# AI TONG SCHOOL

## 2010 SEMESTRAL ASSESSMENT (1)

## PRIMARY SIX SCIENCE

**DURATION : 1hr 45 min**

**DATE: 13 May 2010**

## INSTRUCTIONS

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

**Name :** _____ (  )

**Class : Primary** _____

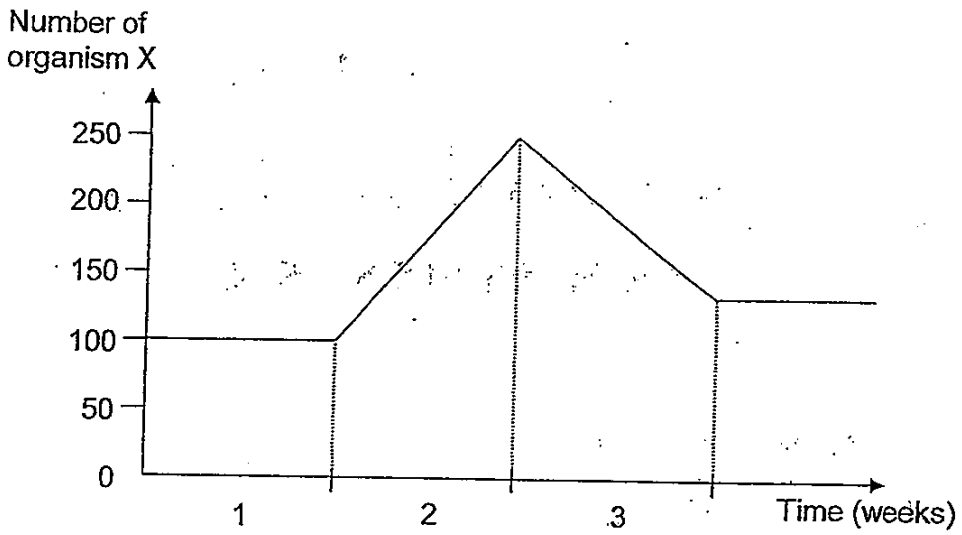
**Parent's Signature :** _____

**Date :** _____

| MARKS | / 100 |
|---|---|

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

1. The graph below shows how the population of organism X changes over a period of 3 weeks.




Which of the following statements are true?

A The population of X remained the same for the first 2 weeks.
B The population of X is greater in Week 3 than in Week 1
C The population of X increased after Week 1.
D ~~A prey~~ of X ~~was~~ introduced in Week 2.
predators were

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

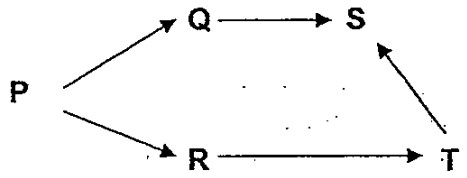
2. The table below shows the observations made by Jason in 2 habitats, A and B.

| Habitat A | Habitat B |
|---|---|
| The habitat is dark, warm and humid. | The habitat is sunny, windy and wet. |
| Spiders and millipedes are found. | Tadpoles and lotus plants are found. |

What could habitats A and B be?

| | Habitat A | Habitat B |
|---|---|---|
| (1) | Field | Mangrove Swamp |
| (2) | Garden | Seashore |
| (3) | Single Plant | Ocean |
| (4) | Rotting Log | Pond |

3. In the diagram below, **P, Q, R, S** and **T** represent different organisms living together in a certain community.




Which of the following statements are true of the food web?

A If R is removed, T will eventually die.
B S is likely to be a carnivore.
C P is a producer.
D R is a predator.

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

4. Animals have different adaptations that help them to survive in their natural habitats. Which one of the following correctly states the structural and behavioural adaptations of the organism mentioned?

| | Organism | Structural | Behavioural |
|---|---|---|---|
| (1) | Polar Bear | Has a layer of blubber to keep itself warm during winter | Has a layer of fur to insulate against the cold |
| (2) | Puffer Fish | Blows itself up to frighten predators | Uses spines to attract preys |
| (3) | Snow Fox | Has big ears to prevent heat loss | Hibernates during winter |
| (4) | Tiger | Has sharp eyesight to hunt | Hide to prevent being detected by its preys before pouncing on them |

5. Which one of the following adaptations enables the shark to survive in its habitat?

(1) It breathes through lungs.
(2) It uses its tail and fins to swim in water.
(3) It has small and blunt teeth for chewing.
(4) It has a streamlined body shape to camouflage in the water.

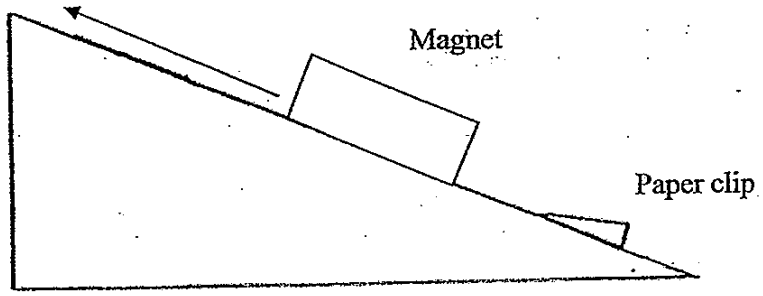
6. Which one of the following is **not** an effect of deforestation on the environment?

(1) Animals lose their source of food.
(2) Erosion of the soil by wind and rain.
(3) Habitats of organisms are destroyed.
(4) An increase in the number of trees planted.

7. Which one of the following actions **does not** involve both a push and a pull force?

(1) Rowing a boat.
(2) Erasing the whiteboard.
(3) Lifting a book from the ground.
(4) Chopping a piece of meat into fine pieces.

8. When Danny placed a magnet at the top of the ramp, as shown in the diagram below, the paper clip moved up the ramp and became attached to the magnet.




What are the forces acting on the paper clip as it moves along the ramp?

A Frictional force
B Magnetic force
C Gravitational force
D Elastic Spring force

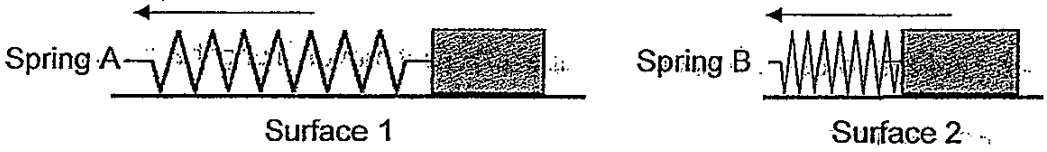
(1) A and B only
(2) A and C only
(3) A, B and C only
(4) B, C and D only

9. The picture below shows a boy wall-climbing.

Which two forces help him to climb up the wall?

(1) Frictional and gravitational force
(2) Magnetic and gravitational force
(3) Frictional force and the force exerted by the rope
(4) The force exerted by the rope and magnetic force

10. Two identical blocks are placed on surfaces 1 and 2 as shown in the diagram below.

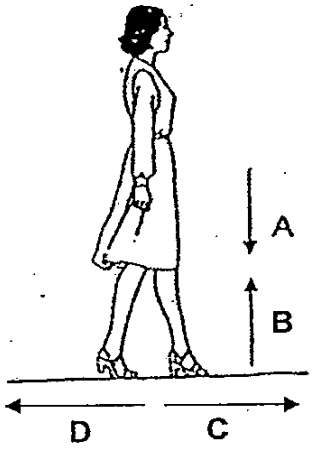



A pulling force is applied on identical Springs, A and B, which are attached to the blocks. Spring A stretches twice as much as Spring B when the block is pulled along the surfaces. Which of the following statements are likely to be true?

A The elastic spring force exerted by Spring A on the block is weaker compared to Spring B.
B The elastic spring force exerted by Spring A on the block is stronger compared to Spring B.
C Surface 1 is smoother than Surface 2.
D Surface 1 is rougher than Surface 2.

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

11. In the diagram below, which arrow represents friction acting between Mrs Tan's shoes and the ground while she is walking?




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

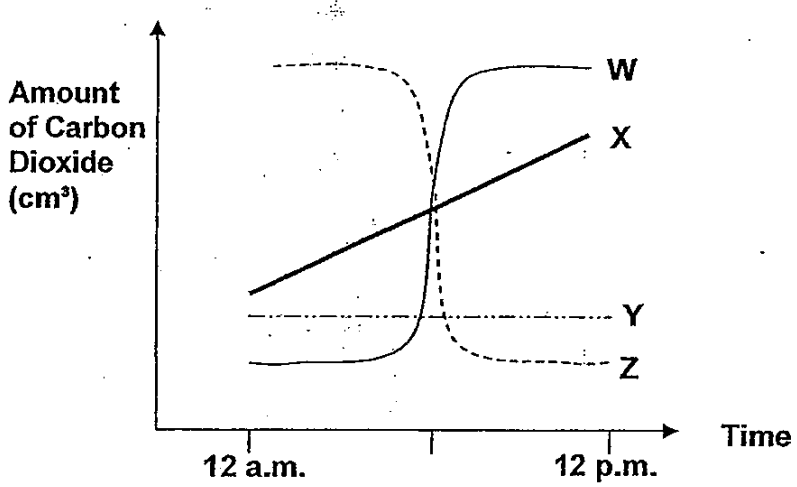
12. Brian put a drop of iodine on 4 different items using a dropper. The results were recorded in the table below.

| Item | Colour of Iodine on different items |
|---|---|
| A | Blue-black |
| B | Blue-black |
| C | Yellowish-brown |
| D | Blue-black |

Which one of the following correctly represents the items tested?

| | A | B | C | D |
|---|---|---|---|---|
| (1) | Noodles | Mashed Potato | Fish | Bread |
| (2) | Banana | Cake | French Fries | Cooked rice |
| (3) | Carrot | Potato | Cake | Noodles |
| (4) | Cooked rice | Fish | Pork | Potato |

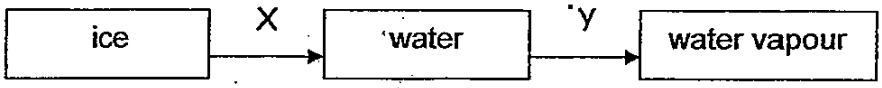
13. Andy placed a potted plant beside the window in his room. Sunlight streamed through the window every day. He used a data logger to measure the level of carbon dioxide around the plant.




Which one of the line graphs shows the most likely amount of carbon dioxide around the plant from 12a.m. to 12 p.m.?

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

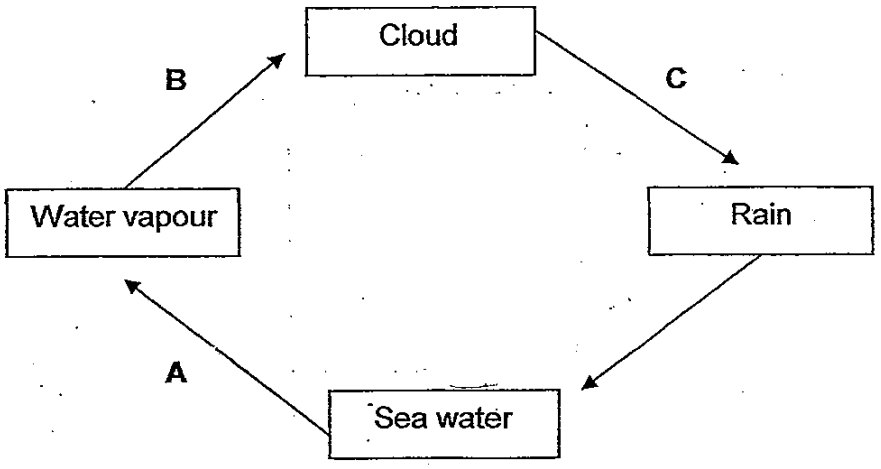
14. Water can change from one state to another as shown below.




X and Y represent the processes in which water changes from one state to another. Which one of the following statements is true about processes X and Y?

(1) Ice and water gain heat during processes X and Y.
(2) Ice and water lose heat during processes X and Y.
(3) Ice gains heat during process X but water loses heat during process Y.
(4) Ice loses heat during process X but water gains heat during process Y.

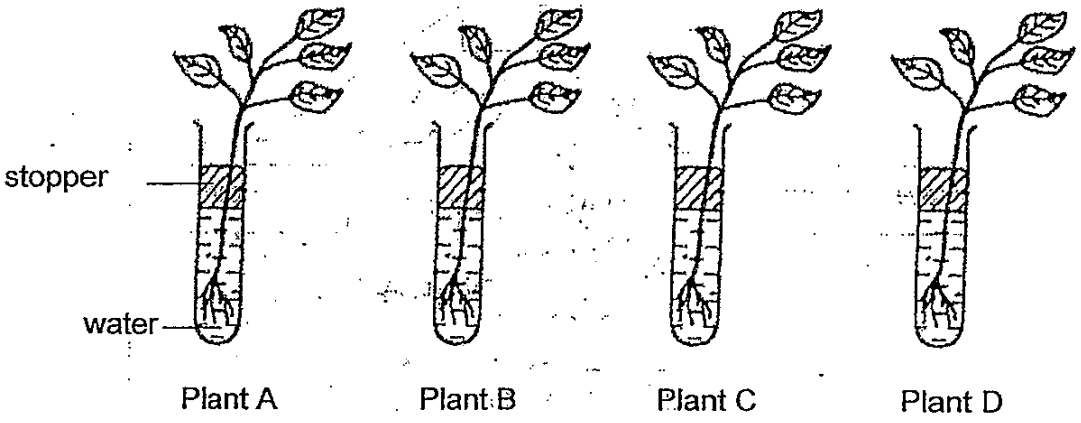
15. The diagram below shows the water cycle.




Which one of the following is correct?

| | Evaporation occurred at | Condensation occurred at |
|---|---|---|
| (1) | A | B |
| (2) | A | C |
| (3) | B | C |
| (4) | C | B |

16. Four similar plants were placed in test-tubes as shown in the diagram below.




Some of the plants had their leaves coated with oil to prevent loss of water. Each plant was weighed in its test-tube at the start of the experiment and then another time 5 days later. The results were shown in the table below.

| | Mass of plant in its test-tube (g) | |
|---|---|---|
| | **At the start of the experiment** | **At the end of the experiment, 5 days later** |
| Plant A | 105 | 103 |
| Plant B | 107 | 84 |
| Plant C | 112 | 110 |
| Plant D | 119 | 97 |

Which of the plants had their leaves coated with oil?

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

17. Mandy prepared four similar containers A, B, C and D. She placed the same amount of cotton wool and five bean seeds in each container. The containers were placed in different places with different conditions as shown in the table below.

| Container | Air | Water | Light | Where the containers were placed |
|---|---|---|---|---|
| A | Yes | Yes | Yes | In an open area |
| B | Yes | Yes | No | In a cupboard |
| C | Yes | Yes | Yes | On the kitchen table |
| D | Yes | Yes | No | In the freezer |

Based on the information above, in which container(s) would the seedlings germinate?

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

18. Jane observed two cells and recorded the results in the table below.

| Cell parts | Cell A | Cell B |
|---|---|---|
| Cell wall | Absent | Present |
| Cell membrane | Present | Present |
| Cytoplasm | Present | Present |
| Nucleus | Present | Present |
| Chloroplasts | Absent | Present |

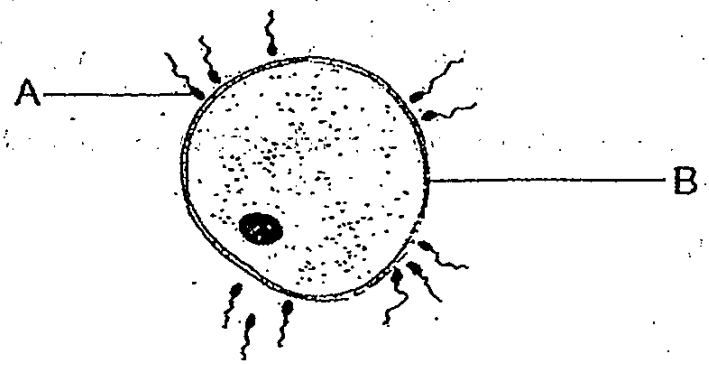
Based on the above table, what conclusion can Jane arrive at?

(1) Cell A is a cheek cell but Cell B is a yeast cell.
(2) Cell A is an animal cell and Cell B is a plant cell.
(3) Cell A is a red blood cell and Cell B is a white blood cell.
(4) Cell A is from the root of a plant and Cell B is from the leaf of a plant.

19. Tubes grow from the pollen grains towards the ovary to pass _____.

(1) the pollen grains to the ovules
(2) nutrients and water to the ovules
(3) the female egg cells to the ovules
(4) the male reproductive cells to the ovules

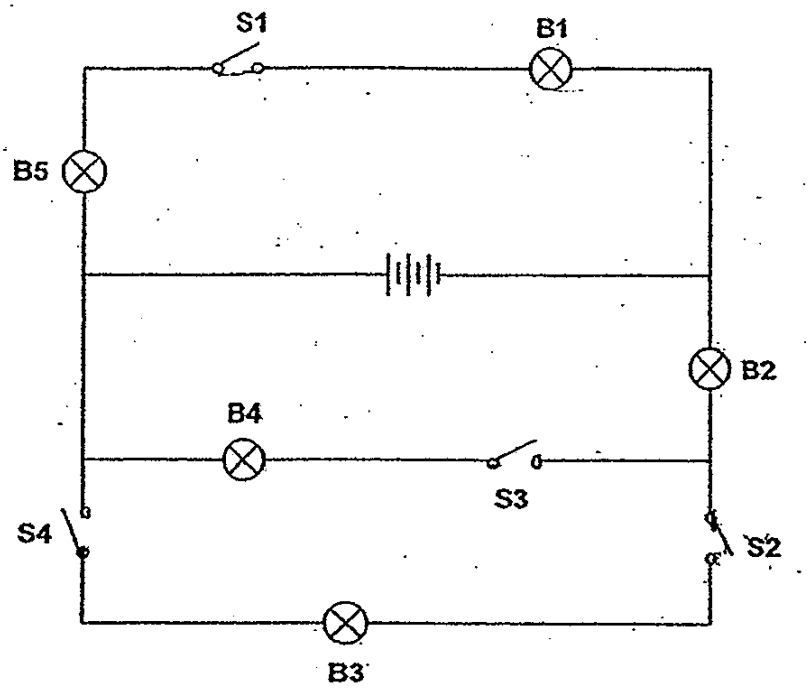
20. The diagram below shows a process of fertilisation in humans. During this process, A fuses with B.




Which of the following correctly identifies the type of fertilisation and where parts A and B are produced in the human reproductive system?

| | **Type of fertilization** | **A** | **B** |
|---|---|---|---|
| (1) | External fertilisation | Ovaries | Testes |
| (2) | External fertilisation | Testes | Ovaries |
| (3) | Internal fertilisation | Testes | Ovaries |
| (4) | Internal fertilisation | Ovaries | Testes |

21. The circuit diagram shown below consists of 5 bulbs, 4 switches and 3 batteries.




Which one of the following statements about the circuit shown above is correct?

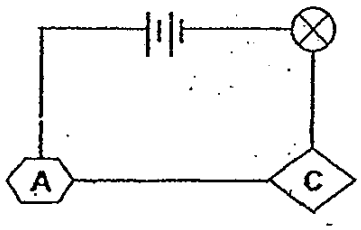
(1) When S1, S2 and S3 are open and S4 is closed, only B2, B3 and B4 would light up.

(2) When S3 and S4 are closed and S1 and S2 are open, only B2, B3 and B4 would light up.

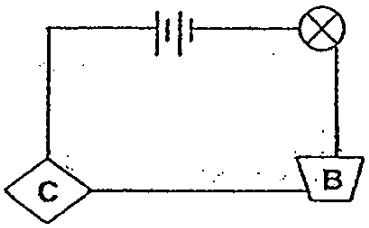
(3) When S2, S3 and S4 are open and S1 is closed, only B1 and B5 would light up.

(4) When S2 and S4 are closed and S1 and S3 are open, only B2 and B4 would light up.

22. Jose set up the circuits below using a bulb, 2 batteries and 3 objects A, B and C.

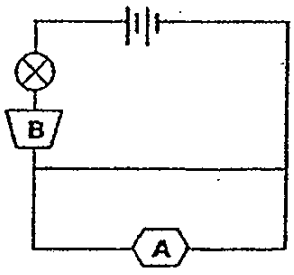



**Bulb lights up**

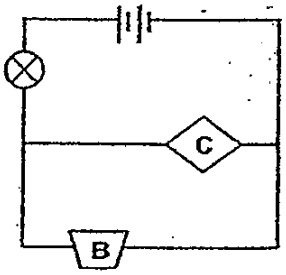



**Bulb does not light up**

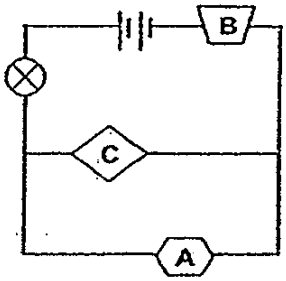
He used the objects A, B and C, again to form the circuits below.




**Circuit E**




**Circuit F**

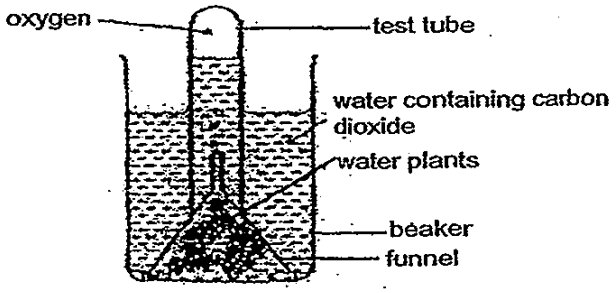



**Circuit G**

In which of the circuits above would Jose see the bulb lighting up?

(1) Circuit F only
(2) Circuit E and G only
(3) Circuit F and G only
(4) Circuit E, F and G

23. Shannon collected 4 water samples A, B, C and D, from different parts of the same river. Using the same amount of each water sample and water plants, she set up the following apparatus and placed the 4 set-ups under the same light source for a day.




At the end of the experiment, Shannon compared the amount of oxygen produced by the water plants and recorded her observations in the table below.

| Water sample | Amount of oxygen collect ($cm^3$) |
|---|---|
| A | 35 |
| B | 18 |
| C | 15 |
| D | 20 |

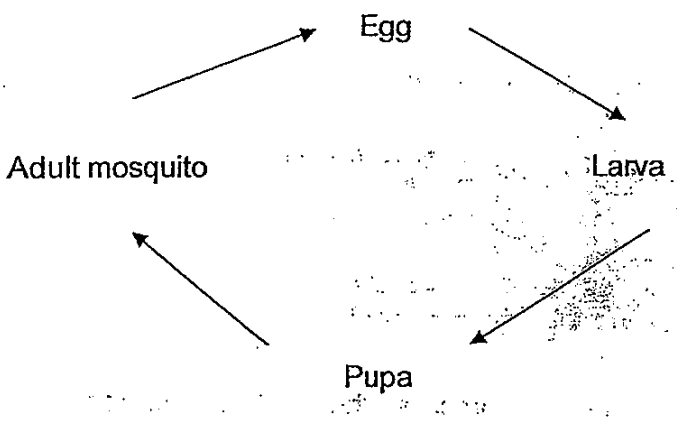
Shannon made the following conclusions based on the information gathered in the table above:

A The river is most polluted at the point where sample A is collected.
B The water samples used affect the rate of photosynthesis of the water plants.
C The water plants in all the ~~water~~ set-ups photosynthesised at different rates.
D Sunlight is the only factor that affects the rate of photosynthesis of the water plants.

Based on the above results of Shannon's experiment, which of her conclusions are correct?

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

24. The diagram below shows the life cycle of a mosquito.




Which one of the following groups of animals has a similar life cycle as the mosquito?

(1) Moth and fruit fly
(2) Spider and housefly
(3) Beetle and dragonfly
(4) Grasshopper and goldfish

25. Which of the following statements are true about the large intestine of a human being?

A Water is absorbed from the undigested food.
B It is shorter than the small intestine.
C Most of the food is digested here.
D The undigested food is passed into the rectum.

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

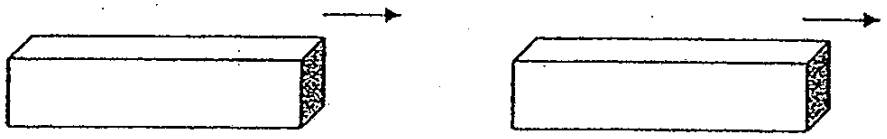
26. Peter dropped 2 different kinds of fruits, Fruit X and Fruit Y from the same height. He recorded the time each fruit took to land on the ground. The table below shows the result of the experiment.

| No. of attempts | Time taken (in seconds) | |
|---|---|---|
| | **Fruit X** | **Fruit Y** |
| 1st | 0.9 | 3.9 |
| 2nd | 1.0 | 4.1 |
| 3rd | 1.1 | 4.0 |

What are Fruit X and Fruit Y likely to be?

| | **Fruit X** | **Fruit Y** |
|---|---|---|
| (1) | Rubber | Angsana |
| (2) | Rambutan | Tomato |
| (3) | Lalang | Strawberry |
| (4) | Chilli | Pong Pong |

27. When Magnet A was brought near Magnet B, Magnet B moved away from Magnet A as shown in the diagram below.



**Magnet A** **Magnet B**

What can we conclude about Magnet A and B?

(1) Magnet A has stronger magnetism than Magnet B.
(2) Magnet B has a stronger magnetism than Magnet A.
(3) The like poles of Magnet A and Magnet B are facing each other.
(4) The unlike poles of Magnet A and Magnet B are facing each other.

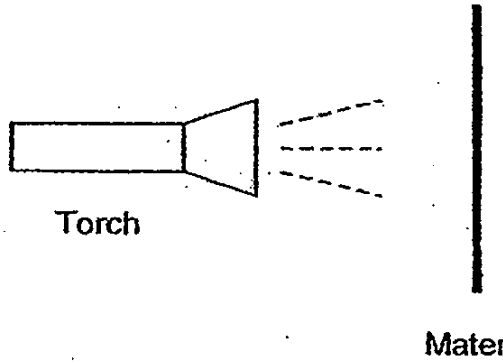
28. The table below shows how some objects have been classified based on certain properties of the materials.

| Group X | Group Y |
|---|---|
| Iron nail | Crystal |
| Steel plate | Frosted glass |
| Copper coin | Tracing paper |
| Vanguard sheet | Clear cling wrap |

Which of the following best describe the properties of the materials?

| | Group X | Group Y |
|---|---|---|
| (1) | Metals | Non-metals |
| (2) | Magnetic | Non-magnetic |
| (3) | Conductors of electricity | Non-conductors |
| (4) | Does not allow light to pass through | Allow light to pass through |

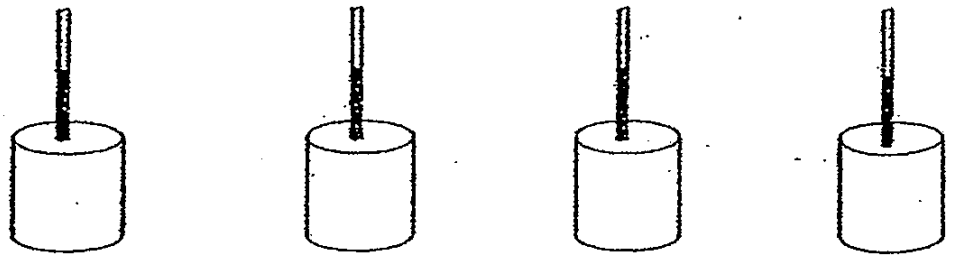
29. Samuel conducted an experiment using four different materials and a torch. She placed the material in front of the torch, one at a time, and recorded her observations as shown in the table below.




Which one of her observations is recorded **wrongly**?

| | Object | Does it allow light to pass through? |
|---|---|---|
| (1) | Ceramic tile | No |
| (2) | Frosted window pane | Yes |
| (3) | Wooden block | No |
| (4) | Mirror | Yes |

30. Timothy carried out an experiment to investigate the effect of the Sun's heat on paper of various colours. He wrapped 4 identical tin cans with papers of different colours, W, X, Y and Z. A thermometer was placed in each container to measure the temperature of air in it. All 4 cans were placed under the Sun.



Coloured paper W | Coloured paper X | Coloured paper Y | Coloured paper Z

He recorded the temperature readings of all the thermometers in the table below.

| | Time interval (min) | | | | |
|---|---|---|---|---|---|
| **Can wrapped with coloured paper** | **0** | **5** | **10** | **15** | **20** |
| W | 30°C | 33.5°C | 35°C | 37.5°C | 38.5°C |
| X | 30°C | 32°C | 34.5°C | 37°C | 40°C |
| Y | 30°C | 31.5°C | 33.5°C | 35°C | 36.5°C |
| Z | 30°C | 30.5°C | 31.5°C | 32.5°C | 33.5°C |

Based on his results, which colours W, X, Y and Z are most suitable to make clothing to keep us cool?

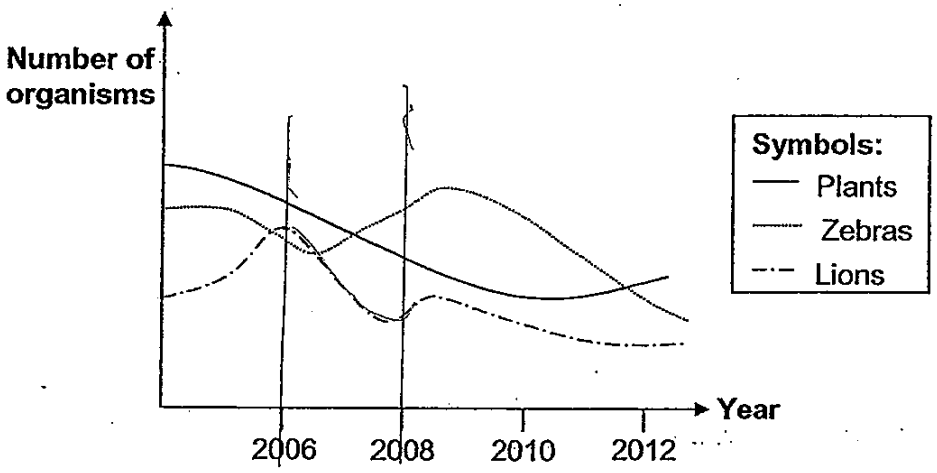
(1) W
(2) X
(3) Y
(4) Z

Name: _____ (  )

Class: P6 (  )

**Section B: 40 marks**
**Read the questions carefully and write down your answers in the spaces provided.**

31. The graph below shows the interdependence of three different populations, namely plants, zebras and lions.




(a) What does the graph tell you about the population of lions between 2006 and 2008? [1]

_____

_____

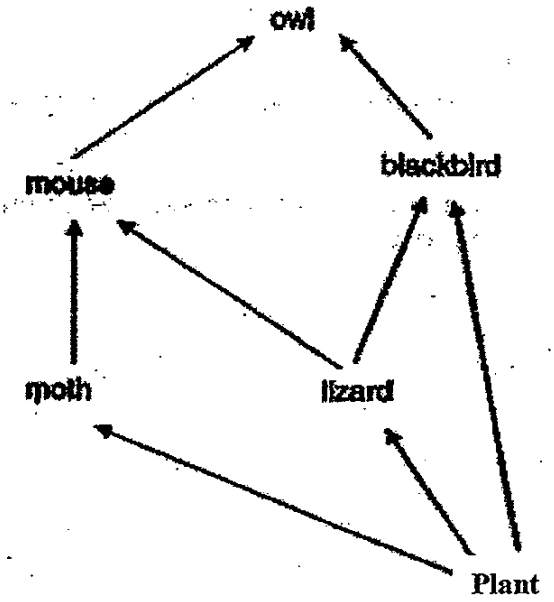
(b) How does the change in the population of lions affect the population of plants between 2006 and 2008? [2]

_____

_____

3

32. Study the food web and answer the questions below.




(a) How many food chains are found in the food web above? [1]

(b) What would happen to the population of moth if all the mice were killed? Why? [2]

3

33. An artic fox has white fur to blend in with its surroundings. It also has small ears to reduce heat loss and dense pads on its paws to enable it to walk on ice easily. It can hide without being detected by its preys before pouncing on them suddenly with its strong and powerful limbs.

Based on the information given, write down two structural adaptations the fox has for living in a cold habitat. [2]

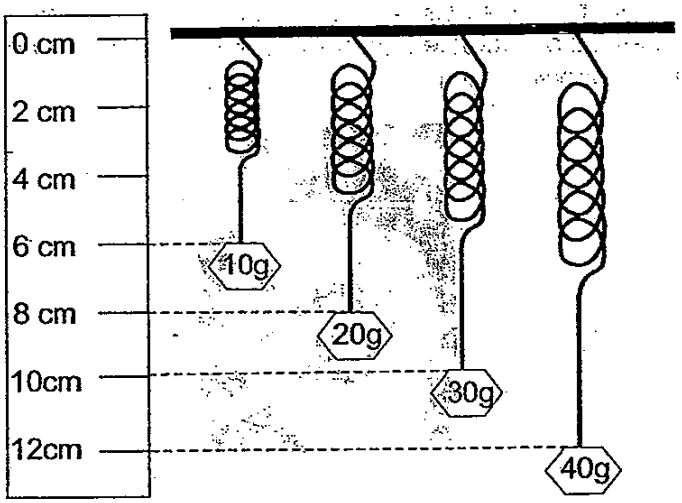
34. Burning of fossil fuels is a human activity which affects the environment.

(a) Give a reason why there is a need to burn fossil fuels. [1]

(b) List one negative effect on the environment when fossil fuels are burned. [1]

4

35. The diagram below shows the length of a spring when different weights were hung.




(a) What is the relationship between the extension of the spring and the weight hung on it? [1]

(b) What forces are acting on the spring when it is stretched by the weights? [1]

(c) What was the original length of the spring? [1]

3

36. The following table shows the results of an investigation to measure the amount of sugar in leaves at different times of the day.

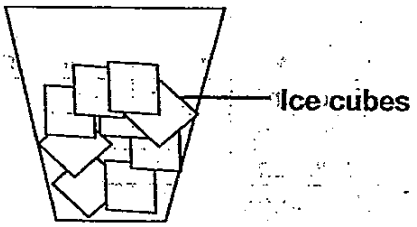
| Time of the Day | Amount of Sugar (g) |
|---|---|
| 6.00 a.m. | 0.8 |
| 8.00 a.m. | 1.0 |
| 10.00 a.m. | 1.3 |
| 12.00 p.m. | 2.1 |
| 2.00 p.m. | 2.0 |
| 4.00 p.m. | 2.0 |
| 6.00 p.m. | 1.8 |

(a) At what time of the day was the amount of sugar in the leaves at a maximum? [1]

(b) Explain why the amount of sugar in the leaves was at the maximum during the time stated in (a). [2]

3

37. A cup was filled with some ice cubes. It was left in a room at 30°C for a period of time.




(a) What was the temperature of the ice when it started to melt? [1]

_____

(b) Explain why the ice started to melt. [1]

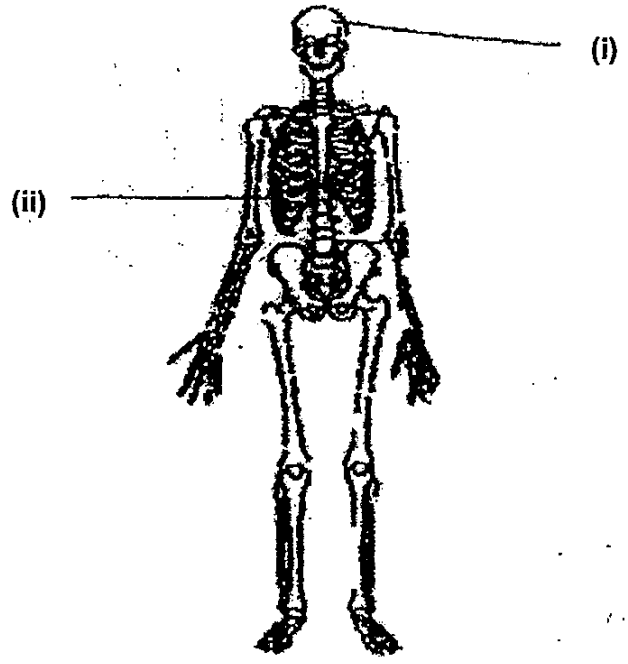
_____

(c) What change of state had taken place? [1]

_____

3

38. The diagram below shows the human skeletal system.




(a) Name (i) and (ii). State their functions. [2]

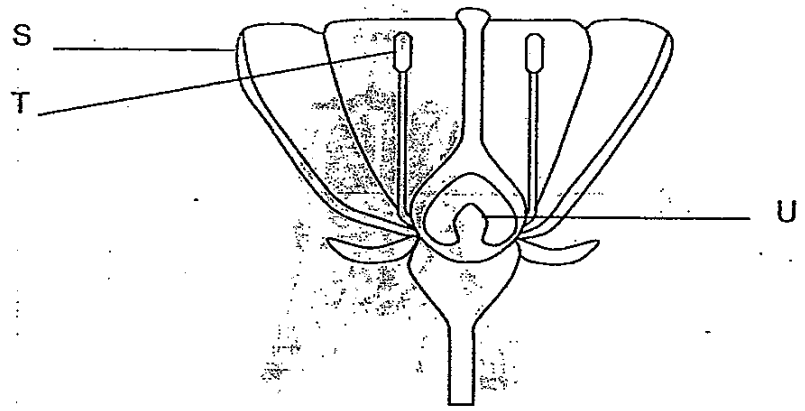
| Part | Name of the part | Function |
|---|---|---|
| (i) | | |
| (ii) | | |

(b) Write the function of the part of the human digestive system. [1]

| Name of the part | Function |
|---|---|
| Small intestine | |
| Large intestine | |

3

39. The diagram shows the cross-section of a flower.




(a) Name the parts labelled : [1]

T : _____

U : _____

(b) What is the function of the Part S? [1]

_____

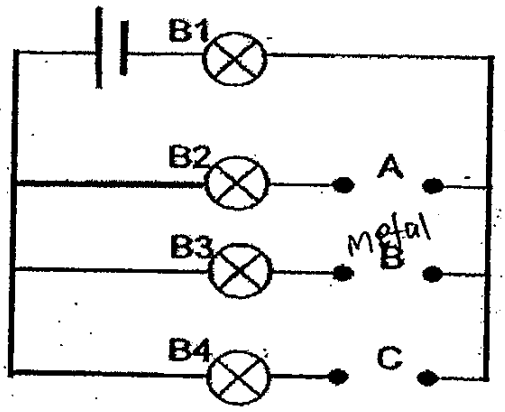
(c) What will happen to Part S after fertilisation? [1]

_____

_____

3

40. Suzy set up a circuit as shown in the diagram below.




She placed three rods, L, M and N (made of unknown material) at positions, A, B and C in the circuit respectively.

She recorded the results of her experiment in the table as below.

| Position where the rod is placed | | |
|---|---|---|
| A | B | C |
| L | M | N |

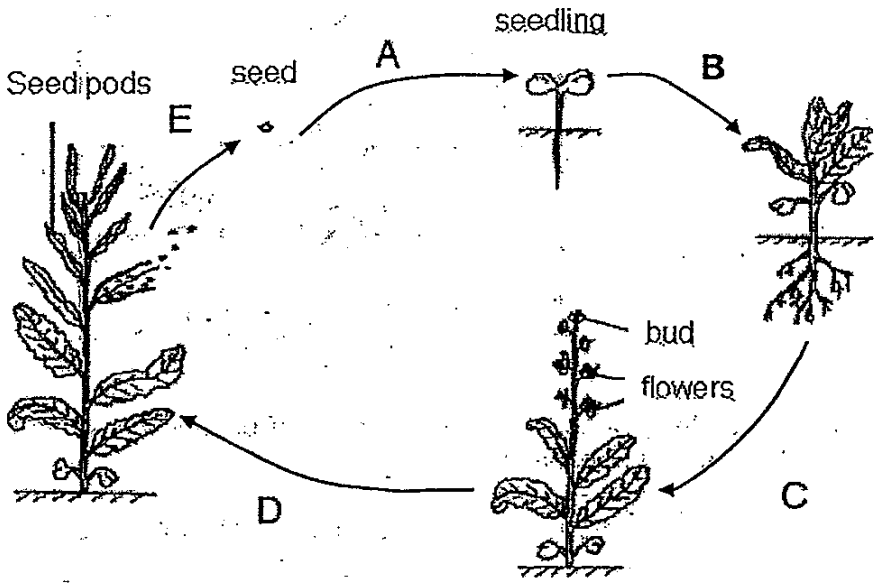
| Did the bulb light up? | | | |
|---|---|---|---|
| **B1** | **B2** | **B3** | **B4** |
| Yes | No | Yes | No |

Based on the results, Suzy made the following statements. Put a tick ( ✓ ) in the appropriate boxes to indicate whether each of the statements is **'True'**, **'False'** or **'Not possible to tell'**.

| | Statement | True | False | Not possible to tell |
|---|---|---|---|---|
| (a) | M is made of copper. | | | |
| (b) | If B1 fused, B3 will not light up. | | | |
| (c) | If B2 is removed, B4 will light up. | | | |
| (d) | L and N are electrical insulators. | | | |

4

41. The diagram below shows the stages of growth of a flowering plant.




(a) What processes take place at A and D? [1]

A: _____

D: _____

(b) Based on the diagram shown above, how are the seeds dispersed? [1]

_____

_____

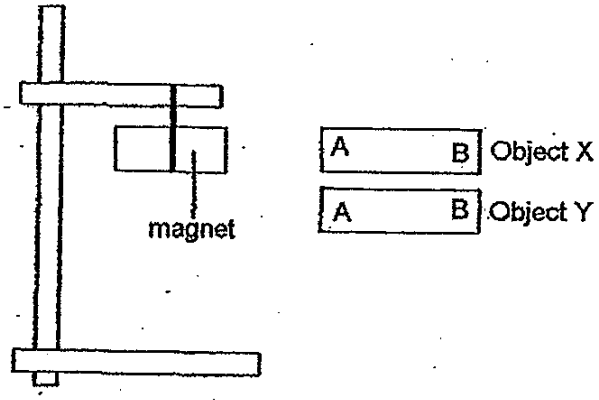
(c) What characteristic helps the fruit to disperse its seeds in the way stated in (b)? [1]

_____

_____

3

42. A magnet was hung from a retort stand. Yoyo then brought both ends of 2 objects, X and Y, close to the magnet. She recorded her observations in the table below.



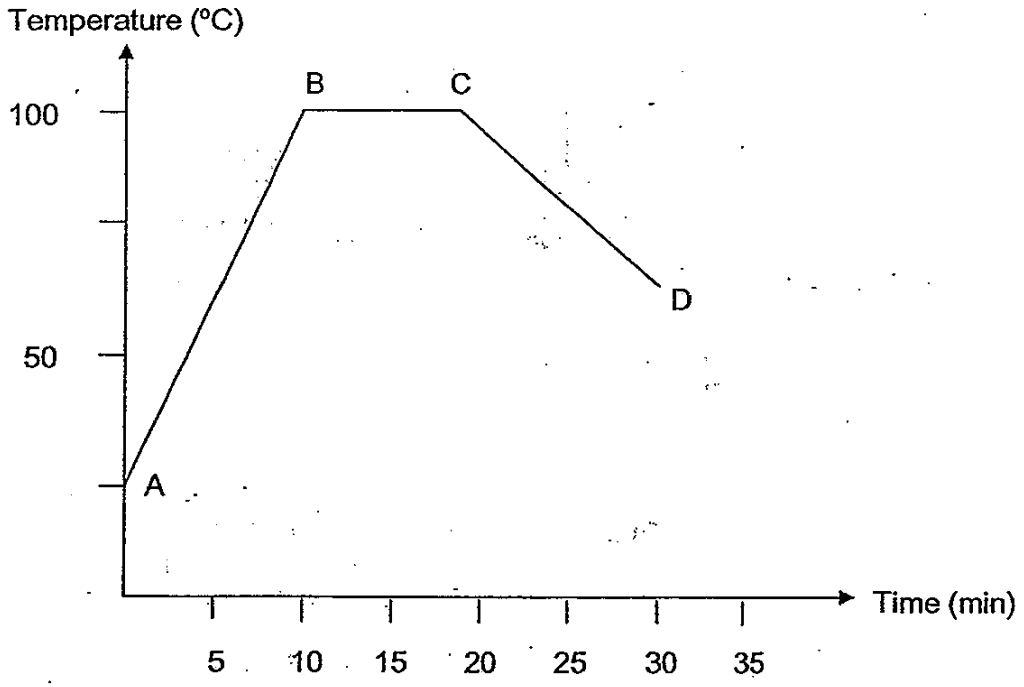

| Objects | End A | End B |
|---|---|---|
| X | Repelled | Attracted |
| Y | Attracted | Attracted |

(a) Based on the results, Yoyo concluded that neither one of the objects is a magnet. Do you agree with her? Explain your answer. [2]

(b) Give an example of the material that Object Y may be made of. [1]

3

43. The graph below shows some water being heated for some time before the heat source was removed.



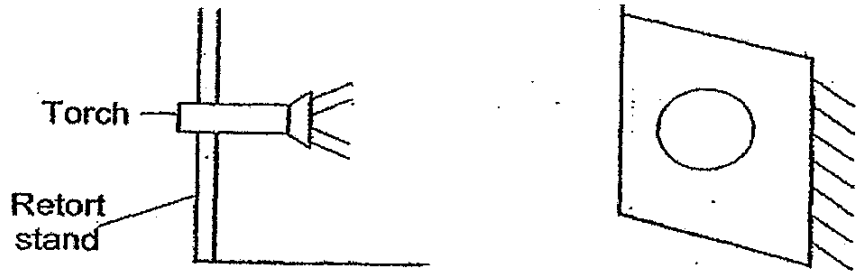

(a) What was the temperature of the water before it was heated? [1]

(b) At which point was the source of heat removed? [1]

(c) Which part of the graph shows that water was losing heat? [1]

3

44. Dan set up an experiment as shown below.




He carried out the following steps:

1. He mounted a torch on a retort stand in front of a wall.
2. He measured the distance between the torch and the wall.
3. He switched on the torch and measured the diameter of the circular light patch on the wall.
4. He placed the torch at different distances from the wall and repeated steps (2) to (4) each time.

The measurements were recorded in the table below.

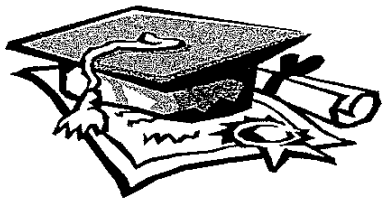
| Distance of the torch from the wall (cm) | Diameter of the light patch on the wall (cm) |
|---|---|
| 12 | 6.2 |
| 14 | 8.5 |
| 16 | 9.6 |
| 18 | 11 |

(a) What was Dan trying to find out from this experiment? [1]

(b) What is the relationship between the distance of the torch from the wall and the diameter of light patch on the wall? [1]



2

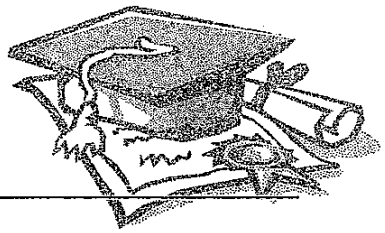


# ANSWER SHEET

**EXAM PAPER 2010**

**SCHOOL : AI TONG PRIMARY**
**SUBJECT : PRIMARY 6 SCIENCE**

**TERM : SA1**



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

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

**31)a)The population of the lions decrease.**
**b)The population of plants decrease as more zebras will eat it thus the population of the zebras decrease.**

**32)a)4 food chains.**
**b)The population of the will increase as no organism will prey on them anymore.**

**33)The fox has small ears to reduce heat loss.**
**The fox has white fur to blend in the ice easily.**

**34)a)They provide as with energy for homes factories, officers and transportation.**
**b)Harmful gases are give off during burning. This may lead to air pollution and cause global warming.**

**35)a)The heavier the weight, the longer the extension of the spring.**
**b)Elastic spring force and gravitational force.**
**c)4cm.**

**36)a)12.00 p.m.**
**b)The most sunlight is given out at that time, so the plant will photosynthesis faster and make more sugar.**

**37)a)0℃.**
**b)The ice gains heat from the surroundings.**
**c)Solid state to liquid state.**

**38)a)i)Skull** **It protects the brain.**
**ii)Ribcage** **It protects the heart and lungs.**

**b)Absorbs digested food into the bloodstream. Digestion is completed.**
**Absorbs excess water from the undigested food.**

**39)a)T: anther** **U: ovary**
**b)It attracts insects with its brightly coloured petals.**
**c)It will wither.**

**40)a)Not** **b)T** **c)F** **d)T**

**41)a)A: germination** **D: fertilization**
**b)They are dispersed by splitting.**
**c)It is dry and hard.**

**42)a)No. Object X repelled the magnet, so it is also a magnet.**
**b)Iron.**

**43)a)25℃.**
**b)Point C.**
**c)Part C and D.**

**44)a)He was trying to find out if the distance of the torch form the wall will affect diameter of the light patch.**
**b)The further the torch is placed from the wall the wider the diameter of the light patch.**