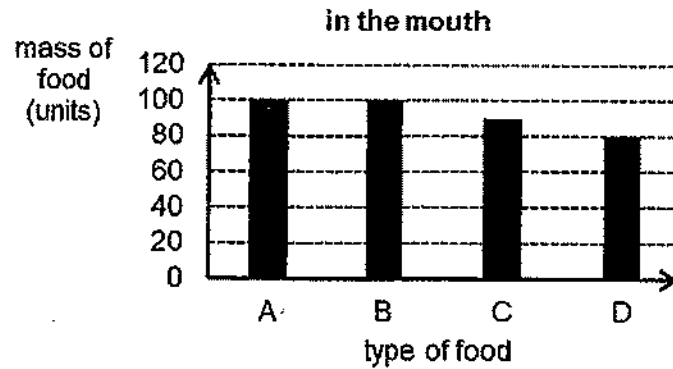
Benny compared the life cycle of the cockroach and that of insect X.

Other than the number of stages in the life cycle, state another difference between the life cycles of the cockroach and insect X.

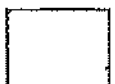
[1]



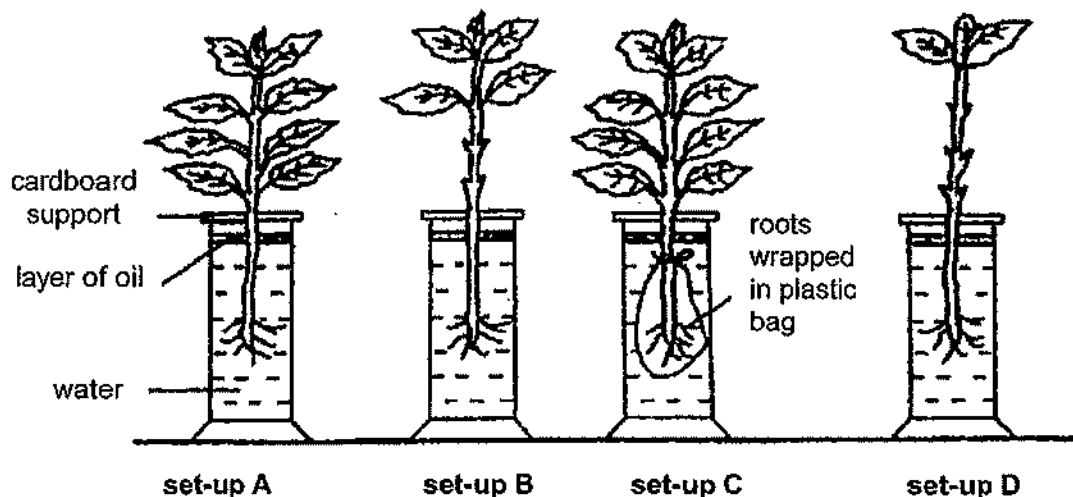
31. The graphs show the change in the mass of four different types of food, A, B, C and D, in different parts of the digestive system.



- (a) Based on the graphs, which type of food is digested only in the small intestine? [1]
-
- (b) Describe what happens to the digested food in the small intestine. [1]
-



32. Henry placed four plants in identical jars, each containing water at the same level of 250 mm as shown below. He then placed the four set-ups, A, B, C and D, next to the window for three hours.



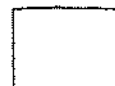
At the end of the experiment, Henry measured the height of water in each jar. He found the height to be 250 mm, 245 mm, 240 mm and 230 mm.

- (a) Write 'A, B, C and D' in the boxes below to show the correct results of the experiment for each set-up. [1]

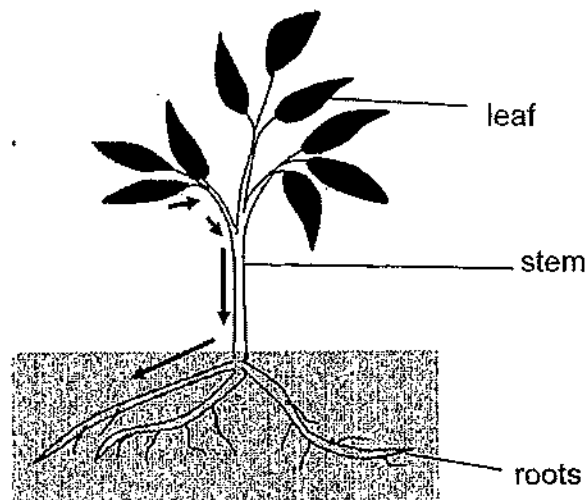
Height of water at start of experiment (mm)	250	250	250	250
Height of water at end of experiment (mm)	250	245	240	230
set-up	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

- (b) If Henry wanted to show that the roots of the plants take in water, which two set-ups should he compare? [1]

- (c) Based on your answer in (b), which set-up serves as a control? Give a reason for your choice. [1]



33. The diagram below shows a plant while the arrows represent part of the transport system found in the plant.



- (a) Identify the type of tubes in the transport system represented by the arrows and describe its function in the plant.

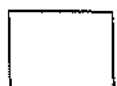
[2]

(i) Type of tubes:

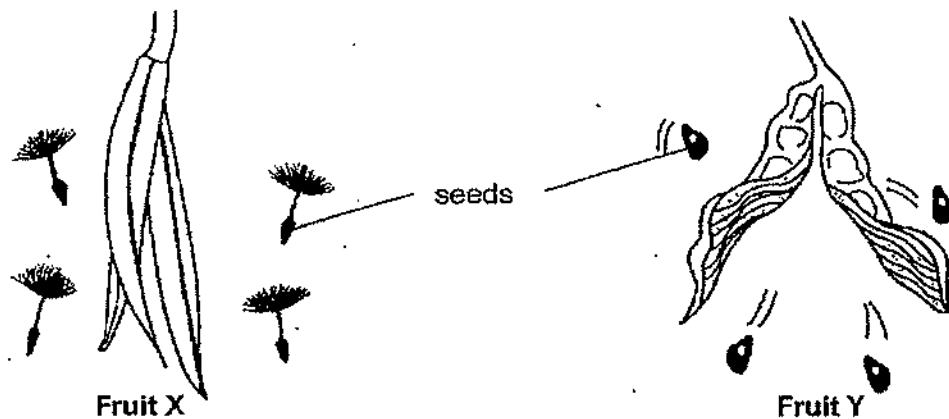
(ii) Function:

- (b) Besides absorbing water and mineral salts, state another function of the roots in the plant.

[1]

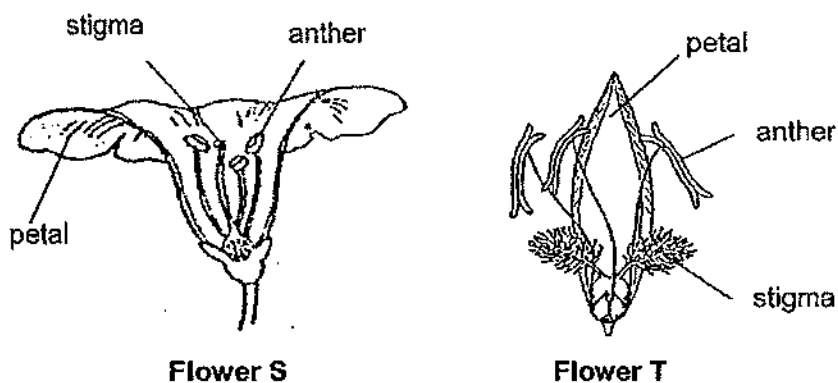


34. The diagrams below show two fruits, X and Y, which disperse their seeds when they split open.



- (a) Based on the diagrams, which fruit, X or Y, is more likely to disperse its seeds further away from its parent plant? Explain your answer. [1]

- (b) The diagrams below show flowers S and T from two different plants.



Based on the diagrams, which flower, S or T, is likely to have its flower pollinated by an animal? Give two reasons for your answer.

[2]

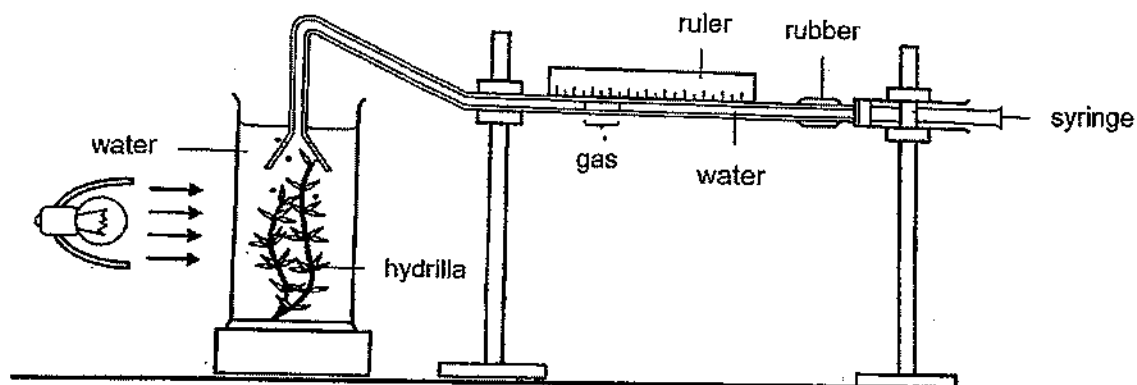
Animal-pollinated flower: _____

Reason 1:

Reason 2:



35. Mark conducted an experiment with the set-up shown below.



He recorded his observation in the table below.

Distance of lamp from hydrilla (cm)	Length of gas column produced in 5 minutes (mm)
10	14
35	12
75	9
100	7
150	4
200	1
250	0

- (a) Identify the independent and dependent variable in Mark's experiment.

[1]

Independent variable: _____

Dependent variable: _____



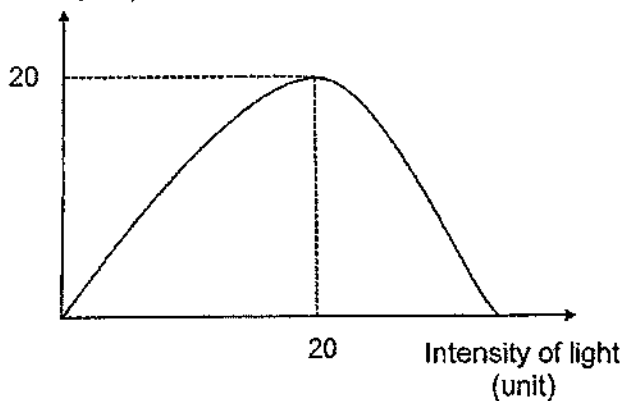
Question 35 continued

- (b) How does the length of the gas column change with the distance of the lamp from the hydrilla? [1]

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

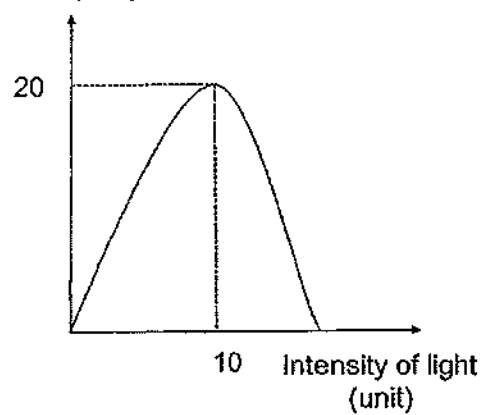
Using the same set-up, Mark conducted a second experiment using two different water plants, X and Y. He plotted the results as shown in the graphs below.

Length of gas column (mm)



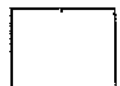
Plant X

Length of gas column (mm)

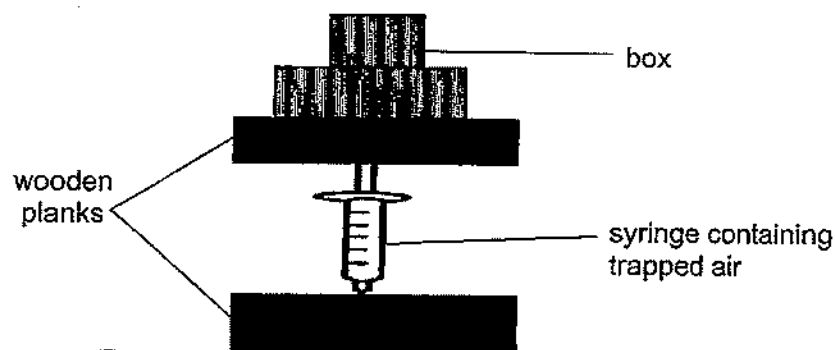


Plant Y

- (d) Based on the results of his second experiment, which water plant, X or Y, should be placed in the shady part of his pond? Explain your answer. [2]



36. Jun Jie conducted an experiment by placing a syringe filled with air between two pieces of wooden plank as shown below. As he added identical boxes, one at a time, onto the piece of wooden plank above the syringe, he measured the volume of air trapped in the syringe.



Jun Jie recorded the volume of the air trapped in the syringe in the table below.

Number of boxes added	0	1	2	3	4	5
Volume of the air trapped in syringe (cm ³)	100	60	50	35	30	27

- (a) The volume of air trapped in the syringe decreased as more boxes were added onto the plank above the syringe. State the property of air which explains this observation. [1]

- (b) The mass of air trapped in the syringe was 4.8 g when one box was placed onto the wooden plank above the syringe.

State the mass of air trapped in the syringe when 4 boxes are added.

Explain your answer.

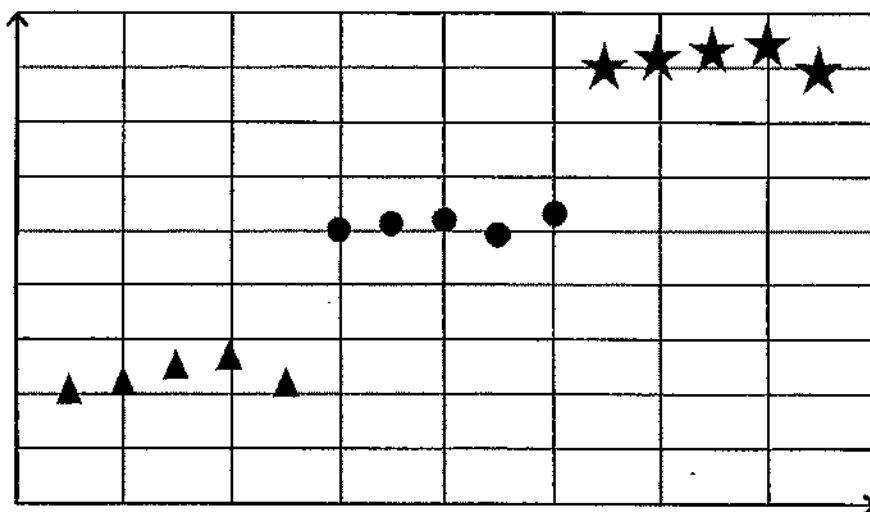
[2]



37. Tom conducted an investigation using three different types of mammals, P, Q and R. For each type of mammal, he used 5 animals. He measured the length of fur and the amount of air trapped by their coat of fur.

He plotted the results of his investigation in the diagram below. Each symbol represents one type of mammal.

Amount of air trapped (cm^3)



Length of fur (cm)

Key:



Mammal P



Mammal Q



Mammal R

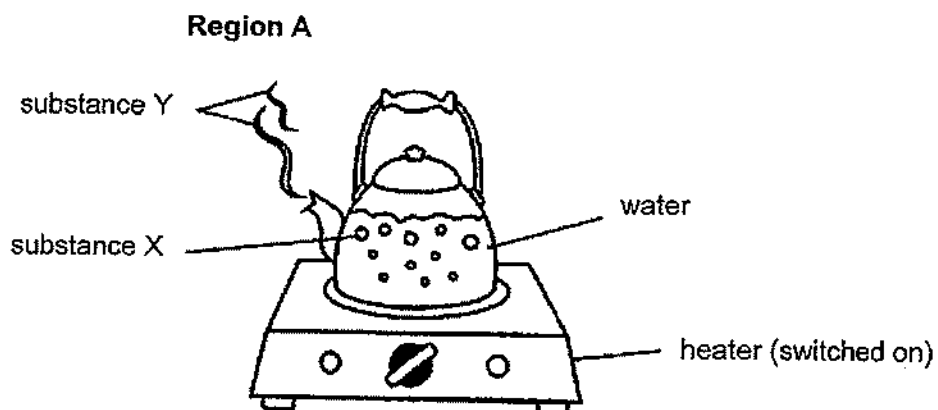
- (a) How does trapping air enable mammals to keep themselves warm? [2]

- (b) Based on the results of his investigation, which mammal, P, Q or R, has fur that is best for making winter clothes? [1]

- (c) Explain your answer in (b). [2]



38. Siti boiled a pot of water and observed that substances X and Y were formed as shown in the diagram below.



- (a) Identify the state of substances X and Y. [1]

Substance X: _____

Substance Y: _____

- (b) Describe how substance Y is formed. [2]

- (c) Siti observed that substance Y could no longer be seen beyond region A. Explain her observation. [1]



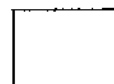
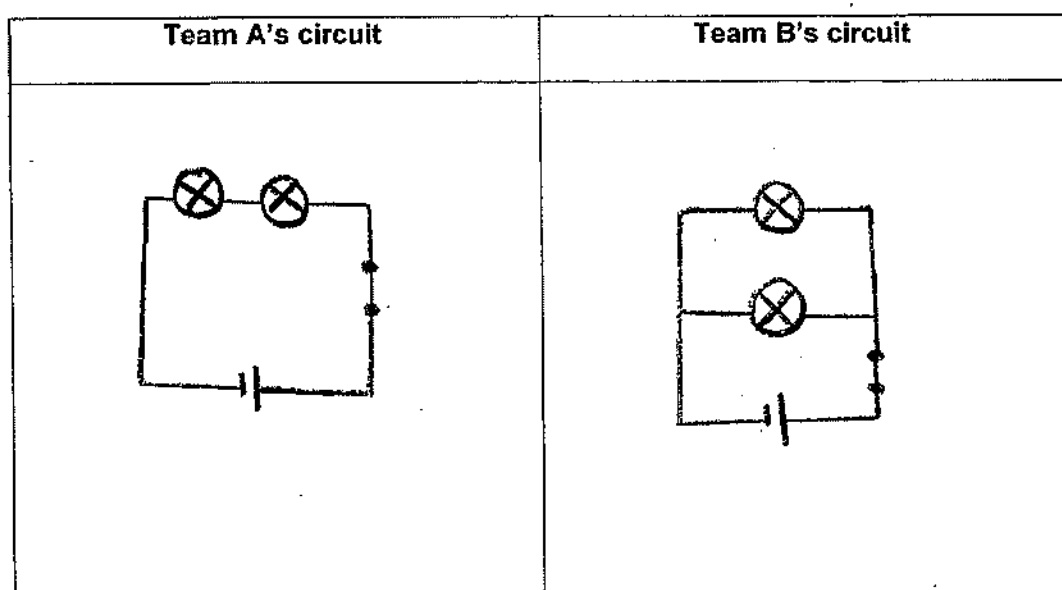
39. Two teams of pupils, A and B, were given some items to set up an electric circuit during a competition. The teams had to use **all** the items given to form their circuit.

Each team was given the following items:

- 1 battery
- 2 identical bulbs
- 1 switch
- some wires

At the end of the competition, team B's bulbs were brighter than team A's.

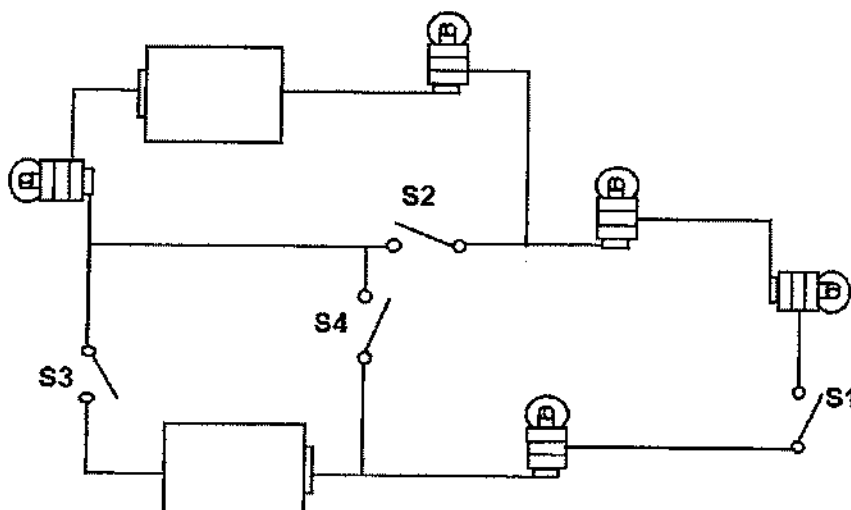
- (a) Draw the two circuit diagrams formed by teams A and B respectively during the competition. [2]



Question 39 continued

(b) The teams were then given the circuit shown below.

All the switches, S1, S2, S3 and S4, in the circuit were opened at the start.



They were told to identify two different pairs of switches to close, one pair at a time, in order for **all** the five bulbs in the circuit to light up.

Which two pairs of switches should the teams identify?

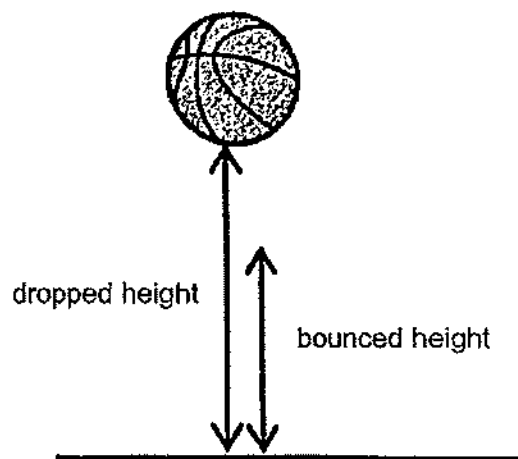
(i) Switch _____ and switch _____

(ii) Switch _____ and switch _____

[2]



40. Raju carried out an investigation to see how high a basketball can bounce when it was dropped from different heights as shown below.



He recorded his findings in the table below.

Dropped height (cm)	30	50	70	90	110
Bounced height (cm)	22	45	57	78	100

- (a) Raju observed that the bounced height is always lower than the dropped height. Give a reason for Raju's observation. [1]

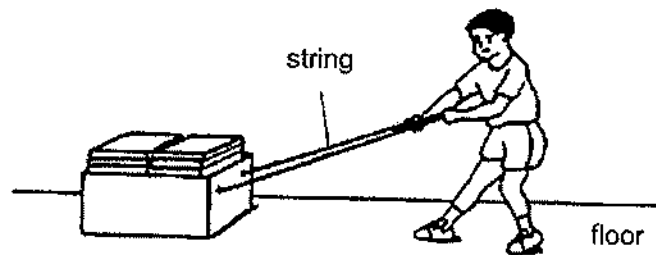
Raju also measured the loudness of the sound made when the ball first bounced on the ground. The table below shows his measurements.

Dropped height (cm)	30	50	70	90	110
Loudness of first bounce (unit)	100	130	165	190	225

- (b) Using energy conversion, explain how the loudness of the first bounce is affected by the height from which the ball was dropped. [2]



41. Ming was pulling a box filled with books along the floor as shown below.

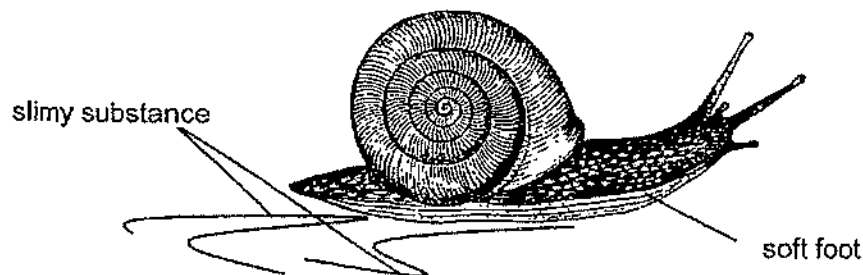


- (a) Name the force that caused Ming to find difficulty in pulling the box. [1]

- (b) Besides causing difficulty in pulling the box, what is another problem that the force mentioned in (a) may cause to the box? [1]

- (c) State how the force mentioned in (a) can also be useful to Ming in pulling the box. [1]

The diagram below shows animal S which crawls on its soft foot. The underside of its foot produces a slimy substance



- (d) Explain how the slimy substance helps animal S to move on the ground. [1]

End of Booklet B



SCHOOL : HENRY PARK PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2020 PERLIM

SECTION A

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

2020 Science Prelims

Suggested Answers

QN	Suggested answer
29a	strength
29b	Material Y (C). It takes the most number of blocks to break it (E). Y is the strongest so does not break easily when other cars knock into part Q (R).
30a	It increases the chance of more young growing into adult (to reproduce).
30b	The young of the cockroach looks like the adult but the young of insect X does not look like the adult.
31a	B
31b	Digested food is absorbed into the bloodstream.
32a	C, D, B, A
32b	A and C
32c	Set-up C. The roots are wrapped in plastic bag to prevent them from taking in water.
33a(i)	Food-carrying tubes
33a(ii)	They transport food made in the leaves to the roots / other plant parts.
33b	The roots help to hold the plant firmly to the soil.
34a	Fruit X. The seeds have fine hair-like parts that allow them to be carried away by wind.
34b	Flower S. Reason 1: It has large petals. Reason 2: The anthers and stigma do not hang outside the flower.
35a	Independent variable: distance between light and plant Dependent variable: length of gas column produced in 5 minutes
35b	As the distance between the light and plant increases, the length of the gas column decreases.
35c	As the distance between the light and plant increases, the light intensity decreases, thus the rate of photosynthesis decreases.
35d	Plant Y. The length of the gas column reaches 20mm at a lower light intensity. Thus, at the shady part of the pond, plant Y can still make enough food.

METHODIST GIRLS' SCHOOL

Founded in 1887



PRELIMINARY EXAMINATION 2020

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.

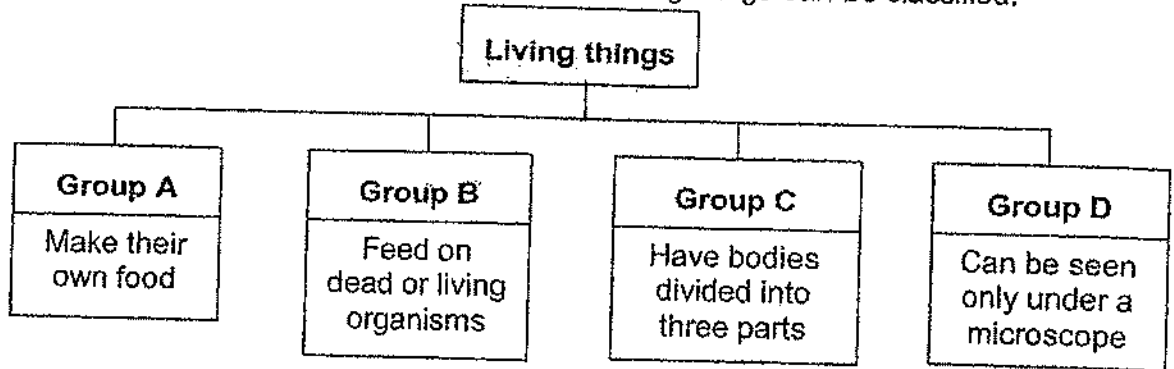
Name: _____ ()

Class: Primary 6 _____

Date : 25 August 2020

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). [56 marks]

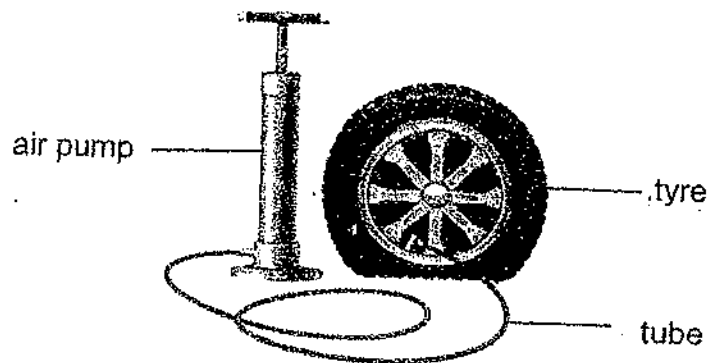
- 1 The classification chart shows how some living things can be classified.



Which of the following can be placed in Groups A, B, C and D respectively?

	Group A	Group B	Group C	Group D
(1)	insects	plants	bacteria	fungi
(2)	flowering plants	fungi	bacteria	insects
(3)	non-flowering plants	fungi	insects	bacteria
(4)	non-flowering plants	bacteria	insects	fungi

- 2 The diagram below shows an air pump attached to a deflated tyre by a tube.



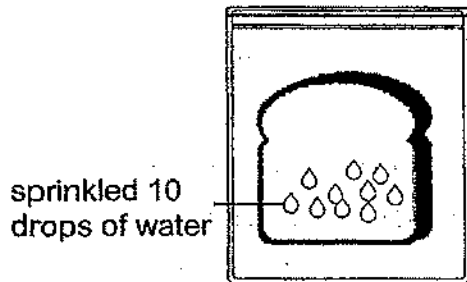
What happens to the mass and volume of the tyre after four pumps of air are given?

	Mass	Volume
(1)	increases	increases
(2)	no change	increases
(3)	increases	no change
(4)	decreases	decreases

(Go on to the next page)

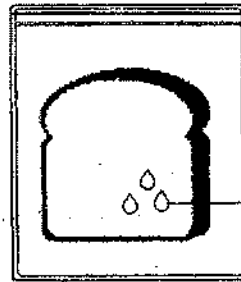
- 3 Shucheng sealed 4 similar pieces of bread into an airtight bag each and placed them under different conditions as shown below. The bread in Bag Y was toasted before being sealed.

Location: Dark cupboard



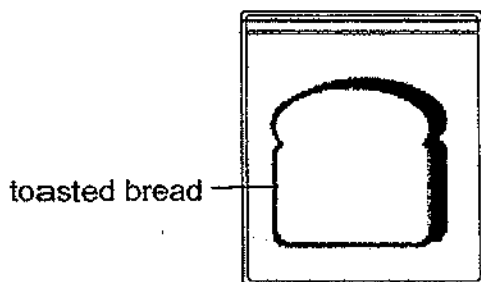
Bag W

Location: By the window



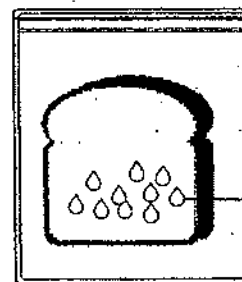
Bag X

Location: Dark cupboard



Bag Y

Location: By the window

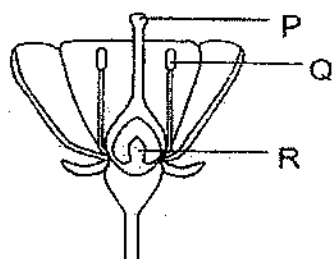


Bag Z

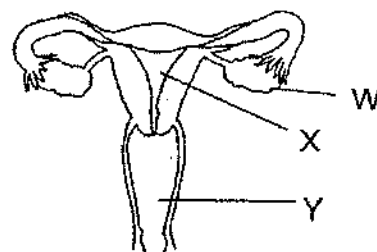
Which of the following correctly shows the aim of his experiment based on the bags that he has chosen for comparison?

	Bags	Aim of experiment
(1)	W and X	To find out if air is required for mould to grow
(2)	W and Z	To find out if light is required for mould to grow
(3)	X and Y	To find out if moisture is required for mould to grow
(4)	Y and Z	To find out if warmth is required for mould to grow

- 4 The diagrams below show parts of the reproductive system in a plant and in a human.



plant reproductive system



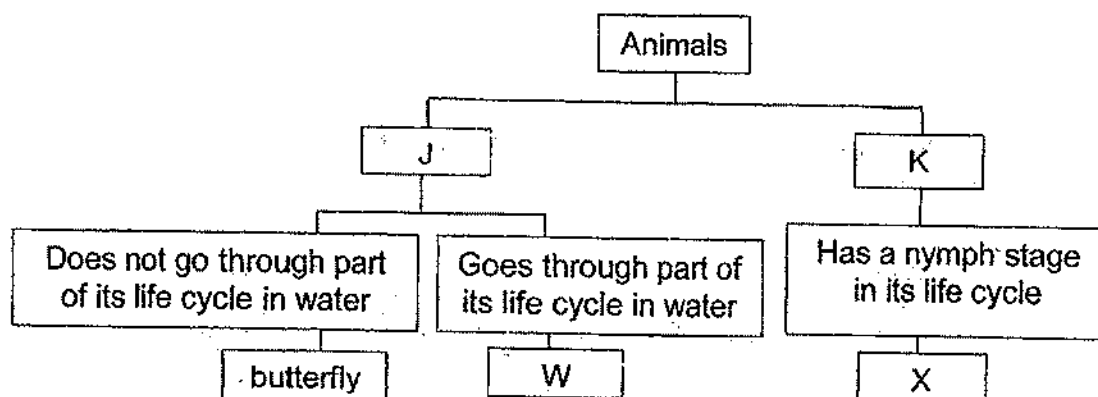
human reproductive system

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

Student	Statement
Andy	Fertilisation takes place at R, X and W.
Janelle	Q and W produce reproductive cells.
Ismail	Both P and Y receive the female reproductive cells.

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

- (1) Janelle only
 - (2) Andy and Ismail only
 - (3) Janelle and Ismail only
 - (4) Andy, Janelle and Ismail
- 5 The classification table below shows how some animals are classified.

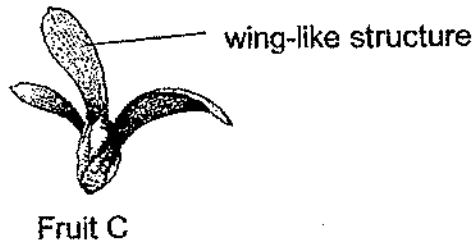


Which of the following best represent J, K, W and X?

	J	K	W	X
(1)	Has a 3-stage life cycle	Has a 4-stage life cycle	beetle	grasshopper
(2)	Has a 4-stage life cycle	Has a 3-stage life cycle	mosquito	cockroach
(3)	Young resembles the adult	Young does not resemble the adult	beetle	cockroach
(4)	Young does not resemble the adult	Young resembles the adult	mosquito	beetle

(Go on to the next page)

6. Samy wanted to find out how the number of wing-like structures of Fruit C affects the time it takes to reach the ground.

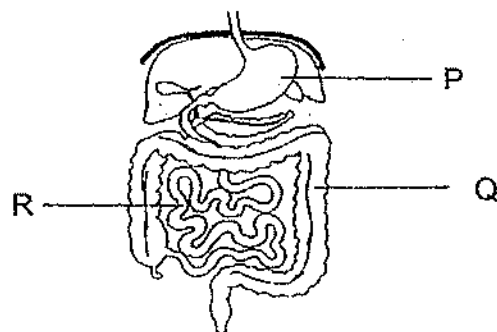


He carried out an experiment using four set-ups, W, X, Y and Z, and recorded his observations in the table below.

Set-ups	Number of wing-like structures	Colour of fruit C	Presence of wind
W	1	brown	Yes
X	1	black	Yes
Y	3	black	Yes
Z	3	brown	No

Which two set-ups should he choose for a fair test?

- (1) W and X
 - (2) W and Y
 - (3) X and Z
 - (4) Y and Z
7. The diagram shows parts of the digestive system.



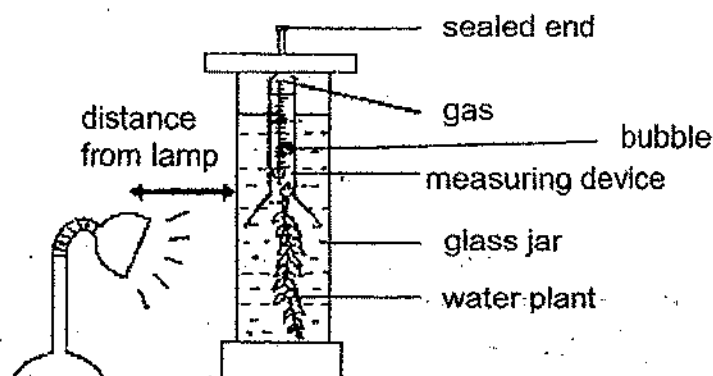
Which of the following statements are correct?

- A Digestion is completed at Q.
- B Digested food is absorbed in Q and R.
- C Digestive juices can be found in P and R.
- D Water is removed from undigested food at Q.

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

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- 8 Molly carried out an experiment using four different water samples, P, Q, R and S. Using the same amount of water sample and water plants, she set up the experiment as shown below.



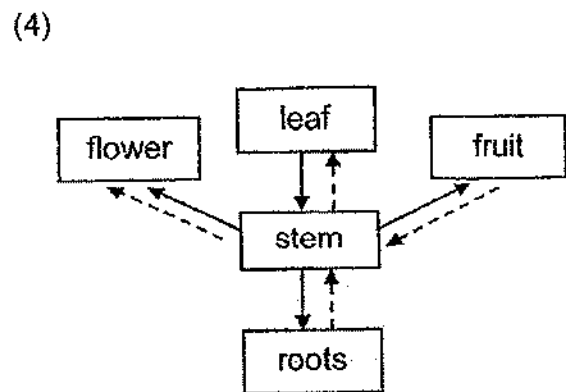
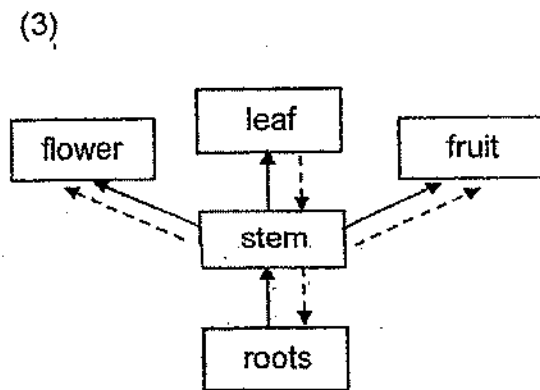
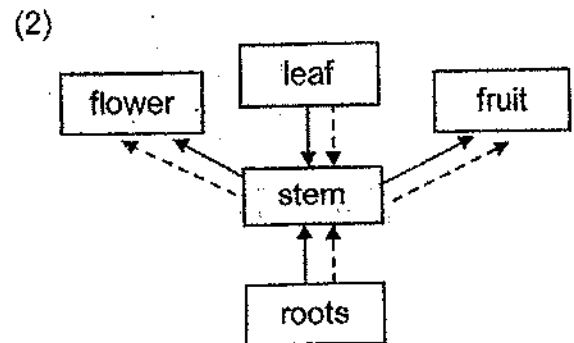
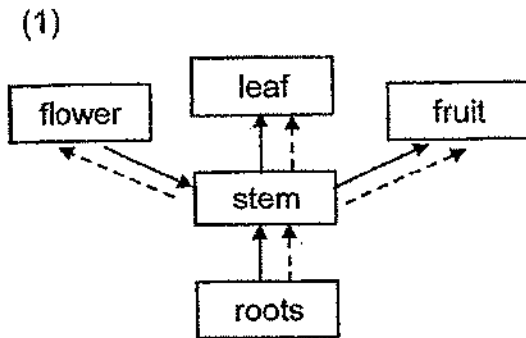
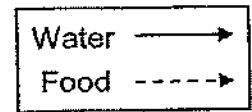
After 6 hours, the volume of gas produced by the water plants in each water sample was recorded in the table below.

Water sample	Volume of gas (cm ³)
P	18
Q	9
R	5
S	11

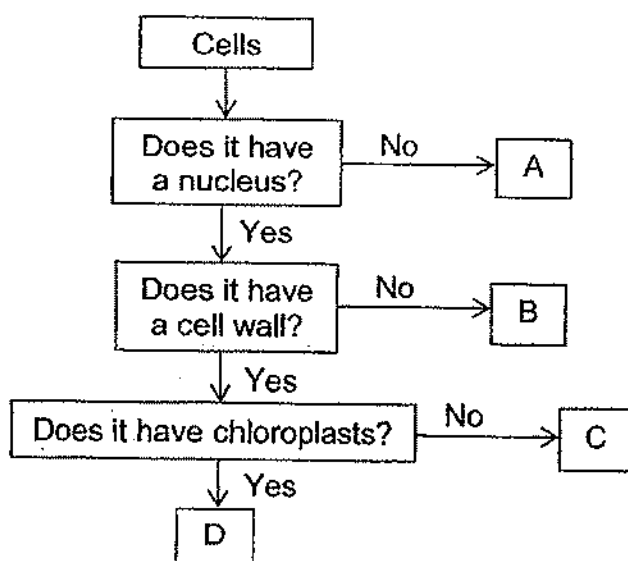
Based on her results, which of the following statements is **incorrect**?

- (1) Sample P is clearer than sample S.
- (2) The amount of light passing through sample R is the least.
- (3) The water plant in sample P made the most amount of food.
- (4) The rate of photosynthesis for the water plant in sample Q is higher than that in sample S.

- 9 Which one of the following diagrams shows the correct paths taken by food and water as they are transported in a plant?

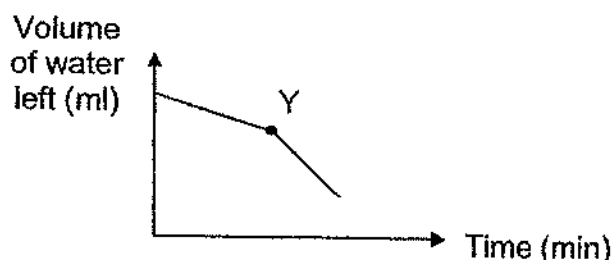


- 10 The flow chart below shows information on four type of cells, A, B, C and D.



Which cell is found on a plant part that produces sugar?

- (1) A
 - (2) B
 - (3) C
 - (4) D
- 11 Nabil set up an experiment to investigate the rate of evaporation of water. He set up a beaker of water in the Science Room and measured the volume of water left in the beaker over a period of time. He recorded his results in the graph below.

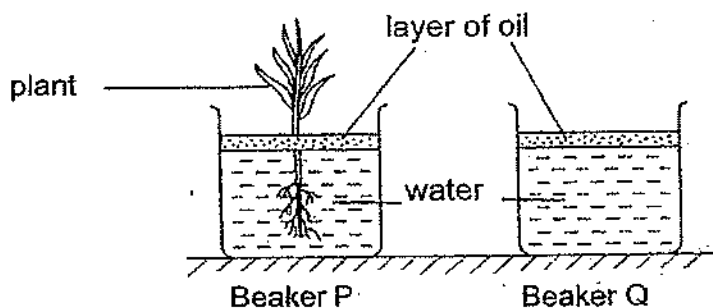


Which one of the following changes did Nabil make to his set-up at point Y of the graph?

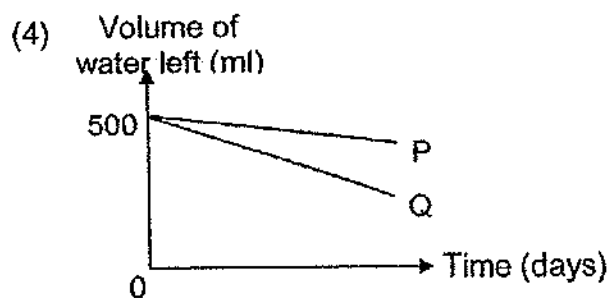
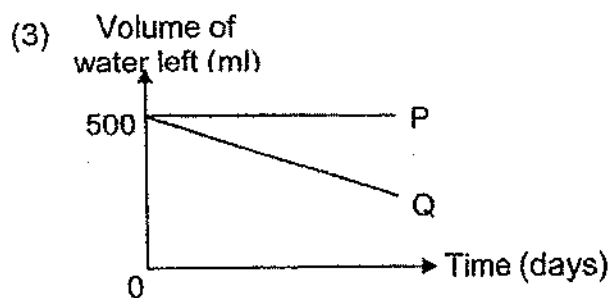
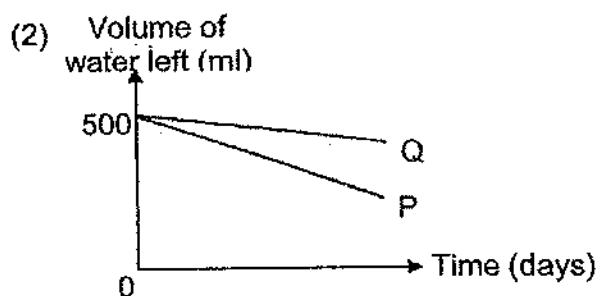
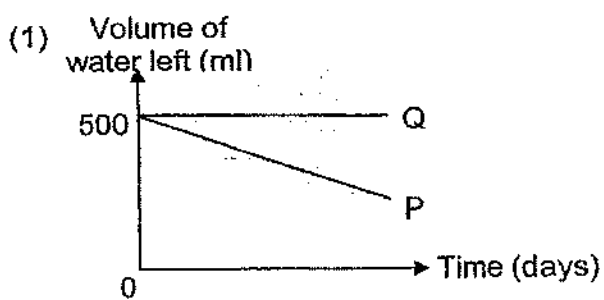
- (1) He placed the beaker in the freezer.
- (2) He poured boiling water into the beaker.
- (3) He switched on the fans in the Science Room.
- (4) He poured the water into another beaker with a smaller opening.

(Go on to the next page)

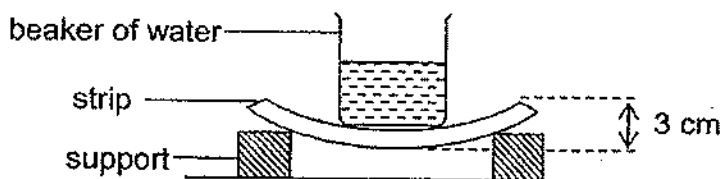
- 12 Iris poured 500 ml of water into two identical beakers, P and Q, and placed a plant into beaker P as shown below.



She left both beakers by a window in the living room and recorded the volume of water left in both beakers over a few days. Which one of the following graphs correctly shows the volume of water left in both beakers?



- 13 Natalie used the set-up below to investigate the flexibility of 3 strips, J, K and L, which are made of different materials.

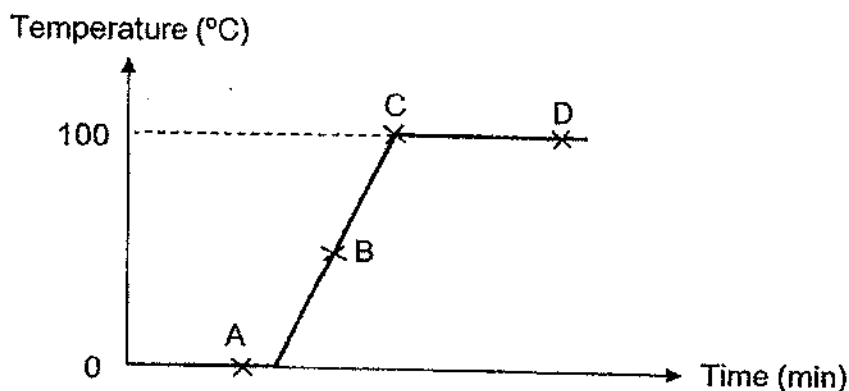


She placed strip J on two supports and poured water into an empty beaker until strip J bent by 3 cm. She repeated the experiment for strips K and L. She recorded the amount of water required to bend each strip by 3 cm and concluded that strip L is the most flexible and strip K is the least flexible.

Which of the following shows the correct amount of water in the beaker required to bend the strips by 3 cm?

	Amount of water in beaker (cm ³)		
	J	K	L
(1)	100	250	500
(2)	250	100	500
(3)	500	250	100
(4)	250	500	100

- 14 Nathaniel used a bunsen burner to heat a beaker containing a block of ice. He measured the temperature of the content in the beaker from the start of the experiment for a period of time and plotted the graph below.

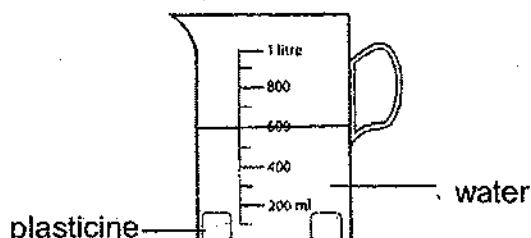


At which points on the graph can he find water in the following states?

	liquid and gas	liquid only	solid and liquid
(1)	C and D	B	A
(2)	D	B	A
(3)	none	C	A and B
(4)	none	C, D	A and B

(Go on to the next page)

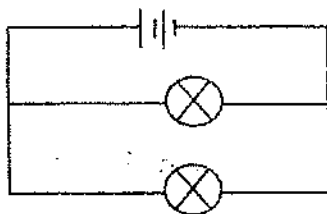
- 15 Janice had 150 cm^3 of plasticine. She moulded all of it into a ball, placed it into a container of water and recorded the total volume of water and plasticine. Next, she took the ball out and rolled it into two cubes before placing it back into the container of water as shown below.



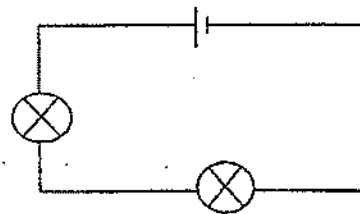
Which of the following represents (A) the volume of water used in the experiment and (B) the total volume of water and one cube of plasticine that Janice could record?

	(A) Volume of water (cm^3)	(B) Total volume of water and one cube of plasticine (cm^3)
(1)	450	150
(2)	525	750
(3)	450	525
(4)	600	750

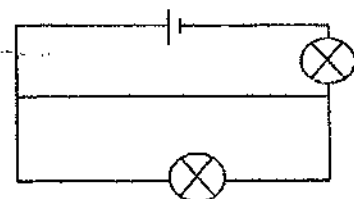
- 16 Zalina wanted to find out if the arrangement of bulbs affects the brightness of the bulbs in a circuit.



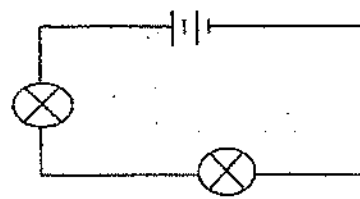
Circuit A



Circuit B



Circuit C



Circuit D

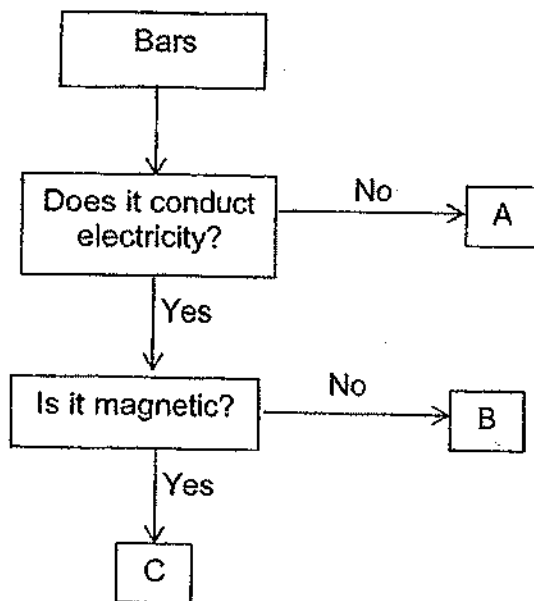
Which two circuits should she use to carry out the experiment?

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

- 17 Sara used a circuit tester to test the properties of three bars, P, Q and R. She recorded the results as shown in the table below.

Observation	Bars		
	P	Q	R
Did the bulb light up?	Yes	No	Yes
Did the bar attract steel clips?	Yes	No	No

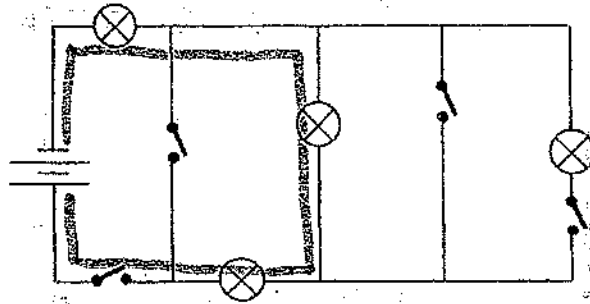
She used the following flow chart to classify the bars based on their properties.



Which of the following letters can be used to represent bars P, Q and R?

	Bars		
	P	Q	R
(1)	A	B	C
(2)	B	C	A
(3)	B	A	C
(4)	C	A	B

- 18 Ted set up a circuit as shown below.

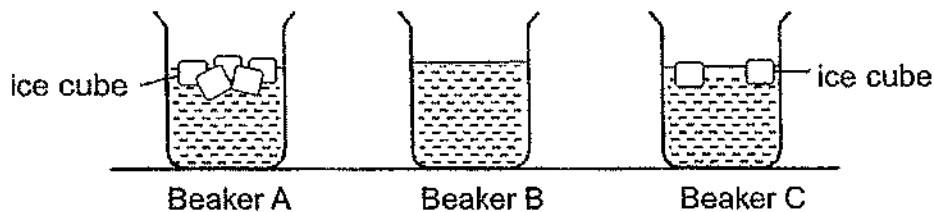


What is the least number of switches he has to close so that all the bulbs light up?

- (1) 1
 (2) 2
 (3) 3
 (4) 4
- 19 Suresh poured equal amount of tap water into 3 identical beakers. He added 7 ice cubes into each beaker. After that, he wrapped each beaker with a different number of identical bubble wraps of the same size.

Beaker	Number of bubble wraps used to wrap the beaker
A	13
B	2
C	7

After some time, he removed all the bubble wraps and made his observations as shown below.

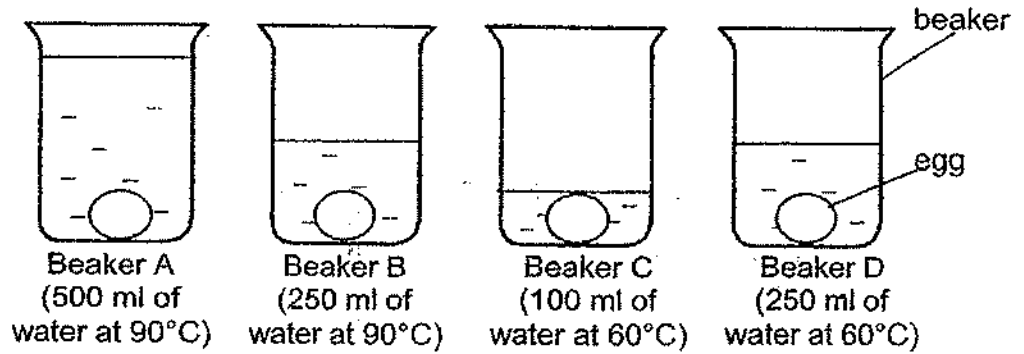


Which statement explains Suresh's observations?

- (1) The ice cubes in beaker C gained more heat than the ice cubes in beaker B.
 (2) The more bubble wraps used, the more heat is trapped to prevent the ice from melting.
 (3) Beaker B has the least bubble wraps used so the greatest amount of heat is lost from the ice cubes.
 (4) Beaker A has the most bubble wraps used so the ice cubes in it gained the least amount of heat.

(Go on to the next page)

- 20 John placed 4 similar uncooked eggs into beakers, A, B, C and D, which contained water of different volumes and temperatures as shown in the diagrams. The eggs were left in the water over a period of time.



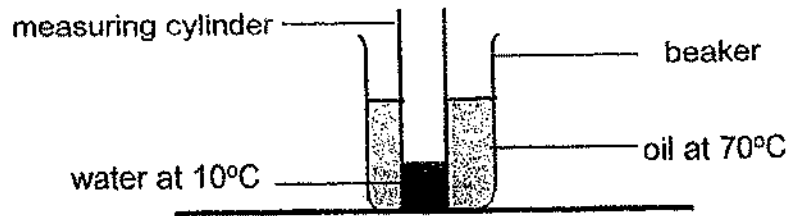
John then cracked each egg to observe how cooked it was.

Which one of the following shows the correct order of how cooked each egg was?

	least cooked → most cooked			
(1)	C	D	B	A
(2)	C	B	D	A
(3)	A	B	D	C
(4)	A	D	B	C

(Go on to the next page)

- 21 A measuring cylinder containing some amount of water at 10°C is placed in a beaker containing 100 ml of oil at 70°C . The set-up was left in the room for some time.

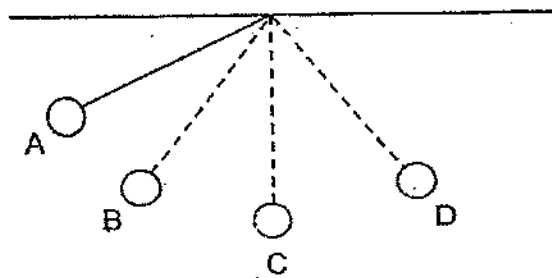


Four pupils made the following statements.

- Jane: The temperature of water increased after some time as it gained heat from the oil.
 Mary: The temperature of oil decreased after some time as it lost heat to the water and surroundings.
 Kathy: Heat is transferred from the oil to the water.

Who made the correct statement(s)?

- (1) Kathy only
 (2) Jane and Kathy only
 (3) Jane and Mary only
 (4) Jane, Mary and Kathy
- 22 A ball was attached to a string and released from position A. It swung from position A to D as shown below.

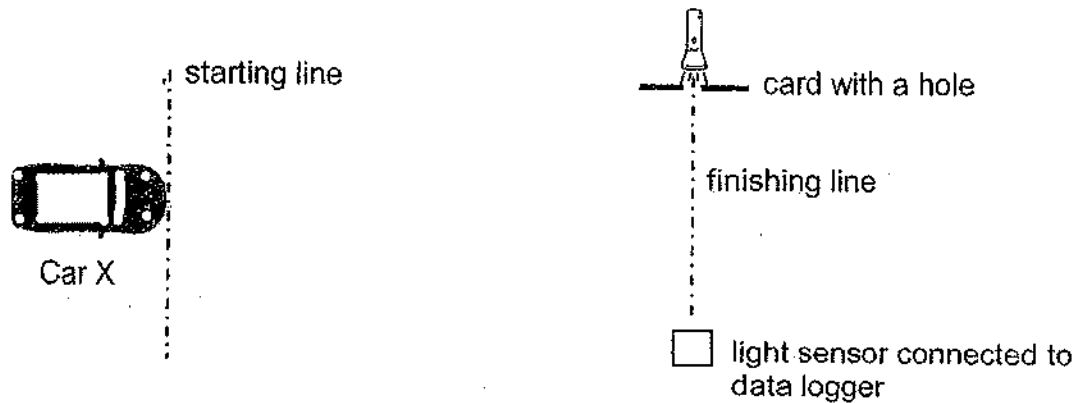


At which position, A, B, C or D, did the ball possess the most kinetic energy?

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

(Go on to the next page)

- 23 Jenny conducted an experiment in a dark room with two different toy cars, X and Y. Car X was first placed at the starting line as shown in the diagram. Jenny turned on its switch and Car X moved towards the finishing line. The amount of light detected by the light sensor as the car moved for five seconds was recorded.



She repeated the experiment with Car Y. Her results are shown in the table below.

Time (s)	Amount of light detected by light sensor (units)	
	Car X	Car Y
0	2000	2000
1	2000	2000
2	0	2000
3	2000	2000
4	2000	0
5	2000	2000

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

- A Car X travelled faster than Car Y.
- B Car Y has a brighter colour than Car X.
- C Car X allows more light to pass through.
- D Car Y reached the finishing line at the 4th second.

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

- 24 Muthu released a wooden block down a slope causing it to move from position A to B as shown in Diagram X. The graph below shows the amount of three different forms of energy of the wooden block at position L of the slope.

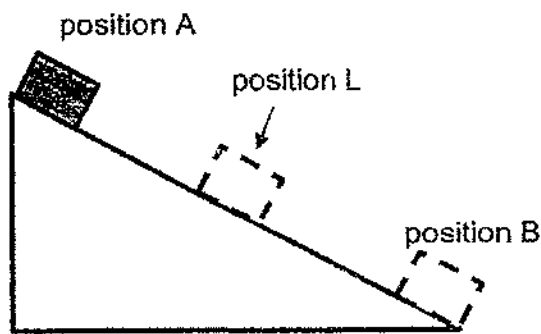
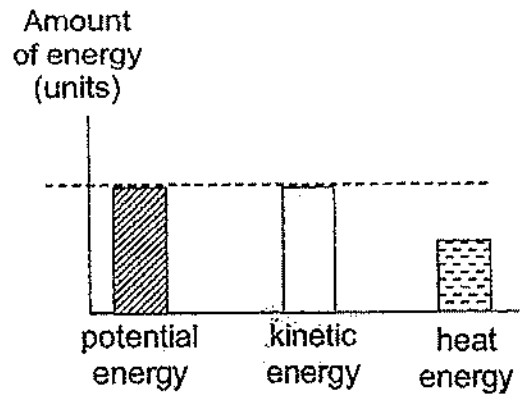
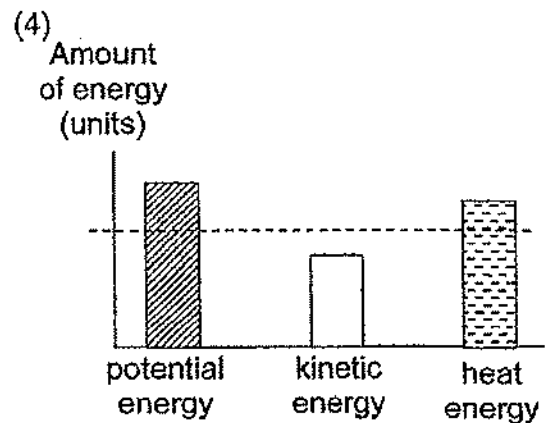
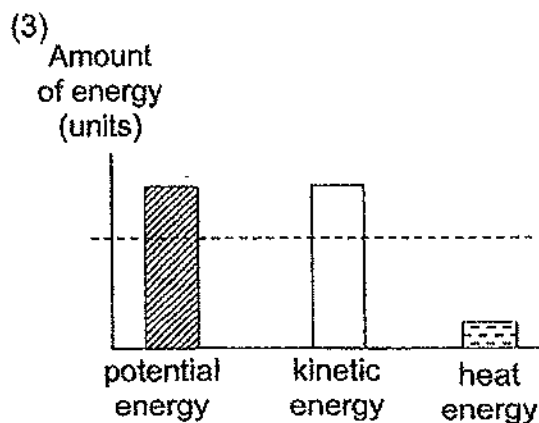
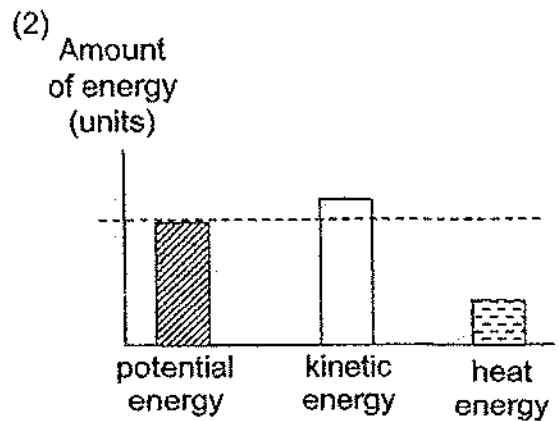
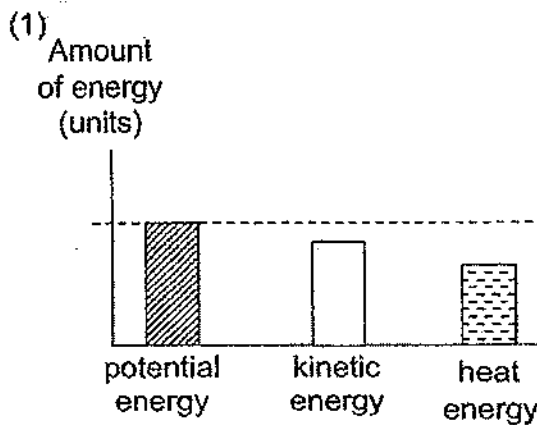


Diagram X

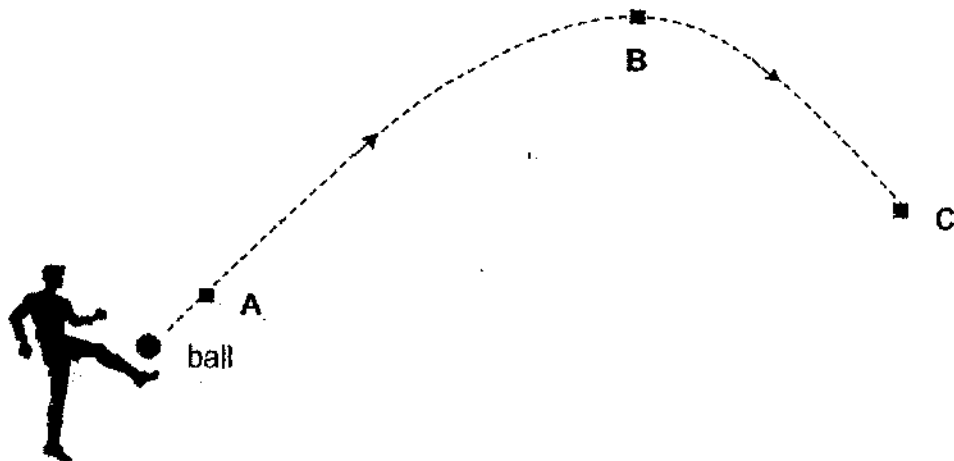


Muthu applied some powder on the slope and repeated the experiment. Which one of the following graphs show the amounts of different forms of energy in the wooden block when it is at position L?



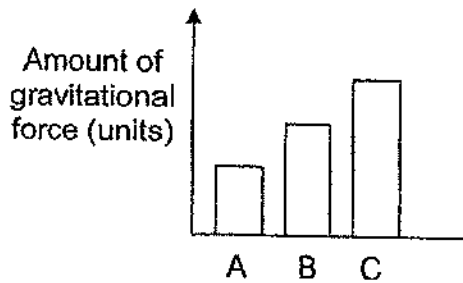
(Go on to the next page)

- 25 The diagram below shows the path taken by the ball travelled when it was kicked. It then travelled to points A, B and C as shown in the diagram below.

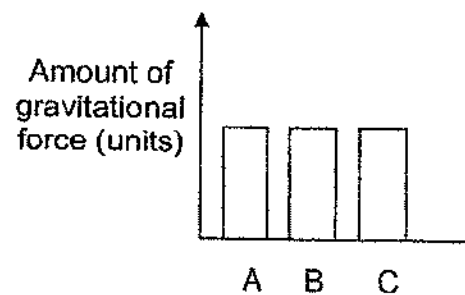


Which one of the following graphs shows the amount of gravitational force acting on the ball at points A, B and C?

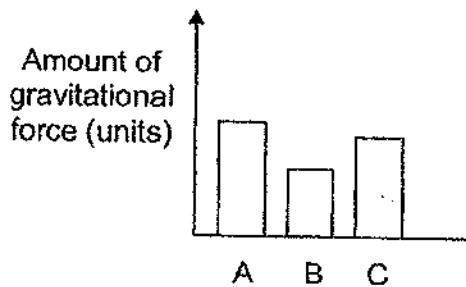
(1)



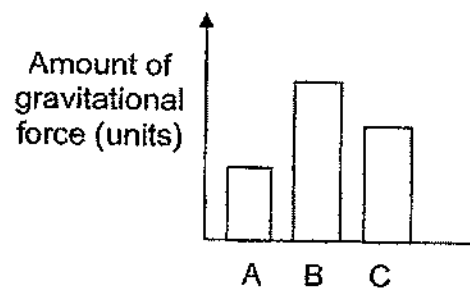
(2)



(3)



(4)

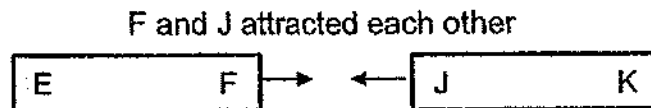
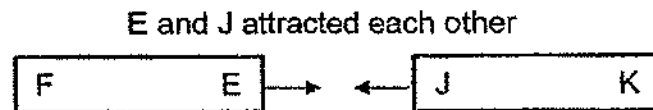
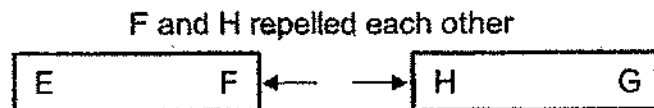
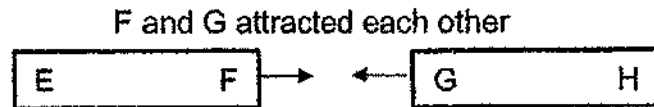


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- 26 Anna labelled the ends of three metal bars A, B and C as shown.



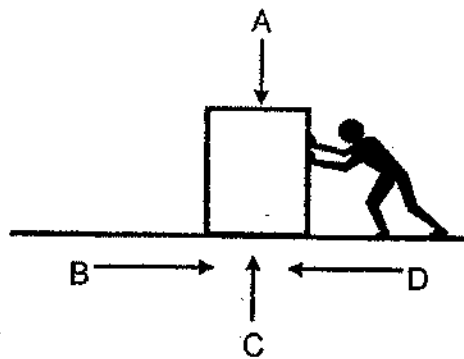
She brought the ends of the metal bars close to each other and made some observations.



Based on her observations, which one of the following statements is **not** correct?

- (1) Bar B can attract bar C.
- (2) Bar A and bar B are magnets.
- (3) Bar A and bar C are magnets.
- (4) Bars A, B and C are made of magnetic materials.

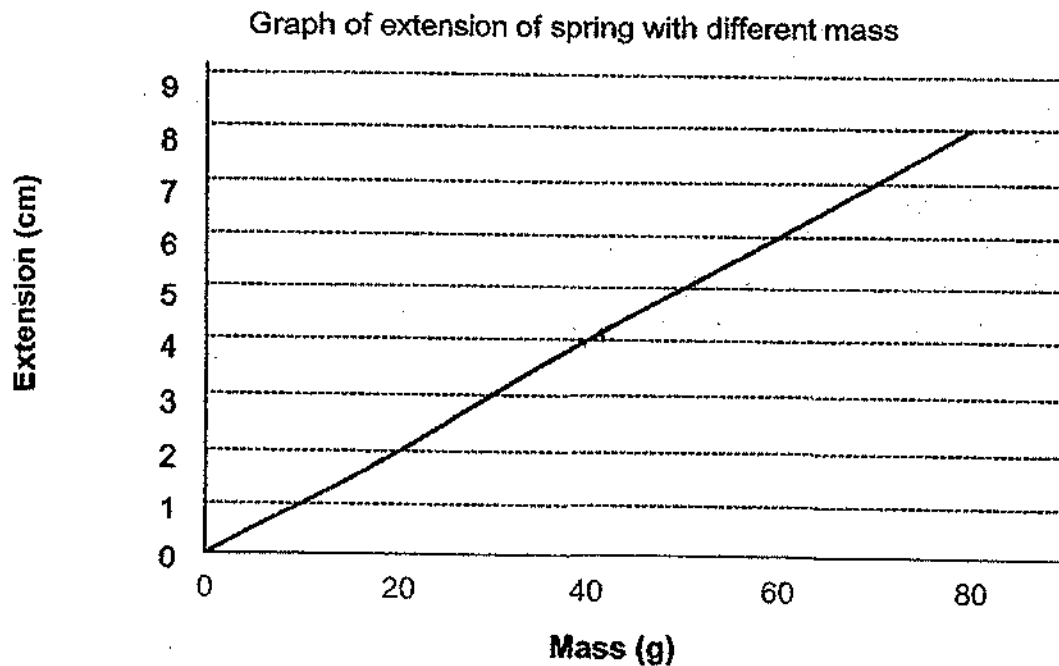
- 27 The picture shows a man pushing a box along the floor.



Which of the following correctly identify the arrows to the type of forces acting on the box?

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

- 28 A mass was hung on a spring and its extension was recorded as shown in the graph below.



The original length of the spring was 10 cm. What was the length of the spring when a mass of 40 g was hung on it?

- (1) 4 cm
- (2) 8 cm
- (3) 12 cm
- (4) 14 cm

METHODIST GIRLS' SCHOOL
Founded in 1887



PRELIMINARY EXAMINATION 2020
PRIMARY 6
SCIENCE

BOOKLET B

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 : 25 August 2020

Booklet A	56
Booklet B	44
Total	100
Parent's Signature	

This booklet consists of 17 printed pages including this page.

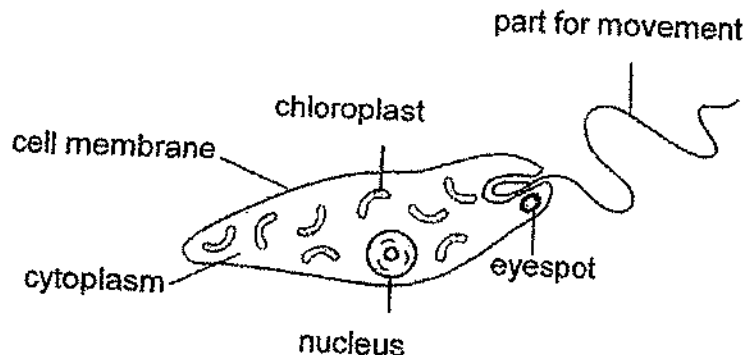
For questions 29 to 40, write your answers in the spaces provided. The number of marks available is shown in brackets [] at the end of each question or part question. [22 marks]

- 29 Some students observed the parts of 3 different cells, X, Y and Z, under a microscope. They recorded their observations in the table below. A tick (✓) indicates that the cell part was present.

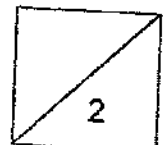
Parts	Cells		
	X	Y	Z
Nucleus	✓	✓	✓
Cell membrane	✓	✓	✓
Cytoplasm	✓	✓	✓
Cell wall		✓	✓
Chloroplast		✓	

- (a) Based on the results above, what is the main difference between the functions of Cells Y and Z? [1]

The students observed another Cell K as shown below.

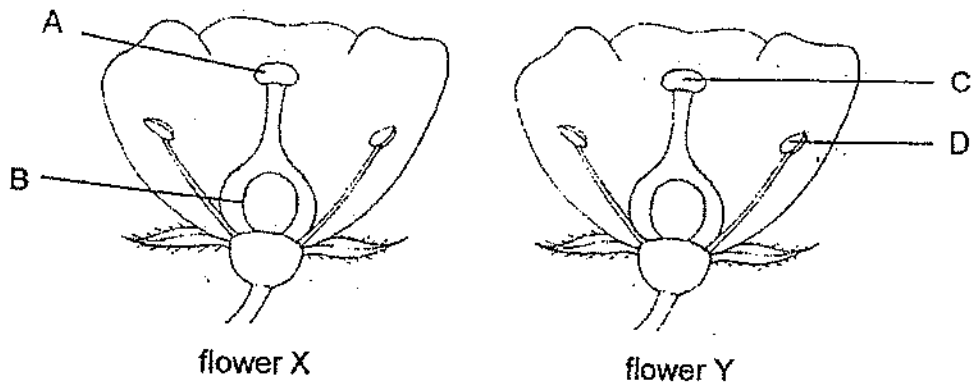


- (b) State a characteristic of Cell K which shows that it is taken from the same group of living things as Cell X. [1]



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- 30 The diagram shows two flowers, X and Y, from the same plant. After process J happens, fertilization takes place in flower X and a fruit develops.



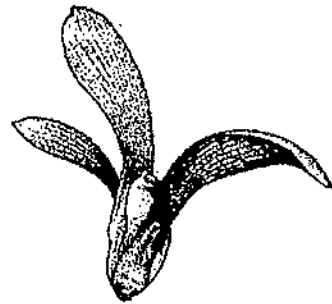
- (a) Using the labelled part(s) in the diagram above, explain what happens during process J. [1]

- (b) Flowers X and Y contain a lot of nectar. Explain how both flowers are likely to be pollinated. [1]

The diagram below shows fruits, V and W, from the same plant



Fruit V

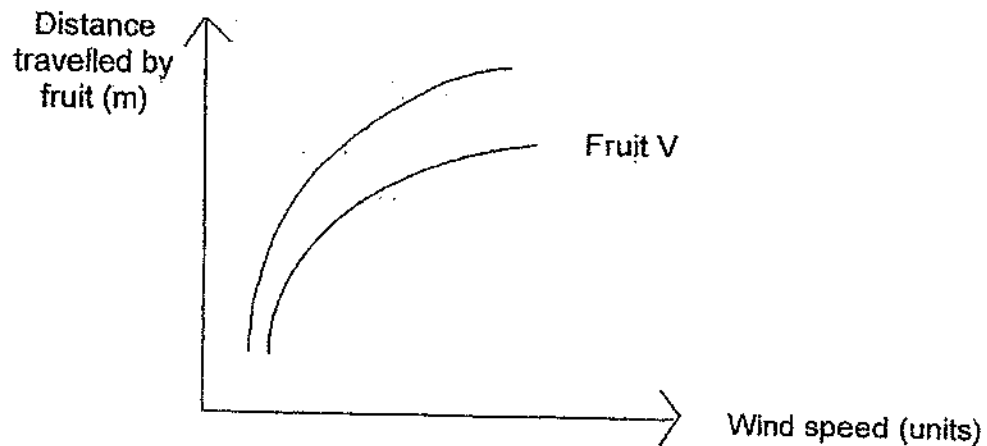


Fruit W

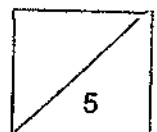
When released from the same height at the same time in an open field, data were collected on the distance travelled by both fruits and presented in the table below.

Fruits	Distance travelled (m)		
	1 st try	2 nd try	3 rd try
V	20	22	19
W	36	40	38

- (c) The graph below shows the relationship between the wind speed and distance travelled by fruit V when both seeds were released from the same height. Draw the graph for fruit W. [1]

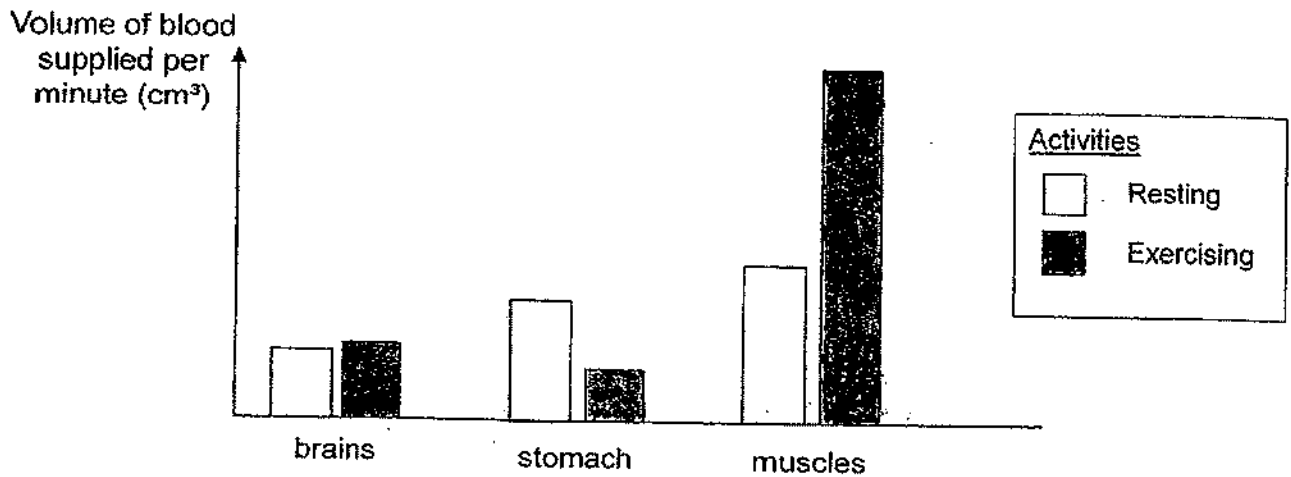


- (d) Which fruit, V or W, will have a higher chance of its seeds germinating? Explain your answer. [2]



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- 31 The graph below shows the volume of blood supplied to some parts of Melvin's body when he is resting and exercising.

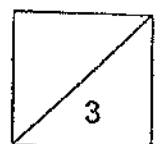


- (a) Explain why more blood is carried to the muscles when Melvin is exercising.

[2]

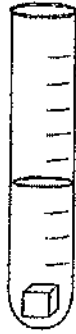
- (b) Based on the graph above, explain why it is not advisable for Melvin to run immediately after having a heavy meal.

[1]



(Go on to the next page)

- 32 Jane prepared the set-ups to investigate the digestion rate of meat cubes as shown below. Liquid X helps in the digestion of food.



Set-up A
10 g meat cube
+
25 cm³ of liquid X



Set-up B
10 g meat cube
chopped into pieces
+
25 cm³ of liquid X

Jane observed the amount of time it took for the meat cubes to be broken down completely in each test tube. She recorded her results in the table below.

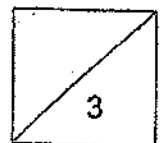
Set-up	Result
A	Meat was broken down completely after 2 hours.
B	Meat was broken down completely after 1 hour.

- (a) Which variable was changed as part of the experiment?

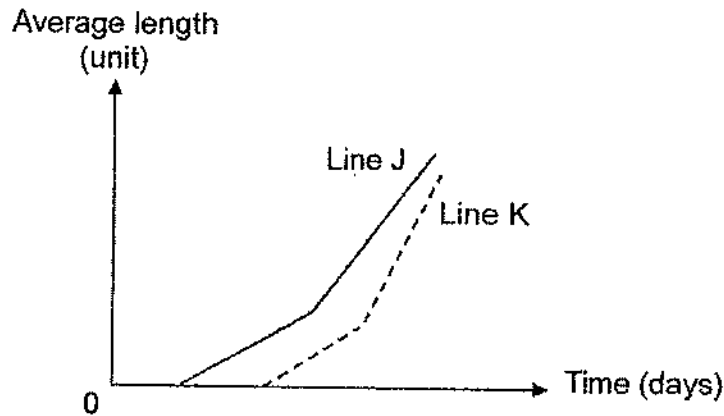
[1]

- (b) Based on the results above, explain how chewing of food affects the rate of digestion.

[2]



- 33 Ismail observed the growth of plant X over 5 days. He placed some seeds of plant X into a container with moist cotton wool and recorded his observations of the average length of their shoots and roots in the graph below.

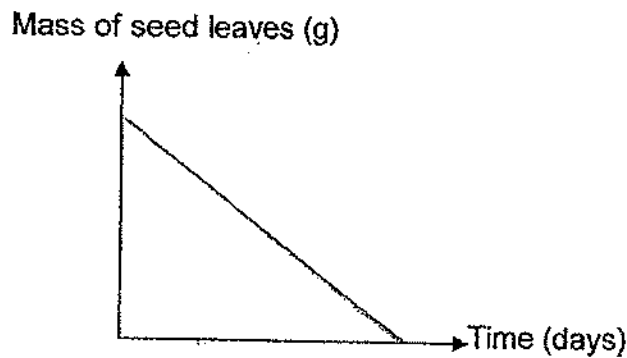


- (a) Which line, J or K, represents the growth of the roots? Explain your answer.

[1]

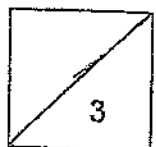
- (b)(i) Draw a line graph below to show the change in the mass of seed leaves of plant X over time.

[1]



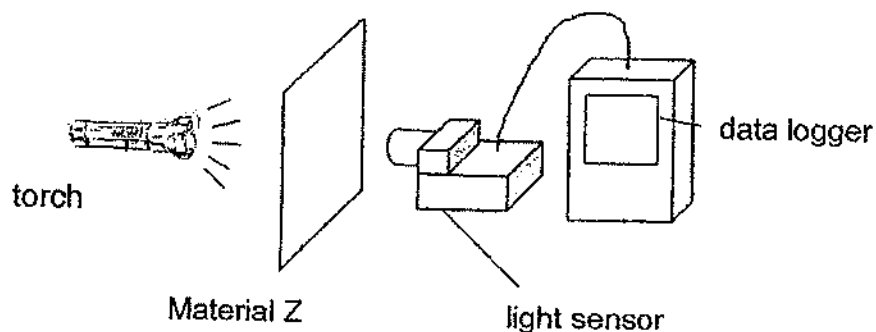
- (ii) Give a reason for your answer in (b)(i).

[1]



(Go on to the next page)

- 34 Mr Tan used Material Z to make sheets of different thickness in his factory. He wanted to find out how much light can pass through different thickness of Material Z using the set-up below.



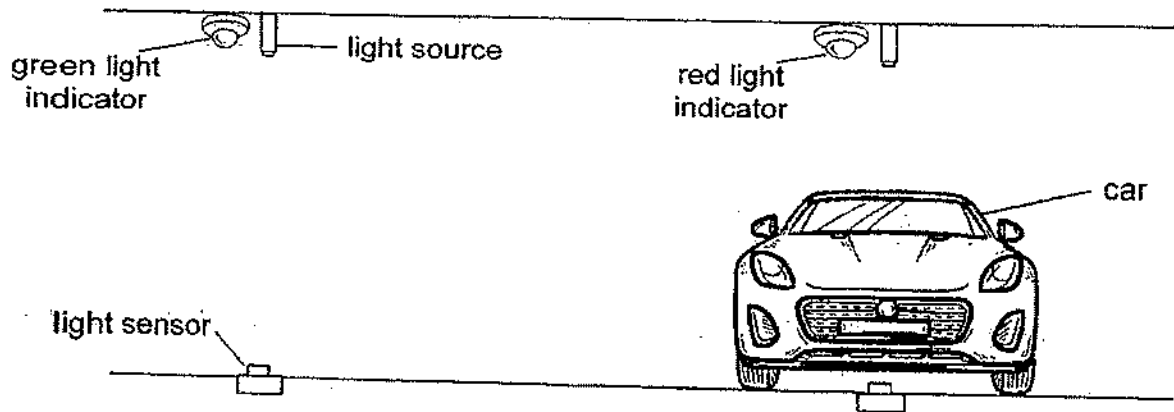
He recorded the results in the table below.

Thickness of Material Z (mm)	Amount of light recorded (unit)
1	15
2	10
3	5
4	0

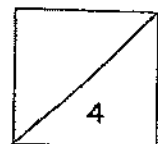
- (a)(i) Mr Tan has a few sheets of Material Z that are 2mm thick. He wants to use it to wrap the outer wall of a clear plastic water bottle so that no light can enter it. Based on the above results, what is the minimum number of sheets of Material Z required? [1]

- (ii) State another important property of Material Z that will make it suitable to be used to wrap the bottle. Explain your answer. [1]

The diagram below shows a parking lot sensor in a carpark. When no car is parked in the lot, the light indicator turns green. When a car is parked in the lot, the light indicator turns red.



- (b) Explain how the parking lot sensor works to show when the lot is occupied and unoccupied. [2]



(Go on to the next page)

- 35 Kate recorded the states of three substances, J, K and L, at three different temperatures in the table below.

Substances	State of substance at		
	0°C	50°C	100°C
J	solid	liquid	gas
K	solid	solid	liquid
L	liquid	gas	gas

- (a) Arrange the three substances in order of melting point, starting from the lowest. [1]

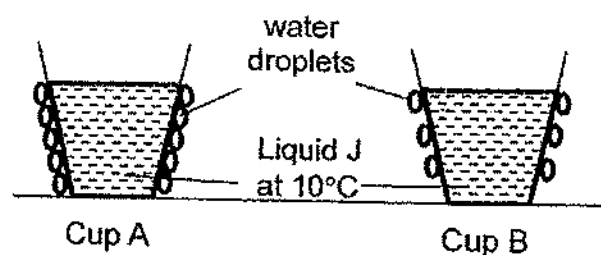
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lowest

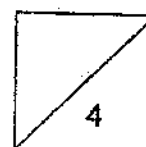
highest

- (b) What is the difference between melting and evaporation? [1]

Kate poured substance J (in liquid form) into two identical cups, A and B. She placed each cup in two rooms, each at different temperatures. After some time, she observed more water droplets forming on cup A than B as shown below.

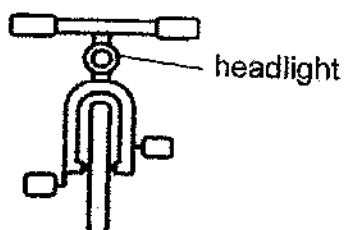


- (c) Suggest a reason for Kate's observation. Explain your answer. [2]

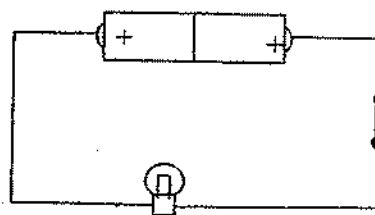


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- 36 Betsy is going night cycling with her friends. In order to remain visible to other road users, she installed a headlight to her bicycle connected to a circuit as shown below.

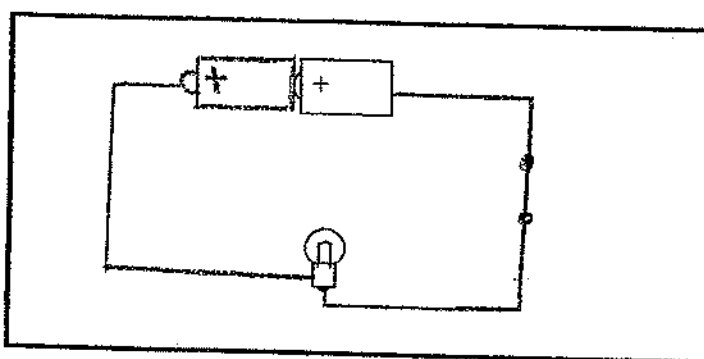


Front view of bicycle

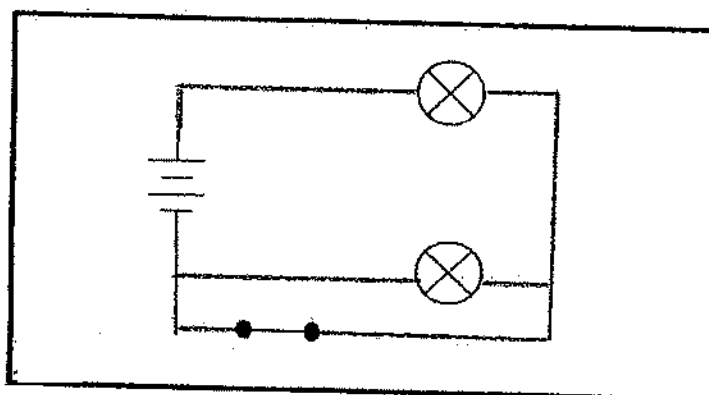


Circuit of headlight

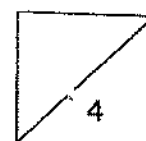
- (a) Betsy noticed that the bulb did not light up in the circuit above. Draw in the box provided below how she should rearrange the components in the circuit for the bulb to light up. (One battery and one bulb have been drawn for you.) [1]



- (b)(i) Betsy then decided to install two headlights for her bicycle. She wanted to make sure that one bulb will still work even if the other bulb is fused. Complete the circuit diagram below for the new headlights by drawing in the missing wires. [2]

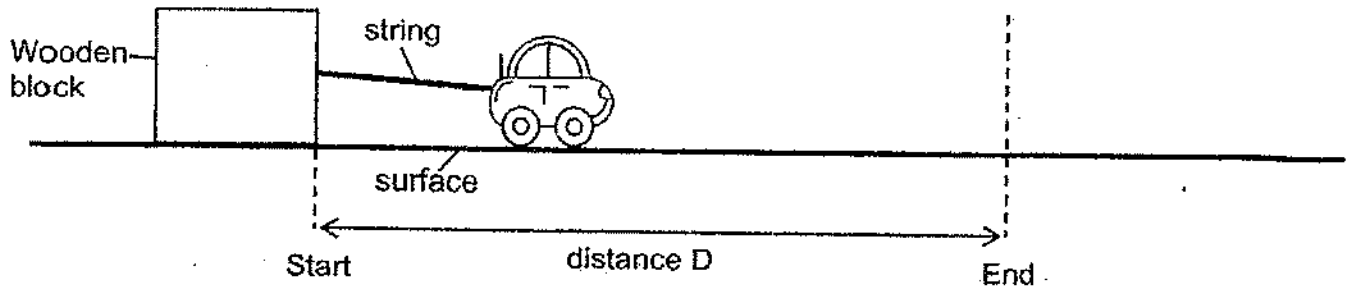


- (ii) Suggest another advantage of the arrangement of the two headlights in (i) that would help Betsy keep safe when she cycles at night. [1]



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- 37 Larry tested four different surfaces W, X, Y and Z. He used an electric toy car to pull the same wooden block across each surface covering the same distance D.



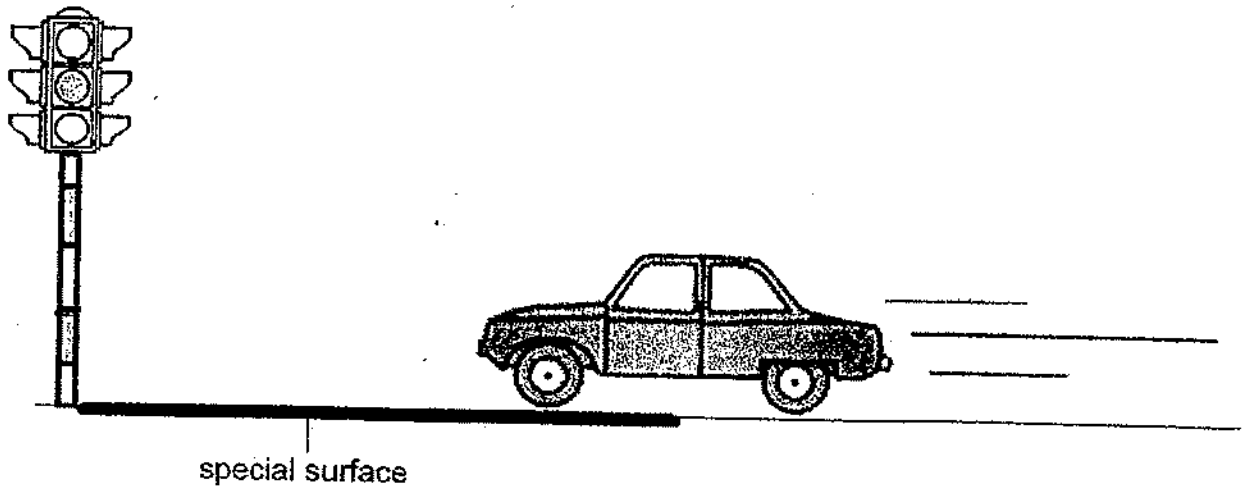
He recorded the time taken for the wooden block to move across distance D on each surface in the table below.

Surface	Time (s)
W	9
X	7
Y	3
Z	15

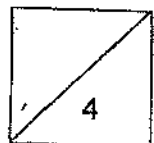
- (a) State two forces that are acting on the wooden block as it is pulled by the car. [1]

- (b) Explain why the time taken for the wooden block to move across distance D on the different surfaces is different. [1]

In many countries, a special surface is used on the portion of the road just before traffic light junctions to prevent accidents from happening.

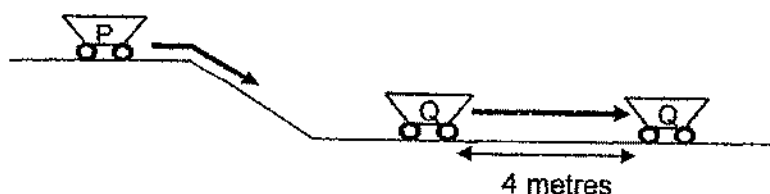


- (c) Based on Larry's results, which surface, W, X, Y or Z is most suitable for the above purpose? Explain your answer. [2]

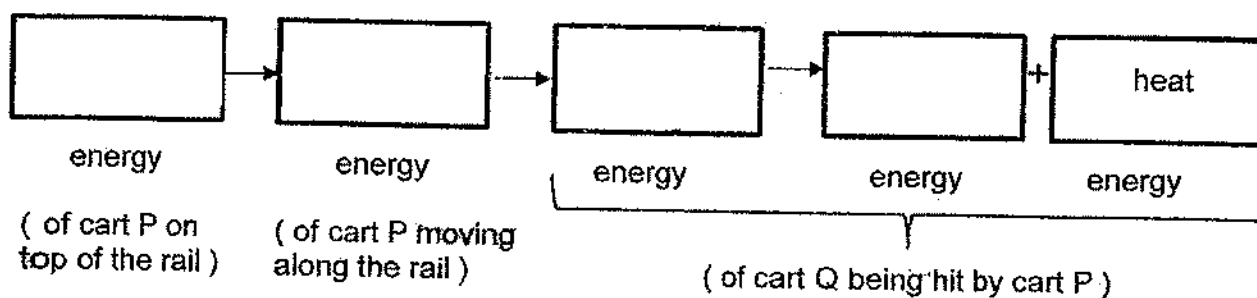


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- 38 The diagram below shows carts P and Q used at a coal mine which were along a rail. When an empty cart P rolled down the rail, it hit a stationary cart Q in front of it. As a result, the stationary cart Q was pushed a distance of four metres forward.

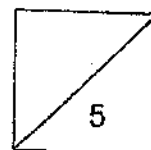


- (a) Write down the energy conversion from one form to another in the boxes below. [2]



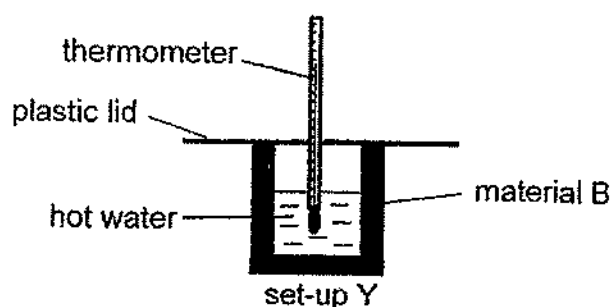
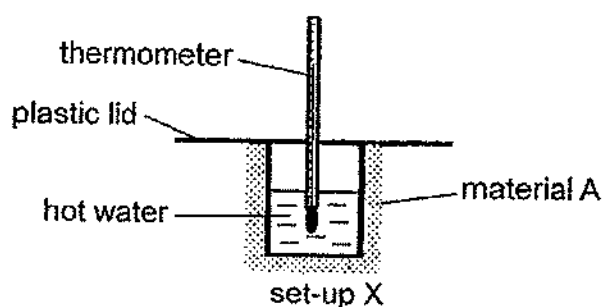
- (b) If the moving cart P was fully loaded with coals, would the distance moved by cart Q be longer or shorter than 4 metres? Explain your answer in terms of energy conversion. [2]

- (c) After being hit by cart P, what will happen to the movement of cart Q eventually? Explain your answer in terms of energy conversion. [1]

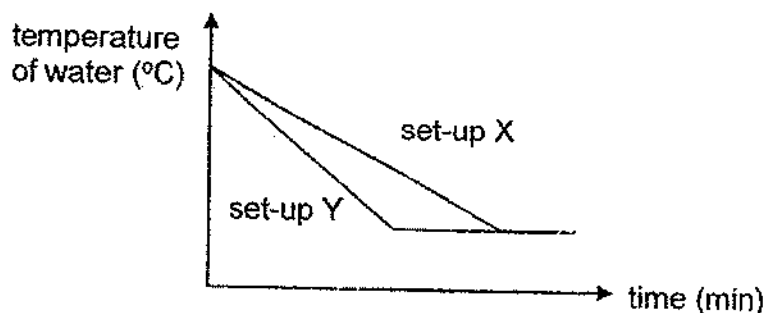


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- 39 Rashid conducted an experiment using set-ups X and Y as shown below. He wrapped a glass beaker with material A and another identical glass beaker with material B. He filled both beakers with the same volume of hot water.



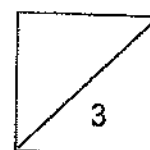
Rashid measured the temperatures of the water over a period of time and plotted his results in the graph shown.



- (a) What happened to the temperature of water in set-ups X and Y after some time? [1]

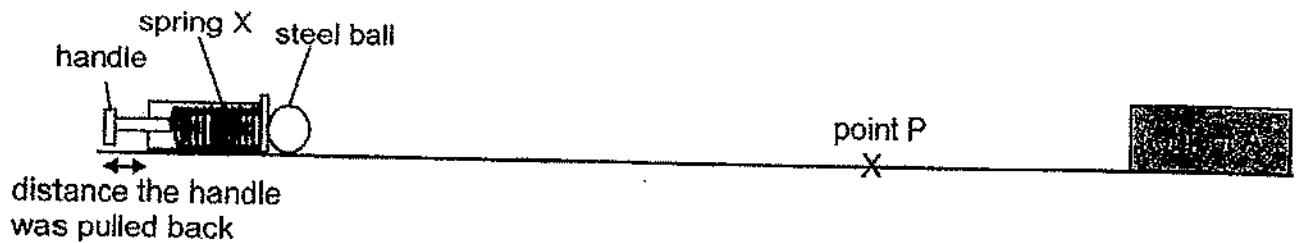
- (b) Explain why the temperature of water in set-up Y decreased at a faster rate. [1]

- (c) Material A in set-up X has small air spaces and is used to make a cooler box to store frozen food. Explain why material A would help keep the frozen food cold for a longer period of time. [1]



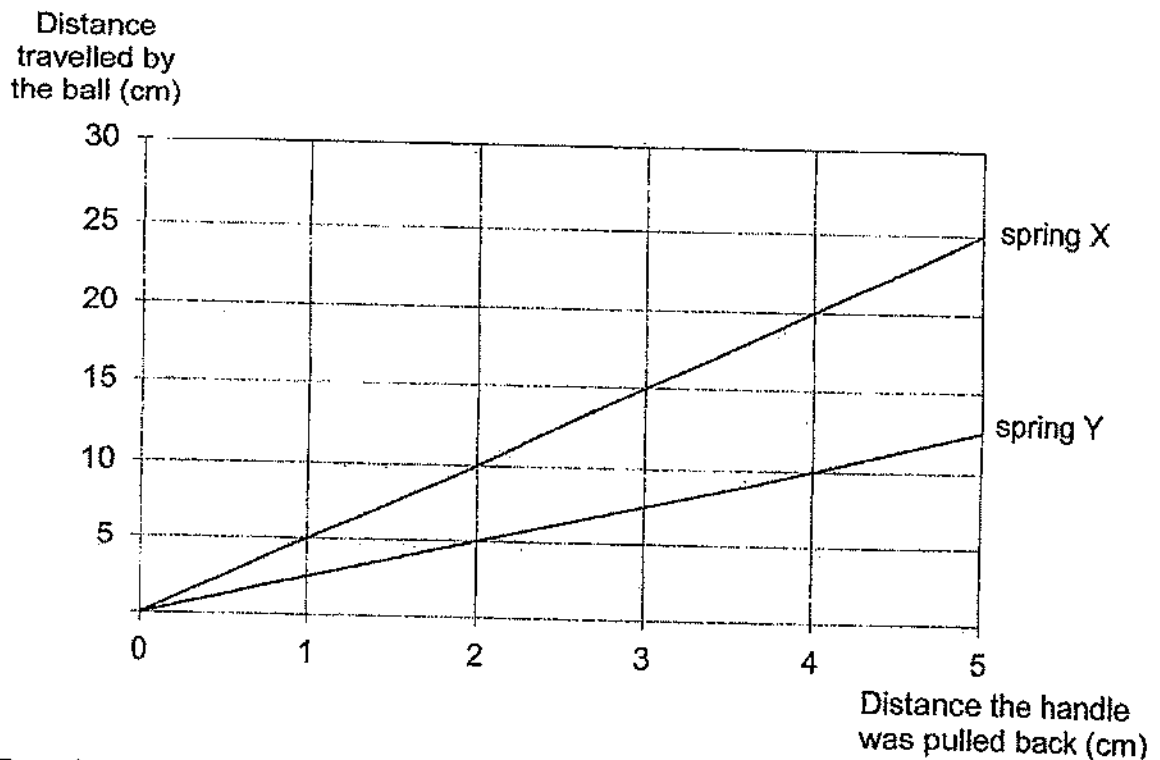
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- 40 Jimmy set up an experiment using a launcher and steel ball as shown below. He pulled spring X back using the handle and released it. He observed that the steel ball started to move and after passing point P, it rolled faster. It hit object A and stopped moving without bouncing back.



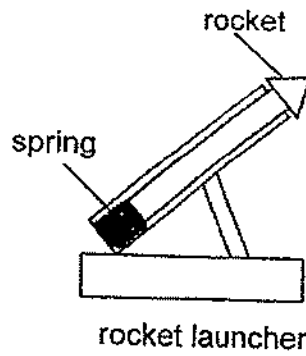
- (a) Based on Jimmy's observation, what could object A be? Give a reason for your answer. [1]

Jimmy then removed object A and repeated his experiment with spring X and spring Y. He pulled each spring back at different distances before releasing the handle and measured the distance travelled by the ball. The graph below shows the results he obtained.



- (b) Based on the graph, what is the relationship between the amount of elastic spring force and the distance travelled by the ball? [1]

Jimmy wanted to build a rocket launcher as shown below.



- (c) Based on the graph, which spring, X or Y, should he choose so that his rocket can fly as high as possible? Explain your answer. [2]

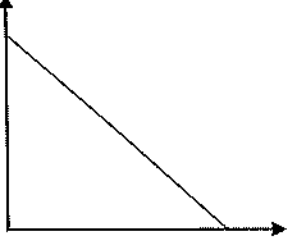
SCHOOL : MGS PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2020 PERLIM

SECTION A

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

SECTION B

Q29)	<p>a)Y makes food for the plant through photosynthesis and Z absorbs water for the plant.</p> <p>b)Cell X has a cell membrane and no cell wall and it is just like cell K.</p>
Q30)	<p>a)The pollen grains from D would and on A and the male reproductive cell would fuse with the female reproductive cell so that fertilisation can occur.</p> <p>b)They are likely to be pollinated by insects. The insects would feed on the nectar and some of the pollen grains would stick on it and when it goes to feed on the other flower, the pollen grains would land on the stigma.</p>
Q31)	<p>a)More blood containing more oxygen and digested food is carried to the to under go more respiration to release more energy.</p> <p>b)When exercising, less blood is carried to his stomach where digestion takes place so rate of digestion is slower.</p>

Q32)	<p>a)The amount of exposed surface area of meat in contact with liquid X.</p> <p>b)When chew food, it breaks down the food into simpler substance and it increase the exposed surface area of the food in contact with the digestive juice and it increases the rate of digestion.</p>
Q33)	<p>a)The root grows first in order to take in water during germination.</p> <p>bi)</p>  <p>ii)The seed leaves stores food for the plant and the mass would slowly decrease when it uses the food, and when the true leaves appear, the seed leaves would drop off.</p>
Q34)	<p>ai)2 sheets</p> <p>ii)Flexibility. If he wants to wrap it, it has to be flexible so that it can cover the whole plastic bottle.</p> <p>b)The car is opaque and it does not allow any light to pass through, hence, when the blight sensor does not detect any light from the light source due to the car it would turn red , but when the light sensor detects light from the light source it would turn green.</p>
Q35)	<p>a)L J K</p> <p>b)Melting is when a solid becomes a light but evaporation is when liquid become a gas.</p> <p>c)The temperature of the room where cup A was placed was higher. The more warmer water vapour in the surrounding air came into contact with the cooler surface of the cup, lost heat and condensed to form more water droplets.</p>

<p>Q36)</p>	<div data-bbox="673 293 1082 528" data-label="Diagram"> </div> <p>b)</p> <div data-bbox="384 680 619 965" data-label="Diagram"> </div> <p>bii) The bulbs would be brighter.</p>
<p>Q37)</p>	<p>a) Frictional Force and Gravitational Force.</p> <p>b) some of the surfaces could be rougher and it increases friction between the surface and the wooden block.</p> <p>c) Surface Z, as it took the longest amount of time for the wooden block to travel distance D so it produced the most amount of friction for the car to slow down before the traffic light.</p>
<p>Q38)</p>	<p>a) Gravitational potential → kinetic → kinetic → sound</p> <p>b) The distance moved will be longer as cart P will have more mass increasing the gravitational potential energy which will be converted to more kinetic energy.</p>
<p>Q39)</p>	<p>a) They both decreased and reached room temperature.</p> <p>b) Material B is a good conductor of heat and it gained heat from the hot water faster and the temperature of the water decreased faster.</p> <p>c) Air is a poor conductor of heat and it would slow down heat gain from the frozen food to the surroundings.</p>

Q40)	<p>a)A magnet. The ball stopped moving when it hit A as A attracted the steel ball.</p> <p>b)As the amount of elastic spring force increases, the distance travelled by the ball increases.</p> <p>c)Spring X. The ball travelled a longer distance when the handle were pulled back the same distance and spring X has more elastic spring force so it pushed the rocket further.</p>

Index No.

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NAN HUA PRIMARY SCHOOL
Preliminary Examination 2020
PRIMARY 6

SCIENCE

BOOKLET A

28 Multiple Choice Questions (56 marks)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Marks Obtained

Booklet A		/ 56
Booklet B		/ 44
Total		/ 100

Name: _____ () Class: P 6 _____

Date: 26 August 2020

Parent's Signature: _____

Section A: (28 × 2 marks = 56 marks)

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

- 1 Andrew spotted an animal, X, in a river and recorded his observations below.

Characteristics of animal X	
• Has hair	• Feeds on fish
• Swims fast	• Produces milk for its young

Which of the following groups of animals does animal X belong to?

- (1) Fish
 - (2) Insects
 - (3) Reptiles
 - (4) Mammals
- 2 The picture below shows the seed leaves of a seedling.



What is the function of the seed leaves?

- (1) to protect the seedling
 - (2) to provide food for the seedling
 - (3) to absorb oxygen for the seedling
 - (4) to absorb carbon dioxide for the seedling to make food
- 3 The picture below shows a cross-section of a fruit.



Based on the picture above, which one of the following statements is true about the flower that this fruit has developed from?

- (1) The flower has large petals.
- (2) The flower has many ovules.
- (3) The flower has many ovaries.
- (4) The flower grows in a cluster.

4

Ben wanted to conduct an experiment to find out if the amount of water given to the seeds affects the germination of seeds.

He set up four similar pots, W, X, Y and Z, with different conditions as shown below.

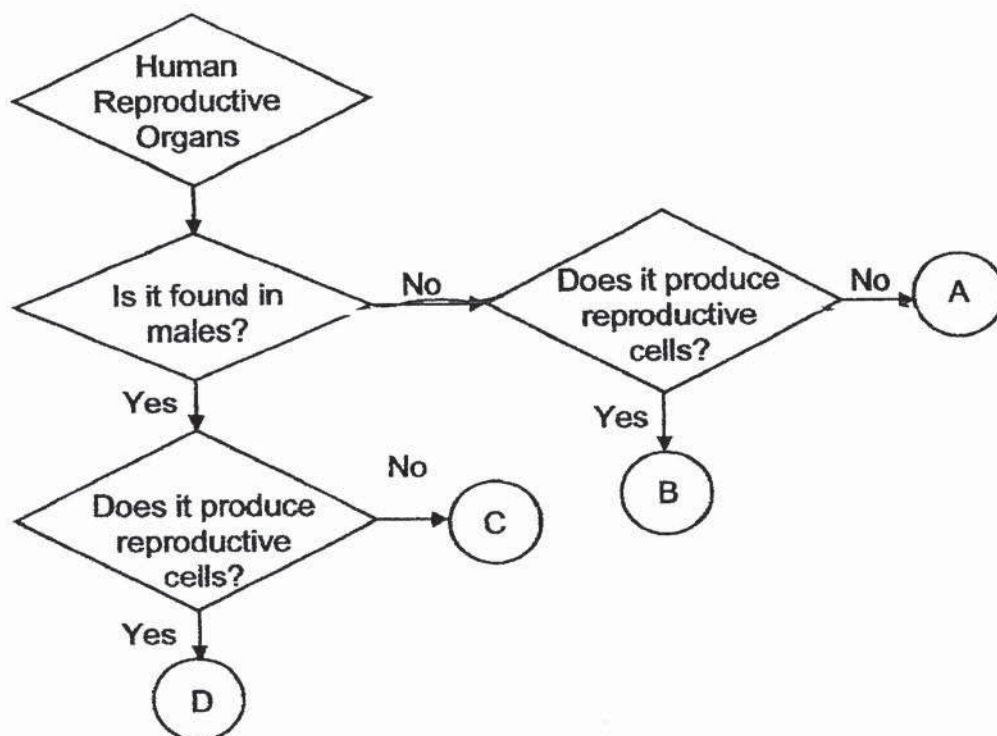
Variables	Pots			
	W	X	Y	Z
Number of seeds	10	30	30	30
Amount of soil (g)	300	500	500	500
Amount of water given daily (ml)	20	10	10	20
Temperature of room the pot is kept in (°C)	3	32	3	32

Which of the above set-ups should he use to ensure a fair test?

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

5

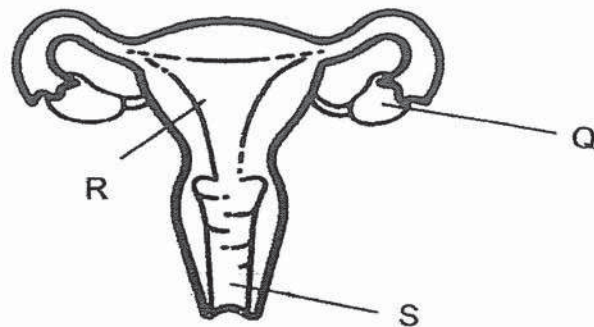
Study the flow chart below.



Which of the letters, A, B, C or D, represents the womb in the human reproductive system?

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

- 6 The diagram below shows the female human reproductive system.

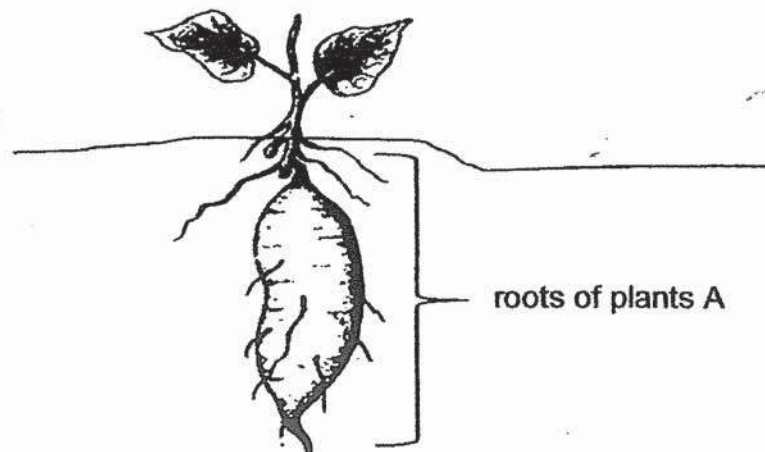


Which of the following statement(s) is/are correct?

- A Eggs are produced in S.
- B The fertilised egg will develop in R.
- C Q releases the sperms needed for fertilisation to take place.

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

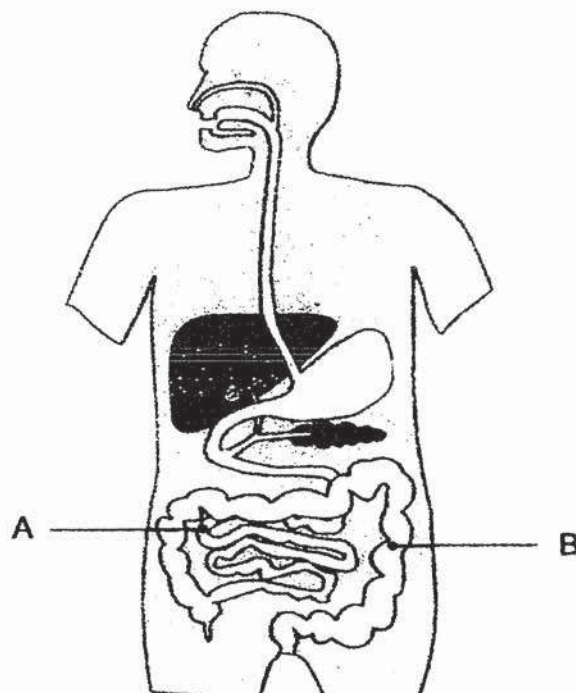
- 7 The diagram below shows plant A.



Which one of the following is not a function of the roots of plant A?

- (1) It stores excess food.
- (2) It anchors the plant to the ground.
- (3) It holds the plant upright to reach for sunlight
- (4) It absorbs water and mineral salts for the plant.

- 8 The diagram below shows the digestive system of a human.



Which of the following shows the correct functions of part A and B?

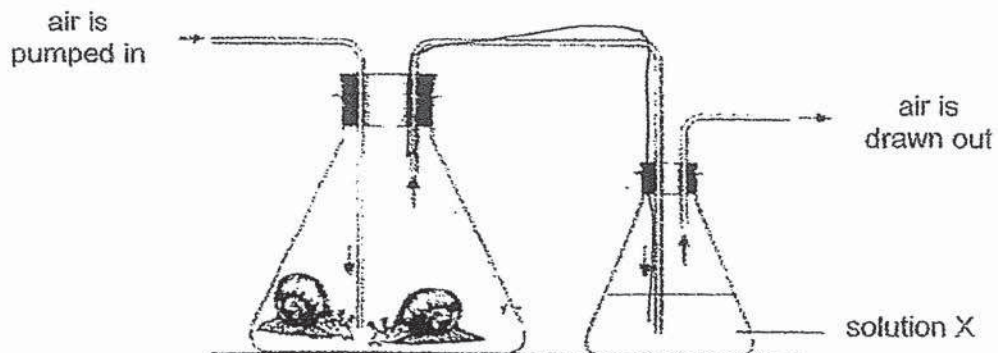
	Part A	Part B
(1)	digestion of food	digestion of food
(2)	digestion of food	absorption of water from undigested food
(3)	digestion of food	absorption of digested food into the bloodstream
(4)	absorption of digested food into the bloodstream	digestion of food

- 9 Which of the following are parts of the respiratory system?

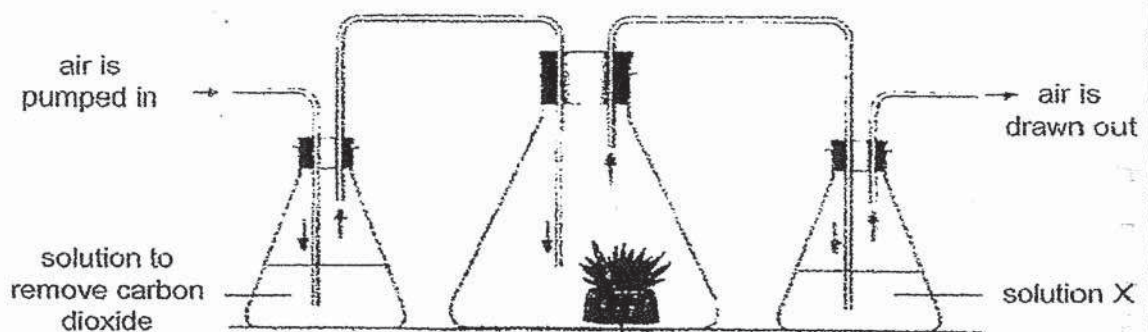
- (1) nose, windpipe and lungs
- (2) heart, blood and blood vessels
- (3) lungs, heart and blood vessels
- (4) lungs, windpipe and blood vessels

10 Melvin carried out three experiments as shown below.

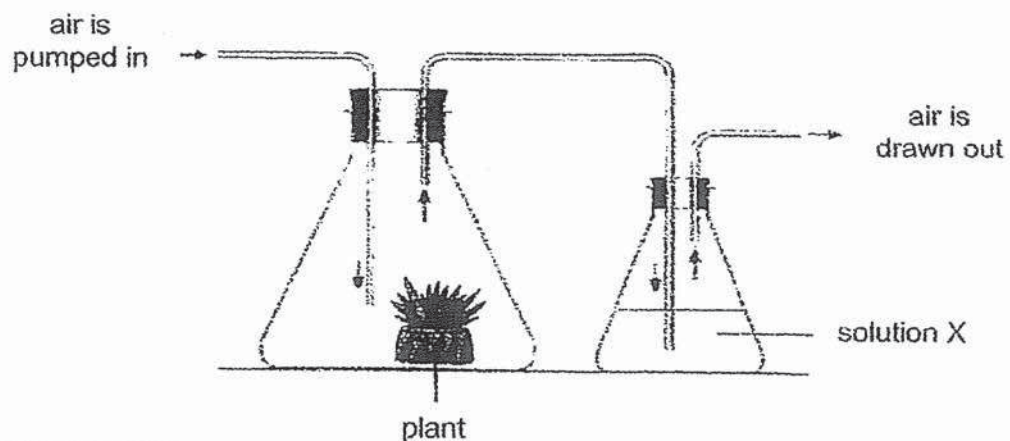
Experiment 1



Experiment 2 : Carried out in a well-lit room



Experiment 3: Carried out in a dark room



Solution X turns chalky in the presence of carbon dioxide.

Which of the following shows the correct observations at the end of the experiment?

(1)

Experiment	Solution X
1	turned chalky
2	turned chalky
3	remained clear

(2)

Experiment	Solution X
1	turned chalky
2	remained clear
3	remained clear

(3)

Experiment	Solution X
1	turned chalky
2	remained clear
3	turned chalky

(4)

Experiment	Solution X
1	remained clear
2	turned chalky
3	turned chalky

11 The diagram below shows a single-cell organism.



How is the single-cell organism different from an animal cell?

- A It has a regular shape.
- B It is able to make food.
- C It has more than one nucleus.

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

- 12 Mrs Ong carried out an experiment to investigate photosynthesis as shown below. She watered the plant with 100ml of water and left the set-up in the sun for 2 hours.



What is the aim of Mrs Ong's experiment?

- (1) To find out if light is required for photosynthesis.
 - (2) To find out if water is required for photosynthesis.
 - (3) To find out if oxygen is required for photosynthesis.
 - (4) To find out if carbon dioxide is required for photosynthesis.
- 13 The diagrams below show two plants, A and B. Plant A has normal green leaves whereas plant B has variegated leaves. Variegated leaves are leaves with both green and white parts.



Plant A



Plant B



a normal green leaf from plant A

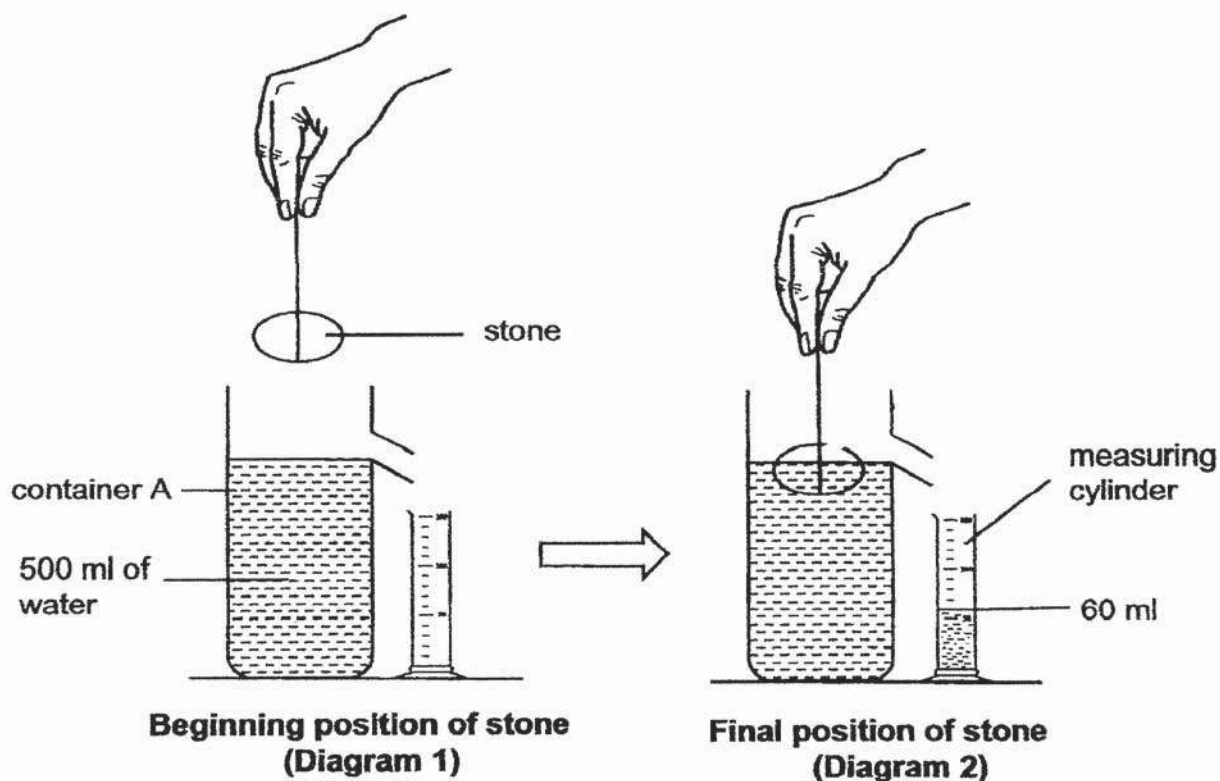


a variegated leaf from plant B

In the wild, plants with variegated leaves tend **not** to survive as well as plants with normal green leaves. What is the likely reason?

- (1) Their leaves trap less light.
- (2) Their leaves lose less water.
- (3) Their leaves take in less oxygen.
- (4) Their leaves take in less carbon dioxide.

- 14 An experiment was conducted as shown below. In diagram 1, container A contained 500 ml of water. In diagram 2, a stone was lowered into container A to the final position as shown below.



The amount of water in the measuring cylinder is 60 ml.

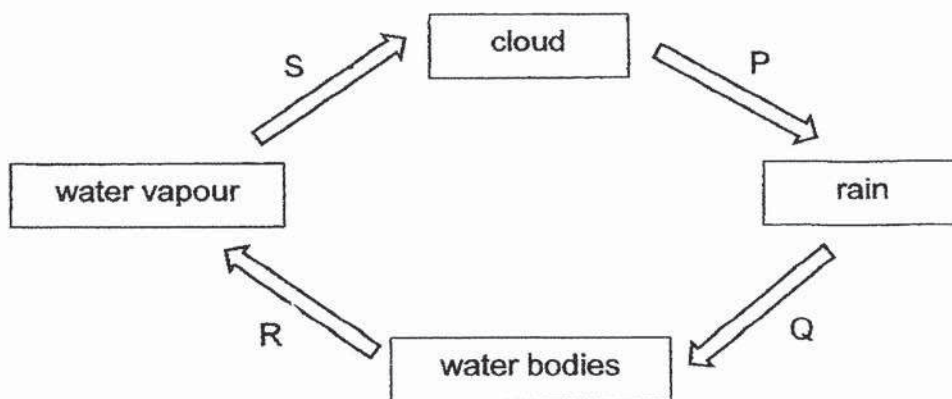
Three students made the following statements about the experiment.

	Statements
Carrie	The aim of this experiment is to find the mass of the stone.
Damien	The volume of the stone is 60 ml.
Elisha	The volume of water in container A is less than 500 ml once the stone is at the final position.

Which student(s) was / were **w**rong?

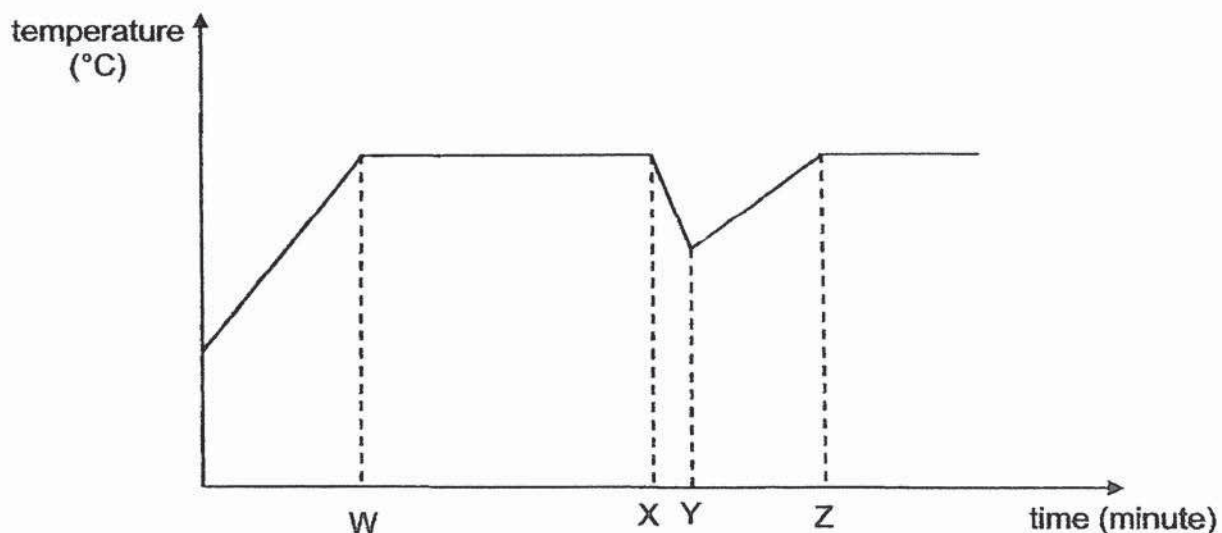
- (1) Carrie only
- (2) Carrie and Damien only
- (3) Damien and Elisha only
- (4) Carrie, Damien and Elisha

- 15 The diagram below shows the water cycle.



Which letters represent the processes that involve a change in the state of water?

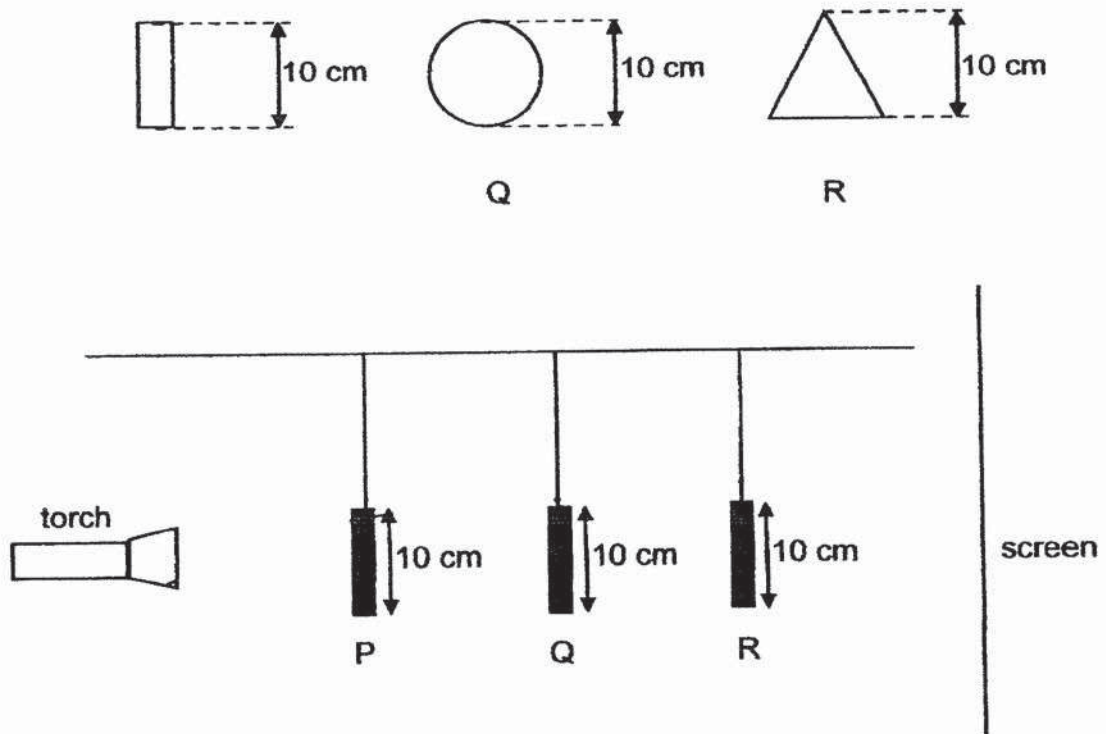
- (1) P and S only
 - (2) P and R only
 - (3) R and S only
 - (4) P, R and S only
- 16 Ginny wanted to boil some vegetables for her dinner. She started off by heating some water in a pot to its boiling point before adding the vegetables that was taken out from the fridge. The graph below shows the change in the temperature of the water throughout the whole process.



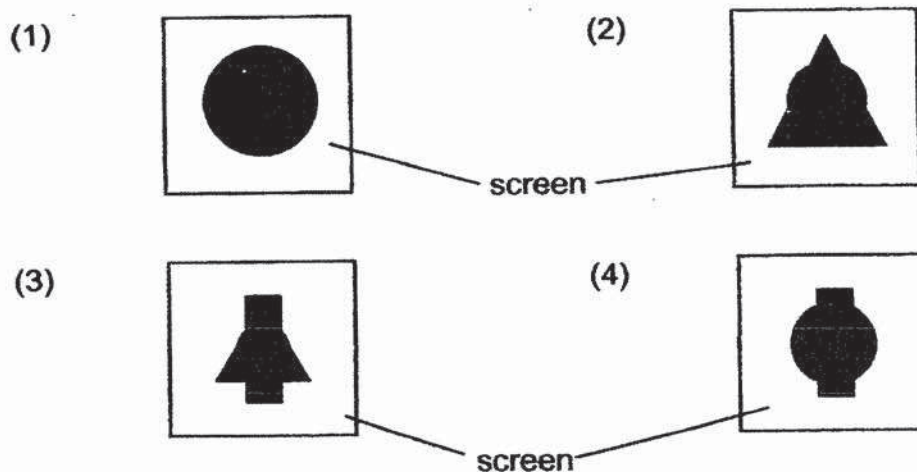
At which point, W, X, Y or Z, did she put the vegetables into the pot?

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

- 17 The set-up below shows three cut-outs of different shapes, hung at different distances from the torch. They are all made of the same material that does not allow light to pass through.



Which of the following diagrams represents what was seen on the screen when the torch was switched on?

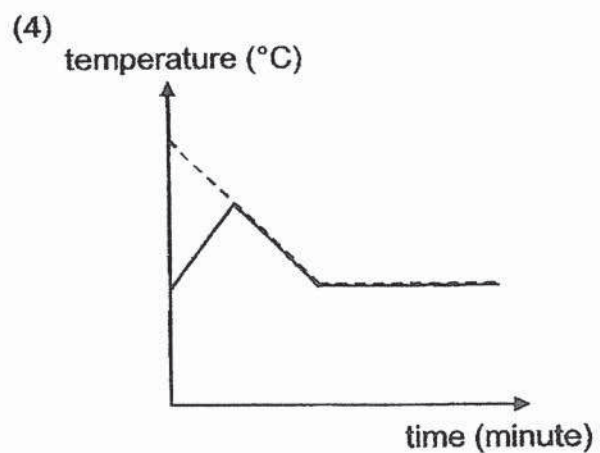
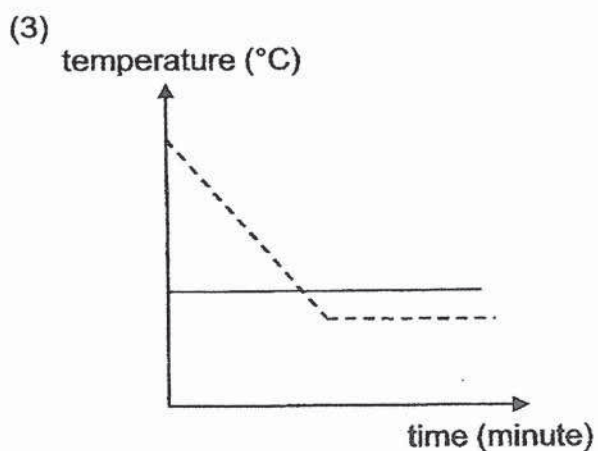
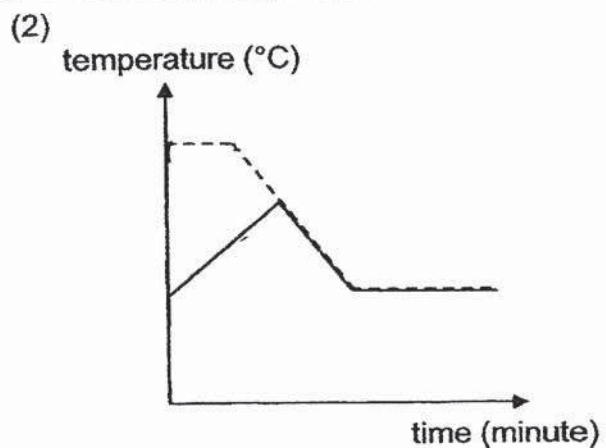
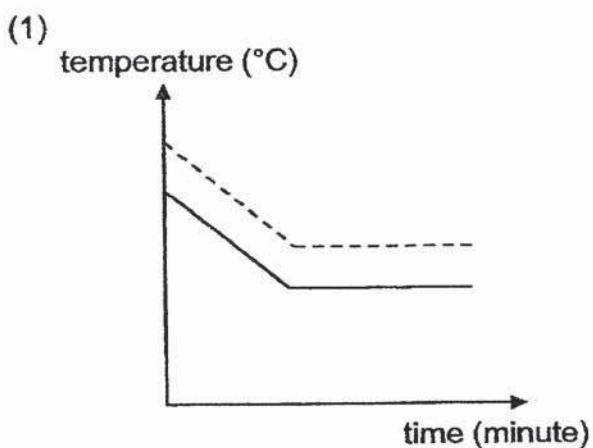


- 18 Henry poured some hot soup into a bowl and left it on the table as shown below

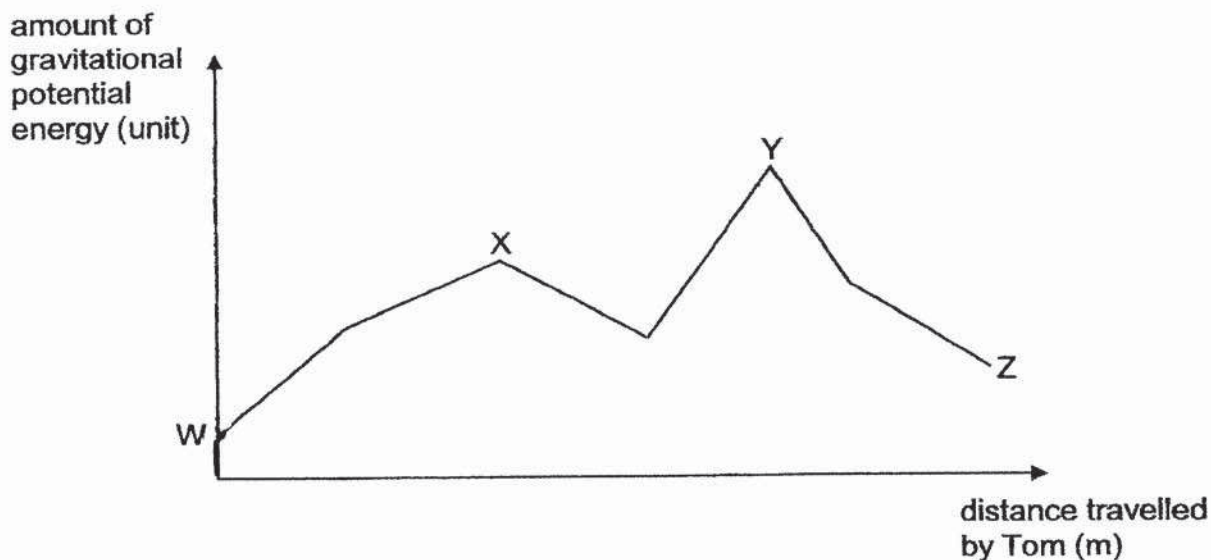


Which one of the following graphs correctly shows the changes in temperature of the bowl and the soup from the moment the soup was poured into the bowl?

Key:
—— Temperature of bowl
----- Temperature of soup



- 19 Tom went for a hike at Bukit Timah Hill. He walked continuously from point W to Z. He did not stop to rest. Tom plotted the amount of gravitational potential energy he possessed at the different points during the hike as shown in the graph below.

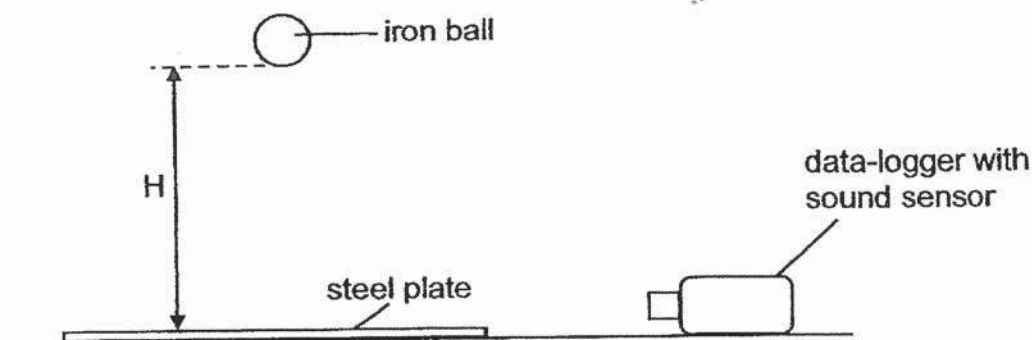


Based on the graph above, which of the following statements is true?

- (1) He was at the ground level at point W.
- (2) He did not possess any kinetic energy at point Y.
- (3) He was at the highest point of his hike at point Y.
- (4) He was climbing down a slope from point W to point X.

20

Jason wanted to find out how the mass of an iron ball and the height, H , at which it is dropped onto a steel plate affect the loudness of sound it makes. He prepared the set-up shown below and dropped iron balls of different masses from different heights.



He used a data-logger with a sound sensor attached to it and recorded the data in the table below.

The sound sensor can only measure a maximum of 45 units of sound.

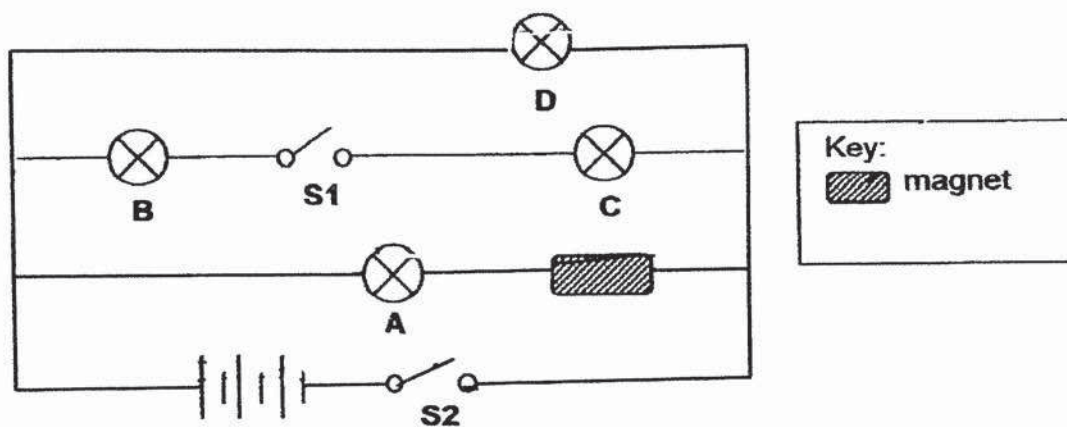
Mass of ball (kg)	Loudness of sound (units)		
	H: 10 cm	H: 20 cm	H: 30 cm
1	12	19	32
2	23	30	45
3	29	38	45

Based on Jason's experiment, which of the following statements is true?

- (1) The loudness of the sound produced is definitely 45 units when a 3 kg ball is dropped at 30 cm.
- (2) A ball with a smaller mass will produce a louder sound when dropped from the same height.
- (3) A ball with a larger mass dropped at a greater height will have all of its potential energy converted to sound energy.
- (4) A ball that is dropped from a greater height will produce a louder sound than the same ball that is dropped from a lower height.

21

The diagram below shows how four bulbs, two switches, three batteries and a magnet are connected.

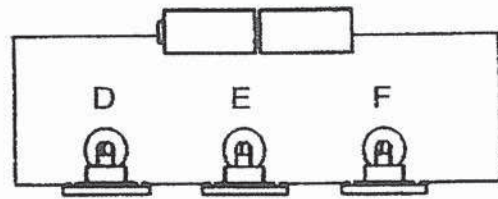
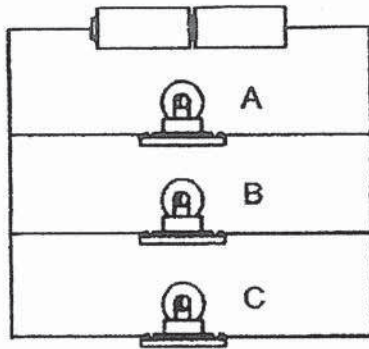


Which bulb(s) will light up when switch S2 is closed?

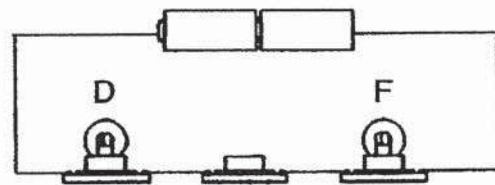
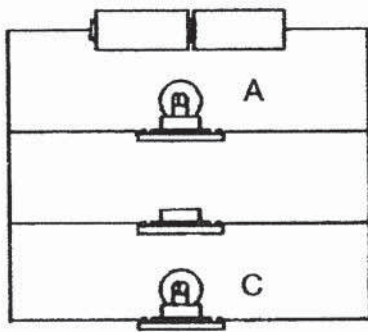
- (1) D only
- (2) A and D only
- (3) B and C only
- (4) B, C and D only

22

Gopal set up two circuits as shown below. All the bulbs lit up.



Next, Gopal removed bulbs B and E from the bulb holders as shown below.

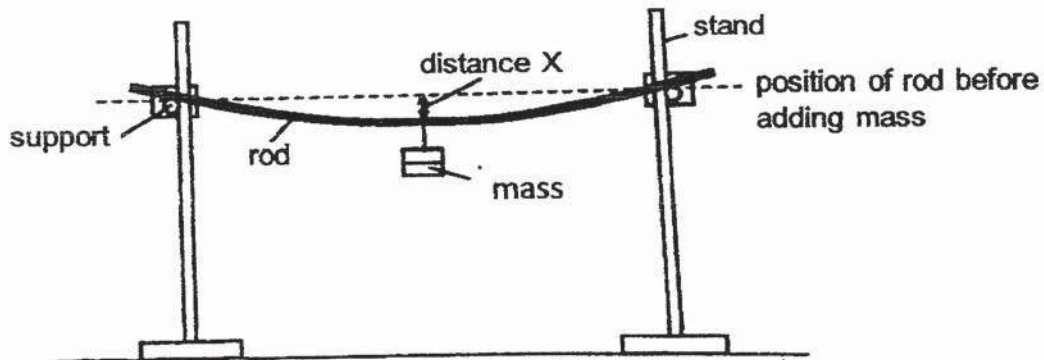


Which bulb(s) remained lit?

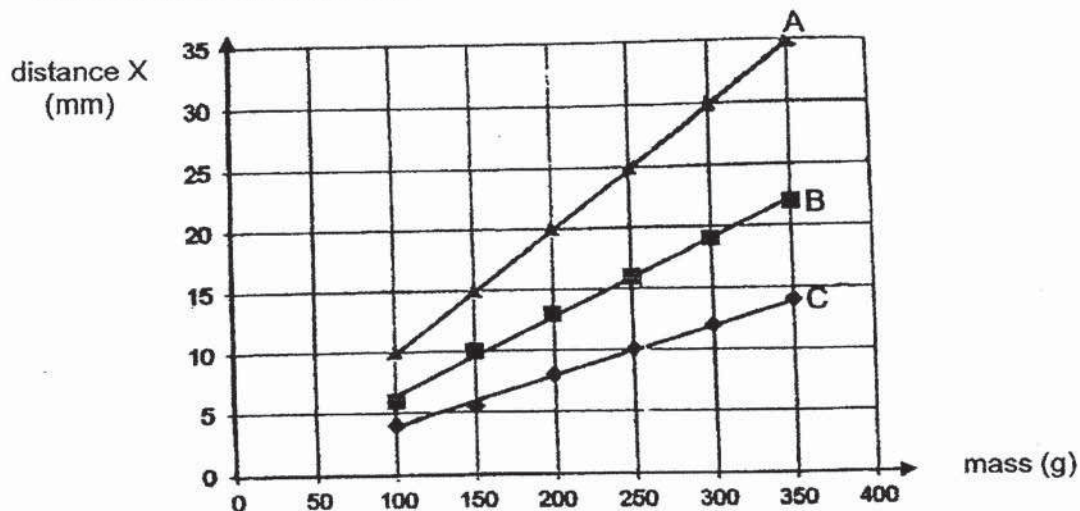
- (1) A and C only
- (2) D and F only
- (3) A, C, D and F
- (4) None of the bulbs

Answer questions 23 and 24 based on the experiment below.

Stanley carried out an experiment on rod A as shown below. He measured the distance, X , at the middle of the rod after adding each mass. He repeated the experiment using rods B and C of different materials but of the same length.



The result of Stanley's experiment is shown below.



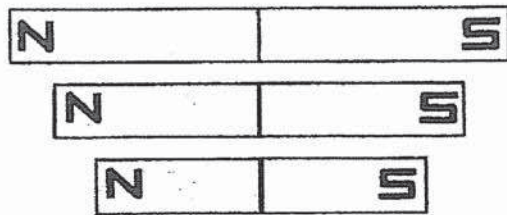
23 Stanley was trying to find out which material is the _____.

- (1) heaviest
- (2) thickest
- (3) strongest
- (4) most flexible

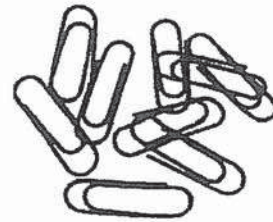
24 From the graph above, what is distance X when a 250 g mass was added to the rod A?

- (1) 10 mm
- (2) 15 mm
- (3) 20 mm
- (4) 25 mm

- 25 Mr Wong carried out an experiment using a few bar magnets of different length. He used the poles of the bar magnets to attract paper clips from a fixed distance and counted the number of paper clips picked up.



bar magnets



paper clips

The table below shows the results of his experiment.

Length of magnet (cm)	Number of paper clips picked up	
	North pole	South pole
10	5	5
6	4	4
4	3	3

Which of the following conclusions can be drawn based on results of the experiment above?

- A The shorter the magnet, the greater the magnetic strength.
- B The poles of a magnet have the greatest magnetic strength.
- C The two poles of a magnet have the same magnetic strength.

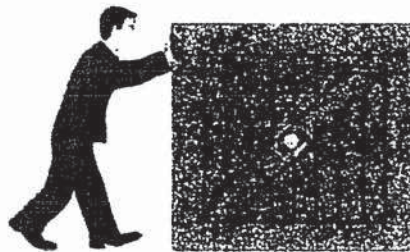
- (1) C only
- (2) A and B only
- (3) B and C only
- (4) A, B and C

- 26 Which of the forces can act at a distance?

- A frictional force
- B magnetic force
- C gravitational force
- D elastic spring force

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

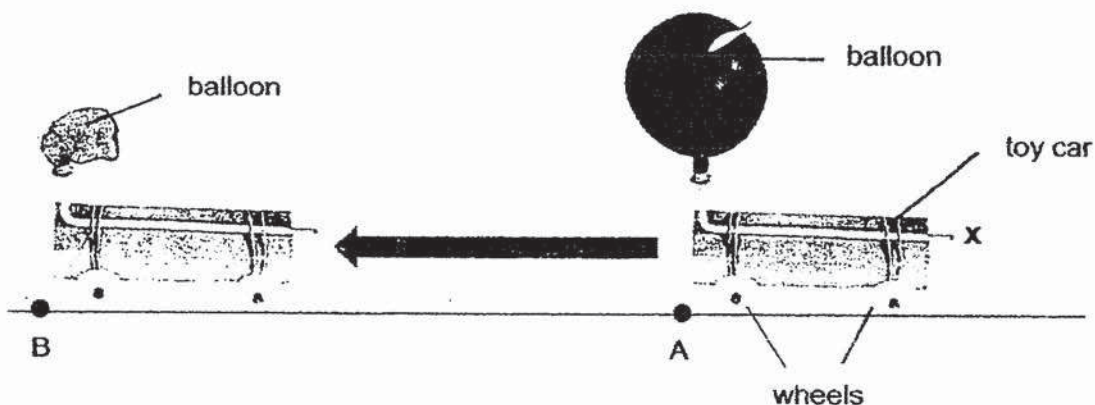
- 27 The diagram shows a man pushing a heavy box, but he is unable to move it.



Which of the following statements is correct?

- (1) There is no friction between the heavy box and the ground.
 - (2) The weight of the man is less than the force he exerted on the box.
 - (3) The force exerted by the man cannot overcome the gravitational force acting on the box.
 - (4) The force exerted by the man cannot overcome the frictional force between the box and the ground.
- 28 The diagram shows a balloon-powered toy car.

When the air in the balloon escaped from the opening at X, the toy car started to move from point A and stopped at point B as shown below.



Which of the effects of forces is **not** shown in the above experiment?

- (1) stop a moving object
- (2) move a stationary object
- (3) change the shape of an object
- (4) change the direction of a moving object

End of paper

Index No.

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NAN HUA PRIMARY SCHOOL
Preliminary Examination 2020
PRIMARY 6

SCIENCE

BOOKLET B

13 Structured / Open-ended questions (44 marks)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

Marks Obtained

Section B

	/ 44
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Name: _____ () **Class: P 6**

Date: 26 August 2020

Parent's Signature: _____

Section B: (44 marks)

For questions 29 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.

- 29 Study the table below. A tick (✓) indicates the presence of the characteristic.

Characteristics	Organism A	Organism B
Has six legs	✓	
Lays eggs	✓	✓
Where it lives	Young (on land) Adult (on land)	Young (in water) Adult (on land)

- (a) Based on the given characteristics, which organism, A or B, is an insect?
Give a reason for your answer. [1]

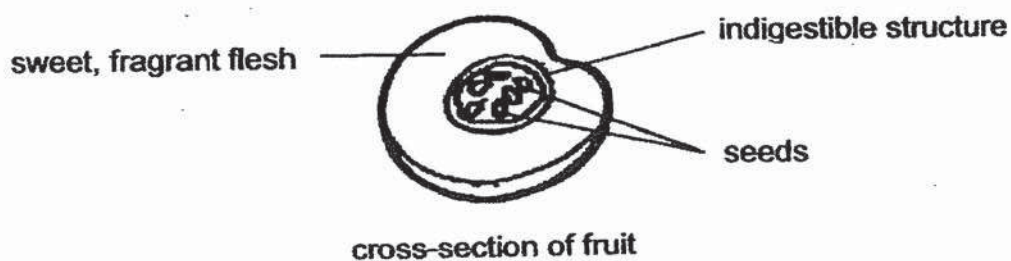
- (b) Can organism A be a mosquito? Explain your answer. [1]

Score	<div></div> <div>2</div>
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- 30 The picture below shows the fruits of a plant that disperses its seeds in two stages.



The plant produces sweet, fragrant fruits that are small and bright orange in colour. Inside each fruit, a small, indigestible structure contains all its seeds as shown below.



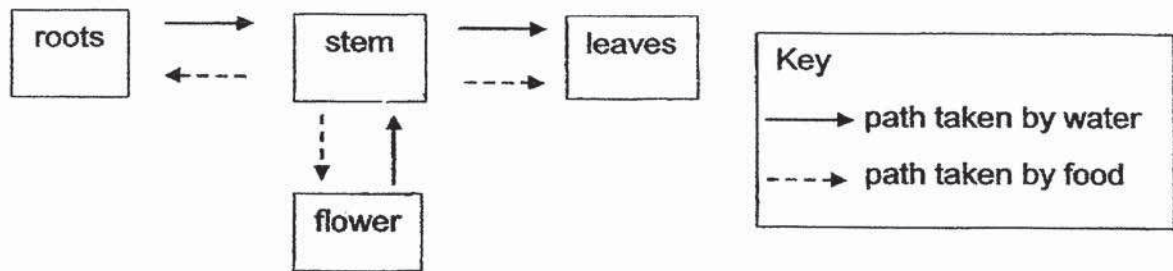
- (a) Based on the information above, explain how the seeds of this fruit would be dispersed during the first stage. Explain your answer. [2]

In stage 2, the indigestible structure will dry up and burst open in an explosive action, releasing the seeds, once the conditions are right.

- (b) Explain how this explosive action would be beneficial to the seedling after germination had taken place. [1]

Score	1
	3

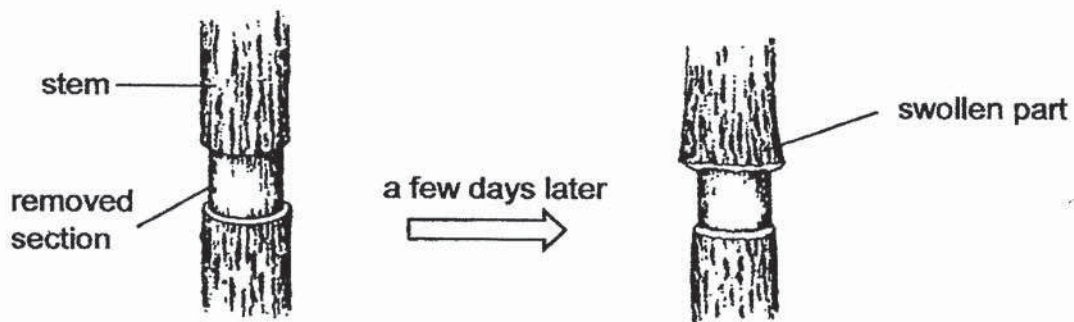
- 31 The diagram below shows the different paths taken by water and food in a plant.



- (a) Two of the arrows are drawn in the wrong direction. Circle the two wrong arrows in the diagram. [1]

- (b) Other than transporting substances, state another function of the stem of a plant. [1]

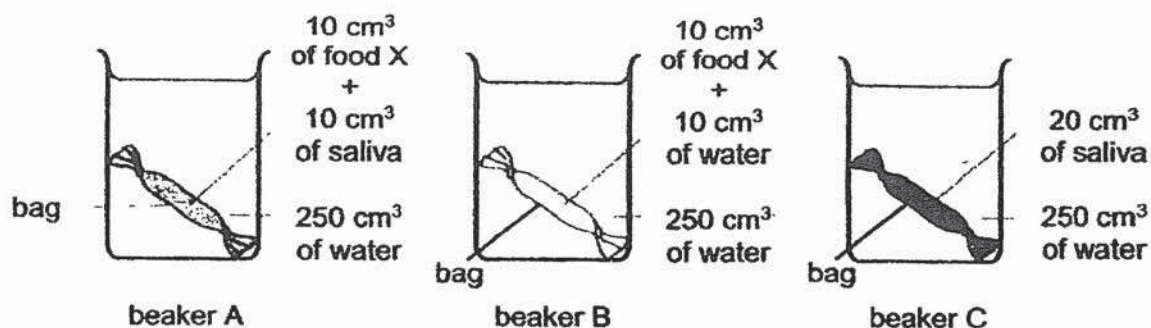
The diagram below shows what happened to the stem of the plant after the outer ring of a section of the stem was removed.



- (c) Explain why the area above the section that was removed was swollen. [1]

Score	3
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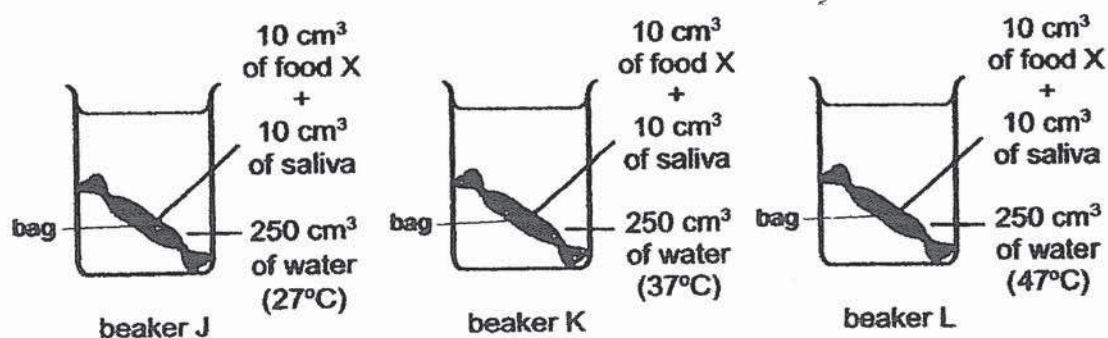
- 32 Mindy set up an experiment as shown below to study the digestion of food by the saliva in the mouth.



- (a) What is digestion? [1]

- (b) Which two beakers should Mindy compare if she wants to find out whether food X can be broken down by the saliva? [1]

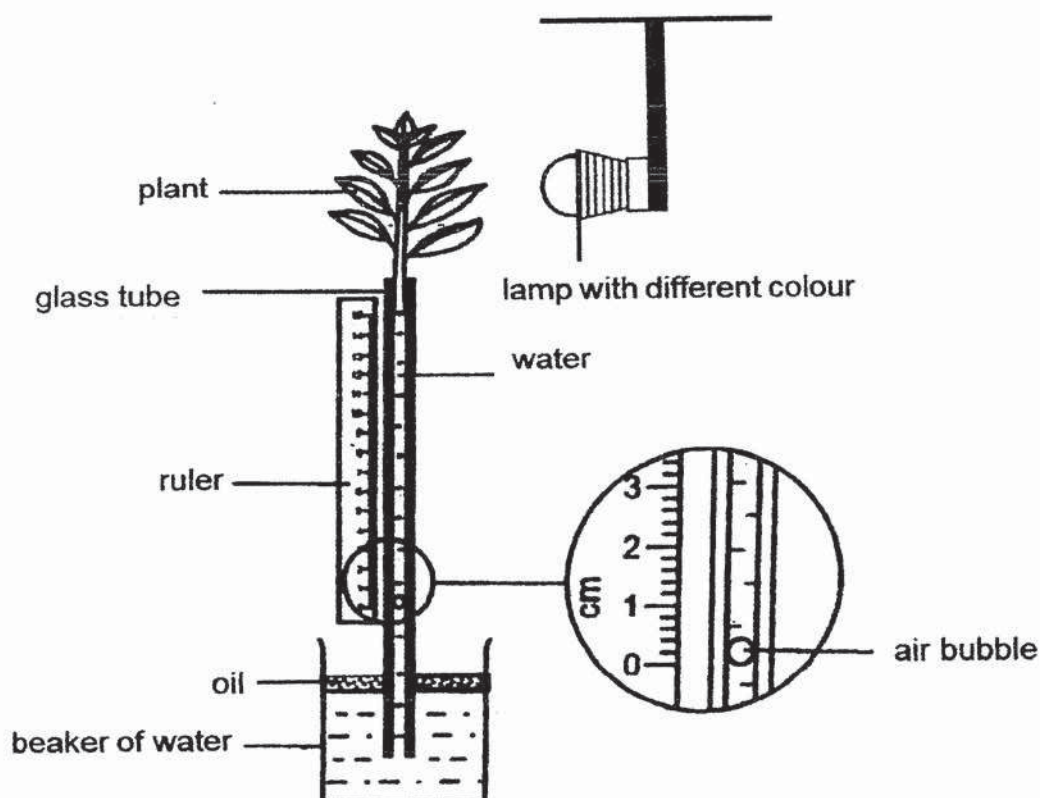
- (c) Mindy then carried out another experiment to find out how the rate of digestion of food is affected by the temperature of water as shown below.



She found out that the rate of digestion of food X is the highest when she kept the temperature of water in the beaker at 37 °C, What is the reason? [1]

Score	
	3

- 33 The experiment below was set up in a dark room to find out how different colours of light affect the rate of photosynthesis. Four identical set-ups were used and each plant had a different coloured light shone on it. The distance moved by the air bubble in each set-up was measured after a fixed time.



The table below shows how the movement of the air bubble is affected by the colours of the light.

Colour of light	Distance moved by the air bubble (cm)
blue	16
green	5
orange	10
white	11

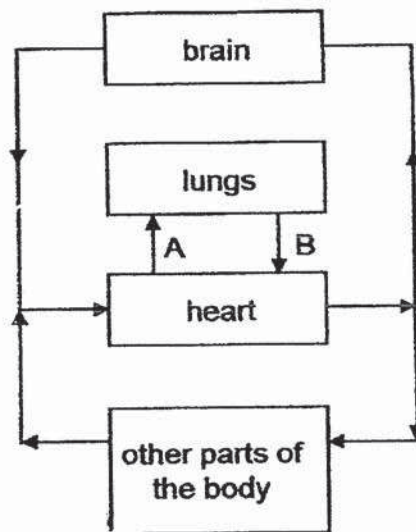
- (a) The type of plant in each set-up was kept the same. How does this ensure a fair test? [1]

- (b) Based on the results shown in the table, which colour of light results in the highest rate of photosynthesis? Explain your answer. [2]

- (c) When no light is shone on the plant, the distance moved by the air bubble is 5 cm. Give a reason for the observation. [1]

Score	<div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; top: 0; right: 0;">4</div></div>
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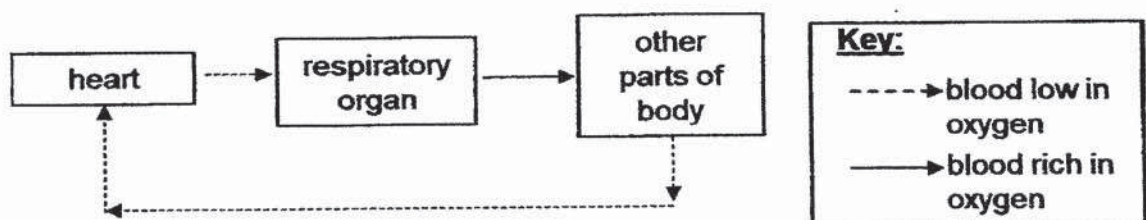
- 34 The diagram below shows how blood circulates around a human body.



- (a) Describe the exchange of gases between the brain cells and the blood. [1]

- (b) State one difference between the blood at A and the blood at B. [1]

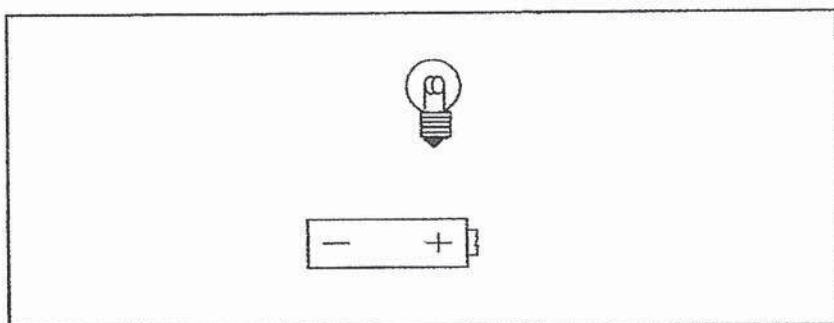
The diagram below shows how blood is circulated in animal P.



- (c) Based on the diagram, state one difference between the flow of blood in the human and in animal P. [1]

Score	
	3

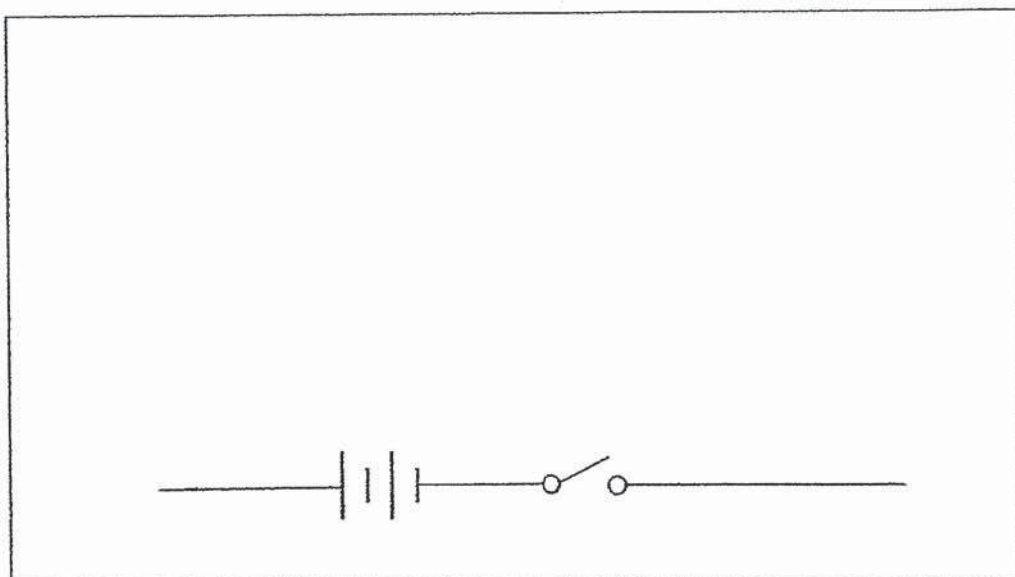
- 35 (a) Draw wires below to form a complete circuit to light up the bulb. [1]



- (b) Design a circuit that **meet all the requirements** listed below:

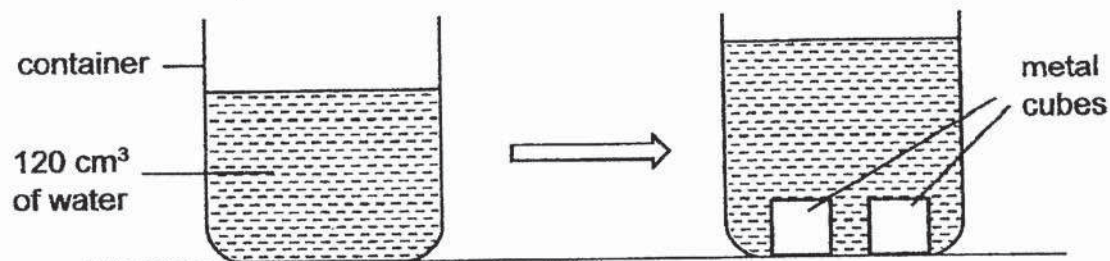
- One switch controls all the bulbs
- The other switch only controls the brighter bulb.
- Two bulbs that have the same brightness and they cannot be controlled independently. [2]

Using symbols, complete the circuit diagram in the space provided with three bulbs, one more switch and wires.



Score	3
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- 36 Kayla prepared a container which has a capacity of 200 cm^3 for an experiment. She filled it with 120 cm^3 of water as shown below. She then added two metal cubes, each with a volume of 30 cm^3 , to the container.

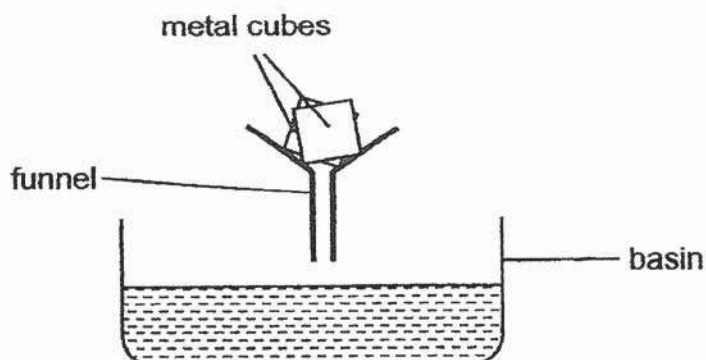


Kayla noticed that the water level has increased.

She wanted to add another metal cube of 30 cm^3 to the container without the water overflowing.

- (a) Will she be able to do so? Explain your answer in terms of the properties of the cube and the water. [1]

Kayla then pour the contents of the container through a funnel into a basin as shown below. She noticed that the two metal cubes stayed above the funnel.



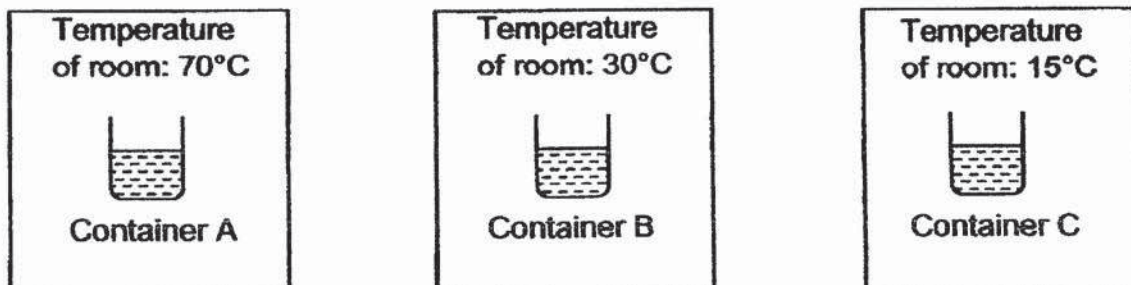
- (b) What is the volume of the water in the basin? [1]

- (c) Explain, in terms of properties of matter, how the metal cubes got separated from the water. [1]

- (d) When Kayla heated up one of the metal cubes, its volume increased. She concluded that the mass of the metal cube had also increased. Do you agree with her? Explain your answer. [1]

Score	<div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; bottom: 0; right: 0; width: 50px; height: 50px; border: 1px solid black; transform: rotate(45deg);"></div></div>
	4

- 37 Nathan filled three similar containers, A, B and C, with 100 ml of water each and placed them in three different rooms as shown below. The three rooms have different temperatures.

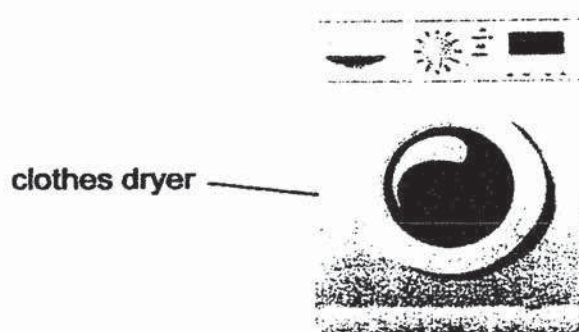


After two hours, he measured and recorded the amount of water left in each container in the table below.

Container	A	B	C
Amount of water left (ml)	26	48	83

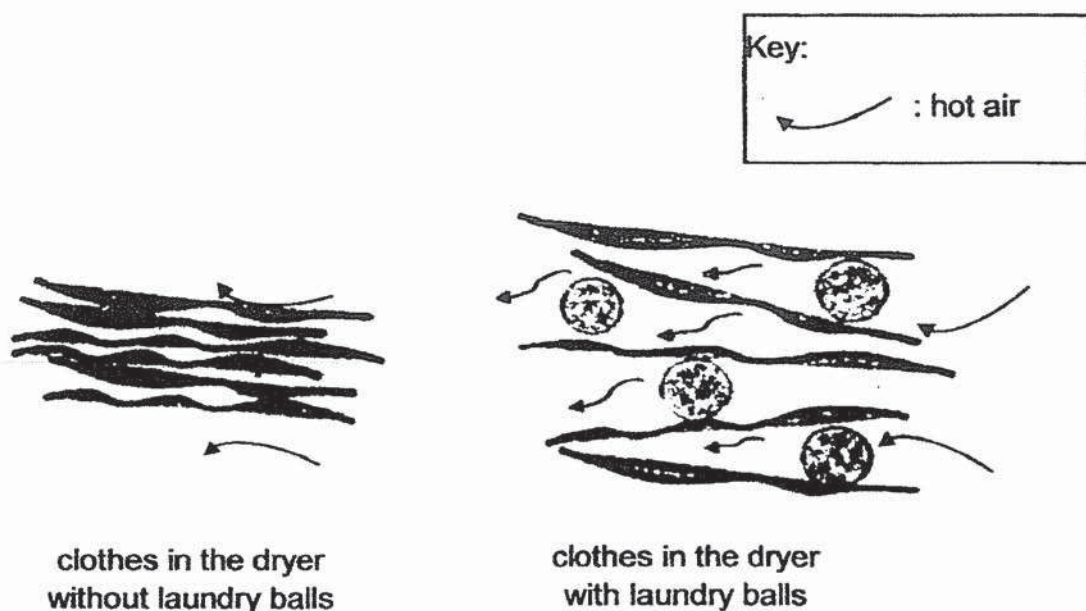
- (a) Based on the table above, what is the relationship between the temperature of the room and the amount of water left in each container? [1]

A clothes dryer, as shown in the diagram below, makes use of hot air to dry clothes. The clothes are rotated inside the dryer while hot air is constantly blown at it.



- (b) Explain how the hot air in the dryer helps to dry the clothes. [1]

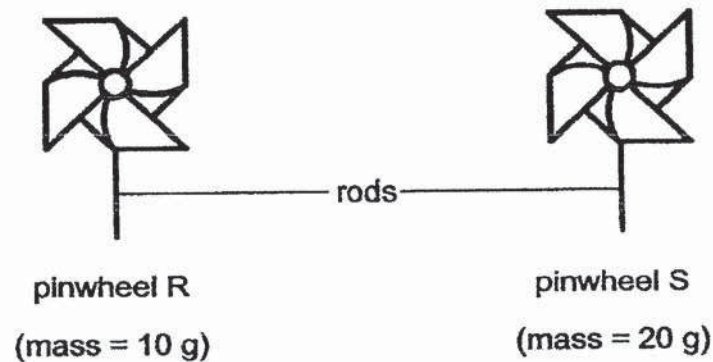
Sometimes, laundry balls are used in the dryer to help shorten the drying time of wet clothes. The diagram below shows the drying of clothes in the dryer, with and without the use of laundry balls.



- (c) Based on the above diagram, explain how having the laundry balls helps to shorten the drying time of the wet clothes in the clothes dryer. [2]

Score	4
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- 38 Paige created two similar pinwheels of different mass as shown below. Both pinwheels are attached to identical rods.



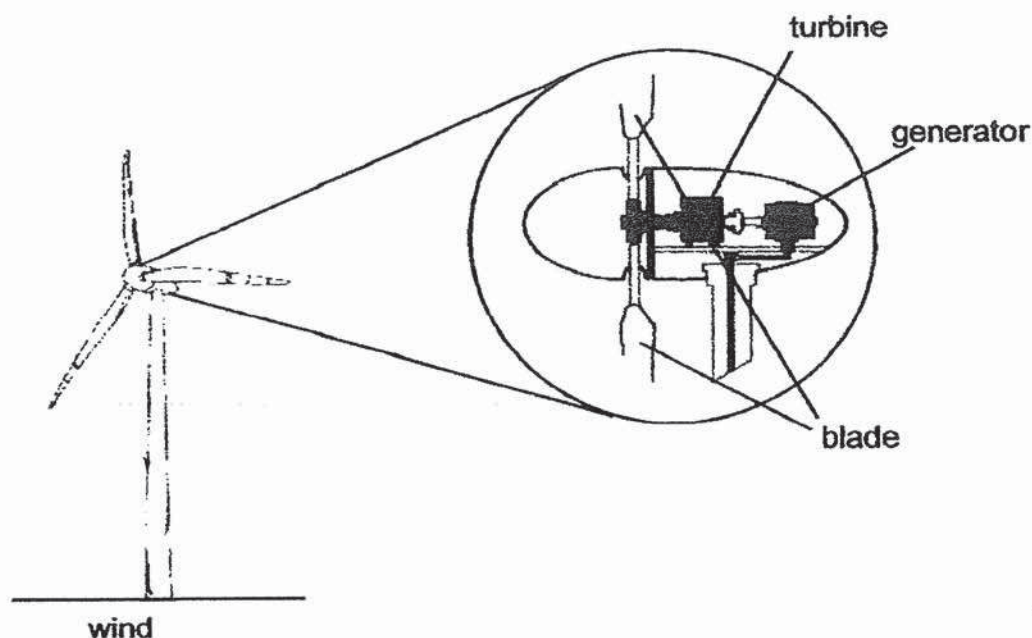
She put each pinwheel at the same distance from a fan and switched on the fan. Then, she recorded the number of times the pinwheels spin in one minute in the table below.

	Pinwheel R	Pinwheel S
Number of times it spins in one minute	65	42

Paige then created another similar pinwheel, T, with a mass of 15 g.

- (a) Suggest a value for the number of times pinwheel T will spin. [1]
-

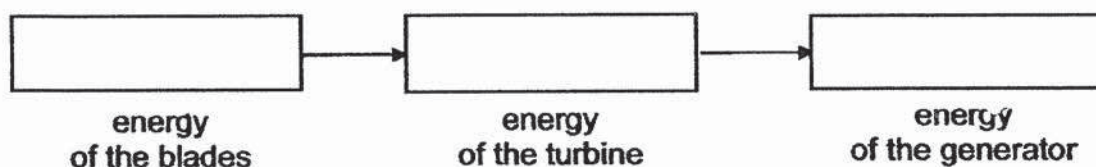
Wind turbines are used in some countries to harness energy from wind. The diagram below shows how a wind turbine generates electricity.



When there is wind, the blades will spin, causing the turbine to rotate and in turn causes the generator to generate electricity.

(b) State the energy conversion for the wind turbine

[1]

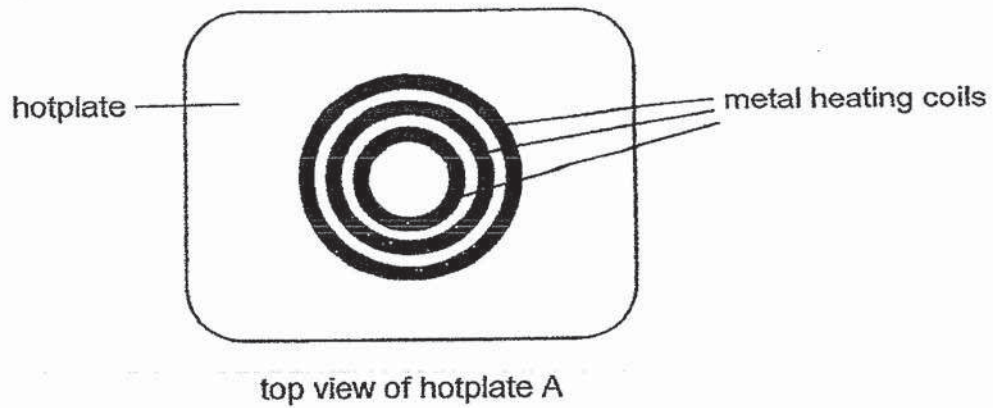


(c) Based on Paige's experiment, in order to generate more electricity within a specific time period, is it better to use a heavier or lighter blade when designing the wind turbine? Explain your answer.

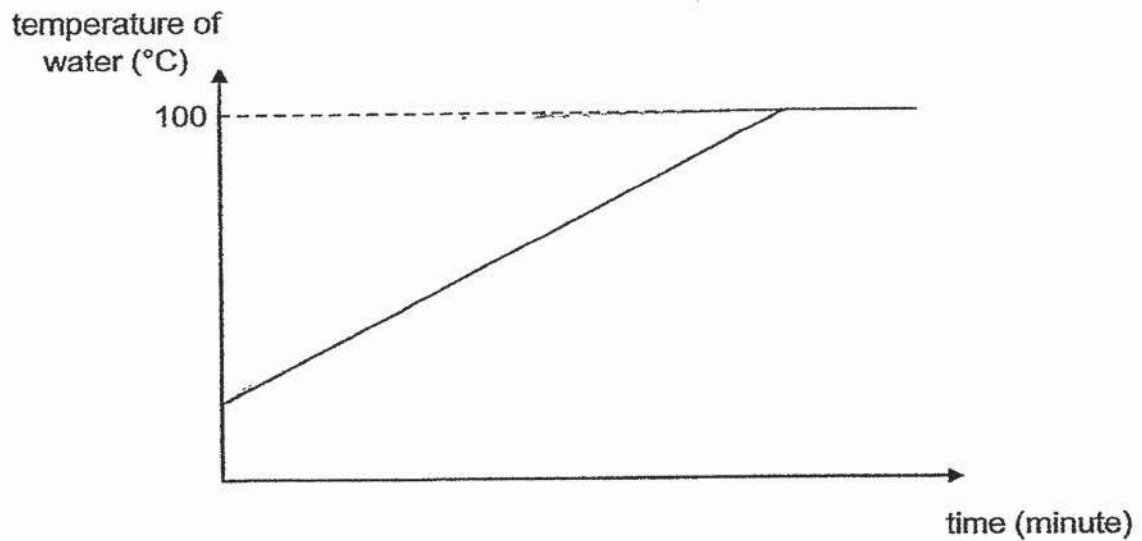
[2]

Score	4
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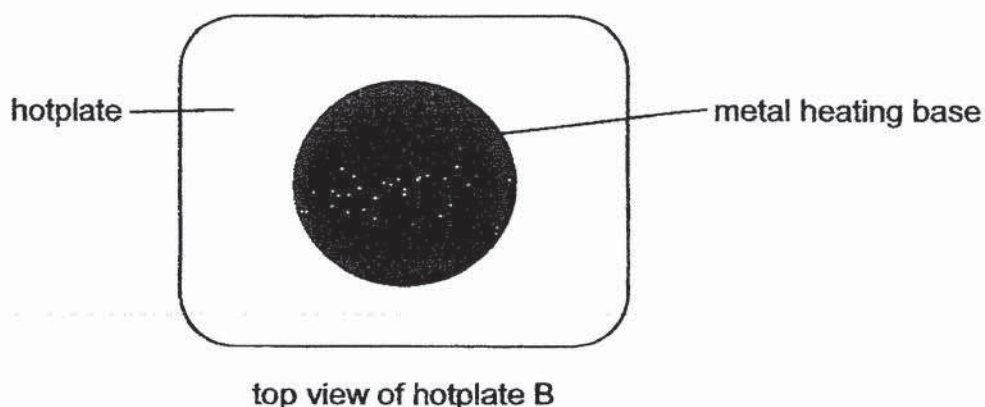
- 39 Sarah bought a hotplate, A, as shown in the diagram below. Hotplate A has metal heating coils.



Hotplate A is used to heat a pot of water. The change in the temperature of the water is recorded and plotted in a graph shown below.



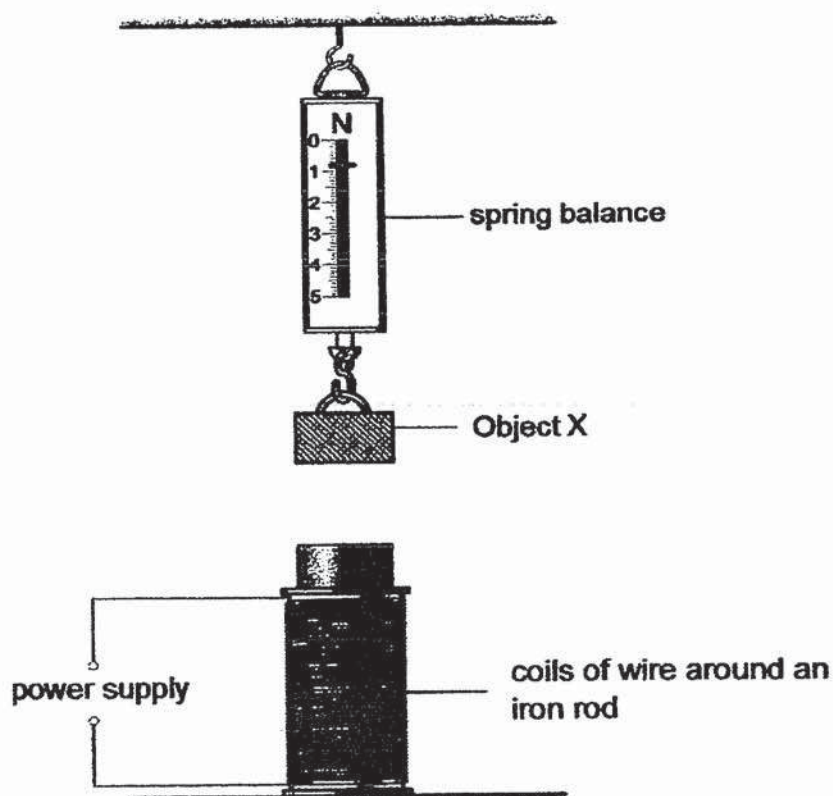
Her sister then told her that she should have bought another hotplate, B, that has a metal heating base as shown below.



- (a) In the graph on the previous page, draw another line to represent the time taken for the same amount of water to boil should hotplate B be used. Label your line 'B'. [1]
- (b) Based on the difference between the two hotplates, explain which hotplate will allow the water in the pot to boil faster. [2]

Score	<div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; top: 0; right: 0; border-top: 1px solid black; border-right: 1px solid black;">3</div></div>
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- 40 The set-up below was used to study the properties of three unknown objects, X, Y and Z. The iron rod turned into an electromagnet when the power supply was turned on.



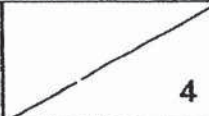
The results of the experiment is shown in the table below.

Objects	Reading of the spring balance (unit)	
	Power supply turned off	Power supply turned on
X	0.8	0.8
Y	0.7	1.3
Z	1.2	0.9

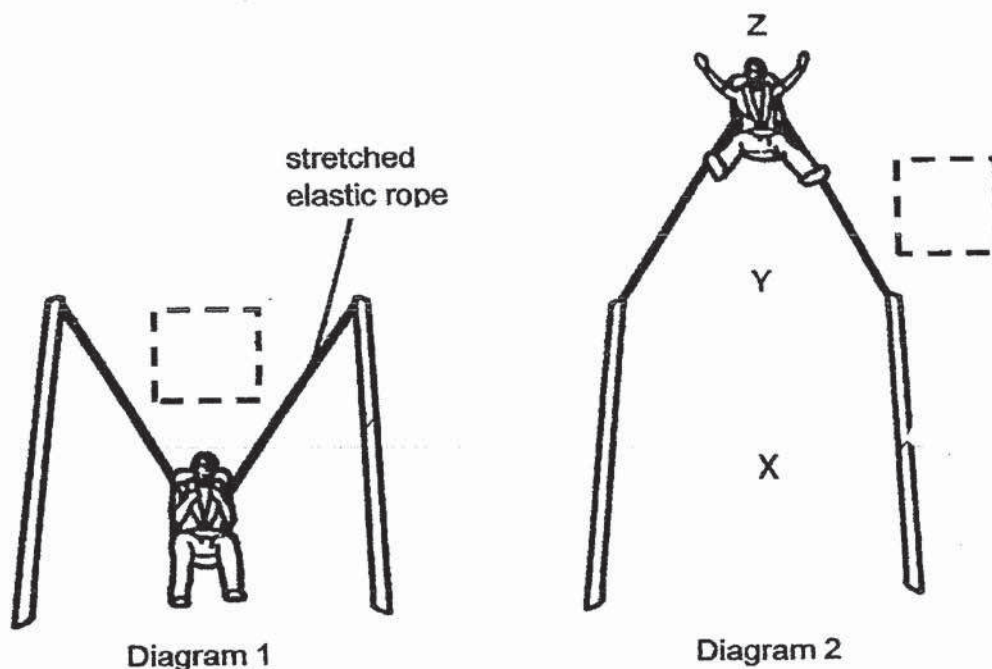
- (a) Based on the results, what can you infer about the material of object X? [1]

- (b) What are the main forces acting on object Y when it was hung on the spring balance and the power supply was turned on? [1]

- (c) Based on the results, what can you infer about object Z? Explain your answer. [2]

Score	
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- 41 The diagram below shows a ride at an amusement park.



When Keok Ming sat on the seat, he stretched the elastic rope. When released, the stretched elastic rope pulled Keok Ming upwards until he reached point Z.

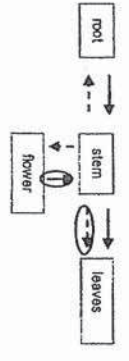
- (a) In the two boxes provided in diagrams 1 and 2, draw the directions the elastic spring force of the stretched elastic rope were acting. [1]
- (b) When the stretched elastic ropes were released, Keok Ming moved from X to Z. Identify the force that caused him to move more slowly from Y to Z than from X to Y. Explain your answer. [2]

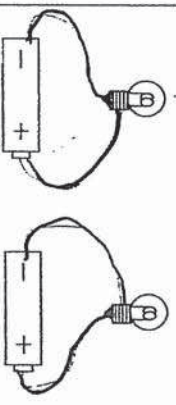
- (c) State the main form(s) of energy that Keok Ming possessed at position Z. [1]

End of paper

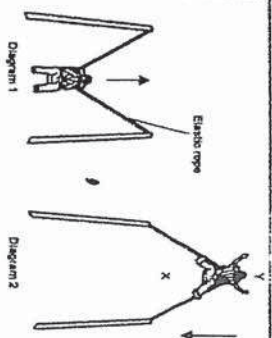
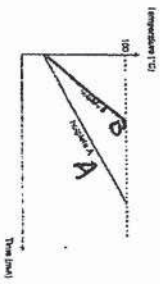
Score	4
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ANSWER KEY

Qn	Answer
29a	Organism A. It has six legs (and lays eggs).
29b	No. The young of the mosquito lives in water (whereas the young of A lives on land).
30a	Animals will feed on the fruit and pass out the indigestible structure that contains the seeds in their (waste) / throw away the indigestible structure
30b	It disperses further away from parent plant which prevents overcrowding among seedlings / it reduces competition for nutrients, water, sunlight and space.
31a	
31b	It is to support the plant upright / support the branches and hold the leaves out.
31c	The food carrying tubes have been removed. So, food made by the leaves cannot be transported down to the lower part of the stem/root and has accumulated at the area above the cut, causing it to swell.
32a	The process whereby food is broken down into simple/simpler substances.
32b	Beakers A and B.
32c	37°C is closed to our body temperature, so the saliva will work best at this temperature.
33a	Different type of plants make food at different rate / To ensure that the difference in the distance moved by the air bubble is due to the colour of light and not the type of plant.
33b	Blue light. The distance moved by the air bubble is the greatest when blue light is used. This shows that the most amount of water is taken in by the plant and the rate of photosynthesis is highest.
33c	The plant takes in water for life processes/survival of plant. Water is lost through the stomata/leaves to the surrounding air as water vapour.

34a	Oxygen from the blood enters the brain cells and carbon dioxide from the brain cells enters the blood.
34b	The blood at A has less oxygen/more carbon dioxide/more waste product than the blood at B.
34c	The circulatory system of human is a double circulation whereas that of animal P is a single circulation.
35a	Blood passes through the heart twice in human circulation system but passes through the heart once in animal P. <i>None complete cycle.</i>
35b	
36a	No. The total volume of the cubes and water exceeded 200 cm ³ / exceeds the capacity of the container. Both the cubes and water have a definite/fixed volume.
36b	120 cm ³
36c	No. The cubes have a fixed shape whereas the water does not have a fixed shape and so can flow through the funnel into the container.
36d	No. There is no change in the amount of substance / matter in the cube after heating. / No. Mass of solids do not change when they are heated up.
37a	The lower the temperature of the room, the greater the amount of water left in the container. <i>(Vice Versa)</i>
37b	The water in the clothes gained heat from the hot air and evaporated.

37c	The laundry balls help to separate the clothes in the dryer which increases the exposed surface area of the clothes to the hot air. This increases the rate of evaporation of the water in the clothes which helps the clothes to dry faster.
38a	Any value between 42 and 65 34
38b	Kinetic, kinetic, electrical
38c	A lighter blade. A lighter blade will allow the blades to move faster / spin more times which will cause the turbine to turn faster / turn more times to generate more electricity.
39a	Pinwheel R is lighter than Pinwheel S and spun more times. This means a lighter blade would also have more KE in the turning blades to be transferred to more KE in turbine which will be converted to more EE in generator.
39b	Hotplate B. The metal heating base has a greater contact surface area with the pot / greater exposed surface area to the pot as compared to metal heating coil. So, heat from the heating base will be transferred to the water at a faster rate / more heat from the heating base will be transferred to the water, causing the water to boil earlier.
40a.	Non-magnetic material.
40b.	Elastic spring force, gravitational force/gravity and magnetic force
40c.	Object Z is a magnet. The reading of the spring balance decreases when the power supply is turned on. The like poles of the magnet and the (electro)magnet/ iron rod are facing each other and they repel.



41a.	
41b.	Elastic (spring) force. From X to Y: Elastic (spring) force acting on him is in the same direction as his motion/movement. From Y to Z: As the elastic rope was being stretched again after returning to its original shape/length, elastic (spring) force acted on him in the opposite direction to his motion/movement. Elastic (spring) force. From X to Y: Only gravitational force is acting in the opposite direction to his motion. From Y to Z: Both the elastic (spring) force and gravitational force are acting in the opposite direction to his motion.
41c.	Gravitational potential energy/potential energy

01. 4	21. 2
02. 2	22. 1
03. 2	23. 4
04. 3	24. 4
05. 1	25. 1
06. 1	26. 3
07. 3	27. 4
08. 2	28. 4
09. 1	
10. 3	
11. 2	
12. 4	
13. 1	
14. 2	
15. 3	
16. 2	
17. 4	
18. 4	
19. 3	
20. 4	



NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

**PRELIMINARY EXAMINATION
2020**

BOOKLET A

Date : 21st August 2020

Duration : 1 h 45 min

Name : _____ ()

Class: Primary 6 ()

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

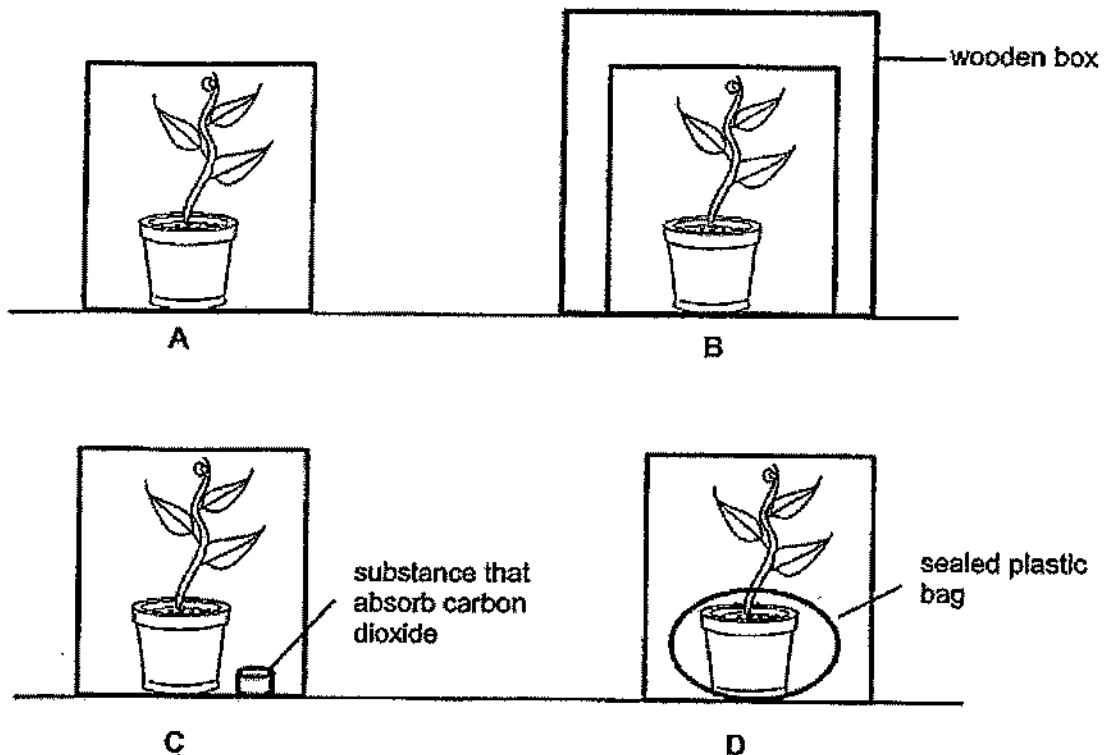
Booklet A consists of 19 printed pages including this cover page.

Section A (28 x 2 marks = 56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer.

Make your choice (1, 2, 3 or 4). Identify and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

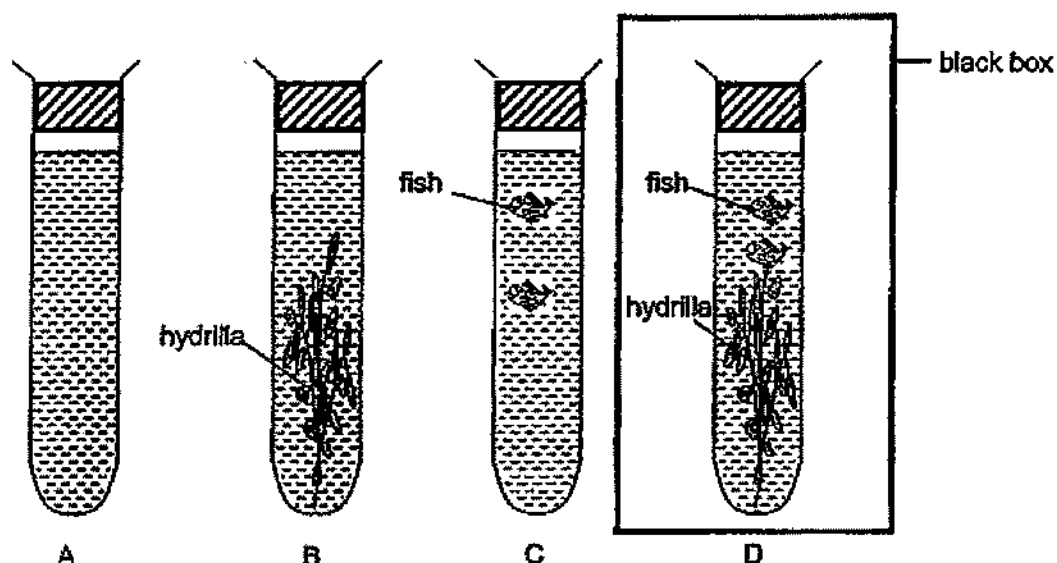
1. June wanted to find out how the presence of carbon dioxide affects the rate of photosynthesis. She placed four identical pots of plants in the garden under bright sunlight as shown in the diagram below.



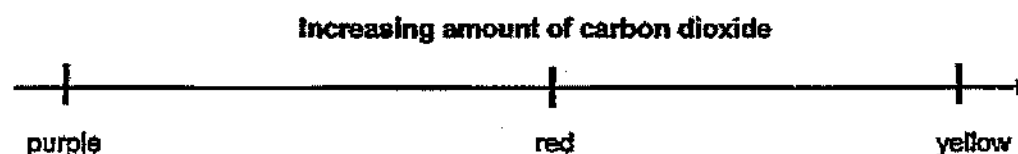
Which set-ups should June use to conduct her experiment?

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

2. Jane carried out an experiment using some fishes and hydrilla plants. A stopper was placed at the opening of each test tube



Jane then placed 5 ml of solution X into each test tube. The colour of solution X changes in the presence of different amounts of carbon dioxide as shown below.

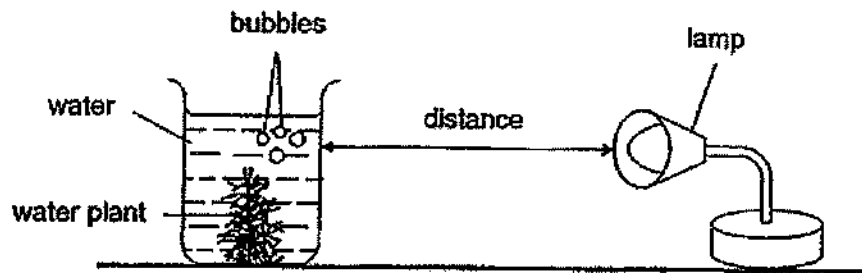


All the set-ups were left in the sun for 3 hours while set-up D was placed in a black box for the same duration. At the start of the experiment, the colour of solution X in each test tube was red.

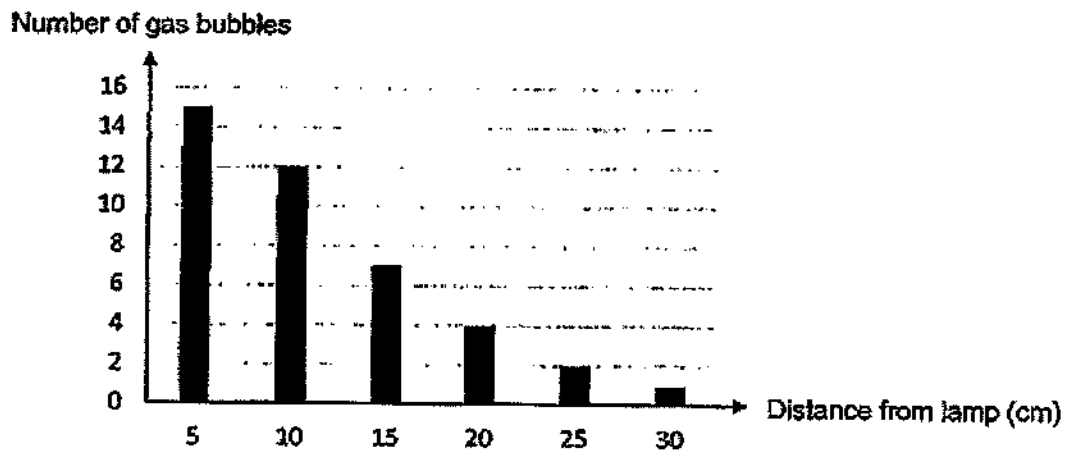
Which of the following shows the most likely results in each tube after 3 hours?

Colour of solution X after 3 hours				
	A	B	C	D
(1)	red	yellow	purple	red
(2)	purple	purple	yellow	red
(3)	red	purple	yellow	yellow
(4)	purple	yellow	purple	yellow

3. Kandis set up an experiment as shown in the diagram below.



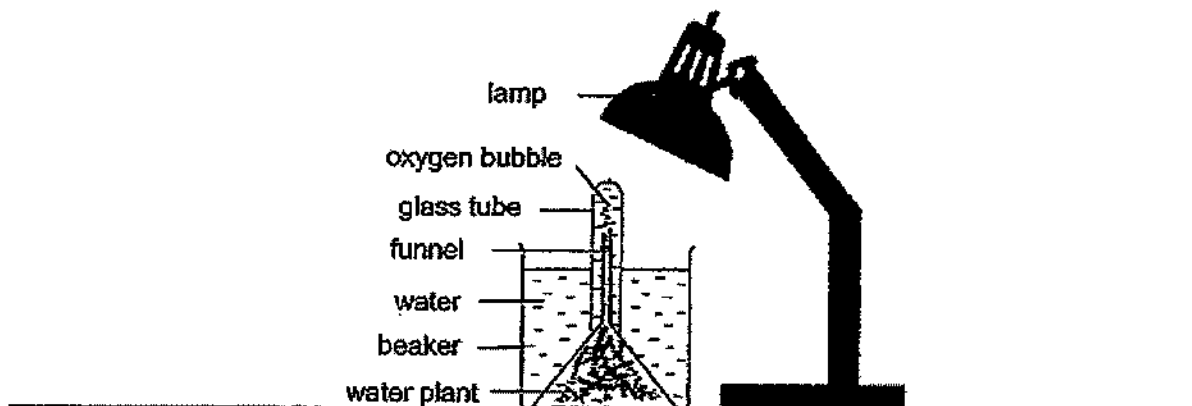
The graph below shows his results.



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

- (1) The higher the rate of photosynthesis, the lower the intensity of light.
- (2) The higher the rate of photosynthesis, the higher the intensity of light.
- (3) The higher the intensity of light, the lower the rate of photosynthesis.
- (4) The higher the intensity of light, the higher the rate of photosynthesis.

4. Linda set up an experiment as shown in the diagram below.

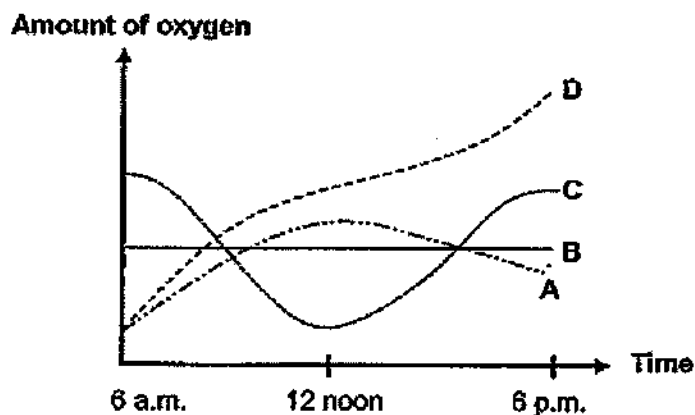


She counted the number of oxygen bubbles produced by the water plant per minute with varying levels of light intensity and her results are shown in table below.

Intensity of light (units)	Number of oxygen bubbles produced
0	0
50	12
100	26
150	40
200	55

The above setup without the lamp was then placed in an open field on a clear day.

Based on the above experiment, which one of the following graphs, A, B, C or D, would represent the amount of oxygen produced from 6.00 a.m. to 6.00 p.m.?



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

5. Figures 1 and 2 below show the reproductive parts of a flowering plant and a female human respectively.

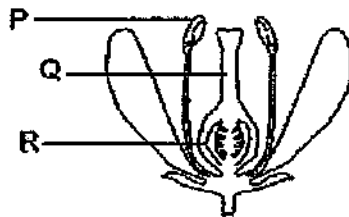


Figure 1

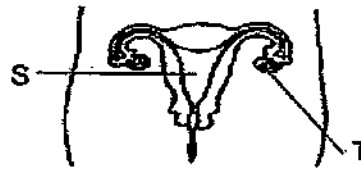


Figure 2

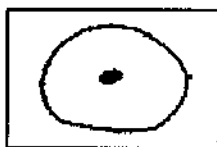
Which two reproductive parts have similar functions?

- (1) P and S
 - (2) Q and T
 - (3) Q and S
 - (4) R and T
6. The diagram below shows human reproductive cells, X and Y, undergoing a process during human reproduction.

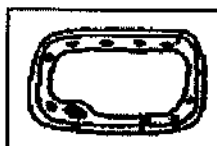


Which one of the following statements is **Incorrect**?

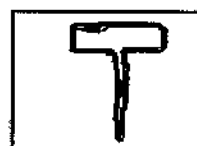
- (1) The above process takes place before the baby develops.
 - (2) The human reproductive cells above are undergoing fertilisation.
 - (3) Cell X is produced in the testes while Cell Y is produced in the ovaries.
 - (4) Cell X is a female reproductive cell and Cell Y is a male reproductive cell.
7. The diagram below shows Cells A, B and C.



Cell A



Cell B



Cell C

Which one of the following statements best describes Cells A, B and C?

- (1) All the cells above have a cell wall.
- (2) All the cells above can make their own food.
- (3) All the cells above are taken from at least two different organisms.
- (4) All the cells above are taken from different parts of the same organism.

8. Study the table below.

A tick (✓) indicates the presence of certain parts in Cells P, Q and R.

Parts	Cell P	Cell Q	Cell R
cell wall		✓	✓
chloroplast		✓	
nucleus	✓	✓	✓

Where are Cells P, Q and R likely to be found?

	Cell P	Cell Q	Cell R
(1)	cheek	root	leaf
(2)	cheek	leaf	root
(3)	root	cheek	leaf
(4)	root	leaf	cheek

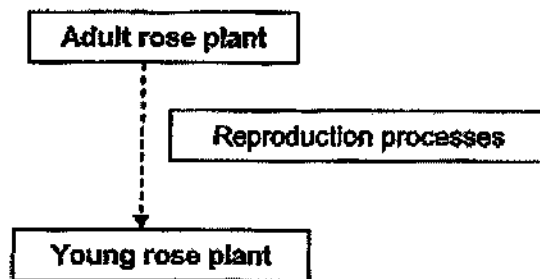
9. Jaime studied three animals, X, Y and Z, and recorded her observations in the table below.

Observations	Animal X	Animal Y	Animal Z
Lays eggs	✓	✓	✓
Has three body parts	✓	✓	
Young resembles adult		✓	

Which of the following could be animals X, Y and Z?

	X	Y	Z
(1)	cockroach	butterfly	frog
(2)	mosquito	butterfly	chicken
(3)	butterfly	mosquito	chicken
(4)	butterfly	cockroach	frog

10. The diagram below shows the different reproduction processes that the adult rose plant goes through.



Which of the following correctly state the reproduction processes that the adult rose plant goes through?

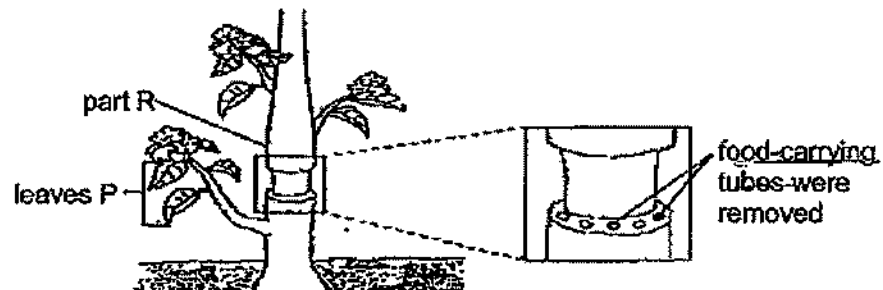
- (1) fertilisation → pollination → seed dispersal → germination
 - (2) pollination → fertilisation → seed dispersal → germination
 - (3) fertilisation → pollination → germination → seed dispersal
 - (4) pollination → seed dispersal → germination → seed dispersal
11. The graph below shows the volume of blood passing through the small intestine during rest and during exercise over a period of time.



Based on the graph above, how does exercising after a meal affect the absorption of digested food in the small intestine?

- (1) Less blood flows to the small intestine so there is less absorption.
- (2) More blood flows to the small intestine so there is less absorption.
- (3) Less blood flows to the small intestine so there is more absorption.
- (4) More blood flows to the small intestine so there is more absorption.

12. Mr Mohammad removed the outer ring of the stem of a plant in a garden as shown in the diagram below. He continued to water the plant daily.

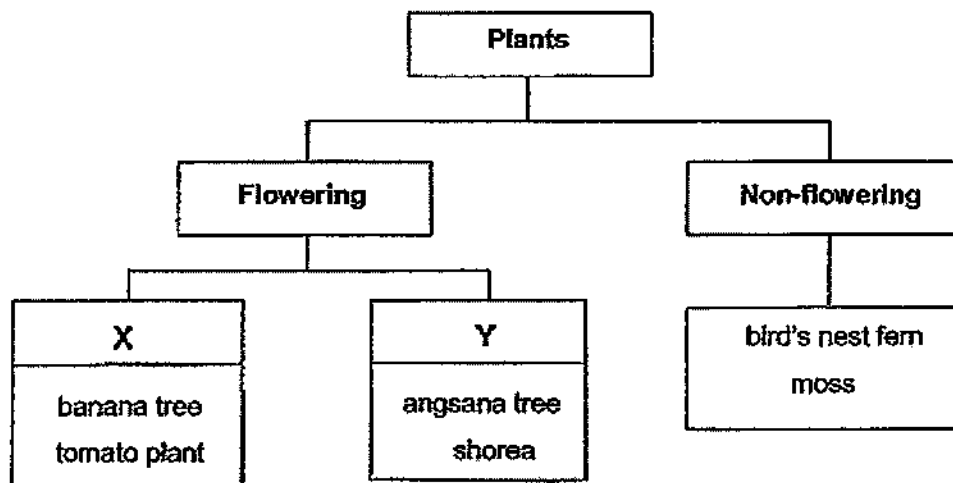


Which of the following would be the most likely observation(s) of the plant after several weeks?

- A Leaves P died.
- B Part R swelled.
- C The whole plant died.

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

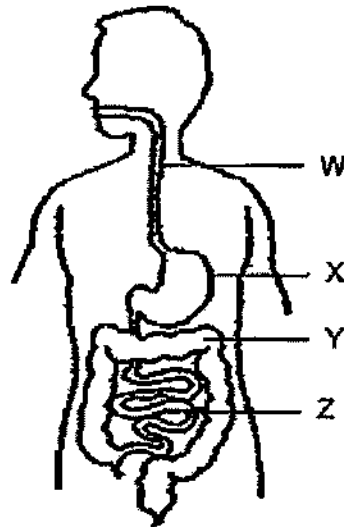
13. The classification chart below shows how some plants are grouped.



Which of the following headings correctly represents X and Y?

	X	Y
(1)	Bear fruits	Do not bear fruit
(2)	Dispersed by water	Dispersed by splitting
(3)	Reproduce by seeds	Reproduce by spores
(4)	Dispersed by animals	Dispersed by wind

14. The diagram below represents the human digestive system.




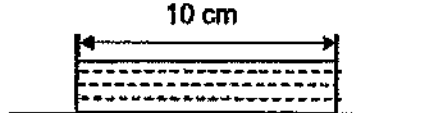
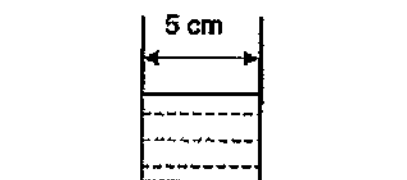
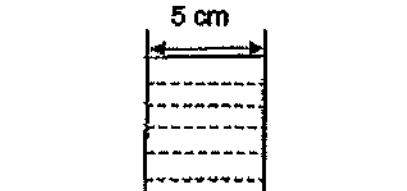
Based on the diagram above, which of the following statements about parts W, X, Y and Z are correct?

- A Digestion is completed at part Y.
- B Digestion of food starts at part Z.
- C Food moves down part W into part X.
- D Water is absorbed into the body at part Y.

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

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

15. Jacob used different containers and poured different volumes of water at 27 °C into the containers as shown in the table below. He then placed the set-ups, A, B, C and D, in the garden.

<p>Volume of water: 140 ml</p>  <p>Set-up A</p>	<p>Volume of water: 400 ml</p>  <p>Set-up B</p>
<p>Volume of water: 140 ml</p>  <p>Set-up C</p>	<p>Volume of water: 400 ml</p>  <p>Set-up D</p>

Which one of the following statement is correct?

- (1) Water in set-up A has the same rate of evaporation as water in set-up C.
- (2) Water in set-up C has the same rate of evaporation as water in set-up D.
- (3) Water in set-up A has a greater rate of evaporation than water in set-up B.
- (4) Water in set-up D has a greater rate of evaporation than water in set-up B.

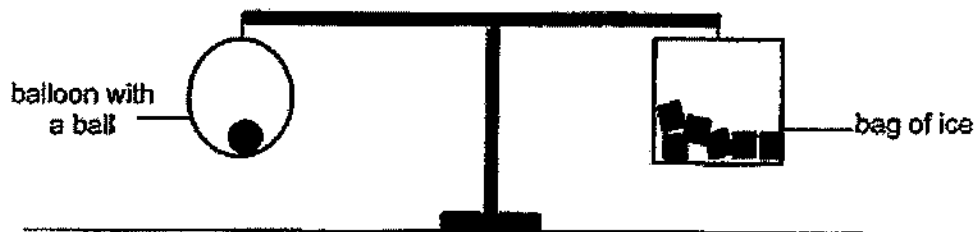
16. A bowl of ice was placed in a room at 27°C.



Mary observed the cup after 5 hours. Which one of the following is correct?

	Observation	Explanation
(1)	The ice cubes melted.	The ice cube lose heat to the water.
(2)	The ice cubes did not melt.	The ice cube lose heat to the room
(3)	The ice cubes melted.	The ice cube gained heat from the room.
(4)	The ice cubes did not melt.	The ice cube gained heat from the water.

17. Sally placed an inflated balloon with a ball in it and a bag of ice on a beam balance under the hot sun. The set up was balanced at the start of the experiment.



She recorded her observation after 3 hours.

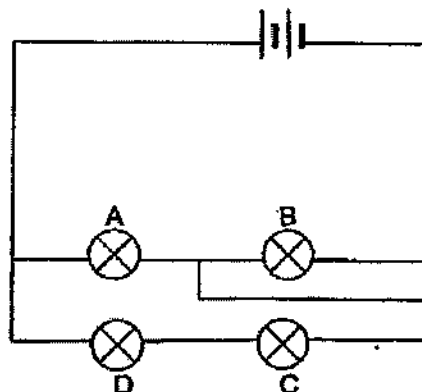
Which of the following statement(s) is/are possible observation(s) after 3 hours?

- A The balloon expanded
- B The set-up remained balanced.
- C The side of the beam balance with the balloon moved downwards.
- D The side of the beam balance with the bag of ice moved downwards.

- (1) B only
- (3) C and D only

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

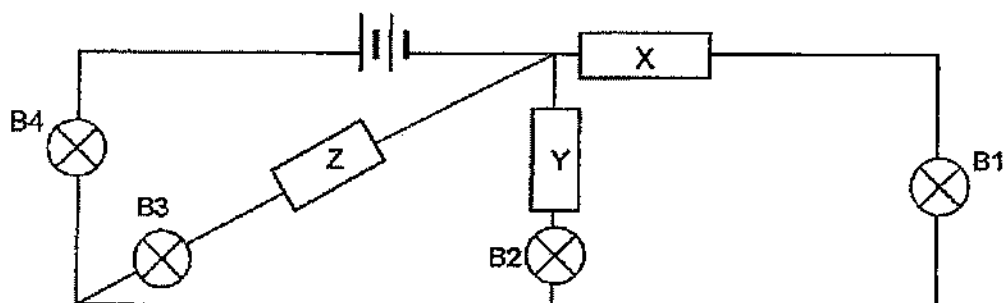
18. Study the circuit below.



After one of the bulbs had blown, all the other bulbs did not light up. Which bulb had blown?

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

19. Tom placed different materials, P, Q, R and S, randomly in positions X, Y and Z as shown below.



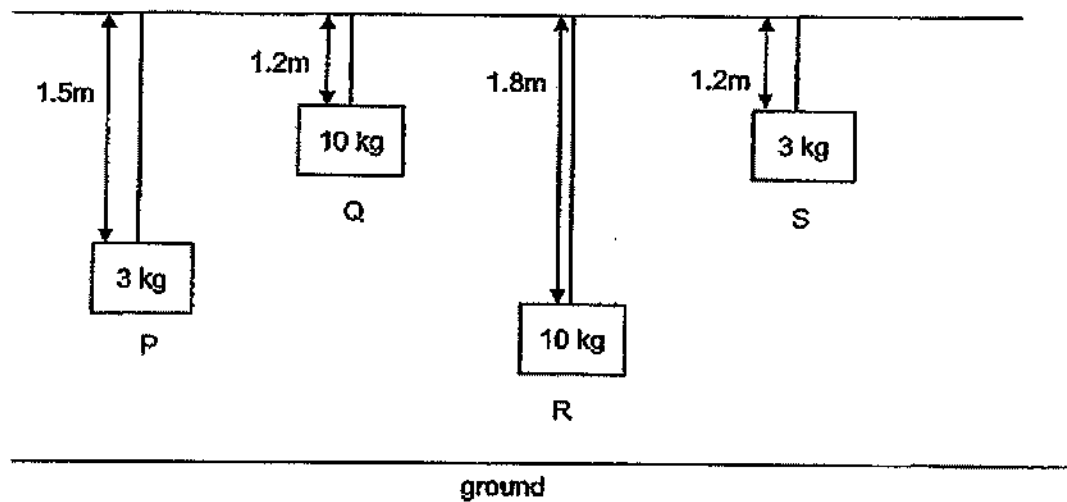
He then recorded his observations in the table below.

Position X	Position Y	Position Z	Bulbs that lit up
P	Q	R	B2 and B4 only
Q	R	S	B1, B3 and B4 only

Which of the following correctly represents P, Q, R and S?

	P	Q	R	S
(1)	copper	plastic	iron	wood
(2)	copper	iron	wood	plastic
(3)	wood	plastic	copper	iron
(4)	wood	iron	plastic	copper

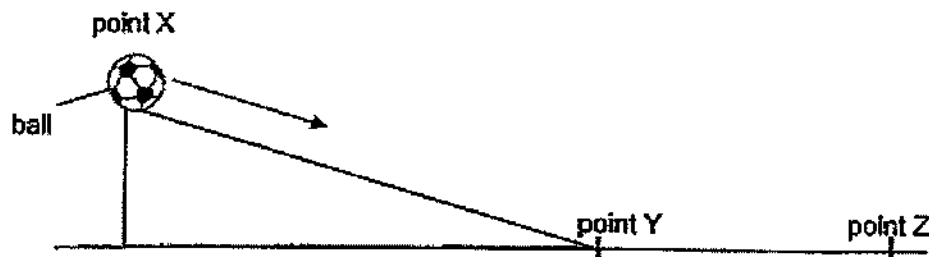
20. Four objects of different mass, P, Q, R and S, are hung above the ground using strings of different lengths as shown in the diagram below.



Which object has the most potential energy?

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

21. A ball at point X was released and it rolled down the ramp past point Y and came to a stop at point Z.

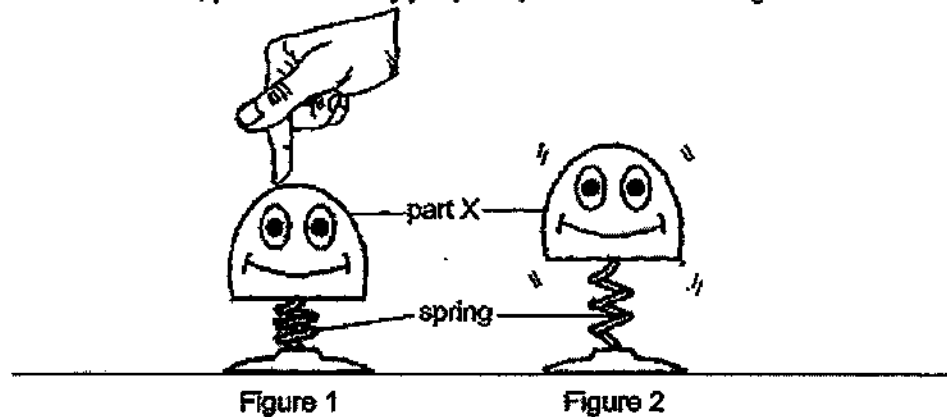


Which of the following statements are correct based on the above set-up?

- A The ball has the most kinetic energy at Y.
B The ball has less potential energy at Z than at Y.
C The ball has the most potential energy at X before it was released.
D The ball has less kinetic energy at Z than at X before it was released.

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

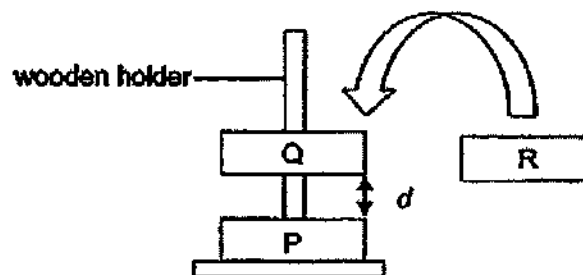
22. Joyce pushed a toy, which was attached to a spring, as shown in figure 1. When she removed her hand, part X of the toy jumped up as shown in the figure 2.



Which of the following shows the correct main energy conversions?

	Joyce pushing the toy	Compressed spring	Part X jumped up
(1)	heat energy	→ potential energy	→ kinetic energy
(2)	heat energy	→ kinetic energy	→ kinetic energy + heat energy
(3)	kinetic energy	→ kinetic energy	→ potential energy
(4)	kinetic energy	→ potential energy	→ kinetic energy + potential energy

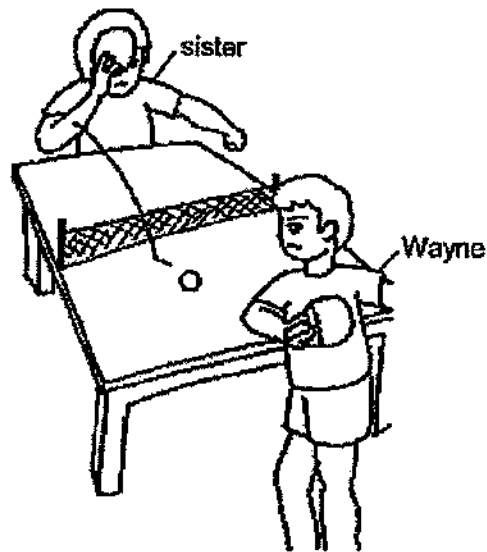
23. Ernest placed two similar ring magnets, P and Q, into a wooden holder as shown below. He observed a distance, d , between the two magnets. Then he added a metal ring, R, into the holder above magnet Q.



Which of the following explains correctly the possible observations he could make about distance, d ?

	Observation of d	Explanation
(1)	increases	Magnet Q repels ring R.
(2)	decreases	Magnet P repels ring R.
(3)	decreases	Ring R adds weight to Magnet Q.
(4)	remains the same	Magnet Q attracts ring R.

24. The diagram below shows Wayne and his sister playing table-tennis.



The ball bounced on the table and was moving towards Wayne. He hit it with the bat.

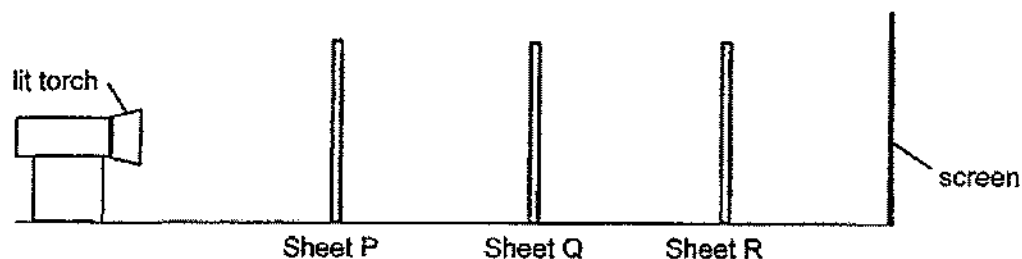
Based on the diagram above, which of the following statements are correct?

- A When Wayne hits the ball, it will totally stop moving.
- B Wayne has to exert a push force on the ball to hit it back to his sister.
- C The ball exerted a push force on the table to bounce towards Wayne.
- D The ball will continue to move at the same speed when Wayne hits it harder than his sister.

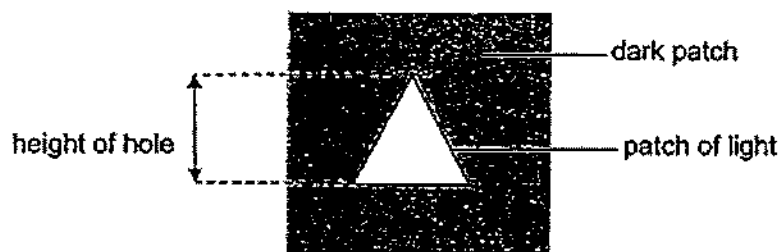
- (1) A and B only
- (3) A, C and D only

- (2) B and C only
- (4) B, C and D only

25. The set-up below shows light shining on three sheets, P, Q and R, made of different materials, in a dark room. Only one sheet allowed most light to pass through. Each sheet has a hole of the same height cut out in a different shape.



The diagram below shows the shadow seen on the screen.



Which of the following arrangements will enable the shadow above to be seen on the screen?


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

Key

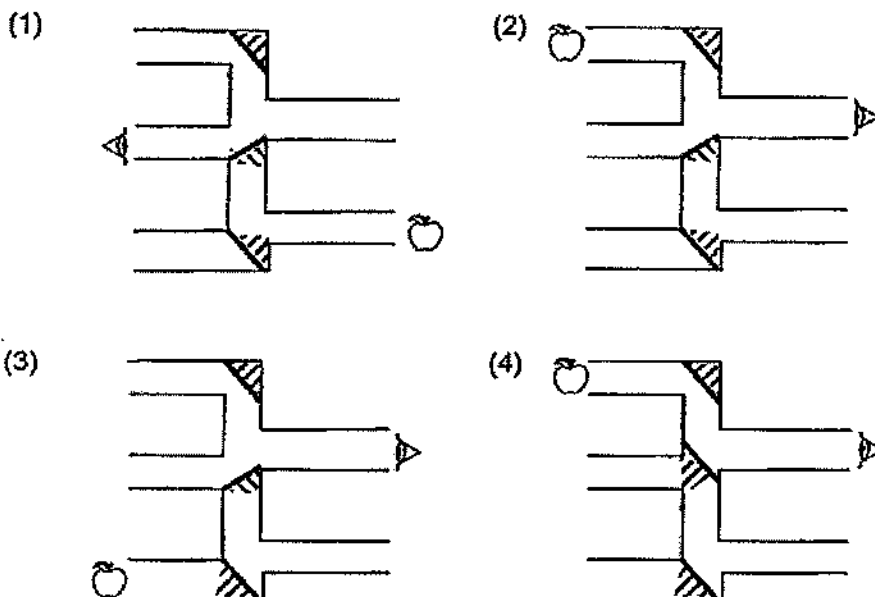
does not allow light to pass through

allows most light to pass through

26. Ramesh placed 3 mirrors in a set of connected pipes. He looked through different pipe openings to find out if he could see the apple on the opposite side using the mirrors.

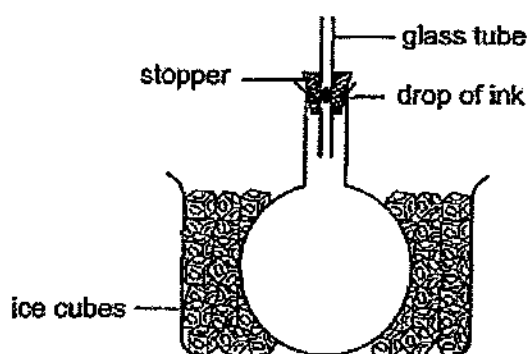
Key:
mirror – 

In which of the following set-ups will he be able to see the apple?



27. Billy placed an empty round-bottom flask into a basin of ice cubes as shown in the diagram below. The flask was fitted with a stopper where a glass tube was inserted. He added a drop of ink into the glass tube.

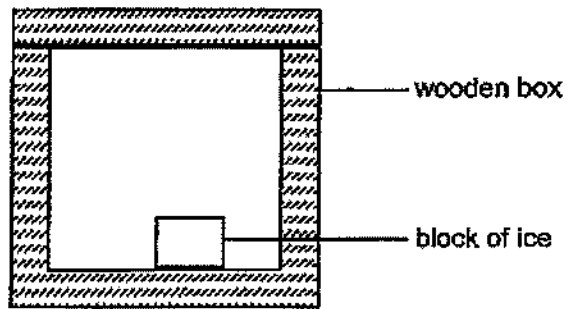
After 20 minutes, he observed that the drop of ink had moved down the glass tube.



Which one of the following explains his observation?

	Air in the flask	Ice Cubes
(1)	gained heat and expanded	gained heat
(2)	gained heat and expanded	lost heat
(3)	lost heat and contracted	gained heat
(4)	lost heat and contracted	lost heat

28. A block of ice was placed in a wooden box as shown in the diagram below.



Which one of the following statements best explains why the block of ice melted slowly?

- (1) The wooden box is a good conductor of heat.
- (2) The air in the wooden box conducted heat away from the ice quickly.
- (3) The heat in the wooden box could not escape to the surrounding air outside the box.
- (4) The wooden box slowed down heat gain by the ice from the surrounding air outside the box.

~ END OF BOOKLET A ~



NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

**PRELIMINARY EXAMINATION
2020**

BOOKLET B

Date: 21st August 2020

Duration: 1 h 45 min

Name : _____ ()

Class: Primary 6 ()

Marks Scored:

Booklet A:		56
Booklet B :		44
Total :		100

Any query on marks awarded should be raised by the next day. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature:

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

Booklet B consists of 18 printed pages including this cover page.

Blank Page

Section B (44 marks)

Write your answers to questions 29 to 40 in the spaces provided.

29. Xinyi setup her new aquarium next to the window in her bedroom as shown in Figure 1 below.

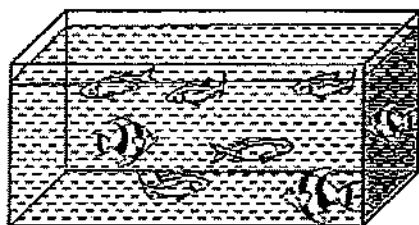


Figure 1



Figure 2

Her mother observed that the fish remained at the surface of the water most of the time and suggested that Xinyi put some water plants, as shown in Figure 2, into the aquarium.

- (a) Describe the process of photosynthesis carried out in green plants. [1]

- (b) Other than being a source of food and shelter, explain how her mother's suggestion would help the fish in the aquarium survive better. [1]

Figure 3 below shows a tent pitched on a field. After a week, the tent was removed. It was observed that the grass growing in the area, where the tent had been pitched, had turned brown and died as shown in Figure 4.



Figure 3

surrounding
green grass

patch of
dead grass

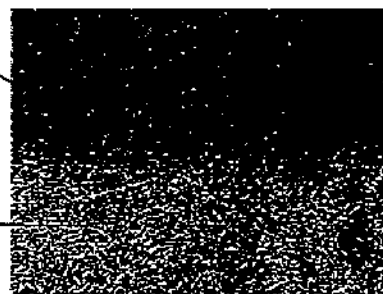
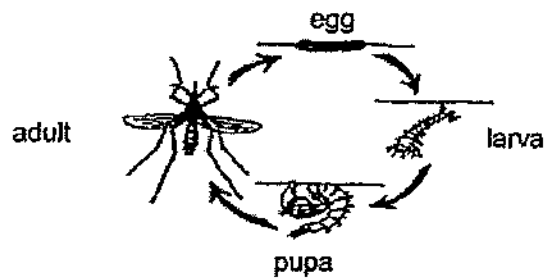


Figure 4

- (c) Explain why the grass under the tent died. [1]

30. The diagram below shows the life cycle of mosquito X, which spreads a virus that causes illness P.

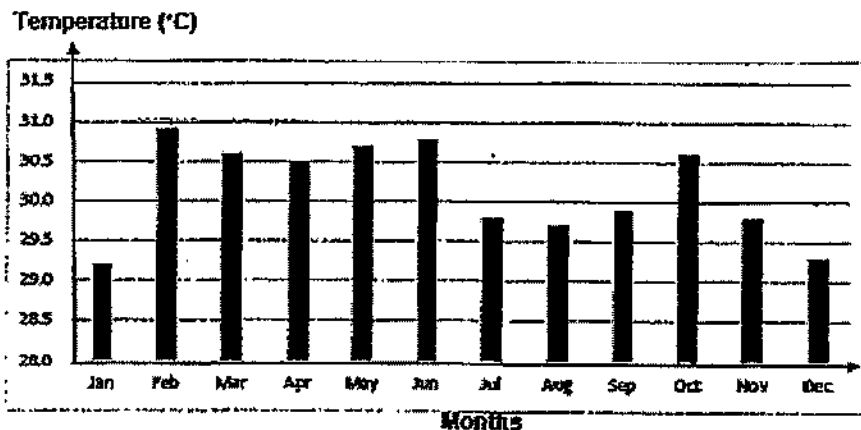


Some scientists kept these mosquitoes at different temperatures and recorded the duration of each stage of their life cycle. The results are shown in the table below.

	Duration of stage at different temperatures (days)			
	28°C	29°C	30°C	31°C
Egg	3	2	2	2
Larva	8	7	6	5
Pupa	2	2	2	1

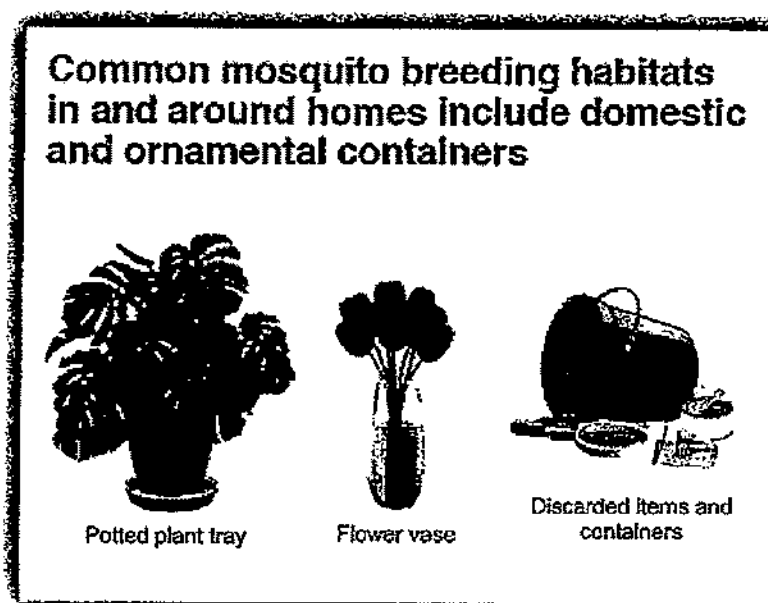
- (a) State the effect of temperature on the length of the life cycle of mosquito X. [1]

The graph below shows the average monthly temperature in Singapore in 2019.



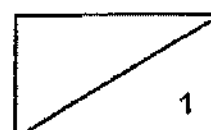
- (b) Based on the information above, would there be more cases of illness P between January and June or between July and December? Explain your answer. [2]

The diagram below shows part of a poster displayed in a neighbourhood with a high number of cases of illness P.

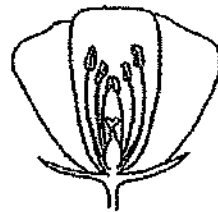


- (c) Based only on the objects shown above, suggest one way residents in the neighbourhood can play a part in reducing the breeding of mosquitoes.

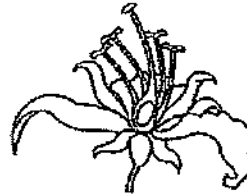
[1]



31. The diagrams below show flowers X and Y.



Flower X

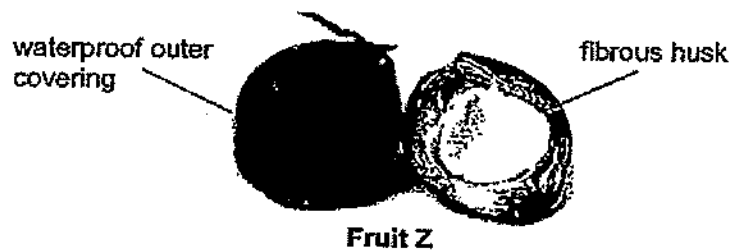


Flower Y

- (a) Which flower, X or Y, is most likely pollinated by wind? Give a reason for your answer.

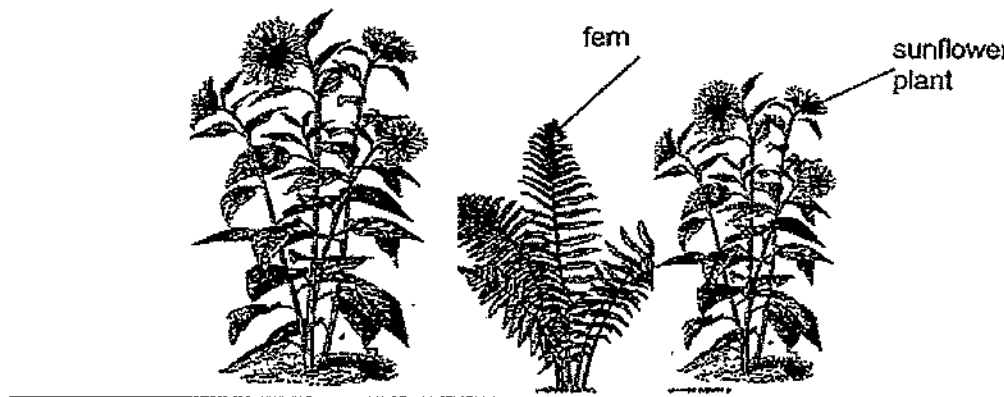
[1]

The diagram below shows fruit Z that Lucas found at the beach



- (b) Explain based on the characteristics of fruit Z how it can be dispersed by water. [1]

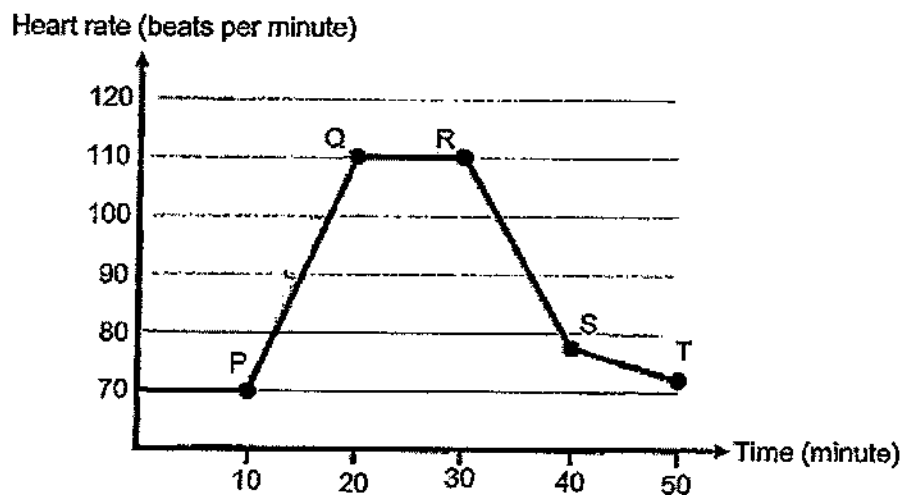
Lucas removed all the plants in his garden. He then planted two rows of sunflower plants only, in his garden. After three weeks, he noticed that there were ferns growing near his sunflower plants as shown in the diagram below.



- (c) Explain how the ferns started growing in his garden. [1]

- (d) Why is it important for Lucas to remove the ferns. [1]

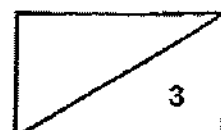
32. The graph below shows the changes in Samuel's heart rate before, during and after exercising. He only exercised for 20 minutes.



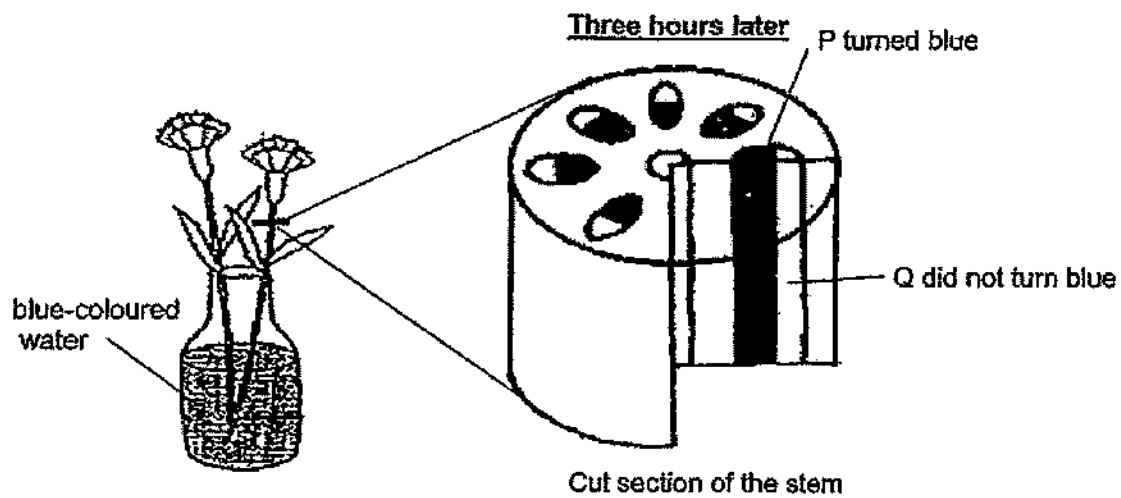
- (a) At which point, P, Q, R, S or T, did Samuel start exercising? [1]

Point _____

- (b) State how his heart rate changed when he exercised. Explain why? [2]



33. Two white flowers were placed in blue-coloured water for three hours. After three hours, the white flowers turned blue. The stem was cut and it was noticed that part P turned blue while part Q did not, as shown in the diagram below.

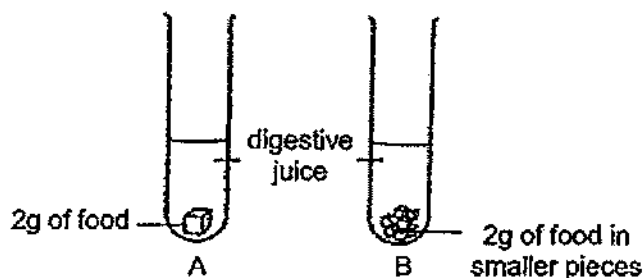


- (a) (i) Identify part P. [1]

- (ii) Explain how the white flowers turned blue. [1]

- (b) What substance did part Q transport? [1]

34. Jie Rui poured an equal amount of digestive juice into 2 test tubes, A and B. She added 2g of food to each test tube. The food that was added to test tube B was cut into (smaller pieces) as shown in the diagram below.



After 2 hours, she removed the undigested food pieces left, dried them and weighed them. She recorded the results and repeated the experiment for another two times as shown in the table below.

Test tube	Mass of food left after 2 hours (g) <small>or mass of food</small>		
	1 st try	2 nd try	3 rd try
A	1.9	1.8	1.9
B	0.7	0.7	0.9

- (a) What was the aim of Jie Rui's experiment? [1]

- (b) Give a reason why it was important for the food pieces to be dried before weighing them. [1]

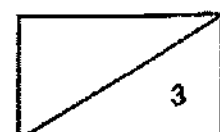
- (c) Based on the result of her experiment, explain why chewing is an important process that helps digestion. [1]

35. Selina bought a cup of hot coffee. Some mist was seen when she took the cup to her seat as shown in the diagram below.

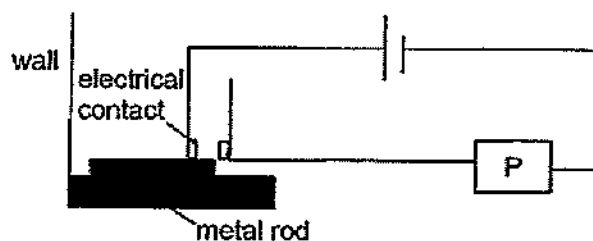


- (a) Explain how the mist was formed. [2]

- (b) Explain why the mist disappeared after a short time. [1]



36. Le Yi set up a simple fire alarm system in her restaurant. She used a metal rod, alarm P and some wires as shown below. The metal rod expands easily when heated.

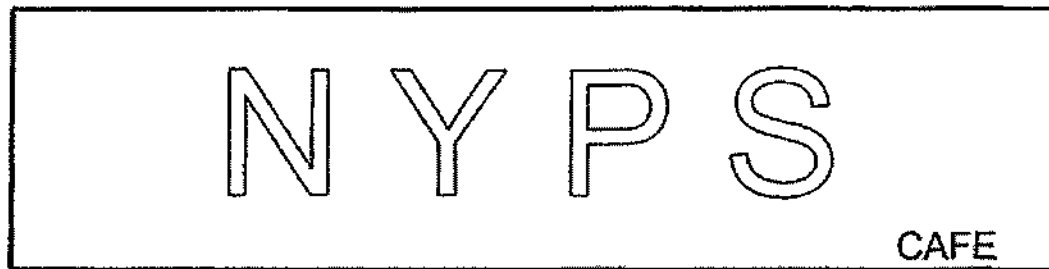


She then tested her alarm system by heating the metal rod to different temperatures. She recorded her results in the table below.

Temperature of ^{rod} box ($^{\circ}\text{C}$)	Alarm P
10	Off
30	Off
80	On

- (a) Explain how the system works when the temperature is above 80°C . [2]

Le Yi then wanted to create a lit up sign board for her restaurant as shown below.



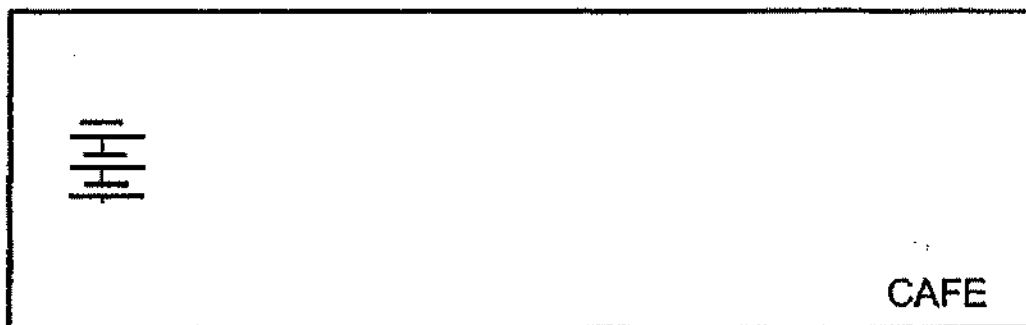
She used one light bulb to light up each letter, 'N', 'Y', 'P' and 'S'.

Her circuit must be able to do the following:

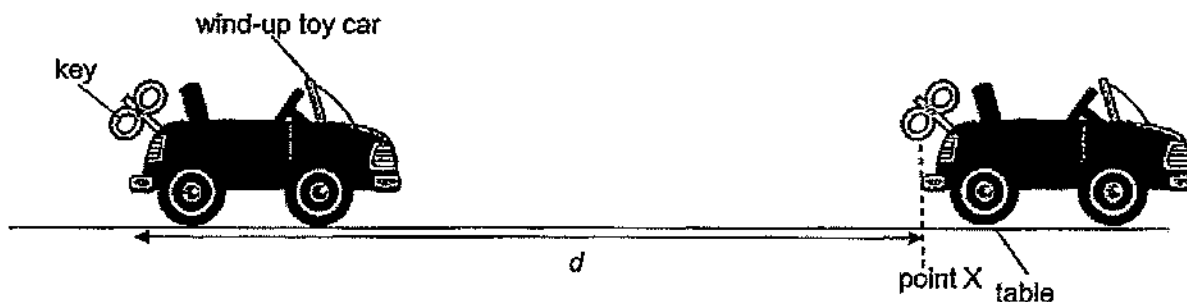
- If one bulb fused the others would still light up.
- The entire sign is controlled by a single switch.

(b) Draw the circuit diagram for her sign board.

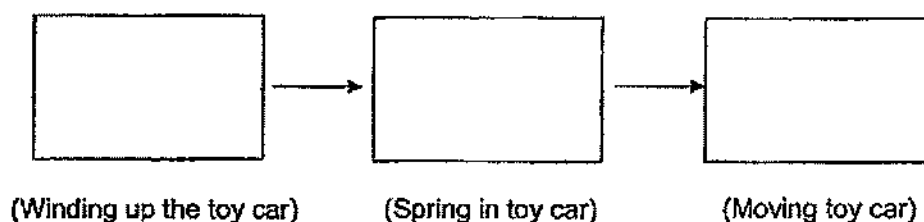
[2]



37. Ali wound up a toy car. Upon releasing it, the toy car moved forward for a short distance before stopping at point X. He measured the distance, d , that the car had moved.



- (a) State the main energy conversions starting from Ali winding up the toy car to the car moving across the floor. [1]



Ali then applied a layer of oil on the surface of the table.

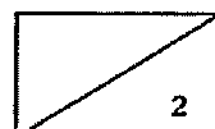
- (b) Explain, in terms of energy, why the car moved a longer distance with the layer of oil on the surface of the table. [2]

Ali then observed how the number of times he turns the key affected the distance travelled by the toy car. His results are shown in the table below.

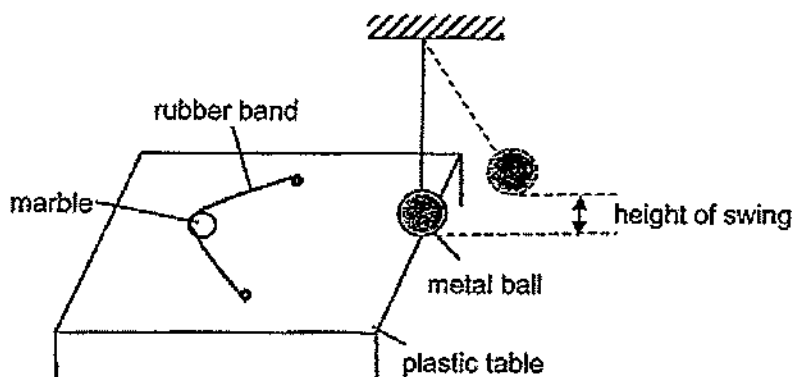
Number of turns	Distance travelled by the toy car (cm)
1	4
2	8
3	12
4	16

- (c) What is the relationship between the number of turns of the key and the distance the toy car travelled? [1]

- (d) Ali discovered that when he turned the key 5 times, the distance travelled by the toy car was 0 cm. State a reason for his observation. [1]



38. Colin conducted an experiment on a plastic table top using the set-up shown in the diagram below.



Colin pulled a rubber band back with a marble before releasing it. The marble rolled forward and hit the metal ball. The metal ball then swing up. He measured the height of the swing and recorded his results. Then, he added substance X to the table and repeated the experiment, using the same materials.

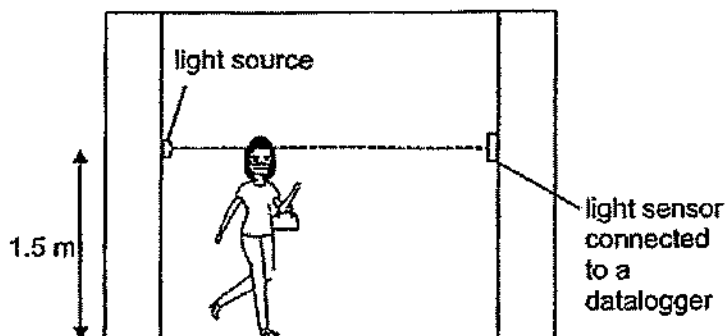
Table	Height of swing of metal ball (cm)		
	1 st reading	2 nd reading	3 rd reading
Without substance X	3	5	4
With substance X	5	6	6

- (a) State the force the stretched rubber band possessed just before it was released. [1]

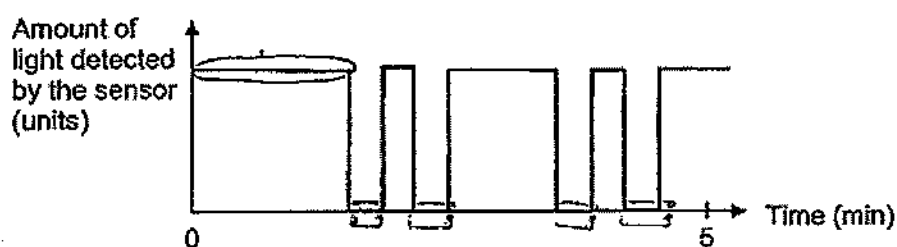
- (b) Base on the results explain in terms of forces the effect of substance X on the height of swing of the metal ball. [2]

- (c) Explain, in terms of forces, why Colin must stretch the rubber band to the same point in order to make it a fair test. [1]

39. A store owner wanted to count the number of people entering his store. He set up a light source and a light sensor at the store entrance as shown below.



The data recorded for 5 minutes is shown in the graph below.



- (a) Using the set-up, explain how the store owner could count the number of people entering the store. [1]

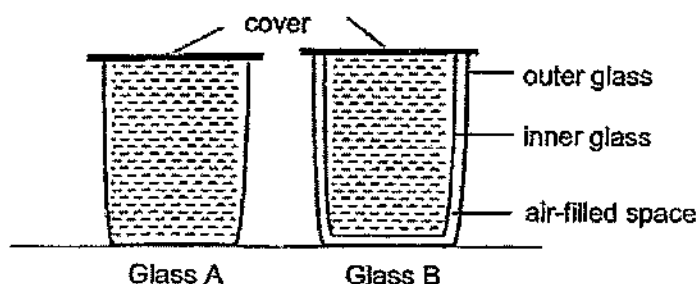
- (b) Based on the results above, how many people have entered his store in the 5 minutes? [1]

_____ people

The store owner realised that his set-up could not count all the people entering the store.

- (c) Using the same materials suggest what he should do and explain how this method ensures that every person entering the store can be counted. [2]

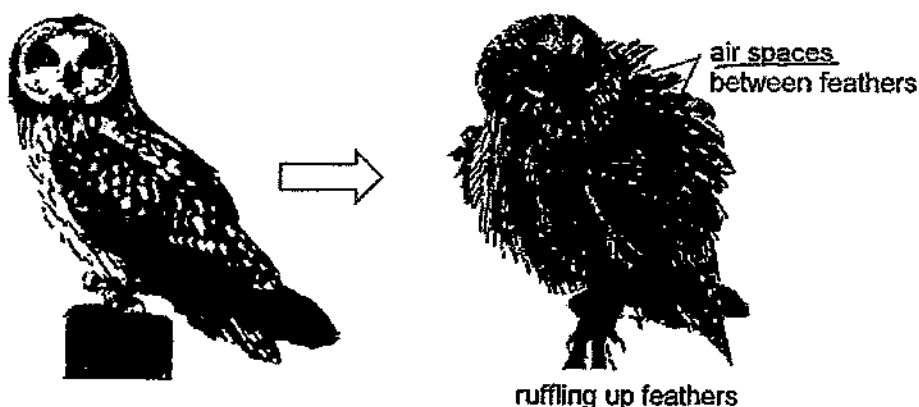
40. Sally poured an equal volume of water at 90°C into two glasses, A and B. Glass A is single-layered while glass B is double-layered with an air-filled space in between.



After some time, she measured the temperature of the water in both glasses.

- (a) Explain why the water in glass B was hotter than the water in glass A. [2]

Birds maintain a higher body temperature than their surroundings. In colder months, they are observed to ruffle up their feathers to keep themselves warm.



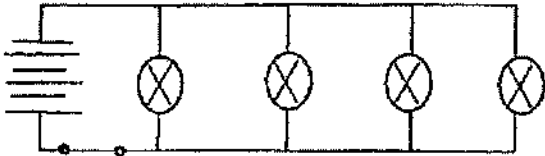
- (b) Suggest how ruffling up their feathers help to keep birds warm. [2]

~ END OF BOOKLET B ~

Nanyang Primary School
P6 SCIENCE Prelim 2020
Suggested Answers

1	1	6	4	11	1	16	3	21	3	26	4
2	3	7	3	12	2	17	2	22	4	27	3
3	4	8	2	13	4	18	2	23	3	28	4
4	1	9	4	14	2	19	4	24	2		
5	4	10	2	15	2	20	2	25	2		

Qn No	Acceptable Answers
29a.	Chlorophyll in green plants trap light, together with carbon dioxide and water, make food and produce oxygen.
29b.	Water plants released oxygen which is taken in by the fish.
29c.	The tent blocked light from reaching the grass so the grass cannot photosynthesize /make food.
30a.	As the temperature increases, the length of the life cycle of mosquito X decreases.
30b.	Between January and June, the average monthly temperature is higher. Mosquito X's life cycle is shorter hence there are more mosquitoes to spread illness P.
30c.	Pour away water in the flowerpot plate./ Change the water in the flower vase regularly./ Check for stagnant water in discarded items.
31a.	The anther and stigma are sticking out of the flower.
31b.	It has fibrous husk which traps air and allows it to float on water./ It has waterproof outer covering which does not absorb water and allows it to float on water.
31c.	The spores of the fern are dispersed by wind/ animal.
31d.	To reduce overcrowding/ competition for water, minerals, space and light.
32a.	P
32b.	His heart rate will increase. His heart will pump blood faster to provide more oxygen and more digested food to all parts of his body.
33ai.	Water-carrying tubes
33aii.	The water-carrying tubes transported the blue-coloured water to the flowers.
33b.	Food
34a.	To find out how the exposed surface area of food in contact with the digestive juice affects the rate of digestion.
34b.	To ensure that she is measuring only the mass of the food without the digestive juice.

34c.	Chewing breaks up food into smaller pieces for faster digestion.
35a.	The water in the coffee gained heat and evaporated into water vapour. The warmer water vapour touches the cooler surrounding air, lost heat and condensed into tiny water droplets.
35b.	The mist gained heat and evaporated to form water vapour.
36a.	The metal rod will gain heat and expand to touch the electrical contacts, forming a closed circuit.
36b.	
37a.	Kinetic Energy \rightarrow (Elastic) Potential Energy \rightarrow Kinetic Energy
37b.	With the layer of oil on the table, less kinetic energy is converted to heat/ sound energy. There is more kinetic energy to move the car a longer distance.
37c.	As the number of turns of the key increases, the distance the toy car travelled increases.
37d.	The spring in the toy car is damaged so the toy car has no more potential energy.
38a.	Elastic spring force.
38b.	There is less friction between the marble and the table so the ball will roll faster and hit the metal ball with more force. The metal ball will swing higher.
38c.	To ensure that only the presence of substance X is changed and the marble is released with the same amount of force.
39a.	As the people entered the store, they would block the light source. Hence, the sensor would not detect any light.
39b.	4
39c.	Lower the light source or sensor so the shorter people can still block the light.
40a.	Air is a poor conductor of heat so it slows down heat loss from the water to the surroundings.
40b.	Air is trapped between feathers. Air is a poor conductor of heat so it slows down heat loss from the bird to the surroundings.



PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATION

**PRIMARY 6
SCIENCE
(BOOKLET A)**

25th AUGUST 2020

Name: _____

Class: Resilience _____

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

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

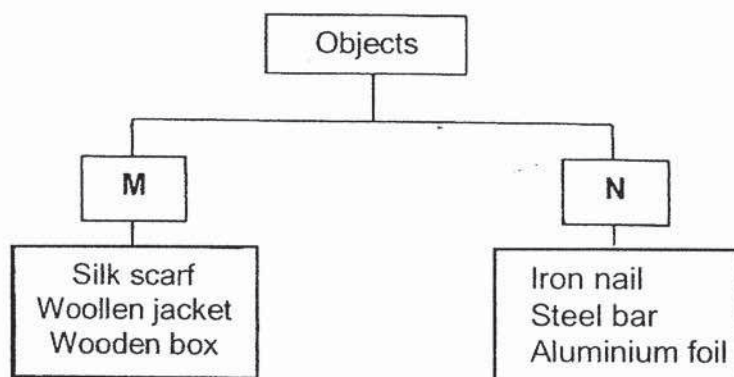
This booklet consists of 19 printed pages, excluding the cover page.

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4) and shade your answer on the Optical Answer Sheet. (56 marks)

1 Which of the following statements is true for both fern and mushroom?

- (1) Both reproduce by seeds.
- (2) Both make their own food.
- (3) Both do not produce fruits.
- (4) Both are harmful to humans.

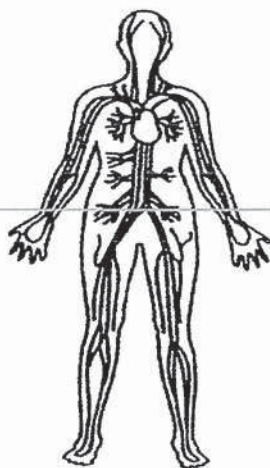
2 Six objects are classified into two groups as shown below.



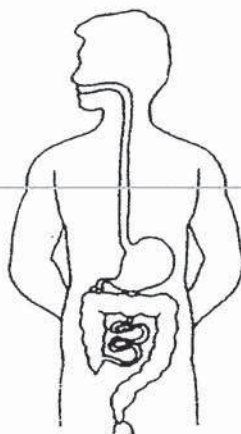
Which of the following correctly shows the headings for M and N?

	M	N
(1)	waterproof	non-waterproof
(2)	non-magnetic	magnetic
(3)	good conductor of heat	poor conductor of heat
(4)	made from living things	made from non-living things

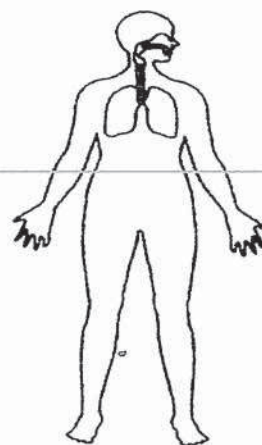
- 3 The diagram below shows three human systems X, Y and Z.



X



Y

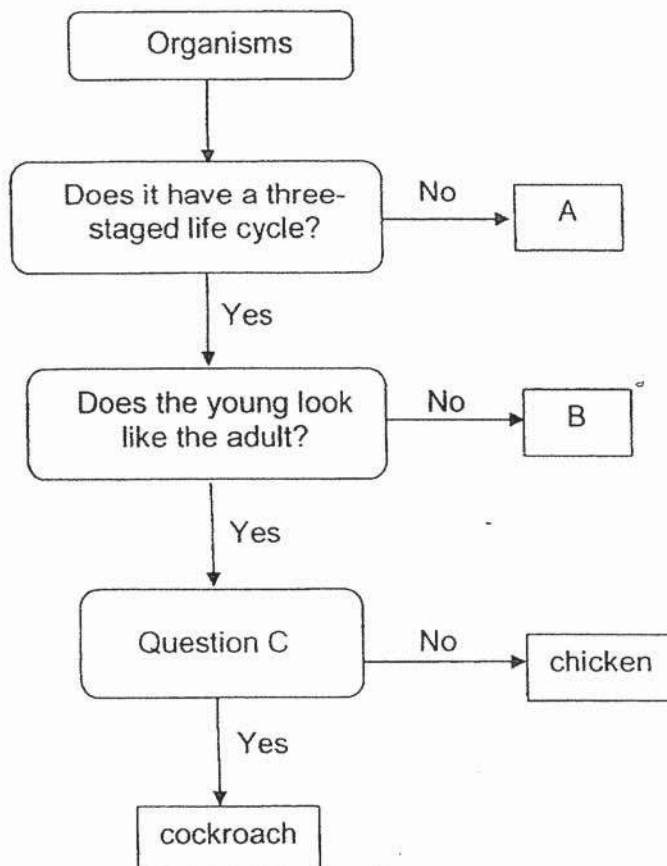


Z

Which of the following statements are true?

- A System X removes undigested food from the body.
 - B System X and system Z work together to remove carbon dioxide produced by the different parts of the body.
 - C System Y and system Z work together to transport food to the different parts of the body.
 - D System Y breaks down food into simple substances that can be absorbed into the bloodstream.
- (1) A and B only
(2) B and D only
(3) C and D only
(4) A, C and D only

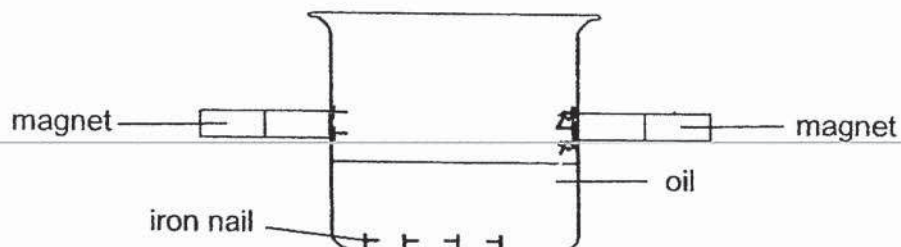
4 Study the chart below.



Which of the following correctly represents A, B and question C?

	A	B	Question C
(1)	beetle	frog	Does it have three body parts?
(2)	butterfly	grasshopper	Does it take care of its young?
(3)	mosquito	butterfly	Does it lay eggs?
(4)	grasshopper	human	Does it have wings?

- 5 Mr Kong set up an experiment with some iron nails in a beaker containing oil. He placed two magnets on the outer surface of the beaker and slowly moved the magnets upwards from the bottom of the beaker.



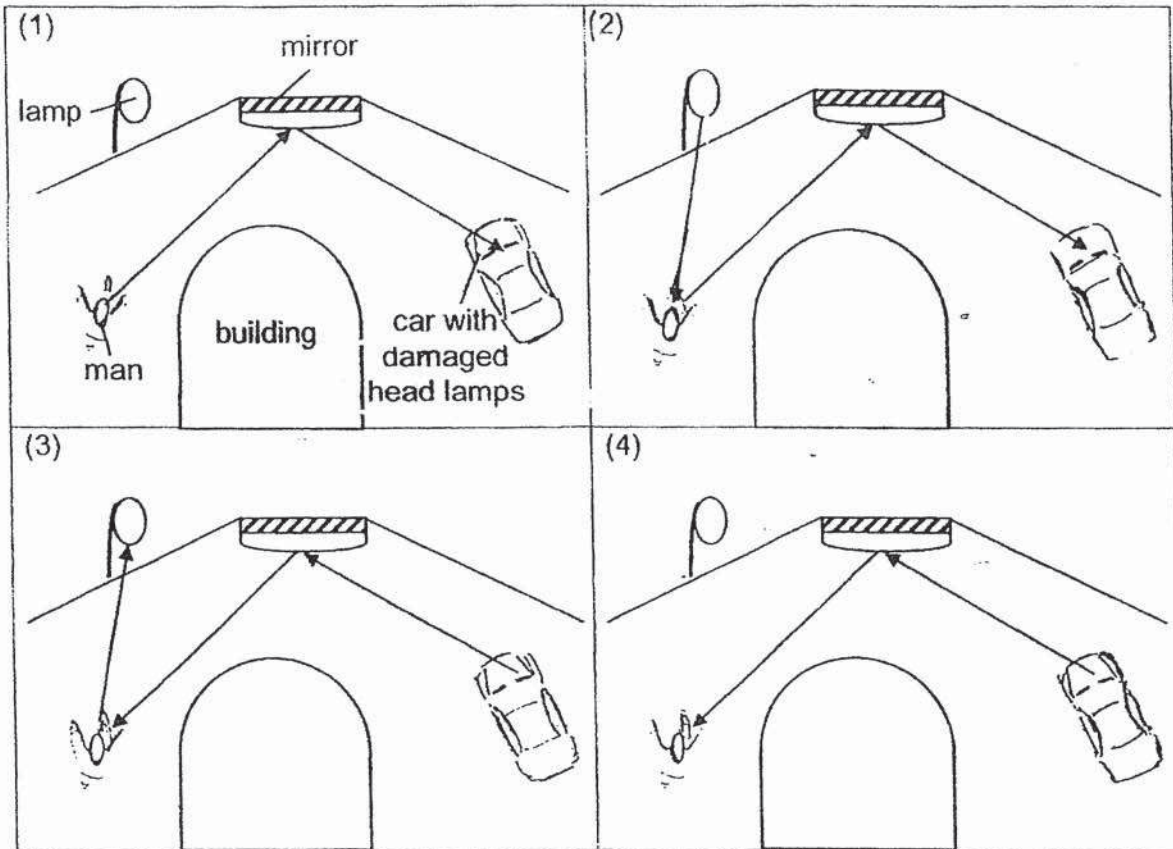
Four pupils made the following statements about the experiment.

- Ann: One magnet has stronger magnetic strength than the other.
Bob: The oil reduces friction and increases magnetic strength of the magnets.
Chris: The iron nails are attracted by the magnetic force from the magnet.
Diane: There is no gravitational force acting on the nails which are attracted by the magnets.

Which pupils were correct?

- (1) Ann and Chris only
- (2) Bob and Chris only
- (3) Ann, Bob and Diane only
- (4) Ann, Chris and Diane only

- 6 A car with damaged head lamps was travelling towards the bend of a road at night. A man was walking on the road in the opposite direction. Which diagram shows the direction of light so that the driver was able to see the man?

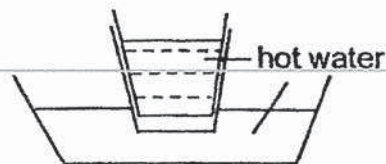


- 7 Krishnan wants to separate two cups which are fitted tightly to each other. Using only hot water and ice cubes, which of the following set-ups can he use to separate the cups?

(1)



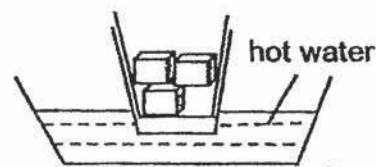
(2)



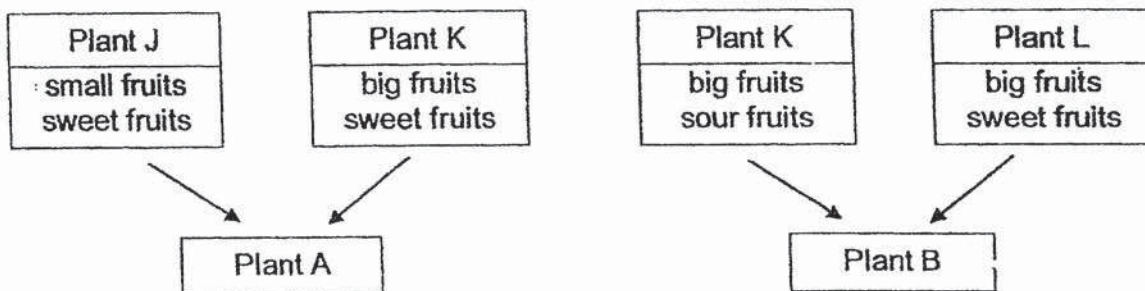
(3)



(4)



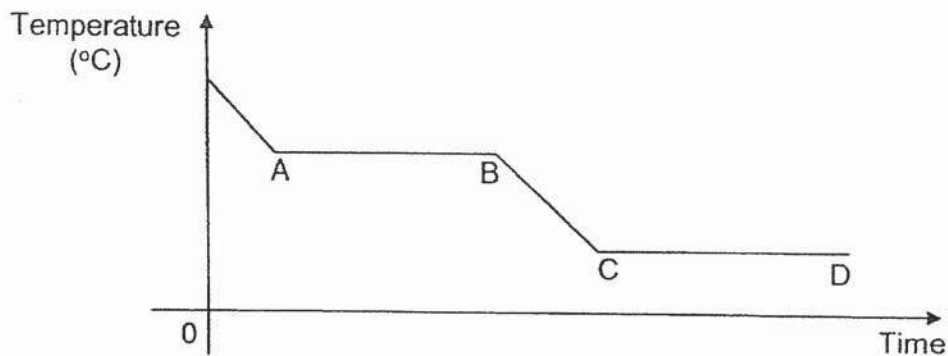
- 8 A farmer selected plants J, K and L to produce fruits with different characteristics. The diagram below shows the characteristics of the 3 plants.



Plant A inherited some characteristics from plants J and K, while plant B inherited some characteristics from plants K and L. Based on the chart above, which of the following best describes the characteristics of plants A and B?

	Plant A	Plant B
(1)	big fruits sweet fruits	big fruits sour fruits
(2)	big fruits sour fruits	big fruits sweet fruits
(3)	small fruits sweet fruits	small fruits sweet fruits
(4)	small fruits sour fruits	small fruits sour fruits

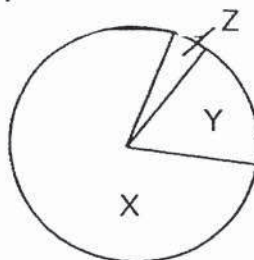
- 9 John had some substance X at room temperature. He melted substance X completely in a container over a hot plate. After turning off the hot plate, he recorded the changes in the temperature of substance X as it cooled over some time in the graph below.



Which of the following correctly describes the temperatures at AB and CD?

	AB	CD
(1)	boiling point	freezing point
(2)	boiling point	room temperature
(3)	freezing point	room temperature
(4)	room temperature	boiling point

- 10 The chart below show the composition of air,



Which of the following correctly identifies the gases in the air?

	X	Y	Z
(1)	oxygen	other gases	nitrogen
(2)	nitrogen	oxygen	other gases
(3)	nitrogen	other gases	oxygen
(4)	other gases	oxygen	nitrogen

- 11 Venus removed two rings of different depths at the stem of a plant as shown in Diagram 1. The enlarged view of a section of the stem is shown in Diagram 2.

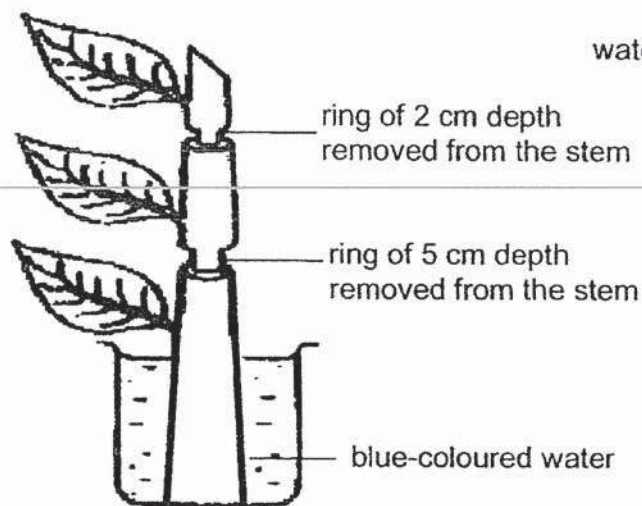


Diagram 1

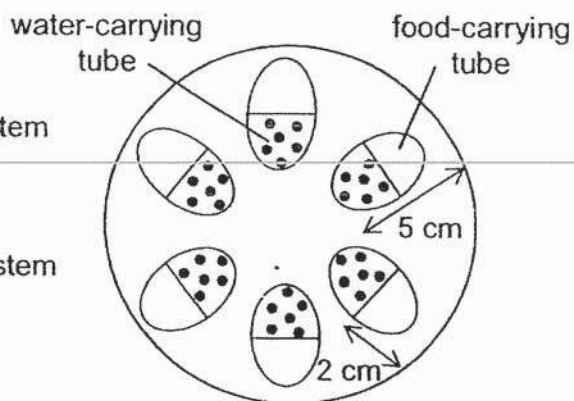
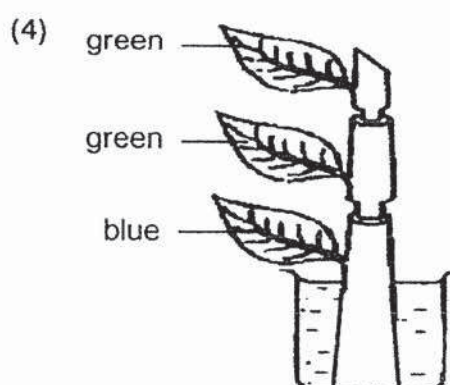
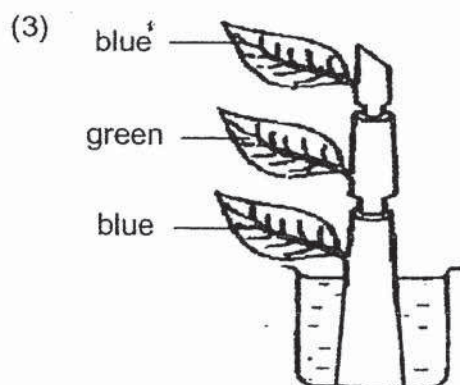
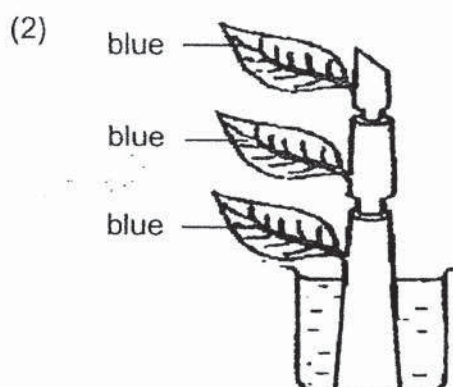
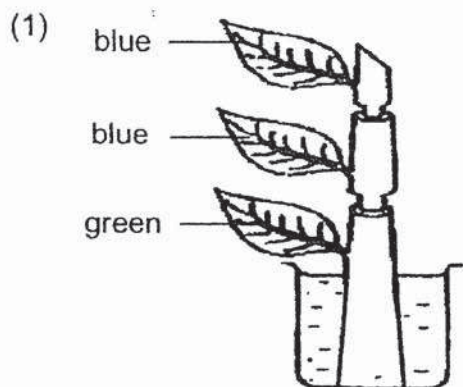
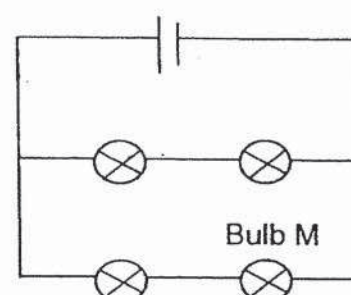
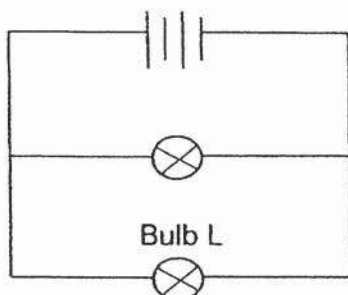
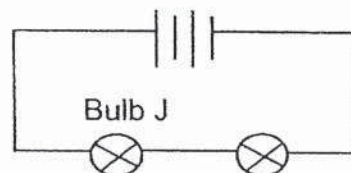
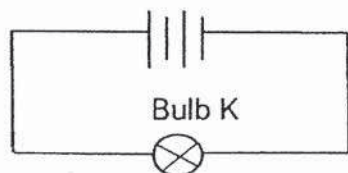


Diagram 2

Which one of the following shows the colour of the leaves after the plant was placed in the beaker of blue-coloured water for few hours?



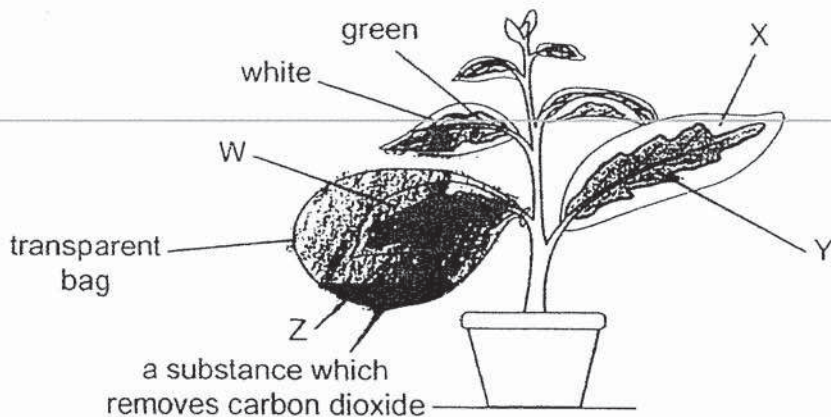
12 Study the four circuits shown below.



Which of the following statements about Bulbs J, K, L and M are true?

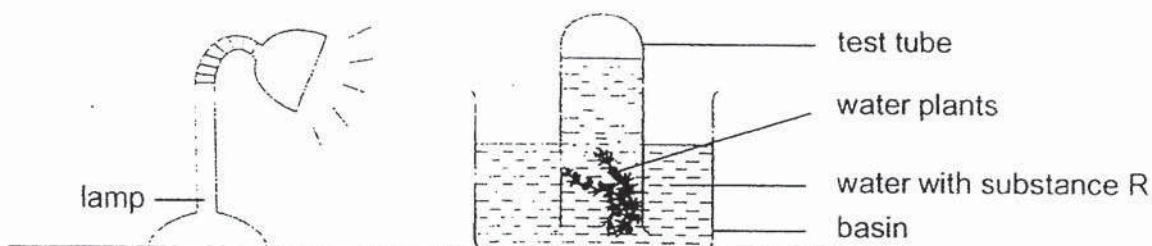
- A Bulb K is as bright as Bulb L.
 - B Bulb J is as bright as Bulb M.
 - C Bulb L is brighter than Bulb J.
 - D Bulb M is dimmer than Bulb K.
-
- (1) A and C only
 - (2) B and D only
 - (3) A, C and D only
 - (4) B, C and D only

- 13 An experiment was conducted on photosynthesis using the set-up below. The plant has leaves that are green in the middle and white around the edges and was placed under sunlight.



Which two areas of the leaves, W, X, Y or Z, lack only one factor needed for photosynthesis?

- (1) W and X
 - (2) W and Y
 - (3) X and Z
 - (4) Y and Z
- 14 Hui Wen set up an experiment as shown below.



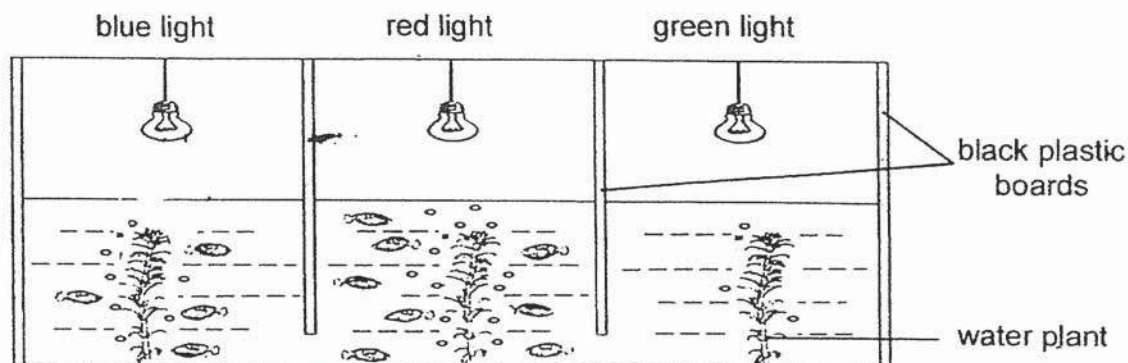
She added substance R to the water. Any carbon dioxide present in the water was absorbed by substance R immediately. She switched on the lamp and measured the amount of various dissolved gases in the water after one hour.

Which of the following statement is true?

- (1) The amount of dissolved oxygen increased.
- (2) The amount of dissolved oxygen decreased.
- (3) The amount of dissolved nitrogen decreased.
- (4) The amount of dissolved carbon dioxide increased.

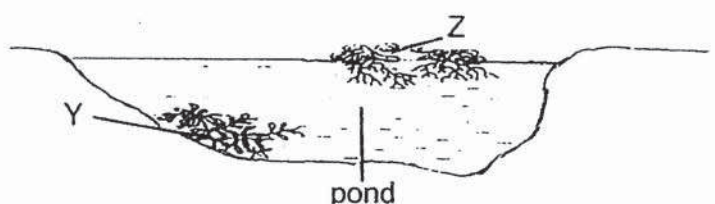
- 15 Donnie conducted an experiment with the set-up below. He divided a big tank into three sections using black plastic board. Each section has the same type of water plant of similar size and were exposed to different coloured lights of the same brightness. He also added the same number of fishes into each section.

After some time, he observed the bubbles produced by the water plants and the movement of the fishes as shown below.



Based on his observation, what can Donnie conclude from his experiment?

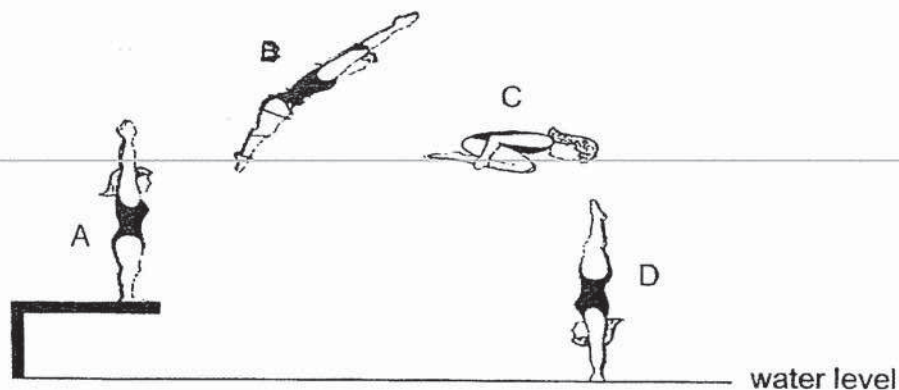
- (1) The fishes are able to survive under red light without any water plant.
 - (2) The water plant produces more oxygen under blue light than red light.
 - (3) The water plant is unable to carry out photosynthesis under green light.
 - (4) The water plant uses more carbon dioxide under blue light than green light.
- 16 The diagram below shows two types of water plants Y and Z, in a pond. It was observed that plant Z increased rapidly in number over a short period of time.



Which of the following correctly shows what will happen to the number of plant Y and the possible reason?

	Number of plant Y	Reason
(1)	decrease	Lack of sunlight for plant Y to make food.
(2)	decrease	Lack of space for plant Y to grow and reproduce.
(3)	increase	Increase in the amount of food produced by plant Z.
(4)	increase	Increase in the amount of oxygen produced by plant Z.

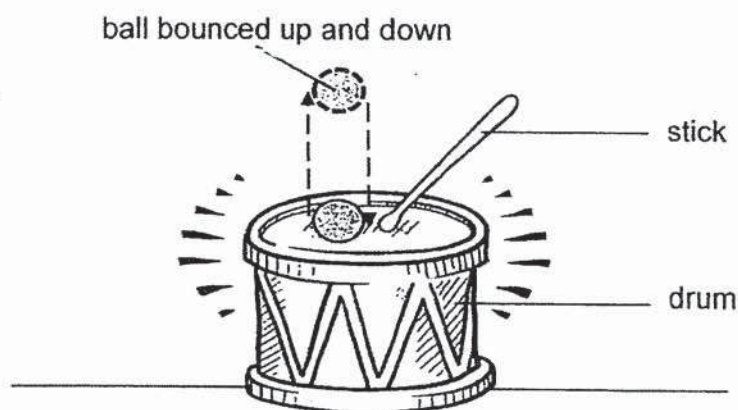
- 17 Chantelle was practising diving into the pool as shown in the diagram below.



Which of the following is correct?

	decrease in potential energy	least potential energy
(1)	A to B	B
(2)	A to B	D
(3)	B to C	D
(4)	C to D	B

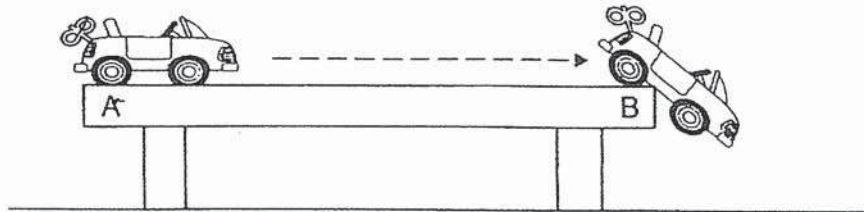
- 18 Hui Min placed a ball on a drum and hit the drum with a stick. She observed that the ball bounced up and down as shown in the diagram below.



Which of the following explains the movement of the ball?

- (1) The ball moved down as it has more potential energy.
- (2) The ball moved up and down as wind was produced when the drum was hit.
- (3) The ball moved up as kinetic energy from the drum was transferred to the ball.
- (4) The ball moved up as kinetic energy from the stick was converted to heat energy on the drum.

- 19 The diagram below shows a wound up toy car released at position A and stopped at the edge of the table at position B.



Which of the following shows the energy conversion of the wound up toy car when released from position A to position B?

- (1) kinetic energy \rightarrow potential energy \rightarrow kinetic energy
 - (2) potential energy \rightarrow kinetic energy \rightarrow heat energy + sound energy
 - (3) kinetic energy \rightarrow potential energy \rightarrow heat energy + sound energy
 - (4) potential energy \rightarrow heat energy + sound energy \rightarrow kinetic energy
- 20 Jay dropped a ball which hit a tray of sand that formed a dent as shown in Diagram 1.

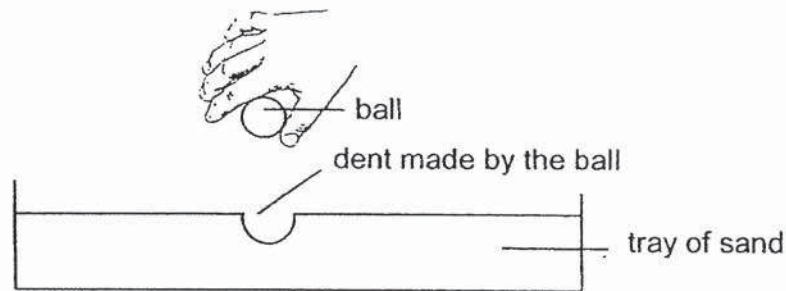


Diagram 1

He repeated the experiment with balls of the same size but different masses released from the same height. Diagram 2 shows the dents made by balls W, X, Y and Z.

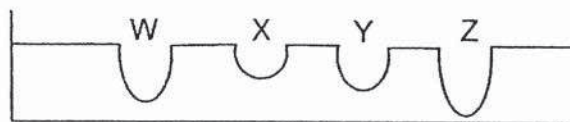
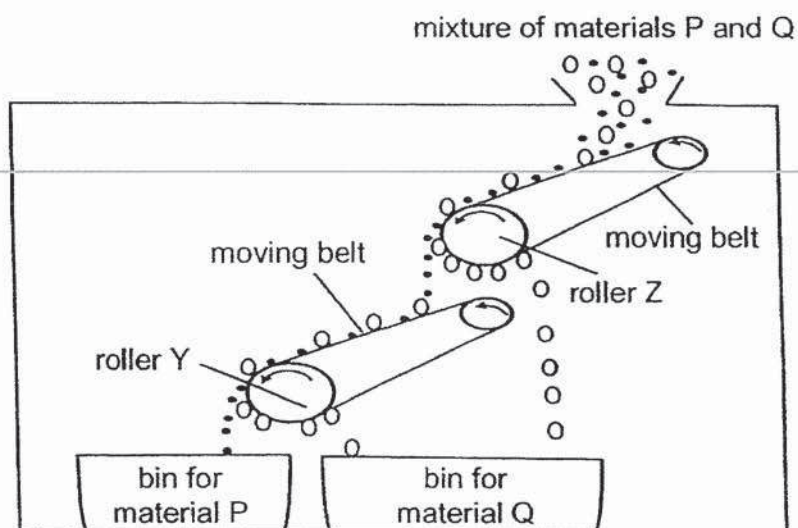


Diagram 2

Which of the following statements is true at the point of release of the ball?

- (1) Ball X has a larger mass than ball W.
- (2) Ball Z had the greatest potential energy.
- (3) Ball W had a lower potential energy than ball Y.
- (4) Less gravitational force acted on ball Y than on ball X.

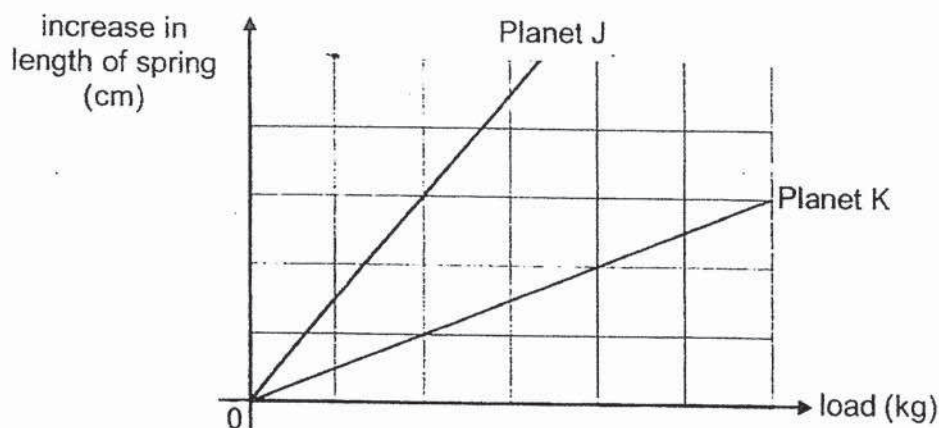
- 21 The diagram below shows a machine used to separate materials based on their magnetic properties.



Based on the diagram above, which two statements are true?

- A Both rollers Y and Z are magnets.
 - B Material Q could be steel.
 - C Material P could be iron.
 - D The machine could separate a mixture of aluminium and copper.
- (1) A and B
(2) A and C
(3) B and D
(4) C and D

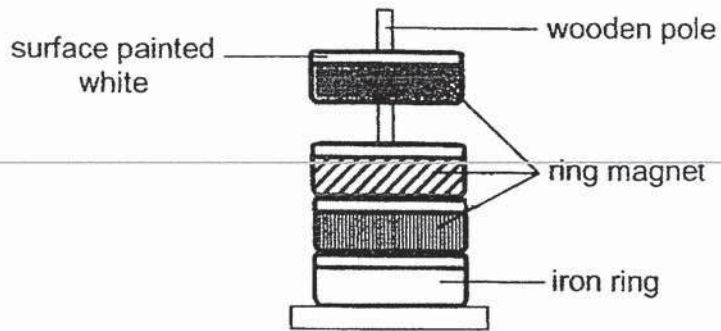
- 22 An experiment was conducted on a spring at Planet J and Planet K. Various loads were hung one at a time and the increase in length of the spring was recorded. The results are shown in the graph below.



Based on the graph, which one of the following conclusions is correct?

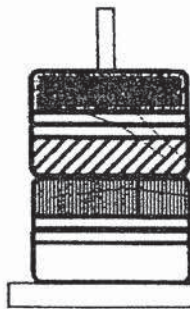
gravitational force acting on load on		
	Planet J	Planet K
(1)	not possible to tell	
(2)	equal to K	equal to J
(3)	less than K	more than J
(4)	more than K	less than J

- 23 Thiru used the set-up shown to investigate the magnetic force between three ring magnets and one iron ring. One of the surfaces of each ring is painted white.

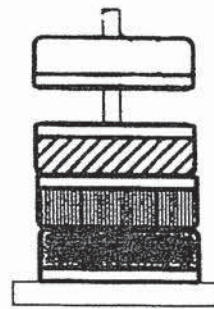


Which one of the following arrangements is possible?

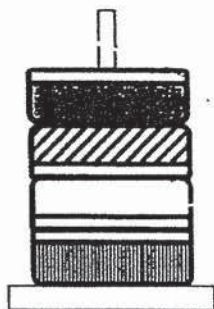
(1)



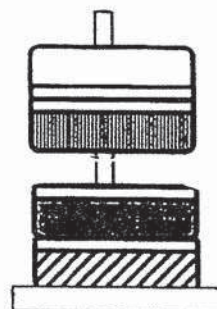
(2)



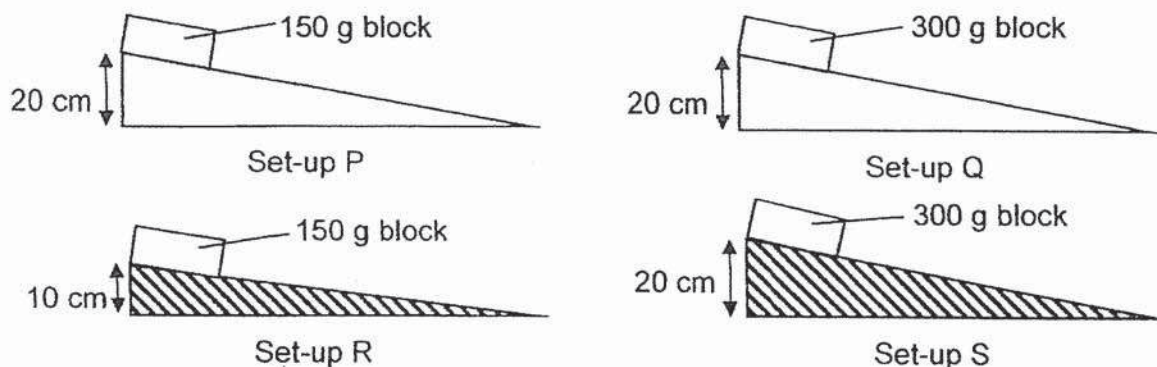
(3)



(4)



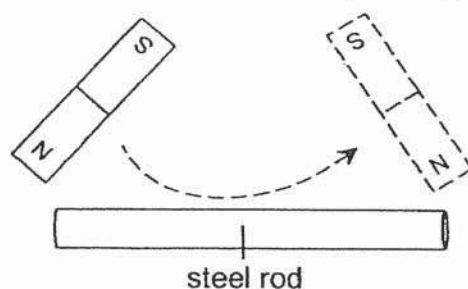
- 24 Betty conducted an experiment with two blocks of the same size but of different mass. He released the blocks on ramps with 2 different surfaces as shown below.



He wanted to find out if the time taken by the block to slide down the ramp is affected by the mass of the block and the surface of the ramp. Which pairs of set-ups should he use for each of his experiments?

	mass of block	surface of ramp
(1)	P and S	R and S
(2)	P and Q	Q and S
(3)	Q and R	P and Q
(4)	R and S	P and R

- 25 Amin used a bar magnet to stroke a steel rod repeatedly in the same direction as shown.

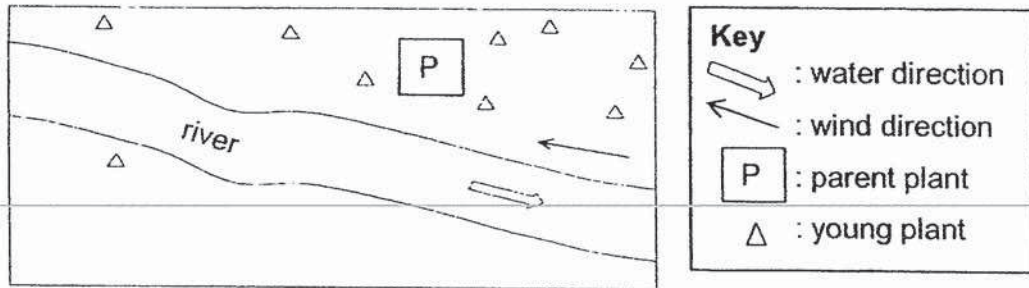


Which of the following statements is correct?

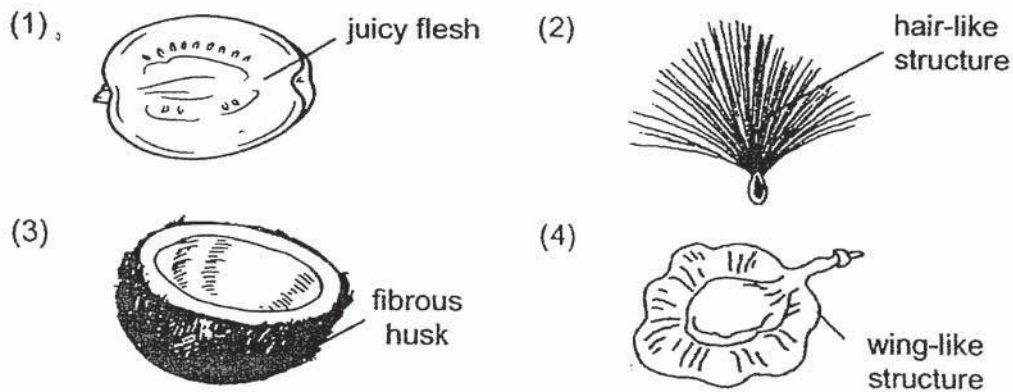
- (1) Stroking once is enough to make the steel rod a strong magnet.
- (2) The steel rod has stronger magnetism if it is stroke using a horse shoe magnet instead.
- (3) The steel rod has stronger magnetism if it is stroke more times in the same direction.
- (4) The bar magnet should stroke the steel rod in different directions the same number of times to form a magnetised steel rod.

26

Study the distribution of young plants of plant P.

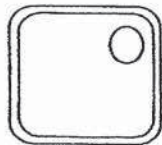


Which one of the following structures is from plant P?

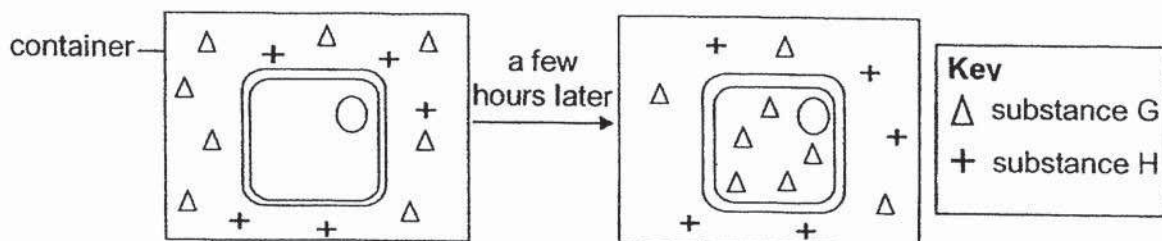


27

The diagram below shows a section of a plant cell.



The plant cell was placed in a liquid containing substance G and H for a few hours.



Which of the following statements is a likely explanation for the observation above?

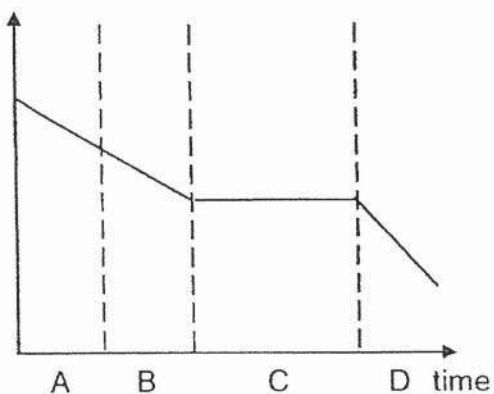
- (1) Substance G moved into the cell faster than substance H.
- (2) The cell wall prevented substance H from entering the cell.
- (3) The cell membrane only allowed substance G to enter the cell.
- (4) Substance H is smaller and is blocked by substance G from entering the cell.

28 Ramli was involved in a sequence of events in school as shown below:

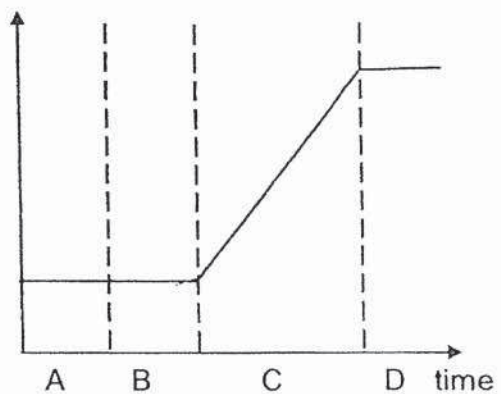
- A Walking quickly to the school field from classroom.
- B Sitting quietly in the school field to get ready for a soccer match.
- C Playing a soccer match with his classmates.
- D Cooling down exercise after the soccer match.

Which of the following graphs most likely shows how his heart rate changes from event A to D?

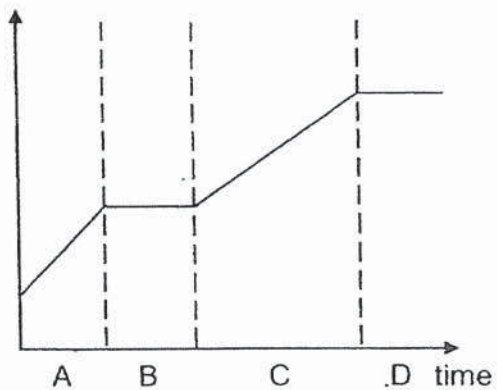
(1) heart rate



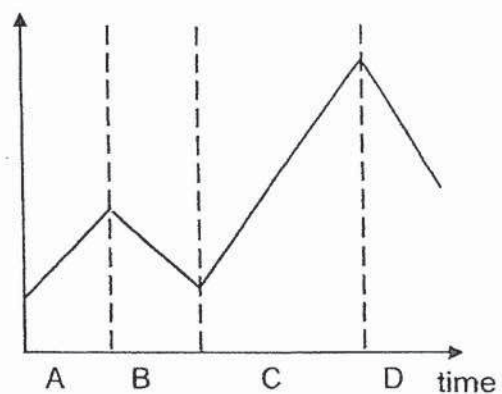
(2) heart rate



(3) heart rate



(4) heart rate





PEI HWA PRESBYTERIAN PRIMARY SCHOOL
PRELIMINARY EXAMINATION

PRIMARY 6
SCIENCE
(BOOKLET B)

25th AUGUST 2020

Name: _____

Class: Resilience _____

Parent's Signature

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

INSTRUCTIONS TO CANDIDATES

1. Write your Name, Class and Register No. in the spaces provided above.
2. DO NOT turn over this page until you are told to do so
3. Follow all instructions carefully
4. Answer all questions.
5. Write all your answers in this booklet.

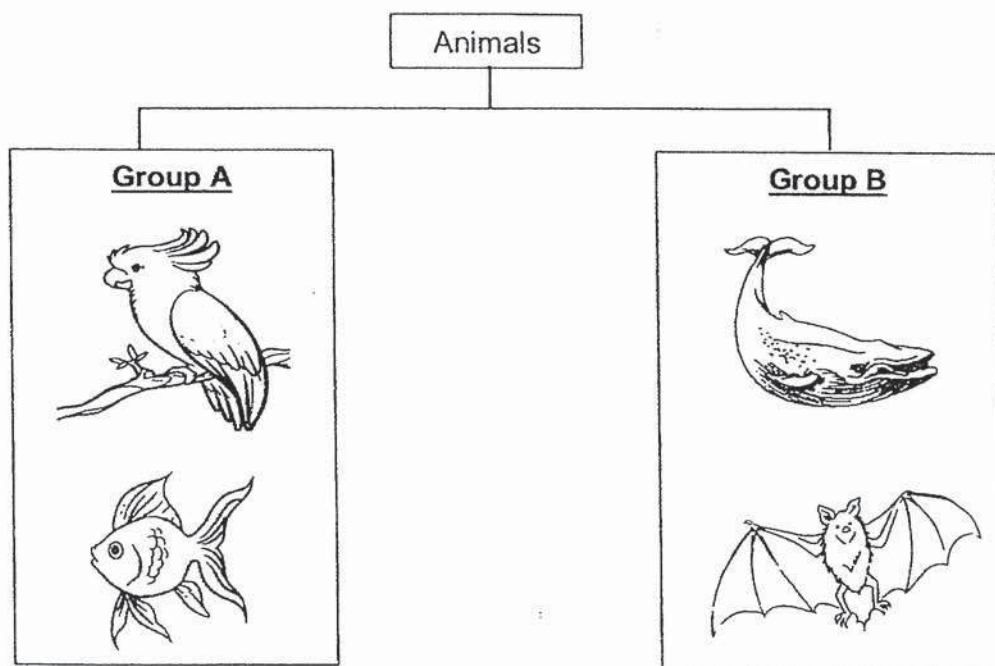
Marks (Booklet A) :	56
Marks (Booklet B) :	44
Total Marks (Booklets A & B) :	100

This booklet consists of 17 printed pages, excluding the cover page.

Write your answers to the questions 29 to 41 in the spaces provided.

The number of marks available is shown in brackets [] at the end of each question or part question. (44 marks)

29 The chart shows some animals that are classified into **two groups**.



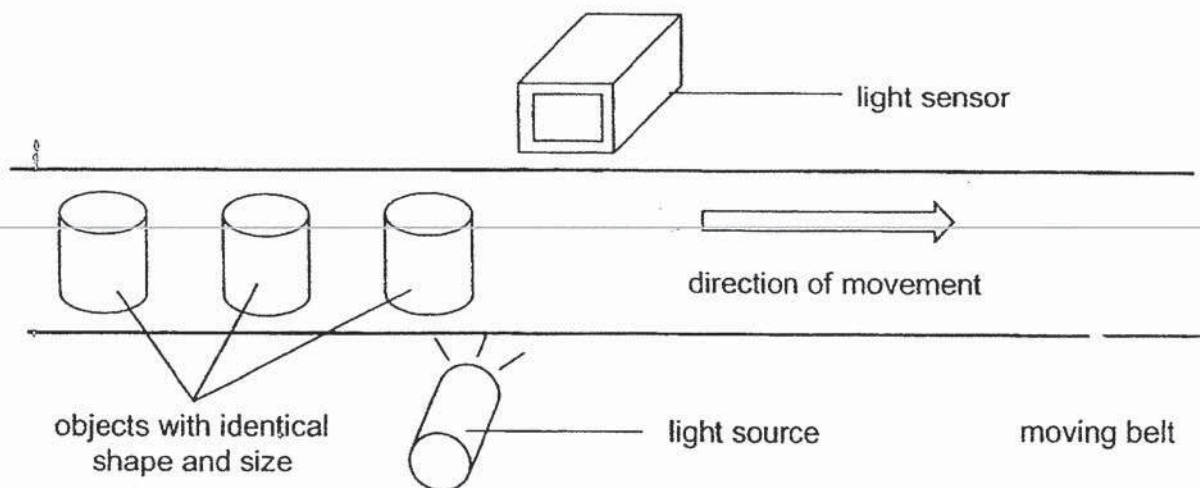
(a) How are the animals in the chart above classified?

[1]

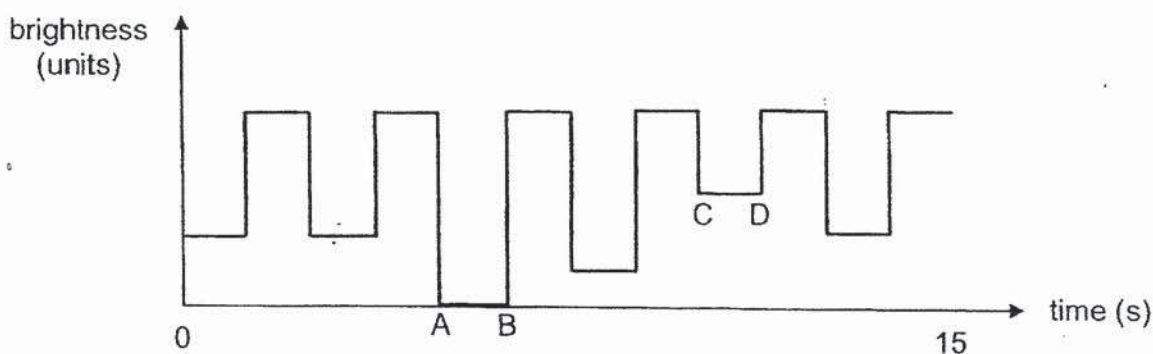
(b) Carrie decided to classify a frog under group B. Based on your answer in (a), do you agree? Give a reason for your answer.

[1]

- 30 A factory uses a light sensor shown below to count objects with identical shape and size.



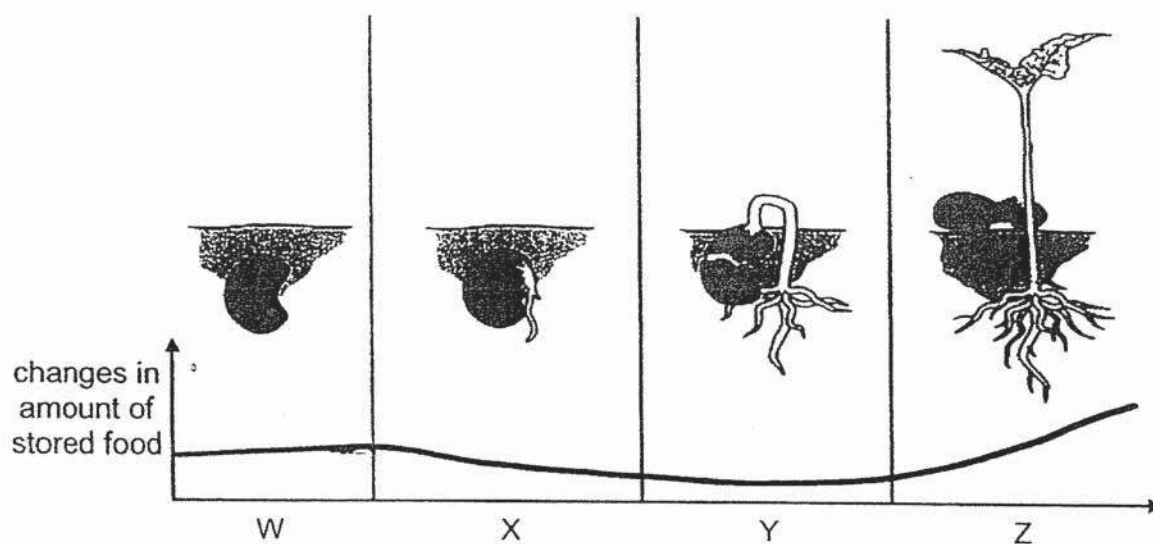
The belt moves at a constant speed. When the object is between the light source and the sensor, it blocks the light from reaching the sensor. The results recorded is shown in the graph below.



- (a) Based on the graph, how many objects passed through the light sensor in 15 seconds? [1]

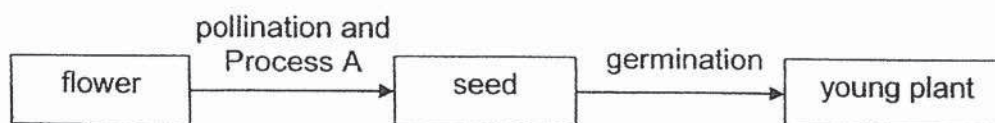
- (b) From the graph, line AB and line CD are results obtained from objects M and N respectively. State the difference in property of the materials used to make objects M and N. Explain your answer. [2]

- 31 The diagram below shows the changes in the amount of food stored in the plant during the stages of growth.



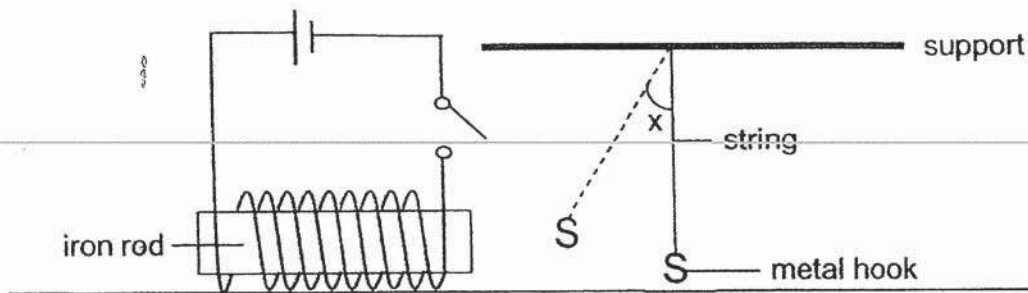
- (a) Explain the changes in the amount of stored food in the plant from W to Z. [2]

- (b) The diagram below shows how a young plant developed from a flower.



Describe Process A.

- 32 Winston conducted an experiment with a metal hook hanging down from the ceiling as shown below. When he switched on the circuit, the metal hook moved nearer to the iron rod and he measured angle x as shown.



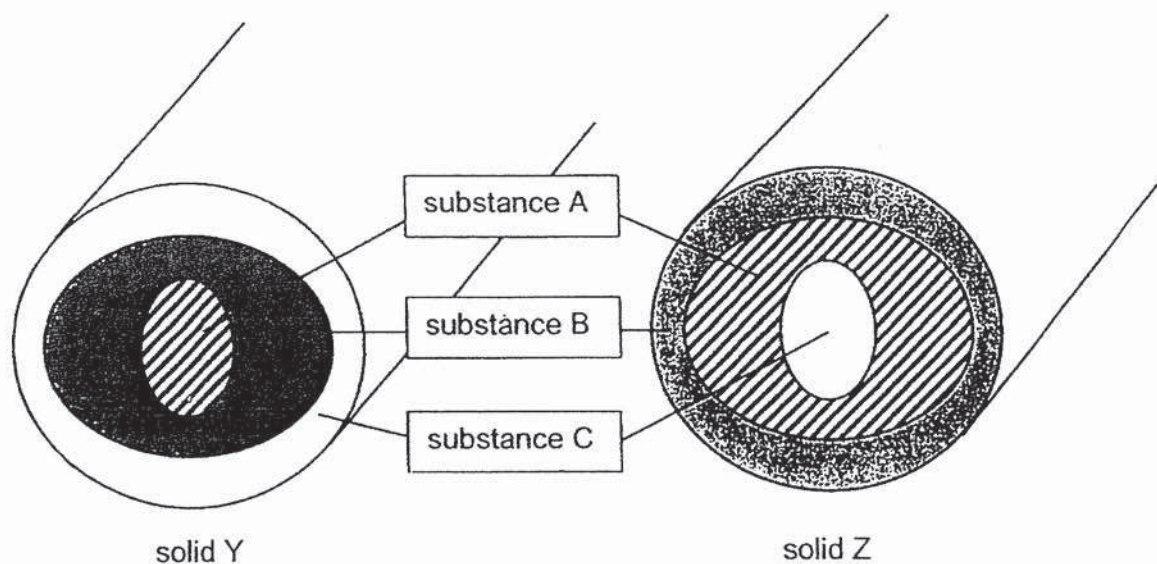
Winston changed the number of coils of the wire around the iron rod and recorded his results in the table below.

number of coils of wire around the iron rod	8	16	24
angle x ($^{\circ}$)	17	25	35

- (a) Based on Winston's results, explain the relationship between the number of coils of wire around the iron rod and the angle moved by the string. [2]

- (b) Suggest one possible change that can be made to the electrical circuit so that the angle x is greater than 35° . [1]

- 33 Solids Y and Z are made of three layers of substances A, B and C. The diagram below show the cut sections of both solids.



The table below show the melting points of substances A, B and C.

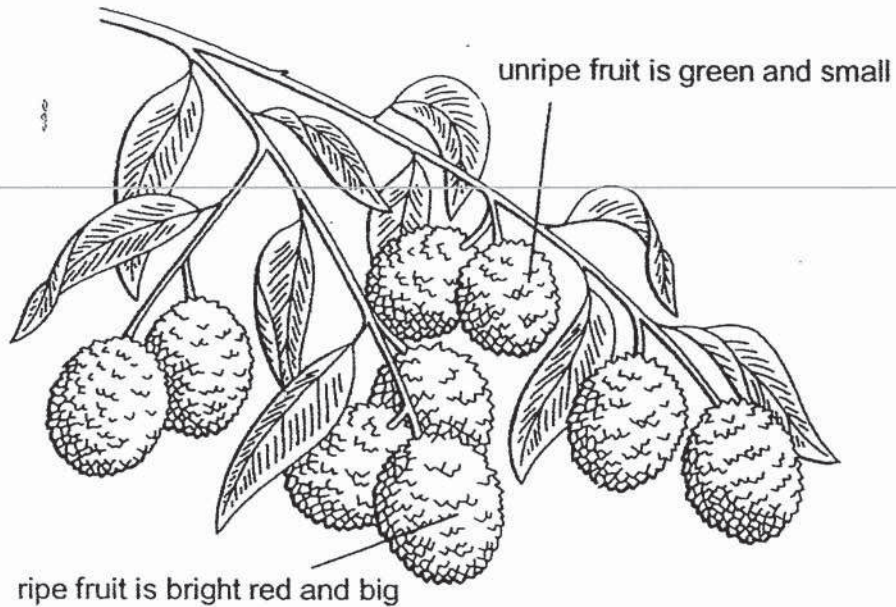
Substance	A	B	C
Melting point ($^{\circ}\text{C}$)	95	70	52

- (a) Suggest a possible temperature to heat solid Y to in order to obtain substance A in its solid state. [1]

_____ $^{\circ}\text{C}$

- (b) Substance C in solid Z cannot be obtained in solid form using with the method stated in (a). Explain why. [2]

- 34 The diagram below show the features of the fruits of plant G found on Island X.

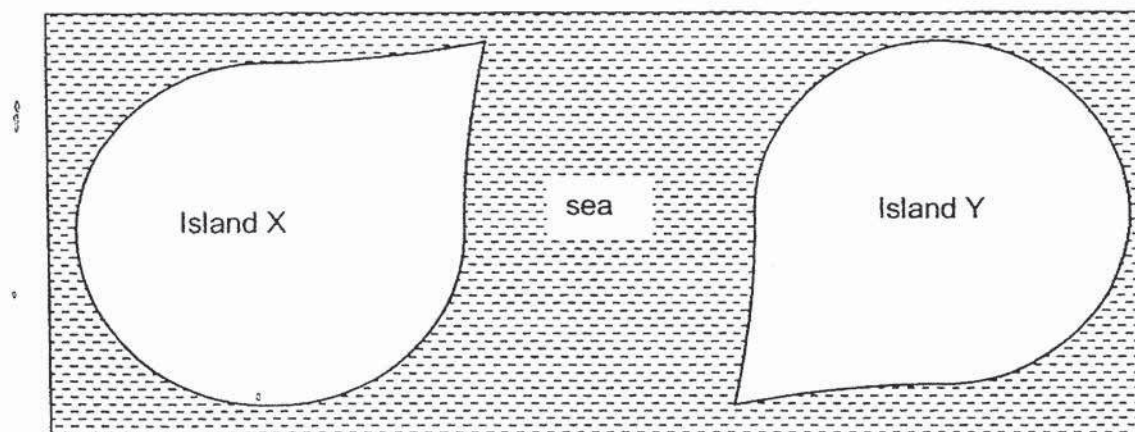


- (a) (i) Why is it important for the ripe fruit of the plant G to be bright red and big? [1]

- (ii) Suggest another possible characteristic of the **unripe** fruit of the plant G. [1]

Question 34 continues on page 7

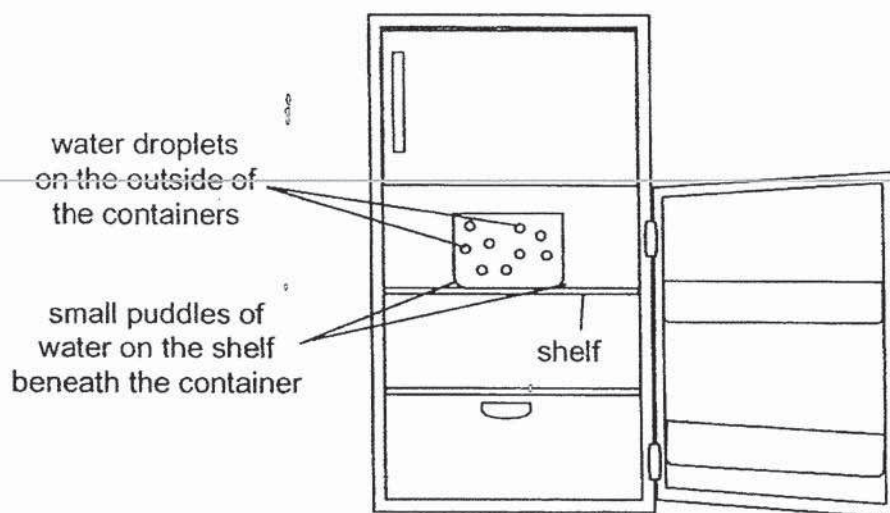
- (b) Island X and Island Y are situated far apart from each other and separated by a sea. Plant G was not found on Island Y.



Scientists observed that plant G grows on Island Y some years later. Suggest how plant G can be found on Island Y.

[1]

- 35 Mrs Chew accidentally left the door of her refrigerator opened. She noticed some small puddles of water on the shelf beneath the container after 20 minutes.



- (a) Based on the observation above, explain how the small puddles of water appeared on the shelf beneath the glass container. [2]

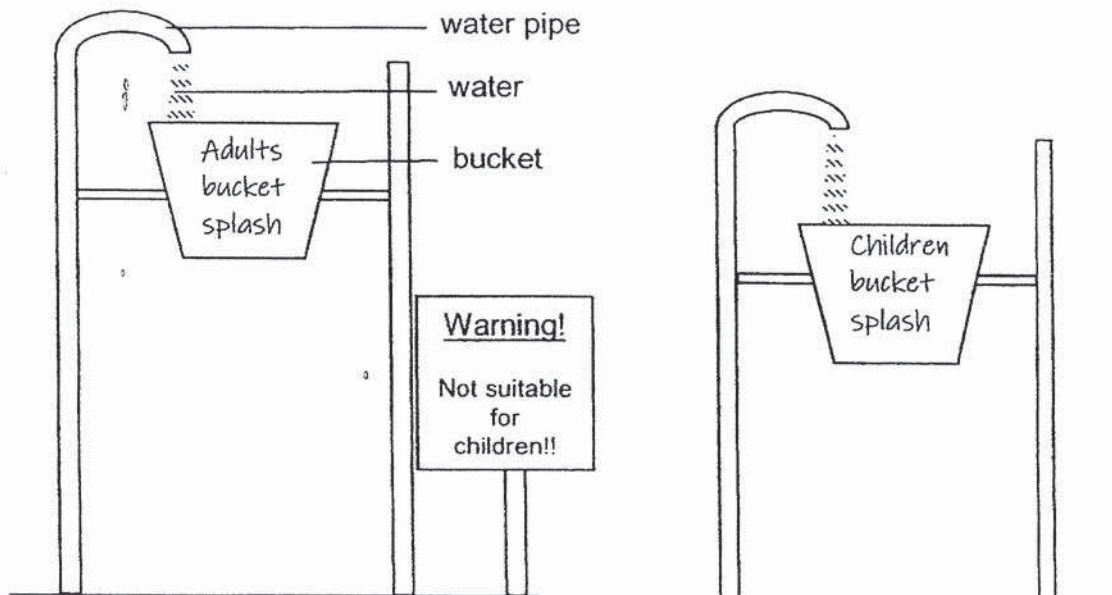
- (b) Mrs Chew added crushed ice from her freezer into a jug with drinks as shown.



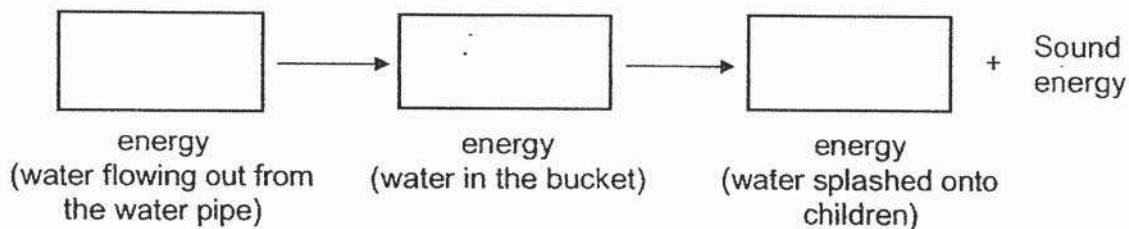
Mrs Chew explained that it is faster to cool the drinks in the jug using crushed ice instead of ice cubes. Explain why cooling is faster when using crushed ice instead of ice cubes.

[2]

- 36 The diagram below shows two water playground equipment found in a water theme park. The buckets tip over when they are completely filled with water and splash onto the people below the buckets.

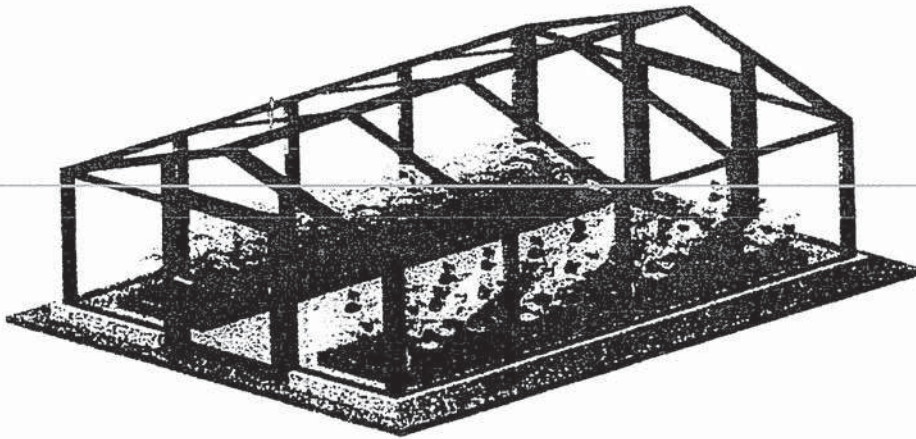


- (a) Fill in the boxes to show the main energy changes in the 'Children bucket splash'. [1]

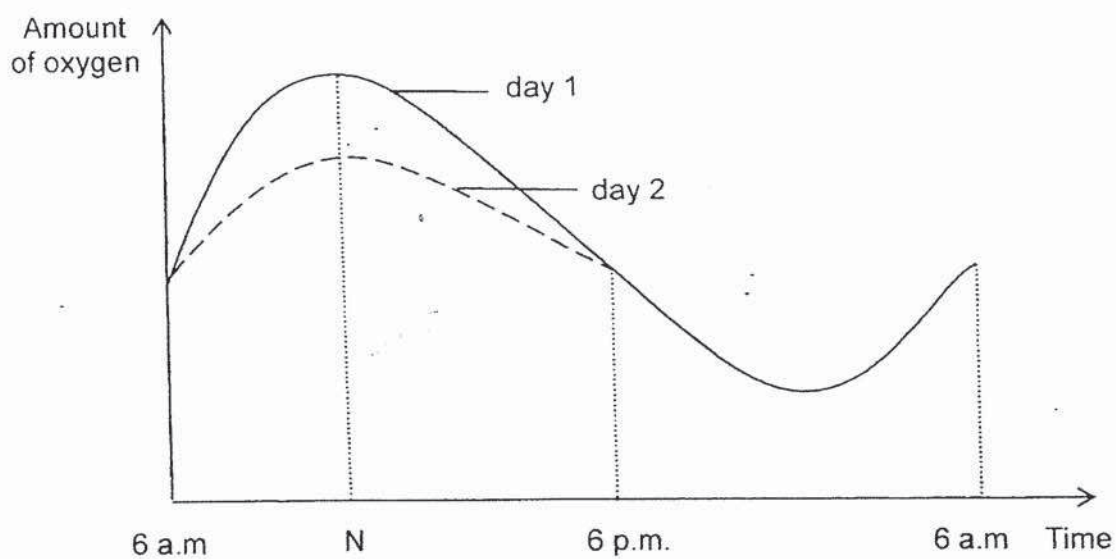


- (b) The buckets used in both water playground equipment are of the same size. Explain why children are advised not to play under the 'Adults bucket splash'. [2]

- 37 A greenhouse is a building made of glass which plants are grown in a controlled environment.



- (a) The graph below shows the amount of oxygen in the greenhouse for 2 days.

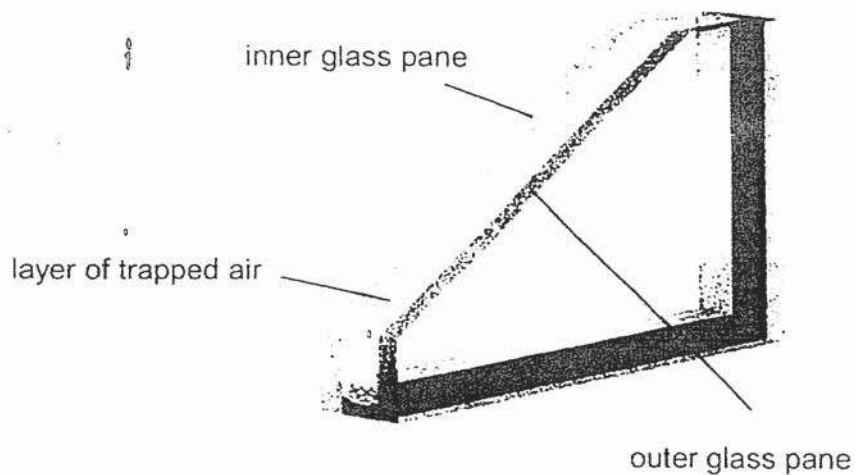


Suggest a reason for difference in the amount of oxygen in day 2 as compared to day 1 between time N to 6 p.m. Explain your answer

[2]

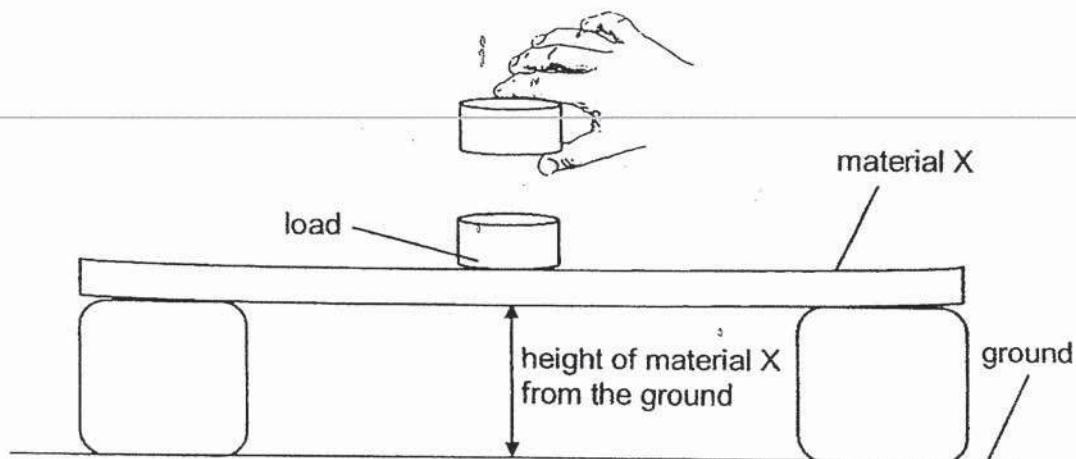
Question 37 continues on page 11

- (b) In winter countries, some greenhouses are made using double-layered windows. Double-layered windows are made up of two sealed glass panes with a layer of air trapped in between as shown below.



Explain why it is necessary to use double-layered windows for greenhouses in cold countries. [2]

- 38 Yiling conducted an experiment using material X and placed similar loads on the material as shown below. She measured the height of the material from the ground as she placed 3 loads on it, one at a time.



She repeated the experiment using material Y and recorded the results shown in the table.

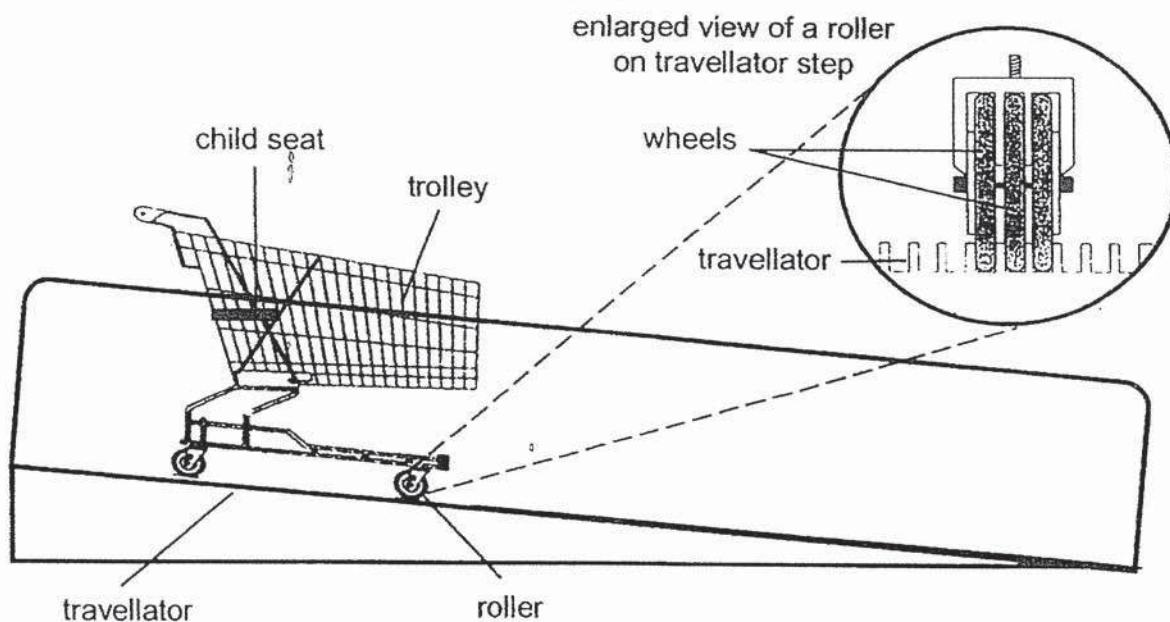
Number of loads added	Height of each material from the ground (cm)	
	Material X	Material Y
0	30	30
1	27	21
2	23	11
3	20	2

- (a) What is the aim of Yiling's experiment?

[1]

Question 38 continues on page 13

The diagram below shows a supermarket shopping cart on a travellator.



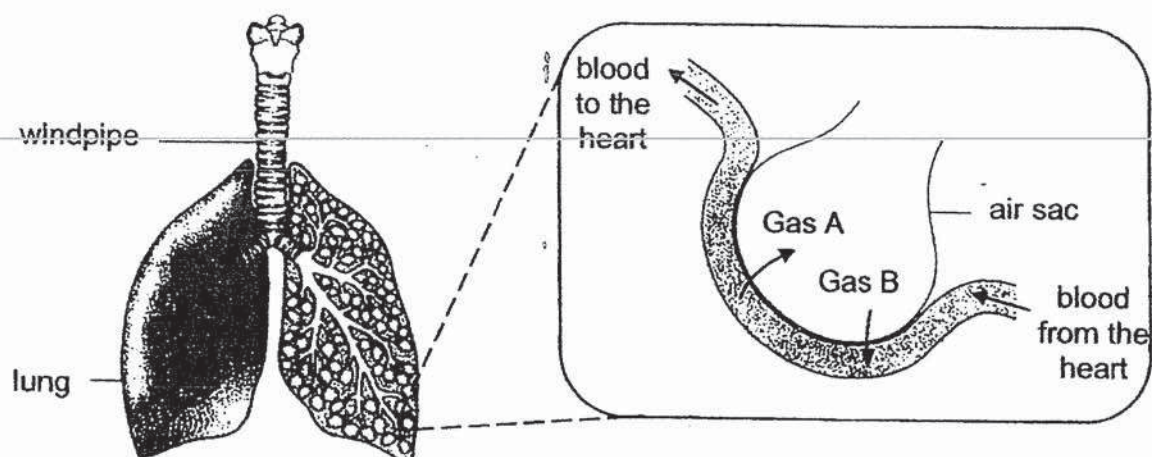
- (b) Based on Yiling's experiment, which material, X or Y, is suitable for the child seat on the trolley? Explain your answer. [1]

- (c) Name the forces acting on the wheels of the trolley in the diagram. [1]

- (d) Using the forces in (c), explain why the trolley did not move. [1]

- (e) The rollers of the trolley need to be replaced after some time. Give a reason for this. [1]

- 39 The diagram below shows the human respiratory system. The enlarged diagram of one air sac in the lung shows how Gas A and Gas B move in and out of the blood surrounding the air sac.



- (a) Name Gas A and Gas B.

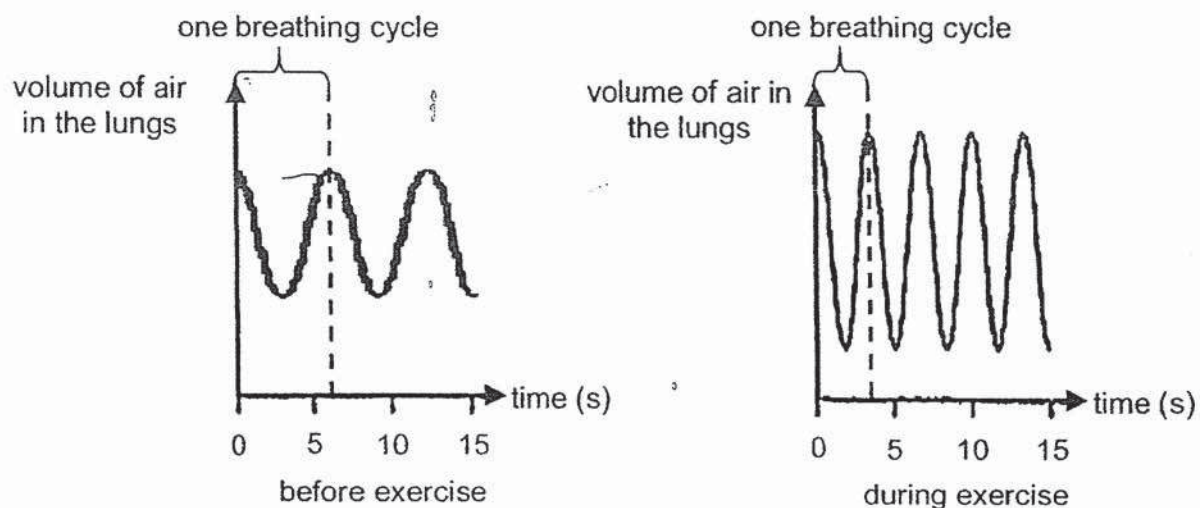
Gas A: _____

Gas B: _____

[1]

Question 39 continues on page 15

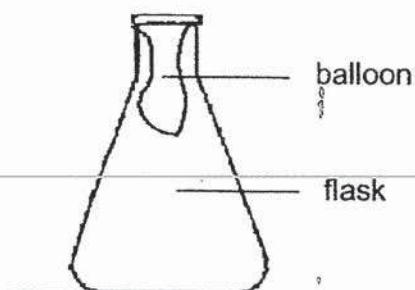
The graphs below show the volume of air in an athlete's lungs as he breathes in and out before and during exercise. One breathing cycle is when the athlete breathe in and out.



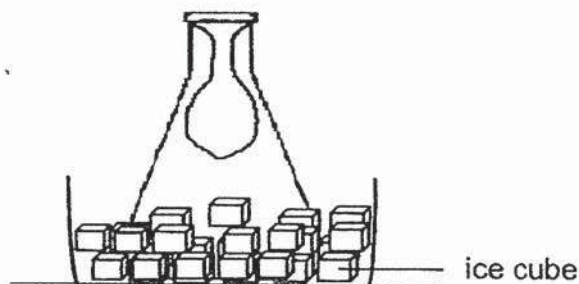
- (b) Based on the information in the graphs, describe two differences in his breathing patterns before and during exercise. [2]

- (c) Explain the reason for one of the differences stated in (b) during exercise. [2]

- 40 Giselle used the set-up below to conduct an experiment. The opening of the balloon was fitted over the mouth of the flask.



The set-up was placed in a basin with ice. The balloon then increased in size after 30 minutes.

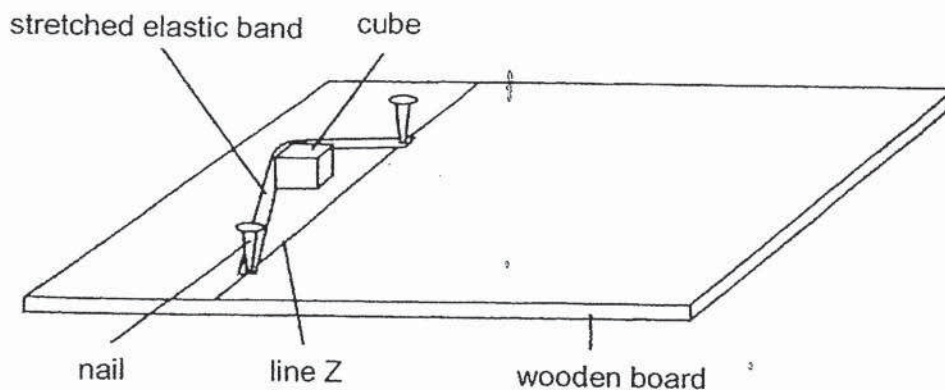


- (a) Explain how the balloon increased in size after 30 minutes. [2]

- (b) Based on the experiment above, what will happen to the mass and volume of air in the flask surrounding the balloon after 30 minutes? Put a tick (✓) under the correct headings. [1]

	Statement	Increase	Decrease	Remained constant
(i)	Mass of air in the flask surrounding the balloon			
(ii)	Volume of air in the flask surrounding the balloon			

- 41 Eleanor placed a cube 5 cm behind line Z on a wooden board. She stretched an elastic band over the cube as shown below. When she released the elastic band, the cube move over line Z.



She had other materials that she could use:

- a marker
 - a stopwatch
 - a metre rule
- (a) Eleanor wanted to find out how the distance the elastic band is stretched back behind line Z would affect the distance moved by the cube from line Z.

Using the materials given, describe how she could carry out her experiment.
(She does not need to use all the materials.)

[2]

- (b) What can Eleanor do to ensure that her results are reliable?

[1]

- End of paper -

ANSWER KEY

YEAR. :2020
LEVEL. :PRIMARY 6
SCHOOL. :RAFFLES GIRLS'
SUBJECT. :SCIENCE
TERM. :PRELIMINARY

SECTION A

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

SECTION B

Q29. (a) They are classied on method of reproduction.

(b). No. Group B is for animals which give birth to young alive but Group A is for animals which lay eggs and amphibians like a frog lay eggs so a frog should be classified under A.

Q30. (a). B

(b). M is opaque while N is translucent. M did not allow any light from the light source to pass through to the light sensor while N only allowed some light to pass through to the light sensor.

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Q31. (a). Stages W to Y the mass decreases as food stored in the seed least was used up by the seeding. Stage Z, The mass increase as excess which is produced during photosynthesis is stored.

(b). The male reproductive cell will fuse with the female reproductive cell to fertilise the plant for the ovary to become the fruit and the ovule to become the seed.

Q32. (a). The greater the coils of wire around the iron rod, the greater the angle X. Having more coils of wire increases the iron rod's magnetic strength, thus allowing the electromagnet to attract the metal hook closer and increase angle X.

(b). Add more batteries to the electromagnet.

Q33. (a). 80 °C

(b). To obtain substance C in solid Z, Substance A and B has to be melted first.

Q34. (a). i.) To attract animals to eat the fruit.

ii.) It's Sour

(b) The seeds of Plant G are eaten by birds which fly over to island Y and disperse the seeds.

Q35. (a). Since the containers had been into the fridge, they became cold.

The warmer water vapour outside the fridge came into contact with the cooler outer surface of the containers, lost heat quickly to condenses water droplets. These water droplets then slide down to form puddles.

(b). The crushed has a greater exposed surface area for the drinks to lose heat quicker to the crushed ice and cool faster.

Q36. (a). Kinetic---Gravitational Potential---Kinetic

(b). The bucket used in the adults bucket splash is at a greater height than the bucket used in the children bucket splash, thus containing more potential energy of the water to be converted to more kinetic energy in the falling water, having a greater impact on the children, which may be dangerous.

Q37. (a). It had been brighter at N on Day 1 than Day 2 with more light, the Plants can photosynthesis more to produce more oxygen and food, thus increase the amount of oxygen more.

(b). The trapped air between the two largers of glass is a poor conductor of heat, thus it will lose heat slower to the colder surrounding, keeping the inside of the greenhouses warm for the plants to thrive.

- Q38. (a). She was trying to find out which material was more flexible.
 (b). X. It did not bend as much as Y when the same amount of load was added, thus it is not as flexible and will not stretch as much as Y when sat on.
 (c). Friction , Gravity
 (d). The friction between the wheels and traveller was enough to withstand the gravity acting on the trolley.
 (e). The friction between the rollers and the traveller causes wear and tear of the rollers.

- Q39. (a). Gas A: Carbon dioxide
 Gas B: Oxygen
 (b). Volume of air breathed into the lungs is more during exercise and breathing rate is higher during exercise.
 (c). During exercise, an athlete's body is producing carbon dioxide faster and needs the lungs to breathe faster to remove carbon dioxide and take in oxygen for the body, thus one breathing cycle is shorter.

- Q40. (a). The air in the flask surrounding the balloon lost heat to the ice cubes and contracted, occupying less space in the flask so air could enter the balloon and occupy more space.

- (b). i) Remained Constant
 ii) Decrease

- Q41. (a). i) Pull back the stretched elastic band with the cube and release.
 ii) Mark its final distance from line Z with a marker.
 iii) Repeat steps 1 and step 2 but pull the elastic band back to different distances each other.
 iv) Record each distance where the marker is.
 (b) She can repeat her experiment until she gets at least three consistent results.

100% correct result only 88660031



RAFFLES GIRLS' PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2020

Section A	56
Section B	44
Your score out of 100%	
Parent's signature	

Name : _____ Index No.: _____ Class: P6_____

20 AUG 2020

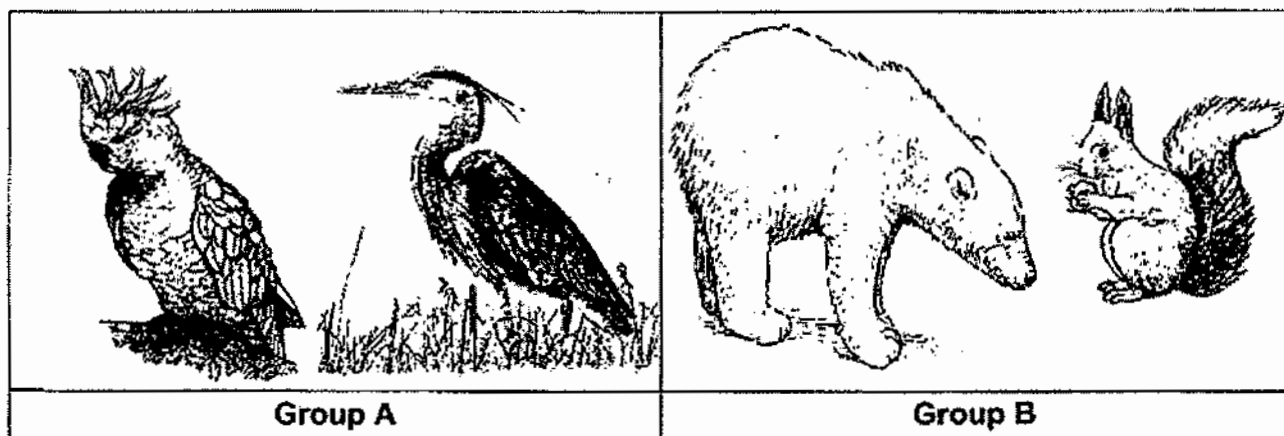
SCIENCE

Duration: 1 h 45 min

SECTION A (28 x 2 marks)

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

- 1 Study the animals in groups A and B below.



Which of the following is correct? A tick (✓) shows the presence of the characteristic(s) of the animals.

	Group	Has body covering of feathers	Has body covering of fur	Has wings
(1)	A		✓	✓
(2)	A	✓		✓
(3)	B		✓	✓
(4)	B	✓		

2 Which of the following statements about fungi are true?

- A Yeast is a type of fungi.
- B Fungi reproduce by spores.
- C Fungi are not made of cells.
- D Fungi do not have chloroplasts.

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

3 Observations made on animals P and Q are recorded in the table below.

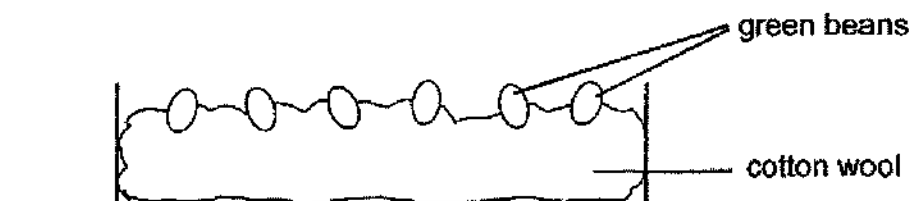
Characteristic \ Animal	Has 3-staged life cycle	Lay eggs on land	Young resembles adult
P	√	√	√
Q	√		

Which of the following represents animals P and Q correctly?

	Animal P	Animal Q
(1)	butterfly	mosquito
(2)	butterfly	frog
(3)	cockroach	frog
(4)	cockroach	mosquito

- 4 Bethany investigated the conditions needed for the germination of green beans.

She prepared three set-ups, A, B and C, each containing same amount of cotton wool and the same number of green beans as shown below.



The table below shows the conditions each set-up was exposed to.

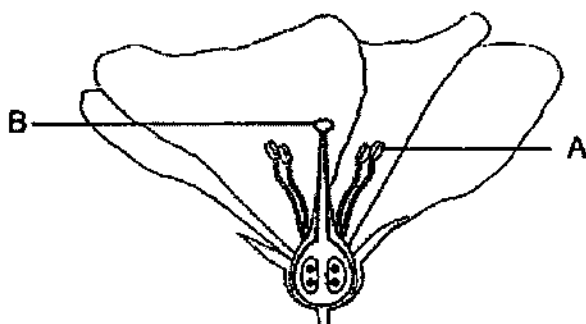
Set up	Conditions		
	Cotton wool	Temperature (°C)	Presence of light
A	damp	30	yes
B	dry	30	yes
C	damp	0	no

Bethany recorded the observations on the green beans after five days.

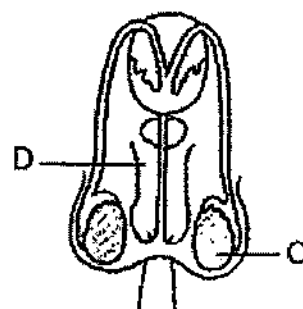
Which of the following observations correctly matches the reason?

	Observation	Reason
(1)	Green beans in set-up A germinated.	Air, water and light ^{warmth} needed for germination were present.
(2)	Green beans in set-up A germinated.	Air, water and warmth needed for germination were present.
(3)	Green beans in set-up B did not germinate.	No light was present.
(4)	Green beans in set-up C did not germinate.	No warmth and light were present .

- 5 The diagrams below show the reproductive systems of a plant and human.



Plant reproductive system

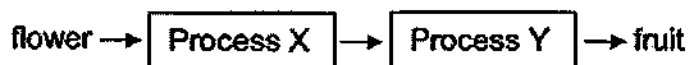


Human reproductive system

Which of the following represent the parts involved in producing the male reproductive cells?

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

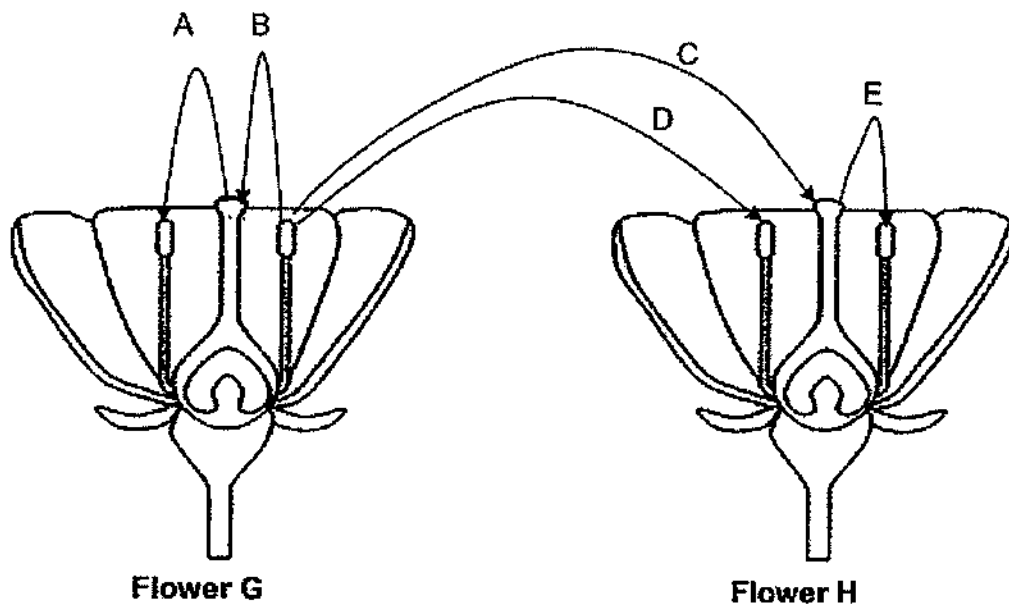
- 6 The diagram below shows how a fruit is developed from a flower.



Which of the following correctly identifies processes X and Y?

	Process X	Process Y
(1)	seed dispersal	fertilisation
(2)	fertilisation	seed dispersal
(3)	fertilization	pollination
(4)	pollination	fertilisation

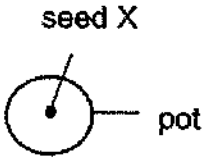
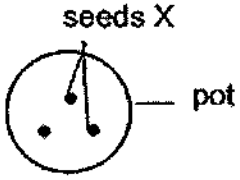
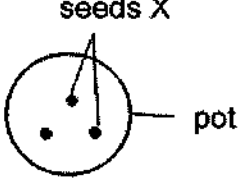
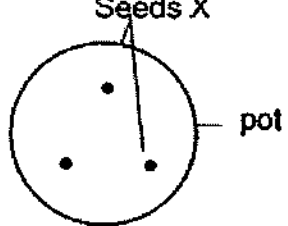
- 7 The diagrams below show two flowers, G and H, from the same type of plant.



Which is / are the arrow(s) that represent(s) the process pollination?

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

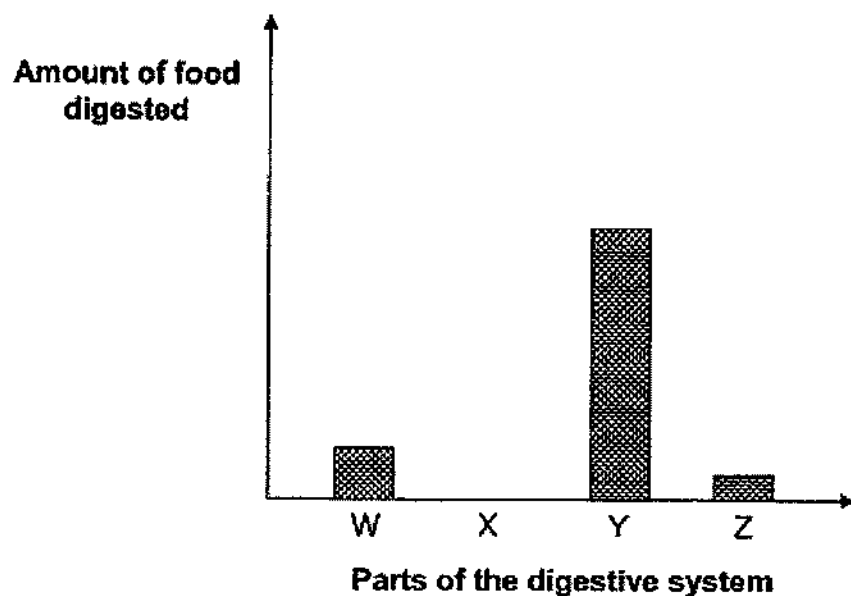
- 8 Sarah wanted to find out if overcrowding affects plant growth. The table below shows four different set-ups, P, Q, R and S, each containing the same amount of soil. She watered each set-up with the same amount of water daily.

Set-ups	Conditions		
	Size of pot and number of seeds	Location	Temperature (°C)
P		classroom	25
Q		garden	35
R		garden	25
S		garden	35

Which set-ups, P, Q, R and S, should Sarah use to ensure a fair test?

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

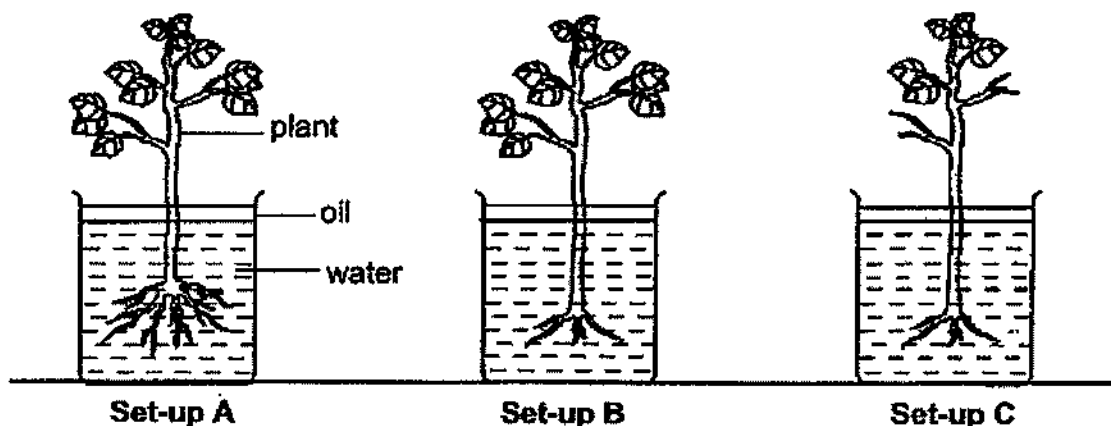
- 9 The chart below shows the amount of food digested in various parts of the human digestive system six hours after a meal.



Based on the graph above, which one of the following best represents W, X, Y and Z respectively?

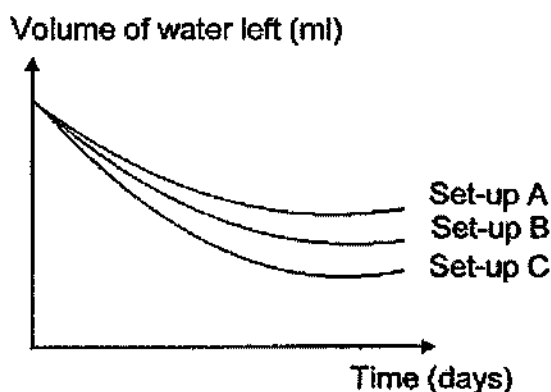
	W	X	Y	Z
(1)	stomach	large intestine	small intestine	mouth
(2)	stomach	mouth	small intestine	large intestine
(3)	mouth	small intestine	large intestine	stomach
(4)	small intestine	large intestine	mouth	stomach

- 10 Norris prepared set-ups A, B and C using the same type of plant. She removed some roots from the plants in set-ups B and C and removed some leaves from the plant in set-up C as shown in the diagrams below. She observed the volume of water left in each set-up over a period of one week.

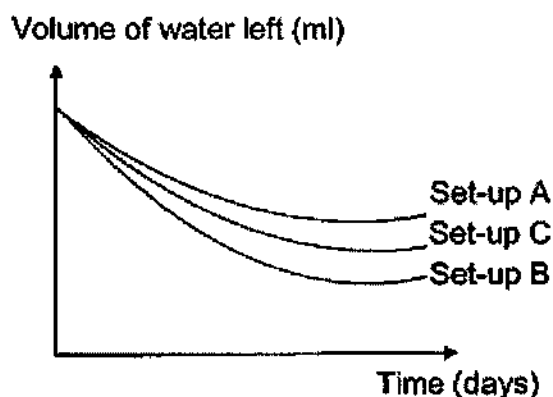


Which of the following graphs best represents the results obtained for the three set-ups, A, B and C?

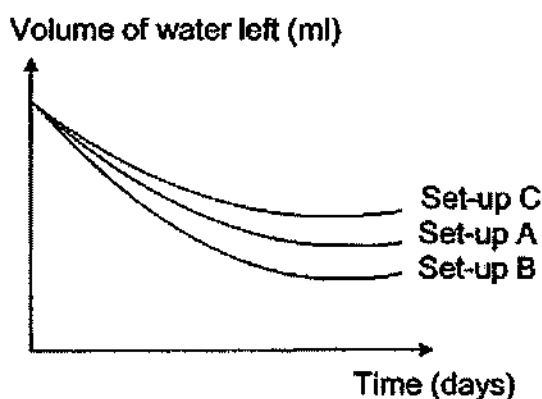
(1)



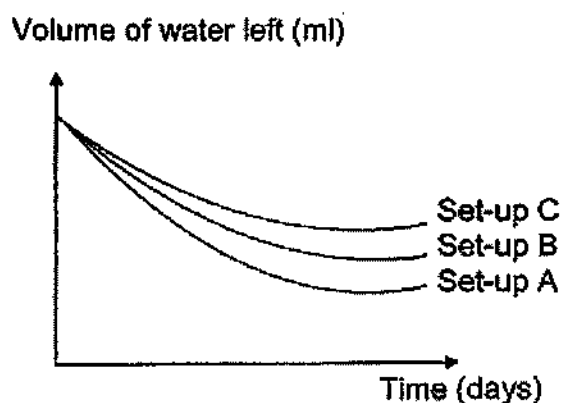
(2)



(3)



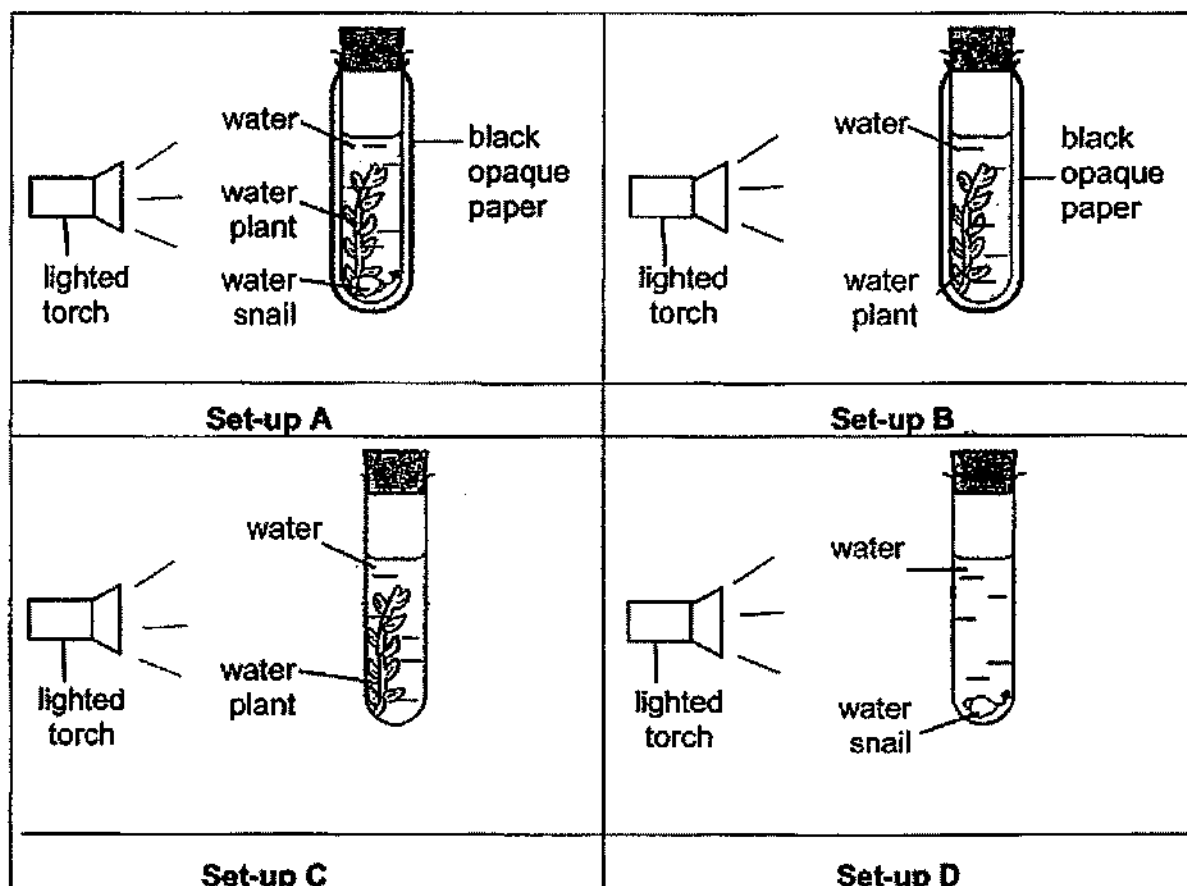
(4)



11 Which one of the following parts is found in a root cell but not in a cheek cell?

- (1) cell wall
- (2) cytoplasm
- (3) chloroplast
- (4) cell membrane

12 Denise prepared set-ups A, B, C and D as shown below.

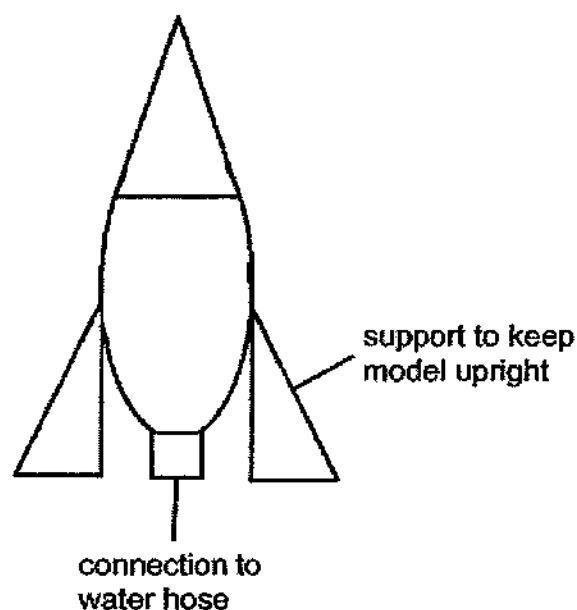


She measured the concentration of carbon dioxide in the water in each test-tube before the experiment and two hours later.

In which test-tube would there be a decrease in the concentration of carbon dioxide after two hours?

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

- 13 Gabi wanted to construct a flying model as shown in the diagram below.

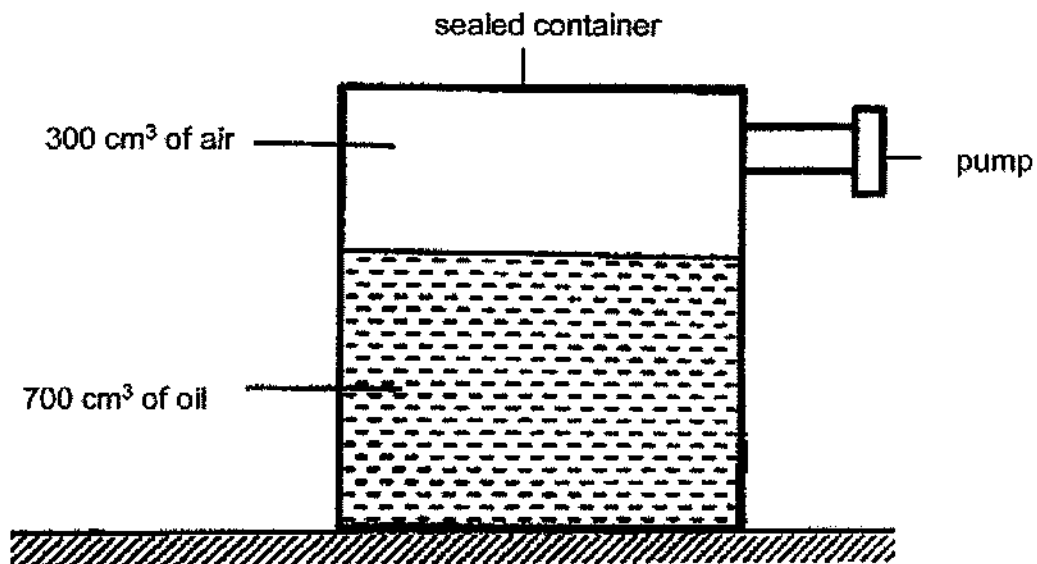


She wanted to conduct a test launch where the flying model would fly to a height of one metre when filled with water and that it would not be damaged when it landed on the ground.

Which of the following properties must she consider while selecting the materials to build her flying model?

- (1) Strength and waterproof.
- (2) Strength and conductor of heat.
- (3) Conductor of heat and flexibility.
- (4) Conductor of electricity and waterproof.

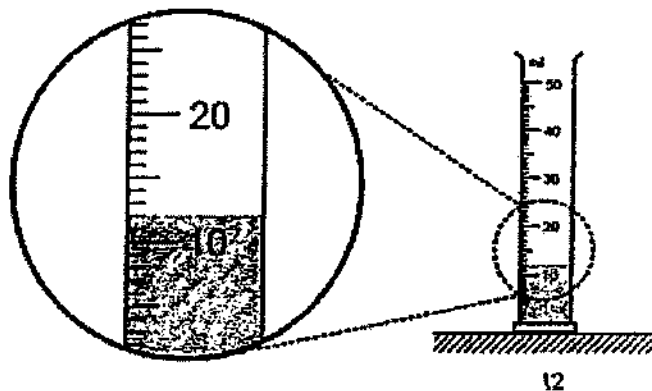
- 14 A sealed container holds 700 cm^3 of oil and 300 cm^3 of air as shown below. Another 200 cm^3 of oil is removed and 100 cm^3 of air is added to the container through the pump.



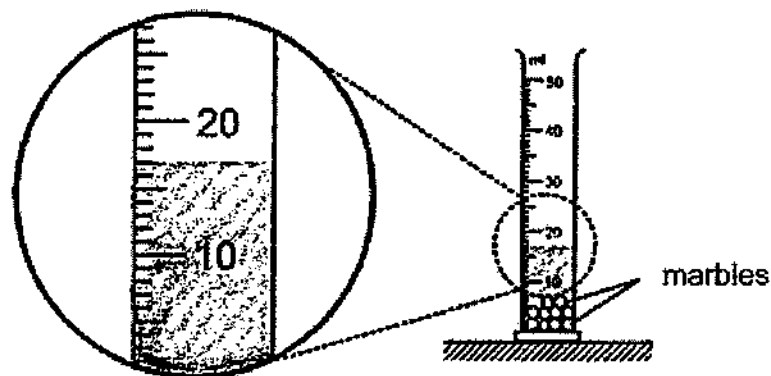
What is the final volume of air in the container?

- (1) 300 cm^3
- (2) 400 cm^3
- (3) 500 cm^3
- (4) 600 cm^3

- 15 Tim had a bag of identical marbles. He wanted to find the volume of each marble. He filled a measuring cylinder with water as shown in diagram below.



Tim then put ten marbles in the measuring cylinder of water. His result is shown below



Based on Tim's experiment, which of the following is correct?

- A Marbles occupy space.
- B Water has no definite volume.
- C The volume of each marble is 5 cm^3 .

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

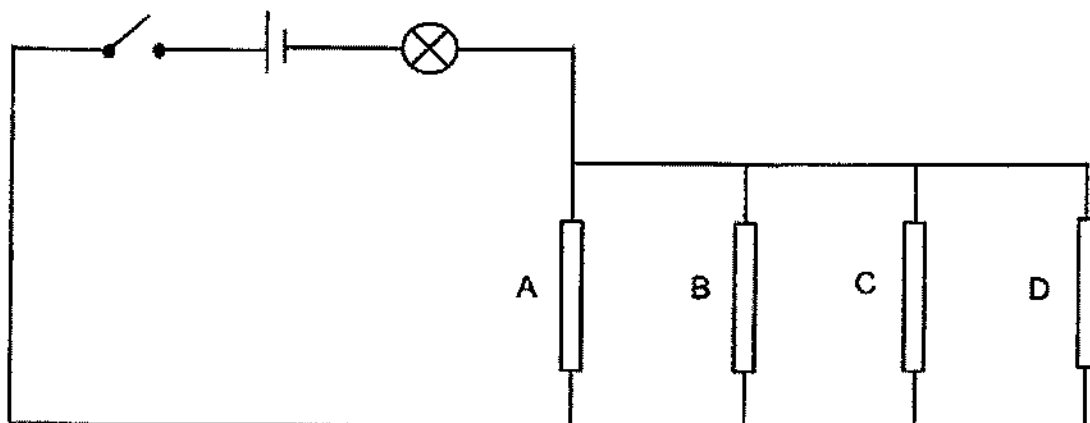
- 16 The table below shows the freezing point and boiling point of three substances, X, Y and Z.

Substance	Freezing point (°C)	Boiling point (°C)
X	6	80
Y	17	118
Z	43	181

Which of the substances, X, Y or Z, is/are liquid(s) at 90°C?

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

- 17 Dora wanted to investigate the electrical conductivity of rods A, B, C and D. She constructed the circuit as shown below.



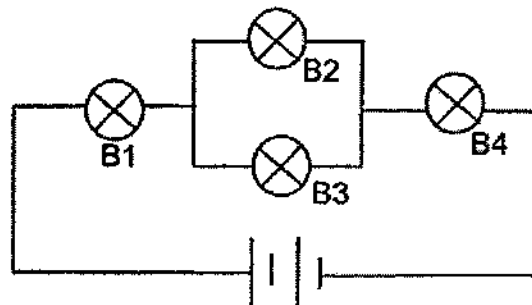
She recorded her observation below when she removed certain rods and closed the switch.

Rod(s) removed from the circuit	Bulb lighted up
D	yes
B and C	yes
B, C and D	no
A, B, D	no

Based on her observation, which of the following conclusions about the rods A, B, C and D is correct?

	Electrical conductor(s)	Electrical insulator(s)
(1)	A, C	B, D
(2)	B, C, D	A
(3)	A	B, C, D
(4)	B, D	A, C

- 18 The circuit below consists of identical bulbs, B1, B2, B3 and B4, all lit up.



Which of the following is likely to be observed when only one of the bulbs in the above circuit is fused at one time?

	Bulb that was fused	Smallest number of bulbs remaining lit	Largest number of bulbs remaining lit
(1)	B1 or B4	0	3
(2)	B1 or B3	1	2
(3)	B2 or B3	2	3
(4)	B2 or B4	0	3

19. A steel bar XY was magnetised using the "stroke" method as shown in Diagram 1 below. Diagram 2 shows the magnetic poles of XY after it was magnetised.

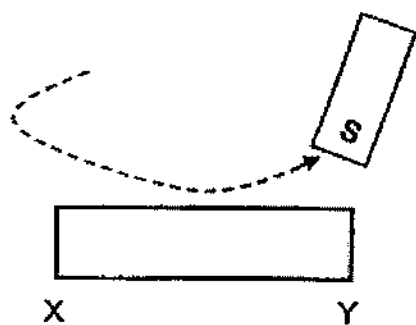


Diagram 1

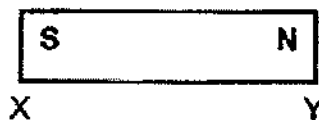


Diagram 2

Another steel bar below was magnetised using two magnets as shown in Diagram 3.

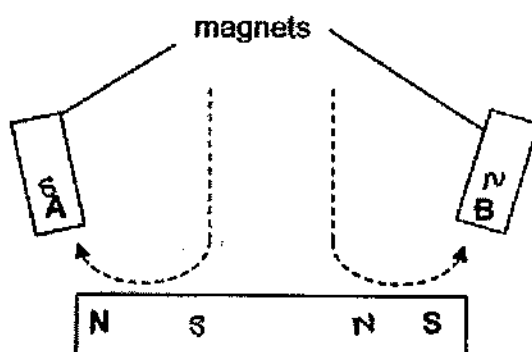
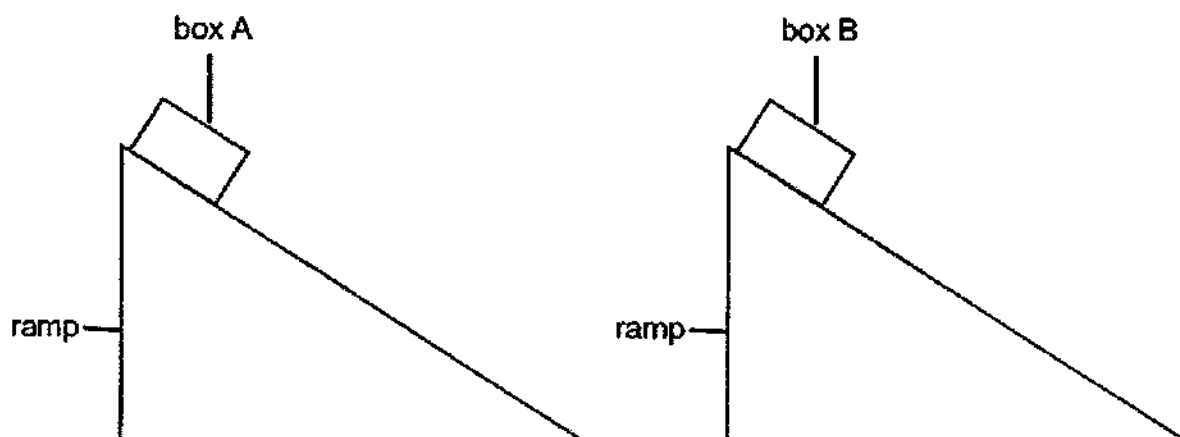


Diagram 3

Identify the poles at A and B used to magnetise the steel bar respectively.

	Poles at A	Poles at B
(1)	N	S
(2)	S	N
(3)	N	N
(4)	S	S

20. Ali, Beth, Cailing, and Devi prepared the following set-ups using identical boxes A and B as shown below.



The boxes were placed at the same starting point on the ramps. They observed that box B would slide down the ramp but box A remained stationary.

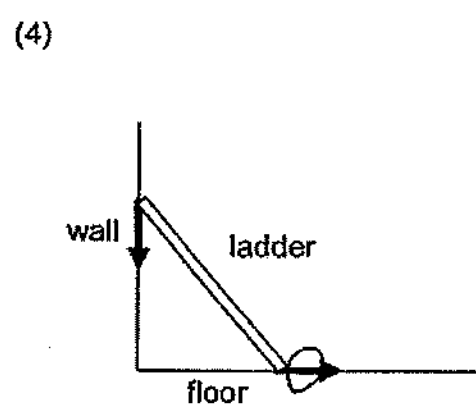
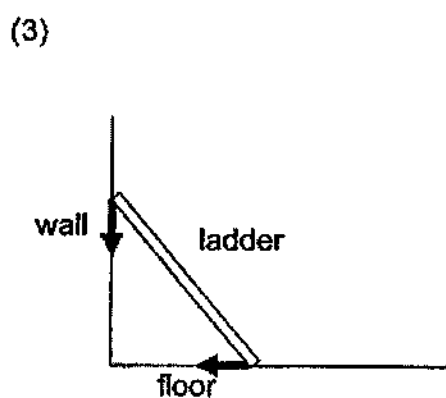
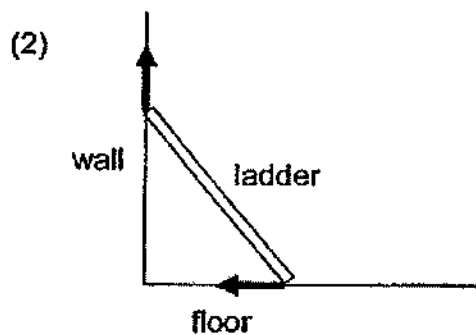
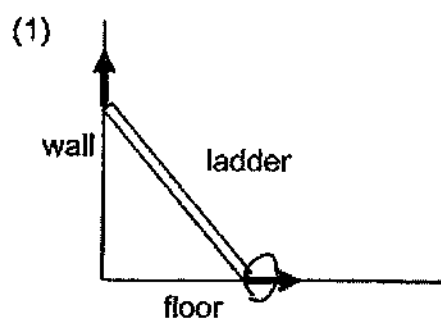
The pupils made the following statements:

Ali	The gravitational force acting on both boxes was the same.
Beth	The gravitational force acting on box B was more than that of box A.
Cailing	The surface of the ramp where box A was placed on was smoother.
Devi	The frictional force between box B and the surface of the ramp was less than that of box A and the surface of the ramp.

Which of the pupils made the correct statements?

- | | |
|----------------------|-------------------|
| (1) Ali and Cailing | (2) Ali and Devi |
| (3) Beth and Cailing | (4) Beth and Devi |

- 21 Which of the following arrows shows the direction of frictional force acting on a ladder which is leaning against the wall?



- 22 Stella carried out an experiment to find out which rubber ball, P, Q or R, travelled the furthest distance when it was rolled down the same ramp as shown below. The rubber balls were identical in size but of different masses.



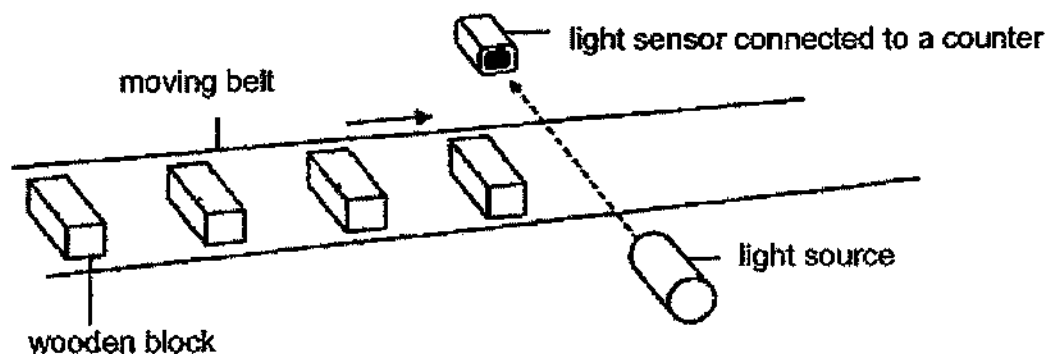
For each ball, she repeated the experiment three times. She recorded the distance travelled by each ball in the table below. However, she did not carry out a fair test when conducting the experiment with ball R.

	Distance travelled by balls (cm)			
	1 st try	2 nd try	3 rd try	Average
P	141	143	146	143.3
Q	183	184	180	182.3
R	90	125	680	142.5

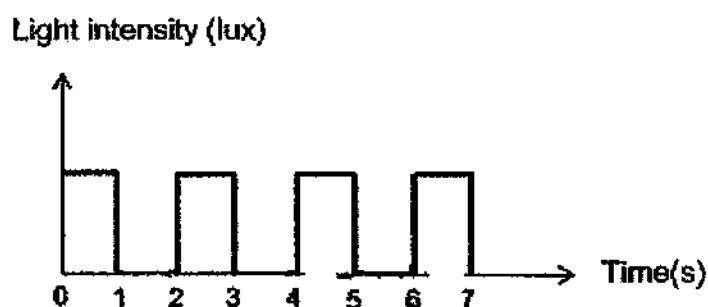
Based on the results of the above experiment, which of the following statements is/are most likely to be true?

- A The amount of gravitational force acting on ball Q was the least.
 - B The way she released ball R was not the same for all the three tries.
 - C Ball R was released at different positions on the ramp at each repeated experiment.
- (1) A only
(2) B only
(3) B and C only
(4) A, B and C

23. A light sensor is used to count the number of wooden blocks on a moving belt in a factory as shown in the set-up below.



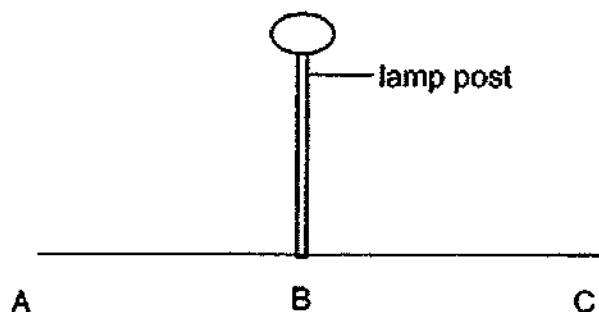
The belt moves at a constant speed. The workers plotted the results in the graph shown below.



Based on the graph above, how many wooden blocks were counted in five seconds?

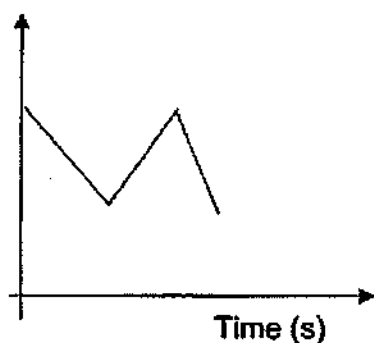
- (1) 2
- (2) 3
- (3) 4
- (4) 5

- 24 The diagram below shows a lamp post. The distance from A to B is identical to the distance from B to C. David walked under the lighted lamp post from B to C, then C to A passing B again. He increased his speed while walking from B to A.

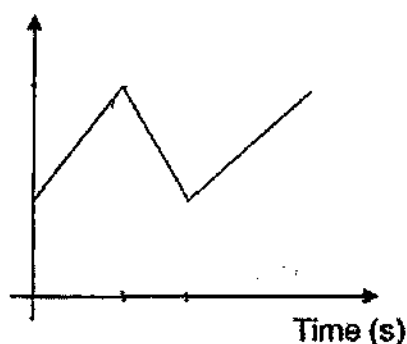


Which one of the diagrams below shows the changes in the length of the boy's shadow over the period of time?

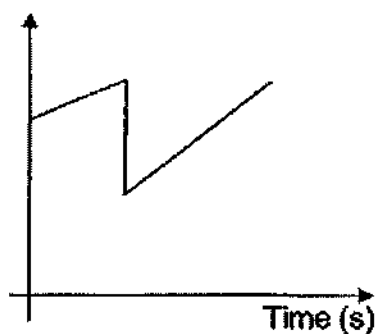
(1) Length of shadow (cm)



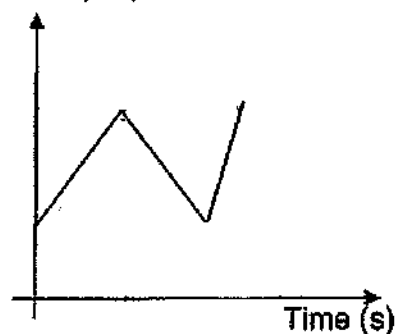
(2) Length of shadow (cm)



(3) Length of shadow (cm)



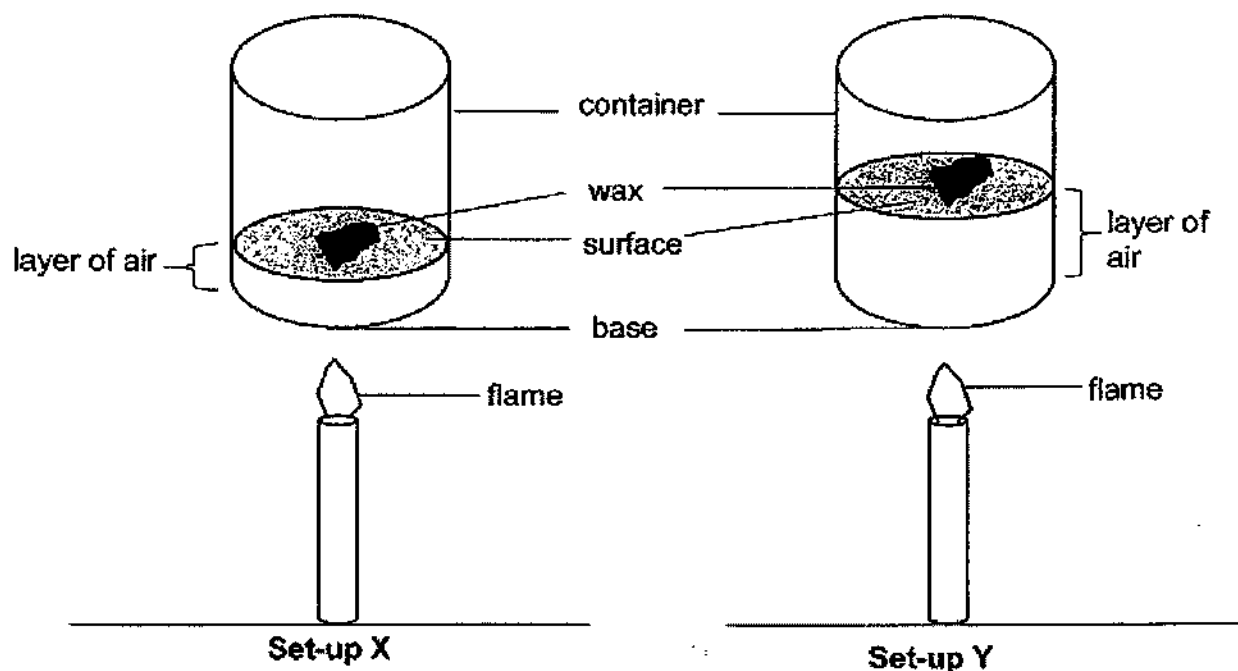
(4) Length of shadow (cm)



- 25 Emma carried out an experiment with the two set-ups X and Y as shown below. She used identical containers and burners for the two set-ups.

In set-up X, she placed a blob of wax on a surface which was placed 5cm above the base of the container.

In set-up Y, she placed the same amount of wax on an identical surface. The surface was raised 15 cm above the base of the container as shown below.



She recorded her observation in the table below.

Layer of air between wax and base of container (cm)	Time taken for wax to melt (s)
5	20
15	85

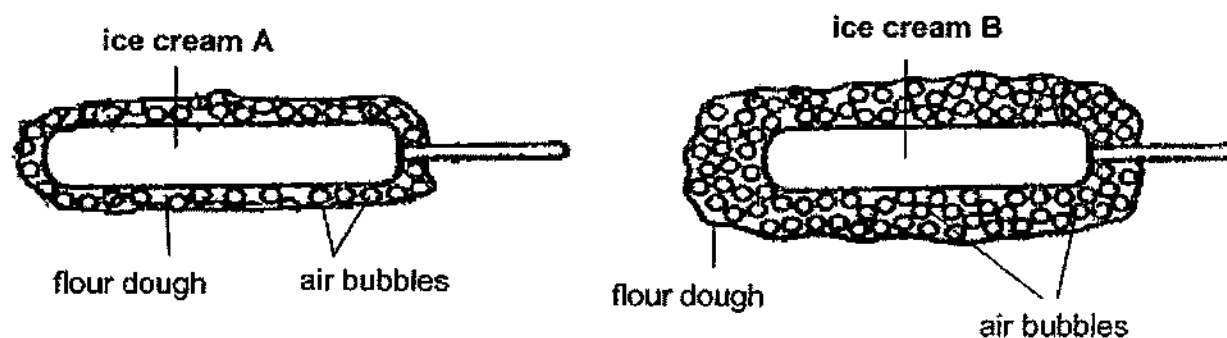
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Based on the results of the experiment, Emma attempted to prepare fried ice cream. It is a dessert where coated ice cream is quickly deep fried to create a golden and crispy shell around the still cold ice cream.

She prepared the flour dough using a mixture of water, baking soda and flour. She coated the identical ice creams with different amounts of flour dough as shown below.

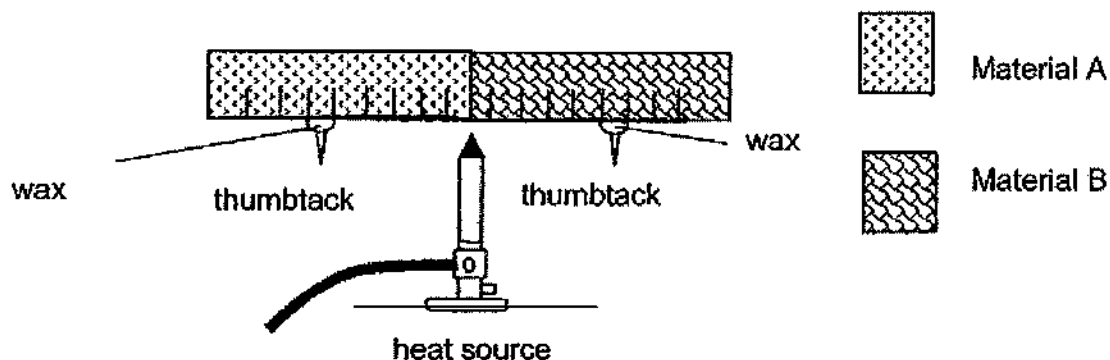
Then they were deep fried using the same amount of heat for ten seconds until golden brown.



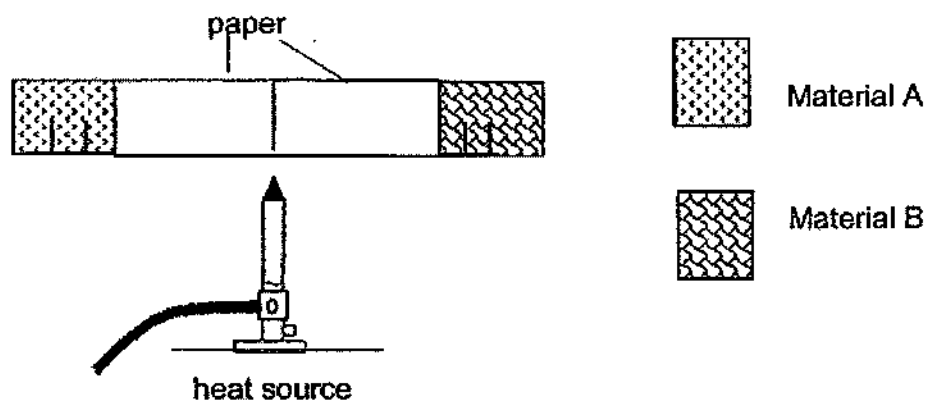
Emma observed that one of the ice creams melted after ten seconds. Which one of the following is correct?

	Ice cream that melted	Reason
(1)	A	The flour dough is a good conductor of heat.
(2)	A	There was less air in the dough. Thus, the ice cream gained heat faster.
(3)	B	The air in the air bubbles is a poor conductor of heat.
(4)	B	The flour dough has more air bubbles round the ice cream.

- 26 Alison prepared the set-up shown below using the same amount of wax to hold the identical thumbtacks on the materials A and B respectively. The materials are of identical length. The thumbtacks were placed at equal distance away from the heat source. Alison observed the thumbtack on material B drop off first.



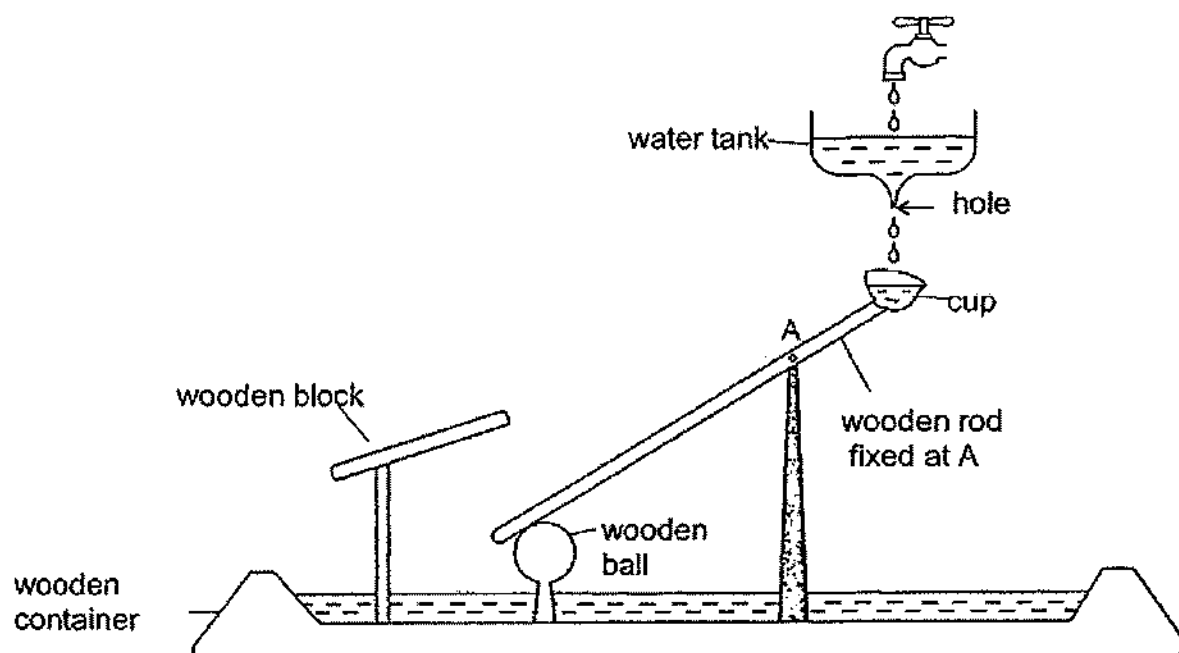
Next, she wrapped a piece of paper round materials A and B as shown below and put over a heat source. She observed the piece of paper after three minutes.



Which of the following provides the correct observation and explanation?

	Observation	Explanation
(1)	The paper on material A would burn.	Material A conducted heat to the paper more quickly.
(2)	The paper on material A would burn	Material A conducted heat away from the paper more slowly.
(3)	The paper on material B would burn	Material B conducted heat to the paper more quickly.
(4)	The paper on material B would burn	Material B conducted heat away from the paper more slowly.

27 Linda designed a model as shown below.



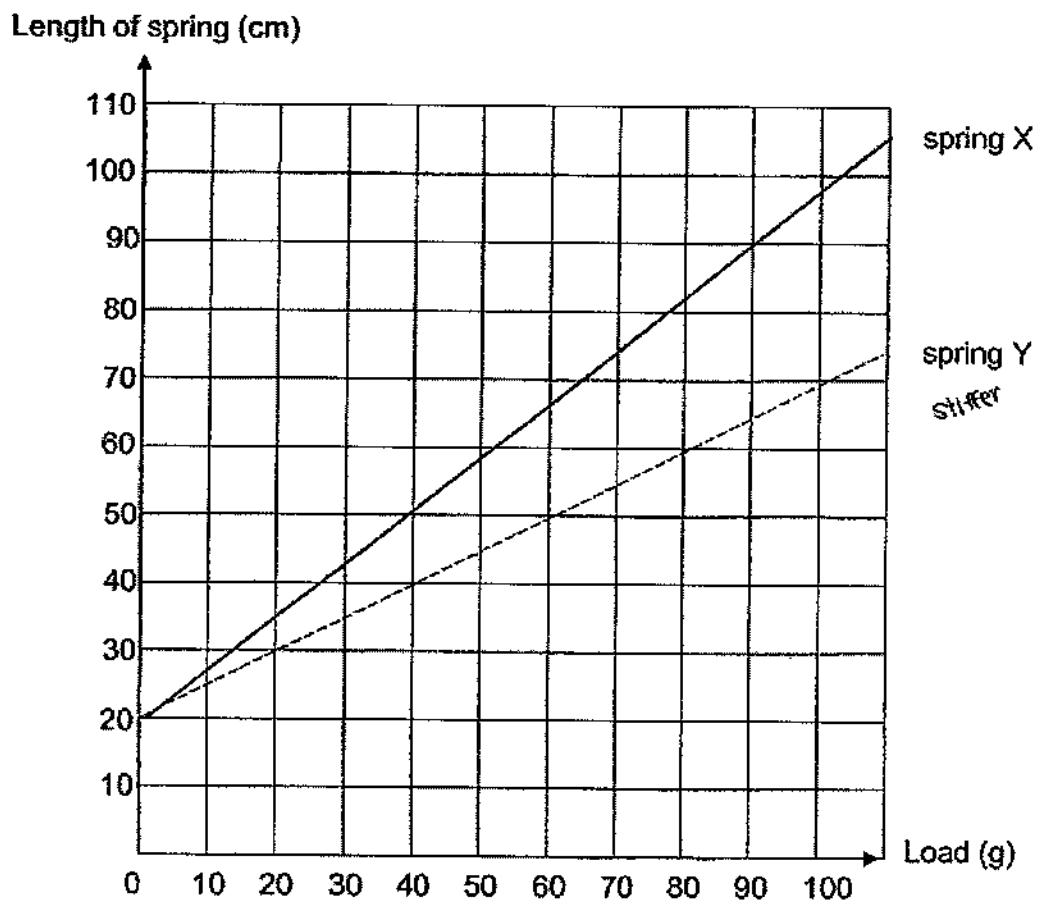
The cup is fixed onto a wooden rod which can move at pivot A. Water from a tank is dripped into the cup. When the cup is filled up with water, it moved down, causing the other end of the rod to hit against the wooden block.

Which of the following should Linda change to enable her model to produce a louder sound?

- A increase the size of the hole
- B increase the size of the wooden ball
- C change the wooden ball to a metal ball
- D increase the height of the tank above the wooden container

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

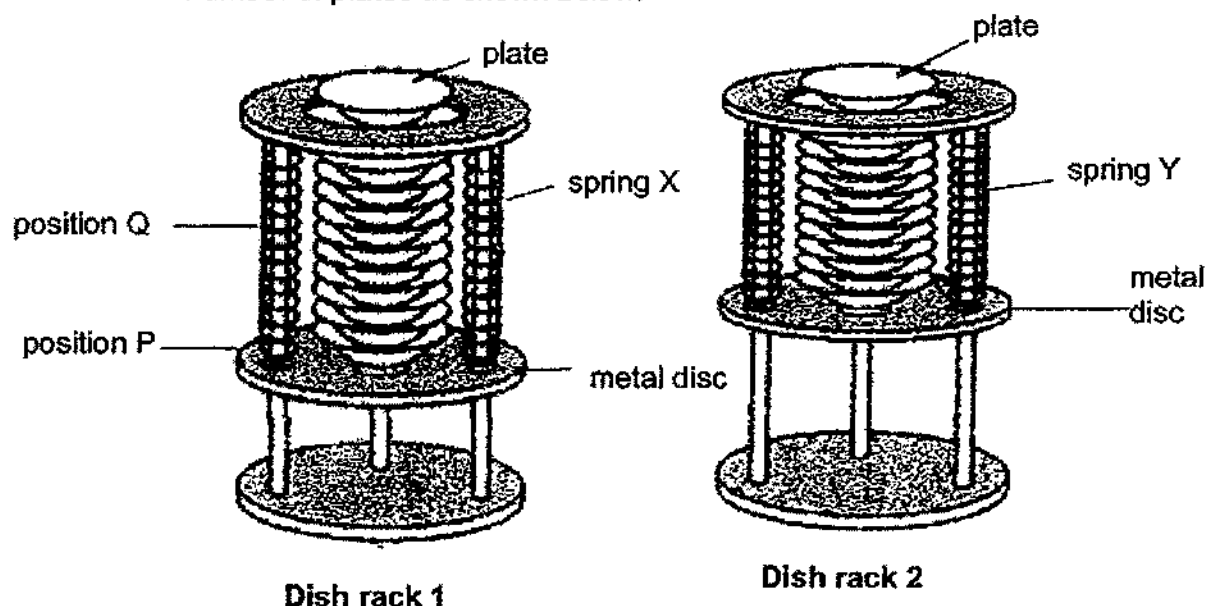
- 28 Trina conducted an experiment using springs X and Y. She hung different numbers of weights one at a time and recorded the length of the springs. Her results were shown in the graph below.



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The two springs, X and Y, were used to make the two dish racks, which hold identical number of plates as shown below.



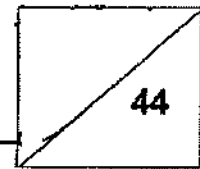
When Trina removed three plates from the top of dish rack 1, the metal disc moved up from P to Q. She also removed three plates from dish rack 2.

Based on the graph and the information provided, which of the following statement(s) is / are true when three plates were removed from the two dish racks?

- ?
- A The metal discs on both racks have gravitational potential energy and elastic potential energy.
 - B The metal disc on dish rack 1 will have less gravitational potential energy than the metal disc in dish rack 2.
 - C The metal discs for both racks moved up because the stretched springs exerted a pulling force on the metal discs.
 - D The metal disc moved up as the weight of the plates is greater than the elastic spring force acting on the metal discs.

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

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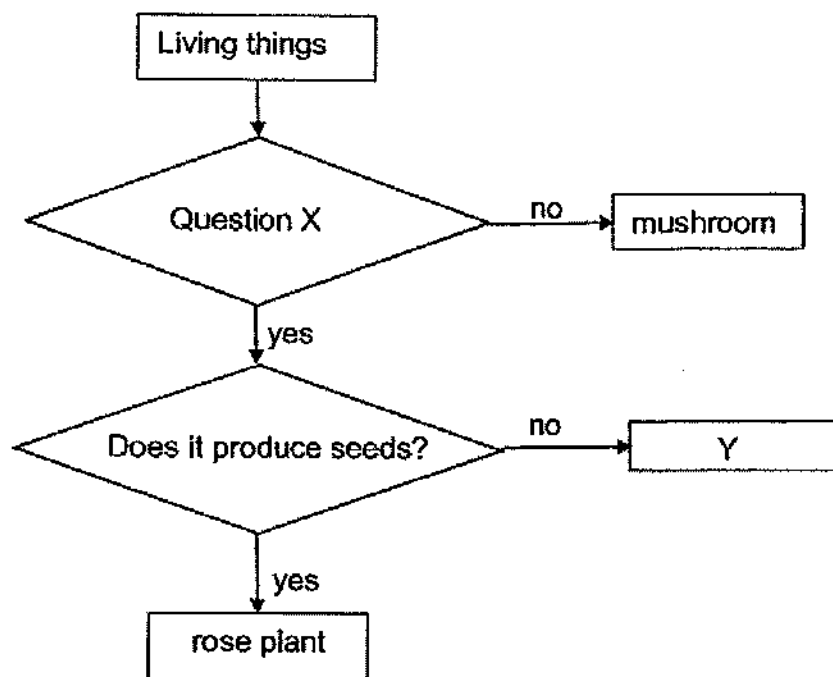


SECTION B (44 marks)

For questions 29 to 41, write your answers clearly in the spaces provided.

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

29 Study the chart below.



(a) Based on the chart above, fill in blanks with the correct answers. [1]

Question X: _____

Y: _____

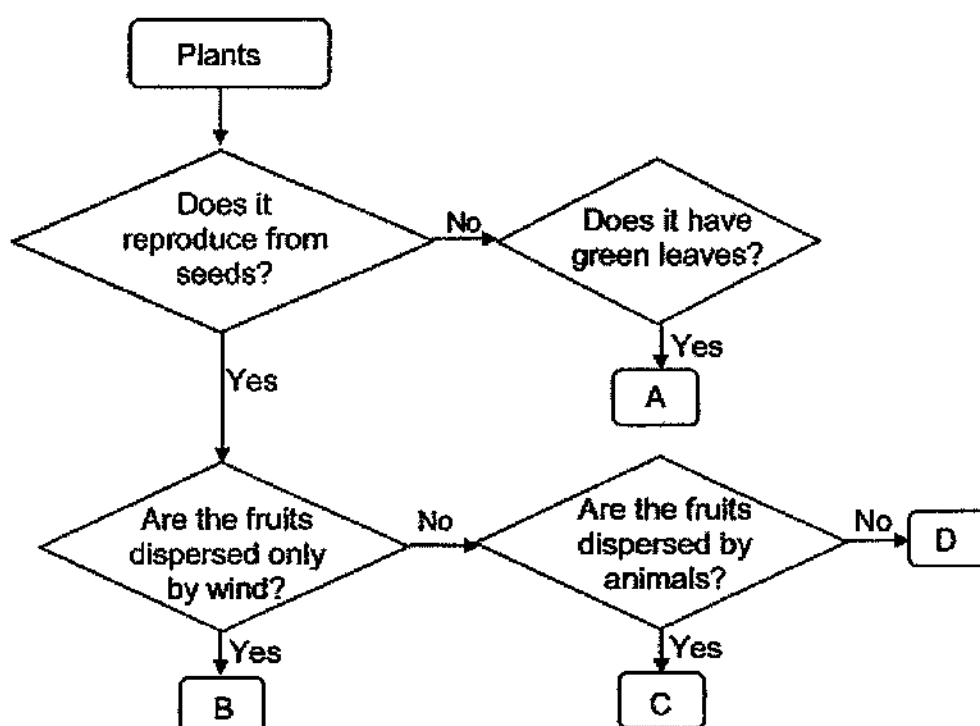
(b) How does organism Y reproduce? [1]

Score	2
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- 30 The diagram shows the characteristics of three fruits, P, Q and R, found in a park. A tick (✓) shows the presence of the characteristic of the fruits.

Fruit	Characteristic of fruit		
	Edible juicy flesh	Wing-like structure	Pod-like structure
P	✓		
Q		✓	
R			✓

Study the chart below.



- (a) Based on the information from the chart above, state one similarity between Plant B and Plant D. [1]

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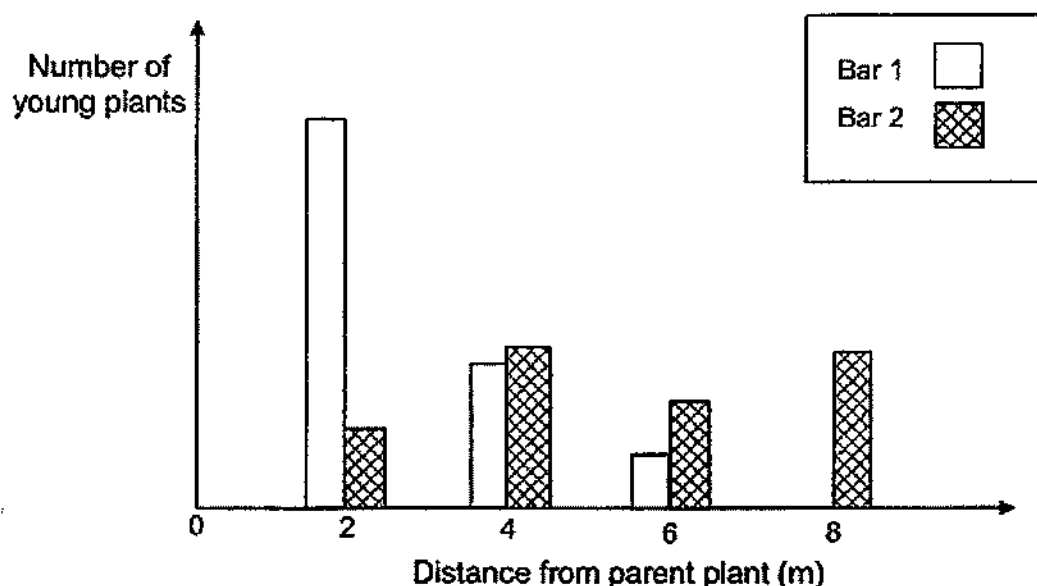
Score	1
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- (b) Based on the information from the table and the chart on the previous page, which plants, A, B, C and D, in the chart best represents plants that bear fruits P, Q and R? [1]

(i) P : Plant _____ (ii) Q : Plant _____ (iii) R : Plant _____

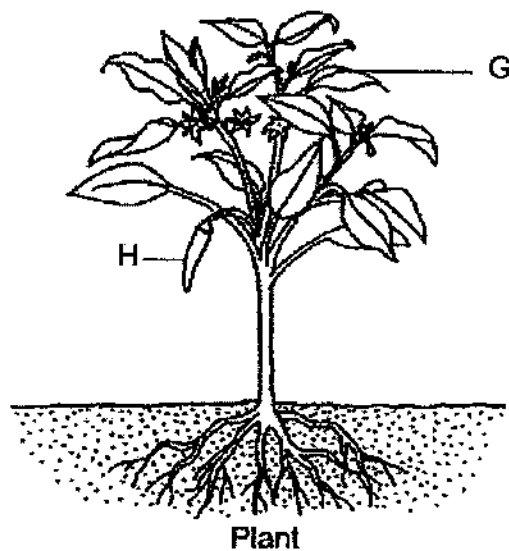
The number of young plants that bear fruits P and R were found at various distances from their parent plants as shown in the graph below.



- (c) Based on the information above, which bar, 1 or 2, represents the results recorded for plants of fruit P. Explain your answer. [2]

Score	3
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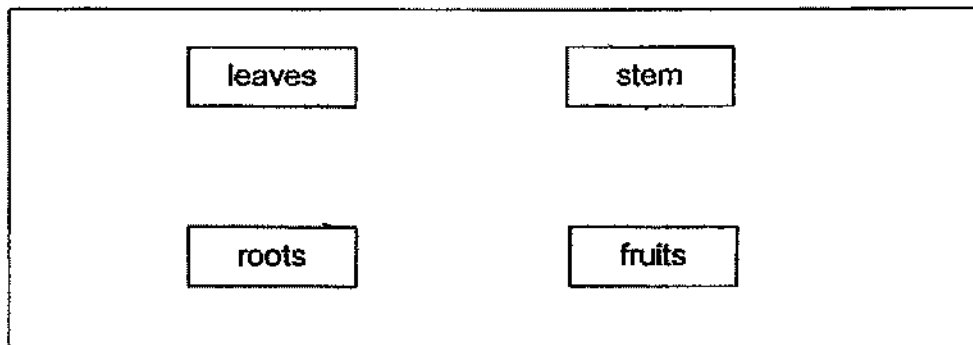
31 The diagram below shows a plant.



- (a) State the main function of part G. [1]

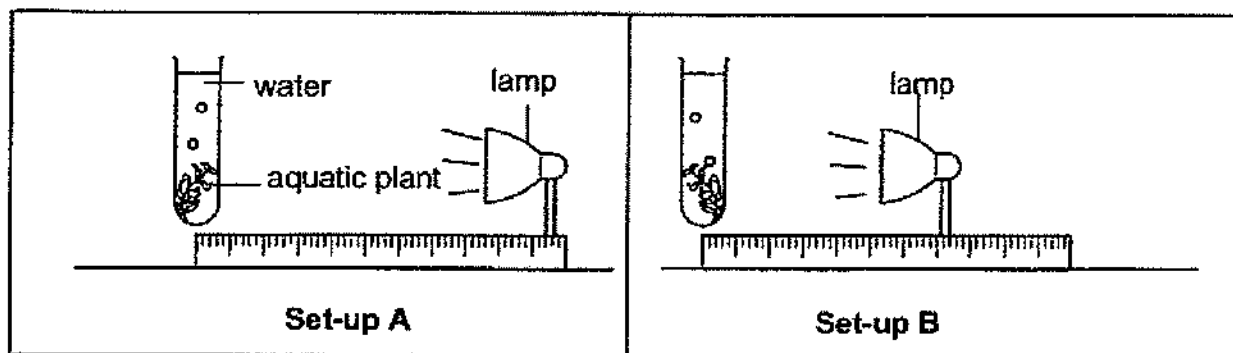
- (b) State the part of the flower that part H developed from. [1]

- (c) Four parts of the plant are listed below. Draw arrows (→) in the diagram below to show how food is transported in the plant. [1]



Score	3
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- 32 Ali wanted to find out how the distance between the lamp and the test-tube of an aquatic plant would affect the number of bubbles produced by the plant. He prepared two set-ups, A and B, as shown below.



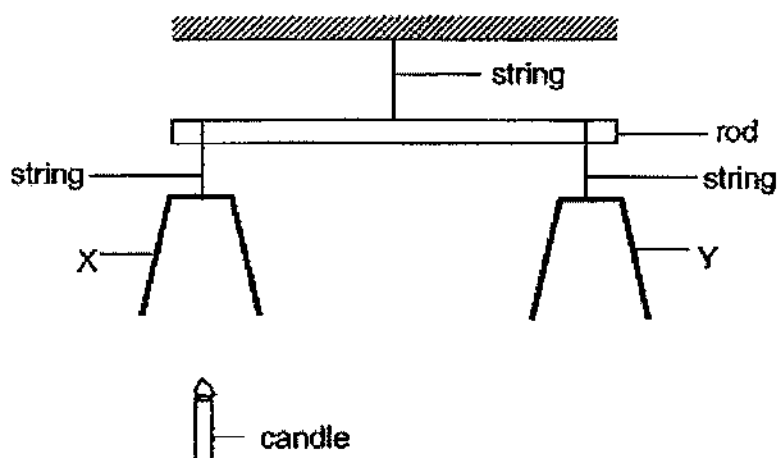
He counted the number of bubbles produced per minute for both set-ups. His results are as shown.

Set-up	Number of bubbles produced per minute
A	17
B	33

- (a) Based on Ali's results, explain how the distance between the lamp and the test-tube of the aquatic plant affect the rate of photosynthesis. [2]
- _____
- _____
- (b) State two variables that Ali has to keep constant when conducting this experiment. [1]
- _____
- _____
- (c) Ali recorded the initial mass of the aquatic plants before the experiment and the final mass of the aquatic plants in each set-up after three days. Both lamps were switched on continuously for three days. Which plant would have a greater increase in mass? Explain your answer. [2]
- _____
- _____

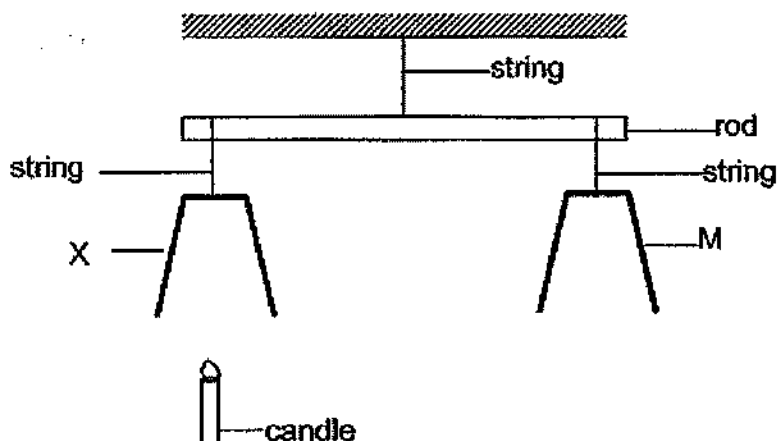
Score	5
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- 33 Two identical cups, X and Y, were balanced on a rod. A burning candle was placed below cup X as shown below.



- (a) Would the rod tilt downwards towards X, remain balanced or tilt downwards toward Y? Explain your answer [2]

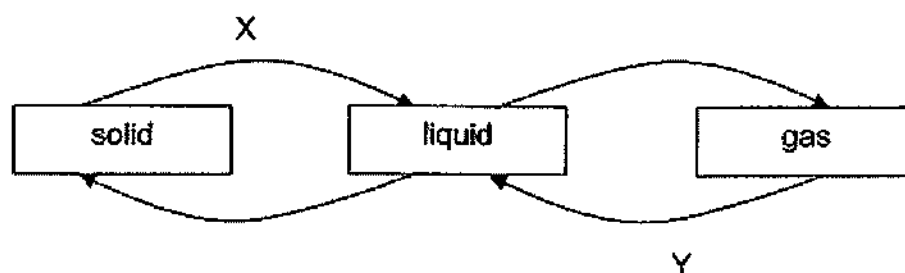
Changes were made to the set up by replacing cup Y with cup M, made of a different material.



- (b) It was observed that the rod was balanced only when the candle was placed under cup X. Explain the observation. [2]

Score	4
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- 34 The diagram below shows the change of state of water.

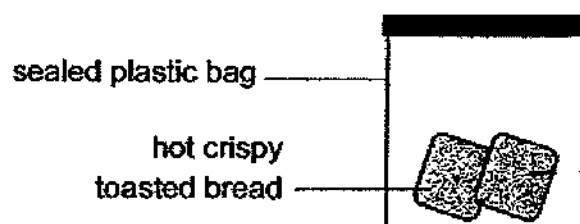


- (a) Name the processes X and Y. [1]

Process X: _____

Process Y: _____

- (b) Michelle bought some slices of hot crispy toasted bread for her grandfather and then walked home.

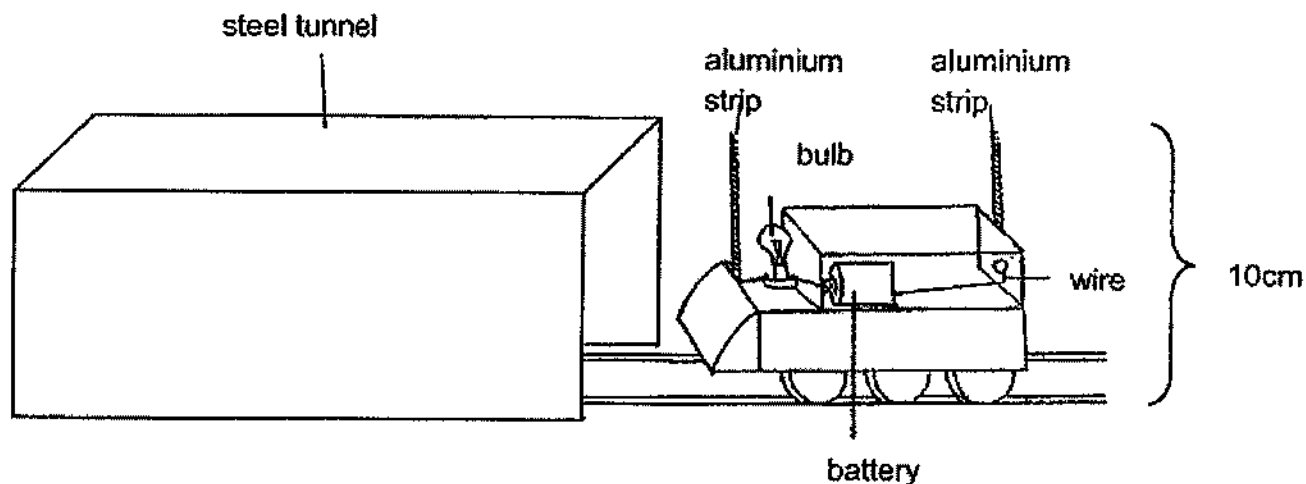


- (i) When she reached home, she found that the slices of crispy toasted bread were damp. Explain her observation. [2]

- (ii) Suggest what Michelle could have done to ensure the slices of toasted bread remained crispy by the time she reached home. [1]

Score	<div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; top: 0; right: 0; bottom: 0; left: 0; border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; transform: rotate(45deg); transform-origin: center;"></div></div>
	4

- 35 Jason made a toy train and a steel tunnel. Both had a height of 10 cm. The aluminium strips were attached to the toy train. The diagram below shows his toy train set.



- (a) Jason observed that the light bulb on the toy train only lit up when the train was moving completely under the steel tunnel.

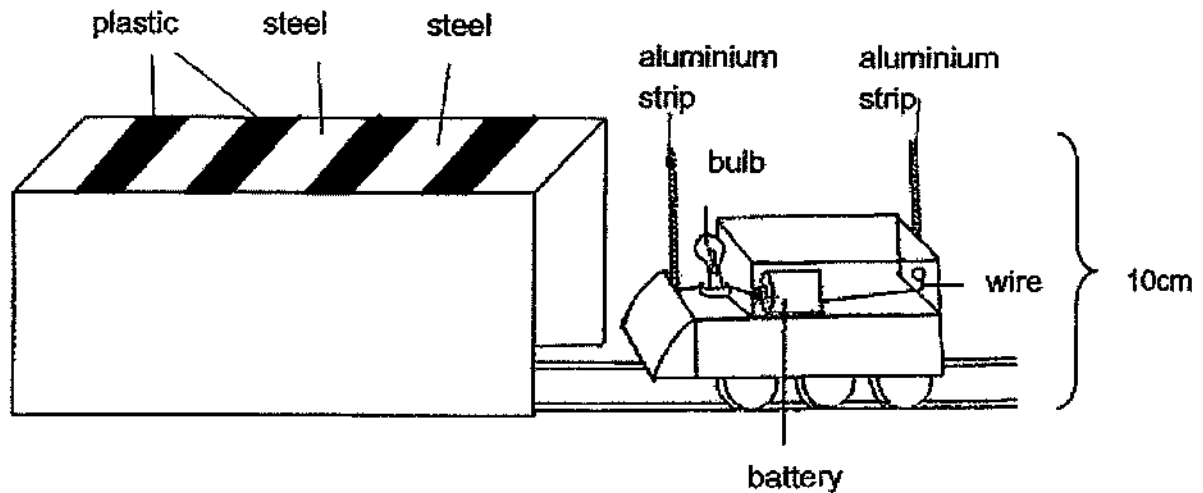
Explain why the bulb on the toy train only lit up when it was moving completely in the steel tunnel. [2]

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Score	2
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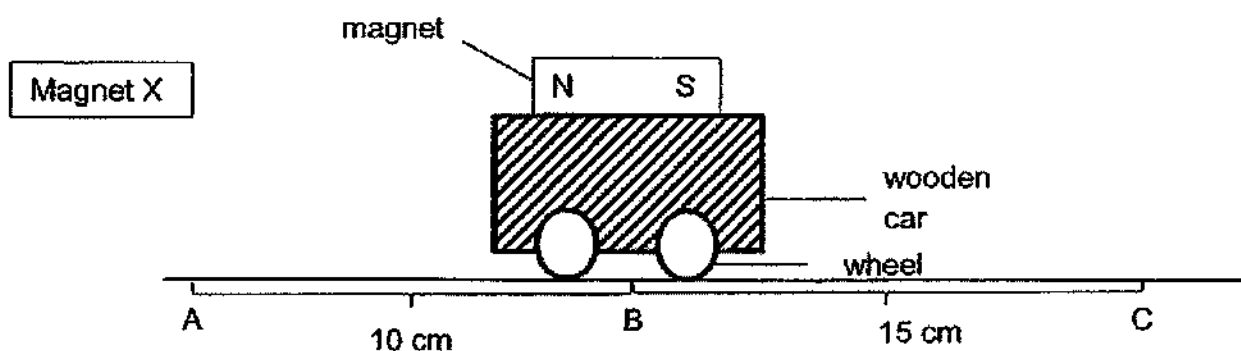
Jason replaced the steel tunnel with another tunnel that was made of plastic and steel as shown in the diagram below. The height of the new tunnel was also 10 cm.



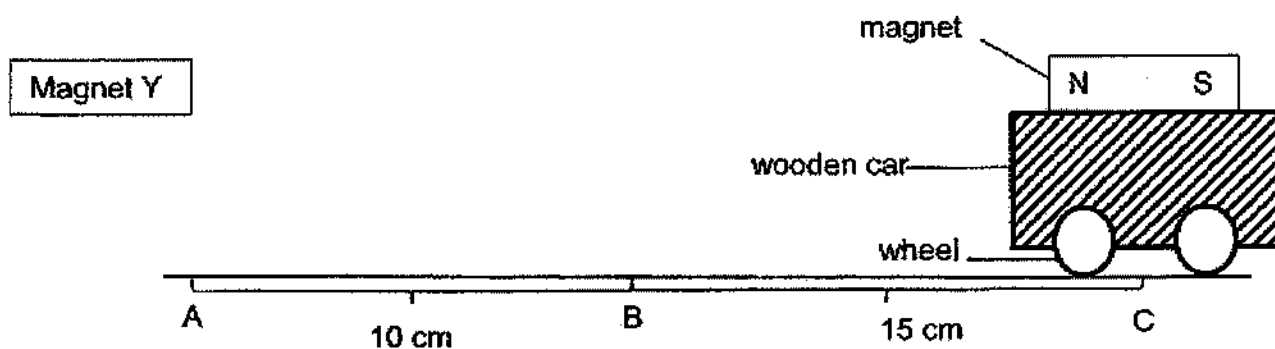
- (b) Describe what Jason would observe of the bulb while the same toy train was moving through the new tunnel shown above. [1]

Score	1
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36 The toy car below moves along the wooden plank.



- (a) When magnet X is placed at position A, the wooden car moved from position A to B. Give a reason for his observation. [1]



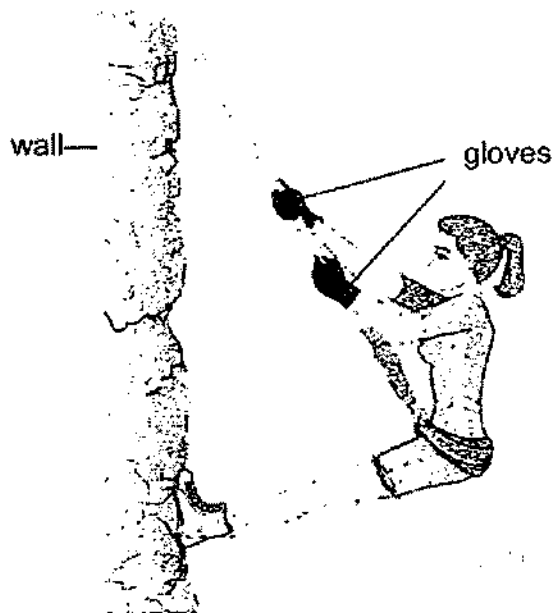
- (b) The wooden car was placed at position C. When magnet Y was placed at position A, the wooden car moved from position C to A. Based on his observations, which magnet, X or Y, is a stronger magnet. Explain your answer. [2]

Score	<div style="border: 1px solid black; width: 100px; height: 100px; position: relative;"><div style="position: absolute; top: 0; right: 0; bottom: 0; left: 0; border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; transform: rotate(45deg); transform-origin: center;"></div></div>
	3

- 37 Ashlynn rubbed her eraser on a piece of paper. She saw some eraser shavings on the piece of paper.

(a) State another observation she would made of the eraser. [1]

The diagram below shows Ashlynn doing abseiling where she was going down a vertical wall using a rope.

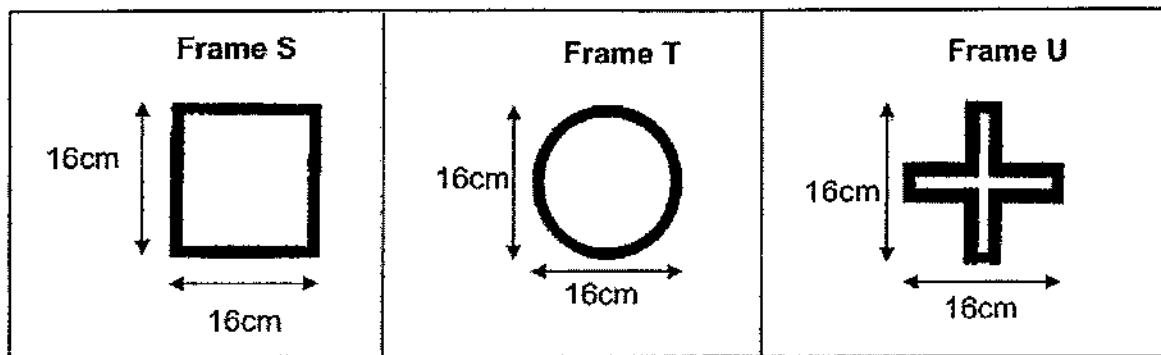


(b) Ashlynn said wearing gloves to pull on the rope while going down the wall would protect her hand. Explain why that was so. [1]

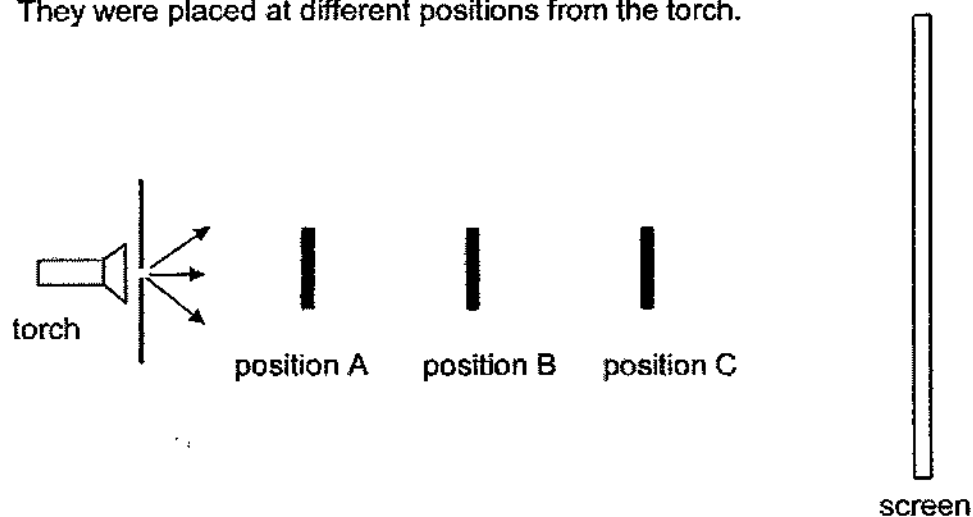
(c) Name another force that was acting on Ashlynn. [1]

Score	3
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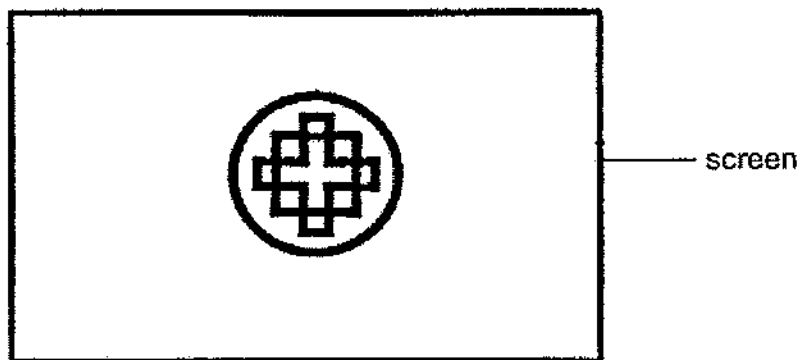
38 Kelvin had three wooden frames, S, T and U.



The set-up below shows light shining on the three wooden frames, S, T and U. They were placed at different positions from the torch.



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



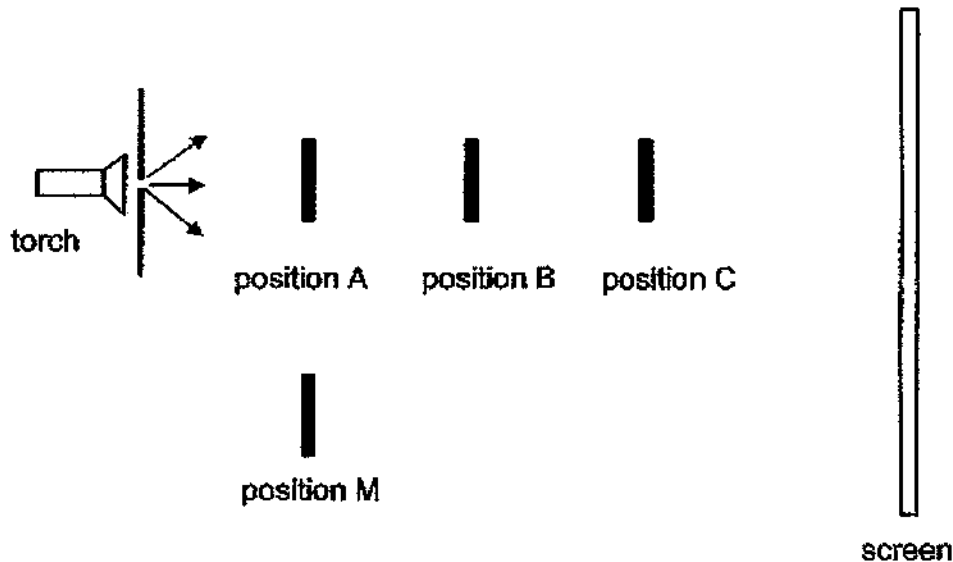
(a) Which wooden frame, S, T or U, was at position C? [1]

Continue on next page

Score	1
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Continued from previous page

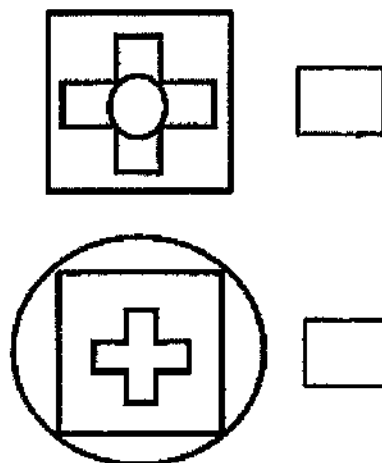
Another piece of wood measuring 16 cm x 16 cm is placed at position M as shown below.



- (b) Will Kelvin still be able to observe the shadow that was cast on the screen earlier? Explain your answer. [1]

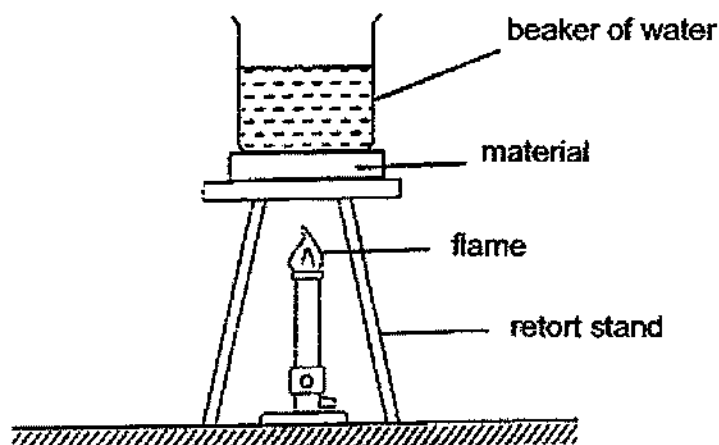
- (c) Which of the shadows will Kelvin observe if frames S, U and T are placed at positions A, B and C respectively?

Put a tick (✓) in the box provided that correctly represents the shadow observed. [1]



Score	<div style="border: 1px solid black; width: 100px; height: 50px; position: relative;"> <div style="position: absolute; top: 0; right: 0; bottom: 0; left: 0;">2</div> </div>
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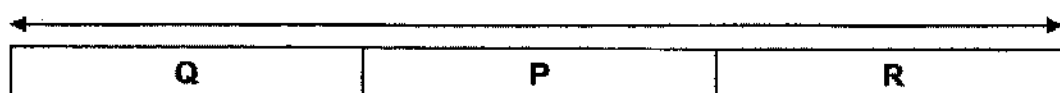
- 39 Martha used the set-up below to find out the heat conductivity of materials P, Q and R. The materials were of the same length and thickness. They were placed below a beaker of water with the same amount of heat applied to the set-ups.



The heat conductivity of materials P, Q and R is as follows.

poorest heat conductor

best heat conductor



She recorded the time taken for the water in each set up to boil in the table below.

Materials	Time taken for water to start boiling (minutes)
P	10
Q	10
R	10

Martha's teacher told her that her experiment was not a fair test as the time taken for water to start boiling should not be 10 minutes for all the three containers as the heat conductivity of the materials are different.

- (a) Identify one of the constant variables which was not kept the same during the experiment and describe what she could have done to arrive at the result shown in the table above. [2]

Score	2
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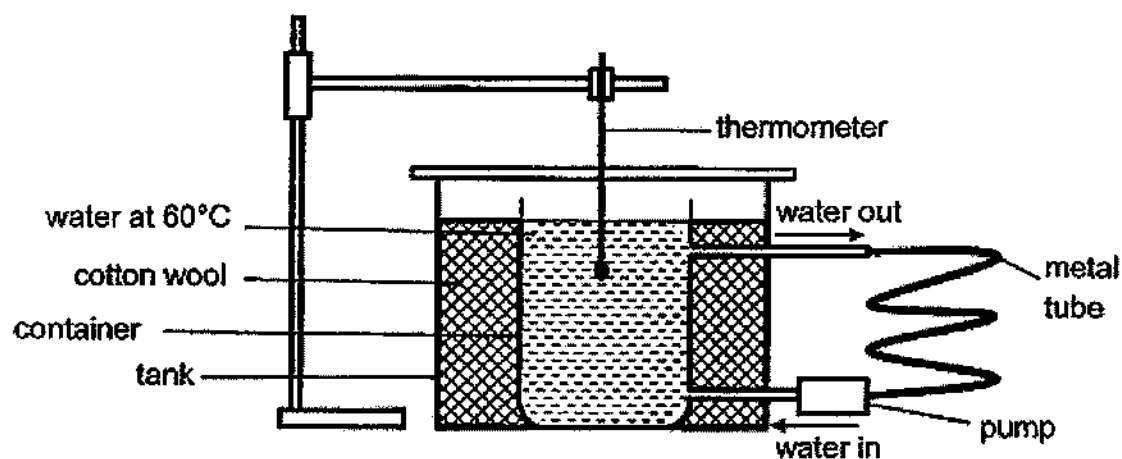
Continued from previous page

- (b) What would be the temperature of water if Martha continued to heat the beakers of boiling water for another five minutes? [1]

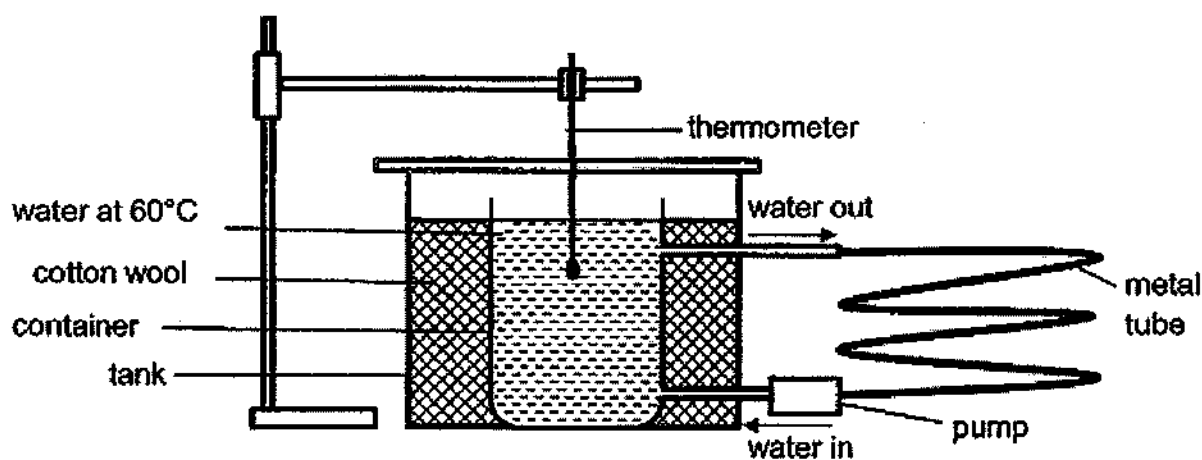
Materials	Temperature of water (°C)
P	
Q	
R	

Score	1
-------	---

40. Two identical containers were each filled with three litres of water at 60°C . Each container was then placed in identical larger tanks filled with cotton wool. A tube and a pump were attached to each container to allow a continuous flow of water out of the container and then back again. Set-up A has a shorter tube than set-up B.



Set-up A



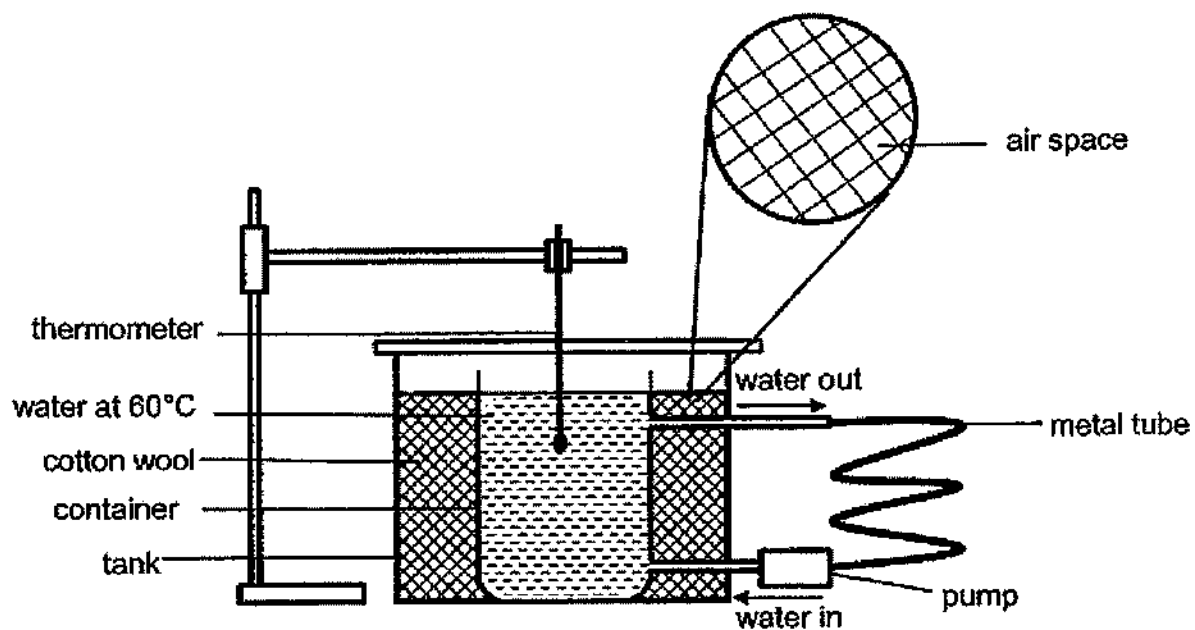
Set-up B

- (a) Given that the set-ups were placed together in the same room, in which set-up would the water reach room temperature first? Explain your answer clearly. [2]

Score	2
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Continued from previous page

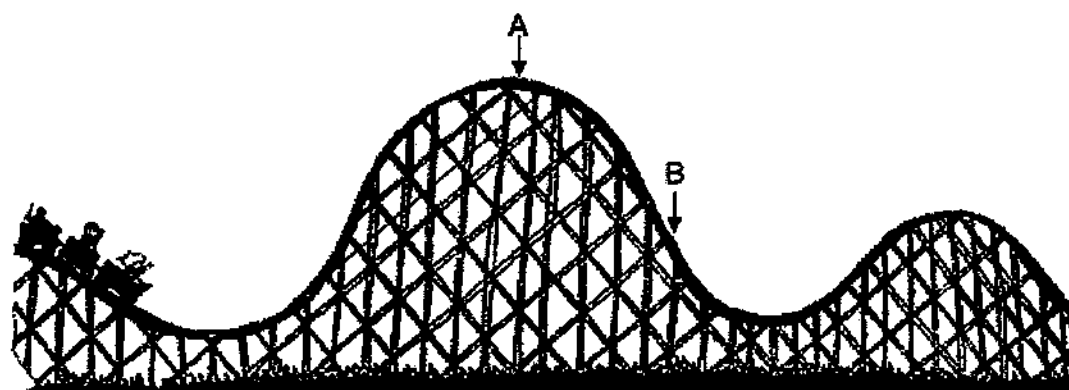
It was found that the cotton wool is filled with air spaces, as shown in the diagram below.



- (b) Explain the purpose of placing the containers into a larger tank filled with cotton wool. [2]

Score	<div>2</div>
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- 41 The roller coaster is brought to the highest point A.



- (a) Write down the energy conversion for the roller coaster as it moves from A to B. [1]

(potential)
gravitational
potential
energy → + +
energy energy energy energy

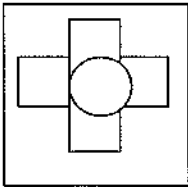
- (b) Fill in the table with 'increase' or 'decrease' as the roller coaster moves down from point A to point B. [2]

Points	Potential Energy	Kinetic Energy	Speed
A to B			

END OF PAPER

Score	3
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Q32)	<p>a)As the distance between the lamp and the test tube increases the aquatic of light received by the plant decreased,Thus the rate of photosynthesise will decreases, producing bubbles.</p> <p>b)1)Intensity of light from the lamp.</p> <p>2)Number of plants.</p> <p>c)Set-up B. The lamp was placed at a closer distance to the plant in B than in A. Thus, the light intensity in B would be higher than A and the plant in B can trap more light to make more food and photosynthesise faster allowing its mass to increased more and stored as starch in the plant.</p>
Q33)	<p>a)Tilt downwards to Y. Air around the candle will gain heat from the flame and rise up to go into X, pushing X up. Thus, the rod will Tilt to Y.</p> <p>b)Cup X has a greater mass than M. At the start of the experiment. The rod would tilt downward to X. Thus, The rising nor air around the candle was able to push X.</p>
Q34)	<p>a)X: Melting Y: condensation</p> <p>b)i)Water vapour inside the sealed plastic bag gained heat from the hot bread and increased in temperature. The vapour then lost heat to the cooler inner surface of the sealed plastic bag and condensed to form tiny water droplets. Which sild down the plastic bag and dripped on the bread.</p> <p>ii)Open the sealed plastic bag.</p>
Q35)	<p>a)When the train moved completely in to the steel tunnel, the aluminium strips touched the steel tunnel and closed the gap in the circuit. Thus, the circuit was closed and electricity could flow through the circuit, enabling the bulb to light up.</p> <p>b)The bulb will flash, and the light bulb will light up and then not light up then light up again and soon.</p>

Q36)	<p>a)X's north pole and the magnet on the car's north pole was facing each other and repelled, pushing the car to B.</p> <p>b)Thus, Y exerted a greater magnetic force of attraction than the force of repulsion exerted by X on the magnet on the car.</p>
Q37)	<p>a)The eraser will decrease in size.</p> <p>b)The gloves prevent her palms from getting cut due to friction between her palms and the rope.</p> <p>c)Gravitation Force.</p>
Q38)	<p>a)S.</p> <p>b)Yes as light travels in a straight line, the other piece of wood at M did not block light to form a shadow.</p> <p>c)</p> 
Q39)	<p>a)She could put the greatest amount of water in the beaker when R was used and the amount of water in the beaker was the least when Q was used.</p> <p>c)P --- 100°C Q --- 100°C R --- 100°C</p>
Q40)	<p>40)a)B. The metal tubes are longer thus is a larger surface area exposed to the surrounding air. Thus, it conducts more heat from the water to the surrounding air.</p> <p>b)Air in the cotton wool is a poor conductor of heat. This slows down reduced heat loss from the water in the container to the surrounding air. This allows a more accurate measurement of rate of heat loss of the water through the metal tube to the surrounding air most of the heat loss takes place at the metal tube.</p>
Q41)	<p>a)gravitational potential → kinetic + heat + sound</p> <p>b)Decrease / Increase / Increase</p>



RED SWASTIKA SCHOOL

SCIENCE 2020 PRELIMINARY EXAMINATION PRIMARY 6

Name : _____ ()

Class : Primary 6/ _____

Date : 24 August 2020

BOOKLET A

Total time for Booklets A & B: 1h 45 min

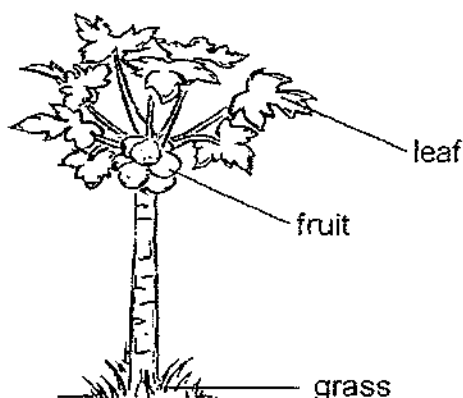
Booklet A: 28 questions (56 marks)

Note:

1. Do not open the booklet until you are told to do so.
2. Read carefully the instructions given at the beginning of each part of the booklet.
3. Do not waste time. If the question is too difficult for you, go on to the next question.
4. Check your answers thoroughly and make sure you attempt every question.
5. In this booklet, you should have the following:
 - a. Page 1 to Page 20
 - b. Questions 1 to 28

For Questions 1 to 28, choose the most suitable answer and shade its number in the QAS provided.

1. The diagram below shows a tree.



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

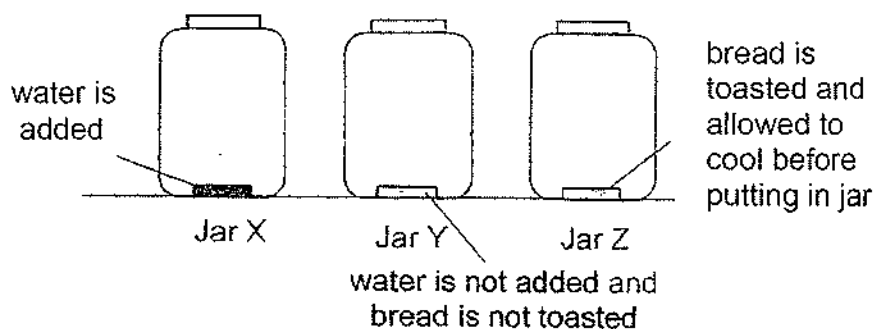
- A: It makes its own food.
- B: It is a flowering plant.
- C: It has a strong stem.

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

2. What is the similarity between mammals and reptiles?

- (1) They have legs.
- (2) They live only on land.
- (3) They obtain food from other living things.
- (4) They have the same type of body covering.

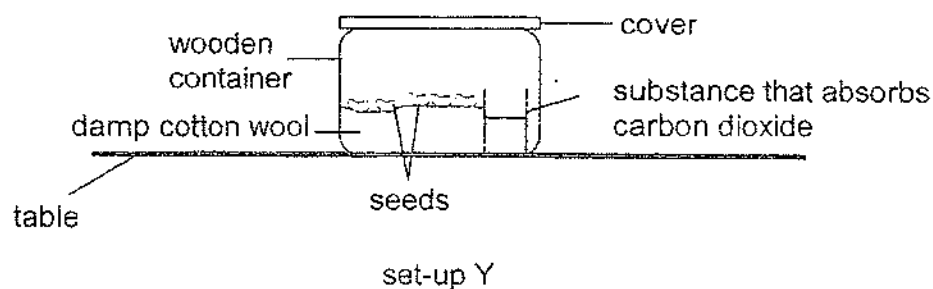
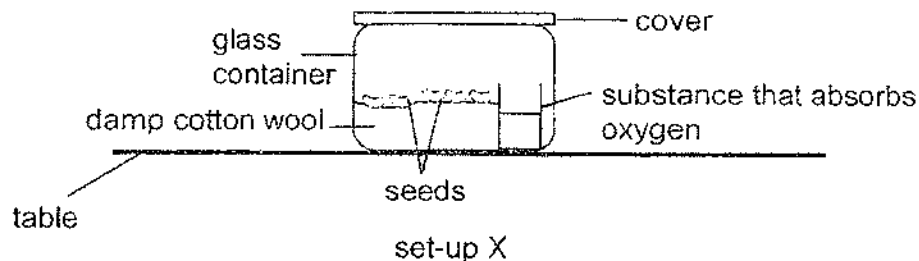
3. Three identical slices of bread were put into three identical glass jars, X, Y and Z. The jars were placed in the Science room.



Which of the following shows the most likely observation after five days?

	Bread is not mouldy	Bread is slightly mouldy	Bread is very mouldy
(1)	Z	Y	X
(2)	Z	X	Y
(3)	Y	Z	X
(4)	Y	X	Z

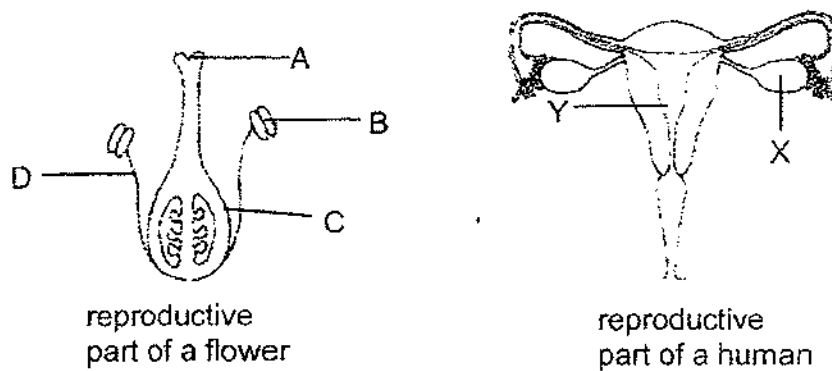
4. Lynn created the set-ups shown below and left them in the classroom.



In which set-up(s) will the seeds germinate?

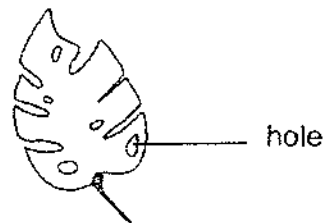
	set-up X	set-up Y
(1)	✓	✓
(2)	X	✓
(3)	✓	X
(4)	X	X

5. The diagrams below show the reproductive parts of a flower and a human.



Which parts of the systems shown above have similar function?

- (1) A and X only
 - (2) B and Y only
 - (3) C and X only
 - (4) D and Y only
6. Mr Tan has a farm growing both fruit trees and vegetables. He noticed that the leaves of his vegetables were damaged with holes by the young of insect K.



The adults of insect K only collect nectar from the flowers of the fruit trees in the farm and help to pollinate the flowers.

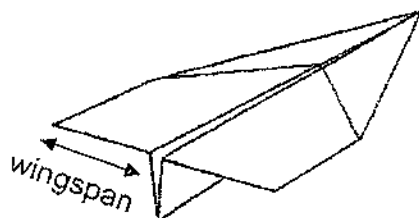
Mr Tan decided to spray pesticide on the leaves of his vegetables so that they will not be damaged.

Which of the following will likely be the result of the use of pesticide after some time?

- A: Less fruits will be collected.
- B: More fruits will be collected.
- C: Less vegetables will be collected.
- D: More vegetables will be collected.

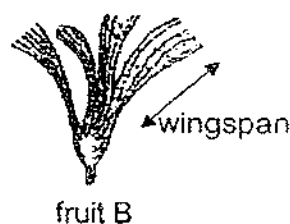
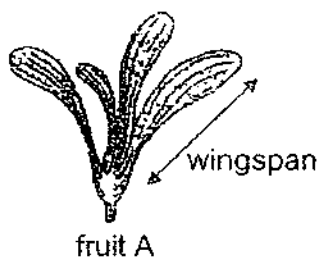
- (1) A only
- (2) D only
- (3) A and D only
- (4) B and C only

7. Alex made two paper airplanes with different wingspan.



He released each airplane from the same height and location and recorded the results as shown in the table.

Length of wingspan	4 cm	8 cm
Time taken for the airplane to reach the ground	8 s	12 s
Distance travelled by the airplane	32 cm	55 cm



Alex found fruits A and B in a garden. Based on the above experiment, which young plant of the fruits is likely not to experience overcrowding?

	Young plant of fruit	Reason
(1)	A	A has a longer wingspan and will travel a further distance away.
(2)	A	A has a longer wingspan and will take a shorter time to reach the ground.
(3)	B	B has a shorter wingspan and will travel a shorter distance away.
(4)	B	B has a shorter wingspan and will take a longer time to reach the ground.

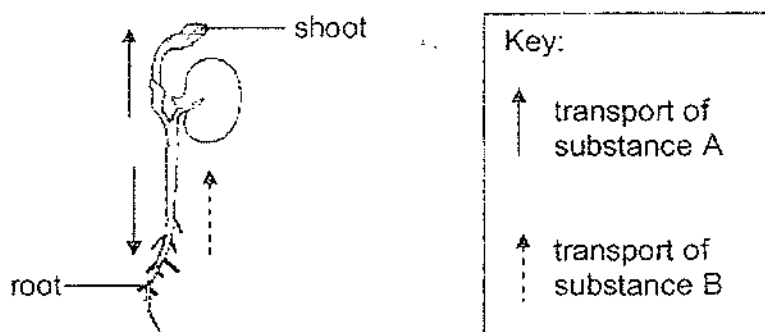
8. The table below shows information on organisms M and N.

Characteristic	organism M	organism N
Needs air, food and water to survive	✓	✓
Has a cell wall	✓	✓
Reproduces by spores		✓

Which of the following correctly represents organisms M and N?

	Organism M	Organism N
(1)	non-flowering plant	non-flowering plant
(2)	flowering plant	flowering plant
(3)	flowering plant	non-flowering plant
(4)	non-flowering plant	flowering plant

9. The diagram below shows a seedling. The arrows show the transportation of substance A and B inside the seedling.



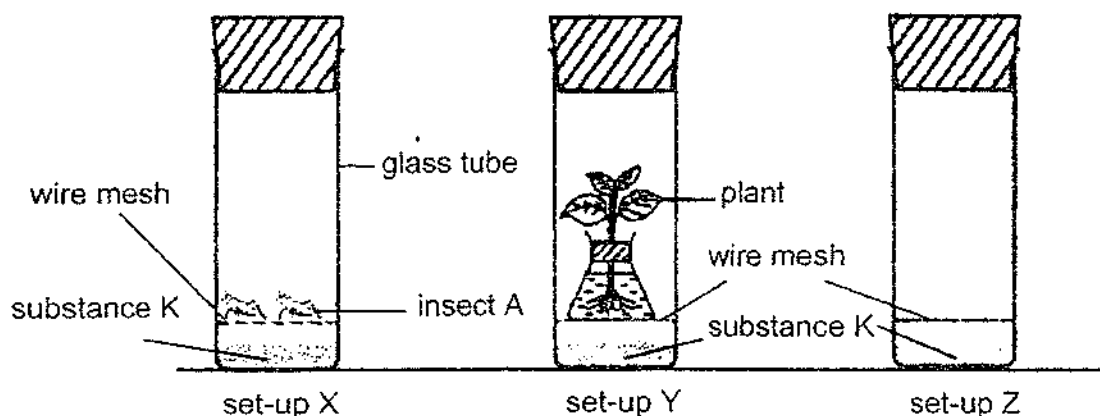
Based on the diagram, which of the following is correct?

	substance A	substance B
(1)	water	water
(2)	food	food
(3)	food	water
(4)	water	food

10.

ups were

placed under a light source for one day.



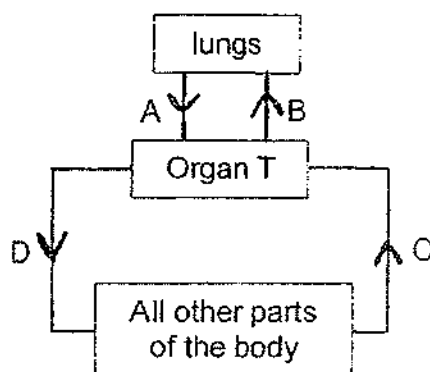
Substance K changes colour when there is a change in the amount of carbon dioxide as shown in the table below.

amount of carbon dioxide	colour
increase	yellow
remain the same	red
decrease	purple

Based on the above set-ups, which of the following is correct at the end of one day?

	set-up X	set-up Y	set-up Z
(1)	yellow	red	purple
(2)	purple	purple	red
(3)	yellow	yellow	red
(4)	yellow	purple	red

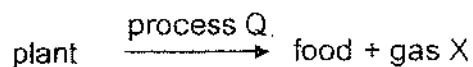
11. The diagram below shows the flow of blood in a human body.



Based on the diagram above, which of the following is correct?

	Organ T	Blood rich in oxygen	Blood rich in carbon dioxide
(1)	heart	A and D	B and C
(2)	nose	B and D	A and C
(3)	heart	B and C	A and D
(4)	nose	A and C	B and D

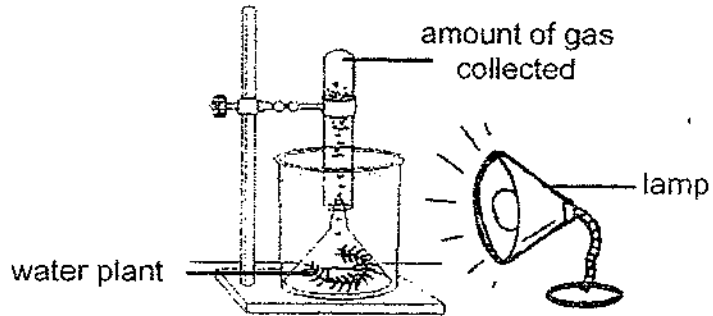
12. The following takes place in plants when there is light.



Identify process Q and gas X.

	process Q	gas X
(1)	germination	carbon dioxide
(2)	fertilisation	oxygen
(3)	pollination	carbon dioxide
(4)	photosynthesis	oxygen

13. Lina created the set-up shown below.



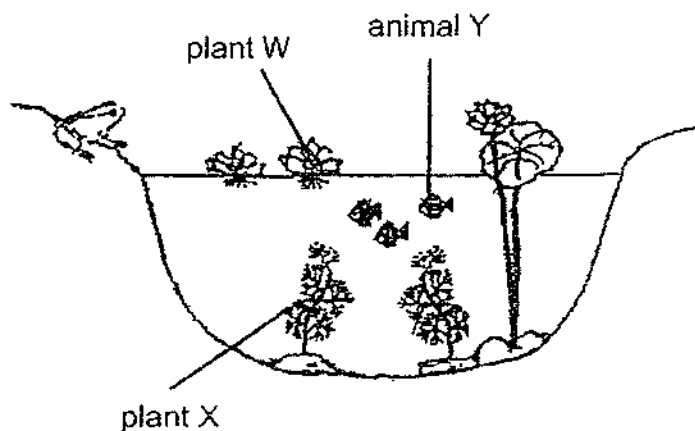
She measured the number of bubbles produced by the plant for one minute. She repeated the experiment with different values of X and recorded her observations in the table below.

variable X (unit)	amount of gas collected (cm ³)
15	32
25	27
35	18
45	9

Based on the information shown above, which of the following is variable X?

- (1) light intensity
- (2) number of leaves
- (3) amount of carbon dioxide
- (4) distance between the lamp and water plant

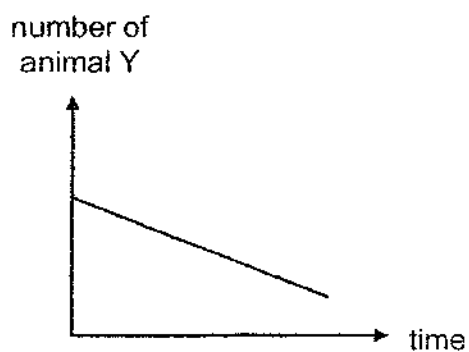
14. The table below shows the organisms in a pond. Animal Y eats plant X only.



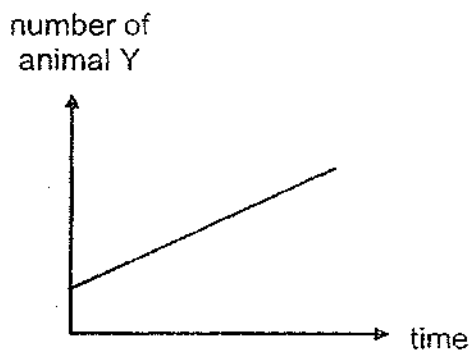
Plant W grew at a very fast rate and covered the surface of the pond within two weeks.

Which of the following graphs correctly shows the change in the number of animal Y after two months?

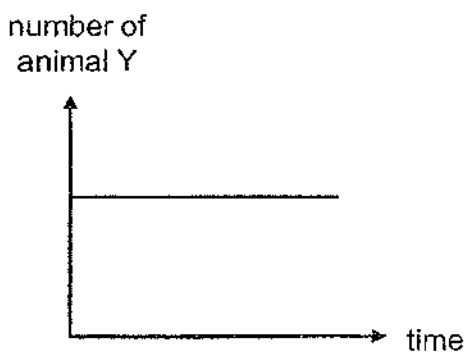
(1)



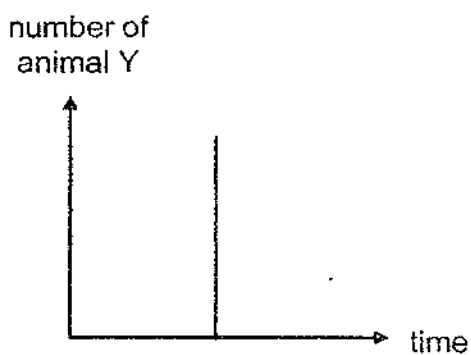
(3)



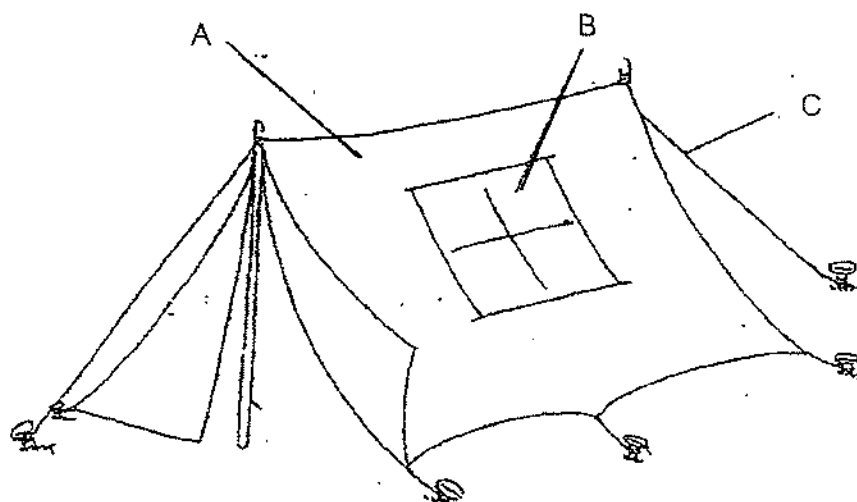
(2)



(4)



15. The picture shows a camping tent. Part B is a window.



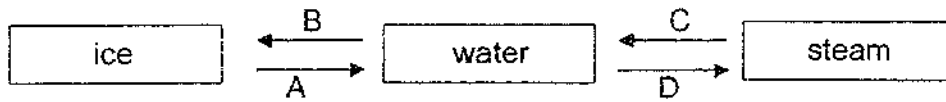
The table below shows the properties of four different materials, W, X, Y and Z.

Material	Properties			
	waterproof	transparent	strong	flexible
W	✓	✓		
X	✓		✓	✓
Y			✓	✓
Z			✓	

Which one of the following shows the most suitable material for parts A, B and C of the camping tent?

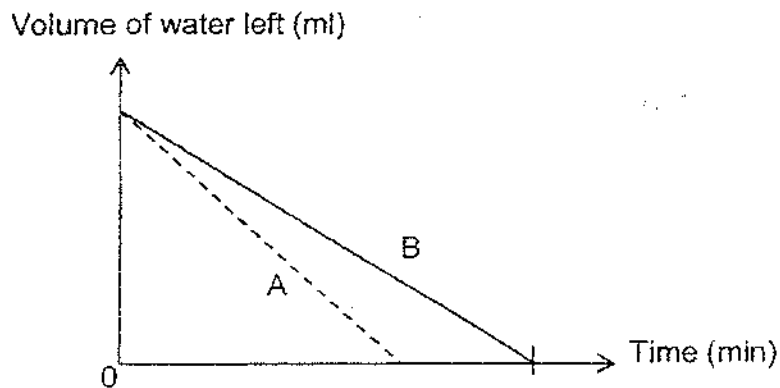
	A	B	C
(1)	W	X	Z
(2)	Z	W	X
(3)	X	W	Y
(4)	Y	Z	W

16. Study the diagram below carefully.



Which of the following shows heat loss during the processes?

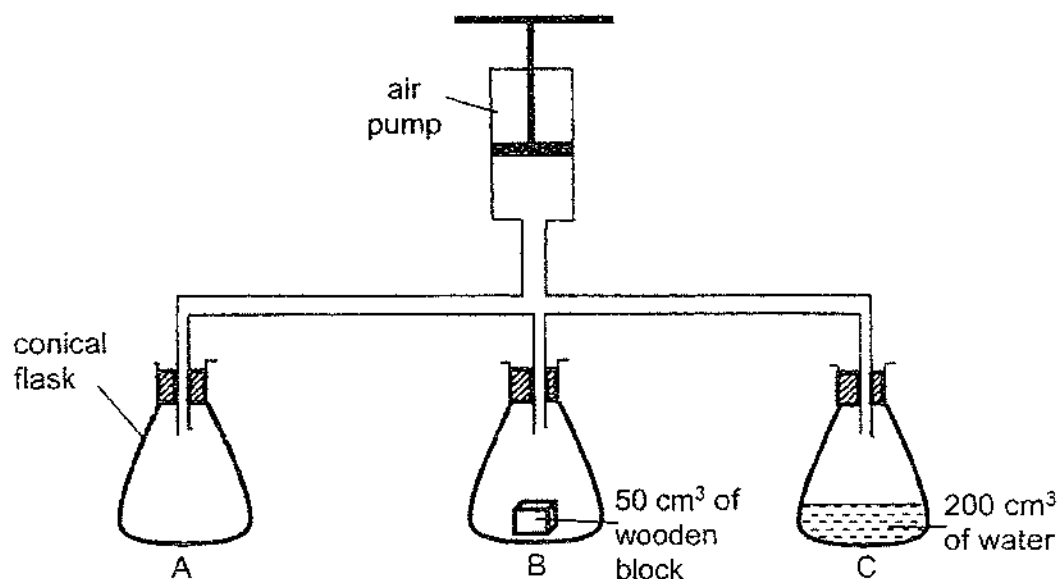
- (1) B only
 - (2) A and C only
 - (3) B and C only
 - (4) A and D only
17. George filled two containers, A and B, with the same amount of water and placed them at two different locations. He measured the volume of water left in each container at regular intervals over some time and plotted the graph below.



Based on the graph, which one of the following statement is most likely correct?

- (1) Container A was in a location with a higher temperature than container B.
- (2) Container A has a smaller exposed surface area than container B.
- (3) Container B has a larger exposed surface area than container A.
- (4) Container B was in a location with a higher temperature than container A.

18. Three 500 cm³ conical flask, A, B and C are joined to an air pump as shown in the diagram below.

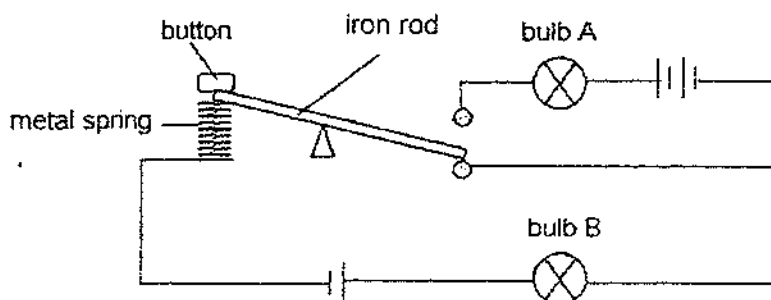


The handle of the air pump is pushed down three times, pushing in 50 cm³ of air with each pumping action.

What is the final volume of air in each flask at the end of the experiment?

	Flask A (cm ³)	Flask B (cm ³)	Flask C (cm ³)
(1)	650	650	650
(2)	500	450	300
(3)	500	500	350
(4)	650	600	450

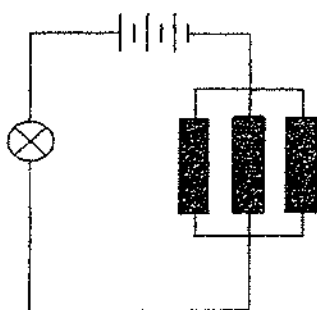
19. Study the circuit below. Bulbs A and B are identical and the three batteries are identical. At the start, bulb A is unlit while bulb B is lit with a brightness of 10 units.



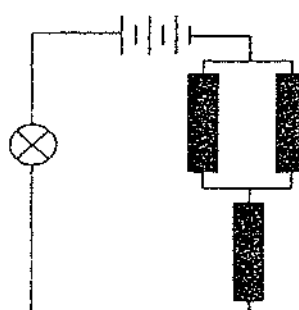
If the button is pressed and held down, what would happen to the brightness of bulbs A and B?

	bulb A	bulb B
(1)	more than 10 units	same as 10 units
(2)	will not light up	will not light up
(3)	more than 10 units	more than 10 units
(4)	will not light up	same as 10 units

20. The diagram below shows two circuits, A and B. Each of the circuit has a steel rod, a glass rod and a plastic rod which is represented by the black rectangles.



circuit A

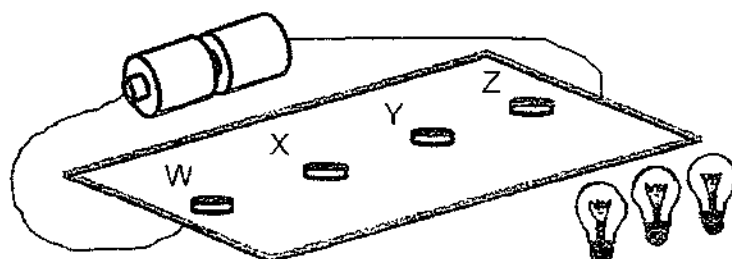


circuit B

Which observation is correct based on the above circuits?

	bulb in circuit A	bulb in circuit B
(1)	does not light up	does not light up
(2)	does not light up	lights up
(3)	lights up	does not light up
(4)	lights up	lights up

21. Ali constructed a game using two batteries and four light bulbs holder W, X, Y and Z. The wires were hidden behind the card.

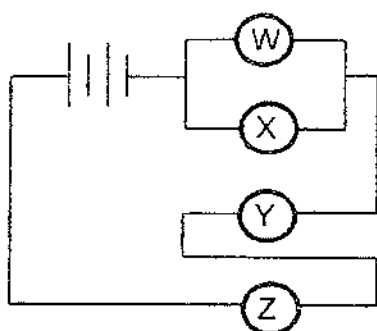


Ali tried to find out how W, X, Y and Z were connected using three identical light bulbs. His findings are as shown below.

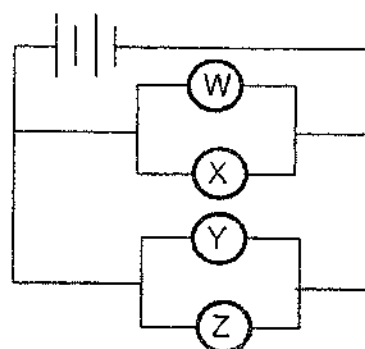
There is no bulb at	Findings
W	bulbs at holder X, Y and Z lit up
X	bulbs at holder W, Y and Z lit up
Y	bulbs at holder W, X and Z did not light up
Z	bulbs at holder W, X and Y did not light up

Which of the following shows the correct circuit of the set-up.

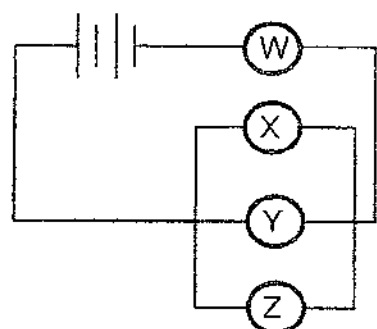
(1)



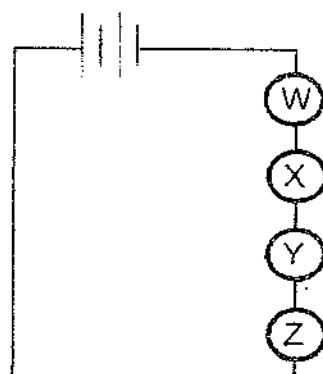
(2)



(3)



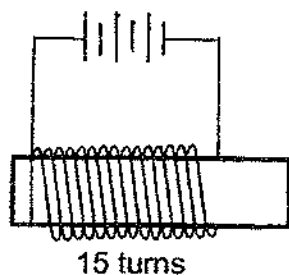
(4)



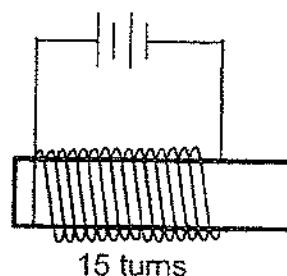
22. Jane wants to find out whether the number of turns of the wire arounds the steel rod affects the strength of the electromagnet.

Which two set-ups below should she choose to conduct a fair test?

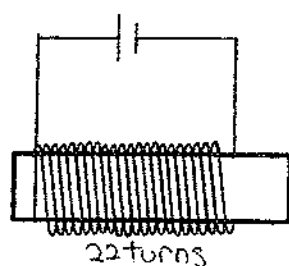
A



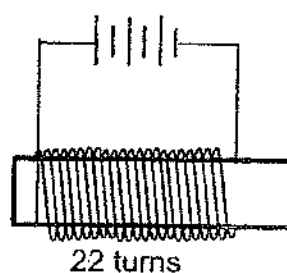
B



C



D



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

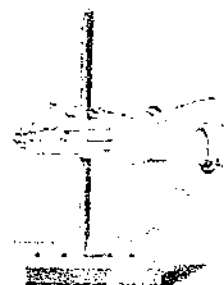
23. The diagrams below show three examples of how forces are used.



A: playing a violin



B: sweeping the floor

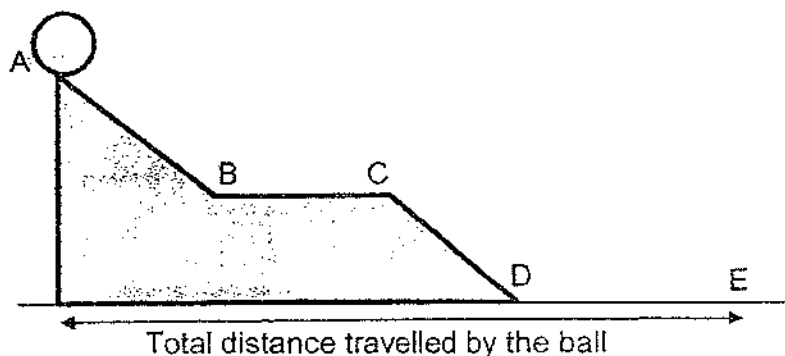


C: making a fire by rubbing a stick onto a wooden board

Which of the example(s) involve(s) friction?

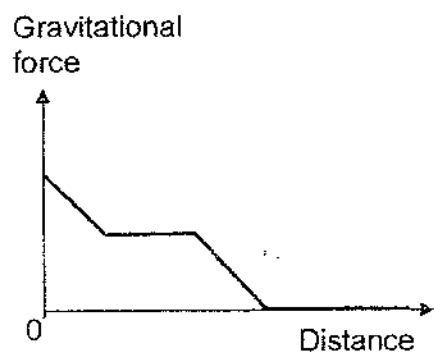
- (1) A only
- (2) C only
- (3) B and C only
- (4) A, B and C

24. Alex releases a ball from the top of the ramp as shown below.

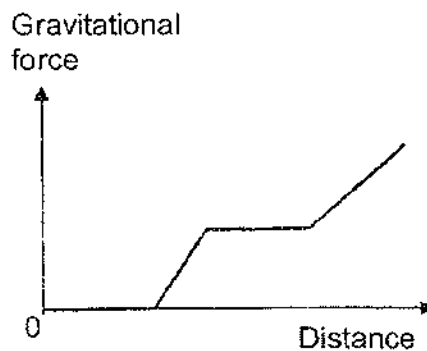


Which one of the following graph shows the gravitational force acting on the ball?

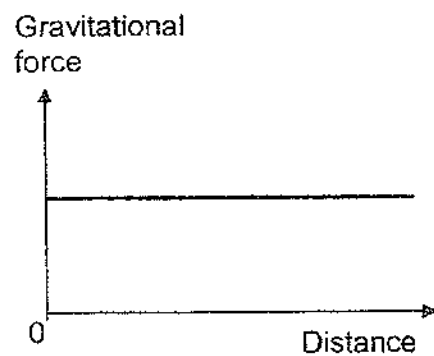
(1)



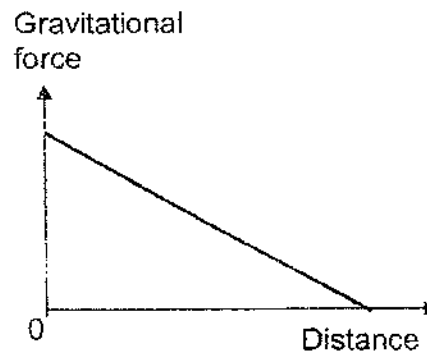
(2)



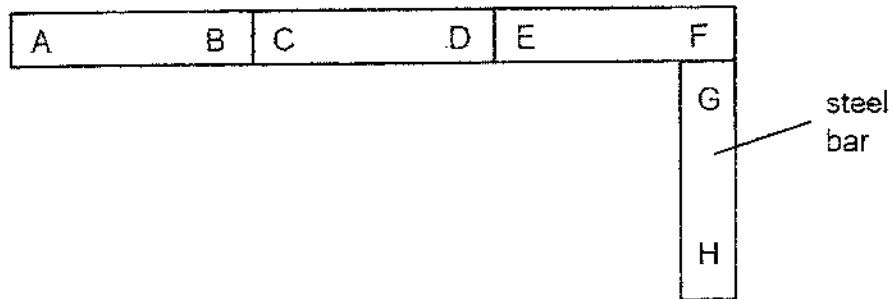
(3)



(4)

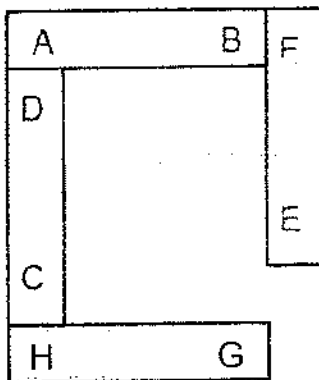


25. Joyce set up three magnets AB, CD, EF and a steel bar GH as shown in the arrangement below.

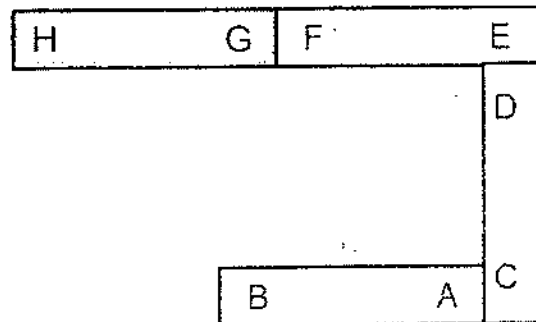


Which of the following is correct?

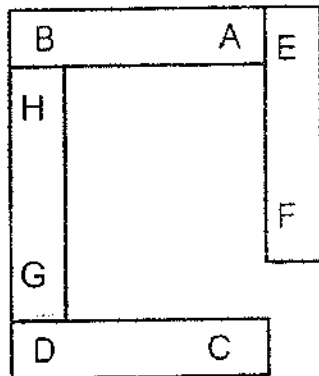
(1)



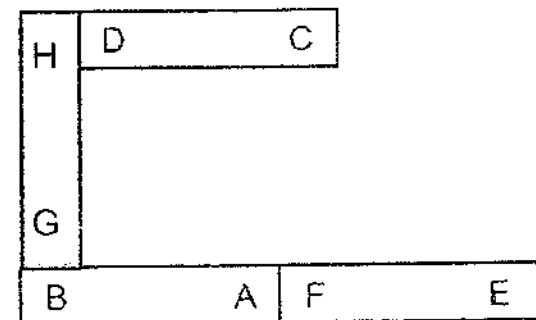
(2)



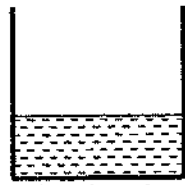
(3)



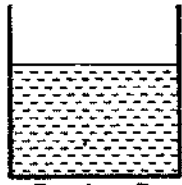
(4)



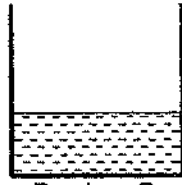
26. Four identical beakers, filled with different amount of water of different temperatures, are used in an experiment to test the amount of heat in each of them.



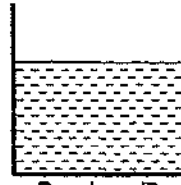
Beaker A
50ml of water
at 70°C



Beaker B
100ml of water
at 70°C



Beaker C
50ml of water
at 80°C



Beaker D
100ml of water
at 80°C

Which of the four beakers has the most amount of heat?

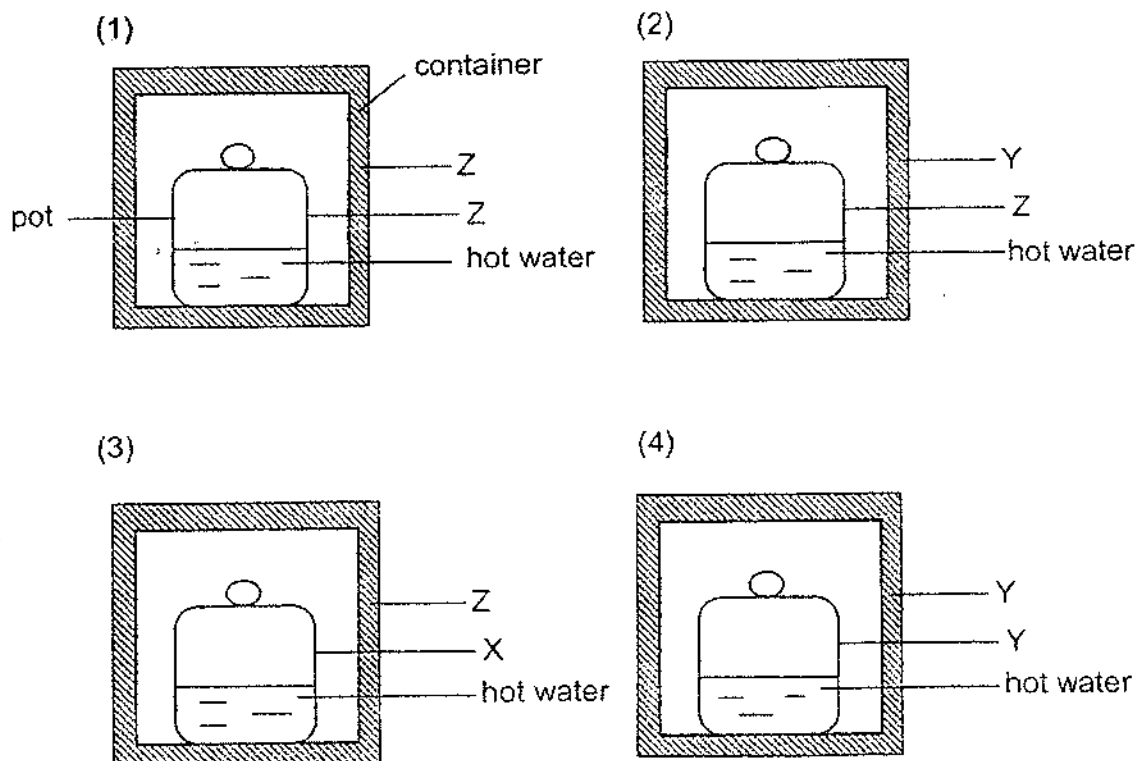
- (1) Beaker A
- (2) Beaker B
- (3) Beaker C
- (4) Beaker D

27. Three materials of the same size, thickness and temperature were heated with the same heater. The time taken for the temperature of the three materials to increase by 10°C were recorded in the table shown.

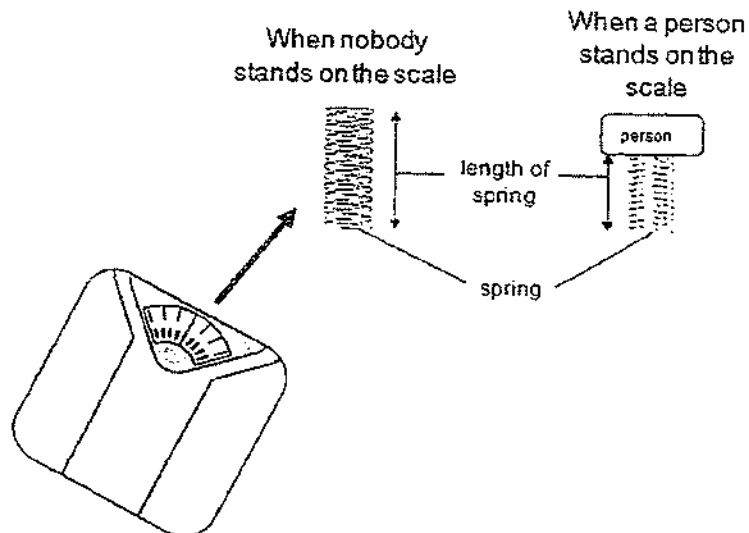
Material	Time taken to increase the temperature by 10°C (min)
X	5
Y	2
Z	8

The materials were then used to make the following containers and pots. The same amount of hot water at 90°C was poured into each pot.

Which of the following set-ups would keep the water hottest for the longest time?



28. The diagram below shows how the spring inside the weighing scale works when a person stands on it.



The table below shows the length of the spring when persons A, B and C stood on the weighing scale, one at a time.

Person	Length of spring (mm)
A	10
B	5
C	16

Based on the information provided, which of the following is correct?

	Person who caused the spring to have the most amount of elastic potential energy when he stepped on the weighing scale	Person with the most mass
(1)	B	B
(2)	B	C
(3)	C	A
(4)	C	B

END OF BOOKLET A



RED SWASTIKA SCHOOL

SCIENCE 2020 PRELIMINARY EXAMINATION PRIMARY 6

Name : _____ ()

Class : Primary 6/ _____

Date : 24 August 2020

BOOKLET B

12 Questions
44 Marks

In this booklet, you should have the following:

- a. Page 21 to Page 35
- b. Questions 29 to 40

MARKS

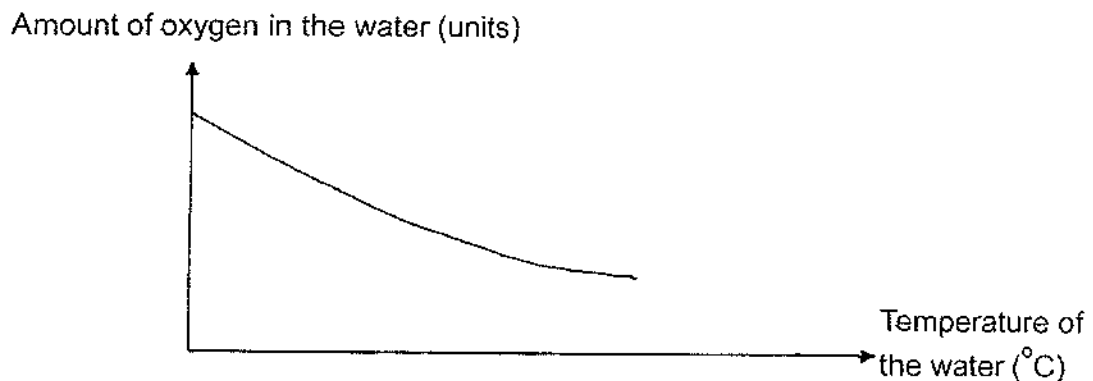
	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

Parent's Signature : _____

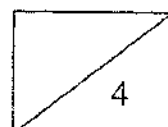
Answer all the questions in the spaces provided.

29. Mr Wee is the owner of a fish farm. He observed that when the temperature of the water in the fish pond is higher, more of the fish died.

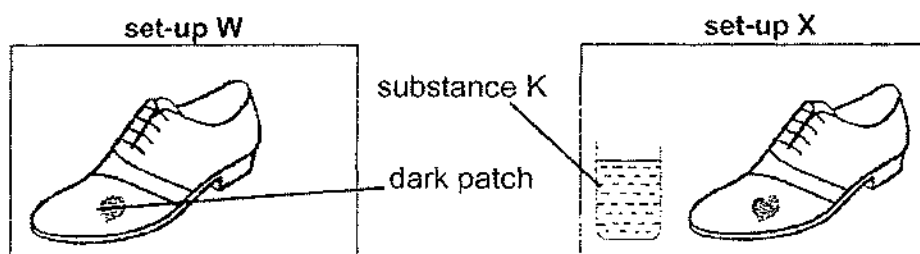
He conducted an experiment to measure the amount of oxygen in the water at different temperatures. His results are shown in the graph below.



- (a) Based on the graph, what happens to the amount of oxygen in the water when the water is cooler? (1m)
-
- (b) Mr Wee observed that the breathing rate of the fish increased as the temperature of the water increased. Using the results of his experiment, explain why. (2m)
-
-
-
- (c) After Mr Wee grew some water plants in the fish pond, he observed that less fish died when the water temperature increased. Based on the experiment, why was this so? (1m)
-
-



30. Mr Tan created two set-ups as shown below. Before the experiment, both leather shoes were kept in a cupboard for a long time and as a result, a dark patch grew on each shoe.



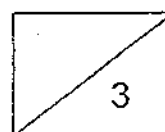
- (a) What was the dark patch that grew on both shoes? (1m)

Mr Tan wanted to investigate if substance K can help remove the dark patch. Below is an instruction on how to use substance K.

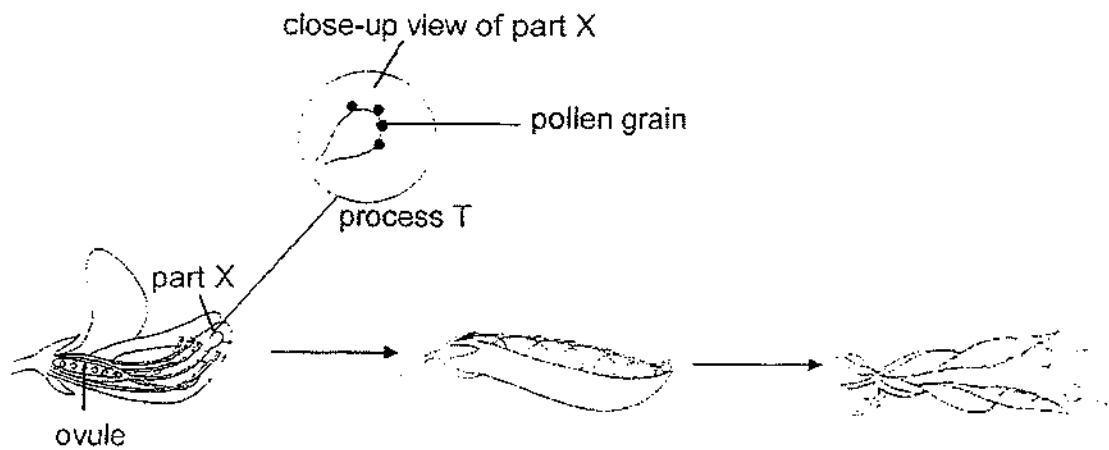
Place substance K next to leather products with dark patches. The patches will disappear within five days!

After five days, Mr Tan was pleased to see that the dark patch on the shoe in set-up X was gone.

- (b) What did substance K remove from set-up X? Explain your answer. (2m)

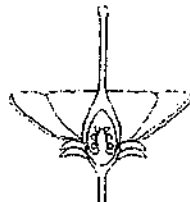


31. The diagram shows the development of a flower into a fruit.

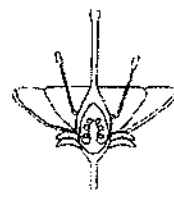


- (a) Base on the close-up view of part X, identify process T. (1m)

Study the two flowers shown below.

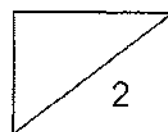


flower K



flower L

- (b) On which flower(s) can process T take place? Explain your answer. (1m)



Flower M shown below is found in the same location as flower L. There is no wind and there are bees flying around.

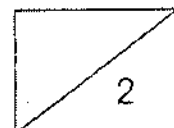


Flower M

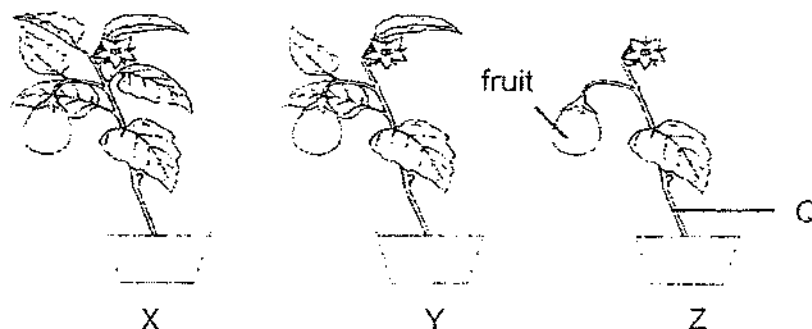
	Flower L	Flower M
Colour of petals	dull	colourful
Scent	no smell	sweet-smelling

- (c) Base on the information provided, which flower, L or M, has a higher chance of going through process T with the help of the bees?

Explain your answer. (2m)



32. Jason conducted an experiment with three plants, X, Y and Z, as shown in the diagram. The plants were placed in a well-lit area and given the same amount of water daily.

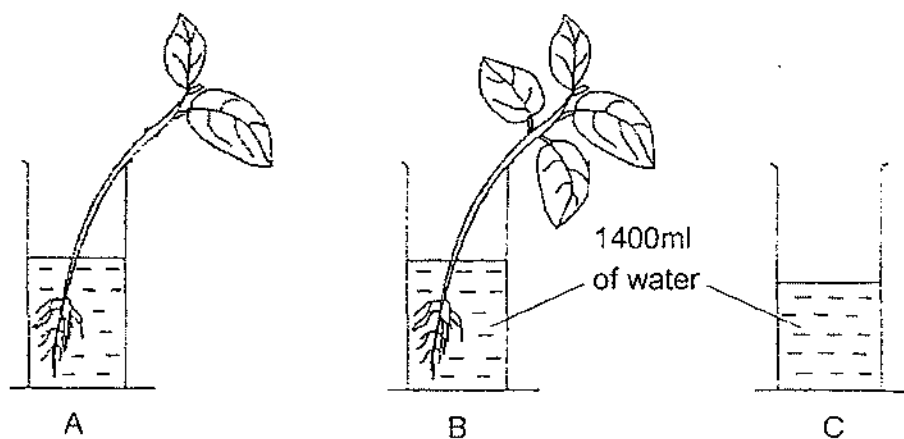


After some time, he measured the mass of the fruit in each set-up. The results are shown in the table below.

Plant	Number of leaves on the plant	Mass of fruit (g)	
		Start of experiment	End of experiment
X	6	8	18
Y	4	8	P
Z	1	8	10

- (a) Based on the table, state a possible value for P. (1m)
- _____
- (b) If all the leaves in plant X are removed, would the mass of the fruit for plant X increase, decrease or remain the same after some time? (1m)
- _____
- (c) Insect E is a pest which eats its way into part Q of plant Z. Explain how this affected the growth of the roots in plant Z. (2m)
- _____
- _____
- _____

33. Jia Hao created the set-up shown below. He placed two plants in containers A and B and filled all three containers with the same amount of water.



The three set-ups were placed in the garden for five days.

The table below shows the amount of water in the measuring cylinders at the start and at the end of the experiment.

Day	Set-up A (ml)	Set-up B (ml)	Set-up C (ml)
Day 1	1400	1400	1400
Day 5	1200	1150	1300

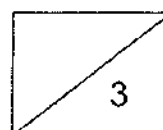
- (a) Jia Hao concluded that the plant in set-up B took in 250ml of water. Explain whether his conclusion is correct. (1m)

- (b) Jia Hao would like to find out if the presence of roots would affect the amount of water taken in by the plant using set-up A and B.

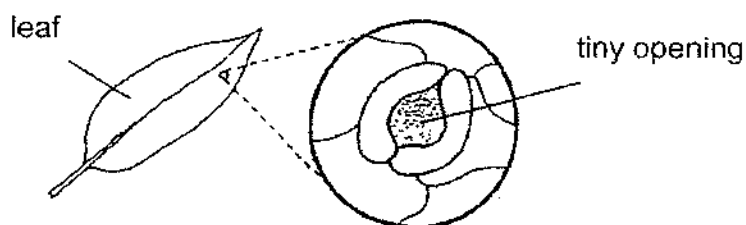
What are the two changes he must do to the plant in set-up B in order to conduct a fair test? (2m)

Change 1: _____

Change 2: _____



34. A leaf has tiny openings on its surface as shown in the diagram below. The tiny openings allows gaseous exchange to take place for the plant.



Jane measured the changes in the size of the tiny openings of some leaves on a plant. The plant was placed in the school field for a day. She recorded her results in the table below.

Time	4am	8am	12pm	4pm	8pm
Average size of the tiny openings (units)	1	3	5	3	1

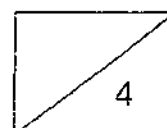
- (a) Based on the table, how did the size of the tiny openings change from 4am to 12pm? (1m)

- (b) What is the advantage and disadvantage to the plant when the size of the tiny openings are bigger? (2m)

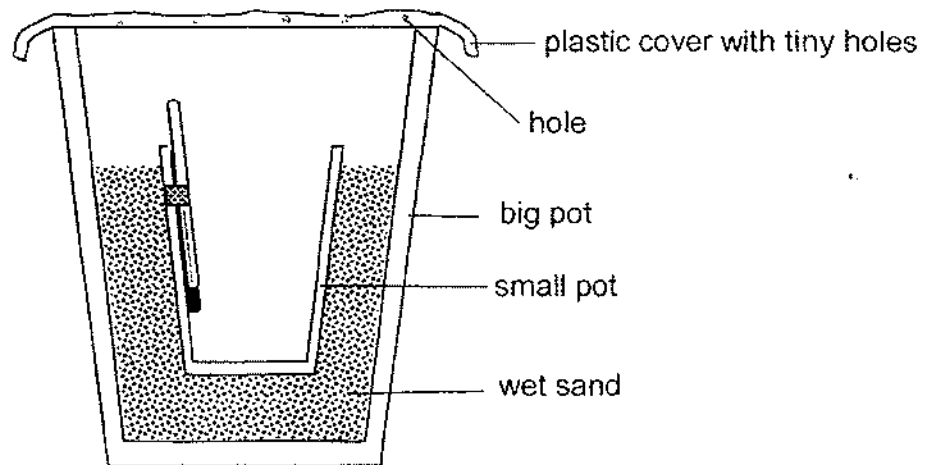
Advantage: _____

Disadvantage: _____

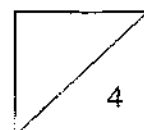
- (c) Which human body system has a similar function as the tiny openings on the leaf? (1m)



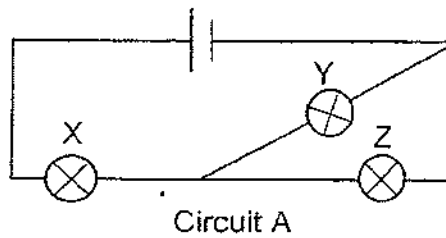
35. Andy set up the experiment as shown below. He placed the set-up in a dry place.



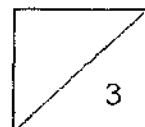
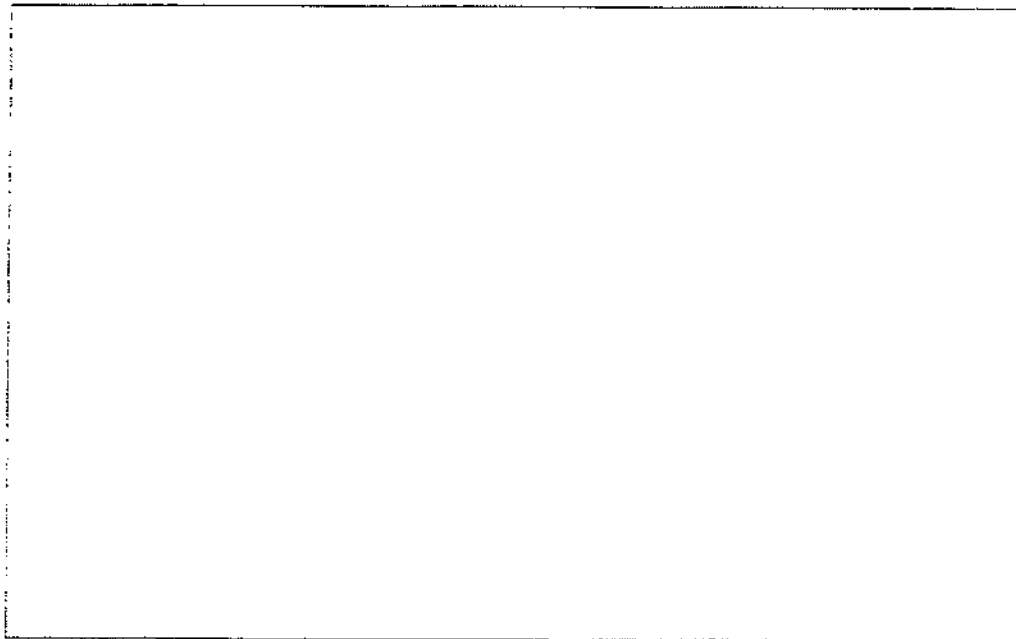
- (a) What will be formed under the plastic sheet after some time? (1m)
- _____
- (b) He noticed that there is a drop in the temperature of the air inside the small pot. Explain why. (2m)
- _____
- _____
- _____
- (c) After several hours, he noticed some water collected at the bottom of the small pot. Without changing the set-up, suggest one way to increase the amount of water collected in the small pot. (1m)
- _____
- _____



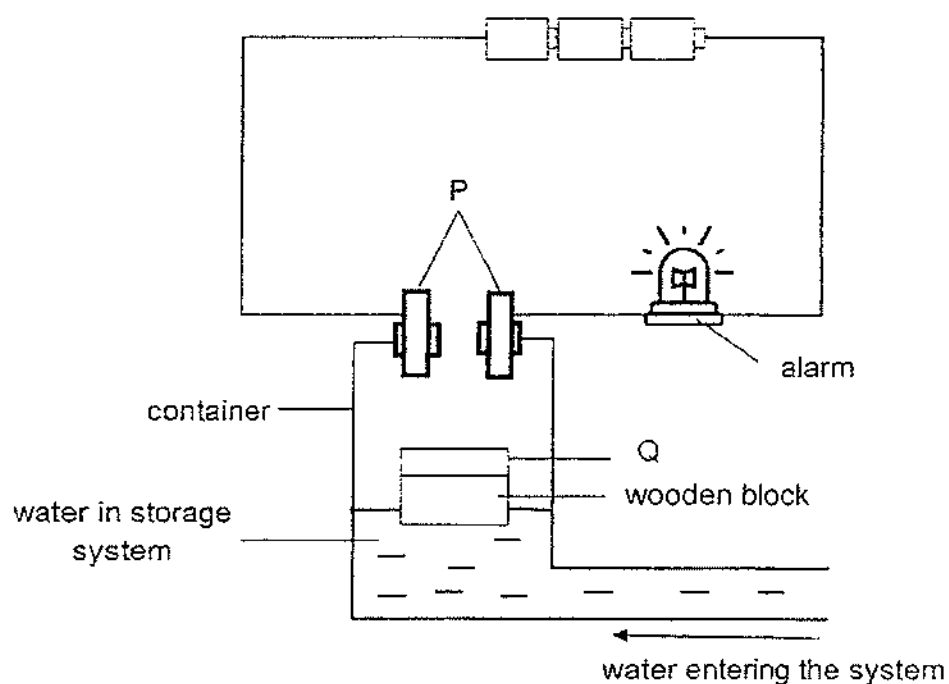
36. May constructed circuit A, as shown below. All the bulbs lit up in circuit A.



- (a) May removed one of the bulbs from circuit A and the other two bulbs did not light up. Which bulb did May remove? Explain your answer. (2m)
- _____
- _____
- (b) May wanted to rearrange bulbs X, Y and Z, such that when one of the bulbs is fused, the remaining two bulbs will continue to light up. Complete the circuit diagram to show this new arrangement. (1m)

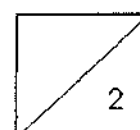


36. The diagram below shows a model that can detect the amount of water in a storage system. When the amount of water reaches a certain level, the alarm sounds to alert that the storage system is full.

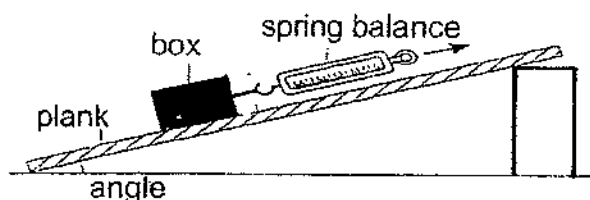


- (c) What material must part P and Q be made of? (1m)

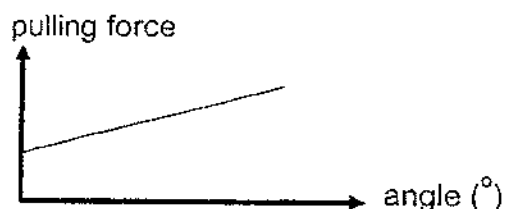
- (d) Explain the answer for part (c). (1m)



37. Joe set up an experiment as shown below. He pulled the box up the plank using a spring balance. He repeated the experiment using different values of the angle.

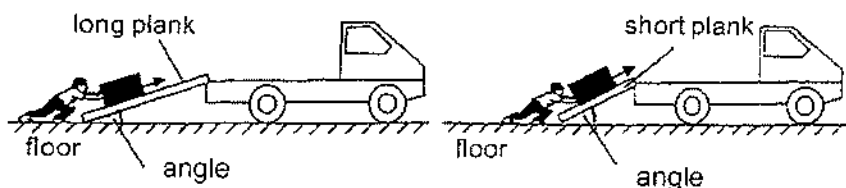


He plotted a line graph to show the results of the experiment.



- (a) What is the relationship between the angle and the pulling force needed? (1m)

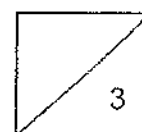
Joe wanted to push a box up a plank to the back of a truck as shown below.



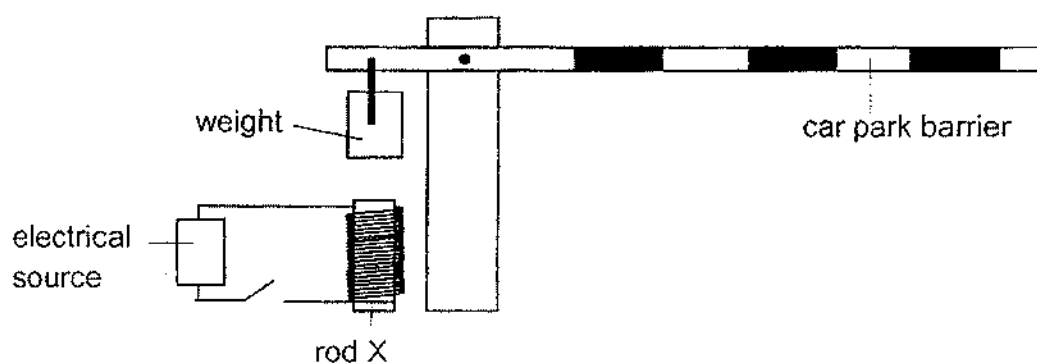
The table below shows the values of the angles.

	long plank	short plank
Value of angle (°)	40	60

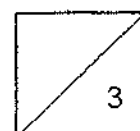
- (b) Based on the graph and table, why it is a disadvantage to push the box up the truck using the short plank? Explain in terms of forces. (2m)



38. David studied how the car park barrier operates using the circuit as shown. When he closed the switch, the weight moved downwards and touch rod X causing the car park barrier to rise.



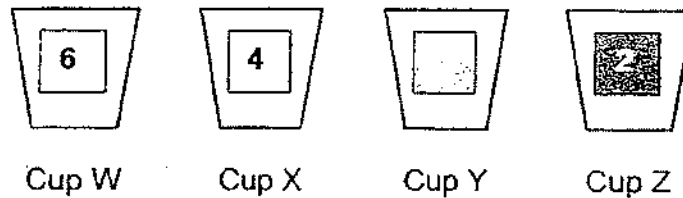
- (a) For the carpark barrier to work, give an example of a metal that the weight can be made of. (1m)
- _____
- (b) Explain why the weight touched rod X after David closed the switch. (2m)
- _____
- _____
- _____



39. A heat camera can show different temperatures. Each number is represented by a different shade of colour.

Temperature (°C)	21-30	31-40	41-50	51-60	61-70	71-80
Colour	1	2	3	4	5	6

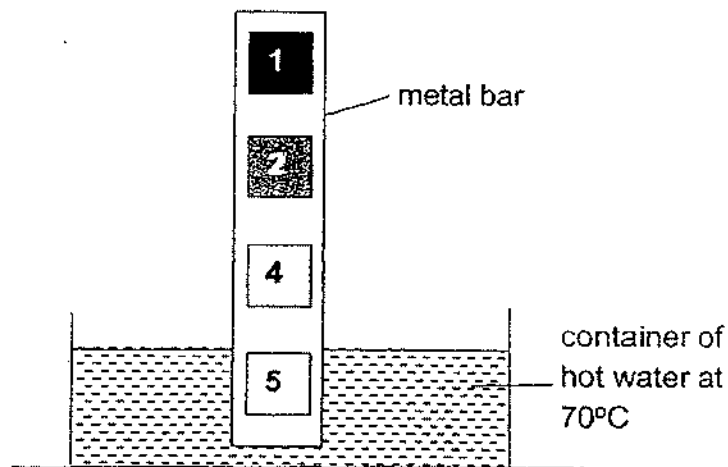
Harry was given 4 cups of water, W, X, Y and Z. When he viewed the water in the cups through the heat camera, the following colours were observed.



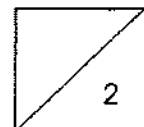
- (a) State the possible temperatures of water in the four cups in the table below. (1m)

Cup W	Cup X	Cup Y	Cup Z

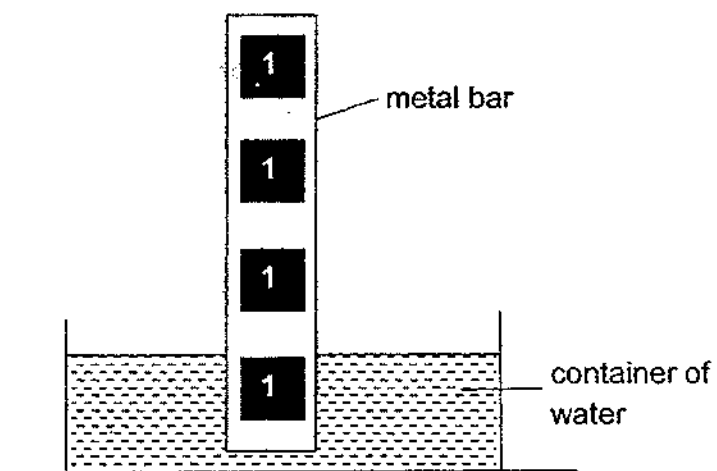
Harry placed a metal bar in a container of hot water at 70°C. When viewed through the heat camera, the following colours were observed on the metal bar.



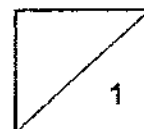
- (b) Based on the above diagram, explain why different colours were observed on the metal bar. (1m)



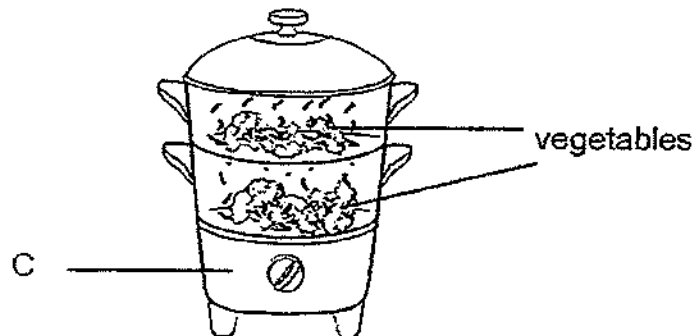
An hour later, when viewed through the heat camera, only one colour was observed on the metal bar.



(c) Explain why only one colour was observed after an hour. (1m)



40. A steamer uses steam to cook vegetables. The steam forms when the water in part C boils.

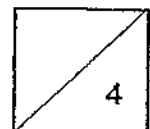


- (a) What is the state of matter for steam? (1m)
- _____
- (b) Explain why keeping the cooked vegetables in a glass container will keep it warm for a longer period of time. (1m)
- _____
- _____

The table below shows the minimum temperature needed for cooking different types of food so that it is safe to eat.

Type of food	Minimum cooking temperature (°C)
X	92
Y	85
Z	80

- (c) Mrs Ong said that the three types of food can be cooked in a steamer until it is safe to eat. Based on the table, explain why she is correct. (2m)
- _____
- _____



END OF BOOKLET B
PLEASE CHECK YOUR ANSWERS.

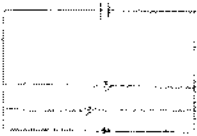
SCHOOL : RED SWASTIKA PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2020 PERLIM

SECTION A

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

SECTION B

Q29)	<p>a)The cooler the water, the more the amount of oxygen in the water.</p> <p>b)As the temperature of the water increased, the amount of dissolved oxygen in the water decreased. As a result the fish had to breath faster in order to get enough oxygen.</p> <p>c)It was because there was more oxygen in the water as the plants photosynthesised and oxygen was produced, hence, even as the water temperature increased there would be more oxygen to the fish to breath in comparison to the oxygen in the tank when the temperature increased and did not have water plants.</p>
Q30)	<p>a)Mould</p> <p>b)Moisture. Without moisture mould cannot grow as it did not have enough water, hence, it will die.</p>

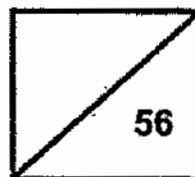
Q31)	<p>a)Pollination</p> <p>b)Both they have a stigma for pollen grains to land on.</p> <p>c)M. The bees will be attracted to the sweet- Smell and transport the pollen gain to the flower.</p>
Q32)	<p>a)149</p> <p>b)Decrease.</p> <p>c)The roots will not be able to get food as the food- carrying tubes have been eaten by E, hence, it will die.</p>
Q33)	<p>a)No. The water in the beaker may have evaporated when the water gained heat.</p> <p>b)1)Remove 2 leaves from the plant.</p> <p>2)Remove the roots from one of the plants.</p>
Q34)	<p>a)The size of the tiny openings increase.</p> <p>b)Advantage : The plant can take in more oxygen for survival.</p> <p>Disadvantage : More water in the plant will gain and evaporate.</p> <p>c)Respiratory System.</p>
Q35)	<p>a)Water droplets.</p> <p>b)Water gains and evaporates. The water vapour escapes, causing the temperature inside the small pot to be lower.</p> <p>c)Place the set-up under hot sun.</p>
Q36)	<p>a)X. When X was removed it caused a open circuit and electricity could not pass through.</p>  <p>b)</p> <p>c)Metal</p>

	d)Metal is an electrical conductor and allows electrical to flow through.
Q37)	<p>a)The bigger the angle, the more the pulling force.</p> <p>b)The angle is bigger. Hence, Joe would need to exert a bigger push force than using the ling plank in order to push the box up the short plank.</p>
Q38)	<p>a)Cobalt.</p> <p>b)Electricity can flow through the circuit, causing the rod X to be magnetised. The electromagnet attract the weight which is made of a magnetic materials.</p>
Q39)	<p>a)71°C / 51°C / 41°C / 31°C</p> <p>b)The bottom end of the metal bar gained heat from the hot water faster than the upper end of the bar.</p> <p>c)The metal rod lost heat to the surrounding. Its temperature decreased to room temperature.</p>
Q40)	<p>a)Gaseous state.</p> <p>b)Glass is a heat insulator. Hence, heat will be lost slower and the cooked vegetable will warm for a longer period of time.</p> <p>c)As stem is water vapour at 100°C , the steamer would have heated the food to 100°C which is above their minimum cooking temperature.</p>



Rosyth School
Preliminary Examination 2020
SCIENCE
Primary 6

Total
Marks:



Name: _____

Class: Pr 6- _____ Register No. _____

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

Date: 27 August 2020

Booklet A

Instructions to Pupils:

1. Do not open the booklet until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.

* This booklet consists of 23 printed pages (including cover page).

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

[56 Marks]

1 All plants _____

- (1) make their own food
- (2) reproduce by seeds
- (3) bear flowers and fruits
- (4) need oxygen at night only

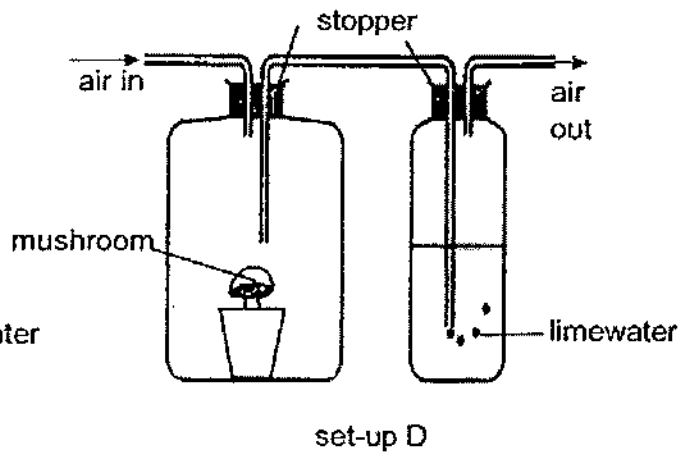
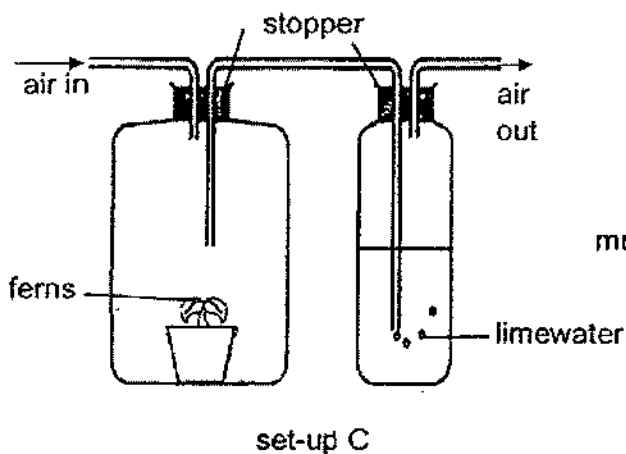
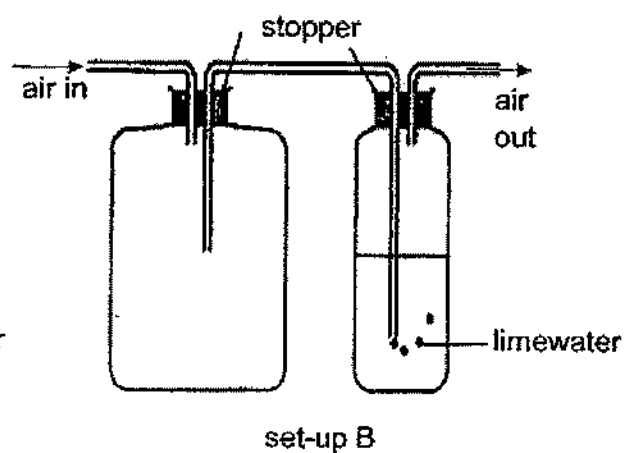
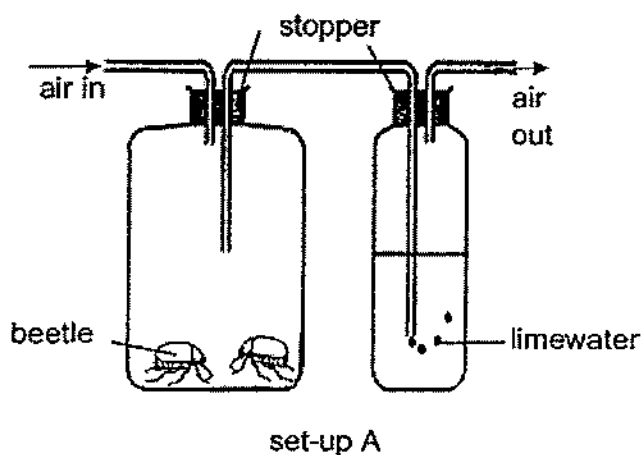
2 Many years ago, a scientist discovered an animal P and studied its characteristics. Some of the characteristics of animal P are as follows:

- A lays egg
- B has four legs
- C can swim in water
- D can produce milk to feed the young

Which of the above characteristics made it difficult to classify animal P as a mammal?

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

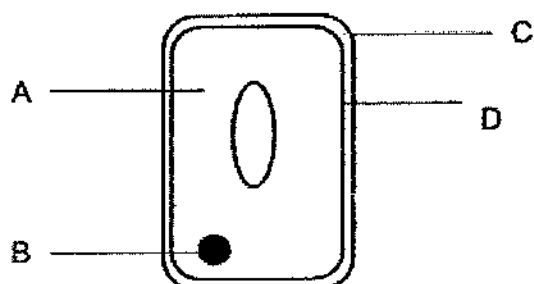
- 3 Study the four set-ups as shown below. All set-ups were placed near a window on a sunny day.



Limewater changes from colourless to chalky in the presence of carbon dioxide.
In which set-up will the limewater turn chalky the slowest?

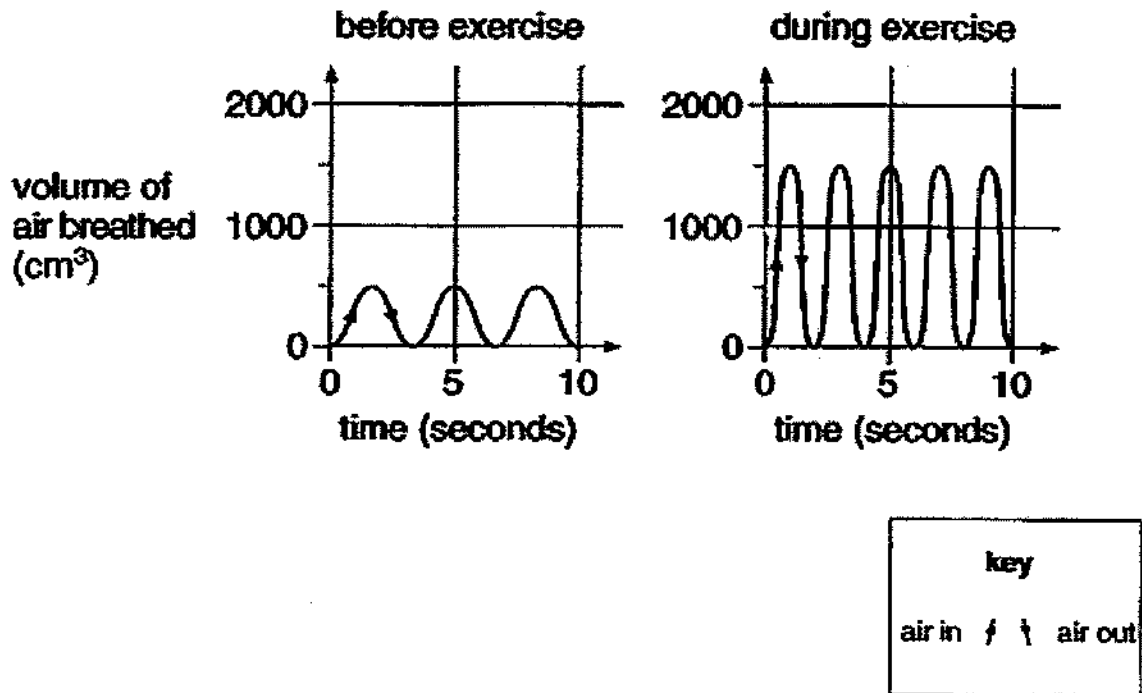
- (1) A
- (2) B
- (3) C
- (4) D

- 4 Some scientists claim that plants will glow in the dark when modified.
Which part of the plant cell has been modified for the investigation?



- (1) A
 - (2) B
 - (3) C
 - (4) D
- 5 Which one of the substances is not transported by the human circulatory system?
- (1) water
 - (2) digested food
 - (3) carbon dioxide
 - (4) undigested food

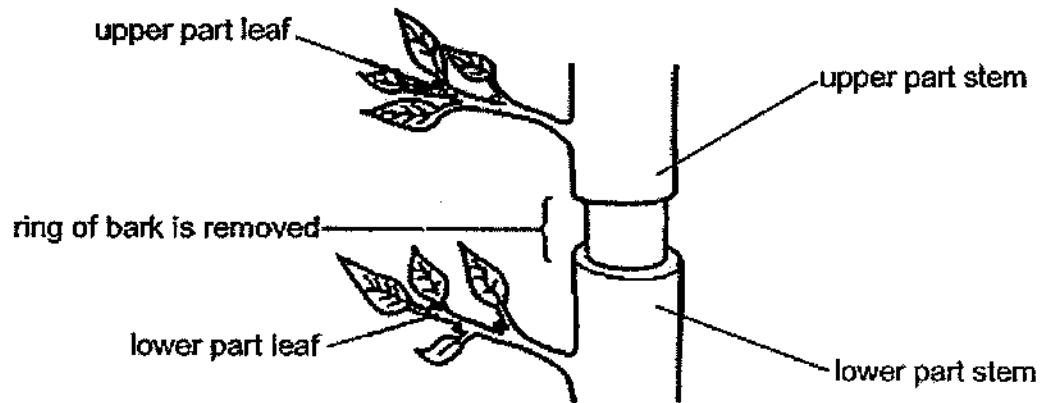
- 6 The two graphs below show Mary's breathing before exercise and during exercise respectively.



In which ways will Mary's breathing change during exercise?

- A Time taken for one breath
 - B Volume of oxygen breathed in
 - C Volume of nitrogen breathed out
 - D Volume of carbon dioxide breathed out
- (1) A and B only
- (2) C and D only
- (3) A, B and D only
- (4) A, B, C and D

- 7 The diagram shows part of the stem of a small tree with a ring of bark removed. Removing the ring of bark takes away the food-carrying tube but not the water-carrying tube.



The effect of removing the ring of bark was observed after some time.

What would be the effect ?

	Upper part		Lower part	
	stem	leaf	stem	leaf
(1)	normal	green	normal	green
(2)	swollen	wilt	swollen	wilt
(3)	swollen	green	normal	wilt
(4)	swollen	green	normal	green

- 8 A group of boys wanted to carry out an experiment to find out if mopping the floor will increase their pulse rate.

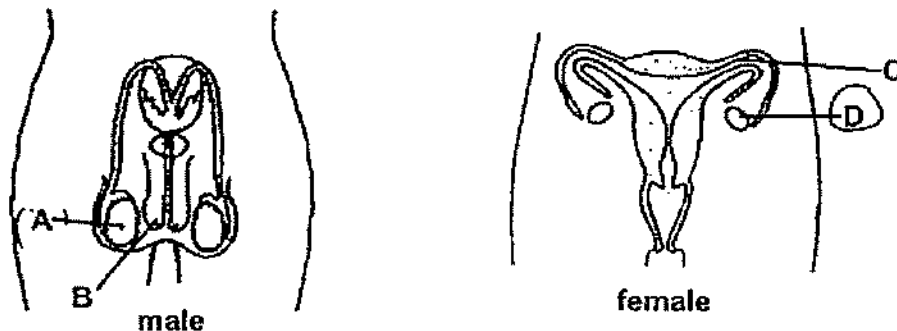
The steps of their experiment are as follows:

- A Take a wet mop
- B Mop the floor continuously for 10 minutes
- C Stop mopping and measure the pulse rate immediately

Their teacher said that they have forgotten an important step and without that step, they cannot make a conclusion.

Which step should they include in their experiment so that they can make a conclusion?

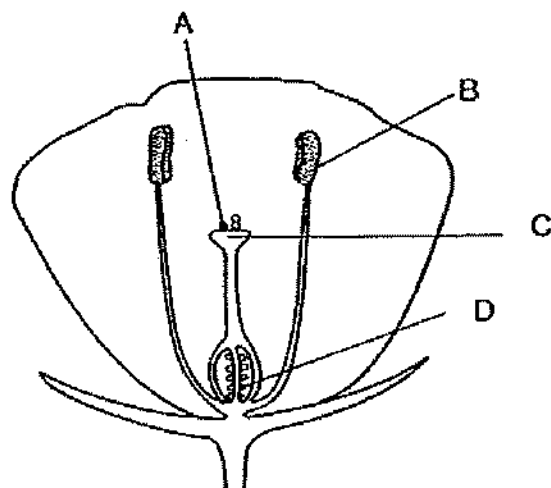
- (1) Repeat the experiment
 - (2) Record the results in a table
 - (3) Measure the pulse rate at rest
 - (4) Measure the heart rate after mopping
- 9 The diagram below shows the human reproductive systems.



Where are the human reproductive cells produced?

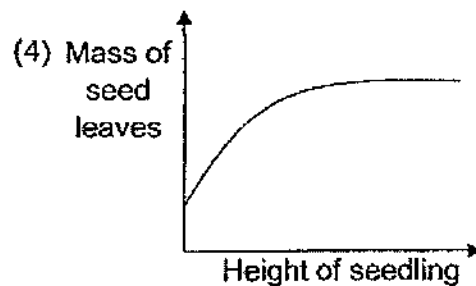
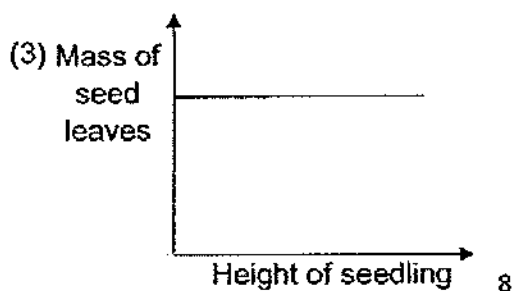
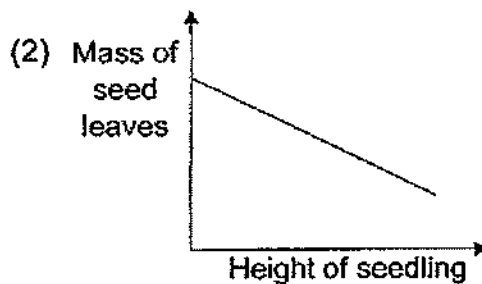
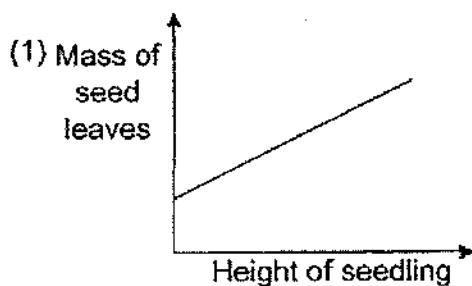
- (1) A and C
- (2) B and D
- (3) A and D
- (4) B and C

- 10 The diagram shows a cross-section of a flower.

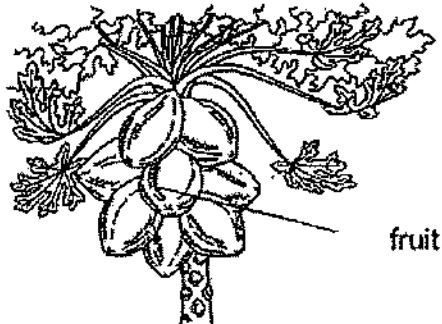


Which one of the following statements is correct?

- (1) Fertilisation occurs at D.
 - (2) A will become a seed after fertilisation.
 - (3) Pollen grains are transferred by insects to B.
 - (4) The reproductive cells are found in B and C
- 11 Which graph correctly shows the relationship between the mass of seed leaves and the height of the seedling?



- 12 The diagrams below show some fruits on a tree and a baby inside a mother's womb.



Alex made three statements about the fruit and the baby.

- A It develops into an adult.
- B It developed after fertilisation.
- C It obtains food from its parent for growth.

Which of the following is correct?

	fruit	baby inside a mother's womb
(1)	A,B,C	A,B, C
(2)	A, B	A,B,C
(3)	B,C	A, B,C
(4)	B,C	A, C

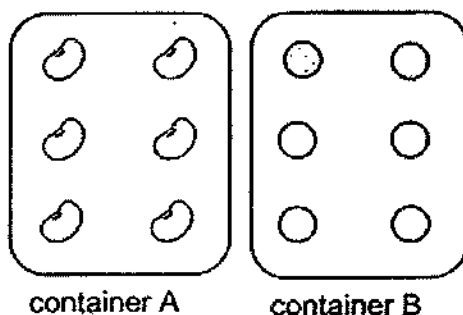
- 13 Ravi compared the life cycles of two animals and made the following statements.

- Both their young resemble the adult.
- Both animals have 3 stages in their life cycles.

Which animals was Ravi comparing?

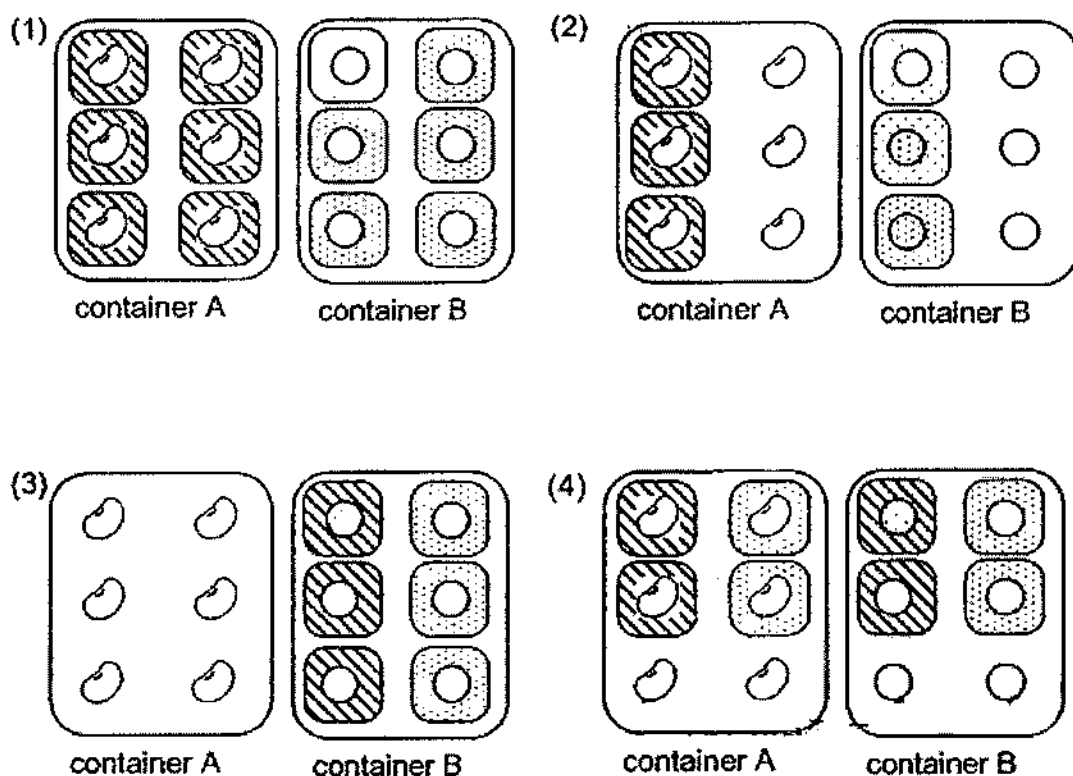
- (1) Chicken and beetle
- (2) Butterfly and chicken
- (3) Grasshopper and beetle
- (4) Chicken and grasshopper

- 14 Siti carried out an experiment on germination of seeds using two different types of seeds placed in identical containers A and B as shown below.

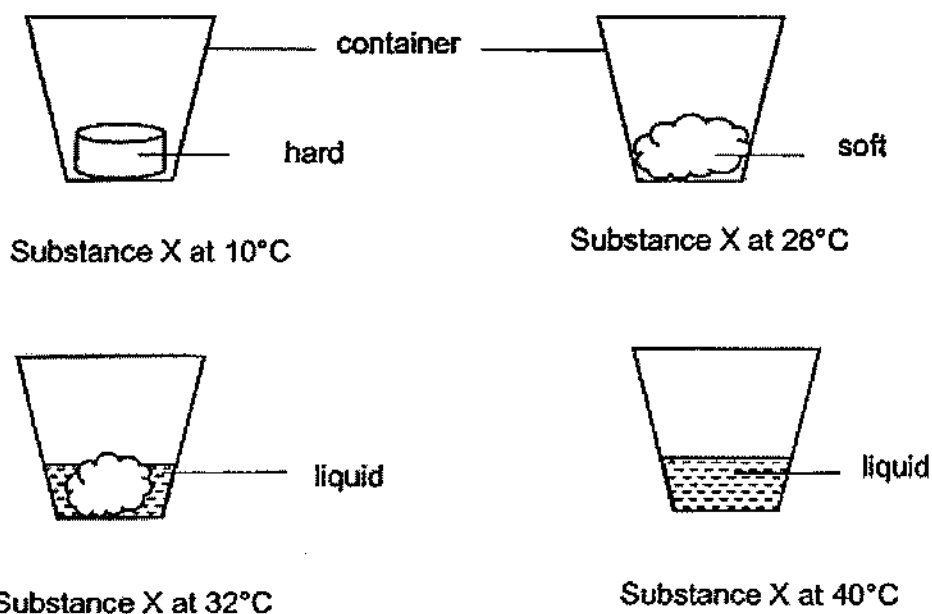


She predicted that the seeds will germinate faster with 50 ml of water. However, her friend predicted that adding only 10 ml of water will help the seeds to germinate faster.

Which of the following set-ups should Siti use to provide a correct test for **both** their predictions?



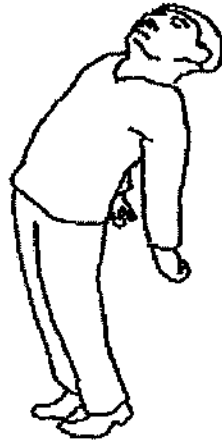
- 15 The diagram below shows Substance X in a container at various temperatures.



Based on the above information, which one of the following is the melting point of Substance X?

- (1) 10°C
- (2) 28°C
- (3) 32°C
- (4) 40°C

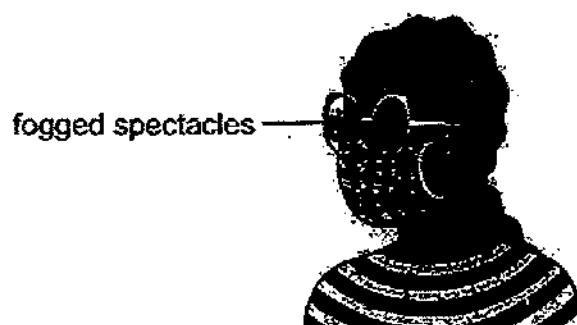
- 16 The diagram shows what a person can do.



This shows the property of _____.

- (1) strength
- (2) elasticity
- (3) flexibility
- (4) waterproof

- 17 Mrs Tan realises that there is fogging on her spectacles when she wears her mask as shown.



Which of the following correctly shows where the fogging takes place and where the warmer water vapour comes from?

	Fogging takes place on the _____ surface of spectacles	Warmer water vapour comes from _____
(1)	inner	Mrs Tan's breath
(2)	outer	Mrs Tan's breath
(3)	inner	the surrounding air
(4)	outer	the surrounding air

- 18 Diagram 1 shows the mass of magnet M when it is placed on an electronic balance. Diagram 2 shows its mass when another object Y is placed above it.

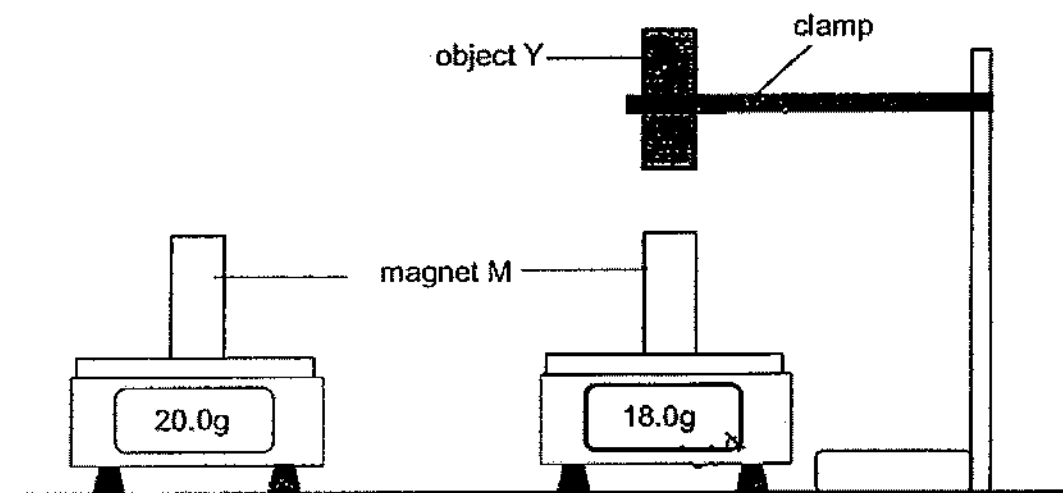


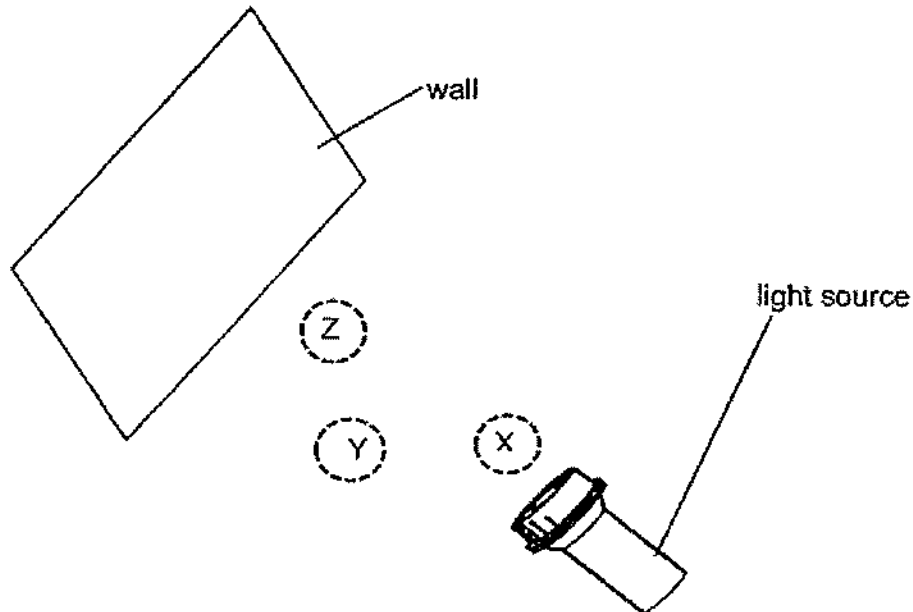
Diagram 1

Diagram 2

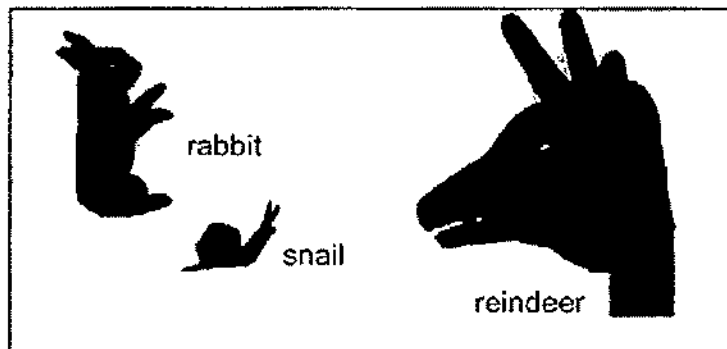
Which of the following shows the material of object Y and the direction of the magnetic force acting on object Y?

	Material of object Y	Magnetic force acting on Y
(1)	copper	↑
(2)	copper	↓
(3)	steel	↓
(4)	steel	↑

- 19 Three children were making shadow animals with their hands. They placed their hands which were of the same size at positions X, Y and Z between a light source and a wall as shown below.



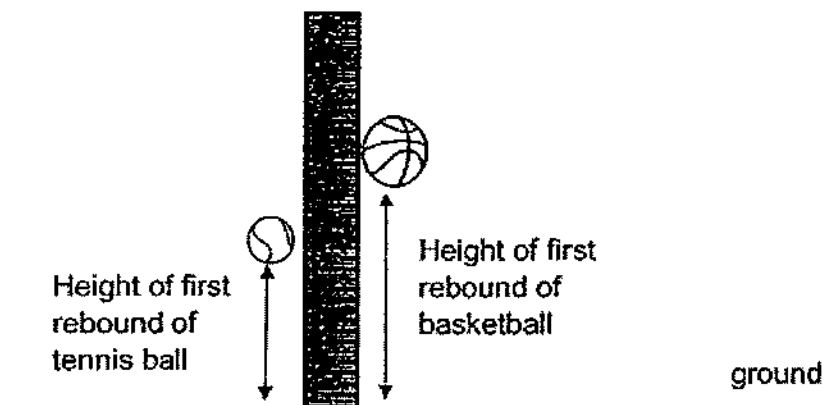
The size of each shadow animal was seen on the wall as shown below.



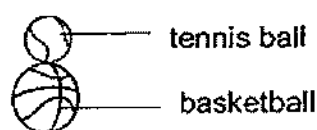
Which of the following shows the positions of the children's hands, X, Y and Z?

	Shadow animal		
	reindeer	rabbit	snail
(1)	X	Y	Z
(2)	X	Z	Y
(3)	Z	Y	X
(4)	Z	X	Y

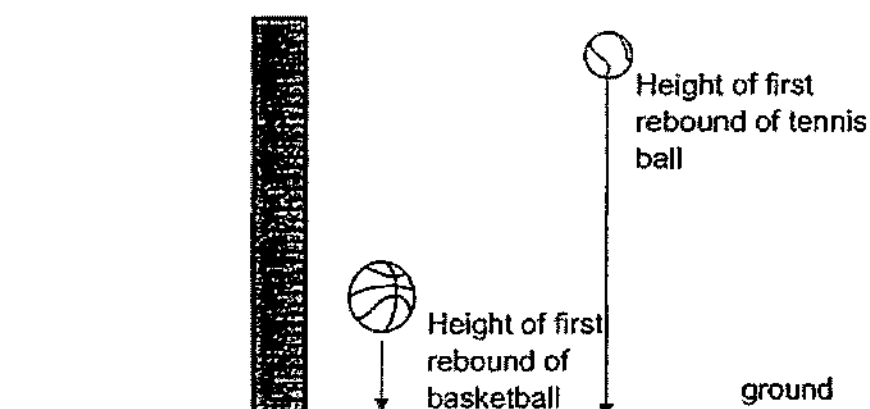
- 20 Dan released a tennis ball and a basketball each from the same height above the ground. The balls hit on the ground and bounced a few times before stopping. He measured the height of the first rebound for each ball as shown below.



Next, he placed the tennis ball on top of the basketball as shown below before releasing them from the same height.



He observed that the tennis ball bounced higher into the air than before as shown below.



Question 20 continues on page 17

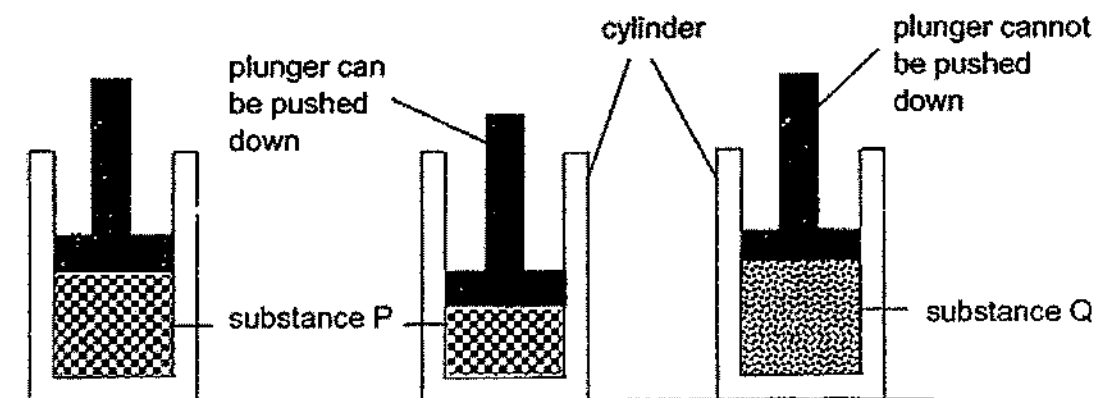
Which one of the following is the best explanation for his observation?

- (1) There was less friction between the tennis ball and the air.
- (2) There was less friction between the basketball and the tennis ball.
- (3) The gravitational potential energy of the basketball was converted to kinetic energy of the tennis ball.
- (4) The elastic potential energy of the compressed basketball when it hit the ground was converted to kinetic energy of the tennis ball.

21 Which one of the following is an example of the effect of a force?

- (1) Leaves falling from a tree.
- (2) Ice cubes melting on a table top.
- (3) Fish being cooked by the steam in a food steamer.
- (4) A puddle of water gaining heat from the sun and evaporating.

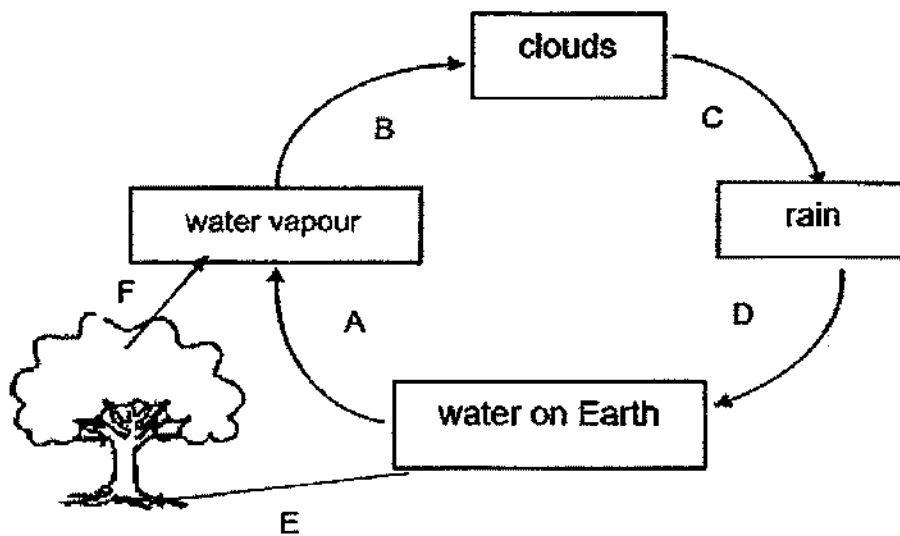
- 22 The diagram shows a cylinder and a plunger. When the cylinder was filled with substance P, the plunger was able to be pushed down to a certain extent but not when it was filled with substance Q.



Based on the observations, which of the following are correct?

- A Substance Q has definite volume.
 - B Substance Q has a definite shape.
 - C There are air spaces in substance P.
- (1) A and B only
 - (2) A and C only
 - (3) B and C only
 - (4) A, B and C

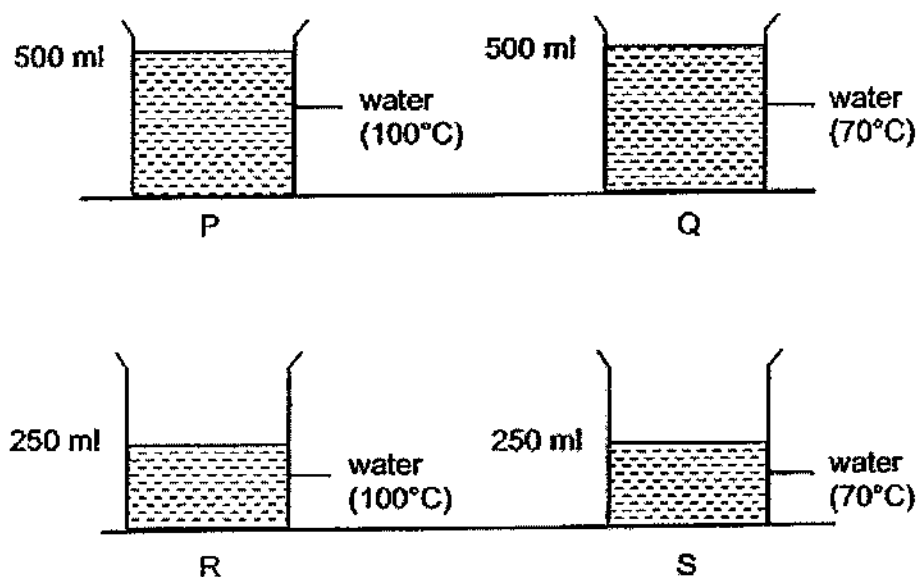
- 23 The diagram below shows the different processes, A, B, C, D, E and F, in a water cycle.



Which one of the following is correct?

	involve a change of state	involve(s) heat loss
(1)	A and B	B
(2)	A , B and F	B
(3)	A , B and F	C
(4)	B, C, D and E	C

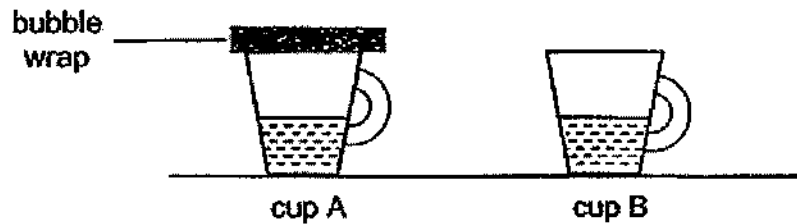
- 24 Ahmad wanted to find out how the volume of water will affect the temperature of hot water over a period of time. He used four identical containers to set up P, Q, R and S as shown below.



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

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

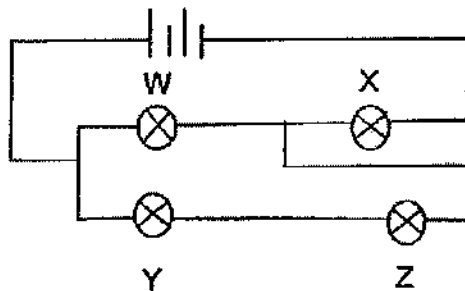
- 25 There were two identical cups, A and B, containing same amount of hot water on a table. The water was at the same temperature in both cups. Bala placed a piece of bubble wrap onto cup A as shown in the diagram below.



After five minutes, Bala observed that the water in cup A had a higher temperature than that in cup B.

Which of the following could be the most likely reason for the observation above?

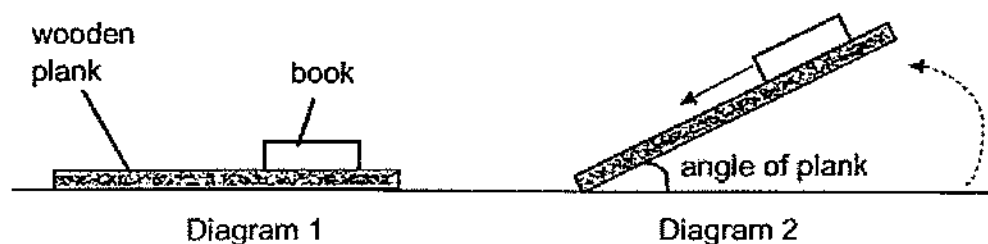
- (1) Heat was transferred from the bubble wrap to the water in cup A.
 - (2) The bubble wrap increased the rate of evaporation of the water in cup A.
 - (3) The bubble wrap increased the rate of condensation of the water in cup A.
 - (4) The bubble wrap reduced the heat transfer from the water in cup A to the surroundings.
- 26 Study the circuit.



Which bulb when blown allows the other three bulbs to remain lit?

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

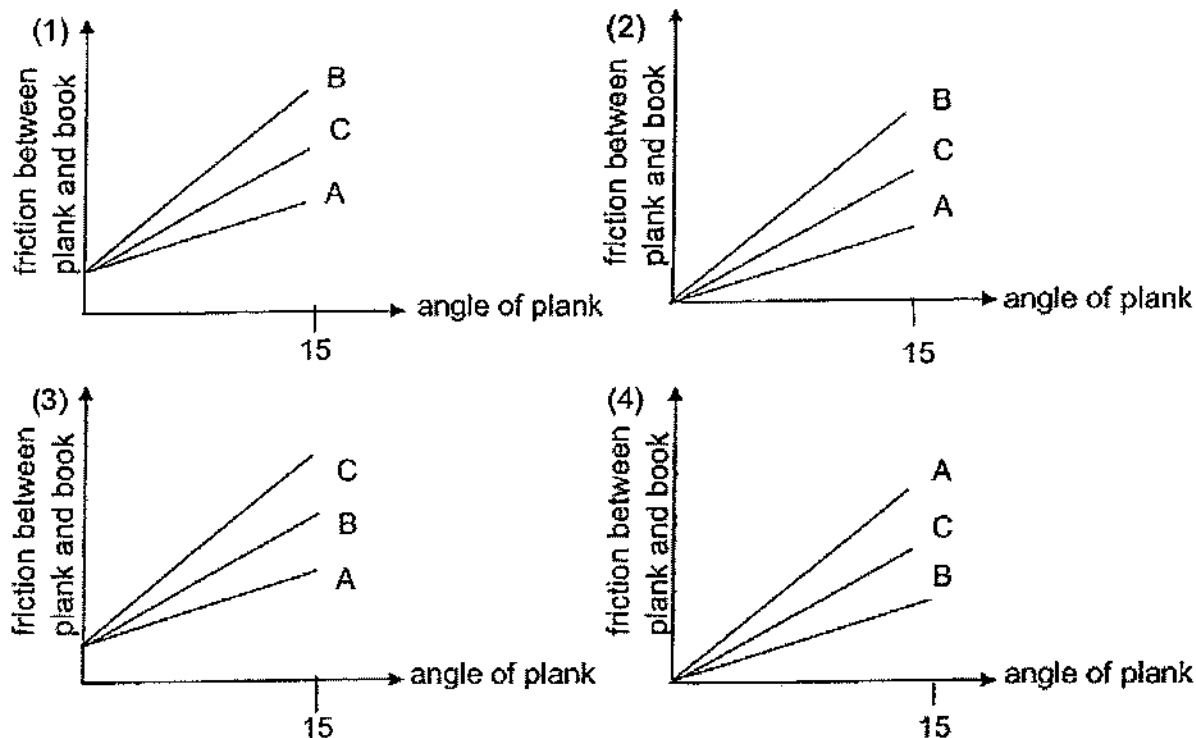
- 27 Ravi placed a book on a wooden plank as shown in Diagram 1. He raised the wooden plank till the book starts to slide down and then he measured the angle of plank as shown in Diagram 2.



The table below shows the results for different types of wooden planks, A, B and C.

Wooden Plank	Angle of plank when the book starts to slide down ($^{\circ}$)
A	20
B	70
C	50

Which of the following correctly shows the relationship between the angle of plank and the amount of friction between the plank and the book?



- 28 Asri used a trolley to push some boxes for delivery. He was able to push the trolley faster after each box was delivered.



Which of the following explain the phenomenon?

- A There was less friction between the trolley and the floor.
 - B He has to overcome less gravitational force between the trolley and the Earth.
 - C More kinetic energy of Asri was converted to more kinetic energy of the trolley.
-
- (1) A and B only
 - (2) A and C only
 - (3) B and C only
 - (4) A , B and C

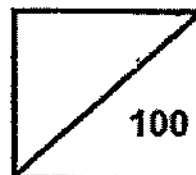
(go to Booklet B)



Rosyth School
Preliminary Examination 2020
SCIENCE
Primary 6

Name: _____

Total
Marks:



Class: Pr 6- _____, Register No. _____

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

Date: 27 August 2020

Parent's Signature: _____

Booklet B

Instructions to Pupils:

For questions 29 to 40, write your answers in the spaces given in this booklet.

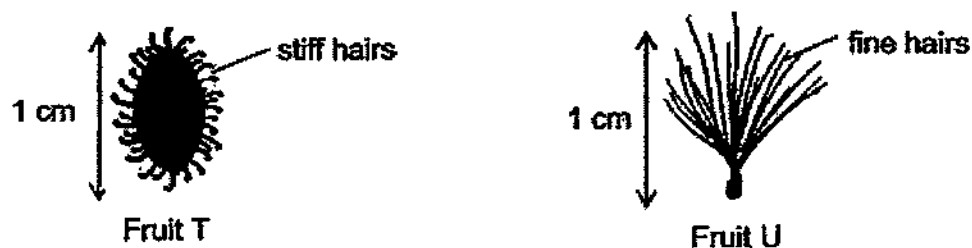
	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

* This booklet consists of 19 printed pages (including cover page).

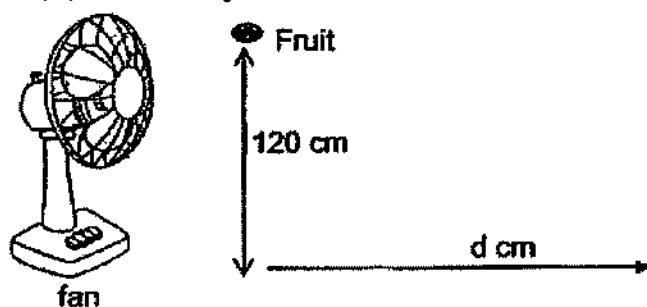
For questions 29 to 40, write your answers in the space provided.

[44 Marks]

29 May conducted an experiment with two fruits, T and U, as shown.



She dropped fruit T and U from a height of 120 cm in front of a fan. She measured the distance, d , travelled by the fruits.



The results are shown below.

Fruit	T	U
Distance, d / cm	5	50

(a) State the method of dispersal for fruit T and fruit U.

[1]

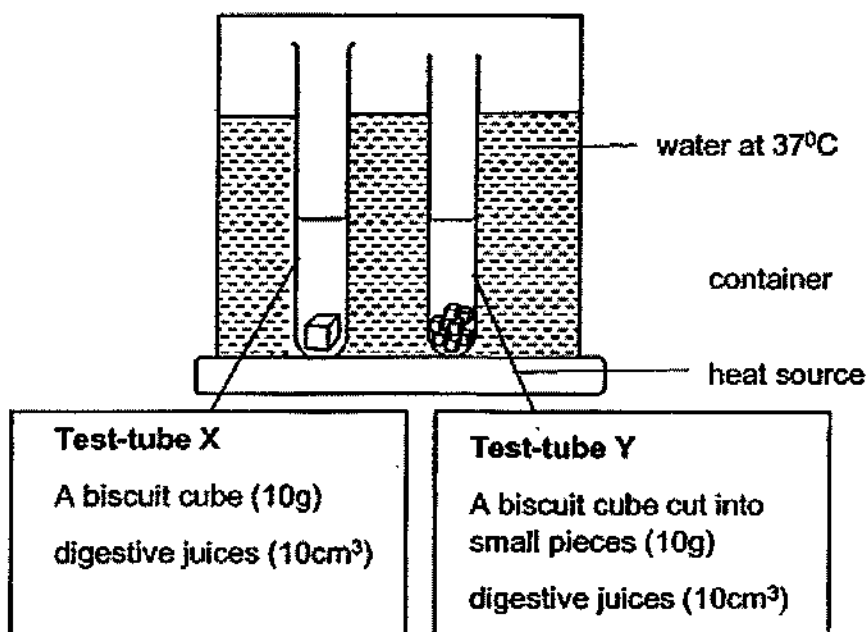
Fruit T: _____ Fruit U: _____

Question 29 continues on page 3

- (b) Explain why the distance travelled by fruit U is further. [1]

- (c) How do young plants benefit when they grow further away from the parent plants? [1]

- 30 Hani wanted to investigate the process of digestion in human body using digestive juices. The diagram shows the two test-tubes, X and Y, at the start of experiment.



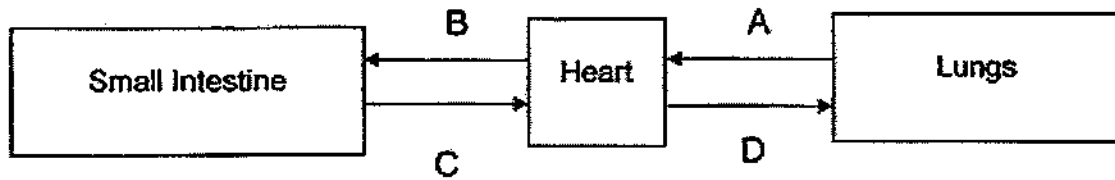
He measured the time for the biscuits to be completely digested.

- (a) Give a reason why Hani choose a temperature of 37° C for the water in the container. [1]

- (b) In which test tube would the biscuit be completely digested first? Explain why. [2]

Question 30 continues on page 5

Hani studied the body systems in the human body as shown below. The arrows represent the flow of blood.

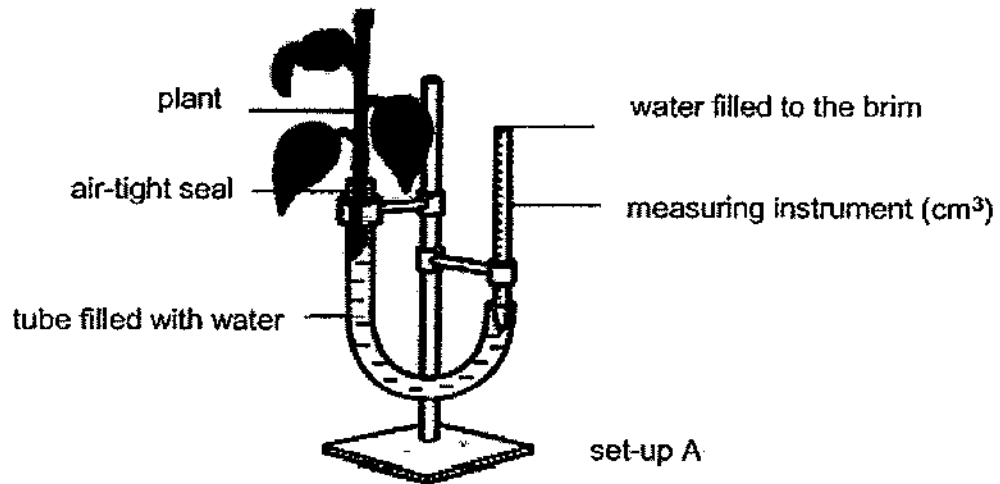


- (c) Which arrow represents the blood rich in digested food? [1]

Arrow: _____

- (d) Describe how oxygen in the lungs reach the other parts of the body? [1]

- 31 May Ling investigated the volume of water taken in by plants using set-up A as shown below. She filled the tube with water until it reached the brim of the measuring instrument. Then she made a plant cutting to put in the tube and sealed it tightly.



She measured the volume of water taken in by the plant in 30 minutes.

- (a) How did she measure the volume of water taken in by the plant? [1]

She repeated her experiment in the similar condition using two other set-ups, B and C, applying oil on different surfaces of the leaves as shown in the table below.

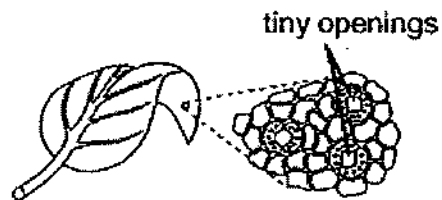
Set-up	Upper surface	Lower surface
B	Oil applied	No oil applied
C	No oil applied	Oil applied

†, Question 31 continues on page 7

She recorded the volume of water taken in by the plant as shown below.

Set-up	Volume of water taken in by plants in 30 minutes (cm ³)
A	10
B	6
C	4

Leaves have tiny openings on their surfaces.



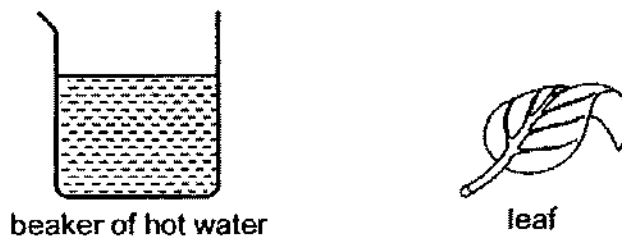
- (b) State one function of the tiny openings.

[1]

- (c) Based on the results in the table above, which surface of leaves (upper or lower) has more tiny openings?

Using only the materials shown below, describe a method and the observation to show your answer.

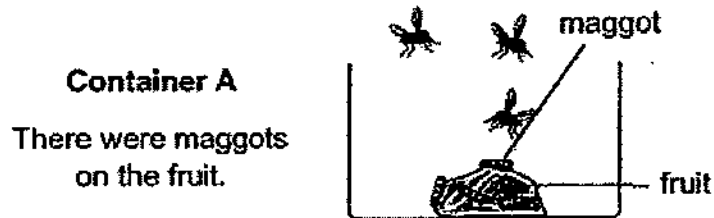
[2]



Method:

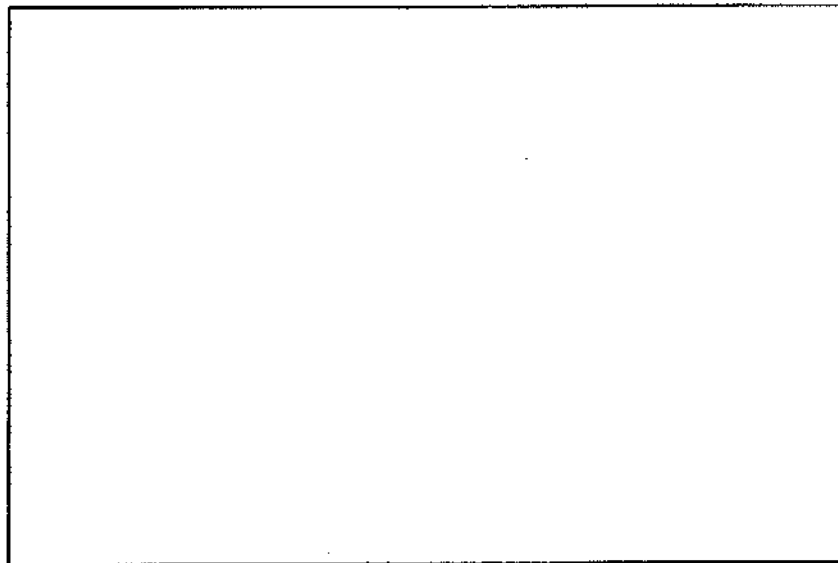
Observation:

- 32 Paul left a piece of fruit in an open container A. After three days, he found maggots on a piece of fruit as shown below.



He researched and found out that maggots are the larvae of fruit flies.

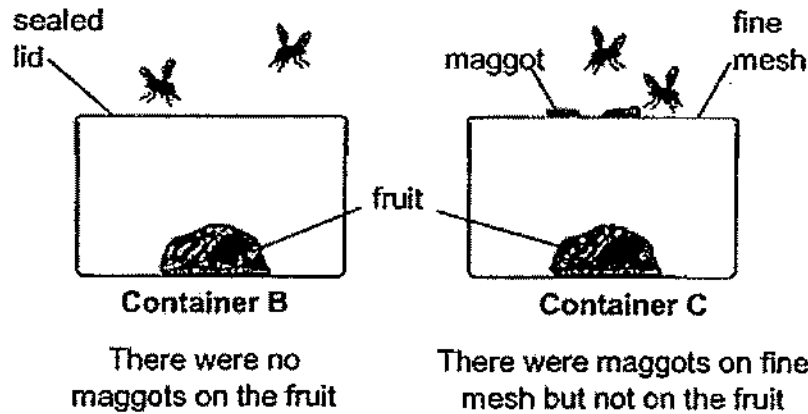
- (a) Draw and label the life cycle of the fruit fly in the box below. [1]



Question 32 continues on page 9

Paul wanted to investigate if the type of seal of the container would affect the life cycle of fruit flies.

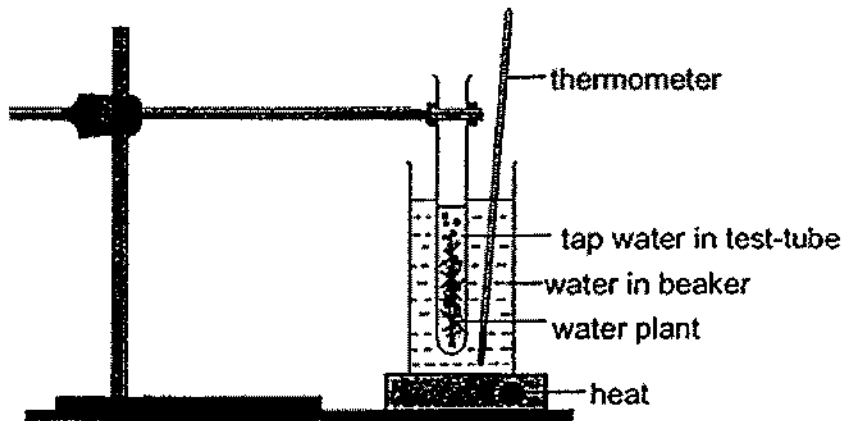
He placed a piece of fruit of the same size in two set-ups. After three days, the results were as shown below.



- (b) Explain why the maggots that hatched on the fine mesh in container C could not complete their life cycle. [1]

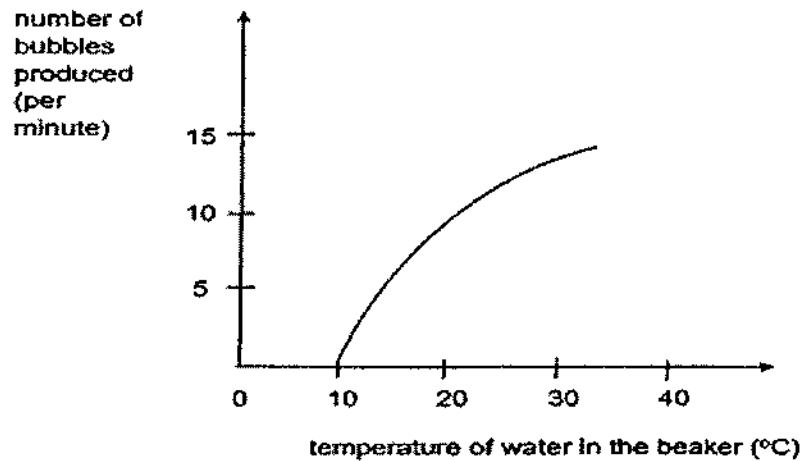
- (c) Can containers, A and B, be used to confirm that maggots did not come from fruit? Explain why. [2]

- 33 Andrew wants to investigate how temperature of water affects the number of bubbles produced by the water plant in one minute. He set up the experiment as shown below in a lit room.



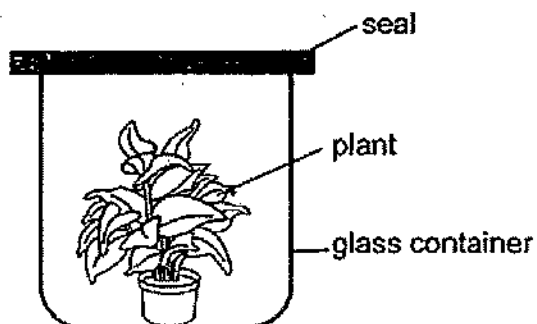
- (a) State all the requirements for the water plant to produce the bubbles. [1]

Andrew counted the number of bubbles produced at different temperatures. His results are shown on the graph below.

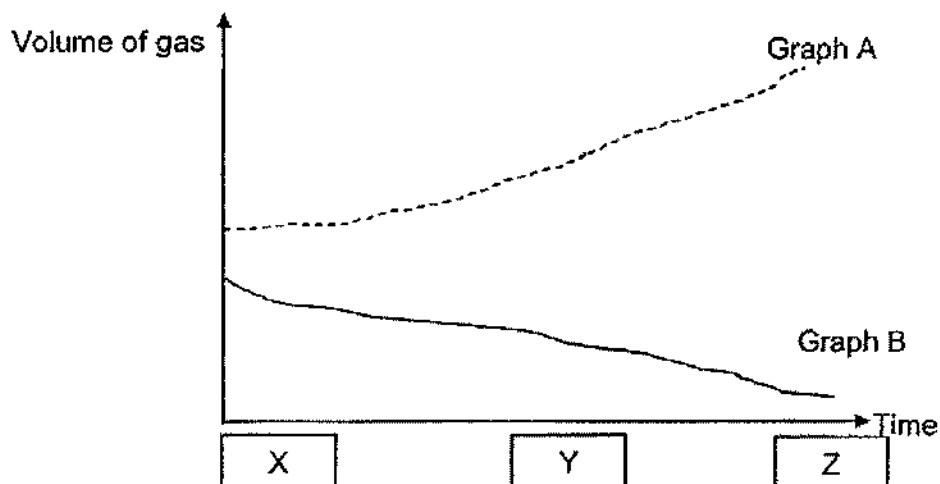


- (b) State the relationship between the temperature of water and the number of bubbles produced. [2]

- 34 Melvin wanted to find out how the amount of oxygen and carbon dioxide changes in a plant. He placed a plant in a sealed glass container in a bright place.



He carried out his experiment and using his results, he plotted the graphs as shown below.



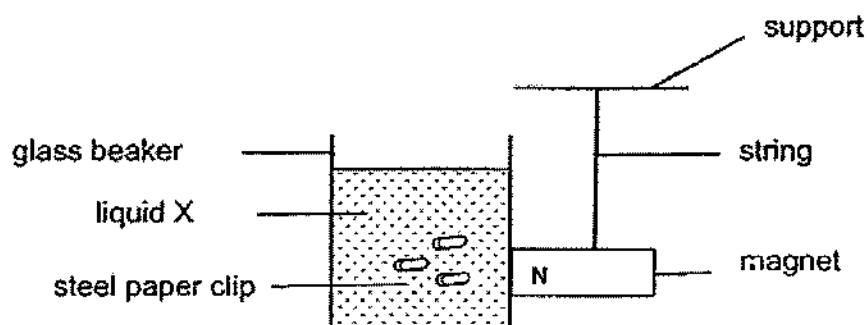
- (a) Identify the gases for Graph A and Graph B. [1]

Graph A: _____

Graph B: _____

- (b) Which letter, X, Y or Z represent 'Noon Time'? Explain why. [2]

- 35 Kumar placed three steel paper clips into a glass beaker containing liquid X. He used the North pole (N) of the magnet to touch the glass beaker as shown below.



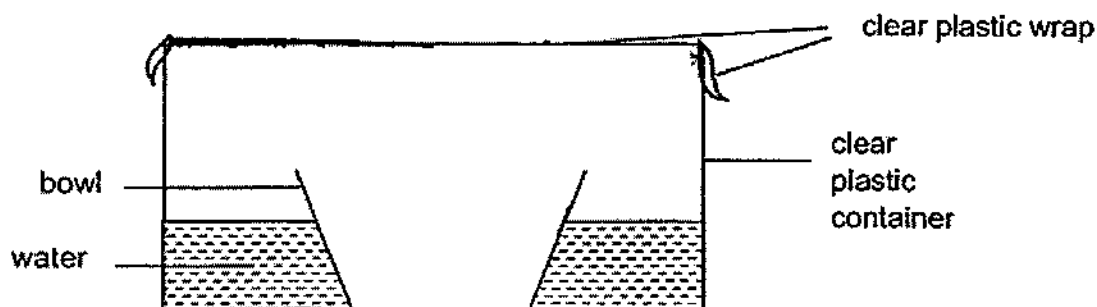
- (a) State a property of magnets that Kumar is trying to show? [1]

Kumar repeated the same experiment but he changed the part of the magnet touching the glass beaker. Using the same beaker, steel paper clips and magnet, he observed that the steel paper clips moved slower towards the magnet.

- (bi) Which part of the magnet was touching the glass beaker? Explain. [1]

- (bii) State another variable that Kumar must keep the same in the above experiment. [1]

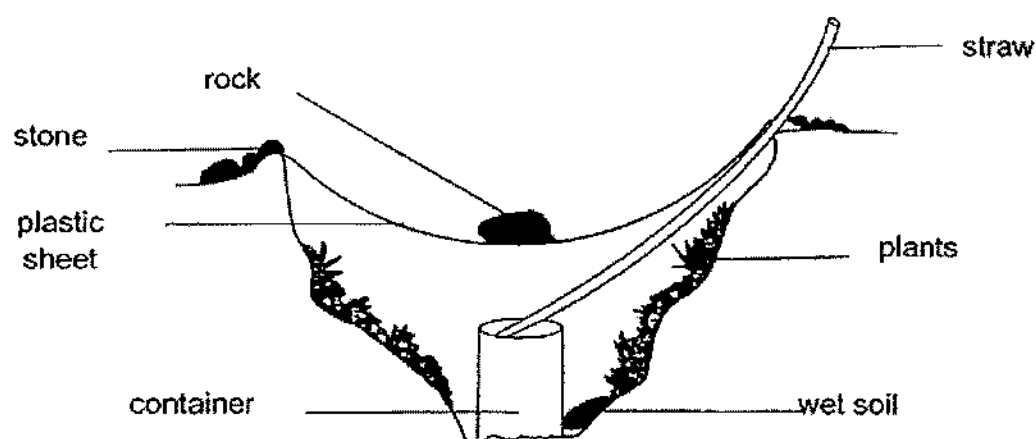
- 36 A teacher, Mr Lim, set up the apparatus as shown. He placed it under the sun for a few hours.



Mr Lim then observed a decrease in the water level in the container.

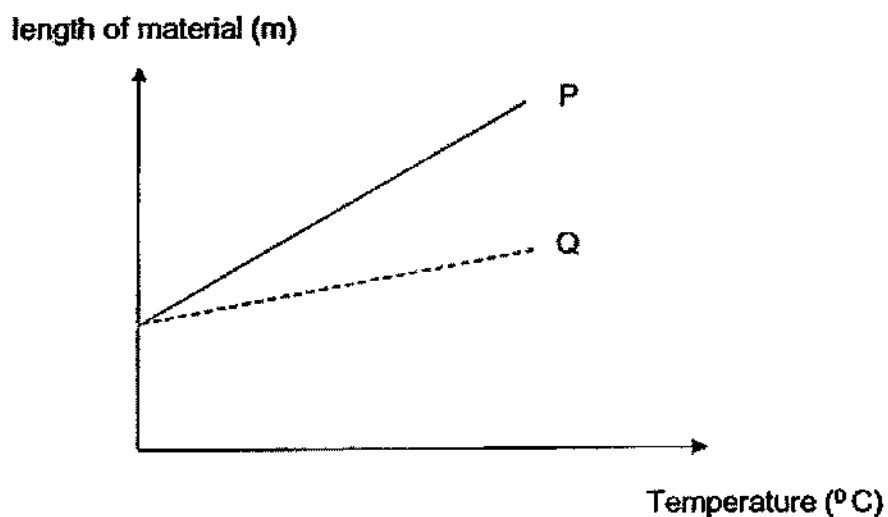
- (a) Draw, in the diagram above, another possible observation he can make on the plastic wrap. [1]
- (b) State the two processes involved for his observations to take place. [1]

Mr Lim's students went for a hike in a jungle and they decided to use their teacher's method to collect drinkable water as shown below.

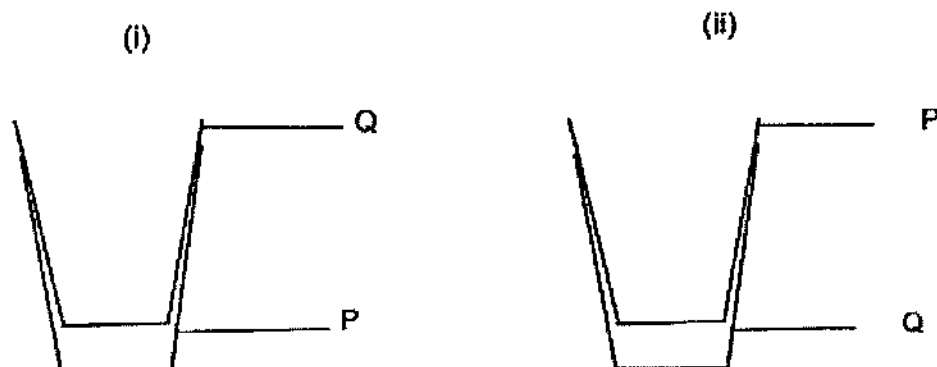


- (c) Suggest one way the students can collect more water. Explain why the method works. [2]

- 37 The graph below shows how the length of materials, P and Q, changes as temperature changes.



The containers made of material, P and Q, are stuck together in two different positions, (i) and (ii), as shown below.



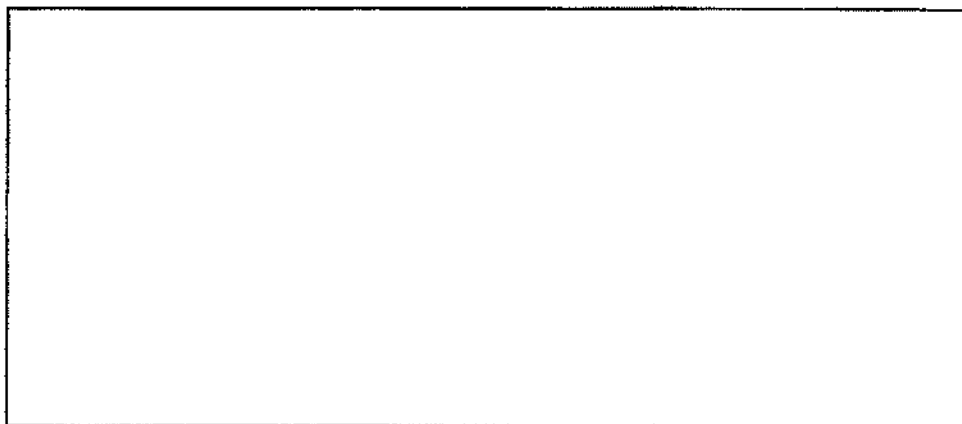
Question 37 continues on page 15

Diwei was given a basin of hot water to separate P and Q.

- (a) Based on the graph above, in which position (i) or (ii), could she use hot water to separate P and Q in a shorter time?

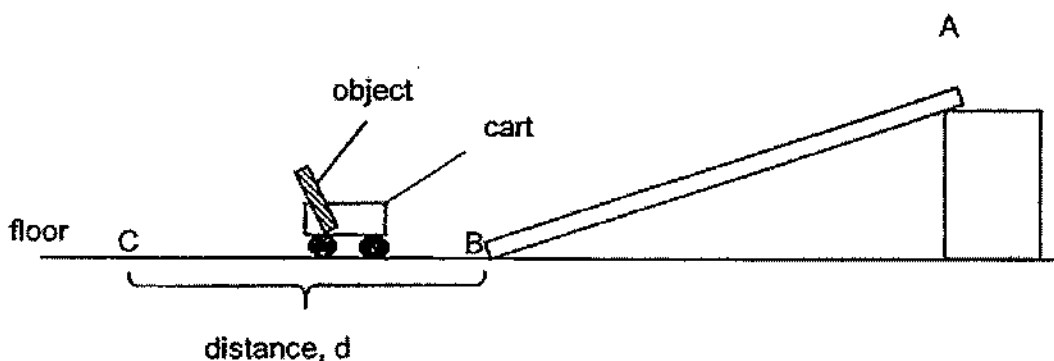
Draw and label to show how she could separate them.

[1]



- (b) Explain how the way in (a) works to separate P and Q in a shorter time. [2]

- 38 Pauline set up the apparatus below to investigate how mass of the object in the cart affects the distance, d , travelled by the cart when it hit the floor at B and stopped at C.



Pauline repeated the experiment using objects of different mass placed inside the cart. The results of her experiment are shown in the table below.

Mass of Object in the cart (g)	Distance, d (cm)
50	10
100	16
150	22

- (a) Fill in the boxes below to show the energy conversion as the cart moved from A to C. [1]

→→+

Question 38 continues on page 17

- (b) Explain how the mass of the object affects the distance, d , that the cart moved. [2]

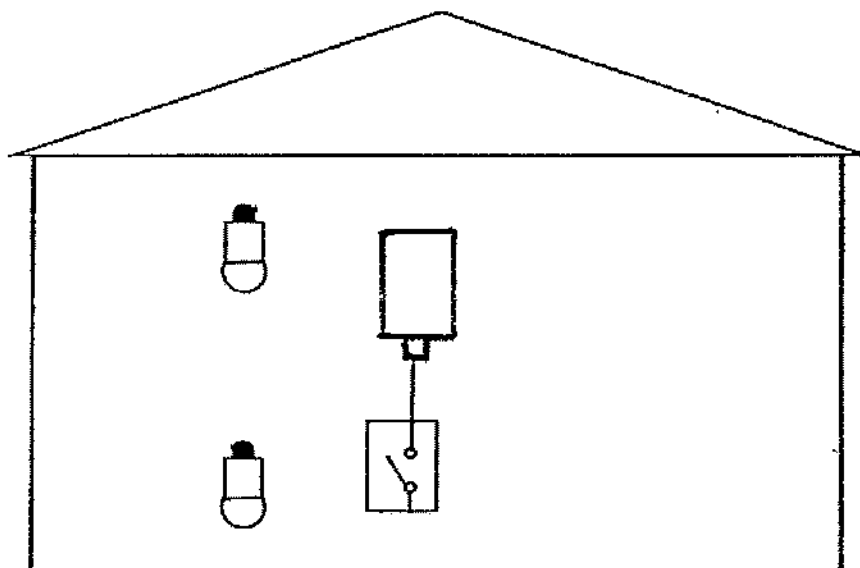
- (c) Give a reason why Pauline used the same cart for her experiment.

- (d) Pauline wants to modify her set-up to find out the relationship between the height of the ramp and the distance, d . Suggest two ways to change her set-up. [1]

(i) _____

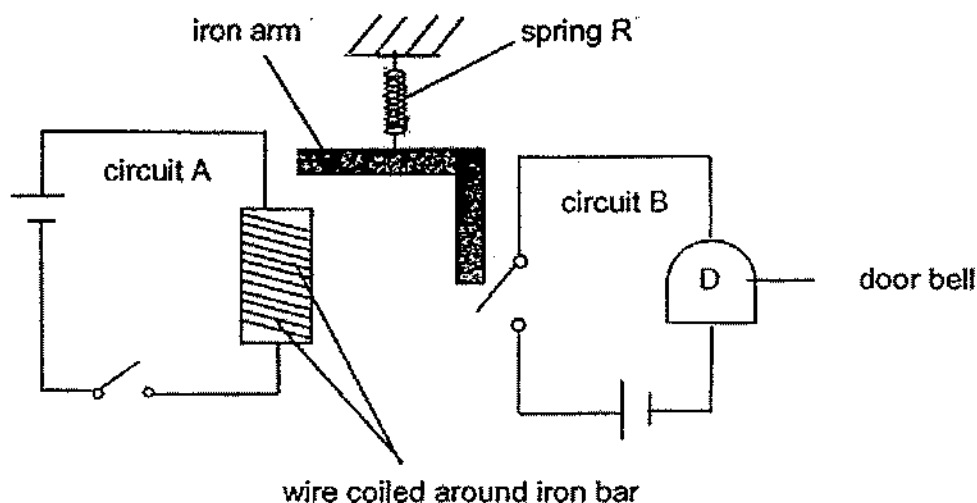
(ii) _____

- 39 Mei Ling sets up a toy house as shown in the diagram. She wants the two bulbs to be lit at the same time and of equal brightness when she closes the switch.



- (a) Complete the circuit in the diagram above so that it will work as described. [2]
- (b) State the arrangement of the bulbs in your drawing. [1]

- 40 Tom set up a doorbell D using two circuits containing two switches as shown.



- (a) Explain how the doorbell rang when Tom closed circuit A. [2]
- _____
- _____
- _____
- _____
- (b) Tom replaced spring R with another spring S and observed that the doorbell did not ring when circuit A was closed. Give a reason for his observation. [1]
- _____
- _____
- (c) Without changing spring S, what can Tom do if he wants the doorbell to ring when circuit A is closed? [1]
- _____

End of Paper

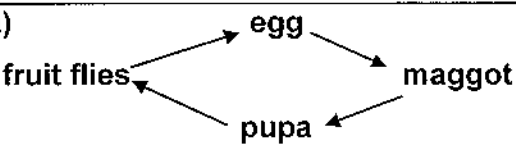
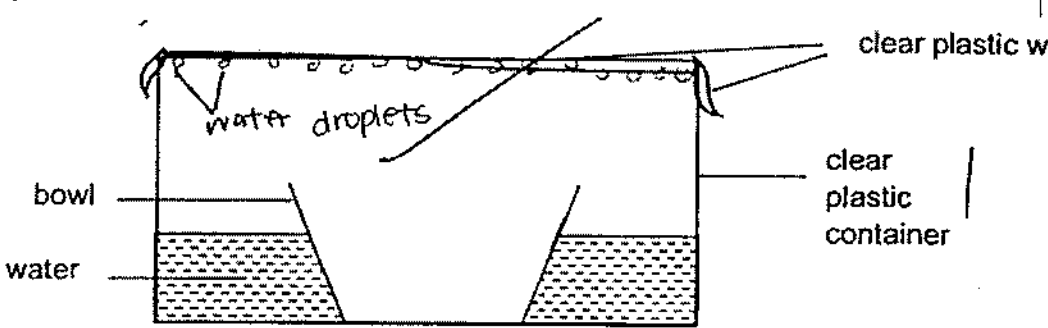
SCHOOL : ROSYTH PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2020 PERLIM

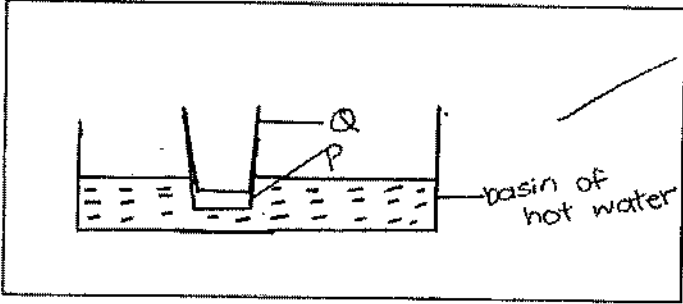
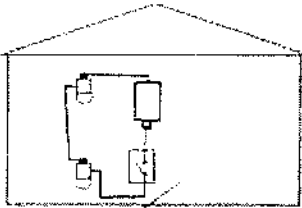
SECTION A

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

SECTION B

Q29)	<p>a)T: animal U: wind</p> <p>b)U had fine hairs that help it stay in the air longer to travel a further distance.</p> <p>c)Competition between young plants and parent plants for light, water, space and nutrients would be reduced.</p>
Q30	<p>a)37°C is close to the human body temperature.</p> <p>b)Test-tube Y. In test-tube Y, the biscuit cube had greater surface area in contact with the digestive juices, allowing the digestive juices to digest it completely faster.</p> <p>c)C</p> <p>d)Oxygen in the lungs enter the bloodstream to the heart. The heart then pumps the oxygen to the other parts of the body.</p>
Q31	<p>a)The difference in the water level in the measuring instrument.</p> <p>b)The tiny openings allow gaseous exchange.</p> <p>c)Method: Put the leaf in the beaker of hot water.</p>

	<p>Observation: More air bubbles will form on the lower surface of the leaf.</p>
Q32	<p>a)</p>  <pre> graph TD A[fruit flies] --> B[egg] B --> C[maggot] C --> D[pupa] D --> A </pre> <p>b)The maggots had no food and will starve to die, thus, it could not complete their life cycle.</p> <p>c)Yes. In container A, there was no sealed lid and there were maggots on the fruit, in container B, there was a sealed lid and no maggots on the fruits, proving that maggots did not come from fruit.</p>
Q33	<p>a)The presence of water, carbon dioxide, light and chlorophyll.</p> <p>b)As the temperature of water increases, the number of bubbles produced increases.</p>
Q34	<p>a)A: oxygen B: carbon</p> <p>b)Z. The volume of oxygen was highest at Z. There is the most amount of light during "Noon Time", hence, the plant would photothesise the most to make the most food and release the most oxygen.</p>
Q35	<p>a)Magnetic force can pass through non-magnetic materials.</p> <p>bi)The middle part. The steel paper clips moved slower towards the magnet proving there was less magnetic force of attraction acting on it. The middle part of a magnet is magnetically the weaker than poles.</p> <p>bii)The type of liquid used.</p>
Q36	<p>a)b</p>  <p>b)evaporation and condensation</p> <p>c)They can replace the rock with an ice cube. The ice cube would lower the temperature of the plastic sheet, allowing more heat loss to</p>

	<p>and condensation on the plastic sheet of more warmer water vapour into more water droplets that drip into the contain.</p>
<p>Q37)</p>	 <p>a)</p> <p>b) P is a better conductor of heat than Q and would gain more heat faster and expand faster.</p>
<p>Q38)</p>	<p>a) gravitational potential energy \rightarrow kinetic energy \rightarrow heat energy \rightarrow sound energy.</p> <p>b) The greater the mass of the object in the cart, the greater the total mass of the cart and hence, the greater the gravitational potential energy the cart has that converted to more kinetic energy of the cart, allowing it to travel a greater distance, d.</p> <p>c) To ensure that any change in the distance, d, travel by the cart is solely due to the mass of the object in the in the cart and not the mass of the cart.</p> <p>d) i) place objects of the same mass in the cart . ii) Change the height of the ramp.</p>
<p>Q39)</p>	 <p>b) series</p>

Q40)	<p>a)When Tom closed circuit A, a closed circuit was formed and electric current flew through the iron bar, magnetizing it into an electromagnet . The electromagnet attracted the iron arm,causing the iron arm to close circuit B an allow electric current to flow through door bell D ringing it,</p> <p>b)Spring S was stiffer and did not expand enough for the iron arm to close circuit B.</p> <p>c)He can move circuit B closer to the iron arm.</p>

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SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

PRIMARY SIX PRELIMINARY ASSESSMENT 2020

NAME: _____ ()

DATE: 20 August 2020

CLASS: PRIMARY 6 SY / C / G / SE / P

Parent's Signature:

SCIENCE

BOOKLET A

28 questions

56 marks

Total time for Booklets A & B: 1 h 45 min

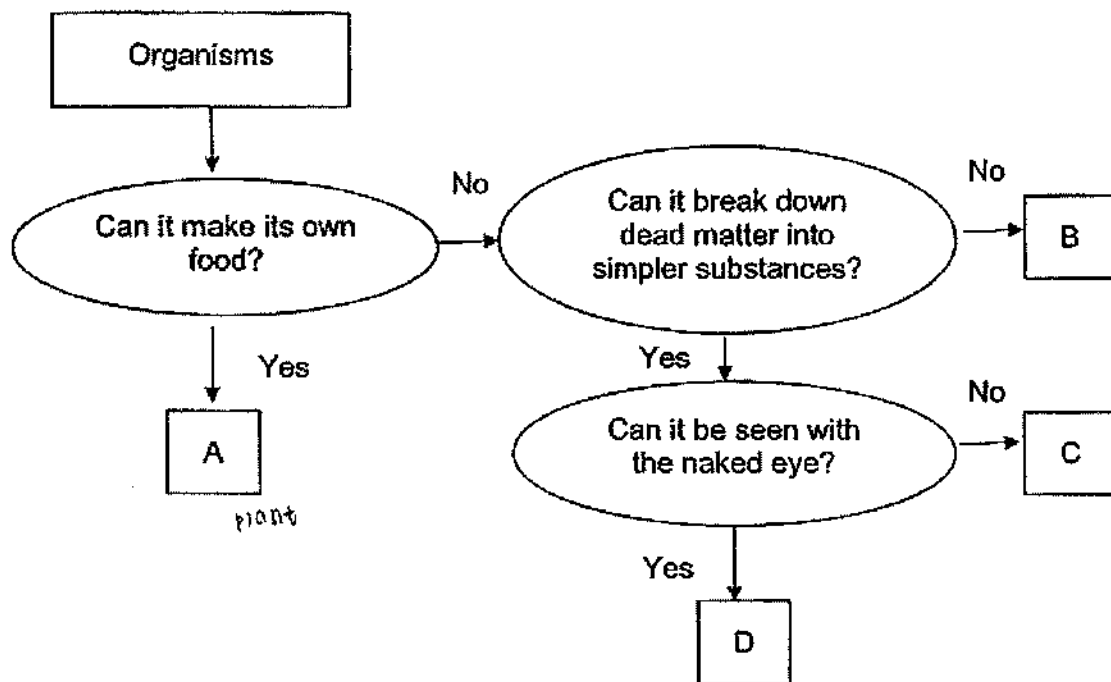
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A (56 marks)

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

1. Observe the flow chart below.



Which of the organisms above is likely a mushroom?

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

2. Jasmine wants to find out the difference between birds and mammals. Which one of the following questions should she ask?

- (1) Does it fly?
- (2) What does it eat?
- (3) Does it live in water or on land?
- (4) What is its outer body covering?

3. The table below shows the properties of Materials W, X, Y and Z.

Materials	Waterproof	Flexible	Strong	Transparent
W	✓		✓	✓
X		✓		✓
Y			✓	✓
Z	✓	✓	✓	

Which of the materials is most suitable for making the tent cover for camping as shown below?



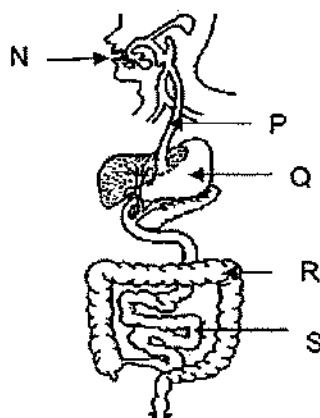
- (1) Material W
- (2) Material X
- (3) Material Y
- (4) Material Z

4. The table below shows a classification of organisms.

Group 1	Group 2	Group 3
Shark Guppy Goldfish	Mosquito Grasshopper Butterfly	Seal Polar bear Penguin

The animals are grouped by their outer body covering. Which of the following is wrongly classified?

- (1) Shark
(2) Guppy
(3) Penguin
(4) Grasshopper
5. The diagram below shows the human digestive system.



Which of the following is correct?

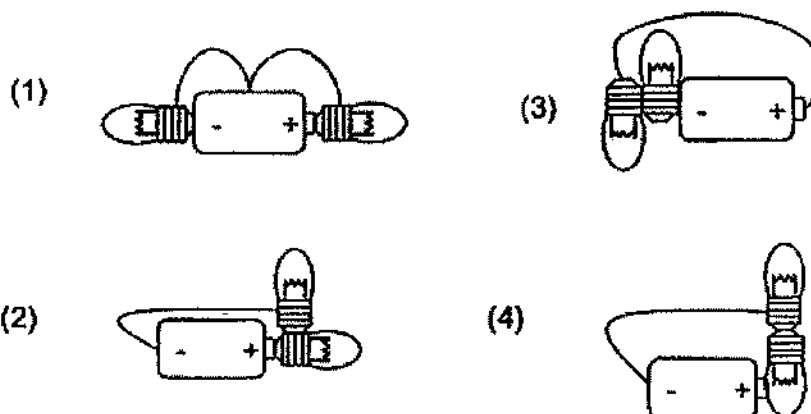
	Contain digestive juices	Where excess water is absorbed from the undigested food
(1)	N and R	S
(2)	P and Q	R
(3)	N and S	R
(4)	Q and R	S

6. Sarah hid in a cupboard during the game of hide-and-seek with her friends.

Which of the following correctly shows the amount of gases in the cupboard after 10 minutes?

	Oxygen	Carbon dioxide	Water vapour
(1)	Increase	Decrease	Decrease
(2)	Increase	Decrease	Increase
(3)	Decrease	Increase	Decrease
(4)	Decrease	Increase	Increase

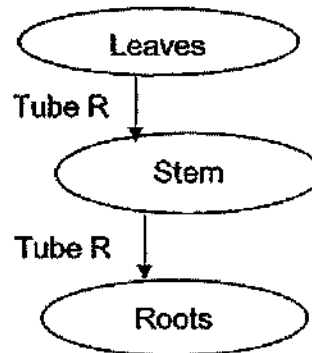
7. Study the circuits below.
Which of the following will have only one bulb lighted up?



8. The diagrams below show a human circulatory system and the plant transport system.



Human circulatory system



Plant transport system

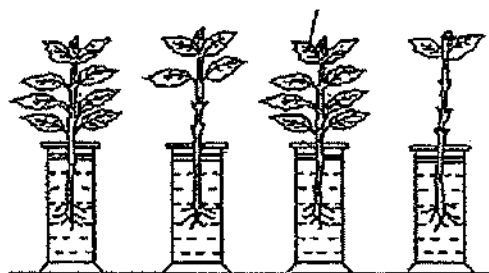
Which of the following is/are transported in both the human circulatory system and in Tube R?

- A: Food
- B: Water
- C: Mineral salts

- (1) A only
- (2) A and C only
- (3) B and C only
- (4) All of the above

9. The diagram below shows 4 set-ups with similar plants used.

Leaves coated with oil

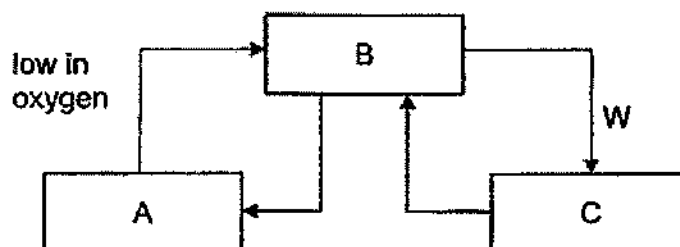


Set-up W Set-up X Set-up Y Set-up Z

Which of the following will have the least amount of water left after 3 days?

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

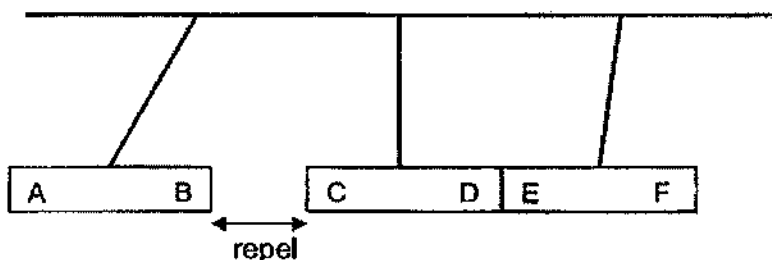
10. The diagram below shows the human circulatory system. A, B and C are organs and W is a blood vessel.



Which of the following correctly identifies A, B, C and W?

	A	B	C	W
(1)	Stomach	Heart	Lungs	Low in oxygen
(2)	Lungs	Heart	Stomach	High in oxygen
(3)	Heart	Lungs	Stomach	Low in oxygen
(4)	Stomach	Lungs	Heart	High in oxygen

11. Arvin set up the experiment below involving 3 magnets.



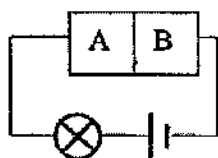
He then predicted some reactions between some of the poles of the 3 magnets if they were brought close together and presented his predictions in the table below.

	Poles of magnets	Reaction
V:	A and D	Attract
W:	A and E	Attract
S:	B and D	Repel
Y:	C and F	Attract

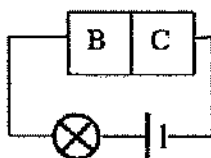
Which of Arvin's predictions is/are correct?

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

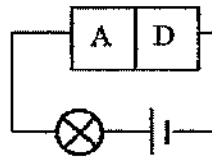
12. Pamela set up the following circuits with 4 different materials, A, B, C and D and recorded her results below.



Bulb lights up

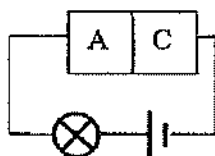


Bulb does not
light up

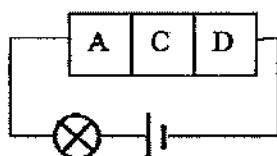


Bulb lights up

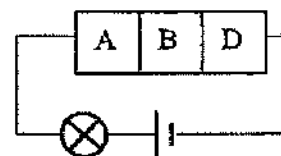
Which of the following arrangements will allow the bulb to light up?



Circuit X



Circuit Y

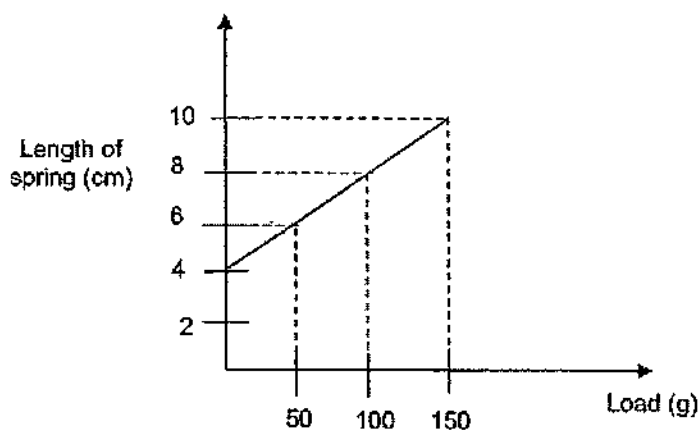


Circuit Z

- (1) Circuit X only
(2) Circuit Z only

- (3) Circuits X and Y only
(4) Circuits Y and Z only

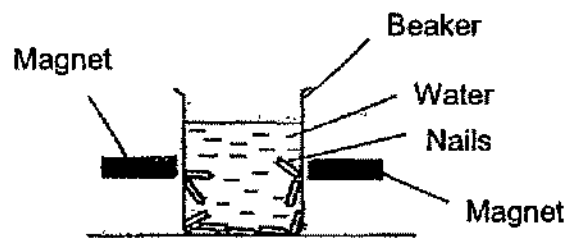
13. Balam hung different masses of weight onto a spring. He recorded the length of spring and plotted the graph below.



What is the extension of spring when 250g of weight is added to it?

- (1) 8 cm
(2) 10 cm
(3) 12 cm
(4) 14 cm

14. An experiment is set up below and the magnets could only attract a few nails.

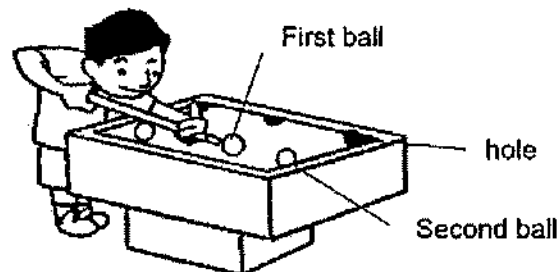


Based on the observations above, which of the following statements is/are likely to be correct?

- A: Some of the nails are not magnetic.
- B: The magnets are repelling one another.
- C: The magnets are attracting one another.
- D: The magnets are not strong enough to attract all the nails.

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

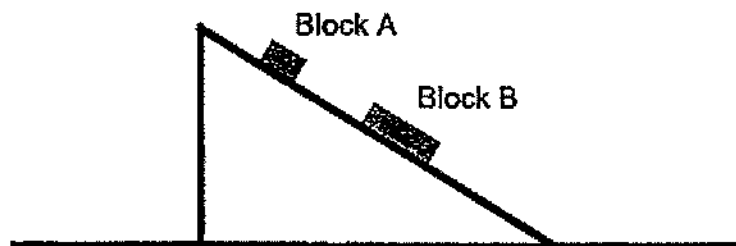
15. Leonard played the game below where he has to use a stick to hit a ball which will hit another ball. He wins the game when the second ball drops into a hole.



Which of the following shows the effect of the force acting on the second ball?

- (1) A force can change the shape of an object.
- (2) A force can cause a moving object to stop moving.
- (3) A force can cause an object to start moving.
- (4) A force can change the direction of a moving object

16. Hannah placed 2 objects, A and B, at different positions on a slope. Object B is bigger and heavier than Object A. Both are stationary until Block A is moved nearer to Block B. When Object A is moved nearer to Block B, Block B moves downwards.



Hannah made the following statements:

A: Magnetic force is acting on both Blocks A and B.

B: Block A has greater gravitational force acting on it than Block B.

C: There is no frictional force acting on the blocks when they are not moving.

Which of the following statements is/are correct?

(1) A only

(3) B and C only

(2) A and B only

(4) A, B and C

17. 4 similar cups with an equal number of seeds were placed under 4 different conditions as shown below.

Cups	Light	Soil	Appearance of seeds	
			Root	Shoot
A	Absent	Wet	Yes	Yes
B	Absent	Dry	No	No
C	Present	Wet	Yes	Yes
D	Present	Dry	No	No

Based on the experiment above only, what can be concluded?

(1) Soil is needed for germination.

(2) Water is needed for germination.

(3) Light and water are needed for germination.

(4) Air, warmth and water are needed for germination.

18. Min wanted to find out if the number of petals of Flower X will affect the number of bees attracted to it. He set up the experiment as shown in the table below.

	A	B	C	D
Location	Garden	Open field	Open field	Open field
Number of petals on Flower X	8	8	5	2
Colour of petals	Red	Yellow	Red	Yellow

Which of the following pair of set-ups should he compare to meet the aim of his experiment?

- 1) A and B
2) A and D
3) B and C
4) B and D
19. Jerome took down notes on the life cycles of a butterfly and mealworm beetle during Science lesson.

L: The young moults.

M: Eggs are laid on land.

N: The young resembles the adult.

O: No feeding takes place at the larva stage.

Which of the statements are true for both life cycles?

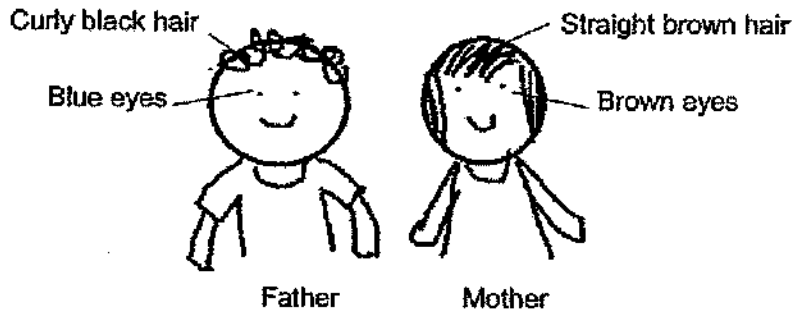
(1) L and M only

(2) M and N only

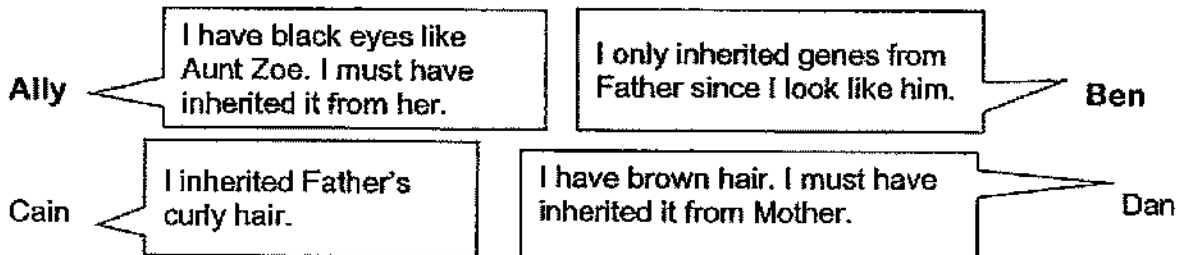
(3) N and O only

(4) L, M and O only

20. The diagram below shows the parents of 4 siblings.



The 4 siblings made the statements below.



Which of the siblings are correct?

- (1) Ally and Ben only
(2) Ben and Cain only
(3) Cain and Dan only
(4) Ally, Cain and Dan only
21. Which of the following statements is/are true about sexual reproduction in both animals and plants?

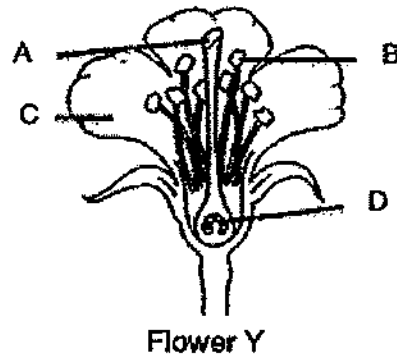
P: The female sex cell is the ovule.

Q: Pollination must take place before fertilisation.

R: Genetic information is passed down in the sex cells.

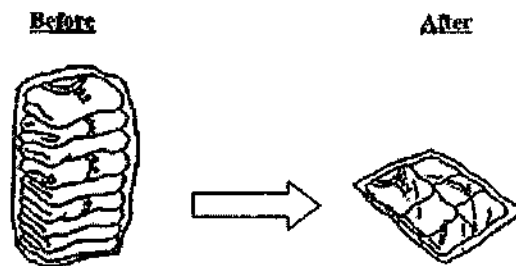
- (1) R only
(2) Q only
(3) P and R only
(4) All of the above

22. 2 parts of the flower below have been removed before pollination took place. After a week, a fruit developed from the flower.



Identify the 2 parts that were most likely removed from Flower Y.

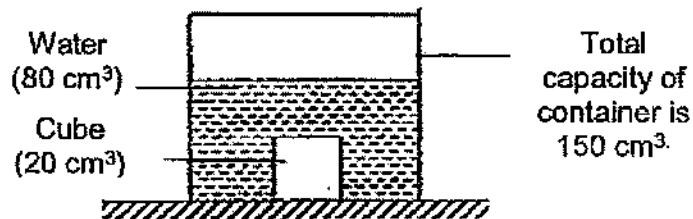
- (1) A and B
(2) A and D
(3) B and C
(4) C and D
23. Layla placed all her clothing into a bag then she removed most of the air trapped inside by pushing it out.



Which of the following shows the changes in the mass and volume of the bag after the air was removed?

	Mass of the bag	Volume of the bag
(1)	Decrease	Increase
(2)	Decrease	Decrease
(3)	Remains the same	Increase
(4)	Remains the same	Decrease

24. Mei set up the experiment as shown below. There was 80 cm^3 of water, a 20 cm^3 cube and 50 cm^3 of air in the container originally.



What is the volume of the air in the container when she adds another 20 cm^3 cube into the container?

- (1) 20 cm^3 (3) 40 cm^3
 (2) 30 cm^3 (4) 50 cm^3
25. The table below shows the states of 4 substances, A, B, C and D, at different temperatures.

Substance	State at 5°C	State at 50°C	State at 100°C
A	liquid	liquid	gas
B	gas	gas	gas
C	solid	liquid	liquid
D	solid	solid	solid

Based on the information above, which of the substances have the highest melting point?

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

26. Sherry poured the same amount of Liquid X but at different temperatures into 2 identical cups. She then placed a metal spoon into each cup and measured the temperature of the spoon after 5 minutes.

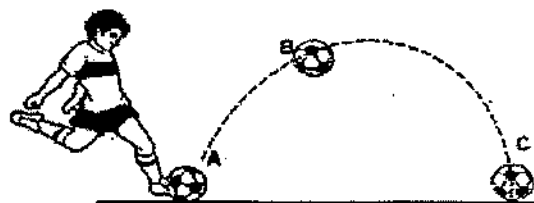


	Before the experiment	After the experiment
Spoon A	30°C	41°C
Spoon B	30°C	20°C

Which of the following shows the likely temperatures of liquid X in Cup A and B?

	Temperature of Liquid X in Cup A (°C)	Temperature of Liquid X in Cup B (°C)
(1)	60	11
(2)	60	40
(3)	15	15
(4)	15	40

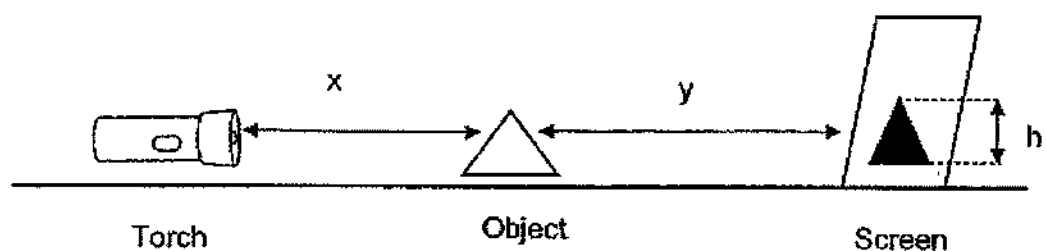
27. Xavier kicked a ball from point A to point C as shown in the diagram below. The ball continued to roll after reaching point C.



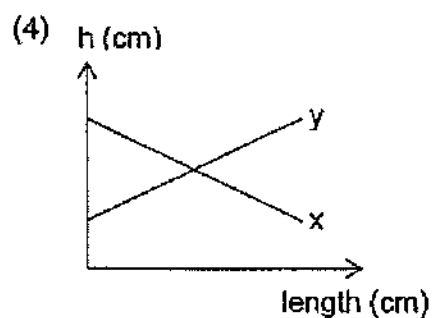
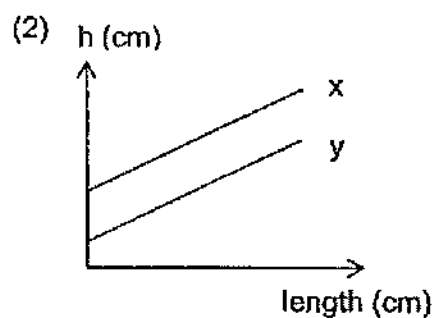
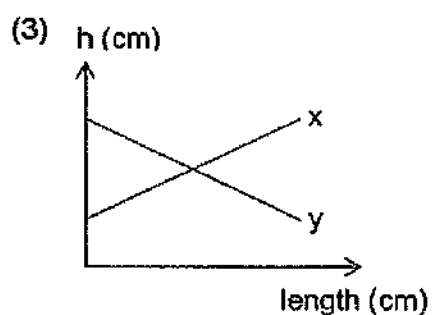
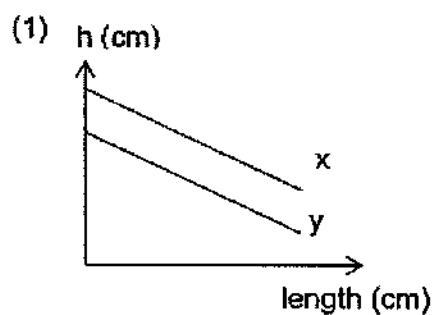
Which one of the following statements is true?

- (1) The ball has no more energy at point C.
- (2) The ball has both kinetic and potential energy at point B.
- (3) There is no gravitational force acting on the ball at point A.
- (4) Gravitational force increases when the ball moves from A to B.

28. An object is placed between a torch and a screen.



Which of the following graphs shows the correct relationship between x , y and h ?



End of Booklet A
Please check your work.

					-	
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SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

PRIMARY SIX PRELIMINARY ASSESSMENT 2020

NAME: _____ ()

DATE: 20 August 2020

CLASS: PRIMARY 6 SY / C / G / SE / P

Parent's Signature:

SCIENCE

BOOKLET B

	Total Actual Marks	Total Possible Marks
Booklet A		56
Booklet B		44
Total		100

12 questions

44 marks

Total time for Booklets A & B: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B (44 marks)

29. Sally observed 3 different cells, C, D and F, under the microscope and drew how they looked like as shown below.



Cell C



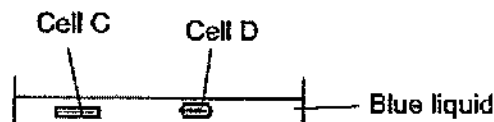
Cell D



Cell F

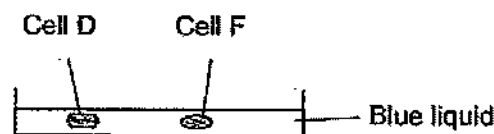
- (a) Which of the cells above is/are animal cells? Explain your answer. (1m)

Sally then placed Cells C and D into a petri dish containing a blue liquid.



- (b) After an hour, Cell C increased in size and turned blue but not Cell D. Explain why. (1m)

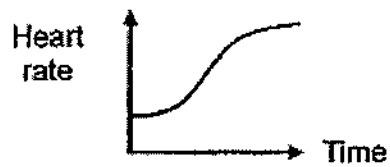
Sally then placed Cells D and F into another petri dish containing a blue liquid.



- (c) After some time, Cell F burst but Cell D did not. Which cell part prevented Cell D from bursting? (1m)

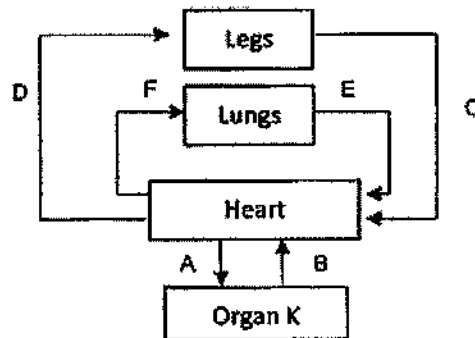
3

30. The graph below shows Ken's heart rate during his swim.



- (a) Explain why his heart rate increases during his swim. (1m)

- (b) The diagram below shows the circulatory system. A-F are blood vessels.



- (i) Digested food is released into the bloodstream by Organ K.

Identify Organ K. (1m)

Organ K: _____

- (ii) Which 2 blood vessels in the diagram above are involved in the transport of digested food to the legs? (1m)

- (c) The diagram below shows a whale.

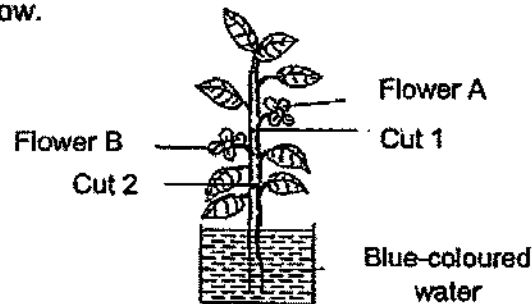


Unlike sharks, a whale needs to come up for air from time to time even when they live underwater. Why? (1m)

2

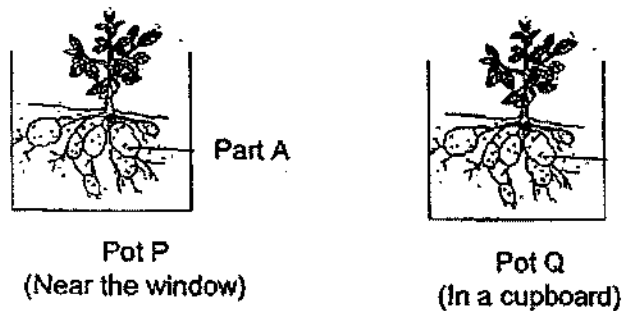
4

31. Mrs Gomaz placed a plant with 2 white flowers into a beaker containing blue-coloured water. She made 2 cuts on the stem as shown in the diagram below.

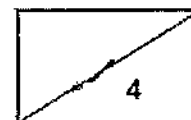


- (a) A few days later, Mrs Gomaz observed that Flower A had withered while Flower B turned blue. Explain Mrs Gomaz's observations. (2m)

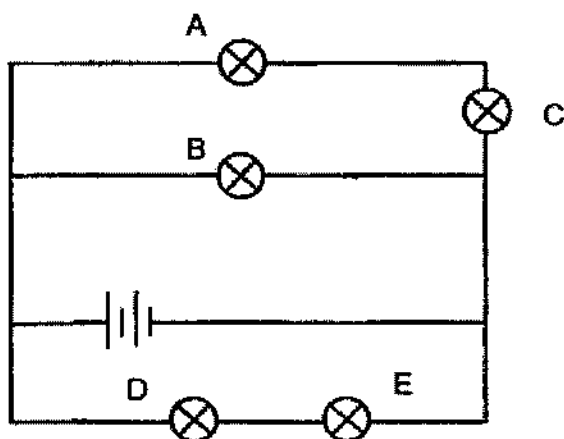
The diagram below shows 2 pots of plants which store food in Part A. Pot P was placed near the window while Pot Q was placed in a cupboard.



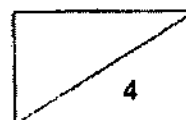
- (b) Which pot, P or Q, will have a bigger Part A after some time? Explain your answer. (2m)



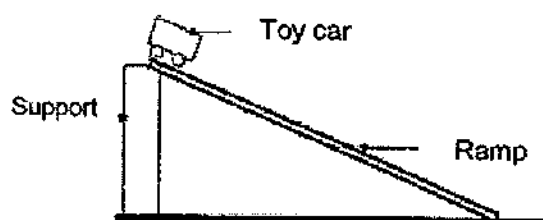
32. The diagram below shows how 5 identical bulbs are arranged in a room.



- (a) Draw 2 switches (Using 'X') on the diagram above such that when the switches are open, only Bulbs A and C remain lit up. (1m)
- (b) State the bulbs that have the same brightness as Bulb D. (1m)
- (c) Which of the bulbs will continue to light up if Bulb C is fused. (1m)
- (d) Will Bulb D light up if Bulb E is fused? Explain your answer. (1m)



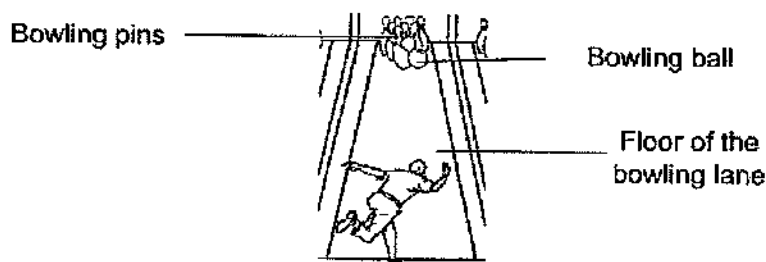
33. Leon set up the experiment below. He recorded the time taken for the toy car to travel down the ramp on 3 different surfaces P, Q and R.



Surfaces	Average time for toy car to reach the bottom of ramp (sec)
P	10.6
Q	4.5
R	8.7

- (a) Besides using the same toy car, state another 2 variables that Leon should keep the same to ensure a fair test? (1m)

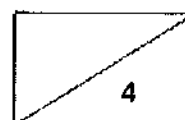
The picture below shows a bowling game. The bowling ball is released before hitting the pins at the end of the lane.



- (b) Leon found that Surface Q allows him to hit the most number of pins. Explain why, based on the results in the table. (2m)

- (c) Which pair of shoes, X or Y, should Leon wear on the surface that he has chosen in (b) so that he will not slip? Explain your answer. (1m)





34 (a) Why do seeds have to be dispersed? (1m)

The diagram below shows 2 different types of fruits, P and Q.

The whole of Fruit P is eaten by birds and it contains many indigestible seeds. Fruit Q, also eaten by birds, has a big indigestible seed in the middle.



Fruit P

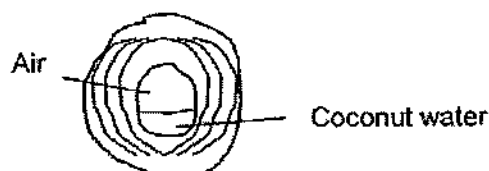


Fruit Q

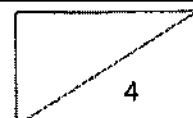
Edible part

- (b) State the advantage of the method of seed dispersal of Fruit P over Fruit Q. (2m)

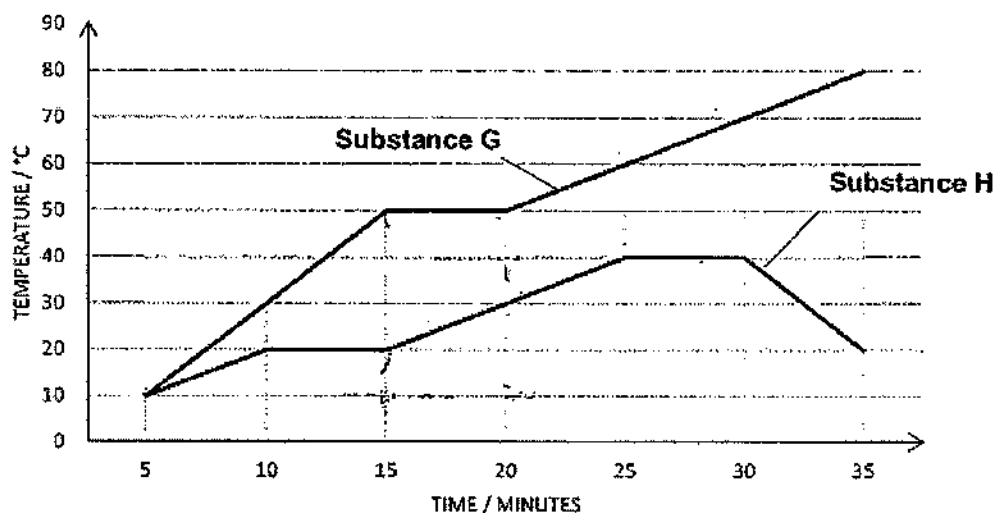
- (c) The diagram below shows the cross-section of a coconut fruit.



State 2 characteristics of the coconut fruit that allow it to be dispersed by water. (1m)

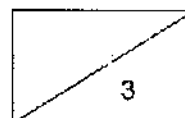


35. Mrs Henderson heated 2 substances, G and H, and their temperature changes were plotted on the graph below.

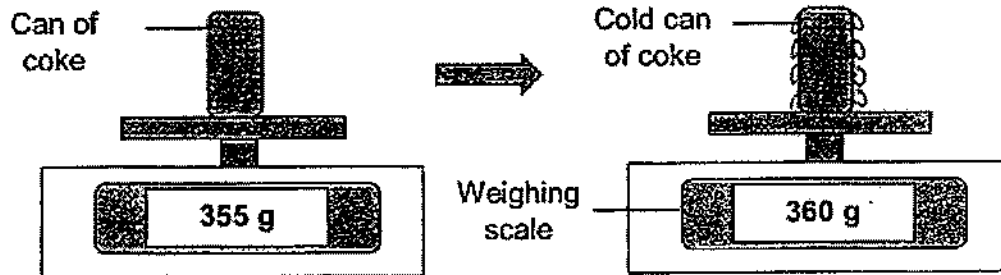


Based on the graph above, answer the following questions.

- (a) Substances G and H are in the solid state at the 5th min.
 What are the states of Substances G and H at the 28th min? (1m)
 Substance G: _____
 Substance H: _____ and _____
- (b) Describe what is happening to Substance G between the 15th and 20th min. (1m)
- (c) State the freezing point of substance H. (1m)



36. Diana took a cold can of coke (355g) from the refrigerator and placed it on the weighing scale. After 10 minutes, she observed that the can of coke became heavier as shown below.



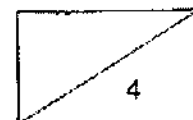
- (a) Explain why the cold can of coke became heavier. (2m)

Diana placed the same can of coke into the freezer. The next day, she took out the can from the freezer on the weighing scale.

- (b) Circle the most likely mass of the can of coke 10 minutes after it was taken out of the freezer. (1m)

350g	360g	366g
------	------	------

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

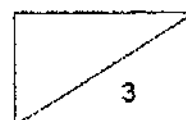


37. Xavier was drenched in the rain as he did not have an umbrella.

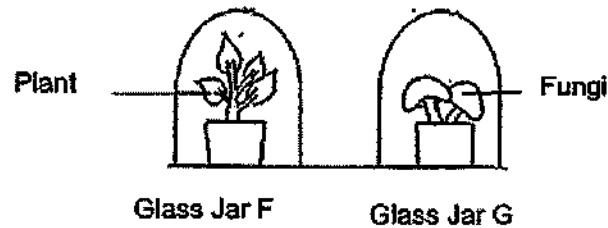


- (a) He managed to find a shelter after a while but he was soaking wet. Explain why he felt colder even when he was no longer in the rain. (1m)

- (b) When the wind blew, Xavier felt even colder. Explain why he felt colder. (2m)

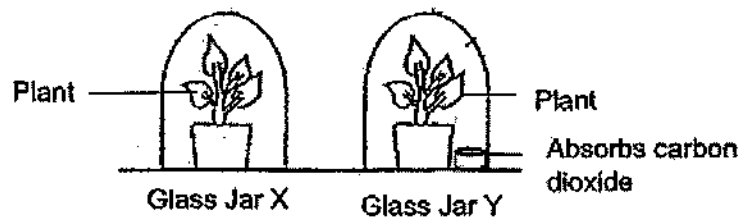


38. A plant and fungi are placed in 2 separate clear glass jars, F and G, and given the same amount of water at the start of the experiment. They are placed near the window.



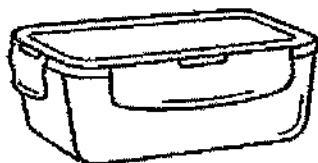
- (a) Will Glass Jar F have more, less or an equal amount of oxygen, as compared to Glass Jar G after some time? Explain your answer. (2m)

Another experiment was carried out at the same place. 2 similar plants are placed in separate glass jars, X and Y, and given the same amount of water at the start of the experiment. A solution that absorbs carbon dioxide is placed in Glass Jar Y. The amount of oxygen in each jar was measured at the end of the experiment.



- (b) What is the aim of the experiment? (1m)
-
-
- (c) Which glass jar, X or Y, will have more oxygen after some time. Explain your answer. (2m)
-
-

39. Magdalene has 2 containers, J and K, as shown below. They are of similar size but are made of different materials. She poured the same volume of hot soup (80°C) into both containers.



Container J

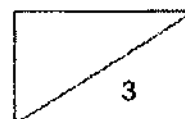


Container K

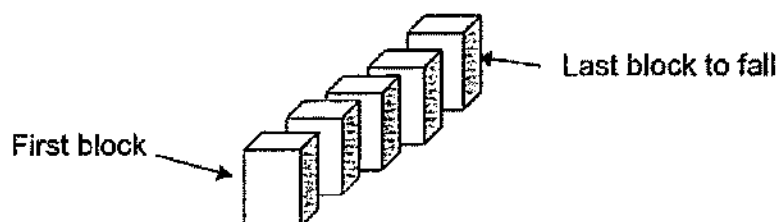
After a few hours, the soup in Container J is still warm but that in container K is cold.

- (a) Explain Magdalene's observations. (2m)

- (b) Which container, J or K, is more suitable for keeping cold desserts cold for a longer period of time? (1m)

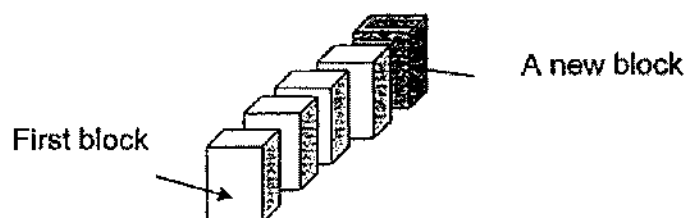


40. Dave arranged some similar blocks as shown below. He then pushed only the first block and the rest of the blocks fell as well.



- (a) Explain, in terms of energy, how the last block fell. (1m)

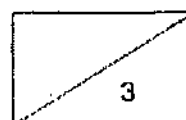
- (b) Dave then replaced the last block with a block that was 3 times heavier than the original block as shown in the diagram below.



- (i) When the first block was pushed, the rest of the blocks fell but not the last block. Explain why. (1m)

- (ii) What can Dave do to ensure that the last block falls when the first block is pushed? (1m)

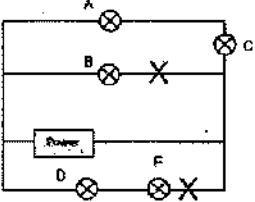
End of Booklet B
Please check your work.



SINGAPORE CHINESE GIRLS' SCHOOL
PRIMARY 6 SCIENCE PRELIMINARY EXAMINATION 2020

Booklet A

1) 4	6) 4	11) 3	16) 1	21) 1	26) 1
2) 4	7) 3	12) 2	17) 2	22) 3	27) 2
3) 4	8) 1	13) 2	18) 4	23) 2	28) 4
4) 3	9) 1	14) 2	19) 1	24) 2	
5) 3	10) 1	15) 3	20) 3	25) 4	

No.	Booklet B Suggested Answers
29a	Cell F. It does not have a cell wall.
29b	The cell membrane of Cell C allowed the blue liquid to enter the cell but the cell membrane of Cell D did not.
29c	Cell wall
30a	His body needs more oxygen and digested food during exercise so the heart needs to pump oxygen and digested food at a faster rate to all parts of the body.
30bi	Small intestine
30bii	B and D
30c	A whale breathes through lungs, not gills.
31a	Flower A withered because the water-carrying tubes were cut at Cut 1 so the blue water cannot be transported to Flower A. Flower B turned blue as the water-carrying tubes were not cut so the blue water can still be transported to Flower B.
31b	Pot P. The plant in Pot P was exposed to light but the plant in Pot Q was not. The plant in Pot P can make food but the Plant in Pot Q cannot. Food made by the plant in Pot P can be transported to Part A and be stored there but the plant in Pot Q used the stored food in Part A.
32a	
32b	A, C and E
32c	B, D and E
32d	No. D and E are <u>arranged in series</u> so when E is fused, there will be an <u>open circuit</u> and D will not light up.
33a	Height of support / Length of ramp/ Position of release of the toy car / Steepness of the ramp
33b	There is the least friction between the ball and floor as the toy car / ball as it moved fastest on surface Q (as shown by the results).

33c	Shoe Y. The soles of Shoe Y is rougher than the soles of Shoe X so there is more friction between the soles of Shoe Y and the surface.
34a	To travel further away from parent plant to avoid overcrowding.
34b	Seeds of Fruit P get mineral salts from the bird droppings to grow better.
34c	Fibrous husk, waterproof surface, air spaces inside
35a	Substance G: <u>Liquid</u> Substance H: <u>Liquid and Gas</u>
35b	Substance G is gaining heat and melting.
35c	20°C
36a	Warmer water vapour in the surrounding lost heat to the cooler outer surface of the can and condensed into water droplets (which stayed on the can), increasing the mass of the can.
36b	366g
36c	The can became much colder which increased the temperature difference between the can and the warmer water vapour from the surroundings, allowing the rate of condensation to increase.
37a	Water on his skin gained heat from his body in order to evaporate.
37b	The presence of wind increased the rate of evaporation and the water gained more heat from his body.
38a	More amount of oxygen. Glass Jar F has a plant which will photosynthesize and produce oxygen but the fungi in Glass Jar G cannot photosynthesize and cannot give out oxygen.
38b	To find out if carbon dioxide is needed for photosynthesis.
38c	Glass Jar X. There is carbon dioxide in Jar X but not in Jar Y. Carbon dioxide is needed for photosynthesis, thus the plant in Glass Jar X can photosynthesize and give out oxygen but the plant in Glass Jar Y cannot.
39a	Container J is a poorer conductor of heat than Container K so the soup in Container J lost heat to the surrounding air more slowly.
39b	Container J
40a	Kinetic energy from the first block is transferred to the next block and eventually to the last block to make the last block fall.
40bi	There is not enough kinetic energy to push the last block.
40bii	Replace the first block with a block that is heavier than the last block. / Push the first block with more force.



2020 PRIMARY 6 PRELIMINARY EXAMINATION

Name: _____ ()

Date: 21 August 2020

Class: Primary 6 ()

Time: 8.00 a.m. - 9.45 a.m.

Duration: 1 hour 45 minutes

Parent's Signature: _____

Marks: _____ / 56

SCIENCE BOOKLET A

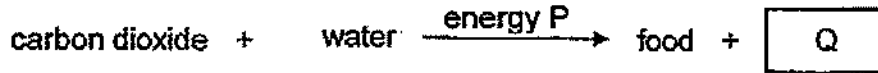
INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers on the Optical Answer Sheet (OAS) provided.

Booklet A (28 x 2 marks)

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

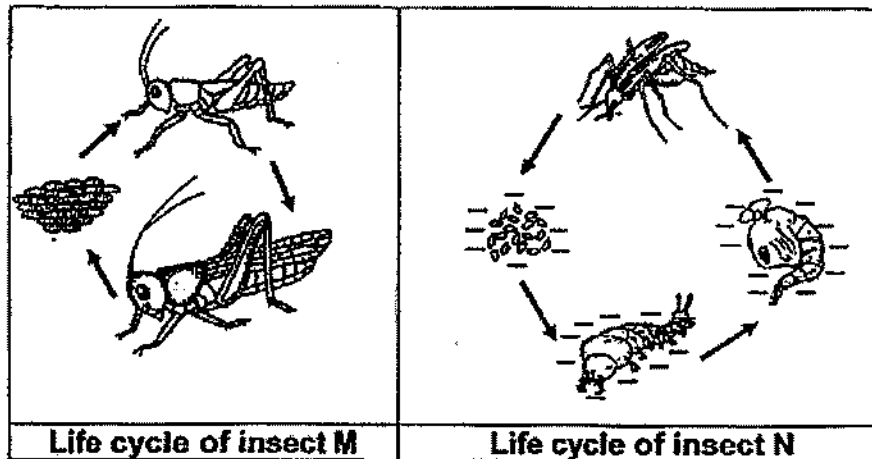
1. The process of photosynthesis is shown below.



Identify energy P and substance Q.

	energy P	Q
(1)	light	water
(2)	light	oxygen
(3)	heat	water
(4)	heat	oxygen

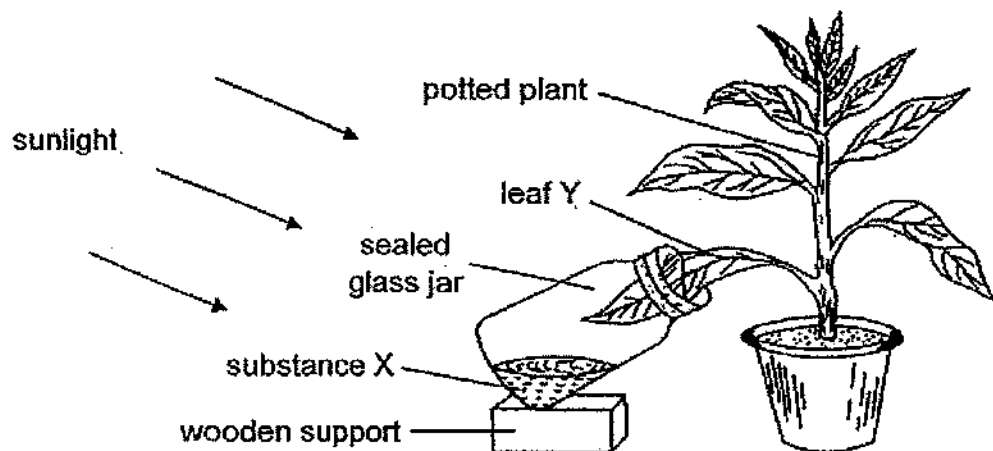
2. Study the life cycles of the insects, M and N, as shown below.



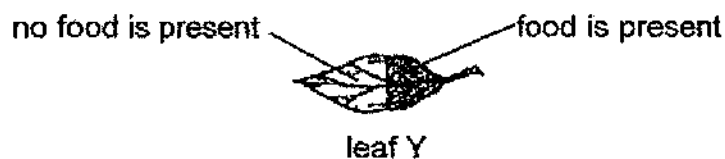
Based on the diagrams above, which of the following statements is true?

- (1) Both life cycles have the larval stage.
- (2) Insect M has more stages in its life cycle than insect N.
- (3) Insect M and insect N can live on land and in water.
- (4) The young of insect M looks like its adult but the young of insect N does not look like its adult.

3. Sarah placed one half of leaf Y in a sealed glass jar containing substance X and placed the set-up in the sun for a few hours.



She then conducted a food test on leaf Y and the result of her experiment is shown below.



What is the purpose of substance X in the experiment?

- (1) To absorb oxygen
 - (2) To produce nitrogen
 - (3) To give out water vapour
 - (4) To absorb carbon dioxide
4. Nadia made the following observations about Organism Z over a period of time. The observations are stated in the box below.

- feeds on insects
- has webbed feet
- lays its eggs in water
- breathes through its moist skin

Which of the following groups of animals does Organism Z belong to?

- (1) fish
- (2) insect
- (3) reptile
- (4) amphibian

5. There were three types of flowering plants, R, S and T, grown in fields near a river as shown in Diagram 1.

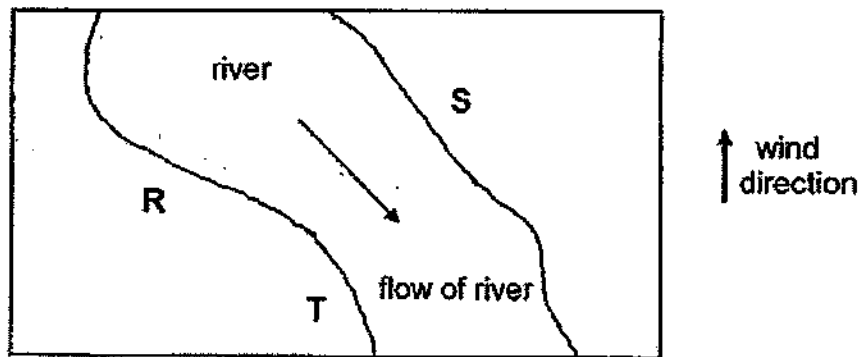


Diagram 1

A few years later, more of each plant, R, S and T, were found growing in the fields as shown in Diagram 2.

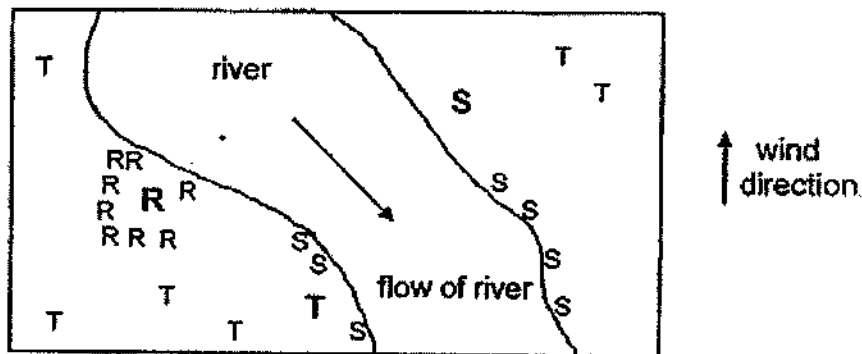
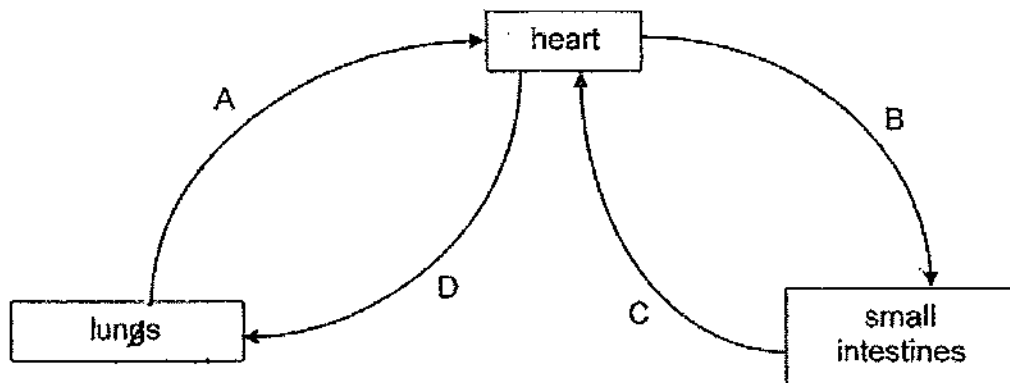


Diagram 2

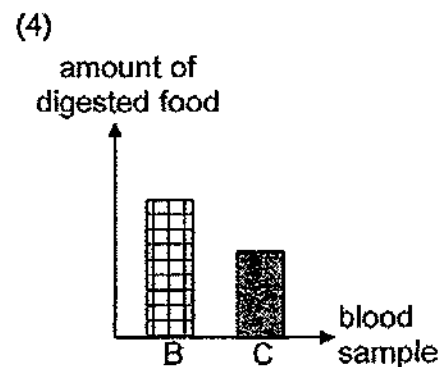
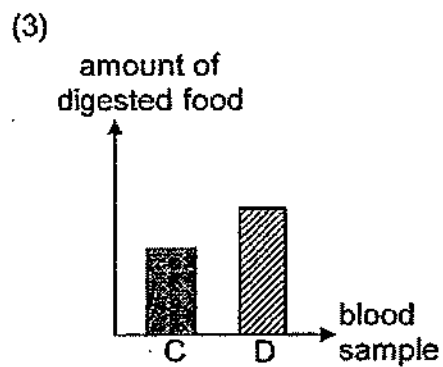
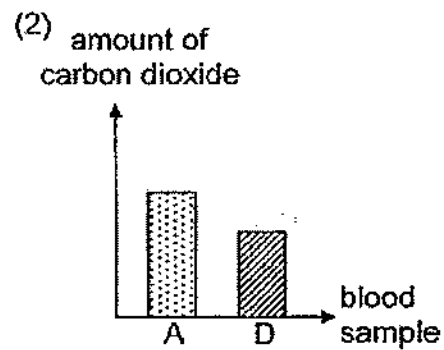
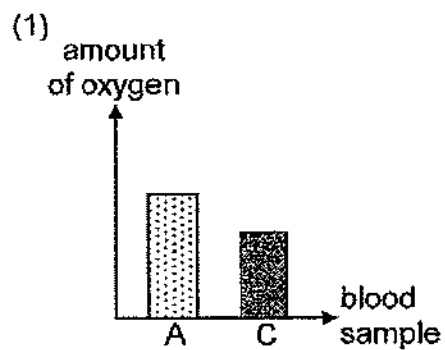
Based on the distribution of plants in Diagram 2, which of the following are likely the characteristics of the fruits, R, S and T?

	Plant R	Plant S	Plant T
(1)	fleshy and brightly coloured	fibrous husk	hook-like structures
(2)	splits open when ripe	hook-like structures	wing-like structure
(3)	splits open when ripe	fibrous husk	fleshy and brightly coloured
(4)	fibrous husk	fleshy and brightly coloured	wing-like structure

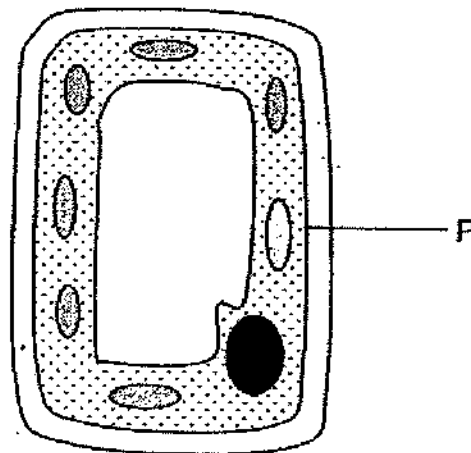
6. The diagram below shows the directions of blood flow in some parts of the body.



The same amount of blood samples was taken from A, B, C and D after a meal. Which chart shows the correct comparison of substances in the blood samples?



7. The diagram shows a plant cell.



Which of the following statements is correct about P?

- (1) P gives the cell its shape.
 - (2) P makes food for the cell.
 - (3) P does not allow light to pass through.
 - (4) P controls substances from entering and leaving the cell.
8. The diagram below shows how food passes through the digestive system of a human body.



Where does digestion take place?

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

9. The table below shows some physical characteristics of both father and mother in a family.

Parent	Pointed Nose	Long Hair	Detached Earlobe
Father	√		
Mother		√	√

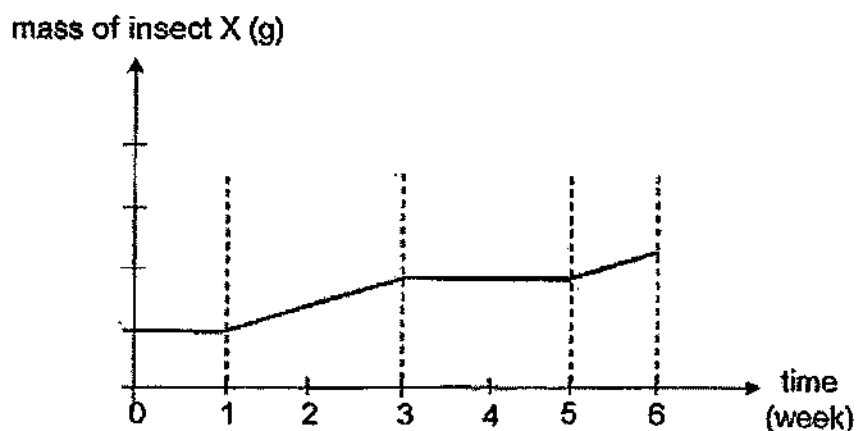
They have four children with the following physical characteristics.

Child	Pointed Nose	Long Hair	Detached Earlobe
Alan	√		√
Betty		√	
Charles	√		√
Daren		√	

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

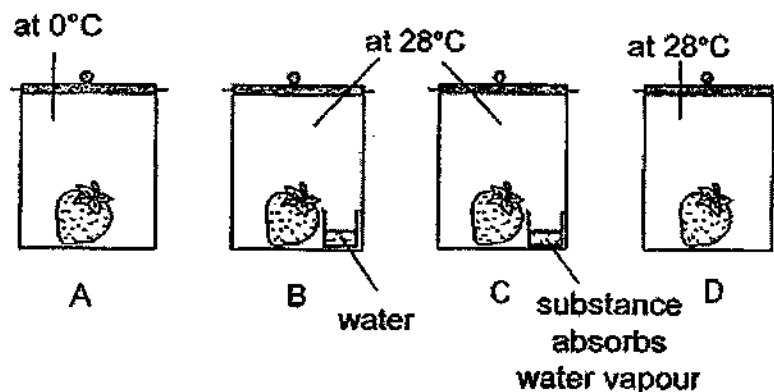
- A Betty and Daren are twins.
 - B Betty inherited at least one physical characteristics from her mother.
 - C Alan inherited one physical characteristics from his father.
 - D Charles inherited at least one physical characteristics from his parents.
-
- (1) A and D only
 - (2) B and C only
 - (3) C and D only
 - (4) B, C and D only

10. The graph below shows the life cycle of insect X.



Based on the graph, how long does insect X take to develop into an adult after hatching?

- (1) two weeks
 - (2) three weeks
 - (3) four weeks
 - (4) five weeks
11. Ted has the following set-ups.



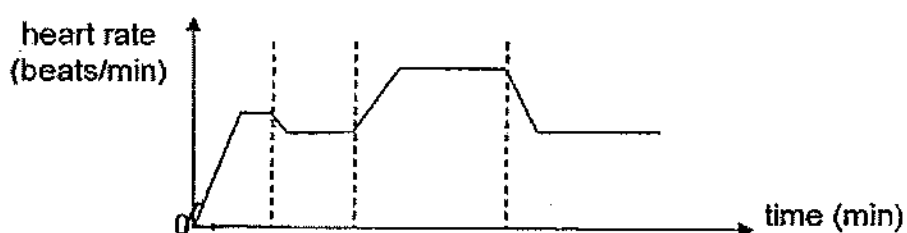
Based on the experiment, in which two set-ups would Ted most likely find mould on the strawberry after a few days?

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

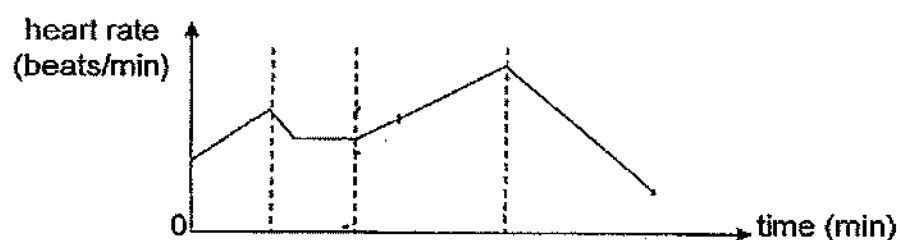
12. Ali took a 10-minute slow walk from his house to a nearby park and rested on a bench for 10 minutes before he jogged home at a constant speed for 20 minutes. He then rested on his sofa.

Which of the following graphs best shows Ali's heart rate from the time he left home to the time he rested at home?

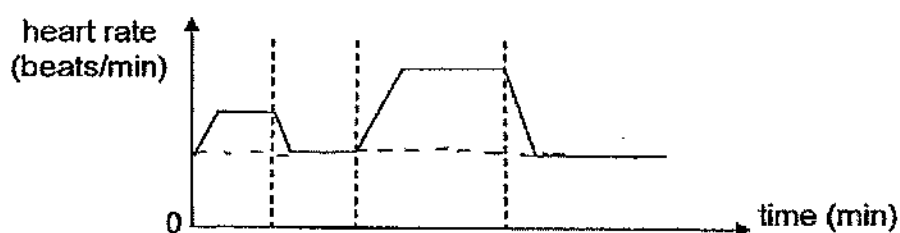
(1)



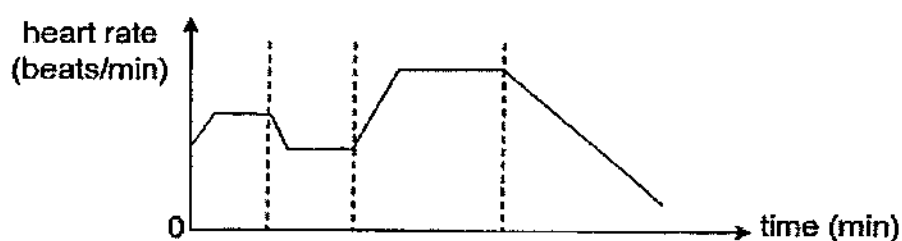
(2)



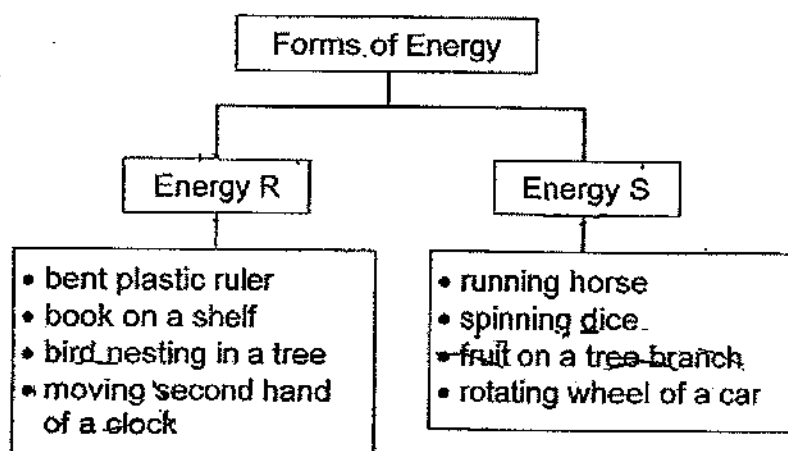
(3)



(4)



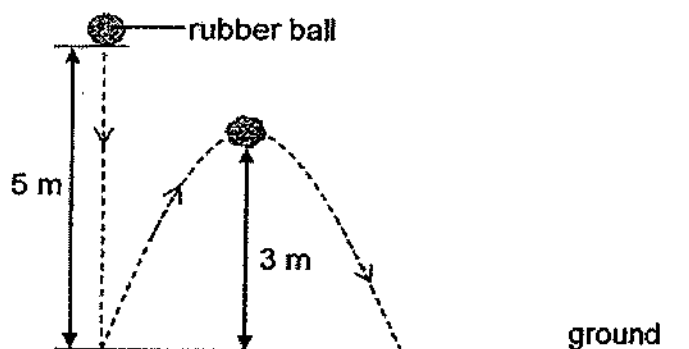
13. Study the classification chart below.



Which of the objects have been incorrectly classified?

	Energy R	Energy S
(1)	bent plastic ruler	spinning dice
(2)	moving second hand of a clock	fruit on a tree branch
(3)	bird nesting in a tree	rotating wheel of a car
(4)	book on a shelf	running horse

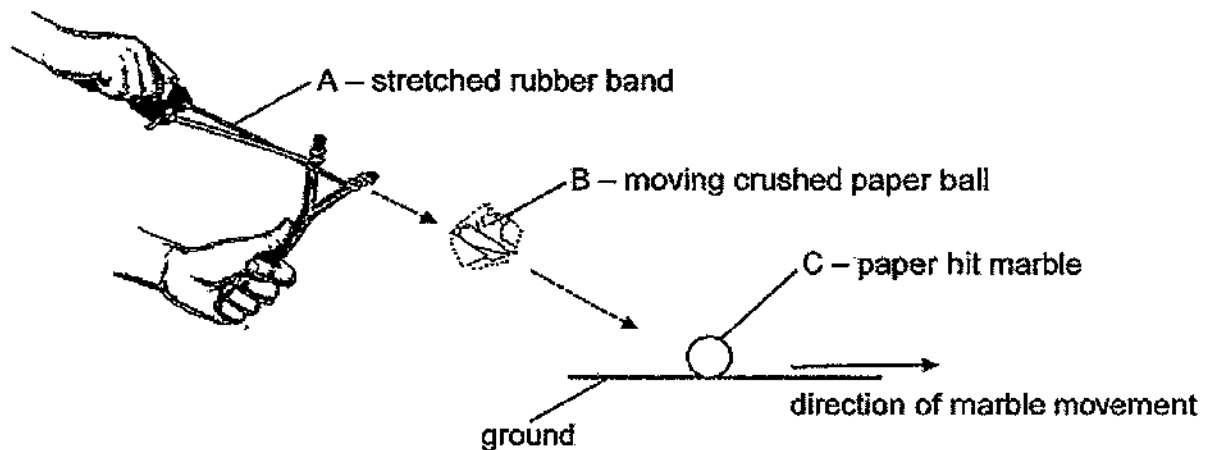
14. Ginny used rubber balls of identical material but of different masses to carry out the experiment below. She dropped a 20 g rubber ball from a height of 5 m. The ball then bounced up 3 m after hitting the ground as shown below.



Which of the following should Ginny choose if she wants the ball to bounce higher than 3 m?

	Rubber Ball (g)	Height dropped from (m)
(1)	10	2
(2)	10	5
(3)	20	2
(4)	50	10

15. Johari was playing with his slingshot. He pulled the rubber band with a crushed paper ball as far as he could before he released the stretched rubber band as shown below. The crushed paper ball hit a marble so the marble moved.



Which of the following correctly shows the energy conversion from point A to point C?

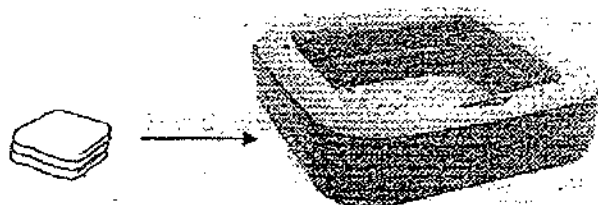
- (1) potential energy \rightarrow kinetic energy \rightarrow potential energy
 - (2) kinetic energy \rightarrow potential energy \rightarrow heat energy + sound energy
 - (3) potential energy \rightarrow kinetic energy \rightarrow kinetic energy + sound energy
 - (4) potential energy \rightarrow kinetic energy \rightarrow potential energy + sound energy
16. A toy car moved down a slope, past point Y and moved up beyond point Z before coming to a stop. After which, the toy car slid back down.



The amount of kinetic energy and potential energy of the toy car at points Y and Z are compared. Which of the following is correct?

	kinetic energy at Z compared to Y	potential energy at Z compared to Y
(1)	less	less
(2)	less	more
(3)	more	the same
(4)	the same	less

17. Mary has an inflatable swimming pool which can be folded when deflated and inflated with air to contain water as shown in diagrams below.



The table below shows the possible properties of the inflatable swimming pool. A tick (✓) indicates the presence of the property.

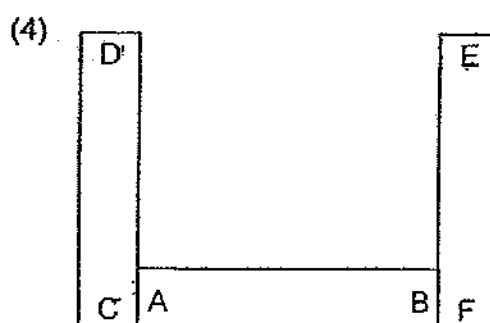
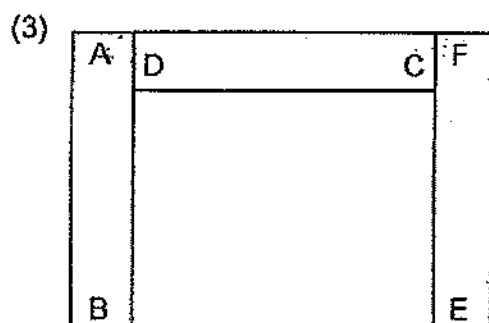
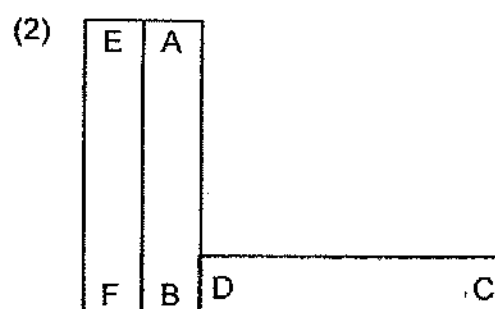
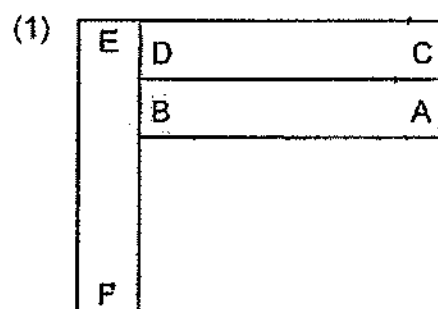
Which of the following are the properties necessary to make the above inflatable swimming pool?

	Properties		
	Flexible	Strong	Waterproof
(1)	✓	✓	✓
(2)	✓		
(3)	✓	✓	
(4)			✓

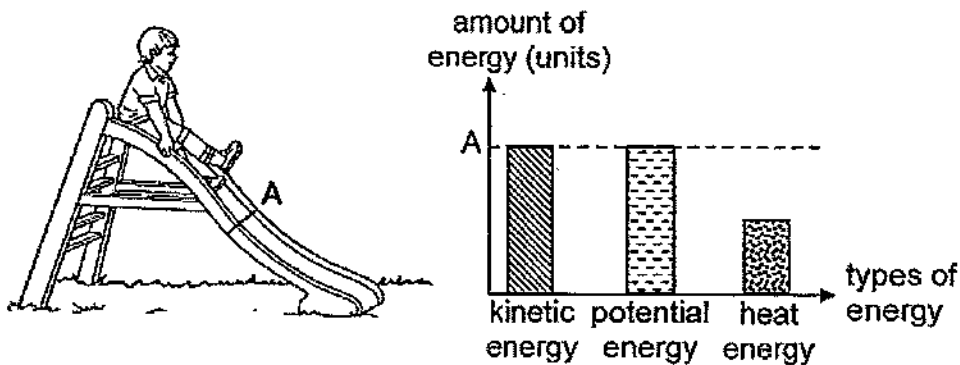
18. Three bar magnets, AB, CD and EF, can be arranged as shown below.



Which of the following arrangements of the magnets is possible?



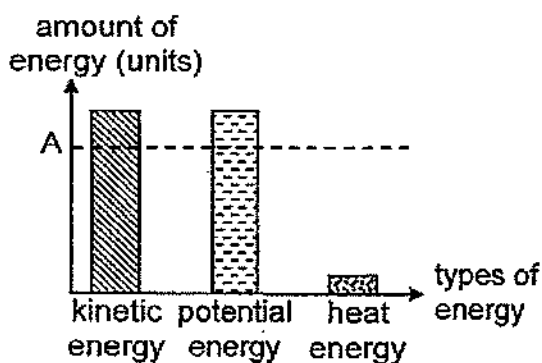
19. The diagram below shows a child sliding down a slide. The graph next to the diagram shows the amount of different types of energy at Point A as the child slides down the slide.



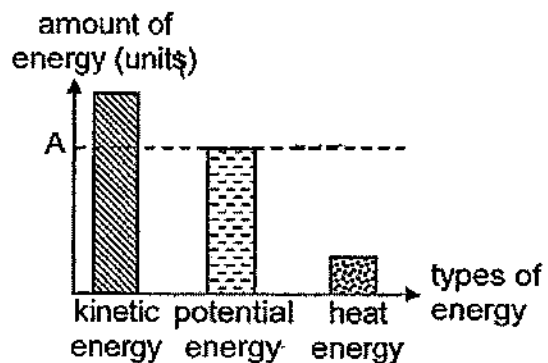
After a sudden downpour, the slide was wet but the child still continued to play.

Which graph correctly shows the change in the amount of different types of energy at A as the child slid down the wet slide?

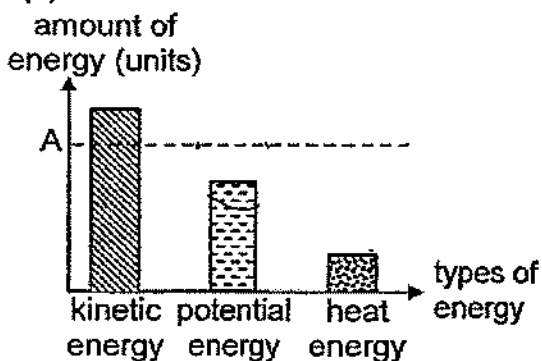
(1)



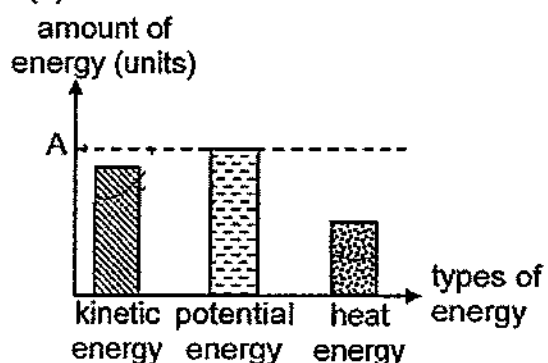
(2)



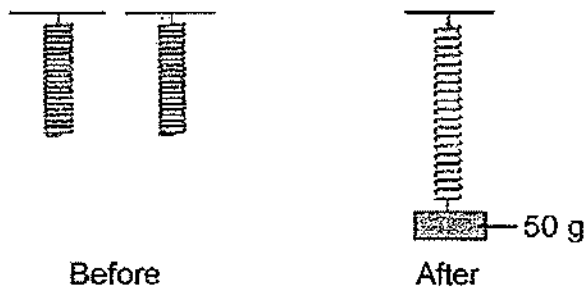
(3)



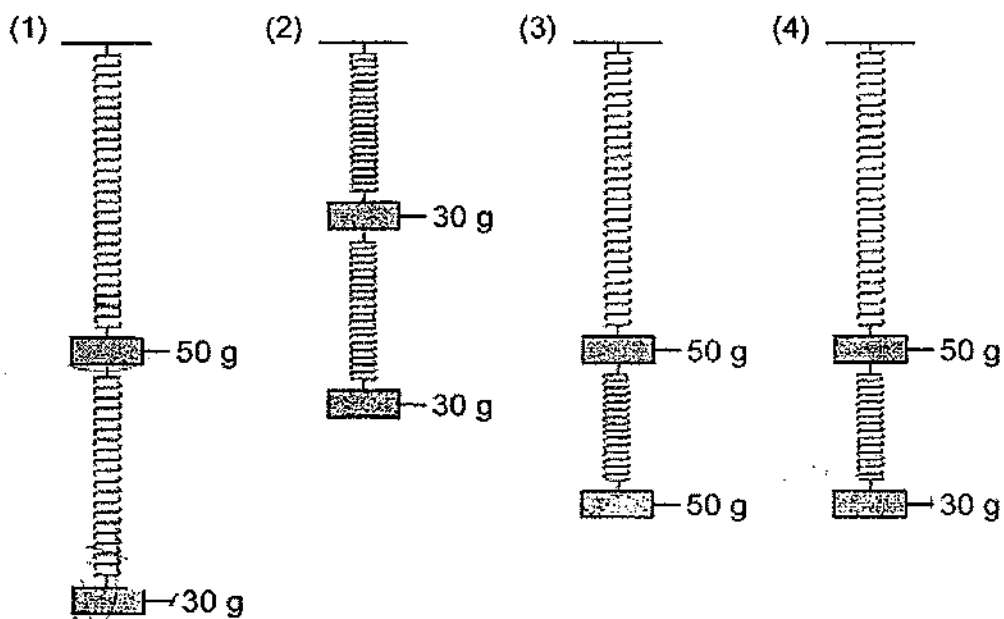
(4)



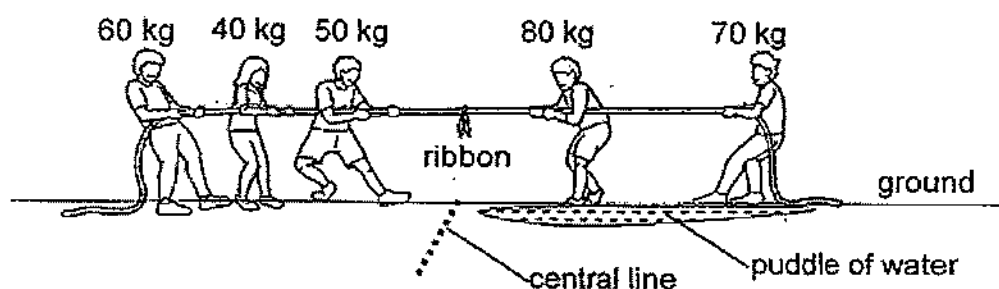
20. Chitra had 2 similar springs. When a 50 g mass was hung on one spring, she noticed that it extended.



Which of the following will correctly show the extensions of the springs when different masses are hung on them?

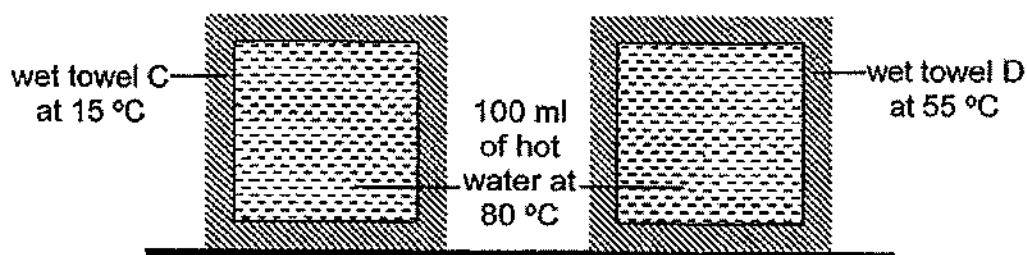


21. Two groups of people were playing 'tug-of-war' as shown below. Both teams had to pull at opposite ends of a rope. The winning team would be the one that managed to pull the centre ribbon across a central line towards themselves.



Which of the following explains why the game was not played fairly?

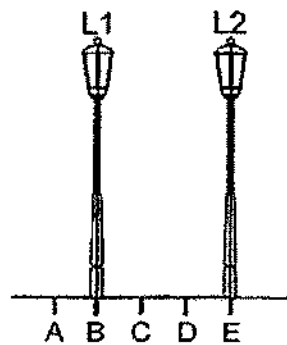
- A The number of participants in each team was different.
 - B The frictional force between the shoes and the ground was different.
 - C The difference in the total mass of each team affected the force exerted on the rope.
- (1) A and B only
 (2) A and C only
 (3) B and C only
 (4) A, B and C only
22. Shaun fully filled two identical containers with hot water. He then wrapped them in identical wet towels, C and D, of different temperatures as shown below.



Which of the following observations did he make after 10 minutes?

	heat gain by towels	heat flow from
(1)	D gained more heat than C	towel to hot water
(2)	C gained more heat than D	hot water to towel
(3)	C and D did not gain heat	hot water to towel
(4)	C and D gained the same amount of heat at any given time	towel to hot water

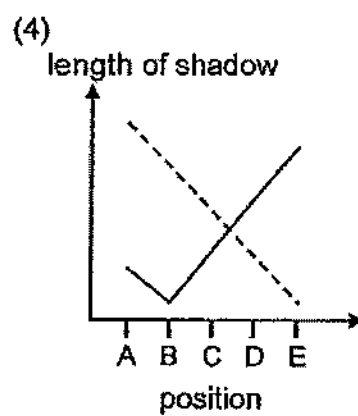
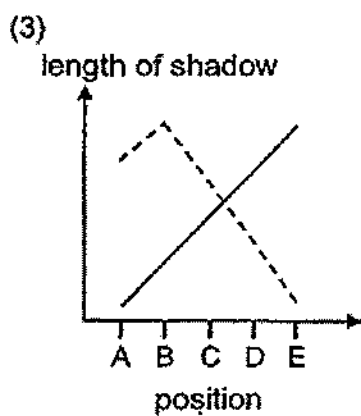
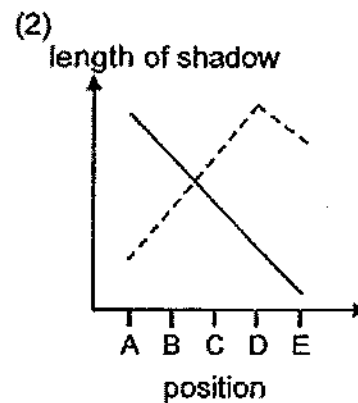
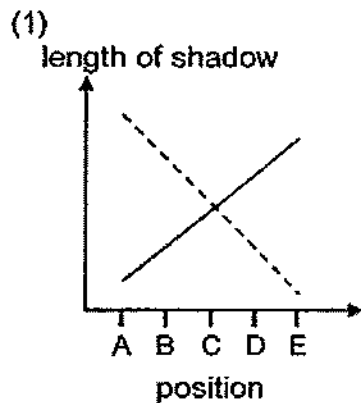
23. Sarah was walking along a path from A to E with two street lamps, L1 and L2, positioned at B and E respectively.



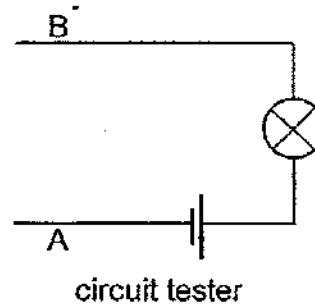
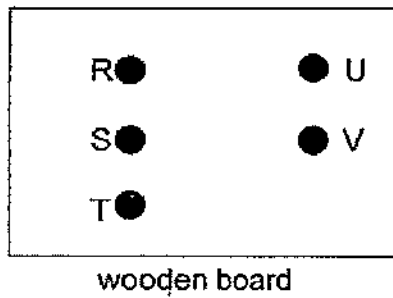
Legend:

- Shadow caused by L1
 - - - Shadow caused by L2

Which of the following graphs shows the correct changes in the length of her shadows as she walked from A to E?



24. The diagram below shows a wooden board and a circuit tester. There are five metal pins, R, S, T, U and V, fixed onto the board. There are some hidden wires connected to the pins.

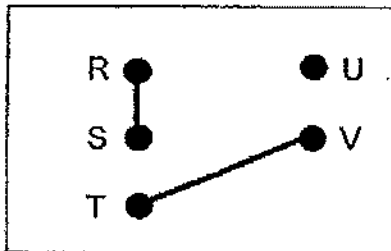


The bulbs would light up when some of the pins formed a closed circuit with the circuit tester. The results were recorded in the table below.

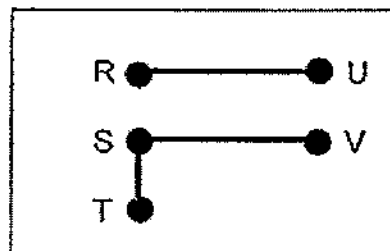
Pin connected to A	Pin connected to B	Did the bulb light up?
R	S	No
R	T	Yes
S	U	No
U	V	Yes

Which of the following shows the correct arrangement of the hidden wires on the wooden board?

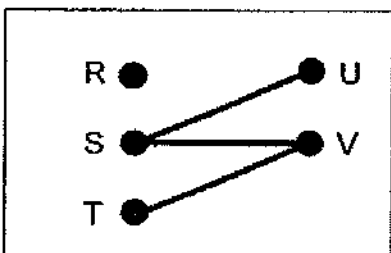
(1)



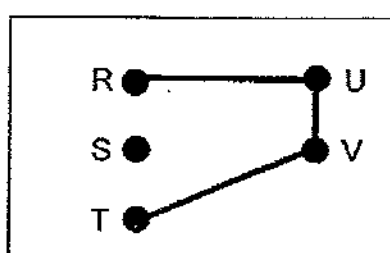
(2)



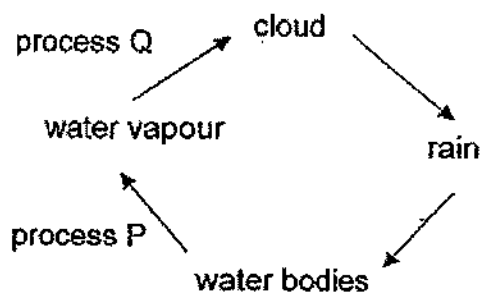
(3)



(4)



25. The diagram below shows the water cycle.



Based on the diagram above, which of the following statements is correct?

- (1) Heat is lost in process P.
- (2) Heat is gained in process Q.
- (3) Process P does not take place at a fixed temperature.
- (4) There is a change in state in process P but not in process Q.

26. The table below shows the melting points and boiling points of two substances, A and B.

Substance	Melting point ($^{\circ}\text{C}$)	Boiling point ($^{\circ}\text{C}$)
A	64	760
B	212	440

Which of the following shows the correct state(s) of substances A and B at 100°C ?

	A	B
(1)	solid	liquid
(2)	liquid	solid
(3)	solid	solid
(4)	liquid	gas

27. Ring magnets S and T, were slipped through a wooden pole as shown below in diagram A. d is the distance between magnets S and T.

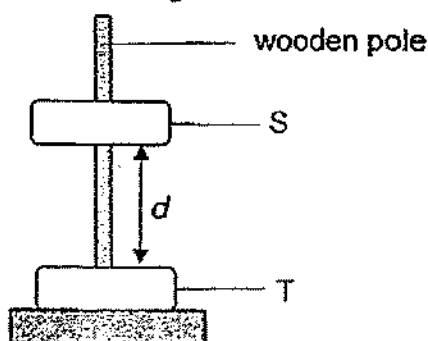


Diagram A

Different masses of load were placed above magnet S and distance d was measured as shown in diagram B.

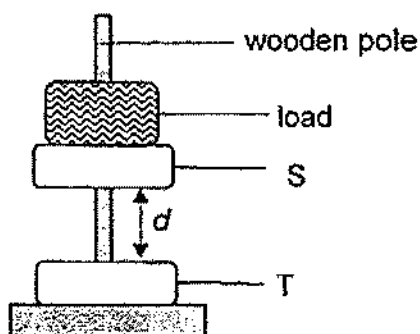


Diagram B

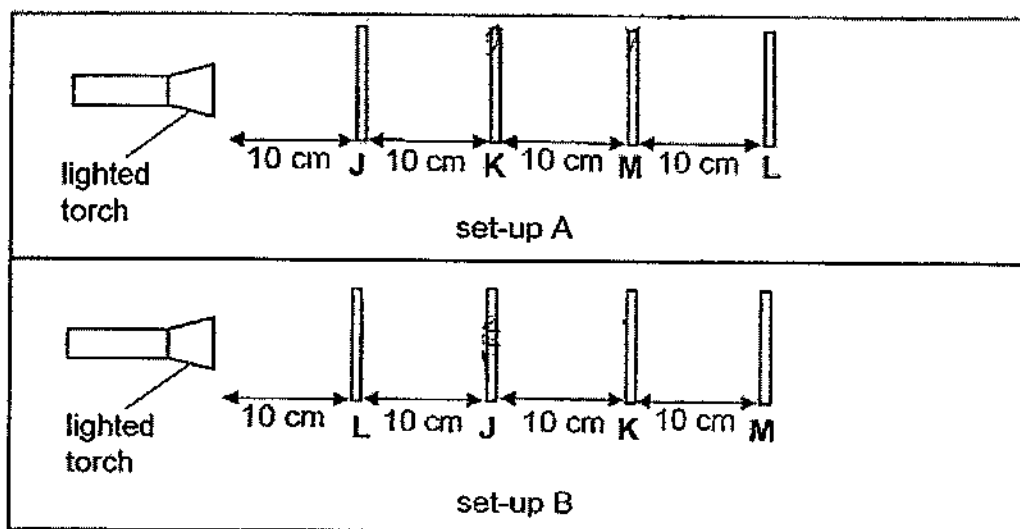
The results were recorded in the table below.

Mass of load (g)	Distance d (cm)
0	15.0
10	12.2
20	7.3
50	0

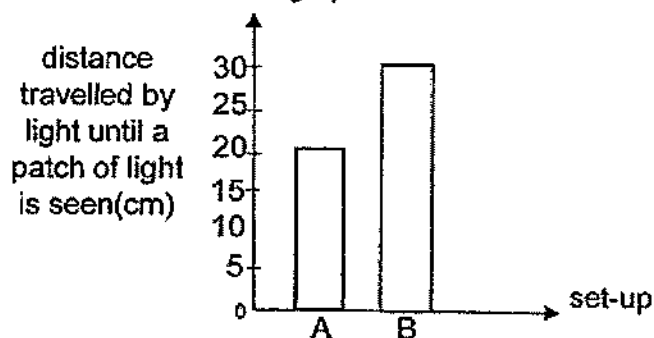
Based on the results, which of the following statements is definitely true?

- (1) Magnet S is lighter than magnet T.
- (2) Unlike poles of magnet S and T are facing each other.
- (3) With increasing mass of load, greater gravitational force is acting against the magnetic force.
- (4) There is no magnetic force of repulsion between magnet S and T when the mass of load is 50g.

28. Four sheets of materials, J, K, L and M, are arranged in the two set-ups as shown below. One of the sheets is coloured. A non-coloured patch of bright light is seen on one of the sheets in set-up A but a coloured patch of dim light is seen on one of the sheets in set-up B.



The distance travelled by the light for each set-up until a patch of light is seen is shown in the bar graph below.



Which of the following correctly describes materials J, K, L and M?

	Allows most light to pass through	Does not allow light to pass through	Coloured sheet
(1)	K	M	J
(2)	L	K	M
(3)	J	K	L
(4)	J	L	K

End of Booklet A



2020 PRIMARY 6 PRELIMINARY EXAMINATION

Name : _____ ()

Date: 21 August 2020

Class : Primary 6 ()

Time: 8.00 a.m. - 9.45 a.m.

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

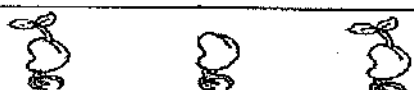



1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in the booklet.

Booklet A	56
Booklet B	44
Total	100

For questions 29 to 41, write your answers clearly in this booklet.

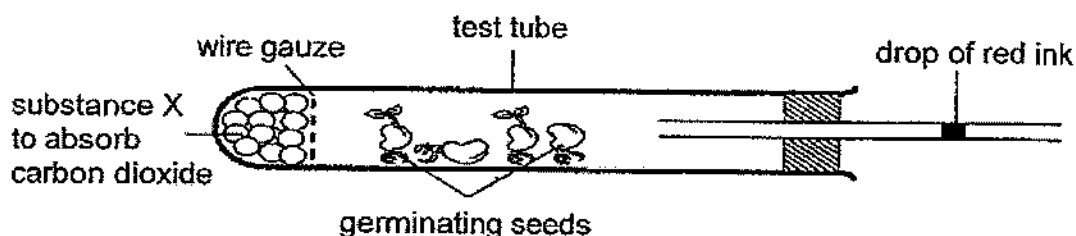
The number of marks available is shown in brackets [] at the end of each question or part question. (44 marks)

29. Xiao Ming set up an experiment to find out the conditions required for seeds to germinate. The experimental conditions and results are shown below.

Tray	Soil	Presence of light	Observations on Day 7
A	wet	yes	
B	wet	no	
C	dry	yes	
D	dry	no	

- (a) From the above results, what condition(s) needed for germination can Xiao Ming conclude? [1]

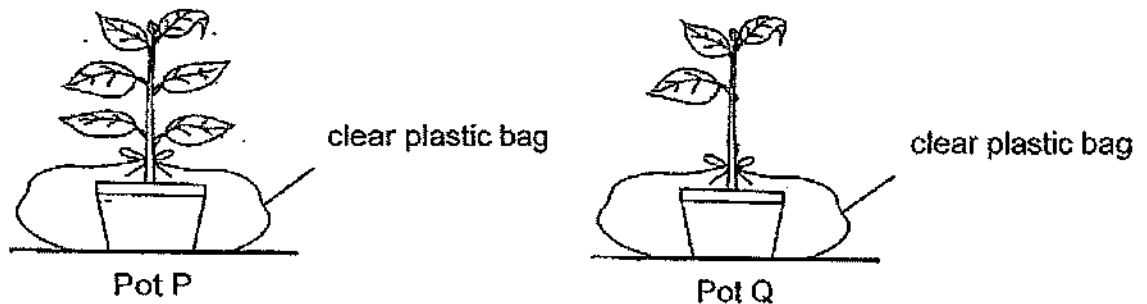
Using the germinating seeds, Xiao Ming set up the apparatus at room temperature as shown below. In the set-up, the drop of red ink prevented air from entering the test tube.



- (b) Explain why the drop of red ink moved towards the test tube after a few days. [2]

Score	3
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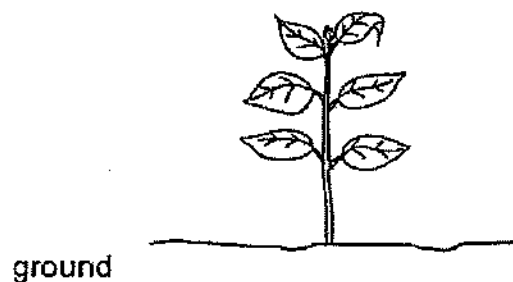
30. Amy conducted an experiment using two similar pots of plants, P and Q, to find out if the number of leaves affects the amount of water absorbed by the roots. She placed the potted plants in a garden and watered each of them with 300 ml of water at the start of the experiment.



After a few days, Amy lifted pots P and Q with both her hands to compare their masses. However, Amy's teacher disagreed with Amy's method of measurement.

- (a) Explain how Amy should have measured the masses of the pots P and Q. [1]

Amy discovered many tiny insects using their mouths to pierce into the stem of a plant in her garden. They were feeding on the stem.

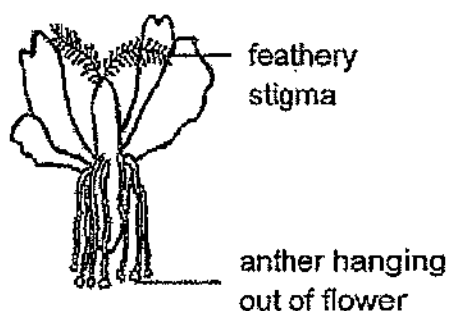
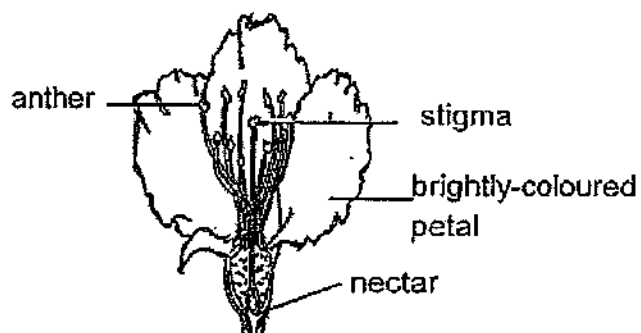
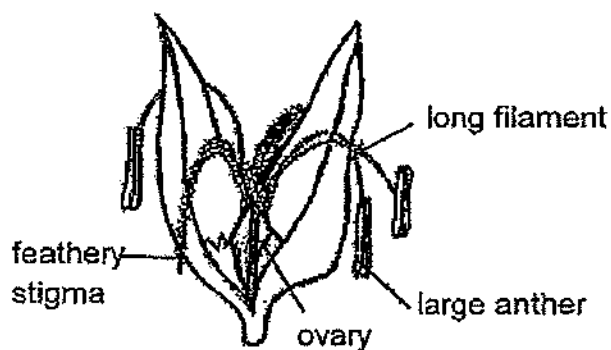
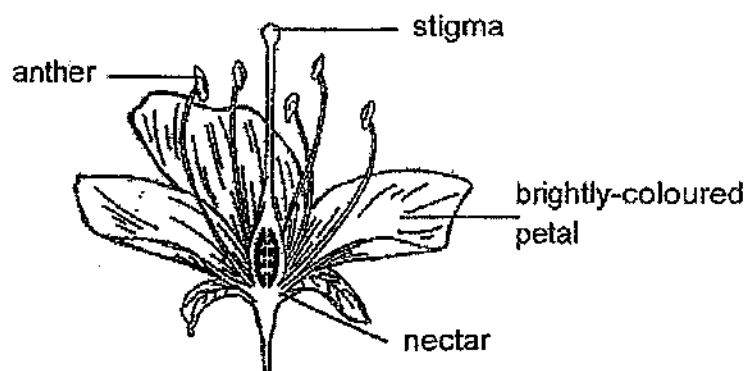


- (b) After a few days, the roots of the plant died. Explain why. [1]

Score	2
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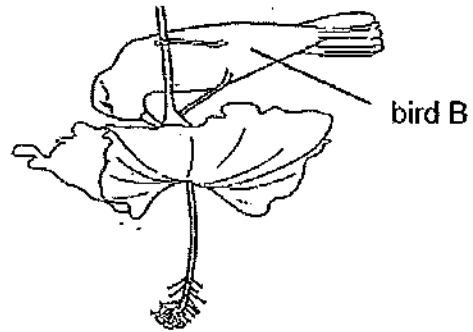
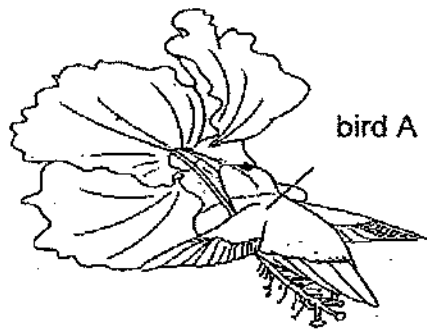
31. Below are four flowers.

(a) Put a tick (✓) in the box(es) to indicate the flower(s) that is/are pollinated by animals. [1]

☐

☐

☐

☐


Score	1
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Birds A and B fly from flower to flower.

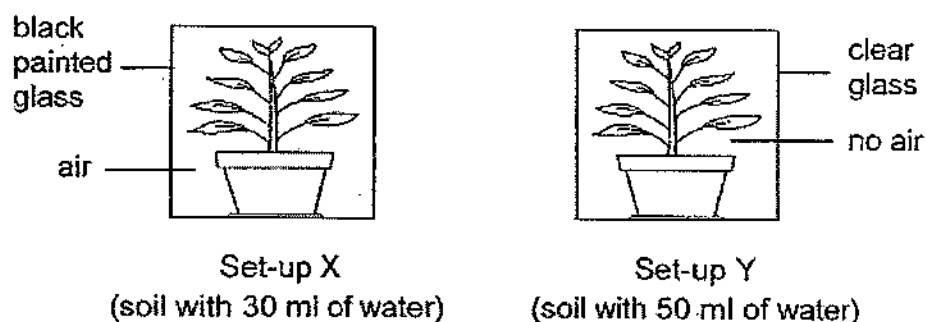


(b) Give a reason why birds A and B fly from flower to flower. [1]

(c) Which bird, A or B will most likely cause the flower to develop into a fruit?
Explain how the bird helps in the fruit development. [2]

Score	3
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32. Kaixin left two set-ups, X and Y, of similar potted plants placed in glass containers under the sun for some time.

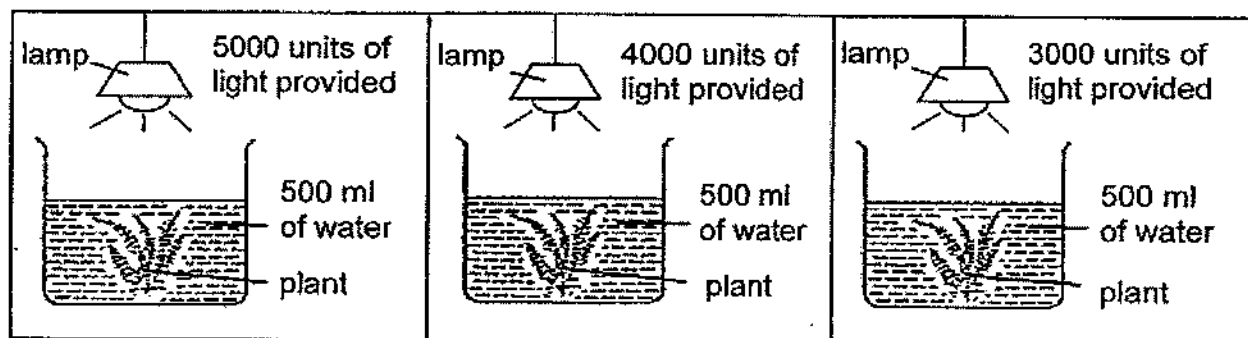


- (a) Kaixin wants to use set-ups X and Y to test if plants need sunlight to make food. Describe the two changes that she must make to the set-ups in order for one of them to be the control set-up. [2]

(i) One change to set-up X: _____

(ii) One change to set-up Y: _____

Then, Kaixin wanted to find out how the intensity of light would affect the rate of photosynthesis of plants. She carried out the following experiment.



Score	2
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She recorded the time each plant took to produce 50 bubbles in the table below.

Light intensity (units)	Time taken for 50 bubbles to be produced (s)
5000	40
4000	45
3000	58

- (b) The time taken for 50 bubbles to be produced decreases as light intensity increases. Explain why. [1]

- (c) Kaixin conducted the experiment in a dark room. Give a reason why this helped to make the test a fair one. [1]

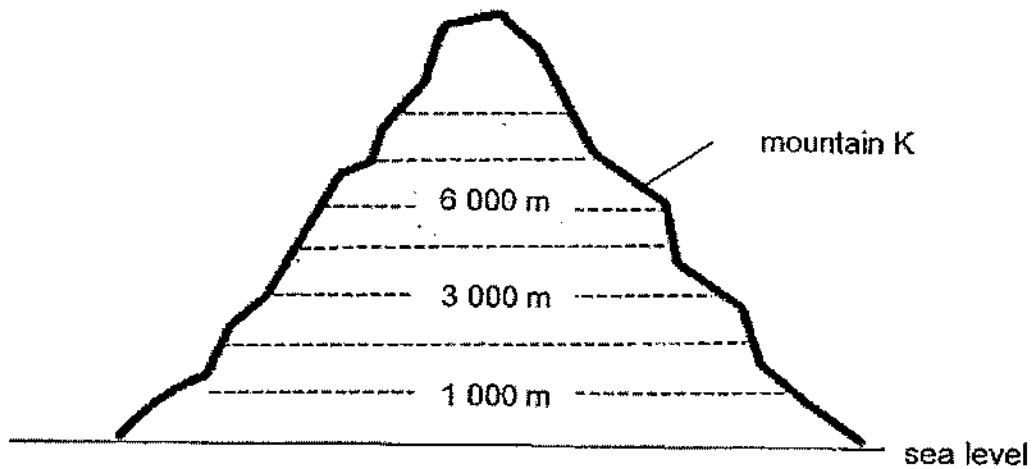
Kaixin realised that the fishes in her aquarium with water plants had been swimming to the surface of the water frequently.



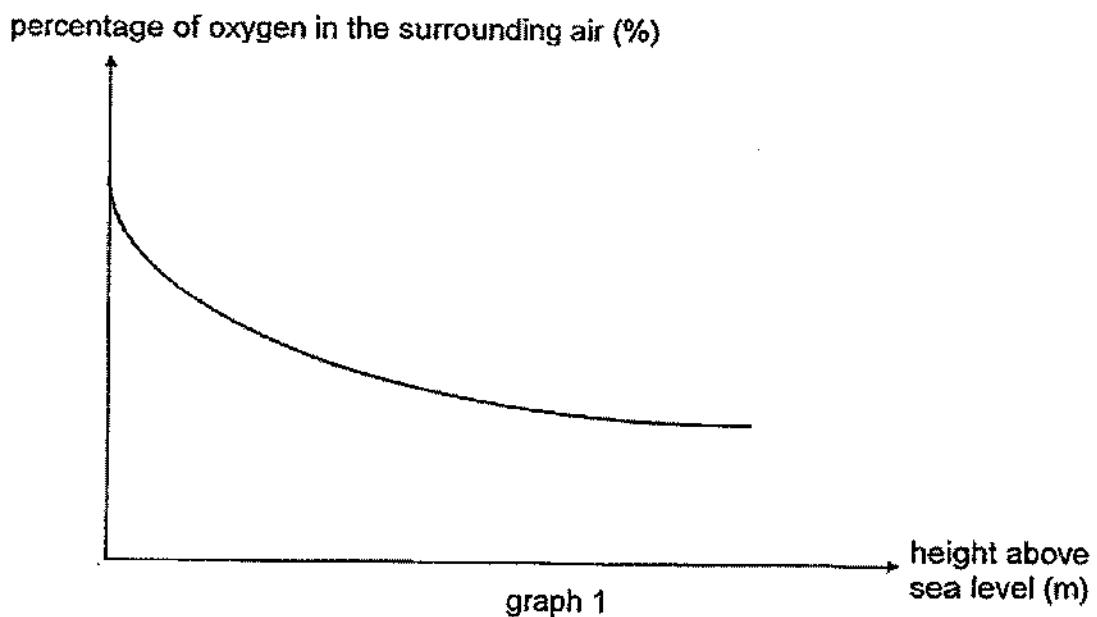
- (d) Based on the results of her experiment above, what should she do to ensure that the fishes do not need to swim to the surface of the water anymore? [1]

Score	3
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33. Mountain K has a height of 8 840 m.



Graph 1 below shows how the percentage of oxygen in the surrounding air changes with the height above sea level.

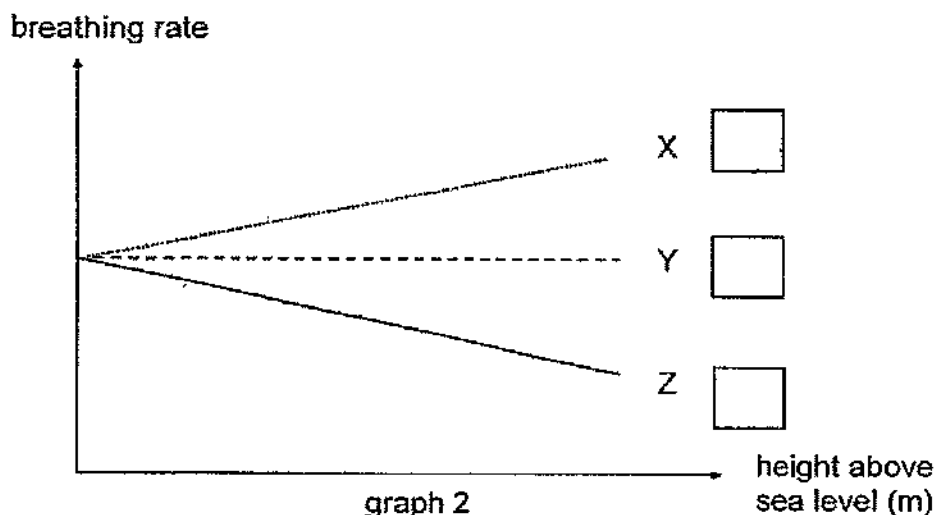


- (a) Based on the results in graph 1, what is the relationship between the height above sea level and the percentage of oxygen in the surrounding air? [1]

Score	1
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- (b)(i) Mr Gopal attempts to climb mountain K. Based on the results in graph 1, which line graph, X, Y or Z, in graph 2 shown below, correctly represents the change in Mr Gopal's breathing rate as he climbs up mountain K?

Tick the correct answer in one of the boxes provided.



- (b)(ii) Explain your choice in part (b)(i).

[2]

The table below shows Mr Gopal's heart rates at rest, when he is at different heights above sea level.

Location	Heart rate (beats per min)
Top of the mountain K	80
Bottom of the mountain K	70

- (c) Explain why Mr Gopal's heart rate is faster when he is at the top of the mountain K.

[1]

Score	3
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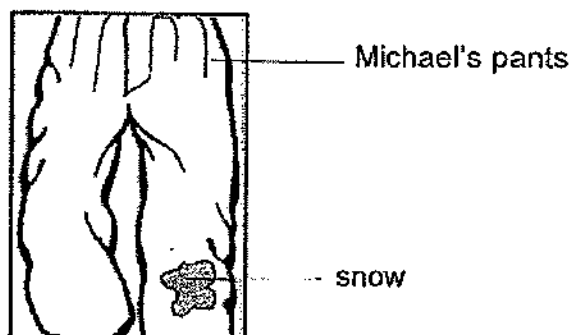
34. Michael was snowboarding on the top of a snow mountain. Mist was seen near his mouth whenever he breathed out as shown below.



(a) Explain how the mist was formed.

[2]

On his way home, Michael noticed that there was snow on his pants. After some time, the snow disappeared and his pants were wet.

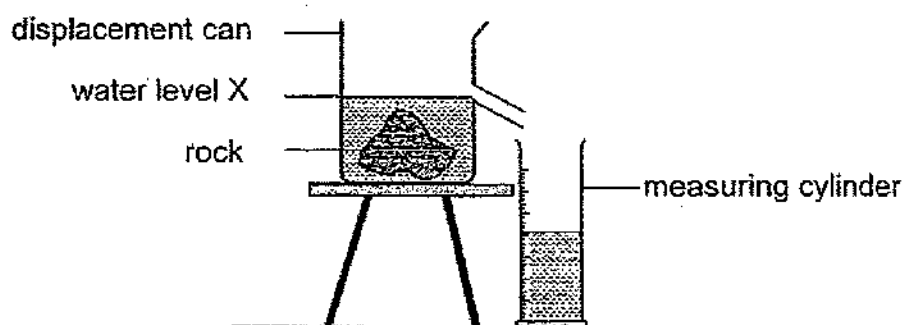


(b) State the process that explains why his pants were wet when the snow on his pants disappeared.

[1]

Score	3
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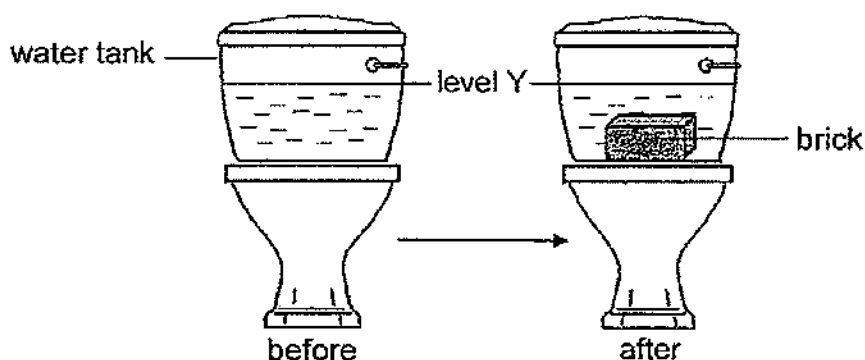
35. The diagram below shows how the volume of a rock can be measured using a displacement can.



- (a) Arrange the following experimental steps in order by writing 1, 2, 3 and 4 in the boxes provided below for the above experiment. [1]

Measure the amount of water collected in the measuring cylinder.	
Lower the rock slowly into the displacement can.	
Pour water into the displacement can until the water reaches level X.	
Allow the displaced water to flow into the measuring cylinder.	

A water tank used for flushing a toilet bowl is shown below.



After flushing, water re-fills the water tank until the water reaches level Y. In order to conserve water, Ali put a block of brick into the water tank.

- (b) Explain how Ali's action would help to reduce the amount of water used to flush the toilet bowl. [1]

36. Two poles of the same height, P and Q, were placed on the stage for a shadow performance. Diagram 1 below shows the top view of the stage, positions of the two poles and the audience.

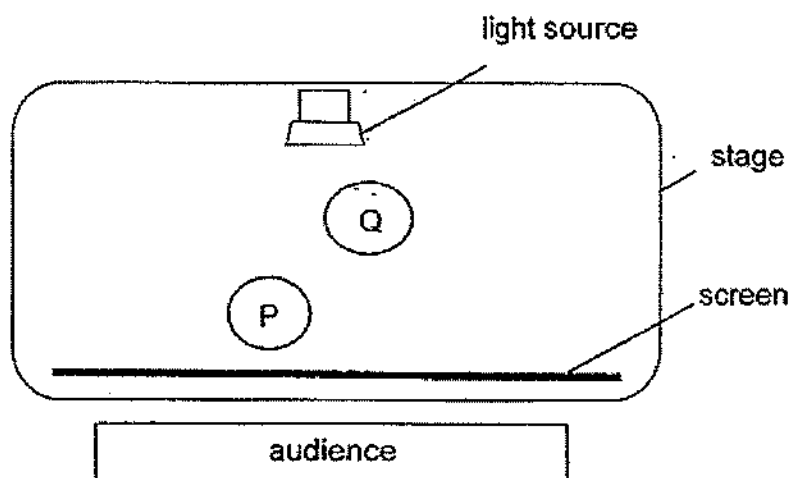


diagram 1

- (a) Which pole, P or Q, will form a bigger shadow? Explain your answer. [1]

Score	1
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Two dancers, X and Y, who were of different heights, were dancing on the stage for a shadow performance. Diagram 2 below shows the top view of the stage, positions of the two dancers and the audience.

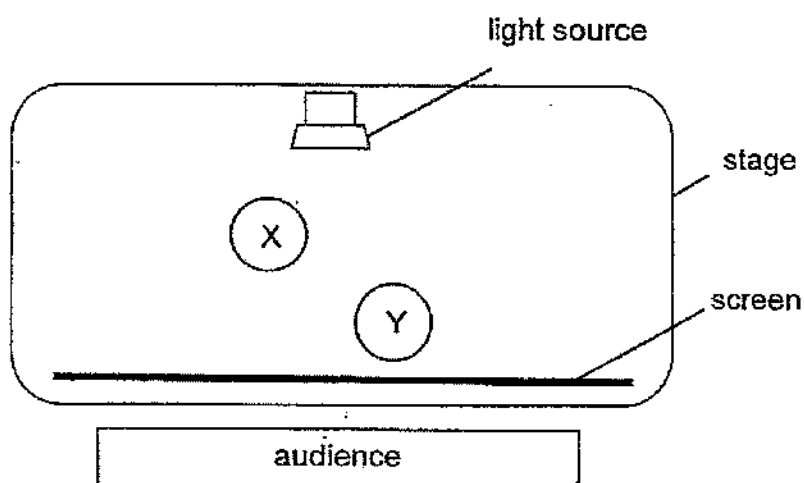
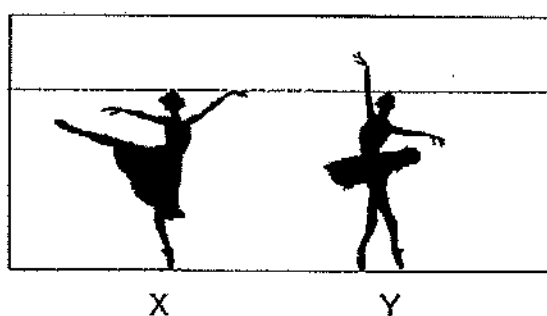


diagram 2

The diagram below shows the shadows of the dancers seen on the screen.

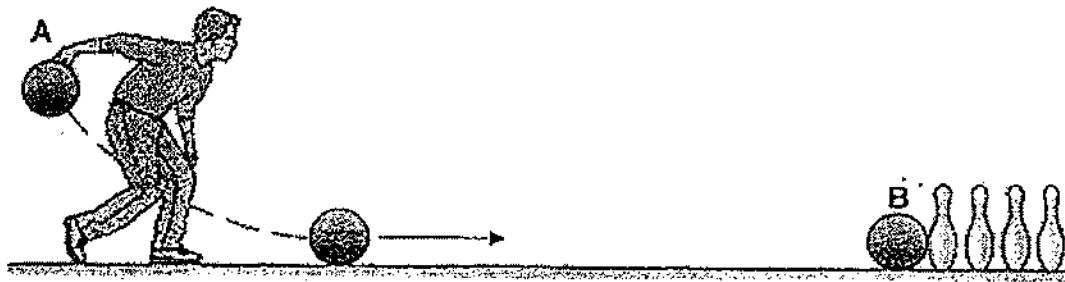


(b) Which dancer, X or Y, is taller? Explain your answer.

[2]

Score	2
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37. The diagram shows Mr Tan rolling a bowling ball along the lane to knock down some pins.



- (a) State the effect of forces on the pins when the bowling ball hits the pins at B. [1]

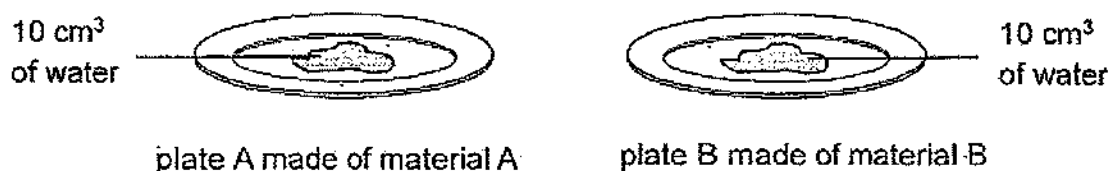
- (b) Identify the force needed to help Mr Tan grip the bowling ball at A. [1]

After some time, Mr Tan's hands became sweaty. He wiped his hands with a dry cloth to absorb the sweat before he rolled the bowling ball forward.

- (c) Explain how the sweat affects his grip on the bowling ball. [1]

Score	3
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38. The diagram below shows two plates made of different materials, A and B, with 10 cm^3 of water each, placed in the sun.

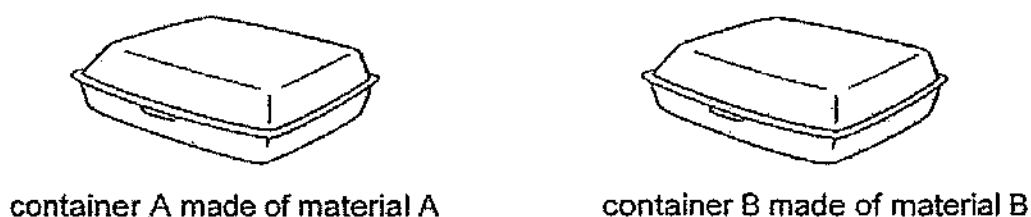


The results are shown in the table below.

Plate	Time taken for water to evaporate completely (min)
A	30
B	45

- (a) How can the above results for the experiment be made more reliable? [1]

The diagram below shows two containers made of materials A and B.



- (b) Based on the results in the table above, which container, A or B, should be used to keep food warm for a longer time? Explain your answer. [2]

Score	3
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39. Suresh performed an experiment on springs P and Q, of the same length, using the set-up shown below.

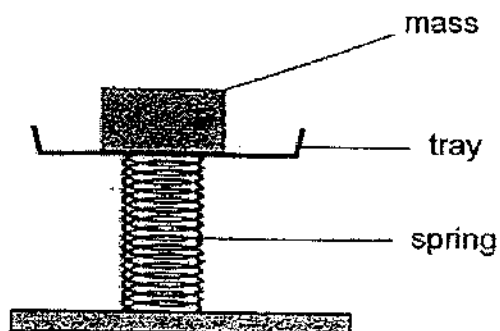


diagram 1

He measured the compression of each spring for different masses.

His results are shown in the table below.

Mass (kg)	Compression of spring P (cm)	Compression of spring Q (cm)
5	2.9	1.9
10	6.1	4.0
15	9.0	5.9
20	12.1	8.1

Diagram 2 below shows Suresh sitting on a rocking horse using spring Q.

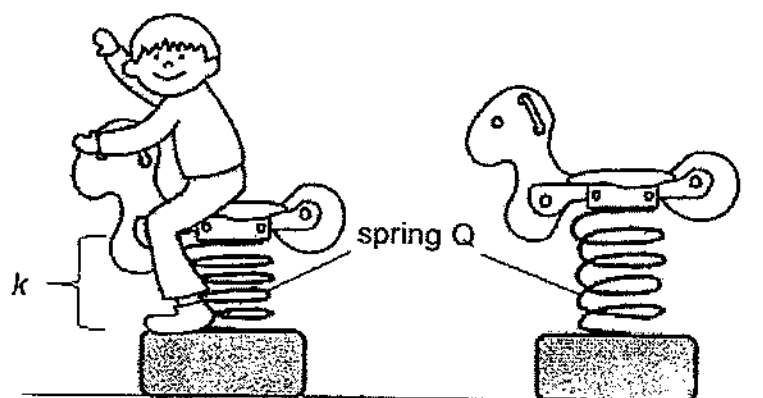


diagram 2

- (a) Identify the force(s) acting on Suresh as he sat on the rocking horse. [1]

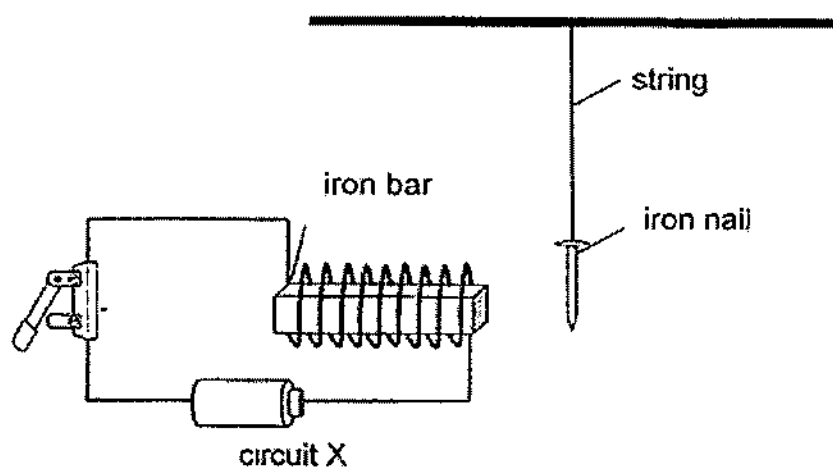
- (b) After Suresh alighted from the rocking horse, spring Q returned to its original length as shown in the diagram 2. Explain the change in length of spring Q in terms of forces. [1]

One day, a technician carelessly replaced spring Q with spring P in the rocking horse.

- (c) Based on the results in the table, would the height of spring P be more or less than k when Suresh sat on the rocking horse again? Explain your answer. [1]

Score	3
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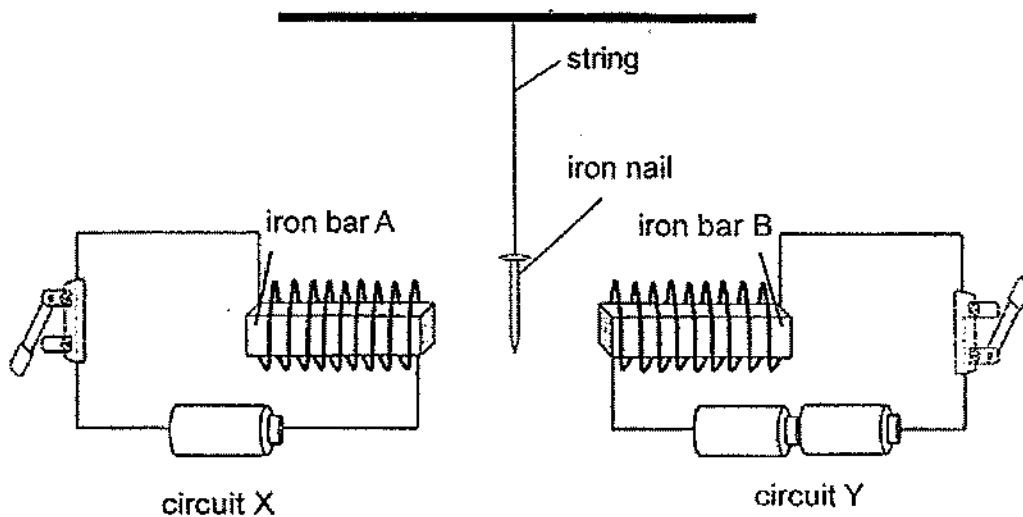
40. Mei Li conducted an experiment as shown below.



- (a) Describe what Mei Li would observe when she closed the switch in circuit X.
Explain her observation. [2]

Score	2
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Mei Li added circuit Y to the experiment using similar batteries, wires and switches as shown below. The iron nail was suspended between the two similar iron bars A and B.



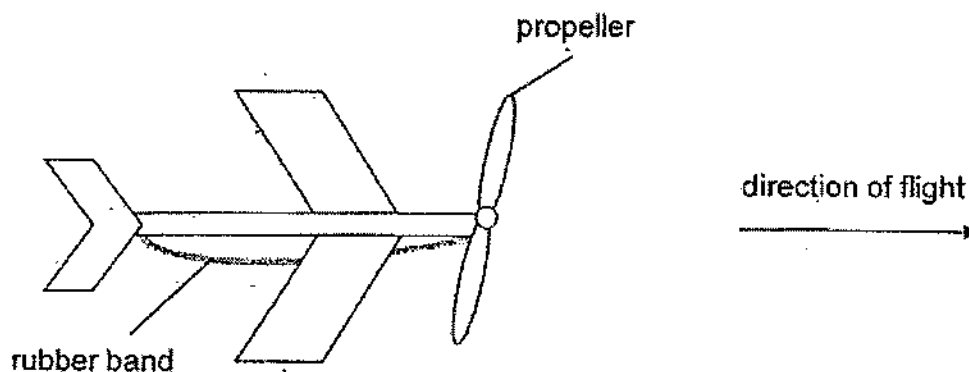
Mei Li observed that the iron nail was attracted to iron bar B when both switches in circuit X and Y were closed.

- (b) Without changing the number of batteries or iron nail, suggest two ways Mei Li could do to the above set-up so that the iron nail is attracted to iron bar A instead. [2]

- (c) Mei Li replaced the iron nail with a heavier iron nail. She observed that the nail did not move at all when the switches are closed. Explain her observation in terms of forces. [1]

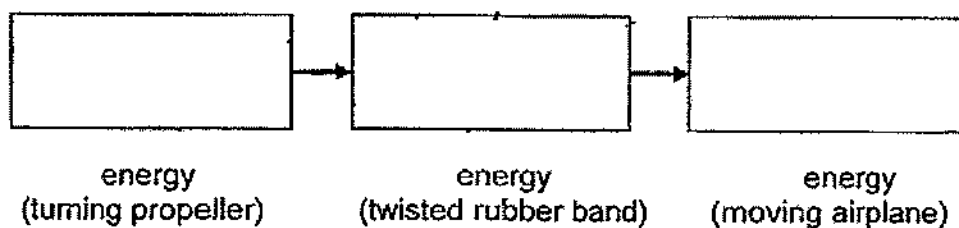
Score	3
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41. The diagram shows a toy airplane.



When the propeller is turned twenty times, it twists the rubber band connected to it. As the propeller is released, the rubber band unwinds, enabling the airplane to fly.

- (a) Fill in the boxes to show the energy changes in the toy airplane. [1]



- (b) Using the same toy airplane another experiment is conducted using two rubber bands. How would the distance travelled by the airplane be affected when two rubber bands are used instead? [1]

- (c) When carrying out the experiment for (b), what are two other variables that need to be kept constant for the test to be fair? [2]

End of Paper

Score	4
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SCHOOL : TAO NAN PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2020 PERLIM

SECTION A

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

	Suggested Answers
29a	Water / moisture/ dampness/ moist/ wetness/wet condition/wet (is needed for germination to take place).
29b	The germinating seeds <u>take in / need oxygen/respire</u> (giving out carbon dioxide which would be absorbed by substance X) so the <u>volume of air</u> inside the test tube <u>decreased</u> ./there would be <u>less air occupying the space</u> in the test-tube.
30a	She should use a weighing machine/(weighing) scale
30b	The tiny insects fed on/ate/damaged the food-carrying tubes so no/insufficient food was transported to the roots./ the roots cannot receive food.
31a	Tick the flowers on the right
31b	To feed on the nectar/obtain food from the flowers
31c	Bird A/B picked up the pollen grains (from the anther) or Pollen grains were stuck/stick/cling on/ brushed on the feather/bird dropping off pollen grains onto a stigma.
32a	i) Add 20 ml of water to the soil. ii) Introduce air into the container
32b	The <u>rate of photosynthesis of the water plant increases/</u> the water plant <u>photosynthesises faster/</u> the water plant <u>absorbs more light for photosynthesis/</u> the water plant <u>make more food (cause)</u> so <u>more oxygen is produced /oxygen is produced faster.</u> (effect)
32c	This is to ensure that no other source of light would affect the results / the time taken for 50 bubbles to be produced- <i>link incorrect variable to results</i> OR This is to ensure that the lamp is the only source of light that would affect the results/ the time taken for 50 bubbles to be produced. - <i>link correct variable to results</i>
32d	She should place a (lit) lamp near/ above/beside the water plants in the aquarium. Move the aquarium beside/near a window with sunlight. Put the aquarium at a location with higher light intensity.

33a	As the <u>height</u> above sea level increases (cause), the (<u>percentage of</u>) <u>oxygen</u> in the surrounding air decreases (effect). or As the <u>height</u> above sea level decreases (cause), the (<u>percentage</u>) of <u>oxygen</u> in the surrounding air increases (effect).
33b	<u>Moving up the mountain, there is less oxygen (cause) so Mr Gopal will breathe faster/ more times/ breathing rate increases to take in sufficient /same/ enough/ more oxygen (effect).</u>
33c	Mr Gopal's heart pumps faster so that <u>blood with oxygen moves faster to body parts/ oxygen reaches faster to the body parts/enough oxygen is sent to body parts.</u>
34a	The water vapour from his breath/mouth/him comes into contact with the cooler surrounding air and condensed. or The <u>warmer</u> water vapour from this breath comes into contact into the surrounding air lost heat to form water droplets.
34b	Melting
35a	4, 2, 1, 3
35b	The brick takes up space (in the water tank) so less water is needed to refill the tank. or The brick has fixed volume (in the water tank) so less water is needed to reach Y.
36a	Pole Q as it is <u>nearer to the light source / further from the screen.</u>
36b	Y is taller. Y is further from the light source /nearer the screen but the shadows are of the same height/size.
37a	The pins/object moved/ fell/ dropped/toppled.
37b	Friction/frictional force
37c	The sweat (is a lubricant which) <u>reduces / decreases frictional force / friction between his hand and the bowling ball (cause)</u> <u>so the grip is weakened/ may drop the ball (effect)</u>
38a	Repeat the experiment several times/ more times / take more readings

38b	<p>Food container B (claim)</p> <p>Material B takes a longer time for the water to evaporate completely. (evidence from experiment) Therefore material B is a poorer conductor of heat (property)/ material B conducts heat slower from the surroundings to the water (still on reference to experiment)</p> <p>and food container B <u>will conduct heat away from the warm food to the surroundings slower.</u> (approach from container) / food will lose less heat to the surroundings (approach from food)/ and food will lose heat slower to the surroundings (approach from food) - 3Application</p>
39a	Any two: gravitational force, frictional force, elastic spring force
39b	<p><u>Less weight</u> (of Suresh)/ no weight acting on the <u>spring</u>.</p> <p><u>Less/ no gravitational force</u> (of Suresh) acting <u>on the spring</u>.</p>
39c	The height of spring P would be less than K as <u>spring P compresses more when the same mass is hung on them /spring P is less stiff.</u>
40a	<p>The <u>iron nail is attracted to the iron bar as iron is a magnetic material.</u> When the switch is closed, <u>a closed circuit is formed/electricity flows through the circuit</u> and the <u>iron bar turned into an electromagnet/ is magnetised.</u></p>
40b	Add more coils of wire around iron bar A/ Open the switch in circuit Y/Shift circuit Y to the right/ Shift circuit X nearer to the nail. / Move the string of the nail closer to X
40c	Magnetic force is not strong enough (to attract the iron nail.)
41a	kinetic energy → (elastic) potential energy → kinetic energy
41b	The distance travelled by the airplane will be <u>further / longer/greater/more.</u>
41c	<p>Any two of these:</p> <p>How the toy airplane is released. Height the toy airplane is released. Speed of wind/ Presence of wind Number of times the propeller is turned Direction of flight Accept anything pertaining to rubber band</p>