Section A	60
Section B	40
Your score out of 100 marks	
Parent's signature	

SEMESTRAL ASSESSMENT (1)
2016

Name : _____ **Index No:** ____ **Class: P6** ____

10 May 2016 **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. Which one of the following characteristics can be used to differentiate between birds and insects?

P number of legs
Q type of body covering
R method of reproduction

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

2. Which of the following statements is/are true about ferns, 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 and organic matter into simple substances.

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

3. Erwin conducted a study on two animals, P and Q.
He recorded his observations in the table below.

A tick (√) in the box indicates the observation made of the animal.

Observations	Animal P	Animal Q
There are 4 stages in its life cycle.	√	√
Its eggs are laid on land.	√	
Its young do not have wings.	√	√

Which one of the following sets identifies animals P and Q correctly?

	Animal P	Animal Q
(1)	butterfly	mosquito
(2)	mosquito	butterfly
(3)	cockroach	butterfly
(4)	mosquito	cockroach

4. Nadia wanted to find out how different factors affect the germination of balsam seeds. She listed the variables below.

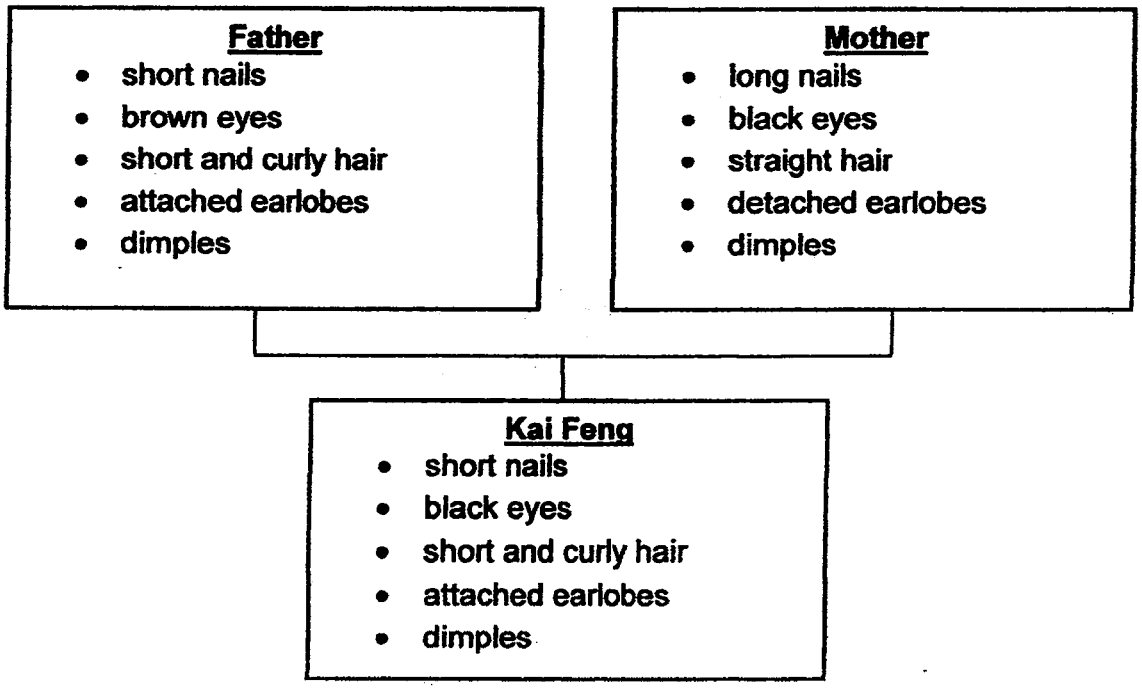
A location of experiment
B type of soil in each pot
C amount of soil in each pot
D number of balsam seeds in each pot
E amount of water given to balsam seeds

She made a list of the aim of the experiment and the variables to be kept constant respectively in the table below.

Which one of the following will enable her to conduct a fair the experiment fairly?

	Aim of the experiment	Variables to be kept constant
(1)	To find out if the amount of water affects the germination of balsam seeds.	A, B, D and E only
(2)	To find out if temperature affects the germination of balsam seeds.	B, C, D and E only
(3)	To find out if the presence of light affects the germination of balsam seeds.	B, C and E only
(4)	To find out if the type of soil affects the germination of balsam seeds.	A, D and E only

5. Kai Feng recorded the physical characteristics of his parents and himself as shown below.



Which of the following are traits inherited from his parents?

(1) length of hair and attached earlobes
(2) dimples, curly hair and length of nails
(3) eye colour, dimples and attached earlobes
(4) length of nails, curly hair and attached earlobes

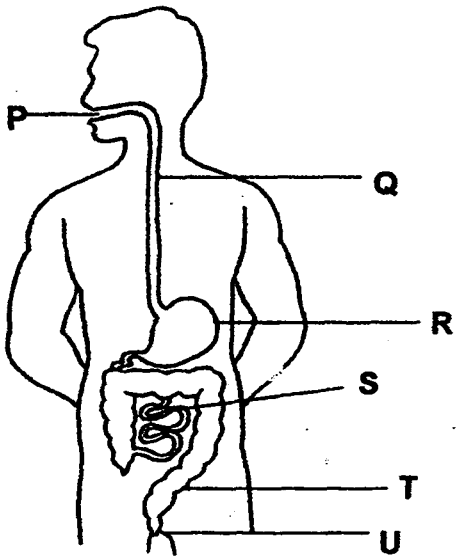
6. Mingli wants to find out whether a fruit which she has picked up is dispersed the same way as the coconut.

Which of the following investigations should she carry out?

A Find the mass of the fruit by weighing it.
B Cut open the fruit to check if it has a fibrous husk
C Place the fruit in a pail of water to see if it can float.
D Cut open the fruit to check if it contains water and is fleshy.

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

7. The diagram below shows parts of the digestive system of a human.

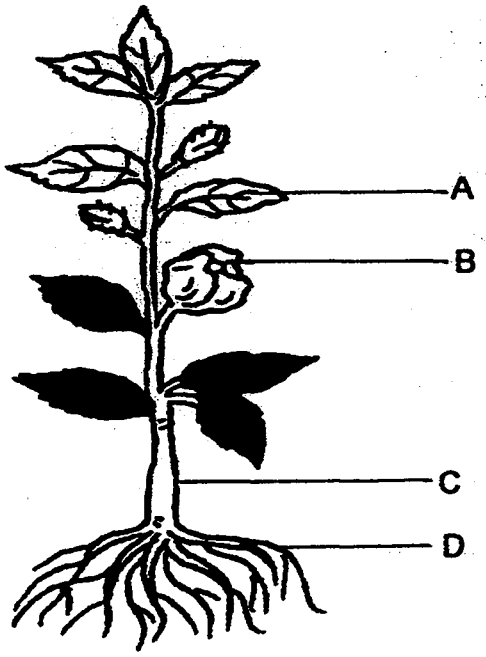


Which of the following statements about the system above is/are **correct**?

A Food is broken into smaller pieces in part P
B Digestive juices in part R help to digest the food further.
C Digested food in part S is absorbed into the bloodstream.
D Parts T and S remove water from the undigested food.

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

8. The diagram below shows a plant.



Four children made statements about the functions of the parts of the plant.

Peiling	: Part C transports water and dissolved mineral salts.
Qiuping	: Part D absorbs water and dissolved mineral salts from the soil.
Ray	: Part A makes food for the plant during respiration.
Stanley	: Part B attracts animals which help in seed dispersal.

Whose descriptions of the functions of the parts of the plant are correct?

(1) Peiling and Qiuping only

(2) Qiuping and Ray only

(3) Ray and Stanley only

(4) Peiling, Qiuping and Stanley

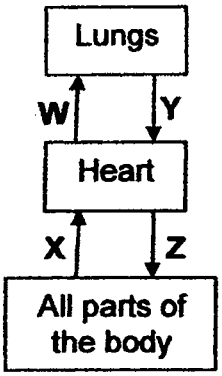
9. Ahmad observed two cells under a microscope and he recorded his observations in the table below. A tick (√) shows the part(s) that the cell has.

Part of Cell	Cell X	Cell Y
Nucleus	√	√
Cell wall		√
Chloroplast		√
Cytoplasm	√	√
Cell membrane	√	√

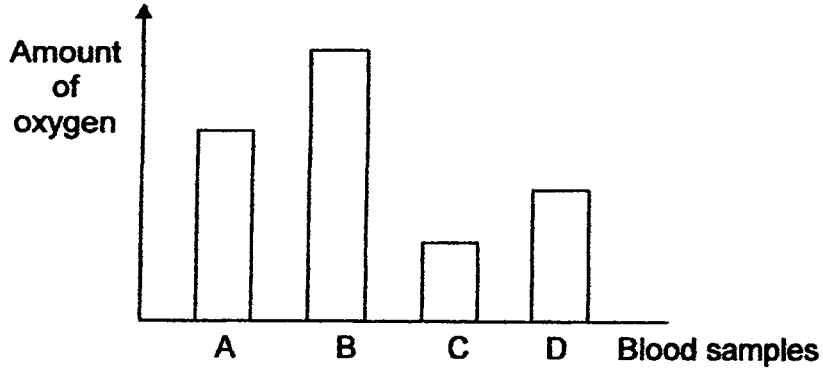
Which of he following statements is correct?

(1) Cell X can make food but Cell Y cannot.
(2) Cell X can trap light energy but Cell Y cannot.
(3) Cell Y has a regular shape but Cell X does not.
(4) Cells X and Y could have been taken from the leaves of different plants.

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



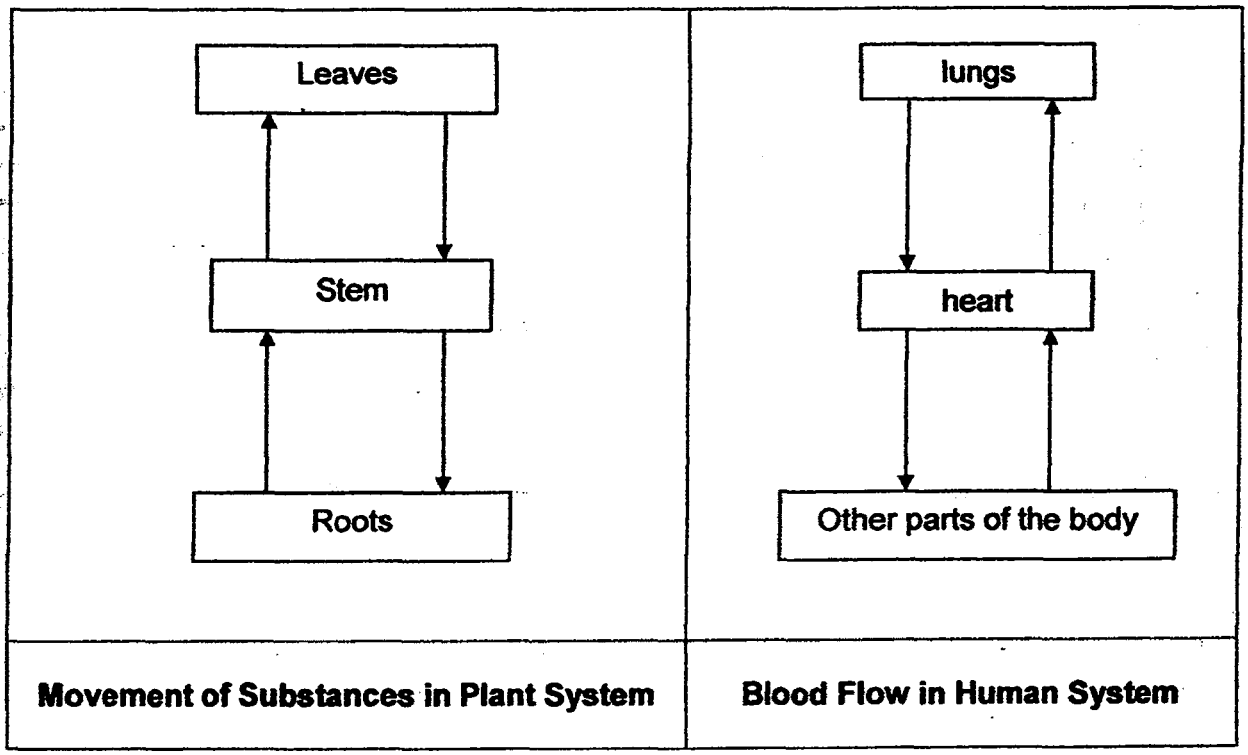
The bar chart below shows the amount of oxygen in the 4 blood samples taken from W, X, Y and Z in the human circulatory system.



Based on the information provided above, where was blood sample B likely to be taken from?

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

11. The diagrams below show the movement of substances in a plant and a human.



Which of the following statements about the plant and human systems is/are true?

P Food is being transported from the roots to other parts of the plant.

Q The water in the plant moves in one direction only, from the roots to other parts of the plant.

R The blood is being pumped by the heart and circulated to all parts of the body.

S Blood flows from the lungs to the heart and then back to the lungs again.

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

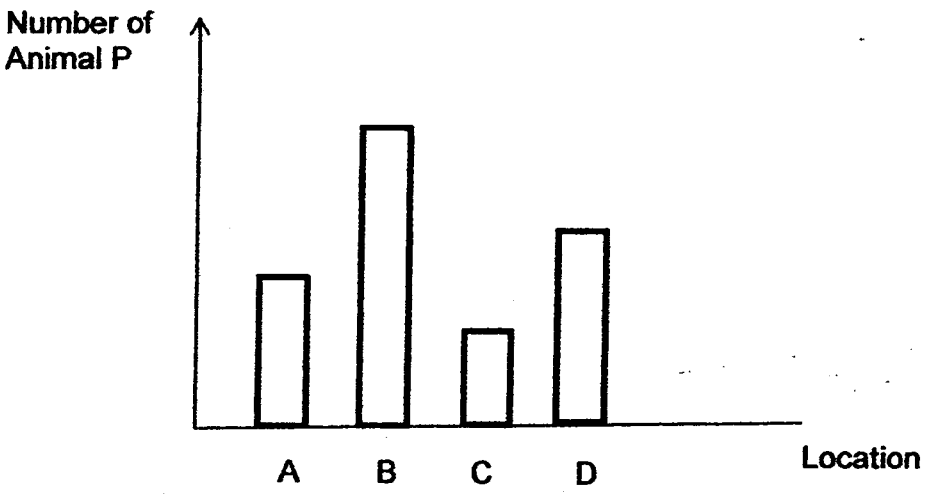
12. Animal P prefers the following conditions in its surroundings in the following order:

Conditions
bright and dry
bright and damp
dark and dry
dark and damp

prefers most

prefers least

The graph below shows the number of Animal P found in different locations, A, B, C and D, in a garden.



Based on the above information, which one of the following statements is definitely correct?

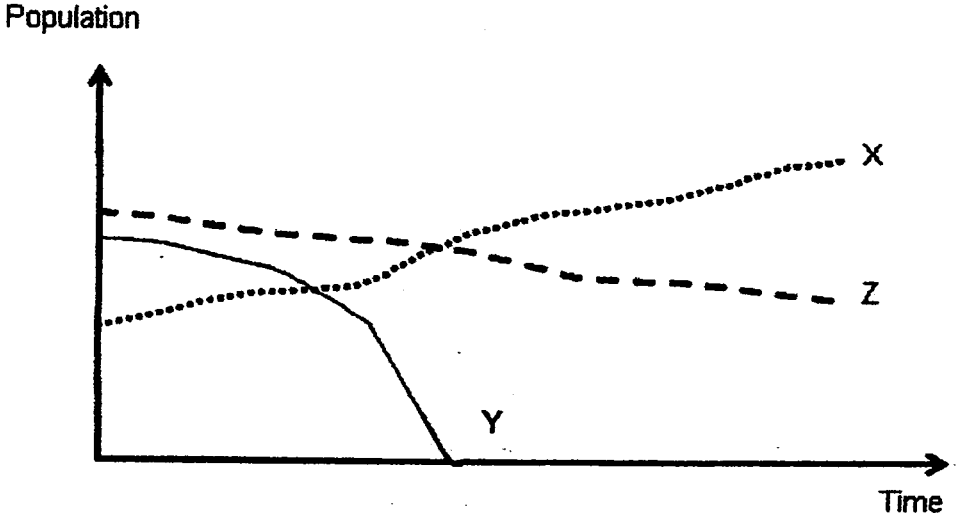
(1) Location B is most likely dark and dry.

(2) The likely condition for location C is dark and damp.

(3) Location D has the least preferred conditions for Animal P.

(4) Animal P most likely belongs to the leaf litter community.

13. The graph below shows the changes in the population of animals X, Y and Z in a particular community over a period of time.



Which is/are the possible reason(s) for the change in the populations of animals X, Y and Z over that period of time?

A Animal X is a predator of Animal Y.
B Animal Z feed on Animal X only.
C There was a drought during the period of time.
D There was a disease outbreak in Animal Y population.

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

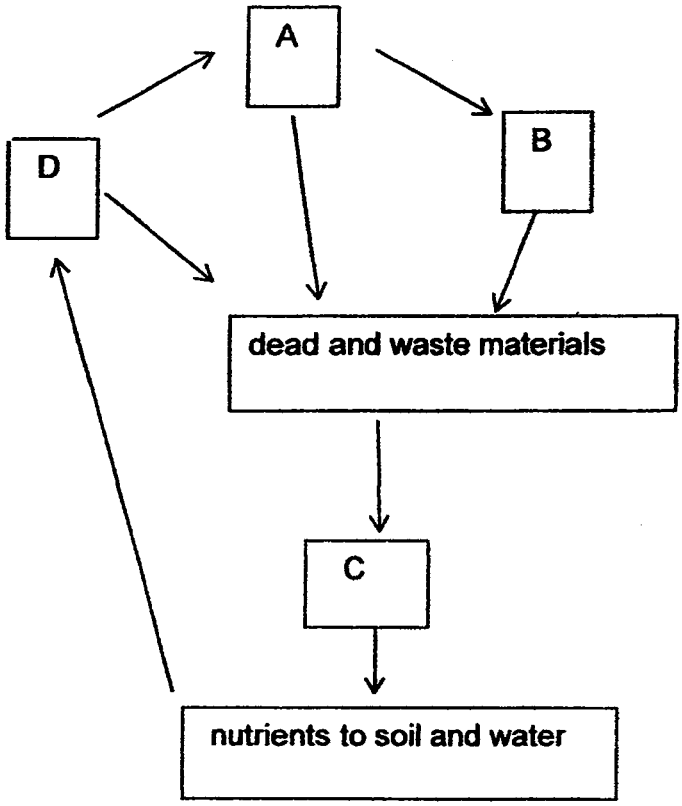
14. Pamela wanted to find out the effects of carbon dioxide on the organisms living in a pond over a period of time. She recorded her observations in the table below.

Concentration of Carbon dioxide (mg/l)	Population size			
	Organism P	Organism Q	Organism R	Organism S
1	60	95	137	105
5	43	72	152	86
10	21	55	174	50
15	6	30	199	27

Based on her observation, which organism is likely to be a food producer?

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

15. The diagram below represents the nutrient cycle. Letters A, B, C and D represent 4 organisms in a community. The arrow (⟶) represents the direction of flow of energy.

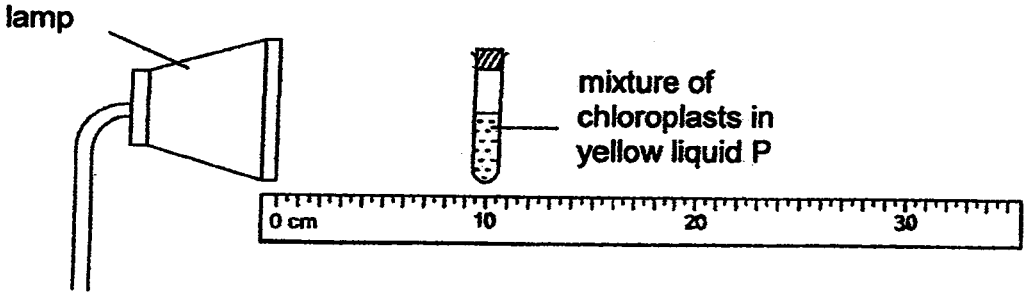


Which one of the following correctly represents A, B, C and D in this community?

	A	B	C	D
(1)	decomposer	producer	animal eater	plant eater
(2)	producer	animal eater	plant eater	decomposer
(3)	plant eater	animal eater	decomposer	producer
(4)	producer	plant eater	animal eater	decomposer

16. Jessica had three tubes, X, Y and Z, containing an equal amount of chloroplasts mixed in the same amount of yellow liquid P. This yellow mixture turns green after photosynthesis has taken place.

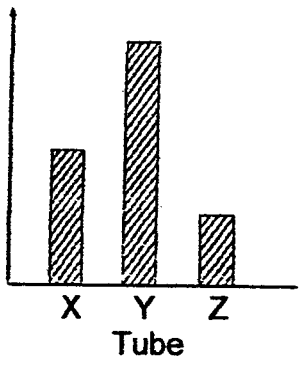
Jessica placed tube X at a distance of 10 cm from the lamp.

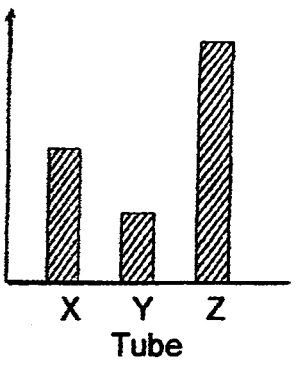


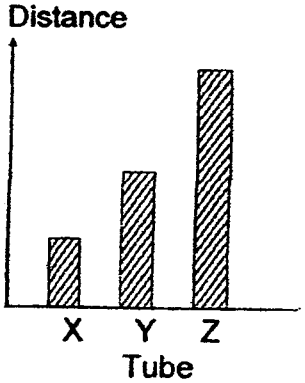
She switched on the lamp in a dark room and recorded the time taken for the mixture to turn green. She repeated the experiment with tubes Y and Z at various distances from the lamp and recorded the results as shown in the table below.

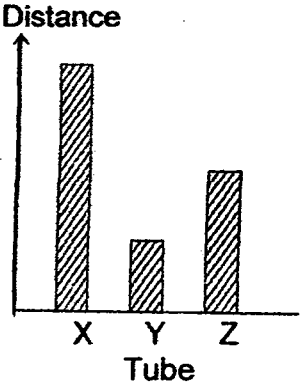
Tubes	Time taken for mixture to turn green (s)
X	17
Y	9
Z	28

Which graph correctly represents the distance tubes X, Y and Z are from the lamp?

(1)


(2)


(3)


(4)


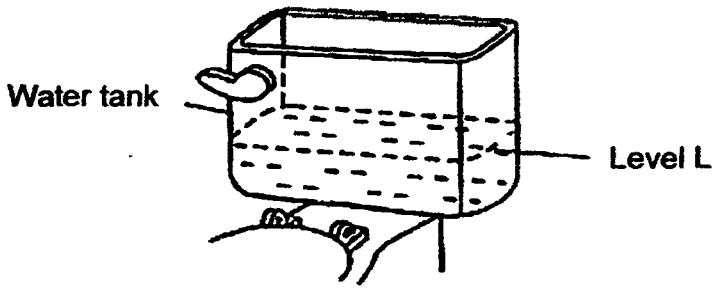
17. Imran wanted to choose a suitable material for making the base of an electric iron.

Which of the following properties of the material must Imran take into consideration when making his choice?

A heavy
B magnetic
C high melting point
D smooth and cools down quickly when heated.

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

18. Below is a water tank used for flushing a toilet bowl. After each flush, water enters and re-fills the tank. The re-filling will stop when the water reaches the level L mark.

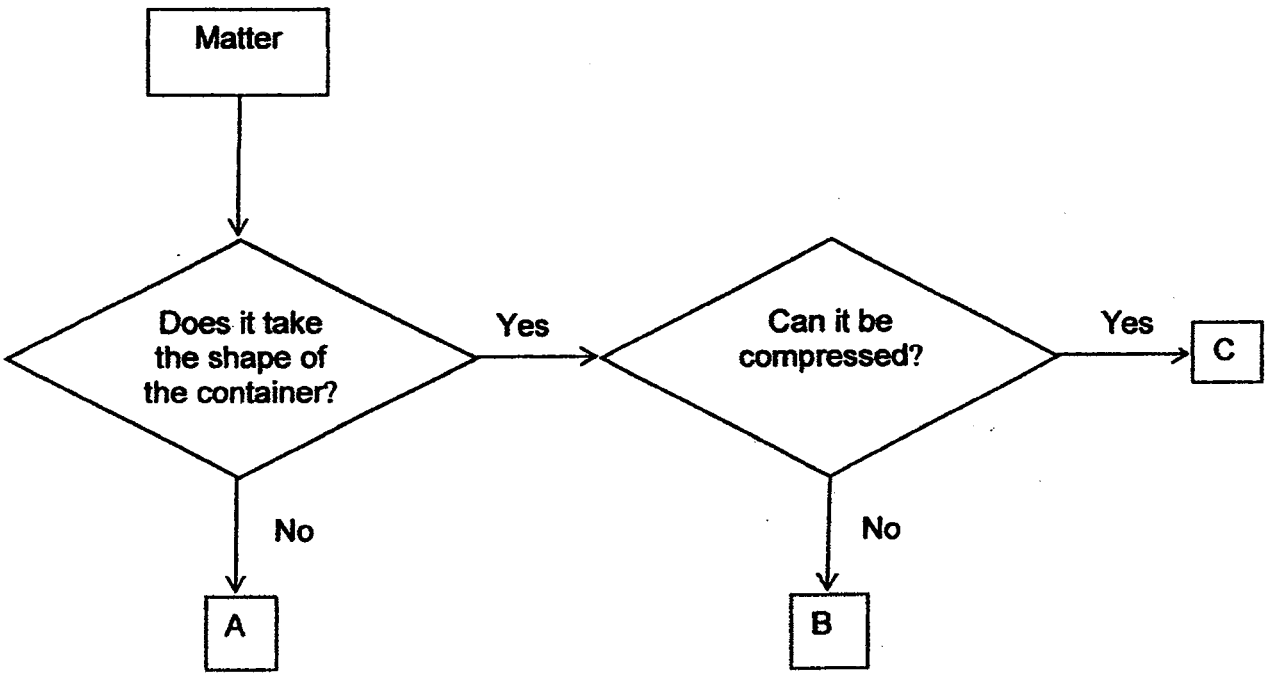


Mabel made use of the properties of matter to use less water to flush the toilet bowl. She put a plastic bottle filled with pebbles into the water tank.
Which of the following properties of matter was Mabel's method based on?

A Solids have mass.
B Solids occupy space.
C Liquids have no definite volume.
D Liquids take the shape of any container.

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

19. The flow chart below identifies the characteristics of three different substances,A, B and C at 39°C.



Which one of the following correctly matches the melting points and boiling points of the three substances A, B and C?

(1)

Substances	Melting point (°C)	Boiling point(°C)
A	36	45
B	28	189
C	5	28

(2)

Substances	Melting point (°C)	Boiling point(°C)
A	45	87
B	28	189
C	5	28

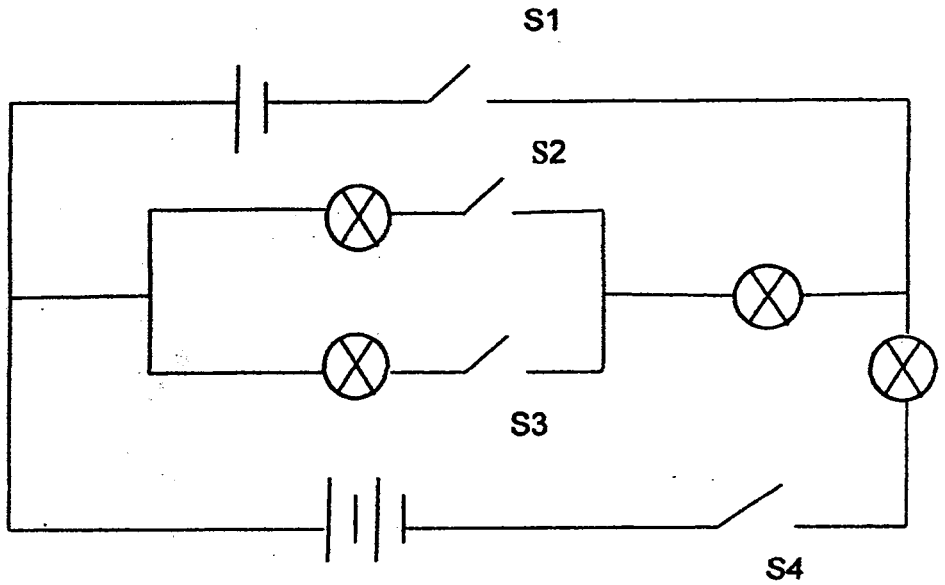
(3)

Substances	Melting point (°C)	Boiling point(°C)
A	31	200
B	45	87
C	20	50

(4)

Substances	Melting point (°C)	Boiling point(°C)
A	45	87
B	50	180
C	5	28

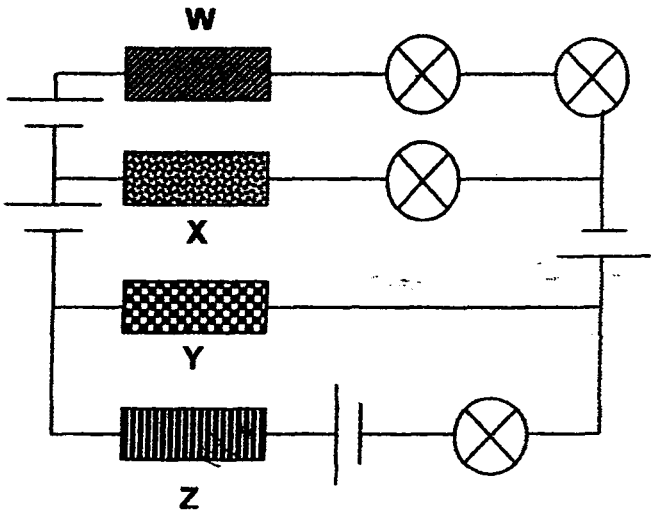
20. **In the circuit below, the bulbs and batteries are working properly.**



Which one of the following shows the correct number of bulbs lit when the respective switches are closed?

	Switches closed	No of bulbs lit
(1)	S1 & S4	4
(2)	S2 & S3	3
(3)	S2 & S4	4
(4)	S3 & S4	3

21. The circuit below, consists of four similar batteries, four similar bulbs and four bars, W, X, Y, Z, which are made of different materials.



Which one of the following classifications of the 4 materials is correct if only **ONE** bulb in the circuit is lit?

(1)

Conductors of electricity	Non-conductors of electricity
X	W
Z	Y

(2)

Conductors of electricity	Non-conductors of electricity
X	W
Y	
Z	

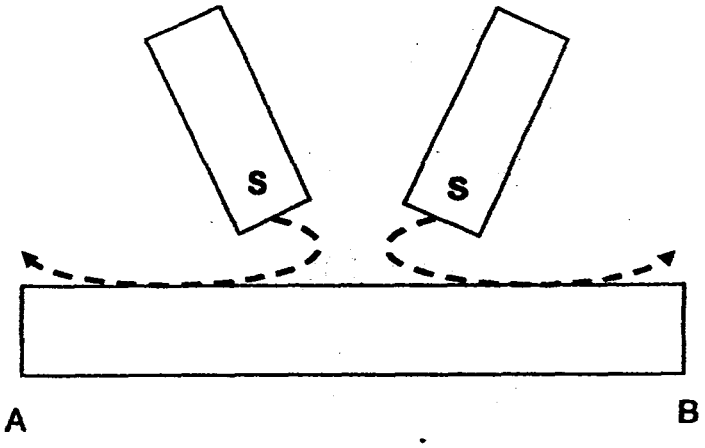
(3)

Conductors of electricity	Non-conductors of electricity
Y	W
Z	X

(4)

Conductors of electricity	Non-conductors of electricity
W	X
Z	Y

22. Serene used the "stroke" method to magnetise an iron bar AB with the South poles of two magnets as shown in the diagram below.



Which one of the following could explain why iron bar AB could not be magnetised by Serene's method?

(1) Iron bar AB is a magnetic material.
(2) Both magnets used are of the same poles.
(3) Both magnets should point in the north-south direction.
(4) The magnetic force of the magnets was not strong enough.

23. Which of the following statements about forces are correct?

A The further an object is from the Earth, the smaller is its mass.

B An object with a smaller mass has a smaller gravitational force acting on it.

C An object which is thrown upwards will eventually fall down due to the pull of gravity.

D The amount of force needed to lift an object depends on the size of the object.

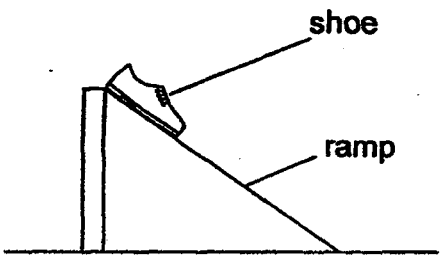
(1) A and B only
(2) B and C only
(3) C and D only
(4) A, B, C only

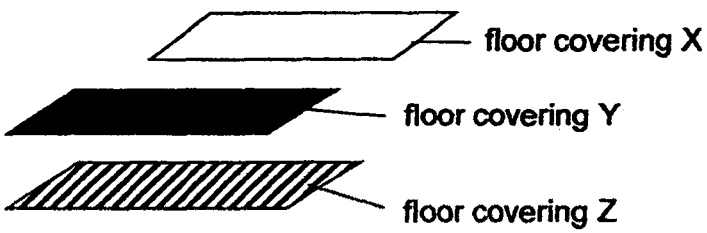
24. Mingli conducted an experiment to find out which type of floor covering, X, Y or Z, provides the best grip when someone walks on it. She set up the experiment and came up with the following steps:

Step 1: Place one type of floor covering on the ramp.

Step 2: Tilt the ramp at an angle until the shoe started to slide down the ramp.

Step 3: Record the height of the ramp at which the shoe started to slide down.



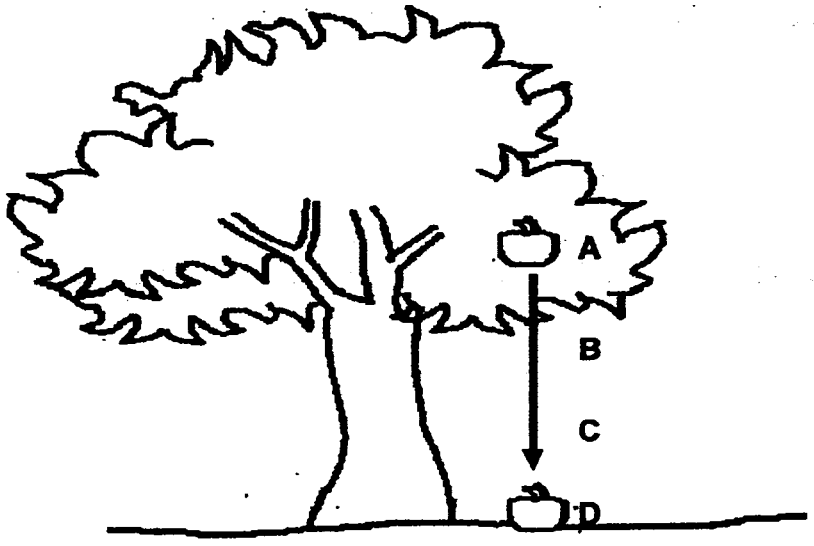


Which of the variables below should be kept the same to ensure a fair test?

A Type of shoe
B Type of floor covering
C Initial height of the ramp
D Length of ramp

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

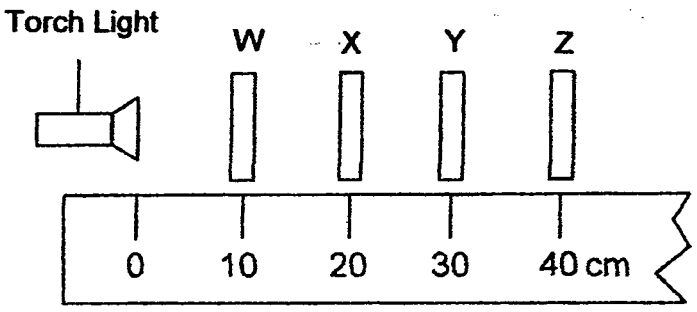
25. The diagram below shows a fruit falling from a tree to the ground.



At which point(s) does/do gravity act on the fruit?

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

26. Daniel set up an experiment using four different objects, wood, tracing paper, clear glass and a cardboard. He arranged the objects in different positions, W, X, Y and Z as shown below.

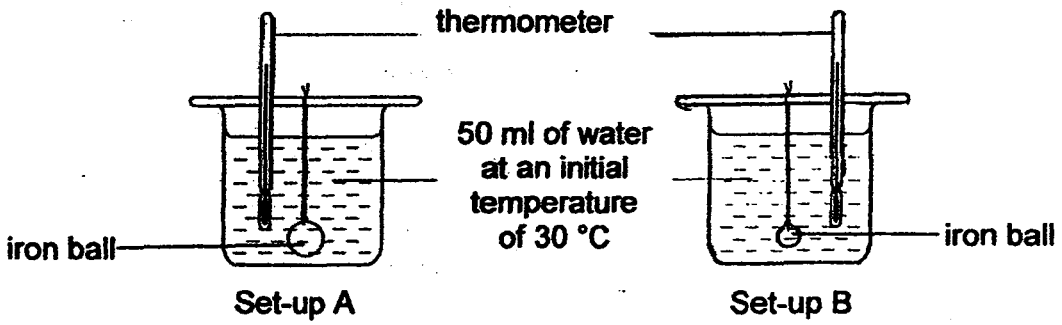


He observed that the distance travelled by the light was 30 cm.

Which one of the following correctly shows the positions of the objects?

	W	X	Y	Z
(1)	wood	tracing paper	clear glass	cardboard
(2)	cardboard	clear glass	tracing paper	wood
(3)	tracing paper	cardboard	wood	clear glass
(4)	clear glass	tracing paper	cardboard	wood

27. Zoe heated up two iron balls of different sizes to 100 °C. She then put each iron ball into Set-up A and Set-up B and measured the rise in the temperature of water as shown below.



Which of the following statements are correct?

A The water lost heat to the iron ball.

B The iron balls expanded after being heated.

C The iron balls have the same amount of heat at 100 °C.

D The water in Set-up A has a greater increase in temperature than the water in Set-up B.

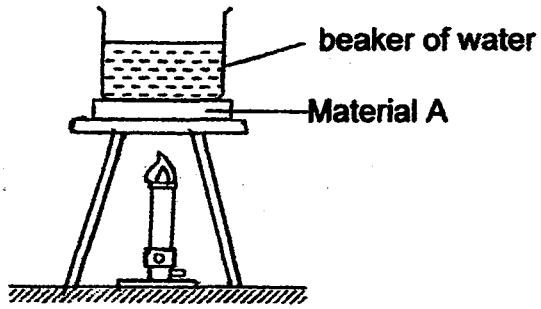
(1) A and D only

(2) B and C only

(3) B and D only

(4) B, C and D only

28. Roy wanted to find out if the thickness of Material A affects the conduction of heat. He set up the experiment below.



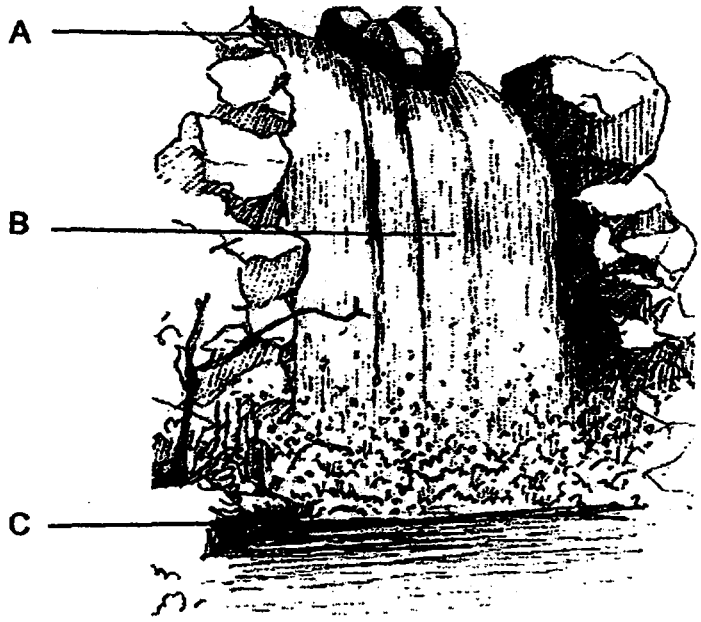
The table below shows the different conditions in Roy's four experiments set-ups, W, X, Y and Z as well as the results.

Variables	Experiment Set-ups			
	W	X	Y	Z
Thickness of material A (cm)	9	8	6	6
Amount of water (ml)	100	120	100	150
Results				
Time taken for water to start boiling (min)	4	3.5	2.5	3.5

Which of the following two experiment set-ups should Roy compare?

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

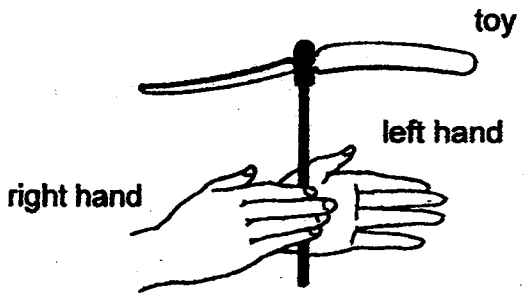
29. The diagram below shows a waterfall.



Which one of the following correctly describes the energy of the water at A, B and C?

	A	B	C
(1)	kinetic energy	potential energy	kinetic energy
(2)	kinetic energy	potential energy and kinetic energy	kinetic energy and heat energy
(3)	potential energy and kinetic energy	potential energy and kinetic energy	kinetic energy and sound energy
(4)	potential energy and kinetic energy	kinetic energy and sound energy	heat energy

30. Ashlyn held a toy between her hands as shown. 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 at 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 higher height?

(1) The weight of the toy was lesser.
(2) The toy used up more heat energy.
(3) The kinetic energy of the toy was greater.
(4) The potential energy of the toy was lesser.

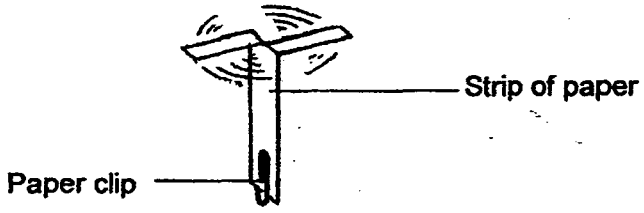
Name : _____ Index No : _____ Class : P6 ___

40

SECTION B (40 marks)

For questions 31 to 44, 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.

31. Gary made a paper flyer using a strip of paper and a paper clip as shown below.



He wanted to find out if the number of paper clips on the paper flyer would affect the time it took for the paper flyer to fall to the ground.

Below were the steps he took in his experiment.

Step 1: Cut a piece of paper and fold it into a paper flyer.
Step 2: Attach one paper clip to the paper flyer.
Step 3: Drop the paper flyer from a height of 5 metres.

(a) What did Gary have to measure after dropping the paper flyer? [1]

_____

_____

(b) Name one variable which Gary must keep constant in his experiment. [1]

_____

(c) Explain why Gary had to keep the variable in (b) constant. [1]

_____

_____

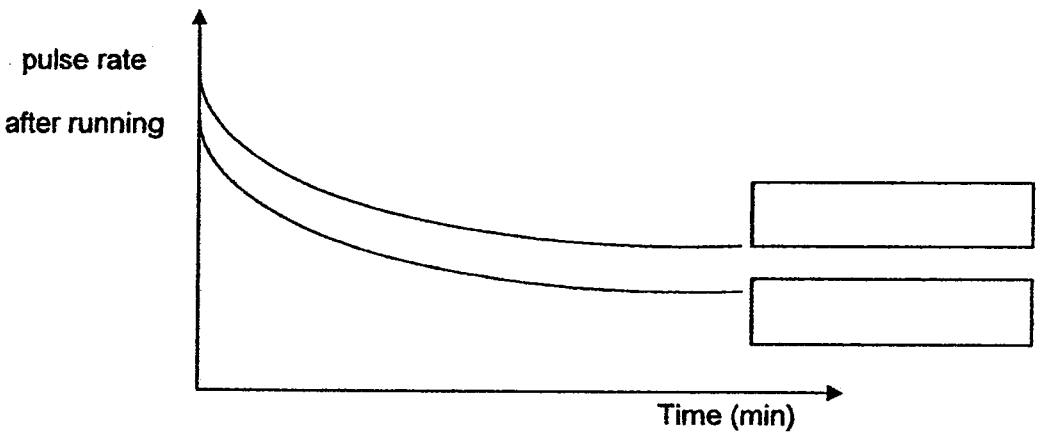
Score 3

32. Two pupils, X and Y, carried out an experiment to investigate how running could affect their pulse rates. They measured their pulse rates before the run. After 15 minutes of running, they measured their pulse rates immediately and again at every 2-minute interval for 10 minutes.

They recorded their pulse rates before and after the run in the table below.

Pupil	pulse rate before running (beats per minute)	Pulse rate after running (beats per minute)					
		Number of minutes					
		0	2	4	6	8	10
X	72	139	119	85	79	75	74
Y	74	135	117	82	76	72	70

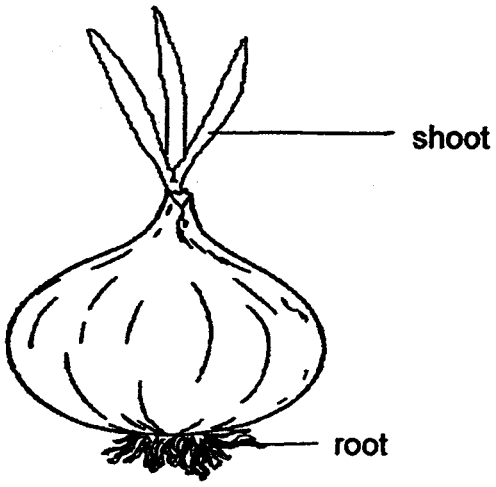
(a) The graph below shows the pupils' pulse rate **after running**.
Label the graph by filling in the boxes with X and Y. [1]



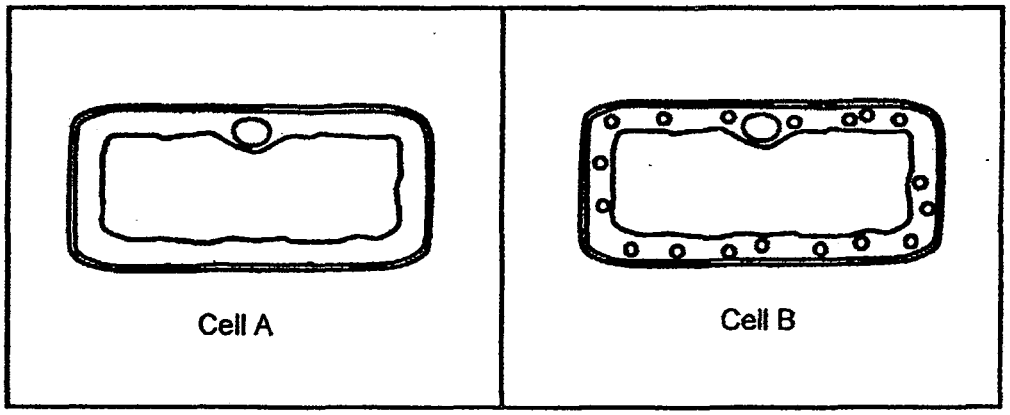
(b) Explain why the boys' pulse rates increased after exercising. [1]

Score 2

33. The diagram below shows a plant.



The following cells, A and B, were taken from two different parts of the plant which are labelled above.

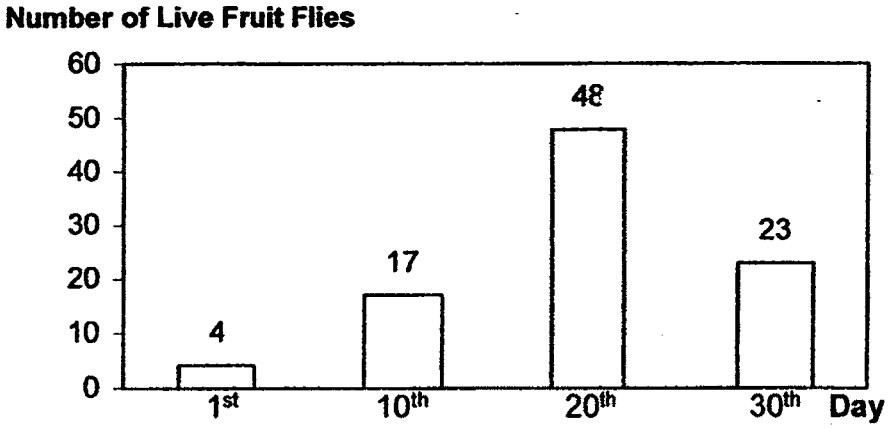


In the table below, identify and write down the cells, A and B, to show where they were taken from the plant and give reasons for your answer. [2]

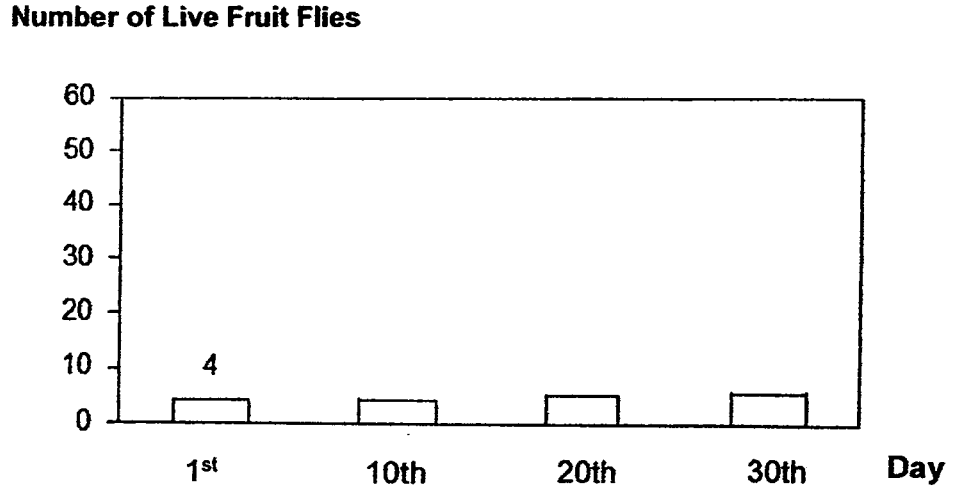
Cell	Part of plant the cell is taken from	Reason
	shoot	
	root	

Score 2

34. Alexis conducted an experiment to study the changes in the population of fruit flies over a period of about one month.
The life cycle of a fruit fly from an egg to an adult is approximately 10 days at room temperature of 30°C.
Alexis placed a piece of banana, a live plant on some damp soil and 4 fruit flies in a closed glass container.
Alexis recorded her observations in the graph below.



Alexis' classmate, Tom, carried out a similar experiment, but he noticed the number of fruit flies on the 30th day in his experiment still remained the same, as shown in the graph below.



(a) Explain why there is a difference in the number of fruit flies in both experiments. [1]

_____

_____

continued on next page

Score 1

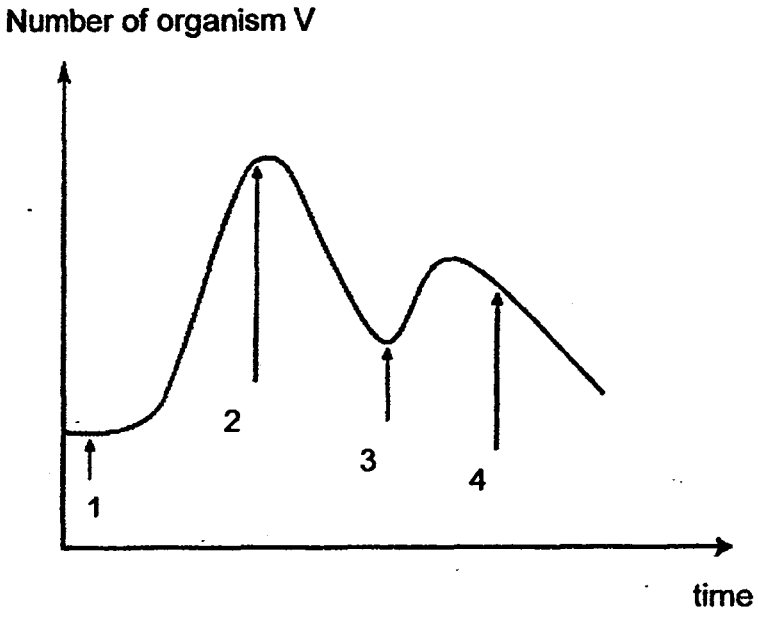
continued from previous page

(b) Explain clearly how the fruit flies can have a constant supply of water and air in the closed container in both experiments? [2]

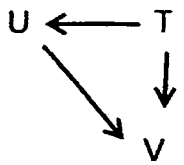
(c) There was a decrease in the population of fruit flies after the 20th day in ~~both~~ Alexis' experiments. Give a reason for ~~his~~ her observation. [1]

Score	/3

35. The graph below shows the number of organism V in their habitat over a period of time.



(a) Animal K, which eats both plants and animals, was first introduced to the habitat at point 2.
Complete the food web below to show the food relationships between Animal K with the rest of the organisms T, U and V. [1]



(b) Based on the food web, **which** organism(s) K, T, U, V, is/are both a prey and predator? [1]

_____

_____

(c) Which organism is a food producer? [1]

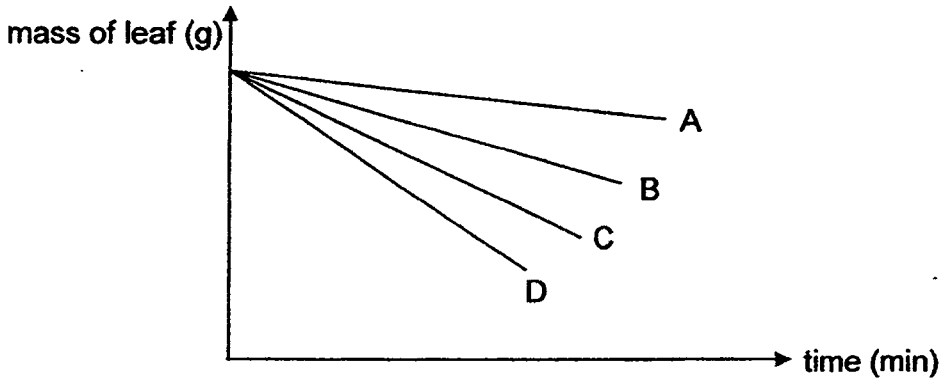
_____

Score	3

36. Lissy set up an experiment using four similar leaves A, B, C and D of a plant. She coated some surfaces of the leaves on the plant with oil as shown in the table.
A tick (√) shows the surface of the leaf coated with oil.

Leaf	Coated with oil	
	Upper surface	Lower surface
A	√	√
B	√	
C		√
D		

The leaves were put in an open area for five hours. Lissy measured the mass of the leaves at regular time intervals. Her results are shown in the graph below.



Lissy used her results to compare the difference between the stomata on the upper and lower surface of the leaves.

(a) What can Lissy conclude about the number of stomata on the surfaces of the leaves of this plant? [1]

_____

_____

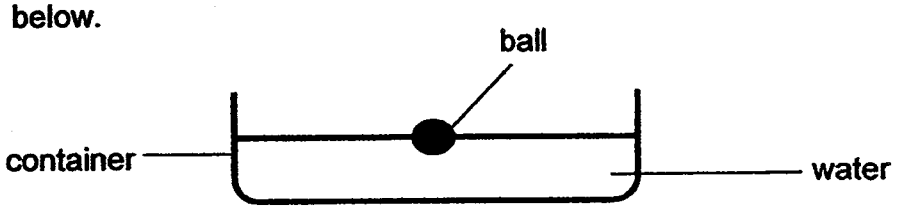
(b) Explain the purpose of Leaf D in the experiment. [1]

_____

_____

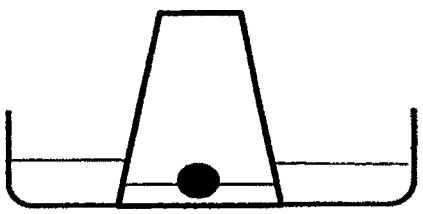
Score ___/2

37. Edwin placed a small ball in a container with water as shown in the diagram below.



Next he lowered an empty glass into the container of water with the small ball in the glass.

Below is what Edwin observed.

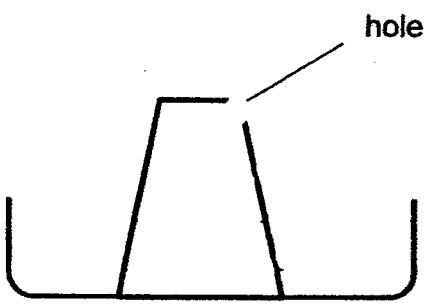


(a) State two reasons for his observation. [2]

(i)_____

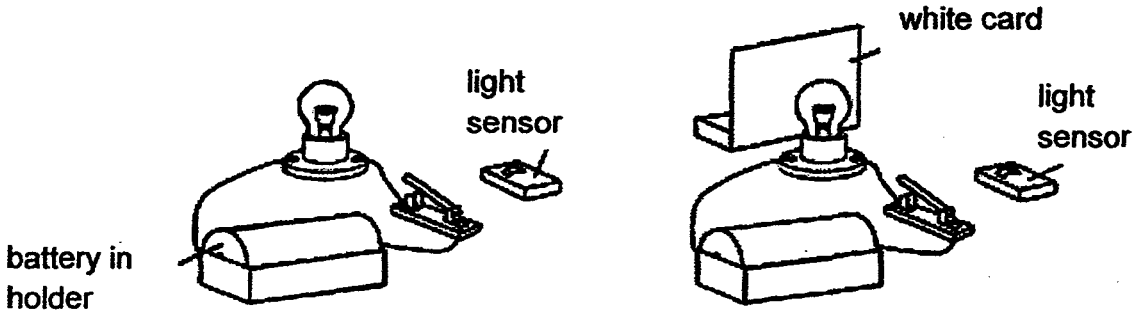
(ii)_____

(b) Next, he made a hole at the top of the cup.
In the diagram below, draw the water level and the ball which Edwin would observe. [1]

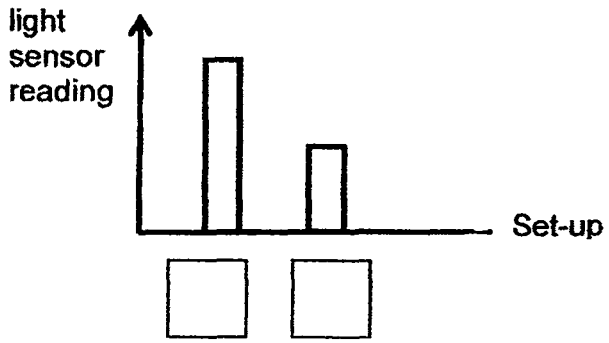


Score	
	3

38. Tiffany conducted an experiment using identical bulbs and batteries with the set-ups below. The light sensor is used to measure the brightness.



(a) Fill in the boxes below with P and Q to show Tiffany's results of the experiment. [1]



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

_____

_____

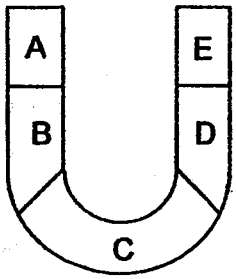
(c) In another set-up, R, Tiffany connected another identical bulb in series to the bulb in set-up Q.

What will be the reading on the light sensor in set-up R as compared to that in set-up Q? [1]

_____

Score 3

39. Ali and Siti tested the strength of the different parts of a horseshoe magnet. They divided the magnet into five parts, A, B, C, D and E, as shown in the diagram below.



They used the horseshoe magnet to attract iron nails and recorded their results in the tables below.

Ali's results	
Part	**Number of iron nails attracted**
A	2
B	5
C	3
D	4
E	1

Siti's results	
Part	**Number of iron nails attracted**
A	4
B	1
C	0
D	1
E	3

(a) Whose results are more likely to be correct?
Give a reason for your answer. [1]

_____

_____

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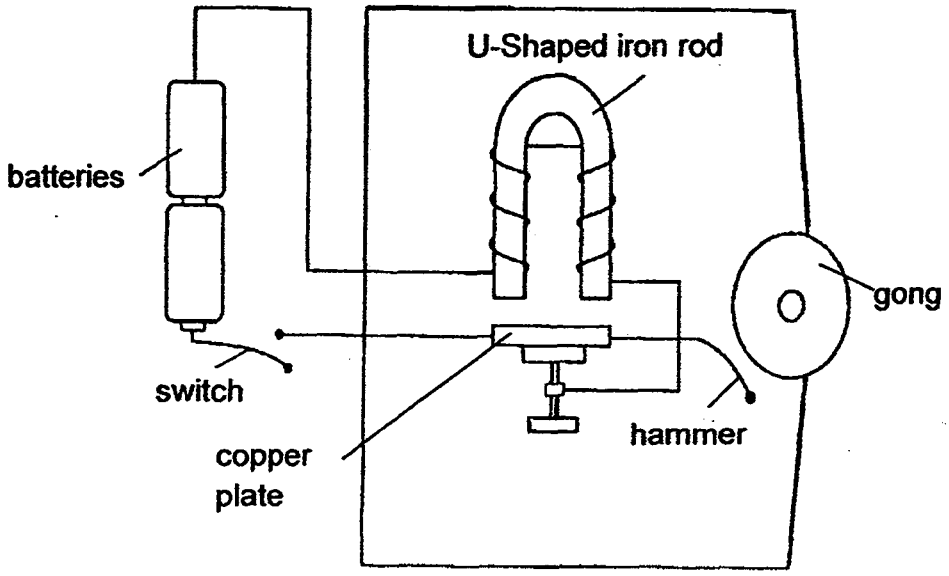
Score 1

continued from previous page

Ali set up the circuit below.



(b) Would the hammer hit the gong when the switch is closed?
Give a reason for your answer. [1]

_____

_____

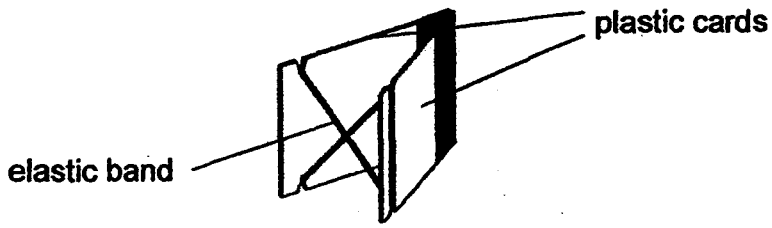
(c) Suggest one way for the hammer to hit the gong faster if the circuit works. [1]

_____

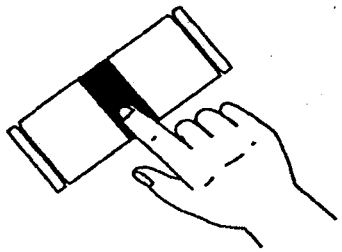
_____

Score	2

40. June made a jumping toy using two pieces of strong plastic cards and an elastic band as shown in the diagram below.



She wanted to find out how the number of elastic bands used to make the toy would affect the height it jumped to. She stretched the elastic band and pressed it down before releasing the toy.



The toy snapped and jumped to a certain height which June measured and recorded in the table below. She repeated the activity by increasing the number of elastic bands used each time.

Number of elastic bands used	Height toy that the jumped (cm)	Put a cross (X)
1	6	
2	9	
3	5	
4	13	
5	16	

Based on the information above, answer the following questions:

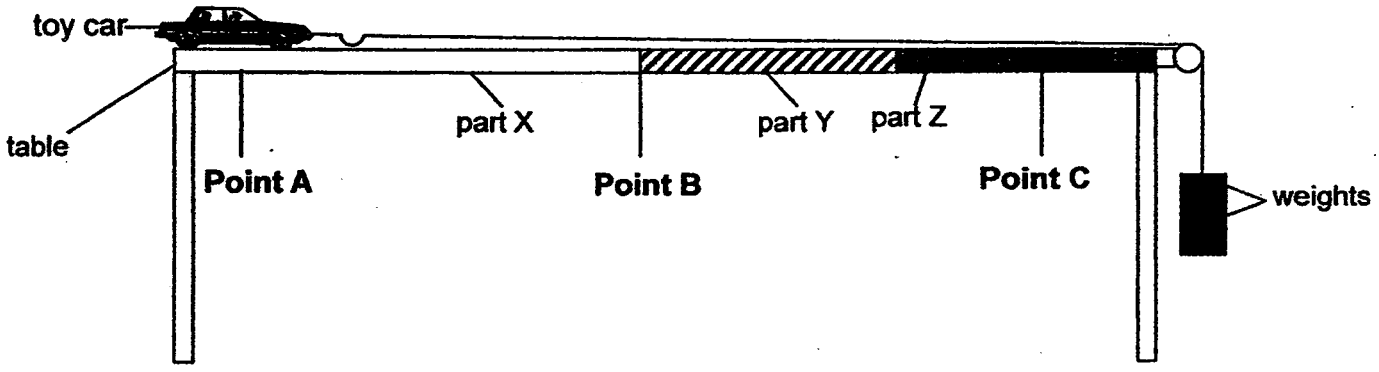
(a) June recorded ONE of the results wrongly.
Put **ONE** cross (X) in the box above to indicate the mistake she had made. [1]

(b) Suggest what June could do to ensure that her results were reliable. [1]

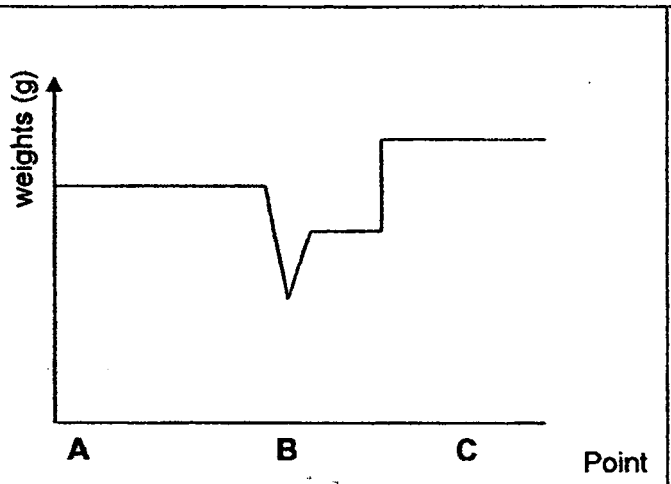
_____

Score	2

41. Tom set up the experiment below to find out if the type of surface would affect the amount of weights needed to move a toy car. He covered parts X, Y and Z of the table with three different types of surfaces and measured the amount of weights needed to move the toy car from point A to point B and finally to point C.



Tom recorded his observations below.



Texture of Surface

Smooth ⟶ **Rough**

glass surface, carpeted surface, sandpaper surface

Based on the information above, answer the following questions:

(a) Identify the type of surfaces that **parts X, Y and Z** could have been covered with in the experiment above. [1]

Type of Surface	Parts of the Table
glass	
carpeted	
sandpaper	

continued on next page

Score	/ 1

continued from previous page

(b) Tom discovered that fewer weights were needed to move the toy car when he poured some water on the glass surface. Explain why this was so. [1]

_____

_____

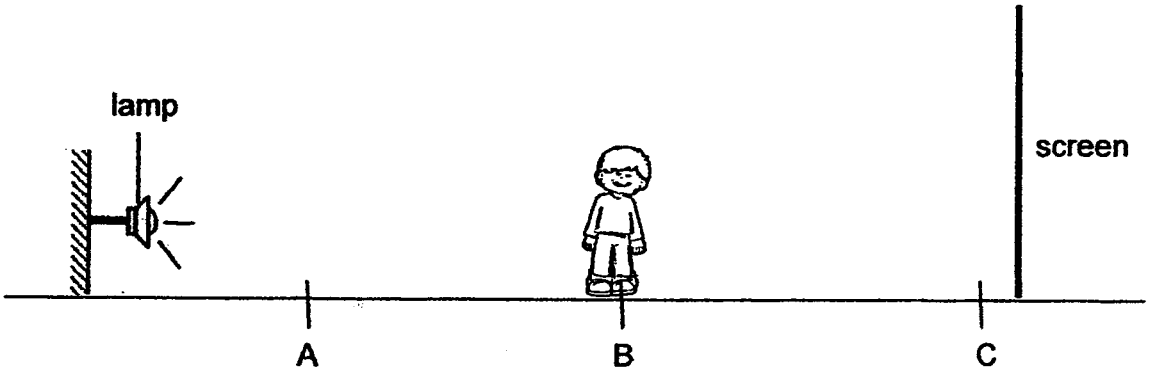
(c) Name the force(s) acting on the toy car when it was moving. [1]

_____

_____

Score	2

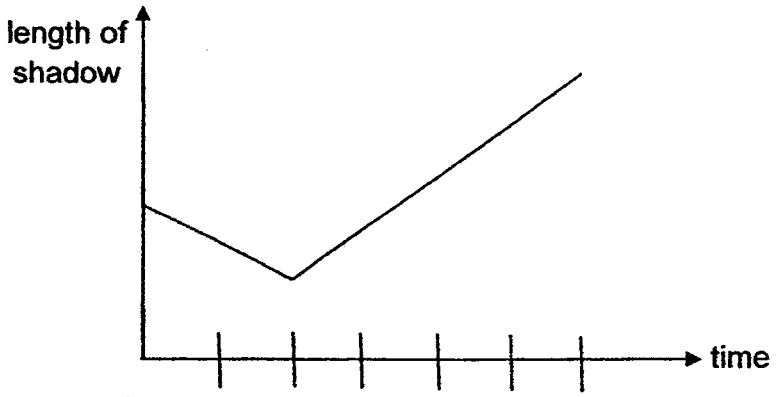
42. Jerry was standing in front of a lamp in a dark room as shown below.



(a) State a property of light resulting in Jerry's shadow to be formed on the screen? [1]

_____

Jerry was standing at Position B and he walked in a straight line between Positions A and C. The distance between A and B is the same as the distance between B and C.
The graph below shows how the length of Jerry's shadow on the screen changed during his walk.



(b) Fill in the boxes below to show the path Jerry took between Position A and Position C that caused the change in the length of his shadow. [1]

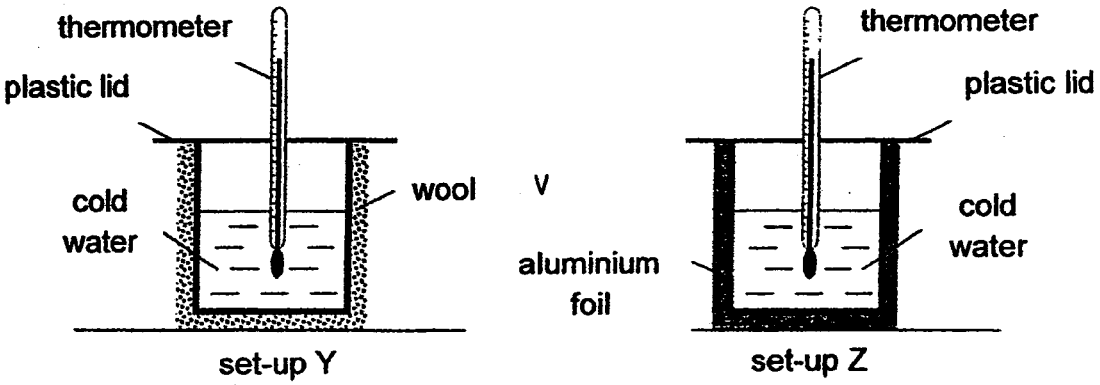
Jerry walked from ☐ to ☐ and then from ☐ to ☐

(c) Explain why Jerry was able to see the lamp in the dark. [1]

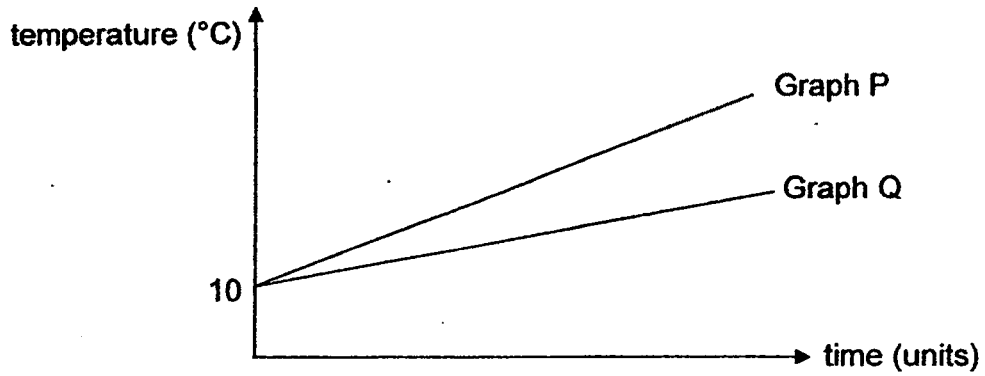
_____

Score ☐/3

43. Amanda conducted an experiment using set-ups Y and Z as shown below. She wrapped a glass beaker with wool and another identical glass beaker with aluminium foil. She filled both beakers with the same volume of cold water at 10 °C.



Amanda measured the temperature of the water at different times and plotted her results in the graph shown.



(a) Based on the graph above, what is the relationship between the temperature of the water and time? [1]

_____

_____

(b) Which graph, P or Q, shows the change in the temperature of water in set-up Z after some time? Give a reason for your answer. [1]

_____

_____

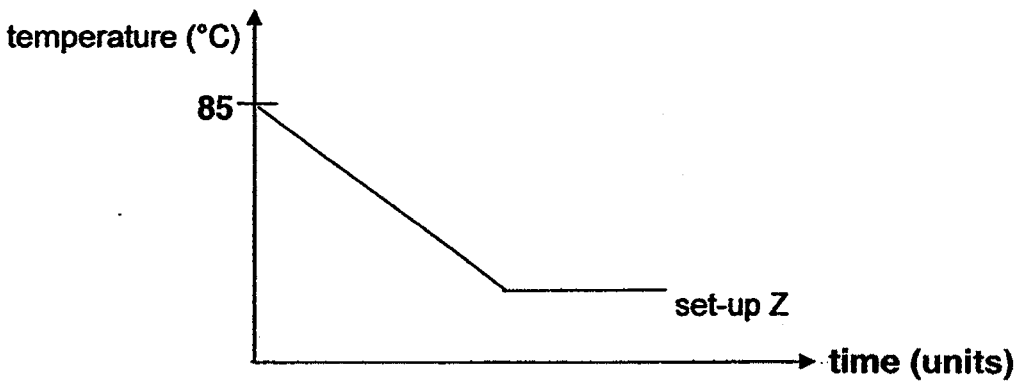
_____

Score 2

continued from previous page

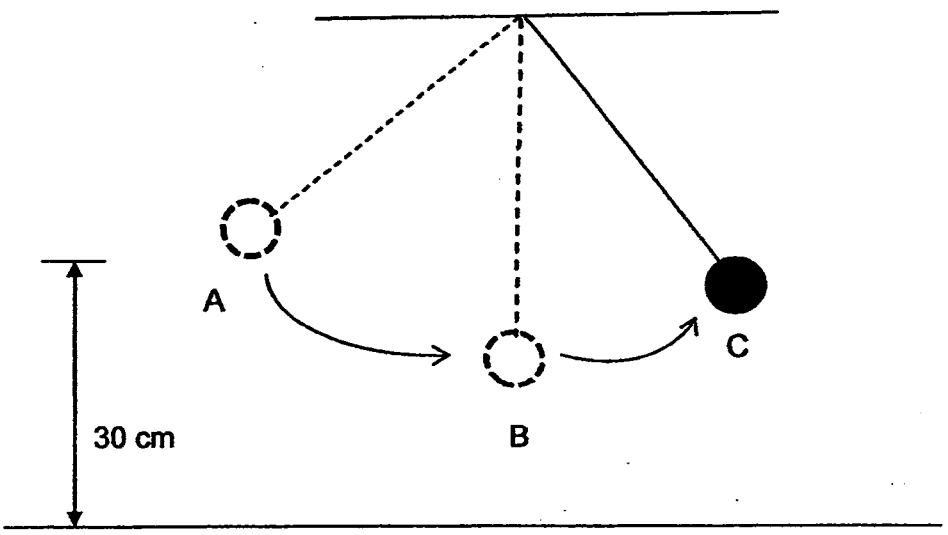
(c) Next, Amanda used hot water at 85 °C in the glass beakers of set-ups Y and Z instead.

Complete the graph below to show the change in temperature of the water in set-up Y. Label your graph set-up Y. [1]



Score	
	1

44. A metal ball which is tied to a string swings from A to B and then to C as shown below.



(a) Describe the energy change for the metal ball as it moved from position A to B and then to C. [2]

_____

_____

(b) At which position, A, B or C, did the ball have the greatest kinetic energy and the least gravitational potential energy? [1]

The ball had the greatest kinetic energy at : _____

The ball had the least gravitational potential energy at : _____

(c) Why was the height of the ball at C less than 30 cm? [1]

_____

_____

- END OF PAPER -

Score	4

ANSWER KEY

YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**RAFFLES GIRLS' PRIMARY**
SUBJECT	:	**SCIENCE**
TERM	:	**SA1**

Booklet A

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

Booklet B

Q31a The amount of time the paper flyer took to reach the ground.

Q31b The type of paper clip used.

Q31c This is to ensure that the time taken for the paper flyer to reach the ground was solely due to the number of paper clips used and not any other reason.

Q32a

X

Y

Q32b This is because when they exercise they need more energy. Thus their hearts beat at a faster rate to pump oxygen and digested food to the other cells of the body faster to release more energy. Resulting in the boys' pulse rates increase.

Q33

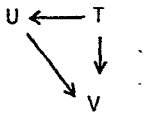
Cell	Part of plant the cell is taken from	Reason
B	shoot	**Cell B contains chloroplast which enables the shoot to trap light energy and photosynthesise.**
A	root	**Cell A does not contain chloroplast, indicating that it is a root cell since the roots do not need to trap light energy to photosynthesise, as it is not exposed to light.**

Q34a The fruit flies Alexis used in her experiment were male and female and they reproduced. However, the flies in Tom's experiment were all female/male, thus they did not reproduce.

Q34b The live plant would take in carbon dioxide and release oxygen during photosynthesis, oxygen is needed by the fruit flies for respiration, thus there will be a constant supply of air. The live plant would absorb the water in the soil and the water is lost through the stomata. The water in the damp soil would gain heat from the warmer surrounding an evaporate into water vapour. The water vapour would rise and lose heat and condense into water droplets when it comes in contact with the cooler inner surface of the glass.

Q34c There was insufficient food and food is needed for the survival of the fruit flies.

Q35a



Q35b Organism V.

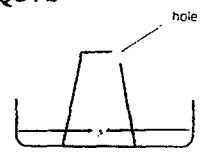
Q35c Organism T.

Q36a There is more stomata on the upper surface of the leaf.

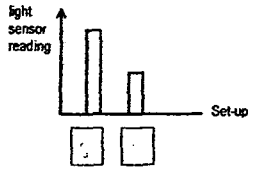
Q36b It acts as a control set-up to ensure that any changes in mass is due to the oil clogging the stomata.

Q37a (i) There was air which occupies space in the glass and could not escape.
(ii) Air can be compressed so a little water could enter.

Q37b



Q38a



Q38b Light emitted from the light bulb in Set-up Q is reflected onto the white card and into the light sensor, thus more light is reflected into the light sensor in Q.

Q38c The reading on the light sensor in Set-up R would be lower than in Set-up Q.

Q39a Siti's results. The magnetic strength of a magnet is strongest at its poles at the end of a magnet in her results, part A and E which were the ends of the magnet and the poles of the magnet attracted the greatest number of iron nails.

Q39b No. Copper is a non-magnetic material. Thus when the switch was closed, electricity flowed through the circuit and electromagnetised the iron rod, the copper plate would not be attracted to the electromagnet and the hammer would not hit the gong.

Q39c Add more batteries in series to the circuit.

Q40a

3	5	X

Q40b She could repeat the experiment 3 more times for every experiment and find the average results for each experiment.

Q41a

Type of Surface	Parts of the Table
glass	Y
carpeted	X
sandpaper	Z

Q41b Water acted as a lubricant and reduced the friction between the wheels of the toy car and the glass surface, thus less force was needed to overcome the frictional force between the wheels of the toy car and glass surface.

Q41c Frictional force and gravitational force.

Q42a Light travels in a straight line.

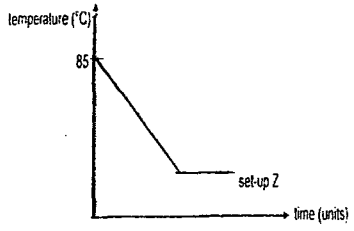
Q42b Jerry walked from **B** to **C** and then from **C** to **A**.

Q42c Light from the lamp entered Jerry's eyes.

Q43a As the time increases, the temperature of the water increases.

Q43b Graph P. Aluminium is a good conductor of heat and will conduct heat from the warmer surrounding to the cold water at a faster rate. The temperature of the water in Graph P rose at a faster rate, indicating that the water gained heat at a faster rate.

Q43c



Q44a From point A to B, gravitational potential energy is converted to kinetic energy. From point B to C, kinetic energy is converted to gravitational potential energy.

Q44b The ball had the greatest kinetic energy at : **B**
The ball had the least gravitational potential energy at : **B**

Q44c Some of the kinetic energy of the ball had been converted into heat and sound energy and the ball did not have enough kinetic energy to reach 30cm again.

End