

CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6

PRELIMINARY EXAMINATION – 2014

SCIENCE

BOOKLET A

21 August 2014.

NAME: _____ ()

CLASS: Primary 6__

Total Time for Booklets A and B: 1 hour 45 minutes.

30 questions
60 marks

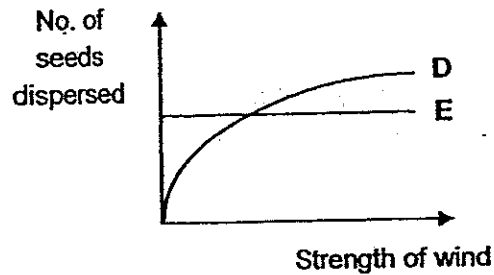
Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 21 printed pages.

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 provided.

1. The graph below shows how the strength of wind affects the dispersal of fruits of plants D and E.



Which one of the following shows what the fruits of plant E probably look like?

(1)



(2)



(3)



(4)

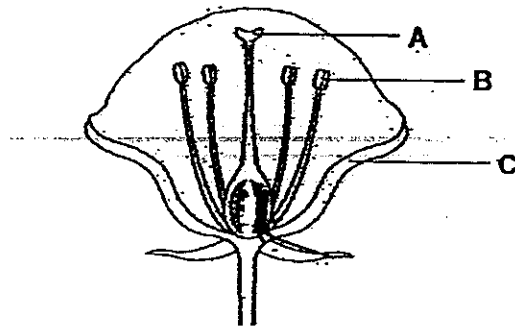


2. Which of the following statements about a spore and a pollen grain is/are true?

- A Both are required for reproduction.
- B Both can be dispersed by wind only
- C Both are produced by flowering plants.
- D Both fuse with the ovule during

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

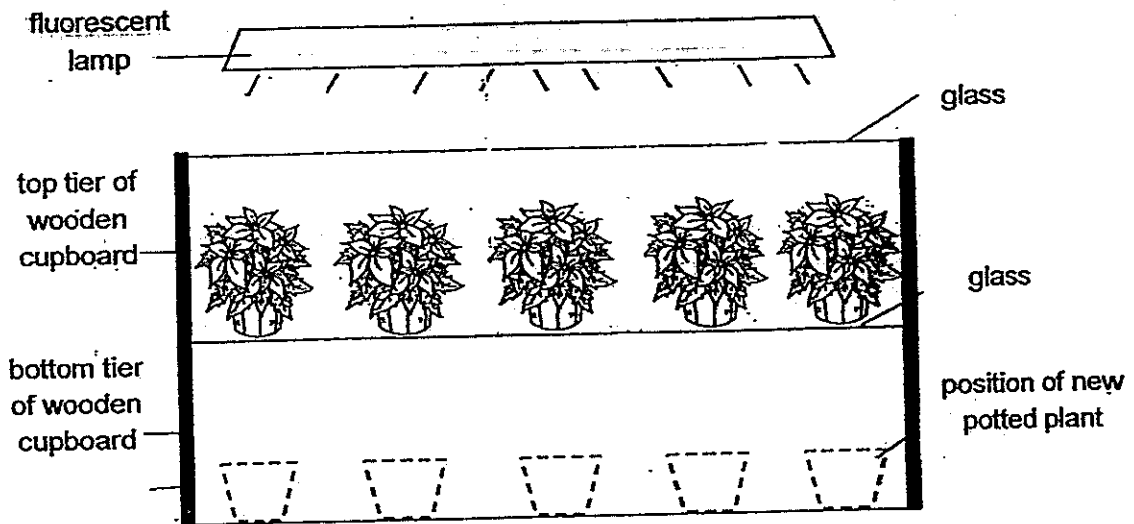
3. The diagram below shows the cross-section of a flower.



Based on the diagram above, which one of the following statements is definitely true?

- (1) The flower will develop into a bunch of fruits.
 - (2) The presence of parts A and C attract insects to the flower.
 - (3) Many seeds can be found in the fruit that will develop after fertilisation.
 - (4) The flower is wind-pollinated because part B is sticking out from the flower.
4. Which of the following statement(s) about the process of human fertilisation is/are true?
- A The fertilized egg develops in the uterus of the female reproductive system.
 - B All the eggs produced by the ovaries will eventually develop into young organisms.
 - C Usually more than one sperm will enter the egg to increase the chances of fertilization.
 - D Fertilisation starts when the cell membrane of the sperm fuses with the cell membrane of the egg.
- (1) A only
 - (2) D only
 - (3) A and C only
 - (4) B and D only

5. Mrs Potts wanted to grow some potted plants in a two-tiered wooden cupboard as shown below. Certain parts of the cupboard were made of glass as indicated. The cupboard was located directly under a fluorescent lamp. She bought some plants to put on the top tier of the glass cupboard as shown below.



If she wants to put another row of plants at the bottom tier of the glass cupboard, which one of the following type of plants will be able to grow most healthily when placed at the bottom tier?

(1)



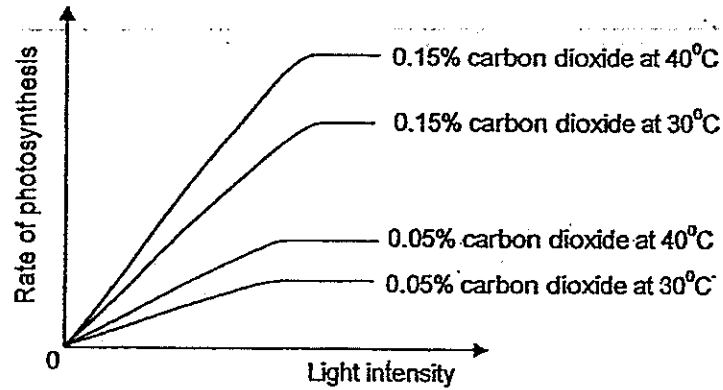
(2)



(3)



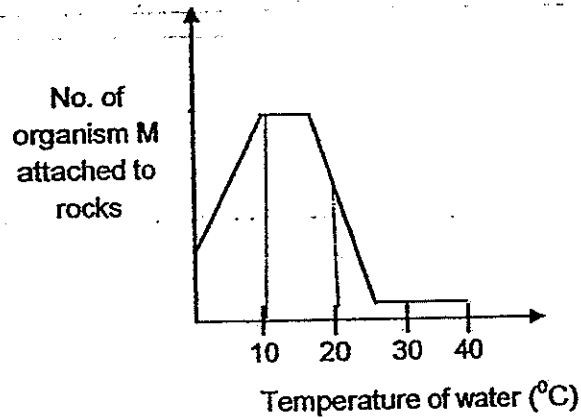
6. Harriet carried out an experiment to find out the effects of light intensity, amount of carbon dioxide and temperature on the rate of photosynthesis. She obtained the following results.



Which one of the following statements about the effects of external factors on the rate of photosynthesis is false?

- (1) Rate of photosynthesis increases with increasing light intensity until it is limited by other factors.
- (2) Temperature will be a factor affecting the rate of photosynthesis in an environment rich in carbon dioxide.
- (3) At the same temperature, the rate of photosynthesis is not affected by the amount of carbon dioxide present.
- (4) At the same light intensity, the rate of photosynthesis is less affected by a change in temperature than a difference in the amount of carbon dioxide present.

7. Organism M lives in the coastal region. It produces a glue-like substance to attach itself to rocks so that it does not get washed off easily by strong waves. A scientist conducted an experiment to find out how temperature affects the effectiveness of the glue-like substance that helps organism M attach to the rocks. His results are shown in the graph below.



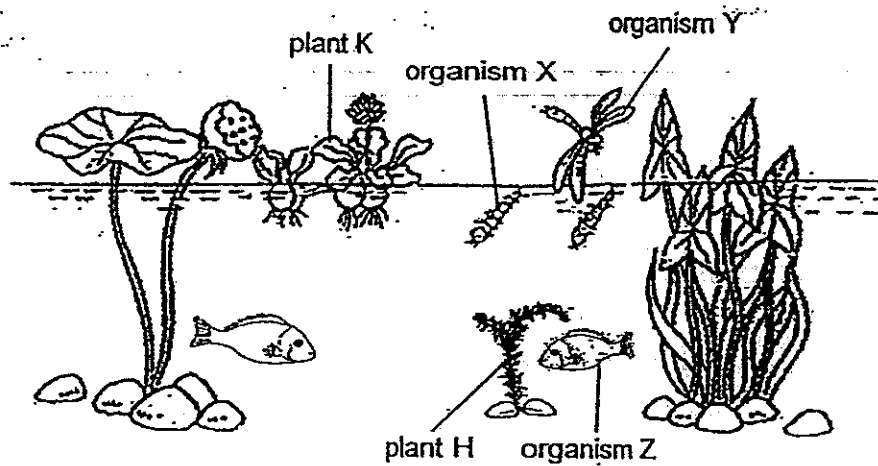
The table below shows the temperature range of four different coastal regions, W, X, Y and Z.

Location	W	X	Y	Z
Temperature range	10 ⁰ C to 20 ⁰ C	21 ⁰ C to 26 ⁰ C	-4 ⁰ C to 9 ⁰ C	28 ⁰ C to 35 ⁰ C

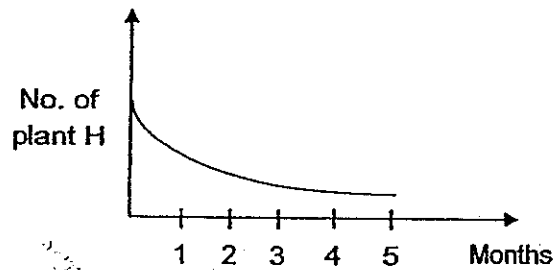
Which one of the above coastal regions would the most number of organism M likely be found?

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

8. The diagram below shows the cross-section of a pond. Organisms Y and Z feed on organism X only.



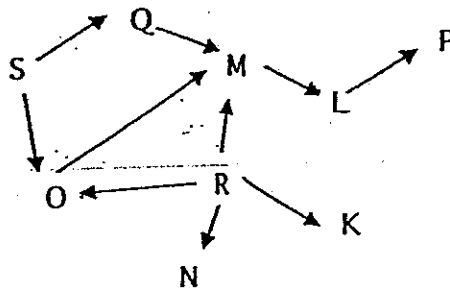
The graph below shows how the number of plant H changes over 5 months



Based on the graph above, which one of the following statements is most likely the cause for the change in the number of plant H?

- (1) The population of plant K has increased.
- (2) The population of organism Y has increased.
- (3) The population of organism Z has increased.
- (4) The population of organism X has increased.

9. The diagram below shows a food web.



Based on the food web above, which one of the following is correct?

	Prey only	Both a prey and a predator	Predator only
(1)	R, S	M, O, Q	K, L, N, P
(2)	Q, O	L, M	P
(3)	R, S	L, M, O, Q	K, N, P
(4)	Q, O, M	L	P

10. Siva placed the same mass of dried apple slices into 3 similar glass jars as shown in the table below. The 3 jars were then sealed and placed in the cupboard.

Jar 1	Jar 2	Jar 3
A few drops of water were added to the dried apple slices.	A packet of silica gel was added to the dried apple slices.	Contains only the dried apple slices

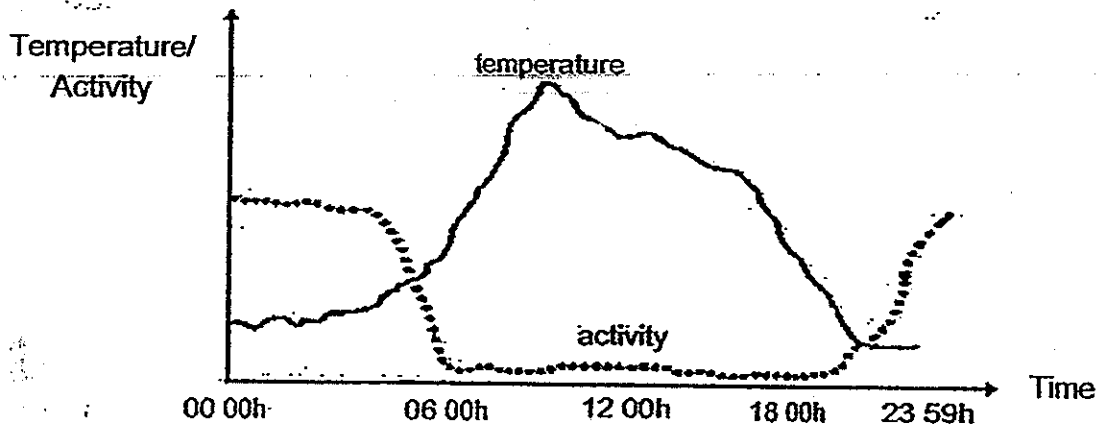
A few days later, Siva observed that there were green patches on the apple slices in Jar 1. After 2 weeks, similar green patches were also observed on the apple slices in Jar 3. The apple slices in Jar 2 still looked the same as before after 2 weeks.

Based on her results, what conclusion(s) can she make?

- A Food that is moist decompose faster.
- B Food can only decompose in the dark.
- C Decomposers prefer to live in warm places.
- D Silica gel absorbs most of the moisture in the jar.

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

11. Organism G lives in the desert. The two line graphs below show the relationship between the behavioural patterns of the Organism G and the temperature changes of the desert in a day.



Based on the graph above, what conclusions can you make about organism G?

- A It is structurally adapted to survive in the hot desert.
 - B Its activity level increases when the temperature is lower.
 - C Its behavioural adaptation helps it to survive in the hot desert
 - D It is structurally adapted to survive through long periods of drought.
- (1) A and B only
(2) B and C only
(3) C and D only
(4) A, B and D only

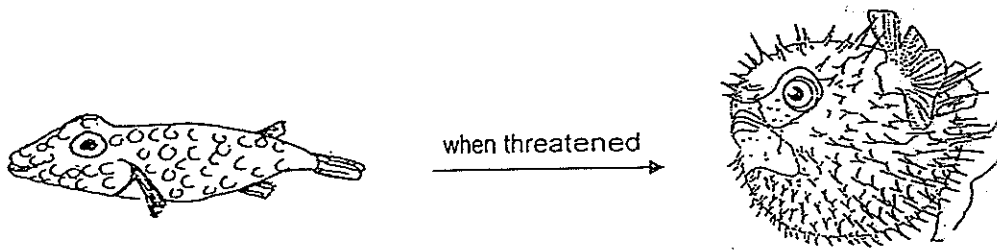
12. The diagram below shows a foot belonging to bird P.



Which one of the following statements best describes the function of bird P's feet?

- (1) Bird P uses its feet for tearing food to eat.
- (2) Bird P uses its feet to swim quickly in water.
- (3) Bird P uses its feet to run very quickly on land.
- (4) Bird P uses its feet to catch and hold on to its prey.

13. The diagram below shows a sea organism. It has a swim bladder that expands when it is being threatened. It has bright colours to indicate the large quantity of toxin it is capable of producing.

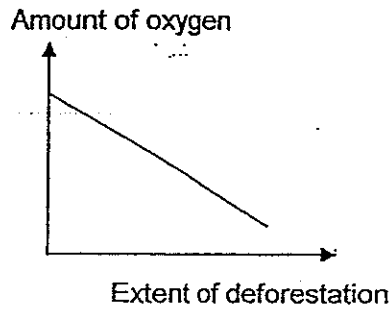


Based on the above diagram, which one of the following is not a structural adaptation of the organism to avoid being eaten by predator?

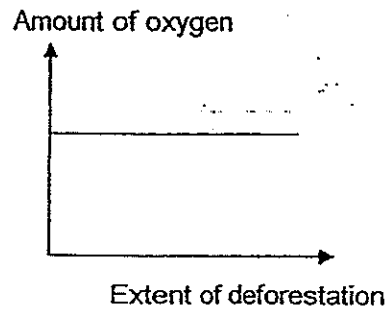
- (1) Spikes on its body.
- (2) Special swim bladder.
- (3) Bright colours of the skin.
- (4) Body able to expand and increase in size quickly.

14. Which one of the following graphs shows the correct relationship between deforestation and the amount of oxygen in the air?

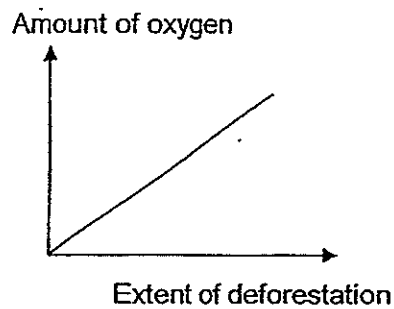
(1)



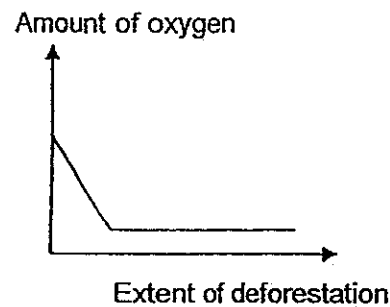
(2)



(3)



(4)



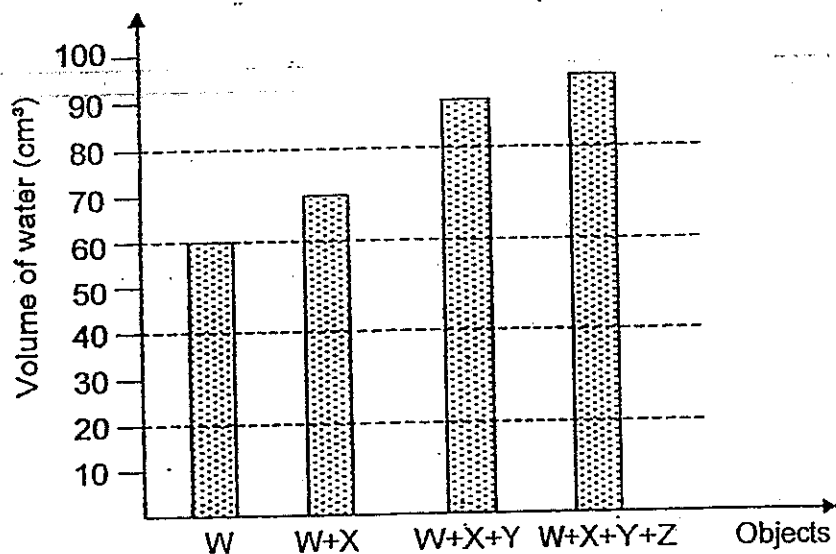
15. Geraldine conducted an experiment to find out which location in her school is the most polluted. She placed four similar glass slides smeared with the same amount of oil at four different locations for a day. She then compared the amount of dust particles found on the slides and ranked the locations in order of how polluted they were, with 1 being the most polluted and 4 being the least polluted.

Location	Ranking
bus bay	1
classroom	3
canteen	2
eco-garden	4

However, her teacher told her that her experimental results were not reliable. Which one of the following reasons could be why her teacher made that comment?

- (1) There was more than one variable changed.
- (2) The duration of the experiment was too short.
- (3) She did not repeat the experiment again over the next few days.
- (4) She should use water instead of oil to trap the dust particles properly.

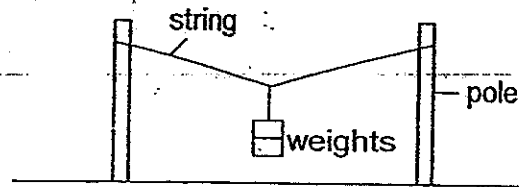
16. There are four objects, W, X, Y and Z. When object W is placed into a measuring cylinder containing 50 cm^3 of water, the water level rises to 60 cm^3 . Next, object X is added into the cylinder followed by object Y, and finally object Z. The graph below shows the water level after each object has been added into the cylinder.



Based on the results shown in the graph above, which one of the following statements is true?

- (1) The volume of object W is 60 cm^3
- (2) Object Y has a larger volume than object Z.
- (3) Object W and object X have the same mass.
- (4) The volume of water in the cylinder increases after each object is added into it.

17. James set up an experiment as shown below. He stretched a string tightly across two poles and hung weights on the string until it broke. He then recorded his observation. He repeated the process with two other strings made from different materials and tabulated his results as shown below.

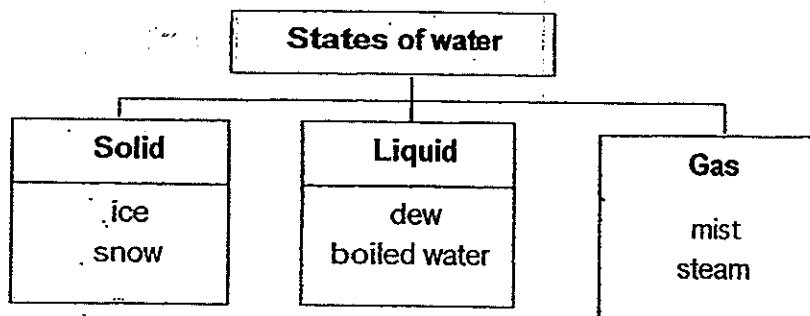


Material of string	Weights needed to break the string (g)
X	200
Y	550
Z	280

Based on his observations, which one of the following conclusions is correct?

- (1) Material Y is the strongest.
- (2) Material X is the least flexible.
- (3) Material Z is harder than material X.
- (4) Material Y is more durable than materials X and Z.

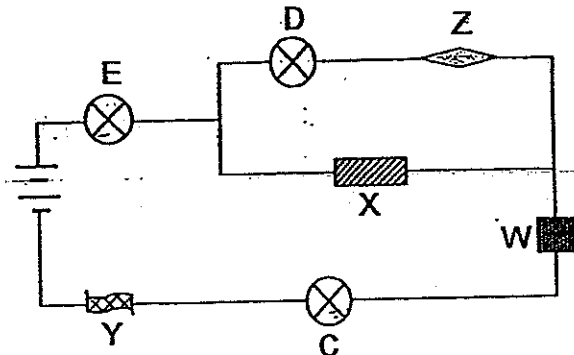
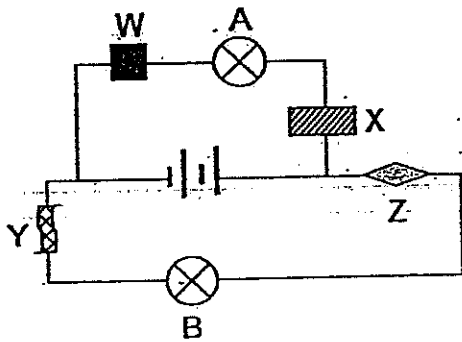
18. Study the classification chart below.



Which one of the above states of water is wrongly classified?

- (1) dew
- (2) mist
- (3) snow
- (4) steam

19. Alice set up the following electric circuits to find out if materials, W, X, Y and Z, were electrical conductors or insulators.



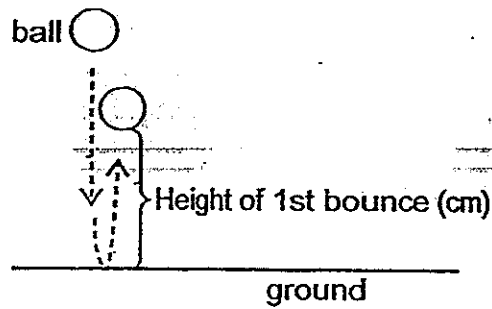
The table below shows the results of her test.

Bulb	Did the bulb light up?
A	Yes
B	No
C	Yes
D	No
E	Yes

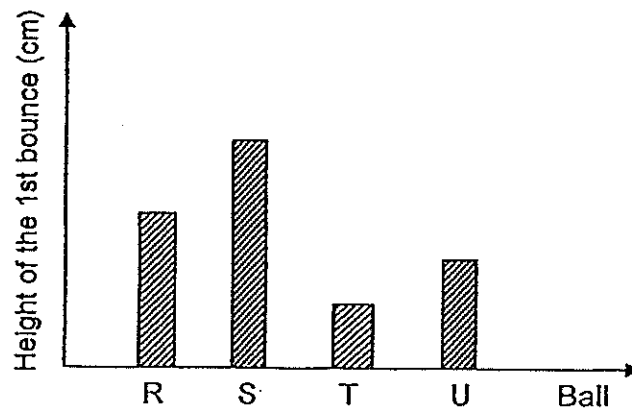
Which one of the following correctly identifies the conductors and insulators of electricity?

	Conductors of electricity	Insulators of electricity
(1)	Z	W, X, Y
(2)	W, X	Y, Z
(3)	W, Z	X, Y
(4)	W, X, Y	Z

20. Salleh conducted an experiment with 4 balls, R, S, T and U, which were made of different materials. He released each ball from the same height and recorded the height of the first bounce from the ground as shown in the diagram below.



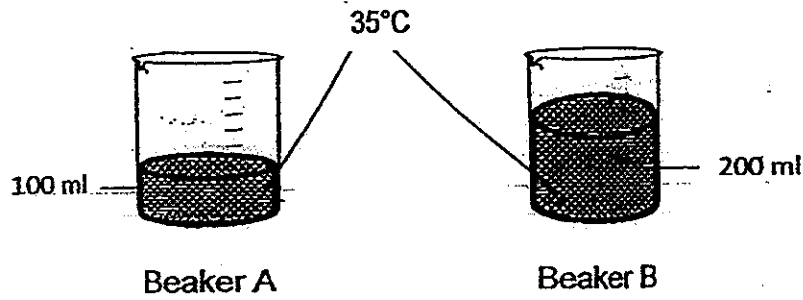
The results of his experiment are presented in the bar graph below.



What could Salleh infer from the results?

- A Ball U was bigger than ball T.
 - B Ball S most likely can bounce the most number of times before stopping.
 - C Ball R had less kinetic energy than Ball U when it bounced up from the ground.
 - D Ball T had the least gravitational potential energy compared to the other balls after the first bounce.
- (1) A and B only
(2) B and D only
(3) C and D only
(4) A, B and D only

21. Sara poured 100ml of water into Beaker A and 200ml of water into Beaker B, as shown in the diagram below. The temperature of the water in both beakers was the same.

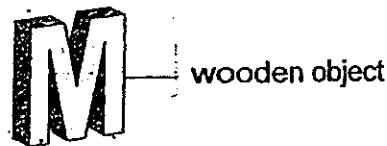


She heated the water in Beaker A for 5 minutes and immediately recorded the temperature of the water using a thermometer. She repeated the experiment with Beaker B.

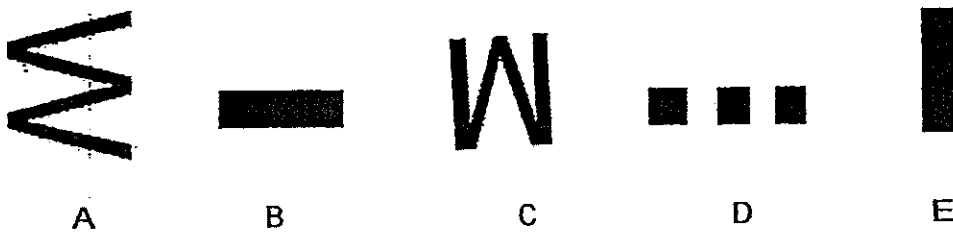
Which one of the following are possible temperatures of the water recorded in both beakers?

	Beaker A	Beaker B
(1)	35°C	35°C
(2)	75°C	55°C
(3)	55°C	75°C
(4)	55°C	55°C

22. Mary carried out an experiment to study the shadows formed by the wooden object shown below.

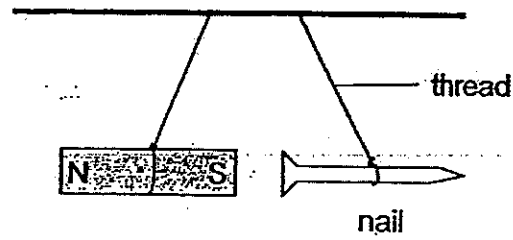


Which of the following shadows can be cast by the object?



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

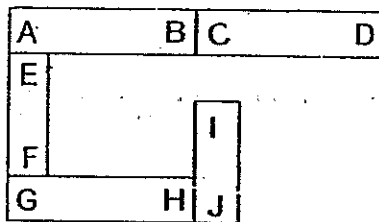
23. The diagram below shows a bar magnet and a nail suspended on a support.



Based on the observation above, what were the forces acting on the magnet and the nail?

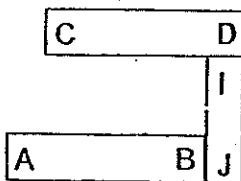
- A gravitational force
 - B elastic spring force
 - C magnetic force of attraction
 - D magnetic force of repulsion
- (1) D only
 (2) A and D only
 (3) B and C only
 (4) A, B and D only

24. Five magnets with their ends marked A to J are joined together as shown.

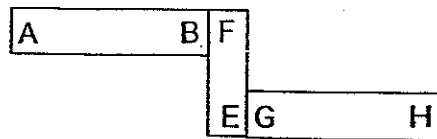


Which one of the following diagrams is a possible arrangement of three of the magnets?

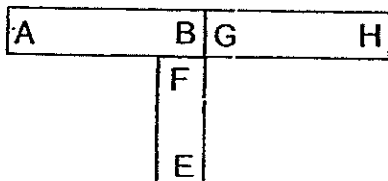
(1)



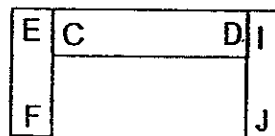
(2)



(3)



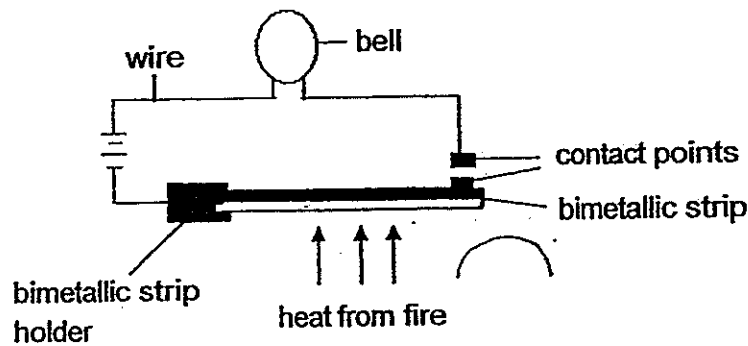
(4)



25. A bimetallic strip consists of two metals attached firmly to each other. In the bimetallic strip below, metal X expands at a faster rate than metal W when it is heated.



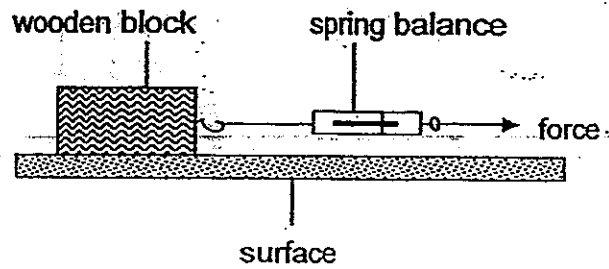
Ken wanted to use the same type of bimetallic strip to construct a fire alarm system for his science project shown below.



When the bimetallic strip gets heated up by the fire, it will bend and the two contact points will touch and the circuit will be closed. This will cause the bell to ring. However, Ken's teacher commented that there was a mistake in his set-up. What was his mistake?

- (1) Metal X should be thicker than metal W.
- (2) Metal W should be shorter than metal X.
- (3) The strip should be made of metal X only.
- (4) The bimetallic strip should be reversed with metal W on top.

26. A block of wood was pulled across 3 different surfaces, E, F and G, as shown in the diagram below. The force needed to pull the block on each surface was measured.



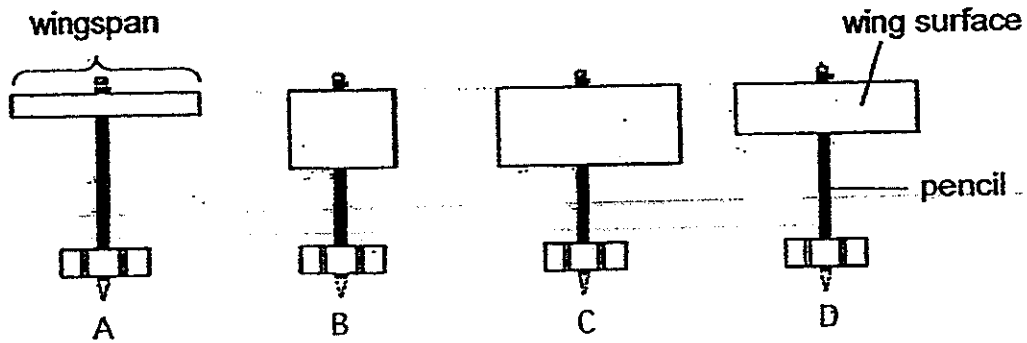
The results are shown in the table below.

Surface Tested	Force needed (Newton)
E	18
F	13
G	24

Which one of the following best represents E, F and G respectively?

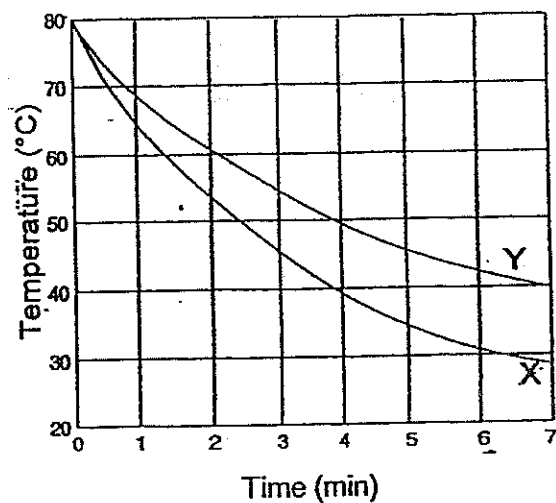
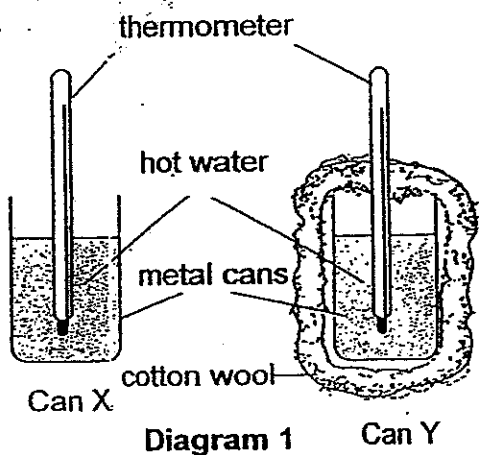
	Surface E	Surface F	Surface G
(1)	cardboard	glass	sandpaper
(2)	sandpaper	cardboard	glass
(3)	glass	cardboard	sandpaper
(4)	glass	sandpaper	cardboard

27. Ben constructed four model planes, A, B, C and D, using pencils and construction paper. The diagram below shows the top views of his model planes.



He took turns to throw each plane with the same force from the same position to find out the greatest distance it could travel. Which model planes must he compare if he wanted to find out the effect of the wingspan on the distance the planes travelled?

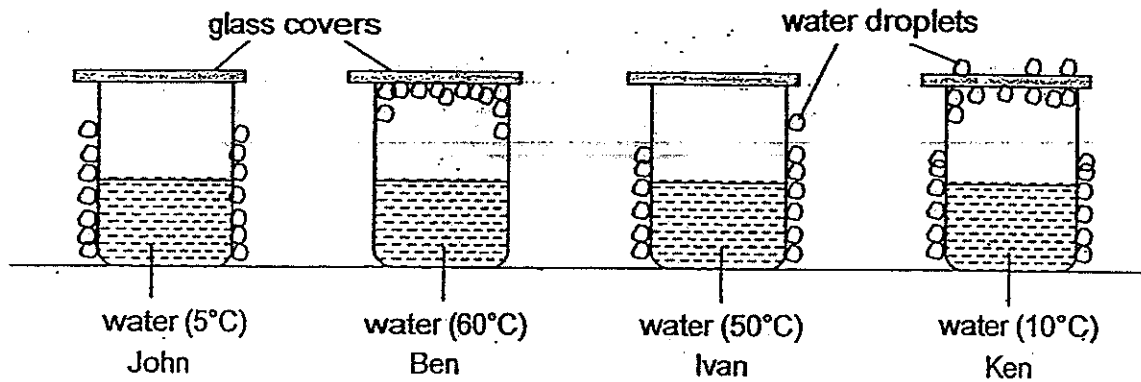
- (1) A and D only
 - (2) B and C only
 - (3) C and D only
 - (4) A, C and D only
28. Mengli set up the experiment with two identical metal cans as shown in diagram 1 below. Both cans were filled with the same amount of hot water. She plotted the graph to show the changes in temperature of the water in cans X and Y.



What was the aim of her experiment?

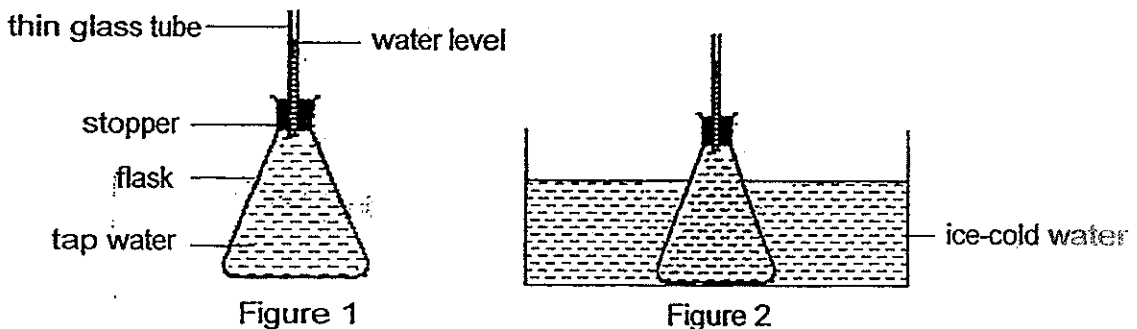
- (1) To show that can X retains heat better than can Y.
- (2) To find out which can is a better conductor of heat.
- (3) To show that cotton wool can affect the time taken for water to cool down.
- (4) To measure the time it takes for water to cool when wrapped in cotton wool.

29. Four students, John, Ben, Ivan and Ken, were each given a beaker containing the same amount of water at different temperatures to observe the formation of water droplets. They presented their observations in the diagrams below.



Whose observations are correct?

- (1) Ben and Ivan only
 - (2) John and Ken only
 - (3) John and Ben only
 - (4) Ivan and Ken only
30. Figure 1 below shows a flask with a thin glass tube. The flask is filled with tap water.



Which one of the following explains correctly what will happen when the flask is lowered into a trough of ice-cold water as shown in Figure 2?

	Observation of water level in the glass tube	Reason
(1)	drops immediately	The water in the flask loses heat and contracts.
(2)	drops immediately	The flask loses heat and contracts
(3)	drops first and then rises	The flask loses heat and contracts while the water in the flask gains heat and expands.
(4)	rises first and then drops	The flask contracts before the water in the flask contracts.

~ End of Section A ~

CHIJ ST NICHOLAS GIRLS' SCHOOL



Primary 6

PRELIMINARY EXAMINATION – 2014

SCIENCE

BOOKLET B

21 August 2014

NAME: _____

CLASS: Primary 6

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

14 questions
40 marks

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

This paper consists of 14 printed pages.

Booklet A	60
Booklet B	40
Total	100

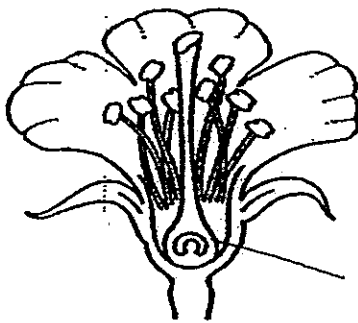
Parent's Signature/Date

Section B (40 marks)

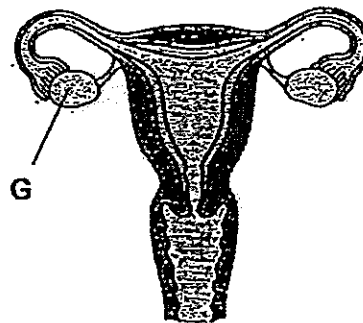
For questions 31 to 44, write your answers in this booklet.

The number of marks available is shown in the brackets at the end of each question or part question.

31. The diagrams below show flower M and the female reproductive system.



flower M



female reproductive system

- (a) In the above diagram of the flower, identify the part that has a similar function to part G of the female reproductive system and label it as 'Y'. [1]
- (b) Organism B can be found visiting flower M very often.



organism B

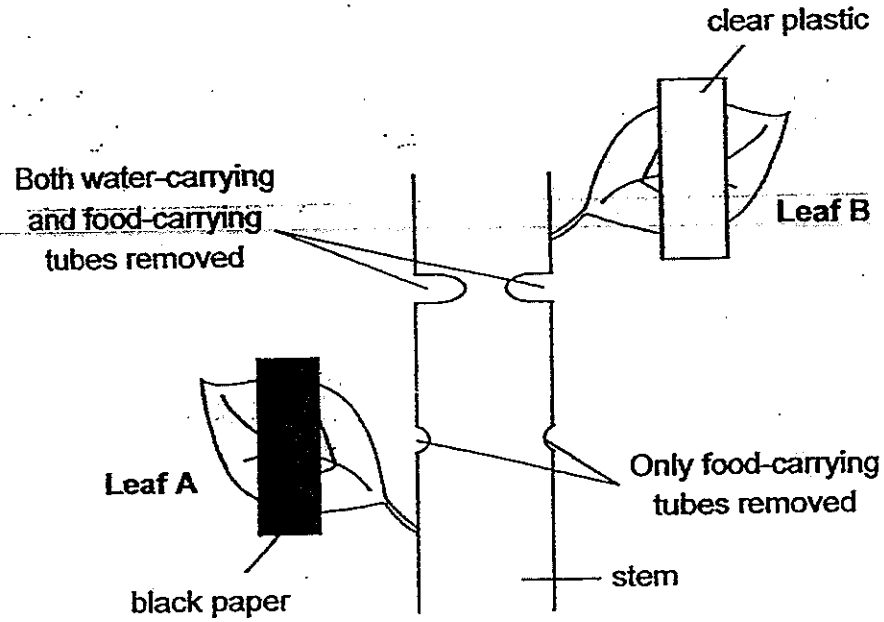
How does flower M and organism B benefit from this relationship? [2]

(i) Benefit for flower M: _____

(ii) Benefit for organism B: _____



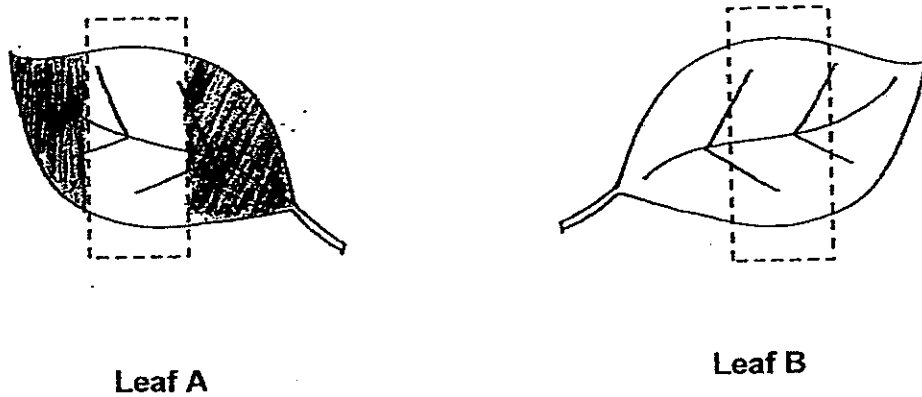
32. The diagram below shows a portion of a plant. Rings of different thickness were removed from two different parts of the stem as shown below.



The plant was kept in the dark for 2 days and watered daily before leaves, A and B, were covered on both sides with clear plastic and black paper respectively as shown above. The plant was then placed under bright sunlight for a day.

Both leaves were then tested for the presence of starch.

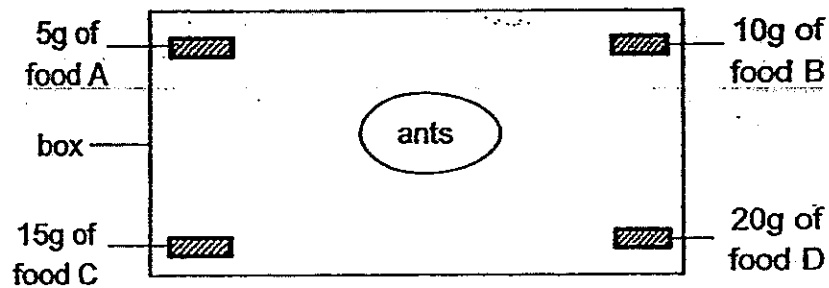
- (a) On the leaves below, shade fully the parts to show where iodine solution would turn dark blue. [1]



- (b) Explain your answer for the shading on leaf A above. [1½]

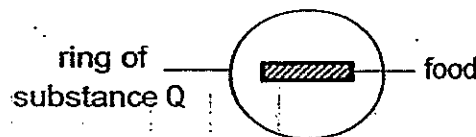


33. Hassan conducted an experiment to investigate the type of food ants prefer. He placed four different types of food, A, B, C and D, at the four corners of the box before releasing 20 ants at the centre. He observed the set-up for 15 minutes and recorded his observations. A diagram of his set-up is shown below.

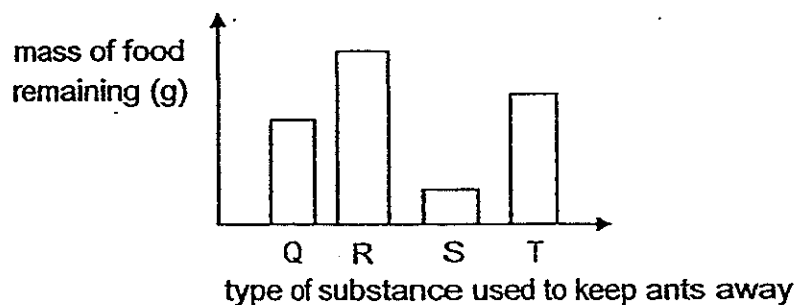


- (a) He observed that more ants moved to food D and concluded that ants prefer food D to the rest. Do you agree with him? Why? [1]

- (b) Hassan conducted another experiment to investigate which one of the substances, Q, R, S or T, was most effective in keeping ants away from food. He set up the experiment as shown below with the same amount of food and substance Q. He repeated the experiment using substances R, S and T.



The graph below shows the mass of the food remaining at the end of the experiment.



Based on Hassan's results, which substance, Q, R, S or T, was the most effective in keeping the ants away from the food? Give a reason for your answer. [1]



34. Farmer Thomas used a chemical substance, X, to kill the caterpillars that were eating the cabbage he was growing. After a few days, he found several birds which are natural predators of caterpillars dead in his farm.

(a) Using the above information, complete the food chain below. [1]

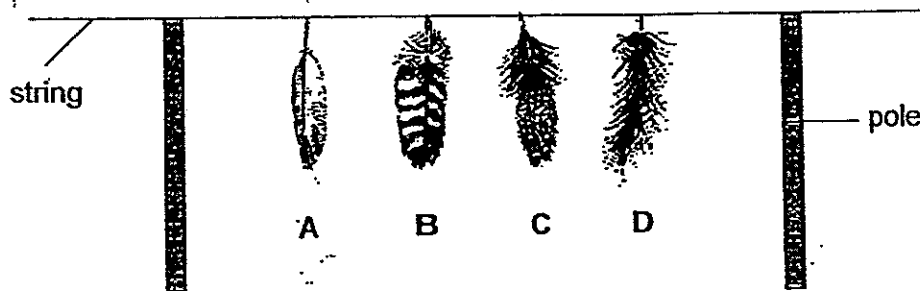


- (b) Farmer Thomas did not want to harm the birds and decided to spray a natural substance, Y, on his cabbage to keep butterflies away from them instead.

Why did Farmer Thomas want to keep the butterflies away? [1]

- (c) More and more farmers are using natural substances rather than harmful chemicals to control and keep pests away from their farms. State one advantage of such a decision. [1]

35. Farah dipped feathers, A, B, C and D, from four different birds into a tub of water for 10 seconds. She then took them out and hung them as shown below to dry.



The time taken for the feathers to dry are as shown below.

Feather	A	B	C	D
Time taken to dry	2 min	3 min	20 s	50 s

Based on the above results, which one of the feathers, A, B, C or D most likely belong to a bird that is well-adapted to hunting for food in the water? Explain your answer. [2]



36. The Caribbean Flamingos are found in water bodies of high salt content where few organisms can survive. They feed on the brine shrimps and brine flies that manage to live in such water bodies. Flamingos also have very tough skin on their legs and an organ to remove any excess salt from their bodies. They can also stand on one leg in the cold waters.

(a) From the information given above, identify one structural and one behavioural adaptation that allows the flamingo to survive in that environment. [2]

(i) Structural adaptation: _____

(ii) Behavioural adaptation: _____

(b) Explain how the behavioural adaptation in part (a) helps the flamingo to survive in the cold waters: [1]

(c) Predators of the flamingos do not have tough skin on their legs that can withstand the corrosive action of the salty waters like the flamingos.

Suggest why it is an advantage for the flamingos to be able to stay in salty waters. [1]



37. Every year, million tonnes of rubbish are being disposed in landfill sites. Much of this waste comes from plastic which takes a long time to break up. Recently, a scientist invented a machine that can melt plastic waste and convert the toxic gas produced into useful oil that can be further processed to make petrol, diesel and kerosene.

(a) What effect will the machine have on the limited natural resources available? [1]

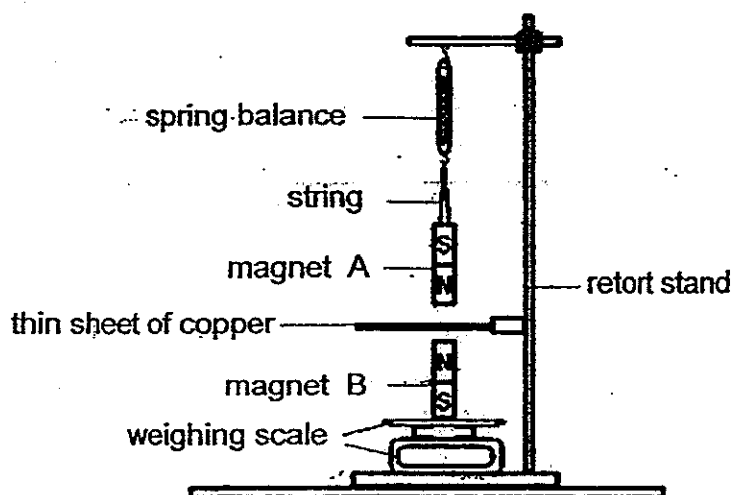
(b) Suggest two other benefits to the environment if the scientist's invention was widely put to use. [2]

(i) _____

(ii) _____



38. David set up an experiment using two identical bar magnets as shown in the diagram below. Magnets A and B have a mass of 50g each.



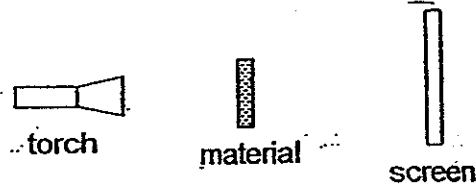
- (a) What would be the readings for the two magnets on the weighing scale and the spring balance respectively? [1]

Magnet	Readings on weighing scale/spring balance (Tick the appropriate boxes)		
	50g	More than 50g	Less than 50g
A			
B			

- (b) How will the reading on the spring balance be affected if the thin sheet of copper is replaced by a thin sheet of iron? Explain your answer. [2]



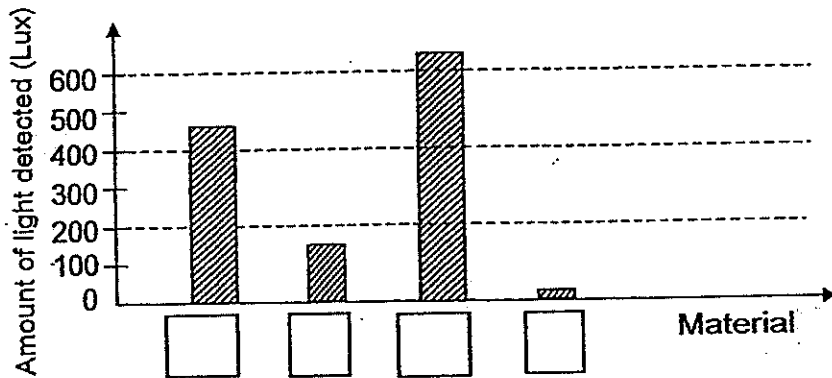
39. Study the setup below. Shawn carried out an investigation in a dark room to study the shadows formed by four different materials, A, B, C and D, as shown in the diagram below. The materials are of the same size and thickness.



He recorded his observations in the table below.

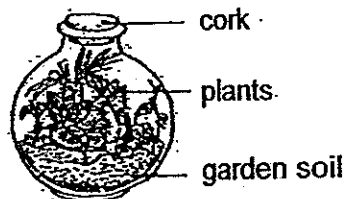
Material	Shadow formed
A	Faint
B	Very dark
C	Very faint
D	Dark

Shawn repeated his investigation by replacing the screen with a light sensor. The results are shown in the bar graph below.



- (a) Based on Shawn's observations of the shadows cast on the screen, fill in the boxes above with A, B, C and D. [2]

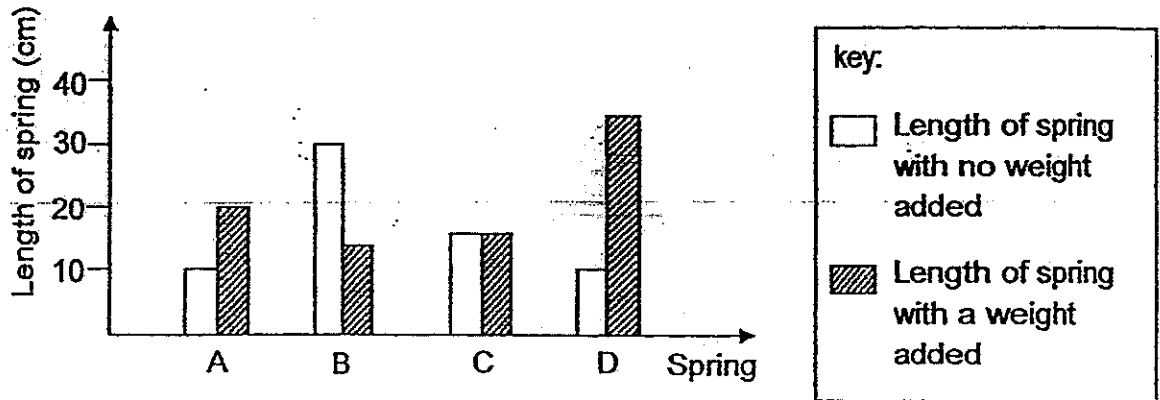
The diagram below shows a bottle garden with plants that thrive in a sunny and warm climate.



- (b) Which material, A, B, C or D, would be the most suitable for making the container? Explain your answer. [2]



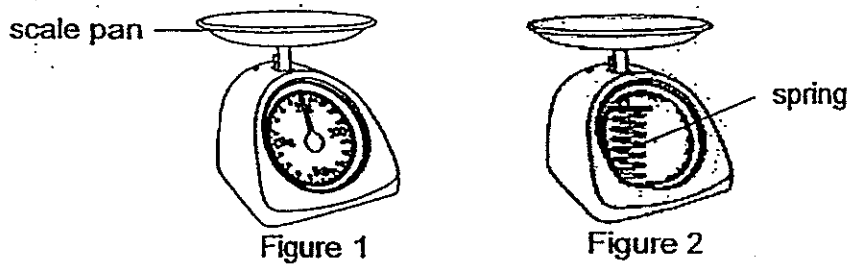
40. The graph below shows how the lengths of different springs, A, B, C and D, in different weighing scales change when the same weight is added to each spring.



- (a) Based on information from the above graph, what can you observe about Spring C? [1]

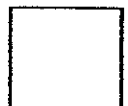
- (b) Give a reason for the observation stated in (a). [1]

- (c) The diagram below shows a kitchen scale. Figure 2 shows the spring inside the kitchen scale.

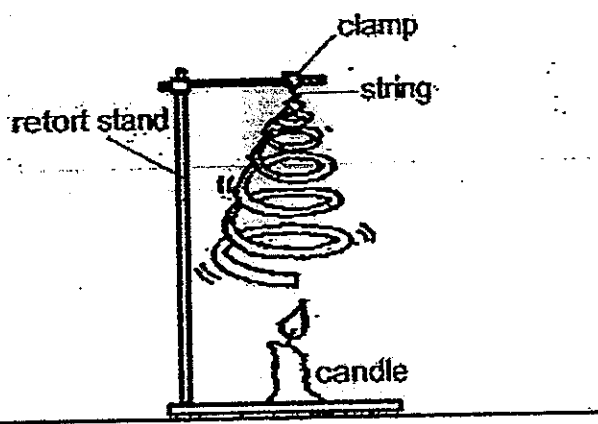


- (i) Which spring above, A, B, C or D, is most likely used in the scale? [1]

- (ii) Explain your answer in (i) above. [1]



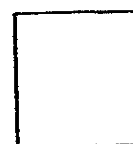
41. Sam set up an experiment as shown below.



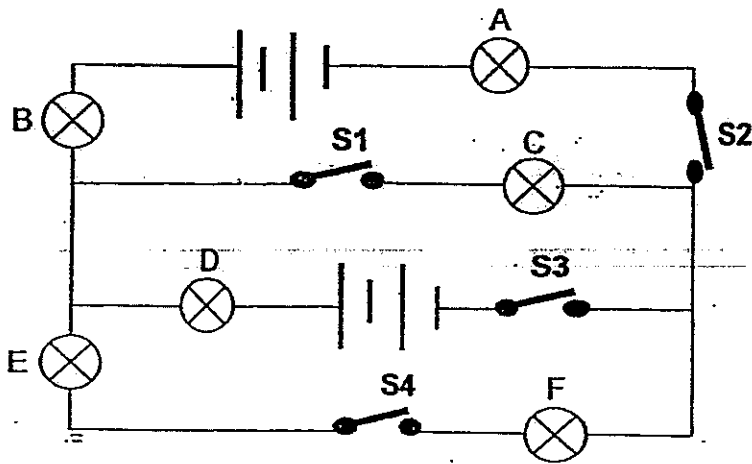
He observed that the paper spiral started to spin when the candle was lit.

(a) Explain why the paper spiral started to spin when the candle was lit. [2]

(b) State the conversion of energy, beginning with the candle that caused the paper spiral to spin. [1]



42. The bulbs and batteries in the circuit below are identical.

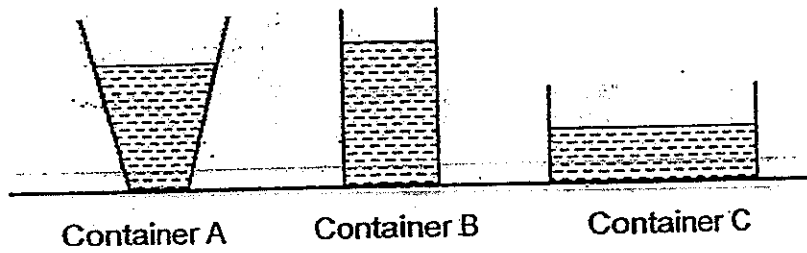


Complete the table below by writing the letter representing each of the bulbs that will light up when the stated switches are closed. [2]

Switches that are closed	Bulb(s) that light up
S1 & S4	
S1 & S3	
S2 & S3	
S2 & S4	

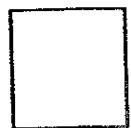


43. Usha wanted to find out how the exposed surface area of water affects the rate of evaporation. She filled the following containers with the same amount of water to carry out her experiment.

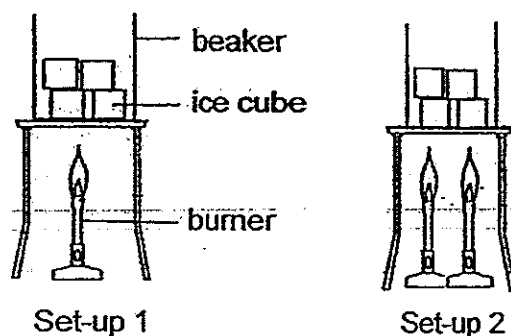


- (a) Explain why Container A is not suitable for the experiment? [1]

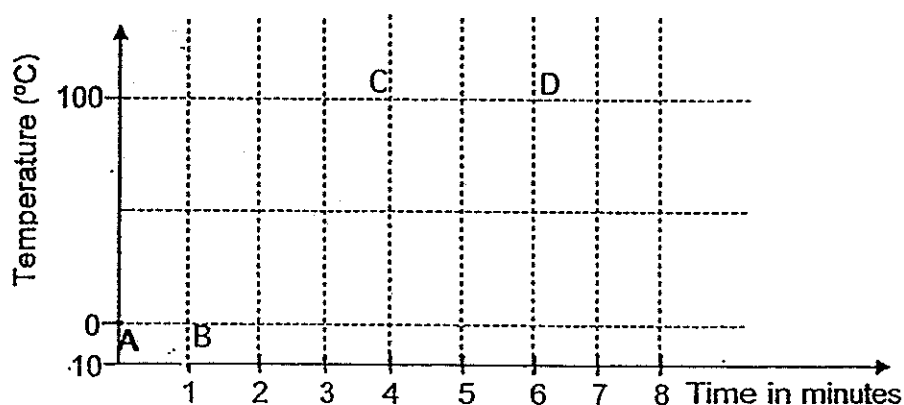
- (b) Besides the exposed surface area of water, state two other factors that affect the rate of evaporation. [1]



44. Two identical beakers containing equal amount of ice cubes were heated as shown in the diagram below.



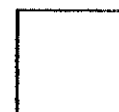
The graph below shows the changes in temperature of ice cubes in set-up 2, over a period of 6 minutes.

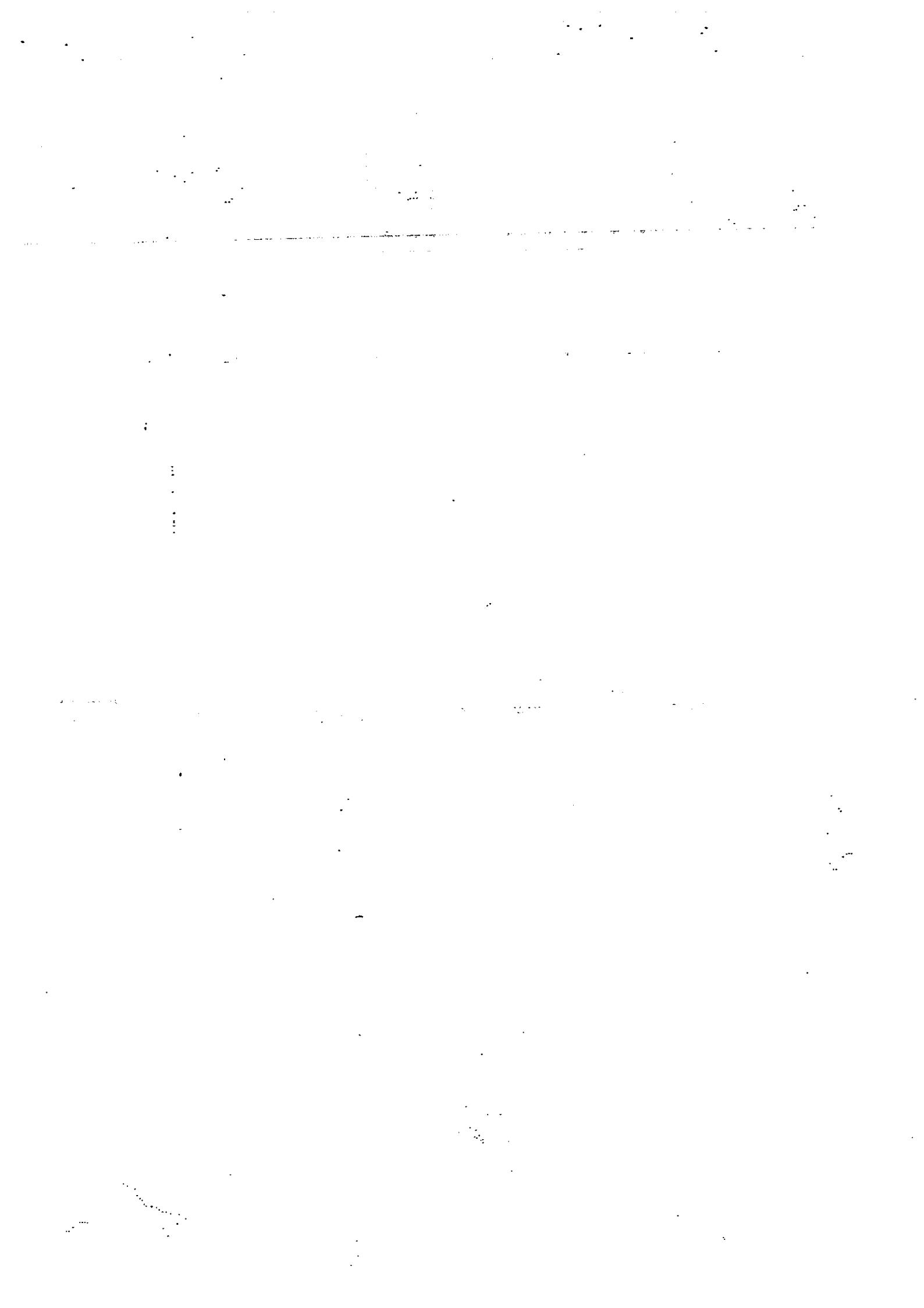


- (a) Using the same grid above, draw another line graph to show the changes in temperature of the ice cubes in set-up 1, over a period of 8 minutes. [1½]
- (b) State two similarities between the two processes as shown in AB and CD of the graph. [1]

- (i) _____
- (ii) _____

~ End of paper ~





Exam Paper 2014 Answer Sheet

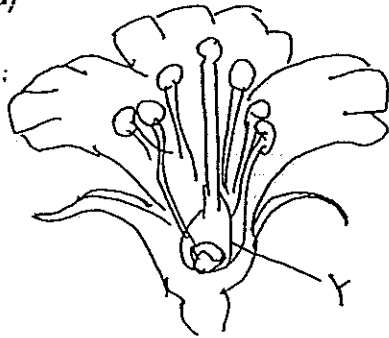
School: CHIJ ST NICHOLAS GIRLS' SCHOOL

Subject: PRIMARY 6 SCIENCE

Term: PRELIM

1) 4	6) 3	11) 2	16) 2	21) 2	26) 1
2) 1	7) 1	12) 4	17) 1	22) 2	27) 2
3) 3	8) 1	13) 4	18) 2	23) 2	28) 3
4) 1	9) 2	14) 1	19) 4	24) 4	29) 3
5) 3	10) 3	15) 3	20) 2	25) 4	30) 4

31. (a)



(b) i. Organism B helps to pollinate the flower when stepping on the stigma while sucking nectar.

ii. Flower M provides nectar for organism B to feed on.

32. (a) Sunlight was not able to reach the part of the leaf covered by the black paper, so it cannot make food and hence starch is absent for that part.

(b) As only the food carrying tube is removed, leaf A still has enough water to photosynthesis, but part of it was covered with black paper, so that part of the leaf would not be able to photosynthesis and produce glucose which will then convert into starch to store.

33. (a) No. He did not use the same amount of food for each container. There are more than 1 variable changed in the setup.

(b) Substance R. It had the most food left at substance R, which means that not many ants had come to eat it.

34. (a) cabbage → caterpillar → birds

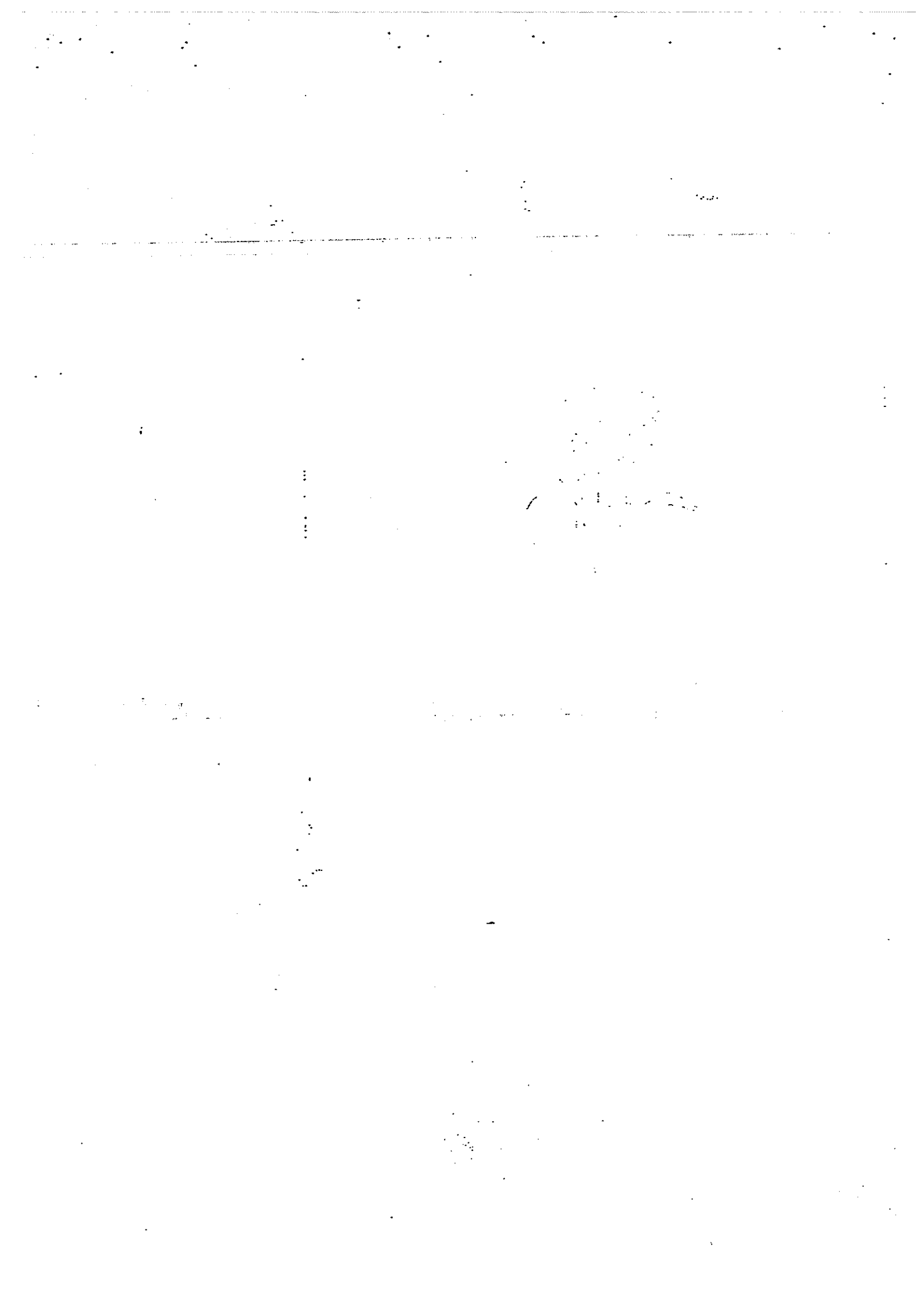
(b) So that the butterflies would not lay eggs on the cabbage and the caterpillars would not hatch from it and feed on the cabbage.

(c) The natural substances may not cause pollution or harm to other organisms.

35. Feather C. C dried the fastest showing that it is the most waterproof. Thus, the bird can keep itself warm/ the bird can fly away from the water the fastest.

36. (a) i. The flamingos have very tough skin on their legs.

ii. They stand on one leg in the cold waters.



(b) By standing on one leg, lesser surface area is exposed in contact with the cold waters, so lesser heat will be lost, keeping the warm enough to survive.

(c) So they can stay safe from predators.

37. (a) It can help to conserve the amount of natural resources available.

(b) i. Lesser landfill sites will be used as plastic will be burnt instead of buried.

ii. No air pollution from burning plastics to get rid of them.

38. (a) A - Less than 50g.

B - More than 50g.

(b) The reading of the spring balance becomes more than 50g. As iron is a magnetic material, the repulsion force between the two magnets cannot pass through it, but instead, magnet A would be attracted to the iron, thus pulling the spring balance down, making it show more than 50g.

39. (a) ADCB

(b) Material C. It allows the most light to pass through so the plants will be able to receive most sunlight to carry out photosynthesis.

40. (a) The length of spring C does not change even with a weight.

(b) The weight attached is not strong enough to stretch the spring.

(c) i. Spring B

ii. When a weight is added the scale pan will move downward. This means that the spring will get shorter. The graph shows that spring B get shorter when a weight is attached, it must be the one used in the kitchen scale.

41. (a) When the candle was lit, it produced heat, causing the surrounding air to gain heat, thus the warmer air rises, pushing the string, making it move.

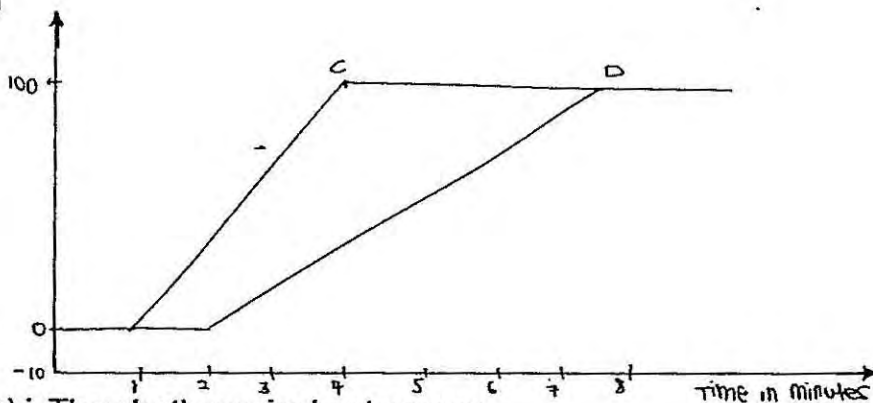
(b) Chemical potential energy of the candle \rightarrow heat energy (air) \rightarrow kinetic energy (hot air) \rightarrow kinetic energy (string)

42. None; C and D; none; A, B, E and P

43. (a) The exposed surface area keeps changing as the water evaporates.

(b) The temperature and the amount of wind present.

44. (a)



(b) i. They both require heat energy.

ii. Their temperature remains constant during the process.

