

**NANYANG PRIMARY SCHOOL**  
**PRIMARY 6 SCIENCE**  
**SEMESTRAL ASSESSMENT 1**  
**2011**

**BOOKLET A**

**10 May 2011**

**Duration : 1 h 45 min**

**Name :** \_\_\_\_\_ (       )

**Class: Primary 6** (       )

**Marks Scored:**

|                    |  |            |
|--------------------|--|------------|
| <b>Booklet A:</b>  |  | <b>60</b>  |
| <b>Booklet B :</b> |  | <b>40</b>  |
| <b>Total :</b>     |  | <b>100</b> |

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet A consists of 30 printed pages including this cover page.**

**Section A (30 x 2 marks = 60 marks)**

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

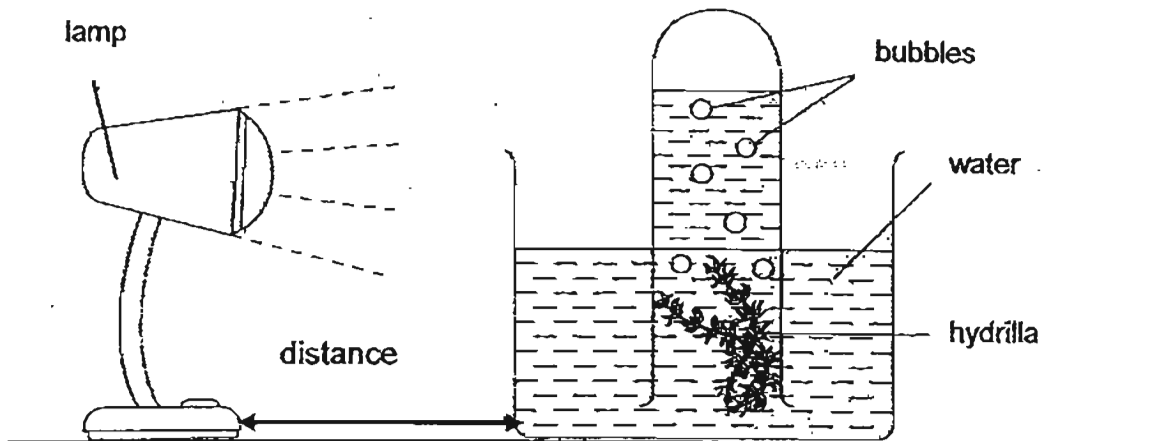
- 1 The diagram below shows the movement of blood through the walls of the small intestine a few hours after a meal.



Which one of the following describes the amount of oxygen, carbon dioxide and digested food found in the blood flowing away from the small intestine?

|     |                    |                     |             |
|-----|--------------------|---------------------|-------------|
| (1) | more digested food | more carbon dioxide | less oxygen |
| (2) | more digested food | less carbon dioxide | more oxygen |
| (3) | less digested food | more carbon dioxide | less oxygen |
| (4) | less digested food | less carbon dioxide | more oxygen |

- 2 Toby set up the experiment as shown below to find out how the rate of photosynthesis is affected by the light intensity of the lamp.



The table below shows the variables that he should keep constant and the ones that he should change.

In order for his experiment to be a fair test, which of the following options correctly shows the variables he should keep constant and which he should change?

A

| Variables                            | Change | Keep constant |
|--------------------------------------|--------|---------------|
| the type of water plant              | √      |               |
| the number of water plant            | √      |               |
| distance between the lamp and beaker |        | √             |
| brightness of lamp used              |        | √             |

B

| Variables                            | Change | Keep constant |
|--------------------------------------|--------|---------------|
| the type of water plant              |        | √             |
| the number of water plant            |        | √             |
| distance between the lamp and beaker | √      |               |
| brightness of lamp used              | √      |               |

C

| Variables                            | Change | Keep constant |
|--------------------------------------|--------|---------------|
| the type of water plant              |        | √             |
| the number of water plant            |        | √             |
| distance between the lamp and beaker |        | √             |
| brightness of lamp used              | √      |               |

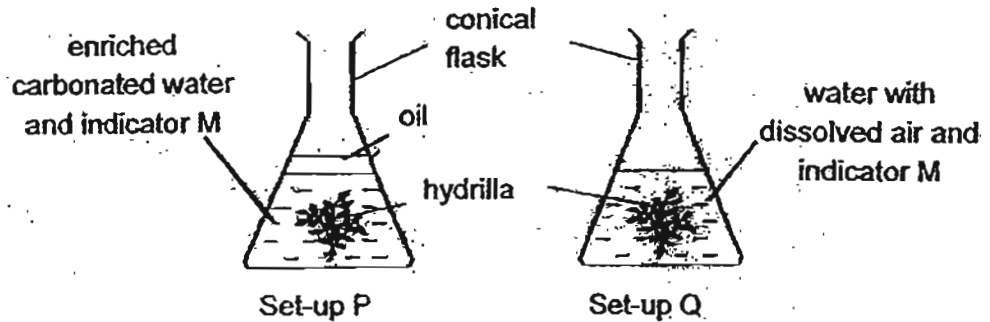
D

| Variables                            | Change | Keep constant |
|--------------------------------------|--------|---------------|
| the type of water plant              |        | √             |
| the number of water plant            |        | √             |
| distance between the lamp and beaker | √      |               |
| brightness of lamp used              |        | √             |

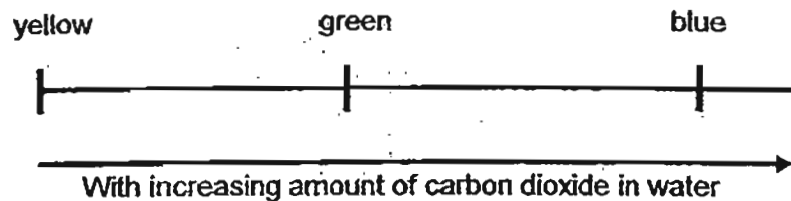
- (1) A and B only
- (2) A and D only
- (3) B and C only
- (4) C and D only

3

Elicia wanted to find out if enriched carbonated water would affect the rate of photosynthesis of hydrilla. She added Indicator M to her 2 set-ups. The colour of Indicator M changes with the amount of carbon dioxide in the water as shown in the diagram. The diagram below shows Elicia's 2 set-ups labelled Set-up P and Q which were left in a bright room for 2 hours



Indicator M changes colour according to the amount of carbon dioxide present in the solution as shown below.



Which of the following correctly identify the colour change of each set-up?

(1)

| Set-up | Start of Experiment | End of Experiment |
|--------|---------------------|-------------------|
| P      | blue                | blue              |
| Q      | yellow              | blue              |

(2)

| Set-up | Start of Experiment | End of Experiment |
|--------|---------------------|-------------------|
| P      | green               | green             |
| Q      | green               | yellow            |

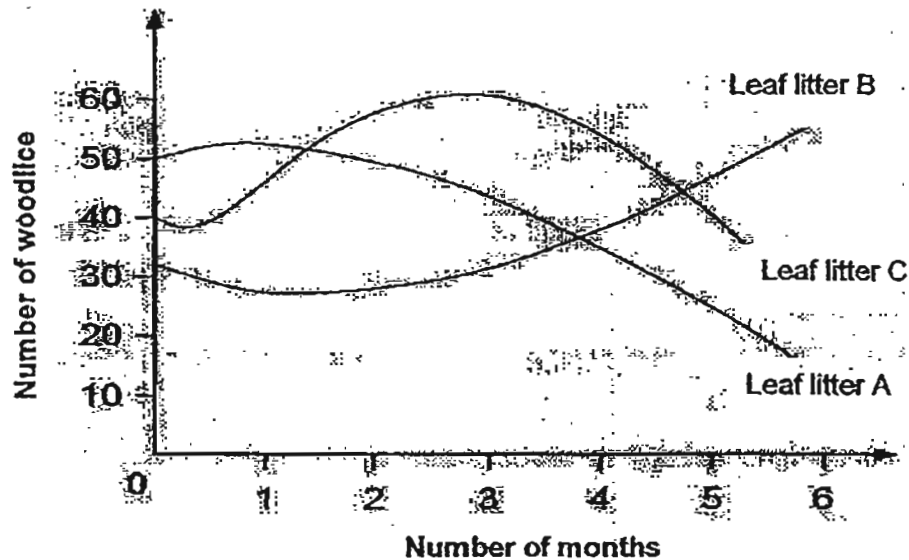
(3)

| Set-up | Start of Experiment | End of Experiment |
|--------|---------------------|-------------------|
| P      | yellow              | yellow            |
| Q      | blue                | green             |

(4)

| Set-up | Start of Experiment | End of Experiment |
|--------|---------------------|-------------------|
| P      | blue                | green             |
| Q      | yellow              | yellow            |

- 4 The graph below shows how the population size of woodlice in 3 leaf litter communities, A, B and C changes over a period of 6 months.



Which of the following statements are true?

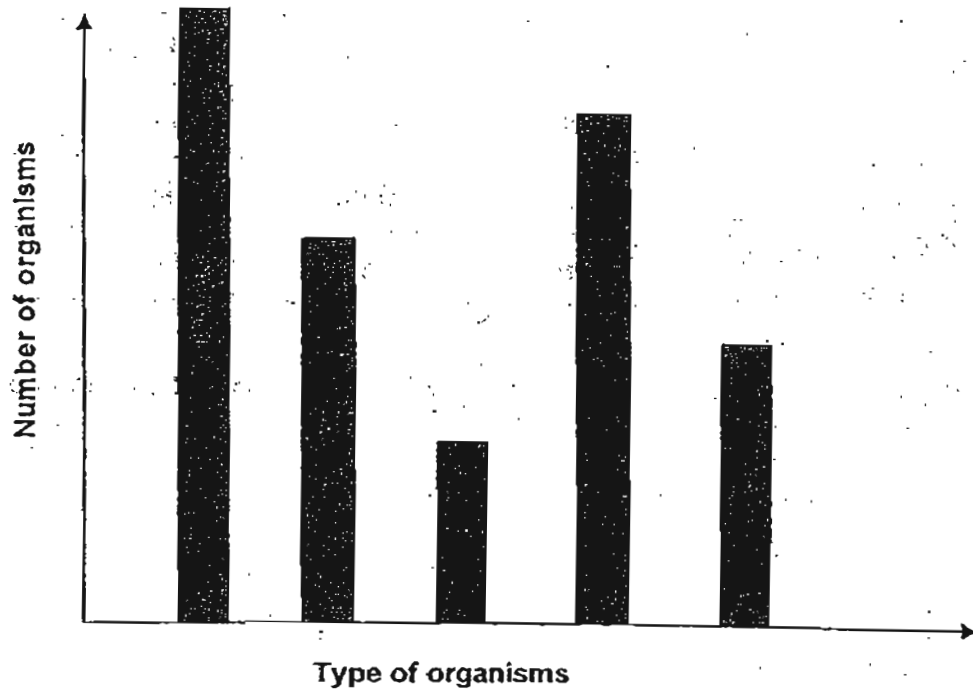
- A The living conditions for the woodlice in Leaf litter B are more favourable than in Leaf litters A and C over the 6-month period.
- B There is an increase in the population of predators of woodlice in Leaf litter A after the first month.
- C There are 4 occasions where the same number of woodlice can be found in 2 of the communities.
- D The number of woodlice in Leaf litter C decreases drastically after the 3<sup>rd</sup> month as there may be a decrease in its source of food.

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

5 The diagram below shows a food chain in a balanced state.

Dandelion → Caterpillar → Frog → Snake → Hawk

The size of the population of the organisms above is shown in the bar chart below.



The first bar shows the total number of the dandelions.

Which one of the following has correctly matched the organisms to its population size?

|     |       |       |       |             |
|-----|-------|-------|-------|-------------|
| (1) | Bar A | Bar B | Bar C | Bar D       |
|     | snake | hawk  | frog  | caterpillar |

|     |       |       |             |       |
|-----|-------|-------|-------------|-------|
| (2) | Bar A | Bar B | Bar C       | Bar D |
|     | hawk  | snake | caterpillar | frog  |

|     |       |       |             |       |
|-----|-------|-------|-------------|-------|
| (3) | Bar A | Bar B | Bar C       | Bar D |
|     | frog  | hawk  | caterpillar | snake |

|     |             |       |       |       |
|-----|-------------|-------|-------|-------|
| (4) | Bar A       | Bar B | Bar C | Bar D |
|     | caterpillar | snake | hawk  | frog  |

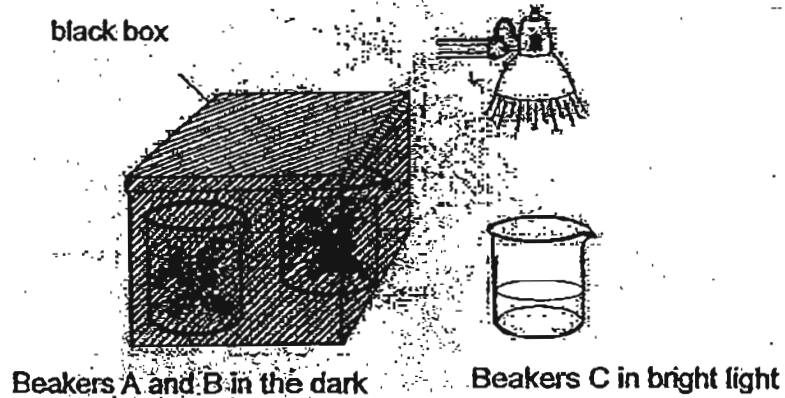
- 6 Pin Pin wanted to investigate the effect of different amounts of water on the growth of plants. She recorded the details of the experiment as shown in the table below.

| Variable                      | Pot A      | Pot B      | Pot C    | Pot D    |
|-------------------------------|------------|------------|----------|----------|
| Type of plant                 | green bean | green bean | red bean | red bean |
| Type of soil                  | sandy      | sandy      | loamy    | loamy    |
| Amount of soil                | 1 kg       | 1.5 kg     | 1 kg     | 1 kg     |
| Amount of water given per day | 30 ml      | 30ml       | 50 ml    | 100ml    |

Based on the aim of her experiment, which 2 pots should she compare?

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

- 7 Adrienne wanted to investigate the effect of different amount of light on the growth of hydrilla plants. She poured some pond water into 3 beakers and placed the same number of hydrilla plants into 2 of the beakers. Then she placed the 3 beakers in the places as shown below. Both beakers A and B were left in the black box for 5 days and Beaker C was left in bright light for 3 days.

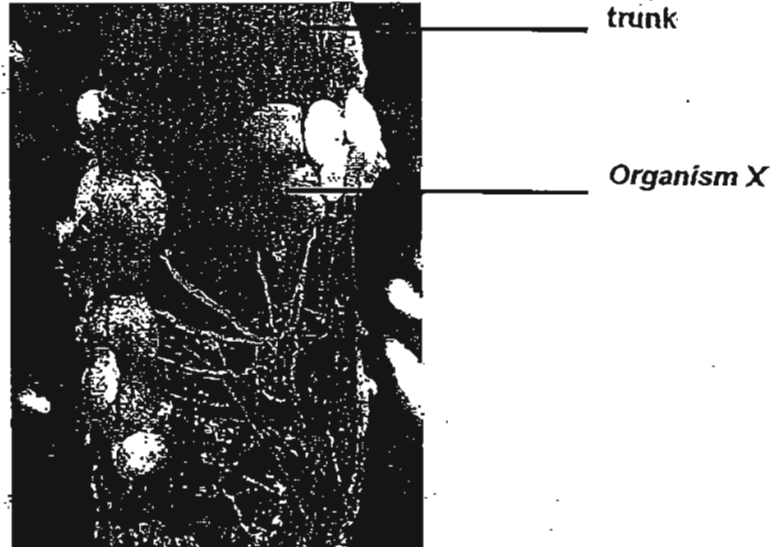


Her teacher commented that her experiment was not a fair one, what should she have done to make it a fair test?

- A Place the same number of hydrilla plants in beaker C
  - B Leave beaker A in the black box, remove beaker B and place it in a place with dim light
  - C Ensure that equal amount of pond water is added to all the 3 beakers
  - D Leave all the 3 set-ups for the same duration before checking on the growth of the plants
- (1) A, B and C only  
(2) A, C and D only  
(3) B, C and D only  
(4) A, B, C and D



8. Patricia identifies Organism X as a living organism which grows on the trunk and branches of trees. It obtains its nutrients from the dead and decaying outer bark of the tree. Patricia wanted to investigate how biotic factors of the environment affect the growth of Organism X.



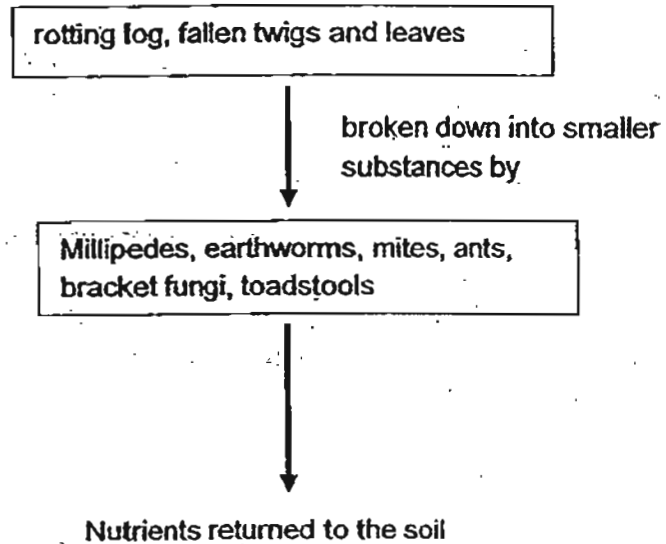
She has observed that the droppings of the ants will enrich the bark with minerals salts that are essential for the growth of Organism X.

Which of the following statements describe how the growth of Organism X is affected by the biotic factors of its environment?

- A The degree of moisture of the bark affects the growth of the Organism X.
- B The presence of other ferns around the trunk will compete with the Organism X for space, mineral salts and water.
- C The dead bodies of small organisms can further enrich the bark with nutrients.

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

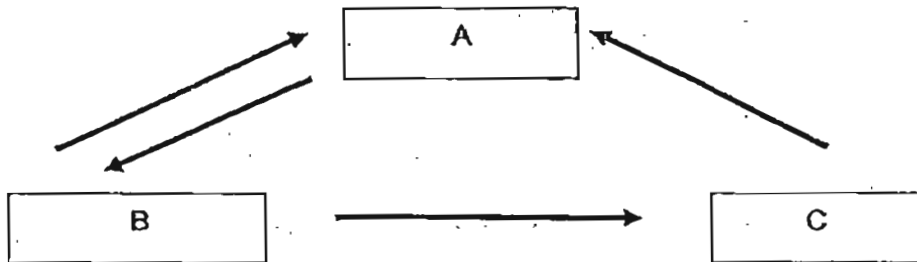
- 9 Jean studied a community of a rotting log in her school garden. She drew the flowchart below to show the relationships between the organisms found on the rotting log.



Which one of the following classifications of the organisms in her flowchart is correct?

|     | Organisms that speed up decomposition           | Decomposers                           |
|-----|---|---------------------------------------|
| (1) | earthworms, toadstools, bracket fungi, ants     | millipedes, mites                     |
| (2) | earthworms, ants, millipedes, mites             | toadstools, bracket fungi             |
| (3) | ants, millipedes, mites                         | earthworms, toadstools, bracket fungi |
| (4) | earthworms, ants, millipedes, mites, toadstools | bracket fungi                         |

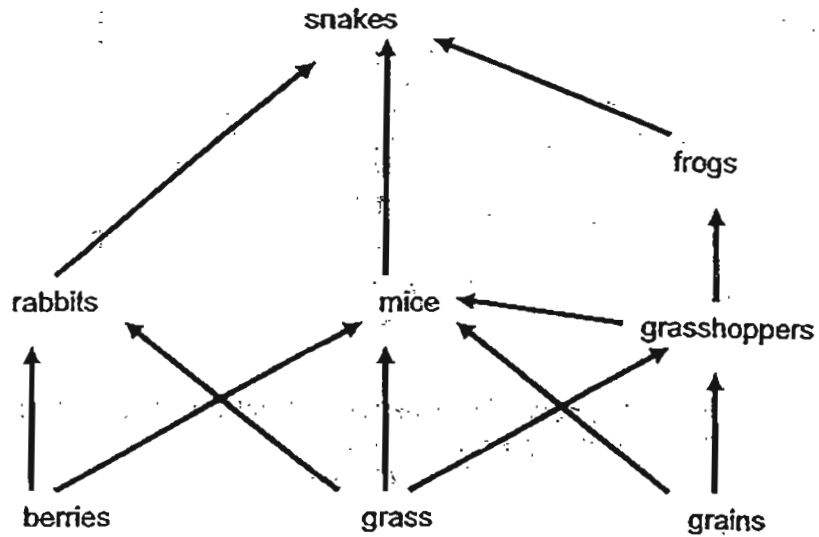
10. The diagram below represents the relationship between organisms A, B and C in a community and the arrows show the direction of energy flow between them.



Which one of the following correctly identifies how organisms A, B and C may interact with one another?

|     | A           | B           | C           |
|-----|-------------|-------------|-------------|
| (1) | producers   | decomposers | consumers   |
| (2) | consumers   | decomposers | producers   |
| (3) | decomposers | producers   | consumers   |
| (4) | producers   | consumers   | decomposers |

11. Study the food web below carefully:

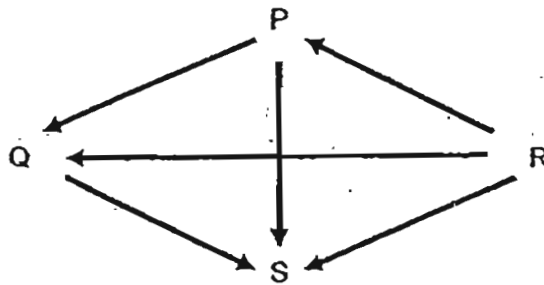


Which of the following statements are true?

- A There is only 1 omnivore in the above food web.
- B There are more than 7 food chains that will end with the snake.
- C Berries, grass and grains transfer the largest amount of energy to other organisms.
- D Rabbits, snakes and mice are not preyed on by other predators.

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

12 The diagram below shows a food web.



Which one of the following organisms will be directly affected if the level of carbon dioxide in the air decreases?

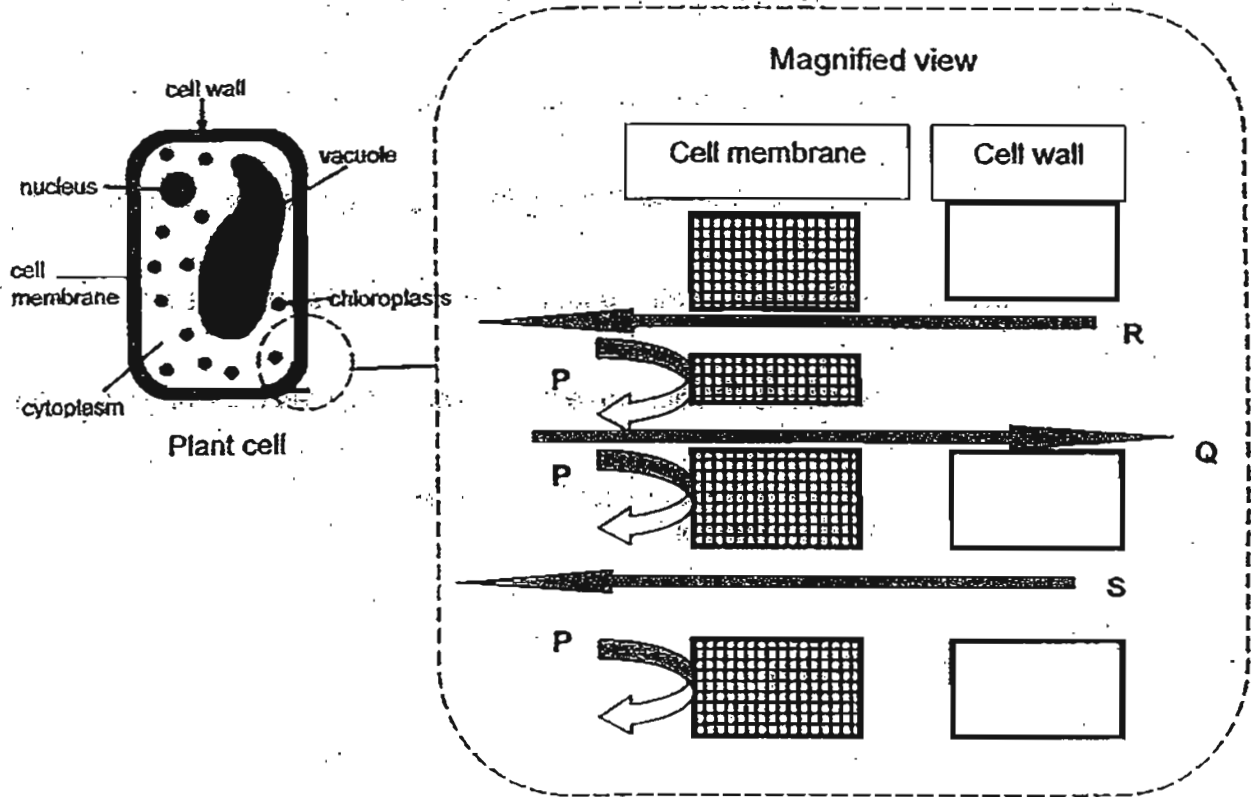
- (1) P
- (2) Q
- (3) R
- (4) S

13 In a human respiratory system, which one of the following correctly shows the pathway of air when one breathes in?

- |     |  |
|-----|--|
| (1) | air → nostrils → gullet → stomach → lungs                  |
| (2) | air → mouth → gullet → stomach → small intestine           |
| (3) | air → nostrils → nasal cavity → pharynx → windpipe → lungs |
| (4) | air → nostrils → nasal cavity → windpipe → pharynx → lungs |

14

The diagram below shows the outer layers of the plant cell as well as the movement of substances in and out of the cell represented by arrows P, Q, R and S.



Based on the diagram above, which of the following correctly describes the cell membrane of the plant cell?

- A The cell membrane controls the flow of substances P, Q, R and S in and out of the cell.
- B The cell membrane allows substances Q, R and S to pass through it easily but prevents substance P from passing.
- C The cell membrane unlike the cell wall is semi-permeable and allows only substance P to pass through.
- D The cell membrane is needed to maintain normal conditions inside the cell.

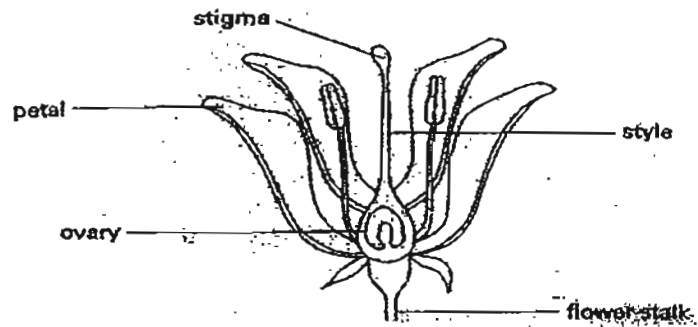
- (1) A, B and C only
- (2) A, B and D only
- (3) A, C and D only
- (4) A, B, C and D

- 15 Katherine carried out an experiment on the germination of seeds by placing container A in the cupboard and container B in the garden. She watered them daily with equal amount of water. After 5 days, she observed that the seeds which germinated in container A had yellow leaves while the seeds that had germinated in container B had green leaves.

What can Katherine conclude from her observation?

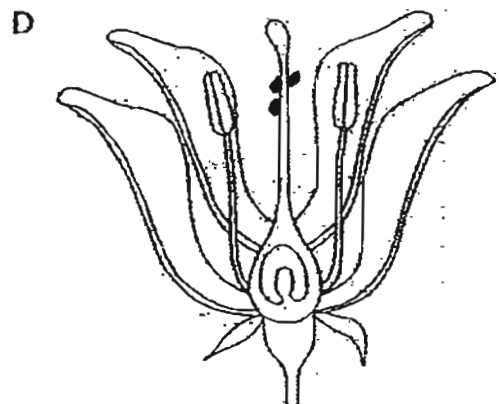
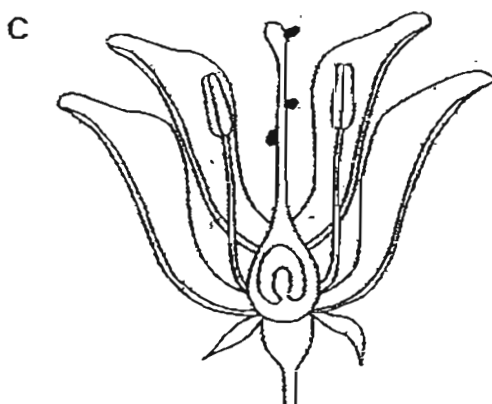
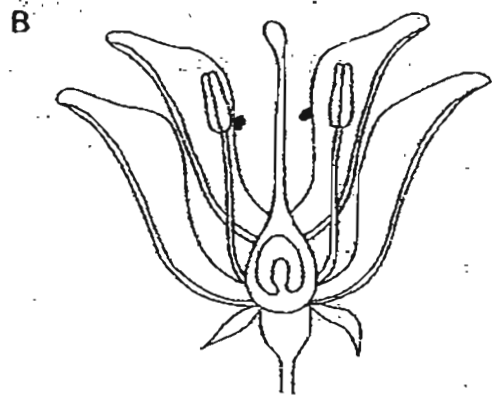
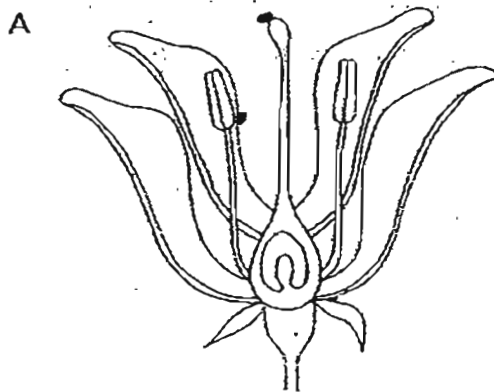
- (1) The seedlings in both containers need green light to make food.
- (2) The leaves in both containers need light to produce chlorophyll.
- (3) The seeds in both containers need light, water, air and warmth to germinate.
- (4) The seeds in Container B germinate faster than those in Container A as light is present.

16 The diagram below shows the different parts of Flower K.



Flower K

If the black dots in the diagrams below represent pollen grains from Flower K, which of the following flowers has/have been successfully pollinated?



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



17 Study the picture of pupils in a judo class given below.



The girl managed to throw the boy onto the ground.

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

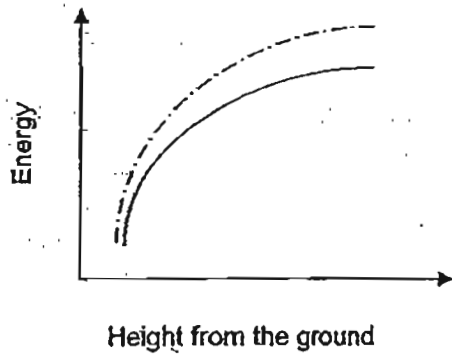
- (1) A force exerted by the girl caused the boy to fall.
- (2) The boy was exerting a push force on the girl as he fell.
- (3) Gravity slowed down the speed at which the boy was falling.
- (4) Reduction of friction allowed the girl to throw the boy onto the floor.

18 The diagram below shows the flight path taken by a water rocket.

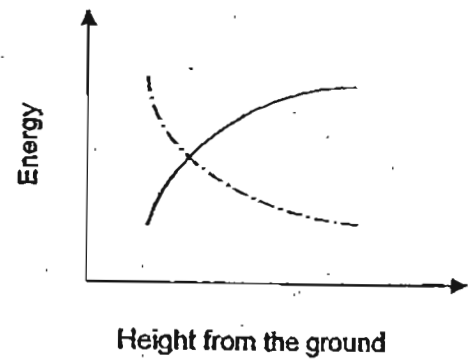


Which one of the following graphs shows the change in gravitational potential energy and kinetic energy of the rocket from point A to point B ?

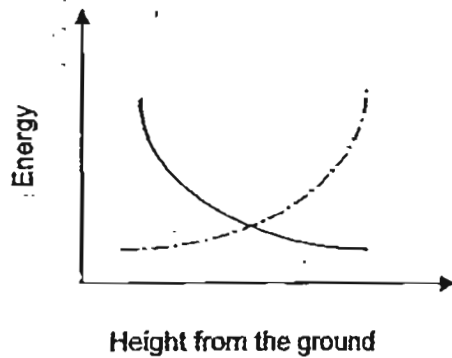
(1)



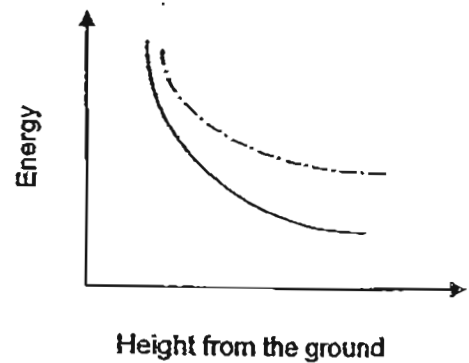
(2)



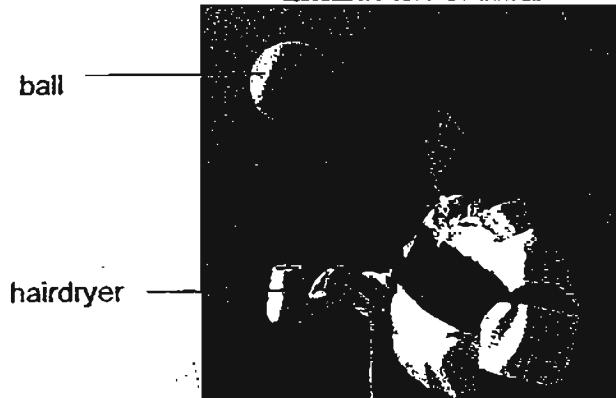
(3)



(4)



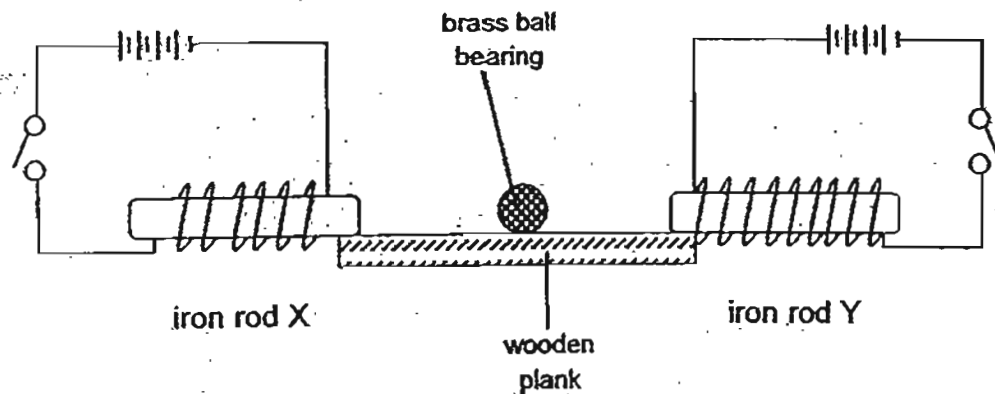
- 19 Rita conducted an experiment with a hairdryer and a ball as shown in the picture below.



Which one of the following best describes the energy conversion taking place during the experiment?

- (1) Electrical Energy  $\longrightarrow$  Heat Energy  $\longrightarrow$  Kinetic Energy and Gravitational Potential Energy
- (2) Electrical Energy  $\longrightarrow$  Sound Energy  $\longrightarrow$  Kinetic Energy and Gravitational Potential Energy
- (3) Chemical Potential Energy  $\longrightarrow$  Kinetic Energy  $\longrightarrow$  Kinetic Energy and Gravitational Potential Energy
- (4) Electrical Energy  $\longrightarrow$  Kinetic Energy  $\longrightarrow$  Kinetic Energy and Gravitational Potential Energy

20 Study the following experimental setup carefully.

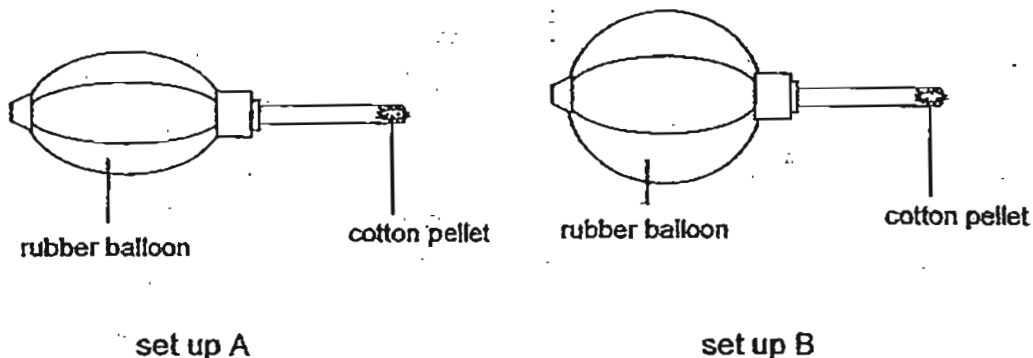


The batteries, wires, switches and iron rods are identical.

What will happen to the ball bearing when the switches are closed at the same time ?

- (1) The ball bearing moves towards iron rod X.
- (2) The ball bearing moves towards iron rod Y.
- (3) The ball bearing remains in the same position.
- (4) The ball bearing moves in a left and right manner between the two iron rods.

21 Terry used 2 different dust blowers in set up A and B for an experiment.

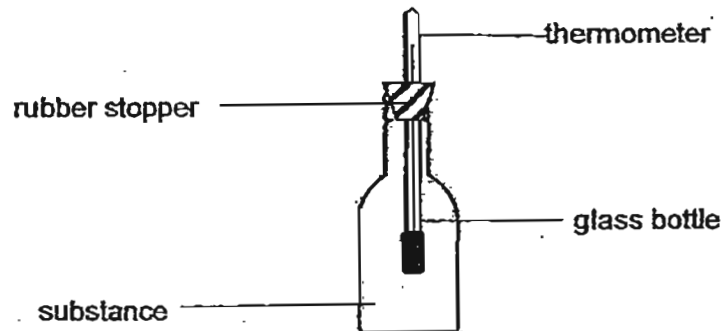


Terry measured the distance travelled by the cotton pellet when the rubber balloon was squeezed with the same amount of force. He repeated the experiment several times but he changed one of the variables each time.

Which one of the following shows a possible aim for the experiment and the variables that was/were kept constant?

|     | Aim of experiment  | Variables that are kept constant                  |
|-----|--|---|
| (1) | To find out how the size of the rubber balloon affects the distance travelled by the cotton pellet.      | size of cotton pellet<br>amount of compressed air |
| (2) | To find out how the thickness of the rubber balloon affects the distance travelled by the cotton pellet. | size of cotton pellet                             |
| (3) | To find out how the amount of compressed air affects the distance travelled by the cotton pellet.        | size of cotton pellet                             |
| (4) | To find out how the size of the cotton pellet affects the distance it travelled.                         | size of rubber balloon<br>size of cotton pellet   |

22 Rui En set up the following experiment as shown below.



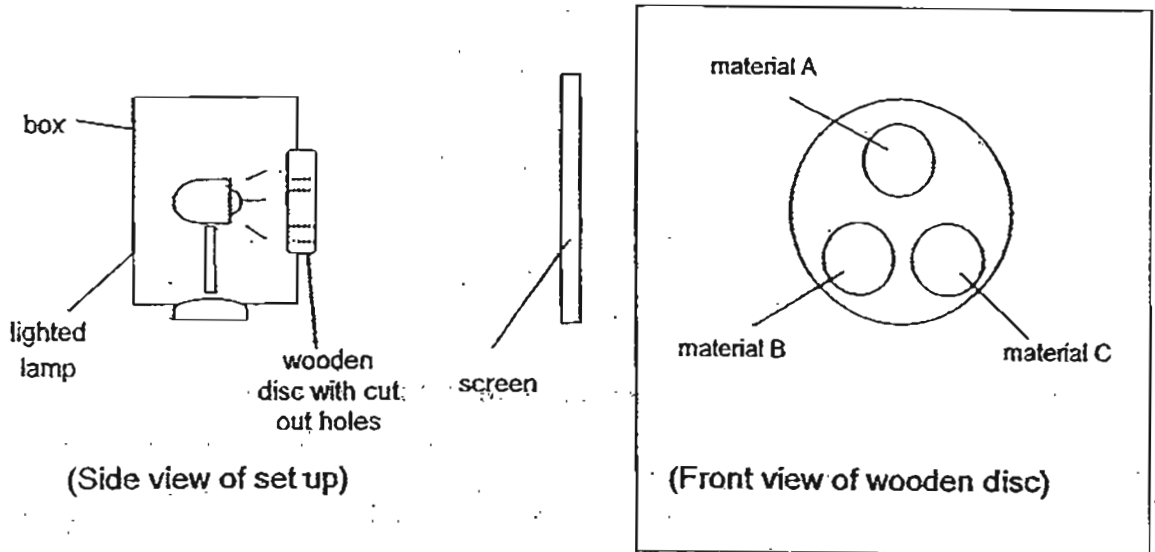
She followed the following procedure to conduct her experiment.

| Steps | Procedure   |
|-------|---|
| 1     | Fill the glass bottle with 500g of talcum powder.                                 |
| 2     | Seal the mouth of the bottle with the thermometer set up as shown in the diagram. |
| 3     | Record the temperature as shown in the thermometer.                               |
| 4     | Shake the bottle vigorously for 10 minutes.                                       |
| 5     | Record the temperature as shown in the thermometer again.                         |
| 6     | Note the difference in temperature.   |
| 7     | Repeat steps 3 to 6 two more times.   |
| 8     | Repeat steps 1 to 7 with fine sand and coarse sand.                               |

Which one of the following could be a hypothesis for Rui En's experiment ?

- (1) The rougher the substance, the greater is the frictional force.
- (2) The greater the amount of movement, the greater is the frictional force.
- (3) The greater the amount of substance, the greater is the frictional force.
- (4) The longer the bottle is shaken, the greater is the temperature in the bottle.

- 23 A box was set up with a lighted lamp. An opening was cut in the box such that a wooden disc could be fitted exactly. The disc had three holes covered which were pasted with three different types of materials. The shadows made by the materials were cast on the screen.



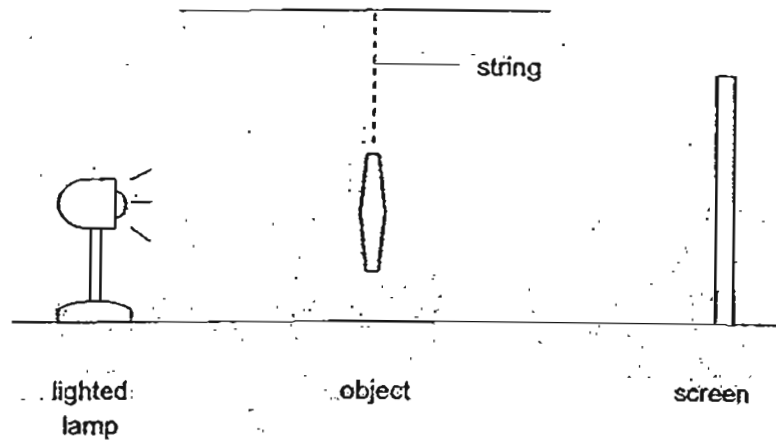
The amount of light on the screen appeared as shown below.



Based on the results given, which one of the following describes the properties of materials A, B and C correctly ?

|     | Transparent | Translucent | Opaque |
|-----|-------------|-------------|--------|
| (1) | A           | C           | B      |
| (2) | C           | B           | A      |
| (3) | B           | C           | A      |
| (4) | C           | A           | B      |

24 The following experiment was set up in a darkened room.



The distance between the lighted lamp and the object remained unchanged. The distance between the object and the screen was changed and the size of the shadow on the screen was measured.

Which one of the following results shows the correct relationship?

(1)

| Distance between object and screen | Size of shadow of object |
|------------------------------------|--------------------------|
| 50 cm                              | 55 cm                    |
| 100 cm                             | 68 cm                    |
| 150 cm                             | 81 cm                    |

(2)

| Distance between object and screen | Size of shadow of object |
|------------------------------------|--------------------------|
| 50 cm                              | 81 cm                    |
| 100 cm                             | 68 cm                    |
| 150 cm                             | 55 cm                    |

(3)

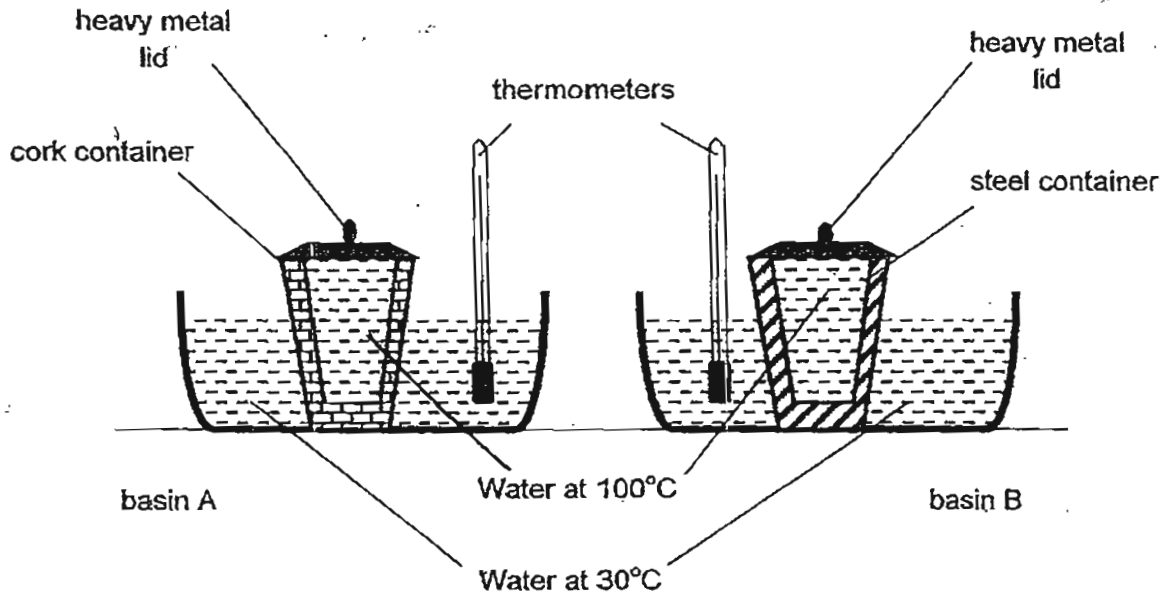
| Distance between object and screen | Size of shadow of object |
|------------------------------------|--------------------------|
| 50 cm                              | 68 cm                    |
| 100 cm                             | 68 cm                    |
| 150 cm                             | 68 cm                    |

(4)

| Distance between object and screen | Size of shadow of object |
|------------------------------------|--------------------------|
| 50 cm                              | 81 cm                    |
| 100 cm                             | 55 cm                    |
| 150 cm                             | 68 cm                    |



25 Study the following experiment carefully.

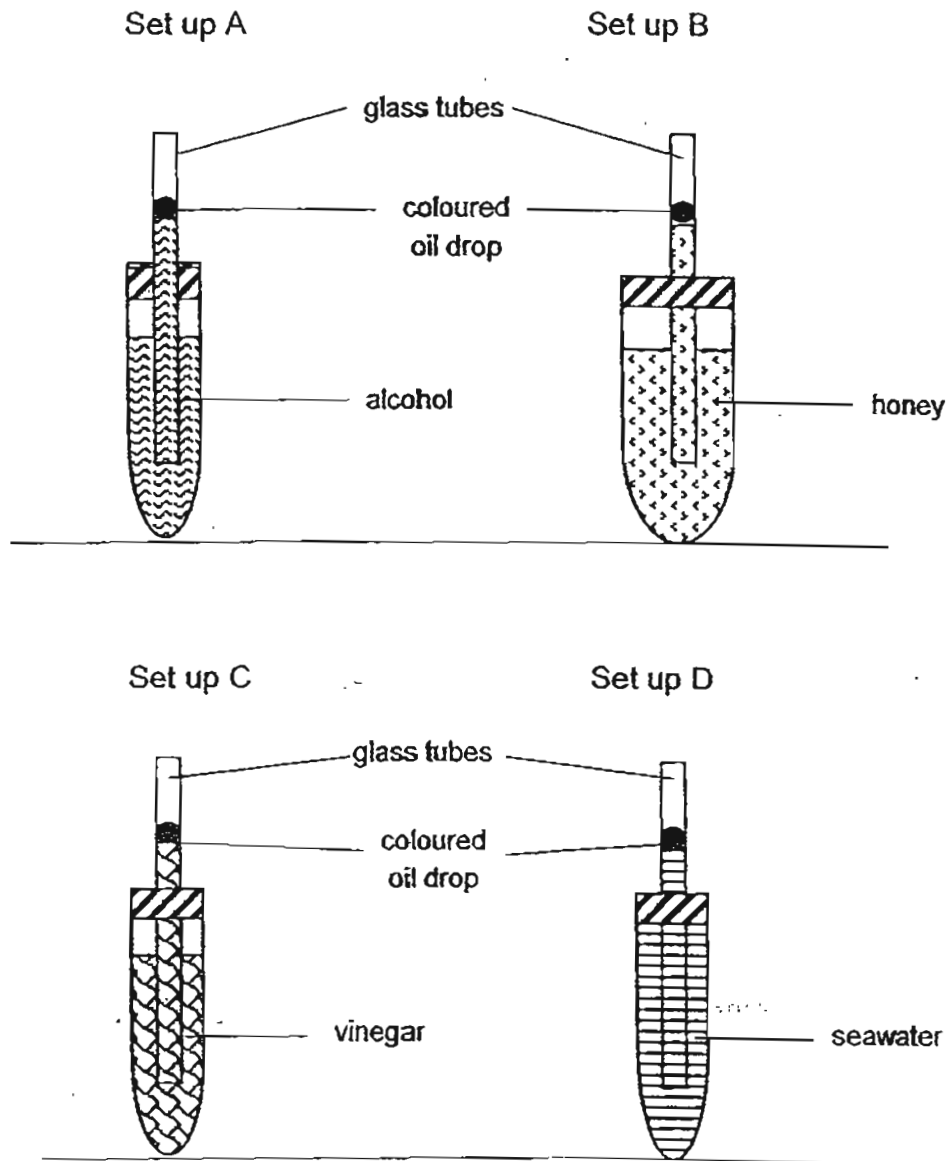


Two similar containers made of cork and steel were filled with boiling water and placed in basins of water, A and B, respectively. The changes in the temperature of the water in the basin were noted after 10 minutes

Which one of the following correctly identifies the basin with a higher temperature of water after 10 minutes?

|     | Basin with water of higher temperature | Reason for difference in temperature |                        |
|-----|--|--------------------------------------|------------------------|
|     |  | Cork                                 | Steel                  |
| (1) | Basin A                                | good conductor of heat               | poor conductor of heat |
| (2) | Basin B                                | poor conductor of heat               | good conductor of heat |
| (3) | Basin A                                | poor conductor of heat               | good conductor of heat |
| (4) | Basin B                                | good conductor of heat               | poor conductor of heat |

- 26 Samantha wanted to conduct an experiment to find out which liquid expanded the most when heated. In order to conduct the experiment, Samantha planned to heat the set ups over a bunsen burner and note the time taken for the coloured oil drop to move 5 cm up the glass tube.

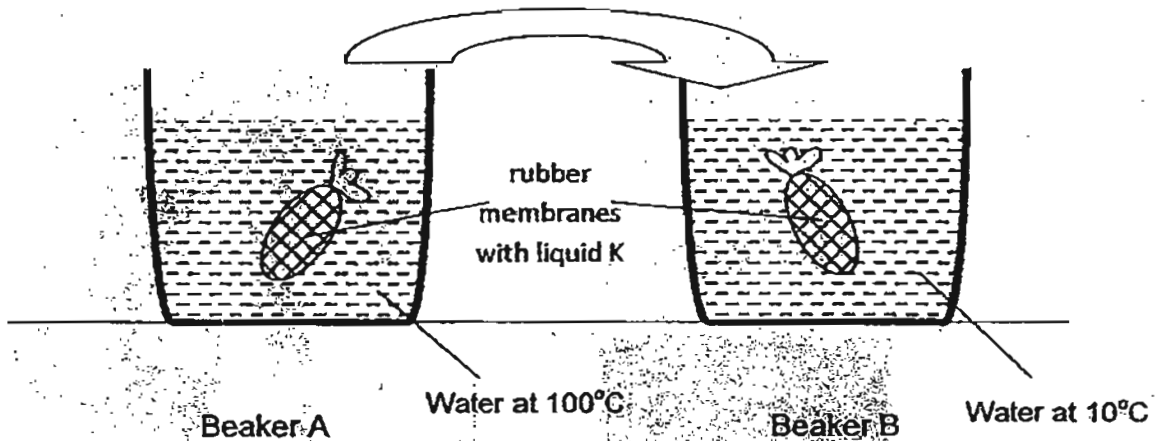


Which two of the above set ups should she use to ensure a fair test ?

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



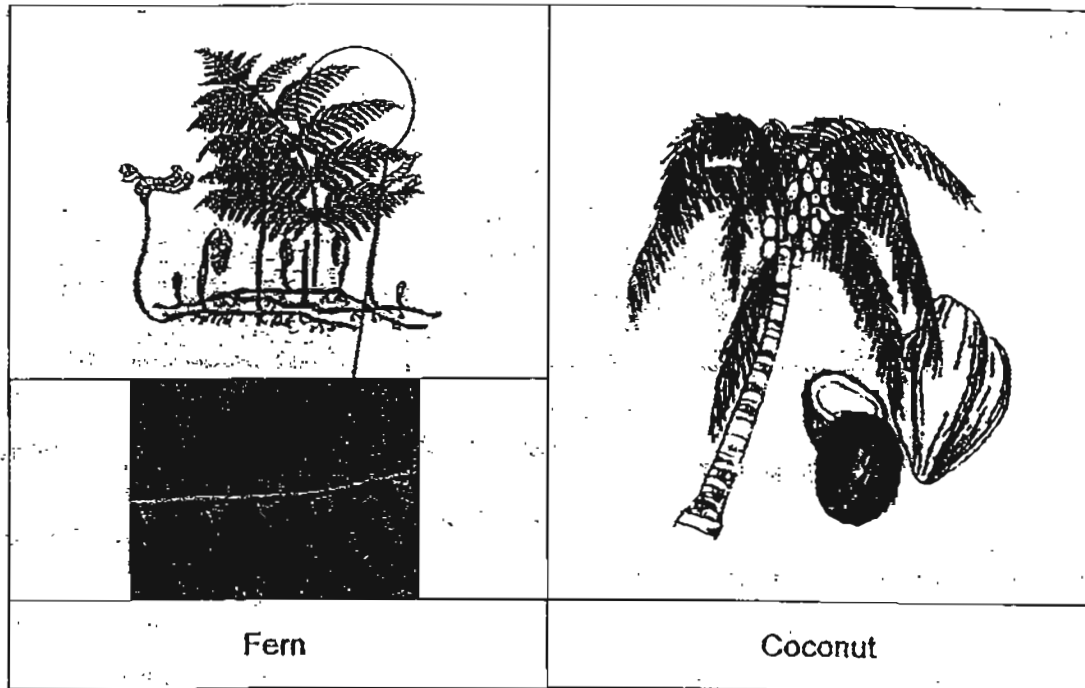
- 28 A rubber membrane holding liquid K at 50°C was placed in a beaker of water at 100°C for 20 minutes before it was dropped into another beaker of water at 10°C.



Which one of the following describes the changes in Liquid K and the rubber membrane in beakers A and B?

|     | Beaker A                |  | Beaker B                |  |
|-----|-------------------------|--|-------------------------|--|
|     | Changes to the liquid K | Changes to the size of the rubber membrane | Changes to the liquid K | Changes to the size of the rubber membrane |
| (1) | The liquid expanded     | It became bigger                           | The liquid expanded     | It became bigger                           |
| (2) | The liquid expanded     | It became smaller                          | The liquid contracted   | It became bigger                           |
| (3) | The liquid contracted   | It became smaller                          | The liquid expanded     | It became bigger                           |
| (4) | The liquid expanded     | It became bigger                           | The liquid contracted   | It became smaller                          |

29 The pictures below show two plants.

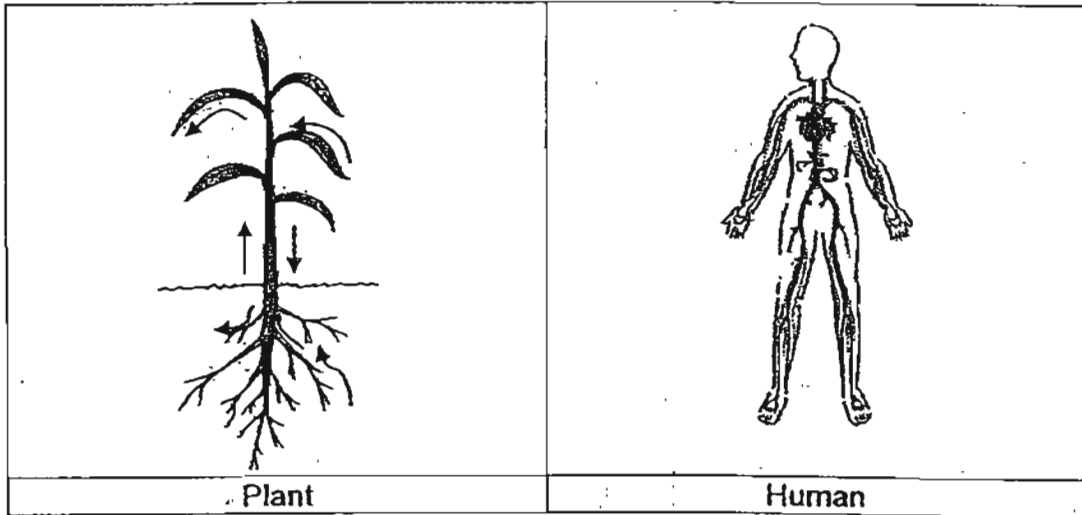


Which of the following statements are true about both plants ?

- A Both of them have flowers.
- B Both of their leaves have chlorophyll.
- C The fern has spores while the coconut has seeds.
- D The fern may grow on trees while the coconut grows on soil.

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

- 30 The diagrams below show the transport system in a plant and in a human body.



Which one of the following statements is correct?

|     | Plant  | Human  |
|-----|--|--|
| (1) | Water is absorbed by the roots and transported to the rest of the plant and back to the roots again. | Blood is transported from the heart to the rest of the body and back to the heart again. |
| (2) | Food made at the leaves is transported to the roots for storage only.                                | Undigested food is transported by blood throughout the body.                             |
| (3) | Water is absorbed by the leaves and transported to the rest of the plant.                            | Blood carries oxygen, carbon dioxide, digested food and waste.                           |
| (4) | Food made at the leaves is transported to all parts of the plant.                                    | Digested food is transported by blood throughout the body.                               |

**NANYANG PRIMARY SCHOOL**

**PRIMARY 6 SCIENCE**

**SEMESTRAL ASSESSMENT 1  
2011**

**BOOKLET B**

**10 May 2011**

**Duration : 1 h 45 min**

**Name : \_\_\_\_\_ ( )**

**Class: Primary 6 ( )**

**DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.  
FOLLOW ALL INSTRUCTIONS CAREFULLY.**

**Booklet B consists of 21 printed pages including this cover page.**





- (b) At the end of his investigation, suggest what Jim should observe to confirm the ~~idea~~ living conditions of woodlice. [ 1 ]

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- (c) Why is it important to count the number of woodlice only after 30 minutes? [ 1 ]

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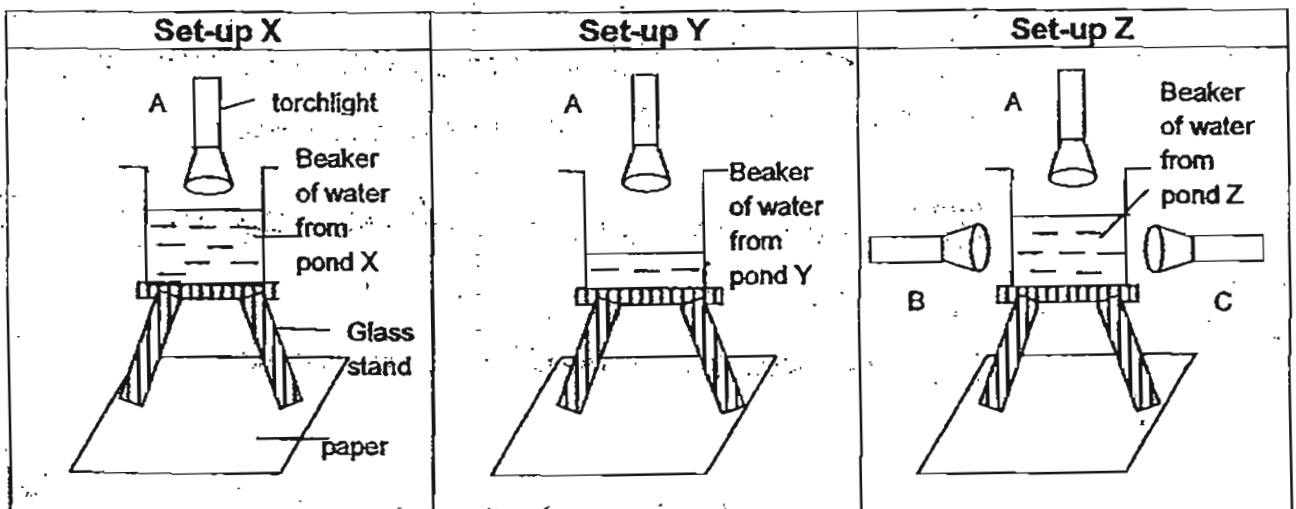


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- 32 Jasmine wanted to conduct an investigation to find out which pond water is the most suitable for aquatic plants to make food. She collected some water from 3 ponds X, Y and Z and the diagram below shows her set-up.



(a) Jasmine's friend said that her set-ups were not correct.

State 1 change Jasmine should make to Set-ups Y and Z respectively so as to ensure that her experiment is a fair one. [ 1 ]

(i) Change made to Set-up Y:

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(ii) Change made to Set-up Z:

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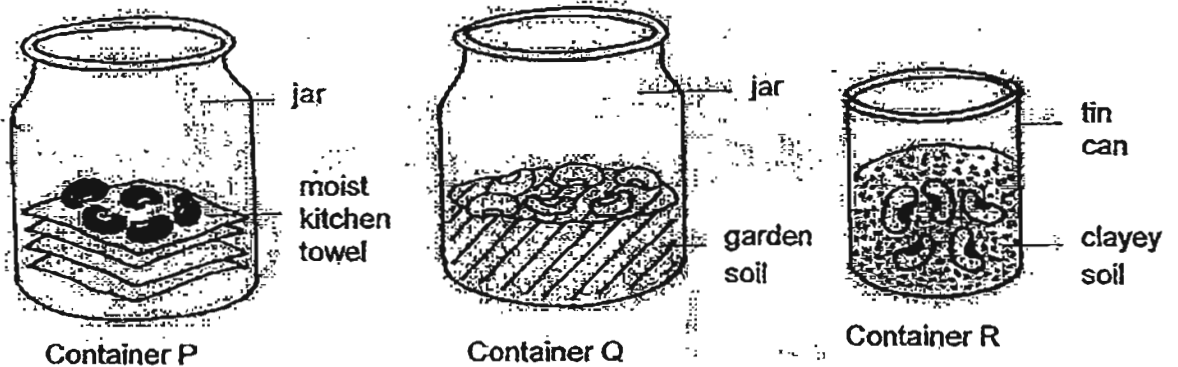
(b) Based on her experiment, what observation would help her decide which pond water is the most suitable for aquatic plants to make food? [ 1 ]

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Ben wanted to find out which kind of beans will sprout the fastest. He chose 3 different kinds of beans and put them into 3 containers as shown below.



After a week, he noticed that the beans in container P sprouted first. Based on his experiment, Ben concluded that the beans in container P sprouted the fastest.

- (a) Did Ben make the correct conclusion? Give a reason for your answer. [ 1 ]

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- (b) Ben decided to remove the seedlings after 5 days. He found out that he could not separate the seedlings from the kitchen towel. Give a reason to explain his observation.

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- (c) What should Ben measure to conclude which beans grew the fastest? [ 1 ]

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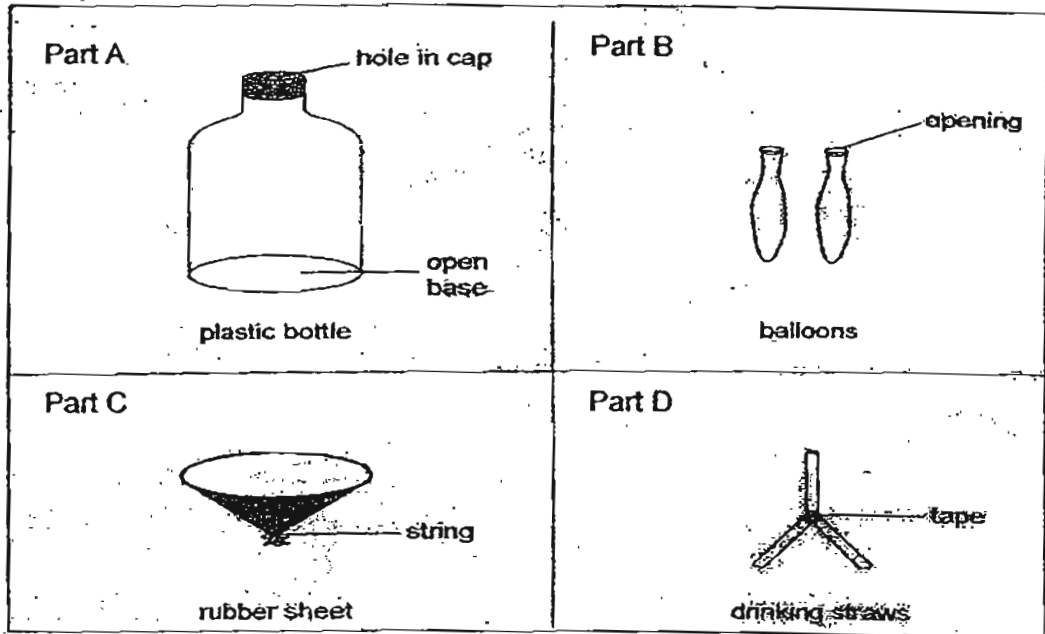


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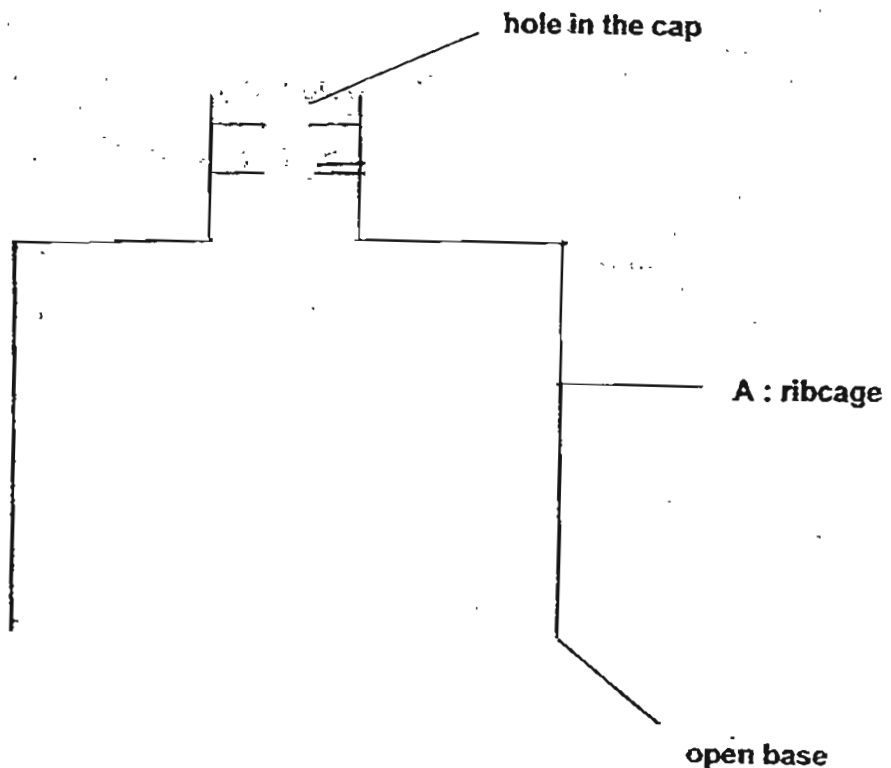
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34 Remy made a model of the human respiratory system using 4 main parts A, B, C and D as shown in the diagram below. He wanted to observe how the size of the balloons changes with the intensity of his breaths.

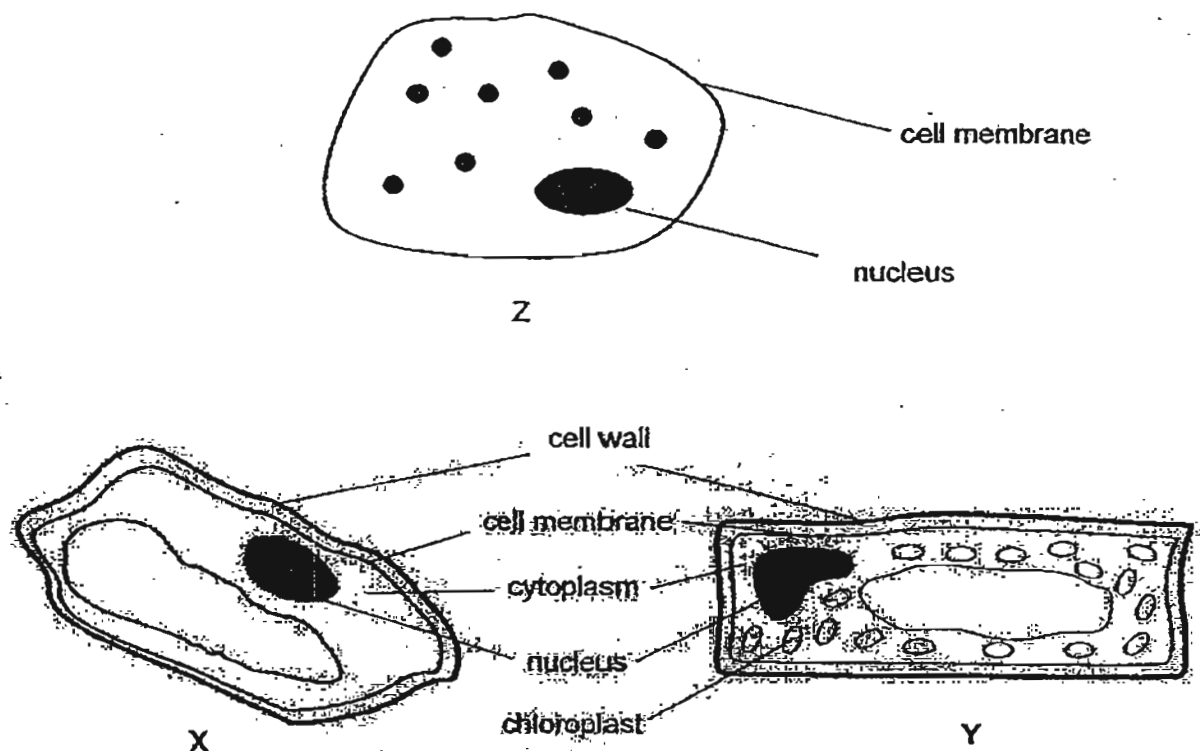


In the space below, draw and label clearly the complete model of the human respiratory system using all the 4 parts A, B, C and D. Identify correctly Parts A to D to the parts of the human respiratory system. Part A has been labelled for you.

[ 3 ]



35 Ronny observed three different types of cells, X, Y and Z as shown in the diagram below.



(a) The three cells were tested with iodine solution.  
Which of the cell(s) will most likely cause iodine solution to turn dark blue?  
Give a reason for your answer. [1]

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**(b)(i)** Based on the above diagram, Ronny concluded that 2 of the 3 cells are plant cells. Identify the 2 cells. **[ 1 ]**

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**(b)(ii)** State 1 characteristic that allowed you to conclude your answer in b(i) **[ 1 ]**

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- 36 Adrian wanted to find out the rate of germination of some radish seeds. He planted 25 seeds in a pot of soil and watered them daily. He recorded the following information over a period of 6 days.

| Day | Number of radish seeds germinated |
|-----|-----------------------------------|
| 1   | 3                                 |
| 2   | 7                                 |
| 3   | 2                                 |
| 4   | 8                                 |
| 5   | 5                                 |
| 6   | (X)                               |

What is the value of X on Day 6? Give a reason for your answer. [ 2 ]

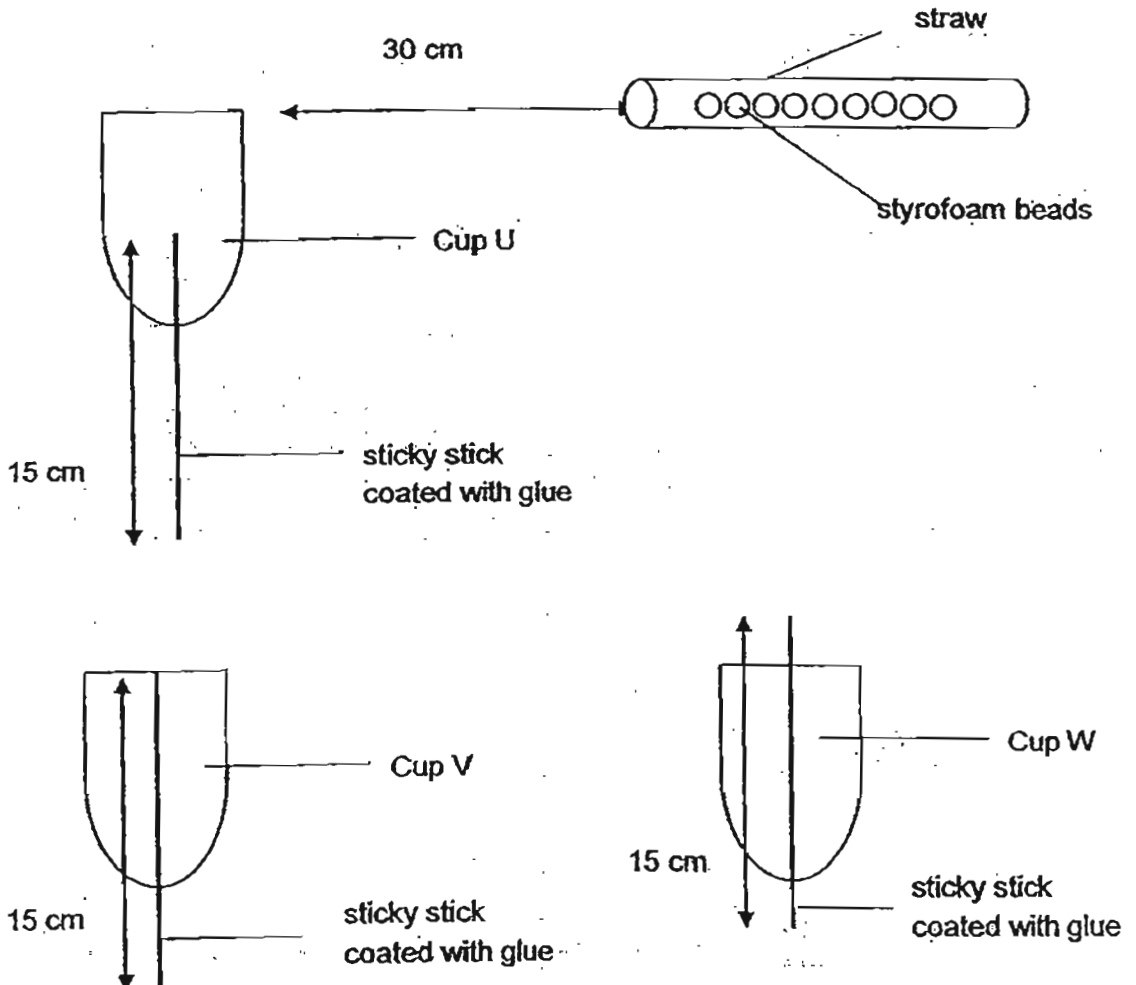
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37

Timmy carried out an experiment to find out the effect of the length of a sticky stick which sticks out of a cup and the number of styrofoam beads that can be attached to it. He prepared 3 cups labelled U, V and W and 3 identical sticks, 15 cm long, that are coated with a layer of glue. He filled one end of the straw with styrofoam beads. He then measured a distance, 30 cm away from each cup and took a deep breath before blowing into the straw towards the sticky stick as shown below.



(a) Arrange the cups in ascending order in terms of the number of styrofoam beads that are attached to the sticky stick. [1]



- (b) State a possible relationship between the distance at which the sticky stick protrudes out of the cup and the number of styrofoam beads that are attached to it. [ 1 ]

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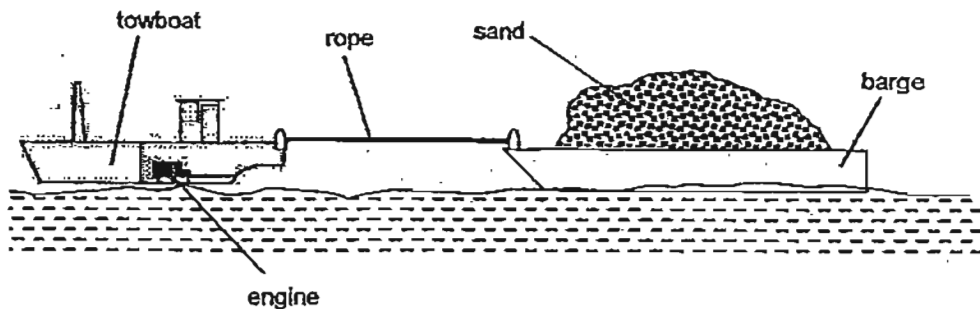


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- 38 The diagram below shows a towboat pulling a barge.



- (a) What is the source of energy for the towboat? [ 1 ]

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- (b) State the two forces acting on the barge. [ 1 ]

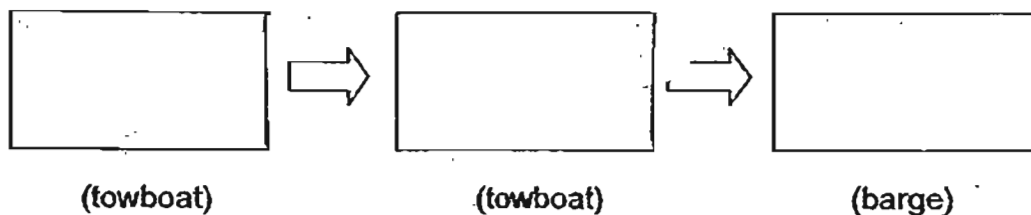
(i) 

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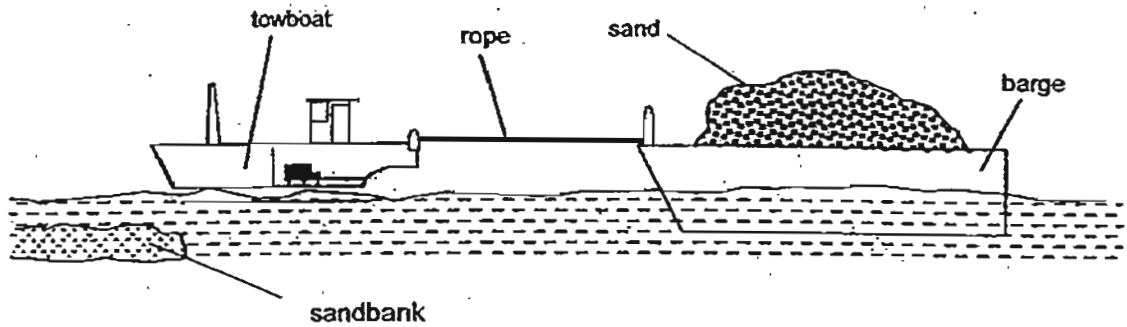
(ii) 

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- (c) Write the energy conversion that takes place when the towboat pulls the barge. [ 1 ]



When the towboat and barge moved up the river, it reached a sandbank



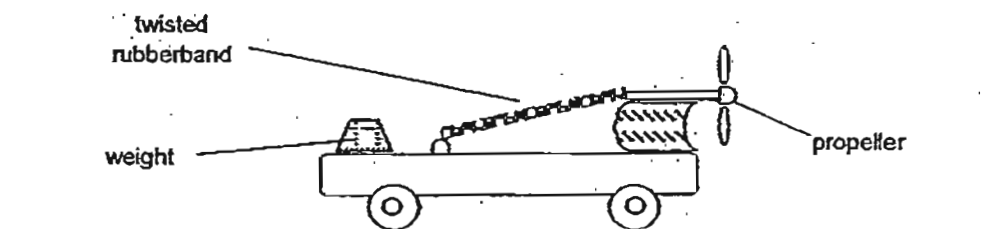
The captain realised that his towboat would not hit the sandbank but the barge would.

- (d) What should the captain have done to make sure that the barge is able to go over the sandbank safely? [ 1 ]

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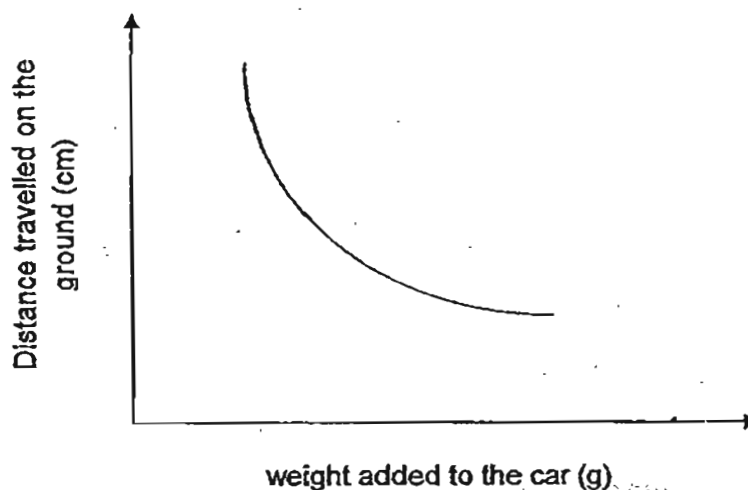
- 39 The drawing below shows a toy car operated by a rubber band attached to a propeller. The aim of the experiment was to find out how the weight of the toy car affects the distance it could travel on the ground.



- (a) State the force that the twisted rubberband possesses. [1]

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The results from the experiment were plotted in the graph shown below.



- (b) What is the relationship between the weight of the car and the distance it travelled on the ground? [1]

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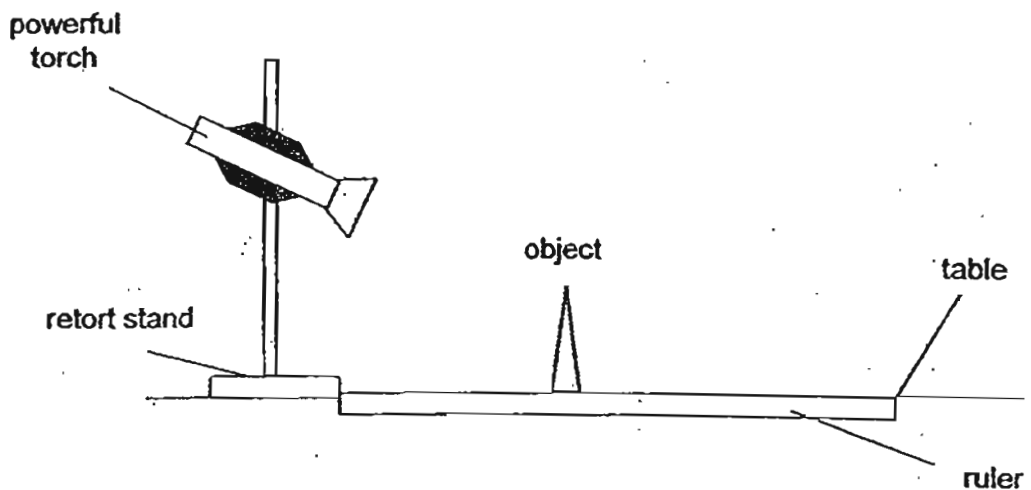


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- (c) The experiment was repeated using the same set up. The surface on which the car travelled was changed to a rougher one.

Predict the results by drawing on the graph above [1]

40 Study the following experimental setup carefully



In the experiment shown above, the angle at which the torch was shining at the object remained unchanged. The change in the size of the object's shadow was measured for different distances between the object and the retort stand.

The results of the experiment were shown in the table below.

| Distance of object from the retort stand | Size of shadow on the table |
|--|-----------------------------|
| 10 cm                                    | 8 cm                        |
| 20 cm                                    | 17 cm                       |
| 30 cm                                    | 23 cm                       |
| 40 cm                                    | 28 cm                       |

(a) What was the aim of the experiment? [1]

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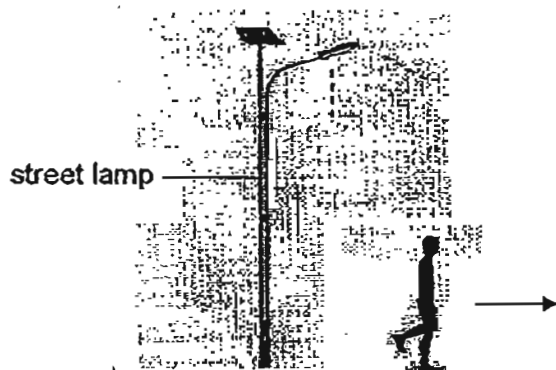
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(b) Explain how the shadow was formed on the table. [1]

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Study the diagram given below.

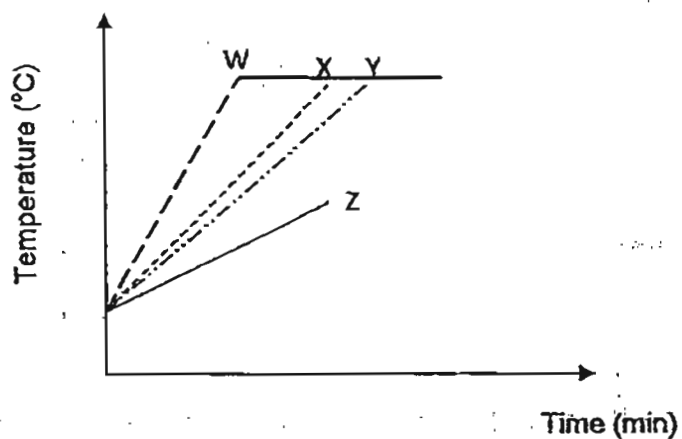


- (c) Based on the results of the first experiment, predict how the shadow of the man would change as he walked away from the street light. [ 1 ]

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- 41 The following graph shows the results of an experiment on 4 materials, W, X, Y and Z. The materials were placed in a container of boiling water and their temperature changes over time were measured.

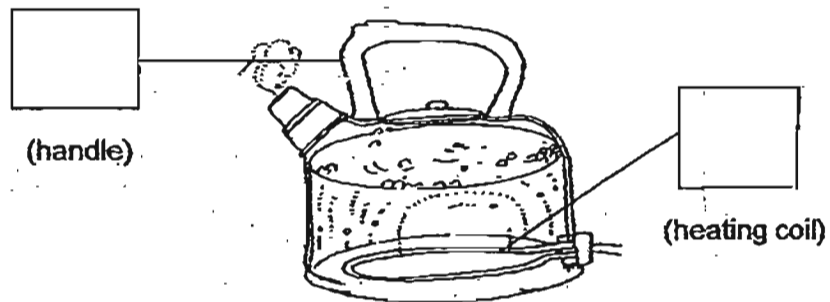


- (a) Based on the results provided, explain why material X is a poorer conductor of heat than material W. [ 1 ]

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The following drawing shows a kettle with the water boiling.



(b) Which of the four materials are the best to be used to make the two parts of the kettle as shown? Write W, X, Y or Z in the boxes provided. [ 1 ]

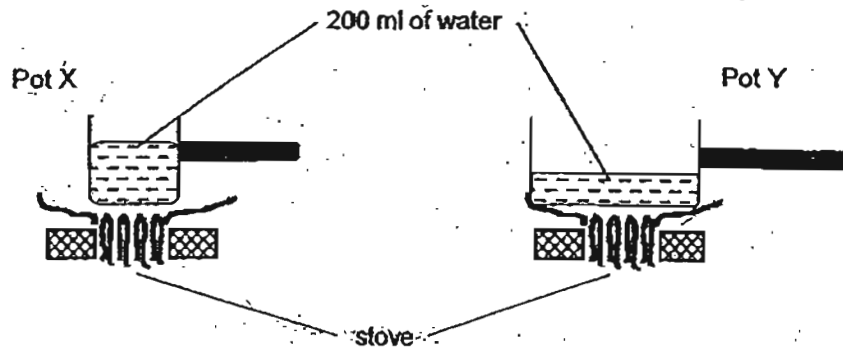
(c) Explain your choice of material for the heating coil. [ 1 ]

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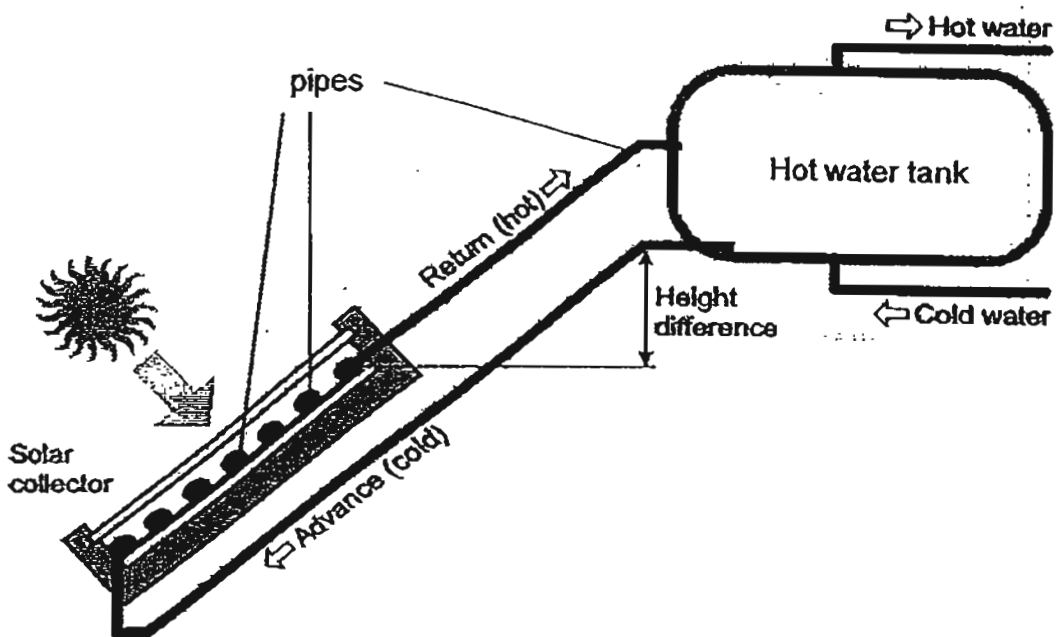
- 42 The same amount of water was placed in two pots and heated over a stove until it evaporates completely.



- (a) In which pot would the water evaporate the fastest? [1]

Use the information from part (a) to answer parts (b) and (c).

The diagram below shows how a solar water heater works.

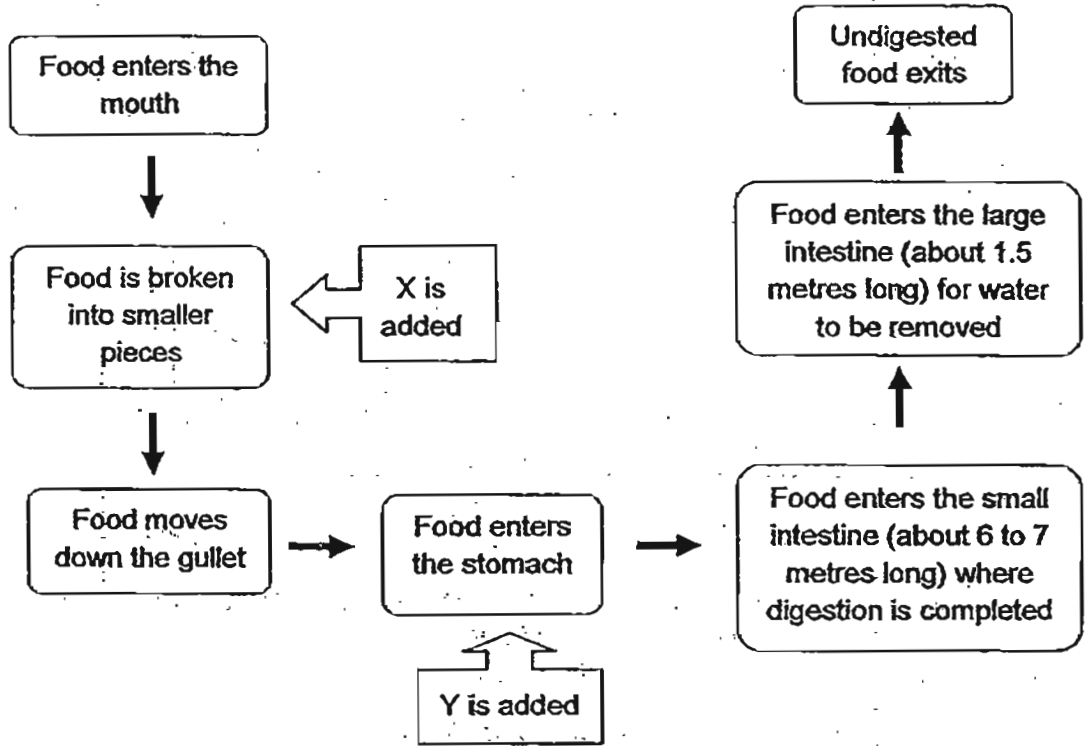


(Side View)





43 Study the following flow chart carefully.



(a) Identify substances X and Y.

[1]

X: \_\_\_\_\_

Y: \_\_\_\_\_

(b) The small intestine is about 6 to 7 metres long while the large intestine is about 1.5 metres long.

Based on the function of the small intestine, explain why it is many times longer than the large intestine.

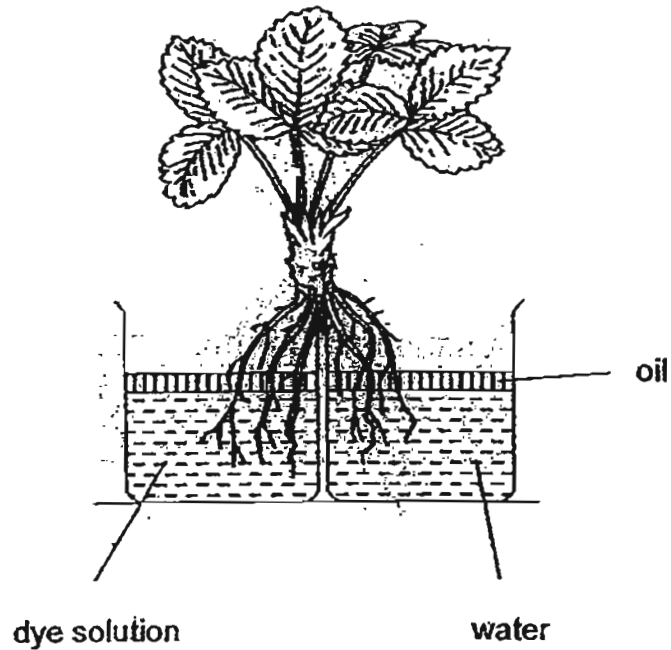
[1]

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44 Study the diagram below.



Half of the roots of the plant was placed in each container which contained a dye solution and water respectively. The set ups were placed in an open area for 2 days.

(a) What would be the results observed for the leaves? [ 1 ]

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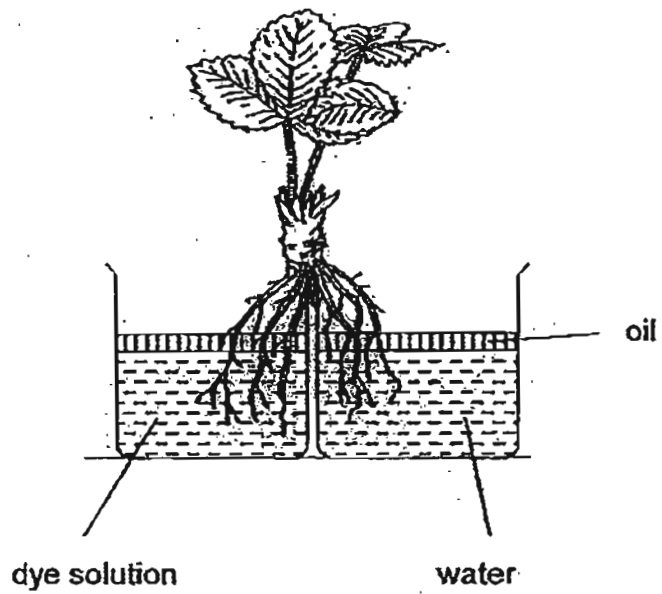
(b) What would you observe to prove that apart from the dye solution, the plant used the water for photosynthesis? [ 1 ]

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The experiment was repeated with some of the leaves trimmed off.



(c) What is the difference in results compared to the earlier experiment? [ 1 ]

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END OF PAPER

Setters : Mr Ting Huat Seng  
Mdm Brenda Kok Wei Ling





# ANSWER SHEET

**EXAM PAPER 2011**

**SCHOOL : NANYANG PRIMARY  
SUBJECT : PRIMARY 6 SCIENCE**

**TERM : SA1**



|    |    |    |    |    |    |    |    |    |     |     |     |     |     |     |     |     |
|----|----|----|----|----|----|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|
| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 | Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 |
| 1  | 4  | 4  | 4  | 3  | 4  | 4  | 3  | 2  | 3   | 1   | 3   | 3   | 2   | 2   | 2   | 1   |

|     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Q18 | Q19 | Q20 | Q21 | Q22 | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Q29 | Q30 |
| 2   | 4   | 3   | 3   | 1   | 2   | 1   | 2   | 3   | 3   | 4   | 4   | 4   |

31)a)2)Use a dropper to absorb the water from the glass.

3)Drip some drops of water on A and C.

4)Use the piece of cloth to cover A and B.

5)Put the woodlice in the middle of A,B,C and D.

b)Jim should count the number of woodlice in each part A,B,C and D.The part with the most number of woodlice has the ideal living conditions of woodlice.

c)They need time to adapt to their surroundings and move to the area with ideal living conditions.

32)a)i)She should increase the amount of water in Set-up Y until it is the same volume as Set-up X and Set-up Z.

ii)She should remove torchlight B and C.

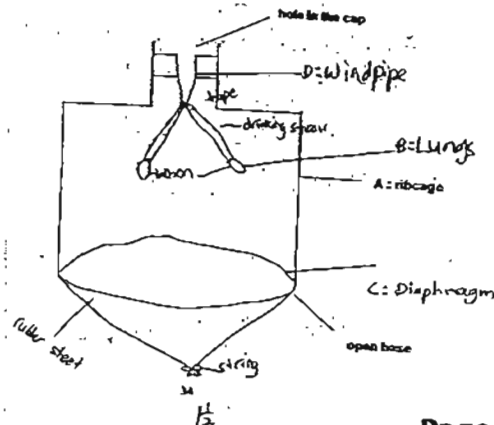
b)The amount of water left.

33)a)No, he must keep all the other variable the same.

b)The seedling have already grew roots that ding on to the mast kitchen towel, thus making if harder to separate if from the kitchen towel.

c)The height of the plant.

34)



35)a)Cell Y. Cell Y contains chloroplast that can trap sunlight to make food. The excess will be converted to starch and thus changing the iodine solution into dark blue.

b)i)Cell X and Y.

ii)They both have cell wall which is present in plant cell but absent in the animal cell.

36)0. All the seeds have germinated. Therefore on day 6 no seeds germinated.

37)a)U,V,W

b)The longer the sticky stick protrudes out of the cup the more number of Styrofoam beads.

38)a)The petrol.

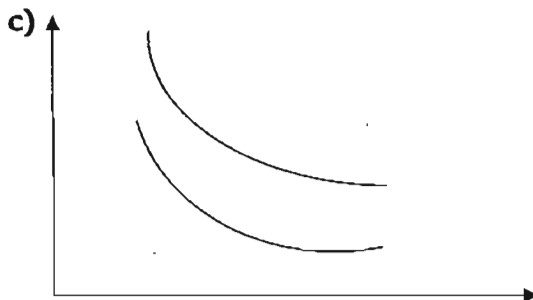
b)i)Gravitational force. ii)Frictional force.

c)Chemical Potential energy  $\rightarrow$  kinetic energy  $\rightarrow$  kinetic energy

d)He should put some of the sand into his boat to make the boat and barge balanced.

39)a)Elastic spring force.

b)The more weight added to the car the lesser the distance it travelled on the ground.



40)a)To find out how the length of the shadow is affected by the distance of the object from the light source.

b)Light could not pass through the opaque object thus creating shadows.

c)It will get longer.

41)a)Material X took a longer time to reach the same temperature as material W.

b)(handle) Z (heating coil) W

c)W is the best conductor of heat.

42)a)Pot Y.

b)Increased surface area to the sun's heat.

c)It uses the solar energy which is renewable.

43)a)X: Saliva Y: Digestive juices

b)To provide more time for the digested food to enter the bloodstream.

44)a)The leaves will be the same colour as the dye solution.

b)The water level will decrease.

c)The water level will decrease slower.