

NAME: _____ ()

CLASS: _____

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METHODIST GIRLS' SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION 2008

PRIMARY SIX

SCIENCE

BOOKLET A1

Total time for Booklets A and B: 1 h 45 min
Booklet A: 30 Questions (60 marks)

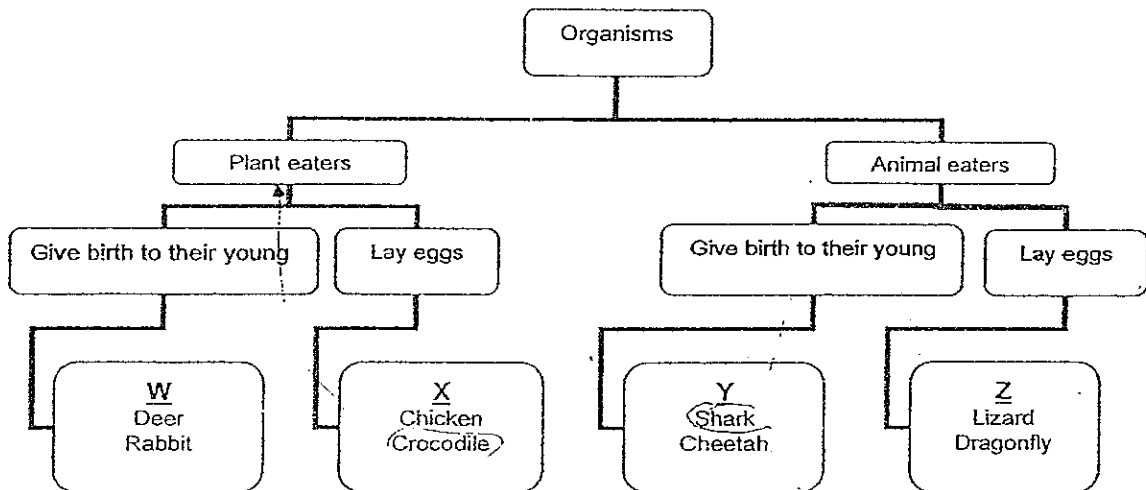
DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

Section A: (30 x 2 marks = 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). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

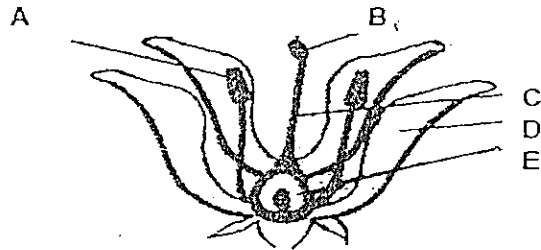
1. The classification table below shows the groupings of plant and animal eaters.



Which groups of animals are wrongly classified?

- (1) X and Z only
- (2) X and Y only ✓
- (3) Y and Z only
- (4) W and Y only

2. The diagram below shows the cross-section of a flower. Parts of the flower are labelled A, B, C, D and E.

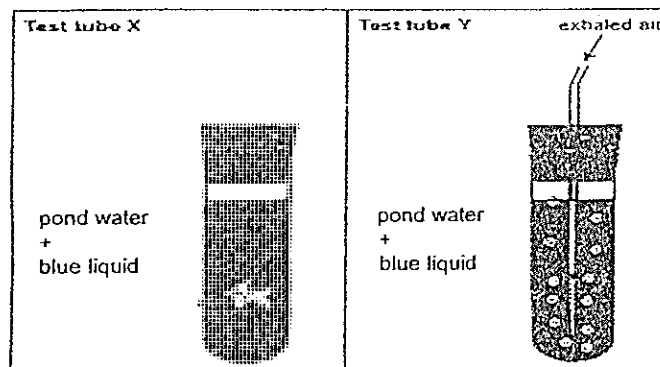


If Part D is removed, seeds can still be produced by the flower but not if Part B is removed. This is because _____

- (1) Part D has no function at all
- (2) Part B is connected to Part C
- (3) Fertilisation depends on Part B
- (4) Pollination takes place at Part B

For Questions 3 and 4 use the information below.

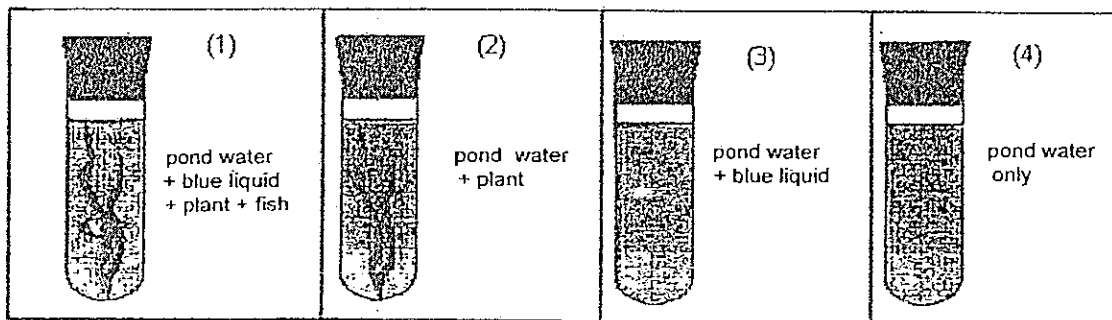
Sue set up an investigation to show that fish exhaled carbon dioxide. She knows that a blue liquid can be used to test for the presence of carbon dioxide in water. The blue liquid will change colour in the presence of carbon dioxide. She set up test tubes X and Y as shown.



3. Sue blew air into test tube Y. What was her assumption and what was her purpose?

	Sue's Assumption	Sue's Purpose – to show that
(1)	Exhaled air contains carbon dioxide	Exhaled air contains carbon dioxide
(2)	Exhaled air contains carbon dioxide	Lime water changes colour in the presence of carbon dioxide
(3)	Lime water has effect on fish	Exhaled air contains carbon dioxide
(4)	Lime water has effect on fish	Lime water changes colour in the presence of carbon dioxide

4. Which other test tube did Sue need for her investigation to be a fair test?



5. The table below provides some information on three types of cells, W, X and Y. A tick (✓) indicates the presence of the part of the cell.

Parts of cell	Cell W	Cell X	Cell Y
Cell wall		✓	✓
Nucleus	✓	✓	✓
Chloroplast		✓	

Which of the following statements matches the description of cells, W, X or Y in the table below?

- A: Cell W can be found in the root of a plant.
B: Cell X is most likely to be able to produce oxygen.
C: Cell Y is most likely to belong to that of an animal.

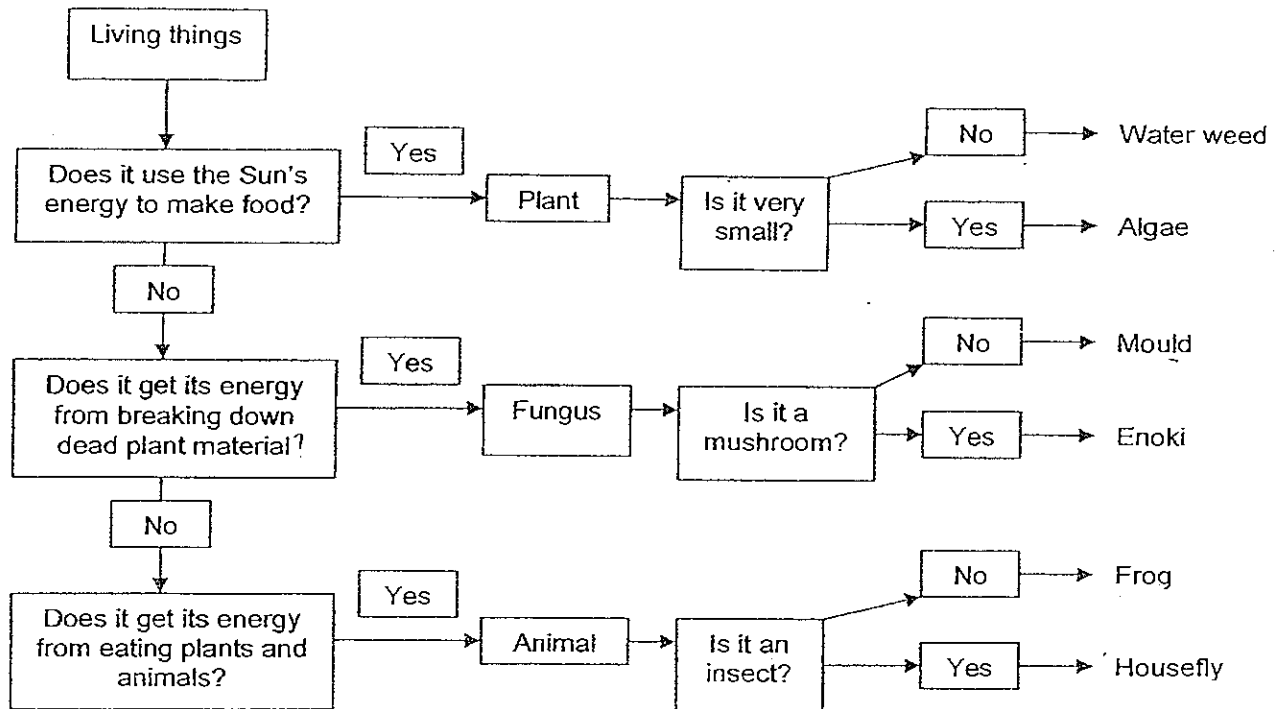
- (1) A only
(2) B only
(3) B and C only
(4) A, B and C

6. Herbivores and carnivores have different sets of teeth in their adaptation to the environment. Incisors are for picking up and cutting food; canines are for gripping and tearing food; premolars are for coarsely grinding food and molars are for finely grinding food. In order to prepare food for swallowing, the herbivore's teeth must _____.

- (1) pick up and cut food only
(2) pick up, cut and finely grind food only
(3) pick up, cut, grip, tear and coarsely grind food only
(4) pick up, cut, grip, tear, coarsely grind and finely grind food

For Questions 7 and 8 use the information below.

The chart below shows how living things obtain their energy.



7. What does the chart tell about the mould and the enoki?
Both organisms _____.

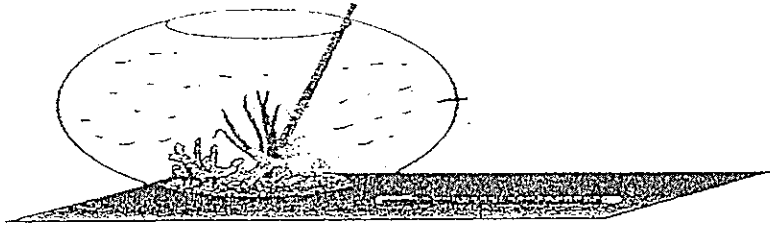
- (1) get their energy by eating fungus.
- (2) get their energy by eating living things
- (3) do not use the Sun's energy to make food.
- (4) do not get their energy from breaking down dead plant material x

8. How does the frog get its energy?
It gets its energy by _____.

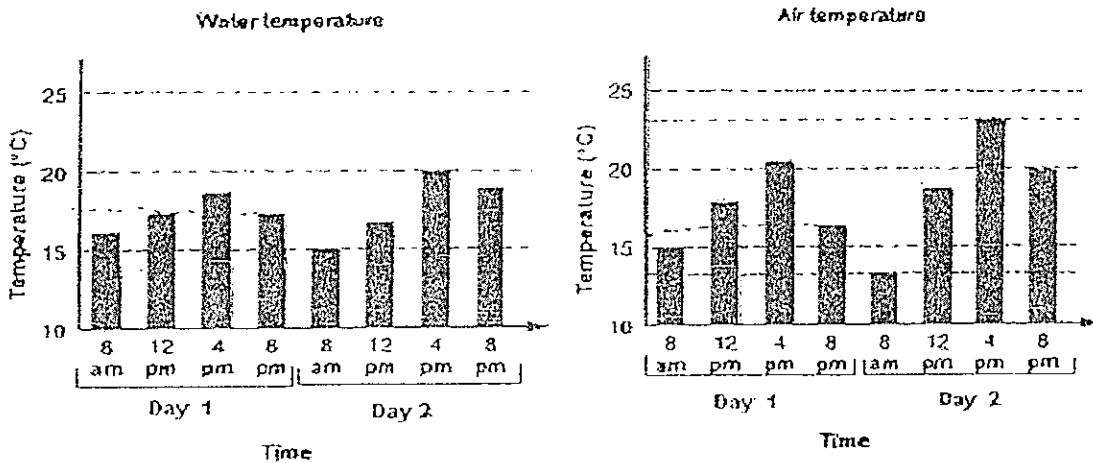
- (1) eating plants and animals
- (2) breaking down dead plant material
- (3) eating Enoki and mould
- (4) eating food it makes using the Sun's energy

For Questions 9 and 10 use the information below.

Ann predicted that the temperature in her fish bowl varied less than the temperature of the air nearby. She set up her experiment as shown to test her idea.

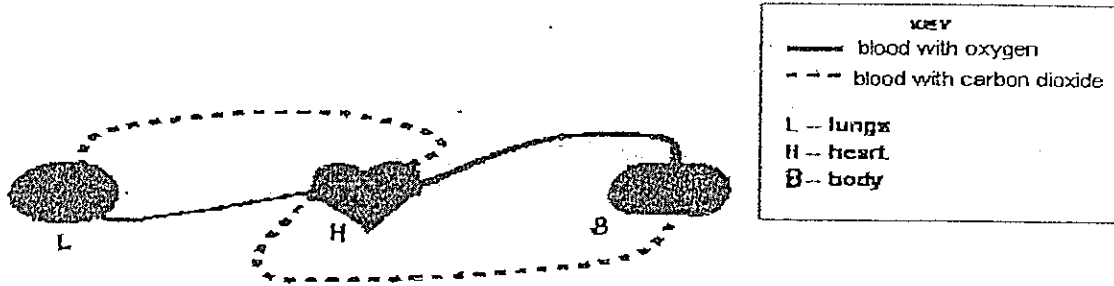


She measured the temperature in each location for the next two days. The two graphs below show her results.



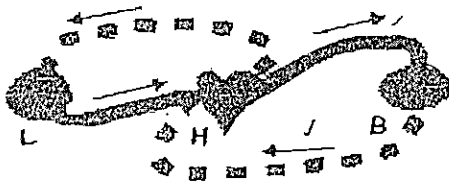
9. What is a correct statement that Ann could make about her results?
- (1) Each day the air temperature was highest at 4 pm.
 - (2) Sunlight heated the water more quickly than the air.
 - (3) The air temperature at 8 am on the second day was 15 °C.
 - (4) The air and water temperatures were the same at 8 pm on the first day.
10. Was Ann's prediction correct? What is the **difference** between the temperature ranges in the water and in the air over the two days?
- (1) No. 5 °C
 - (2) Yes. 5 °C
 - (3) No. 10 °C
 - (4) Yes. 10 °C

11. The circulatory system carries blood containing the gases, oxygen and carbon dioxide, through blood vessels to all parts of the body. In the heart, blood is pumped to all parts of the body. In the body, oxygen from the blood is used up and carbon dioxide from the body is taken up by the blood. In the lungs, blood gives out carbon dioxide and takes up oxygen. The diagram below shows the parts of the circulatory system.



Which diagram correctly shows the direction in which blood flows?

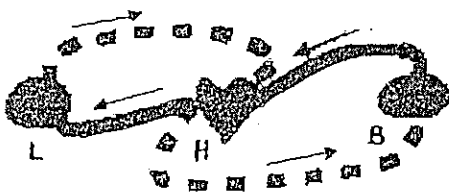
(1)



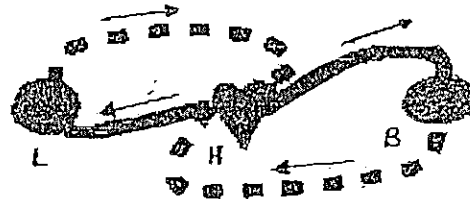
(2)



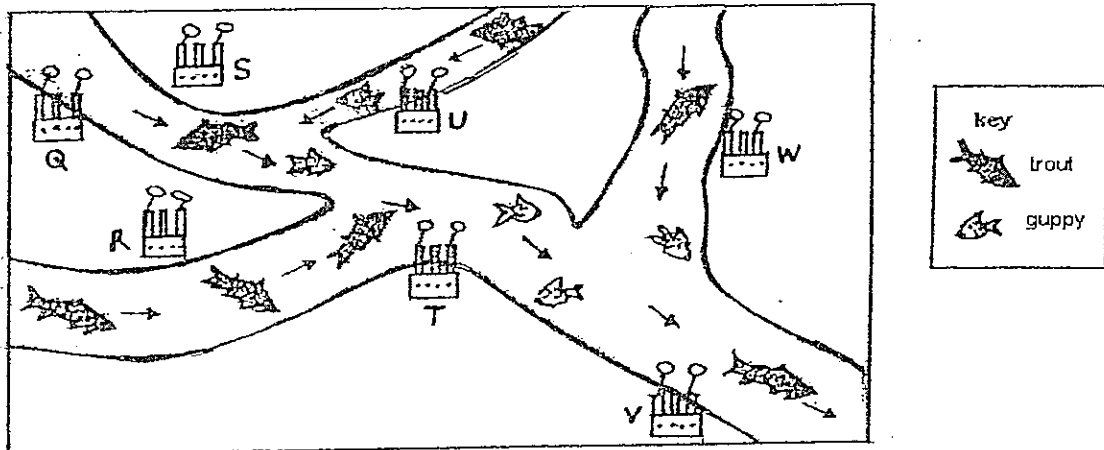
(3)



(4)



12. A small increase in water temperature will kill trouts. Guppies thrive when water temperature increases. Hot water discharged from factories into a river raises the water temperature of the river nearby. The map shows factories located along a river system and the type of fish found in particular areas. The arrows show the direction the river flow.



Which factories are most likely to be discharging hot water into this river?

- S, T, V only
 T, U, W only
 S, T, U, W only
 T, U, V, W only

13. The table below shows the eye colours that children inherited from parents with various eye colours within a community.

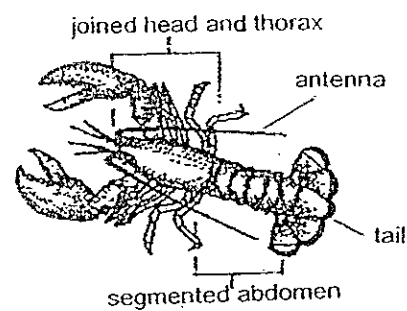
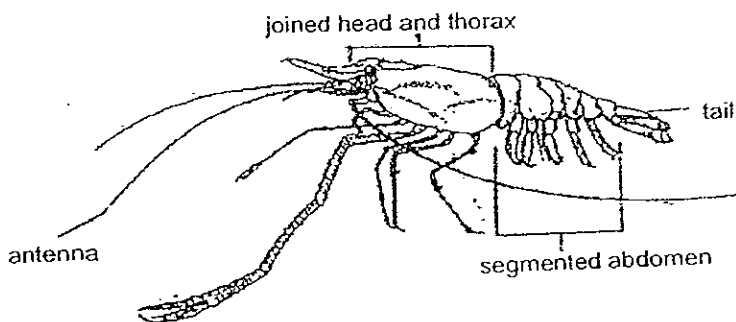
KEY: bl – blue g – green br – brown

Eye colour of parents	Mother - brown Father - brown	Mother - brown Father - blue	Mother - green Father - green	Mother - blue Father - blue
Eye colour of children (%)				

Which statement is correct about the inheritance of eye colour by these children?

- (1) If both parents have green eyes, they will have no green-eyed children.
- (2) If the mother has brown eyes, then all her children will have brown eyes.
- (3) If the father has blue eyes, then at least 25% of his children will have blue eyes.
- (4) If both parents have eyes of different colours, then all of their children will have either of the eye colour.

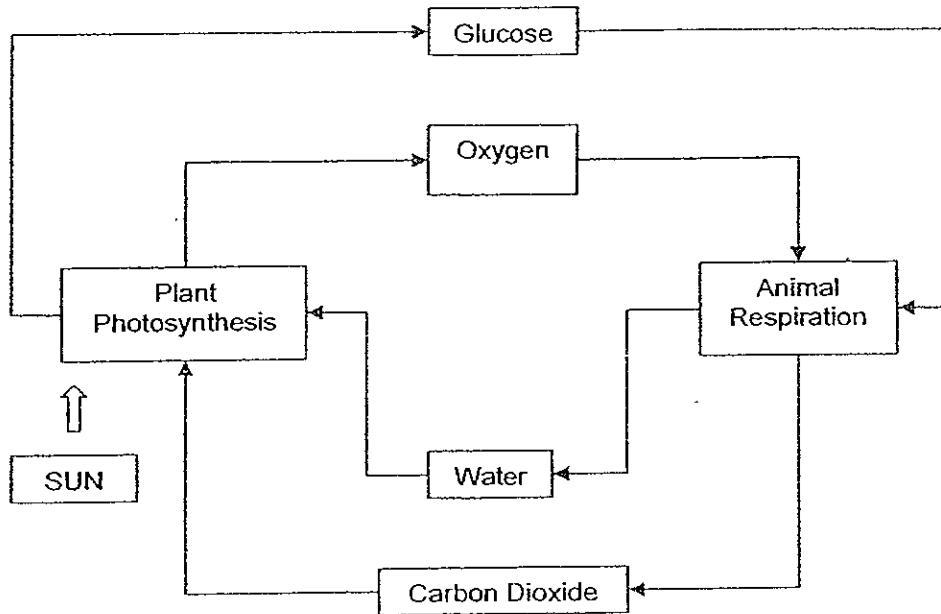
14. These two animals belong to the same group and have many similarities.



What is most similar about these animals?

- (1) a segmented abdomen
- (2) a separate head and thorax
- (3) antennas longer than the body length
- (4) large pincer claws attached to the thorax

15. The diagram shows how oxygen and carbon dioxide are cycled through living things.



Which statement **correctly** interprets this diagram?

- (1) Plant photosynthesis does not require water.
- (2) Plant photosynthesis produces carbon dioxide.
- (3) Oxygen is a by-product of plant photosynthesis.
- (4) The products of animal respiration are glucose and water.

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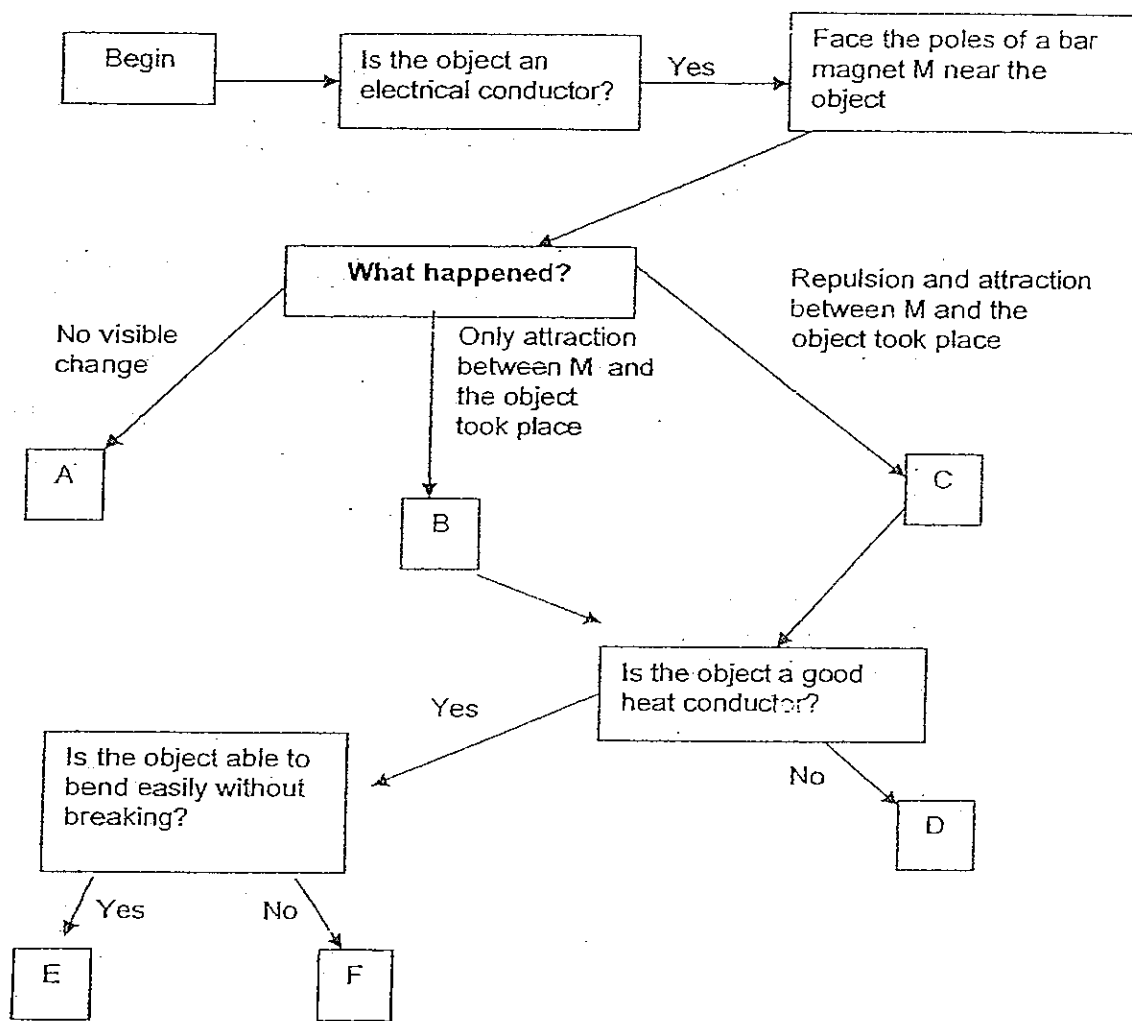
SCIENCE

BOOKLET A2

NAME: _____ ()

CLASS: _____

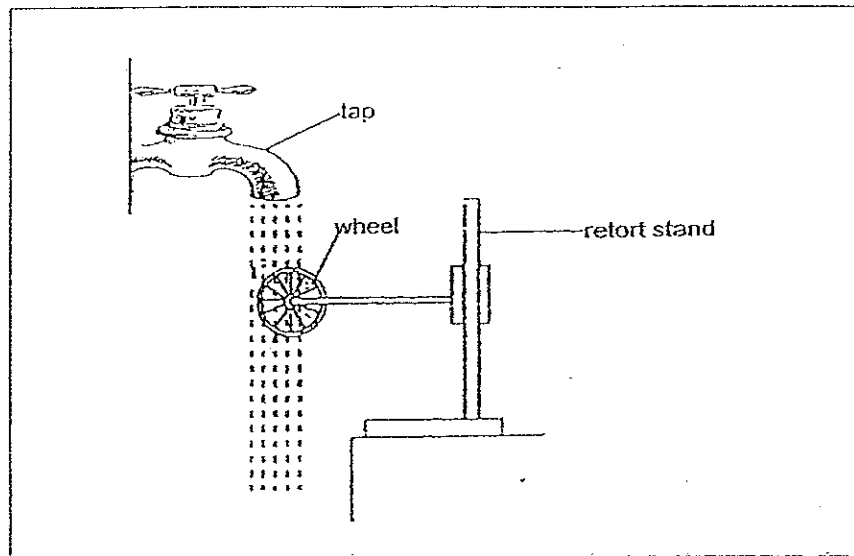
16. The following diagram shows a flowchart. Analyse the flowchart to answer the question.



Which of the following is E?

- (1) Iron bar
- (2) Rubber hose
- (3) Steel paper clip
- (4) Carbon pencil lead

17. Look at the diagram below.



Which of the following actions would make the wheel spin faster?

- A: Adjust the wheel upwards
- B: Adjust the wheel downwards
- C: Reduce water flow from the tap
- D: Increase water flow from the tap

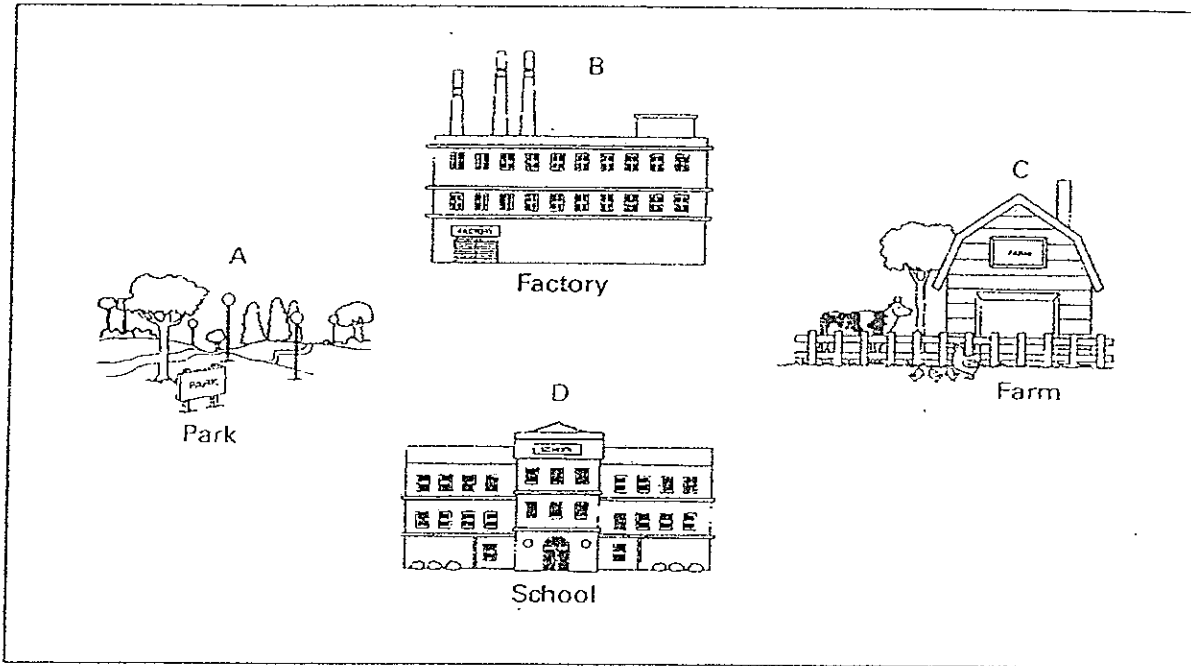
- (1) A and C only
- (2) A and D only
- (3) B and C only
- (4) B and D only

18. Which of the following are reasons for recycling steel in Singapore?

- A: Energy is conserved through recycling of steel.
- B: Ease of collection but not separation of steel.
- C: Producing more steel does not contribute to global warming.
- D: Steel is mainly made of non-renewable resources.

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

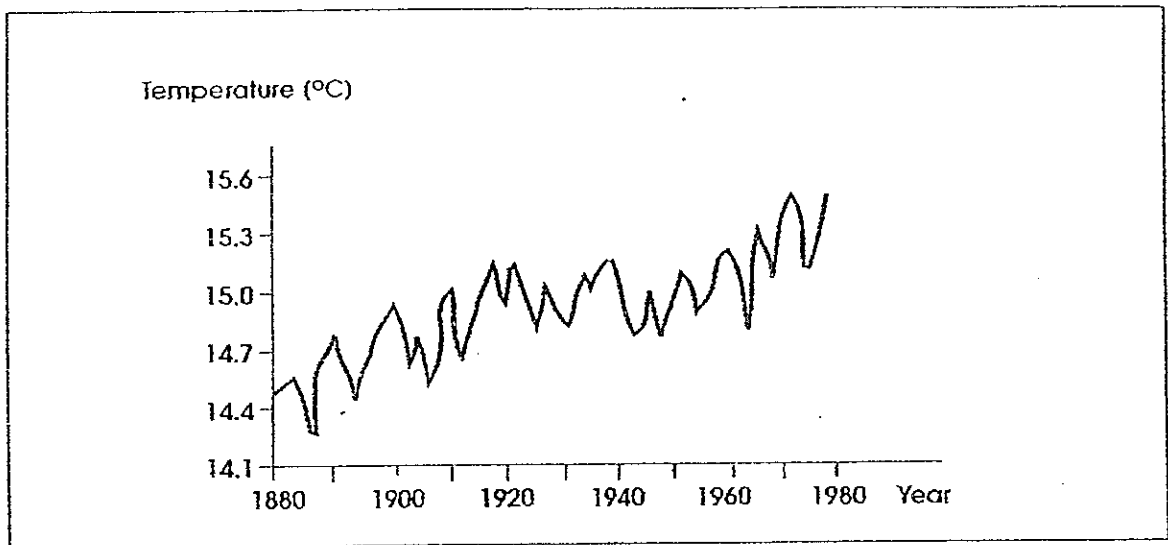
19. The diagram below shows four different locations A, B, C and D in a certain town. Rainwater is collected from each of the locations and tested for its contents.



Which location will have rainwater which is least polluted?

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

20. The graph shows the average global temperature in degree Celsius.

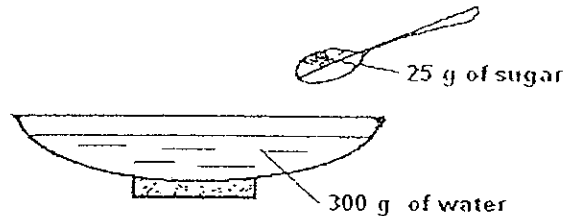


Which of the following are reasons for the above graphical representation?

- A: Burning of forest for plantation
- B: Photosynthesis by green plants
- C: Removal of trees for materials
- D: Exhaust fumes from factories and vehicles.

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

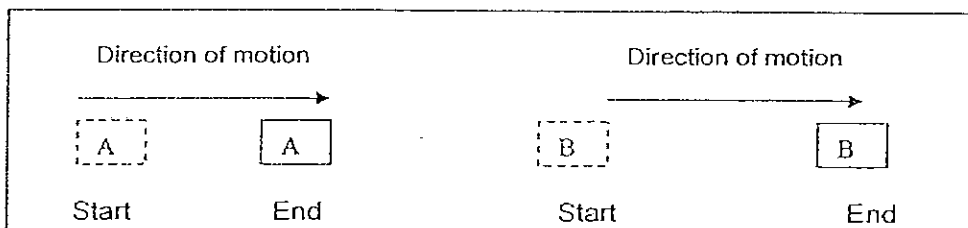
21. A glass bowl contained 300 g of water. 25 g of sugar was dissolved in the bowl of water.



After 5 days, it was found that only 225g of solution was left in the bowl. The remaining solution would contain about _____.

- (1) 25 g of sugar
- (2) 225 g of water
- (3) 200g of water and 25 g of sugar
- (4) 225 g of water and 25 g of sugar

22.



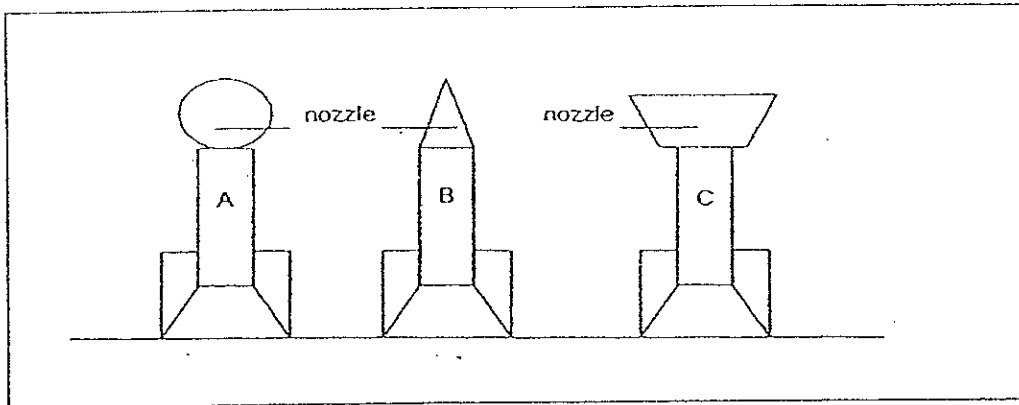
The diagram above shows two similar blocks of the same mass. They are also made from the same material. Jason pushed them with an equal force. He found that Block A travelled a shorter distance than Block B.

Which of the following is / are correct explanation (s) for this?

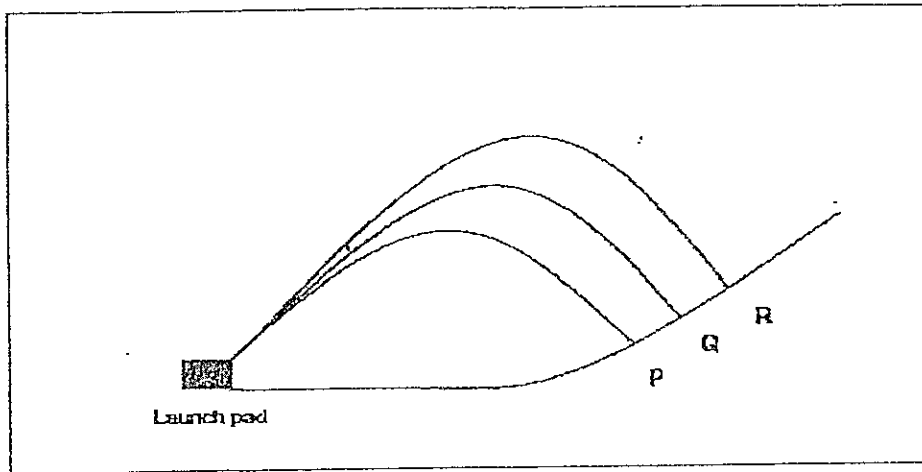
- A: Jason used a greater force to push Block B.
- B: Block A moved a shorter distance as there is greater friction between A and the surface than in the case of B.
- C: Block B moved a longer distance as there is no friction between Block B and the surface.
- D: A lubricant could have been spread on the surface on which Block B was travelling.

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

23. Three rockets, A, B and C, of the same mass are shown below.



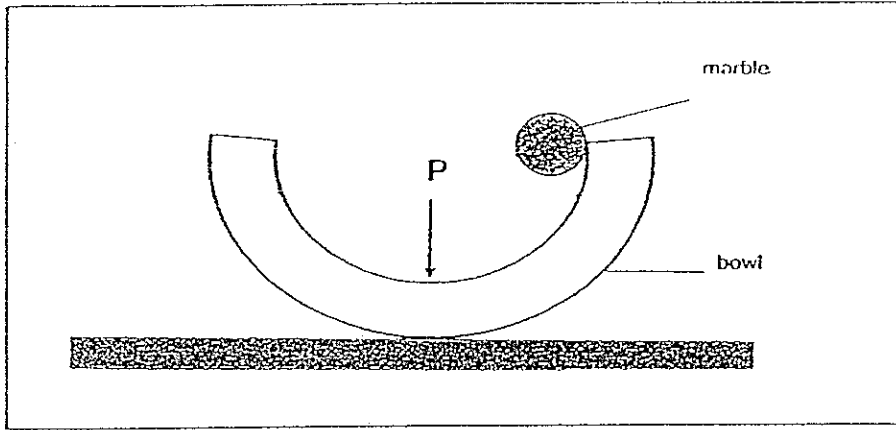
The diagram below shows the paths of flight taken by rockets A, B and C after they were launched. They landed on a slope at points P, Q and R.



Match the rockets to their correct flight path if the only variable that is changed is their nozzle shape.

	Rocket A	Rocket B	Rocket C
(1)	P	Q	R
(2)	P	R	Q
(3)	R	P	Q
(4)	Q	R	P

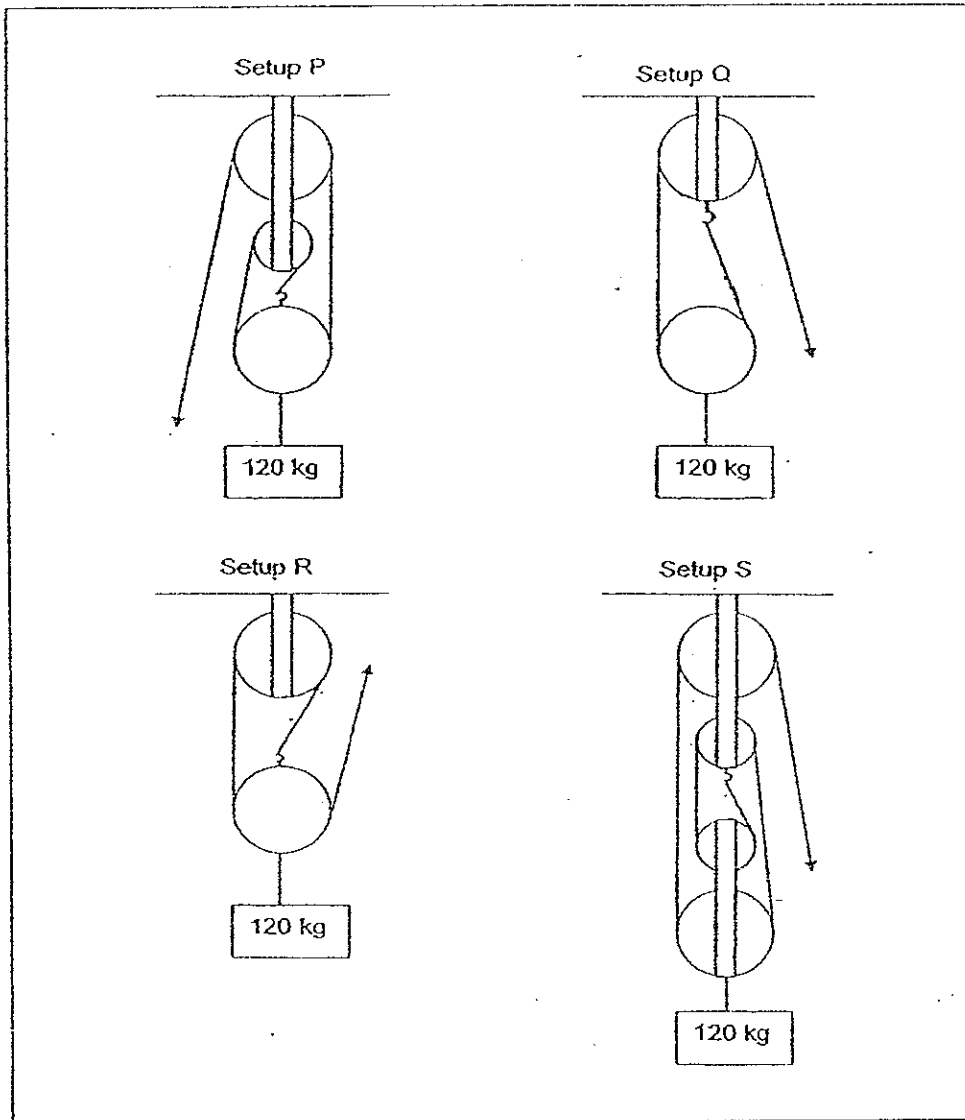
24. A marble is released from the side of a bowl as shown in the diagram below. Point P is the lowest point of the bowl.



Which of the following statement (s) is / are true about the marble when it first reaches Point P after it is released?

- A: The marble has no kinetic energy.
B: The marble has less gravitational potential energy than before.
C: All the gravitational potential energy has been converted into sound and heat.
- (1) B only
(2) B and C only
(3) A and C only
(4) A, B and C

25. Study the diagram below.

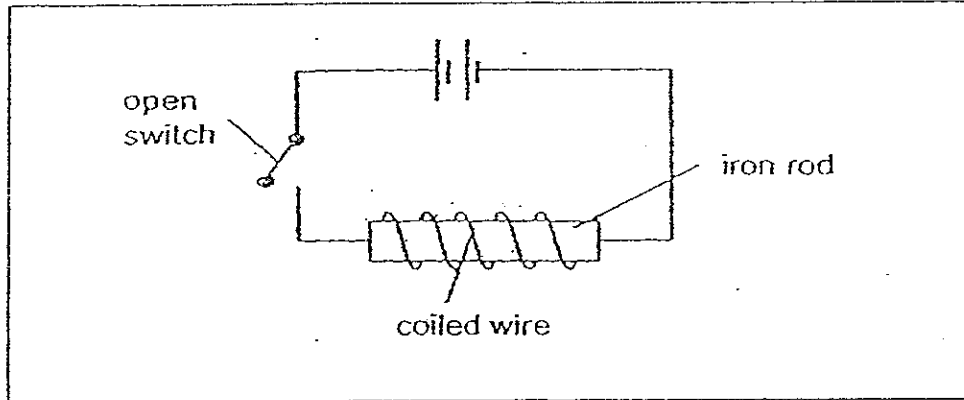


Which of the above set-up/s possess/es both the following characteristics?

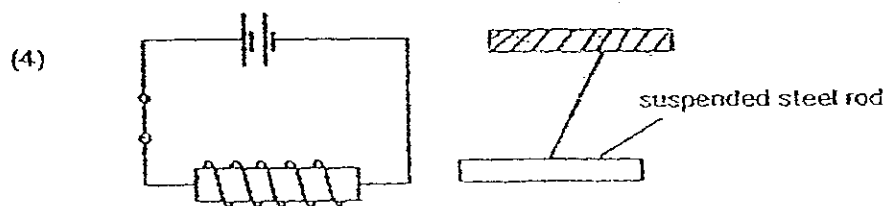
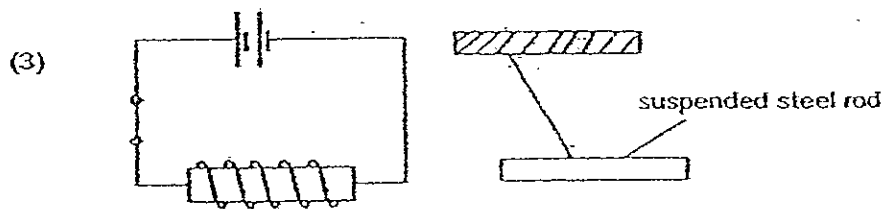
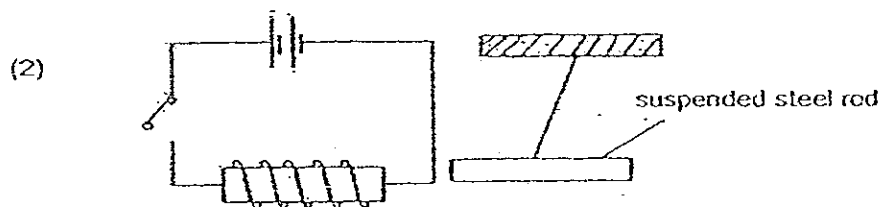
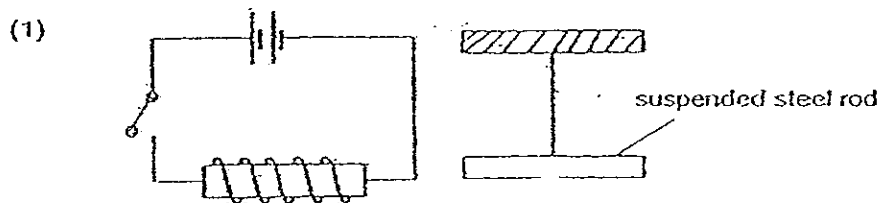
- A: The effort used is **less than** half of the load
 B: The effort and load moved in the opposite direction.

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

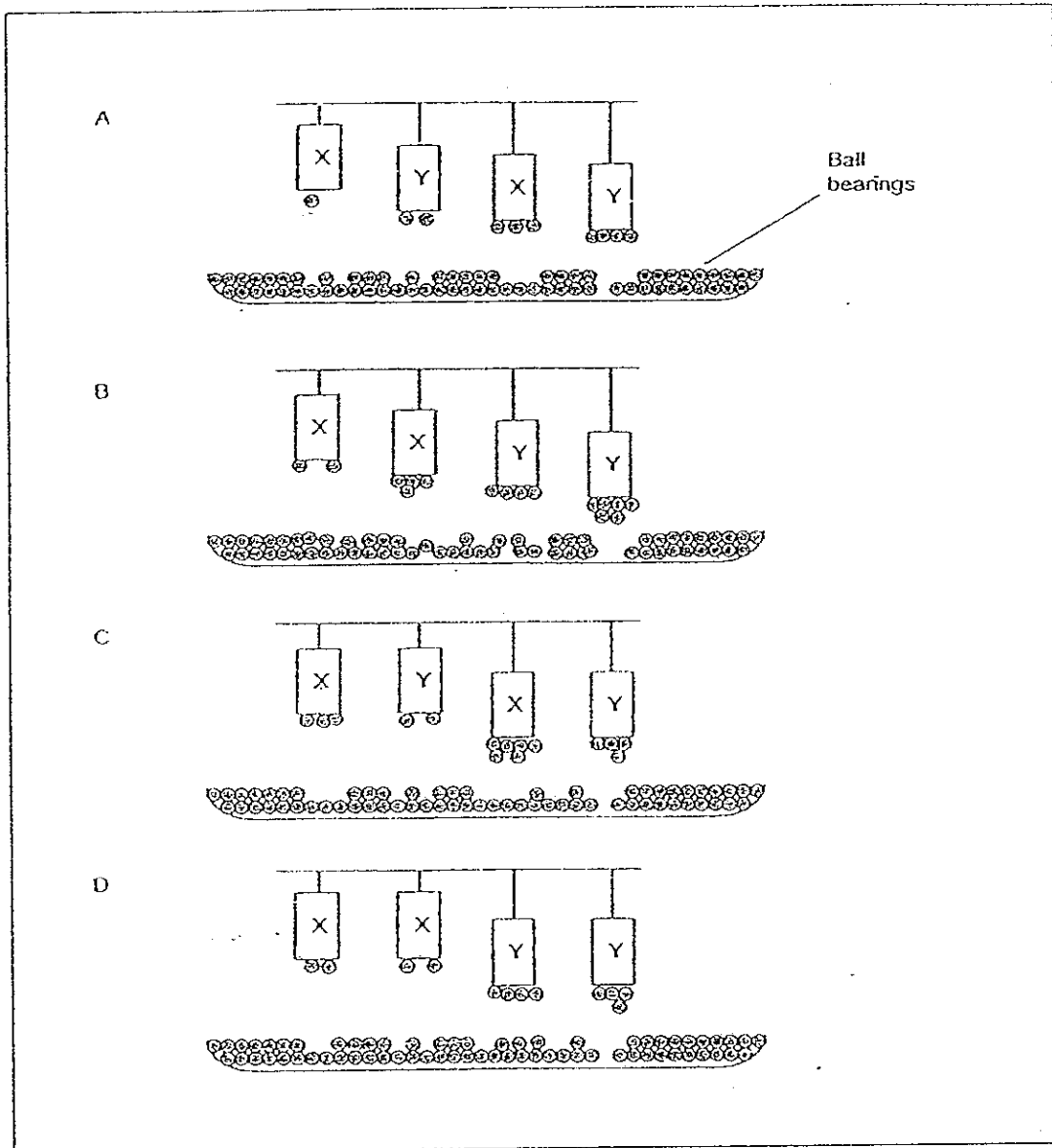
26. Alexandra set up the experiment as shown below.



She closed the switch and observed what happened. Which one of the following diagrams correctly shows what Alexandra would observe when the suspended steel rod was brought near the iron rod?

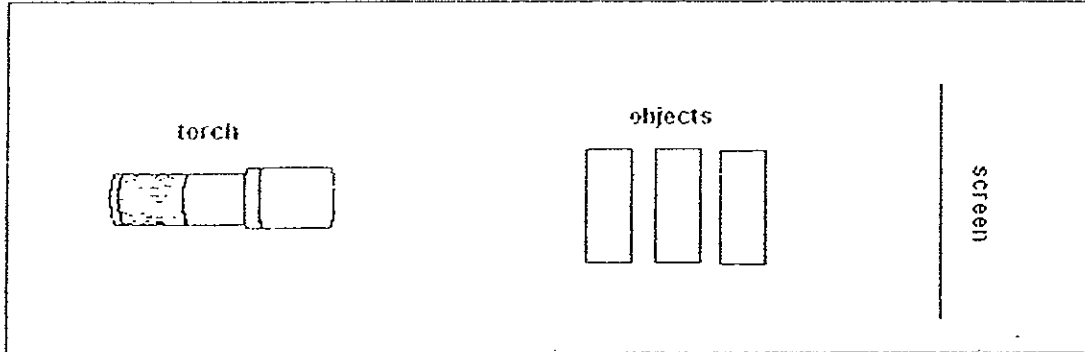


27. Patsy read an article which claimed that a magnet made of **material X** is stronger than that made of **material Y**. It also stated that the amount of magnetic force is affected by the distance of the magnet from the object it is to attract. Peter set up a few experiments using magnets made of materials X and Y to verify this. Which of the following observations support (s) both claims?

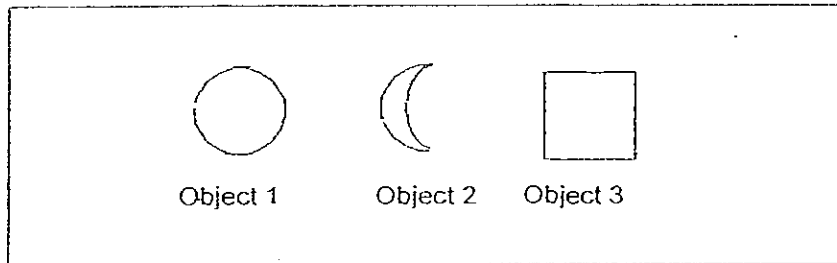


- (1) B only
- (2) C only
- (3) D only
- (4) All of the above

28. Berry set up the experiment below to investigate the properties of light.



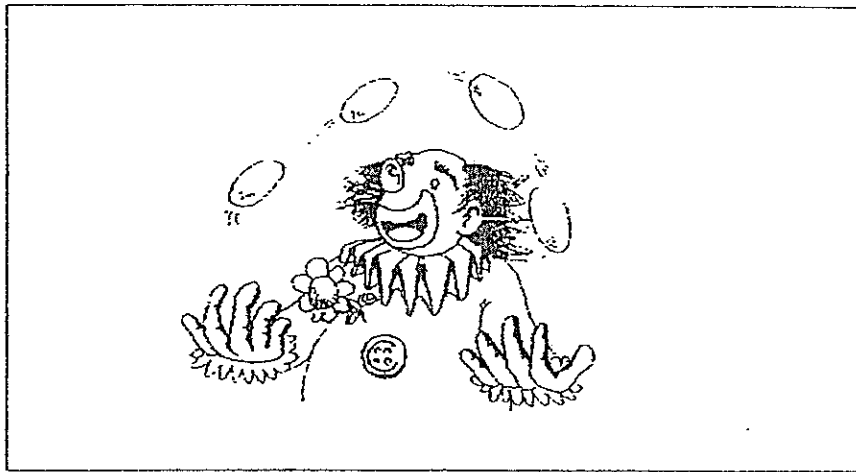
Berry cut the objects from hard cardboard into different shapes as shown below.



What will Berry see on the screen?

- (1)
- (2)
- (3)
- (4)

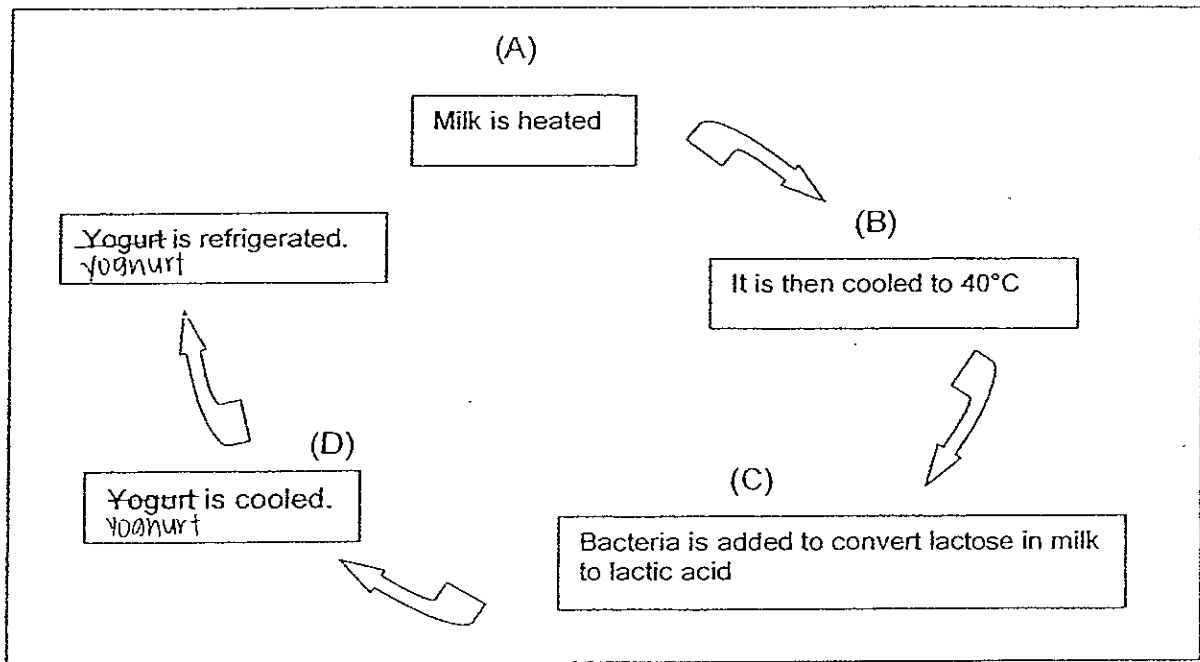
29. The diagram below shows a clown throwing a ball into the air.



Which of the following correctly identifies the energy changes that took place in the ball?

	Ball is thrown upwards	Ball at its highest point	Ball is falling back down
1.	Kinetic energy → Potential energy	Potential energy is maximum	Potential energy → Kinetic energy
2.	Potential energy → Kinetic energy	Kinetic energy → Potential energy	Potential energy → Kinetic energy
3.	Potential energy → Kinetic energy	No kinetic energy	No potential energy
4.	No kinetic energy	Potential energy is maximum	No kinetic energy

30. Yoghurt is a product of fermented milk. Fermentation results from activities of a group of bacteria called lactic acid bacteria (e.g. lactobacillus) which can survive well in acidic conditions. The flowchart below shows the steps in yoghurt production.



Fermentation of milk takes place at stage _____.

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

End of Booklet A. Please proceed to Booklet B

METHODIST GIRLS' SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION 2008

PRIMARY SIX

SCIENCE

BOOKLET B1

SECTION	MARKS
A	60
B1	20
B2	20
TOTAL	100

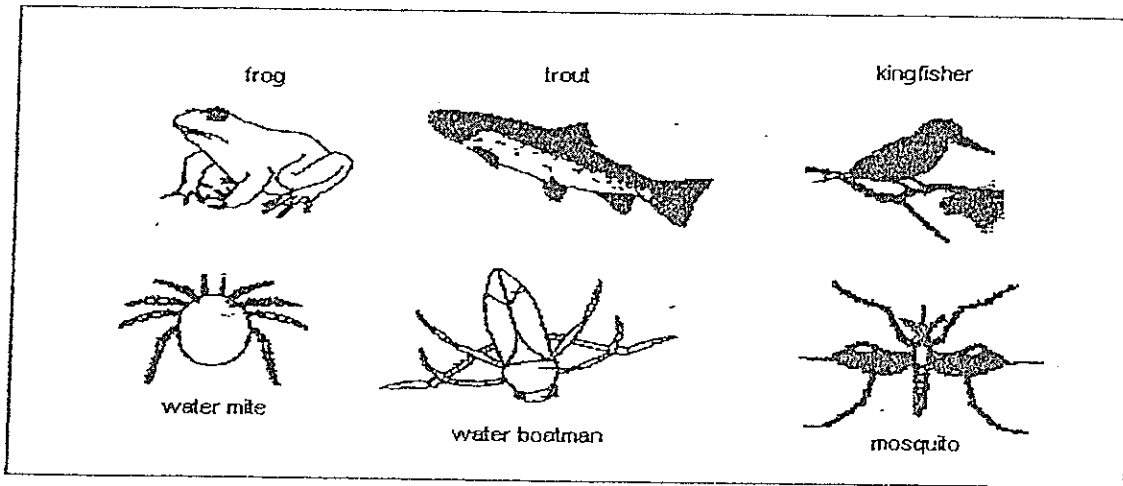
NAME: _____ ()

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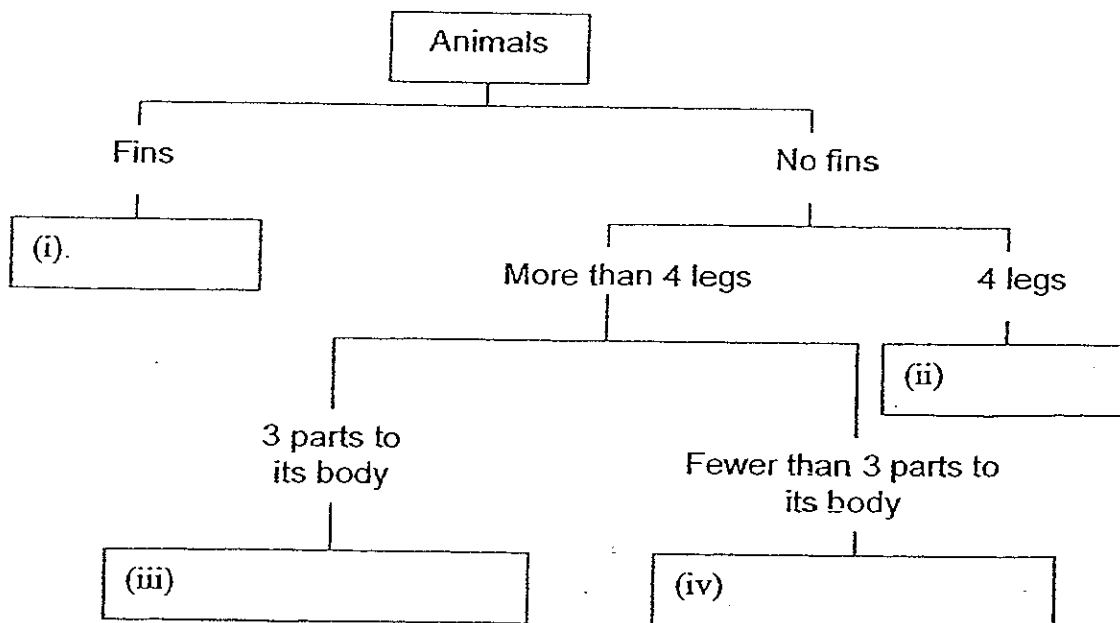
Section B: 40 marks

Read the questions carefully and write your answers in the space provided.

31. The organisms shown below can be found in water or near water. The pictures are not drawn to scale.

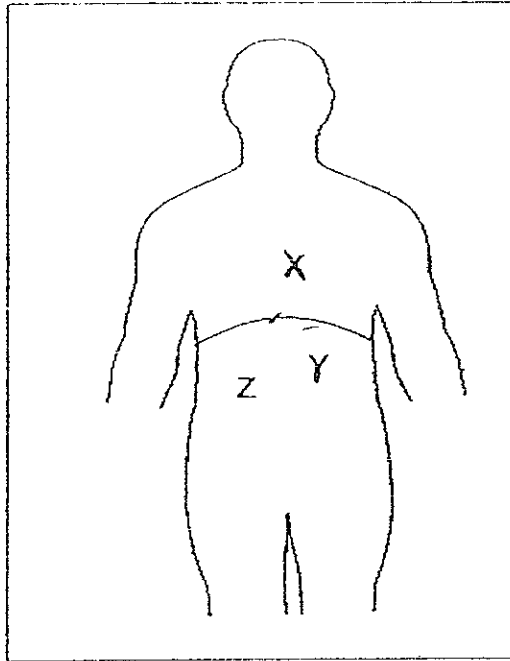


- (a) Fill the above organisms correctly into the Boxes (i) to (iv) according to the classification chart as shown below. (2 m)



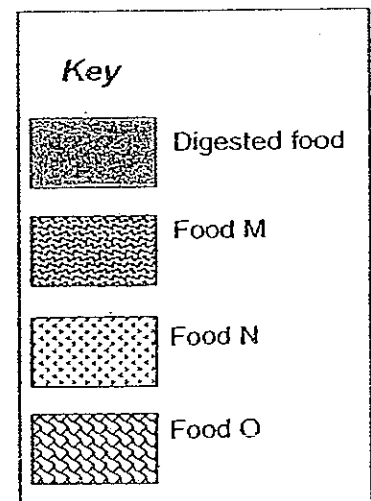
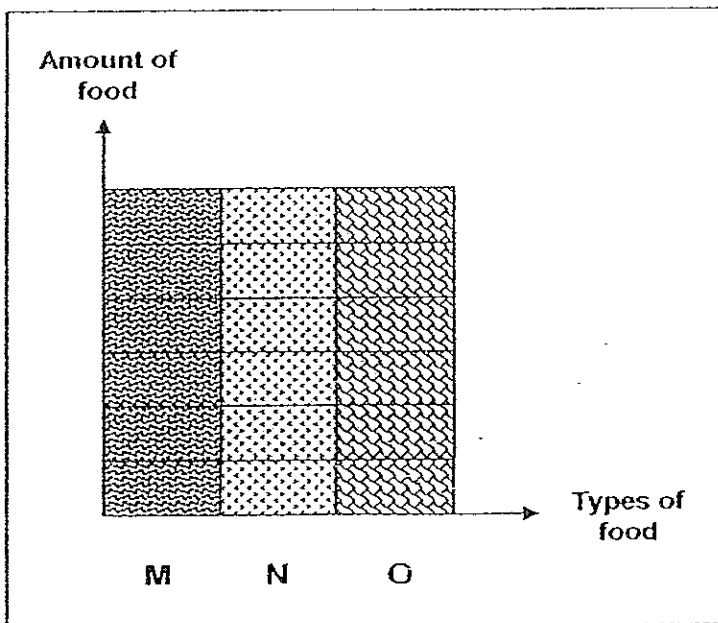
- (b) What is another way of classifying the above six organisms? (1 m)

32. When food is eaten, it passes into the stomach. Circle the letter X, Y or Z that shows the position of the stomach in the diagram below. (1 m)

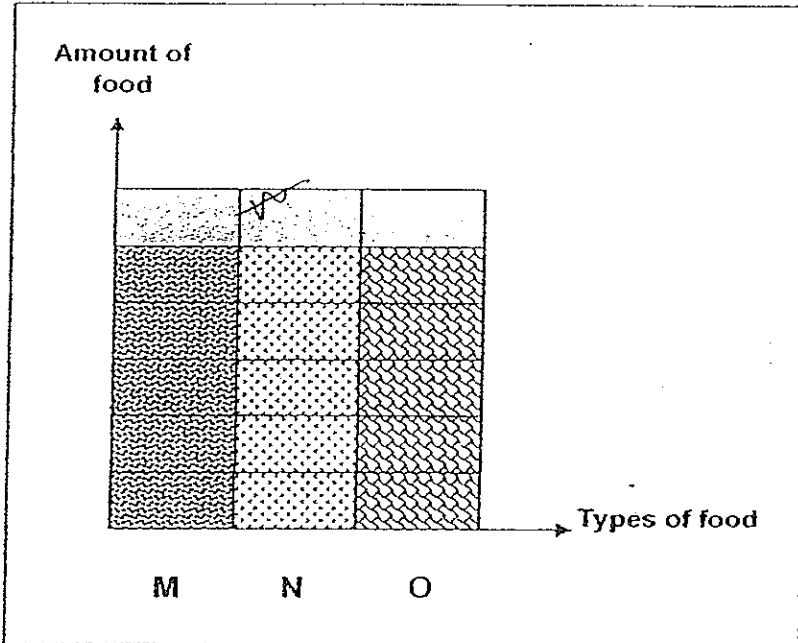


The bar graphs below show the digestion of three types of food, M, N and O, in the different parts of the digestive system.

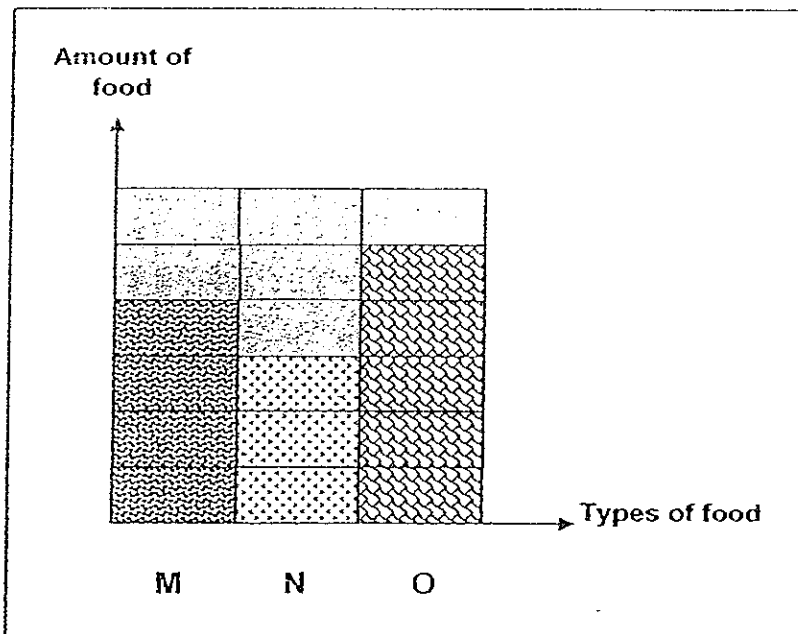
At the start:



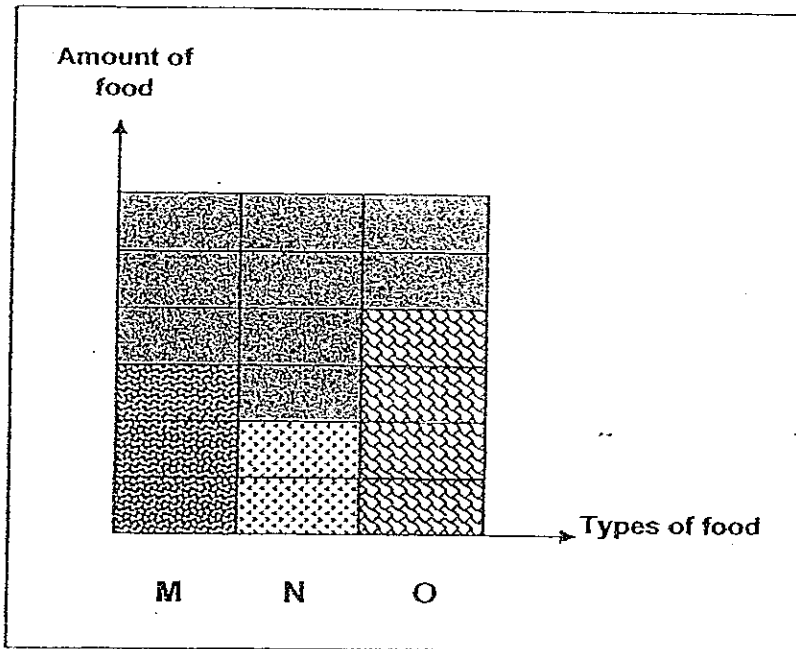
In the mouth:



In the stomach:



In the small intestine:



- (a) Based on the graphs above, in which organ/s was/were digestion of Food N mostly carried out? (½ m)

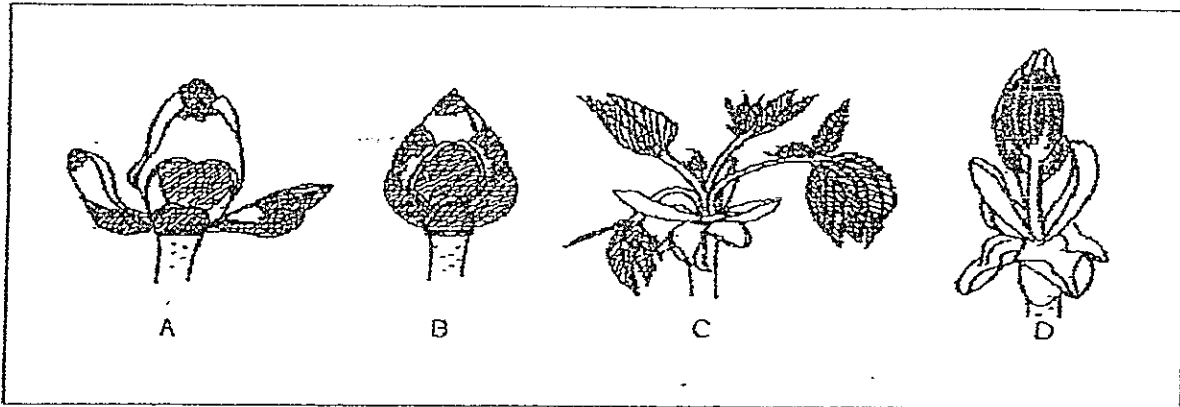
The table below shows 3 types of food.

Soup	Biscuit	Hamburger
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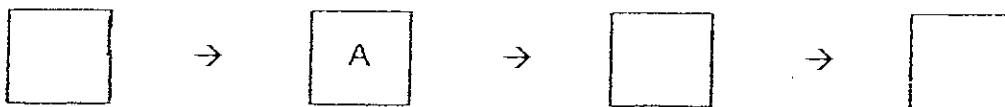
- (b) Identify the best possible match of the food given in the table to Food M, N and O. (1½ m)

- (i) Food M: _____
- (ii) Food N: _____
- (iii) Food O: _____

33. The pictures below show some of the stages of the life cycle of a flower which are not arranged in the correct sequence.

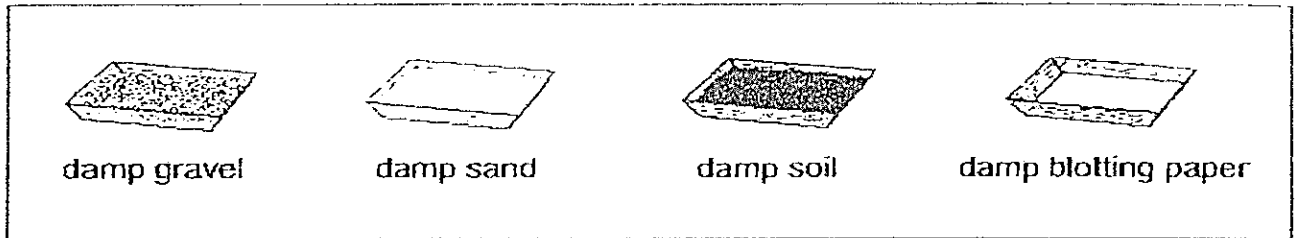


- (a) Rearrange the pictures in the correct sequence according to the stages in its life cycle by filling in missing letters in the boxes below. (1 m)



- (b) If the flower is not brightly coloured, how can the plant attract pollinators to itself? (1 m)

34. ° Susan was investigating the conditions needed for seeds to germinate. She set up the seed trays with holes at their bases by putting 20 seeds in each tray and giving them the same amount of water.



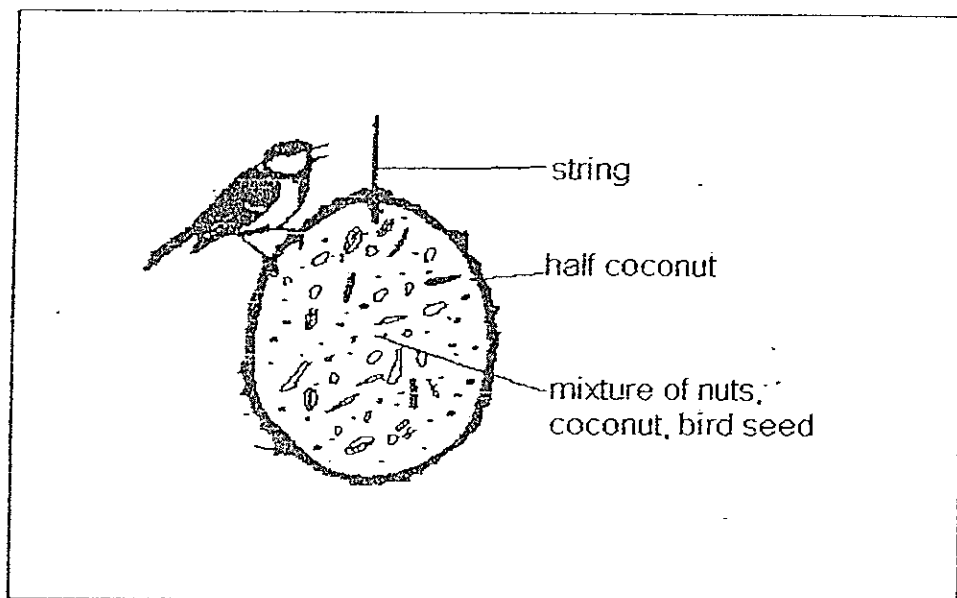
The results are shown in the table below.

Seed Tray	Number of seeds which grew into healthy seedlings
Gravel	3
Sand	8
Soil	15
Blotting paper	10

(a) What is a possible reason for the poor germination with gravel? (1 m)

(b) Name two variables not mentioned in the question above that she must keep the same in order to ensure a fair test. (1 m)

35. The school wildlife club wanted to attract birds. A half coconut was filled with a mixture of nuts, coconut and bird seed as shown in the diagram. Two such half coconuts were each hung from two different trees.



- (a) Name one life process the half coconuts could enable the birds to carry out. (1m)
-

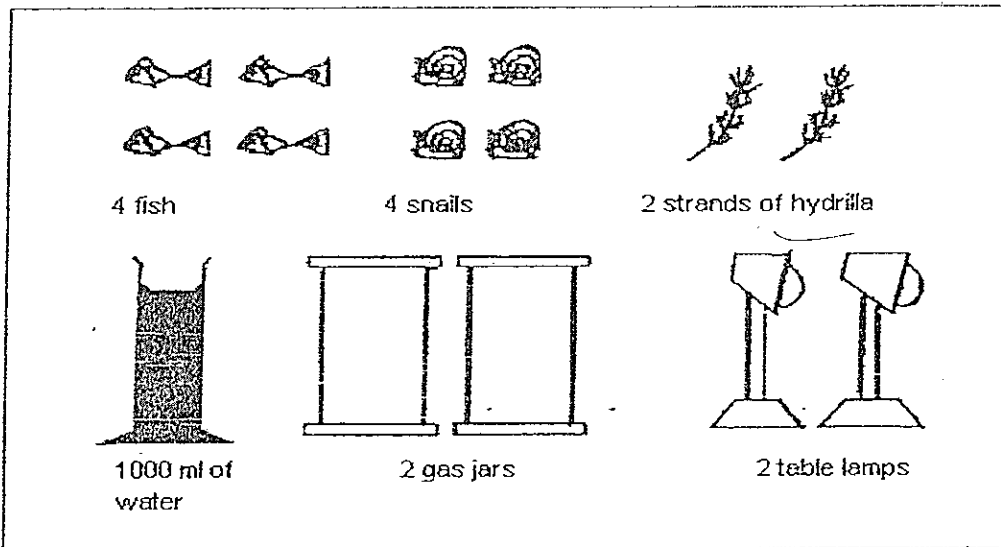
- (b) X and Y are the two half coconuts that had been hung from trees with positions stated in the table below. Three club members, A, B and C, made the following observations:

Coconut	Position of Tree	No. of Visits to the Coconut by Birds in a Morning								
		Day 1			Day 2			Day 3		
		A	B	C	A	B	C	A	B	C
X	Among a cluster of trees	23	25	24	20	22	21	22	24	25
Y	In the open	10	7	9	6	5	7	9	8	10

- (i) What is a likely conclusion that can be obtained from the data in the table? (1 m)

- (ii) Suggest a possible reason for the data collected by A, B and C. (1 m)

36. Betty wanted to test the hypothesis that the presence of water plants increases the survival rate of water snails. She had the following items:

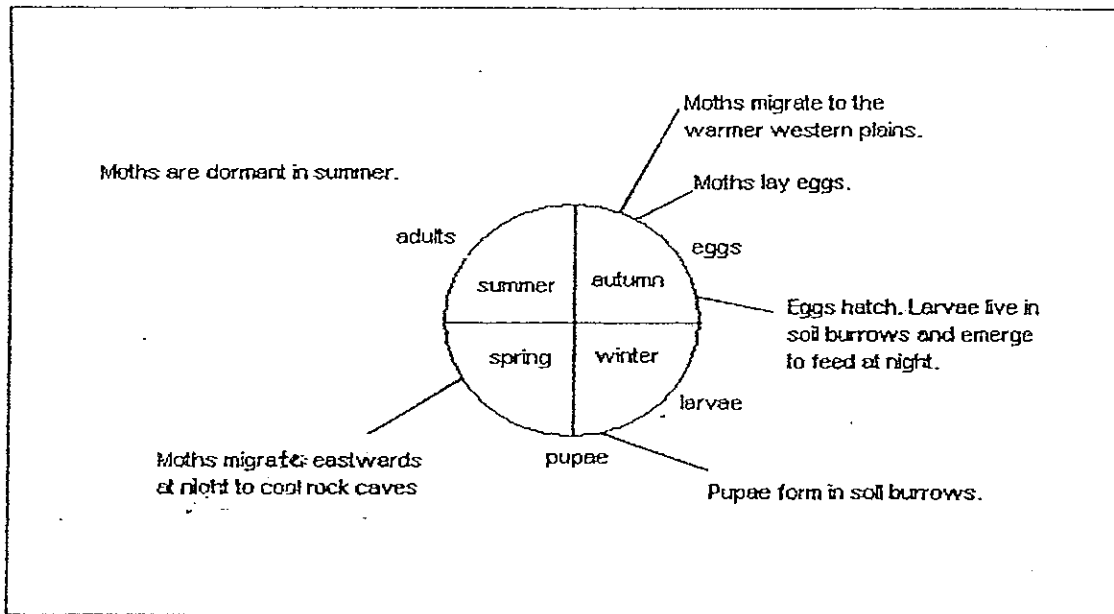


- (a) Betty needed to prepare 2 set-ups to conduct a fair test. **Draw in pencil** in the space provided below to show the set-ups she should prepare. (You need not use all the items provided) (2 m)

Set-up A	Set-up B

- (b) What observation would prove that Betty's hypothesis is true? (1 m)

37. A certain species of moth is very common in Canada. The diagram below shows the major stages in the life cycle of this moth.

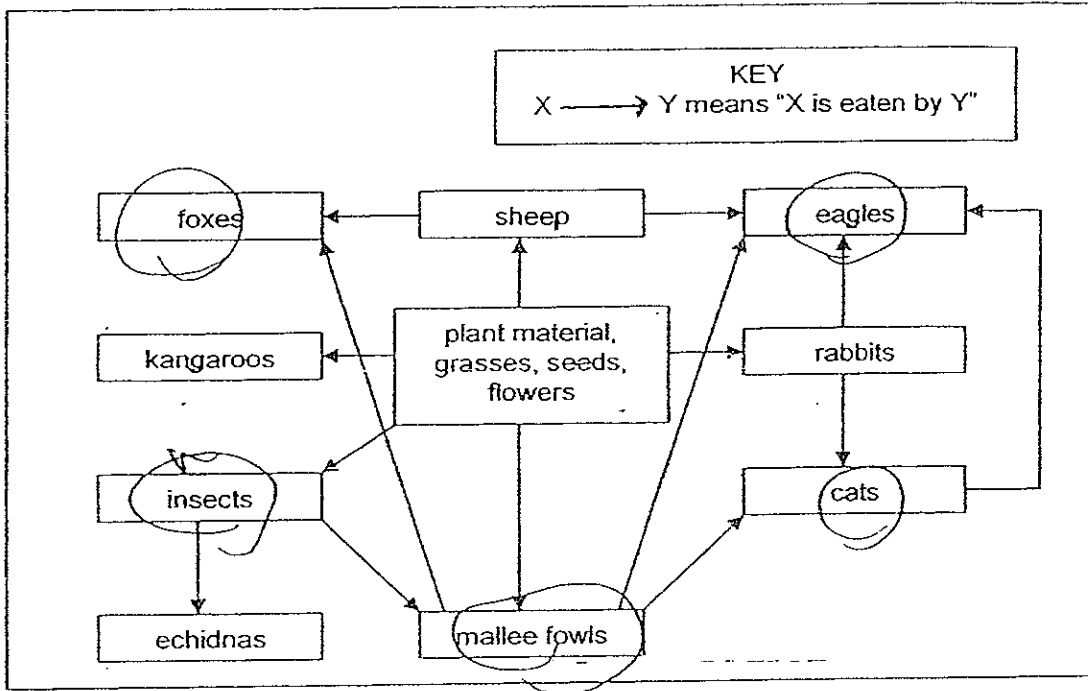


- (a) There are four seasons in a year. Based on the diagram above, what is the approximate number of months in the larval stage of this moth? (½ m)

- (b) In what season/s would the moth migrate? (½ m)

- (c) Suggest a likely reason as to why this type of moth is inactive in the summer. (1 m)

38. The diagram below shows the organisms living in a community. They are related to one another in the food web as shown by the linking arrows.



Match the descriptions given in the box below to the organisms above by writing the names of the organisms in the blanks. (2 m)

	Descriptions	Organism/s
(a)	The organism/s is/are 'both a prey and a predator'.	
(b)	The organism/s competes/compete for food with the mallee fowls.	
(c)	The organism/s is/are 'both a plant and animal eater'.	
(d)	The organism/s is/are 'an animal eater'.	

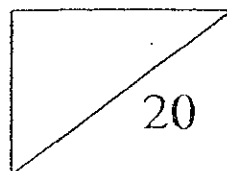
METHODIST GIRLS' SCHOOL (PRIMARY)

PRELIMINARY EXAMINATION 2008

PRIMARY SIX

SCIENCE

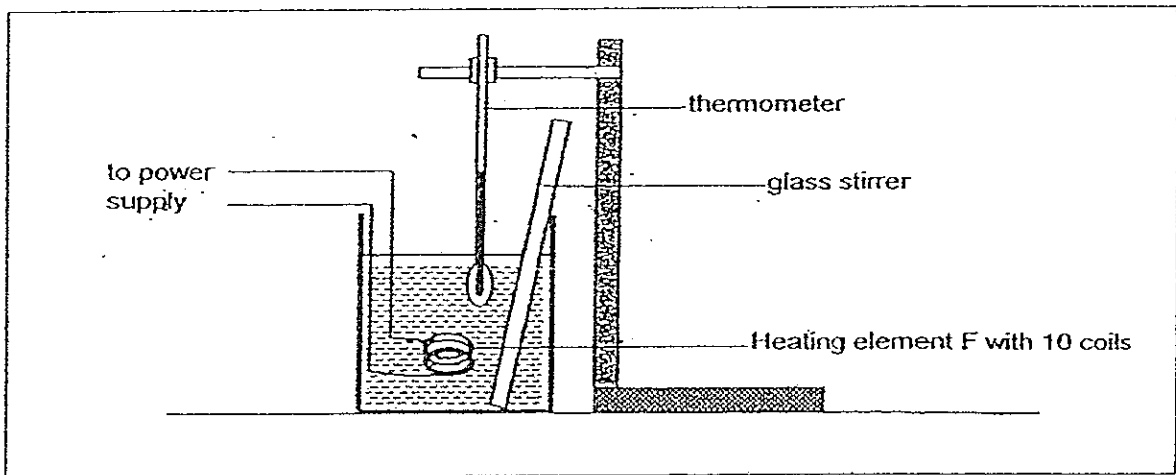
BOOKLET B2



NAME: _____ ()

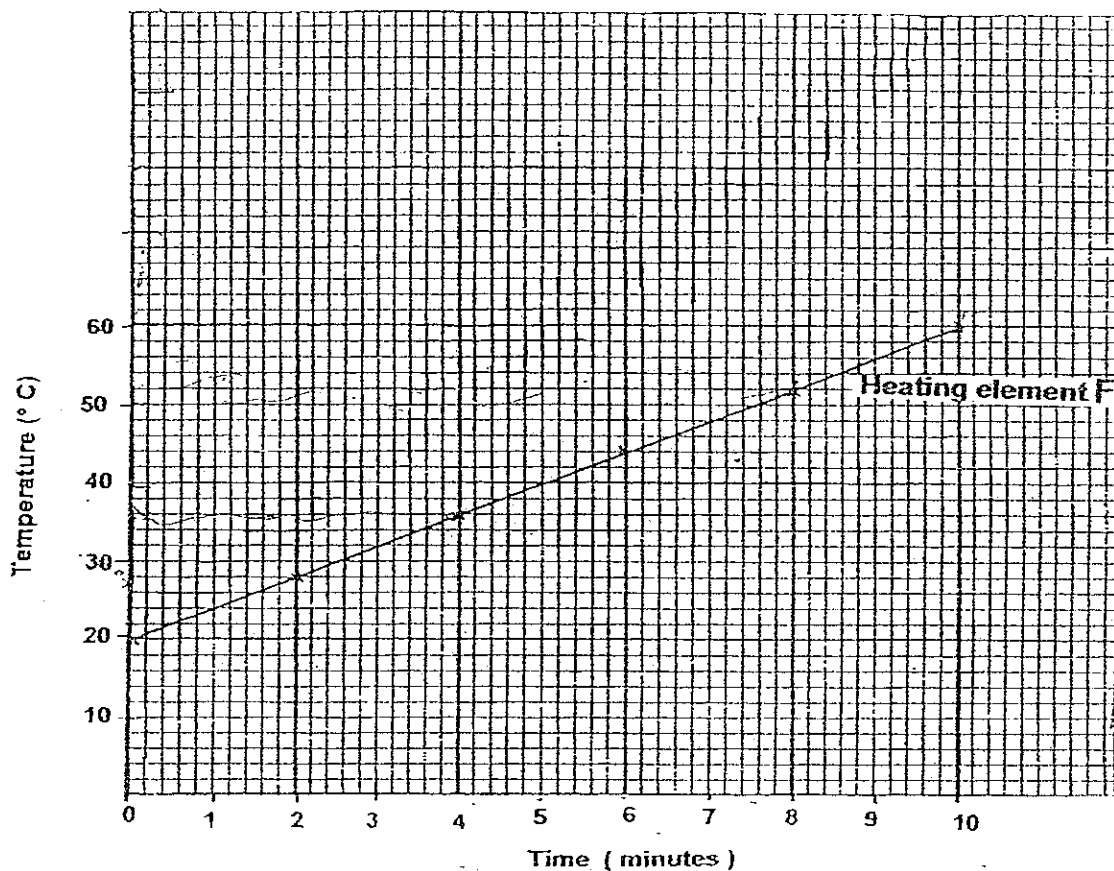
CLASS: _____

39. Susan used the set-up below to find out how fast a heating element F with 10 coils could heat up a beaker of water. Before taking the temperature of the water, she stirred the beaker of water with a glass stirrer. She closed the circuit and then took the temperature of the water at 2-minute intervals.



- (a) Why did Susan stir the water before taking the temperature of the water?
(1m)

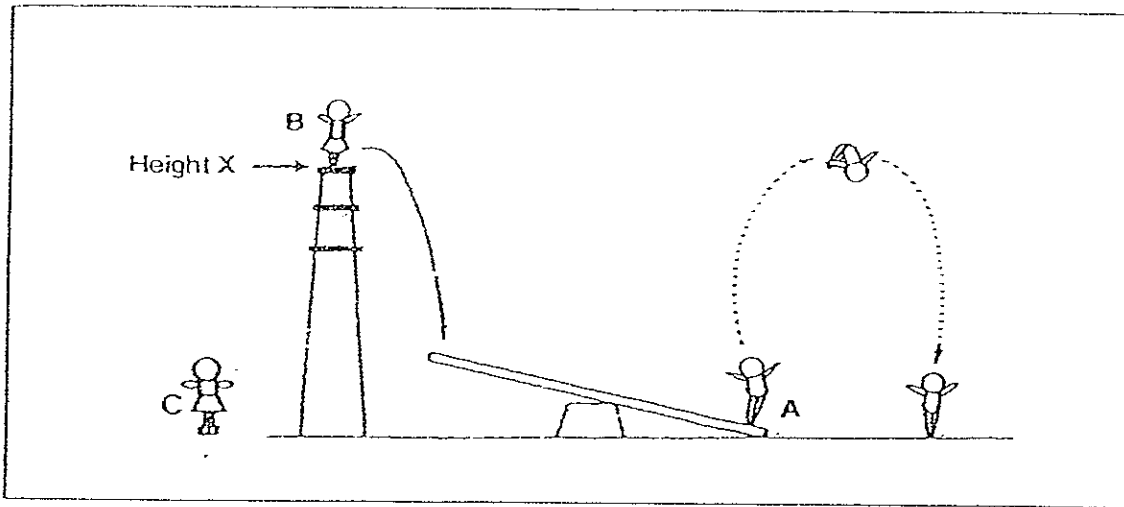
After several readings were taken, the graph below was plotted.



The experiment was repeated using the same set-up. The amount of water and its starting temperature were kept the same. A heating element, X, made of the same material as F was used. X had 20 coils. The last reading was taken when the water was at 60°C.

- (a) ^(b) On the same axes of the graph above, plot another line to show the change in temperature of the water with time for the heating element X. (2m)

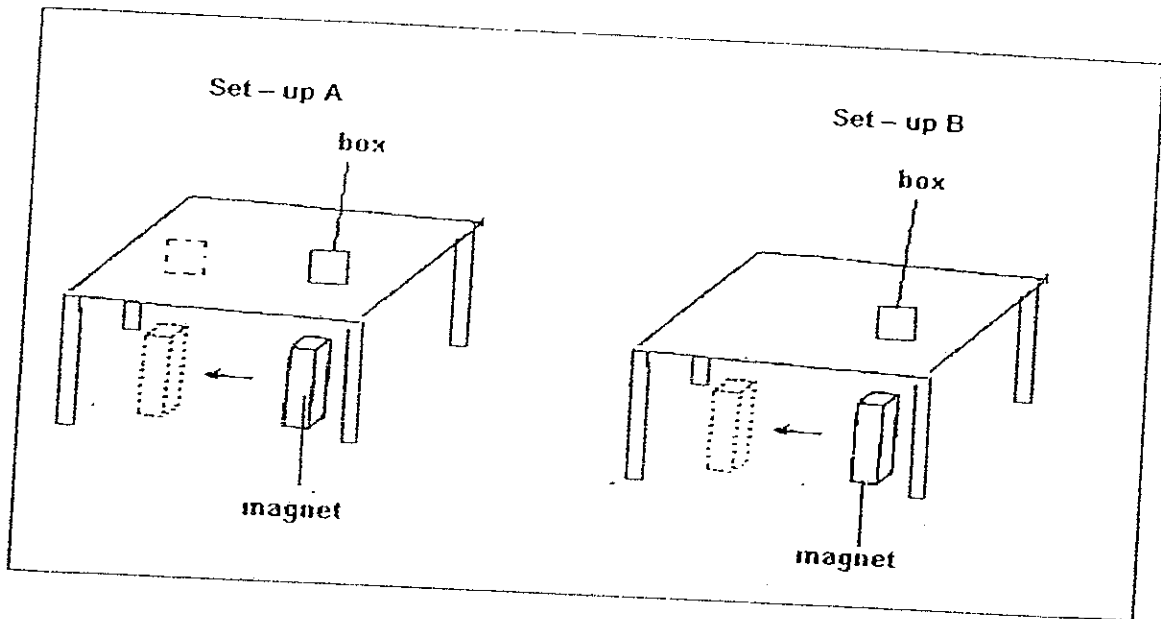
40.



- (a) How could acrobat B help acrobat A to perform a somersault to a greater height from Height X? (1m)

- (b) When Acrobat C replaced acrobat B, and jumped from the same point X, it was noticed that acrobat A jumped to a greater height before coming down. Explain this observation. (2m)

41. Sam set up an experiment as shown below.

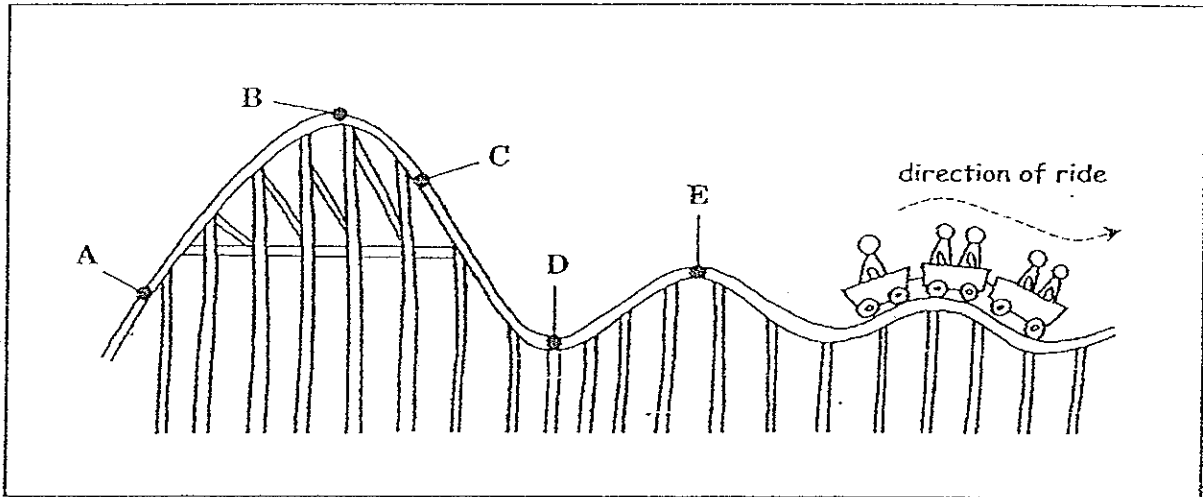


All the apparatus and materials used in Set-up A and Set-up B are kept constant except for the material that made the table. He used a very strong magnet and slid it across the underside of each table in the direction as indicated by the arrows. She observed that only the box in Set-up A moved while the box in Set-up B remained in its position.

(a) Explain why the box in Set-up A move and the box in Set-up B did not? (2m)

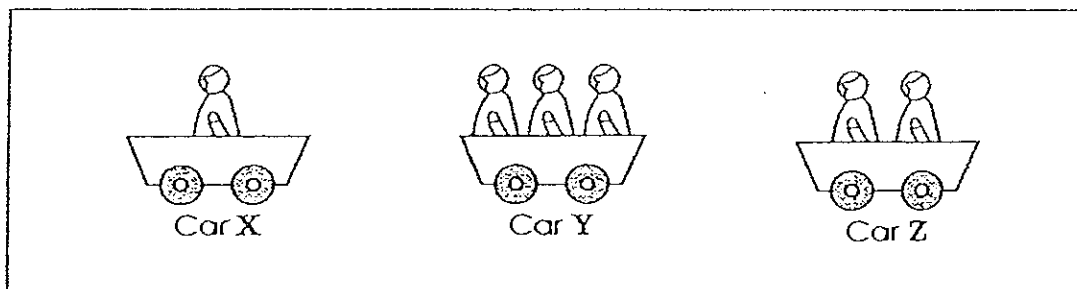
(b) Give an example of a material that could be used to make the box in both the set-ups. (1m)

42. Roller coasters are pulled up a steep slope by a chain at the beginning of the ride. From then on, the cars go up and down without the help of a motor.



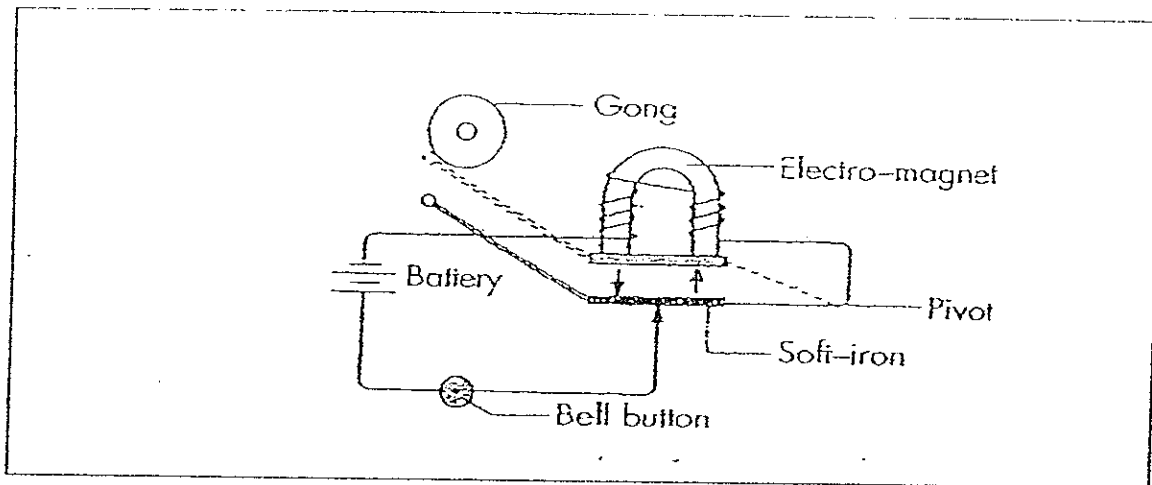
- (a) Between which points would the roller coaster need a chain to pull the cars up? (½m)

- (b) At which point would the roller coaster cars have the least gravitational potential energy? (½m)

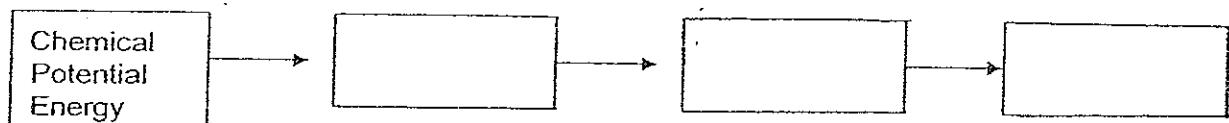


- (c) If all the above roller coaster cars are moving equally fast, which one of the cars has the most kinetic energy and why? (1m)

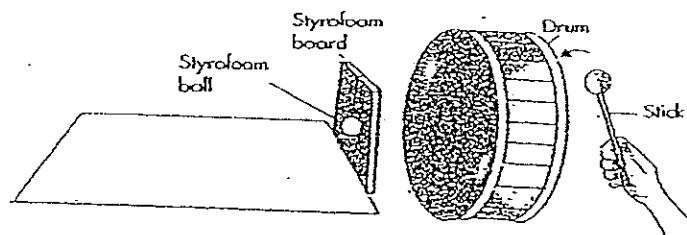
43. Study the circuit shown below closely.



- (a) Pressing the bell button closes the electrical circuit, and as a result, energy conversion takes place. Complete the diagram below to show the energy conversion that has taken place. (1m)



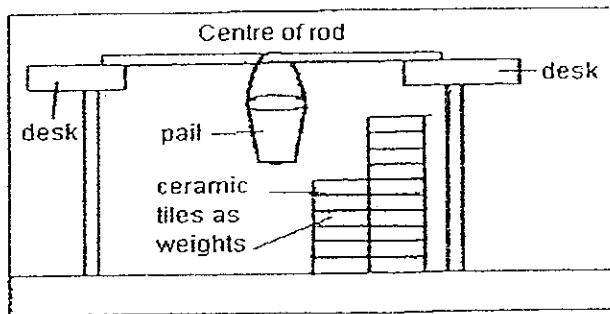
- (b) Zam set up an experiment as shown below.



As he hit the drum with a stick, he noticed that the styrofoam ball moved. State the energy conversion by filling the blanks below with suitable words. (2m)

_____ energy in the hand is converted to _____ energy of the drum. This is converted to _____ energy of the air which is finally converted to _____ energy of the styrofoam ball.

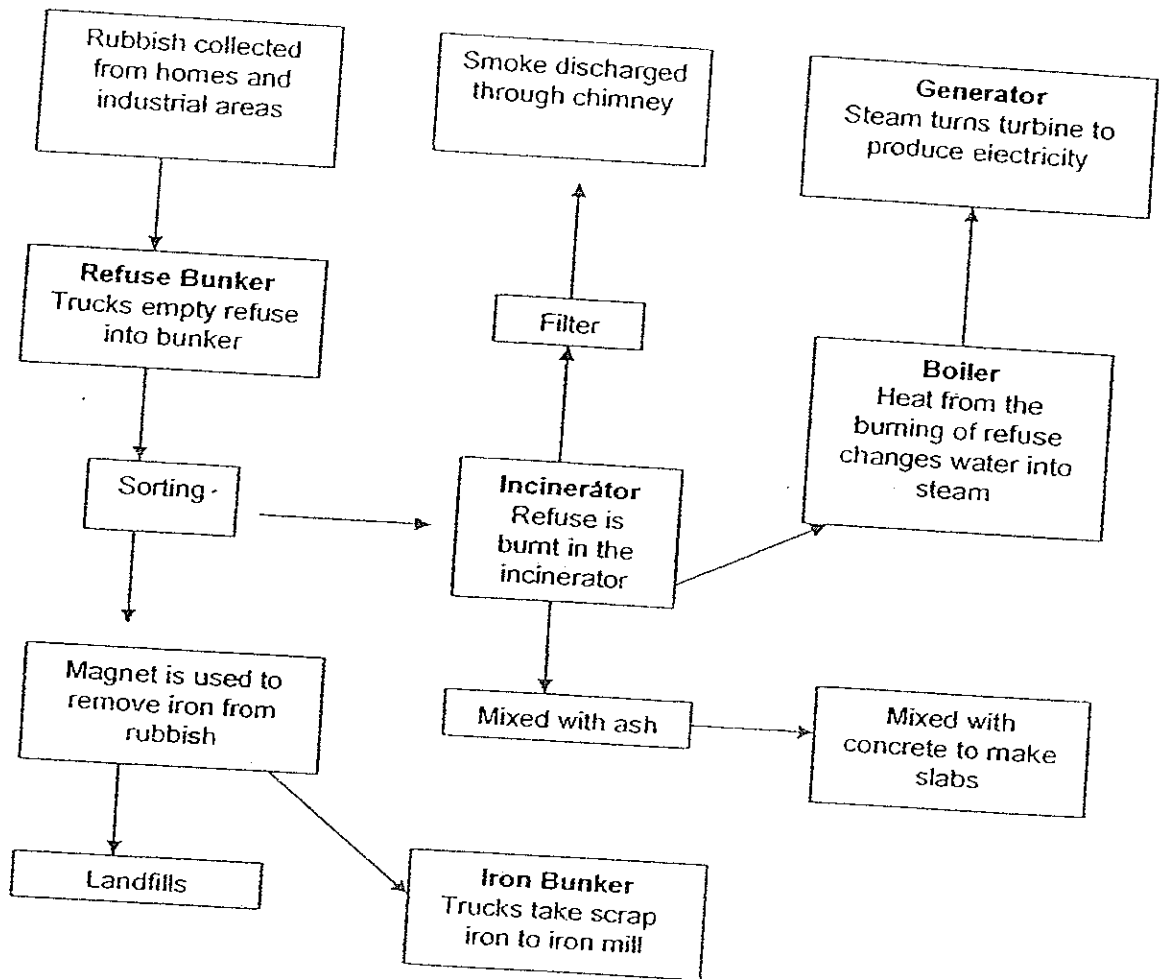
44. Alison wanted to find out which one of the three rods, A, B or C is the strongest. The rods were of the same thickness and length but were made of different materials. She was also given some ceramic tiles, a pail and two desks of the same height. She set up the experiment as shown below.



Describe systematically the steps she should take to find the result. Use only the materials provided. (2m)

Steps	Description
Step 1	Set up the experiment as shown above.
Step 2	

45. Study the chart below.



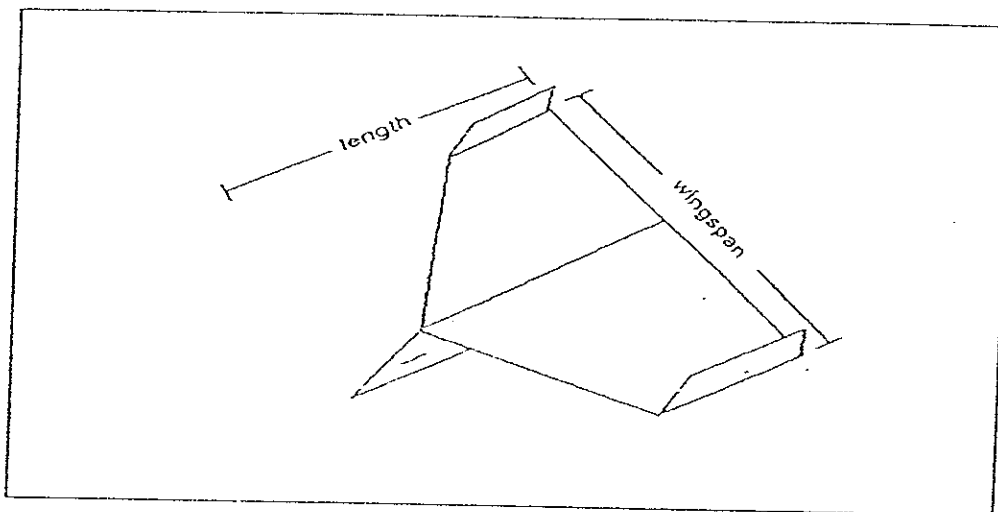
(a) Why is the filter needed?

(1m)

(b) What can be done to reduce the refuse collected?

(1m)

46. Sheena wanted to find out if the mass of the paper used for a paper aeroplane would affect the distance that it would travel. She folded 6 paper aeroplanes according to the design below, using different types of paper.



She then tabulated her results in the following table.

Plane	Mass of paper (g)	Wingspan (cm)	Length (cm)	Distance travelled (m)
A	9	12	20	10.2
B	7	15	15	6.7
C	8	12	20	8.5
D	6	12	20	5.0
E	7	12	15	7.4
F	7	17	15	5.6

- (a) In order to carry out a fair test, which plane (s) should she use? (1m)

- (b) In another experiment, Sheena used planes B, E and F. What is the aim of her second experiment? (1m)

*****End-of-Paper*****

MGS Primary School
Primary 6 Science SA2 Exams (2008)

Answer Keys

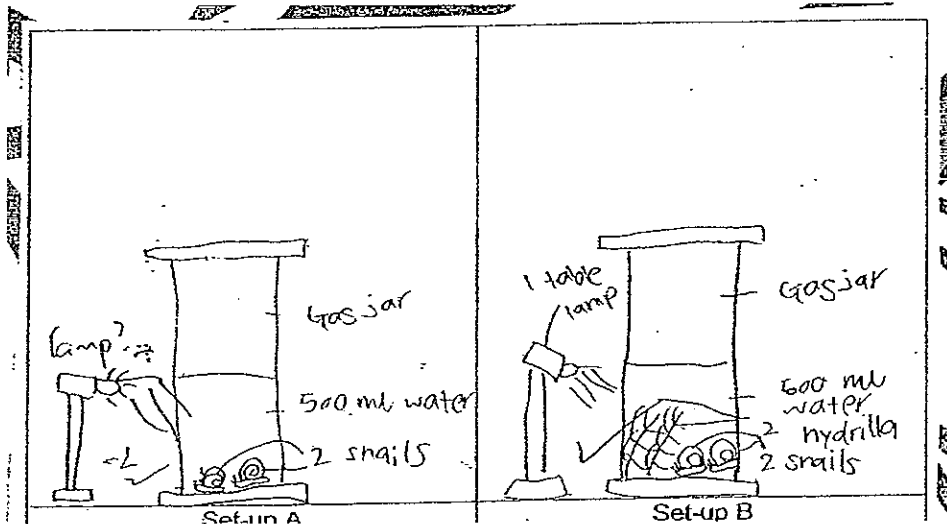
Qo.	Ans
1	2
2	4
3	2
4	3
5	2
6	2
7	3
8	1
9	1
10	2

Qn no.	Ans
11	1
12	2
13	3
14	1
15	3
16	3
17	4
18	4
19	1
20	3

Qn no	Ans
21	3
22	3
23	4
24	1
25	3
26	4
27	2
28	4
29	1
30	3

- 31a. (i) Trout (ii) Frog (iii) Mosquito (iv) Water mite
 31b. Vertebrates or invertebrates/warm-blooded or cold-blooded/wings or no wings/legs or no legs/can fly or cannot fly. Have skeleton or have exoskeleton.
- 32a. In the stomach.
 32b. (i) Biscuit (ii) soup (iii) hamburger
- 33a. B → A → D → C
 33b. Gives off a scent/emit fragrance/emit smell/has a large store of nectar.
- 34a. Gravel cannot hold and retain water long enough for it to be taken in by most of the germinating seeds.
 34b. Seed trays of the same size/amount of content in tray/seed trays pt in the same place/duration of experiment same type of seeds/amount of surface area/distance between each seed in the tray.
- 35a. Digestion
 35b(i). More birds were attracted to the coconut which was among a cluster of tree coconut X, while less birds were attracted to the coconut in the open, coconut Y.
 (ii) The birds prefer to have the protection of trees to hide from predators.

36a.



36b. In set-up A, the snails will live for a longer time than the snails in set-up B.

37a. About 3 months

37b. Spring and autumn

37c. The summer temperature may be too for this type of moth.

38a. Mallee fowls, cats

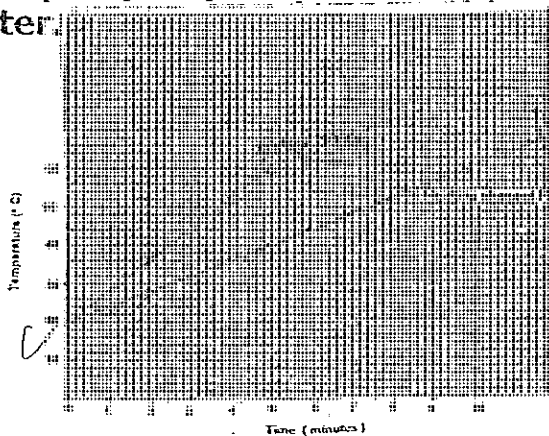
38b. Enchidnas, insects kangaroos, shecp, rabbits

38c. Mallee fowls

38d. Foxes, eagles, cats, echidnas

39a. To speed up and quicken the transfer of heat to all parts of the water.

39b. iter.



40a. Acrobat B can jump down with a greater force.

40b. Acrobat C was probably heavier than acrobat B. Thus, Acrobat C would have much more gravitational potential energy and exert and greater force and cause Acrobat A to jump higher.

41a. Table in set-up A is likely to be a non-magnetic material while the table in set-up B is likely to be a magnetic material.

41b. steel

- 42a. A to B
42b. D
42c. Car Y. Because car Y has the greatest mass so the kinetic energy level B higher.
- 43a. Electric energy \longrightarrow kinetic energy \longrightarrow sound energy
43b. Chemical potential, sound energy, kinetic energy, kinetic
44. Step 2 : Place as many ceramic tiles as possible into the pail, until the rod breaks
Step 3 : When the rod breaks, record the number of tiles in it.
Step 4 : Repeat step 2 and 3 with a different rod.
Step 5 : When you are done, compare the results. The rod that could hold up the most number of tiles is the strongest.
- 45a. To remove harmful particles from smoke before it is released in the air.
45b. We can reduce, reuse and cycle
- 46a. A, C and D
46b. She was finding out if the length wingspan of the paper plane will affect the distance traveled.