NANYANG PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2007

PRIMARY 6

SCIENCE

BOOKLET A

30 questions

60 marks

Duration : 1 h 45 mins

Name : _____ ( )

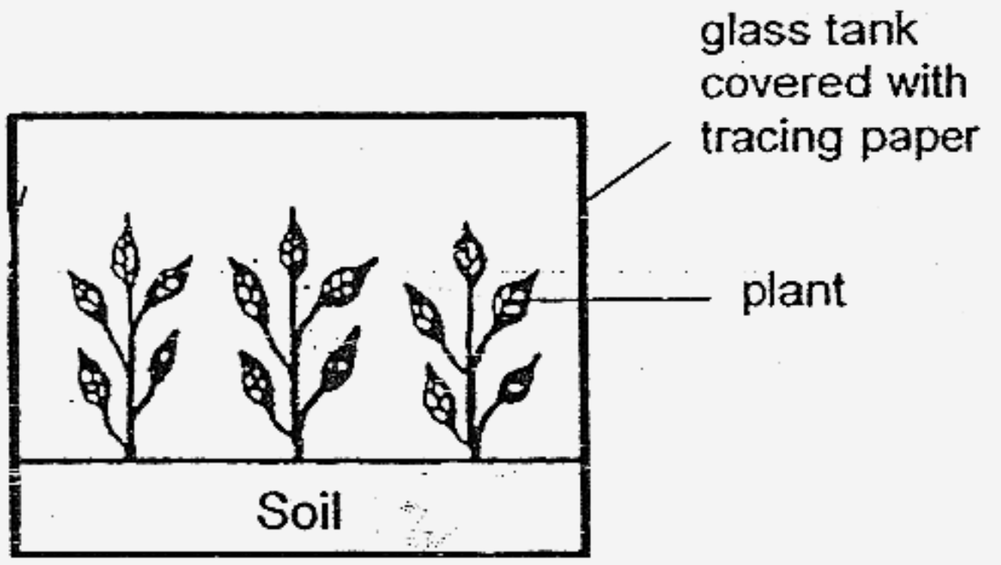
Class : Primary 6 ( )

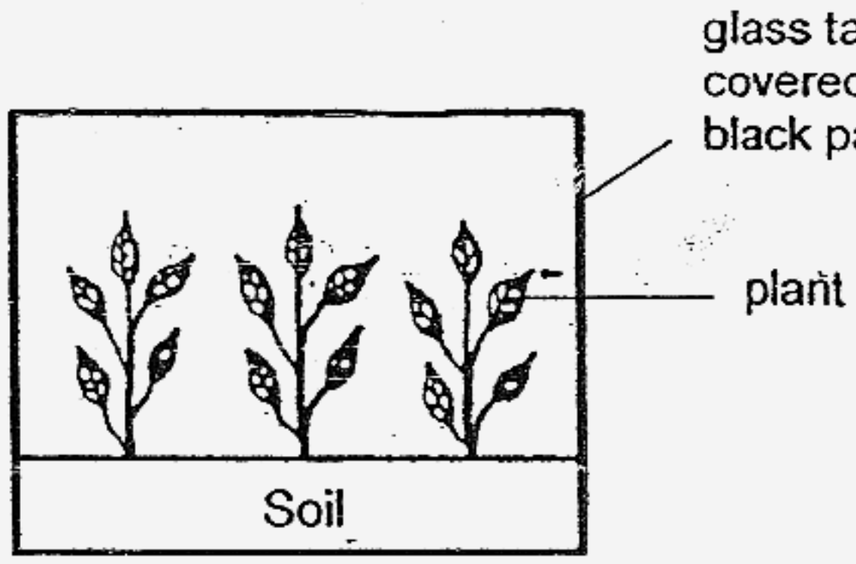
Parent's Signature : _____

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

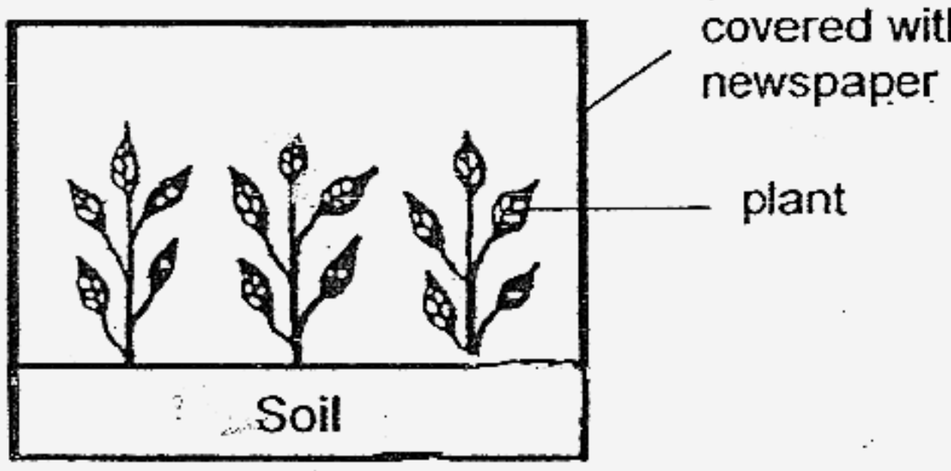
1. Joshua used the two setups below to investigate how the amount of light affects the growth of a type of plant. He wrapped one of the glass tanks with tracing paper and the other with black paper and placed them together in a classroom.





Which one of the following setups should he use as a control for his experiment?

(1)



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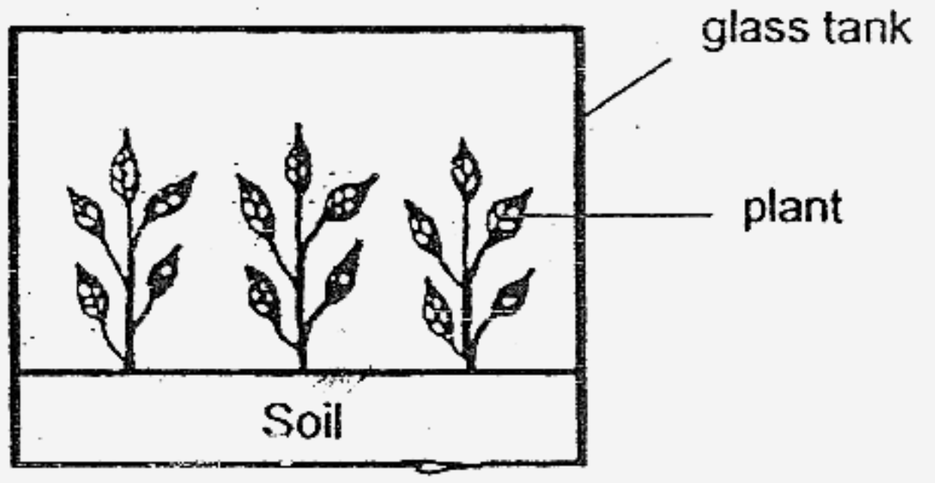

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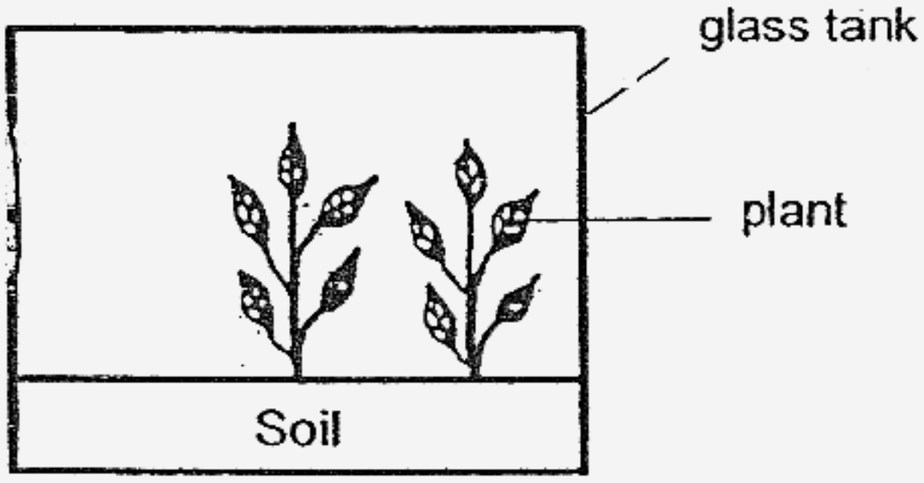

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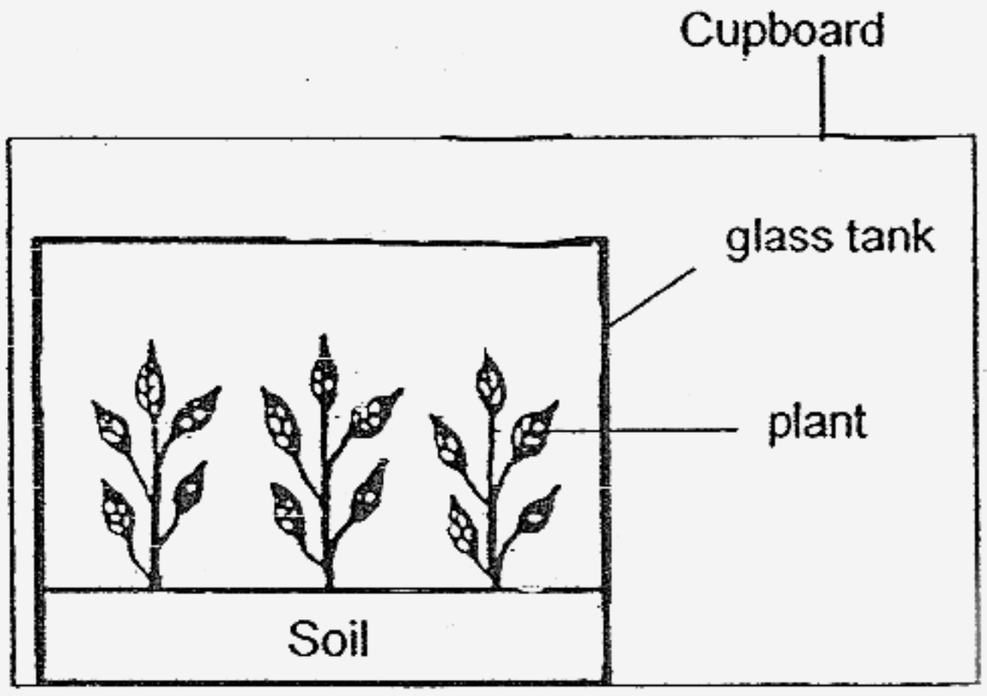


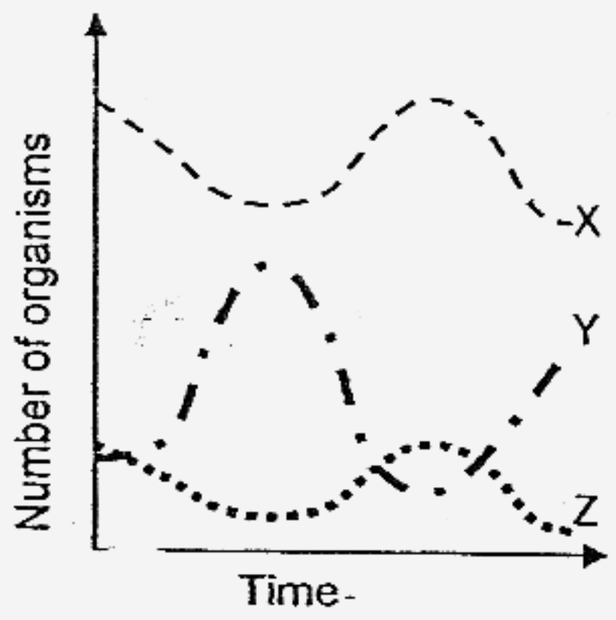
2. Melissa carries out an experiment to find out how temperature affects the growth of balsam plants.

Which of the following variables should she keep the **same** to make the experiment a fair test?

A Size of pot
B Type of soil
C Amount of soil
D Location where the pot is placed

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

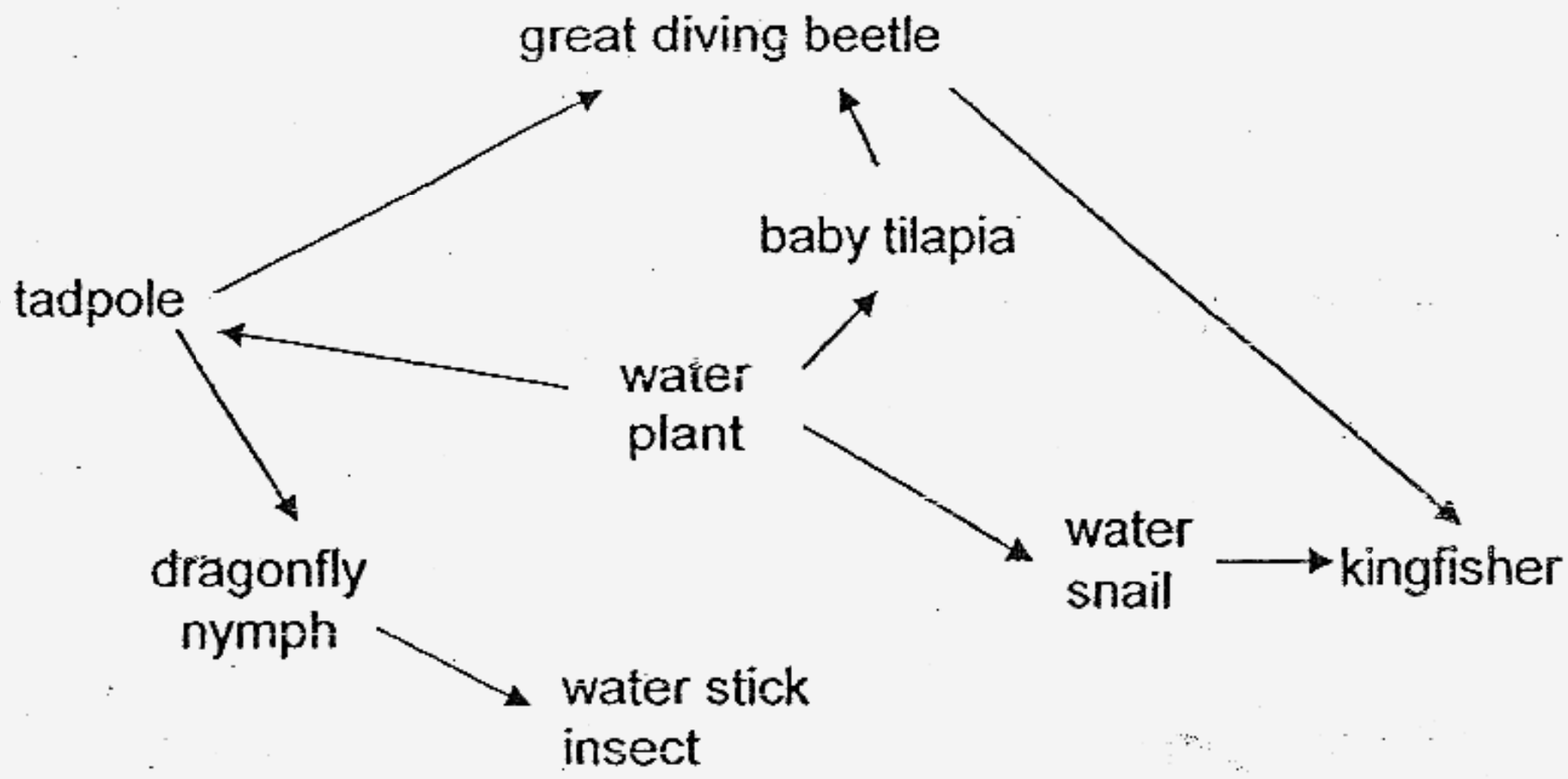
3. The graph below shows organisms X, Y and Z interacting with one another in the same community over a period of time.



Which one of the following food chains shows the relationship of organisms X, Y and Z?

(1) $X \rightarrow Y \rightarrow Z$
(2) $X \rightarrow Z \rightarrow Y$
(3) $Y \rightarrow X \rightarrow Z$
(4) $Z \rightarrow Y \rightarrow X$

The food web below shows the food relationship among several organisms in a pond community. Use the food web to answer questions 4 and 5.



4. How many food chains are there in the above food web?

(1) 7 (2) 6

(3) 5 (4) 4

5. Which of these organisms are both a prey and a predator?

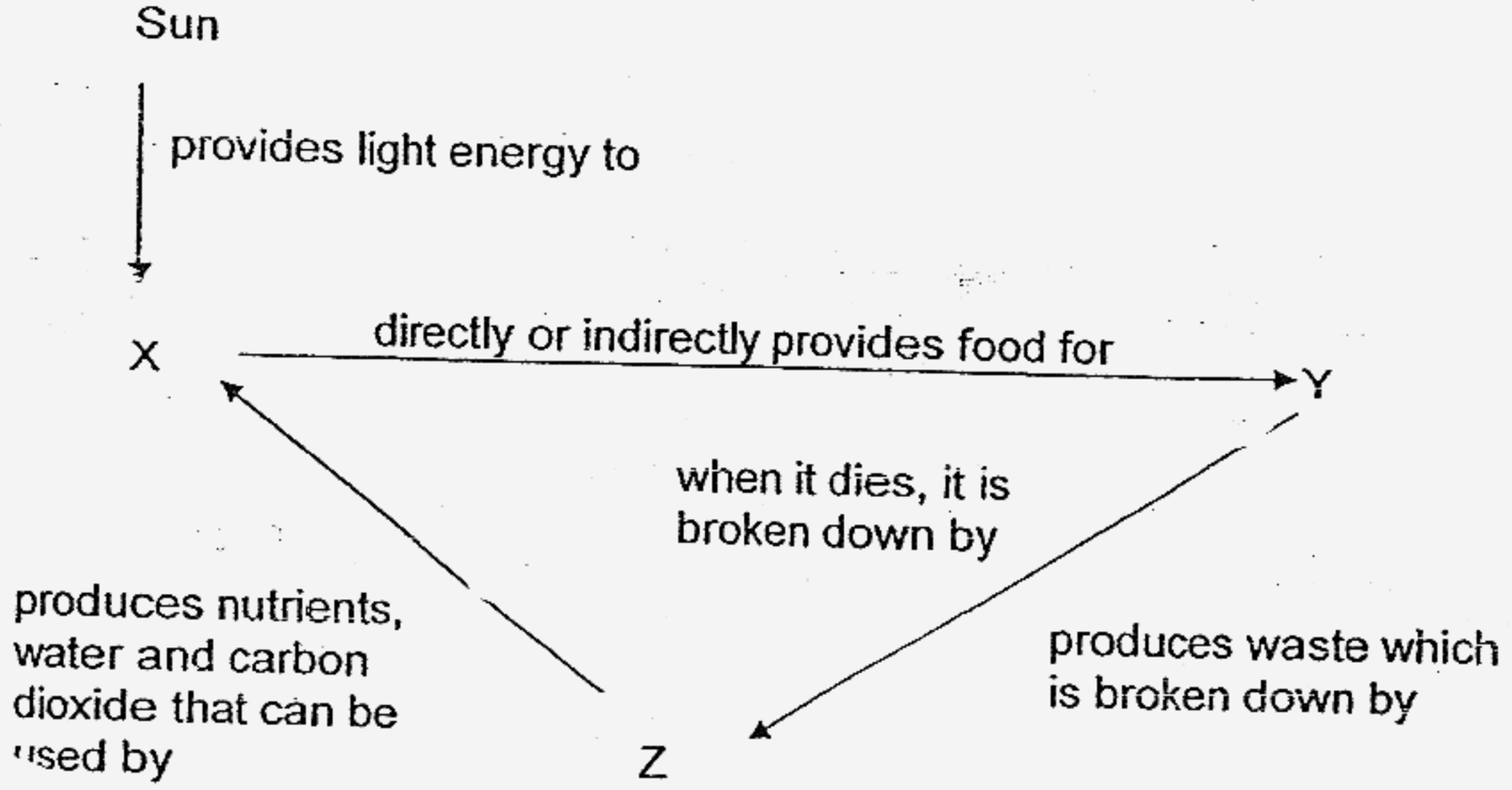
(1) tadpole and baby tilapia only

(2) dragonfly nymph and great diving beetle only

(3) water snail, dragonfly nymph and great diving beetle only

(4) kingfisher, water stick insect, dragonfly nymph and great diving beetle only

6. The following diagram shows how the energy from the Sun is transferred to organisms X, Y and Z.

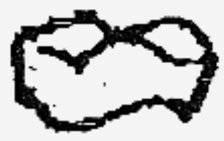


Which of the following correctly represent X, Y and Z?

	X	Y	Z
(1)	Goat	Woodlouse	Grass
(2)	Seaweed	Earthworm	Cat
(3)	Grass	Ox	Mushroom
(4)	Bacteria	Rice	Wolf

7. The teeth in the jawbone can determine the diet of an animal. Canines are found in carnivores while molars are found in herbivores. The diagram below shows a canine and a molar.

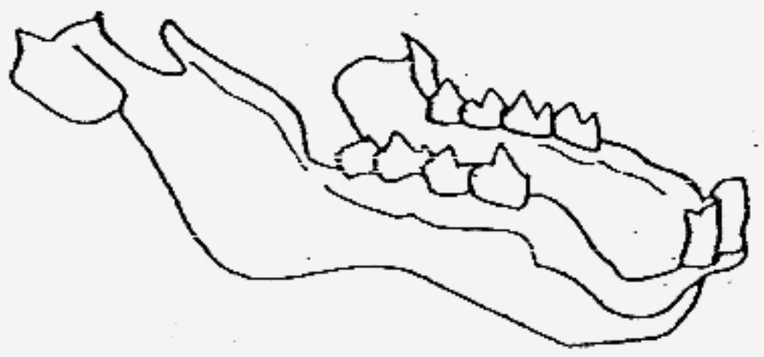
Canine



Molar

The arrangement of teeth on the upper and lower jaws is the same. Which one of the following jaw bones is most likely that of an omnivore?

(1)



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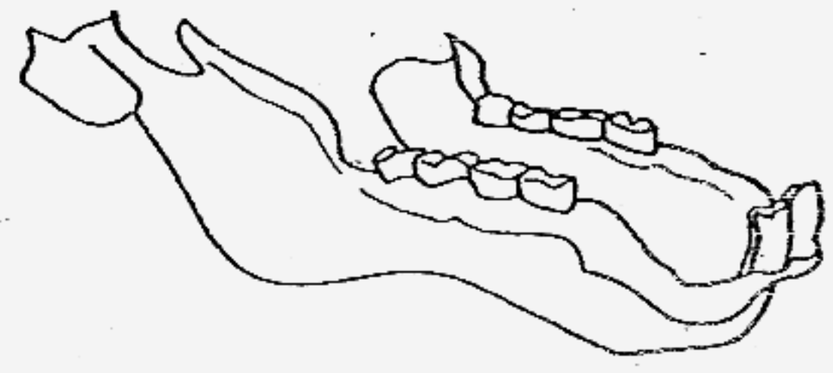

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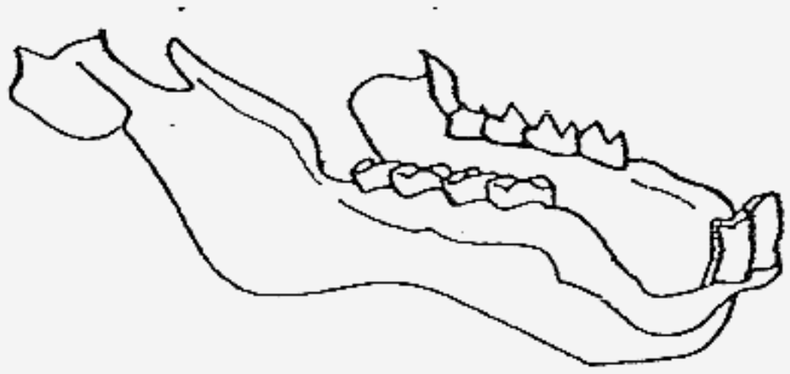

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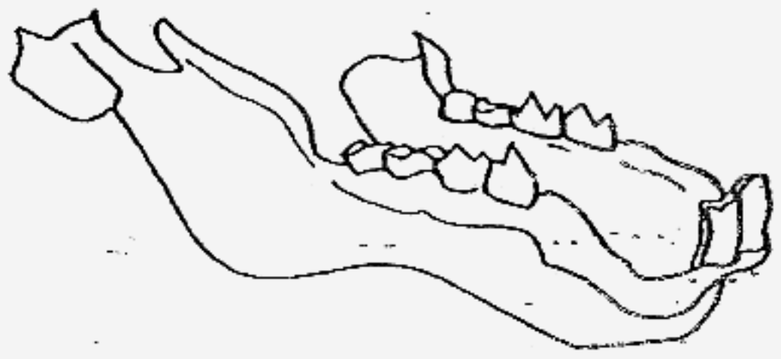
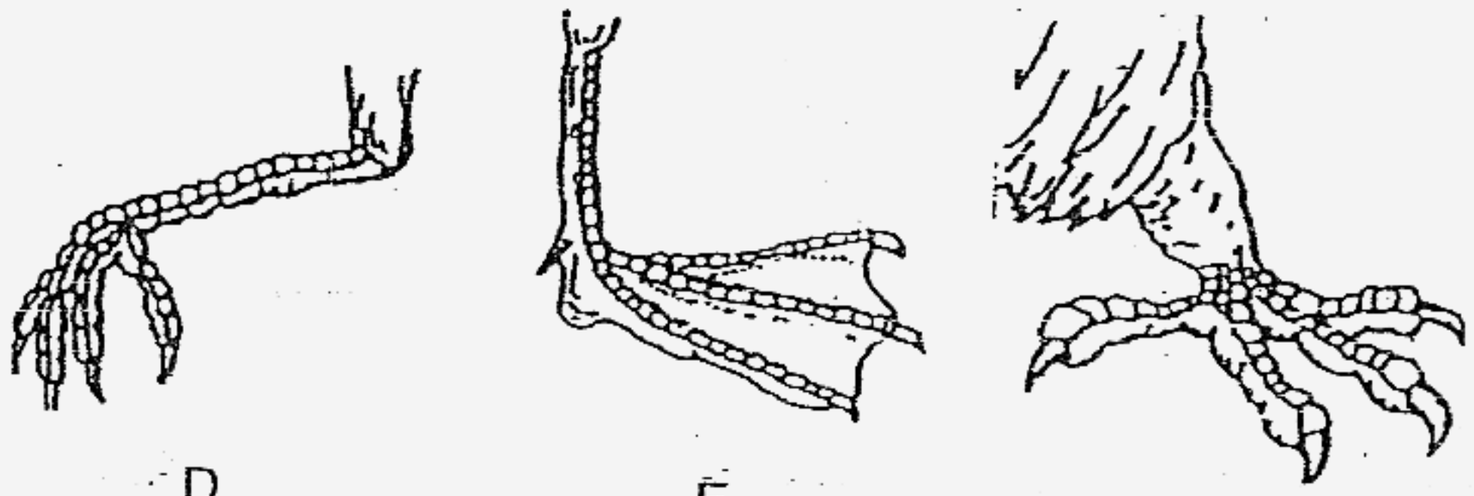


8. The diagram below shows the different types of beaks and feet that birds have to help them survive in different environments.

A B C

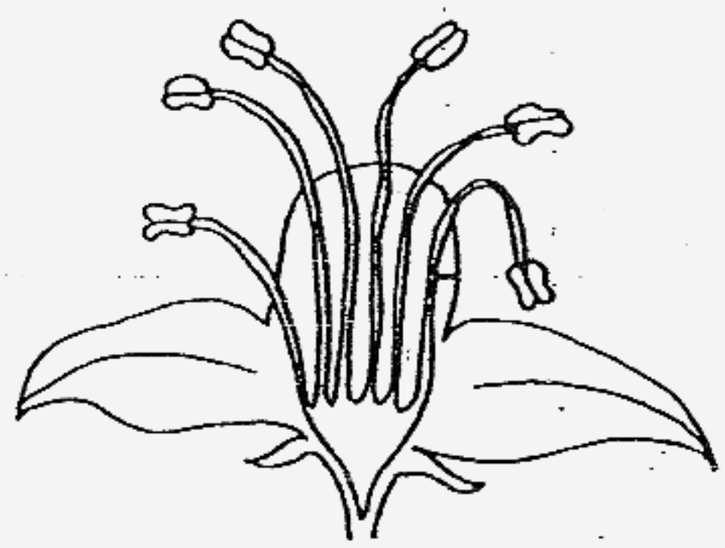


D E F

Which one of the following beaks and feet belongs to a bird that can swim in water and feed on fish?

	Beak	Foot
(1)	A	D
(2)	B	F
(3)	C	F
(4)	A	E

9. The diagram below shows a male flower. The flower has small petals, long filaments and stamens that are sticking out of the flower.



How is the above flower most likely pollinated?

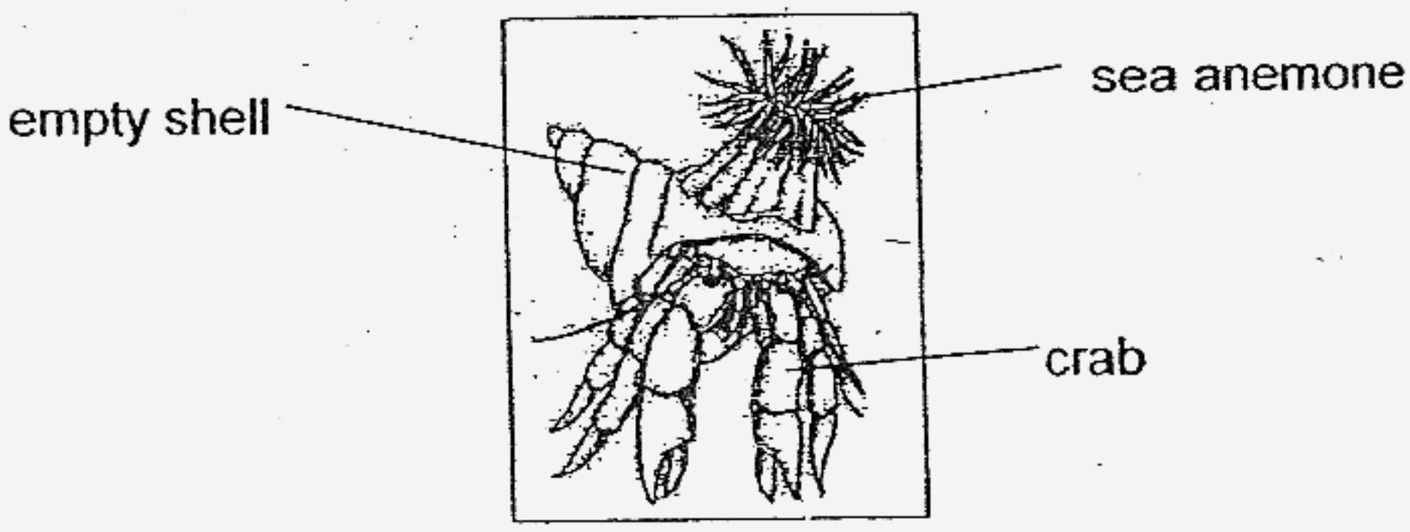
(1) By wind

(2) By water

(3) By animal

(4) By explosive action

10. A hermit crab pushes itself into an empty shell for protection. It then finds a sea anemone and places it on top of its shell. The sea anemone provides the crab with useful camouflage while the crab provides the sea anemone with scraps of leftover food.



Which one of the following describes a similar relationship as the sea anemone and the crab?

(1) Fleas found on a dog.

(2) A bird catching a worm.

(3) A bee collecting nectar from a flower.

(4) A caterpillar feeding on a balsam leaf.

11. Three plants Q, R and S were planted on a piece of land as shown in Figure 1. Figure 2 shows the same piece of land a few years later.

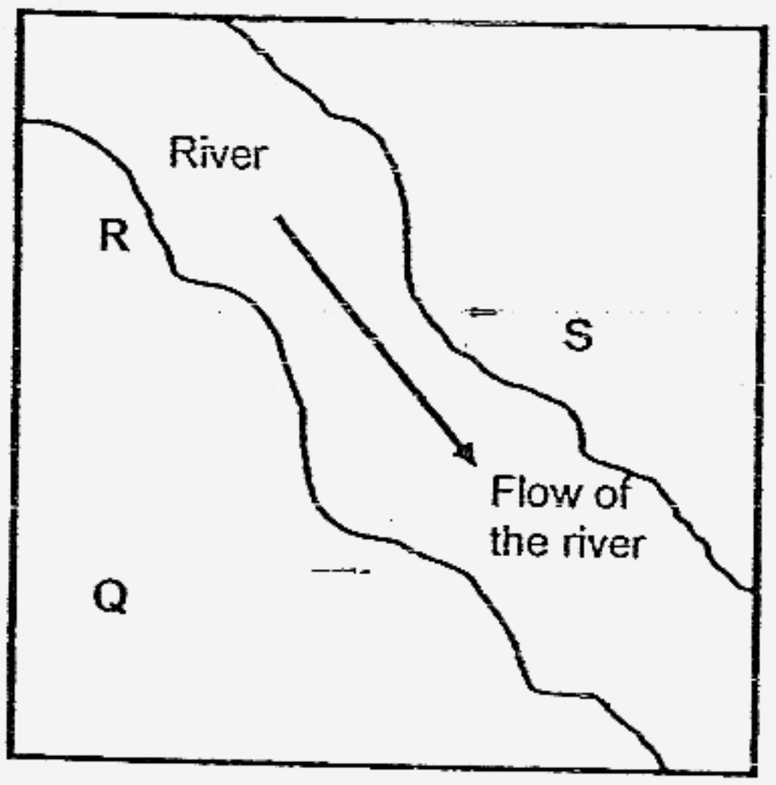


Figure 1

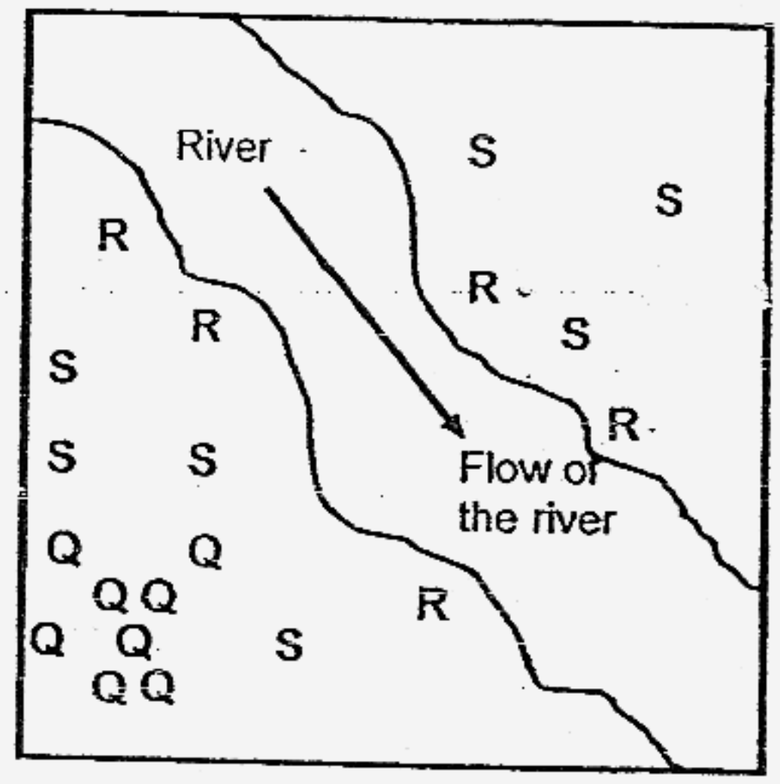


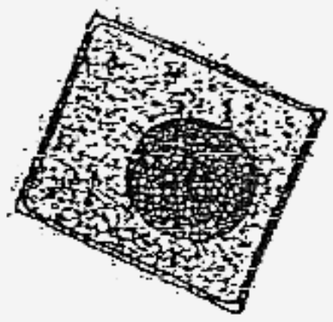
Figure 2

How are the fruits of plant Q, R and S most likely dispersed?

	Q	R	S
(1)	Wind	Splitting action	Water
(2)	Splitting action	Water	Wind
(3)	Splitting action	Wind	Water
(4)	Wind	Water	Splitting action

12. The following diagrams show different types of cells.

A



B

C

D

Which one of the following shows the correct classification for cells A, B, C and D ?

	Plant cells	Animal cells
(1)	A, C	B, D
(2)	A, B	C , D
(3)	B, C, D	A
(4)	A, C , D	B

13. Which one of the following comparisons between respiration and photosynthesis in plants is true?

	Respiration	Photosynthesis
(1)	Takes place only at night	Takes place only in the day
(2)	Takes place in all cells	Takes place in the leaves only
(3)	Takes place all the time	Takes place only when there is light
(4)	Requires food and produces energy	Requires oxygen and produces carbon dioxide

14. Four boys were involved in a competition. The table below shows the breathing rates of the four children at the beginning and the end of the competition.

Child	Breathing rate (per minute)	
	At the beginning	At the end
Peter	20	25
Kumar	20	22
Yusoff	18	23
Weiming	19	24

Based on the result in the table, which of the following statements are most likely true?

A Peter uses more energy than Kumar.

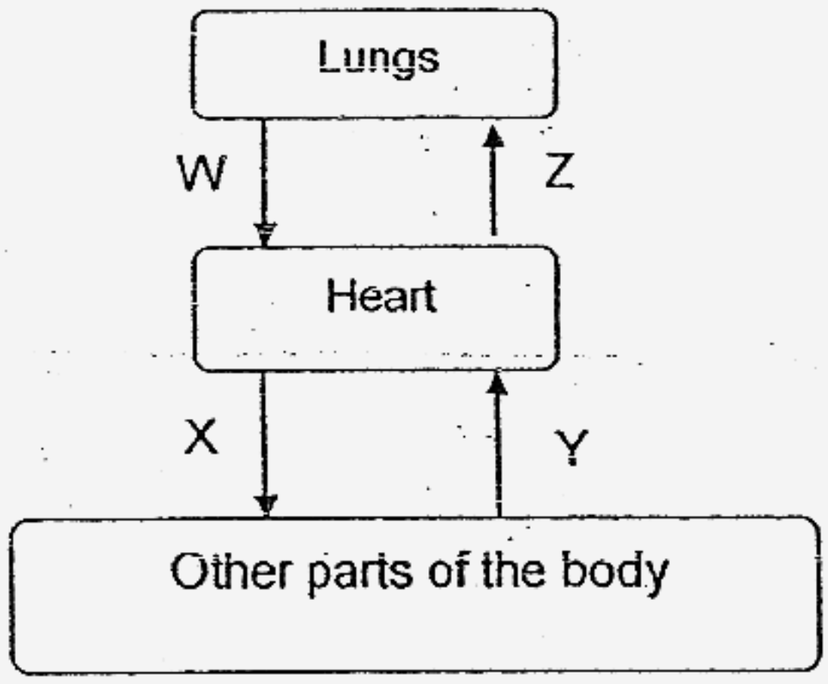
B Peter and Yusoff use the same amount of energy.

C Weiming and Yusoff have the same increase in their breathing rate at the end of the race.

D Breathing rates of all the boys increased at the end of the race because their bodies need to remove the excess carbon dioxide produced.

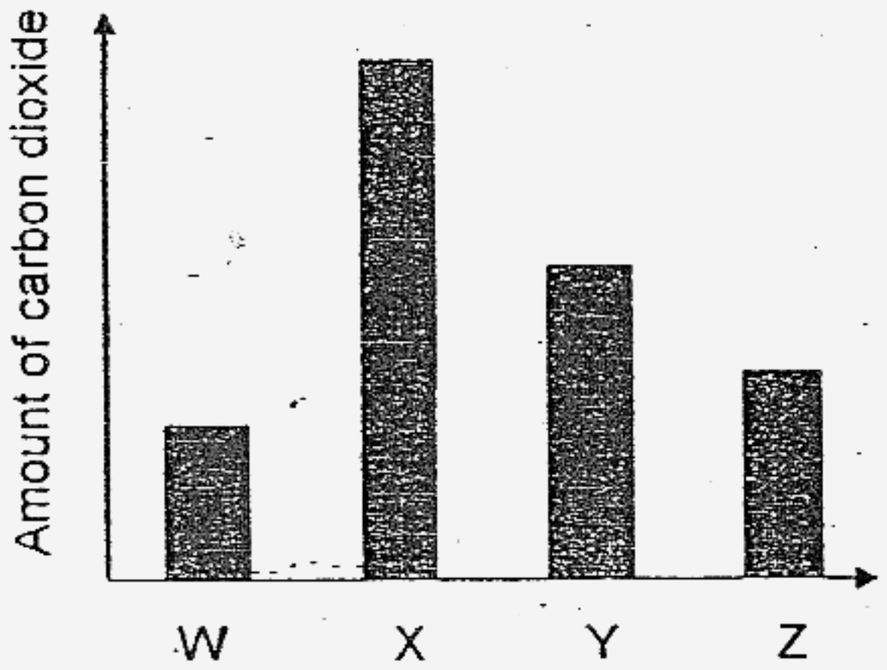
(1) A and C only
(2) A and B only
(3) C and D only
(4) B and D only

15. The diagram below shows a simple representation of blood circulation in a human body. Arrows W, X, Y and Z represent the flow of blood to different parts of the body.

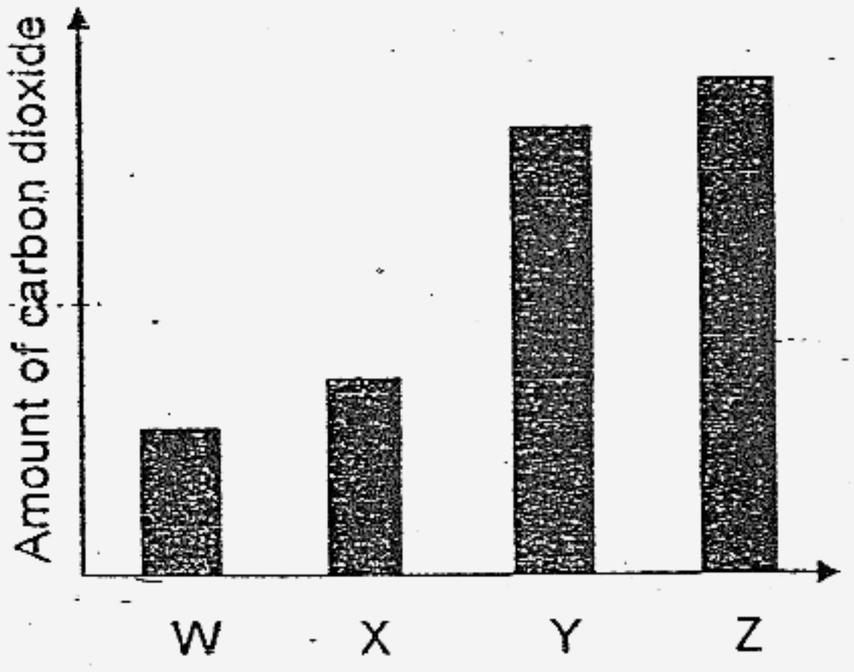


Which one of the following graphs correctly represents the amount of carbon dioxide in W, X, Y and Z?

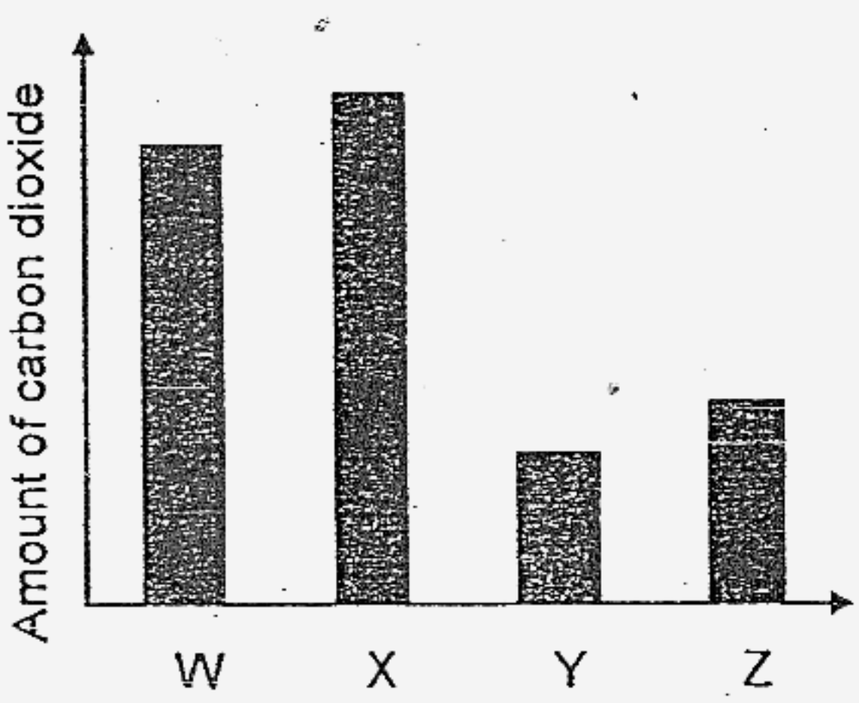
(1)



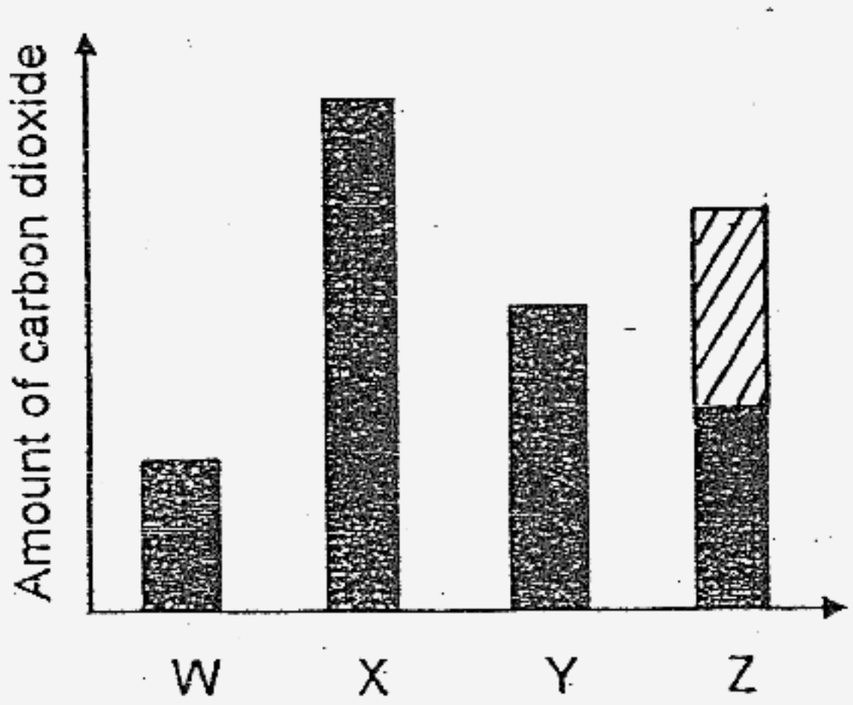
(2)



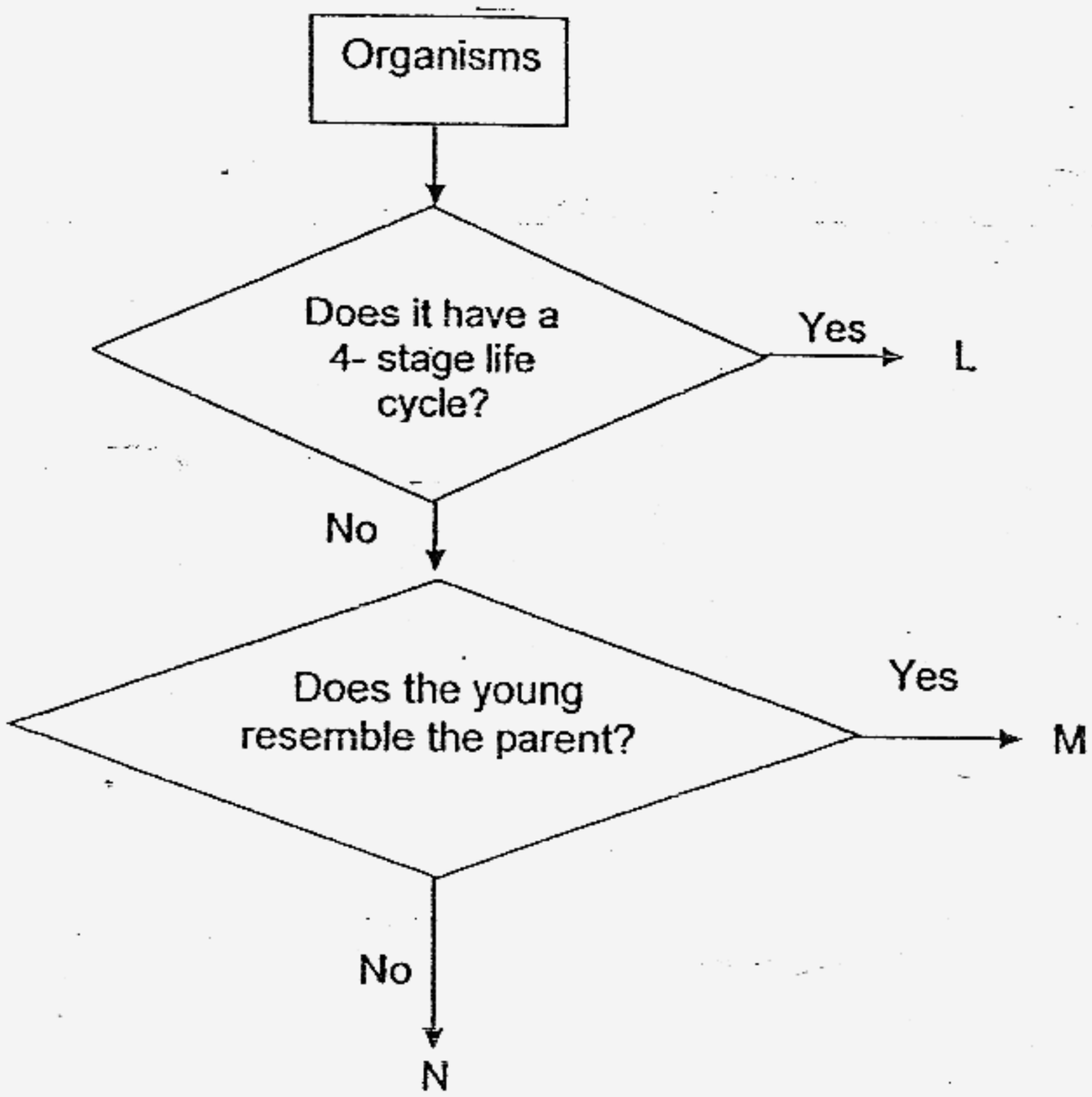
(3)



(4)



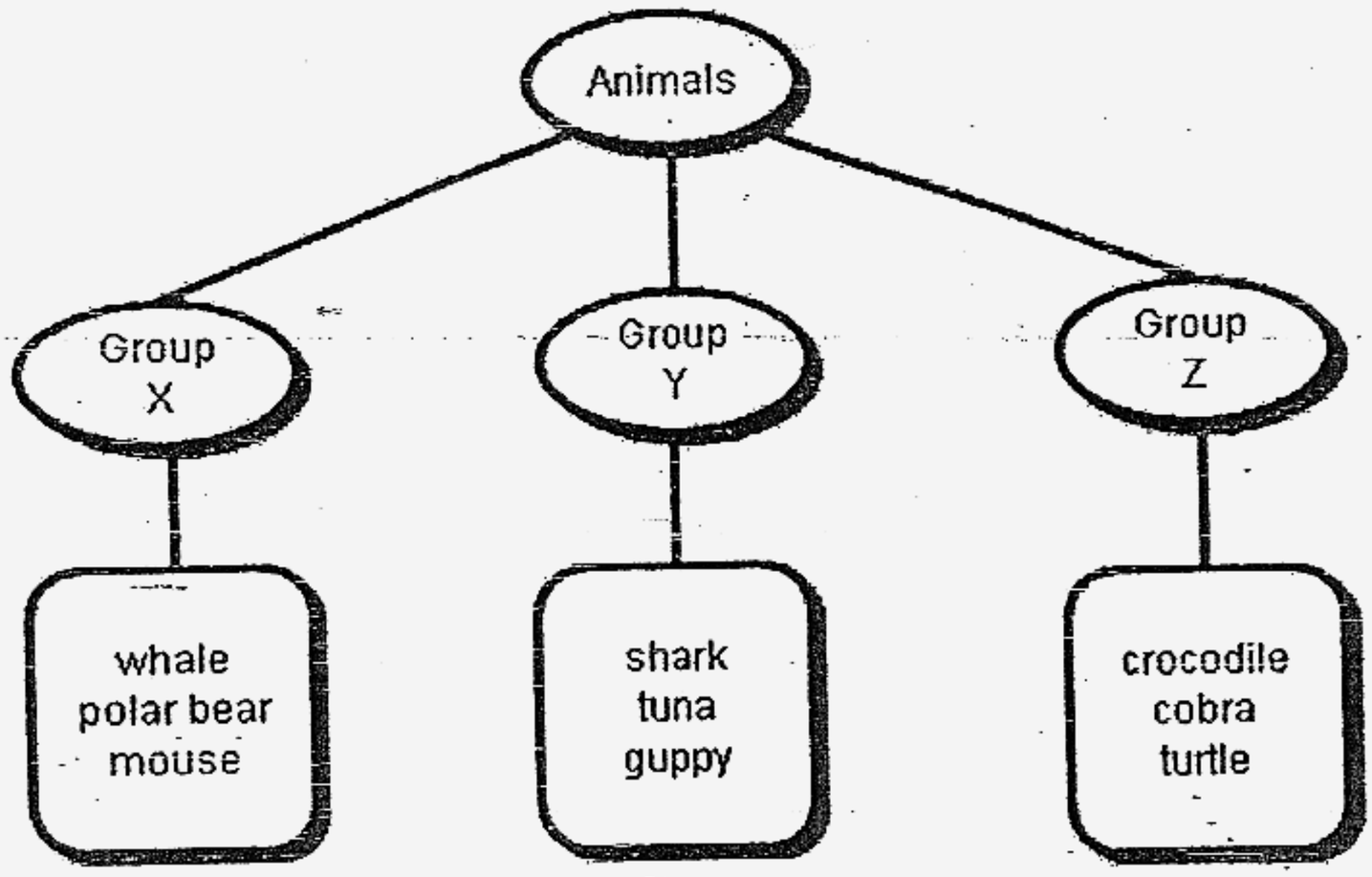
16. Study the following flow chart.



Which one of the following represents L, M and N correctly?

	L	M	N
(1)	Dragonfly	Toad	Butterfly
(2)	Grasshopper	Dog	Mosquito
(3)	Butterfly	Chicken	Frog
(4)	Moth	Frog	Housefly

17. Study the following classification table.



Which of the following statements are correct?

A There is at least an animal in each group that can swim

B Only the animals in Group X give birth to their young alive.

C The animals are classified according to their animal groups

D Animals in Group Y and Z share at least one common characteristic.

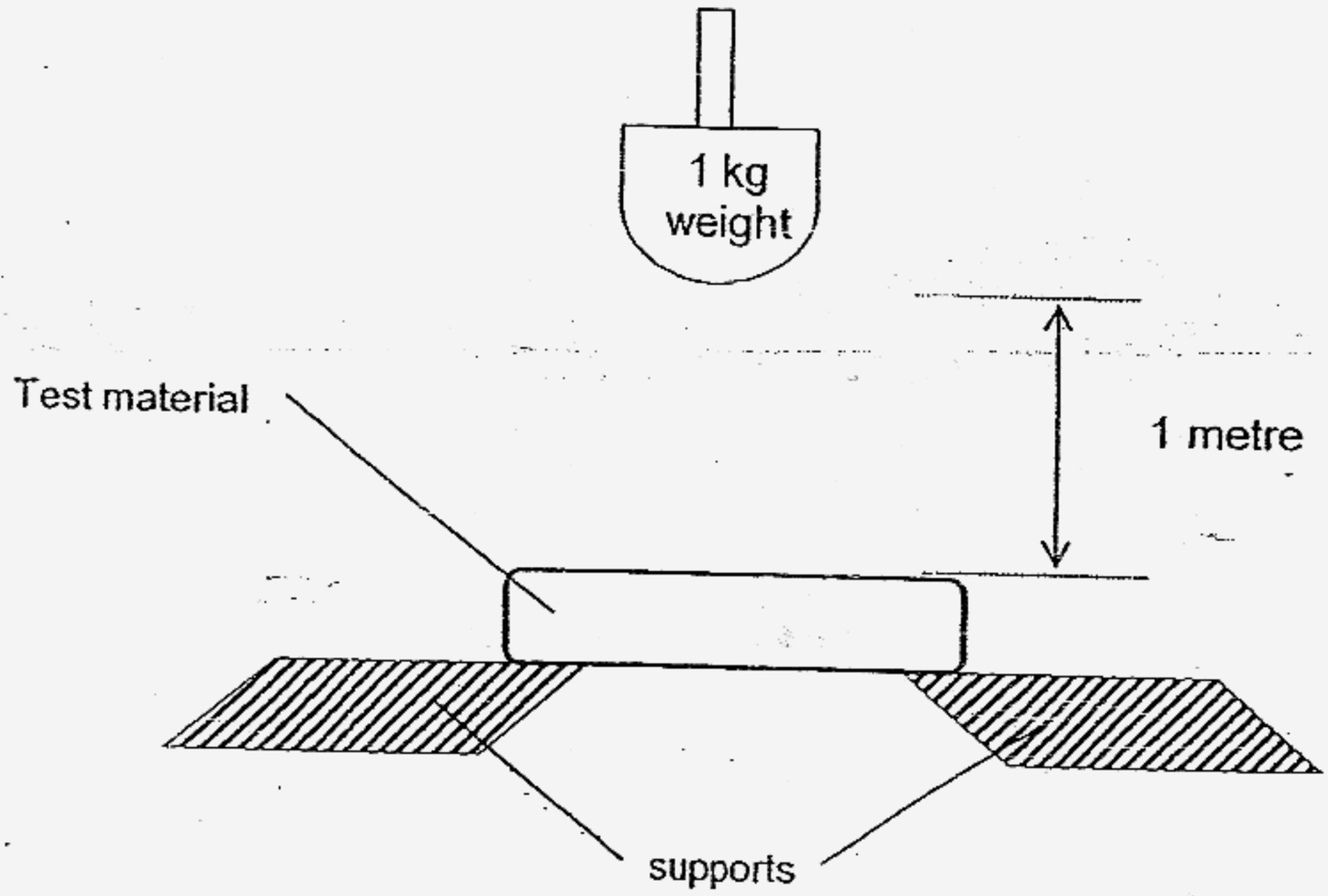
(1) A, B and D only

(2) A, B and C only

(3) A, C and D only

(4) B, C and D only

18. Study the following diagram.



Wei Kai tested the strength of 5 materials by dropping a 1 kg weight from a height of 1 metre. He ensured that the materials had the same size and shape. He noted the number of times the weight was dropped before the materials broke into two pieces. His results were shown below.

Material	Number of Hits
P	48
Q	37
R	64
S	23
T	51

Based on the results in the table, which one of the following describes the materials correctly ?

(1) Material T is metal.

(2) Material P is stronger than Material R.

(3) Material T is hard enough to scratch material Q.

(4) Material S is the first one to break if a 2-kg weight is used to repeat the experiment.

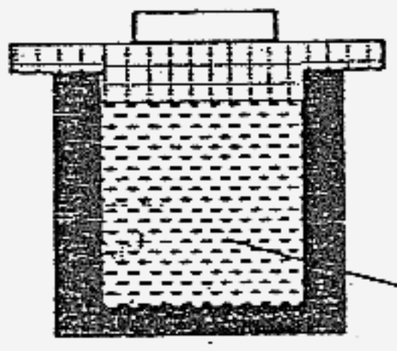
19. Study the following results that show the expansion of certain metals when heated to 100°C.

Key	Metal	Amount of Expansion at 100 °C
	K	5 mm
	L	1 mm
	M	10 mm

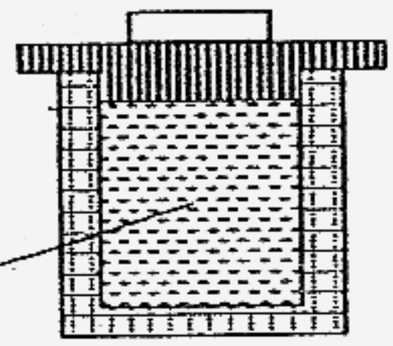
Four similar containers with covers were made with metals K, L and M. Water at 100°C were poured into the containers before they were covered and left standing for 10 minutes. None of the covers was observed to have bent at the end of 10 minutes.

In which three of the containers is it most difficult to remove the cover after 10 minutes?

A

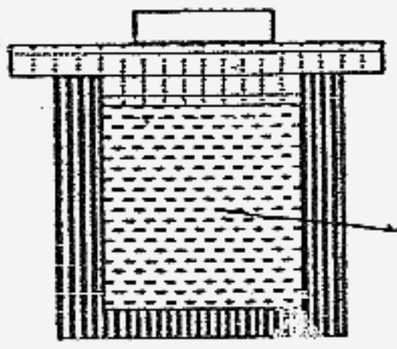


B

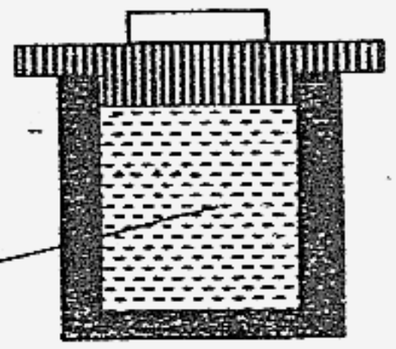


Water at 100°C

C



D



Water at 100°C

(1) A, B and C only

(2) A, B and D only

(3) A, C and D only

(4) B, C and D only

20. Some processes involving energy changes are listed below.

A Burning of firewood.

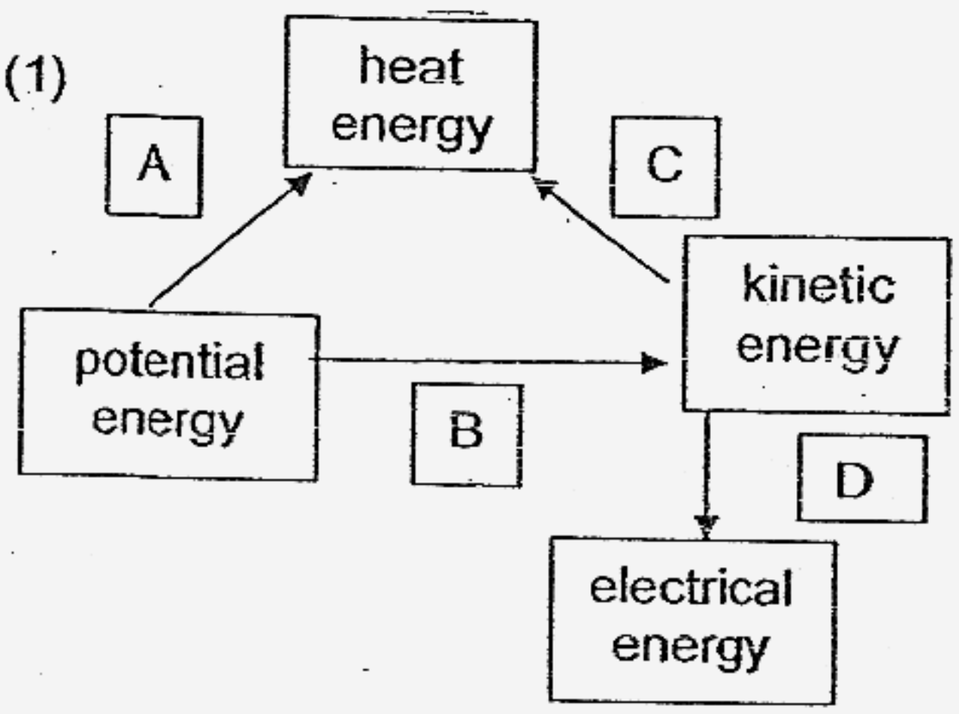
B Dropping a ball from a tower.

C Rubbing of two hands together.

D Using running water to spin a water wheel connected to a electric generator.

Which one of these diagrams correctly shows the energy changes in the processes above ?

(1)



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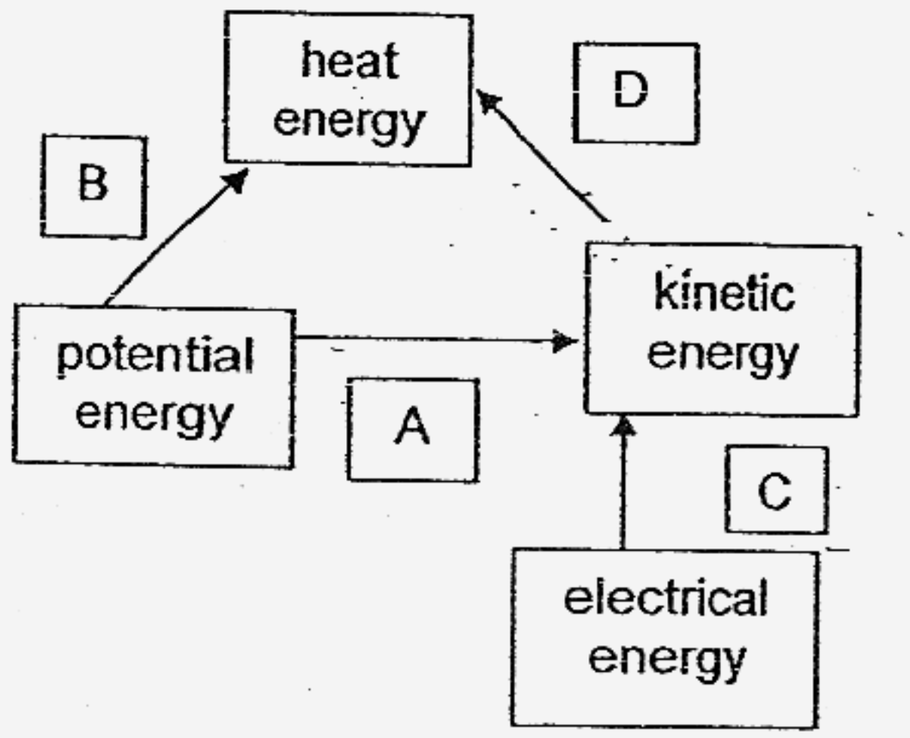

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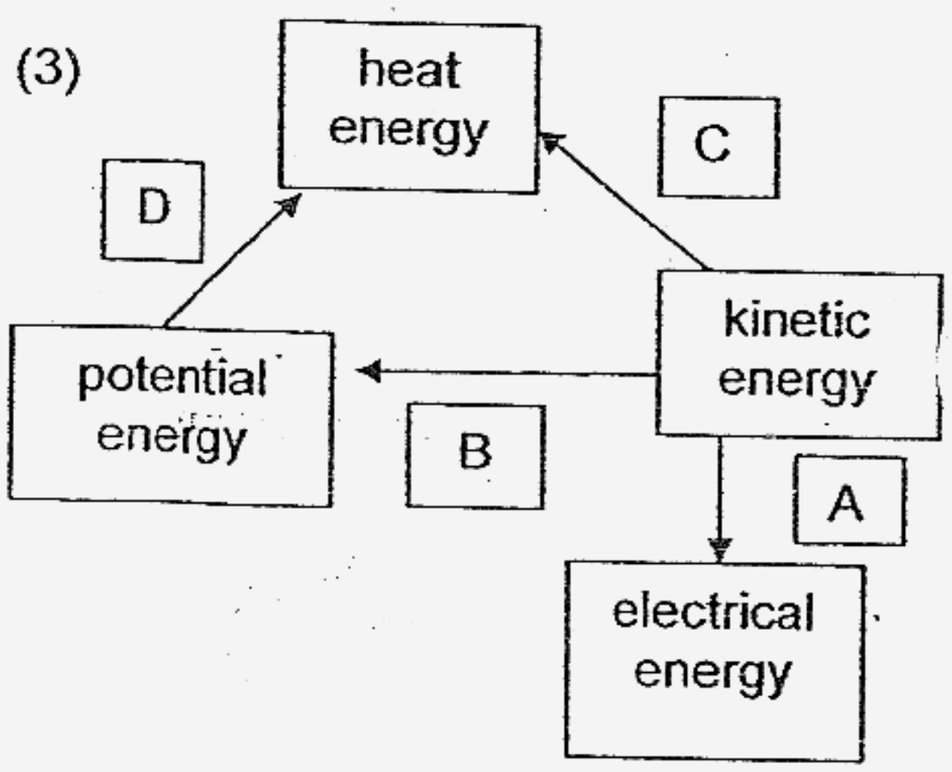
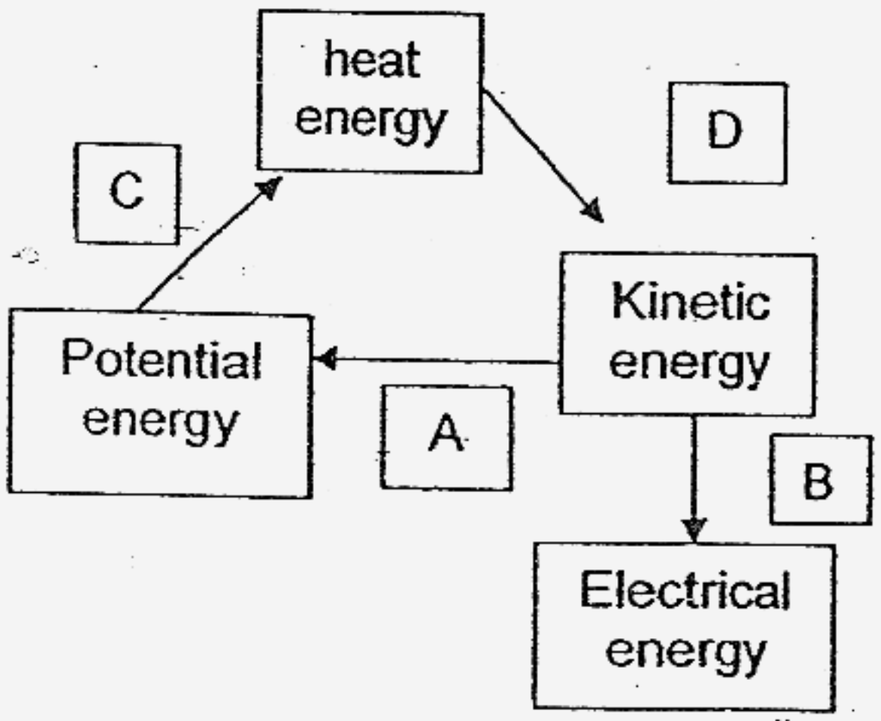


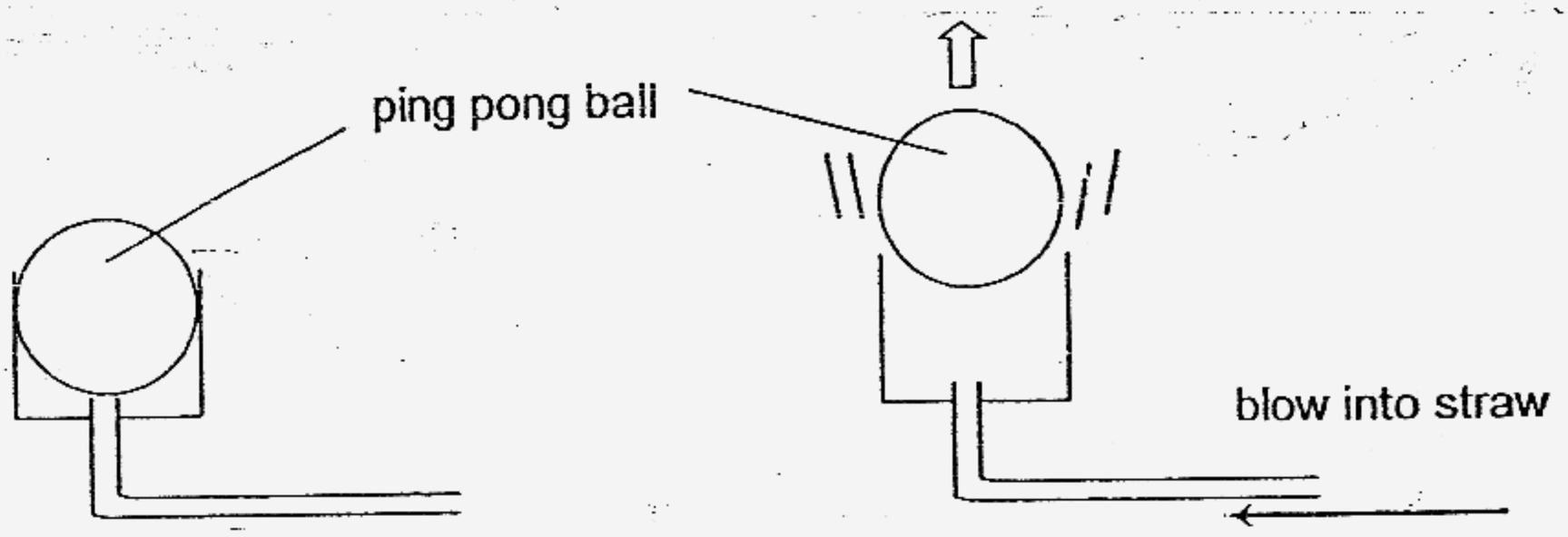
(4)



21. Which one of the following consists of renewable energy sources only ?

(1) solar, natural gas, wood
(2) wind, geothermal, coal
(3) oil, natural gas, nuclear
(4) wood, geothermal, solar

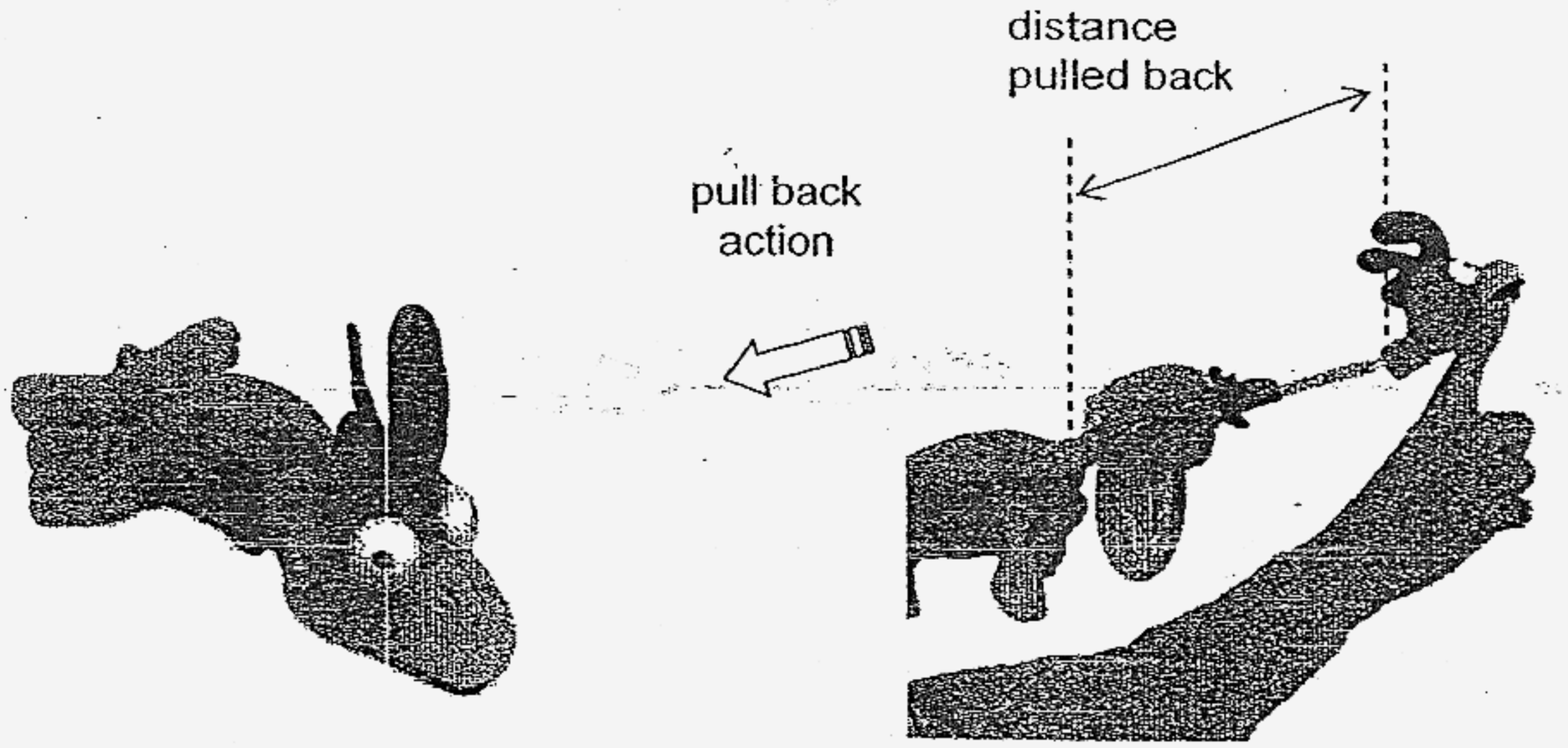
22. Study the diagram below.



Which one of the following statements explains the result of blowing air into the straw ?

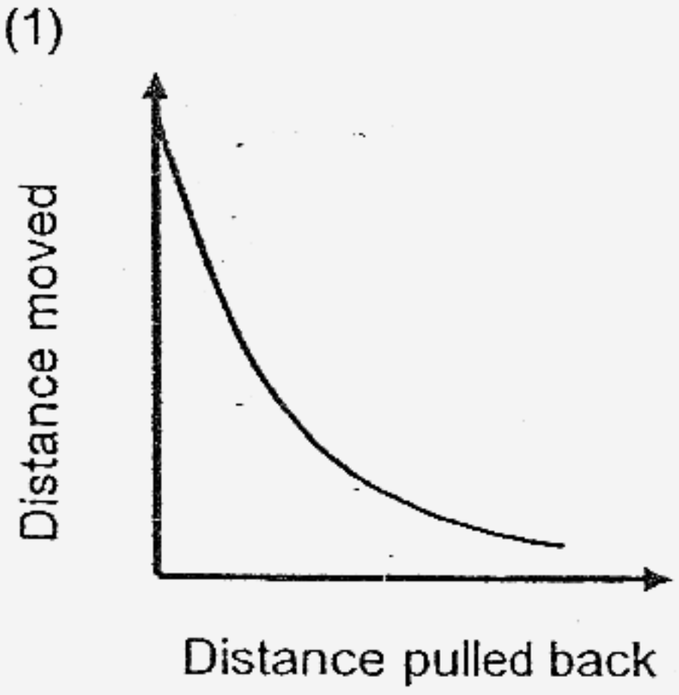
(1) The amount of moving air is lesser than the weight of the ping pong ball.
(2) The hot air from the mouth heated the ping pong ball and causes it to rise.
(3) The force exerted by the moving air is able to support the weight of the ping pong ball.
(4) The amount of gravity acting on the ping pong ball is lesser because of the moving air.

23. The following pictures show a toy and how it can be played.

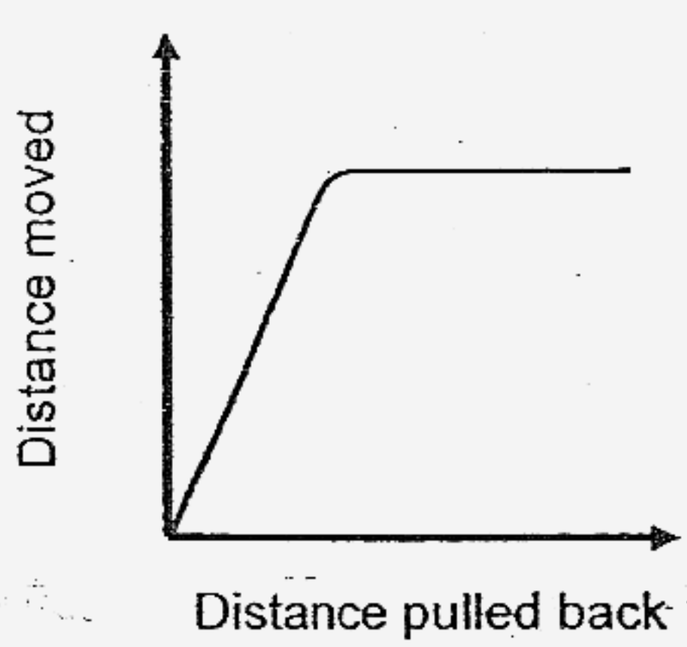


Which one of the following graphs best describe the relationship between the distance moved by the toy and the distance it is pulled back ?

(1)



(2)



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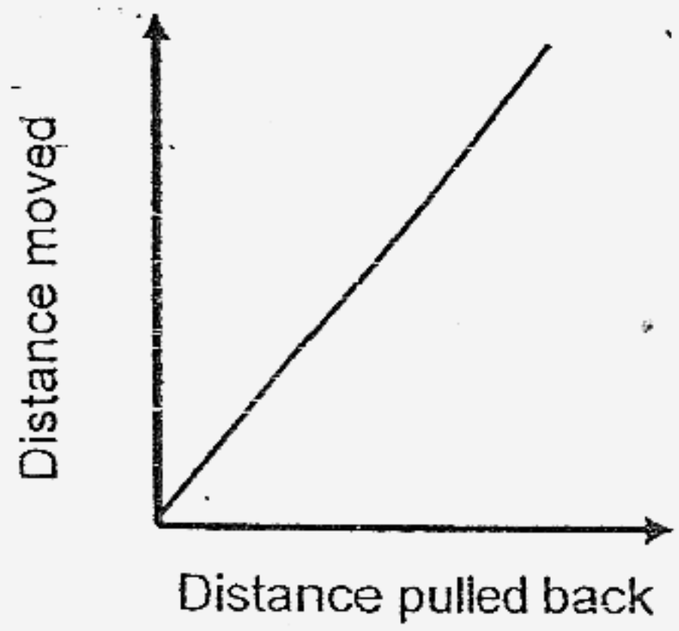

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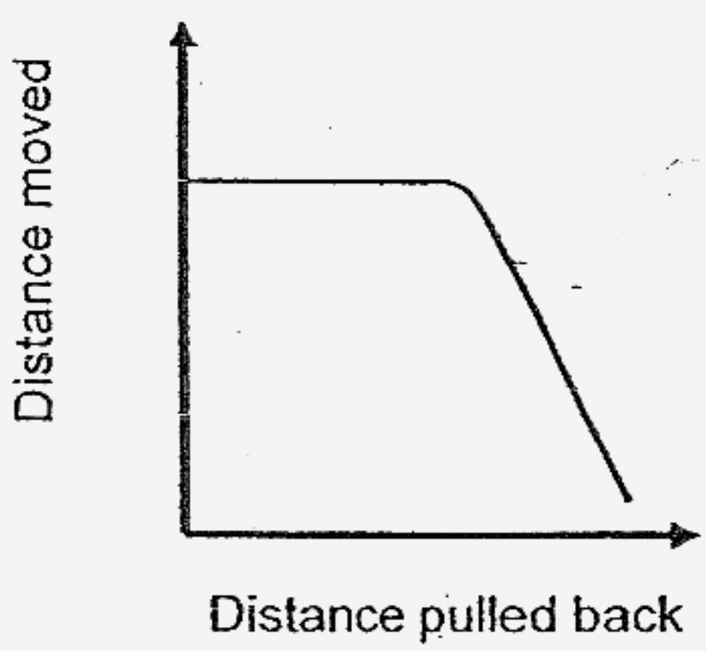
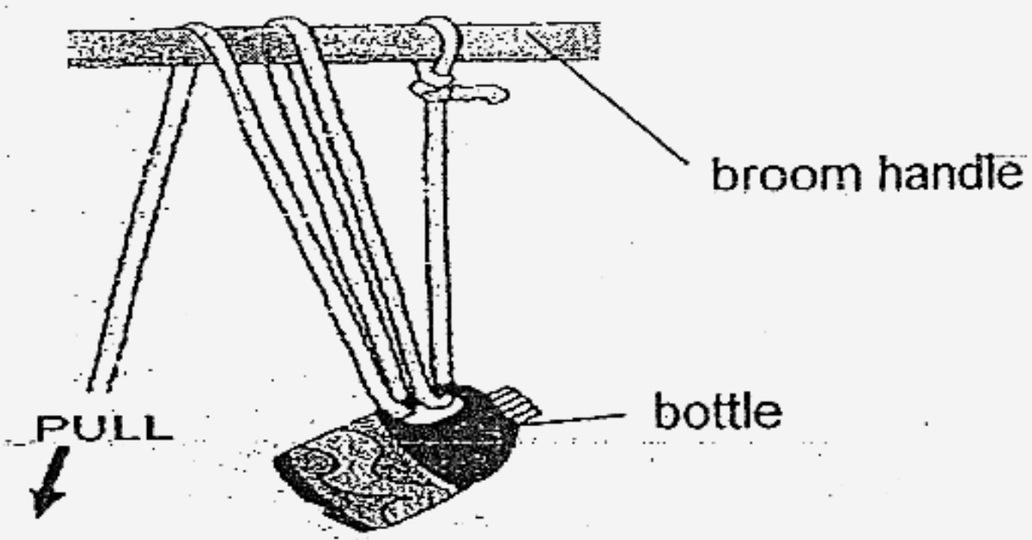
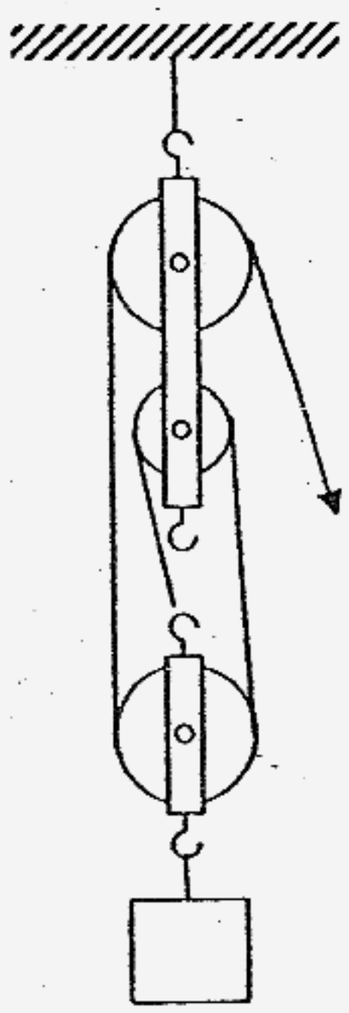


24. The diagram below shows a broom handle with ropes looped around it in order to lift the bottle filled with liquid detergent by pulling on one side of the rope.

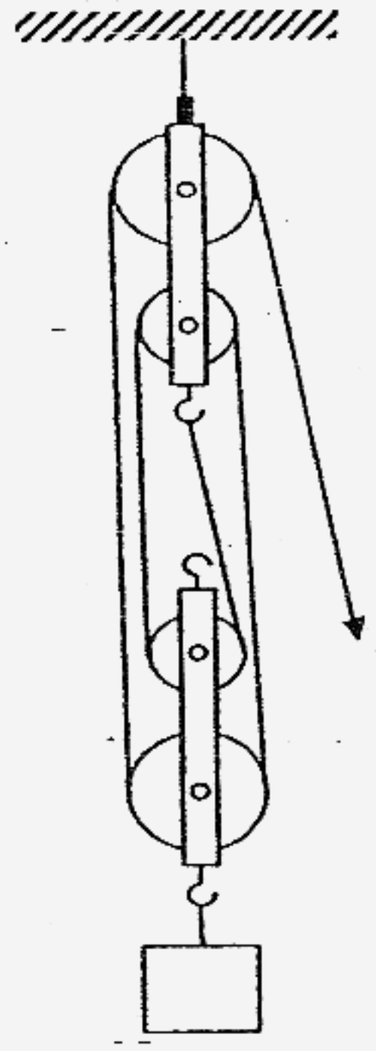


Which one of the following diagrams shows a pulley system that best matches the system shown in the diagram above?

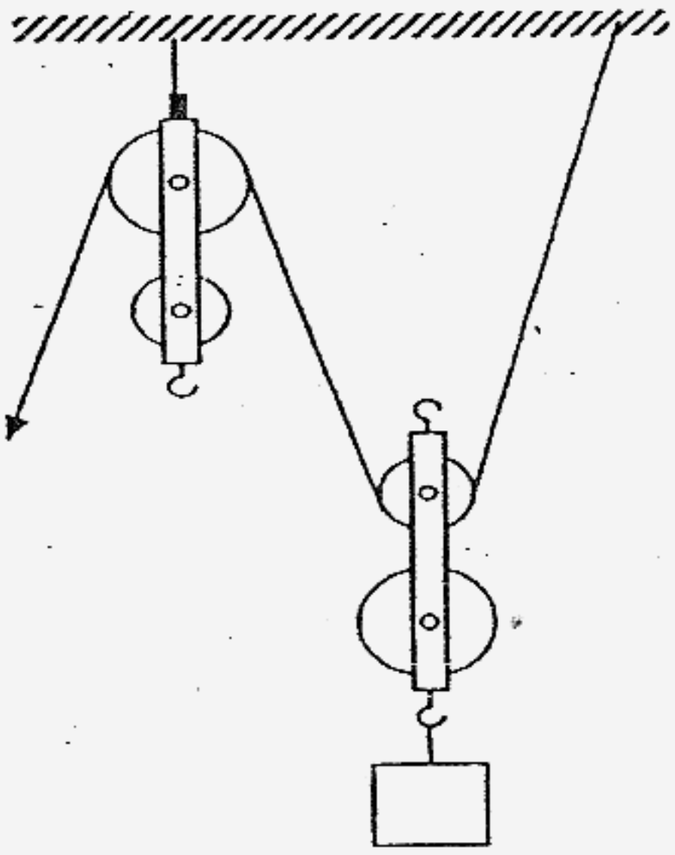
(1)



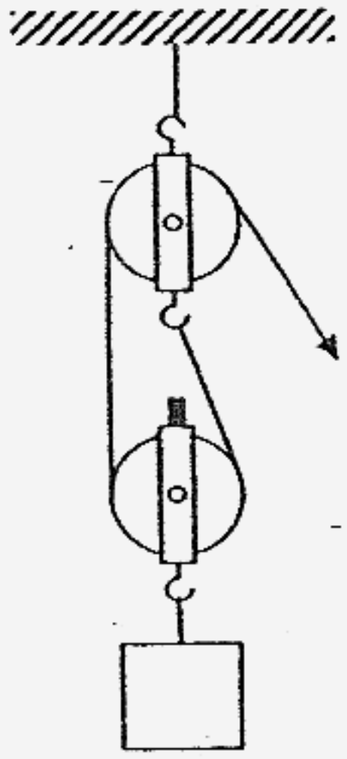
(2)



(3)



(4)



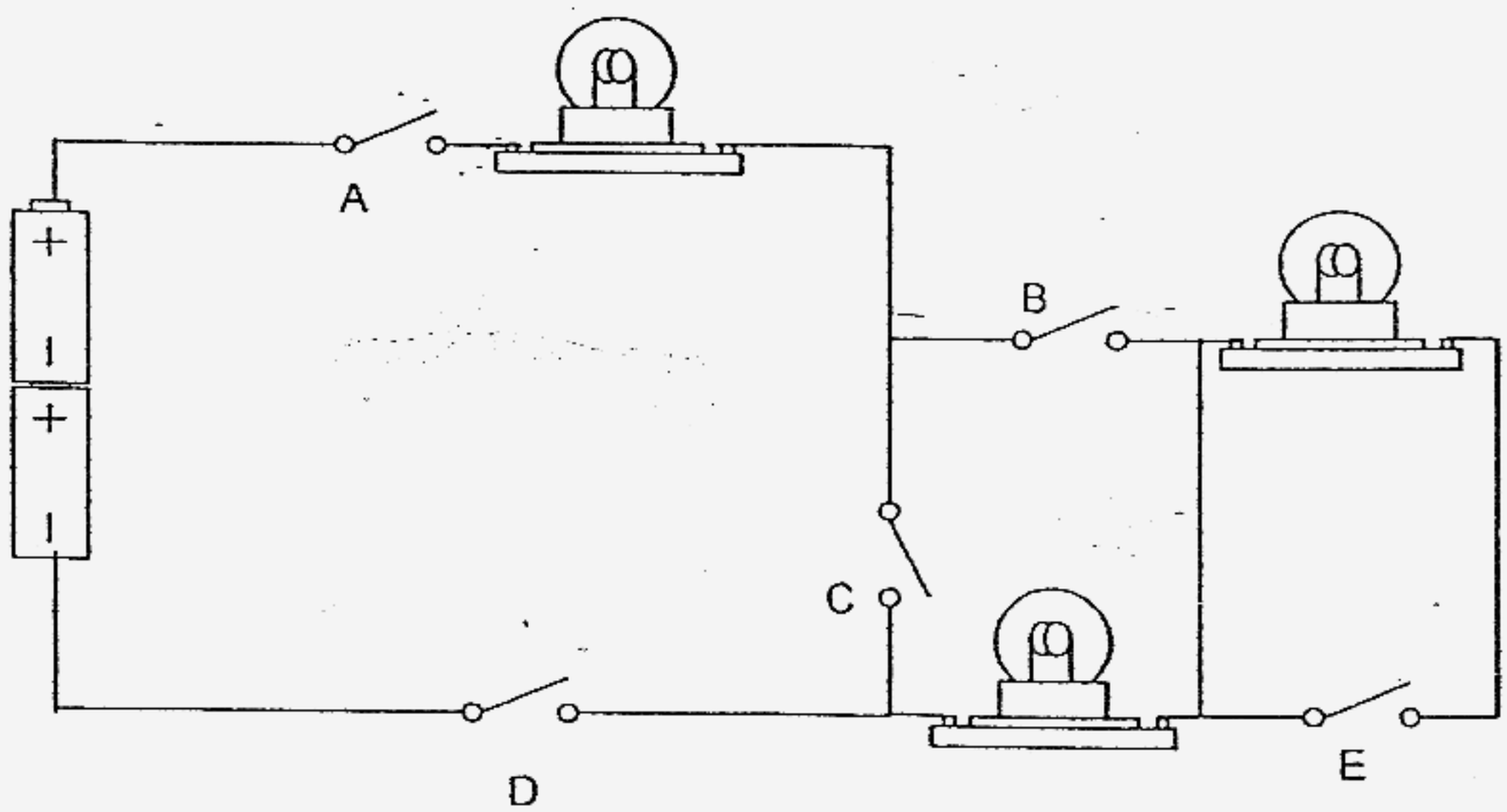
25. Study the table below.

X	Y	Z
iron copper saltwater	rubber plastic wood	bronze mercury alcohol

Which one of the following consists of suitable headings for the table ?

	X	Y	Z
(1)	poor conductors of heat	conductors of electricity	good conductors of electricity
(2)	conductors of electricity	poor conductors of heat	insulators of electricity
(3)	conductors of electricity	insulators of electricity	good conductors of heat
(4)	good conductors of heat	insulators of electricity	poor conductors of heat

26. Study the following circuit diagram carefully.



In order to light up only 2 bulbs, which switches need to be closed ?

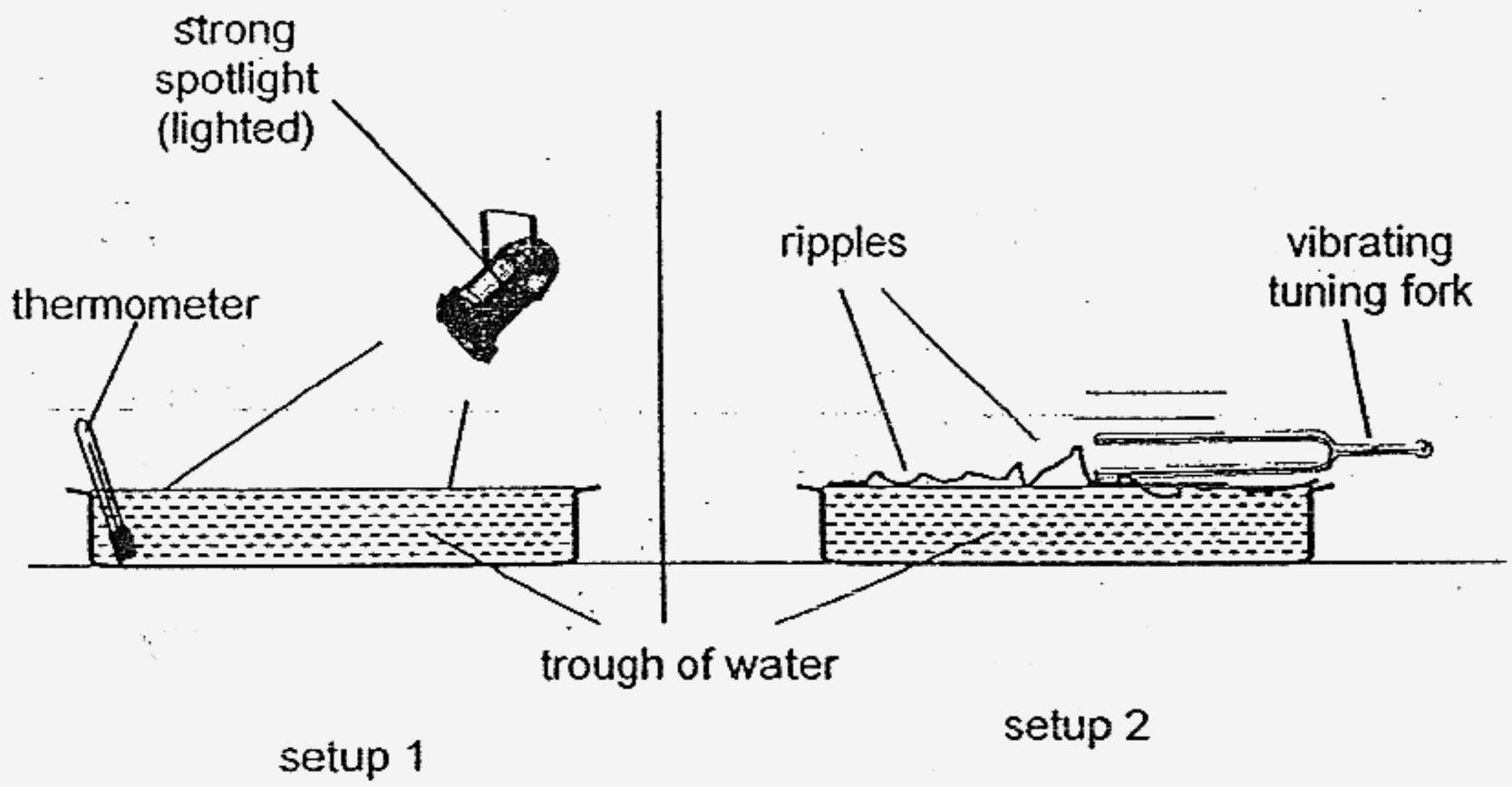
(1) A, B and D only

(2) A, B, C and D only

(3) A, B, D and E only

(4) A, B, C, D and E

27. Richard set up an experiment as show below.



Which one of the following statements best describes the aim of Richard's experiment ?

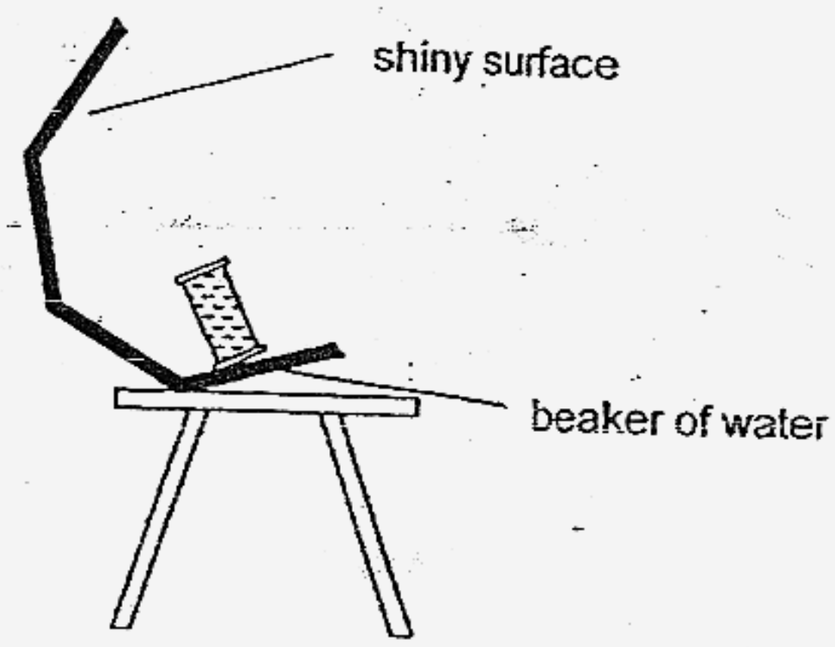
(1) To find out if energy causes changes in matter.

(2) To compare the amount of energy in setups 1 and 2.

(3) To prove that there is more energy in setup 1 than setup 2.

(4) To show that there is no energy transfer in setup 1 but there is energy transfer in setup 2.

28. Fandi designed a solar cooker for a Science Project.



He conducted the experiment several times with the same cooker but with the shiny surface placed at different angles. He then measured the temperature of the water in the beaker after ten minutes.

Which one of the following best explains why he experimented with different angles for the shiny surface ?

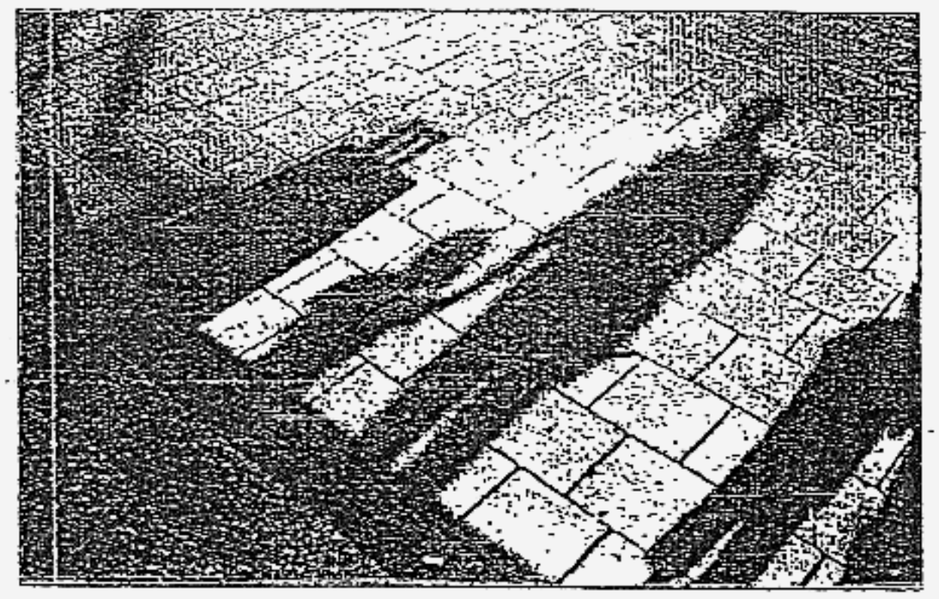
(1) To form shadows onto the beaker of water.

(2) To reflect sunlight away from the beaker of water.

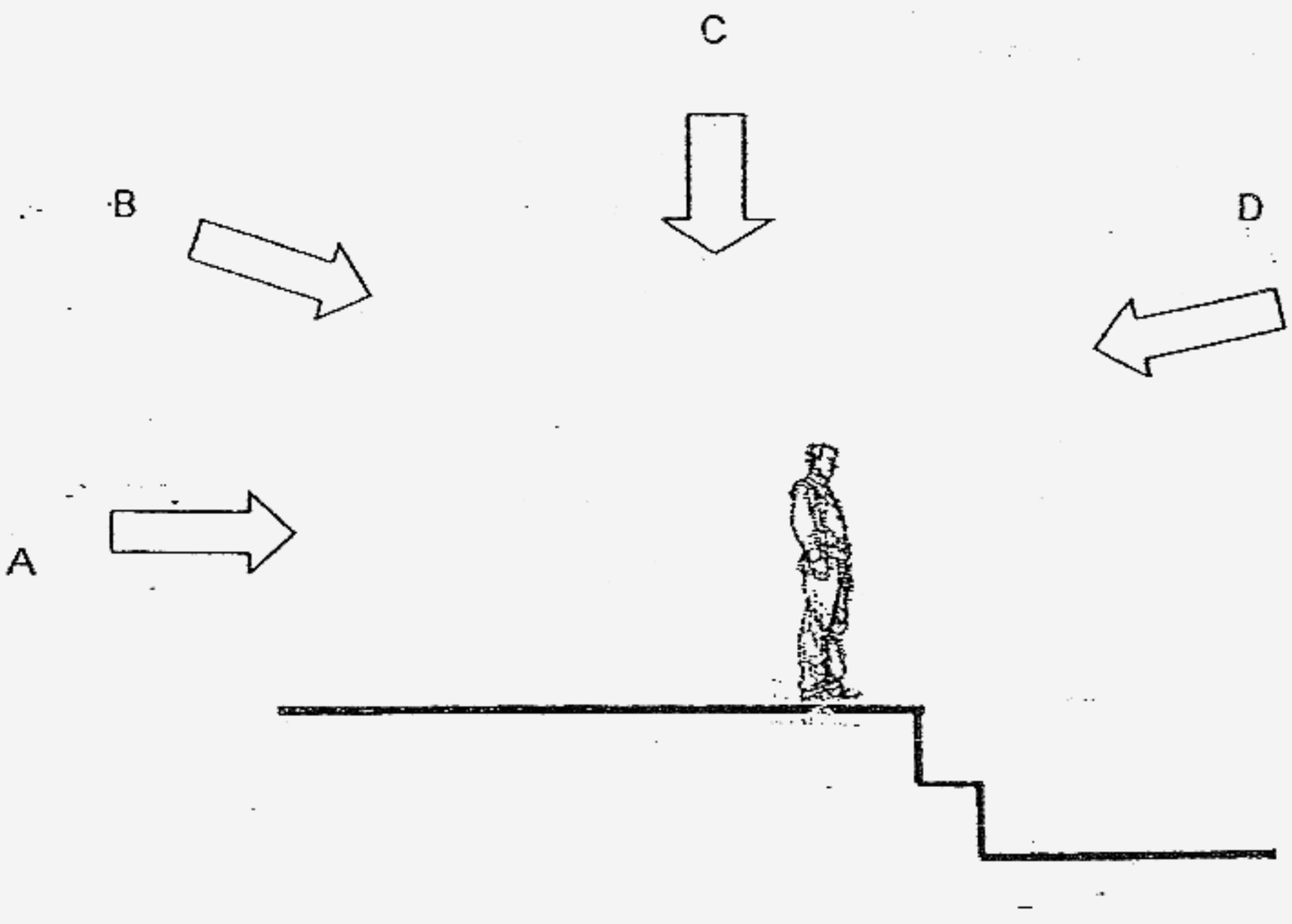
(3) To allow sunlight to pass through the shiny surface.

(4) To reflect sunlight so that it is focused on the beaker of water.

29. Look at the picture carefully.



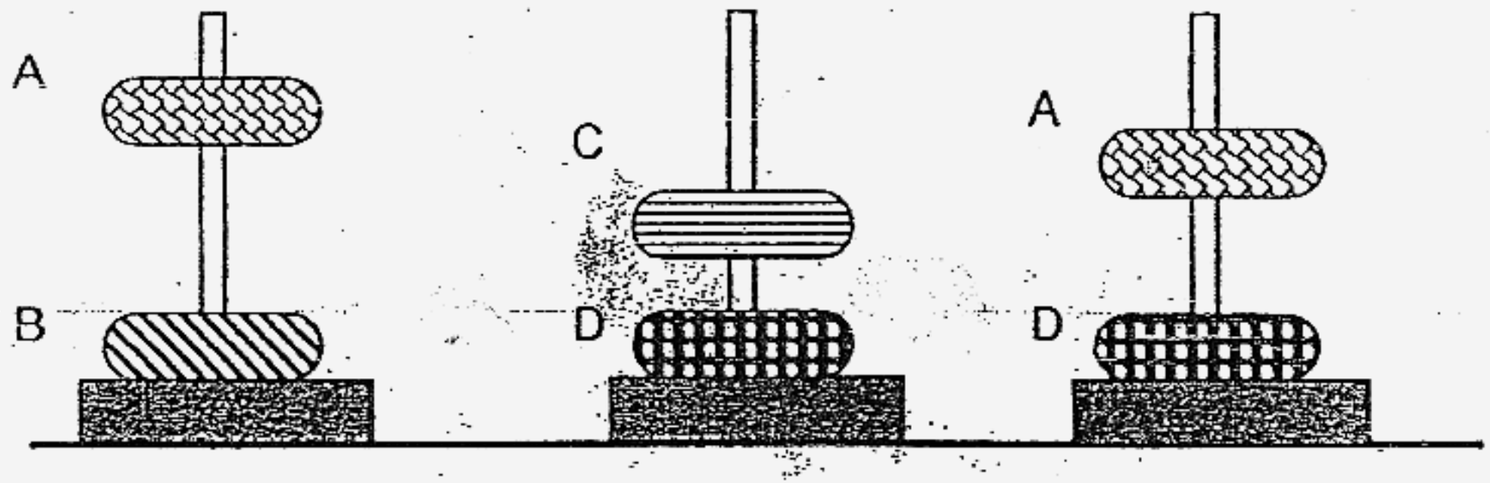
Which one of the following arrows represents the direction of the sun that could have caused the shadows shown in the picture ?



(1) A (2) B

(3) C (4) D

30. The following 3 setups show different ring magnets A, B, C and D whose like poles are facing each other
All the magnets have the same mass.



Based on the setups given, which one of the following statements is most likely to be correct ?

(1) Magnet A is stronger than magnet B.

(2) Magnet D is stronger than magnet C.

(3) Magnet A is stronger than magnet C.

(4) Not possible to tell which magnet is strongest.

********** END OF BOOKLET A **********

NANYANG PRIMARY SCHOOL

PRELIMINARY EXAMINATION 2007

PRIMARY 6

SCIENCE

BOOKLET B

17 questions

40 marks

Duration : 1 h 45 mins

SCORE	
Booklet A	
Booklet B	
Total	

Name : _____ ( )

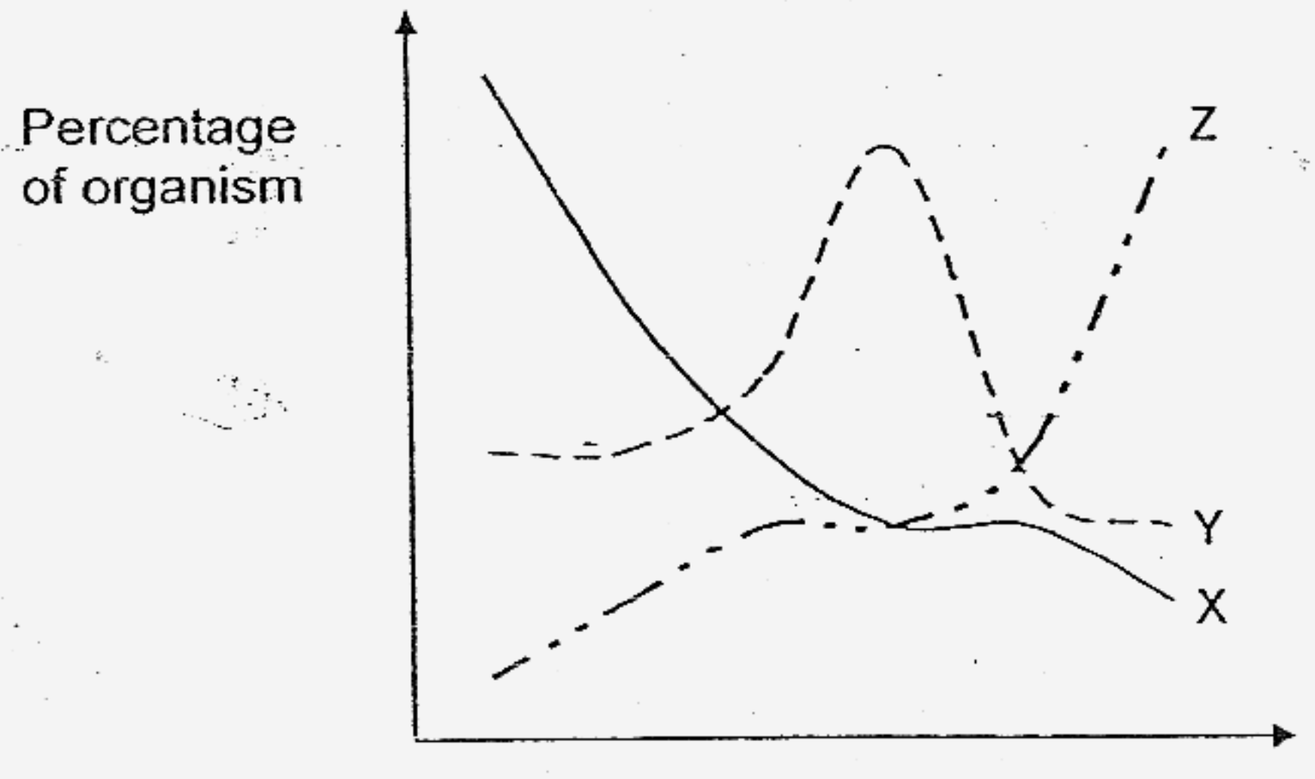
Class : Primary 6 ( )

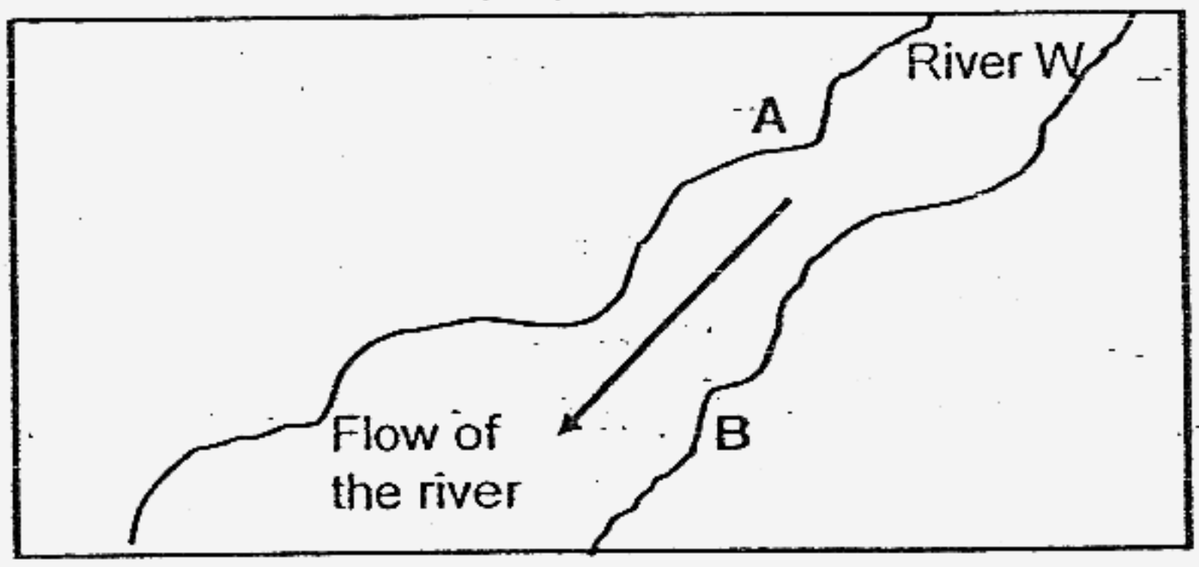
Parent's Signature : _____

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

31. Different aquatic organisms can tolerate different amount of pollutants. As the level of pollutants increases, the number of certain organisms will decrease and the number of other organisms will increase. The graph shows the percentage of the different organisms at the various levels of pollutants at River W. Equal amount of water samples were collected from points A and B of River W.





The percentage of each organism found in water samples collected is shown in the table below.

Point	X	Y	Z
A	45%	20%	10%
B	0%	10%	50%

(a) Using the table above, compare the amount of pollutants from Point A to B. (1 mark)

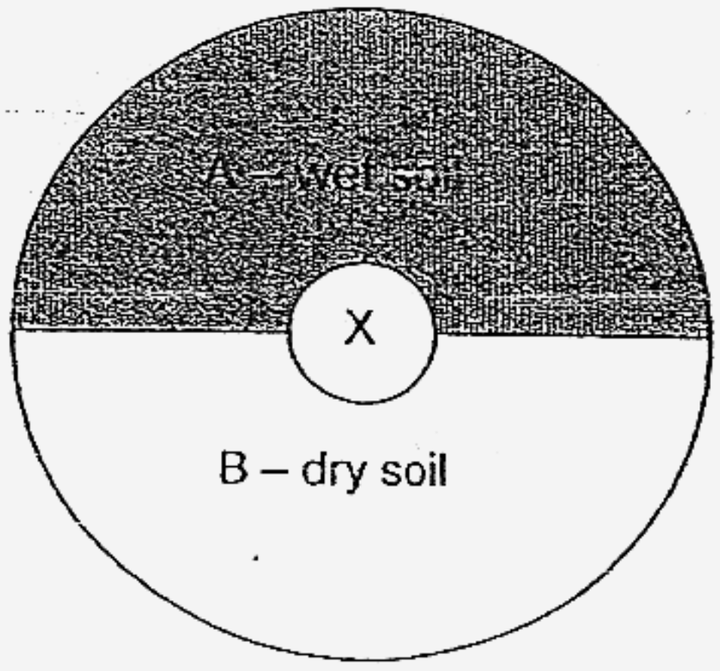
_____

(b) Describe one human activity that could have caused this change in the level of pollution? (1 mark)

_____

_____

32. In an experiment, Gopal wanted to find out the most suitable living condition for an organism X to live in. He divided a tray into two parts A and B. He filled part A with wet soil and part B with dry soil. He then covered part A with a piece of black paper and part B with a piece of transparent plastic.



He placed the tray in the hot sun. He then released a number of organism X in the middle of the tray in the area marked by the circle. After one hour, greater number of organism X was found in part A. He obtained the same result after repeating the experiment 3 times.

(a) Why did he place organism X in the middle and not at the side of the tray? (1 mark)

_____

_____

_____

(b) Why did he repeat the experiment 3 times? (1 mark)

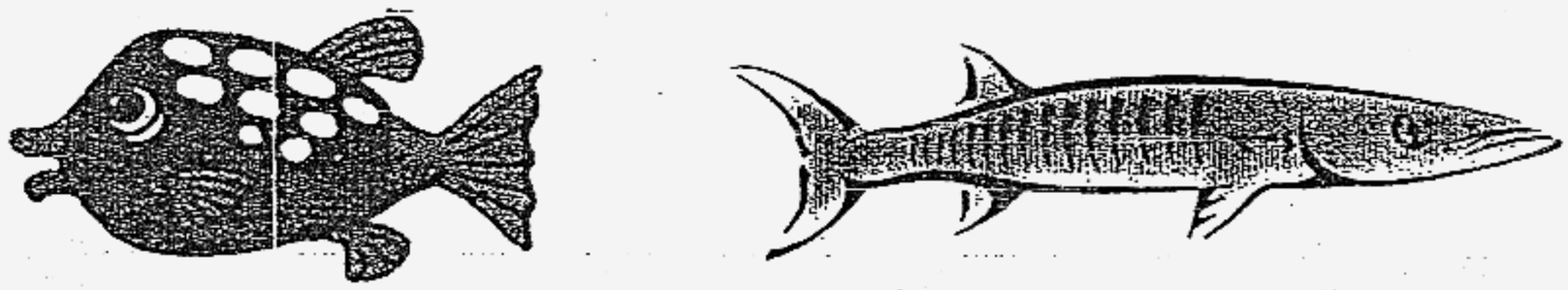
_____

_____

(c) Identify the natural habitat of organism X. (1 mark)

_____

33. The following diagram shows two fish X and Y.
Fish Y is a natural predator of Fish X.



Fish X Fish Y

(a) State one physical adaptation that prevents fish X from escaping from fish Y.
(1 mark)

_____

_____

(b) Explain the answer in (a). (1 mark)

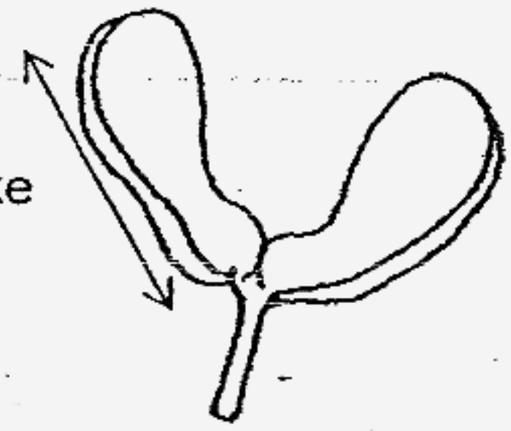
_____

_____

_____

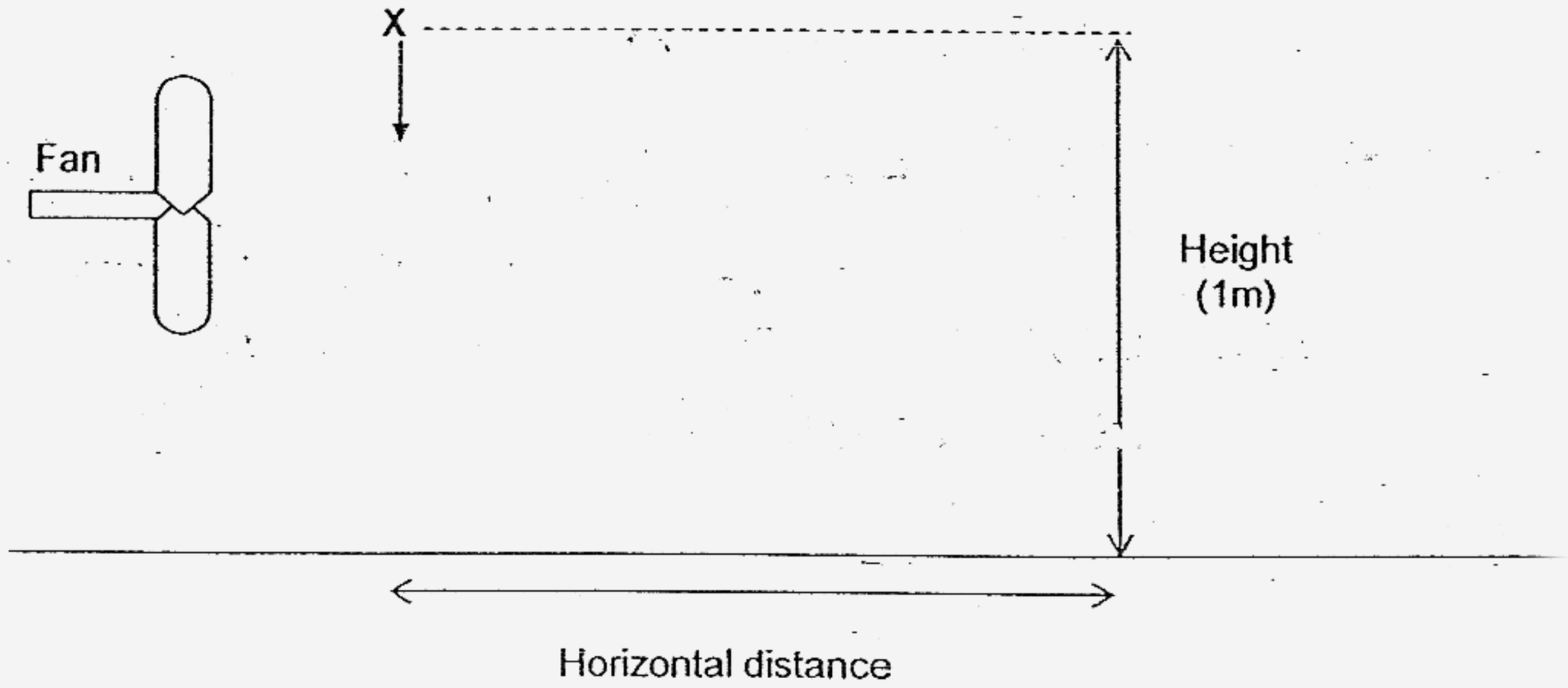
34. Peter wanted to find out how the wing-like structure of a seed affects the distance it will travel in wind. He cut the length of the wing of seed H. He dropped it down from a height of 1 m and measured the horizontal distance it travelled as shown as in the set-up below.

Seed H

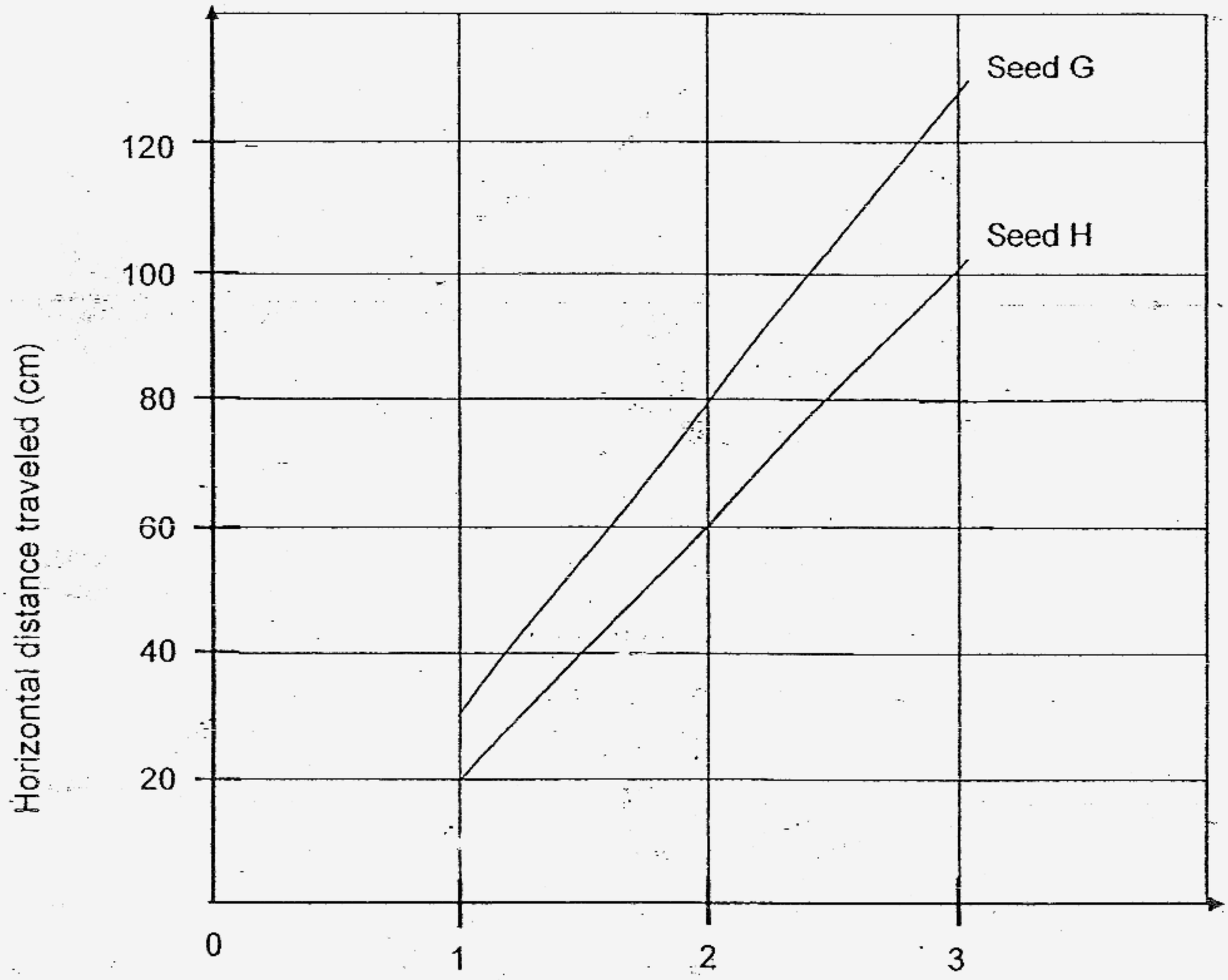


Length of the wing-like structure

The point where the seed is dropped



Based on the result the following graph was plotted.



(a) What is the relationship between the length of the wing-like structure of seed H and the horizontal distance travelled? (1 mark)

_____

_____

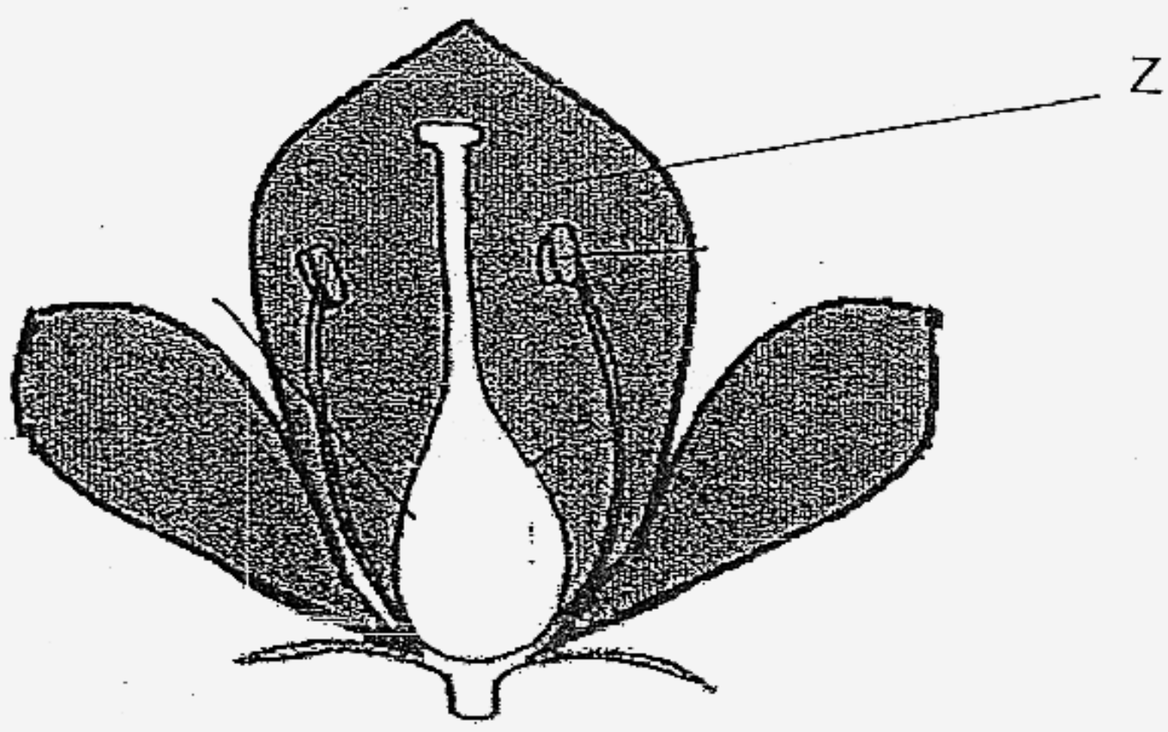
(b) Using the graph, predict the horizontal distance travelled by seed H when its wing-like structure is less than 1cm. (1 mark)

_____ cm

(c) Peter repeated the experiment with seed G and seed J which are obtained from the same plant as seed H. Seed G was lighter than seed H and seed J was the heaviest among the three seeds. The result for seed G was plotted in the graph above.
Plot the result for Seed J on the graph above.

(1 mark)

35. The diagram below shows a longitudinal-section of a flower.



(a) The table below shows two parts of the flower, X and Y, that have similar functions to certain organs in the human reproductive system.

Parts	Similar function to certain organs in the human reproductive system
X	producing sperms
Y	producing eggs

Label part X and Y in the diagram above. (2 marks)

(b) If X is removed from the flower, will the flower be able to develop into a fruit? Explain why. (1 mark)

_____

_____

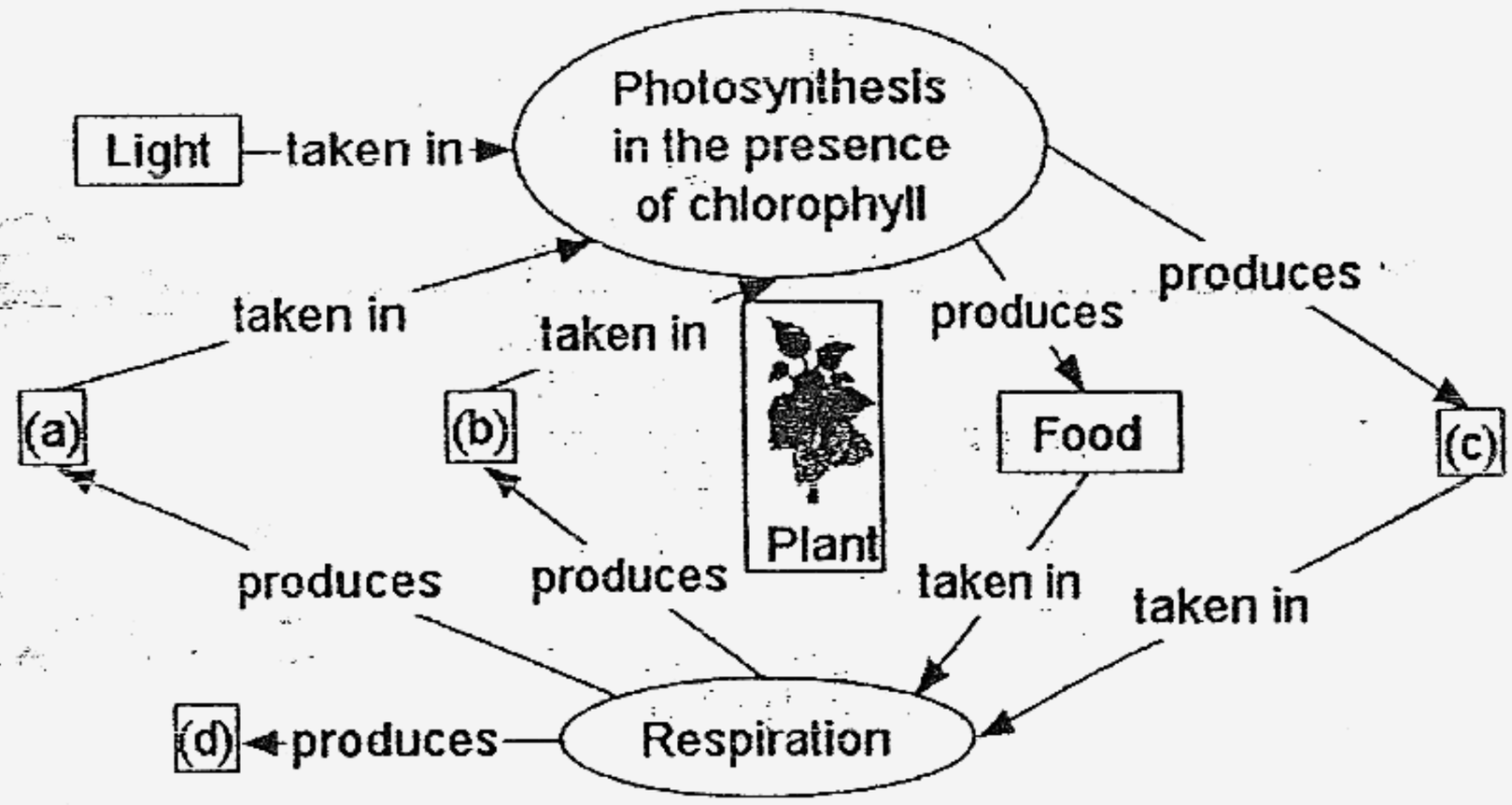
_____

(c) What is the function of part Z ? (1 mark)

_____

_____

36. The diagram below describes the processes of photosynthesis and respiration in plants.



Write down words that best represent (a), (b), (c) and (d). (2 marks)

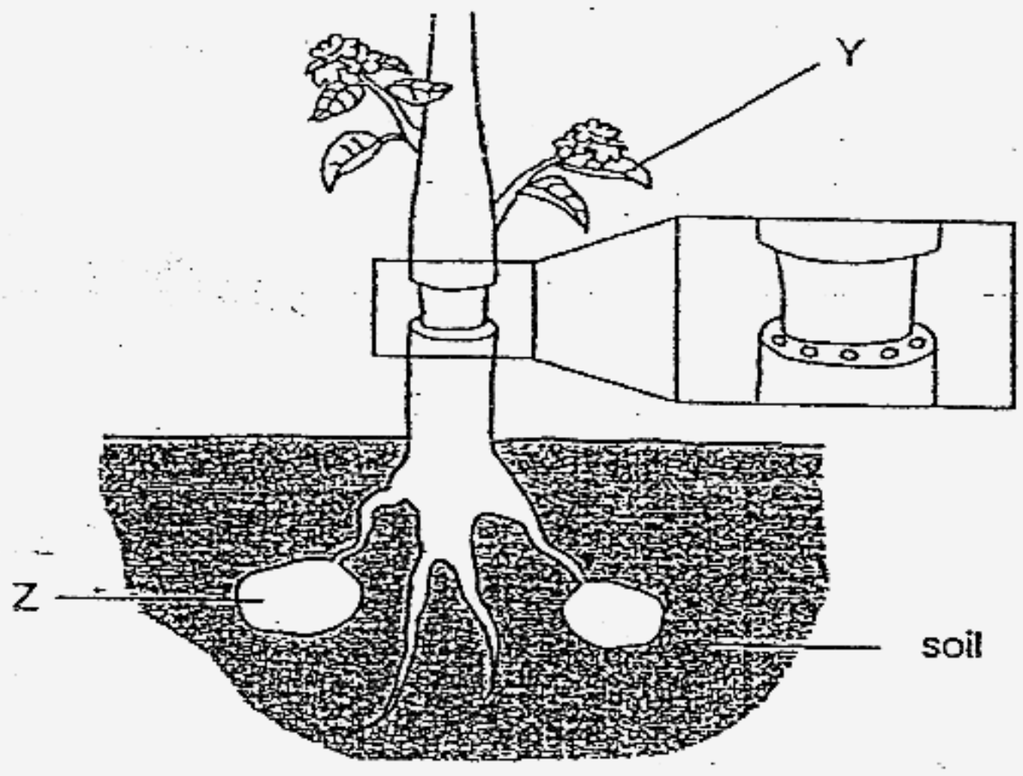
(a) _____

(b) _____

(c) _____

(d) _____

37. The diagram below shows a stem with an outer ring removed. As a result the only tubes carrying food in this stem were removed.



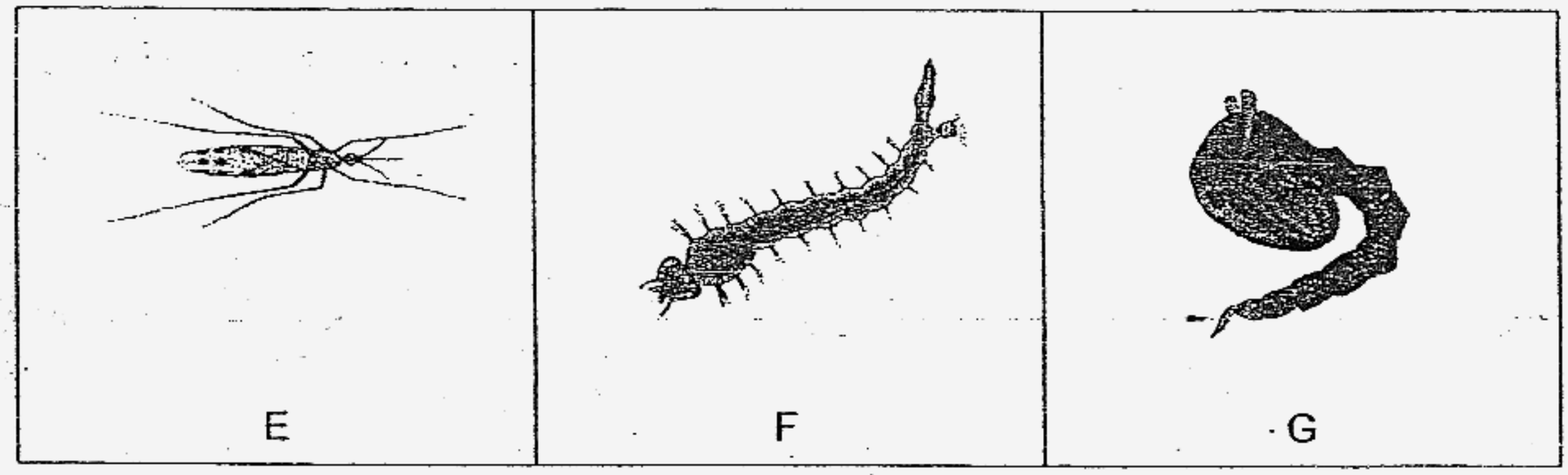
A close up view

Predict what will happen to part Y and part Z after one week. Explain why.

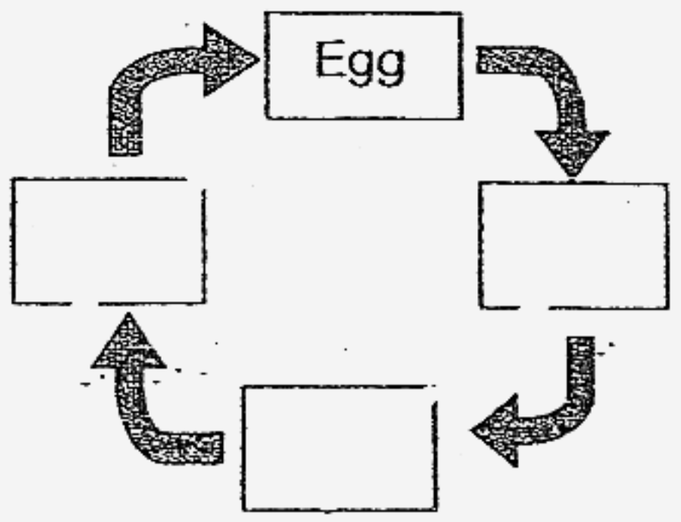
Part	Observation	Reason
Y		
Z		

(2 marks)

38. The diagram below shows the different stages in the life cycle of insect S.



(a) Put stages E, F and G in the life cycle of insect S below. (1 mark)

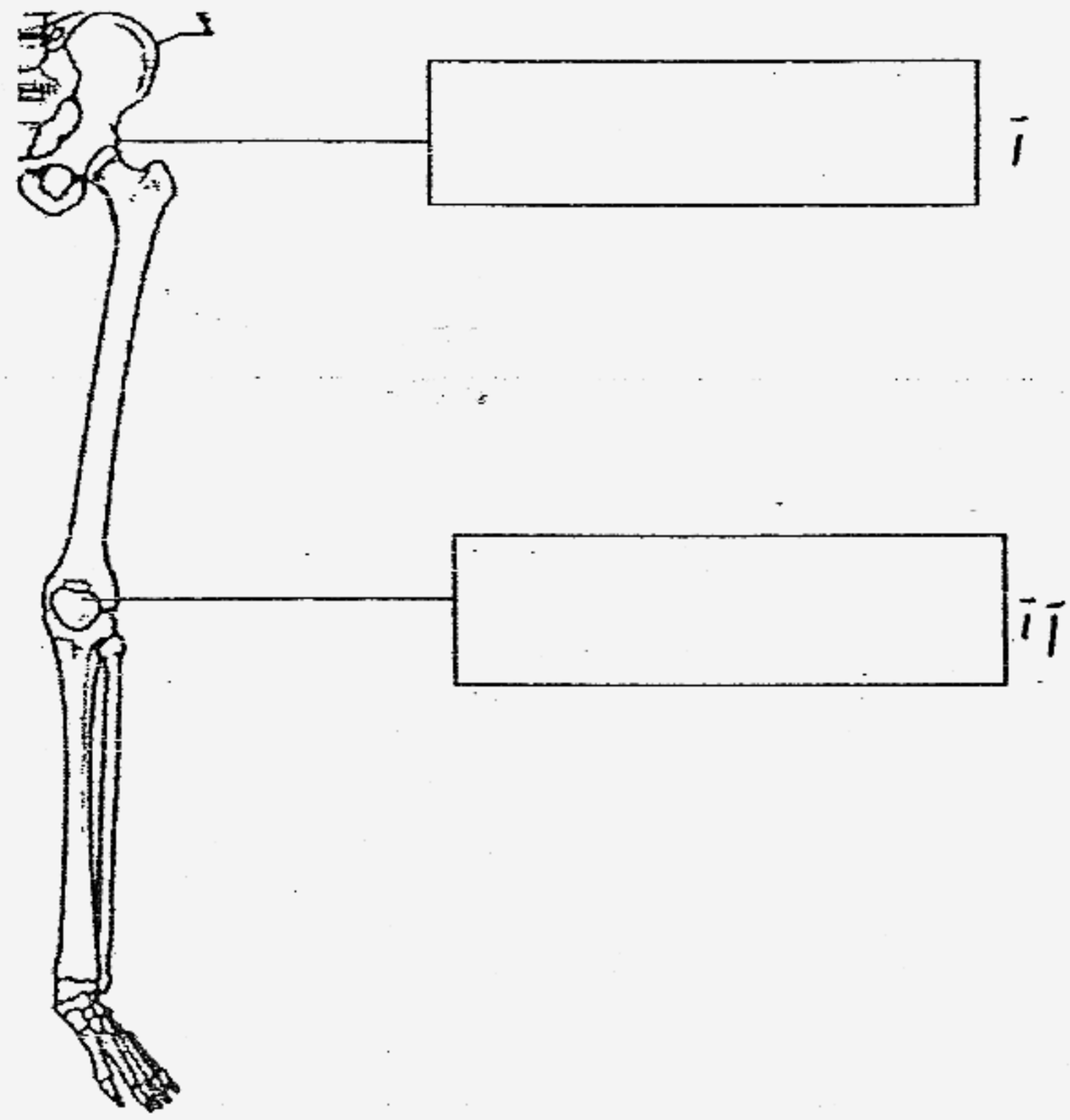


(b) State a difference between the life cycle of insect S and a cockroach. (1 mark)

_____

_____

39. The diagram below shows the skeletal system of the human leg.



(a) Label the "hinge joint" and "ball and socket joint" in the diagram above.

(1 mark)

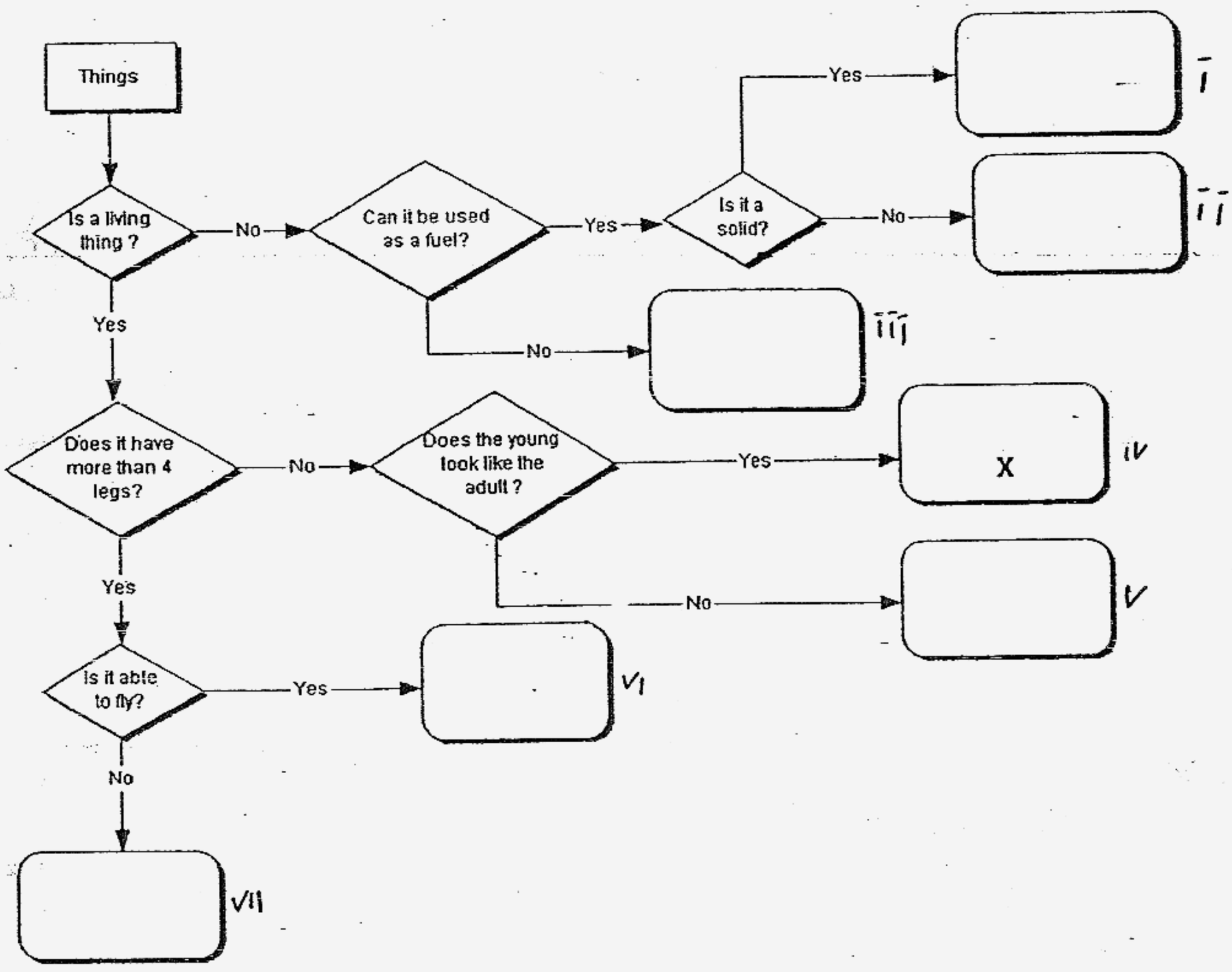
(b) Explain how these two joints are different in terms of their movement.

_____

_____

(1 mark)

40. Study the flowchart below carefully.

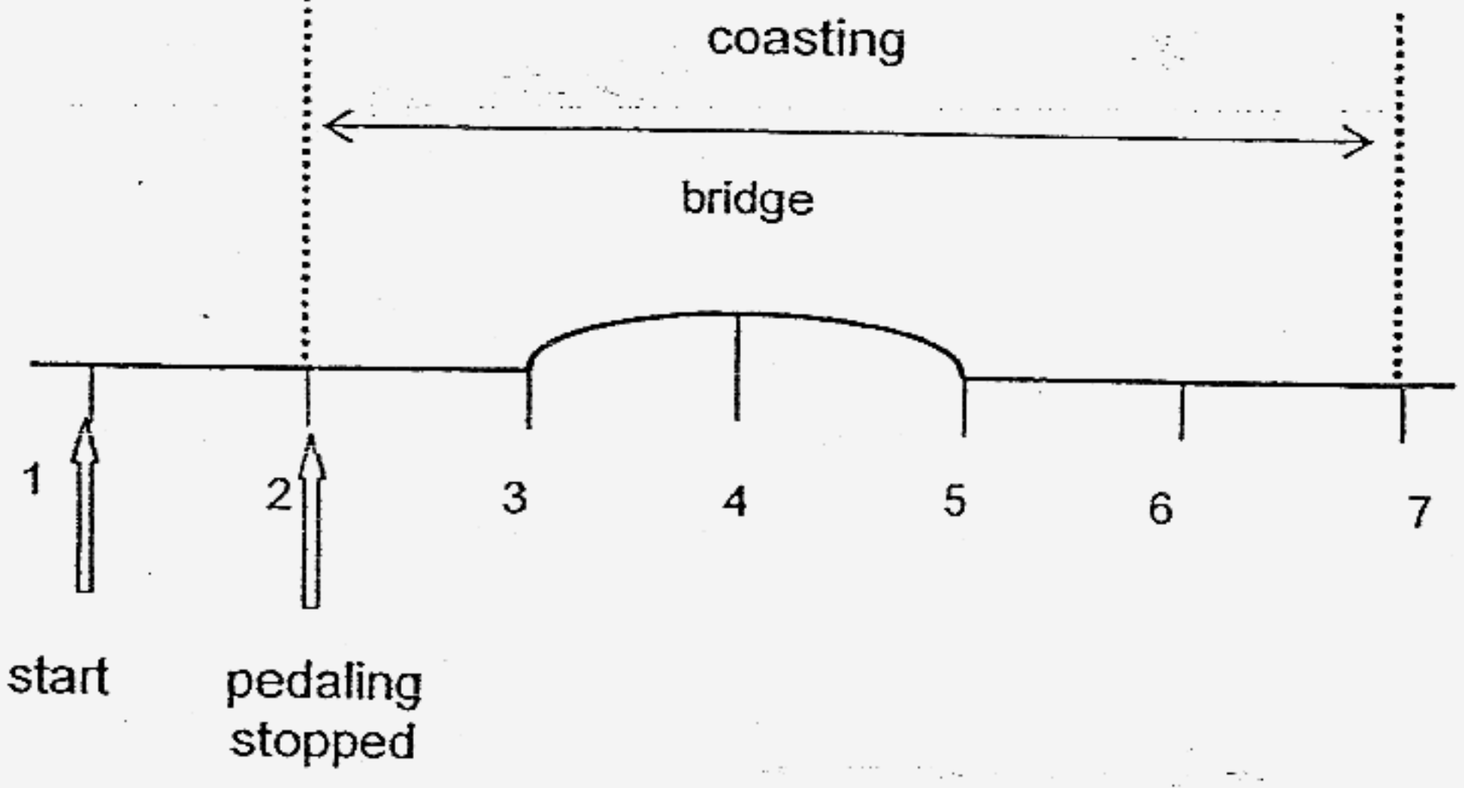


(a) Fill in the appropriate boxes with the words 'coal' and 'butterfly'. (1 mark)

(b) Using the information given above, describe 'X'. (1 mark)

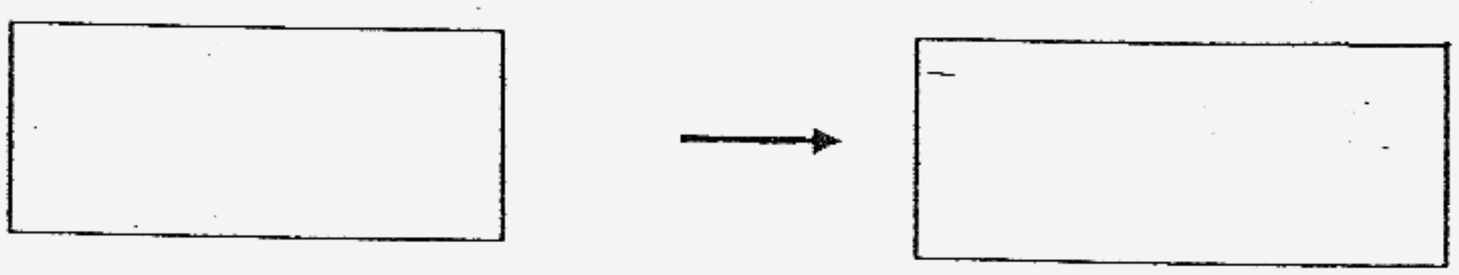
41. Randoph and his friends rode their bicycles at West Coast Park. The boys decided to have a competition when they reached a bridge. They pedaled as fast as they could from point 1 to point 2 and then they stopped. They then lifted their feet from the pedal and coasted to point 7.

A drawing of the path they had taken is shown below.



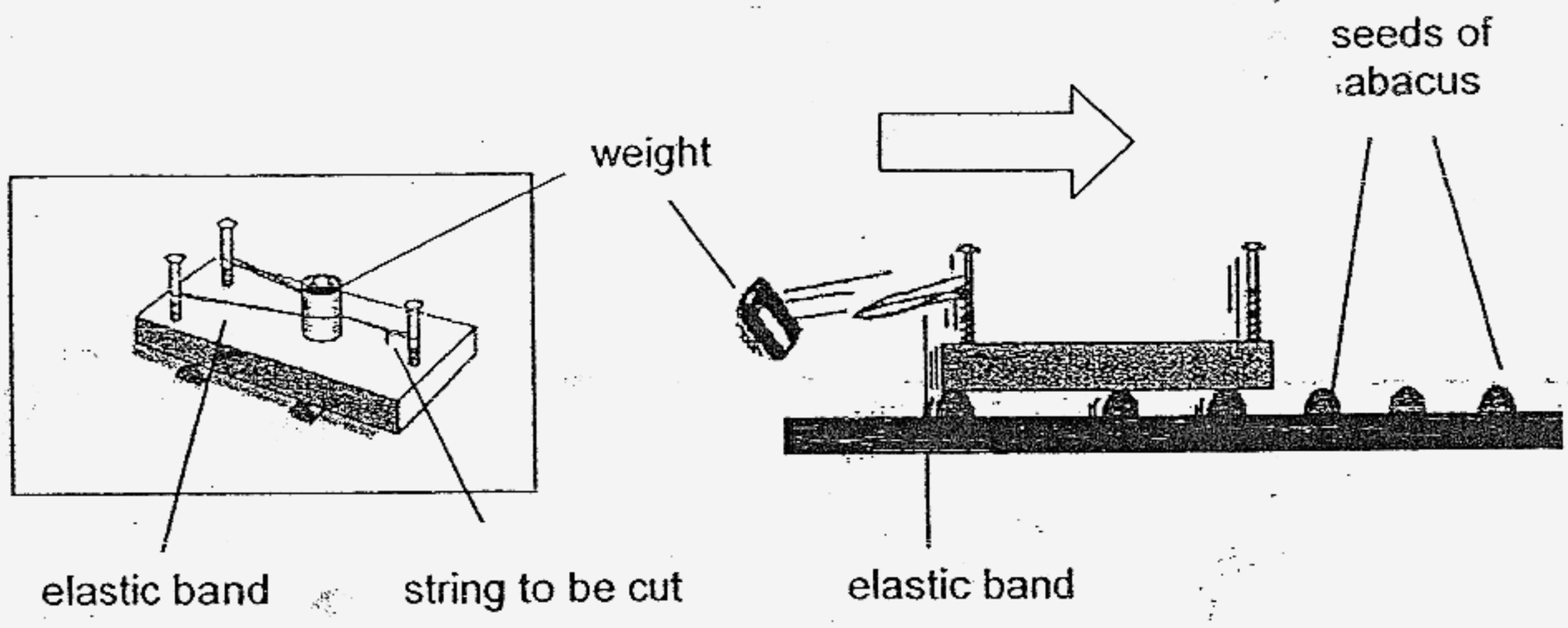
(a) At which point did the bicycles travel the fastest? (1 mark)

(b) Describe the energy conversion using the boxes given. (1 mark)
(Main energy changes only.)



(c) What are two other forms of energy that are also present when the bicycles move on the path? (1 mark)

42. The diagram below show an experiment with a toy car.



The toy car was made with a wooden block with three screws attached. A stretched elastic band was fastened to two screws at one end of the car. It was then held by a string tied to another screw at the other end. A weight was lastly placed in the position as shown in the diagram. Different weights were used for each trial.

The whole setup was then placed on an abacus so that the seeds act as rollers for the toy car to move on.

The distance moved by the car is measured when the string was cut. The elastic band, wooden block and the positions of the screws remained unchanged.

(a) What was the aim of the experiment ? (1 mark)

_____

_____

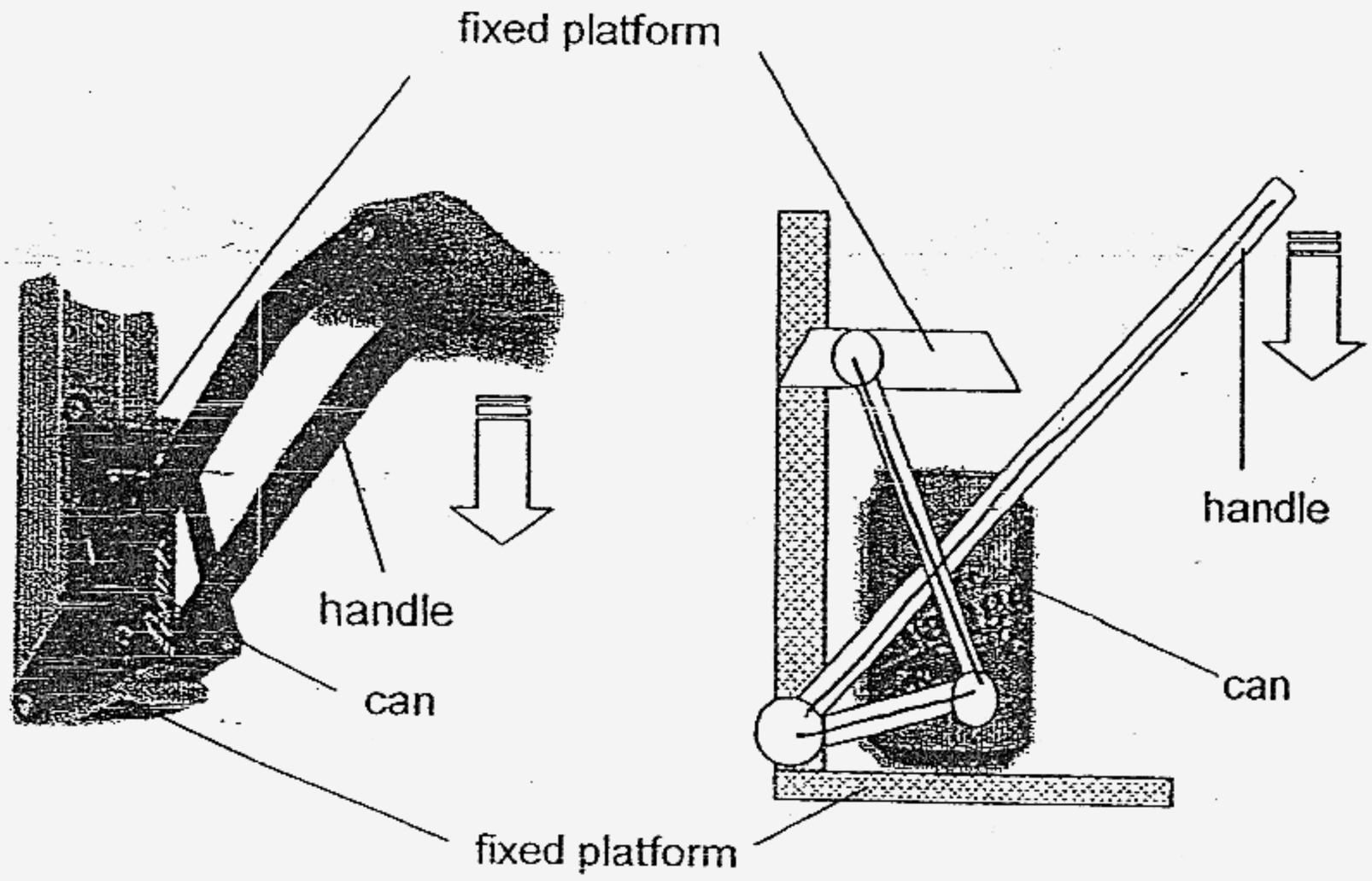
_____

(b) The toy car moves a further distance on the seeds of the abacus than on the floor. Explain why. (1 mark)

_____

_____

43. The following pictures show a can crusher that is used to reduce the size of empty aluminium cans to one-fifth their original size.



(a) How many levers are there in the can crusher ? (1 mark)

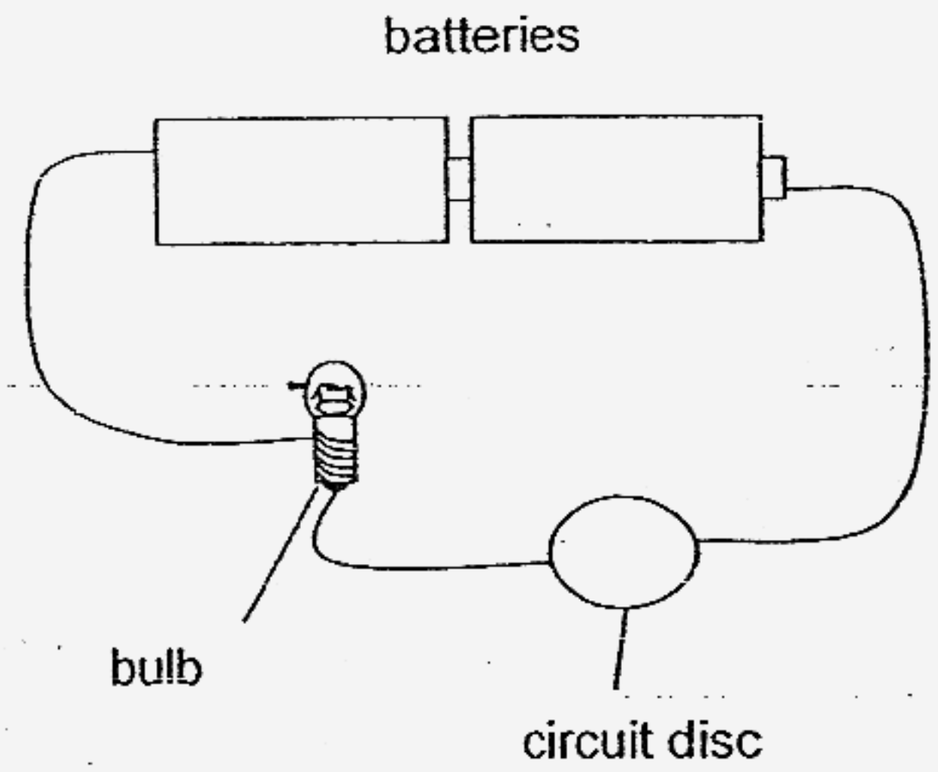
_____

(b) How does having a longer handle help you when you are using the can crusher ? (1 mark)

_____

_____

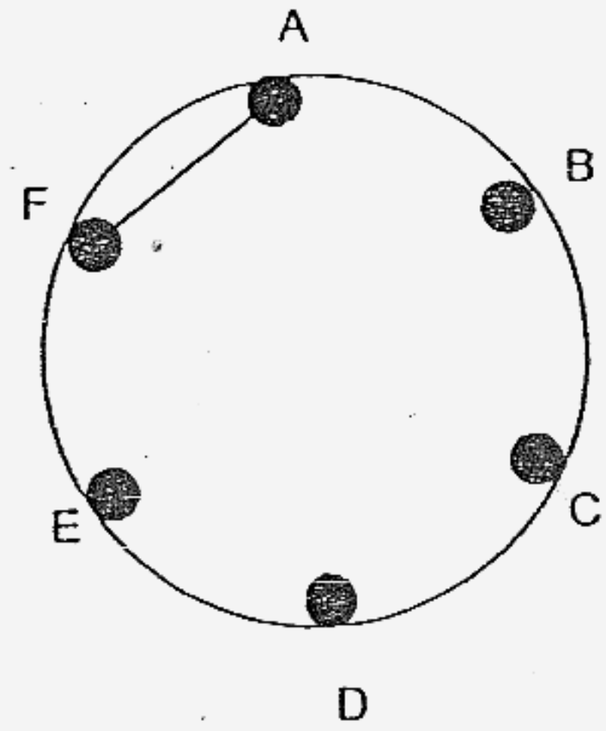
44. Meili used a circuit tester to test a circuit disc as shown below.



After connecting each pair of contact points on the circuit disc, the following results were obtained.

Contact points connected	Did the bulb light up?
A and C	Yes
B and E	No
C and F	Yes
D and B	No
A and F	Yes

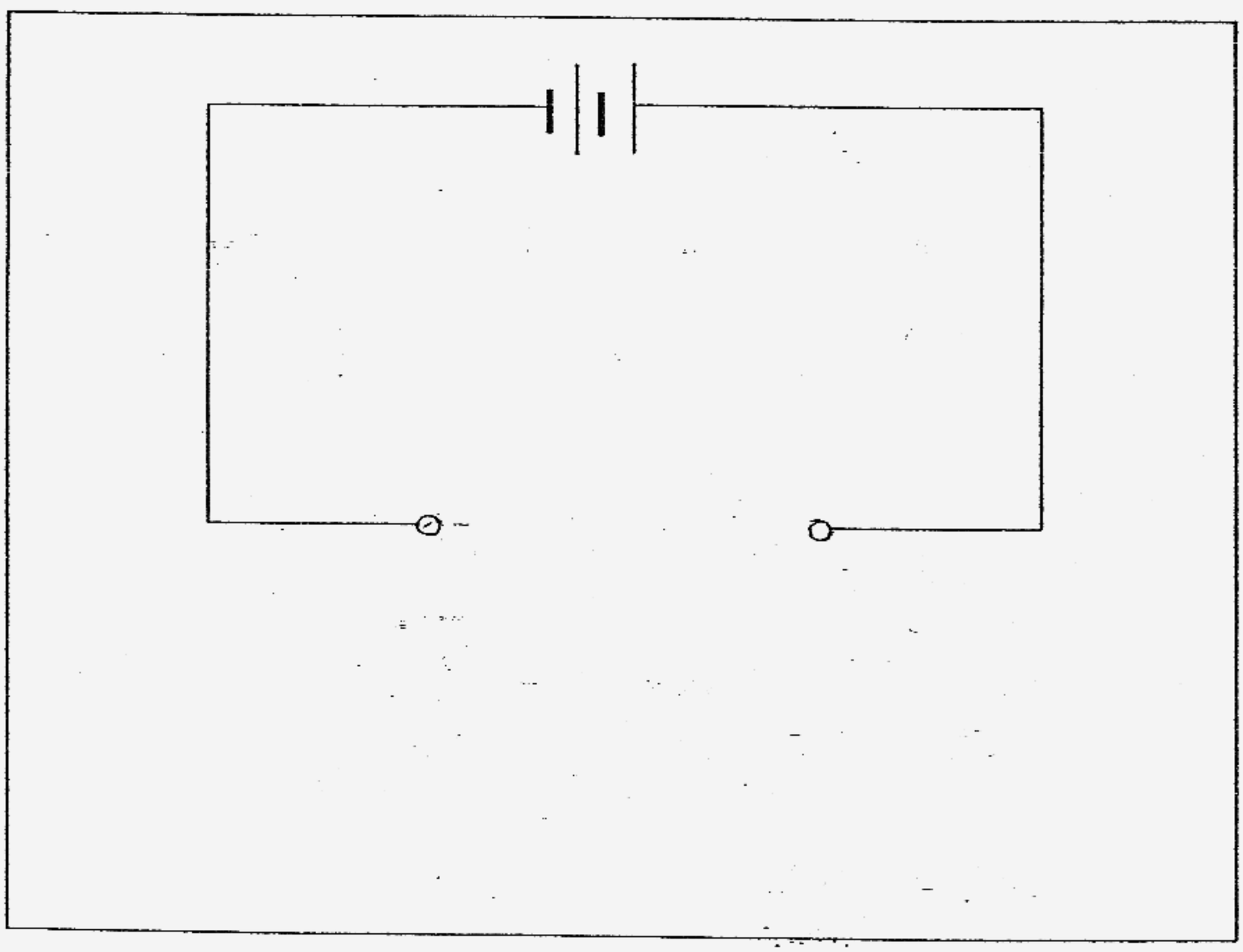
(a) Based on the results given, draw **only two lines** on the diagram below to show how the circuit disc is connected. (1 mark)



(b) Using the symbols given, draw how two bulbs could be arranged such that the brightness of the bulbs would be the same as the one in the setup shown in part (a).

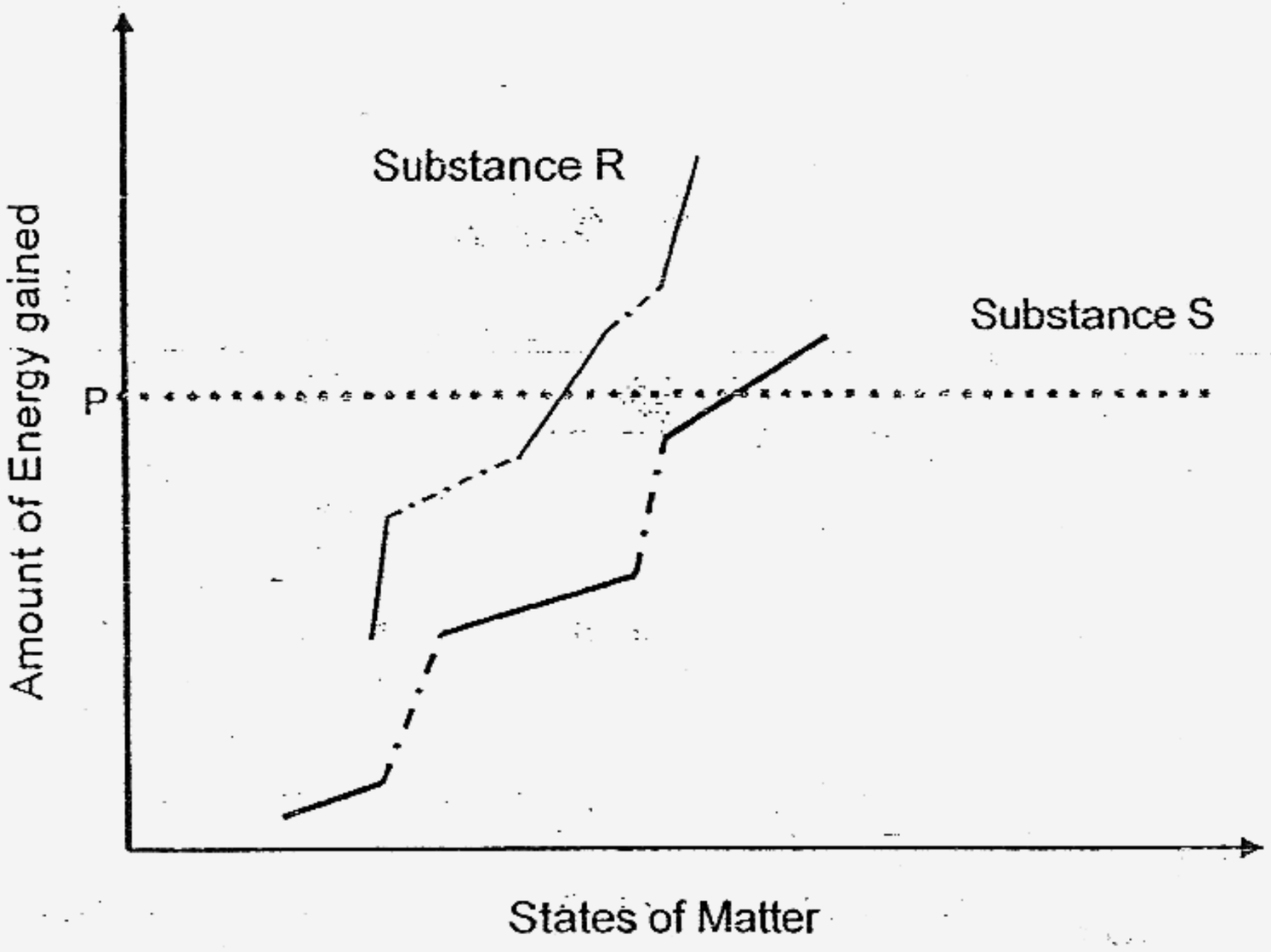
bulb

wire



(1 mark)

45. Look at the following graphical representation of changes of states of substances R and S from a solid to a liquid to a gas.



(a) What form of energy was required for the changes in state in both substances ? (1 mark)

_____

(b) What would be the states of substances R and S at energy level P ?

Substance R : _____

Substance S : _____

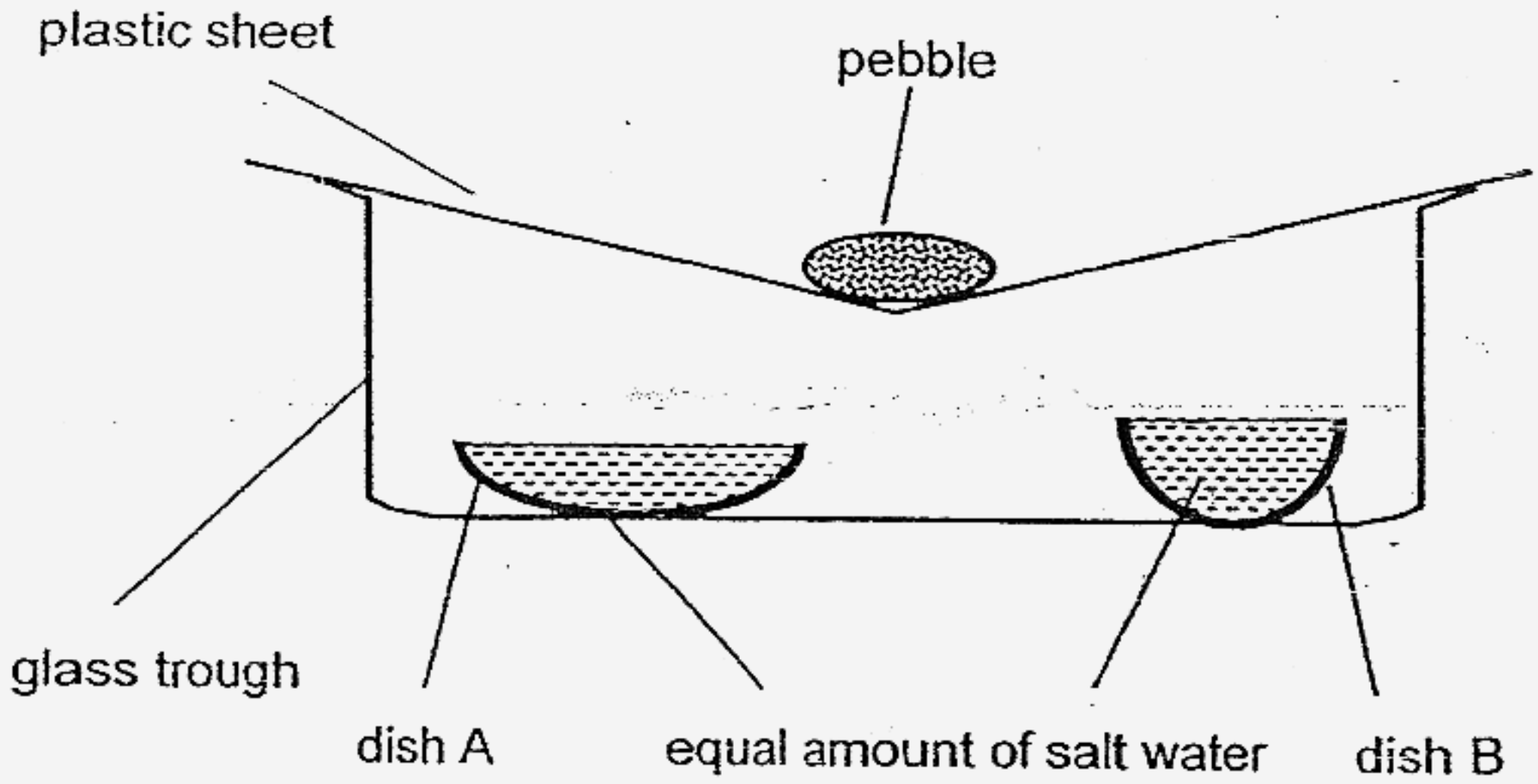
(1 mark)

(c) Based on the graph, how is substance R different from substance S in terms of the rates of change from one state to another ? (1 mark)

_____

_____

46. The following experimental setup was placed at the window.



(a) Explain why there is less water in dish A compared to dish B after 3 days.

_____

_____

_____

(1 mark)

(b) Explain how water is collected at the bottom of the trough after 3 days.

_____

_____

_____

(1 mark)

47. Complete the following passage using an appropriate word for each blank. (2 marks)

A magnet is strongest at its _____ and weakest in the middle. To turn a magnetic material into a magnet, one can use stroking, induction or electricity. A magnet loses its magnetism when it is _____.

A stronger magnet will take a _____ time to lose its magnetism than a weaker one. A magnet exerts a _____ that cannot be seen but it can be felt.

********** END OF PAPER **********

Setters :

Ms Peh Tvun Chyn
Mr Ting Huat Seng

NANYANG PRIMARY SCHOOL - PRIMARY 6 SCIENCE 2007
SEMESTRAL ASSESSMENT (2)

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

31) a) Point A has less pollutants than point B.

b) Discharge from factories is flowing into the river.

32) a) So that the distance from organisms X to part A and part B would be the same.

b) To make sure that the results are reliable.

c) Its natural habitat is the leaf litter

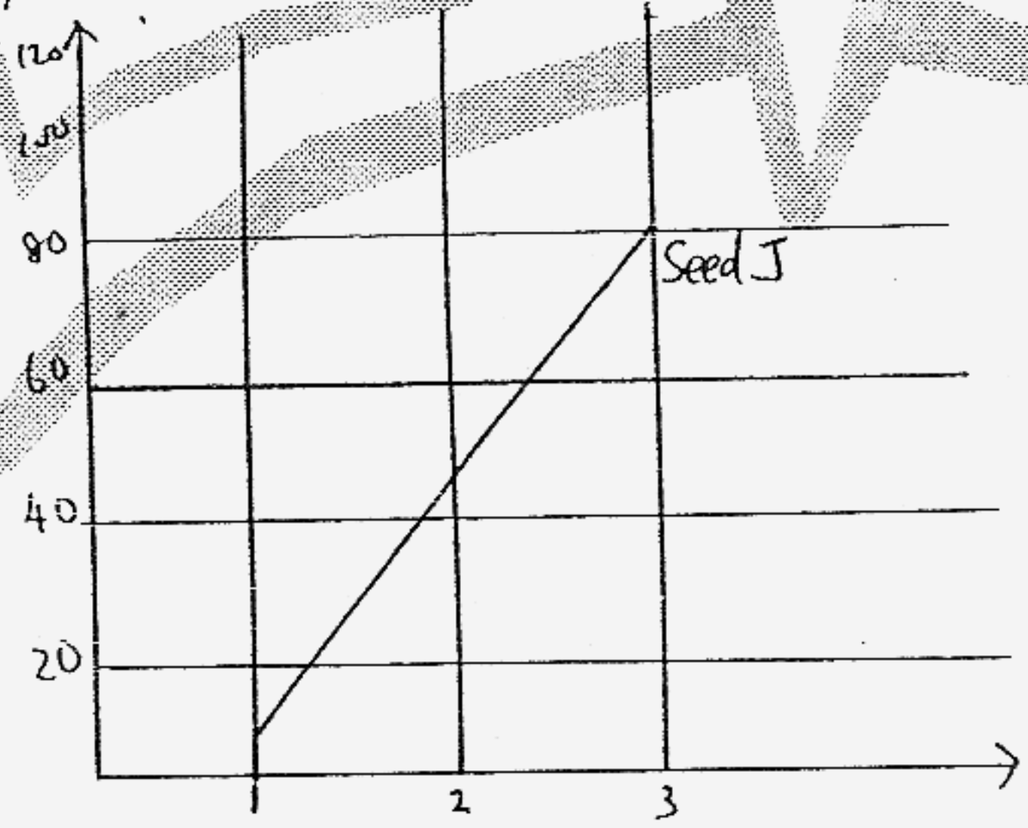
33) a) The body of fish X has greater water resistance than that of fish.

b) As fish Y is more streamlined than fish X, fish Y faces lesser water resistance than fish X. Thus, fish Y would be able to swim faster and catch fish X.

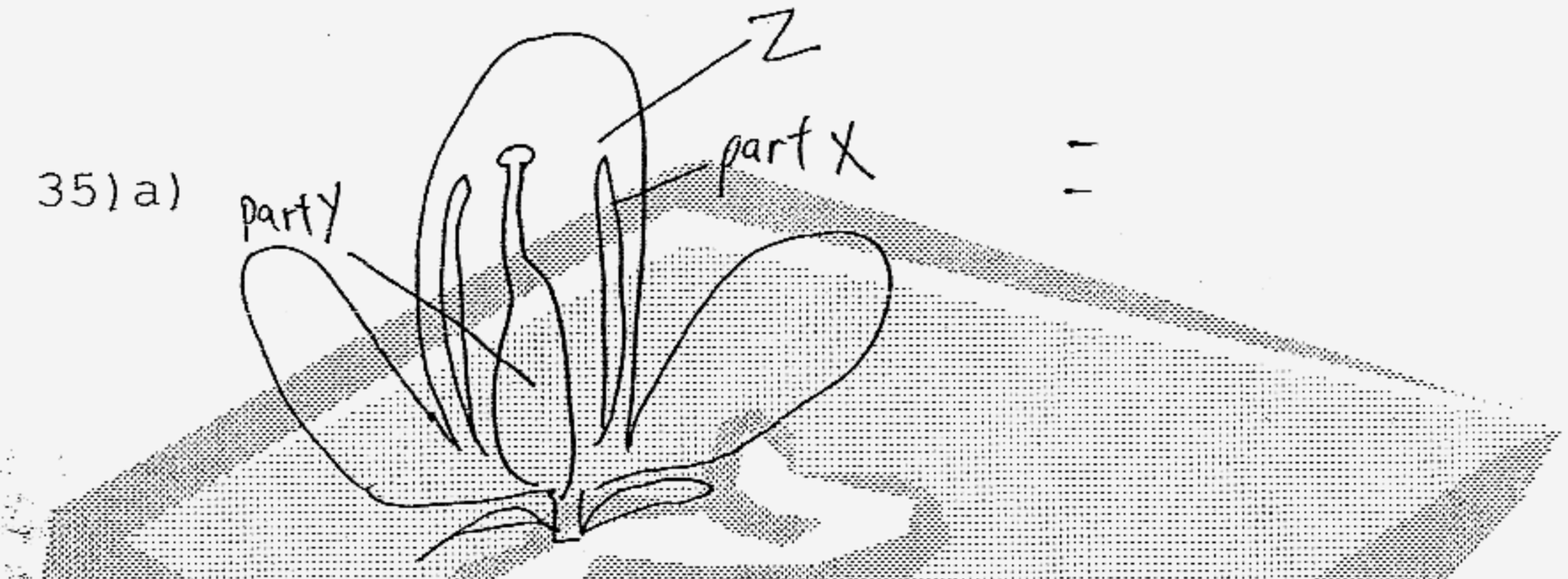
34) a) The greater the length of the wing-like structure of seed H, the further the horizontal distance traveled.

b) 19

c)



35)a)



b)Yes, the pollen grains from another flower of the same species can still pollinate the flower and thus, fertilise the ovules in the ovary.

c)Part Z attracts insects like bees to collect nectar and in the process pollinate the flowers.

36)a)carbon dioxide
b)water
c)oxygen
d)energy

37)Y:Part Y remains healthy/green.
It is able to make food as the xylem tube is not removed.
Z:Part Z will shrink.
No food is able to be transported from the leaves to part Z because part of the phloem tube is cut off. Thus, part Z will shrink as the roots still need sugars to carry out respiration.

38)a) Egg

E F

G

b)Insect S has four-stages in its life cycle, while the cockroach has three-stages in its life cycle.

39)a)i)ball and socket joint.
ii)hinge joint..
b)The ball and socket joint enables the leg to move in circular motions, but the hinge joint only enables the lower leg to move back and forth.

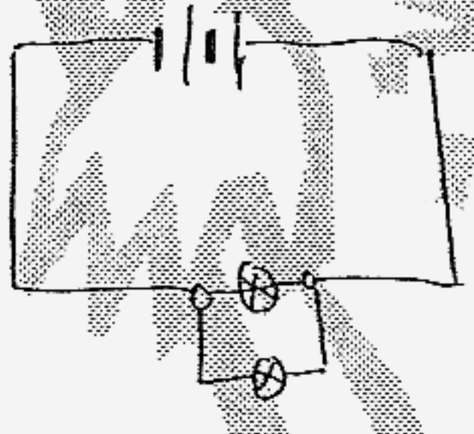
40)a)i)Coal vi)Butterfly
b)X is a living thing, does not have more than 4 legs and its young resembles the adult.

41)a)Point 2.
b)Chemical potential energy→Kinetic energy
c)Heat energy and gravitational potential energy.

42)a)It was to find out whether the different weights used affected the distance moved by the toy car.
b)The seeds of the abacus help to reduce friction between the toy car the ground surface it is moving on.

43)a)Three
b)Less effort is needed to crush the can.

44)a)F→A→C
b)



45)a)Heat energy
b)R:Liquid
S:gas
c)Substance R changes state at a faster rate Substance S.

46)a)Since dish A has a larger area of exposed surface than dish B,more water evaporated from dish A compared to dish. Thus, there is less water in dish A than in dish B at the end of 3 days.
b)The water from the two dishes evaporated and condensed on the cooler surface of the plastic sheet.

47)poles, heated, longer, farce.

---end---