



AI TONG SCHOOL

2018 MID-YEAR EXAMINATION PRIMARY FOUR SCIENCE

DURATION: 1 hour 45 minutes

DATE: 11 May 2018

INSTRUCTIONS

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

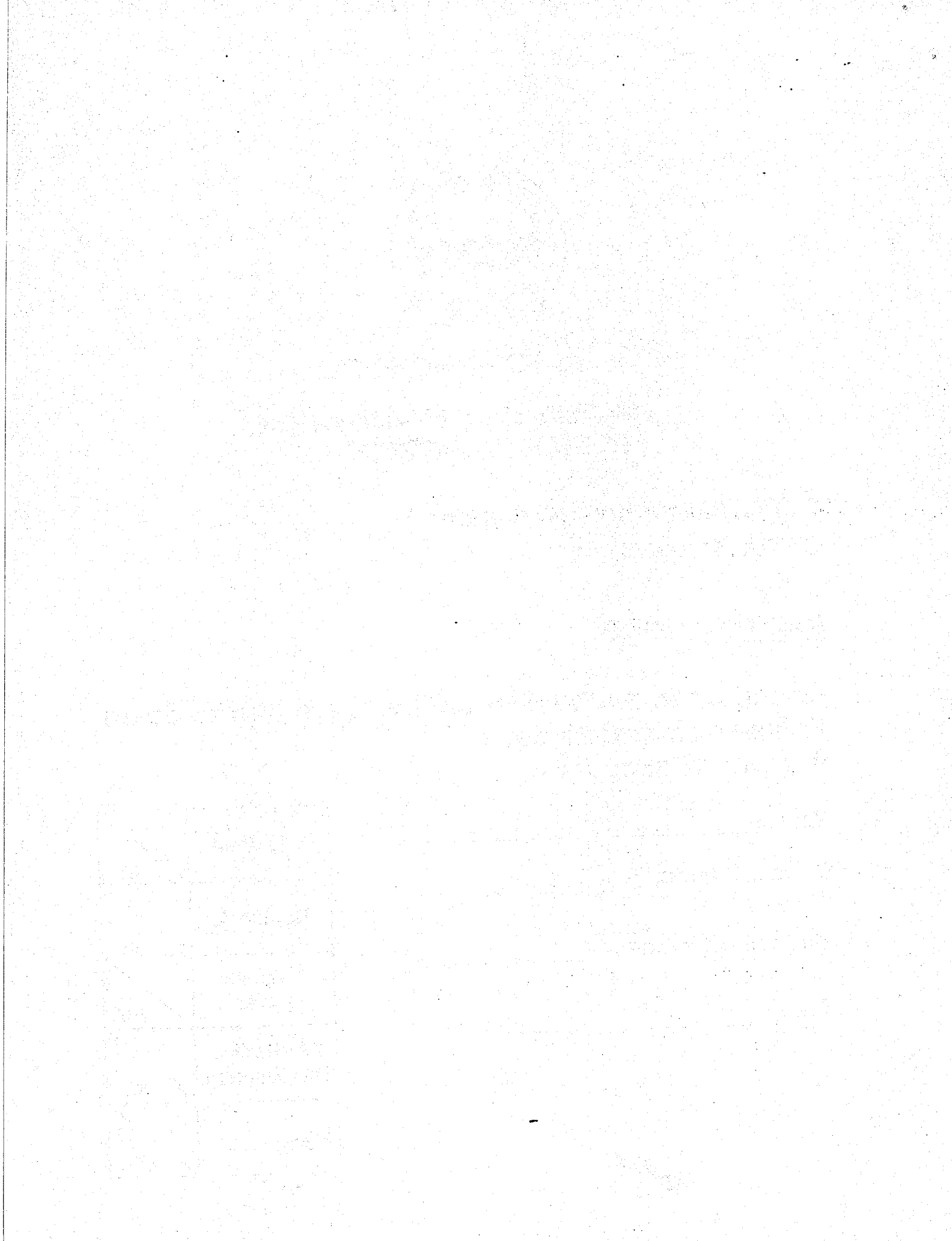
Name : _____ ()

Class : Primary 4 _____

Parent's Signature : _____

Date : _____

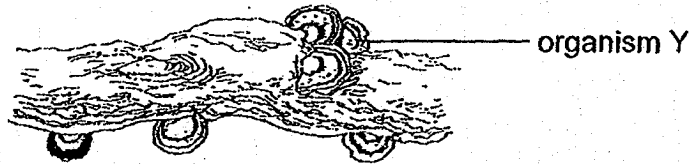
Booklet A	56
Booklet B	44
Total for paper	100
Alternative Assessment	15
Total	115



Section A (28 x 2 marks)

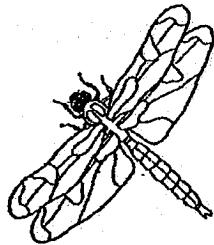
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice and shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. The diagram below shows organism Y.

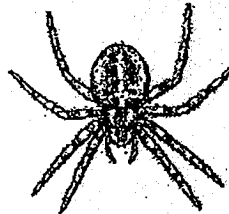


Which one of the following statements explains why organism Y is classified as fungi but not plant?

- (1) It reproduces by spores.
 - (2) It lives on another organism.
 - (3) It does not make its own food.
 - (4) It cannot move freely from one place to another by itself.
2. Feline spotted Animals G and H in the school OEL garden.



Animal G

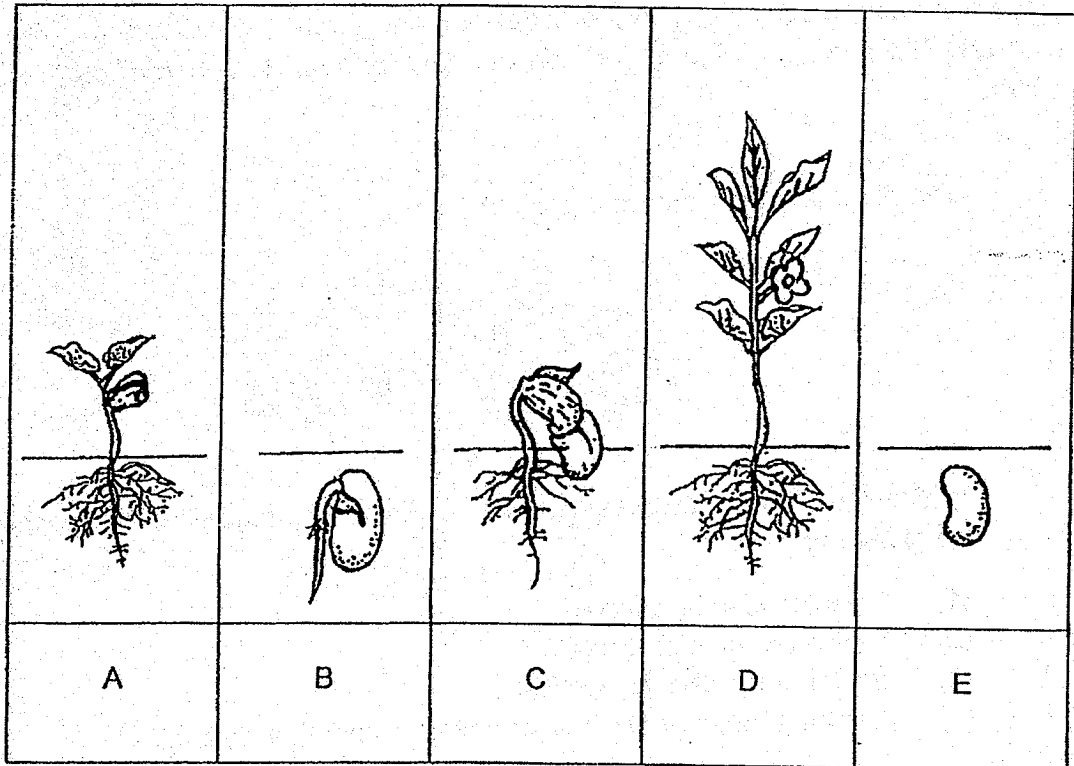


Animal H

What can she do to find out which animal is an insect?

- A Count the number of legs
 - B Look for the presence of wings
 - C Count the number of body parts
 - D Look for the presence of tail
- (1) A and C only
 - (2) B and D only
 - (3) C and D only
 - (4) A, C and D only

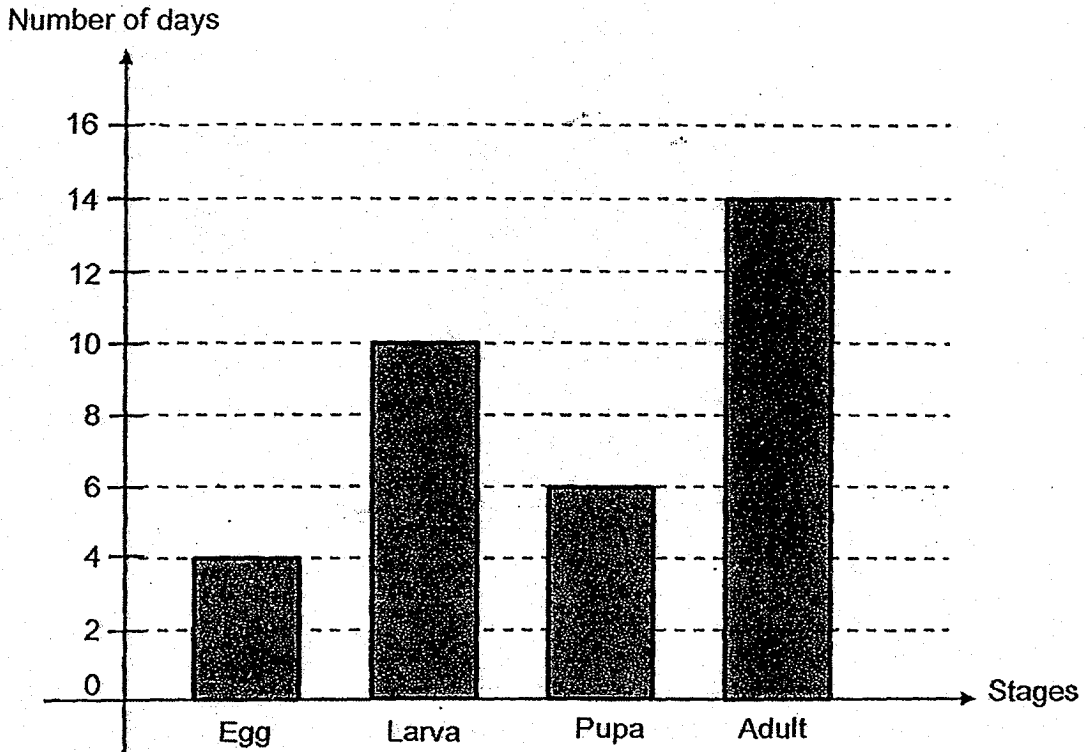
3. The diagram below shows the different stages in the life cycle of Plant P.



Which is the correct order for the stages in the life cycle of Plant P?

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

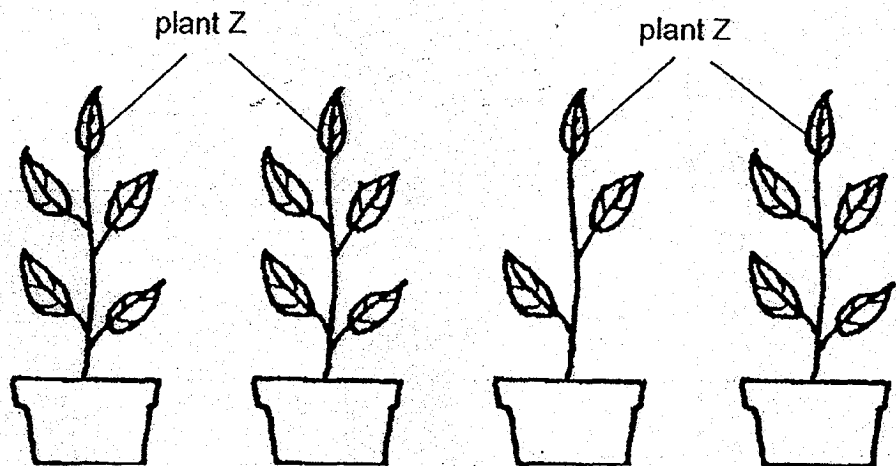
4. The graph below shows the number of days for each stage of the life cycle of organism S.



Based on the graph, how many days does it take for organism S to become an adult after the egg has hatched?

- (1) 14 days
- (2) 16 days
- (3) 20 days
- (4) 34 days

5. Liz wanted to find out if the amount of water given to plant Z daily would affect its growth. She prepared four set-ups as shown below.

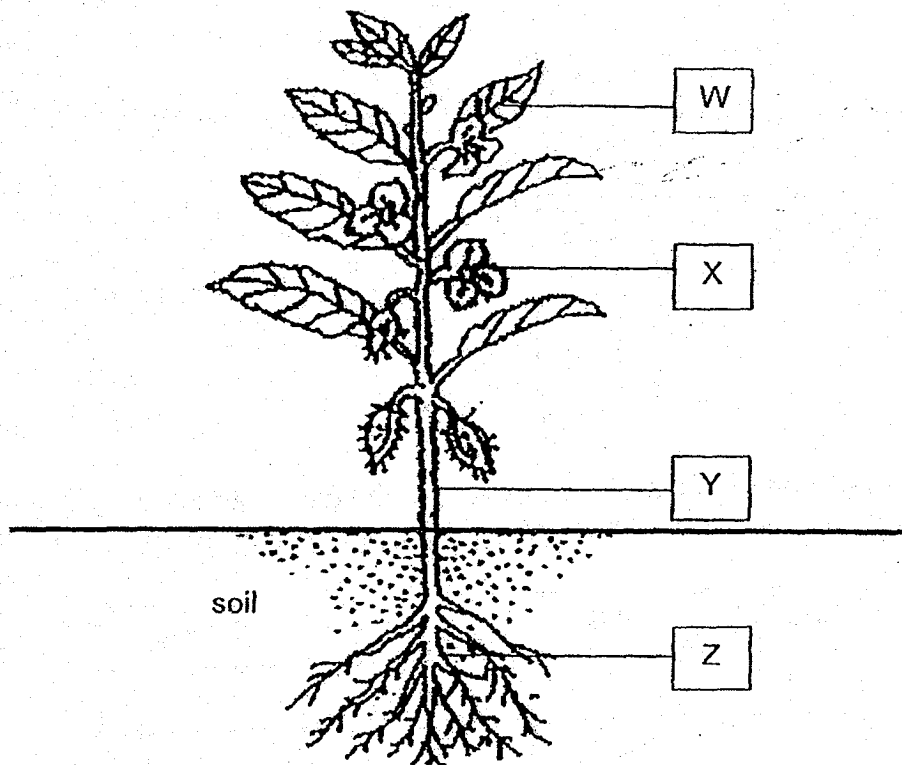


Set-up	A	B	C	D
Amount of water given daily	100 ml	50 ml	100 ml	50 ml
Location of plant Z	Garden	Garden	Under the shade	Under the shade

Which two set-ups should Liz use to ensure a fair experiment?

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

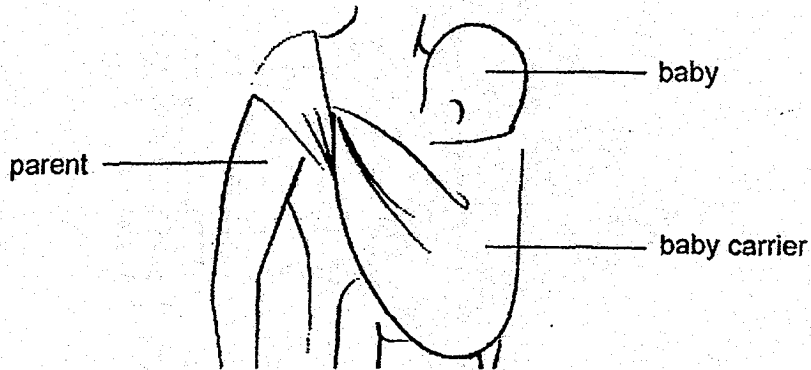
6. The diagram below shows a flowering plant.



Which of the following statements about the function of the plant part is **incorrect**?

- (1) Y supports the plant.
- (2) X makes food for the plant.
- (3) Z absorbs water and minerals for the plant.
- (4) W has many tiny openings to take in and give out gases.

7. A baby product company is looking for the most suitable material to make a baby carrier for parents to carry their babies on their bodies.



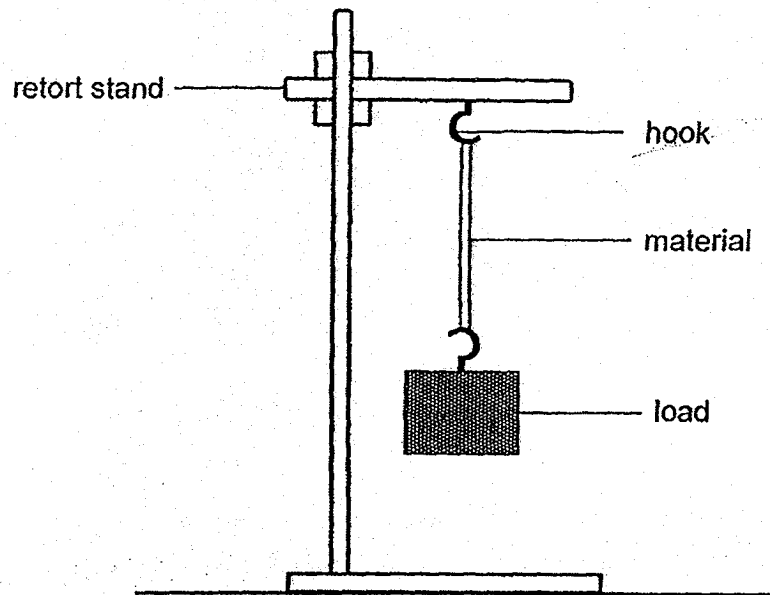
The table below shows the properties of the four materials A, B, C and D. A tick (✓) indicates that the material has the stated property.

Material	Stiff	Transparent	Strong
A			✓
B	✓		✓
C	✓	✓	✓
D	✓	✓	

Which material is most suitable for making the baby carrier?

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

8. Danny conducted an experiment using the set-up below.



He increased the mass of the load until the material broke.

The aim of the experiment was to find out _____.

- (1) how strong the material is
- (2) how flexible the material is
- (3) how long it takes for the load to drop
- (4) how loud the sound will be when the load drops

9. Andy wanted to build a toy boat as shown in Diagram 1.

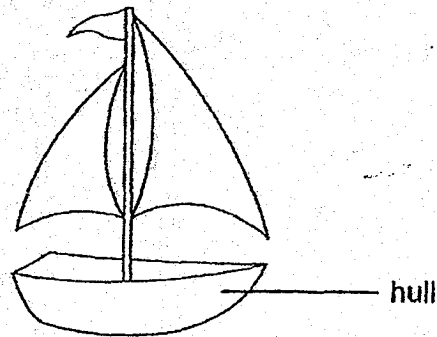


Diagram 1

He placed four similar-sized objects into a container of water as shown in Diagram 2. The objects were made of different materials A, B, C and D.

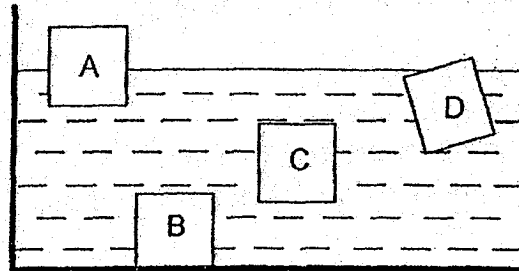
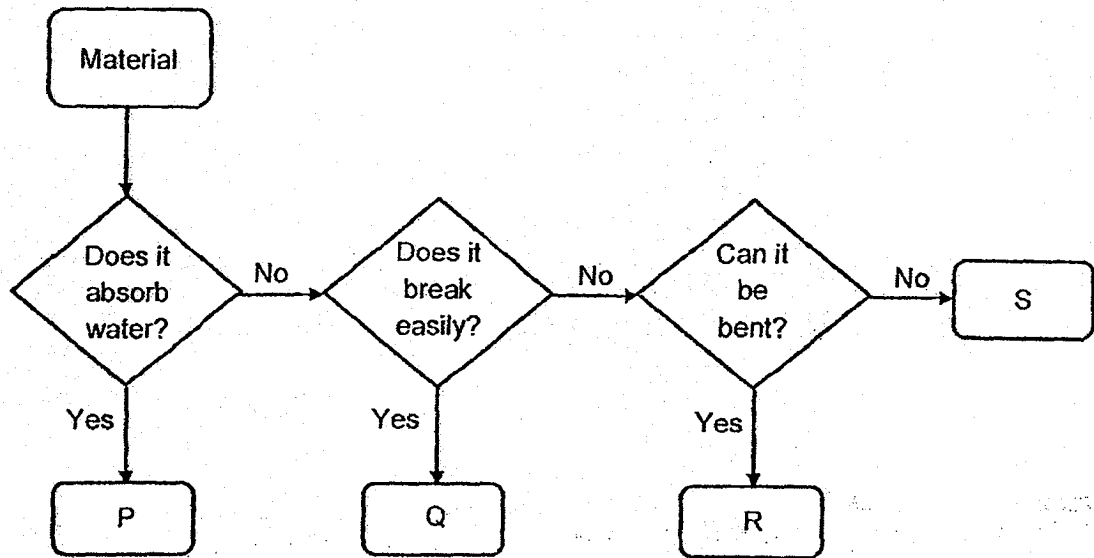


Diagram 2

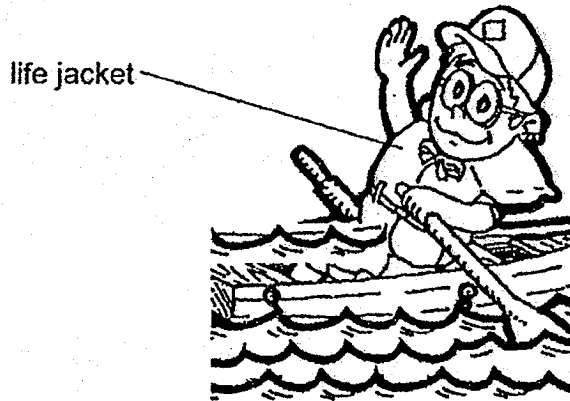
Which material, A, B, C or D, is most suitable for making the hull of the boat?

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

10. Study the flowchart below carefully.



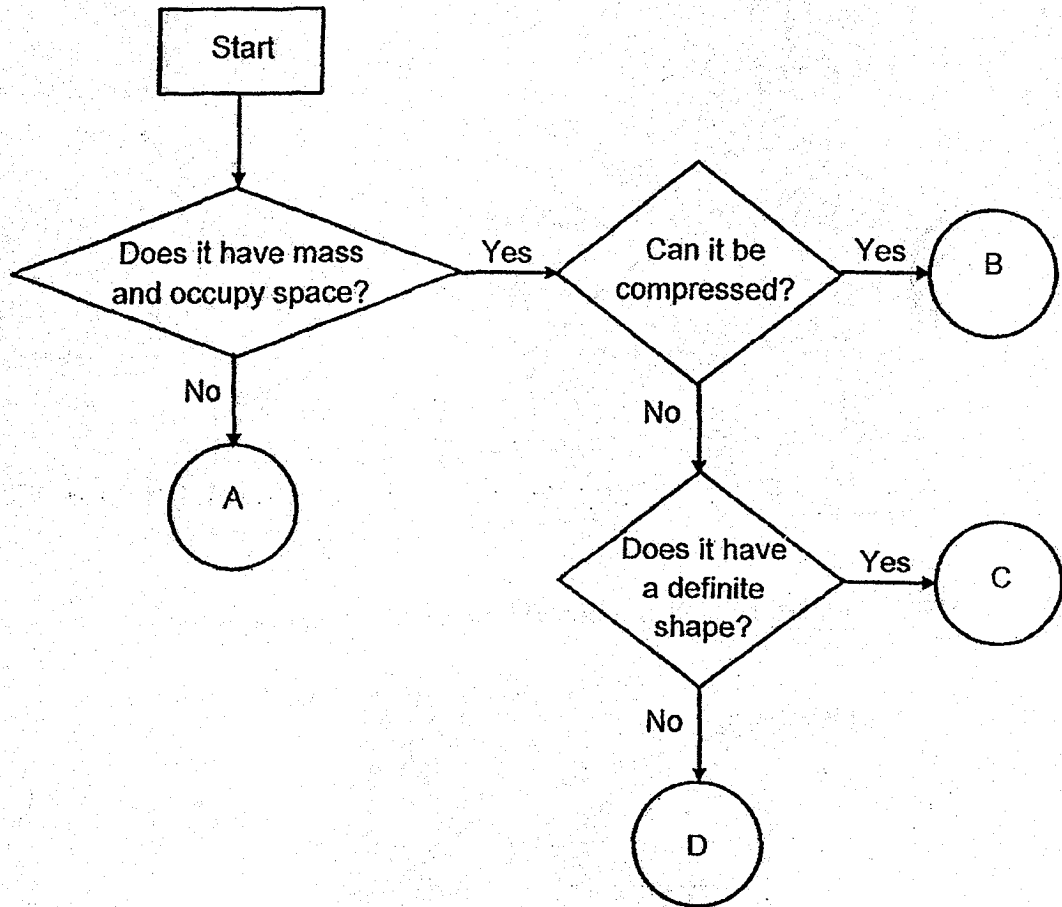
The picture below shows a boy wearing a life jacket on a boat.



Based on the flowchart, which material is most suitable for making the life jacket?

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

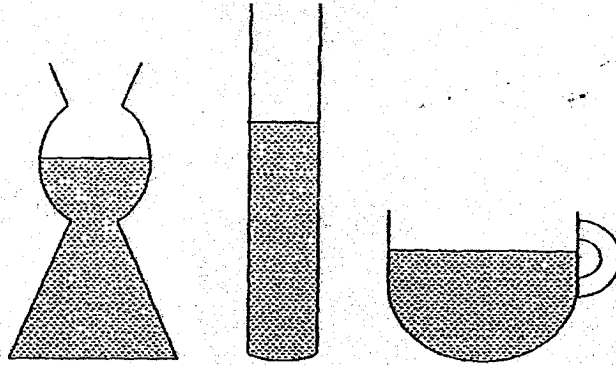
11. The flowchart below shows the properties of four substances A, B, C and D.



Which of the following could substances A, B, C and D represent?

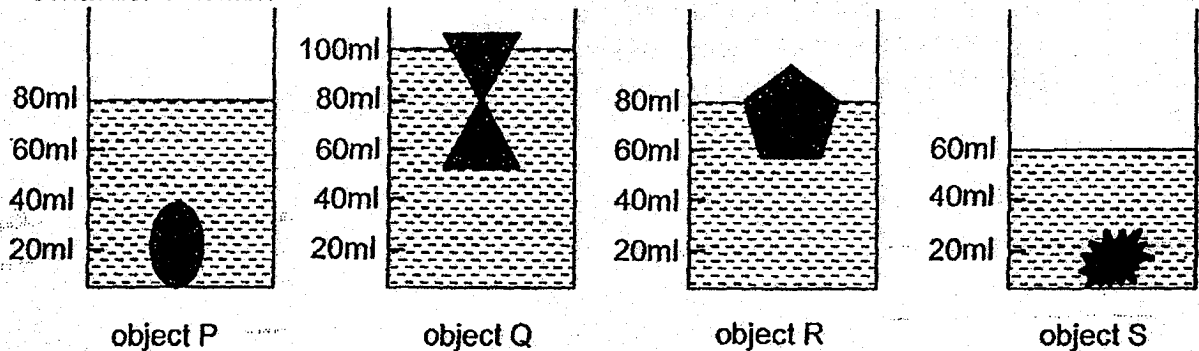
	A	B	C	D
(1)	light	balloon	rain	milk
(2)	wind	shadow	eraser	ice cube
(3)	heat	air	coin	oil
(4)	rainbow	air	ruler	heat

12. Kim filled three different containers with 200 ml of water each as shown in the diagram below.



What property of liquid does Kim's experiment show?

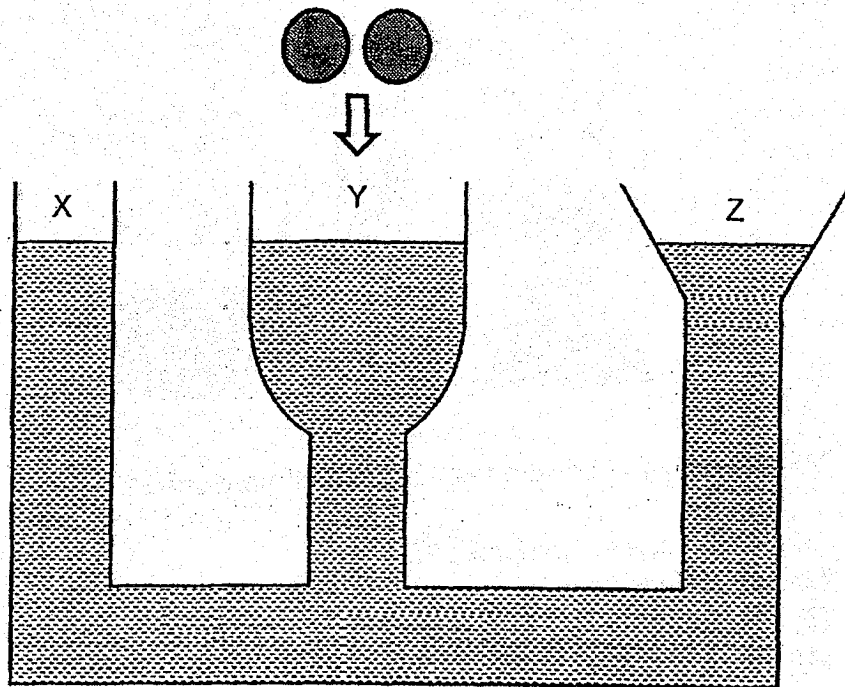
- (1) Liquid can be compressed.
 - (2) Liquid has no definite shape.
 - (3) Liquid has no definite volume.
 - (4) Liquid has mass and occupies space.
13. Jay conducted an experiment as shown below. He poured 50 ml of water into four similar containers. He then placed four different objects P, Q, R and S gently into each container of water.



Based on the observations above, which one of the following statements is incorrect?

- (1) Object S has the least volume.
- (2) Object P has a volume of 30 cm³.
- (3) Object Q has more volume than object S.
- (4) Both objects P and R have the same volume.

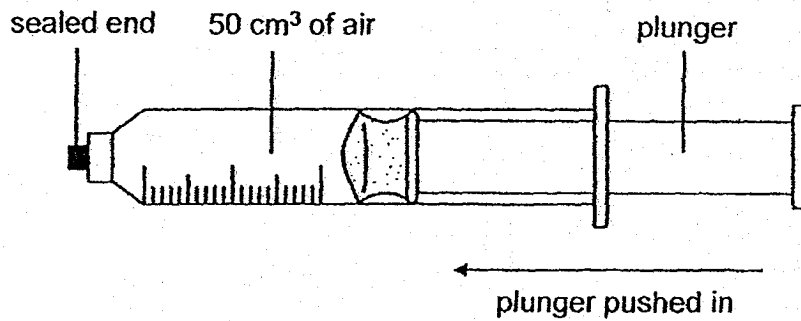
14. John poured some water into a container with three openings X, Y and Z. He then dropped two metal balls gently into opening Y.



What will happen to the water levels at X and Z?

- (1) Water levels at X and Z will increase.
- (2) Water levels at X and Z will decrease.
- (3) Water levels at X and Z will remain the same.
- (4) Water level at X will increase and the water level at Z will decrease.

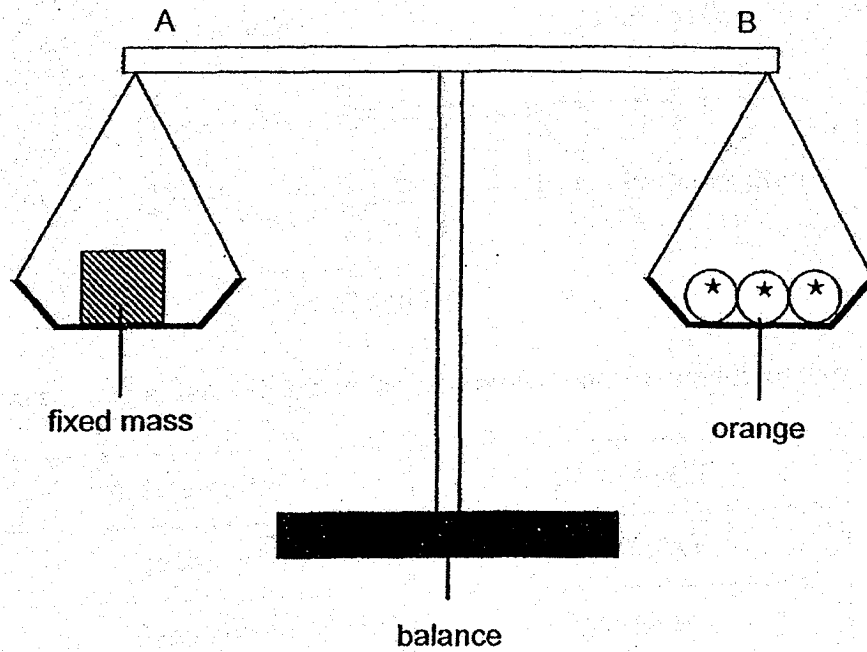
15. The diagram below shows a syringe filled with 50 cm^3 of air. The end of the syringe is sealed.



What will happen to the mass and volume of air after the plunger is pushed in?

	Mass of air	Volume of air
(1)	no change	increase
(2)	no change	decrease
(3)	increase	no change
(4)	decrease	no change

16. Ali used a balance and different fixed masses as shown below to find out the mass of three oranges.



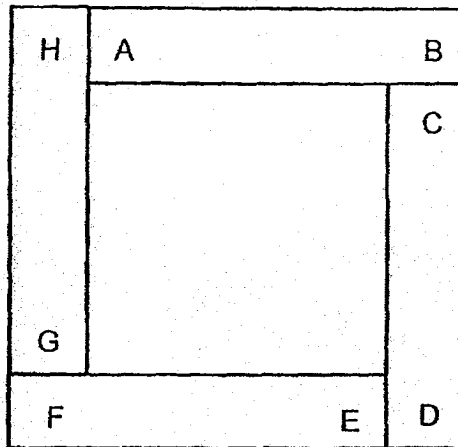
He recorded his observations in the table below as he placed each fixed mass on side A of the balance.

Fixed mass (g)	Side of balance that tilts downwards
20	B
40	B
60	B
100	A
150	A

Based on his results, what is the most likely mass of the three oranges?

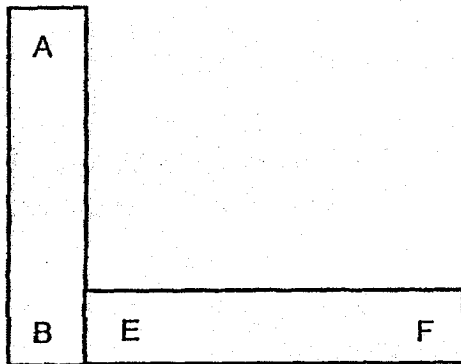
- (1) 40 g
- (2) 60 g
- (3) 80 g
- (4) 100 g

17. Four bar magnets with their ends marked A to H can be arranged as shown below.

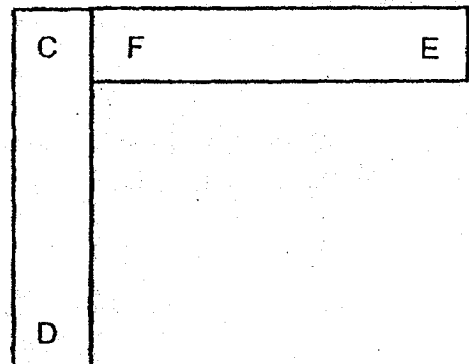


Which one of the following arrangements of magnets is not possible?

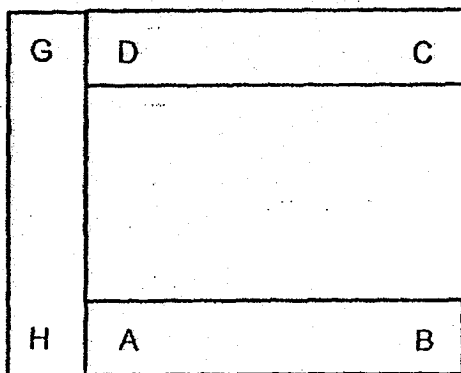
(1)



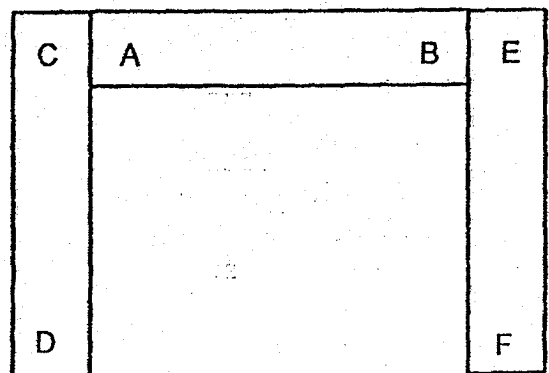
(2)



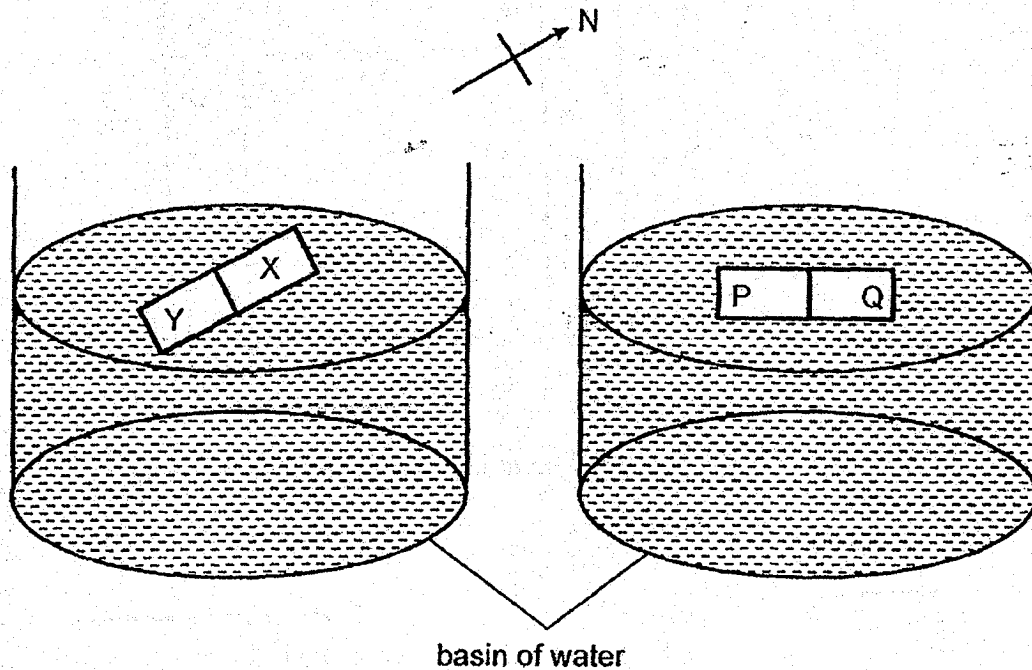
(3)



(4)



18. Becky stroked metal bars XY and PQ a few times with one end of a bar magnet. She then placed both metal bars into two basins of water as shown below.



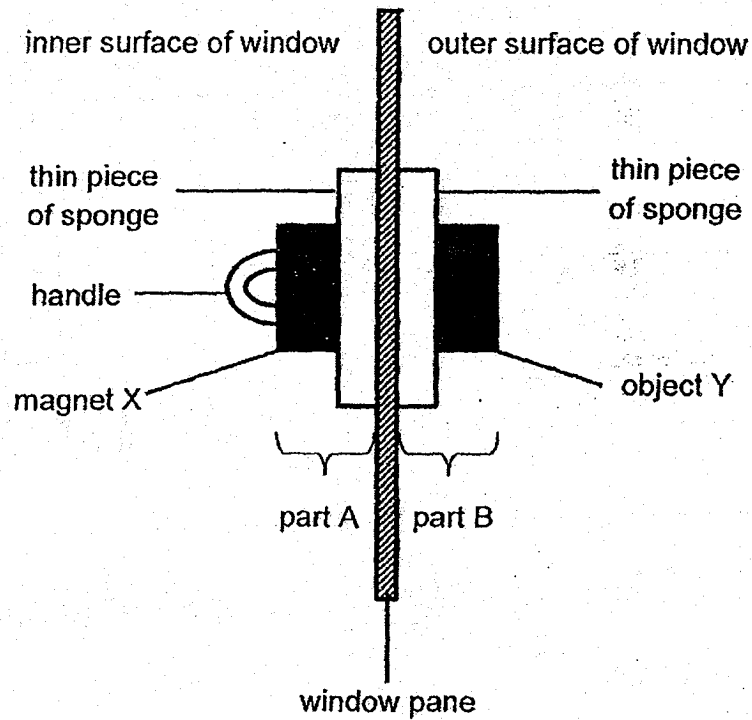
Becky observed that metal bar XY moved and came to a rest with X pointing in the North direction but metal bar PQ did not move. Becky then made the following statements.

- A Metal bar XY has become a magnet.
- B Metal bar XY is repelled by metal bar PQ.
- C Metal bar PQ can attract magnetic objects.
- D Metal bar XY is resting in the North-South direction.

Which statement(s) made by Becky is/are correct?

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

19. The diagram below shows a device used to clean window panes. When part A is moved over the inner surface of the window pane, part B follows it, moving over the outer surface of the window pane.

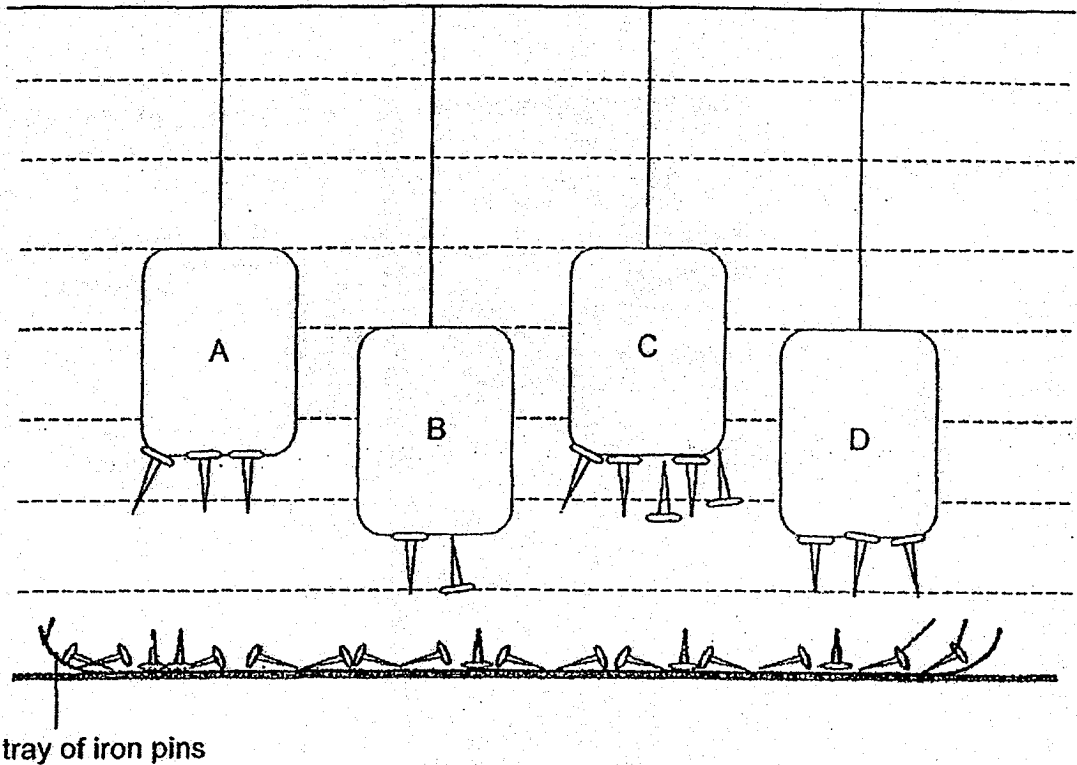


Which of the following statements about the device are correct?

- A Object Y is made of magnetic material.
- B Magnetic force cannot pass through the sponge.
- C Magnet X attracted the sponges which attracted object Y.
- D There is a force of attraction between magnet X and object Y.

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

20. Linda hung four magnets, A, B, C and D, above a tray of identical iron pins. Her observation is as shown below.



Based on her observations, arrange the magnets according to their strengths, starting from the weakest.

	Weakest	→		Strongest
(1)	A	B	C	D
(2)	B	A	D	C
(3)	B	D	A	C
(4)	C	D	A	B

21. Which of the following is not a source of heat?

- (1) hair dryer
- (2) water heater
- (3) winter jacket
- (4) hot chocolate drink

22. During a science lesson, four pupils made the following statements about heat.

Ali Heat is a form of energy.

Benson Temperature is a form of energy.

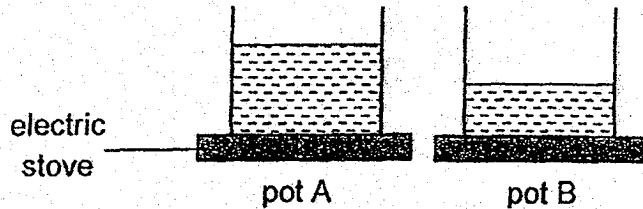
Carl Hot coffee has more heat than cold coffee.

Danny 500 ml of water at 65°C has the same amount of heat as 200 ml of water at 65°C.

Which of the pupils are correct?

- (1) Ali and Carl only
- (2) Ali and Danny only
- (3) Benson and Carl only
- (4) Benson and Danny only

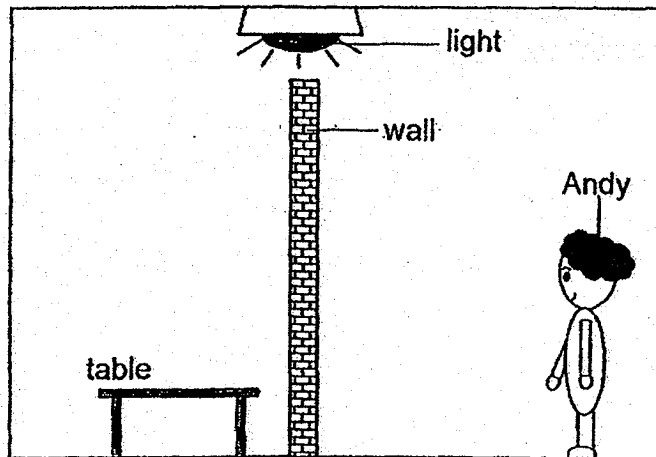
23. Two pots of water, A and B, were at room temperature. They were then heated on electric stoves. The amount of water in both pots are not the same. The amount of heat given to both pots of water for five minutes is the same. The room temperature is 25°C.



Which of the following gives the correct temperature of the water in the pots after five minutes?

	Pot A	Pot B
(1)	25°C	25°C
(2)	80°C	50°C
(3)	50°C	80°C
(4)	70°C	70°C

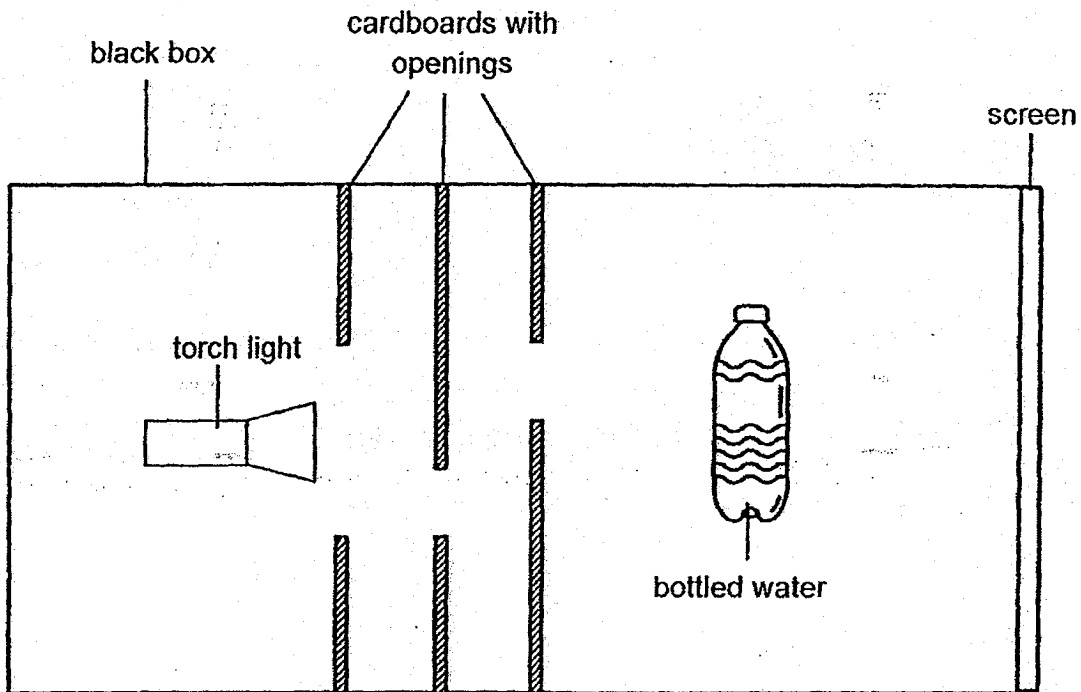
24. Andy was standing behind the wall as shown below and he could not see the table.



Which one of the following was the reason why Andy could not see the table?

- (1) The table did not reflect light.
- (2) The table did not give off light.
- (3) The wall did not allow light to pass through.
- (4) The table did not allow light to pass through.

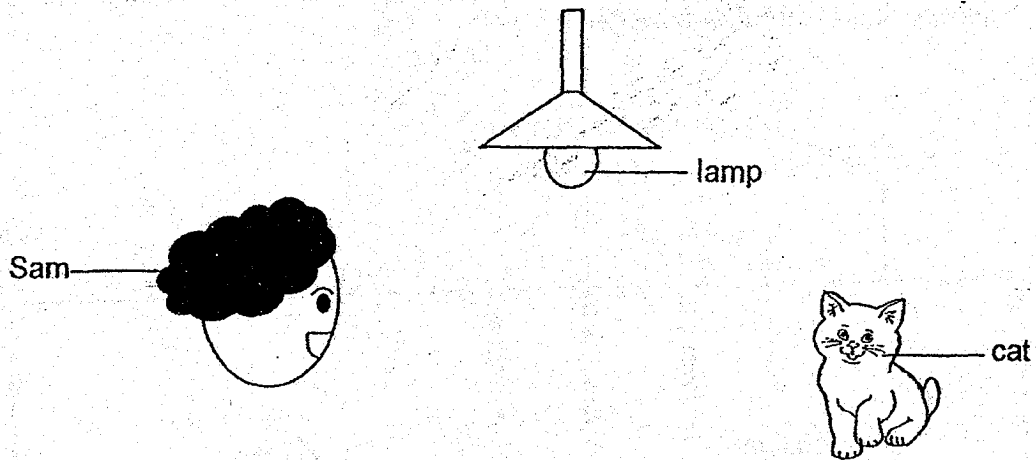
25. Willy set up the experiment in a black box as shown below. He placed three cardboards with openings in front of a bottled water.



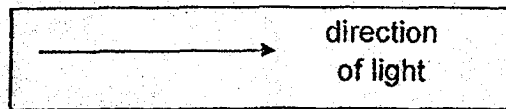
Which one of the following statements about Willy's experiment is correct?

- (1) No shadow will form on the screen.
- (2) Shadow of the bottle will form on the screen.
- (3) Shadow of the cardboards will form on the screen.
- (4) Both the shadows of the cardboards and the bottle will form on the screen.

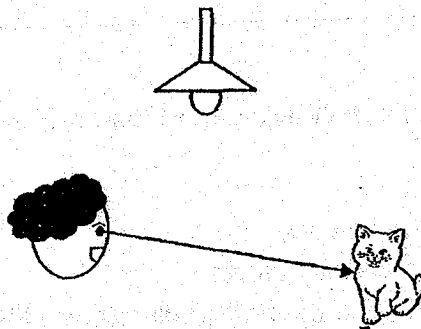
26. Look at the diagram below.



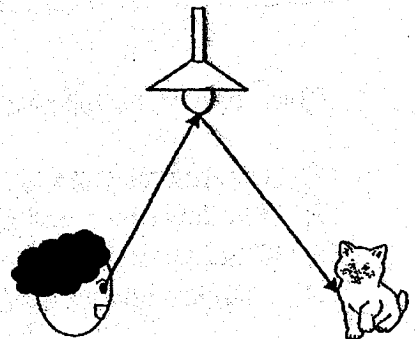
Which one of the following light ray diagrams correctly shows why Sam can see the cat?



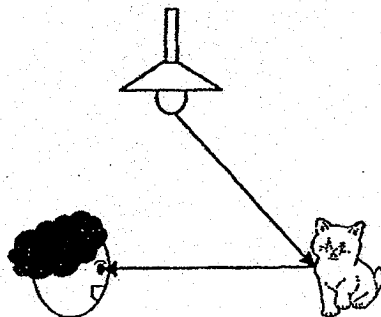
(1)



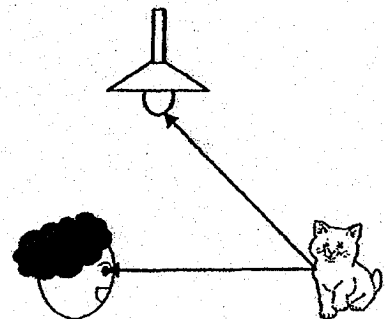
(2)



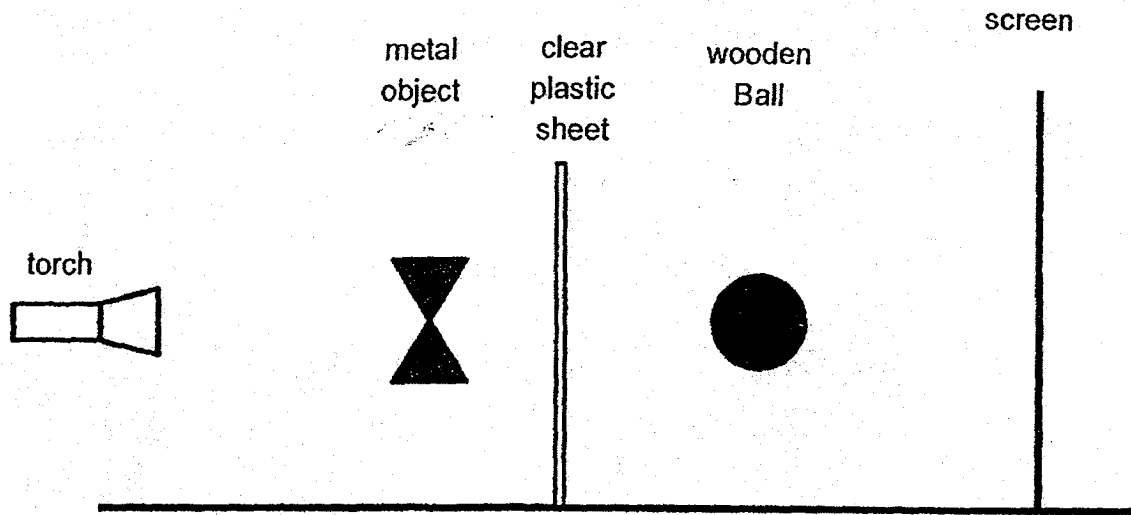
(3)



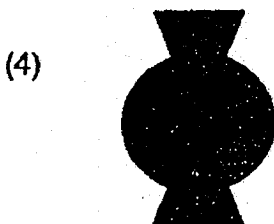
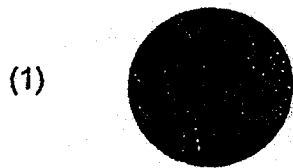
(4)



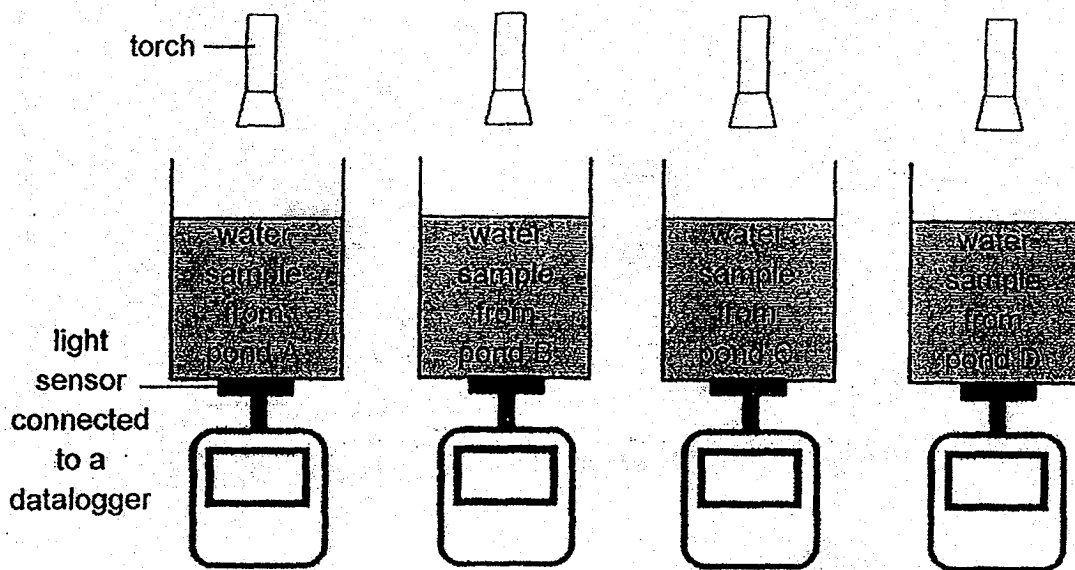
27. The diagram below shows a set-up with a wooden ball, a clear plastic sheet and a metal object.



Which of the following shadows would be observed on the screen?

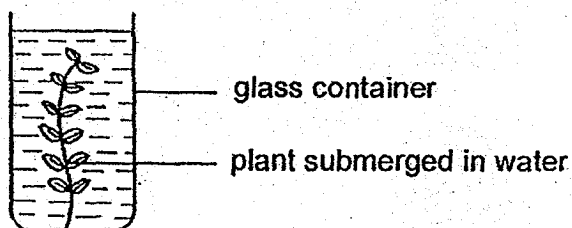


28. Kenny set up the experiment as shown below to find out the amount of light that passed through four similar glass beakers containing water samples from ponds A, B, C and D. He recorded his results in the table below.



Pond	A	B	C	D
Amount of light detected by datalogger (unit)	500	100	1200	750

Based on his results above, which pond, A, B, C or D, would be the best for growing plants that are submerged in water?



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

Name: _____ ()

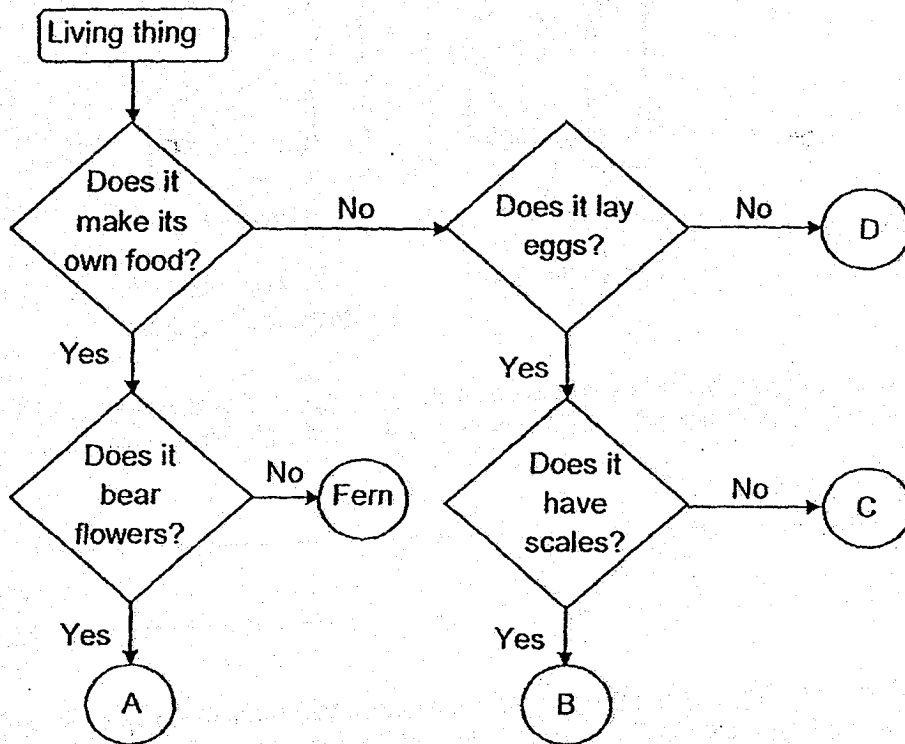
Mid-Year 2018

Class P4 ()

Section B: 44 marks

Read the questions carefully and write down your answers in the spaces provided.

29. The flowchart below shows the characteristics of four organisms A, B, C and D.

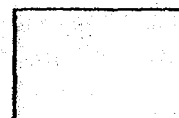


(a) Which letter, A, B, C or D, best represents the living things shown below? [1]

(i)

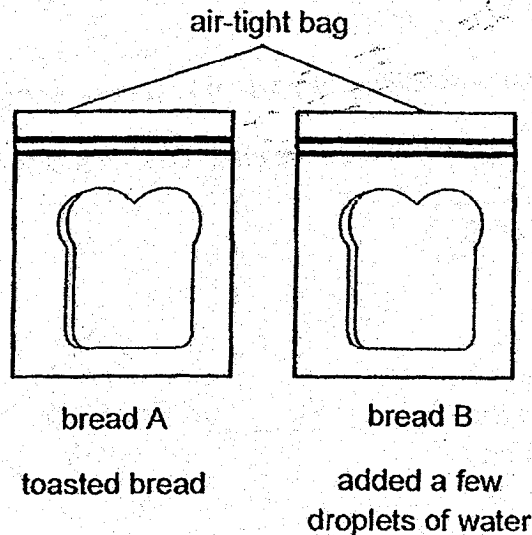


(ii)



(b) Based on the flowchart above, state one similarity between organisms B and C. [1]

30. Mike carried out an investigation using two pieces of similar bread as shown below. He toasted bread A and added a few droplets of water to bread B. He then placed both pieces of bread into two air-tight bags.



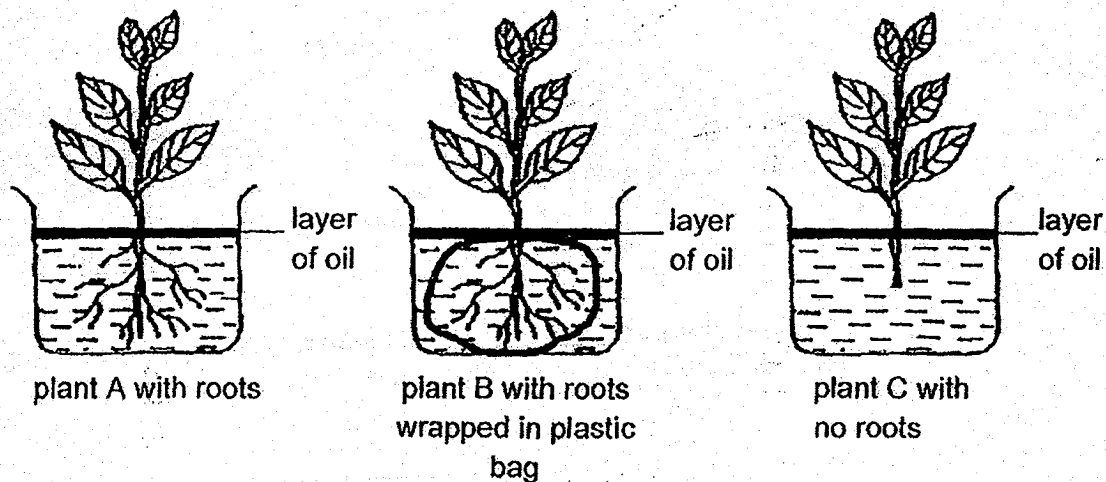
- (a) After a week, bread mould started to grow on one of the pieces of bread. Which bread, A or B, would have bread mould growing? Explain your answer. [1]

- (b) When carrying out his investigation, Mike made sure that bread A and B and the air-tight bags are similar. How does this help in his investigation? [1]

This ensures that his investigation is a _____ one.

- (c) Mike's friend told Mike he could put the bread into a refrigerator to slow down the growth of bread mould. Is Mike's friend correct? Explain your answer. [1]

31. Jack placed three healthy plants, A, B and C, in identical containers with 500 ml of water each as shown in the diagram below. A layer of oil was added to each container of water to prevent water lost to the surrounding.



He then placed the above set-ups near the window for a week and recorded in the table below the amount of water left in each container after a week.

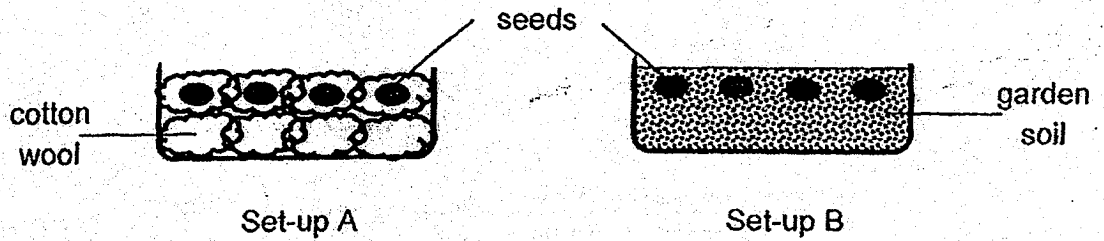
Plant	Amount of water left in the container after one week (ml)
A	200
B	150
C	400

- (a) What is the measured variable in this experiment? [1]

- (b) Jack's science teacher commented that the reading for plant B is not correct based on his experiment.

Do you agree with Jack's science teacher? Explain your answer. [2]

32. John grew two groups of seeds belonging to Plant W. He grew one group of seeds in cotton wool and another group of seeds in garden soil. Both groups of seeds were watered daily and they germinated into seedlings after a few days.

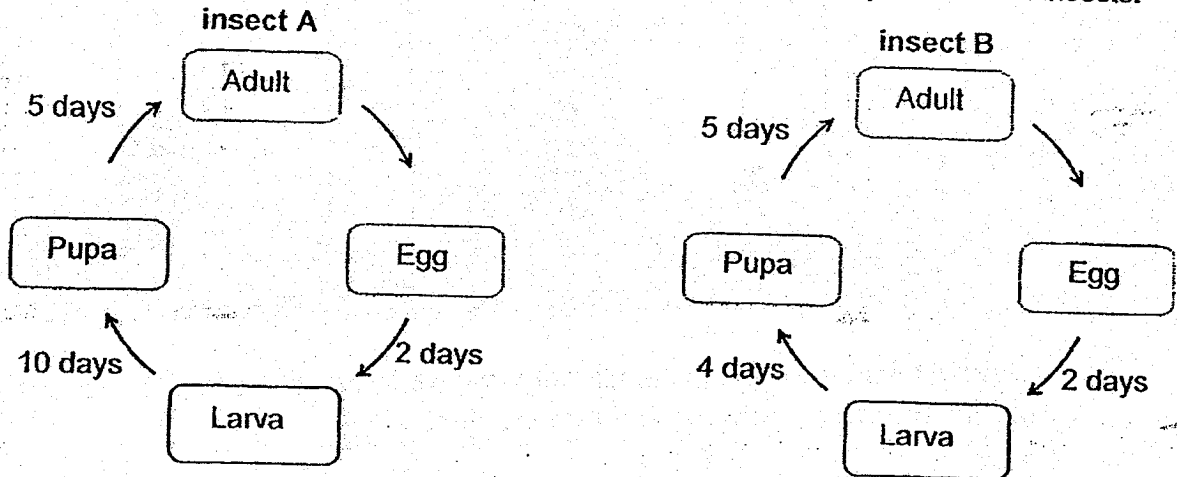


- (a) Give one observation of the seedlings that John could use to help him conclude if the seedlings in Set-up A or B are healthier. [1]

- (b) State the three conditions needed for a seed to grow into a seedling. [1]

Question 32 continues...

John observed that insects A and B have been feeding on the leaves of Plant W. To know more about insects A and B, John started to study the life cycles of both insects.



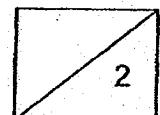
Only the larvae of insects A and B feed on the leaves of Plant W. The table below shows the amount of leaves which the larvae of insects A and B feed on per day.

Insect	A	B
Amount of leaves eaten by the larvae per day (grams)	100	100

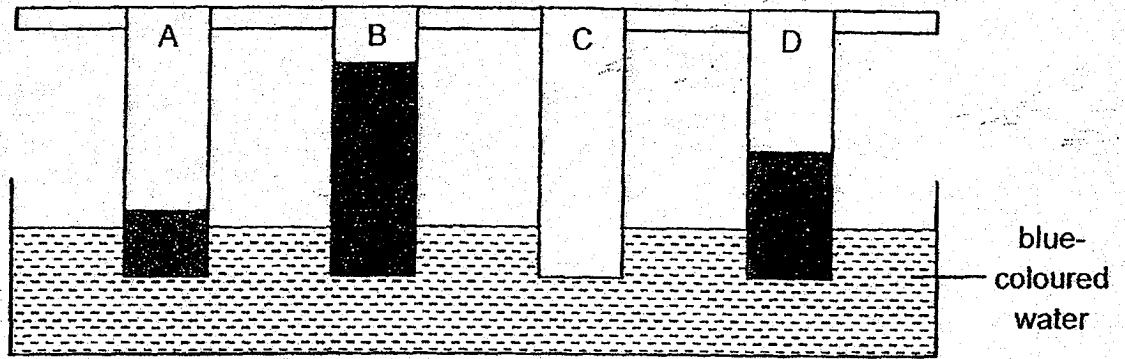
- (c) Based on the data above, John concluded that insect A is more destructive towards Plant W than insect B.

Do you agree with John? Explain your answer.

[2]



33. Four strips made of different materials, A, B, C and D, were dipped into a beaker containing some blue-coloured water as shown below.



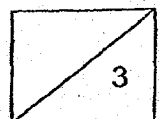
After 15 minutes, all the materials were removed from the beaker. The length of the strip stained blue was measured and recorded below.

Material	A	B	C	D
Length of strip stained blue (cm)	9	27	0	15

- (a) Arrange the materials, A, B, C and D, according to its ability to absorb water. [1]

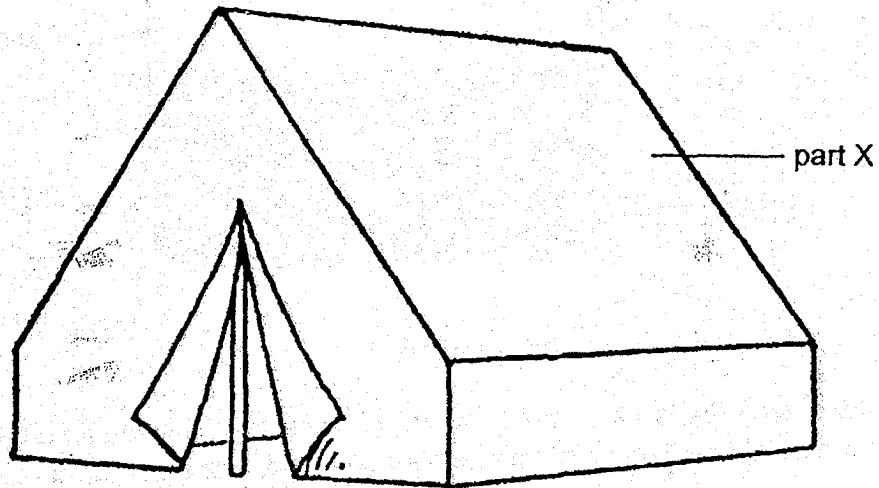
Unable to absorb water → Able to absorb the most water			

- (b) Which material, cotton or plastic, is strip B likely to be made of? Explain your answer. [2]



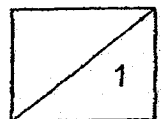
Question 33 continues...

(c) The diagram below shows a camping tent.

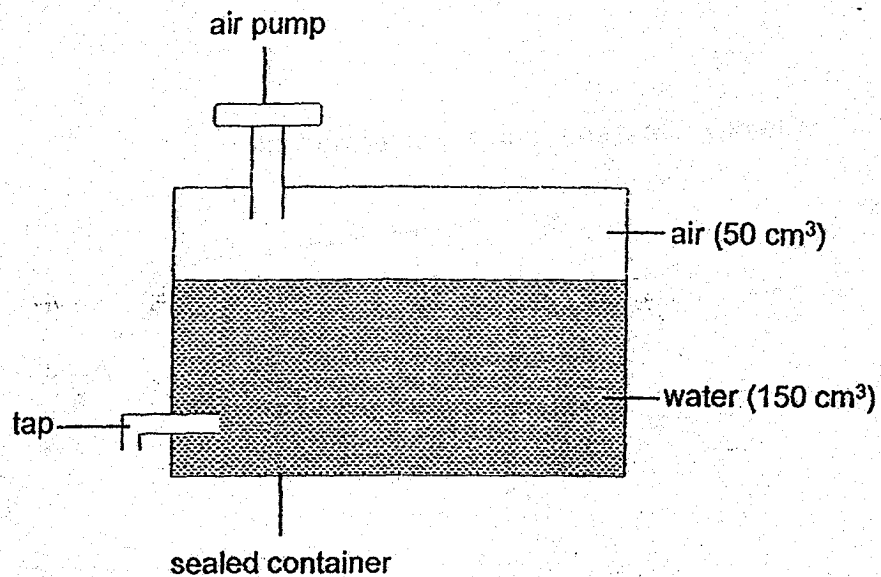


Based on the results of the experiment, which material, A, B, C or D, is most suitable for making part X of the camping tent so that it could be used in all weathers? Explain your answer.

[1]



34. The diagram below shows a sealed container with an air pump and a tap.

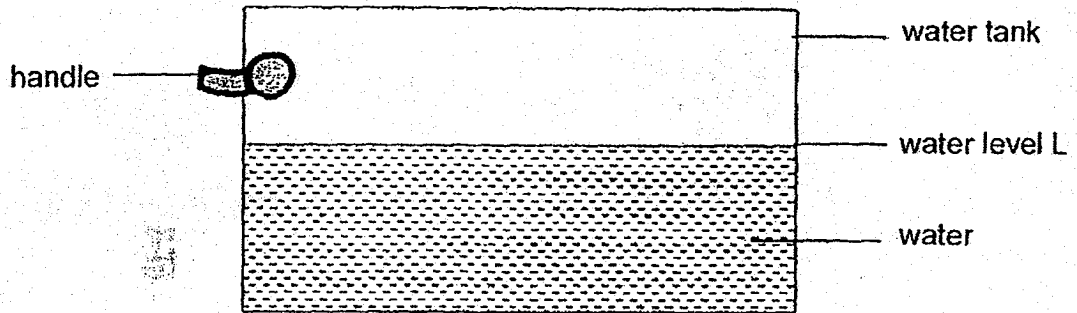


Jane used the tap to remove 20 cm³ of water from the sealed container. She then pumped 45 cm³ of air into the sealed container using the air pump.

(a) What is the final volume of the air in the sealed container? [1]

(b) What properties of water and air did you use to obtain your answer in (a)? [2]

35. A water tank used for flushing a toilet bowl is shown below. After flushing, the water enters and refills the tank. The tank will stop filling when the water reaches level L.

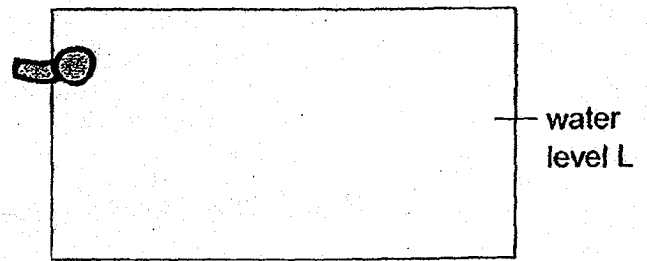
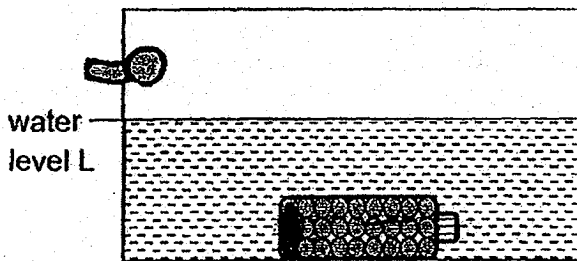


After learning about World Water Day, Catherine wanted to do her part towards water conservation. Peter suggested putting a bottle filled with stones into the water tank.

- (a) Explain how Peter's suggestion would help to save the amount of water used to flush the toilet bowl. [2]

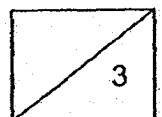
- (b) Catherine followed Peter's suggestion and put a bottle filled with stones into the water tank as shown in diagram A. The water was then refilled to water level L.

What would happen to the water level in the water tank if Catherine were to remove the bottle filled with stones from the water tank? Draw the new water level in diagram B. [1]

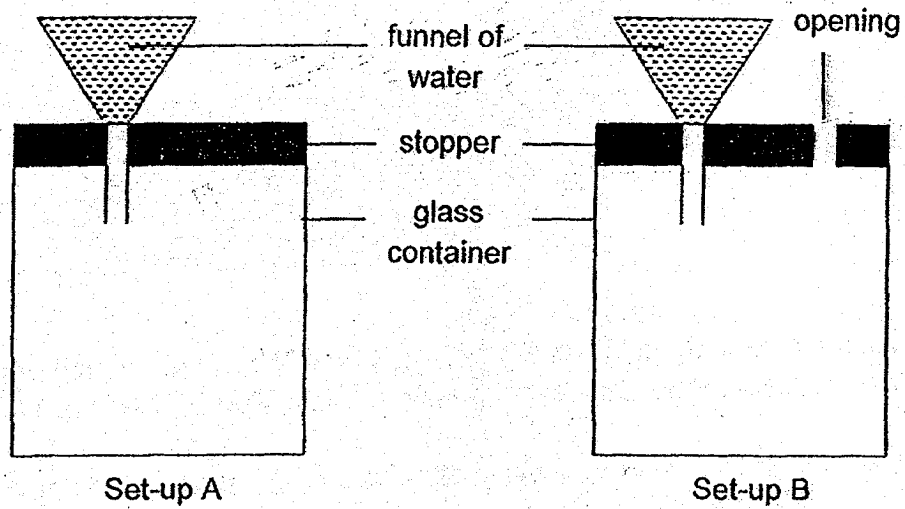


bottle with stones diagram A

diagram B



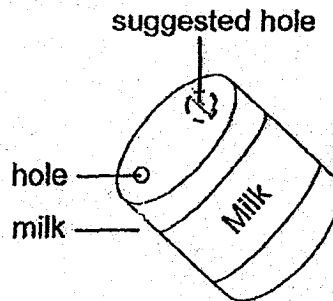
36. Jenny set up an experiment as shown below. She poured the same amount of water into the two funnels and observed that the water in set-up B flows into the glass container faster than in set-up A.



- (a) Explain Jenny's observations.

[2]

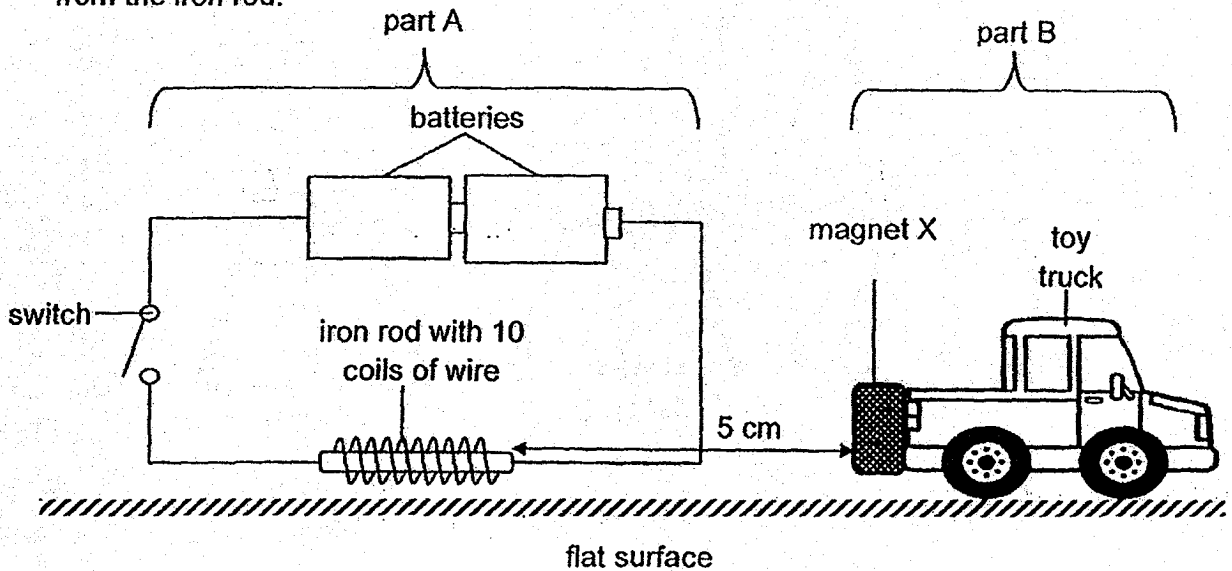
- (b) One morning, Jenny saw her mum having difficulty trying to pour some milk out of a metal container. She suggested to her mum to poke another hole at the top of the milk container.



Explain why Jenny's suggestion would help her mum.

[1]

37. Sanjay made a toy using an electromagnet as shown below. Part A of the toy consists of two batteries and a wire coiled 10 times around an iron rod. Part B of the toy consists of magnet X attached to the back of a toy truck. The toy truck was placed 5 cm away from the iron rod.



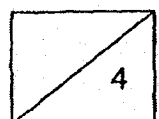
When Sanjay closed the switch, he observed that the toy truck moved another 1 cm further away from the iron rod.

- (a) Suggest two methods Sanjay could use to increase the distance the toy truck move away from the iron rod. [2]

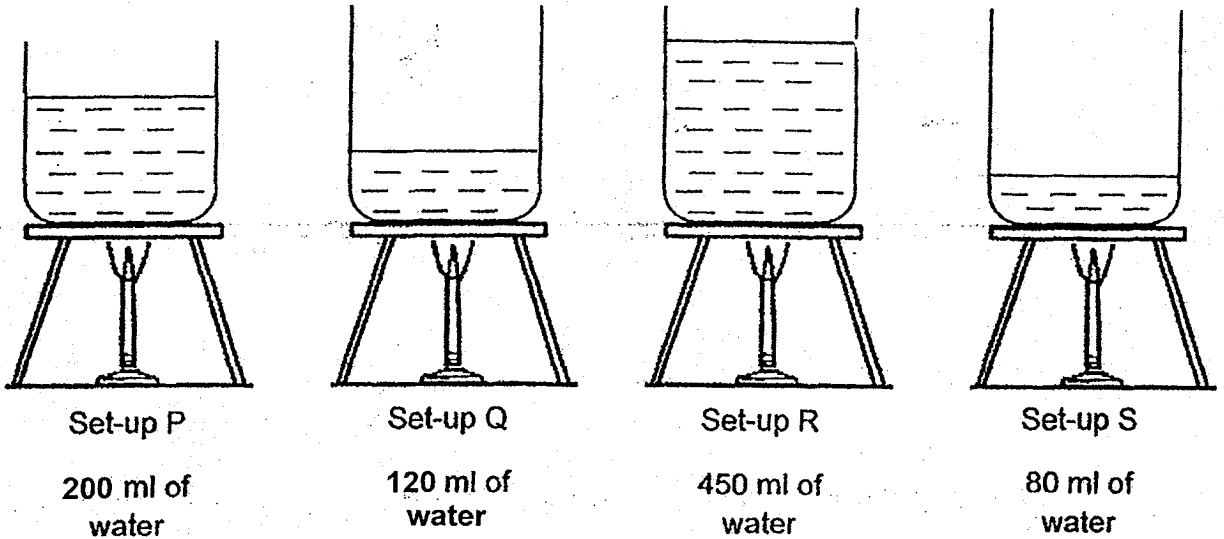
1: _____

2: _____

- (b) When Sanjay changed magnet X to a copper object of the same size and shape, he realised that the toy truck did not move at all when he closed the switch. It remained 5 cm away from the iron rod. Explain why. [2]



38. Olivia wanted to find out if the amount of water affects how fast the water boils. She prepared the set-ups as shown below.

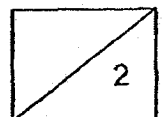


She recorded the time taken for each beaker of water to boil in the table below.

Set-up	P	Q	R	S
Time taken for water to boil (minutes)	5	3	10	2

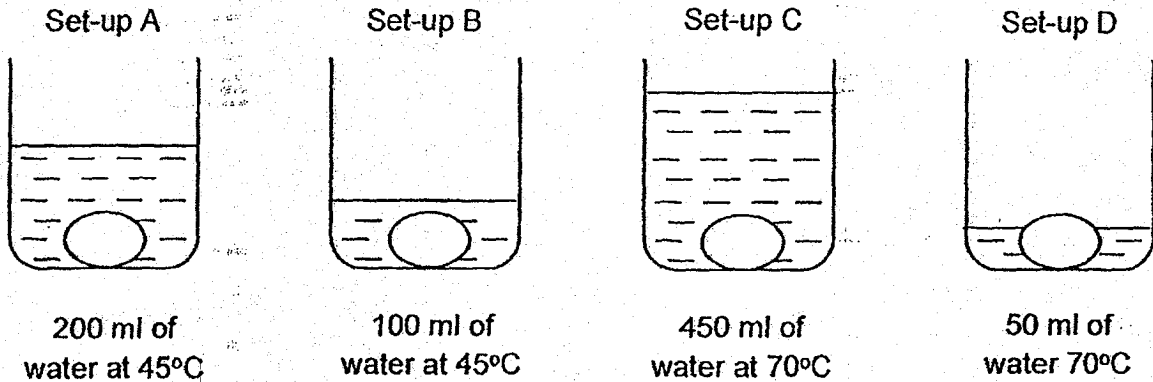
- (a) State the changed variable for Olivia's experiment. [1]

- (b) Based on the results of the experiment, what could Olivia conclude from her experiment? [1]



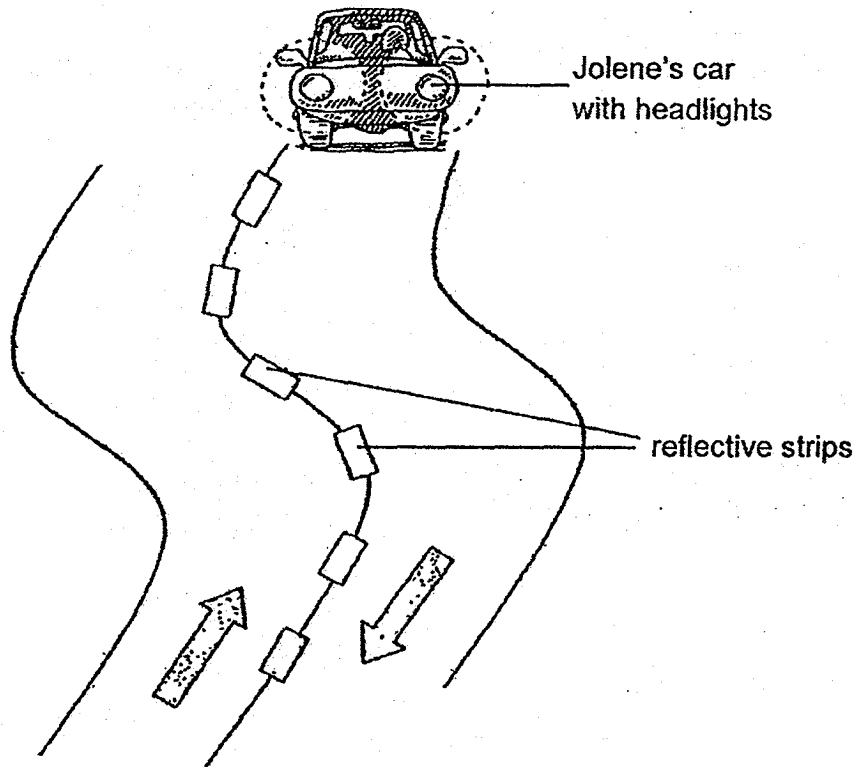
Question 38 continues ...

- (c) In another experiment, Olivia placed four similar eggs into four beakers containing different volumes of water at different temperatures.



Which set-up, A, B, C or D, should Olivia use if she wants her egg to be cooked in the shortest time? Explain your answer. [2]

39. Jolene was driving her car along a road at night with no street lamps. She was able to see her way with the help of the reflective strips on the road.

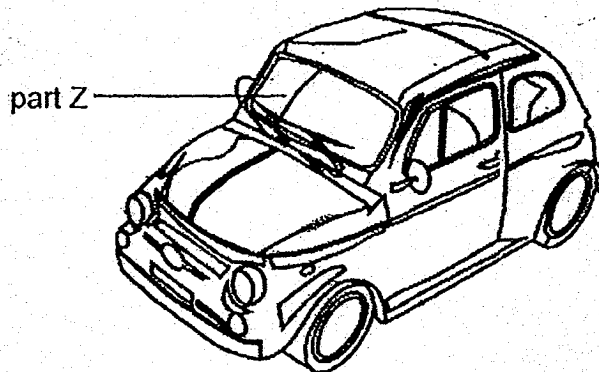


- (a) What was the source of light for Jolene to see the reflective strips on the road? [1]

- (b) Explain how Jolene was able to see the reflective strips on the road. [1]

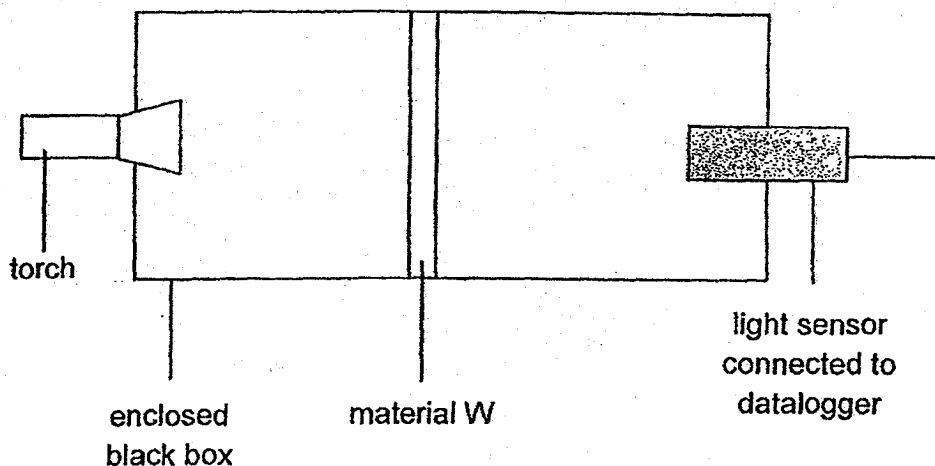
Question 39 continues ...

(c) The diagram below shows Jolene's car.



State a property of part Z that allows Jolene to see her way clearly when driving on the road. [1]

40. Diana conducted an experiment in a black box as shown below. She placed material W, with a thickness of 1 cm, between the torch and light sensor. The light sensor was connected to a datalogger that will record the amount of light passing through material W.

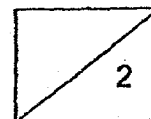


She repeated the experiment with the same material W but of different thickness. The results of the experiment were recorded in the table below.

Material W	1 cm	2 cm	4 cm	5 cm
Amount of light recorded (Units)	1500	1250	950	500

- (a) Based on the results of the experiment, what is the relationship between the amount of light recorded by the light sensor and the thickness of material W? [1]

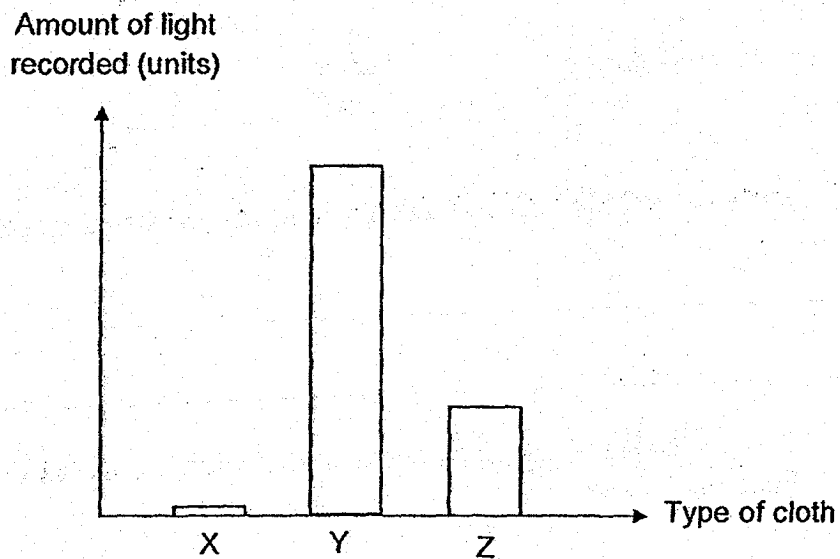
- (b) What is the purpose of conducting the experiment in a black box? [1]



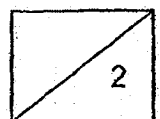
Question 40 continues ...

Diana wanted to convert her bedroom into a dark room. She needed to cover her windows with curtains to block out as much light as possible.

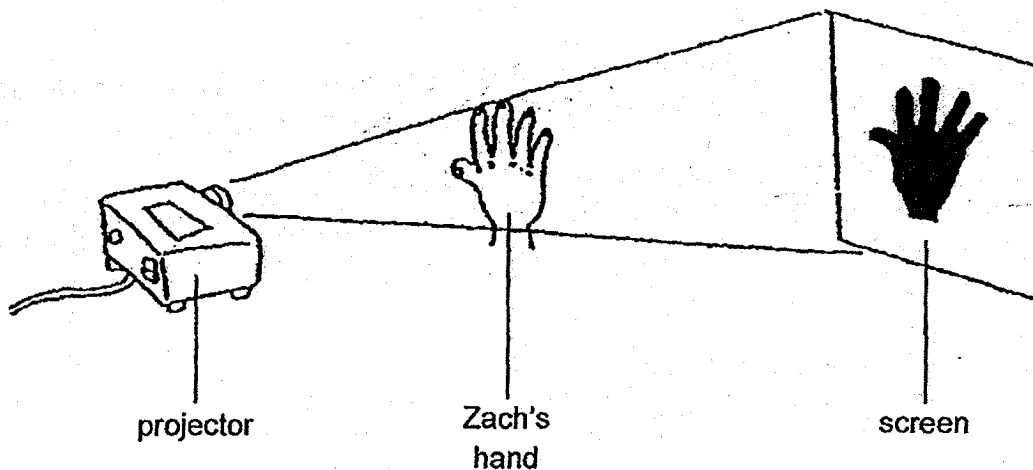
Using the same set-up, Diana conducted another experiment to find out which cloth, X, Y or Z, is the best for making the curtains. The results of the experiment were recorded in the bar graph below.



- (c) Based on her results, which cloth, X, Y or Z, is most suitable to be used for making the curtains? Explain your answer. [2]



41. Zach placed his hand in front of a projector as shown in the diagram below.



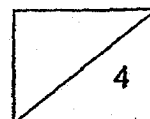
(a) Explain why the shadow of Zach's hand was cast on the screen. [1]

(b) Suggest two methods Zach could do to decrease the size of the shadow of his hand on the screen. [2]

(c) Zach moved his hand away from the front of the projector and in its place, he put a clear plastic glove.

Will the shadow created by the clear plastic glove be darker, less dark or of the same darkness as the shadow of Zach's hand? Explain your answer. [1]

END OF PAPER



EXAM PAPER 2018 (P4)

SCHOOL : AI TONG

SUBJECT : SCIENCE

TERM : SA1

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

Q29) a) (i) A

(ii) D

b) Organisms B and C lay eggs.

Q30) a) B. There is water for bread mould to grow on bread B but not bread A.

b) Fair

c) Yes. Mould needs warmth to grow. It is cold in a refrigerator.

Q31) a) The amount of water left in the container after one week.

b) Yes. The root of plant B is wrapped in a plastic bag, so the roots would not be able to absorb water in the beaker, thus the amount of water left in the beaker should remain the same.

Q32) a) To see whether which plant would grow faster.

b) Seeds need air, water, warmth to germinate.

c) Yes. Insect A spends more days as a larva. Insect A will eat more leaves than insect B.

Q33) a) C, A, D, B

b) Cotton. Strip B absorbs the most water and cotton can absorb water unlike plastic.

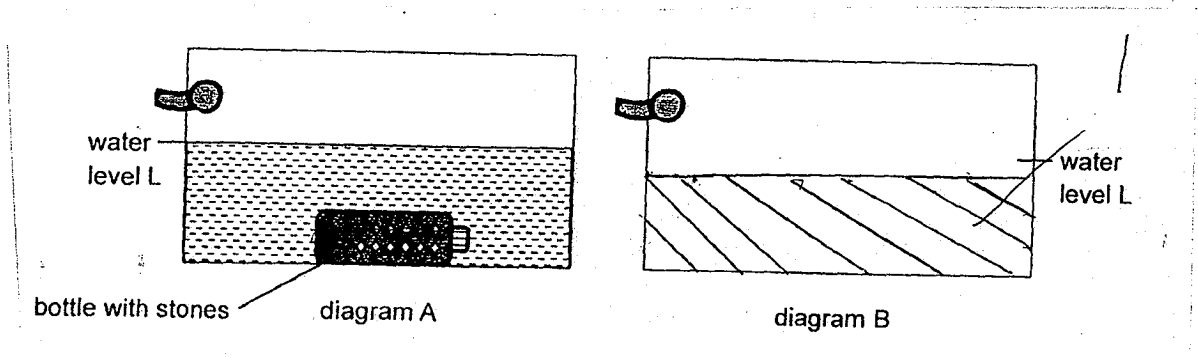
c) Material C. C does not absorb any water and so when it rains, the tent will not absorb water.

Q34) a) 70 cm³

b) Water has a definite volume, Air has no definite volume

Q35) a) The plastic bottle filled with stones occupies space in the tank. Thus less water is needed to fill the tank to level L.

b)



Q36) a) There is a hole in set-up B but not set-up A. The hole in set-up B allows air to escape, thus water could flow in faster to occupy the space.

b) Air can enter from the second hole to occupy the space of the milk

Q37) a) 1) Coil the wire more times

2) Place another battery

b) Copper object is not a magnet nor a magnetic material. It cannot be attracted or repelled by the electromagnet.

Q38) a) Amount of water in each beaker.

b) The more the amount of water in the beaker, the longer time taken for the water boil.

c) C. Container in set-up C contains the most water at the highest temperature. It will have the most heat to cook the egg fastest.

Q39) a) Headlights from the car

b) The reflective strips reflected the light from the headlight to Jolene's eye.

c) Transparent

Q40) a) As the thickness of Material W increases, the amount of light recorded by the light sensor decreases.

b) To ensure that light detected by the light sensor is only from the light source and X is able to keep the room the darkest.

Q41) a) Zach's hand block the light from the projector from reaching the screen.

b) 1) Move his hand closer to the screen

2) Move the screen nearer to the hand

c) Less dark. The clear plastic glove does not block as much light as Zach's hand.

