CONTINUAL ASSESSMENT 1 (2017)
PRIMARY 6

SCIENCE

BOOKLET A

THURSDAY **23 FEBRUARY 2017** **1 Hour**

Name: _____ ( ) Class : 6.( )

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO

Follow all instructions carefully.

There are 14 questions in this booklet.

Answer **ALL** questions.

INFORMATION FOR PUPILS

The total marks for this booklet is 28.

The total time for Booklets A and B is 1 hour.

This question paper consists of 11 printed pages (inclusive of cover page).

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Booklet A (30 marks)

For each question from 1 to 15, four options are given. One of them is the correct answer. Choose the correct option (1, 2, 3 or 4) and shade the correct oval on the Optical Answer Sheet (OAS). (15 x 2 marks)

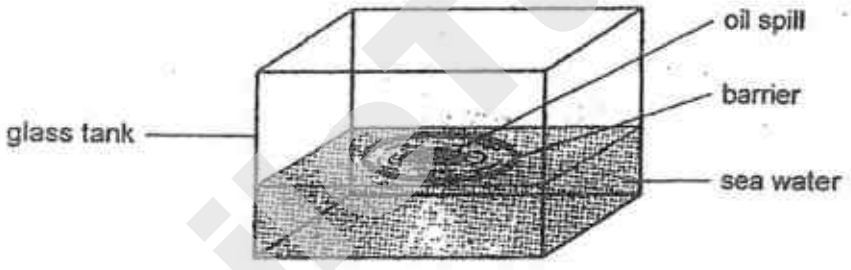
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1 Which of the following statements are true for both fungi and bacteria?

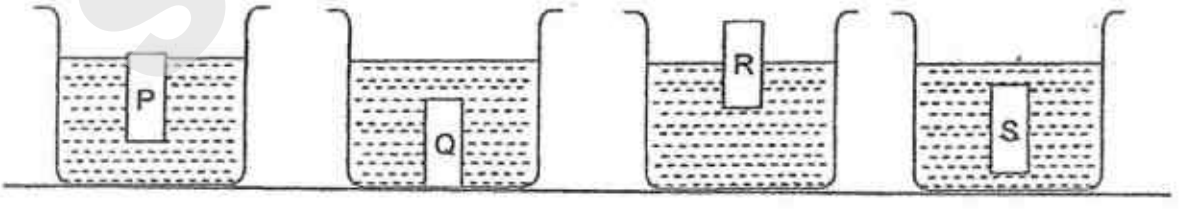
A Some are decomposers.
B They reproduce from spores
C They can only be seen with a microscope.
D They feed on living as well as dead organisms.

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

2 The diagram below shows a model of a barrier used to surround an oil spill in a glass tank of sea water. The purpose of the barrier is to contain the spread of the oil spill within the barrier.



Tessa wanted to find out what material could be used to make such a barrier. She placed identically shaped blocks of different Materials P, Q, R and S in identical beaker containing an equal amount of sea water as shown in the diagram below.

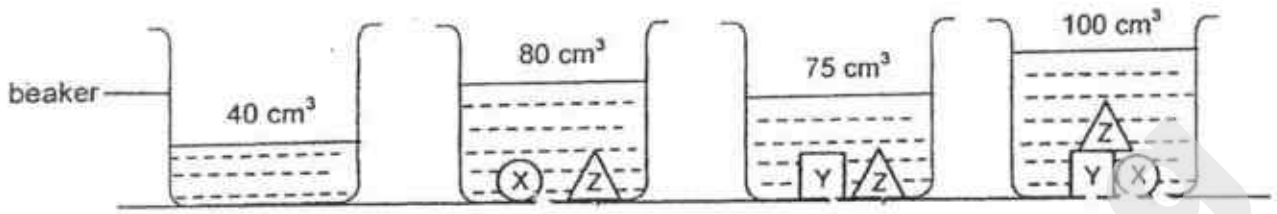


Which material, P, Q, R or S is most suitable for making the barrier?

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

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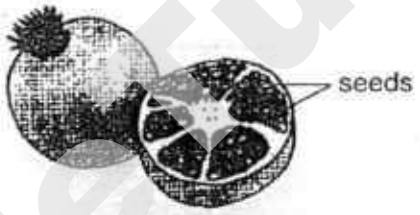
3 A beaker of water was filled with 40 cm^3 of water. Objects X, Y and Z were put into the beaker at separate times and the water level rose as shown in the diagram below.



What is the volume of object X?

(1) 15 cm^3
(2) 20 cm^3
(3) 25 cm^3
(4) 55 cm^3

4 The diagram below shows the cross-section of a pomegranate fruit. The fruit is sweet and juicy but contains many seeds.



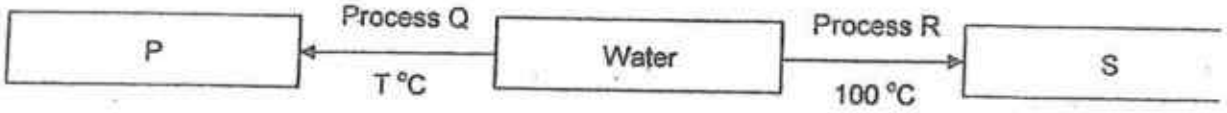
Which of the following statements about the pomegranate flower are correct?

A The flower has many ovaries.
B The ovary of the flower contained many ovules.
C The flower went through pollination before fertilisation.
D Fertilisation occurred when pollen landed on the stigma.

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

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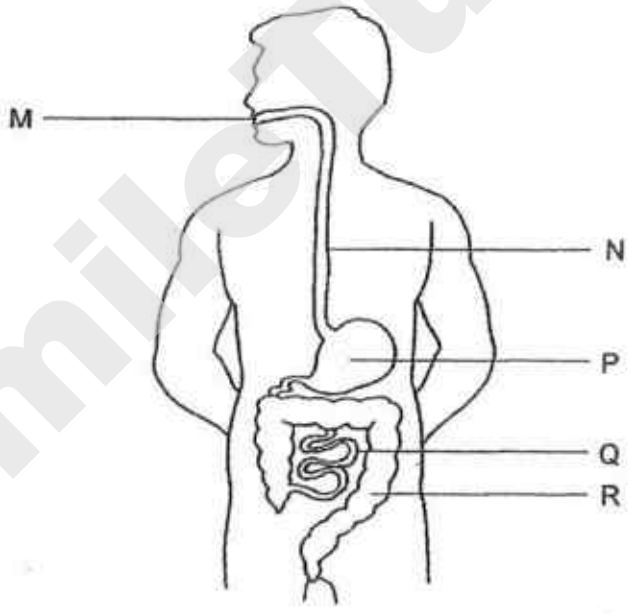
5 Study the diagram below.



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

	P	Q	R	S	T
(1)	Water	Melting	Evaporation	Water vapour	30
(2)	Ice	Freezing	Boiling	Steam	0
(3)	Ice	Melting	Evaporation	Water vapour	0
(4)	Water Vapour	Freezing	Condensation	Steam	10

6 The diagram below shows the human digestive system.



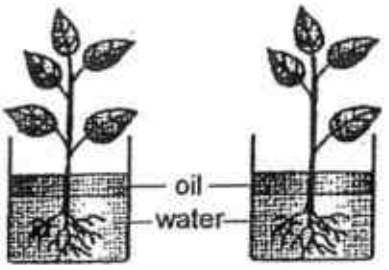
Which of the following correctly identifies the function(s) of M, N, P, Q and R?

	Produces digestive juices	Where ~~digested food~~ digestion is completed	Removes water from undigested food
(1)	M, N, Q	Q, R	Q, R
(2)	M, P, Q	P, Q	R
(3)	M, N, P	Q	Q, R
(4)	M, P, Q	Q	R

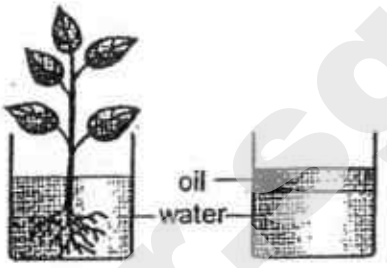
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7 Sally wanted to find out if ~~roots of~~ plants absorb water. Which of the following set-ups should she use in order to carry out her experiment?

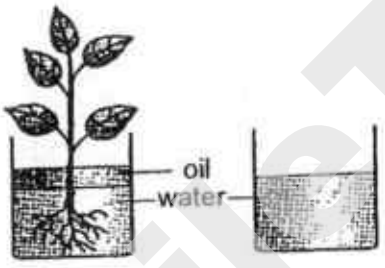
(1)



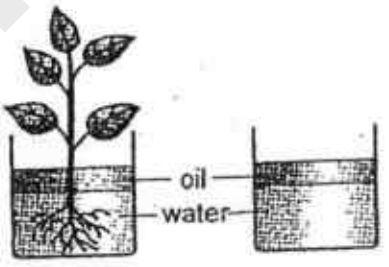
(2)



(3)



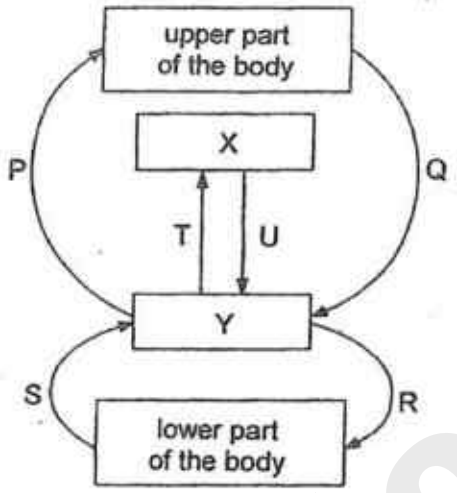
(4)



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8 The diagram below shows the flow of blood from one part of the human body to another. X and Y represent certain organs in the human body while P, Q, R, S, T and U represent the blood vessels in the body.



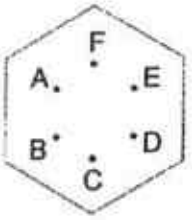
Which of the following correctly represents X and Y and the type of blood found in the blood vessels?

	X	Y	Blood Rich In Oxygen	Blood Rich In Carbon Dioxide
(1)	Heart	Lungs	P, S and T	Q, R and U
(2)	Lungs	Heart	P, R and T	Q, S and U
(3)	Heart	Lungs	P and R	Q, S, E and U
(4)	Lungs	Heart	P, R and U	Q, S and T

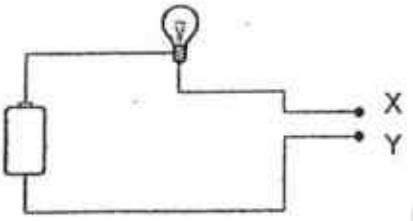
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9 Calvin used a circuit tester to test a circuit card. He connected Points X and Y of the circuit tester to the various clips A, B, C, D, E and F on a circuit card to see if the bulb would light up.



Circuit Card



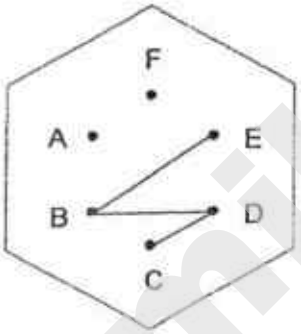
Circuit Tester

Calvin recorded the results of his experiment in the following table :

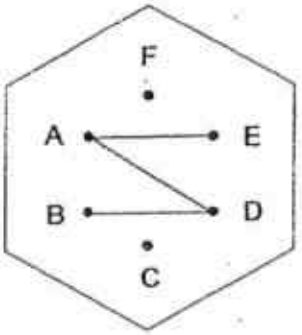
Clips Tested	Bulb of Circuit Tester
A and C	Did not light up
A and F	Did not light up
B and E	Lit up
C and E	Lit up
E and F	Did not light up

Which circuit card did Calvin use in his experiment?

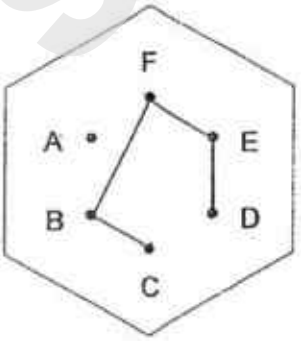
(1)



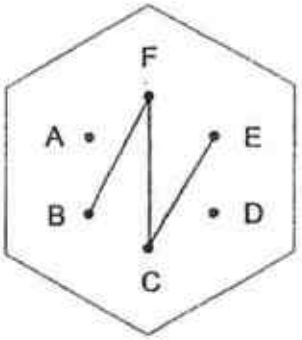
(2)



(3)



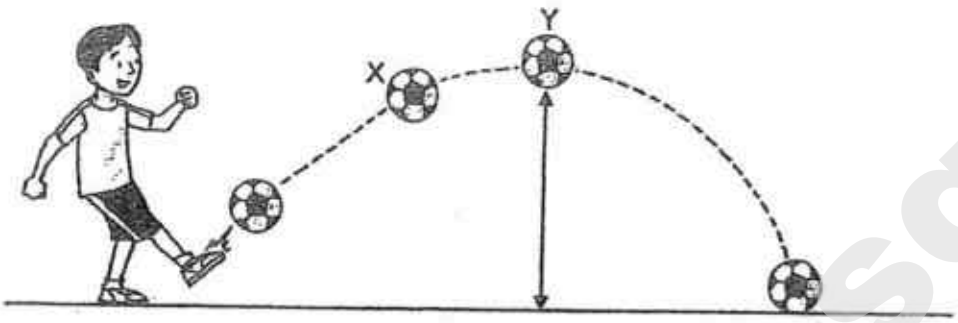
(4)



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10 Calvin kicked a soccer ball. The diagram below shows the path taken by the ball after he had kicked it. Points W, X, Y and Z are different points along the path taken by the ball.



Which of the following statements are true?

A A push force started the ball moving.
B At Point Y, the frictional force, acting on the ball, was downwards.
C Gravitational force and frictional force caused the ball to change direction.
D Gravitational force started acting on the ball at Point Y and stopped at Point Z.

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

11 The following organisms are found in a school's eco-garden pond :

- Mosquitoes
- Frogs
- Guppies (A type of fish)
- Tadpoles
- Mosquito larvae
- Duckweeds (a type of water plant)
- Water Hyacinths (a type of water plant)
- Water Lily (a type of water plant)

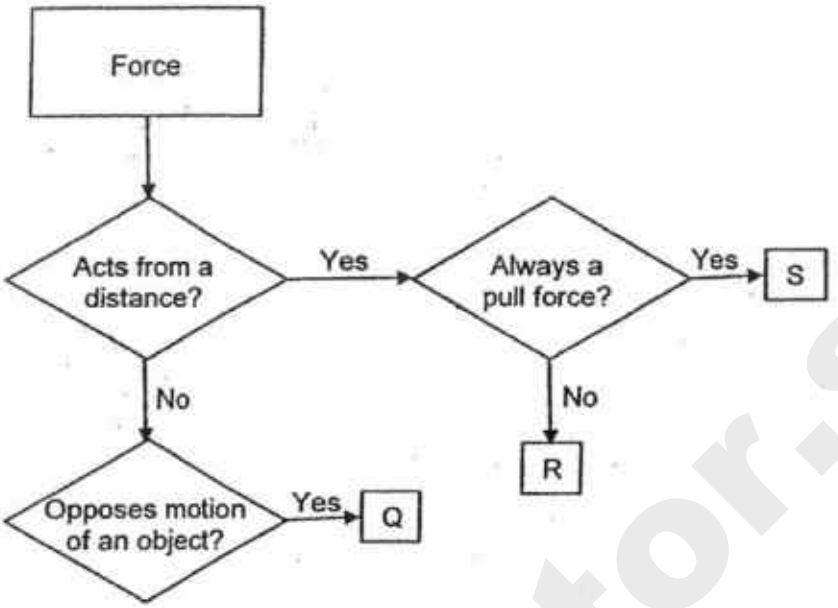
Which of the following statements about the school's eco-garden pond are true?

A All the organisms live in the water.
B There are 6 populations of organisms.
C The animals and plants in the pond form a community.
D There are more populations of animals than populations of plants.

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

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12 Study the flowchart below.



Which of the following correctly identifies the types of forces represented by Q, R and S?

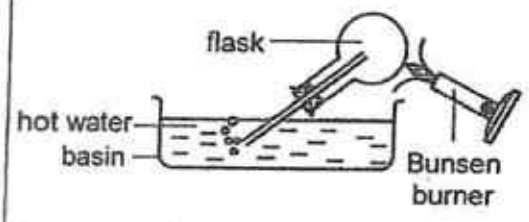
	Q	R	S
(1)	Magnetic force	Push force	Gravitational force
(2)	Frictional force	Gravitational force	Magnetic force
(3)	Magnetic force	Gravitational force	Push force
(4)	Frictional force	Magnetic force	Gravitational force

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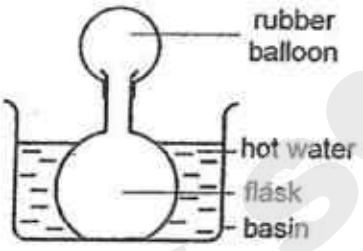
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13 Which of the following experiments can be used to show that heat causes air to expand?

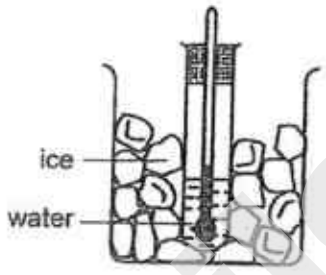
A



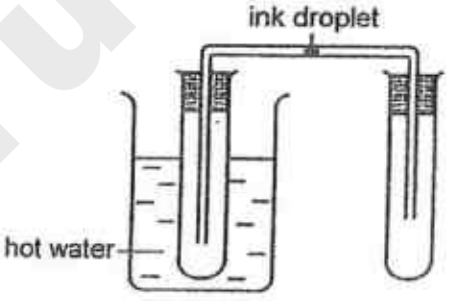
B



C



D

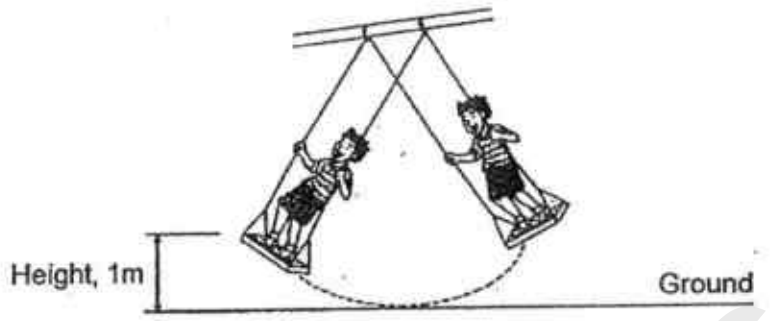


(1) A and B only
(2) B and C only
(3) A, B and D only
(4) A, C and D only

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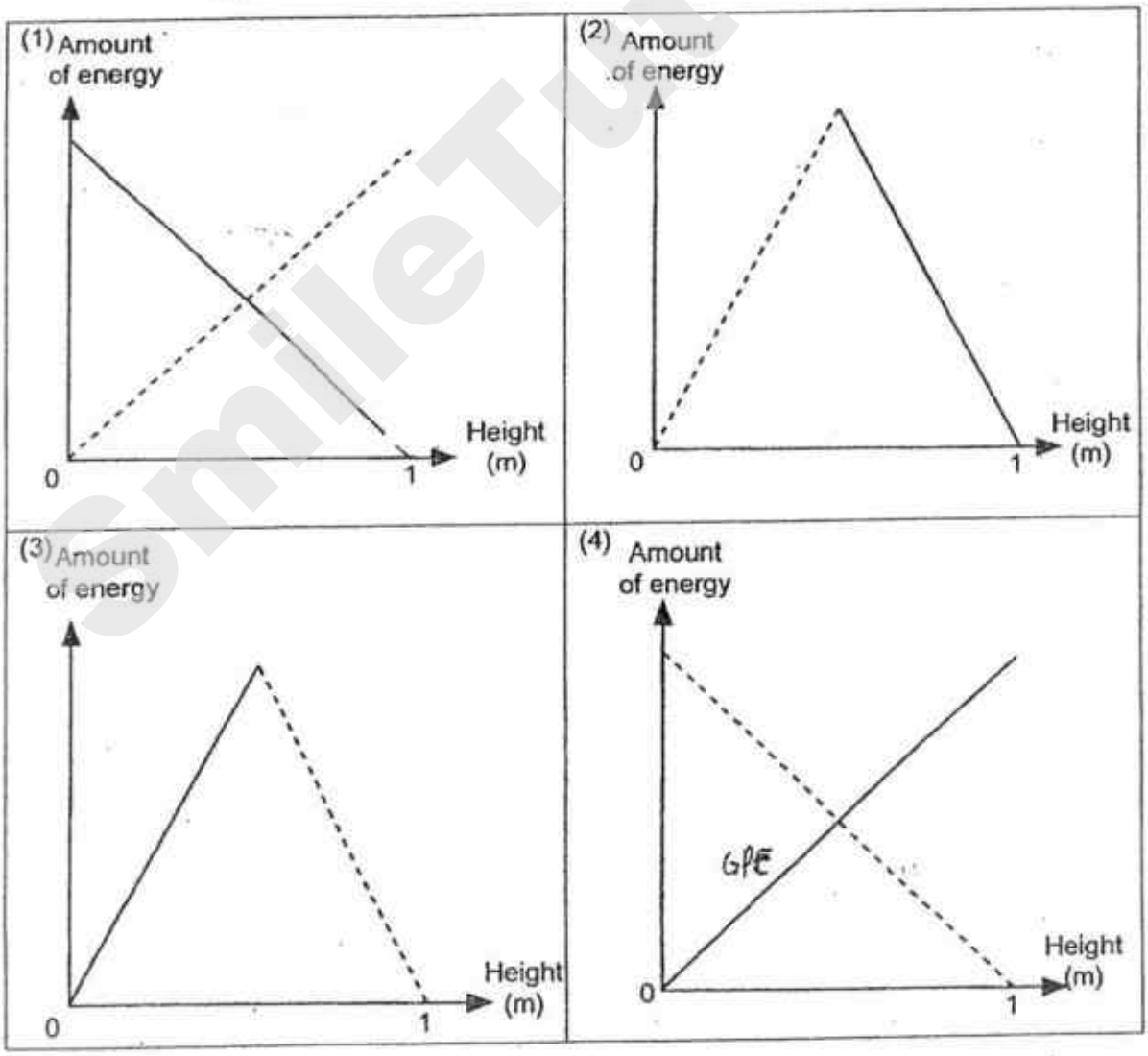
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14 George stood on a swing and moved to and fro through a height as shown in the diagram below.



Key :
Gravitational potential energy ——————
Kinetic energy - - - - - - - - - -

Which of the following graphs correctly shows the amounts of gravitational potential energy and kinetic energy of the swing as it changes with height?



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CONTINUAL ASSESSMENT 1 (2017)
PRIMARY 6

SCIENCE

BOOKLET B

THURSDAY **23 FEBRUARY 2017** **1 Hour**

Name: _____ ( ) Class : 6.( ) Parent's Signature:_____

INSTRUCTIONS TO PUPILS

DO NOT TURN OVER THE PAGES UNTIL YOU ARE TOLD TO DO SO

Follow all instructions carefully.

There are 7 questions in this booklet.

Answer **ALL** questions.

INFORMATION FOR PUPILS

The number of marks is given in brackets [ ] at the end of each question or part question.

The total marks for this booklet is 22.

The total time for Booklets A and B is 1 hour.

This question paper consists of 8 printed pages (inclusive of cover page).

Booklet	Possible Marks	Marks Obtained
A	28	
B	22	
Total	50	

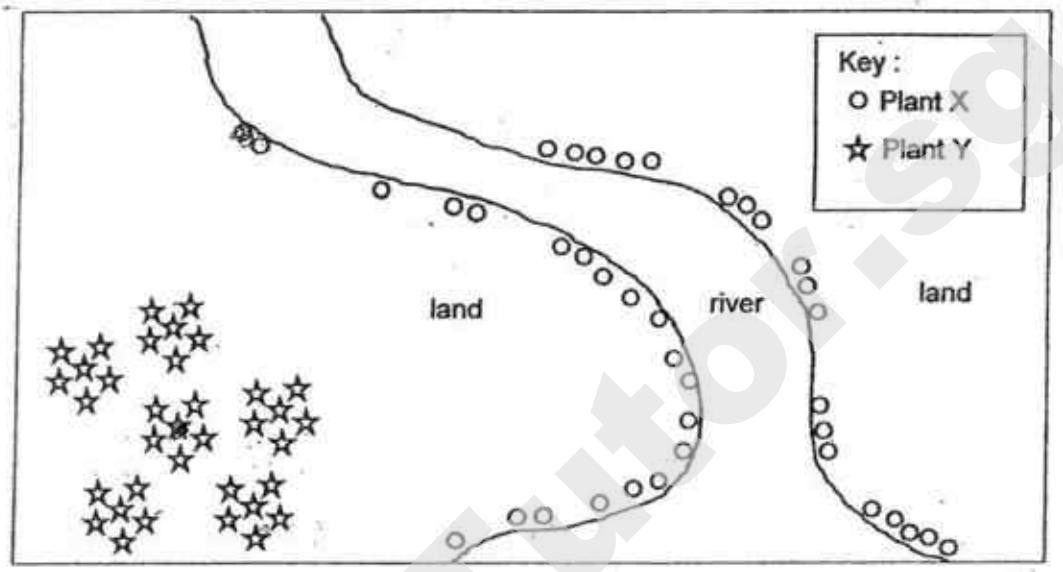
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Booklet B (22 marks)

For questions 15 to 21, write your answers in this booklet.
The number of marks awarded is shown in the brackets [ ] at the end of each question or part question.

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15 Two types of plants, X and Y are found in an area as shown in the map below.



(a) Based on your observation of the map above, state the method of seed dispersal for plants X and Y. Give a reason for the method of seed dispersal stated. [2]

Plant	Method of Seed Dispersal	Reason
X		
Y		

(b) Explain clearly how seed dispersal helps to ensure the survival of the next generation of plants. [1]

_____

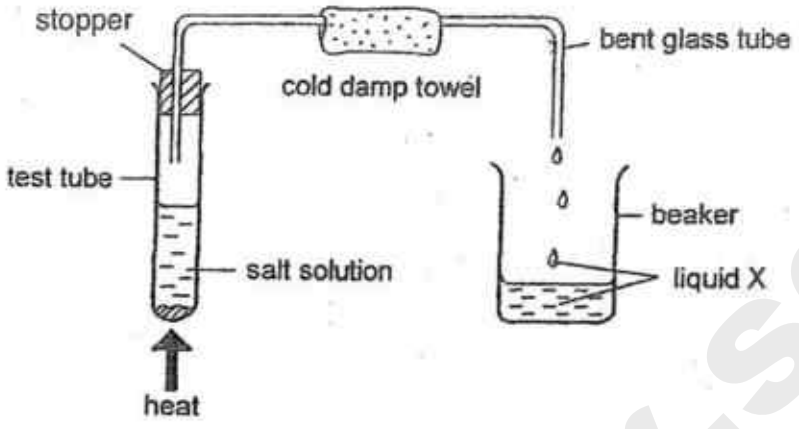
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SCORE	/ 3

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16 Study the set-up shown in the diagram below.



(a) What is liquid X? Explain clearly how liquid X is collected in the beaker. [2]

(b) Suggest 2 ways that the above set-up can be changed so that more liquid X can be collected in a shorter time. [1]

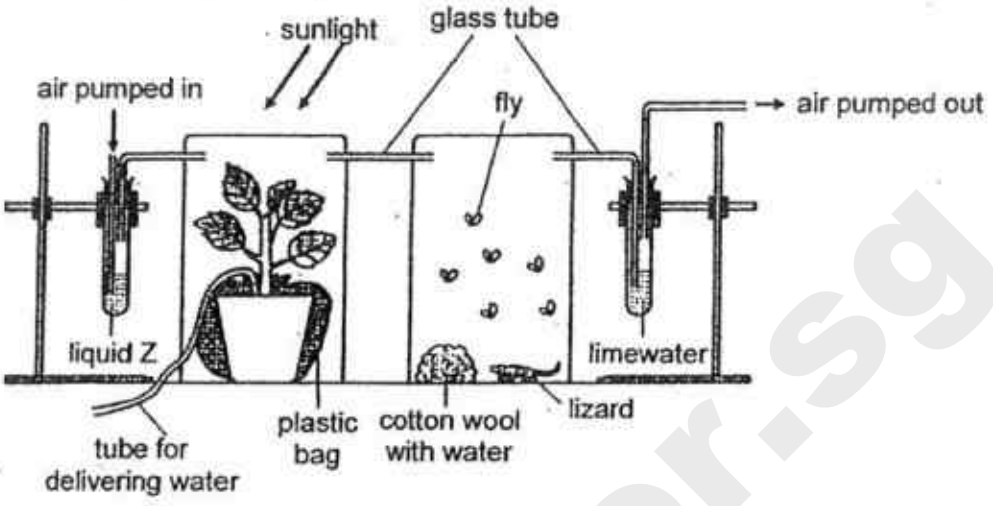
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SCORE	/ 3

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17 Tom used the following set-up to carry out an experiment.



(a) Liquid Z was used to remove a gas which was required for the lizard's survival. Name that gas. [1]

_____

(b) Predict what would happen to the lizard if the set-up above was placed in a dark room. Explain your prediction. [2]

_____

_____

_____

_____

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SCORE	
	3

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18 Study the two diagrams below.

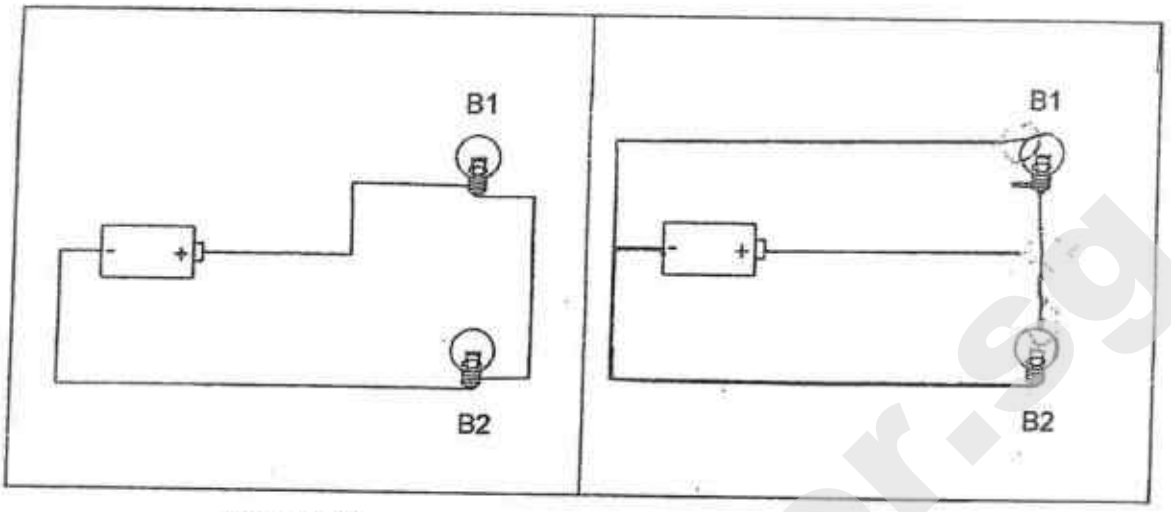


Diagram X

Diagram Y

(a) How are the bulbs B1 and B2 arranged in Diagram X? [1]

(b) Draw wires to connect the battery and bulbs B1 and B2 in Diagram Y so that the bulbs will be brighter than those in Diagram X. State the name of this arrangement below. [1]

(c) Which arrangement is more advantageous than the other? Give 1 reason (other than that given in 18 (b) above) to justify your answer. [1]

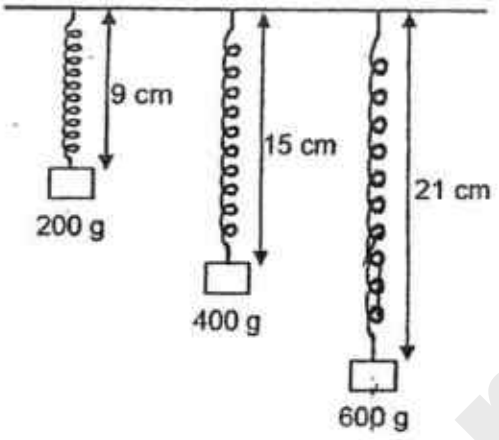
(d) Mark an "X" in Diagram Y to represent the position a switch that will control both Bulbs B1 and B2 at the same time. [1]

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SCORE	/ 4

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19 The diagram below shows how the length of a spring changes when 3 different masses were hung on it.



(a) State the forces acting on each of the masses. [1]

_____

(b) What is the original length of the spring? [1]

_____

(c) (i) Use the information in the above diagram to complete the table below. [½]

Mass (g)	Length of spring (cm)
	18

(ii) What will be the extension of the spring if 700g is added to the original spring? [½]

_____

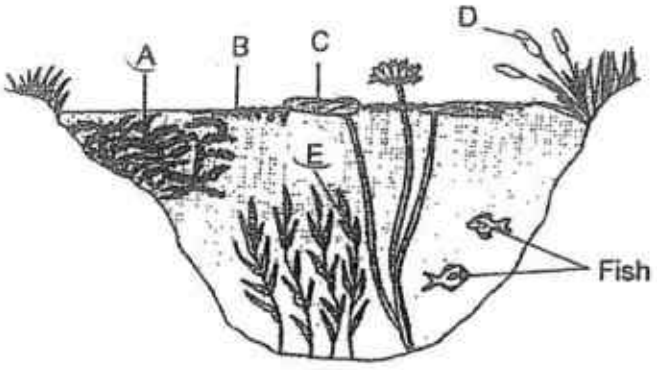
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SCORE	/ 3

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20 The diagram below shows five plants growing in and around a pond. There are also many small fish living in the pond.



(a) It was found that plants A and E grow best when there was carbon dioxide present in the pond water. Explain why. [1]

_____

_____

(b) Describe two possible sources of carbon dioxide in the pond. [1]

_____

_____

(c) Which plants will be severely affected if the population of plant C were to increase rapidly? Explain your answer. [1]

_____

_____

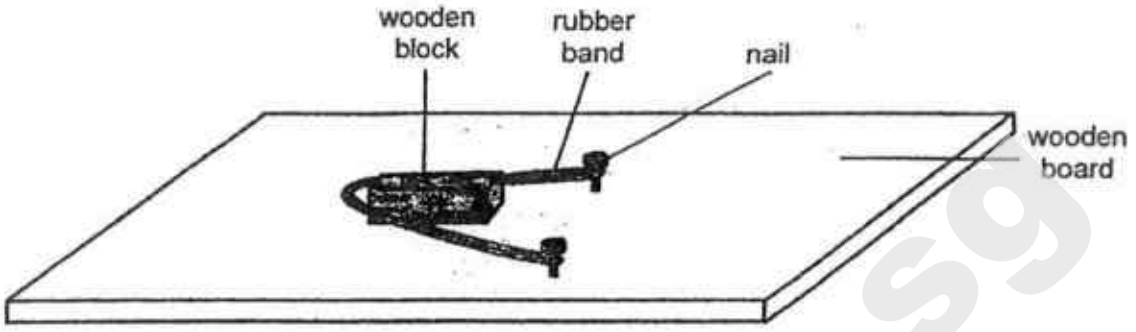
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SCORE	
	3

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21 Jack made a toy catapult by attaching a rubber band to two nails which had been driven into a wooden board as shown in the diagram below. He pulled the rubber band back with the wooden block before releasing it.



(a) State the forces acting on the wooden block after it is released. [1]

_____

_____

(b) Fill in the blanks to show the correct energy conversions that occur. [1]

_____ energy (in the stretched rubber band) → _____ energy (in the moving wooden block) + _____ energy + _____ energy

(c) State two ways how Jack can make the original wooden block travel further. [1]

_____

_____

End of paper

SCORE	/ 3

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LEVEL : PRIMARY 6
SCHOOL : ANGLO-CHINESE SCHOOL (JUNIOR)
SUBJECT : SCIENCE
TERM : CA1

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7
4	3	3	2	2	4	4
Q8	Q9	Q10	Q11	Q12	Q13	Q14
4	1	2	2	4	3	4

Booklet B

Q15 (a)

Plant	Method of Seed Dispersal	Reason
X	Water	Plant X can only be found by the river, showing that the seeds were most likely dispersed by water.
Y	Spliting	Plant Y are clustered around each other, showing that the seeds were split.

(b) It makes sure that there is no overcrowding and competition for space, water, nutrients and light.

Q16 (a) Liquid X is water. The water in the salt solution gained heat from the test tube and evaporated into water vapour which condensed in the cool glass tube. The water then flowed into the beaker.

(b) Place more cold damp towels on the glass tube.

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Q17 (a) The gas is oxygen. Without it the lizard will die because it cannot respire.

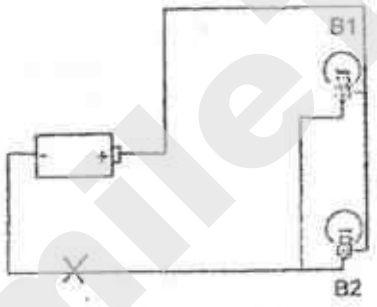
(b) The lizard would die. As plants can only make food and oxygen in the presence of light, placing it in a dark room does not allow oxygen to be produced. Hence, without oxygen the lizard will die.

Q18 (a) They are arranged in series.

(b) It is arranged in parallel.

(c) Parallel arrangement. If one bulb fuses, the other will still light up.

(d)



Q19 (a) Gravitational and elastic spring forces.

(b) It is 3 cm.

(c) (i)

Mass (g)	Length of spring (cm)
500g	18

(ii) 21 cm

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ACS CHI

Q20 (a) This is because plants A and E need carbon dioxide to make food for itself and it cannot be taken in if it is not in the water.

(b) The fishes and the plants.

(c) Plants A and E. A and E will be affected because there is little light reaching it, making it unable to make much food for survival.

Q21 (a) Frictional and gravitational forces.

(b) Potential energy → Kinetic energy + Heat energy + Sound energy

(c) Jack can put oil on the wooden board or stretch the block further.

End

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CONTINUAL ASSESSMENT 1 2017
PRIMARY SIX
SCIENCE

Name : _____ ( )

Class : Primary 6 / ___

Date : 1 March 2017

Duration : 1 hr 45 min

MARKS	
Sect A:	/ 56
Sect B:	/ 44
Total :	**/ 100**

Parent's Signature : _____

Section A: (28 x 2 marks = 56 marks)

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

1. Study the classification table below carefully.

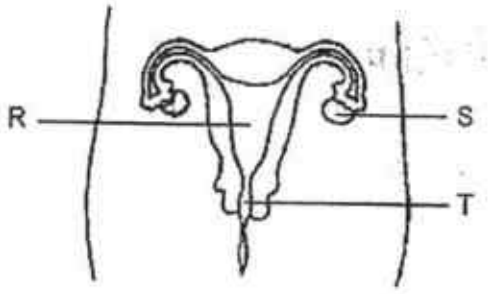
Group A	Group B
 Honeydew Melon  Chilli  Lady's finger	 Bread mould  Mushroom  Fern

Which of the following headings correctly represent groups A and B?

	Group A	Group B
(1)	Fruit	Fungi
(2)	Edible	Inedible
(3)	Dispersed by water	Dispersed by wind
(4)	Reproduce by seeds	Reproduce by spores

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2. The diagram below shows the female human reproductive system.

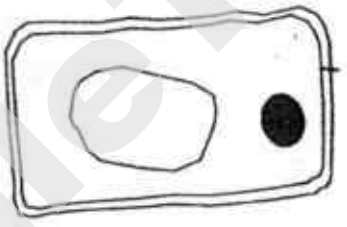


Which of the following statement(s) is/are correct?

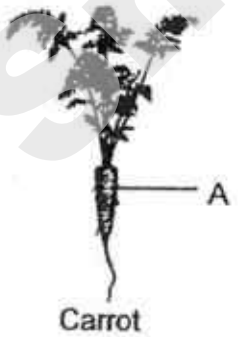
A Fertilisation takes place at T.
B The unfertilised eggs are produced by S.
C The developing baby develops in R for about nine months.

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

3. The diagram below shows a plant cell.



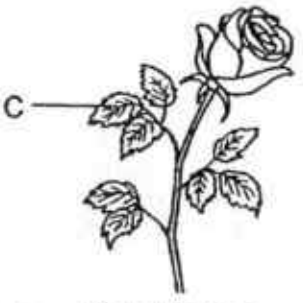
The pictures below show parts of plants where the cell could have been taken from.



Carrot



Seeds



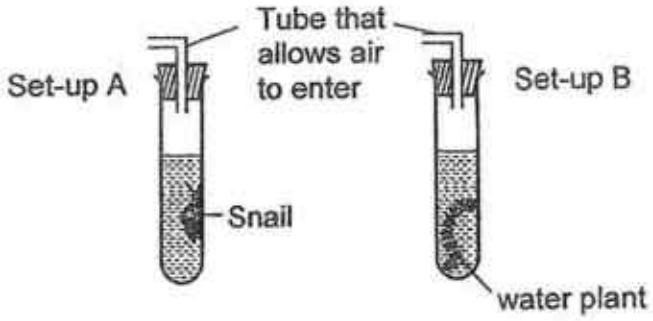
Rose Flower

Which part(s) could the cell be taken from?

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

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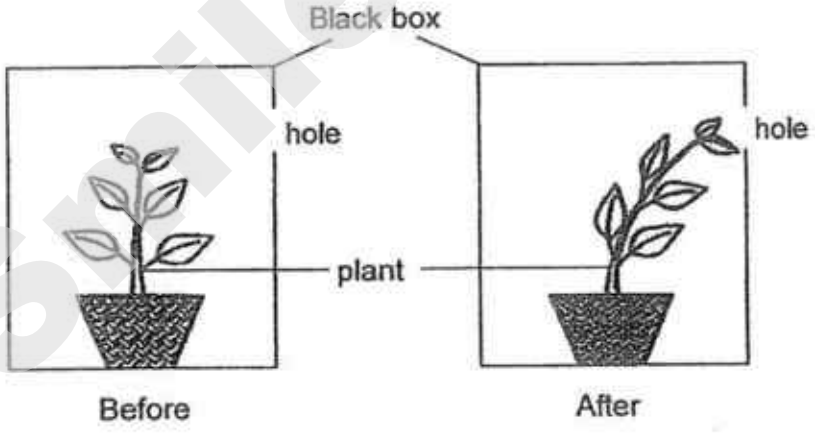
4. A snail and a water plant were placed into two identical test tubes containing the same amount of water as shown in the diagram below. Both test tubes were placed in a brightly lit room for a week.



Based on the experiment above, which statement is true?

(1) The snail would die first as it has no food whereas the water plant could make its own food.
(2) The plant would die first as there was no snail to provide carbon dioxide for it to photosynthesize.
(3) The snail would die first as the dissolved oxygen in the water was used up by the snail for respiration.
(4) The snail and the plant would die at the same time as the dissolved oxygen in the water was used up for respiration.

5. A plant was placed in a black box with a hole made on the right side as shown in the diagram below. The boxes were placed by the window for three days.



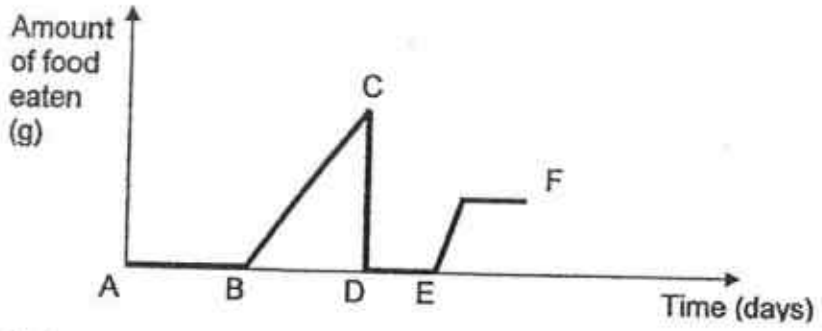
Which of the following can be concluded from the observation above?

A Plants can make food.
B Plants can respond to changes.
C Plants need food, water and sunlight.

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

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6. The graph below shows the amount of food eaten at various stages in the life cycle of the butterfly.

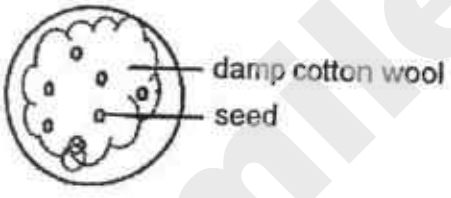


Which part of the line graph shows the larva and pupa stages?

	Larva stage	Pupa stage
(1)	AB	BC
(2)	BC	DE
(3)	CD	DE
(4)	AB	EF

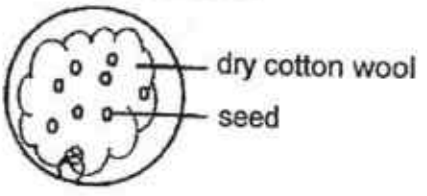
7. Jack wants to set up an experiment to find out if seeds need light to germinate. He prepared four petri-dishes as shown below.

placed under light



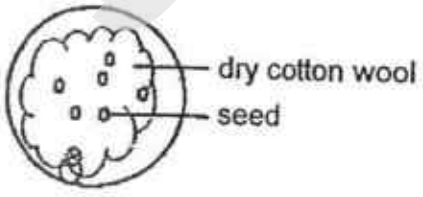
A

placed in darkness



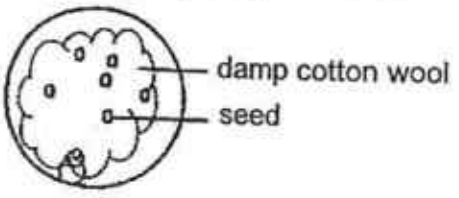
B

placed under light



C

placed in darkness



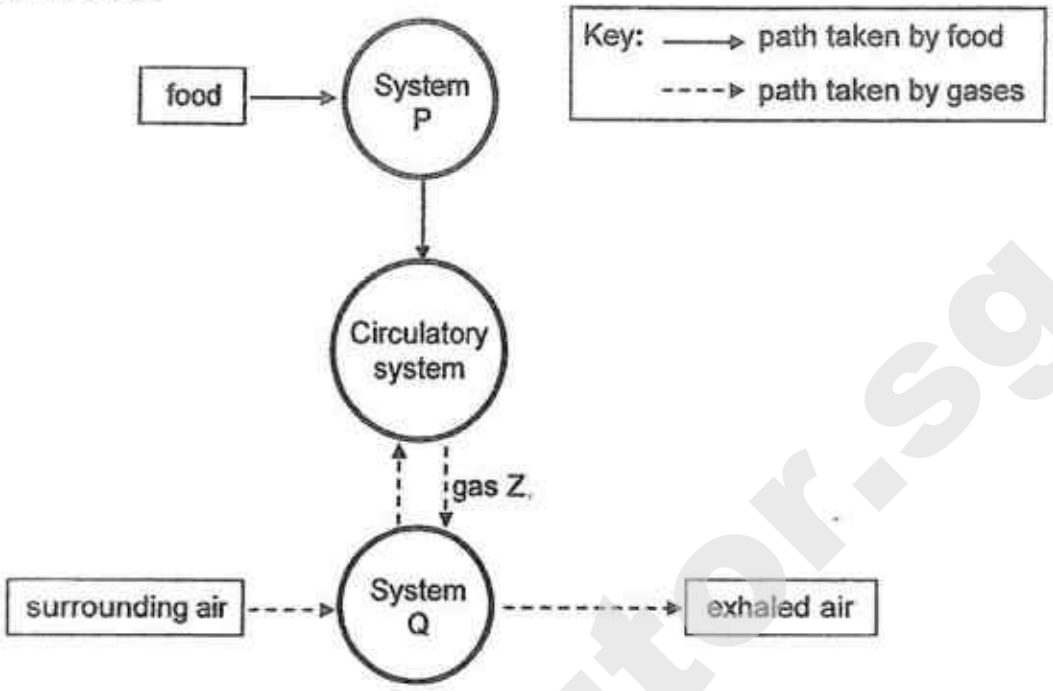
D

Which two petri-dishes should he choose for his experiment?

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

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8. The diagram below shows how food and various gases are transported in the human body.



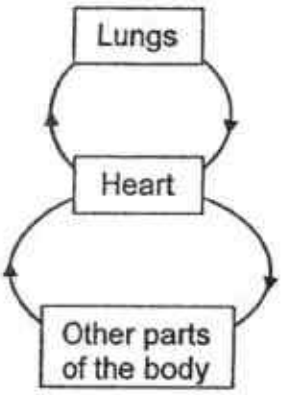
Identify system P, system Q and gas Z.

	System P	System Q	Gas Z
(1)	Digestive	Respiratory	Oxygen
(2)	Respiratory	Digestive	Oxygen
(3)	Respiratory	Digestive	Carbon dioxide
(4)	Digestive	Respiratory	Carbon dioxide

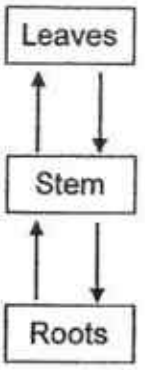
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9. The diagrams below show the direction of the flow of materials in the human circulatory system and the plant transport system.



Human Circulatory System



Plant Transport System

Which statement(s) about the two systems is/are correct?

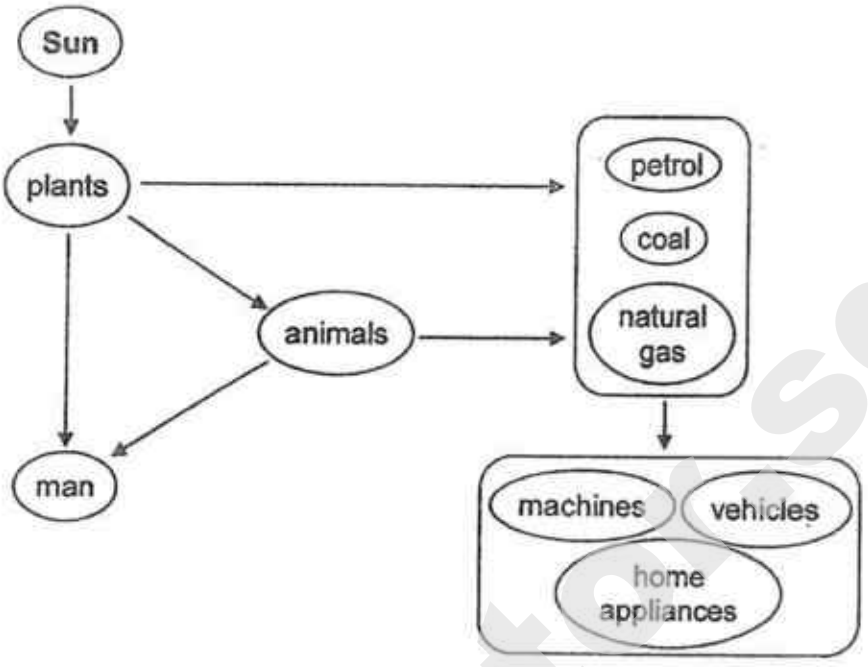
A Both systems transport exactly the same materials.
B The plant transport system has two different types of tubes whereas the human circulatory system has blood vessels.
C The human circulatory system has a heart to move materials around whereas the roots pump materials from the soil up to the leaves.

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

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10. Study the diagram below carefully.



Based on the diagram, which statements are true?

A The Sun is the main source of energy.
B The arrows show how food is obtained.
C The arrows show the direction of energy transfer.

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

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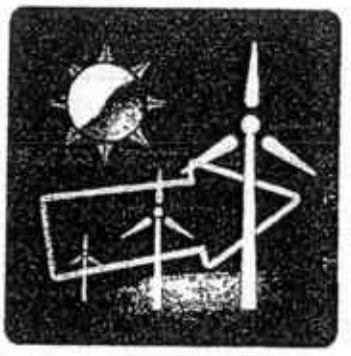
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11. There has been a lot of focus on alternative sources of energy such as the Sun and the wind.

Solar Energy



Wind Energy



Which of the statements below explain why there is so much focus on harnessing energy from the Sun and the wind?

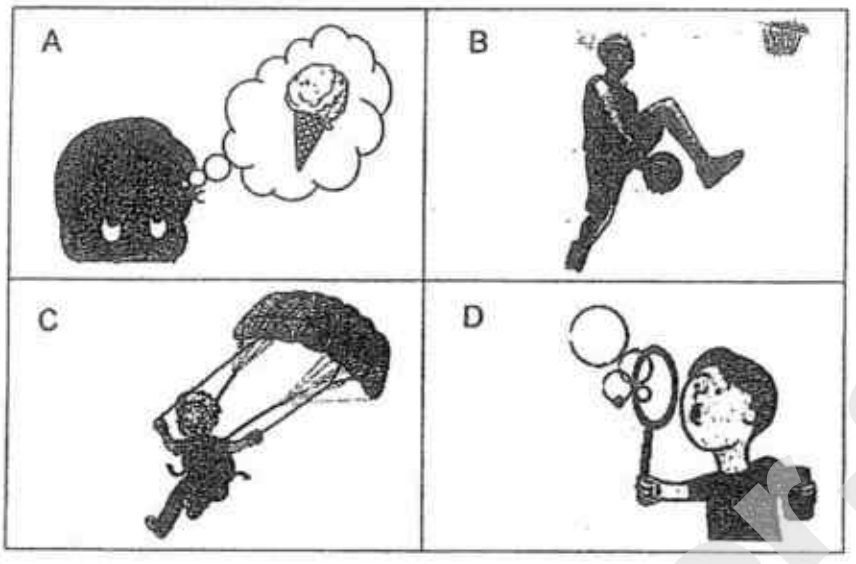
A Wind and sunlight are easily available.
B New technologies are more interesting to use.
C We have plenty of land to build wind turbines and solar panels.
D We cannot rely on the same source of energy which can run out one day.

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

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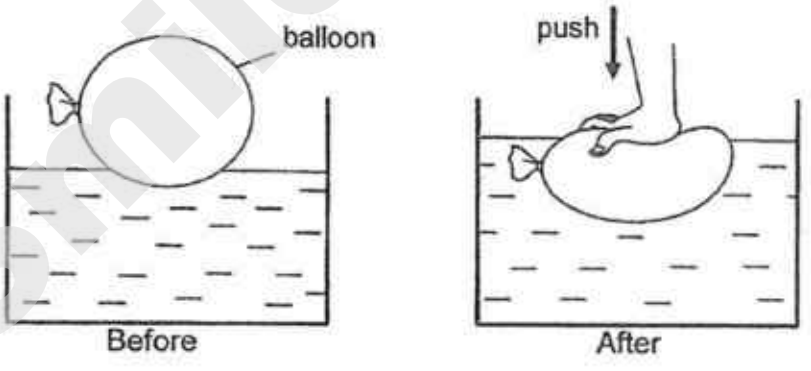
12. Study the diagrams below carefully.



Which activity **does not** involve a force?

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

13. The diagram below shows someone pushing a balloon into a container of water.



What is/are the effect(s) of the force on the balloon?

A Stop a moving balloon
B Move the stationary balloon
C Change the shape of the balloon

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

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14. The diagram below shows a girl jumping on a trampoline.



What force(s) is/are involved that enabled the girl to do the activity?

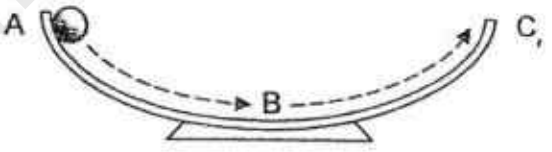
(1) Gravitational force only
(2) Gravitational force and frictional force only
(3) Elastic spring force and frictional force only
(4) Gravitational force, elastic spring force and frictional force

15. During a science lesson, each pupil was given a bulb, two batteries and all the other necessary parts to make a circuit that would light up the bulb.

If all the parts are connected but the bulb did not light up, what could be a possible reason?

(1) Only one battery was used.
(2) A switch was not added to the circuit.
(3) Some rubber covering around the wire had come off.
(4) The same terminals of the batteries were facing each other.

16. A ball which is released in a bowl at point A rolls to B and then to C as shown below.

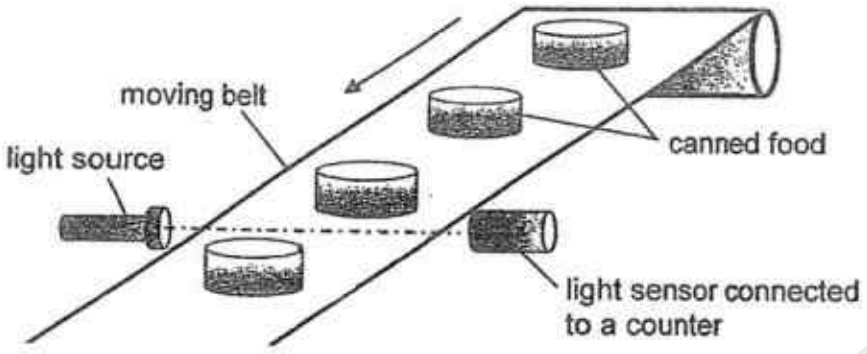


Which of the following correctly shows the changes in the potential energy and kinetic energy of the ball as it rolls from A to C?

	Change in kinetic energy from A to B	Change in potential energy from B to C
(1)	increase	increase
(2)	decrease	decrease
(3)	decrease	increase
(4)	increase	decrease

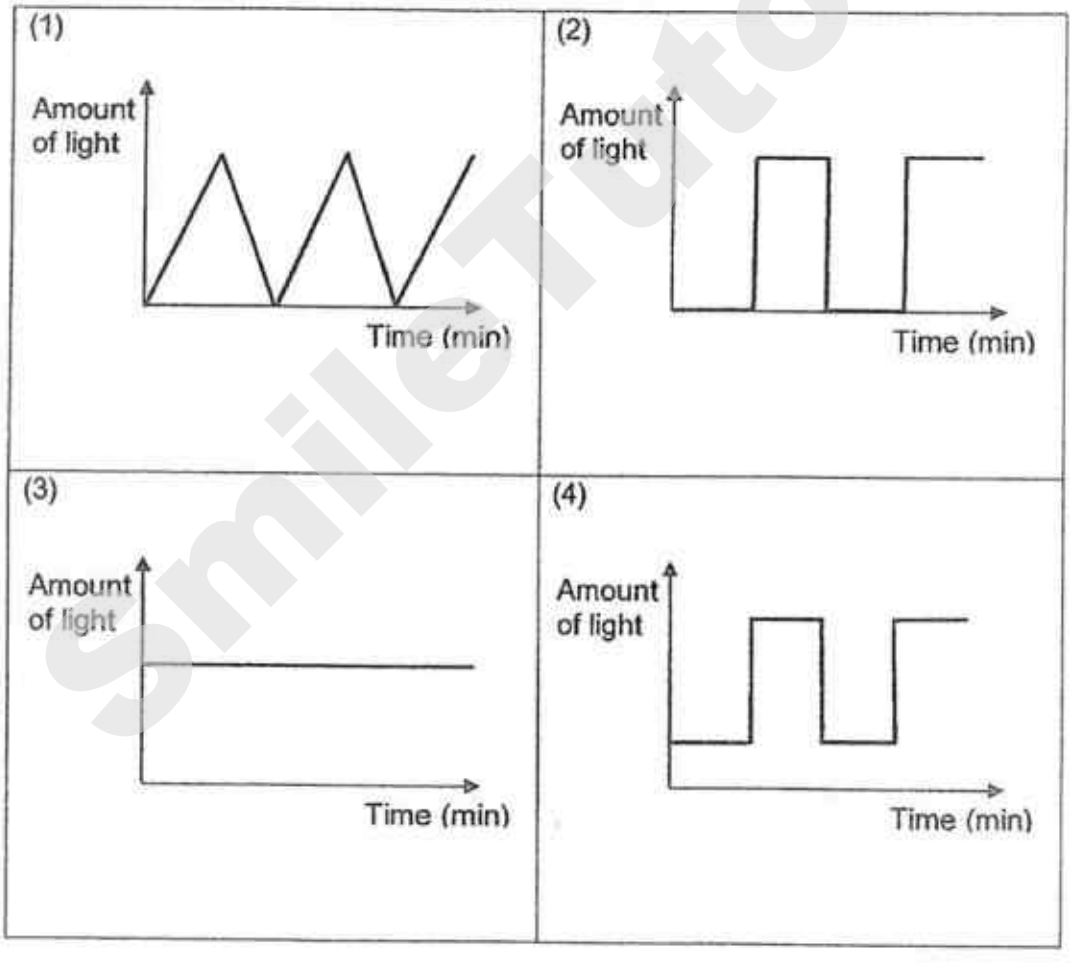
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17. The diagram below shows a set-up that uses a light sensor to count the number of identical canned food moving on a belt.



The belt moves at a constant speed. When a can is between the light source and the sensor, it blocks the light from reaching the sensor.

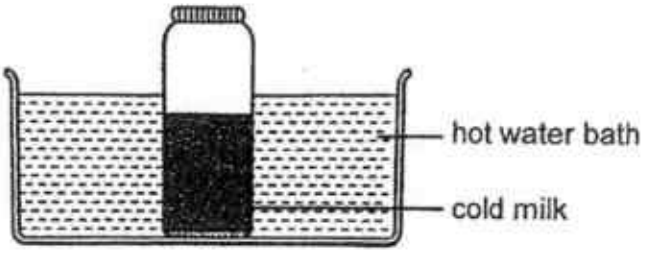
Which graph correctly shows the data recorded by the light sensor?



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18. A bottle of cold milk is placed in a hot water bath.



Which statements correctly describe what will happen in the set-up?

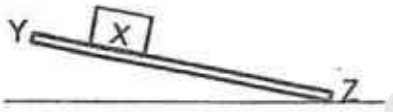
A Heat travelled from the water to the milk.
B The temperature of the milk will increase.
C The temperature of water will not change since there is a lot of water.
D The temperature of the milk and the water will eventually be the same.

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

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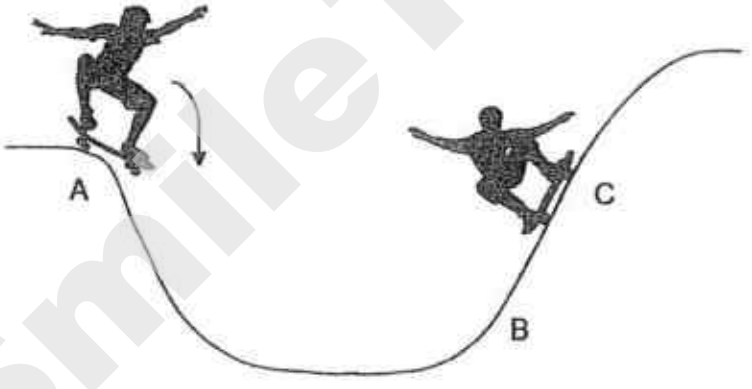
19. Clara conducted an experiment using a wooden block X and a flat wooden plank YZ. In Figure 1, block X was placed on wooden plank YZ that was placed horizontally. He raised the end Y of the plank slightly as shown in Figure 2 but the block did not slide down.

Figure 1	Figure 2
	

Which of the following statements is/are correct?

(1) Frictional force acted on block X in Figure 1.
(2) Frictional force acted on block X in Figure 2.
(3) No frictional force acted on block X in Figure 1 and Figure 2.
(4) There is more frictional force between block X and the plank in Figure 1 than in Figure 2.

20. Gravitational force acted on the skateboarder so he moved down from point A.



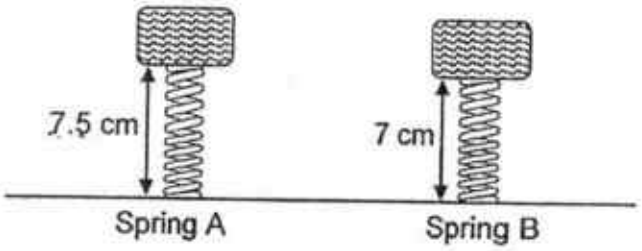
When the skateboarder is moving from B to C, what is/are the force(s) acting on him that slows him down?

A Magnetic force
B Frictional force
C Gravitational force

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

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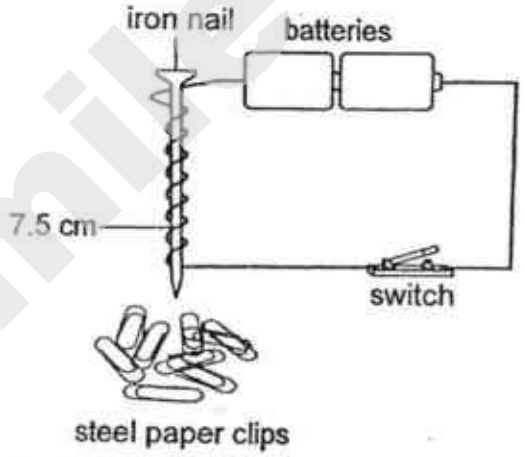
21. Pria conducted an experiment on springs A and B that have the same original length of 8 cm. She placed identical wooden blocks on both springs as shown below.



As she continued to add more identical wooden blocks to both springs, which statement is true?

(1) For every wooden block added, the length of Spring A was longer than Spring B.
(2) When the same load was added to both springs, Spring B compressed less than Spring A.
(3) If more load was added to both springs, Spring A would be completely compressed first.
(4) When the first wooden block was placed on both springs, Spring B stretched less than Spring A.

22. Isaac carried out an experiment using an electromagnet he made to attract as many paper clips as possible.



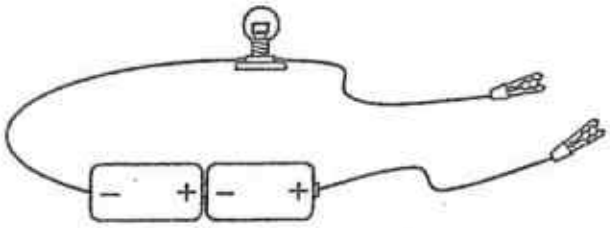
Which of the method(s) will **not** enable the iron nail to attract more paper clips?

A Use a longer iron nail.
B Add another battery in series to the batteries.
C Increase the length of the wire connecting every part in the circuit.
D Keep the switch closed for a longer time to magnetise the iron nail.

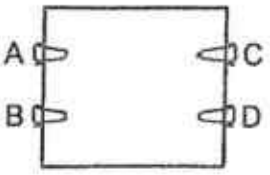
(1) B only
(2) A, B and C only
(3) A, C and D only
(4) B, C and D only

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23. A circuit card is tested with a circuit tester and the results are recorded in the table below.



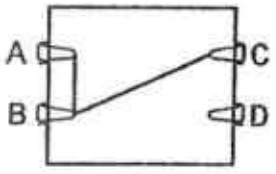
Circuit Tester



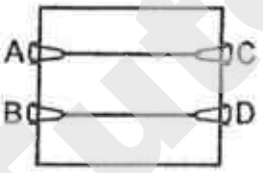
Circuit card

Pairs of clips	Did the bulb light up?	
	Yes	No
A and C	✓	
B and D		✓
C and D	✓	

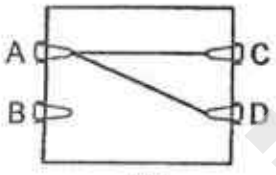
Which of the following can the circuit card be?



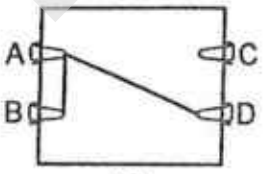
(1)



(2)



(3)

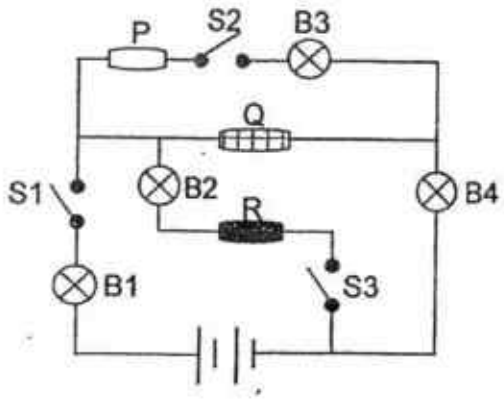


(4)

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24. The diagram below shows a simple circuit.



The table below shows the bulbs that lit up when various switches were closed.

Switches that were closed	Bulbs that lit up
S1	None
S1, S2	B1, B3, B4
S1, S3	B1, B2

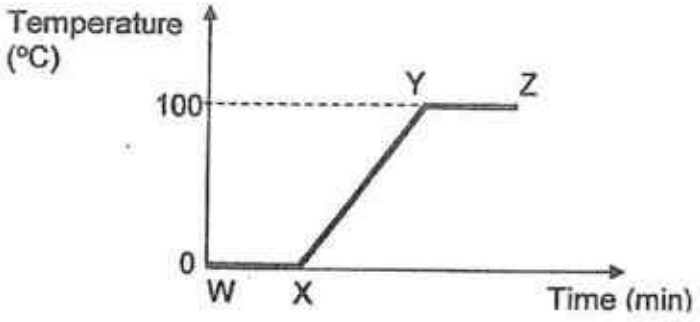
Based on the observations, which of the following correctly identify the electrical conductor(s) and insulator(s)?

	Electrical conductor	Electrical insulator
(1)	P, R	Q
(2)	Q	P, R
(3)	P, Q	R
(4)	R	P, Q

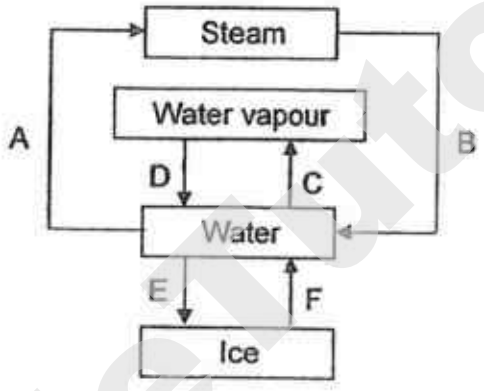
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25. Some ice is placed in a beaker and heated over time. The graph below shows the change in temperature over time.



In the diagram below, A, B, C, D, E and F represent the processes responsible for the change of state of water.

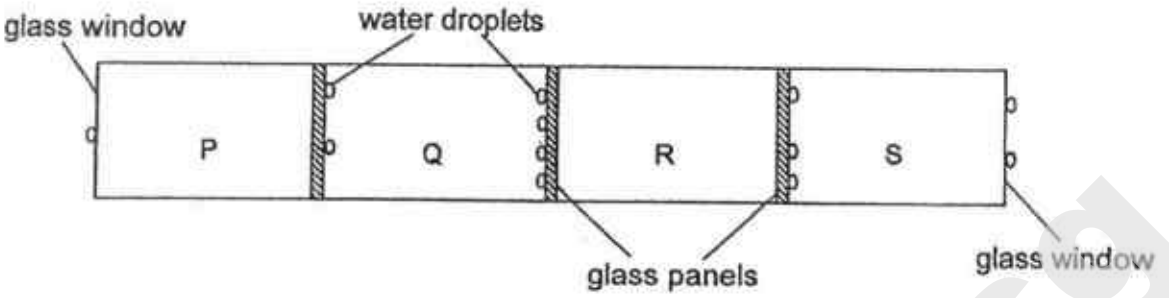


Which of the following correctly matches the processes, A, B, C, D, E and F, to the various parts of the graph?

	WX	XY	YZ
(1)	F	D	C
(2)	E	C	A
(3)	E	D	B
(4)	F	C	A

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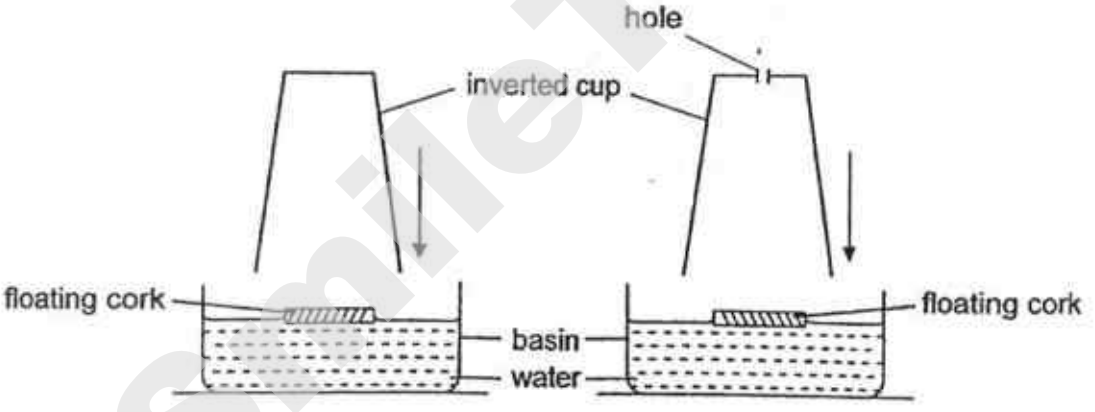
26. Four rooms, P, Q, R and S, are separated by 3 glass panels. Water droplets were formed on different sides of the glass panels as shown in the diagram below.



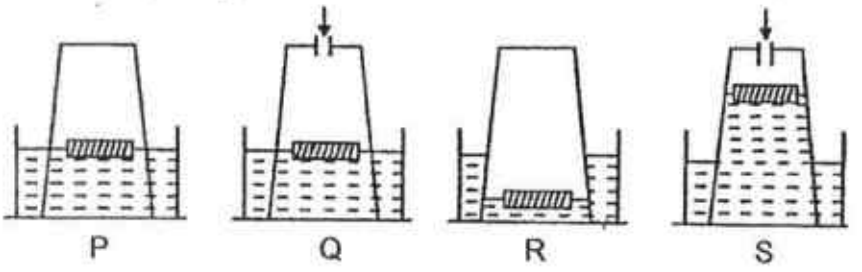
Which is the coldest room?

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

27. The diagram below shows two inverted cups, one with a hole at the bottom and one without, being pushed into a basin of water with a piece of cork floating on the water.



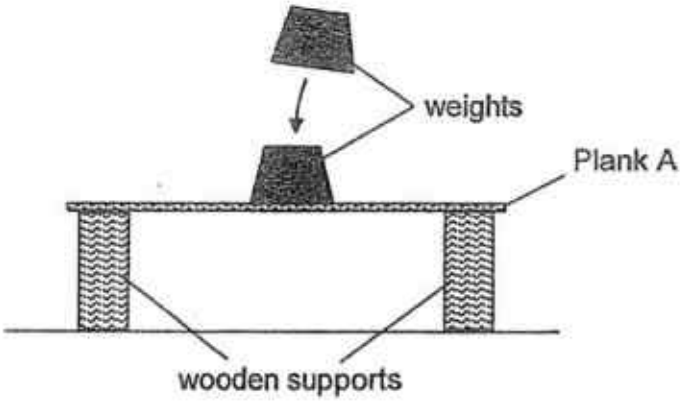
Which of the diagrams show the possible outcomes after the inverted cups are pushed completely into the basin?



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

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28. Matthew prepared the set-up below.



He kept stacking weights in the middle of the plank until it broke and recorded the number of weights needed to break it. He then replaced the plank with Plank B, which is made of another material, and repeated the experiment.

Based on the experiment, which statement is correct?

(1) The variable changed in the experiment is the number of weights.
(2) The plank that broke with more weights stacked on top is more flexible.
(3) The aim of the experiment is to find out if Plank A was stronger than Plank B.
(4) The plank that broke with fewer weights stacked on top is made of a stronger material.

End of Section A

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CONTINUAL ASSESSMENT 1 2017
PRIMARY SIX

SCIENCE

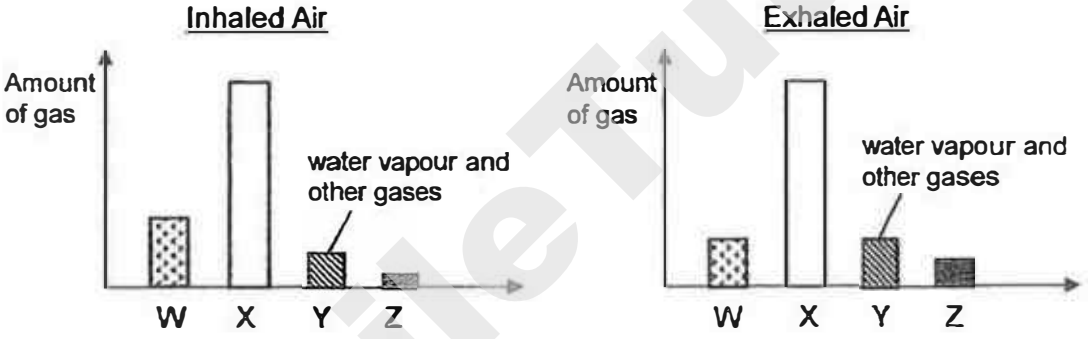
MARKS
44

Name : _____ ( )

Class : Primary 6 / ____

Section B: (44 marks)
Write your answers to questions 29 to 41.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

29. Inhaled air is the air we breathe in from the surroundings and exhaled air is the air that we breathe out. The graphs below show the amount of four gases, W, X, Y and Z, in the air that is inhaled and exhaled.



(a) The amount of gas Z increased in the exhaled air as compared to the inhaled air. What is gas Z? [1]

_____

(b) In the exhaled air, gas W is the only gas that decreased in amount as compared to the inhaled air. What is gas W and why did it decrease? [2]

_____

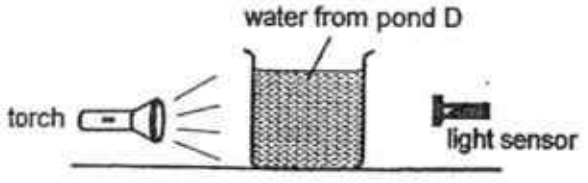
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_____

Score	3

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30. Francis used a beaker and collected some water from pond D. He shone a torch at the beaker of water and used a light sensor to measure the amount of light that passed through it as shown in the diagram below.



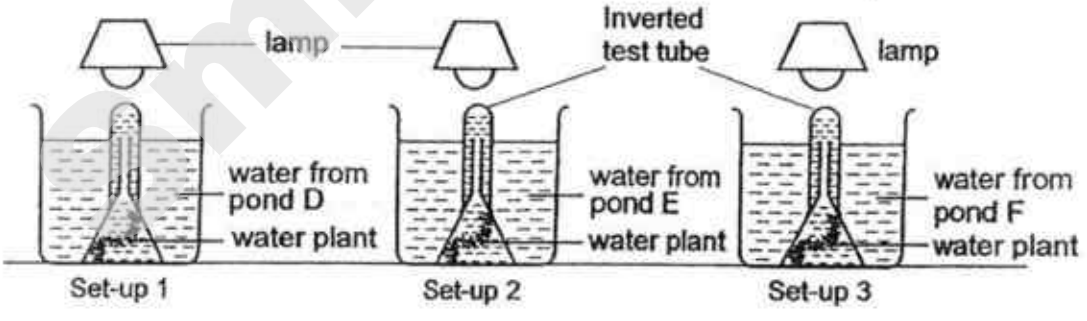
Francis repeated the experiment with water taken from ponds E and F and recorded the results in the table below.

Pond water	Amount of light (lux)
D	5000
E	900
F	10000

(a) Based on the table above, which pond has the clearest water? Give a reason for your answer.

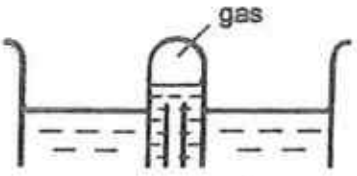
[1]

Francis then conducted another experiment using the following set-ups and water from ponds D, E and F. He left the set-ups in a dark room for 12 hours. Except for the type of pond water, all other conditions of the three set-ups were similar.



(b) Which water plant will photosynthesise the least? Explain your answer. [2]

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(c) At the end of the experiment, some gas was collected in each of the inverted test-tubes.

i) What is this gas? [1]

_____

ii) Explain this observation. [1]

_____

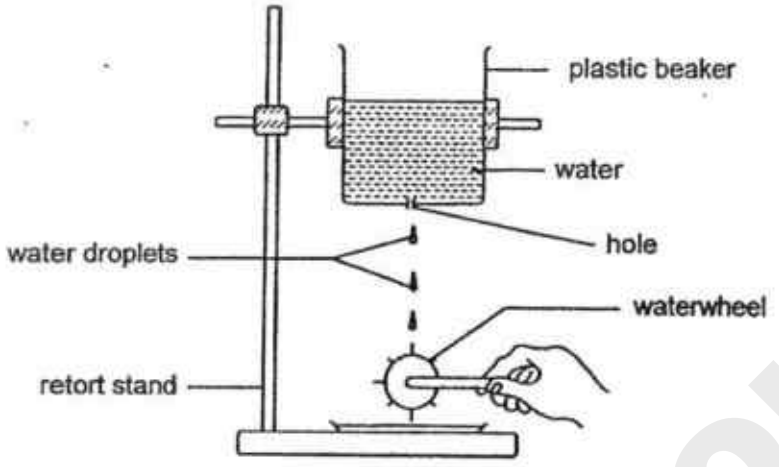
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Score	5

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31. A waterwheel is held below a beaker of water. Water is dripping from a hole at the bottom of the plastic beaker.



(a) The waterwheel will spin when the water droplets fall on it. Identify the form(s) of energy possessed by the following: [1]

Water in the plastic beaker: _____

Water droplets: _____

(b) Without moving or making any changes to the waterwheel, suggest a way to make the waterwheel spin faster. [1]

_____

(c) Explain your answer in (b) clearly in terms of energy conversion. [2]

_____

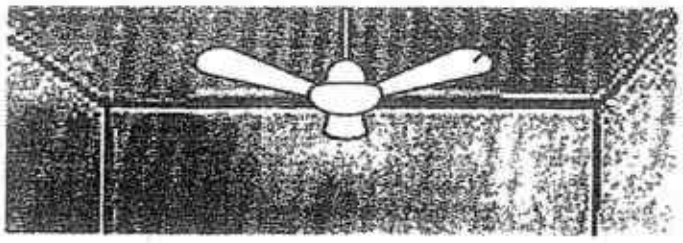
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_____

Score	4

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32. The diagram below shows a ceiling fan.



(a) What form(s) of energy do the blades of the ceiling fan possess when the fan is spinning? [1]

_____

(b) After switching off the fan, why did the fan continue spinning for a while before stopping? [1]

_____

_____

(c) Explain in terms of energy why the fan finally stopped spinning after a short while? [1]

_____

_____

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Score	3

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33. Jeanie attended an art lesson that required her to draw with a pencil.



(a) What is the effect of the force exerted on the pencil when she started drawing? [1]

_____

(b) Jeanie made sure she sharpened her pencil before she started drawing. However, after some time, the pencil lead became shorter and blunt. Explain this observation clearly. [2]

_____

_____

_____

Score	/ 3

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34. The diagram below shows a satellite revolving around the Earth.



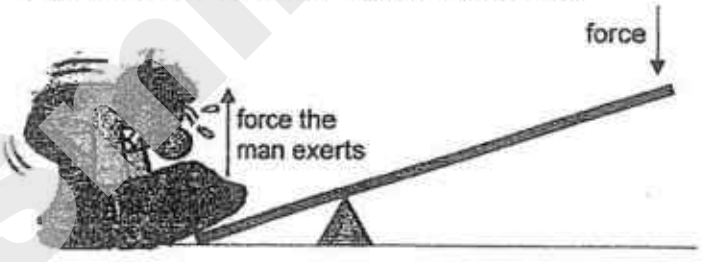
(a) What is the force that enables the satellite to keep moving around the Earth without spinning away into deep space? [1]

_____

The diagram below shows a lever. A lever is a simple machine that makes doing a task easier. By pushing downwards on one side, an object can be lifted on the other side.



The diagram below shows a man trying to lift a rock.



(b) Why is lifting the rock directly more difficult than lifting it with the help of a lever? [2]

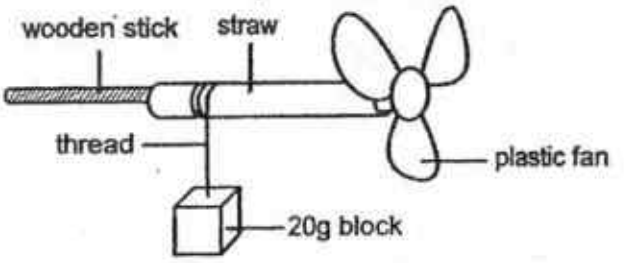
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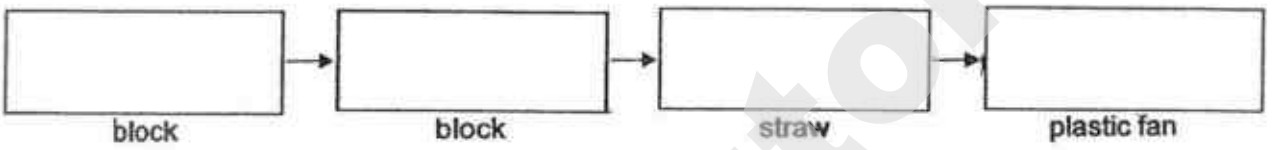
Score	3

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35. Josh made a fan with some recycled materials. He inserted a wooden stick into a straw with a plastic fan attached to it. A thread with a 20 g block attached to it is coiled round the straw as shown in the diagram below. He released the 20 g block and counted the number of cycles the fan spun in 10 seconds.



(a) Fill in the boxes to show the energy changes that enabled the fan to spin. [2]



Josh repeated the activity above with blocks of different masses and recorded his findings in the table below.

Mass of block (g)	Number of cycles the fan spun in 10 seconds
20	15
30	25
40	35

(b) Explain clearly how the mass of the block affected the number of cycles the fan spun in 10 seconds. [2]

_____

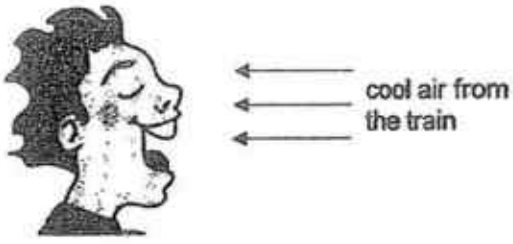
_____

_____

Score	/ 4

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36. Tom takes the MRT train home after school every day. He enjoys the cool air when he enters the air-conditioned train after walking in the hot sun.



(a) Explain why he feels cool when he entered the air-conditioned train? [1]

_____

_____

(b) One day, Tom got caught in a rain and his uniform was wet. He entered the train as usual, but instead of feeling nice and cool, he felt extremely cold. Explain why he felt much colder this time? [2]

_____

_____

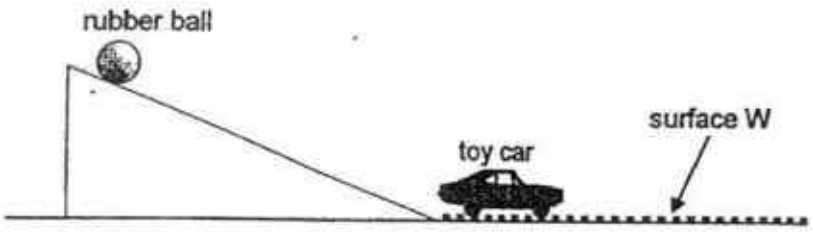
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Score	3

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37. Mavis rolled a rubber ball down a ramp as shown in the diagram below. The rubber ball would then push a toy car at the bottom of the ramp over a surface, W.



The experiment was repeated using three other surfaces, X, Y and Z. The distance moved by the toy car was recorded in the table below.

Surface	Distance moved by the toy car (cm)
W	80
X	120
Y	40
Z	60

(a) Mavis used the same toy car, rubber ball and ramp in her experiment. She also made sure that she released the rubber ball without pushing it.
State another factor that she must keep constant to ensure a fair test. [1]

_____

(b) What should she do to improve the reliability of her results? [1]

_____

(c) Which surface is the smoothest? Explain your answer. [2]

_____

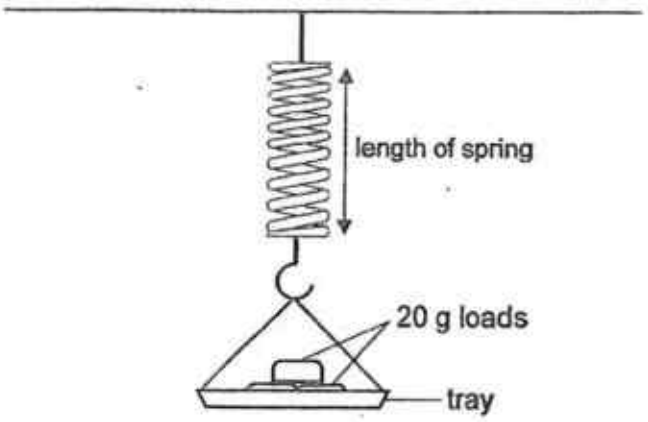
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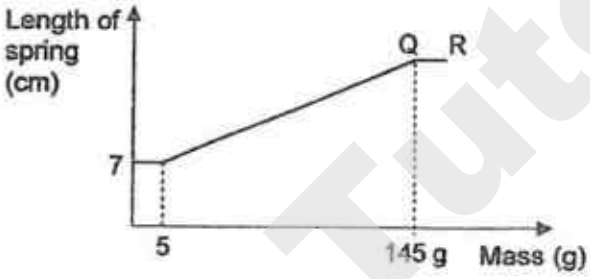
Score	4

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38. In an experiment, 20 g loads were added one at a time to a tray hung on a spring, as shown below. The mass of the empty tray is 5 g.



The results are shown in the graph below.



(a) Why did the spring stretch when the 20 g loads were added to the tray? [1]

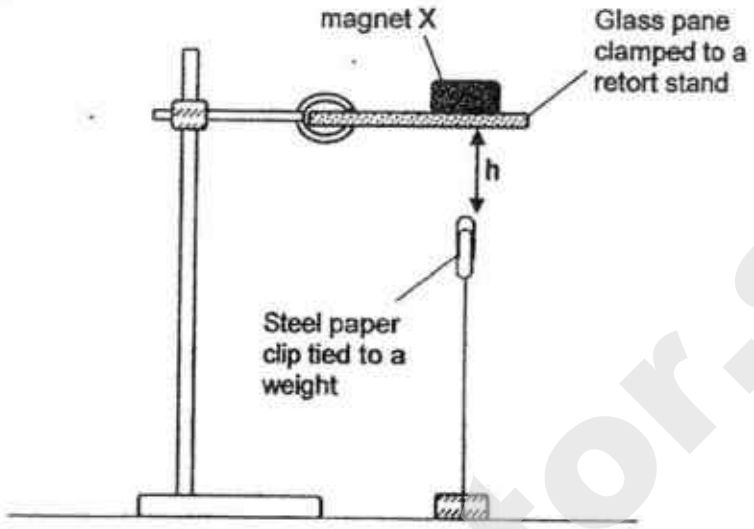
(b) From the graph, why did the length of the spring remain at 7 cm even though the tray was hung onto it? [1]

(c) From Q to R in the graph, the spring stopped stretching even though more 20 g loads were added. Explain why? [1]

Score	3

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39. Mr Soo prepared an experiment as shown in the diagram below. He placed a strong magnet, X, onto a piece of glass pane clamped to a retort stand. He could change the distance, h, by moving the glass pane clamped to the retort stand up and down.



(a) State two properties of the magnetic force observed in this experiment. [2]

Mr Soo moved the glass panel with the magnet upwards, further away from the paper clip, until the paper clip could no longer be attracted by the magnet and fell to the table. He then recorded the distance, h.

He repeated the experiment with two other magnets, Y and Z, and recorded his results in the table below.

Magnet	Distance, h (cm)
X	5
Y	3
Z	7

(b) What does distance, h, tell you about the strength of the magnets? [1]

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(c) Mr Soo had a fish bowl on his desk. He accidentally dropped a paper clip into it. The mouth of the bowl was too small for anyone to reach into the bowl. He was also careful not to pour out everything from the bowl and cause the fish to be stressed.

Describe what Mr Soo should do to remove the paper clip using a magnet? [2]

_____

_____

_____

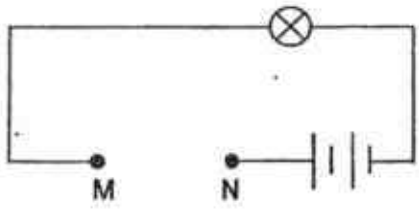
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Score	/ 5

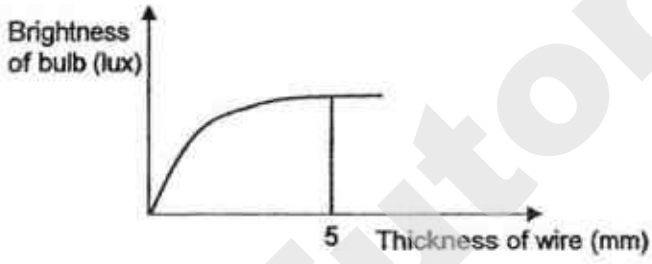
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40. Amos set up a circuit as shown in the diagram below for an experiment.



During the experiment, he connected wires of various thickness to points M and N, and measured the brightness of the bulb. He drew a graph with the results he recorded.



(a) From the graph, how does the thickness of a wire affect the brightness of the bulb? [1]

_____

_____

(b) He should not use the same battery for the whole experiment. Explain how this will help to ensure a fair test. [1]

_____

_____

Score	/ 2

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41. The diagram below shows a fern growing high up from cracks in a brick wall on a building.



(a) Explain how the characteristics of spores allowed the fern to get to this place? [1]

_____

_____

(b) How does this method of dispersal help to increase the chance of survival of the seedlings? [1]

_____

_____

End of Paper

Score	2

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YEAR	:	2017
LEVEL	:	PRIMARY 6
SCHOOL :	:	NAN HUA PRIMARY
SUBJECT :	:	SCIENCE
TERM	:	CA1

Section A

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

Section B

Q29 (a) Gas Z is carbon dioxide.

(b) Gas W is oxygen, it decreased because the body needed to use it, unlike the other gases which were not needed by the body.

Q30 (a) Pond F, the most amount of light could pass through Pond F compared to the other pond's waters thus it has the clearest water.

(b) The water plant in set-up 2, pond water E is used in set-up 2 and pond water E had the least light passing through it compared to the other pond waters, so it would block the most light from the lamp and prevent the water plant from getting much light thus the water plant from set-up 2 would photosynthesise the least.

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(c) (i) It is oxygen.

(ii) The plants would photosynthesise and the by-product of photosynthesis is oxygen, so oxygen would be collected in each of the inverted test tubes.

Q31 (a) (i) Water in the plastic beaker: Gravitational potential energy.

Water droplets: Kinetic energy and gravitational potential energy.

(b) Place the plastic beaker of water higher up.

(c) The water droplets falling from a higher height which has more gravitational potential energy is converted to more kinetic energy in the water and transferred to more kinetic energy in the waterwheel.

Q32 (a) Gravitational potential energy and kinetic energy.

(b) It is because not all the kinetic energy has been converted to sound and heat energy yet.

(c) After a short while, all the kinetic energy of the fan was converted to sound and heat energy and the fan no longer possessed any kinetic energy to spin.

Q33 (a) It moved the stationary pencil.

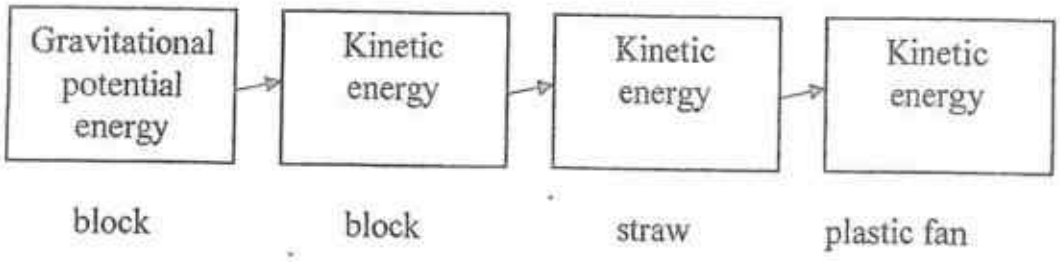
(b) The frictional force between the pencil lead and the drawing surface had smoothened the pencil lead as frictional force causes wear and tear.

Q34 (a) Gravitational force.

(b) The man lifting the rock directly has to work against gravity but using the lever helps him to work in the same direction as gravity.

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Q35 (a)



(b) As the mass of the block increases, the gravitational potential energy of the block would also increase and when released, more gravitational potential energy would be converted to more kinetic energy of the block and more kinetic energy of the block would be transferred to the straw and finally to the plastic fan, which would cause the fan to spin more cycles in 10 seconds.

Q36 (a) Tom's body would lose heat to the cooler air from the train.

(b) Tom's body lost more heat as the water in his clothes gained heat from his body to evaporate.

Q37 (a) The place the toy car is placed on each surface should be constant.

(b) Mavis should repeat the experiment a few times and calculate the average results.

(c) Surface X is the smoothest, this is because the toy car could travel the greatest distance compared to when on the other surfaces and it had the least friction between the toy car and it.

Q38 (a) It is because the weight of the 20g loads pulled the spring downwards and stretched it.

(b) The weight of the tray is not heavy enough to stretch the spring or the weight of the tray was too light.

(c) The spring cannot be stretched anymore.

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Q39 (a) It can act at a distance and can pass through non-magnetic objects.

(b) Magnet Z is the strongest followed by magnet X and magnet Y.

(c) Mr Soo should place the magnet at the outer surface of the fish bowl closest to the steel paper clips and when the magnet attracts the paper clips, slowly move the magnet up of the fish bowl and retrieve the steel paper clips.

Q40 (a) The thicker the wire, the brighter the bulb but when the wire becomes 5mm, then the brightness of the bulb will remain constant.

(b) The battery will weaken causing the bulb to be less bright.

Q41 (a) Spores are light and can be carried by wind.

(b) This ensures that the seedlings grow further away from the parent plant and prevents overcrowding.

End

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PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1

2017

BOOKLET A

Date : 1 March 2017
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.

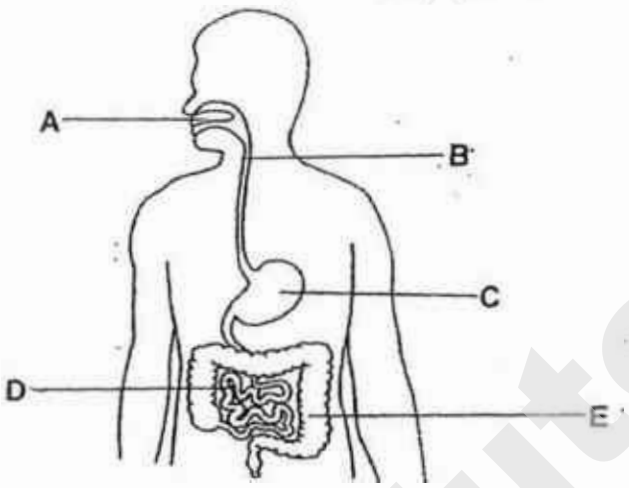
Booklet A consists of 23 printed pages including this cover page.

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Section A (28 x 2 marks = 56 marks)
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

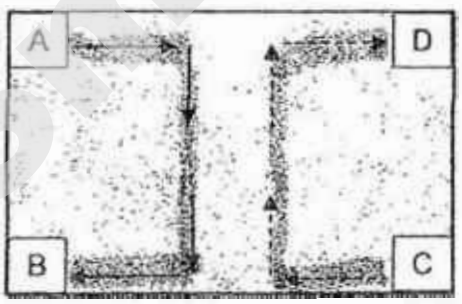
1. The diagram below shows parts of the human digestive system.

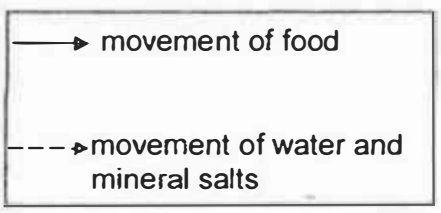


In which of the following parts is digestion carried out?

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

2. In the diagram below, A, B, C and D represent the parts of a plant. The arrows represent the movement of substances in the plant.



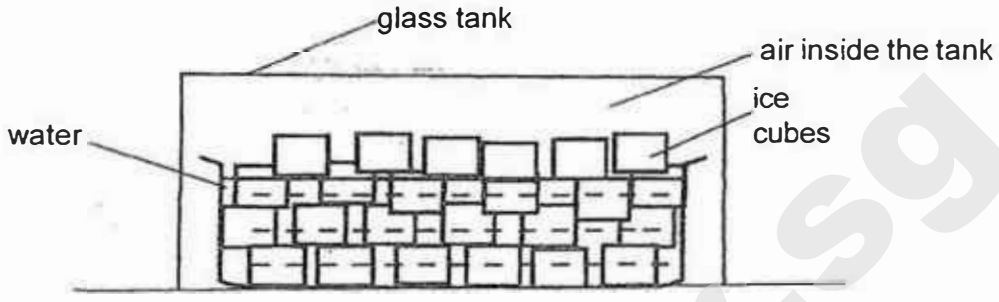


Which one of the following correctly identifies parts A, B, C and D?

	A	B	C	D
(1)	leaf	stem	leaf	roots
(2)	leaf	roots	roots	leaf
(3)	stem	leaf	stem	roots
(4)	stem	roots	leaf	stem

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3. A glass tank was placed over a container of ice cubes. This was placed on a table in the kitchen with a room temperature of 30^0C. The ice cubes started to melt after some time and it was observed that the air inside the glass tank was cooler than the room temperature.



Which of following correctly explain why the temperature of the air in the glass tank was lower after some time?

A The air inside the tank lost heat to the water.
B The air inside the tank gained heat from the water.
C The air inside the tank lost heat to the melting ice cubes.
D The air inside the tank gained heat from the melting ice cubes.

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

4. An experiment was conducted to study the effect of temperature on the rate of evaporation of water. The conditions were recorded in the table below.

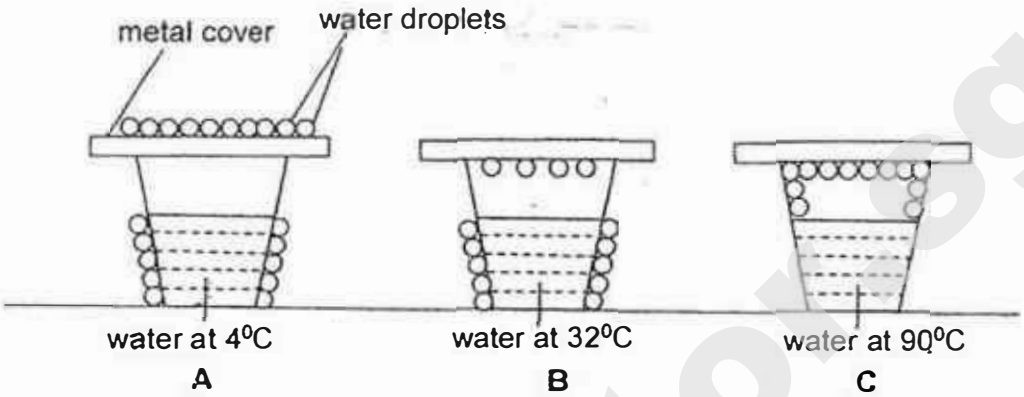
Set-up	Exposed surface area of container (cm^2)	Temperature of water (°C)	Amount of water used (ml)
A	40	80	180
B	50	60	200
C	50	80	200
D	60	50	180

Which of the two set-ups should they use to ensure a fair test?

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

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5. Hassan was given a set of drawings which showed 3 glasses of water at different temperatures, 4^0C, 32^0C and 90^0C. The glasses were placed on a table in a room of 32^0C. He was told to draw the most likely formation of water droplets on each of the glasses after some time. His drawings are shown below.



Which of the above drawings are **correct**?

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

6. Which of the following are actions that help to conserve water?

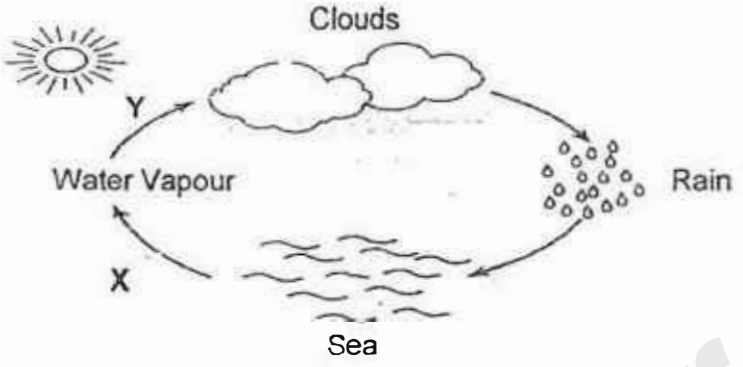
A Take long showers on a hot day.
B Turn off the running tap while brushing your teeth.
C Reuse water used for washing rice to water plants.
D Use the washing machine only when you have a half load.

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

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7. Study the diagram of the water cycle below.
X and Y are two processes that take place in the water cycle.



Based on the diagram above, which of the following statement(s) is/are **incorrect**?

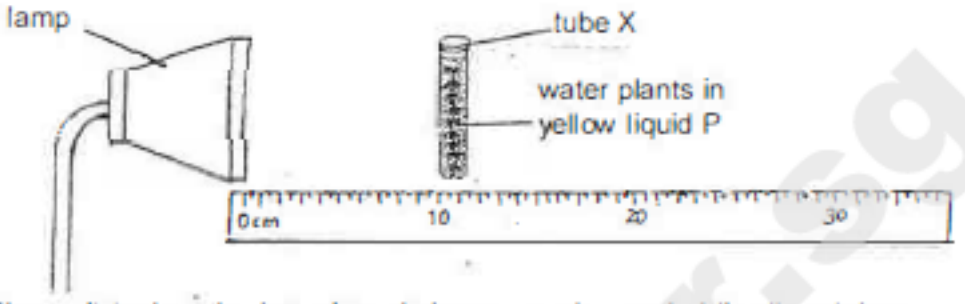
A Heat is gained by water vapour during process Y.
B Process X does not take place at a fixed temperature.
C There is a change in state of water during processes X and Y.

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

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8 Jessica had three tubes, X, Y and Z, containing an equal amount of water plants mixed in the same amount of yellow liquid P. This yellow liquid turns green after photosynthesis has taken place. Jessica placed tube X at a distance of 10 cm from the lamp.

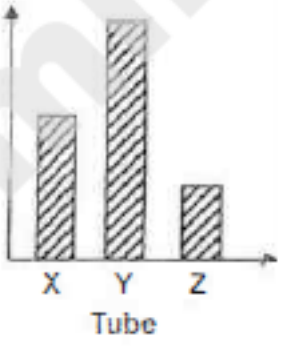


She switched on the lamp in a dark room and recorded the time taken for the mixture to turn green. She repeated the experiment with tubes Y and Z at various distances from the lamp and recorded the results as shown in the table below.

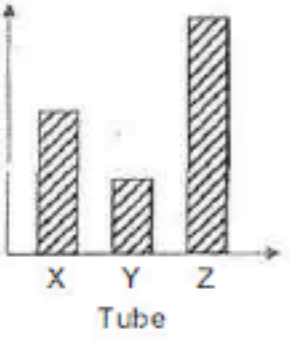
Tubes	Time taken for the liquid to turn green (min)
X	17
Y	9
Z	28

Which one of the graphs below correctly represents the distance that tubes X, Y and Z are placed from the lamp?

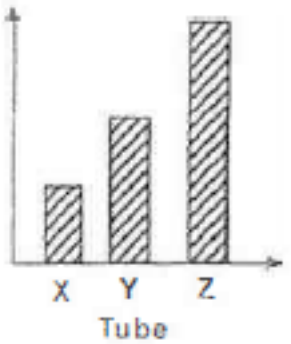
(1) Distance



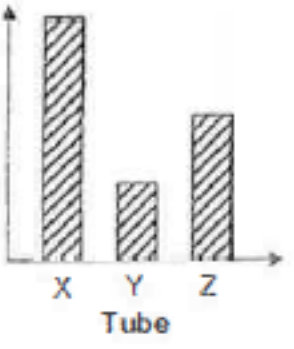
(2) Distance



(3) Distance

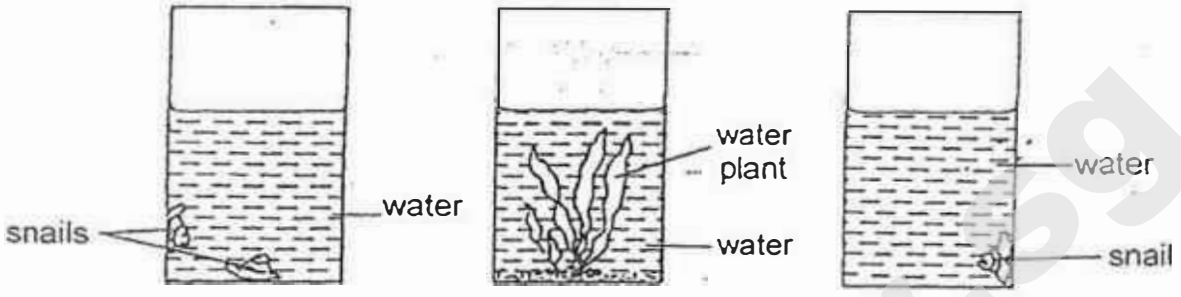


(4) Distance



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9. Containers, A, B and C, were set up with the same amount of carbon dioxide at the start of an experiment. For 12 hours, containers A and B were kept in the presence of light while container C was kept in darkness.



container A in light | container B in light | container C in darkness

Which one of the following has correctly arranged the one containing the least amount of carbon dioxide in the water to the one with the most carbon dioxide **at the end of the experiment**?

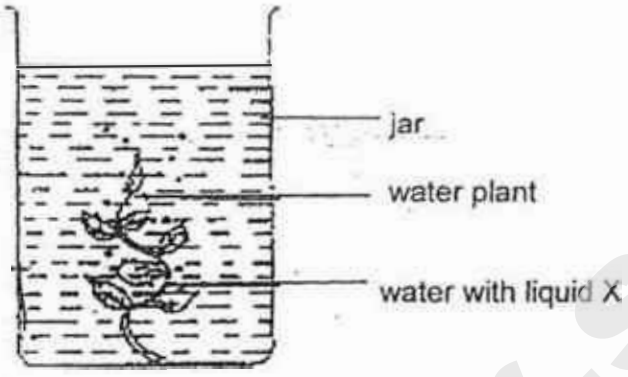
Least carbon dioxide ⟶ most carbon dioxide

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

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10. Daphne wanted to find out whether water plants affect the amount of carbon dioxide in water when exposed to different amounts of light.



She prepared two set-ups similar to the one shown above. One set-up was placed in a dark cupboard while the other was placed under a lamp. She then added a few drops of liquid X to the water in the two set-ups.

At the start of the experiment, the colour of the water with liquid X was red. Liquid X will change colour based on the amount of carbon dioxide present in the water, as shown below.

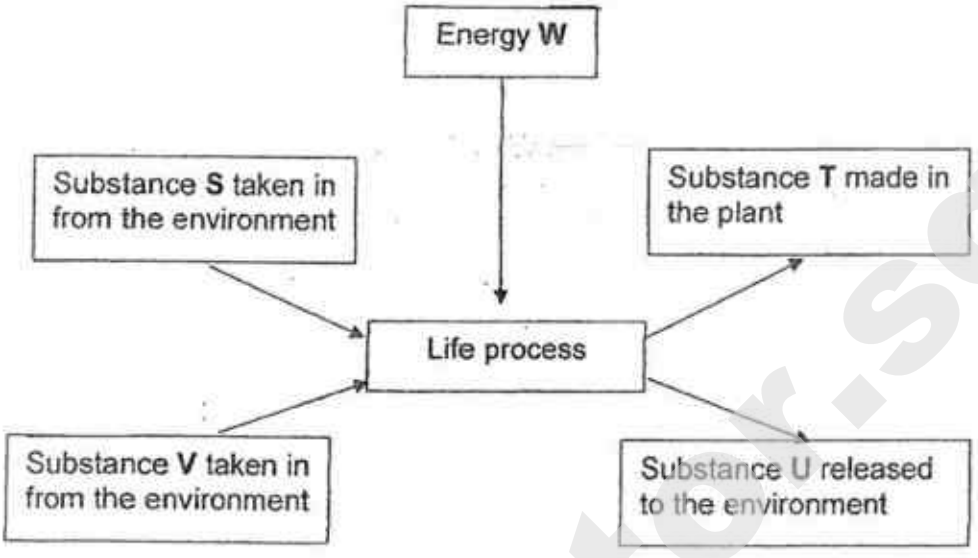
	Colour of water with liquid X
Less carbon dioxide than at the start of the experiment	blue
More carbon dioxide than at the start of the experiment	yellow

What colour would the water with liquid X be in each set-up after 2 days?

	Under a lamp	**In a dark cupboard**
(1)	red	yellow
(2)	blue	yellow
(3)	yellow	blue
(4)	blue	red

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11. The diagram below represents a life process that takes place in green plants.



Which one of the following correctly identifies S, T, U, V and W?

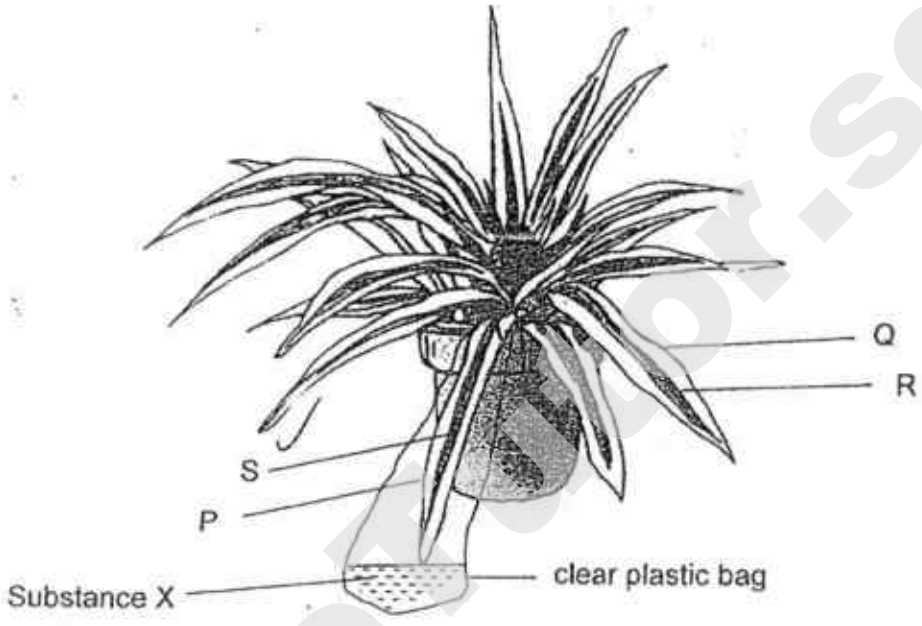
	Substance				Energy W
	S	T	U	V	
(1)	food	water	oxygen	carbon dioxide	light
(2)	oxygen	sugar	carbon dioxide	water	heat
(3)	carbon dioxide	sugar	oxygen	water	light
(4)	oxygen	water	sugar	carbon dioxide	heat

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12. Lynn set up an experiment to find out whether carbon dioxide is needed for photosynthesis. She used a plant which had leaves with green areas in the middle and white areas round the edges as shown below. The white areas of the leaves do not contain chloroplasts.

One of the leaves was wrapped in a plastic bag containing substance X which absorbs carbon dioxide. The set-up was placed in sunlight.

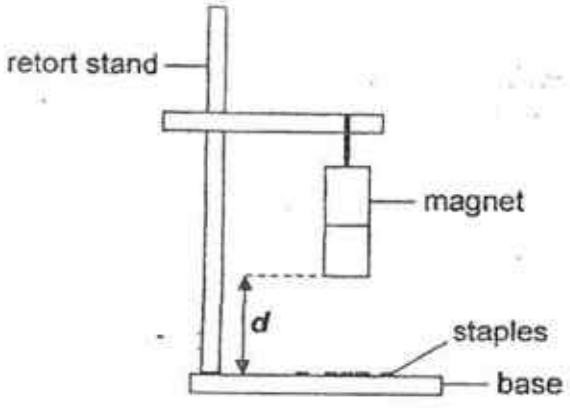


Which of the following two areas should Lynn compare to show that carbon dioxide is needed for photosynthesis?

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

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13. Jemay clamped a magnet 10cm away from the base of a retort stand where she laid 10 staples as shown in the diagram below. The magnet attracted some of the staples and she counted the number of staples left on the base of the retort stand.



She repeated the experiment, decreasing distance d by 2cm until all the staples were attracted. She recorded her results in a table as shown below.

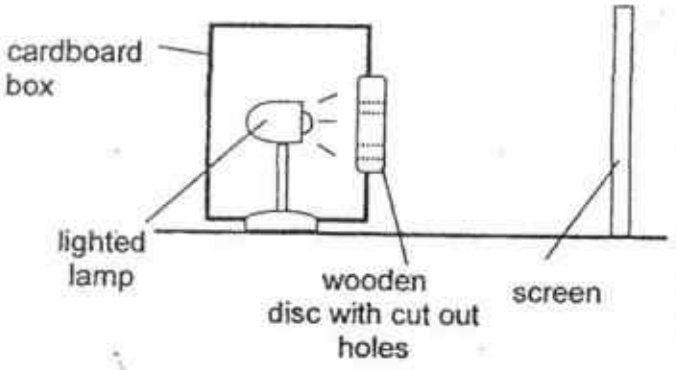
Distance *d* (cm)	Number of staples attracted by the magnet
10	2
8	3
6	5
4	8
2	10

Which one of the following is a **correct** conclusion based on Jemay's experimental results?

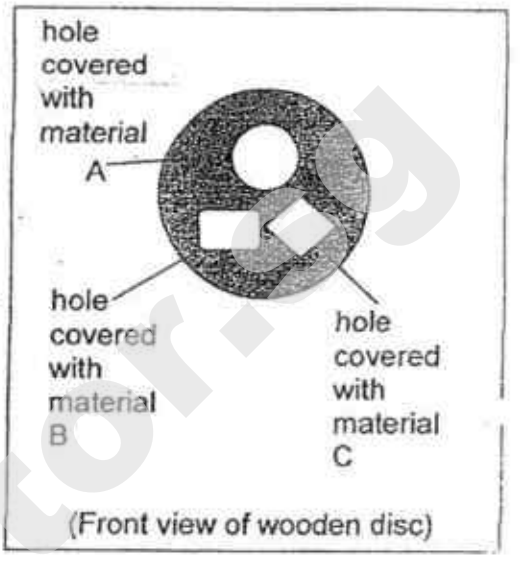
(1) The magnetic force of attraction is the strongest at its poles.
(2) When ***d*** is 3 cm, all the staples will be attracted by the magnet.
(3) The smaller the distance ***d***, the greater the magnetic force exerted on the staples.
(4) The greater the distance ***d***, the more number of staples attracted by the magnet.

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14. A cardboard box was set up with a lighted lamp as shown below. An opening was cut in the box such that a wooden disc could be fitted exactly. The disc had three holes which were pasted with three different types of materials.



(side view of set up)



(Front view of wooden disc)

The shadows cast on the screen appeared as shown below.

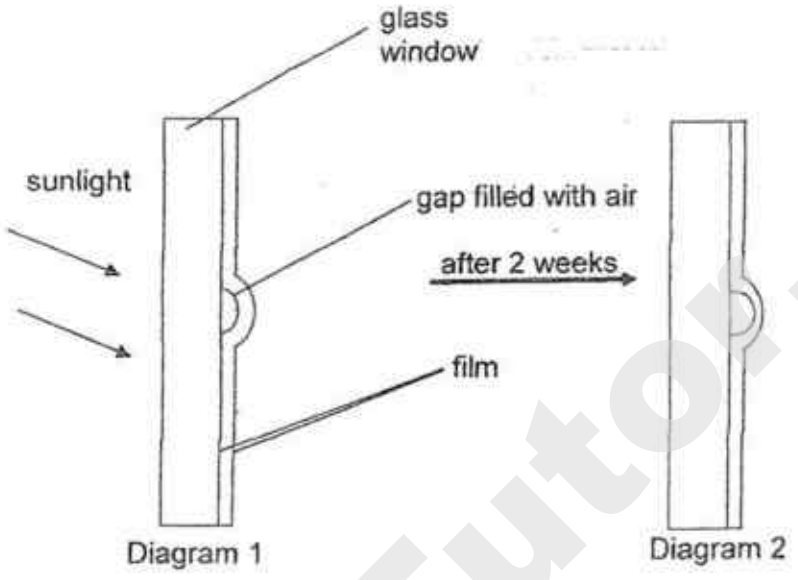


Based on the results given, which one of the following correctly describes the properties of materials A, B and C?

	Allows most light to pass through	Allows some light to pass through	Allows no light to pass through
(1)	A	C	B
(2)	C	B	A
(3)	B	C	A
(4)	C	A	B

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15. Tom pasted a film on a glass window to reduce the amount of sunlight coming into the classroom. He noticed that some air bubbles were trapped under the film as shown in Diagram 1. After two weeks, the air bubble became larger as shown in Diagram 2.



Side view of the glass windows

Which of the following reasons best explains why the gap with air became larger in Diagram 2?

(1) The air in the gap lost heat and contracted.
(2) The film removed heat from the air in the gap.
(3) The air in the gap gained heat and expanded.
(4) The glass window blocked the heat from passing through it.

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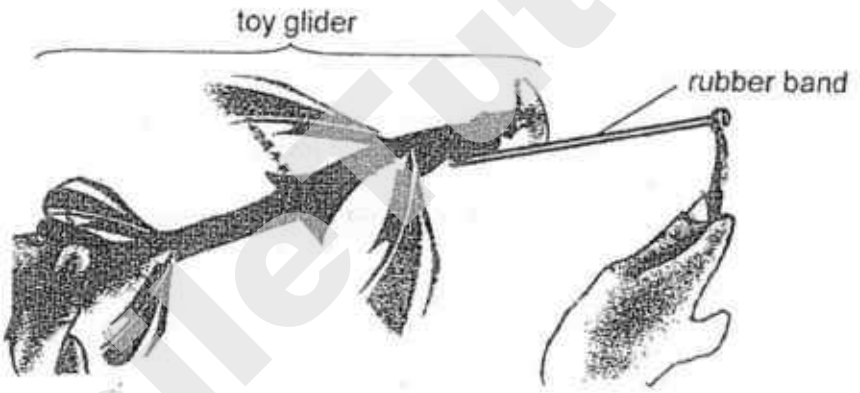
16. Geetha stood on a weighing scale and her classmates made some statements based on their observation.

Which one of the statements made by her classmates is correct?

A Geetha's weight is a force.
B Geetha's weight will increase as her mass increases.
C Geetha will weigh less on the moon as there is less gravitational force acting on her there.

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

17. Junhao hooked a rubber band to a toy glider. He then stretched the rubber band as shown in the diagram below before releasing the glider held in his hand.



Which of the following **correctly** describe the forces acting on the glider **just before it is released**?

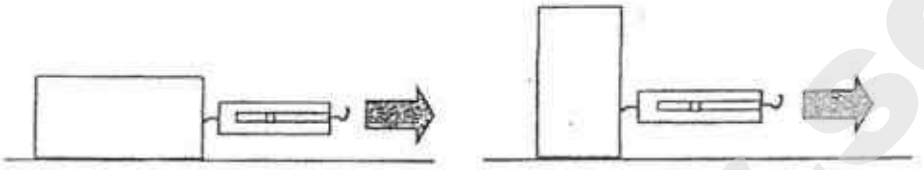
A Gravitational force is acting on the toy glider.
B There is frictional force between the fingers and the toy glider.
C The stretched rubber band exerts an elastic spring force on the toy glider.

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

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18. Rosnah carried out an experiment as shown in the diagram below. She pulled a wooden block on its larger rectangular surface on a table. She used a spring balance to measure the force needed when the block started to move at a steady speed.

Then she repeated the experiment, placing the same wooden block on its smaller square surface and measuring the force needed to move the block.

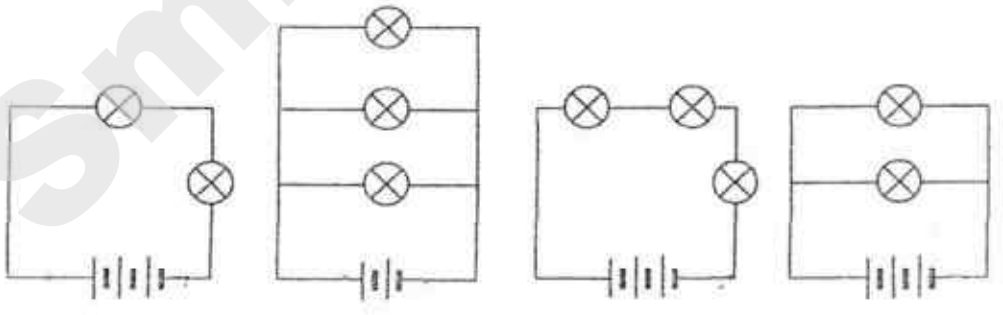


Set-up 1 Set-up 2

Based on the above information, what is the aim of her experiment?

(1) To find out if the material of the block affects the force needed to move the block.
(2) To find out if the mass of the block affects the speed at which the block moves.
(3) To find out if the surface area of the block in contact with the table affects the force needed to move it.
(4) To find out if the shape of the block in contact with the table affects the time taken before the block starts moving.

19. Anders wanted to find out if the arrangement of bulbs will affect the brightness of the bulbs. He set up four circuits (P, Q, R and S) as shown below.



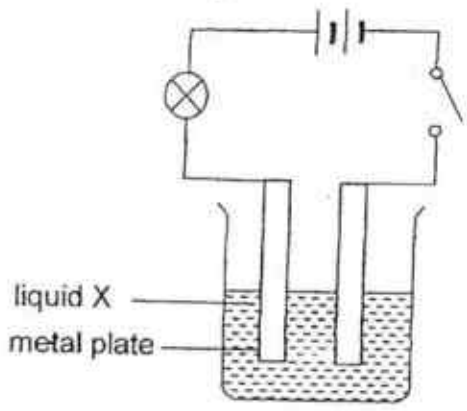
Circuit P Circuit Q Circuit R Circuit S

Which two circuits should he use to conduct a fair test?

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

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20. Gerald carried out an experiment to find out if liquids X, Y and Z are conductors of electricity. He inserted 2 metal plates of similar size connected to an electric circuit in Liquid X as shown in the set-up below.



He closed the switch and observed the bulb. He repeated this with the other 2 liquids, Y and Z, and recorded the results in a table as shown below.

Liquid	Observation of bulb
X	did not light up
Y	lit up brightly
Z	lit up dimly

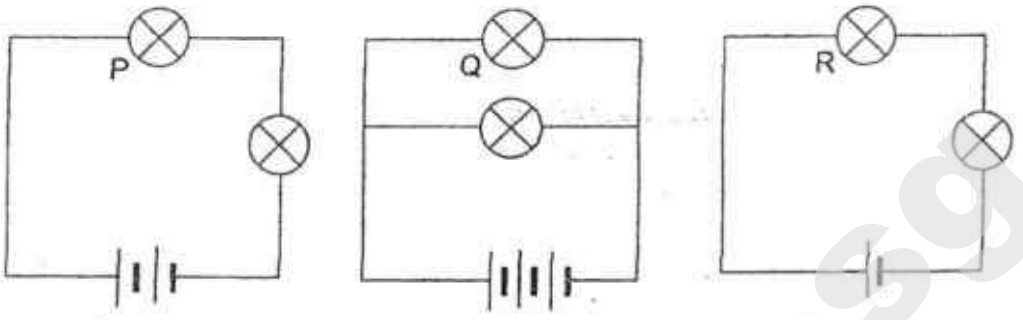
Which variables should he keep the same to ensure that he is conducting a fair test?

A type of liquid
B amount of liquid
C type of metal plate
D number of batteries

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

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21. Jieqi set up 3 electrical circuits with two bulbs each. Bulbs P, Q and R are labelled as shown below. All the electrical components are new and working properly.



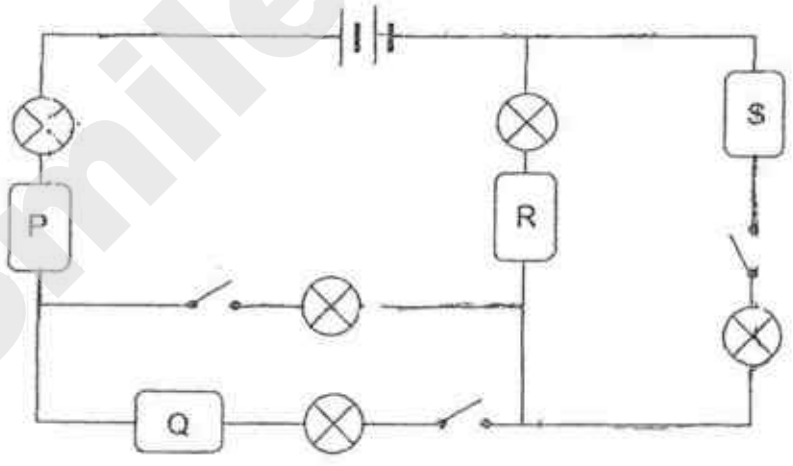
Set-up 1 Set-up 2 Set-up 3

Based on the set-ups, which of the following statement(s) is/are **correct?**

A Bulb R lights up the brightest.
B Bulb Q lights up brighter than Bulb P.
C Bulbs P and Q have the same brightness.

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

22. In the electrical circuit below, **only 3 bulbs** lit up when all the switches were closed. P, Q, R and S are blocks of different materials.

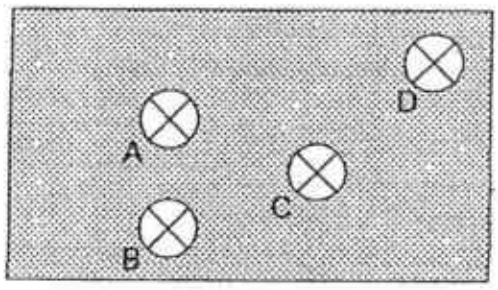


Based on the results, which of the following are possible materials that P, Q, R and S could be made of?

	P	Q	R	S
(1)	aluminium	copper	glass	wood
(2)	glass	wood	steel	copper
(3)	steel	aluminium	copper	glass
(4)	copper	glass	wood	aluminium

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23. Keith constructed a circuit puzzle using 2 batteries, 4 bulbs, A, B, C and D and some wire. All the electrical components were in working condition. He covered the circuit with a piece of cardboard with only the bulbs exposed as shown below.

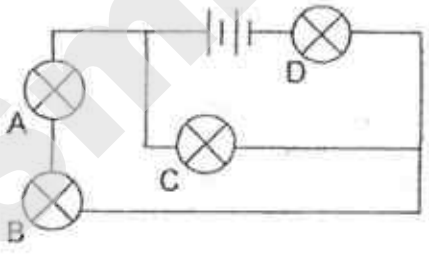


Keith removed bulbs A, B, C and D one at a time leaving a gap in the circuit. He observed the effect before re-connecting each bulb and recorded them in the table below.

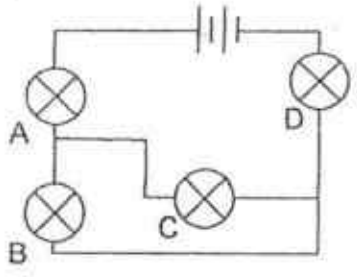
Bulb removed	Bulbs that were lit			
	A	B	C	D
A		✓		✓
B	✓		✓	✓
C		✓		✓
D				

Based on the above information, which one of the following shows the circuit diagram that Keith had constructed?

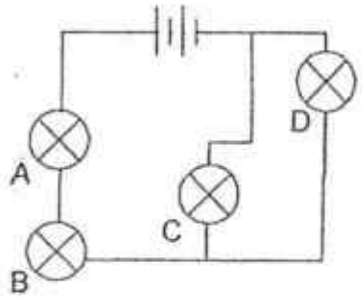
(1)



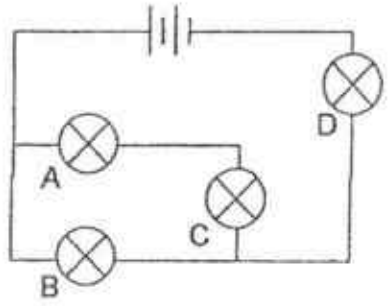
(2)



(3)

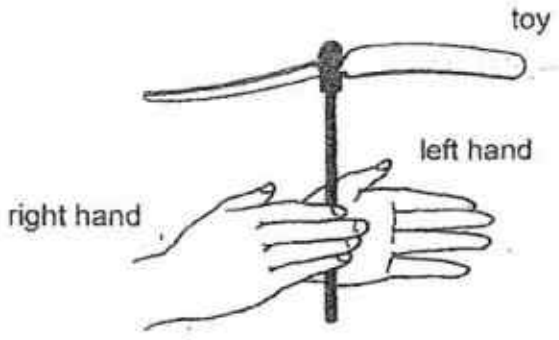


(4)



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24. Ashlyn held a toy between her hands as shown below.
She rotated the toy by sliding her right hand forward and her left hand backwards before releasing it. The toy flew to a certain height after it left her hands.



She rotated the same toy from the same starting position again. However, the toy flew to a higher height than it did before.

Which one of the following could explain why the toy flew to a **greater** height?

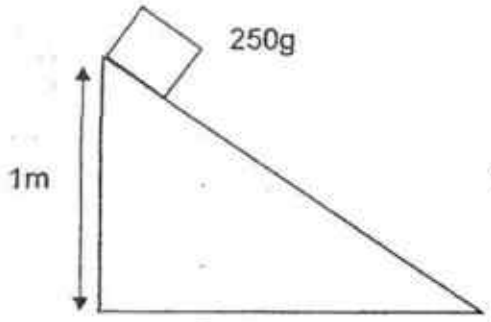
(1) The toy had a smaller mass.
(2) The toy used up more heat energy.
(3) The toy had a greater kinetic energy.
(4) The toy had less gravitational potential energy.

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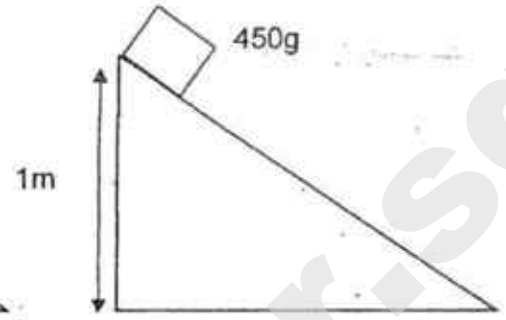
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25. Dave conducted an experiment with four set-ups A, B, C and D. He used two metal blocks of the same size but of different masses.

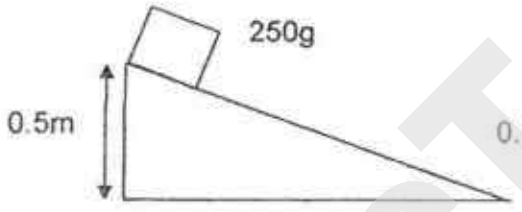
He released the blocks from different heights as shown below.



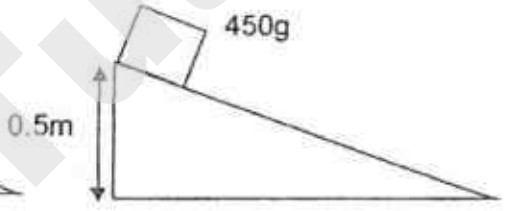
Set-up A



Set-up B



Set-up C



Set-up D

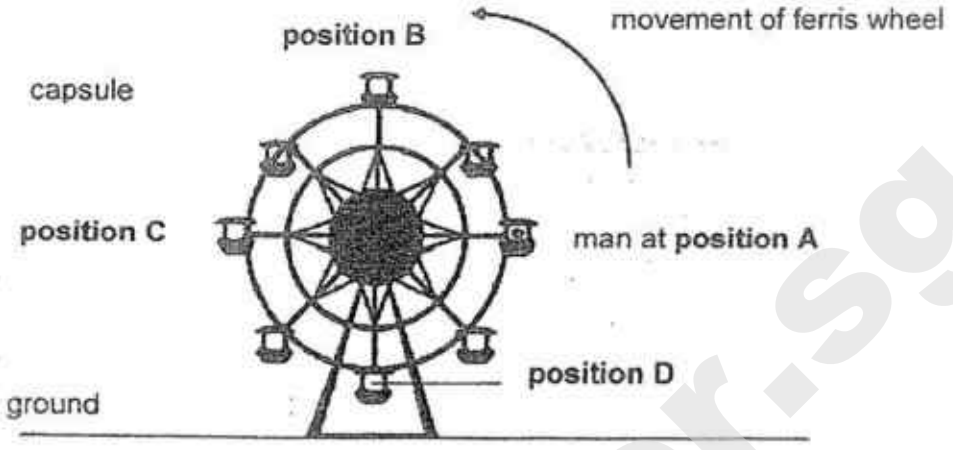
Dave wanted to find out how the distance travelled by the block is affected by its mass and the height from which it was released.

Which pairs of set-ups should he use in his investigation?

	To show how the distance travelled by the block is affected by its mass	**To show how the distance travelled by the block is affected by the height from which it was released**
(1)	A and B	C and D
(2)	B and D	A and C
(3)	C and D	B and D
(4)	A and C	A and B

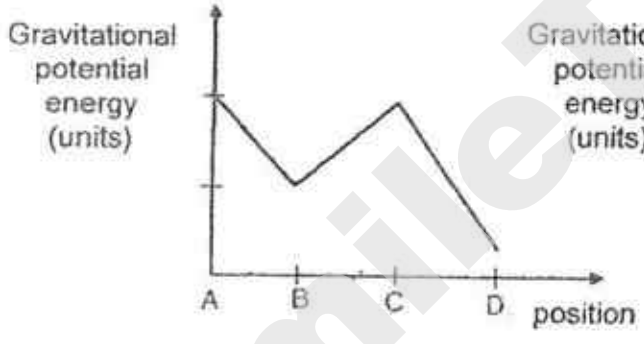
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26. The diagram below shows a man sitting in a capsule of a ferris wheel.

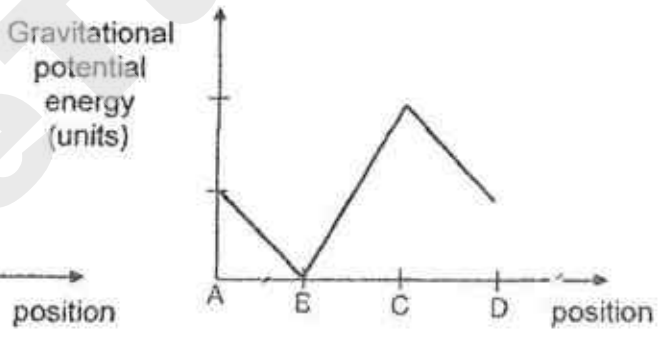


Which one of the following graphs shows the change in the amount of gravitational potential energy of the capsule as the man travelled from position A to position D?

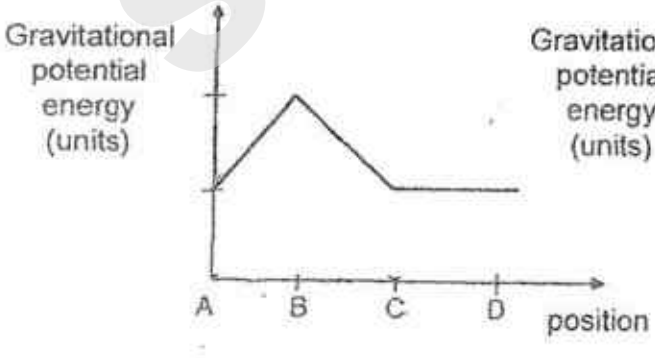
(1)



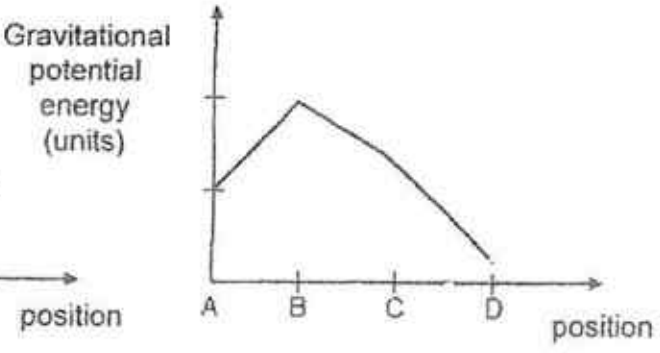
(2)



(3)

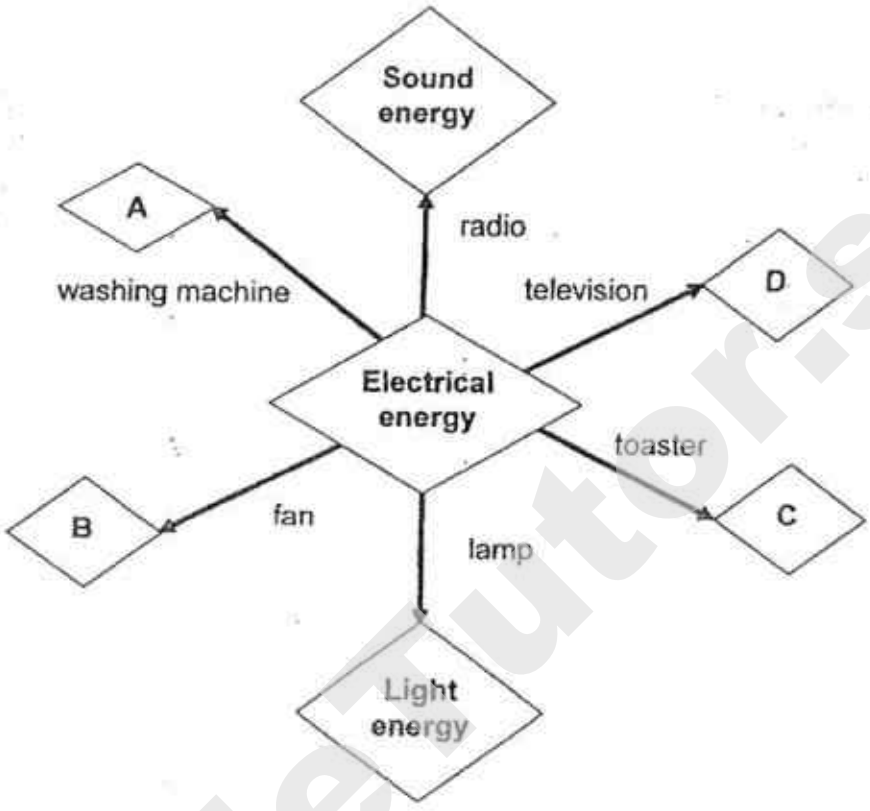


(4)



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27. The diagram below shows that electrical energy can be converted to other useful forms of energy in the 6 electrical appliances.

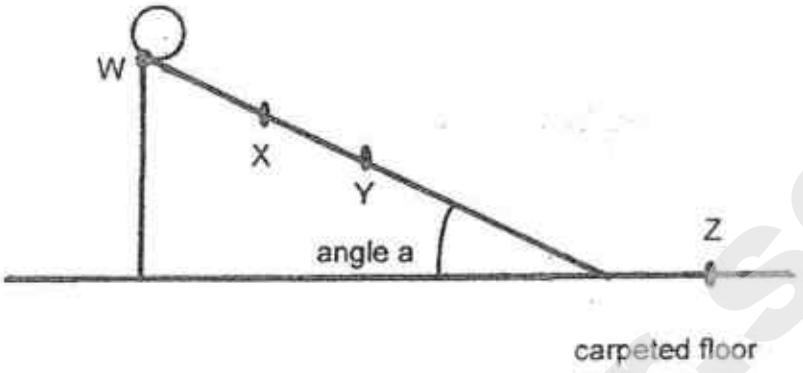


Which **useful** forms of energy are necessary for the appliances to function as represented by A, B, C and D?

	A	B	C	D
(1)	Sound Energy	Heat Energy	Light Energy	Heat Energy
(2)	Kinetic Energy	Kinetic Energy	Heat Energy	Light and Sound Energy
(3)	Heat Energy	Kinetic Energy	Heat Energy	Kinetic Energy
(4)	Light Energy	Heat Energy	Sound Energy	Light and Sound Energy

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28. Four pupils released a ball at Point W as shown in the diagram below. It rolled down the slope, moved along the floor and stopped at Point Z.



The pupils then made the following statements.

David:	At points X and Y, the ball only has kinetic energy.
Ravi:	The ball has the greatest amount of gravitational potential energy at point W.
Sue:	The ball would have rolled further if the experiment had been done on a glass floor.
Kim:	The ball would have rolled faster along the slope if angle a had been larger.

Which of the pupils had made a **correct** statement?

(1) Ravi and Sue only
(2) David and Ravi only
(3) Kim, Ravi and Sue only
(4) Kim, David and Sue only

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PRIMARY 6 SCIENCE

CONTINUAL ASSESSMENT 1

2017

BOOKLET B

Date : 1 March 2017

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 9 March 2017. 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: .....

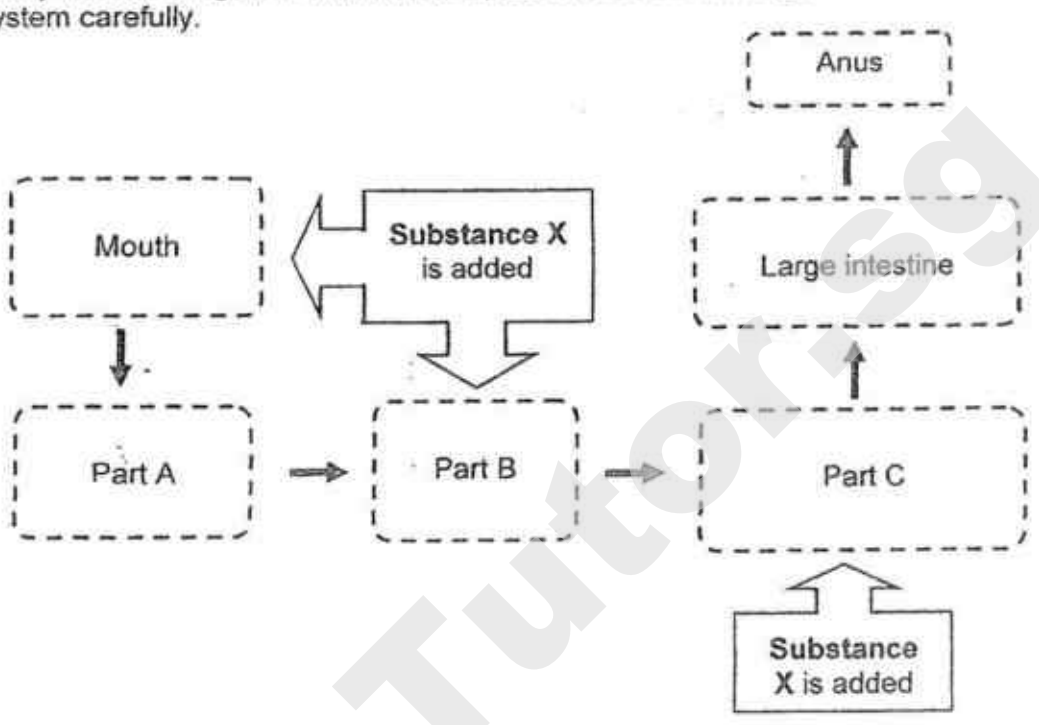
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

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

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Section B (44 marks)
Write your answers to questions 29 to 41 in the spaces provided.

29. Study the following flow chart which represents the human digestive system carefully.



(a) Identify substance X and Part C. [2]

Substance X: _____

Part C : _____

(b) State the function of part A. [1]

_____

_____

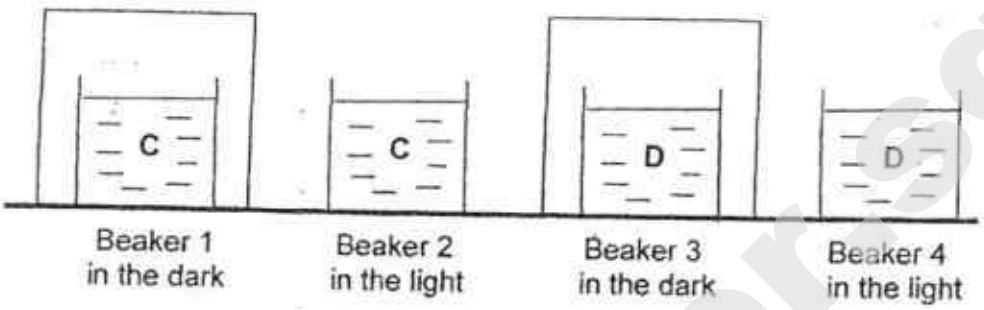
(c) Describe what happens to the digested food after digestion is completed. [1]

_____

_____

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30. Adam found two types of organisms, C and D, in a pond. He wanted to find out whether they were animals or plants. He filled four beakers, 1, 2, 3 and 4 with some pond water. He then placed some organism C in beakers 1 and 2 and some organism D in beakers 3 and 4. Beakers 1 and 3 were placed in the dark. Beakers 2 and 4 were placed in the light.



He added a drop of liquid P in each beaker. The table below shows the colour of liquid P in the presence of more oxygen or less oxygen in the beaker than in the surrounding air.

Colour of liquid P	When more oxygen is present	When less oxygen is present
	blue	yellow

At the end of two hours, the following results were obtained.

Beaker	Colour of Liquid P
1	yellow
2	yellow
3	yellow
4	blue

(a) What process could organism D have carried out in beaker 4 to cause the indicator to turn blue in beaker 4? [1]

_____

(b) Explain how the process in part (a) caused the change in the colour of liquid P. [1]

_____

_____

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(c) Adam was able to identify that organism C was an animal. Explain how Adam arrived at this conclusion. [2]

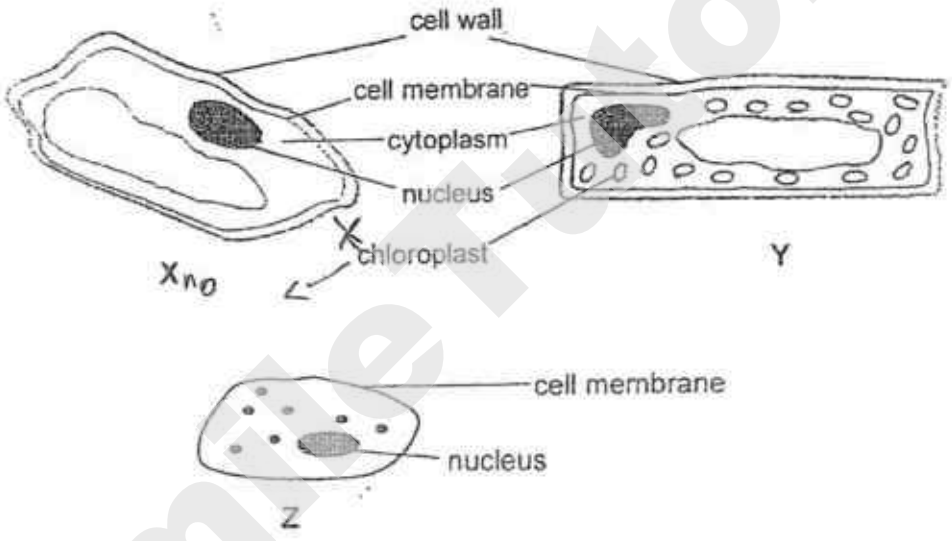
_____

_____

_____

_____

31. The diagram below shows three cell specimens, X, Y and Z, which are examined under a microscope.



(a) Based on the above diagram, it was concluded that 2 of the 3 cells are plant cells. Identify the 2 plant cells. [1]

_____

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

_____

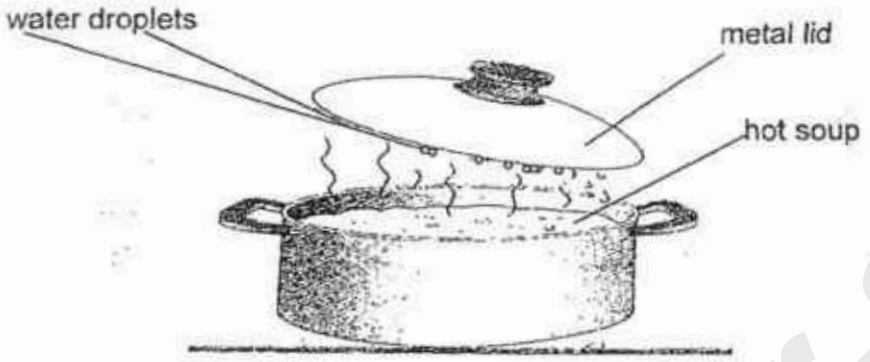
_____

(c) State where you could most likely find cell X. [1]

_____

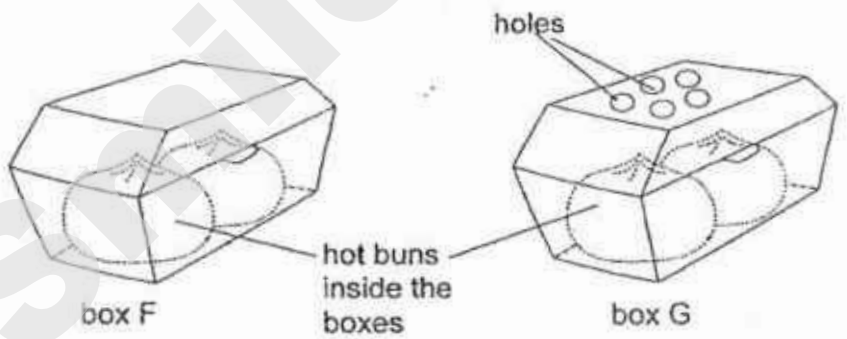
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32. Peter lifted the metal lid from the pot of hot soup and observed that water droplets had formed under the metal lid.



(a) Explain how the water droplets were formed under the metal lid. [2]

Peter put some hot buns inside two similar boxes. Box G has some holes on its cover.



(b) Which box would contain buns which are wetter? Explain your answer. [2]

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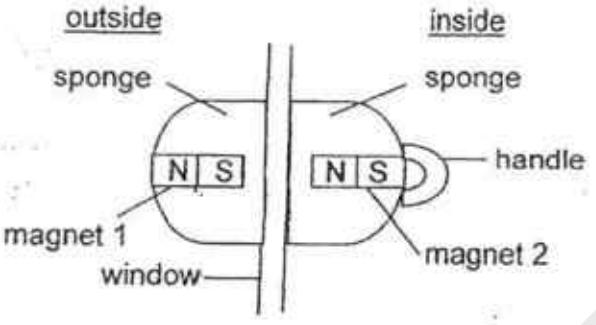
33. A collision between 2 ships in the sea caused an oil spill which covered the seawater with a layer of black crude oil. It was observed that the water plants at the bottom of the sea died after some time.

Explain how the pollution caused the above observation. [2]

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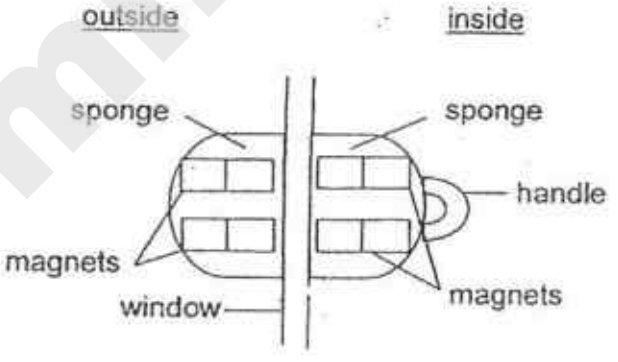
34. Mrs Tan had trouble cleaning the outside of her window. She made a device with two parts, one on the inside of a window, and the other on the outside, as shown in the diagram below. She found that she could clean the window on both sides now.



(a) Based on the diagram, describe how the device most likely worked to help Mrs Tan clean the outside of her window from inside the safety of her house. [2]

While cleaning the window, the outside part of the device could not cling on to the window and fell to the ground.

Mrs Tan changed her device as shown in the diagram below.

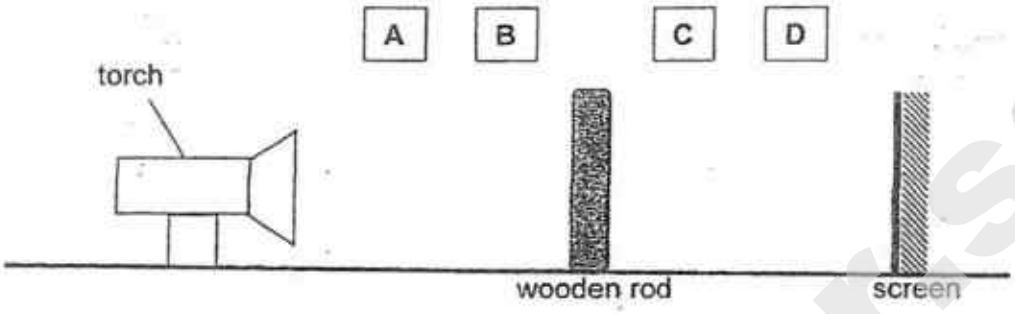


(b) In the diagram above, **label the poles** of the magnets so that the device clings to each other. [1]

(c) The part of the device outside the window clings better to the window now. Explain why. [1]

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35. The diagram below shows four different positions, A, B, C and D, where a wooden rod could be placed in front of the light source. Differently-sized shadows were formed on the screen based on the different positions of the rod.



The wooden rod was placed at another position in which the shadow formed was larger than when it was placed at position C.

(a) State the position (A, B, C or D) and provide a reason for your answer. [1]

_____

_____

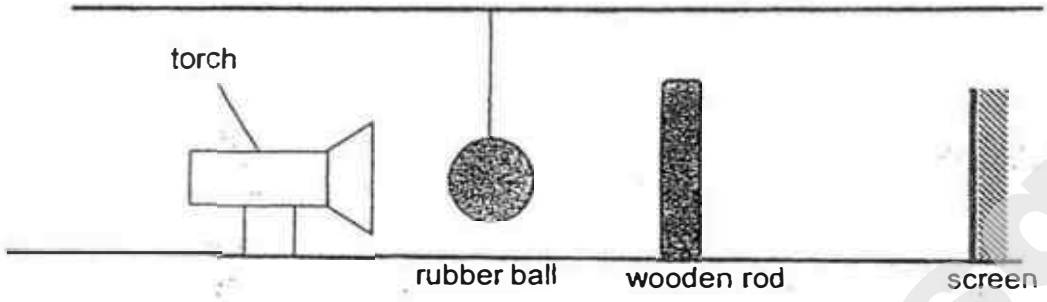
(b) State an important property of the material of the rod that enables a shadow to be formed? [1]

_____

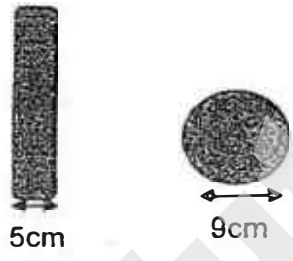
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In another experiment, a rubber ball was hung directly in front of the wooden rod as shown below.

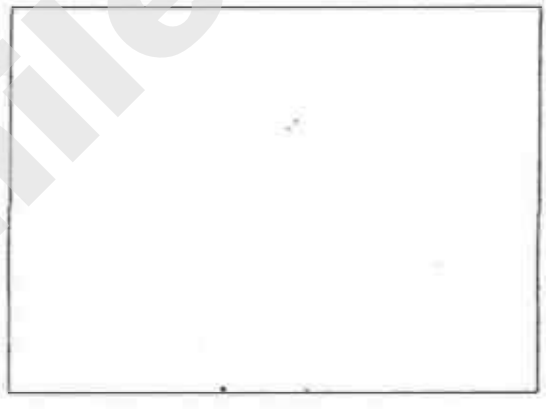


The diagrams below show the measurement of the wooden rod and the rubber ball.



front view

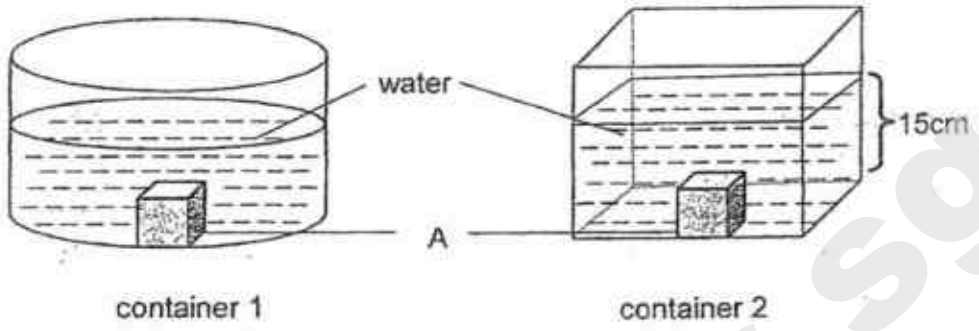
(c) Draw the possible shadow formed on the screen in the box below. [1]



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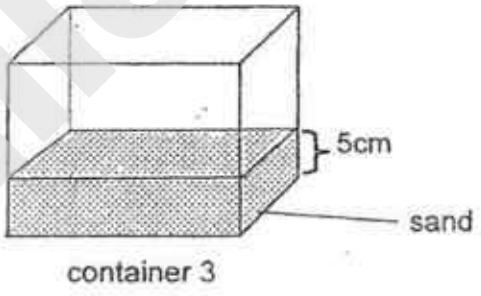
36. Sarah placed matter A into containers 1 and 2 which were filled with water as shown in the diagrams below.



Based on her observation, Sarah concluded that matter A is a solid.

(a) Give a reason for her conclusion. [1]

Sarah filled container 3 which is identical to container 2 with sand to a height of 5cm. She poured the contents in container 2 into container 3. She observed that the height of the water was only 19 cm.

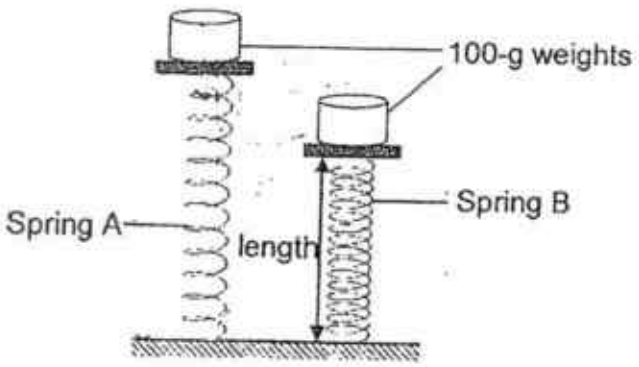


(b) Explain her observation. [1]

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37. Weiling carried out an investigation using two springs, A and B, of equal length. She placed two 100-g weights on each spring and recorded the new lengths of the springs as shown below.



Set-up 1

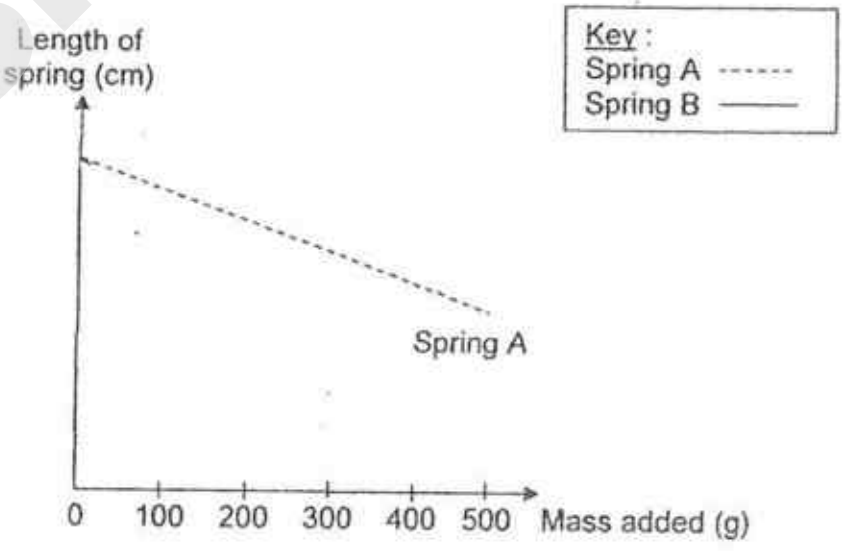
Spring	Original length (cm)	New length (cm)
A	10.0	5.0
B	10.0	3.5

(a) In the diagram above, **draw and name two forces acting on Spring A**, using arrows to indicate their direction. [2]

She increased the weight on each spring by 100g and recorded the new lengths of both springs. She then repeated this step up to a total mass of 500g.

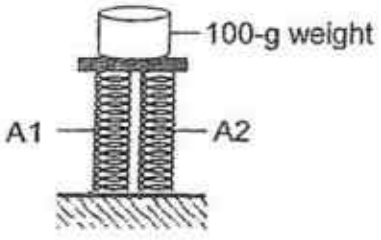
The length of Spring A was plotted in the graph below.

(b) In the graph below, **draw and label** a line for Spring B using the key provided. [1]



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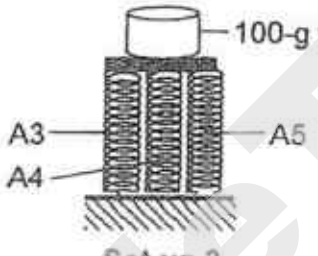
Weiling then took 2 identical Spring A (A1 and A2) and placed a 100-g weight on them as shown in the diagram below. She measured the new length of each spring and recorded them.



Set-up 2

Spring	Original length (cm)	New length (cm)
A1	10.0	7.0
A2	10.0	7.0

Weiling repeated the experiment, using three identical Spring A, A3, A4, A5, and recorded the new length of the springs in the table below.



Set-up 3

Spring	Original length (cm)	New length (cm)
A3	10.0	7.4
A4	10.0	7.4
A5	10.0	7.4

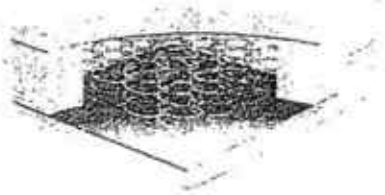
(c) What is the relationship between the number of springs used in each set-up and the length of the spring after compression? [1]

_____

_____

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Weiling wants to buy a spring mattress.



(d) If she wants a firmer mattress, should she choose one with Spring A or Spring B? Give a reason for your answer.
(Assume that all other materials used to make the mattress are identical)
[1]

_____

_____

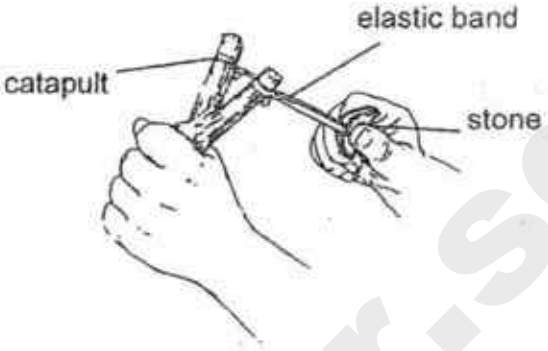
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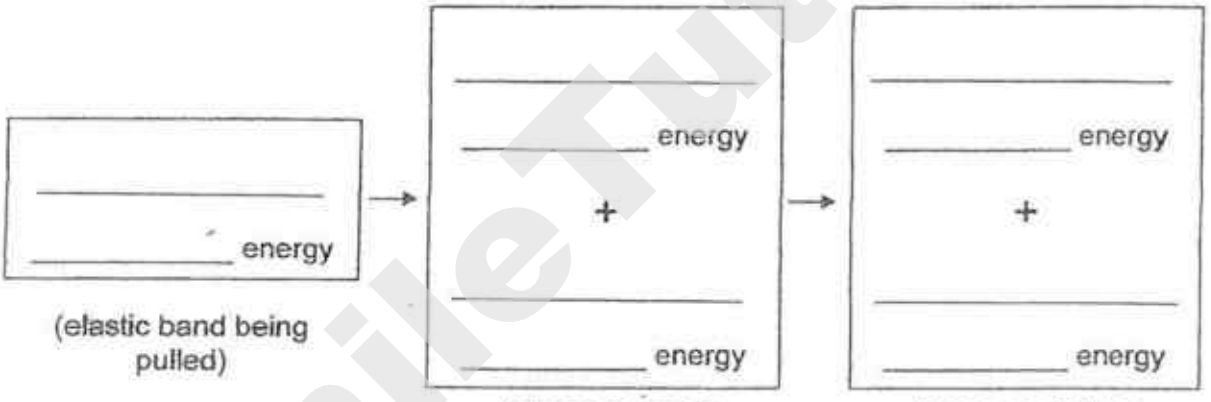
38. Luke used a catapult to shoot a stone at a target as shown below.



target



(a) State the energy changes that occur from the moment the elastic band was pulled to the moment that the stone landed on the ground. [2]



Luke replaced the elastic band with a rope and he observed that the distance travelled by the stone is shorter.

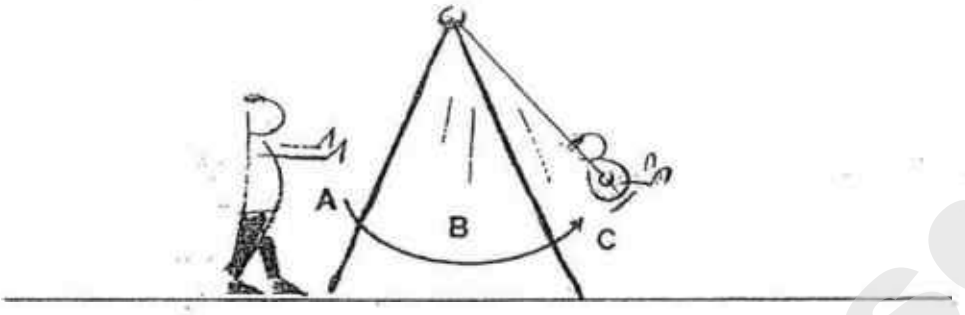
(b) Give an explanation for his observation. [1]

_____

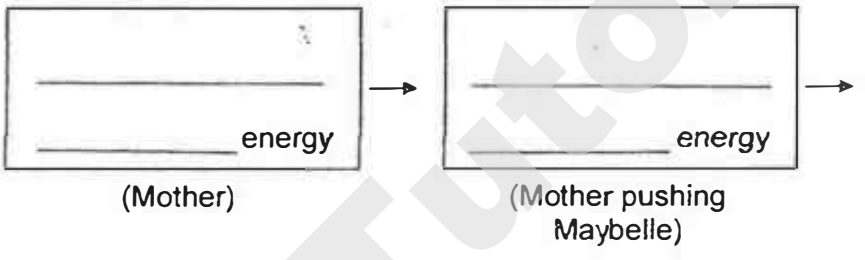
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39. Maybelle's mother pushed her on the swing in the playground.



(a) State the energy changes from the time Maybelle's mother was pushing her to when Maybelle was swinging to the highest point. [1]



It was observed that the swing swung lower when Maybelle's mother stopped pushing it.

(b) Give a reason for the observation. [1]

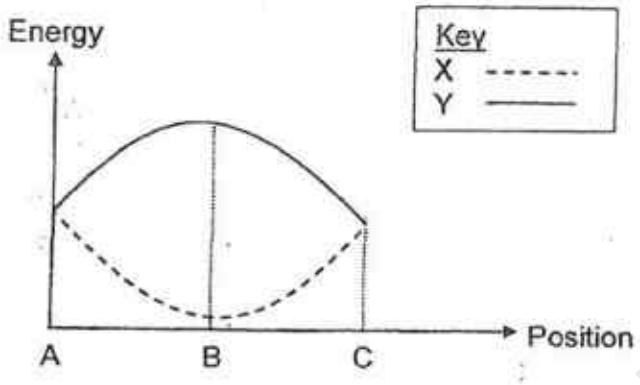
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The graph below shows the changes in energy as Maybelle swings from A to B to C.



(b) What forms of energy do X and Y represent? [1]

X: _____

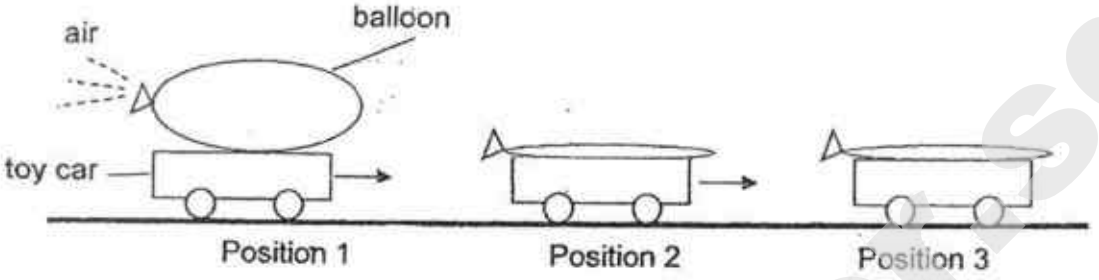
Y: _____

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40. In an experiment, an inflated balloon was glued to a toy car.

At position 1, in the diagram below, air was released from the balloon which caused the car to move forward. At position 2, all the air had escaped but the car continued to move forward. The car came to a stop at position 3.



(a) Give a reason why the toy car continued to move forward from position 2 towards position 3. [1]

_____

_____

(b) Suggest two changes to the experiment to make the toy car move a longer distance in the experiment. [2]

1) _____

2) _____

(c) In the diagrams above, **draw and label** a force that is acting on the toy car in position 1. Do **not** state frictional force. [1]

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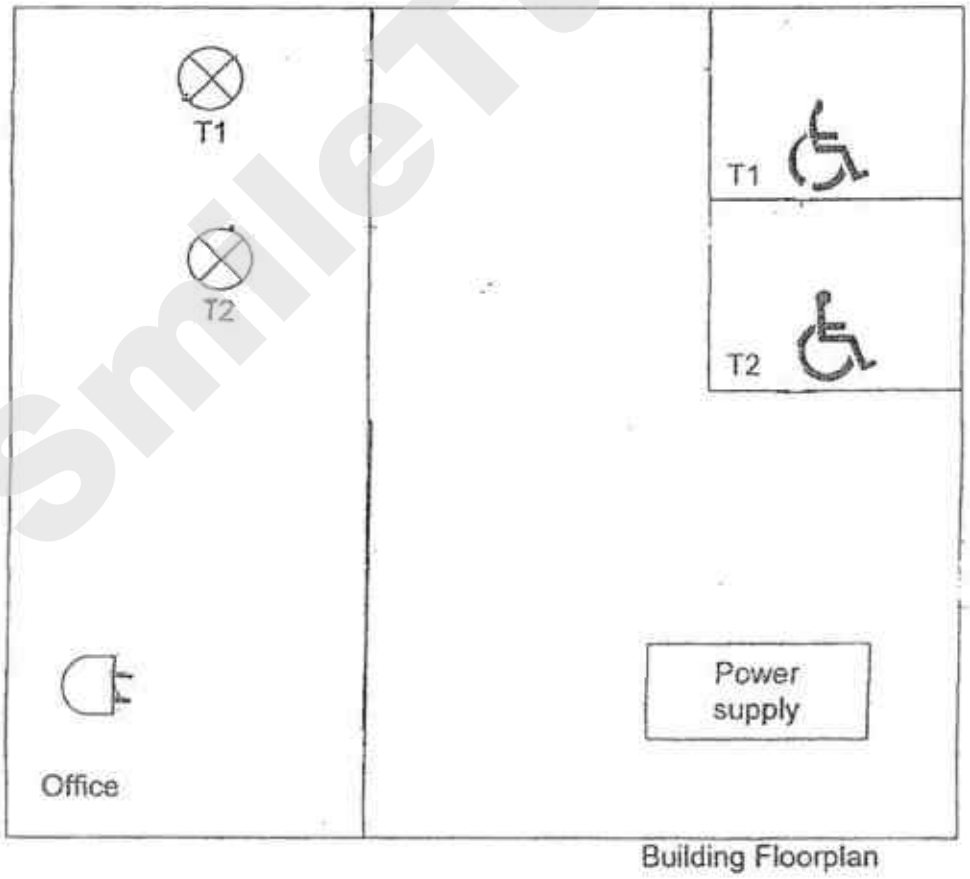
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41. People with physical disability can press an **emergency switch** in the toilet for help and a bell will sound in the office of the building. At the same time, a light indicator will turn on showing the toilet (T1 or T2) where help is required.

(a) Draw the circuit diagram in the floorplan below so that the emergency switch can function as stated above.

Use the following symbols in your circuit diagram, connecting them to the power supply provided. [2]

Description	Symbol
Light indicators	T1 T2
Bell	
Emergency switch	

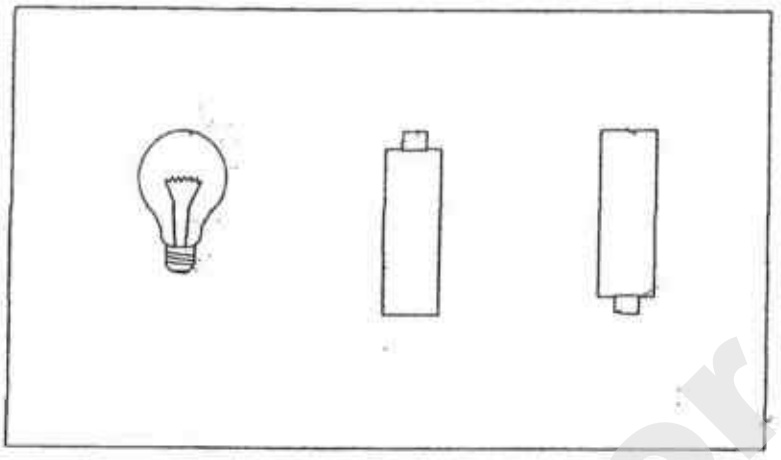


Building Floorplan

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(b) In the diagram below, draw wires to connect the bulb and the batteries so that the bulb lights up the **brightest**. [1]



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YEAR	:	2017
LEVEL	:	PRIMARY 6
SCHOOL	:	NANYANG PRIMARY
SUBJECT	:	SCIENCE
TERM	:	CA1

Booklet A

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

Booklet B

Q29 (a) Substance X : Digestive juices.
Part C : Small Intestine.

(b) It is to transport the food for further digestion in Part B.

(c) It is absorbed into the bloodstream in Part C, the small intestine and transported to all other parts of the body.

Q30 (a) Photosynthesis

(b) When D photosynthesized, it took in carbon dioxide from the water and gave out oxygen, thus liquid P reacted to the increase of oxygen present, turning into blue liquid P.

(c) Organism itself did not photosynthesise. Under light, there is less oxygen.

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Q31 (a) X and Y

(b) Plant cells have cell walls, which X and Y have, thus they are plant cells.

(c) In a plant's root.

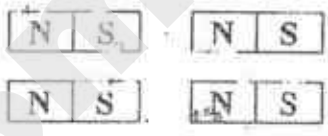
Q32 (a) Some of the hot soup evaporated into the air and made contact with the cooler surface of the metal lid, condensing into water droplets.

(b) Box F would be wetter as the hot buns' water would evaporate and condense into water droplets, while when the hot buns' water in box G start to evaporate into water vapour, some would escape through the holes, thus box F buns are wetter.

Q33 The black crude oil blocked sunlight and air to enter the sea water, thus when the plant tried to photosynthesize, the plants could not get light nor air, thus could not photosynthesize, not able to make food and soon died to the lack of food.

Q34 (a) The unlike poles of Magnet 1 and 2 were facing each other. Thus the part of the device inside attracts the part of the device outside and moves it along as Mrs Tan controls the handle.

(b)



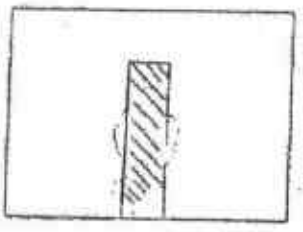
(c) The magnets had more magnetic force to attract each other as there were more magnets added to the device.

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Q35 (a) B. The further the object is to the screen, the larger the shadow that was formed.

(b) It was opaque.

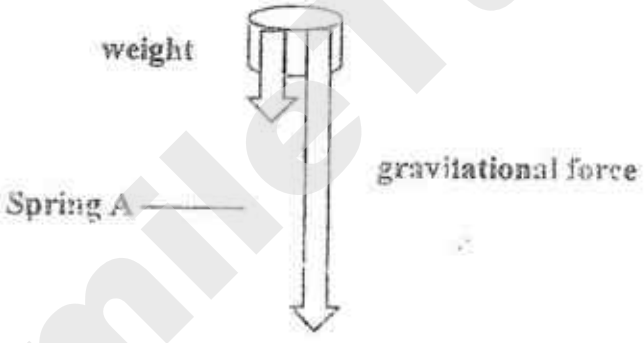
(c)



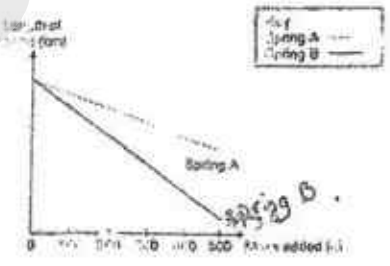
Q36 (a) A did not change in shape when it was placed into the two containers as A solid has a definite shape.

(b) In between the sand, there were tiny gaps that the air in the container occupied, thus when water was added in, the air rushed out of these spaces and the water occupied the space in the gaps.

Q37 (a)



(b)



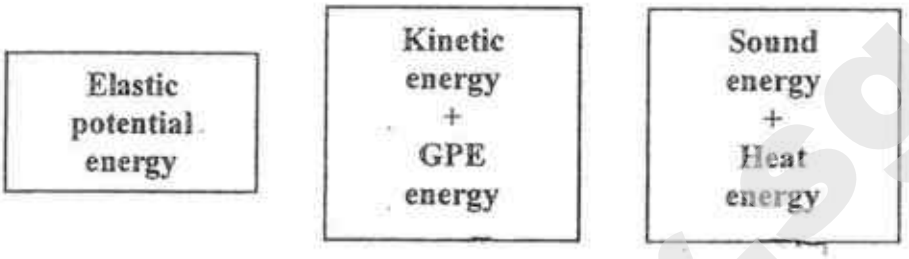
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(c) The more the number of springs used in each set-up, the longer the length of the spring after compression.

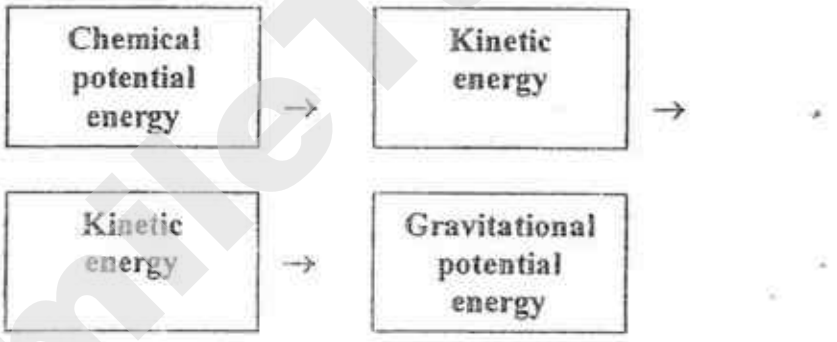
(d) Spring A. A will not be compressed very deep and firm.

Q38 (a)



(b) The rope was not as elastic as the elastic band, thus contained less elastic potential energy. Hence the stone could not travel as far as when using an elastic band.

Q39 (a)



(b) Some kinetic energy was converted to heat energy and sound energy.

(c) X : Gravitational Potential Energy

Y : Kinetic Energy

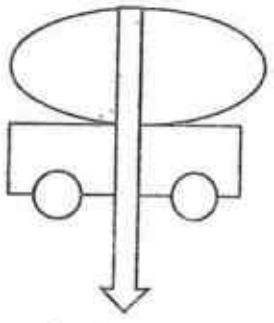
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Q40 (a) There was still kinetic energy in the car.

(b) 1) Change to a smoother surface.

2) Add more air into the balloon.

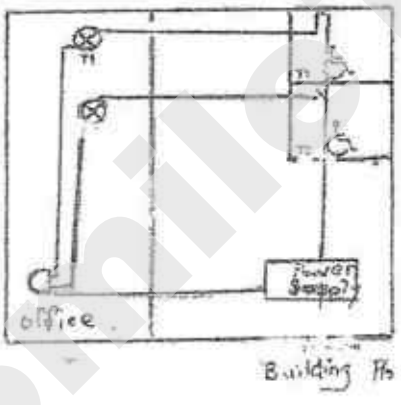
(c)



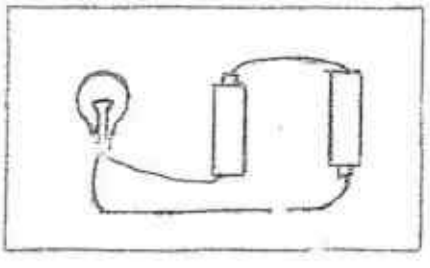
Gravitational force

Position 1

Q41 (a)



(b)



End

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Continual Assessment 1 2017
STANDARD SCIENCE
Primary 6



Name: _____ **Total Marks:**

Class: Pr 6 _____ **Register No._____** **Duration: 1 h 45 min**

Date: 3 March 2017 **Parent's Signature: _____**

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 29 to 42, give your answers in the spaces given in the Booklet B.

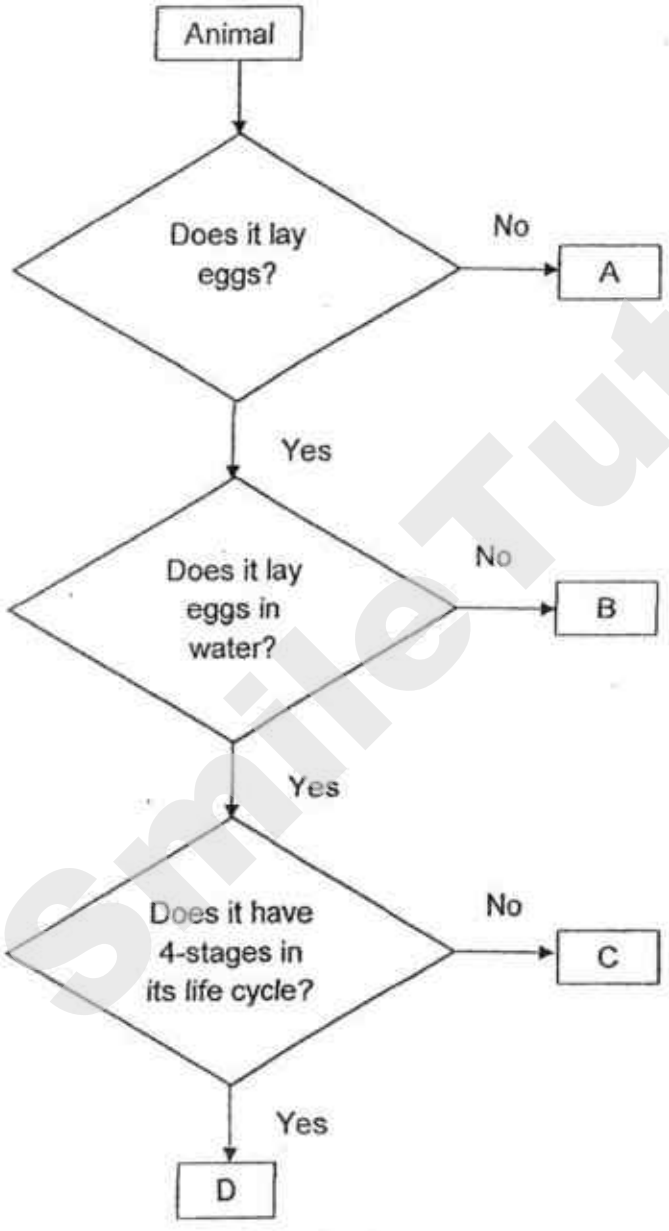
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Part I (56 Marks)

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. Study the flowchart below.

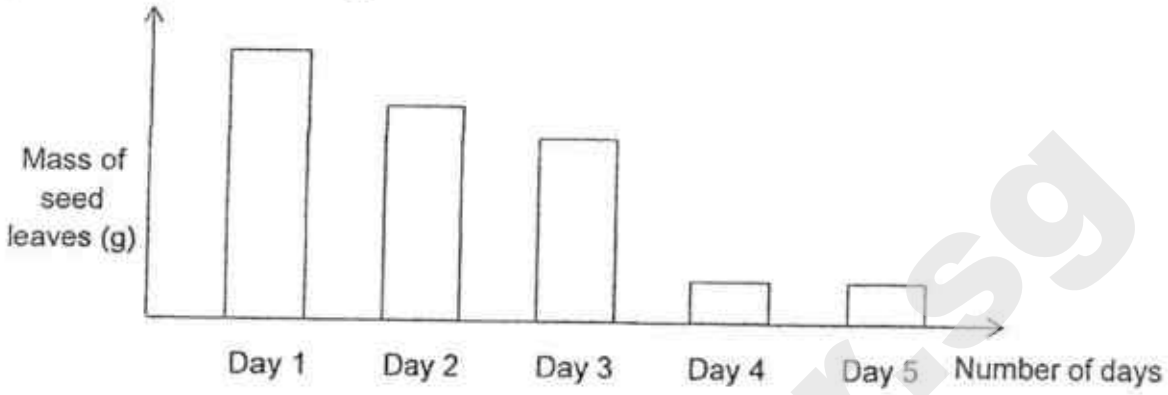


Which one of the following best represents a mosquito?

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

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2. The graph below shows the change in the mass of the seed leaves of a young plant over a period of 5 days.



Sarah, Johan, Keith and Diana wrote the following statements based on the graph above.

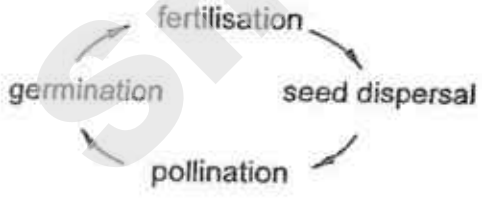
Sarah: The mass of the seed leaves will increase after Day 5.
Johan: The leaves will make food for the young plant after Day 4.
Keith: The young plant will die as the mass of the seed leaves decreases.
Diana: The seed leaves provide food for the young plant from Day 1 to Day 4.

Whose statements are correct?

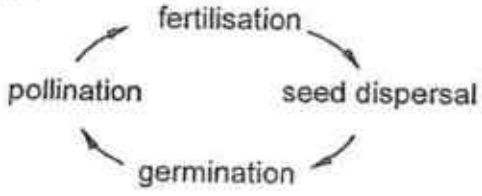
(1) Sarah and Johan
(2) Sarah and Keith
(3) Johan and Diana
(4) Keith and Diana

3. Which one of the following shows the correct sequence of processes in the sexual reproduction of flowering plants?

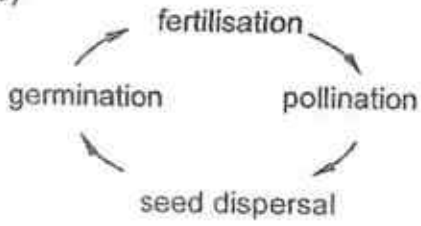
(1)



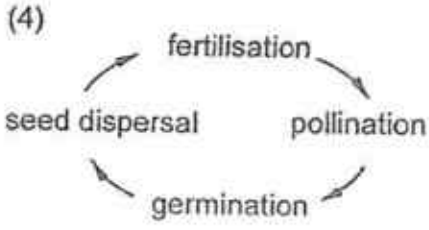
(2)



(3)

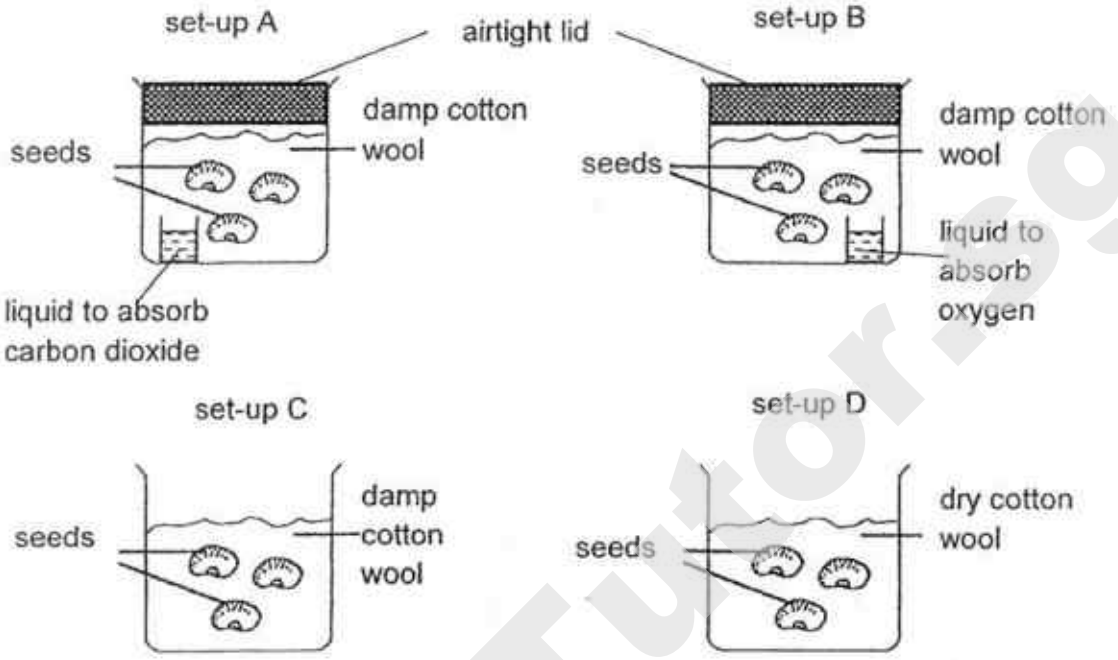


(4)



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4. Salina placed the same type of seeds in four identical containers as shown below. She covered set-ups A and B with an airtight lid, and placed the four set-ups next to the window at room temperature.



In which set-up(s) would the seeds most likely start to germinate?

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

5. The table below describes the differences in sexual reproduction between a flowering plant and a human.

	Plant	Human
Female reproductive cell	ovule	S
Male reproductive cell	pollen grain	P
Formed after fertilisation	seed	Q

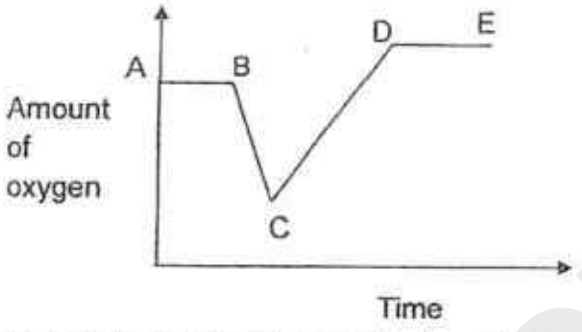
Which one of the following correctly identifies S, P and Q?

	S	P	Q
(1)	sperm	foetus	egg
(2)	egg	sperm	foetus
(3)	ovary	sperm	foetus
(4)	foetus	egg	ovary

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6. Zul has an aquarium filled with water plants and fishes. He connected a datalogger to his aquarium to measure the amount of oxygen in the aquarium over a 24 hr period.

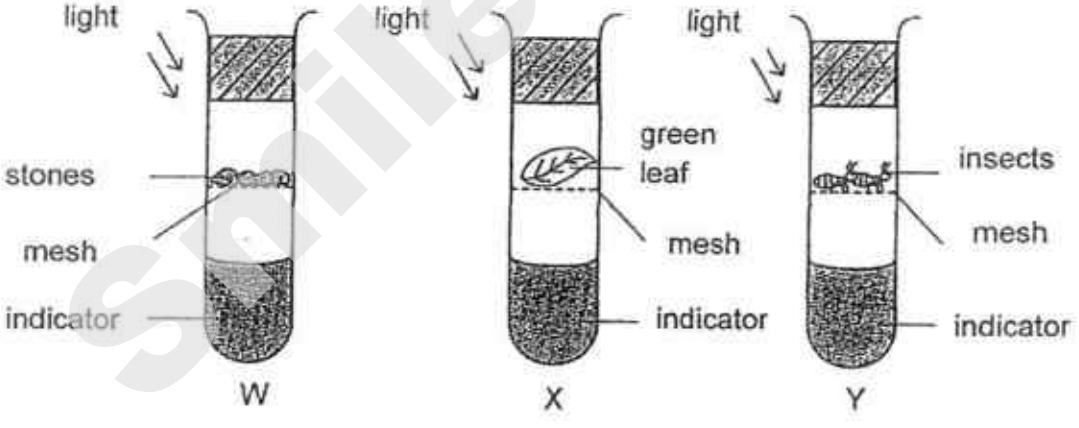
The graph from the datalogger shows the following information.



At which part of the graph was the plant unable to make food?

(1) From A to B only
(2) From B to C only
(3) From C to D only
(4) From D to E only

7. Three test tubes were set up as shown below. At the start of the experiment, the indicator in each test tube is blue. In the presence of an increased amount of carbon dioxide, the indicator changes from blue to red.

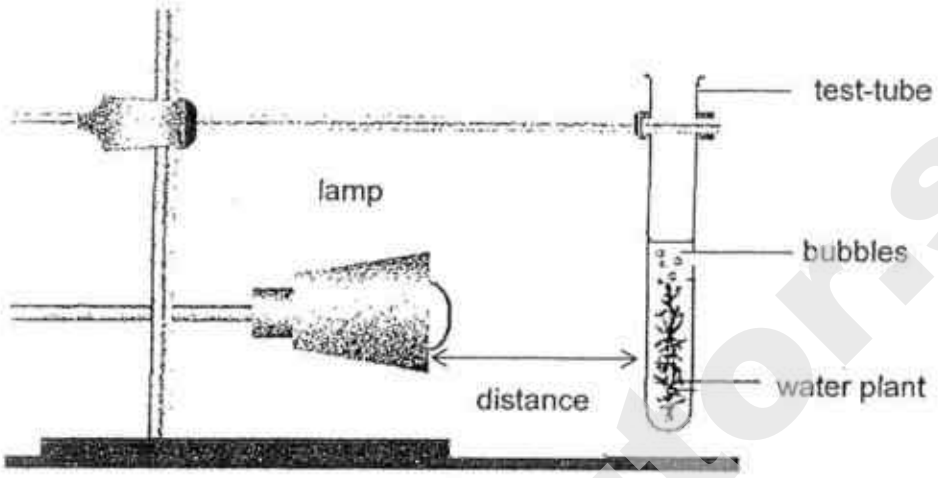


What will be the colour of the indicator in each test tube after two hours?

	W	X	Y
(1)	blue	blue	blue
(2)	blue	red	red
(3)	blue	red	blue
(4)	blue	blue	red

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8. Stanley carried out an experiment on photosynthesis. He set up the apparatus as shown below. When the lamp was switched on, he observed bubbles in the water.



Which of these variables can affect the number of bubbles produced by the water plant?

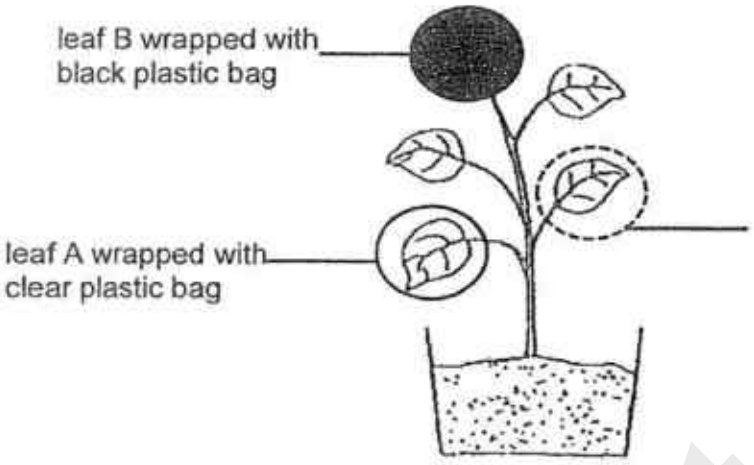
A: Size of the test-tube
B: Distance from the lamp
C: Brightness of the lamp
D: Amount of oxygen dissolved in the water

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

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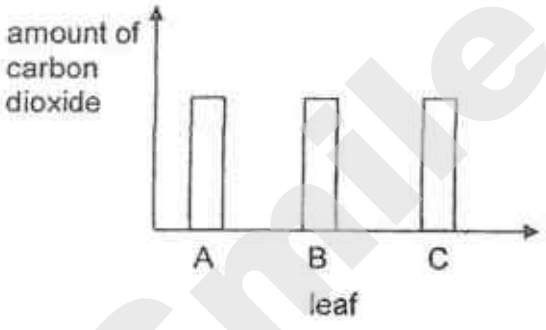
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9. Emma set up an experiment as shown below. She wrapped three similar leaves in different types of plastic bags of the same size. She placed the potted plant under the sun for several hours.

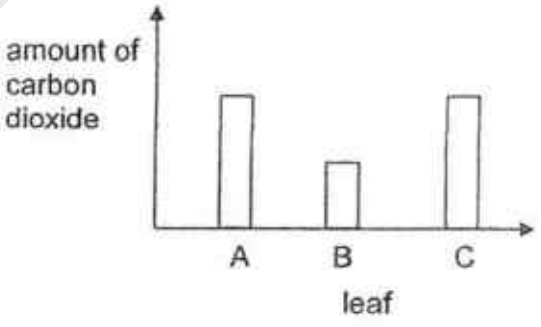


Which of the following graphs represents the amount of carbon dioxide in the plastic bags at the end of her experiment?

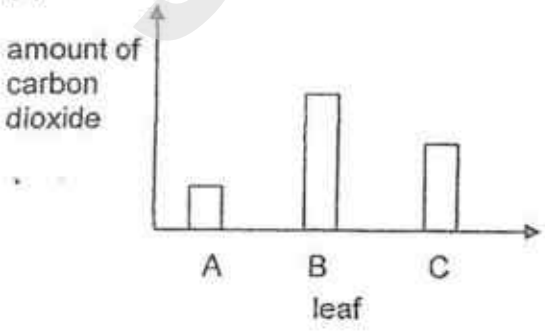
(1)



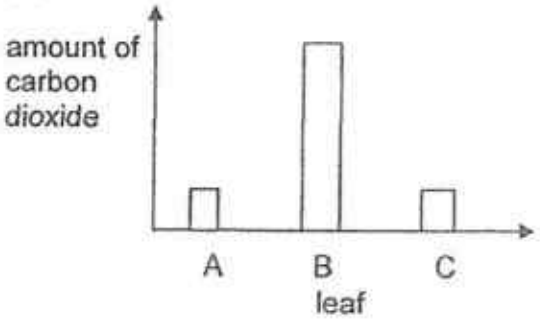
(2)



(3)



(4)



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10. Which one of the following properties can differentiate a liquid from a gas?
    (1) Has mass
    (2) Occupies space
    (3) Has a definite shape
    (4) Has a definite volume

11. Ali has a football which can hold 350cm³ of air. He used a syringe and removed 80cm³ of air from the football as shown in the diagram below.

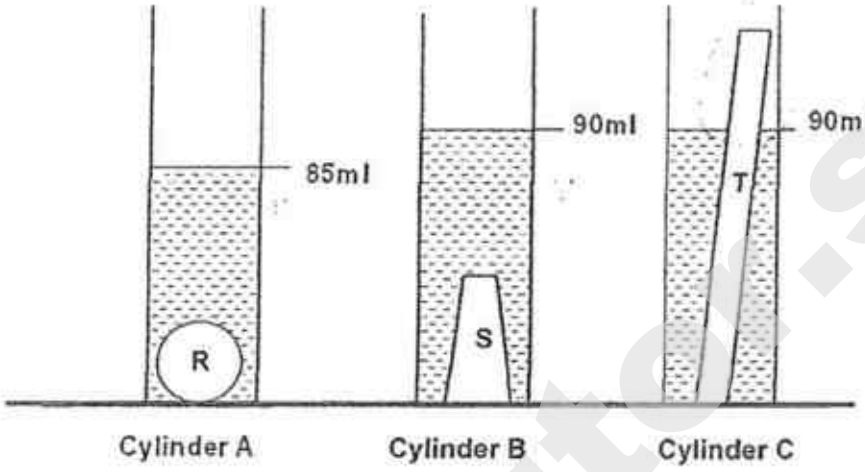


How did the volume of the air in the football and the mass of the football change ?

	Volume of air in the football	Mass of the football
(1)	decreased	decreased
(2)	increased	increased
(3)	decreased	remained the same
(4)	remained the same	decreased

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12. An experiment was conducted on 3 different objects (R, S and T). Each object was placed into measuring cylinders A, B and C respectively, filled with 80ml of water at the start.



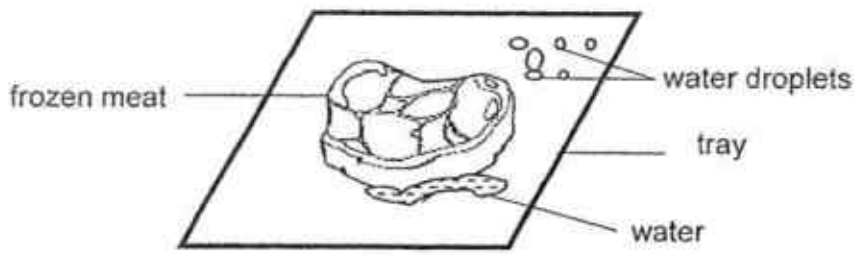
Which of the following can be concluded about objects R, S and T?

A: Object T has the largest volume.
B: Object T has a greater mass than Object R.
C: Object S has a greater volume than Object R.
D: Objects S and T have the same mass and volume.

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

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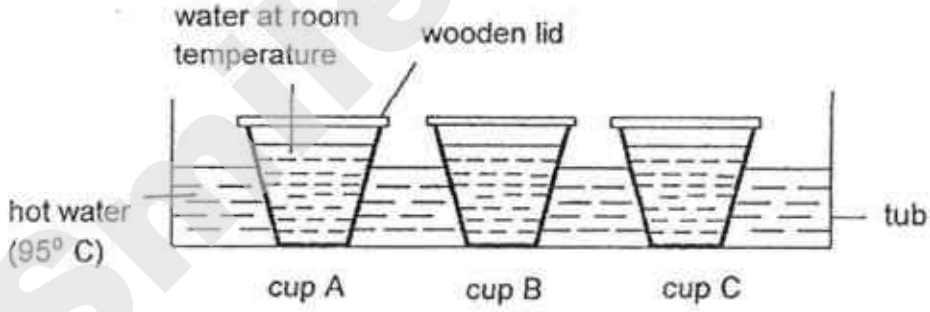
13. Mrs Tan took a piece of frozen meat covered with ice and placed it on a tray as shown in the diagram below. After some time, water appeared on the tray and the meat was not frozen.



Based on the above observations, which one of the following is **NOT** correct?

	substance	gained heat	lost heat
(1)	ice	√	
(2)	tray		√
(3)	frozen meat	√	
(4)	water vapour in the air	√	

14. Andy poured equal volumes of water at room temperature into three cups of different material. He placed the cups in a tub of hot water as shown below and covered each cup with a wooden lid.



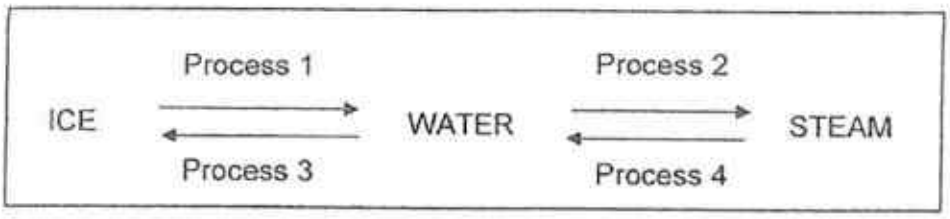
He measured the temperature of water in each cup after some time.

Andy concluded that the material of cup B was the best conductor of heat.
What was the most likely observation for Andy to make such a conclusion?

(1) The temperature of the water in cup A was the lowest.
(2) The temperature of the water in cup C remained the same.
(3) The temperature of the water in the cups A, B and C increased.
(4) The increase in the temperature of water in cup B was the highest.

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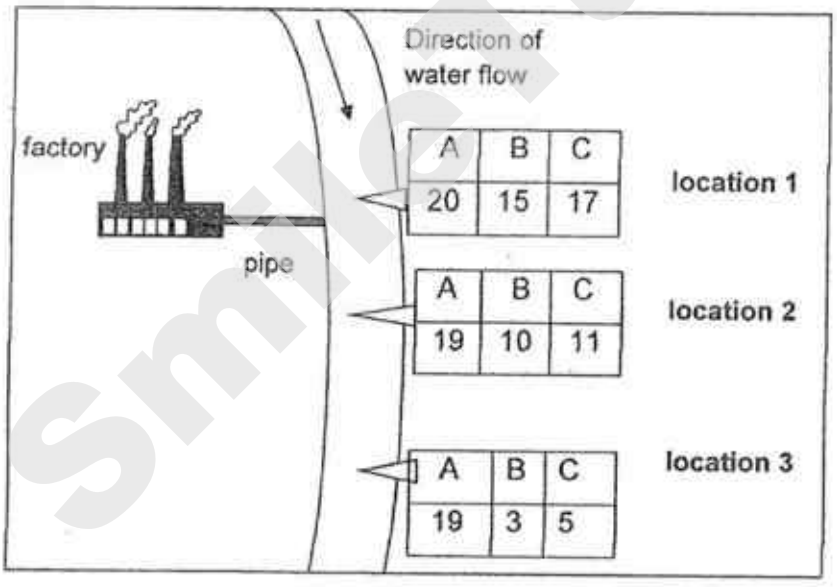
15. The diagram below shows the change of state for water.



What are the names of the processes?

	Process 1	Process 2	Process 3	Process 4
(1)	condensation	freezing	melting	boiling
(2)	melting	condensation	freezing	boiling
(3)	boiling	melting	condensation	freezing
(4)	melting	boiling	freezing	condensation

16. The diagram below shows the number of animals A, B and C found in a stream at locations 1, 2 and 3 after the factory was built. Waste is released into the water by the factory.



Mr Tan wants to conclude that the animals B and C are most affected by the factory waste.
Which one of the following information does he need?

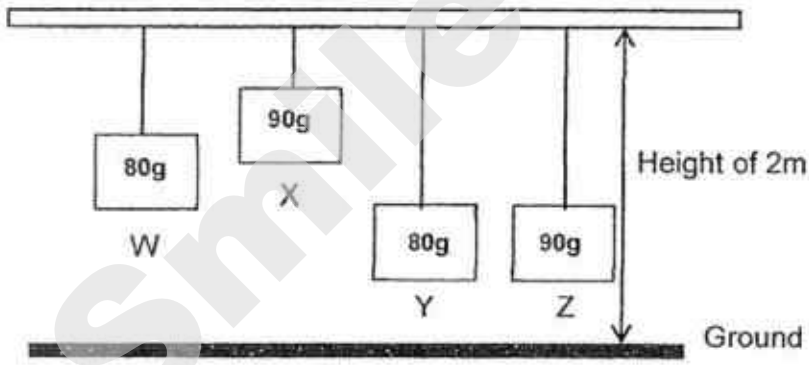
(1) The amount of waste discharged into the water.
(2) The types of waste substances discharged into the water.
(3) The number of animals A, B and C at the three locations before the factory was built.
(4) The average number of animals A, B and C at the three locations after the factory was built.

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17. Which of the following best matches the main form of energy present in the diagram shown?

	Running water 	Food 	Lightning strikes a tree 	Boy on diving board 
(1)	Kinetic energy	Potential energy	Heat energy	Kinetic energy
(2)	Sound energy	Heat energy	Light energy	Potential energy
(3)	Kinetic energy	Potential energy	Heat energy	Potential energy
(4)	Sound energy	Kinetic energy	Sound energy	Kinetic energy

18. The diagram show 4 objects which are hung from the ceiling.



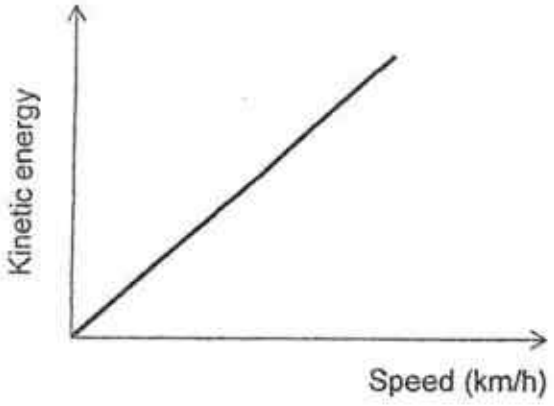
Which of the following statement(s) is/are correct?

A: Object X has more potential energy than object Z.
B: Object Z has more potential energy than object Y.
C: Objects W and Y have the same amount of potential energy.

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

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19. John conducted an experiment to find out if the speed of a car affects the amount of kinetic energy it has. He plotted his results as shown below.



Based on the graph, what conclusion(s) can be drawn?

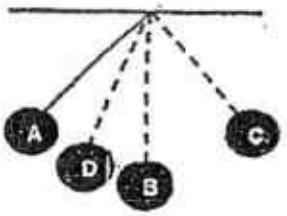
A: The car has no kinetic energy when it is at rest.
B: The faster the car moves, the more kinetic energy it has.
C: The mass of the car does not affect the amount of kinetic energy it has.

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

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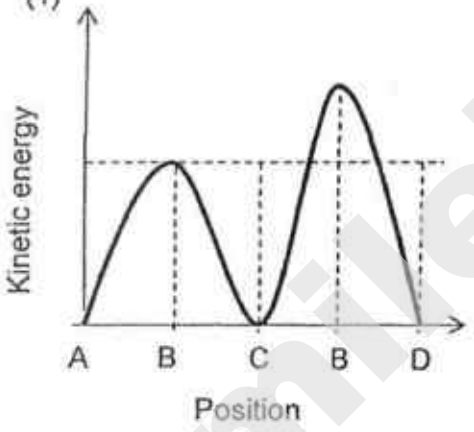
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20. Xavier carried out an experiment with a pendulum as shown in the diagram below. He released the metal ball at position A and let it swing to position C and then back to position D.

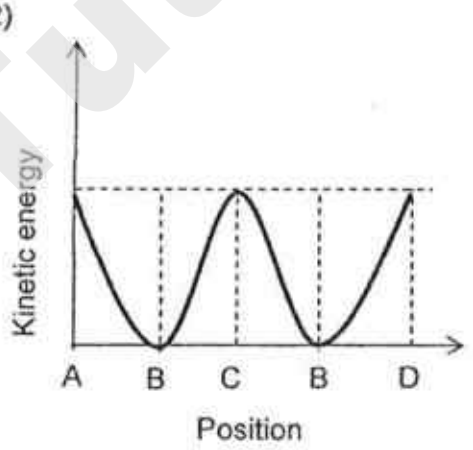


Which one of the following graphs shows the change in kinetic energy of the metal ball as it swung from A to C and then back to D passing through position B at both times?

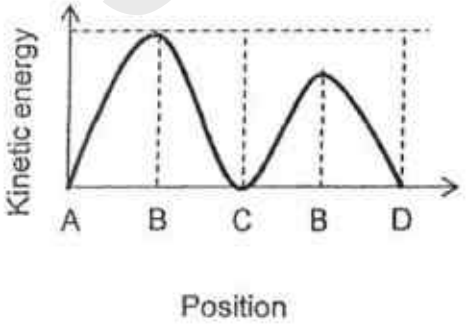
(1)



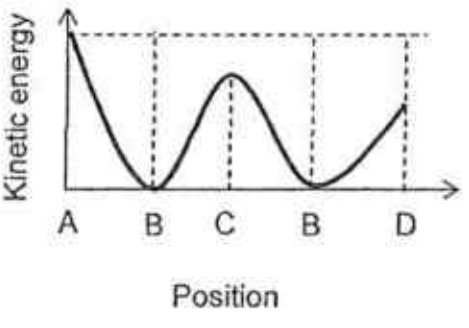
(2)



(3)

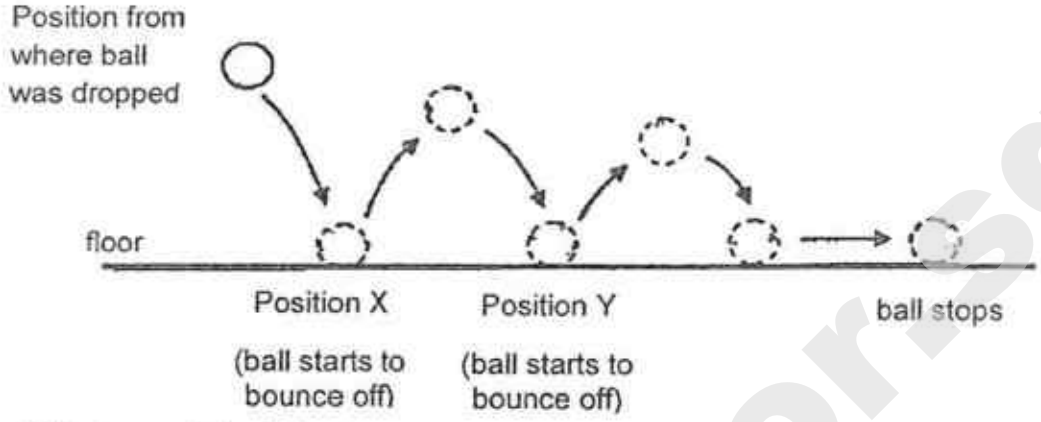


(4)



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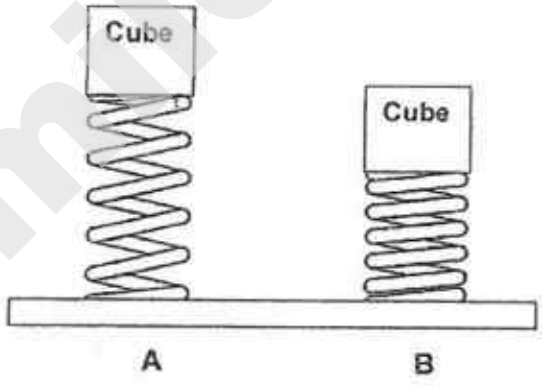
21. A rubber ball was dropped onto the floor as shown in the diagram below. The ball bounced several times making a sound each time it hit the floor.



Which one of the following statements is true about the energy in the ball as it moved from position X to position Y?

(1) The ball has no kinetic energy at both positions X and Y.
(2) The ball has more kinetic energy at position X than at position Y.
(3) The ball has the less kinetic energy at position X than at position Y.
(4) At position X, all the potential energy is converted to only kinetic energy.

22. Jason placed two different cubes on two identical springs. As a result, the springs, as shown in set-ups A and B, were compressed as shown below.



Based on his observation, Jason can conclude that _____.

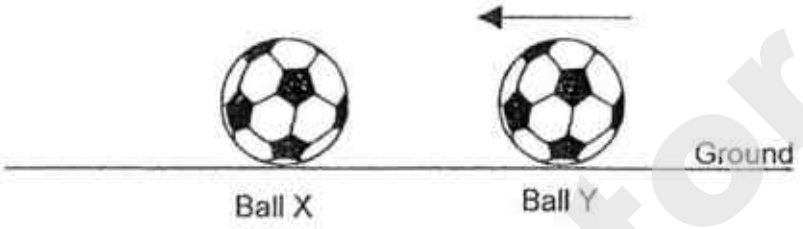
(1) Cube in A is heavier than Cube in B.
(2) The spring in A has less potential energy than in B.
(3) The spring in A has more potential energy than in B.
(4) The potential energy in the spring in A will be converted to more kinetic energy than in the spring in B.

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23. When a force is applied to an object, which of the following is not an effect of the force?

(1) The object rotates.
(2) The object moves faster.
(3) The object increases in mass.
(4) The object moves in the opposite direction.

24. Ball X is not moving. Ball Y is moving towards ball X.



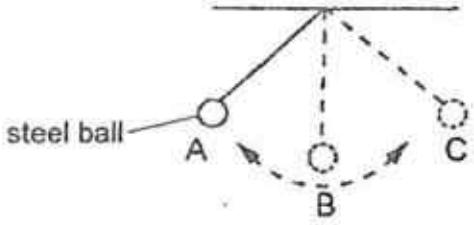
What will happen to Ball X when Ball Y touches it?

(1) Stops moving
(2) Starts moving
(3) Changes direction
(4) Slows down in speed

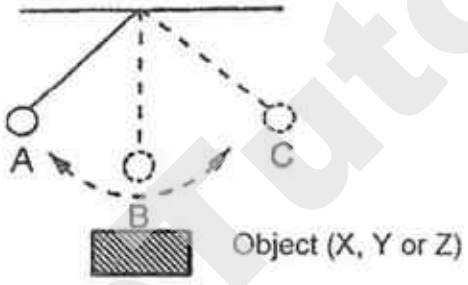
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25. Faith set up an experiment by letting a steel ball swing from point A to point C. It took 15 seconds to come to rest at position B.



She repeated the experiment by placing different objects X, Y and Z under position B respectively, using the identical set-up above.



The results obtained are shown in the table below.

Object	Time taken for the ball to come to a complete stop at B (s)
X	3
Y	10
Z	15

Based on the results obtained, which one of the following deductions can be made?

(1) Objects X, Y and Z are magnets.
(2) Object X is the weakest magnet.
(3) Object Y is a weaker magnet than object X.
(4) Object Z is made of a non-magnetic metal.

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26. Mr Quek used a large force to push two boxes up a slope as shown in Diagram 1. Then, he moved the same two boxes with a trolley up the same slope using a smaller force as shown in Diagram 2.

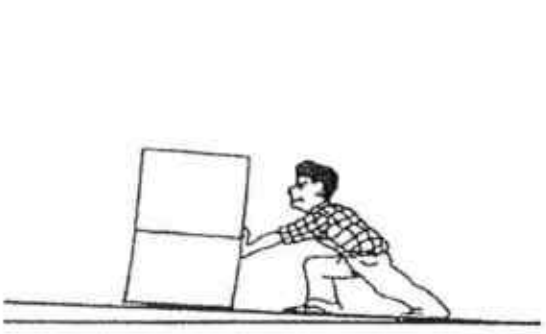


Diagram 1

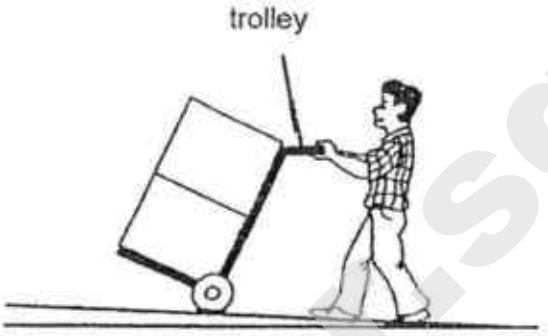
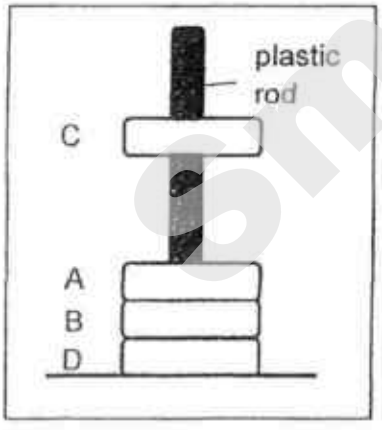


Diagram 2

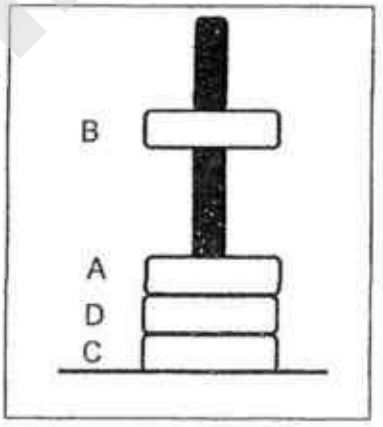
Which one of the following statements explains why Mr Quek used a smaller force to push the boxes with a trolley?

(1) Friction is reduced.
(2) There is no friction.
(3) The boxes have a smaller mass.
(4) The weight of the boxes is reduced.

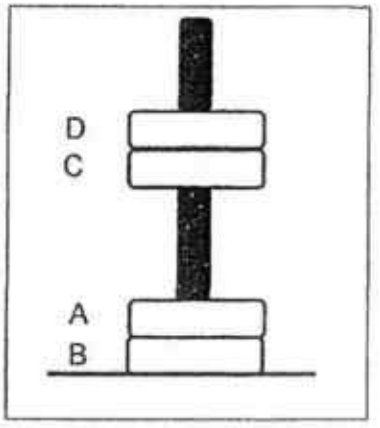
27. Chloe placed four iron rings A, B, C and D through a smooth plastic rod in three different arrangements as shown below.



Arrangement 1



Arrangement 2



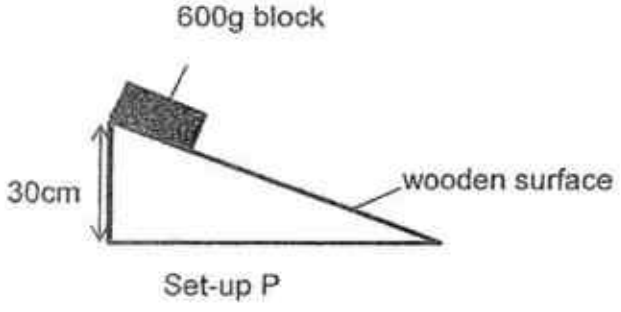
Arrangement 3

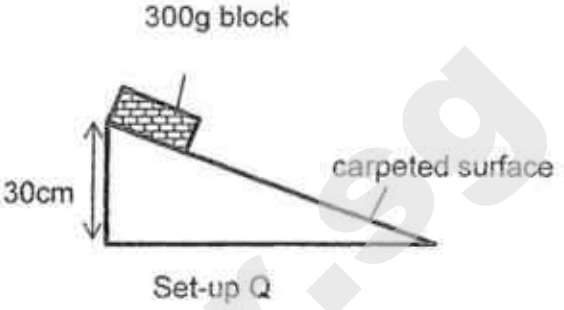
Based on the observation above, which of the following iron rings are definitely magnets?

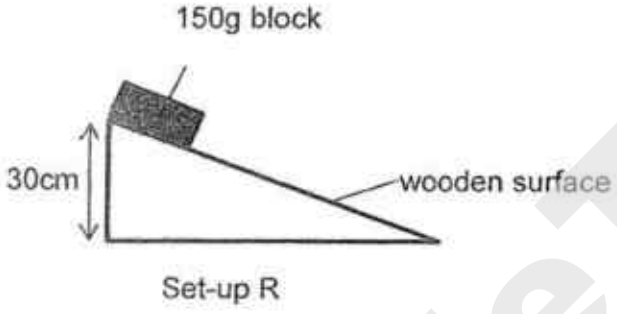
(1) A and B only
(2) B and D only
(3) A, B and C only
(4) B, C and D only

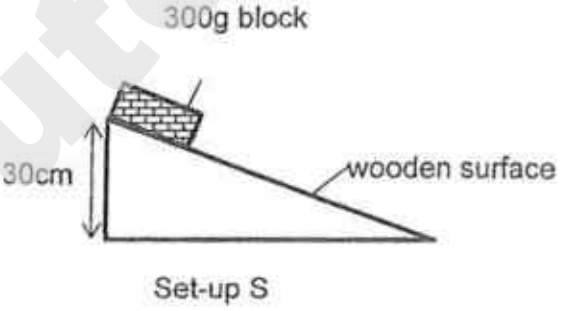
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28. Joshua conducted an experiment with blocks of different masses. He released the blocks from the top of the ramps with different surfaces as shown below.









He wanted to investigate how the time taken by the block to slide down the ramp depends on the mass of the block and the surface of the ramp. Which pairs of set-ups should he use in his investigation?

	Time taken depends on	
	Mass of the block	**Surface of the ramp**
(1)	Q and S	P and R
(2)	R and S	Q and S
(3)	P and Q	Q and S
(4)	P and S	Q and R

End of Booklet A

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Continual Assessment 1 2017
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: 100

Class: Pr 6 ___ Register No. _____ Duration: 1 h 45 min

Date: 3 March 2017 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 29 to 42, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

* This booklet consists of 15 printed pages. (including the cover page)

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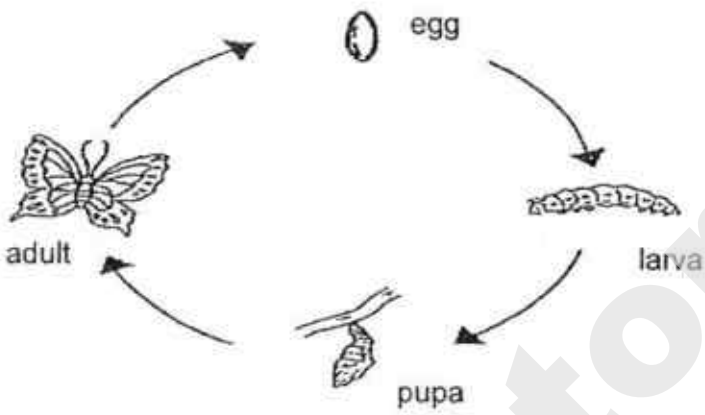
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Part II (44 Marks)

For questions 29 to 42, write your answers in the space provided.

29. Philip studied the life cycle of a butterfly as shown below.



(a) At the larval stage, the young of the butterfly has to go through a process to grow bigger. Name this process. [1]

_____

(b) The adult butterfly lays eggs on leaves.
Why does it lay eggs on leaves? [1]

_____

_____

(c) Philip classified butterfly as an insect. State one characteristic that helped him classify butterfly as an insect. [1]

_____

_____

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30. Rahimah grew two plants, A and B, of the same kind in her garden. She recorded the number of flowers and fruits grown on both the plants in the table below.

Number of days	15	25	35	45
Number of flowers on plant A	25	37	50	65
Number of fruits on plant A	0	0	21	35
Number of flowers on plant B	15	24	40	60
Number of fruits on plant B	0	0	0	0

(a) Explain why there is no fruit in plant B. [1]

_____

_____

(b) Rahimah also noticed many bees flying around her garden. Explain how the bees are helpful to plants A and B. [1]

_____

_____

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31. Study the diagram below.



fern



mushroom

(a) Give one difference between the fern and the mushroom shown above in terms of how they obtain food. [2]

_____

_____

_____

(b) Explain how the fern and the mushroom prevent overcrowding at a place. [1]

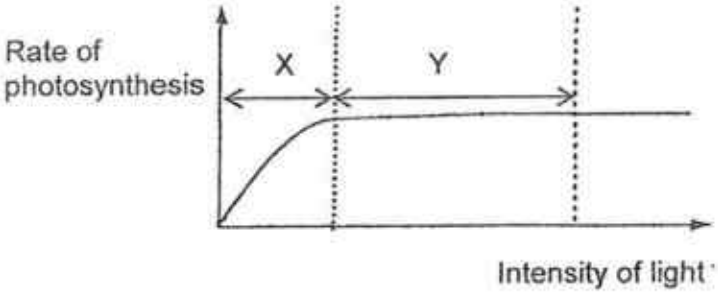
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32. The graph below shows how the intensity of light affects the rate of photosynthesis of plants.



(a) Based on part X of the graph, what is the relationship between the intensity of light and rate of photosynthesis? [1]

_____

_____

(b) The rate of photosynthesis at part Y remained the same even though the intensity of light was increased. Explain why. [1]

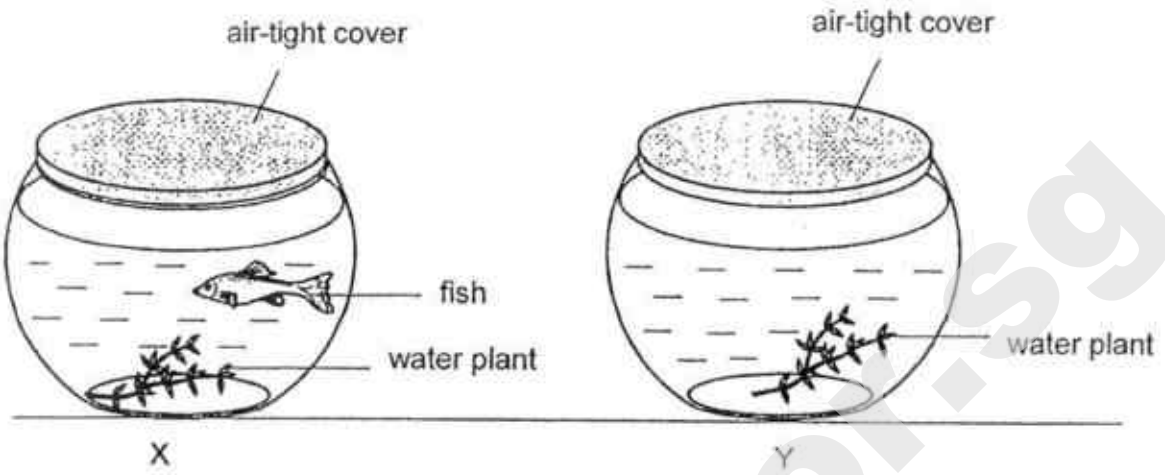
_____

_____

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33. Study the two fish bowls, X and Y below.



In the bowls above, the water contains air and sufficient food for the fish to eat. Both bowls were placed in bright light.

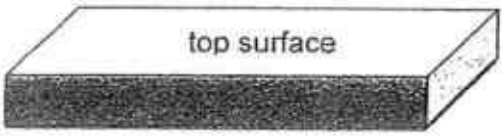
(a) After several hours, what happened to the amount of carbon dioxide and oxygen in bowl Y? Explain why. [2]

(b) Without adding water plants, what could you change in the bowl X for the fish to survive longer? Explain why. [2]

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34. The pictures below show 2 types of board made of similar metal, E and F.

metal board E



metal board F



Ryan cut both metal boards into the same size and thickness and placed them on a hot plate.

(a) After a few minutes, he found that the top surface of E felt hot but the top surface of F did not. Explain why. [2]

(i) metal board E:

_____

_____

(ii) metal board F:

_____

_____

(b) Give a reason how each of the following actions helps to make his experiment a fair test. [2]

(i) using similar metal for the two boards

_____

_____

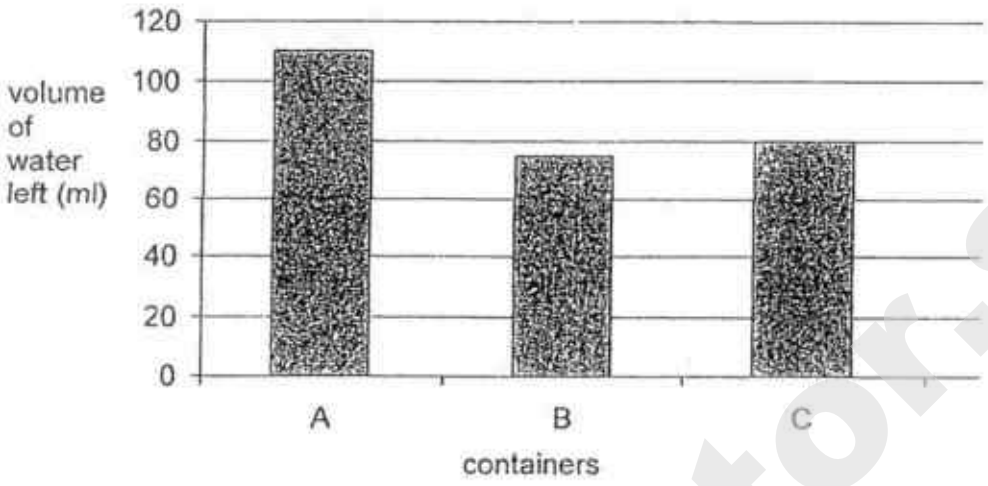
(ii) using the same hot plate

_____

_____

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35. Sandra filled three containers, A, B and C of different sizes and shapes with 300ml of water. She placed them out in the same open field from morning till late afternoon. After 9 hours, she recorded the volume of water left in each container in a bar chart shown below.



(a) What can she conclude about the rate of evaporation for the three containers? [1]

_____

_____

(b) State two factors that could have affected the rate of evaporation in the three containers. [2]

_____

_____

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36. Lily went to a store to buy some pancakes. The sales assistant packed her pancakes which were still hot into a styrofoam box with a triangular cut as shown in the diagram below.



When she opened the box at home, she noticed some water droplets on the inner surface of the cover.



(a) Explain how the water droplets appeared on the underside of the cover. [2]

_____

_____

_____

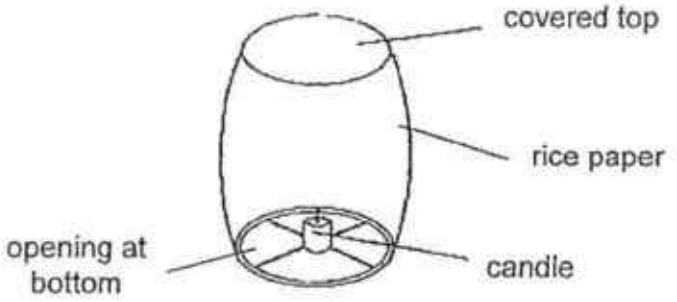
(b) Explain how the hole reduced the amount of water droplets formed on the underside of the cover. [1]

_____

_____

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37. Sky lanterns are made of rice paper and works like a hot air balloon. It has a covered top and an opening at the bottom. A candle is lit which caused the lantern to rise up into the air.

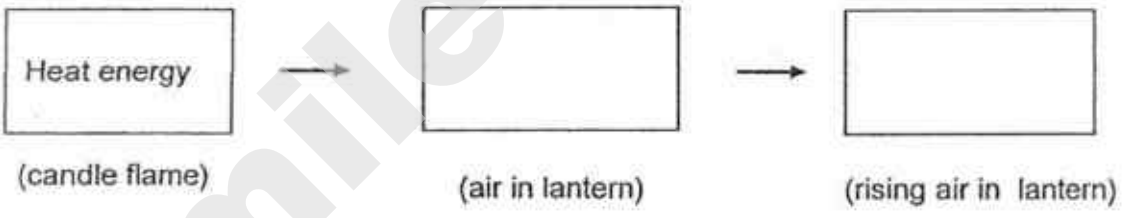


Sky lantern

(a) Identify the source of energy for the rising sky lantern. [1]

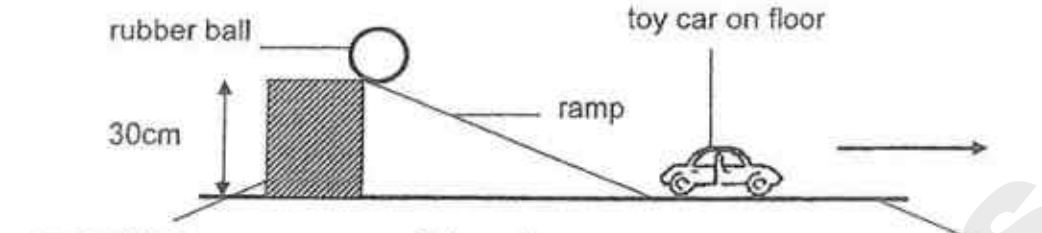
_____

(b) State the energy changes when the candle is burnt for the sky lantern to rise up into the air? [1]

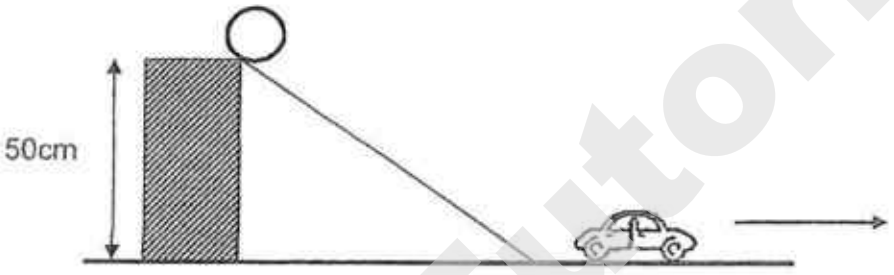


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38. Cathy carried out an experiment using identical rubber balls, wooden ramps and toy cars. Wooden block of different heights were also used as shown below.



Set-up A



Set-up B

When Cathy released the ball from the top of the ramp, the ball rolled down and hit the toy car. She measured the distance travelled by the toy car along the floor.

(a) State one possible aim for her experiment. [1]

_____

_____

(b) Based on your answer in (a), state one other variable you must keep the same. [1]

_____

(c) List two ways Cathy can decrease the distance travelled by the toy car in set-ups A and B. [1]

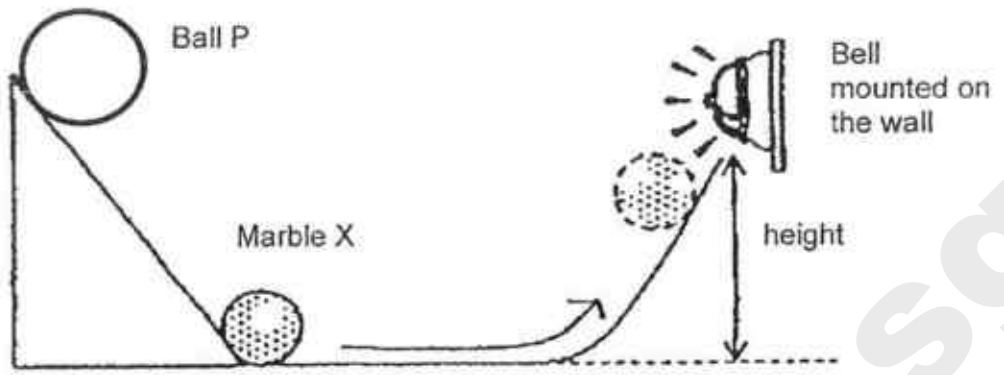
(i) _____

(ii) _____

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39. Jason conducted an experiment using the set-up as shown below.



Jason wanted to find out the mass of the ball required to move Marble X to hit the bell. Ball P was released to hit Marble X. Marble X moved in the direction as shown in the set-up. He repeated the experiment with Balls Q, R and S. He recorded his results in the table below.

Ball	Mass of ball (g)	Height moved by Marble X (cm)	Did the bell ring?
P	25	7	No
Q	50	9	No
R	75	14	No
S	100	20	Yes

(a) What is the relationship between the mass of ball used to hit Marble X and the height moved by Marble X? [1]

_____

_____

(b) Why was Ball S able to hit the bell? [2]

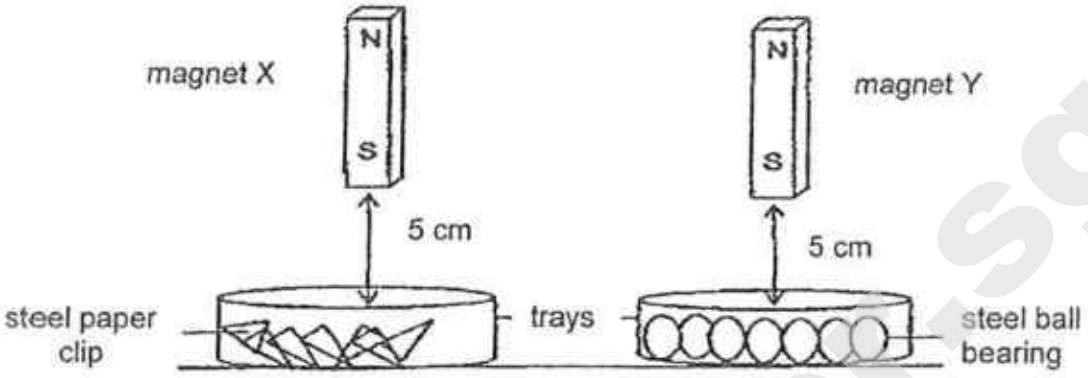
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40. Jane conducted an experiment to find out if Magnet X or Magnet Y was stronger as shown below. The strength of the magnet is determined by the number of objects picked up by the magnet. The two similar containers were filled with the same number of steel paper clips and steel ball bearings.



Her teacher said that her experiment was not a fair one.

(a) What change should Jane make to her set-up to ensure a fair test? [1]

_____

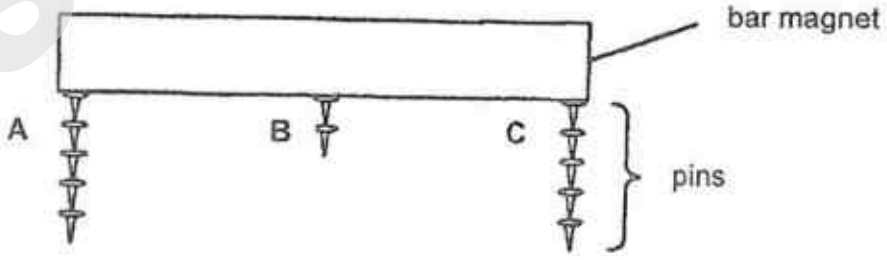
_____

(b) How does the change in (a) ensure a fair test? [1]

_____

_____

Jane then placed pins, one at a time, at A, B and C on Magnet X, until no more pins could be attracted by the magnet. The result is as shown below.



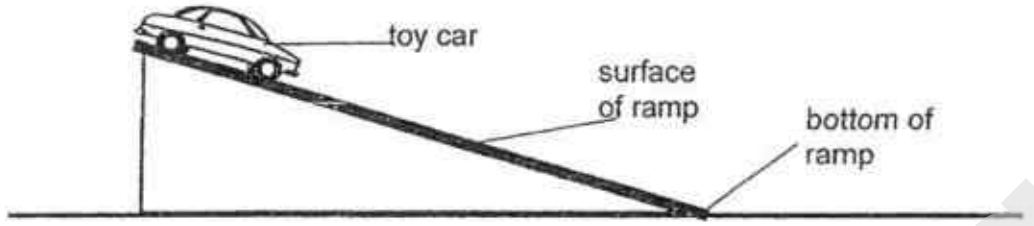
(c) What could Jane conclude about Magnet X based on her observation? [1]

_____

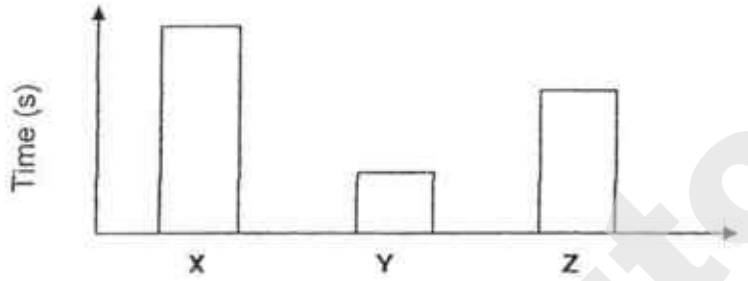
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41. An experiment was conducted using the set-up below.



The graph below shows the time taken for the toy car to reach the bottom of the ramp for the three different types of surfaces, X, Y and Z.



(a) Explain why using the same toy car in the experiment ensures a fair test. [1]

_____

_____

(b) How would you ensure the experiment is reliable? [1]

_____

_____

(c) Why did the toy car eventually come to a stop? [1]

_____

_____

(d) Based on the graph, which surface would you choose to make the bathroom floor to prevent slipping? Explain why. [2]

_____

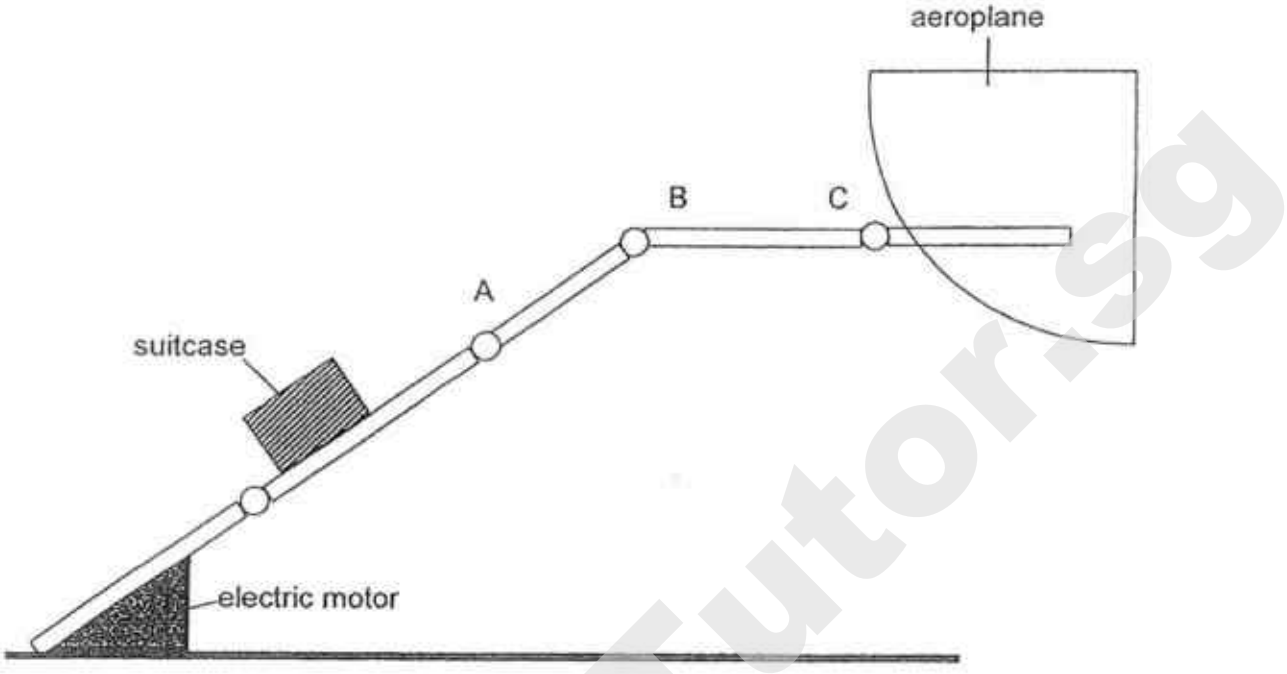
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42. The diagram shows a belt carrying a suitcase into an aeroplane using an electric motor.



(a) What happens to the amount in potential energy of the suitcase as it moves from points A to B and then to C? [2]

(i) A to B : _____

(ii) B to C : _____

(b) Give reasons for your answers in (i) and (ii). [2]

_____

_____

_____

End of Booklet B

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YEAR	:	2017
LEVEL	:	PRIMARY 6
SCHOOL	:	ROSYTH
SUBJECT	:	SCIENCE
TERM	:	CA1

Booklet A

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

Booklet B

Q29 (a) Moulting

(b) So that when its eggs hatch, they will be able to eat the leaves.

(c) It has three body parts.

Q30 (a) The flowers in plant B are male flowers.

(b) They can help pollinate the flowers by transferring the pollen grain from flower B to the stigma of a flower.

Q31 (a) The fern makes food for itself while the mushroom grows and feeds on other dead organisms.

(b) They produce spores which are light which can be easily carried away by the wind further from the parent.

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Q32 (a) As the intensity of light increases, the rate of photosynthesis also increases.

(b) It had reached a certain limit and could no longer photosynthesise.

Q33 (a) The carbon dioxide decreased while the oxygen increased as the plant had photosynthesized thus, taking in carbon dioxide and giving out oxygen.

(b) Remove the air tight cover. The amount of air would increase along with the oxygen as it would be able to enter the water.

Q34 (a) (i) Heat can travel to the metal board easily.

(ii) There were air spaces and air is a poor conductor of heat thus, it took more time for heat to travel through it.

(b) (i) Ensure that the metal have the same ability to conduct heat.

(ii) There would be the same intensity of heat.

Q35 (a) The rate of evaporation is the fastest in container B followed by container C and container A.

(b) Exposed surface area, temperature of water.

Q36 (a) The water vapour the cooler surface of the cover and condensed to water droplets.

(b) The hole allows water vapour to escape so less water vapour will condense.

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Rosyth CA1

Q37 (a) Candle

(b)

Heat energy	→	Kinetic energy

Q38 (a) To find out if the height of the wooden block affects the distance travelled by the car.

(b) Surface of the floor / starting point of car / ball on the ramp.

(c) (i) Use a lighter ball.

(ii) Use a heavier car.

Q39 (a) As the mass of the ball increases, the height moved by Marble X also increases.

(b) Ball S has the greatest mass hence it will have the most potential energy which is converted to the most kinetic energy, causing Marble X to move the greatest height in order for the ball to rim.

Q40 (a) Change the ball bearings to steel paper clips.

(b) To confirm that the number of paper clips is affected by the strength of the magnet only.

(c) Magnetic force is stronger at the ends than the middle.

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Q41 (a) The mass of the toy car would remain the same.

(b) Repeat the experiment a few times and take the average results.

(c) All of its kinetic energy had been converted to other forms of energy.

(d) Surface X. The toy car took the longest time to reach the bottom of the ramp shows surface X has a rougher surface thus increasing the friction between the person and the floor hence surface X is most suitable to prevent slipping.

Q42 (a) (i) A to B : Increases

(ii) B to C : Remains the same

(b) From A to B, the height increases and from B to C, the height remains the same.

End

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Name: _____( )

Class: Primary 6 _____

Primary 6
Continual Assessment 1 – 2017
SCIENCE

BOOKLET A

2 March 2017

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

28 questions
56 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 18 printed pages.

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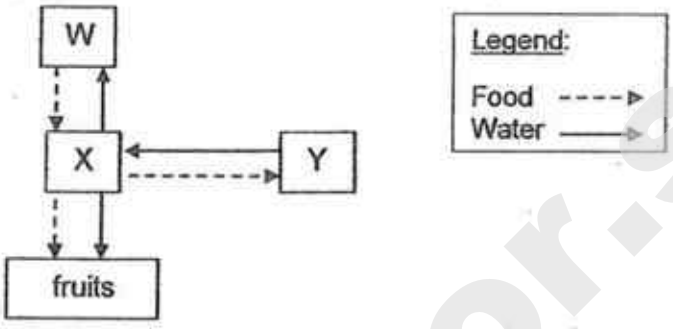
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Section A (28 x 2 marks = 56 marks)
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

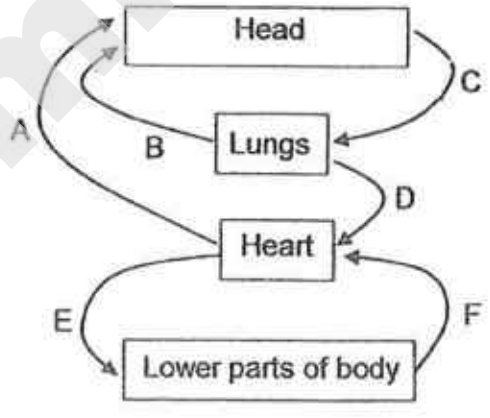
1. The diagram below shows how water and food are transported in a plant.



What plant parts do W, X and Y represent?

	W	X	Y
(1)	roots	stem	leaves
(2)	stem	leaves	roots
(3)	leaves	stem	roots
(4)	leaves	roots	stem

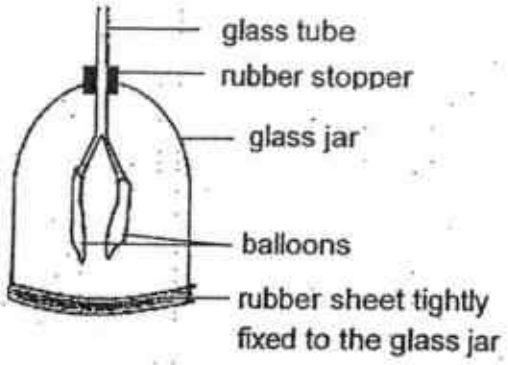
2. The diagram below shows how blood travels in the human body. Arrows A, B, C, D, E and F represent the movement of blood.



Which arrows in the above diagram are <u>not</u> correct?
(1) A and E only
(2) B and C only
(3) A, C and D only
(4) A, D, E and F only

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3. A group of students built a model of the human respiratory system as shown below.



Which of the following cannot be represented by the model when the rubber sheet is pulled down?

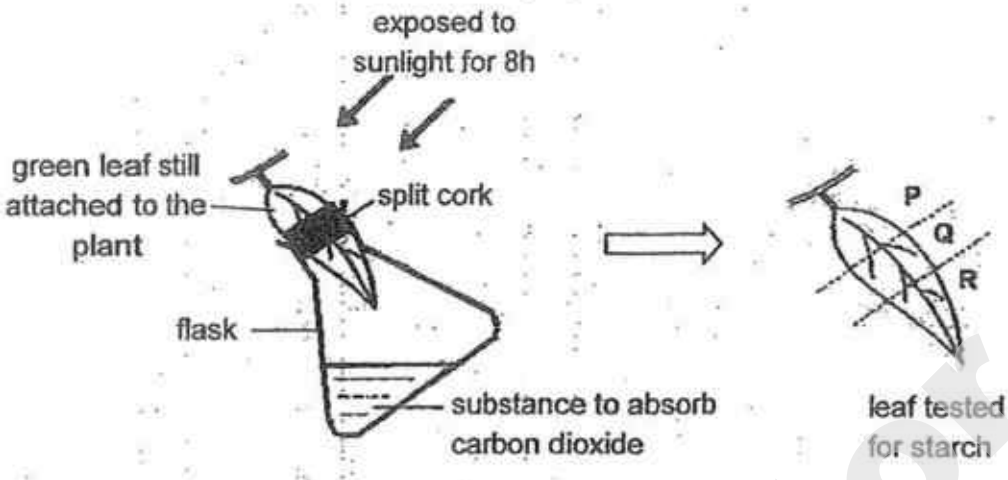
A The movement of the ribs during breathing.
B The lungs being inflated when air is drawn in during breathing.
C The movement of the diaphragm when air is drawn in during breathing.
D The exchange of gases in the air sacs when air is drawn in during breathing.

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

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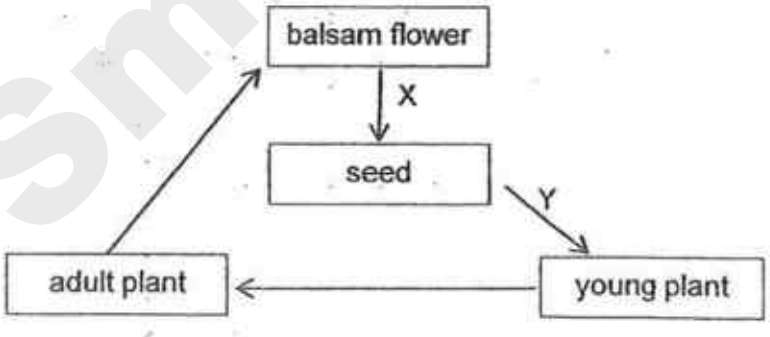
4. An experiment using one of the leaves on a plant was set up as shown below. After 8 hours in the sun, the leaf was cut into three sections P, Q and R and tested for starch.



Which one of the following shows the results of the iodine test on the parts of the leaf labelled P, Q and R respectively?

	P	Q	R
(1)	Dark blue	Yellowish brown	Dark blue
(2)	Dark blue	Yellowish brown	Yellowish brown
(3)	Yellowish brown	Dark blue	Dark blue
(4)	Yellowish brown	Dark blue	Yellowish brown

5. A balsam plant undergoes processes X and Y as shown.

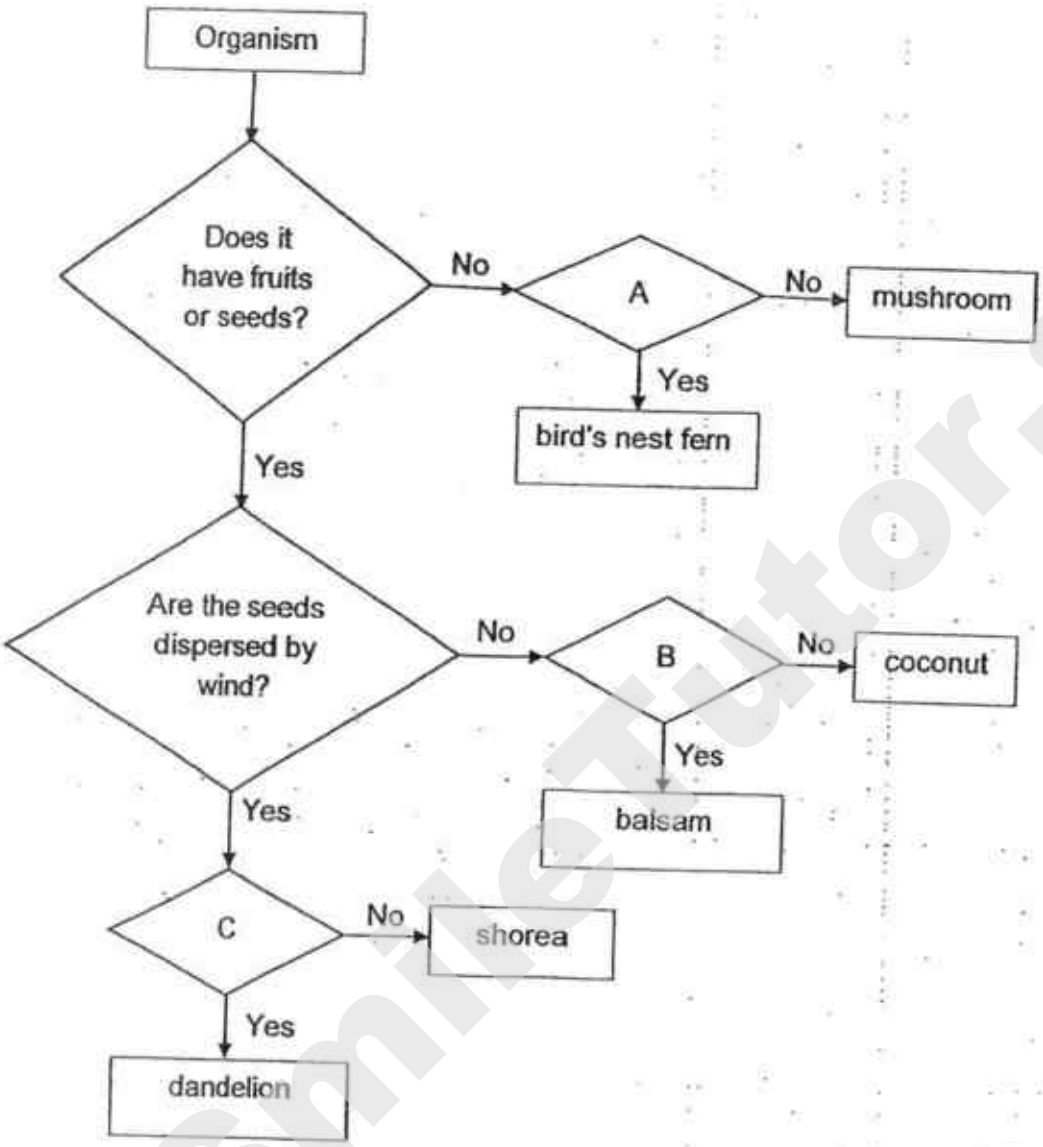


Which one of the following correctly represents the processes X and Y?

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

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6. Study the flowchart below carefully.



What do A, B and C in the flowchart represent?

	A	B	C
(1)	Does it grow in soil?	Is the fruit wall fibrous?	Does the fruit or seed have stiff hairs?
(2)	Is it a plant?	Do the fruit walls split open when ripe?	Does the fruit or seed have hair-like structure?
(3)	Does it have spore bags?	Is the fruit edible?	Does it have feather-like structure?
(4)	Does it reproduce from spores?	Does it bear flowers?	Does the fruit/seed have wing-like structure?

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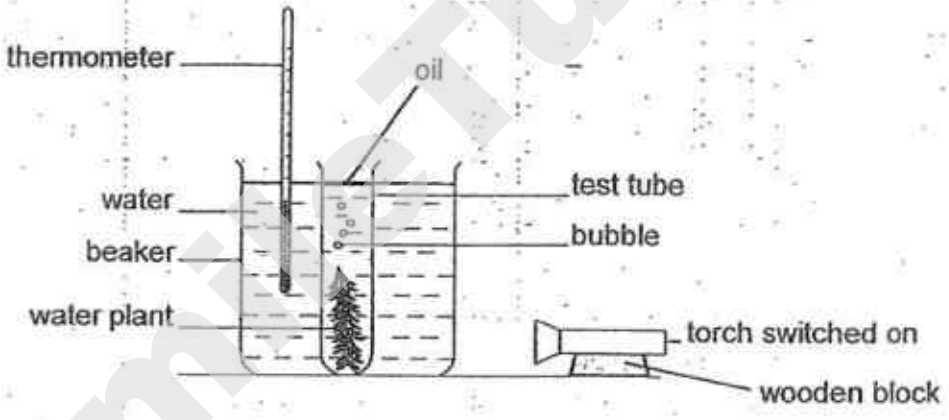
7. Jenny wrote the following word equation that represents the process of photosynthesis:

$$X + \text{water} \xrightarrow[\text{chlorophyll}]{\text{light energy}} Y + Z$$

Which one of the following correctly represents X, Y and Z?

	X	Y	Z
(1)	oxygen	sugar	carbon dioxide
(2)	oxygen	starch	carbon dioxide
(3)	carbon dioxide	sugar	starch
(4)	carbon dioxide	sugar	oxygen

8. John set up the experiment below to investigate the rate of photosynthesis.



Which of the variables can affect the number of bubbles produced per minute by the plant?

A the intensity of light
B the size of the leaves
C the temperature of water
D the amount of carbon dioxide in the beaker

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

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9. The table below compares the sexual reproduction of flowering plants and humans.

	Flowering Plants	Humans
The part where the male reproductive cell is produced/stored	Anther	A
The part where the male reproductive cell fuses with the female reproductive cell	B	Fallopian tube
The process whereby the male reproductive cell fuses with the female reproductive cell	C	Fertilisation

Which one of the following correctly identifies A, B and C?

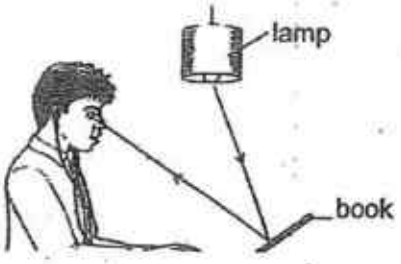
	A	B	C
(1)	Stigma	Ovary	Germination
(2)	Anther	Womb	Pollination
(3)	Testis	Ovary	Fertilisation
(4)	Testis	Stigma	Pollination

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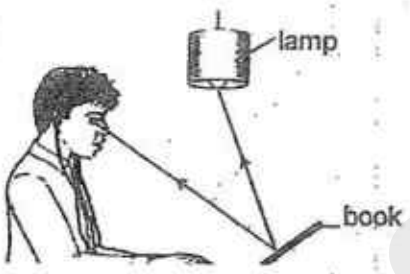
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10. Which one of the following correctly shows the path of light that allows George to read?

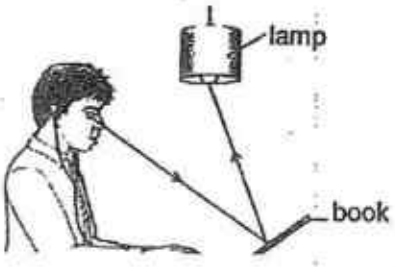
(1)



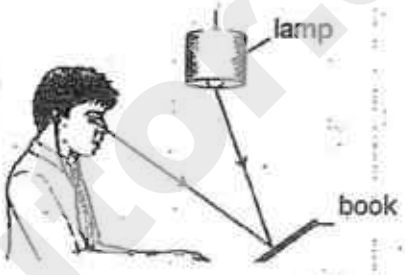
(2)



(3)



(4)



11. Which of the following statement(s) is/are true about using electricity safely?

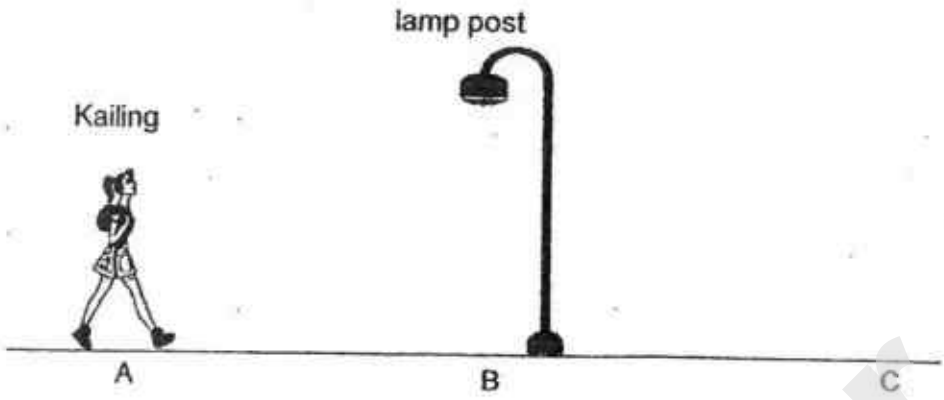
A Never touch switches with wet hands.
B Do not put many plugs into one socket.
C Try to repair exposed electrical wires by yourself.
D Check electrical appliances regularly for exposed wires.

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

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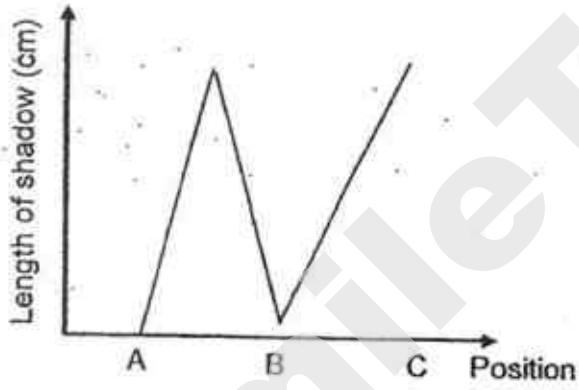
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12. Kailing walked from position A to C, passing a lamp post at B.

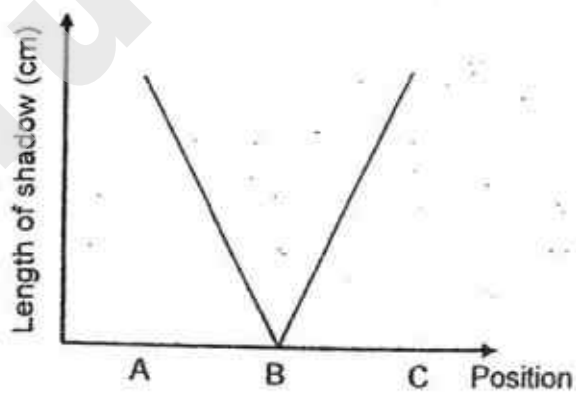


Which one of the following graphs shows how the length of her shadow changes as she walks from A to C?

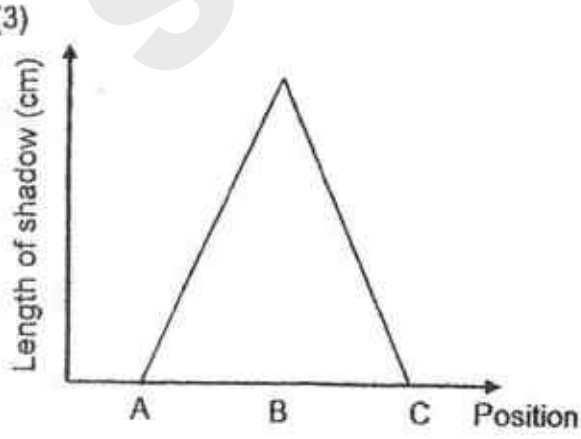
(1)



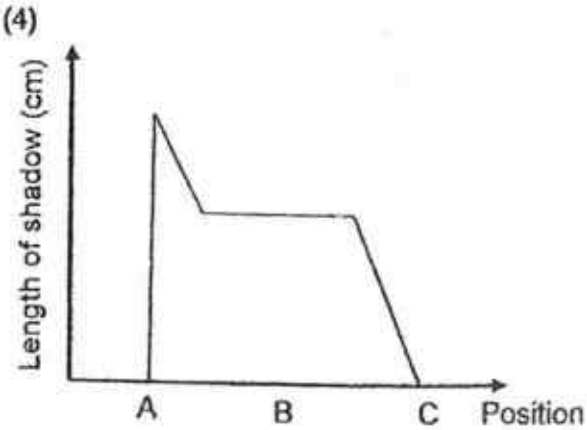
(2)



(3)



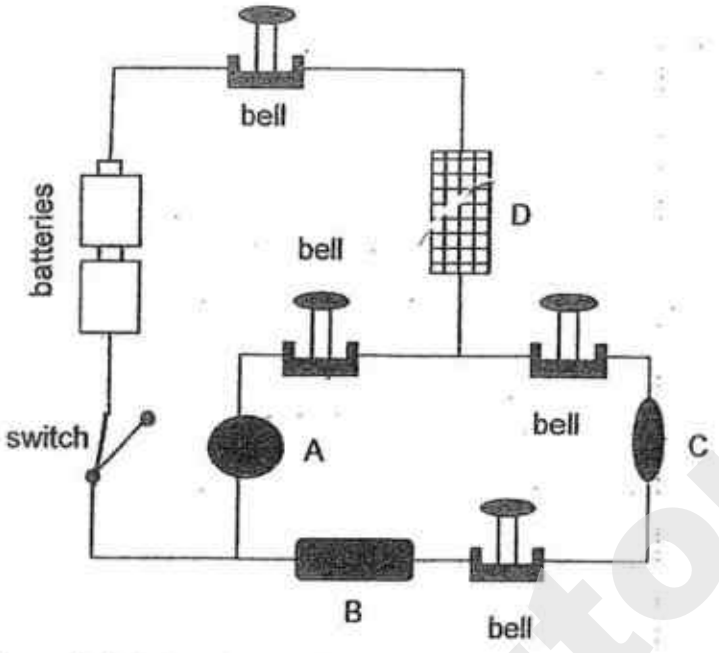
(4)



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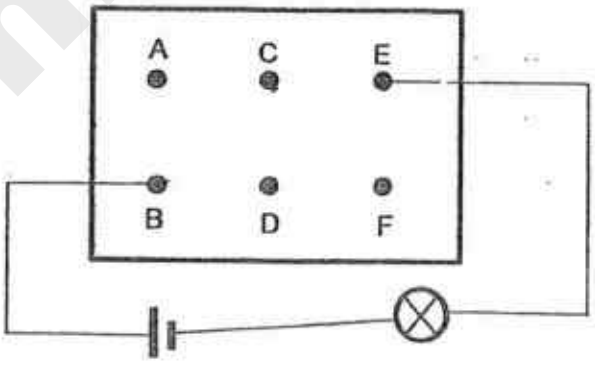
13. Ali set up a circuit as shown below.



When the switch is closed, he observed that only two bells in the circuit rang. Which of the four objects A, B, C and D are electrical insulators?

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

14. The diagram below shows the front view of a circuit board.

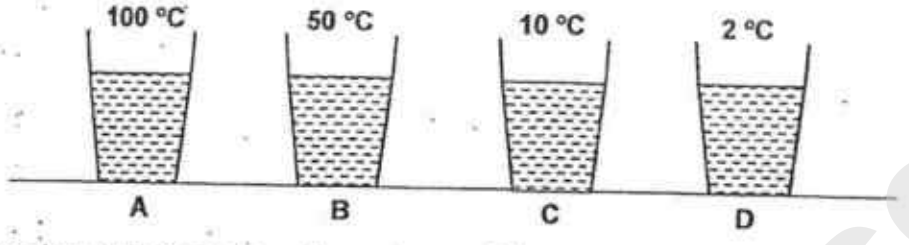


There are wires connected behind the circuit board which allow the bulb to light up. Which one of the following is a possible connection on the circuit board?

(1) AB and CF
(2) BC and CE
(3) BD and EF
(4) AD and ED

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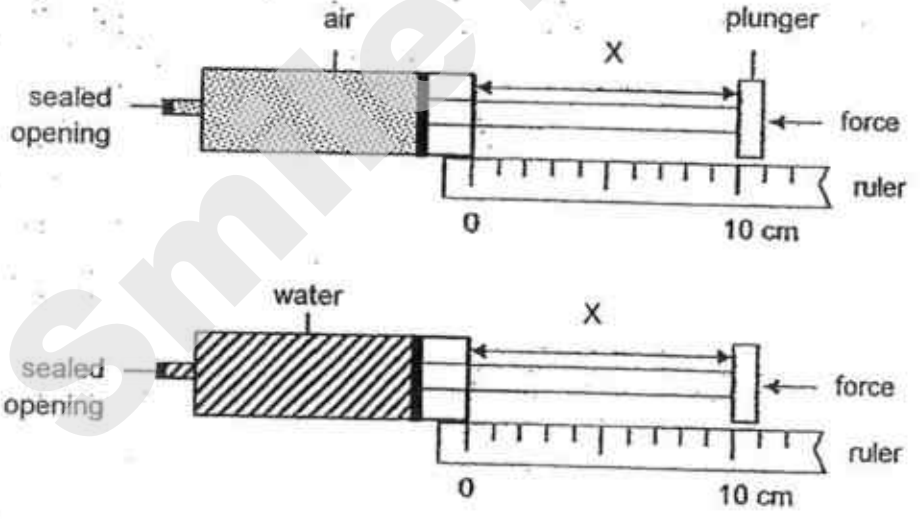
15. In the diagram below, 4 similar glasses, A, B, C and D, with equal amount of water at different temperatures were placed in a room with a temperature of 29 °C.



Water droplets were formed on the surfaces of the glasses after some time.
On which surface of the glasses A, B, C and D will the water droplets be formed?

	A	B	C	D
(1)	outer surface	outer surface	inner surface	inner surface
(2)	outer surface	outer surface	outer surface	outer surface
(3)	inner surface	inner surface	outer surface	outer surface
(4)	inner surface	outer surface	inner surface	outer surface

16. Paul completely filled two identical syringes, one with air while the other with water as shown in the diagram below.

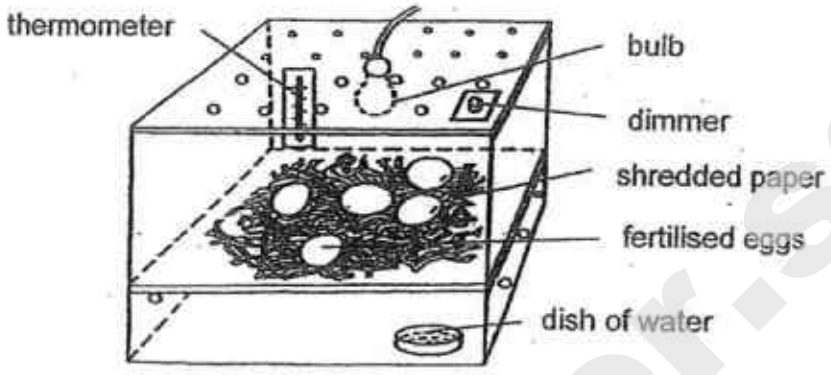


He then pushed each plunger as hard as he could and measured the distance, X.
Which one of the following shows the correct values of X?

	Syringe with water (cm)	Syringe with air (cm)
(1)	10	7
(2)	10	0
(3)	7	10
(4)	5	7

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17. Janet wants to find out if the temperature in an incubator affects the time taken for an egg to hatch. She used two incubators for her experiment. One of them is shown below.



Which of the following variables must Janet keep constant for both incubators to ensure a fair test?

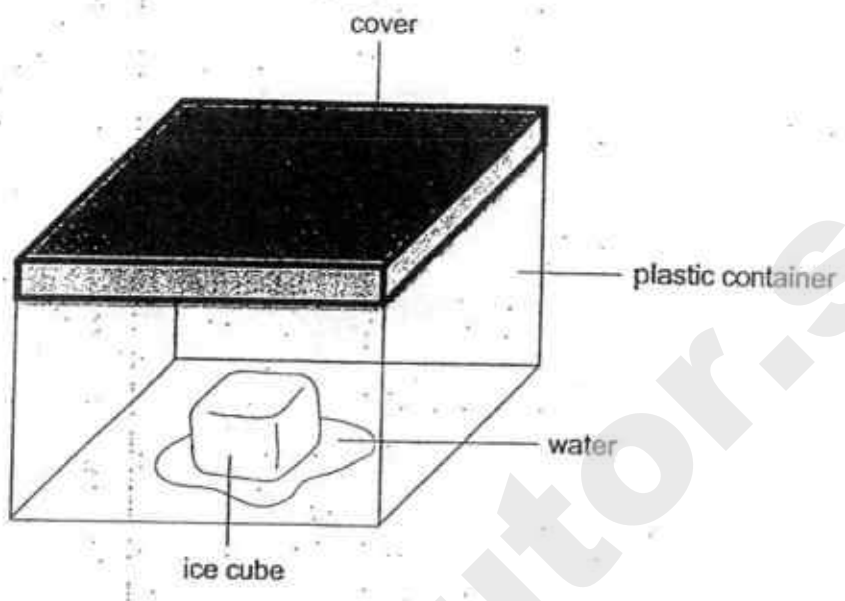
A The type of egg.
B The temperature in the incubators.
C The time taken for the eggs to hatch.
D The amount of shredded paper in the incubators.

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

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18. An ice cube was placed in a sealed plastic container. After a while, the ice cube starts to melt as shown in the diagram below.



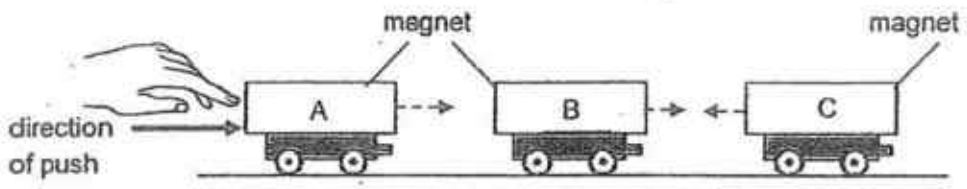
Which one of the following correctly states if heat is gained or lost by the ice cube, water and air in the container?

	Ice cube	Water	Air in the container
(1)	loses heat	loses heat	gains heat
(2)	loses heat	gains heat	loses heat
(3)	gains heat	gains heat	loses heat
(4)	gains heat	loses heat	gains heat

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19. Peter placed magnets A, B and C, on rollers as shown below.

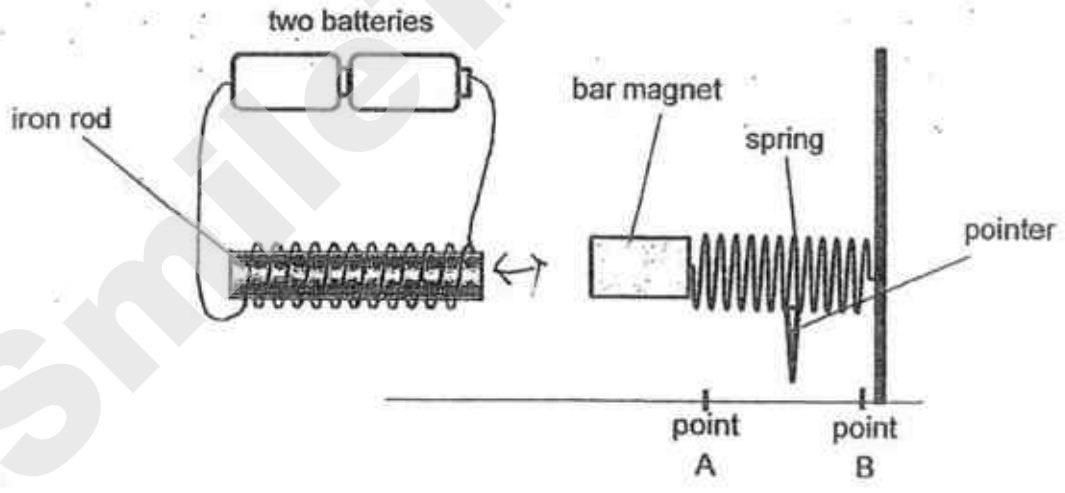


The arrow (→) shows the direction in which the rollers move when magnet A was pushed towards magnet B.

What can he infer from his observations?

(1) The like poles of magnet A and B are attracting each other.
(2) The like poles of the magnet B and C are attracting each other.
(3) The unlike poles of the magnet A and B are facing each other.
(4) The unlike poles of the magnet B and C are facing each other.

20. In the set-up below, when the circuit is closed, the bar magnet is repelled by the electromagnet and the pointer attached to the spring moves.

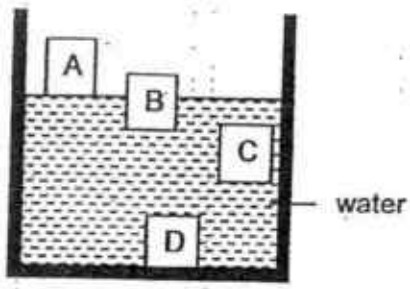


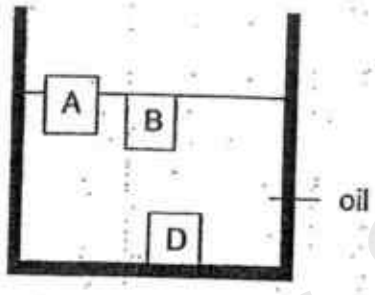
Which one of the following states correctly the movement of the pointer based on the change made to the set-up?

	Change to the set-up	Movement of pointer
(1)	Remove one battery	Towards point B
(2)	Add one more battery	Towards point A
(3)	Increase the number of coils on the iron rod	Towards point A
(4)	Decrease the number of coils on the iron rod	Towards point A

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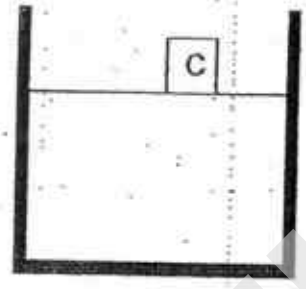
21. The diagram below show two containers with 4 different blocks A, B, C and D.



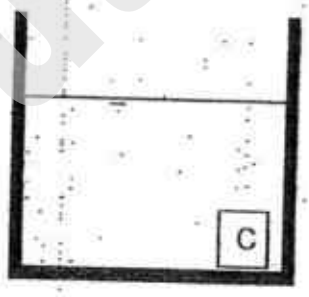


Which one of the following shows the most likely position of block C when it is placed in the container of oil?

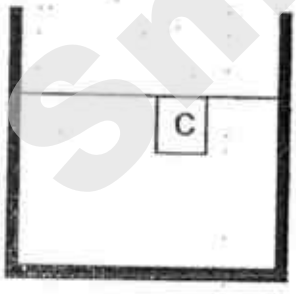
(1)



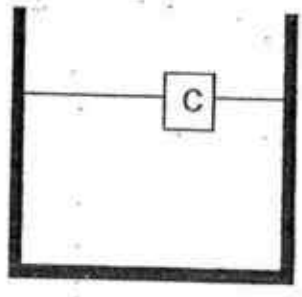
(2)



(3)



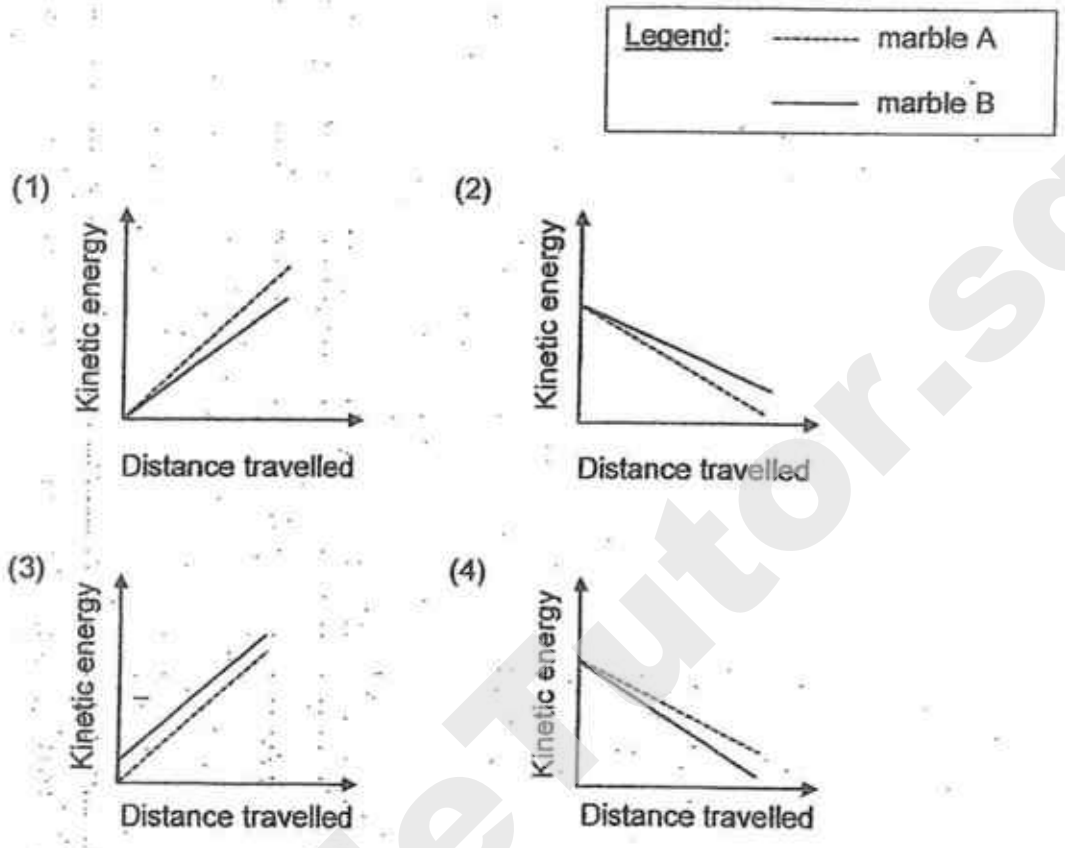
(4)



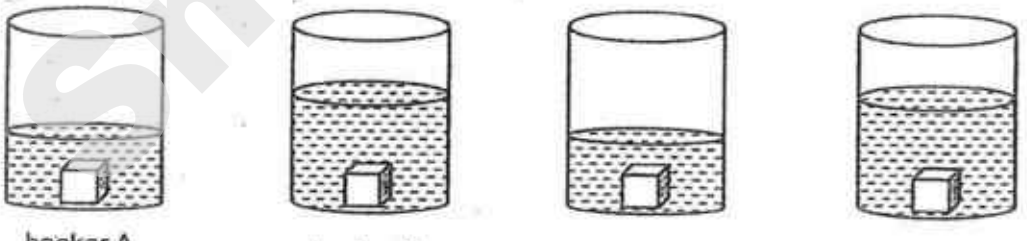
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22. Two marbles, A and B, were dropped from the same height. Marble A has a greater mass than marble B. Which one of the following graphs correctly represents how kinetic energy changes as they move downwards before they hit the ground?



23. Four similar blocks of iron were heated to a temperature of 70 °C. Each block was then dropped into a beaker of water as shown in the diagram below. The beakers contained different amounts of water at different temperatures.



In which beaker would the water show the greatest increase in temperature?

(1) Beaker A

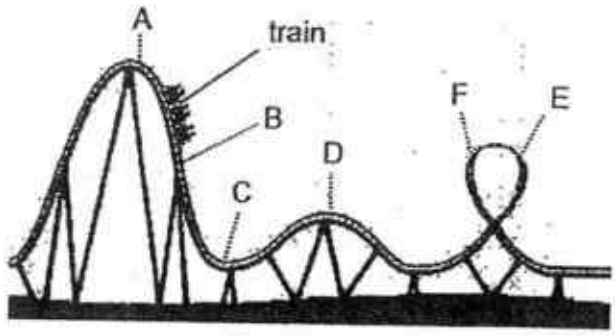
(2) Beaker B

(3) Beaker C

(4) Beaker D

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24. The diagram below shows a roller coaster.



roller coaster

At which part of the track does the train have the most kinetic energy?

(1) AB
(2) BC
(3) CD
(4) EF

25. The table below shows the energy source of four power stations, A, B, C and D. Which power station is the **least** environmentally friendly?

	Power station	Energy source
(1)	A	oil
(2)	B	sun
(3)	C	wind
(4)	D	running water

26. Which one of the following is **not** a renewable energy source?

(1) wind
(2) natural gas
(3) water
(4) sunlight

27. Which one of the following activities does not involve a pushing force?

(1) Kicking a ball away
(2) Stopping a moving ball
(3) Placing a pen on the table
(4) Dragging a boat out of the water

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28. Look at the activities shown below.

birds flying in the sky	paper boat floating on water	boy on top of a slide
		
A	B	C

Which of the above show(s) the force of gravity at work?

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

~~ End of section A ~~

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Name : _____ ( )

Class : Primary 6 _____

Primary 6
Continual Assessment 1 – 2017
SCIENCE

BOOKLET B

2 March 2017

Booklet A	56
Booklet B	44
Total	100

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

13 questions
44 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.

This booklet consists of 17 printed pages.

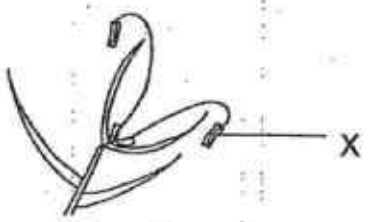
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Section B: 44 marks

For questions 29 to 41, write your answers in this booklet.

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

29. The diagram below shows flower P.



flower P

(a) Which organ of the human reproductive system has a similar function as part X of flower P? [1]

_____

(b) Part X is dangling outside the flower. What is the advantage of having this plant part outside the flower? [1]

_____

_____

(c) Based on the above diagram, will flower P be able to develop into a fruit? Explain your answer. [1]

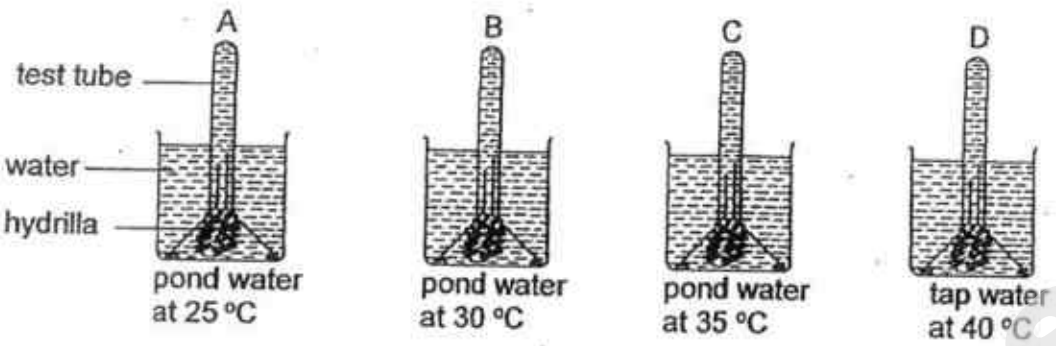
_____

_____

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30. Johanna carried out an experiment to find out the effect of temperature on the rate of photosynthesis of the hydrilla as shown in the diagram below. The set-ups were left under the same light source for a few minutes.



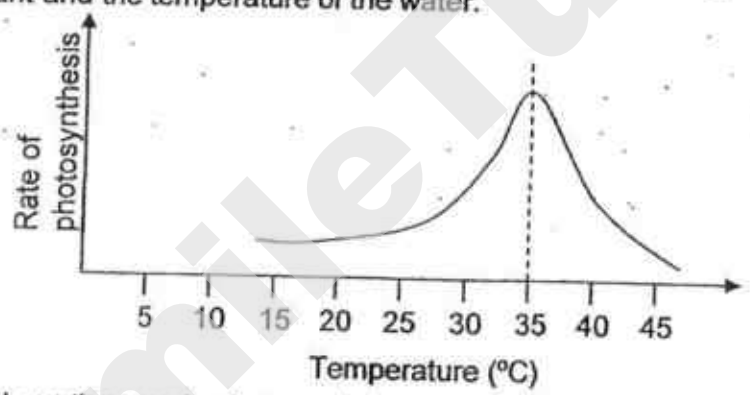
(a) What could she measure in order to find the rate of photosynthesis of the hydrilla? [1]

_____

(b) Did she carry out a fair experiment? Explain your answer.

_____

The graph below shows the relationship between the rate of photosynthesis of the hydrilla plant and the temperature of the water.



(c) Based on the graph above, what conclusion can you draw about the effect of temperature on the rate of photosynthesis? [2]

_____

_____

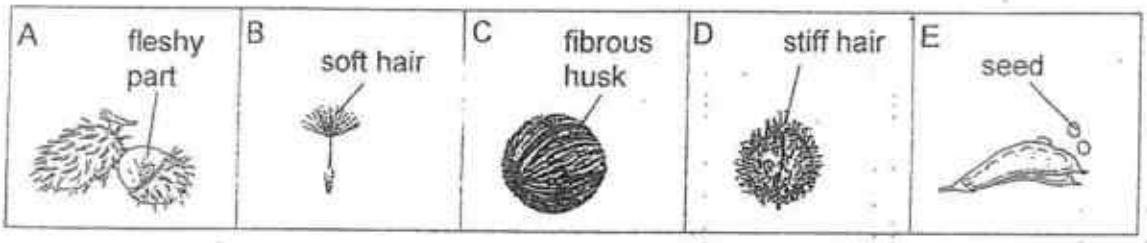
(d) Temperature of the water in Pond Q can reach as high as 40 °C around noon time. Based on the graph above, explain why fish in Pond Q are usually found near the water surface around noon time? [1]

_____

_____

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31. The diagram below shows fruits with different methods of dispersal.



(a) Based on the diagram above, classify the fruits by writing the letters, A, B, C, D and E, in the classification table below. [2]

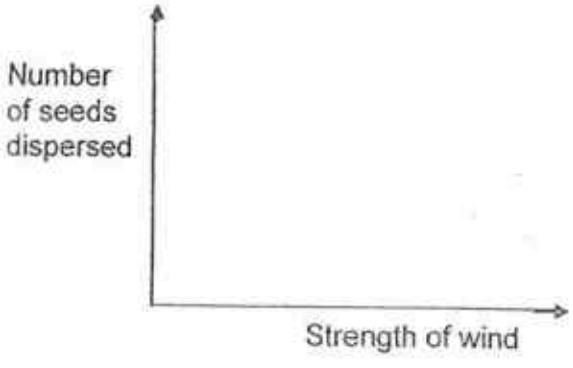
Methods of dispersal			
Wind	**Water**	**Animals**	**Splitting**

(b) Siti found an African Tulip fruit in the school compound. Her teacher told her that the fruit should be classified under two of the above groups.



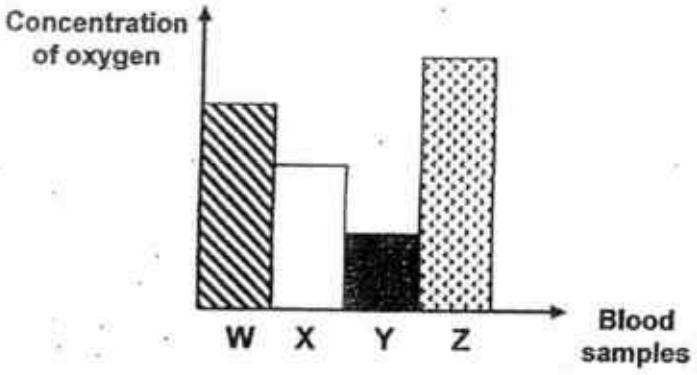
Why did her teacher say that? [1]

(c) In the graph below, **draw** clearly a line graph to show the relationship between the number of seeds dispersed by **Fruit A** and the strength of the wind. [1]

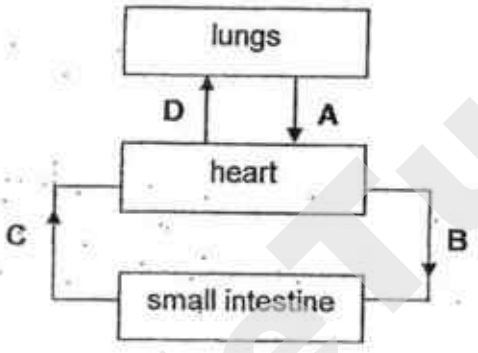


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32. The bar graph below shows the concentration of oxygen in four blood samples taken at the same time from different blood vessels located in different parts of the circulatory system.



The following diagram shows the different organs linked with different blood vessels.



(a) Fill in, A, B, C and D, in the table below to show how the different blood vessels are matched with the blood samples. [2]

Blood Sample	Blood vessel from
W	
X	
Y	
Z	

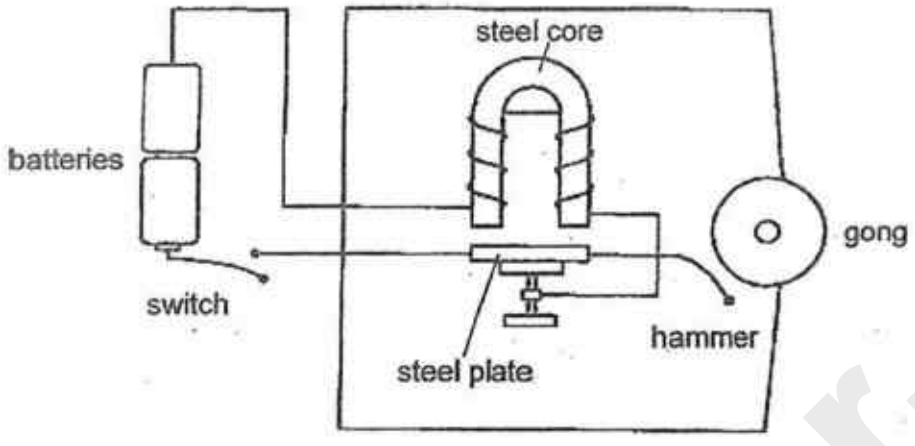
(b) What role does the circulatory system play in the digestion of food? [1]

_____

_____

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33. Shawn set up a circuit as shown. When he closed the switch, the hammer will hit the gong.



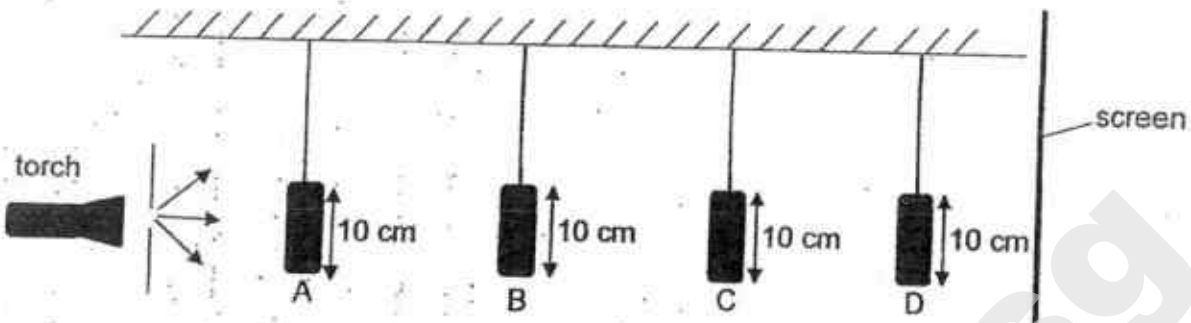
(a) Explain why the hammer was able to hit the gong when Shawn closed the switch? [1]

(b) Shawn replaced the steel plate with another plate made of a different material. When he closed the switch, the hammer did not move at all.
Based on the result above, state a possible material the plate could be made of and write down one property of the material.

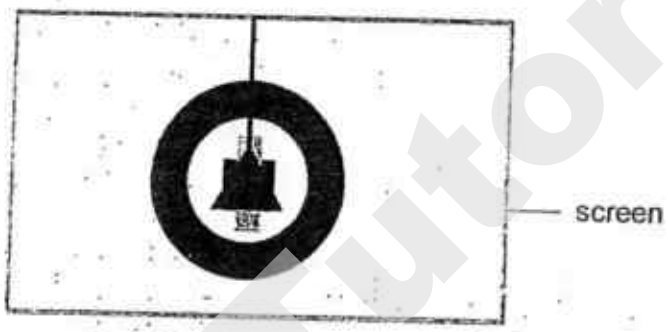
[1]

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34. The set-up below shows light shining on four objects, A, B, C and D, made of different materials. They are placed at different distances from the torch.



The diagram below shows the shadows of the objects shown on the screen.



(a) Based on the shadows formed, identify the objects A, B, C and D. [2]

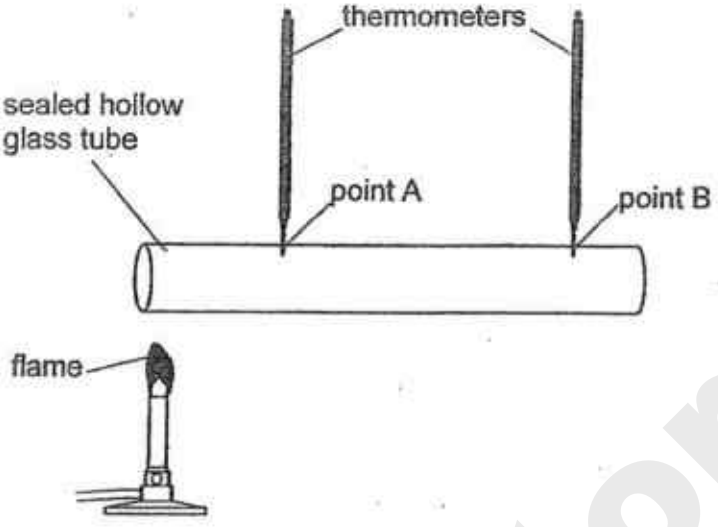
Shapes	Object
Ring	
Square	
Triangle	
Rectangle	

(b) It was observed that the triangular shadow cast was darker than the rectangular shadow cast. What could be a possible reason for the difference? [1]

(c) State one property of light that allows shadows to be formed. [1]

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35. Sue conducted an experiment where she placed a flame near one end of a hollow glass tube that was sealed at both ends. Two holes were drilled and two thermometers were inserted at points A and B as shown in the diagram.



She recorded the temperature of air in the hollow tube at point A and B every 2 minutes in the table shown below.

Time (min)	Temperature of air at	
	Point A (°C)	Point B (°C)
0	28	28
2	40	30
4	52	35
6	60	39

(a) What is the relationship between the duration of heating and the temperature of air at point A? [1]

_____

_____

(b) Based on the results recorded, explain why the temperature at point B increased slower than the temperature at point A. [1]

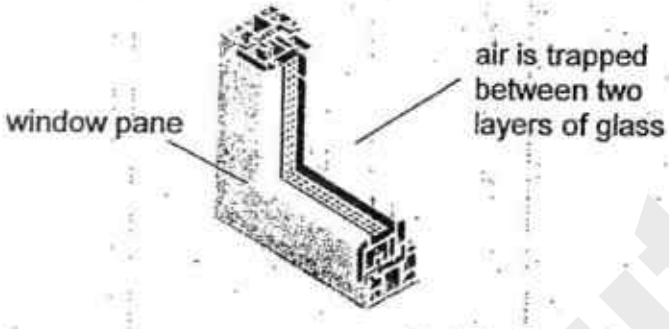
_____

_____

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(c) How will the results be affected if the glass tube is replaced with a metal tube?
[1]

The diagram below shows a cross-section of a double-layered glass window of an aeroplane.

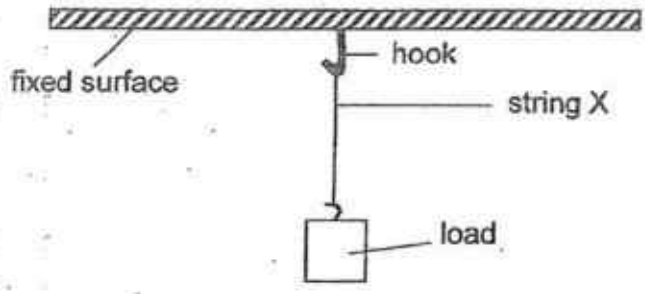


As the aeroplane flies higher up to the sky, the temperature outside the aeroplane decreases to below 0 °C.

(d) Explain how such windows help passengers remain warm in the aeroplane.
[1]

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36. Raja conducted an experiment using string X in the set-up below.



He increased the mass of the load until string X broke. He then recorded the mass and repeated his experiment with two other strings, Y and Z. The results of his experiment are shown in the table below.

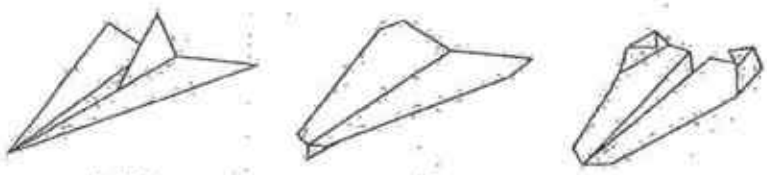
	Mass of load hung when the string broke (g)
String X	1000
String Y	500
String Z	1450

(a) What is the aim of Raja's experiment? [1]

(b) What can Raja do to ensure that the results of his experiment are reliable? [1]

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37. Hassan conducted an experiment with three different models of aeroplanes X, Y and Z.



model X model Y model Z

He launched each model aeroplane horizontally with the same amount of force from the same height. He recorded the time taken for each model to reach the ground in the table below. He repeated his experiment two more times.

Model	X			Y			Z		
	1st try	2nd try	3rd try	1st try	2nd try	3rd try	1st try	2nd try	3rd try
Time(s)	3.4	3.4	3.5	4.8	4.9	4.8	2	2.1	2.1

(a) What was the aim of his experiment? [1]

_____

(b) Name one other variable Hassan should keep constant for his experiment to be fair. [1]

_____

(c) Based on Hassan's results, which one of the models, X, Y or Z, should he use to design a toy aeroplane that can fly the furthest distance? Explain your answer. [1]

_____

_____

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38. Karen magnetised a steel bar AB using the stroking method as shown in diagram 1 below. Diagram 2 shows the magnetic poles of the steel bar AB after it was magnetised.

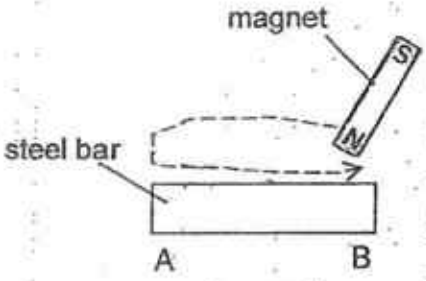


diagram 1

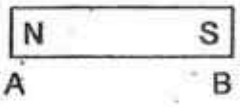


diagram 2

Another steel bar CD was magnetised using two magnets as shown in diagram 3 below.

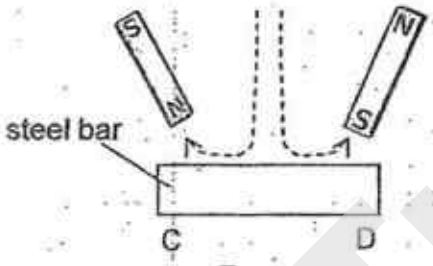


diagram 3

(a) State what the magnetic poles of the steel bar CD would be at end C and D. [1]

At end C: _____

At end D: _____

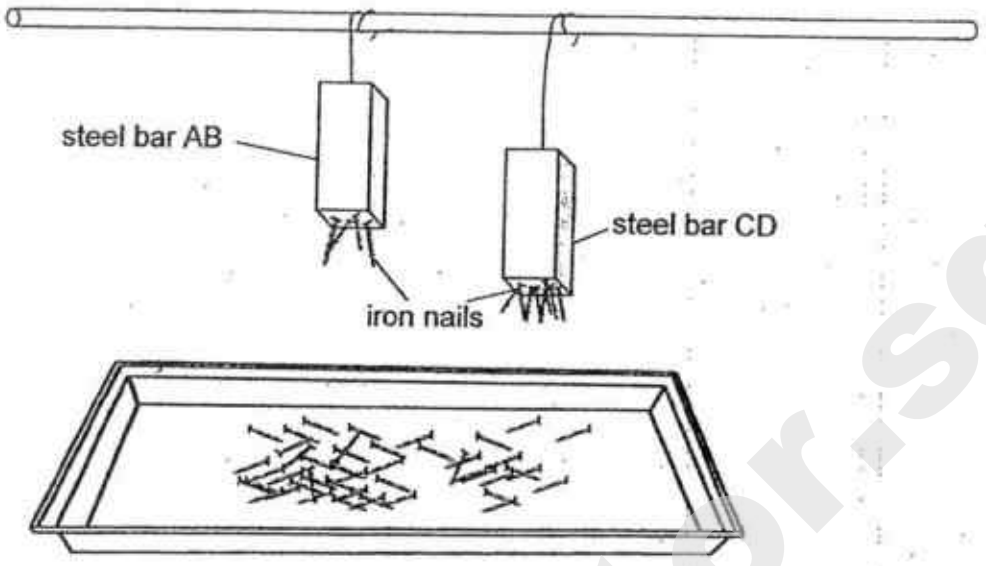
(b) Using only bar CD and a magnet, how can Karen confirm that bar CD is magnetised? [1]

_____

_____

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Karen then took the two steel bars, AB and CD, and hung them above a tray of iron nails as shown below.



(c) From the observation above, is Karen able to conclude which steel bar, AB or CD, has a greater magnetic strength? Explain your answer.

[1]

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39. A pot of water is heated on a hot metal plate as shown below.

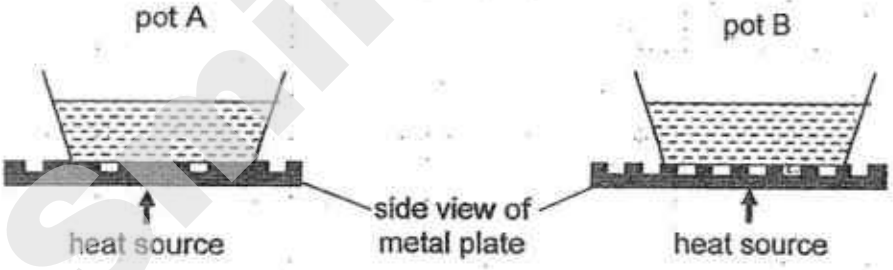


(a) Which of the following is correct when the water boils? Tick the correct statement(s) in the box below.

[1]

Statement	Tick if it is correct
Steam can be seen forming above the water.	
The temperature of the water remains constant.	
The transfer of heat from the metal plate to the water will stop.	

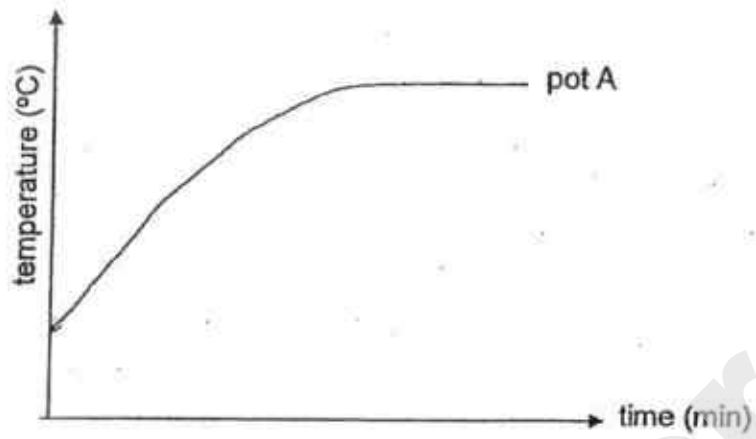
Corrine placed two identical pots containing the same amount of water at room temperature on two electrical metal plates. The metal plates are made of the same material but with different surfaces as shown below.



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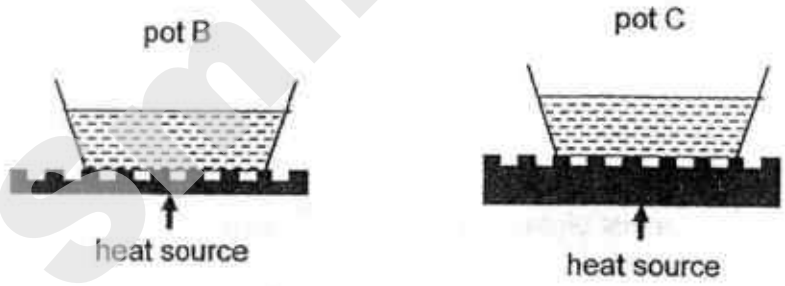
(b) Corrine recorded the time taken for the water in both pots to boil and plotted the results of pot A on the graph below. On the same graph, **draw** another line to represent the results of pot B.

[1]



(c) Give a reason for your answer in (b). [2]

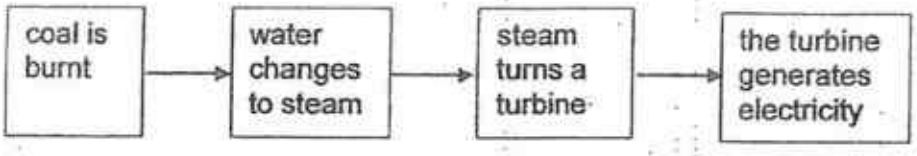
Corrine wants to find out if the thickness of the metal plate will affect the time taken for the water to boil. She sets up another experiment as shown below:



(d) Corrine thinks that the thickness of the metal plate does not affect the results of the experiment. Is she correct? Explain your answer. [1]

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40. The chart below shows the process of using coal to produce electricity in a power station.



(a) What is the main energy transfer when coal is burnt? [1]

_____

(b) Some of the energy stored in coal is wasted when it is burnt.
Name one type of energy released that is not useful in the above process. [1]

_____

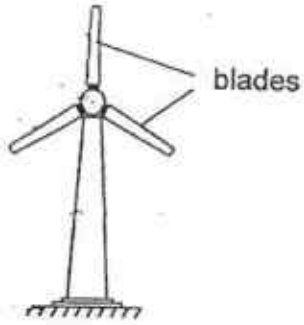
(c) Suggest one disadvantage of using coal to generate electricity. [1]

_____

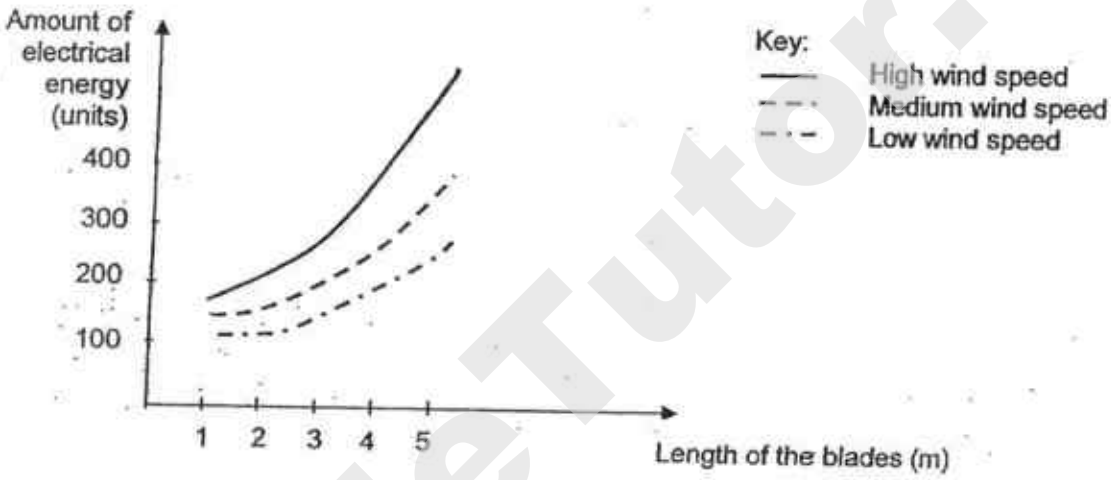
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41. Electricity can be generated using wind turbines. An example of a wind turbine is shown below.

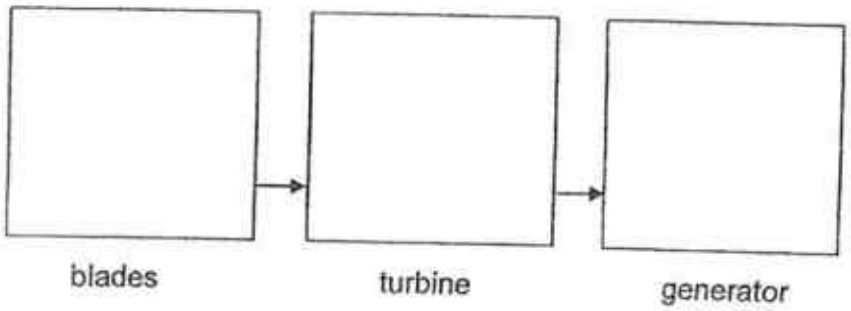


The graph below shows the amount of electrical energy produced by different wind turbines. The blades of the wind turbines are of different lengths.



(a) From the graph, state 2 conditions that can cause the wind turbines to produce more electrical energy. [2]

(b) Write down the main energy conversion that takes place as the wind turbine spins. [1]



— End of paper —

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EXAM PAPER 2017 2 March 2017
LEVEL : PRIMARY 6
SCHOOL : CHIJ ST NICHOLAS GIRL'S SCHOOL (PRIMARY)
SUBJECT : SCIENCE
TERM : CONTINUAL ASSESSMENT 1

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

Q29a) Testis

b) The pollen grain on the anther can be easily blown away by wind to another flower of the same species for pollination.

c) No. Flower P does not have an ovary and an ovule, so it cannot be fertilized and develop into a fruit.

Q30a) She can measure how many bubbles the hydrilla produced.

b) No. She did not use the same type of water.

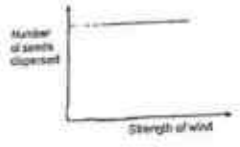
c) 35°C is the best temperature for photosynthesis, also, the rate of photosynthesis increases from 15°C to 35°C, but decreases after 35°C and above.

d) In noon, the rate of photosynthesis is slower, and will not give out much oxygen for the fish, and the fish swim near the water surface for more oxygen.

Q31a) Wind: B Water: C Animals: A,D Splitting: E

b) The pod has a hard shell which explodes the seeds away from the parent plant and is classified as splitting dispersal but the seeds also have wind-like structures to float away, hence being classified also as wind dispersal

c)



Q32a) W – B X – C Y – D Z – A

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b) It circulates the nutrients of the digested food to other parts of the body.

Q33a) When the switch is closed, the steel core will be an electromagnet, attracting the steel plate which is connected to the hammer, which moved upwards and will hit the gong.

b) Wood. Wood is not a conductor of electricity.

Q34a) Ring – A Square – D Triangle – C Rectangle – B

b) The triangular block is made out of an opaque material while the rectangular object is made out of a translucent material.

c) It travels in a straight line.

Q35a) As the duration of heating increases, the temperature of air at point A increases.

b) Point A is closer to the flame, and the glass tube will gain heat first at the point.

c) Point A and Point B will gain heat faster.

d) Air between the windows wills low down heat loss between the warmer air inside the aeroplane and cold air outside the aeroplane as it is a poor conductor of heat.

Q36a) To find out which string is the strongest.

b) He can repeat the experiment multiple times and average the results.

Q37a) To find out which airplane ,model reaches the ground first.

b) The amount of wind in where the experiment is taking place.

c) Model Y. It took the longest time to land on the ground compared to X and Z.

Q38a) At and C: South Pole At end D: North pole

b) She can make the like poles of both magnets facing each other, if they repel, CD is magnetised.

c) No. Bar CD is nearer to the nails and attracted more nails then Bar AB.

Q39a) The temperature of the water remains constant.

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b)



c) Pot B has a smaller surface in contact with the metal plate so less heat will be gained by the water in pot B, so water in pot B will boil slower than pot A.

d) She is not correct. The thicker the metal plate, the slower the rate of gaining between the heat source and the plate, which affects the rate of the pot gaining heat, hence affecting the experiment.

Q40a) Chemical potential energy → heat energy

b) Light energy

c) Coal is unrenewable.

Q41a) Higher wind speed and longer blades.

b) Kinetic energy → kinetic energy → electrical energy

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END.

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Anglo-Chinese School (Junior)

SEMESTRAL ASSESSMENT 1 (2017)

PRIMARY 6

SCIENCE

BOOKLET A

Wednesday **17 MAY 2017** **1 hour 45 minutes**

Name: _____ ( ) Class: 6.( )

INSTRUCTIONS TO PUPILS

1 Do not turn over the pages until you are told to do so.
2 Follow all instructions carefully.
3 There are 28 questions in this booklet.
4 Answer ALL questions.
5 Shade your answers in the Optical Answer Sheet (OAS) provided.

This question paper consists of 16 printed pages (inclusive of cover page).

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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 your answer on the Optical Answer Sheet. (28 x 2 marks)

1. Maximus placed three identical slices of bread on three identical plastic plates A, B and C. One of the slices was toasted and another was sprinkled with water. All three plates were placed side by side in a warm and dark place. He observed the slices over 5 days and recorded his observation in the table below.

	Estimated area of mould growth (cm^2)		
Day	Slice on Plate A	Slice on Plate B	Slice on Plate C
1	0	0	0
2	0	10	0
3	0	20	5
4	0	40	10
5	5	80	15

Which of the plates most likely had the slices of bread which were toasted and sprinkled with water?

	Plate with toasted bread	Plate with bread sprinkled with water
(1)	A	B
(2)	A	C
(3)	B	C
(4)	C	B

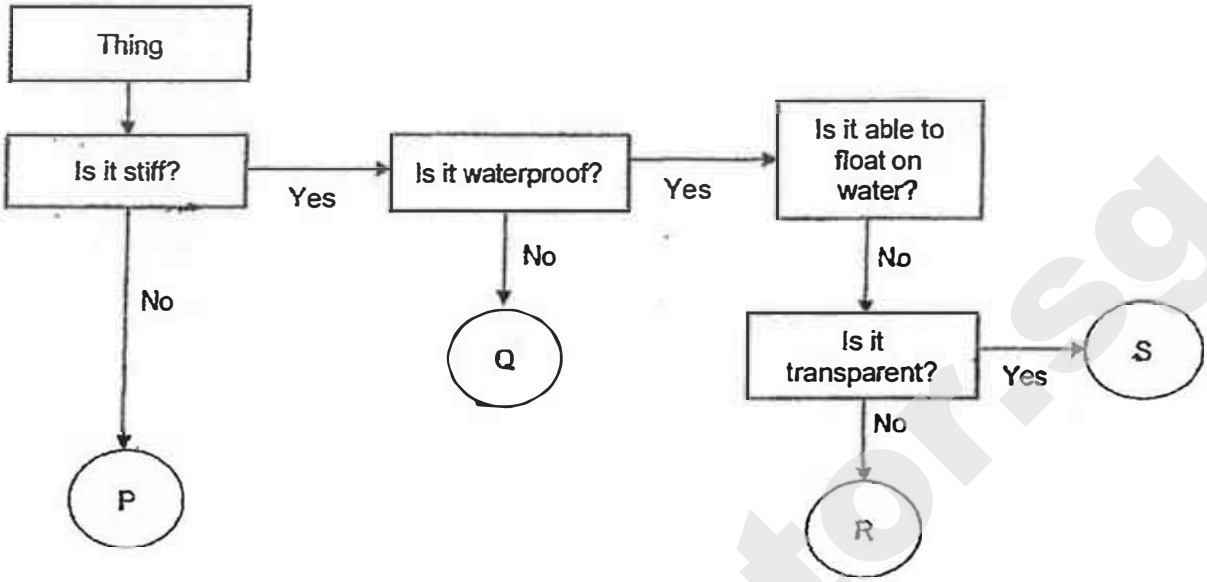
2. Which of the following parts are matched to the systems correctly?

	Digestive System	Respiratory System	Skeletal System
(1)	Mouth	Heart	Skull
(2)	Stomach	Blood Vessels	Muscles
(3)	Lungs	Nose	Backbone
(4)	Small intestine	Windpipe	Rib

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3. Study the flowchart below.



Based on the flowchart, which could most likely be a glass cup?

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

4. Cayden carried out an experiment. He cut out a ring of a plant's stem, as shown below. He placed the plant in his garden and continued to water the plant daily.



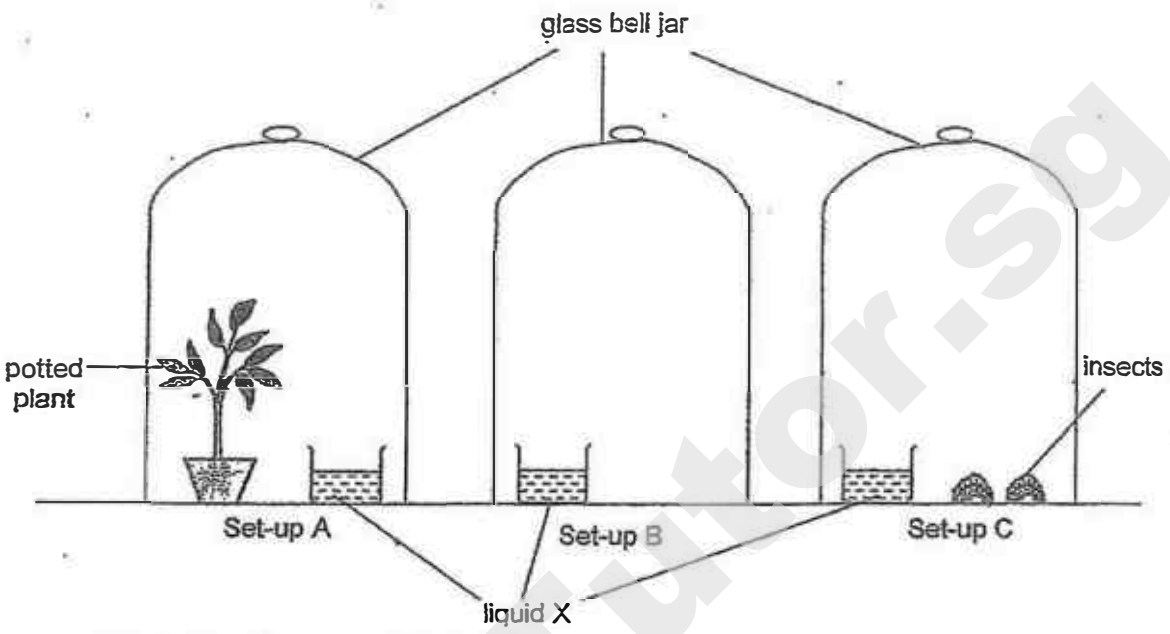
Cayden observed the leaves turning yellow and dropping off after a few days. Which of the following statements best explains his observations?

(1) The leaves could not take in oxygen to make food
(2) The leaves could not take in carbon dioxide to make food
(3) Food could not be transported to the leaves as the food-carrying tubes were removed
(4) Water could not be transported to the leaves to make food as the water-carrying tubes were removed

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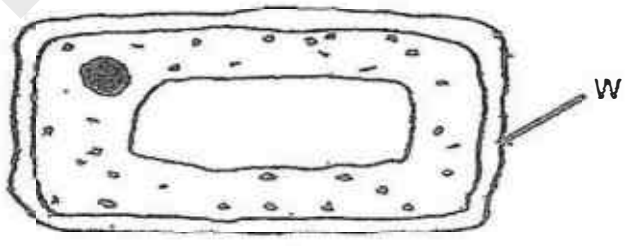
5. Daniel used three identical glass bell jars to conduct an experiment using set-ups A, B and C, as shown below. They were placed next to each other in the school field from 12 pm to 2 pm. He placed an equal amount of liquid X that was clear in colour at the start of the experiment into each set-up. Liquid X changes from clear to milky white in colour when exposed to increased amount of carbon dioxide.



What will be the colour of Liquid X in each set-up after 2 hours?

	A	B	C
(1)	clear	milky white	clear
(2)	clear	clear	milky white
(3)	milky white	milky white	milky white
(4)	milky white	clear	milky white

6. The diagram below shows a cell of an organism.



What is the function of part W in the cell?

(1) Gives the cell its shape

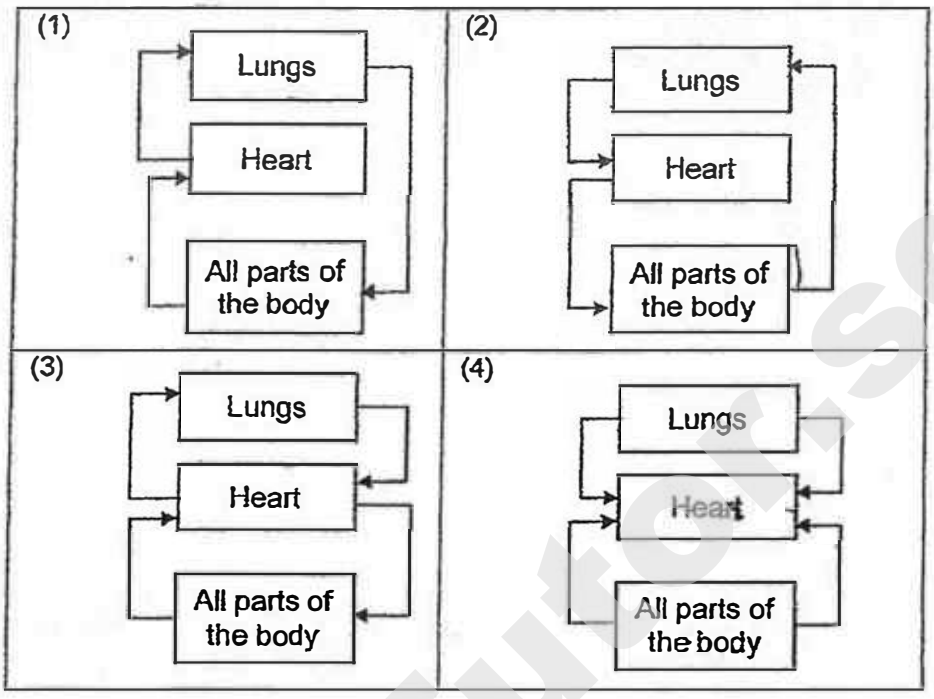
(2) Controls all activities in the cell

(3) Contains chlorophyll that traps light

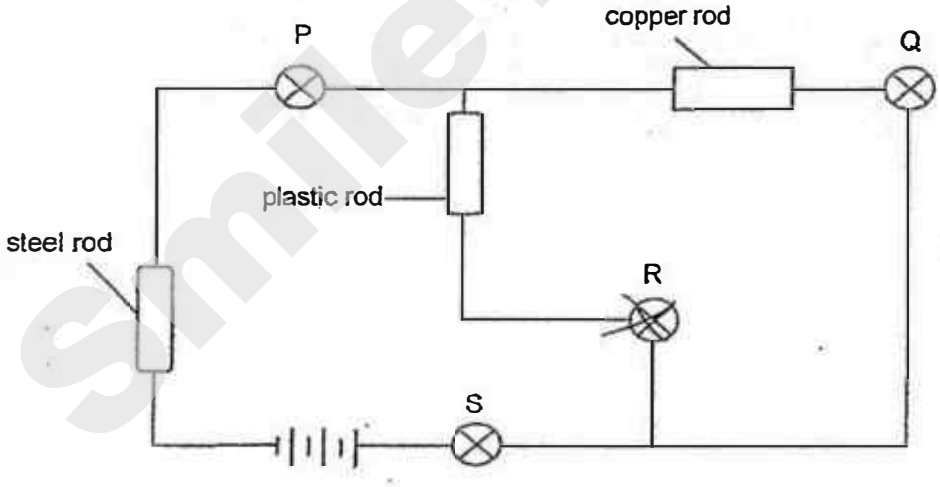
(4) Controls the movement of substances in and out of the cell

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7. Which one of the following shows the correct flow of blood in a human circulatory system?



8. Study the electric circuit below. New batteries and bulbs were used.



Which bulbs would light up?

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

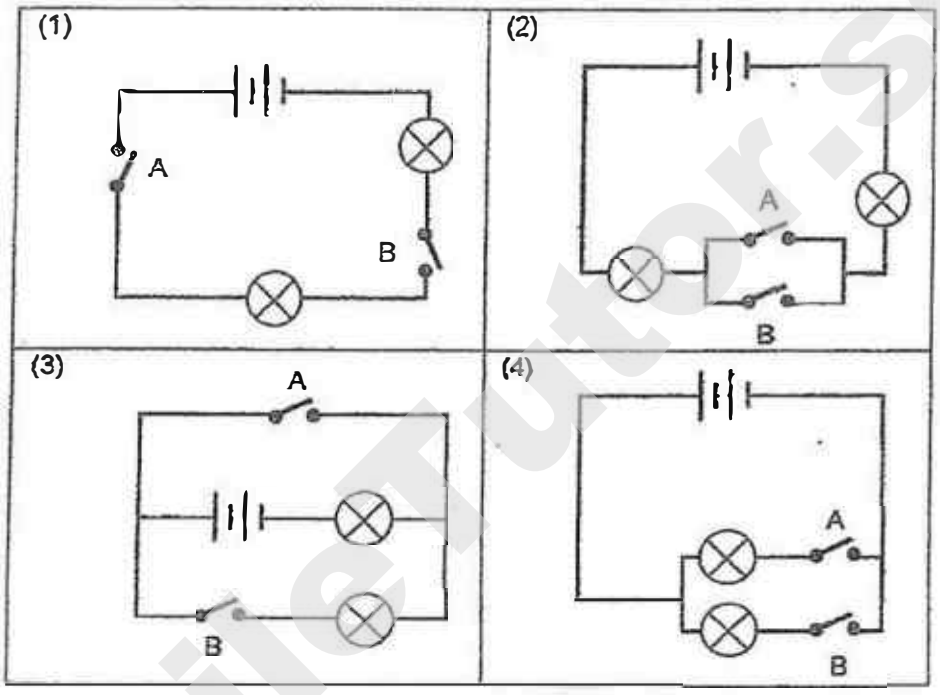
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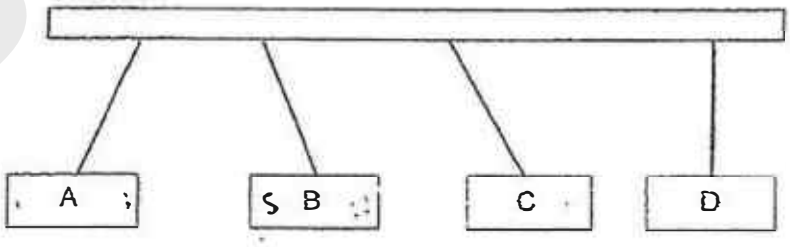
9. Jarius conducted an experiment with an electrical circuit. He opened and/or closed each of the 2 switches in different combinations and observed the number of bulbs that lit up and recorded his results in the table below.

Switch A	Switch B	Number of bulbs lit
Open	Open	0
Open	Close	2
Close	Open	1
Close	Close	2

Which of the following circuits did Jarius use to obtain the results above?



10. James hung four rods on a wooden pole with strings and observed the rods moved as shown below.



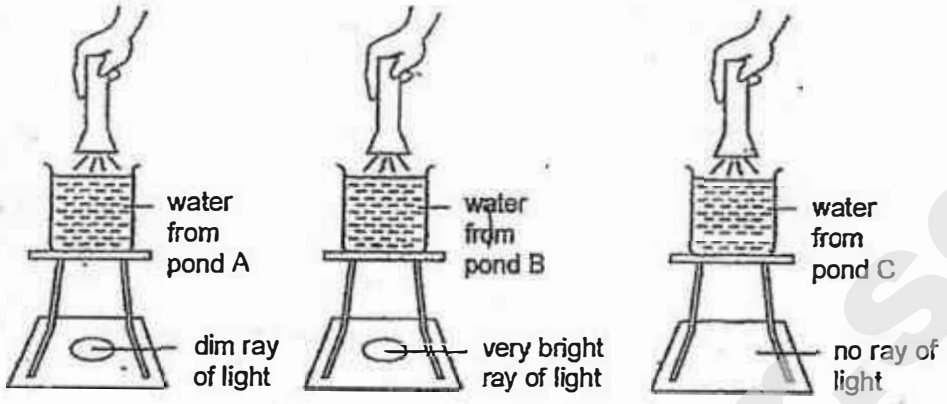
Which of the rod(s) is/are definitely a magnet?

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

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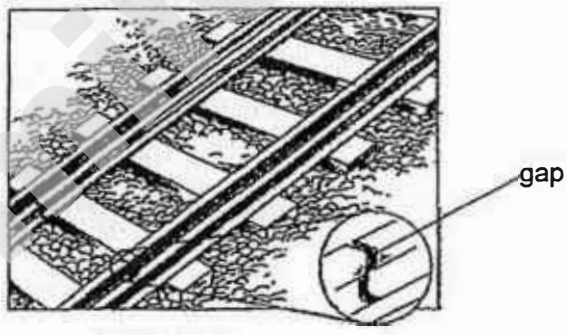
11. Charlie collected 200 ml of pond water from 3 ponds, A, B and C and placed them in three identical beakers. He then placed each beaker on identical tripod stands and shined the same torch through each of them as shown below.



Based on the above observations, in which pond(s) would fully submerged plants most likely be found?

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

12. The diagram below shows a railway track in Singapore that is completely made of metal and is exposed to the sun.



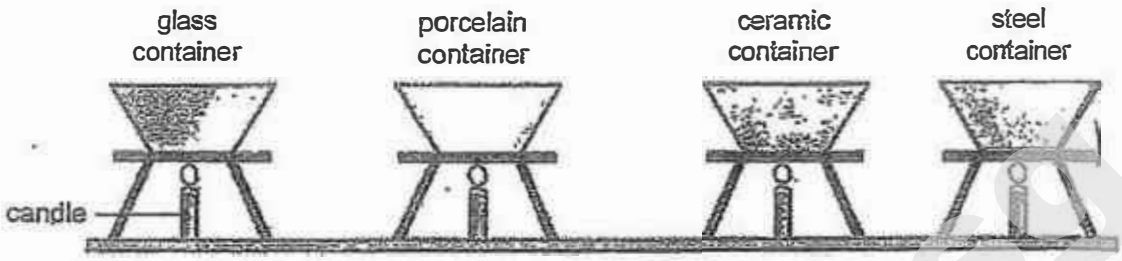
A railway track engineer measured the size of the gap at different times of the day and recorded a measurement of 2 cm and 2.5 cm.

Which of the following shows the correct time of the day that the measurements were taken?

	Gap of 2 cm	Gap of 2.5 cm
(1)	6 am	1 pm
(2)	1 am	6 pm
(3)	1 pm	1 am
(4)	6 pm	1 pm

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13. Zach conducted an experiment with four containers of the same size but made of different materials. He placed five ice cubes in each container and heated the containers using lighted candles of the same type as shown below.



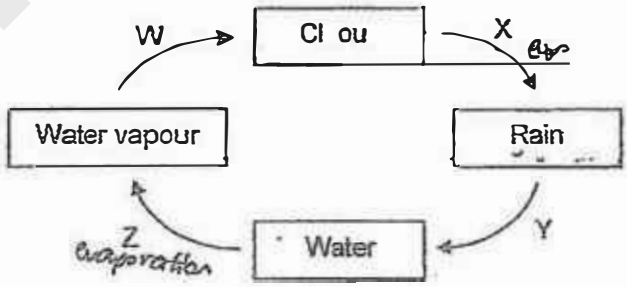
The results of the experiment were recorded in the table below.

Material	Time taken for all the ice cubes to melt completely (min)
glass	3
porcelain	4
ceramic	6
steel	2

From the results of the experiment, which material is the best conductor of heat?

(1) steel
(2) glass
(3) ceramic
(4) porcelain

14. The diagram below shows the water cycle.



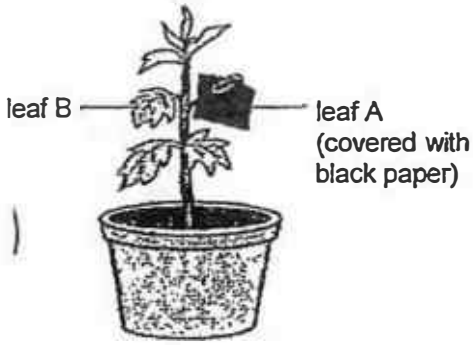
At which point, W, X, Y or Z, in the water cycle will there be heat loss for a change of state to take place?

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

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15. Sam covered one of the leaves on a plant with black paper as shown in the diagram below. The plant was exposed to the Sun for two days.

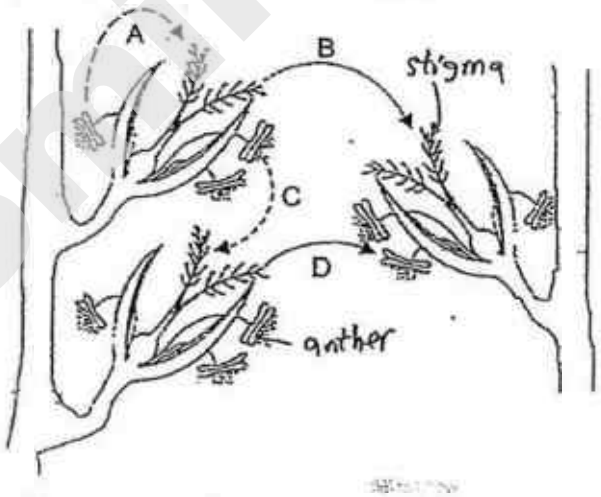


After two days, Sam tested both leaves A and B for starch. He added 3 drops of iodine solution to each leaf. The iodine solution remains brown if no starch is present and turns blue-black if starch is present.

Which of the following conclusions is correct based on Sam's test?

	Colour of iodine solution on Leaf A	Colour of iodine solution on Leaf B
(1)	blue-black	blue-black
(2)	blue-black	brown
(3)	brown	blue-black
(4)	brown	brown

16. The diagram shows the flowers of two plants.



Which of the arrows, A, B, C or D, represent pollination taking place?

(1) A only

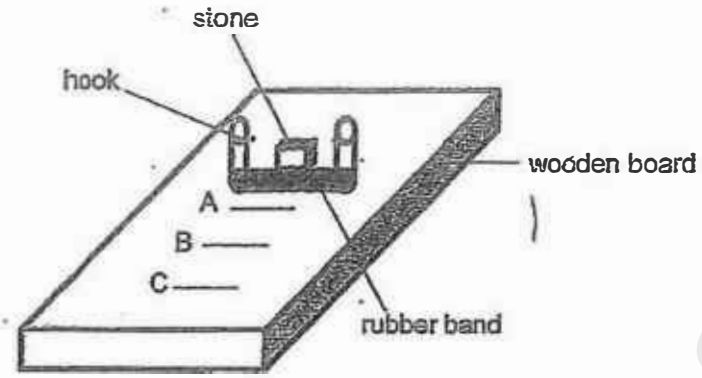
(2) B and D only

(3) A and C only

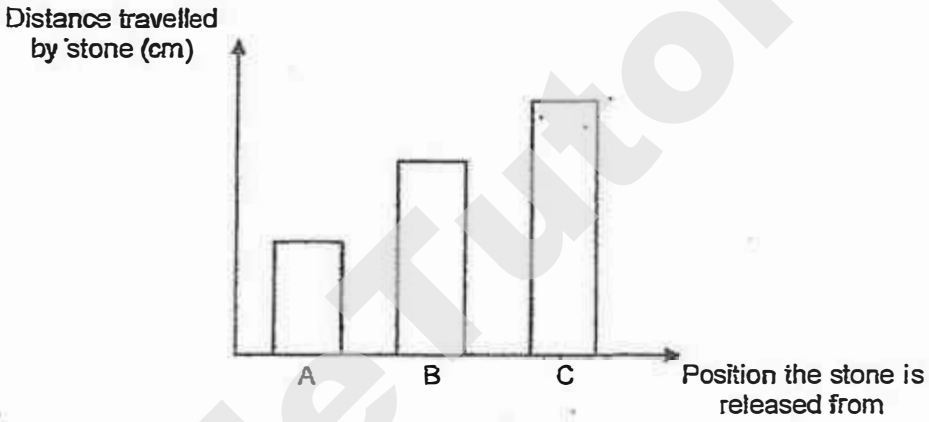
(4) C and D only

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17. Joe carried out an experiment to find out how the length of a stretched rubber band affects the distance travelled by a stone. He used the set-up as shown below.



Joe presented his results in the bar graph as shown below.



Which of the following can be inferred from the graph?

(1) As the distance travelled by the stone decreases, the elasticity of the rubber band decreases

(2) The more the rubber band is stretched, the further the distance travelled by the stone

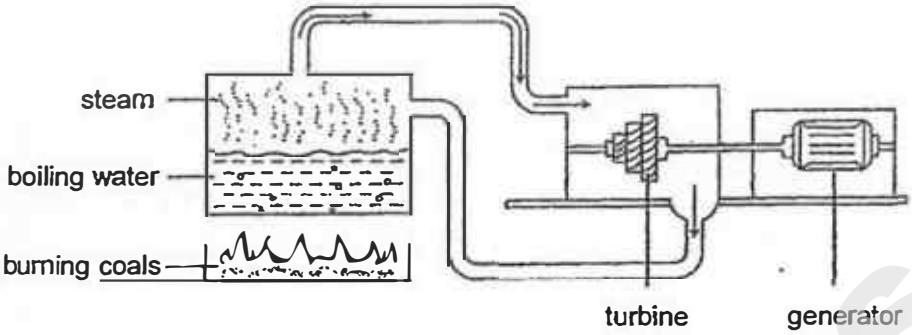
(3) The length of the stretched rubber band does not affect the distance travelled by the stone

(4) The position the stone is released from is greater when the distance travelled by the stone is smaller

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18. The diagram below shows a method of generating electricity.



Which of the following shows the correct energy conversion in the diagram above?

(1) potential energy (boiling water) → kinetic energy (moving steam) → kinetic energy (moving turbine) → potential energy (generator)

(2) heat energy (boiling water) → kinetic energy (moving steam) → kinetic energy (moving turbine) → electrical energy (generator)

(3) potential energy (boiling water) → heat energy (moving steam) → kinetic energy (moving turbine) → potential energy (generator)

(4) heat energy (boiling water) → heat energy (moving steam) → kinetic energy (moving turbine) → electrical energy (generator)

19. The table below shows the boiling and freezing points of three substances, X, Y and Z.

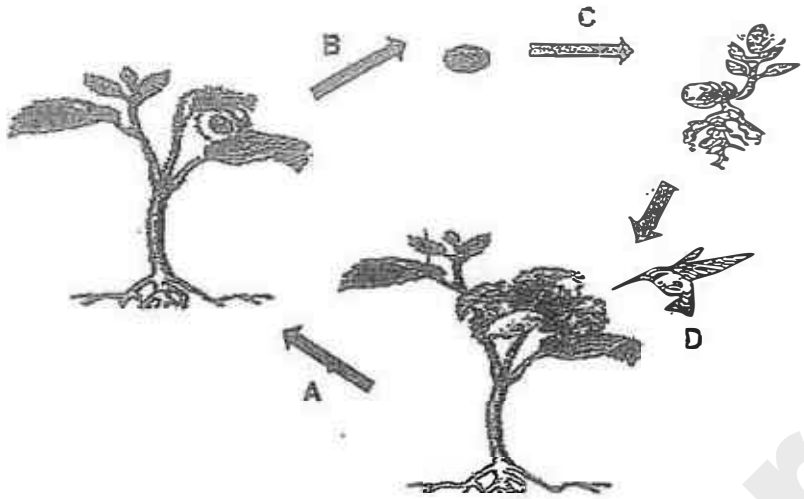
Substances	X	Y	Z
Boiling Point (°C)	16	135	72
Freezing Point (°C)	5	38	13

What is the state of the substances, X, Y and Z at room temperature of 26°C?

	X	Y	Z
(1)	gas	liquid	solid
(2)	liquid	solid	gas
(3)	gas	solid	liquid
(4)	solid	gas	liquid

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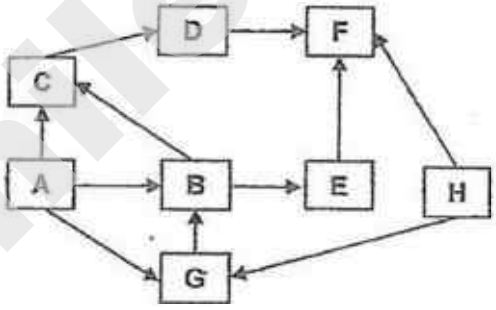
20. Study the diagram of the life cycle of a flowering plant.



Which of the following shows the correct order of processes starting from point A to D?

	A	B	C	D
(1)	pollination	fertilisation	dispersal	germination
(2)	fertilisation	dispersal	germination	pollination
(3)	dispersal	germination	pollination	fertilisation
(4)	germination	pollination	fertilisation	dispersal

21. Study the food web of a community shown below.



Which of the following correctly matches the organisms to their diet?

	Herbivore	Carnivore	Omnivore
(1)	C, G	B, D	E, F
(2)	C, B, G	D, F	D, E
(3)	G	B, D	E, F
(4)	G	D, E	B, F, C

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22. The diagrams below show the beaks and feet of four birds A, B, C and D and their feet, W, X, Y and Z.



Bird A



Bird B



Bird C



Bird D



Feet W



Feet X



Feet Y

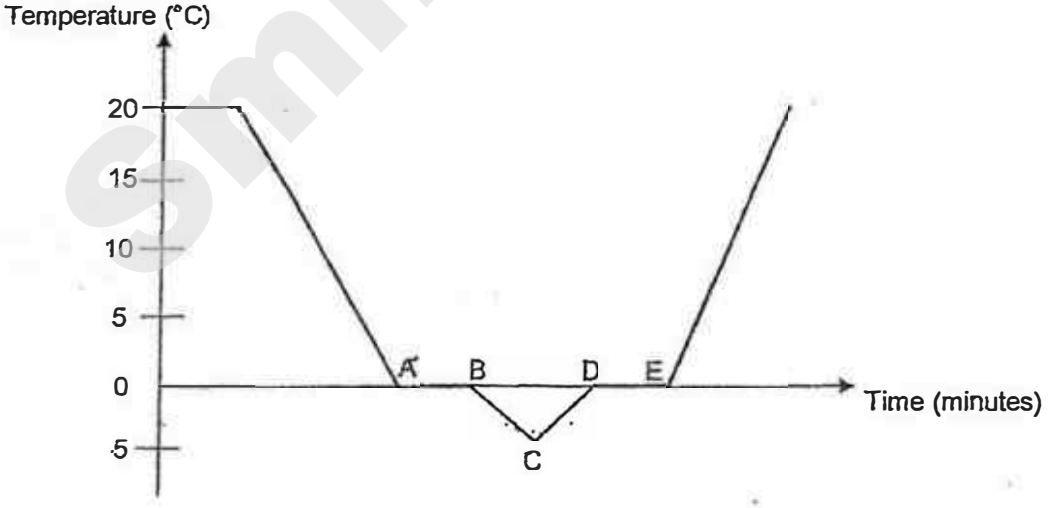


Feet Z

Which of the following correctly matches the birds to their feet?

	Bird A	Bird B	Bird C	Bird D
(1)	Y	Z	X	W
(2)	X	W	Z	Y
(3)	Y	W	Z	X
(4)	X	Z	Y	W

23. The graph below shows how the temperature of a glass of water changes with time.



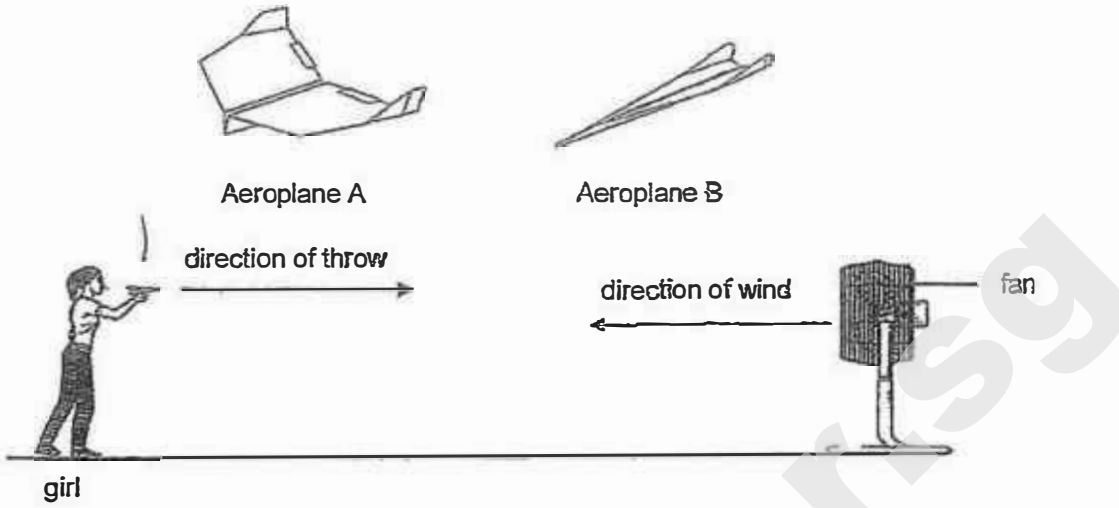
Between which points on the graph is the glass of water at solid state only?

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

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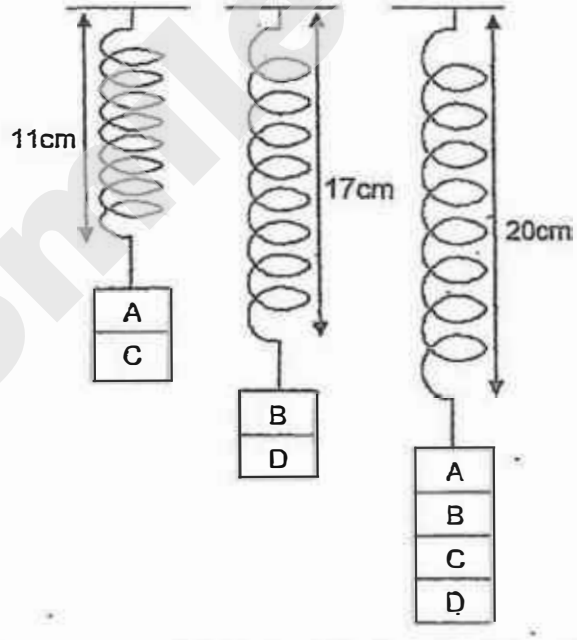
24. Megan threw two different models of paper aeroplanes, A and B, made from identical pieces of paper against a blowing fan.



She threw each paper aeroplane from the same position and with the same amount of force. Which paper aeroplane will fly the furthest distance from the girl to the fan?

(1) Aeroplane B because is longer than A
(2) Aeroplane A because it has the wider wings
(3) Aeroplane A because it has less air resistance
(4) Aeroplane B because it has a more streamlined body

25. The diagram below shows the same spring with different amount of weights hanging from it.

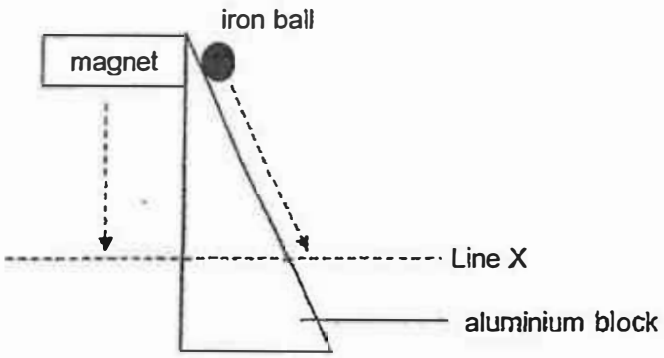


Based on the diagram, what is the original length of the spring?

(1) 3 cm
(2) 6 cm
(3) 8 cm
(4) 9 cm

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26. An iron ball was held near the top of a triangular aluminium block by a magnet as shown in the diagram below.

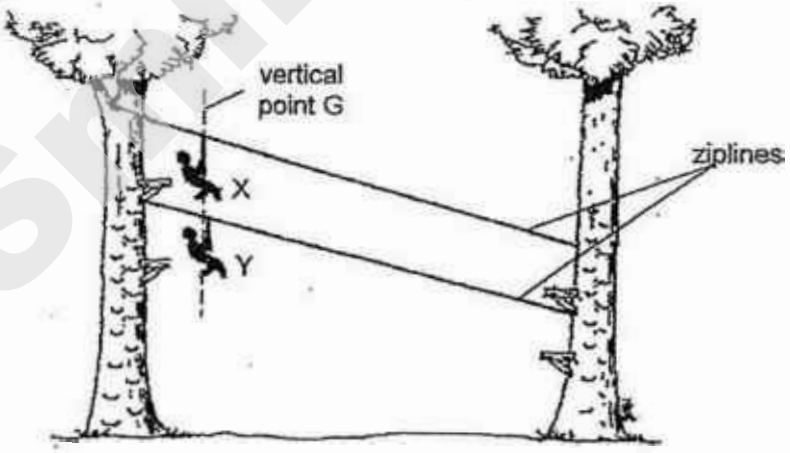


When the magnet is moved downwards, the iron ball moves downwards along with the magnet. However, once the magnet and iron ball reach Line X, the iron ball rolls do to the floor.

Which of the following statement best explains why the iron ball rolls down after Line X?

(1) Magnetism cannot pass through aluminium
(2) The aluminium block is a non-magnetic material
(3) The increased distance between the magnet and iron ball will decrease the magnetic force on the iron ball
(4) The magnet loses its magnetic force to the aluminium block as the distance between the magnet and iron ball increase

27. The diagram below shows 2 boys of the same mass, X and Y, sliding down ziplines at different heights.

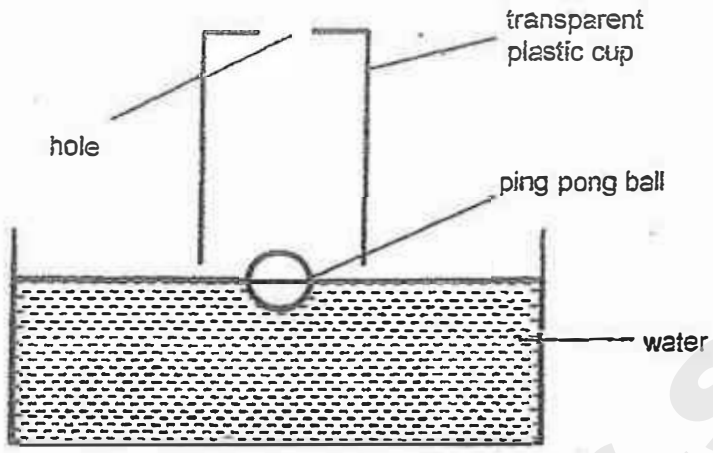


Which of the statement best describes the gravitational force that is acting on the 2 boys at vertical point G?

(1) No gravitational force is acting on the 2 boys
(2) Same amount of gravitational force is acting on both boys
(3) There is more gravitational force acting on Boy X than Boy Y
(4) Gravitational force acting on the boys decreases as the height of the ziplines decrease

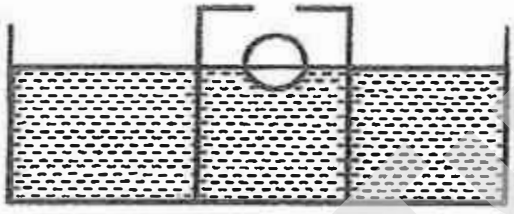
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28. Ken conducted an experiment using the set-up below.

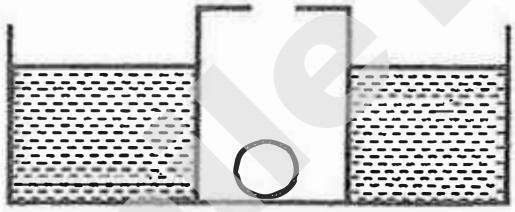


Ken then pushed the cup down into the water. Which of the following shows the results of his experiment?

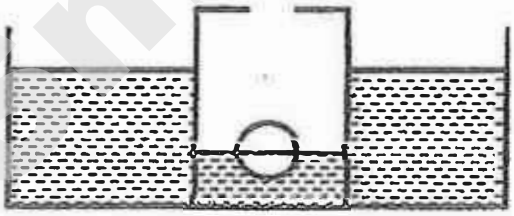
(1)



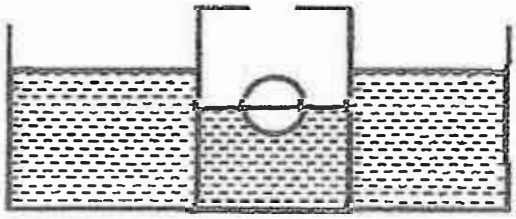
(2)



(3)



(4)



End of Booklet A

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SEMESTRAL ASSESSMENT 1 (2017)

PRIMARY 6

SCIENCE

BOOKLET B

Wednesday **17 MAY 2017** **1 hour 45 minutes**

Name: _____ ( ) Class: 6.( ) Parent's Signature:_____

INSTRUCTIONS TO PUPILS

1 Do not turn over the pages until you are told to do so.

2 Follow all instructions carefully.

3 There are 13 questions in this booklet.

4 Answer ALL questions.

5 The marks are given in the brackets [ ] at the end of each question or part question.

Booklet	Possible Marks	Marks Obtained
A	56	
B	44	
Total	100	

This question paper consists of 15 printed pages (inclusive of cover page).

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Booklet B (44 marks)

For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

29 Russell placed 3 similar plants in the same area in the garden. He watered them with the same amount of water each. All the leaves of each plant were treated as follows:

Plant	Treatment
A	Upper side of leaves were coated with a layer of black paint
B	Under side of leaves were coated with a layer of black paint
C	Leaves were not coated with any paint

(a) Russell wants to investigate the loss of water through the leaves of plants. He uses plant C and another plant to conduct his experiment. Which other plant, A or B, should Russell use to achieve the aim of his experiment? Explain your answer. [1]

(b) Explain why Russell used plant C in his experiment. [1]

(c) Predict what would happen to plant A after a week. Explain your prediction. [1]

(Go on to the next page)

SCORE 3

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30 Sam conducted an experiment to measure the amount of air he exhales. Diagram A shows the set-up at the start of the experiment. Diagrams B shows the results of the experiment after he blew through the delivery tube for 10 seconds continuously.

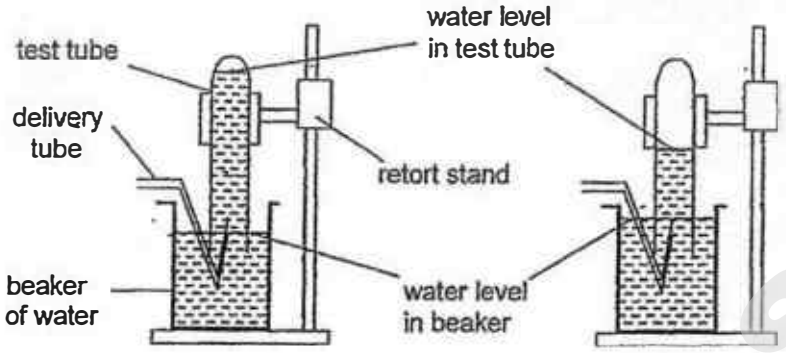
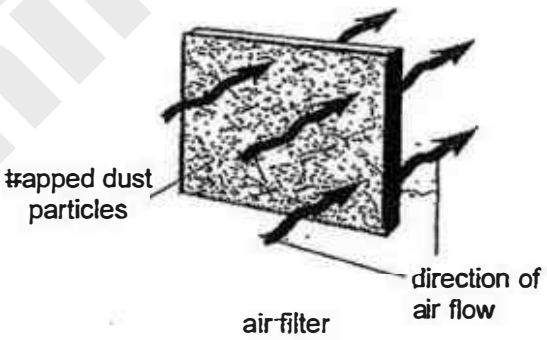


Diagram A Diagram B

(a) Explain why the water level in the test tube decreased while the water level in the beaker increased after Sam blew air into it for 10 seconds. [2]

The diagram below shows an air filter. It filters out small dust particles. .



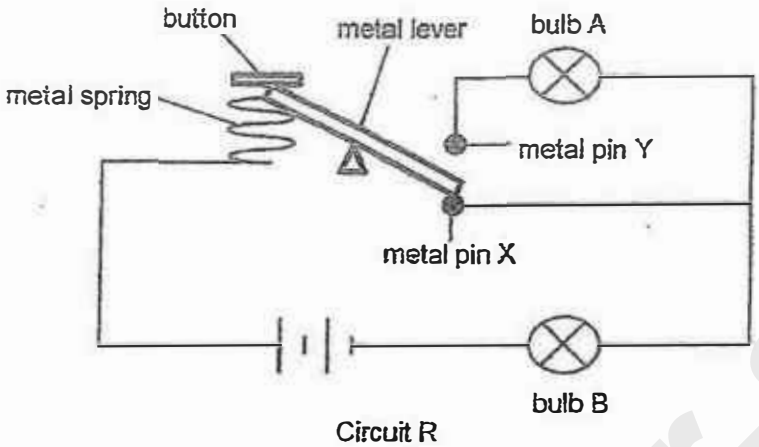
(b) Which part of the human respiratory system is similar to the air filter shown above? Explain your answer. [1]

(Go on to the next page)

SCORE 3

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31 Penny set up circuit R as shown below. She used identical batteries and bulbs. At first, bulb B was lit. When the button is pressed and held down, both bulbs lit up.

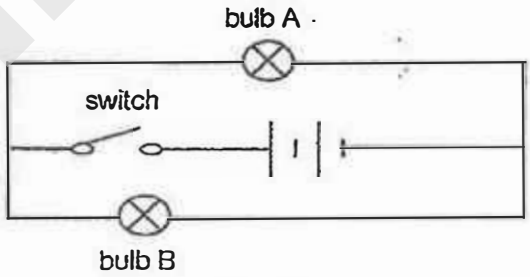


Circuit R

(a) Explain how both bulbs lit up when the button is pressed and held down. [2]

(b) What will happen to the brightness of bulb B when the button is pressed and held down? Explain your answer. [1]

Penny modified circuit R by replacing the button, spring and lever with a switch as shown below.



Circuit S

(c) State an advantage of circuit S to that of circuit R. [1]

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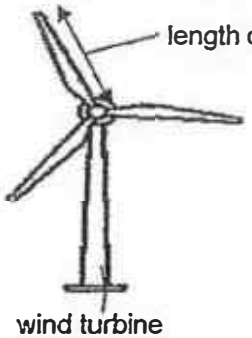
SCORE 4

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32 Gabriel wants to find out if the length of the blade of a wind turbine affects the amount of energy it can generate.



fan



wind turbine

Gabriel carried out the experiment in the Science Laboratory by blowing some wind, from a fan, towards the model wind turbine which has a generator to produce energy and records the amount of energy it generates. He repeats his experiment with different lengths of blades and records the results in the table below.

Length of blade (cm)	Amount of energy generated (units)
5	200
10	400
15	600
20	800

(a) From the above results, what is the relationship between the length of the blades of the wind turbine and the amount of energy it generated? [1]

(b) Predict the results when a stronger wind source is used on the wind turbine with the 10 cm blade. Explain your prediction. [2]

(c) State another variable that has to be kept the same to ensure a fair test. [1]

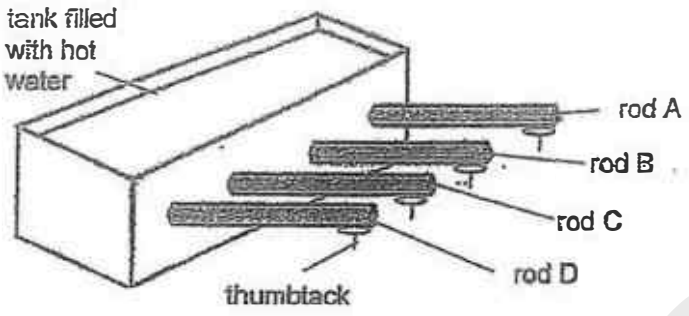
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SCORE ___/4

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33 Four rods, A, B, C and D, of the same length but made of different materials are attached to a tank filled with hot water as shown below.



Four identical thumbtacks are held on the ends of the four rods with the same amount of wax. The time taken for the thumbtacks to fall off are recorded in the table below.

Rod	Time taken for thumbtacks to fall off (seconds)
A	120
B	90
C	75
D	150

(a) From the results, which rod is the worst conductor of heat? Explain your answer. [1]

_____

_____

(b) Explain why the length of the rods, A, B, C and D, should be the same size to ensure a fair test. [1]

_____

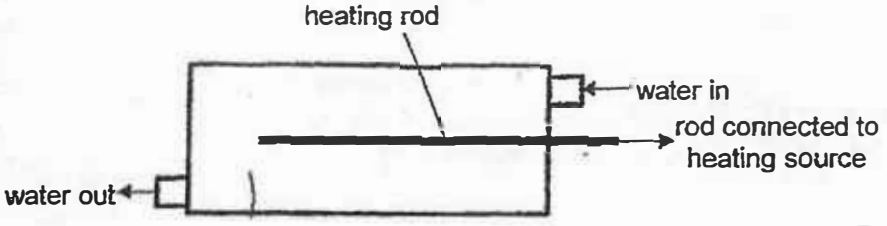
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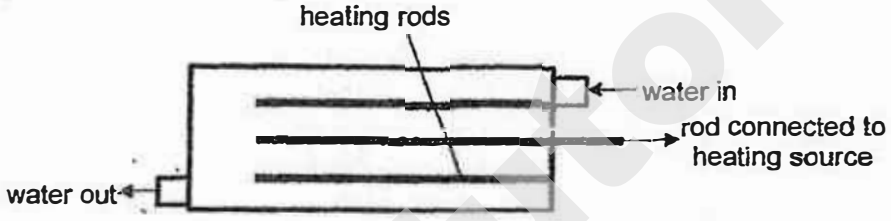
SCORE 2

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The diagrams below show two water heaters with different number of heating rods. Each of the heating rods of both water heaters were made of the same material and were of the same size.



water heater P



water heater Q

(c) Which rod, A, B, C or D, from the experiment is most suitable to make the heating rod for the water heaters above? Explain your answer. [1]

(d) The water in water heater Q heated up faster ~~that~~ then the water from water heater P. Explain why. [1]

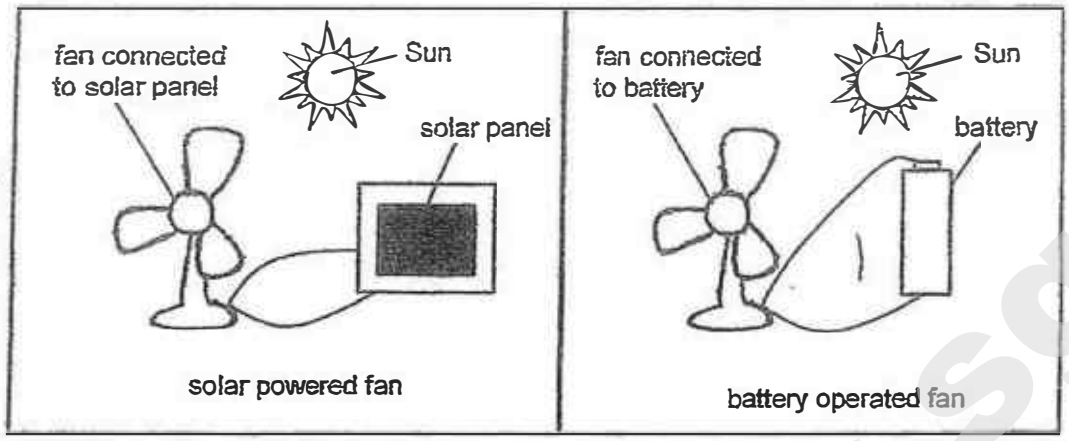
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SCORE 2

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34 The diagram below shows a solar powered fan and a battery operated fan.



(a) Fill in the blanks to show the correct energy conversions that occur in the solar powered fan. [1]

_____ energy (the Sun) → _____ energy (the solar panels) → _____ energy (the fan)

(b) State one advantage of the solar powered fan to the battery operated fan. [1]

_____

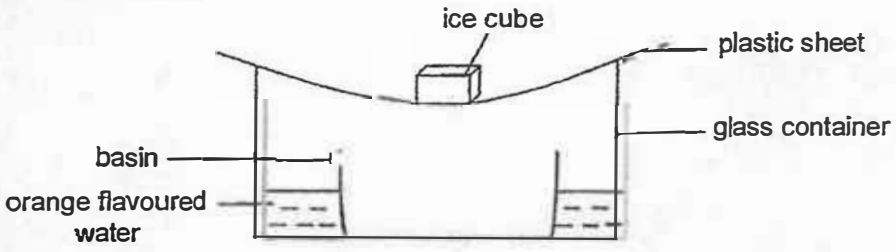
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SCORE	2

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35 Tom set up the experiment below on a sunny day.



(a) Tom predicted that the liquid collected in the basin after two hours is orange juice. Do you agree with him? Explain your answer. [2]

(b) Tom repeated the experiment using a smaller basin in the glass container. Will the amount of liquid collected be more or less than the experiment above? Explain why. [1]

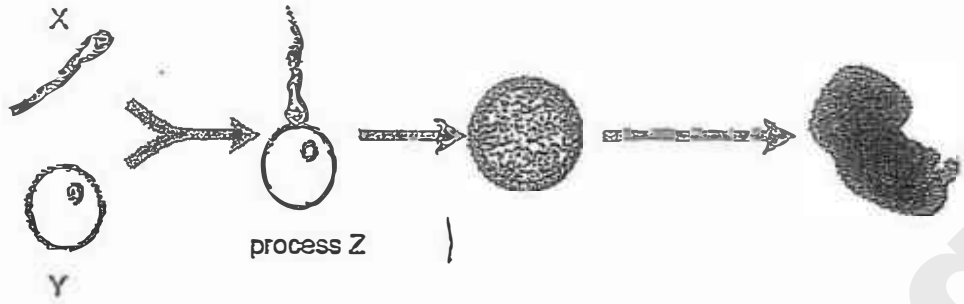
(c) Besides the change in (b), what can Tom do to increase the rate of collection of the amount of liquid? [1]

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SCORE 4

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36 The diagram shows processes X and Y in human reproduction.



(a) Name the human reproductive parts that produces X and Y. [1]

X : _____

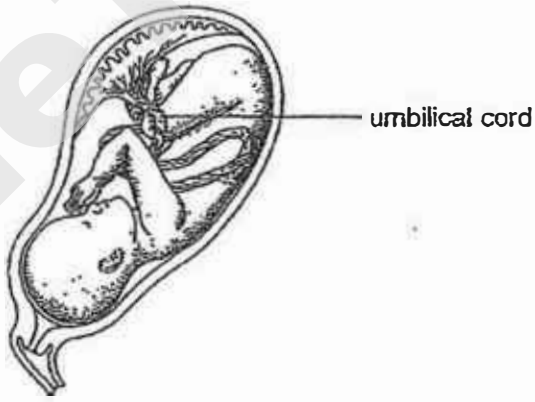
Y : _____

(b) State the name of process Z and describes what happens during process Z. [1]

_____

_____

(c) Study the diagram below. [1]



How does the umbilical cord help in the development of the baby while it is in the mother?

_____

_____

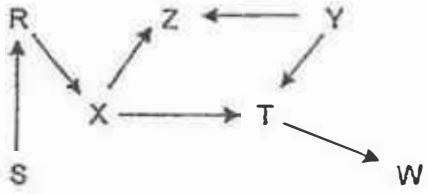
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SCORE	
	3

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37 The diagram below shows a food web of a community.



(a) Based on the food web above, state the relationship between organism T and organism W. [1]

(b) How many food chains are there in the food web? [1]

(c) Jack said that organism Y is a prey of organism T. Do you agree with him? Explain your answer. [1]

(d) A disease caused large numbers of organism Z to die. Explain how this would affect the population of organism T. [1]

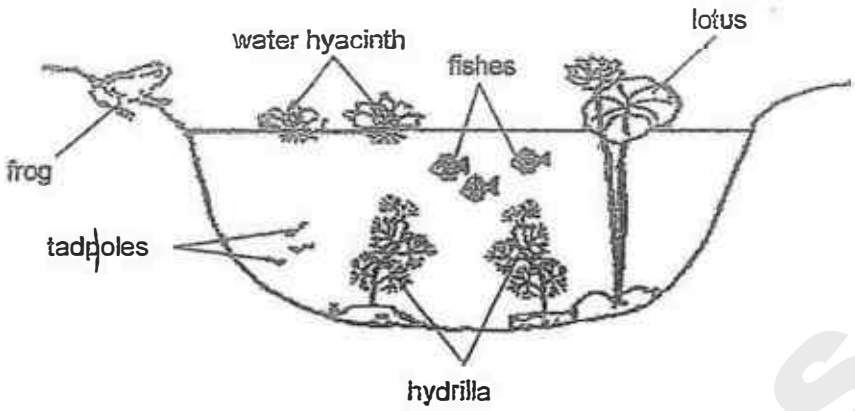
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SCORE 4

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38 The diagram below shows a pond community.



(a) State how the fish and the hydrilla are dependent on one another. [1]

(b) Explain how the population of hydrilla will be affected if the population of water hyacinth suddenly increases. [1]

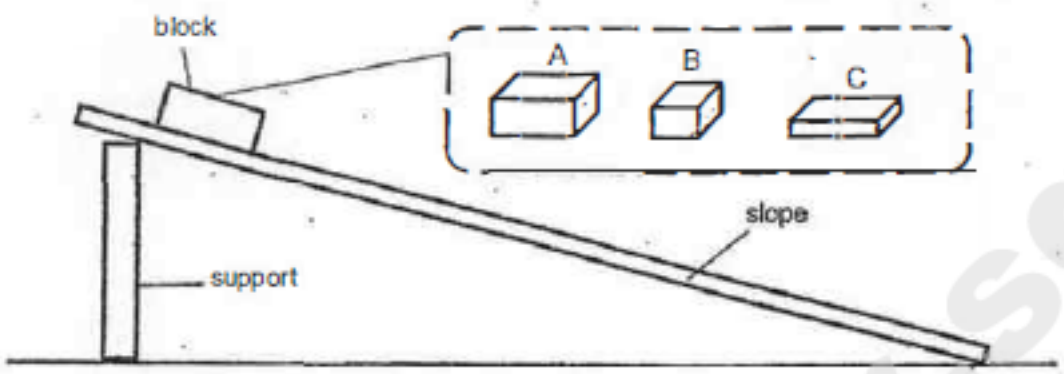
(c) If the water in the pond dries up, why would the frogs survive when all the other organisms in the community dies? [1]

(Go on to the next page)

SCORE	3

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39 Nick carried out an experiment using three blocks made of the same material, but with various mass and area of contact with the surface. He release the blocks from the slope and measured the distance moved by each block until it stopped moving.



His results are shown in the table below.

Block	Mass (g)	Distance moved (cm)
A	300	50
B	200	40
C	100	30

(a) State two variables that Nick has to keep constant for his experiment to be fair. [1]

(b) Based on the results, what is the relationship between the mass and distance moved by the block? [1]

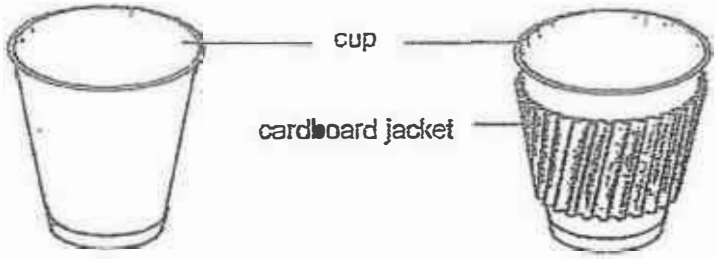
(c) If Nick carries out the experiment using block D of mass 350g, predict the distance that block D will move. Explain your answer. [2]

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SCORE / 4

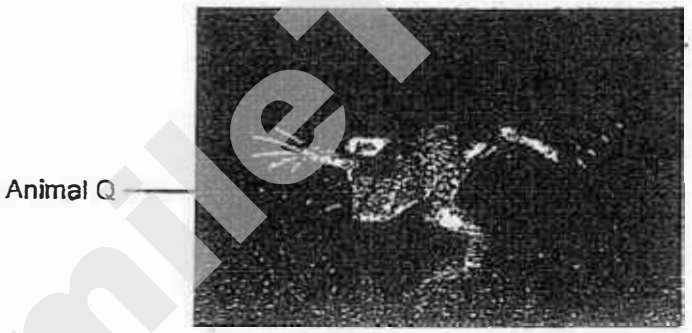
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40 Ivan conducted an experiment using two identical paper cups containing the same amount of hot coffee.



(a) After some time, Ivan found that he could hold on to Cup B longer than Cup A. Explain why. [2]

(b) Animal Q lives in the desert. During the day the sand gets very hot and animal Q can be found moving across the sand by raising its tail and one of its front and back legs at the same time and then repeating it with the other two legs.



Based on the results of Ivan's experiment, explain how this behaviour helps animal Q to survive in the desert. [1]

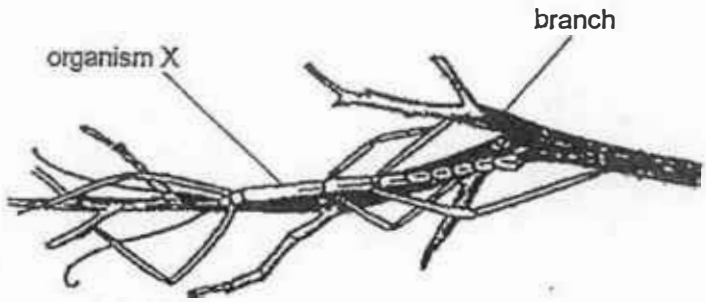
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SCORE	/ 3

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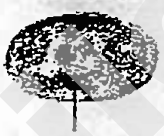
41 The diagram below shows organism X on a branch.



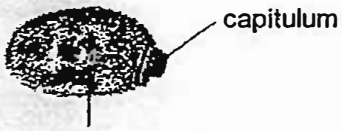
When startled by its predators such as birds, organism X will stop moving and keep very still.

(a) Explain how the above adaptations ensures that organism X has a better chance of survival. [1]

The diagram below shows a seed eaten by ants and an egg of organism X. The ants usually collect the seeds and store them underground. Organism X lays its eggs from a tree and drops them onto the ground. The eggs contain a small part called the capitulum, which is full of sugar. The ants will carry the eggs underground to their nest.



Seed eaten by ants



Egg of organism X

(b) Based on the information given above, state how the ant's behaviour benefits itself and the egg of ~~the stick insect.~~ Organism X [2]

End of Paper

SCORE	
	3

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YEAR	:	2017
LEVEL	:	PRIMARY 6
SCHOOL :	:	ANGLO-CHINESE SCHOOL (JUNIOR)
SUBJECT :	:	SCIENCE
TERM	:	SA1

Booklet A

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

Booklet B

Q29 (a) B. All stomata are on the underside of the leaves, so all water will be lost through the stomata on the underside of the leaves and not the upper side so B should be used if Russel wants to investigate the loss of water through the leaves of plant.

Q29 (b) C is used as a control set-up to show that water loss is due to the stomata of the leaves.

Q29 (c) A would die. Leaves of A cannot absorb light for photosynthesis because the leaves were coated with black paint.

Q30 (a) When Sam blew air into the delivery tube, air entered the test tube. As air takes up space, the air took up the space previously taken up by the water and so some of the water in the test tube had to move down the test tube and fill up the beaker, therefore the water level in the beaker increased.

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Q30 (b) The nose. When we breathe in, there are some dust particles in the air that we have taken in, so the nose hair traps the dust particles, just like the air filter.

Q31 (a) When the button is pressed down and held down, one end of the metal lever is connected to the metal pin Y. As the button is made of a magnetic material, the circuit becomes a closed circuit. As electricity can flow through a closed circuit, electricity can flow through the circuit to light up both bulbs because metal pin Y is also made of a magnetic material and electricity can flow through magnetic materials.

Q31 (b) The brightness of B will decrease. B is now in series together with A and as bulbs in series are dimmer than bulbs in parallel, the Electricity flowing out of the batteries now have to be shared between A and B instead of only B so B will be dimmer

Q31 (c) When one bulb in S fuses, the other bulb can still light up but in R, When one bulb fuses. the other bulb cannot light up

Q32 (a) The greater the length of the blade (cm), the greater the amount of energy generated.

Q32 (b) The amount of energy generated would be more than 400 units, about 500 units. The stronger the wind source, the faster the wind turbine turns, so the wind turbine would generate more energy.

Q32 (c) The distance between the fan and the wind turbine.

Q33 (a) D. D is the worst conductor of heat as it took 150 seconds for the thumbtack on D to drop off, the longest among all rods, proving that the heat from the hot water took the longest amount of time to reach the thumbtack on D for the thumbtack to drop, so D is the worst conductor of heat.

Q33 (b) This is to ensure that there is only one changed variable, the type of Material of rod, so only the type of material of rod and not the length of the rods will affect the time taken for the thumbtack to drop off.

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Acs SM1

Q33 (c) C. C is the best conductor of heat among all 4 rods as among all 4 rods, C took the shortest time for the heat to reach the thumbtack on C and make the thumbtack drop off. Therefore, as heating rods need to be the best conductor of heat, C is most suitable to make the water heater.

Q33 (d) There were more heating rods in Q than P, so the water heater Q would take a faster time to heat up than the water heater P as more heat could be transferred from the heating rods to the water heater Q than the heating rod to the water heater P, so the water heater Q heated up water faster than water heater P.

Q34 (a) Light → electrical → kinetic

Q34 (b) It uses renewable energy.

Q35 (a) No. The water in the orange flavoured water gained heat and Evaporated into warmer water vapour, which rose and touched the cooler underside of the plastic sheet which had been cooled by the cooler ice cube condensing into water droplets.

Q35 (b) More. The orange flavoured has a greater exposed surface area, so more water can evaporated into more water vapour and more water vapour can condense into more water droplets.

Q35 (c) Put more ice cubes on the top of the plastic sheet.

Q36 (a) X : testes
Y : ovary

Q36 (b) Fertilisation. The nuclei of the sperm cell fuses with the nuclei of the egg cell.

Q36 (c) The umbilical cord provides digested food, oxygen and water for the baby to help in the baby's development.

Q37 (a) Organism T is eaten by organism W.

Q37 (b) 4

Q37 (c) No. Organism Y is a food producer and organism T feeds on organism Y.

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Q37 (d) Organism T will increase. There are are fewer Z to feed on X and Y, so there will be an increase in X and Y.
More X and Y for T to feed on will cause an increase in T.

Q38 (a) The fish respire, producing carbon dioxide and the totally submerged take in the carbon dioxide given out by the fish to photosynthesise, producing oxygen. The fish then take in the oxygen given out by the hydrilla for respiration.

Q38 (b) The population of hydrilla would decrease drastically as the floating water hyacinth would totally block the surface of the pond, leaving no light to enter the pond and to be trapped by the fully submerged hydrilla, so the hydrilla cannot photosynthesise and the population of hydrilla would decrease drastically.

Q38 (c) The frogs can migrate to another pond to continue to survive.

Q39 (a) The type of surface of the slope. The height of the support.

Q39 (b) The smaller the mass of the block, the smaller the distance moved by the block.

Q39 (c) 55cm. When the mass increases, the gravitational potential energy Increases so this results in more kinetic energy of the block and increase in distance moved by D.

Q40 (a) The cardboard is a poor conductor of heat and it reduces the contact surface area between B and the hand, there it will gain heat faster.

Q40 (b) By raising it's tail and with 2 legs in contact with the hot sand, there is less contact surface area between Q and the hot sand, therefore Q gains heat slower and will not burn itself.

Q41 (a) This will reduce the chances of predators spotting it as X stay still, so the predators of X will have a harder time looking for it than when X is moving, so X has a better chance of survival.

Q41 (b) The ant's behavior benefits itself as it receives sugar which the ant will eat. The eggs of organism X will be safer from its predators as the eggs of X are stored underground.

End

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CATHOLIC HIGH SCHOOL

PRELIMINARY EXAMINATION ONE (2017)

PRIMARY SIX

SCIENCE

BOOKLET A

Name: _____ ( )

Class: Primary 6 - _____

Date: 9 May 2017

28 questions

56 marks

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

INSTRUCTIONS TO CANDIDATES

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

This booklet consists of 19 printed pages, excluding the cover page.

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Booklet A (28 × 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 your answer on the Optical Answer Sheet. (56 marks)

1 Four pupils recorded their observations of an animal they saw at the Singapore Zoo.

Ali	Its body is covered with hair.
Betty	It reproduces by laying eggs.
Chen Bin	Its young resembles the adult.
Danny	It moves by swimming and hopping.

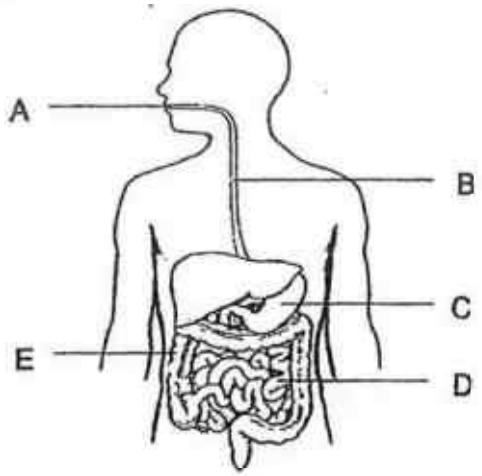


Who gave the correct observations about the animal shown?

(1) Ali and Danny only
(2) Ali and Chen Bin only
(3) Ali, Chen Bin and Danny only
(4) Betty, Chen Bin and Danny only

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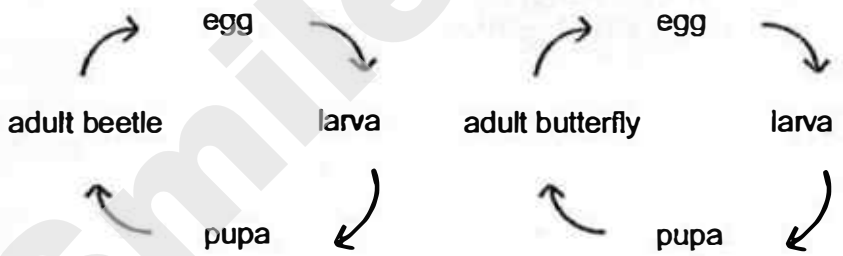
2 The diagram below shows parts of a human digestive system.



In which parts, A, B, C, D and E, are digestive juices found?

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

3 The diagrams below show the life cycles of 2 animals.



Which of the following statements about the life cycles of the animals are correct?

A Both give birth to young alive.
B Both their young do not resemble the adult.
C The young will only become insects at the adult stage.
D The pupa does not eat before reaching the adult stage.

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

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4 Susan conducted an experiment to find out whether the presence of oxygen would affect the growth of seeds. She placed a few seeds in each of the four containers.

The table below shows the amount of water that Susan used to water the plants each day. It also shows which containers received oxygen and sunlight.

Container	Amount of water (ml)	Oxygen	Sunlight
A	5	Yes	No
B	10	No	Yes
C	5	No	Yes
D	10	Yes	Yes

Which two containers should she use if she wants to find out whether the presence of oxygen would affect the growth of seeds?

(1) A and B only

(2) A and C only

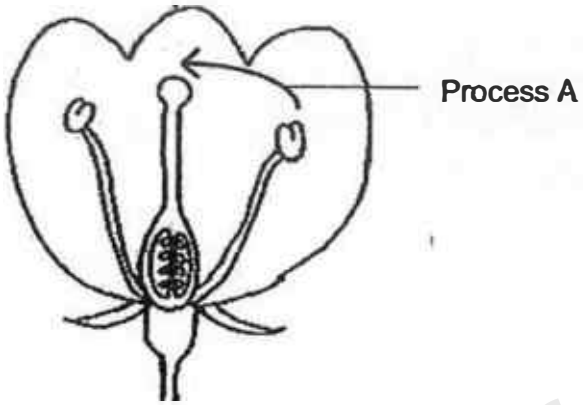
(3) B and C only

(4) B and D only

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5 Study the diagram below.



- The ovary develops into part X.
- The ovule develops into part Y.

Which of the following could processes A and B and parts X and Y be?

	A	B	X	Y
(1)	fertilisation	germination	fruit	seed
(2)	fertilisation	seed dispersal	seed	fruit
(3)	pollination	seed dispersal	seed	fruit
(4)	pollination	fertilisation	fruit	seed

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6 John wanted to find out if the colour of the petals has an effect on the number of pollinators attracted to the flower. He had the following flowers.

Flower	Colour of petals	Characteristics
A	pink	anther within the flower
B	white	anther within the flower
C	yellow	small petals
D	white	sweet scent
E	purple	no scent
F	white	small petals

Which of the flowers should John use to conduct his investigation?

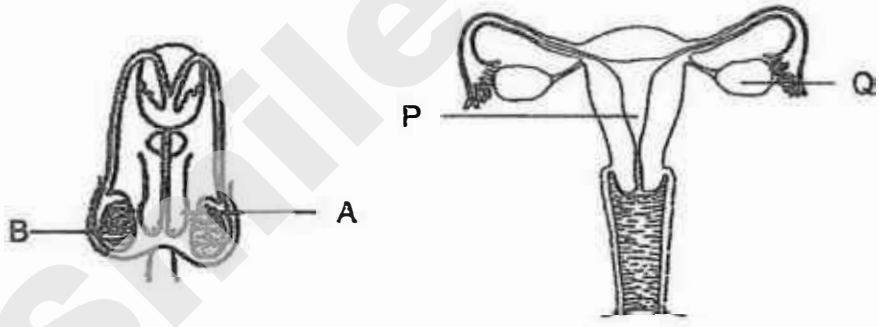
(1) A and B only

(2) D and E only

(3) B, D and F only

(4) C, E and F only

7 The diagram below shows the male and female reproductive systems.



In which parts of the reproductive systems are the reproductive cells produced?

(1) A and P only

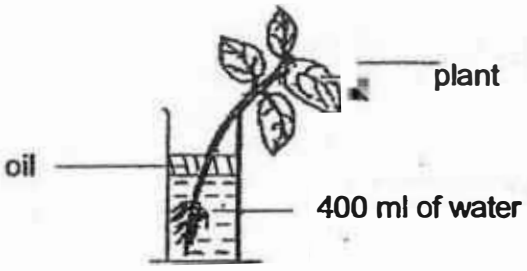
(2) A and Q only

(3) B and P only

(4) B and Q only

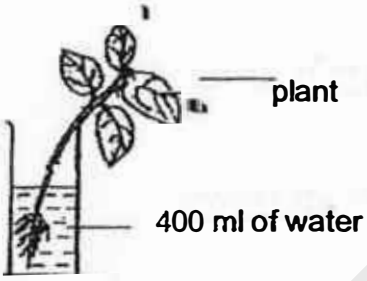
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8 Some pupils were asked to find out if a plant takes in water through its roots. The following set-up was left in an open area for a few days.

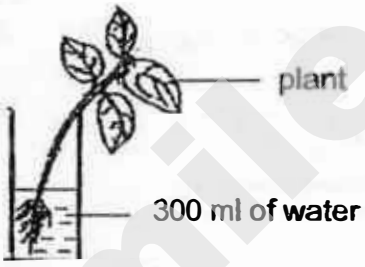


Which of the following should the pupils use as the control set-up for the experiment?

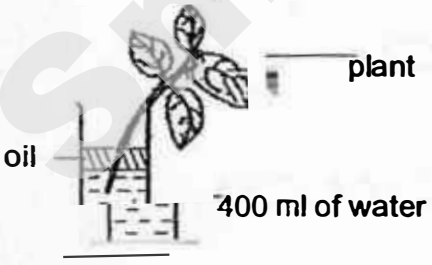
(1)



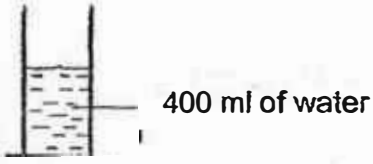
(2)



(3)



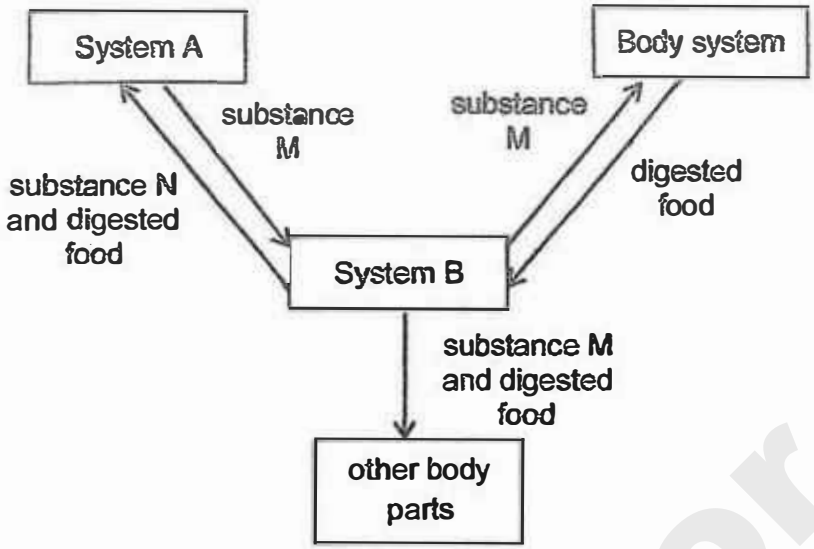
(4)



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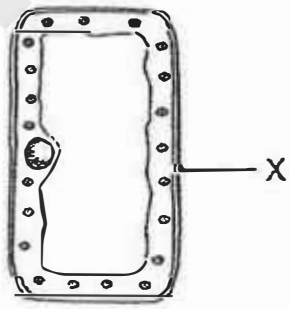
9 The diagram below shows how some substances are transported in the human body.



Which one of the following correctly identifies substances M and N, and Systems A and B?

	Substance M	Substance N	System A	System B
(1)	Carbon dioxide	Oxygen	Circulatory	Respiratory
(2)	Carbon dioxide	Oxygen	Respiratory	Digestive
(3)	Oxygen	Carbon dioxide	Digestive	Circulatory
(4)	Oxygen	Carbon dioxide	Respiratory	Circulatory

10 The diagram below shows a plant cell.



Which one of the following statements is correct about X?

(1) It enables the cell to keep its shape.

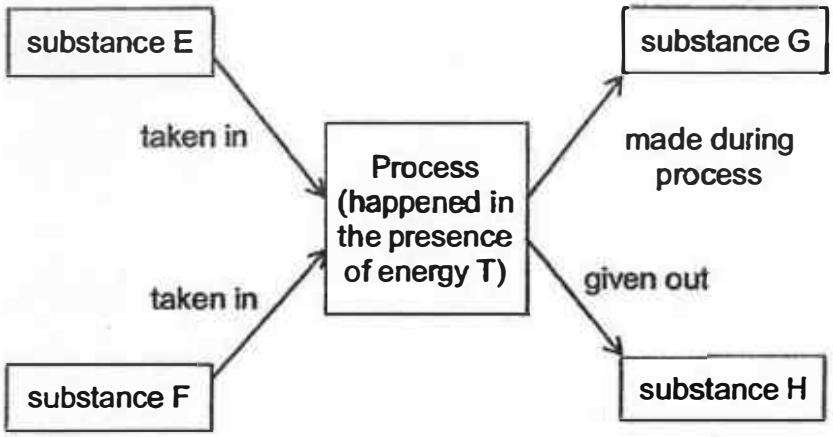
(2) It prevents substances from leaving the cell.

(3) It prevents substances from entering the cell.

(4) It helps trap light energy from the sun for the plant to make food.

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11 The diagram below shows a certain process that takes place in green plants.



Which one of the following correctly identifies substances E, F, G and H?

	Substance				Energy T
	E	F	G	H	
(1)	Food	Water	Oxygen	Carbon dioxide	Light
(2)	Oxygen	Food	Carbon dioxide	Water	Heat
(3)	Carbon dioxide	Water	Food	Oxygen	Light
(4)	Carbon dioxide	Food	Oxygen	Water	Heat

12 The following relationships were observed among four living things J, K, L and M.

J feeds on L.
M feeds on J.
L gets its food from K.
M feeds on L but does not feed on K.

Which one of the following identifies J, K, L and M correctly?

	Food producer	Prey	Prey and predator	Predator
(1)	K	M	J	L
(2)	M	J	L	K
(3)	K	L	J	M
(4)	M	K	L	J

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13 The statements below are about the adaptations of some animals.

A Wolf hunts in groups.
B Grizzly bear eats a lot before hibernation.
C Polar bear has thick fur coat to keep warm.
D Fish uses gills to help them breathe in water.

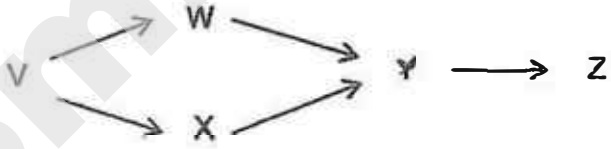
Which of the following shows how the above adaptations can be classified?

	Behavioural adaptation	Structural adaptation
(1)	A, B	C, D
(2)	A, B, D	C
(3)	C	A, B, D
(4)	A, D	B, C

14 The statements below describe a field habitat and a tree habitat. Which one of them is not correct?

(1) Air in the field habitat and tree habitat moves freely.
(2) The field habitat is exposed to light while the tree habitat is shady.
(3) Both the field and tree habitats get periods of brightness and darkness.
(4) The tree habitat experiences greater temperature changes than the field habitat.

15 The food web shows the relationships between organisms V, W, X, Y and Z in a pond.



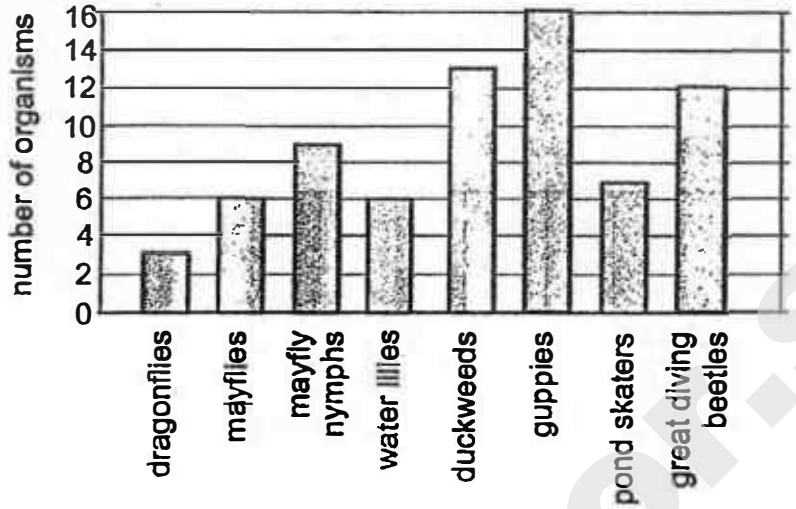
The whole population of Y died out due to water pollution.

Which one of the following correctly shows what would first happen to the populations of the other organisms after all of Y died?

	Organism	What would first happen to the population?
(1)	V	Increase
(2)	W	Increase
(3)	X	Decrease
(4)	Z	Increase

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16 Wei Yi plotted the number of different organisms he saw in a school pond in the bar graph below.



Which of the following statements is/are correct?

A There are 5 insect populations.

B There are less number of plants than animals.

C There are 15 organisms in the mayfly population.

D There are 7 communities living in the school pond.

(1) A only

(2) B and C only

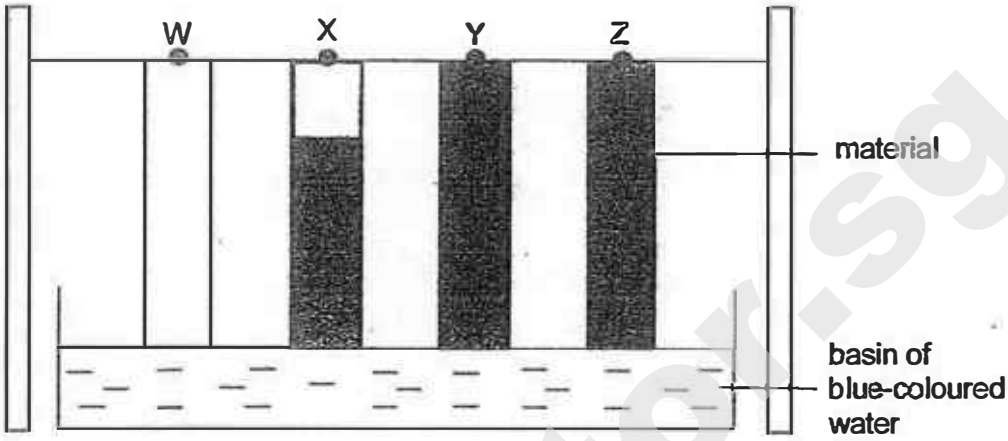
(3) A, B and C only

(4) B, C and D only

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17 Christine conducted an experiment to compare the absorbency of different types of materials. She placed 4 strips of materials, W, X, Y and Z, of identical size, into a basin of blue-coloured water for 10 minutes. Christine recorded her observations as shown in the diagram below.



Based on the information above, which of the following shows the most suitable material to make a raincoat, a towel and a cup?

	Raincoat	Towel	Cup
(1)	Z	W	Y
(2)	W	X	Z
(3)	Y	X	Z
(4)	W	Z	W

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18 Joe placed object A securely onto the plastic board and measured the length of the spring as shown in diagram X.

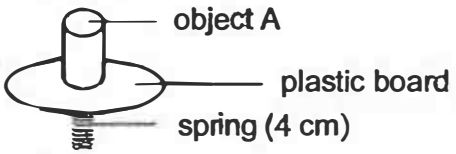


Diagram X

He wanted to find out if objects, A, B and C, would interact with the magnet hanging from the retort stand. He hung a magnet above object A and measured the length of the spring as shown in diagram Y. He repeated the experiment with objects B and C. Objects A, B and C are of the same mass.

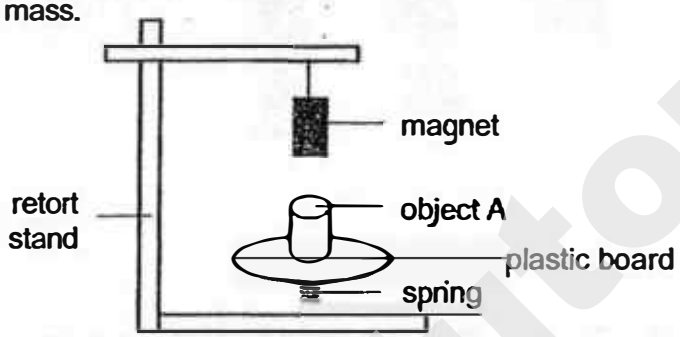


Diagram Y

The results of the experiments were recorded as below.

Object	Length of spring (cm)
A	3
B	4
C	6

Based on the results above, what could objects A, B and C be?

	Object A	Object B	Object C
(1)	magnet	copper bar	iron bar
(2)	magnet	iron bar	copper bar
(3)	iron bar	magnet	copper bar
(4)	iron bar	copper bar	magnet

19 A metal tank has a capacity of 1000 cm^3. Which one of the following can Jane use to fill the tank completely?

(1) 1200 cm^3 of oil

(2) 1200 cm^3 of water

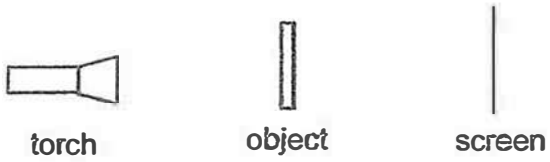
(3) 1200 cm^3 of oxygen

(4) 1200 cm^3 of rice grains

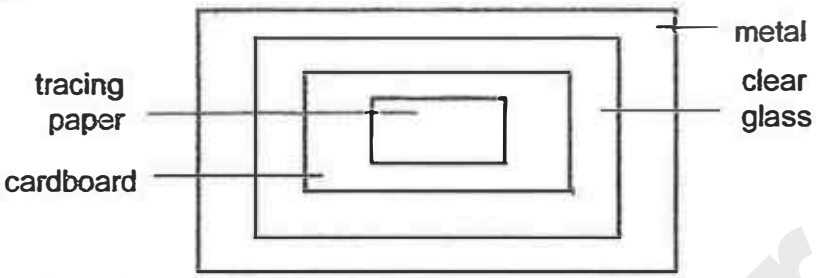
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20 In the diagram shown below, an object is placed between the torch and the screen.



The object is made up of different materials as shown in the diagram below.

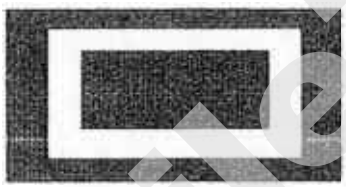


Legend:



Which one of the following is most likely to be the shadow formed on the screen?

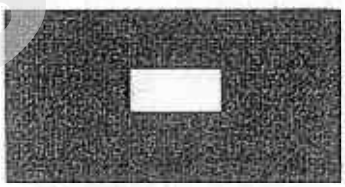
(1)



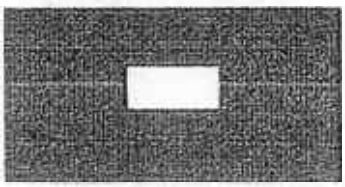
(2)



(3)



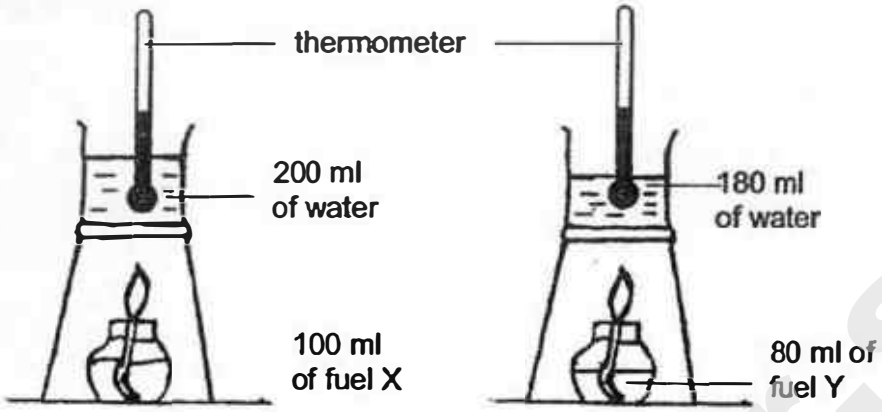
(4)



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21 Sophia conducted an experiment to find out which liquid fuel, X or Y, produces more heat when burnt. The diagram below shows the set-ups for her experiment.



Sophia said that it was not a fair test. Which variables should Sophia keep the same to make it a fair test?

A Volume of fuel

B Volume of water

C Type of liquid fuel

D Initial temperature of the water

(1) A and D only

(2) B and C only

(3) A, B and C only

(4) A, B and D only

22 The table below shows the melting and boiling points of substances P, Q and R.

Substance	Melting point (°C)	Boiling point (°C)
P	42	78
Q	28	63
R	54	90

At which of the following temperatures will the three substances be in the same state?

(1) 32°C

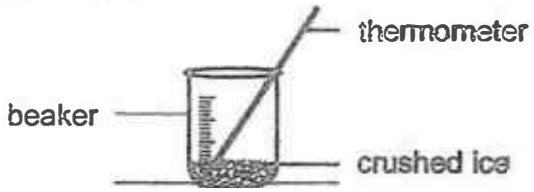
(2) 60°C

(3) 75°C

(4) 80°C

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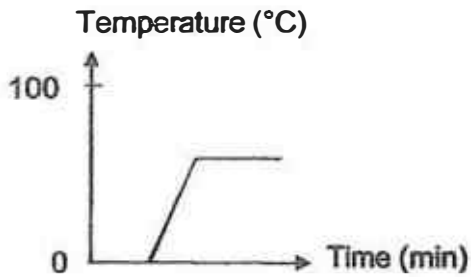
23 Dan placed a beaker of crushed ice with a thermometer on a table as shown in the diagram below.



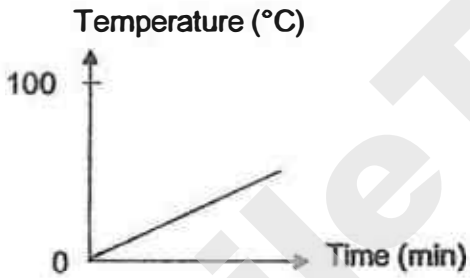
for 60 minutes

He left it to stand on the table. He observed the temperature of the crushed ice and recorded the readings in a graph. Which of the following graphs would he obtain?

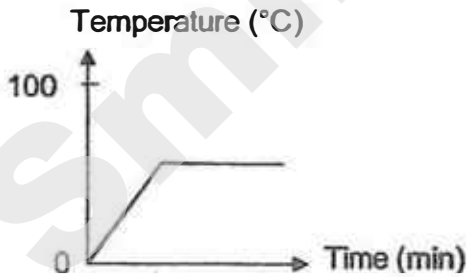
(1)



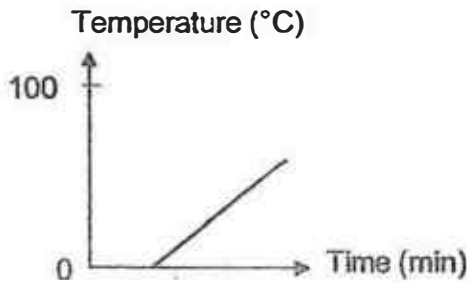
(2)



(3)



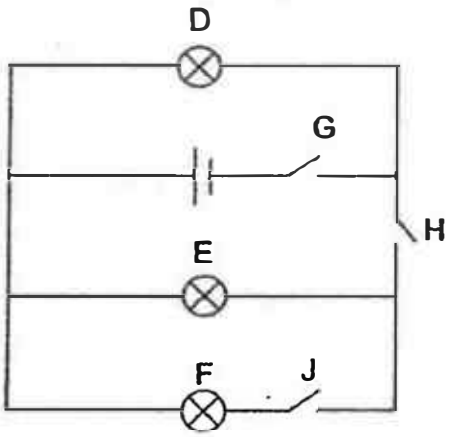
(4)



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24 Bulbs D, E and F and switches G, H and J are connected in a circuit as shown. All bulbs in the circuit are working properly.



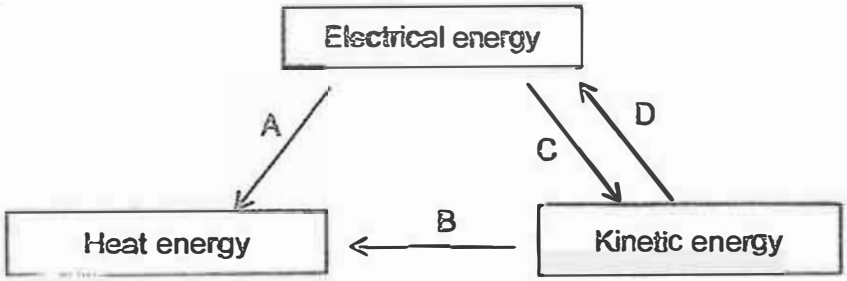
Which one of the following is correct?

	Does the bulb light up?			Switch		
	D	E	F	G	H	J
(1)	Yes	Yes	No	Closed	Closed	Open
(2)	No	Yes	No	Open	Closed	Open
(3)	Yes	No	Yes	Closed	Open	Closed
(4)	No	No	Yes	Open	Open	Closed

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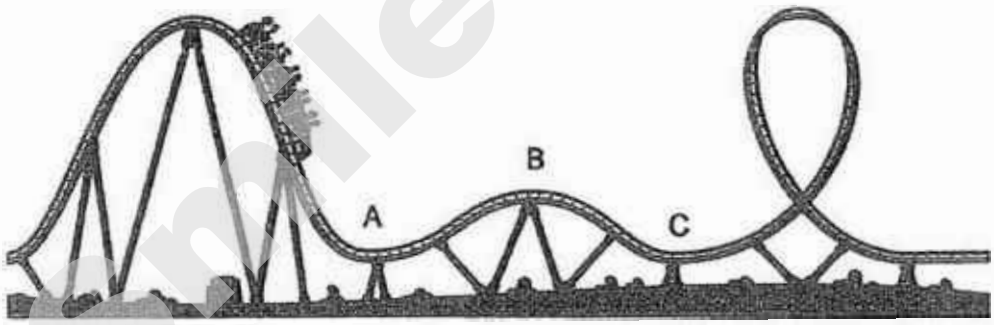
25 The diagram below shows how energy can be converted from one form to another form, through activities A, B, C and D.



Which of the following could activities A, B, C and D be?

	A	B	C	D
(1)	Rubbing of palms	Using an oven	Using a ceiling fan	Turning a turbine
(2)	Using an oven	Rubbing of palms	Using a ceiling fan	Turning a turbine
(3)	Turning a turbine	Using a ceiling fan	Rubbing of palms	Using an oven
(4)	Using an oven	Rubbing of palms	Turning a turbine	Using a ceiling fan

26 The picture shows a group of children taking a roller coaster ride.



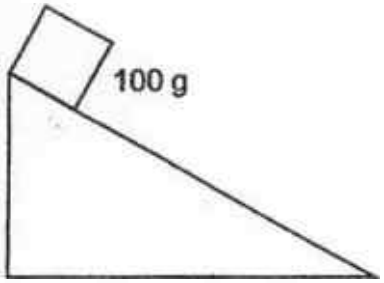
Which one of the following shows the changes in the kinetic energy and gravitational potential energy as the roller coaster travelled from A to C?

	Change in gravitational potential energy from A to B	Change in kinetic energy from B to C
(1)	Increase	Increase
(2)	Increase	Decrease
(3)	Decrease	Increase
(4)	Decrease	Decrease

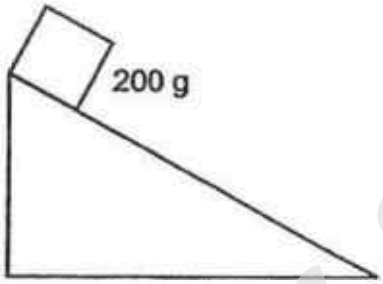
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27 Petrina conducted an experiment with two blocks of the same size but of masses 100 g and 200 g.

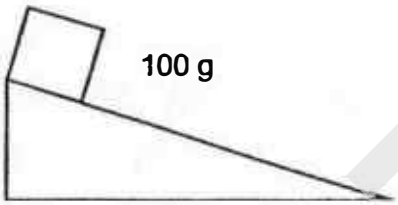
She then released the blocks from two different heights as shown in set-ups A, B, C and D.



Set-up A



S B



Set-up C



Set-up D

Petrina wanted to investigate how the gravitational potential energy of the block depends on its mass and the height from where it was released.

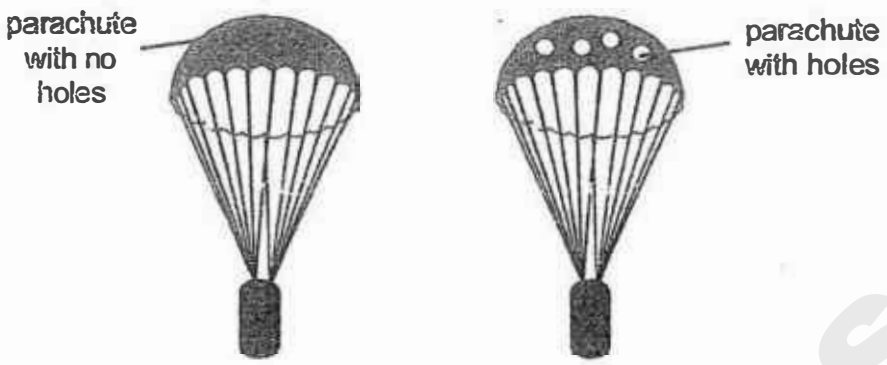
Which pairs of set-ups should she use in her investigation?

	Gravitational potential energy depends on	
	mass	**height**
(1)	A and B	C and D
(2)	B and D	A and C
(3)	C and D	B and D
(4)	A and C	A and B

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28 The diagram below shows two similar loads X and Y being released from the same height on a parachute.



Which one of the following correctly explains why load Y falls faster than load X?

(1) More gravitational force is acting on load Y.

(2) More air is pushing down on the parachute of load Y.

(3) Less force is acting upwards on the parachute of load Y.

(4) There is more potential energy in load Y than load X before they were released.

End of Booklet A

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PRELIMINARY EXAMINATION ONE

(2017) PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____ ( )

Class: Primary 6 - _____

Date: 9 May 2017

Parent's Signature: _____

Booklet A	56
Booklet B	44
Total	100

13 questions

44 marks

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

INSTRUCTIONS TO CANDIDATES

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

This booklet consists of 16 printed pages, excluding the cover page.

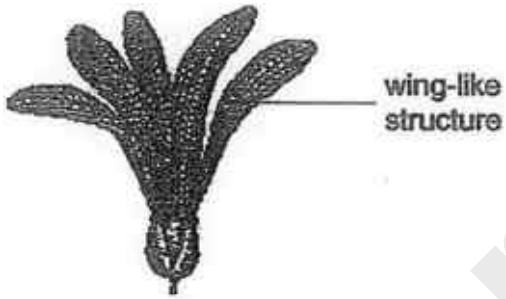
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Booklet B (44 marks)

For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 Study the fruit below.



(a) State the dispersal method for the fruit above. [1]

_____

(b) How does the structure help in its dispersal? [1]

_____

_____

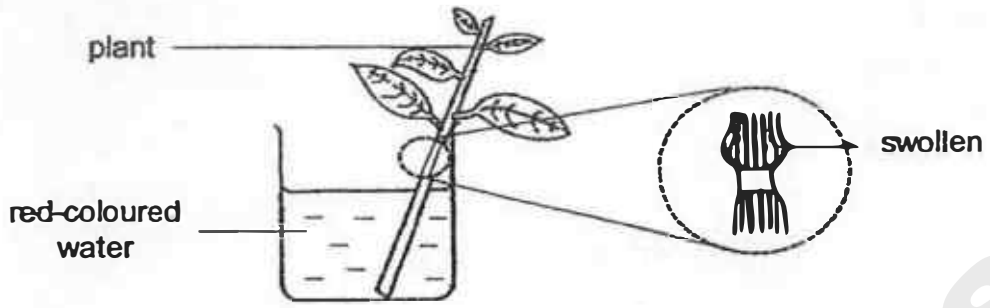
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SCORE	/ 2

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30 The diagram below shows a plant placed in a beaker of red-coloured water. The outer ring of a section of the stem of the plant was removed.



(a) What would happen to the colour of the leaves after a few days? [1]

_____

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

_____

_____

(c) Explain why the part just above the cut stem was swollen after a few days. [1]

_____

_____

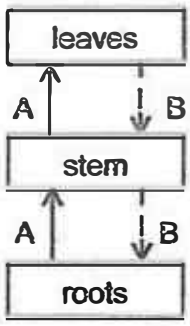
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SCORE	/ 3

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31 The diagram below shows how substances A and B are transported from one part of the plant to another in the plant transport system.



(a) Identify substance B. [1]

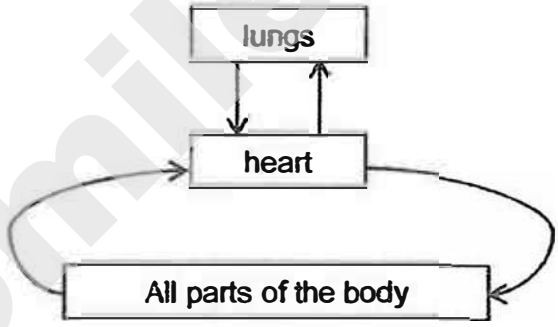
_____

(b) What happens to substance A when it reaches the leaves? [1]

_____

_____

The diagram below shows the human circulatory system.



Compare the diagrams on the plant transport system and the human circulatory system.

(c) State the difference in the direction in which food is transported in plants and humans. [1]

_____

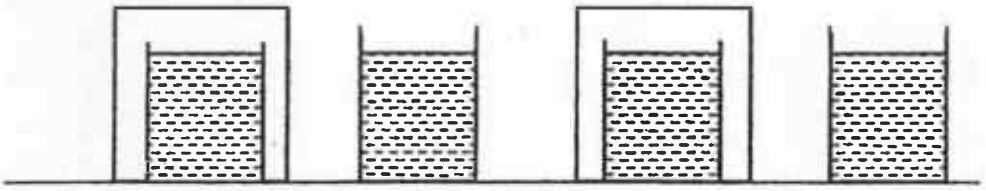
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SCORE 3

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32 Ian caught two organisms C and D from his school pond and wanted to find out whether they were animals or plants. He filled four beakers 1, 2, 3 and 4 with pond water. He placed organism C in beakers 1 and 2 and organism D in beakers 3 and 4 as shown below.



Beaker 1 (Organism C) placed in the dark	Beaker 2 (Organism C) placed in the light	Beaker 3 (Organism D) placed in the dark	Beaker 4 (Organism D) placed in the light

Ian added a drop of liquid A in each beaker. The table below shows the colour of liquid A in the presence of more oxygen or more carbon dioxide.

Colour of liquid A	More oxygen is present	More carbon dioxide is present
	blue	yellow

Ian recorded the colour of liquid A after the experiment as shown below.

Beaker	Colour of liquid A
1	yellow
2	yellow
3	yellow
4	blue

(a) Based on the results, Ian concluded that organism C was an animal. Explain how he arrived at this conclusion. [1]

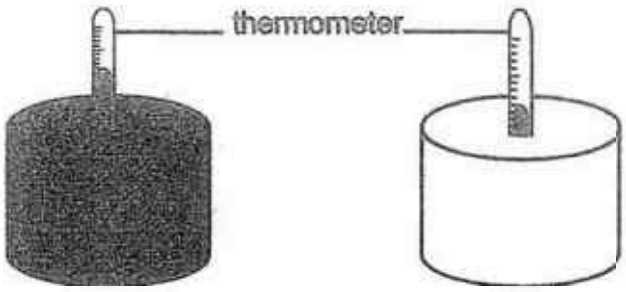
(b) Name the process that took place in beaker 4. Explain how this process caused the change in the colour of liquid A. [2]

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SCORE 3

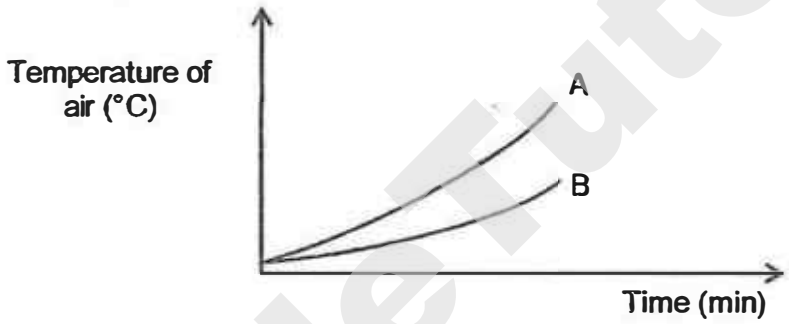
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33 Olivia conducted an experiment using two identical air-tight containers A and B as shown. Container A had a black surface while container B had a white surface.



Container A Container B

The readings on both thermometers were the same before Olivia placed the containers under the Sun. She recorded the change in the temperature of air in each container as shown in the graph below.



(a) Line A represents the change in the temperature of air in Container A. [1]
What could Olivia conclude from her experiment?

_____

_____

(Go on to the next page)

SCORE 1

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Continue from Question 33

Bird P lives in a very cold habitat.



Bird P

(b) Bird P usually stands with its back facing the Sun. Suggest a reason for such a behaviour. [1]

_____

_____

(c) Bird P puffs up the feathers when it gets colder. Explain how puffing up the feathers will help it to keep warm. [1]

_____

_____

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SCORE	/ 2

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34 Joanna wrote down some information about the organisms found in her garden. The table below shows the information about the relationships of some organisms in Joanna's garden.

Organism	Information
M	A plant eater
N	Feeds on M and P
O	A predator of N
P	A plant eater
Q	Gets its energy directly from the Sun

(a) Based on the information above, construct a food web, involving organisms M, N, O, P and Q, in the box below. [2]

(b) One of the organisms was a plant and its population size had been decreasing over the past few months. Joanna wanted the plant population to increase. Without adding more plants, Joanna planned to introduce more of one type of organism.

Based on the information and food web above, which one of the organisms M, N, O, P or Q should Joanna add? Explain your answer. [3]

(Go on to the next page)

SCORE 5

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35 Diagram 1 below shows a magnet held near P which is tied to a string. It is then observed that P moved away from the magnet and a distance is maintained between them. A flame was then placed at one end of the magnet as shown in Diagram 2. After some time, P started to move towards the magnet and the distance between them decreased.

Diagram 1

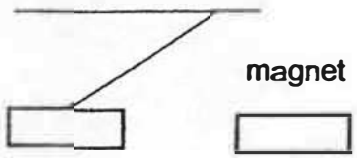
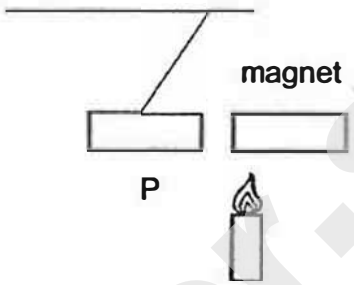


Diagram 2



(a) Based on the above observations, what is P likely to be? [1]

_____

_____

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

_____

_____

(c) In Diagram 2, give a reason why the distance between P and the magnet decreased. [1]

_____

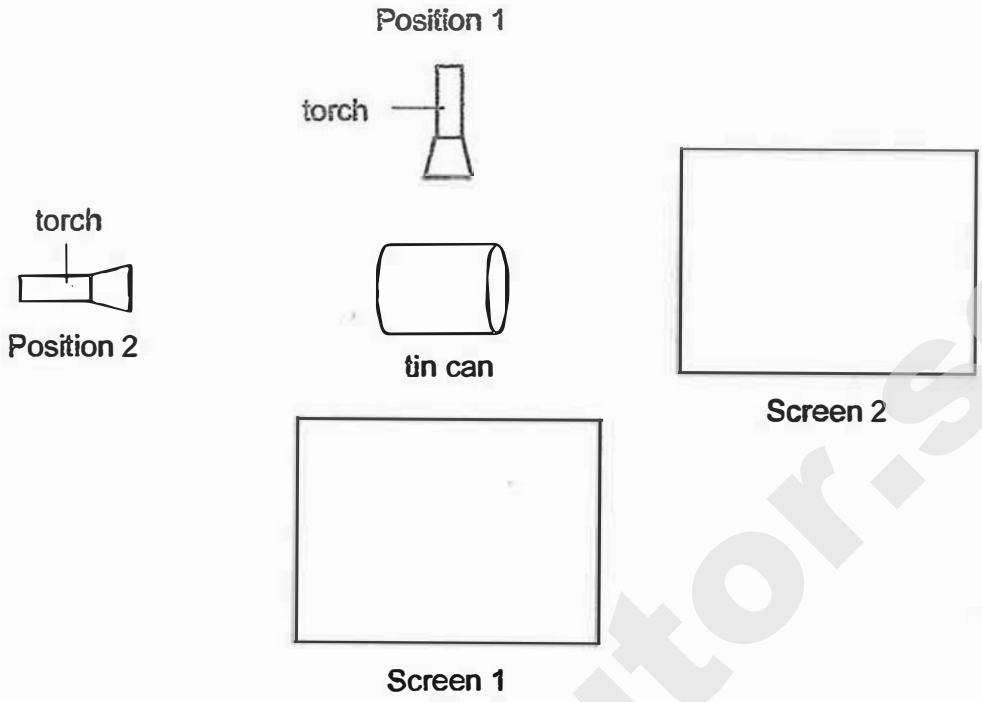
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SCORE 3

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36 Helen shone a torch on a tin can from two different positions as shown in the diagram below.



(a) Draw the shadows that will be formed on the two screens, 1 and 2, respectively. [1]

(b) How is a shadow formed? [1]

_____

_____

(c) If Helen was to move the tin can closer to position 2, what change would she observe about the shadow on screen 2? [1]

_____

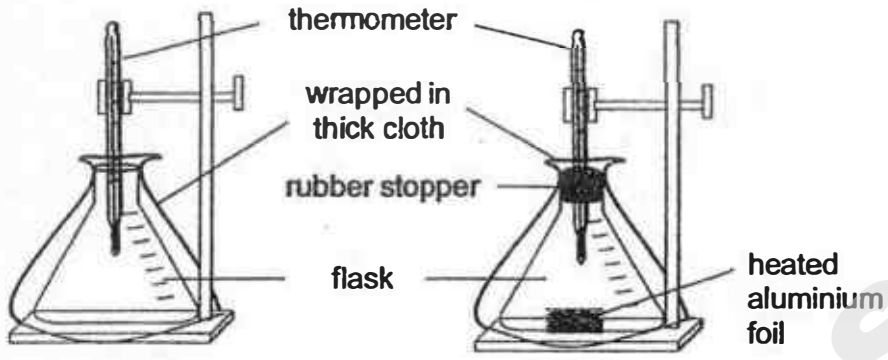
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SCORE 3

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37 Gabriel set up two set-ups below to find out how heat affects the temperature of the air. Both set-ups were placed in the same location.



Set-up A Set-up B

He recorded the changes in the temperatures in both set-ups over a period of 30 minutes in the table below.

Time (mins)	Set-up A (°C)	Set-up B (°C)
0	30	30
15	30	38
20	30	44
25	30	48
30	30	48

(a) Why was there an increase in the temperature in set-up B from the start of the experiment to 25th minute of the experiment? [1]

(b) Explain what happened in set-up B between the 25th and 30th minute. [1]

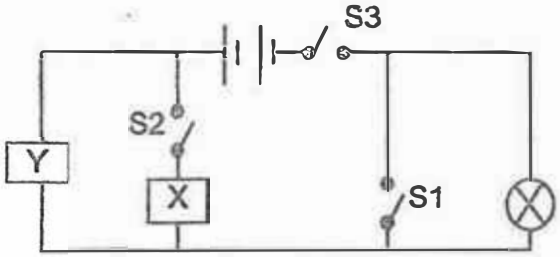
(c) Gabriel was advised by his mother to put a lid on the pot while cooking the food. How does this make cooking faster? [1]

(Go on to the next page)

SCORE 3

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38 Rafiq set up circuit A as shown below using an eraser and a copper coin which are connected to the circuit at either position X or Y.



Circuit A

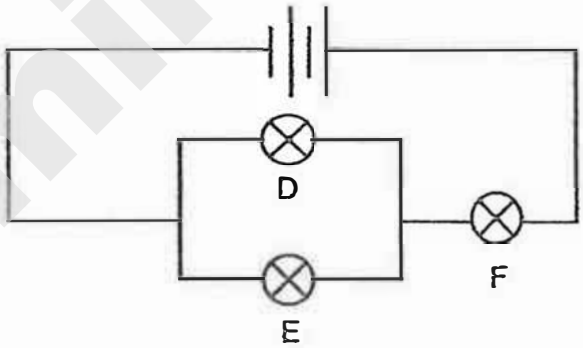
He closed some of the switches in the above circuit and his observations were recorded below.

Closed switches	Did the bulb light up?
S1 and S3	No
S2 and S3	Yes

(a) Based on his observations, write down the positions, X and Y, of the two items used in circuit A. [1]

Items	Position
eraser	
copper coin	

Rafiq created circuit B as shown below, using similar batteries and bulbs. All the bulbs were lit up in this circuit.



Circuit B

(b) Rafiq removed one of the bulbs from circuit B and the other two bulbs did not light up. Which bulb did Rafiq remove? Explain your answer. [1]

_____

_____

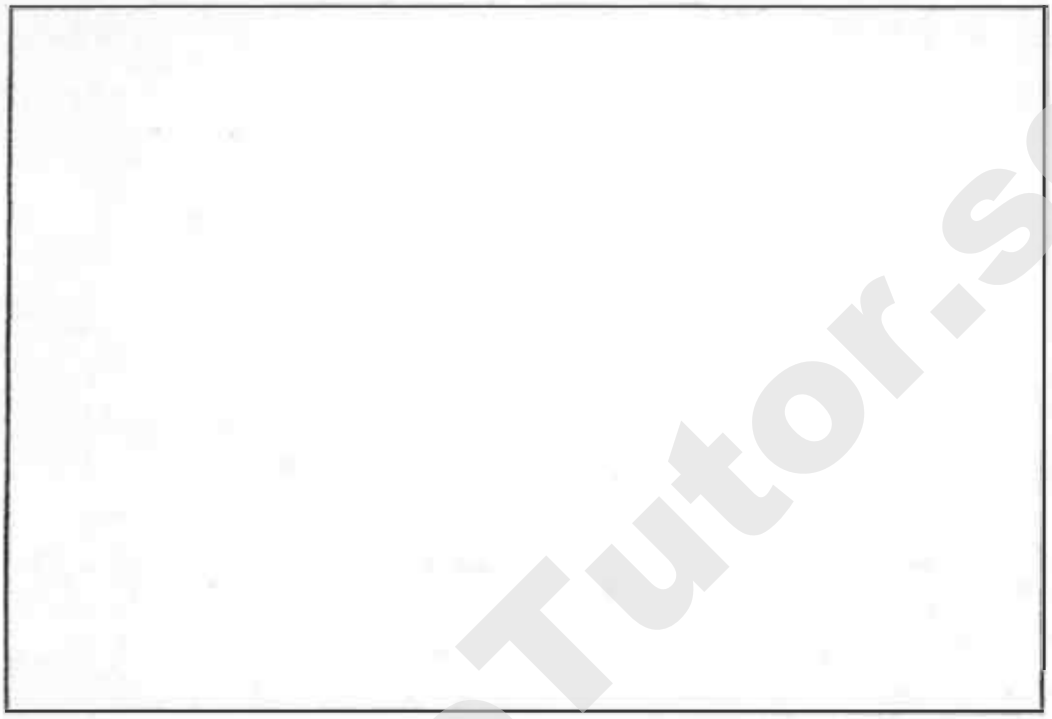
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SCORE 2

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Continue from Question 38

(c) Rafiq wanted to rearrange circuit B so that all 3 bulbs would be brighter than before. Using the same number of batteries and bulbs, draw a circuit diagram to show a new arrangement to make all 3 bulbs brighter. [2]



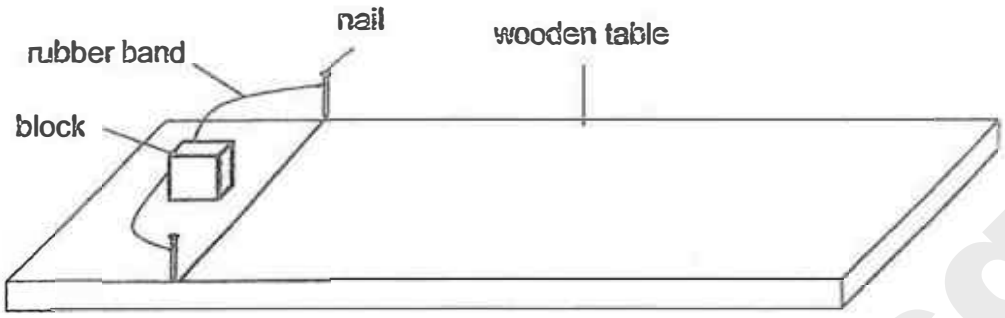
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SCORE / 2

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39 A block is placed on a wooden table as shown in the diagram. The rubber band is stretched when the block is pulled against the rubber band.



(a) What are the two forces that are involved when the block is released? [1]

_____

_____

(b) The wooden table is replaced by a marble table while all of the other variables are held constant. Will the block travel over a longer distance? Explain your answer. [1]

_____

_____

(c) Bala decides to repeat the experiment using blocks of the same mass and material, but different area of contact with the wooden table.

His results are shown below.

Block	Area of contact with the table (cm^2)	Distance moved (cm)
G	100	12
H	120	12

Based on Bala's results, did the area of contact with the table affect the friction on the block? Explain how you came to your conclusion. [1]

_____

_____

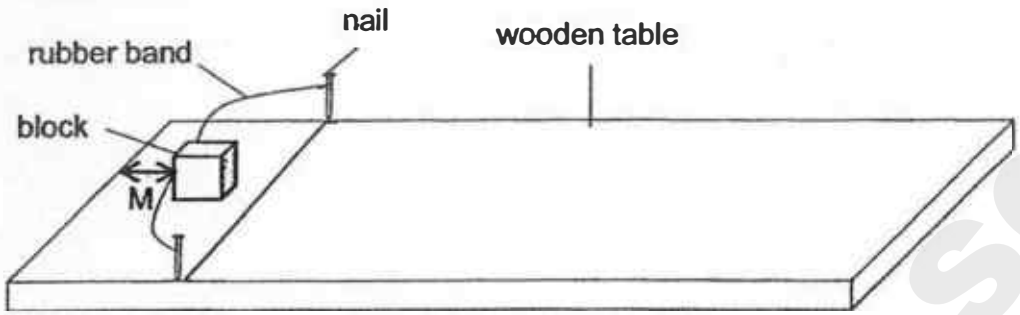
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SCORE 3

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Continue from Question 39

Bala then wanted to find out how the distance from the block and the end of the wooden table (distance M) will affect the distance travelled by the block.



He recorded his findings in the table below.

Distance M (cm)	Distance travelled by the block (cm)
15	25
10	28
6	30

(d) What is the relationship between distance M and the distance travelled by the block before it comes to a stop? [1]

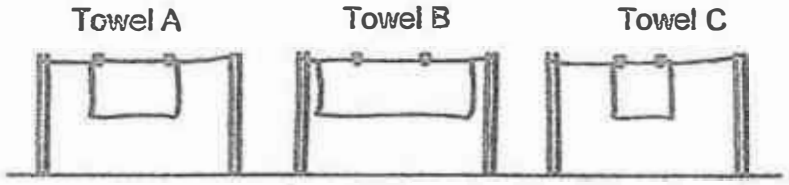
(e) Explain your answer in (d). [1]

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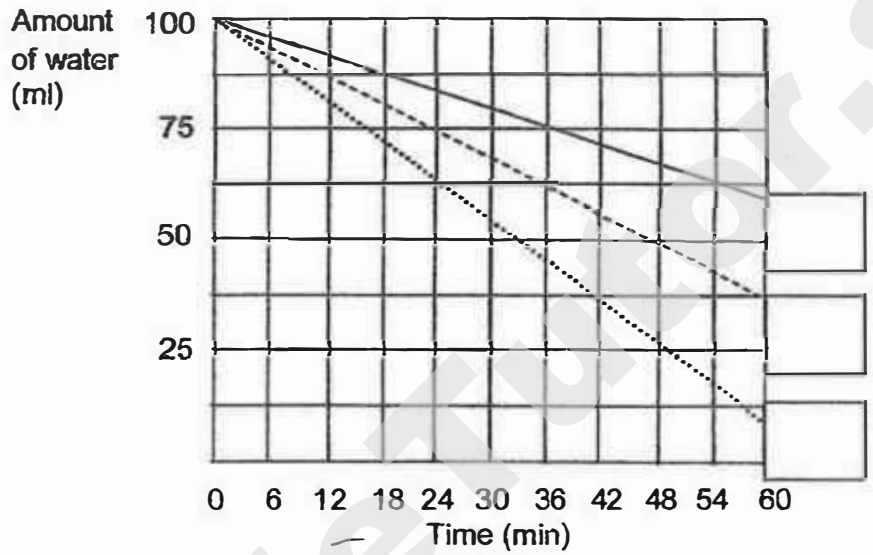
SCORE / 2

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40 Mrs Tan hung 3 wet towels of the same material out to dry at the same place as shown below.



(a) The graph below shows the amount of water left on each towel. Write down the correct letter (A, B or C) in the boxes below to indicate the graph for towels A, B and C. [1]



(b) Which towel dried the fastest? Explain your answer. [1]

_____

_____

(c) Write down one other variable that was kept the same in this experiment to ensure a fair test. [1]

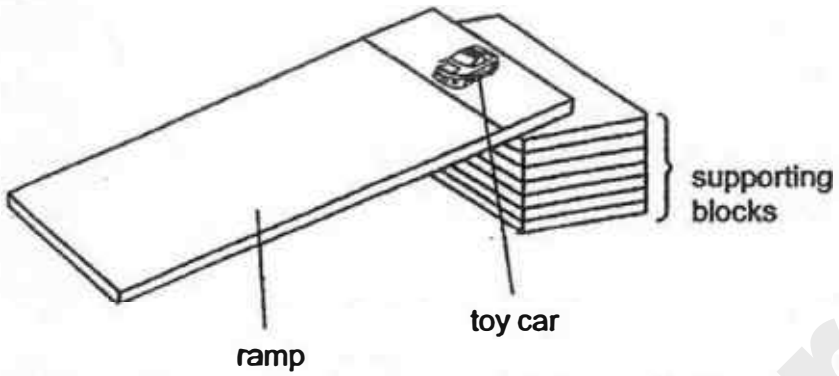
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SCORE 3

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41 Brian conducted an experiment with his toy car. He placed the toy car behind the starting point as shown below. When he released the toy car, it rolled down the ramp.

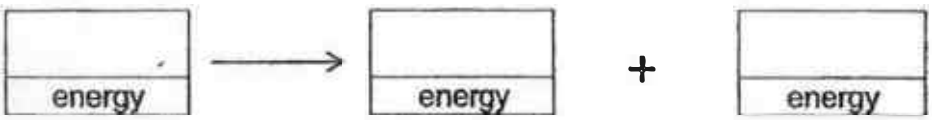


Brian also used a stop watch and two other toy cars of different masses in this experiment. He wanted to find out how the mass of the toy cars would affect the average time taken for the toy car to roll down from the starting point to the end of the ramp.

(a) Describe how Brian could carry out his experiment. [2]

(b) In his experiment, Brian decided to keep the height of the supporting blocks constant. Why would this make his experiment a fair test? [1]

(c) What is the energy conversion as the toy car is moving down the ramp? [1]



End of Booklet B

SCORE 4

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EXAM PAPER 2017
LEVEL : PRIMARY 6
SCHOOL : CATHOLIC HIGH SCHOOL
SUBJECT : SCIENCE
TERM : SA1

Booklet A

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

Booklet B

Q29 (a) By wind
(b) The wing-like structure helps the fruit to fly long distance so that it can be further away from its parent plant to avoid overcrowding.

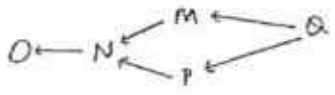
Q30 (a) The leaves would turn red.
(b) The water is transported through the water-carrying tubes.
(c) Food that is made by the leaves would not be able to move down the stem to be transported to other parts of the plant. As a result, this causes the food/starch to accumulate and swell at the opening/end of the cut.

Q31 (a) Food for the plant
(b) Water evaporates as the plant exchanges water for carbon dioxide during transpiration through the stomata in the leaves.
(c) Food in leaves are transported in one direction while food in humans are transported through blood in a circulatory manner.

Q32 (a) If the plant were placed in the light, the colour of liquid A would be blue as there would more oxygen present as plants photosynthesis but the colour of liquid A is yellow which is how Ian arrived at this conclusion.
(b) Photosynthesis. Photosynthesis produces oxygen and when more oxygen is produced, the colour of liquid A would change to blue.

Q33 (a) Olivia could conclude from her experiment that black absorbs more heat than white.
(b) As the back of Bird P is black, it could absorb more heat than its front facing the sun as its front is white as Bird P needs heat as it lives in a cold habitat.
(c) Puffing up the feathers will trap air and air is a poor conductor of heat. Hence, bird P will lose less body heat to the cold.

Q34 (a)



(b) Q is the plant. With more N added, they will feed on more P and more M. Hence, there will be less P and M to feed on Q/plant.

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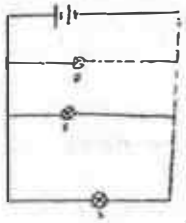
Q35 (a) P is likely to be a magnet.
(b) P repelled from the magnet and only magnet repel.
(c) The magnet lost some of its magnetism when heated.

Q36 (a) screen 1 

screen 2 

(b) A shadow is formed when the path of light is fully or partially blocked by an opaque or translucent object.
(c) The shadow would become bigger.

Q37 (a) The heated aluminium foil caused the air in the flask to gain heat and the hot air did not escape due to the rubber stopper.
(b) The temperature of air in the flask was the same as the heated aluminium foil so there was no transfer of heat between them.
(c) By putting the lid on , the hot air will not escape and it reduces heat loss to the surrounding so the cooking will be faster.

Q38 (a) Y, X
(b) Bulb F. The circuit becomes open and the electric current is unable to flow through the circuit.
(c) 

Q39 (a) Elastic spring force and frictional force.
(b) Yes, it will. The marble table is smoother than the wooden table so the frictional force between the marble table and block is lesser. Thus, the block travels over a longer distance.
(c) No. When the area of contact with the table changed, it did not affect the friction on the block as the distance moved is the same.
(d) As distance M decrease, the distance travelled by the block increases.
(e) When distance M decreases, the rubber band with the block is pulled further backwards and there is more elastic spring force so the block will travel a greater distance before coming to a stop.

Q40 (a) C
A
B
(b) It has the greater amount of exposed surface area for water to evaporate the fastest. Hence, it has the least amount of water left.
(c) Thickness of material

Q41 (a) Step 1: release the car at the starting point 1
Step 2: record the time taken for the car to reach the ground (repeat 3 times)
Step 3: calculate the average time taken.

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catholic S4/1

Do the same for the other car then compare the results.

(b) If the height of the supporting blocks do not stay constant, some cars might have more gravitational potential energy than the other cars, thus, it will have a greater kinetic energy which would affect the time taken for a car to reach the ground.

(c) Potential energy → Kinetic energy → Heat energy

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END

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HENRY PARK PRIMARY SCHOOL

FIRST SEMESTRAL ASSESSMENT 2017

PRIMARY 6

SCIENCE

SECTION 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: 12 May 2017

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

Section	Marks
A	/ 56
B	/ 44
Total	/100

Parent's Signature: _____

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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. John observed two animals and recorded his observations in the table below.

A tick (✓) indicates the characteristic the animals have.

Observation	Animal K	Animal L
It has six legs.		✓
Eggs are laid in water.	✓	✓
There are four stages in its life cycle.		✓

Based on John's observation, which of the following statement(s) is/are correct?

A: Animal L lives longer than Animal K.

B: Animals K and L are insects that cannot fly.

C: The young of Animals K and L live in water.

(1) A only

(2) C only

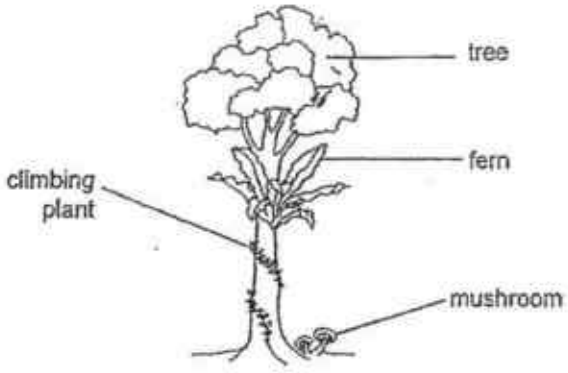
(3) B and C only

(4) A, B and C

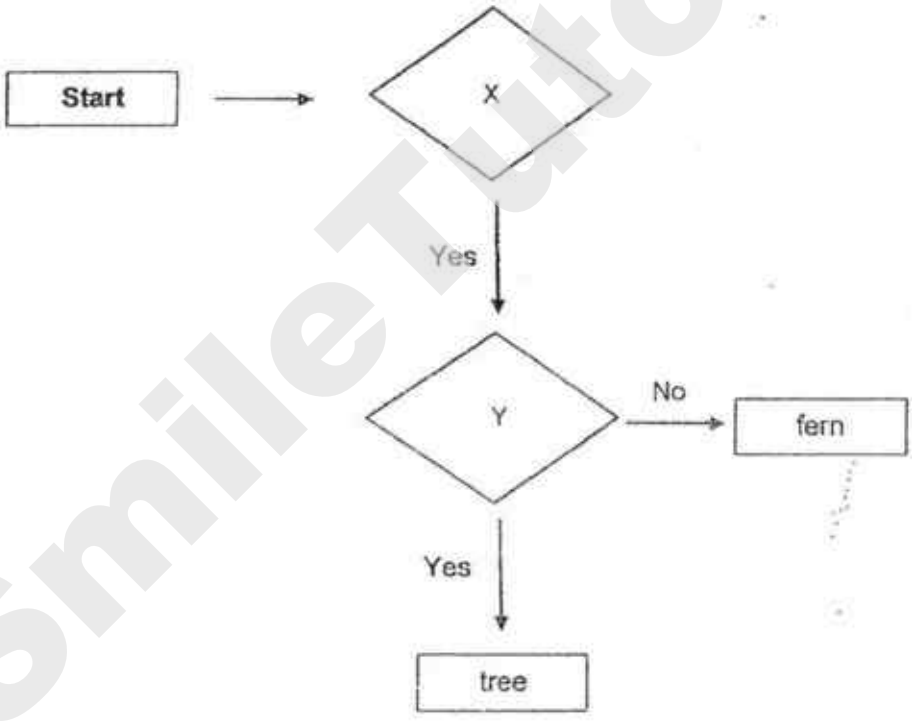
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2. The diagram below shows four living things.



Study the flowchart below.



What could questions X and Y be?

	X	Y
(1)	Reproduce from seeds?	Able to make its own food?
(2)	Able to make its own food?	Reproduce from seeds?
(3)	Grow above ground?	Reproduce from spores?
(4)	Has weak stem?	Reproduce from seeds?

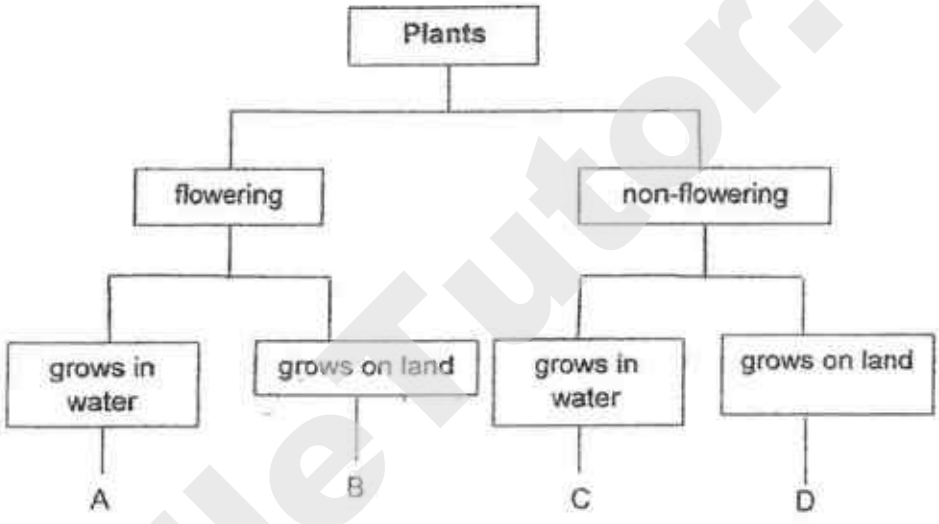
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3. The following table gives information on four plants, W, X, Y and Z, based on two characteristics. A tick (✓) shows that the plant has the characteristic.

Characteristic	W	X	Y	Z
Bears fruit		✓		✓
Grows on land	✓			✓

From the information above, where do plants W, X, Y and Z belong in the following classification table?



	Plant W	Plant X	Plant Y	Plant Z
(1)	A	C	B	D
(2)	C	D	A	B
(3)	D	A	C	B
(4)	C	B	A	D

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4. The arrows in the diagram show the path taken by a substance through a plant.



Which one of the following substances follows this path?

(1) water

(2) sugar

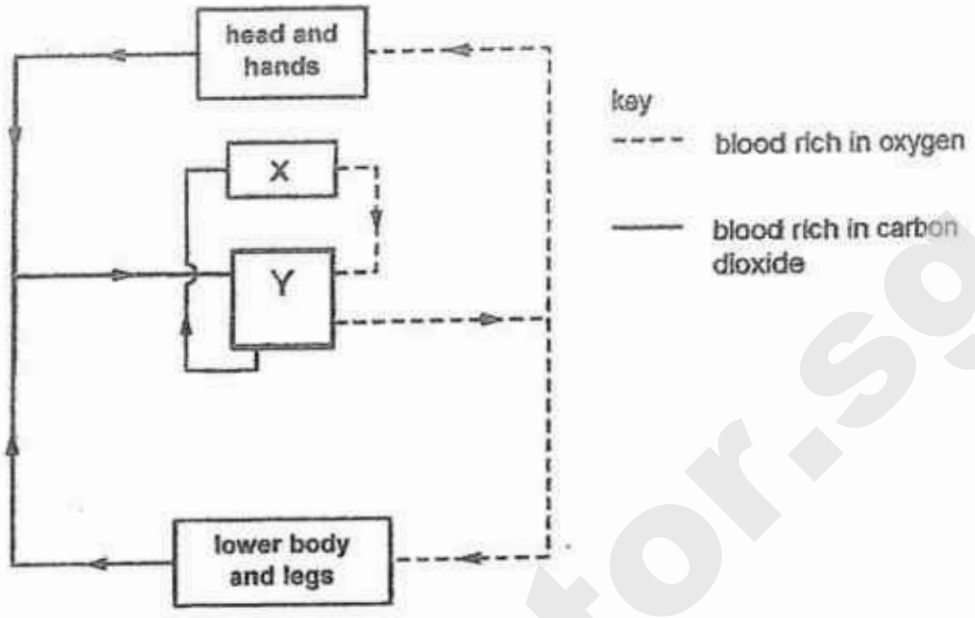
(3) oxygen

(4) carbon dioxide

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5. The diagram below shows how blood travels in a human body.



Which organ does the part labelled X represent?

(1) heart

(2) lungs

(3) stomach

(4) small intestine

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6. The table below shows some information on three cells, X, Y and Z.

A tick (✓) indicates the presence of the part of a cell.

		Cell X	Cell Y	Cell Z
Part	Nucleus	✓	✓	✓
	Chloroplast	✓		
	Cell wall	✓	✓	

Where are cells X, Y and Z likely to be found?

	Cell X	Cell Y	Cell Z
(1)	cheek	leaf	root
(2)	root	leaf	cheek
(3)	root	cheek	leaf
(4)	leaf	root	cheek

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7. Billy found a fruit as shown below.



He wants to find out whether this fruit disperses its seeds by animals.

He plans to do the following :

A: Place it in water to see if it floats.

B: Open it to see if it has small seeds.

C: Open it to see if it is fleshy and juicy.

D: Examine it to see if it has a smooth skin.

Which of the above plans are useful to his investigation?

(1) A and B only

(2) B and C only

(3) C and D only

(4) A, B and C only

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8. Which of the following are examples of interactions between living and non-living things in an environment?

A: A cow feeding on grass.

B: A plant making food using sunlight.

C: An earthworm making a tunnel in muddy soil.

D: A fish taking in dissolved oxygen from the water.

(1) A and B only

(2) A and D only

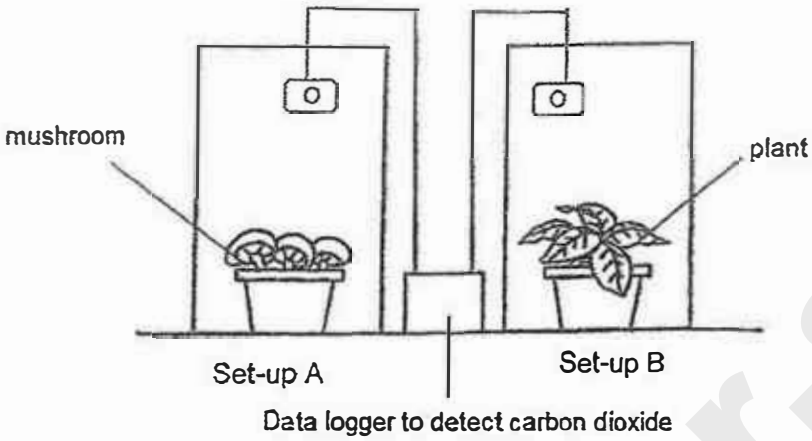
(3) C and D only

(4) B, C and D only

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9. Janet conducted an experiment as shown below.

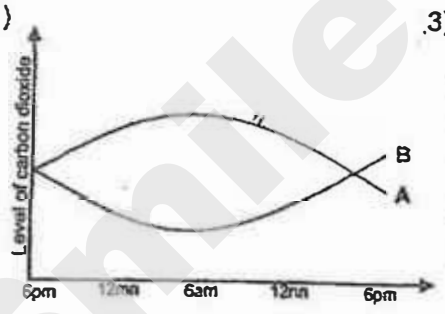


Both set-ups were placed in an area where bright light was available.

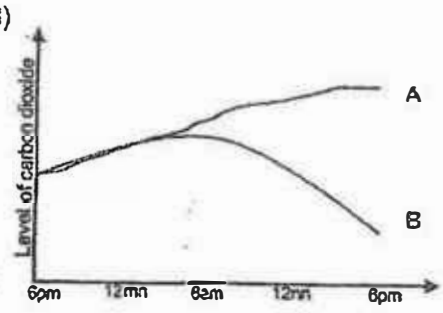
The duration of experiment was 24 hours and Janet plotted a graph to show the results of the experiment.

Which one of the following graphs shows correctly the level of carbon dioxide in each set-up?

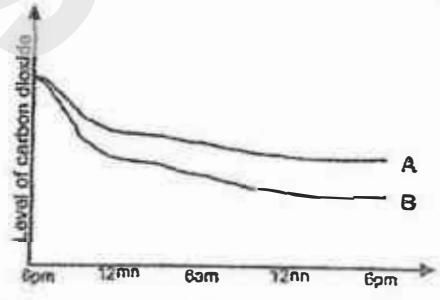
1)



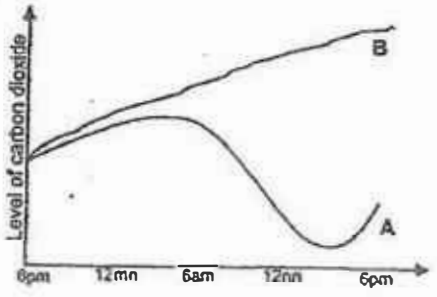
3)



2)



4)



Key:

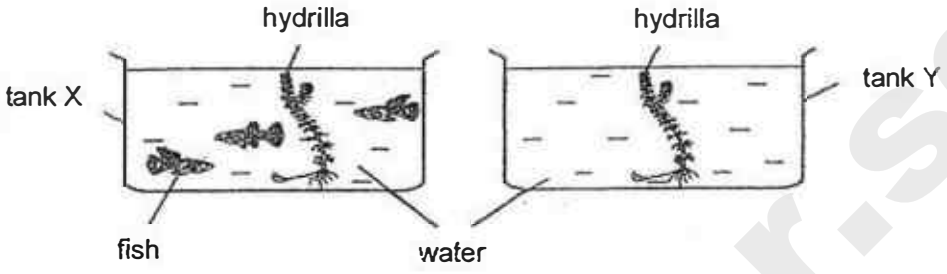
12 mn – 12 midnight

12 nn – 12 noon

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10. Two identical tanks, X and Y, as shown below, were set up near an open window.

The hydrilla in each tank was of the same size at the beginning of the experiment.



After two weeks, it was observed that the hydrilla in tank X had grown bigger than the hydrilla in tank Y.

Which of the following is/are possible reason(s) for the observation?

A: The hydrilla in tank X absorbed more sunlight.

B: The hydrilla in tank X absorbed more dissolved oxygen.

C: The hydrilla in tank X absorbed more dissolved nutrients.

D: The hydrilla in tank X absorbed more dissolved carbon dioxide.

(1) D only

(2) C and D only

(3) B and D only

(4) A, C and D only

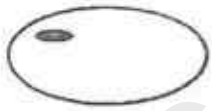
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11. Vijay conducted an experiment to find out the properties of cell membranes.

He placed two animal cells, X and Y, in water containing two dissolved substances, 'Myco' and 'Zyto'.

The duration of the experiment is 30 minutes.

Before the experiment	 Animal cell X	 Animal cell Y
After placing the cells in the new environment containing 'Myco' and 'Zyto' in the water	 Animal cell X	 Animal cell Y

Key:
- ○ water
- ☆ Zyto
- △ Myco

Vijay wrote the statements as shown below.

A: 'Myco' and 'Zyto' are unable to enter Cell Y.

B: Water can enter Cell Y more easily than Cell X.

C: Both Cell X and Y allow only water to move in and out.

Which of Vijay's statements are correct?

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

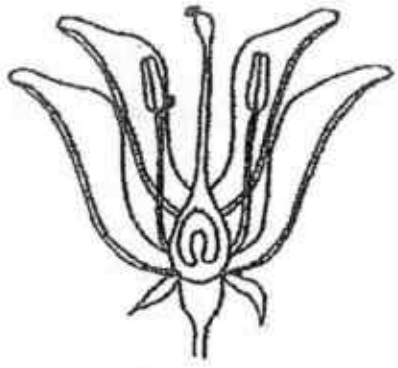
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12. The diagram below shows the different parts of a flower.

If the black dots in the diagrams below represent pollen grains, which of the following flower(s) has/have been pollinated?

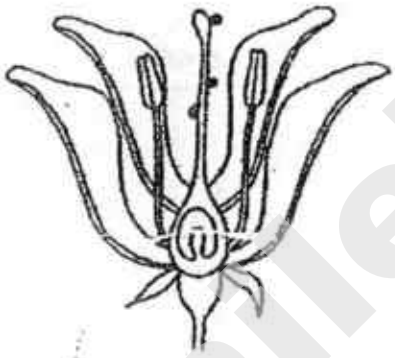
A



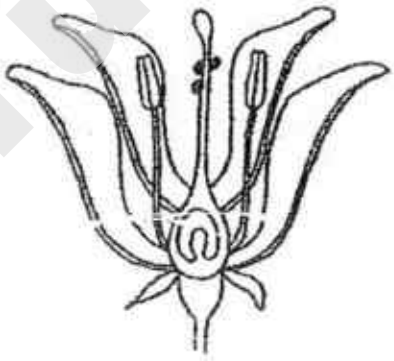
B



C



D



(1) A only

(2) D only

(3) A and C only

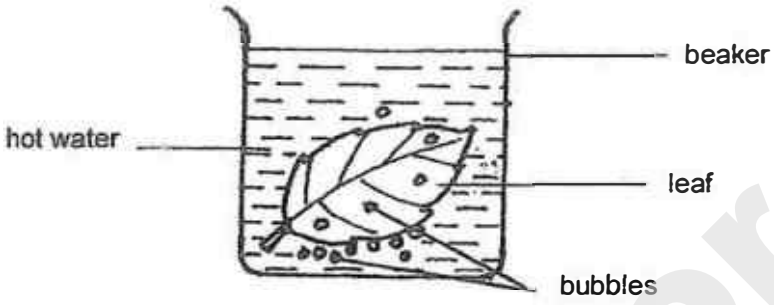
(4) B, C and D only

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13. Jerrel plucked a leaf and placed it in a beaker of hot water. After some time, bubbles were seen appearing on the upper and lower surfaces of the leaf.

He also observed that there were more bubbles on the lower than on the upper surface.



Which of the following statements correctly explain his observation?

A: The openings in the leaf give out water.

B Air in the leaf expands due to heat and escapes.

C: Air enters the upper surface and escapes from the lower surface.

D: There are more openings on the lower surface than on the upper surface.

(1) A and D only

(2) B and D only

(3) A, B and C only

(4) A, B, C and D

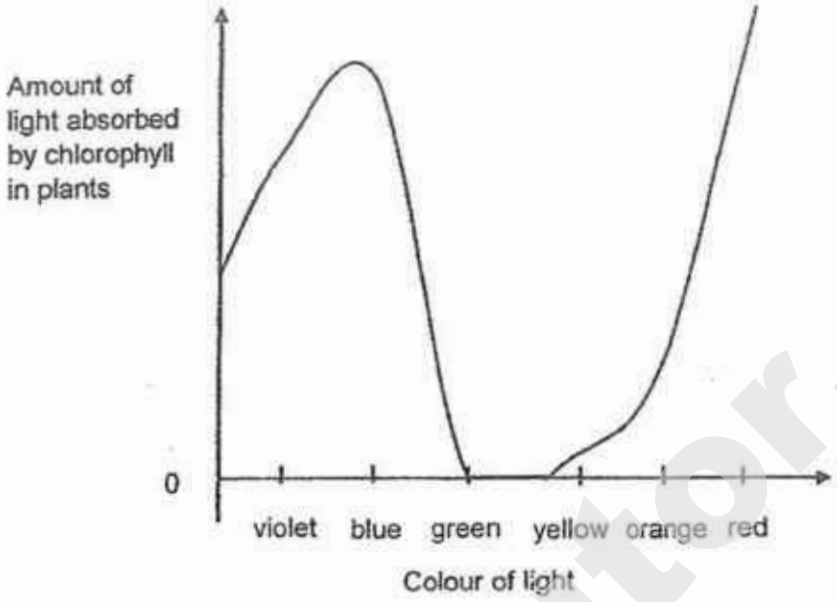
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14. The graph below shows the amount of different coloured lights absorbed by chlorophyll during photosynthesis in plants.



Two plants, X and Y, were exposed to different coloured lights. A leaf was then plucked from each plant and tested for starch.

The results are shown in the table below.

Leaf from	Results of iodine test
Plant X	Iodine solution remained brown
Plant Y	Iodine solution turned dark blue

Which one of the following correctly identifies the coloured light that each plant was exposed to?

	Colour of light plant was exposed to	
	Plant X	Plant Y
(1)	red	blue
(2)	green	red
(3)	red	green
(4)	blue	yellow

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15. Which of the following are common properties of solids and liquids?

A: They have mass.

B: They can be compressed.

C: They have definite shape.

D: They have definite volume.

(1) A and D only

(2) B and C only

(3) A, B and C only

(4) A, C and D only

16. Which of the following show(s) correctly what happen(s) when a piece of ice is melting?

A: The ice gains heat.

B: The ice absorbs water vapour.

C: The temperature of the ice increases.

D: The temperature of the ice remains at 0°C.

(1) A only

(2) A and D only

(3) B and C only

(4) A, C and D only

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17. The diagram below shows a cooking pot with handles.



Study the properties of the four materials shown below.

Material	Property of material	
	Can bend easily	Can conduct heat easily
A	yes	no
B	yes	yes
C	no	no
D	no	yes

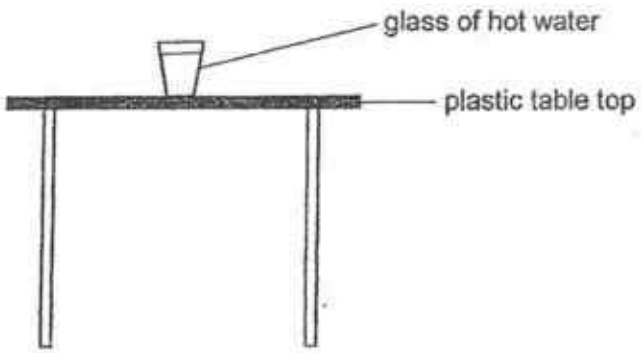
Which materials are most suitable for making the handles and the cooking pot?

	Material for making	
	Handle	Cooking pot
(1)	A	B
(2)	C	B
(3)	C	D
(4)	D	C

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18. Ferrell placed a glass of hot water on a table with a plastic top.



What could he do to cool the hot water faster?

(1) Place the glass in a wooden box.

(2) Place the glass on a ceramic plate.

(3) Wrap the glass with a piece of paper.

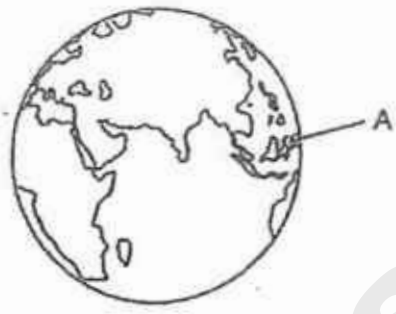
(4) Place the glass on a piece of aluminium sheet.

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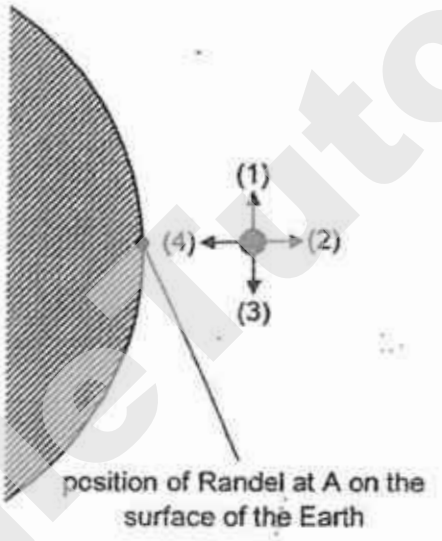
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19. Randel drops a ball at position A of the Earth.





In which direction, (1), (2), (3) or (4), will the ball move at position A of the Earth?



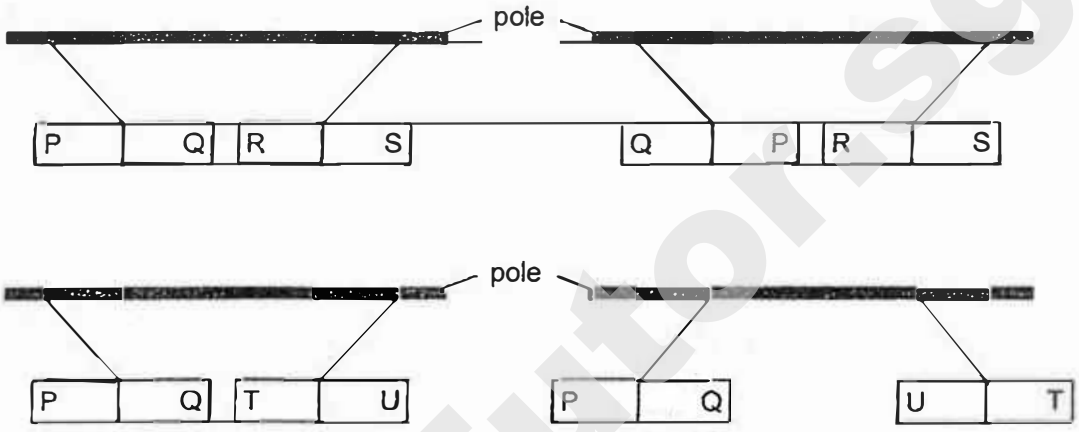
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20. Anne carried out an experiment with three metal bars, PQ, RS and TU. Each of the metal bars is of the same size. She hung each metal bar to a pole using a string and brought them close to each other.

She wanted to find out which of them are magnets.

The results of her experiment are shown below.



Which one of the following is correct?

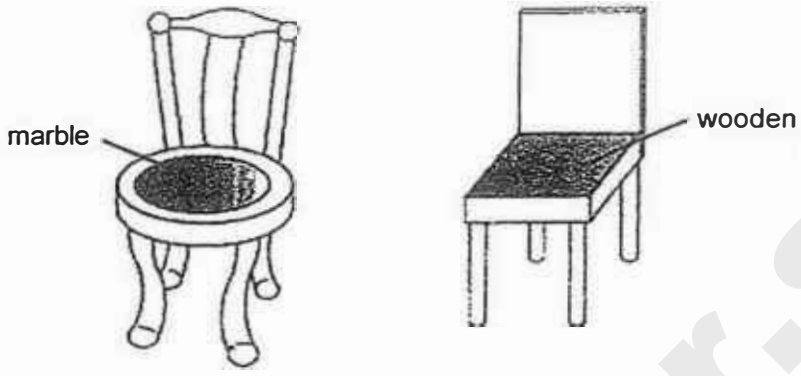
	Metal Bars		
	PQ	**RS**	**TU**
(1)	magnet	magnet	not a magnet
(2)	magnet	not a magnet	magnet
(3)	not a magnet	magnet	not a magnet
(4)	not a magnet	not a magnet	magnet

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21. There are two chairs in an air-conditioned room.

Li Mei touched the seat of each chair. Her hand felt cooler on the marble seat.



Which one of the following reasons best explains why Li Mei's hand felt cooler on the marble seat as compared to the wooden seat?

(1) More heat flowed from Li Mei's hand to the marble seat.

(2) More heat flowed from Li Mei's hand to the wooden seat.

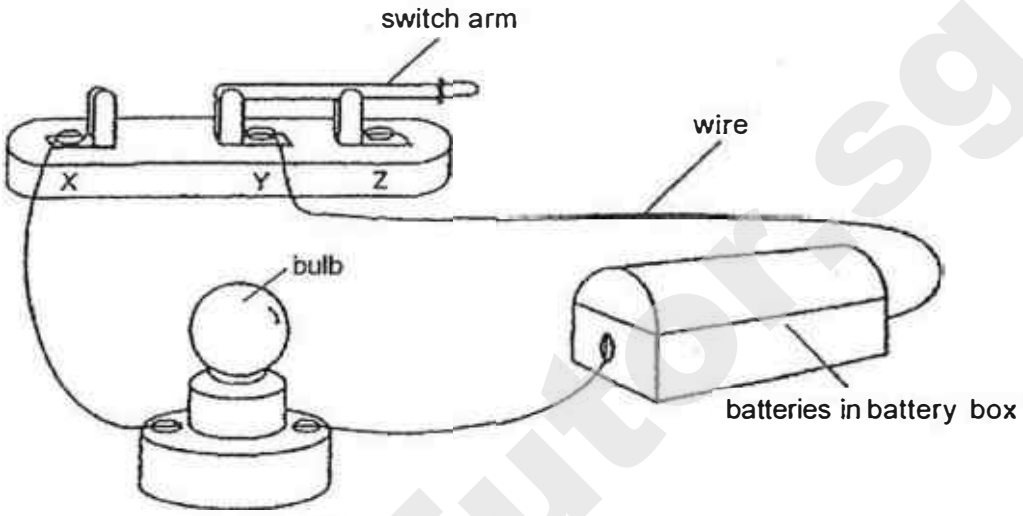
(3) Marble is a poor conductor of heat as compared to wood.

(4) The wooden seat was losing heat faster than the marble seat.

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22. Travis set up an electrical circuit as shown in the diagram below. The bulb did not light up.



What should Travis do to make the bulb light up and why?

(1) Change the bulb because it is faulty.

(2) Change the batteries because they are flat.

(3) Connect the wire to Z instead of Y because it closes the circuit.

(4) Connect the switch arm to X instead of Z because it closes the circuit.

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23. Matthew has four experimental set-ups, A, B, C and D, using water in containers made of the same material.

The table below shows the different conditions at the start of the experiment.

Conditions	Experimental Set-up			
	A	B	C	D
Room temperature (°C)	28	28	31	28
Volume of water (ml)	400	300	400	400
Exposed surface area of water (cm^2)	80	80	80	100

Matthew wanted to investigate the following :

X : how the rate of evaporation of water was affected by the amount of water

Y : how the rate of evaporation of water was affected by the exposed surface area

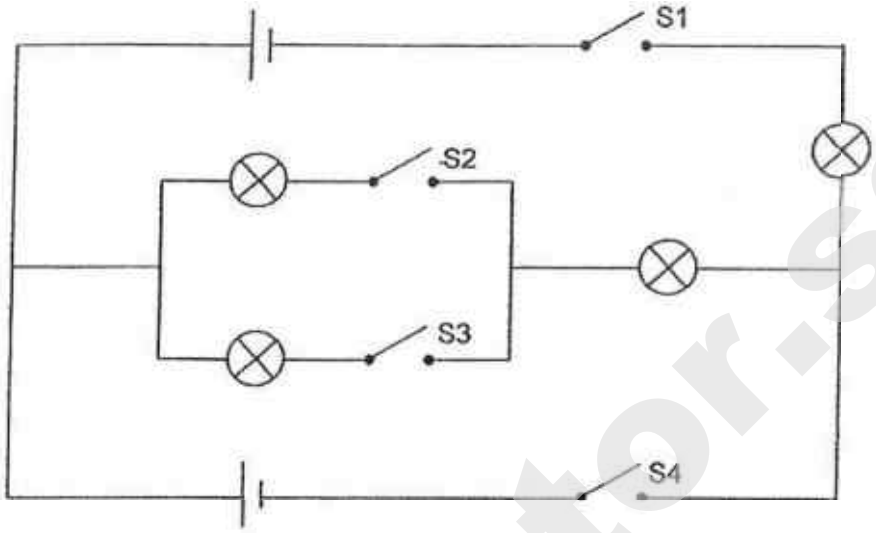
Which of the following experimental set-ups should Matthew compare to ensure a fair test?

	Investigation	
	X	Y
(1)	A and B	A and D
(2)	A and B	B and D
(3)	A and C	A and D
(4)	B and C	B and D

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24. In the circuit below, the bulbs and batteries used are identical. All the bulbs and batteries are working properly.



Which of the following switches should be closed so that only two bulbs will light up?

A: S1 and S2 only

B: S2 and S3 only

C: S2 and S4 only

D: S3 and S4 only

(1) C only

(2) A and B only

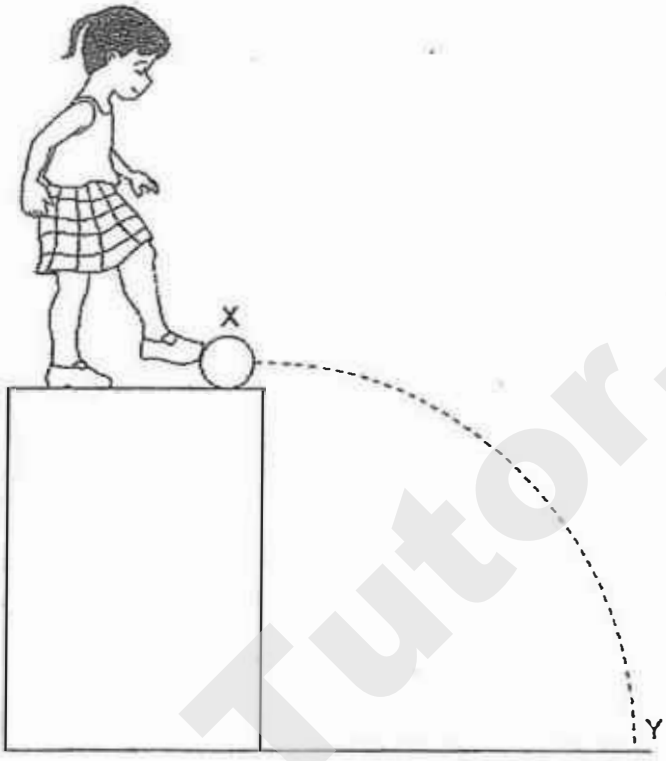
(3) C and D only

(4) A, B, and C only

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25. Felicia kicked a ball from X to Y as shown in the diagram below.



Which of the following statements are correct?

A: The mass of the ball remained the same.

B: The force exerted by Felicia moved the ball.

C: The kinetic energy of the ball increased from X to Y.

D: The potential energy of the ball increased from X to Y.

(1) A and B only

(2) A and D only

(3) B and C only

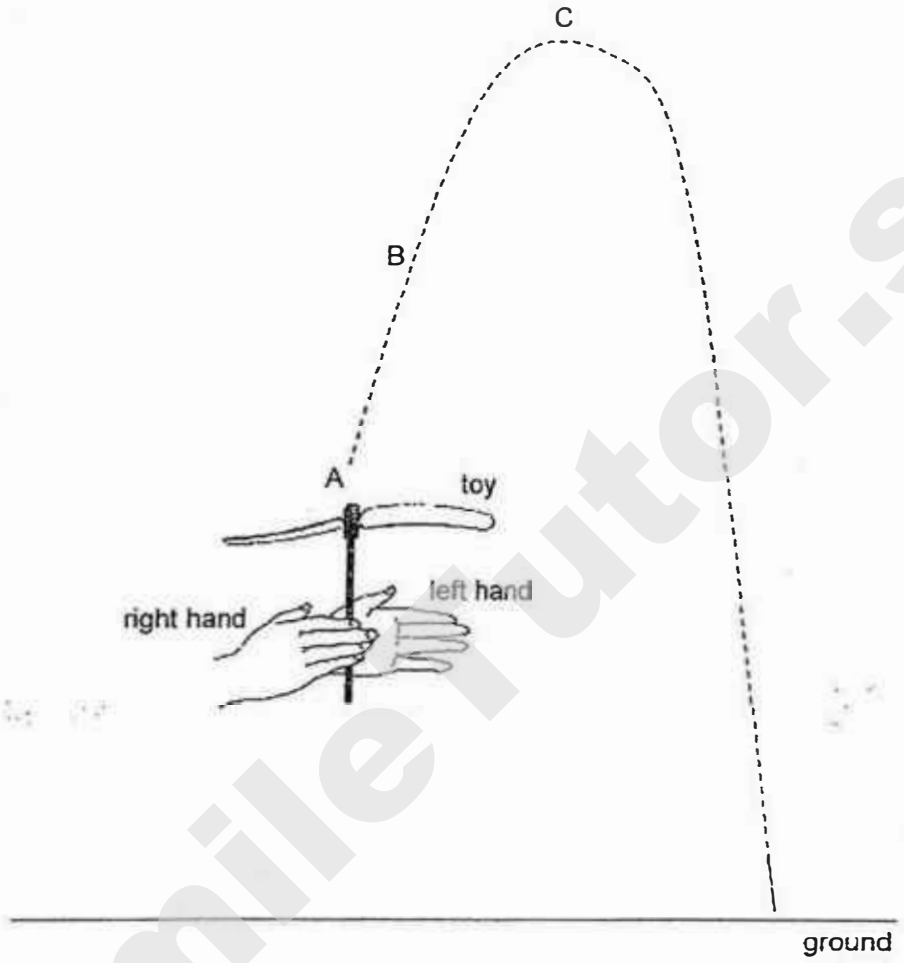
(4) A, B and C only

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26. Timothy held a toy between his hands as shown below. At A, he rotated the toy by sliding his right hand forward and left hand backwards before releasing it.

The toy flew from A to B and then to C before falling to the ground.



Which one of the following correctly describes the energy of the toy at A, B and C?

	A	B	C
(1)	kinetic energy	potential energy	kinetic energy
(2)	potential energy	potential energy and kinetic energy	potential energy
(3)	kinetic energy	potential energy and kinetic energy	potential energy and kinetic energy
(4)	potential energy and kinetic energy	potential energy and kinetic energy	potential energy and kinetic energy

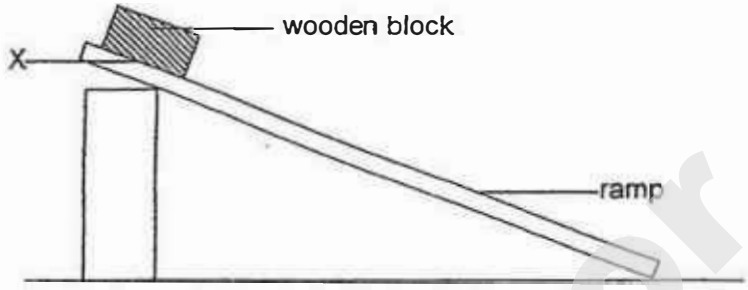
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27. Four ramps, A, B, C and D, each of the same length and thickness but made of different materials, were used in an experiment.

A wooden block was placed at point X of ramp A and the distance moved by the block down the ramp was recorded.

The experiment was repeated with the remaining ramps, B, C and D.



The results obtained are shown in the table below.

Ramp	Distance moved by wooden block (cm)
A	45
B	81
C	27
D	67

The experiment was carried out to find out how _____.

(1) the mass of the ramp affected the amount of friction between the surfaces

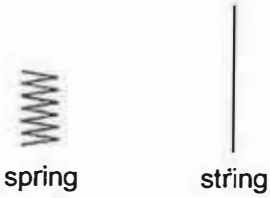
(2) the material of the ramp affected the amount of friction between the surfaces

(3) the thickness of the ramp affected the amount of friction between the surfaces

(4) the material of the wooden block affected the amount of friction between the surfaces

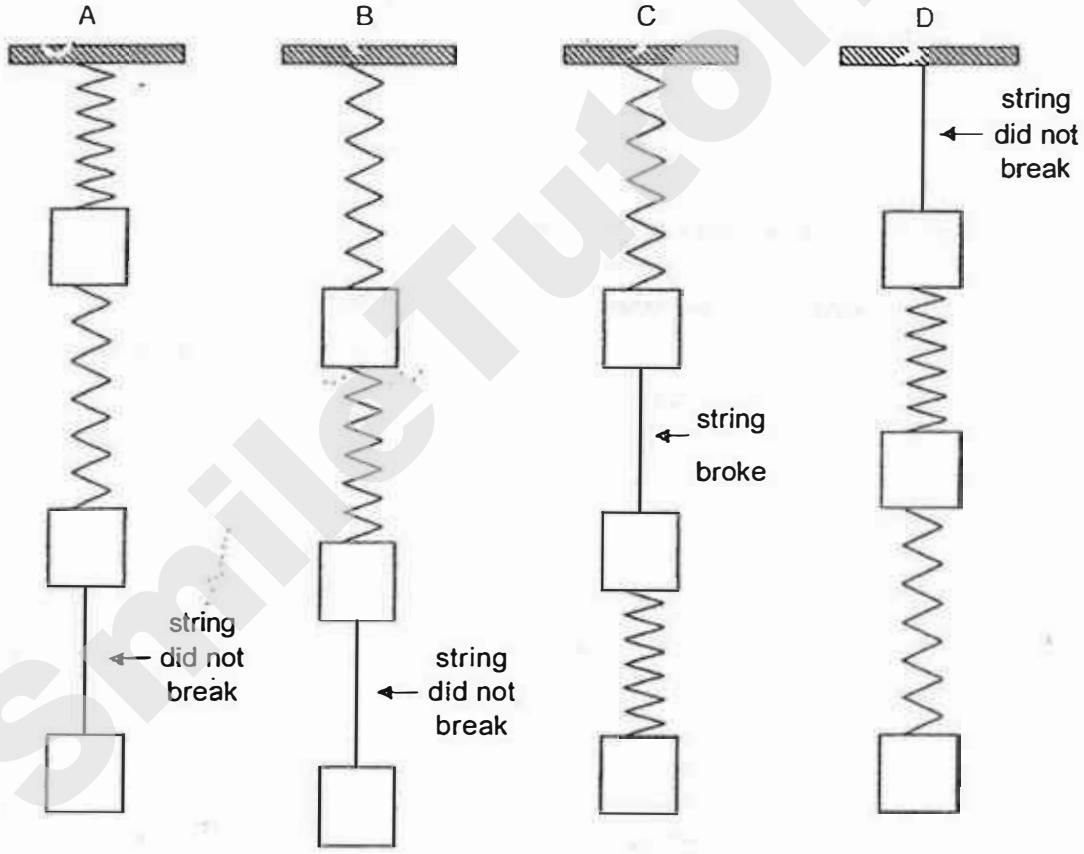
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28. Gopal experimented with two identical springs and a string, each attached to a block of equal mass. The diagrams of each of the springs and the string before the experiment are shown below.



The string broke when more than one block was hung on it.

Which of the following are likely to happen?



(1) A and B only

(2) A and D only

(3) B,and C only

(4) B, C and D only

End of Booklet A

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FIRST SEMESTRAL ASSESSMENT 2017

PRIMARY 6

SCIENCE

SECTION 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: 12 May 2017

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

Marks for Section B: _____

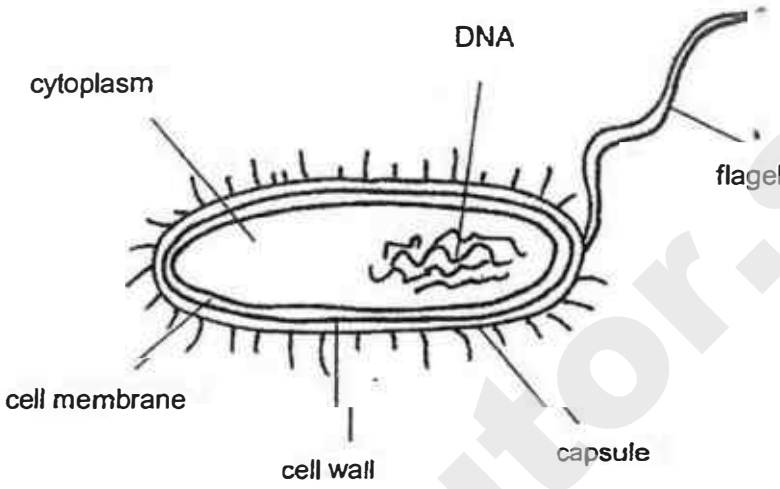
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Booklet B (44 marks)

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

29. The diagram below shows a simplified drawing of a bacterial cell.



a) Which part of the bacterial cell is also found in plant cells but not in animal cells? [1]

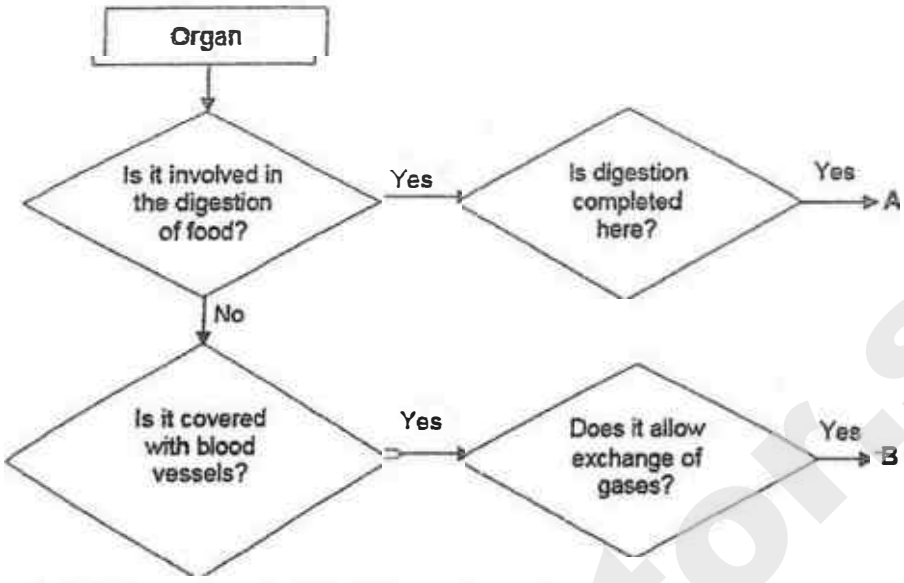
b) Based on the diagram above, state how the bacterial cell gets energy for its life processes. [1]

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

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30. The flow chart below shows the functions of various organs in the human body.

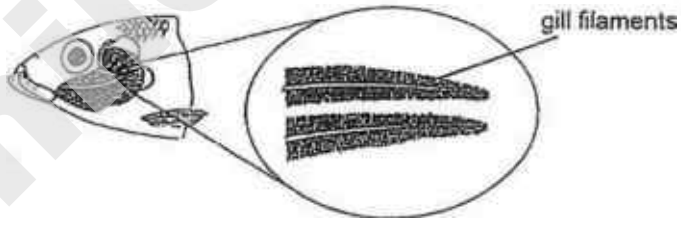


a) Which organs do the letters A and B represent? [1]

A : _____

B : _____

b) The diagram below shows the gills of a fish. They are made up of many tiny filaments covered with blood vessels.



Give a reason why the gills are made up of many tiny filaments covered with blood vessels. [2]

(i) **Having many tiny filaments** : _____

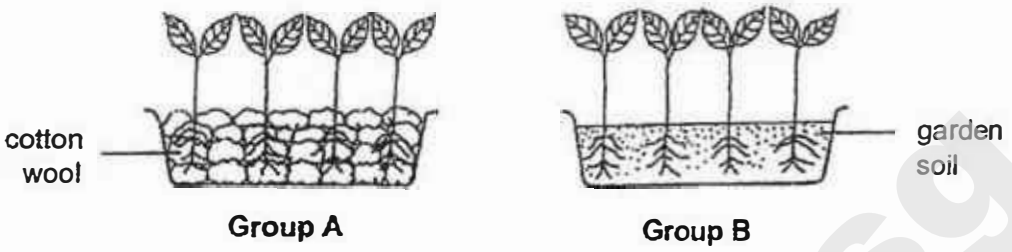
_____

(ii) **Covered with blood vessels** : _____

_____

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31 Jenny grew two groups of seedlings, A and B, as shown below. Group A was grown in cotton-wool while group B was grown in garden soil. Both groups of seedlings were placed in sunlight and watered every day.

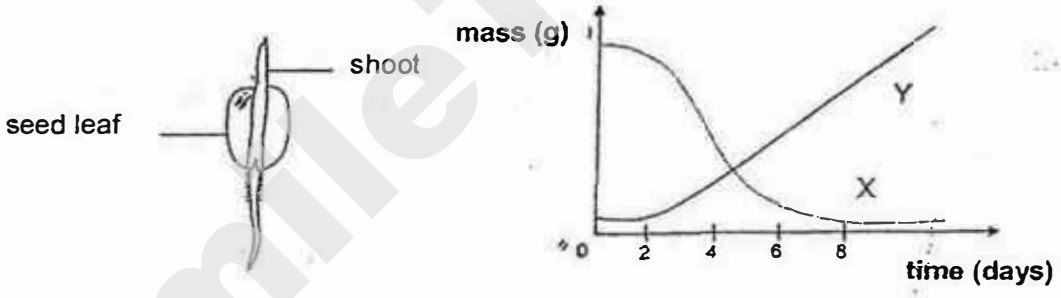


After some time, Jenny observed that the seedlings in group A withered and died but those in group B remained healthy.

a) Give a reason for Jenny's observation. [1]

_____

The diagram below shows a seed growing into a seedling and the graph showing the changes in mass of the seed leaf and the shoot of the seedling.



b) Write 'X' and 'Y' in the boxes below to represent the changes in mass of the seed leaf and shoot. Give a reason for your answer. [2]

Change in mass of seed leaf: ☐

Reason : _____

_____

Change in mass of shoot: ☐

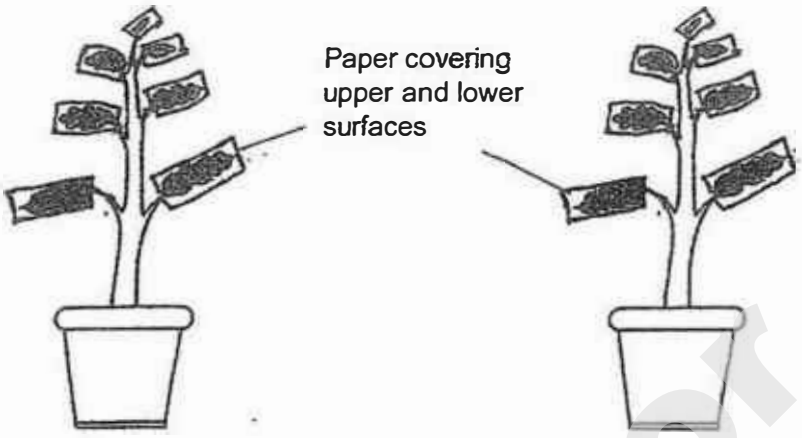
Reason : _____

_____

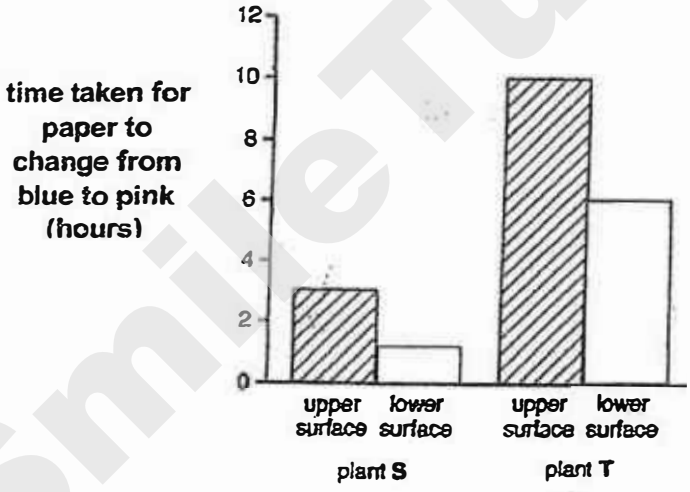
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32. Water is lost through the stomata of leaves.

Ali wants to find out how quickly water is lost through the stomata of two different types of plant, S and T. He attaches paper to the upper and lower surfaces of leaves on each plant. The paper changes colour from blue to pink on contact with water.



The results of his experiment are shown in the bar graph below.

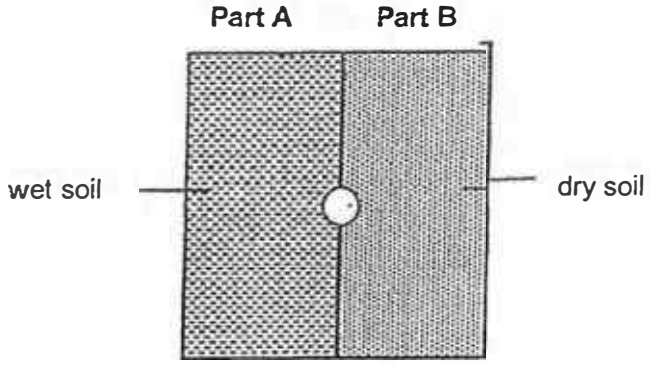


a) Based on the bar graph above, what is a similarity in the results of Plant S and T? [1]

b) Which plant, S or T, does Ali need to water more often when placed in the same location? Give a reason for your answer. [2]

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33. Ming wanted to find out the suitable living conditions for organism P. He used a tray consisting of two parts, A and B. He filled part A with wet soil and part B with dry soil.



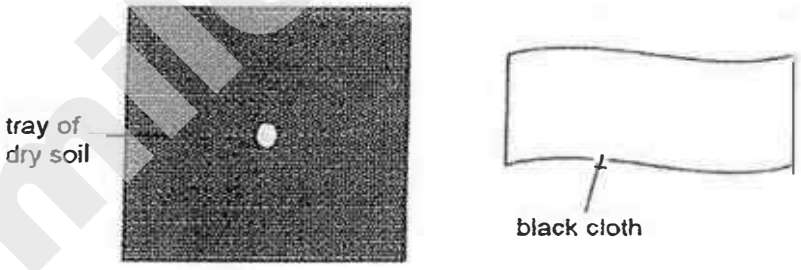
He placed a number of organism P in the middle of the tray in the area marked by the circle. After one hour, most of the organism P were found in part A.

a) Why did Ming place organisms P in the middle of the tray at the beginning of his experiment? [2]

_____

_____

b) An organism Q can survive well in dry soil. Ming thought that organism Q might prefer dark conditions.
Ming was given a piece of black cloth and an identical tray with dry soil as shown below.



How could he carry out an experiment to find out if organism Q prefers dark condition? [1]

Write the missing step in the blank below.

Step 1 : Place a number of organism Q in the middle of the tray.

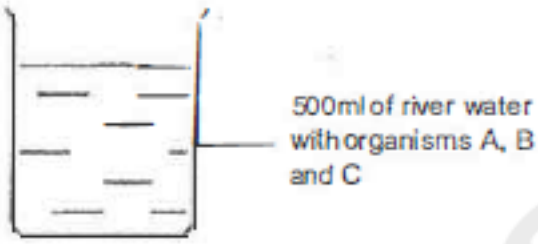
Step 2 : _____

Step 3 : Count the number of organism Q in each section of the tray.

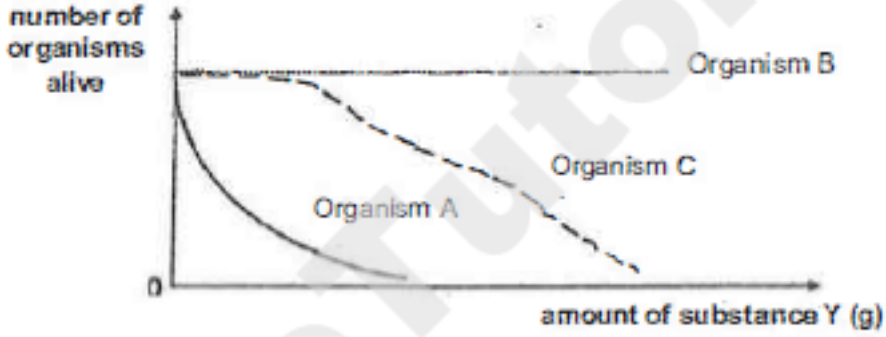
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34. Minah wanted to find out if Y, a substance found in insecticides, affects organisms A, B and C, found commonly in rivers.

She prepared five beakers, each containing 500ml of river water and the same number of organisms A, B and C. One of the beakers is shown below.



He added different amount of substance Y to each of the five beakers. Two days later, he counted the number of each type of organisms still alive in the beakers. The graph below shows his findings.



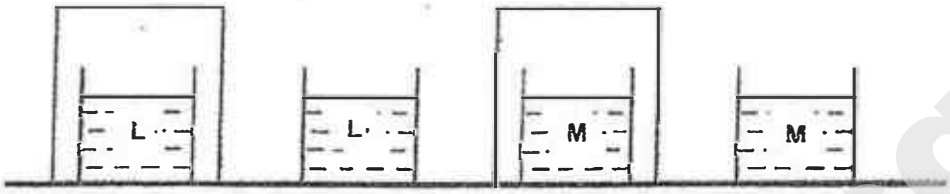
a) State the independent variable in Minah's experiment. [1]

b) What is the relationship between the amount of substance Y in the water and the number of organism A? [1]

c) Suggest a control set-up to show that any change in the number of the organisms was caused by substance Y. [2]

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35. Ben found two organisms, L and M, in a pond. He wanted to find out whether they are animals or plants. He filled four beakers, 1, 2, 3 and 4, with pond water. He placed organism L in beakers 1 and 2 and organism M in beakers 3 and 4. Beakers 1 and 3 were placed in the dark. Beakers 2 and 4 were placed in the light as shown below.



Beaker 1 (in the **dark**) | Beaker 2 (in the **light**) | Beaker 3 (in the **dark**) | Beaker 4 (in the **light**)

He added a drop of liquid X in each beaker. The table below shows the colour change of liquid X in the presence of more oxygen or more carbon dioxide.

Colour of liquid X	Where there is **more oxygen** present	Where there is **more carbon dioxide** present
	yellow	red

At the end of three hours, Ben obtained the results as shown below.

Beaker	**Colour of liquid X**
1	red
2	yellow
3	red
4	red

a) Based on the results, write 'plant' or 'animal' in the blank next to organisms L and M. [1]

Organism L : _____

Organism M : _____

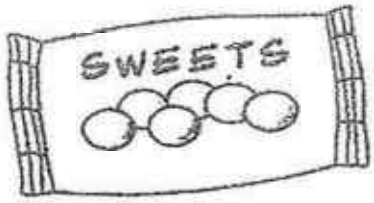
b) Explain your answer in (a). [2]

_____

_____

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36. The diagram below shows a packet of sweets which Jun Hao bought from a candy store.



He measured the mass of the packet of sweets and the mass of one sweet using an electronic weighing scale as shown below.



The results of his measurement are shown below.

Mass (g)	
One packet of sweets	One sweet
50.0	2.0

Based on the results, Jun Hao concluded that there are 25 sweets in the packet.

He opened up the packet of sweets and counted that there were only 23 sweets instead.

Give two reasons why Jun Hao's conclusion was not correct. [2]

Reason 1 : _____

_____

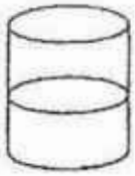
Reason 2 : _____

_____

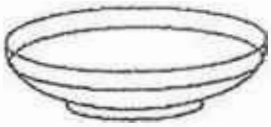
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37. Li Peng carried out an experiment with four containers, A, B, C and D. They are of different sizes and shapes and are made of different materials.

She poured water into each container until it was half-filled. The containers were left in the same room.



Container A – metal tin



Container B – plastic plate



Container C – glass flask



Container D – porcelain pot

a) Li Peng wanted to compare how **fast** the water evaporates in each container. What should she measure? [2]

_____

_____

b) Her classmate, Kim Seng, told her that using the four containers of water, A, B, C and D, to investigate how the exposed surface area of water affects the rate of evaporation of water is not fair. [2]

Give two reasons to support Kim Seng's claim.

Reason 1 : _____

_____

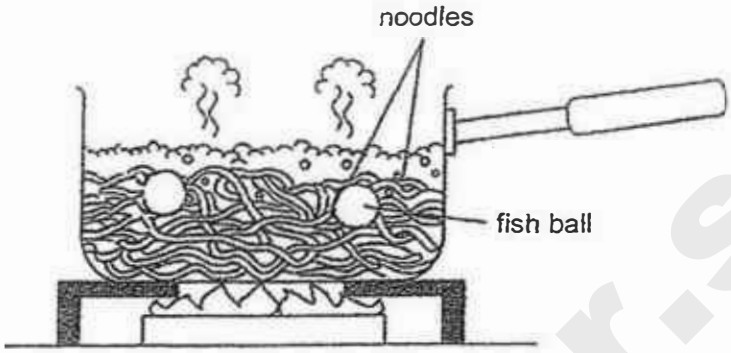
Reason 2 : _____

_____

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38. Boon Kee put some noodles and fish balls at room temperature into a metal pot of boiling soup.

The soup was boiling at 104°C.



a) Just after adding the noodles and fish balls, will the temperature of the boiling soup be, **lower than** or **the same as** or **higher than**, 104°C? [2]

Explain your answer.

_____

_____

b) Boon Kee found that the temperature at the centre of the fish ball was 92°C after three minutes. [1]

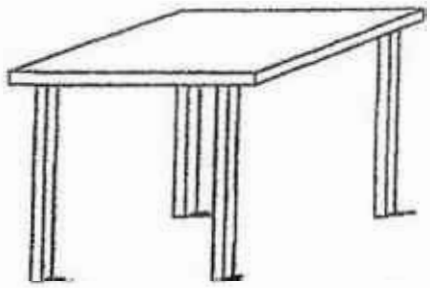
Give a reason why it was lower than the temperature of the boiling soup.

_____

_____

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39. Felix wanted to move a table across the room. He pushed the table but it did not move. When he pushed the table with more force, it started moving while making a screeching sound.



a) Name the force that prevented Felix from moving the table easily. Explain your answer. [1]

_____

_____

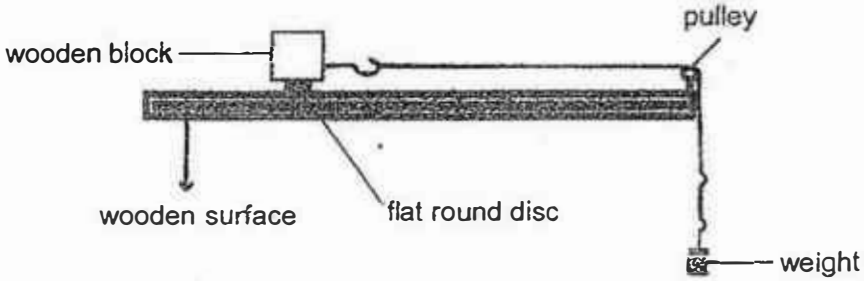
b) Name another force that was acting on the table as it was pushed across the room. [1]

_____

Felix carried out an experiment with three flat round discs, P, Q and R, each made of a different material. He pasted disc P on one side of a wooden block as shown in the diagram below.



He placed the wooden block on a wooden surface and noted the number of identical weights needed to start the block moving. He repeated the experiment with discs Q and R.



Question 39 continues on the next page

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Question 39 continued

The results of his experiment are shown below.

Type of flat round disc	Number of weights		
	Trial 1	Trial 2	Trial 3
P	9	8	8
Q	4	4	3
R	6	5	5

c) Besides using the same pulley, wooden block and surface, state another variable that has to be kept the same for the investigation to be fair. [1]

_____

d) For Felix's investigation, why did he carry out more than 1 trial for each type of disc? [1]

_____

_____

e) What was Felix trying to find out from this investigation? [1]

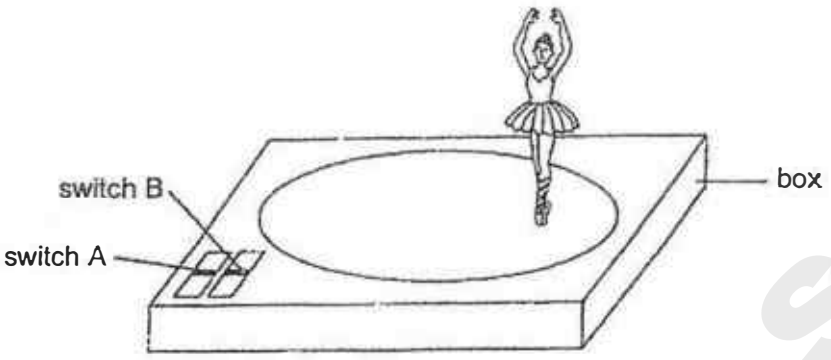
_____

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40. The diagram below shows a toy Tricia bought from a store.

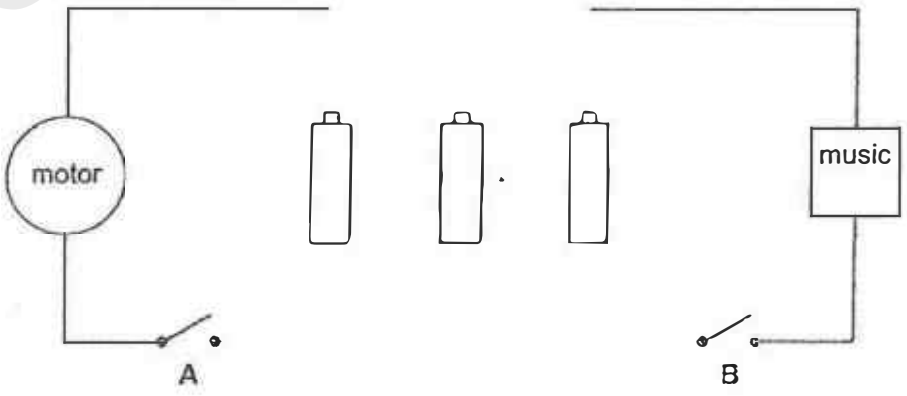


The toy works on batteries and her observations of how the toy works are shown below.

Switched ON	Observation
A only	Dancer moved in a circle. There was no music.
B only	Dancer did not move. There was music.
Both A and B	Dancer moved in a circle and there was music.

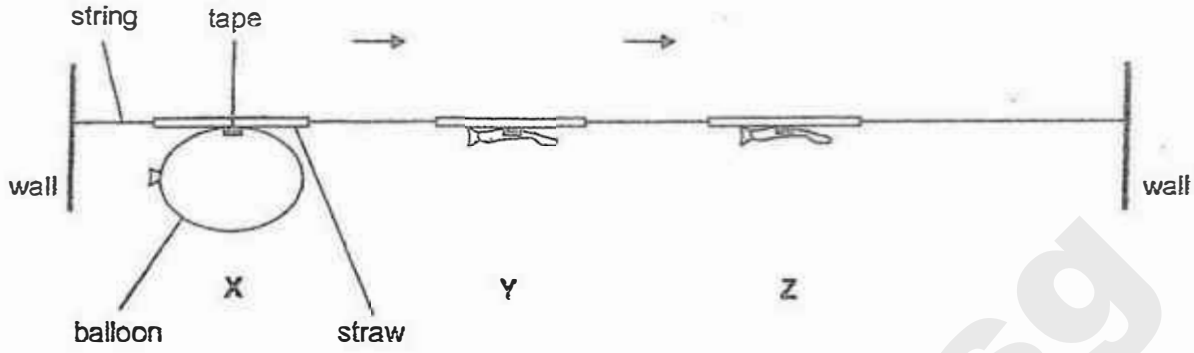
a) From Tricia's observation above, how many circuit set-up(s) is/are hidden in the box? Give a reason for your answer. [2]

b) The circuit diagram below shows the possible set-up hidden in the box. It is **not** complete. Draw wires to complete the circuit diagram. [2]



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41. In an experiment, a string is passed through a straw. An inflated balloon was then taped firmly to the straw as shown below.



The inflated balloon was held stationary at X. Then, air was released from the balloon and it moved forward as shown by the arrows. At Y, all the air had escaped but the straw continued to move forward until it came to a complete stop at Z.

a) Explain why the straw continued to move forward from Y towards Z. [1]

b) Give a reason why the straw came to a complete stop at Z. [1]

c) Suggest two methods to make the balloon move further than point Z. [2]

Method 1 :

Method 2 :

End of Booklet B

Setters: Ms Evelyn Tan and Mr Tan Joo Nam

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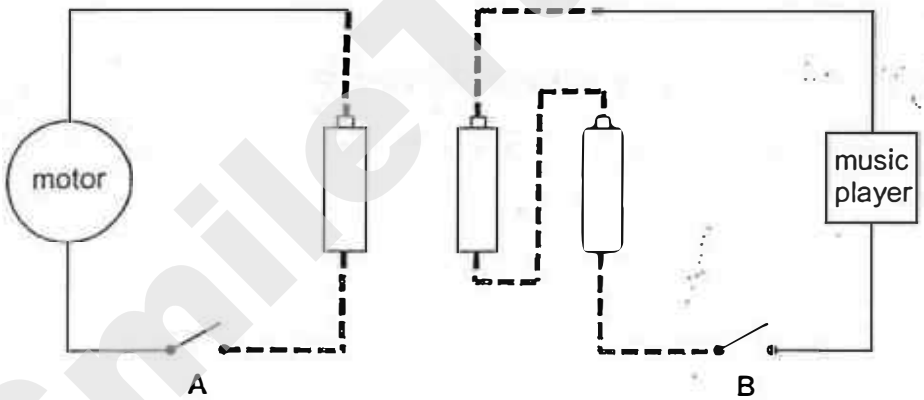
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QN	Answer
29.	(a) Cell wall (b) It feeds on decaying matter (c) It has no chloroplasts to make its own food
30.	(a) A: small intestine B: Lungs (b)(i) Increases the surface area for exchange of gases (ii) Oxygen can be absorbed into the blood and carbon dioxide can be removed.
31.	(a) There were more nutrients in the garden soil. (b) X. The food (in the seed leaves) has been used up by the seedling. Y. The shoot increases in size as the seedling grows.
32.	(a) Time taken for the paper to change from blue to pink is longer on the upper surface. (b) Plant S. Water is lost faster / there is more stomata.
33.	(a) To keep the distance between P and the types of soil equal to ensure fair test (b) Cover the tray with the black cloth.
34.	(a) Number of (substance) Y. (b) As the amount of Y increases, the number of A decreases. (c) Have a beaker with 500ml of river water and the same number of organisms A, B and C without substance Y
35.	(a) Organism L: Plant, Organism M: Animal (b) In the presence of light, L carry out photosynthesis and release oxygen but M cannot photosynthesise.
36.	• The packet/plastic (of sweets) has mass. • The air (trapped) inside the packet has mass.
37.	(a) Measure the amount of water evaporated over a fixed time. (b) The amount of water in each container is not the same. AND The material of each container is not the same.

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38.	(a) Lower than 104°C. The noodles/fish balls gain heat from the soup (b) The fish ball took more time to gain heat from the (boiling) soup.
39.	(a) Frictional force as it opposes motion (b) Gravitational force (c) Number / mass / thickness of disc (d) Ensure that the results are reliable. (e) To find out which (type of) material of the discs affect the amount of force needed to move the block.
40.	(a) 2. One switch was to make the dancer move, the other was to control the music.
41.	(a) The straw still has kinetic energy. (b) All the kinetic energy of the straw has been converted to other forms of energy. (c) Blow more air into the balloon / Lubricate the string

40b



Section A

1.	2	11.	1	21.	1
2.	2	12.	3	22.	4
3.	3	13.	2	23.	1
4.	1	14.	2	24.	3
5.	2	15.	1	25.	4
6.	4	16.	2	26.	4
7.	2	17.	3	27.	2
8.	4	18.	4	28.	3
9.	3	19.	4		
10.	2	20.	2		

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METHODIST GIRLS' SCHOOL

Founded in 1887

MID-YEAR EXAMINATION 2017
PRIMARY 6
SCIENCE

BOOKLET A1

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6._____

Date : 9 May 2017

This booklet consists of 12 printed pages including this page.

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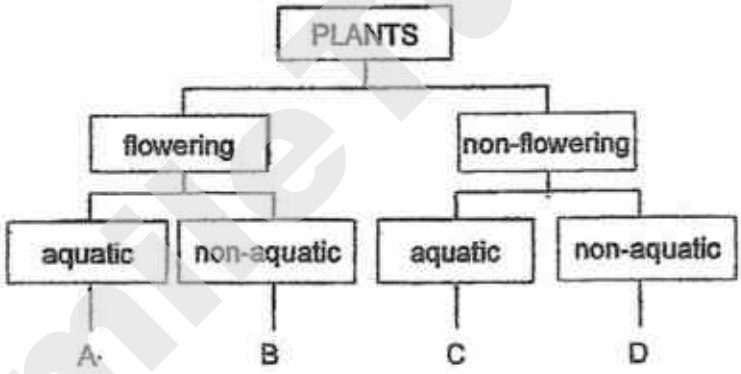
For each question from 1 to 14, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS). [28 marks]

---

1 The following table gives information on four plants, P, Q, R and S, based on two characteristics. A tick (√) shows that the plant has the characteristic.

	Plants			
Characteristic	**P**	**Q**	**R**	**S**
Bears fruit	√	√		
Grows on land	√		√	

From the information above, where do plants Q and R belong in the following classification table?



	Plant Q	Plant R
(1)	A	C
(2)	B	D
(3)	C	B
(4)	A	D

(Go on to the next page)

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2 The table below shows the differences between the toad and the cockroach. Which one of the following comparisons is correct?

	Toad	Cockroach
(1)	Young looks like its parent	Young does not look like its parent
(2)	Young is not cared for by parent	Young is cared for by parent
(3)	Has 3 stages in its life cycle	Has 2 stages in its life cycle
(4)	Lays many eggs in water	Lays many eggs on land

3 The diagram below shows Fruit P.



Fruit P is compared to the coconut in terms of its dispersal. Which of the following actions would be most appropriate to find out whether Fruit P is scattered in the same way as the coconut?

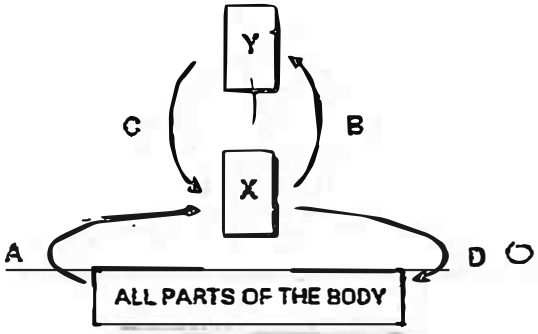
A Weigh Fruit P.
B Place Fruit P in water.
C Open Fruit P to see if it contains water.
D Examine Fruit P to determine if it has a fibrous husk.

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

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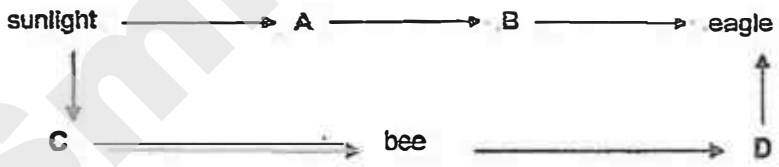
4 The diagram below shows arrows A, B, C and D which represent the movement of blood. Boxes X and Y represent two organs.



What do the arrows A and C represent and what organs are represented by X and Y?

	A	C	X	Y
(1)	rich in oxygen	rich in carbon dioxide	heart	lungs
(2)	rich in oxygen	rich in oxygen	lungs	heart
(3)	rich in carbon dioxide	rich in oxygen	heart	lungs
(4)	rich in carbon dioxide	rich in carbon dioxide	lungs	heart

5 Study the food web given below.



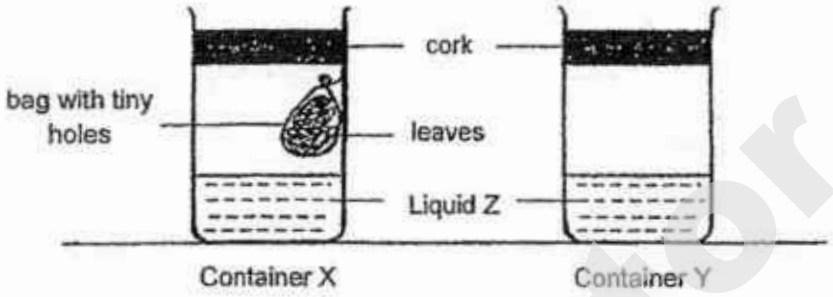
Which one of the following groups of organisms would complete the food web correctly?

	A	B	C	D
(1)	rice	mouse	ixora	frog
(2)	corn	grasshopper	fern	sparrow
(3)	carrot	rabbit	rose	owl
(4)	mango	snake	lily	lizard

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6 Gopal set up an experiment using two containers, X and Y, filled with the same amount of liquid Z. Liquid Z is red and it turns yellow when the amount of carbon dioxide increases. She placed some leaves in a bag with many tiny holes and then hung it in container X. After a few weeks, liquid Z in container X turned yellow but liquid Z in container Y remained red.



What had happened to cause liquid Z in container X to turn yellow?

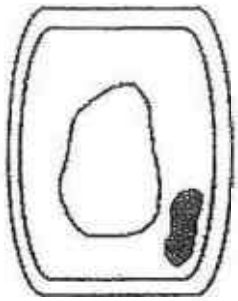
(1) The leaves made food.
(2) Evaporation took place.
(3) Decomposition took place.
(4) Carbon dioxide entered the container.

(Go on to the next page)

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7 A group of four children looked under the microscope and saw the cell shown below. They made a statement based on their observations.



Name of child	Statements
Martha	This is an animal cell because it has a regular shape.
Babu	This is an animal cell because it has no chloroplast.
Zainal	This is a plant cell because it has a cell wall.
Steven	This is a cell of an underground stem which has no chloroplast because it does not make its own food.

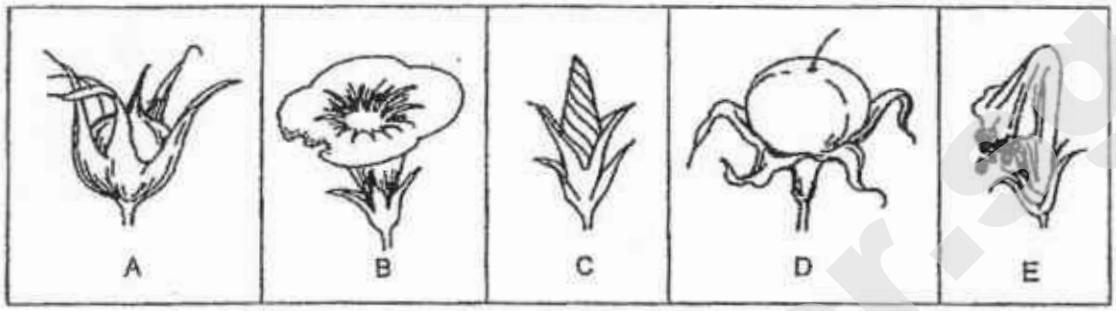
Whose statement(s) about the cell is/are correct?

(1) Babu only
(2) Steven only
(3) Babu and Martha only
(4) Zainal and Steven only

(Go on to the next page)

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8 The diagrams below show the different stages of a flower developing into a fruit, but they are not in the correct order.



Which one of the following shows the correct order of development?

(1) B → C → E → A → D

(2) B → A → D → C → E

(3) C → A → D → E → B

(4) C → B → E → A → D

9 Which of the following statements are true about the human digestive system?

A Food is not digested in the gullet.
B Digestion is completed in the stomach.
C Digestive juice is not present in the mouth.
D Food undigested in the stomach may be digested in the small intestine.
E Water is absorbed from the undigested food by the body in the large intestine.

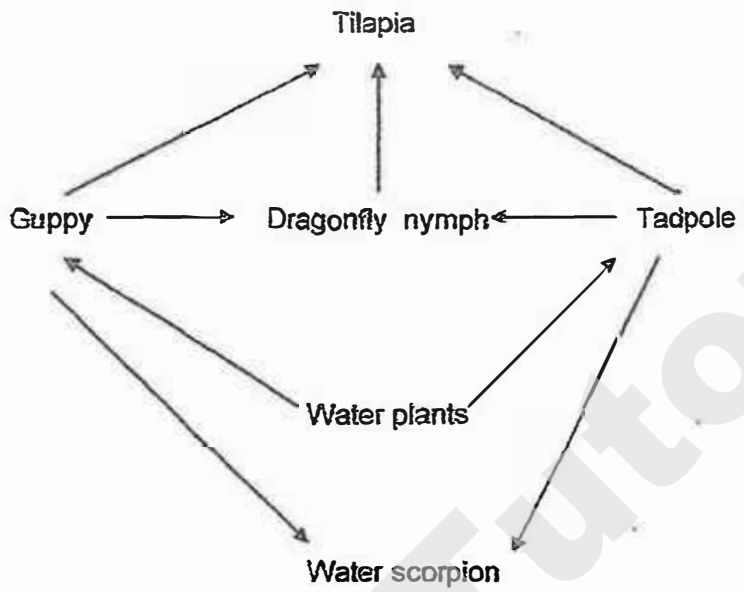
(1) A and B only
(2) C and E only
(3) A, D and E only
(4) B, C and D only

(Go on to the next page)

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10 The food web below shows the food relationship in a pond.



Which of the following is/are most likely the result if all the dragonfly nymphs become dragonflies?

A The tadpoles will have one predator left.

B The tilapia will feed on more tadpoles and guppies.

C The community will be left with four types of predators.

D Water scorpions will feed on more tadpoles than guppies.

(1) B only

(2) B and C only

(3) A and C only

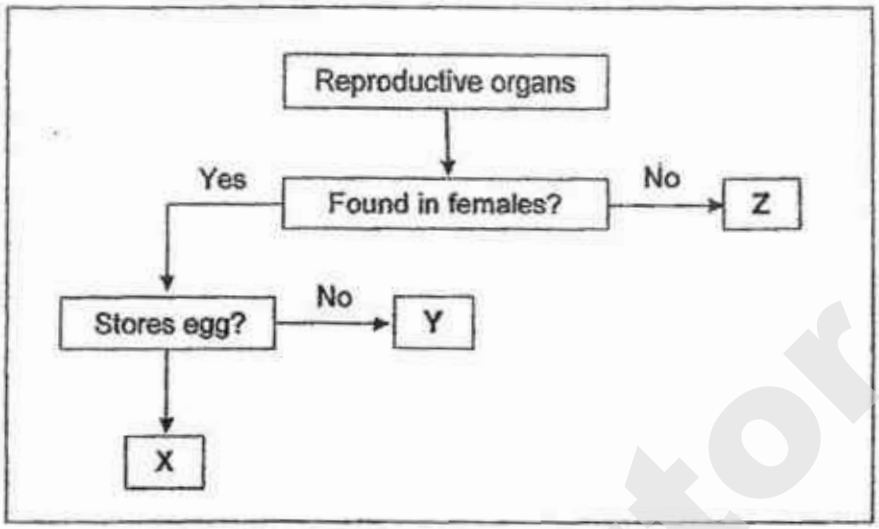
(4) A, B and D only

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11 Study the flow chart below.



Which one of the following best identifies X, Y and Z of the human reproductive system in the flow chart?

	X	Y	Z
(1)	Ovule	Ovary	Testis
(2)	Ovary	Womb	Testis
(3)	Testis	Womb	Ovary
(4)	Womb	Ovary	Testis

(Go on to the next page)

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12 The table below provides a description of some physical factors in four different habitats.

Physical factor	Habitat			
	A	B	C	D
Intensity of light (lux)	High	High	Low	Low
Amount of moisture	Low	High	High	Low
Average temperature (°C)	17	31	22	24

Organisms R and S were observed to have the following characteristics:

Organism R	Organism S
Thrives in a damp environment	Thrives in a dry environment
Prefers to stay in a dark environment	Prefers to stay in a bright environment
Most active when the surrounding temperature ranges from 16 - 24 °C	Most active when the surrounding temperature ranges from 16 - 24 °C

In which habitats would the greatest number of Organisms R and S be found?

	Habitat where most R are found	Habitat where most S are found
(1)	A	C
(2)	D	B
(3)	C	A
(4)	C	B

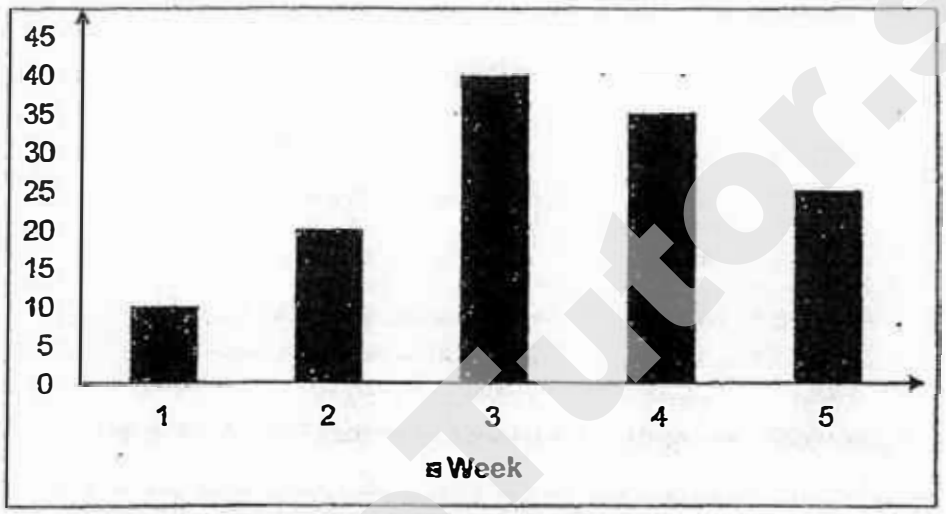
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13 The food relationships among the organisms in a field community is shown below.

crop ⟶ grasshopper ⟶ bird

In the bar graph below, the population of grasshoppers in the field community was monitored over five weeks.



Which of the following statements best explain the changes in the population of grasshoppers?

A More crops were grown in the first two weeks.

B The population of birds decreased after the 3rd week.

C There was an outbreak of bird disease in the first two weeks.

D Less crops were harvested in the field from the 4th week onwards.

(1) A and B only

(2) C and D only

(3) A and C only

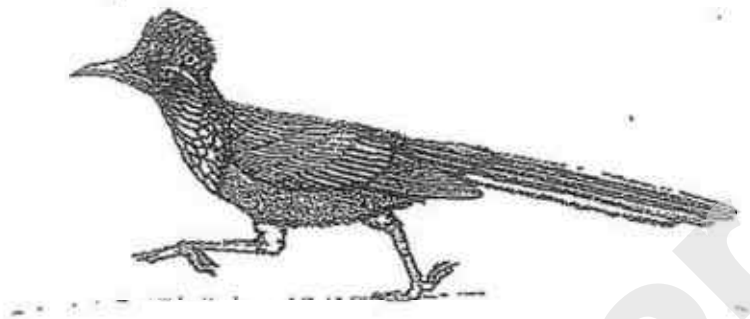
(4) A, B and D only

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14 The picture below shows Animal G. Animal G lives in the desert and it is commonly spotted racing across the desert floor.



Which one of the following statements correctly explains how this behavior helps Animal G to withstand the heat from the hot sand in a desert habitat?

(1) By running at a great speed, Animal G creates wind resulting in less heat being felt by its feet.

(2) As Animal G runs quickly, its feet leave the hot sand fast enough for the heat to be gained and lost quickly.

(3) The moving air cools down the heat between Animal G's feet and the hot sand as it runs quickly across the hot desert floor.

(4) The surface area of contact between Animal G's feet and the hot sand is increased as it alternates its feet when it runs quickly across the desert floor.

End of Booklet A1

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MID-YEAR EXAMINATION 2017
PRIMARY 6
SCIENCE

BOOKLET A2

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6. ____

Date : 9 May 2017

This booklet consists of 13 printed pages including this page.

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For each question from 15 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet (OAS). [28 marks]

15 Wei Xin set up the following experiment as shown in Diagram 1 below. Two bar magnets were suspended with a string and the poles of the magnet were not known to him. In diagram 2, another magnet, P, was placed in between the bar magnets and the positions of the magnets changed as shown in Diagram 2.



Diagram 1

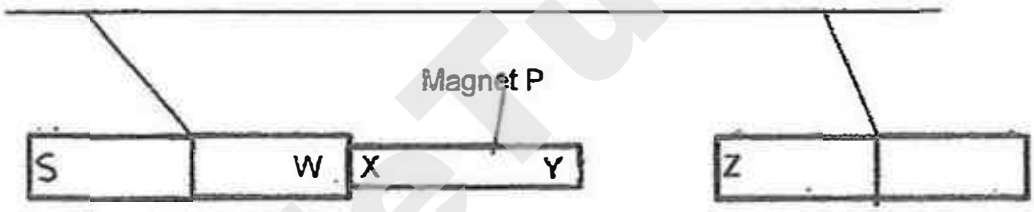


Diagram 2

Wei Xin listed some possible combinations of the poles of the bar magnets as shown in the table below.

	W	X	Y	Z
A	North	South	South	South
B	North	South	North	North
C	South	North	South	South
D	South	North	North	North

Which of the following combinations are possible poles for the bar magnets?

(1) A and B

(2) A and C

(3) B and C

(4) B and D

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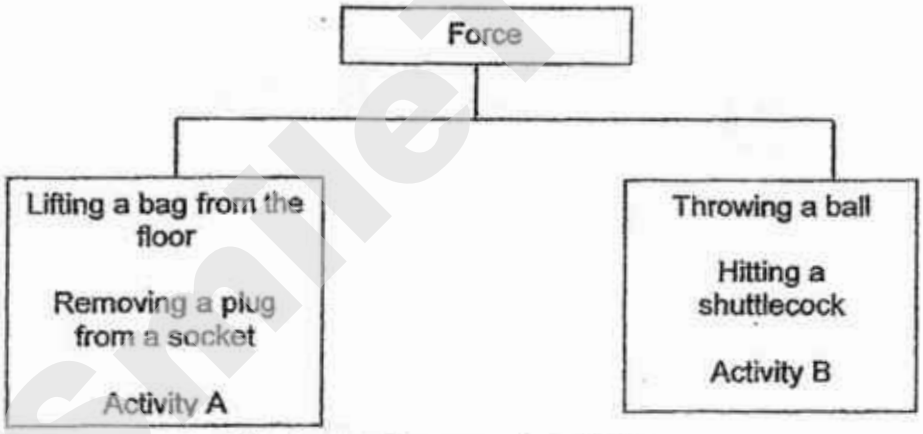
16 Study the characteristics of the four objects given in the table below.

Properties/ Objects	Flexible	Electrical Conductor	Magnetic	Allow light to pass through
A	No	Yes	Yes	No
B	Yes	No	No	No
C	No	No	No	No
D	No	No	No	Yes

Which of the following could objects A, B, C and D be made of?

	A	B	C	D
(1)	steel	rubber	wood	glass
(2)	iron	cotton	glass	copper
(3)	copper	wood	steel	glass
(4)	aluminum	glass	cotton	steel

17 Study the classification chart below.



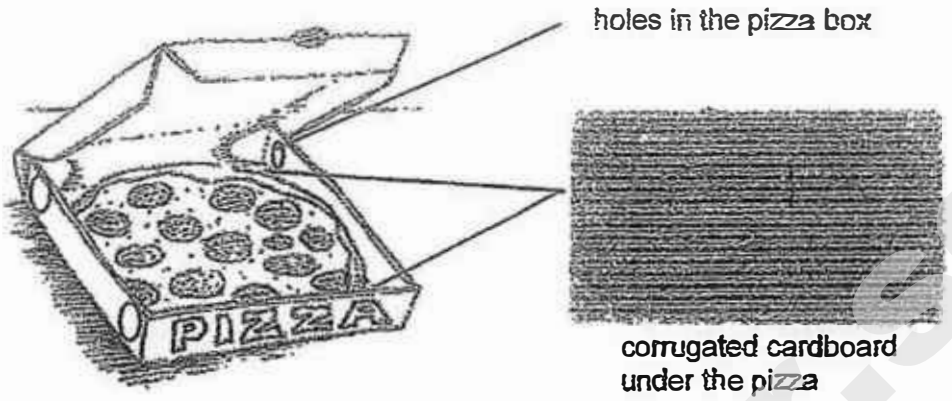
Which one of the following best represents activities A and B?

	Activity A	Activity B
(1)	Playing the piano	Pressing a door bell
(2)	Wringing a towel	Opening a drawer
(3)	Closing a drawer	Magnets repelling each other
(4)	Magnets attracting each other	Hammering a nail

(Go on to the next page)

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18 The diagram below shows a pizza box with some common features.



Which of the following statements best explain the features found in the pizza box?

A The holes in the pizza box prevents the pizza from becoming soggy by allowing water vapour to escape.

B The holes in the pizza box keeps the pizza warm by allowing air, which is a poor conductor of heat to enter the box.

C The corrugated cardboard under the pizza increases friction between the pizza and the box to absorb the moisture.

D The corrugated cardboard under the pizza reduces area of contact between the pizza and the box, slowing down heat loss.

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

(Go on to the next page)

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19 The table below shows the energy conversion when four different devices are used.

Devices	Energy conversion
W	Chemical potential energy → Kinetic energy → Kinetic energy + Sound energy
X	Electrical energy → Light energy + Sound energy + Heat energy
Y	Chemical potential energy → Electrical energy → Light energy + Heat energy + Sound energy
Z	Electrical energy → Heat energy + Kinetic energy + Sound energy

Which one of the following options correctly matches the energy conversions above?

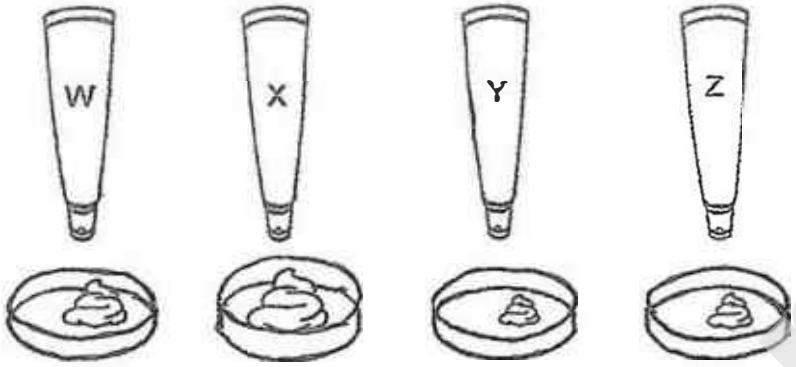
	W	X	Y	Z
(1)	Piano	Television	Handphone	Hairdryer
(2)	Oven	Radio	Iron	Washing machine
(3)	Washing machine	Electronic keyboard	Handphone	Hairdryer
(4)	Piano	Oven	Hairdryer	Television

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20 In an experiment, Miss Chua squeezed four identical tubes of paint, W, X, Y and Z from the same height above four dishes as shown below. The original amount of paint in each tube was the same. After one squeeze, she measured the mass of the paint on the four dishes. The following shows the results of her experiment.



Tube	Mass of paint on petri dish after one squeeze (g)
W	20
X	30
Y	12
Z	15

Which of the following statement(s) correctly explains her observation?

A Most force was applied on Tube X.

B More gravity acted in Tube Z than in Tube Y.

C Tube Y has the least amount of gravitational potential energy at first.

D There was more paint which was squeezed from Tube Z than Tube W.

(1) A only

(2) B and C only

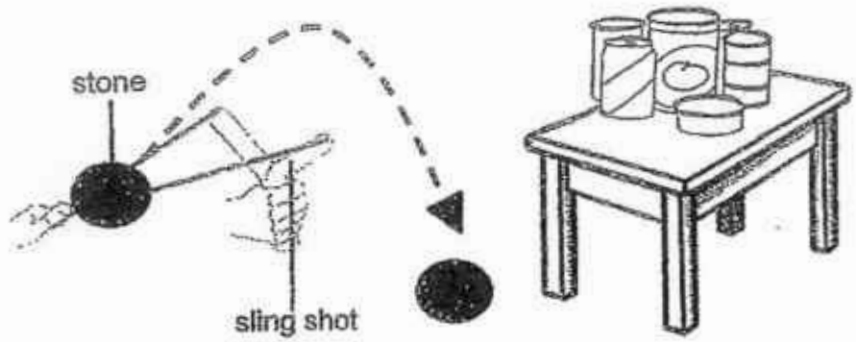
(3) A and D only

(4) A, B and D only

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21 In the diagram below, Muthu used a sling shot to hit some cans on the table.



When Muthu pulled the elastic band and released the stone, the stone flew forward and dropped to the ground before it could hit the cans.

Which of the following statements correctly explain his observation?

A The stone fell to the ground as gravitational force is acting on it.

B Elastic potential energy is converted to heat and sound energy only.

C Friction between the stone and the elastic band prevented the stone from reaching the can.

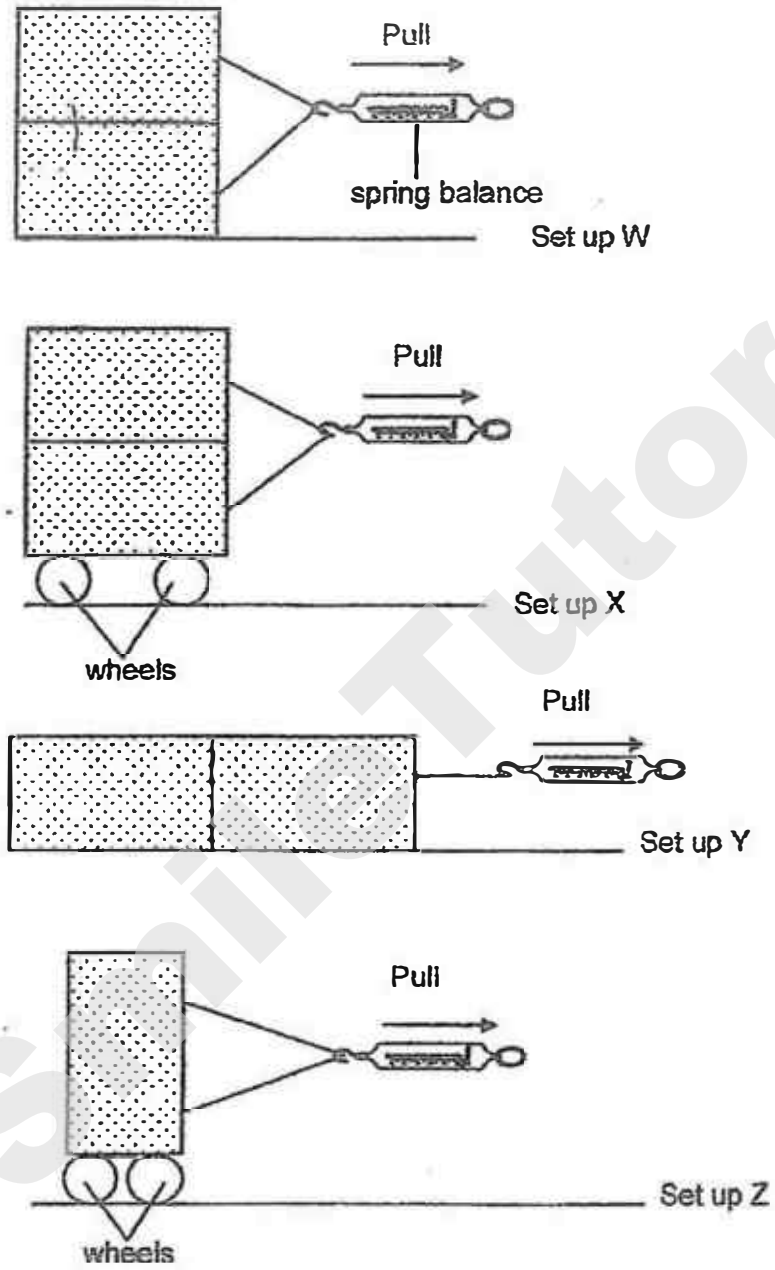
D The energy in the stone has been converted to other forms of energy before it reached the cans.

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

(Go on to the next page)

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22 Linda prepared the following set-ups to investigate the amount of force needed to pull some wooden blocks across the same table surface. The pieces of wood are glued together for all the set-ups. The readings from the spring balance were then recorded.



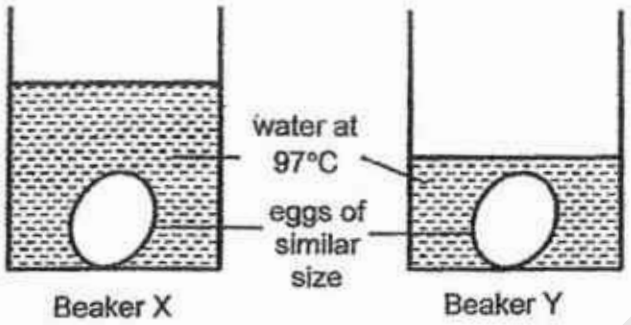
Which two set-ups would most likely show similar reading in the spring balance?

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

(Go on to the next page)

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23 Two eggs which were similar in size were each placed in Beaker X and Beaker Y. The temperature of water in both set-ups is 97°C.



Based on the experiment above, which of the following statement(s) is/are correct?

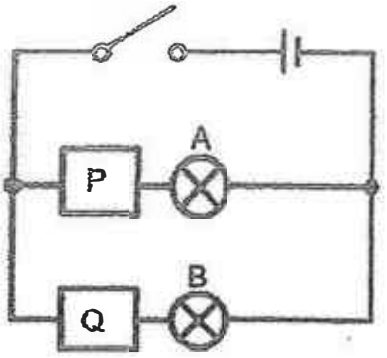
A The water in Beaker X loses heat faster than the water in Beaker Y
B Heat from the hot water in Beaker X and Y is transferred to the eggs.
C The egg in Beaker X will be cooked slower than the one in Beaker Y
D Both the water in Beaker X and Y contains the same amount of heat.

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

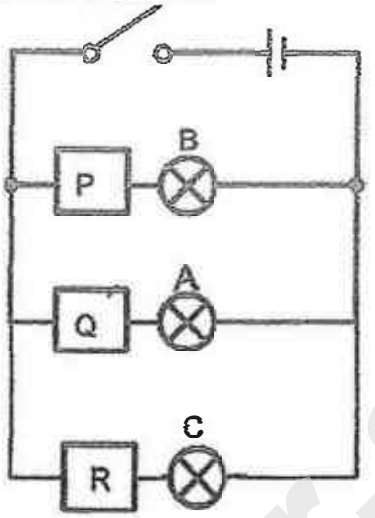
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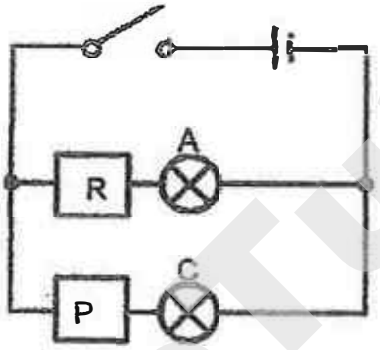
24 Huat Seng set up the following circuits as shown below.



Circuit 1



Circuit 2



Circuit 3

He closed the switches and recorded his observations in the table below.

Circuit	Bulb that lights up
1	A only
2	None
3	None

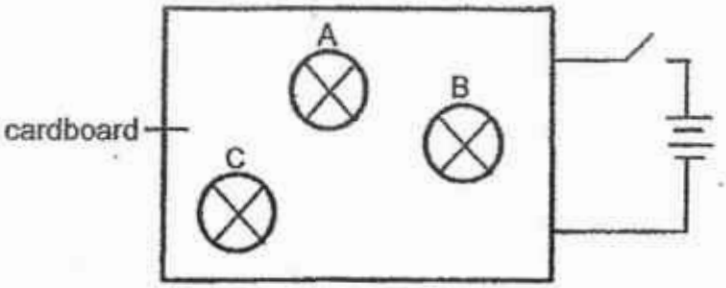
Based on the results, which one of the following is correct?

	Electrical Conductor(s)	Electrical Insulator(s)	Faulty Bulb(s)
(1)	P	Q and R	B and C
(2)	Q	R	B and C
(3)	P and Q	P	A
(4)	Q and R	P	B and C

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25. Rafik set up a circuit with three identical bulbs, A, B and C, and two batteries. He covered the wires connecting the bulbs with a cardboard as shown in the diagram below.

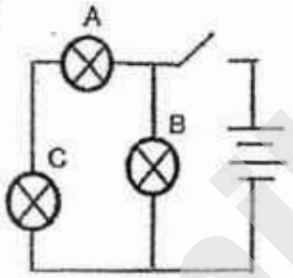


Rafik removed the bulbs, A, B and C, one at a time while keeping the rest of the circuit intact. Before connecting each bulb back into the circuit, he observed the other two bulbs and recorded his observations in the table below.

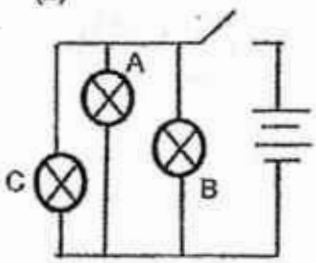
Bulb removed	Observations
A	B and C stay lit
B	C went off while A stay lit
C	B went off while A stay lit

Which one of the following circuits shows how the three bulbs were connected?

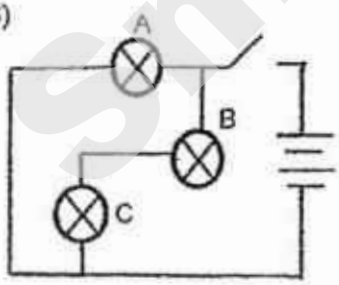
(1)



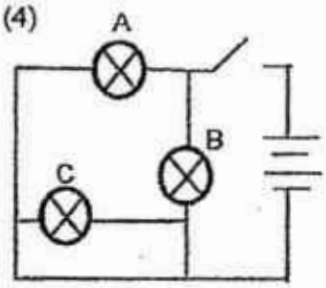
(2)



(3)



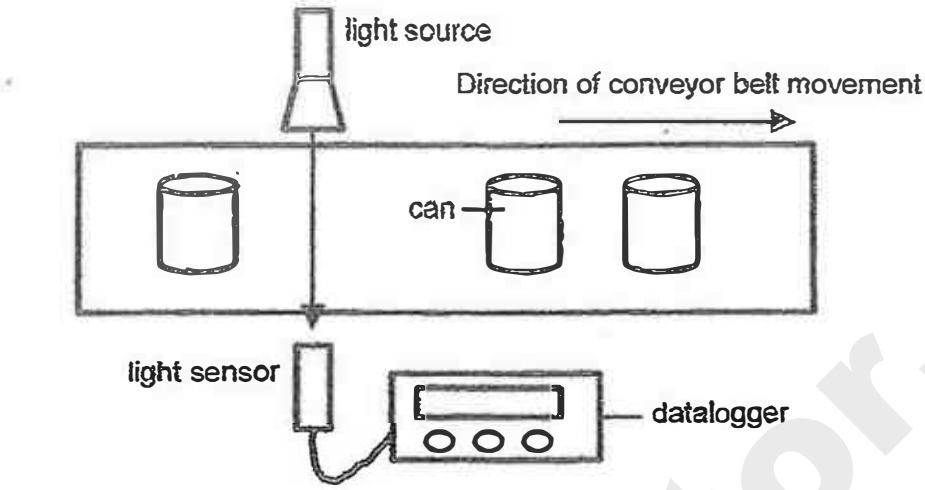
(4)

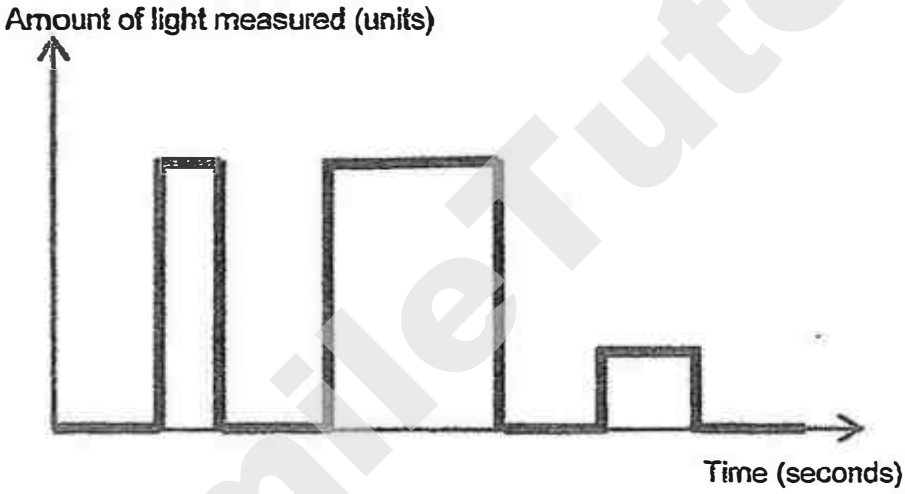


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26. The following graph shows the readings from a light sensor when some cans on a conveyor belt pass through a light source.





Based on the information above, which of the following statement(s) is/are correct?

A Three cans passed through the sensor.

B The cans are not spaced at equal distance on the conveyor belt.

C All the cans blocked the light for the same amount of time.

D Beside the cans, there was another object which blocked some light on the conveyor belt.

(1) C only

(2) A and B only

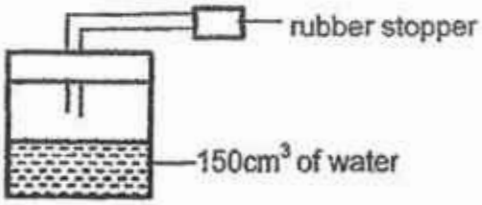
(3) C and D only

(4) B, C and D only

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27. A container was filled with 150 cm^3 water and some air as shown below.



A cube was then added to the container and 20 cm^3 more air was pumped in.

Which one of the following options is correct after the above contents are added?

	Total mass	Total volume	Volume of air	Volume of water
(1)	Increases	Increases	Increases	Increases
(2)	Increases	Remains the same	Decreases	Remains the same
(3)	Remains the same	Increases	Increases	Decreases
(4)	Decreases	Remains the same	Decreases	Remains the same

28. Xiao Lin set up the following experiment as shown below. Three identical empty glass bottles were left in three different rooms at different temperatures. The glass bottles were not sealed or capped.



After 5 hours, Xiao Lin removed the bottles from the rooms and placed them in in another room at room temperature. She observed that only the bottle at Room X had water droplets on them.

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

A Room X is the coldest room.

B Room Y and Z are colder than Room X.

C The temperature in Room Y and Z must be the same.

D All three bottles lost a different amount of heat at room temperature.

(1) A only

(2) A and B only

(3) C and D only

(4) B, C and D only

End of Booklet A2

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MID-YEAR EXAMINATION 2017
PRIMARY 6
SCIENCE

BOOKLET B1

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6._____

Date : 9 May 2017

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

This booklet consists of 10 printed pages including this page.

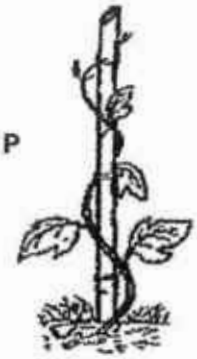
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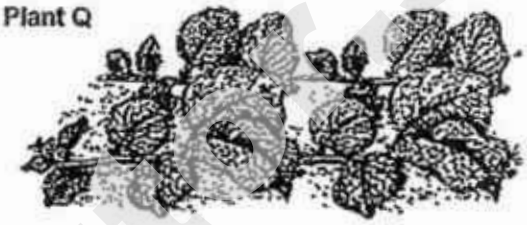
For questions 29 to 34, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [22 marks]

29 The diagram below shows two plants, P and Q. Both plants have weak stems but they have adapted to their environment and both are growing well.

Plant P



Plant Q



(a) What is the structural adaptation of each plant? [1]

Adaptation of Plant P: _____

Adaptation of Plant Q: _____

(b) Suggest a common reason why these adaptations allow both plants to grow well. Explain your answer clearly. [1]

_____

_____

Stomata, tiny openings on leaves of land plants, are usually concentrated on one side of leaves. Oil was spread on the underside of leaves of Plant P and upper side of leaves of Plant Q. After a week, one plant wilted.

(c) Which plant, P or Q, has wilted? Give a reason why the plant wilted. [1]

_____

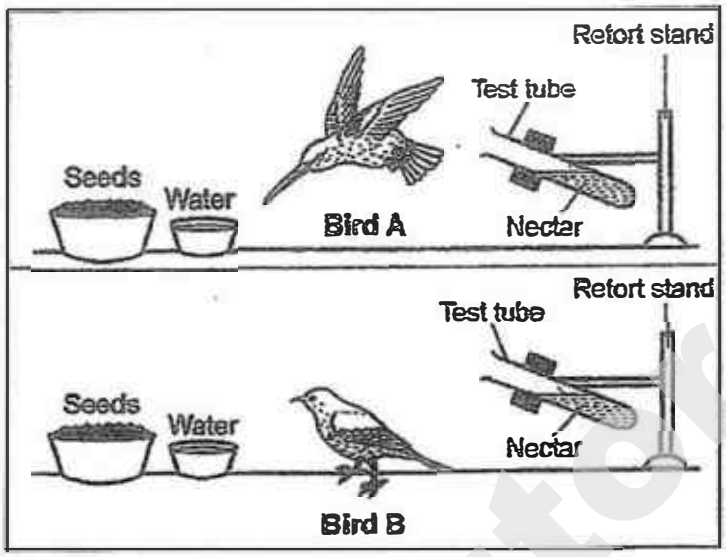
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30 Bird A and Bird B were kept separately in two cages as shown below.



200g of seeds and 40ml of nectar were placed in each cage at the start of the experiment. After two days, the amount of seeds and nectar were recorded in the table as shown below.

	Cage with Bird A	Cage with Bird B
Mass of seeds at the start of experiment (g)	200	200
Mass of seeds at the end of experiment (g)	200	50
Volume of nectar at the start of experiment (ml)	40	40
Volume of nectar at the end of experiment (ml)	20	40

(a) What can be concluded about the diet of Bird A from the above readings? [1]

_____

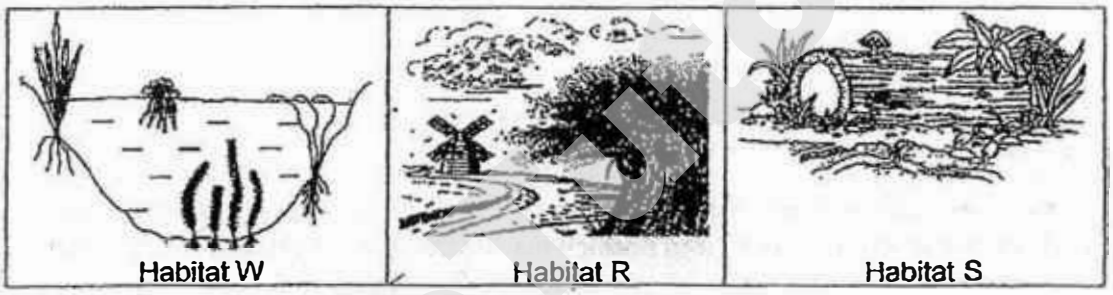
1

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(b) Explain how Bird A is adapted to its natural habitat for the diet mentioned in (a). [2]

(c) The picture below shows three different habitats, W, R and S. Which ~~one~~ of the three habitats is best suited for Bird B in order for it to find sufficient food for its survival? Give a reason for your answer. [1]



Habitat: _____

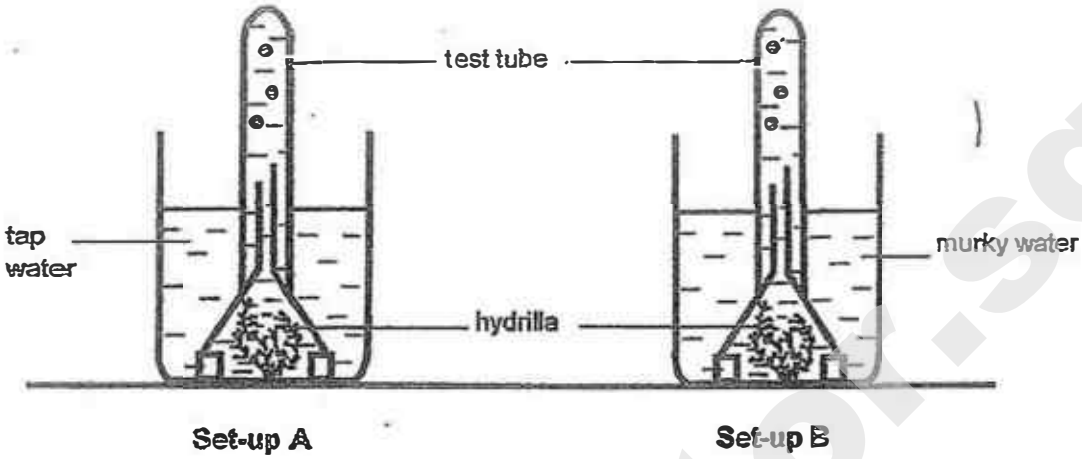
Reason: _____

3

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31 Sammy set up an experiment to find out how murky water affects the rate of photosynthesis in a hydrilla plant. Two similar hydrilla plants were placed in similar beakers with the same amount of water. The set-ups were then placed in direct sunlight.



Sammy hypothesizes that the rate of photosynthesis is higher for the hydrilla plant in tap water.

(a) Why did Sammy make his hypothesis as stated? Explain your answer clearly. [1]

(b) What data should Sammy collect in order to support his hypothesis? [1]

(c) Sammy's teacher asked him to repeat his experiment a few times. Why did his teacher make this suggestion? [1]

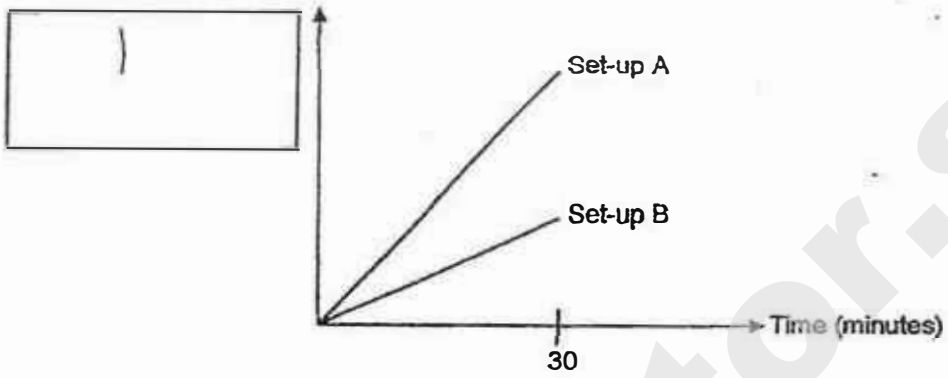
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(d) The graph below shows the measured variable for Set-up A and Set-up B over 30 minutes. Label the vertical axis of the graph by writing in the given box below. [1]



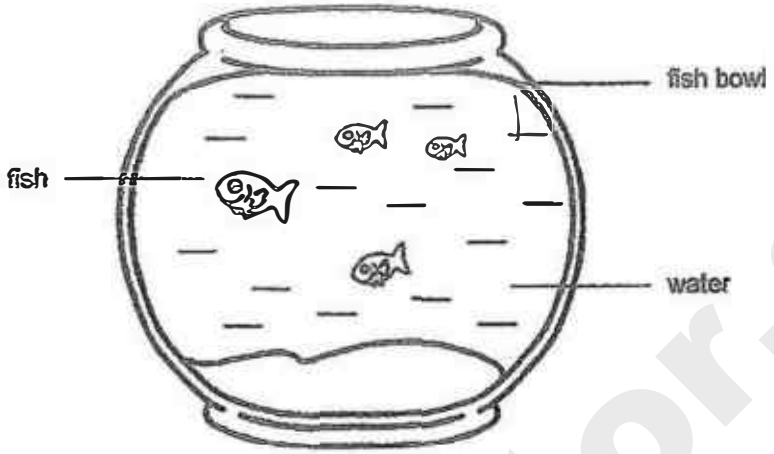
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32 A little boy kept some fish in his fish bowl as shown in the picture below.



After a few days of observation, he realized that the fish were always swimming around the surface of the water. He told his friends that the fish wanted light, so they swam near the surface.

(a) Do you agree with the little boy? Explain your answer. [1]

_____

_____

_____

(b) What changes can he do to the environment that the fish are in so that they would not always swim near the surface of the water? Give two suggestions and explain why. [2]

Suggestion 1: _____

_____

Suggestion 2: _____

_____

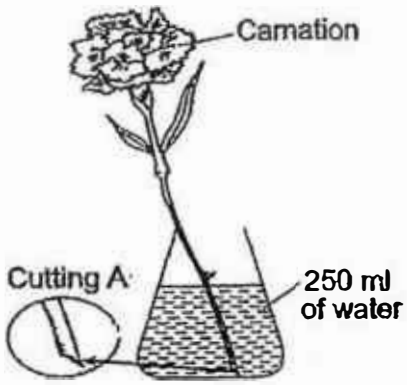
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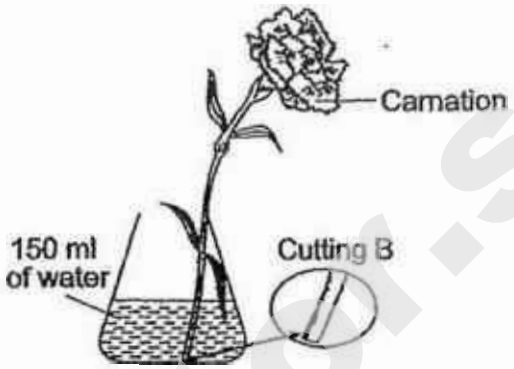
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33 Bitna wanted to find out if the different ways of cutting the stalks of carnation flowers would affect the amount of water taken in by them. She filled two similar vases, A and B, with water and placed a stalk of white carnation in each vase. Next, she placed both vases in the same location. The two different ways each stalk was cut are shown below.



Vase A



Vase B

(a) How would she determine which stalk of carnation had taken in more water? [1]

_____

_____

(b) Her teacher told her that the experiment is not a fair one. Based on the set-up as shown above, suggest two changes that she should make to ensure a fair test. [2]

Suggestion 1: _____

_____

Suggestion 2: _____

_____

3

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(c) How did Cutting A and Cutting B affect the amount of water taken in by each stalk of carnation? Explain your answer clearly.

(d) A florist has an order of 100 carnations for a wedding. The bride wanted blue and pink colours on each carnation. What could the florist do to meet the requirements of her order besides spraying the flowers with blue and pink paint? [1]

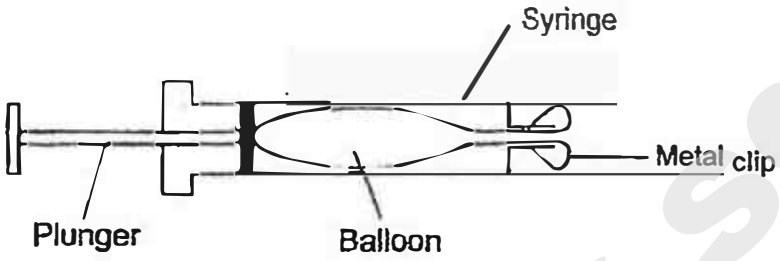
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34 Latifah made a simple model to resemble the human respiratory system. She used a large syringe, balloon and a metal clip as materials for her model. Her model was assembled as shown below.



(a) Which objects in the model represent the following body parts? [1]

(i) Lungs: _____

(ii) Ribcage: _____

(b) Latifah pulled the plunger backwards away from the balloon. What will happen to the balloon? Explain your answer clearly. [1]

_____

_____

(c) Latifah told her teacher that only three human body systems are working together when a person is sleeping. Do you agree with her? Explain your answer. [1]

_____

_____

3

End of Booklet B1

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MID-YEAR EXAMINATION 2017
PRIMARY 6
SCIENCE

BOOKLET B2

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

INSTRUCTIONS TO CANDIDATES

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

Name: _____ ( )

Class: Primary 6._____

Date : 9 May 2017

Booklet B2	22

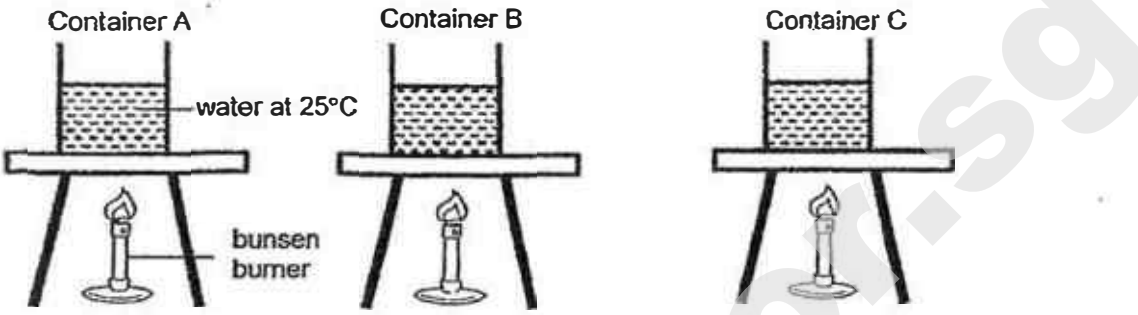
This booklet consists of 11 printed pages including this page.

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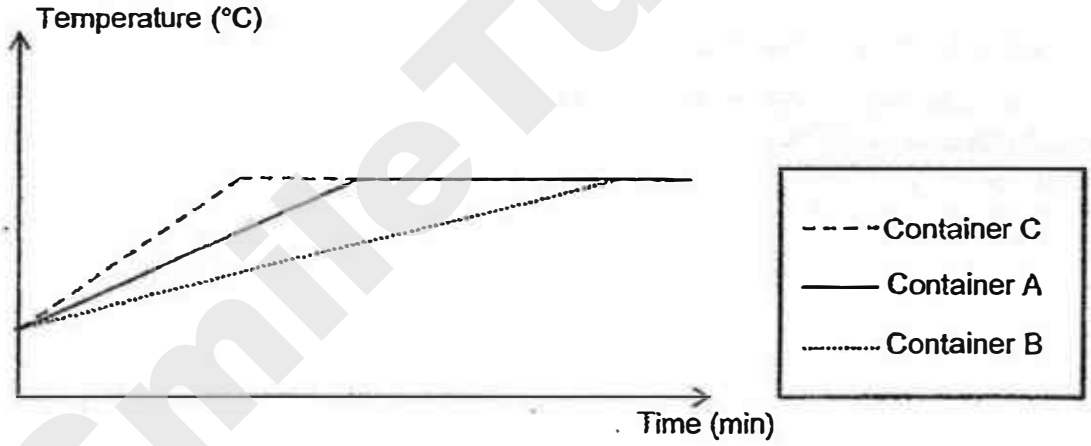
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For questions 35 to 41, write your answers in the spaces provided. The number of marks available is shown in brackets [ ] at the end of each question or part question. [22 marks]

35. In the diagram below, Valerie heated three containers, A, B and C which were made of different materials. Each container contained an equal amount of water at 25°C. The containers were supplied with the same amount of heat.



She measured the amount of time taken for the water to boil in the table and plotted a a graph as shown below.



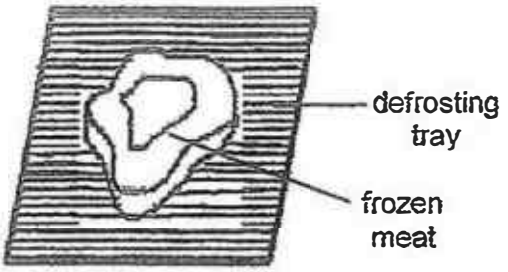
(a) Based on Valerie's results, which container, A, B or C is the poorest conductor of heat? Explain your answer. [1]

1

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The following diagram shows a defrosting tray which is found in the kitchen. It is used to thaw frozen meat quickly.



(b) From the results of the experiment, which material, A, B or C is the most suitable material to make the defrosting tray to thaw frozen meat quickly? Give a reason for your answer. [1]

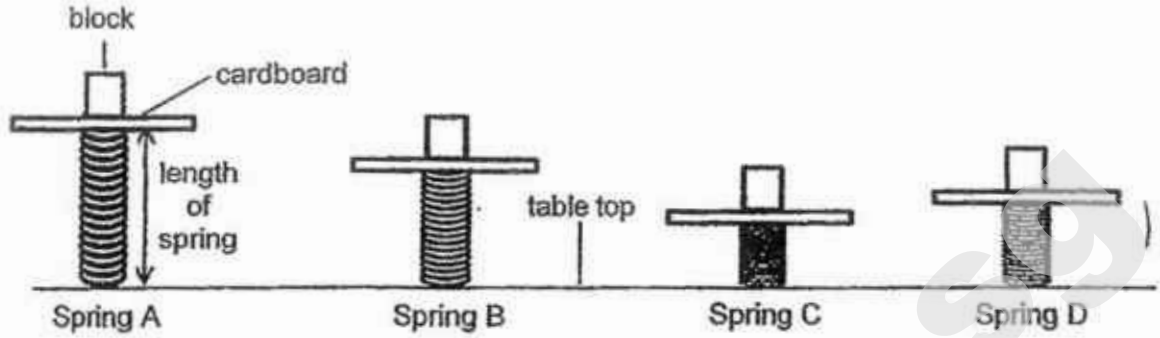
(c) When Valerie cut the frozen meat into smaller pieces, she realised that the amount of time to thaw it was shorter. Explain her observation. [1]

2

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36 In an investigation, Keith placed identical blocks on four different springs, A, B, C and D. The original length of all the springs was 10 cm.

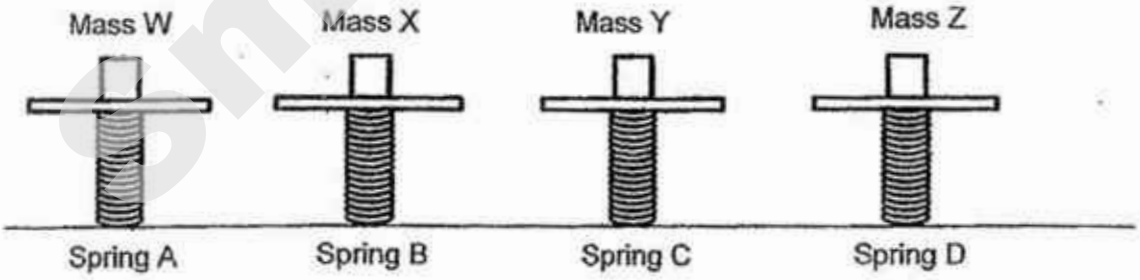


After placing the blocks on the springs, he measured the length of spring and recorded his results in the table below.

Spring	Length of spring (cm)
A	8.5
B	7
C	5
D	6

(a) Based on the results, give a reason why the lengths of the springs are different when the same block is placed on them. [1]

(b) In another experiment, Keith placed different masses, W, X, Y and Z on the four springs, A, B, C and D respectively such that the length of each spring is the **same**.



(i) Arrange the masses, W, X, Y and Z from the **heaviest to the lightest.** [1]

Heaviest → Lightest

			Y

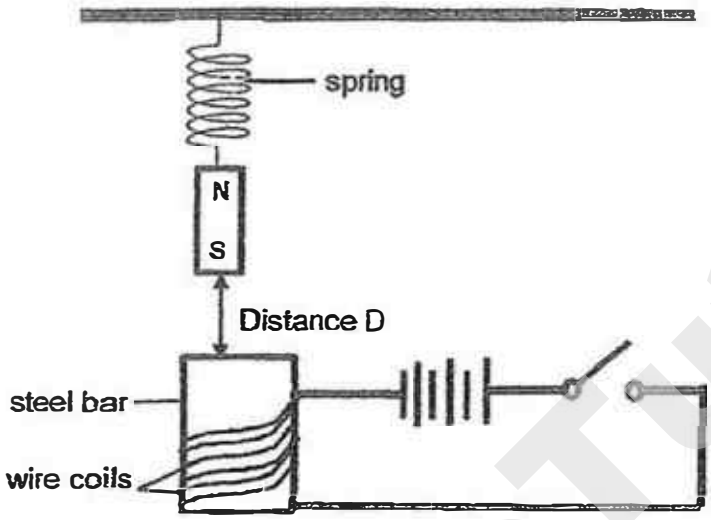
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(ii) Explain why Mass Y is the lightest. [1]

Study the set-up below.



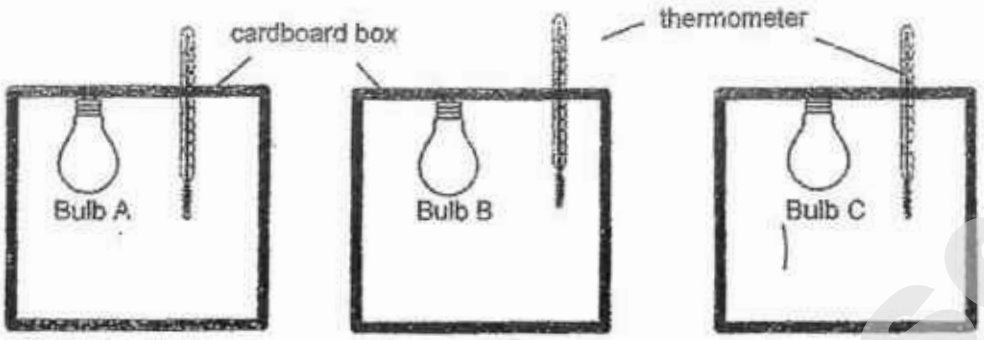
(c) When the switch was closed, it was found that distance D increased. Explain this observation clearly. [2]

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37. Mr Lai conducted an experiment with three different light bulbs, A, B and C as shown below. The temperature of the air was measured over a period of 20 minutes.

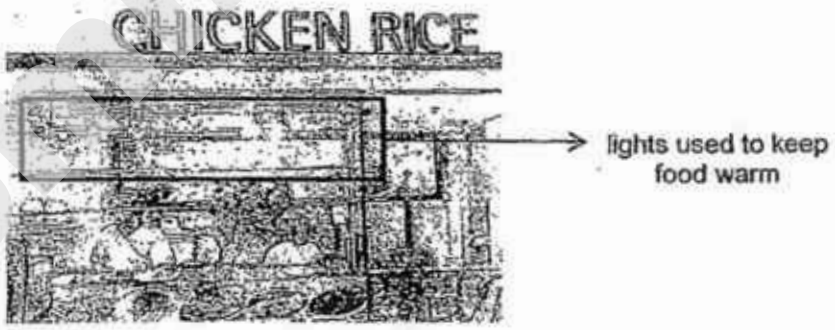


Time/min	Temperature of air/ °C		
	Set-up A	Set-up B	Set-up C
0	25	25	25
5	28	27	27.5
10	30	30	30
15	31	31	33
20	32	33	36

(a) Fill in the boxes to show the energy conversion in the bulb. [1]



It was observed that light bulbs were sometimes placed strategically near the food to keep them warm in air- conditioned food courts.



(b) Based on the above results, which light bulb, A, B or C should Mr Lai use for his chicken rice stall? Give a reason for your answer. [1]

_____

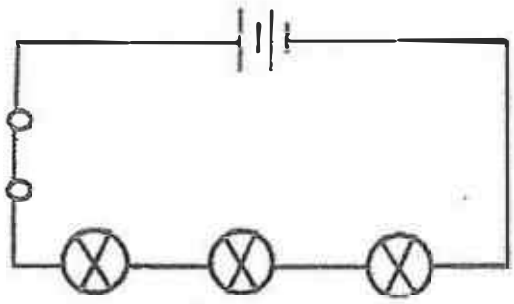
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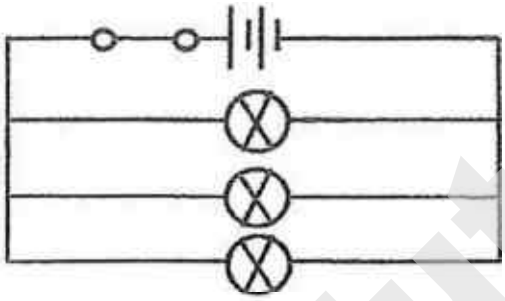
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The diagrams below shows two possible circuit arrangements to keep the roast chickens warm in Mr Lai's stall.



Circuit X



Circuit Y

(c) What is one advantage of choosing Circuit Y for Mr Lai's chicken rice stall? [1]

_____

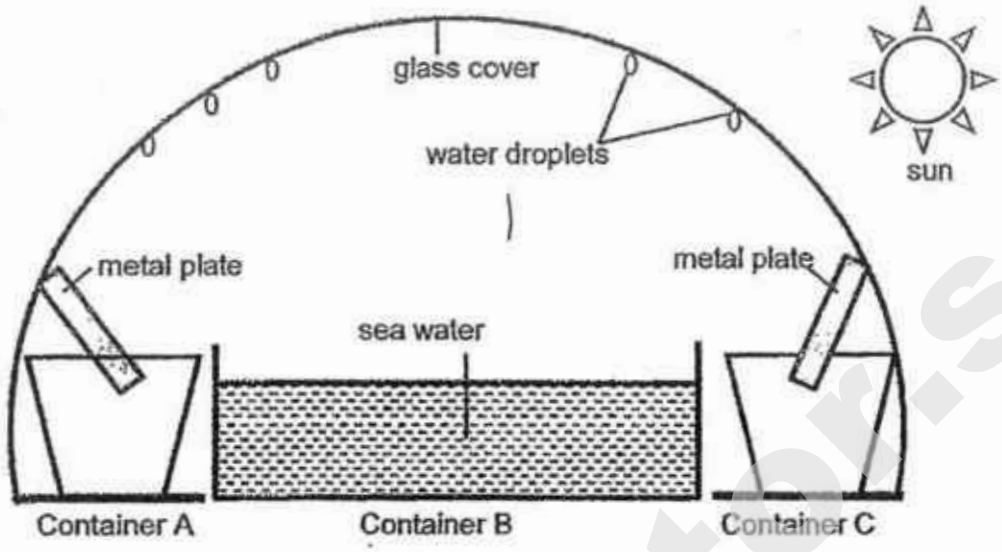
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1

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38. Mr Soh constructed a model below to obtain clean water from sea water. The model uses solar energy to heat up the sea water.



(a) Explain the processes in which clean water is obtained from the sea water. [1]

Mr Soh's son claimed that more clean water will be collected at a faster rate if he changed Container B to a smaller one as shown below.



(b) Do you agree with his son? Give a reason for your answer. [2]

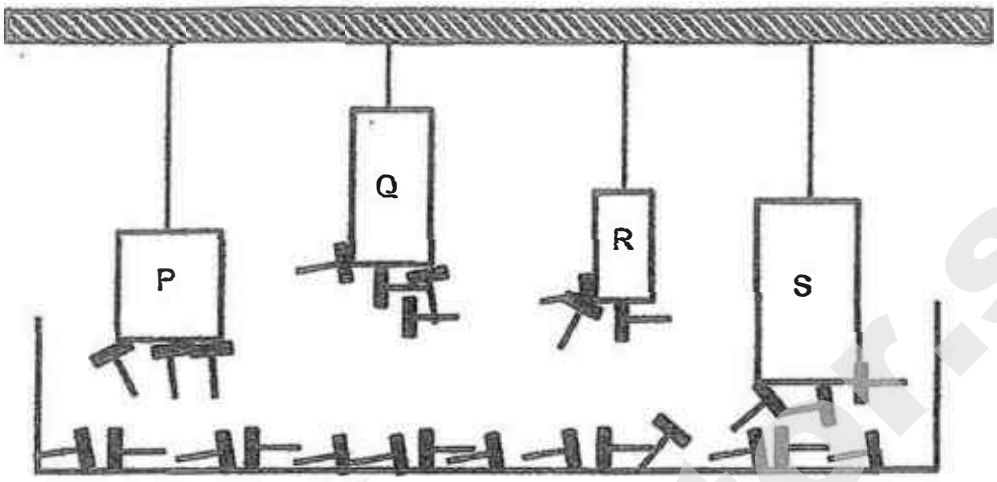
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39. Jennifer wanted to compare the magnetic force of four magnets, P, Q, R and S. She set up the experiment below and recorded the number of pins that were attracted by each magnet in the table below.



(a) Her teacher explained that her experiment was not a fair one. How should Jennifer change her set-up? [1]

Based on her teacher's recommendation in (a), Jennifer repeated her experiment. All the other variables were kept the same.

Magnet	Number of pins attracted
P	12
Q	10
R	8
S	5

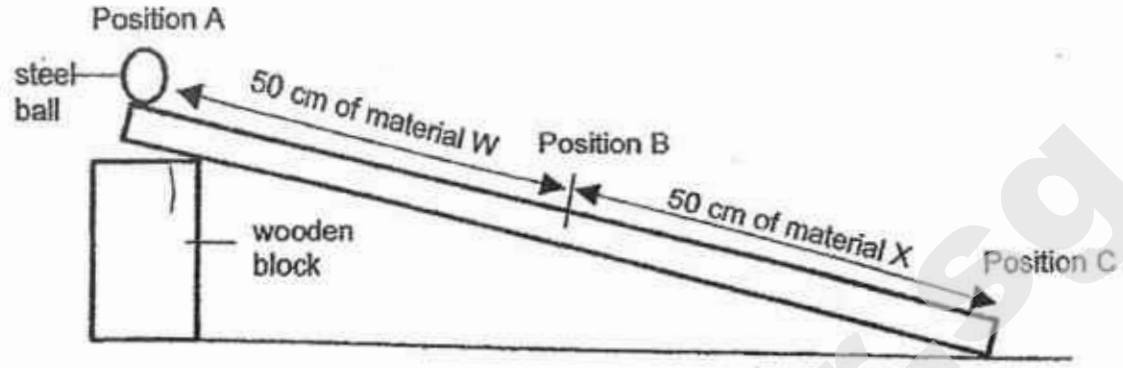
(b) From the above data, what could Jennifer conclude about the size of the magnet and its magnetic strength? [1]

2

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40. In the diagram below, a steel ball was released at Position A of the ramp. The surface of the ramp was made of two different materials, W and X, each with a length of 50 cm.



The time taken to roll down the ramp from A to B and B to C was recorded in the table below.

Position	Time taken/seconds			
	1st try	2nd try	3rd try	Average
A to B	4.5	5.2	4.3	4.7
B to C	3.4	4.1	3.9	3.8

(a) What are the forces acting on the steel ball as it rolls from Position A to C? [1]

_____

(b) Based on the results above, which material, W or X, is the most suitable to make the flooring of a bowling alley? Explain your answer. [1]

_____

_____

(c) **Using the same steel ball and ramp**, suggest two changes to the set- up to make the steel ball roll down faster. [2]

Suggestion 1:

_____

Suggestion 2:

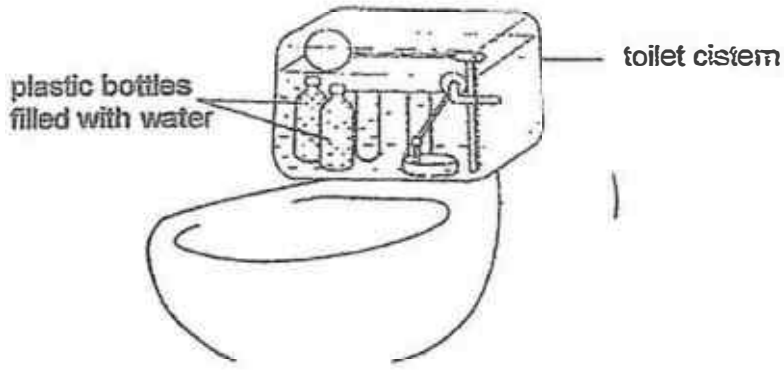
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4

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41 In the diagram below, Mrs Tan placed two plastic bottles in a toilet cistern. The plastic bottles were filled with water and capped tightly.



(a) Explain how Mrs Tan can save water by using these plastic bottles in the toilet cistern.

[1]

(b) If these plastic bottles filled with water were to be replaced by empty ones with caps, would Mrs Tan still be able to save water? Give a reason for your answer. [1]

2

End of Booklet B2

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EXAM PAPER 2017
LEVEL : PRIMARY 6
SCHOOL : MGS
SUBJECT : SCIENCE
TERM : SA1

Booklet A

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

Booklet B

Q29 (a) Plant P: Climbs on a pole
Plant Q: Spreads itself on the ground
(b) To get more sunlight
(c) Plant P. Most stomata are found on the underside of leaves. When covered with oil, gaseous exchange cannot take place.

Q30 (a) Bird A feeds on nectar but not seeds.
(b) Bird A has a long and thin beak that can be inserted into the flowers to draw out nectar when it hovers near the petals.
(c) Habitat : R
Reason: Bird B has a small pointed beak which is adapted to feed mostly on seeds. It will find seeds in farm lands.

Q31 (a) The murky water allows little light to pass through and so the rate of photosynthesis decreases whilst tap water allows light to pass through and so the rate of photosynthesis increases.
(b) Sammy can count the number of gas bubbles released from the plant.
(c) To ensure the consistency of results.
(d) Vertical axis – Amount of oxygen

Q32 (a) No. There is not enough dissolved oxygen for the fish so they swim near the surface of the water to get oxygen.
(b) Suggestion 1 – Put a water plant. The water plant takes in carbon dioxide and gives out oxygen.
Suggestion 2 – Add in an air pump. The air pump will increase the supply of air in the water.

Q33 (a) The greater the difference in water level in the vase of water will show that the stalk of carnation had taken in more water.
(b) Suggestion 1 – The amount of water in the two vases should keep the same
Suggestion 2 – The number of leaves to be the same.
(c) The surface area of A is more than the surface area of B, allowing the carnation in vase A to take in more water.
(d) The 100 carnations can be divided into halves. One half can be put into blue-coloured water while the other half can be put into pink-coloured water.

Q34 (a) Lungs: Balloon
Ribcage: Syringe

(b) The balloon will inflate. This is because there is more space in the syringe for air to enter into the balloon.

(c) No. A person is alive thus all his body systems are functioning and working together to carry on life processes even as he is sleeping.

Q35 (a) Container B. Container B took the longest amount of time to reach a certain temperature.

(b) Container C. It is the best conductor of heat and it will transfer the most heat from the surrounding air to the frozen meat.

(c) When the meat is cut into pieces, there is an increase in surface area exposed to the surrounding. More heat will be gained by the frozen pieces of meat so that they will thaw faster.

Q36 (a) The four springs may be made of different materials.

(b) (i) W, X, Z, Y
(ii) When the same weight blocks are placed on the spring, spring C is the shortest. This means that it is able to be compressed the most compared to other springs. Thus, the lightest is mass Y.

(c) When the switch is closed, a closed circuit is formed and electric current is able to flow through. The steel bar becomes a temporary electromagnet and the pole nearest to the magnet is a South pole. Like poles of the magnet repel and thus distance D increased.

Q37 (a) Electrical energy → Heat , Light → Light energy

(b) Light bulb C. Within the period of 20 minutes, the increase in temperature of the air in the cardboard box was the highest in set-up C.

(c) When one light bulb fuses, the other two light bulbs will still light up.

Q38 (a) The sea water gains heat from the sun and evaporates into water vapour. The water vapour condenses into water droplets when it touches the cooler surface which is the glass cover. The water droplets drip into containers A and C.

(b) I do not agree. The surface area affects the rate of evaporation if Mr Lai changes it to a smaller container the rate of evaporation will be slower as there is less surface area.

Q39 (a) The magnets should be hung at the same height.

(b) The size of the magnet does not affect the magnetic strength.

Q40 (a) Frictional force and gravitational force

(b) Material X. The steel ball took a shorter time to roll from position B to C on material X. This shows that there is lesser friction produced between the surface of the steel ball and material X.

(c) Suggestion 1 - put lubricant
Suggestion 2 – Increase the height of the wooden block.

Q41 (a) The plastic bottles occupies space and less water is needed for flushing.

(b) No. The empty bottles will float and it is unable to be fully submerged in water to reduce the amount of water needed to fill the cistern.

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NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2017
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 : 8 May 2017 Parent's Signature: _____

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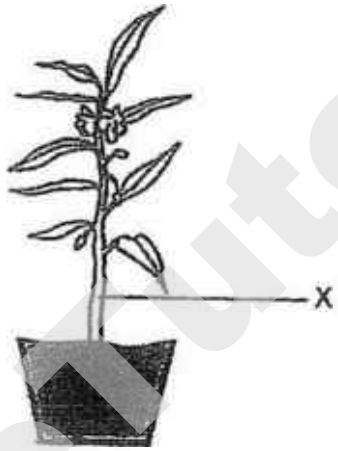
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Section A: (28 × 2 marks = 56 marks)

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). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. What is/ are the function(s) of part X in the diagram below?

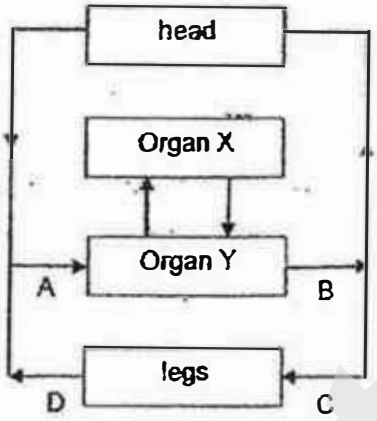


A Part X holds the plant upright.
B Part X enables the plant to make food.
C Part X has tubes that transport food from the roots to all parts of the plant.

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

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

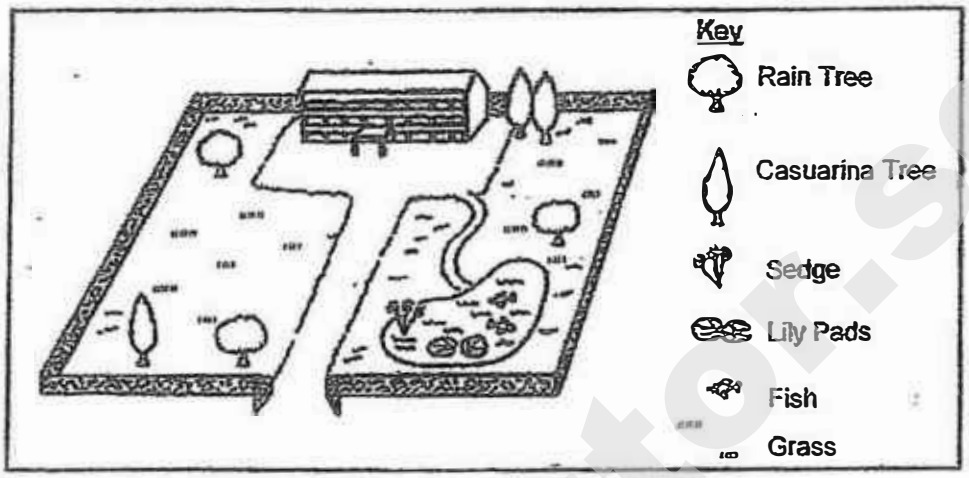


Which one of the following statements about the diagram above is correct?

(1) Organ X is the heart and Organ Y is the lungs.
(2) The blood in A and D is poorer in oxygen than the blood in B and C.
(3) The blood in A is rich in oxygen while the blood in B is rich in carbon dioxide.
(4) The blood in D is poor in carbon dioxide while the blood in C is poor in oxygen.

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3. The diagram below shows a garden habitat in a school.



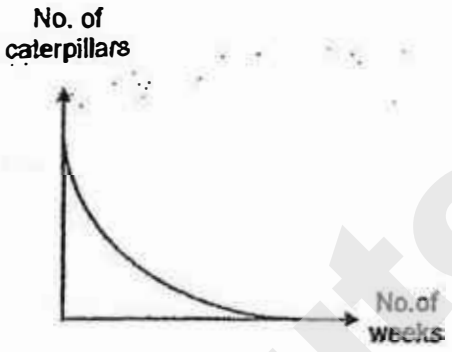
Which of the following statements is **not** true?

(1) There are three populations in the pond.
(2) There are five plant populations in the school.
(3) There is at least one community in the school.
(4) There are at least ten plant populations in the school.

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4. The graph below shows how the number of caterpillars in the garden have changed over a number of days.

What are the likely reasons for the change in the number of caterpillars in the garden?

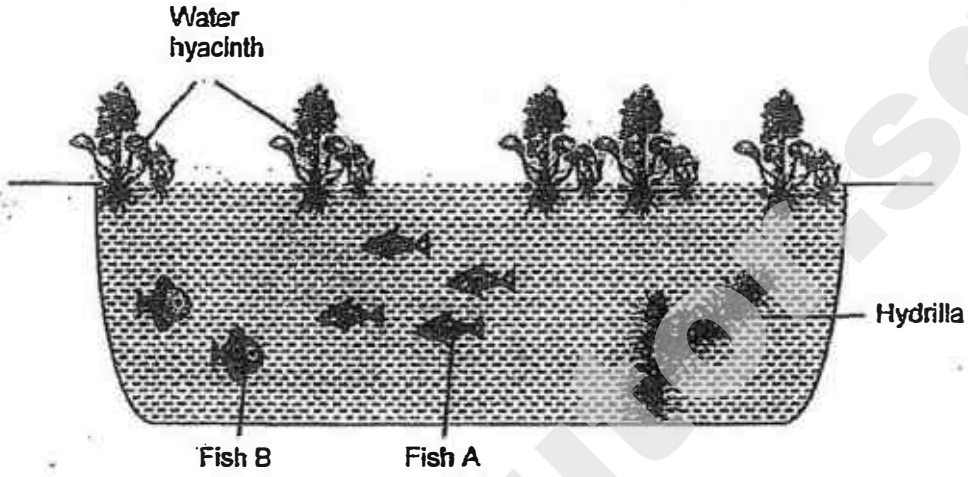


A All the caterpillars had turned into butterflies.
B There was a disease that struck the plants in the garden.
C There was a decrease in the number of predators of the caterpillars.

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

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5. The diagram below shows a pond habitat. Fish A eats only hydrilla while Fish B feeds only on water hyacinth.

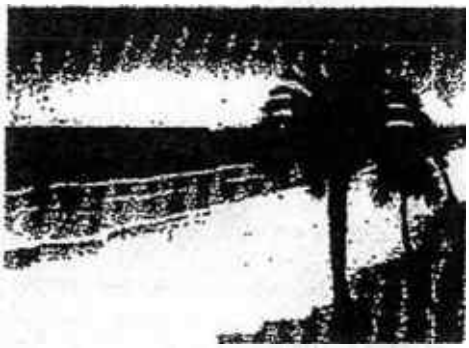


Which of the following will not cause Fish A to decrease in population over some time?

(1) Remove the hydrilla.
(2) Remove the water hyacinth.
(3) Introduce a predator of Fish A into the pond.
(4) A disease that struck the population of Fish A only.

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6. The picture below shows a seashore habitat.



Which of the following factors affect(s) the environment of a seashore habitat?

A Availability of food
B The amount of light it receives.
C Presence of other kinds of organisms

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

7. The table below shows some animals and their habitats.

Habitat	Animals
A	whale, jellyfish, dolphin
B	beetle, butterfly, snail
C	earthworm, millipede, wood louse
D	tadpole, water beetle, guppy

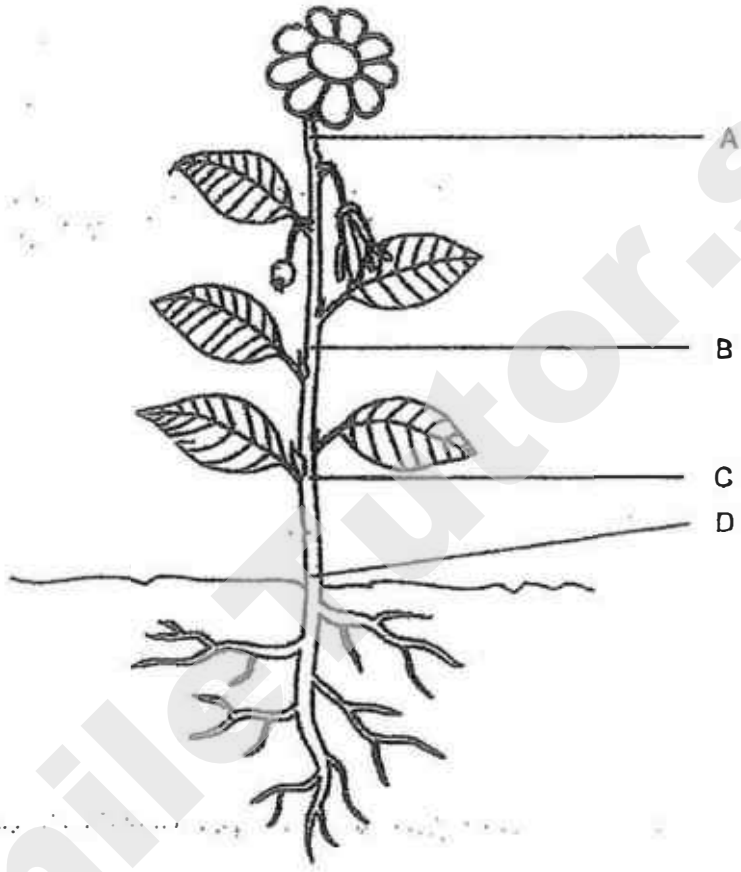
In which one of these habitats would you most likely find the dragonfly nymph?

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

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8. The diagram below shows a flowering plant.



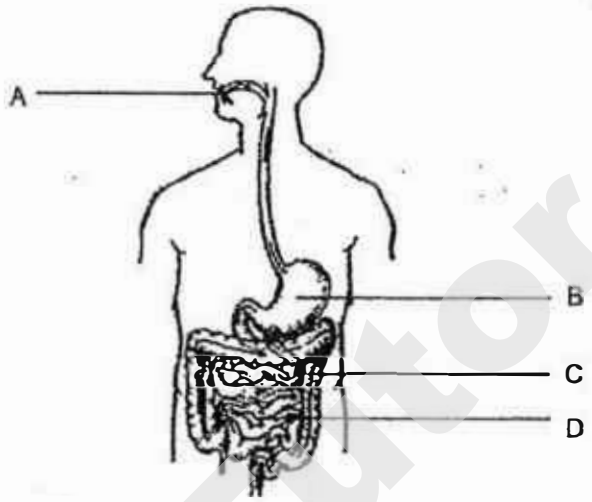
At which part of the plant will both the food and mineral salts be definitely transported upwards only?

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

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9. The diagram below shows part of the human digestive system.



Which of the following statements are *correct*?

A Water is absorbed at C only.
B Digestive juices are released at B, C and D only.
C Food is broken down into simpler substances at A, B and C only.
D Absorption of digested food into the bloodstream occurs at D only.

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

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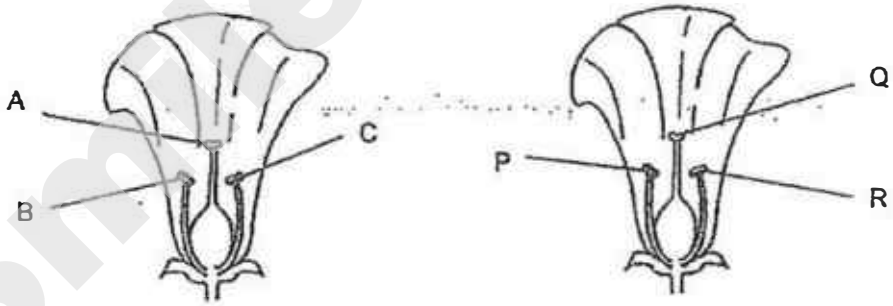
10. Linda was asked to identify three cells, P, Q and R.

Parts of a cell	Name of Cell		
	Cell P	Cell Q	Cell R
Nucleus	Present	Present	Present
Cell Wall	Present	Absent	Present
Cytoplasm	Present	Present	Present
Chloroplasts	Present	Absent	Absent
Cell Membrane	Present	Present	Present

Based on the results in the table above, what could cells, P, Q and R be?

	Cell P	Cell Q	Cell R
(1)	Leaf Cell	Skin Cell	Root Cell
(2)	Cheek Cell	Leaf Cell	Root Cell
(3)	Root Cell	Cheek Cell	Leaf Cell
(4)	Leaf Cell	Root Cell	Skin Cell

11. The diagram below shows 2 flowers.

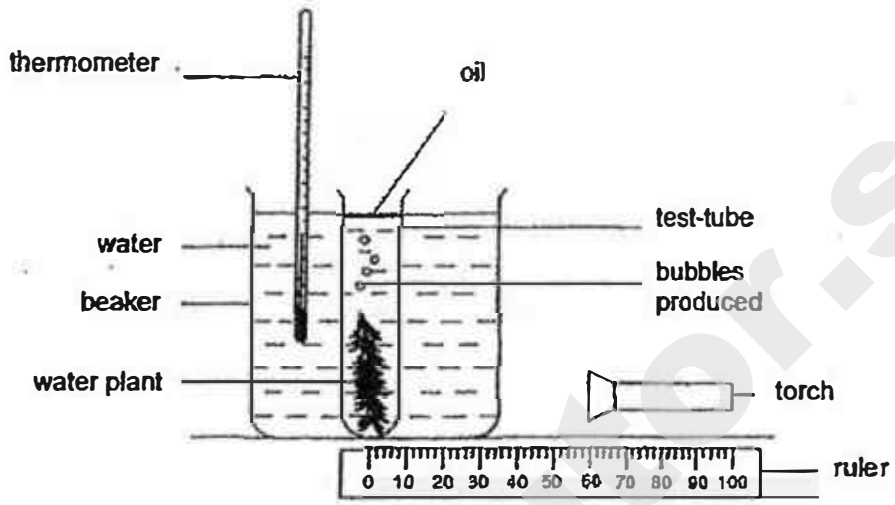


Pollination between these two flowers occurs when pollen grains are transferred from _____.

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

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12. Elsa set up an experiment in a dark room as shown below.



Elsa changed variable X and measured variable Y. She kept the other variables constant. Her results are shown below.

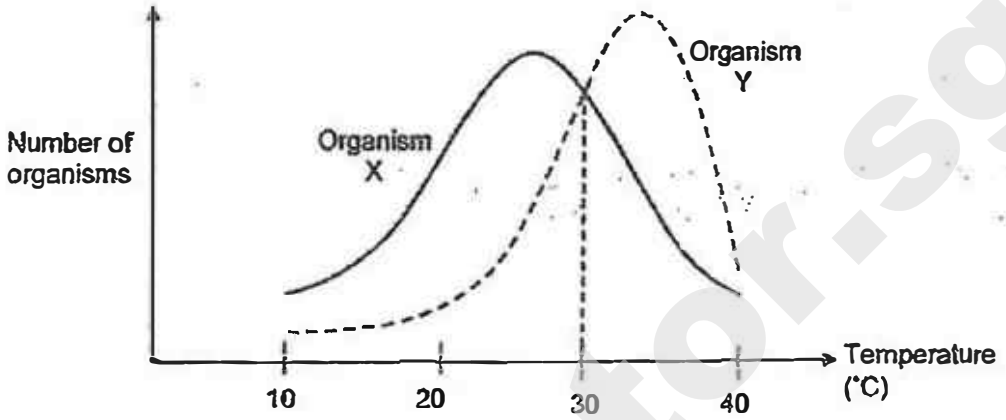


What are variables X and Y?

	Variable X	Variable Y
(1)	Amount of oxygen	Temperature of water
(2)	Light intensity	Number of bubbles produced per minute
(3)	Volume of water in the test-tube	Number of bubbles produced per minute
(4)	Number of water plants	Light intensity

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13. The graph below shows how the temperature of the pond water affects the number of organism X and organism Y found in it.



The temperature of regions E, F, G and H in the pond is indicated in the key.



Key
Temperature Range (°C)
Region E: 35 to 40
Region F: 30 to 35
Region G: 25 to 30
Region H: Below 25

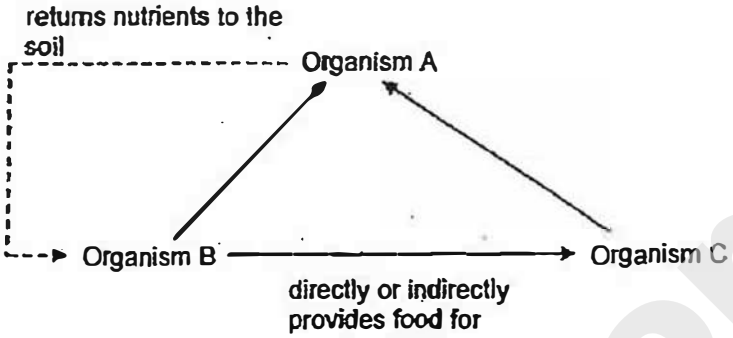
Based on the information above, which of the following statement(s) is/ are correct?

A In region H, there are more organism X than organism Y.
B Both organism X and organism Y thrive the best in region G.
C The population of organism Y decreased more slowly than organism X in region E.

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

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14. The diagram below shows the organisms A, B and C in a community and the arrows show the direction of the transfer of energy.

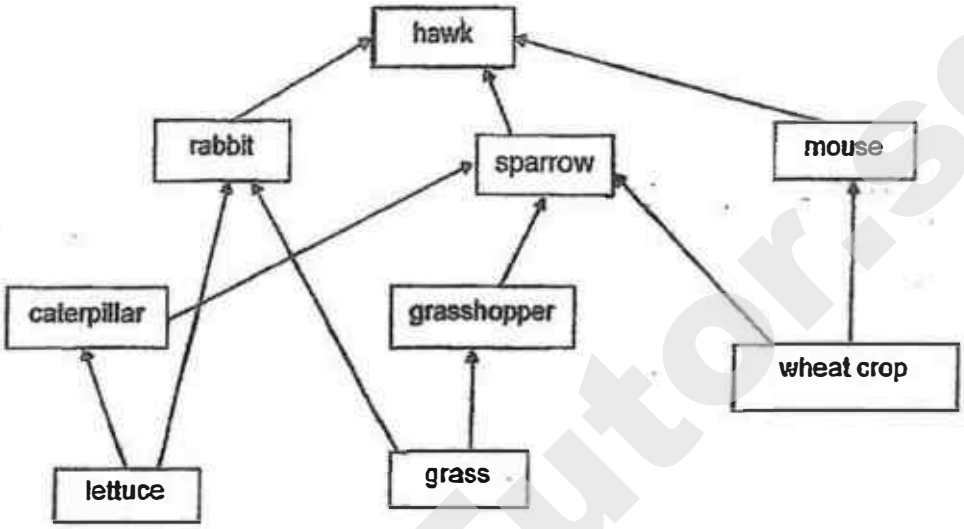


Which one of the following correctly represents A, B and C in this community?

	A	B	C
(1)	decomposer	food producer	food consumer
(2)	food producer	decomposer	food consumer
(3)	decomposer	food consumer	food producer
(4)	food consumer	food producer	decomposer

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15. Study the food web below.

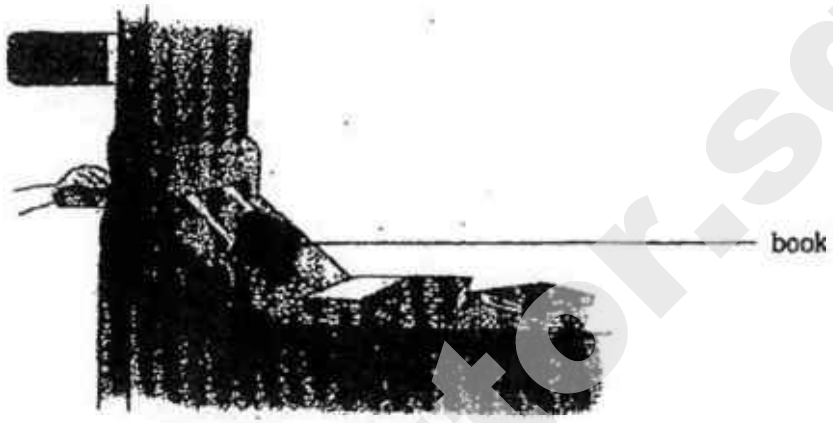


Which of the following would happen if the sparrow population was completely wiped out due to a disease that affected only the sparrows?

(1) The population of caterpillars will decrease.
(2) The population of rabbits will not be affected as it has sufficient food.
(3) Only the population of the grass and lettuce will increase but not the population of the wheat crop.
(4) The population of rabbits and mouse will decrease as the hawk will eat more rabbits and mouse.

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16. Peter dropped a book at the book drop in a library.



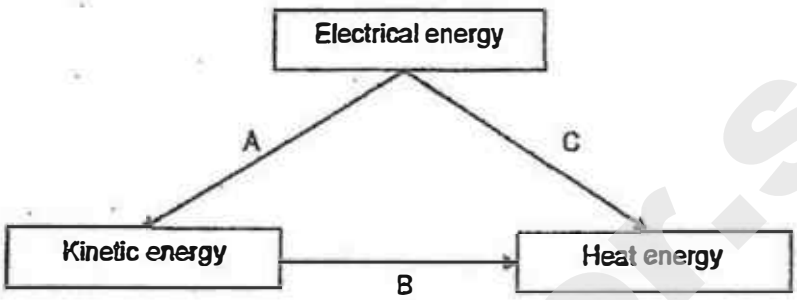
Based on the information above, which of the following statement(s) is/ are correct?

A The book stopped moving after some time after it was dropped into the book-drop.
B Frictional force between the book and the ramp caused the book to speed up as it slid down the ramp.
C Gravitational force caused the book to move down the ramp as Peter dropped the book.

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

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17. In the diagram below, different energy changes are represented by the arrows A, B and C. Only the useful forms of energy are considered.



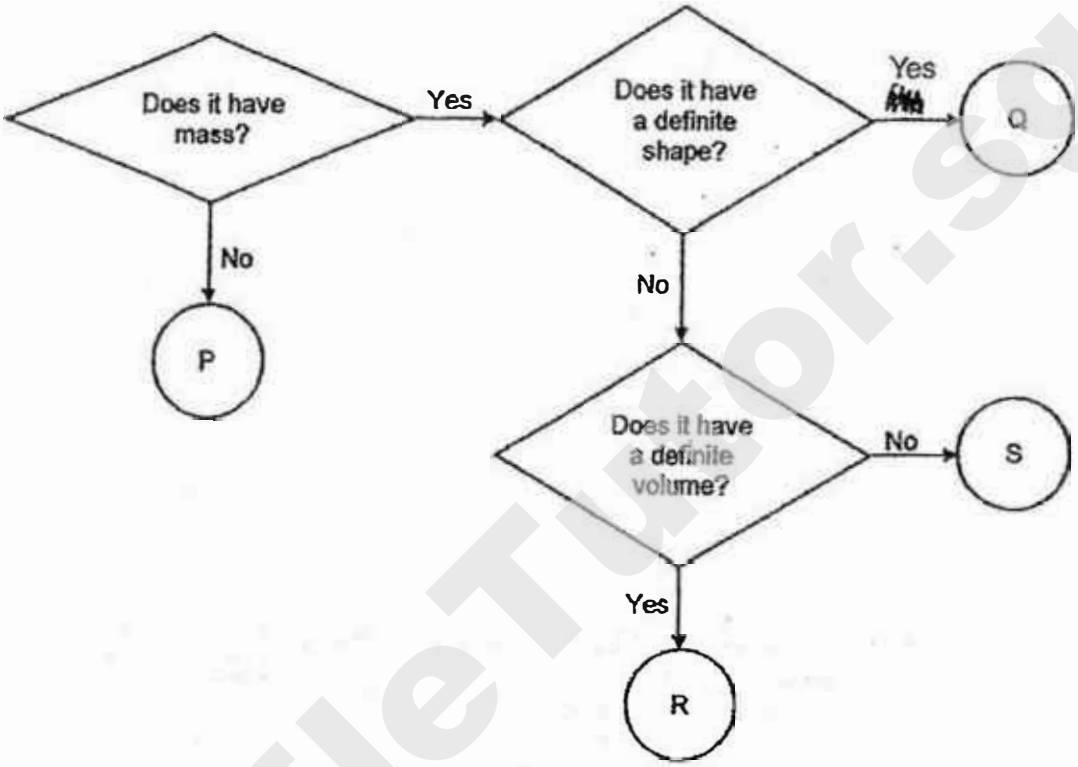
Which of the following will bring about the energy changes represented by the arrows?

	A	B	C
(1)	Rubbing our hands together	Using an electric iron	Using an electric rice cooker
(2)	Using a hair dryer	Clapping our hands	Using an electric iron
(3)	Using an electric fan	Rubbing our hands together	Using an electric rice cooker
(4)	Using an electric iron	Clapping our hands	Using an electric fan

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18. Study the flowchart below.

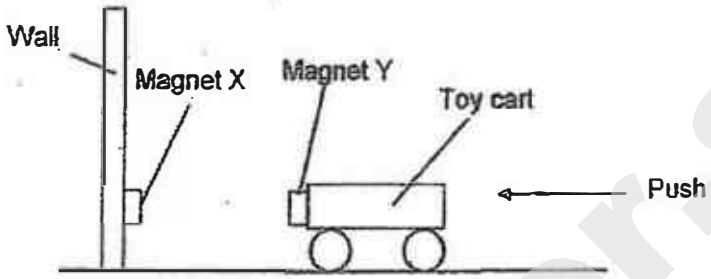


Which one of the following is most likely P, Q, R and S?

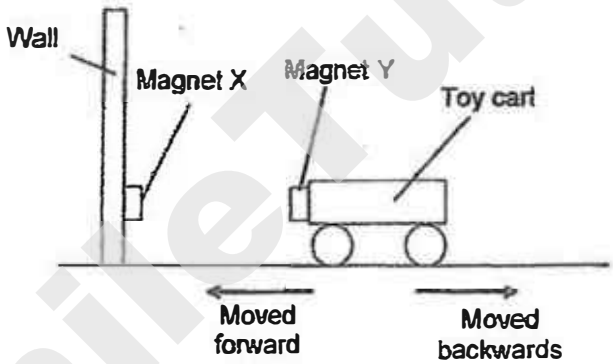
	P	Q	R	S
(1)	Sound	Snow	Oil	Steam
(2)	Heat	Ice	Oxygen	Water
(3)	Shadow	Sponge	Water vapour	Air
(4)	Light	Paper	Water	Dew

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19. Alvin glued Magnet X to a wall and Magnet Y to the toy cart as shown in the diagram below. Then, he pushed the toy cart towards the wall.



The toy cart moved forward for a short distance before moving backwards again. The toy cart did not hit Magnet X at all.



What were the forces acting on the toy cart when it moved backwards?

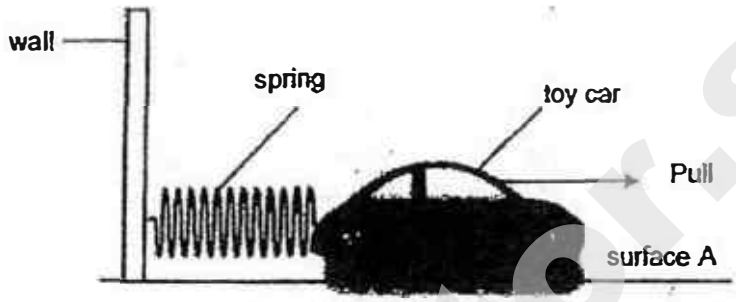
A Gravitational Force
B Frictional Force
C Elastic Spring Force
D Magnetic Force

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

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20. Susan secured a spring to a wall. Next, she attached a toy car to the other end of the spring. Then, she pulled the toy car and released it on Surface A. She recorded the time taken for the spring to return to its original length.



She repeated the experiment on 3 other types of surfaces, B, C and D using the same pulling force. The table below shows the results of the experiment.

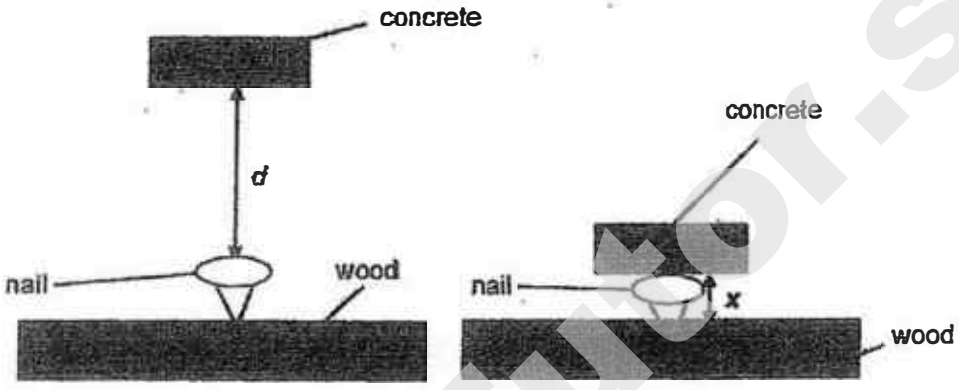
Type of surface	Time taken for the spring to return to its original length (seconds)
A	4
B	3
C	8
D	5

Susan's mother wanted to choose a suitable material for her bathroom mat to prevent people from slipping easily when they come out of the bathroom. Which material should she choose?

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

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21. Adam dropped a slab of concrete to push a nail into a piece of wood as shown in the diagram below. *d* is the distance between the concrete and the nail at first. The slab of concrete pushed the nail into the wood. He then measured the distance, *x*, between the top of the nail and the surface of the wood.

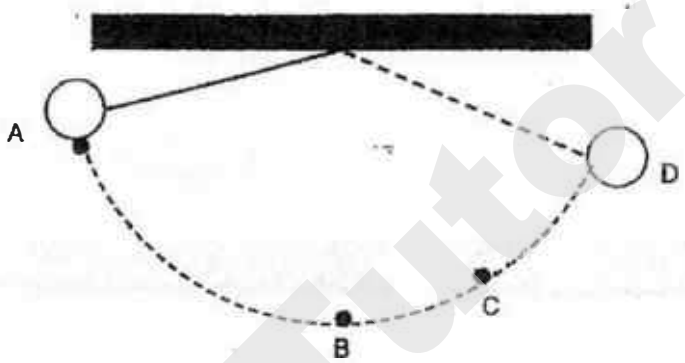


Which one of the following statements is definitely correct?

(1) The distance *d* does not affect the distance *x*.
(2) The shorter the distance *d*, the longer the distance *x*.
(3) The smaller the mass of the slab of concrete, the shorter the distance *x*.
(4) When the distance *x* increases, the mass of the slab of concrete increases.

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22. A ball was attached to a string from a beam as shown below. John held the ball at Position A and released it. The dotted line shows the path of the ball swinging from Position A to Position D at its first swing.



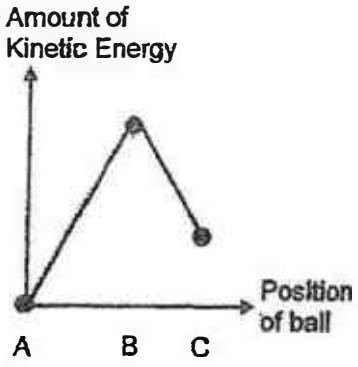
Which one of the following graphs best represents the changes in kinetic energy and potential energy from Position A to Position C?

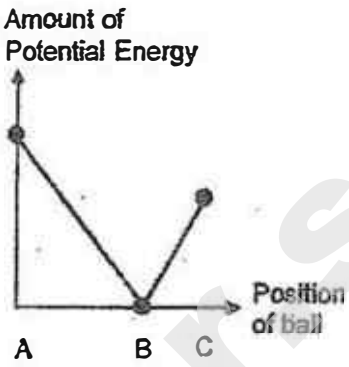
Please turn over to the next page for the options.

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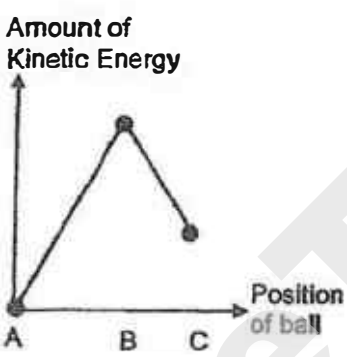
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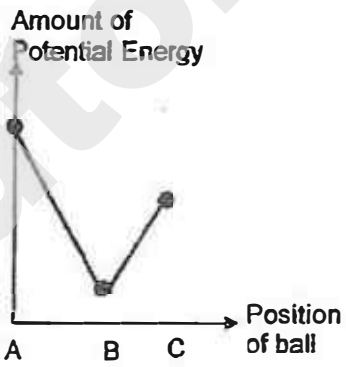
(1)



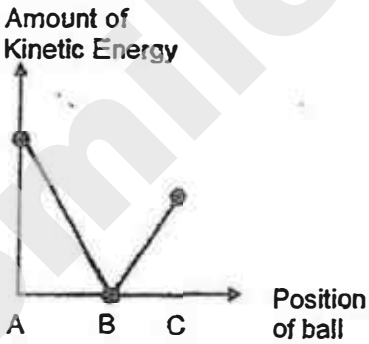


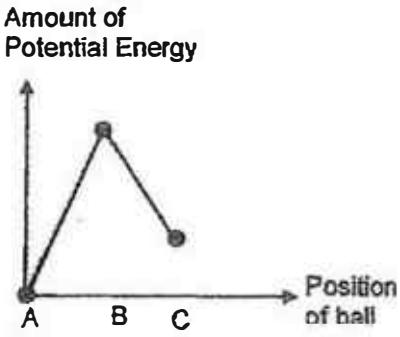
(2)



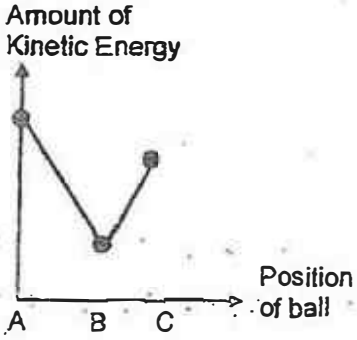


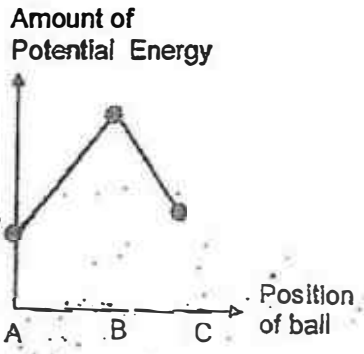
(3)





(4)



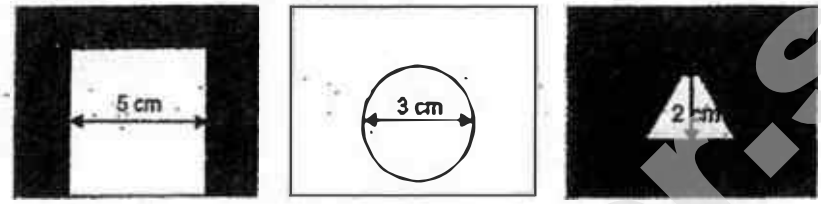


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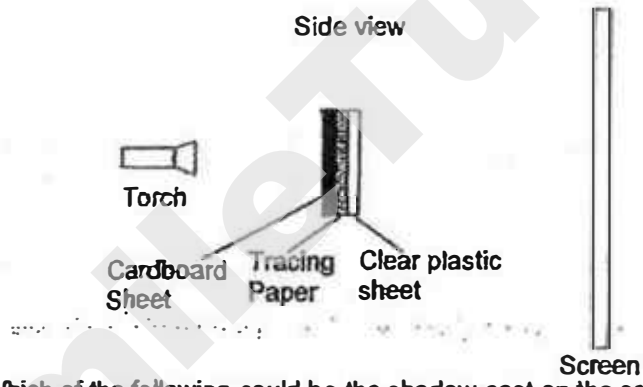
23. Tom cut out a square from a cardboard sheet, a circle from a clear plastic sheet and a triangle from a tracing paper as shown below. All the 3 rectangular sheets are of the same size.

Front View



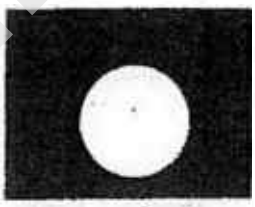
Cardboard Sheet | Clear Plastic Sheet | Tracing Paper

Then, he glued the three remaining rectangular sheets together and placed it between a torch and a screen in a dark room as shown below.

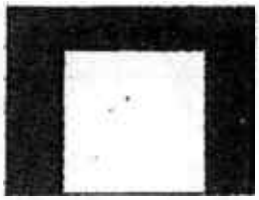


Which of the following could be the shadow cast on the screen?

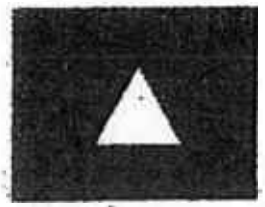
(1)



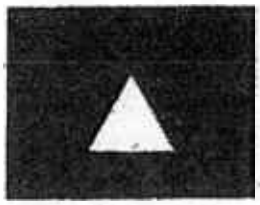
(2)



(3)

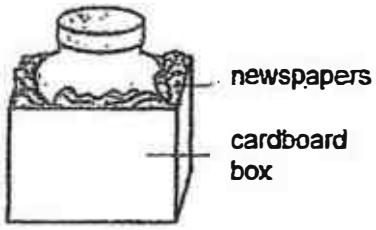


(4)



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24. The diagram below shows 2 identical plastic jars. Jar A was wrapped with newspapers and placed in a cardboard box. Hot water at 90°C was poured into the 2 jars and covered with lids. Coco left the two jars at room temperature in the Science Laboratory for 15 minutes.



Jar A



Jar B

She then measured the temperature of water in the jars and recorded the temperature of the water at the start of the experiment and at the end of the experiment.

Which one of the following tables best shows the temperature change in Jar A and Jar B?

(1)

Jar	At the start of the experiment	At the end of the experiment
A	90°C	90 °C
B	90°C	55 °C

(2)

Jar	At the start of the experiment	At the end of the experiment
A	90°C	55 °C
B	90°C	40 °C

(3)

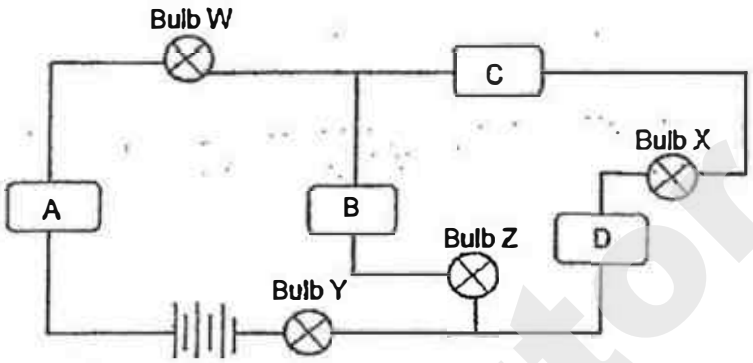
Jar	At the start of the experiment	At the end of the experiment
A	90°C	40 °C
B	90°C	55 °C

(4)

Jar	At the start of the experiment	At the end of the experiment
A	90°C	55 °C
B	90°C	55 °C

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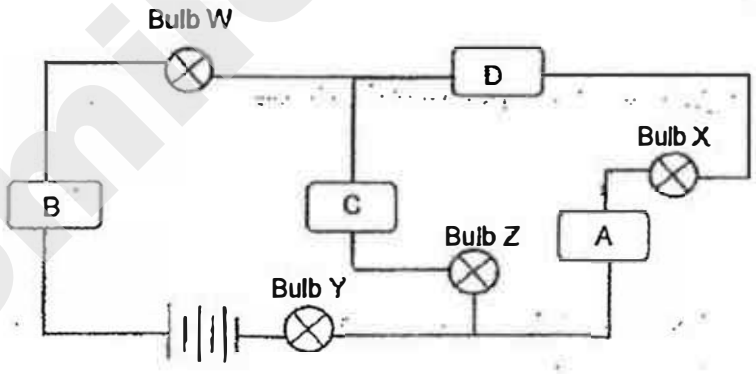
25. Jamie conducted an experiment on four different materials, A, B, C and D. She positioned them in different parts of an electric circuit and observed if the light bulbs, W, X, Y and Z, lit up.



The table below shows the results.

Did Bulb W lit up?	Did Bulb X lit up?	Did Bulb Y lit up?	Did Bulb Z lit up?
Yes	No	Yes	Yes

She then rearranged the four blocks in different parts of the electric circuit.



The table below shows the results.

Did Bulb W lit up?	Did Bulb X lit up?	Did Bulb Y lit up?	Did Bulb Z lit up?
Yes	Yes	Yes	No

Please turn over to the next page for the options.

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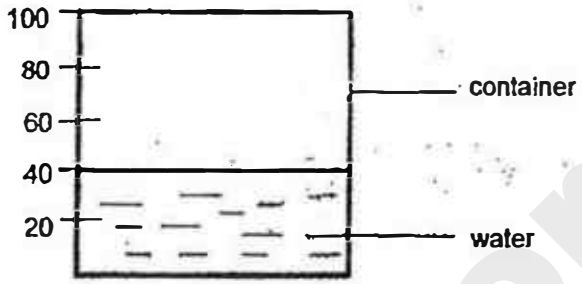
Based on the results in the tables, which one of the following best describes materials A, B, C and D?

	Is the material a conductor of electricity?			
	Material A	**Material B**	**Material C**	**Material D**
(1)	Yes	Yes	No	No
(2)	No	No	Yes	Yes
(3)	Yes	Yes	No	Yes
(4)	Yes	No	Yes	No

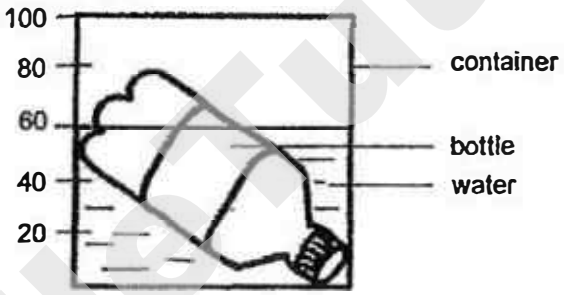
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26. The diagram below shows an enclosed container which holds 40 cm^3 of water and 60 cm^3 of air.



Then, a bottle completely filled with water was submerged into the container of water.

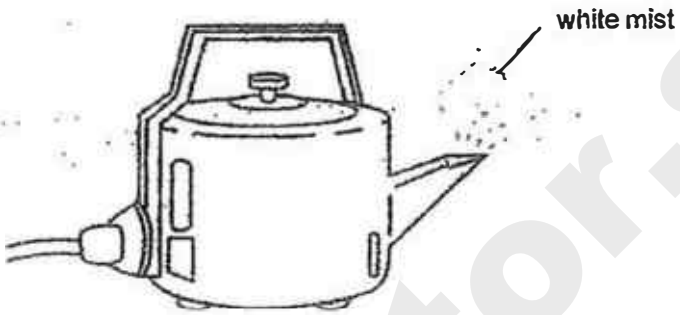


What is the most likely volume of the bottle and the volume of the air in the container now?

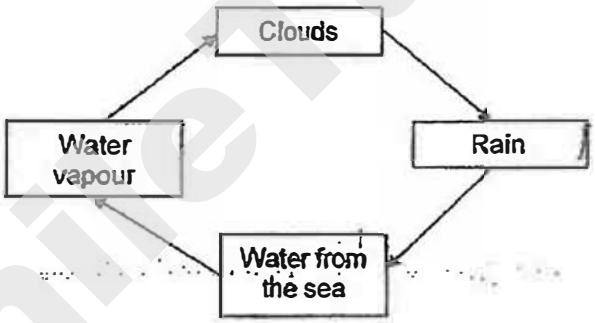
	Volume of bottle	Volume of air
(1)	Between 10 cm^3 and 20 cm^3	Above 40 cm^3
(2)	Between 10 cm^3 and 20 cm^3	Between 30 cm^3 and 40 cm^3
(3)	Between 20 cm^3 and 30 cm^3	Above 40 cm^3
(4)	Between 20 cm^3 and 30 cm^3	Between 30 cm^3 and 40 cm^3

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27. Aaron was boiling some water in a kettle when he observed some white mist coming out from the spout of the kettle.



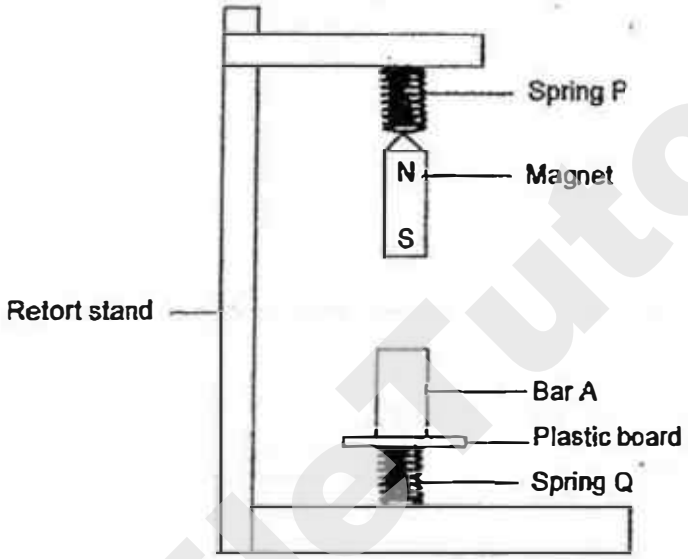
Which part of the water cycle is the white mist most similar to?



(1) Rain
(2) Clouds
(3) Water vapour
(4) Water from the sea

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28. Mr Chua was given 3 bars, A, B and C. One of them was a magnet while the other two bars were made of iron and copper. He hung a magnet from Spring P which was attached to the top of the retort stand.
Another spring, Spring Q, was attached securely onto the plastic board and placed at the base of the retort stand.
Both springs have an original length of 4 cm
He then placed each bar onto the plastic board and measured the length of both the springs.



The results are recorded in the table below

	Length of Spring P (cm)	Length of Spring Q (cm)
Bar A	3	3
Bar B	7	4
Bar C	5	3

Which one of the following shows what Bar A, Bar B and Bar C could be?

	Bar A	Bar B	Bar C
(1)	Magnet	Copper	Iron
(2)	Copper	Magnet	Iron
(3)	Iron	Copper	Magnet
(4)	Magnet	Iron	Copper

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SEMESTRAL ASSESSMENT 1 – 2017
PRIMARY 6

SCIENCE

BOOKLET B

12 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

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

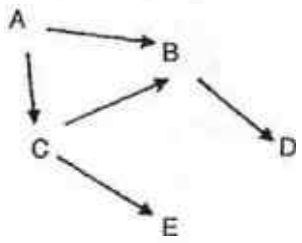
Date : 8 May 2017 **Parent's Signature:** _____

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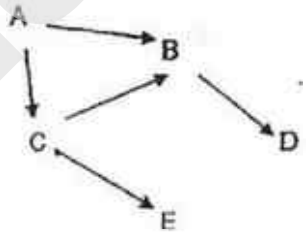
Section B: (44 marks)
Write your answers to question 29 to 40.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

29. The diagram below shows a food web in a certain community.



(a) Which organism, when totally wiped out, will cause the rest of the organisms to die off eventually? Explain your answer clearly. [1]

(b) A new organism, F, was introduced into the community. It preyed only on organisms C and E. Draw organism F in the food web below. [1]



(c) With the introduction of organism F, what will be the immediate changes to the population of C and D? In the boxes provided below, write "increase", "decrease" or "no change" to indicate the immediate changes to the population of the 2 organisms. [1]

Population of C

Population of D

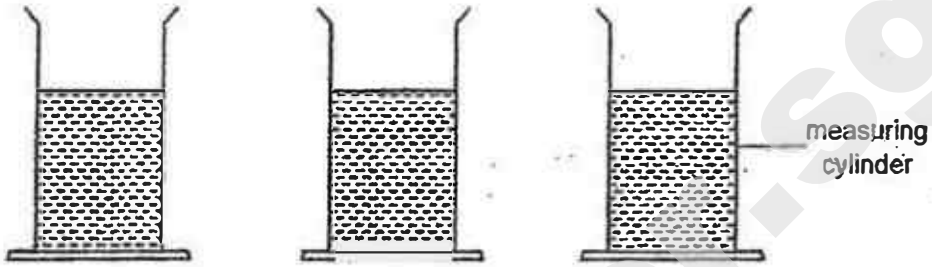
1

Score 3

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30. Alan set up an experiment as shown in the diagram below.



He placed 5 organism X in each of the 3 measuring cylinders. They are filled with 100 ml of 3 different solutions. At the end of 2 days, he noted the number of surviving organism X and recorded the result in a table as shown below. He then repeated the experiment with 2 other types of organisms, Y and Z.

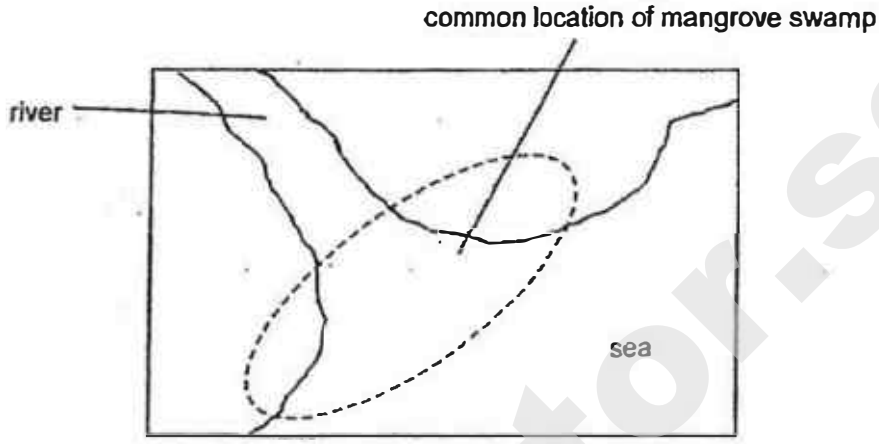
Type of solution	Number of organisms left after 2 days		
	X	Y	Z
River water	5	5	0
Mixture of river and sea water	1	5	2
Sea water	0	5	5

(a) Alan placed all set-ups at the same location so that the surrounding temperature was the same. How does placing all the set-ups at the same location helps to ensure a fair test? [1]

(b) Other than repeating the experiment, what is another way to improve the reliability of the results? [1]

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A mangrove swamp is normally located at the mouth of a river as shown in the diagram below.



(c) Based only on the information obtained from the experiment above, explain clearly which organism, X, Y or Z, can survive the best in a mangrove swamp. [2]

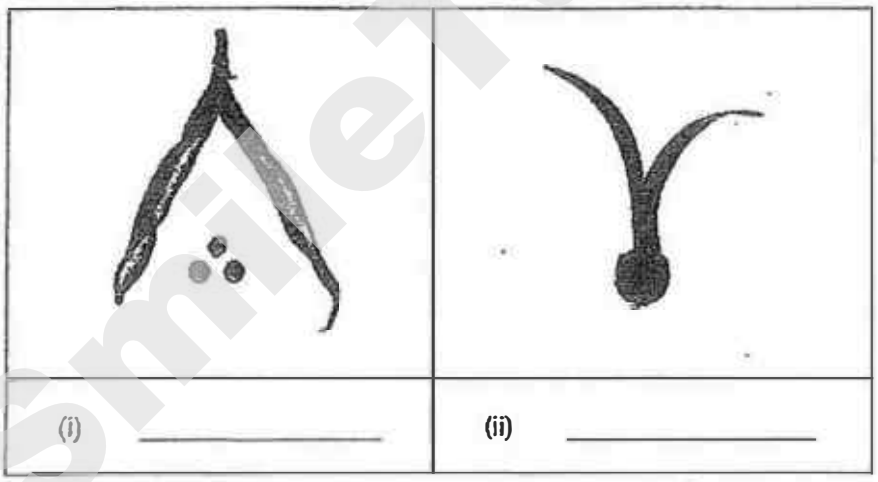
Score 4

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31. Peter conducted an experiment on 2 different types of seeds to find out how far away they were dispersed once they have ripened. He recorded down the results in the table shown below.

Distance away from the parent plant (m)	Number of seeds found	
	Seed A	Seed B
2	3	10
4	5	12
6	8	7
8	12	3
10	13	1

(a) Based on the information given above, which seed is most likely to be Seed A and Seed B? Fill in the blanks below with the correct label, "Seed A" and "Seed B". [1]



(i) _____ (ii) _____

(b) Which seed's dispersal method above is more advantageous to the plant? Explain your choice clearly. [2]

_____

_____

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Peter made some changes to the following seed as shown in the diagram below.

	
Original seed	Seed after changes have been made

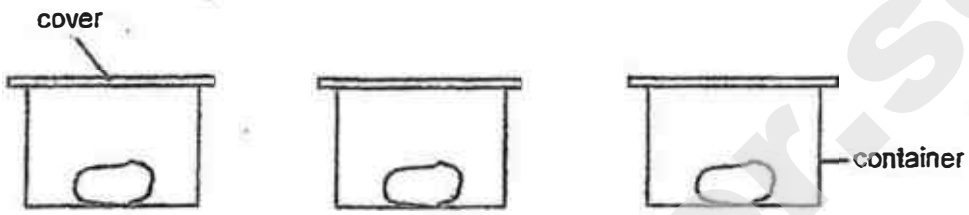
(c) Will the distance dispersed from its parent plant increase or decrease once the changes have been made to the above seed? Explain your answer clearly. [1]

Score 4

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32. Jane wanted to find out how long it would take for mould to start to grow on pieces of meat that contained different amount of moisture. She set up an experiment as shown in the diagram below. The containers were all placed in a room which is at room temperature.



Meat P	Meat Q	Meat R
(no moisture removed)	(50% moisture removed)	(75% moisture removed)

Jane recorded her findings in the table below.

Meat	Days it takes for mould to appear
P	6
Q	22
R	31

(a) How is the number of days taken for mould to appear affected by the moisture content of the meat? [1]

(b) Name the process that has taken place on the pieces of meat. [1]

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(c) In the past, when refrigerator had not been invented, people often dehydrated (removed moisture from) their meat to prevent them from spoiling easily. Based on the information in the above experiment, explain clearly how dehydrating their meat could help their meat last longer. [2]

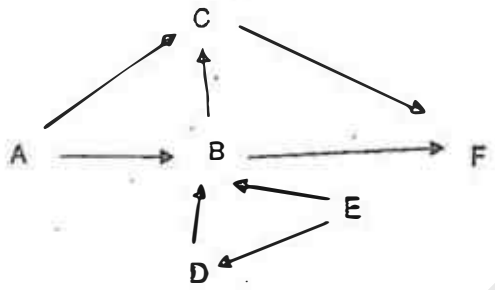
(d) Based on her findings above, will Jane be able to conclude how long mould will take to appear if the set-ups are placed in a room which is at 3°C? Explain your answer. [1]

Score	5

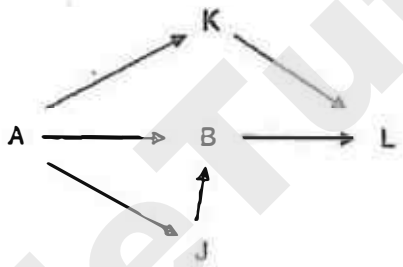
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33. The diagram below shows 2 food webs that are found in 2 different habitats.



Habitat T



Habitat U

(a) List down all the organisms in habitat T that are both a prey and a predator. [1]

_____

_____

(b) How many food chains are there in habitat U? [1]

_____

(c) One organism from habitat T was introduced to habitat U but it was not able to survive. Which organism would it most likely be? Explain your choice clearly. [1]

_____

_____

Score 3

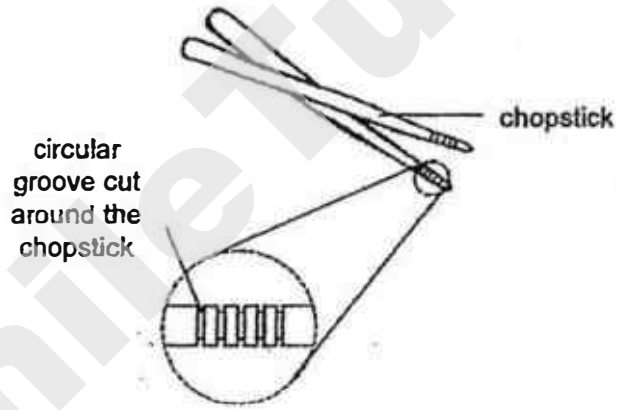
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34. Mary was learning how to use a pair of chopsticks to eat. She was given a pair of chopsticks as shown in the diagram below.



Mary found that the slice of fish that she was trying to pick up kept sliding off her chopsticks. Her mother then passed her another pair of chopsticks that is shown in the diagram below.



magnified side view of chopstick

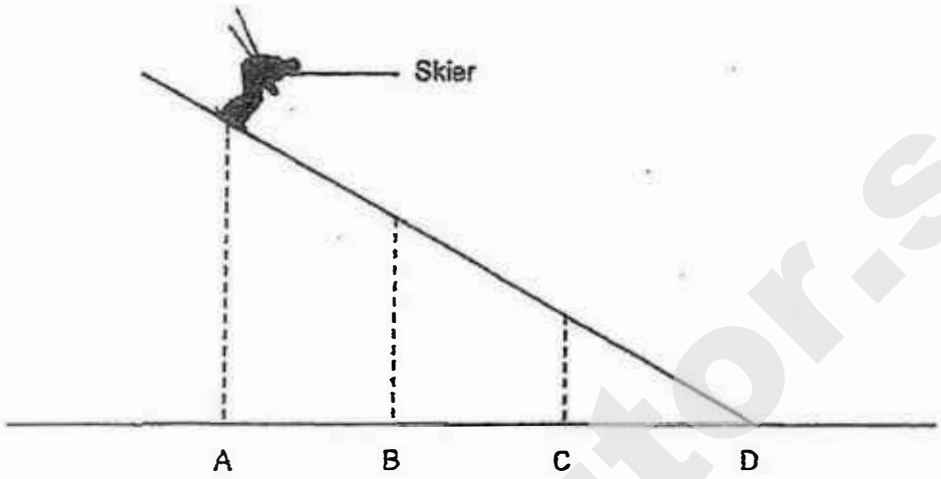
Mary then found that it was easier to pick up a slice of fish with the second pair of chopsticks.

Explain, in terms of forces, why it is easier to pick up the slice of fish with the second pair chopsticks. [2]

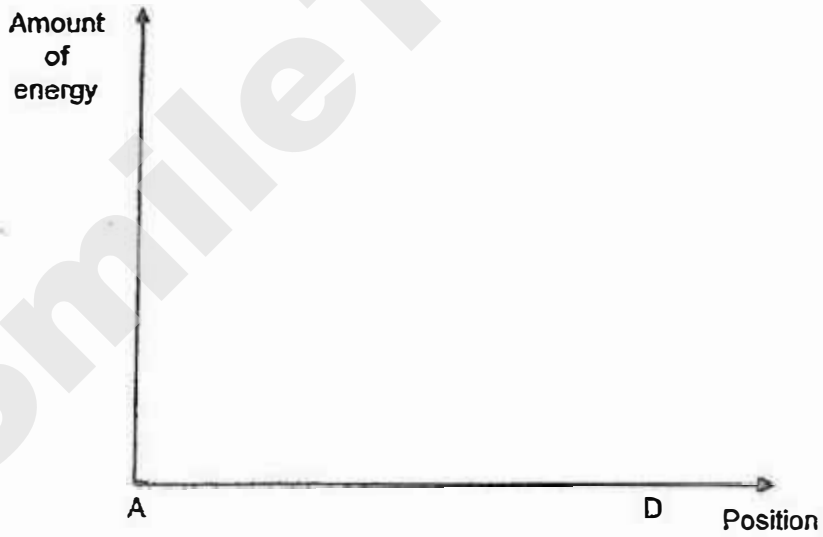
Score 2

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35. The picture below shows a skier skiing down a slope.



(a) Draw and label 2 lines on the graph representing the amount of kinetic energy and gravitational potential energy the skier has from point A to D. [2]

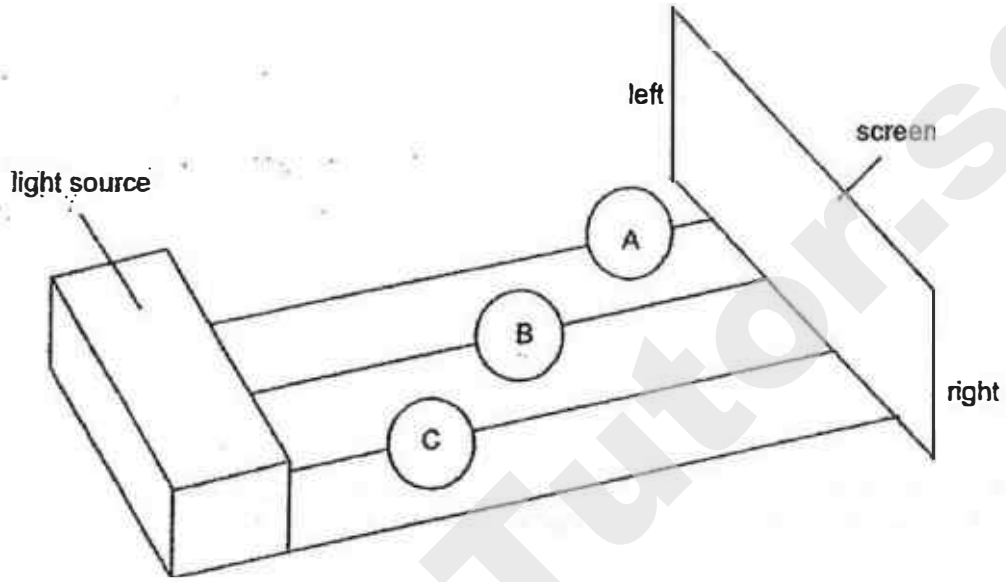


(b) At which point, B or C, does the skier have more kinetic energy? Explain your answer clearly. [1]

Score 3

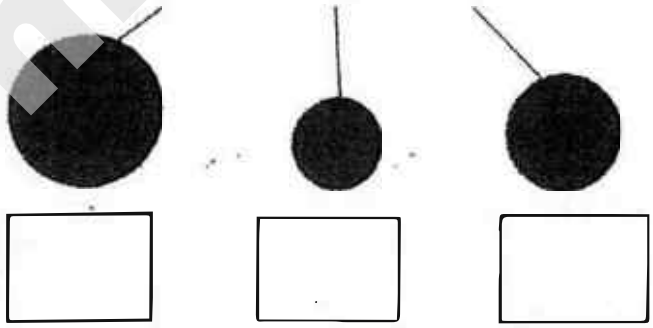
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36. John set up an experiment as shown in the diagram below. 3 similar balls, A, B and C, were placed at different distances in front of a screen. A light is shone on them and the shadows of balls A, B and C were cast on the screen.



(a) Write down A, B or C in the boxes provided below to correctly represent the shadows cast by the 3 different balls in the experiment above. [1]

Shadows cast by balls A, B and C



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(b) What can John do if he wanted the shadows of B and C to be the same size? [1]

_____

_____

(c) If John were to move the screen further away from the balls, what will be the likely changes to the size of the shadows of the 3 balls? [1]

_____

_____

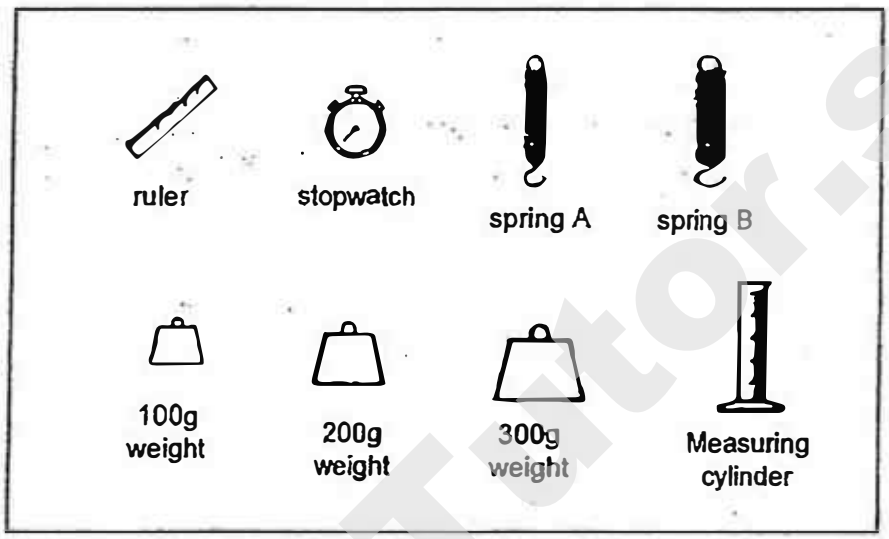
Score 3

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37. Henry wanted to conduct an experiment to find out which spring, A or B, would stretch more when weights were hung on it.

He was given a set of items as shown in the diagram below.



(a) List down the items he will need to conduct the experiment? [1]

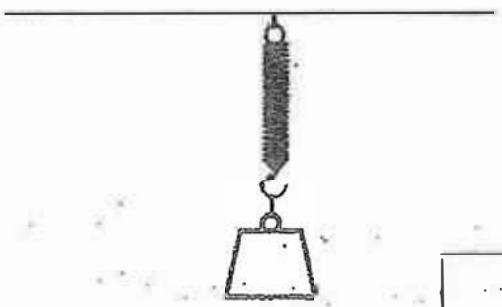
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(b) Write down the experimental procedures (steps 1 to 6) for Henry to conduct an experiment with reliable results in the blanks provided below. Step 7 has been done for you. [3]

Step	Procedures
1	Measure _____
2	Hang _____
3	Measure and record _____
4	Repeat steps 2 and 3 with _____
5	Repeat steps 2, 3 and 4, record _____
6	Repeat steps 1 to 5 _____
7	Compare the results and conclude the experiment.

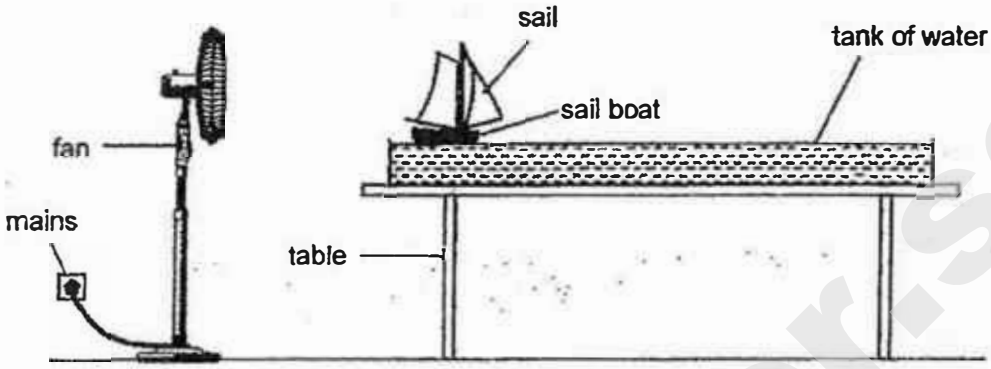
(c) When a weight was hung on Spring A as shown in the diagram below, what was/were the force(s) acting on the stretched spring? Draw and label the arrow(s) showing the direction of the force(s). [1]



Score	5

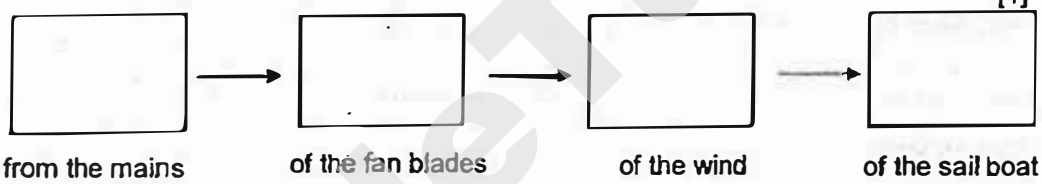
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38. Sarah set up an experiment as shown in the diagram below.



She switched on the fan which is connected to the mains and observed that the sail boat moved across the tank of water.

(a) Write down the energy conversion for the above activity in the blanks provided. [1]



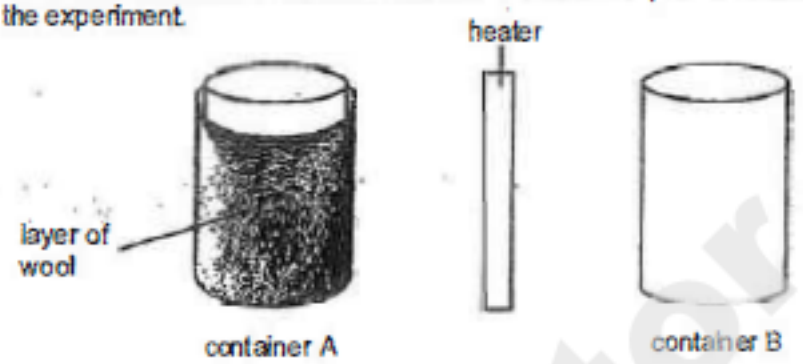
(b) Sarah increases the speed of the fan from speed 1 to speed 2. Explain, in terms of energy, what will happen to the sail boat. [2]

(c) Without removing the sail from the sail boat, state one change Sarah can make to the sail if she wanted the boat to move slower. [1]

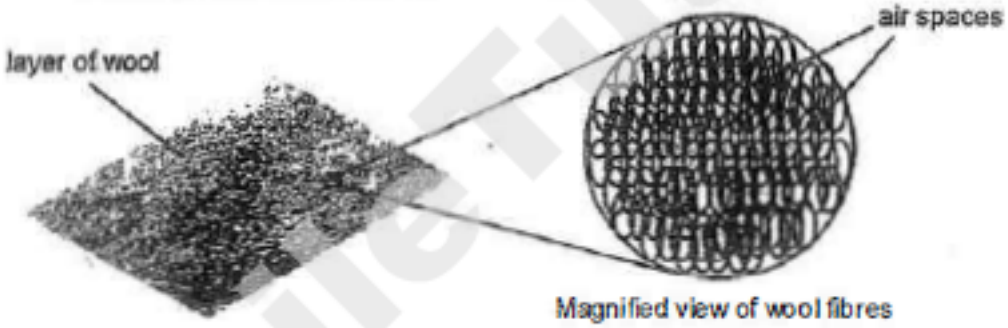
Score 4

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39. The diagram below shows a heater placed at the same distance from 2 identical metal containers A and B. Container A was wrapped with a layer of wool. Both containers were filled with water at room temperature at the start of the experiment.

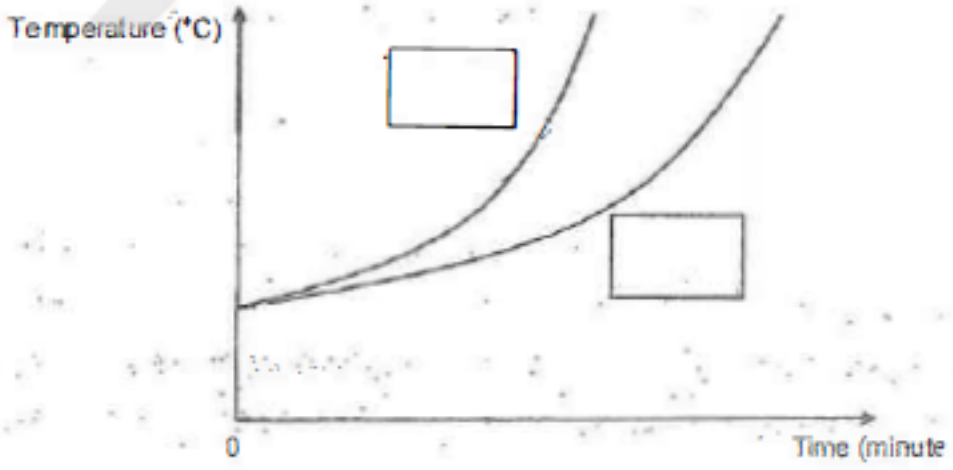


A magnified picture of the layer of wool is shown in the diagram below.



The temperature of the water in both containers were taken and the data is shown in the graph below.

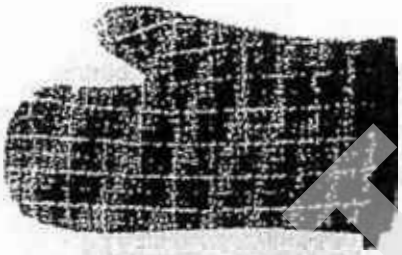
(a) Label the 2 lines with A and B to indicate how the temperature of the water changes in each container as time passes. [1]



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

Mrs Lim recently bought 2 pot holders. One of them has a thin layer of wool in it whereas the other has a thick layer of wool in it as shown in the diagram below.



pot holder X (thin layer of wool)



pot holder Y (thick layer of wool)

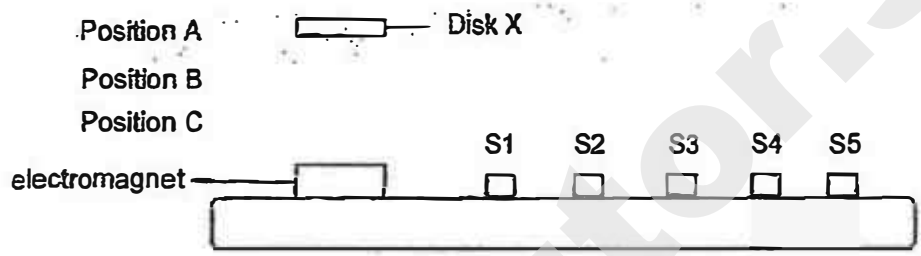
(c) Which pot holders, X or Y, is more suitable for holding hot pots for a longer period of time? Explain your answer clearly. [2]

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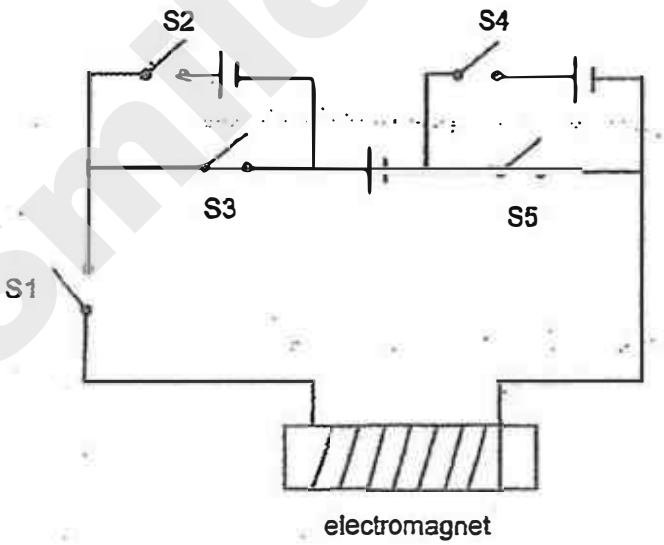
Score: 5

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40. The diagram below shows a toy designed by John. He was able to make Disk X float at different positions, A, B and C, by controlling the circuit that is connected to the electromagnet. John can turn the switches, S1 to S5, on and off to control the circuit and in turn controls the magnetic strength of the electromagnet.



The diagram below shows the circuit that is connected to the toy.



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In order for Disk X to float at position B, switches, S1, S2 and S5 have to be turned on.

(a) In the table below, which switch(es) does John need to turn on in order for Disk X to float at positions A and C? Make your choice by ticking in the correct boxes. [1]

Position	S1	S2	S3	S4	S5
A					
B					
C					

(b) Other than changing the number of batteries that are connected to the electromagnet, what can John do to the electromagnet if he wants Disk X to float at a distance that is further to the electromagnet than at position A? [1]

(c) What will happen if John were to change Disk X to an iron coin? [1]

End of Paper

Score 3

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YEAR	:	2017
LEVEL	:	PRIMARY 6
SCHOOL :	:	NAN HUA PRIMARY
SUBJECT :	:	SCIENCE
TERM	:	SA1

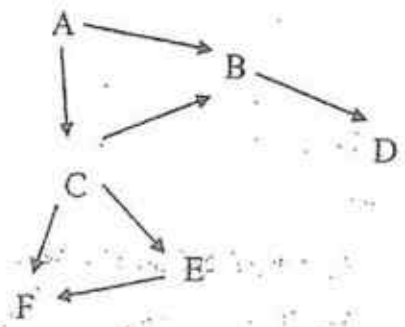
Booklet A

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

Booklet B

Q29 (a) Organism A, this is because organism A is the food producer, without it organism C will die off first as organism A is organism C's source of food, without organism C, organism B will die off too as organism A and C were it's sources of food and organism E will also die off as organism C is it's source of food and thus it will die of starvation and lastly organism D will die as organism B is it's source of food.

Q29 (b)



Q29 (c) Population of C | decrease |

Population of D | no change |

Q30 (a) So that the surrounding temperature will not affect the number of organisms left after 2 days.

Q30 (b) Conduct the experiment with more organisms X, Y and Z.

Q30 (c) Organism Y can survive the best in a mangrove swamp but for organism X and Z, some of the organisms died.

Q31 (a) (i) Seed B (ii) Seed A

Q31 (b) Seed A's dispersal method, it is because seed A's dispersal method allows it to be dispersed further away from the parent plant in order to avoid overcrowding which might lead to competition for space, sunlight, nutrients and water.

Q31 (c) The distance dispersed from it's parent plant will decrease, this is Because now the seed does not have it's wing-like structures, thus when dispersed it experience less air resistance and will be dispersed closer to the parent plant.

Q32 (a) As the moisture content of the meat decreases, the days taken for the mould to appear increases.

Q32 (b) Decomposition.

Q32 (c) Dehydrating their meat could increase the number of days for their meat to decompose and spoil as one of the factors for decomposition is moisture.

Q32 (d) No, she will not. This is because the meat in the experiment were left at room temperature.

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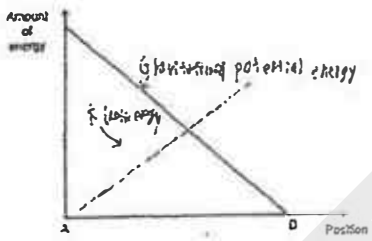
Q33 (a) Organisms C and B

Q33 (b) 3

Q33 (c) Organism D, this is because organism D only eats organism E but there is no organism E in Habitat U, thus it will die.

Q34 It is because the circular groove cut around the chopstick increases the friction between the fish and the circular groove cut, which made this part of the chopstick rougher, causing the fish to be picked up easier.

Q35 (a)



Q35 (b) At point C, it is because at point C, more gravitational potential energy would be converted to kinetic energy compared to when the skier as at point B.

Q36 (a)



Q36 (b) John could place all 3 balls side by side, with all 3 balls having the same distance in front of the screen.

Q36 (c) The shadows of the balls would increase in size.

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NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1
2017

BOOKLET A

Date : 8th May 2017
Duration : 1 h 45 min

Name : _____.( )

Class: Primary 6 ( )

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

Booklet A consists of 22 printed pages including this cover page.

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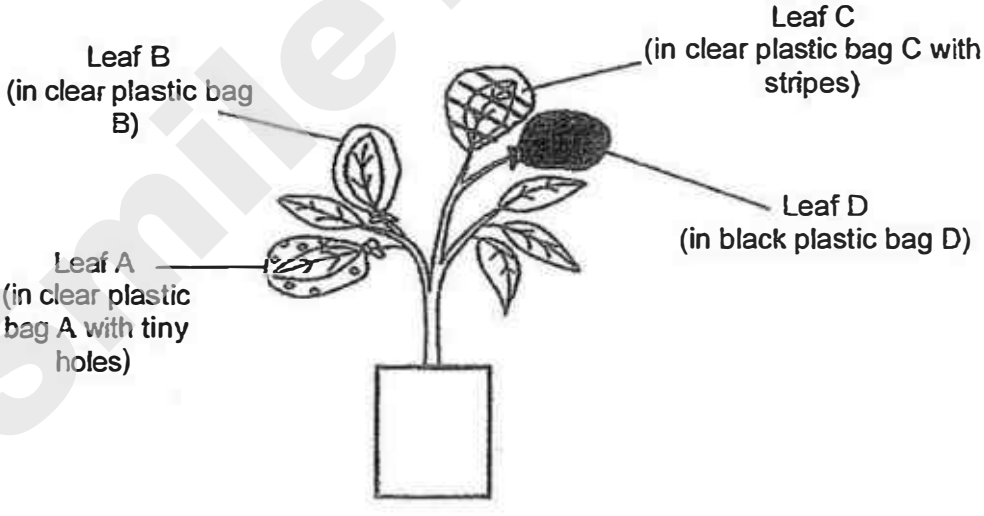
Section A (28 x 2 marks = 56 marks)
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. Which of the following are used by plants to carry out the process of photosynthesis?

A Heat
B Oxygen
C Sunlight
D Carbon dioxide

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

2. Lisa set up an experiment as shown below. She wrapped four similar leaves in different types of plastic bags. The plastic bags were of the same size. She left the plant under bright light for 4 hours.

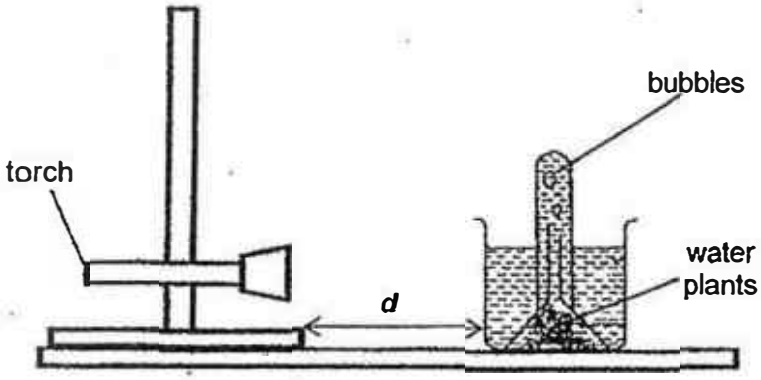


Which plastic bag would contain the highest amount of carbon dioxide after 4 hours?

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

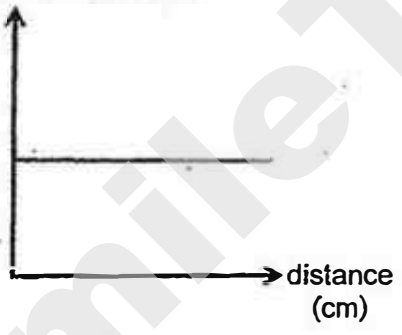
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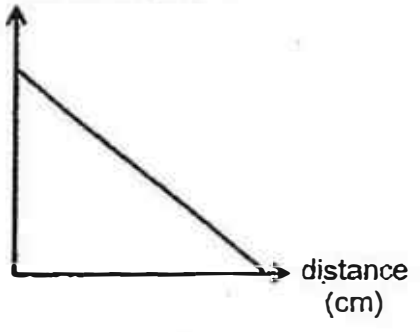
3. Bryan set up the experiment as shown below.

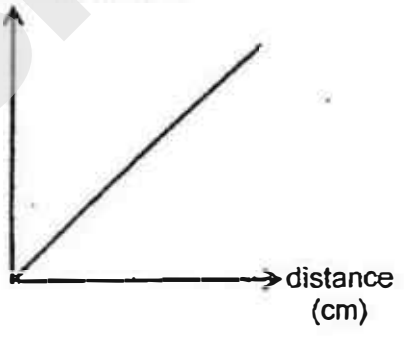


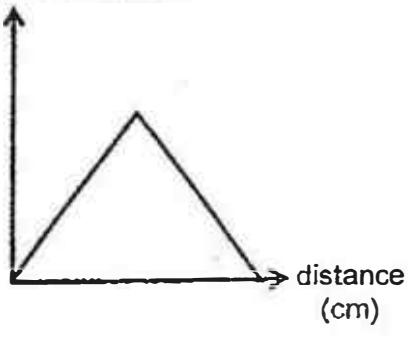
He made 3 identical set-ups using the same amount and same type of plants. He changed the distance, ***d*** between the torch and the plant. For each of the set-up, he counted the total number of bubbles produced over a period of 5 minutes.

Which one of the following graphs shows the correct relationship between the distance, ***d*** and the number of bubbles produced?

(1)


(2)


(3)


(4)


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4 Fruit trees, vegetables and butterflies make up a community in a farm. A farmer sprayed insecticide on the vegetables regularly when he found that they were being eaten by caterpillars. The butterflies in the farm help in pollinating the fruit trees.

How would the spraying of insecticide affect the amount of vegetables and fruits produced over a period of three months?

	Production of vegetables	Production of fruits
(1)	increase	remain the same
(2)	increase	decrease
(3)	decrease	remain the same
(4)	decrease	decrease

5. The table below shows the characteristics of the environment found in four different habitats.

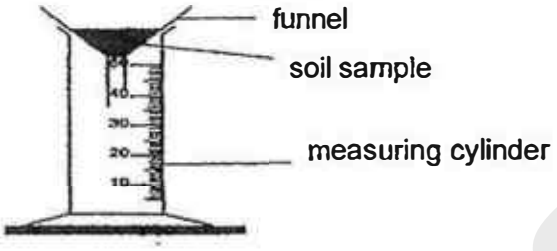
Habitat	Factors affecting the environment		
	temperature of the surrounding air	water	light
A	extremely low	exists as icebergs and icy streams	present only during certain months of the year
B	hot during the day but cold at night	very little	plenty during the day
C	cool	found in the soil	very little most of the time
D	hotter during the day	plentiful	more on the water surface than below

In which one of the following habitats can water snails, tadpoles and water hyacinths all be found?

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

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6. Irene collected soil samples A, B and C. She prepared three identical set-ups as shown below and poured ~~35ml~~ **45ml** of water onto each soil sample during the experiment.



Irene measured the amount of water collected in the measuring cylinder after 2 minutes and recorded it in the table below. She repeated this for all three soil samples.

Sample	Amount of water collected (ml)
A	35
B	5
C	15
D	40

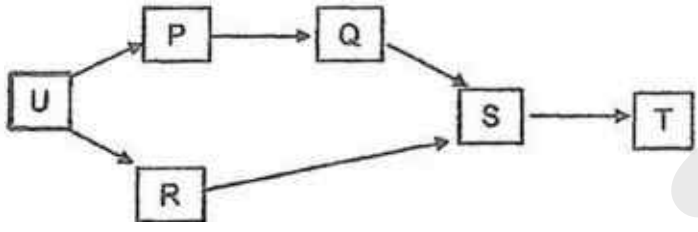
In a rice plantation, a flooded paddy field is needed for the seedlings to grow.

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

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

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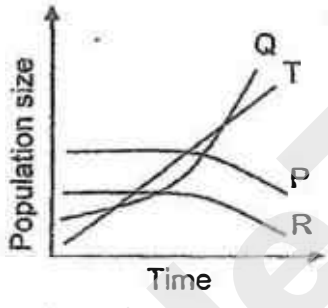
7. The food web below shows the relationships between organisms P, Q, R, S, T and U



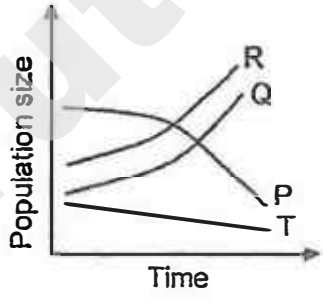
There is a sudden mass migration of S out of the habitat.

Which one of the following graphs shows how the populations of P, Q, R and T are likely to be affected?

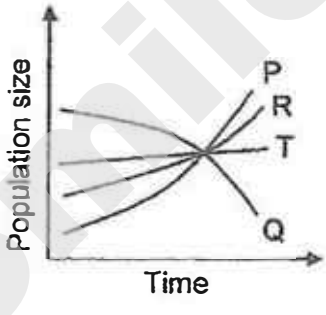
(1)



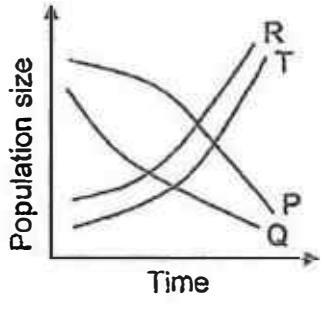
(2)



(3)



(4)



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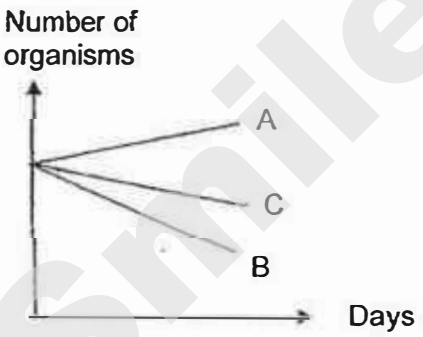
8. The following relationships were observed among four living things, K, L, M and N, of which one organism is a food producer.

K feeds on M. N feeds on K. M gets its food from L. N feeds on M but does not feed on L.

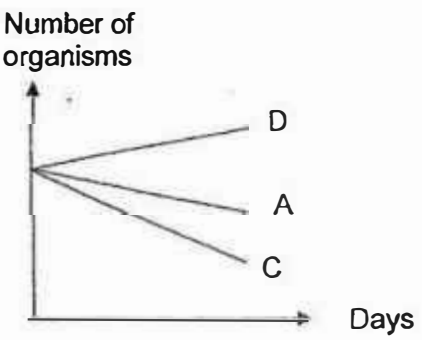
Which one of the following classifications is correct?

	producer	prey	prey and predator	predator
(1)	L	N	K	M
(2)	N	K	M	L
(3)	L	M	K	N
(4)	N	L	M	K

9. Four different organisms A, B, C and D, belonging to the same food chain are used in an experiment. In the first enclosure, only organisms A, B and C are put together while in the second enclosure, only organisms A, C and D are put together. B is the only food producer in the food chain.



Enclosure 1



Enclosure 2

Which one of the following correctly identifies the roles of organisms A, C and D?

	Prey	Predator	Both a prey and a predator
(1)	A	C	D
(2)	D	C	A
(3)	C	A	D
(4)	C	D	A

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10. Four pupils came up with the following conclusions while reading up about decomposers.

Jason: Decomposers break down their own food and produce oxygen for animals to respire.
Gabriel: Decomposers help to get rid of dead organisms and wastes and prevent them from piling up.
Naomi: Decomposers help to break down animal wastes and remains of the plants and animals to make the soil fertile for the food producers.
Arielle: Decomposers speed up the process of decomposition by breaking down dead plants and animal wastes into smaller pieces.

Which of the pupils had made the correct conclusions?

(1) Arielle and Jason
(2) Arielle and Naomi
(3) Gabriel and Naomi
(4) Gabriel, Naomi and Arielle

11. Which of the following observations involve(s) the condensation of water?

A Rain falling from the clouds.
B Pouring a cup of water to drink.
C Puddle of water getting smaller in size.
D "Mist" forming at the mouth of a boiling kettle.

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

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12. Jordan placed a bottle of water on the table at room temperature (30°C) shown in the diagram below.



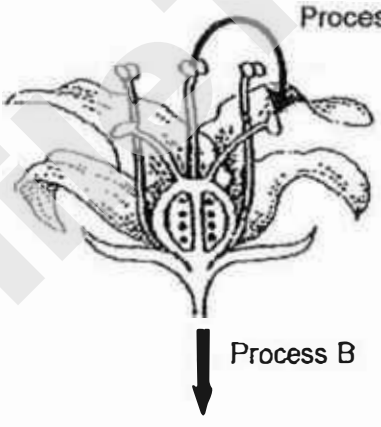
He wanted the water in the bottle to evaporate as fast as possible.

Which of the following methods would enable Jordan to speed up the rate of evaporation?

A Place the bottle in a box.
B Position the bottle to stand upright.
C Place a fan at the mouth of the bottle
D Place a heating coil next to the bottle.

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

13. Study the diagram below.



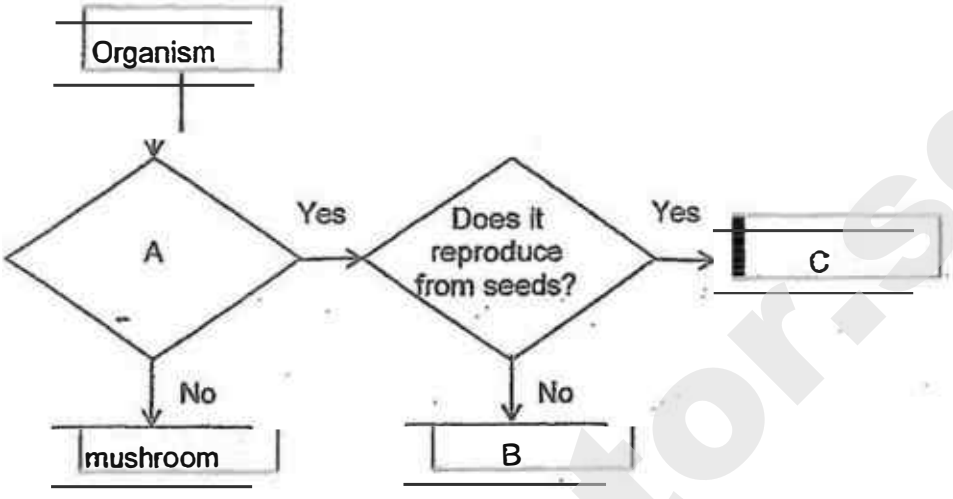
The ovary develops into W.
The ovule develops into X.

Which one of the following correctly represents processes A and B and parts W and X?

	Process A	Process B	Part W	Part X
(1)	fertilisation	seed dispersal	seed	fruit
(2)	fertilisation	germination	fruit	seed
(3)	pollination	fertilisation	fruit	seed
(4)	pollination	fertilisation	seed	fruit

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14. The flow chart below shows how some organisms are classified.



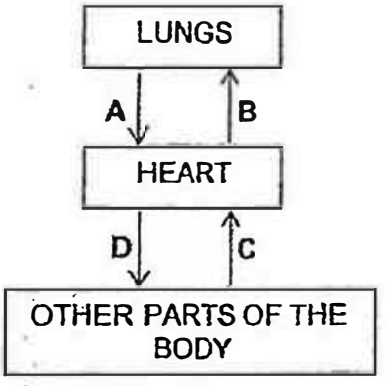
Which one of the following could represent A, B and C correctly?

	A	B	C
(1)	Does it have spores?	bird's nest fern	bracket fungus
(2)	Does it bear flowers?	mango	moss
(3)	Does it make its own food?	moss	angsana
(4)	Are its seeds scattered by animals?	staghorn fern	coconut

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15. Study the diagram below. The arrows, A, B, C and D, represent blood vessels carrying blood to and from the lungs, heart and other parts of our body.



Which one of the following correctly shows the comparison of the amount of oxygen and carbon dioxide in the four blood vessels?

(1) The blood in A has less oxygen than the blood in D.
(2) The blood in B has more oxygen than the blood in C.
(3) The blood in C has less carbon dioxide than the blood in D.
(4) The blood in D has less carbon dioxide than the blood in C.

16. Faeka watered a potted plant with white flowers with some water containing blue food dye. After a few hours, she noticed that some parts of the flowers had turned blue.

Which one of the following statements correctly explains why some parts of the flowers turned blue?

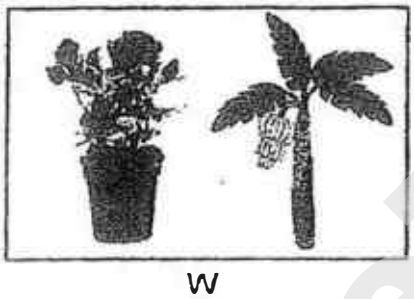
(1) Water is taken in by the stomata of the plant.
(2) The stem transports water from the roots to all parts of the plant.
(3) The stem transports food from the leaves to all parts of the plant.
(4) The stomata allow water exchange between the plant and the surroundings.

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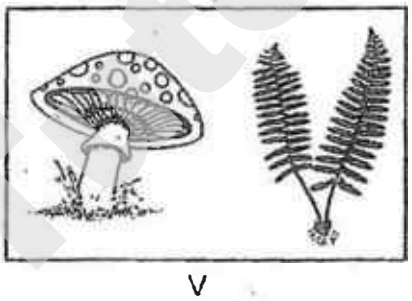
17. Which one of the following correctly shows where digestion of food and absorption of digested food takes place in the human digestive system?

	Part involved in the digestion of food	Part involved in the absorption of digested food
(1)	Mouth	Large Intestine
(2)	Gullet	Small intestine
(3)	Stomach	Small Intestine
(4)	Small intestine	Large Intestine

18. Study the two groups of organisms, W and V, below.



W



V

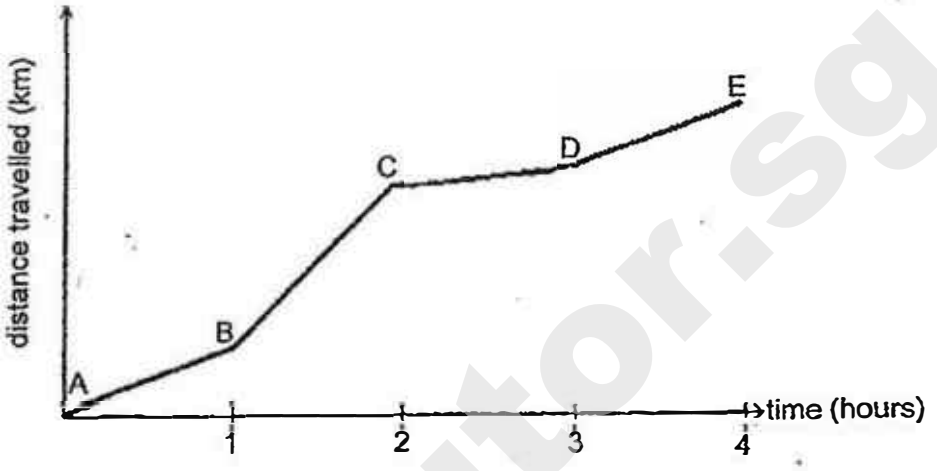
Which one of the following correctly describes the organisms in groups W and V?

	Group	Makes its own food	Bears fruits
(1)	W	No	Yes
(2)	V	No	No
(3)	W	Yes	Yes
(4)	V	Yes	No

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19. Jenny was cycling along a road on East Coast Park.

The graph below shows the distance travelled by Jenny during a period of 4 hours.

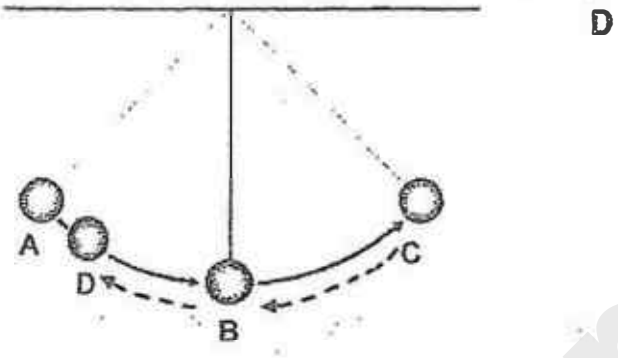


Based on the graph above, at which period did Jenny possess the greatest amount of kinetic energy?

(1) AB
(2) BC
(3) CD
(4) DE

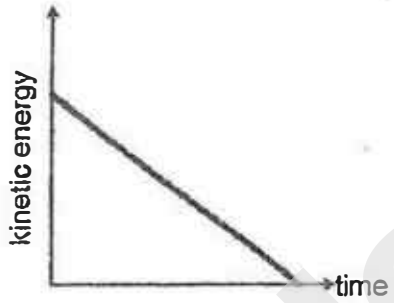
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20. The diagram below shows a metal ball. Daniel released it from point A and it moved to points B and C before being caught at point D again.

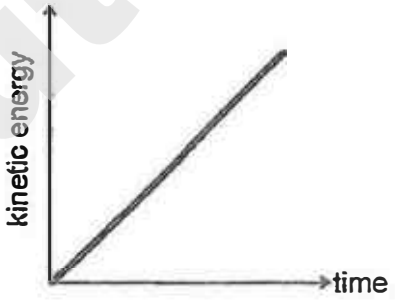


Which of the following graphs shows how the kinetic energy of the metal ball varied with time as it moves from point A to C and back to point D?

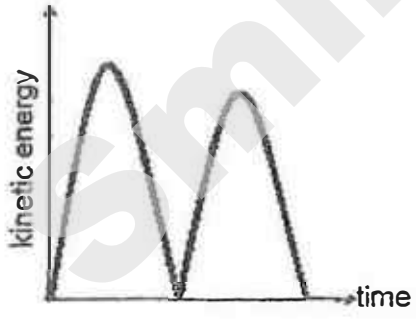
(1)



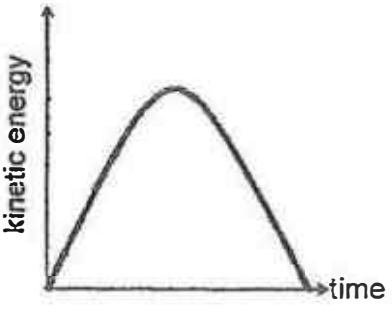
(2)



(3)



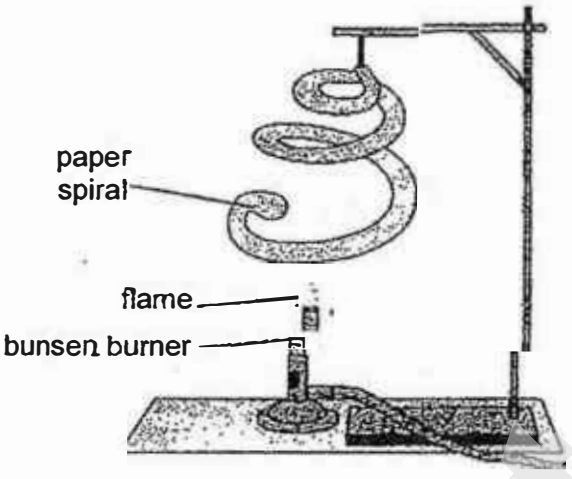
(4)



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21. A bunsen burner was placed under a piece of paper spiral as shown in the figure below. After some time, the paper spiral started to spin.

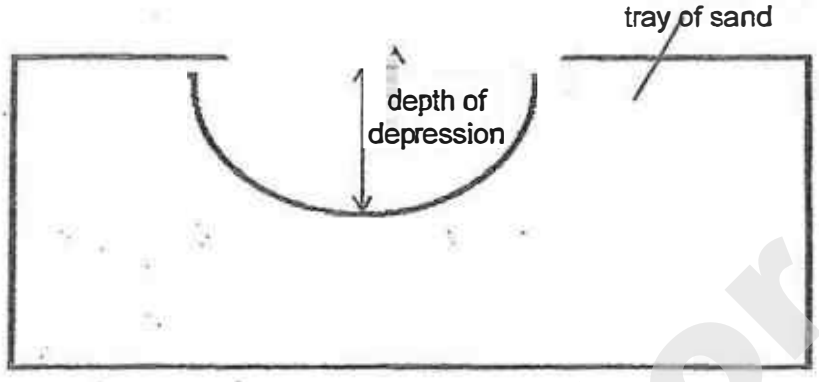


Which one of the following correctly shows the energy conversion as the bunsen burner is switched on?

(1)	Chemical potential Energy	→	Heat Energy	→	Kinetic Energy	→ Kinetic Energy
(2)	Chemical Potential Energy	→	Solar Energy	→	Heat Energy	→ Kinetic Energy
(3)	Chemical Potential Energy	→	Light Energy	→	Heat Energy	→ Gravitational Potential Energy
(4)	Chemical Potential Energy	→	Kinetic Energy	→	Kinetic Energy	→ Gravitational Potential Energy

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22. Marcus dropped a ball into a tray containing some sand. He measured the depth of the depression as shown in the diagram below. Marcus repeated the experiment using the set-up but each time he changed the height at which the ball was dropped.



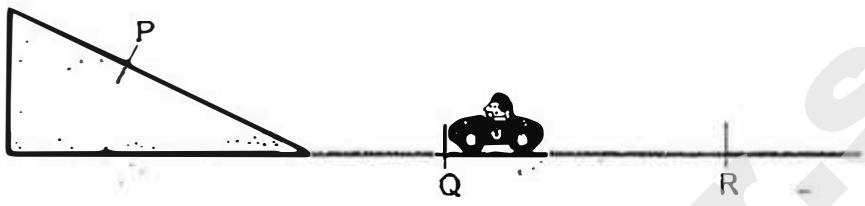
	Height A	Height B	Height C	Height D
Depth of depression (cm)	3.5	2.7	3.1	4.0

Marcus recorded the results as shown in the table above. Which one of the following correctly matches the height from which the balls were dropped?

	Height A (cm)	Height B (cm)	Height C (cm)	Height D (cm)
(1)	75	70	65	60
(2)	70	60	65	75
(3)	70	65	60	75
(4)	70	75	65	60

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23. Mustafa placed a wound up plastic toy car at position Q, pulled it backwards to position R and released it. It moved up a ramp, stopped at P and rolled back to somewhere between Q and R.



What could he do to make the toy car move higher than P?

(1) He could use a higher ramp.
(2) He could use a toy car with a bigger mass.
(3) He could put some sand between P and Q.
(4) He could use the same toy car with a smaller mass.

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24. Kai Kai wanted to move a soccer ball to point Z. He kicked the ball at point P. It rolled forward and stopped at point Q.



Which of the following statements are possible reasons why the ball stopped at point Q?

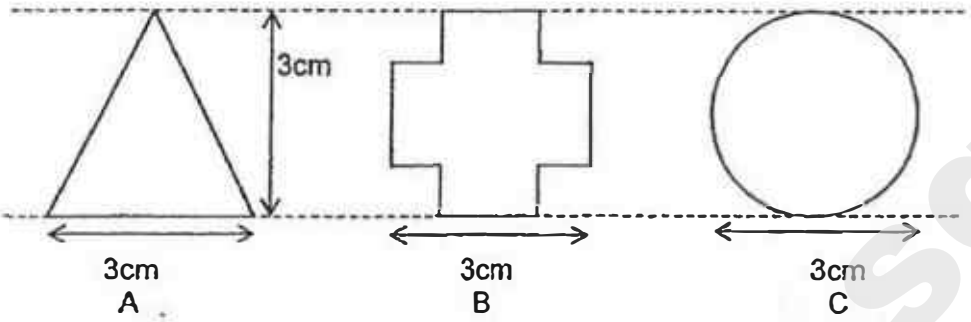
A The ball slowed down due to air resistance.
B Gravitational force acting on the ball was the same from P to Z.
C Frictional force between the ball and the ground was greatest at Q.
D The ball slowed down due to frictional force between the ball and the floor.

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

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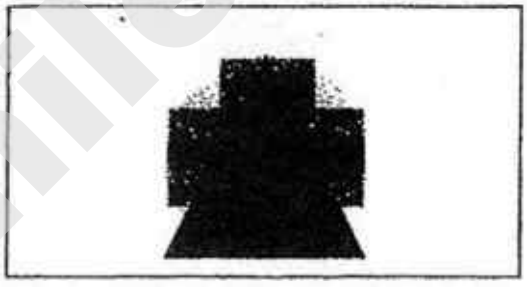
25. The set-up below shows three pieces of cards made up of three different materials, A, B and C.



The three pieces of cards were then glued together and placed between a torch and screen as shown below.



The diagram below shows what was seen on the screen.

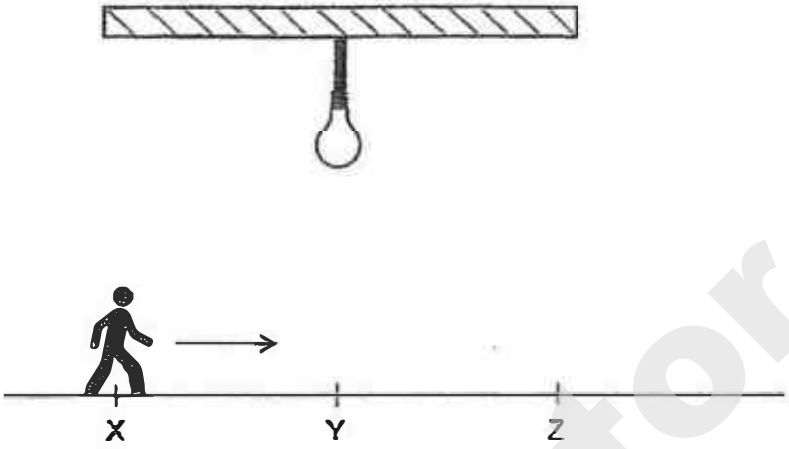


Which one of the following correctly shows the properties of materials A, B and C?

	Allow most light to pass through	Allow some light to pass through	Does not allow light to pass through
(1)	A	A	B
(2)	A	B	C
(3)	B	C	A
(4)	C	B	A

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26. Yu Jun walked in a straight line from points X to Z as shown in the figure below. At point Y, he was directly under the lamp. The distance between points X and Y is the same as the distance between points Y and Z.



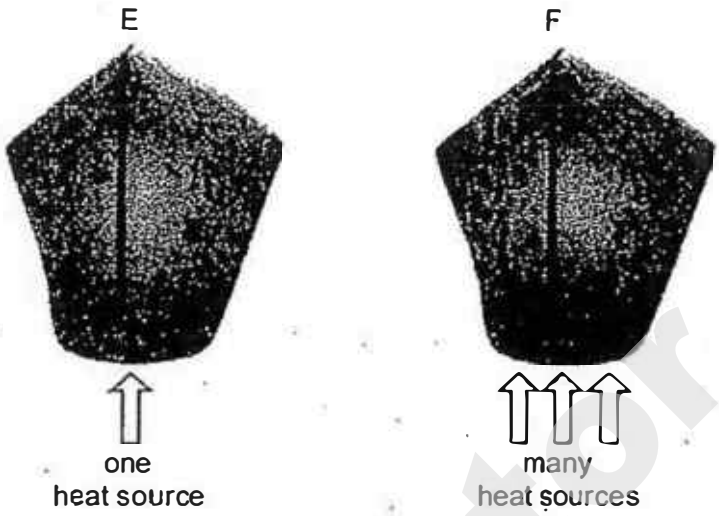
Which one of the following statements is not correct?

(1) His shadow was shortest at Y.
(2) His shadow at X was longer than his shadow at Z.
(3) As he walked from Y to Z, his shadow became longer.
(4) He would see his own shadow in front of him as he walked from Y to Z.

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27. The diagram shows 2 identical paper lanterns, E and F.



Which one of the following observation and explanation after 10 minutes is correct?

	E	F	Explanation
(1)	rise	rise faster	The air in lantern F gains heat more quickly from the candles. Hot air rises and it lifts the lantern upwards faster.
(2)	rise	rise faster	Lantern F gains more heat from the candles and expands. The lantern rises upwards faster.
(3)	rise faster	rise	The air in lantern E gains heat more quickly from the candle. Hot air rises and it lifts the lantern upwards faster.
(4)	rise faster	rise	Lantern E gains more heat from the candle and expands. The lantern rises upwards faster.

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28. The table below shows the state of a block of ice at regular intervals inside four similar containers made of four different materials, A, B, C and D. The four containers are placed in a classroom at room temperature.

Container	State of ice		
	20 min later	40 min later	60 min later
A	solid	solid	solid
B	solid	solid	liquid
C	solid	liquid	liquid
D	liquid	liquid	liquid

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

(1) D is the best conductor of heat.
(2) C is the poorest conductor of heat.
(3) A is a better conductor of heat than B.
(4) B is a better conductor of heat than D.

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PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1

2017

BOOKLET B

Date : 8th May 2017

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 18th May 2017. 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: .....

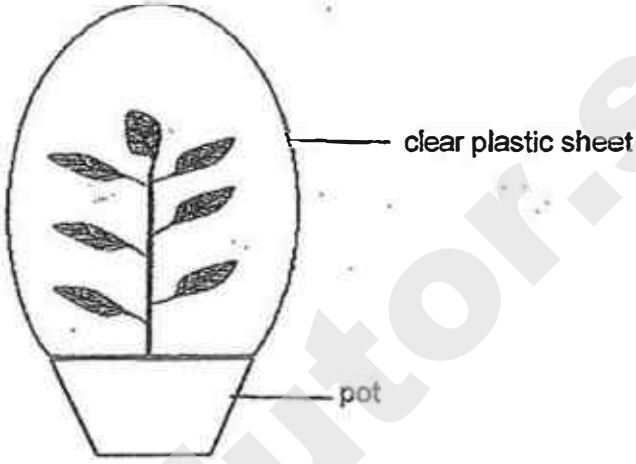
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 20 printed pages including this cover page.

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Section B (44 marks)
Write your answers to questions 29 to 41 in the spaces provided.

29. The diagram below shows a well-watered plant with a clear plastic sheet tied around it. The plant has been kept in the dark for 48 hours.



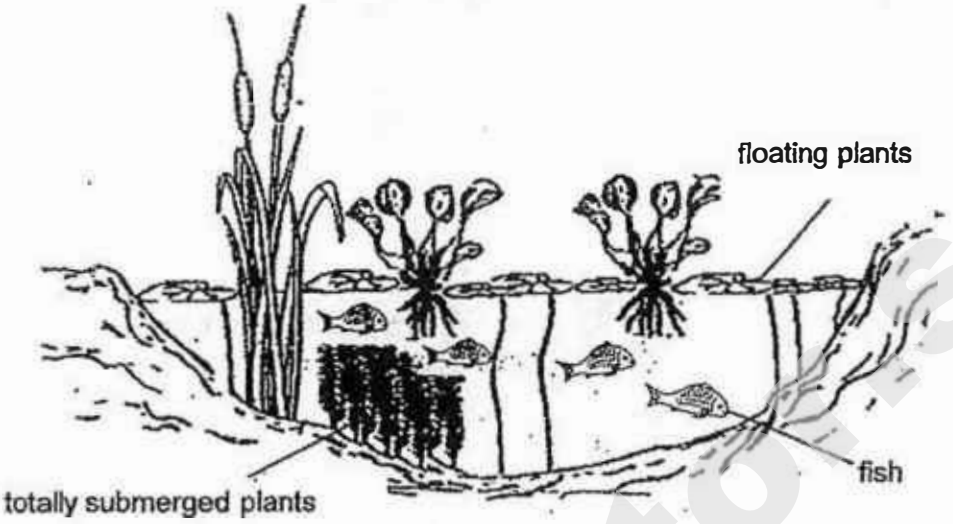
The pot of plant was then placed under the sun for 12 hours and the leaves were tested for starch using iodine.

What would be the colour of iodine on the leaves after the test? Explain your answer. [2]

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30. The diagram below shows a pond.



The surface of the pond is mostly covered with floating plants.
It was observed that the population of the fish and the fully submerged plants started to decrease after some time.

(a) Give two reasons for the decrease in the population of fish. [2]

i) _____

_____

ii) _____

_____

(b) Suggest a benefit that the fish could provide for the submerged plants. [1]

_____

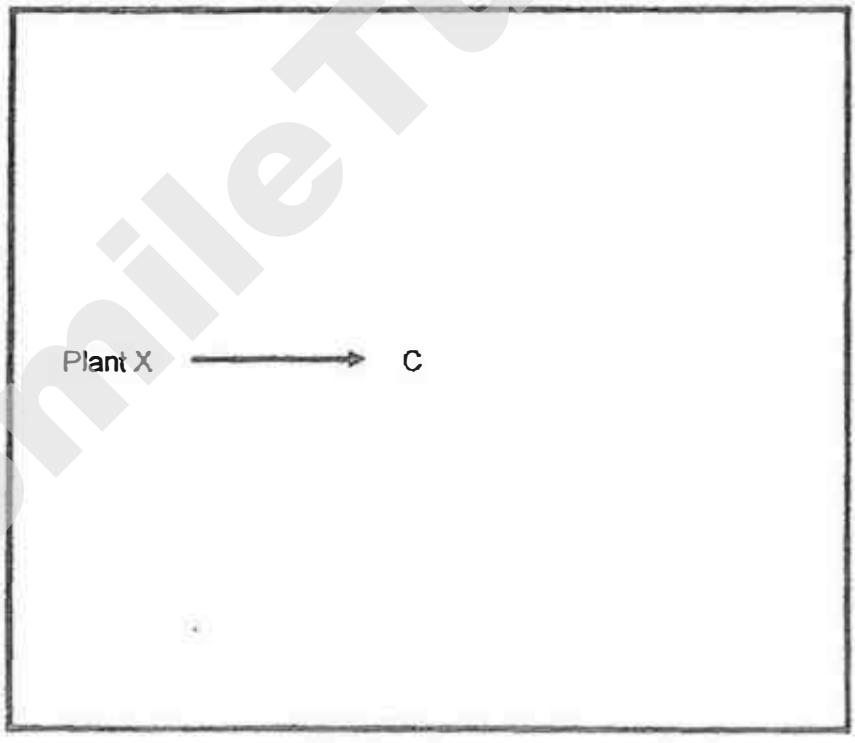
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31. Ming Ling caught 4 different types of fish, A, B, C and D, from a river and he conducted 5 experiments in an aquarium to study the food relationships between these fishes. He also added water plants X in some of his experiments. The table below shows the results of the experiments conducted over a period of time.

Experiment	Number of live organisms on the 1st day					Number of live organisms on the last day				
	Plant X	A	B	C	D	Plant X	A	B	C	D
1	10	4	0	0	0	10	0	0	0	0
2	10	4	0	4	0	5	4	0	2	0
3	10	0	0	4	4	3	0	0	4	4
4	0	4	0	4	4	0	4	0	2	1
5	0	4	4	0	0	0	0	4	0	0

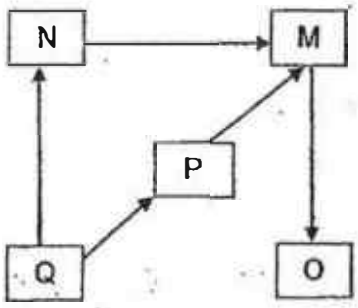
(a) In the space below, draw arrows to complete the food web for plant X and fishes A, B, C and D. [2]



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(b) The diagram shows a food web of five organisms M, N, O, P and Q in Ming Ling's garden.



Ming Ling noticed that one of the organisms is a plant and its population size has been decreasing over the past three months. He wanted the plant population to increase eventually.

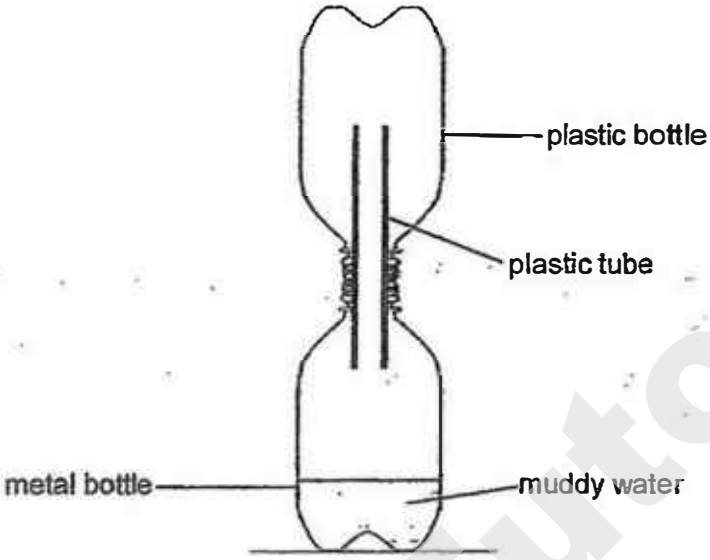
Without adding more plants, he planned to introduce more of one type of organism to solve his problem.

State and explain which **one** of the above population of organisms M, N, O, P or Q Ming Ling should increase to solve his problem. [2]

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32. Devin has invented a simple device which enables a person to extract water that is safe for drinking from muddy water as shown below. He placed it under the sun for 5 hours.



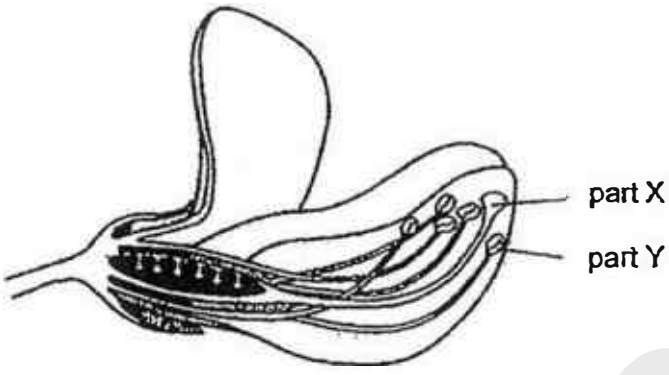
(a) Based on the device above, explain how water that is safe for drinking can be collected in the plastic bottle. [2]

(b) Suggest one change Devin could make if he wanted to get more drinkable water in the plastic bottle within the same period of time. [1]

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33. Jim noticed Flower T growing along the covered walkway of his school. He wanted to pluck off part X of Flower T but his classmate told him that without part X, the flower would not be able to bear fruits.



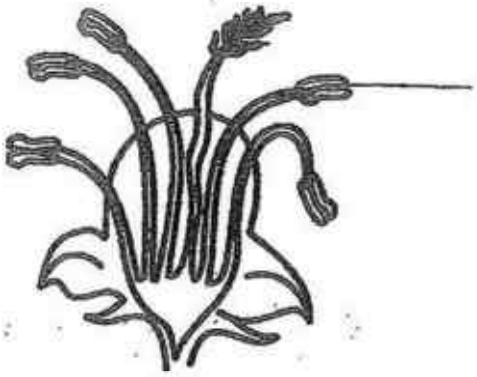
Flower T

(a) Explain why flower T will not be able to bear fruits if part X is plucked off. [2]

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The diagram below shows a section of flower Z.



Flower Z

(b) Based on the diagrams above, state the method of pollination for flowers T and Z and give a reason for your answer. [2]

(i) Method of pollination for Flower T:

_____

Reason: _____

_____

_____

(ii) Method of pollination for Flower Z:

_____

Reason: _____

_____

_____

(c) State the function of Part Y of both flowers T and Z. [1]

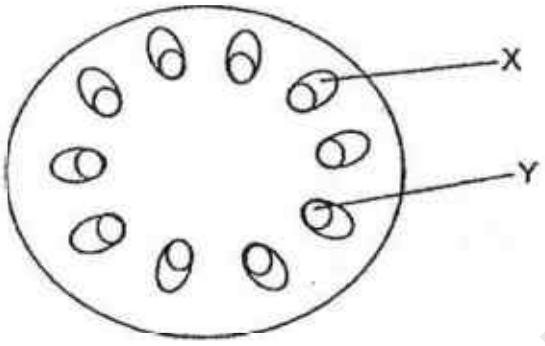
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34. Michael put a plant in a beaker of red-coloured water. After two days, he cut the stem and a section of the stem is shown below. He noticed that tube Y appeared red in colour.



(a) What are the functions of tubes X and Y? [2]

Tube X: _____

_____

Tube Y: _____

_____

(b) The plant used has white flowers. Explain why the flowers appeared red after 4 days. [1]

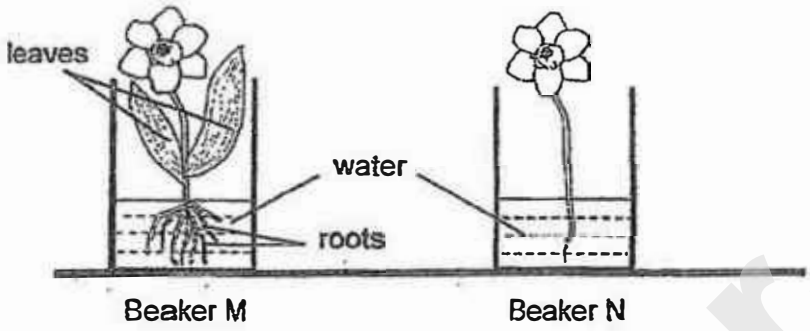
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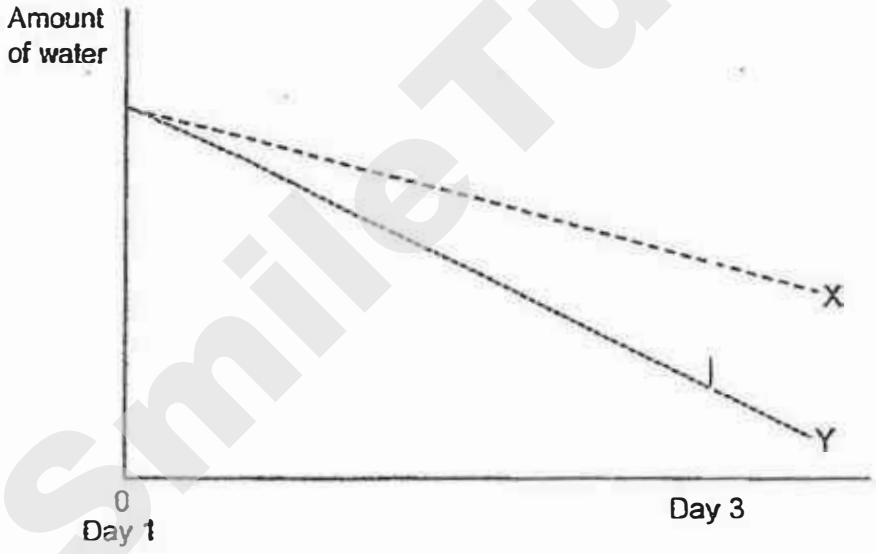
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35. Jie Qi wanted to find out how the amount of water in a beaker is affected by the presence of roots. She placed 2 almost identical plants in beakers M and N as shown below.



Beakers M and N were left on the table by the side of the classroom for a week. The graph below shows the volume of water in Beakers M and N on Day 1 and Day 3 of the experiment.



(a) Which graph, X or Y, correctly shows the amount of water left in Beaker M at the end of Day 3? Explain your answer. [1]

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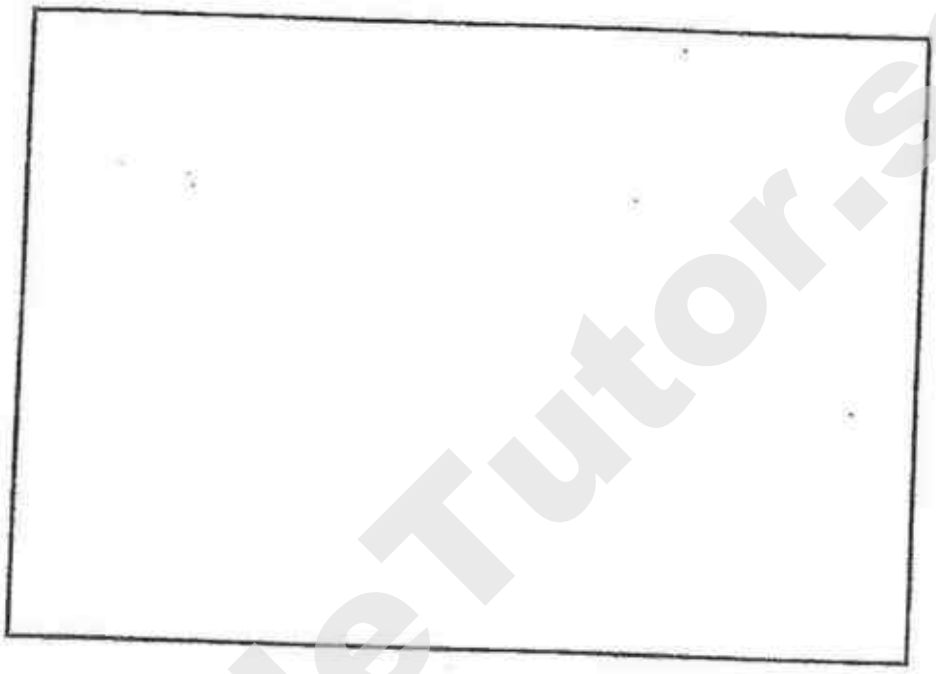
(b) Jie Qi's teacher told her that it was not a fair test. Explain why her experiment is not a fair test. [1]

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36. Jack used a microscope to observe a leaf cell of a plant. His teacher instructed him to draw the cell in his Science journal.

(a) Draw a leaf cell in the space below.
Label all the parts of the cell that you have drawn. [2]



(b) In the Science laboratory, Jack continued to observe another specimen slide of the human cheek cell and noticed many differences between the cheek cell and the leaf cell.

State 2 cell parts that were present in the leaf cell but not in the human cheek cell. [1]

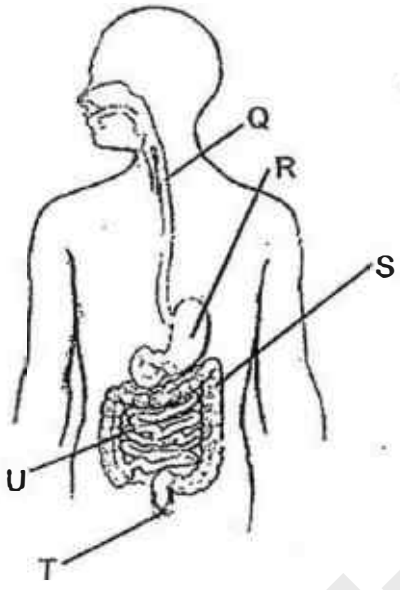
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37. The diagram below shows the human digestive system.



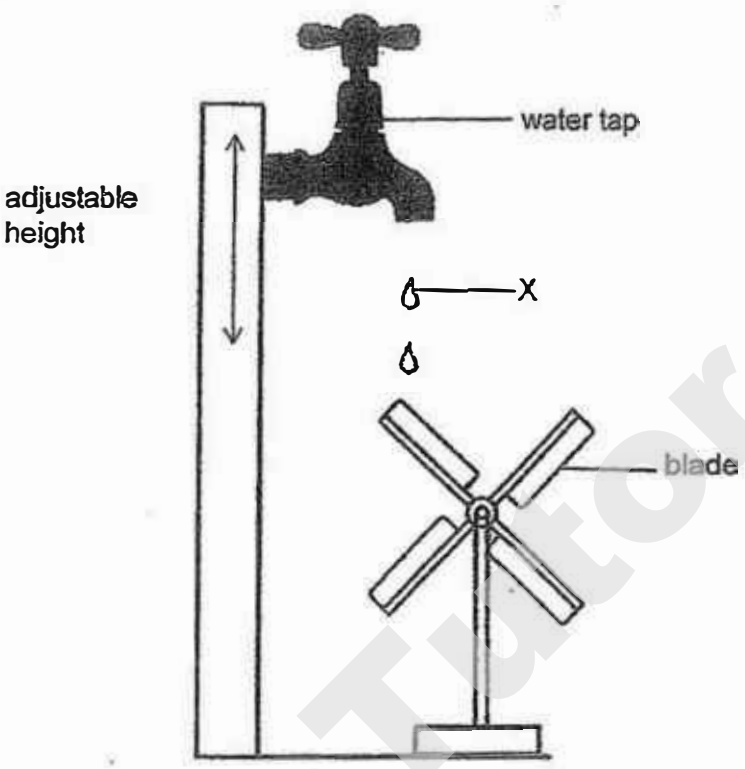
Study the table below and put a (√) that matches the functions to their correct parts. There can be more than one (√) for each function. [2]

Functions		Parts of the digestive system				
		Q	R	S	T	U
(a)	digestion takes place					
(b)	removes water from undigested food					
(c)	churns and turns the food					
(d)	passes digested food into the bloodstream					

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38. The diagram below shows a simple water mill.



The water mill would rotate as water drops onto the blade of the mill. The position of the tap is adjustable such that it can be moved upwards or downwards.

(a) What forms of energy does the water droplet at point X possess? [1]

_____

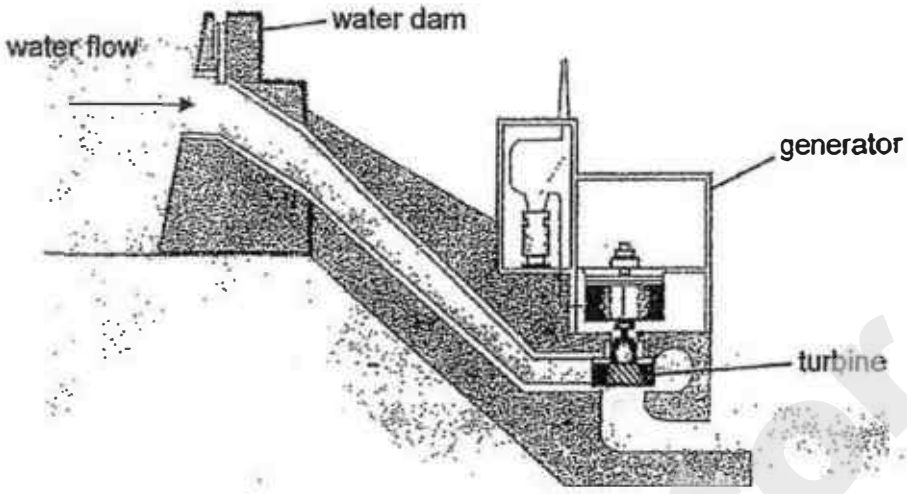
(b) Suggest 2 modifications to the set up such that the water mill will spin faster. [2]

i) _____

ii) _____

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The diagram below shows a generator that is powered by water.

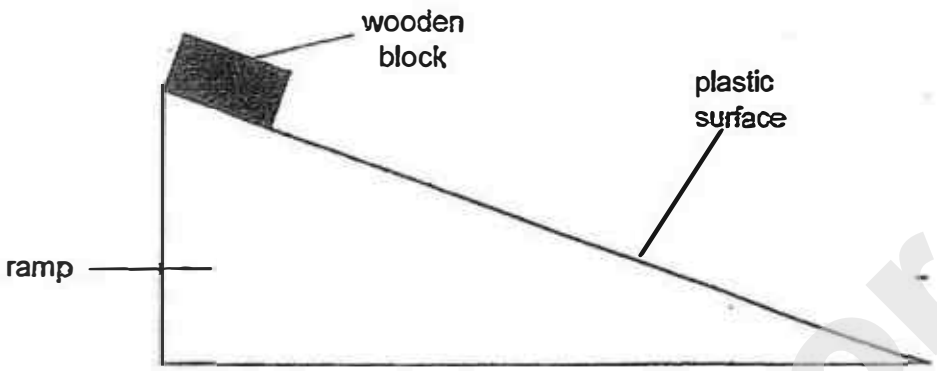


(c) Why is it necessary for the water dam to be built at a position much higher than the position of the turbine? [2]

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39. Lucas released a wooden block from the top of a ramp with a surface made of plastic. He recorded the time taken for the wooden block to reach the bottom of the ramp.



He repeated the experiment on three similar ramps with different surfaces, L, M and N, and recorded the results in the table below.

Type of surface	Time taken for the wooden block to reach the bottom of the ramp (s)
plastic	25
L	16
M	9
N	32

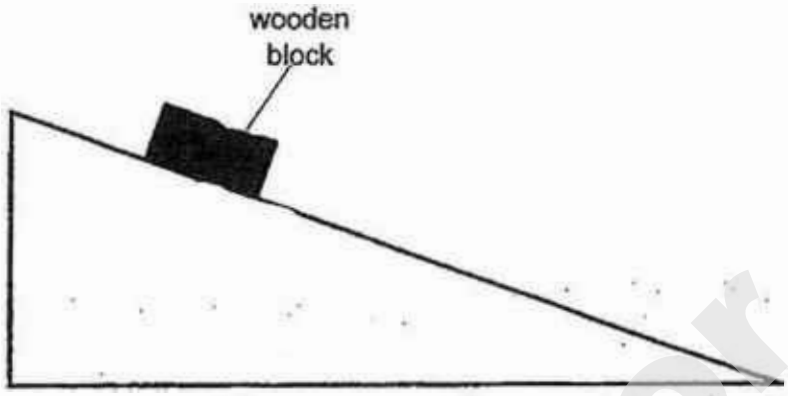
(a) Which surface, L, M or N is most likely to be sandpaper? Give a reason for your answer. [1]

Lucas then added some oil on the plastic surface and repeated the experiment.

(b) What could be a possible time taken for the wooden block to reach the bottom of the ramp? Give a reason for your answer. [2]

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(c) Draw and label two forces that are acting on the wooden block as it moves down the ramp. [2]



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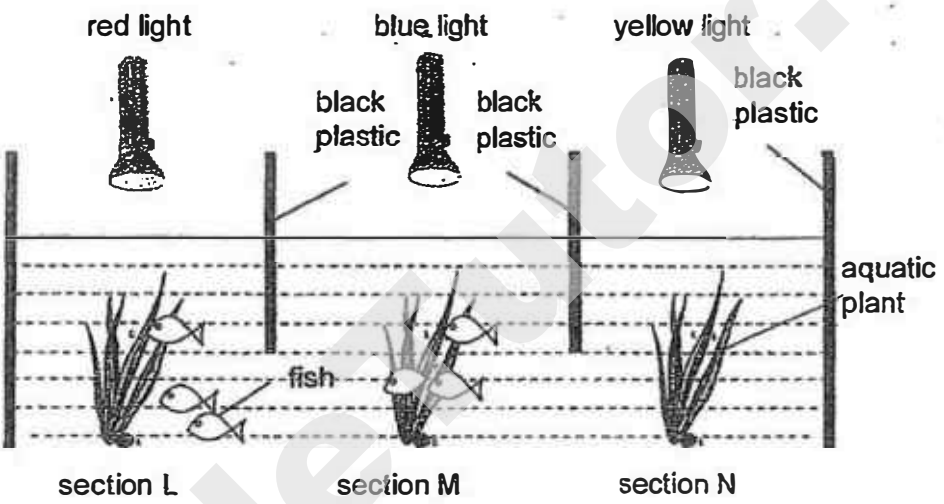
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40. Sophie set up an experiment in a dark room to find out which coloured light(s) red, blue or green could be used for photosynthesis.

She divided a tank into 3 sections, L, M and N, by black plastic sheets as shown in the diagram below. The coloured lights are of the same brightness.

Before adding the aquatic plants, she noticed that the fish could be found at all the three sections.

She then introduced an aquatic plant into each section. After some time, she noticed that the fish gathered in sections L and M only.



(a) Based on Sophie's experiment, which coloured light(s) could be used for photosynthesis? Explain why. [2]

_____

_____

(b) Sophie removed all the aquatic plants after a day. What would she most likely observe about the fishes in the set-up after four days? Give a reason for your answer. [1]

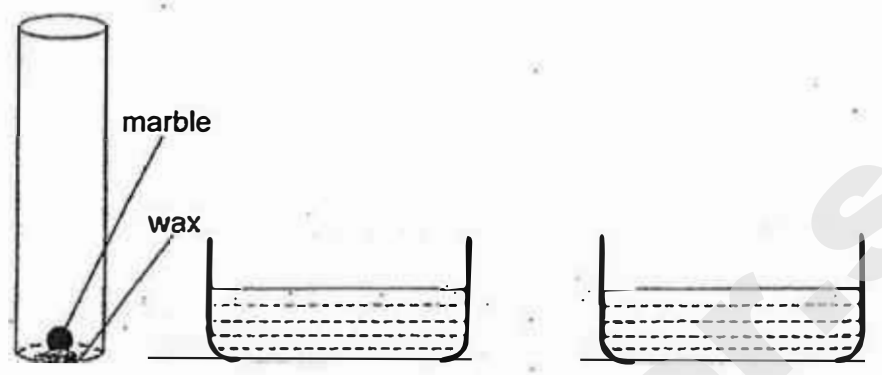
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_____

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41. Jie Ren was asked to remove a marble which was stuck to the bottom of a tall beaker with wax. He was given two basins, each containing water of different temperatures.



tall beaker with marble stuck inside

basin A water at room temperature

basin B water at 100°C

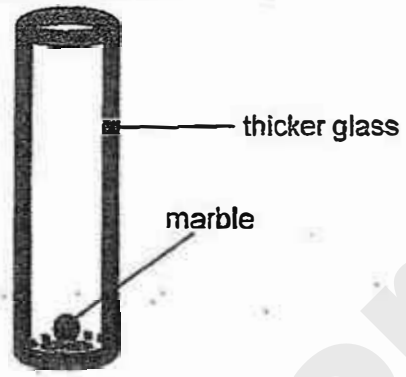
(a) i Using only the above apparatus, describe clearly how Jie Ren can remove the marble, without pouring the water from the basin into the tall glass beaker.

Method: [1]

(a) ii Explain your answer.

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(b) Would Jie Ren be able to remove the marble if the tall beaker is made of thicker glass? Explain your answer clearly. [2]



tall beaker with marble stuck inside

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EXAM PAPER 2017
LEVEL : PRIMARY 6
SCHOOL : NANYANG PRIMARY SCHOOL
SUBJECT : SCIENCE
TERM : SA1

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

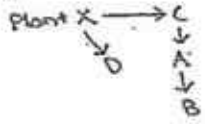
-Q29. Iodine turned blue-black. The plant could make food and the food was converted into starch.

Q30ai) As the surface is covered with plants, the submerged plants will not have enough sunlight to make food and will die, causing the fishes to lose their shelter and hence, they have lesser places to reproduce.

ii) The plants would not make food, so it does not release enough oxygen for the fish to respire.

b) When the fish breathes, it gives out carbon dioxide the submerged plants take in the carbon dioxide to make food.

Q31a)



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b) Ming Ling should increase the population M. As there is more population M to eat P and N, they will decrease and thus the plant Q will have less P and N, eating it, thus the plant Q population can increase.

Q32a) The metal bottle gains heat from the sun, the muddy water in the metal bottle thus gains heat from the metal bottle and the water evaporates, turning into water vapour and rises to the plastic tube since plastic is a poor conductor of heat, it gains heat slower, the water vapour then loses heat to the cooler plastic bottle and condenses, forming water droplets in the plastic bottle.

b) To place ice cubes on the top of the plastic bottle.

Q33a) Part X is where the pollen grain from part Y is from is to land for the flower to be pollinated, if the flower cannot be pollinated, it cannot be fertilized and cannot reproduce.

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bi) Animal pollination Reason: The flower has its part Y and part X inside the flower and would attract an animal using nectar and when the animal gets the nectar and when the animal gets the nectar, it brushes off pollen grains onto part X, thus pollinating it.

ii) Wind of pollination. Reason: The flower has feathery stigma and this will help to catch the pollen grains from part Y when the wind blows, thus pollinating the flower.

c) It produces pollen.

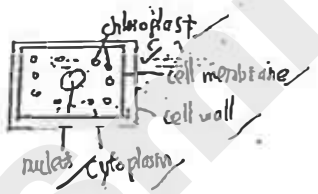
Q34a) Tube X : To transport food from the leaves to all the parts of the plant.
Tube Y: To transport water from the roots to all parts of the plant.

b) The water carrying tubes transported the water from the roots which absorbed the water to the flowers and the flowers thus turned red.

Q35a) Y. Beaker M has roots to take in water and for photosynthesise, the plant used the water to make food, thus there was a big decrease in the water.

b)Beaker N's flower did not have roots and leaves while there should only have the laves and the flower for the flower in beaker N, thus the experiment had two changed variables and it was not a fair test.

Q36a)



b) The plant call has chloroplast and cell wall while the human cheek does not.

Q37a) R and U b) S c) R d) U

Q38a) Gravitational potential energy, kinetic energy.

bi) To increase the height of the tap from the mill.

ii) To increase the rate of he water dripping from the tap.

c) The water will possess more gravitational potential energy to be converted into more kinetic energy. This will then be transferred into more kinetic energy of the turbine so the generator will generate more electrical energy.

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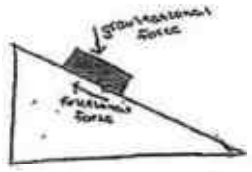
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Nanyang SA1

Q39a) N. Sand paper is rough and thus, there will be more friction between and sand paper, thus taking longer than plastic for the block to reach the bottom of the ramp.

b) 20 seconds. Oil is a lubricant and will help to decrease the amount of friction between the block and the plastic surface.

c)



Q46a) The blue and red light. The fish gathered at the plants at section L and M as the plants had photosynthesised and give out oxygen which the fishes breathe in, thus allowing the fish to have more oxygen.

b) They will die. The fishes will have not enough oxygen to breathe as there are no more plants to produce oxygen during photosynthesis.

Q41ai) To place the tall beaker in the basin of water at 100 degrees celcius and wait for the wax to melt before taking the marble out.

ii) The beaker will gain heat from the water at 100 degress celcius, the wax will then gain heat from the beaker and melt, thus allowing the wax to melt and Jie Ren can then take the marble out.

b) No. Glass is too thick. By the time the heat travels through the glass to the was, it is not hot enough to melt the wax.

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RAFFLES GIRLS' PRIMARY SCHOOL

SEMESTRAL ASSESSMENT (1) 2017

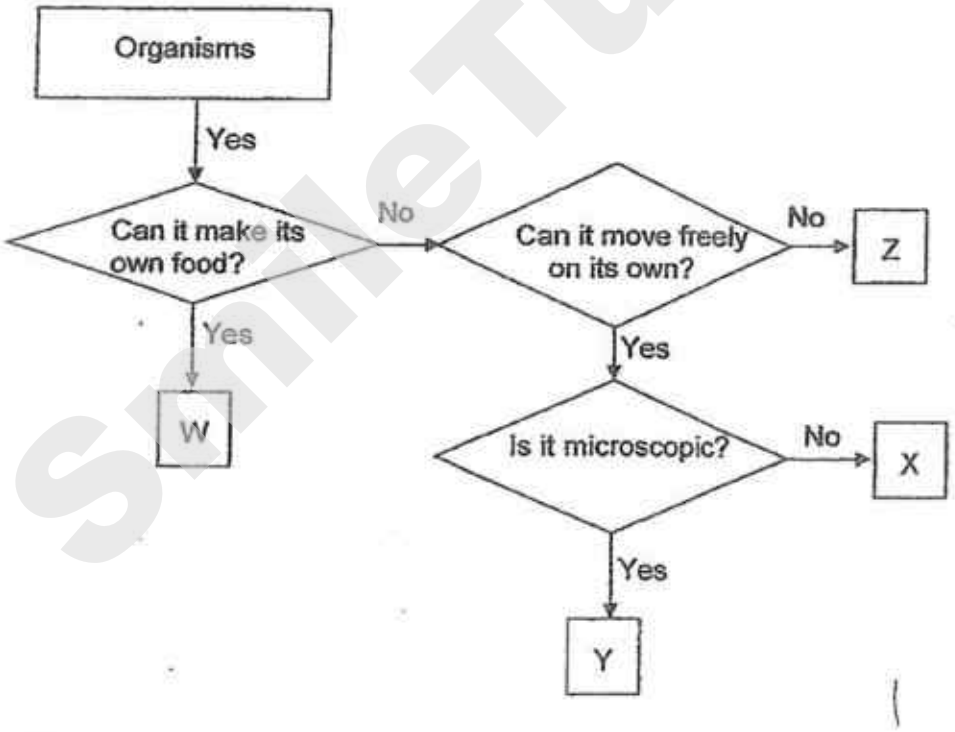
Section A	/56
Section B	/44
Your score out of 100 marks	
Parent's signature	

Name : _____ Index No: ____ Class: P6 ___

9 May 2017 **SCIENCE** Attn: 1h 45min

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

1. Organisms W, X, Y and Z are classified using the chart below.



Which organism is most likely a fungi?

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

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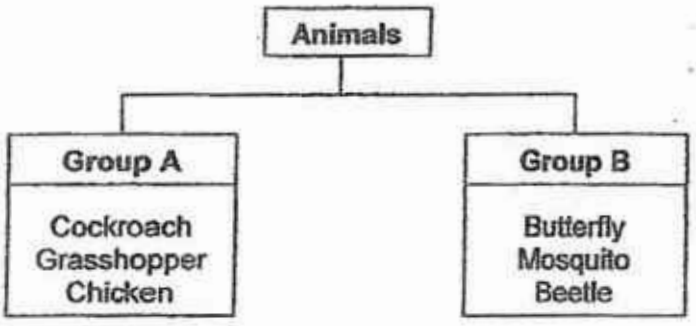
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2. Which of the following characteristic(s) can be used to differentiate between fish and reptile?

A Method of breathing
B Type of body covering
C Method of reproduction

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

3. Mary classified a group of animals in the table as shown below.



What characteristic of the animals was used by Mary in her classification?

(1) Ability to fly
(2) Number of legs
(3) Place where the eggs are laid
(4) Number of stages in its life cycle

4. Helen prepared four set-ups, P, Q, R and S, as shown in the table below.

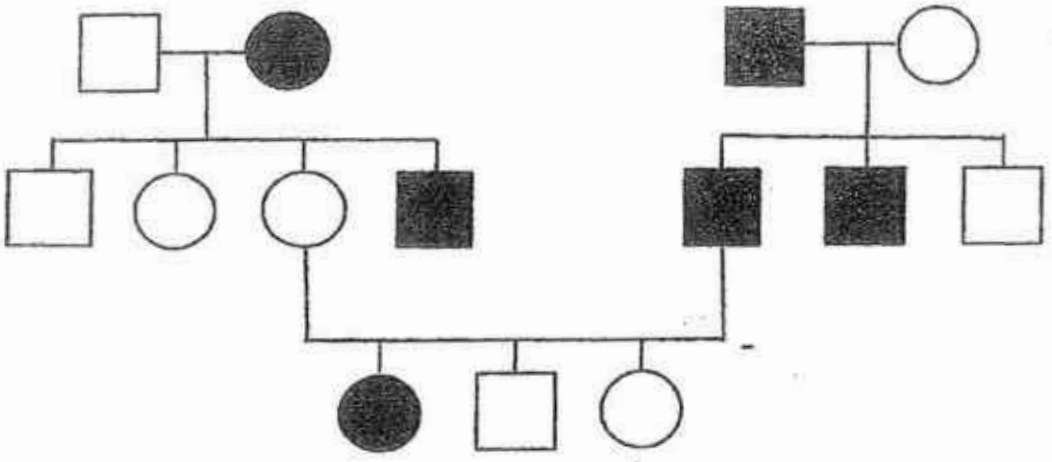
Set-up / Variables	P	Q	R	S
Number of green bean seeds	10	5	5	5
Amount of water added to the seeds everyday (cm^3)	100	100	0	100
Location where the set-up is placed	garden	garden	garden	freezer

Helen selected the following set-ups for each of the following experiment. Which of the following set-ups used will ensure a fair test?

	Set-ups	Aim of experiment
A	Q and R	To find out if water is needed for germination
B	P and S	To find out if the presence of warmth affects germination
C	P and Q	To find out if the number of seeds affects the rate of germination
D	R and S	To find out if the amount of water and presence of warmth affects germination

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

5. The diagram below shows Siti's family tree. Some of Siti's family members have attached earlobes while some have detached earlobes.



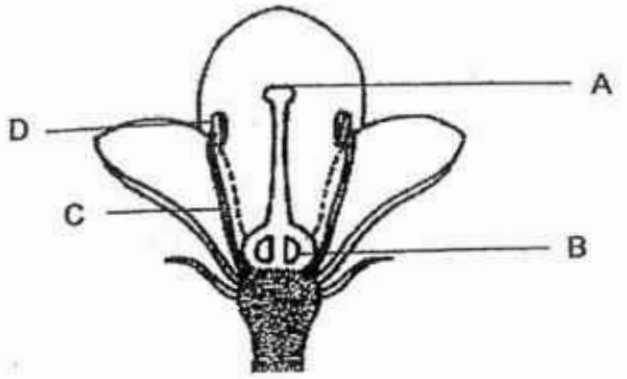
Legend:

- Male with attached earlobes
- Male with detached earlobes
- Female with attached earlobes
- Female with detached earlobes

Which one of the following statements is correct?

(1) Siti's brother has attached earlobes.
(2) Siti's parents have attached earlobes.
(3) Both Siti's grandmothers have attached earlobes.
(4) Siti's father has a brother with detached earlobes.

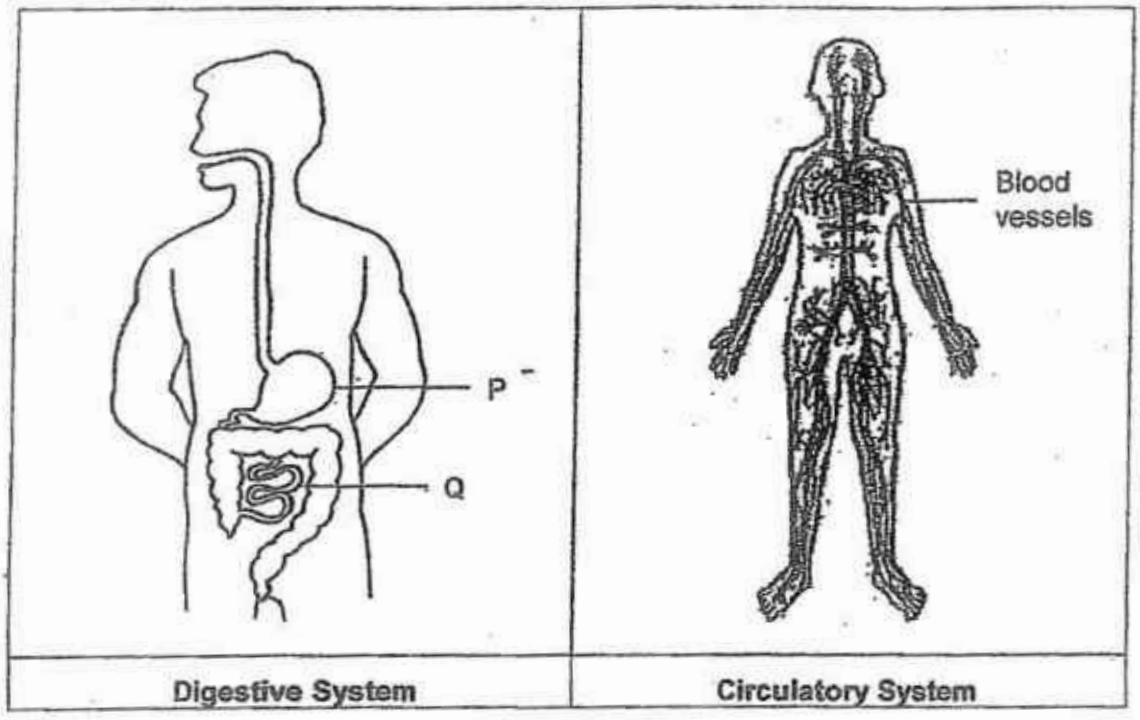
6. The diagram below shows the cross-section of a flower.



Which parts of the flower show where the pollen grains and ovules are produced?

	Pollen grains	Ovules
(1)	A	B
(2)	A	C
(3)	C	D
(4)	D	B

7. The diagram below shows parts of the digestive and circulatory system of a human.

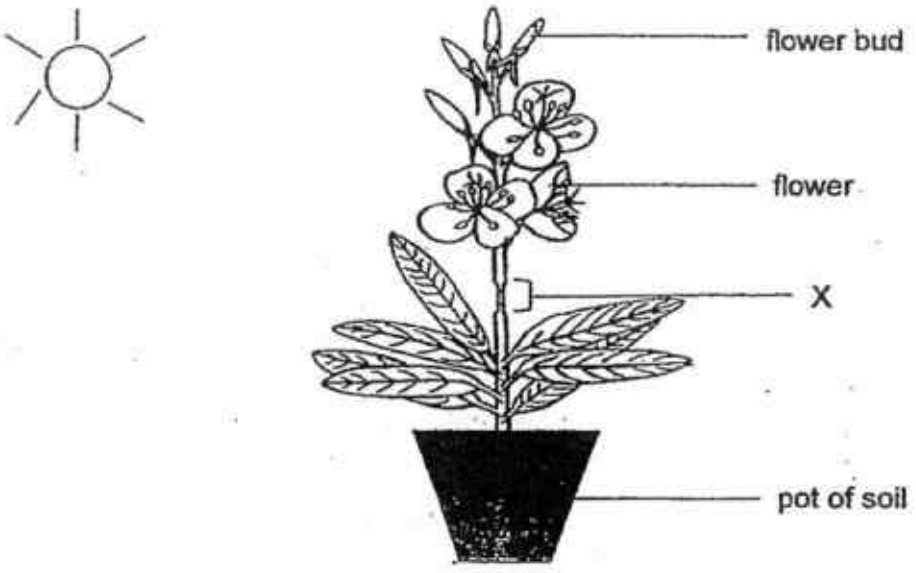


Which of the following statement(s) about the system(s) above is/are correct?

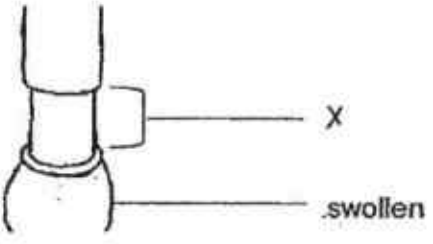
A Blood transports the undigested food from P to the large intestine.
B Digested food from Q enters the blood vessels and is transported to different parts of the body.
C The circulatory system transports carbon dioxide away from the different parts of the body.

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

8. Xiao Hui removed the outer ring of the stem of a plant bearing white flowers at X as shown in the diagram below.



She left the plant under the Sun and watered it regularly with water stained with red food colouring.



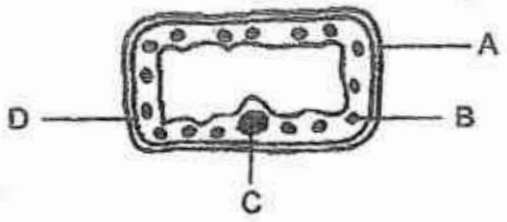
After a few days, Xiao Hui observed that the white flowers and flower buds were withering. However, the part of plant below part X was still alive and was observed to be swollen as shown in the diagram above. She also noticed that the leaves and stem below part X turned red, but not the part of the plant above part X.

Which of the following statement(s) explain(s) her observations?

A The food-carrying tubes were removed at X.
B The water-carrying tubes were removed at X.
C The food made by the leaves was accumulated at the swollen part of the stem.

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

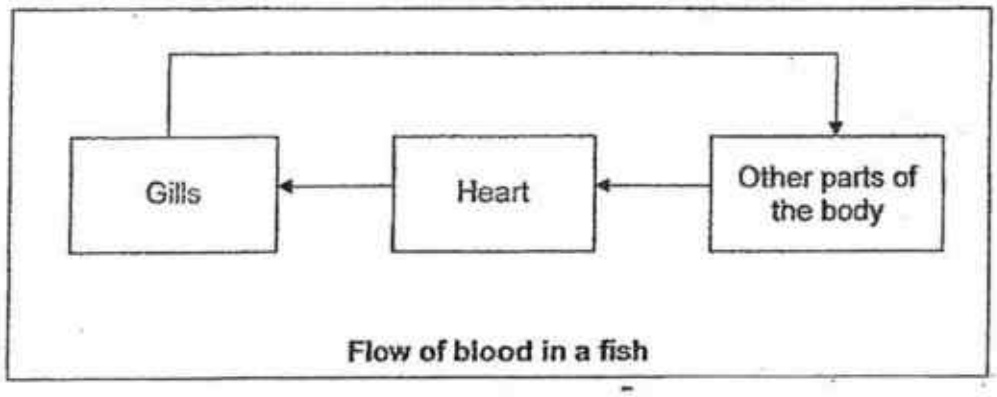
The diagram below shows a cell with its parts labelled A, B, C and D.



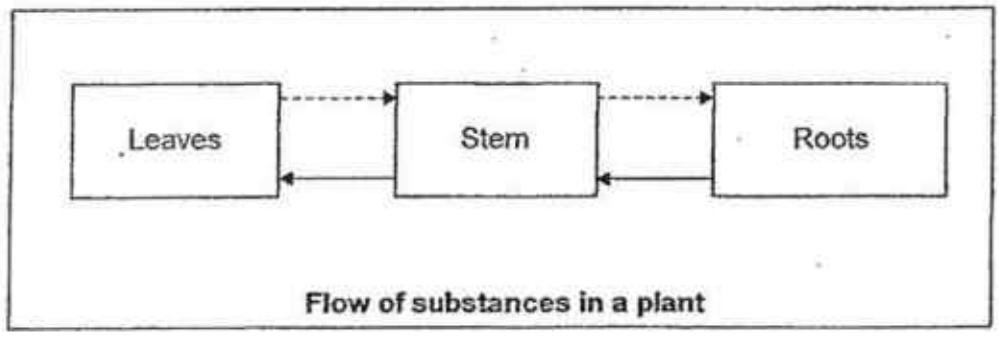
Which one of the following correctly describes the functions of parts A, B, C and D of the cell?

	Controls substances that enter or leave the cell	Controls all activities in the cell	Supports and gives the cell a rigid shape	Contains chlorophyll
(1)	A	B	D	C
(2)	D	C	A	B
(3)	C	B	A	D
(4)	B	D	C	A

10. The diagram below shows the direction flow of blood in a fish and flow of substances in a plant.



Flow of blood in a fish



Flow of substances in a plant

Which of the statements about flow of blood in fish and substances in plant are correct?

A The plant removes water through the leaves and absorb water through the roots.

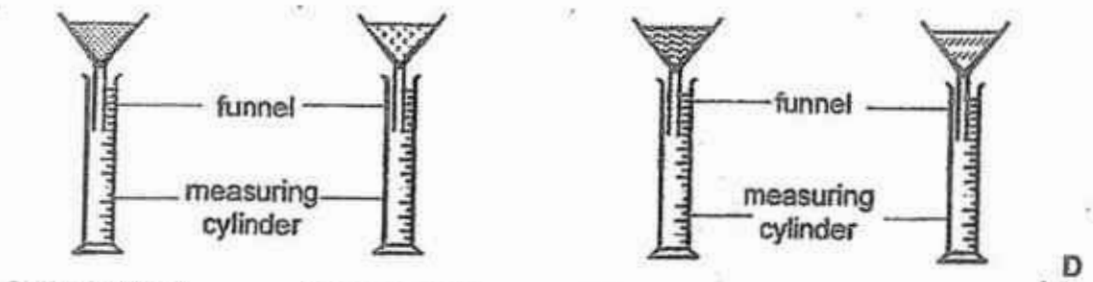
B The plant allows food and water to flow at the same time in different directions

C The flow of the blood in a fish and the flow of water in a plant moves in a circulatory direction.

D Oxygen enters the blood vessels through the gills and carbon dioxide in the blood leaves the blood vessels through the gills.

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

11. Amy prepared four set-ups by putting identical amount of soil samples, A, B, C and D into each funnel as shown below.



Soil Sample A Soil Sample B Soil Sample C Soil Sample D

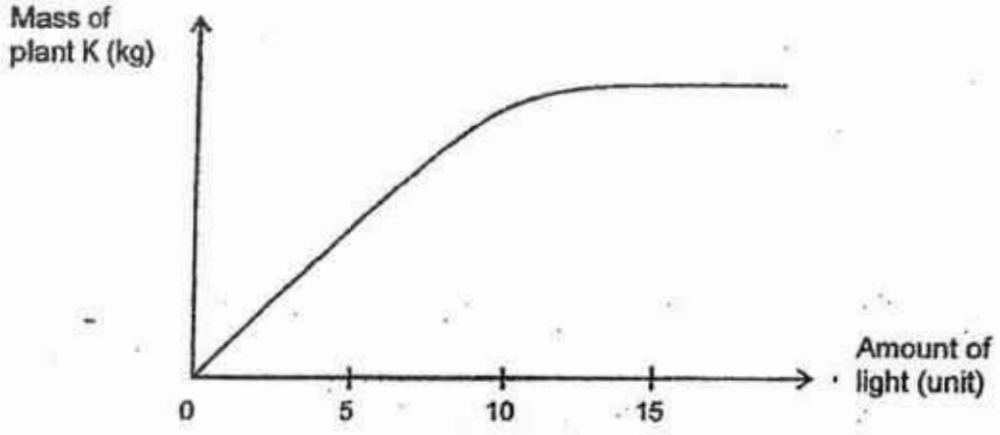
Amy poured 100 ml of water into the funnel of each set-up and recorded the amount of water collected in the measuring cylinders after two minutes in the table below.

Set-up with soil sample	Amount of water collected in the cylinder (ml)
A	60
B	20
C	95
D	80

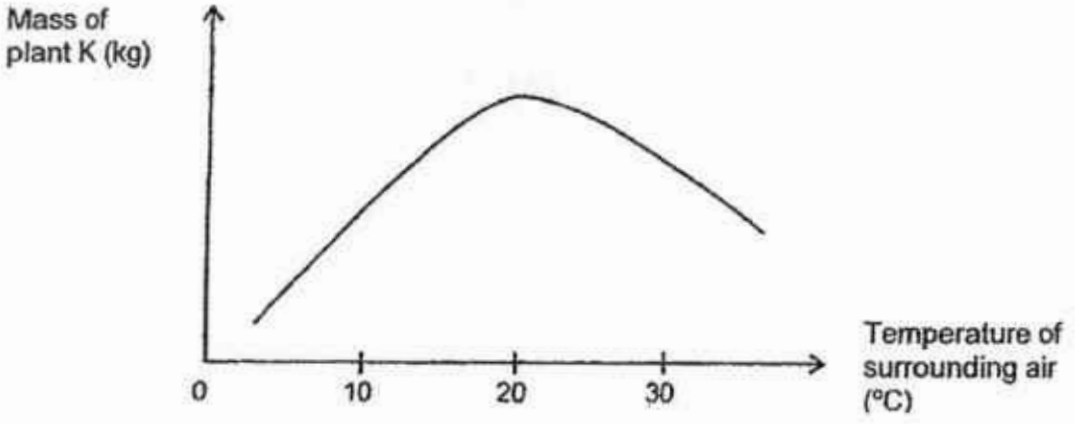
Which one of the following soil samples, A, B, C or D, is able to hold the greatest amount of water?

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

12. Lillian conducted an experiment to investigate the effect of the amount of light on the growth of plant K over a period of time. She recorded her findings in the graph below.



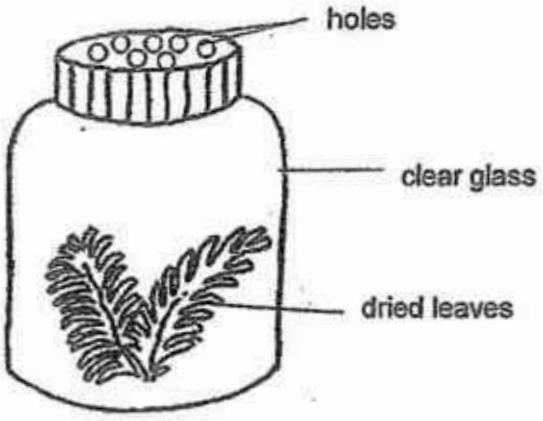
Next she also conducted another experiment on the effect of temperature of the surrounding air on the growth of Plant K over a period of time.
The graph below shows the results of her experiment.



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

(1) The ideal temperature for Plant K to produce the most food is 20°C
(2) The higher the temperature of the surrounding air, the taller Plant K is.
(3) As the amount of light increases, the temperature of the surrounding air decreases.
(4) In order for plant K to grow well, Lily needs to expose Plant K to surrounding air temperature of 30°C and 15 units of light.

13. Mavis carried out an experiment to study the decomposition of dead leaves. She placed some dried leaves in container as shown below and placed it in a cupboard.



After 2 weeks, she noticed that no decomposition had taken place.
What change(s) should she make to the set-up so as to speed up the rate of decomposition?

A Add some water.
B Remove the lid.
C Add some caterpillars
D Add more dead leaves

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

14. The table below shows the description of some physical factors in four different habitats.

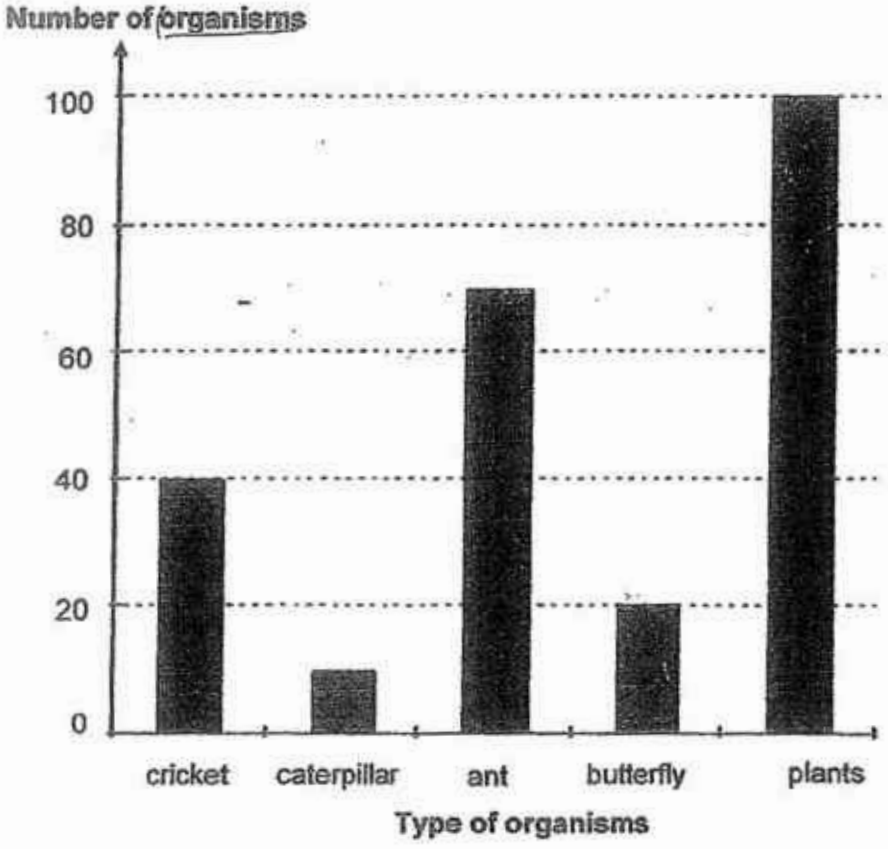
Habitats / Physical factors	A	B	C	D
Humidity	high	high	low	Low
Average temperature (°C)	20	32	18	23
Light intensity (lux)	low	high	high	Low
Time taken for 25ml of water to flow through soil samples	21	16	13	8

Organisms Y prefer dark and damp places. They are most active when the surrounding temperature ranges from 20°C to 25°C.

Which of the following habitat(s) will most organism Y be found?

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

15. Fiona and her classmates counted the number of plants and animals found in a certain part of their school and recorded their findings in the graph shown below.

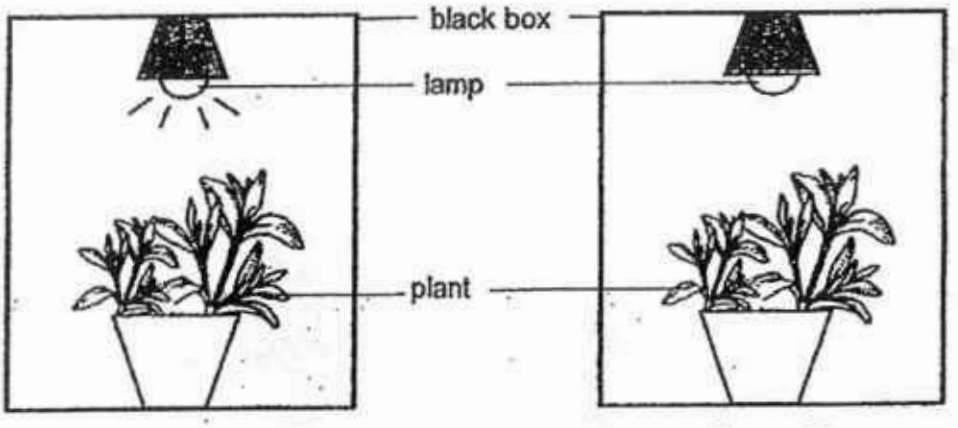


Based on the information above, which one of the following statements is/are definitely true?

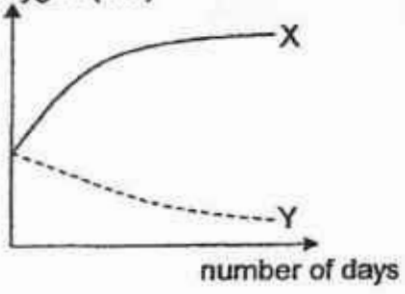
A The population of butterfly is the smallest.
B The total number of populations in the habitat is 240.
C The total number of populations in the habitat may be more than five.

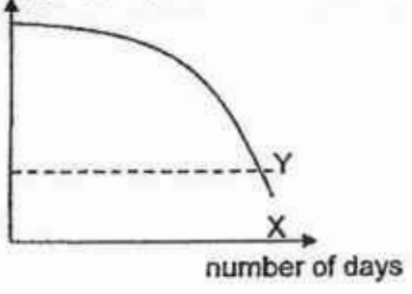
(1) B only
(2) A and C only
(3) A and B only
(4) B and C only

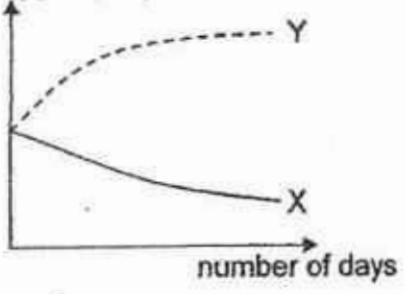
16. Gary prepared two identical set-ups, X and Y, and placed them in the dark enclosed boxes for three days as shown in the diagrams below. Only the lamp in set-up X was switched on over the three days.

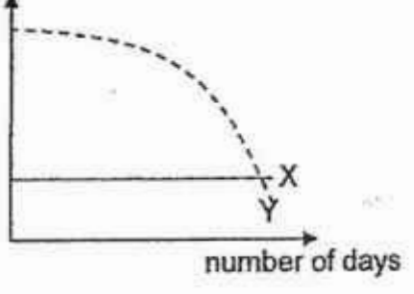


Which one of the following graphs shows the change in the amount of oxygen in the set-ups X and Y over the three days?

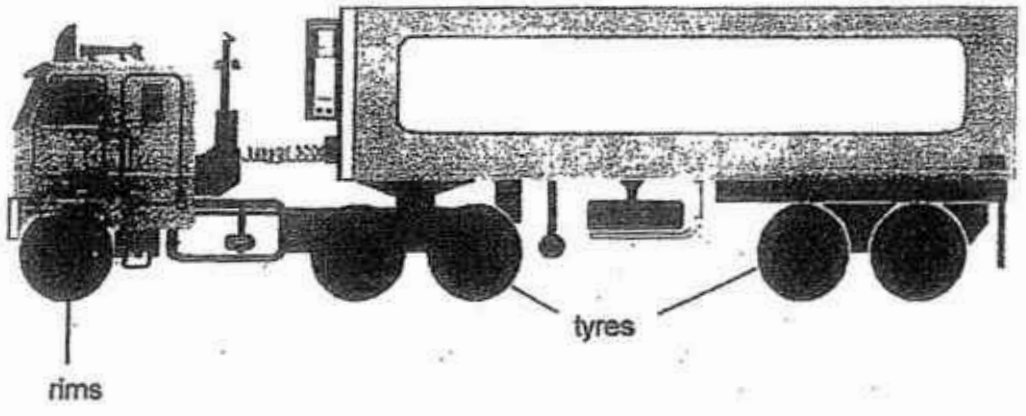
(1)


(2)


(3)


(4)


17. Material X is used to make the tyres of the truck as it will not break easily when the tyres roll over stones. It is able to wrap around the rims of the wheels. When it rains, water does not get into the tyres.

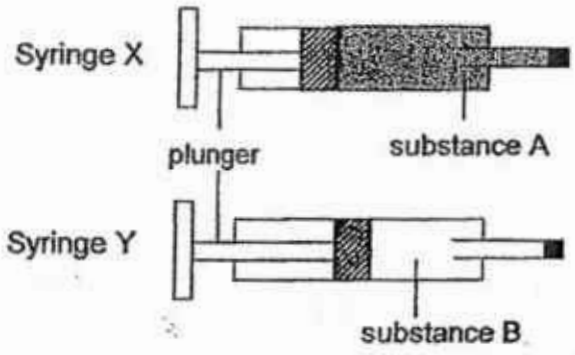


Based on the information above, which of the following are the properties of material X taken into consideration when used to make the tyres?

A strong
B flexible
C waterproof
D able to float on water

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

18. Two syringes, X and Y, contained substances A and B respectively. Plunger in syringe X could not be pushed in while plunger in syringe Y could be pushed in slightly as shown in the diagram below.



Which of the following statement(s) explain(s) the observations?

A Substance A has definite volume.
B Both substance A and B have mass.
C Substance B can be compressed but not A.

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

19. The table below shows the states of four substances, P, Q, R and S, at different temperatures.

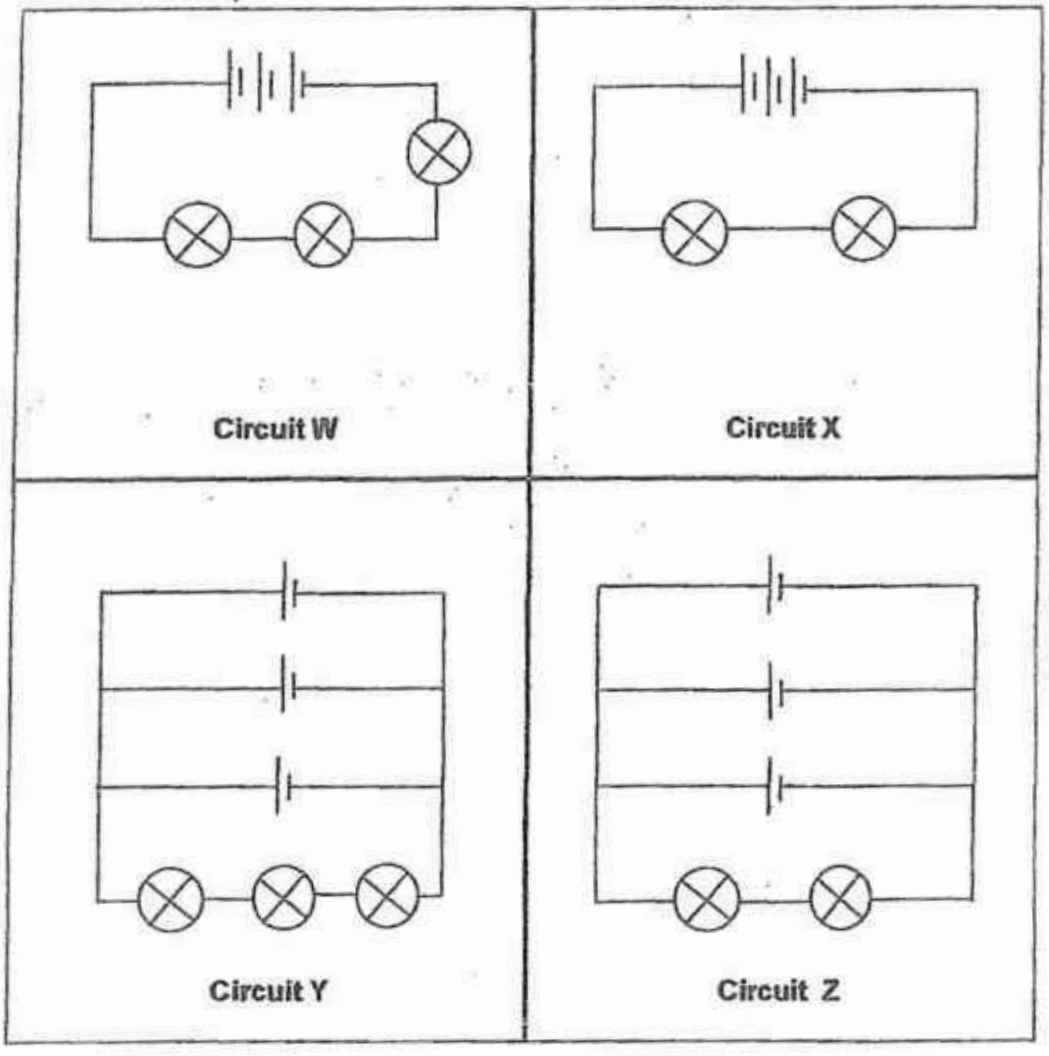
State of substance at / Substances	10 °C	40 °C	70 °C
P	solid	solid	solid
Q	solid	solid	liquid
R	solid	liquid	liquid
S	liquid	liquid	liquid

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

A The boiling point of substance R is 40°C.
B The melting point of substance Q is 40°C.
C Substance P has the highest melting point.
D Substance S has a boiling point less than 10°C.

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

20. Study the four circuits W, X, Y and Z shown below.

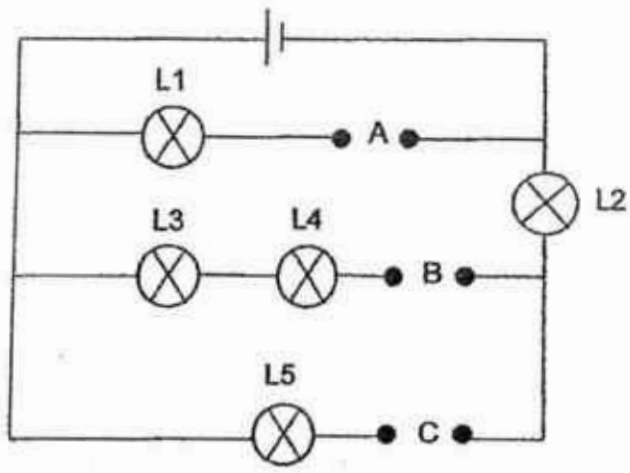


The bulbs and batteries in the circuits are identical and all the bulbs lit up.

Which one of the following statements about the brightness of the bulbs is correct?

(1) The bulbs in circuit X are the brightest.
(2) The bulbs in circuit Y is brighter than the bulbs in circuit Z.
(3) The bulbs in circuit X is as bright as the bulbs in circuit Z.
(4) The bulbs in circuit W is as bright as the bulbs in circuit X.

21. Ahmad had three materials, X, Y and Z. He placed them in positions, A, B and C, of the circuit shown below.



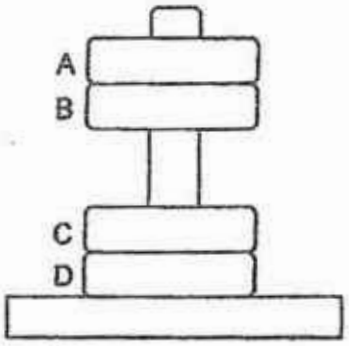
The results of the experiment were shown in the table below. When any of the lamps, L1, L2, L3, L4 or L5, lit up during the experiment, a tick (√) was placed in the box.

Positions where materials were placed			Lamps				
A	B	C	L1	L2	L3	L4	L5
X	Y	Z	√	√	√	√	

Which of the following would show the correct result if the materials, X, Y and Z, were placed at different positions?

	Positions where materials were placed			Lamps				
	A	B	C	L1	L2	L3	L4	L5
(1)	X	Z	Y	√				√
(2)	Y	X	Z	√		√	√	√
(3)	Z	Y	X		√	√	√	
(4)	Y	Z	X	√	√			√

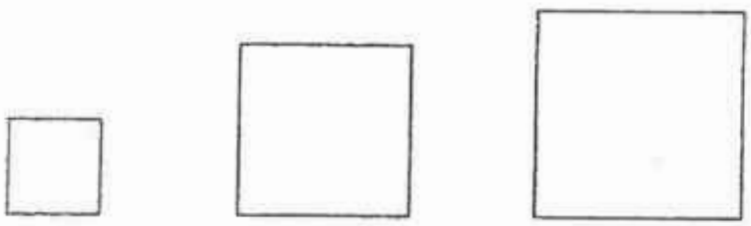
22. The set-up below shows four rings, A, B, C and D, which pass through a plastic rod.



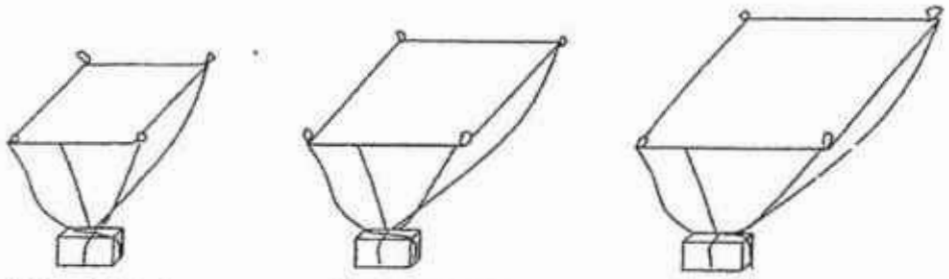
Which one of the following identifies A, B, C and D correctly?

	A	B	C	D
(1)	wood	magnet	steel	magnet
(2)	magnet	steel	wood	magnet
(3)	wood	magnet	magnet	steel
(4)	magnet	steel	magnet	wood

23. The canopies of parachutes, A, B and C were made of the same material but different sizes as shown below.



A 1-kg weight was tied to each parachute. The three parachutes were dropped at different heights above ground.



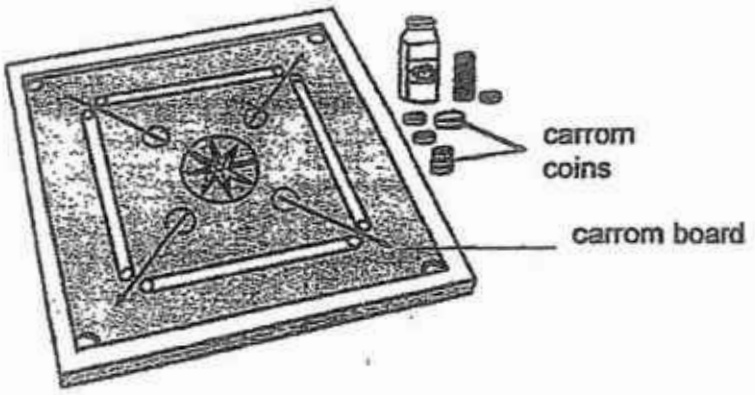
Parachute A Parachute B Parachute C

The parachutes were observed to reach the ground at the same time.

Which one of the following could possibly be the heights where parachutes A, B and C were dropped?

	Height for parachute (m)		
	A	B	C
(1)	3	1	2
(2)	1	2	3
(3)	2	3	1
(4)	3	2	1

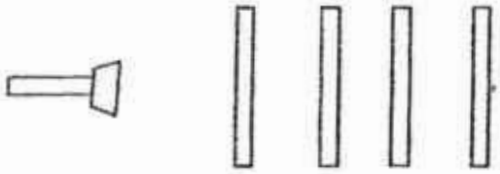
24. Tom and his friends want to play a game of carrom. In the game, the carrom coins need to move over long distance on the carrom board easily.



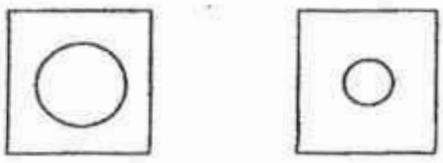
Which of the following should they do before playing the game so that the coins will move a longer distance on the board?

(1) Spread powder on the surface of the carrom board.
(2) Place a piece of rubber mat on the surface of the carrom board.
(3) Paste sandpaper on the surfaces of the carrom coins that are in contact with the board
(4) Scratch the surfaces of the carrom coins that are in contact with the board.

25. Mabel carried out an experiment in a dark room with the set-up as shown below. She arranged 4 sheets of the same size but of different materials K, L, M and N in a straight line.



Circles of different sizes were cut out from sheet K and sheet L as shown in the diagrams below.

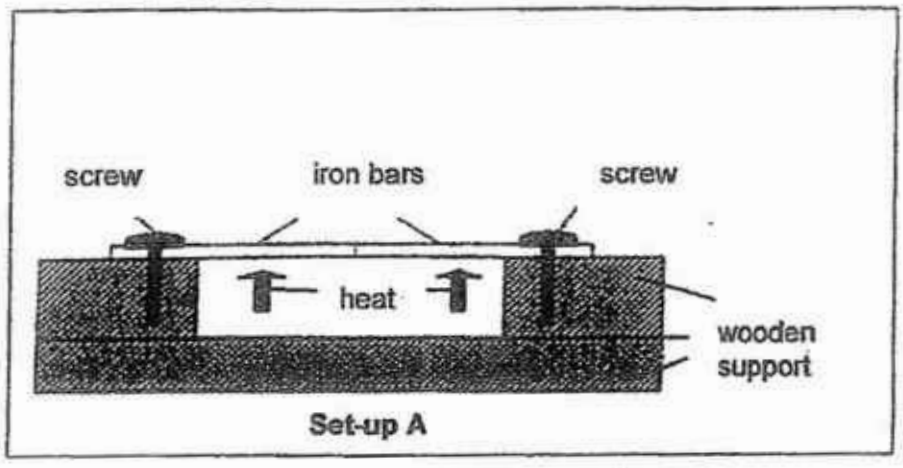


When the torch was switched on, she only observed a bright circular patch of light on sheet M.

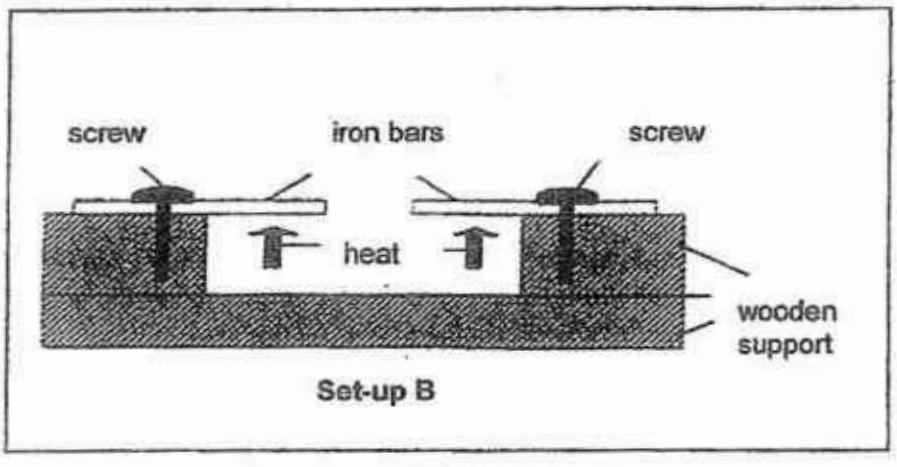
Which one of the following is definitely true about the degree of transparency of the sheets used above?

	K	L	M	N
(1)	not possible to tell	opaque	opaque	transparent
(2)	transparent	transparent	not possible to tell	opaque
(3)	transparent	not possible to tell	opaque	transparent
(4)	opaque	transparent	opaque	not possible to tell

26. Wilson carried out an experiment using set-ups, A and B as shown below. The materials used in the set-ups were identical. The iron bars were positioned differently as shown below.



Set-up A



Set-up B

The iron bars attached firmly to a wooden support in both set-ups were heated for twenty minutes over high heat.

Which one of the following shows the correct explanations for his observations after twenty minutes?

(1) The iron bars in set-up A bend due to expansion.
(2) The iron bars in set-up A bend due to contraction.
(3) The iron bars in set-up B bend as it expanded faster.
(4) The iron bars in set-up B did not bend as the iron bars lose heat to the surroundings.

27. Jason, Timothy and Audrey were given the same amount of hot tea of the same temperature at the same time. Jason and Timothy poured their hot tea into a porcelain cup and saucer respectively and left them on the table for one minute before drinking the tea. While Audrey poured the hot tea between two identical porcelain cups repeatedly for one minute before drinking it as shown below.

	Before	After 1 minute
Jason	 **Porcelain cup**	Drank the tea from the cup.
Timothy	 **Porcelain saucer**	Drank the tea from saucer.
Andrey	 **Porcelain cups** Audrey poured the hot tea between the two porcelain cups repeatedly for one minute.	Drank the tea from one of the cups

Based on the information above, which one of the following statements is correct?

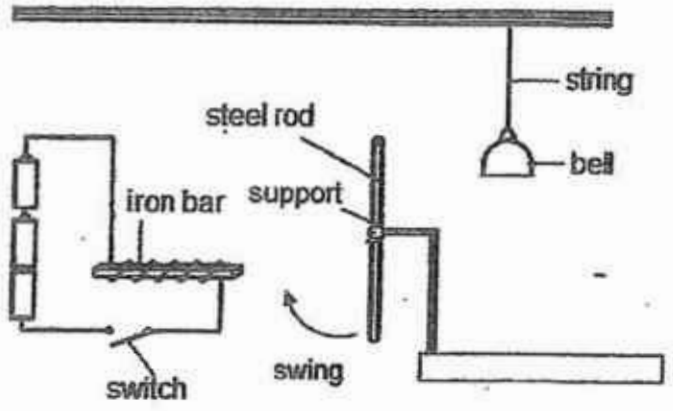
(1) Timothy's tea ~~in the~~ cooled down fastest as the tea lost heat to the saucer the fastest.

(2) The surface area of Aubrey's tea exposed to the surrounding air is the greatest, hence the tea lost heat to the surrounding the fastest.

(3) The surface area of the cup is the smallest, hence Jason's lips gain heat from the cup the slowest.

(4) Audrey's cup of tea cooled down the slowest as the tea gained more heat from the surrounding air.

28 Hannah designed a doorbell as shown below. She attached the steel rod to a support so that the rod can swing freely. When the circuit is closed, she observed that the steel rod swing and hit the bell.



Which one of the following correctly describes the main energy conversion for the above observation?

	Energy in batteries	Energy in wires	Energy in steel rod	Energy in bell
(1)	potential energy	electrical energy	sound energy	potential energy
(2)	electrical energy	kinetic energy	kinetic energy	sound energy
(3)	electrical energy	electrical energy	electrical energy	kinetic energy
(4)	potential energy	electrical energy	kinetic energy	sound energy

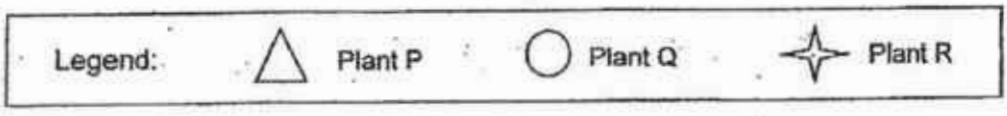
Name : _____ Index No : _____ Class : P6 ____

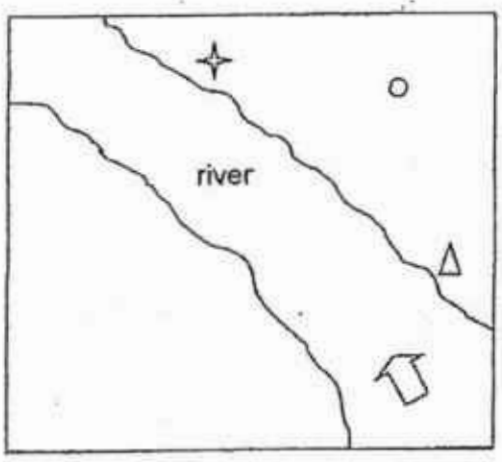
44

SECTION B (44 marks)

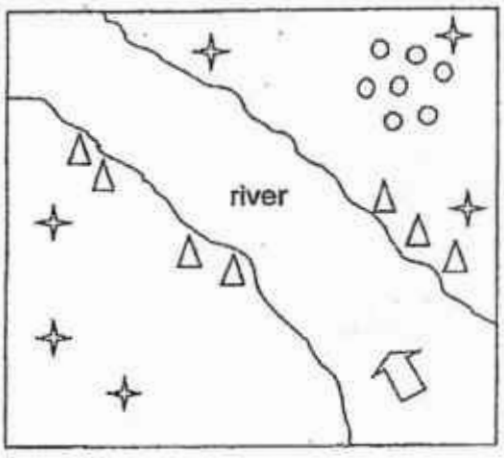
For questions 29 to 41, write your answers clearly in the spaces provided.
The number of marks available is shown in the brackets [ ] at the end of each question or part question.

29. Francis counted the number of wild plants P, Q and R on an island. After a few months, he noted down his observations in the diagrams shown below.





Before



After

(a) Based on the information above, state the method of seed dispersal for plants P, Q and R. [1]

(i) P: _____

(ii) Q: _____

(iii) R: _____

(b) Based on the observation above, give a reason for your answer in (a)(i). [1]

_____

Score 2

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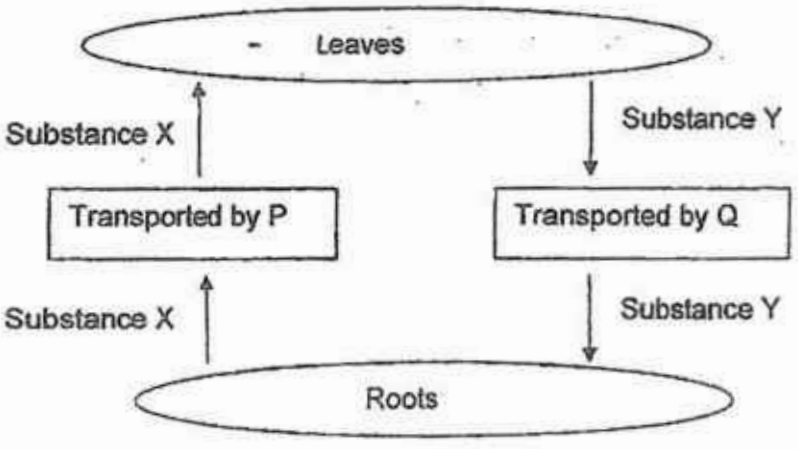
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(c) State one physical characteristic that plant P is likely to have that helps it in its seed dispersal. [1]

_____

_____

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



(a) (i) Identify tubes P and Q in the stem of the plant. [1]

P : _____

Q : _____

(b) (ii) Identify substances X and Y. [1]

X : _____

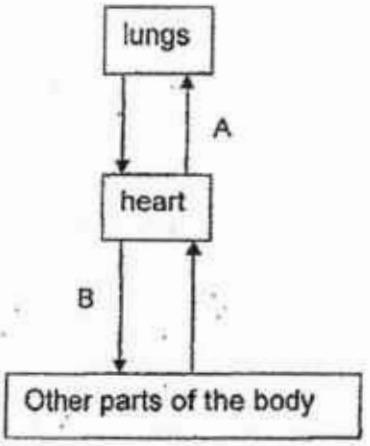
Y : _____

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Score 3

Continue from previous page

30. The diagram shows the flow of blood in a human body.



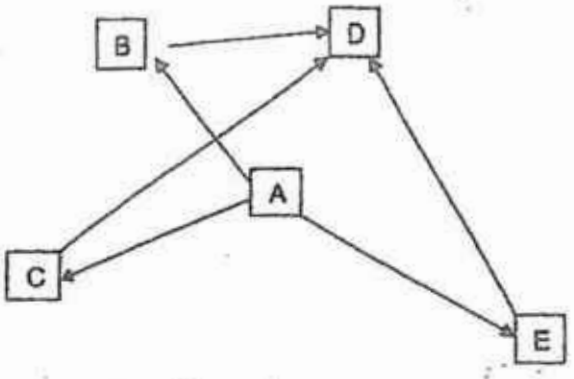
(c) What is the difference between the composition of oxygen and carbon dioxide in the blood flowing at A and B? [1]

_____

_____

Score 1

31. Study the food web of some organisms in a habitat below.



(a) Based on the food web above, use letters, A, B, C, D, E ~~or F~~, to identify the following: [2]

or

food producer(s)	
Predator(s) only	

(b) Based on the food web above, when there is a sharp increase in the population B, the number of C and E remained the same. How would the population of A and D change? Give a reason for your answer. [2]

(i) Effect of population A and reason:

_____

_____

_____

(ii) Effect of population D and reason:

_____

_____

_____

Score	/4

32. A farmer's crops had been destroyed by aphids. He wanted to find out which types of ladybirds, X,Y,Z, is most effective in getting rid of the aphids in his plantation.

He prepared the set-ups by placing 20 ladybirds and 200 aphids in each container. At the end of the experiment, the farmer recorded the number of aphids left in each set-up.

Set-up with	Number of aphids	
	Before	After
Ladybird X	200	194
Ladybird Y	200	107
Ladybird Z	200	48

(a) Based on the results of his experiment, which type of ladybirds, X, Y or Z, should he use to get rid of the aphids most effectively?
Give a reason for your answer. [1]

_____

_____

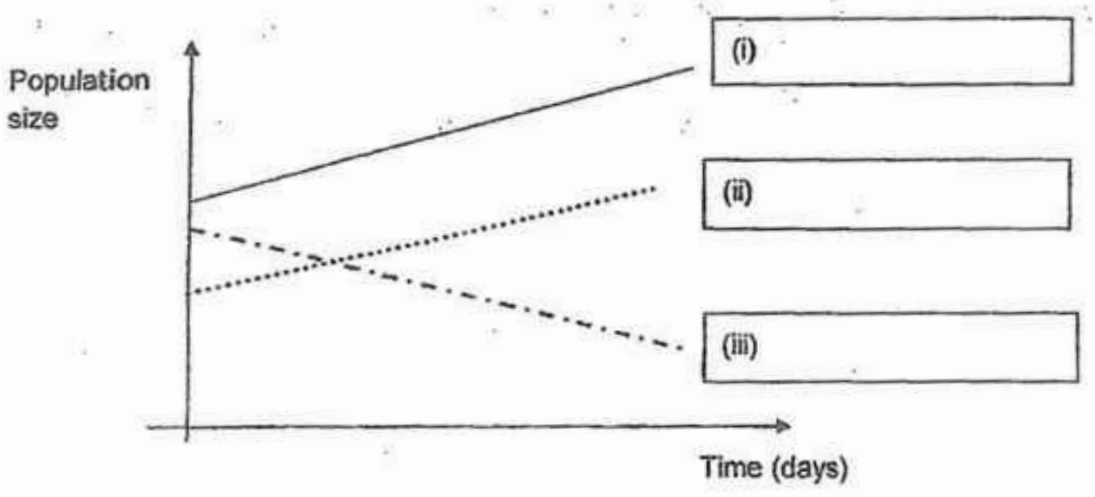
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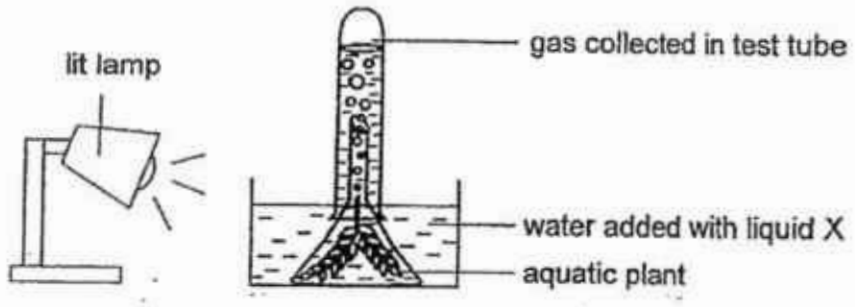
32 (b) The graph below shows the change in population size of the plants, aphids and ladybirds after the introduction of the ladybirds into the farmer's plantation over a period of time. There were no other organisms in this habitat.

Label the lines correctly using the words, **'plants', 'aphid' and 'ladybird'** to show the change in population size over time. [3]



Score	3

33. Dina prepared the following set-up and placed it in a dark room as shown below.



The water in the experiment was added with liquid X. Liquid X changes colour according to the concentration of carbon dioxide as shown in the table.

Amount of carbon dioxide in water	Less than normal	normal	Higher than normal .
Colour of water with liquid X	purple	red	yellow

She observed the amount of gas collected in the test tube over three days and the change in the colour of water with liquid X and recorded her observations in the table below.

	Amount of gas collected in test tube (cm^3)	**Colour of water with liquid X**
Day 0	0	yellow
After 1 day	3	red
After 2 days	5	purple
After 3 days	6	purple

(a) Name the gas collected in the test tube. [1]

_____

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Score 1

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(b) Explain her observations made over the three days. [2]

_____

_____

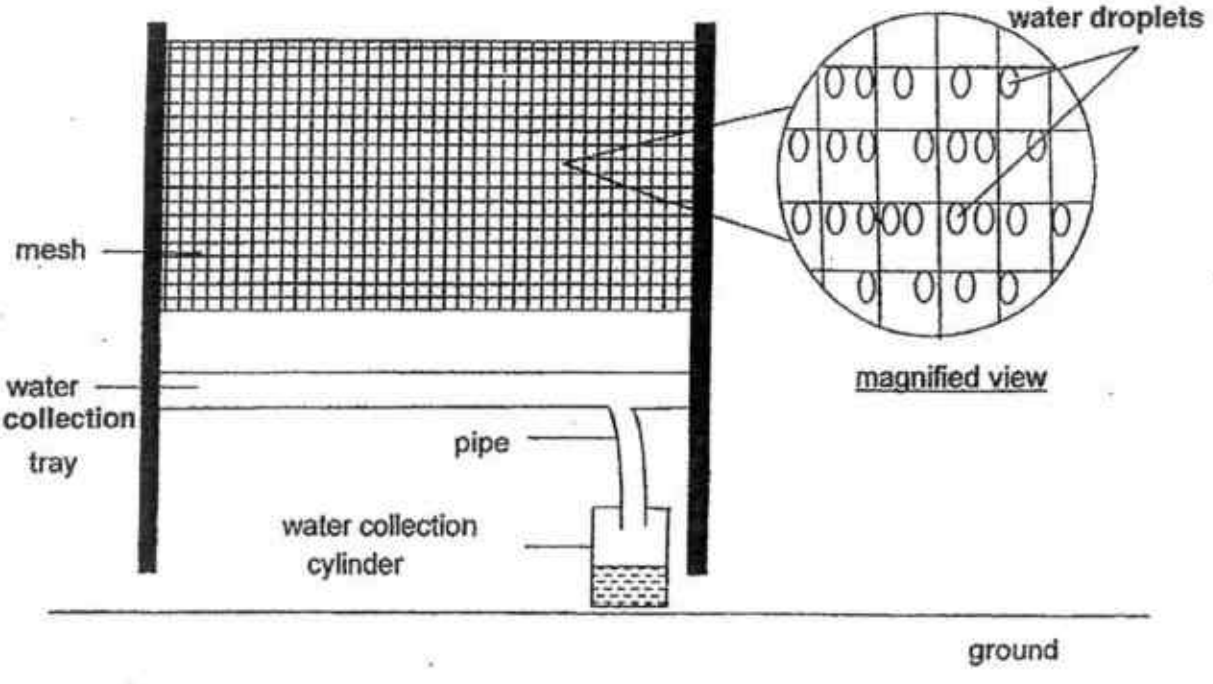
(c) State the relationship between the amount of carbon dioxide present and the amount of gas produced by the plant. [1]

_____

_____

Score	/ 3

34. The diagram below shows a water collecting device found in countries with little rainfall. The device was left in the open throughout the night. In the morning, tiny droplets of water were found on the mesh. There was no rain throughout the night.



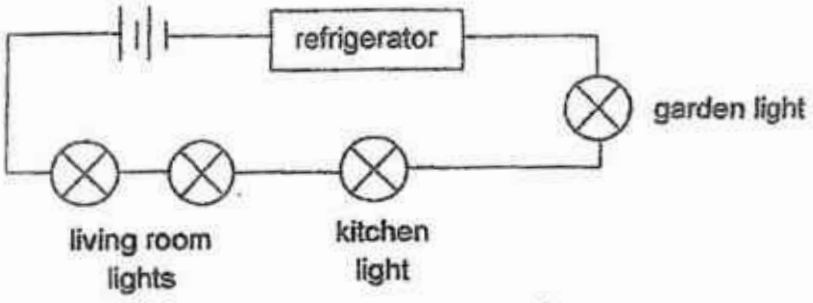
(a) Explain how the water droplets were formed on the mesh. [2]

(b) (i) In order to increase the amount of water collected, what can be done to the above set-up without changing the type of materials used in the device? [1]

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

Score	/4

35. The wiring in Lynn's house was arranged as shown below.



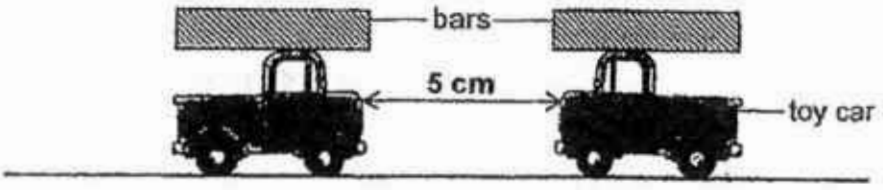
When the garden light was faulty and Lynn turned it on, she observed that the refrigerator and all the other lights would not work.

(a) How should Lynn arrange the wiring in her house such that if one bulb is not working, the refrigerator and other bulbs would still work?

Draw the electrical circuit diagram in the box below. [2]

Score	/ 2

36. Jenny attached two bars on top of each toy car. She placed the toy cars 5 cm apart from each other as shown in the diagram below.



She noticed that the toy cars moved away from each other and ended up 10 cm apart from each other.

(a) Based on the above observations, what could she conclude about the two bars placed on top of the toy cars? Give a reason for your answer. [2]

_____

_____

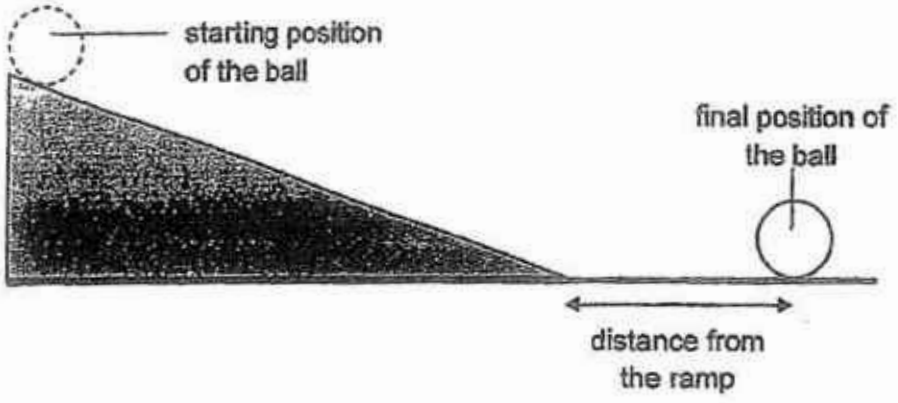
(b) Without changing any objects used in the experiment, suggest what Jenny could do such that the toy cars could move from their original positions and ended up more than 10 cm apart from each other. [1]

_____

_____

Score 3

37. Tom released a ball from the top of a ramp. He noticed that the ball rolled down the ramp, across the floor and stopped some distance from the ramp as shown in the diagram below.



Tom measured the distance of the ball from the ramp and repeated the experiment but changed the surface of the ramp using different materials.

Material of the surface of the ramp	Distance from the ramp where the ball came to a stop (cm)
A	20
B	15

(a) Explain the difference in the distance travelled by the ball on the ramp made of different materials. [1]

_____

_____

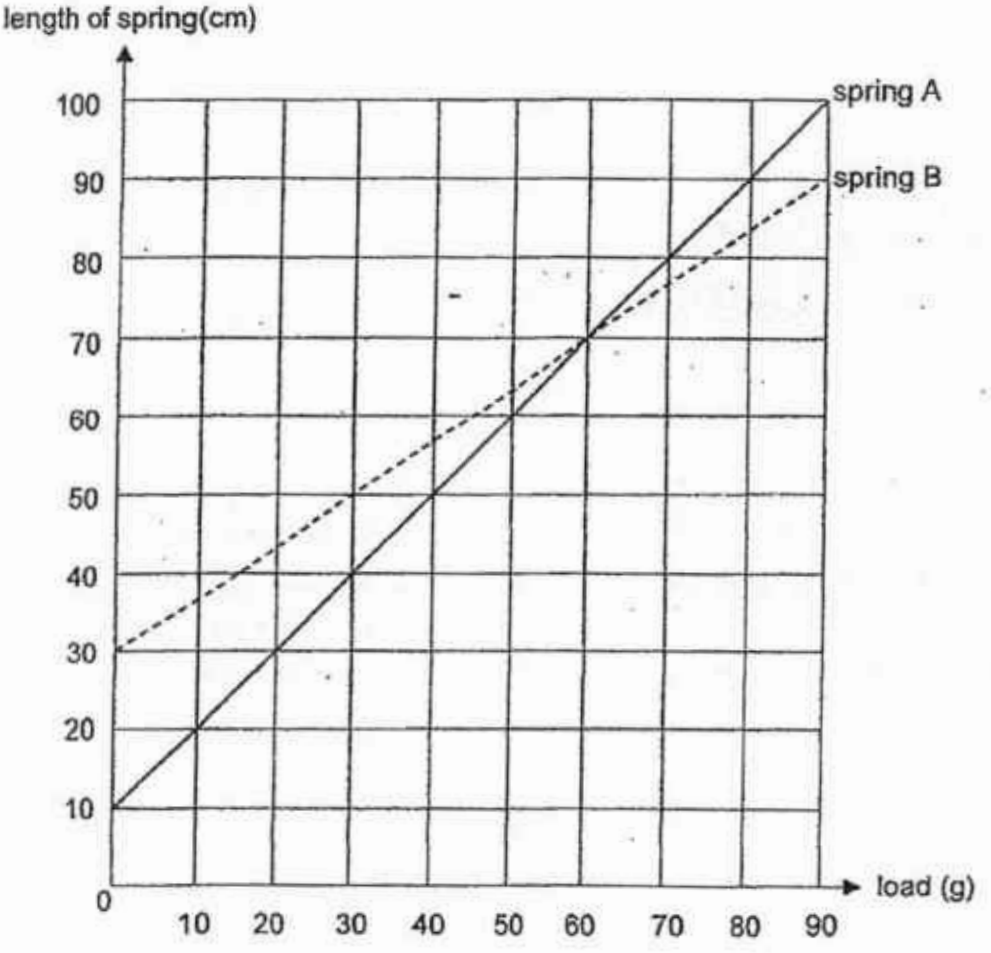
(b) What can Tom do so that the ball moving on ramp with surface B could travel a longer distance without replacing any items from the set-up. Give a reason for your answer. [2]

_____

_____

Score	
	3

38. Siti conducted an experiment on springs A and B. She hung various loads one at a time and recorded the length of the spring. Her results are shown in the graph below.



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

_____

(b) Which spring, A or B, is more elastic? Give a reason for your answer. [1]

_____

_____

Score 2

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(c) After Ali hung 100 g of load on spring A, he removed all the loads and observed that spring A was 20 cm long.

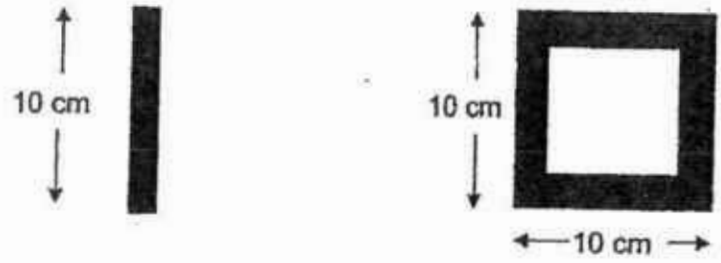
Give a reason for his observation. [1]

_____

_____

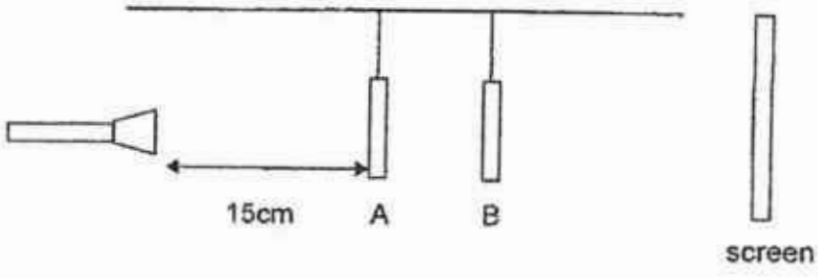
Score	/ 1

39. Mabel used ~~the three~~ two wooden objects, ~~A, B and C~~ A and B, below in her experiment.

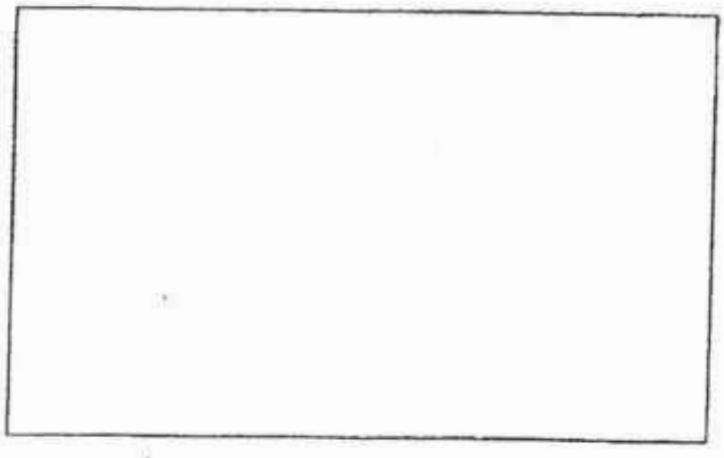


A B

She hung the ~~3~~ 2 wooden objects at different distances from the lighted torch as shown below.



(a) In the box below draw the shadow of the objects Mabel would observe on the screen. [2]



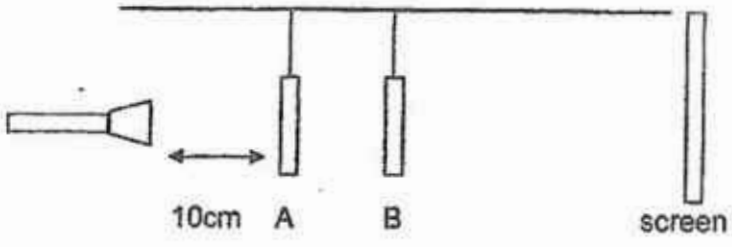
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Score 2

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(b) Explain how you arrive at your answer in (a). [2]

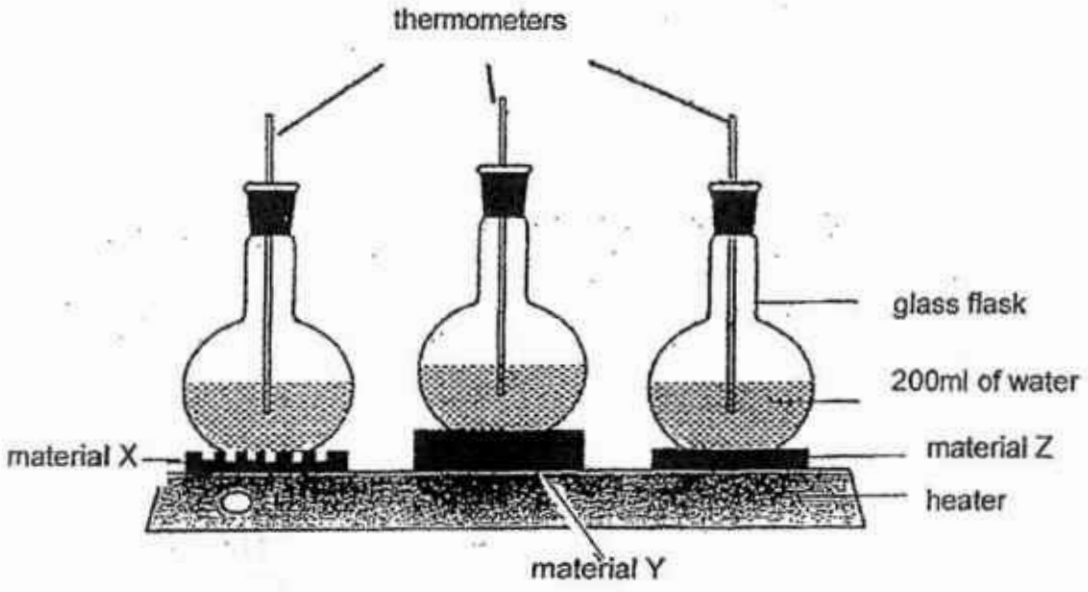
(c) Mabel moved the torch nearer to objects A and B.



What change would she observe in the shadows formed on the screen? [1]

Score 3

40. Sam heated three identical glass flasks containing 200 ml of water on materials X, Y, Z.
He placed the three materials, X, Y and Z on the heater and positioned the three glass flasks containing 200 ml of water on each of the materials as shown below.



(a) List two variables Sam must keep the same, in order to conduct a fair test. [2]

_____

_____

(b) After making the changes to ensure his experiment was a fair test, Sam recorded the time taken for the water to boil as shown below

Material	Time taken for the water to start boiling (min)
X	4
Y	15
Z	8

Based on Sam's results, which material, X, Y or Z would you use to make an ice box? Give a reason for your answer. [1]

_____

Score	
	3

Continue from previous page

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

_____

_____

_____

(c) Describe what Johnson has to do to ensure that the data collected is reliable? [1]

_____

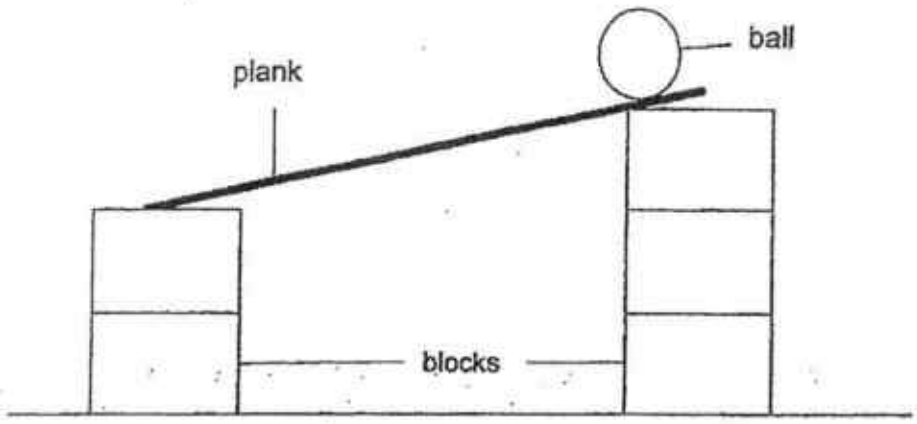
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- END OF PAPER -

Score 2

Setters : Mdm Lim L.S., Mrs C. Lim, and Mdm J. Woon.

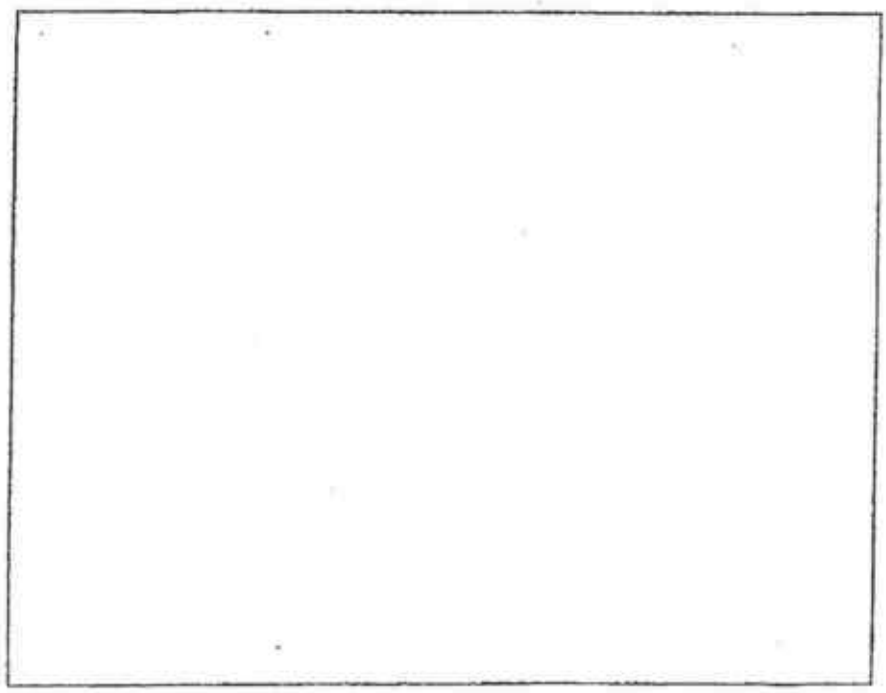
41. Johnson set up the ramp below using five identical blocks.



Johnson released the ball down the ramp. The time taken for the ball to roll down the ramp is approximately four seconds.

(a) Johnson wanted to rearrange the five blocks such that the ball will roll down the ramp in less than four seconds.

Draw the new set-up using all the objects provided in the box below. [1]



Score	1

Continue on next page

ANSWER KEY

YEAR	:	2017
LEVEL	:	PRIMARY 6
SCHOOL	:	RAFFLES GIRLS' PRIMARY SCHOOL
SUBJECT	:	SCIENCE
TREM	:	SEMESTRAL ASSESMENT (1)

SECTION A

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

SECTION B

Q29. a) (i) By water
(ii) By splitting / explosive action
(iii) By animal / wind

b) The plants P were found growing along / near / beside the river.

c) . Fibrous husk
. Water proof outer-covering

Q30. a) (i) Water carrying tube / xylem
(ii) Food carrying tube / phloem

b) (i) Water
(ii) Food

c) The blood flowing at A is richer in carbon dioxide and poorer in oxygen than the blood in B.

Q31. a) (i) A (arrows pointing outward only).
(ii) D (arrows pointing towards only).

b) (i) Population A would decrease as more B would feed on A.
(ii) Population D would increase as D would have more food, B , to feed on.

Q32. a) Z, the number of aphids left in the setup was the least / there was a greatest decrease In the number of aphids. (use superlative)

b) (i) Plants (ii) ladybirds (iii) Aphids

Q33. a) Oxygen

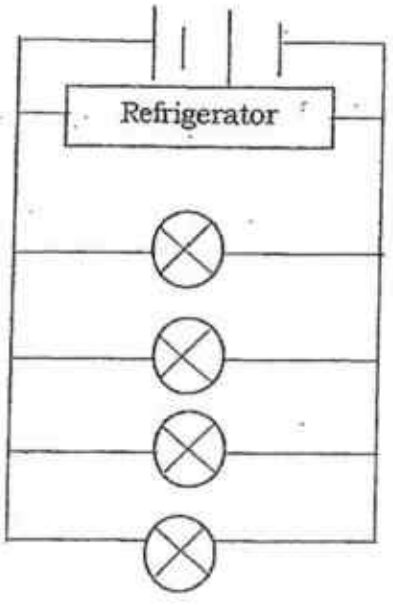
b) The aquatic plant used carbon dioxide to carry out photosynthesis and produce oxygen.

c) The smaller the amount of carbon dioxide, the smaller the amount of oxygen produced by the plant.

Q34. a) The water vapour in the air lost heat and condensed on the cooler surface of the mesh to form tiny water droplets.

b) (i) A larger amount of mesh can be used.
(ii) The greater the surface area of the mesh, the greater the amount of water vapour that come in contact and lost heat to and condense on the mesh.

Q35.



Q36. a) The two bars are magnets. The like poles of magnet were facing other such that the Magnets repelled.

b) Apply lubricant such as water on the ground.

Q37. a) The ball travelled a longer distance on A as there is less friction between the surface A and the ball.

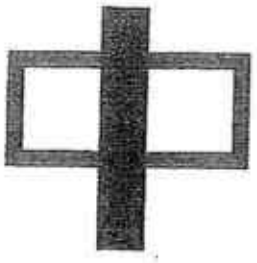
b) Put oil, powder, water on the ramp. This will reduce the friction between the ball and Surface B.

Q38. a) Gravity, elastic spring force.

b) A. For the same amount increase in load, spring A increase more in length than B.

c) Spring has been overstretched, reached its elastic limit.

Q39. a)



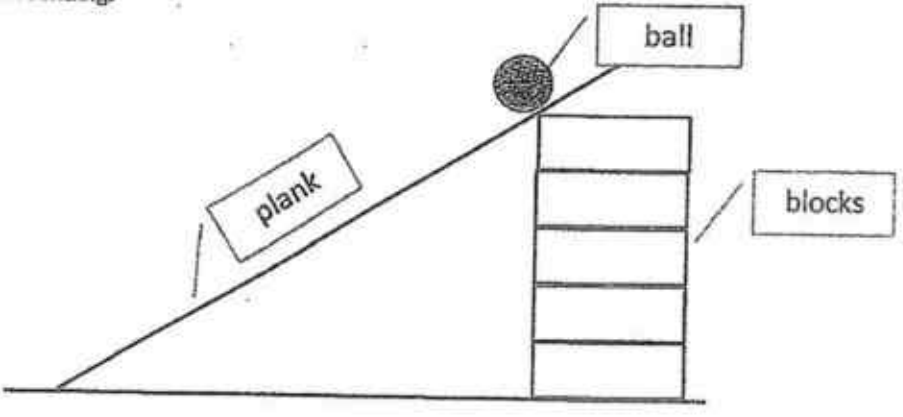
b) A is nearer to the torch, hence the shadows is bigger.

c) The shadows formed will be bigger.

Q40. a) (i) The thickness of material.
(ii) Initial temperature of water.

b) Y. It is the poorest conductor of heat. It will take the longest time to conduct heat from surrounding.

Q41.



b) The higher the ball is placed, the more GPE it has, hence more GPE is converted to more KE , resulting the ball roll down faster.

c) Repeat the experiments 2 times and find the average time taken.

RED SWASTIKA SCHOOL

SCIENCE
2017 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 5 May 2017

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 21
   b. Questions 1 to 28

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Section A

For Questions 1 to 28, choose the most suitable answer and shade its number in the OAS provided.

1. Sally found black spots growing on a piece of bread that was placed on a table for five days as shown below.

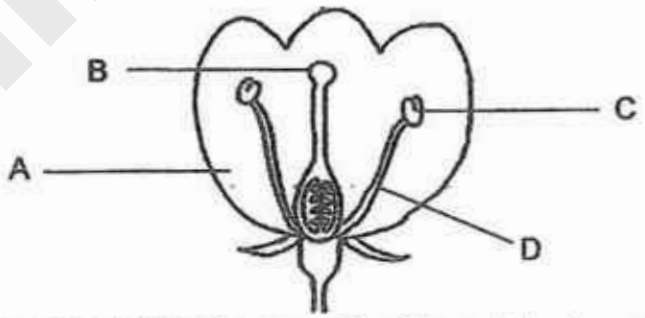


Which of the following need to be present for the black spots to grow?

A: oxygen
B: carbon dioxide
C: water
D: light

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

2. Alan conducted an experiment with a flower on a plant.



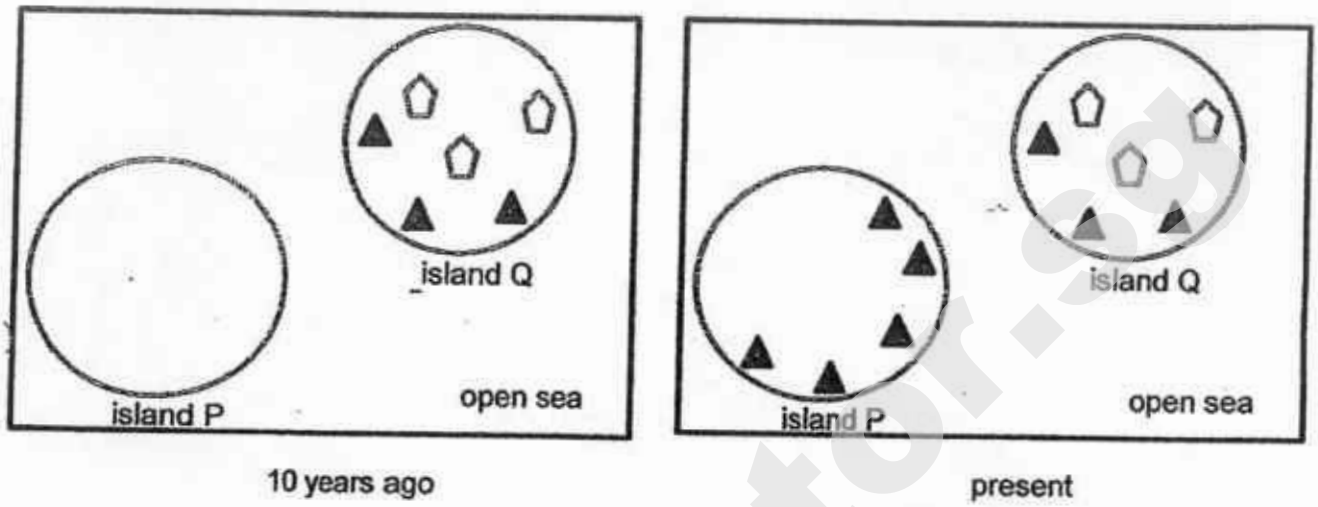
He removed one part of the flower and the flower did not produce any seeds after that.

Which part of the flower did he remove?

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

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3. Island P is situated near island Q. Ten years ago, island P was bare, with no trees on it. There are no animals living on both islands.



10 years ago present

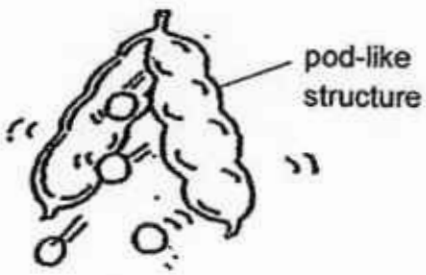
tree X: ▲
tree Y: ⬠

Which of the following fruits is most likely from tree X?

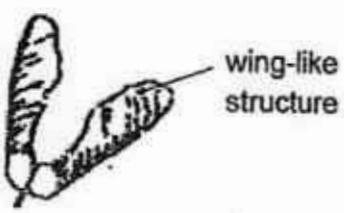
(1)



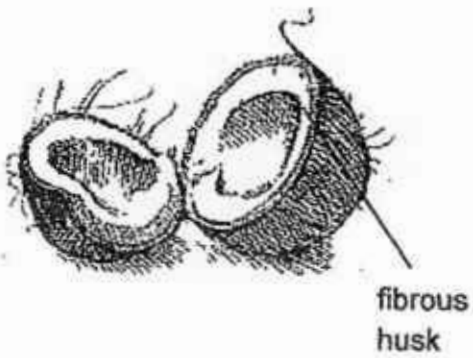
(2)



(3)

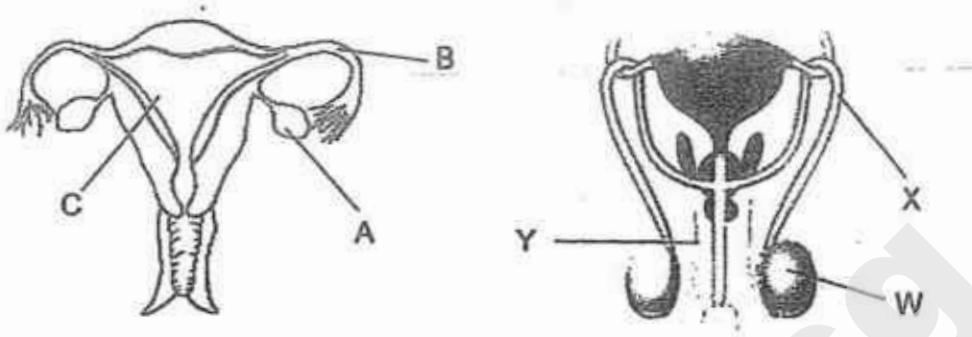


(4)



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4. Study the two human reproductive systems shown below.



How are the above reproductive systems similar?

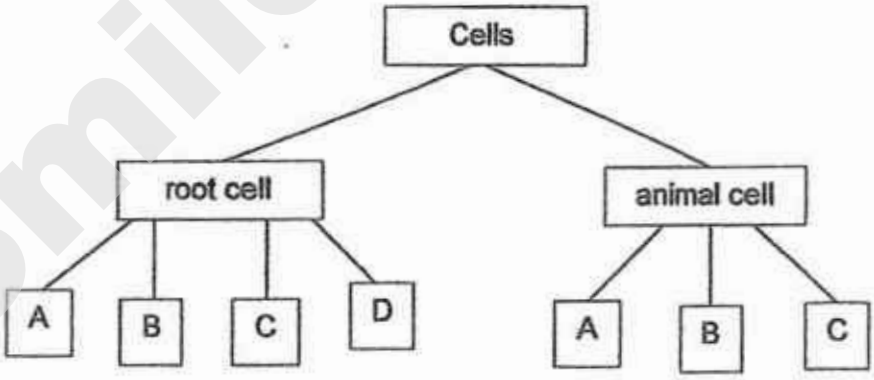
(1) Part Y produces the sperm cell and part B produces the egg cell.

(2) The fertilised egg may develop at part C or part Y.

(3) Reproductive cells can be found in part A and part W.

(4) Fertilisation may occur at part A and part X.

5. Study the flow chart below carefully. A, B, C and D represent functions of the parts of a cell.

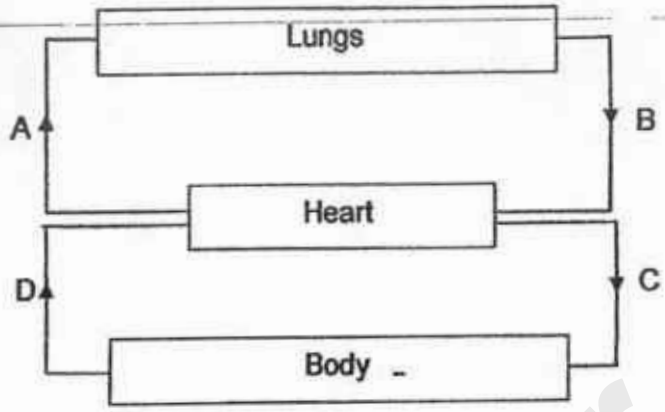


Which of the following correctly describes D?

(1) Gives the cell its shape.
(2) Controls everything that happens inside the cell.
(3) Substance where cell activities take place.
(4) Controls movement of materials in and out of the cell.

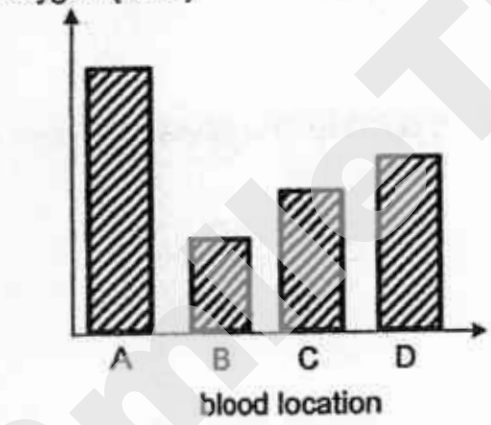
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6. The diagram below shows the flow of blood in a human body.

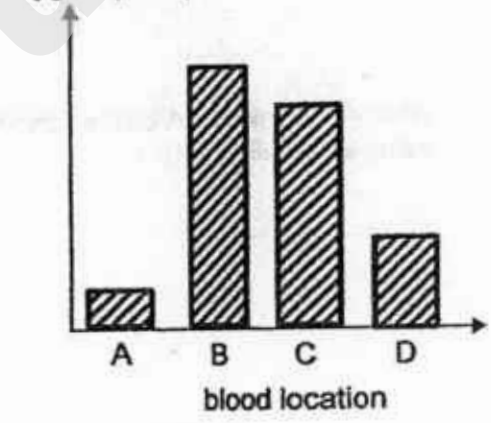


Which of the following graphs correctly represents the amount of oxygen in the blood at locations A, B, C and D?

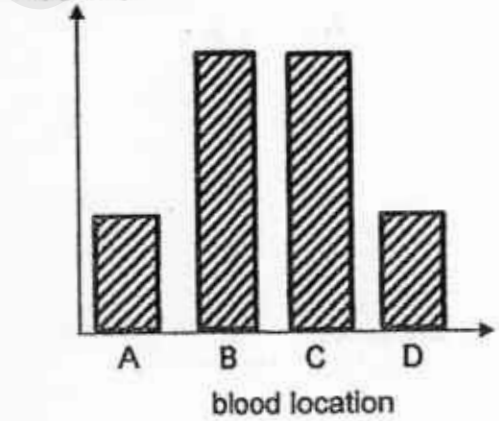
(1)



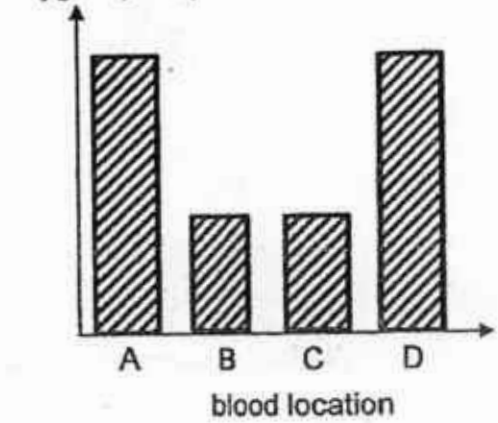
(2)



(3)

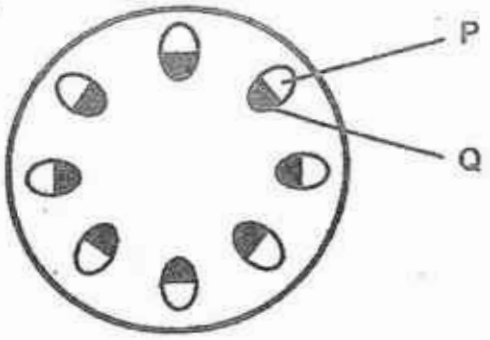


(4)



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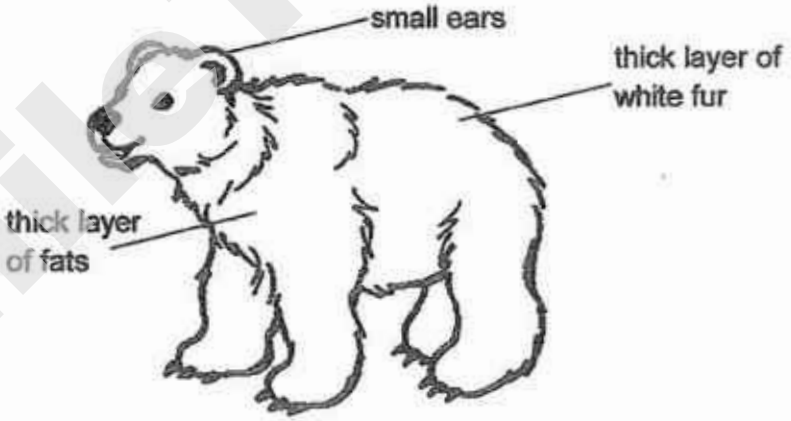
7. Tom put a plant in a beaker of blue-coloured water. After one day, he cut the stem. A section of the stem is shown below.



Tom observed that tube P remained unchanged but tube Q turned blue. Why?

(1) Tube P transports food from the flower to all parts of the plant.
(2) Tube P transports water from the roots to all parts of the plant.
(3) Tube Q transports water from the roots to all parts of the plant.
(4) Tube Q transports food from the leaves to all parts of the plant.

8. Study the picture of the polar bear.

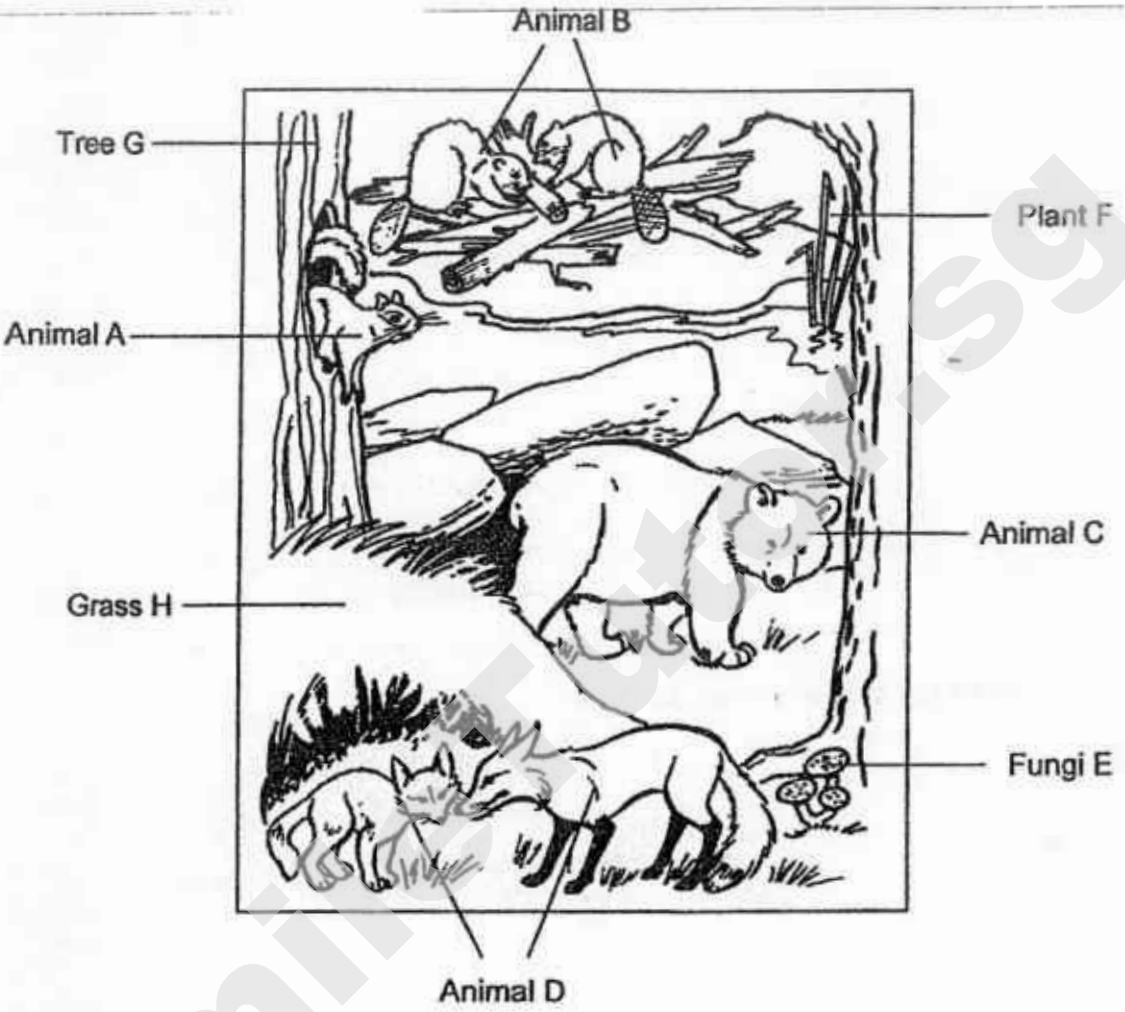


Which of the following correctly matches the adaptation to its function?

	thick layer of fats	small ears	thick layer of white fur
(1)	to fight off predators	slows down heat gain	slows down heat loss
(2)	stores energy	for better hearing	to camouflage
(3)	to fight off predators	for better hearing	to camouflage
(4)	stores energy	slows down heat loss	slows down heat loss

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9. Harris found the following animals in habitat X.

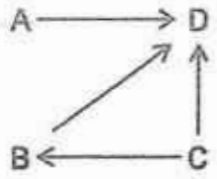


Which of the following is correct?

	Number of populations	Number of habitats	Number of producers	Number of consumers
(1)	8	1	3	5
(2)	4	2	4	4
(3)	8	2	4	4
(4)	4	1	3	5

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10. The diagram below shows a food web involving organisms A, B, C and D in a certain habitat.



Study the following statements.

A: When the population of organism C decreases, the population of organism B will definitely increase.
B: Only organism C is a producer.
C: Organism D is a plant and animal eater.
D: Organism B is a plant eater.

Which of the above statements is/are definitely correct?

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

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11. Study the different types of birds shown below.

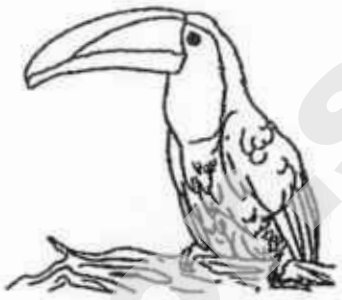
Bird S eats fish and when it is hungry, it will walk to the deeper end of a pond and not wet its feathers while hunting for fish.

Which of the birds shown below is most likely to be bird S?

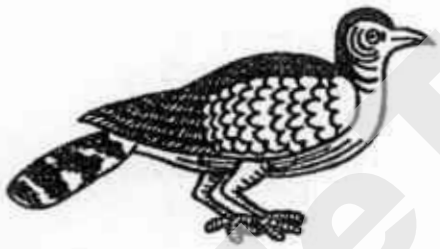
(1)



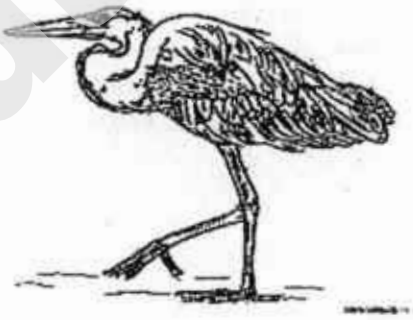
(2)



(3)



(4)



12. A food chain of the organisms living in a community is shown below.

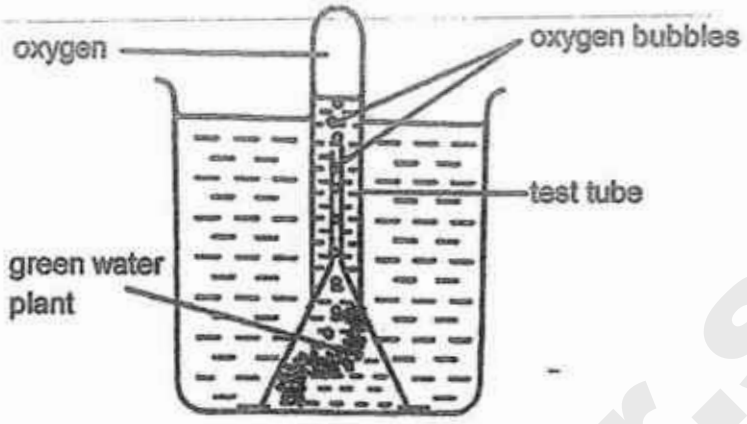
grass ⟶ caterpillar ⟶ bird ⟶ hawk

Which of the following is true when the population of hawks decrease?

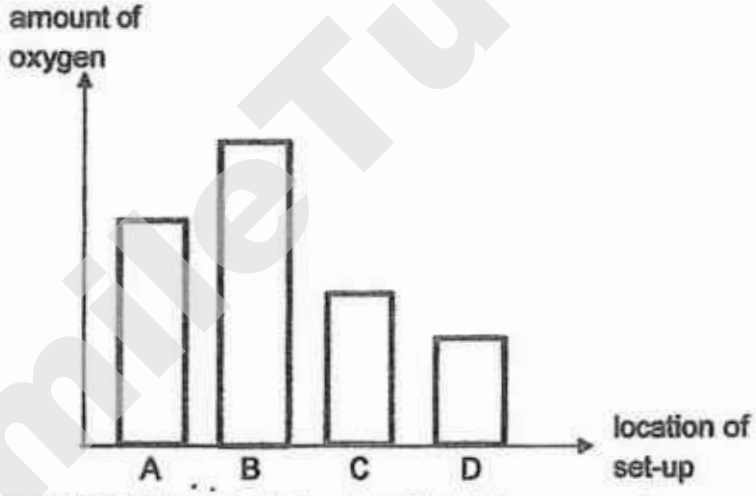
(1) The population of grass will decrease.
(2) Both the populations of birds and grass will increase.
(3) The number of caterpillars will increase.
(4) There will be no change to the other populations.

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13. Sally placed four similar set-ups at four different locations, A, B, C and D. For each location, only the intensity of the light was different.



She observed the amount of oxygen collected in the four test tubes after two hours and recorded her observations in the bar graph below.



Sally concluded that as the intensity of light decreases, the amount of oxygen in the test tube also decreases.

Arrange the locations,A, B, C and D, according to the intensity of light at that location, from the brightest to the dimmest.

	brightest	less bright	less dim	dimmest
(1)	D	C	A	B
(2)	B	A	C	D
(3)	A	B	C	D
(4)	D	C	B	A

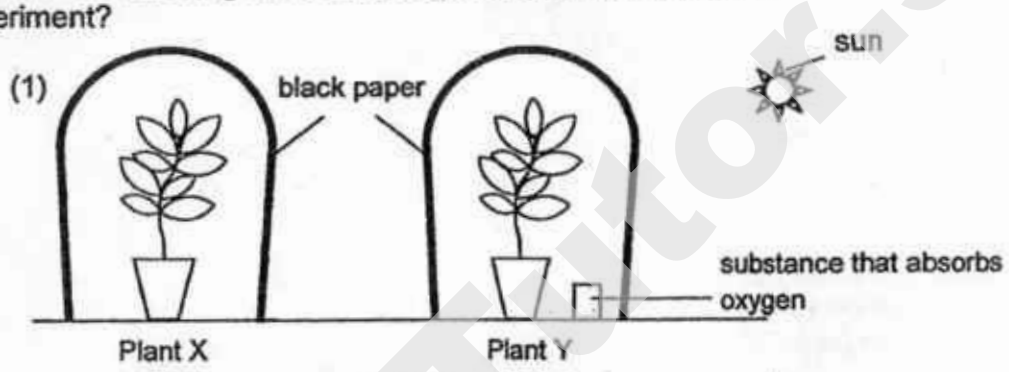
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14. Mrs Tan dripped a few drops of iodine solution on two leaves, each taken from plant X and Y. She observed the colour change of the iodine solution and recorded her observations in the table below. Iodine solution changes from brown to dark blue in the presence of starch.

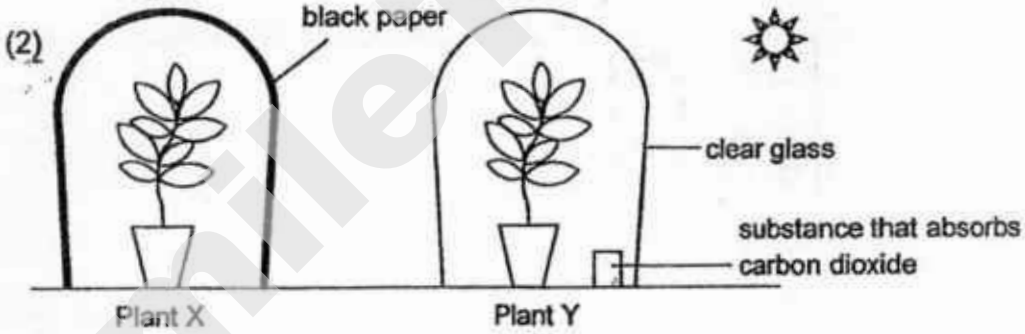
Plant	Results observed
X	Iodine solution turns dark blue
Y	Iodine solution remains brown

Which of the following were the set-ups which Mrs Tan used for her experiment?

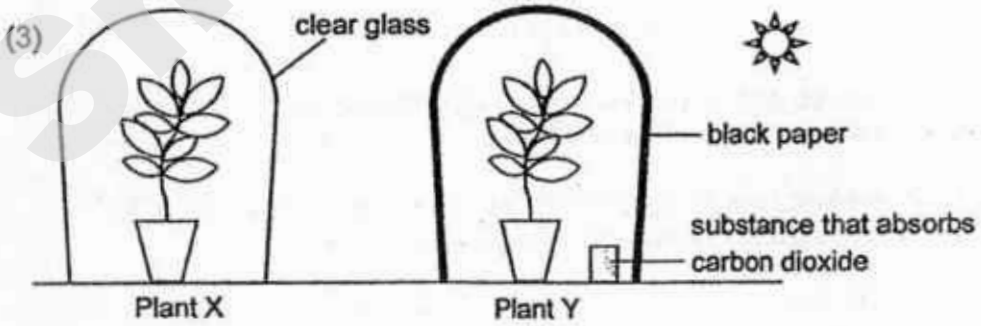
(1)



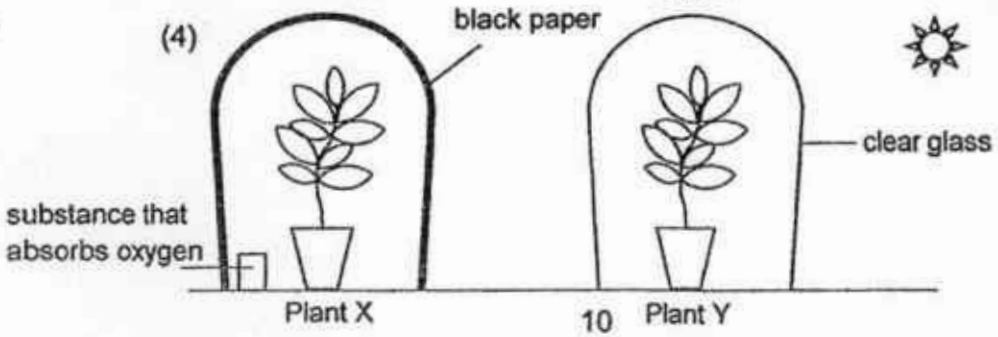
(2)



(3)

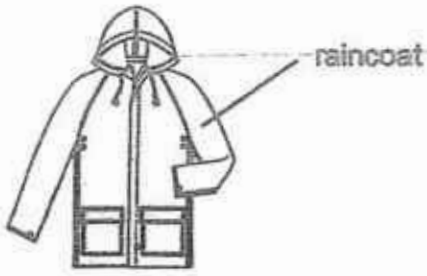


(4)



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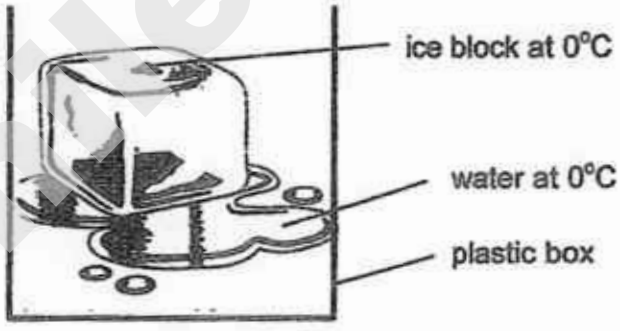
15. Which of the following physical properties must a raincoat have?



A: Flexible
B: Waterproof
C: Transparent

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

16. An ice block is placed in a plastic box. The box is placed on the table in a room. The room temperature is 28°C.

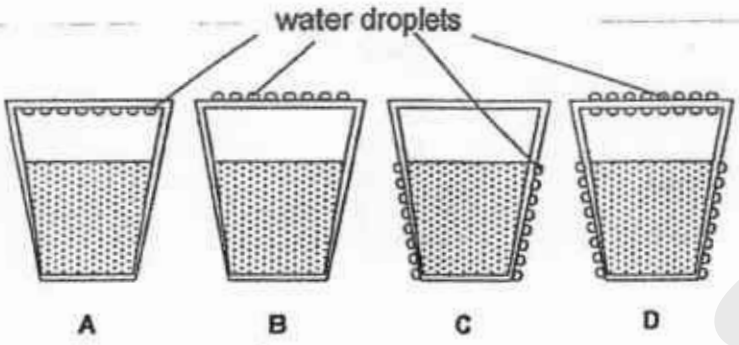


When the ice and the water were at 0°C, which of the following is correct?

(1) The ice would not melt as its temperature was 0°C.
(2) The ice would not melt as there was no source of heat.
(3) The ice would melt as it gained heat from the room.
(4) The ice would melt as it gained heat from the water.

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17. Hot water was poured into a cup with a steel lid.



Which of the diagrams above shows how water vapour condensed onto the cup?

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

18. The table below shows the melting and boiling points of three different substances, X, Y and Z.

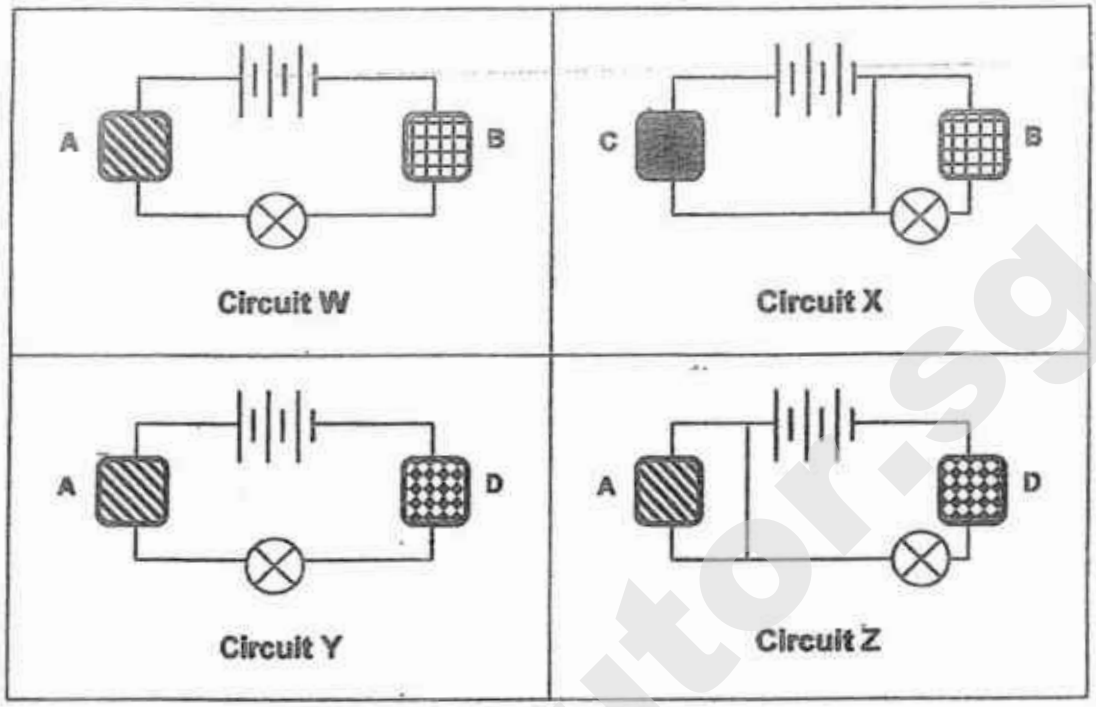
Substance	Melting Point (°C)	Boiling Point (°C)
X	45	80
Y	10	62
Z	62	88

What are the state of substances, X, Y and Z, at a room temperature of 28°C?

	X	Y	Z
(1)	liquid ✓	gas	liquid
(2)	gas	solid ✓	gas
(3)	solid	liquid	solid
(4)	liquid ✓	solid √	gas

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19. Materials A, B, C and D, were used to set up the four circuits below.



The results of the four circuits are shown in the table below.

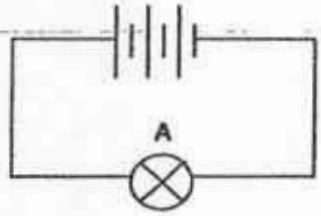
Circuit	Does the bulb light up?	
	Yes	No
W		√
X	√	
Y		√
Z	√	

Which of the materials, A, B, C and D, are definitely conductors of electricity?

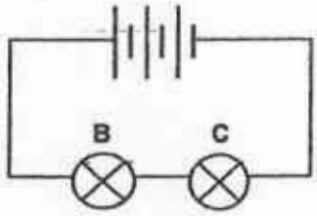
(1) A and C only
(2) B and D only
(3) B, C and D only
(4) A, B, C and D

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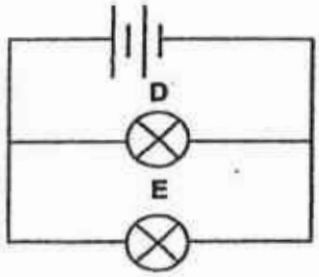
20. Circuits M, N, O and P are made up of similar batteries and bulbs.



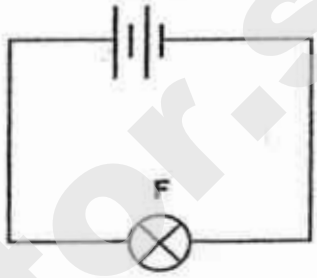
Circuit M



Circuit N



Circuit O



Circuit P

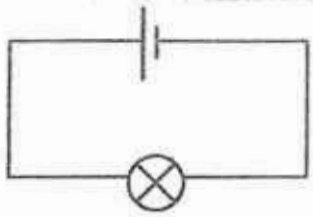
Which of the following shows the correct order of bulbs arranged from the brightest to the least bright?

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

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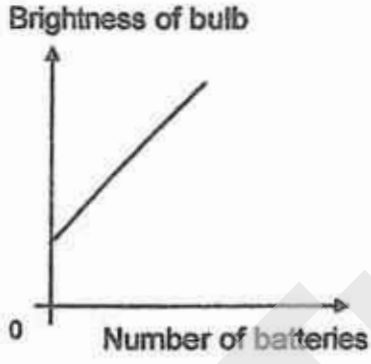
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21. Batteries are slowly added to the following electrical circuit in series and the brightness of the bulb is then measured.

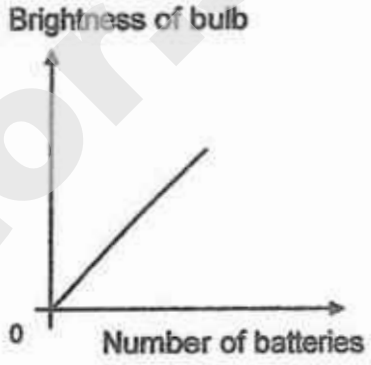


Which of the following graphs show(s) the possible results from the experiment?

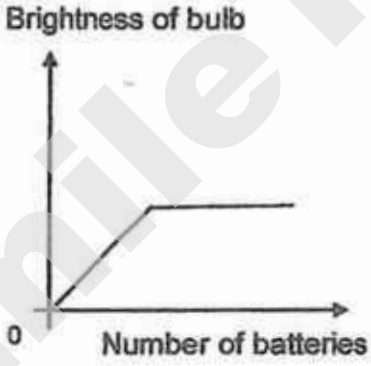
(A)



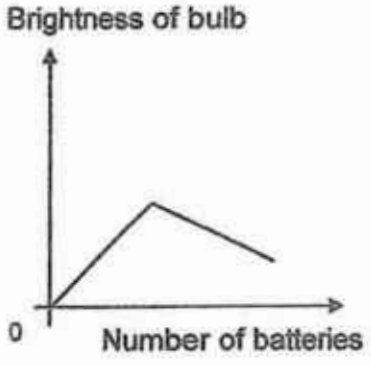
(B)



(C)



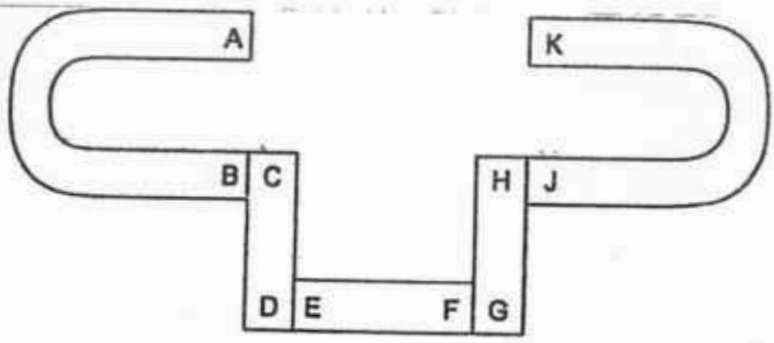
(D)



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

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22. The diagram below shows five magnets.

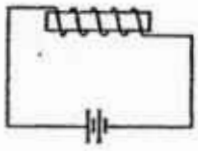


Which of the following statements are false?

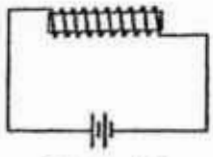
A: E and J are like poles.
B: B will be attracted to D but repel E.
C: E and F have more magnetic force than the other poles.

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

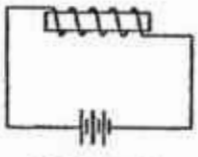
23. Set-ups A, B, C and D are made with similar batteries and iron rods.



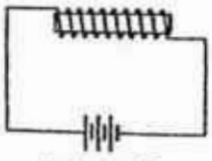
Set-up A



Set-up B



Set-up C

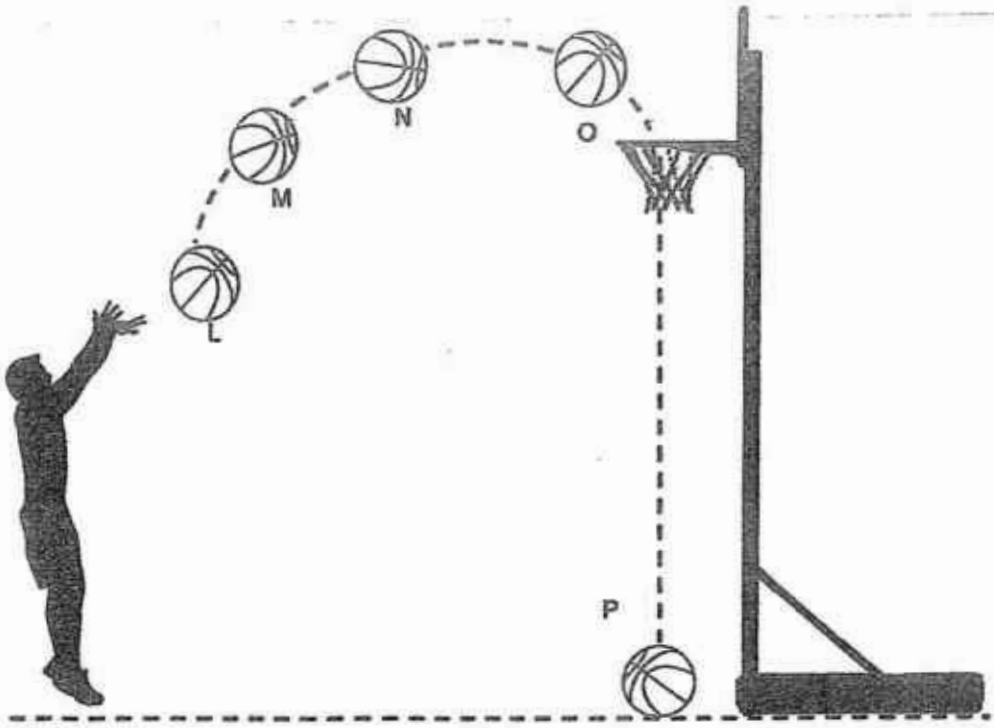


Set-up D

In which set-up will the iron rod attract the least number of iron pins?

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

24. Wei Xiang threw a basketball into the net as shown below.

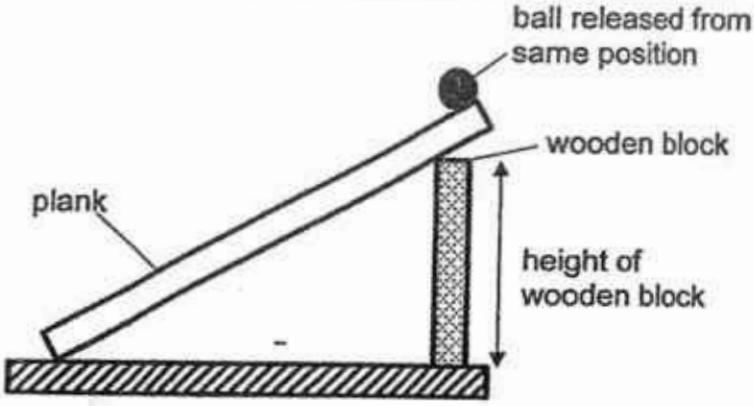


Which of the following statements are false?

A: Gravity acts on the ball only at P.
B: There is more gravity acting on the ball at N than at M.
C: No forces are acting on the ball at P after it comes to a rest.

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

25. An experiment was set up as shown below. A ball was released from the same position each time and the time taken for the ball to reach the end of the plank was measured.

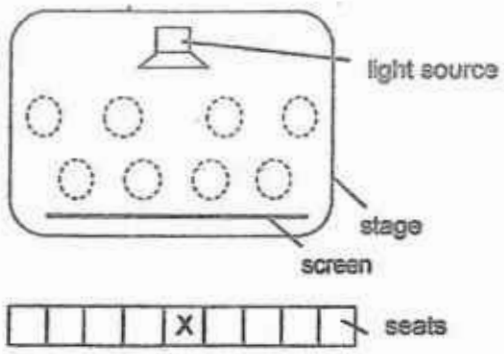


The experiment was repeated several times with the ball being released from the same position each time but some variables are changed each time.

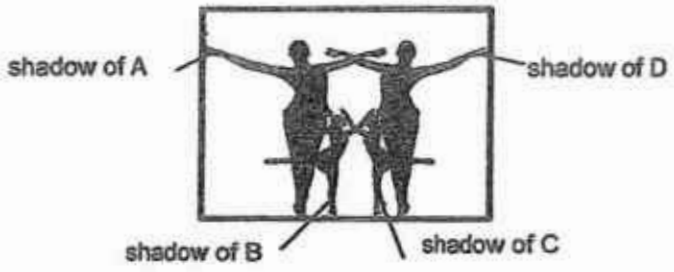
Which of the following shows the correct aim with the correct variables kept constant? A tick (√) indicates that the variable is kept constant.

	Aim of Experiment	Material of Plank	Mass of ball	Height of wooden block
(1)	To find out if the material of the plank affects the time taken for the ball to reach the end of the plank.	√		√
(2)	To find out if the material of the plank affects the time taken for the ball to reach the end of the plank.		√	
(3)	To find out if the height of the wooden block affects the time taken for the ball to reach the end of the plank.	√	√	
(4)	To find out if the height of the wooden block affects the time taken for the ball to reach the end of the plank.			√

26. The diagram below shows the layout of the stage for a shadow performance.

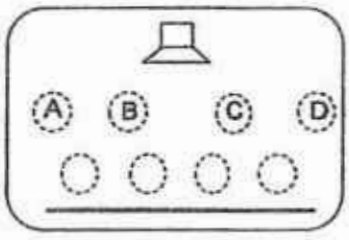


There were four actors, A, B, C and D who were of similar height. The person at X saw the shadows on the screen as shown below.

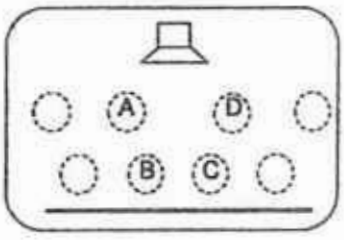


Which of the following shows the positions of actors A, B, C and D?

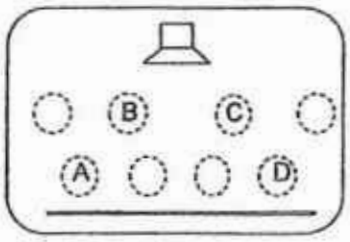
(1)



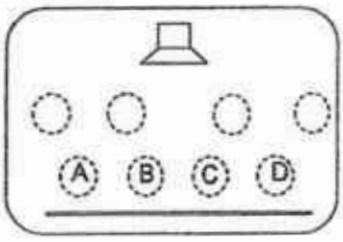
(2)



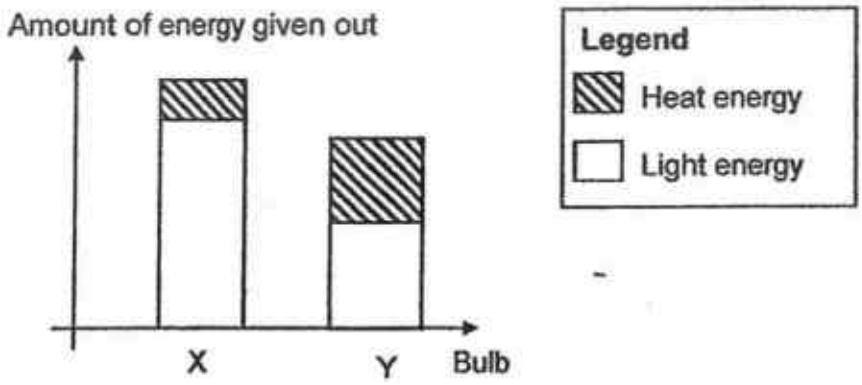
(3)



(4)



27. A test was conducted to compare the amount of light and heat energy given out by two different light bulbs, X and Y. Each light bulb was connected to similar electrical circuits and the graph below shows the amount of light and heat given out by bulbs X and Y.

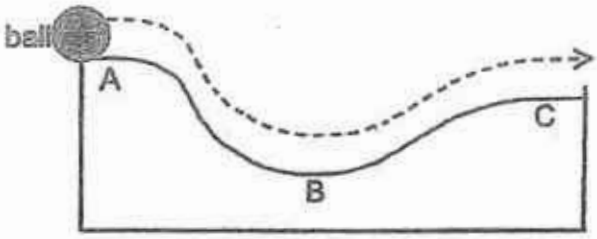


Which of the following statements is/are true?

A: Bulb X will be warmer when lit than bulb Y.
B: Bulb X will be brighter than bulb Y when lit.
C: Bulb X gives out more energy than bulb Y.

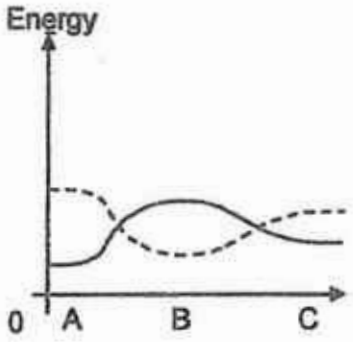
(1) A only
(2) B only
(3) A and B only
(4) B and C only

28. The diagram below shows a ball travelling from point A to C. The ball was at rest at point A before it was released.

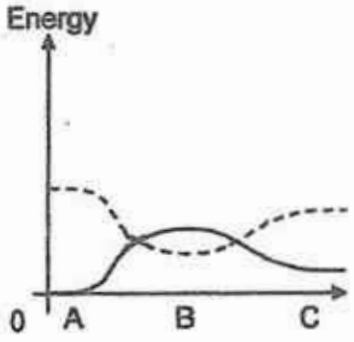


Which of the following graphs shows the possible results from the experiment?

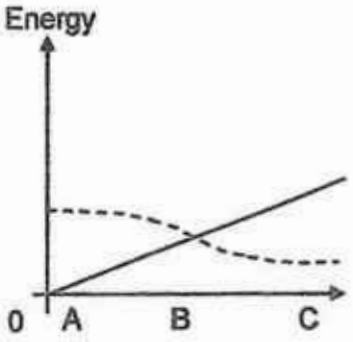
(1)



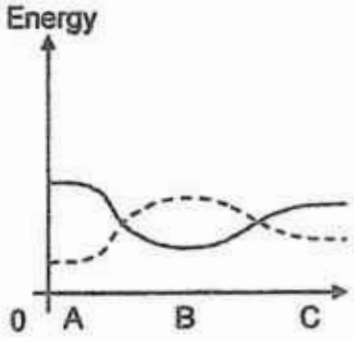
(2)

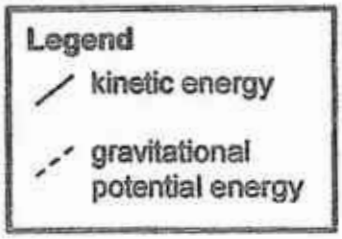


(3)



(4)





END OF SECTION A

SCIENCE
2017 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 5 May 2017

BOOKLET B

13 Questions
44 Marks

In this booklet, you should have the following:
a. Page 22 to Page 35
b. Questions 29 to 41

MARKS

	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

Parent's Signature : _____

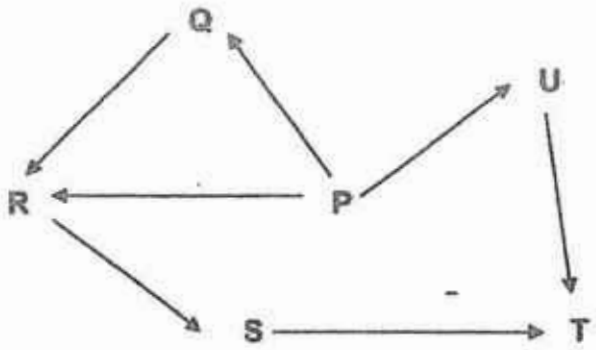
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SECTION B

Answer all the questions in the spaces provided.

29. Study the food web shown.



(a) Which organism, P, Q, R, S, T or U is a producer? (1m)

_____

(b) Which organisms, P, Q, R, S, T or U, are both predator and prey in the food web? (1m)

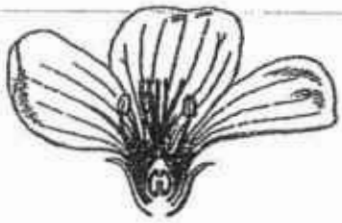
_____

(c) Organism A is a new animal that is introduced into the food web. It is a predator of organism U and a prey of organism T.

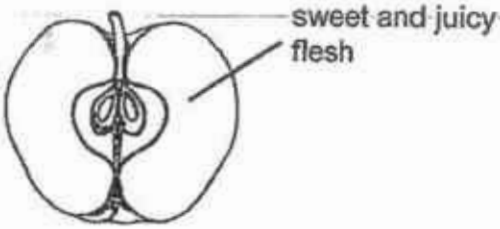
Write the letter 'A' and draw the correct arrows to show organism A in the food web above. (1m)

3

30. The flower of plant A and its fruit were found in a garden.



flower of plant A



fruit of plant A

(a) Name two processes that must take place for the flower of plant A to develop into a fruit. (1m)

_____

_____

(b) What is the method of dispersal that is most likely used for the fruit of plant A? Explain your answer. (1m)

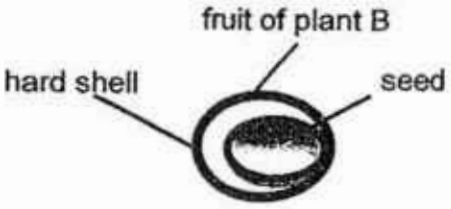
_____

_____

The fruit of plant B has a hard shell and its seeds are a source of food for mouse X.



mouse X



Mouse X will break the hard shell and bury each seed separately in different places so that it can eat the seeds at a later time.

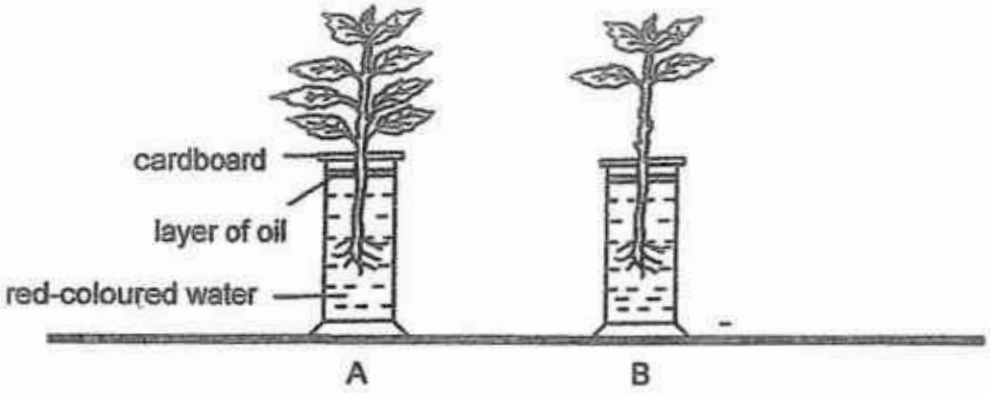
(c) State one benefit for plant B when the mouse buries the seeds at different places. (1m)

_____

_____

3

31. Teck Whye created the set-ups shown below. He would like to find out if plants take in water through the roots.



(a) His teacher told him that his set-up was not correct. Without replacing the plants, state two changes that Teck Whye should do in order to find out if plants take in water through the roots. (2m)

Change 1: _____

_____

Change 2: _____

_____

(b) After three days, a few of the leaves turned red. Explain how this happened. (2m)

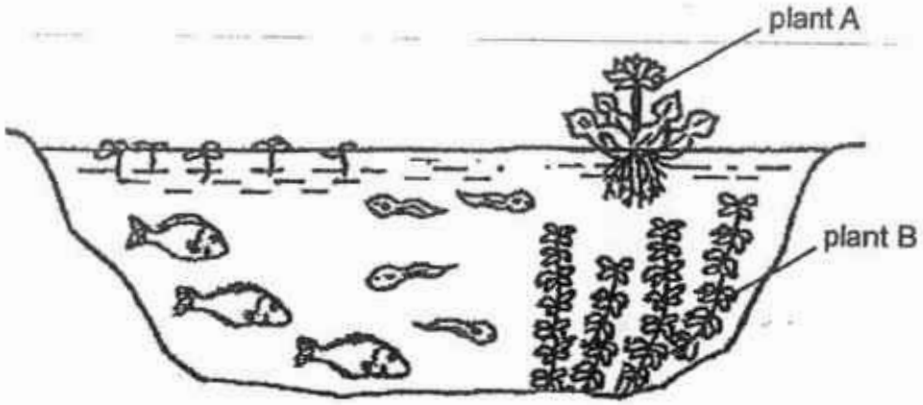
_____

_____

_____

4

32. Study the picture of a pond below carefully.



(a) Besides providing oxygen for the animals in the pond, suggest two other reasons why plant B is important to the animals in the pond. (2m)

Reason 1: _____

_____

Reason 2: _____

_____

(b) When the population of plant A increased, the population of animals surviving in the pond decreased. Suggest a reason for the decrease. (1m)

_____

_____

(c) A disease killed many animals in the pond. It was observed that the oxygen level in the water decreased after that. Explain why. (1m)

_____

_____

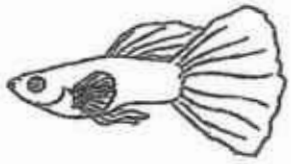
4

33. Fish X is found in the ocean. When faced with danger, it is able to inflate its body with sharp spines that are poisonous. It feeds on shrimps only.

Fish Y swims around fish X and feeds on dead matter found on fish X's body only. Fish Y is not affected by fish X's poisonous spines.



fish X – when inflated



fish Y

(a) How does fish X and fish Y benefit from living near each other? (2m)

Benefit to fish X: _____

_____

Benefit to fish Y: _____

_____

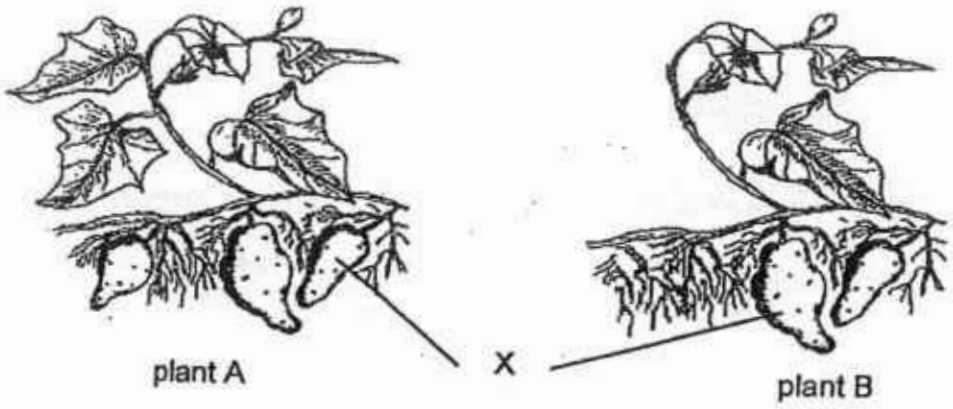
(b) State the type of adaptation shown by fish X when it inflates its spines in the presence of danger. (1m)

_____

3

34. Ahmad planted two similar plants in the same location. The plants were provided with the same amount of water and mineral salts.

After three months, both plants had grown as shown below. Part X of the plant would grow underground in the soil. Animals would dig the soil to feed on part X.



(a) Compare plant A and B. State one observation from the diagram which indicated a possible reason why there was less part X growing in plant B. (1m)

(b) When Ahmad first planted the two plants, part X had not developed. Explain how the leaves and food-carrying tubes work together to help part X to grow in the soil. (2m)

_____

_____

_____

3

35. Five set-ups, A, B, C, D and E, are prepared according to the table below to find out how different variables affect the rate of evaporation of water.

Set-up	Volume of water (ml)	Temperature of water (°C)	Exposed surface area of water (cm^3)
A	200	20	100
B	300	40	150
C	200	30	100
D	350	40	50
E	200	30	150

(a) What would the aim of the experiment be if set-ups A and C are used? (1m)

_____

_____

(b) If the aim of the experiment is to find out how the exposed surface area of water affects the rate of evaporation of water, which two set-ups should be used? (1m)

_____

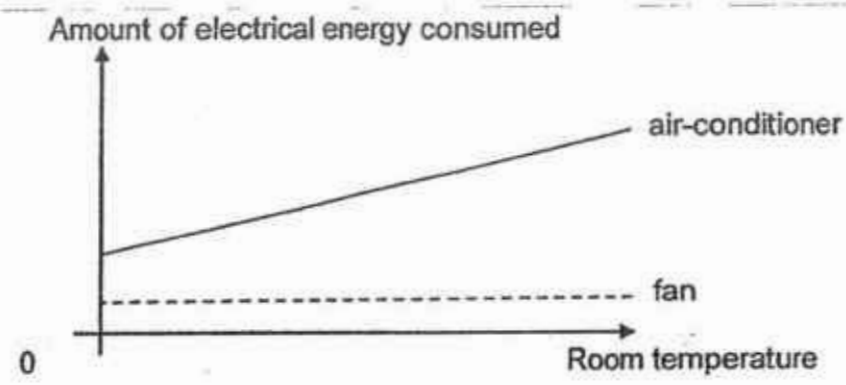
(c) Set-ups B and D are used to find out if the volume of water affects the rate of evaporation of water. Is the experiment a fair test? Explain why. (1m)

_____

_____

3

36. Minah plotted the graph below to show the amount of electrical energy used by her fan and air-conditioner as her room temperature changed.



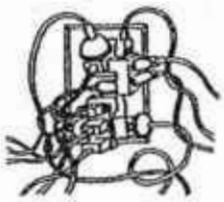
(a) Based on the results, which electrical appliance is more energy-conserving? Explain why. (1m)

(b) Study the table below.

	Room with window shades installed	Room without window shades installed
Temperature during the day (°C)	29	33

Based on the results, what recommendation would you give to a person who wants to save electricity when using an air-conditioner? Explain. (1m)

(c) The following picture shows how Minah uses the electrical sockets in her room.



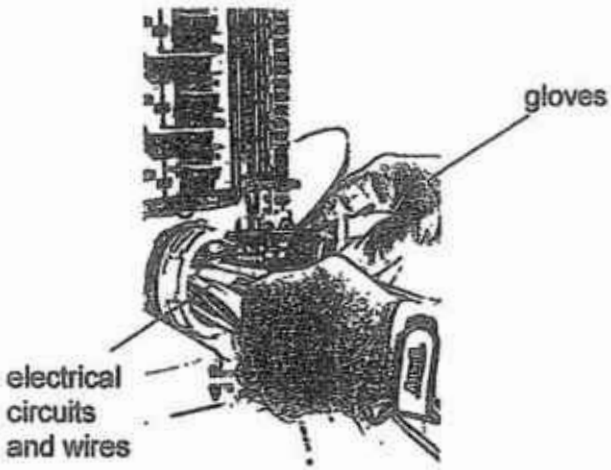
Is this safe? Explain why. (1m)

3

37. Saroo has two batteries, two light bulbs and many wires. Draw a circuit diagram to show how he can make both light bulbs shine the brightest at the same time. (2m)

(a)

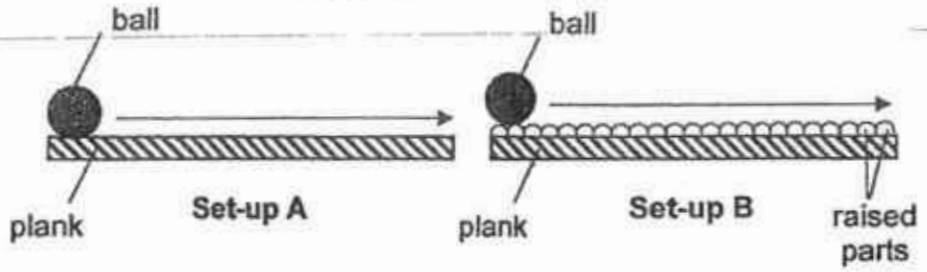
(b) Electrical engineers usually wear rubber gloves when repairing electrical circuits.



Explain how wearing rubber gloves reduces the likelihood of the engineers getting electrical shocks when repairing electrical circuits. (2m)

4

38. Lee Yin prepared two set-ups, A and B, as shown below. In set-up B, raised parts were added to the surface of the plank.



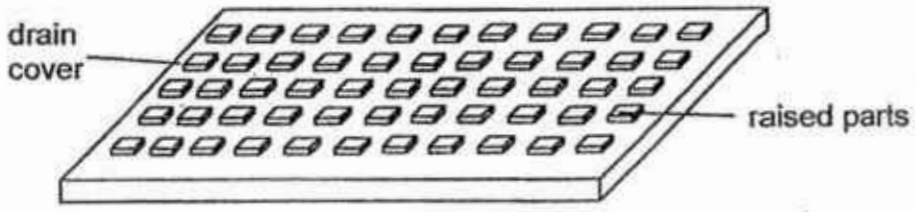
The time taken for the ball to roll from one end of the plank to the other was measured and recorded in the table below. The experiment was repeated four times and the ball was pushed from the same starting point on the plank with the same force each time.

Observation	Time taken for ball to travel from one end of the plank to the other (s)	
	Set-up A	Set-up B
1	3.1	3.9
2	2.9	4.0
3	3.0	4.0
4	3.1	4.1

(a) Why did Lee Yin make four observations? (1m)

(b) Explain the difference in results between set-ups A and B. (1m)

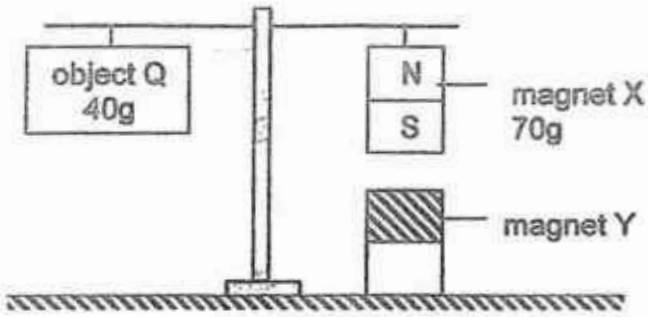
(c) Many drain covers have raised parts included in their design.



Based on the results above, explain why drain covers are designed this way to improve safety during periods of rain. (1m)

3

39. A balancing scale was set up as shown in the diagram below. The masses of magnet X and object Q are 70g and 40g respectively. Magnet Y is fixed to the table.



(a) The scale is balanced. Identify the shaded pole of magnet Y. (1m)

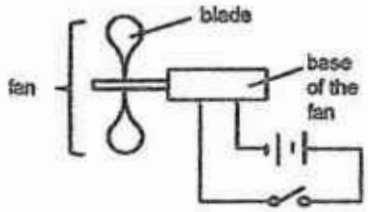
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(b) Explain how the scale is balanced. (1m)

_____

_____

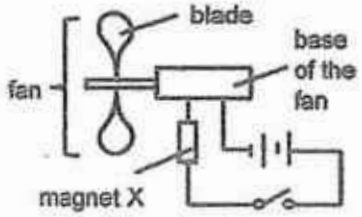
Mr Tan connected a fan to an electrical circuit as shown below. When the switch was closed, the blades of the fan would turn.



(c) He wanted to find out if the amount of electrical energy would affect the speed of the fan. Based on the diagram, state one variable he should change to achieve his aim. (1m)

_____

When Mr Tan added magnet X to the electrical circuit as shown, he observed that the blades of the fan were still able to turn.

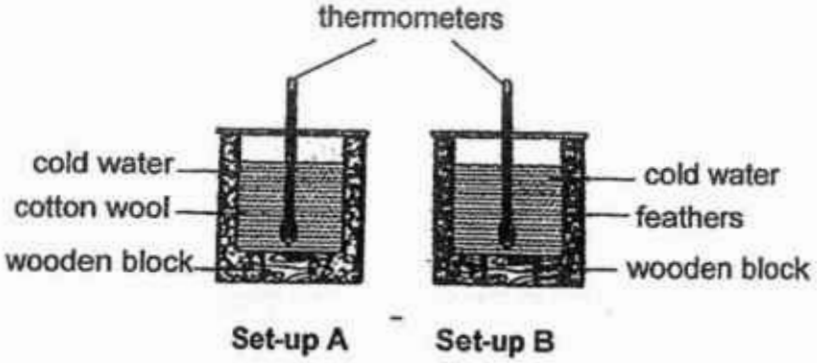


(d) What could he conclude about magnet X? (1m)

_____

4

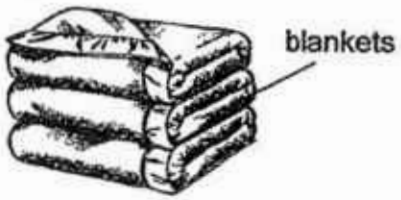
40. Sarisa conducted an experiment. She prepared two identical beakers with the same volume of cold water and placed them in two larger and identical beakers, one filled with cotton wool and the other filled with feathers.



She left the two set-ups on a table in her room and measured the temperature of the water in the beakers after ten minutes. She recorded the results in the table below.

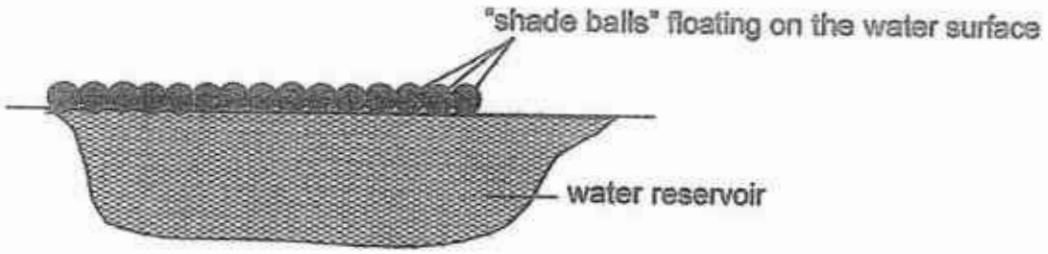
Set-up	Temperature of water at start of experiment (°C)	Temperature of water at end of experiment (°C)
A	10	15
B	10	12

(a) Based on the results, should Sarisa buy cotton or feather blankets to keep herself warmer? Explain. (2m)



2

40 (b) Many countries across the world are adding plastic "shade balls" onto the surface of their water reservoirs as shown below.



Explain how these "shade balls" help to conserve water in the water reservoirs. (2m)

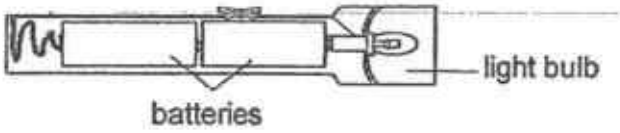
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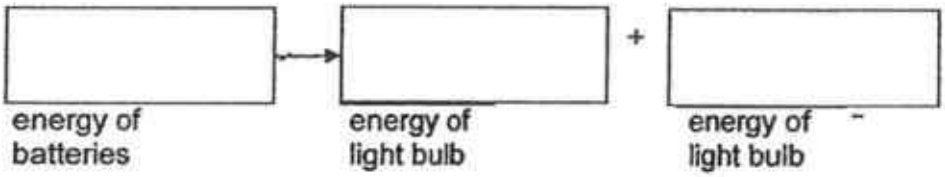
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2

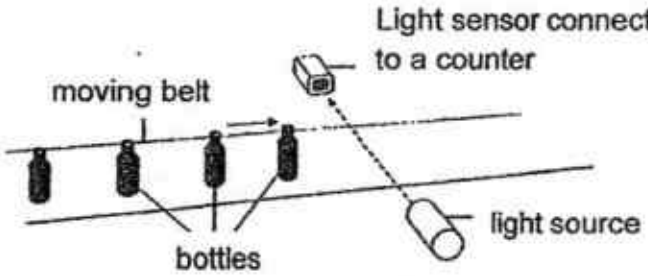
41. The diagram below shows how a torch is set up.



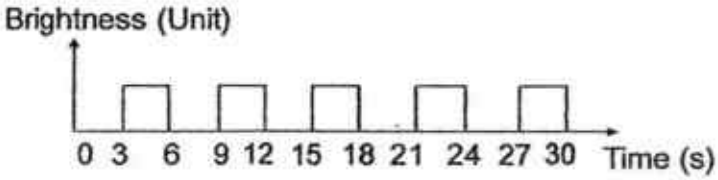
(a) Fill in the boxes to show the energy changes in the torch when the torch is turned on. (1m)



A factory uses a light sensor to count the number of bottles on a moving belt.



The belt moves at a constant speed. When a bottle is between the light source and the sensor, it blocks all the light from reaching the sensor. The data is shown in the graph below.



(b) Based on the graph, how many bottles passed the sensor in 30 seconds? (1m)

_____

(c) The moving belt is already moving at its maximum speed. Suggest a method so that more bottles can be counted in 30 seconds. (1m)

_____

_____

END OF SECTION B
PLEASE CHECK YOUR WORK

3

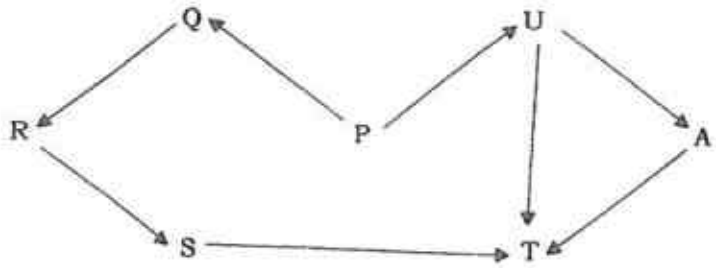
YEAR : 2017
LEVEL : PRIMARY 6
SCHOOL : RED SWASTIKA SCHOOL
SUBJECT : SCIENCE
TREM : SEMESTRAL ASSEMENT (1)

BOOKLET A
Section A

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

BOOKLET B
SECTION B

Q29. a) P
b) R and S
c)



Q30. a) Pollination and Fertilisation
b) By animals. The animal will eat its sweet and juicy flesh and throw its seeds further away.
c) The seeds can germinate further away from the parent plant.

Q31. a) Change 1: remove the roots from one set-up.
Change 2: Cut the leaves from set-up A to be the same as set-up B.
b) The roots take in water and red water is transported through the water – carrying tube to the leaves.

Q32. a) Reason 1: They provide food.
Reason 2 : They provide shether.
b) An increase in plant A will block sunlight from entering the pond, hence plant B photosynthesise less and there will be less food and oxygen for the animals.
c) When the animals die, they start to decompose and oxygen is used up by decomposer during decomposition.

Q33. a) Benefit to fish X : Fish Y will eat the dead matter on its body.
Benefit to fish Y : Fish Y will be protected from its predators.

b) Behavioural adaptation.

Q34. a) Plant B has lesser / fewer leaves.

b) The leaves photosynthesise. The plants use the food-carrying tube to transport excess sugar from the leaves to part X to be stored as starch.

Q35. a) The aim of the experiment is to find out how the temperature of the Water affects the rate evaporation of water.

b) C and E

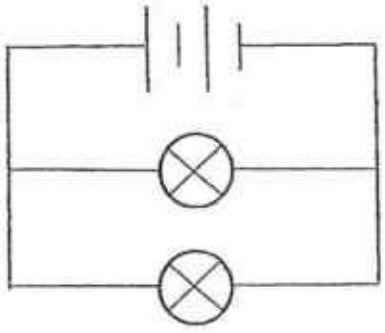
c) No. There are two changed variables, the volume of water and the exposed surface area of water. In a fair test, there can only one changed variable, the volume of water.

Q36. a) The fan. The fan uses lesser electrical energy than the air-conditioner.

b) Install window shades will lower the room temperature and keep room cooler and hence reduces the amount of electricity energy used by the air-conditioner to cool the room.

c) No. Overloading the electrical sockets may cause fire.

Q37. a)



b) The rubber gloves do not conduct electricity and reduces electrical energy flowing through the engineer's body preventing on electrical shock

Q38. a) She made four observations to increase the reliability of the results at the experiment.

b) Adding raised parts to the surface of the plank increased the friction between ball B and the surface and therefore caused the ball to take a longer time to travel from one end of the plank to the other.

c) T he raised parts on the drain cover increases the friction between the feet and the drain cover and helps to prevent slipping.

Red swastika 574

Q39. a) South pole.

b) The like poles of magnet Y and X repel, pushing Magnet X up to balance the scale with the lighter object A.

c) Number of batteries.

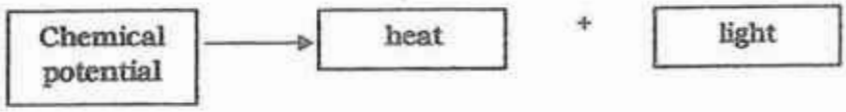
d) Magnet X conducted electricity.

Q40. a) Feather blanket B had water that is lower in temperature. Hence Feather traps air more effectively than cotton. As air is a poor Conductor of heat, the air will conduct her body heat to the surroundings slower, keeping her warm.

b) Plastic is a poor conductor of heat. Heat from the surroundings would be conducted slowly to the water, resulting in a decrease in rate of evaporation.

OR b) The "shade balls" reduce the exposed surface of water in the water reservoirs, causing the rate of evaporation of water to decrease in the water reservoirs.

Q41. a)



b) 5

c) Decrease the distance between each bottle.

End of Paper

Rosyth School
First Semestral Assessment 2017
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: /56

Class: Pr 6 _____ Register No. _____ Duration: 1 h 45 min

Date: 9 May 2017 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 29 to 40, give your answers in the spaces given in the Booklet B.

* This booklet consists of 18 printed pages (including cover page).

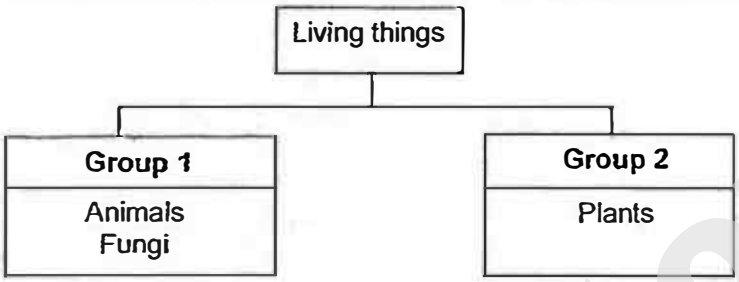
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Part I

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **(56 Marks)**

1 Some living things are classified into two groups as shown in the chart below.



Which of the following are suitable headings for the two groups?

	Group 1	Group 2
(1)	Not able to make its own food	Able to make its own food
(2)	Reproduce by spores	Reproduce by seeds
(3)	Produce carbon dioxide	Do not produce carbon dioxide
(4)	Need oxygen to stay alive	Do not need oxygen to stay alive

2 The picture below shows an animal, X.



animal X

X is not classified in the same group of animals as a bird. Some students made the following statements to explain why.

A X has hair but a bird has feathers.
B X does not have a beak but a bird has a beak.
C X has wings larger than its body but a bird does not.

Which of the statements are correct?

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

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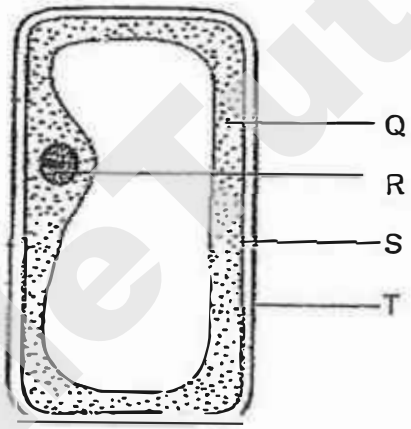
3. Nancy wants to conduct an experiment to find out if an organism needs water to survive. A tick (√) in the table below indicates that the condition is present in the set-up.

Conditions	Set-up			
	A	B	C	D
Air	√	√		√
Food		√	√	√
Water	√		√	√

Which set-up(s) should she use?

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

4 The diagram shows a plant cell.

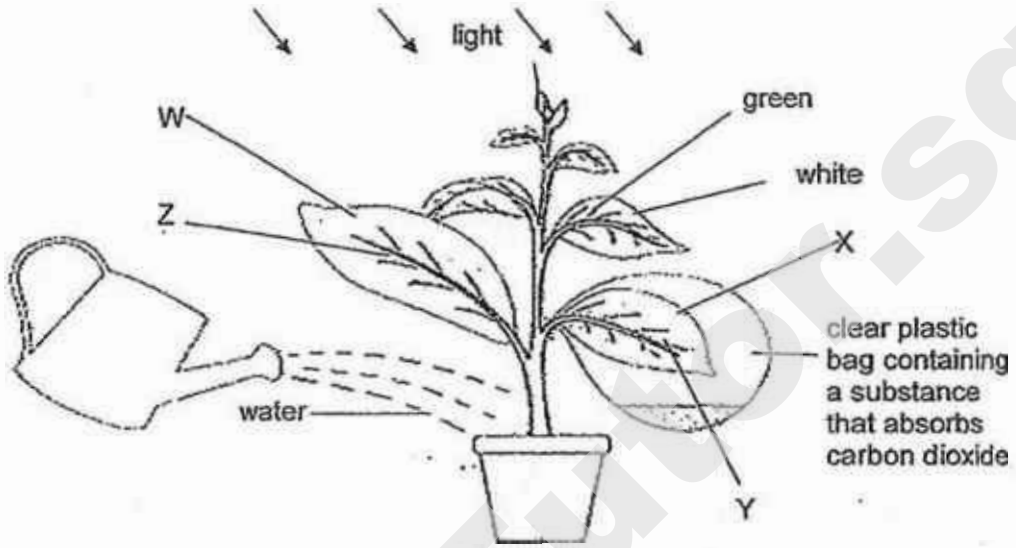


Which part is not found in animal cells?

(1) Q
(2) R
(3) S
(4) T

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5 The diagram shows an investigation on photosynthesis. The plant has leaves that are green in the middle and white around the edges.



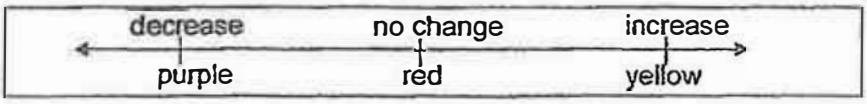
Which leaf areas lack only one condition needed for photosynthesis?

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

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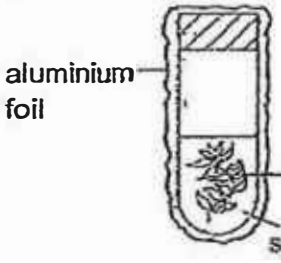
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6 Four tubes are left in the sunlight for one hour. The solution in each tube is red at the start of the experiment. The diagram below shows how the colour of the solution changes with changes in the amount of carbon dioxide.



In which tube does the colour of the solution change to purple?

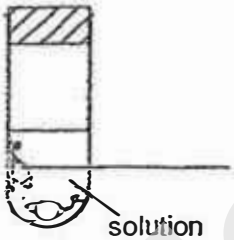
(1)



(2)



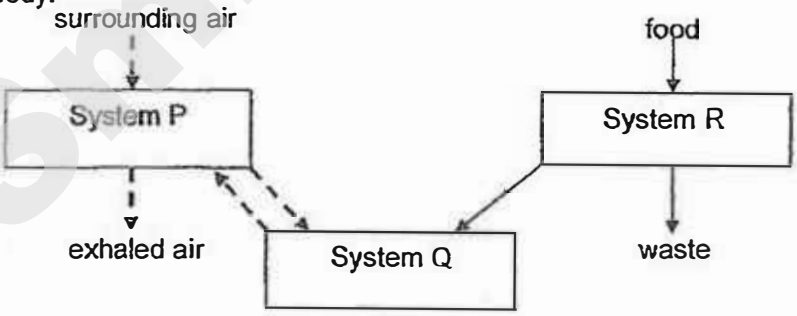
(3)



(4)



7 The diagram below shows how food and various gases are transported in the human body.



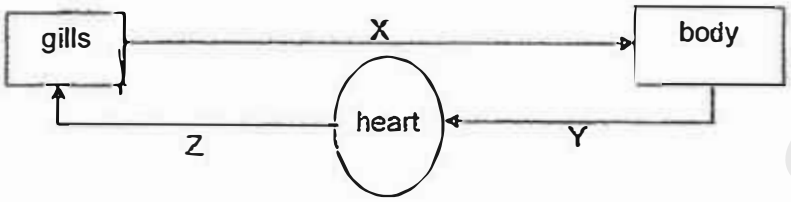
Which of the following correctly identifies P,Q and R?

	System P	System Q	System R
(1)	circulatory	digestive	respiratory
(2)	respiratory	digestive	circulatory
(3)	respiratory	circulatory	digestive
(4)	digestive	respiratory	circulatory

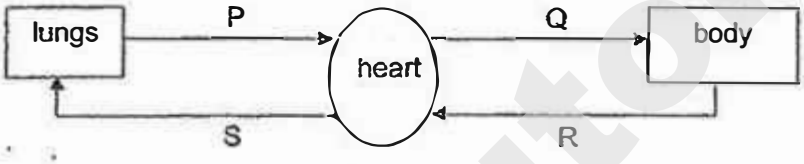
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8 The diagrams below show the circulatory systems of two organisms, a fish and a mammal. The arrows represent the blood vessels that carry blood from the gills or the lungs to the other parts of the body.

Circulatory system of a fish



Circulatory system of a mammal



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

A Only blood vessels X, P and Q carry oxygen-rich blood.
B Only blood vessels Y, Z, R and S carry carbon dioxide-rich blood.
C Oxygen-rich blood from the gills goes to the heart like the blood in blood vessel P.

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

9 Study the table about the plant transport system and human circulatory system.

	Plant Transport System	Human Circulatory System
A	Has tubes that transport materials	Does not have tubes to transport materials
B	Transports food produced by the leaves only	Transports undigested food only
C	Transports water, dissolved mineral salts and food to all parts of the plant	Transports digested food, oxygen, carbon dioxide, water and waste mate
D	Has no part to pump the substances through the system	Has a heart to pump blood through the system

Which of the above comparisons are false?

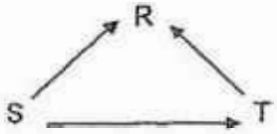
(1) A and B only
(2) C and D only
(3) A, B and C only
(4) B, C and D only

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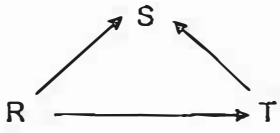
10 R, S and T are 3 organisms that live in a community.
R is a decomposer.
S is a producer.
T is a consumer.

Which diagram below shows the direction of the flow of energy in the community?

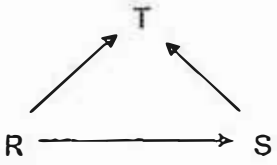
(1)



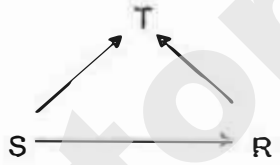
(2)



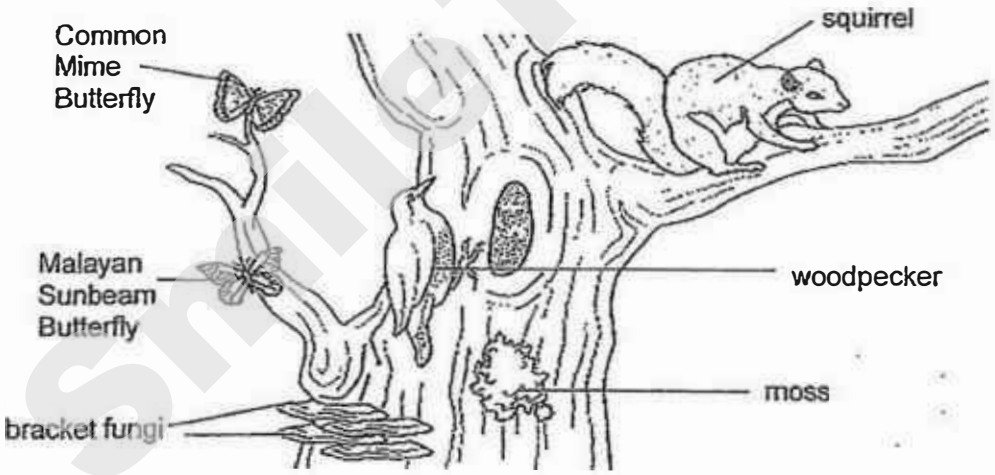
(3)



(4)



11 The diagram below shows a tree community.

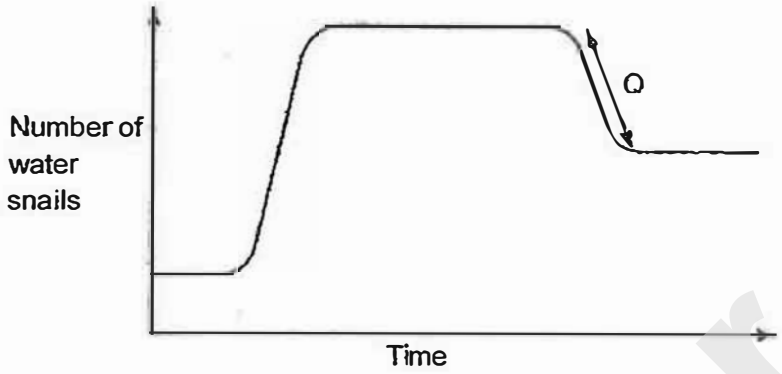


Which of the following sets of organisms are part of the same population in the tree community?

(1) tree and moss
(2) woodpecker and squirrel
(3) two different types of butterflies
(4) four bracket fungi on the trunk

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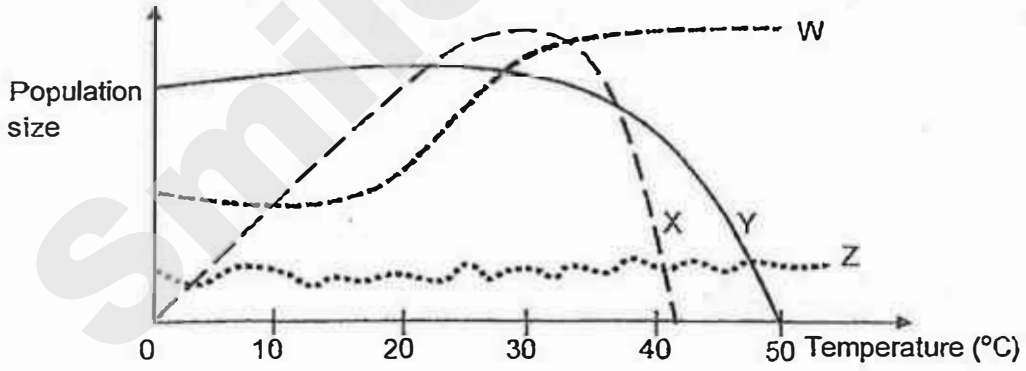
12 The graph below shows the number of water snails in a pond.



What might have been the reason for the section Q on the graph?

(1) Addition of water plants to the pond
(2) Increase in the birth rate of water snails
(3) Increase in food supply for the water snails
(4) Addition of predators that feed on water snails

13 The graph below shows the effect of temperature of the environment on the populations of 4 different organisms W, X, Y and Z

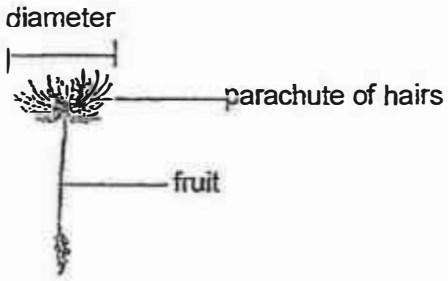


Which one of the following statements is correct?

(1) W survives better when the temperature is below 30°C.
(2) X can only survive when the temperature is about 30°C.
(3) Y is the most sensitive to any change in the temperature.
(4) Z is the least affected by changes in the temperature compared to the rest.

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14 The diagram shows a fruit attached to a parachute of hairs.



The following results were obtained during an experiment to investigate the time taken for four fruits, A, B, C and D with different diameters of parachute of hairs to fall to the ground.

Fruit	Diameter of parachute of hairs (cm)	Time taken to fall (s)
A	1.2	4.5
B	1.0	4.0
C	0.7	2.5
D	0.4	1.5

What conclusion can be drawn from the results?

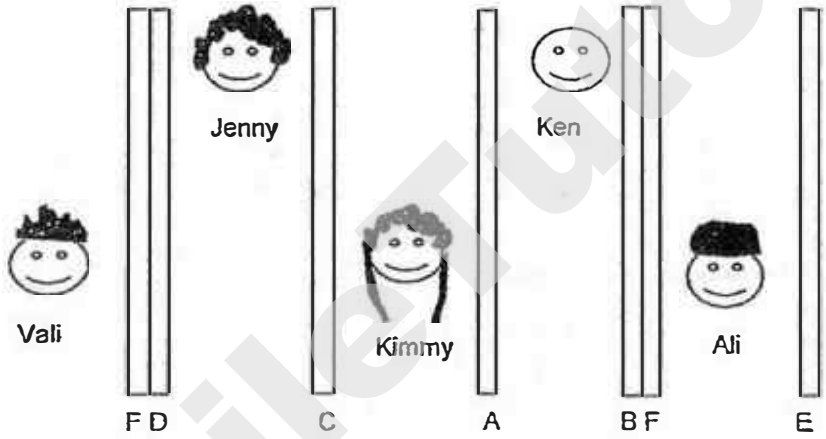
(1) Fruit D fell the slowest and fruit A fell the fastest.
(2) Fruit size affects the time taken for the fruit to fall.
(3) The fruits are well adapted for dispersal by animals.
(4) As the parachute diameter increases, the time taken to fall increases.

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15 A factory makes 6 types of materials, A, B, C, D, E and F. The materials are classified in the table below.

Does not allow light to pass through at all	Allow most light to pass through
A	C
B	D
E	F

Five children were asked to test the materials by standing behind the walls made of the materials as shown in the diagram below.



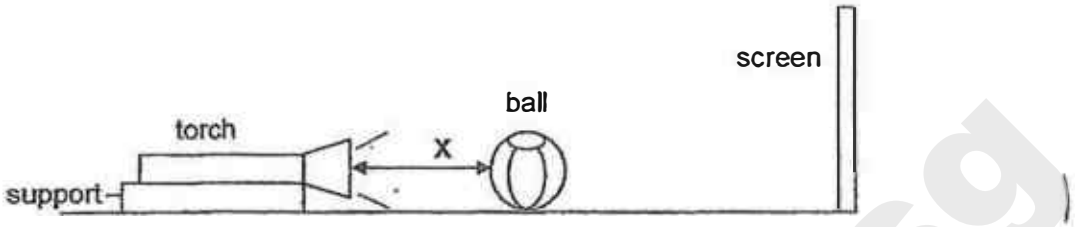
Which of the following statements are true?

A Ali can see Ken.
B Kimmy can see Vali.
C Vali cannot see Ken.
D Jenny cannot see Kimmy.

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

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16 Sarah set up an experiment in a dark room. She shone a torch on a ball as shown in the diagram below. A shadow of the ball was cast on the screen.



What could Sarah do to enlarge the shadow on the screen?

A Move the torch towards the ball.
B Move the screen towards the ball.
C Move the torch away from the ball
D Move the screen away from the ball.

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

17 The table below shows the state of 4 substances W, X, Y and Z at different temperatures.

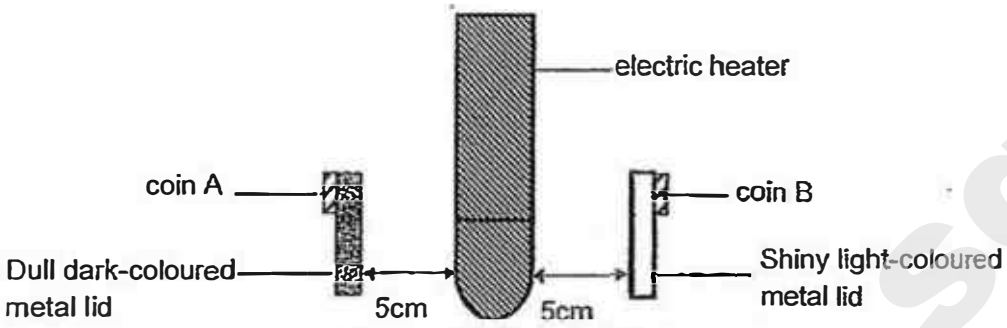
Substance	State of substance at 25°C	State of substance at 60°C	State of substance at 95°C
W	Solid	Solid	Liquid
X	Liquid	Gaseous	Gaseous
Y	Solid	Liquid	Gaseous
Z	Solid	Liquid	Liquid

Which substance has the lowest boiling point?

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

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18 Study the experiment below.



Two coins, A and B were attached to the 2 metal lids by the same amount of wax. After the electric heater is turned on, which coin, A or B, will drop off first and explain why.

(1) A, because dull and dark-coloured surfaces can reflect heat better.
(2) A, because dull and dark-coloured surfaces can absorb heat be
(3) B, because shiny and light-coloured surfaces can reflect heat better.
(4) B, because shiny and light-coloured surfaces can absorb heat better.

19 Mandy wanted to find out how the temperature of the water affects the rate of evaporation of water. She prepared the following set-ups as shown in the table below.

Set-up / Variable	A	B	C	D
Amount of water in container (cm^3)	100	200	100	200
Exposed surface area of water in container (cm^2)	50	50	45	50
Temperature of water (°C)	28	15	15	28
Temperature of surrounding air (°C)	30	25	15	25

Which 2 set-ups should she choose for her investigation?

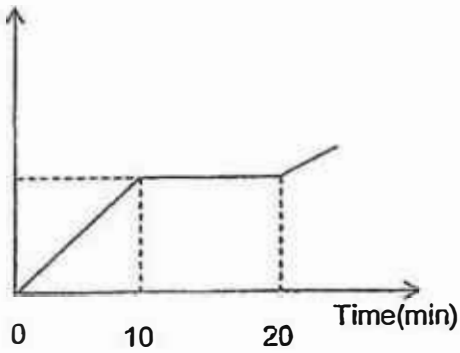
(1) A and B
(2) A and D
(3) B and C
(4) B and D

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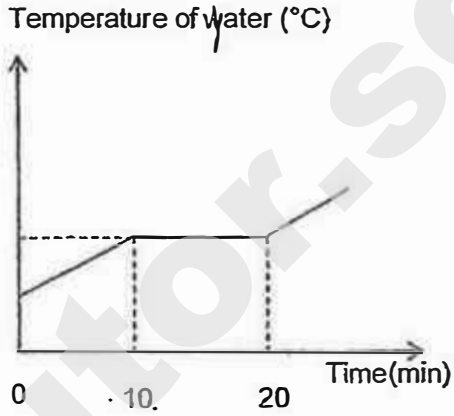
20 Judy filled a pot with some tap water and heated for 10 minutes until it started to boil. She continued boiling it for another 10 minutes before adding some frozen prawns and slices of fish into the boiling water.

Which of the following graphs shows the changes in the temperature of water correctly?

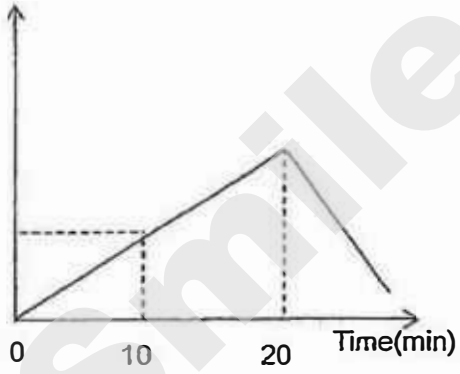
(1)



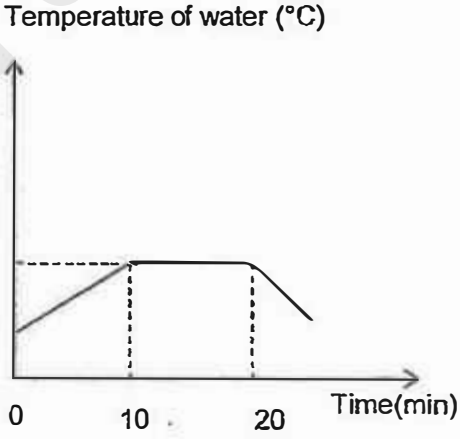
(2)



(3)



(4)



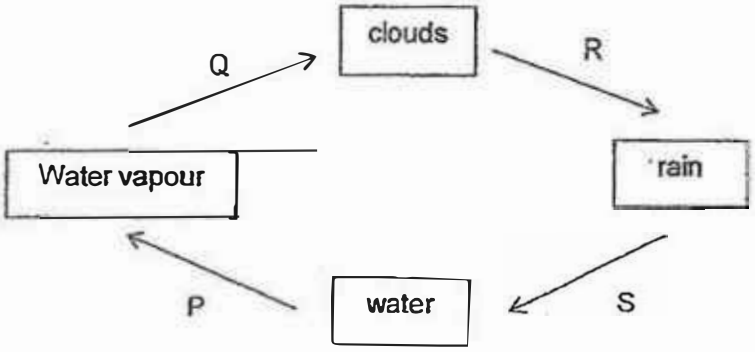
21 Ben walked into a cold storage room filled with blocks of ice and immediately he felt very cold.

Which one of the following explanations is correct?

(1) The blocks of ice lost heat to his body.
(2) Ben's body lost heat to the cold surrounding air.
(3) The blocks of ice gained coldness from his body.
(4) Ben's body gained coldness from the blocks of ice.

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22 The diagram below shows the stages, P, Q, R and S in the water cycle.



Which stage(s) show(s) a change in the state of water?

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

23 The table below shows the main energy conversion of four electrical appliances, S, T, U and V.

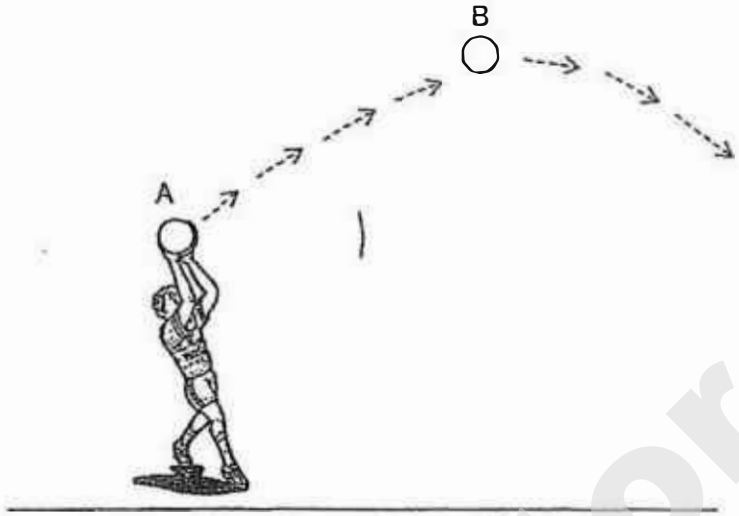
Electrical appliances	Energy conversion
S	Electrical energy → Kinetic energy
T	Electrical energy → Heat energy
U	Electrical energy → Sound energy
V	Electrical energy → Light energy

Which of the following electrical appliances correctly represents the energy conversion as shown above?

	S	T	U	V
(1)	Food blender	Oven	Radio	Fan
(2)	Fan	Radio	Oven	Ceiling light
(3)	Food blender	Fan	Ceiling light	Radio
(4)	Fan	Oven	Radio	Ceiling light

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24 Dev threw a tennis ball as shown in the diagram below.



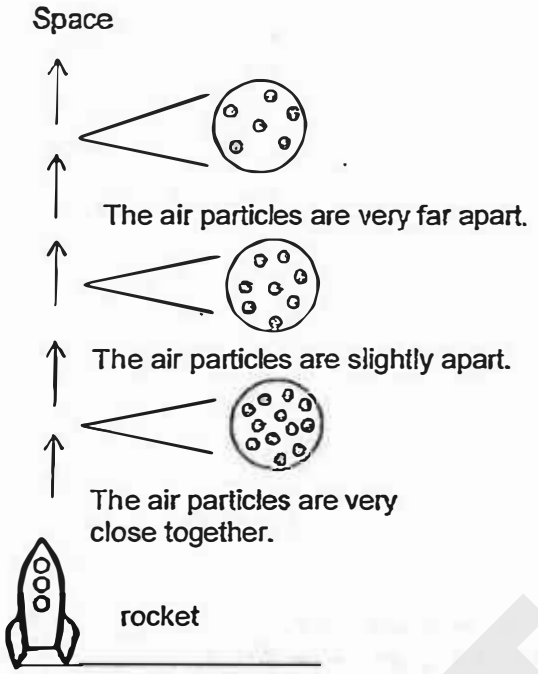
Which of the following is correct, as the ball moved from position A to position B?

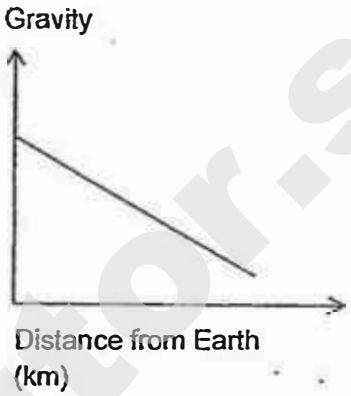
(1) Potential energy is highest at position A.
(2) Potential energy and kinetic energy is the same at position A.
(3) Kinetic energy is highest and potential energy is lowest at position B.
(4) Kinetic energy is lowest and potential energy is highest at position B.

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25 Study the diagram and graph below carefully.





Using the information given above, as the rocket flies towards space it needs less force to fly at a constant speed.

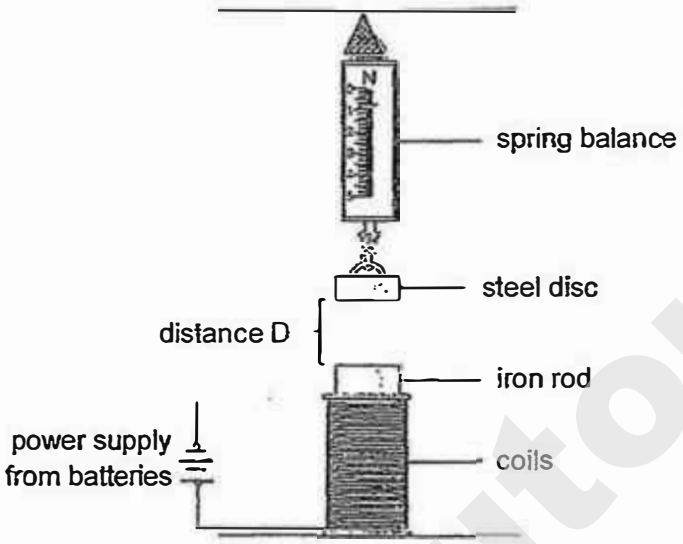
Which of the followiing(s) can explain the above?

A The pull of earth's gravity is less.
B The pull of moon's gravity is less.
C There is less friction caused by the air.

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

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26 Owen set up an experiment to test the strength of an electromagnet as shown below. He used the spring balance to measure the force of attraction of the electromagnet on a steel disc.



He recorded his results in the table below.

Number of coils	15	30	45	60
Distance D (cm)	10	6	4	2

Owen then made a change to his experiment and carried out the experiment again. The results of his second experiment are shown in the table below.

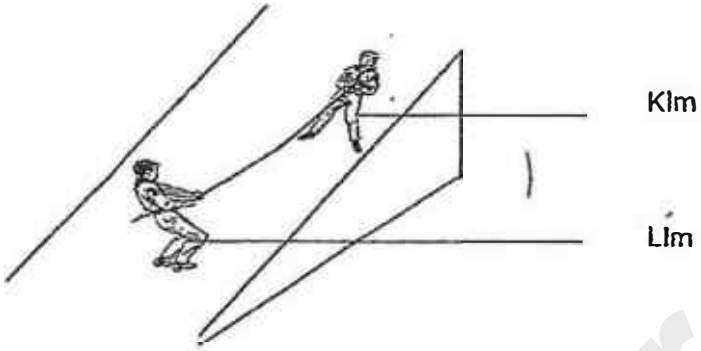
Number of coils	15	30	45	60
Distance D (cm)	8	4	2	0

Based on the above results, what could be the possible change Owen has made in his second experiment?

(1) He used a lighter steel disc.
(2) He applied heat to the iron rod.
(3) He added more batteries to the set-up.
(4) He change the iron rod to a steel rod.

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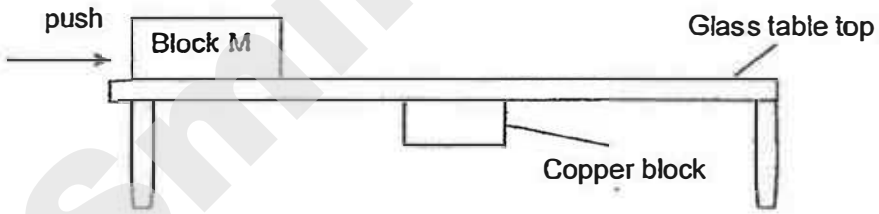
27 The diagram below shows Kim helping Lim up a steep slope on a hill. Kim and Lim weigh the same.



Based on the above diagram, which one of the following statements about the forces acting on Kim and Lim is correct?

(1) Both boys were exerting a pushing force.
(2) Gravitational force acting on both boys is the same.
(3) Kim had more gravitational force acting on him than Lim.
(4) Kim was exerting a pull force and Lim was exerting a push force.

28 Block M is a bar magnet. It was placed on a flat glass table as shown below. A copper block was attached to the bottom of the table. Block M was given a push to move along the table.



Which of the force(s) below must the push overcome in order for Block M to move along the table?

(1) Frictional only
(2) Frictional and Magnetic only
(3) Frictional and Gravitational only
(4) Frictional, Gravitational and Magnetic

END OF BOOKLET A

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First Semestral Assessment 2017
STANDARD SCIENCE
Primary 6

Total Marks: 100

Name: _____

Class: Pr 6 _____ Register No. _____ Duration: 1 h 45 min

Date: 9 May 2017 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 29 to 40, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

* This booklet consists of 17 printed pages (including cover page).

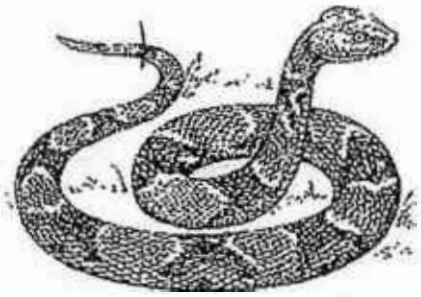
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Part II

For questions 29 to 44, write your answers in the space provided. **(44 Marks)**

29 The diagram below shows a snake.



(a) Complete the table below by stating the characteristic of living things related to each behaviour of the snake. [3]

Characteristic of living things	Behaviour
(i) _____ _____	Feeds on small animals like rats and mice
(ii) _____ _____	Lays eggs
(ii) _____ _____	Sheds its skin to allow its body to increase its size

A snake is a reptile.

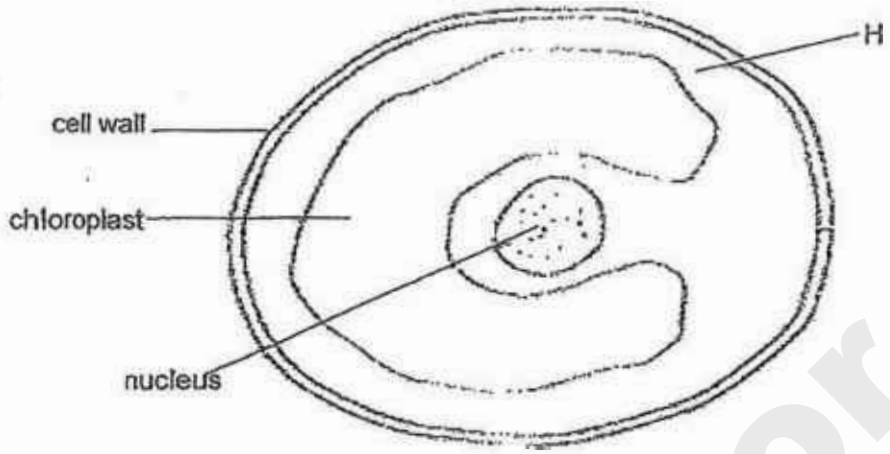
(b) State one difference between a reptile and a fish. [1]

_____

_____

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30 The diagram below shows a one-celled organism. Arul found it growing on the bark of a tree.



(a) Identify part H. [1]

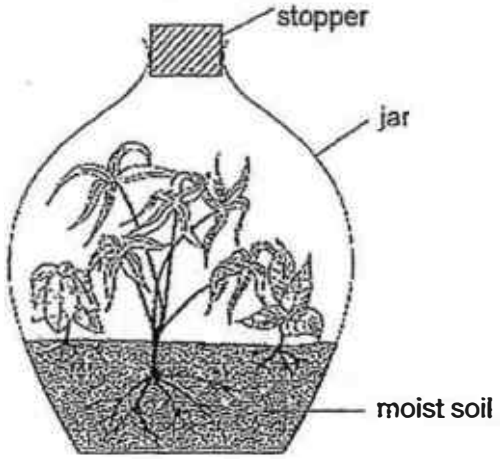
(b) Label the cell membrane on the diagram above. [1]

(c) Arul says that the organism feeds on other organisms. Do you agree with him? Explain your answer. [1]

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31 The diagram below shows a large glass jar in which plants are growing. The jar provides an environment in which the plants can live for many months without adding water or removing the tightly-fitting stopper to allow air to enter.



(a) Suggest why the plants in the jar show only very limited growth compared with similar plants growing under natural conditions? [1]

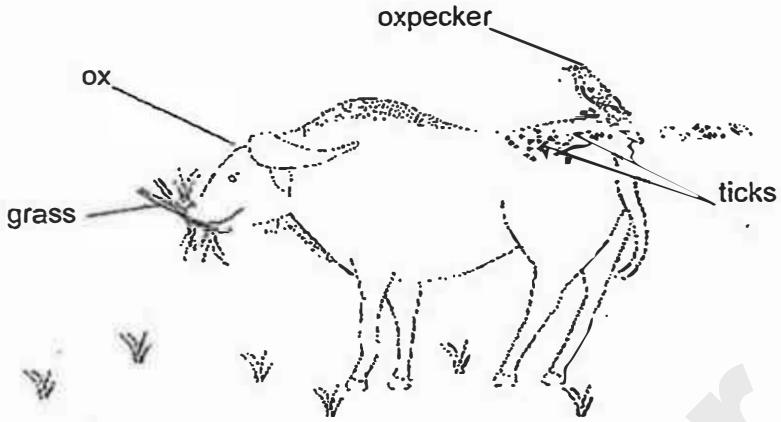
(b) The jar is put in a place where there is light. Explain why this is done. [1]

(c) The stopper prevents surrounding air from entering the jar. Explain how the plants are able to remain alive without a continuous supply of fresh air. [1]

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32 Study the diagram below.



(a) What is the indirect source of energy for the ox? [1]

The bird on the ox's back is an oxpecker that feeds both on blood-sucking ticks living on the ox, and on blood from the ox's wounds.

(b) Identify a pair of predator and prey. [1]

(c) In the space below, draw a food web to show the feeding relationships of all the organisms above. [2]

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33 The diagram below shows a sloth. The sloth is a mammal that lives in the trees of the rainforests.



Sloths are extremely slow moving. Their fur is often green as a plant-like organism called algae, grows on it. They climb down the tree to deposit their faeces in a hole they dig near the foot of the tree. They lose a quarter of their body weight when they pass out their faeces, which may be once every 6 to 8 days.

(a) Suggest and explain an advantage to the sloths of each of the following:

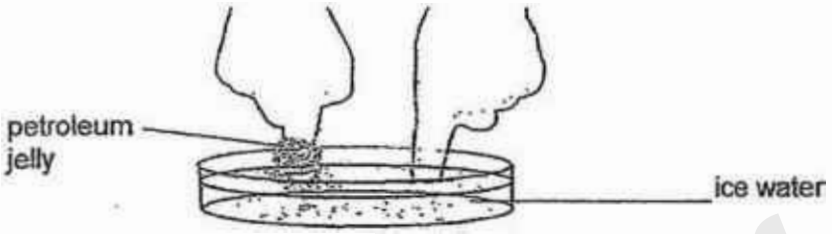
(i) the algae that live in their fur [1]

(ii) burying their faeces at the foot of the trees in which they live [1]

(b) One part of the sloth's digestive system is proportionally much bigger than the same part in humans. Suggest which part and give a reason for your answer. [1]

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34 Ai Ling dipped two fingers into a dish of ice water. One finger was covered with petroleum jelly (made of oil). She timed how long she could keep the fingers inside the ice-cold water without feeling uncomfortable.



Her results are shown below.

	Time finger stayed in ice water
Bare finger	45 s
Finger with petroleum jelly	5 min

(a) Why did her bare finger feel cold after a short while? [1]

(Question 34 continue on the next page)

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Animal K is a large mammal that lives in cold regions. It has long hair, a compact body, short tail and small ears. It lives in herds and each herd can consist of over a hundred animals.



Animal K

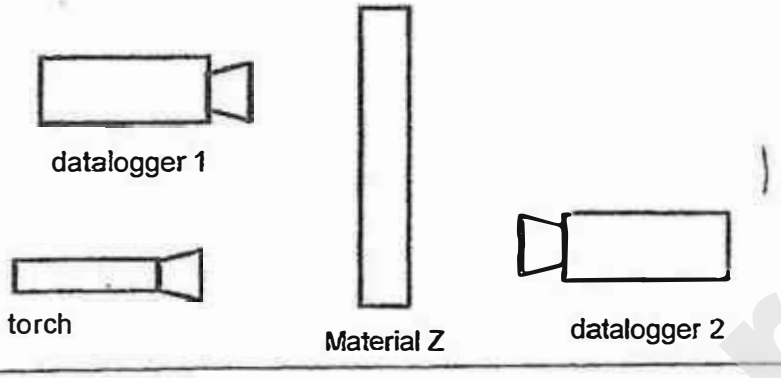
(b) Based on the results of Ai Ling's investigation, explain how the thick layer of fat under its skin helps Animal K. [1]

(c) Identify a behavioural adaptation of Animal K to help itself keep warm. [1]

(d) Besides the thick layer of fat and long hair, identify another structural adaptation that helps it survive in the cold. Explain your answer. [2]

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35 Jeremy shone a torch on a piece of material Z. He placed 2 light sensor dataloggers of equal distance from the material Z as shown in the diagram below.



The table below shows the amount of light detected by the 2 dataloggers.

Datalogger	Amount of light (lux)
datalogger 1	1000
datalogger 2	3000

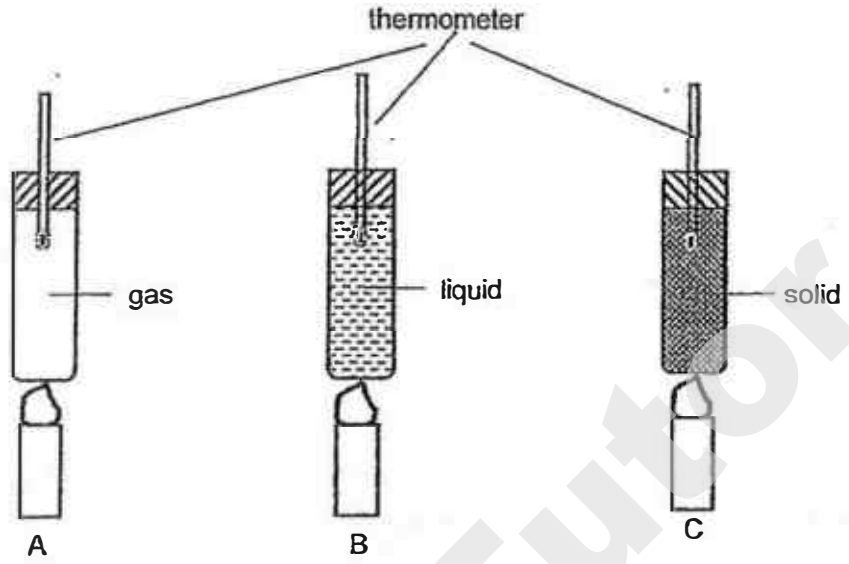
(a) What is the difference in the amount of light detected by the two dataloggers? [1]

(b) Give a reason for the difference in the amount of light detected by the two dataloggers. [1]

(c) Jeremy decided to use the material Z to build a greenhouse to grow his plants. Do you agree with him? Explain why. [1]

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36 Zen prepared set-ups A, B and C as shown below. Equal volume of 3 different matters, gas, liquid and solid were placed in the test-tubes and heated for 10 minutes.



After 10 minutes, the changes in the temperature of the content in the test-tubes were recorded in the table below.

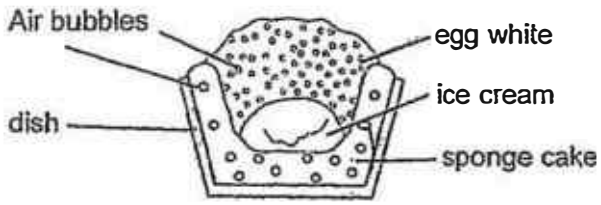
Time / minutes	Temperature (°C) of content in set-up		
	gas	liquid	solid
0	30	28	23
5	37	40	60
10	39	42	93

(a) Based on the table above, what can you conclude about the rate of heat conductivity of the three states of matter? [1]

(Question 36 continue on the next page)

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Mrs Ong made a pudding as shown in the diagram below.



The pudding was put in a very hot oven until the top of the egg white turns brown. It is then removed from the oven. The ice cream remains frozen in the solid state when it is served.

(b) Give a reason why the ice cream remains frozen in the solid state. [2]

_____

_____

(c) What is the effect of heat gain for the egg white? [1]

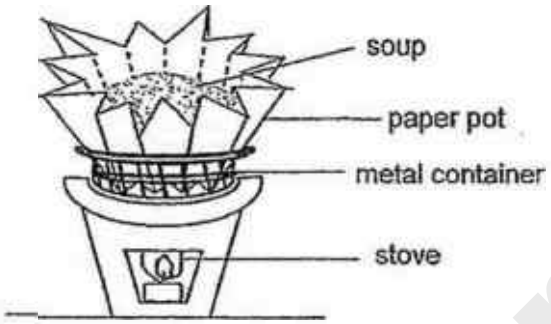
_____

_____

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37 Macy went to a restaurant for dinner. A soup was served in a paper pot on a stove as shown in the diagram below.



After 15 minutes, she observed that the soup boiled but the paper pot did not burn at all.

(a) Why did the soup boil? [1]

_____

_____

Macy concluded that the soup helped to prevent the paper pot from being burnt.

(b) Suggest what Macy should do and observe to confirm her conclusion. [2]

Do: _____

_____

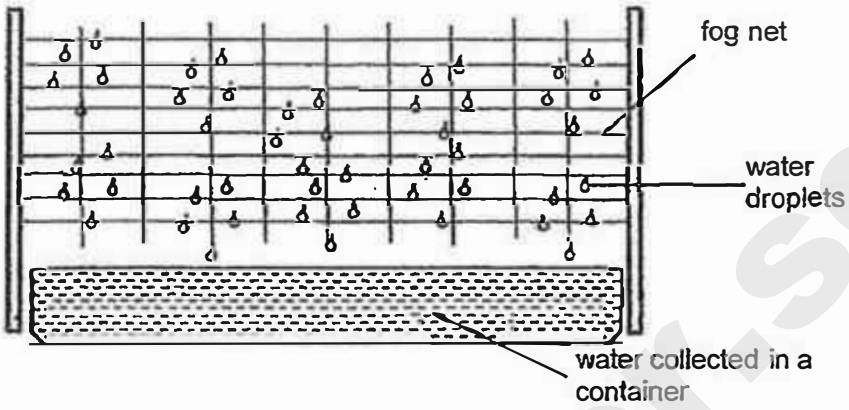
Observe: _____

_____

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38 Fog is formed when warm water vapour in the air rises and meet the cold surface of the fog net.



Water droplets that collect on the net run downwards and drip into a container at the bottom of the net from where they are collected and stored as freshwater for drinking.

(a) Name the process that causes the water droplets to form on the net. [1]

_____

(b) In which habitat, desert or Arctic region would you use the fog net to obtain drinking water? Explain why. [1]

_____

_____

_____

(Question 38 continue on the next page)

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The table below shows the amount of fresh water collected per day by different sizes of fog nets.

Total surface area of net (m^2)	Amount of Water collected (litres/day)
50	1000
100	3000
150	5000
200	7000

(c) State the relationship between the total surface area of the net and the amount of water collected per day. [1]

_____

_____

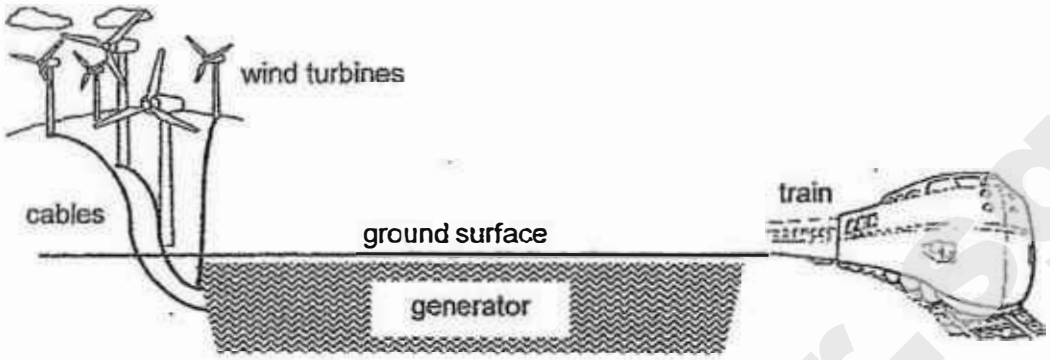
(d) Besides the surface area of the fog net, state one other factor of the fog net that will affect the amount of water collected per day. [1]

_____

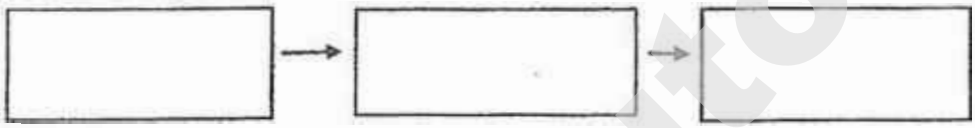
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39 A train making company is using wind turbines to produce energy to power the train in the country as shown in the diagram.



(a) State the energy conversion to move the train. [1]



(b) Give one advantage for wind as a source of energy to make the train move. [1]

_____

_____

(c) The train company built many wind turbines to move the train. Explain why. [1]

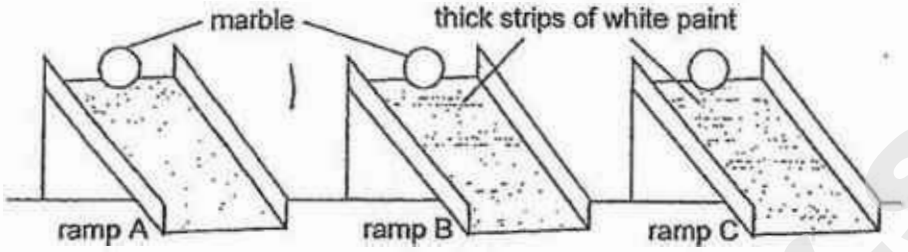
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40 An experiment was set up as shown in the diagram below. Three similar marbles were each placed on three similar ramps, A, B and C. Ramps B and C were painted with a different number of thick strips of white paint.



The three marbles were rolled down the ramps at the same time. The table below shows the average time taken by each marble to reach the bottom of the ramps.

Time (s)	Ramp A	Ramp B	Ramp C
Average	3.2	5.2	7.2

(a) What is the possible aim of the experiment? [1]

(b) What is the purpose of ramp A? [1]

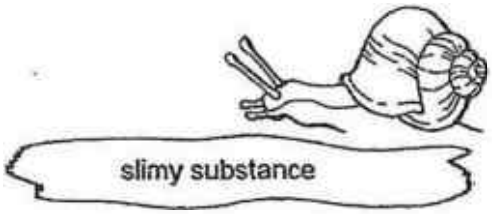
(c) Name the forces acting on the marble as they roll down along the 3 ramps. [1]

(Question 40 continue on the next page)

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Study the picture below.



(d) A snail secretes slimy substance as it moves along its path. Explain why. [1]

_____

_____

(e) State one effect of friction the snail is trying to reduce by secreting the slimy substances. [1]

_____

_____

END OF PAPER

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EXAM PAPER 2017 9 May 2017
LEVEL : PRIMARY 6
SCHOOL : ROSYTH
SUBJECT : SCIENCE
TERM : SEMESTRAL ASSESSMENT 1

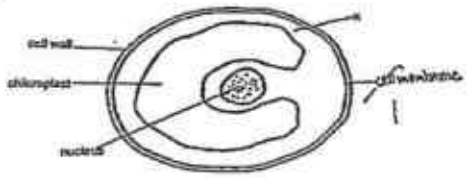
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	3	4	4	2	3	1	1	1
Q11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
4	4	4	4	2	2	2	2	4	4
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	3	4	4	4	3	2	1		

Q29ai) Needs food to survive **ii) reproduce** **iii) Grows**

b) The reptile has dry scale but fish has wet scales.

Q30a) Cytoplasm

b)



c) I do not agree. The organism has chloroplast to make its own food with presence of sunlight.

Q31a) There is not enough space.

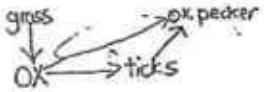
b) It is to allow the plants to carry out photosynthesis in order to make food.

c) When the leaves photosynthesise using carbon dioxide, oxygen is produced and oxygen is taken in and carbon dioxide is given out by the plant.

Q32a) The indirect source of energy for the ox is the sun as it slows the plants to make food in order to survive so the ox can eat the grass.

b) Ticks are predators and ox is the prey.

c)



Q33ai) The algae in the sloth's fur is to allow the sloth to camouflage among the trees to avoid being spotted by their predators.

ii) The faeces decay to provide nutrients for the tree so the tree will provide food and shelter for the tree.

b) Rectum. It can store a lot of faeces and only need to deposit their faeces once every 6 to 8 days.

Q34a) It lose heat to the ice water.

b) It help to reduce heat loss from the body to its surroundings.

c) They live in herds.

d) It has small ears. It reduces heat loss to the surroundings as the area exposed to the cold is reduced.

Q35a) The amount of light detected in the datalogger 1 is lesser than the datalogger 2.

b) The amount of light detected is lesser than the amount of light passing through.

c) Yes. As the material allows light to pass through it and plants are able to make food.

Q36a) The rate of heart conductivity for gas is the lowest but the rate of heat conductivity for solid is highest.

b) Air in the bubble is a poor conductor of hear so heat transfer from over to ice cream is slowed down.

c) It turns brown.

Q37a) It gained heat from the stove and it reached the boiling point.

b) do: Take to set ups, fill one with soup.
observe: the pot without soup will get burnt.

Q38a) Condensation.

b) Desert. The air in the desert will be hot while the water vapour in the Arctic is cold and the warm vapour will condense on the cold surface of the fog net.

c) As the total surface area of net increases, the total amount of water collected will increase.

d) The temperature of the fog net.

Q39a) Kinetic energy → electrical energy → kinetic energy

b) The wind is free.

c) Large amount of wind has more kinetic energy which can be converted to more electrical energy to move the train.

Q40a) To find out if the number of strips of the ramps affects the time taken for the marbles to reach the ground.

b) It acts as a control set-up to confirm that the only variable affecting the average time taken for the marble to roll down the ramp is the amount of thick strips of white paint.

c) Frictional force and gravitational force.

d) It is to reduce the amount of friction between the snail and its pat.

e) Wear and tear

SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

FIRST SEMESTRAL ASSESSMENT 2017

NAME: _____ ( )

DATE: 2nd May 2017

CLASS: PRIMARY 6 SY

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.

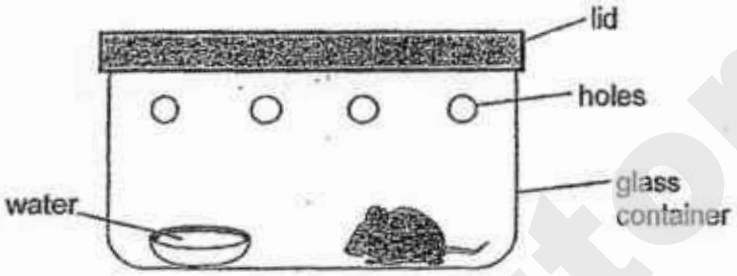
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Part I (56 marks)

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. Joseph placed a mouse in a glass container and covered it with a lid. The mouse died after 1 week. What could Joseph do to prevent this from happening?



He should
A: cover up the holes.
B: put some food into the glass container.
C: put another mouse in the glass container.
D: put the glass container near a light source.

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

2. Which of the following is **not** true about the body systems of a human?

1) The circulatory system transports nutrients to the other parts of the body.

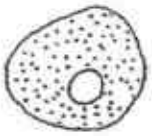
2) The respiratory system is made up of the nose, windpipe, gullet and lungs.

3) The skeletal system and muscular system work together for the movement of the body.

4) The digestive system breaks down food for the body to absorb.

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3. Professor Lee found Animal A that could glow in the dark. He transferred the gene of Animal A that was responsible for the glow to the cell of a plant, B.

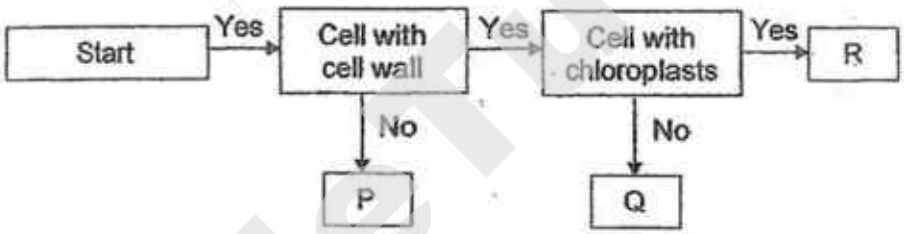
Cell of animal A 

Cell of plant B 

After the transfer, the cell of Plant B is able to pass down the glowing characteristic to its young. Which part of the cell did Professor Lee transfer the glow gene to?

1) chloroplasts
2) cell membrane
3) nucleus
4) cytoplasm

4. Study the flowchart below. It shows the characteristics of 3 cells, P, Q and R.



Which one of the following represents cells P, Q and R respectively?

	Human cheek cell	Bean plant leaf cell	Onion skin cell
1)	P	Q	R
2)	Q	R	P
3)	P	R	Q
4)	R	P	Q

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5. Erica ran up and down the stairs for 10 minutes and made some observations about her own pulse rate. Which of the following statements is/are true?

A: The pulse rate increases when Erica is resting.

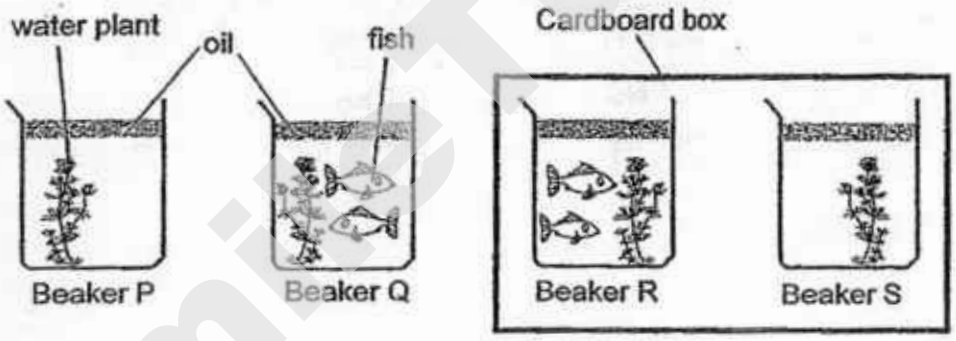
B: The pulse rate stops when Erica is holding her breath.

C: The breathing rate increases when Erica's pulse rate increases.

D: The pulse rate decreases when Erica is running up and increases when she is running down the stairs.

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

6. Freddie conducted an experiment with 4 set-ups as shown below.

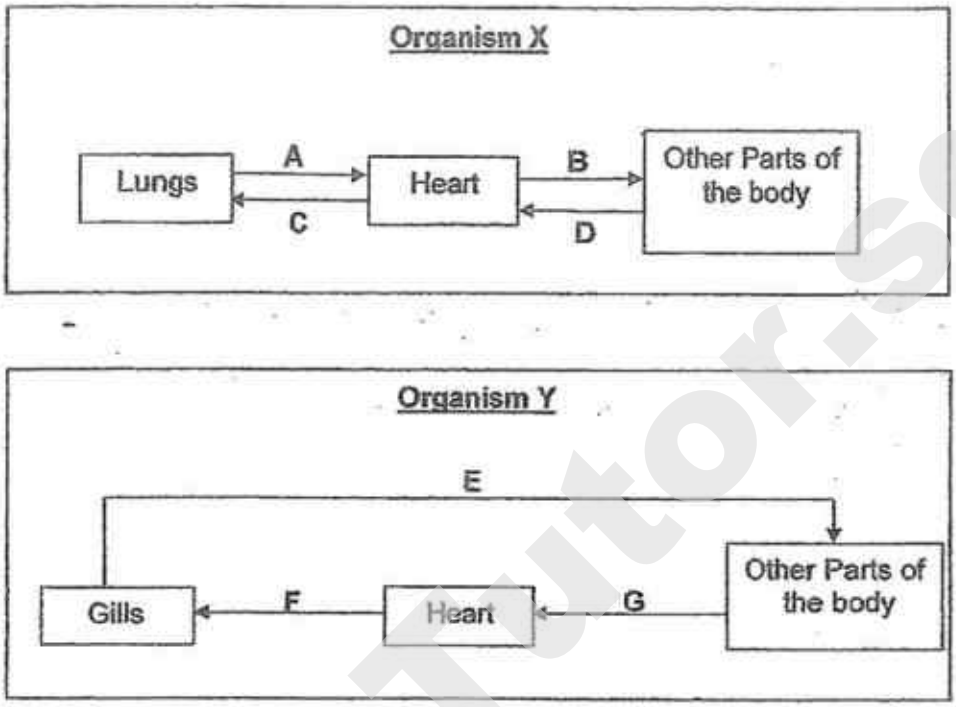


Beakers P and S contained 1 water plant each and Beakers Q and R contained 2 fishes and 1 water plant each. A layer of oil is poured into the beakers. In addition, Freddie placed Beakers R and S in a cardboard box. All the beakers were placed in a brightly lit place. Which beaker would have the least amount of oxygen at the end of an hour?

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

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7. The diagrams below show the flow of blood of two organisms X and Y. The arrows represent the blood vessels that carry blood from the lungs or gills to the other parts of the body.



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

Ally: Arrows A, B, E and G carry blood rich in oxygen.

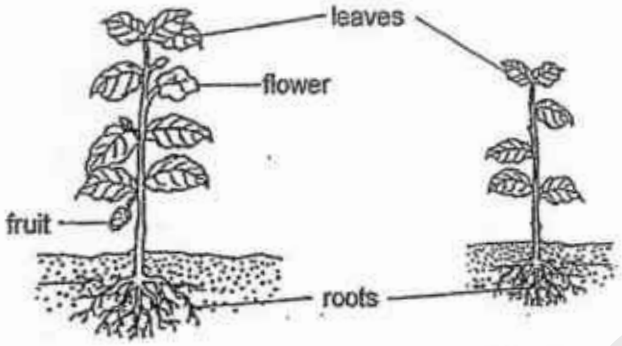
Ben: Arrows C, D, G and F carry blood rich in carbon dioxide.

Carine: Arrow E carries blood rich in both oxygen and carbon dioxide.

(1) Ben only
(2) Ally and Carine
(3) Ben and Carine
(4) Ally, Ben and Carine

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8. Norman planted two similar types of plant X and Y. Plant X was planted 3 weeks before Plant Y. Norman noticed that there were some differences between the plants and he made some inferences about them.



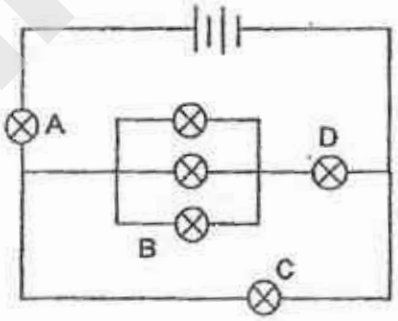
Plant X Plant Y

Which of the following statements is/are likely to be true?

A: Both plants are adult plants.
B: Plant Y is not able to reproduce yet.
C: Both plants can make their own food.
D: Plant X is likely to take in more water than Plant Y.

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

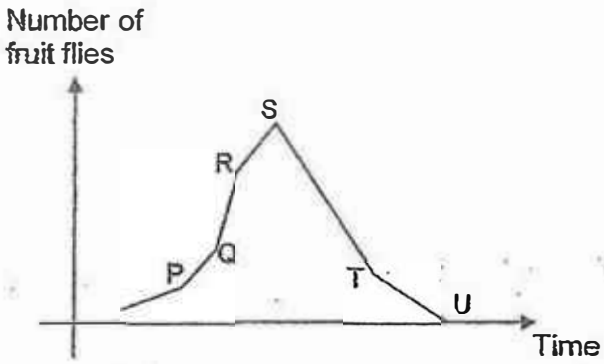
9. Study the electrical circuit below. Which bulb, when fused, will cause all the bulbs not to light up?



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

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10. Ling caught some fruit flies and placed them in a bottle. The fruit flies were given air, food and water. Ling recorded their population over a period of time. She then decided to add a frog into the bottle.



Based on the graph, at which point of time was the frog introduced?

1) P
2) S
3) U
4) T

11. Study the following food chain carefully.



The food chain above shows 4 different organisms E, F, G and H found in a mini garden in a glass tank. What are the possible actions that can be done to reduce the population of organism G?

A: Cover the tank with black cloth.

B: Put more Organism E into the garden.

C: Put more Organism H into the garden.

D: Remove Organism H and put more Organism F into the garden.

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

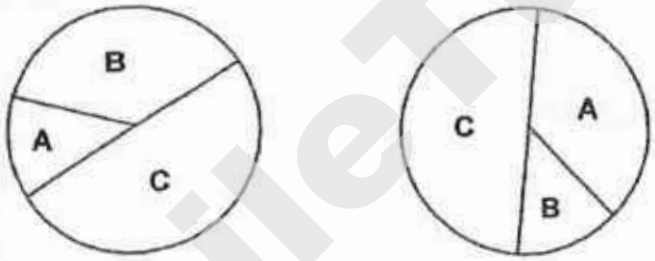
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12. Lauren learnt that plants can still grow in extreme conditions. She wants to find out if the lack of water will affect the growth of plants.

Which of the following shows correctly the number of set-ups she should use, the variable that she should change and the variable that she should measure for her experiment?

	Number of Set-up/s	Variable to change	Variable to measure
1)	1	Number of plants	Number of leaves dropped
2)	1	Amount of sunlight	Number of new leaves
3)	2	Amount of water	Number of leaves dropped
4)	2	Amount of sunlight	Number of new leaves

13. Study the pie charts below.



Community X Community Y

Which of these statements about the communities is/are true?

A: There are more C than A in Community X.

B: There are fewer B than C in Community Y.

C: The number of C in Community X and Community Y are equal.

D: There are at least 3 populations of organisms in communities X and Y.

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

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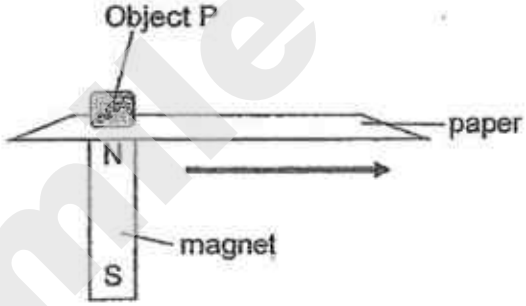
14. The diagram below shows Animal A. It lives among the trees in the warm rainforest. It feeds on fruits and moves slowly.



Which one of the following adaptations help Animal A when it is living in its habitat?

1) thick fur
2) long eyelashes
3) streamlined body shape
4) strong, sturdy arms

15. Leslie setup an experiment with a magnet, a piece of paper and an Object P. He placed Object P on a piece of paper and placed a magnet under it directly as shown in the diagram below.

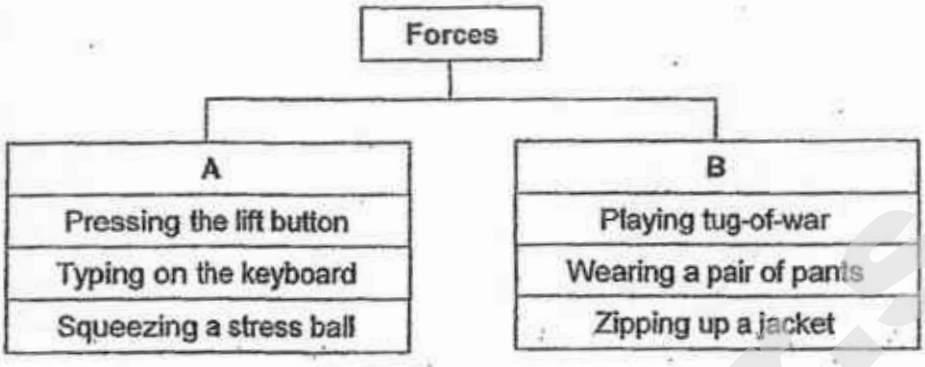


Leslie slid the magnet in the direction as shown above with both the North-seeking pole (N) and the South-seeking pole (S) and he noticed that Object P did not move. Which of the following could be a possible reason for it?

1) The paper is too thin.
2) The magnet is too small.
3) The magnet is too strong.
4) Object P is made of a non-magnetic material.

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16. Study the chart below.



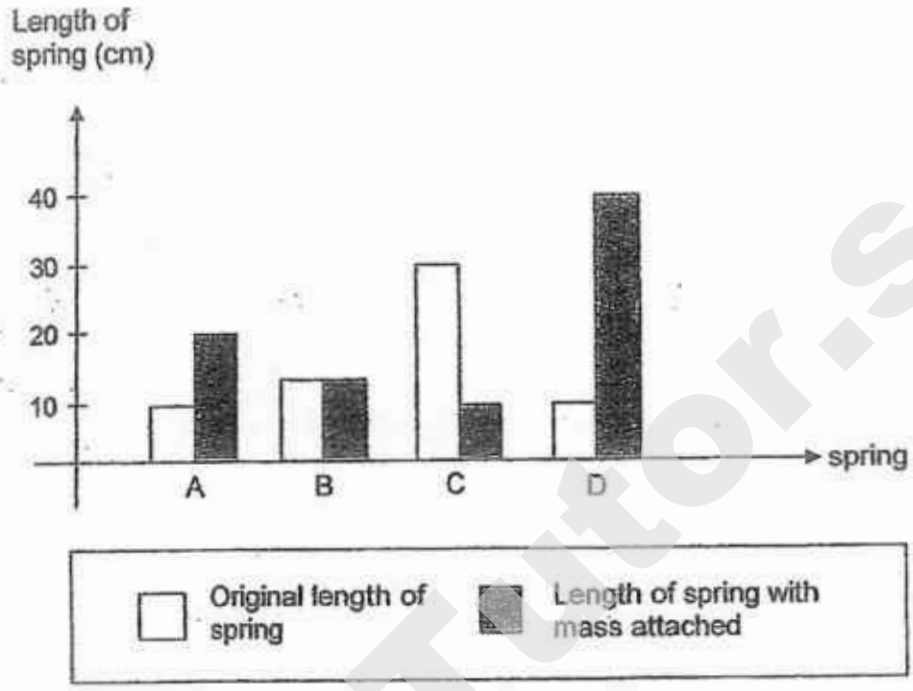
Which of the following is the most appropriate heading for A and B?

	A	B
1)	Push force	Pull force
2)	Changes shape	Does not change shape
3)	Has frictional force	Has no frictional force
4)	Changes the direction	Does not change the direction

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17. Gary wanted to find out how the lengths of different springs, A, B, C and D, change when a weight of 50 grams is added to each spring.



He conducted the experiment and plotted a graph as shown above. Based on the graph, which of the following statement/s is/are true about the springs?

A: Spring A extended to twice its length.

B: Spring C is a spring that was compressed.

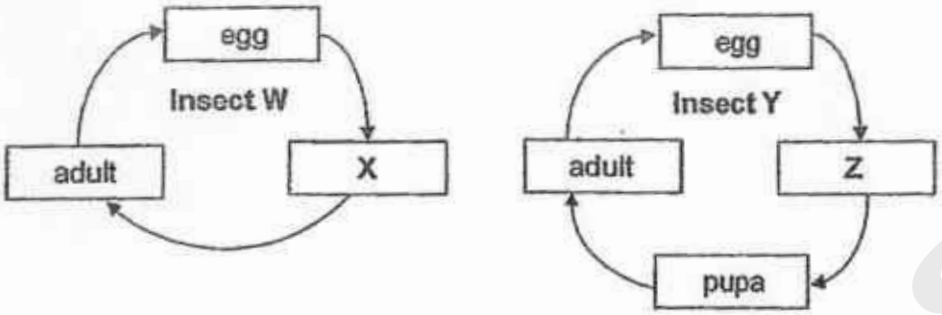
C: Spring D is extended more than Spring A.

D: Spring B needs a weight greater than 50g to cause a change in its length.

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

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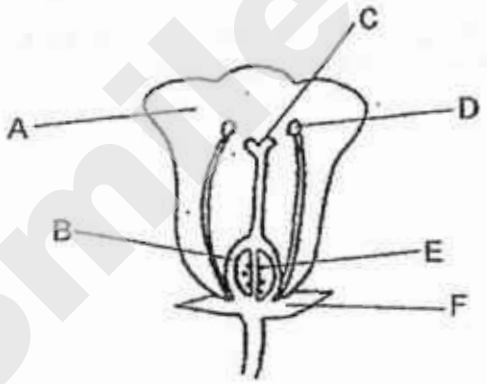
18. The diagrams below show the life cycles of 2 different insects.



Which of the following correctly matches W, X, Y and Z in the 2 life cycles?

	Insect W	Stage X	Insect Y	Stage Z
1)	moth	larva	cockroach	nymph
2)	moth	nymph	cockroach	larva
3)	cockroach	nymph	butterfly	larva
4)	cockroach	larva	butterfly	nymph

19. The diagram below shows the cross-section of a flower.

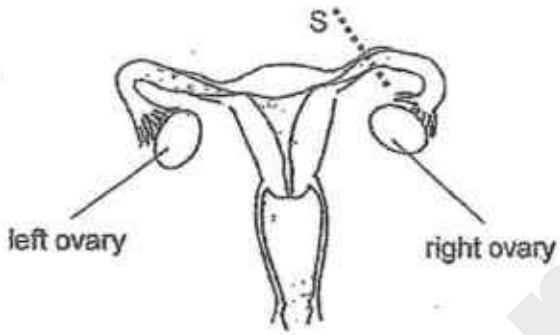


Given that pollination has not taken place, which one of the observations is **correct** when the various parts of the flower are removed?

	Parts removed	Observation
1)	A and D	The flower will be able to bear fruits.
2)	A and C	The flower will be able to bear fruits.
3)	B and F	The flower will be able to bear fruits.
4)	C and E	The flower will be able to bear fruits without seeds.

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20. 4 friends, Kit, Lucy, Min and Kumar, discussed what will happen to the female reproductive system if a cut was made at point S.



These are the statements they made:

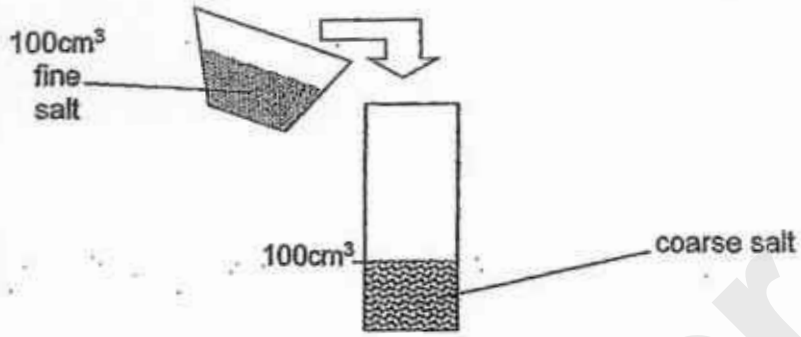
Kit:	The female will not be able to get pregnant.
Lucy:	The left ovary will stop producing eggs.
Min:	The sperm will be able to travel to the egg produced by the left ovary.
Kumar:	The foetus will not be able to develop in the womb.

Who was correct?

1) Kit
2) Lucy
3) Min
4) Kumar

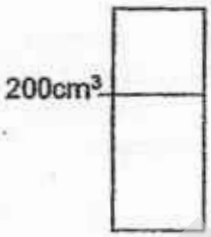
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21. Seng Choon poured 100cm³ of coarse salt into a container. He then added 100cm³ of fine salt into the container. After she has poured in the fine salt, she gave the container a shake and placed it on the table.

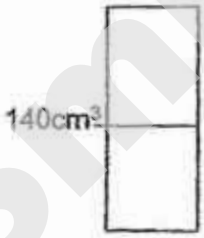


Which container shows the most possible new level of the salt?

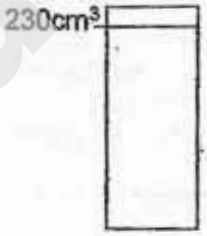
1)



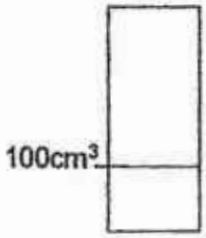
2)



3)

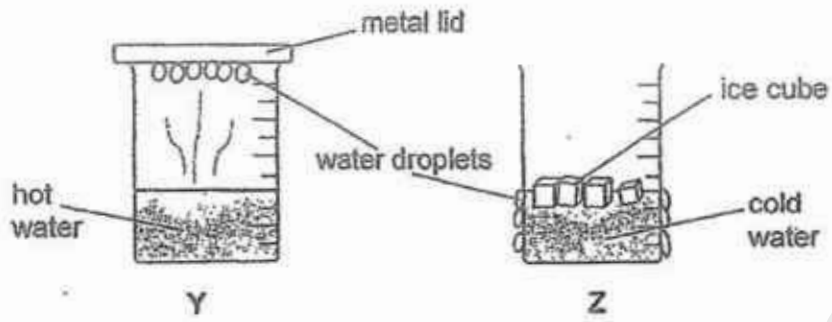


4)



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22. Study the following diagram.



Where did the water droplets on each surface condense from?

	Setup Y	Setup Z
1)	hot metal lid	ice cubes in cold water
2)	warm water vapour from surrounding air	warm water vapour from surrounding air
3)	hot water vapour from hot water	cold surface of beaker
4)	hot water vapour from hot water	warm water vapour from surrounding air

23. Joseph left 3 blocks of ice of different sizes on the table at the same time.



Which of the following statements about the ice cubes is correct?

1) Y has the lowest temperature.

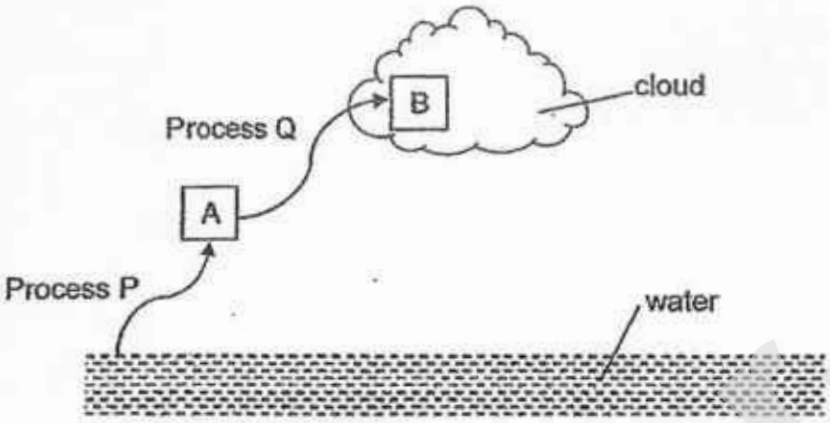
2) X will take the longest time to melt.

3) Z will need more heat to melt it than X.

4) All the ice cubes have a temperature of more than 0°C.

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24. Study the diagram of the water cycle carefully.



Which of the following shows the correct state of water and processes in the water cycle respectively?

	A	B	P	Q
1)	Liquid	Gas	Evaporation	Condensation
2)	Gas	Liquid	Evaporation	Condensation
3)	Gas	Liquid	Condensation	Evaporation
4)	Liquid	Gas	Condensation	Evaporation

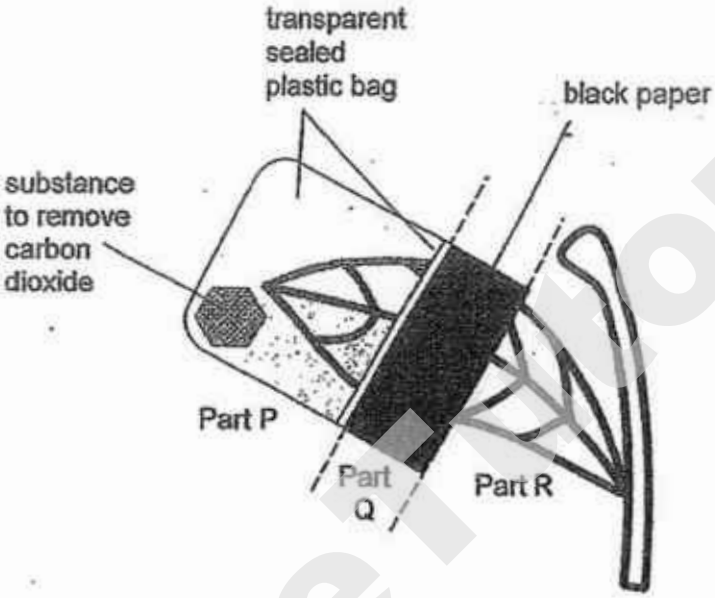
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25. Linda took a leaf and placed it in the dark for 2 days.

After 2 days, she did the following to the leaf:

- sealed one end of it, Part P, with a plastic bag
- placed some substance to remove the carbon dioxide in the plastic bag
- covered Part Q with a piece of black paper
- left Part R untouched

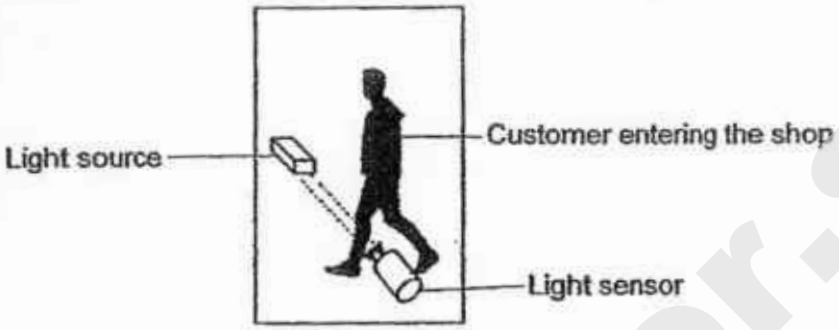


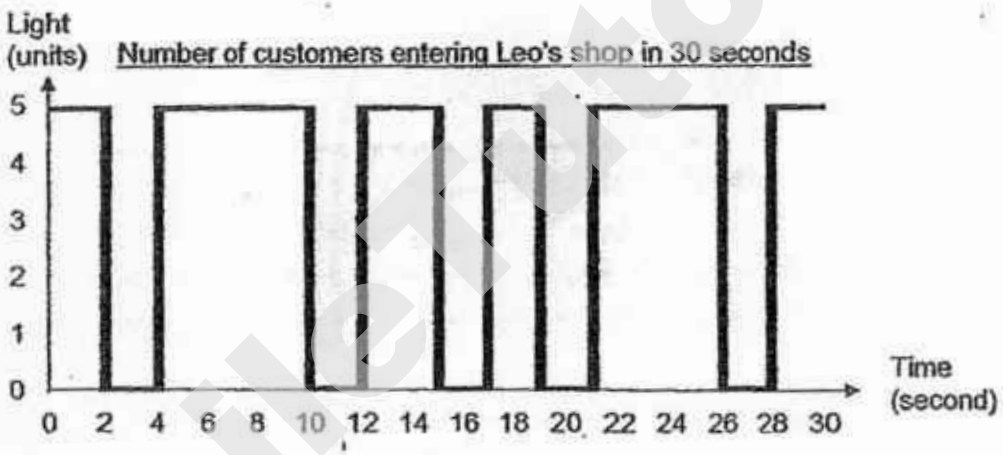
Linda then placed the leaf under sunlight and tested for starch with iodine solution 5 hours later. What could be the possible results that she will be able to see? Note: Iodine turns dark blue when it reacts with starch.

	P	Q	R
1)	iodine turned dark blue	iodine turned dark blue	iodine remained yellow
2)	iodine remained yellow	iodine turned dark blue	iodine remained yellow
3)	iodine remained yellow	iodine remained yellow	iodine turned dark blue
4)	iodine turned dark blue	iodine remained yellow	iodine turned dark blue

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26. Leo uses a light sensor to count the number of customers entering his shop. When a customer walks into the shop, light will be blocked from the light sensor. The graph below shows the data collected by the light sensor in 30 seconds.



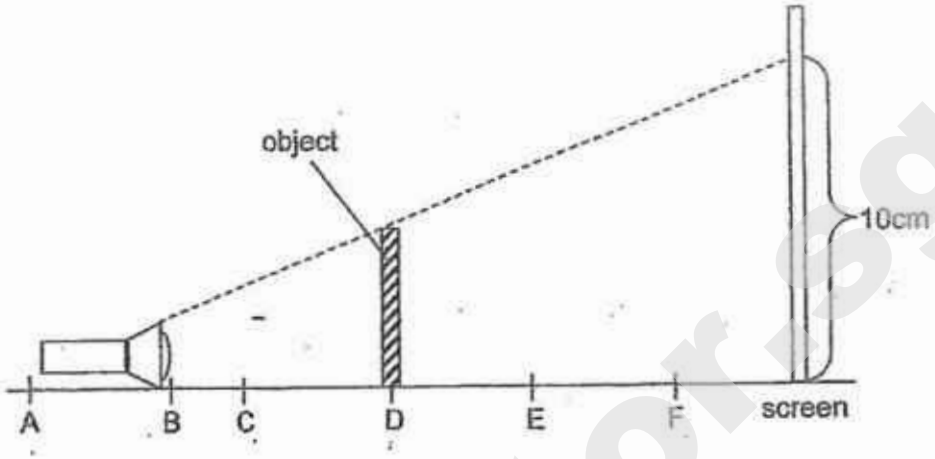


How many customers entered Leo's shop in 30 seconds?

(1) 5
(2) 6
(3) 28
(4) 30

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27 Hui Leng wanted to find out if the position of an object would affect the length of its shadow on the screen. The experiment was set up as shown in the diagram below.



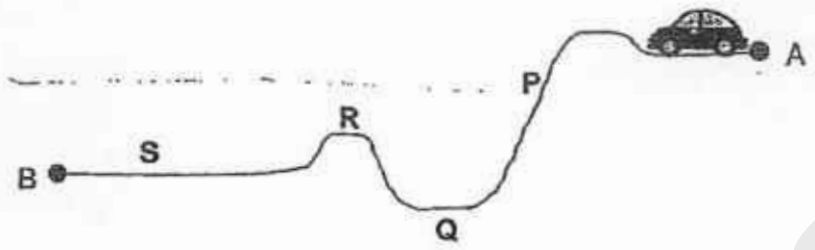
Hui Leng noticed that when she placed the torch at Position B, the object makes a shadow of 10cm. She then placed the torch at different positions and recorded her findings in the table below.

Which set of recorded data is correct?

	Position of torch	Position of Object	Length of shadow
1)	A	D	11cm
2)	B	F	6cm
3)	C	D	8cm
4)	B	C	9cm

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28. A toy car is travelling from A to B.



At which point P, Q, R or S will the toy car have the greatest gravitational potential energy?

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

End of Paper

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SINGAPORE CHINESE GIRLS' SCHOOL (PRIMARY)

FIRST SEMESTRAL ASSESSMENT 2017

NAME: _____ ( ) DATE: 2nd May 2017

CLASS: PRIMARY 6 SY

Parent's Signature:

_____

SCIENCE

BOOKLET B

	Total Actual Marks:	Total Possible Marks
Booklet A		**56**
Booklet B		**44**
Total		**100**

13 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.

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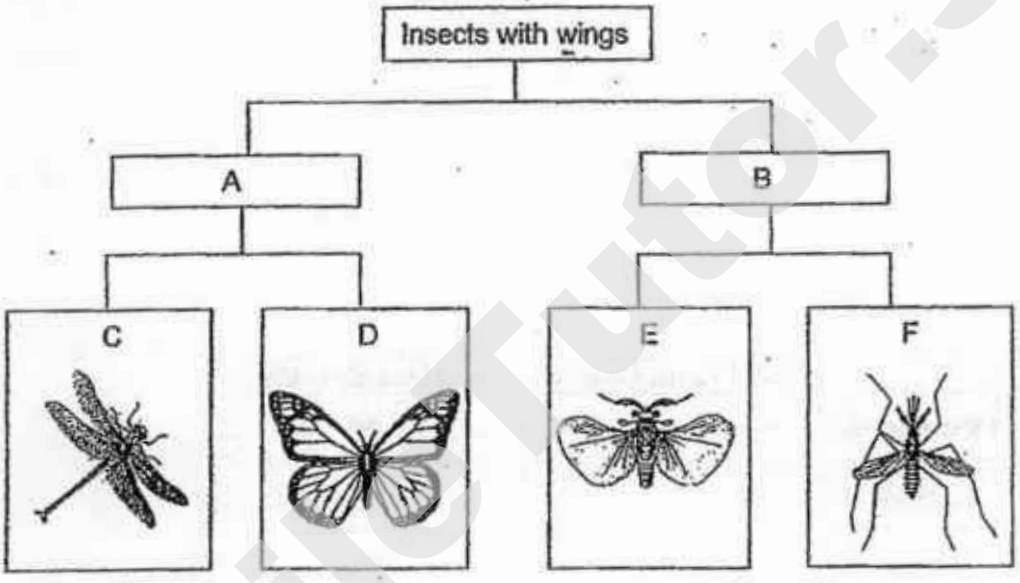
Name: _____ Date: _____

Class: Primary 6 SY

Part II (44 marks)

Answer all the following questions.

29. Study the following classification of insects.



a) What is the most suitable heading for A and B? (2m)

A	
B	

b) Can the spider be classified under the above classification table? Why or why not? (1m)

_____

c) The 4 insects C, D, E and F above can be further classified by the shape of their wings. Classify them by writing the letters in the boxes provided. (1m)

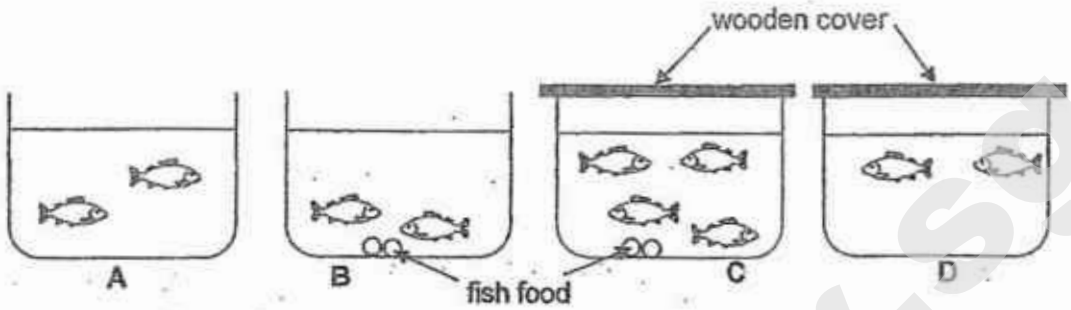
Broad Wings	Long, Narrow Wings

4

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30. Gopal observed some fishes in his tank. He wanted to confirm whether the fishes are living or non-living things and decided to conduct 2 experiments to find out.



a) If the aim for the 1st experiment is to find out if living things need air to survive, which 2 setups should he use? (1m)

Setup ☐ and ☐

b) If the aim for the 2nd experiment is to find out if living things need food to survive, which 2 setups should he use? (1m)

Setup ☐ and ☐

c) Gopal improved his experiment by putting 3 more fishes into each tank. How did this improve the experiment? (1m)

_____

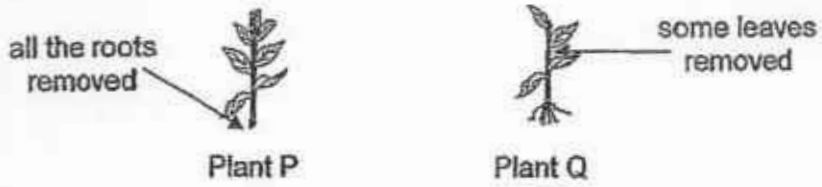
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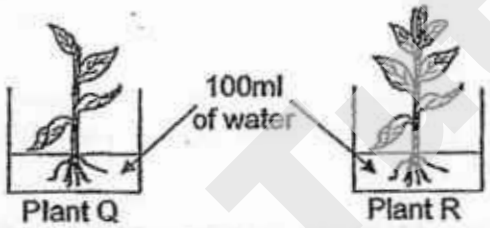
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31. Wen Jie carried out an experiment with 2 similar plants. He cut off the roots of Plant P and removed some leaves from Plant Q. Wen Jie planted both plants in the soil and watered them every day.



a) Plant P died after a few days. Explain why this had happened. (1m)

b) Wen Jie conducted a similar experiment with Plant Q and another similar plant, Plant R.



He took out Plant Q from the soil and placed both plants Q and R in 2 beakers containing 100ml of water respectively and recorded the amount of water left in the beakers after 2 days.

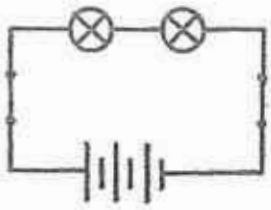
What is the aim of his experiment? (1m)

c) Design the **control setup** to show that any water lost from the plant is caused only by the plant and draw the setup/s in the box provided below (1m) and label the diagram (1m).

4

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32. Hugo set up a circuit as shown in the diagram below.



a) If Hugo adds 1 bulb in series to the circuit, how would it affect the brightness of the existing bulbs? (1m)

_____

_____

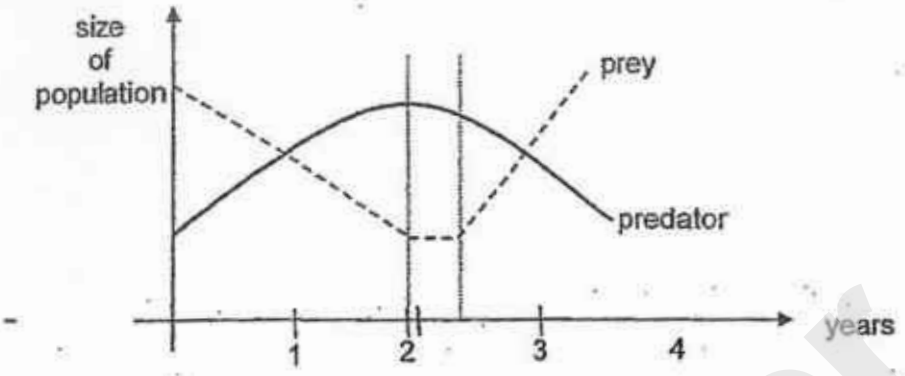
b) If Hugo wanted to change the setup so that each of the 2 bulbs can be switched on and off independently and are of the same brightness, how should ~~be~~ he change the setup? Draw the new circuit diagram below in the box provided. Use only the same items provided in the above setup. (2m)



3

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33. The graph below shows the population size of a predator and its prey living in a certain habitat over a few years.



Write 'T' (true), 'F' (false) or 'NPTT' (not possible to tell) in the boxes provided below. (3m)

	Statements	T, F or NPTT
a)	Hunters killed all the predators in 1 year.	
b)	The prey is the only food source for the predator.	
c)	The population of the prey and predator were the same twice.	
d)	When the population of predators decreased, the population of prey increased immediately.	
e)	The population of the prey will continue to increase if the population of the predator continues to decrease.	
f)	The number of predators is higher than the number of prey from Year 1 to Year 2.	

3

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34. The following picture shows a cactus plant growing in the desert.



a) Explain how the two structural adaptations listed below benefit the cactus. (2m)

Structural Adaptation	Benefit of adaptation
needle-like leaves	
juicy stem	

b) The porcupine has a coat of sharp spines like the cactus with spiny leaves.



The spines of the porcupine serve the same purpose as the spiny leaves of the cactus. How does it help both the organisms? (1m)

_____

_____

c) The camel can also be found in the desert. How does having extra-long eyelashes help the camel survive the sandy condition of the desert? (1m)

_____

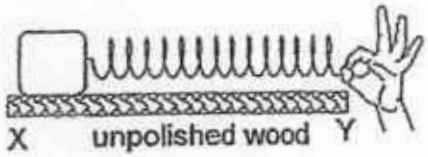
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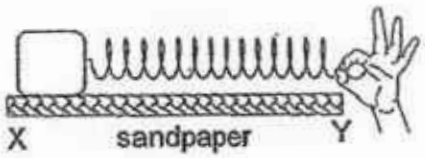
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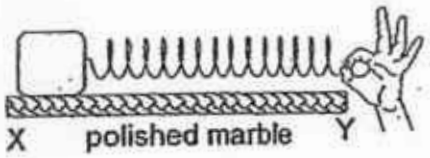
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35. Rani attached a wooden block weighing 200g to a spring and pulled the block across 3 different materials - unpolished wood, sandpaper and polished marble from Point X to Y as shown below.







a) Which surface needed the least amount of force to pull across? Why? (2m)

_____

_____

b) Rani then used a 500g block and repeated the experiment. Put a tick ✓ in the appropriate boxes to indicate which forces have increased, decreased or not applicable at all. (2m)

Type of force	Increase	Decrease	Not applicable
Gravitational force			
Frictional force			
Magnetic force			
Elastic Spring force			

c) Explain why using a spring balance will make the results in (a) more reliable? (1m)

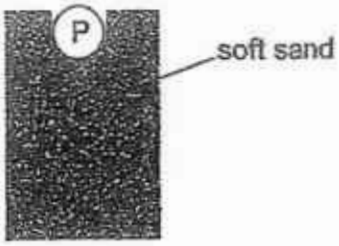
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_____

5

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36. Kit Leng dropped Ball P from a release height of 100cm into a container filled with soft sand and the ball caused an indentation in the sand as shown below.



She repeated the experiment with 3 other balls, Q, R and S and recorded the data in the table as shown.

Ball	Indentation caused by the ball (cm)
P	3
Q	6
R	1
S	4

a) What was the main force was acting on the balls when they were dropped? (1m)

_____

b) What could cause Ball Q to have the deepest dent in the soft sand? (1m)

_____

_____

c) What could be done to the release heights if Kit Leng wanted Ball Q and Ball R to cause the same depth of indentation? (1m)

_____

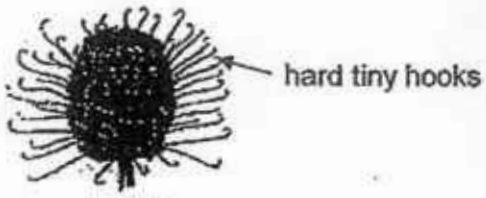
_____

3

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37. Judy found Fruit A as shown below in her garden. She observed that it has hard tiny hooks and concluded that it cannot be dispersed by animals because the animals will not be able to eat and digest the fruit.



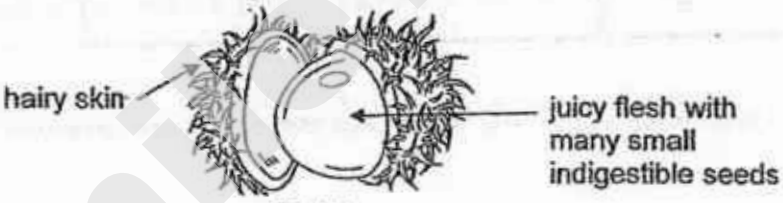
Fruit A

a) Is her conclusion correct? Explain your answer. (1m)

_____

_____

Judy found another fruit as shown below and it looks similar to the Fruit A. However, it has soft hair and juicy sweet flesh surrounding its seeds.



Fruit B

b) Describe how animals are likely to disperse the seeds above. (1m)

_____

_____

c) Between Fruit A and Fruit B, which fruit benefits from being lighter in mass? Why? (1m)

_____

_____

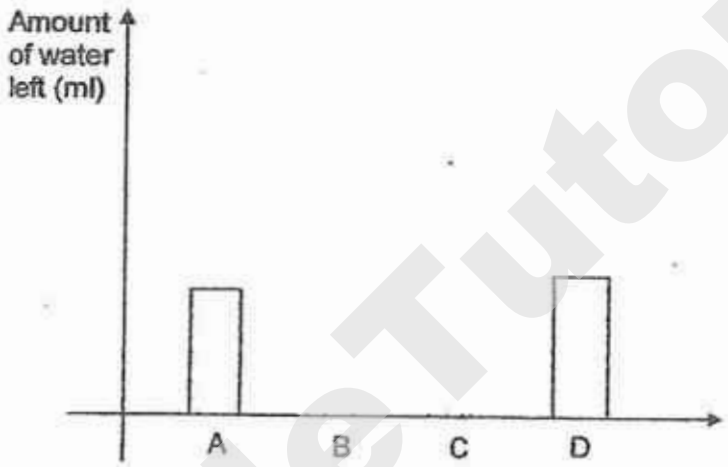
3

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38. Harry filled 4 containers A, B, C and D with the same amount of water at room temperature and left them in different places with 4 different conditions for 3 hours.

Container	A	B	C	D
Conditions	Windy Cloudy	No wind Cloudy	Windy Sunny	No wind Sunny

a) In the bar graph below, **add 2 bars** that best represents the water left in the containers B and C after 3 hours. (2m)



b) If Harry used hot water instead of water at room temperature for this experiment, how will the rate of evaporation be affected? (1m)

_____

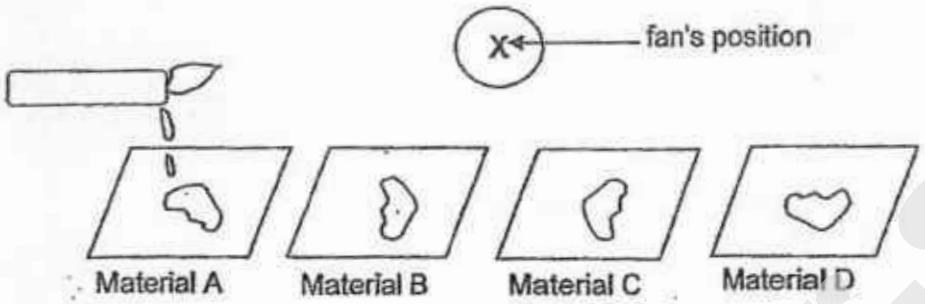
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39. Kate conducted an experiment. She lit a candle and allowed the same amount of wax from the candle to drip onto 4 different materials.



Kate then recorded the time taken for the wax on the material to solidify in the table below.

Material	A	B	C	D
Time taken for the wax to solidify (seconds)	8	13	6	4

a) Based on the table above, which material is the best conductor of heat? (1m)

_____

b) Which material is the most suitable to make a container for keeping Kate's cold juice cool for the longest time? (1m)

_____

c) Kate's classmate commented that Kate can speed up the experiment by placing a fan at position labelled X as shown in the diagram. Will this make it a fair test? Explain your answer. (2m)

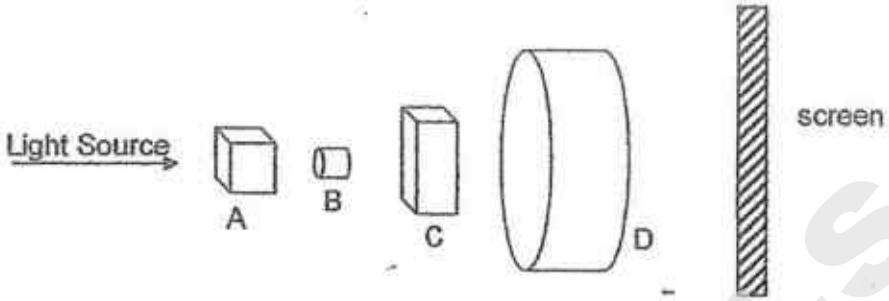
_____

_____

4

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40. Joan conducted some experiments with the set-up shown below to find out about shadows and the properties of light.



When she placed objects A, B, C and D in the above line-up, the shadow formed on the screen was as follows:



Shadow formed on the screen

a) Suggest the degree of transparency for each material that made up the objects. (2m)

A: _____ C: _____

B: _____ D: _____

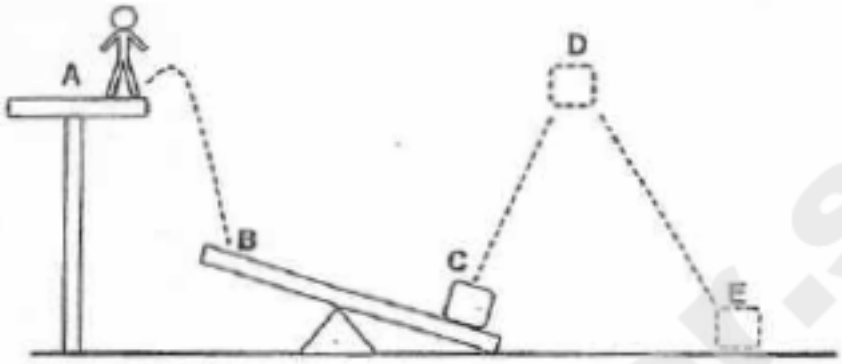
b) If Joan swopped the positions of A and C, will the shadow formed on the screen change? (1m)

_____

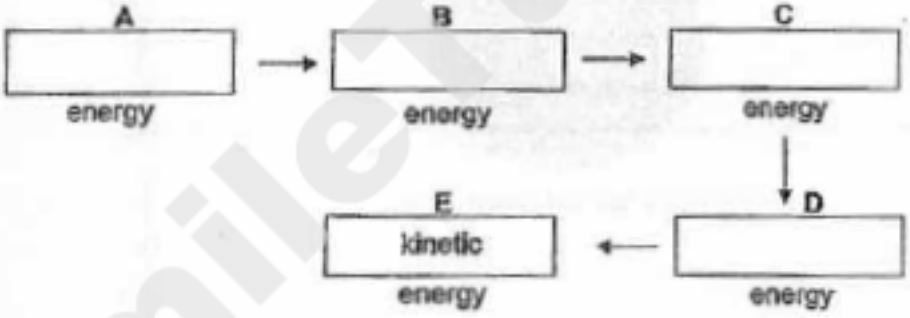
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41. A man standing on Platform A jumps onto a see-saw at Point B. A box placed at Point C moves in the path as shown below and lands at Point E.



a) What is the energy conversion from the point when the man jumps off to the point when the box lands? (2m)



End of Booklet B

2

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ANSWER KEY

YEAR	:	2017
LEVEL	:	PRIMARY 6
SCHOOL	:	SINGAPORE CHINESE GIRLS' PRIMARY SCHOOL
SUBJECT	:	SCIENCE
TREM	:	SEMESTRAL ASSEMENT (1)

SECTION A

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

SECTION B

Q29. a)

A	4 wings
B	2 wings

b) The spider does not have wings.

c)

Broad Wings	Long, Narrow Wings
D and E	C and F

Q30. a) Ans: A and D

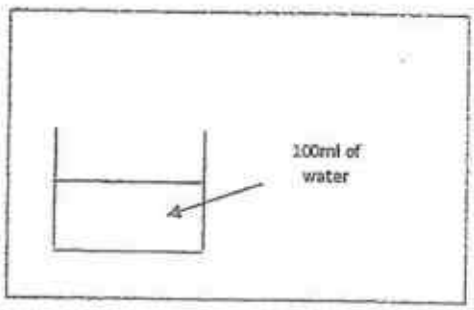
b) Ans : B and A

c) He wanted to increase the reliability of the experiment by increasing the sample size.

Q31. a) Plant P could not take in the water and minerals from the soil.

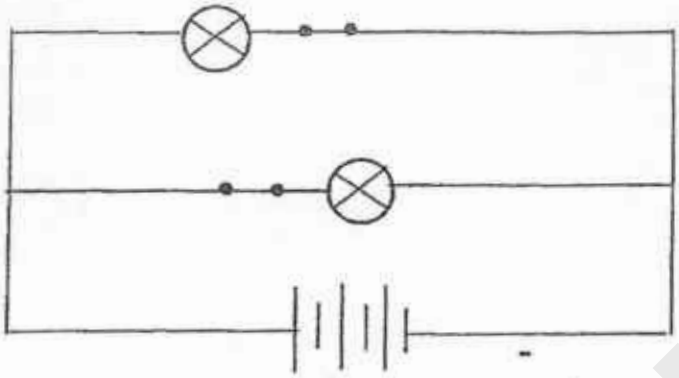
b) He wanted to find out if the number of leaves in the plant will affect the amount of water absorbed by the plant.

c)



Q32. a) The existing bulbs will become dimmer.

b)



Q33. a) F
b) NPTT
c) T
d) F
e) T
f) T

Q34. a)

Structural Adaptation	Benefit of adaptation
needle-like leaves	to protect itself from animals
Juicy stem	to store water so it will not die

b) The spines of both protects them from being eaten.

c) The eyelashes helps to protect itself from getting sand in its eyes.

Q35. a) The polished marble. The polished marble reduce friction between the wooden block and the surface.

b) i) Gravitational force - increase
ii) Frictional force - increase
iii) Magnetic force - not applicable
v) Elastic Spring force - increase

c) We can use the spring balance to allow us to measure the amount of force accurately.

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SCGS SA1

Q36. a) Gravitational force.

b) Ball Q was the heaviest

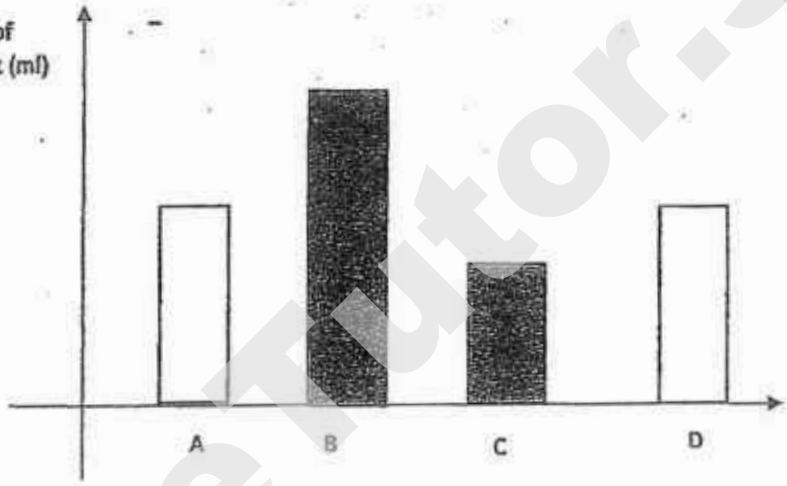
c) Ball R could be dropped at a greater height while Ball Q could be dropped at a lower height.

Q37. a) No. The fruit has hooks which can hook onto animal's fur, allowing the fruit to be dispersed.

b) The animals will eat the juicy flesh together with the small seeds. The seeds are passed out in their dropping after digestion. By then, the seeds would have been carried far away from its parent plants.

c) Fruit A. The hooks of fruit A can cling onto the fur of the animals and can be easily carried away by the animals because of its light mass.

Q38. a)



b) The rate of evaporation will be faster.

Q39. a) Material D.

b) Material B.

c) No, it will not. The fan's wind will be stronger between Materials B and C than A and C, casuing the wax to dry up faster between the Materials B and C.

Q40. a) A: transparent C: transparent
B: Opaque D: translucent

b) No.

Q41 a) A – gravitational potential energy
B – kinetic energy
C – kinetic energy
D - gravitational potential energy

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Name: _____( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Semestral Assessment 1 – 2017

SCIENCE

BOOKLET A

9 May 2017

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

28 questions
56 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 22 printed pages.

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Section A (28 x 2 marks = 56 marks)

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

1. Cindy had to classify four animals as shown below.

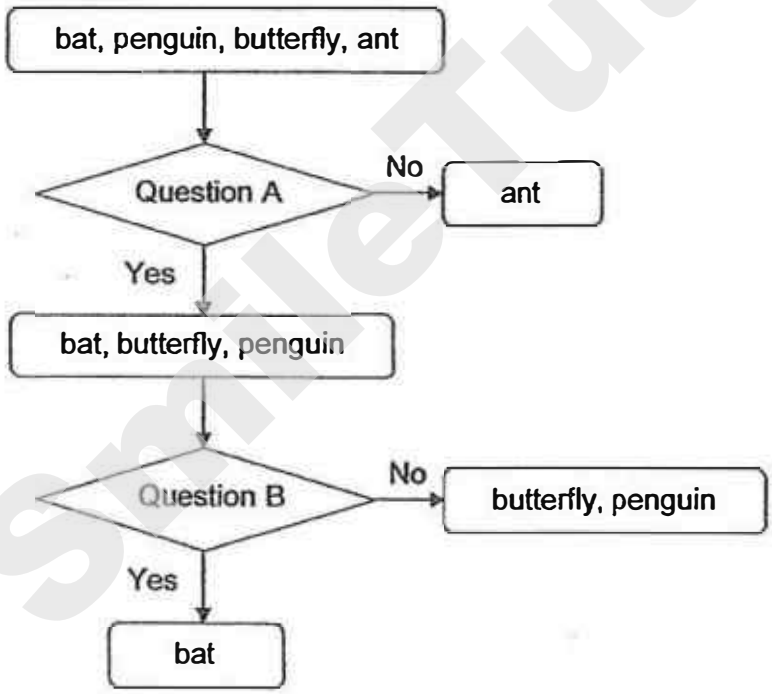

bat


butterfly


ant


penguin

She classified them with the help of the chart below.

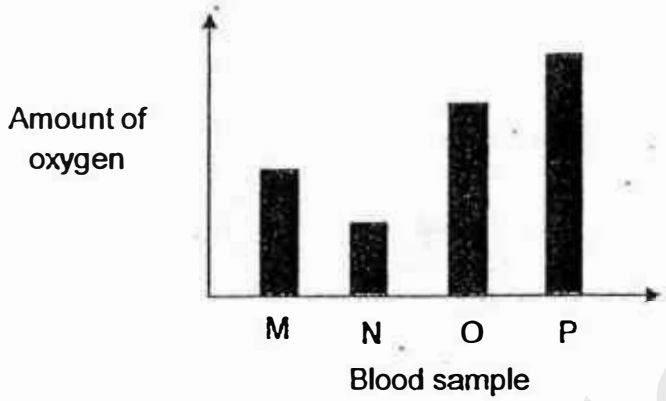


What one of the following correctly represents questions A and B?

	Question A	Question B
(1)	Do they have hair?	Do they have wings?
(2)	Do they have scales?	Do they take care of their young?
(3)	Do they have wings?	Do they give birth to their young alive?
(4)	Do they lay eggs?	Do they have scales?

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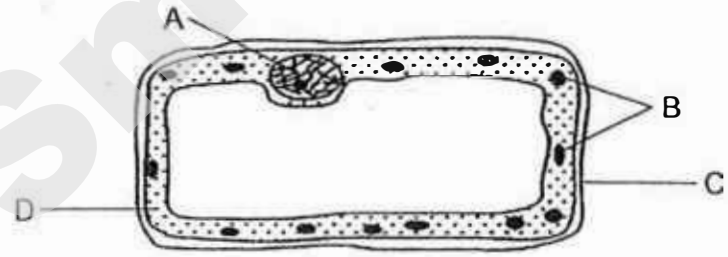
2. Blood samples were collected from different blood vessels in the body. The following graph shows the amount of oxygen in each of the blood samples.



Which one of the blood samples is most likely taken from the blood vessel carrying blood from the heart to the lungs?

(1) M
(2) N
(3) O
(4) P

3. The diagram below shows a plant cell.



Which parts of the cell A, B, C or D, are also found in an animal cell?

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

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4. Jackson made some observations of three different garden plants X, Y and Z.

Plant	Observations
X	Flowers are bright yellow. Animal R and S were seen flying around the plant.
Y	Flowers have huge petals. Animal S were found around the plant.
Z	Animal R were found around the plant.

Animal R and S are agents of pollination.
Animal S has a good vision but poor sense of smell.
Animal R has a good sense of smell and unable to see yellow objects.

Based on the information above, what can Jackson conclude about X, Y and Z?

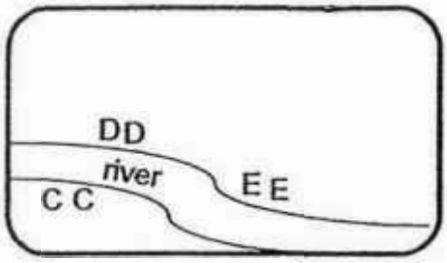
A Flowers on Y are sweet-smelling.
B Flowers on X are sweet-smelling.
C Flowers on Z are yellow and odourless.

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

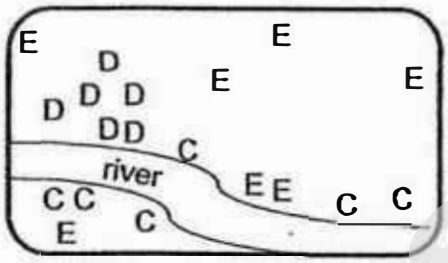
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5. The diagram below shows a plot of land at the start and end of the year. C, D and E, represent different types of plants.



start of the year



end of the year

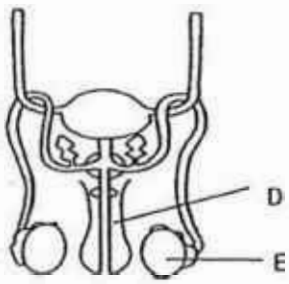
Based on the diagram, which one of the following shows the most likely method of dispersal of fruits C, D and E?

	Dispersal method		
	Animal	**Water**	**Splitting**
(1)	C	E	D
(2)	E	D	C
(3)	D	E	C
(4)	E	C	D

6. The diagram below shows the reproductive organs of a human.



Female reproductive organ



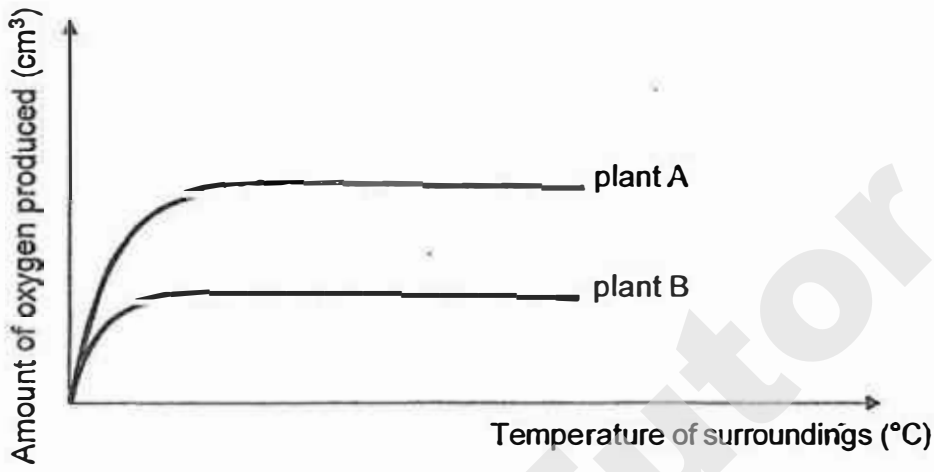
Male reproductive organ

Which one of the following shows the correct functions of the male and female reproductive organs?

	Female reproductive sex cell is produced	Male reproductive sex cell is produced
(1)	A	E
(2)	B	D
(3)	A	D
(4)	C	E

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7. Hamid conducted an experiment to investigate the factors affecting the rate of photosynthesis on two similar plants. Plant A was given more carbon dioxide than plant B. The results of his experiment are shown in the graph below.



From Hamid's results, he can conclude that the rate of photosynthesis is affected by the _____.

A	amount of oxygen present
B	temperature of the surroundings
C	amount of carbon dioxide present
D	amount of water given to the plant

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

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8. Five similar plants were exposed to different conditions as shown in the table below. A tick (✓) indicates the presence of the condition.

	Set-ups				
Conditions	**1**	**2**	**3**	**4**	**5**
Presence of carbon dioxide	✓	✓	✓	✓	✓
Presence of oxygen	✓	✓			✓
Presence of sunlight		✓	✓	✓	✓
50 ml of water	✓	✓	✓		
10 ml of fertiliser		✓		✓	✓

Which two set-ups should be chosen to find out if water is needed for photosynthesis?

(1) Set-ups 1 and 2
(2) Set-ups 1 and 3
(3) Set-ups 2 and 5
(4) Set-ups 4 and 5

9. Which of the following statements are true about mushrooms and mould?

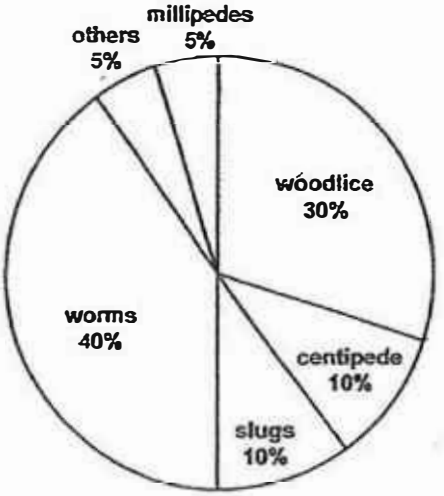
A They only grow in soil.
B They reproduce from spores.
C They are able to make their own food.
D They break down dead matter into simpler substances.

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

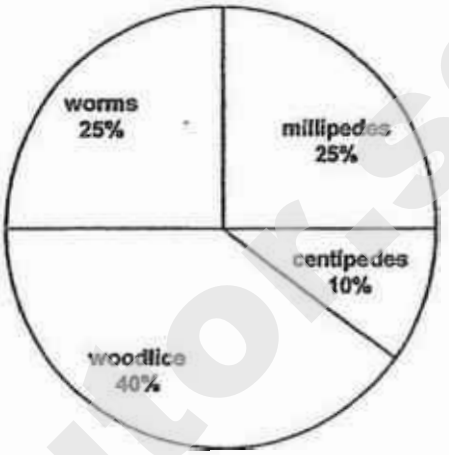
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10. Yusoff carried out a project to study more about the rotting log and the leaf litter community.



rotting log community



leaf litter community

Based on the information in the pie charts above, which of the following statements is/are correct?

A There are more worms in the rotting log community.
B There are six populations in the rotting log community.
C The number of centipedes in both communities is the same.
D There are more types of organisms in the rotting log community.

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

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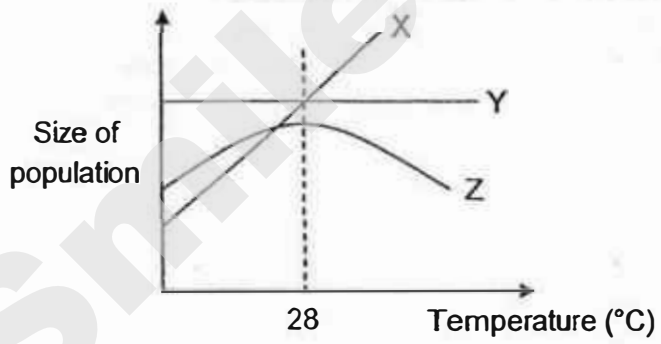
11. Jane wanted to find out which pond is the most suitable for guppies to survive in. Equal amount of water samples from ponds X, Y and Z are poured into beakers A, B and C respectively.

Which variables should be kept constant for a fair test?

A The type of pond water
B The amount of water in each beaker.
C The amount of food given to the guppies
D The number of guppies at the end of the experiment
E The number of guppies at the start of the experiment

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

12. The following graph shows the effect of temperature on the population size of three different organisms X, Y and Z over a period of time.

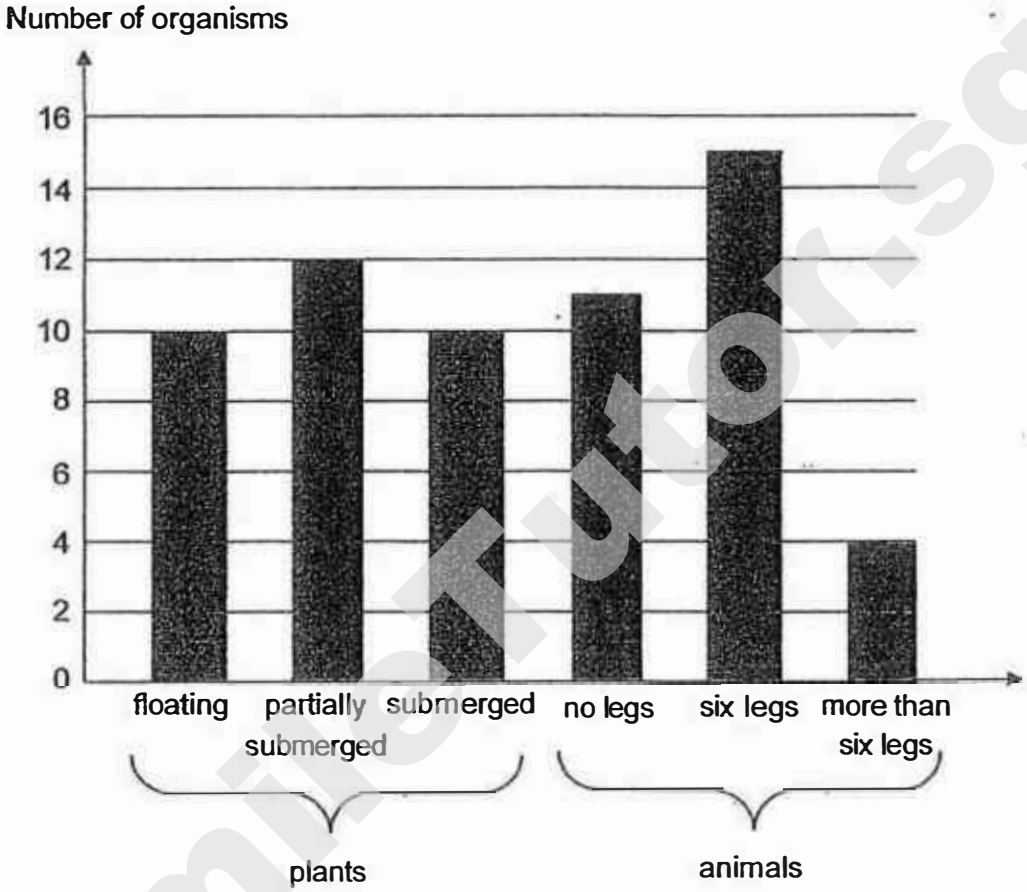


Which one of the following statement is **false**?

(1) Organism Z grows best at 28°C.
(2) Organism Y is able to survive as the temperature changes.
(3) The population size of X increases as the temperature increases.
(4) The population size of Z increases as the temperature increases.

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13. The number of plants and animals in the school pond were counted and represented in the bar graph below.



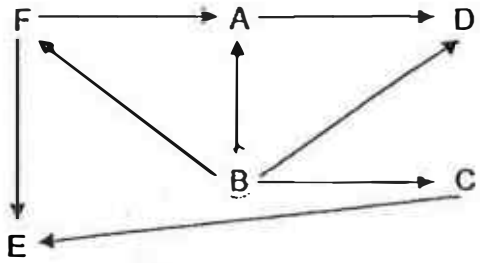
Which of the following statements about the plants and the animals in the pond are definitely correct?

A There is at least 6 populations of plants and animals.
B The plant population is more than the animal population.
C There are a total of 62 populations of plants and animals.
D The number of floating plants and submerged plants are equal.

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

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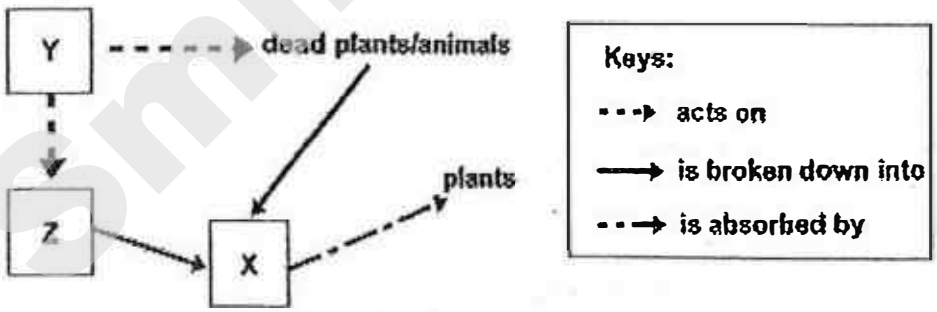
14. The diagram below shows a food web.



Which of the following is correctly represented by A, B, C, D, E and F in the food web?

	Plant	Plant eater only	Animal eater only	Plant and animal eater
(1)	B	C and F	E	A and D
(2)	B	A, C and D	E	F
(3)	E	F	B	A, C and D
(4)	E	C and F	A and B	D

15. The diagram below shows how decomposers act on dead matter and change them into simple substances.



Which one of the following best represents X, Y and Z respectively?

	X	Y	Z
(1)	carbon dioxide	predators	nutrients
(2)	water	fungi	nutrients
(3)	mineral salts	prey	animal waste
(4)	mineral salts	bacteria	animal waste

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16. Emily was given a beaker containing three powdery substances X, Y and Z, mixed together. The properties of the three substances are given in the table below.

	Property A	Property B	Property C	Property D
	Does it dissolve in water?	Does it float on water?	Is it a magnetic material?	Is it a good conductor of electricity?
Substance X	no	yes	no	no
Substance Y	no	no	yes	yes
Substance Z	no	no	no	yes

Which properties A, B, C and D, should Emily make use of in order to separate the three substances?

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

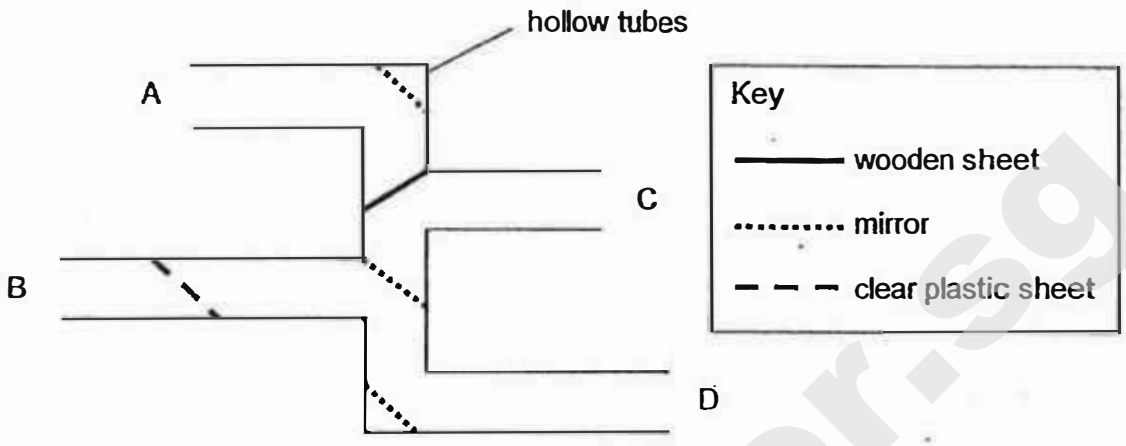
17. The table below shows the freezing points and boiling points of three substances X, Y and Z.

Substance	Freezing point (°C)	Boiling point (°C)
X	5	100
Y	20	78
Z	115	130

Based on the information given above, which one of the following is correct?

(1) X is a solid at 9 °C.
(2) X and Y are both liquids at 26 °C.
(3) Y and Z are both solids at 110 °C.
(4) Z can be a liquid or a gas at 115 °C.

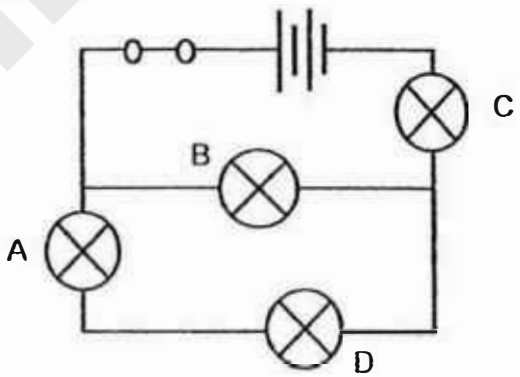
18. Study the diagram shown below. Different objects are fixed inside the hollow tubes.



Where should the position of the eye and object be in order to see the object through the tubes?

	Position of object	Position of eye
(1)	A	C
(2)	B	D
(3)	C	B
(4)	D	A

19. Study the circuit below carefully. When one of the bulbs in the circuit fuses, the other three bulbs remain lit.

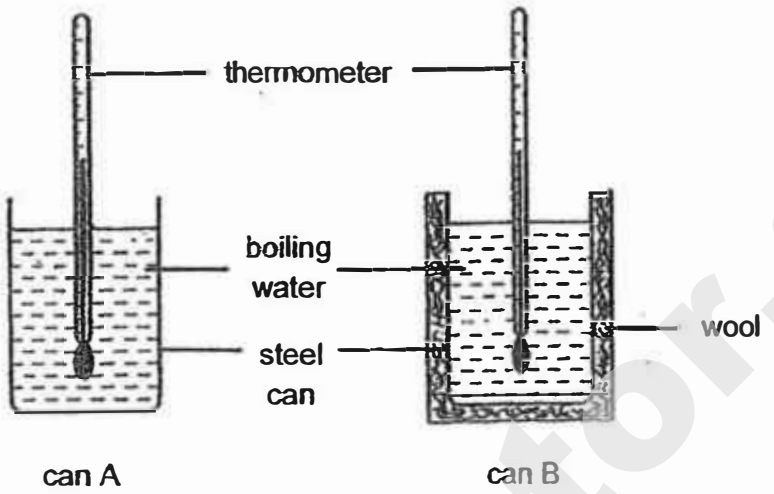


Which one of the following bulbs has fused?

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

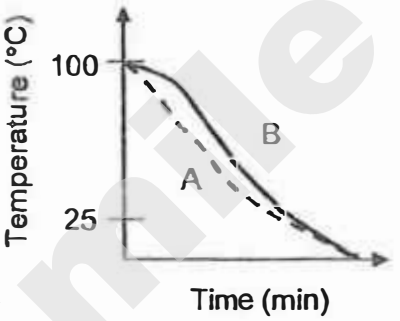
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20. Two steel cans were filled with boiling water as shown below. Can B was wrapped with wool for a duration of 30 minutes. The temperature of the water in each can was recorded every minute.

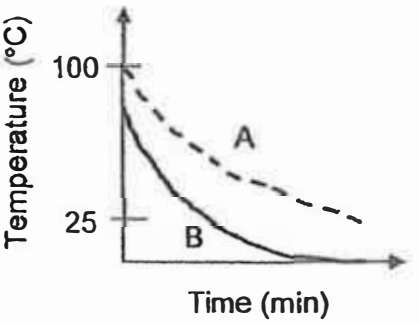


Which one of the following graphs shows the results obtained?

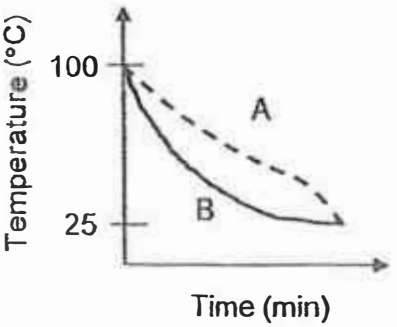
(1)



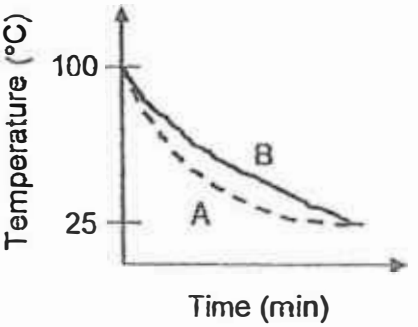
(2)



(3)



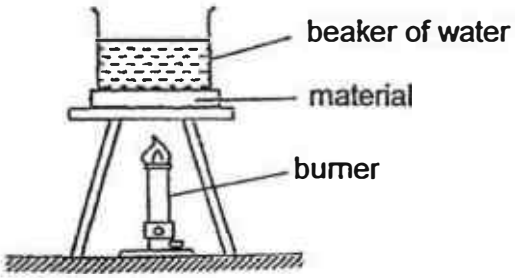
(4)



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21. Sandra conducted an experiment using the set-up shown below.



She recorded the time taken for the water to boil when different materials X, Y and Z, were placed below the beaker of water in the table below.

Material	How well the material conducts heat	Time taken for the water to start boiling (min)
X	good	12
Y	very good	12
Z	poor	12

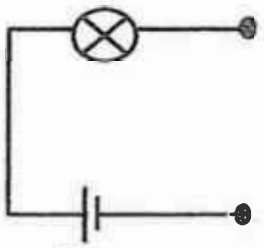
Sandra used different volumes of water for her experiment.

Which one of the following most likely shows the volume of water used at the start of the experiment?

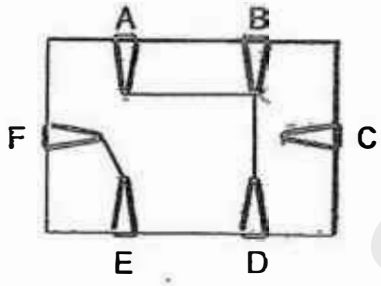
	Volume of water used at the start for each material (cm^3)		
	Material X	**Material Y**	**Material Z**
(1)	250	350	150
(2)	150	350	250
(3)	350	250	150
(4)	150	250	350

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22. Janice conducted an experiment as shown below. The circuit card had paper clips A, B, C, D, E and F, clipped onto it. Some of these paper clips were connected by electrical wires.



circuit tester



circuit card (back view)

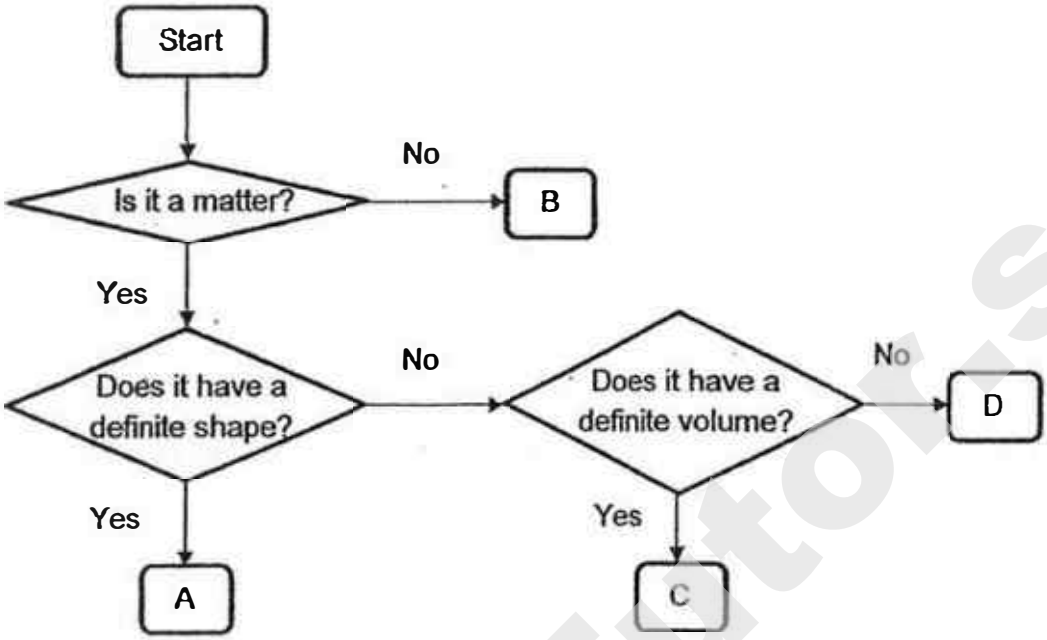
Which pair of paper clips should she connect to the circuit tester in order to light up the bulb?

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

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23. Study the chart below.



Which of the following is most likely to be A, B, C and D?

	A	B	C	D
(1)	book	sunlight	ruler	oxygen
(2)	sunlight	oxygen	milk	oil
(3)	ruler	shadow	oil	carbon dioxide
(4)	carbon dioxide	book	ice	shadow

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24. Kristen wanted to find out if the surrounding temperature affects the rate of evaporation of water.

Set-up	Surrounding temperature (°C)	Strength of wind	Volume of water used (ml)
A	25	breeze	200
B	35	strong wind	150
C	35	breeze	200
D	25	breeze	150
E	25	strong wind	200

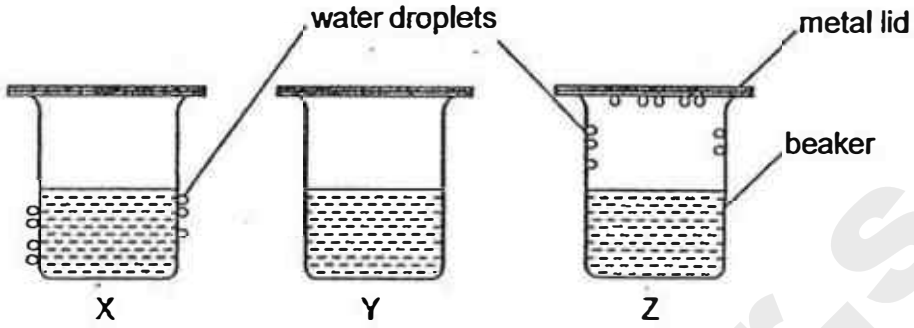
Which two set-ups should Kristen use for her experiment?

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

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25. Sarah filled three identical beakers X, Y and Z, with the same amount of water of different temperatures. She covered them with metal lids and left them in the same classroom. After ten minutes, water droplets were observed as shown below.



Based on the observations shown above, which of the following statements are true?

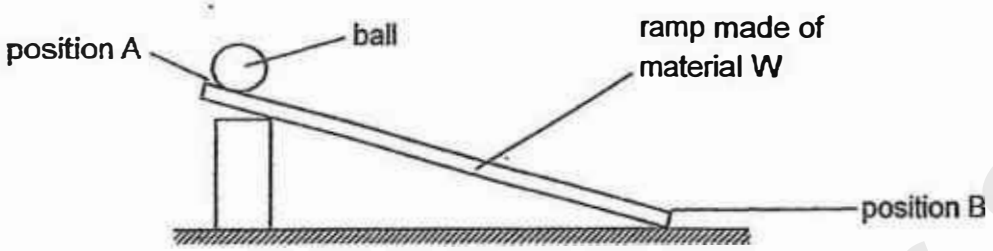
A Only Beaker Z contains hot water.
B Beaker X and Y contain cold water.
C The water in beaker Y is at room temperature.
D Water vapour from the surrounding air lose heat and condense as water droplets on the outer surface of beaker X.

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

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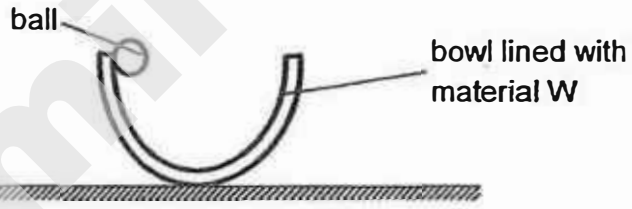
26. Jason set up an experiment using a ramp made of material W as shown below. He released the ball at position A and recorded the time taken for the ball to reach position B. He then repeated the experiment with ramps made of materials X, Y and Z.



The table below shows the results of the experiment.

Material	Time taken (s)
W	5.0
X	2.4
Y	3.5
Z	1.8

The diagram below shows a round glass bowl lined with material W. Jason released the ball and measured the amount of time taken for the ball to stop rolling. He repeated the experiment below with materials X, Y and Z.



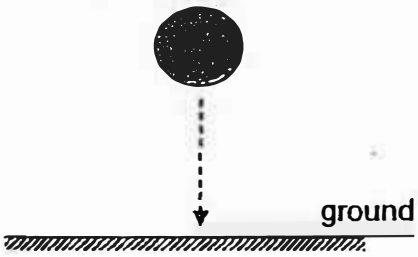
On which material will the ball take the longest time to **stop** rolling?

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

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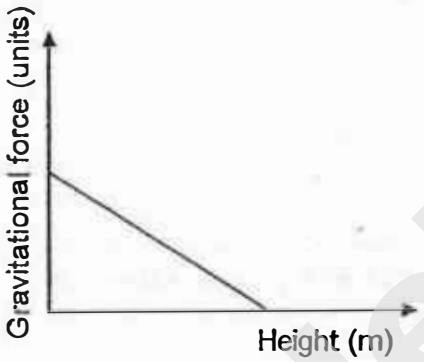
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27. The diagram below shows a ball that was released from a certain height.

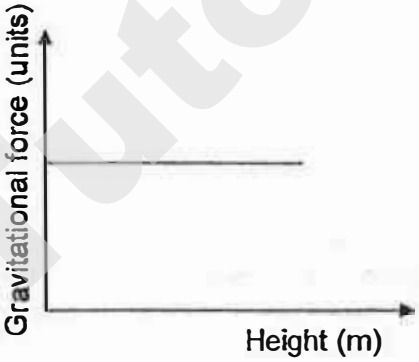


Which one of the following graphs correctly shows the amount of gravitational force acting on the ball as it was released from the height?

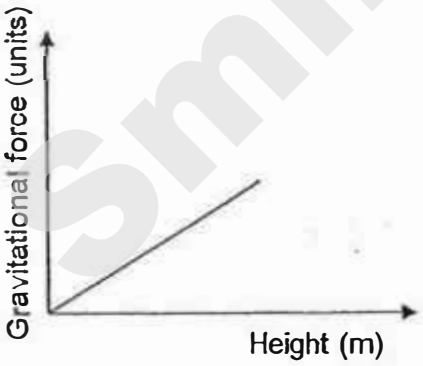
(1)



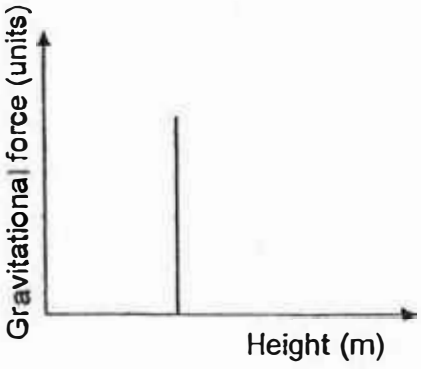
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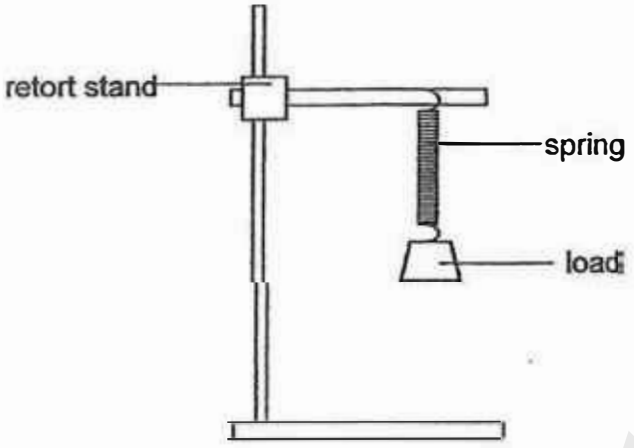
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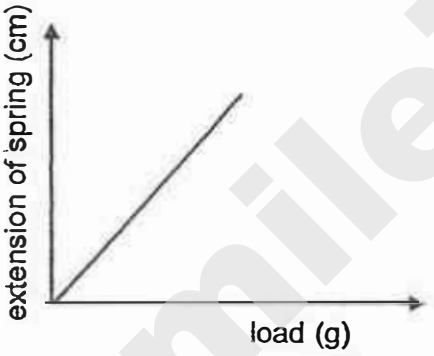
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28. Alice conducted an experiment using a spring and some loads. She measured the length of the spring as she increased the mass of the load hung on the spring as shown in the diagram below.

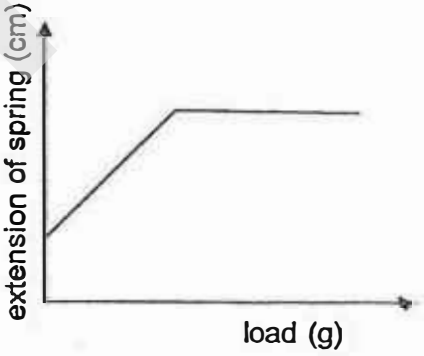


Which one of the following graphs correctly represents Alice's results?

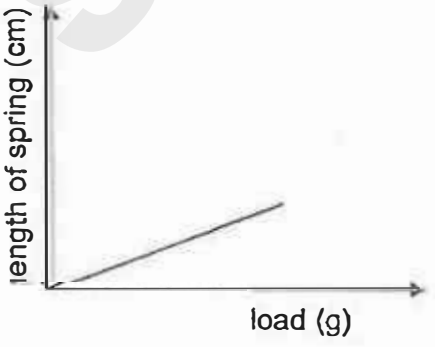
(1)



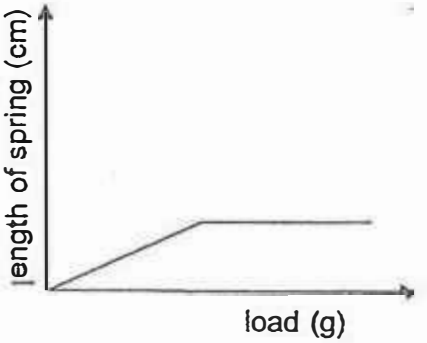
(2)



(3)



(4)



~End of Booklet A~~

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Name : _____ ( )

Class : Primary 6 _____

Primary 6
Semestral Assessment 1 – 2017

SCIENCE

BOOKLET B

9 May 2017

Booklet A	56
Booklet B	44
Total	100

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

13 questions
44 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This paper consists of 17 printed pages.

_____

Parent's Signature/Date

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Section B (44 marks)

For questions 29 to 41, write your answers in this booklet.

The number of marks available is shown in the brackets at the end of each question or part question.

29. The table below shows some information on four cells A, B, C and D.
A tick (✓) indicates the presence of the part of a cell.

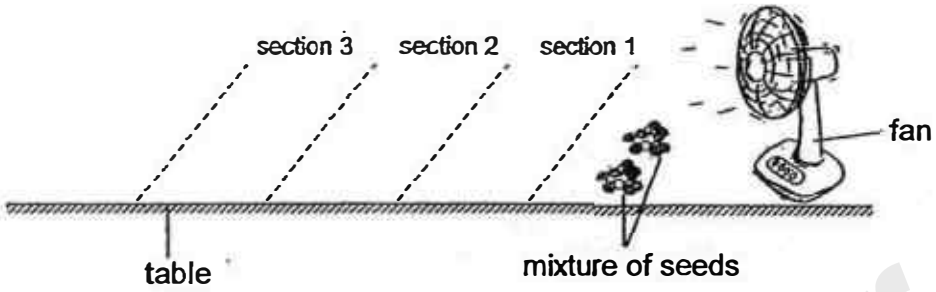
	Cell			
Parts of a cell	**A**	**B**	**C**	**D**
Nucleus	✓	✓	✓	
Cell wall	✓		✓	
Cell membrane	✓	✓	✓	✓
Cytoplasm	✓	✓	✓	✓
Chloroplast	✓			

(a) Based on the table above, which one of the cells A, B, C or D, cannot reproduce? Explain why. [1]

(b) Jimmy says that since cell C has a cell wall, it is definitely a leaf cell. Do you agree with him? Explain why. [1]

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30. An experiment was carried out with three types of wind-dispersed seeds X, Y and Z. 10 seeds of each type were mixed and placed on a table as sho below. The fan was then switched on for 30 seconds.



After 30 seconds, the number of seeds of each type was counted in each section and recorded in the table below.

Type of seeds	Average mass of seeds (g)	Number of seeds		
		Section 1	Section 2	Section 3
X	1	0	1	9
Y	1.6	2	8	0
Z	2.1	7	3	0

(a) Based on the results, what can be concluded about the mass of the seed and the distance travelled? [1]

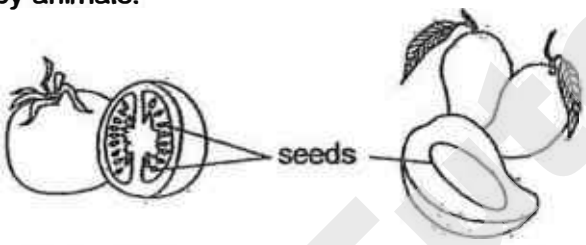
(b) The fan speed was kept constant throughout the experiment. Explain why. [1]

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31. Sam observed that plant G has bright and colourful flowers.

(a) Explain how by having bright and colourful flowers help plant G in reproduction. [1]

The diagram below shows the fruits of plant G and H. Both fruits are dispersed by animals.



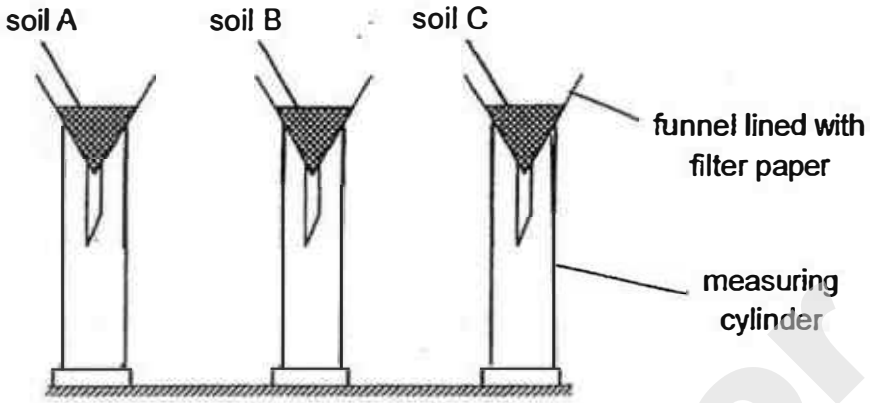
fruit of plant G fruit of plant H

(b) Based on the diagram above, which fruit could be dispersed further away from its parent plant? Explain your choice. [2]

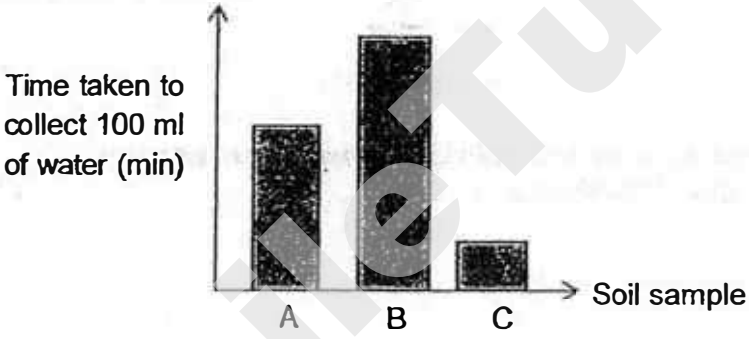
(c) Why is it an advantage for plants to be able to disperse their seeds further away? [1]

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32. Plant X grows well in flooded fields. Siti wanted to find out which type of soil is suitable to grow plant X. She collected three equal amounts of soil A, B and C, and placed them each in a funnel lined with filter paper as shown in the diagram below.



She then poured 200 ml of water into each funnel and measured the time taken to collect 100 ml of water in each of the measuring cylinder. The graph below shows the results of her experiment.

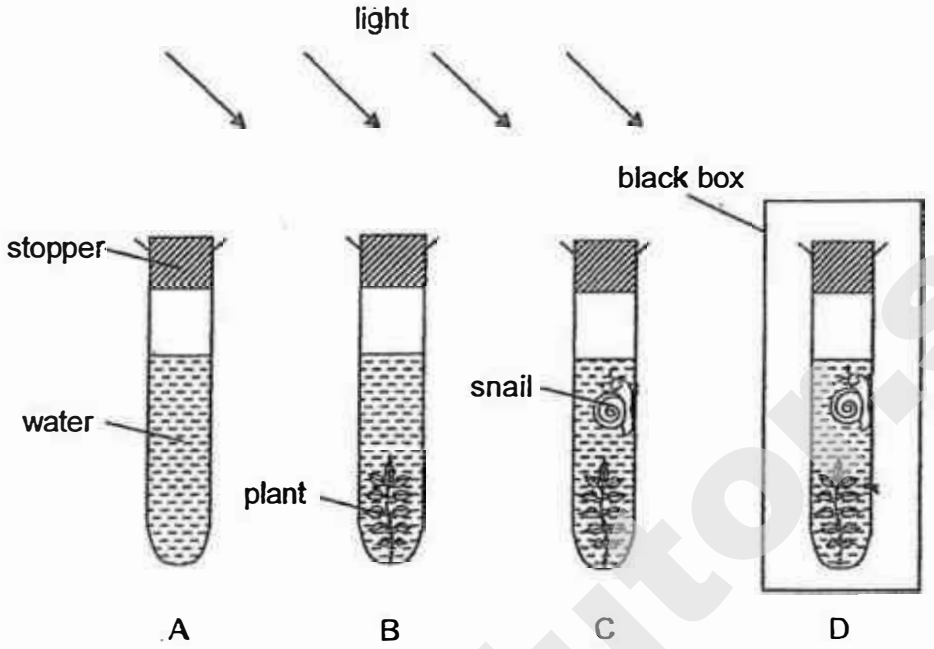


(a) Based on the above results, which type of soil is the most suitable to grow plant X. Explain your answer. [2]

(b) Based on the same experiment, what else can Siti measure to reach the same conclusion? [1]

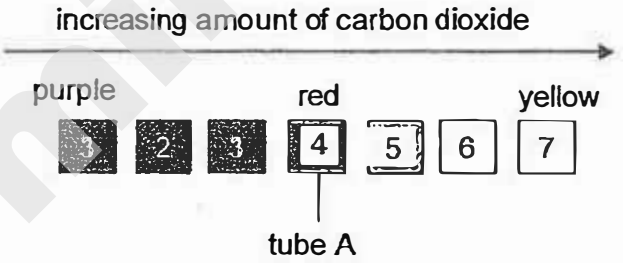
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38. Kathy conducted an experiment using four identical tubes as shown.



After a few hours, a drop of liquid Q was added to each tube. When liquid Q was added, the colour of water changed according to the amount of carbon dioxide present.

Each number below represents a different colour. The number for the colour of the water in tube A is 4.



(a) Suggest a number for the colour of the water in tube B. [1]

Tube B: _____ Tube D: _____

(b) Explain your answer in (a) for tube B. [1]

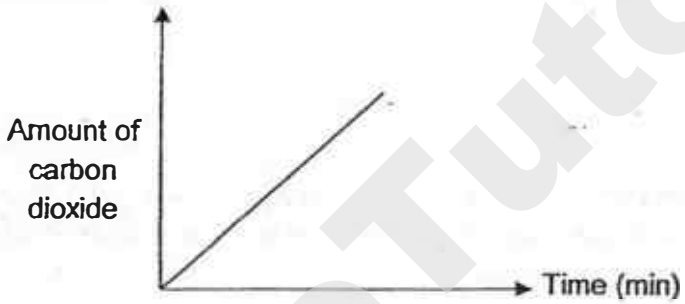
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(c) Kathy predicted that tube C has more carbon dioxide than tube A. However, her friend Sarah said that this may not be true. Explain why tube C may not have more carbon dioxide than tube A. [2]

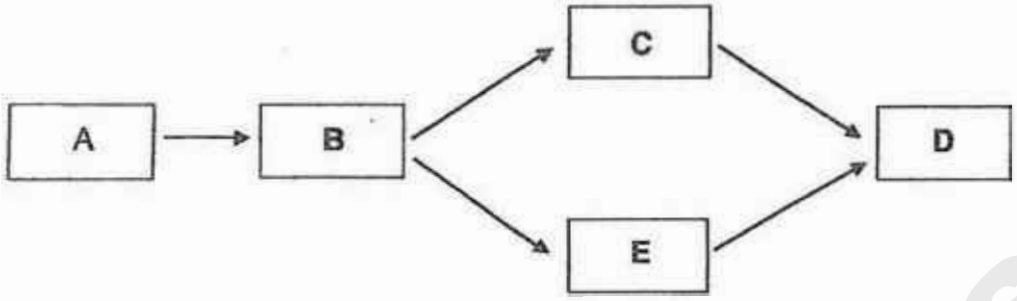
The graph below shows the results for one of the set-ups.



(d) Which set-up A, B, C or D, could the above graph represent? Explain your answer. [1]

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34. Study the food web shown below.



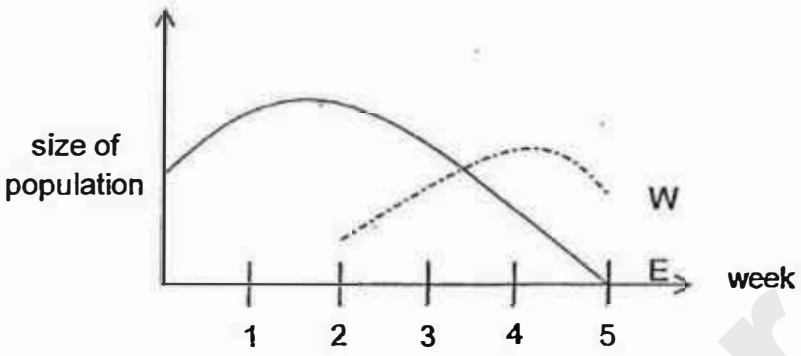
(a) Jane said, "Organism B is a producer." Do you agree with her? Explain why. [1]

(b) What could be 2 possible direct results of a sudden decrease in the population of C? [1]

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Jane recorded the population size of organism E over a period of time. She then introduced organism W into the food web. Population size of organisms E and W are shown below.

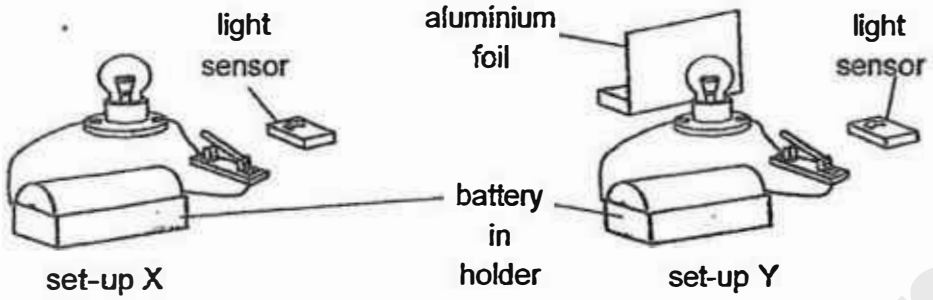


(c) Based on the graph above, describe the food relationship between E and W. [2]

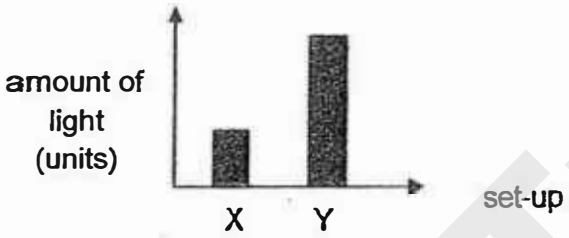
(d) What happens to the excess energy stored in the organisms if they are not preyed upon by any other organisms? [1]

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35. Celine conducted an experiment using similar bulbs and batteries as shown below. The light sensors are used to measure the brightness of the bulbs in set-ups X and Y.



Her results are shown in the graph below.



(a) Explain why the light sensor in set-up Y gave a higher reading. [1]

_____

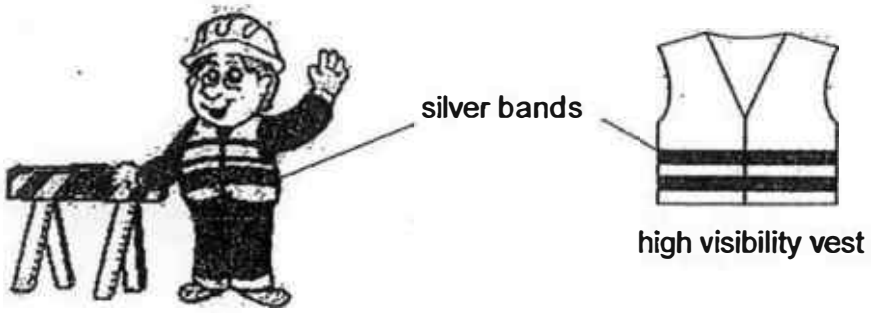
_____

(b) Celine conducted her experiment in a dark room. Explain how this condition ensures that a fair test is carried out. [1]

_____

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The diagram below shows a high visibility vest used by construction workers who work during night time.



(c) How do the silver bands on the vest ensure the safety of the construction workers when they work on the road at night? [1]

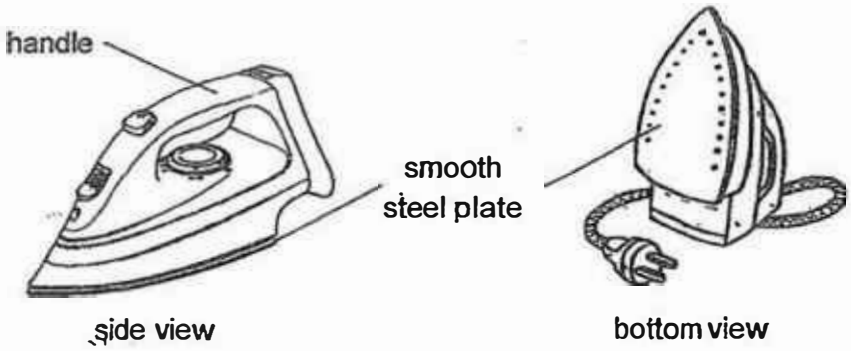
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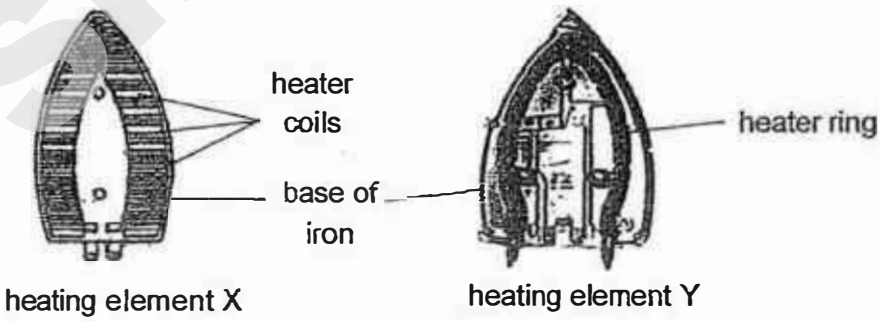
36. The diagram below shows an electric iron.



(a) Give a reason why the steel plate at the bottom of the electric iron needs to be smooth. [1]

(b) Suggest a material the handle could be made of. Give a reason for your answer. [1]

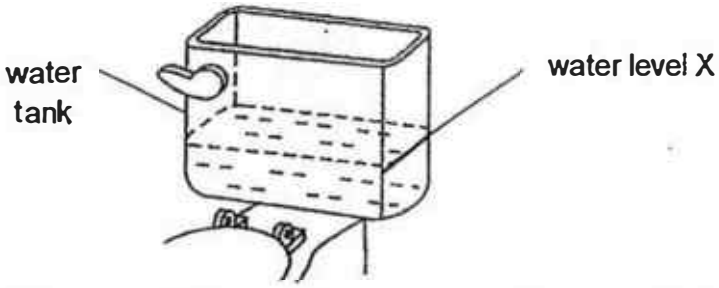
The diagram below shows two designs of heating elements X and Y, made from the same material. They are attached to the base of two similar electric irons before being covered with smooth steel plates.



(c) Which heating element X or Y, will heat up the electric iron more quickly? Explain your answer. [2]

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37. The diagram below shows a water tank used for flushing a toilet bowl.



After flushing, water enters and re-fills the tank. The tank will stop filling when the water reaches level X.
Alex wanted to use lesser water to flush the toilet bowl. He decided to put a sealed plastic bottle filled completely with pebbles into the water tank.

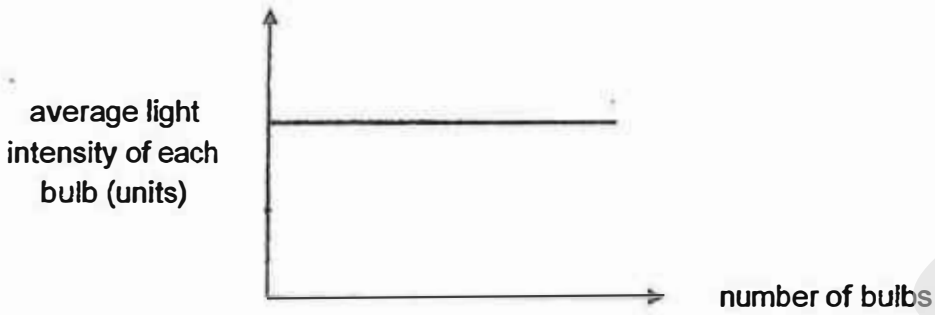
(a) Explain how his method would help reduce the amount of water used to flush the toilet bowl. [2]

(b) State a property of matter that is shown in the above experiment. [1]

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38. Timmy carried out an experiment using four batteries, wires and some similar bulbs. He then plotted the results of his experiment in the graph shown below.



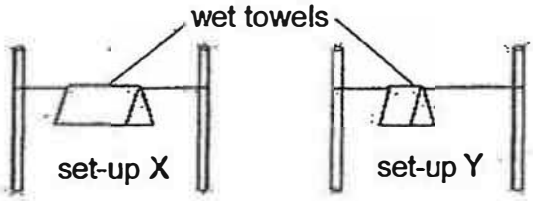
(a) From the graph, state the relationship between the number of bulbs and the average light intensity of each bulb. [1]

(b) Based on the graph, what can be concluded about the arrangement of bulbs in the experiment? [1]

(c) Timmy repeated the experiment with two batteries. In the graph above, draw the line graph to represent the results that he would obtain. [1]

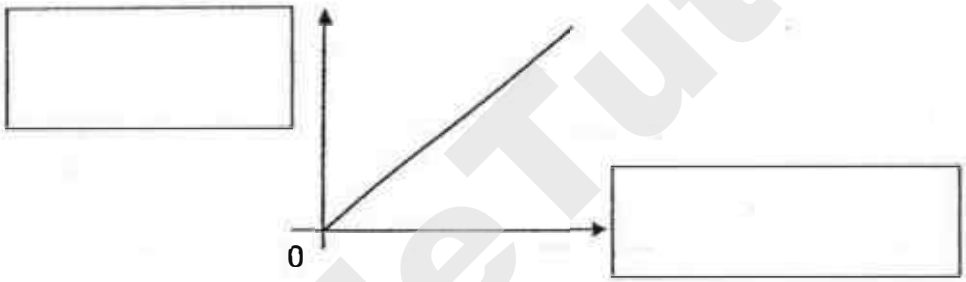
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39. Bala conducted an experiment with set-ups X and Y to investigate the evaporation of water. He hung two similar wet towels in the same location under the sun. In set-up X, the towel was folded once while in set-up Y, the towel was folded twice.

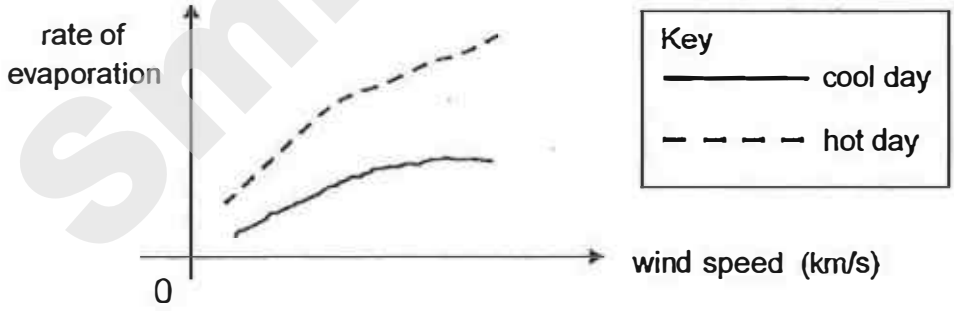


(a) What is the aim of his experiment? [1]

(b) Based on the results of the experiment, label the axis in the graph below. [1]



The graph below shows the rate of evaporation of water of two similar pieces of wet cloths.



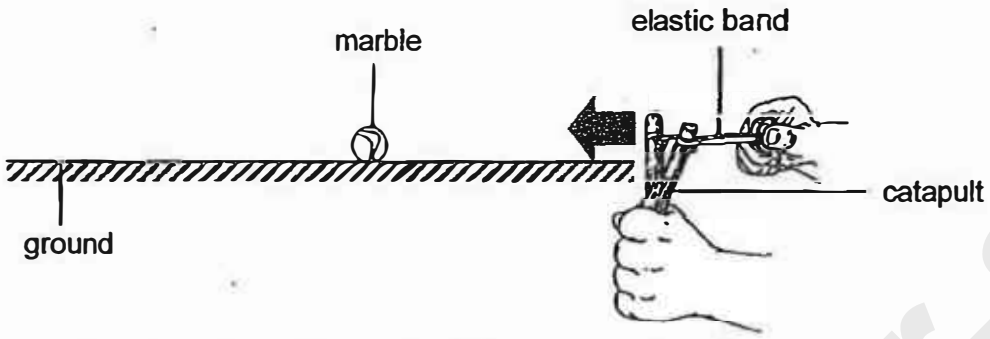
(c) Based on the graph above, state two conditions that can increase the rate of evaporation of water. [2]

(i)

(ii)

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40. Jacob wanted to find out how the distance travelled by the marble was affected by the length of the stretched elastic band of the catapult as shown in the diagram below.



The table below shows the results of Jacob's experiment.

Length of stretched elastic band (cm)	Distance travelled by the marble (m)
5	1
10	3
15	6

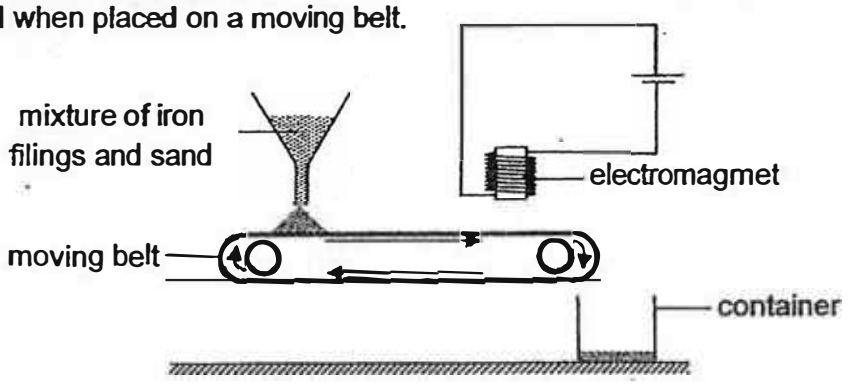
(a) What is the main energy conversion from stretching the elastic band with the hand till the marble started moving. [1]



(b) Based on Jacob's results, how did the length of the stretched elastic band affect the distance travelled by the marble? Explain why. [2]

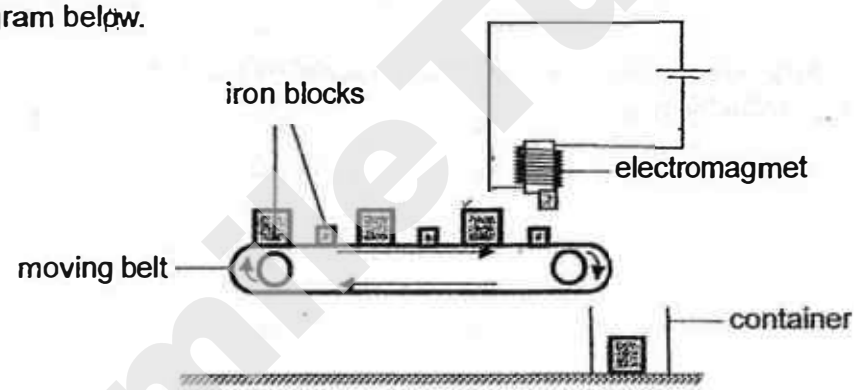
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41. The set-up below shows how a mixture of iron filings and sand could be separated when placed on a moving belt.



(a) What would be collected in the container? Explain your answer. [1]

Iron blocks of different sizes are placed on the moving belt as shown in the diagram below.



(b) Only the bigger blocks are collected in the container. Explain why. [1]

(c) The set-up can collect 10 blocks in a minute when the belt is moving at its maximum speed. Suggest a way to collect more than 10 blocks in a minute without changing the speed of the belt. [1]

~~End of Booklet B ~~

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EXAM PAPER 2017 **9 May 2017**
LEVEL : PRIMARY 6
SCHOOL : CHIJ ST NICHOLAS GIRL'S SCHOOL (PRIMARY)
SUBJECT : SCIENCE
TERM : SEMESTRAL ASSESSMENT 1

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

Q29a) Cell D. It does not have a nucleus so genetic information cannot be passed down from the next generation.

b) No. I do not agree. Not only leaf cells has a cell wall, cell C could be from a root cell, as all cells from the plant have cell walls. Cell C also does not have chloroplast, which is needed in leaf cells to carry out photosynthesis to make food for the plant.

Q30a) As the mass of the seed increases, the distance travelled decreases.

b) So that the result of the distance travelled by the seeds is solely due to its mass, volume and fan speed.

Q31a) Flower attracts pollinators to pollinate the flower so fertilization can occur.

b) The seed of G are smaller and can be swallowed by animals and digested seeds are passed out as waste when the animal travels to another place far away.

c) H prevents overcrowding so there is less competition between the young plant and the parent plant for sunlight, nutrients, water and space.

Q32a) Soil B. Plant X grows well in soil which allows water to seep in the slowest, and soil B takes the longest time for water to seep through, indicating it is similar to the soil plant X grows the best in.

b) She can measure the amount of water collected in the morning cylinder over a set duration of time.

Q33a) Tube B: 1 Tube D: 7

b) In tube B, the plant takes in all the carbon dioxide in the water, photosynthesizes as it also has sunlight and gives out the most amount of oxygen, leaving very little amount of carbon dioxide left.

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c) The rate of photosynthesis of the plant is faster than the rate of evaporation of the snail and the plants so more carbon dioxide is used.

d) Set-up D. Set-up D is inside a box and the plant in D does not receive sunlight, and is unable to photosynthesize and produce oxygen, instead, it respires and gives out carbon dioxide. With the carbon dioxide from the plant and from the snail when it exhales, and the carbon dioxide would increase.

Q34a) I do not agree with her. Organism B feeds on A, and producers only produce food instead of consuming other organism like B does.

b) Organism B will increase and D will decrease.

c) E is the prey of W and W is the predator of E because when W was introduced to the food web, E decreases as W eats E.

d) When the organisms die, decomposers break down their dead body into simpler substances which is returned to the soil as nutrients.

Q35a) In set up Y, the sensor can sense the light given off from the bulb and the light from the bulb reflected off the aluminum foil, compared to set-up X is sensor which senses the light given off from the bulb.

b) So that only light detected is from the bulb and not any other light source.

c) The silver band reflects light from the cans highlights and the street lamps into the drivers eyes and it allows the drivers to see the workers and avoid hitting them.

Q36a) Smooth metal reduces friction between the iron and the cloth so that it is easier to iron the cloth.

b) Plastic. It must be a poor conductor of heat so that the user's hand would not be burned if they use a good conductor of heat.

c) Heating element X as it has greater surface area in contact to the steel plates so the steel plate would heat up faster.

Q37a) Plastic bottle with pebbles takes up space inside the so there will be less water needed to fill up to level X so reducing the amount of water used.

b) Water occupies space.

Q38a) As the number of bulbs increases, the average light intensity of each bulb remains the same.

b) The bulbs are formed in a parallel circuit.

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c)



Q39a) To find out if the amount of exposed surface area affects the rate of evaporation.

b) Rate of evaporation (left) **Exposed surface area (right)**

c)(i) The greater amount of wind **(ii) Higher temperature**

Q40a) Kinetic energy → Potential elastic energy → Kinetic energy

b) The longer the stretched elastic band, the longer the distance travelled by the marble as the band has more elastical potential energy tube converted to more kinetic energy in the marble.

Q41a) Sand is a non-magnetic material and will not be attracted by the electromagnet.

b) Gravitational force acting on the bigger block is greater than the magnetic force at the electromagnet.

c) Put the blocks closer to each other.

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3
END

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SA1

PRIMARY 6 MID-YEAR EXAMINATION 2017

Name _____ Date: 8 MAY 2017

Class : Primary _____ Duration: 1h 45min

Parent's Signature : Marks: _____ / 56

SCIENCE
BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

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

Follow all instructions carefully.

Answer all questions.

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

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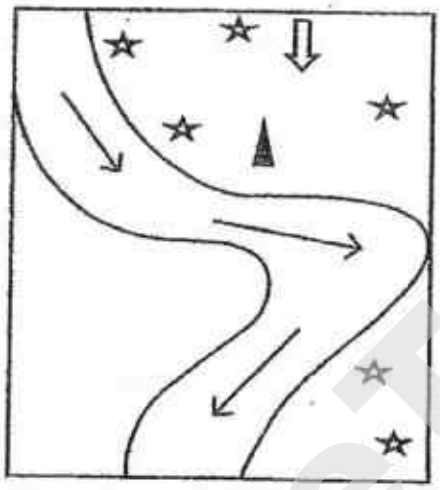
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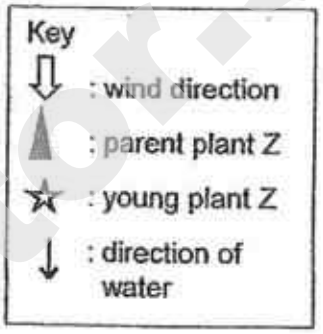
Booklet A (28 x 2 marks)

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.

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1. The diagram below shows the location of a parent plant Z and its young plants near a river.



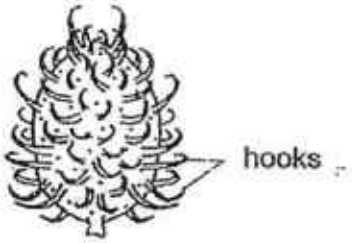


Which of the following fruits is likely to be produced from plant Z?

(1)



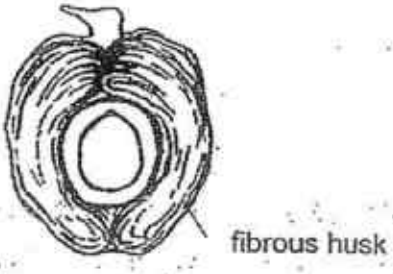
(2)



(3)

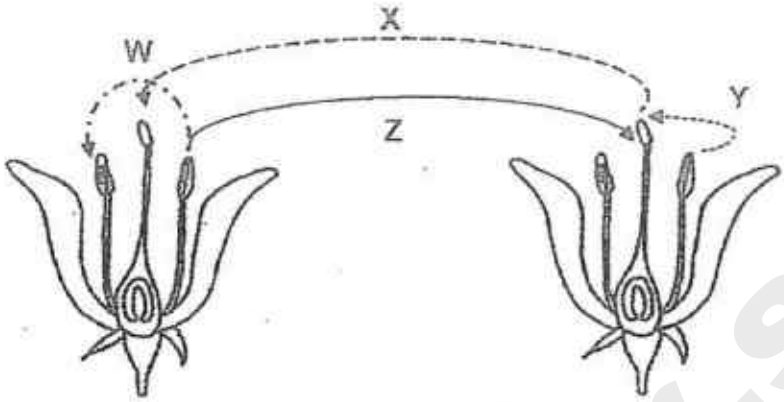


(4)



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2. The diagram below shows two flowers from the same plant.



Which of the arrows show(s) pollination taking place?

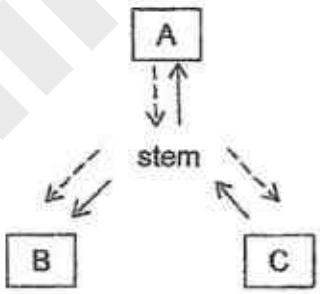
(1) Y only

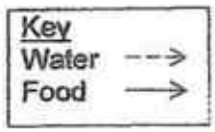
(2) W and Y only

(3) X and Z only

(4) Y and Z only

3. A, B and C are different parts of a plant. The diagram below shows how water and food are transported in the plant.





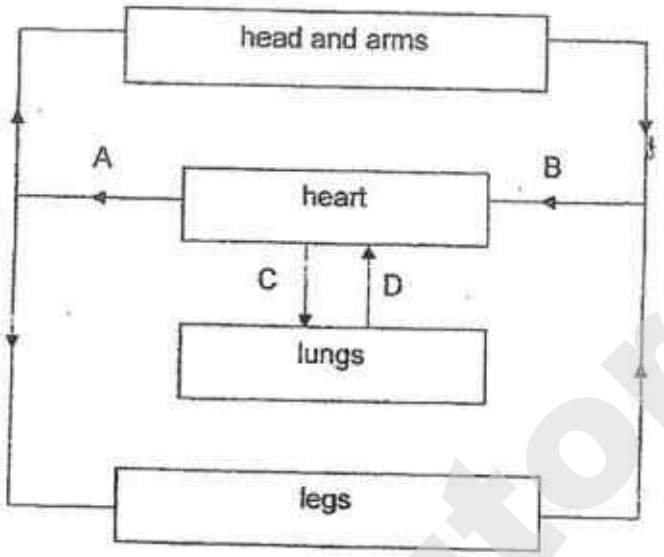
Which of the following correctly shows the parts of the plants?

	A	B	C
(1)	root	leaf	fruit
(2)	leaf	flower	root
(3)	leaf	root	fruit
(4)	root	flower	leaf

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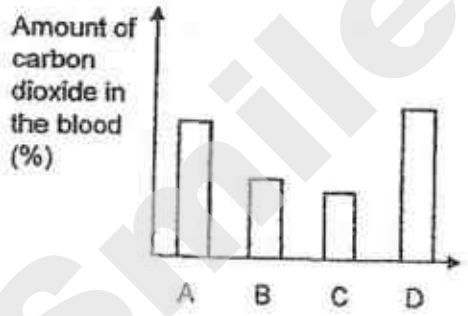
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4. The diagram below shows the movement of blood in some parts of the human circulatory system.

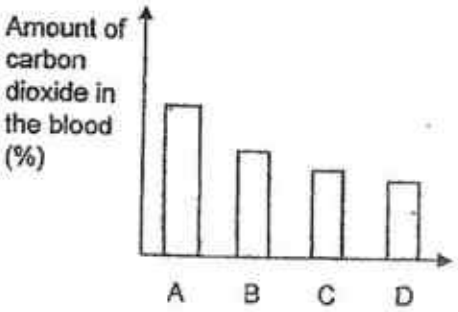


Which of the following graphs represents the amount of carbon dioxide in blood vessels, A, B, C and D?

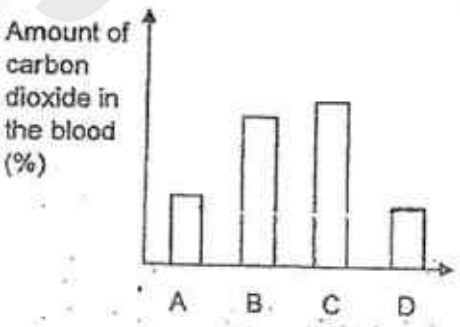
(1)



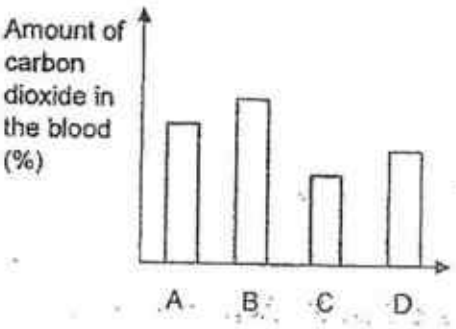
(2)



(3)

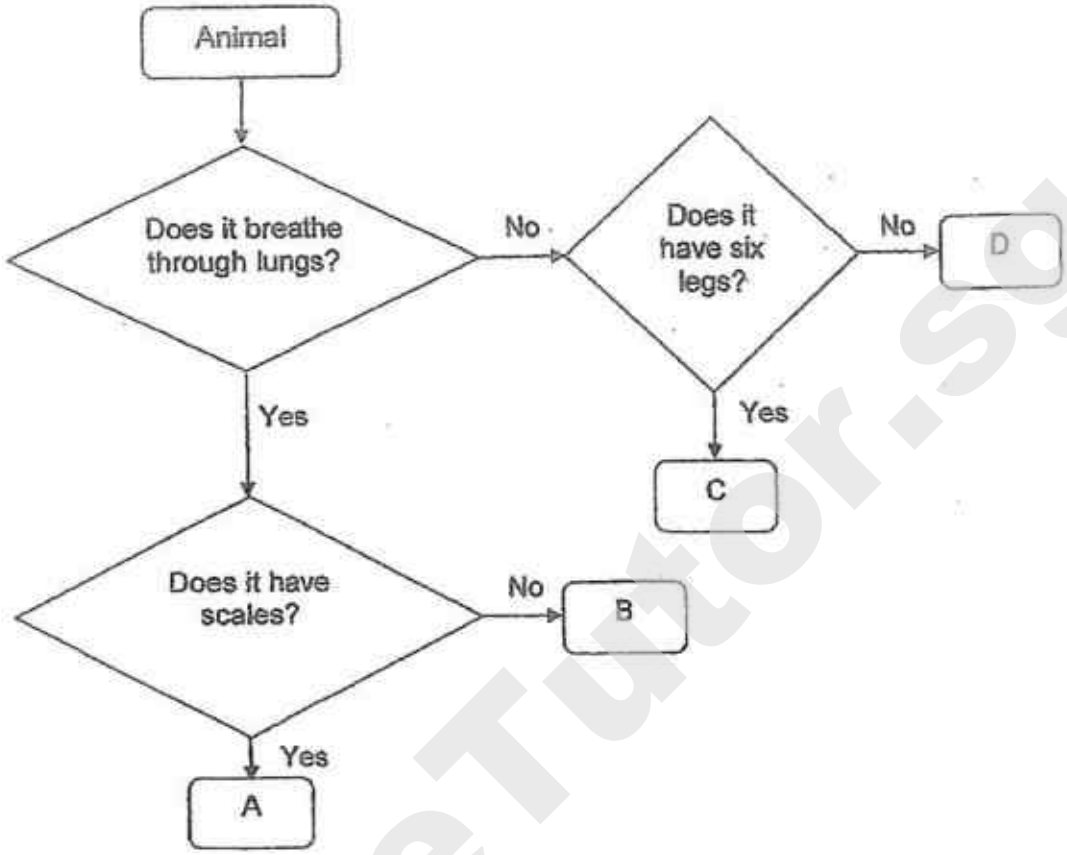


(4)



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5. The flowchart below shows some characteristics of animals, A, B, C and D.



Which of the following is best represented by A, B, C and D?

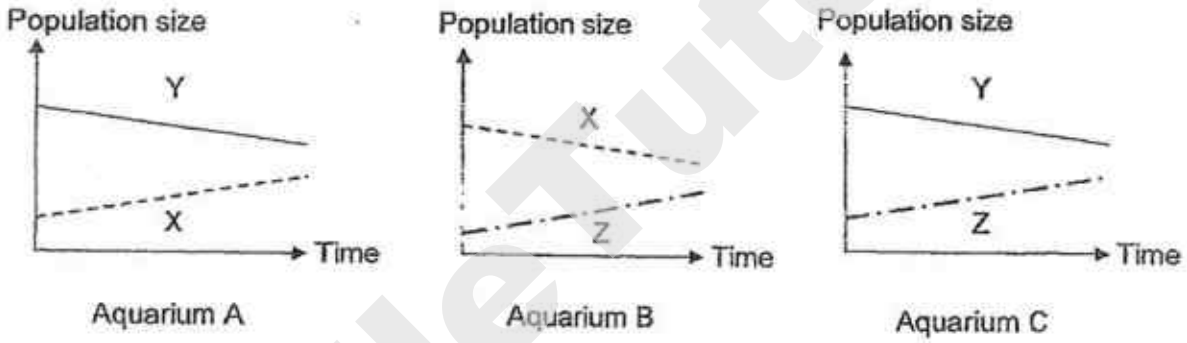
	A	B	C	D
(1)	reptile	bird	mammal	fish
(2)	fish	mammal	insect	bird
(3)	fish	bird	amphibian	mammal
(4)	reptile	amphibian	insect	fish

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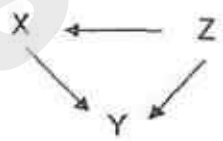
6. Three aquariums, A, B and C, contain different organisms, X, Y and Z, as shown in the table below.

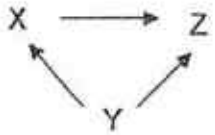
Aquarium	Organisms
A	X and Y
B	X and Z
C	Y and Z

The graphs below show the populations of the organisms in each aquarium over a month.

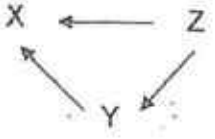


Which of the following shows the relationships between the organisms, X, Y and Z, if they are all placed in the same aquarium?

(1)


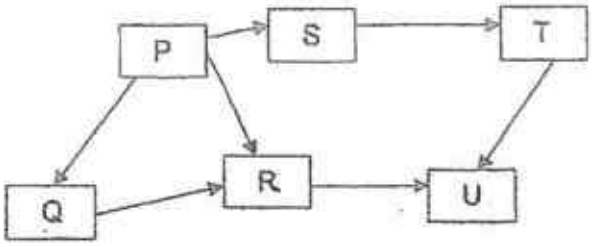
(2)


(3)


(4)


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7. The diagram below shows a food web.



Three statements were written about the food web.

A R is a prey as well as a predator.

B There are five prey in this food web.

C All the energy in R is transferred to U.

Which of the above statements is/are correct?

(1) A only

(2) A and B only

(3) B and C only

(4) A, B and C

8. The following relationships were observed among four living things, P, Q, R and S.

R feeds on S.
P feeds on Q and S.
S gets its food from Q.
R feeds on P but does not feed on Q.

Which of the following classifications is correct?

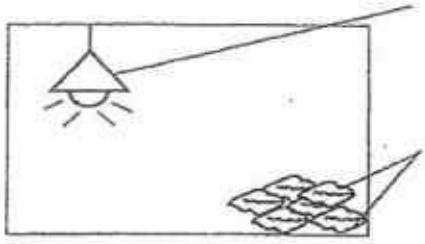
	producer	prey only	prey and predator	predator only
(1)	R	S	P	Q
(2)	Q	P	S	R
(3)	R	Q	P	S
(4)	Q	S	P	R

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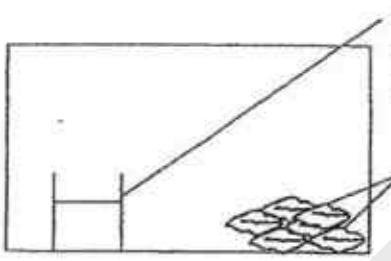
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9. Study the set-ups shown below. Which pile of leaves would be the first to decompose completely?

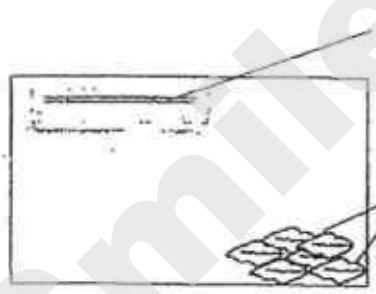
(1)



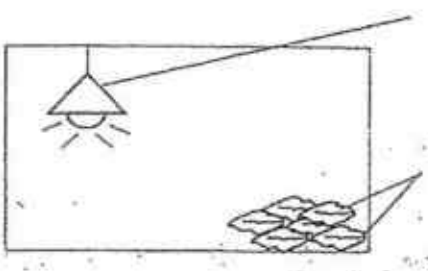
(2)



(3)



(4)



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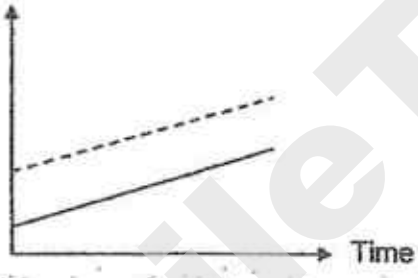
10. The food chain below shows the relationship between four organisms in a community.

plant ⟶ grasshopper ⟶ mynah ⟶ eagle

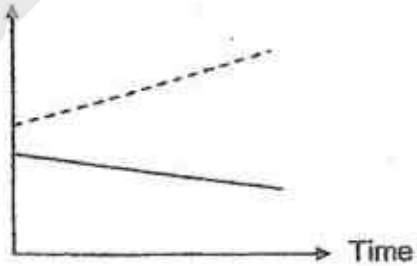
Which of the graphs below correctly represents the changes in the populations of the grasshoppers and eagles when animal X, which only feeds on mynahs, is introduced to the community?

Key:
Grasshoppers - - - - - - -
Eagles ———

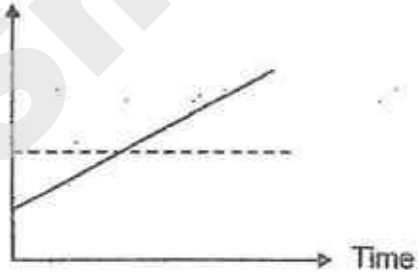
(1)



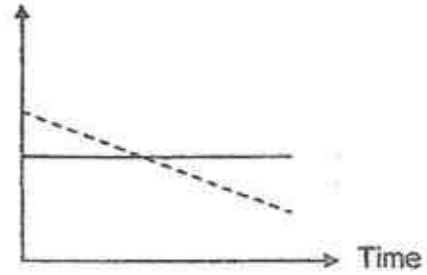
(2)



(3)

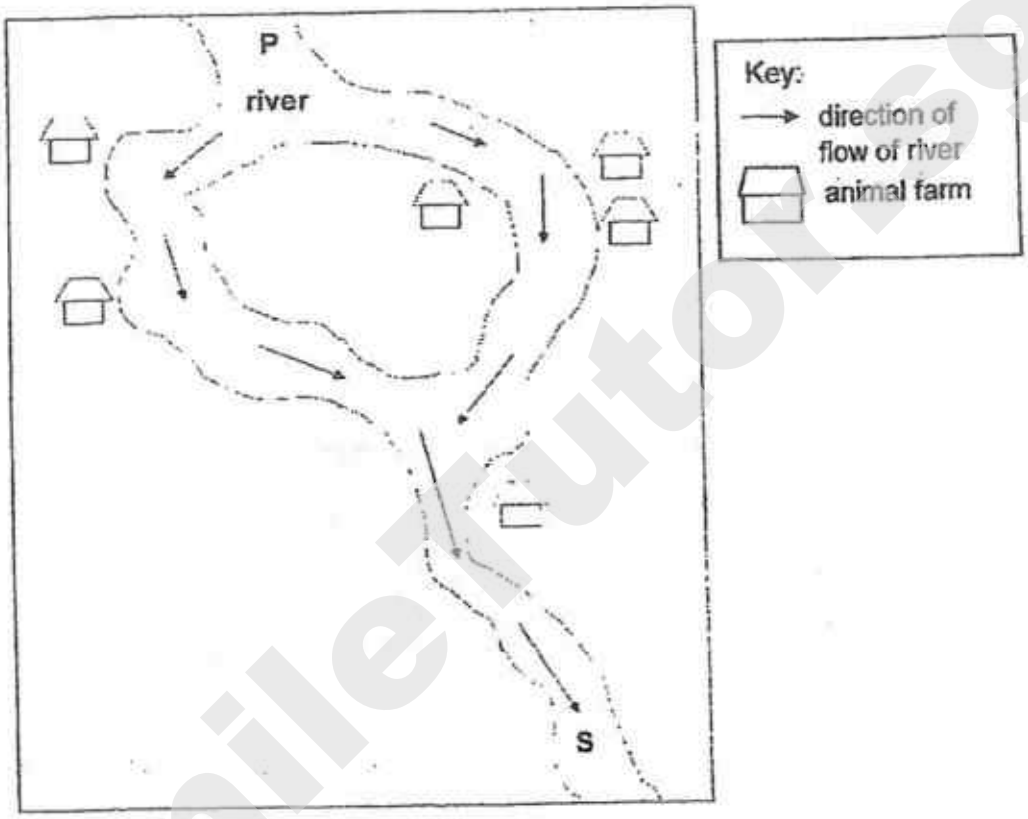


(4)



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11. The map below shows the location of some animal farms along a river. The animal waste from the farms flowed into the river where decomposition of the animal waste would take place. The number of fish at P and S was recorded over a period of time.



Which of the following is a possible effect on the number of fish in the river and is matched with the correct reason?

	Effect on the number of fishes	Reason
(1)	More fishes at S than at P	There was more nutrients for the fish at S.
(2)	Fewer fishes at S than at P	More bacteria would compete with the fish for dissolved oxygen at S.
(3)	More fishes at S than at P	Decomposition produced carbon dioxide for the fish at S.
(4)	Fewer fishes at S than at P	Bacteria fed on the fish at S.

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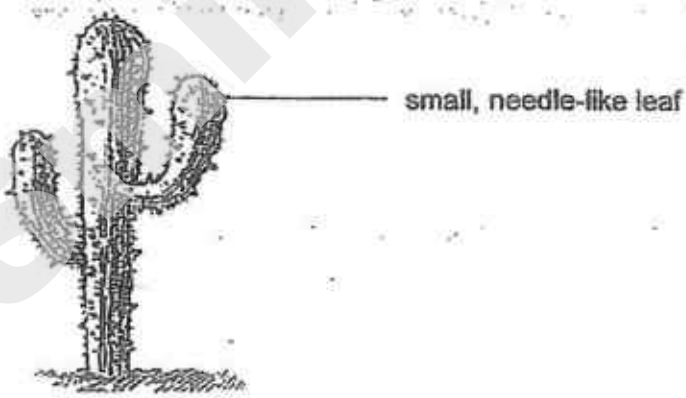
12. In a particular habitat, the number of organisms are counted and recorded in the table below.

Organisms	Number of organisms
grasshoppers	23
hibiscus	10
male frogs	6
caterpillars	4
female frogs	4
butterflies	6

Based on the table above, which of the following is correct?

(1) There are six communities.
(2) There are six populations with a total of 53 organisms.
(3) There are 53 populations of organisms living in the habitat.
(4) There is one community with four populations of organisms.

13. The diagram shows a plant living in a desert.



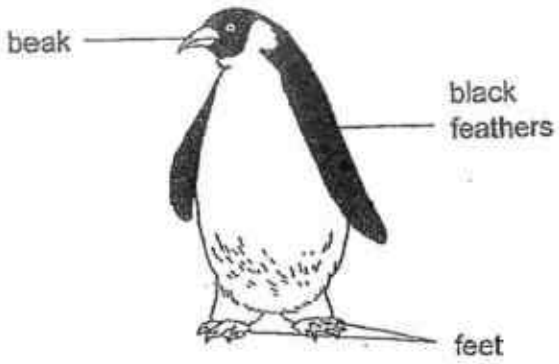
The small needle-like leaf helps the plant to _____.

(1) make food
(2) store water
(3) reduce heat loss
(4) reduce water loss

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14. The diagram below shows animal P.



Animal P

Which of the following adaptations helps it to get food?

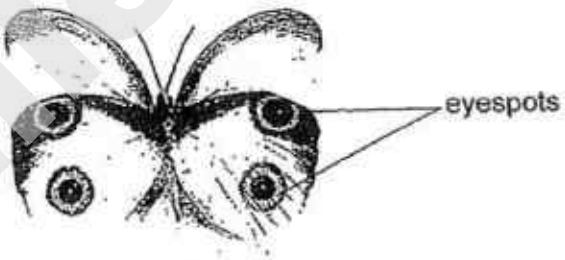
(1) The streamlined body reduces water resistance.

(2) The small feet reduce heat loss to the surroundings.

(3) The beak of the animal P helps it to peck for prey in the ground.

(4) The black feathers help to camouflage it so its prey below cannot see it.

15. The diagram below shows the adaptation of animal X.



Animal X

Which of the following is correct about how the eyespots of animal X help it to survive?

(1) The attractive wings will distract its predator.

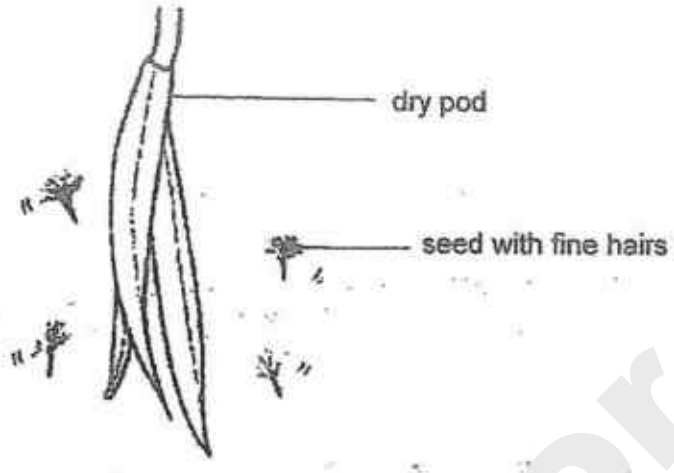
(2) The prey of animal X will not be able to spot it easily.

(3) The predators of animal X will mistake it for a bigger animal and avoid it.

(4) Animal X will be able to camouflage itself in its surroundings and escape from its predators.

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16. The diagram below shows the characteristics of fruit A.



Fruit A

Which of the following correctly describes the dispersal of fruit A?

A The seed will hook onto the fur of animals.

B The fruit splits open to release the seeds when it ripens.

C The seed has fine hairs so as to be carried further away by the wind.

(1) B only

(2) C only

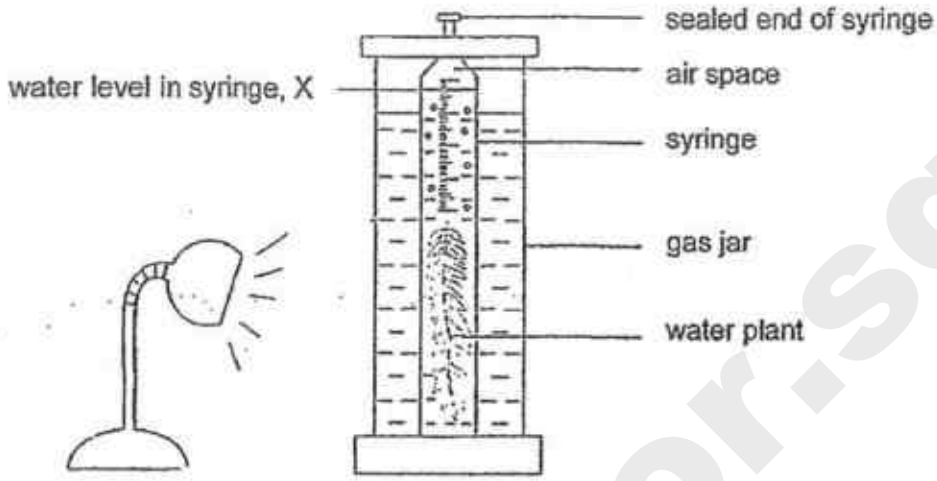
(3) B and C only

(4) A, B and C

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17. Weiming set up an experiment in a dark room as shown below.



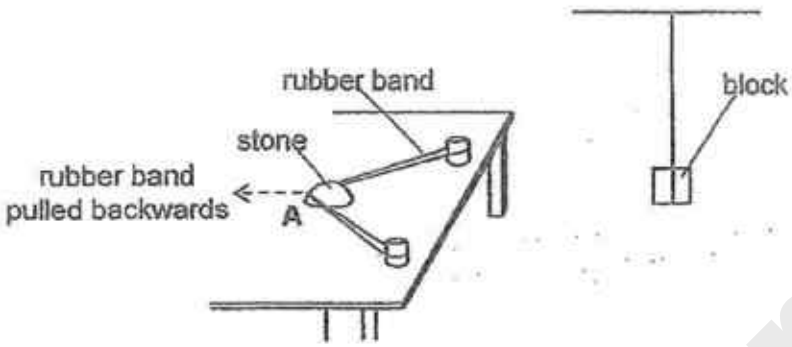
He placed a table lamp at a distance from the gas jar. After half an hour, he observed that the water level, X, in the syringe moved.

In which direction did the water level, X, move and what was the reason for the movement?

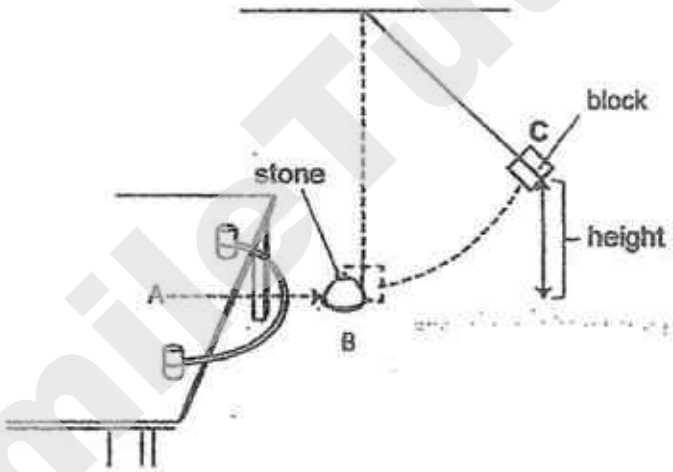
	Water level X moved	Reason
(1)	up	Heat from the lamp causes the water to expand.
(2)	up	Plant gives out water during photosynthesis.
(3)	down	Oxygen released by the plant collects in the air space.
(4)	down	Carbon dioxide in the air space is taken in by the plant.

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18. Samantha conducted an experiment as shown below. She pulled the rubber band backwards together with a stone to position A.



When she released the rubber band with the stone, the stone moved forward and hit the block. The block swung from position B to position C, as shown in the diagram below.



Which one of the following correctly shows the main energy conversions taking place from positions A to B to C, and back to B?

(1) Potential energy → Kinetic energy → Kinetic energy

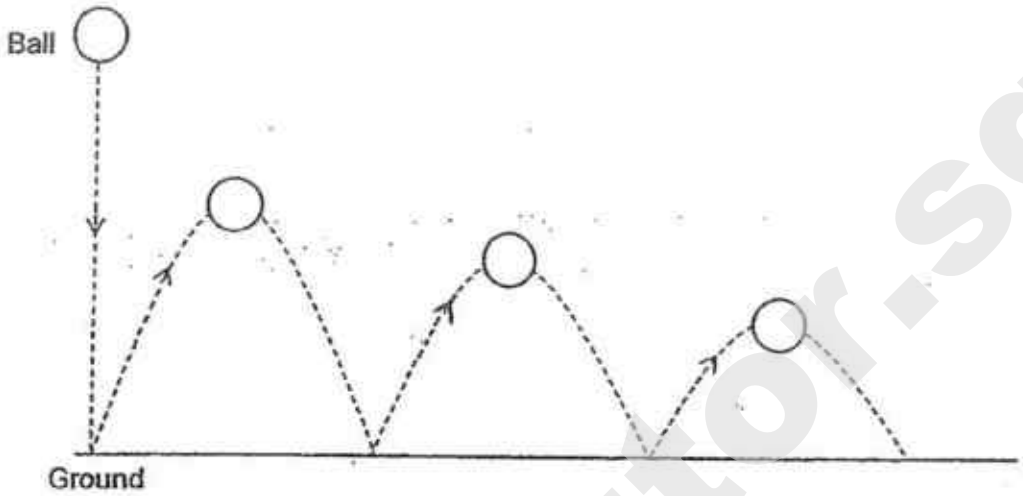
(2) Potential energy → Kinetic energy → Potential energy

(3) Potential energy → Kinetic energy → Kinetic energy → Potential energy

(4) Potential energy → Kinetic energy → Potential energy → Kinetic energy

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19. Ravi dropped a ball from a height above the ground. As the ball bounced, Amy noticed that the ball bounced up to a lower height after each bounce, as shown in the diagram below.



Which of the following explains correctly why the ball did not bounce back to the initial height from which it was dropped?

(1) The potential energy increased with each bounce.

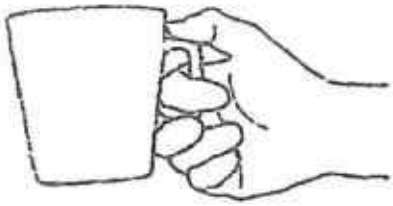
(2) All of the potential energy was converted to heat energy.

(3) Some of the potential energy was destroyed when the ball bounced when it hit the ground.

(4) Some of the kinetic energy was converted to heat energy and sound energy when it hit the ground.

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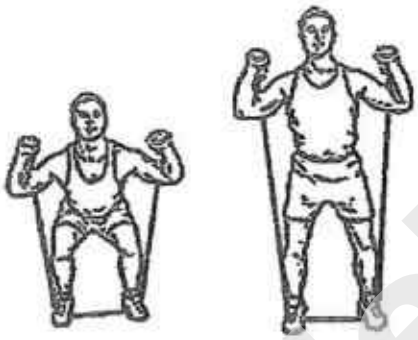
20. Which of the following makes use of gravitational force to do the work?



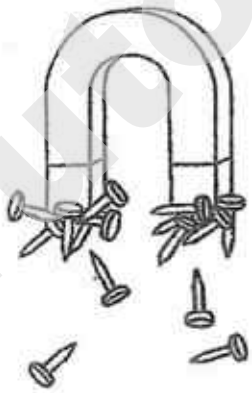
(1) Holding a cup



(2) Watering plants



(3) Exercising with resistance bands

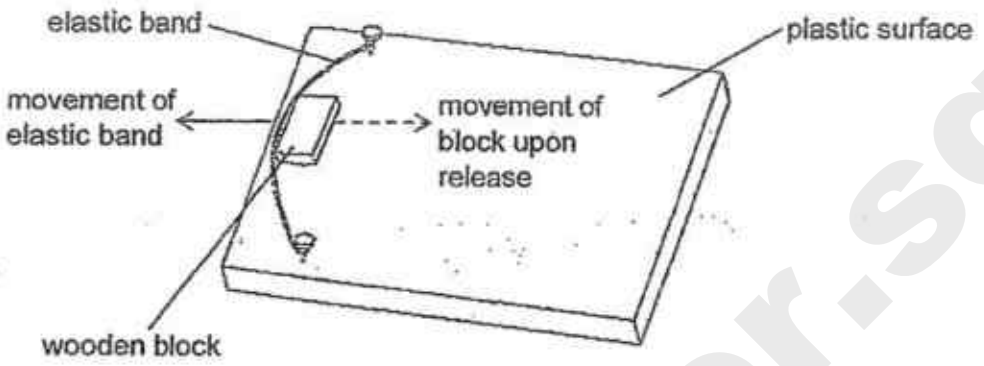


(4) Attracting nails with a magnet

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21. Carl conducted an experiment to find out which liquid, R, S, T or U, is best able to reduce friction between a wooden block and a plastic surface.



In the set-up above, he applied a thin layer of liquid R on the plastic surface. He then stretched the elastic band by 2 cm from its original position. He released the block and measured the distance it moved before coming to a stop. The plastic surface was cleaned and Carl repeated the experiment with liquids S, T and U and the table below shows the results of his findings.

Liquid	R	S	T	U
Distance moved by the block (cm)	33	45	27	39

Friction between the engine parts in the moving car can cause overheating.

Based on his results, which of the liquids, R, S, T or U, should he choose to reduce overheating in the engine parts most effectively?

(1) R

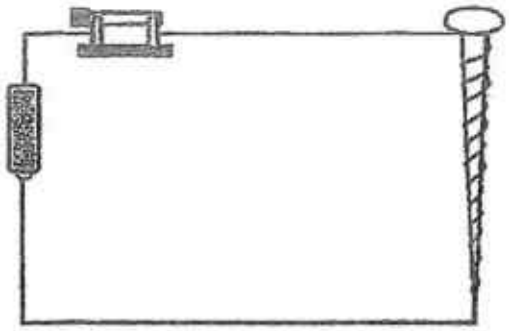
(2) S

(3) T

(4) U

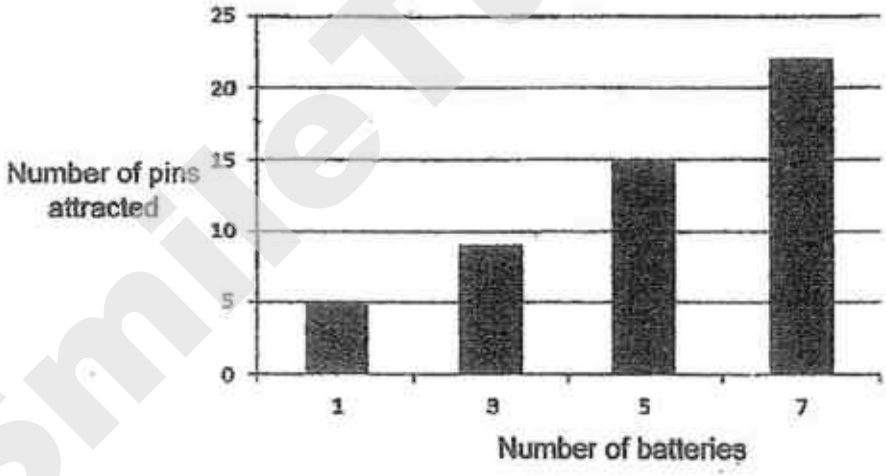
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22. Gina wanted to find out how the number of batteries affect the strength of an electromagnet using the set-up below. She changed the number of batteries and counted the number of pins that were attracted to the iron nail.



pins

Her results were shown in the graph below.



Based on the graph, how many pins would the electromagnet attract if there were six batteries in the set-up?

(1) 7

(2) 13

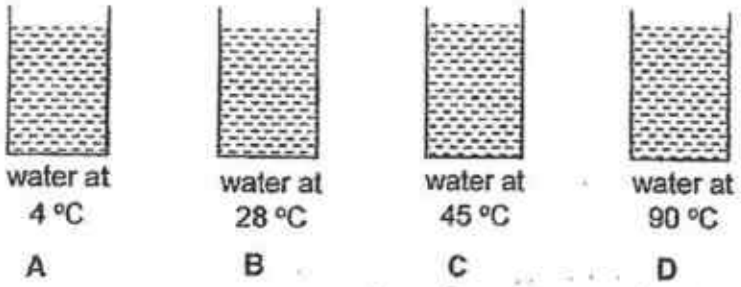
(3) 19

(4) 25

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23. Four identical containers, A, B, C and D, shown below were filled with water at different temperatures. They were left in a room with a temperature of 28°C.



Which of the following container(s) will you observe water droplets forming on its/ their outer surface(s)?

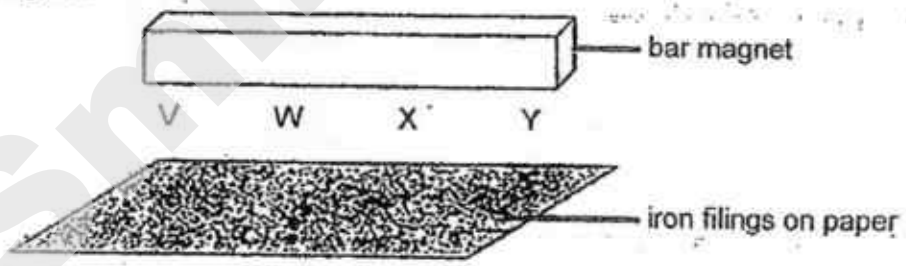
(1) A only

(2) A and B only

(3) C and D only

(4) A, B, C and D

24. Siang Hoe spread iron filings evenly on a piece of paper. He placed a bar magnet above it and then moved the bar magnet towards the paper. He observed that the iron filings were mostly attracted to certain parts of the magnet.



At which parts of the magnet, V, W, X or Y, would the least amount of iron filings be attracted to?

(1) V and W only

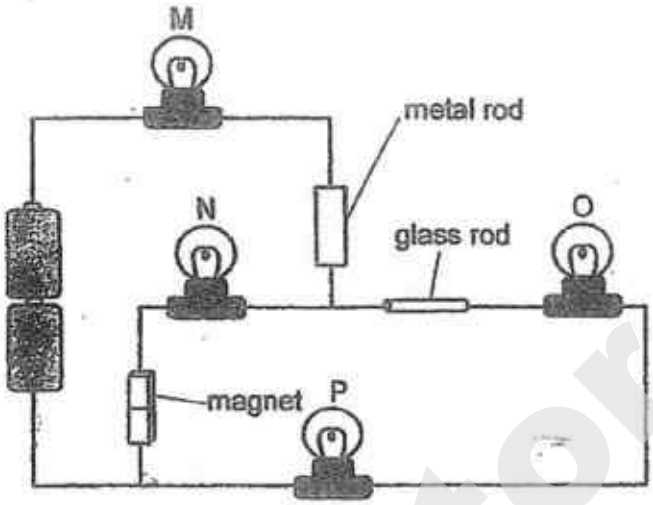
(2) V and Y only

(3) W and X only

(4) X and Y only

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25. The diagram below shows four bulbs, M, N, O, and P, connected properly in a circuit. All the bulbs and batteries are in good working condition.



Which of the bulbs, M, N, O or P, will light up?

(1) M and N only

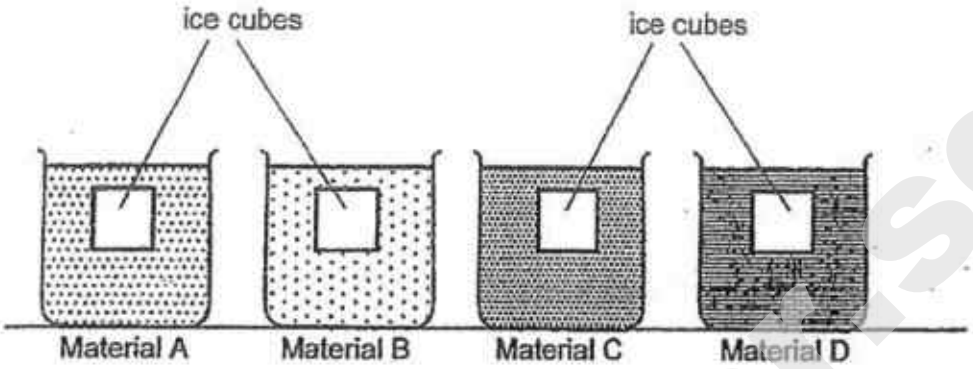
(2) M, O and P only

(3) N, O and P only

(4) None of the bulbs

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26. Each of the four beakers was packed with different materials, A, B, C and D, as shown in the diagram below. Hayati placed identical ice cubes in each beaker.



She recorded the time taken for each ice cube to melt completely in the table below.

Material	Time taken for ice cube to melt completely (min)
A	25
B	55
C	75
D	100

Based on her findings, which of the materials, A, B, C or D, could be used to make a container that will keep hot food warm for the longest time?

(1) Material A

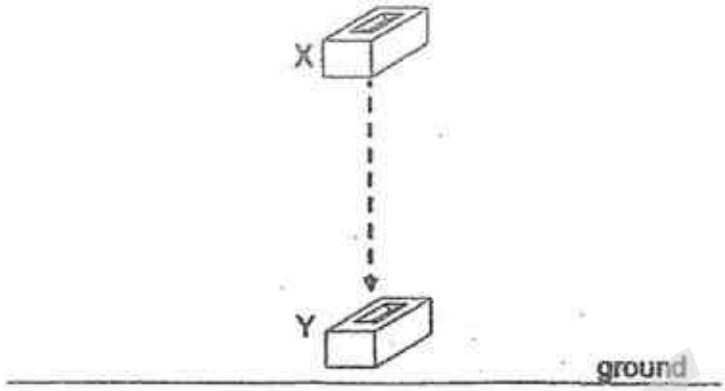
(2) Material B

(3) Material C

(4) Material D

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27. In the diagram below, a brick was dropped from position X above ground. It moved from position X to position Y before touching the ground.



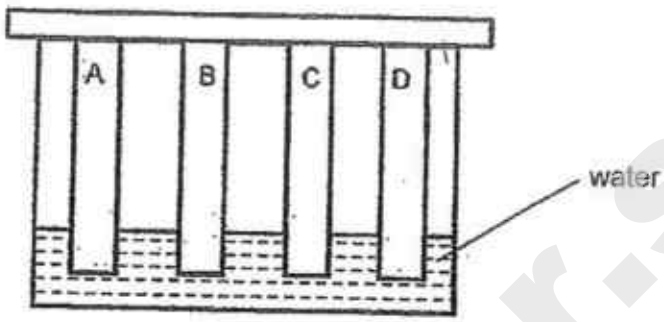
Which of the following correctly shows the change in the amount of potential energy and kinetic energy from X to Y?

	Potential energy of the brick from X to Y	Kinetic energy of the brick from X to Y
(1)	decreased	decreased
(2)	increased	decreased
(3)	decreased	increased
(4)	increased	increased

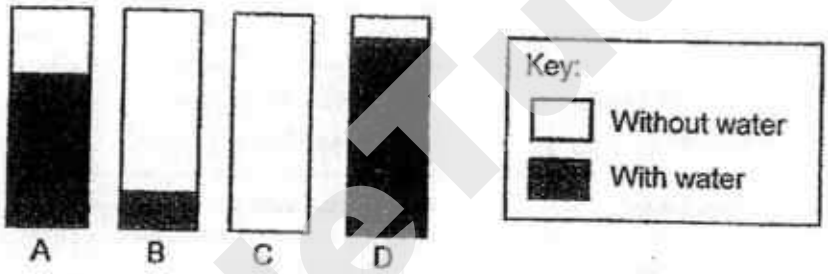
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28. Catherine placed four similar strips made of different materials, A, B, C and D, into a container filled with water as shown below.



She removed the strips after one minute. The amount of water absorbed by each strip is shown below.



What observation in the strips would not help Catherine decide which material is most suited to make a bath towel?

(1) the colour of the strip when it is wet

(2) the length of the strip that remains dry

(3) the mass of each strip after one minute

(4) the time taken by the strip to be completely wet

End of Booklet A

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PRIMARY 6 MID-YEAR EXAMINATION 2017

Name . _____ ( ) Date: 8 MAY 2017

Class : Primary 6 ( ) Duration : 1h 45min

Parent's Signature : _____ Marks: _____ / 44

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

Write your name, class and register number.

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

Follow all instructions carefully.

Answer all questions.

Booklet A	56
Booklet B	44
Total	100

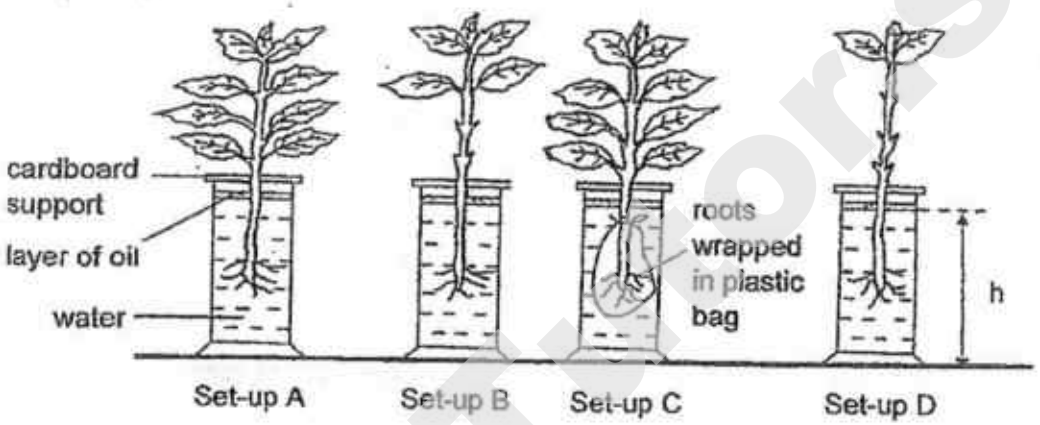
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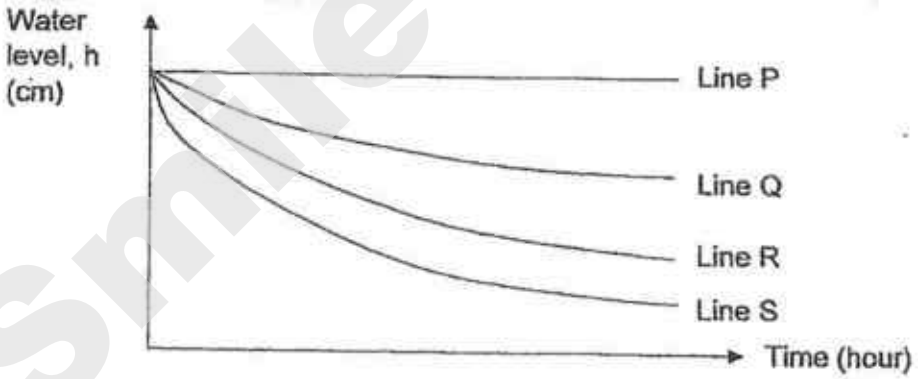
Section B

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.

29. Simon was given four plants in identical glass jars, each containing the same amount of water as shown below. He has to find out how the number of leaves affects the amount of water absorbed by the plant. He placed the set-ups, A, B, C and D, next to the window for three hours. He then recorded the water level, h, at regular intervals.



The results obtained were represented in the graph below.



(a) Which line, Q, R or S, represents the results obtained for set-up D? Explain your choice. [2]

Score 2

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(b) Simon changed the aim of the experiment to find out if the presence of roots of the plant affects the amount of water taken in. Which two set-ups should he use to compare? [1]

_____

(c) Which set-up in (b) is the control set-up? Explain your answer. [1]

_____

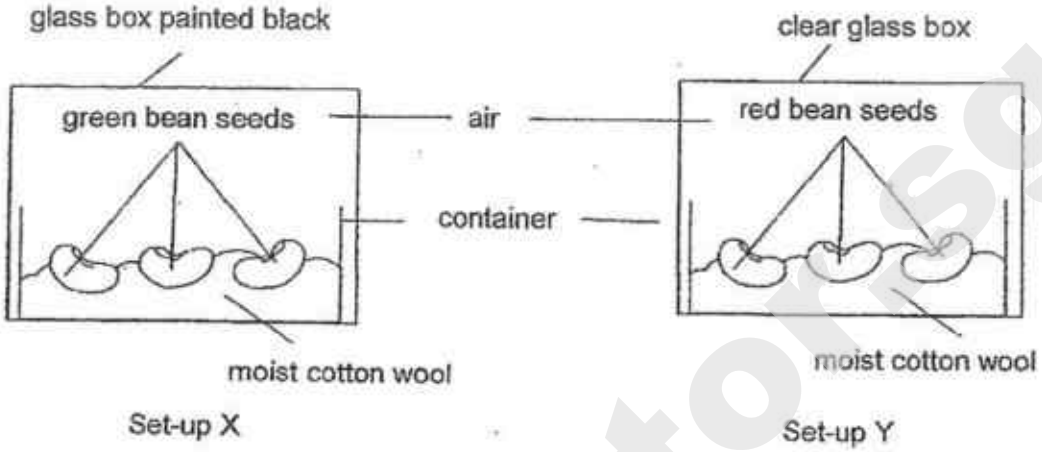
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Score	2

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30. Shawn wanted to find out if light is needed for the germination of seeds. He placed two set-ups as shown below on the kitchen table.



(a) Shawn was told that his experiment was not fair test as he had used different types of seeds. Explain why the same type of seeds should be used in his experiment. [1]

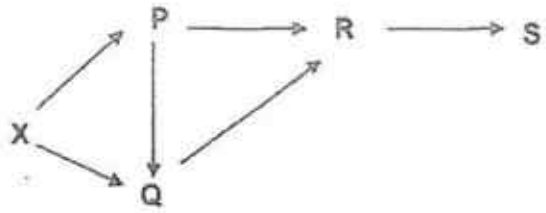
(b) What changes should Shawn make to set-up Y if he wants to find out if water is needed for the germination of seeds? [2]

Score	/3

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31. The food web below shows how organisms X, P, Q, R and S, depend on one another in a pond community.



(a) Based on the above food web, which organism is greatest in terms of quantity? [1]

_____

(b) Based on the food web, explain how a disease that affects R would affect the population size of S. [2]

_____

_____

(c) Based on your answer in (b), state one way organism S could do to survive. [1]

_____

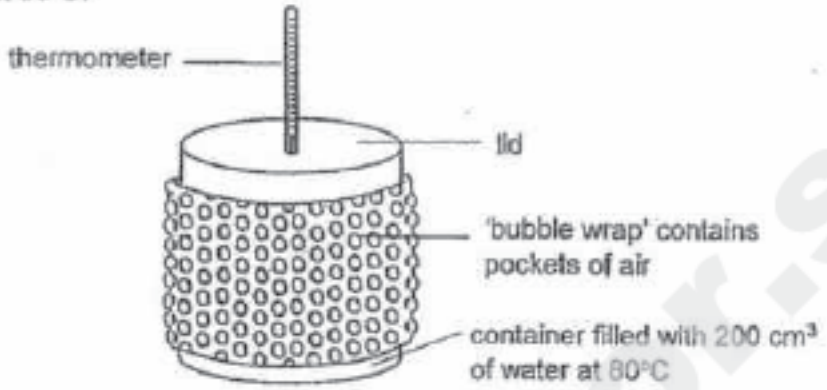
_____

Score	/ 4

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32. Sujesh conducted an experiment using two identical containers. One container was wrapped with the material, 'bubble wrap' as shown in the diagram while the other container was not wrapped. Both containers were filled with 200 cm^3 of water at 80°C.



Sujesh recorded the reading of the temperature of water over time. His results are shown in the graph below.



(a) Which line graph shows the results of the container with the bubble wrap? Explain your answer. [2]

Score 2

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The diagrams below show how bird P looks like in warm and cold weathers.
Bird P does not gain or lose weight in the different weathers.

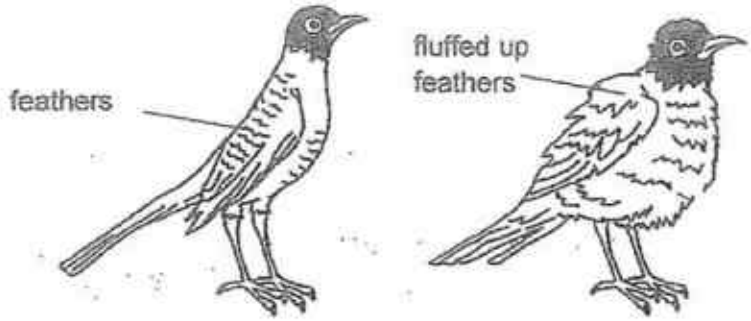


Diagram A Diagram B

(b) Based on the results of Sujesh's experiment, which diagram, A or B, shows how bird P looks like in cold weather? Explain your answer. [2]

_____

_____

_____

The diagram below shows how some birds stay close together to keep warm.



(c) Explain how staying close together helps the bird to keep warm their cold environment. [1]

_____

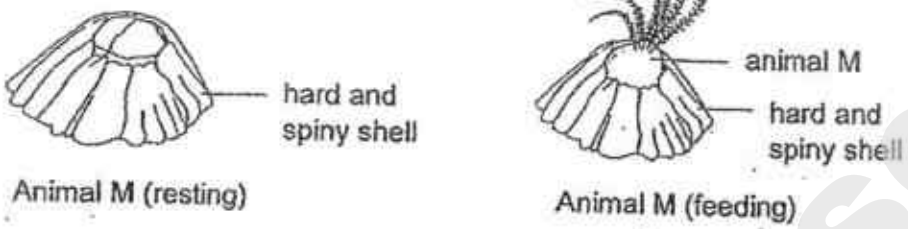
_____

Score	/ 3

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33. The diagram below shows animal M coming out of its hard and spiny shell to feed.

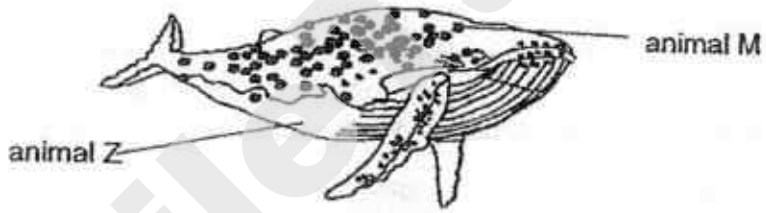


Animal M (resting)

Animal M (feeding)

(a) Some fish feed on animal M. How does the hard and spiny shell benefit animal M? [1]

Animal M usually attaches itself on a rock. It also attaches itself on the back of animal Z as shown below.



(b) Give two reasons why it is an advantage for animal M to attach itself on animal Z instead of attaching on a rock. [2]

Reason 1:

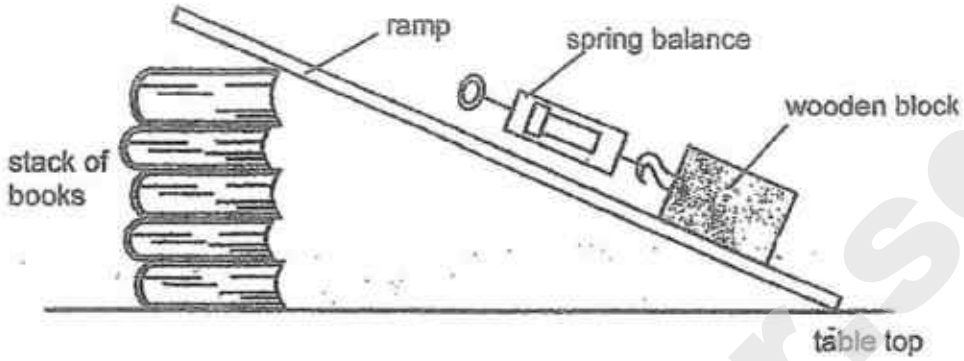
Reason 2:

Score	/3

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34. Asha pulled a wooden block up a ramp using a spring balance as shown in the diagram below.



She recorded the amount of force needed to move the wooden block up the ramp. She then changed the number of books in the stack and pulled the block again. Her results are shown in the table below.

Number of books	Amount of force (unit)
1	65
3	80
5	90

a) What was the relationship between the amount of force and the number of books used in the stack? [1]

b) State two forces acting on the wooden block when it was being pulled up. [2]

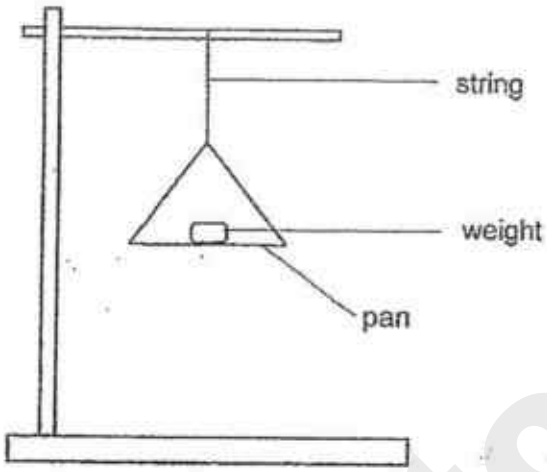
c) In the diagram above, draw arrows and label the two forces that were acting on the wooden block when it was pulled up. [1]

Score 4

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35. Hafiz used the set-up below to compare the strength of two strings, X and Y.



He added weights, of equal mass, onto the pan until each of the strings broke. His results are shown in the table below.

String	Number of weights added to break the string
X	2
Y	8

a) State one variable Hafiz has to keep the same to ensure a fair test? [1]

_____

_____

Score 1

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Hafiz wanted to string his kite.



(b) Which string, X or Y, should he choose if he does not want the string to break easily? Give a reason for your answer. [1]

_____

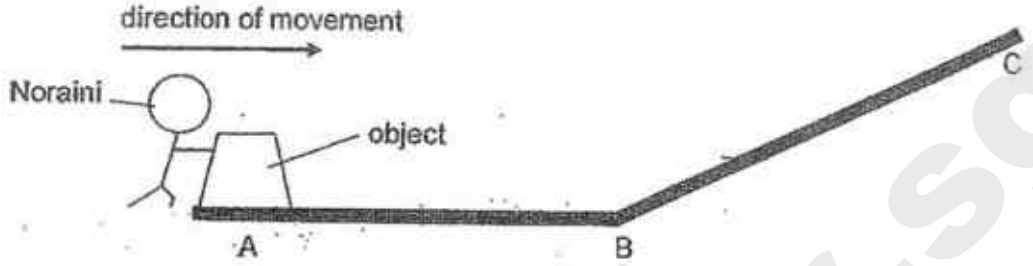
_____

Score	/ 1

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36. Noraini pushed an object over the same type of surface from point A to C as shown in the diagram below.



(a) Based on the diagram above, explain why Noraini needed more force to push the object from point B to C, than from point A to B. [1]

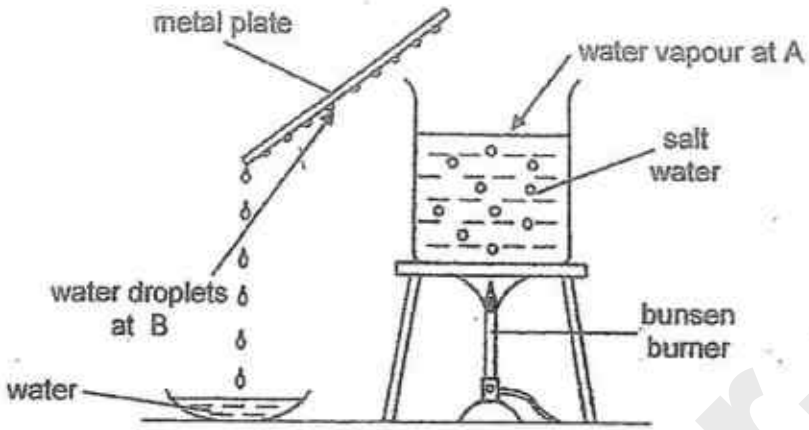
(b) Suggest one method that will allow Noraini to push the object from point B to C more easily. [1]

(c) Explain why your method stated in (b) will allow the object to be pushed from B to C more easily. [1]

Score	/ 3

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37. The diagram below shows a set-up used to obtain clean water from salt water.



(a) Based on the diagram, identify the two different processes involved in the set-up. Name the processes that occur at point A and point B. [1]

Process at point A: _____

Process at point B: _____

(b) If the metal plate is changed to a glass plate, explain clearly how this will affect the amount of clean water collected after a short period of time. [2]

_____

_____

_____

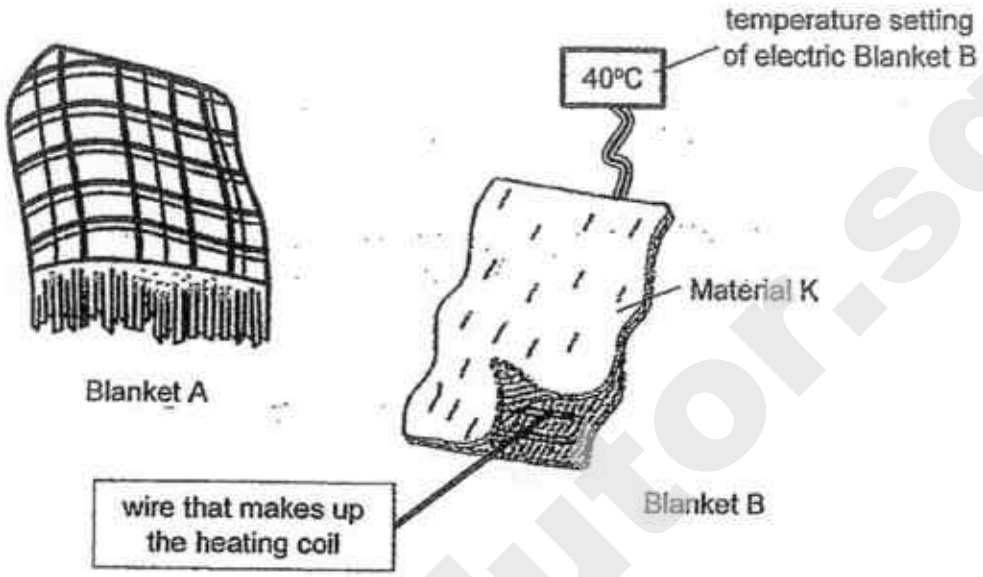
_____

Score	/ 3

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38. The diagram below shows a normal wool blanket, Blanket A, and an electric blanket, Blanket B. Both blankets are of the same size and thickness.



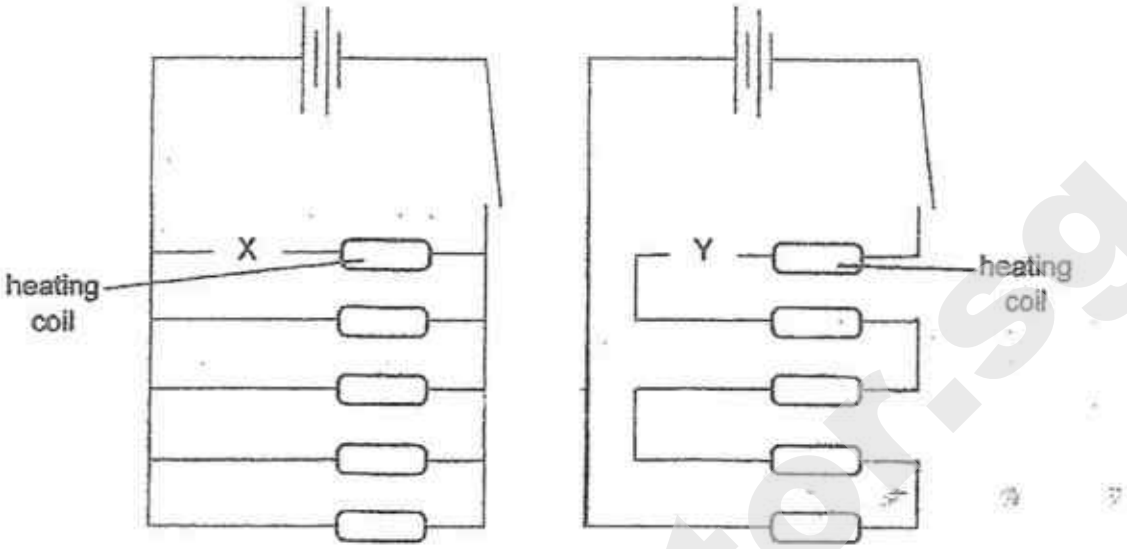
(a) Which Blanket, A or B, would keep a person warmer? Explain why. [2]

(b) Suggest a suitable property that Material K must have for it to be made into an electric blanket. [1]

Score	/ 3

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The diagrams below show two possible ways how the circuit of the heating coil in the electric blanket can be connected.



Circuit A Circuit B

Part of the wire broke at point X of Circuit A and at point Y of Circuit B.

(c) Explain how the broken wire in each circuit affects the amount of heat produced when the switch is closed? [2]

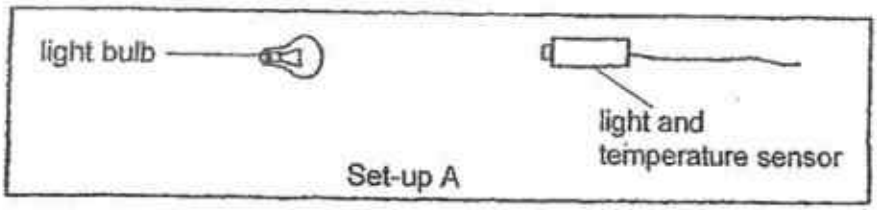
Circuit A:

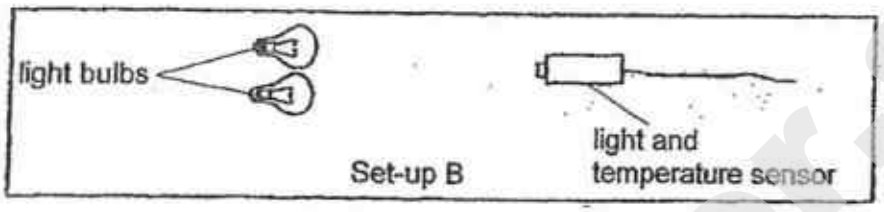
Circuit B:

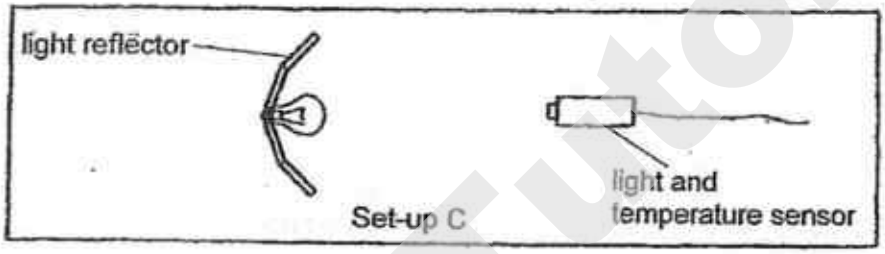
Score 2

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39. An experiment was conducted to determine which set-up, A, B or C, is best suited for use in a classroom as shown in the diagram below.







Set-up	Amount of light detected (unit)	Temperature (°C)
A	200	31
B	400	34
C	400	31

The results are shown in the table above.

(a) Using the information given above, state two advantages of using set-up C in a classroom. [2]

Advantage 1:

_____

_____

Advantage 2:

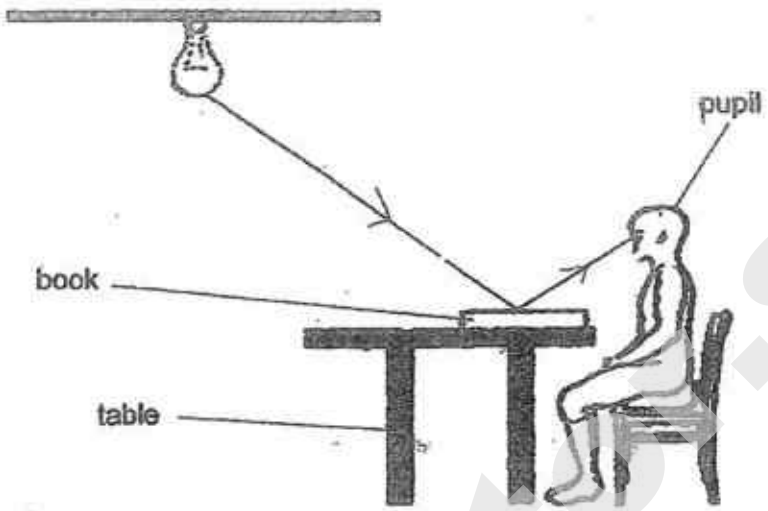
_____

_____

Score 2

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(b) In the diagram below, draw in two arrows heads on the two lines provided, to show the path of light which enables the pupil to see the book. [1]



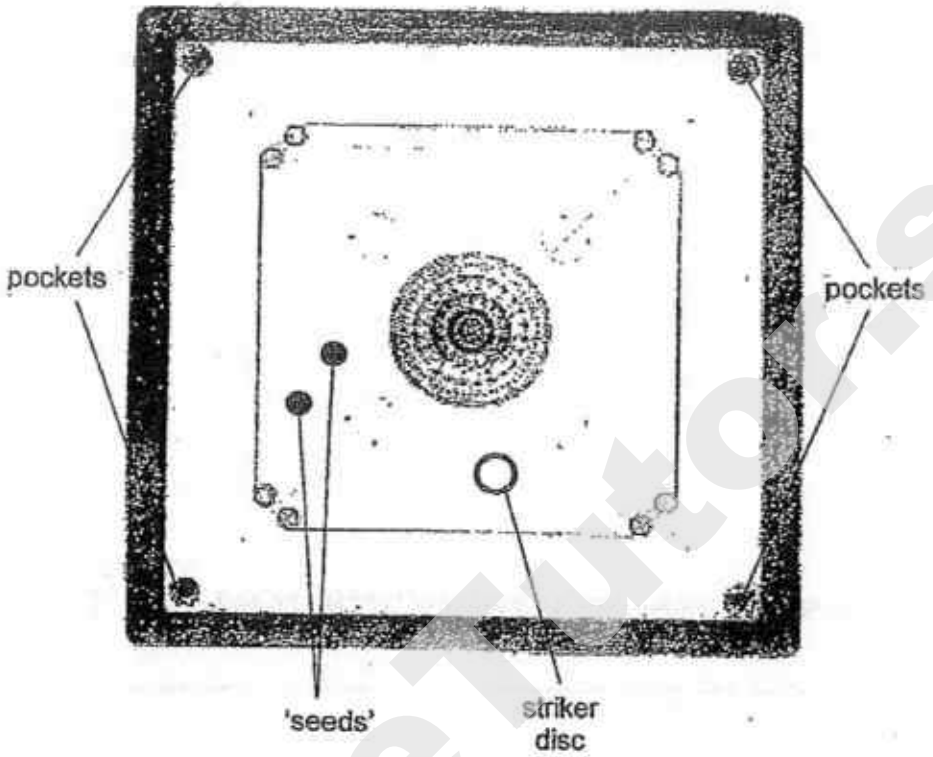
(c) Based on the diagram above, which property of light is shown? [1]

_____

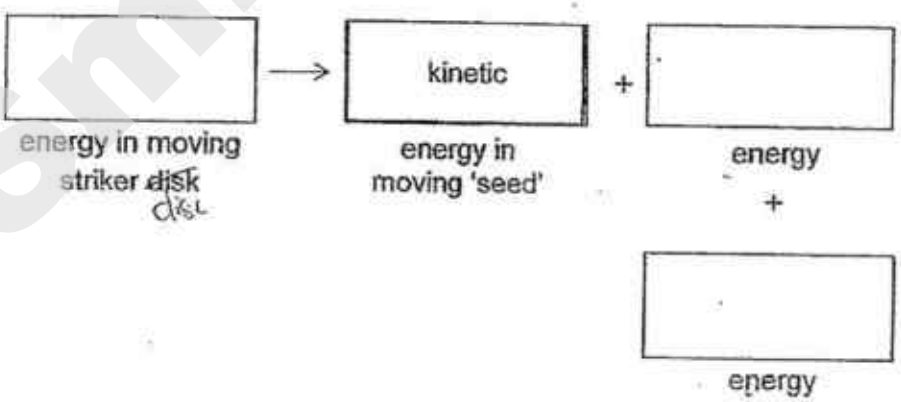
Score	2

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40. In the game carom, a player uses his finger to flick the striker disc to hit the carom 'seeds' into the pockets of a wooden board.



(a) State the energy conversion that takes place when a striker disc hits a 'seed'. [1]



Score 1

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(b) If the player changes the striker disc to a heavier one and the new striker disc travels at the same speed as that in part (a), explain how it would affect the speed of the 'seed'. [2]

(c) It was observed that the 'seed' slowed down after some time as it moved across the surface of the game board. Give an explanation for this observation. [1]

Score	/3

End of paper

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EXAM PAPER 2017
LEVEL : PRIMARY 6
SCHOOL : TAO NAN SCHOOL
SUBJECT : SCIENCE
TERM : SA1

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

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35a)	To ensure a fair test, Hafiz needs to keep the thickness/length of the string or material/weight/mass of the pan the same.	
b)	Y, because it was able to withstand/hold more weights before it broke so it was stronger than X.	☐ I am able to use the data/evidence from the table to compare the strength of String X and Y, using words like "more weights" instead of " Y needs 8 weights to break the string"
36a)	When the block was travelling from B to C it was opposing gravity, when it was travelling from A to B, it was not. Or When pushing the box from A to B, he needed to overcome friction only. From B to C, he needed to overcome both friction and gravity when pushing up the box. Hence more force is needed.	
b)	Add some wheels/ ball bearings to the object. Or Add lubricant/oil/ water/ powder to the surface from B to C (or under the object)	
c)	By adding wheels or adding lubricant to the surface, there is now less friction between the surface and the object, thus allowing it to move easily.	☐ I explained using the science concept of "reduced friction" ☐ I indicated which two surfaces where the reduced friction was acting between.
37a)	Process A: Evaporation/Boiling Process B: Condensation	
b)	Glass is a poorer conductor of heat /gains heat slower from the water vapour. This would lead to less/slower condensation of the water vapour and less water collected at the end of the experiment.	☐ I showed comparison in (i) difference in the heat conductivity between metal and glass (ii) rate of condensation of water vapour (iii) amount of clean water collected
38a)	Blanket B. Blanket B has a heating coil to provide a heat source to keep a person warmer while Blanket A does not have a heat source/ or Blanket A only reduces heat loss from a person's body the surroundings	☐ I showed comparison in how Blanket B keeps a person warmer
b)	Poor conductor of heat/electricity.	
c)	Circuit A: The circuit is still closed except for one pathway. Less heat is produced. or Electricity still flows through the other 4 pathways in the circuit. Less heat is produced. Circuit B: The circuit is open / electricity does not flow through the circuit. No heat is produced.	☐ I explained the science concept about close/open circuit causing electricity to flow or not flow through the heating coil. ☐ I state the how this affects the amount of heat produced(increase/decrease/no heat)

39a)	• Since the amount of light detected for one bulb with a reflector is the same as using 2 bulbs, it saves energy/ uses less energy for the same amount of light. • The classroom will be cooler. • The classroom will be brighter/has more light.	
b)	 There must be 2 arrow heads to show direction of light from:- light bulb to book, book to pupil.	
c)	Light can be reflected / travel in a straight line.	
40a)	Kinetic → Kinetic energy (GIVEN) + Heat + Sound	
b)	When the striker disc has a greater mass, the kinetic energy is greater and (more) kinetic energy will be transferred to the seed causing the speed of the seed to increase. or When the striker disc has a greater mass, the kinetic energy is greater and will hit the seed with greater impact causing the speed of the seed to increase.	
c)	Some of the kinetic energy of the seed has been converted into heat energy and sound energy. Or Friction/Frictional force has caused the seed to slow down.	

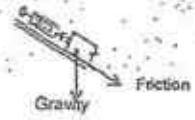
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Tao Nan School

2017 Primary 6 Science Mid-Year Examination

Qn	Suggested answers	Checklist
29a)	Line Q. The plant in set-up D has the least number of leaves so the plant (or roots) took in least water as they lose the least amount of water through the (stomata of) leaves. Hence the water decreased the least as shown in Line Q.	✓ I used superlative to show comparison in the observation of leaves in different set-up. ✓ I linked the amount of water decreased/taken in by plant to the number of leaves. ✓ I linked amount of loss of water loss/evaporated from the stomata of leaves to the decrease of water loss in set-up D.
b)	He should use set-ups A and C.	
c)	Set-up C. The roots cannot take in water because it is wrapped in a plastic bag. Set-up C confirms/shows that the decrease in the amount of water level in set-up A, is due to the roots taking in the water/ presence of roots.	✓ I selected the correct set-up C as the control set-up. ✓ I explained set-up C is the control as the roots could not absorb water. (absence of LV) ✓ I explained this showed/confirmed that any results (or decrease in water level) observed in set-up A is solely due to the IV (presence of roots)
30a)	So that the results of the experiment will only be affected by the presence of light and not by the type of seeds used.	
b)	• He should paint the clear glass box black, • change the red bean seeds to green bean seeds and • change the moist cotton wool to a dry cotton wool.	✓ I ensured that all variables in set-up Y were the same as set-up X except for the Independent/Changed Variable (presence of water) for a fair test to be conducted.
31a)	Organism X	✓ I selected a food producer in the food web.
b)	Population of R would decrease so population of S would decrease as S would have fewer R to feed on.	✓ I gave the cause: As population of R decreases/is wiped out by the disease, less R for S to feed on or S is affected by disease after eating R and hence dies. ✓ I gave the effect: Population of S decreased
c)	Organism S could move to another habitat/area/pond where more food is available. Or could adapt to eat P/Q or other animals/other food sources.	

32a)	P. The air in the bubble wrap is a poor conductor of heat so water in the container lost heat more slowly to the surrounding (air). Hence the temperature of the water decreases more slowly as showed in Line P.	✓ I gave the science concept that air in the bubble wrap is a poor conductor of heat. ✓ I explained how the air caused water in container to lose less heat/ lose heat more slowly. (Comparison) ✓ I stated clearly the direction of heat flow from source to destination.
b)	Diagram B. The bird's feathers in B fluffed up to trap air which is a poor conductor of heat so the bird's body loses less heat (or loses heat more slowly) to the surrounding air to keep the bird warm.	✓ I applied the concept from the experiment illustrated in (a) of the question ✓ I linked "fluffed up feathers traps air" and explained how air slowed down the heat loss. (Comparison) ✓ I stated clearly the direction of heat flow from source to destination.
c)	The birds stay close together so that there is smaller exposed surface area of their bodies which will reduce the rate of heat loss from their bodies to the cooler surroundings.	✓ I could identify the main cause – exposed surface area of the bird's bodies is reduced/less (Compare!) when birds huddle together. Effect: reduced heat loss from bird to the cold air.
33a)	Animal M can hide/stay/rest in the hard and spiny shell to avoid detection by its predator.	
b)	• Animal M is able to travel to more places/faster to get (more) food/get food more easily. • Animal M is able to get food/foodscraps from Animal Z. • Animal M is able to escape easily from predators on the back of Animal Z that moves (faster) rather than grow on stationary rocks. • Animal Z will eat/scare away the predators of M.	✓ I linked the benefit/advantage to survival as compared to if animal M attaches itself to the rock.
34a)	As the number of books increases, the amount of force increases.	✓ I am able to state how the independent variable (Number of books) affects the dependent variable (Amount of force needed to pull the books up)
b)	Gravity/ Gravitational Force and Friction/ Frictional Force	
c)		

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

PRELIMINARY EXAMINATION 2017
PRIMARY SIX
SCIENCE
BOOKLET A

Name: _____ ( ) Class: Primary 6 __

Date: 25 August 2017 Duration of paper: 1 h 45 min

INSTRUCTIONS TO CANDIDATES

1. Write your name, register number and class.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answer on the Optical Answer Sheet (OAS) provided.
6. This question paper consists of 22 printed pages including this cover page.

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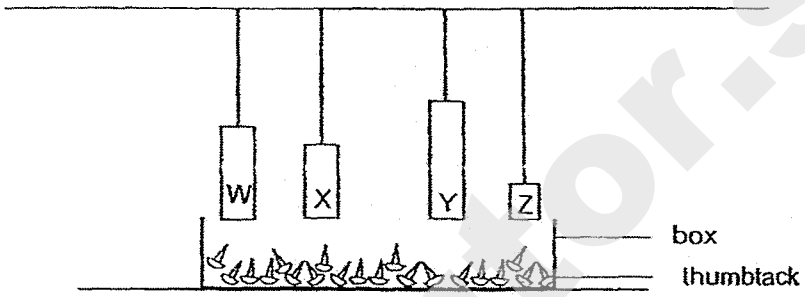
PART I

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

(56 marks)

---

1 Tom had four magnets, W, X, Y and Z, suspended on strings above a box of thumbtacks as shown in the diagram below. All the magnets were placed at an equal distance away from the thumbtacks.



He observed the number of thumbtacks that each magnet was able to attract and recorded his findings in the table below.

Magnet	W	X	Y	Z
Number of thumbtacks attracted	3	2	5	6

Which two statements could he infer from the experiment and the results in the table?

A Magnetic force can act from a distance.

B Shorter magnets are weaker than longer magnets.

C The strength of a magnet is not dependent on its size.

D The strength of a magnet can be reduced by dropping the magnet.

(1) A and B

(2) B and D

(3) C and D

(4) A and C

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2 The table below shows the changes in weather conditions from Monday to Thursday. On which day would wet clothes that are hung out to dry take the longest time to dry?

	Day	Sunny	Windy	Surrounding Temperature
(1)	Monday	Yes	No	33°C
(2)	Tuesday	No	No	28°C
(3)	Wednesday	Yes	Yes	33°C
(4)	Thursday	No	Yes	28°C

3 Which two of the following are characteristics that can be passed from parents to their young?

A Thumbprints
B Length of hair
C Colour of eyes
D Ability to roll the tongue

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

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4 Jack used a magnet to stroke a steel bar XY repeatedly as shown in Diagram 1 below. Diagram 2 shows the magnetic poles of the steel bar after it was magnetized.

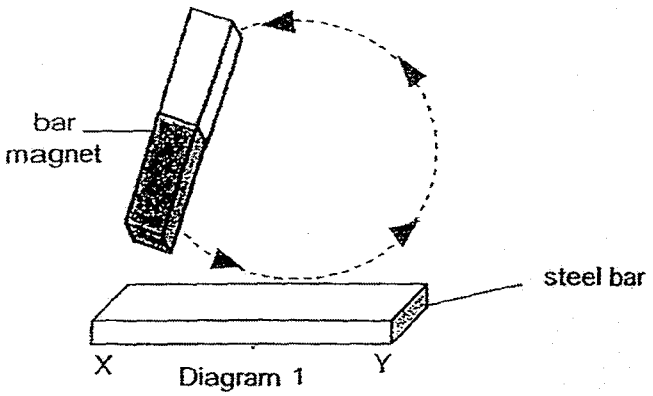


Diagram 1

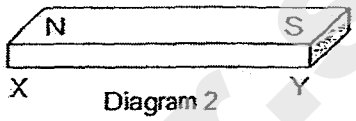


Diagram 2

Jack then brought a compass near the steel bar XY as shown in Diagram 3 below.

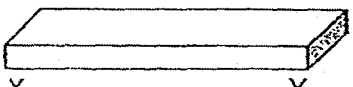
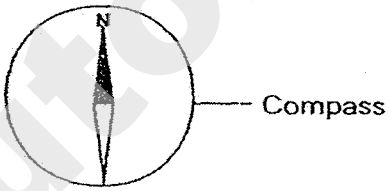
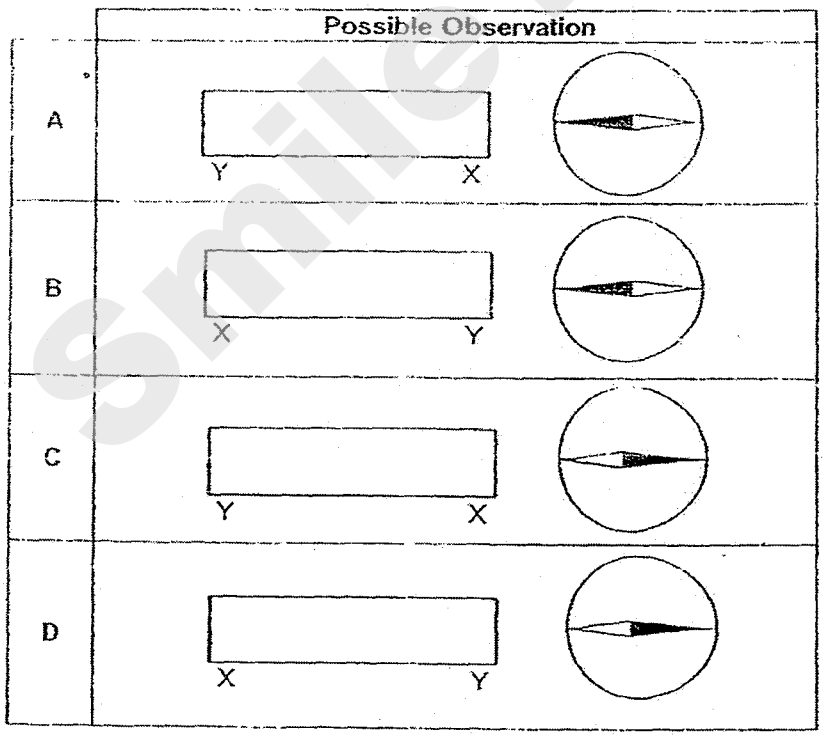


Diagram 3



Which of the following are possible observations?



(1) B only

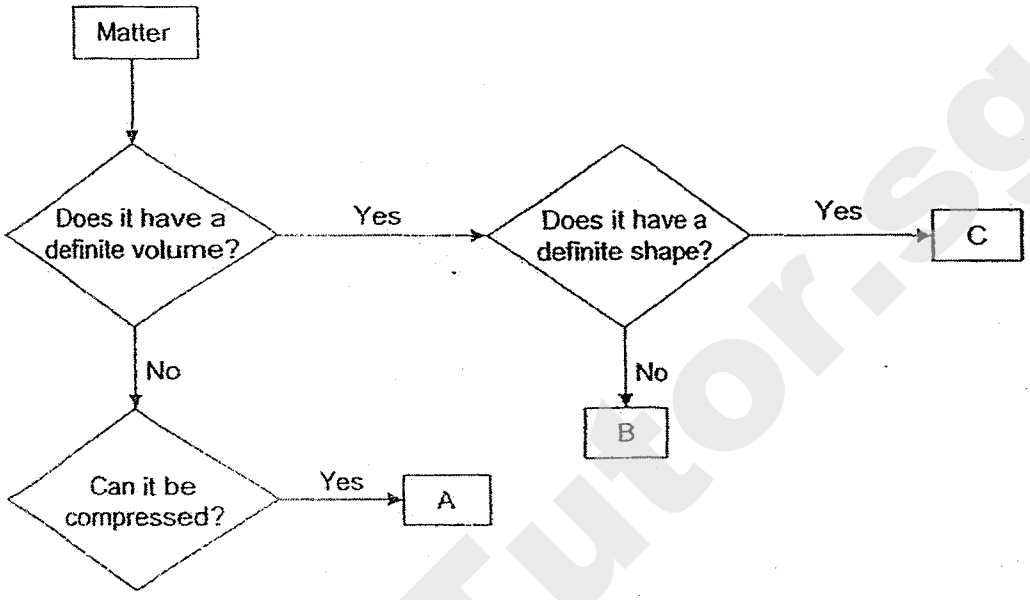
(2) B and C only

(3) C and D only

(4) A, B and D only

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5 The flowchart below shows how matter is classified.



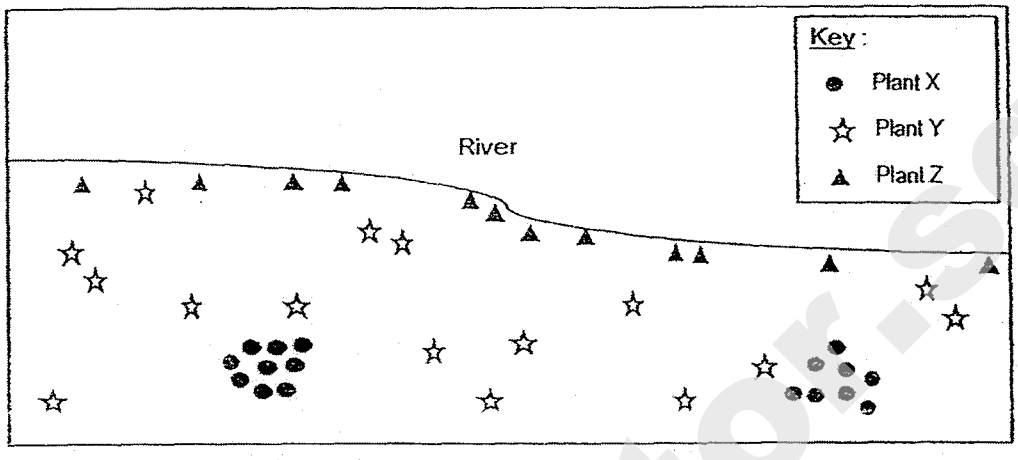
What can A, B and C most likely be?

	A	B	C
(1)	Gas	Solid	Liquid
(2)	Solid	Liquid	Gas
(3)	Liquid	Gas	Solid
(4)	Gas	Liquid	Solid

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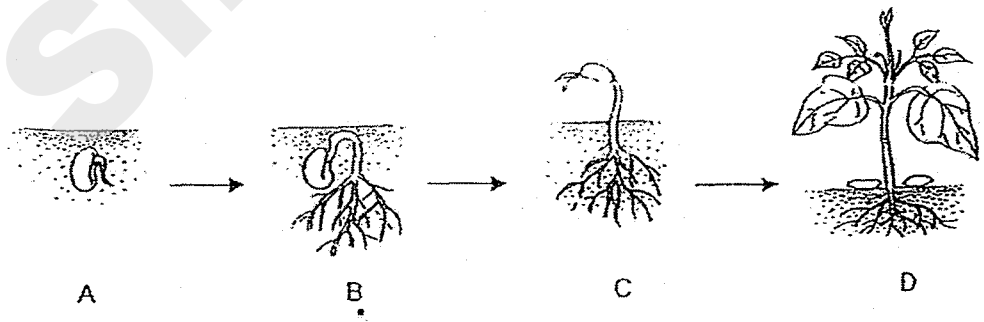
6 Sally was walking along the bank of a river and observed some plants growing in a particular pattern. She made a diagram of her observations as shown below.



Which of the following best represents the method of seed dispersal of the three plants, X, Y and Z?

	Plant X	Plant Y	Plant Z
(1)	Wind	Animal	Splitting
(2)	Splitting	Water	Animal
(3)	Water	Wind	Splitting
(4)	Splitting	Animal	Water

7 The diagram below shows the growth of a bean plant.

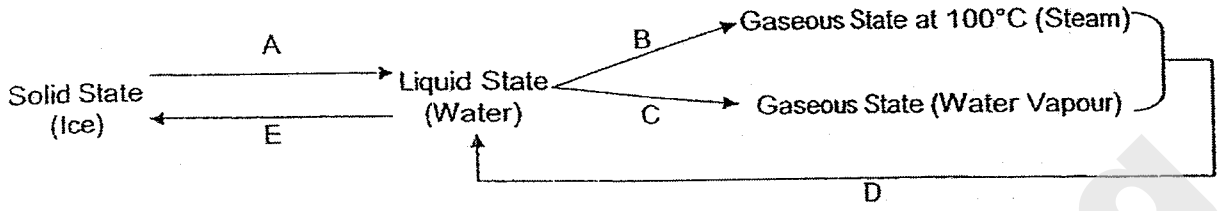


At which stage(s) is sunlight needed for the growth of the plant?

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

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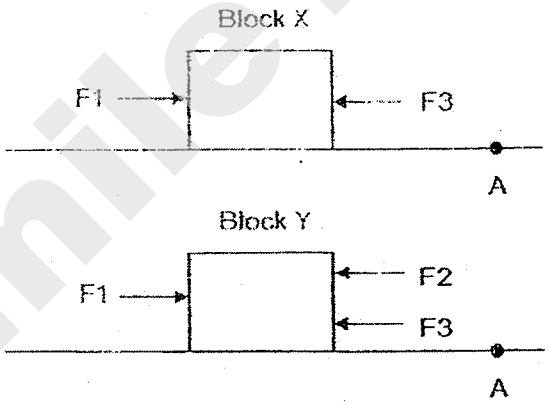
8 In the diagram below, A, B, C, D and E represent different processes that result in the changes in states of water.



Which of the following processes correctly represent A, B, C, D and E?

	A	B	C	D	E
(1)	Freezing	Evaporation	Boiling	Condensation	Melting
(2)	Melting	Boiling	Evaporation	Condensation	Freezing
(3)	Freezing	Evaporation	Condensation	Boiling	Melting
(4)	Melting	Boiling	Condensation	Evaporation	Freezing

9 The diagrams below show forces, F1, F2 and F3, exerted on two identical blocks, X and Y, at the same time on the same surface.



Which of the following shows the correct amount of forces for F1, F2 and F3 such that Block X will move to point A while Block Y remains stationary?

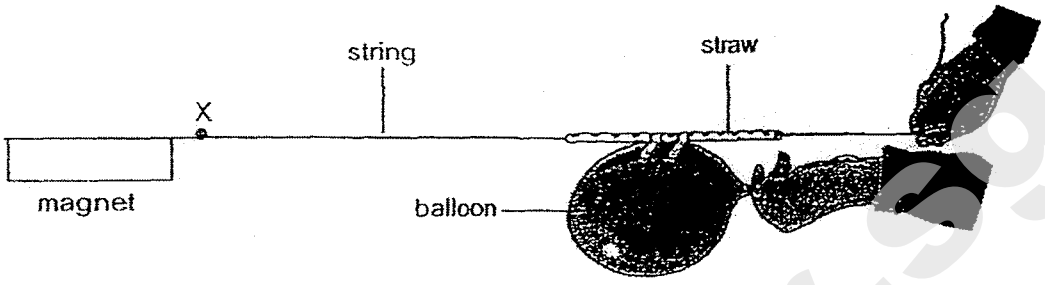
	F1 (units)	F2 (units)	F3 (units)
(1)	10	20	30
(2)	20	20	10
(3)	20	10	20
(4)	30	20	10

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10 Jacob taped an inflated balloon to a straw as shown below. When he released the balloon, air rushed out from the balloon and produced a force.



The balloon attached to the straw moved along the string towards point X as the force produced was greater than the _____ force acting on the straw.

A frictional

B magnetic

C elastic spring

(1) A only

(2) A and C only

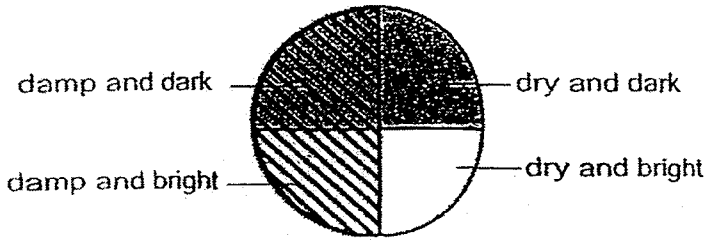
(3) B and C only

(4) A, B and C

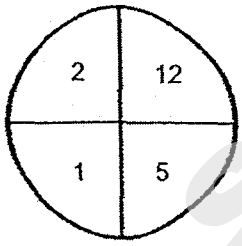
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11 Mike carried out an experiment to find out the preferred environment of organism H. 20 organisms H were placed in the middle of Dish X. After 10 minutes, the number of organism H in each section of Dish X was counted.

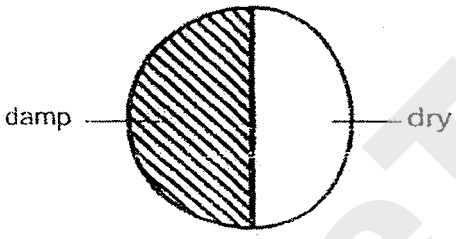


Dish X

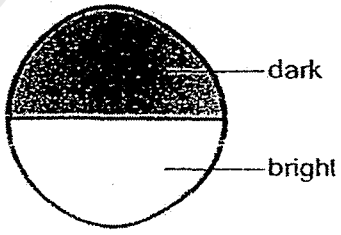


Number of organism H in each section after 10 minutes

He repeated the experiment with the same number of organism H placed in the middle of Dish Y and Dish Z.



Dish Y



Dish Z

Which of the following correctly shows the likely number of organism H in each section of Dish Y and Z?

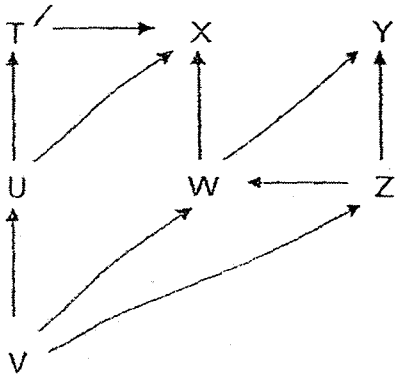
	Number of organism H in each section			
	Dish Y		Dish Z	
	damp	dry	dark	bright
(1)	10	10	8	12
(2)	4	16	16	4
(3)	12	8	17	3
(4)	9	11	10	10

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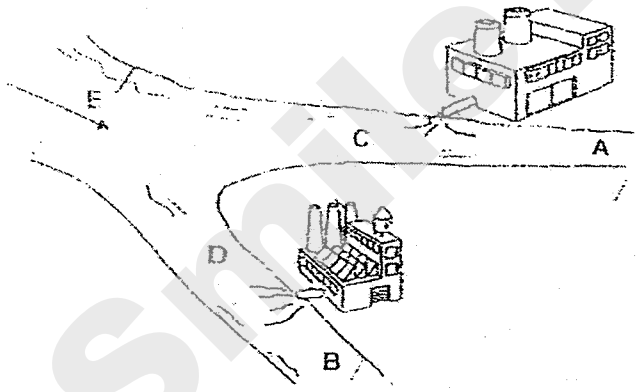
12 Study the food web below.



Which of the organisms are both prey and predator?

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

13 The government was concerned that polluted water was being washed into the rivers.



Key:
Direction of the flow of the river →

In order to pinpoint the sources of pollution, the government collected and tested water samples from different parts of the river. Which samples does the government have to test and compare?

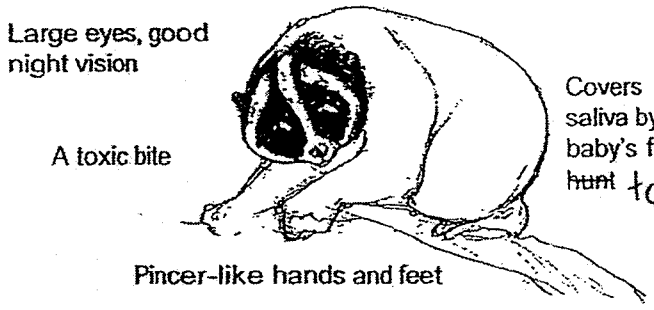
(1) A and B only
(2) C and D only
(3) A, B and E only
(4) C, D and E only

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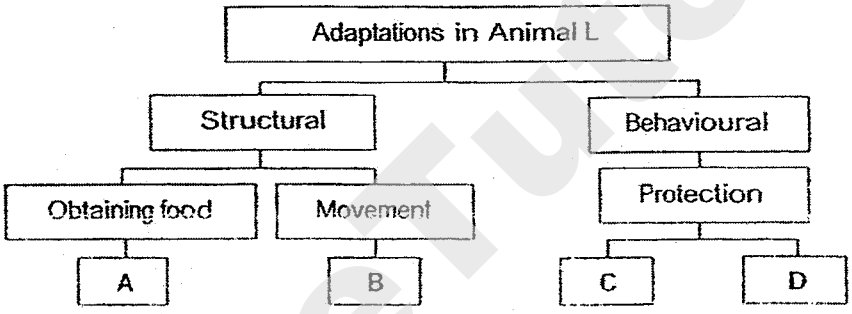
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14 The diagram below shows Animal L, a nocturnal mammal, and its special adaptations in order to survive in its natural environment. Animal L only feeds on plants.



The chart below shows how the adaptations stated above could be classified.



Which one of the following correctly matches A, B, C and D in the flowchart of Animal L?

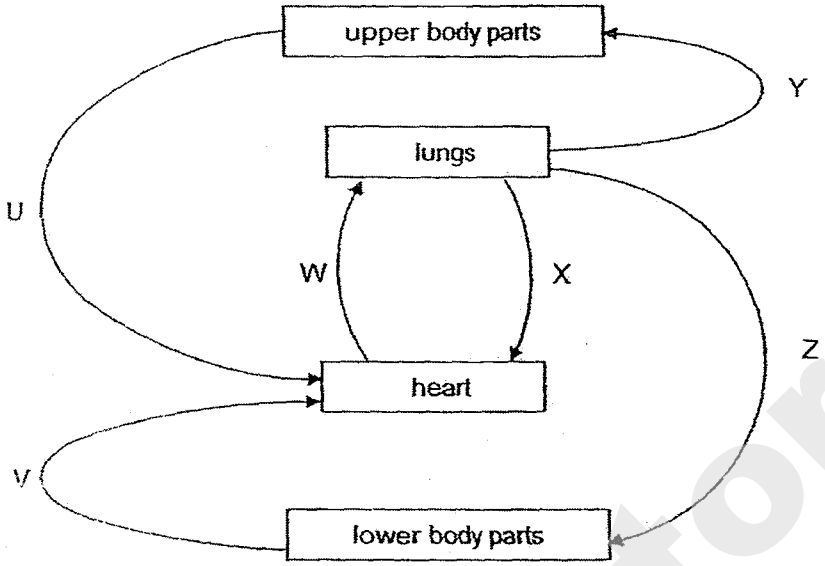
	A	B	C	D
(1)	Pincer-like hands and feet	Covers her baby in poisonous saliva	Large eyes, good night vision	A toxic bite
(2)	Pincer-like hands and feet	Large eyes, good night vision	A toxic bite	Covers her baby in poisonous saliva
(3)	A toxic bite	Pincer-like hands and feet	Covers her baby in poisonous saliva	Large eyes, good night vision
(4)	Pincer-like hands and feet	A toxic bite	Large eyes, good night vision	Covers her baby in poisonous saliva

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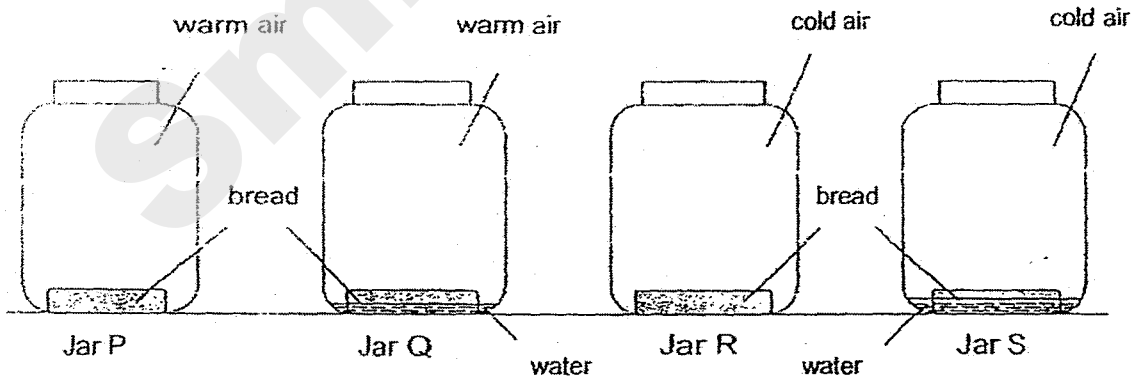
15 The diagram below shows the direction of blood flow in the human body.



Which two arrows in the diagram above are **not** correct?

(1) U and V
(2) U and Z
(3) W and X
(4) Y and Z

16 Ali placed four identical pieces of bread in four jars which were exposed to different conditions as shown in the diagram below. All four jars were sealed tightly.



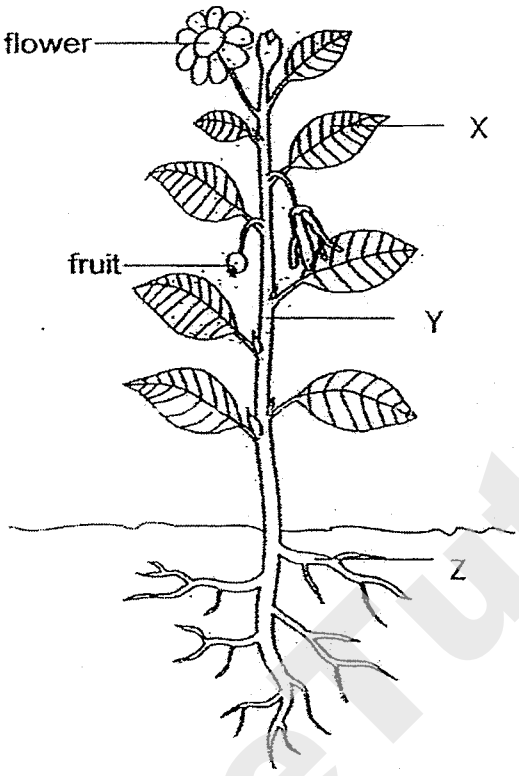
After five days, he observed each of the bread in the jars. Which jar would most likely contain bread which had turned mouldy first?

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

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17 The diagram below shows a flowering plant.



What are the functions of the parts labelled X, Y and Z?

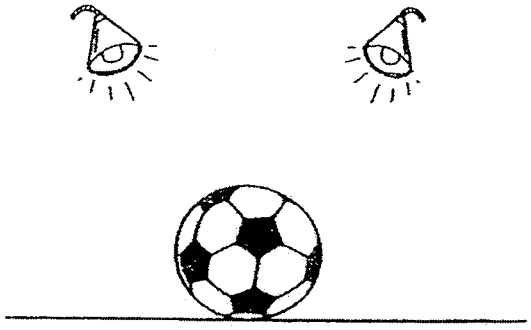
	Part X	Part Y	Part Z
(1)	To make food for the plant	To take in sunlight for the plant	To transport food to the leaf
(2)	To grow into a new plant	To grow into a fruit	To absorb sunlight for the plant
(3)	To make food for the plant	To hold the plant upright	To absorb water for the plant
(4)	To absorb water for the plant	To store seeds for the plant	To grow into a flower

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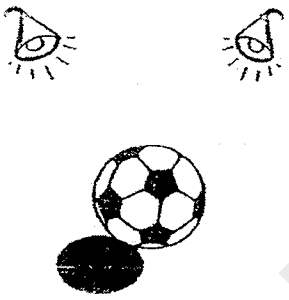
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18 A soccer ball was placed under two lamps as shown below.



Which one of the following pictures below correctly shows the shadow(s) cast by the soccer ball?

(1)



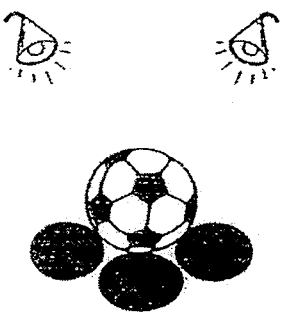
(2)



(3)



(4)

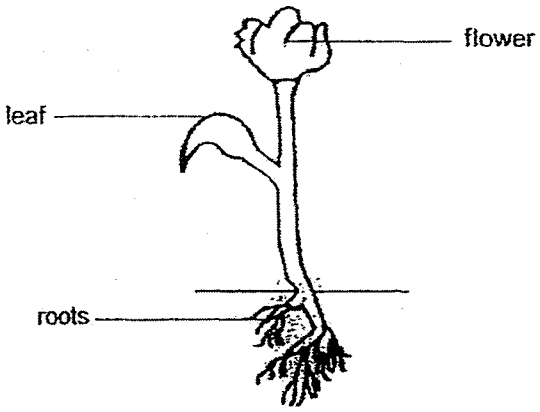


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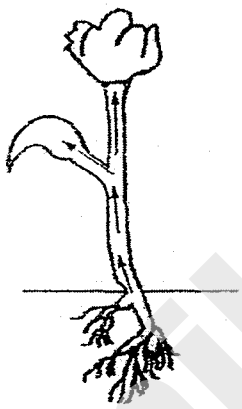
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19 Study the diagram below.

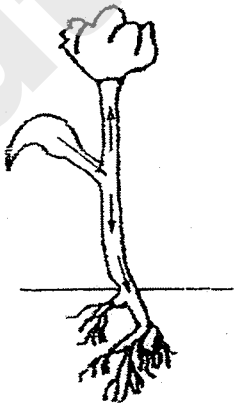


Which diagram shows the correct movement of food in a plant with flower?

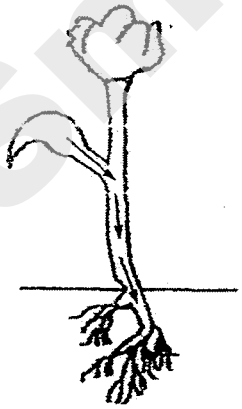
(1)



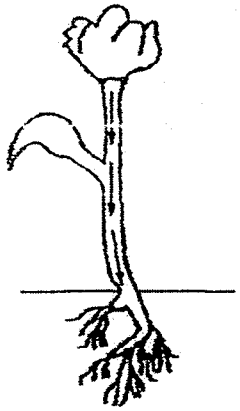
(2)



(3)



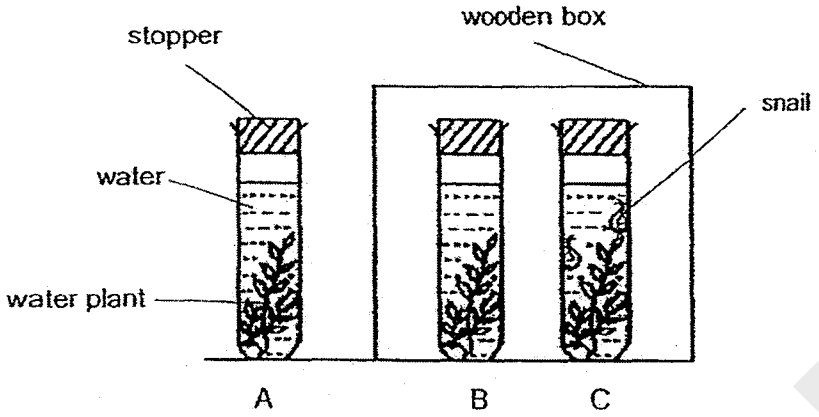
(4)



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20 Kumar conducted an experiment using the following set-ups. They were placed next to an open window during the day for a few hours.



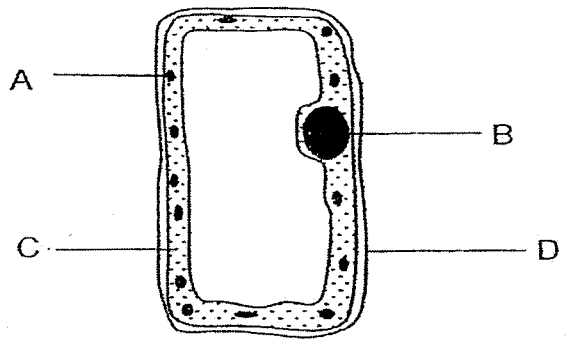
What would be the likely change in the amount of carbon dioxide at the end of the experiment?

	Amount of carbon dioxide in set-up		
	A	B	C
(1)	increase	increase	no change
(2)	decrease	increase	no change
(3)	increase	decrease	decrease
(4)	decrease	increase	increase

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21 The diagram below shows a plant cell.



Four pupils made the following statements about the plant cell.

Alex: Part A traps light to make food.

Bala: Part B controls all activities of the cell.

Chloe: Part C controls the movement of substances in and out of the cell.

Danny: Part D protects the cells by preventing harmful substances from entering.

Which pupils were correct?

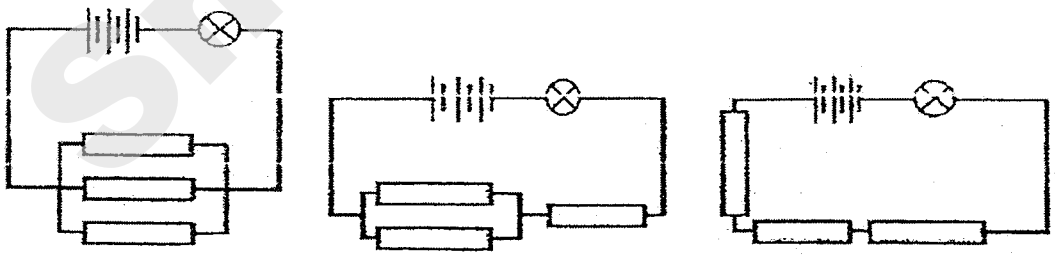
(1) Alex and Bala only

(2) Alex and Chloe only

(3) Bala, Chloe and Danny only

(4) Alex, Chloe and Danny only

22 The circuits below have an iron rod, a wooden rod and a plastic rod as components of each circuit.



circuit A circuit B circuit C

The bulbs and the batteries in the three electric circuits are identical and in working conditions. In which of the above circuits would the bulb light up?

(1) A only

(2) C only

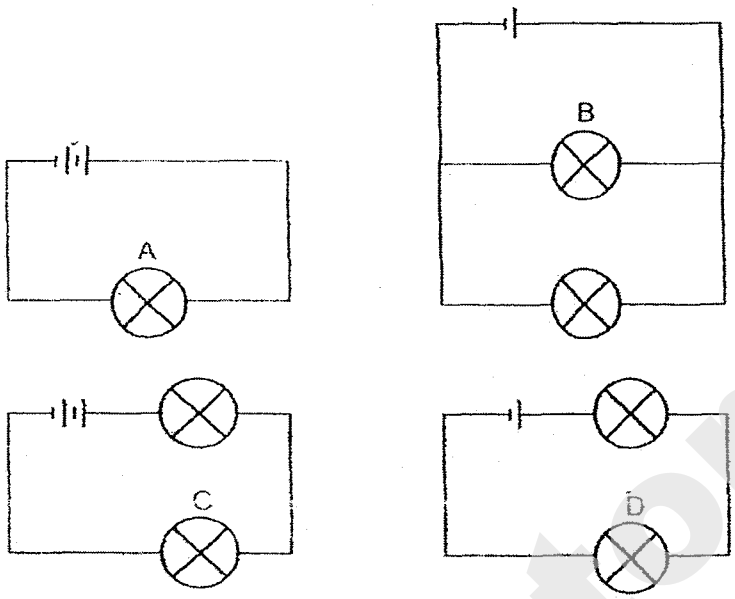
(3) A and B only

(4) None of the above circuits

(Go on to the next page)

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



Which of the following two bulbs have the same brightness?

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

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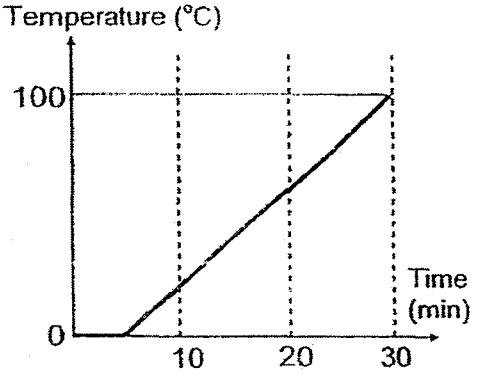
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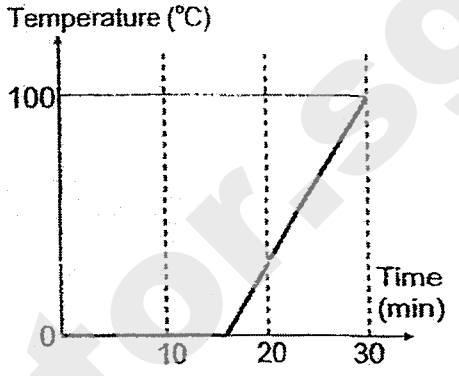
24 Audrey filled up half a beaker with ice and heated it until all the ice had melted. She noticed that it took all the ice 10 minutes to completely melt. She then heated the water until it started boiling. She noted that it took another 20 minutes for the water to start boiling.

Which one of the following graphs best shows the change in temperature in the beaker that Audrey observed?

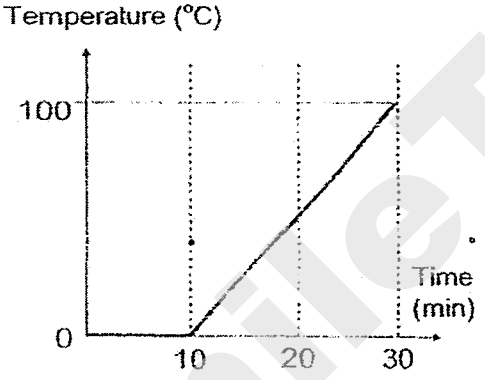
(1)



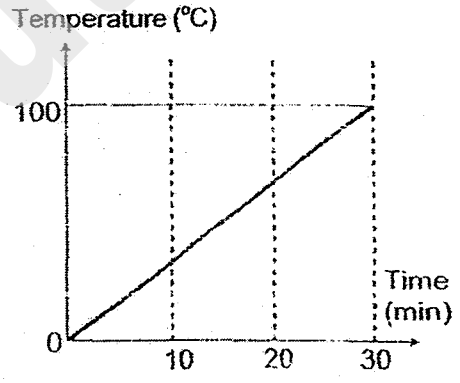
(2)



(3)



(4)

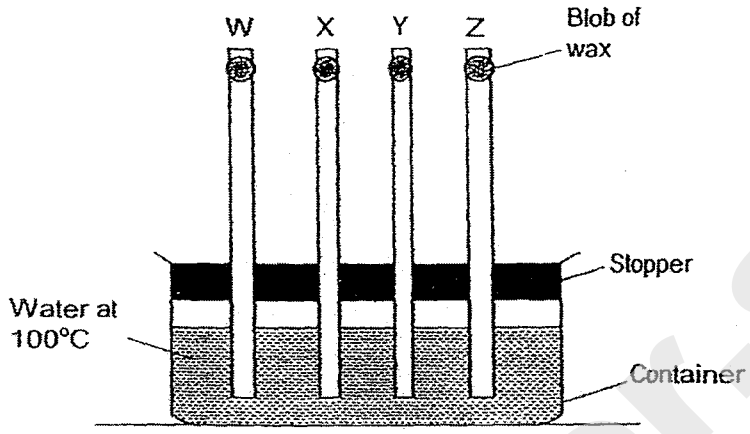


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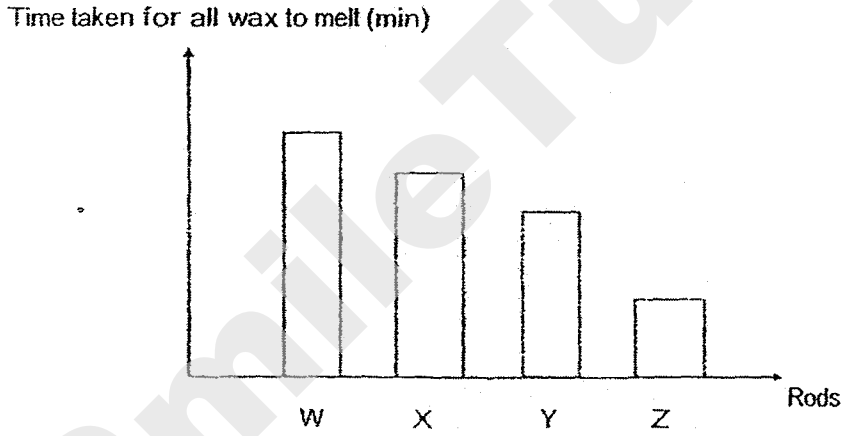
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25 Eddie set up an experiment as shown below.



All the rods were of the same size, but made of different materials. He placed the same amount of wax on the tip of each rod and poured in boiling water into the container as shown above. He started to measure and record the time taken for all the wax on rods, W, X, Y and Z to melt. He plotted his results in a graph below.



Which one of the rods is made of a material that is the most suitable for making boxes to store ice-cream so that the ice-cream will take the longest time to melt?

(1) Rod W

(2) Rod X

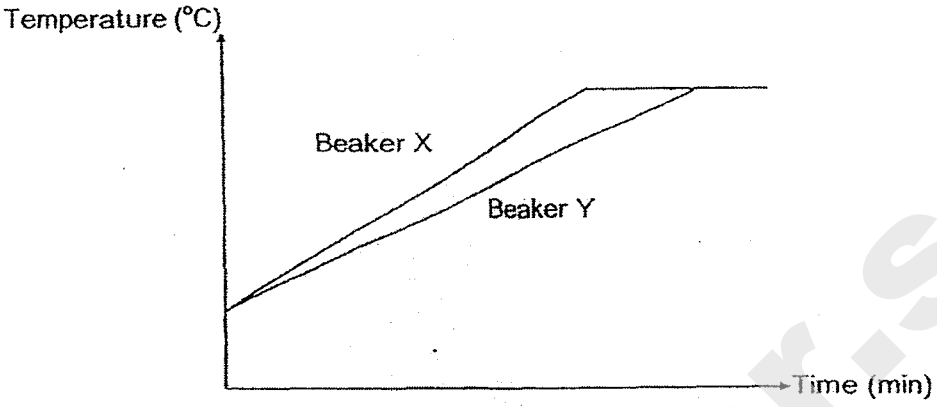
(3) Rod Y

(4) Rod Z

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26 Boon Hui heated 200 ml of water in two beakers, X and Y, until the water boiled. The graph below shows the changes in the temperature of the water in both beakers.



Which of the following statements is/are possible reason(s) to explain the results shown above?

A Beaker X is a better heat conductor than beaker Y.

B Beaker Y has a larger contact surface area with the heat source.

C Boon Hui used a stronger heat source to heat up the water in beaker X.

(1) A only

(2) B only

(3) A and C only

(4) B and C only

27 Which of the following best represents the source of energy, its application and the main type of energy produced?

	Source of energy	Used for/in	Main type of energy produced
A	Sun	Photosynthesis	Chemical potential
B	Coal	Power stations	Gravitational potential
C	Battery	A radio	Sound
D	Food	A person swimming	Kinetic

(1) A and D only

(2) B and C only

(3) A, B and D only

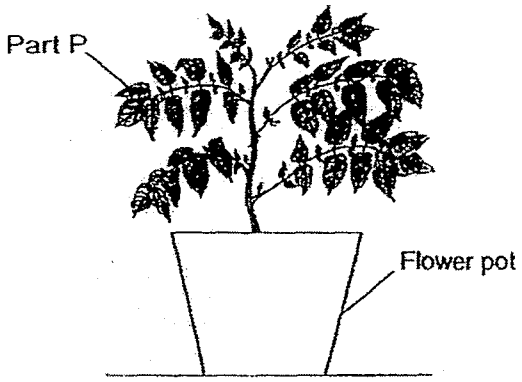
(4) A, C and D only

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28 Betty had some plants of the same type as shown below. She wanted to find out how the number of part P will affect the mass of the plant over a period of time.



Which of the following variables should Betty keep the same so that her investigation is a fair one?

A Number of Part P

B Amount of water given

C Amount of sunlight available

D Amount of nutrients available

(1) A and C only

(2) B and D only

(3) B, C and D only

(4) A, B, C and D

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PRELIMINARY EXAMINATION 2017
PRIMARY SIX
SCIENCE
BOOKLET B

Name: _____ ( ) Class: Primary 6 __

Date: 25 August 2017 Duration of paper: 1 h 45 min

_____
Parent's/Guardian's Signature

INSTRUCTIONS TO CANDIDATES

1. Write your name, register number and class.
2. Do not turn this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.
6. This question paper consists of 15 printed pages including this cover page.

BOOKLET	POSSIBLE MARKS	MARKS OBTAINED
A	56	
B	44	
Total	100	

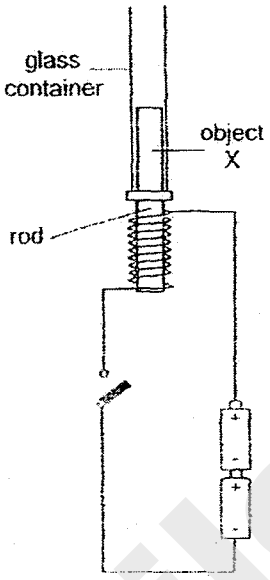
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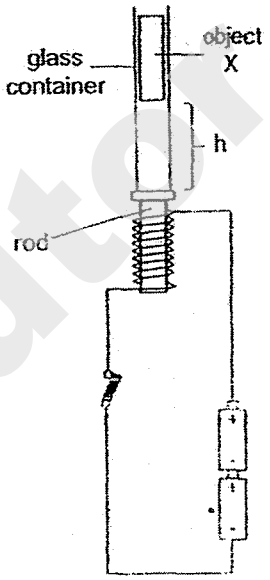
PART II

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

(44 marks)

29 Tessa set up an experiment as shown below. When she closed the switch of the electric circuit, she observed that object X rose up and was suspended at a height of h cm from the bottom of the glass container.





(a) From the results of her experiment, what could Tessa infer about object X? [1]

(b) Explain clearly how object X could suspend from a height of h cm from the bottom of the glass container when Tessa closed the switch of the electric circuit. [2]

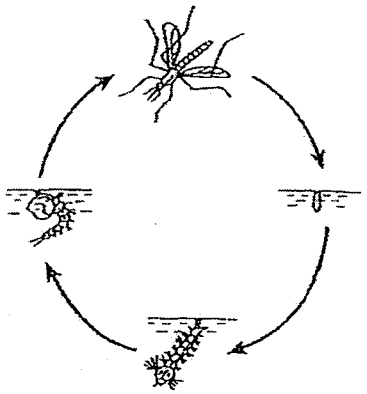
(c) Without changing object X, suggest two changes that Tessa can make to the set-up of her experiment to increase the value of h when she closes the switch of the electric circuit. [2]

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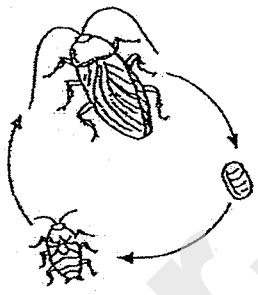
SCORE /

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30 The diagrams below show the life cycles of two organisms P and Q.



P



Q

(a) State one similarity and one difference based on what you can observe about the life cycles of organisms P and Q as shown above. [2]

Similarity :

_____

_____

Difference :

_____

_____

(b) At which stage in organism P's life cycle can it potentially spread diseases and be harmful to humans? Suggest a way to prevent organism P from reproducing in your home and explain clearly how your suggestion works. [1]

_____

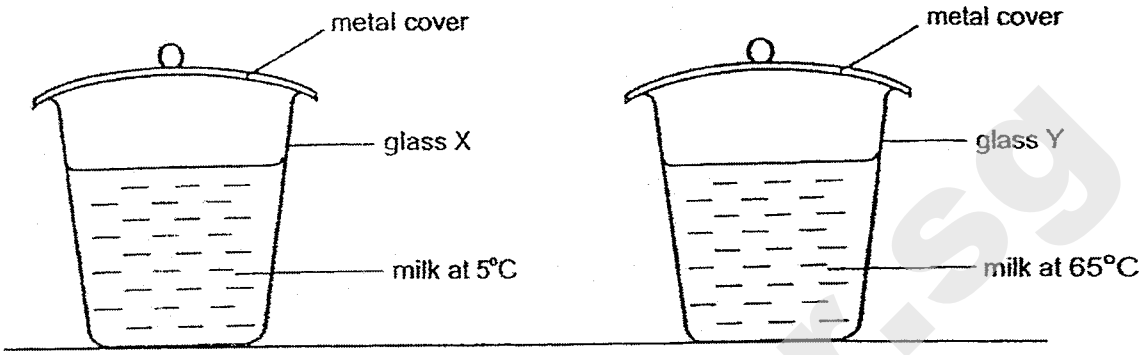
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31 Calvin conducted an experiment to find out where tiny water droplets form on the two identical glasses of milk at two different temperatures as shown in the diagram below. He placed the two glasses of milk on the table in a room at 30°C for 10 minutes.



(a) Predict specifically where the water droplets would form on the two glasses/set-ups after 10 minutes. [2]

Glass X :

_____

Glass Y :

_____

(b) Explain how the water droplets are formed in Glass Y. [2]

_____

_____

_____

(c) Will there be more, less or the same amount of tiny water droplets formed if the metal cover for glass Y is replaced with a plastic cover? Explain your answer. [1]

_____

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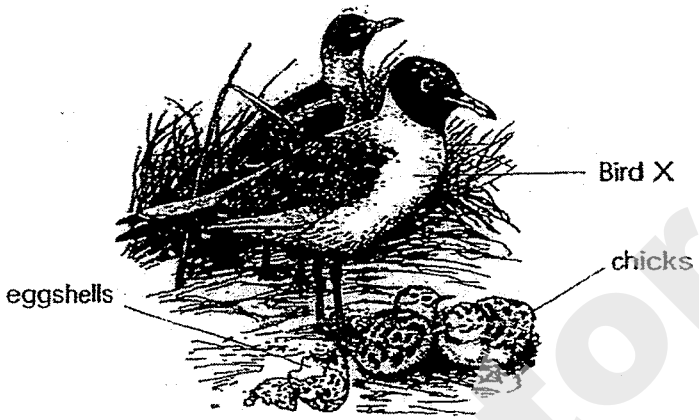
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32 Bird X lives along the seashore. It builds nests of brown twigs on the ground. It lays eggs that are light brown and covered with darker brown spots. However, the inner side of the eggshell is white.

It picks up the eggshells shortly after a chick has hatched and flies to carry the shells to a location far from the nest.



(a) Explain why Bird X removes the eggshells from the nest. [2]

(b) In the winter, Bird X migrates to warmer areas and makes its home near wetlands, coasts, and rivers. Other than to avoid the low temperature, give a reason for the migration. [1]

(Go on to the next page)

SCORE 3

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33 The diagram below shows the cutting down of trees.



(a) The cutting down of trees on a large scale is known as deforestation. Explain how fully submerged plants in the nearby rivers will be affected when it rains heavily. [2]

(b) Explain how cutting down of trees can lead to an increase in the Earth's temperature. [1]

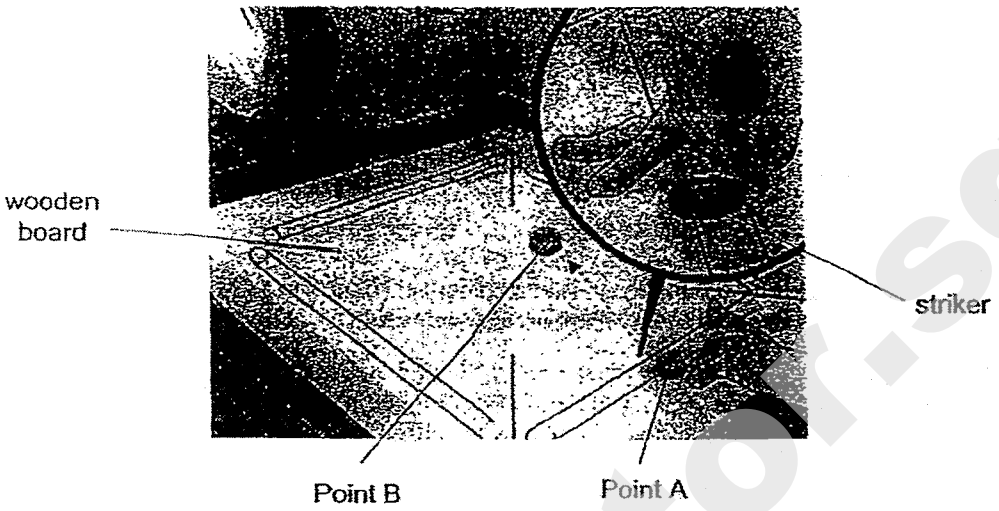
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SCORE

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34 Andre uses his finger to flick the striker from point A to point B.



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

(b) Without moving or changing the surface of the wooden board, what can Andre do to the board if he wants the striker to move further than point B using the same amount of force to push the striker? Explain your answer. [2]

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35 Sarah used two identical cups as shown in the diagram below, one made of metal and the other made of styrofoam to conduct an experiment.



metal cup styrofoam cup

(a) She placed both cups in an air-conditioned room for an hour. Which cup felt colder when she touched them? Explain your answer. [2]

Sarah conducted another experiment in an open field using the two cups. She placed two identical ice-cubes, A and B, into each cup. The table below shows the volume of water in the two cups at the start and at the end of the experiment 10 minutes later.

	Volume of water with ice-cube A (cm^3)	Volume of water with ice-cube B (cm^3)
Start of the experiment	0	0
10 minutes later	40	15

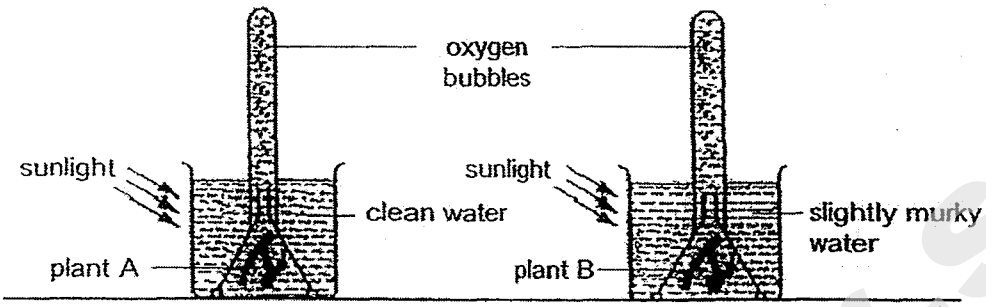
(b) Which of the ice-cubes, A or B, was placed in the metal cup? Explain your answer. [1]

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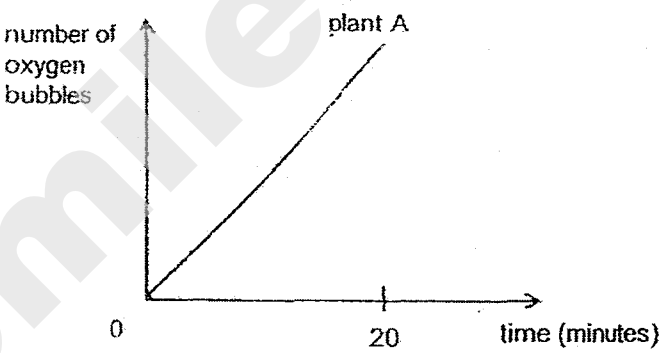
36 Two similar water plants, A and B, were placed in identical beakers with the same volume of water and under direct sunlight. Plant A was placed in clean water while plant B was placed in slightly murky water.



The number of oxygen bubbles given out by both plants over a period of 20 minutes was then counted.

(a) Based on the given information, what was the aim of the experiment? [1]

(b) The line graph below shows the results for plant A. Using a ruler and pencil, draw another straight line in the graph below to show the results for plant B and label the line as "plant B". [1]



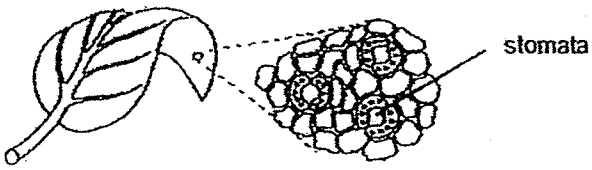
(c) Based on the results of the experiment, explain why farmers would not want to rear fishes in slightly murky water even though there are plants in the water. [2]

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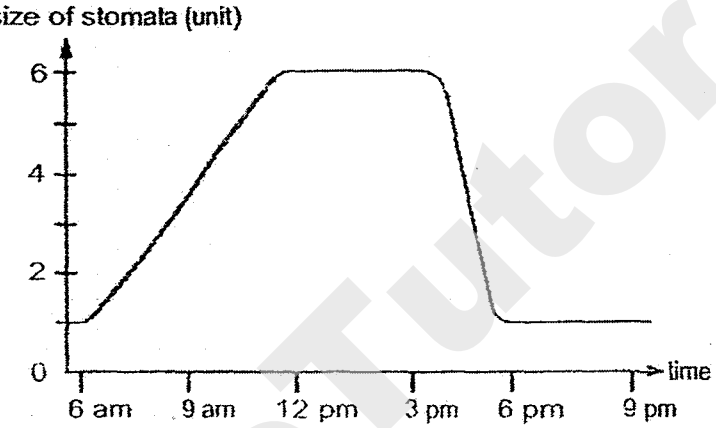
SCORE 4

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37 Leaves have tiny openings called stomata on their surfaces.



Ramada measured the changes in the size of the stomata of a plant in the garden at different time of the day. It was a clear sunny day when he did his observations. He plotted his results as shown below.



(a) Based on the results in the graph, how do we know that the stomata were not completely closed at anytime? [1]

(b) Why was the size of stomata the smallest between 6 pm to 9 pm? [1]

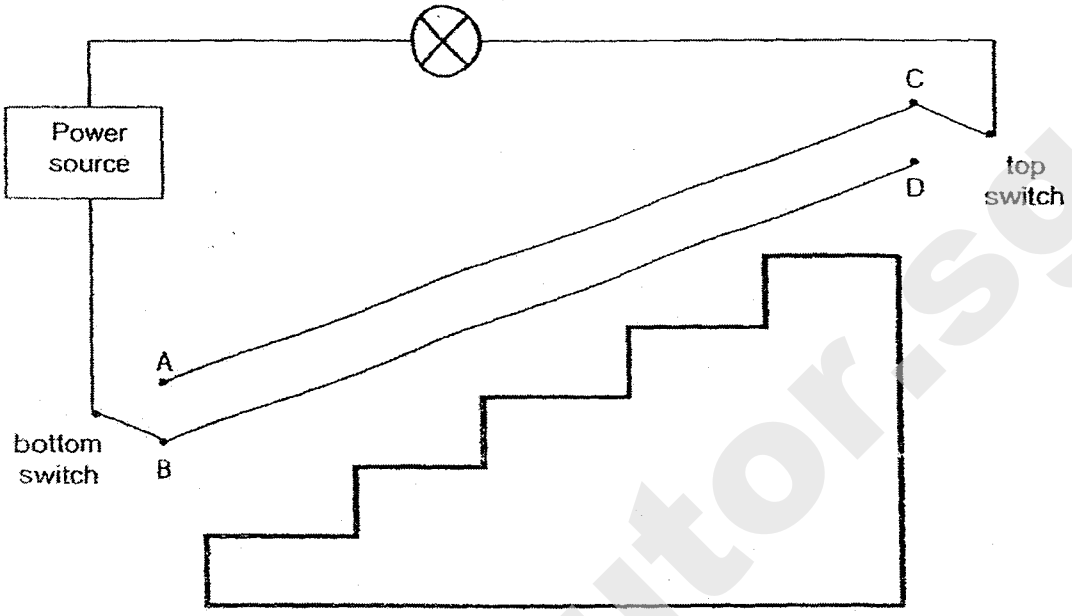
(c) What is the disadvantage to the plant when it opens its stomata to the widest when the surrounding temperature is the hottest? [1]

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SCORE

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38 The diagram below shows a two-way switch installed at the staircase. The bulb can be switched on or off from either ends of the staircase.



At the moment, the bulb is switched off. The bottom switch is connected to point B, while the top switch is connected to point C.

(a) David is at the bottom of the staircase. What can he do to switch on the bulb at the bottom of the staircase? [1]

(b) David walked up the staircase after he had switched on the bulb at the bottom of the staircase. What can David do to switch off the bulb at the top of the staircase? [1]

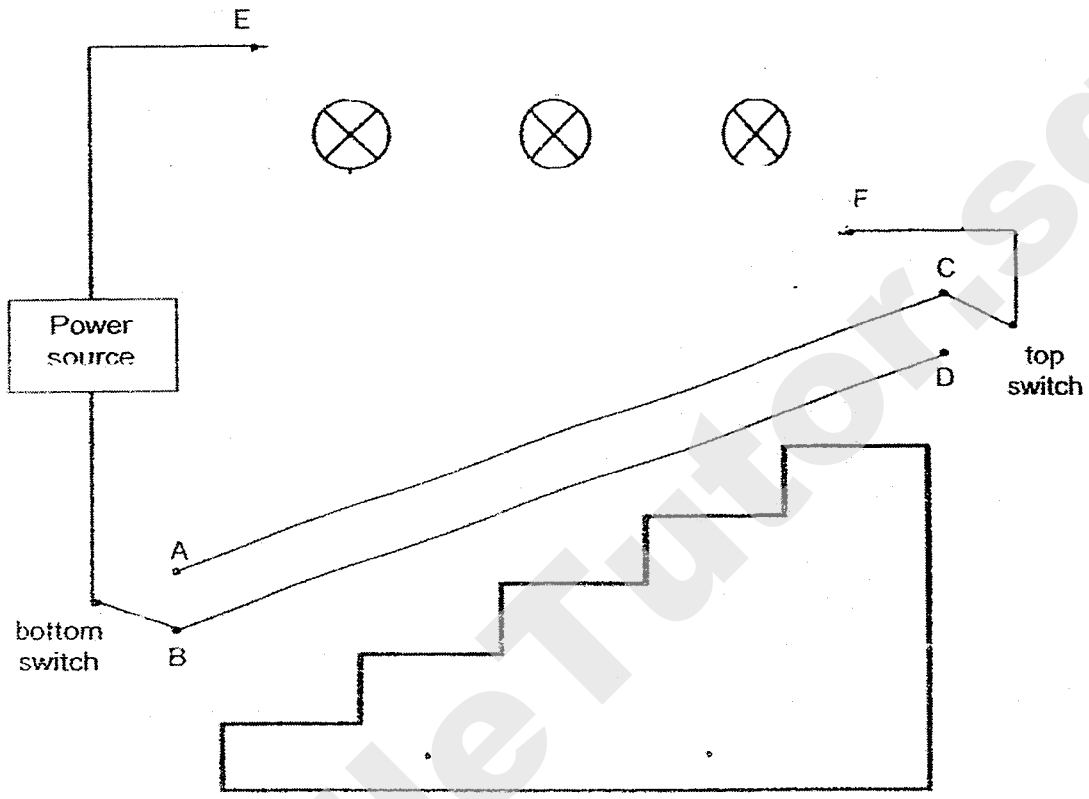
(Question 38 continues on page 12)

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SCORE	
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(c) David wanted to install three bulbs for the stairway while maintaining the same brightness as before for each bulb. In the diagram below, draw the wires between points E and F to show the connections between the three bulbs. [1]



(d) Other then having the same brightness as before, what is the advantage of having the bulbs connected in the way you have drawn in **(c)**? [1]

_____

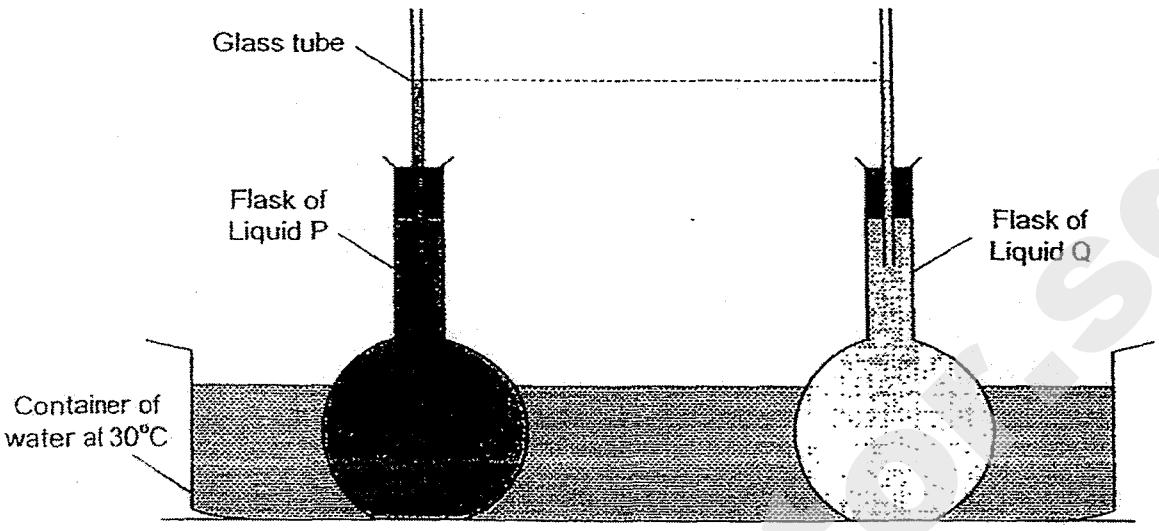
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SCORE	/ 2

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39 Winston set up the experiment as shown below.



Winston ensured that when both flasks were immersed in the container of water at 30°C, the level of liquids P and Q in the glass tube were the same.

(a) If liquid P is a better conductor of heat than liquid Q, state and compare what will happen to the level of liquids in both flasks when Winston adds ice cubes into the container of water [1]

(b) Explain your answer in (a).

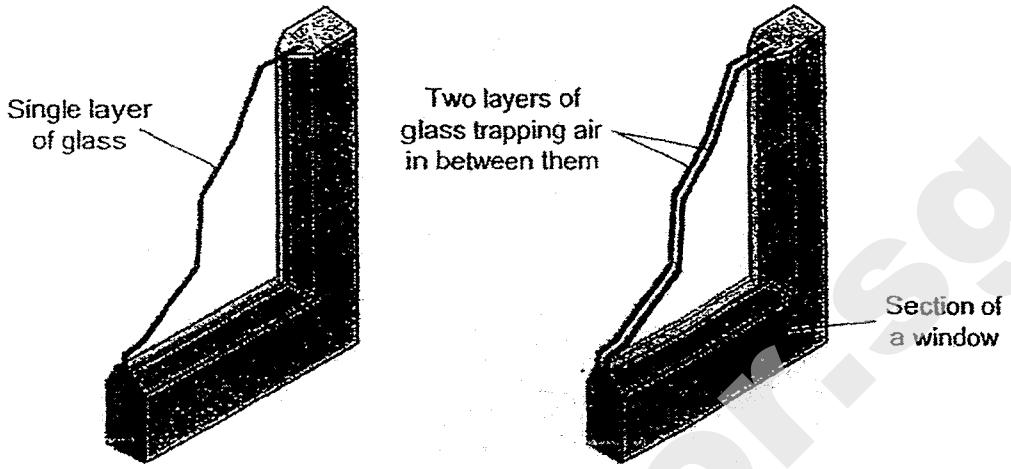
(Question 39 continues on page 14)

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Winston discovered that houses in cold countries usually have windows that have two layers of glass, trapping air in between them, as shown in the diagram below.



(c) Explain how this helps to keep temperature inside the room higher than outside for a longer period of time, as compared to windows with only a single layer of glass. [2]

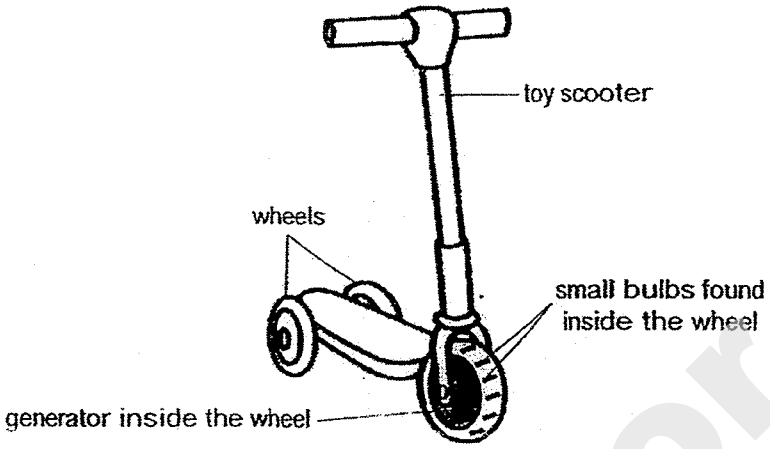
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SCORE

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40 The diagram below shows Caleb's toy scooter.



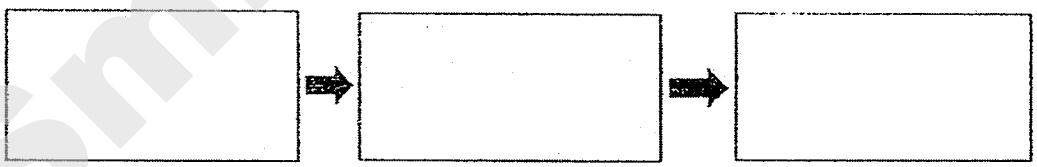
When Caleb steps on the scooter and pushes himself forward, the scooter will move and the small bulbs inside the wheels of the scooter will light up.

(a) What property should the material used to make the wheels have so that Caleb can see the lights when the wheel is turning? [1]

_____

_____

(b) Fill in the boxes below to show the energy conversion in the wheel when it started moving. [1]



(c) Caleb noticed that the bulbs in the wheel do not always light up. Explain why. [1]

_____

_____

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ANSWER KEY

YEAR : 2017
LEVEL : PRIMARY 6
SCHOOL : : ANGLO-CHINESE
SUBJECT : : SCIENCE
TERM : PRELIMINARY EXAMINATION

Booklet A

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

Booklet B

Q29 (a) Object X is a magnet.

(b) When the switch was closed, electricity flowed through the circuit causing the iron rod to be magnetised. The poles of the electromagnet and Object X facing each other were the same, and therefore Object X was repelled.

(c) Add more batteries or add more coils.

Q30 (a) Similarity: Both life cycles have an egg stage.

Difference: Organism P has a 4-stage life cycle while Q has a 3-stage life cycle.

(b) Pour away stagnant water in vases / flower pots so that P have no suitable place to lay their eggs.

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Q31 (a) Glass X:
The outer surface of the glass.

Glass Y:
Inner surface of the metal lid.

(b) The water vapour in the air in glass Y gained heat from the milk and came into contact with the cooler glass and cover where it lost heat and condensed into water droplets.

(c) Plastic is a poorer conductor of heat than metal. So less water vapour will condense into tiny water drops.

Q32 (a) The camouflage against the brown twigs. So removing the shell will decrease the chances of predators spotting the chicks and eating them.

(b) So that it can find food.

Q33 (a) When the trees are cut down, there will be less roots to hold the topsoil in place. When it rains heavily, the soil will be washed into the rivers and block out most of the light for fully submerged plants to photosynthesise and make food. Without food these plants will die.

(b) There will be fewer trees to take in carbon dioxide during photosynthesis, so there will be more carbon dioxide in the atmosphere to trap more heat.

Q34 (a) Gravitational force, frictional force.

(b) Add a lubricant on the board. This reduces friction between the surface of the board & the surface of the striker, allowing it to move further.

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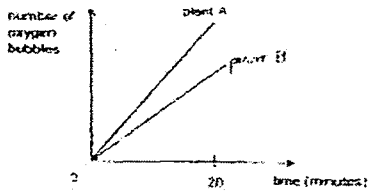
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Q35 (a) **The metal cup. Metal is a better conductor of heat and it loses heat to the surroundings faster than styrofoam.**

(b) **Ice-cube A. There is more water in the cup as the metal cup gained heat faster from the surroundings to the ice cube which caused the ice cube to melt faster.**

Q36 (a) **To find out if the type / cleanliness of water affects the rate of photosynthesis in a water plant.**

(b)



(c) **The water plants will not be able to receive sufficient sunlight for photosynthesis and will not produce enough oxygen for the fishes to breathe.**

Q37 (a) **The average size of stomata is never at 0 units. / The smallest average size of stomata is 1 unit.**

(b) **There is no light / less light / least light for photosynthesis.**

(c) **It will allow more / too much water vapour to escape. The plant will lose more / too much water.**

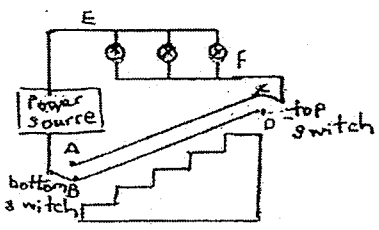
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Q38 (a) David can connect the bottom switch to point A.

(b) David could connect the top switch to point D.

(c)



(d) If one bulb fuses, the others will still light up.

Q39 (a) The level of liquids in P and Q will decrease but the level of liquid in P will be lower than Q.

(b) When ice is added, liquid P will lose heat faster than liquid Q and contracts more than liquid Q.

(c) Air is a poor conductor of heat and will reduce the amount of heat lost from the room to the colder environment / air outside.

Q40 (a) It is transparent and allows light to pass through.

(b)

Kinetic energy	→	Electrical energy	→	Light energy
wheel		generator		bulb

(c) The wheel is not turning fast enough, so the generator does not have enough kinetic energy to be converted to electrical energy.

End

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CATHOLIC HIGH SCHOOL

PRELIMINARY EXAMINATION (2017)

PRIMARY SIX

SCIECCE

BOOKLET A

Name: _____ ( )

Class: Primary 6 - _____

28 questions

56 marks

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

INSTRUCTIONS TO CANDIDATES

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

This booklet consists of 19 printed pages, excluding the cover page.

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Booklet A (28 × 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 your answer on the Optical Answer Sheet. (56 marks)

1 Four pupils recorded their observations of an animal they saw at the Singapore Zoo.

Ali	Its body is covered with hair.
Betty	It reproduces by laying eggs.
Chen Bin	Its young resembles the adult.
Danny	It moves by swimming and hopping.



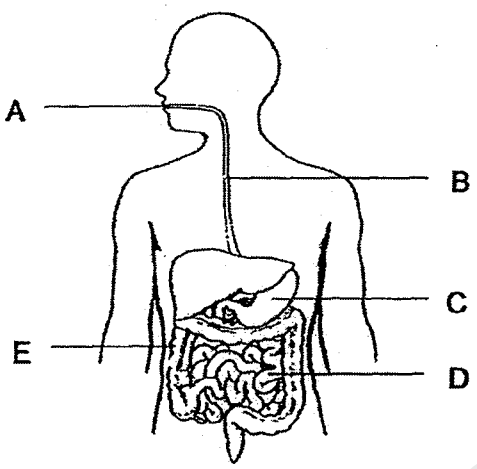
Who gave the correct observations about the animal shown?

(1) Ali and Danny only
(2) Ali and Chen Bin only
(3) Ali, Chen Bin and Danny only
(4) Betty, Chen Bin and Danny only

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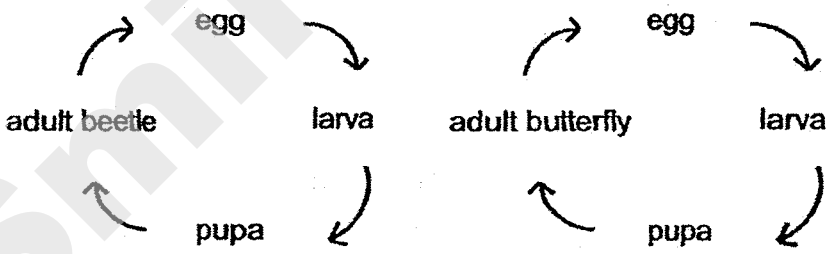
2 The diagram below shows parts of a human digestive system.



In which parts, A, B, C, D and E, are digestive juices found?

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

3 The diagrams below show the life cycles of 2 animals.



Which of the following statements about the life cycles of the animals are correct?

A Both give birth to young alive.
B Both their young do not resemble the adult.
C The young will only become insects at the adult stage.
D The pupa does not eat before reaching the adult stage.

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

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4 Susan conducted an experiment to find out whether the presence of oxygen would affect the growth of seeds. She placed a few seeds in each of the four containers.

The table below shows the amount of water that Susan used to water the plants each day. It also shows which containers received oxygen and sunlight.

Container	Amount of water (ml)	Oxygen	Sunlight
A	5	Yes	No
B	10	No	Yes
C	5	No	Yes
D	10	Yes	Yes

Which two containers should she use if she wants to find out whether the presence of oxygen would affect the growth of seeds?

(1) A and B only

(2) A and C only

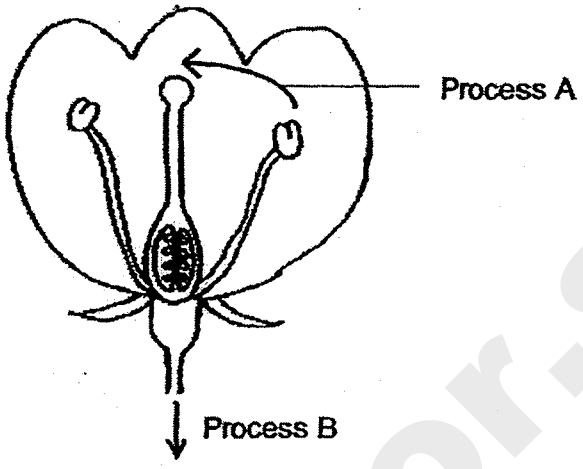
(3) B and C only

(4) B and D only

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5 Study the diagram below.



- The ovary develops into part X.
- The ovule develops into part Y.

Which of the following could processes A and B and parts X and Y be?

	A	B	X	Y
(1)	fertilisation	germination	fruit	seed
(2)	fertilisation	seed dispersal	seed	fruit
(3)	pollination	seed dispersal	seed	fruit
(4)	pollination	fertilisation	fruit	seed

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6 John wanted to find out if the colour of the petals has an effect on the number of pollinators attracted to the flower. He had the following flowers.

Flower	Colour of petals	Characteristics
A	pink	anther within the flower
B	white	anther within the flower
C	yellow	small petals
D	white	sweet scent
E	purple	no scent
F	white	small petals

Which of the flowers should John use to conduct his investigation?

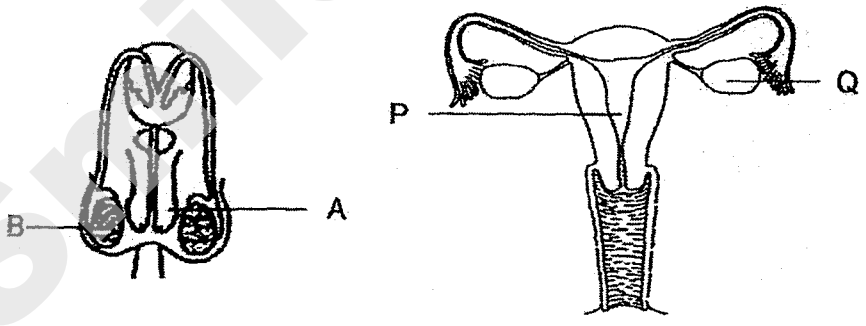
(1) A and B only

(2) D and E only

(3) B, D and F only

(4) C, E and F only

7 The diagram below shows the male and female reproductive systems.



In which parts of the reproductive systems are the reproductive cells produced?

(1) A and P only

(2) A and Q only

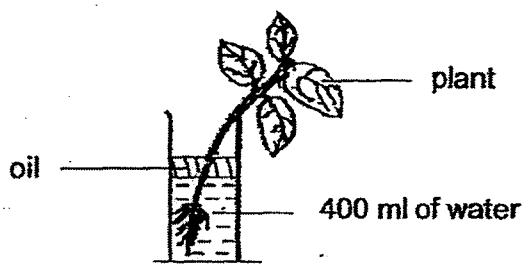
(3) B and P only

(4) B and Q only

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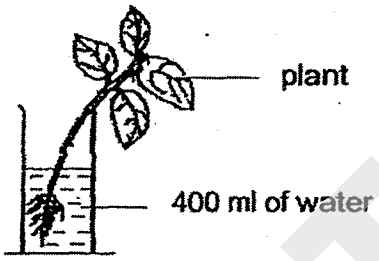
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8 Some pupils were asked to find out if a plant takes in water through its roots. The following set-up was left in an open area for a few days.

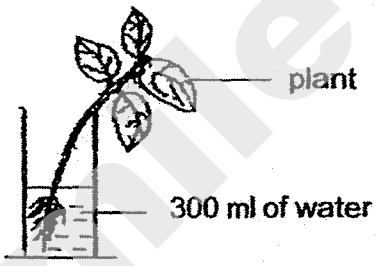


Which of the following should the pupils use as the control set-up for the experiment?

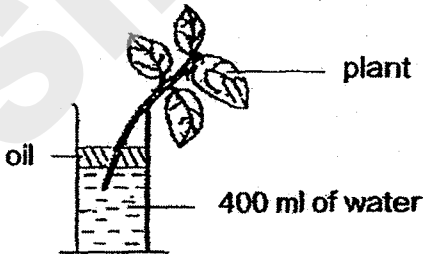
(1)



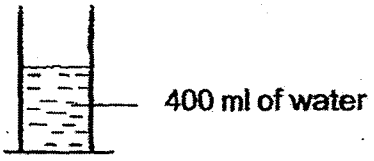
(2)



(3)



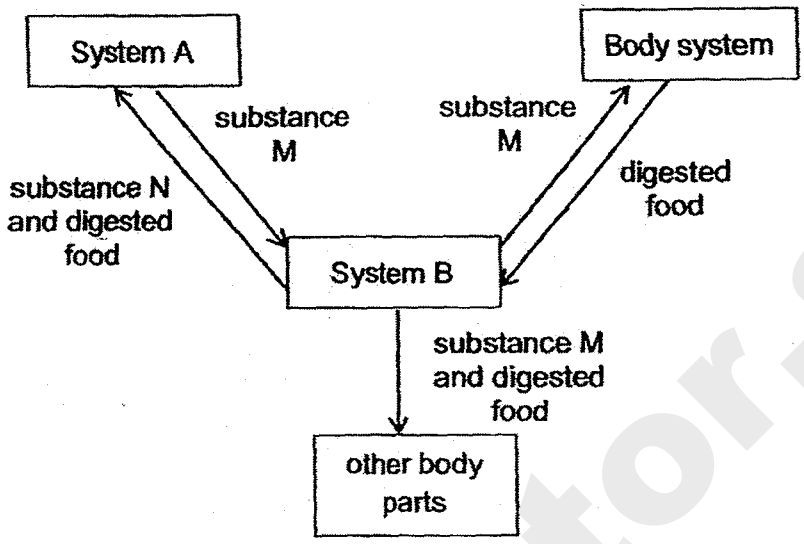
(4)



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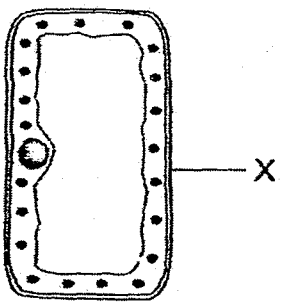
9 The diagram below shows how some substances are transported in the human body.



Which one of the following correctly identifies substances M and N, and Systems A and B?

	Substance M	Substance N	System A	System B
(1)	Carbon dioxide	Oxygen	Circulatory	Respiratory
(2)	Carbon dioxide	Oxygen	Respiratory	Digestive
(3)	Oxygen	Carbon dioxide	Digestive	Circulatory
(4)	Oxygen	Carbon dioxide	Respiratory	Circulatory

10 The diagram below shows a plant cell.



Which one of the following statements is correct about X?

(1) It enables the cell to keep its shape.

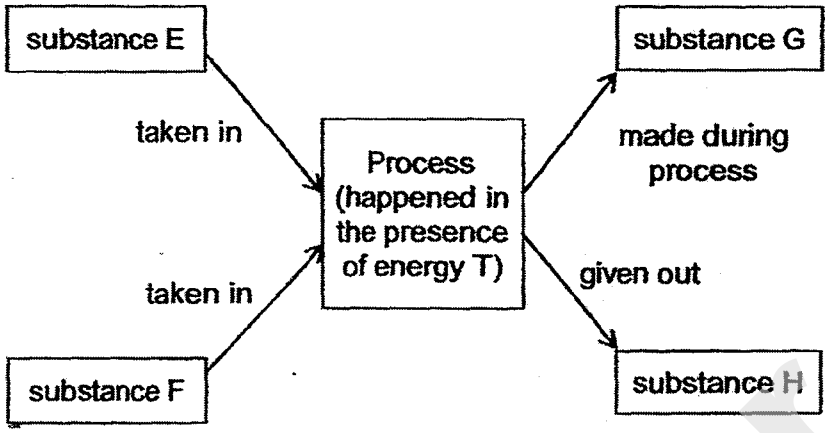
(2) It prevents substances from leaving the cell.

(3) It prevents substances from entering the cell.

(4) It helps trap light energy from the sun for the plant to make food.

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11 The diagram below shows a certain process that takes place in green plants.



Which one of the following correctly identifies substances E, F, G and H?

	Substance				Energy T
	E	F	G	H	
(1)	Food	Water	Oxygen	Carbon dioxide	Light
(2)	Oxygen	Food	Carbon dioxide	Water	Heat
(3)	Carbon dioxide	Water	Food	Oxygen	Light
(4)	Carbon dioxide	Food	Oxygen	Water	Heat

12 The following relationships were observed among four living things J, K, L and M.

J feeds on L.
M feeds on J.
L gets its food from K.
M feeds on L but does not feed on K.

Which one of the following identifies J, K, L and M correctly?

	Food producer	Prey	Prey and predator	Predator
(1)	K	M	J	L
(2)	M	J	L	K
(3)	K	L	J	M
(4)	M	K	L	J

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13 The statements below are about the adaptations of some animals.

A Wolf hunts in groups.
B Grizzly bear eats a lot before hibernation.
C Polar bear has thick fur coat to keep warm.
D Fish uses gills to help them breathe in water.

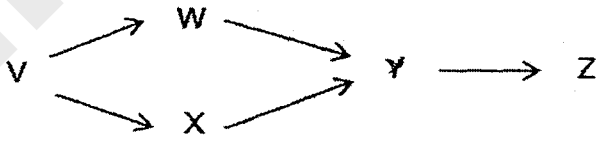
Which of the following shows how the above adaptations can be classified?

	Behavioural adaptation	Structural adaptation
(1)	A, B	C, D
(2)	A, B, D	C
(3)	C	A, B, D
(4)	A, D	B, C

14 The statements below describe a field habitat and a tree habitat. Which one of them is not correct?

(1) Air in the field habitat and tree habitat moves freely.
(2) The field habitat is exposed to light while the tree habitat is shady.
(3) Both the field and tree habitats get periods of brightness and darkness.
(4) The tree habitat experiences greater temperature changes than the field habitat.

15 The food web shows the relationships between organisms V, W, X, Y and Z in a pond.



The whole population of Y died out due to water pollution.

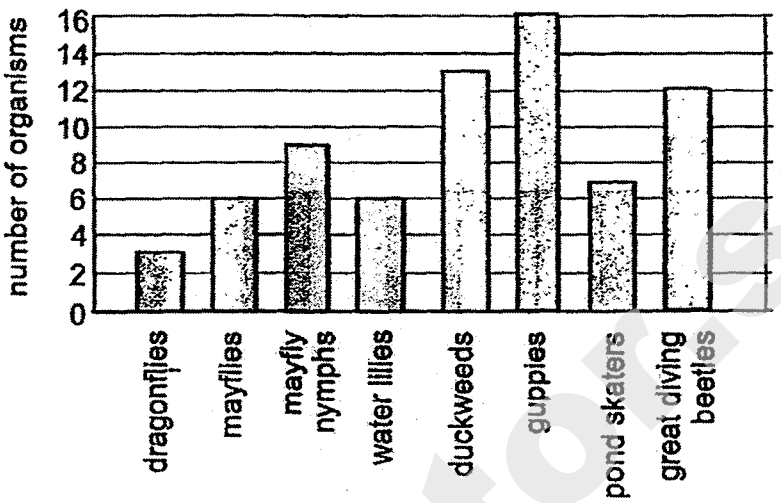
Which one of the following correctly shows what would first happen to the populations of the other organisms after all of Y died?

	Organism	What would first happen to the population?
(1)	V	Increase
(2)	W	Increase
(3)	X	Decrease
(4)	Z	Increase

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16 Wei Yi plotted the number of different organisms he saw in a school pond in the bar graph below.



Which of the following statements is/are correct?

A There are 5 insect populations.

B There are less number of plants than animals.

C There are 15 organisms in the mayfly population.

D There are 7 communities living in the school pond.

(1) A only

(2) B and C only

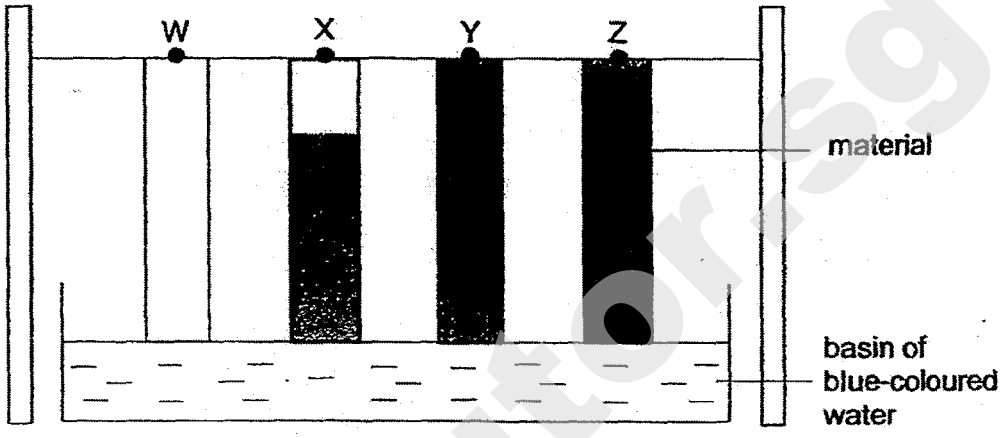
(3) A, B and C only

(4) B, C and D only

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17 Christine conducted an experiment to compare the absorbency of different types of materials. She placed 4 strips of materials, W, X, Y and Z, of identical size, into a basin of blue-coloured water for 10 minutes. Christine recorded her observations as shown in the diagram below.



Based on the information above, which of the following shows the most suitable material to make a raincoat, a towel and a cup?

	Raincoat	Towel	Cup
(1)	Z	W	Y
(2)	W	X	Z
(3)	Y	X	Z
(4)	W	Z	W

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18 Joe placed object A securely onto the plastic board and measured the length of the spring as shown in diagram X.

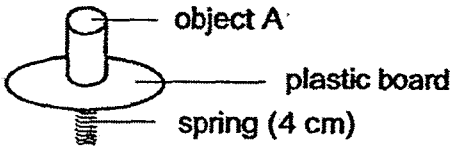


Diagram X

He wanted to find out if objects, A, B and C, would interact with the magnet hanging from the retort stand. He hung a magnet above object A and measured the length of the spring as shown in diagram Y. He repeated the experiment with objects B and C. Objects A, B and C are of the same mass.

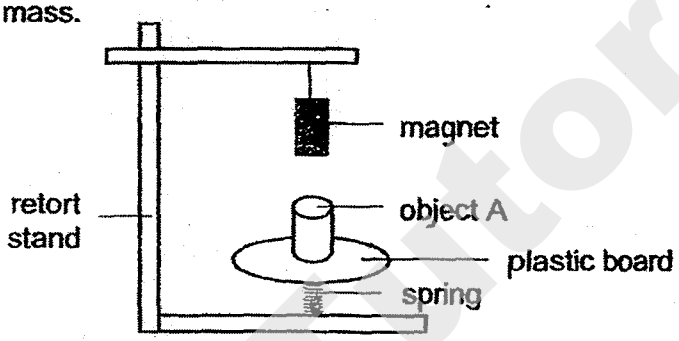


Diagram Y

The results of the experiments were recorded as below.

Object	Length of spring (cm)
A	3
B	4
C	6

Based on the results above, what could objects A, B and C be?

	Object A	Object B	Object C
(1)	magnet	copper bar	iron bar
(2)	magnet	iron bar	copper bar
(3)	iron bar	magnet	copper bar
(4)	iron bar	copper bar	magnet

19 A metal tank has a capacity of 1000 cm^3. Which one of the following can Jane use to fill the tank completely?

(1) 1200 cm^3 of oil

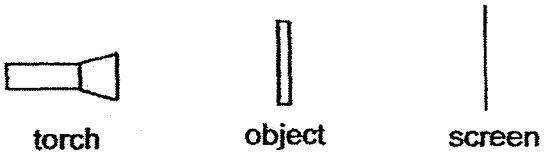
(2) 1200 cm^3 of water

(3) 1200 cm^3 of oxygen

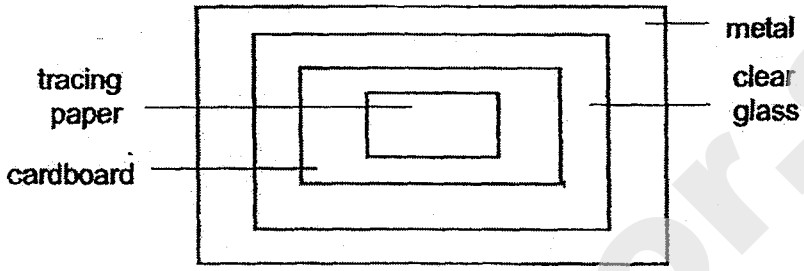
(4) 1200 cm^3 of rice grains

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20 In the diagram shown below, an object is placed between the torch and the screen.



The object is made up of different materials as shown in the diagram below.



Legend:



Which one of the following is most likely to be the shadow formed on the screen?

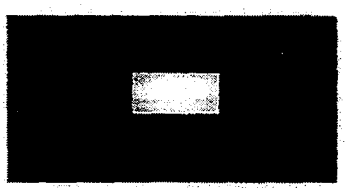
(1)



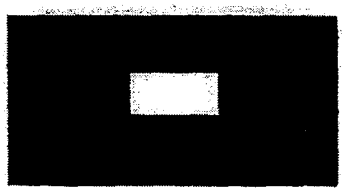
(2)



(3)



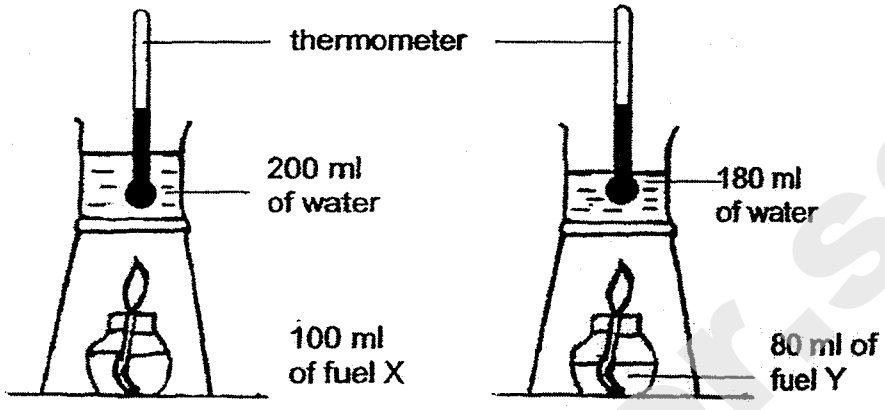
(4)



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21 Sophia conducted an experiment to find out which liquid fuel, X or Y, produces more heat when burnt. The diagram below shows the set-ups for her experiment.



Sophia said that it was not a fair test. Which variables should Sophia keep the same to make it a fair test?

A Volume of fuel

B Volume of water

C Type of liquid fuel

D Initial temperature of the water

(1) A and D only

(2) B and C only

(3) A, B and C only

(4) A, B and D only

22 The table below shows the melting and boiling points of substances P, Q and R.

Substance	Melting point (°C)	Boiling point (°C)
P	42	78
Q	28	63
R	54	90

At which of the following temperatures will the three substances be in the same state?

(1) 32°C

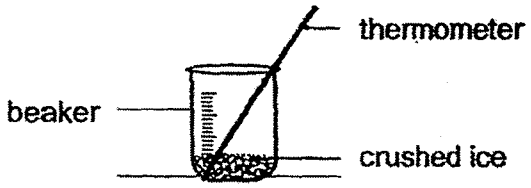
(2) 60°C

(3) 75°C

(4) 80°C

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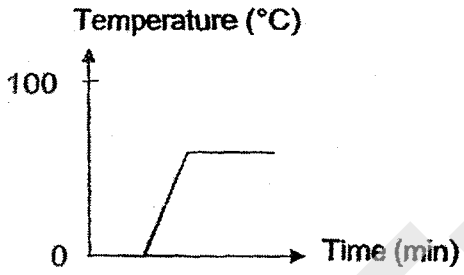
23 Dan placed a beaker of crushed ice with a thermometer on a table as shown in the diagram below.



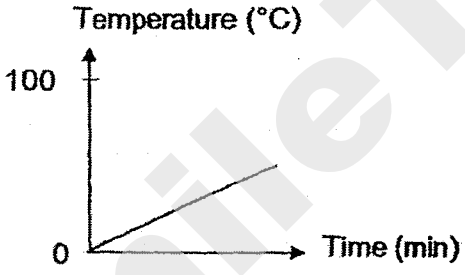
for 60 minutes

He left it to stand on the table. He observed the temperature of the crushed ice and recorded the readings in a graph. Which of the following graphs would he obtain?

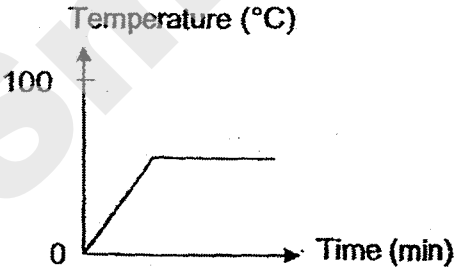
(1)



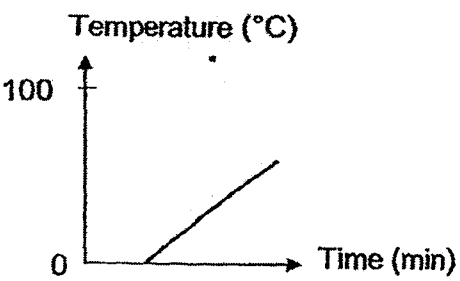
(2)



(3)



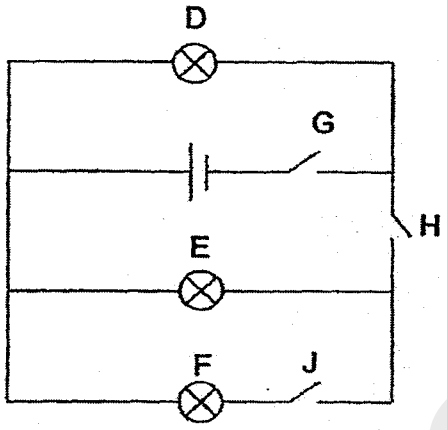
(4)



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24 Bulbs D, E and F and switches G, H and J are connected in a circuit as shown. All bulbs in the circuit are working properly.



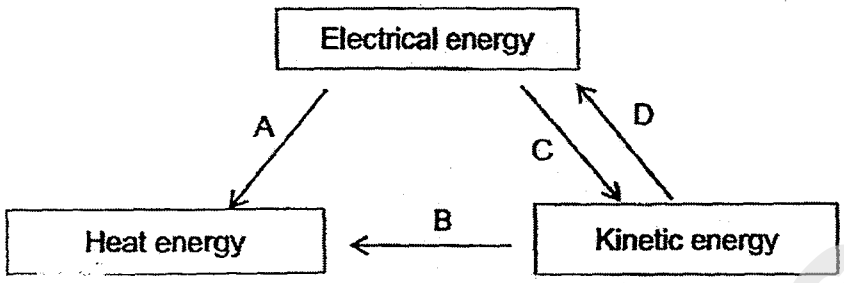
Which one of the following is correct?

	Does the bulb light up?			Switch		
	D	E	F	G	H	J
(1)	Yes	Yes	No	Closed	Closed	Open
(2)	No	Yes	No	Open	Closed	Open
(3)	Yes	No	Yes	Closed	Open	Closed
(4)	No	No	Yes	Open	Open	Closed

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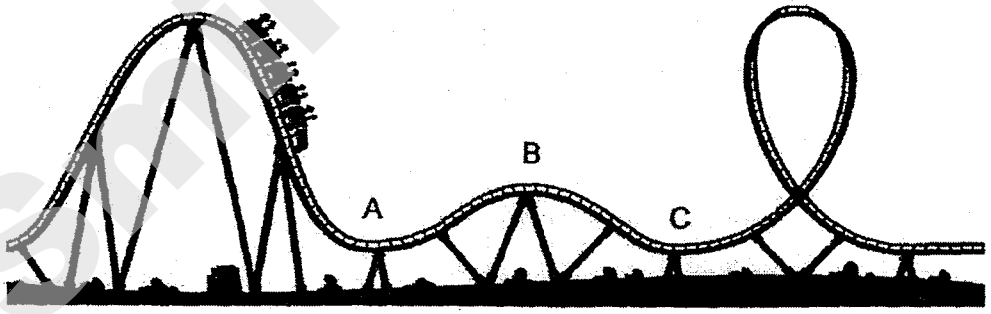
25 The diagram below shows how energy can be converted from one form to another form, through activities A, B, C and D.



Which of the following could activities A, B, C and D be?

	A	B	C	D
(1)	Rubbing of palms	Using an oven	Using a ceiling fan	Turning a turbine
(2)	Using an oven	Rubbing of palms	Using a ceiling fan	Turning a turbine
(3)	Turning a turbine	Using a ceiling fan	Rubbing of palms	Using an oven
(4)	Using an oven	Rubbing of palms	Turning a turbine	Using a ceiling fan

26 The picture shows a group of children taking a roller coaster ride.



Which one of the following shows the changes in the kinetic energy and gravitational potential energy as the roller coaster travelled from A to C?

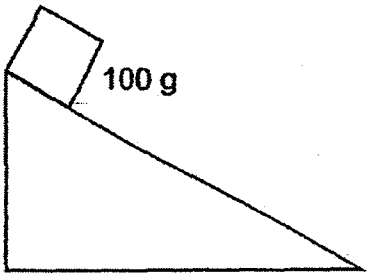
	Change in gravitational potential energy from A to B	Change in kinetic energy from B to C
(1)	Increase	Increase
(2)	Increase	Decrease
(3)	Decrease	Increase
(4)	Decrease	Decrease

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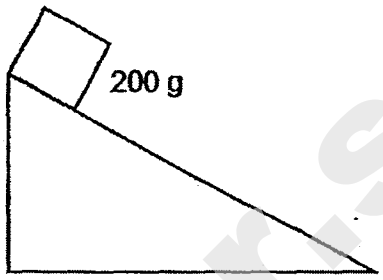
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27 Petrina conducted an experiment with two blocks of the same size but of masses 100 g and 200 g.

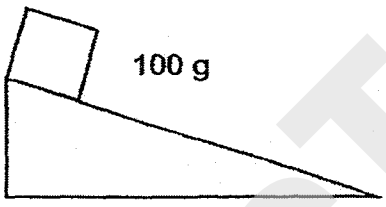
She then released the blocks from two different heights as shown in set-ups A, B, C and D.



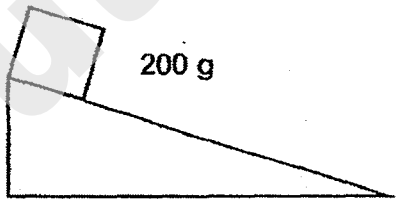
Set-up A



Set-up B



Set-up C



Set-up D

Petrina wanted to investigate how the gravitational potential energy of the block depends on its mass and the height from where it was released.

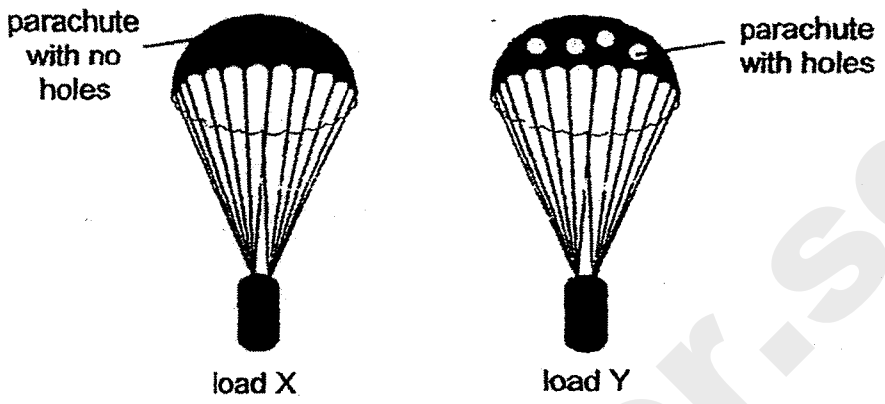
Which pairs of set-ups should she use in her investigation?

	Gravitational potential energy depends on	
	mass	**height**
(1)	A and B	C and D
(2)	B and D	A and C
(3)	C and D	B and D
(4)	A and C	A and B

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28 The diagram below shows two similar loads X and Y being released from the same height on a parachute.



Which one of the following correctly explains why load Y falls faster than load X?

(1) More gravitational force is acting on load Y.

(2) More air is pushing down on the parachute of load Y.

(3) Less force is acting upwards on the parachute of load Y.

(4) There is more potential energy in load Y than load X before they were released.

End of Booklet A

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PRELIMINARY EXAMINATION ONE (2017)

PRIMARY SIX

SCIENCE

BOOKLET B

Name: _____ ( )

Class: Primary 6 - _____

Date: 9 May 2017

Parent's Signature: _____

Booklet A	56
Booklet B	44
Total	100

13 questions

44 marks

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

INSTRUCTIONS TO CANDIDATES

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

This booklet consists of 16 printed pages, excluding the cover page.

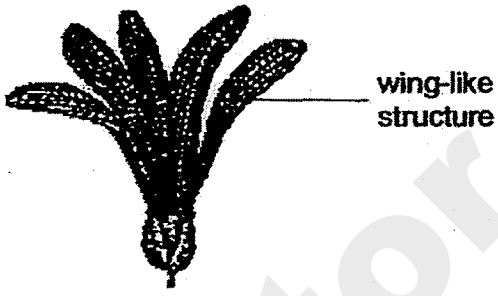
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Booklet B (44 marks)

For questions 29 to 41, write your answers in this booklet.
The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 Study the fruit below.



(a) State the dispersal method for the fruit above. [1]

_____

(b) How does the structure help in its dispersal? [1]

_____

_____

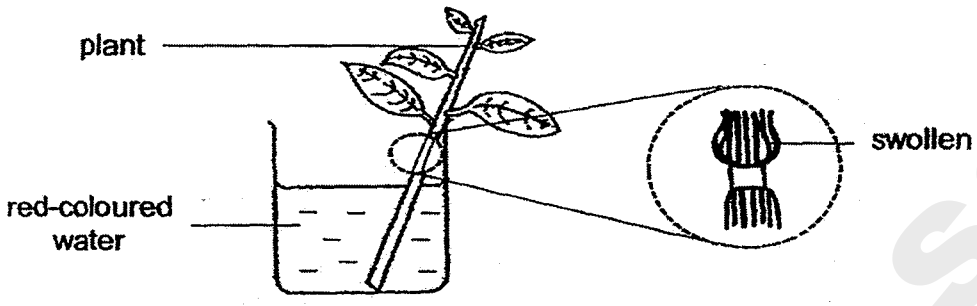
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SCORE	/ 2

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30 The diagram below shows a plant placed in a beaker of red-coloured water. The outer ring of a section of the stem of the plant was removed.



(a) What would happen to the colour of the leaves after a few days? [1]

_____

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

_____

_____

(c) Explain why the part just above the cut stem was swollen after a few days. [1]

_____

_____

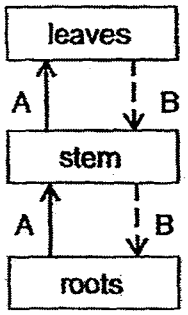
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SCORE	/ 3

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31 The diagram below shows how substances A and B are transported from one part of the plant to another in the plant transport system.



(a) Identify substance B. [1]

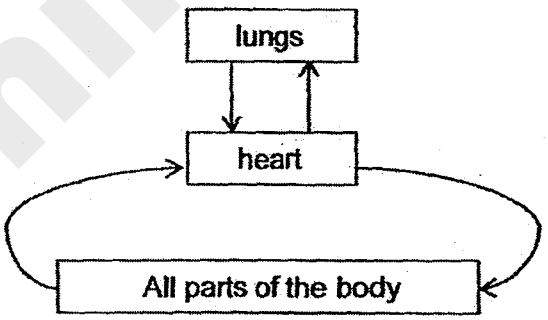
_____

(b) What happens to substance A when it reaches the leaves? [1]

_____

_____

The diagram below shows the human circulatory system.



Compare the diagrams on the plant transport system and the human circulatory system.

(c) State the difference in the direction in which food is transported in plants and humans. [1]

_____

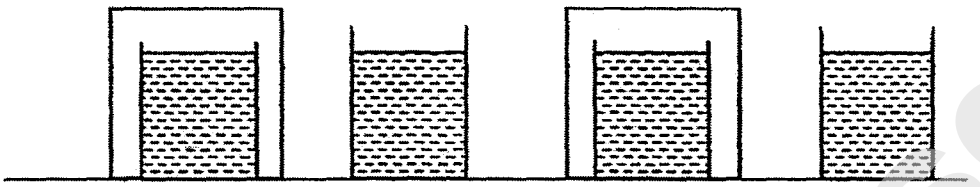
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SCORE 3

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32 Ian caught two organisms C and D from his school pond and wanted to find out whether they were animals or plants. He filled four beakers 1, 2, 3 and 4 with pond water. He placed organism C in beakers 1 and 2 and organism D in beakers 3 and 4 as shown below.



Beaker 1 (Organism C) placed in the dark	Beaker 2 (Organism C) placed in the light	Beaker 3 (Organism D) placed in the dark	Beaker 4 (Organism D) placed in the light

Ian added a drop of liquid A in each beaker. The table below shows the colour of liquid A in the presence of more oxygen or more carbon dioxide.

Colour of liquid A	More oxygen is present	More carbon dioxide is present
	blue	yellow

Ian recorded the colour of liquid A after the experiment as shown below.

Beaker	Colour of liquid A
1	yellow
2	yellow
3	yellow
4	blue

(a) Based on the results, Ian concluded that organism C was an animal. Explain how he arrived at this conclusion. [1]

_____

_____

(b) Name the process that took place in beaker 4. Explain how this process caused the change in the colour of liquid A. [2]

_____

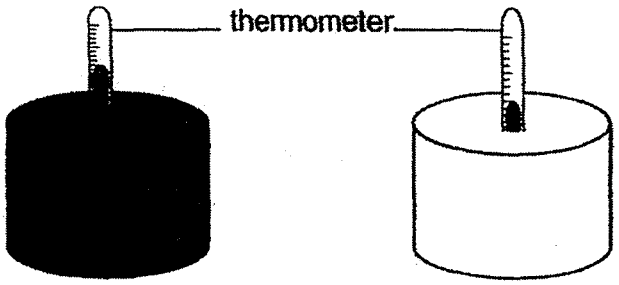
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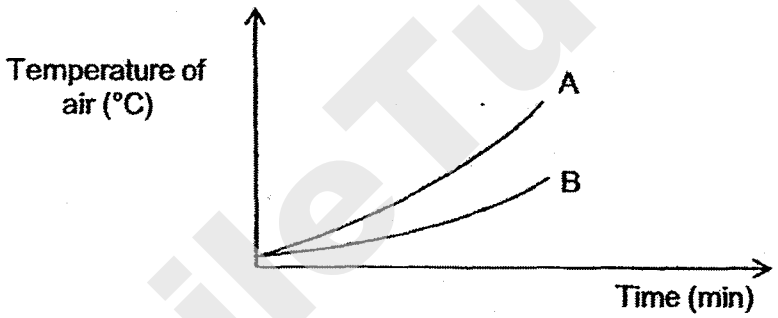
SCORE	/ 3

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33 Olivia conducted an experiment using two identical air-tight containers A and B as shown. Container A had a black surface while container B had a white surface.



The readings on both thermometers were the same before Olivia placed the containers under the Sun. She recorded the change in the temperature of air in each container as shown in the graph below.



(a) Line A represents the change in the temperature of air in Container A. [1]
What could Olivia conclude from her experiment?

_____

_____

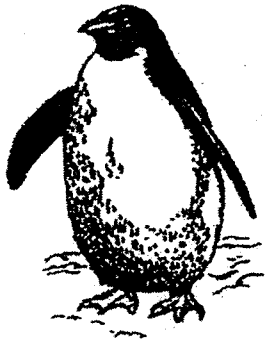
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SCORE 1

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Continue from Question 33

Bird P lives in a very cold habitat.



Bird P

(b) Bird P usually stands with its back facing the Sun. Suggest a reason for such a behaviour. [1]

_____

_____

(c) Bird P puffs up the feathers when it gets colder. Explain how puffing up the feathers will help it to keep warm. [1]

_____

_____

(Go on to the next page)

SCORE	2

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34 Joanna wrote down some information about the organisms found in her garden. The table below shows the information about the relationships of some organisms in Joanna's garden.

Organism	Information
M	A plant eater
N	Feeds on M and P
O	A predator of N
P	A plant eater
Q	Gets its energy directly from the Sun

(a) Based on the information above, construct a food web, involving organisms M, N, O, P and Q, in the box below. [2]

(b) One of the organisms was a plant and its population size had been decreasing over the past few months. Joanna wanted the plant population to increase. Without adding more plants, Joanna planned to introduce more of one type of organism.

Based on the information and food web above, which one of the organisms M, N, O, P or Q should Joanna add? Explain your answer. [3]

(Go on to the next page)

SCORE 3

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35 Diagram 1 below shows a magnet held near P which is tied to a string. It is then observed that P moved away from the magnet and a distance is maintained between them. A flame was then placed at one end of the magnet as shown in Diagram 2. After some time, P started to move towards the magnet and the distance between them decreased.

Diagram 1

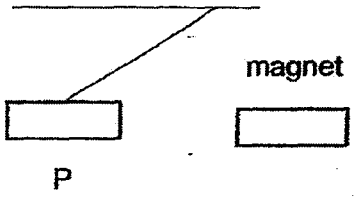
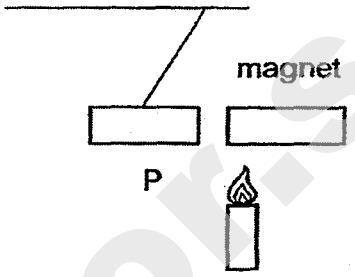


Diagram 2



(a) Based on the above observations, what is P likely to be? [1]

_____

_____

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

_____

_____

(c) In Diagram 2, give a reason why the distance between P and the magnet decreased. [1]

_____

_____

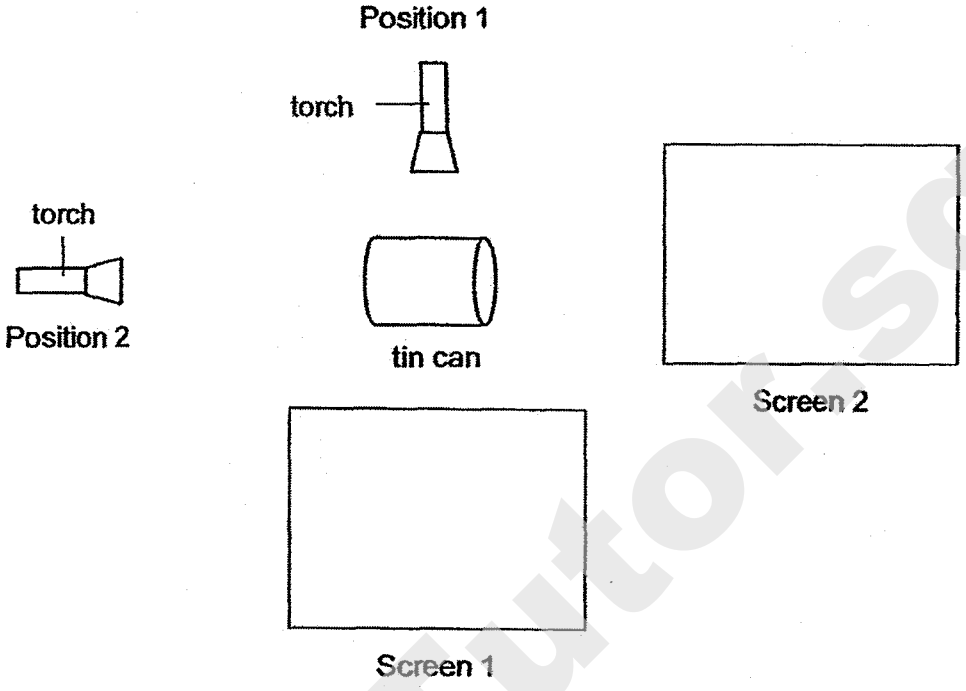
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SCORE 3

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36 Helen shone a torch on a tin can from two different positions as shown in the diagram below.



(a) Draw the shadows that will be formed on the two screens, 1 and 2, respectively. [1]

(b) How is a shadow formed? [1]

_____

_____

(c) If Helen was to move the tin can closer to position 2, what change would she observe about the shadow on screen 2? [1]

_____

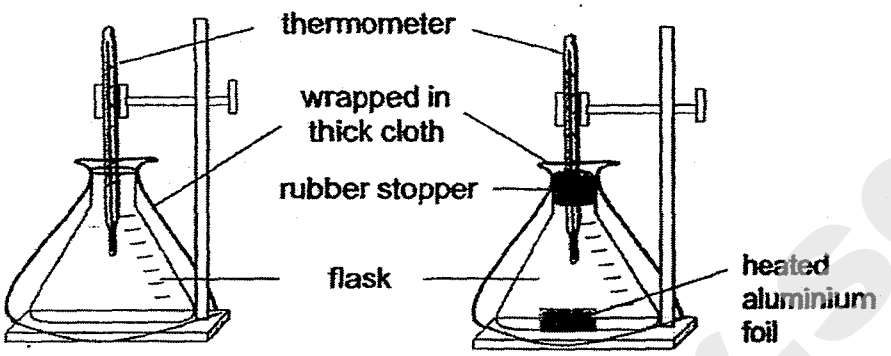
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SCORE 3

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37 Gabriel set up two set-ups below to find out how heat affects the temperature of the air. Both set-ups were placed in the same location.



Set-up A Set-up B

He recorded the changes in the temperatures in both set-ups over a period of 30 minutes in the table below.

Time (mins)	Set-up A (°C)	Set-up B (°C)
0	30	30
15	30	38
20	30	44
25	30	48
30	30	48

(a) Why was there an increase in the temperature in set-up B from the start of the experiment to 25th minute of the experiment? [1]

_____

_____

(b) Explain what happened in set-up B between the 25th and 30th minute. [1]

_____

_____

(c) Gabriel was advised by his mother to put a lid on the pot while cooking the food. How does this make cooking faster? [1]

_____

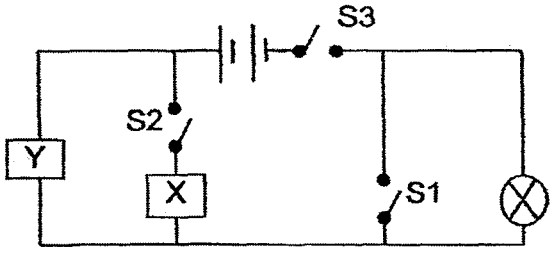
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SCORE /3

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38 Rafiq set up circuit A as shown below using an eraser and a copper coin which are connected to the circuit at either position X or Y.



Circuit A

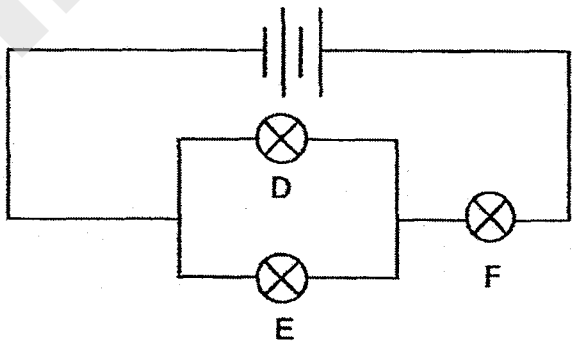
He closed some of the switches in the above circuit and his observations were recorded below.

Closed switches	Did the bulb light up?
S1 and S3	No
S2 and S3	Yes

(a) Based on his observations, write down the positions, X and Y, of the two items used in circuit A. [1]

Items	Position
eraser	
copper coin	

Rafiq created circuit B as shown below, using similar batteries and bulbs. All the bulbs were lit up in this circuit.



Circuit B

(b) Rafiq removed one of the bulbs from circuit B and the other two bulbs did not light up. Which bulb did Rafiq remove? Explain your answer. [1]

_____

_____

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SCORE 2

Continue from Question 38

(c) Rafiq wanted to rearrange circuit B so that all 3 bulbs would be brighter than before. Using the same number of batteries and bulbs, draw a circuit diagram to show a new arrangement to make all 3 bulbs brighter. [2]

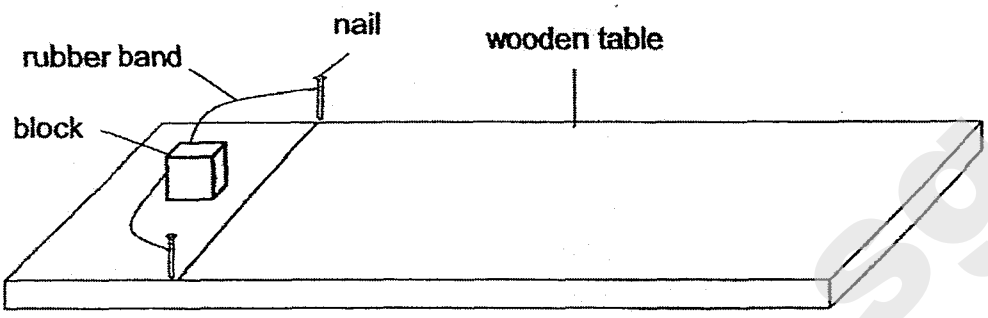
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SCORE / 2

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39 A block is placed on a wooden table as shown in the diagram. The rubber band is stretched when the block is pulled against the rubber band.



(a) What are the two forces that are involved when the block is released? [1]

_____

_____

(b) The wooden table is replaced by a marble table while all of the other variables are held constant. Will the block travel over a longer distance? Explain your answer. [1]

_____

_____

(c) Bala decides to repeat the experiment using blocks of the same mass and material, but different area of contact with the wooden table.

His results are shown below.

Block	Area of contact with the table (cm^2)	Distance moved (cm)
G	100	12
H	120	12

Based on Bala's results, did the area of contact with the table affect the friction on the block? Explain how you came to your conclusion. [1]

_____

_____

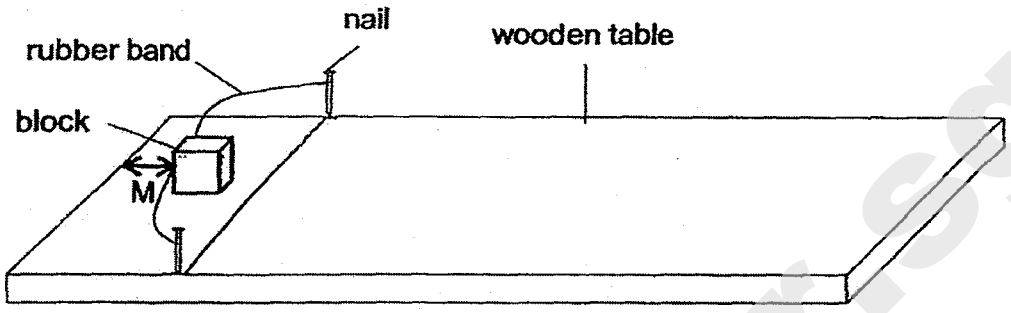
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SCORE	/ 3

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Continue from Question 39

Bala then wanted to find out how the distance from the block and the end of the wooden table (distance M) will affect the distance travelled by the block.



He recorded his findings in the table below.

Distance M (cm)	Distance travelled by the block (cm)
15	25
10	28
6	30

(d) What is the relationship between distance M and the distance travelled by the block before it comes to a stop? [1]

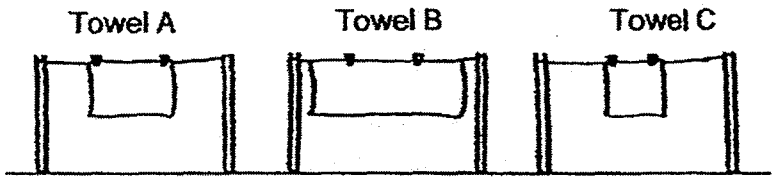
(e) Explain your answer in (d). [1]

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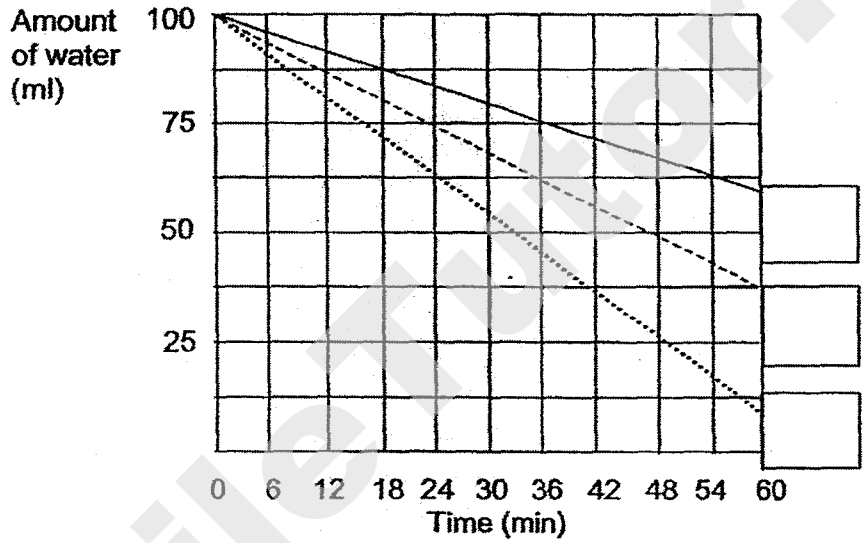
SCORE 2

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40 Mrs Tan hung 3 wet towels of the same material out to dry at the same place as shown below.



(a) The graph below shows the amount of water left on each towel. Write down the correct letter (A, B or C) in the boxes below to indicate the graph for towels A, B and C. [1]



(b) Which towel dried the fastest? Explain your answer. [1]

_____

_____

(c) Write down one other variable that was kept the same in this experiment to ensure a fair test. [1]

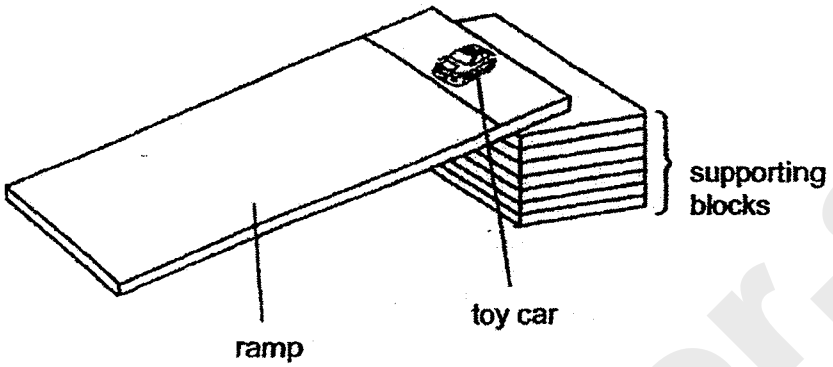
_____

(Go on to the next page)

SCORE	3

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41 Brian conducted an experiment with his toy car. He placed the toy car behind the starting point as shown below. When he released the toy car, it rolled down the ramp.

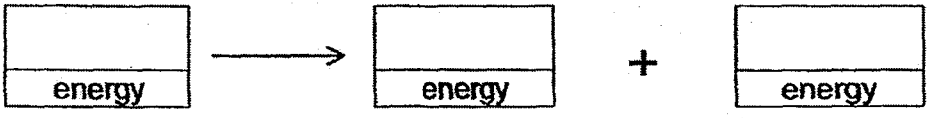


Brian also used a stop watch and two other toy cars of different masses in this experiment. He wanted to find out how the mass of the toy cars would affect the average time taken for the toy car to roll down from the starting point to the end of the ramp.

(a) Describe how Brian could carry out his experiment. [2]

(b) In his experiment, Brian decided to keep the height of the supporting blocks constant. Why would this make his experiment a fair test? [1]

(c) What is the energy conversion as the toy car is moving down the ramp? [1]



End of Booklet B

SCORE 4

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EXAM PAPER 2017
LEVEL : PRIMARY 6
SCHOOL : CATHOLIC HIGH SCHOOL
SUBJECT : SCIENCE

Booklet A

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

Booklet B

Q29 (a) By wind
(b) The wing-like structure helps the fruit to fly long distance so that it can be further away from its parent plant to avoid overcrowding.

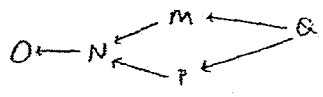
Q30 (a) The leaves would turn red.
(b) The water is transported through the water-carrying tubes.
(c) Food that is made by the leaves would not be able to move down the stem to be transported to other parts of the plant. As a result, this causes the food/starch to accumulate and swell at the opening/end of the cut.

Q31 (a) Food for the plant
(b) Water evaporates as the plant exchanges water for carbon dioxide during transpiration through the stomata in the leaves.
(c) Food in leaves are transported in one direction while food in humans are transported through blood in a circulatory manner.

Q32 (a) If the plant were placed in the light, the colour of liquid A would be blue as there would more oxygen present as plants photosynthesis but the colour of liquid A is yellow which is how Ian arrived at this conclusion.
(b) Photosynthesis. Photosynthesis produces oxygen and when more oxygen is produced, the colour of liquid A would change to blue.

Q33 (a) Olivia could conclude from her experiment that black absorbs more heat than white.
(b) As the back of Bird P is black, it could absorb more heat than its front facing the sun as its front is white as Bird P needs heat as it lives in a cold habitat.
(c) Puffing up the feathers will trap air and air is a poor conductor of heat. Hence, bird P will lose less body heat to the cold.

Q34 (a)



(b) Q is the plant. With more N added, they will feed on more P and more M. Hence, there will be less P and M to feed on Q/plant.

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Q35 (a) P is likely to be a magnet.
(b) P repelled from the magnet and only magnet repel.
(c) The magnet lost some of its magnetism when heated.

Q36 (a) screen 1



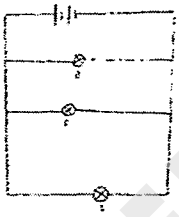
screen 2



(b) A shadow is formed when the path of light is fully or partially blocked by an opaque or translucent object.
(c) The shadow would become bigger.

Q37 (a) The heated aluminium foil caused the air in the flask to gain heat and the hot air did not escape due to the rubber stopper.
(b) The temperature of air in the flask was the same as the heated aluminium foil so there was no transfer of heat between them.
(c) By putting the lid on , the hot air will not escape and it reduces heat loss to the surrounding so the cooking will be faster.

Q38 (a) Y, X
(b) Bulb F. The circuit becomes open and the electric current is unable to flow through the circuit.
(c)



Q39 (a) Elastic spring force and frictional force.
(b) Yes, it will. The marble table is smoother than the wooden table so the frictional force between the marble table and block is lesser. Thus, the block travels over a longer distance.
(c) No. When the area of contact with the table changed, it did not affect the friction on the block as the distance moved is the same.
(d) As distance M decrease, the distance travelled by the block increases.
(e) When distance M decreases, the rubber band with the block is pulled further backwards and there is more elastic spring force so the block will travel a greater distance before coming to a stop.

Q40 (a) C
A
B
(b) It has the greater amount of exposed surface area for water to evaporate the fastest. Hence, it has the least amount of water left.
(c) Thickness of material

Q41 (a) Step 1: release the car at the starting point 1
Step 2: record the time taken for the car to reach the ground (repeat 3 times)
Step 3: calculate the average time taken.

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Do the same for the other car then compare the results.

(b) If the height of the supporting blocks do not stay constant, some cars might have more gravitational potential energy than the other cars, thus, it will have a greater kinetic energy which would affect the time taken for a car to reach the ground.

(c) Potential energy → Kinetic energy → Heat energy

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END

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HENRY PARK PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2017

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 2017

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

Booklet	Marks
A	
B	
Total (A+B)	

Parent's Signature: _____

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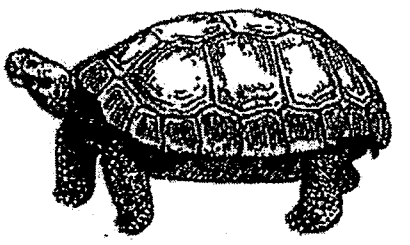
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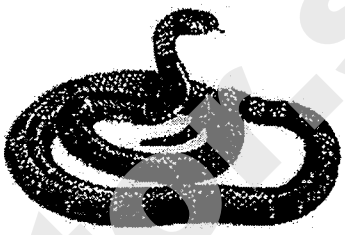
Booklet A (56 marks)

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. Study the two groups of animals, A and B, below.





Group A





Group B

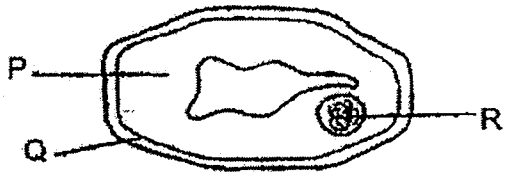
Which of the following describes the animals in groups A and B correctly?

	Group A		Group B	
	Covered with scales	**Give birth to live young**	**Covered with scales**	**Give birth to live young**
(1)	No	No	No	Yes
(2)	Yes	No	No	Yes
(3)	No	No	Yes	Yes
(4)	Yes	Yes	No	No

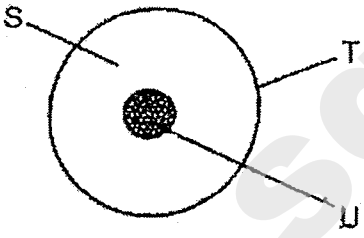
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2. The diagrams below show two cells, X and Y.



Cell X



Cell Y

Which of the following statement(s) about cells X and Y is are correct?

A: Parts R and U control the activities in the cells.

B: Parts P and S support and give the cells their shape.

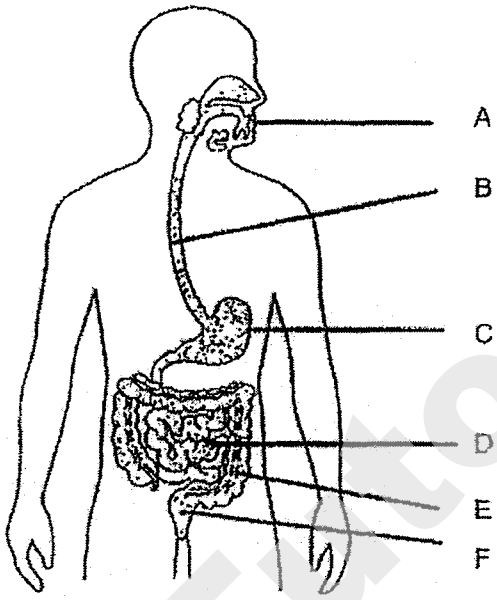
C: Parts Q, S and T control the movement of substances in and out of the cell.

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

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3. The diagram below shows the human digestive system.



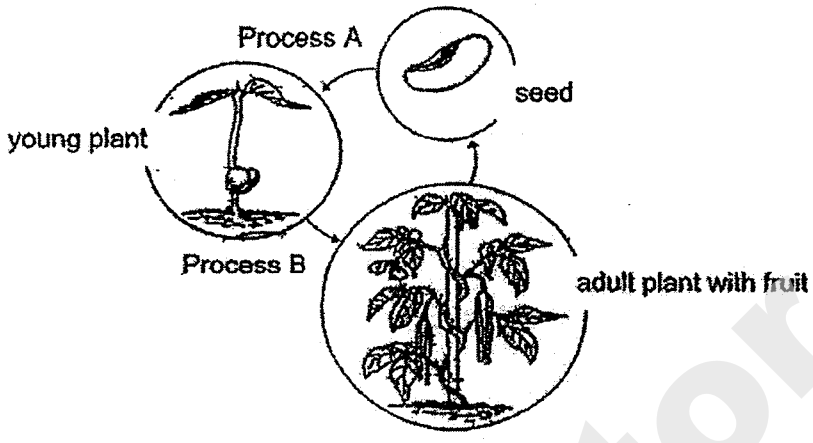
Which of the following correctly describes the function(s) of organs A to F?

	Organs that produce digestive juice	Organ involved in absorption of food	Organ(s) involved in absorption of water
(1)	A, B	E	F
(2)	A, C, D	D	E
(3)	A, B, C	D	E, F
(4)	A, C, D	E	F

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4. The diagram below shows processes A and B in the life cycle of a flowering plant.



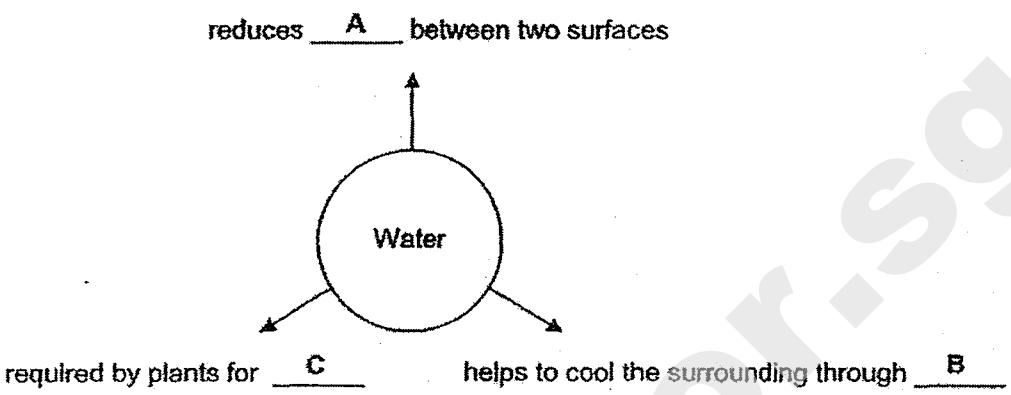
Which of the following identifies both processes A and B **wrongly**?

	Process A	Process B
(1)	Germination	Pollination
(2)	Germination	Fertilisation
(3)	Fertilisation	Germination
(4)	Seed Dispersal	Fertilisation

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5. The diagram shows some uses of water.



Which of the following words represent A, B and C correctly?

	A	B	C
(1)	friction	evaporation	photosynthesis
(2)	friction	photosynthesis	evaporation
(3)	friction	condensation	photosynthesis
(4)	gravity	evaporation	condensation

6. Which of the following activities do **not** harm the environment?

A: Writing on both sides of a paper.

B: Turning off the lights when not in use.

C: Bringing your own bag on shopping trips.

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

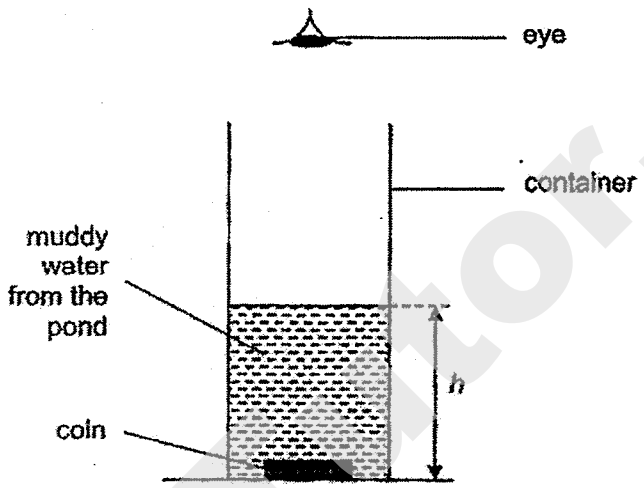
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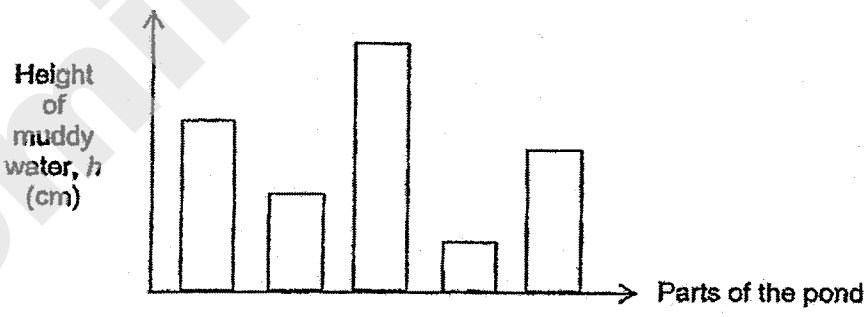
7. Aaron conducted an experiment using some muddy water from a pond.

He placed a coin at the bottom of a container and poured in the muddy water until the coin could no longer be seen, as shown in the set-up below.

Then, he recorded the height *h* cm of the muddy water.



Aaron repeated his experiment by taking muddy water from different parts of the pond and keeping all other variables the same. His results are shown below.



Aaron was trying to find out _____.

(1) from which part of the pond the coin was observed

(2) if the type of coin affects the amount of mud in the water

(3) which part of the pond has the most amount of mud in the water

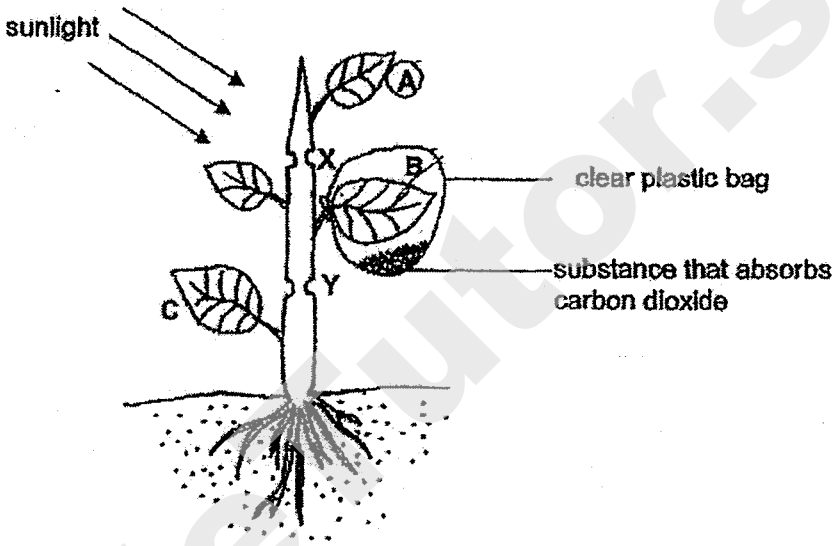
(4) how the distance between the eye and the coin affects the amount of mud in the water

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8. In an experiment, a plant had been kept in the dark for 24 hours at first. It was then exposed to bright sunlight with two outer rings of the stem, X and Y, removed.

The water-carrying tubes in ring X were removed but those in ring Y remained in the stem.



After some time, three leaves, A, B and C, were removed from the plant and were tested for starch using iodine solution.

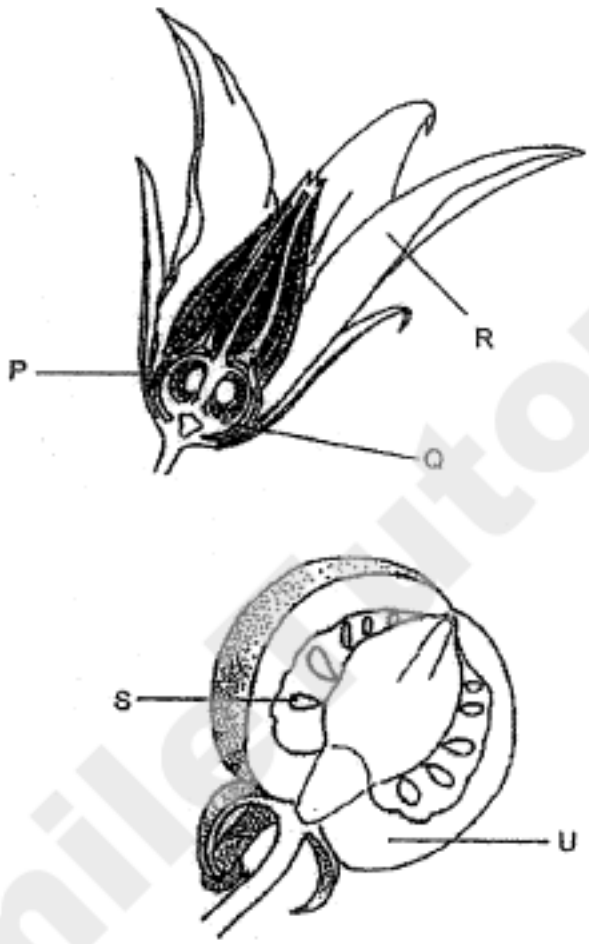
Which one of the following sets of observation is correct for the leaves, A, B and C, when they were tested for starch?

	Leaf		
	A	B	C
(1)	Iodine turns dark blue	Iodine turns dark blue	Iodine turns dark blue
(2)	Iodine remains brown	Iodine remains brown	Iodine turns dark blue
(3)	Iodine remains brown	Iodine turns dark blue	Iodine turns dark blue
(4)	Iodine remains brown	Iodine remains brown	Iodine remains brown

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9. Study the diagram of a flower and the fruit below.



Which of the following statements are correct after fertilisation has taken place in the flower to form the fruit?

A: P develops into S.

B: Q develops into U.

C: R withers and falls off.

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

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10. Substance P is a fertiliser that helps plants to grow healthily.

Jeremy wanted to find out how the amount of substance P added to the plants help them grow healthily.

He used three similar potted plants. Of the three potted plants he used for comparison, one of them was a control set-up.

Pot	Amount of water given (ml)	Amount of Substance P (g)	Surrounding temperature (°C)	Duration of experiment (days)
A	100	10	30	15
B	100	0	30	5
C	100	5	30	15
D	100	0	30	15
E	80	5	30	15

Which three of the above potted plants did Jeremy use for his experiment?

(1) A, B and C

(2) A, C and D

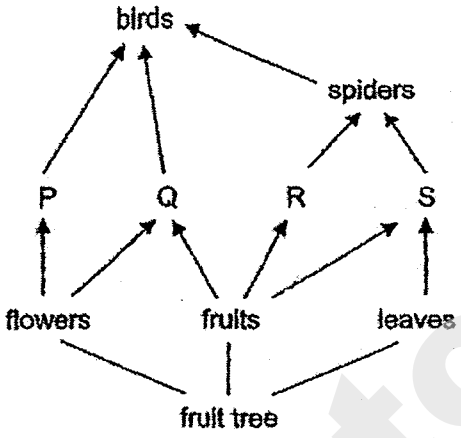
(3) B, D and E

(4) C, D and E

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11. Study the food web below.



Which one of the organisms, P, Q, R or S, would be most affected if the flowers of the fruit tree are **not** pollinated and fertilised?

(1) P

(2) Q

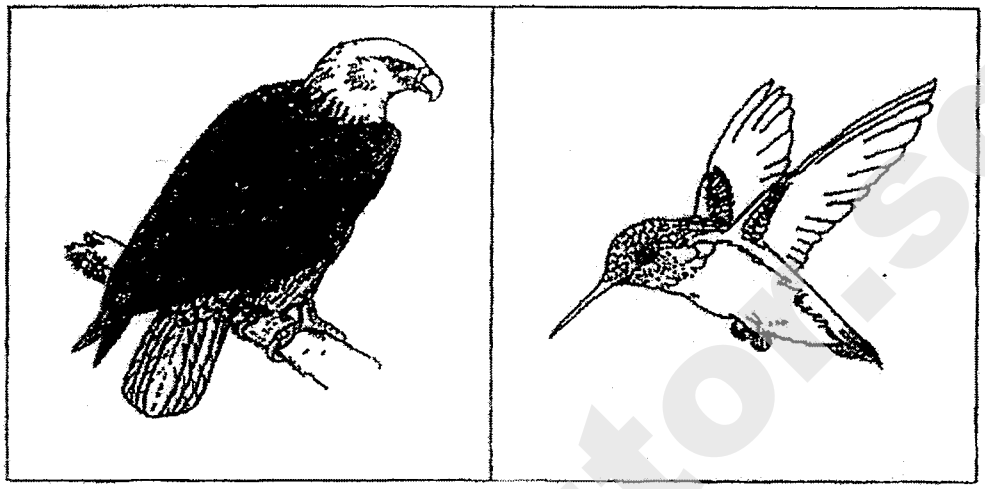
(3) R

(4) S

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12. The diagrams below show birds R and S.



Bird R

Bird S

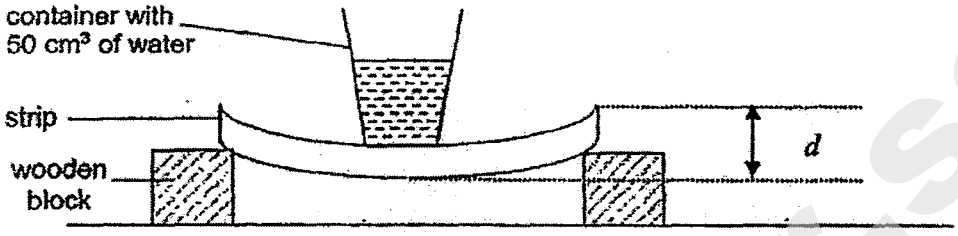
Based on your observation of the birds, which one of the following is most likely eaten by birds R and S?

	Bird R	Bird S
(1)	fish	seeds
(2)	seeds	nectar
(3)	nectar	seeds
(4)	mouse	nectar

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15. Wei Ling set up an experiment as shown below to compare the flexibility of four similar strips, A, B, C and D, each made of a different material.

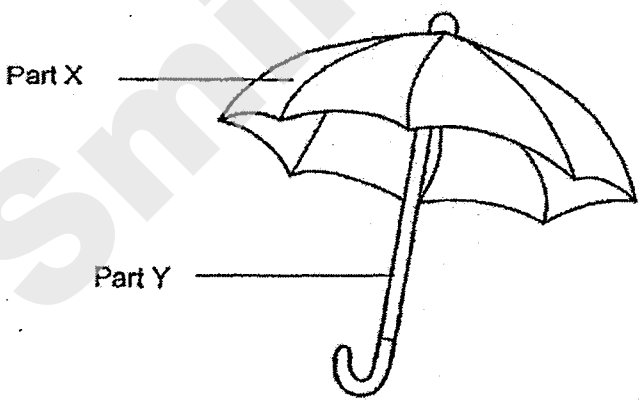


On each strip, she placed a container with 50 cm³ of water. The distance, *d*, between the highest and lowest points of the strip was measured.

Her results are shown below.

Strip	*d* (mm)
A	36
B	14
C	25
D	4

Based on the results of the experiment, which material is the most suitable to make part X and Y of the umbrella?



	Material	
	Part X	Part Y
(1)	C	D
(2)	D	A
(3)	A	B
(4)	A	D

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13 Ravi prepared four set-ups of seeds for an experiment shown in the table below

He added an equal amount of water to each set-up

Set-up	Type of condition	Presence of oxygen
E	Cold and Dark	Yes
F	Cold and Dark	No
G	Warm and Dark	Yes
H	Warm and Dark	No

What is/are the possible aim (s) of his experiment?

A: To find out if oxygen is needed for seeds to germinate.

B: To find out if warmth is needed for seeds to germinate.

C: To find out if the amount of light will affect germination of seeds.

(1) A only

(2) B only

(3) A and B only

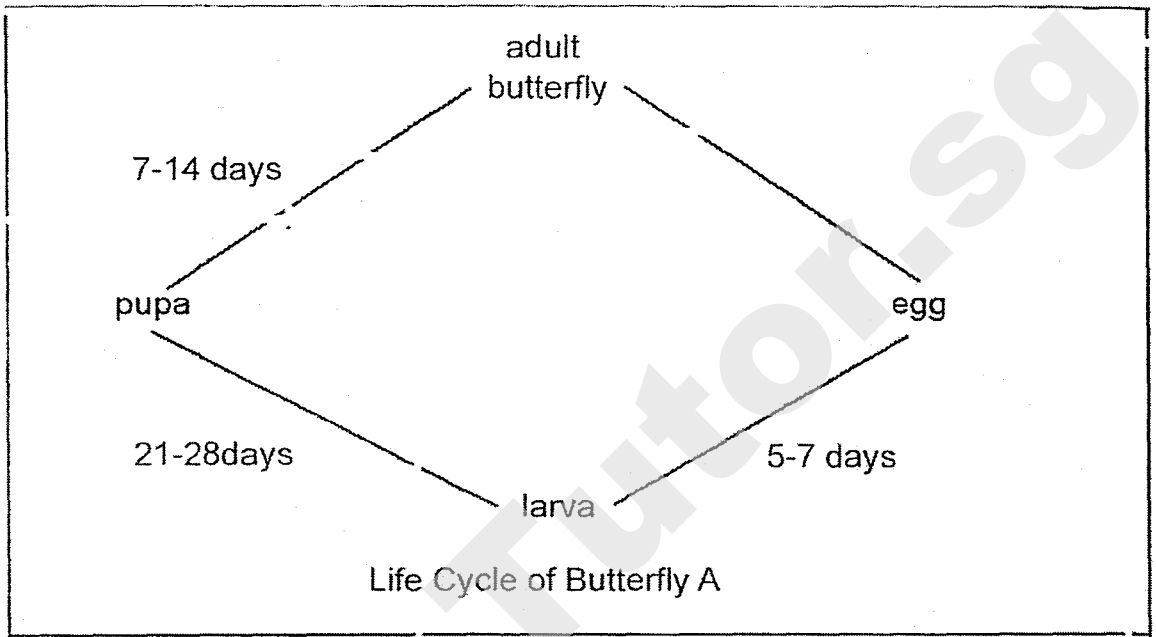
(4) A, B and C

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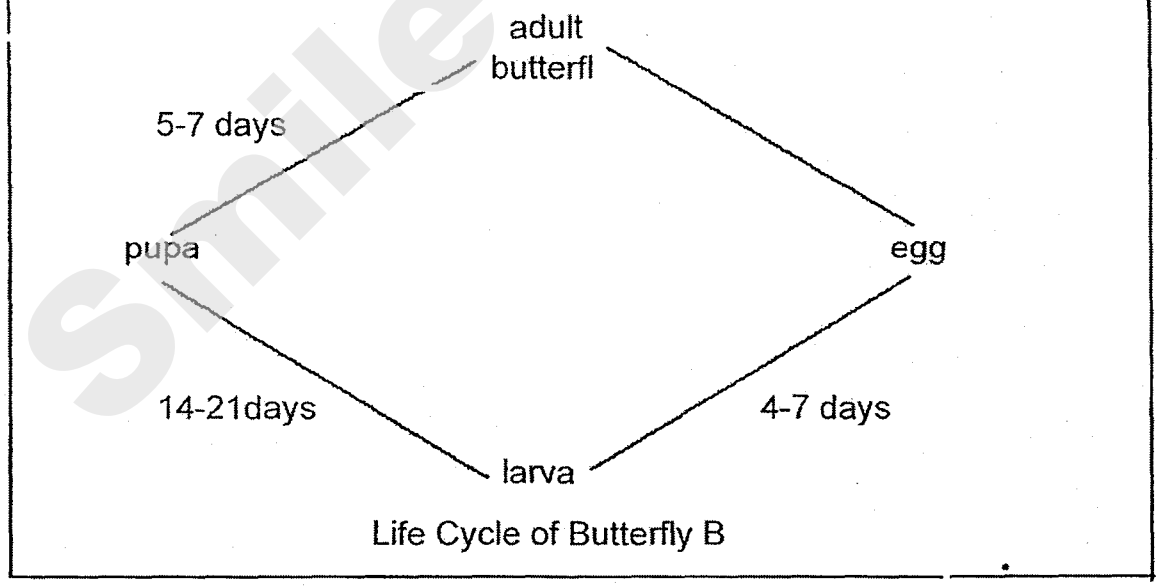
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14 The diagrams below show the life cycle of two types of bulterflies A and B living in the same area

These butterflies do not reproduce in the colder months between September and March



Life Cycle of Butterfly A



Life Cycle of Butterfly B

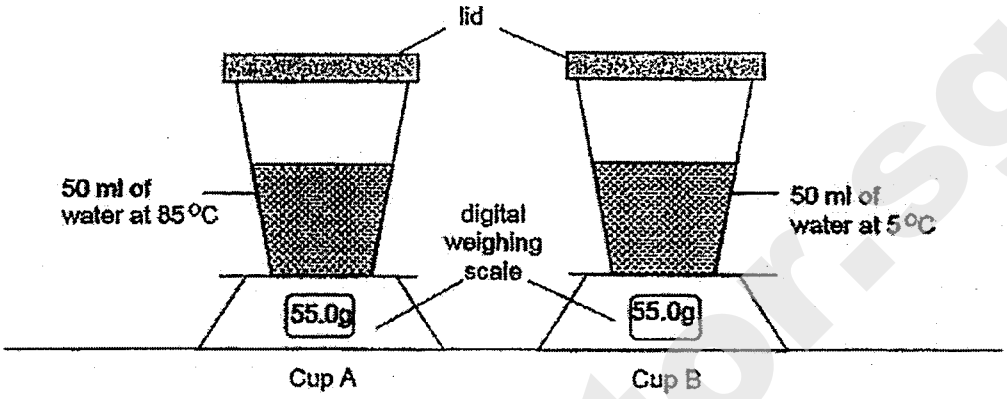
From the given information, it is most likely that_____

(1) no butterflies will be found alive in September
(2) the adult butterfly A will live longer than the adult butterfly B
(3) the egg of butterfly A will hatch faster than the egg of butterfly B
(4) butterfly A will take a longer time to complete its life cycle than butterfly B

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16. Jonathan poured 50 ml of water into two identical cups, A and B. He weighed the two cups of water using similar digital weighing scale.



After half an hour, he observed that water droplets were formed on the lid on both cups.

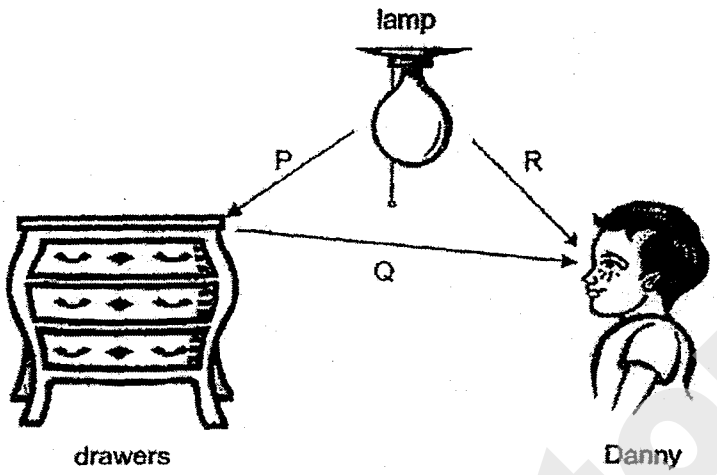
Which of the following correctly shows the mass of the cups after half an hour?

	Mass of the cup after half an hour (g)	
	Cup A	Cup B
(1)	55.0	55.0
(2)	55.0	55.5
(3)	55.5	55.0
(4)	55.5	55.5

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17. The arrows P, Q and R show the direction of light in the diagram below.



When Danny switched on the lamp in his room, he could see the lamp and the drawers.

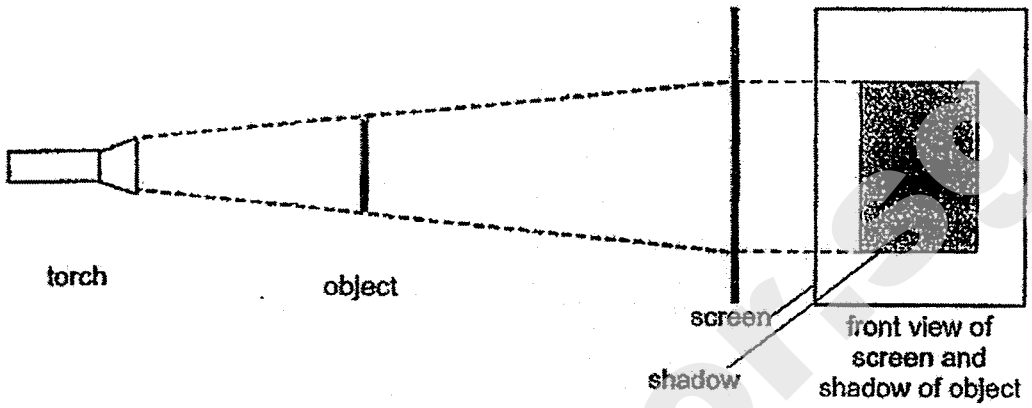
Which arrow(s) best explain(s) why Danny could see the lamp and the drawers?

	Lamp	Drawers
(1)	R	P and Q
(2)	P	R and Q
(3)	P and R	Q
(4)	Q and R	P

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18. John set up an experiment as shown below.



What should John do to make the shadow on the screen smaller?

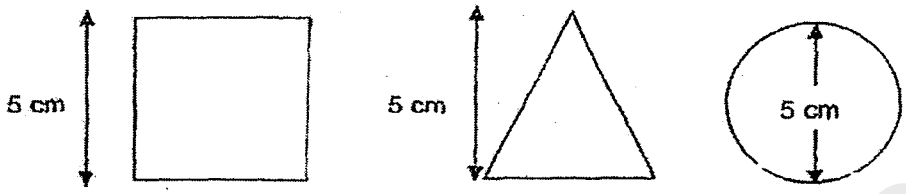
A: Move the torch nearer to the object.
B: Move the screen nearer to the object.
C: Move the screen further from the object.
D: Move the torch further away from the object.

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

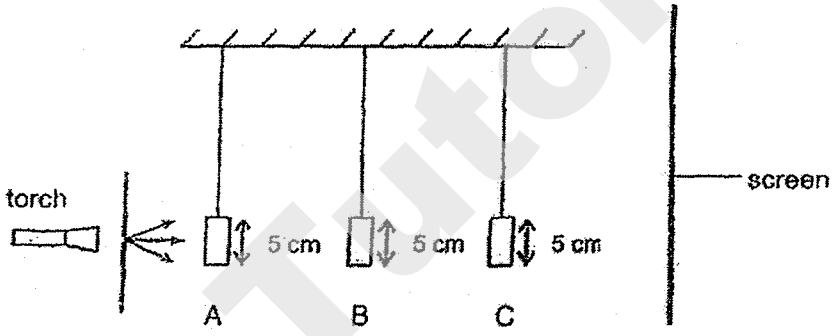
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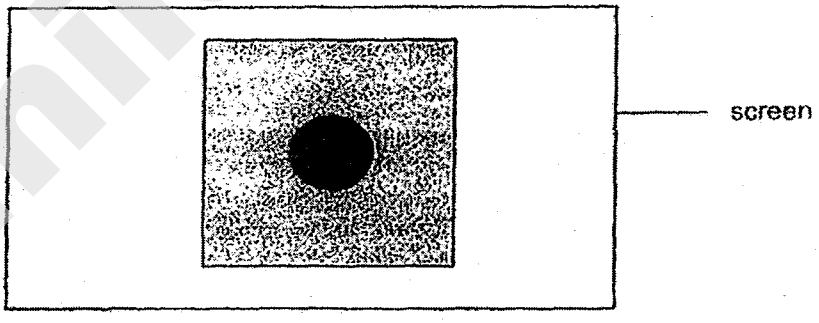
19. The diagrams below show three shapes, a square, a triangle and a circle, each made of a different material.



The diagram below shows the side view of the three shapes hung at different positions, A, B and C.



The shadows cast on the screen are shown below.



Which of the following statements are correct?

A: The square is nearer to the torch than the circle.
B: The triangle does not allow light to pass through.
C: The square allows more light to pass through than the circle.

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

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20. The table below shows the melting and boiling point of four substances, W, X, Y and Z.

Substance	Melting point (°C)	Boiling point (°C)
W	10	78
X	0	100
Y	44	280
Z	110	180

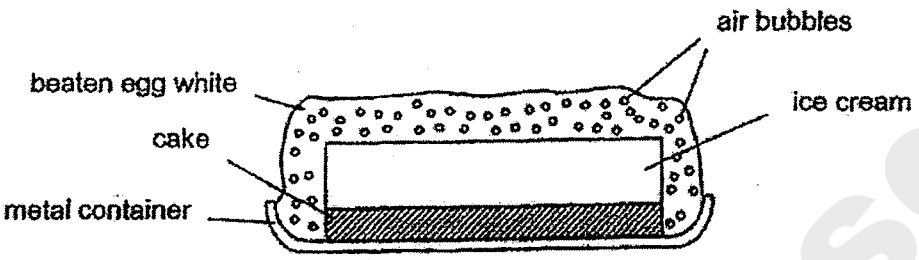
Which of the substances, W, X, Y and Z, is/are liquid(s) at 30°C?

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

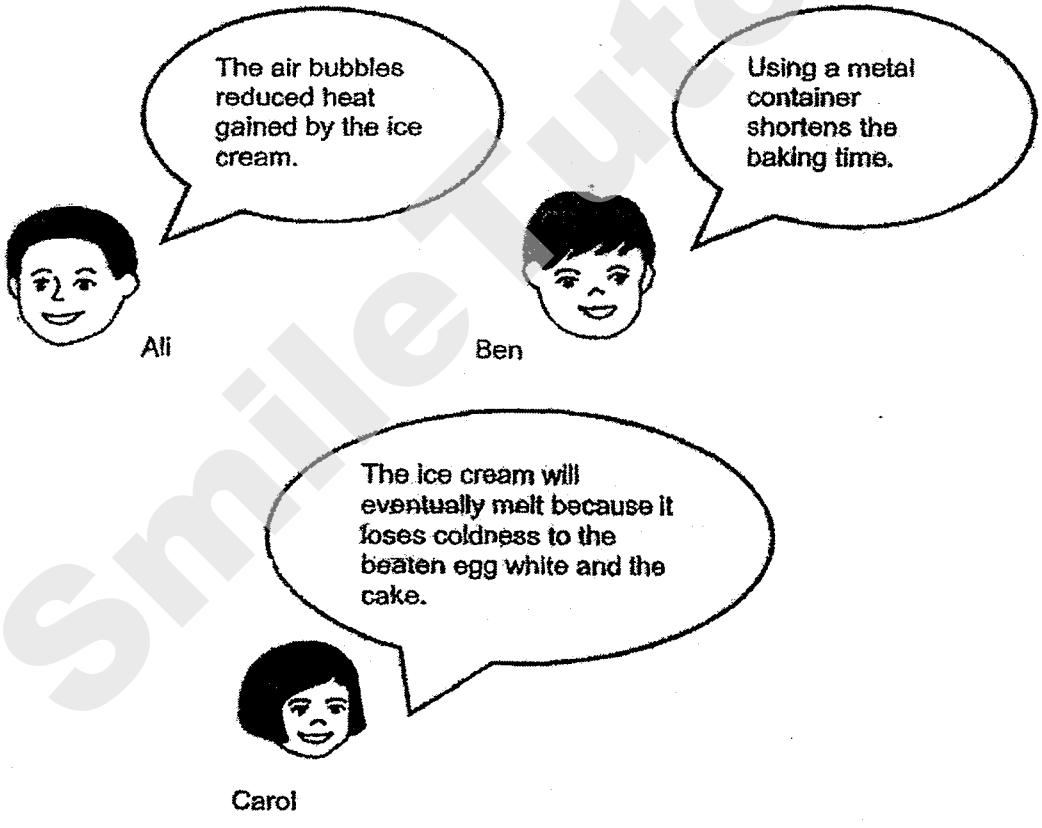
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21. Mrs Heng baked an ice cream dessert shown below for 10 minutes.



The ice cream did not melt when it was taken out of the oven.
Three children, Ali, Ben and Carol, each made a statement about the ice cream dessert as shown below.



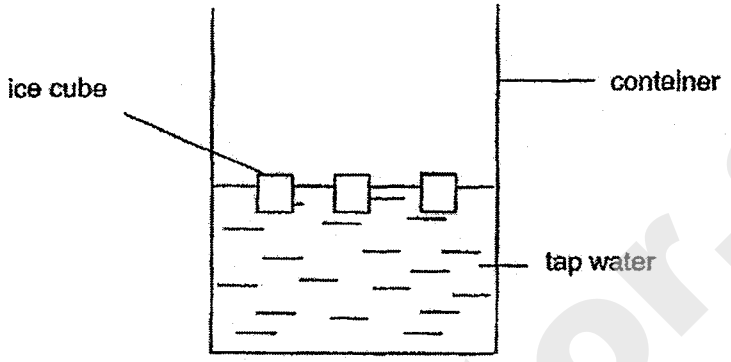
Which of the above children are correct?

(1) Ali and Ben only
(2) Ali and Carol only
(3) Ben and Carol only
(4) Ali, Ben and Carol

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22. Mary was conducting an experiment shown below in the Science room which had a temperature of 32°C. She measured the temperature of the water each time after adding three ice cubes.



Her results are shown below.

Number of ice cubes added	Temperature of water in container (°C)
0	32
3	28
6	22
9	15
12	9
15	5
18	4

Based on the experiment, which of the following statements is correct?

(1) The surrounding air gained heat from the water.

(2) The ice cubes have lost all the heat to the water.

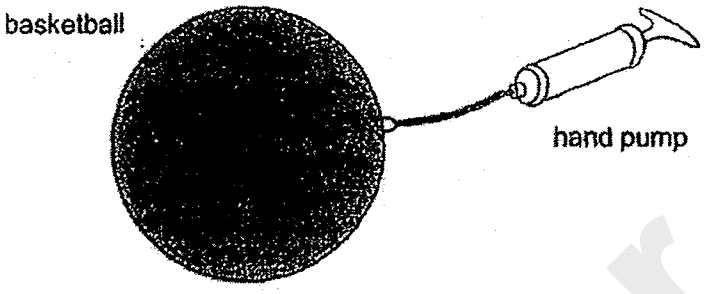
(3) The water loses more heat as more ice is added to it.

(4) The water freezes when more than 18 ice cubes are added.

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23. Matthew used a hand pump to pump more air into the basketball shown below. He observed that the size of the basketball remained the same.



Which of the following statements are correct as Matthew pumped more air into the basketball?

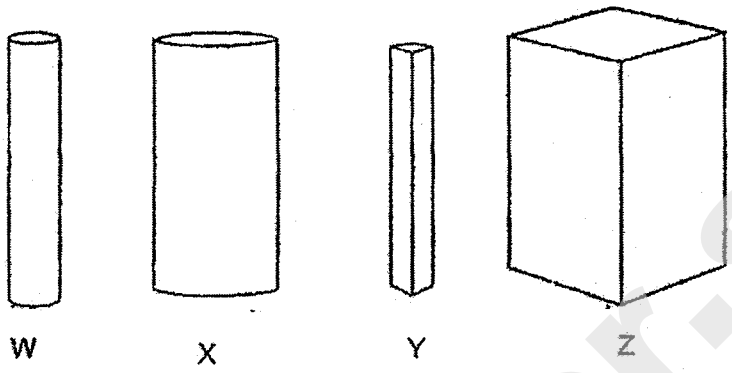
A: Air can be compressed.
B: The volume of air increases.
C: The mass of air increases.
D: The mass of air remains the same.

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

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24. Rina had four magnets, W, X, Y and Z, as shown below.



To compare the strength of the magnets, Rina took each of the magnets and placed them near a pile of iron pins.

The table below shows the number of iron pins that was attracted by the magnets, W, X, Y and Z, from different distances.

Magnet	Distance between magnet and iron pins (cm)	Number of iron pins attracted
W	3	9
X	3	11
Y	5	12
Z	3	12

Which of the following statements about magnets W, X, Y and Z are correct?

A: Z is stronger than X.

B: Y is stronger than Z.

C: W is the weakest magnet.

(1) A and B only

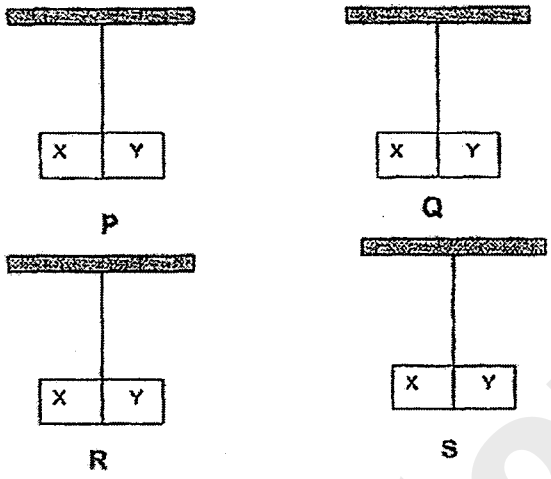
(2) A and C only

(3) B and C only

(4) A, B and C

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25. Ravi hung 4 metal bars, P, Q, R and S, from horizontal rods as shown below.





bar magnet

He brought the north pole of a bar magnet near end X and then end Y of each metal bar.

He recorded the observations made in the table below.

Metal bar	Observations	
	North pole and end X	North pole and end Y
P	attracted	repelled
Q	attracted	attracted
R	no reaction	no reaction
S	repelled	attracted

He wrote the following statements after the experiment.

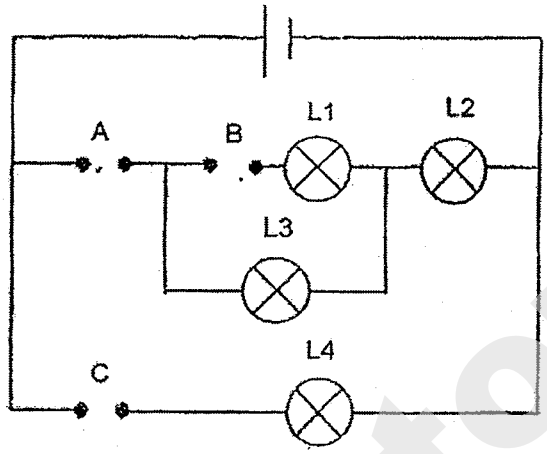
A: Metal bar P is made of magnetic material.
B: Metal bar R can be made into an electromagnet.
C: End X of metal bars P and S will repel each other.
D: Both ends X and Y of metal bar P will attract metal bar Q.

Which of the above statements are correct?

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

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26. Lee Cheng had three rods, P, Q and R, made of different materials. She placed them in various positions, A, B and C, of the circuit shown below.



The results of the experiment were shown in the table below. When any of the lamps, L1, L2, L3 or L4, lit up during the experiment, a tick (✓) was placed in the box.

Positions where rods were placed			Lamp			
A	B	C	L1	L2	L3	L4
P	Q	R	✓	✓	✓	

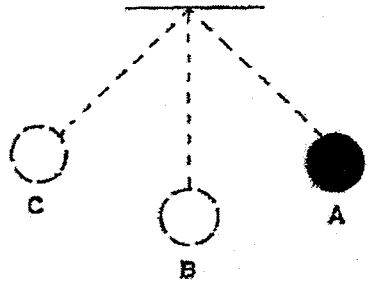
Which of the following would show the correct result if the rods, P, Q and R, were placed at different positions?

	Positions where rods were placed			Lamp			
	A	B	C	L1	L2	L3	L4
(1)	P	R	Q			✓	✓
(2)	Q	R	P		✓	✓	✓
(3)	R	Q	P	✓			✓
(4)	Q	P	R		✓	✓	

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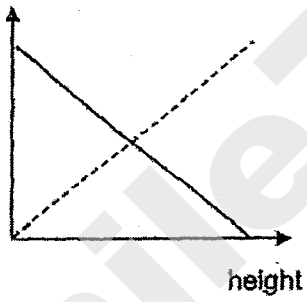
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27. A ball tied to a string swings from A to B and then C as shown in the diagram below.

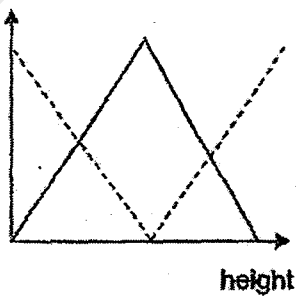


Which one of the following graphs shows correctly the change in potential energy and kinetic energy of the ball with height?

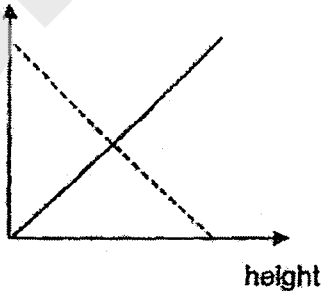
(1)



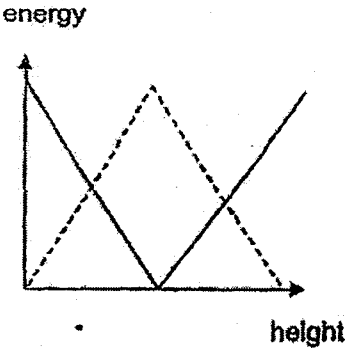
(2)



(3)



(4)

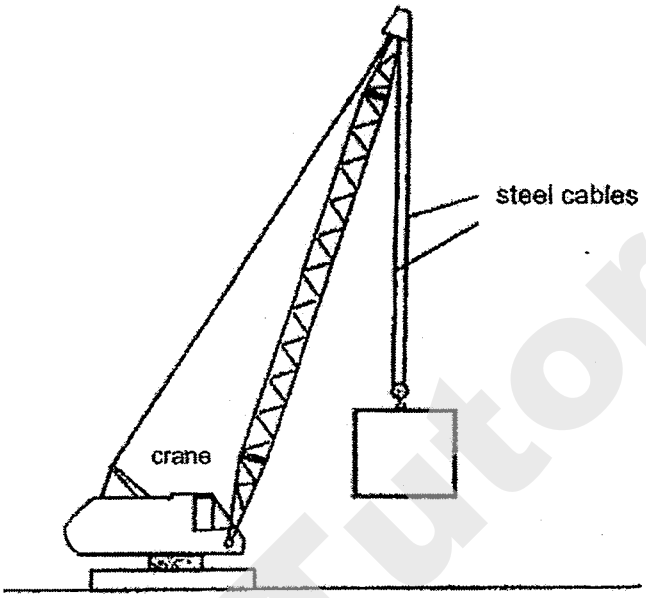


Key:
——— Potential energy
- - - - - - - Kinetic energy

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28. The diagram below shows a crane lifting a heavy object.



What is / are the force(s) acting on the steel cables?

A: frictional force
B: gravitational force
C: elastic spring force

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

END OF BOOKLET A

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ANSWER SHEET

EXAM PAPER 2017 (P6)

SCHOOL : HENRY PARK

SUBJECT : SCIENCE

TERM : PRELIM

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

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