MAHA BODHI SCHOOL
2018 SEMESTRAL ASSESSMENT 1
PRIMARY SIX SCIENCE
(BOOKLET A)

Name : _____ ( )

Class : Primary 6 _____

Date : 8 May 2018

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

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 in the Optical Answer Sheet (OAS) provided.

This booklet consists of 22 printed pages.

BOOKLET 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 your answer on the Optical Answer Sheet.**

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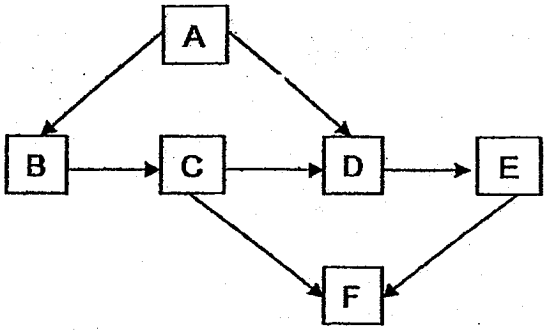
1. Allan wanted to find out if the growth of a plant is affected by drought or flood.

   Which of the following shows correctly the variables that should be changed and measured in his experiment?

	Number of set-up	Variable changed	Variable measured
(1)	1	amount of water	height of plant
(2)	1	amount of sunlight	number of leaves
(3)	3	amount of sunlight	height of plant
(4)	3	amount of water	number of leaves

2. The food web below shows the food relationships among six organisms.



   Which of the organisms are both prey and predator?

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

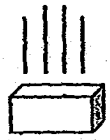
3. Sam made some observations of how the leaves of some plants adapt to their environment. He recorded his observations in the table shown below.

Plant	Adaptation	Function
X	air spaces in leaves	helps the plant to float
Y	waxy leaves	prevents water from collecting on the leaves
Z	needle-like leaves	reduce water loss

Based on the information given above, which of the following correctly describes the reason for the adaptation of leaves X, Y and Z?

	Plant X	Plant Y	Plant Z
(1)	obtain sunlight	obtain sunlight	cope with high temperature
(2)	cope with high temperature	breathe in water	obtain sunlight
(3)	obtain sunlight	cope with high temperature	breathe in water
(4)	breathe in water	obtain sunlight	cope with high temperature

4. A brick is dropped from a height.

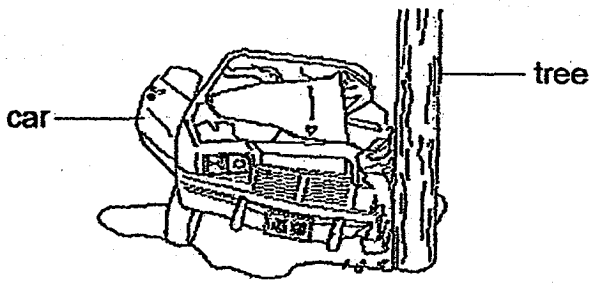


Which of the following forms of energy are present in the falling brick?

A. light energy
B. kinetic energy
C. potential energy
D. electrical energy

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

5. The picture below shows what happened when a moving car crashed into a tree.

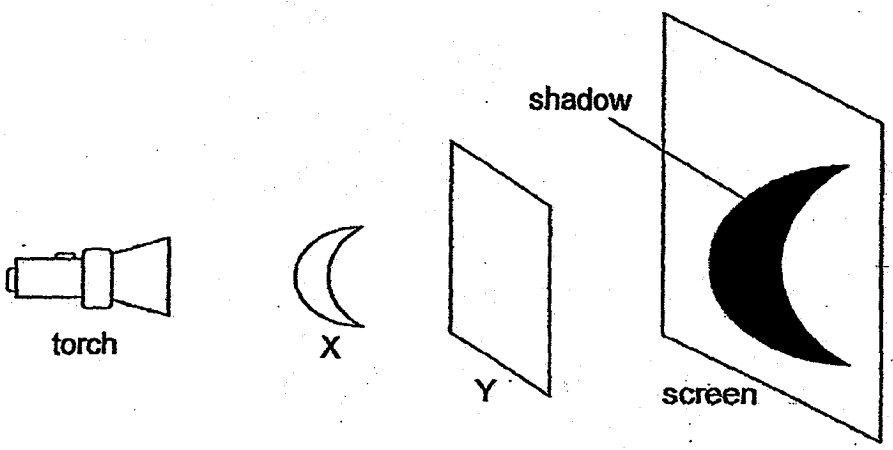


Which of the following show the effects of a force on the car when it hit the tree?

A. The car changed shape.
B. The car stopped moving.
C. The moving car slowed down.
D. The moving car changed direction.

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

6. Alicia placed a rectangular sheet Y and object X between a torch and a screen as shown below.

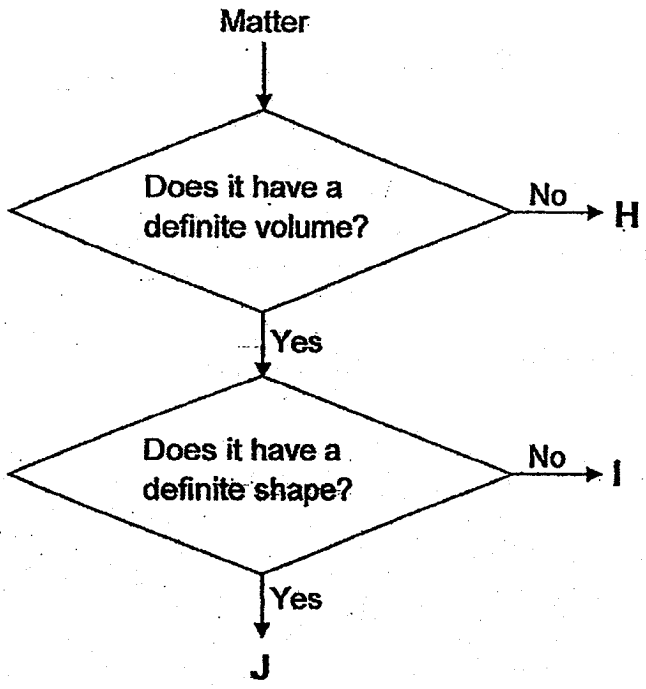


Which of the following conclusions are correct?

	Object	Allows light to pass through	Does not allow light to pass through	Not possible to tell
A.	X		✓	
B.	Y	✓		
C.	screen			✓

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

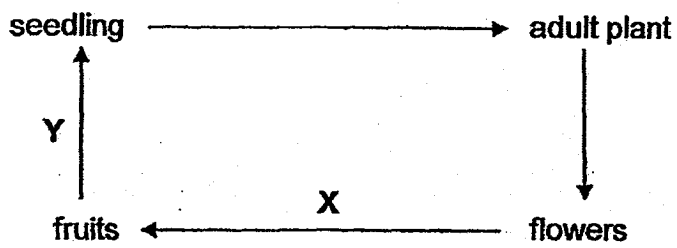
7. Study the flow chart below



Which of the following correctly represents H, I and J?

	H	I	J
(1)	ice	water	water vapour
(2)	water vapour	ice	water
(3)	ice	water vapour	water
(4)	water vapour	water	ice

8. The diagram below shows the life cycle of a plant.



Which of the following best represent processes at X and Y?

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

9. The following are descriptions of animal X.

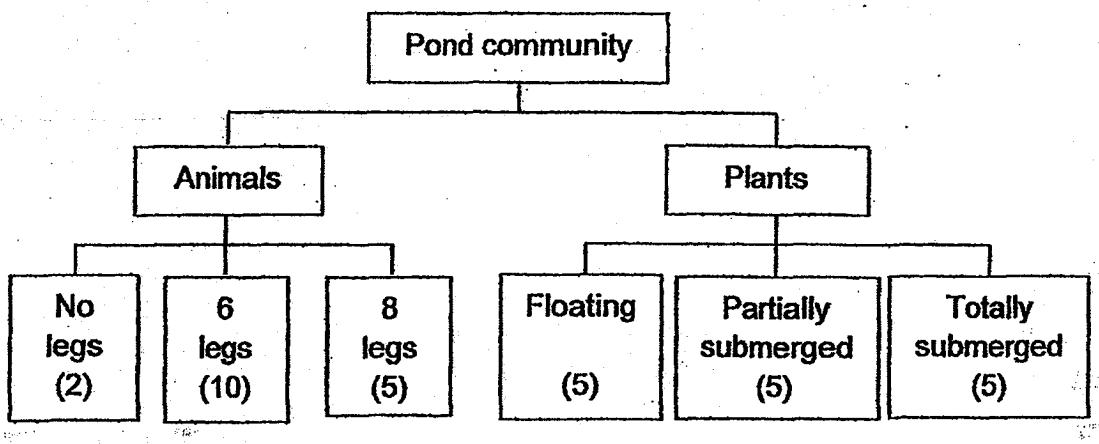
Lay eggs in water	Has three stages in its life cycle

Which of the following statements about animal X is/are definitely true?

A. Animal X is not a mosquito.
B. The adult of animal X lives on land.
C. The young of animal X lives in water.
D. The young of animal X looks like its adult.

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

13. The table below shows the number of plants and animals in a pond.



Based on the table above, which of the following statements is/are true?

A. There are 6 populations in the community.
B. There are more animals than plants in the community.
C. There are only 3 populations of plants in the community.

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

14. Ethan studied a small habitat which has four organisms A, B, C and D. The food relationships of the organisms are shown below.

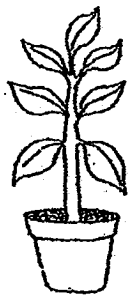
- A eats B and C.
- B is eaten by A and D.
- D is eaten by C.

Which organism in the habitat obtains its energy directly from the Sun?

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

15. Fiona bought two similar potted plants. She kept one plant under the sun and the other in the shade.

A few months later, Fiona noted that the two plants looked different as shown in the diagrams below.



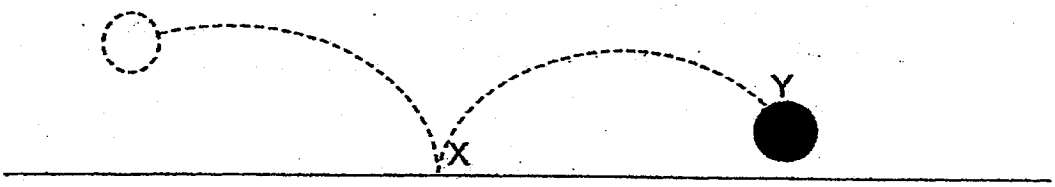
plant grown in the shade

plant grown in sunlight

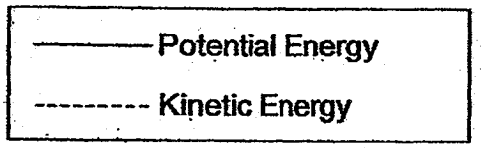
Which one of the following is correct for the plant grown in the shade?

	Observation	Reason
(1)	had more leaves	to make more food
(2)	had longer stem	to support more leaves
(3)	had leaves that were well-spread out	to get maximum sunlight
(4)	had thicker stem	to transport more food and water

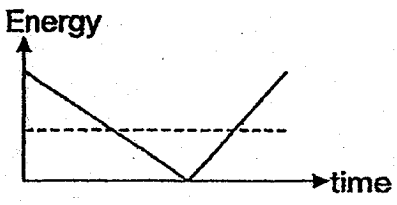
16. A rubber ball was thrown and moved through a path as shown below.



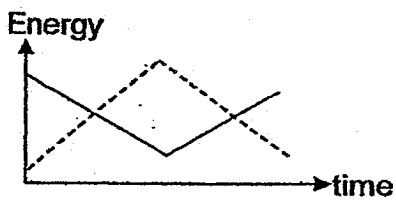
Which of the following graphs best represents the change in the amount of potential energy and kinetic energy as the ball moved from X to Y?



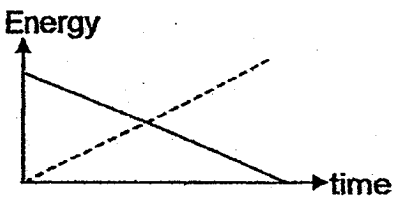
(1)



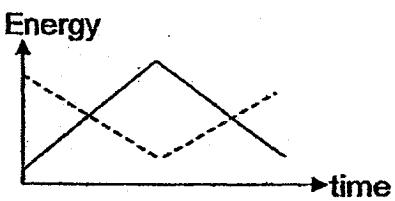
(2)



(3)

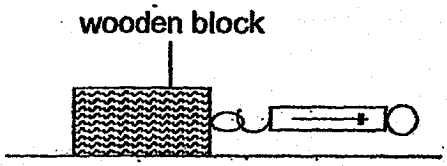


(4)



17. David conducted a fair test using a wooden block and a spring balance.

He measured the amount of force needed to move the wooden block on its faces of different areas of contact with the table surface.



He concluded that the area of contact does not affect the frictional force between the wooden block and the table surface.

Which of the following tables shows the correct set of results?

(1)

Area of contact (cm^2)	Force needed (unit)
20	15
20	15
20	15

(2)

Area of contact (cm^2)	Force needed (unit)
20	10
50	15
100	30

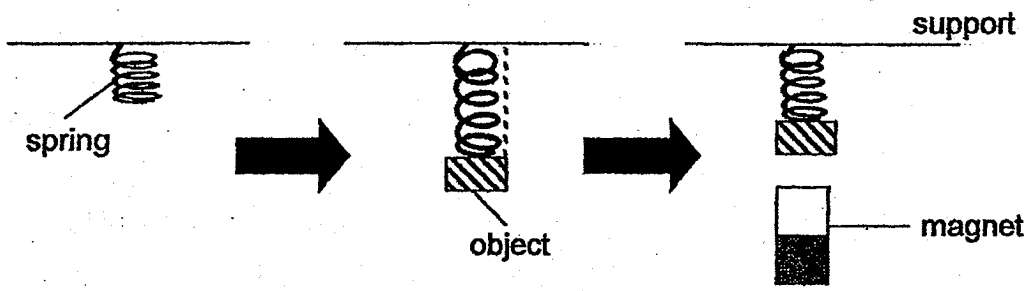
(3)

Area of contact (cm^2)	Force needed (unit)
20	15
50	15
100	15

(4)

Area of contact (cm^2)	Force needed (unit)
100	10
100	15
100	30

18. The diagrams below show what happened when an object was hung on a spring. A magnet was then placed below the object.

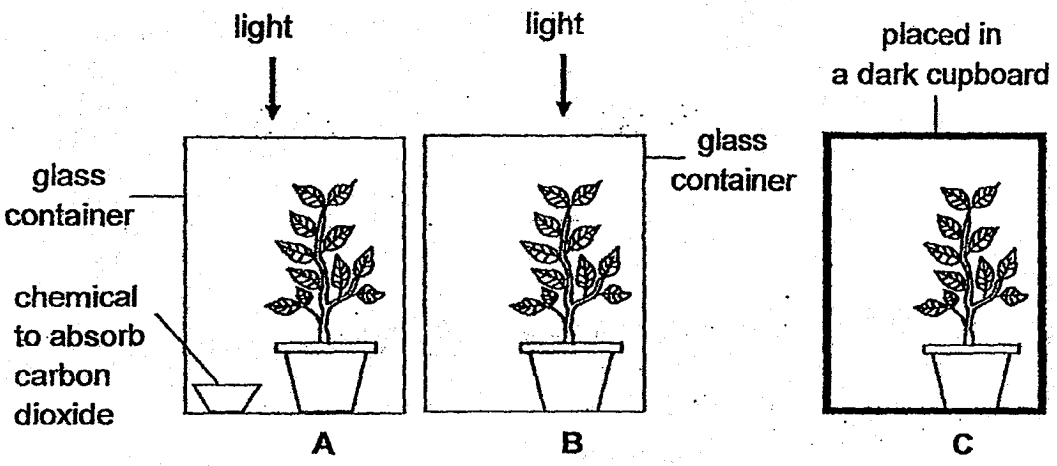


Which of the following forces is/are pushing or pulling the object upwards?

A. magnetic force
B. gravitational force
C. elastic spring force

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

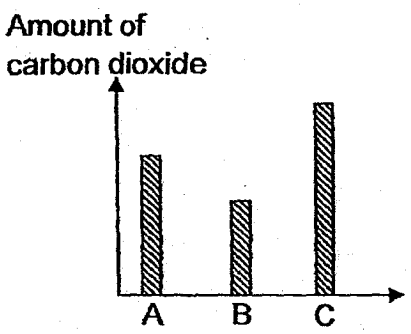
19. Jessie set up the experiment as shown below. She used three similar well-watered potted plants. She placed containers A and B in a brightly lit room and container C in a dark cupboard.



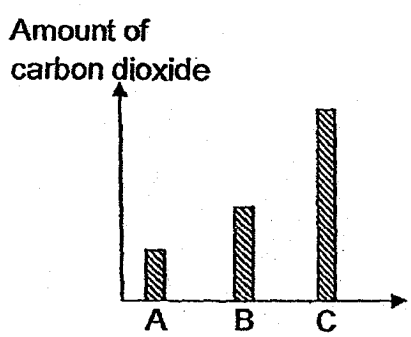
She measured the amount of carbon dioxide in each container after five hours.

Which graph correctly represents the amount of carbon dioxide in the containers?

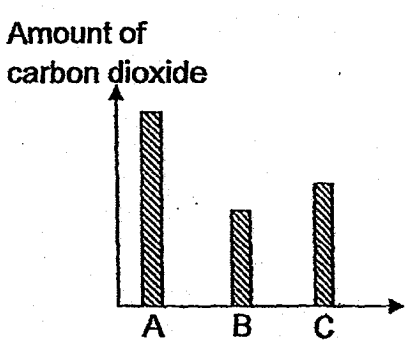
(1)



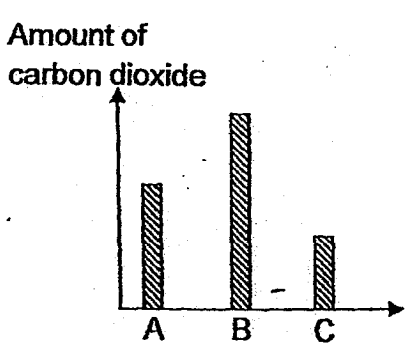
(2)



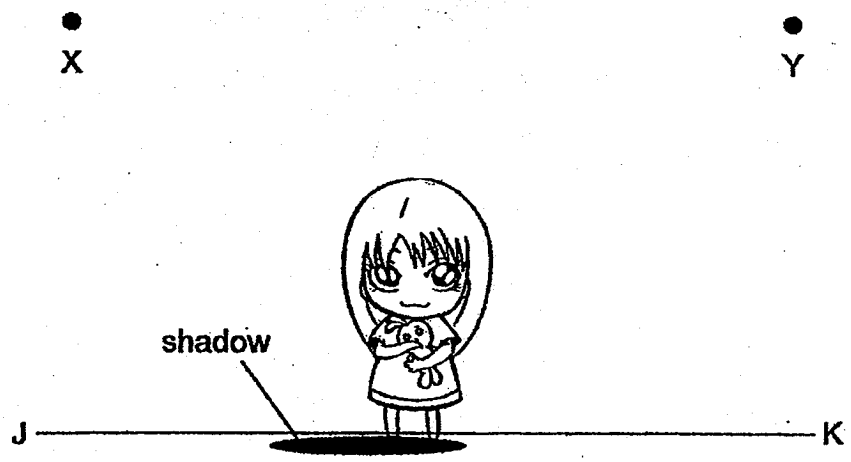
(3)



(4)



20. Yi Shuen was standing in a room with only one source of light as shown below.



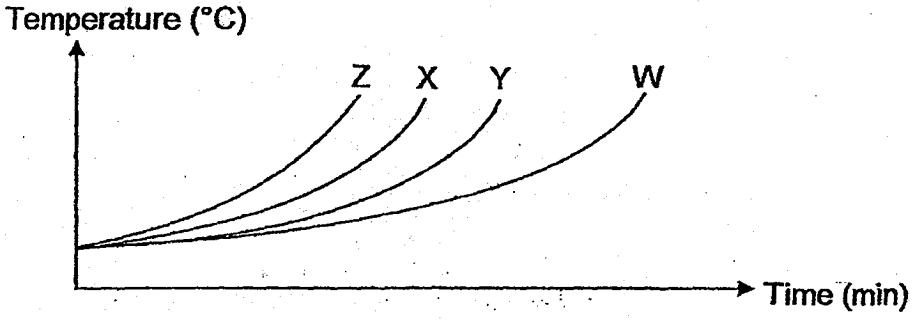
She started moving in one direction and her shadow became shorter.

Which of the following is true?

	Location of light source	Direction Yi Shuen was moving towards
(1)	X	J
(2)	X	K
(3)	Y	J
(4)	Y	K

21. Four identical pots made of different materials, W, X, Y and Z, were filled with the same amount of water and placed over a flame. The temperature of the water was measured until they started boiling.

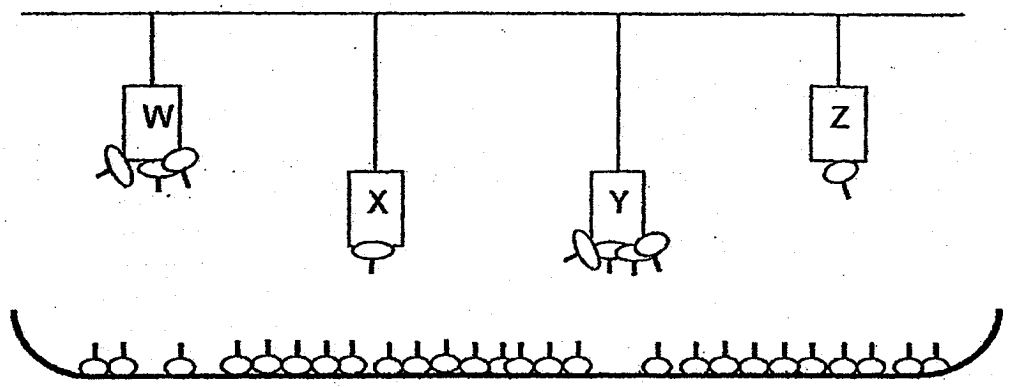
The results are shown in the graph below.



Which of the following shows the arrangement of the materials in order from the best conductor of heat to the poorest conductor of heat?

	Best conductor of heat → Poorest conductor of heat			
(1)	W	X	Y	Z
(2)	W	Y	X	Z
(3)	Z	X	Y	W
(4)	Z	Y	X	W

22. Four magnets are hung over a tray of steel pins as shown below.

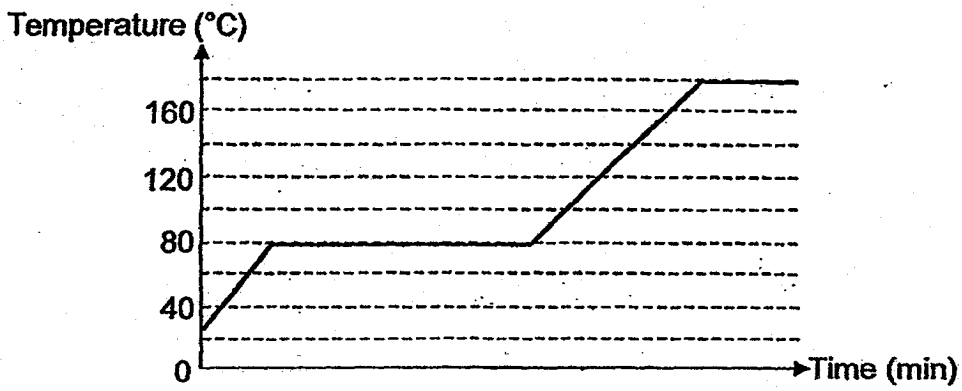


Which of the following conclusions are correct?

A. Magnet Y is the strongest magnet.
B. Magnet X is weaker than Magnet Y.
C. Magnet W is stronger than Magnet X.
D. Magnet X and Magnet Z are equally strong

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

23. A solid object was heated continuously until its state changed. Its temperature was taken throughout the heating process and plotted in the graph below.



What is the freezing point of the object?

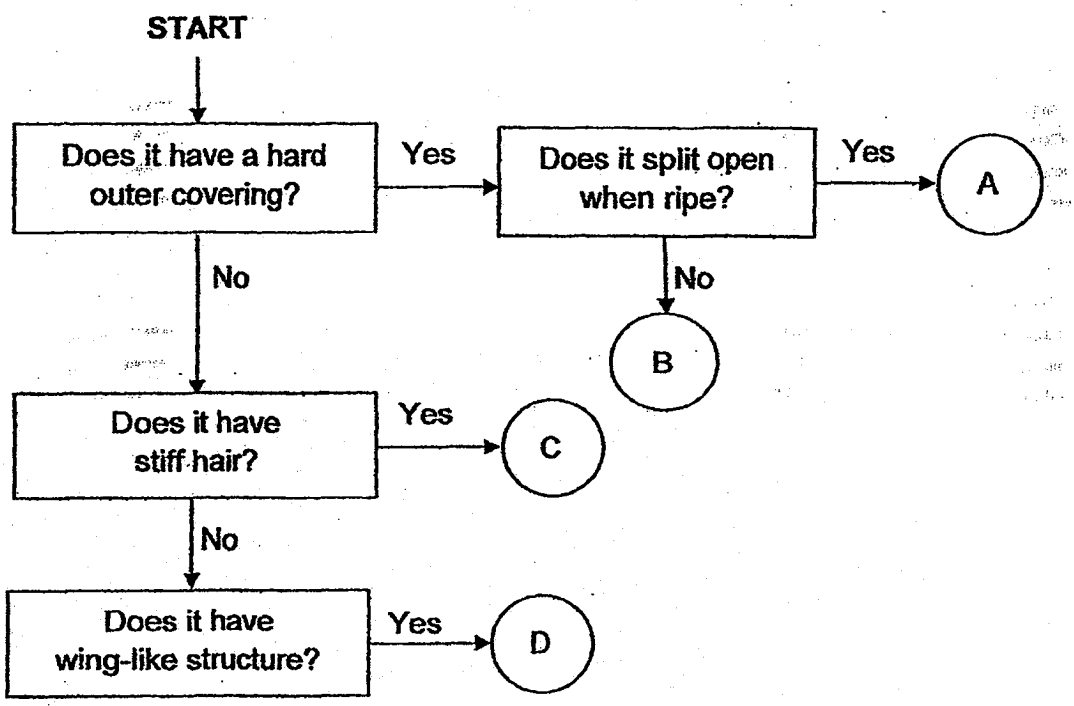
(1) 0°C
(2) 80°C
(3) 100°C
(4) 180°C

24. Material K has a melting point of 15°C and a boiling point of 150°C.

Which of the following correctly describes K at 10°C and 200°C?

	10°C	200°C
(1)	Has definite shape Has definite volume	Has no definite shape Has no definite volume
(2)	Has definite shape Has definite volume	Has no definite shape Has definite volume
(3)	Has no definite shape Has definite volume	Has no definite shape Has no definite volume
(4)	Has no definite shape Has no definite volume	Has definite shape Has definite volume

25. The flow chart below shows the characteristics of fruits of different plants A, B, C and D.



Based on the flow chart, which plant is most likely to grow nearest its parent plant?

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

26. Gwen wanted to find out how different factors would affect the germination of a seed.

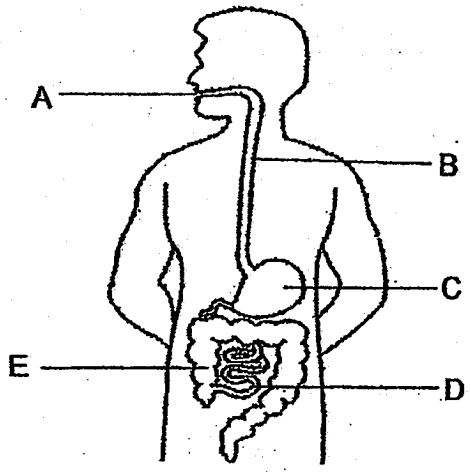
She listed the variables below:

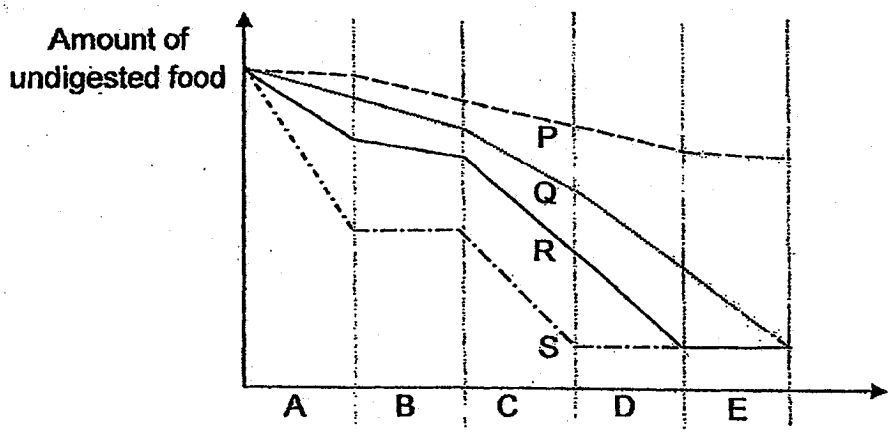
A. location of experiment
B. type of soil
C. amount of soil
D. number of seeds
E. amount of water

Which of the following would allow her to conduct a fair test?

	Factor to be tested	Variables to be kept constant
(1)	amount of water	A, B, D and E only
(2)	temperature	B, C, D and E only
(3)	presence of light	B, C and E only
(4)	type of soil	A, D and E only

27. Felix studied samples of food as it passed through five parts, A, B, C, D and E, of the human digestive system, as shown below.

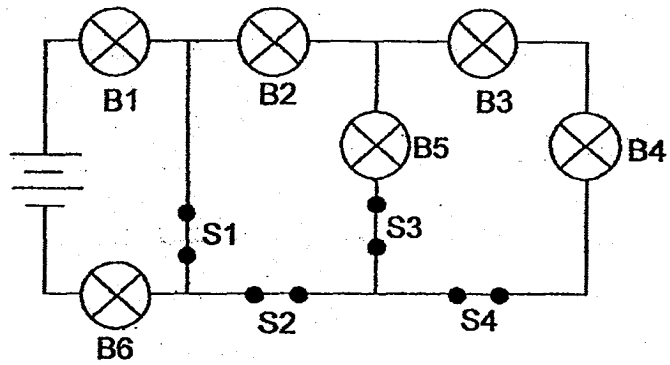




Which line in the graph above best represents the relative amount of undigested food in the different parts of the digestive system?

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

28. Study the circuit diagram below.



Which of the following shows the correct switches being closed when only B1 and B6 are lit up?

	Switch closed			
	S1	**S2**	**S3**	**S4**
(1)	✓		✓	✓
(2)			✓	✓
(3)	✓	✓		✓
(4)		✓	✓	

END OF BOOKLET A

GO ON TO BOOKLET B

MAHA BODHI SCHOOL
2018 SEMESTRAL ASSESSMENT 1
PRIMARY SIX SCIENCE
(BOOKLET B)

Name : _____ ( )

Class : Primary 6 _____

Date : 8 May 2018

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

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. Write all your answers in this booklet.

Booklet	Marks Obtained	Max Marks
A		56
B		44
Total		**100**

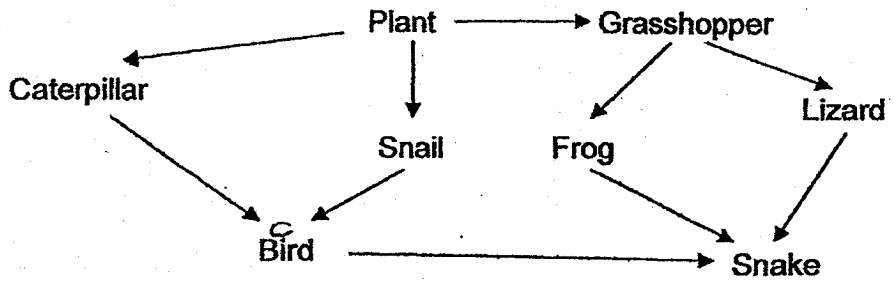
Parent's Signature : _____

This booklet consists of 17 printed pages.

BOOKLET 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. (a) Study the food web shown below.



If all the plant-eaters in the food web were killed, what would happen to the other consumers?
State two possibilities and a reason for each possibility. [2]

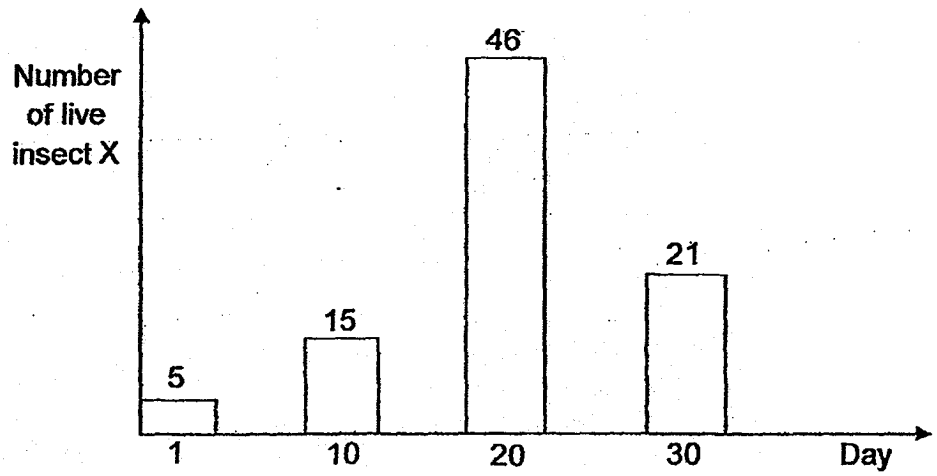
(b) Dried grass and cow dung can be burnt to produce energy.

How can the energy in dried grass and cow dung be traced back to the Sun? [2]

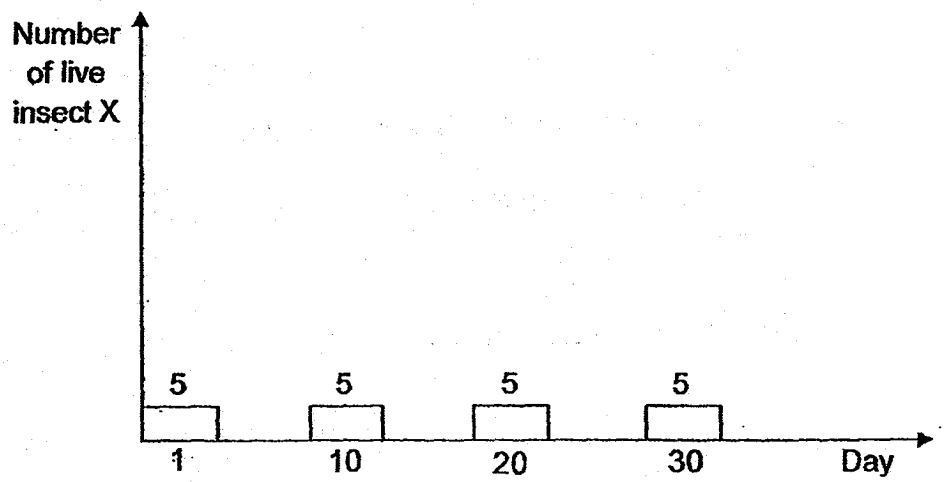
Marks : / 4

30. Two groups, A and B, of students wanted to study the changes in the population of insect X over a period of 30 days. The life cycle of insect X from an egg to an adult is approximately ten days at room temperature.

Group A placed a ripe fruit, a live plant on some damp soil and five insect X in a closed glass container in a place with sunlight. Their observations are shown in the graph below.



Group B carried out a similar experiment with insect X. They observed that the number of insect X remained the same throughout the 30 days. Their observations are shown in the graph below.



(a) Explain the difference in the number of insect X in both experiments. [2]

(i) Group A

(ii) Group B

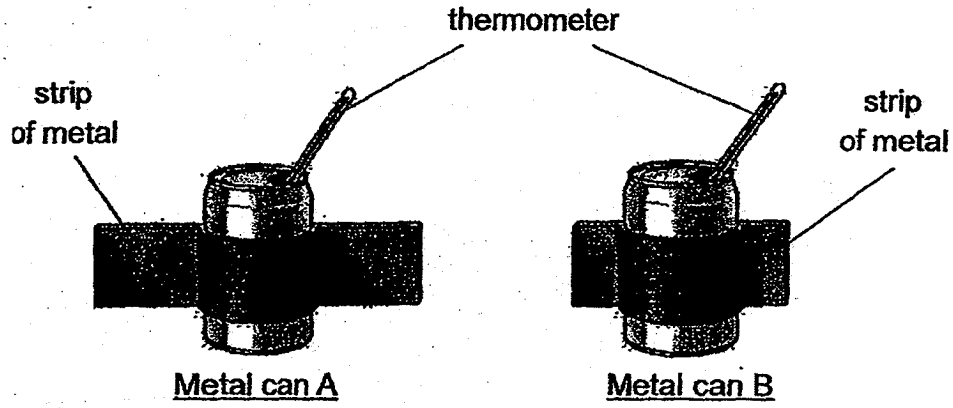
(b) The students claimed that insect X was able to have a constant supply of water in the closed container in both experiments.
Explain how this was possible. [2]

(c) Group A observed a decrease in the population of insect X after the 20th day.

Give a reason for their observation. [1]

Marks : / 4

31. Kelly filled two identical metal cans, A and B, with 200 cm^3 of hot water. She wrapped strips of metal around them as shown in the diagram below.



She recorded the temperature of the water in each can every five minutes. The table below shows the results of her experiment.

Time (min)	Temperature (°C)	
	Metal can A	Metal can B
0	70	70
5	63	68
10	59	66
15	54	64
20	51	62

(a) What conclusion can be drawn from the results of Kelly's experiment? [1]

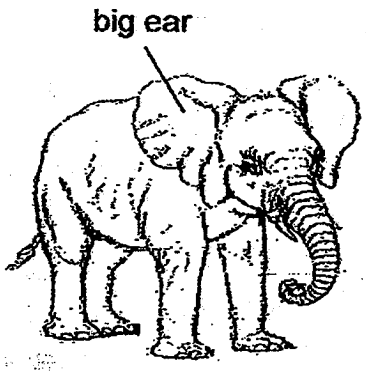
_____

_____

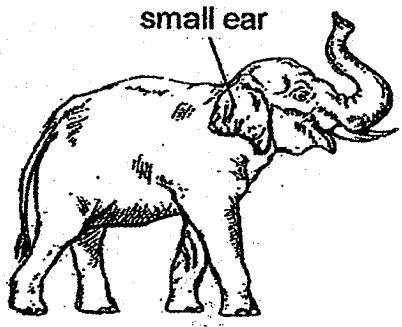
_____

Marks : / 1

(b) The diagrams below show two elephants.



Elephant A



Elephant B

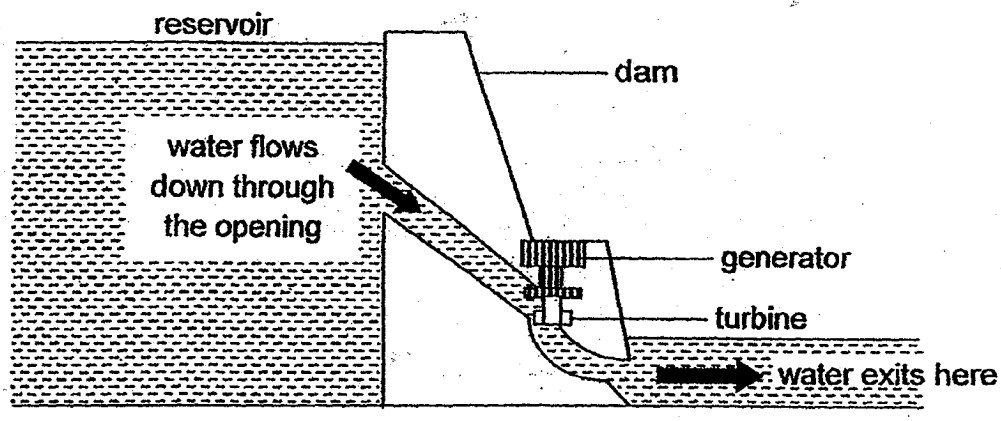
Based on the results of Kelly's experiment, which elephant, A or B, can survive better in a hot environment?
Explain your answer. [1]

(c) Elephants also like to roll in muddy water when the surrounding temperature is high.

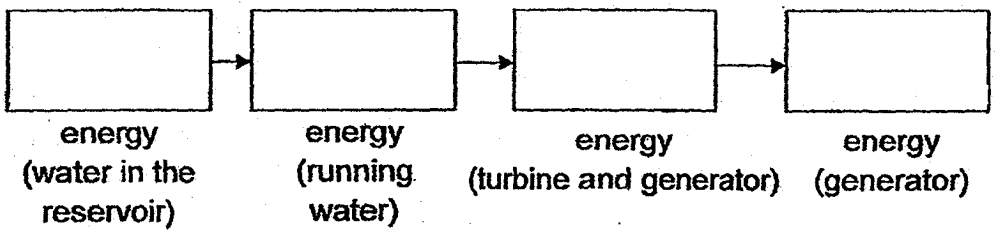
How does this behaviour benefit the elephant? Explain your answer. [2]

Marks : / 3

32. The diagram below shows a hydro-electric power station. When the generator, which is attached to the turbine, rotates, electricity is produced.



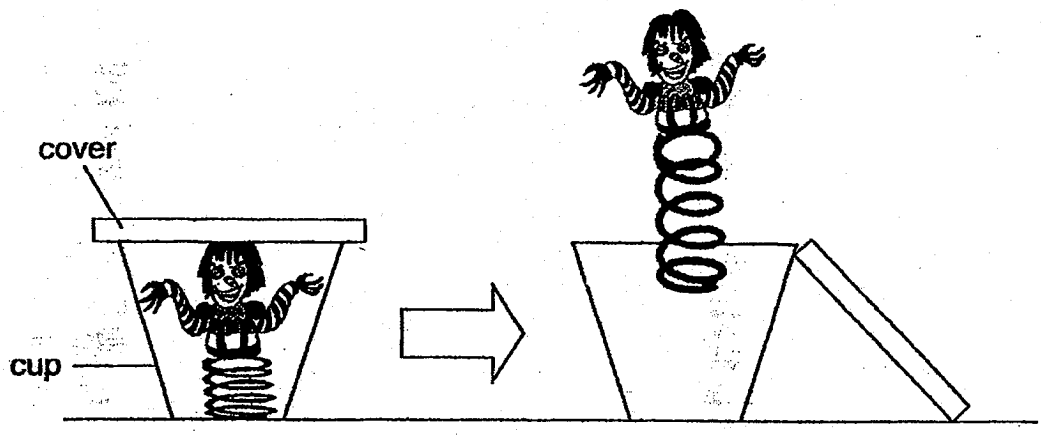
(a) State the energy conversion in the boxes below. [1]



(b) During a certain period, the water level in the reservoir fell. Explain how this would affect the electricity produced. [2]

Marks : /3

33. The picture below shows a toy, made up of a figurine and a spring, held down in a cup. When the cover of the cup was removed, the toy jumped up.



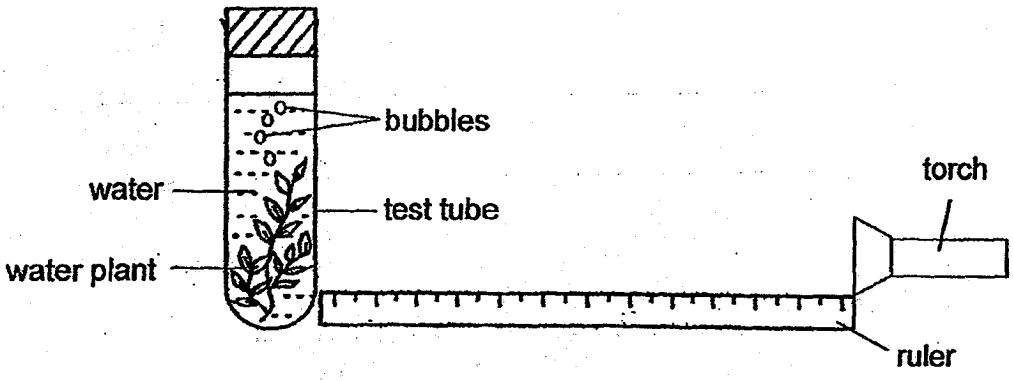
(a) When the cup was replaced with a shorter cup, the toy jumped higher.

Explain why the toy jumped higher. [1]

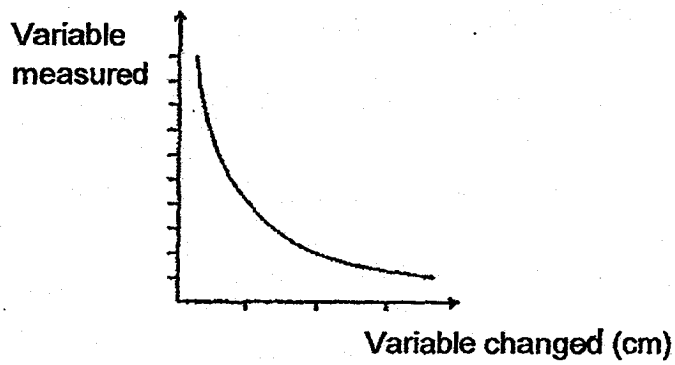
(b) State another way you can make the toy jump higher using the same spring. [1]

Marks : /2

34. Su-Lin used the set-up below to find out how light intensity would affect the amount of oxygen given out by water plants.



The results of her experiment are shown in the graph below.



(a) Su-Lin did not label her graph.
Identify the variable that she changed and the variable that she measured. [1]

Variable changed: _____

Variable measured: _____

(b) Su-Lin conducted her experiment in a dark room.
Give a reason why this helped to make the experiment a fair test. [1]

_____

_____

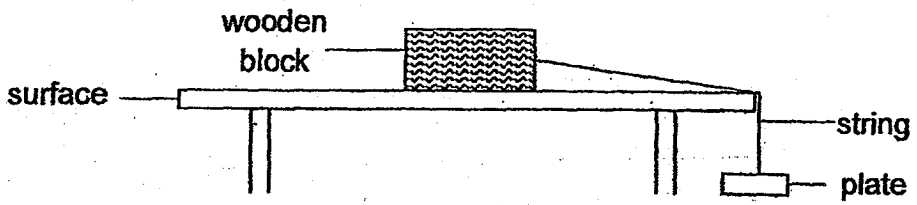
Marks : /2

(c) There was no control for Su-Lin's experiment.

What kind of control should Su-Lin set up?
Explain why this control is needed. [1]

Marks : / 1

35. Siva set up an experiment to test out different types of surface as shown below.



Identical plates were attached to the end of the string in the set-up until the wooden block started moving.

(a) What caused the wooden block to move? [1]

Siva recorded his results in the table below.

Surface	Number of plates needed
W	5
X	12
Y	3
Z	?

(b) Siva concluded that surface Z has the smoothest surface. What is a possible number of plates needed to move the block on surface Z? [1]

(c) Which of the above surfaces would be most suitable for use as floor tiles to ensure the safety of the people walking on it? Explain your answer. [2]

Marks : / 4

36. Four objects of similar shape and volume but made of different materials were heated under similar conditions for 10 minutes. The volume of the blocks was measured immediately after heating.

The results are shown below.

Material	Volume before heating (cm^3)	Volume after heating (cm^3)
H	50	54
I	50	53
J	50	51
K	50	52

(a) Explain why the volume of the objects changed. [1]

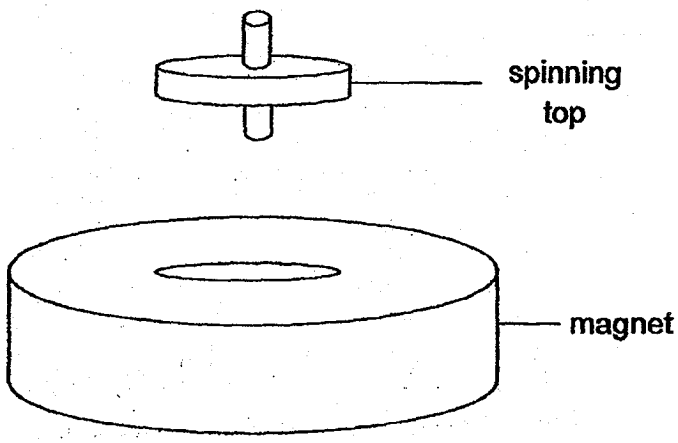
(b) Explain why it was needed for the volume of the objects to be measured immediately after heating and not after a few minutes. [2]

(c) In places where the temperature changes between very high and very low values, the water pipes bend and break after a period of time.

Which of the above materials is most suitable for making pipes in such places? Explain your answer. [1]

Marks : /4

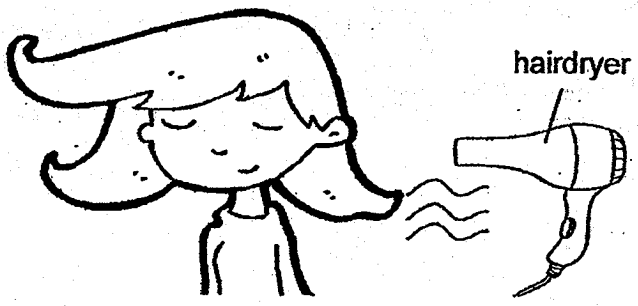
37. The picture below shows a floating spinning top. The spinning top is kept afloat by a magnet below it.



Explain how the spinning top is able to stay afloat. [2]

Marks : /2

38. A hairdryer blows out hot air to dry a person's wet hair more quickly.



(a) State one reason why the hairdryer is able to help dry a person's hair more quickly. [1]

(b) Sally spreads her hair apart as she uses a hair dryer.

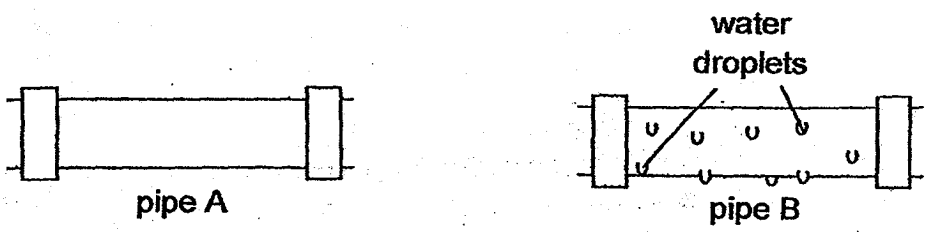
Explain how this will help her hair dry even faster. [1]

Marks : /2

39. Two water pipes of the same thickness and size but made of different materials are located in the same room. The temperature in the room is 30°C.

Both pipes transport water at 20°C from the same water tank.

At certain times, water droplets can be seen forming on pipe B but not on pipe A.

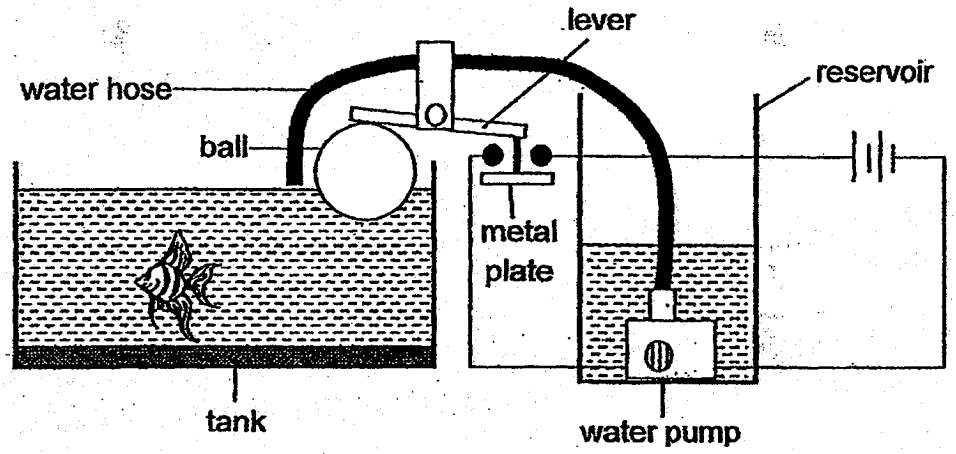


(a) Explain how the water droplets form on Pipe B. [1]

(b) State the difference in the property of the two materials to explain why water droplets form only on pipe B and not on pipe A. [2]

Marks : /3

40. Richard has designed a circuit for an automatic top-up system for his fish tank, as shown below. The lever is fixed such that when one end moves down, the other end moves up. The ball is also heavier than the metal plate.



When the water level in the tank falls, the circuit will start up the water pump which pumps water from the reservoir into the tank.

(a) What property must the ball have to allow this system to work? [1]

_____

(b) Describe how the pump gets started up when the water level falls. [1]

_____

_____

(c) Richard notices that the water level drops too low before the pump starts.

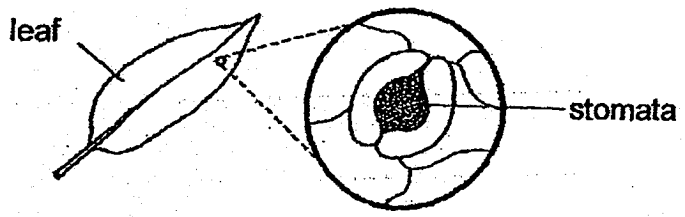
Without changing the lever, state two ways he can change the set-up so that the pump starts up at a higher water level. [2]

(i) _____

(ii) _____

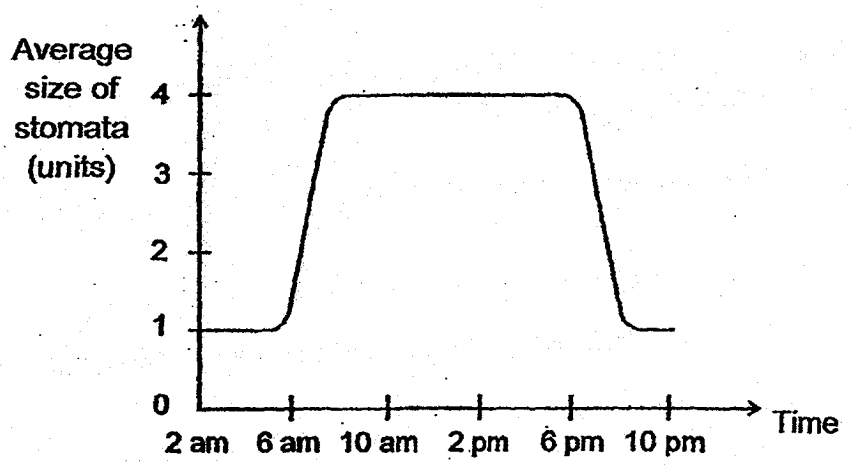
Marks : 1 /4

41. Leaves have tiny openings called stomata on their surfaces. There are usually more stomata on the lower surface of the leaves than the upper surface.



Some of the gases that move through the stomata of a plant are oxygen, carbon dioxide and water vapour.

Isaac measured the changes in the size of the stomata of a plant placed by the window at different times of the day. He plotted his results as shown below.



(a) Based on the results, what effect did light have on the size of the stomata? [1]

_____

_____

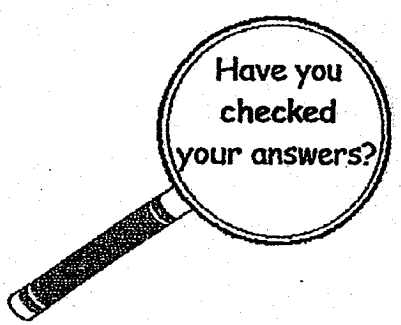
Marks : / 1

(b) Explain how the change in the size of the stomata in (a) help in photosynthesis. [2]

(c) The change in size of the stomata in the presence of light can also be a disadvantage to the plant.

What is this disadvantage? [1]

~ END OF PAPER ~



Marks : / 3

SCHOOL : MAHA BODHI PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2018 SA1

SECTION A

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

SECTION B

Q29)	(a) The population of plant will increase since no more plant-eaters will feed on the plants while the population of the other consumers will decrease as their food sources are the plant-eaters. Without the plant-eaters, the other consumers will not have food and will die eventually. (b) The sun provides sunlight for the grass make food and grow. The cow feed on the grass and pass out the waste as dung.
Q30)	(a) (i) Insect X feeds on the ripe fruit, get its water from the fruit and plant provides water and oxygen for the insect when it photosynthesises. (ii) The plant may have died and the insect does not reproduce. (b) The ripe fruit will decompose and water is produced during decomposition. Also the insects live plant will respire at all time, the water vapour in the carbon dioxide breathe out by the insects will condense on the inner surfaces of the container, forming water droplets. Thus, insect X was able to have a constant supply of water in the closed container. (c) There were too many insects and they compete with each other for food. Thus, some will die due to starvation.

Q31)	(a) Can A is a good conductor of heat and the bigger the exposed surface area, the faster the rate of heat lost to the surrounding. (b) Elephant A as bigger ears which have larger exposed surface area and thus will lose more heat to the surrounding. So it will be able to survive better in a hot environment. (c) By rolling in muddy water, the elephant will feel cooler as the water gain heat from its body and evaporate faster to the surrounding. Thus, its body will lose heat and feel cooler.
Q32)	(a) Gravitational Potential energy → Kinetic Energy → Kinetic Energy → Electric Energy (b) With lesser water in the reservoir, lesser gravitational potential energy is converted to kinetic energy in the running water, and lesser kinetic energy is converted to electric energy. So there will be lesser electricity produced.
Q33)	(a) With a smaller cup, the spring is more compressed and thus has more elastic potential energy. So when the cup is opened, more elastic potential energy is converted to kinetic energy and thus the toy jumped higher. (b) Add some weight to the toy to cause it to compress more
Q34)	(a) Variable changed : Distance between the test tube and the torch Variable measured : Amount of bubbles produced (b) The source of light is only from the torch and not from the surrounding (c) A set-up without light from the torch. With this control, then she can conclude that presence of light affects the rate of photosynthesis.
Q35)	(a) The weight of the plate which is the downward pulling force caused the wooden block to move. (b) 1 (c) Surface X as it needed 12 plates in order to move the wooden block which means it has the roughest surface and thus the greatest frictional force between the wooden block and the surface. Thus it will be the best to ensure the safety of the people walking on the tiles.
Q36)	(a) The material gained heat and expanded. (b) If the volume of the objects were not measured immediate, the object might lose heat to the surrounding and contract. Then the results will

	not be accurate as each material has different rate of cooling and loses heat to the surrounding at different rate. (c) Material H as it gained heat fastest and expanded the most. Thus it will not break easily due to varied temperature.
Q37)	Spinning top is made from magnet. When the like poles of the spinning top and the magnet are near each other, there will be a repulsion force and thus the spinning top will stay afloat.
Q38)	(a) Hairdryer gives out heat and wind when it is turned on. So it will help to increase the rate of evaporate and thus the hair will dry more quickly. (b) By spreading her hair apart, it increases the exposed surface area to the heat and wind from the hairdryer and thus helps to dry hair even faster.
Q39)	(a) Pipe B is colder compared to the room temperature. So water vapour in the room touches the colder surface, loses heat and condenses to form water droplets on the Pipe B. (b) Pipe A is a poor conductor of heat compares to Pipe B. It loses heat slower to the cold water in the pipe. So its temperature is about the same as the room temperature. When there is not much difference in temperature between the pipe and the temperature, condensation will not take place.
Q40)	(a) All matter has weight. (b) When the water level falls, the ball will move down and the metal plate will move upwards. When the metal plate touches the connectors of the circuit, it will cause a closed circuit which start up the water pump. (c) (i) Make the ball smaller (ii) Add some pebbles in the tank to raise the water level.
Q41)	(a) As the amount of light increases, the size of the stomata increases until 4 units. (b) When the size of the stomata increases, more light can enter and will increase the rate of photosynthesis since light is needed for photosynthesis to take place. (c) With increased size of stomata, more water will be lost in the presence of light. This will slow down the rate of photosynthesis and the plant may not make enough food to survive.