SCIENCE
2016 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 10 May 2016

BOOKLET A

Total time for Booklets A & B: 1h 45 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 18
   b. Questions 1 to 30

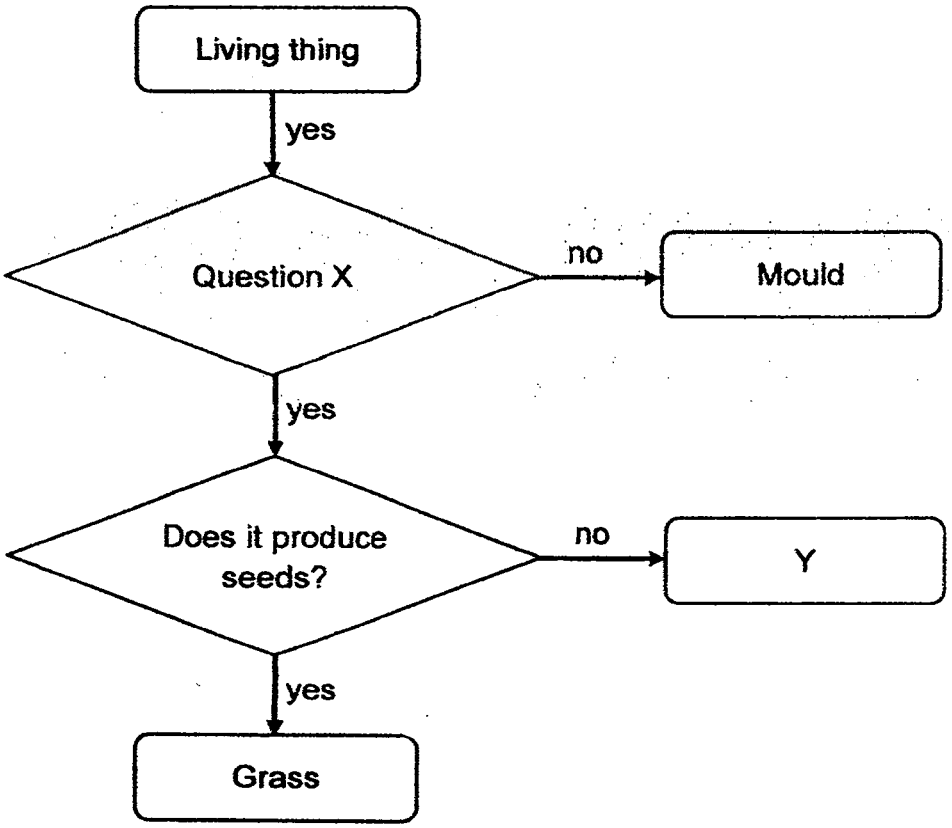
Section A

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

1. What is generally common between mammals and fish?

   (1) They have no legs.
   (2) They live only on land.
   (3) They obtain food from other living things.
   (4) They have the same type of body covering.

2. Study the chart below.



Which one of the following is correct?

	Question X	Y
(1)	Does it make its own food?	Hibiscus
(2)	Does it reproduce through spores?	Mushroom
(3)	Does it make its own food?	Moss
(4)	Does it reproduce through spores?	Toadstool

3. The characteristics of three organisms, D, E and F, are given in the table below.

Type of Organism	D	E	F
Has a four-stage life cycle	Yes	No	No
Can move from one place to another freely	Yes	Yes	No
Depends on other organisms for food	Yes	Yes	No

From the information given, which of the following organisms are correctly represented by organisms D, E and F?

	Mosquito	Angsana tree	Cockroach
(1)	D	E	F
(2)	E	F	D
(3)	F	D	E
(4)	D	F	E

4. For a seed to eventually grow into a fruit, which process(es) must take place?

(1) fertilisation only
(2) germination only
(3) pollination and fertilisation only
(4) germination, pollination and fertilisation

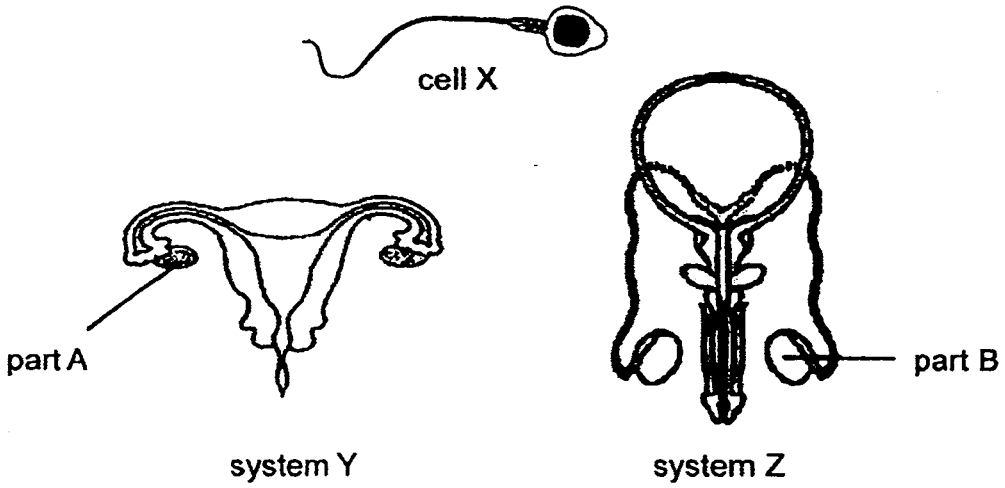
5. Michael carried out an experiment with some green bean seedlings. He placed four identical pots with different number of seedlings in the garden. The same amount of water was provided for the seedlings. The results were shown in the table below.

Pot	No. of seedlings	Amount of water (ml)	Average height of seedlings after 5 days (cm)
A	3	20	5
B	30	20	14
C	8	20	6
D	12	20	9

He wanted to find out if _____.

(1) overcrowding affects the growth of the seedlings
(2) the size of the pots affects the growth of the seedlings
(3) the amount of water affects the growth of the seedlings
(4) the amount of water affects the germination of the seedlings

6. The diagrams below show cell X and the two systems, Y and Z, which are involved in the human reproduction process.



Which of the following statement(s) is/are true?

A: During mating, many cells X are first released from part A.
B: The fertilised egg will develop in part A.
C: Cell X is produced in part B.
D: Fertilisation takes place in part B.

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

7. The male frog X is bright blue and lives on land in the rainforests. It is considered a poisonous animal.

What is/are the possible advantage(s) of the male frog X's skin colour to its survival?

A: Attract female frog X.
B: Warn its prey of its presence.
C: Warn its predator against eating it.

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

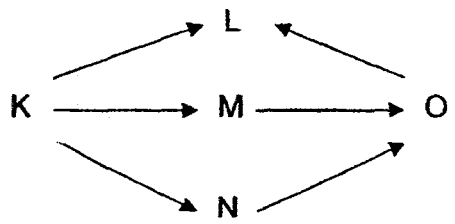
8. Gopal observed and recorded the organisms found in the school field. The results are shown in the table below.

Organisms	
Ant	Papaya tree
Bee	Earthworm
Grass	Grasshopper
Butterfly	Bird's nest fern
Millipede	Sparrow

Based on the table above, how many populations of producers and consumers are present in the school field?

	Number of populations of producers	Number of populations of consumers
(1)	2	7
(2)	2	8
(3)	3	7
(4)	3	6

9. Study the food web carefully.



The population of O decreases suddenly because of a disease. Which of the following statement(s) correctly describe(s) how this will affect the other populations at first?

A: The population of L will increase.
B: The population of M will increase.
C: The population of N will decrease.

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

10. Air pumps are used to increase the amount of dissolved oxygen in a fish tank. Stacia wants to investigate how the amount of dissolved oxygen in the water affects the survival of fish.

She uses three similar fish tanks to conduct the experiment.

Which of the following should be kept constant in each fish tank for a fair test?

A: Number of fish
B: Species of fish
C: Amount of water
D: Number of air pumps

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

11. Which of the following statements about photosynthesis is/are correct?

A: Plant has chlorophyll to trap sunlight for it to make food.
B: Plant gives out carbon dioxide during photosynthesis.
C: Plant needs water during photosynthesis.

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

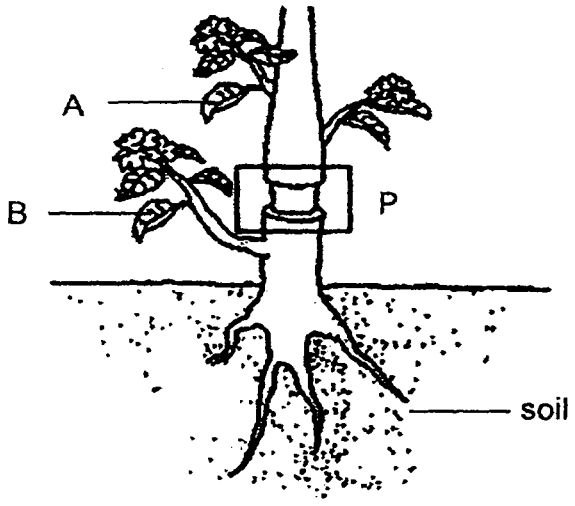
12. Vibha put a few drops of iodine solution on some food items and recorded her observations in the table shown.

Food item	Colour of iodine on the food item
X	brown
Y	dark blue
Z	dark blue

Which of the following is correct?

	X	Y	Z
(1)	fish	bread	chicken
(2)	fish	potato	rice
(3)	rice	chicken	potato
(4)	rice	potato	bread

13. Ahmad covered a plant in his garden with a cardboard box for two days before conducting an experiment.



After removing the box, he cut a ring around the stem at P. Three days later, he conducted a starch test on leaves A and B.

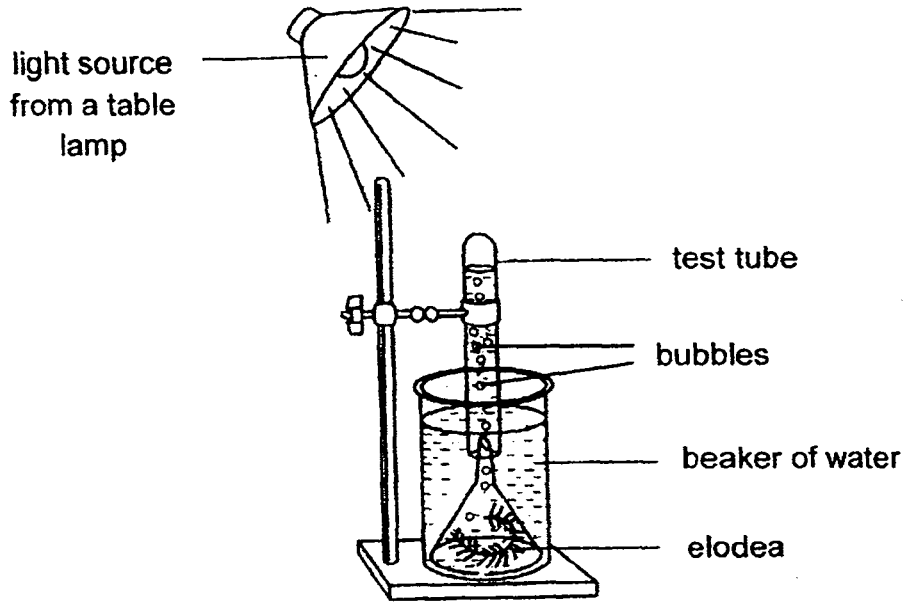
He wrote down the results in the table below.

	Colour of iodine
Leaf A	brown
Leaf B	dark blue

Which of the following statements could explain Ahmad's test results?

(1) There was no water in the soil.
(2) There was a lack of sunlight during the three days after the ring was cut.
(3) He had cut the food-carrying tube only.
(4) He had cut both the food-carrying and water-carrying tubes.

14. Ali created the set-up shown below.

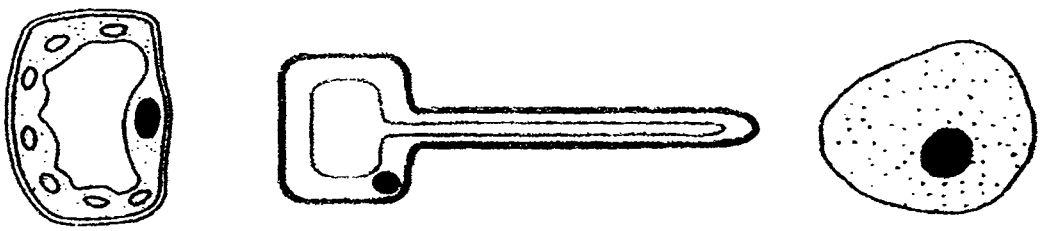


He noticed that when the light source was positioned nearer to the beaker of water, more bubbles could be seen in the test tube. These bubbles were produced by the elodea.

Which of the following best explains how the bubbles were produced?

(1) The light source caused the water to boil.
(2) The evaporation of water into water vapour.
(3) The presence of light caused photosynthesis to take place.
(4) The absorption of mineral salt present in the water by the elodea.

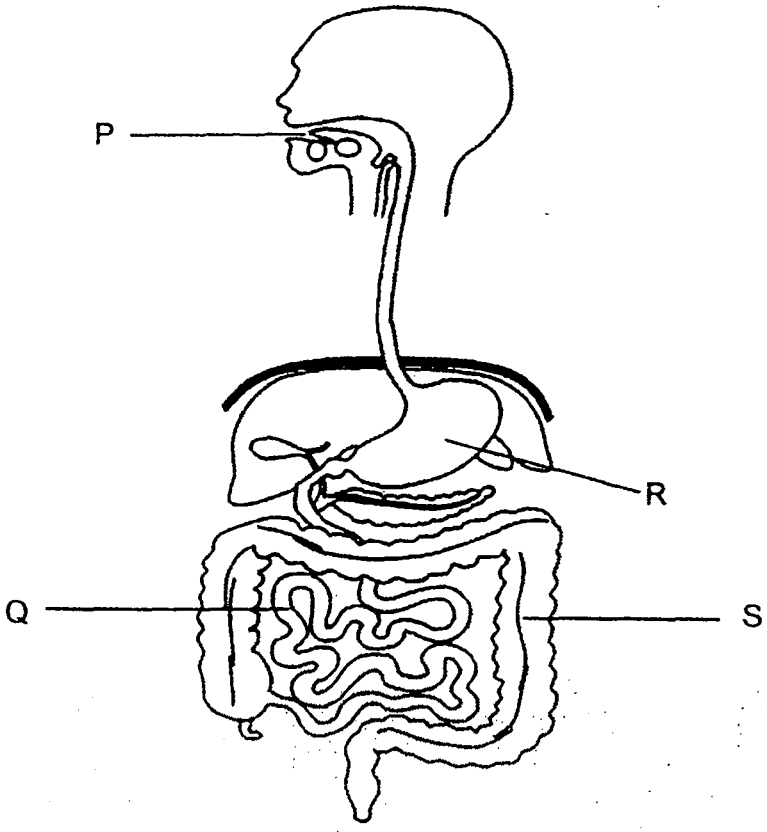
15. Study the three different cells shown below.



Which of the following statements is true about all the three cells?

(1) They are plant cells.
(2) They have chloroplasts.
(3) Every cell has nucleus and cell wall.
(4) Every cell has nucleus and cell membrane.

16. The diagram below shows the human digestive system.



Students A, B and C each made a statement about the parts of the digestive system.

A : Digestion is completed here.

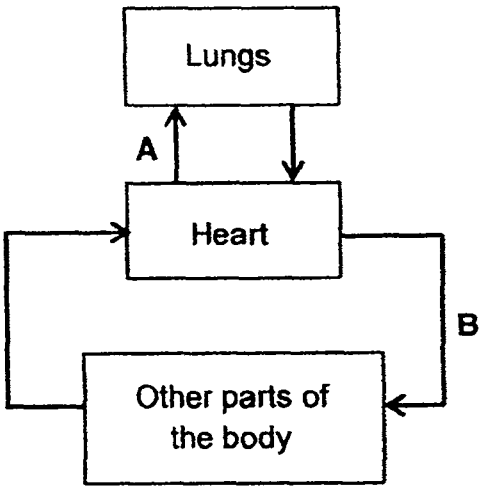
B : Digestive juices are added here.

C : Water is absorbed from the undigested food here.

Which of the parts P, Q, R and S match correctly to the statements made by students A, B and C?

	Student A	**Student B**	**Student C**
(1)	Q	P, Q	R
(2)	Q	P, R, Q	S
(3)	S	P, R, Q	S
(4)	S	R, Q	P

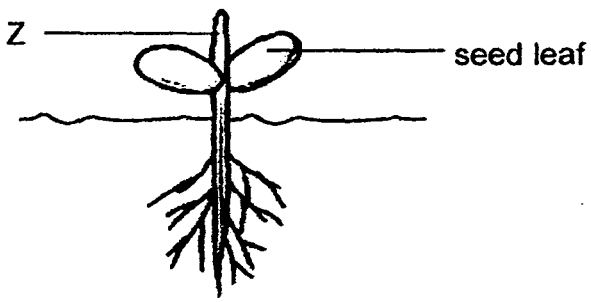
17. The diagram below shows the movement of blood.



Which one of the following about the blood in blood vessels A and B is correct?

	A	B
(1)	Poor in oxygen	Poor in carbon dioxide
(2)	Poor in oxygen	Rich in carbon dioxide
(3)	Rich in oxygen	Rich in carbon dioxide
(4)	Rich in oxygen	Poor in carbon dioxide

18. The diagram shows a seed growing into a young plant.

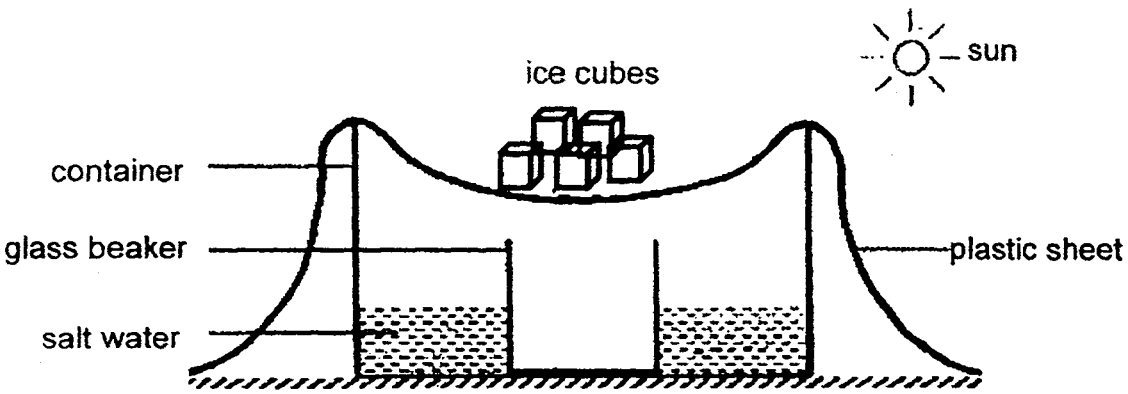


What is the direction in which water and food are being transported to Z?

	Direction for transport of	
	water	**food**
(1)	upwards	downwards
(2)	upwards	upwards
(3)	downwards	downwards
(4)	downwards	upwards

Please use the information below to answer questions 19 and 20.

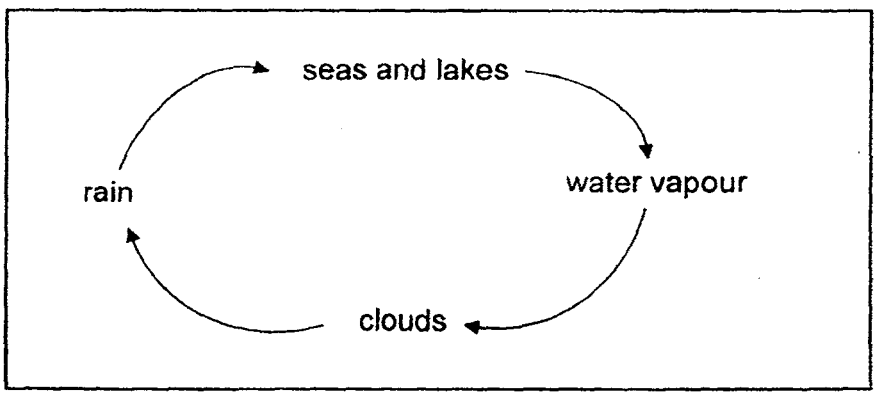
Raja created a model of the water cycle in the experiment as shown below. He put a glass beaker in a container of water and covered it with a plastic sheet. Next, he put some ice cubes on the plastic sheet.



19 What was the purpose of the ice cubes?

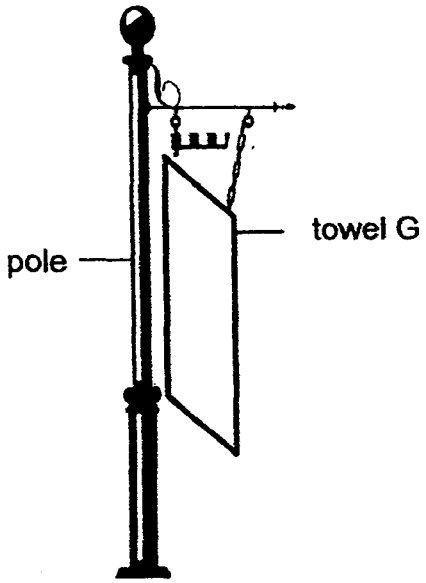
(1) To cool down the plastic sheet so that water vapour forms in the container.
(2) To cool down the plastic sheet so that water vapour condenses under the sheet.
(3) To cool down the container so that more salt water evaporates.
(4) To cool down the salt water so that more water evaporates.

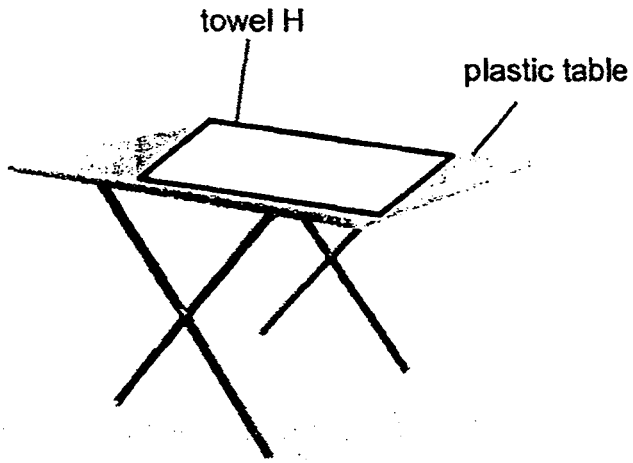
20. Which part of the water cycle does the salt water in the container represent?



(1) seas and lakes
(2) water vapour
(3) clouds
(4) rain

21. Calvin has two identical towels, G and H, which are each soaked in one litre of water. He tries to dry them using different methods as shown below. The two towels are placed in his garden. Towel G is hung on a pole and towel H is laid on a plastic table.





Which of the following best describes the time taken for both towels to dry?

A: Towel G took a shorter time. The temperature was higher for the water to evaporate.
B: Towel G took a shorter time. There was more exposed surface area for the water to evaporate.
C: Towel H took a shorter time. The temperature was lower for the water to evaporate.
D: Towel H took a longer time. There was less exposed surface area for the water to evaporate.

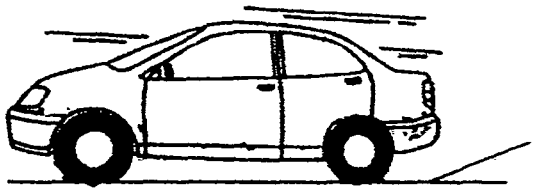
(1) A and D only
(2) B and C only
(3) A and C only
(4) B and D only

22. Which one of the following are example(s) of energy conversion?

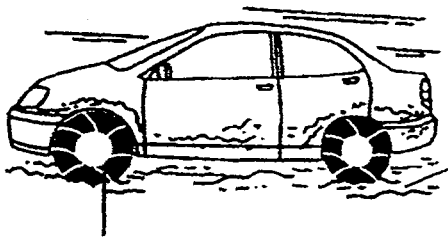
A: Walking to the classroom
B: Switching on a torch
C: Using petrol to drive a car

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

23. Study the diagrams shown below carefully. In some countries which snow during winter, drivers may fit snow chains on the tyres of car wheels. This helps them to drive safer on roads covered with snow.



road not covered with snow



road covered with snow

snow chain fitted on the tyres

Average speed of car with snow chains	Average speed of car without snow chains
40km/h	70km/h

Which of the following best explain about the use of snow chains during the winter season?

A: The chains reduce friction between the wheel and the road surface.

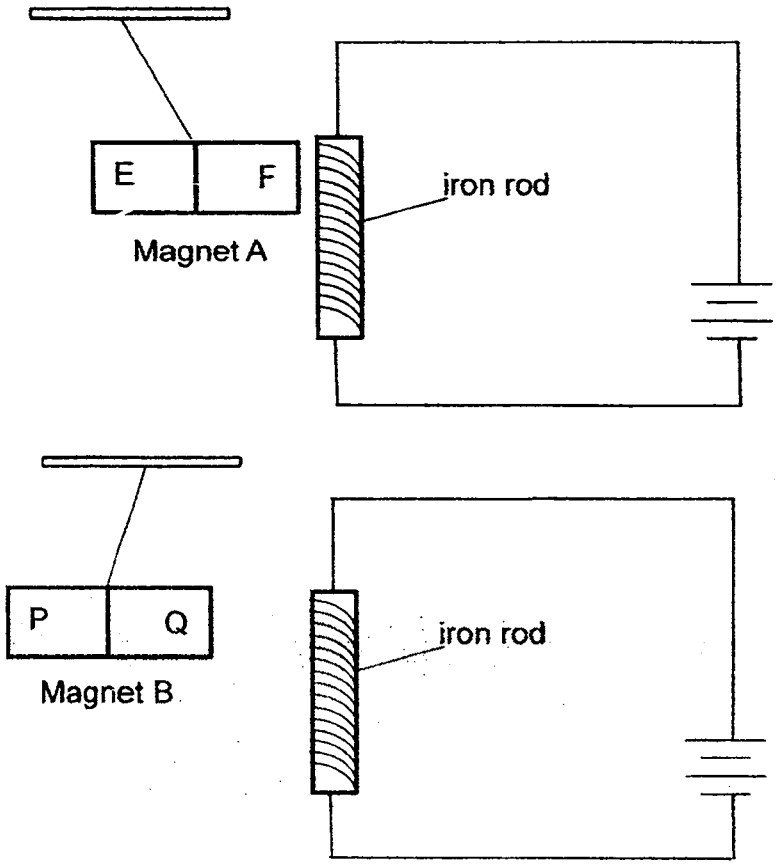
B: The chains increase friction between the wheel and the road surface.

C: The chains cause the car to move at a slower speed.

D: The chains cause the car to move at a faster speed.

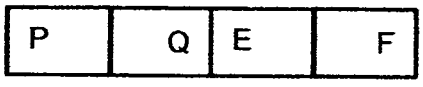
(1) A and C only
(2) B and C only
(3) A and D only
(4) B and D only

24. An iron rod is connected to a closed circuit. The diagrams below show the reaction when magnets A and B are held close to the iron rod.



What will be the most likely reaction if magnet A and B are placed together?

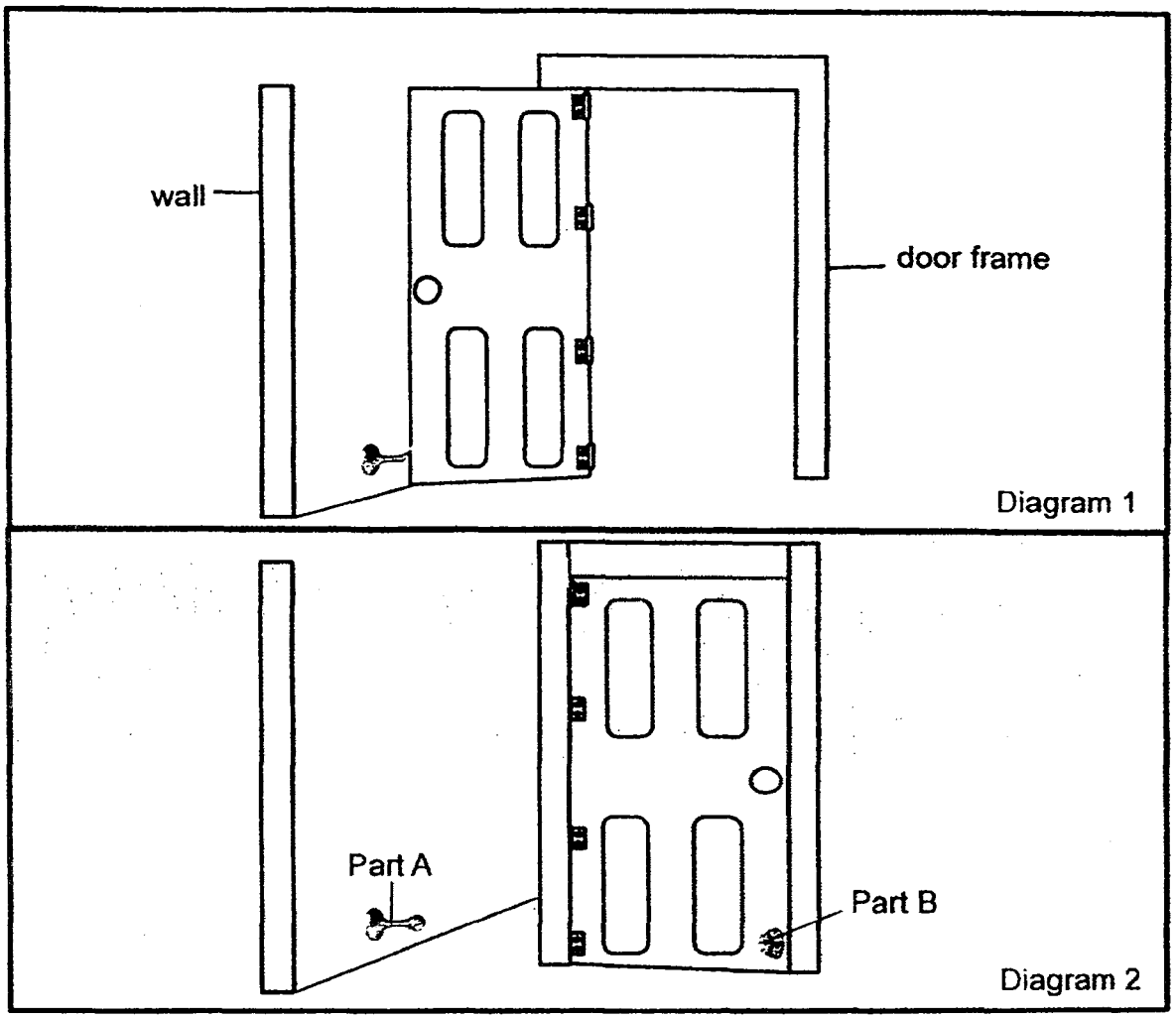
(1) 

(2) 

(3) 

(4) 

25. The diagrams below show the interaction between parts A and B of a magnetic door stopper. In diagram 1, the magnetic door stopper helps to keep the door open without it closing accidentally.



Based on the diagrams shown above, parts A and B have to interact to enable this magnetic door stopper to work.

Which of the following best represents parts A and B?

	Part A	Part B
(1)	iron	copper
(2)	aluminium	steel
(3)	aluminium	plastic
(4)	iron	steel

26. Aminah tested the hardness of four materials, A, B, C and D, by scratching them using the sharp ends of a plastic rod and a wooden rod.

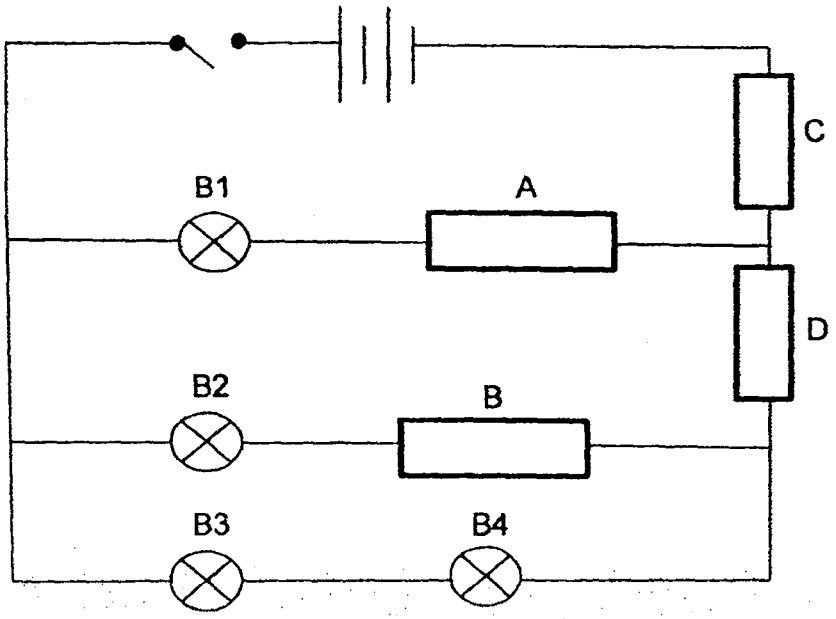
She checked for the presence of scratch marks on the materials and recorded her observations in the table below.

Rod used to scratch material	**Scratch marks observed on material?**			
	A	**B**	**C**	**D**
plastic	yes	no	no	no
wood	yes	no	yes	no

Which one of the following statements is correct?

(1) A and B are harder than plastic.
(2) B and D are harder than plastic.
(3) A and C are harder than wood.
(4) C and D are harder than wood.

27. Yuzal set up an electrical circuit as shown below. A, B, C and D are objects made of different materials and placed in the circuit. When the switch is closed, certain bulbs lighted up.



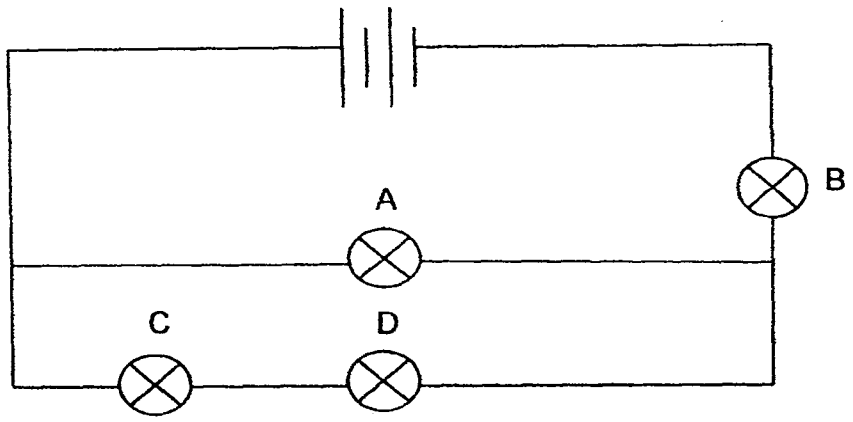
When the switch is closed, he recorded the bulbs that lighted up in the table.

Bulb	Did the bulb light up?
B1	Yes
B2	No
B3	Yes
B4	Yes

Which one of the following correctly shows what is represented in Yuzal's investigation?

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

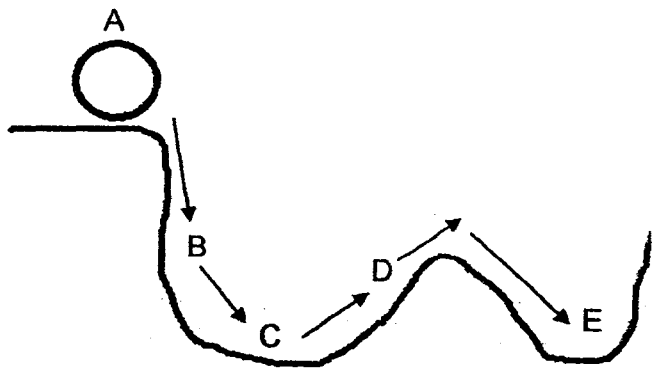
28. Study the circuit diagram below carefully.



If one bulb fuses and the rest of the bulbs remain lighted up, which bulb fused?

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

29. A ball was released from point A and it moved along the points to point E where it stopped as shown below.

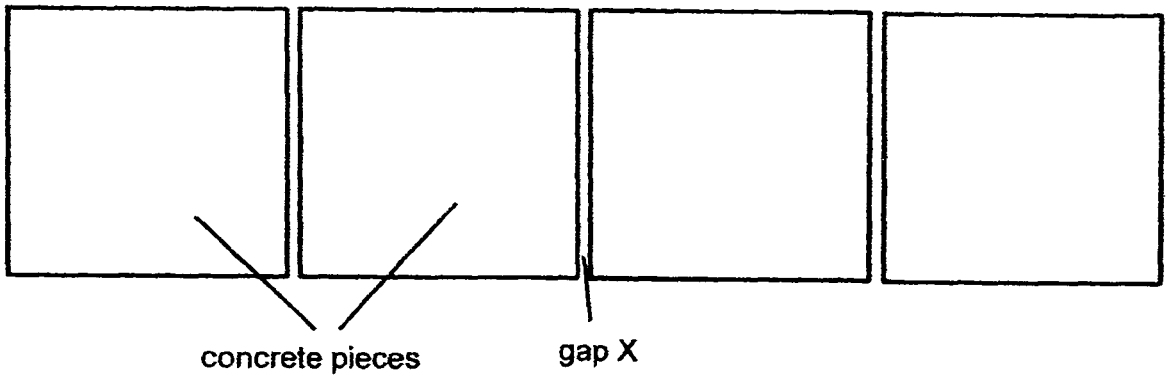


Which of the following is correct?

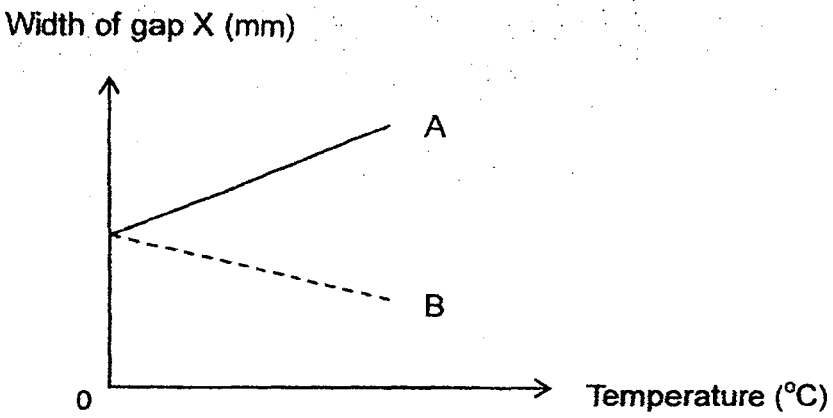
(1) The ball had less kinetic energy at B than at A.
(2) The ball had more kinetic energy at C than at D.
(3) All the kinetic energy of the ball was converted to gravitational potential energy as the ball rolled to D.
(4) The kinetic energy of the ball was converted to only sound energy at C.

30. Mr Tan was walking along the pavement when he observed narrow gaps between the pieces of concrete on the pavement.

Top view of pavement



He plotted two graphs to show the changes in the width of gap X as the temperature changes.



Which of the following shows the correct graph and explanation on the changes in the width of gap X as the day becomes warmer?

	Graph	Explanation
(1)	A	The concrete pieces lost heat and contracted.
(2)	A	The concrete pieces gained heat and expanded.
(3)	B	The concrete pieces lost heat and contracted.
(4)	B	The concrete pieces gained heat and expanded.

End of Section A

SCIENCE
2016 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 10 May 2016

BOOKLET B

14 Questions
40 Marks

In this booklet, you should have the following:
a. Page 19 to Page 34
b. Questions 31 to 44

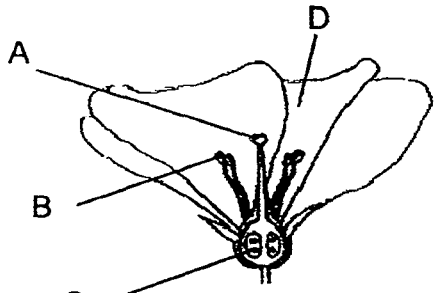
MARKS

	OBTAINED	POSSIBLE
BOOKLET A		60
BOOKLET B		40
TOTAL		100

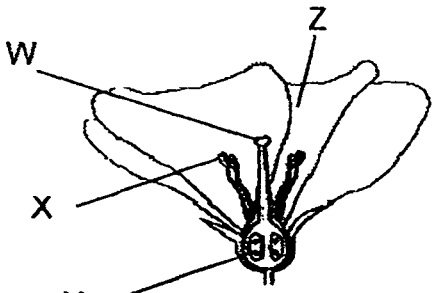
Parent's Signature : _____

SECTION B
Answer all the questions in the spaces provided.

31. A bee moves from flower L to flower M in search for nectar.



flower L



flower M

When the bee landed on flower M, it unknowingly transferred substance Q from flower L to flower M. Substance Q is needed for flower M to develop into a fruit.

(a) (i) Based on the information above, from which part of flower L (A, B, C or D) was substance Q produced? (1/2m)

_____

(ii) Based on the information above, to which part of flower M (W, X, Y or Z) was substance Q transferred by the bee that could help the flower develop into a fruit? (1/2m)

_____

(b) If flower M develops into a fruit, will the fruit have one seed or a few seeds? Why? (2m)

_____

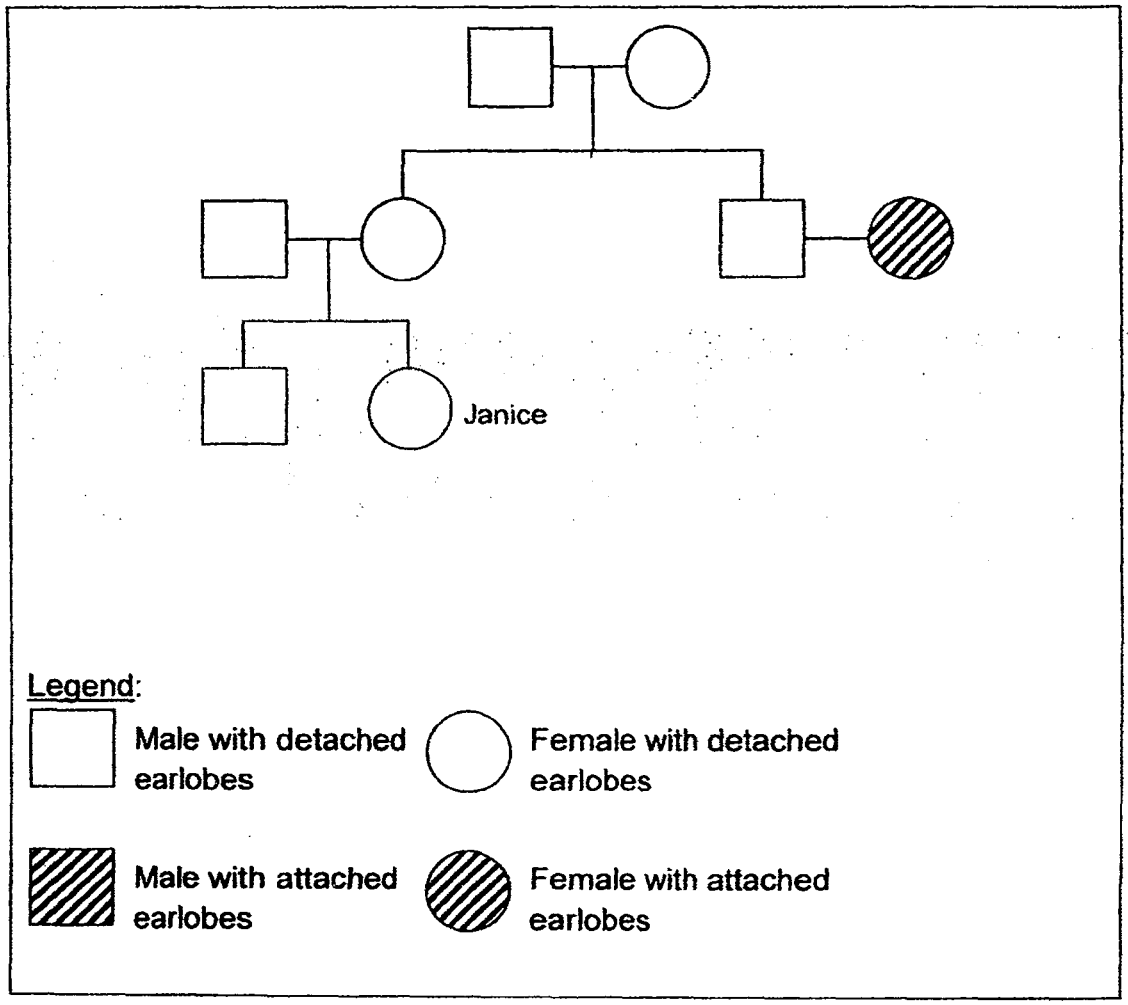
_____

3

32. Read the description about Janice and her family below.

Janice's grandmother has three children and only one of them is a female.
Janice has an uncle, Ken, who is not married.
Janice's elder brother, Jordan, is married to Candice.
Candice and Janice's aunt have attached earlobes.

(a) Complete Janice's family tree using the information above. Draw and label the symbols for Janice's uncle, **Ken**, and her brother's wife, **Candice**. (1m)

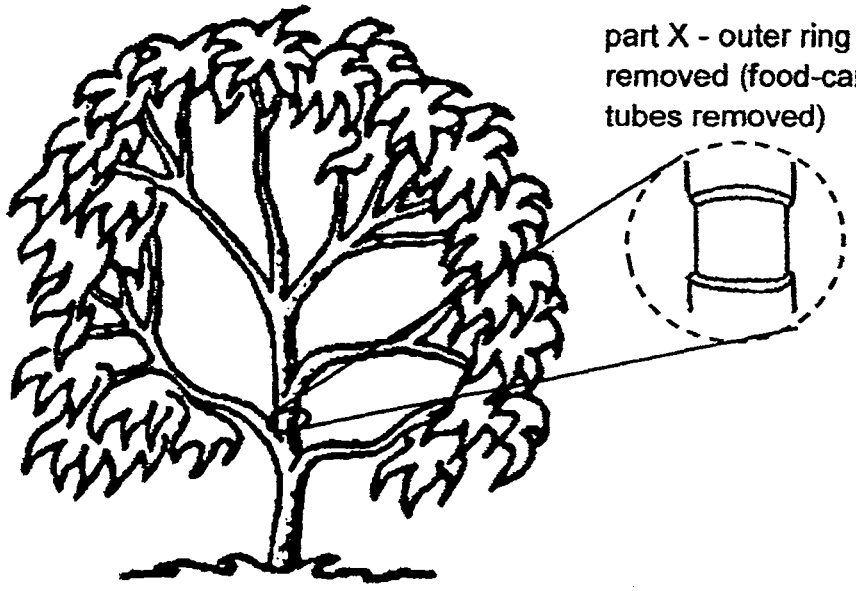


(b) Why did Janice have detached earlobes? (1m)

_____

_____

33. Dianne found a fruit tree in her garden. At part X, she removed an outer ring from the stem as shown below. The food-carrying tubes were removed while the water-carrying tubes remained in the stem.



After some time, she noticed fruits growing above and below part X, where she removed the outer ring.

Dianne found that the fruits above part X were sweeter than those below part X. Suggest why sweeter fruits were produced above part X. (2m)

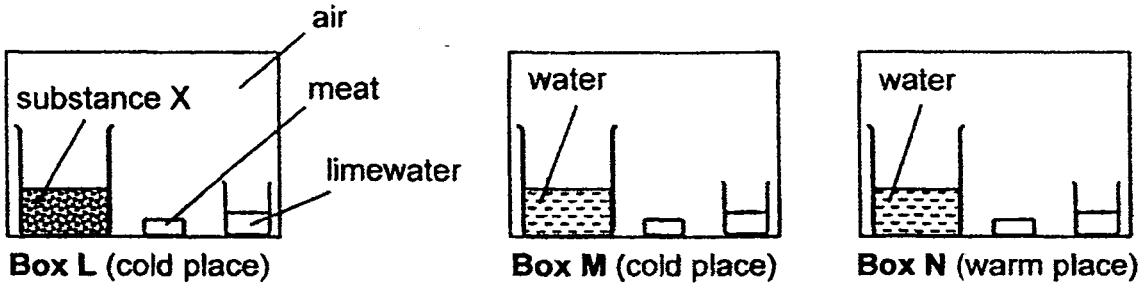
_____

_____

_____

34. George placed three similar pieces of meat into three identical sealed transparent boxes, L, M and N. In each box, there was a small beaker of limewater and a large beaker of either substance X or water. Substance X absorbed oxygen from the surrounding air.

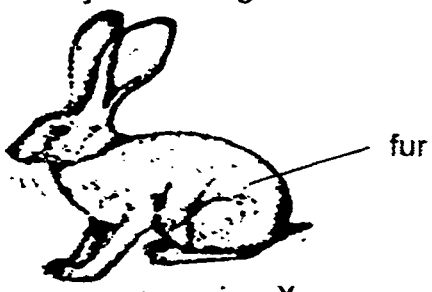
He placed boxes L and M in a cold place and box N in a warm place.



(a) The beaker of limewater in box N turned chalky the fastest. Explain why. (2m)

(b) George observed that the meat in box M decomposed but the one in box L did not. Why did the meat in box L not decompose? (1m)

35. Organism X is adapted to the conditions of dry grasslands. Dry grasslands can be very hot in the day and very cold at night.



organism X

(a) Explain how does organism X's structural adaptation (coat of fur) help it to survive the cold weather at night. (1m)

_____

_____

In hot weather, organism X's ears stand straight up. In cold weather, the ears lie back close to the body.

(b) How does the behavioural adaptation help organism X to survive the hot and cold weather? (2m)

Hot weather:

_____

_____

Cold weather:

_____

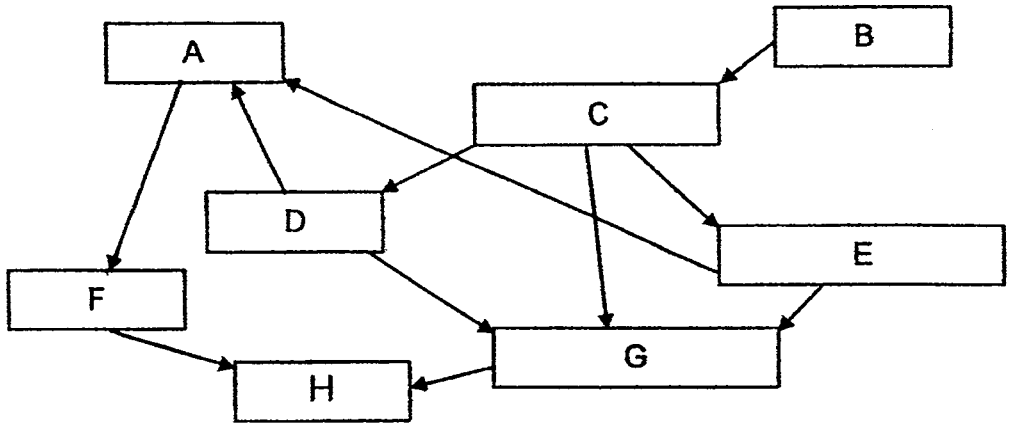
_____

(c) Organism X is a plant eater. It has an excellent sense of hearing and moves quickly with its strong legs. Suggest a reason why its hearing and movement are important to its survival. (1m)

_____

_____

36. Study the food web below.

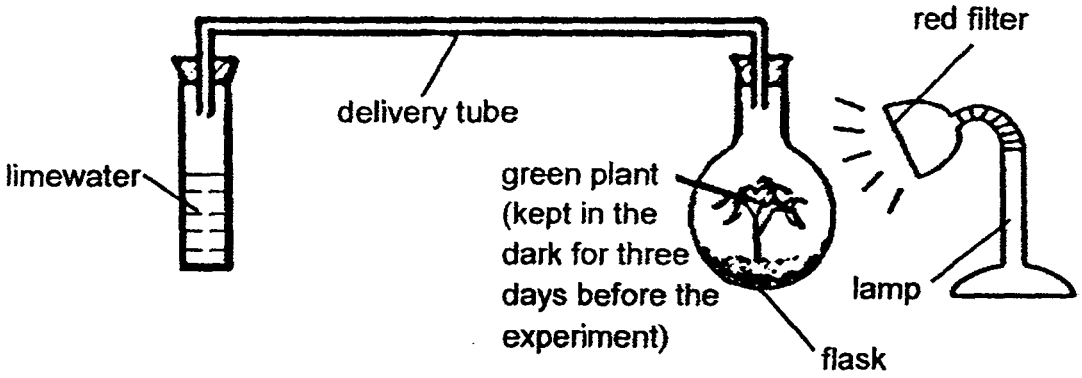


(a) Explain how does the removal of organism B affect the population of organism E. (2m)

(b) Other than providing food indirectly, explain another benefit that organism B could provide for organism H. (1m)

(c) Identify two organisms that are both a predator and a prey. (1m)

37. Ai Qing wanted to find out if there was any coloured light that could not be used for plants to photosynthesise. She prepared three set-ups. One example of the set-ups was shown in the diagram.



For each set-up, the plant was exposed to light that was similar in colour as the filter colour. At the end of five hours, one leaf in each set-up was tested for starch. Also, the observation of the limewater was recorded in the table shown.

Colour of filter	Limewater
Red	Remained clear
Blue	Remained clear
Green	Turned chalky

(a) Name one variable that must be kept constant to ensure a fair test. (1m)

_____

(b) Based on the table, what could be concluded about the effect of light colour on the plant's ability to photosynthesise? (1½ m)

_____

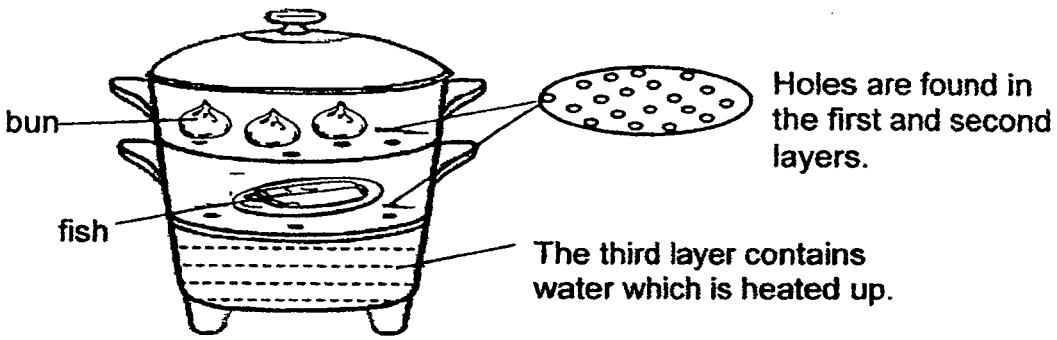
_____

(c) After the starch test was done, what observation to the colour of the iodine solution would show that her conclusion was correct? Complete the table below. (1½ m)

Colour of filter	Colour of iodine solution after starch test was done
Red	
Blue	
Green	

4

38. During a shopping trip, Mr Tan saw a multi-steamer with two layers that can cook food as illustrated below. It is a product which saves time as you can cook two dishes at a time. Mr Tan saw the demonstration of cooking steamed buns and fish.



(a) There were water droplets found on the surface of the steamed buns. Explain how the water droplets were formed. (2m)

_____

_____

_____

(b) Explain how the use of a cover helps to cook the food in a shorter time. (1m)

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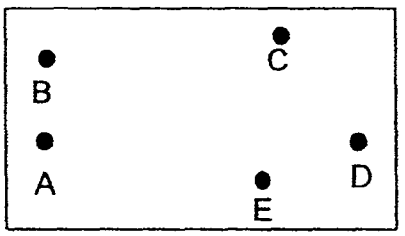
_____

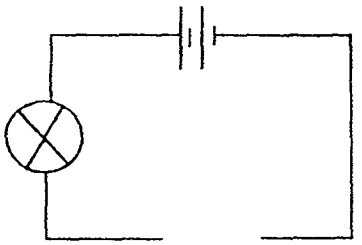
3

39. The diagram below shows a circuit card and a circuit tester.

Circuit card



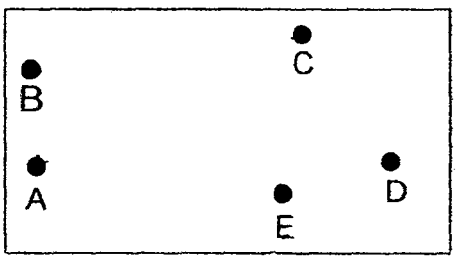
Circuit tester



The table below shows what happens to the bulb when each of the points on the circuit card is connected to the circuit tester.

Points connected to the circuit tester	Does the bulb light up?
A and B	Yes
A and C	Yes
B and D	No
B and E	Yes
C and D	No

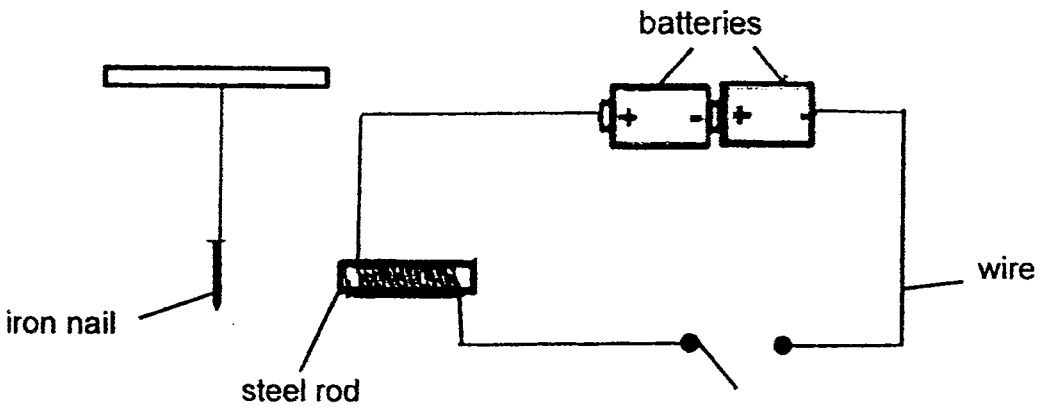
Based on the information given in the table above, draw three lines to complete the circuit card to show the correct arrangement of the wires. (1m)



1

40. Study the set-up shown.

Circuit C



(a) When the switch in circuit C is closed, which direction will the iron nail move towards? Explain your answer. (2m)

_____

_____

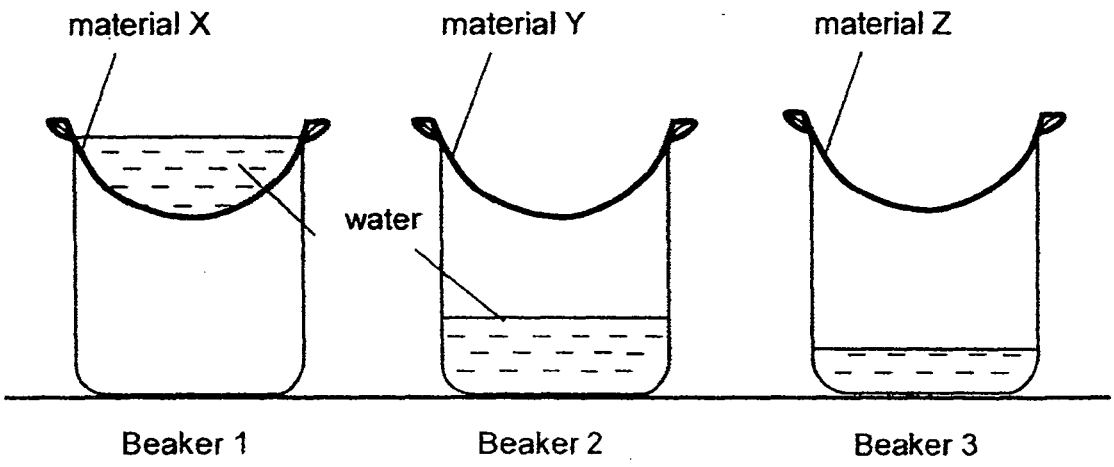
_____

(b) Will the iron nail move if the steel rod is changed to a plastic rod? Why is it so? (1m)

_____

_____

41. Devi set up an experiment using materials X, Y and Z. She secured the materials at the top of the beakers and poured the same amount of water onto each material. The amount of water collected in each beaker and/or on each material after 30 minutes is shown below.



(a) What could she observe to confirm which material is the most suitable to make a bath towel? (1m)

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_____

(b) Devi poured different amount of water onto three separate identical pieces of material Z. She measured the mass of the wet material and recorded the results as shown.

Amount of water poured onto each piece of material Z (ml)	0	10	20
Mass of material Z (g)	20	30	40

What is the relationship between the mass of material Z and the amount of water poured onto material Z? (1m)

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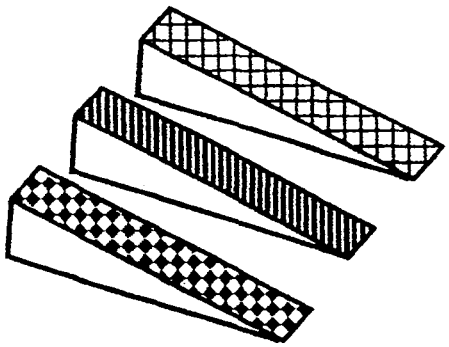
_____

2

42. Kai Le conducted an experiment in which he released the same block to slide down a ramp from the same starting point. He used ramps of the same height but with three different surfaces. The ramps were shown below.

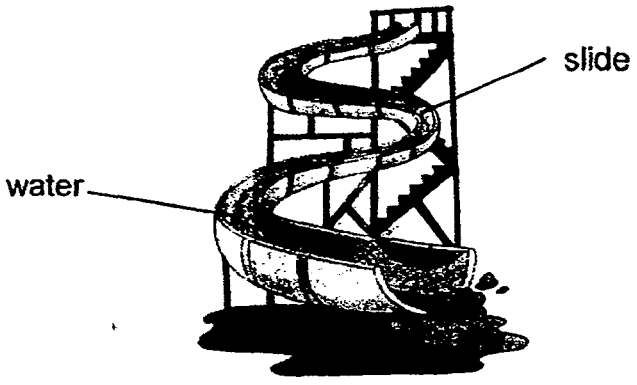


He tabulated the results as shown.

Ramp		Time taken for the block to slide down the ramp
A		10 seconds
B		20 seconds
C		30 seconds

(a) Explain what Kai Le can conclude about ramp A. (2m)

Kai Le's parents brought him to the Water Play Park and he played on the water slide as shown.



He took three minutes to get from the top to the bottom of the slide for his first ride. On his second ride, he noticed that more water flowed down the slide. As a result, Kai Le's took only two minutes to reach the bottom of the slide for his second ride.

(b) Why did Kai Le take a shorter time to reach the bottom of the slide on his second ride? (1m)

_____

_____

43. Xin Man carried out an experiment with a steel paper clip attached to a string and a magnet. The set-up of the experiment was shown below.

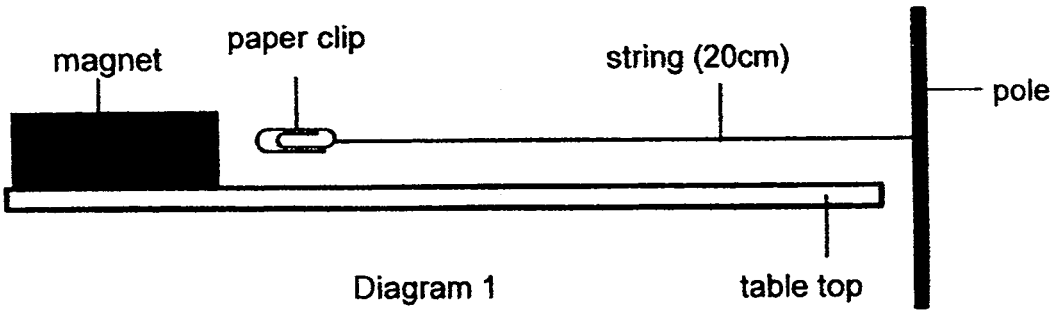


Diagram 1

(a) Explain why the steel paper clip reacted towards the magnet as shown in diagram 1. (1m)

_____

_____

Xin Man heated the magnet. After heating, she measured the length of the string needed to achieve the same effect as shown in diagram 1. The results were recorded below.

Magnet	Length of string needed (cm)
Before heating	20
After heating	22

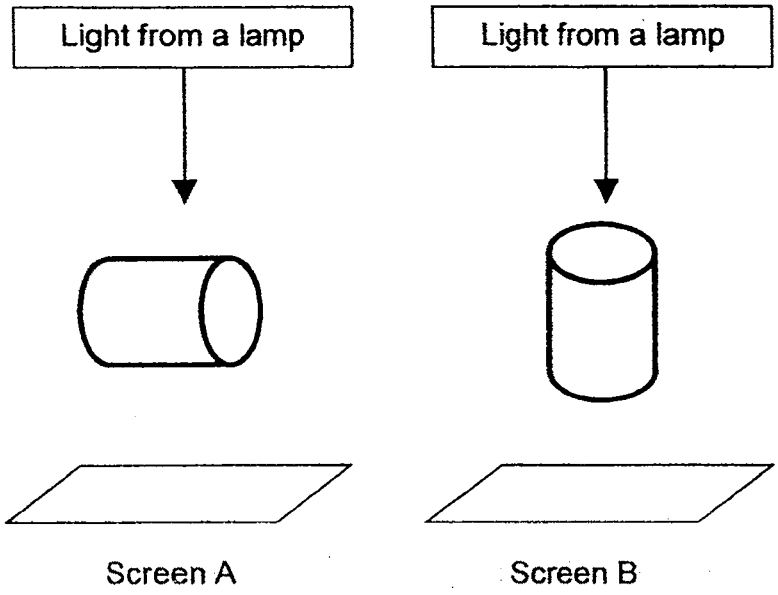
(b) After heating the magnet, why did she have to use a longer string to achieve the same effect as shown in diagram 1? (1m)

_____

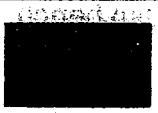
_____

2

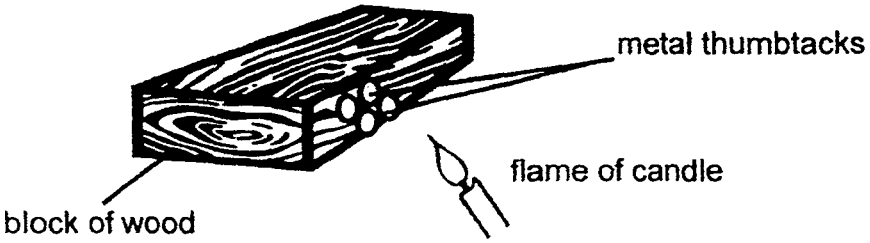
44. Jin Yong wanted to find out how the shape of the shadow of a metal can is affected by the way it is placed. He placed two similar cans in two different positions and shone light from the same lamp. He observed the shadows cast on screen A and B below.



(a) Tick a possible set of shadows Jin Yong would observe on screens A and B. (1m)

Screen A	Screen B	Tick the correct set of shadows
		
		

Study the experiment carefully.



Jin Yong set up and conducted an experiment as shown above. He used a candle to heat the area around the wood for approximately 10 minutes.

After heating, he measured the temperature and realised that the wood was not as hot as the metal thumbtacks.

(b) Explain why the metal thumbtacks were hotter than the wood after being heated for 10 minutes. (2m)

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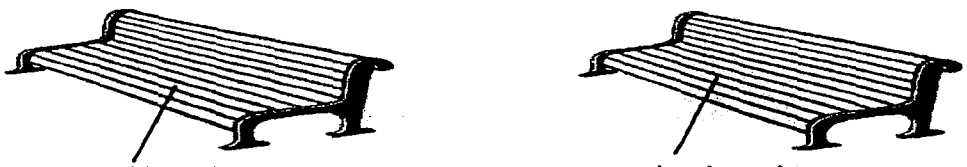
On a hot day, Jin Yong observed that more people prefer to sit on a wooden bench than the metal bench. Both benches were located at the same location at the field.



(c) Explain why more people prefer to sit on the wooden bench during a hot day. (1m)

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End of Section B
Please check your answer.

ANSWER KEY

YEAR	:	**2016**
LEVEL	:	**PRIMARY 6**
SCHOOL	:	**RED SWASTIKA**
SUBJECT	:	**SCIENCE**
TERM	:	**SA1**

Booklet A

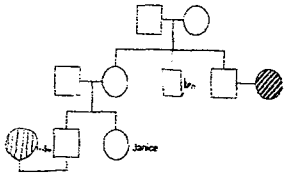
Q1	3	**Q6**	1	**Q11**	3	**Q16**	2	**Q21**	4	**Q26**	2
Q2	3	**Q7**	4	**Q12**	2	**Q17**	1	**Q22**	4	**Q27**	1
Q3	4	**Q8**	3	**Q13**	4	**Q18**	2	**Q23**	2	**Q28**	1
Q4	4	**Q9**	1	**Q14**	3	**Q19**	2	**Q24**	1	**Q29**	2
Q5	1	**Q10**	3	**Q15**	4	**Q20**	1	**Q25**	4	**Q30**	4

Booklet B

Q31a (i) Part B
(ii) Part W

Q31b The fruit will have a few seeds. After fertilisation, the ovules of flower M turn into seeds. As flower M has more than one ovule, the fruit will have a few seeds.

Q32a



Q32b Both her parents have detached earlobes, hence they are able to pass the characteristics/traits/genetic information to her.

Q33 Food produced by the leaves above part X cannot be transported below part X as the food carrying tubes were removed. More food is stored in the fruits above part X making the fruits sweeter.

Q34a Box N had the best conditions, warmth, oxygen, and water/moisture, for bacteria to grow most quickly. The rate of decomposition of meat was the fastest and most carbon dioxide was produced.

Q34b Bacteria could not survive as there was no oxygen present. Hence, there was no bacteria to decompose the meat.

Q35a Organism X's fur will trap air. The air trapped is a poor conductor of heat and reduces heat loss from the organism to the surroundings.

Q35b Hot weather : When organism X's ears stand upright, there is an increased exposed surface area between its body and the surrounding air, allowing it to lose more heat to the surrounding air.

Cold weather : When organism X's ears lie back close to its body, less exposed surface area of the ears is exposed to the surrounding air and there is less body heat loss.

Q35c With an excellent sense of hearing, Organism X can sense danger as early as possible, and with its quick movement, it can runaway/hop away quickly from danger.

Q36a When the organism B is removed, (organism) C has no food to feed on and so the population will decrease. There is less Organism C for Organism E to feed on. Hence, the population of Organism E would decrease.

Q36b Organism B is a food producer which produces oxygen when it makes food during photosynthesis.

Q36c E and F are both a predator and a prey.

Q37a She must ensure that the amount of limewater used OR the light intensity is kept the same.

Q37b She had concluded that the plant could not photosynthesise under green light and can only photosynthesise under blue and red light.

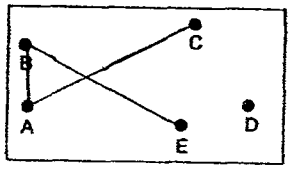
Q37c

Colour of filter	Colour of iodine solution after starch test was done
Red	**Blue - black**
Blue	**Blue - black**
Green	**Brown**

Q38a Water (droplets) in the third layer gained heat and evaporated into water vapour. The hot water vapour rises and touched the cooler inner surface of the cover, lost heat to it and condensed into water droplets.

Q38b The cover prevents the hot water vapour from escaping the steamer so that the heat is trapped in the steamer to cook the food in a shorter time.

Q39



Q40a The iron nail moved towards the steel rod. When the switch was closed, a closed circuit was formed and electricity flowed through the circuit. The steel rod became an electromagnet and attracted the iron nail, a magnetic material, to move towards it.

Q40b The iron nail would not move. Plastic rod is not a magnetic material so it cannot attract the iron nail.

Q41a The amount of water collected in the beaker is the least.

Q41b As the amount of water poured onto material Z increases, the mass of material Z increases.

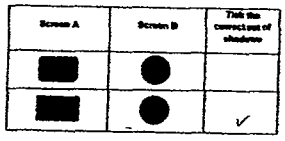
Q42a Ramp A has the smoothest surface. The amount of frictional force between the surface of the ramp and the block is the least.

Q42b There was more water which reduced the frictional force between the surface of the slide and Kai Le.

Q43a The paper clip is made of steel, a magnetic material so it was attracted to the magnet.

Q43b A longer string is required because the magnet's magnetic strength was weakened by the heat.

Q44a



Q44b The metal thumbtacks are better conductor of heat so it gain more heat from the flame.

Q44c Wood is a poorer conductor of heat. Heat is conducted from the bench to the person at a slower rate so it is cooler to sit on a wooden bench.

End