RED SWASTIKA SCHOOL

# RED SWASTIKA SCHOOL

## 2015 SEMESTRAL ASSESSMENT 1
## SCIENCE
## PRIMARY 4

Name : _____ (  )

Class : Primary 4/ _____

Date : 12 May 2015

## BOOKLET A

Total time for Booklets A & B: 1h 30 min

Booklet A: 30 questions (60 marks)

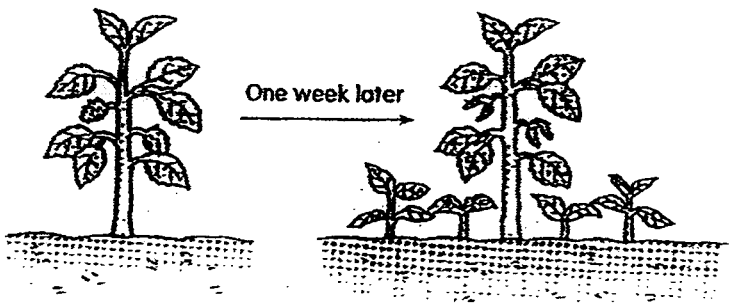
Note:

1. Do not open the booklet until you are told to do so.
2. Read carefully the instructions given at the beginning of each part of the booklet.
3. Do not waste time. If the question is too difficult for you, go on to the next question.
4. Check your answers thoroughly and make sure you attempt every question.
5. In this booklet, you should have the following:
   a. Page 1 to Page 17
   b. Questions 1 to 30

## Section A

**For Questions 1 to 30, choose the most suitable answer and shade its number in the OAS provided.**

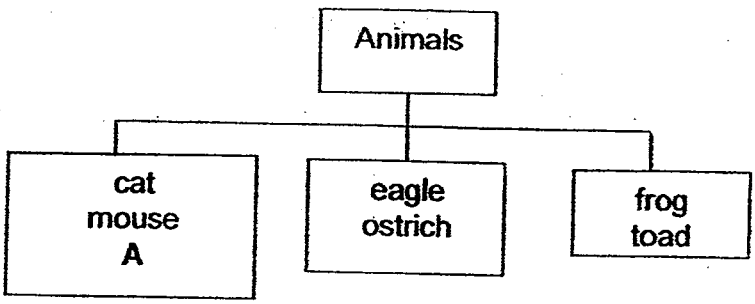
1. Study the diagram below.




Which of the characteristics of living things does the above show?

(1) Living things can respond.
(2) Living things can reproduce.
(3) Living things need air and water.
(4) Living things can move by themselves.

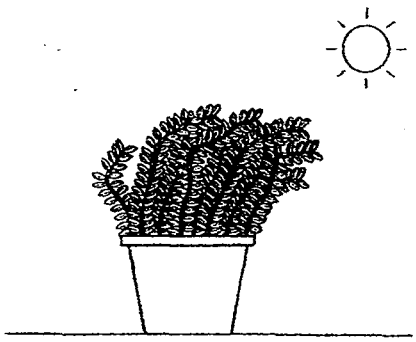
2. Study the classification table below.




Which of the following can animal A be?

(1) zebra
(2) lizard
(3) guppy
(4) butterfly

3. Four students found some plants growing in a pot, as shown below.



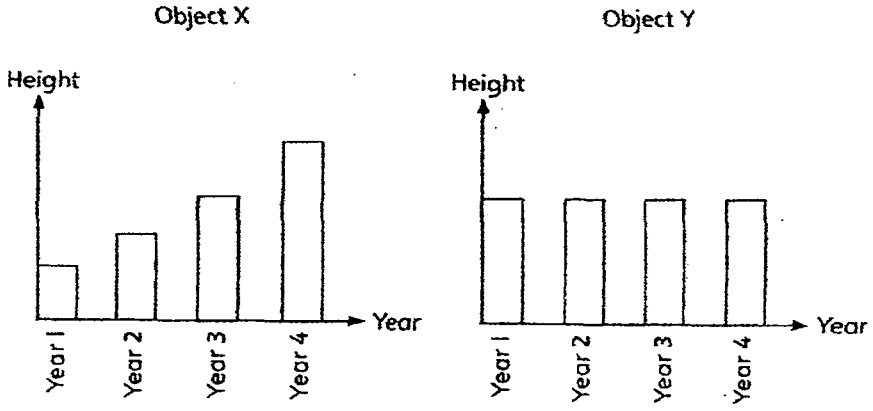
The students made the following statements:

A: The plants will compete with each other for water.
B: The plants will compete with each other for sunlight.
C: The plants will compete with each other for nutrients in the soil.

Which of the statements are correct?

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

4. Study the bar charts shown below.




Which of the following correctly shows examples of X and Y?

| | Object X | Object Y |
|---|---|---|
| (1) | tree | baby |
| (2) | baby | cupboard |
| (3) | cupboard | block of flats |
| (4) | block of flats | tree |

5. Which of the following living things develop from seeds?

(1) grass
(2) mushroom
(3) toadstool
(4) bird's nest fern

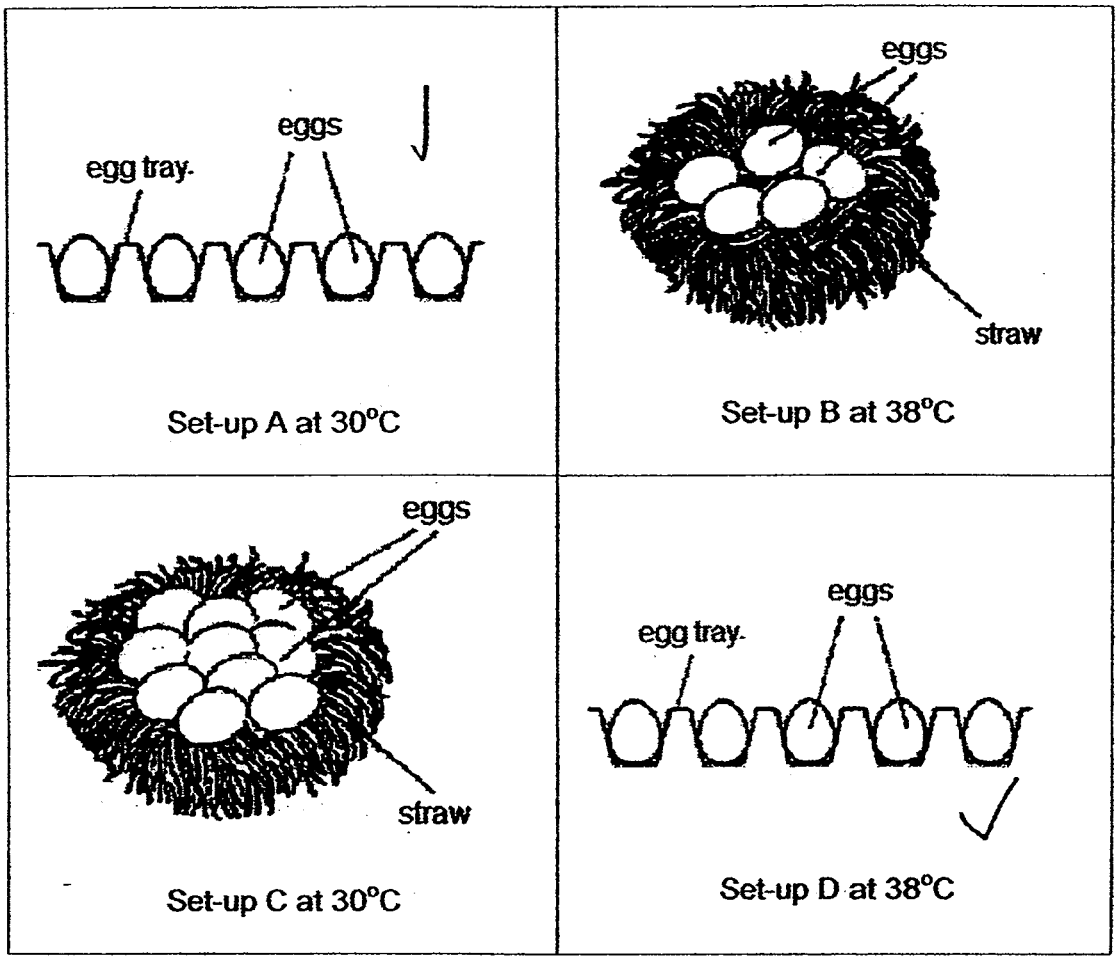
6. The characteristics of two animals are given in the table below.

| Characteristic | Animal A | Animal B |
|---|---|---|
| Lays eggs | ✓ | ✓ |
| Has a 4-stage life cycle | ✓ | X |
| Useful to man in at least one stage of its life cycle | ✓ | ✓ |
| Is a pest to man in at least one stage of its life cycle | ✓ | X |

Based on the information given, which of the following animals are represented by A and B?

| | Animal A | Animal B |
|---|---|---|
| (1) | mosquitc | frog |
| (2) | mosquito | duck |
| (3) | butterfly | chicken |
| (4) | grasshopper | cockroach |

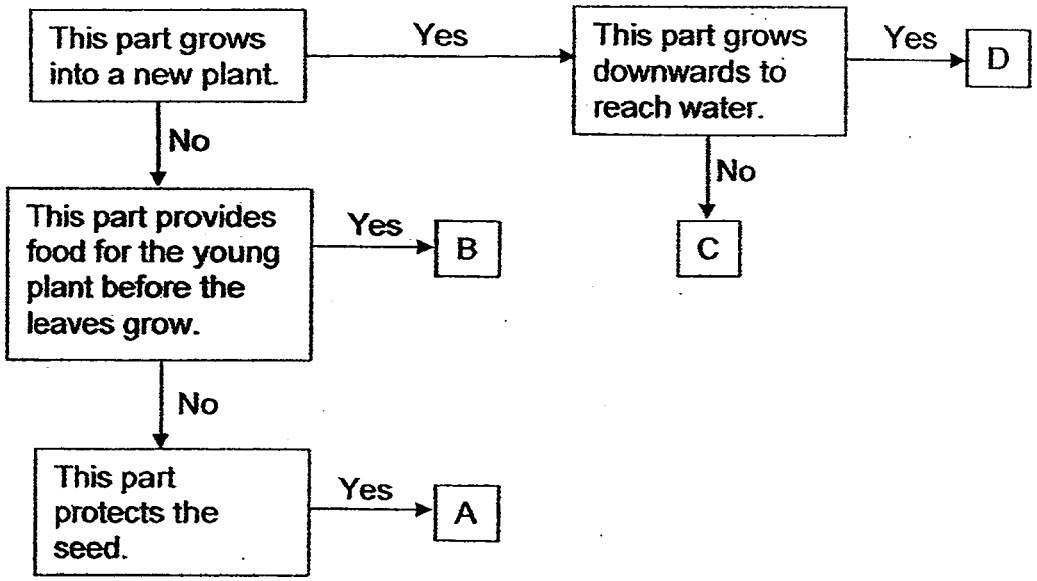
7. Janice wanted to find out what temperature is more suitable for hatching fertilised chicken eggs in an incubator.




Which two set-ups should she use in order to have a fair experiment?

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

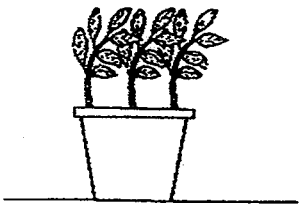
8. The diagram below shows a flow chart. A, B, C and D represent different parts of a seed which is grown in the soil in the garden.




Which of the following correctly identifies the letters representing the shoot and the seed leaves?

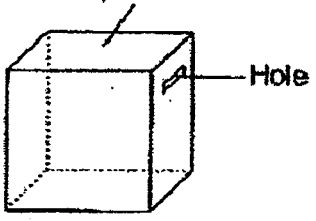
| | Shoot | Seed leaves |
|---|---|---|
| (1) | A | D |
| (2) | B | C |
| (3) | C | B |
| (4) | D | A |

9. Gerald's Science teacher showed him a pot of young plants. He was told that they had been kept in a box for one week and had been watered daily. The box was placed in the open school field.

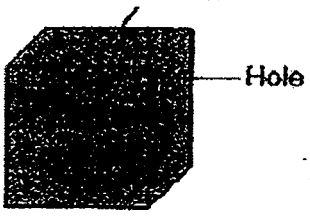


Which of the following boxes could the pot of young plants have been placed in?

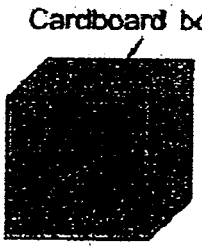
(1)



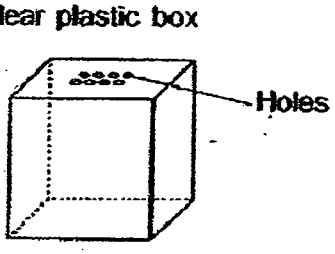

(2)



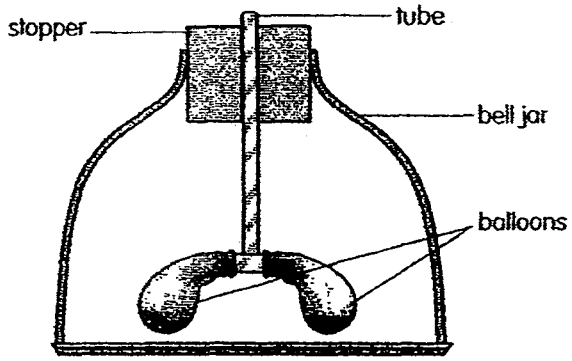

(3)




(4)



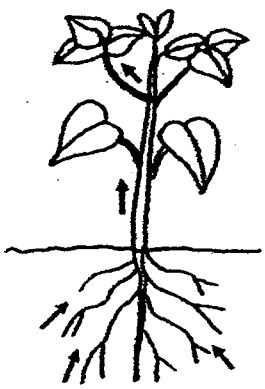
10. A model of the respiratory system is shown below.




Which of the following correctly matches the parts of the model to the organs of the respiratory system?

| | Tube | Balloons | Bell jar |
|---|---|---|---|
| (1) | windpipe | lungs | rib cage |
| (2) | windpipe | lungs | heart |
| (3) | gullet | heart | rib cage |
| (4) | gullet | lungs | heart |

11. Look at the diagram of the plant shown below.



What do the arrows on the diagram show?

(1) The movement of oxygen in the plant.
(2) The movement of carbon dioxide in the plant.
(3) The movement of food to all parts of the plant.
(4) The movement of water to all parts of the plant.

12. Ali had his dinner four hours ago. How did the food travel in his body before it was completely digested and absorbed?

(1) gullet → stomach → mouth → small intestine
(2) mouth → gullet → stomach → small intestine
(3) stomach → mouth → small intestine → gullet
(4) mouth → small intestine → stomach → large intestine

13. Which of the following activities are most likely to speed up a person's heart rate?

A: taking a nap
B: taking a slow walk
C: doing aerobic exercises
D: going on an exciting roller coaster ride

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

14. Which of the four human systems is correctly matched to its function?

| | System | Function |
|---|---|---|
| (1) | Muscular | Breaks down food into simpler substances. |
| (2) | Digestive | Supports the body and gives it a shape. |
| (3) | Circulatory | Transports digested food, water and other substances to all parts of the body. |
| (4) | Skeletal | Removes undigested food from the body. |

15. Four healthy potted plants were provided with different conditions as shown in the table below.

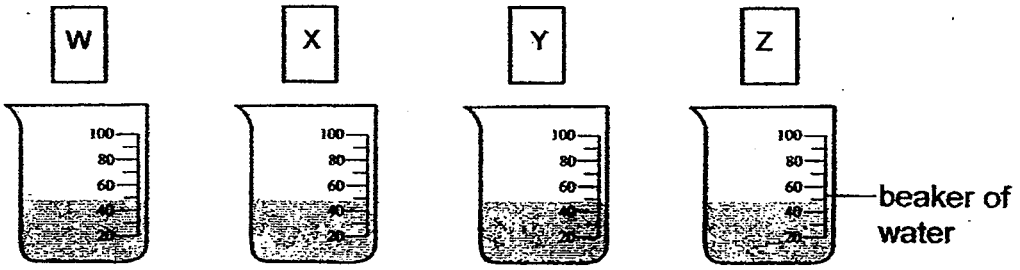
| Pot | Location | Water | Temperature |
|---|---|---|---|
| A | cupboard with door closed | present | 26°C |
| B | dark storeroom | present | 24°C |
| C | garden | absent | 30°C |
| D | garden | present | 30°C |

One week later, only one of the plants grew healthily. The leaves of the other three plants started to turn yellow.

Which pot of plants grew healthily?

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

16. Four thin sheets of materials W, X, Y and Z of similar sizes, were weighed individually before they were put into four beakers containing equal amounts of water. After fifteen minutes, each sheet was weighed again. Their masses were recorded in the table below.

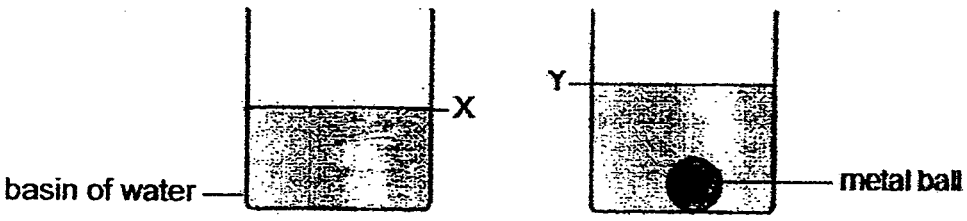



| Material | Mass at the beginning (g) | Mass after 15 minutes (g) |
|---|---|---|
| W | 8 | 16 |
| X | 10 | 10 |
| Y | 12 | 14 |
| Z | 13 | 18 |

Based on the information given, which material is most suitable for use in making a tent?

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

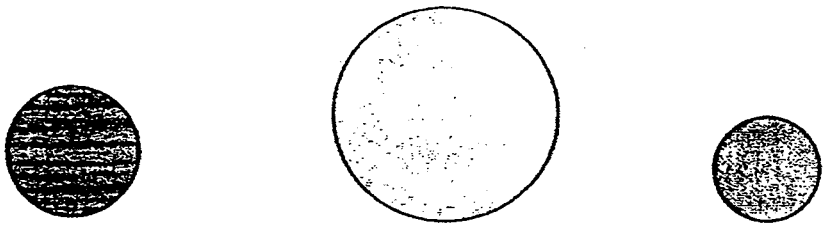
17. An experiment was set up as shown below.




At the start of the experiment, the water level was at X. After a student dropped a metal ball into the beaker of water, the water level rose to Y. This experiment shows that _____.

(1) the metal ball does not take up space
(2) water can be compressed
(3) water does not have a definite volume
(4) the metal ball has a definite volume.

18. The diagram below shows three balls of the same mass.

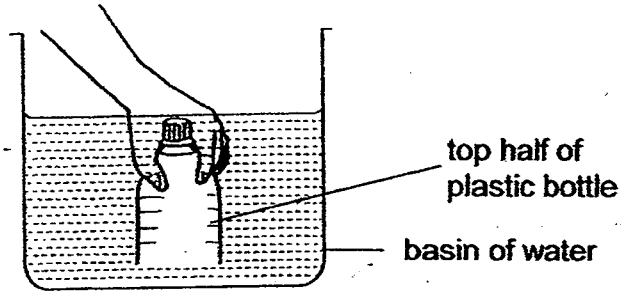


wooden ball rubber ball iron ball

Which of the following statement is true?

(1) The iron ball has the least amount of substance in it.
(2) The wooden ball has the least amount of substance in it.
(3) The rubber ball has the most amount of substance in it.
(4) The three balls have the same amount of substance in them.

19. Junaidah cut a plastic bottle into half. She screwed the bottle cap tightly and pushed the top half of the bottle downwards into the basin of water, until it was fully submerged in the water, as shown below. She observed that only a little water entered the bottle.



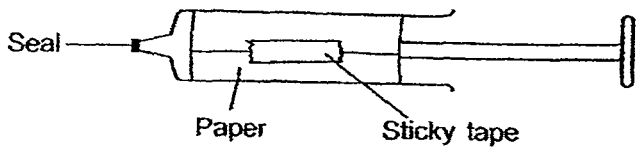

While holding the bottle under water, she unscrewed the bottle cap. Air bubbles were observed coming out from the top of the bottle, and water rushed in from the bottom of the bottle.

What did the experiment show?

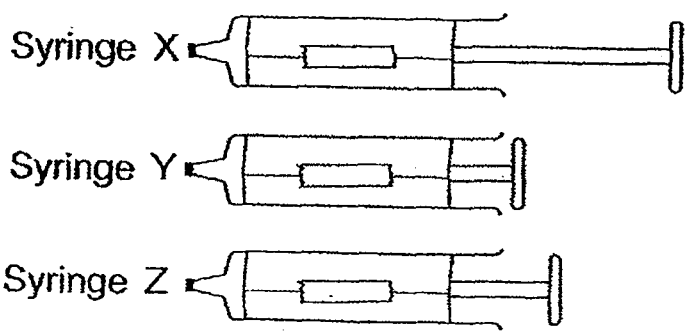
A: Air can be compressed.
B: Air takes up space.
C: Water takes up space.

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

20. Mr Rahman prepared three identical syringes by wrapping up the sides syringe with paper, as shown below. This is to prevent his student seeing the contents of the syringe. He then filled one syringe with another with air and the last one with a mixture of air and water. The r of each syringe were tightly sealed to stop the contents from leaking ou




Mr Rahman then pressed the plunger of each syringe as far as it would The results were shown below:



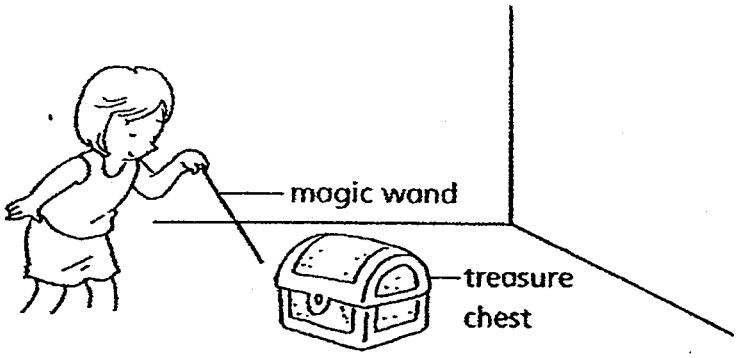

Based on the results, identify the contents of each syringe.

| | Syringe X | Syringe Y | Syringe Z |
|---|---|---|---|
| (1) | Air only | Water only | Air and water |
| (2) | Air and water | Air only | Water only |
| (3) | Water only | Air only | Air and water |
| (4) | Water only | Air and water | Air only |

21. Lost in the forest by himself, Sammy ties a bar magnet to a string anc the magnet. When the magnet stops spinning, he should see the n resting in the _____ direction.

(1) North-South
(2) North-West
(3) South-East
(4) South-West

22. Kelly is performing a magic show. She is using a magic wand to push a treasure chest to a corner without the magic wand touching the chest.




She made use of magnets to perform her show.

Which of the following concepts has Kelly used in her magic show?

A: Like poles of two magnets repel.
B: Unlike poles of two magnets attract.
C: Magnetic forces can act at a distance.

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

23. Devi wanted to find out the magnetic strength of four different bar magnets. She placed each magnet and a nail on the table and she slowly moved the magnet closer to the nail until it could attract the nail. Her results are shown in the table.


| | Magnet A | Magnet B | Magnet C | Magnet D |
|---|---|---|---|---|
| Distance between the magnet and the nail when the magnet could attract the nail | 6 cm | 8 cm | 2 cm | 4 cm |

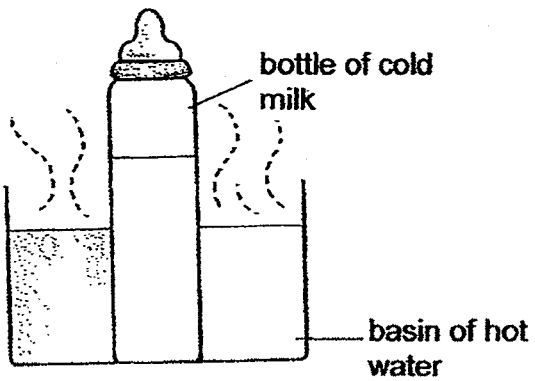
Based on the table, arrange the magnets according to its magnetic strength starting from the magnet with the least magnetic strength.

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

24. Heat is given out by _____.

(1) an unlit candle
(2) melting ice
(3) an empty metal cup
(4) the Sun

25. Study the diagram below.

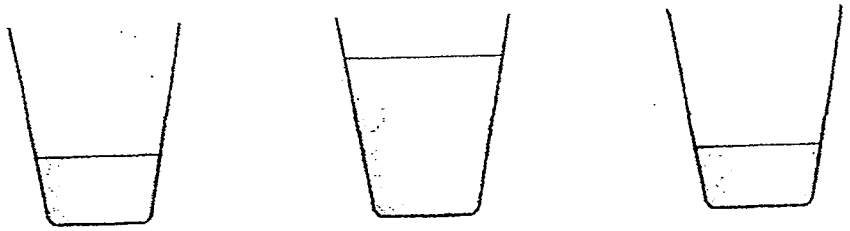



A bottle of cold milk was placed in a basin of hot water. Which of the following statements are correct?

A: The cold milk loses heat.
B: The temperature of the hot water falls
C: The cold milk gains heat from the hot water.
D: The hot water gains heat from the cold milk.

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

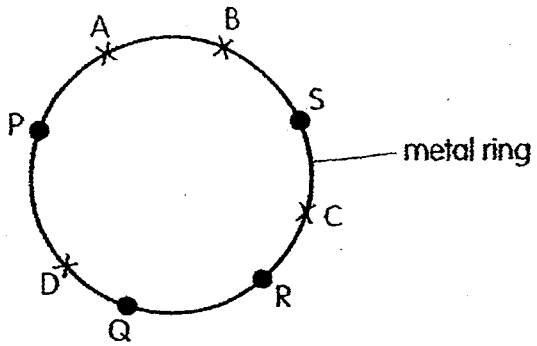
26. Study the diagram below.




The glasses are filled with different amounts of water at different temperatures. Arrange the glasses in order, beginning with the one that has the most heat .

(1) A, C, B
(2) B, A, C
(3) B, C, A
(4) C, A, B

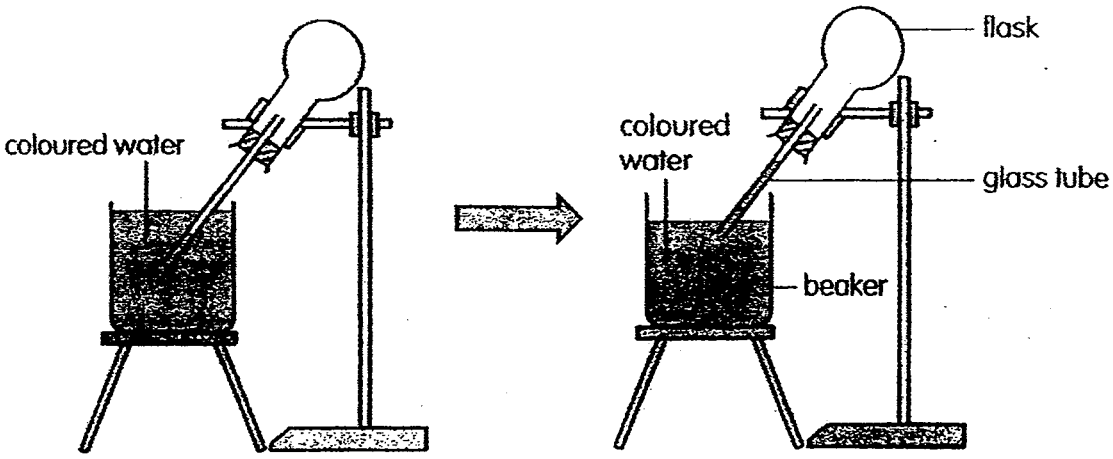
27. P, Q, R and S are blobs of wax on a metal ring. When the ring was heated at a certain point, blob S dropped off first, followed by P, R and Q.




For this to happen, the ring was heated at point _____.

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

28. An experiment was set up as shown below. After three minutes, the coloured water rose up the glass tube.




At the start of the experiment

After three minutes

What was the cause of this observation?

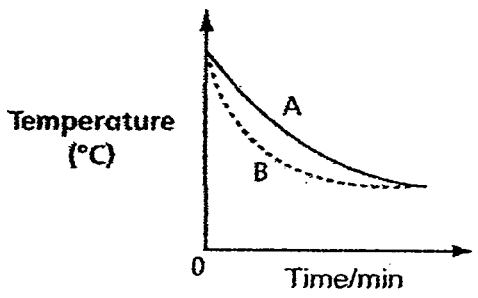
A: The flask was heated.
B: The beaker was cooled.
C: The flask was cooled.

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

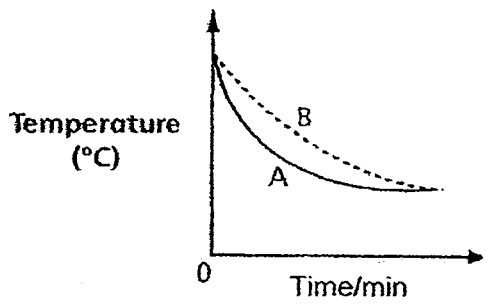
29. There are two identical beakers, A and B. Beaker A contains 200 ml of boiling water but Beaker B contains 500 ml of boiling water. The two beakers are left on a table in an air-conditioned room with the temperature set at 20°C.

Which of the following line graphs shows the likely changes in the temperature of the water in the two beakers?

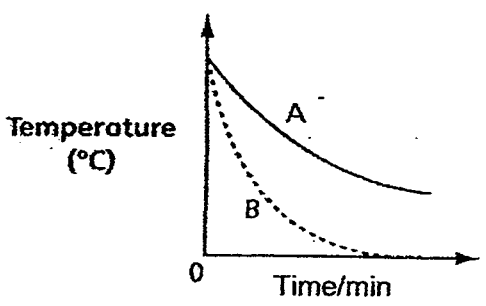
(1)



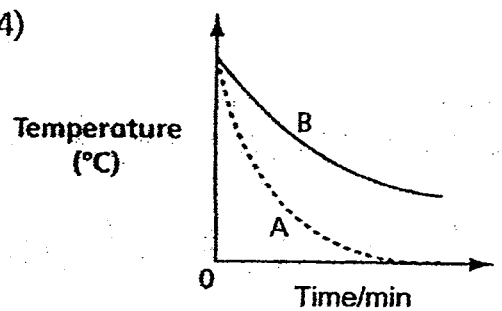

(2)



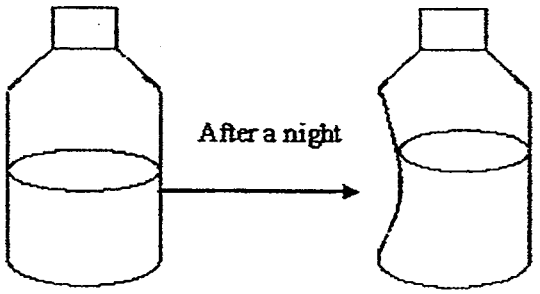

(3)




(4)



30. A plastic bottle half-filled with water was put in a refrigerator for a night. The next morning, the shape of the bottle was changed as shown below. What could have possibly caused the change?




(1) The water in the bottle has gained heat and contracted..
(2) The air in the bottle has lost heat and contracted.
(3) The water in the bottle has lost heat and decreased in mass.
(4) The air in the bottle has gained heat and expanded.

***END OF SECTION A***
PLEASE CHECK YOUR WORK.

RED SWASTIKA SCHOOL

# RED SWASTIKA SCHOOL

## SCIENCE
## 2015 SEMESTRAL EXAMINATION 1
## PRIMARY 4

Name : _____ (  )

Class : Primary 4/ _____

Date : 12 May 2015

## BOOKLET B

14 Questions
40 Marks

In this booklet, you should have the following:
a. Page 18 to Page 33
b. Questions 31 to 44

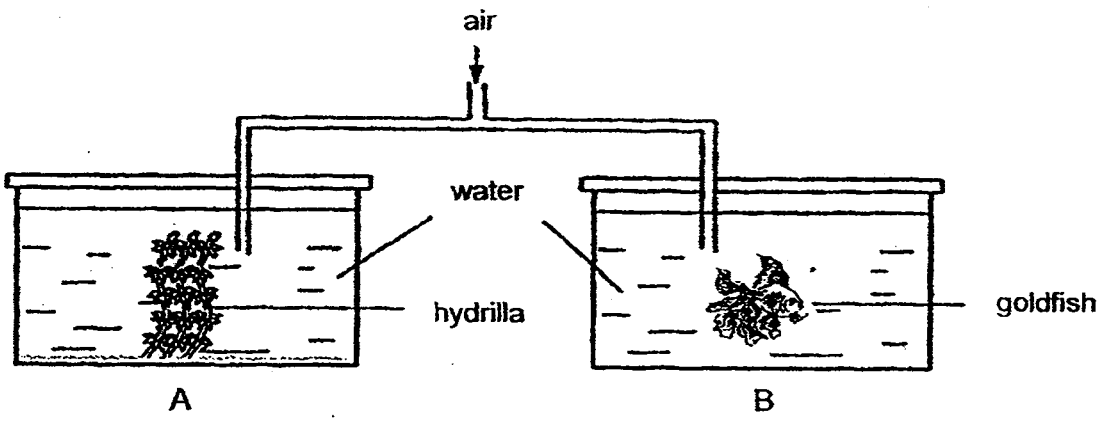
**MARKS**

| | OBTAINED | POSSIBLE |
|---|---|---|
| BOOKLET A | | 60 |
| BOOKLET B | | 40 |
| TOTAL | | 100 |

Parent's Signature :

**Section B**
**Answer all the questions in the space provided.**

31. Jason conducted an experiment using the set-ups below. The set-ups were placed under a light source during the experiment.




Two tightly sealed glass containers of the same size containing the same amount of water are supplied with an equal amount of air. Both set-ups are left under the light source for two weeks.

(a) Which organism, the hydrilla or the goldfish, is likely to die at the end of two weeks? (1 m)

_____

_____

(b) Explain your answer for part (a). (1 m)

_____

_____

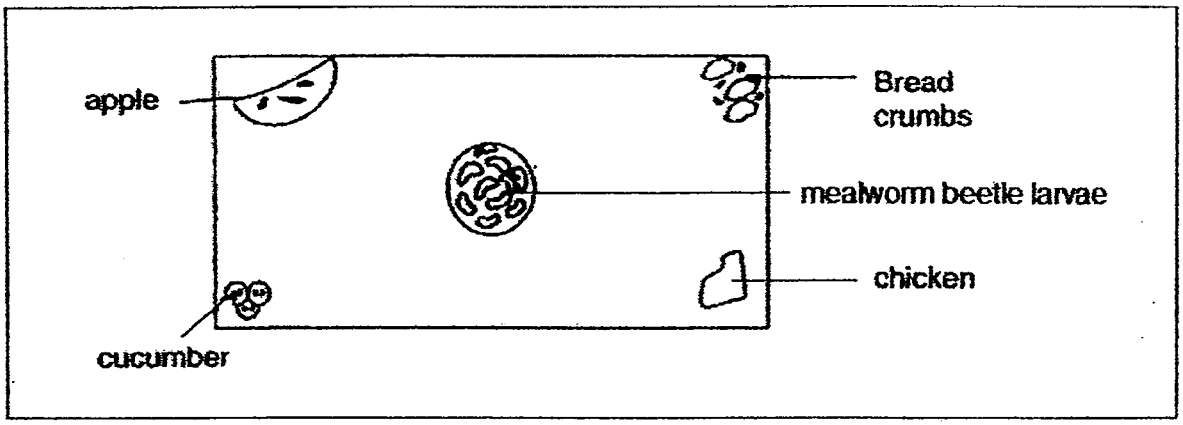
The experiment is repeated using only set-up A. Set-up A is placed in a dark room.

(c) What will happen to the plants after two weeks? Why? (1 m)

_____

_____

32. Jerry carried out an experiment with ten mealworm beetle larvae. The larvae were placed in the centre of a tray as shown in the diagram below. The same amount of food was placed at each corner.




After half an hour, the number of larvae at each corner was counted. The results were then recorded in the table below.

| Distance of food from the larvae(cm) | Type of food | Number of larvae after half an hour |
|---|---|---|
| 20 | apple | 3 |
| 20 | bread crumbs | 5 |
| 20 | cucumber | 2 |
| 20 | chicken | 0 |

(a) What was the changed variable in the experiment? (1 m)

_____

_____

(b) Based on the table, which type of food do you expect to be eaten up completely first? Why? (2 m)

_____

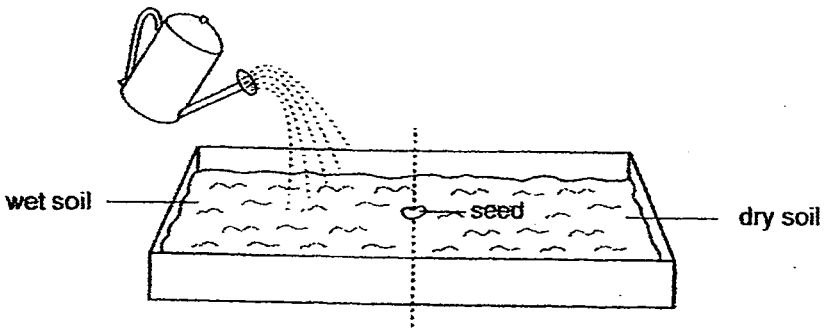
_____

(c) In terms of their life cycle, state one way in which the mealworm beetle larva is different from the cockroach nymph. (1 m)

_____

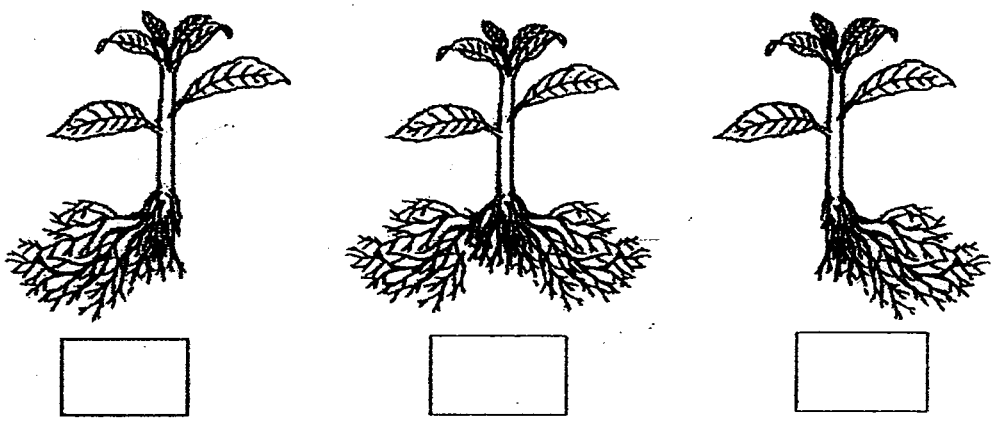
_____

33. Susan planted a seed in the centre of a large, rectangular box. She placed the box in a sunny garden and watered the soil daily. However, she only watered the left half of the soil in the box, as shown below.




After two months, Susan dug up the plant and examined the roots.

(a) Put a tick (✓) in the correct box below to show how you would expect the roots to grow. (1 m)



(b) Explain your answer to part (a). (1 m)

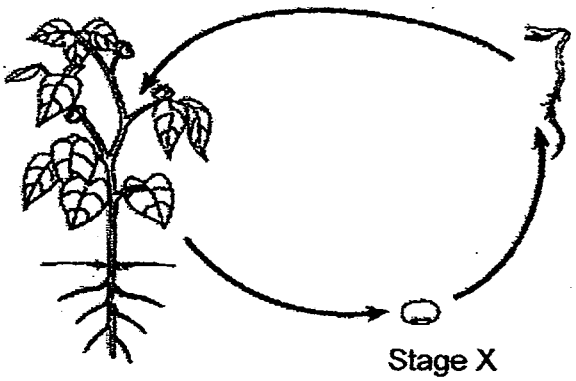
_____

_____



2

The diagram below shows the life cycle of the plant that Susan grew.

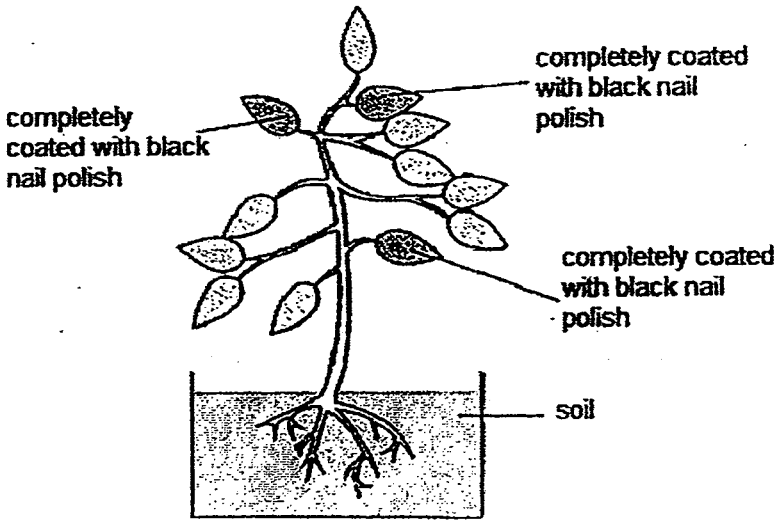



(c) What does the plant in Stage X require in order to germinate? (1 m)

_____

_____

34. Siti carried out an experiment on the plant shown below. She painted three of its leaves with black nail polish.




(a) After two weeks, what will happen to the leaves that were covered with black nail polish? (1 m)

_____

_____

(b) Explain your answer in part (a). (1 m)

_____

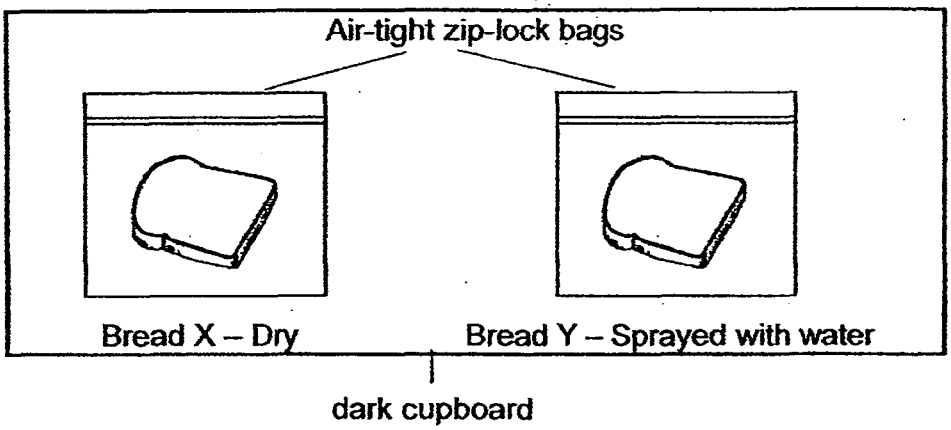
_____

Siti carried out a second experiment to find out whether the number of leaves would affect the amount of water absorbed by a plant.

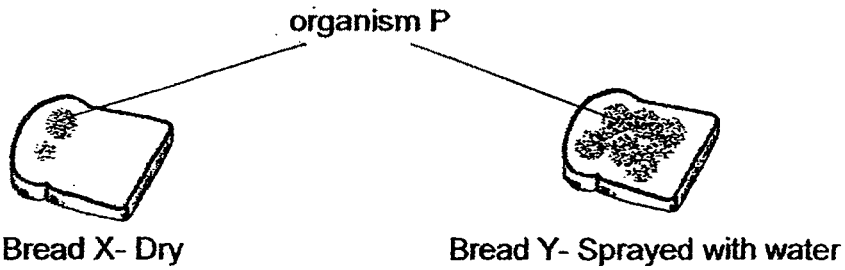
(c) Put a tick (✓) in the correct boxes to indicate the variables that she should keep the same or change in order to carry out her experiment.(1 m)

| | Variables | Keep the same | Change |
|---|---|---|---|
| i | Amount of water given | ✓ | |
| ii | Number of leaves on each plant | | ✓ |
| iii | Location of each plant | ✓ | |
| iv | Type of plant | ✓ | |

35. Benedict placed two similar slices of fresh bread in two similar air-tight zip-lock bags. He left both bags in a dark cupboard for one week.




After one week, he noticed organism P growing on both slices of bread as shown below.




(a) Identify organism P growing on the bread slices. (1 m)

_____

(b) From the diagram, what can be observed about the patches of organism P growing on both Bread X and Bread Y? (1 m)

_____

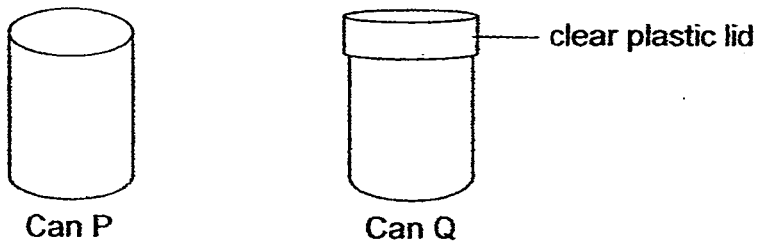
_____

(c) Can organism P be classified in the same group of living things as a sunflower? Why? (1 m)

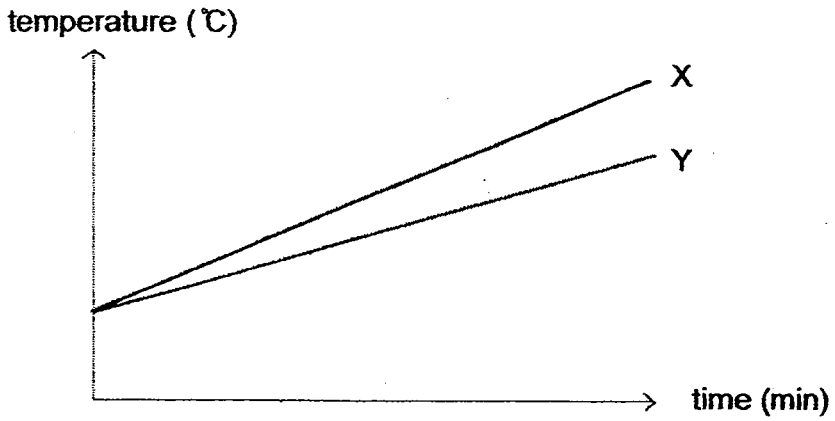
_____

_____

36. The diagram shows two cans made of the same material placed in a school garden under the hot sun for two hours. Can P is not covered while Can Q is covered with a clear plastic lid.




The temperatures of the air in both cans are recorded as shown in graphs X and Y below.




(a) Fill in the blanks below correctly with the letters 'X' and 'Y' to show the change in the temperature of air in Can P and Can Q. (1 m)

Can P: _____

Can Q: _____

(b) Explain your answer in part (a) for Can Q. (1 m)

_____

_____

37. The table below shows some properties of three types of material.

| Property | Material R | Material S | Material T |
|---|---|---|---|
| Flexible? | ✓ | X | X |
| Lightweight? | X | ✓ | X |
| Waterproof? | ✓ | ✓ | ✓ |

Rena wants to bring some crisp biscuits to a picnic. She wants a plastic container that can ensure that the biscuits will not be crushed so easily into pieces.

(a) Which material, R or S, is more suitable for Rena's use? Give two reasons to support your answer based on the table given. (2 m)

_____

_____

_____

(b) Material T is most suitable to be used to make the windscreen of a car. Identify another physical property of material T. (1 m)

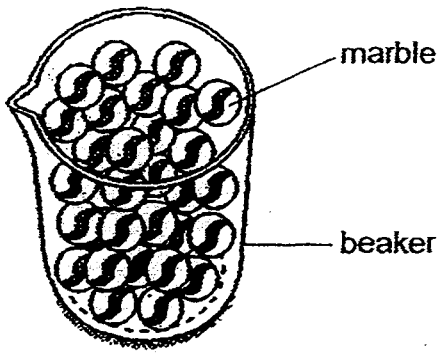
_____

_____



3

38. James filled a 500 ml beaker completely with marbles as shown.



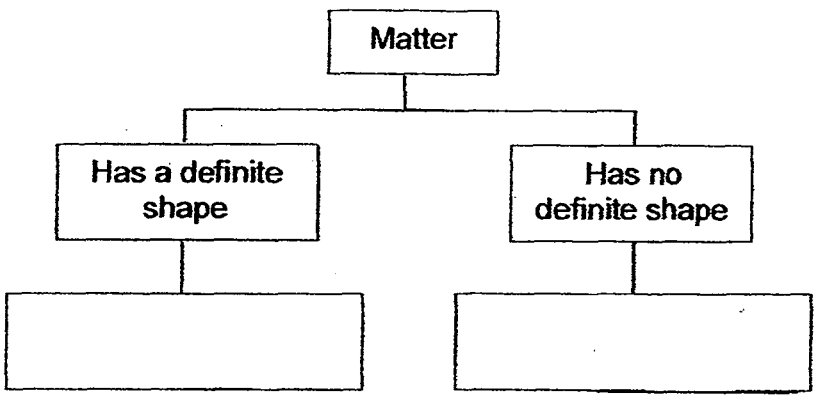

He poured 20 ml of water into the beaker containing the marbles.

(a) Would the water overflow from the beaker? Explain your answer. (1 m)

_____

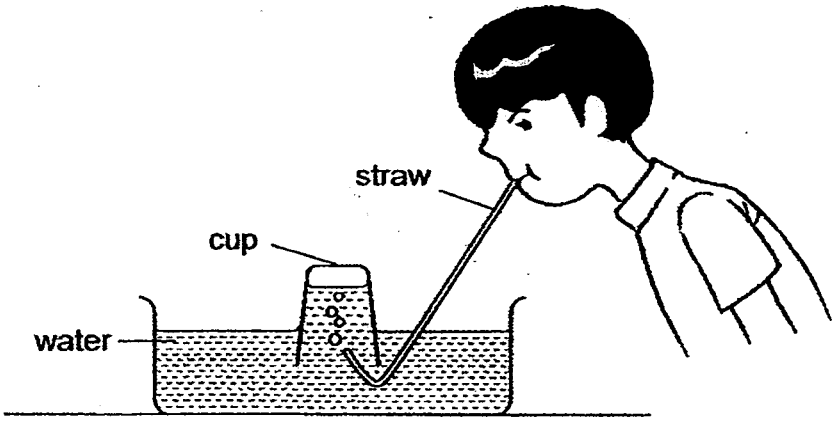
_____

(b) Complete the boxes given below by writing the words, "marbles" and "water" in the correct box. (1 m)




2

39. Jinxiang filled a cup with water and inverted it into a basin of water as shown below. Using a bendable straw, he then blew air bubbles into the cup.




(a) Jinxiang observed that the water level in the cup decreased as he blew bubbles into it. Explain why. (1 m)

_____

_____

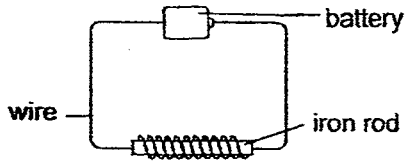
(b) What happened to the water level in the basin as Jinxiang blew bubbles into the cup? Why was this so? (1 m)

_____

_____

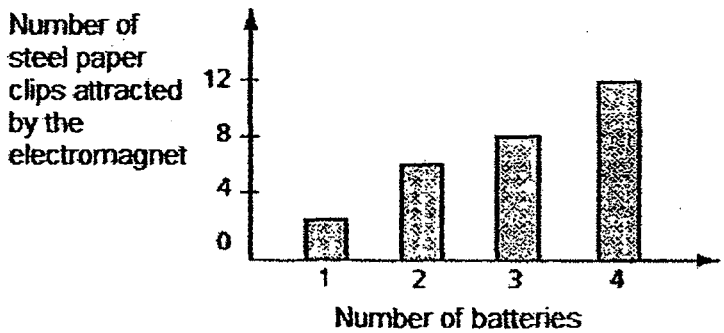
2

40. Ron conducted an experiment to find out how the number of batteries affects the magnetic strength of an electromagnet.




He changed the number of batteries and counted the number of steel paper clips attracted to the electromagnet.
At the end of his experiment, he plotted a graph as shown below.

Results for Experiment 1




(a) Based on the graph, state the relationship between the number of batteries used and the number of steel paper clips attracted to the electromagnet. (1 m)

_____

_____

Then, Ron changed one more variable and carried out his experiment again. He recorded his readings in the table below.

Results for Experiment 2

| **Number of batteries used** | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| **Number of steel paper clips attracted** | 6 | 10 | 16 | 20 |

He observed that the number of steel paper clips attracted had increased.

(b) What could Ron have done to increase the number of steel paper clips attracted if the iron rod and the number of batteries used remained the same? (1 m)

_____

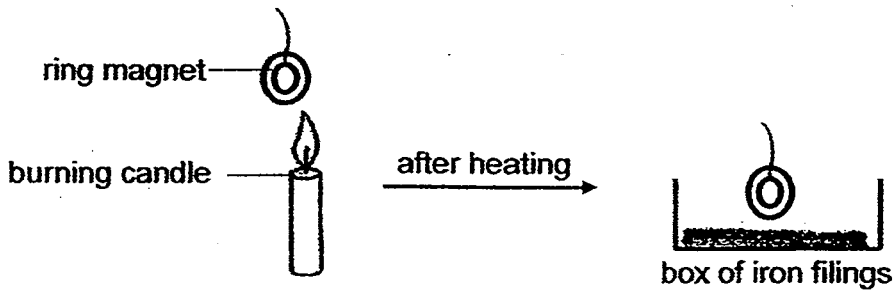
_____

(c) When Ron replaced the iron rod with a copper rod in experiment 2, he could not attract any steel paper clips at all. Why was this so? (1 m)

_____

_____

Ron set up a third experiment to find out if the magnetic strength of a ring magnet would be affected by heating.




After heating the ring magnet as shown above, he placed it in a box of iron filings. Then he recorded the mass of the iron filings attracted to the ring magnet in the table below.

| Duration the magnet was heated (minute) | Mass of iron filings attracted (g) |
|---|---|
| 0 | 30 |
| 2 | 26 |
| 4 | 20 |
| 6 | 12 |
| 8 | 6 |

(d) Based on the table, what can Ron conclude about the magnetic strength of the ring magnet after the magnet was heated? (1 m)

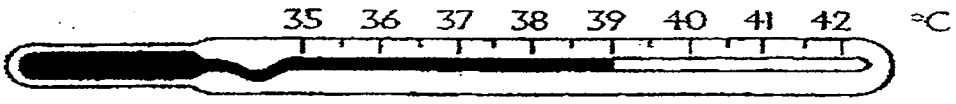
_____

_____



2

41. The diagram below shows a thermometer.




(a) What is the reading on the thermometer? (1 m)

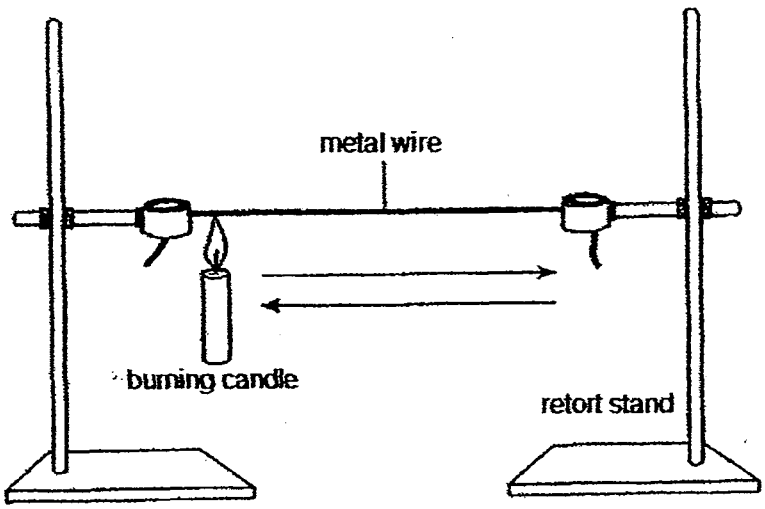
_____

(b) Name another thermometer that can measure a temperature that is above 42 °C. (1 m)

_____

2

42. A wire was placed between two retort stands as shown below.




A candle was lit and the flame was moved along the length of the wire several times.

(a) What would happen to the length of the metal wire after the flame heated it for some time? (1 m)

_____

_____

(b) Explain your answer in part (a). (1 m)

_____

_____

The table below shows water in its different states as it interacts with its surroundings.

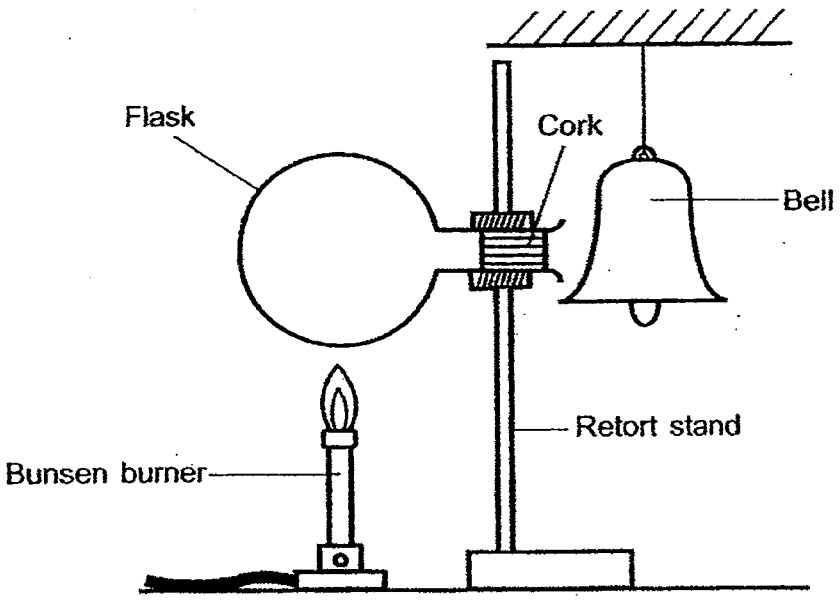
(c) For each process, put a tick in the correct column to indicate whether water gains or loses heat to the surroundings. (1 m)

| | Process | Water gains heat | Water loses heat |
|---|---|---|---|
| i) | Water freezes into ice. | | |
| ii) | Hot water cools down on the table. | | |

3

43. Terry set up a flask near a bell as shown below. The flask is stoppered with a cork that is placed near to the bell. He then heated the flask by using a bunsen burner.

Experiment 1




(a) What will happen to the cork and the bell if Terry heats the flask for five minutes? (1 m)

_____

_____

(b) Explain your answer in part (a). (1½ m)

_____

_____

_____

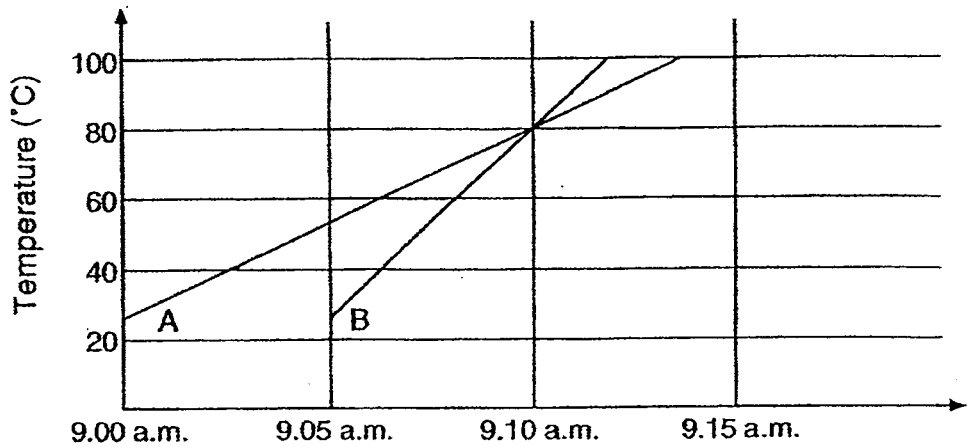
(c) When Terry used a stronger bunsen flame, the time taken for the changes in his set-up to occur was shorter than experiment 1 shown above. Why? (1 m)

_____

_____

44. Two beakers, A and B, containing 300 ml of water each were heated. The flame for Beaker A was lit five minutes before the flame for Beaker B was lit.

The graph below shows the changes in the temperature of the water in beakers A and B.




(a) Based on the graph, which beaker reached the boiling point first? (½ m)

_____

After the water in both beakers had boiled, the beakers were placed in the classroom. Anna recorded the temperature of the water in both beakers in the table shown below.

| | **Temperature of water (°C)** | **Temperature of classroom (°C)** |
|---|---|---|
| Start of experiment | 100 | 30 |
| Six hours later | 30 | 30 |

(b) What is the temperature of the water after six hours? Why is this so? (1 m)

_____

_____

(c) The water used in part (b) was then left in the freezer for one day. What is the change in the state of matter of water at the end of the experiment? (1 m)

From _____ state to _____ state.

**EXAM PAPER 2015**
**LEVEL : PRIMARY 4**
**SCHOOL : RED SWASTIKA SCHOOL**
**SUBJECT : SCIENCE**
**TERM : SA1**

| Q1 | Q2 | Q3 | Q4 | Q5 | Q6 | Q7 | Q8 | Q9 | Q10 |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 1 | 4 | 2 | 1 | 3 | 2 | 3 | 2 | 1 |
| Q11 | Q12 | Q13 | Q14 | Q15 | Q16 | Q17 | Q18 | Q19 | Q20 |
| 4 | 2 | 4 | 3 | 4 | 2 | 4 | 4 | 4 | 3 |
| Q21 | Q22 | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Q29 | Q30 |
| 1 | 3 | 3 | 4 | 2 | 3 | 2 | 1 | 2 | 2 |

Q31a. The goldfish is likely to die in two weeks.

Q31b. The goldfish does not have anything to eat, as it could not make its own food. However, the hydrilla could make its own food.

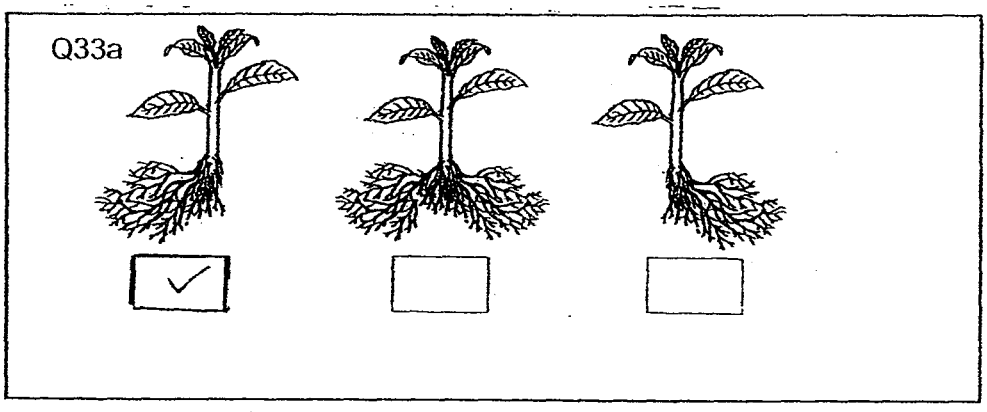
Q31c. The plant will die. The plant has no sunlight to make food.

Q32a. Type of food.

Q32b. Bread crumbs. The most number of larvae were found there which shows that the larvae prefer bread crumbs the most.

Q32c. The young of the mealworm beetle does not resemble its adult but the young of the cockroach resembles its adult.

Q33a. **SEE PICTURE.** Q33b. Since the roots take in water, the roots will grow towards the left as there is more water available there.




**Q34c. SEE PICTURE**

| | Variables | Keep the same | Change |
|---|---|---|---|
| i | Amount of water given | ✓ | |
| ii | Number of leaves on each plant | | ✓ |
| iii | Location of each plant | ✓ | |
| iv | Type of plant | ✓ | |

Q33c. The plant in stage X needs air, water and warmth to germinate.

Q34a. The leaves will dry up

Q34b. Black nail polish prevents air from entering the leaves. Thus, without air to breathe, the leaves will wither. **Q34c. SEE PICTURE on page 1**

Q35a. Fungi Q35b. Bread Y has more patches of organism P than bread X.

Q35c. No. Organism P / mould is a fungi but a sunflower.

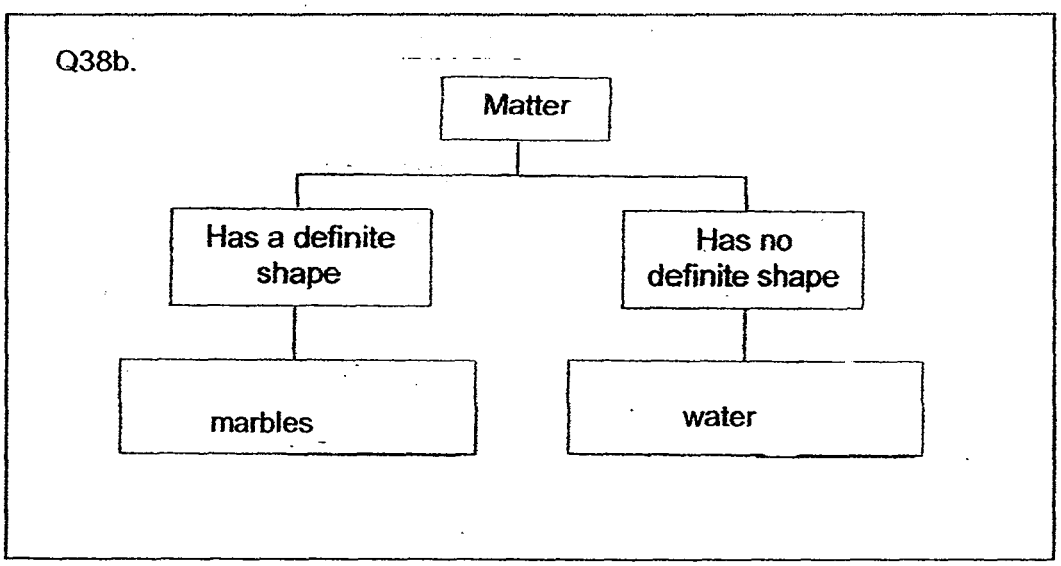
Q36a. Can P: Y Can Q: X

Q36b. Can Q has a lid to cover the can. The hot air in Can Q cannot escape easily. Therefore, the temperature is higher.

Q37a. Material S, material S is not flexible and it is waterproof.

Q37b. Material T allows light to pass through.
Q38a. No, the water could not overflow as the water will occupy the tiny spaces between the marbles. **Q38b. SEE PICTURE**

Q38b.




Q39a. When air was blown into the cup, air took up the space previously occupied by water in the cup.

Q39b. The water level in the basin will increase as Jin Xiang blew air into the cup and air takes up space.

Q40a. As the number of batteries used increased, the number of steel paper clips attracted to the electromagnet increased.

Q40b. Ron increased the coils around the iron rod.

Q40c. Copper is anon-magnetic material and thus, cannot be magnetized to attract the steel paper clips.

Q40d. The magnetic strength had increased.

Q41a. 39°C

Q41b. Laboratory thermometer.

Q42a. The length of the metal wire would be longer.

Q42b. The metal wire gained heat and expanded.

Q42c. (i) Water freezes into ice – Water loses heat
Q42c. (ii) Hot water cools down on the table. – Water loses heat.

Q43a. The cork will fly out of the flask and then hit the bell.

Q43b. The air in the flask gained heat from the burner and expanded. The expanded air pushed the cork out of 6the bottle, causing the cork to hit the bell.

Q43c. The air gained heat faster and expanded faster.

Q44a. Beaker B.

Q44b. 30°C. Heat travelled from the warm water to the cooler surroundings in the classroom until both reach the same temperature.

Q44c. From liquid state to solid state.

**THE END**