

CATHOLIC HIGH SCHOOL
PRIMARY 6
PRELIMINARY EXAMINATION 1
2010

SCIENCE
EM 1 / EM 2

Name: _____ ()

Class : Primary 6 _____

Date : 25th May 2010

BOOKLET A

30 Questions
60 Marks

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

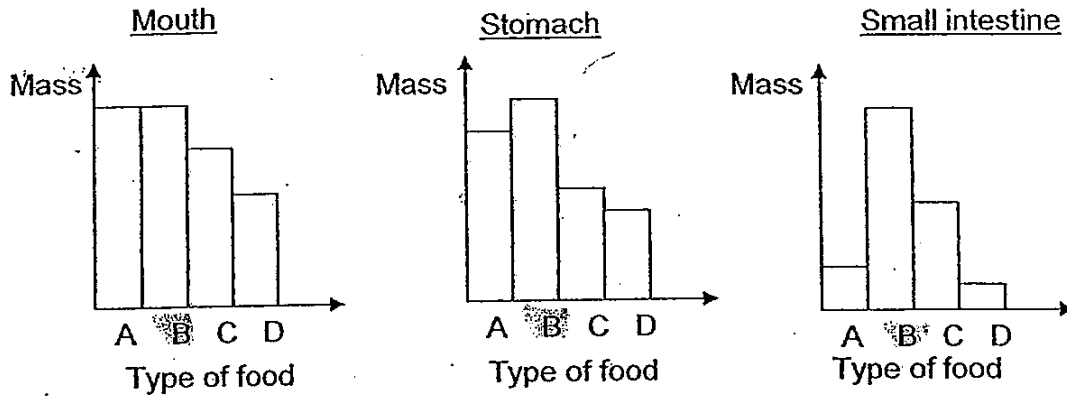
Instructions to Candidates

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

Section A: Multiple Choice Questions (60 marks)

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

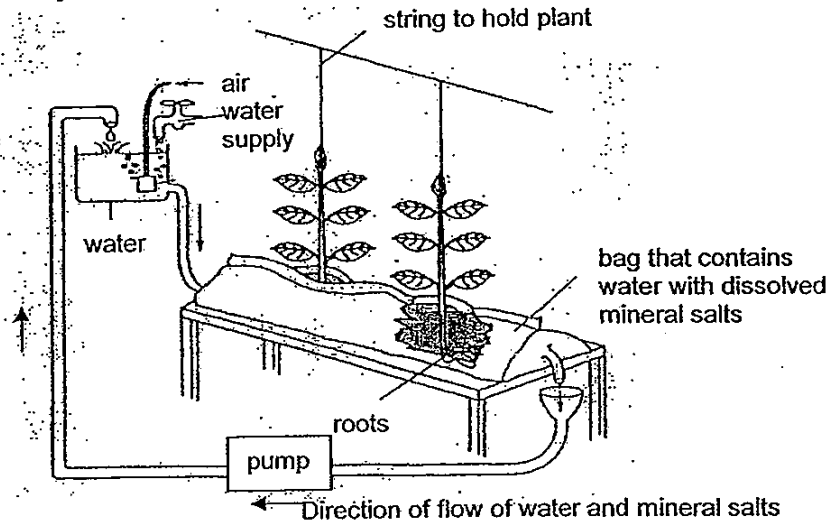
1. The graphs below show the masses of 4 different types of food, A, B, C and D as they travel from the mouth to the small intestine.



Which type of food was not being digested?

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

2. The diagram below shows a set-up of plants grown without soil. Part of the plant is submerged in a bag that contains water with dissolved mineral salts and the plants are still healthy after one month.

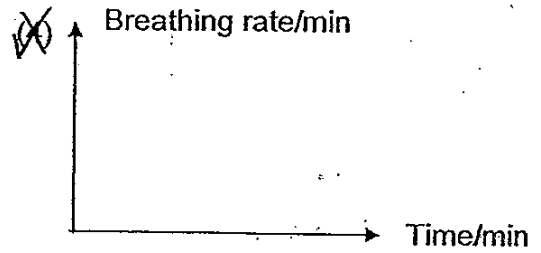
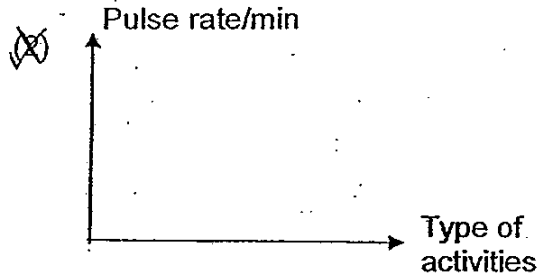
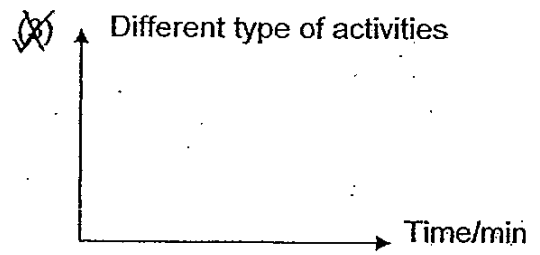
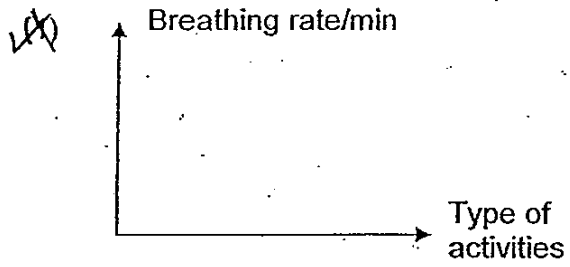


Which one of the functions of the part of a plant is not demonstrated in the above experiment?

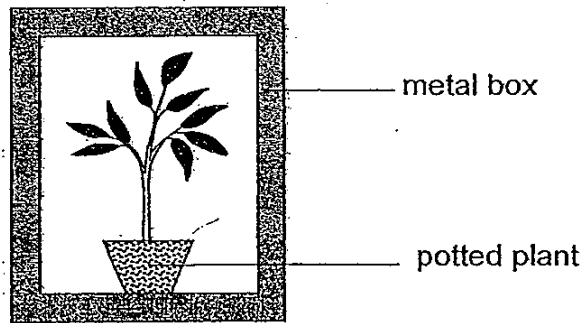
- (1) The leaves are able to photosynthesize.
- (2) The roots are able to anchor itself firmly.
- (3) The stem is able to transport food and water.
- (4) The roots are able to take in water and mineral salts.

3. Mr Lee wanted to investigate whether his breathing rate increases when he does different types of activities.

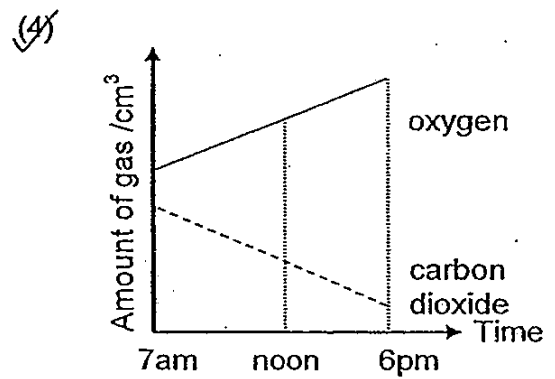
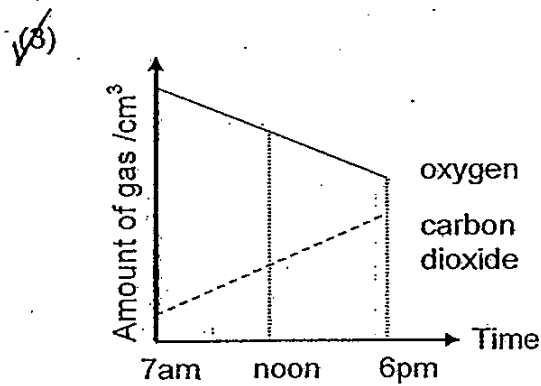
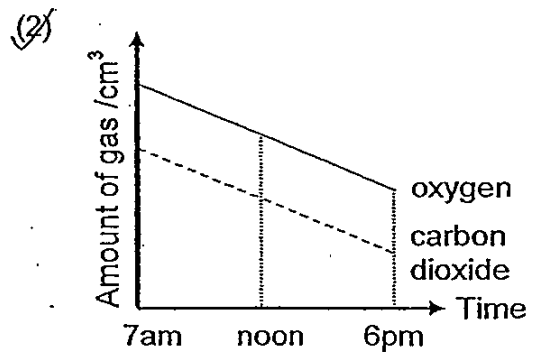
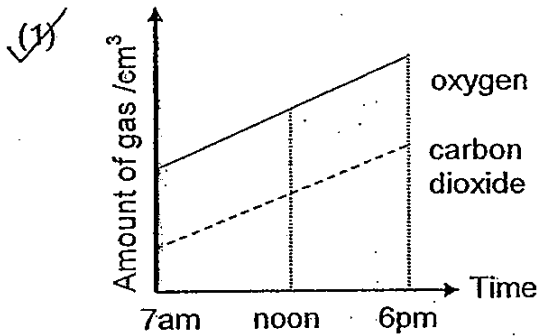
Which one of the following axes should he use to show his results?



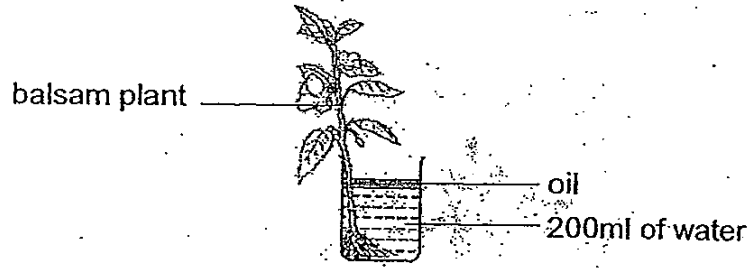
4. A potted plant was given sufficient amount of water and placed in an air-tight metal box for a day in a garden as shown below.



Which one of the following graphs shows the changes in amount of oxygen and carbon dioxide present in the box during the day?



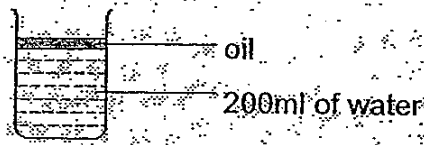
5. Tim set up an experiment as shown below to find out whether plants take in water.



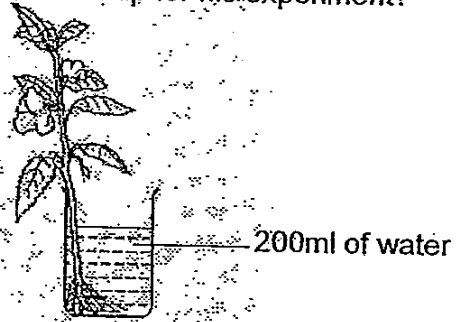
He wanted to set up a control for his experiment.

Which one of the following should Tim use as a control set-up for his experiment?

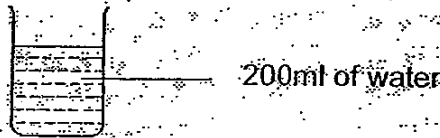
✓(1)



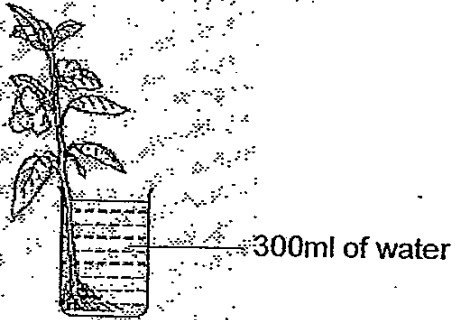
✓(2)



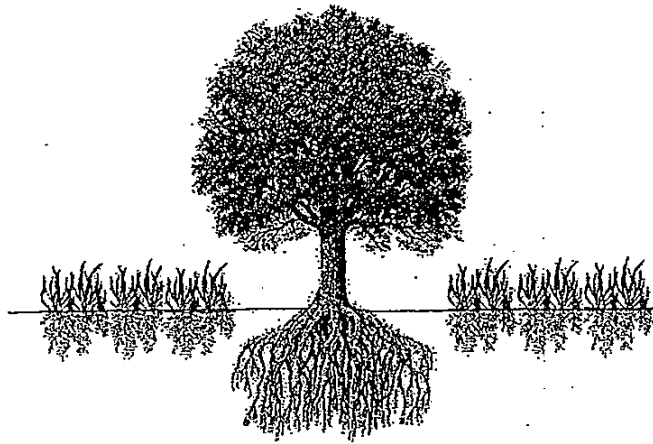
✓(3)



✓(4)

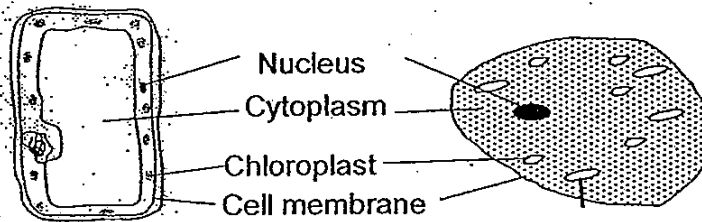


6. The diagram below shows a tree and some grass growing near it. After a long period of time without rain, the grass around the tree started to turn brown but the tree remain healthy.



What is a possible reason for the difference in appearance?

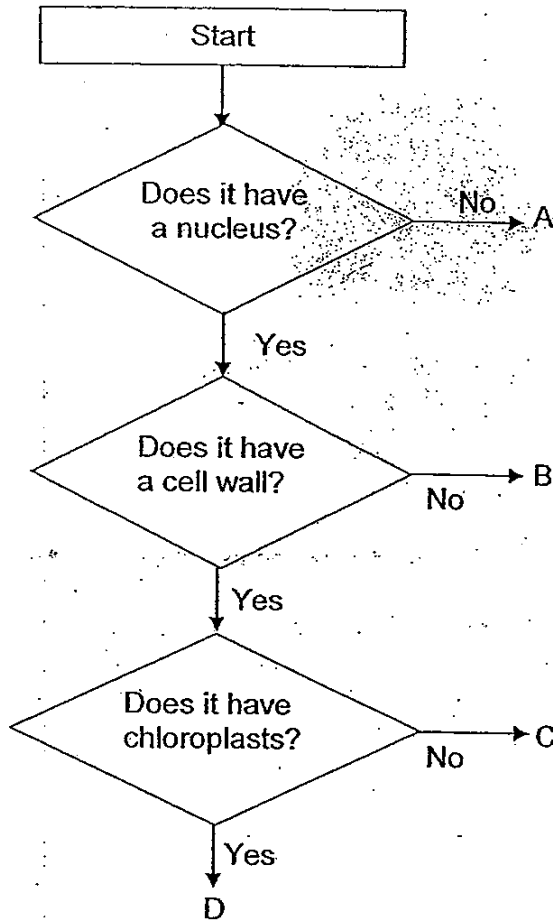
- (1) The tree is able to absorb water better than the grass.
 - (2) The tree is taller and can make food better than the grass.
 - (3) The tree has a strong stem that can transport water better.
 - (4) The roots of the tree were able to anchor itself firmly to the ground.
7. The diagrams below show two cells seen under a microscope.



Which of the following labels is correct for both cells?

- (1) Nucleus
- (2) Cytoplasm
- (3) Chloroplast
- (4) Cell membrane

8. The flowchart below provides some information on 4 cells A, B, C and D.



Which one of the above cells is able to produce starch?

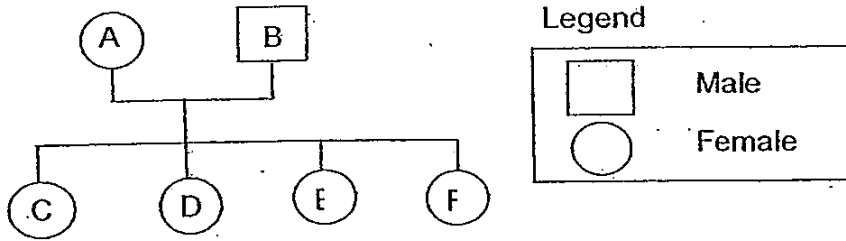
- (1) A
- (2) B
- (3) C
- (4) D

9. Which of the following statements about the reproduction of animals are true?

- A Eggs must be fertilised before they can develop into young animals.
- B A male and female are always required for reproduction to take place.
- C Fertilisation always takes place while the egg is still inside the body of a female animal.
- D The life cycle of an animal depicts the stages of development from a fertilised egg to the adult stage.

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

10. The diagram below shows the family tree of Rachel and her sisters.



The table below shows the characteristics of her family members and a tick (✓) represents that the person has the characteristic. Rachel resembles her father the most.

| Family member | Characteristics | | | |
|---------------|-----------------|------------|---------------------|------------|
| | Double eyelids | Round face | Hitch-hiker's thumb | Sharp nose |
| A | ✓ | ✓ | | ✓ |
| B | ✓ | | ✓ | |
| C | | ✓ | ✓ | ✓ |
| D | ✓ | ✓ | | ✓ |
| E | ✓ | | ✓ | ✓ |
| F | | ✓ | ✓ | |

Which letter in the family tree best represents Rachel?

- (1) C
(2) D
(3) E
(4) F

11. An experiment involving 2 similar seeds, X and Y was carried out. Seed X was placed in a container with digestive liquids while Seed Y was placed in a container with water.

The table below shows the results after two days.

| Seed X | Seed Y |
|----------------------|---------------------------|
| No observable change | The seed increase in size |

What can we infer about the seeds from this experiment if we know that seeds germinate after being passed out by animals?

- (1) Seeds do not absorb water.
(2) Seeds need air, water and suitable temperature to germinate.
(3) Seeds do not allow all substances to pass through and are thus unharmed.
(4) Seeds do not have any protection against the substances they come into contact with.

12. An experiment was carried out to find out how the number of paper clips on the wings will affect the time taken for 4 paper spinners to fall to the ground. Study the tables made by the pupils.

Which one of the following tables is correct?

✓(1)

| Variable to be changed | Variables to be kept constant | | |
|------------------------|-------------------------------|---------------------------------------|----------------------------------|
| Number of paper clips | Length of the wings/ cm | Height that paper spinner was dropped | Number of wings on paper spinner |
| 1 | 10 | From the 3 rd floor | 4 |
| 2 | 15 | From the 3 rd floor | 4 |
| 3 | 16 | From the 3 rd floor | 4 |
| 4 | 10 | From the 3 rd floor | 4 |

✓(2)

| Variable to be changed | Variables to be kept constant | | |
|------------------------|-------------------------------|---------------------------------------|----------------------------------|
| Number of paper clips | Length of the wings/ cm | Height that paper spinner was dropped | Number of wings on paper spinner |
| 1 | 10 | From the 3 rd floor | 2 |
| 2 | 10 | From the 3 rd floor | 2 |
| 3 | 10 | From the 3 rd floor | 2 |
| 4 | 10 | From the 3 rd floor | 2 |

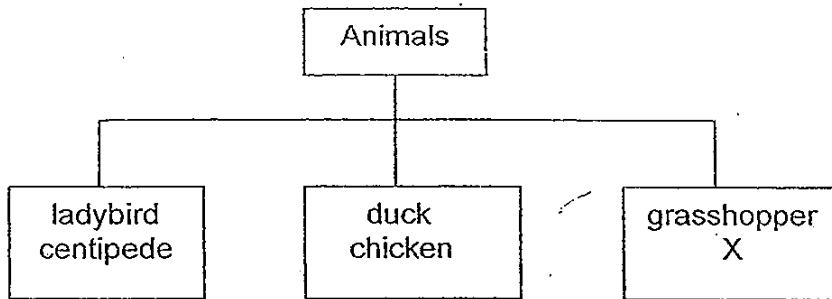
✓(3)

| Variable to be changed | Variables to be kept constant | | |
|------------------------|-------------------------------|-----------------------|---------------------------------------|
| Length of the wings/cm | Number of wings | Number of paper clips | Height that paper spinner was dropped |
| 10 | 1 | 2 | From the 3 rd floor |
| 10 | 2 | 4 | From the 3 rd floor |
| 10 | 3 | 6 | From the 3 rd floor |
| 10 | 4 | 8 | From the 3 rd floor |

✓(4)

| Variable to be changed | Variables to be kept constant | | |
|------------------------|-------------------------------|-----------------|---------------------------------------|
| Number of paper clips | Length of the wings/ cm | Number of wings | Height that paper spinner was dropped |
| 2 | 10 | 2 | From the 2 nd floor |
| 4 | 10 | 2 | From the 3 rd floor |
| 6 | 10 | 2 | From the 4 th floor |
| 8 | 10 | 2 | From the 5 th floor |

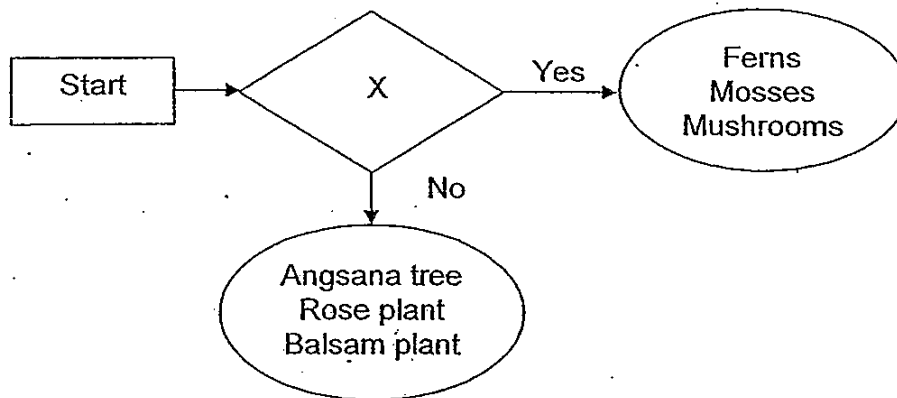
13. The animals below are classified according to the food they eat.



Based on the information given in the chart, which one of the following statements about X is most likely to be true?

- (1) It is an insect.
- (2) It is able to fly.
- (3) It does not feed on other animals.
- (4) It can spread diseases to the plant.

14. Study the flowchart below.

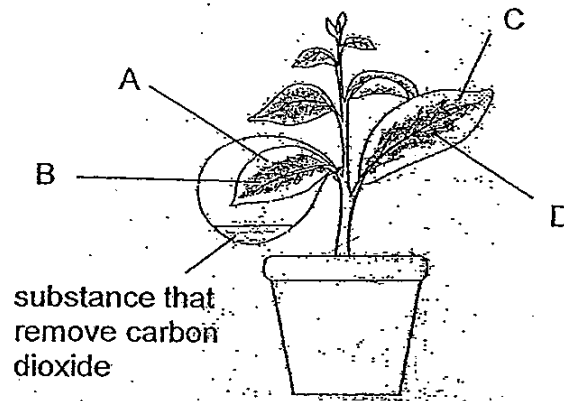


The letter 'X' represents a question that classifies the living things into two groups.

Which one of the following best represents 'X'?

- (1) Do they make food?
- (2) Do they have roots?
- (3) Do they have flowers?
- (4) Do they reproduce by spores?

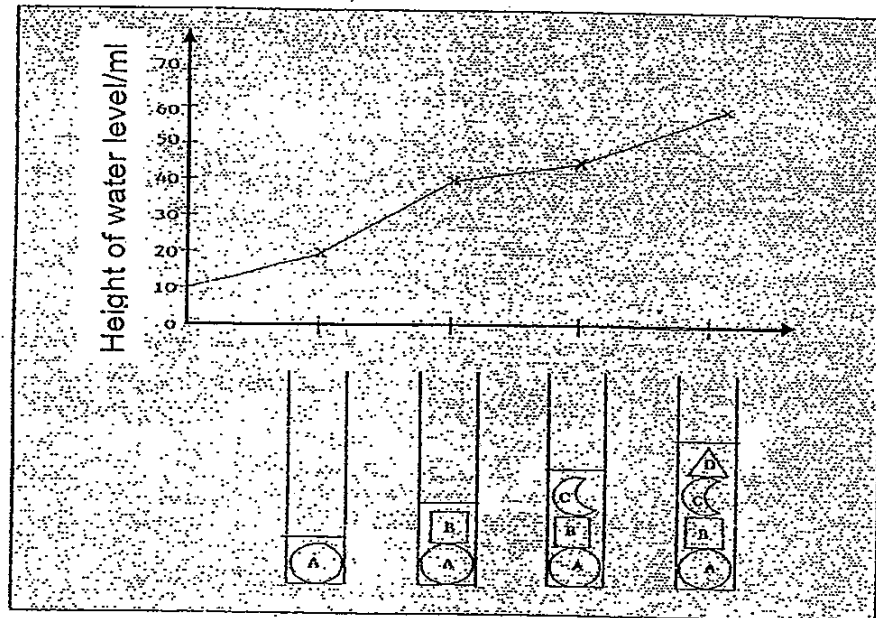
15. The diagram below shows a photosynthesis investigation. The plant has leaves that are green in the middle and white round the edges.



Which two leaf areas each lack only one factor needed for photosynthesis?

- (1) A and C
 - (2) A and D
 - (3) B and C
 - (4) B and D
16. Sam has 4 objects, A, B, C and D. When he puts A into a measuring cylinder containing 10ml of water, the water level rises. Then he puts in B, followed by C, then finally D.

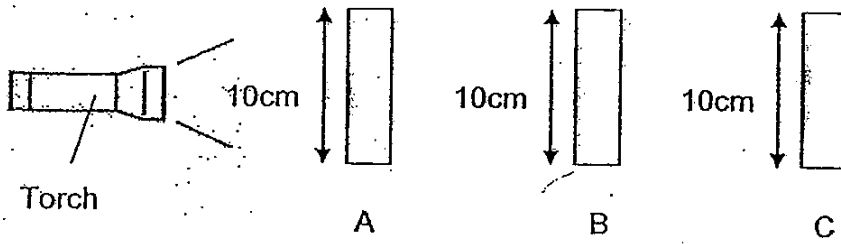
The graph below shows the changes in water level after each object has been placed in.



Which of the 4 objects has the greatest volume?

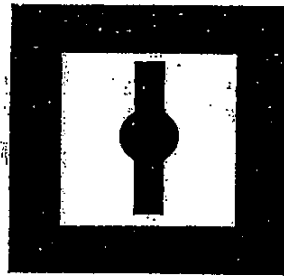
- (1) A
- (2) B
- (3) C
- (4) D

17. 3 objects, A, B and C, made of similar materials are arranged in a straight line as shown below.



Screen

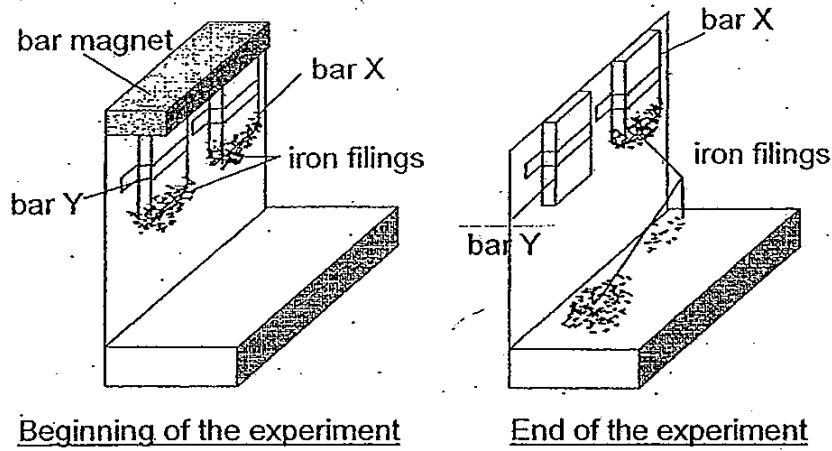
The diagram below shows the shadow formed on the screen.



What could the shape of A, B and C most likely be?

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

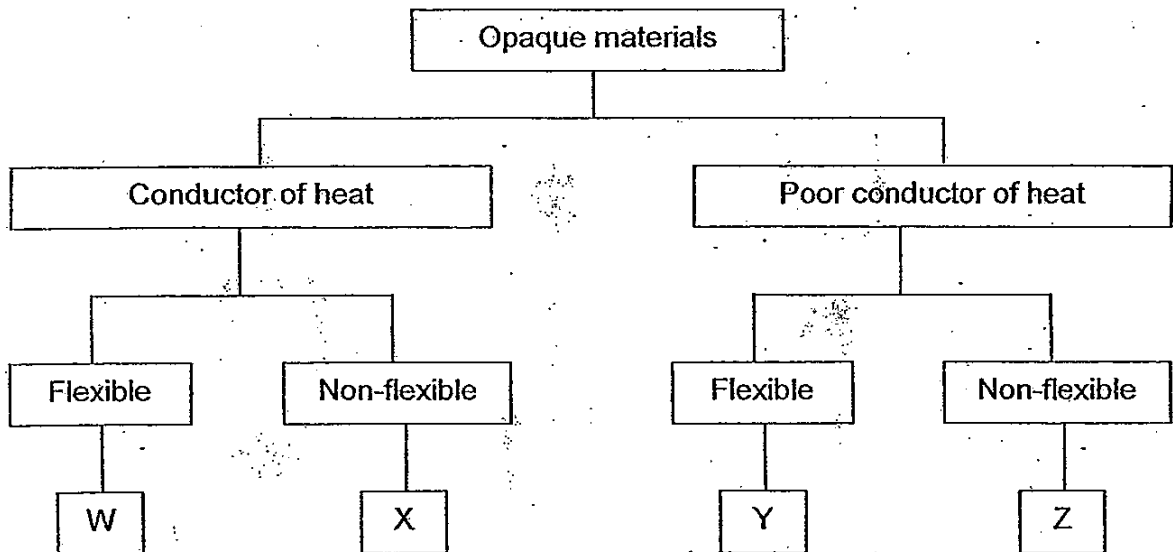
18. Benny conducted an experiment using the set-up as shown below.



What can Benny conclude about the bars?

- (1) Both X and Y are magnets.
- (2) Magnetism can only pass through magnetic objects.
- (3) Bar X can be magnetized to become a temporary magnet.
- (4) Bar X is a non-magnetic material that allows magnetism to pass through.

19. Study the classification table below.



Which of the following is a possible combination of objects W, X, Y and Z?

| | W | X | Y | Z |
|-----|----------------|------------|--------------|-----------------|
| (1) | Silver wire | Steel pipe | Rubber hose | Spectacles lens |
| (2) | Copper wire | Iron nail | Metal spring | Ceramics mug |
| (3) | Silver wire | Steel pipe | Rubber hose | Clay pot |
| (4) | Aluminium wire | Iron nail | Metal spring | Ceramics mug |

20. Four materials, exactly the same size, are placed with one end in boiling water.

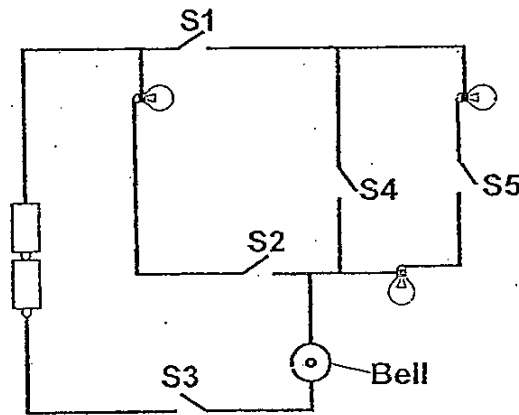
The time needed for the materials to rise to 2°C is recorded in the table below.

| Material | Time taken to rise 2°C/s |
|----------|--------------------------|
| A | 5 |
| B | 10 |
| C | 80 |
| D | 120 |

To make a container with the least heat loss and a bag to keep the container in that will minimize heat loss, which one of the following sets of materials should be used?

| | Container | Bag |
|------|-----------|-----|
| ✓(1) | A | C |
| ✓(2) | A | D |
| ✓(3) | B | C |
| ✓(4) | B | D |

21. Study the diagram below.



Which one of the following will result in the bell ringing without lighting up any of the bulbs?

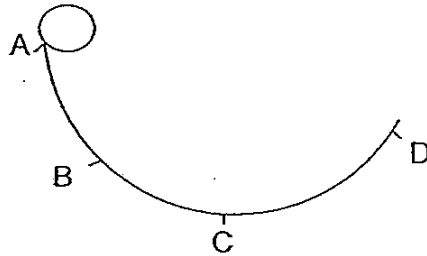
| | S1 | S2 | S3 | S4 | S5 |
|------|--------|--------|--------|--------|--------|
| ✓(1) | Closed | Closed | Closed | Open | Closed |
| ✓(2) | Open | Open | Closed | Open | Closed |
| ✓(3) | Closed | Open | Closed | Closed | Open |
| ✓(4) | Open | Closed | Closed | Open | Open |

22. Which one of the following situations shows the following energy conversion?

gravitational potential energy \rightarrow kinetic energy

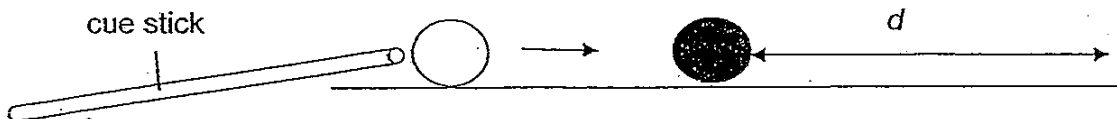
- (1) Flying a plane using fuel.
- (2) A crane is lifting heavy concrete slabs up a building.
- (3) Burning fuels to produce electricity in the power station.
- (4) Water from the dam is used to move the turbines in the power stations.

23. The diagram below shows a curved track. A marble is released at point A. Which one of the following statements about the energy possessed by the ball is true?



- (1) The ball has the most kinetic energy at C.
- (2) The ball has the most kinetic energy between points A and B.
- (3) The ball has more gravitational potential energy at D than at A.
- (4) The ball has the same amount of gravitational energy at points B and D.

24. The diagram below shows a white ball hitting a black ball after it had been given a push by cue stick during a game of snooker. The black ball travelled a distance, d before coming to a stop.



Which of the following correctly describes what has taken place from the time the white ball hits the black ball?

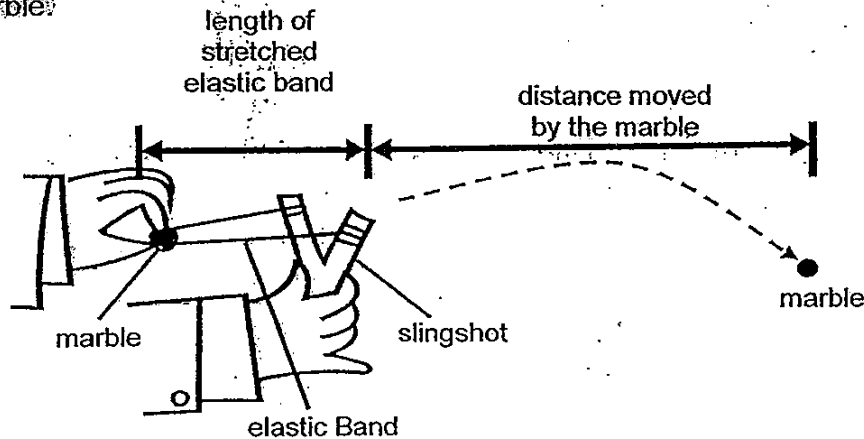
- (1) The black ball lost energy after moving distance d and came to stop.
- (2) The black ball stopped after distance d as it needs to overcome gravity and friction.
- (3) The cue stick had stored energy which was converted to kinetic energy of the two balls.
- (4) The energy from the white ball was transferred to the black ball causing it to move upon contact.

25. Four objects W, X, Y and Z are hung on a pole above the ground, using strings of different lengths. The table shows the mass of each object and its distance from the ground.

| Object | Mass/ kg | Distance from ground /cm |
|--------|----------|--------------------------|
| W | 3 | 75 |
| X | 10 | 118 |
| Y | 7 | 19 |
| Z | 3 | 45 |

Which one of the following is true of W, X, Y and Z?

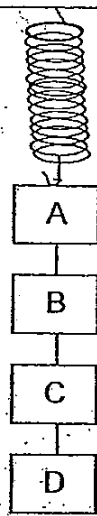
- (1) Object X possesses the least potential energy.
 (2) Object Y possesses the most potential energy.
 (3) Object W has more potential energy than Object Z.
 (4) Object Y possesses more potential energy than Object W.
26. Henry was playing with a slingshot when he discovered that there is a relationship between the length that the elastic band was stretched and the distance moved by the marble.



Which one of the following would most probably describe the relationship he had discovered?

- (1) The distance moved by the marble was the same no matter how far he stretched the elastic band.
 (2) The lesser the length of the stretched rubber band, the lesser the distance moved by the marble.
 (3) The greater the distance moved by the marble, the lesser the length of the stretched rubber band.
 (4) The distance moved by the marble is not affected by the length of the stretched rubber band.

27. An experiment was carried out with 4 objects A, B, C and D of different masses and a spring. When each of the objects was hung on the spring, the length of the stretched spring was measured.



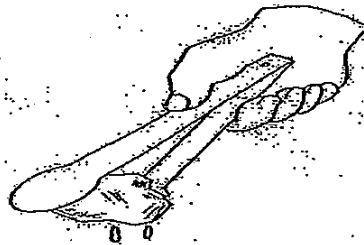
The table below shows the length of spring after each object is hung on it. The original length of the spring is 10 cm.

| Object(s) | Length of spring /cm |
|---------------|----------------------|
| A | 30 |
| A + B | 65 |
| A + B + C | 89 |
| A + B + C + D | 105 |

If the extension of the spring is constant throughout the experiment, which one of the following objects has the smallest mass?

- A
 B
 C
 D

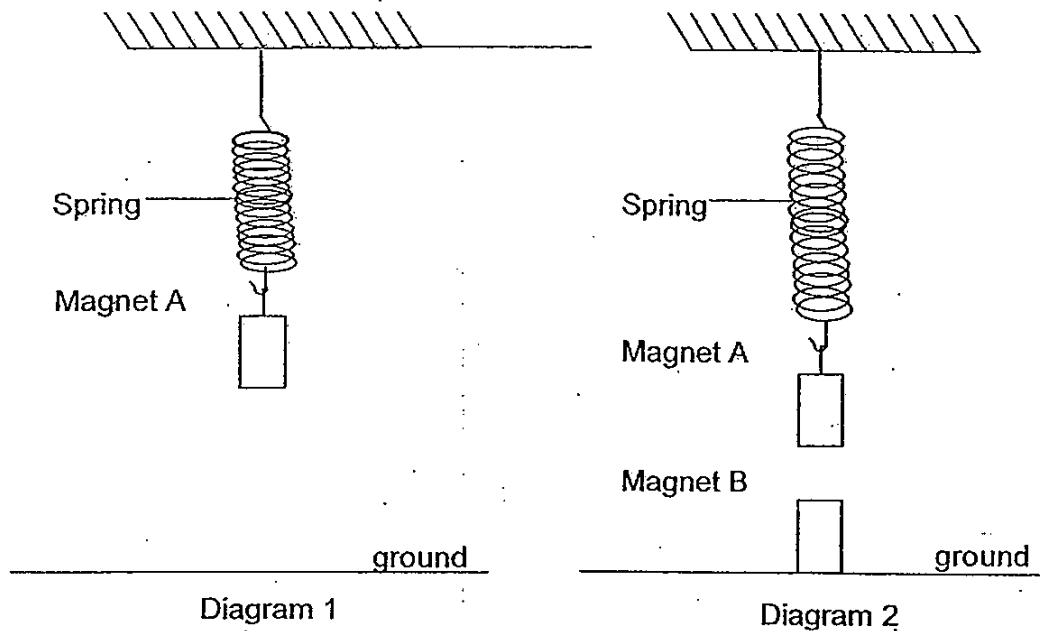
28. The diagram below shows a person holding an ice cube using a pair of ice tongs.



Which type of force is applied at the ice cube to allow him to do this?

- (1) Frictional force
 (2) Magnetic force
 (3) Gravitational force
 (4) Elastic spring force

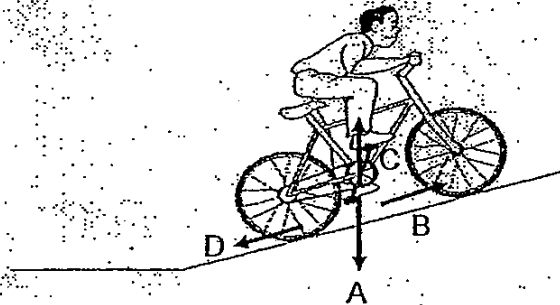
29. Magnet A is attached to a spring as shown in Diagram 1. Magnet B is then brought close to Magnet A as shown in Diagram 2.



Why does the spring stretch more in the arrangement shown in Diagram 2?

- (1) Gravitational force is acting on Magnet A and pulling it downwards.
 (2) The magnetic force of attraction is acting from a distance on the spring.
 (3) The gravitational force acting on the spring causing the increase in the elastic spring force.
 (4) Magnetic force of attraction between the magnets cause an increase in the elastic spring force.

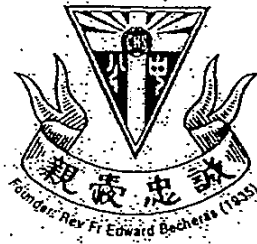
30. The diagram below shows a man riding up a slope.



Which of the arrows, A, B, C or D, above shows the frictional force and the gravitational force acting on the man and bicycle respectively?

| | Frictional Force | Gravitational Force |
|---|------------------|---------------------|
| (1) <input checked="" type="checkbox"/> | A | B |
| (2) <input checked="" type="checkbox"/> | B | A |
| (3) <input checked="" type="checkbox"/> | C | D |
| (4) <input checked="" type="checkbox"/> | D | A |

-End of Section A-



CATHOLIC HIGH SCHOOL
PRIMARY 6
PRELIMINARY EXAMINATION 1
2010

SCIENCE
EM 1 / EM 2

Name: _____ ()

Class : Primary 6 _____

Date : 25th May 2010

BOOKLET B

16 Questions
40 Marks

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

Instructions to Candidates

Follow all instructions carefully.
Answer all questions.

Parent's Signature: _____

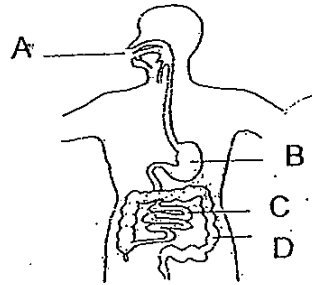
Date: _____

| Score | |
|-----------|-----|
| Section A | 60 |
| Section B | 40 |
| Total | 100 |

Section B: Open-ended Questions (40 marks)

Read the following questions carefully and write your answers in the space provided. The maximum marks that can be awarded are shown at the end of each question or part-question.

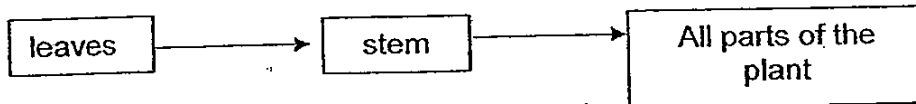
31. The diagram below shows parts of the digestive system.



(a) Apart from water, identify the substance found in organs A, B and C and explain how it cause change to the amount of undigested food. [1]

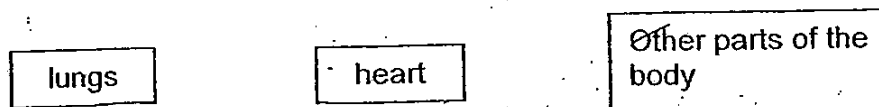
(b) Explain what happens to the digested and undigested food in organ C. [2]

32. The diagram below shows the movement of substance X in the plant.



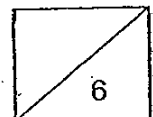
(a) What could X be? [1]

The diagram shows the different parts in the human system.

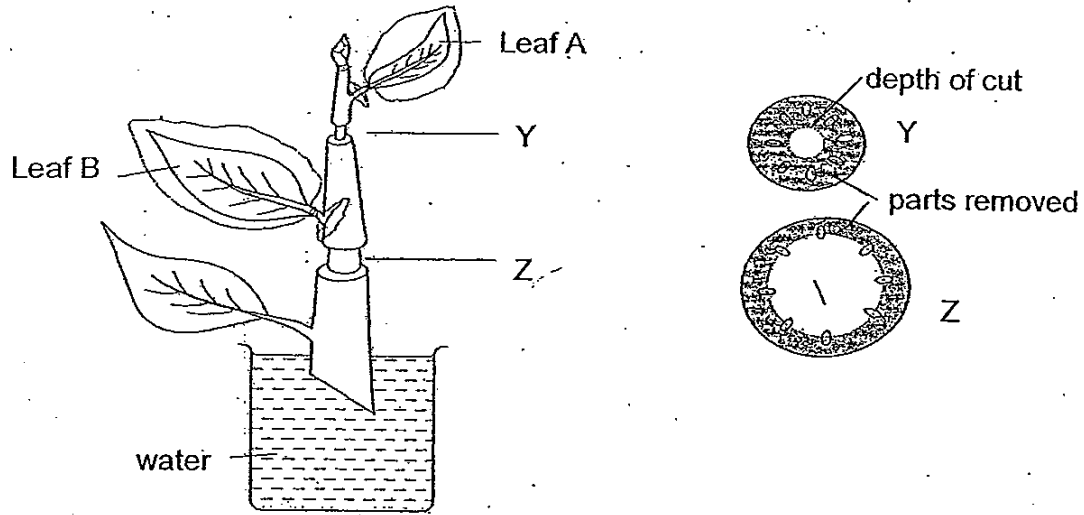


(b) Draw in the arrows to show the flow of blood in the human system. [1]

(c) State one difference between the direction of movement of X in plants and direction of the flow of blood in the human body. [1]

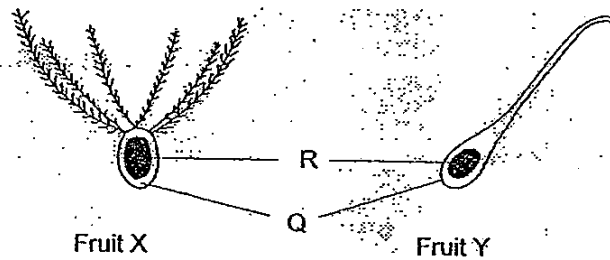


33. The diagram below shows two parts of the stem, Y and Z, being removed as shown below.



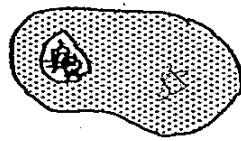
- (a) What is the difference between the part removed from Y as compared to that of Z? [1]
-
- (b) What will happen to leaf A? Give a reason for your answer. [2]
-

34. The diagram below shows the cross sections of two fruits, X and Y.

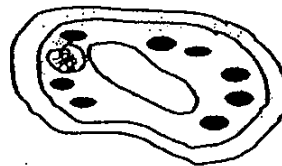


- (a) Which parts of the parent plants do Q and R developed from? [1]
-
- (b) How are the methods of dispersal of Fruit X different from Fruit Y based on the structures observed in the diagram above? [2]
-
-

35. Two cells, X and Y, are taken from two different organisms for use in an experiment as shown below.



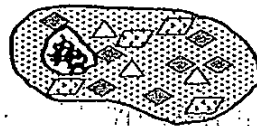
Cell X



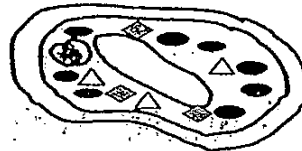
Cell Y

Both cells have been placed in a dish containing 3 different substances, A, B and C. After two hours, the diagram below shows the results of the experiment.

| Substance A | Substance B | Substance C |
|-------------|-------------|-------------|
| △ | ◊ | ▨ |



Cell X



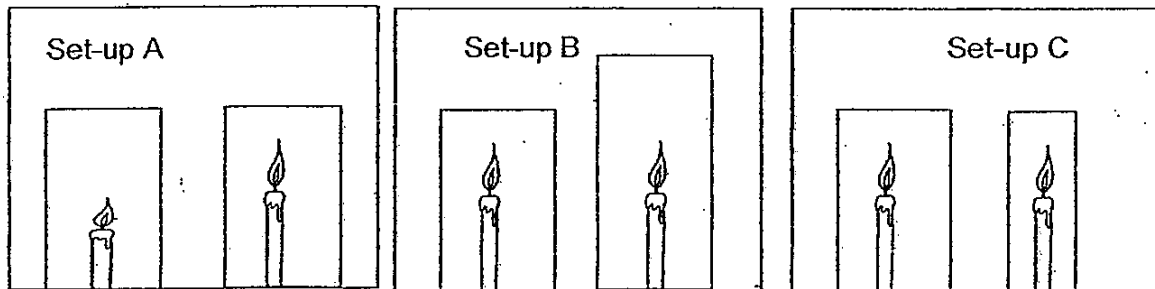
Cell Y

- (a) What substance can be found in cell X but not cell Y? [1]

- (b) What can you conclude about the cells from the above experiment? [1]

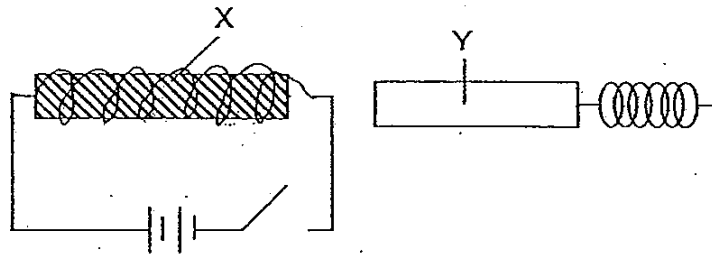
36. An experiment was conducted to find out how the amount of air affected the time taken for the candle to go off.

Study the three set-ups below.



Compare the three set-ups. Explain clearly which of the set-up(s) is/ are correct in order to ensure a fair test. [2]

37. Kevin designed a locking device as shown below.

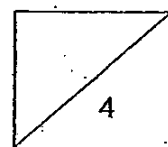


Kevin used the following sets of materials to test out the device.

| | X | Y |
|---|-------------|--------|
| A | Aluminium ✓ | Iron ✓ |
| B | Iron | Nickel |
| C | Steel | Steel |
| D | Nickel | Steel |

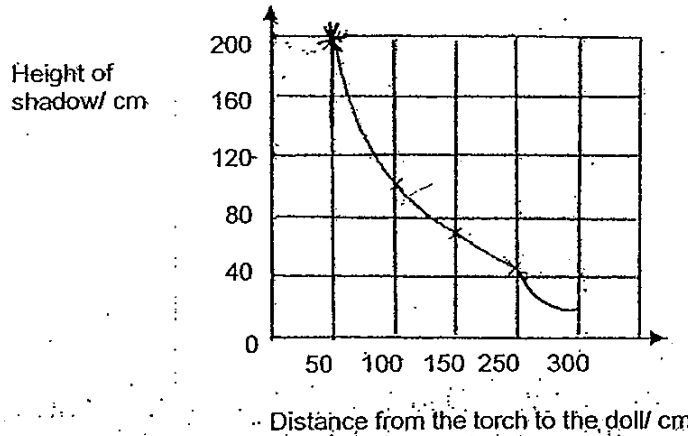
(a) Explain which one of the above will not work. [2]

(b) Describe how the device will work when the switch is turned on. [2]

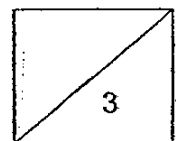


38. The height of a doll is 20 cm.

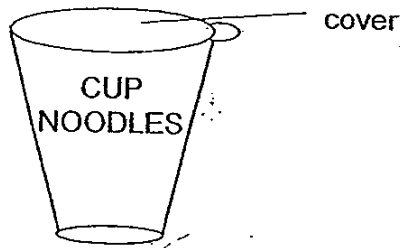
The graph shows how the height of the shadow on the screen changed when the doll was moved away from the screen.



- (a) Continue the line graph to show what height of the shadow will be when the doll is 250 cm and 300 cm from the torch. [1]
- (b) Based on the graph above, what was the height of the shadow when the doll was 50 cm away from the torch? [1]
-
- (c) What is the pattern between the height of the shadow of the doll and the distance from the torch to the doll? [1]
-
-



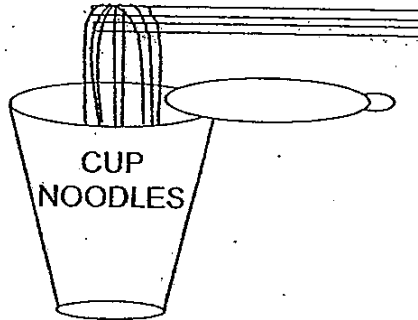
39. The diagram below shows some noodles packed in a styrofoam cup. Some hot water was poured in by Jia Jie and it was kept covered for 10 minutes.



After ten minutes, he observed that the noodles had softened and the soup was still hot.

- (a) How did the styrofoam cup keep the noodles hot for 10 minutes? [1]

Jia Jie held the noodles above the cup for a while as shown in the diagram below and blew on it.

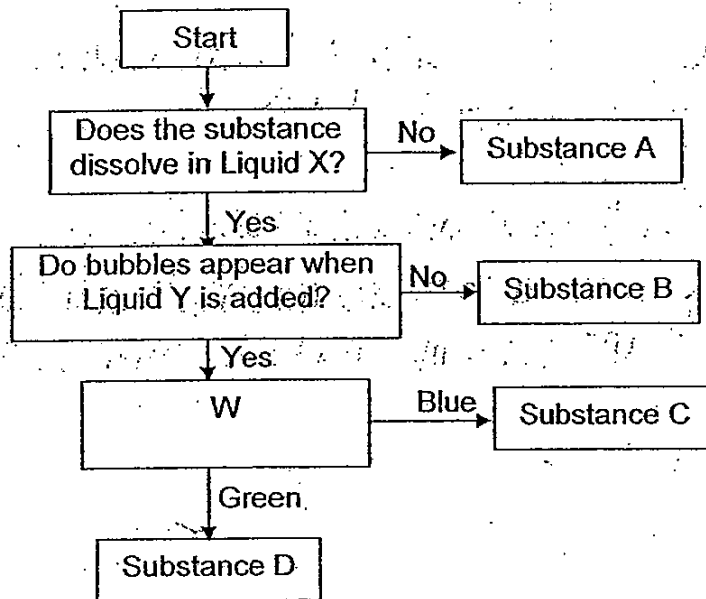


- (b) How did his actions help to reduce the temperature of the noodles? [2]

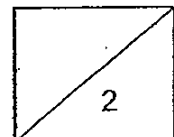
40. Peter used 3 types of Liquids X, Y and Z to test on 4 different substances. He recorded the results in the table below.

| Substances | Does the substance dissolve in Liquid X? | Do bubbles appear when Liquid Y is added? | Liquid Z turns _____ when the substance is added. |
|----------------|--|---|---|
| Salt | Yes | No | Blue |
| Iron Filings | No | No | Green |
| Baking Powder | Yes | Yes | Green |
| Washing Powder | Yes | Yes | Blue |

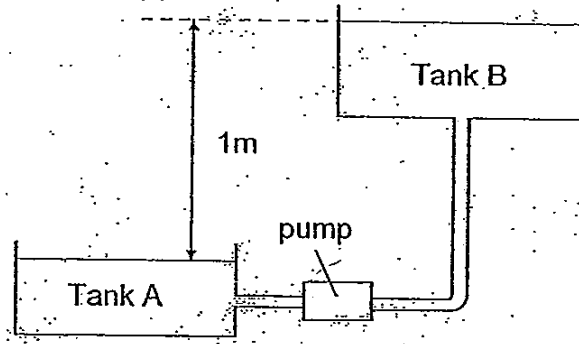
A flow chart is constructed to identify the 4 substances A, B, C and D.



- (a) What can substance B be? [1]
-
- (b) If letter W represents a question that classifies the substances further, write a suitable question that can represent letter W. [1]
-



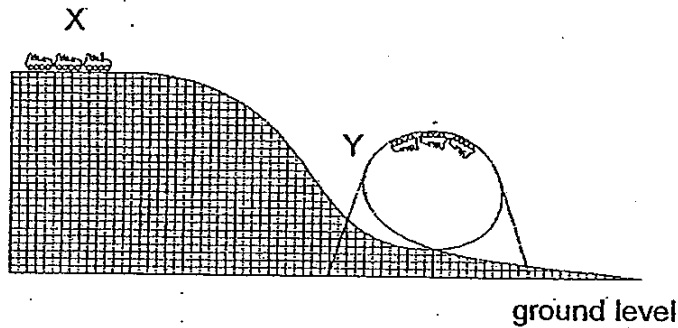
41. The diagram shows how an electrically-powered pump is used to raise water from tank A to tank B. There are moving parts in the pump that help to move the water upwards.



- (a) What is the main energy conversion that occurs in the pump? [1]

- (b) Some of the energy supplied to the pump is wasted. Explain what has happened to the energy. [2]

42. In a theme park ride, passengers in a car are initially at rest at the top of the track. The car then travels down and round a circular loop in the track.

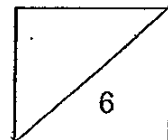


- (a) What energy is possessed by the car and passengers at points X and Y? [1]

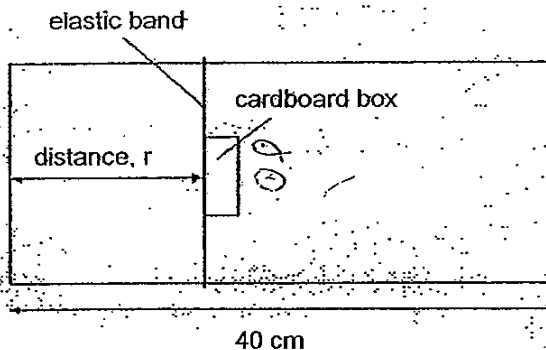
Point X: _____

Point Y: _____

- (b) Explain why point X must be the highest in order to allow the cars to travel around the loop. [2]



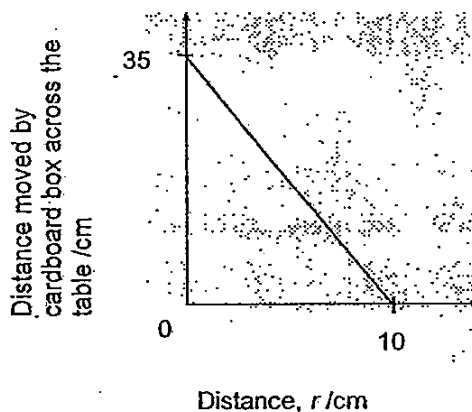
43. Jia Kai carried out an experiment by stretching the centre of the elastic band towards the left edge of the table before releasing it to slide the cardboard box across the table.



He wanted to find out the relationship between distance, r and the distance moved by the cardboard box across the table.

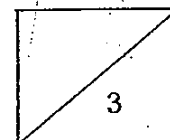
Distance, r is the distance between the centre of the elastic band and the left edge of the table.

She plotted her results in the graph below.

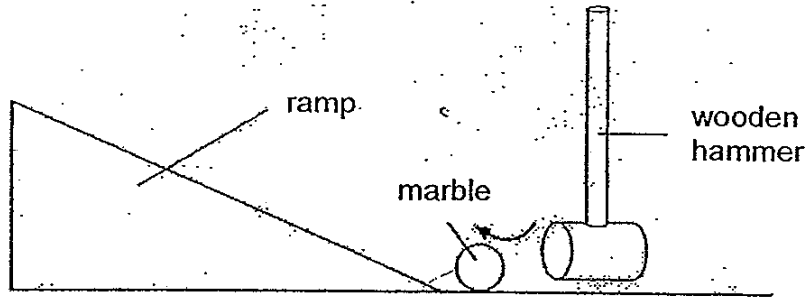


- (a) What is the relationship between distance, r and the distance moved by the cardboard box across the table? [1]

- (b) Based on the graph above, explain why the cardboard box move when distance, r is less than 10 cm? [2]



44. A glass marble of 50 g was struck by a mallet at the bottom of the ramp as shown below.

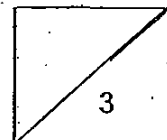


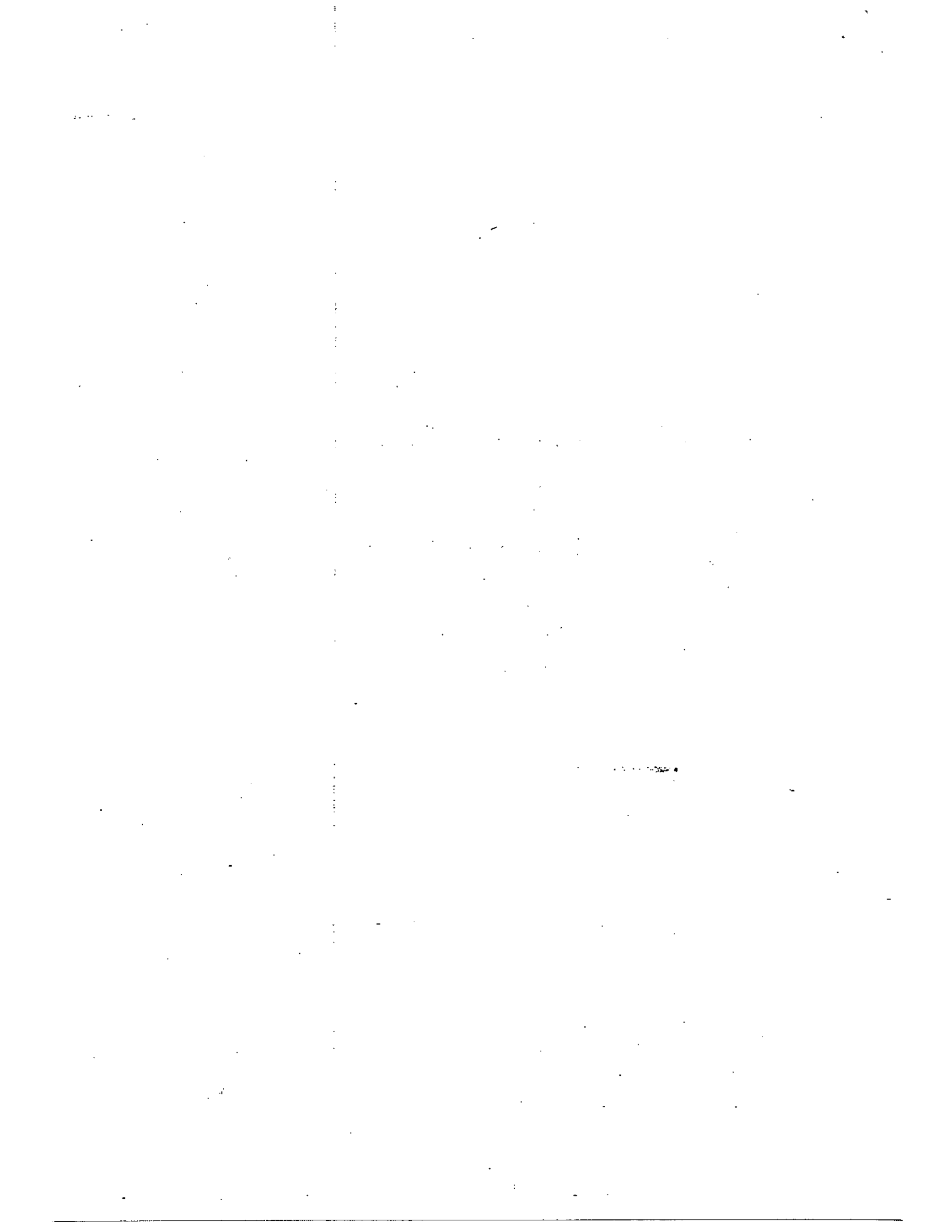
The marble travelled 15 cm up the ramp before it slid back down to the ground.

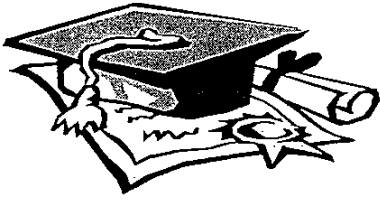
- (a) What caused the marble to roll down the ramp? [1]

- (b) What should he record in this experiment? [1]

- (c) If the surface of the ramp was covered with sandpaper, compare the expected observation of the movement of the glass marble on the ramp with or without sandpaper. [1]





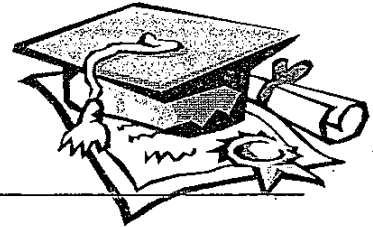


ANSWER SHEET

EXAM PAPER 2010

SCHOOL : CATHOLIC HIGH PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1



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

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

31. (a) Saliva/enzyme/digestive liquid/digestive juice (0.5m). It helps to reduce/ break down the food to simpler substances or decrease the amount of undigested food(0.5m)

Digest/ dissolve food (unclear)- 0m

- (b) The digested food will be passed into/ absorbed into the bloodstream (1m) while the undigested food will be passed into D/ large intestine (1m).

32. (a) Food/ starch/sugar

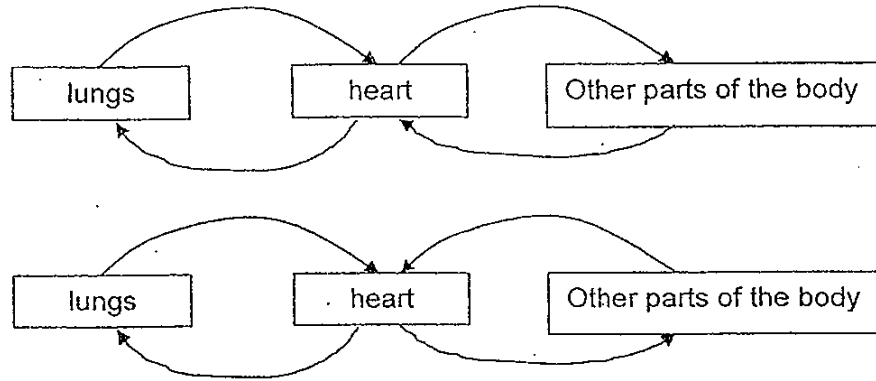


Figure of 8

- (c) It flows downwards/ in one direction/one way only. The blood flows in circular way/ in a circle/ Blood is circulated in the body

- 34 (a) R -- ovules (0.5m)
Q -- ovary (0.5m)

Ovules and ovaries (1m)

They develop from ovaries/ flowers/ ovules/ ovum (0m)

- (b) Fruit X has a hairy/feathery parachute-like structure (0.5 m) which helps it to float/ glide/fly in the air/ be dispersed by wind (0.5m) while Fruit Y has a hook-like structure/hook (0.5m) that helps it to hook/attach onto the fur of animal, be dispersed by animals(0.5m)

Wing-like structure (there are no wings, think about angšana, shorea) (0m)-
Observations based on structures

Disperse by hooks (0m)

- 33 (a) Both the food and water-carrying tubes are removed in Y(0.5m) while the food-carrying tubes are removed in Z(0.5m)

- (b) Leaf E will wilt (1m). It is not able to carry out photosynthesis as the water-carrying tubes are removed and there is no water for photosynthesis. (1m)

Die (0m)

Wilt - due to lack of water, leaves droop

Wither- plant shriveled up (disease / no sunlight)

eventually die (1m)

35. (a) Substance C cannot be found in Cell Y.
 (b) Cell X is less permeable than Cell Y (The membrane Cell Y allows more substances to enter than Cell X/ Cell X absorbs substance C but not cell Y.)
 (Cell X allows substance C to enter but not cell Y.)
36. (a) Set-ups B and C (1m) have set-up the experiment correctly as there have containers with different amounts of air in their set-ups[1m].
 Just mention Set-up B/ Set-up C with correct explanation (1m)
 With wrong explanation (0m)
37. (a) Set A will not work because the bar needs to be magnetic(1m) in order for the coil to attract it (1m).
 (b) When the switch is turned on, the circuit will be closed (0.5m). The bar will become an electromagnet() and be attracted to the right side and the spring will be stretched. $\frac{1}{2}m$ $\frac{1}{2}m$
38. (a) Line is going downwards but must be above 20 cm.
 (b) 200 cm (No unit -0.5m)
 (c) The height of the ~~dot~~ decreases as the distance from the torch to the doll increases. (1/2) shadow $\frac{1}{2}m$ Dist betw doll & torch \downarrow , shadow \uparrow
39. (a) The cup is a bad conductor of heat (0.5m) and helps to reduce the loss of heat to the surroundings. $\frac{1}{2}m$ poor conductor (1/2m) trap heat / reduce heat loss } 0m
 non-conductor }
 insulator }
 (b) The blowing of the noodles helps to increase the wind which helps in the loss of heat to the surroundings (1m) while holding to the noodles above the cup helps to increase the surface area of the noodles which increase the heat loss (1m).
40. (-) Salt
 (b) What colour does Liquid Z turn into when the substance is added?/ Does Liquid Z turn blue or green when the substance is added

Liquid Z turns _____ when the substance is added?

other forms
 of energy (0m)

41. (a) Electrical energy to kinetic energy (1m)
 Chemical potential energy \rightarrow electrical energy \rightarrow heat energy (0m)
 (b) The energy is used to overcome the friction (0.5m) at the moving parts of the pump(0.5m) and converted to heat energy(0.5m).
42. (a) Point X: Gravitational potential energy (0.5m)
 Point Y: Kinetic energy and gravitational potential energy (0.5m)
 (b) At point X, it is the highest (0.5m) so it has the greatest amount of gravitational potential energy(0.5m). The gravitational potential energy is then converted to kinetic, heat and sound energy(0.5m) and there must be enough kinetic energy to travel around the loop(0.5m)

43. (a) When distance r is decreased, the distance moved by the cardboard box across the table is increased. / When distance r is increased, the distance moved by the box across the table is decreased.
- (b) When distance r is less than 10 cm, the rubber band is stretched, it thus possess elastic spring force (1m). When released, the force will push the box across the table (1m).

When the distance r is less than 10cm, the rubber band possesses elastic potential energy as it is stretched (1m). When released, the elastic potential energy is converted to kinetic energy. This is transferred to the box (1m) when it hits in, thus causing it to move.

When the rubber band hits the box, it moves (0m) → When not stretched, it will not be able to hit the box. Not explaining, not using concepts taught.

~~Elastic potential energy of the elastic band is converted to kinetic energy of the box. (0m) Did not show how and why~~

More elastic potential energy is converted to kinetic energy thus the box moved. (Vague)

There was less elastic potential energy therefore shorter distance (0m)

44. (a) The gravitational force/ gravity acting on it. (1m)

Gravitational potential energy/ gravitational potential force (0m)

Friction (0m) --it is the force opposing motion/ between 2 surfaces, causing it to not to go up the slope further.

- (b) He should record the distance travelled by the marble/ how high/ the height it travelled up before sliding down/ how much it travelled down the slope. (other measurements not penalized- eg. how hard it was hit/ how much strength it was used)

$\frac{1}{2}m$
~~Distance travelled by marble (0m) vague~~ (where)

Time taken/ how fast or slow (0m)- no way to measure, no stopwatch

- (c) The distance/ height travelled by the marble up the slope with the sandpaper will be lesser than that without the sandpaper.