SCIENCE
2016 SEMESTRAL EXAMINATION 2
PRIMARY 5

Name : _____ ( )

Class : Primary 5 / _____

Date : 27 October 2016

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 24
   b. Questions 1 to 28

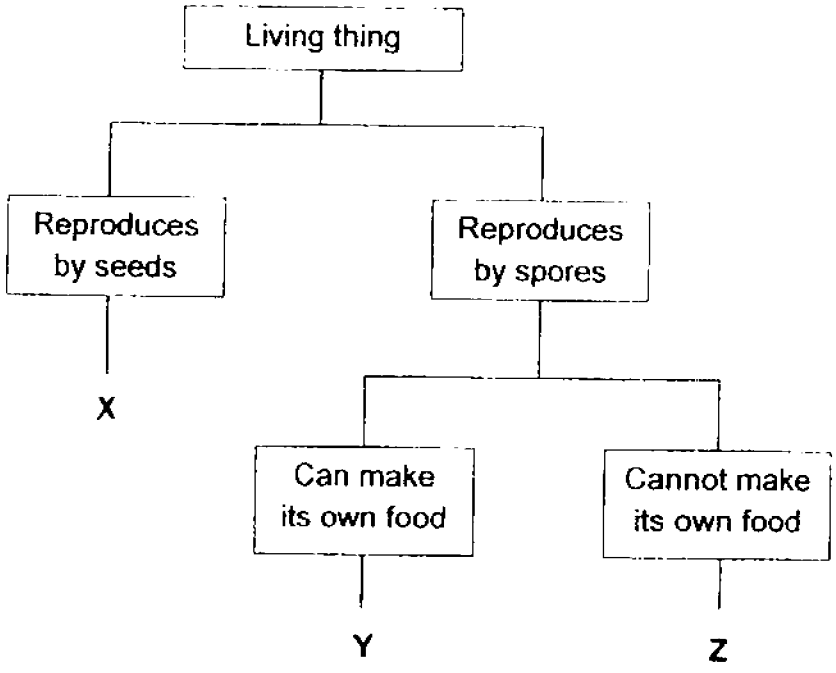
Section A

For Questions 1 to 28, choose the most suitable answer and shade its number in the OAS provided.

1. Siti saw animal P at the park and she thought it was a bird. Which of the following characteristics should Siti look out for in order to determine that animal P is a bird?

   (1) It can fly.
   (2) It lays eggs.
   (3) It has wings.
   (4) It has feathers.

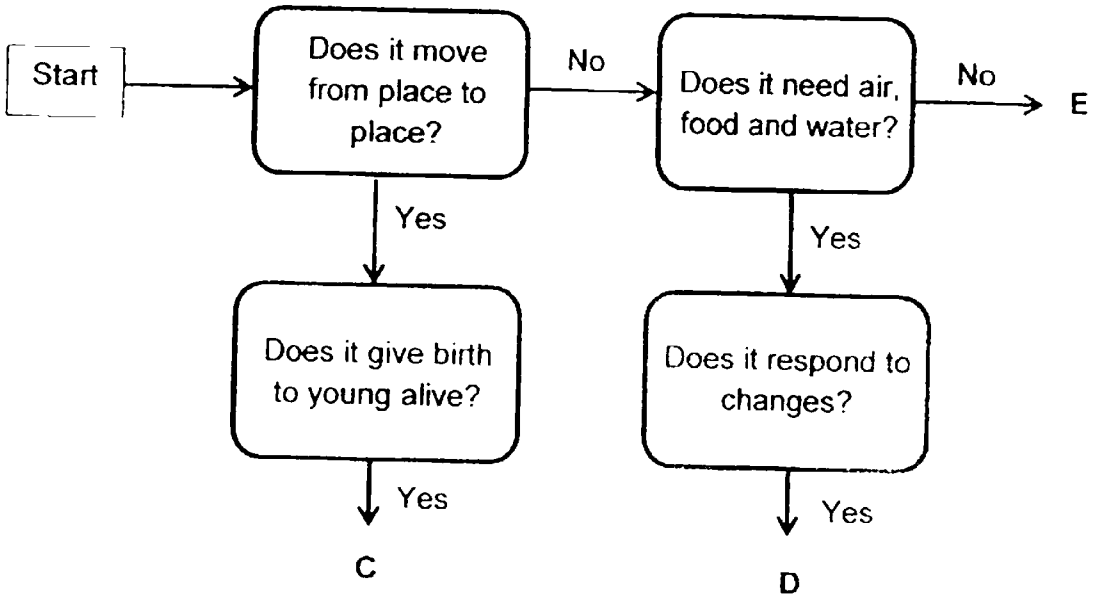
2. Study the classification chart below carefully.



From the information above, which of the following is correct?

	X	Y	Z
(1)	flowering plant	fern	fungi
(2)	flowering & non-flowering plants	fungi	fern
(3)	non-flowering plants	fern	fungi
(4)	flowering plants	fungi	fern

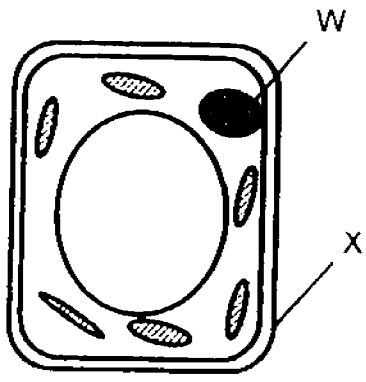
3. Study the flowchart below carefully.



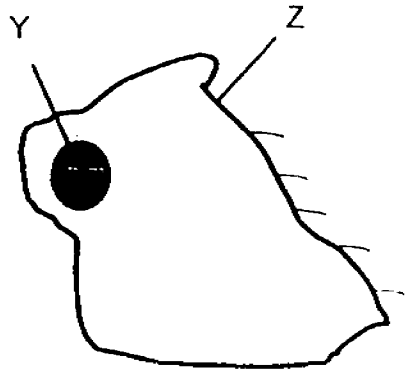
Which of the following correctly matches C, D and E?

	C	D	E
(1)	molly	rabbit	water
(2)	parrot	rose plant	table cloth
(3)	guppy	cactus	book
(4)	housefly	money plant	paper

4. Jia Le studied cell A and cell B under a microscope as shown below.



cell A



cell B

Her friends made the following statement(s):

Alice: Part Y contains hereditary information.
Ben: Part W contains chlorophyll for the cell to make food.
Cindy: Part Z controls all the activities that take place in the cell
Dora: Part X has the same function as part Z.

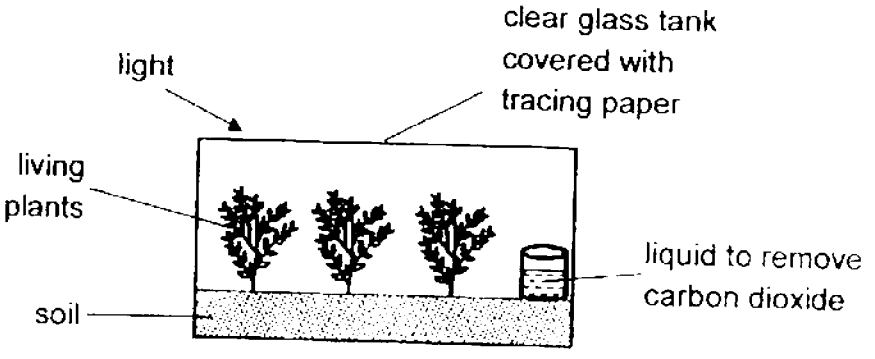
Who made the correct statement?

(1) Alice only
(2) Ben only
(3) Ben and Cindy only
(4) Alice, Cindy and Dora only

5. Which of the following is the basic unit of life for a human baby?

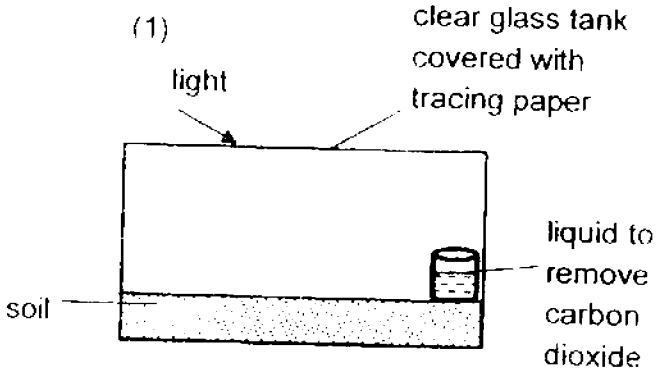
(1) egg
(2) ovary
(3) womb
(4) testes

6. Ramesh wants to investigate how the presence of carbon dioxide affects the growth of a type of plant. The diagram below shows his set-up in a clear glass tank covered with tracing paper.

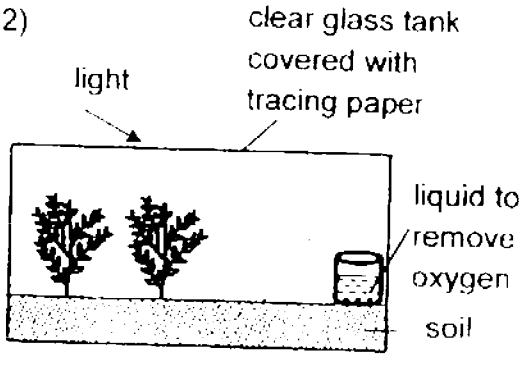


Using the same type of plants, which one of the following could be used as a control for his experiment?

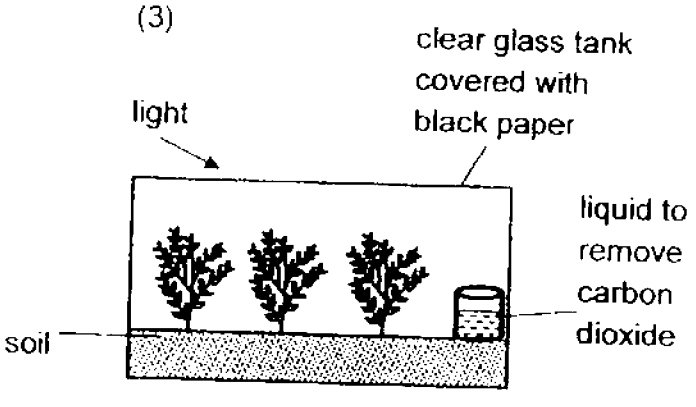
(1)



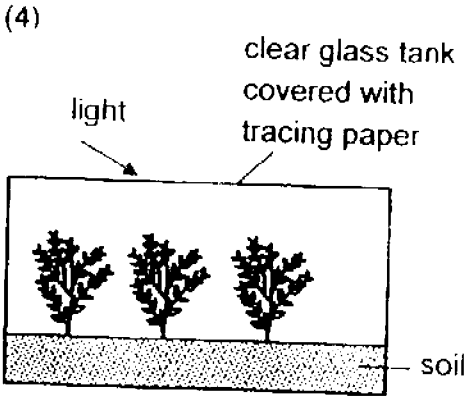
(2)



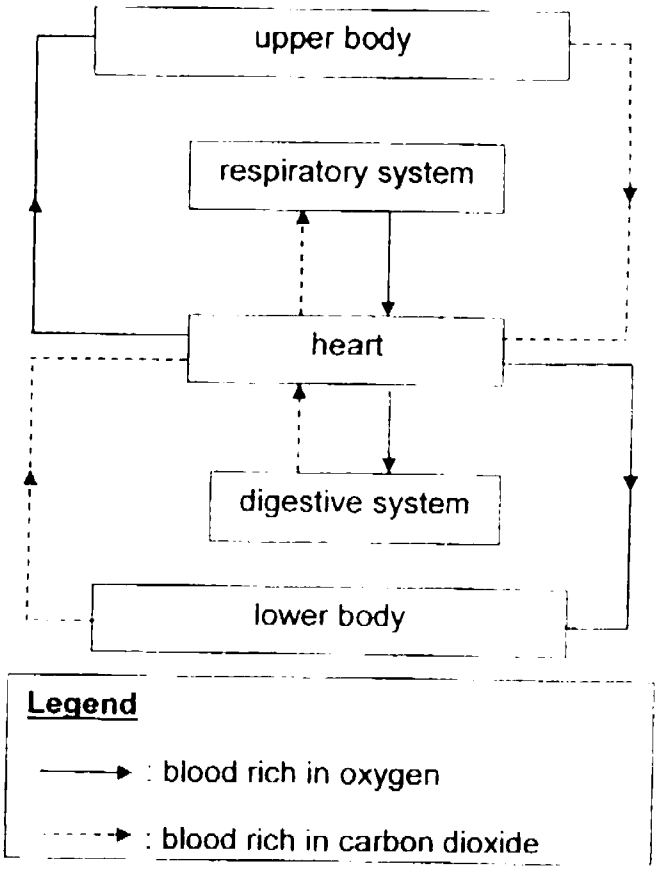
(3)



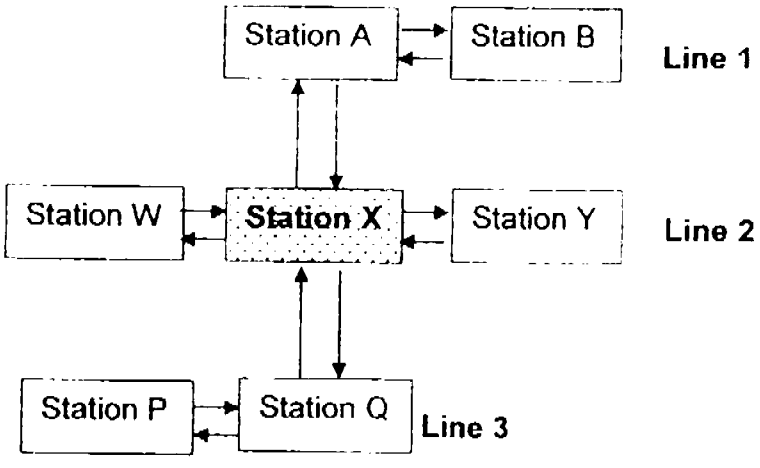
(4)



7. David drew the diagram below to show the blood flow in some parts of the human body.



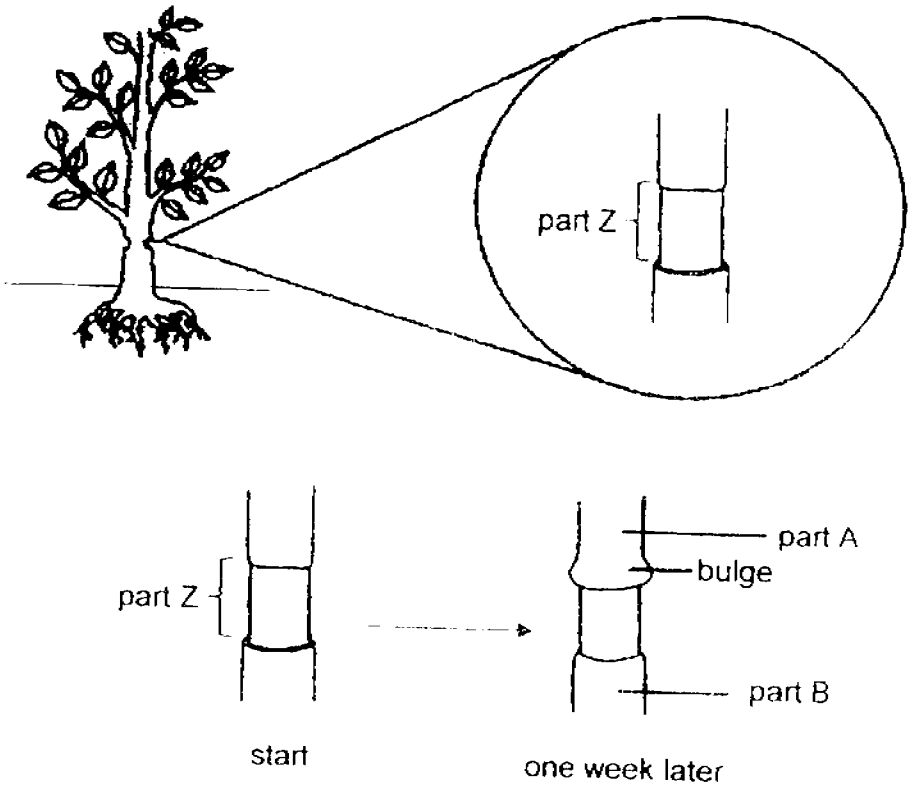
He also studied the map of a railway system as shown below. Passengers will alight at station X in order to transfer from one line to another.



Which of the following shows the human organ that is represented by station X and the system that it belongs to?

	human organ	human system
(1)	heart	circulatory
(2)	muscles	muscular
(3)	heart	digestive
(4)	lungs	respiratory

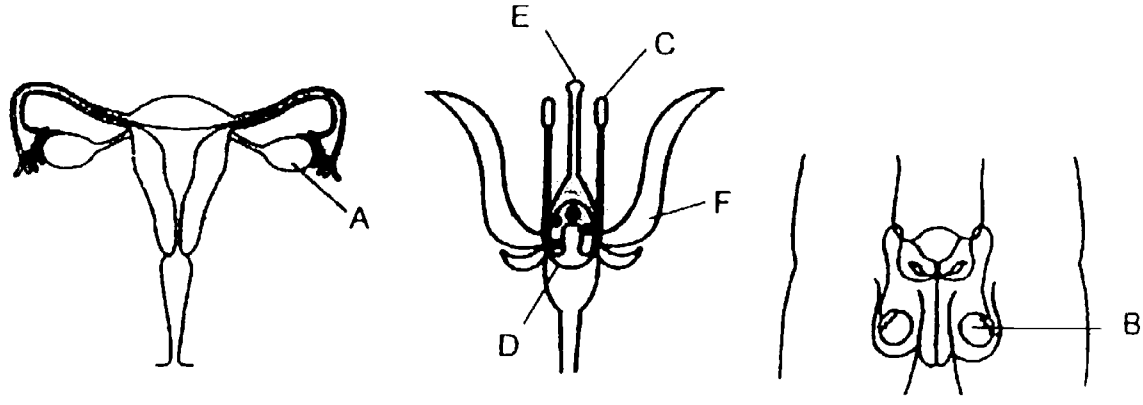
8. Lily removed the outer ring of a plant at part Z. After one week, she observed a bulge above part Z.



Which tube was removed and what was the correct explanation for her observation?

	tube removed	explanation
(1)	food-carrying tube	Food from the leaves was able to go to part A only.
(2)	food-carrying tube	Food from the leaves was able to go to part B only.
(3)	water-carrying tube	Water from the soil was able to go to part A only.
(4)	water-carrying tube	Water from the soil was able to go to part B only.

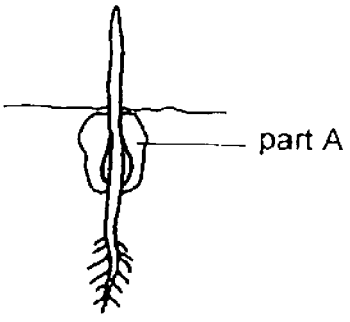
9. Chin Lee studied the parts of three reproductive systems shown below.



Which parts of the plant reproductive system have functions that are similar to parts A and B respectively?

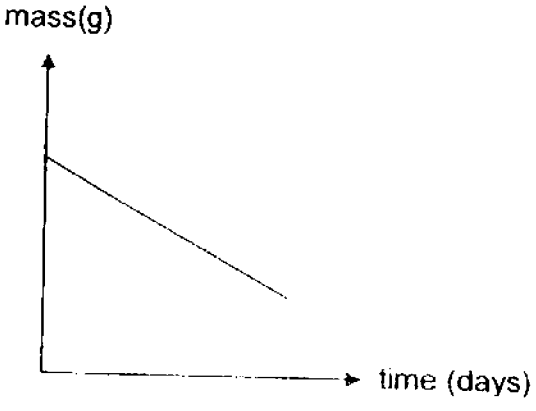
	similar to A	similar to B
(1)	C	D
(2)	D	C
(3)	E	F
(4)	F	E

10. The diagram below shows a seed growing into a young plant.

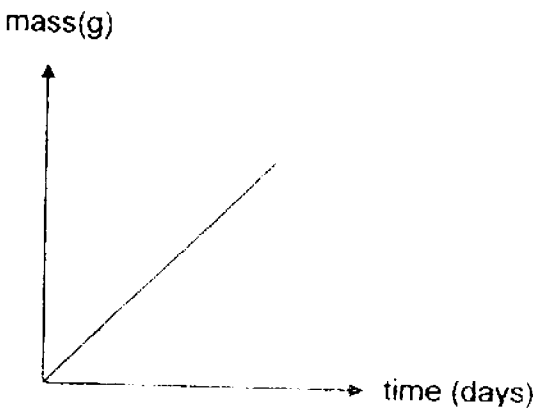


Which one of the following graphs represents the mass of part A over time?

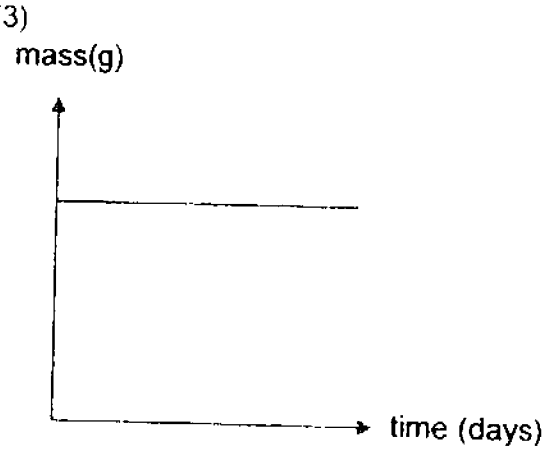
(1)



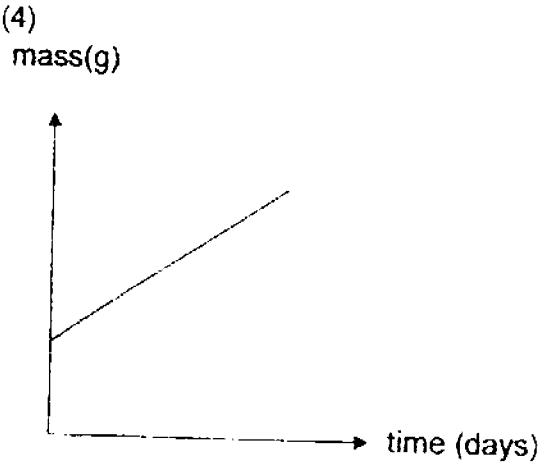
(2)



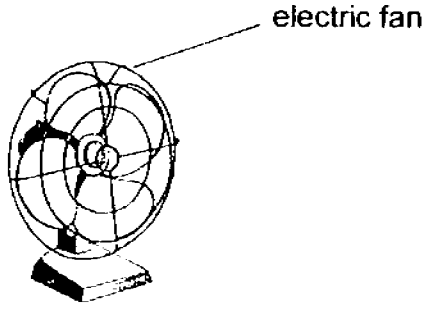
(3)

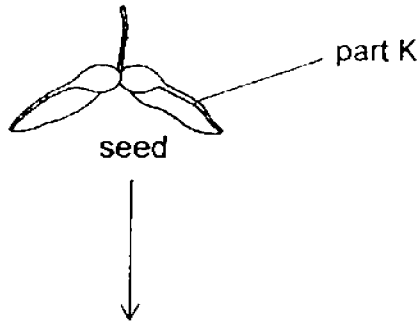


(4)



11. May Lee conducted an experiment by dropping a seed in front of a blowing fan and observing the time taken by the seed to stay afloat in the air before landing on the ground.





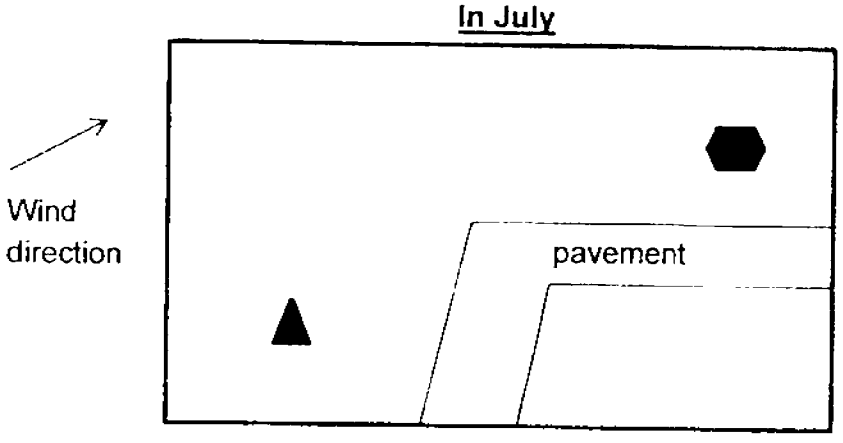
After three tries, she removed part K and repeated the same experiment. She recorded all her findings in the table shown below.

	with part K	without part K
1st try	4 seconds	2.3 seconds
2nd try	3.7 seconds	1.9 seconds
3rd try	4.2 seconds	2.1 seconds

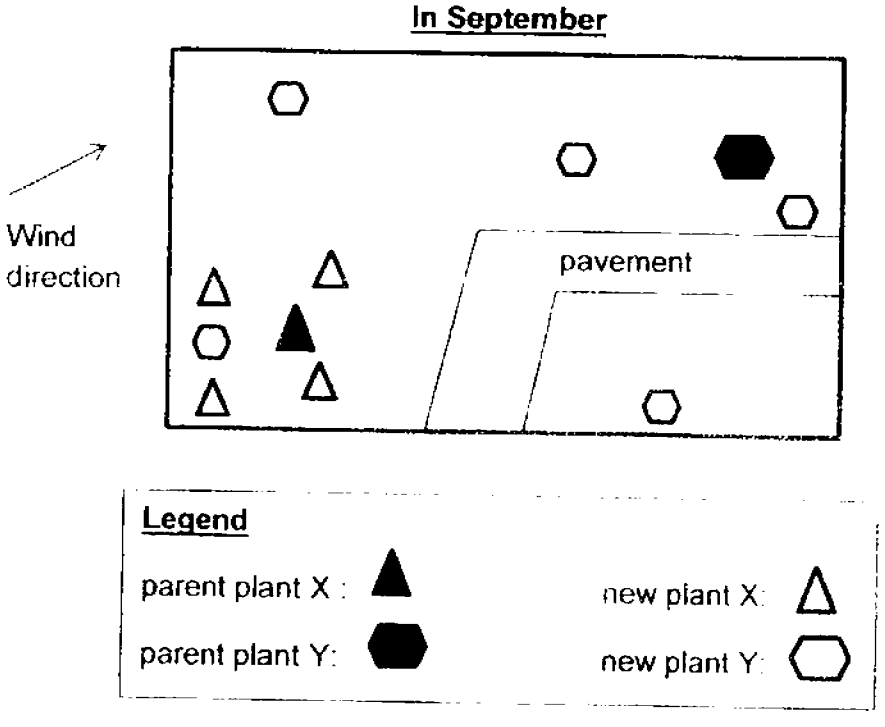
Which of the following can she best conclude from the above experiment?

(1) The seed will stay in the air longer without part K.
(2) Part K helps the seed to stay afloat in the air longer.
(3) Part K is not necessary for seed dispersal and germination.
(4) Removing part K will enable the seed to land on the ground and reproduce more slowly.

12. Susan visited a park in July and she drew a map to show where she found two plants, X and Y.



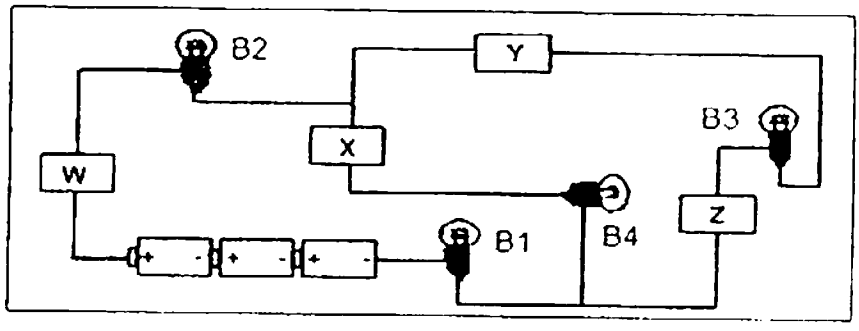
She went to the park again in September and found that there were more new plants of X and Y. She drew another map as shown below.



Which of the following correctly matches the parent plants X and Y to their dispersal methods?

	plant X	plant Y
(1)	by animals	by splitting open forcefully
(2)	by wind	by water
(3)	by water	by wind
(4)	by splitting open forcefully	by animals

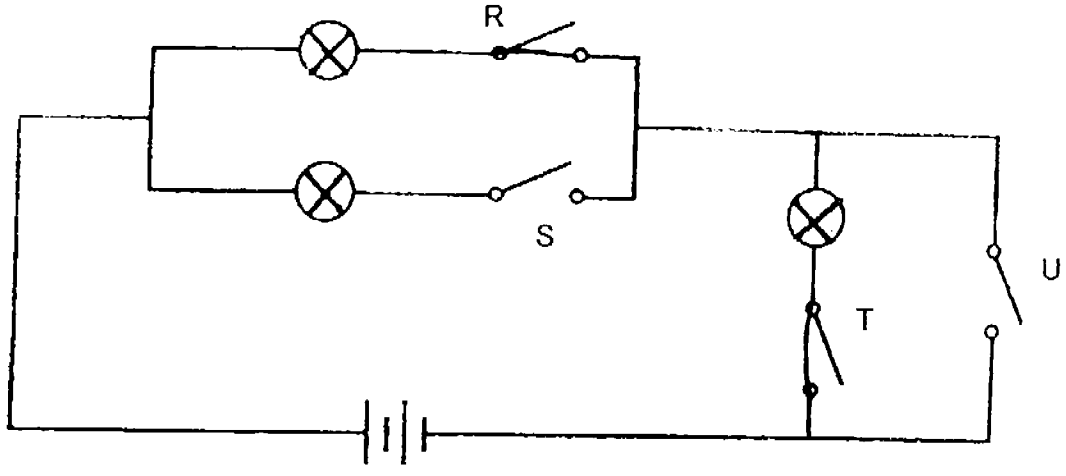
13. Study the diagram below carefully.



What can W, X, Y and Z be if only bulbs B1, B2 and B3 light up?

	W	X	Y	Z
(1)	handkerchief	woollen glove	paper clip	iron nail
(2)	plastic fork	pencil lead	silver spoon	metal ball
(3)	tungsten wire	copper rod	aluminium foil	metal ball
(4)	steel ruler	tissue paper	magnet	copper wire

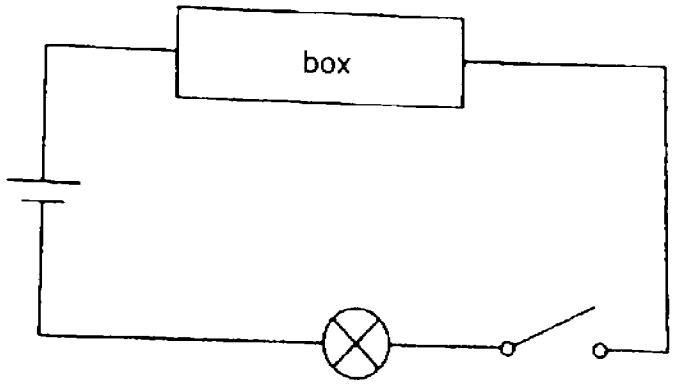
14. Study the electrical circuit below carefully.



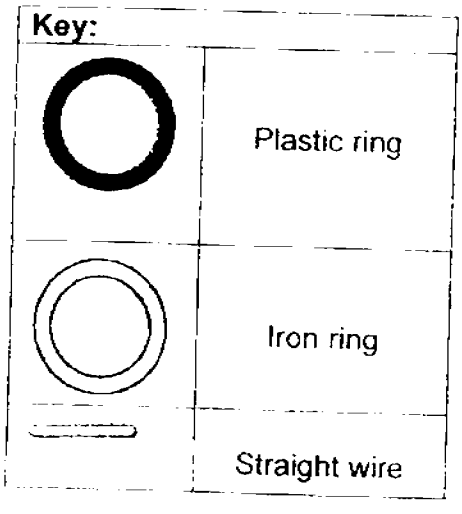
In the circuit diagram above, which switch(es) must be closed for only two bulbs to light up?

(1) switch T only
(2) switches R and S only
(3) switches R and T only
(4) switches U and T only

15. A box is connected to a circuit tester as shown below.



When the switch is closed, the bulb lights up. Which one of the following correctly shows what is in the box?

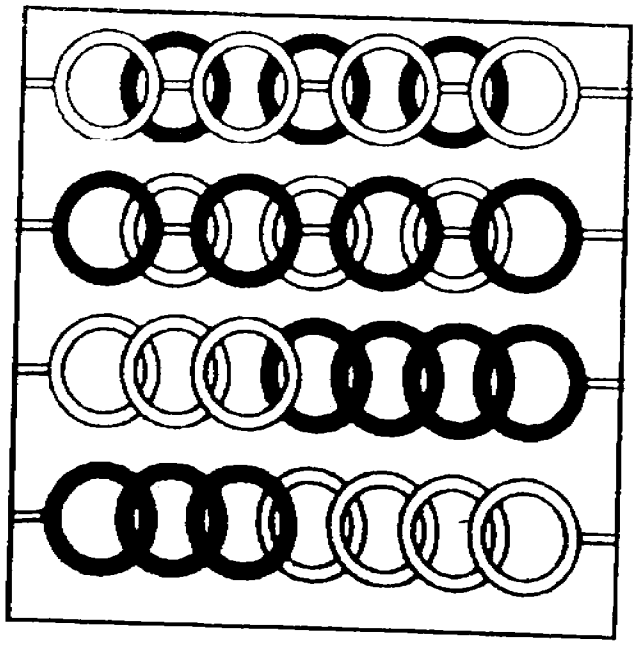


(1)

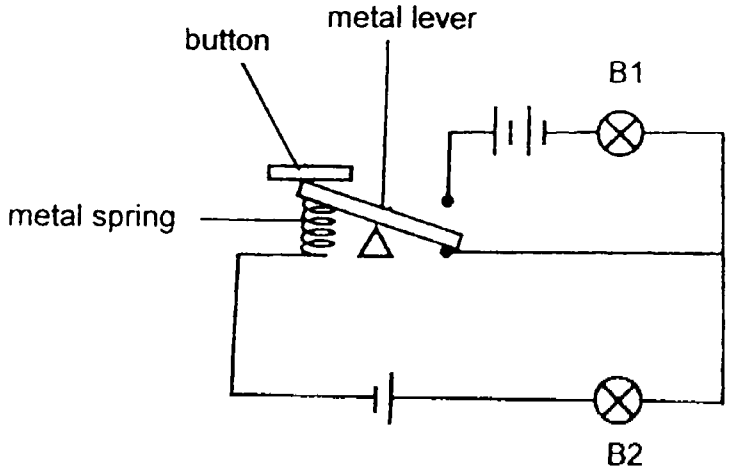
(2)

(3)

(4)



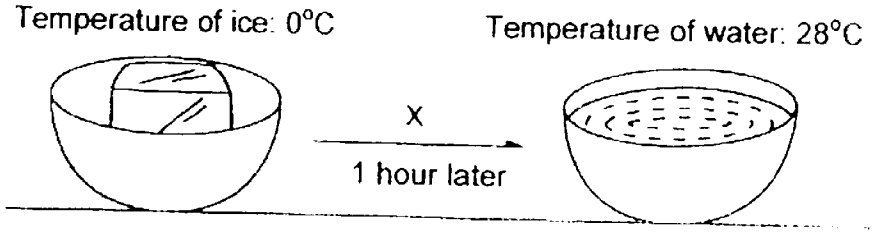
16. In the following circuit, two identical bulbs, B1 and B2, and three identical batteries are used. The metal lever is movable. At first, bulb B1 is unlit while bulb B2 is lit with a brightness of 5 units.

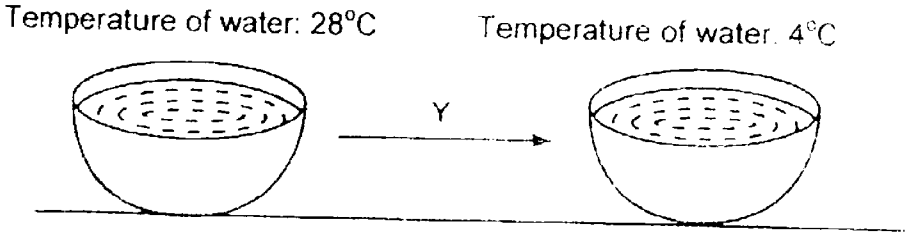


If the button is pressed and held down, what would happen to bulbs B1 and B2?

	Bulb B1	Bulb B2
(1)	as bright as 5 units	unlit
(2)	brighter than 5 units	unlit
(3)	as bright as 5 units	brighter than 5 units
(4)	brighter than 5 units	brighter than 5 units

17. Billy takes an ice cube from the freezer and puts it in a bowl on the table for an hour. After that, he puts the bowl of water into the refrigerator. The temperature of the ice and water are recorded.

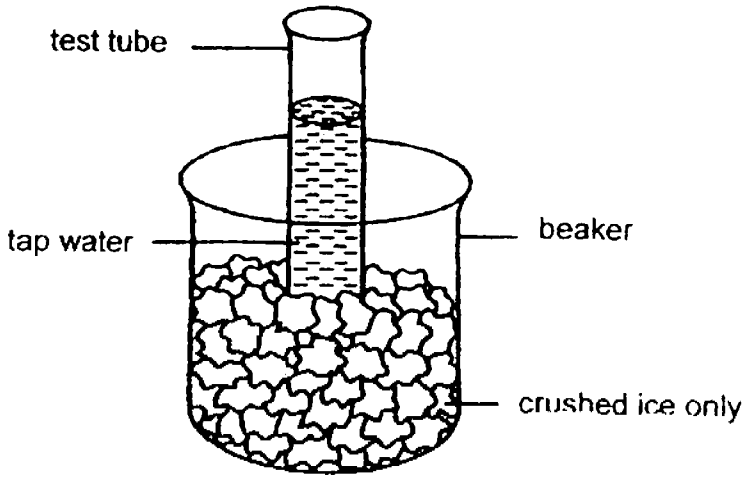




Which one of the following correctly describes what happens during X and Y?

	X	Y
(1)	The ice cube gains heat from the surroundings and melts.	Water loses heat to the surroundings, causing the temperature of the water to drop.
(2)	The ice cubes loses heat to the surroundings and melts.	Water gains heat from the surroundings, causing the temperature of the water to drop.
(3)	The ice cube gains heat from the surroundings and melts.	Water gains heat from the surroundings, causing the temperature of the water to drop.
(4)	The ice cube loses heat to the surroundings and melts.	Water loses heat to the surroundings, causing the temperature of the water to drop.

18. Jimmy carried out an experiment as shown below in the Science room. He observed the experiment carefully.

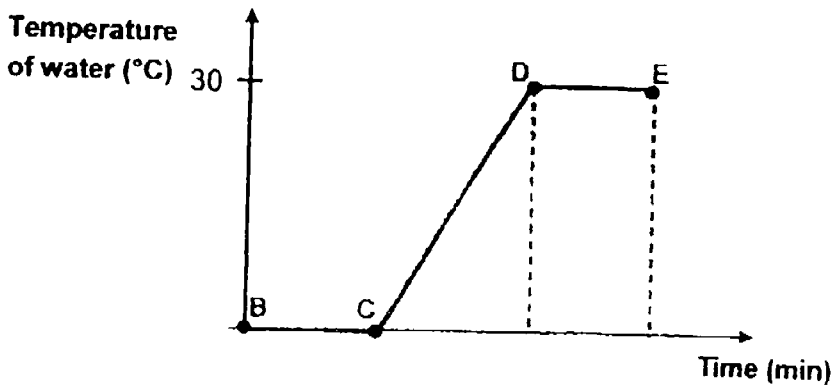


What would he observe after five minutes?

A: The beaker became warmer.
B: The ice in the beaker melted.
C: The water inside the test tube became cooler.
D: Water droplets were found on the outer surface of the beaker.

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

19. Susan put a bottle of water in a freezer. After 12 hours, she took out the bottle of frozen water and its temperature was measured at regular intervals. She plotted a graph using the data collected.



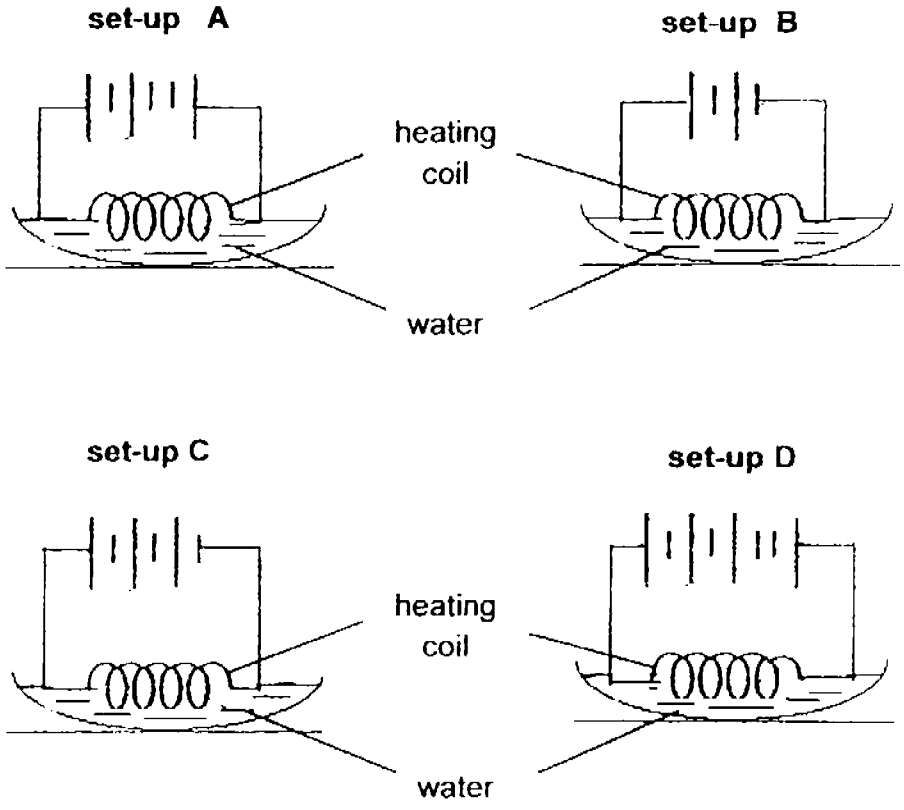
Her friends made the following statements based on the graph.

Andrew: Evaporation is occurring at CD only
Bobby: There is a change in state from B to C.
Cindy: The water is boiling at DE.

Who has/ have made the correct statement(s)?

(1) Andrew only
(2) Bobby only
(3) Andrew and Bobby only
(4) Andrew, Bobby and Cindy

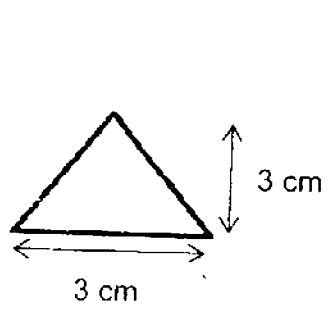
20. Robin prepares four set-ups as shown below. Each set-up has a circuit connected to a heating coil. Each heating coil is dipped into 15ml of water contained in a dish.



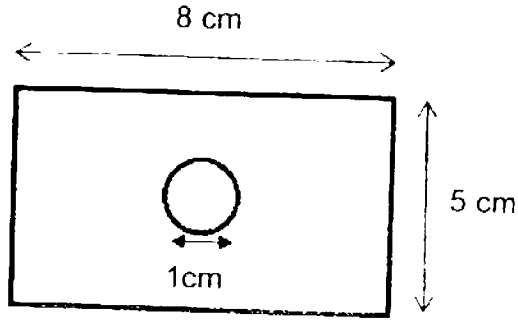
Which set-up will have the least amount of water after 20 minutes?

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

21. Jonah cut out two shapes from different materials. He pasted the two shapes together and shone a torch at them onto a white screen. Shape A was cut from a translucent sheet and shape B was cut from a piece of cardboard with a hole cut out in the centre.

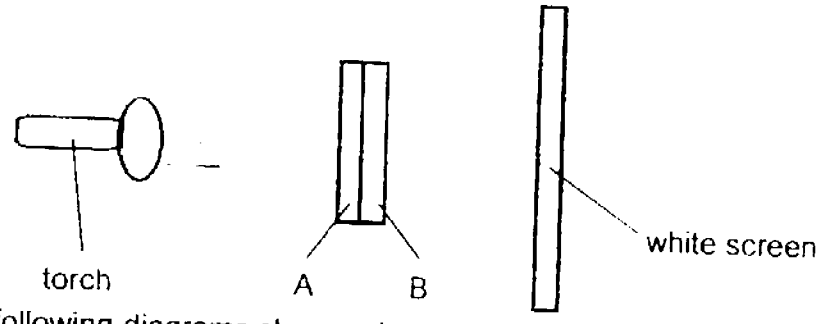


A



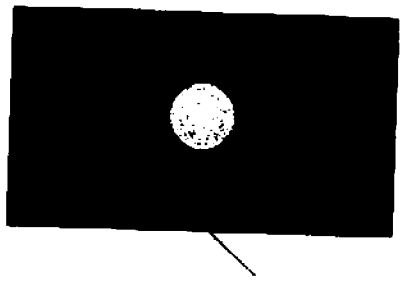
B

He placed the two cutouts between the torch and the white screen as shown below.

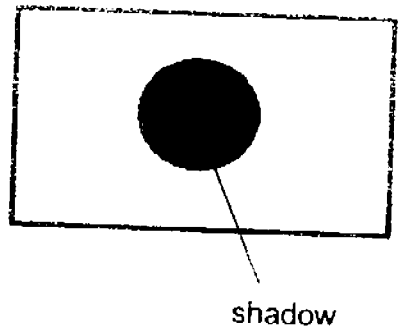


Which one of the following diagrams shows what could be observed on the white screen?

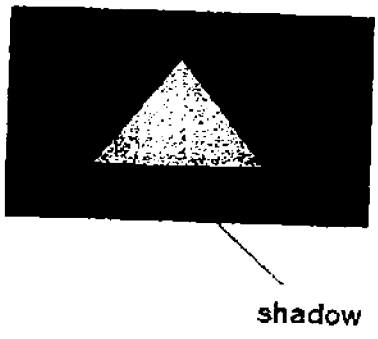
(1)



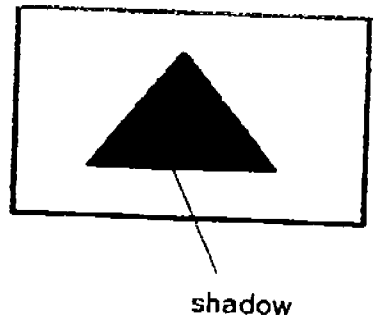
(2)



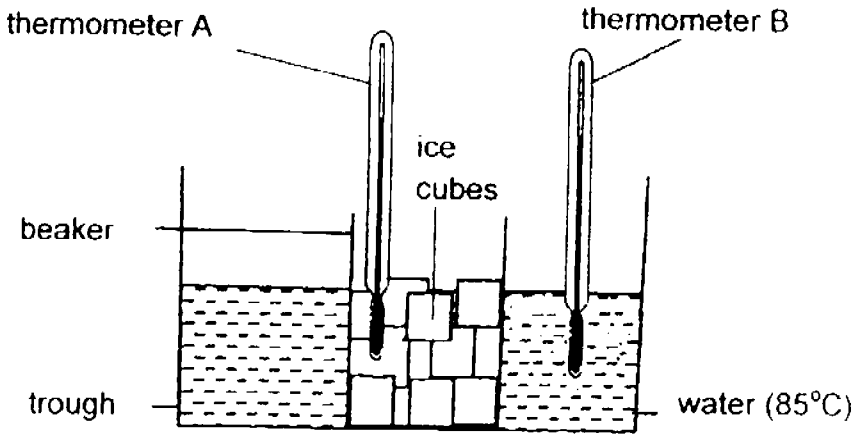
(3)



(4)

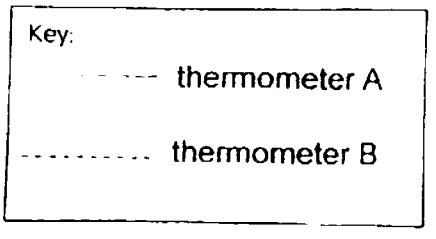


22. Samantha conducted an experiment using a set-up as shown below.

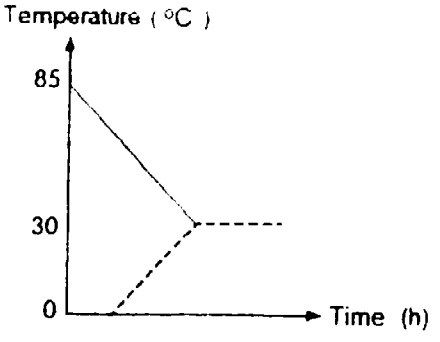


The set-up was left on a table for two hours. The readings on the thermometers, A and B, were recorded throughout the experiment.

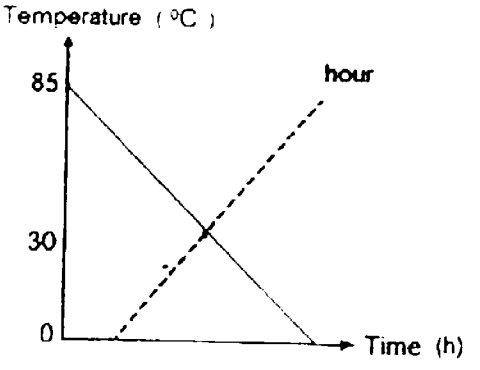
Which one of the following graphs correctly shows the readings on the two thermometers throughout the experiment?



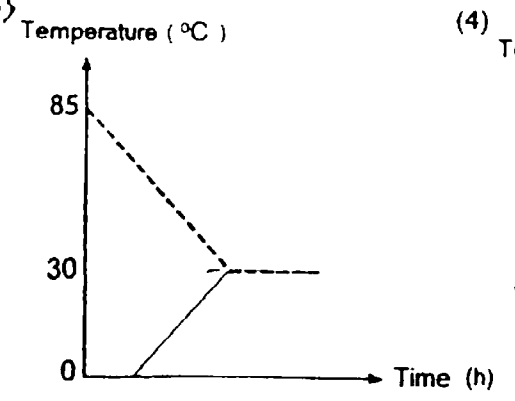
(1)



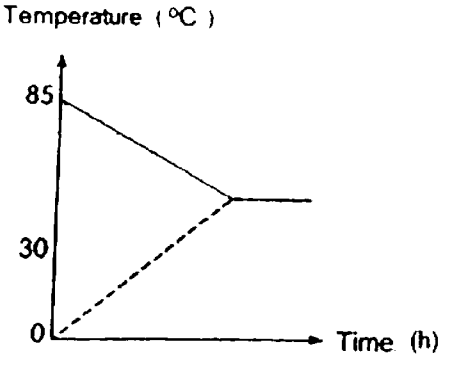
(2)



(3)



(4)



23. Kay wanted to conduct an experiment on heat. He first measured the temperature of the air inside a bottle as shown in diagram 1. Next, he placed a heated steel bar into the bottle and sealed the bottle with a rubber stopper as shown diagram 2.

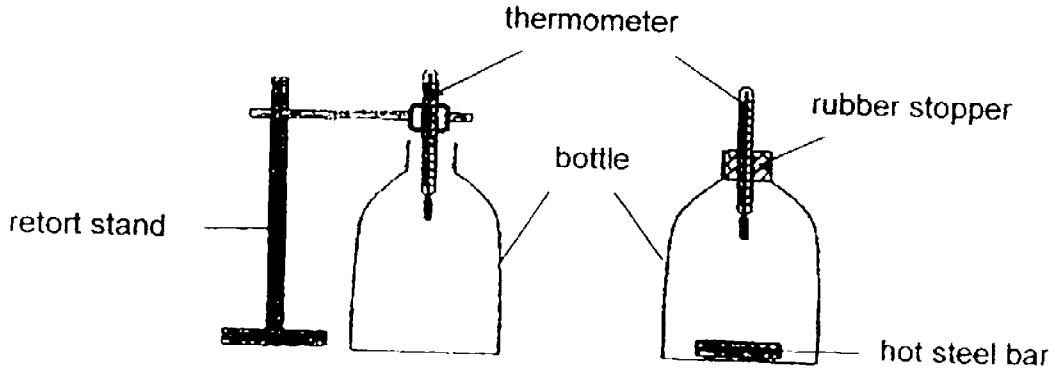


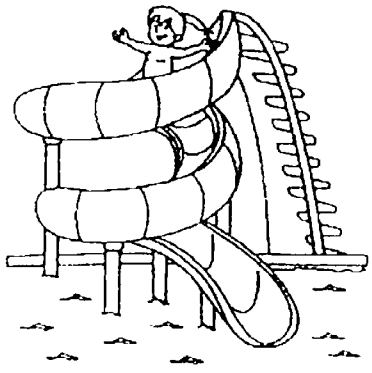
Diagram 1 Diagram 2

After 3 minutes, Kay observed that the temperature of the air in the bottle has increased.

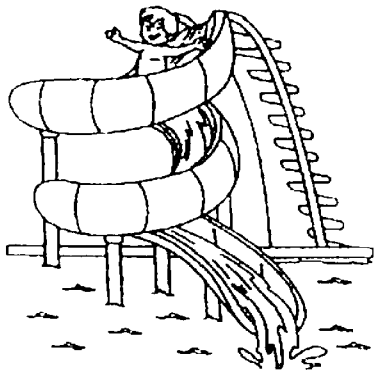
Which of the following can Kay conclude from his experiment?

(1) Air is a good conductor of heat.
(2) Steel is a poor conductor of heat.
(3) The air in the bottle gained heat from the hot steel bar.
(4) The air in the bottle gained heat from the surrounding air.

24. Aden wanted to try sliding down a water slide. As he was too early, the water flowing down the slide had not been turned on. He noted the time taken for him to reach the bottom of the slide from the top. He went down the slide again when the water was turned on. The time taken for him to reach the bottom of the slide was shorter on his second try.



Time taken: 5.6s



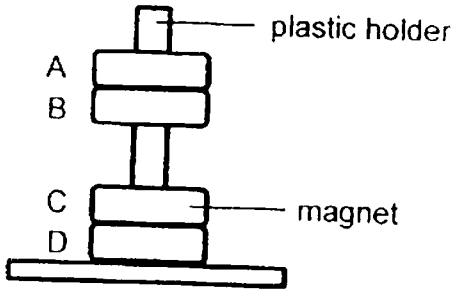
Time taken: 3.2s

Which of the following explain(s) why the time taken by Aden on his second try was shorter?

A: The water caused Aden's weight to reduce.
B: The water increased the gravitational force acting on Aden.
C: The water reduced the frictional force between Aden and the slide.

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

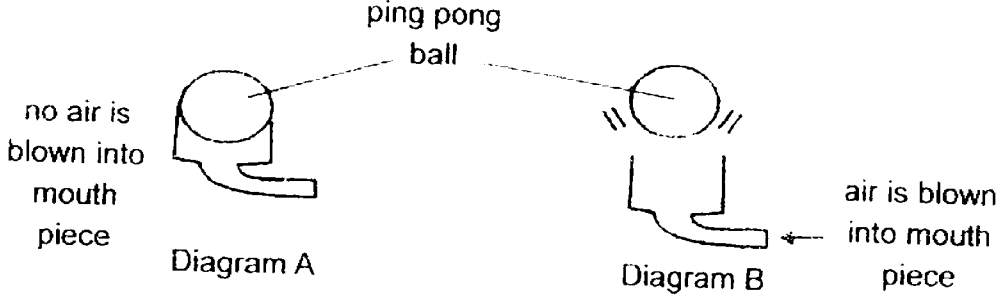
25. In the set-up below, A, B, C and D are four rings which pass through a smooth plastic holder. C is a magnet.



Which one of the following is not possible?

	A	B	
(1)	wooden	magnet	wooden
(2)	iron	magnet	Iron
(3)	wooden	iron	iron
(4)	wooden	magnet	magnet

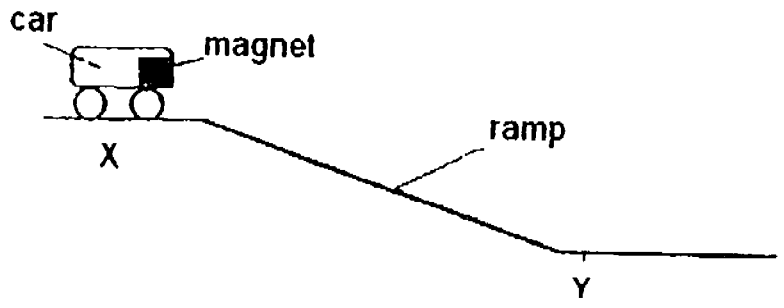
26. Which of the following statements explains why the ping pong ball is able to hover in mid-air when air is blown into the mouth piece as shown in diagram B?



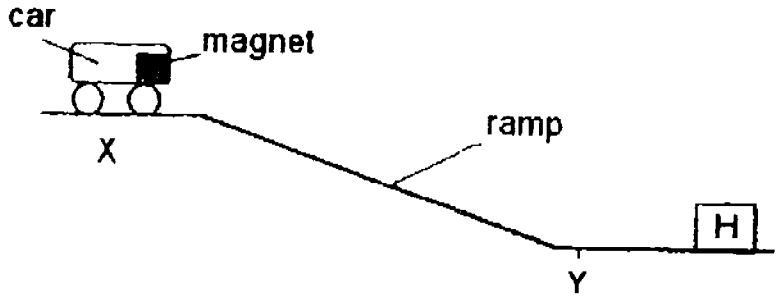
A: The warm air exhaled from the mouth heats up the ping pong ball and causes it to rise.
B: The force exerted by the moving air is able to overcome the weight of the ping pong ball.
C: The gravitational force acting on the ping pong ball is greater than the force exerted by the moving air.

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

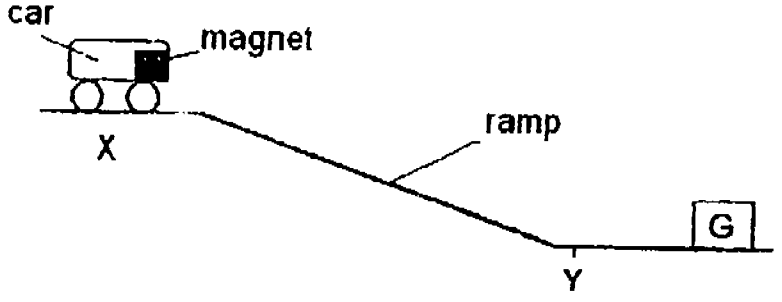
27. Jamie set up an experiment as shown below. When she pushed the car from X, the car moved down the ramp and moved a distance after point Y before coming to a stop.



She repeated the experiment with object H placed near Y as shown below. She pushed the car from X and the car moved down the ramp and stopped at Y. The car did not touch object H.



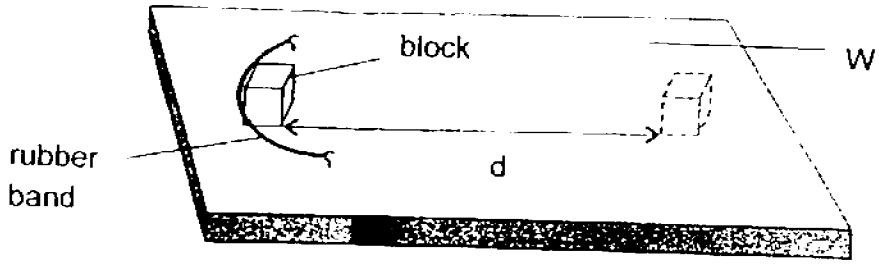
When she replaced object H with object G and pushed the car from X with the same force, the car moved towards object G and was stuck to it.



What could objects H and G possibly be?

	H	G
(1)	iron block	glass block
(2)	magnet	iron block
(3)	wooden block	steel box
(4)	electromagnet	copper box

28. A block was placed on a board, W, and was pulled to a fixed distance before it was released as shown in the diagram below.



The distance (d) moved by the block after it was released was recorded. The experiment was repeated using identical blocks released on different surfaces X, Y and Z.

The results were as shown below:

Type of surface	Distance (d) in cm
W	12
X	17
Y	25
Z	5

Which surface would be most suitable for making a slide?

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

End of booklet A

SCIENCE
2016 SEMESTRAL EXAMINATION 2
PRIMARY 5

Name : _____ ( )

Class : Primary 5 / _____

Date : 27 October 2016

BOOKLET B

13 Questions
44 Marks

In this booklet, you should have the following:
a. Page 25 to Page 42
b. Questions 29 to 41

MARKS

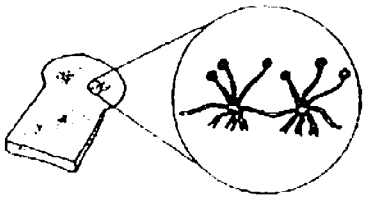
	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

Parent's Signature : _____

SECTION B

Answer all the questions in the spaces provided.

29. Mrs Tan placed a fresh piece of bread on a table. Organism X was observed on it at the end of one week.



bread organism X

a) What is organism X? (1m)

_____

b) How did organism X manage to grow on the bread? (1m)

_____

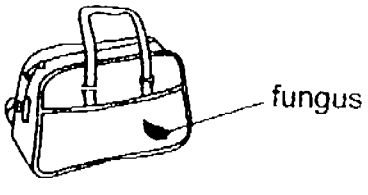
_____

c) Mrs Tan said that keeping the bread in a cupboard would prevent organism X from growing. Explain whether she was correct. (1m)

_____

_____

Mrs Tan had a leather bag and she found a patch of fungus on it.



Her husband advised her to keep the bag in a dark place to prevent the fungus from making food.

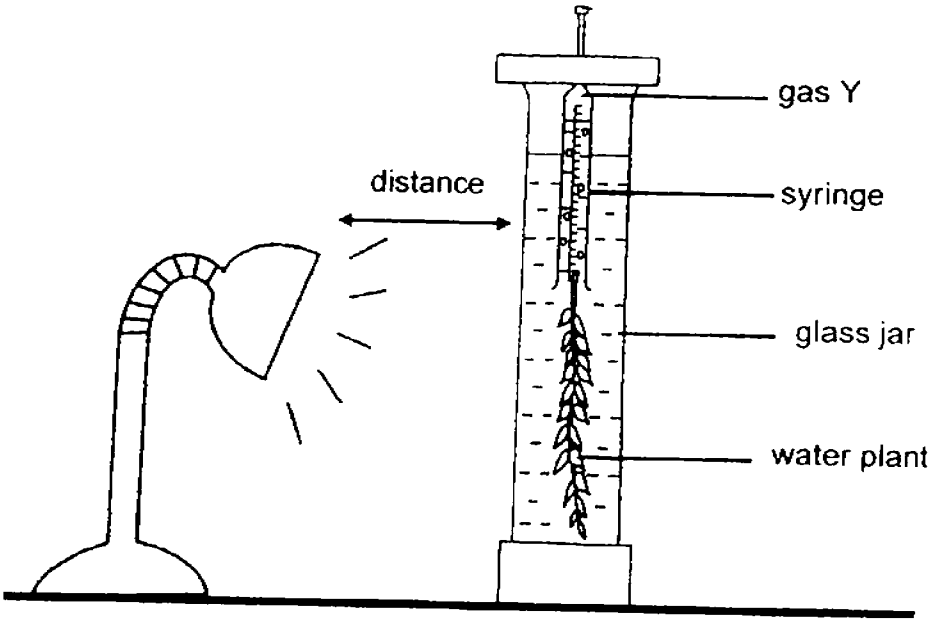
d) Explain whether her husband's advice was correct. (1m)

_____

_____

4

30. Michael placed a plant in a glass jar and set up the experiment as shown below in a dark room. He measured the amount of gas Y given out in 20 minutes.



He repeated the experiment a few times by changing the distance between the lamp and the glass jar. He measured the amount of gas Y given out.

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

_____

_____

He conducted a similar experiment and he added three guppies in the glass jar.

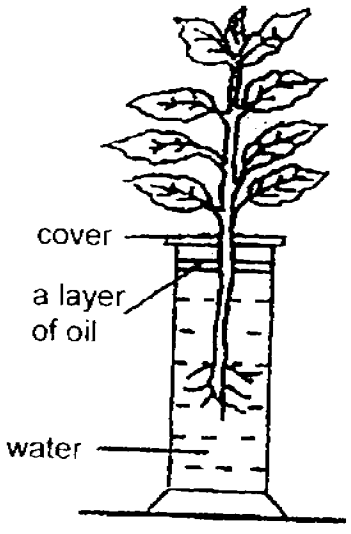
b) Explain why switching off the lamp would cause the guppies to die faster than when the switch is on. (2m)

_____

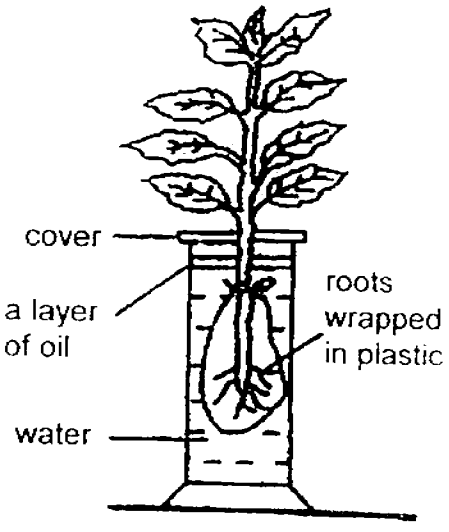
_____

3

31. Sam conducted an experiment as shown below. He used similar plants and placed both set-ups in a dark room for three days.



set-up A



set-up B

a) State the change in the water level for both set-ups on the third day. Explain your answer. (1m)

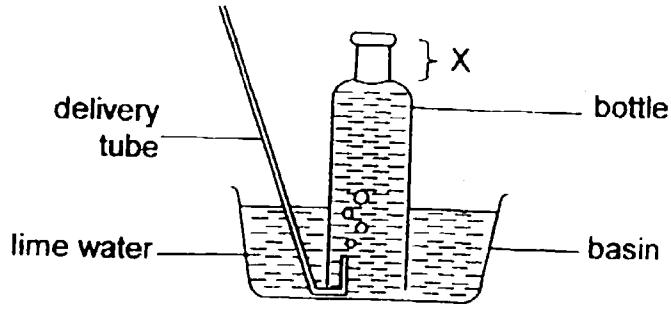
b) Tick (√) the gas(es) that is/are produced by the plants during the experiment. (1m)

	Set-up A	Set-up B
Oxygen		
Carbon dioxide		

c) What would happen to both plants after two weeks? Explain your answer. (1m)

3

32. Kayne created a set-up as shown below. He blew into the delivery tube and recorded the height of the space (X) in the bottle after each blow.



Ken created another similar set-up and carried out the same experiment. The results of their experiments were recorded as shown below.

	height of space (X) in Kayne's set-up	**height of space (X) in Ken's set-up**
1st blow	2cm	2.7cm
2nd blow	2.2cm	2.9cm
3rd blow	2.8cm	2.6cm

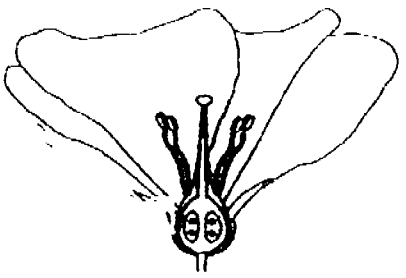
a) Whose limewater would be more chalky after the first blow? Explain your answer (1m)

b) It was observed that when they blew into the delivery tube, the water level in the basin increased. Why? (1m)

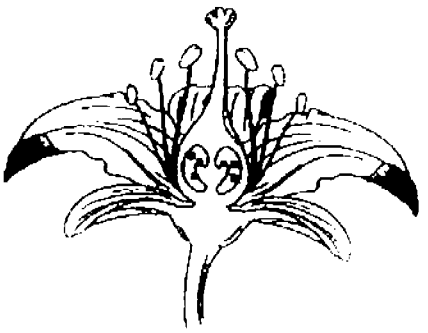
c) Why did they repeat the experiment? (1m)

3

33. The diagrams below show two flowers, A and B. Flower A contains nectar but flower B does not. Once pollinated, both flowers will take the same time to turn into a fruit.



flower A



flower B

Joan observed the trees of flower A and flower B and recorded the number of fruits produced by each tree over three weeks. Both trees had no fruits at the beginning of her observation.

	Number of fruits produced	
	Flower A	Flower B
End of week 1	0	7
End of week 2	0	8
End of week 3	1	10

a) State the most possible method of pollination for flower A. (1m)

_____

b) Explain how the pollination method in (a) takes place. (2m)

_____

_____

_____

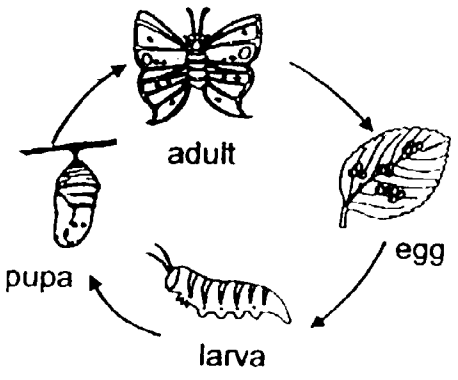
c) Which tree was more likely to be pollinated and fertilised more frequently during the three weeks of Joan's observation? Explain your answer. (1m)

_____

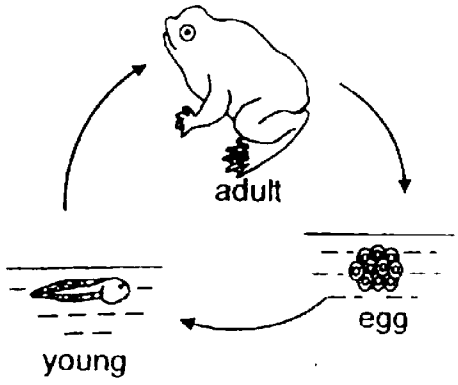
_____

4

34. The diagrams below show the life cycles of two organisms.



organism A



organism B

a) Both organisms lay many eggs at a time. State an advantage for doing so. (1m)

_____

_____

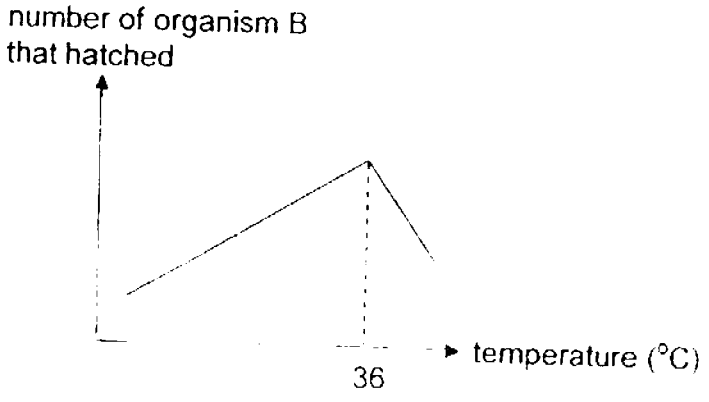
b) The larva of organism A feeds on leaves of plants but the adult feeds on the nectar of flowers. How is this helpful for the organism to survive? (1m)

_____

_____

2

34. The graph below shows the number of organism B that hatched over different temperatures of water in a pond.



c) Based on the above diagram, how does the temperature of the water affect the number of eggs hatched? (1m)

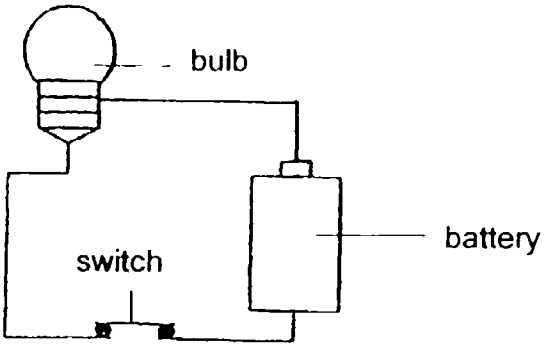
The temperature of water and the amount of oxygen present in the pond where organism B lives were measured and the results were shown in the table below.

temperature of water (°C)	amount of oxygen (units)
25	100
30	95
35	89
40	77

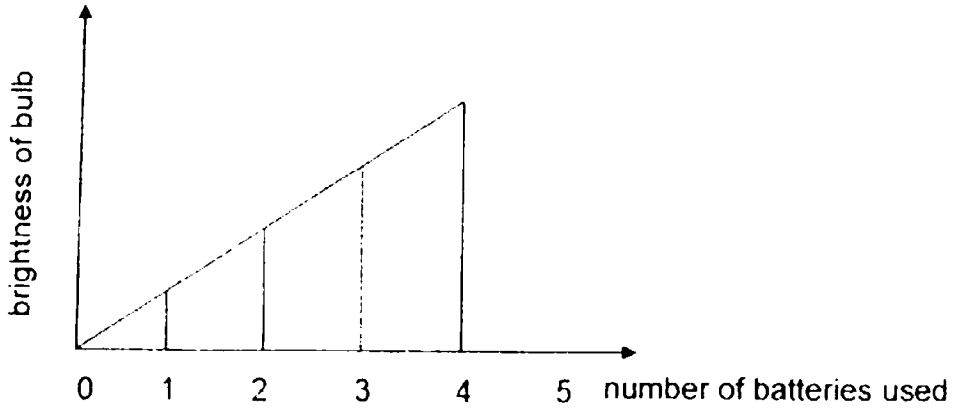
d) It was observed that the breathing rate of the young of organism B increased when the temperature of the water increased. Explain this observation. (2m)

3

35. Jasper set up an experiment as shown below.



He repeated the experiment with different number of batteries. The results of this experiment are represented by the graph shown below.



a) What was Jasper trying to find out from the above experiment? (1m)

_____

_____

b) What can Jasper conclude about the brightness of the bulb when the number of batteries was increased from 1 to 3? (1m)

_____

_____

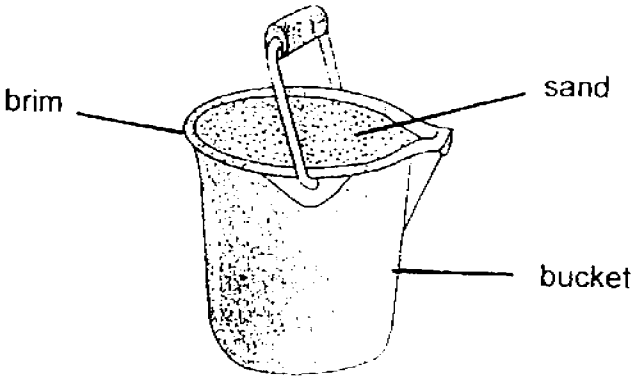
c) What happened to the bulb when the 4th battery was added to the closed circuit above? (1m)

_____

_____

3

36. Megan was at the beach with her family, playing with sand. She filled a bucket to the brim with sand. After that, she continued to pour sand into the bucket but the sand kept flowing out of the bucket.

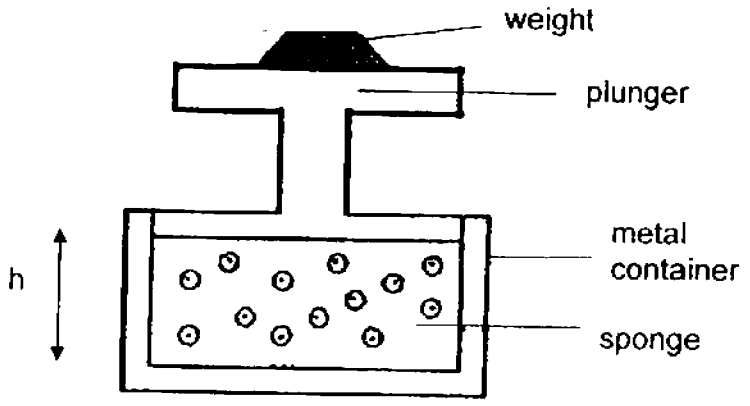


a) What can you conclude about the property of matter for sand from the above observation? (1m)

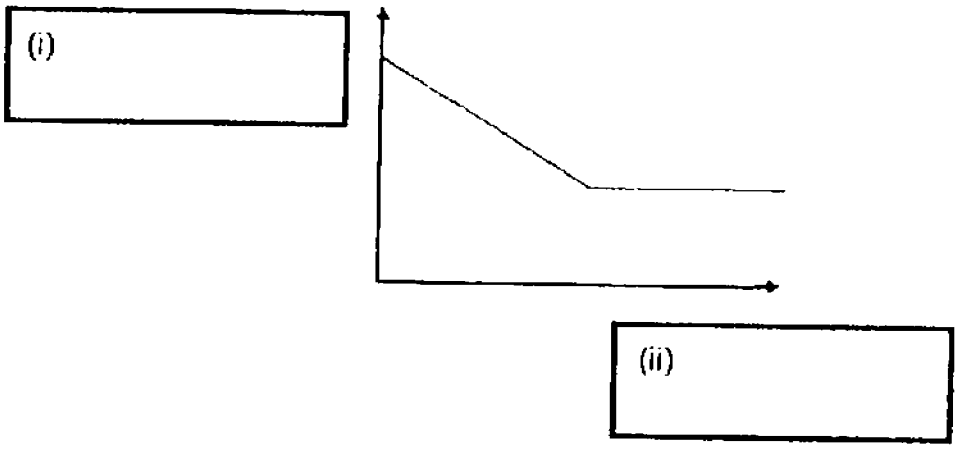
b) Megan says that sand is a liquid as it took up the shape of the bucket when it was poured into the bucket. Do you agree with Megan? Explain your answer. (1m)

2

36. David put a sponge into a metal container as shown below. He then put a weight on the plunger and measured the height (h) of the sponge when the plunger stopped moving upwards. He repeated the experiment by adding more weights.



c) David recorded his results and draw a graph as shown below. Label the axis (i) and (ii) of the graph. (1m)



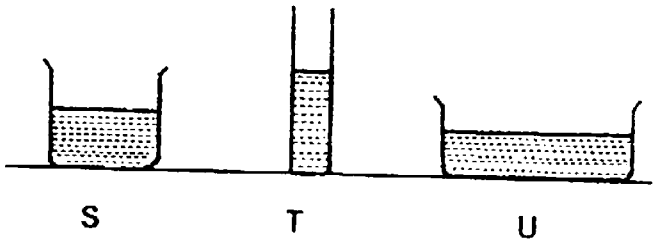
d) The height (h) of the sponge decreased as weights were placed on the plunger. Explain why this was possible. (1m)

_____

_____

2

37. Alan set up an experiment as shown below to study the rate of evaporation of water in three different containers S, T and U. He poured different amount of water into each of the containers and left them in the open for a day.



a) His teacher told him that his experiment is not a fair test. Suggest what Alan should do to make this experiment a fair test. (1m)

_____

_____

Alan then improved on his experiment to make it a fair test.

b) What should he measure to determine which container has the highest rate of evaporation? (1m)

_____

_____

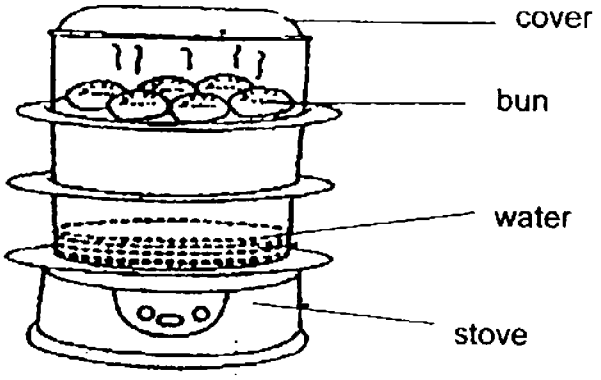
c) Which container of water has the highest rate of evaporation? Explain your answer. (1m)

_____

_____

3

37. Mother used a steamer shown below to steam some buns.



Mother observed some water droplets on the underside of the cover after some time.

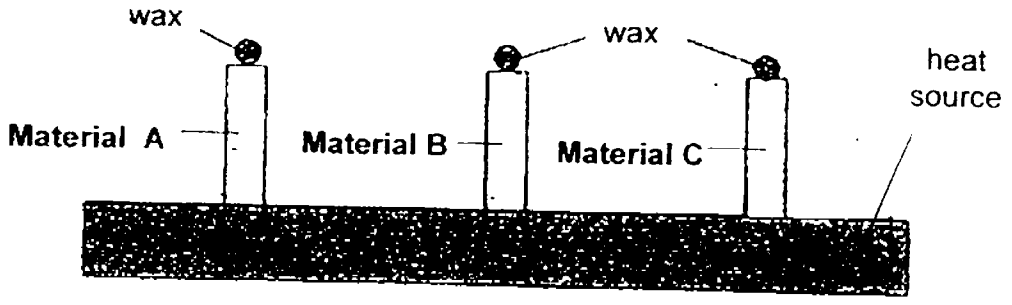
d) Explain clearly how the water droplets were formed. (2m)

_____

_____

2

38. Jerick conducted an experiment to find out how fast different materials conduct heat. He placed some wax at the top end of 3 rods made of different materials A, B and C. The three rods were then placed on top of a heat source as shown below.



He recorded the time taken for the wax to melt completely, as shown in the table below.

Materials	**A**	**B**	**C**
Time taken (minutes)	7	9	4

a) Based on the results, which material is most suitable for making a frying pan? Explain your answer. (2m)

_____

_____

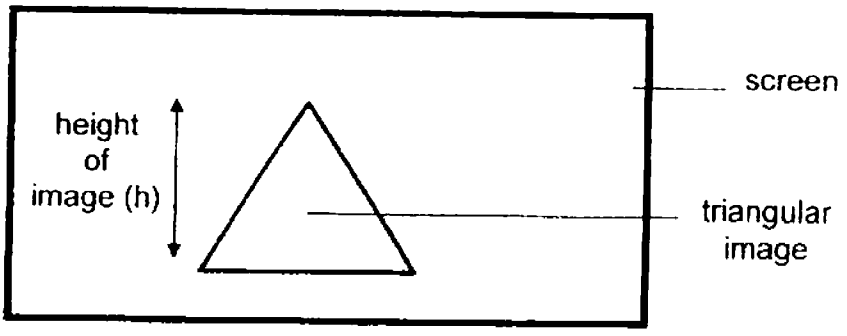
b) List two variables that Jerick needs to keep constant to ensure that the experiment is fair. (1m)

(i) _____

(ii) _____

3

39. David wants to have a movie room in his new house where he intends to install a projector to project movies onto a large screen. He placed the projector at different distance from the screen and recorded the height of a triangular image on the screen.



Distance of the projector from the screen, in metres	Height of the image on the screen (h), in metres
10.0	2.0
12.5	2.5
15.0	3.0
17.5	3.5

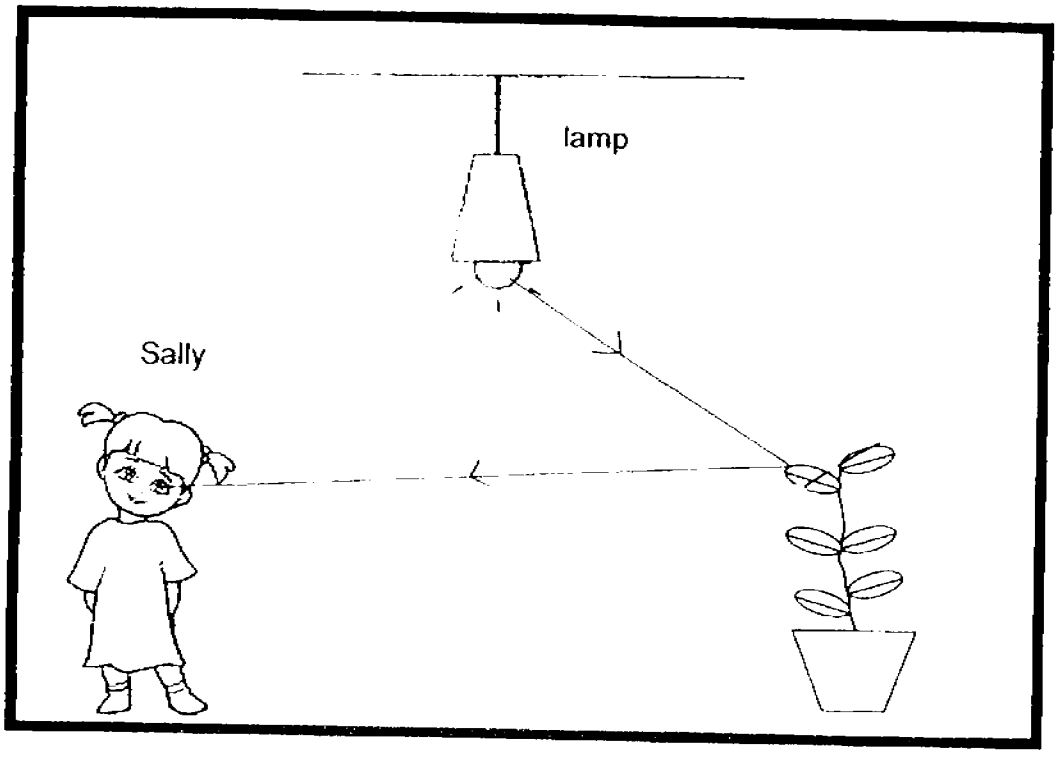
a) Based on the table, what is the relationship between the distance of the projector from the screen and the height of the image on the screen? (1m)

_____

_____

1

b) Sally could see the pot of plant as shown below. Draw arrows to show how light travels such that Sally could see the pot of plant. (1m)



1

40. The diagram shows a boy riding up a slope on a bicycle.

a) Besides friction that the boy would encounter, identify one other force that is acting on the boy as he goes up the slope. (1m)

_____

_____

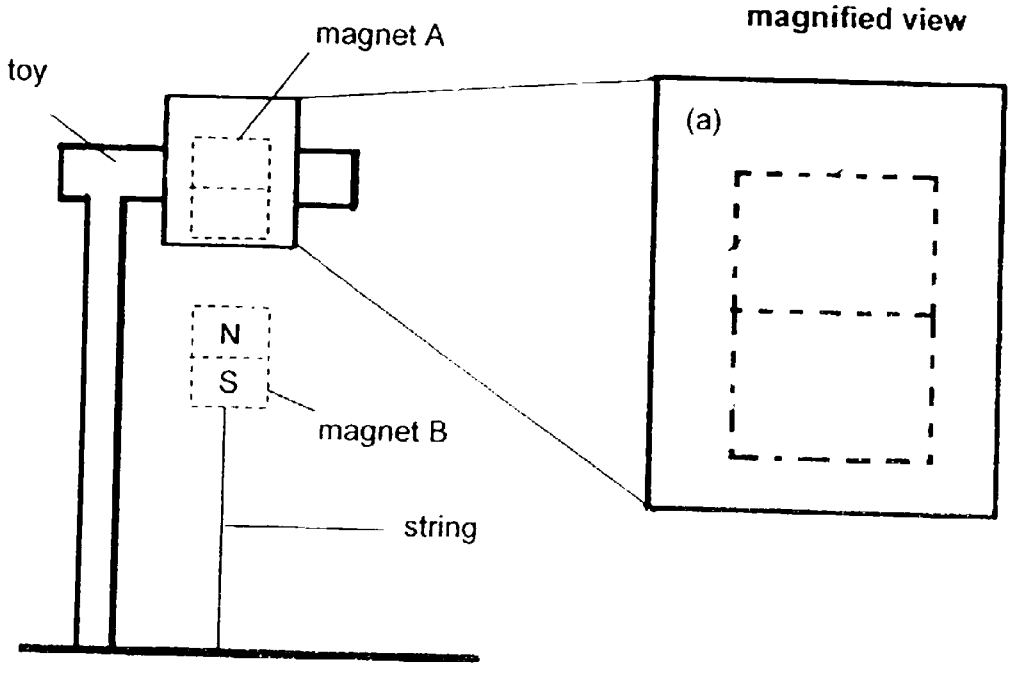
b) He found that he has to apply a greater force on the pedals when he moves up the slope. Explain why this is so. (1m)

_____

_____

2

41. The diagram below shows a picture of a toy. The toy has a magnet in it.



a) Label the poles of magnet A in the toy so that magnet B is able to 'float' in the air. (1m)

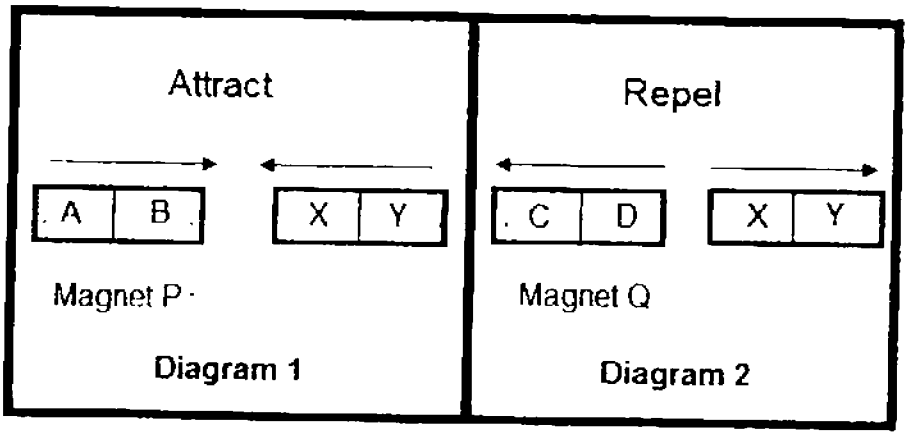
b) It is observed that when the toy is removed, magnet B drops to the ground. Explain why. (1m)

_____

_____

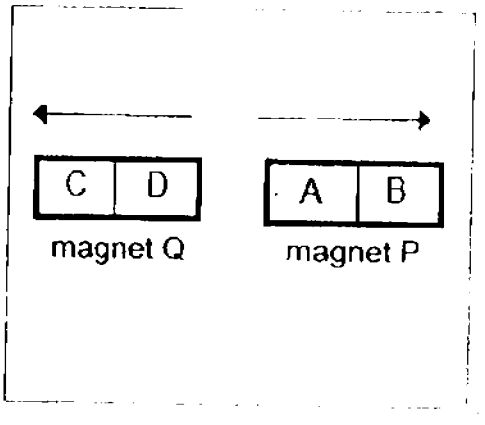
2

c) The diagrams below show what happens when magnet P and magnet Q are placed close to a magnet, one at a time.

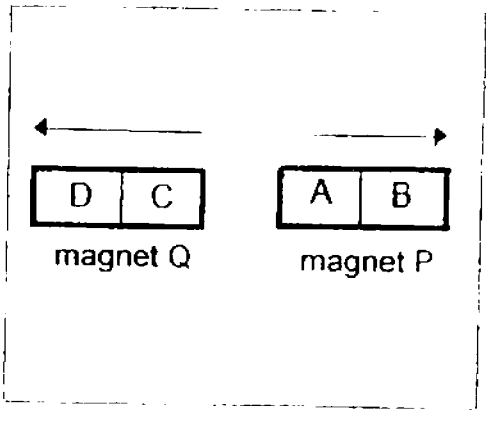


Magnet P and magnet Q were then placed close to each other. Draw arrows in the boxes below to show the force of repulsion or the force of attraction between the two magnets. (1m)

(i)



(ii)



1

END OF SECTION B
PLEASE CHECK YOUR WORK

YEAR : 2016
LEVEL : PRIMARY 5
SCHOOL : RED SWASTIKA
SUBJECT : SCIENCE
TERM : SA2

Booklet A

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

Booklet B

Q29a Fungi

Q29b Mould spores landed on the bread and with water they grew into moulds.

Q29c She was wrong. Placing the bread in the cupboard will continue to allow the bread mould to grow because there is warmth, water and oxygen in the cupboard.

Q29d His advice was not correct. The fungus is not a plant so it does not need sunlight to make food.

Q30a To find out if the amount of light affects the rate of photosynthesis of the plant.

Q30b When the lamp is switched off, there is no light for the plants to photosynthesise and give out oxygen. The guppies will die faster as there is less/insufficient oxygen for them.

Q31a Set-up A's water will be decreased as the roots are absorbing it, however set-up B water remain constant as the roots are unable to absorb it as there is a plastic wrapping it.

Q31b

	Set-up A	Set-up B
Oxygen		
Carbon dioxide	✔	✔

Q31c Both plants will die, as there is no light to make food.

Q32a Ken's. He blew more air into the limewater and thus there is more carbon dioxide.

Q32b The air that is exhaled takes up the space previously occupied by the water in the water in the bottle and pushes the water out of the bottle into the basin.

Q32c To make sure that the experiment is reliable.

Q33a Insect – pollinated.

Q33b Insects are attracted to flower A by its nectar. Pollen grain get stuck to the insect's body and take to the stigma.

Q33c Flower B. It had more fruits than flower A.

Q34a By doing so, it would avoid extinction.

Q34b Both organisms would not compete for food.

Q34c The higher the temperature of the water, the more the number of eggs hatched, until 36° when the number of eggs hatched starts to reduce with further increase in temperature.

Q34d The amount of oxygen in the pond decreases as the temperature of the water increases. Thus, at higher temperature, there is less oxygen for the young to breathe in so the young needs to breathe faster to take enough oxygen for survival.

Q35a He was trying to find out if the number of batteries, would the brightness of the bulb increase or not.

Q35b As the amount of batteries was being increased, the brightness of the bulb would also be increased.

Q35c The bulb will be fused as there is too much electrical energy.

Q36a Sand has a definite volume an occupies space.

Q36b No. Each sand particle has a definite shape, so sand is a solid.

Q36c (i) Height of the sponge.
(ii) Amount of force used.

Q36d As weights were placed the air in the sponge was forced out or compressed.

Q37a He should ensure an equal amount of water into each container.

Q37b The amount of water left.

Q37c Container U. It has the largest exposed surface area of water.

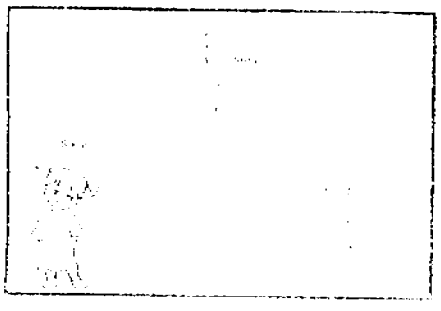
Q37d The water gets heated and evaporated to form hot water vapour. The hot water vapour touches the cooler inner surface of the cover. The water vapour than loses heat and condenses to form water droplets.

Q38a C. Time taken for the wax to melt is shortest. This shows that C conducts heat the fastest.

Q38b (i) The height of the rods.
(ii) The amount of wax.

Q39a As the distance of projector from the screen increases, the height of the image on the screen increases.

Q39b



Q40a Gravitational force.

Q40b Gravitational force is pulling him down and as by applying a great force would allow him to overcome the frictional and gravitational force.

Q41a

Q41b There is no magnetic force of attraction to hold magnet B in the air and gravity pull it down to the ground.

Q41c (i)

(ii)

End