

**NAN HUA PRIMARY SCHOOL  
END-OF-YEAR EXAMINATION 2006  
PRIMARY FOUR  
SCIENCE**

Name: \_\_\_\_\_ ( )  
 Class : Primary 4 \_\_\_\_\_  
 Date : 1 Nov 2006  
 Duration: 1h 30 min

Section A: \_\_\_\_\_ / 60  
 Section B: \_\_\_\_\_ / 40  
 Marks : \_\_\_\_\_ / 100

Parent's Signature: \_\_\_\_\_

**Section A (30 x 2 marks)**

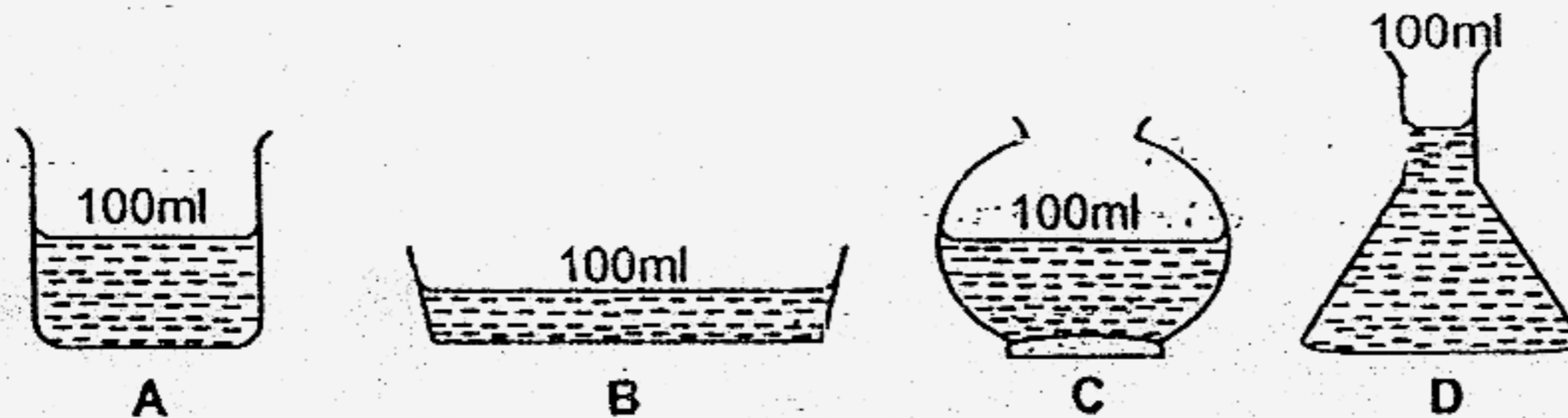
For each question 1 to 30, four options are given. One of them is the correct answer. Choose the most suitable answer from the options given and write its number in the Optical Answer Sheet (OAS) provided.

1. Heat and light are \_\_\_\_\_.

- (1) sources of energy
- (2) given off by the sun only
- (3) different forms of energy
- (4) the same form of energy

( )

2.



Four containers A, B, C and D were filled with 100 ml of water. They were placed in a field on a hot sunny day. After a day, the volume of the water left in the containers were measured and recorded.

Which of the following would show the **most likely** amount of water left in each of the containers?

	A	B	C	D
(1)	60 ml	80 ml	45 ml	20 ml
(2)	45 ml	20 ml	60 ml	80 ml
(3)	20 ml	45 ml	60 ml	80 ml
(4)	50 ml	20 ml	80 ml	60 ml

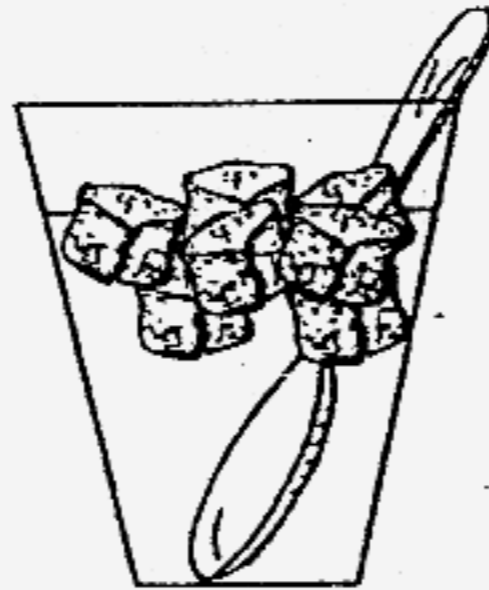
( )

3. Which one of the following does not affect the rate of evaporation of a puddle of water on the roadside?

- (1) Speed of the wind.
- (2) Colour of the puddle of water
- (3) Temperature of the surroundings.
- (4) Surface area of the puddle of water.

( )

4.



A spoon that is left in a cup of iced water feels cold to the fingers because

- (1) heat travels from the water to the spoon
- (2) heat travels from the spoon to the fingers
- (3) heat travels from the fingers to the water through the spoon
- (4) heat travels from the water to the fingers through the spoon

( )

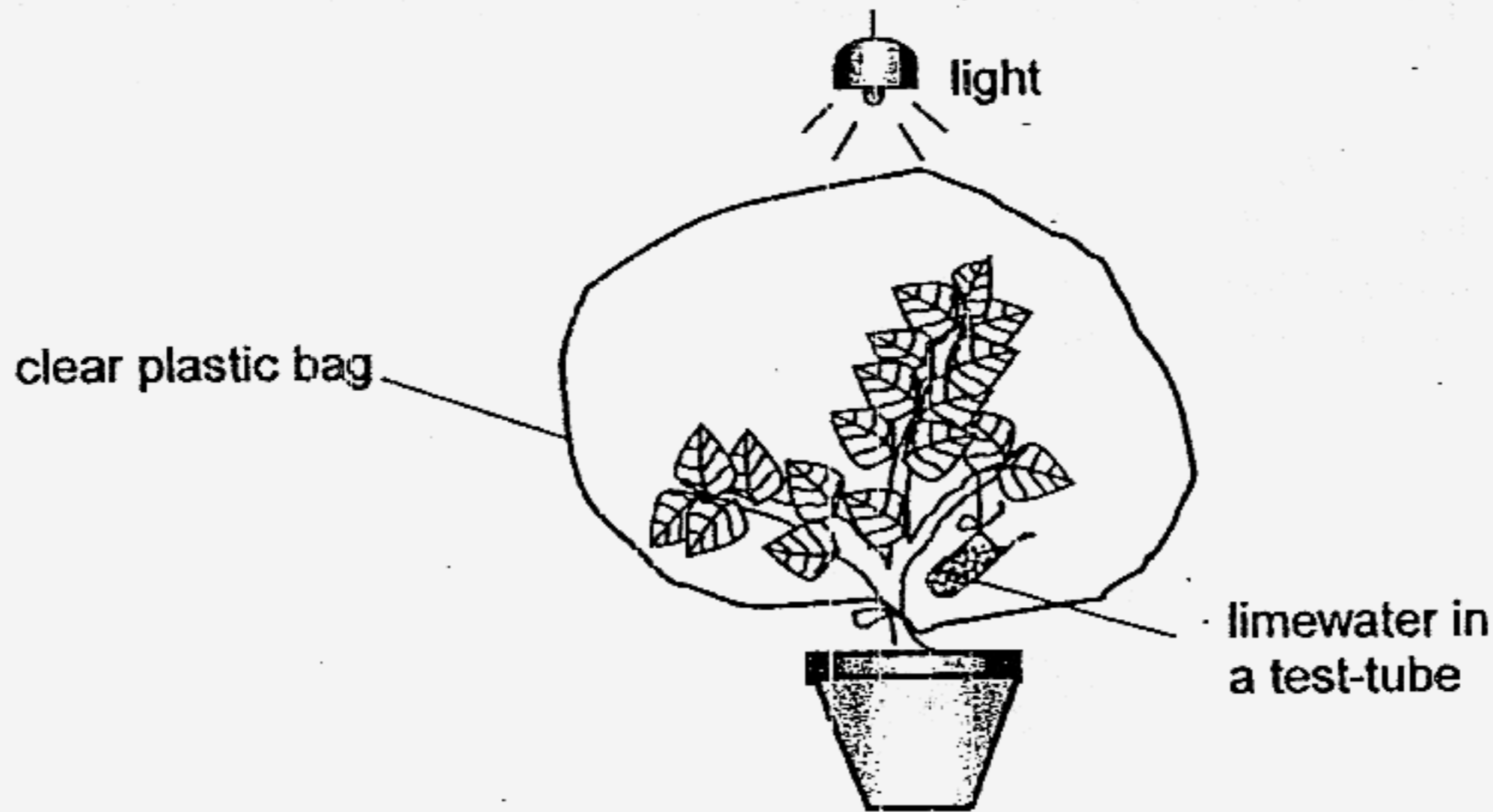
5. We can help to conserve water by \_\_\_\_\_.

- A: washing our car with a hose.
- B: fixing a leaking tap immediately.
- C: allowing the shower to run while soaping.
- D: using a mug of water instead of running water while brushing our teeth.

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

( )

Study the experiment shown below and answer questions 6, 7 and 8.



6. The aim of the above experiment is most likely to find out if plants \_\_\_\_\_ .
- (1) take in oxygen when light is present
  - (2) release oxygen when light is present
  - (3) take in carbon dioxide when light is present
  - (4) release carbon dioxide when light is present
- ( )
7. If the light is switched on throughout the experiment, what will happen to the limewater in the test tube after a day?
- (1) It will turn yellow.
  - (2) It will turn cloudy.
  - (3) It will most likely remain the same.
  - (4) It will turn yellow and then become cloudy.
- ( )
8. Which is the most likely reason why only the upper part of the plant was covered and not the pot?
- (1) The plant needs to get air through the roots.
  - (2) The soil may release gases that may affect the result.
  - (3) The water in the soil will evaporate and inflate the bag.
  - (4) The upper part of the plant needs sunlight but the roots do not.
- ( )

9. Oxygen-rich blood is exchanged in the \_\_\_\_\_.

- (1) heart
- (2) lungs
- (3) brain
- (4) liver.

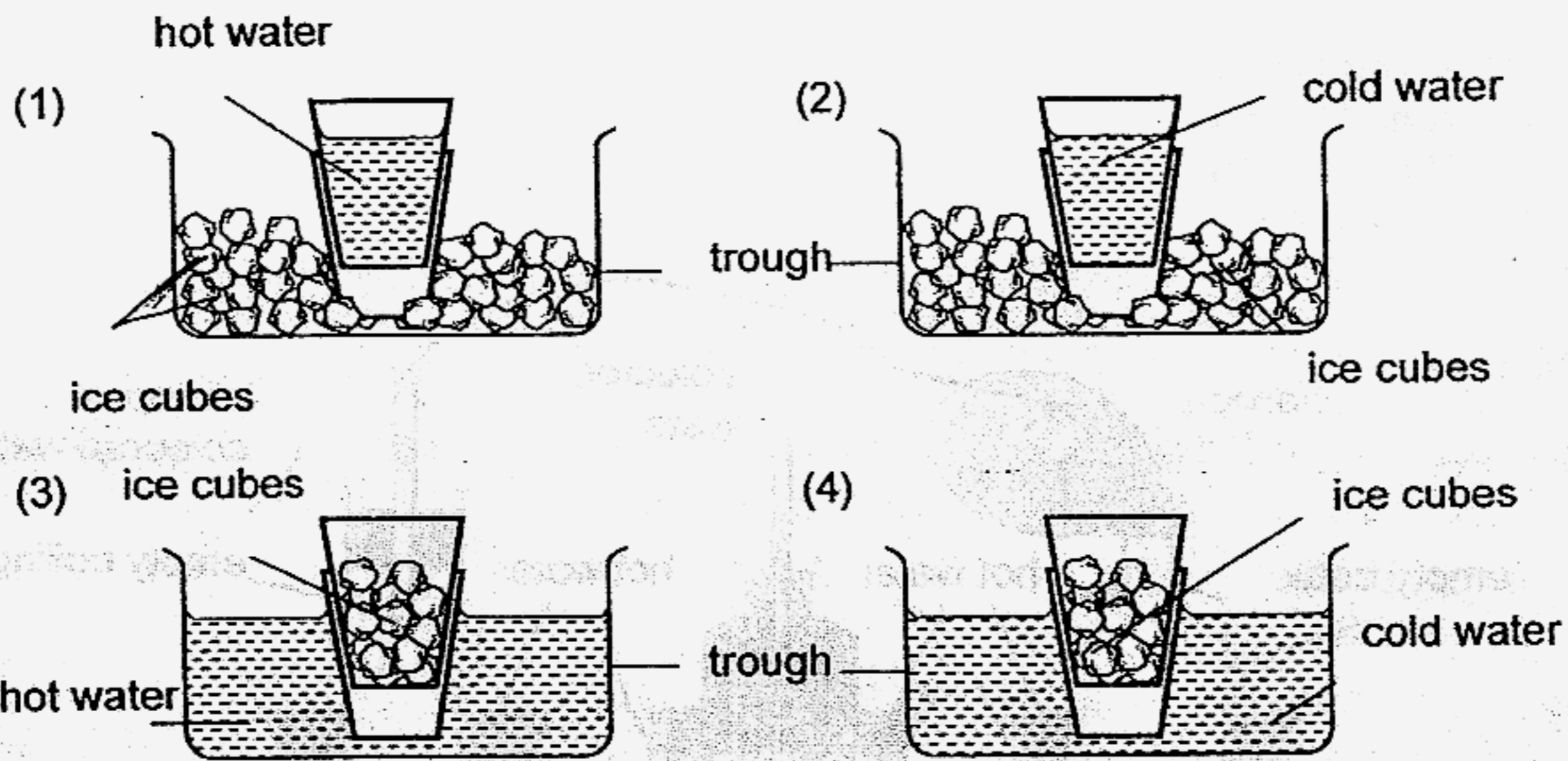
( )

10. Which one of the following insects resembles its adult when young?

- (1) Moth
- (2) Housefly
- (3) Mosquito
- (4) Grasshopper

( )

11. Two metal cups are stuck together. Which one of the following would be the most suitable method of separating them?



( )

12. Which of these statements are true?

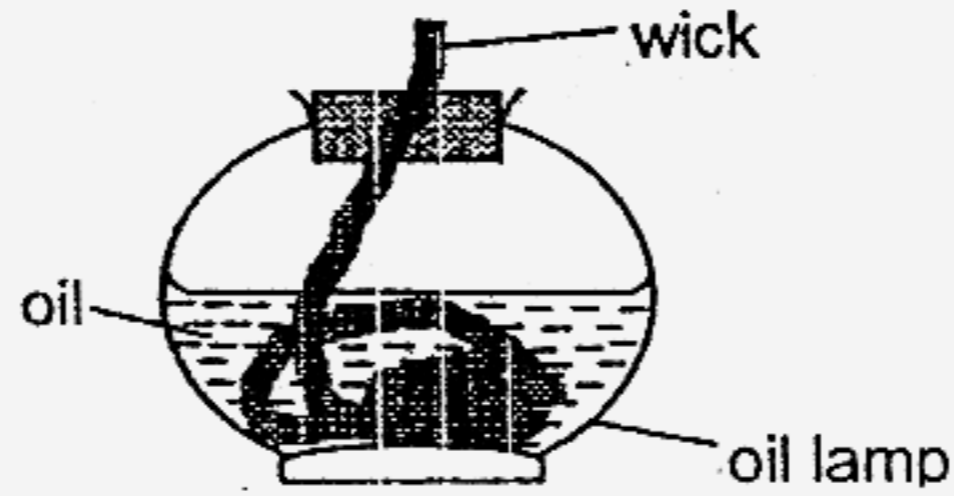
- A : Veins carry blood toward the heart from all parts of the body.
- B : Veins going from the heart to the lungs carry oxygenated blood.
- C : Arteries carry blood away from the heart to the other parts of the body.
- D : Arteries are thick-walled vessels and generally carry oxygenated blood.

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

( )



13.



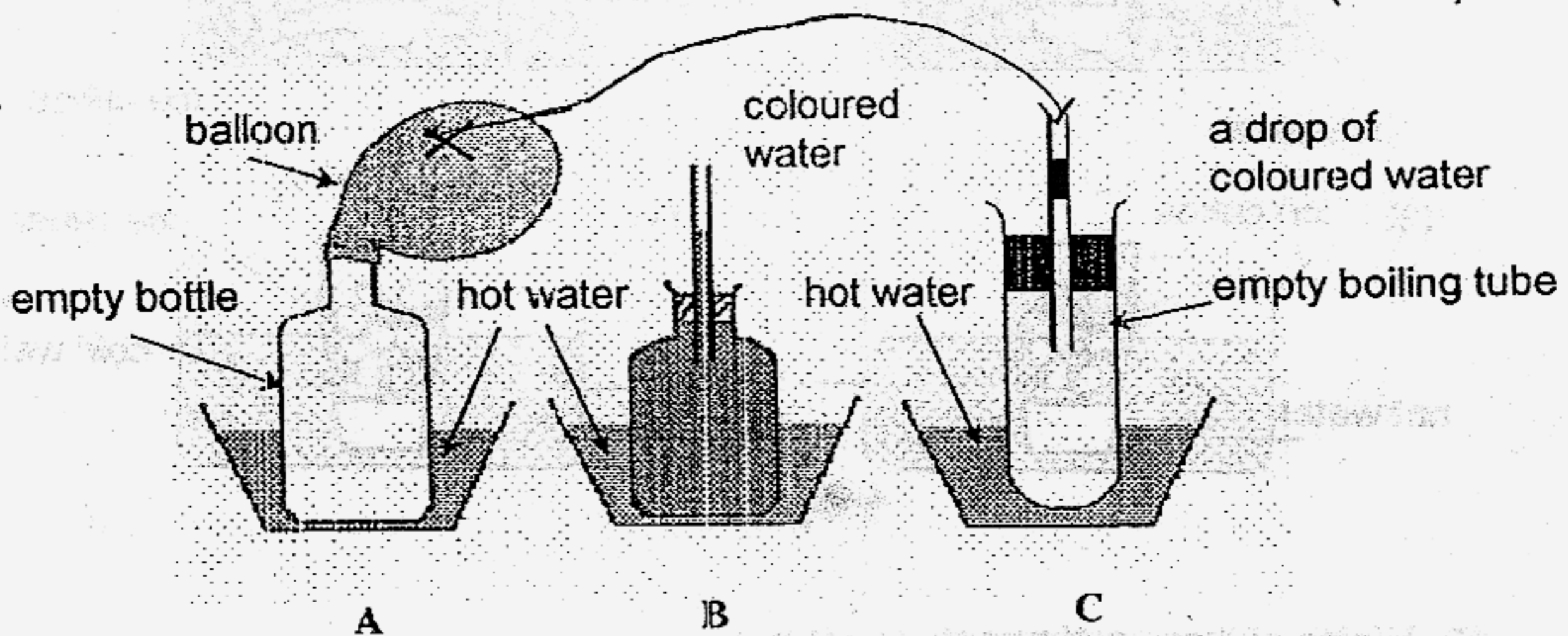
Some boy scouts are going camping. To see their way around at night, they need to bring along an oil lamp as shown above. Before that, they want to find out which type of oil would burn longer.

Which of the following variables should they keep the same when they test out the oil lamp?

- A: Type of oil
- B: Amount of oil
- C: Length of wick
- D: Place where lamp is placed

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

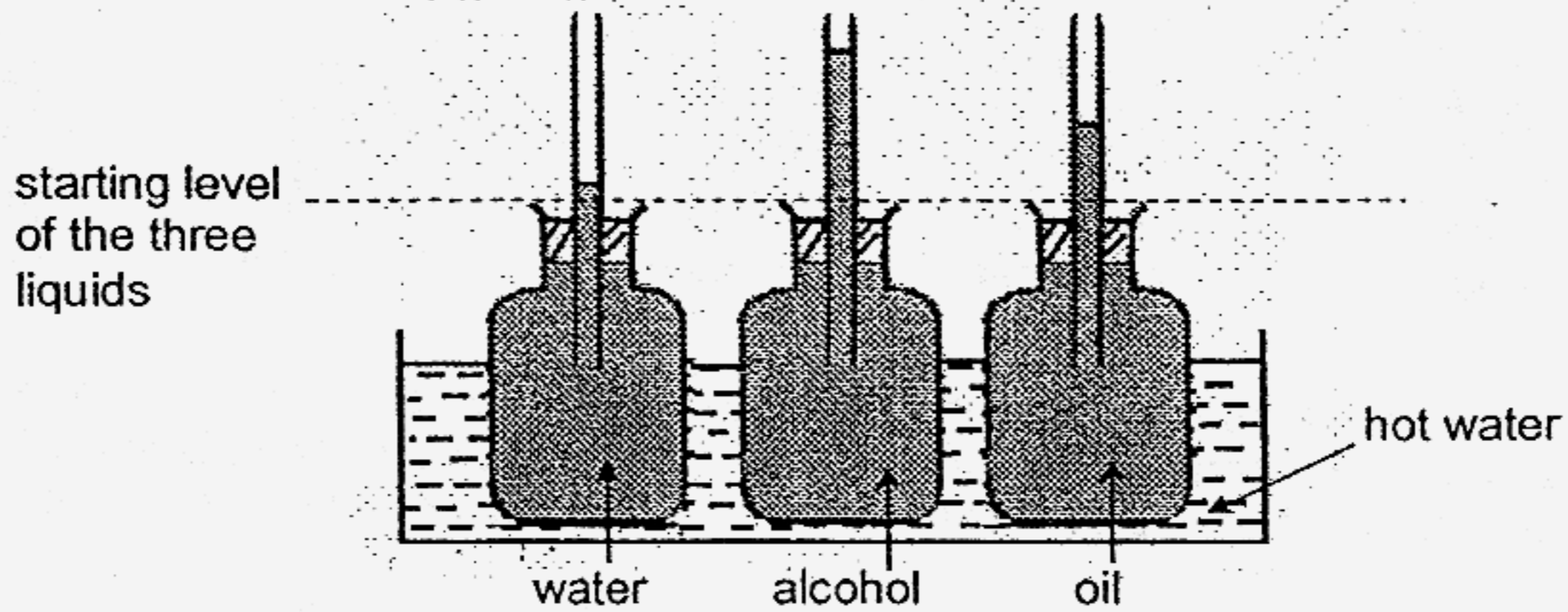
14.



Which of the three set-ups shown above can be used to demonstrate that air expands when heated?

- (1) A only
- (2) B only
- (3) A & C only
- (4) B & C only

15.



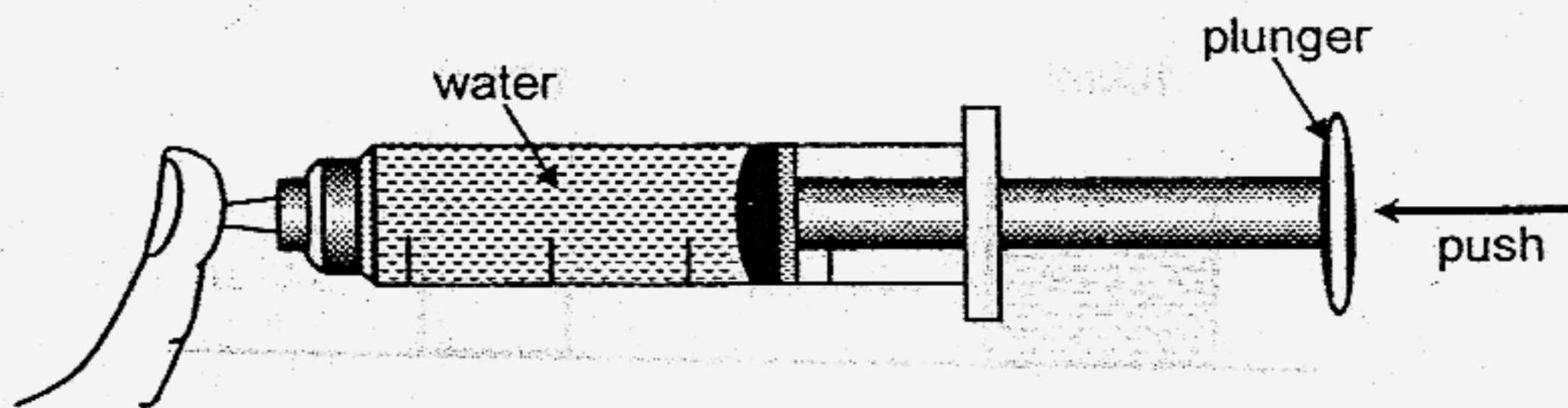
Three flasks of water, alcohol and oil are heated in a basin of hot water. At first, all of the three liquids are at the same level in the glass tubes but upon **heating**, each liquid **rises** to a different level as shown above.

From the results of this experiment, we can conclude that \_\_\_\_\_.

- A: alcohol expands more than water
- B: oil does not expand as much as alcohol
- C: water expands less than alcohol but more than oil;

- (1) A only
- (2) B only
- (3) A & B only
- (4) B & C only

16.

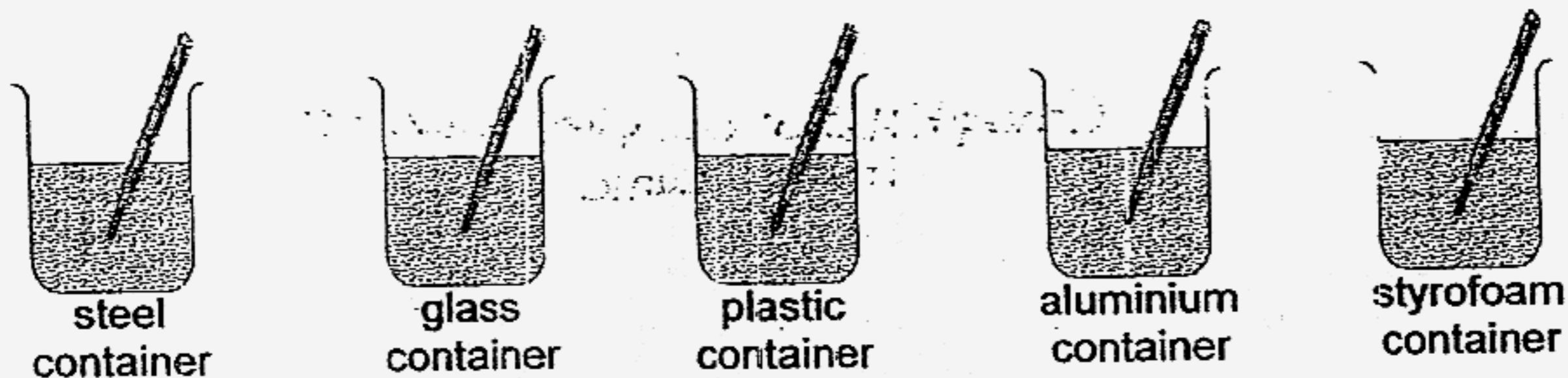


Kiat Kai filled a syringe with water and sealed the nozzle completely with his finger, as shown above. He tried to push the plunger but was unable to do so.

This experiment proves that water \_\_\_\_\_.

- (1) can be compressed
- (2) has a definite shape
- (3) has no definite mass
- (4) cannot be compressed

17.



Carmen has 5 containers of the same size and thickness which is made of different materials. She poured the same amount of water at 86°C and placed a thermometer into each container. All the containers were placed in a room with the same conditions.

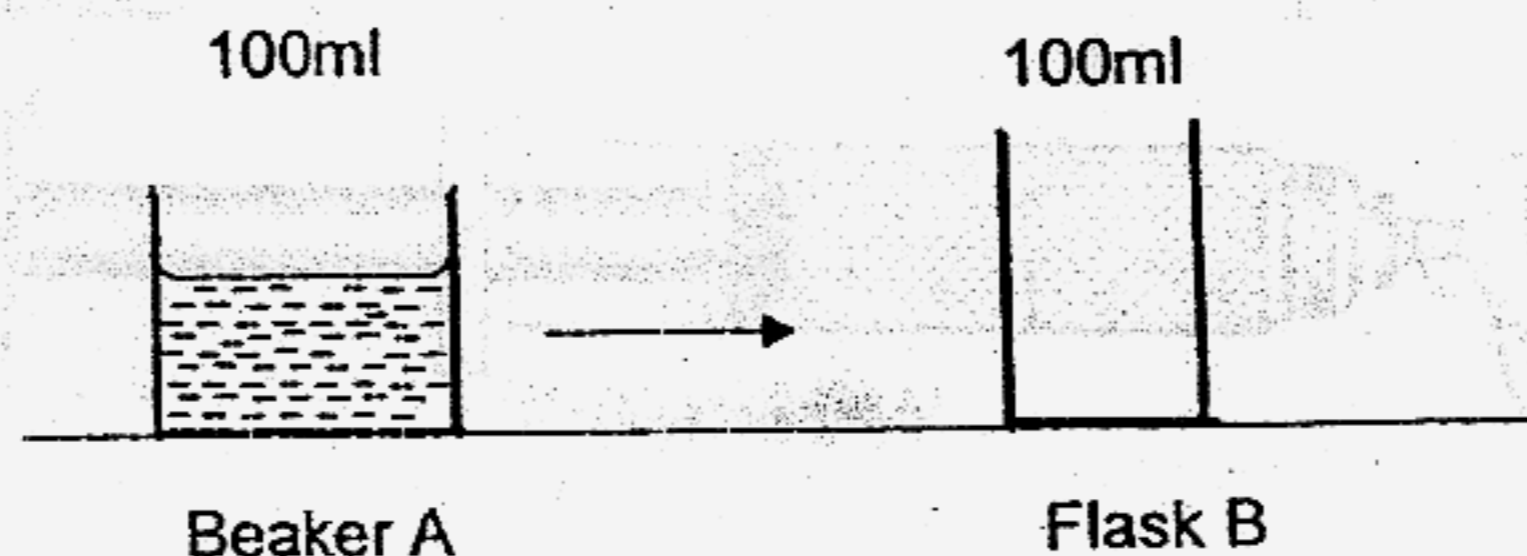
After 30 minutes, which of the following could Carmen observe?

- A: All the thermometers will have the same temperature.
- B: All the thermometers will have different temperatures.
- C: Both thermometers in the steel and aluminium containers will show the greatest drop in temperature.
- D: The thermometer in the styrofoam container will show the highest temperature.

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

( )

18. Simon filled beaker A with 100 ml of water. Then he poured all the water from beaker A into flask B. Which of the following changes would he observe in flask B?



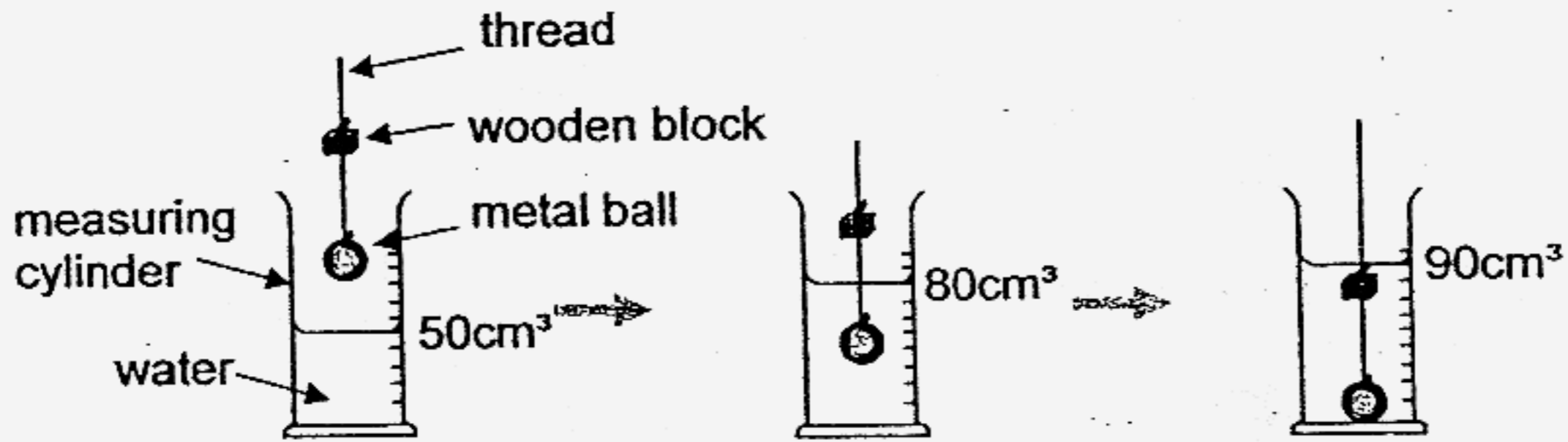
- A: Increase in height of water
- B: Increase in volume of water
- C: Increase in mass of water
- D: Change in shape of water

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

( )



19.



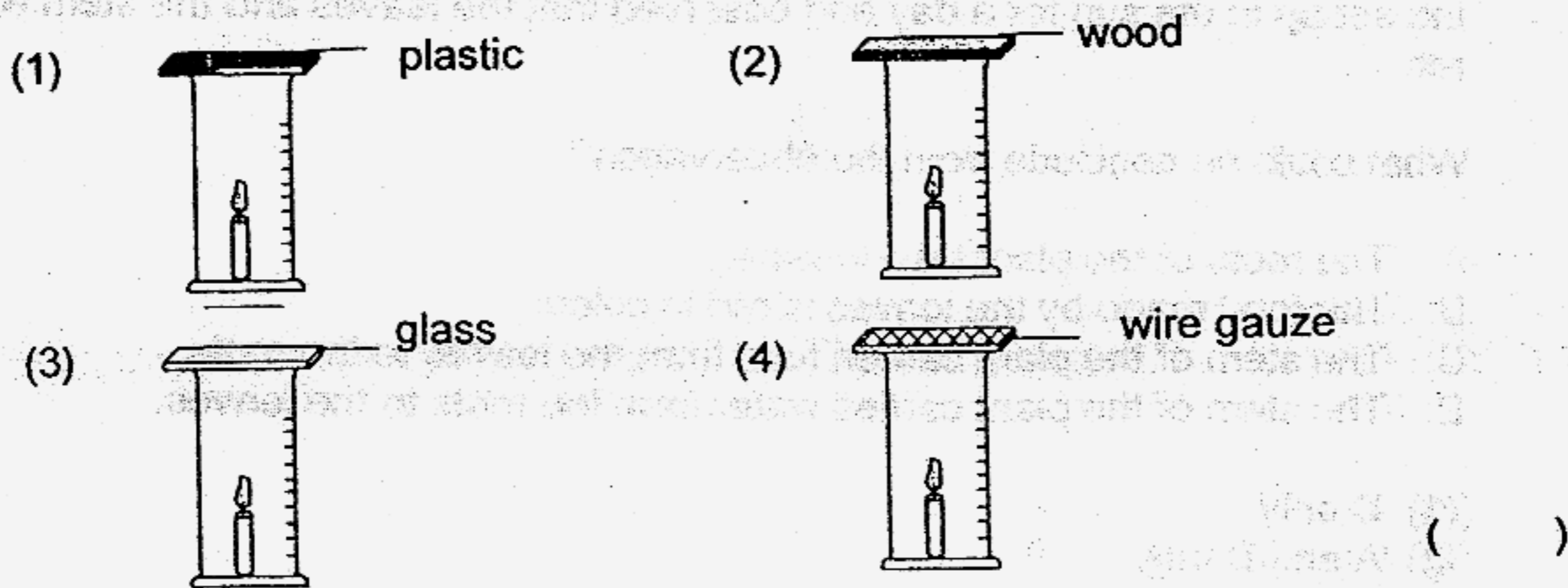
A measuring cylinder contains  $50\text{cm}^3$  of water. When a metal ball is lowered into the cylinder, the water level rises to the  $80\text{cm}^3$  mark. When the metal ball and a wooden block are lowered into the cylinder, the water level rises to the  $90\text{cm}^3$  mark.

Which one of the following sets of readings is correct?

	Volume of metal ball ( $\text{cm}^3$ )	Volume of wooden block ( $\text{cm}^3$ )
(1)	80	90
(2)	30	40
(3)	30	10
(4)	10	30

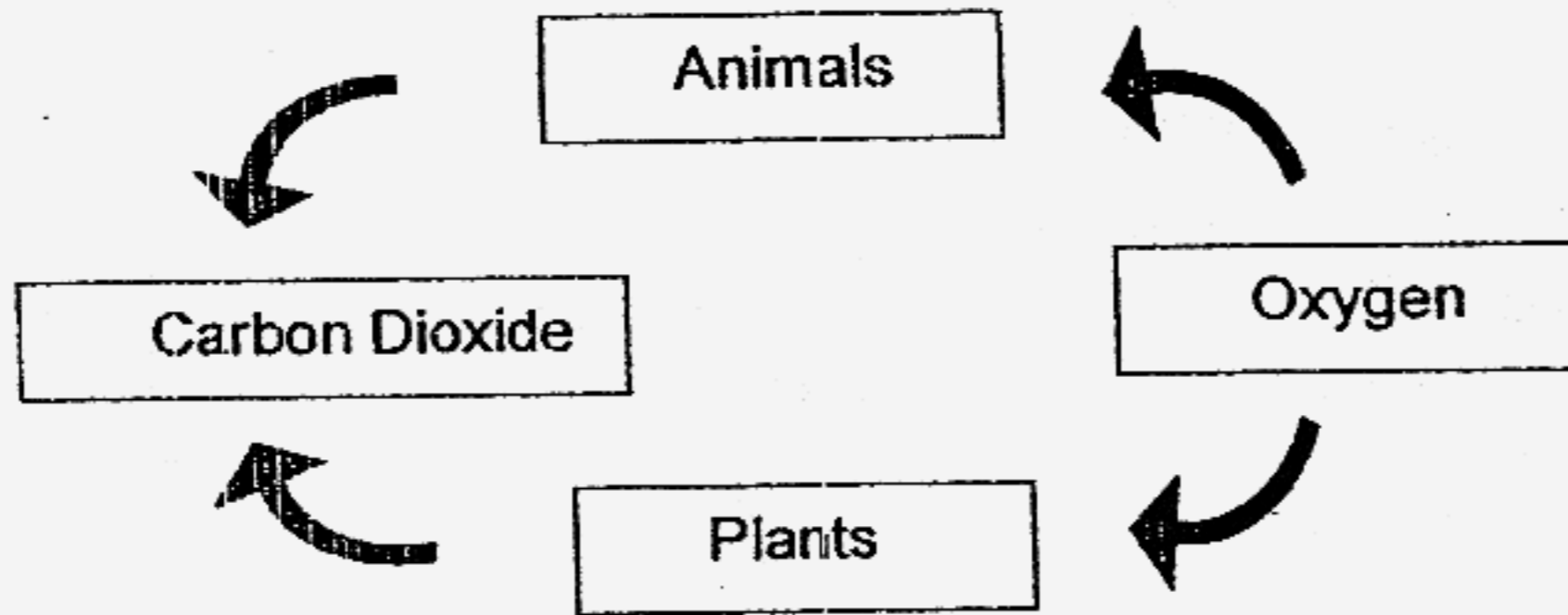
20. In the following experiment, four similar candles are placed in four glass cylinders of the same size. The candles are lit at the same time and the mouth of each cylinder is covered completely with a different material as shown.

Which one of the candles will burn for the longest time?





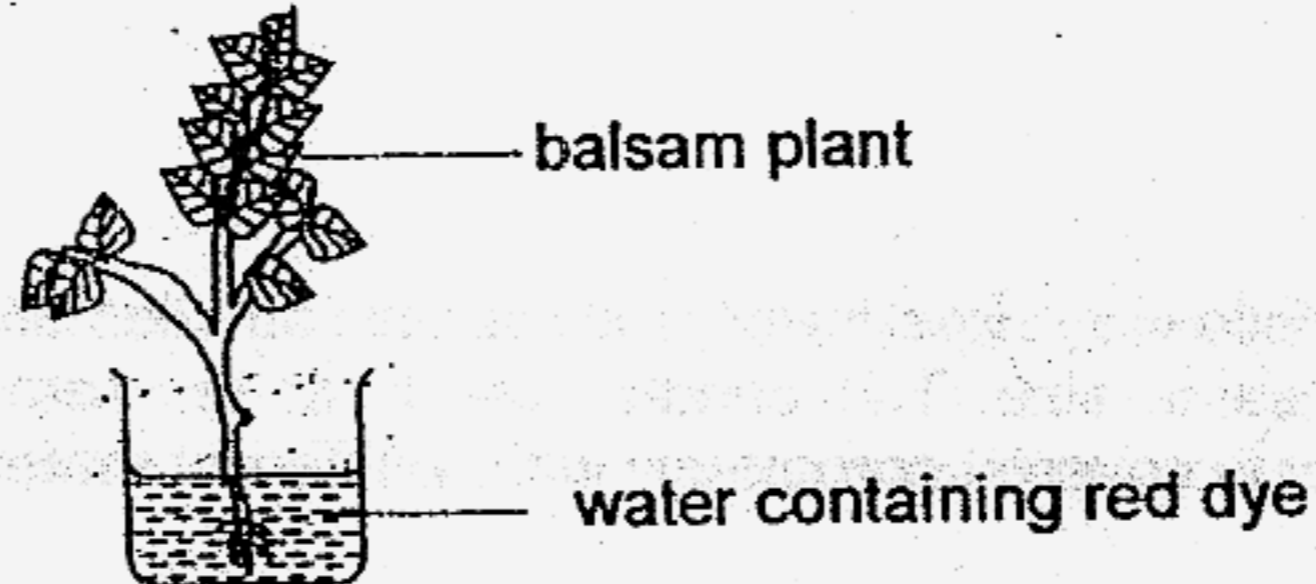
21



The diagram above shows the exchange of gases in plants and animals. What is the name of this process and when does it take place?

	Process	Time of Process
(1)	Circulation	Day and night
(2)	Respiration	At night only
(3)	Respiration	Day and night
(4)	Photosynthesis	During the day only

22.



Elmo placed a young balsam plant in a beaker of water containing red dye. He placed the set-up in the sun for a day and observed that the leaves and the stem were stained red.

What could he conclude from the observation?

- A: The roots of the plant take in water.
- B: The food made by the leaves is red in colour.
- C: The stem of the plant carries food from the leaves to the roots.
- D: The stem of the plant carries water from the roots to the leaves.

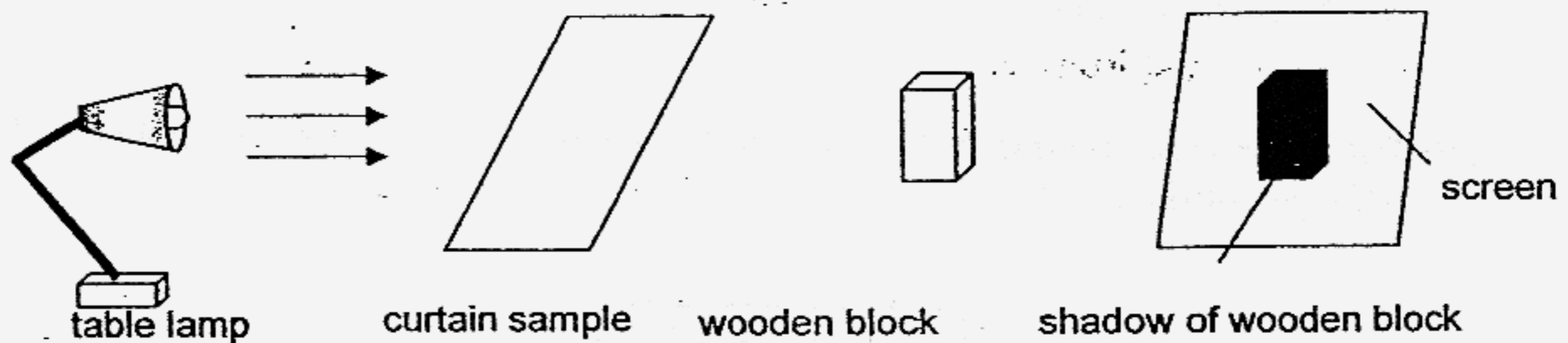
- (1) D only
- (2) A and D only
- (3) B and C only
- (4) B and D only

23. Energy exists in different forms. Which of the following is **not** a form of energy?

- (1) Heat
- (2) Light
- (3) Shadow
- (4) Electricity

( )

24.



Mrs Goh wants to make a new set of curtains for her living room to **reduce** the amount of sunlight entering the room. To ensure that her choice is accurate, she selected some samples of curtain materials to test the amount of light that passes through each of them.

She set up her test as shown above and observed the shadow formed on the screen.

Curtain sample	Shadow of wooden block
A	Dark
B	Faint
C	Darkest
D	No shadow

Based on her observations, which of the above samples should Mrs Goh use for her new set of curtains?

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

( )

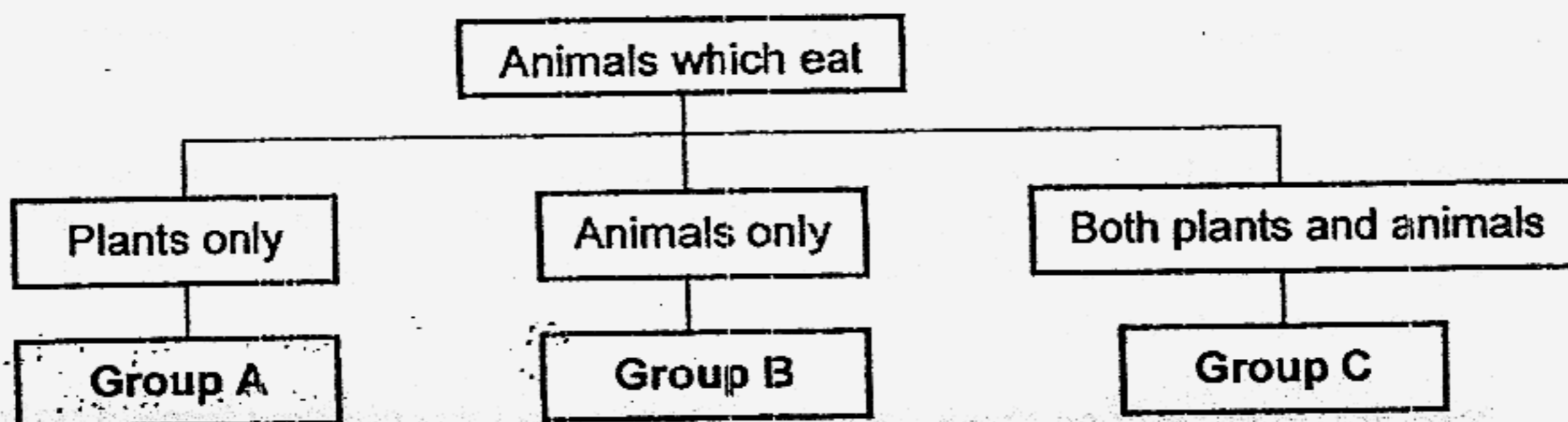
25. Which of the following conditions are necessary for a shadow to be formed?

- A: The object used must be a solid.
- B: The object used must be upright.
- C: A light source must be present.
- D: The object used must block light from passing through it.

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

( )

26. The classification table below shows three different groups of animals that feed on different kinds of food.



Which one of the following animals below belongs to Group C?

- (1) Frog
- (2) Squirrel
- (3) Chicken
- (4) Elephant

( )

27. Briana wanted to conduct an experiment to find out whether plants need water to survive. Which two of the following set-ups should she use to ensure a fair test?

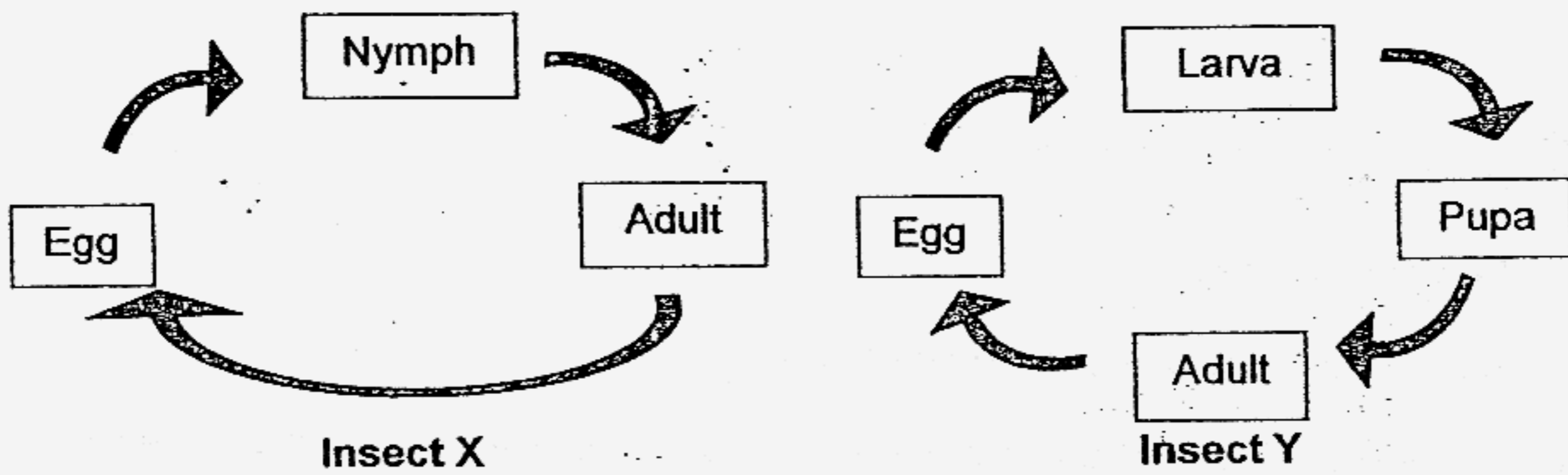
Set-up	Conditions		
A	Air	Sunlight	Water
B	Air	Sunlight	No water
C	No air	Sunlight	Water
D	Air	No sunlight	Water

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

( )



28.

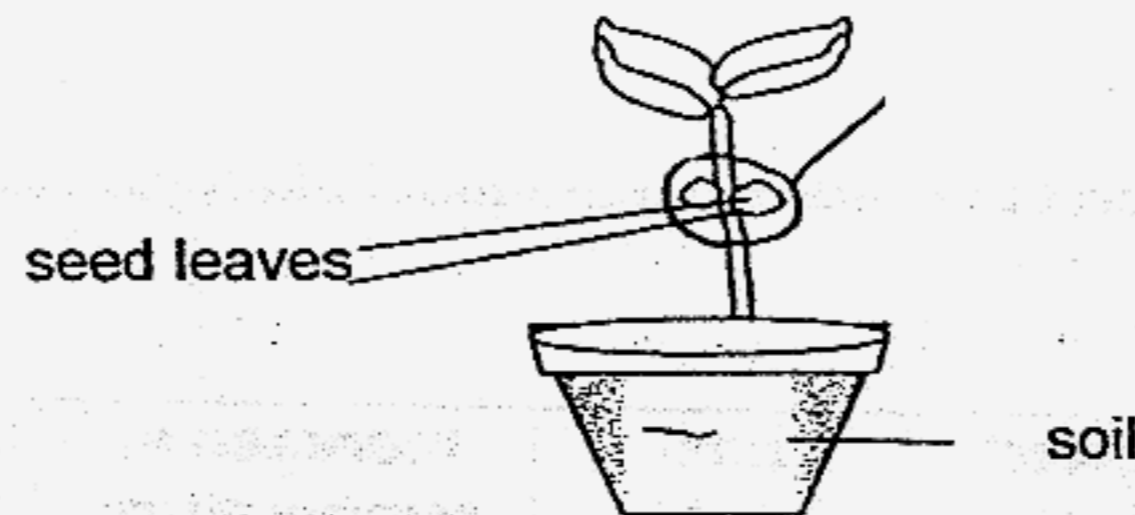


The life cycles of insect X and insect Y are shown above. Which of the following correctly represents these insects?

	Insect X	Insect Y
(1)	Cockroach	Mealworm
(2)	Grasshopper	Dragonfly
(3)	Damselfly	Cockroach
(4)	Mosquito	Ant

( )

29



What will happen to the seedling above if the seed leaves are cut off?

- (1) The seedling will bear flowers.
- (2) The leaves will no longer be able to make food.
- (3) The seedling will wilt and die as there is no source of food for it to grow.
- (4) The seedling can still grow as it has green leaves to help it make food.

( )

30. What does a seed need to grow into a young plant?

- (1) Light, water and air.
- (2) Light, warmth and air.
- (3) Water, warmth and air.
- (4) Light, warmth and water.

( )

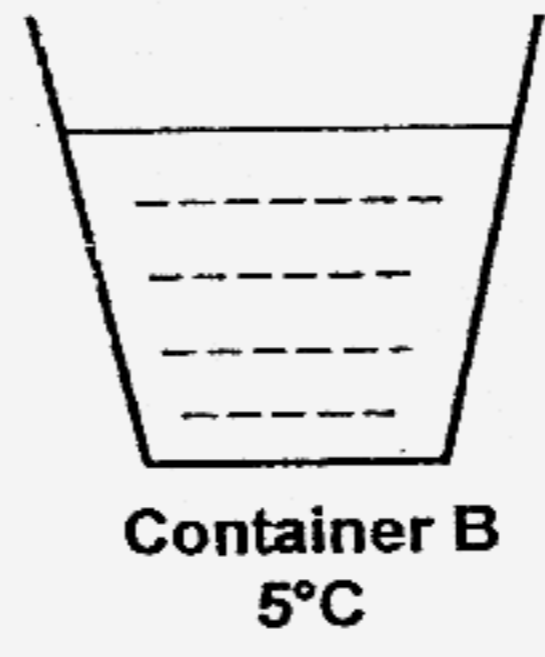
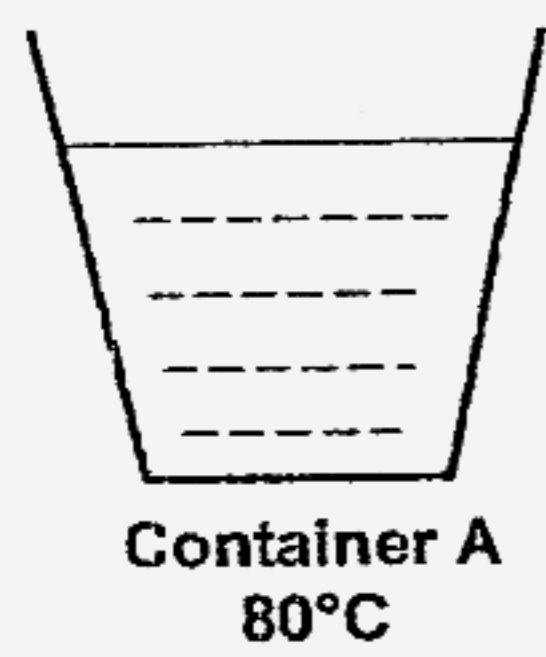
Name : \_\_\_\_\_ ( )  
 Class : Pr. 4 \_\_\_\_\_



**Section B (40 marks)**

Fill in the blanks with the appropriate answers.

31. Two identical containers with equal amounts of water were left on a table at a room temperature of 29°C.



(a) Put a tick (✓) in the correct column of the table below to show the change after an hour.

	Gained heat	Lost heat	Increase in temperature	Decrease in temperature
Water in container A				
Water in container B				

(2 m)

(b) Predict what the temperature of the water would be in containers A and B after they were left alone for a few hours.

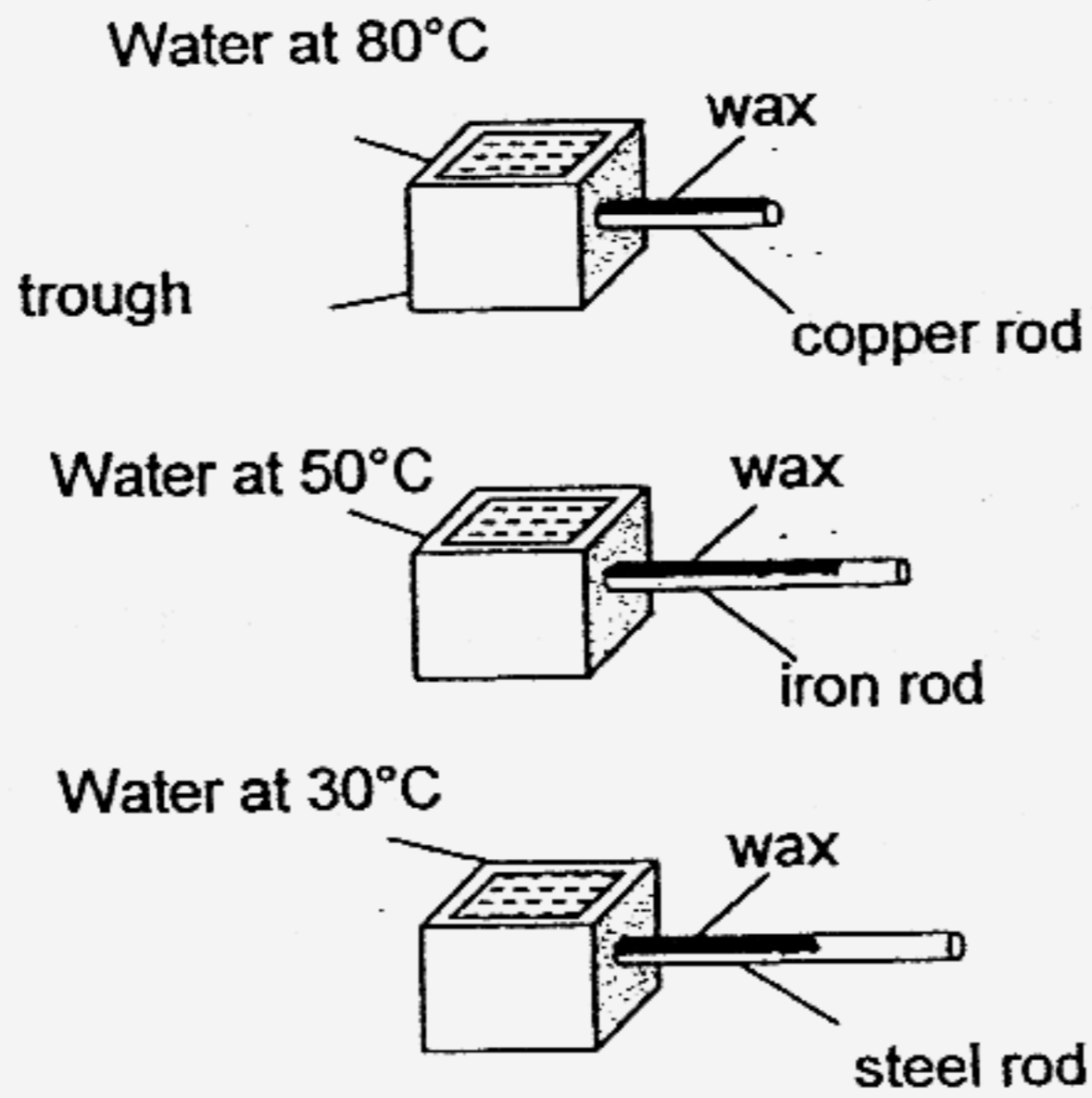
---



---

(1 m)

32. A group of pupils set up the experiment below to find out which type of metal rod is the best conductor of heat.



Suggest two ways of making the above experiment a fair test.

(i)

---

(ii)

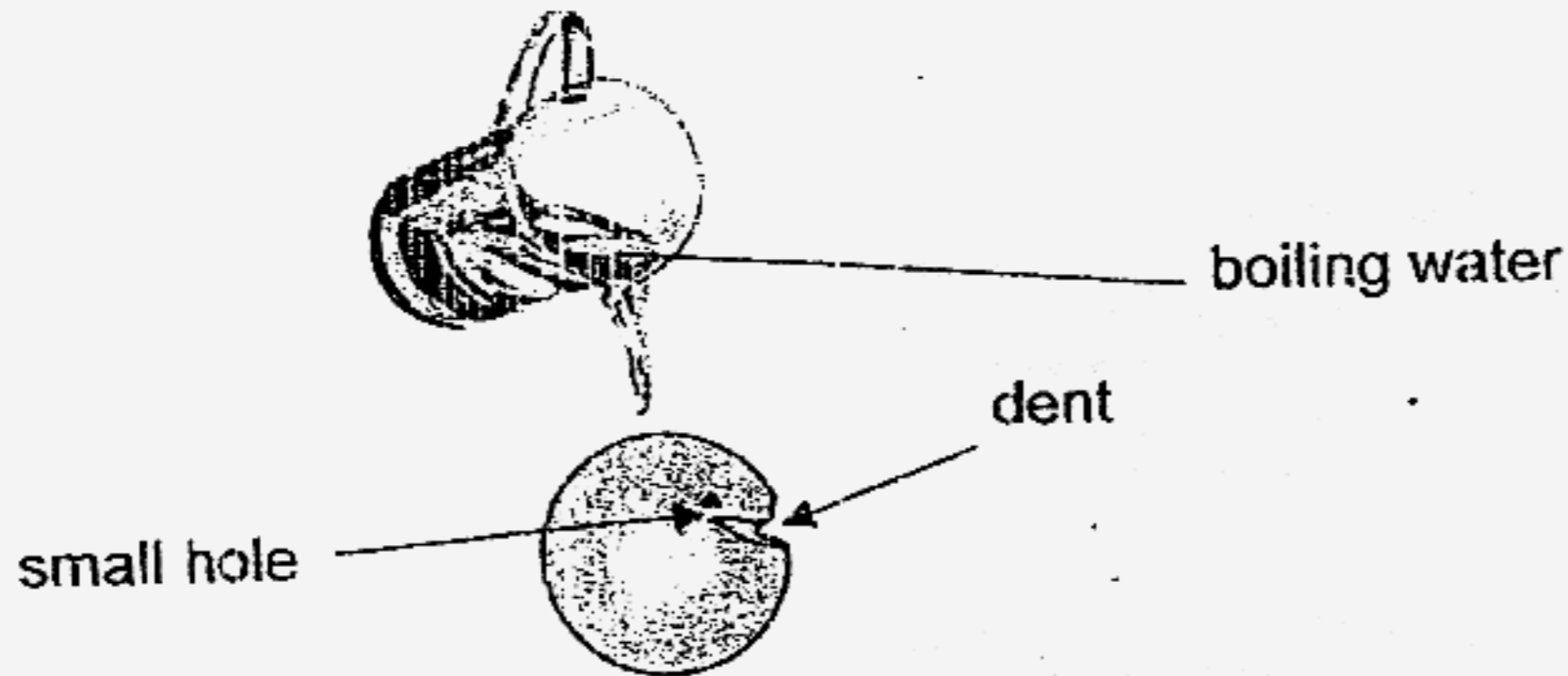
---

(2 m)



~~boiling water~~

33. Ricky was told that hot water would help a dented ping pong ball retain its shape. He decided to pour some boiling water onto it.



- (a) Explain how this action would help inflate the dented ping pong ball.

---

---

(2 m)

After pouring the boiling water, Ricky found that the ping pong ball remained slightly dented. He also noticed a small hole near the dent.

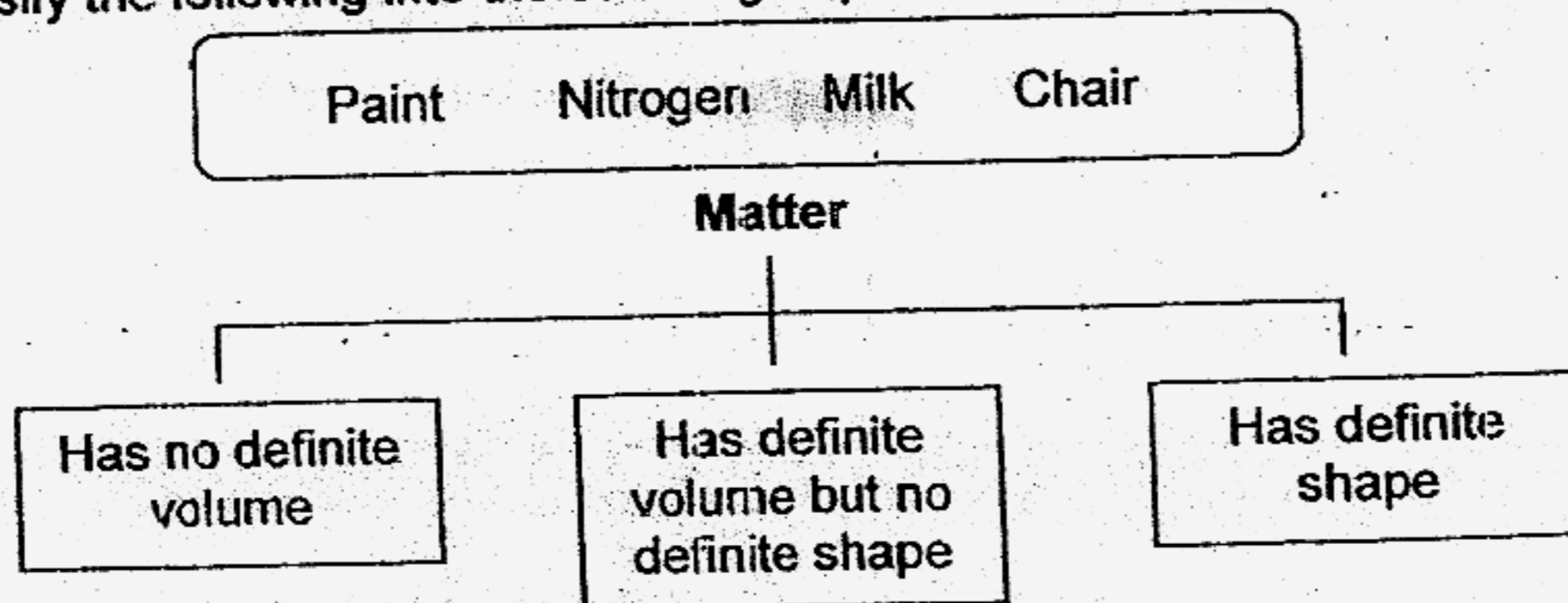
- (b) Why was his action unsuccessful?

---

---

(1 m)

34. Classify the following into the correct groups.

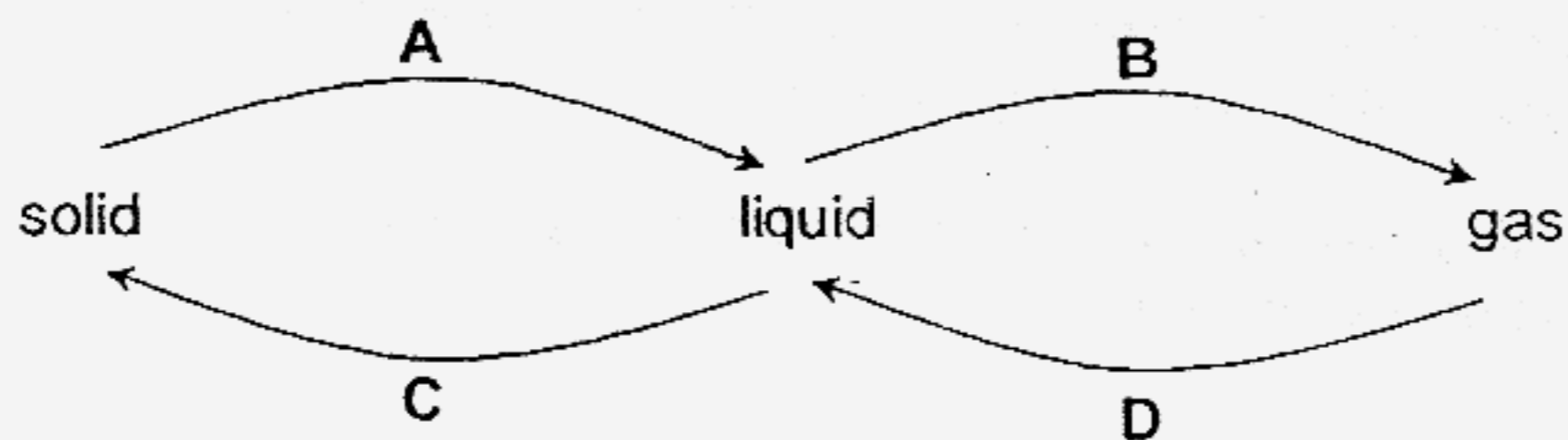


---

---

(2 m)

35. The following diagram shows the processes in which water changes state. Fill in the blanks with the **processes** that take place at A, B, C and D.



- A: \_\_\_\_\_  
 B: \_\_\_\_\_  
 C: \_\_\_\_\_  
 D: \_\_\_\_\_

(2 m)

36



Sally needed the help of a mirror to tie her hair. She then noticed that there were also hairs in her nose. She went closer to observe the inside of her nose and realised that the mirror became "blurred."

- (a) <sup>Why</sup> What are there hairs in Sally's nose?

\_\_\_\_\_

\_\_\_\_\_

(1 m)

- (b) Why did the mirror become "blurred" when Sally went closer to it?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

(2 m)

37. Write 'T' for True and 'F' for False in the boxes provided. (4 m)

(a) Air sacs can be found in fishes and plants.

(b) Carbon dioxide is needed by plants during photosynthesis.

(c) Carbon dioxide from the blood goes into the air tubes of the lungs and out of the body through the nose.

(d) The nose, windpipe, lungs and diaphragm make up the human respiratory system.

38. Name a similarity and a difference between the process of boiling and evaporation.

(a) Similarity :

---



---

(b) Difference:

---



---

(2 m)

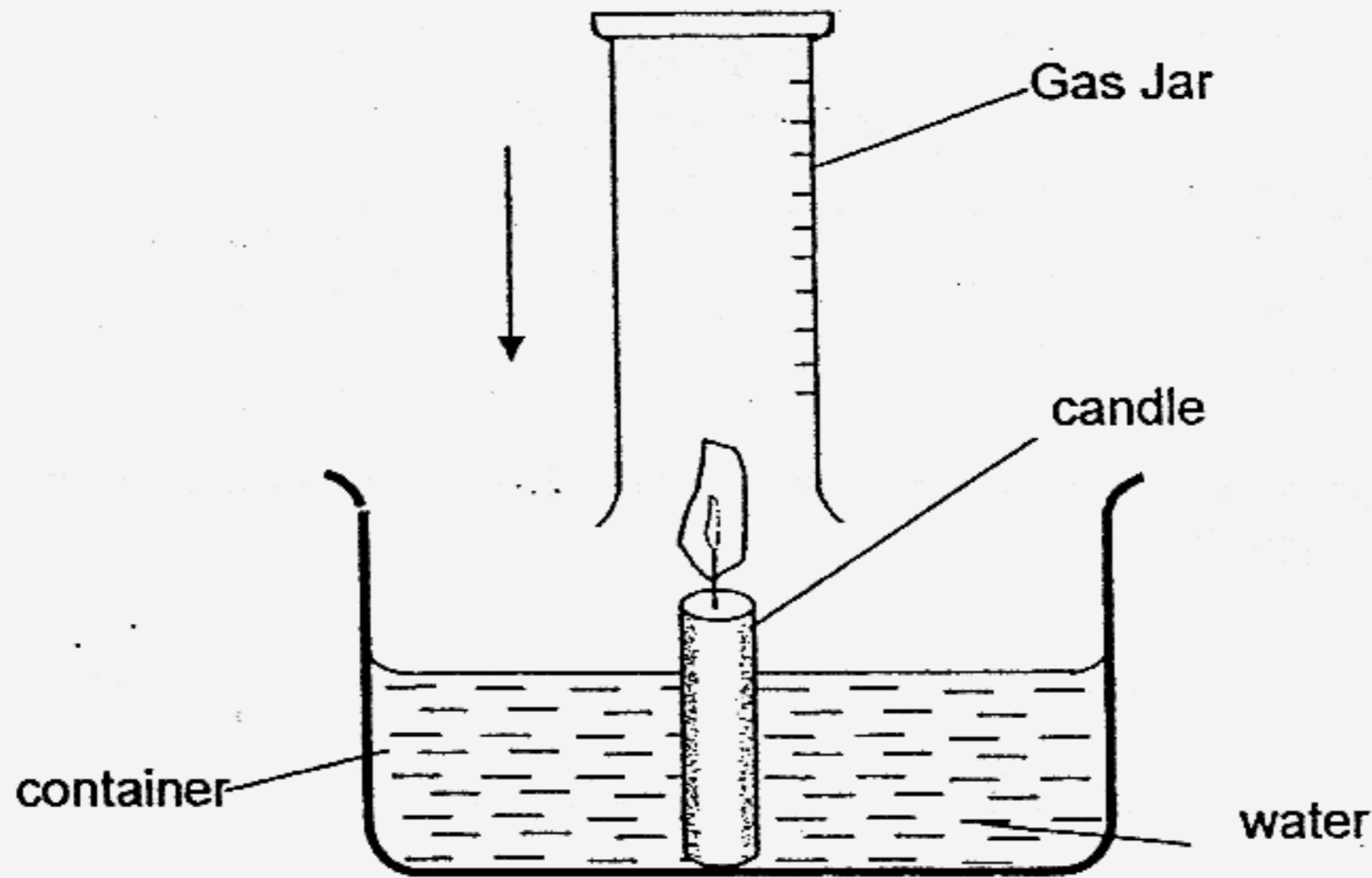
39. Study the table below carefully. Complete (a), (b), (c) and (d) with suitable words. Some have been done for you.

Source of Energy	Object / Living Thing	Forms of Energy
petrol	car	movement, sound, heat
(a)	torchlight	(d)
(b)	human being	movement, sound, heat
(c)	television	light, sound, heat

(2 m)



40. Joycelyn sets up an experiment as shown below.



(a) State two observations that Joycelyn will make as she covers the lit candle with the gas jar?

i) \_\_\_\_\_

ii) \_\_\_\_\_ (2 m)

(b) Give reasons for the two observations stated in (a) above.

i) \_\_\_\_\_

ii) \_\_\_\_\_ (2 m)

41. Draw lines to match the following correctly. (2m)

Blood                      Q

Q is a muscular organ between the lungs which pumps blood to all parts of the body.

Blood vessels            Q

Q includes the heart, blood and blood vessels.

Heart                      Q

Q are mainly made up of three types

Circulatory System    Q

Q is made up of red blood cells, white blood cells and platelets.

42. The table below shows the heart rate of Pek Yan when <sup>he</sup> she is in different positions.

Positions	Heart rate (beats per minute)
Lying down	68
Sitting	71
Standing	71
Squatting	71

- (a) From the table, what can you conclude about Pek Yan's positions in relation to his heart rates?

---



---

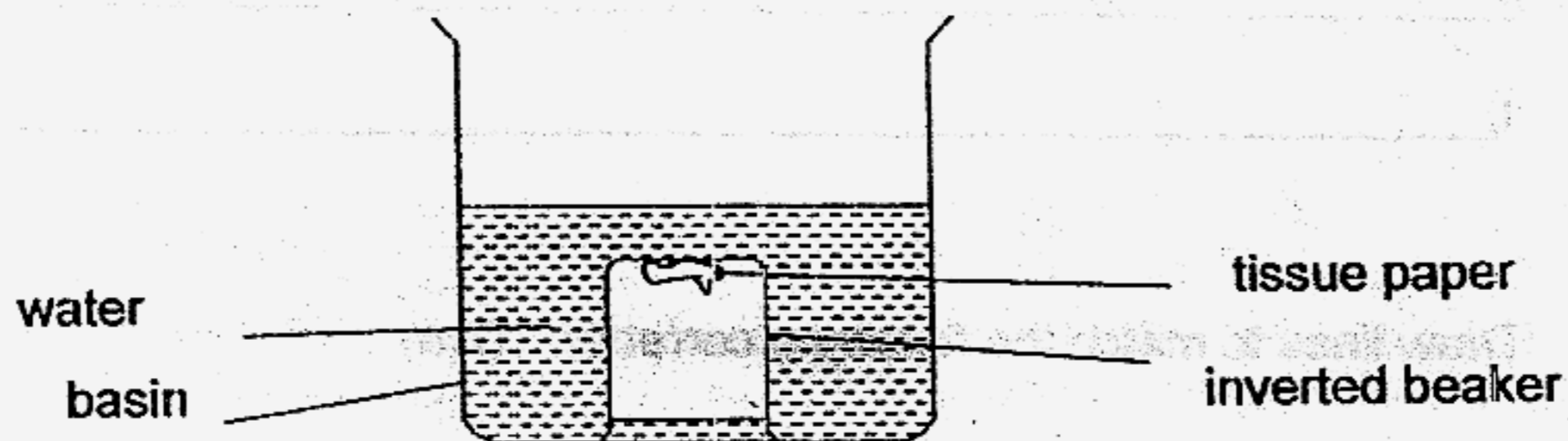
(1 m)

- (b) If his heart rate at rest is 71 beats per minute, how would his heart rate change after he has jogged for a minute?

---

(1 m)

43. Ryan placed a piece of tissue paper at the bottom of a beaker which was then inverted and immersed in a basin of water. He found that the tissue paper remained dry.



Explain why the tissue paper was dry.

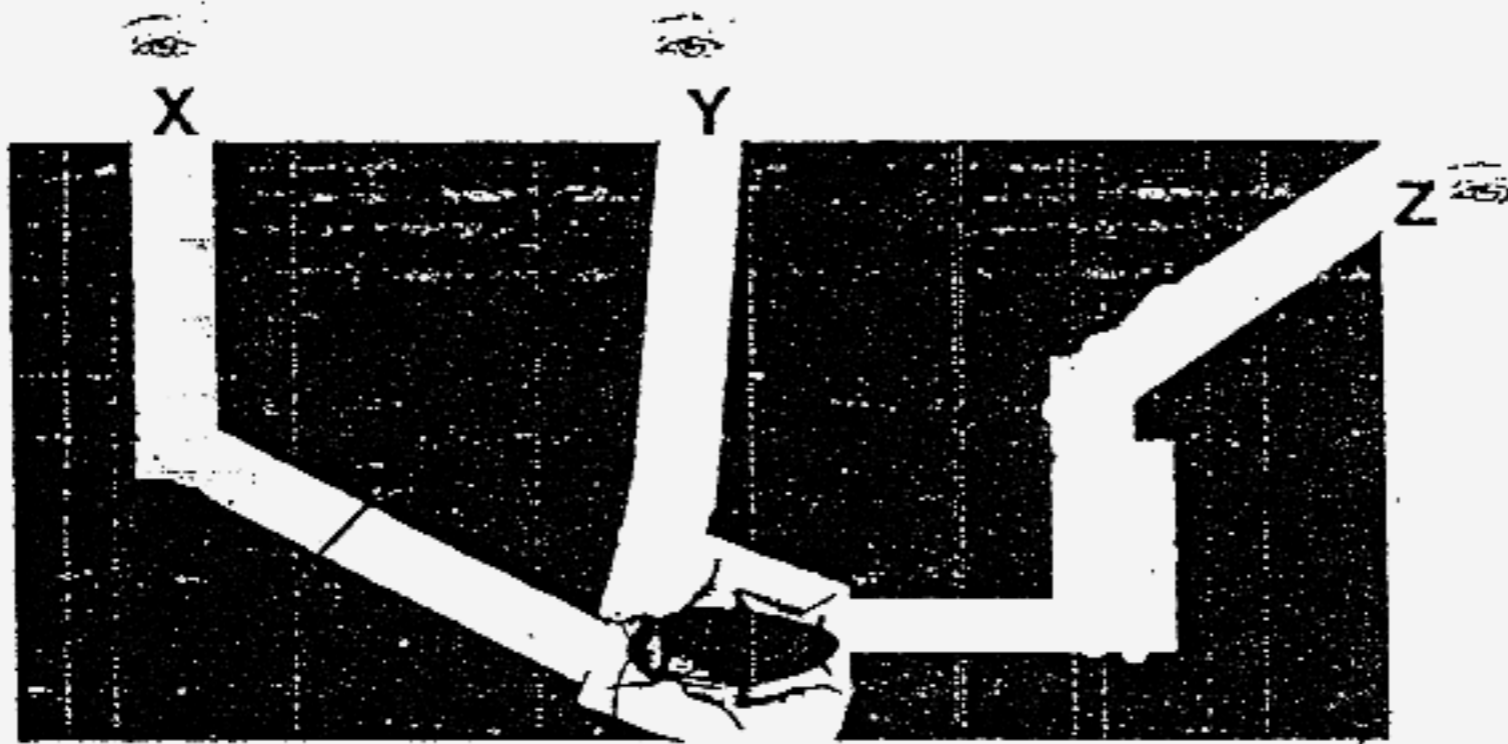
---



---

(2 m)

44. A cockroach is placed in a box with three openings X, Y and Z as shown below.



(a) Which opening(s) can the cockroach be seen directly?

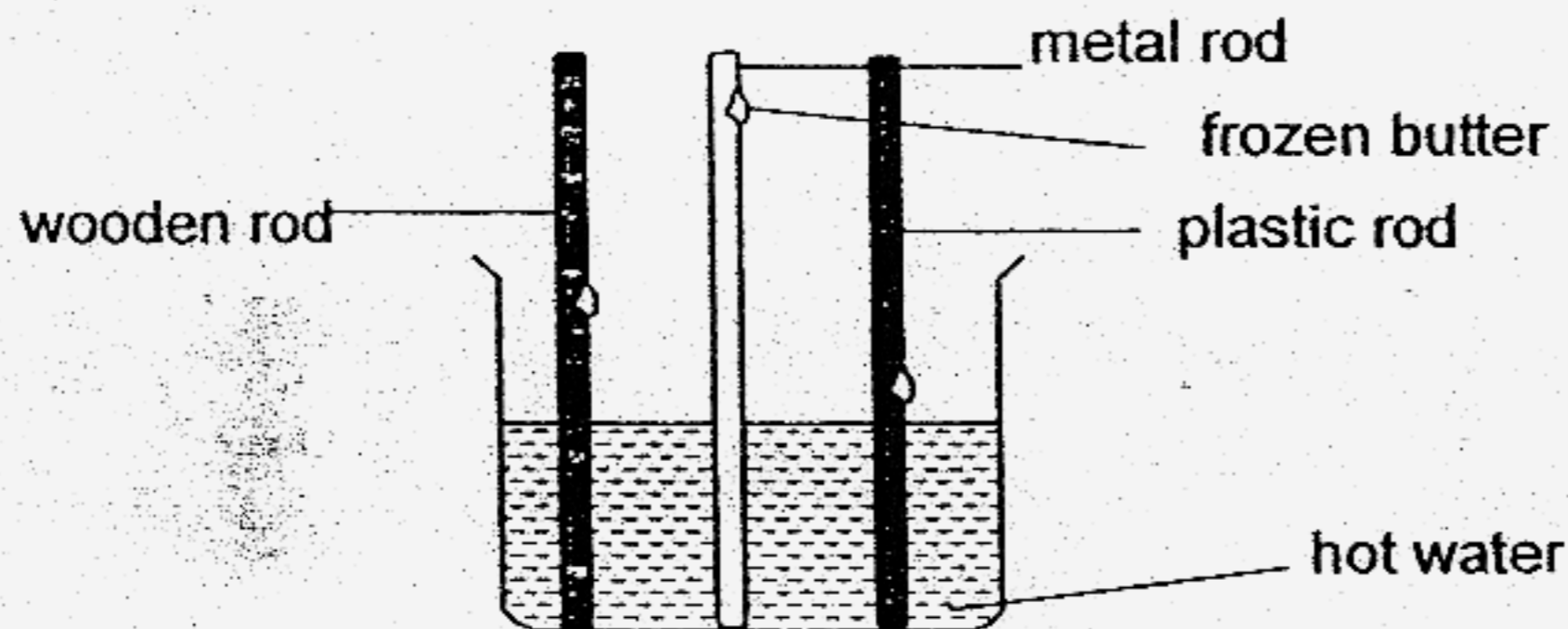
\_\_\_\_\_ (1 m)

(b) What property of light does this experiment show?

\_\_\_\_\_ (1 m)

(c) Draw three mirrors in the diagram above that would allow the cockroach to be seen from the openings not mentioned in (a). (2 m)

45. Victor decides to conduct an experiment to find out which rod is the best conductor of heat.



(a) Suggest one variable that Victor must change to ensure that the experiment is fair. (1m)

\_\_\_\_\_

(b) If the experiment was a fair one, the frozen butter on which rod will melt first? What can Victor conclude from this? (2m)

\_\_\_\_\_

\_\_\_\_\_

1. 3      31) a) A: Lost heat, Decrease in temperature  
 2. 2           B: gained heat, Increase in temperature  
 3. 2           b) Both of the temperature will be 29°C  
 4. 3           after they were left alone for a few hours.  
 5. 3  
 6. 4      32) i) The temperature of water should be the same.  
 7. 2           ii) Length of rod/Amount (volume) of wax/  
 8. 2           water temperature/ Distance of wax from  
 9. 2           the trough must be the same.  
 10. 4  
 11. 3      33) a) The boiling water would heat up the air  
 12. 3           inside the ping pong ball. The expanded  
 13. 4           air would expand and push out the dent to  
 14. 3           its original shape.  
 15. 3           b) The expanded air escaped through the tiny  
 16. 4           hole and is not able to push out the dent.  
 17. 4  
 18. 2      34) Nitrogen      Milk      Chair  
 19. 3                paint  
 20. 4  
 21. 3      35) A: melting      B: evaporation  
 22. 2           C: Freezing      D: condensation  
 23. 3  
 24. 2      36) a) The purpose of the hair is to trap the dust  
 25. 1           in the air she inhaled.  
 26. 3           b) Sally breathed out water vapour which was  
 27. 1           of higher body temperature onto a cooler  
 28. 1           surface of the mirror. The water vapour  
 29. 4           condensed and form tiny water droplets on  
 30. 3           the mirror.
- 37) a) F    b) T    c) T    d) T
- 38) a) Both processes involve the change of  
 Liquid to gas.  
 b) Water boils at 100°C but evaporation  
 takes all the time.



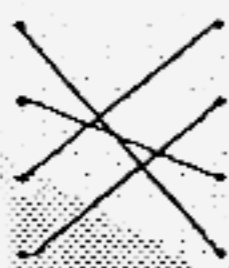
39) a) battery    b) food    c) electricity    d) heat

40) a) i) The flame of the candle will go out in seconds.  
ii) The water level will rise.

b) i) As fire needs oxygen for burning, the fire will not have enough oxygen to burn.

ii) Oxygen in the glass jar is used up.

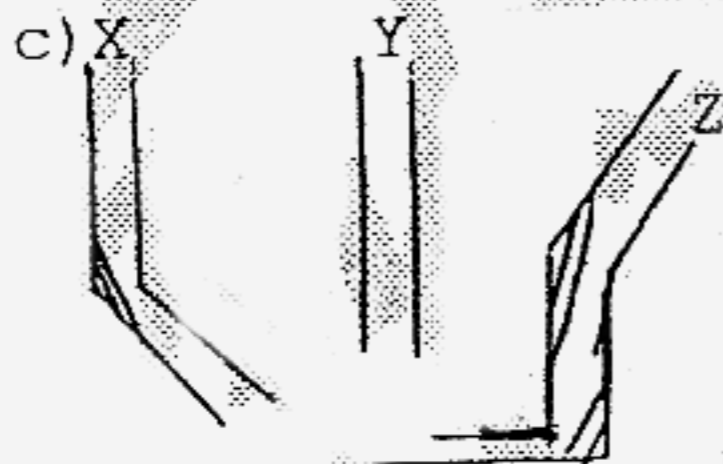
41)



42) a) His heart rate is the lowest when lying down.  
b) It would increase.

43) As air occupies space, the air in the inverted beaker will take up space in the beaker not allowing water to touch the tissue paper.

44) a) Opening Y can see the cockroach directly.  
b) Light travels in a straight line.



45) a) He must ensure that the distance/the height of the butter from the water is same.

b) The frozen butter on the metal rod will melt first. Metal is the best conductor of heat out of wood, metal and plastic.