

CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 4
Semestral Assessment II– 2006
SCIENCE

BOOKLET A

12th October 2006

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

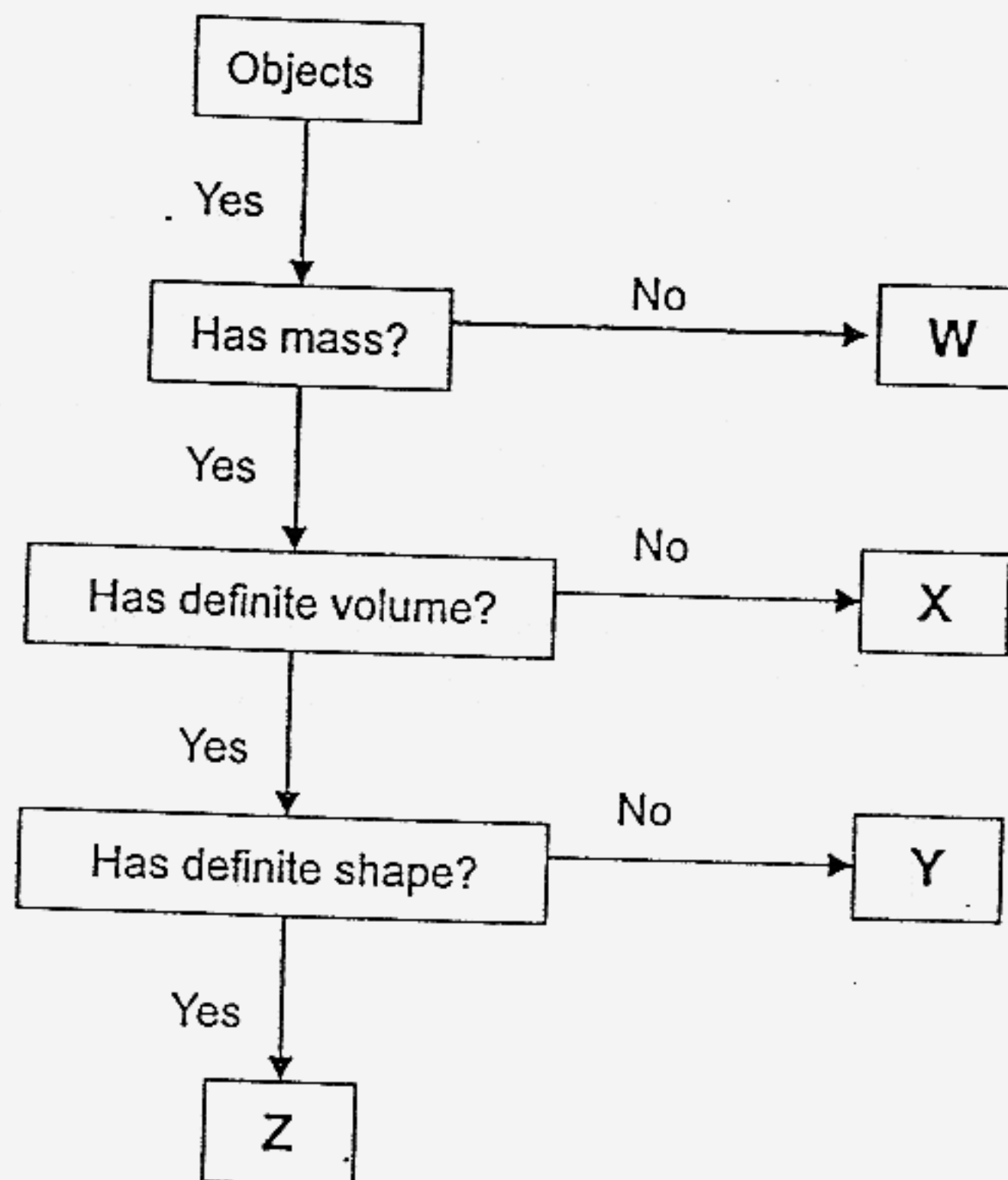
30 questions
60 marks

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

Section A: (30 x 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

1. Study the flowchart below.



Which of the following statements are correct?

- A: W does not have mass but Z has mass.
- B: Y and Z have mass and definite volume.
- C: X and Y have mass but no definite shape.
- D: W and X do not have mass but has definite volume.

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

2. Which one of the following is not an example of matter?

- (1) Wind
- (2) Sound
- (3) Bubbles
- (4) Water vapour

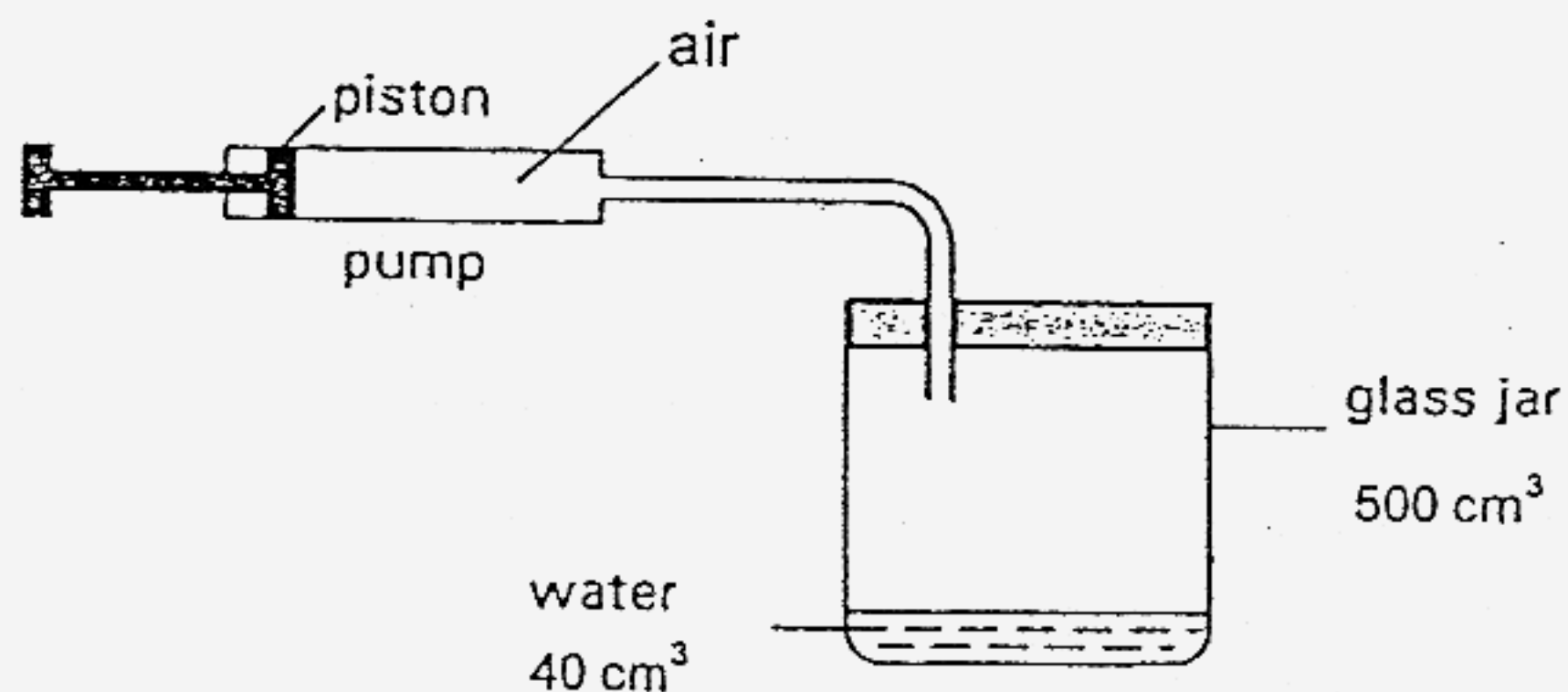
3. The table below shows the melting points of 4 metals, A, B, C and D.

Metal	Melting Point ($^{\circ}\text{C}$)
A	2350
B	2450
C	2550
D	2850

A factory wants to use one of the above metals to make cans. Which one should the factory use so that it can produce the cans at a faster rate?

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

4. The diagram below shows a pump connected to a glass jar. The capacity of the jar is 500cm^3 . The jar contains 40cm^3 of water.



When the piston is pushed completely in, 30cm^3 of air is forced into the jar. What is the new volume of air in the jar?

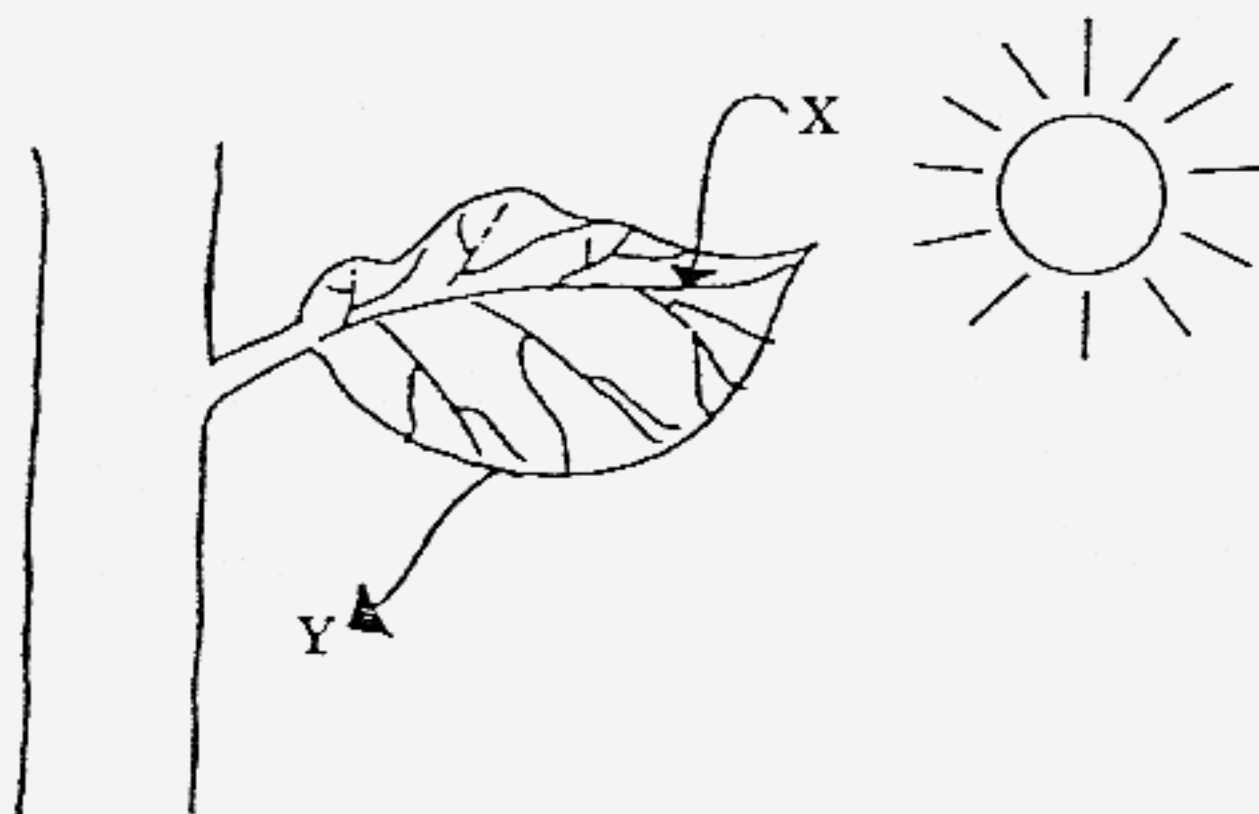
- (1) 30cm^3
- (2) 460cm^3
- (3) 480cm^3
- (4) 540cm^3

5. Jean filled 4 beakers, W, X, Y and Z with different volumes of water and placed them in the garden. After a few hours, she recorded the volume of water remaining in each of the 4 beakers as shown below.

Beakers	Volume of water at the start of the experiment (ml)	Volume of water at the end of the experiment (ml)
W	50	30
X	70	20
Y	80	30
Z	100	10

Which one of the following statements about the experiment is true?

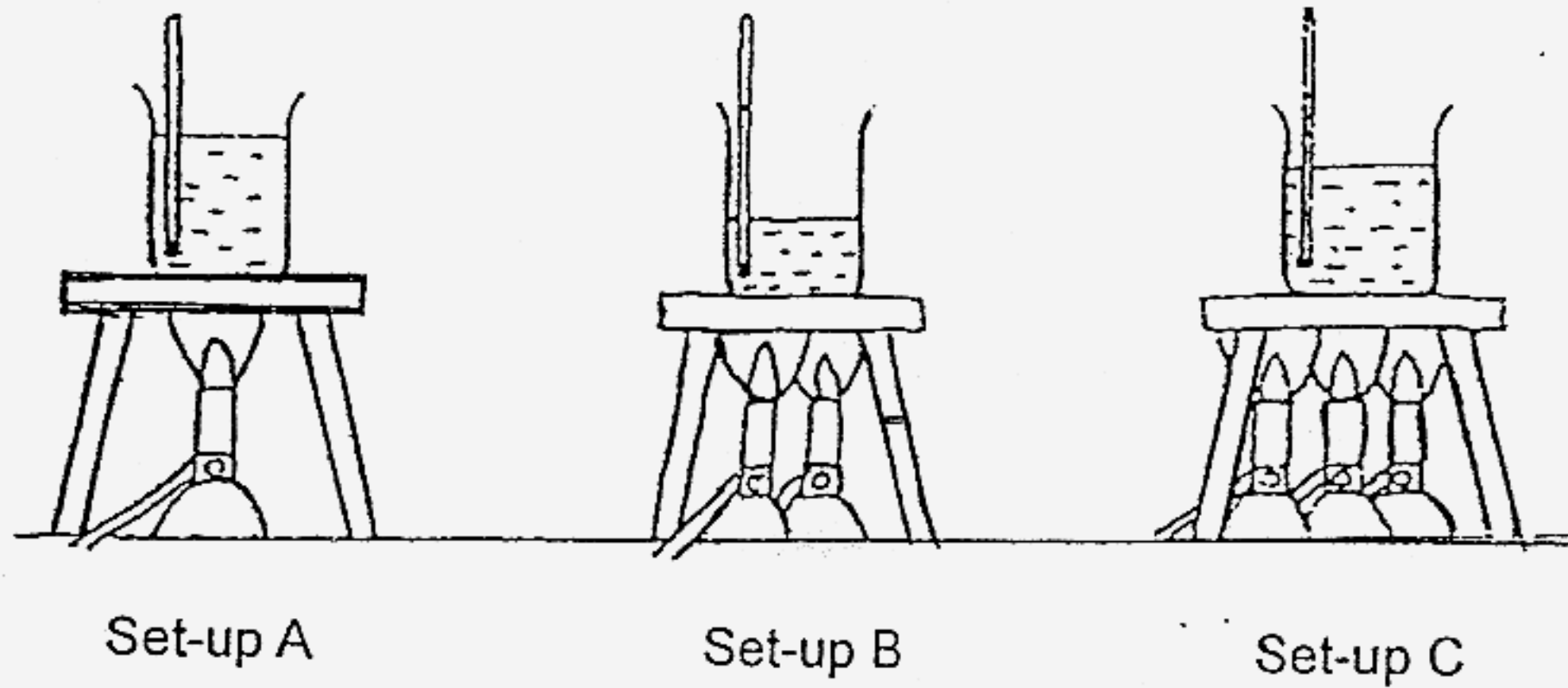
- (1) The water in beaker X evaporates the slowest.
 - (2) Beaker Z has the largest exposed surface area.
 - (3) The water in beaker W and Y evaporates at the same rate.
 - (4) Beaker X has a smaller exposed surface area than beaker W.
6. The diagram below shows the gaseous exchange between a leaf and its surrounding during the day.



Which one of the following are X and Y most likely to be?

	X	Y
(1)	Carbon Dioxide	Oxygen
(2)	Oxygen	Nitrogen
(3)	Nitrogen	Oxygen
(4)	Oxygen	Carbon Dioxide

7 Study the diagram below.

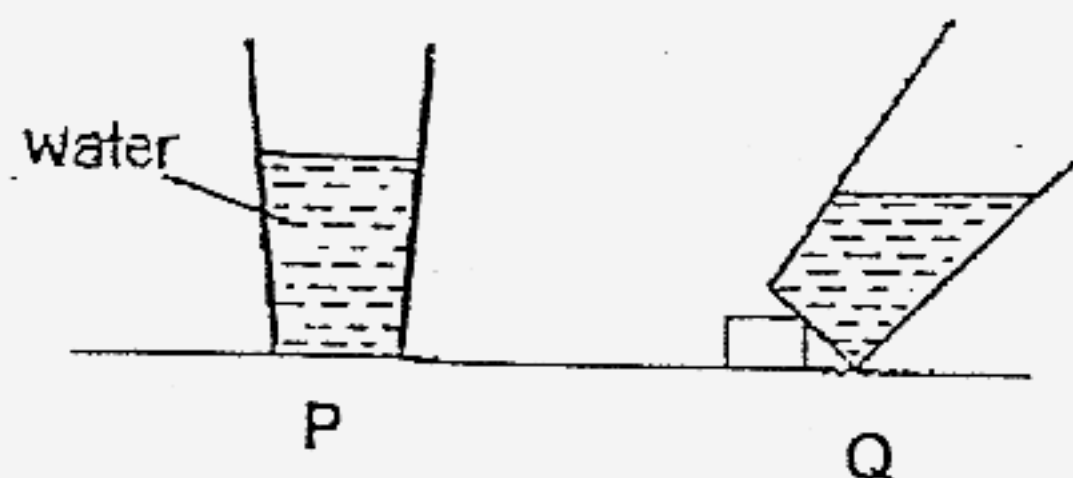


The water in each of the set-ups is heated until it boils.

The thermometer reading(s) in _____.

- (1) setup A is the lowest
- (2) setup C is the highest
- (3) all setups are the same
- (4) setup C is higher than setup A but lower than in setup B

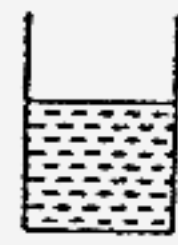
8. Gillian set up the experiment below. She poured an equal amount of water into two glasses, P and Q. P was placed under the sun while Q was left under a shady tree. After 3 hours, she measured the volume of water in each cup.



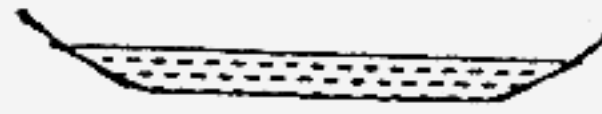
Which one of following observations made is correct?

- (1) Both glass P and Q has the same volume of water.
- (2) Both glass P and Q has an increased volume of water.
- (3) Glass P has lesser volume of water than that in glass Q.
- (4) Glass Q has lesser volume of water than that in glass P.

9. Rosalind carried out an experiment to find out how long would it take for 50cm^3 of water to dry up completely in each of the 4 containers shown below.



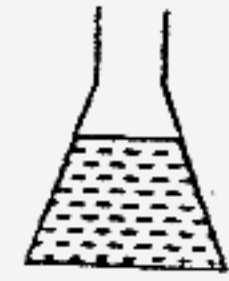
beaker



plate



bowl



flask

She recorded her findings in the table below.

Type of container	Time taken for water to dry up completely (hours)
Beaker	30
Plate	19
Bowl	24
Flask	20

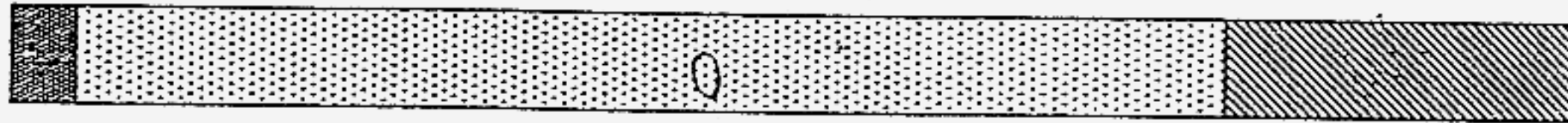
Her teacher told her that she might have made an error in one of her recordings.

In which container was the result not as expected?

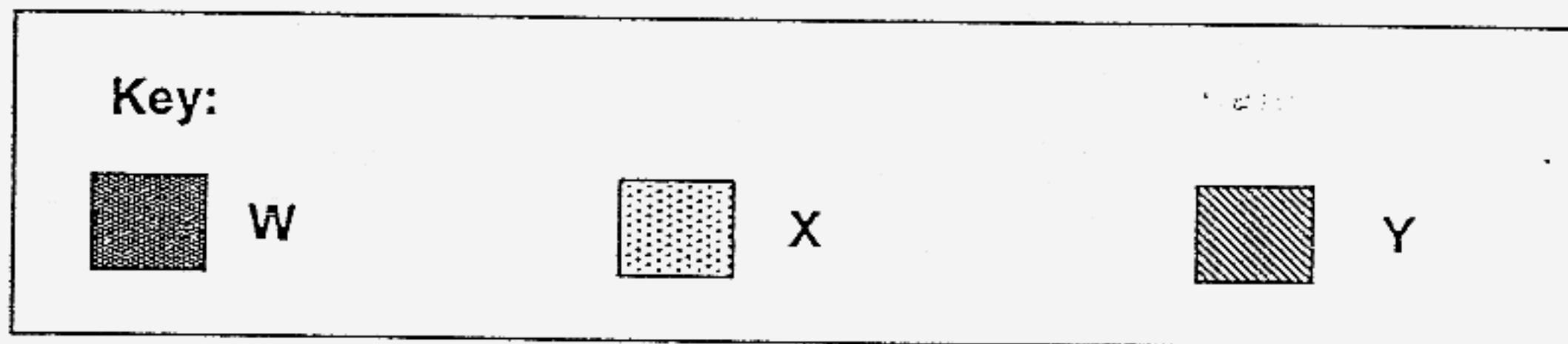
- (1) Beaker
 - (2) Plate
 - (3) Bowl
 - (4) Flask
10. Which one of the following does not help in conserving water?
- (1) Wash a car using a pail of water.
 - (2) Turn off the showerhead when shampooing.
 - (3) Take a cold shower instead of warm shower on a hot day.
 - (4) Use the washing machine to wash a full load of clothing each time.

11. The bar charts below show the proportion of air during inhalation and exhalation in the human body system.

Inhalation:



Exhalation:



Which one of the following best represents W, X and Y?

	W	X	Y
(1)	Oxygen	Carbon dioxide	Water vapour
(2)	Carbon Dioxide	Oxygen	Water vapour
(3)	Water vapour	Oxygen	Carbon Dioxide
(4)	Carbon Dioxide	Water vapour	Oxygen

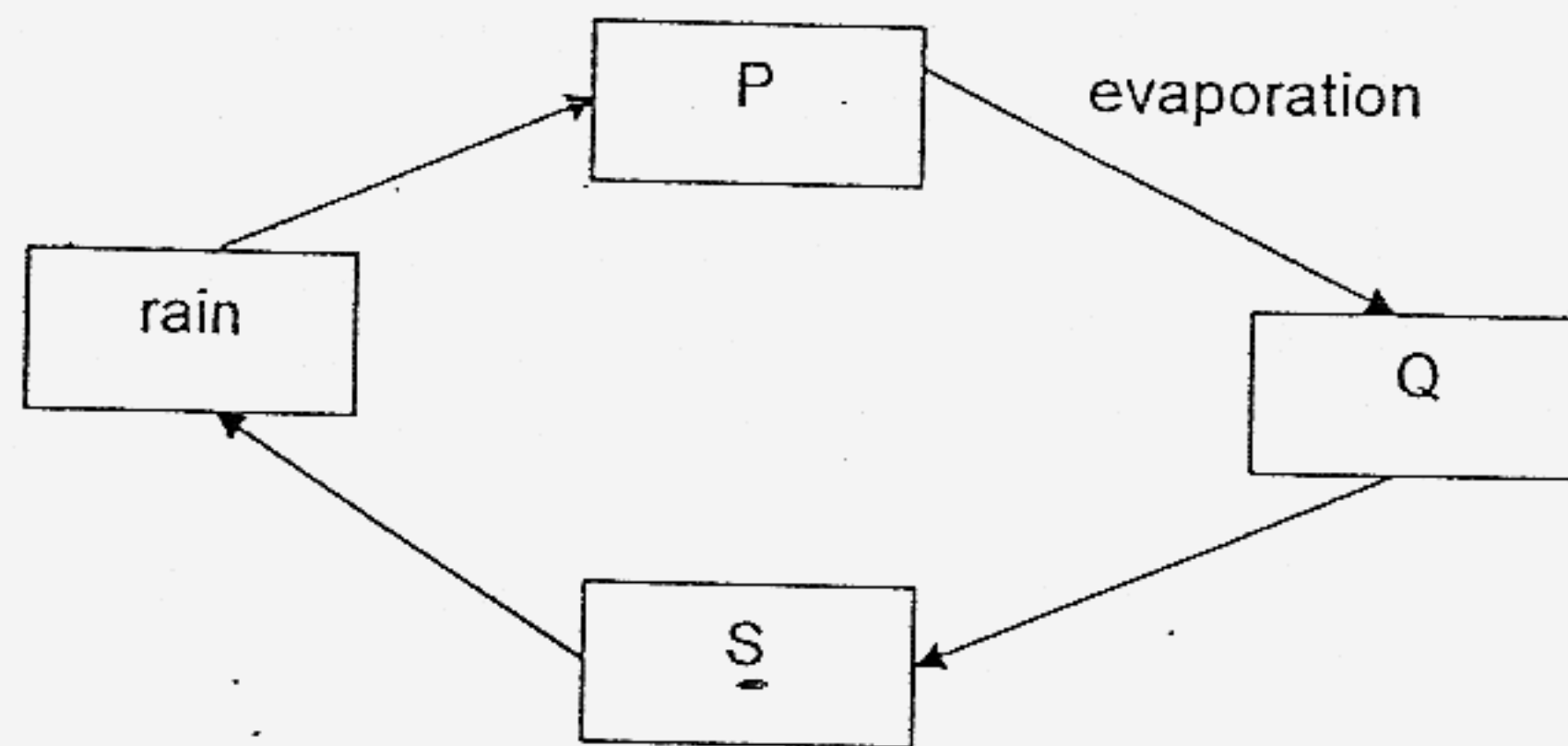
12. Plants absorb water through their roots.

Which of the following parts of the plant is the water transported to?

- A: fruits
- B: stems
- C: leaves
- D: flowers

- (1) C only
- (2) A and D only
- (3) A, B and C only
- (4) All of the above

13. The diagram below shows the various stages in the water cycle.



In which stage(s), P, Q or R, in the water cycle does/do water have definite volume but no definite shape?

- (1) P only
 - (2) P and S only
 - (3) Q and S only
 - (4) P, Q and R S
14. Figure P shows that a small ring of bark has been removed from a plant growing in an open field. The ring of bark that was removed contained some phloem tubes. Xylem tubes were not removed.

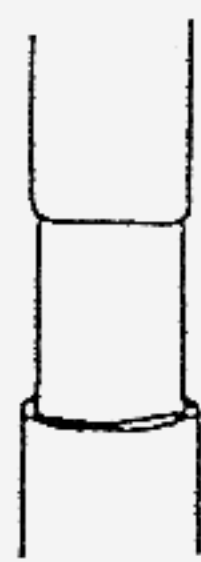


Figure P

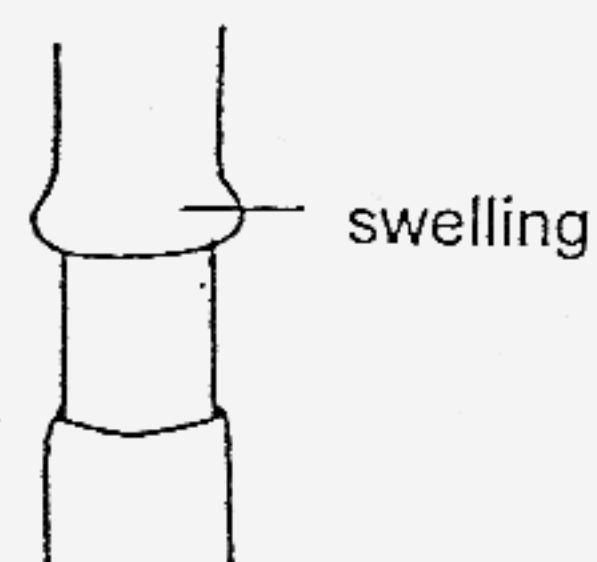


Figure Q

Figure Q shows a swelling that was seen above the ring a few days later.

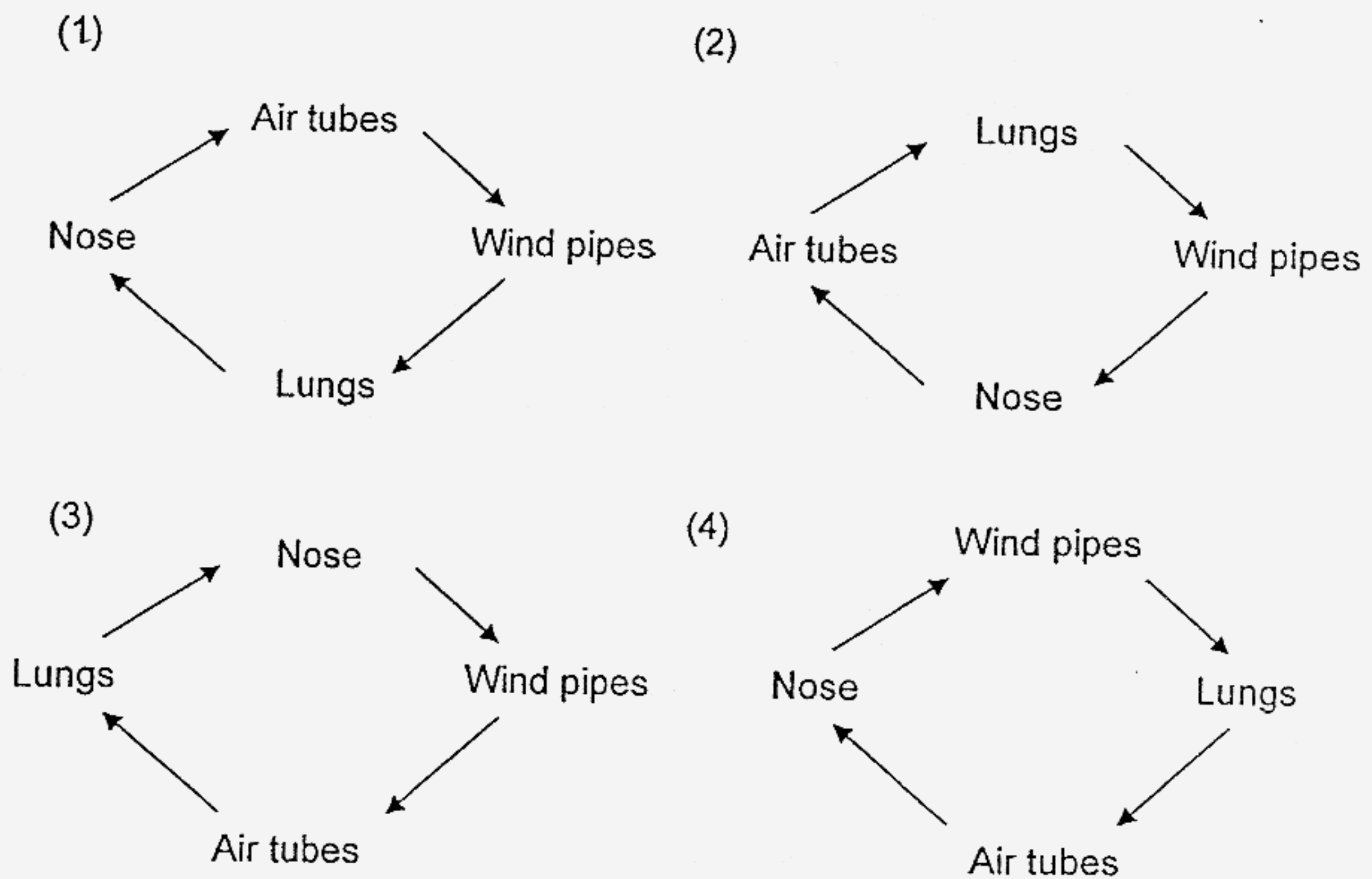
Which statement explains the presence of the swelling?

- (1) Food travelling up the stem is trapped above the ring.
- (2) Food travelling down the stem is trapped above the ring.
- (3) Water travelling up the stem is trapped above the ring.
- (4) Water travelling down the stem is trapped above the ring.

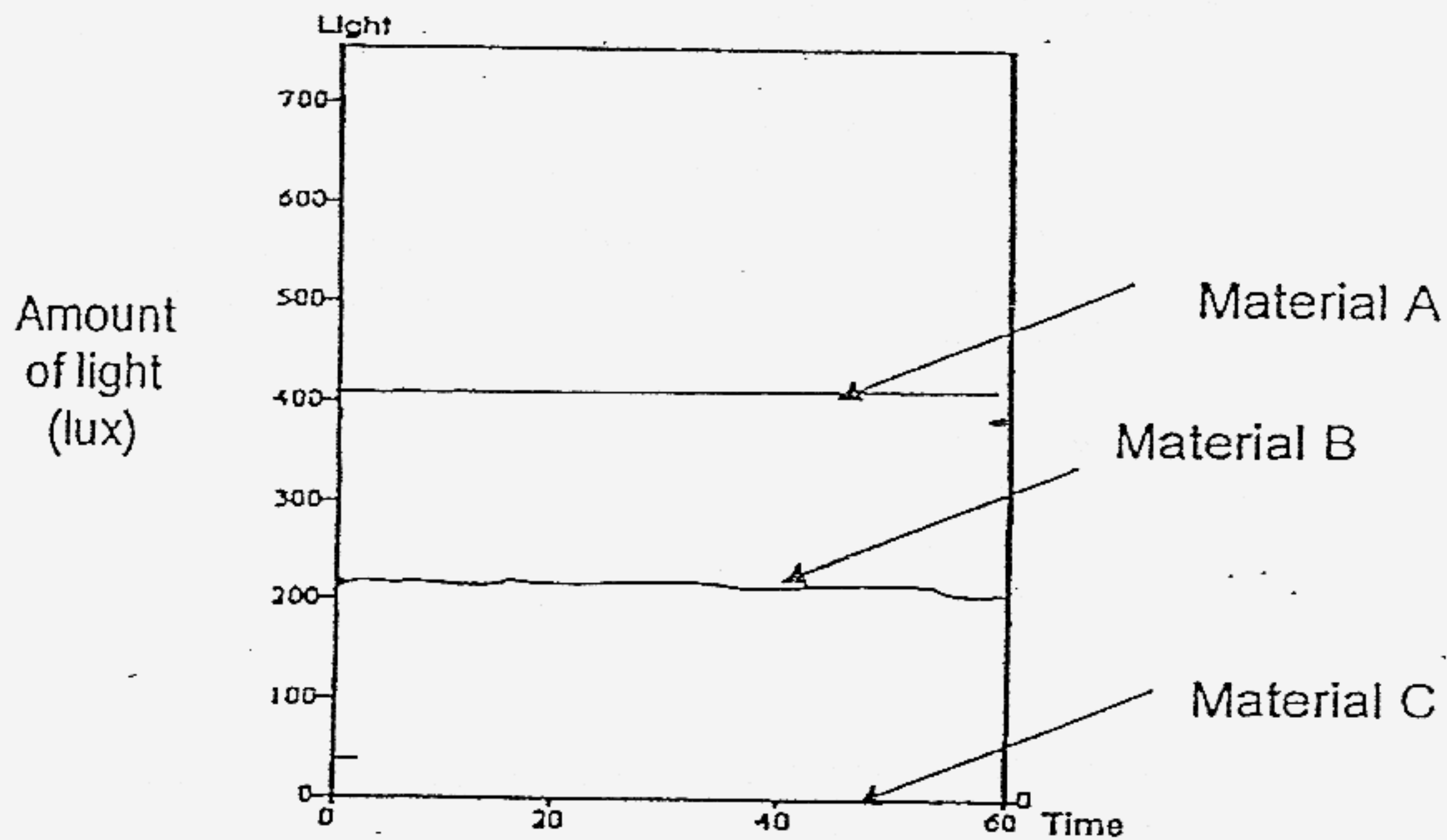
15. Which one of the following statements clearly explains why it is more advisable to breathe in through the nose than the mouth?

- (1) The nose has two nostrils for better air intake.
- (2) The air which enters the mouth will go to the stomach.
- (3) The nose has hairs and moisture to trap the dust before it enters the lungs.
- (4) The nose is smaller than the mouth so as to reduce the dust entering the lungs.

16. Which one of the following shows the correct pathway of air in the human body system during inhalation?



17. A datalogger was used to measure the amount of light passing through three different materials A, B and C.



Which one of the following is most likely to be Material A, B and C?

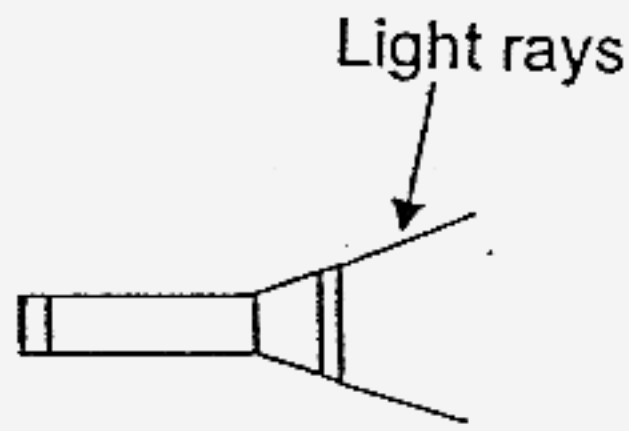
	Material A	Material B	Material C
(1)	Clear plastic	Rice paper	Ceramic
(2)	Rice paper	Clay	Clear plastic
(3)	Clay	Frosted glass	Rice Paper
(4)	Ceramic	Clear plastic	glass

18. Which one of the following gives out light on its own?

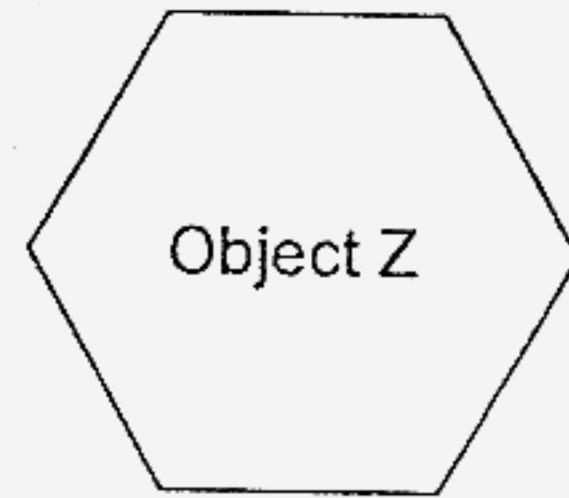
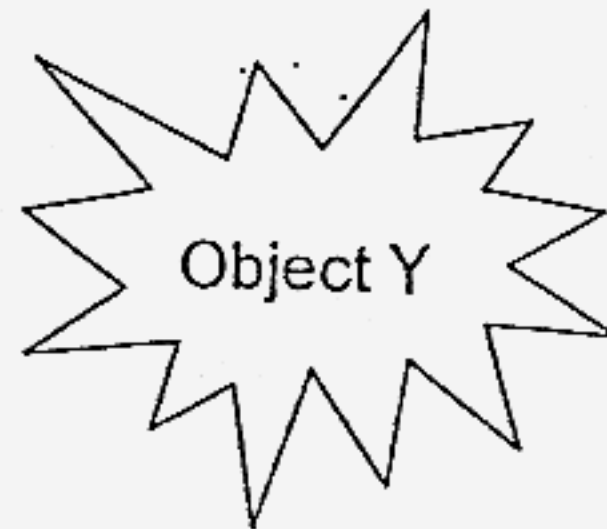
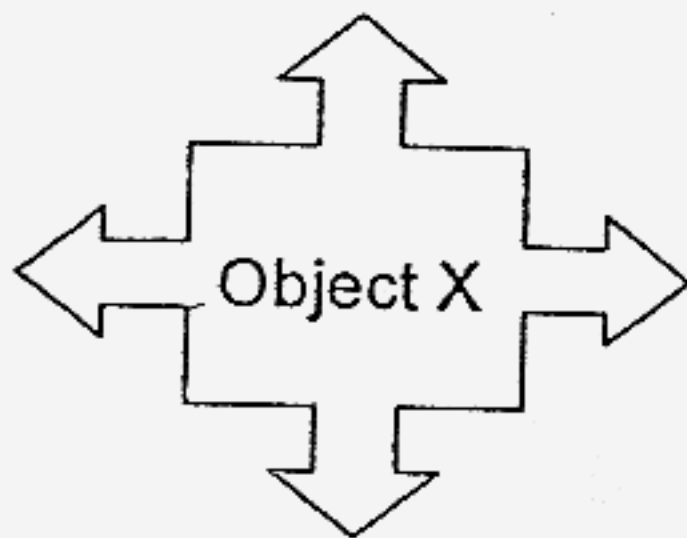
- (1) Moon
- (2) Firefly
- (3) Diamond
- (4) Aluminium foil

19. Which of the following statements do not show the similarities between the plant and human transport systems?
- A: Both systems consist of tubes.
 - B: Both systems transport materials.
 - C: Both systems transport food that has been digested.
 - D: Both systems have an organ to pump materials to other parts of the body/plants.
- (1) A and B only
 - (2) C and D only
 - (3) B, C and D only
 - (4) All of the above
20. Which of the following properties are considered when choosing a material to make a frying pan?
- A: Colour
 - B: Durability
 - C: Melting point
 - D: Ability to conduct heat
- (1) A and C only
 - (2) C and D only
 - (3) B, C and D only
 - (4) All of the above
21. Which one of the following statements about carbon dioxide is incorrect?
- (1) It turns limewater chalky.
 - (2) It is used in fire extinguisher.
 - (3) It is used to make carbonated drinks.
 - (4) It is required for all living things to survive.

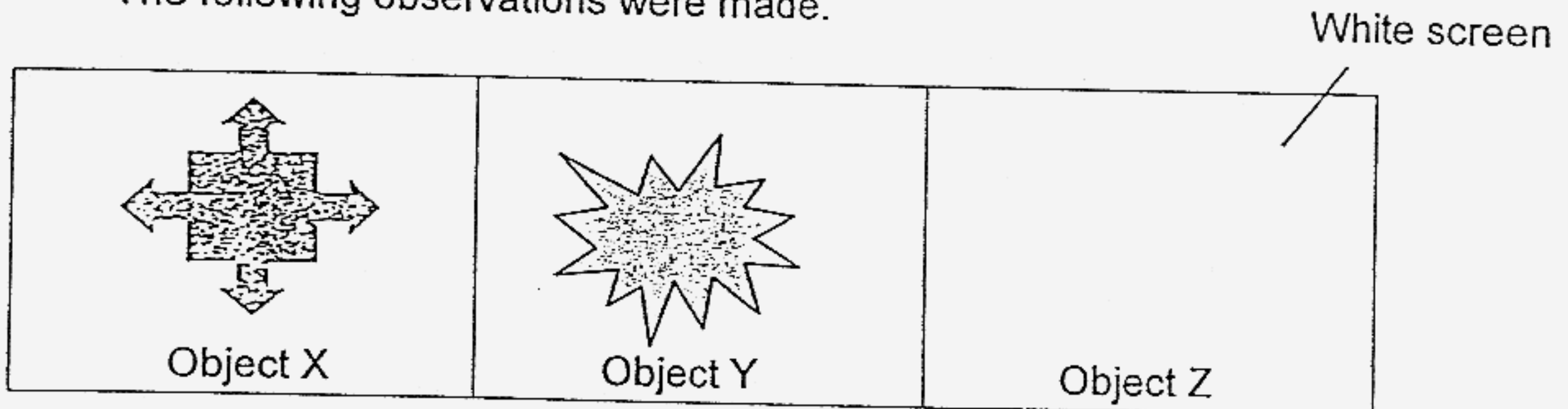
22. Study the set up below.



Objects X, Y and Z were placed in between the light source and the screen.



The following observations were made.

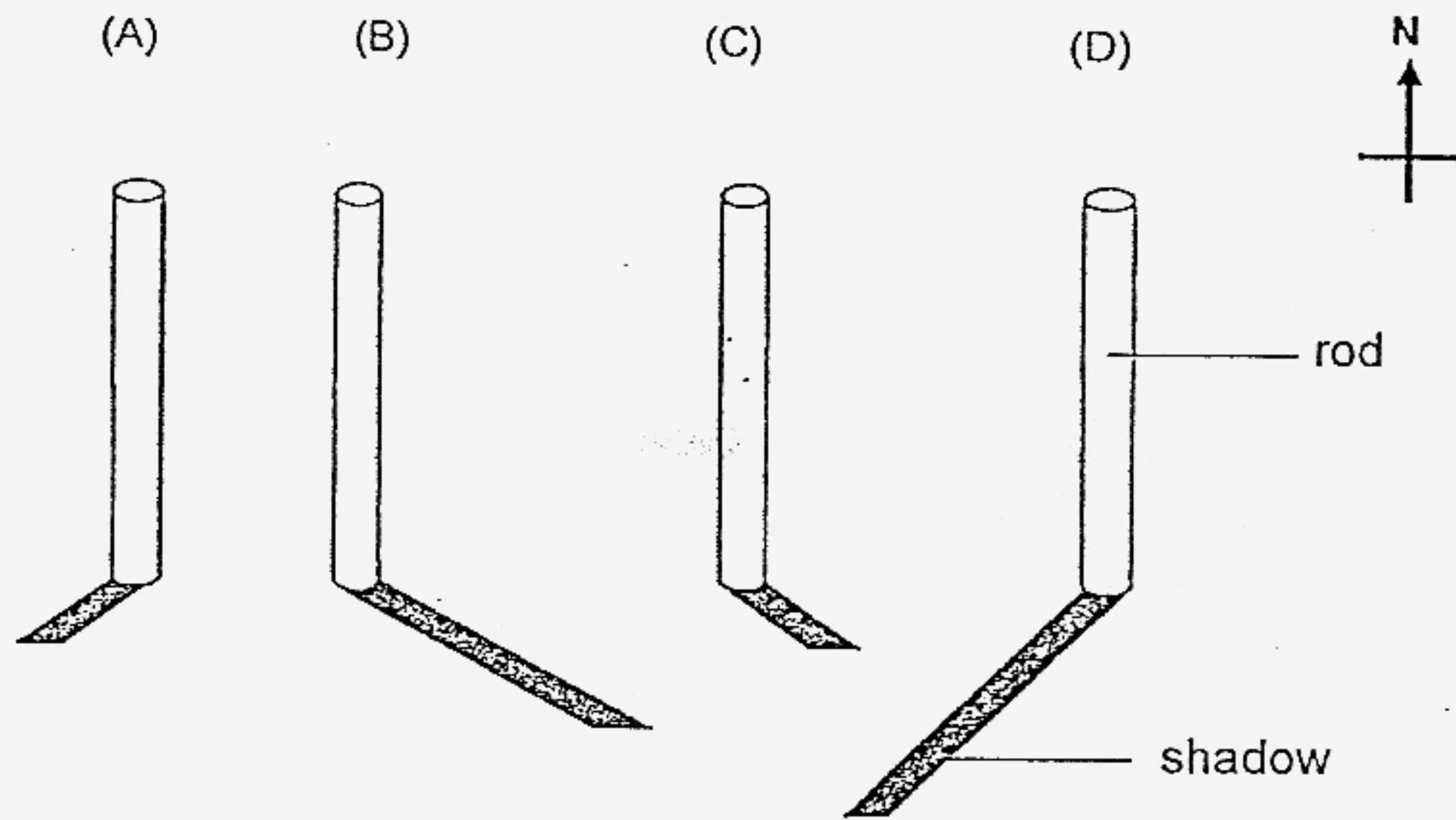


Which of the following explain why the above observations were made?

- A: Light is a form of energy.
- B: Object X is opaque while Z is transparent.
- C: Object Y is placed furthest away from the light source.
- D: The path of light is blocked by at least one of the objects.

- (1) A and B only
- (2) B and D only
- (3) C and D only
- (4) All of the above

23. The diagram above shows the length of the shadow cast by the rod.



Which one of the following indicates the correct times the shadows are observed?

	A	B	C	D
(1)	8 a.m.	1 p.m.	4 p.m.	11 a.m.
(2)	4 p.m.	11 a.m.	8 a.m.	1 p.m.
(3)	11 a.m.	4 p.m.	1 p.m.	8 a.m.
(4)	1 p.m.	8 a.m.	11 a.m.	4 p.m.

24. A boy carried out the activities as shown in the pictures below. Which one of the following activities would he have the lowest pulse rate?

(1)



(2)



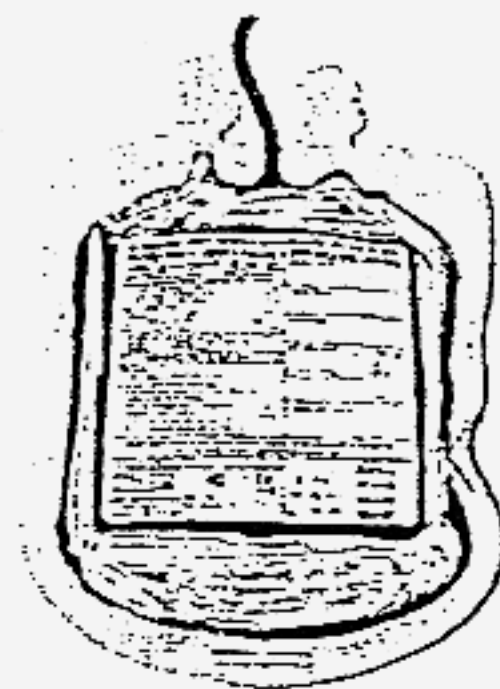
(3)



(4)



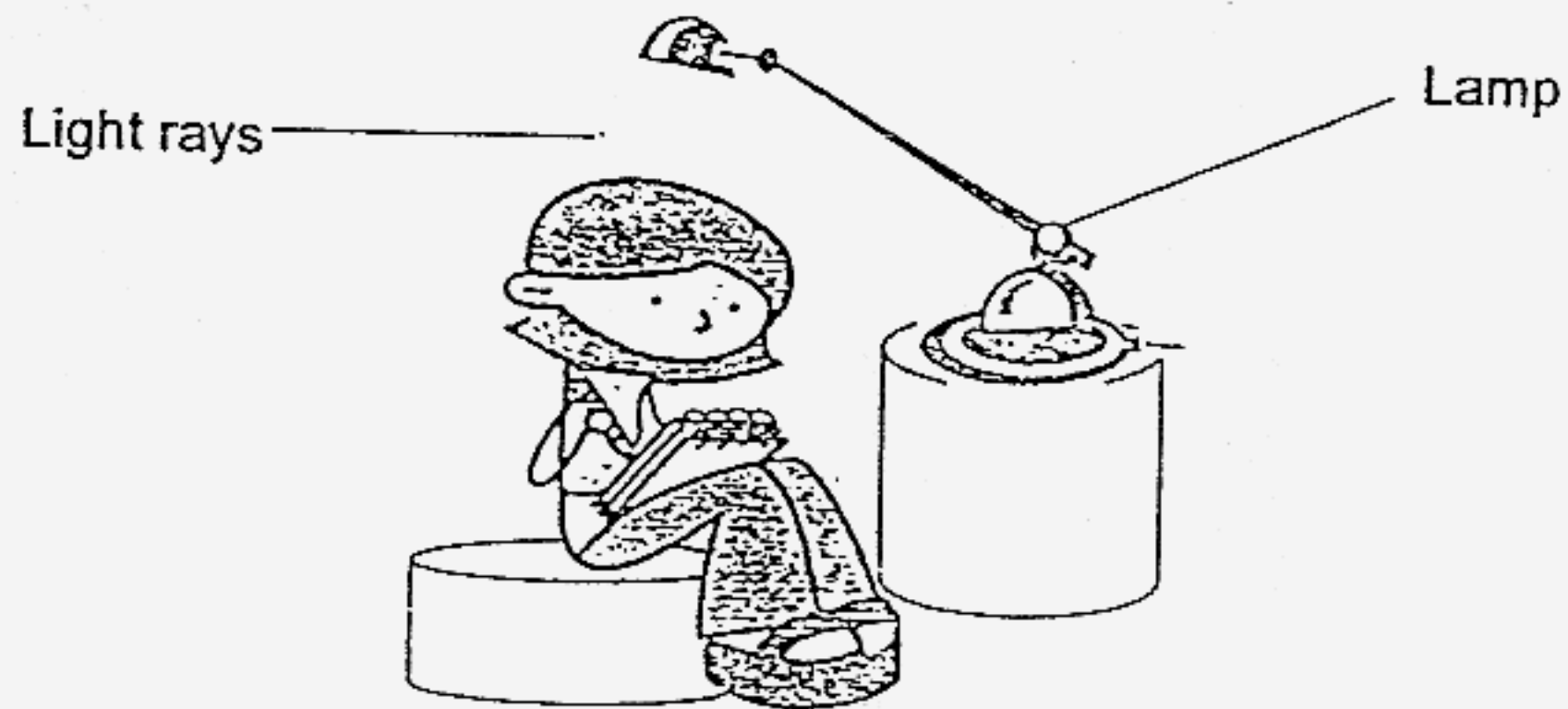
25. The diagram below shows a packet of blood collected from a blood donor. The blood is bright red and rich in oxygen.



The blood is taken from the _____ of the blood donor.

- (1) Heart
- (2) Veins
- (3) Arteries
- (4) Capillaries

26. Study the picture below.



Which of the following statements are true?

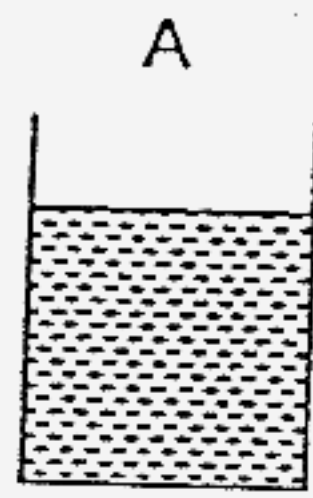
- A: The table lamp is a source of light.
- B: The girl is able to write because light from the lamp enters her eyes.
- C: The girl is able to read her book because light falling on the book is reflected into her eyes.

- (1) A and C only
- (2) B and C only
- (3) ~~C and D only~~ A and B only
- (4) All of the above

27. When salt is added to ice, its temperature is most likely to be _____.

- (1) 5°C
- (2) 0°C
- (3) Lower than 0°C
- (4) Higher than 5°C

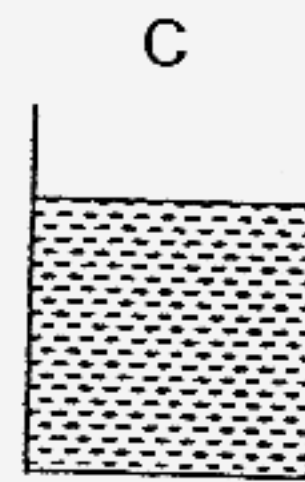
28. The diagrams below show four identical beakers A, B, C and D containing ice, water or both. They need different amount of heat to reach 30°C .



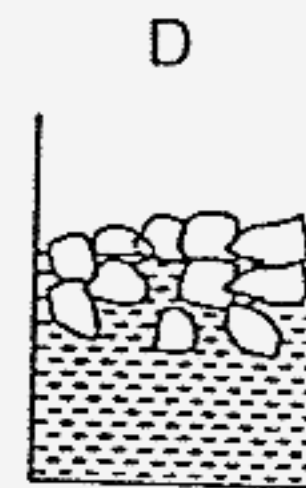
50g of water
at 5°C



50g of ice



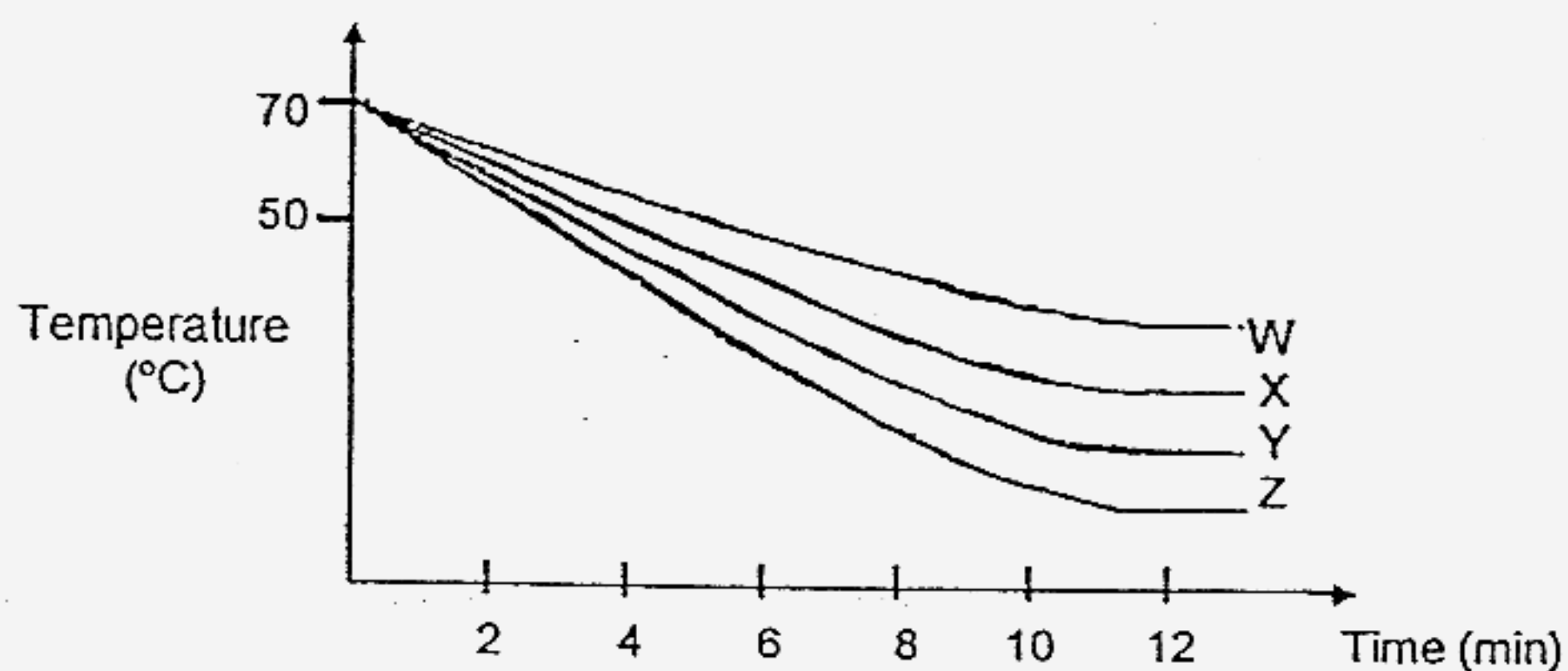
50g of water
at 20°C



30g of ice and
20g of water

Which one of the following lists shows the amount of heat needed in descending order?

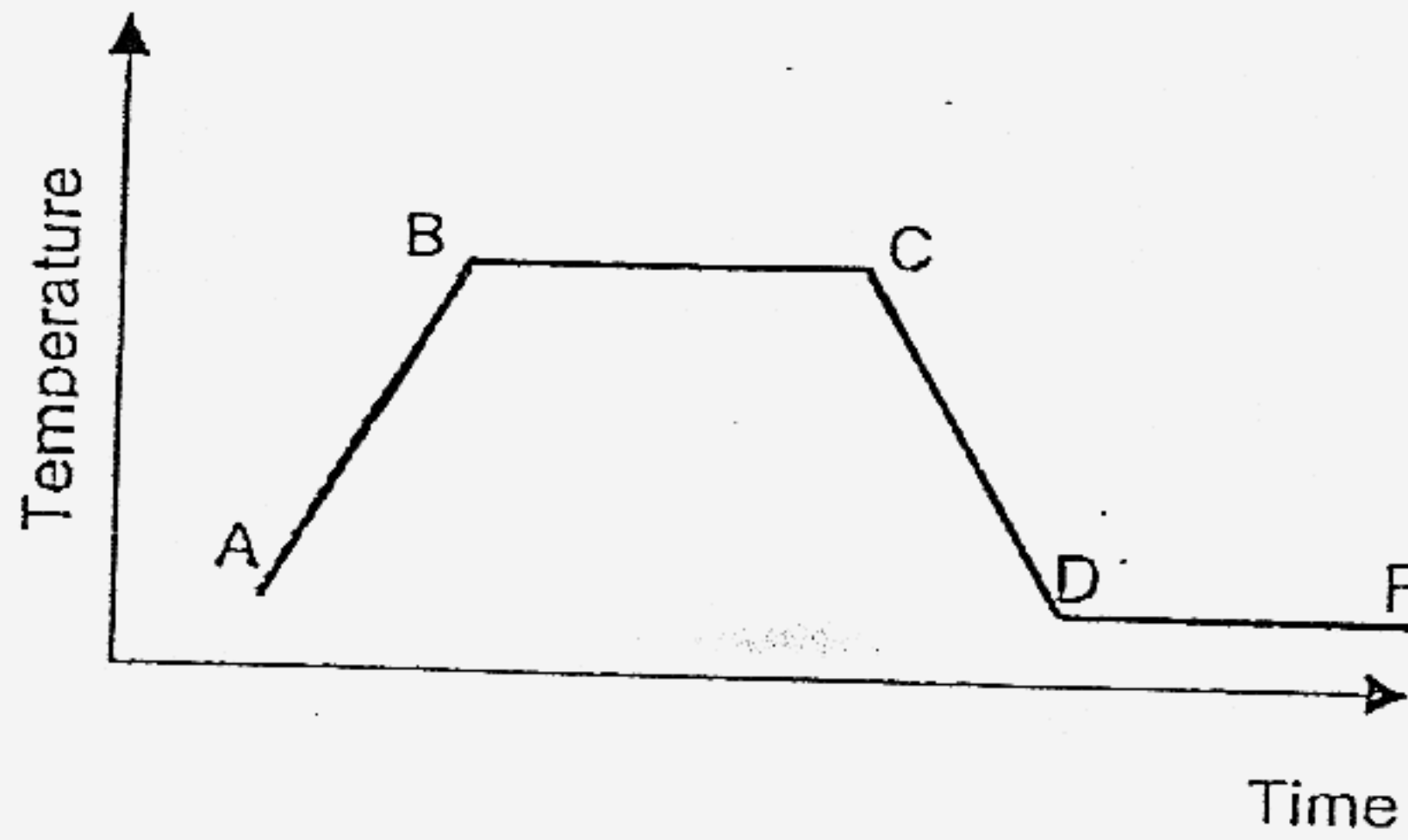
- (1) B, D, A, C
 (2) A, C, D, B
 (3) C, A, D, B
 (4) C, A, B, D
29. Ahmad carried out an experiment to find out which kind of mug is best for keeping his coffee hot. He poured the same amount of coffee into four mugs of different materials which were of the same size and thickness. The results of the experiment were recorded on the graph shown below.



Based on the graphs, which one of the mugs is the best for keeping his coffee hot?

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

30. Some water is brought to the boiling point and then allowed to cool to room temperature as shown below.



Which part of the graph shows that the water is losing heat?

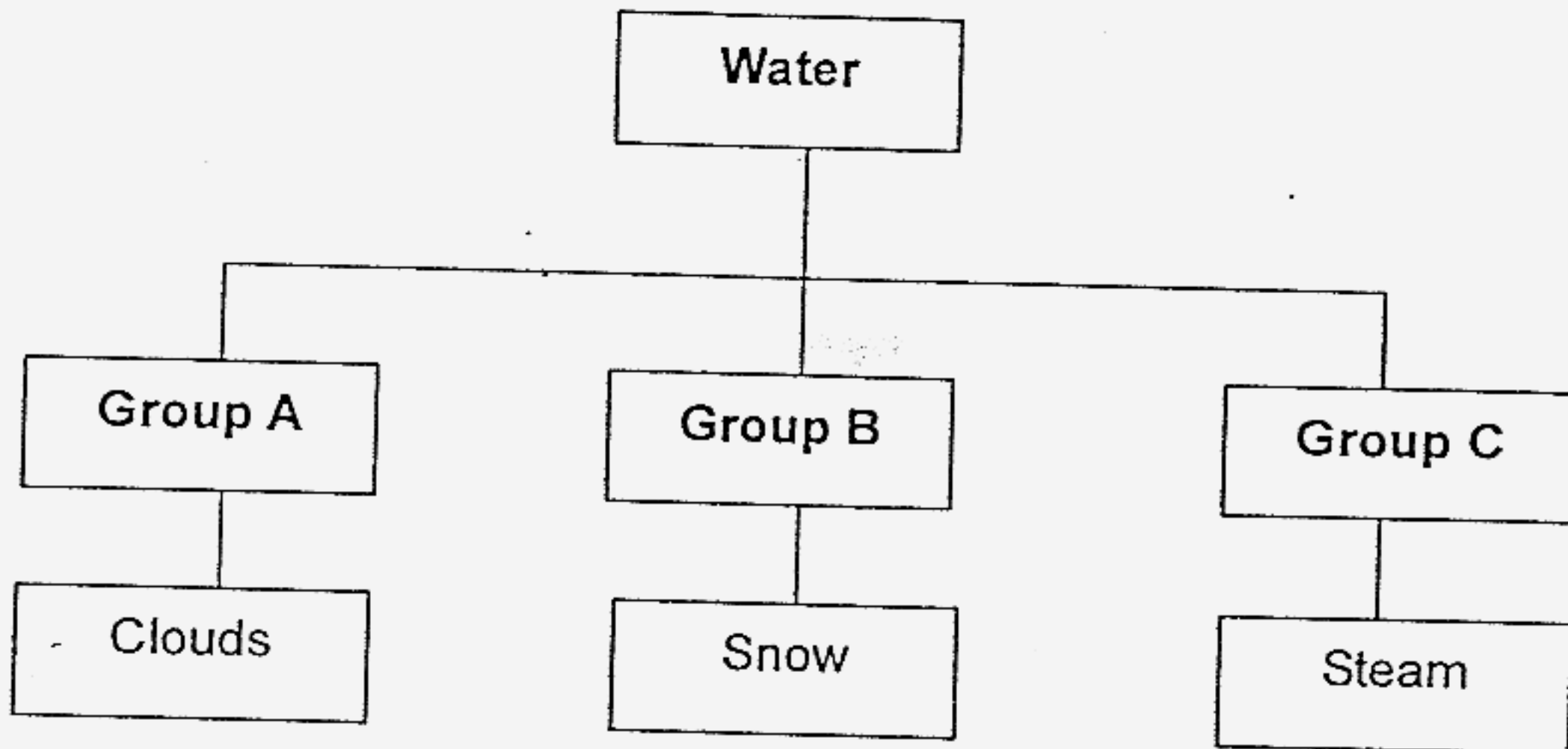
- (1) Line AB
- (2) Line BC
- (3) Line CD
- (4) Line DF

***** End of Section A *****

Section B: (40 marks)

Answer the following questions in the spaces provided.

31. Study the classification table below.



(a) Give a suitable heading for the following groups. (1½m)

(i) Group A : _____

(ii) Group B : _____

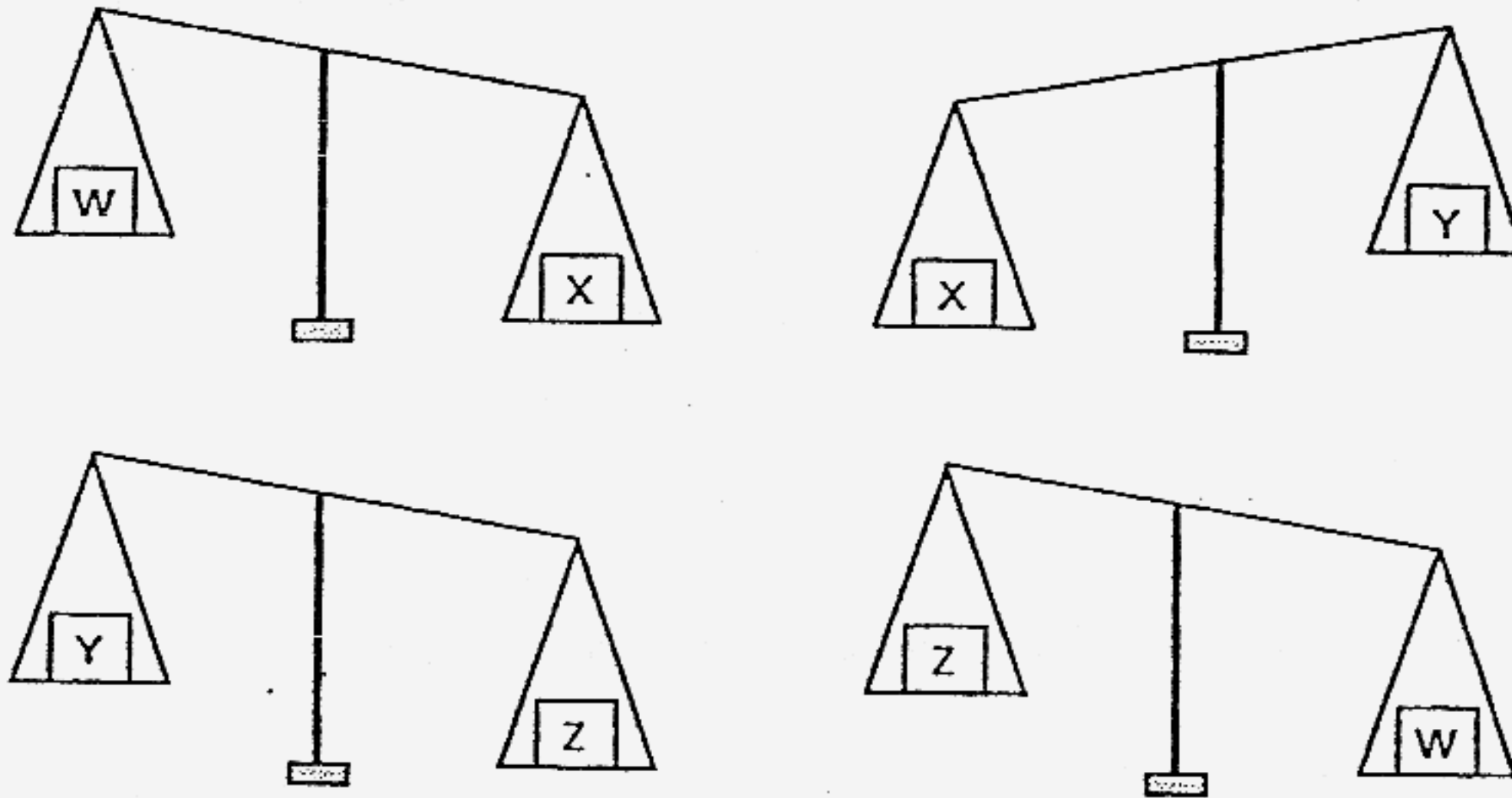
(iii) Group C : _____

(b) In which group would you place 'dew'? (½ m)

(c) What is one similarity between Group A, B and C. (1m)



32. The diagram below shows 4 objects, W, X, Y and Z on a balance.



Arrange the objects beginning with the one with the greatest mass.

(2m)

--	--	--	--

(greatest mass)

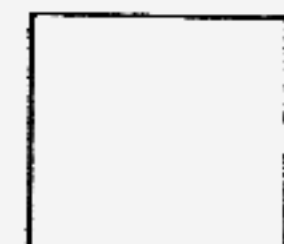
(smallest mass)

33. Read the following statements carefully.

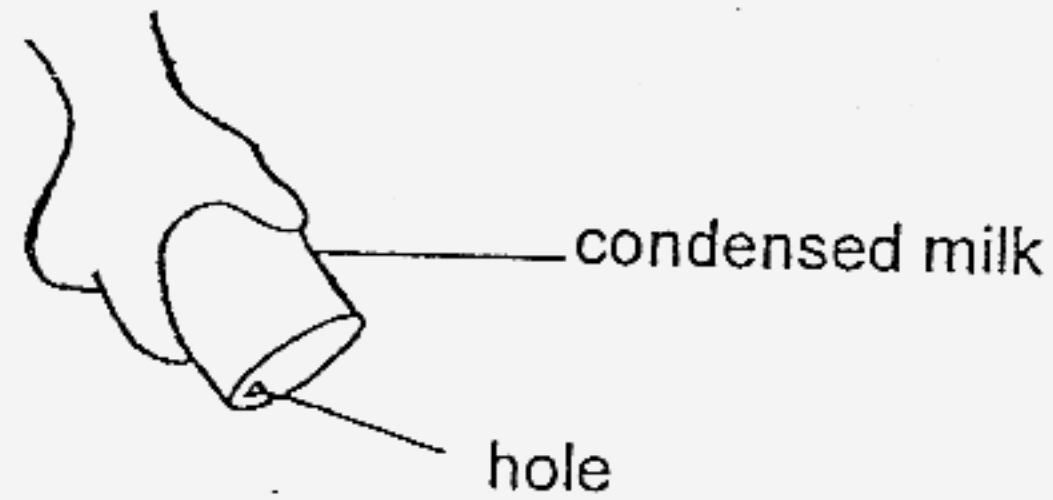
Write the letter "T" if the statement is true or the letter "F" if the statement is false in the boxes provided below.

(2m)

Statements	T / F
The sun is the driving force in water cycle.	
Clouds are formed when water vapour gains heat.	
Candle wax melts when it gains heat from the fire.	
All heat sources are also light sources but only some light sources are heat sources.	



34. Heidi punched a small hole in the can of condensed milk as shown below.

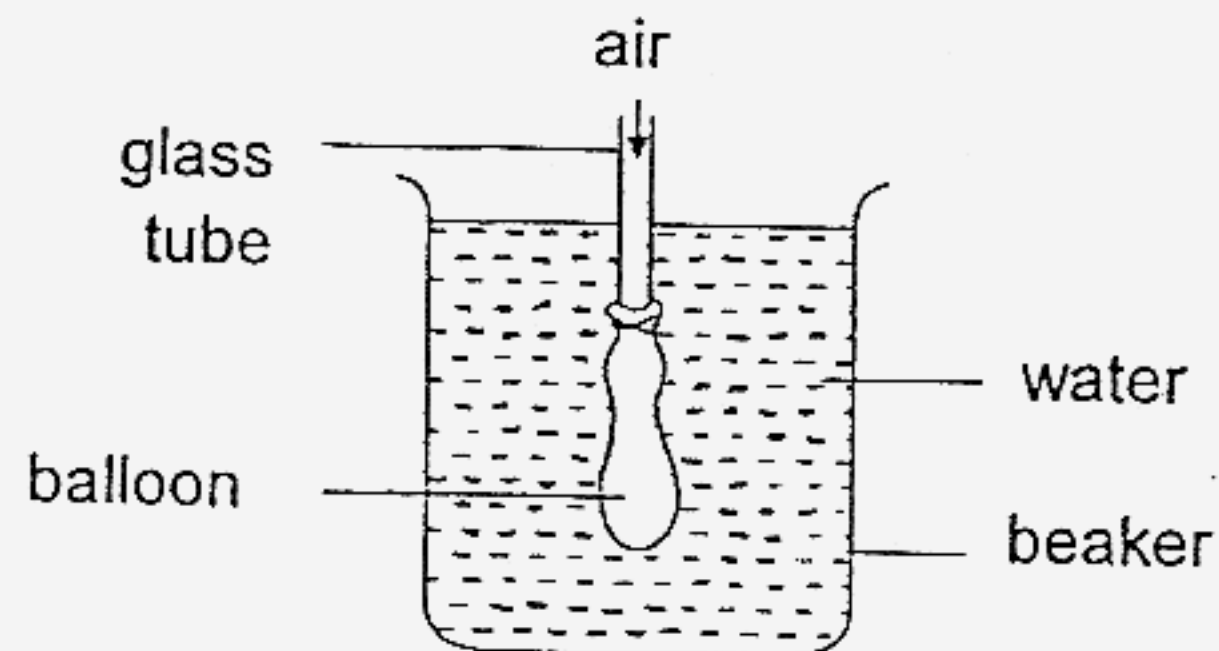


She noticed that the condensed milk flow out very slowly.

- (a) What could she do to make the condensed milk flow out faster? (1m)

- (b) Explain your answer in (a). (1m)

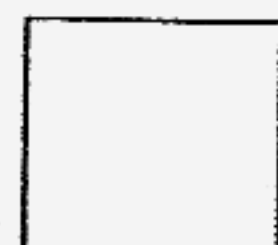
35. Sarah fixed a balloon over a glass tube and submerged it in a beaker of water as shown in the diagram below.



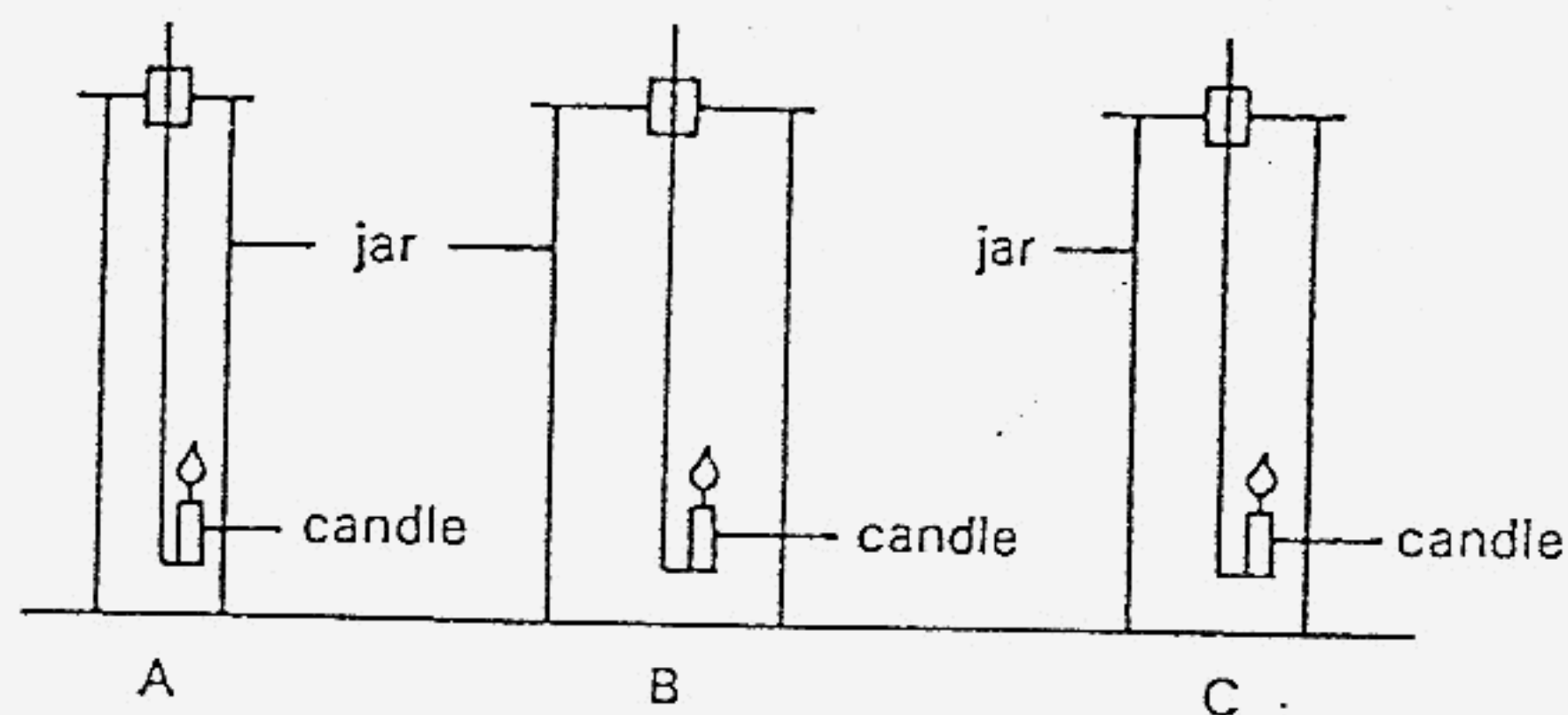
State 2 observations which can be made when she blew air through the tube as shown above. (2m)

(i) _____

(ii) _____



36. A burning candle was lowered into three jars of different sizes A, B and C as shown below.

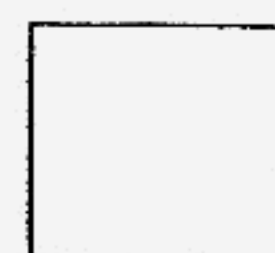


The time taken for the flame to go off in each jar was noted and the results were as follows:

Jar	Time taken (seconds)
A	5
B	15
C	10

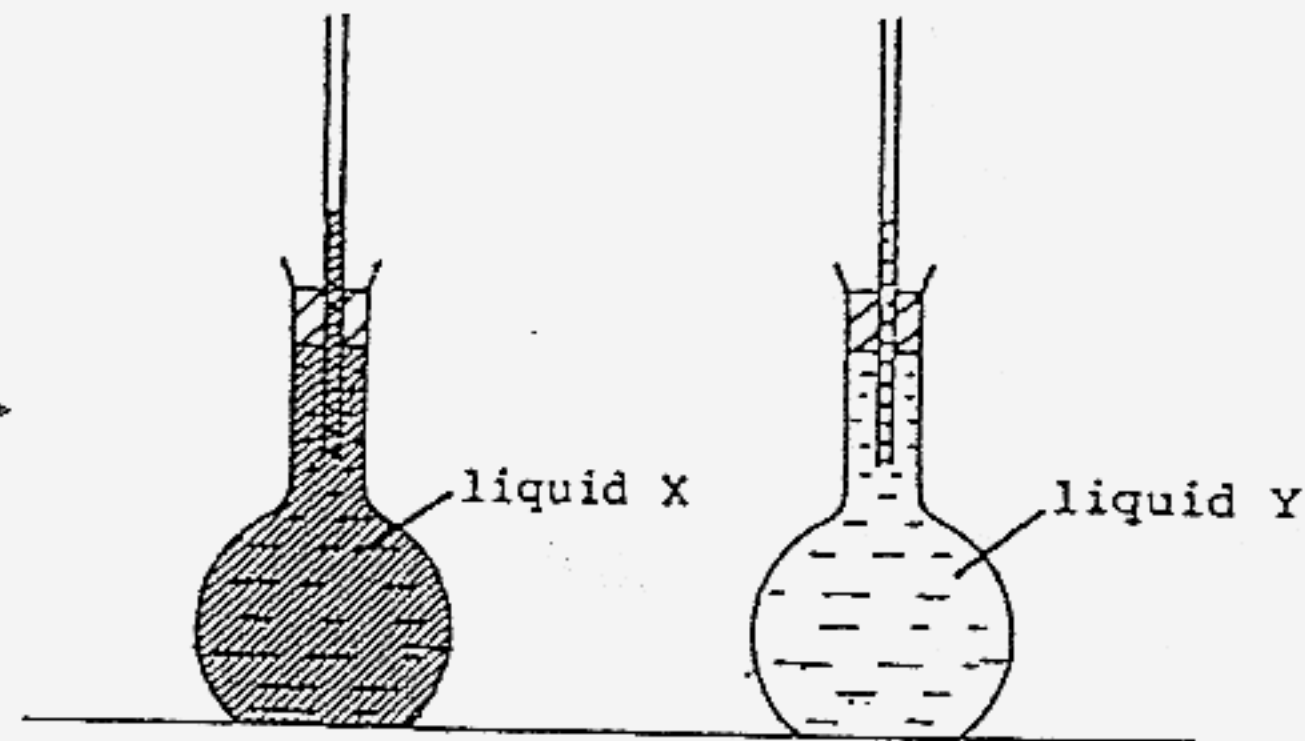
- (a) What pattern do you notice about the size of the jar and the time taken for the candle to go off? (1m)

- (b) Give a reason for the pattern observed. (1m)



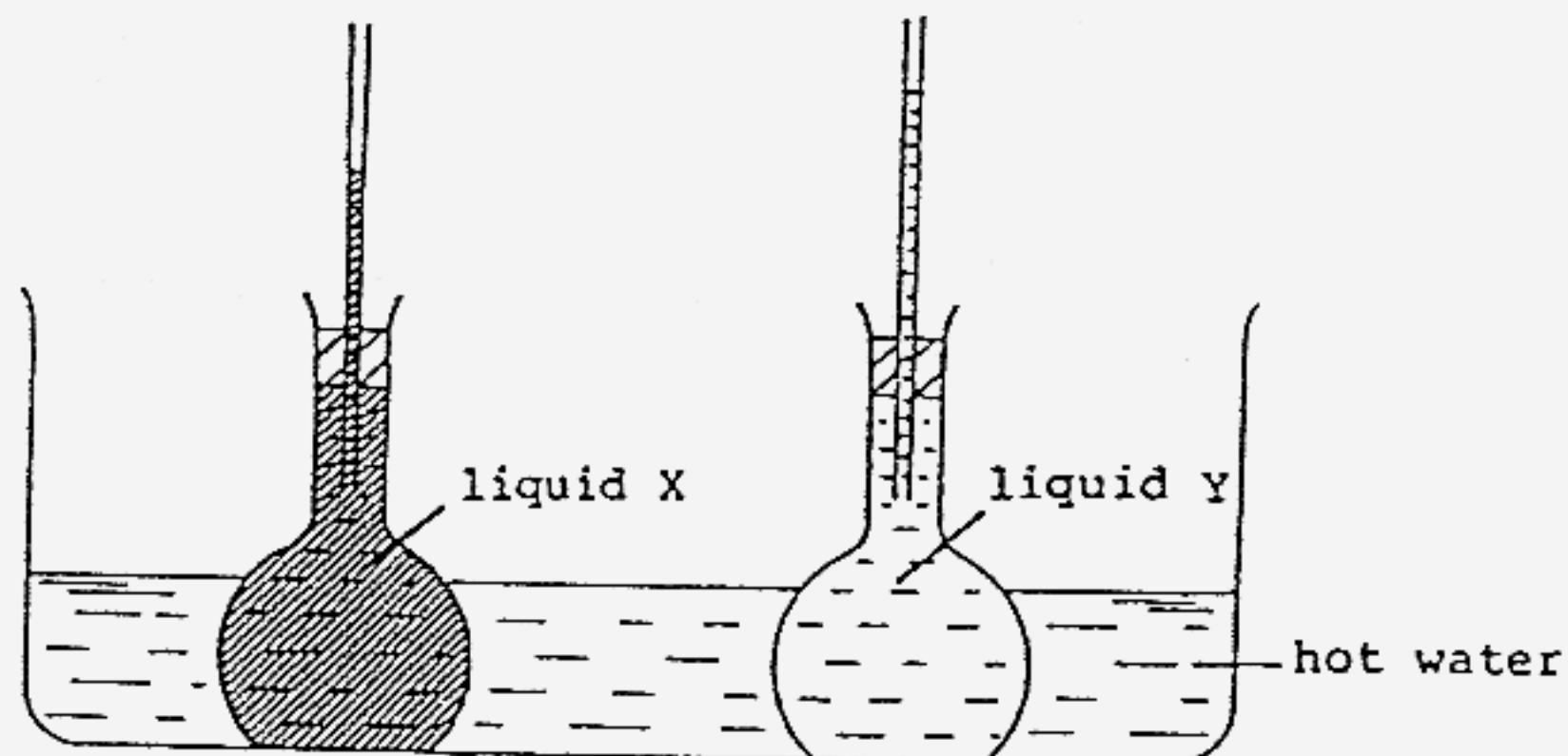
37. Meishan did an experiment to compare the expansion of 2 different liquids X and Y. She filled one flask with liquid X and another with liquid Y.

The levels of liquids in the glass tubes were the same at the beginning of the experiment.



Beginning of Experiment

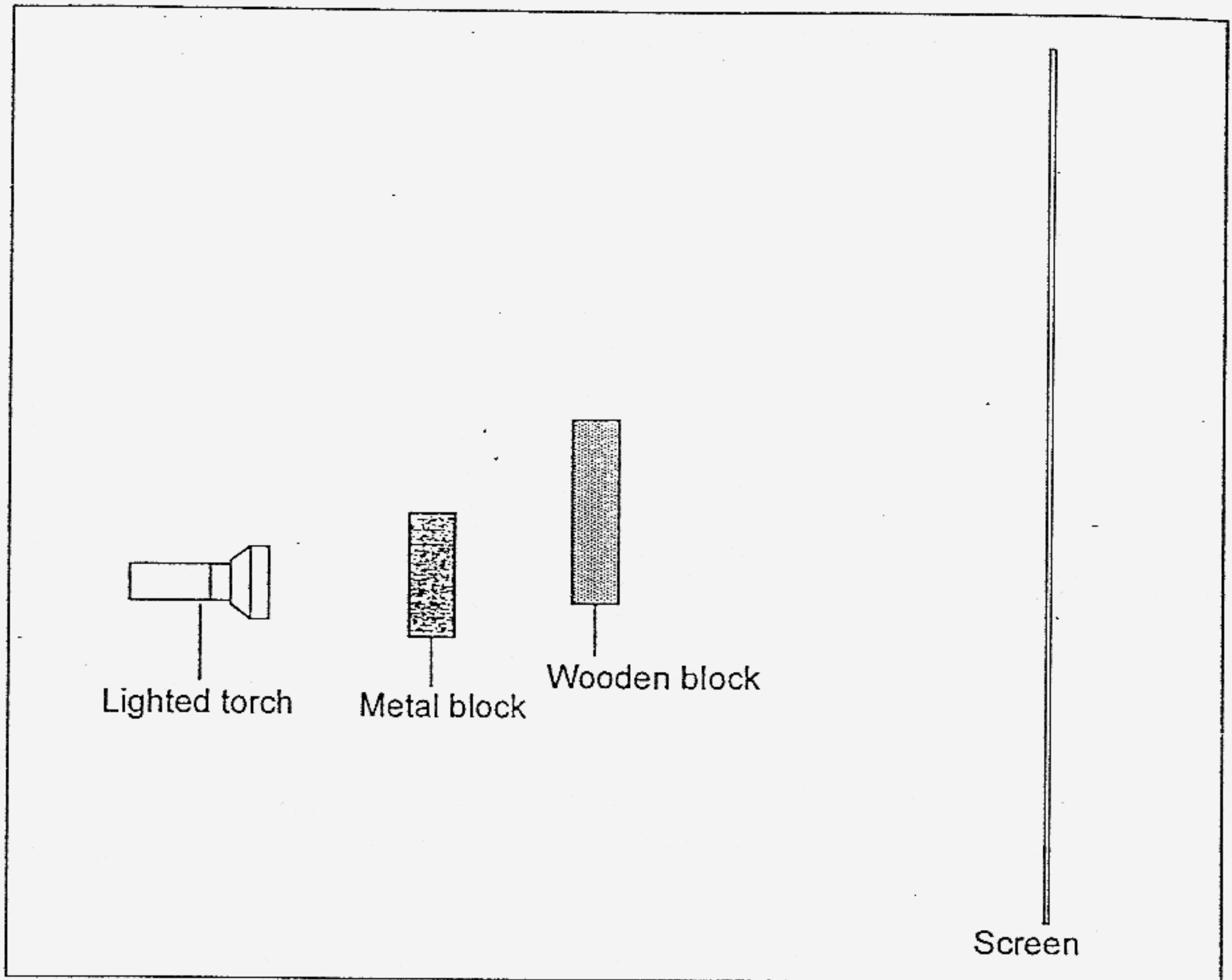
The flasks were then placed in a container of hot water. After some time, the liquids rose in the tubes as shown in the diagram below.



End of Experiment

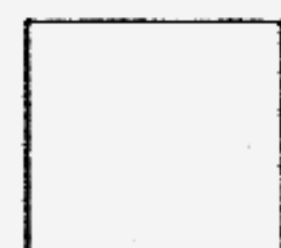
- (a) State one variable that must be kept the same for the experiment.
-
- (b) Why did the water level in each of the glass tubes rise after some time? (1m)
-
- (c) What can Meishan conclude about the expansion of the two liquids in the experiment? (1m)
-

38. Study the diagram below.



A metal block and a wooden block, were used to cast a shadow on the screen.

- (a) Show how you can determine the length of shadow by drawing dotted lines in the diagram. (1m)
- (b) State a property of light which caused the shadow to be formed. (1m)
-
- (c) Without moving the 2 blocks, how can you make the shadow bigger? (1m)
-



39. Study the diagrams shown below.

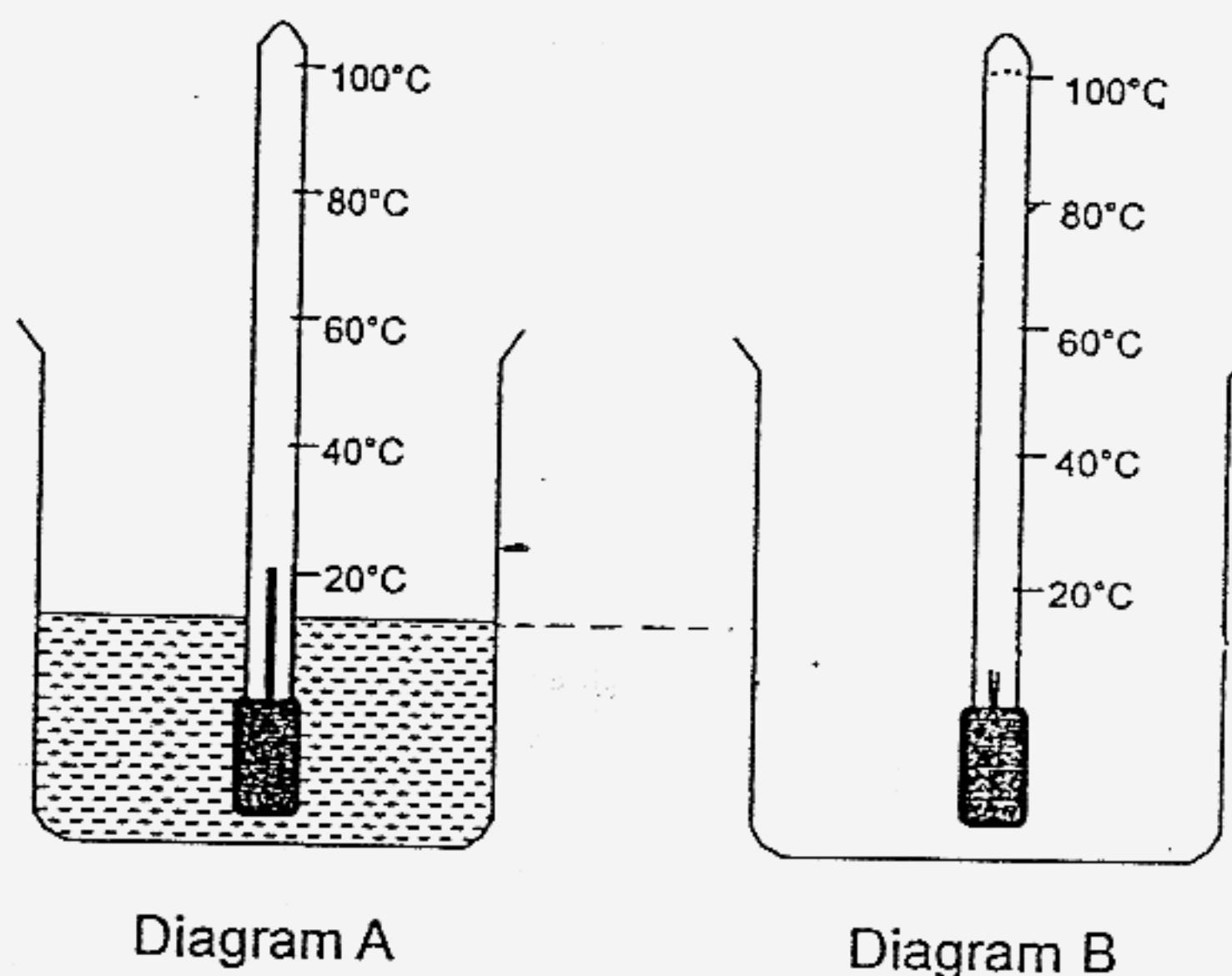


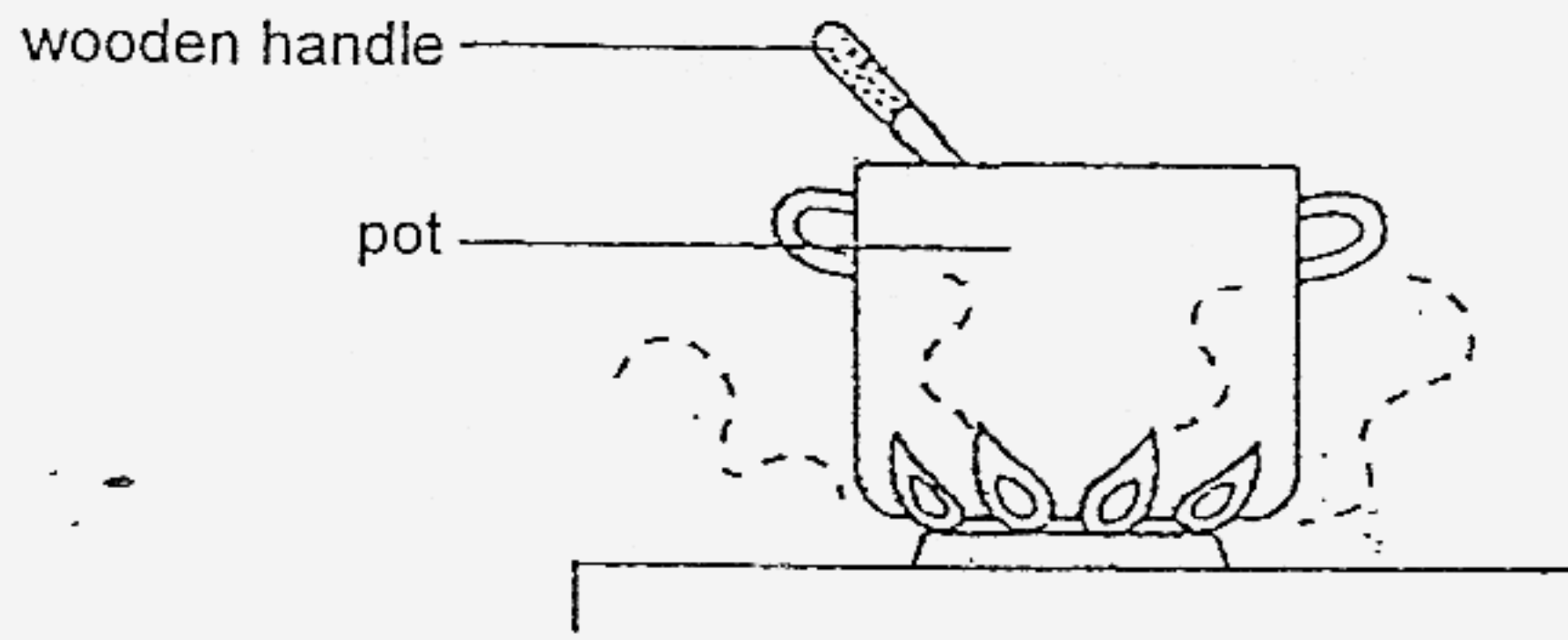
Diagram A shows the temperature of a beaker of water before it is heated. The beaker of water is subsequently heated for 20 minutes until it boils.

(a) What is the reading of the thermometer in Diagram A? (1m)

(b) Complete Diagram B by drawing in the water level and indicate on the thermometer the temperature of the water when it boils. (2m)



40. Jia Jia holds the wooden handle of a steel ladle to stir the boiling soup in a stainless steel cooking pot. The handle feels warm, yet it does not burn her fingers.



- (a) Describe how the heat is transferred to the wooden handle. (1m)

- (b) Although the stainless steel pot is extremely hot, Jia Jia can hold the wooden handle comfortably. Why is there a difference in the temperature of the two materials? (1m)



41. Joe wanted to find out if the rate at which the gills of a fish beat in 3 different samples of water X, Y and Z taken from 3 different fish tanks.

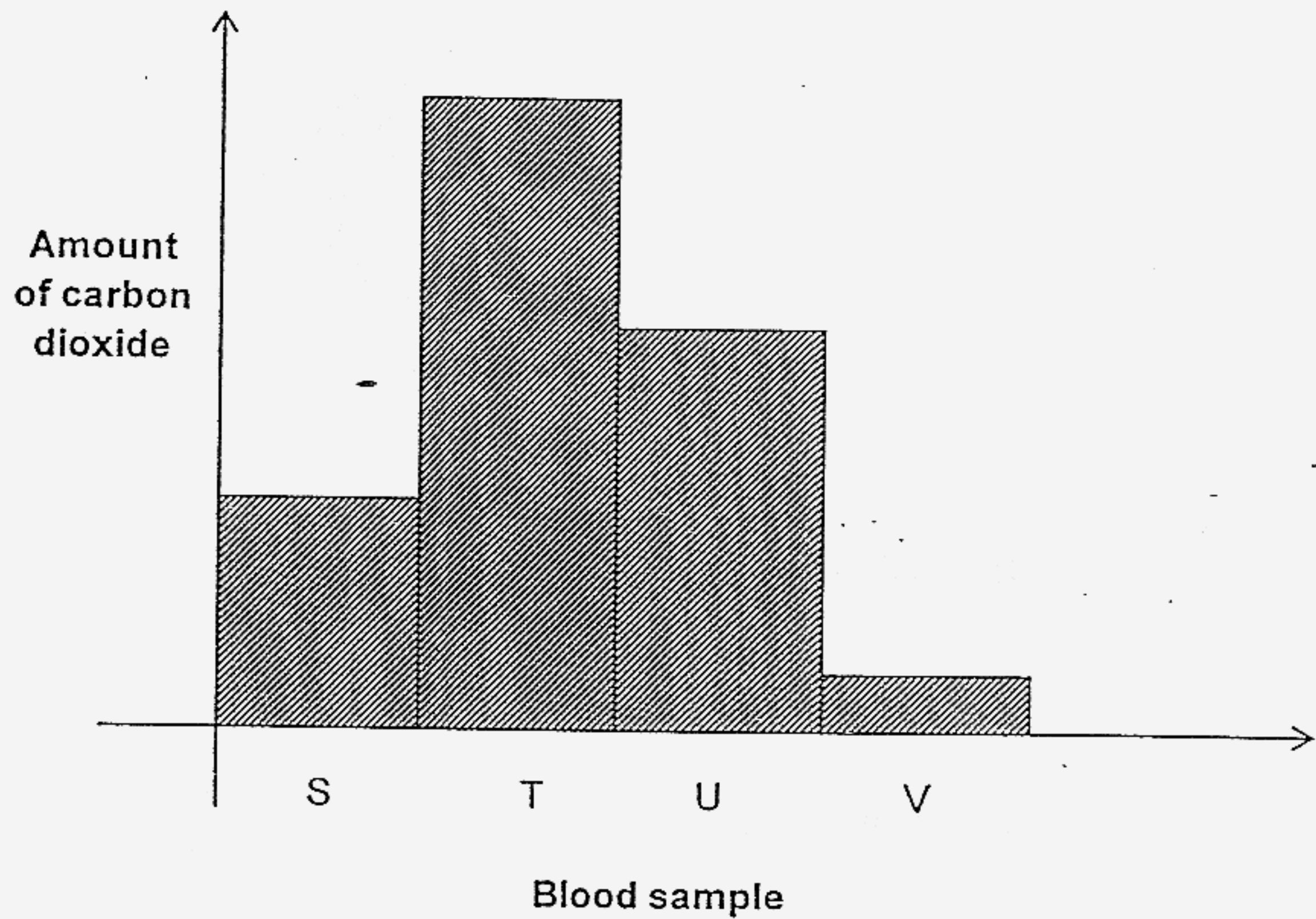
Water sample	Gill cover open and close per minute
X	60
Y	140
Z	100

- (a) Which water sample contains the least amount of oxygen? Explain your answer clearly. (1m)
-

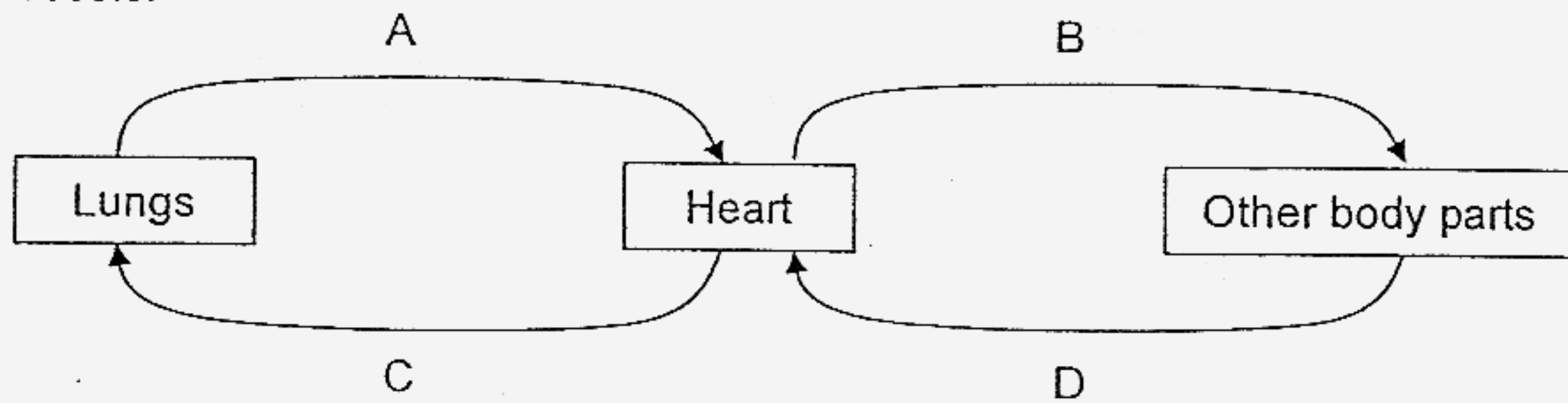
- (b) What could be done to increase the amount of oxygen in the fish tank? (1m)
-



- A2. Four blood samples S, T, U and V, were taken from different blood vessels in the body. The following graph shows the amount of oxygen in each of these blood samples.

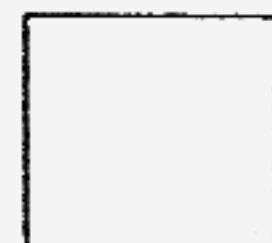


The following diagram shows the different organs linked with different blood vessels.



Complete the table below to show how the different blood vessels are matched with the blood samples. (2m)

Sample	Blood vessel from
S	
T	
U	
V	



43. Janet breathes onto a mirror as shown in the diagram below.



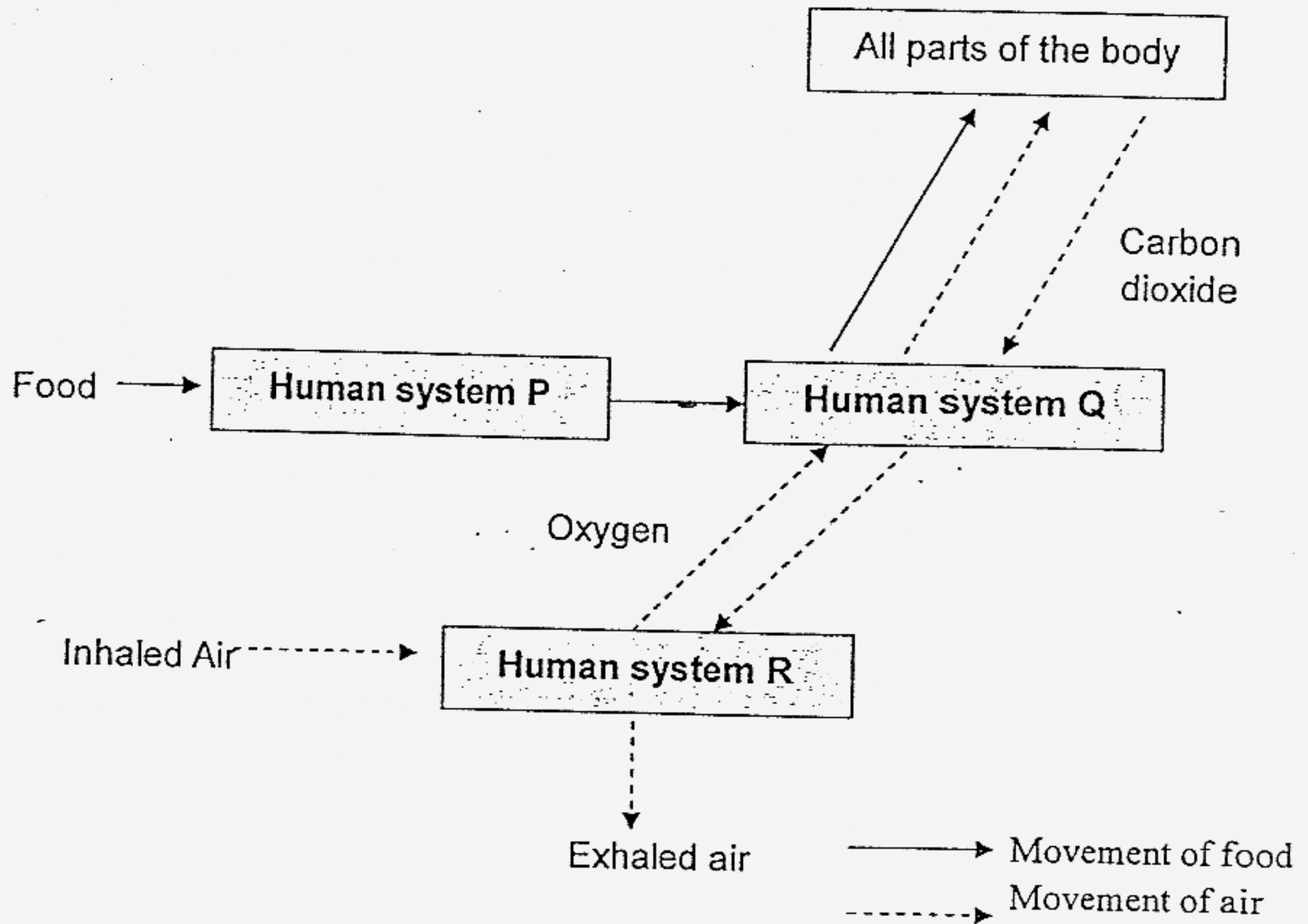
(a) What would Janet observed on the mirror? (1m)

(b) Name the process that is taking place at the mirror. (1m)

(c) Would the observation be the same if Janet blows onto the mirror in an air-conditioned room? Explain your answer clearly. (2m)



44. Study the diagram below.



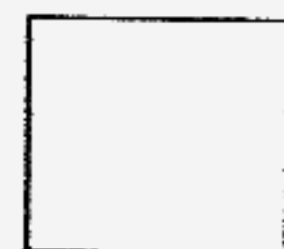
(a) Identify the human systems which P, Q and R represent. (1½ m)

(i) Human System P : _____

(ii) Human System Q : _____

(iii) Human System R : _____

(b) Name the 3 parts which made up of the Human System Q. (1½ m)

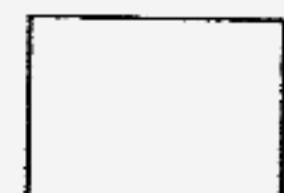


45. Jeremy had 5 set-ups V, W, X, Y and Z. He conducted two different fair tests to find out the factors affecting the rate of evaporation of water.

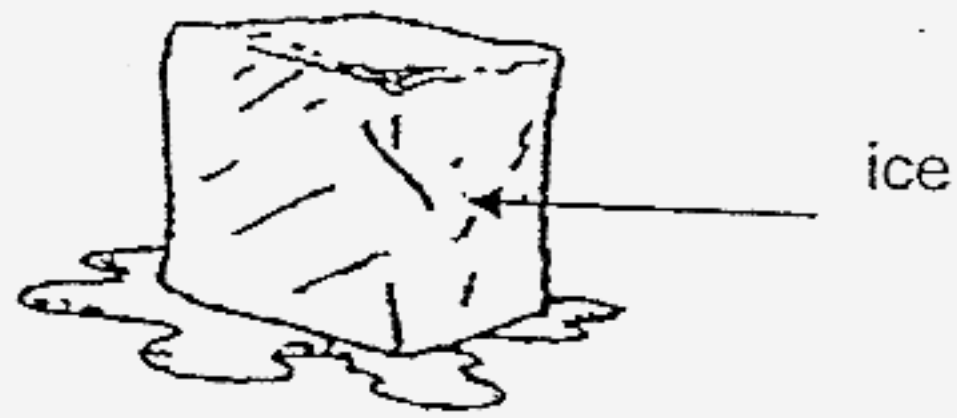
Set-up	V	W	X	Y	Z
Volume of water (ml)	400	200	200	400	200
Temperature of water ($^{\circ}\text{C}$)	30	55	35	30	60
Exposed surface area (cm^2)	10	15	10	15	10

- (a) What would be the aim of the fair test if he had used set-ups X and Z?
(1m)

- (b) If he wanted to find out whether exposed surface area would affect the rate of evaporation, which two other set-ups would he use?
(1m)



46. Study the diagram below.

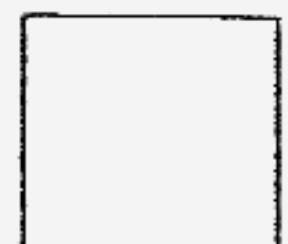


(a) Name the process that is taking place. (1m)

(b) What remains constant during this process? (1m)

(c) Suggest one way that can help to slow down this process. (1m)

***** End of Paper *****



1	1	6-1	11-2	16-3	21-4	26-4
2	2	7-3	12-4	17-1	22-2	27-3
3	1	8-4	13-2	18-2	23-3	28-1
4	2	9-4	14-2	19-2	24-1	29-1
5	2	10-3	15-3	20-2	25-3	30-3

31 a) i) Liquid ii) Solid iii) Gas
 b) Group A.
 c) They are states of water

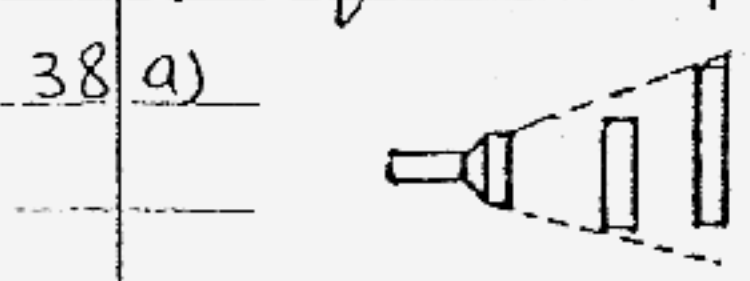
32 X W Z Y
 33 T F T F

34 a) She should poke another hole on the mouth of the can.
 b) When she punched another hole, air from the surroundings went through the hole, pushing the condensed milk out of the first hole. The air will then occupy the space in the can.

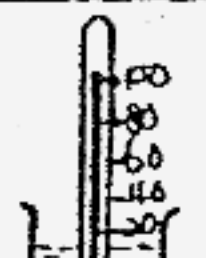
35 i) The balloon inflates.
 ii) The water level in the beaker increases and some water might flow out of the beaker.

36 a) The smaller the size of the jar, the shorter it would take for the flame would go off.
 b) Amount of oxygen is higher.

37 a) The time duration of the temperature.
 b) The hot water in the basin causes the two types of liquid in the flasks to gain heat and expand. That is why the water level rises.
 c) Liquid Y expands faster than liquid X.



b) When light travels in a straight line, and is blocked by an opaque or translucent object, a shadow is formed.
 c) Move the torch nearer to the blocks and the screen further away from the blocks.

39 a) 20° b) - 

40 a) It transfers from the fire to the pot, to the steel ladle and then to the wooden handle.

b) The wooden handle is an insulator of heat and does not conduct heat easily, while the pot is made of steel which is a good conductor of heat so that it can conduct heat to cook the food as well.

41 a) Water sample Y. Since there is less oxygen in the water, the fish need to breathe faster.

b) Add some water plants into the water such as hydrilla and camboba.

42 B C D A

43 a) She would observe tiny water droplets on the mirror which caused the mirror to look misty.

b) Condensation.

c) Yes, her observation would be the same. The air in the air-conditioned room is cooler than the air from her mouth, hence the water vapour from her mouth, touches the cooler surface of the mirror and condenses into water droplets.

44 a) P: Digestive system.

Q: Circulatory system.

R: Respiratory system.

b) Heart, blood and blood vessels.

45 a) To find out if temperature affects the rate of evaporation.

b) V and Y.

46 a) Melting.

b) The temperature of the ice.

c) Add impurities such as salt onto the ice.