# RAFFLES GIRLS' PRIMARY SCHOOL

## SEMESTRAL ASSESSMENT (2) 2019

| | |
|---|---|
| Section A | /50 |
| Section B | /40 |
| Your score **out of 100%** | |
| Parent's signature | |

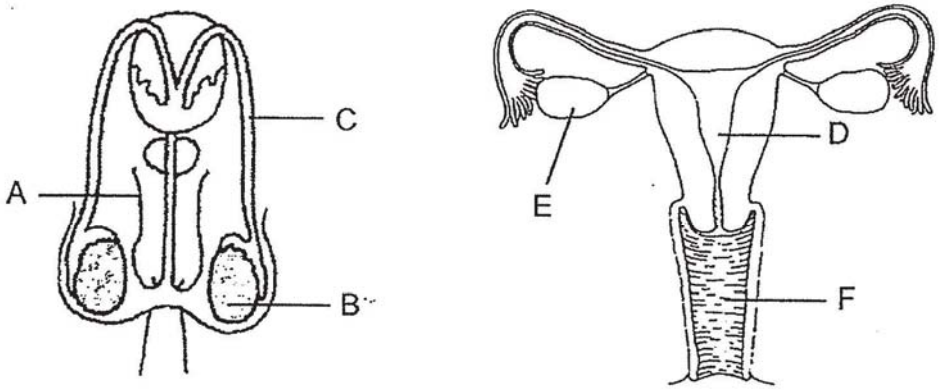
**Name :** _____ **Index No.:** _ **Class: P5**___ **Date:** _____

**30 October 2019** **SCIENCE** **ATT: 1 h 30 min**

**SECTION A (25 x 2 marks)**

For each question from 1 to 25, 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 (OAS) provided.

1. The diagrams below show the male and female human reproductive systems.

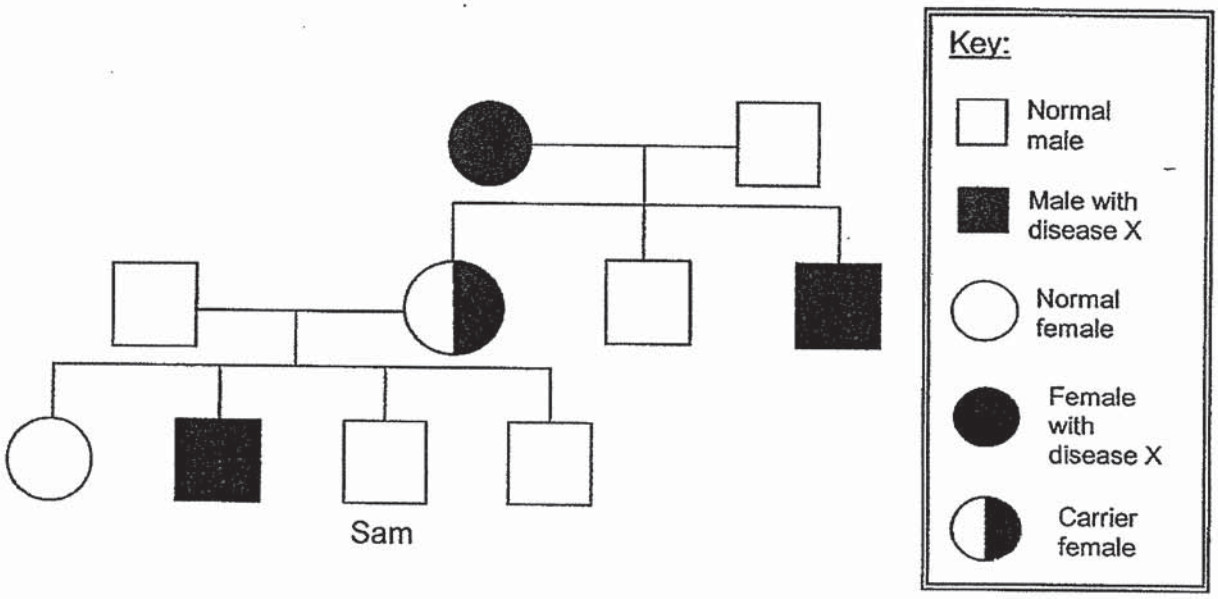



Which of the following states the parts that perform the functions stated correctly?

| | production of female reproductive cells | production of male reproductive cells |
|---|---|---|
| (1) | B | F |
| (2) | D | A |
| (3) | F | C |
| (4) | E | B |

2. A disease carrier is a person who has inherited a genetic trait of the disease but displays no symptoms for the disease.

The diagram below shows information of three generations of Sam's family on the inheritance of the genetic trait for disease X.

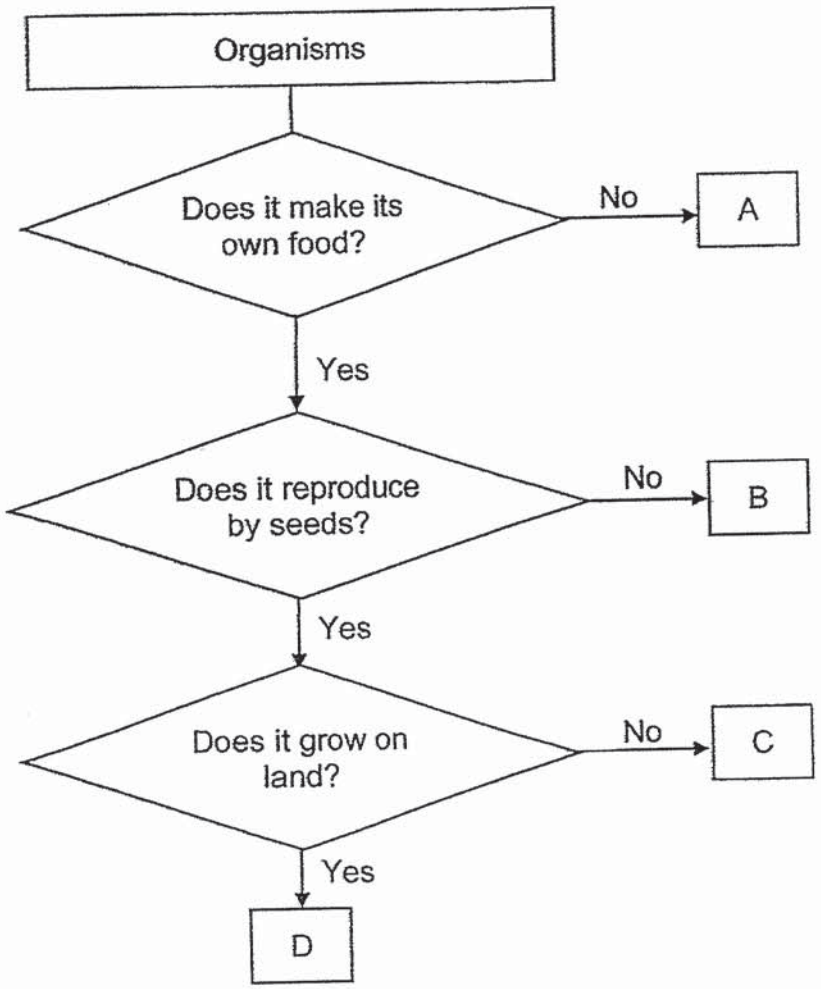



Based on the information above, which of the following statement(s) is/are likely to be correct?

A Sam's children could possibly inherit the disease.
B Both of Sam's grandparents display symptoms of disease X.
C Sam's mother inherited the gene of disease X from his grandmother.
D The genes of disease X are passed on to only the female members of the family.

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

13. The flow chart below shows how organisms A, B, C and D are grouped.




The table below shows some characteristics of organisms P, Q and R. A tick (✓) indicates the presence of the characteristic in the organism.

| Characteristics | Organism P | Organism Q | Organism R |
|---|---|---|---|
| Has chlorophyll | ✓ | ✓ | |
| Grows on land | ✓ | | ✓ |
| Has fruits | ✓ | ✓ | |
| Reproduces by spores | | | ✓ |

Based on the information above, which of the following organism(s) share the same characteristics as organism C?

(1) Q only
(2) P and Q only
(3) P and R only
(4) P, Q and R

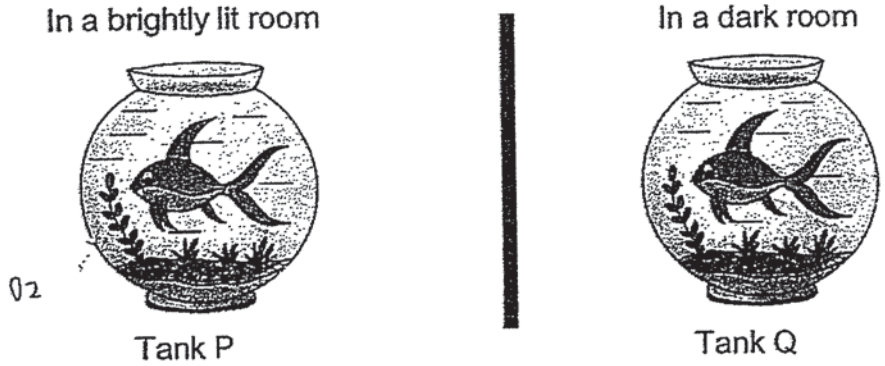
4. Cassandra wanted to find out the effect of overcrowding on the growth of seedlings. She used identical pots for her experiment and watered them daily with the same amount of water.

| Set-up | Number of seedlings | Type of seeds | Location |
|---|---|---|---|
| A | 13 | P | Field |
| B | 7 | Q | Room |
| C | 7 | P | Field |
| D | 13 | Q | Room |
| E | 35 | Q | Field |

Which of the following set-ups should Cassandra use in order to ensure a fair test?

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

5. Meera filled two identical tanks, P and Q, with same amount of water and plants as shown in the diagrams below. She placed tank P in a brightly lit room and tank Q in a dark room.

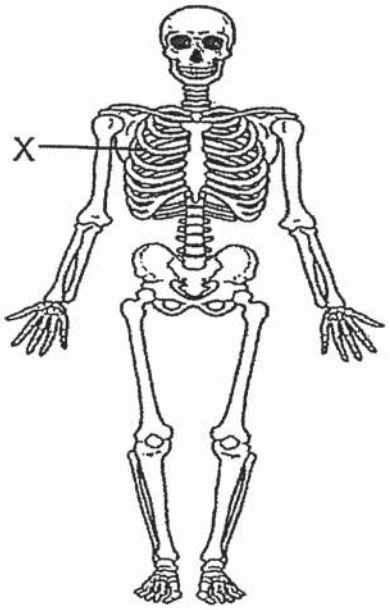



Meera recorded the time taken for the fish in each tank to swim to the surface of the water to receive more air.

Which of the following most likely shows Meera's observations?

| | Time taken for the fish to swim to the surface of the water (minutes) | |
|---|---|---|
| | **P** | **Q** |
| (1) | 15 | 15 |
| (2) | 15 | 10 |
| (3) | 15 | 30 |
| (4) | 14 | 15 |

6. The diagram below shows the skeletal system.

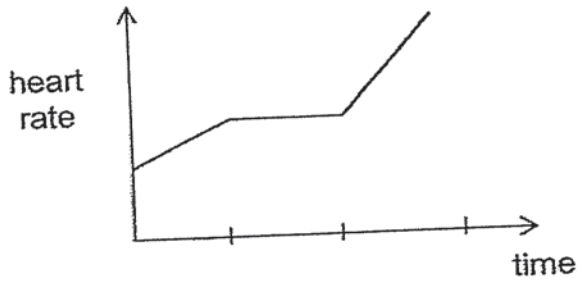



Part X protects the _____.

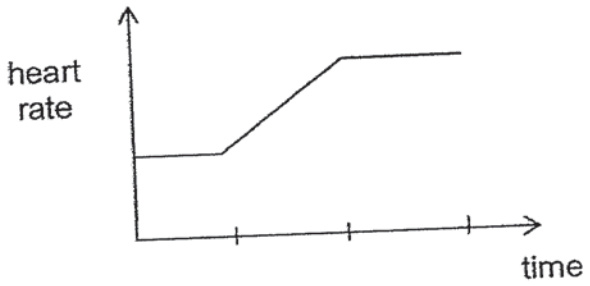
(1) lungs and heart
(2) heart and stomach
(3) lungs, heart and small intestine
(4) heart, stomach and small intestine

7. Gerald started his exercise session with a brisk walk and then he took a rest before he continued with a few sets of jumping jacks. Which of the following graphs best represents his heart rate from the start to the end of his exercise session?

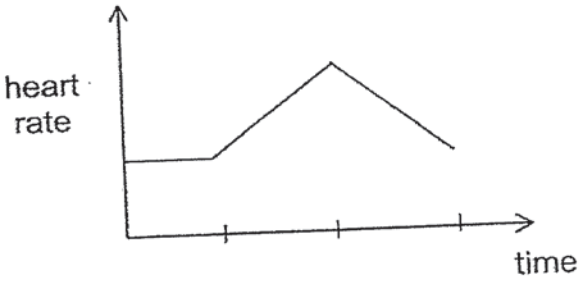
(1)



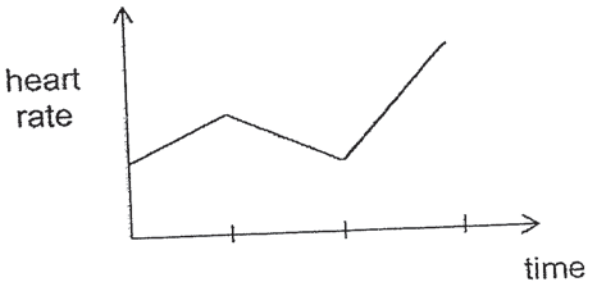

(2)



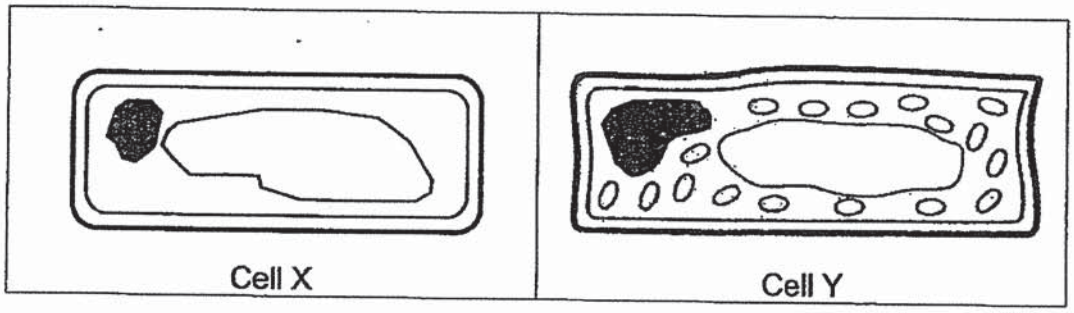

(3)




(4)



8. The diagram below shows two different types of cells, X and Y.

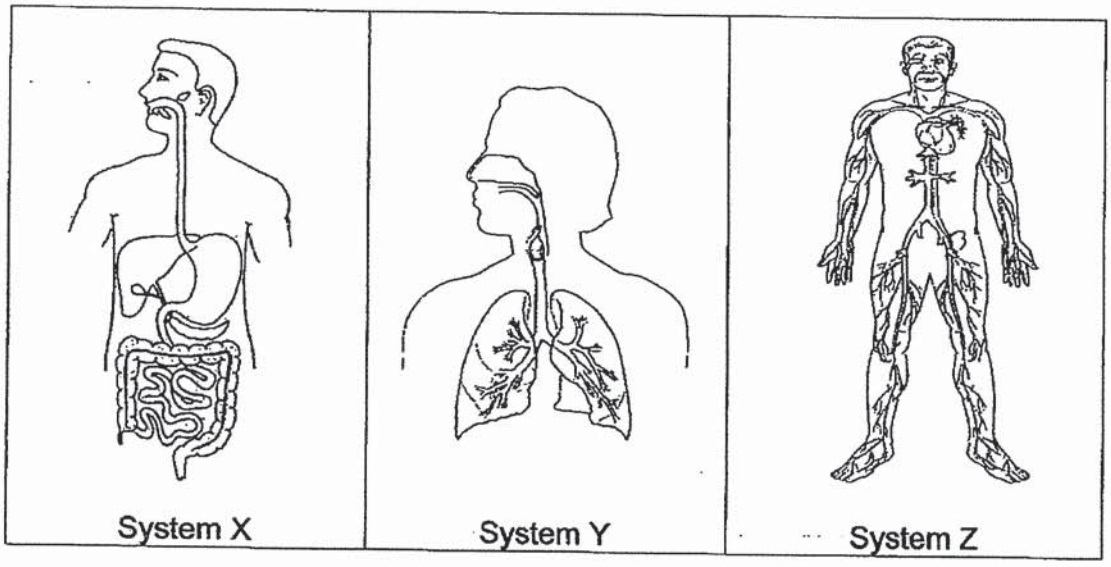



Which of the following statements about cells X and Y are most likely to be correct?

A Both cell X and cell Y are plant cells.
B Cell Y is most likely to be found in the leaf.
C Cell X is an animal cell, while Cell Y is a plant cell.
D Both cell X and cell Y are able to make food.

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

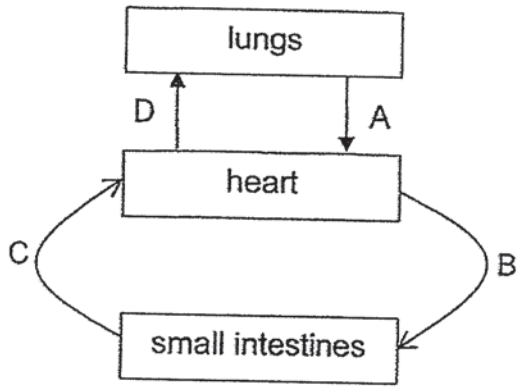
9. The diagrams below show human systems, X, Y and Z.




Which of the following systems work(s) to supply oxygen to the body and remove carbon dioxide from the body?

(1) System X only
(2) System Y only
(3) Systems Y and Z only
(4) Systems X, Y and Z

10. The diagram below shows how blood flows in certain parts of the body after a meal.

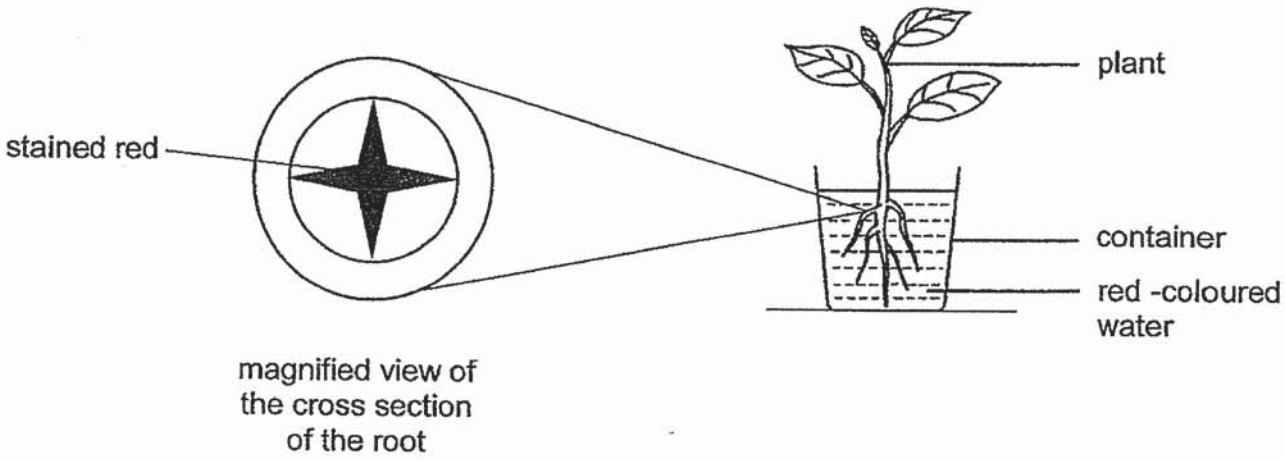



Same amount of blood samples were taken from parts A, B, C and D.

Which of the following is correct?

| | Amount of oxygen in blood | Amount of digested food in blood |
|---|---|---|
| (1) | Blood A has more than blood B. | Blood B has less than blood C. |
| (2) | Blood A has less than blood C. | Blood B has more than blood C. |
| (3) | Blood D has more than blood B. | Blood B has less than blood C. |
| (4) | Blood D has less than blood C. | Blood B has more than blood C. |

11. The diagram below shows a plant placed in a container containing red-coloured water. The magnified cross-section of the root is shown below.

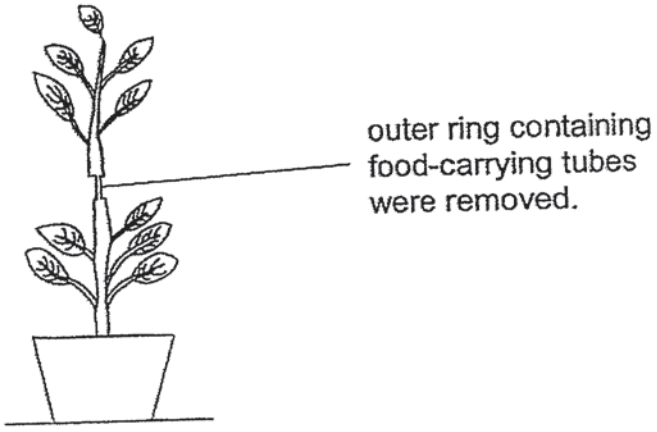



magnified view of the cross section of the root

Which of the following correctly explains the function of the part that is stained red?

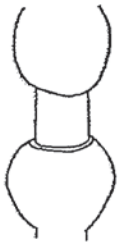
(1) It keeps the plant upright.
(2) It stores food made by the plant.
(3) It transports food to all parts of the plant.
(4) It transports water to all parts of the plant.

12. Jamie removed the food-carrying tubes of a plant as shown in the diagram below. She left the plant under the sun and watered it daily.

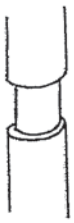



Based on the information above, which of the following diagrams best represents the appearance of the above stem after one week?

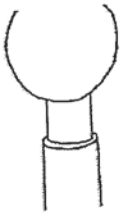
(1)



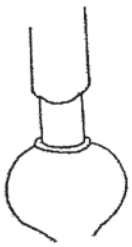
(2)



(3)



(4)



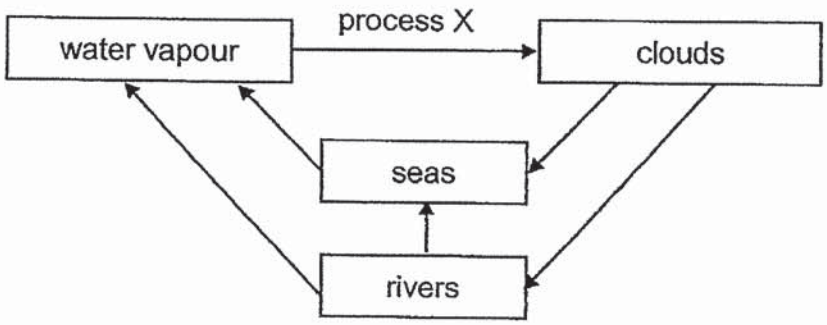
13. The table below shows the melting point and boiling point of four different substances A, B, C and D.

| Substance | Melting point (°C) | Boiling point (°C) |
|---|---|---|
| A | 24 | 74 |
| B | 0 | 100 |
| C | 13 | 55 |
| D | 80 | 220 |

Which of these substance(s) is/are liquid(s) at 30 °C and gas(es) at 75 °C?

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

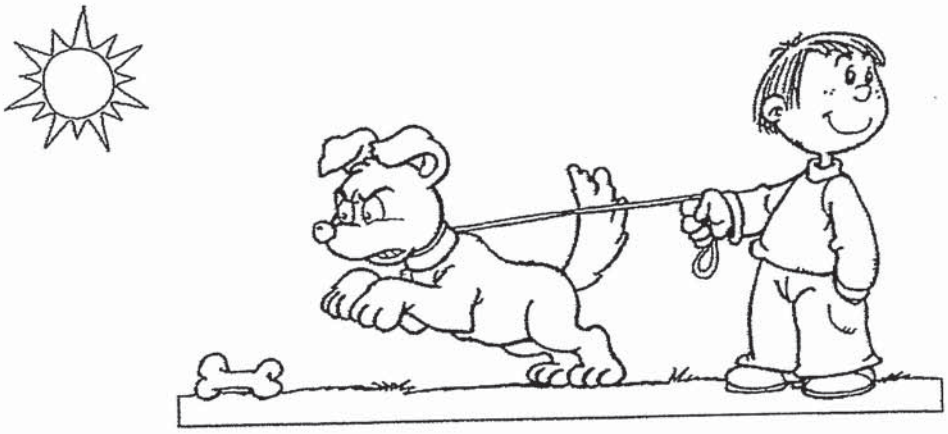
14. The diagram shows the water cycle.




Which of the following describes process X correctly?

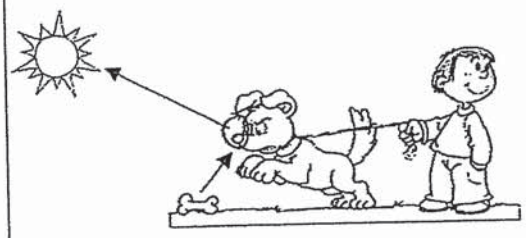
| | Heat transfer | Process X |
|---|---|---|
| (1) | heat loss | condensation |
| (2) | heat loss | evaporation |
| (3) | heat gain | condensation |
| (4) | heat gain | evaporation |

15. Study the diagram below, the dog is able to see the bone.

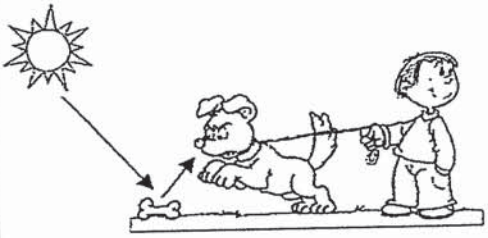


Which of the following correctly shows the path of light that makes it possible for the dog to see the bone?

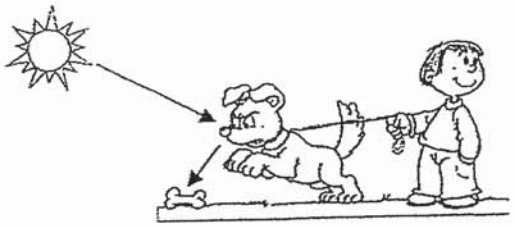
(1)



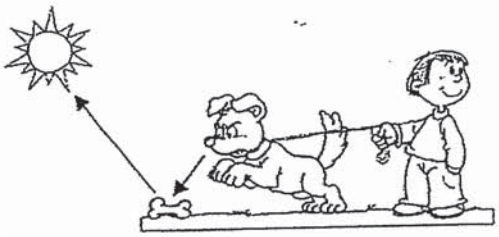
(2)



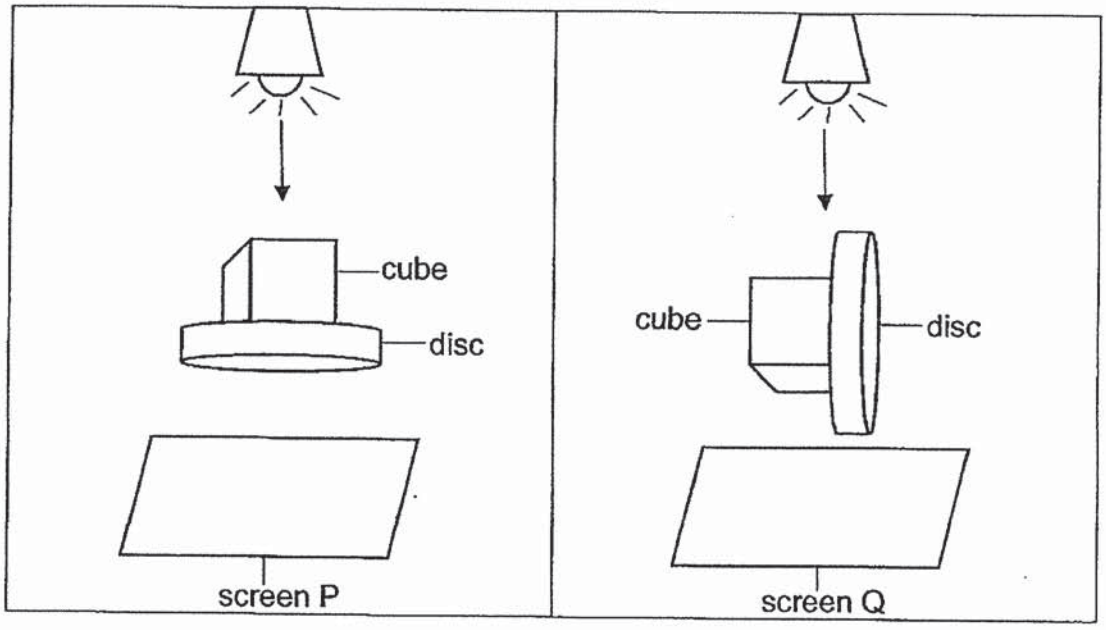
(3)



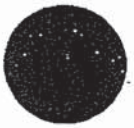
(4)



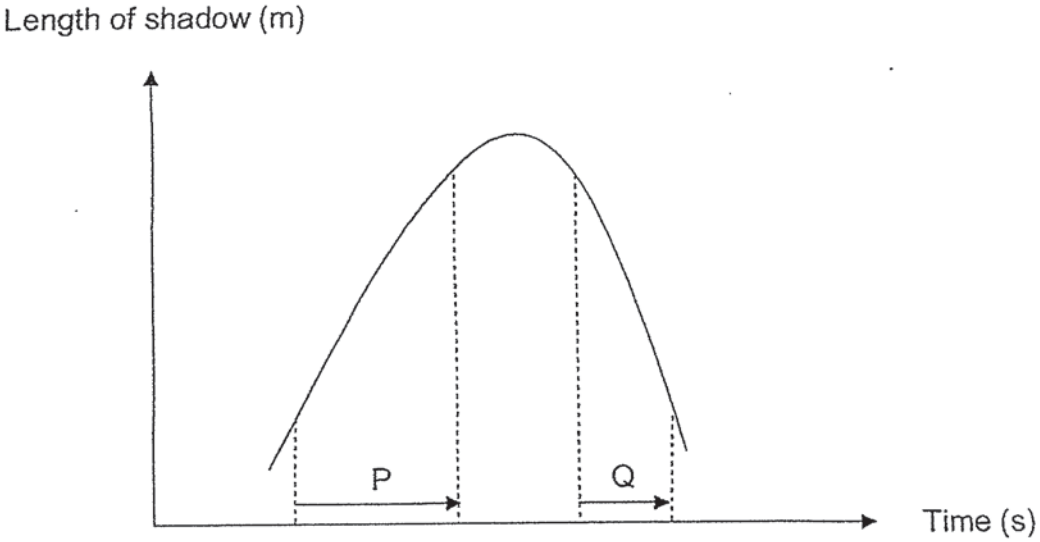
16. Mary placed a wooden cube and a circular disc under a lamp as shown below and observed the shadow cast on screen P. She changed the position of the objects and observed the shadow casted on screen Q.




Which of the following shadows shows the shadows cast on screen P and Q?

| | Screen P | Screen Q |
|---|---|---|
| (1) |  |  |
| (2) |  |  |
| (3) |  |  |
| (4) |  |  |

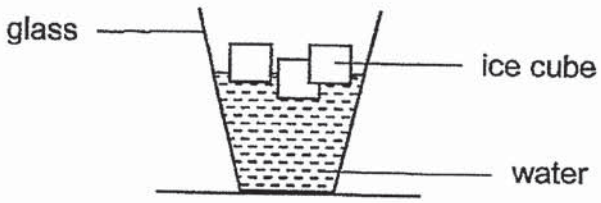
17. The graph below shows how the length of Raju's shadow changes over a period of time when he walks near a street lamp at night.




Which of the following correctly shows the walking path that Raju took during periods P and Q?

| | Period P | Period Q |
|---|---|---|
| (1) | towards the lamp | away from the lamp |
| (2) | towards the lamp | towards the lamp |
| (3) | away from the lamp | towards the lamp |
| (4) | away from the lamp | away from the lamp |

18. The diagram below shows some ice cubes in a glass of water.

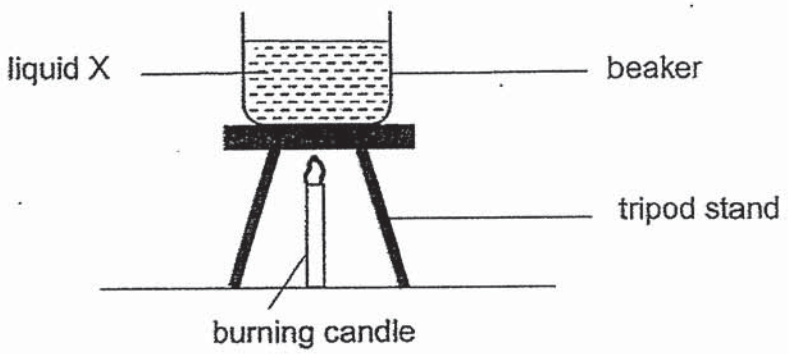



After ten minutes, the ice cubes melted completely.
Which of the following statement(s) correctly explain(s) why the ice cubes melted?

A The water gained heat from the ice.
B The ice gained heat from the water.
C The ice lost heat to the surrounding air.
D The surrounding air lost heat to the ice cubes.

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

19. Tom prepared a set-up as shown below. He poured 250 ml of liquid X into the beaker and recorded the time taken for it to boil.




He then repeated the experiment using the same amount of liquids Y and Z, and recorded the time taken for liquids X, Y and Z to boil in the table below.

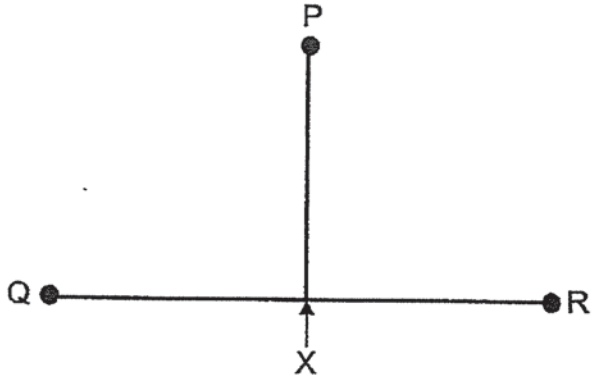
| Liquid | Ability to gain heat | Time taken for it to boil (min) |
|---|---|---|
| X | Poor | 15 |
| Y | Good | 15 |
| Z | Very good | 15 |

After the experiment, he realised that he used different number of heat sources for each repeated experiment.

Which of the following most likely shows the number of heat source he had used to heat up liquids X, Y and Z?

| | Number of heat source(s) | | |
|---|---|---|---|
| | X | Y | Z |
| (1) | 1 | 2 | 3 |
| (2) | 1 | 3 | 2 |
| (3) | 3 | 1 | 2 |
| (4) | 3 | 2 | 1 |

20. Helen placed 3 pieces of wax, of different quantity, at positions P, Q and R on steel rods of identical length as shown below. Heat is applied at point X. She recorded the time taken for the wax to melt completely.



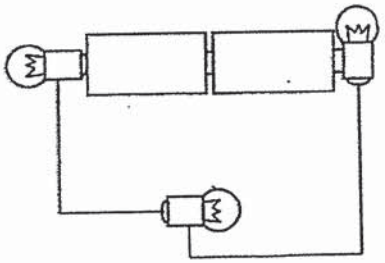

| Wax at position | Time taken for the wax to melt completely (minutes) |
|---|---|
| P | 10 |
| Q | 15 |
| R | 20 |

Which of the following correctly explains the different amount of time taken for each piece of wax to melt?

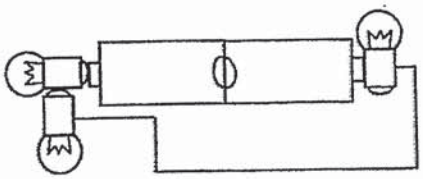
(1) Different amounts of heat were conducted to the wax at positions P, Q and R, to melt them.
(2) The wax at position Q gained less amount of heat to melt than the wax at positions P and R.
(3) The wax at position R gained more amount of heat to melt than the wax at positions P and Q.
(4) The wax at position P required the least amount of heat to melt as it was the smallest piece.

21. Which one of the following circuit arrangements will only have one bulbs lit up?

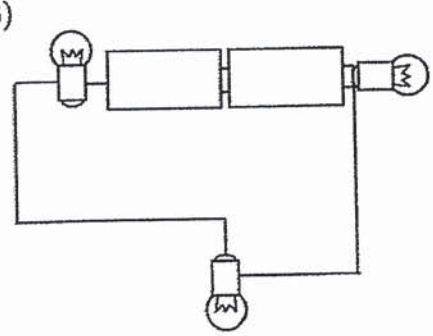
(1)



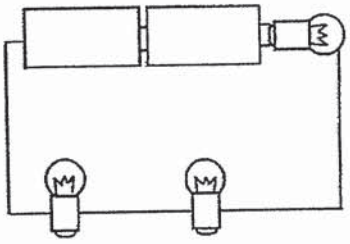
(2)



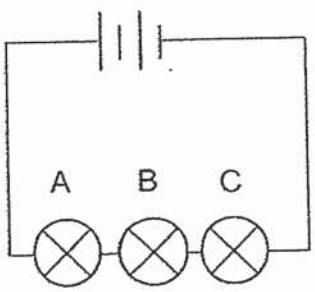
(3)



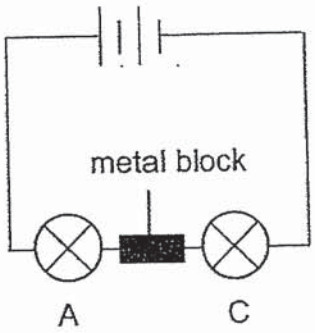
(4)



22. Study the electric circuits as shown below.




Circuit X



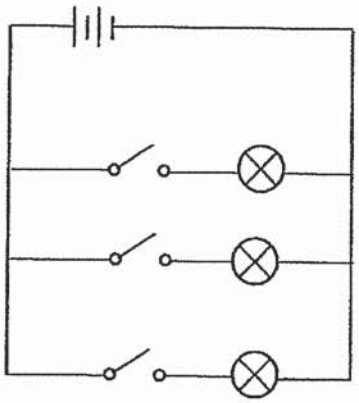

Circuit Y

If bulb B is removed and replaced with a metal block as shown in circuit Y, what will happen to bulbs A and C?

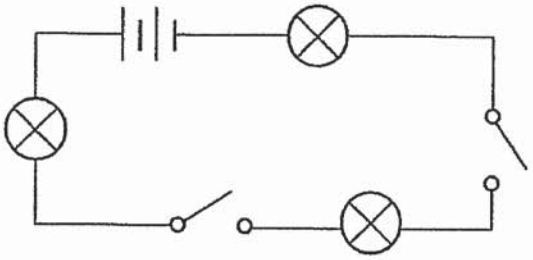
(1) Bulb C will not light up.
(2) Bulb A will become brighter than C.
(3) Bulb A will become dimmer than C.
(4) Bulbs A and C will light up with equal brightness.

23. Which of the following circuits allows the most number of bulbs to light up when only one switch is closed?

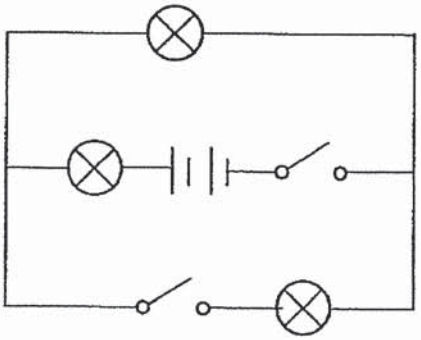
(1)



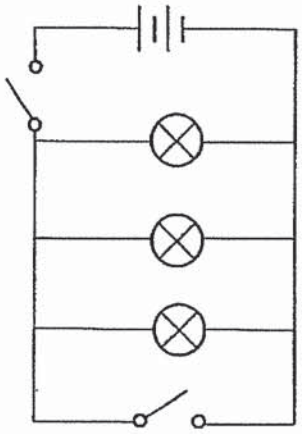
(2)



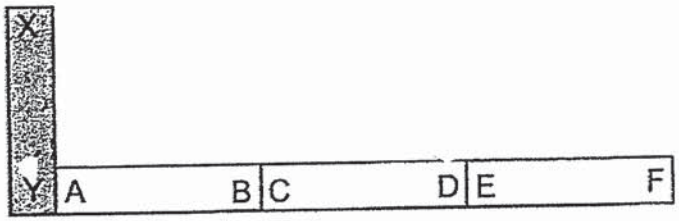
(3)



(4)

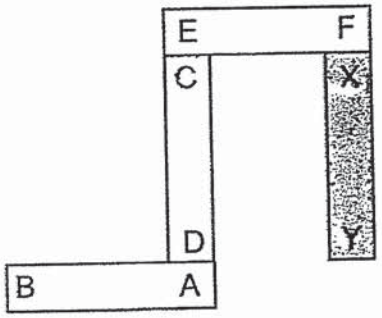


24. Siti arranged three magnets AB, CD and EF and an iron bar XY as shown below.

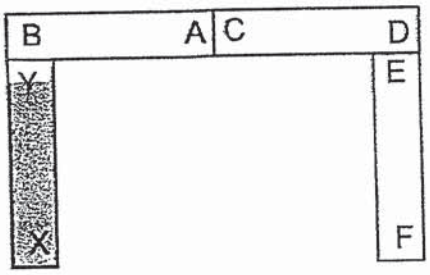



Which of the following arrangements is possible?

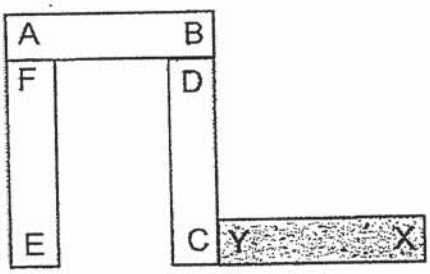
(1)



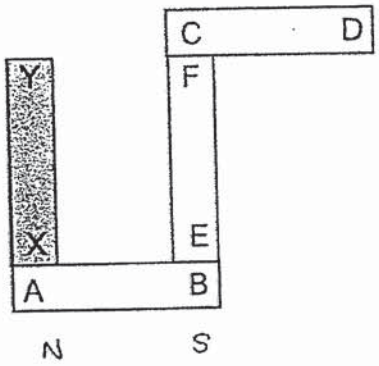

(2)



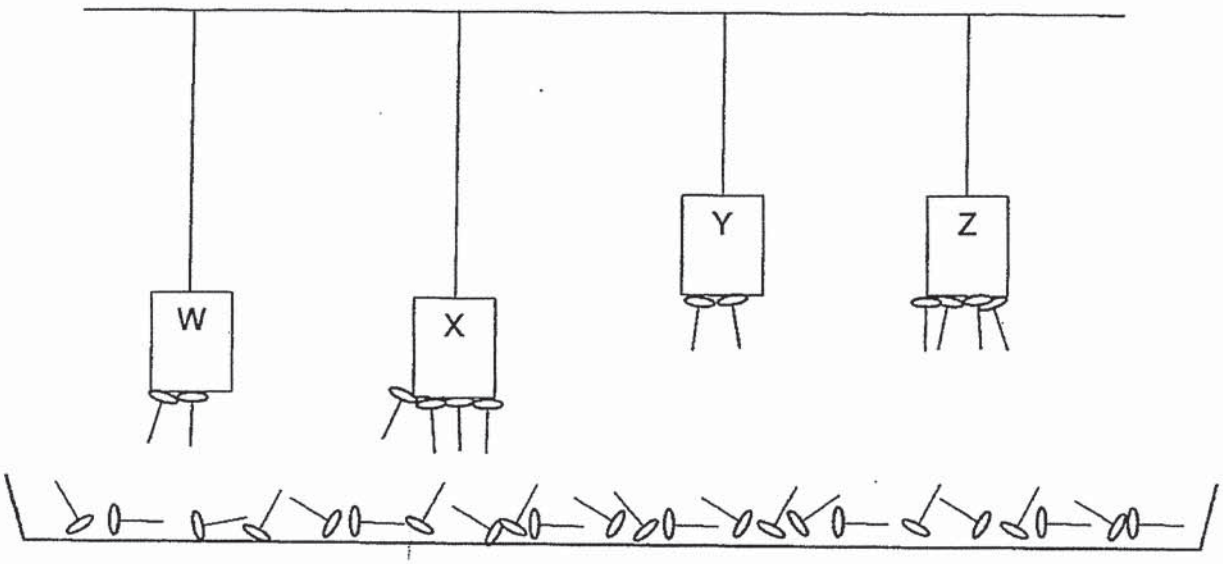

(3)




(4)



25. Magnets W, X, Y and Z are hung above a tray of iron pins. The number of pins attracted by each magnet is shown in the diagram below.




Which one of the following magnets is the strongest?

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

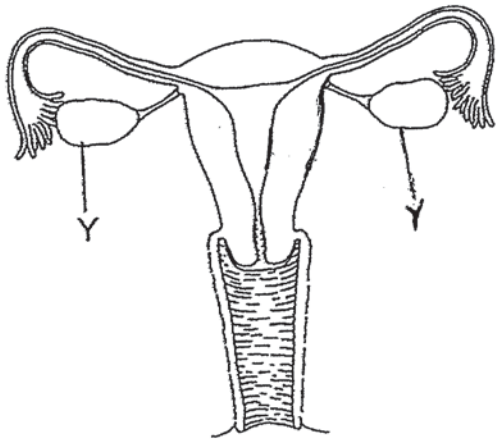
Name: _____ Index No: _____ Class: P5 _____

40

**SECTION B (40 marks)**

For questions 26 to 38, write your answers clearly in the spaces provided.
The number of marks is shown in brackets [ ] at the end of each question or part question.

26. The diagram below shows the human female reproductive system.




(a) Label with an 'X' in the diagram above to show the part where the fertilised egg develops into a foetus. [1]

(b) During the mating process, thousands of sperms are released into the female reproductive system. Explain how this helps in the process of fertilisation. [1]

_____

_____

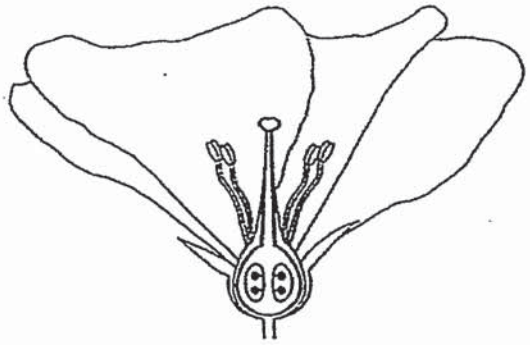
(c) Would it be possible for fertilisation to take place if both parts Y were removed? Explain your answer. [1]

_____

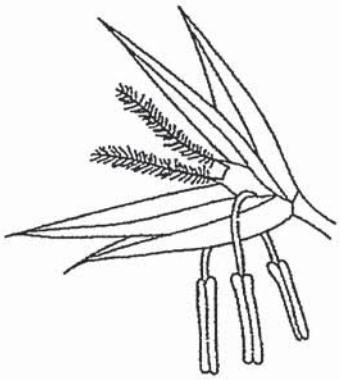
_____

Score 3

27. The diagram shows two flowers, A and B, with both male and female reproductive parts.



Flower A



Flower B

(a) Based on the observations of the flowers,

(i) state how each flower is pollinated in the table below. [1]

| Flower | Method of pollination |
|---|---|
| A | |
| B | |

(ii) state one difference between the physical characteristics of the two flowers above. [1]

_____

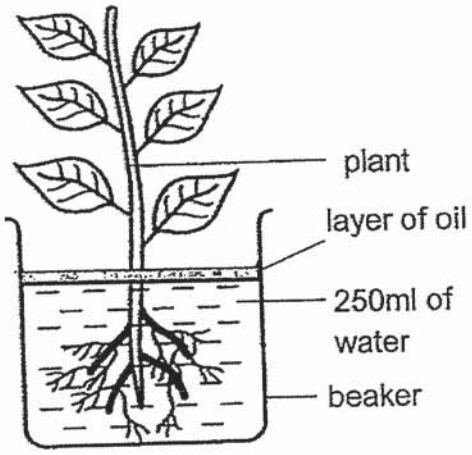
_____

(b) Name the process that occurs after pollination has taken place. [1]

_____

| Score | / 3 |
|---|---|

28. Peter wanted to investigate if the plants absorb water through the roots. He prepared a set-up as shown below.

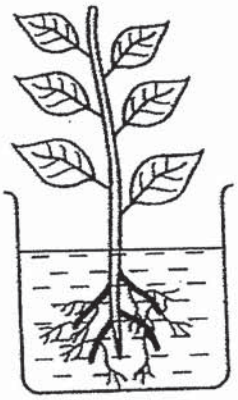



experimental set-up

(a) What is the purpose of the layer of oil in this experiment? [1]

_____

(b) Next, Peter prepared a control set-up as shown below. His friend commented that his set-up was wrong.



control set-up

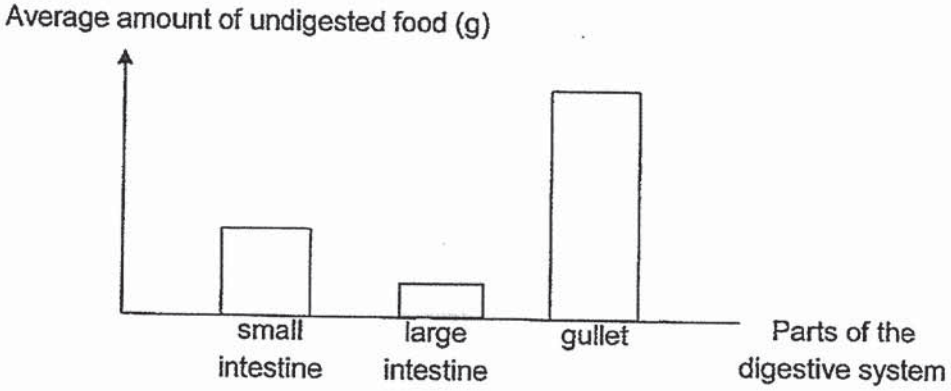
Without removing any parts of the plant in the control set-up, suggest **two** changes that must be made to the control set-up to ensure a fair test. [2]

(i) _____

(ii) _____

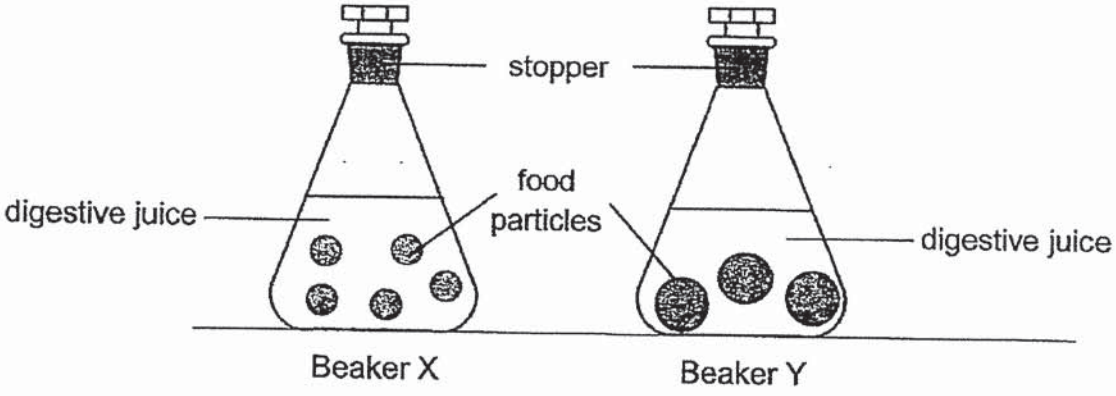
| Score | |
|---|---|
| | 3 |

29. The graph below shows the average amount of undigested food leaving three parts of the digestive system.




(a) Complete the graph above by drawing a bar to show the average amount of undigested food in the large intestine. [1]

Two identical type of food samples of equal mass were placed into two similar beakers, X and Y, containing equal amounts of digestive juices. Three hours later, the mass of the undigested food particles in both beakers were measured.




(b) What would be the difference between the mass of the food samples in both beakers after three hours? Explain your answer. [2]

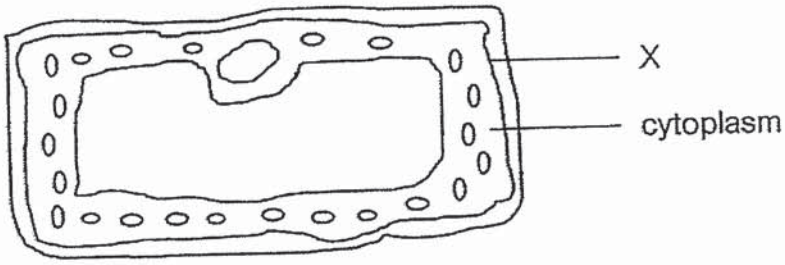
_____

_____

_____

Score 3

30. The diagram below shows cell A.

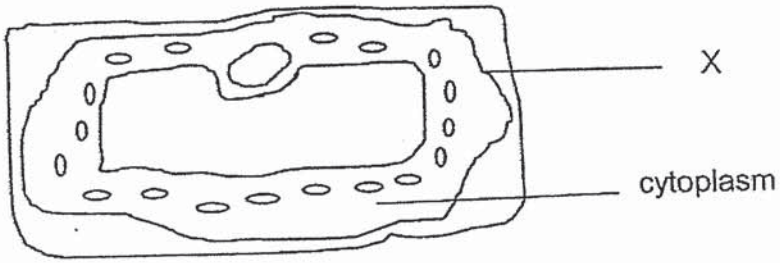



cell A

(a) Name part X as seen in the above diagram. [1]

_____

(b) When cell A is placed in a dish filled with liquid P, water will move out of the cell causing the cytoplasm to shrink as shown in the diagram below.




(i) State a characteristic of part X that allows water to move out of the cell. [1]

_____

_____

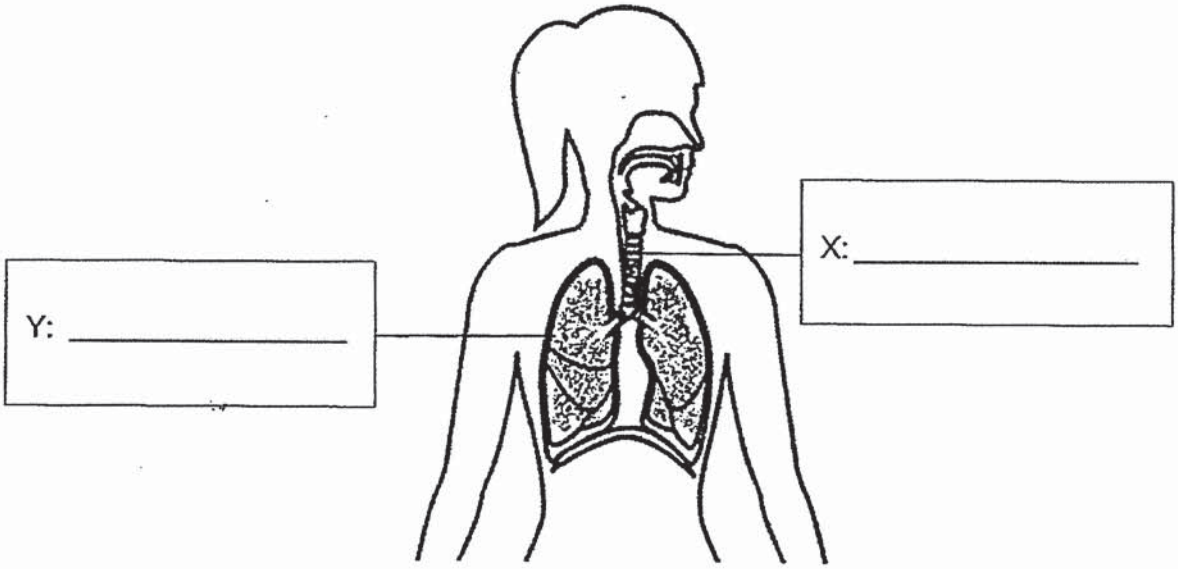
(ii) Give a reason why cell A was able to maintain its shape even though water moved out of the cell. [1]

_____

_____

| Score | |
|---|---|
| | 3 |

31. The diagram below shows a human respiratory system.




(a) Name the parts X and Y of the human respiratory system in the diagram above. [1]

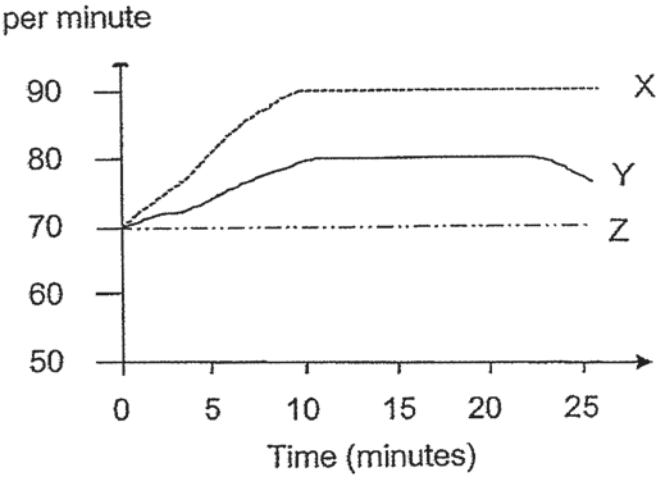
(b) What is the function of part Y? [1]

_____

_____

| Score | / 2 |
|---|---|

32. The graph below shows Peter's number of heartbeats per minute during three different activities, X, Y and Z.




Based on the information in the graph above, answer the following questions:

(a) Which activity, X, Y or Z, shows that Peter was resting? [1]

_____

(b) Which activity, X, Y or Z, was the most vigorous activity that Peter was engaged in? Give a reason for your answer. [2]

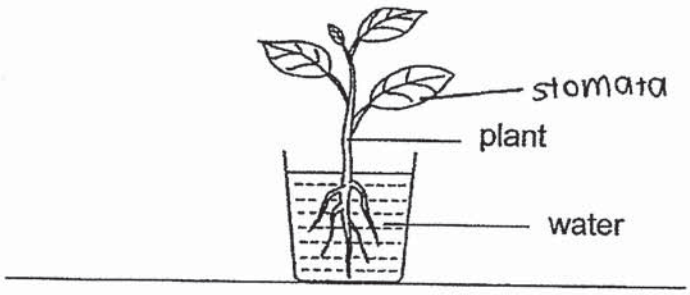
_____

_____

_____

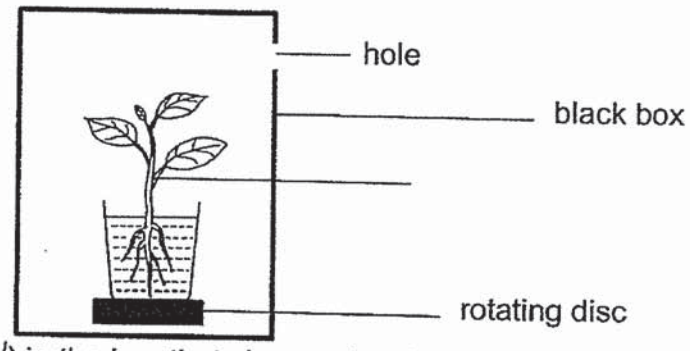
| Score | |
|---|---|
| | 3 |

33. The diagram below shows a plant in a beaker of water.

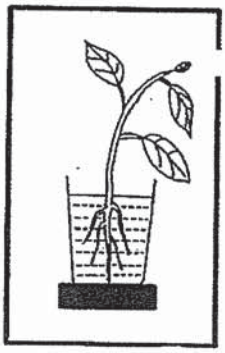



(a) Label and name the part of the plant that helps to take in carbon dioxide and gives out oxygen in the diagram above. [1]

(b) The plant was placed on a rotating disc and was kept in a black box with a hole at the side as shown in the diagram below. The plant rotates one complete round every hour. The black box was placed with the hole facing a window.

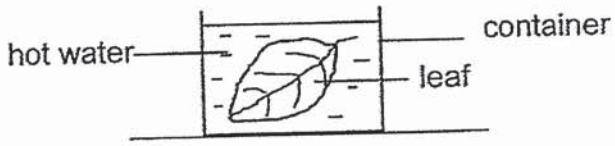



Place a tick (√) in the box that shows what the plant would look like after one week. [1]



| Score | / 2 |
|---|---|

34. Kate placed a leaf from plant A in a container of hot water as shown in the diagram below.




(a) Kate noticed that there were more bubbles on the lower surface of the leaf than on the upper surface. Give a reason for your answer. [1]

_____

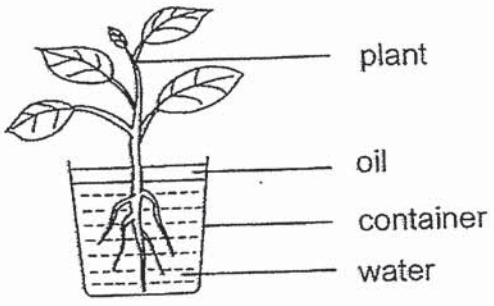
_____

(b) Kate prepared three identical plants P, Q and R.
She coated some surfaces of the leaves of plants, P, Q and R, with oil as shown in the table below.

| Plant | Coated with oil | |
|---|---|---|
| | Upper surface | Lower surface |
| P | no | yes |
| Q | yes | no |
| R | no | no |

She then placed plants P, Q and R, in identical containers of water as shown below.

The plant gives out water vapour through their stomata on the leaves.

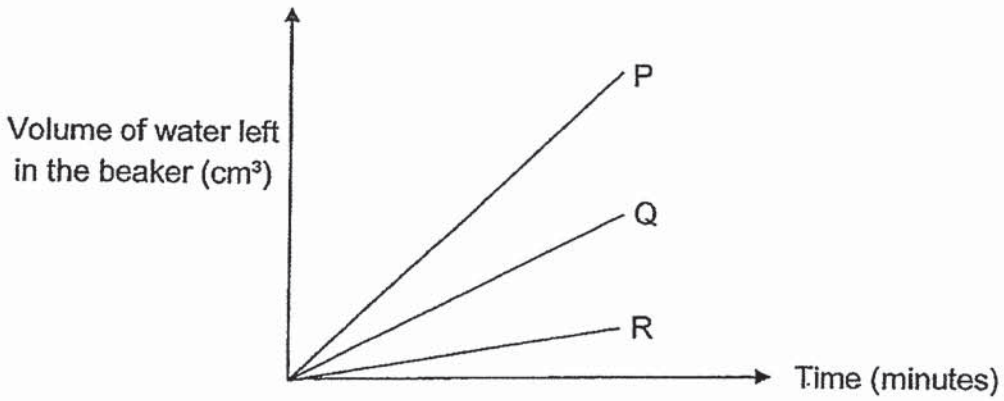



*Continue in the next page*

Score: 1

*Continued from previous page*

The set-ups were placed under bright sunlight for two hours. Kate measured the volume of water left in the beaker at regular intervals and recorded the results in the graph below.




Based on the information in (a) and (b), which plant lost the least amount of water? Explain your answer. [2]

_____

_____

_____

| Score | |
|---|---|
| | 2 |

35. Peter claimed that he observed some steam while having a hot shower.

(a) What is wrong about Peter's claim in observing steam in the shower? [1]

_____

_____

(b) Without drying himself, he stepped out of the bathroom with his wet body. After some time, he felt cool. Explain why he felt cool after some time. [2]

_____

_____

_____

(c) Peter felt cooler when he stepped into the windy balcony with his wet body. Explain why. [1]

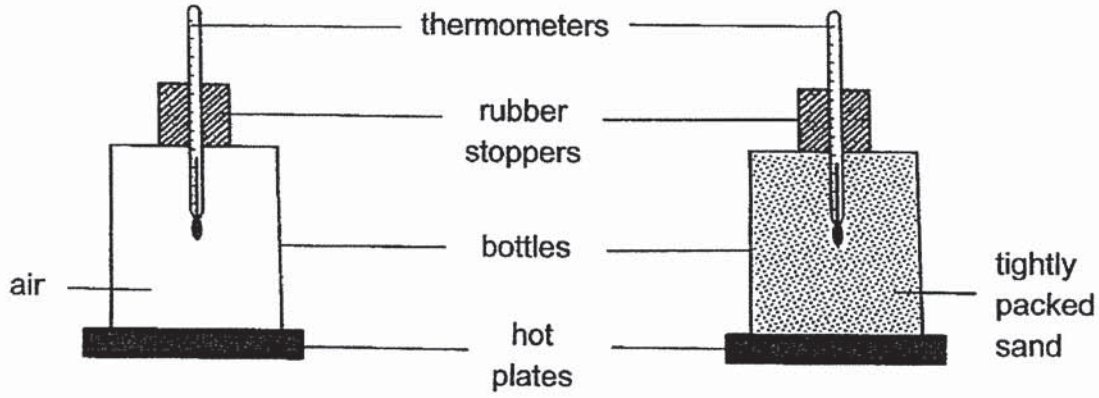
_____

_____

| Score | / 4 |
|---|---|

36. Ben set up an experimental set-up as shown below.

Two identical bottles were used, one was filled with air, while the other filled with sand. Both of the bottles were sealed with a rubber stopper. He then placed the bottles on top of identical hot plates with the same temperature.




After ten minutes, he recorded the temperature in the bottles as shown in the table below.

| | Temperature of substances in the bottle (°C) | |
|---|---|---|
| | **At the start** | **After 10 minutes** |
| Set-up 1 | 30 | 32 |
| Set-up 2 | 30 | 40 |

(a) What can Ben conclude about how the temperature of the substance in the bottle changes with time in set-up 1 as compared to set-up 2? Explain your answer. [2]

_____

_____

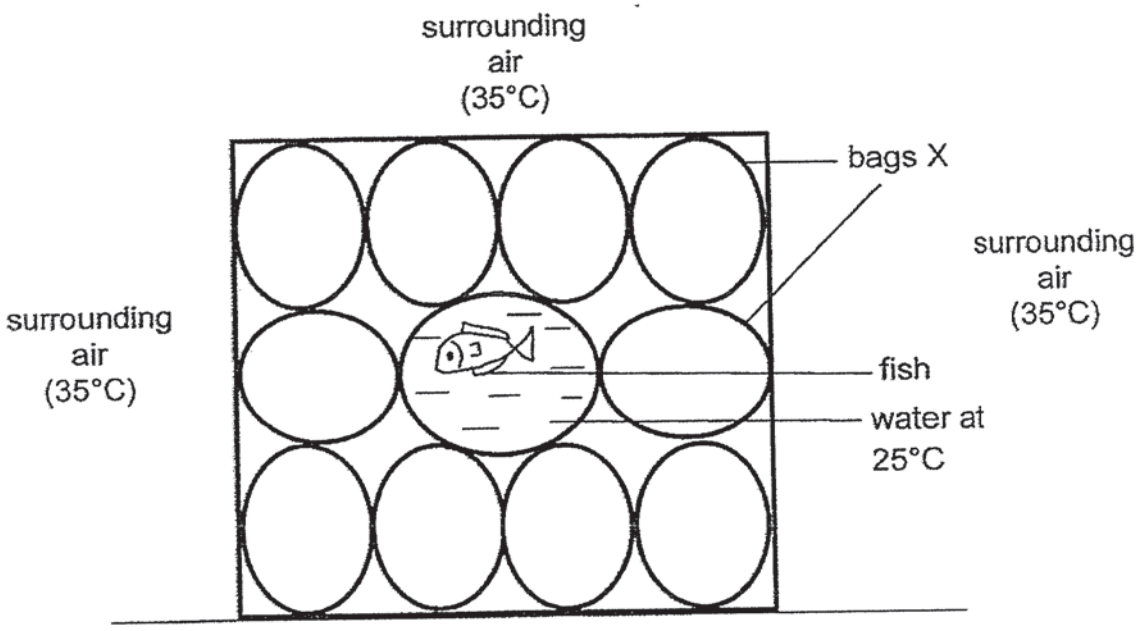
*Continue in the next page*

Score 2

*Continued from previous page*

Ben's uncle owns a shop that sells and deliver live fish to his customers. In order to ensure that his fish do not die during the transportation, his uncle has to ensure that the temperature of water in the bag which the fish are kept is maintained at 25°C.

The surrounding air temperature is 35°C.




(b) Based on the information provided, which substance, sand or air, should be used to fill bags X? Explain your answer. [2]

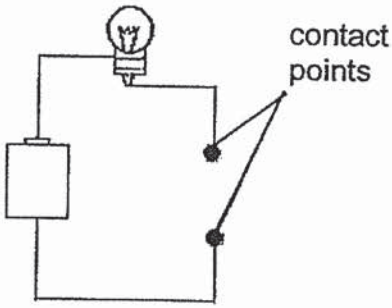
_____

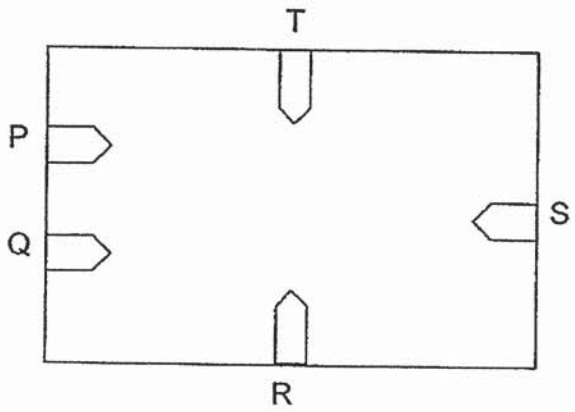
_____

_____

| Score | / 2 |
|---|---|

37. Bob conducted an experiment to test a circuit card using a circuit tester and recorded his observations in the table below.

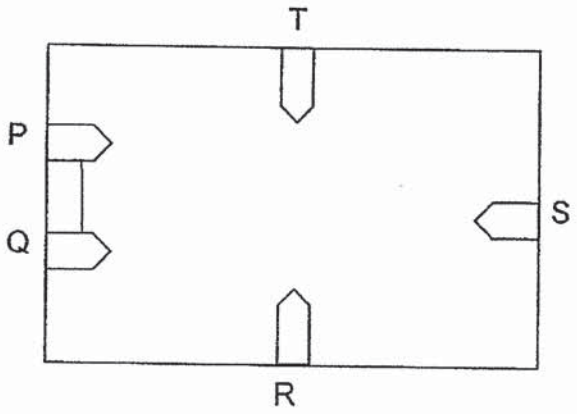



circuit card

| Clips connected to paper clips on circuit tester | Did the bulb of circuit tester light up? |
|---|---|
| P and Q | Yes |
| P and R | No |
| R and S | No |
| P and T | Yes |
| Q and T | Yes |
| P and S | No |

(a) Based on the information above, draw **two lines** in the diagram below to show how the wires were connected in the circuit tester. [1]

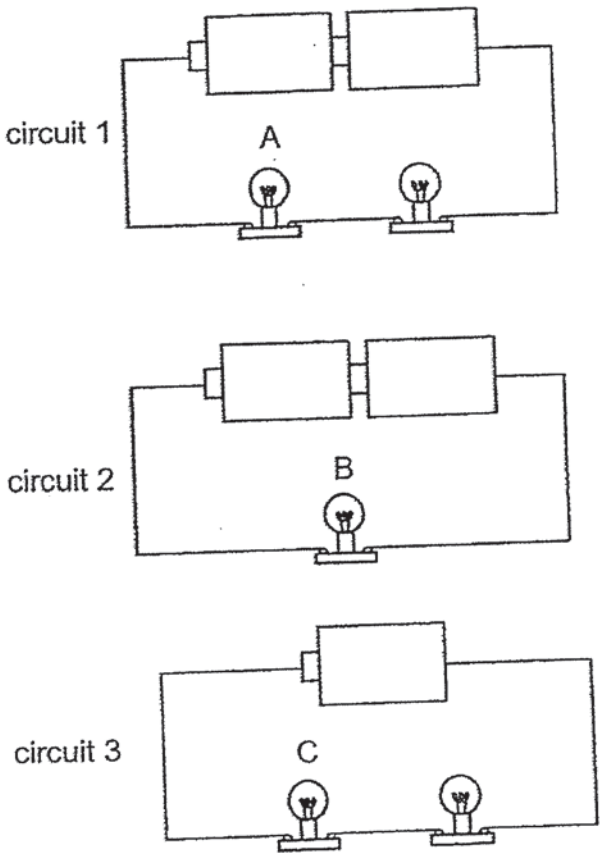



*Continue in the next page*

Score 1

*Continued from previous page*

The diagram below shows three circuits with different arrangements of identical batteries and bulbs. The bulbs in all three circuits light up. All the bulbs and batteries are all working properly.




(b) Arrange the bulbs, A, B and C, starting from the increasing order of brightness. [1]

_____ , _____ , _____

(least bright) (brightest)

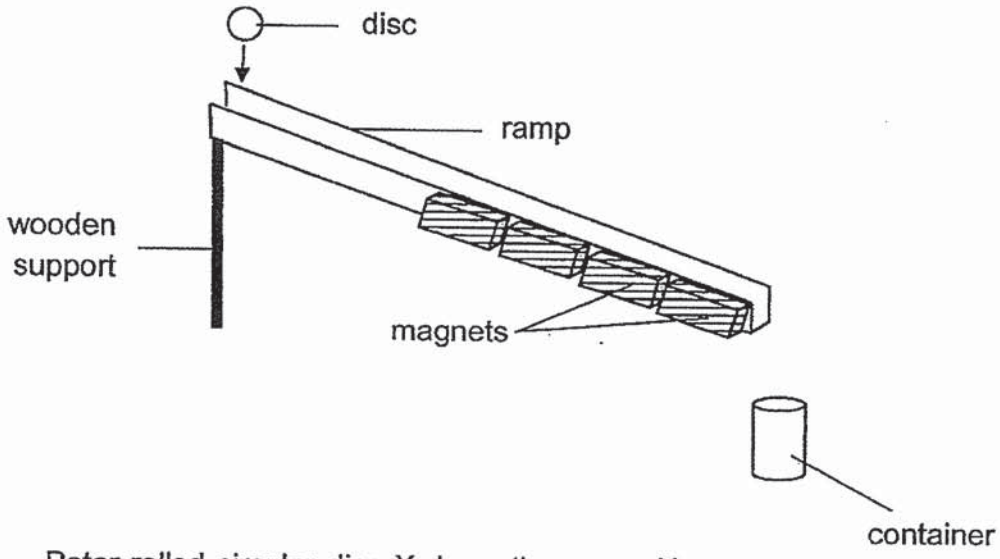
(c) State two ways to increase the brightness of bulb C without changing the number of batteries. [2]

(i) _____

(ii) _____

Score 3

38. The diagram below shows a magnetic sorter. The magnetic sorter would involve the use of four magnets attached to the side of a plank.




. Peter rolled circular disc X down the ramp. He repeated the experiment with another disc Y of the same size and mass and recorded his observations in the table below.

| Disc | Roll down the ramp ... |
|---|---|
| X | slower |
| Y | faster |

Based on the information in the table above, answer the following questions.

(a) Explain why disc X would roll down the ramp slower than disc Y? [2]

_____

_____

_____

(b) If Peter rolled an aluminium disc down the ramp, would it roll down the ramp faster than disc X? Give a reason for your answer. [1]

_____

_____

End of Paper

| Score | |
|---|---|
| | 3 |

# ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY 5
SCHOOL : RAFLES GIRL'S SCHOOL
SUBJECT : SCIENCE
TERM : SA2

## SECTION A

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

## SECTION B

Q26) (b)The many sperms help to increase the chances of one sperm fusing with the egg cell.

(c)No, without ovaries, no eggs produced to be fertilised by th sperm.

Q27) (a)(i)By insects.

By wind.

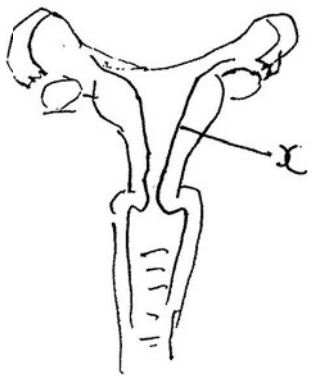
(ii)Flower A's anther is inside the petals of the flower while flower B's anther is hanging outside the flower.

(b)Fertilisation.

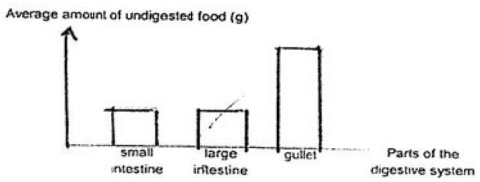
Q28) (a) ...urpose is to reduce evapouration from occurring.

(b) ...ur a layer of oil over the surface of water.

(ii)Tie the roots of the plant in a plastic bag.




Q29) (a)




(b)The mass of food particles will be lower in beaker Y. The food particle size in X is smaller and has a greater surface area for the digestive juices to

act on than in Y thereforethe rae of digestion is faster in the food samples in beaker X.

Q30 (a)Th cell membrane.

(b)(i)Part X contrls the movement of substance going in and out of the cell.

(ii)Cell A had a cell wall which protects the cell and gives the cell a fixed shape, thus, the cell A was able to maintain its shape.

Q31 Y:Lungs

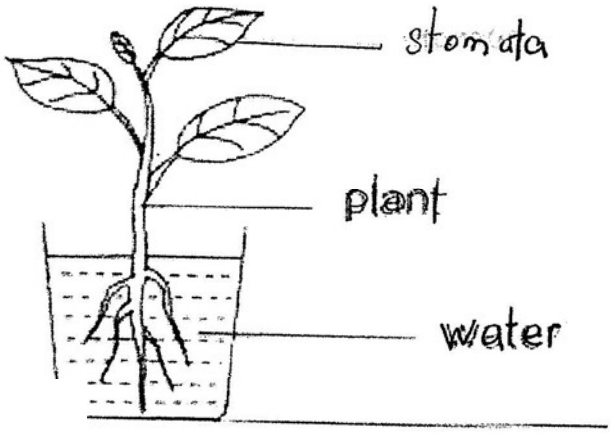
X:Windpipe

(b)Part Y absorbs oxygen taken in from the nose and gives out carbon dioxide.

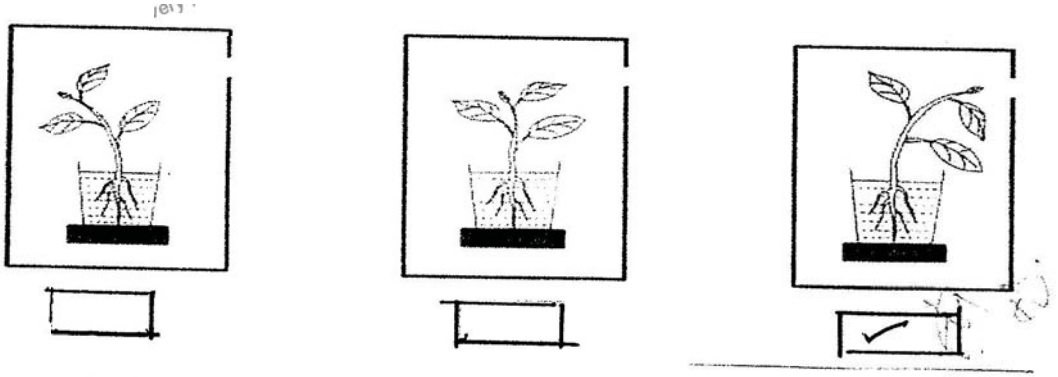
Q32 (a)Activity Z

(b)Activity X. His heart rate was the highest when he was carrying out activity X.The heart pumped the most amount of oxygenated blood to all parts of the body to release/reporoduce the most amoun of energy.

Q33 (a)




(b)



Q34 (a)The leaf took in the carbon dioxide and exchange gas and it became oxygen, the oxygen flow up.

(b)Plant P. As there are more stomato on the bottom of the leave and stomota give out water as there too much water.

Q35 (a)Steam is invisible.

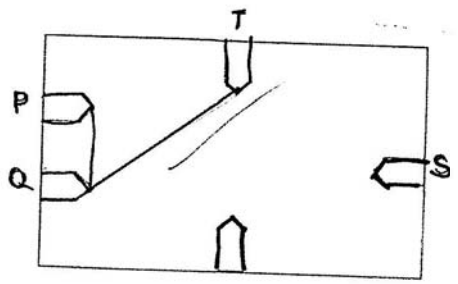
(b)The bathroom room temperature was higher than the room temperature and it was below his body temperature.

(c)The wind blew him and his wet body could evapourate faster.

Q36 (a)The temperature of sand in set-up 2 increases faster than the temperature of the air in set-up 1.Within minutes, the temperature of the sand in set-up 1 increases in temperature from 30° to only 32°.

(b)Ben's uncle should use ar to fill bags X . Air is a poorer conductor of heat compared to sand, so air will gain heat more slowly causing the temperature around the fish to be around 25°, therefore air is more suitable.

Q37 (a)




(b)C, A, B

(c)(i)use lesser wires

(ii)Place the bulb in parallel

Q38 (a)Disc X was probably a magnetic material and was being attracted by the magnets, causing it to roll down the ramp slower, while disc Y was probably a non-magnetic material and was not affected by the magnets, thus, it rolled down the ramp faster.

(b)The alu m disc would roll down the ramp fasterthen Disc X. Aluminium is a non-magnetic material and would not be affected by the magnets so it would roll down the ramp faster.



END.