NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2017
PRIMARY 6

SCIENCE

BOOKLET A

28 Multiple Choice Questions (56 marks)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

Marks Obtained

Booklet A		/56
Booklet B		/44
Total		/100

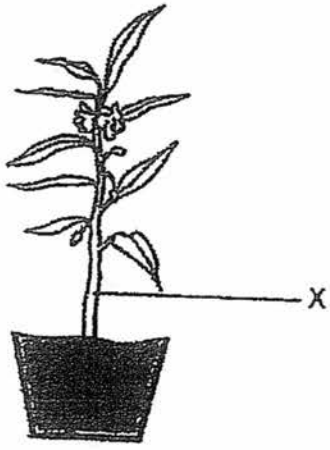
Name: _____ ( ) Class: P 6 _____

Date : 8 May 2017 Parent's Signature: _____

Section A: (28 × 2 marks = 56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.

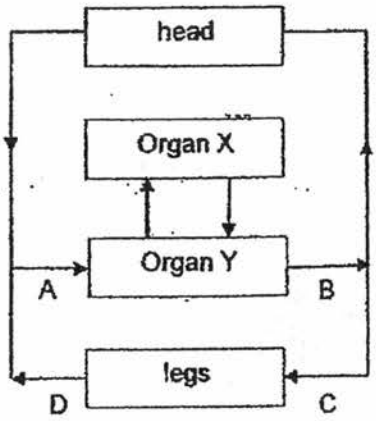
1. What is/ are the function(s) of part X in the diagram below?



A Part X holds the plant upright.
B Part X enables the plant to make food.
C Part X has tubes that transport food from the roots to all parts of the plant.

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

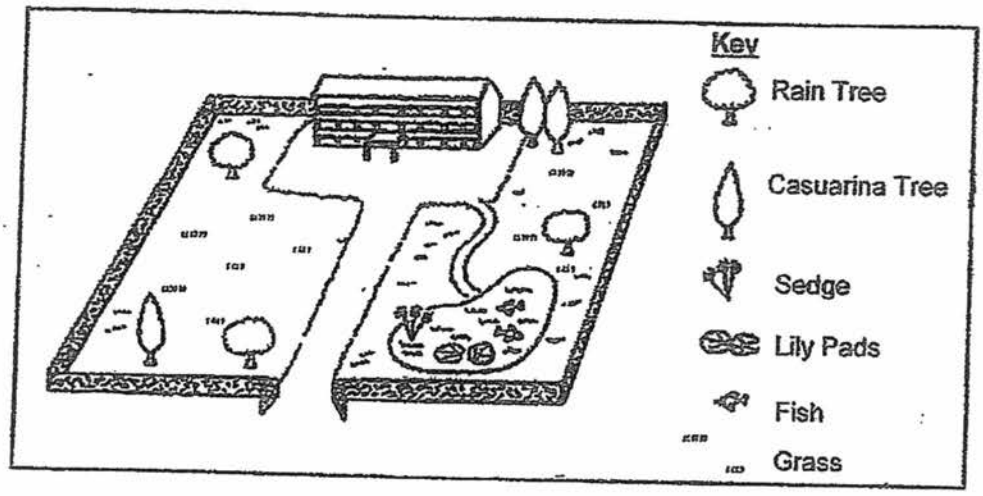
2. The diagram below shows the direction of blood flow in some parts of the body.



Which one of the following statements about the diagram above is correct?

(1) Organ X is the heart and Organ Y is the lungs.
(2) The blood in A and D is poorer in oxygen than the blood in B and C.
(3) The blood in A is rich in oxygen while the blood in B is rich in carbon dioxide.
(4) The blood in D is poor in carbon dioxide while the blood in C is poor in oxygen.

3. The diagram below shows a garden habitat in a school.

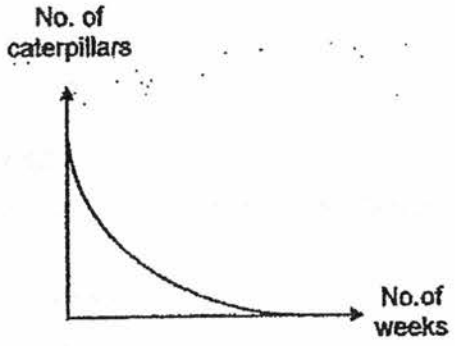


Which of the following statements is not true?

(1) There are three populations in the pond.
(2) There are five plant populations in the school.
(3) There is at least one community in the school.
(4) There are at least ten plant populations in the school.

4. The graph below shows how the number of caterpillars in the garden have changed over a number of days.

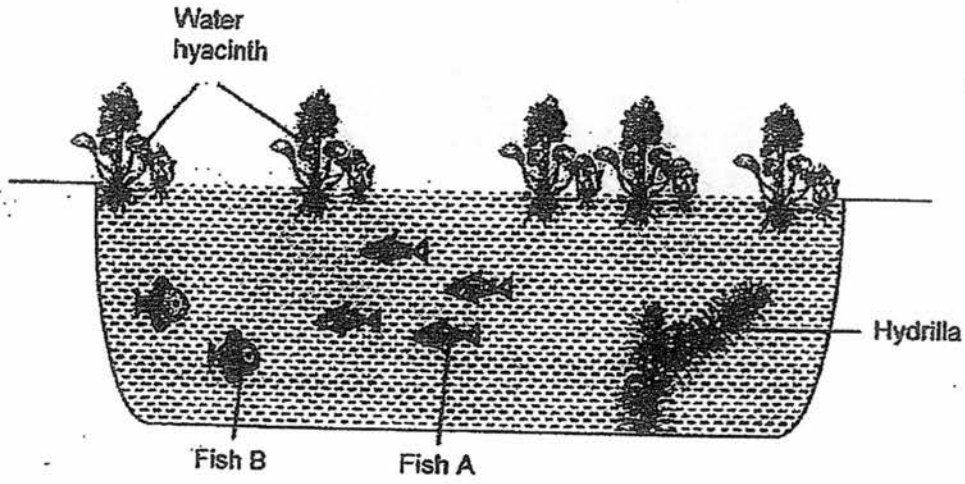
What are the likely reasons for the change in the number of caterpillars in the garden?



A All the caterpillars had turned into butterflies.
B There was a disease that struck the plants in the garden.
C There was a decrease in the number of predators of the caterpillars.

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

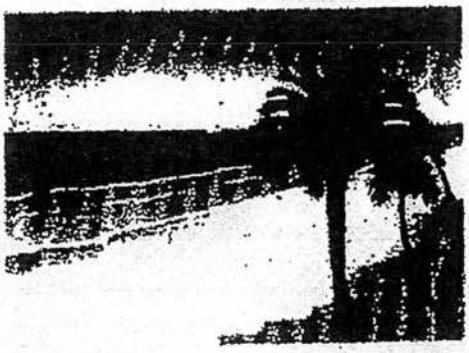
5. The diagram below shows a pond habitat. Fish A eats only hydrilla while Fish B feeds only on water hyacinth.



Which of the following will not cause Fish A to decrease in population over some time?

(1) Remove the hydrilla.
(2) Remove the water hyacinth.
(3) Introduce a predator of Fish A into the pond.
(4) A disease that struck the population of Fish A only.

6. The picture below shows a seashore habitat.



Which of the following factors affect(s) the environment of a seashore habitat?

A Availability of food
B The amount of light it receives.
C Presence of other kinds of organisms

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

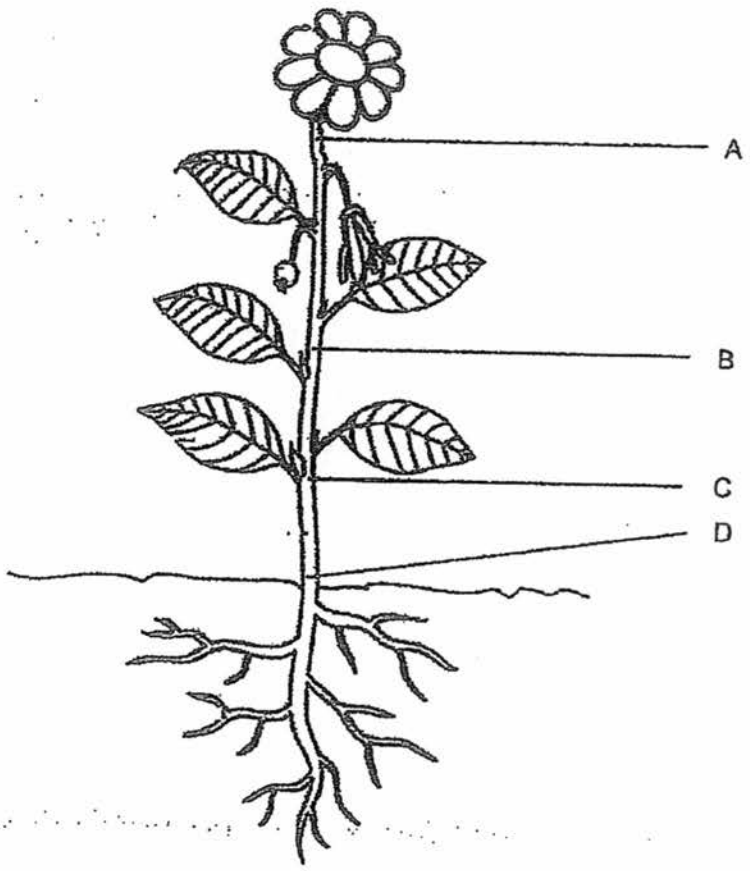
7. The table below shows some animals and their habitats.

Habitat	Animals
A	whale, jellyfish, dolphin
B	beetle, butterfly, snail
C	earthworm, millipede, wood louse
D	tadpole, water beetle, guppy

In which one of these habitats would you most likely find the dragonfly nymph?

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

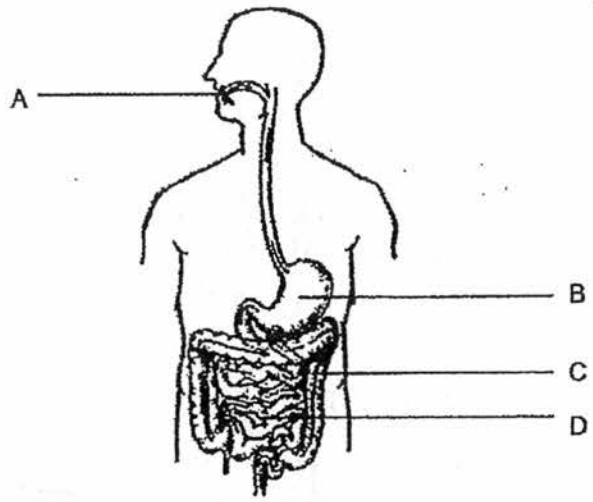
8. The diagram below shows a flowering plant.



At which part of the plant will both the food and mineral salts be definitely transported upwards only?

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

9. The diagram below shows part of the human digestive system.



Which of the following statements are correct?

A Water is absorbed at C only.
B Digestive juices are released at B, C and D only.
C Food is broken down into simpler substances at A, B and C only.
D Absorption of digested food into the bloodstream occurs at D only.

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

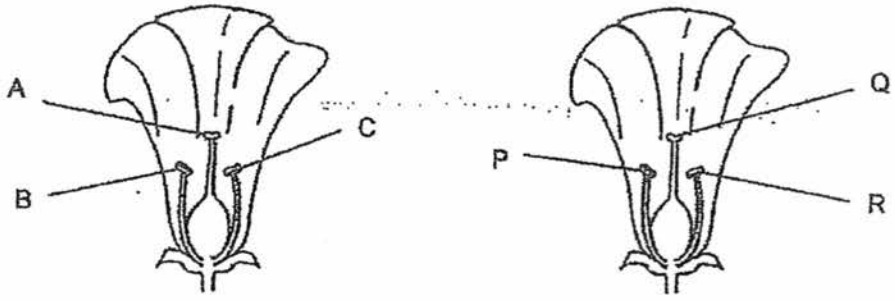
10. Linda was asked to identify three cells, P, Q and R.

Parts of a cell	Name of Cell		
	Cell P	Cell Q	Cell R
Nucleus	Present	Present	Present
Cell Wall	Present	Absent	Present
Cytoplasm	Present	Present	Present
Chloroplasts	Present	Absent	Absent
Cell Membrane	Present	Present	Present

Based on the results in the table above, what could cells, P, Q and R be?

	Cell P	Cell Q	Cell R
(1)	Leaf Cell	Skin Cell	Root Cell
(2)	Cheek Cell	Leaf Cell	Root Cell
(3)	Root Cell	Cheek Cell	Leaf Cell
(4)	Leaf Cell	Root Cell	Skin Cell

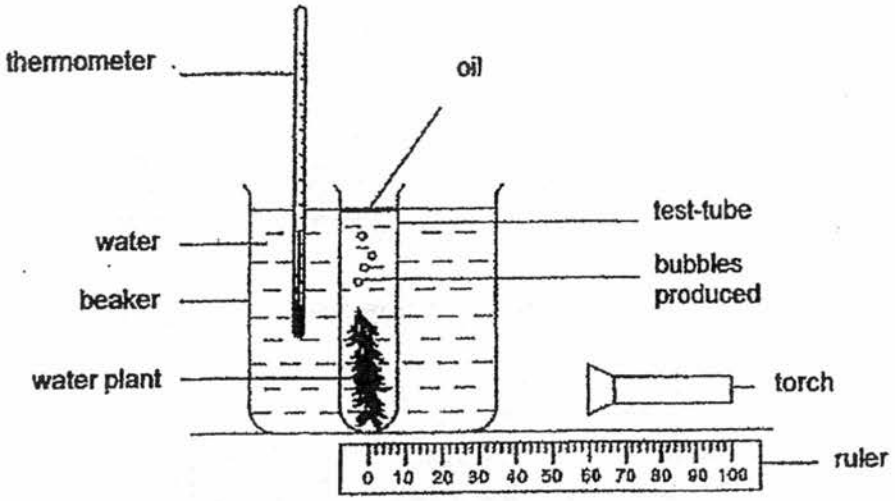
11. The diagram below shows 2 flowers.



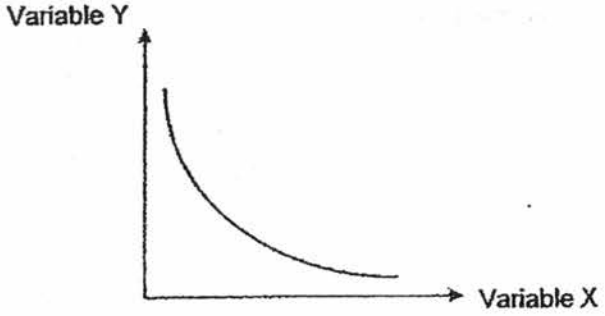
Pollination between these two flowers occurs when pollen grains are transferred from _____.

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

12. Elsa set up an experiment in a dark room as shown below.



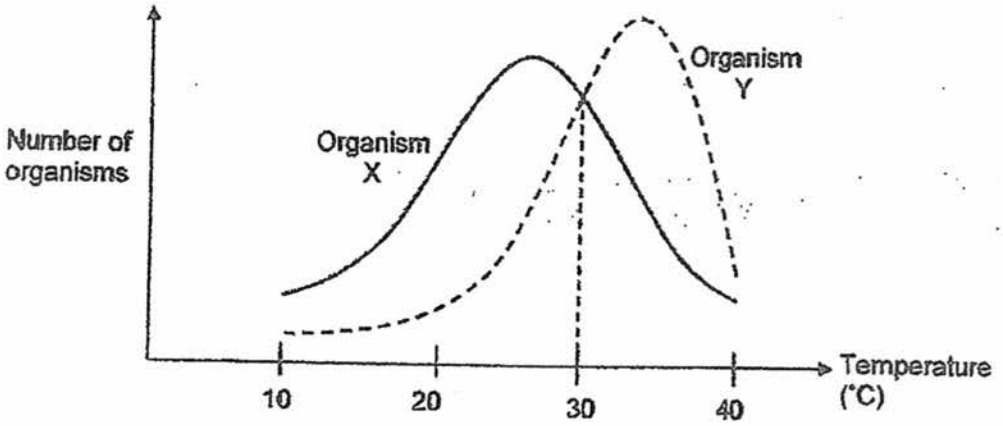
Elsa changed variable X and measured variable Y. She kept the other variables constant. Her results are shown below.



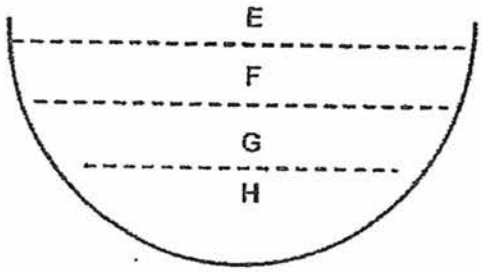
What are variables X and Y?

	Variable X	Variable Y
(1)	Amount of oxygen	Temperature of water
(2)	Light intensity	Number of bubbles produced per minute
(3)	Volume of water in the test-tube	Number of bubbles produced per minute
(4)	Number of water plants	Light intensity

13. The graph below shows how the temperature of the pond water affects the number of organism X and organism Y found in it.



The temperature of regions E, F, G and H in the pond is indicated in the key.



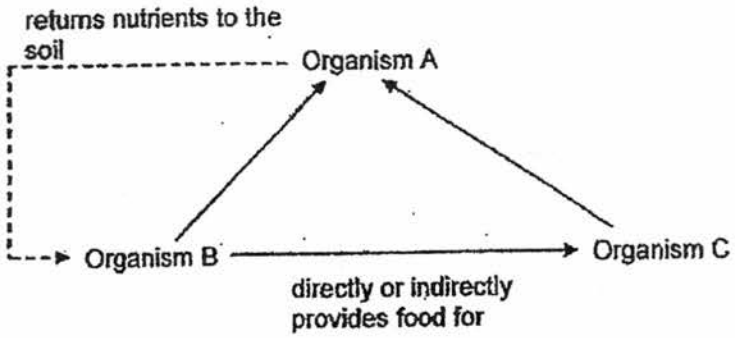
Key
Temperature Range (°C)
Region E: 35 to 40
Region F: 30 to 35
Region G: 25 to 30
Region H: Below 25

Based on the information above, which of the following statement(s) is/ are correct?

A In region H, there are more organism X than organism Y.
B Both organism X and organism Y thrive the best in region G.
C The population of organism Y decreased more slowly than organism X in region E.

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

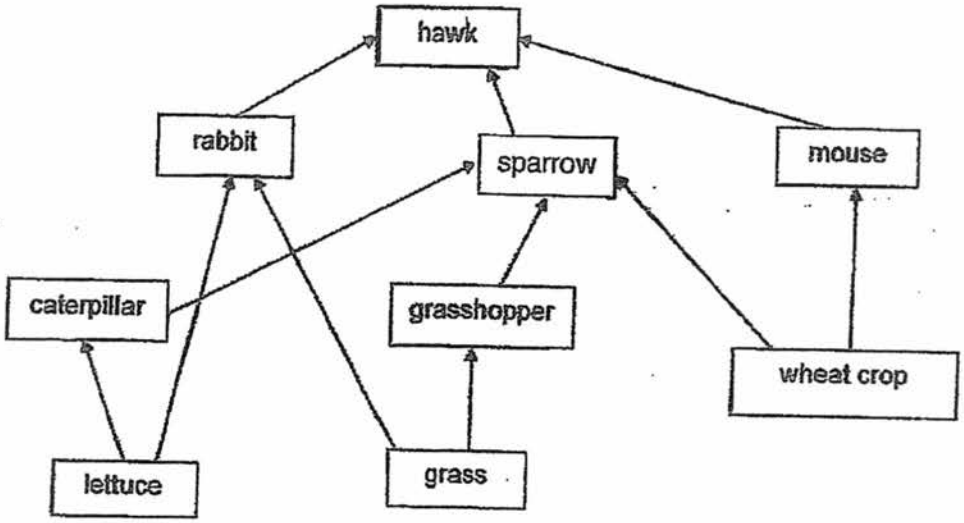
14. The diagram below shows the organisms A, B and C in a community and the arrows show the direction of the transfer of energy.



Which one of the following correctly represents A, B and C in this community?

	A	B	C
(1)	decomposer	food producer	food consumer
(2)	food producer	decomposer	food consumer
(3)	decomposer	food consumer	food producer
(4)	food consumer	food producer	decomposer

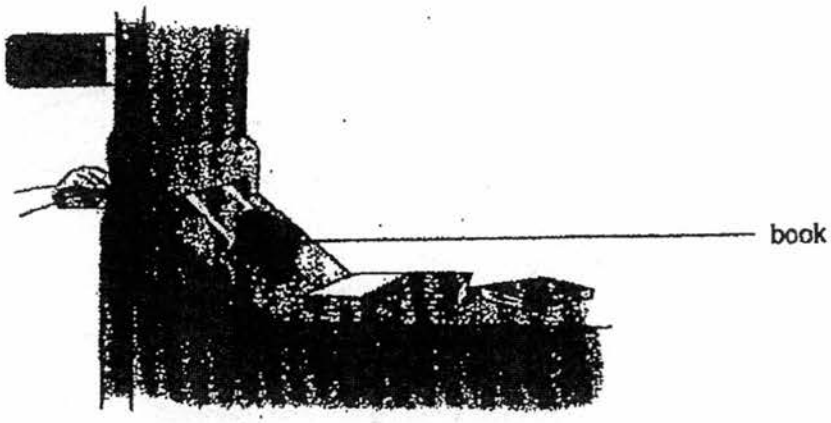
15. Study the food web below.



Which of the following would happen if the sparrow population was completely wiped out due to a disease that affected only the sparrows?

(1) The population of caterpillars will decrease.
(2) The population of rabbits will not be affected as it has sufficient food.
(3) Only the population of the grass and lettuce will increase but not the population of the wheat crop.
(4) The population of rabbits and mouse will decrease as the hawk will eat more rabbits and mouse.

16. Peter dropped a book at the book drop in a library.

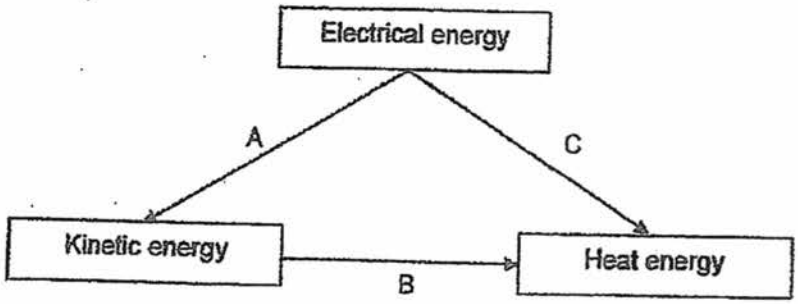


Based on the information above, which of the following statement(s) is/ are correct?

A The book stopped moving after some time after it was dropped into the book-drop.
B Frictional force between the book and the ramp caused the book to speed up as it slid down the ramp.
C Gravitational force caused the book to move down the ramp as Peter dropped the book.

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

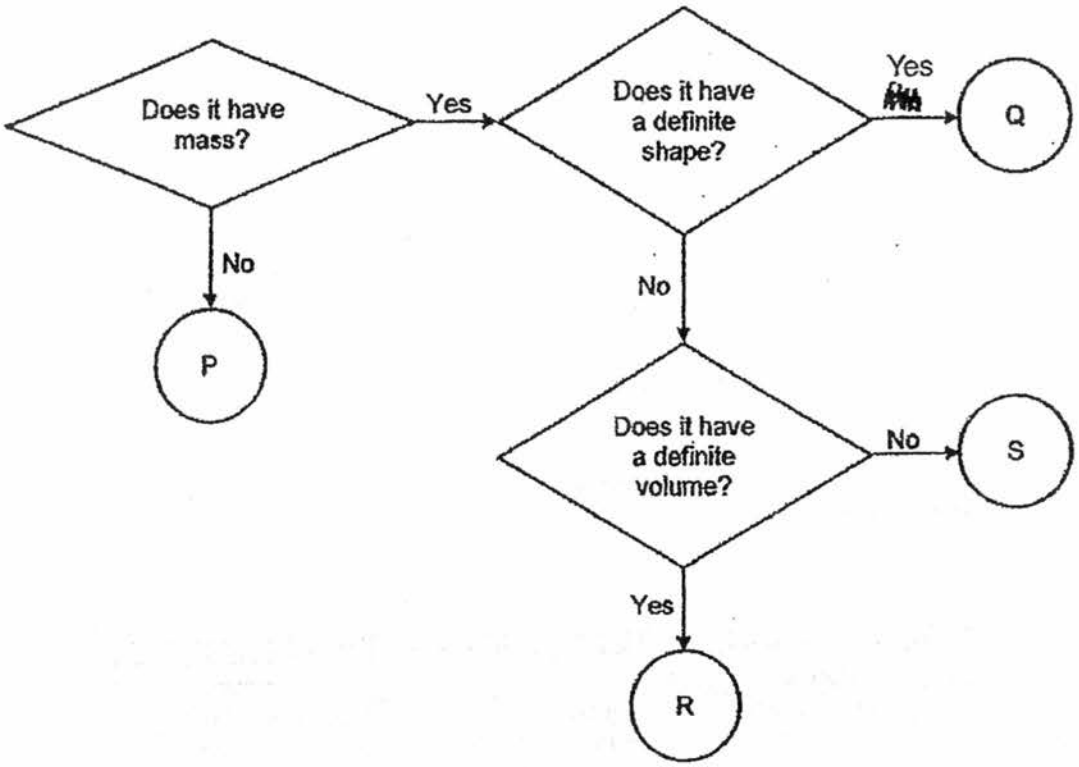
17. In the diagram below, different energy changes are represented by the arrows A, B and C. Only the useful forms of energy are considered.



Which of the following will bring about the energy changes represented by the arrows?

	A	B	C
(1)	Rubbing our hands together	Using an electric iron	Using an electric rice cooker
(2)	Using a hair dryer	Clapping our hands	Using an electric iron
(3)	Using an electric fan	Rubbing our hands together	Using an electric rice cooker
(4)	Using an electric iron	Clapping our hands	Using an electric fan

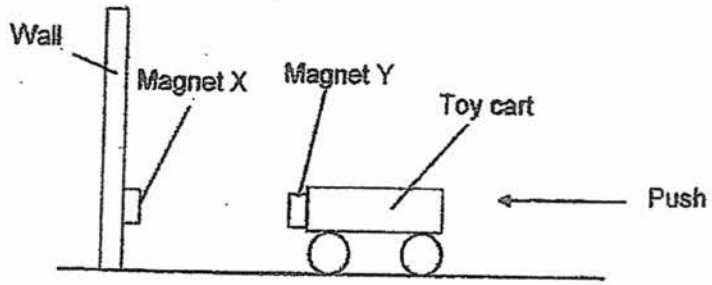
18. Study the flowchart below.



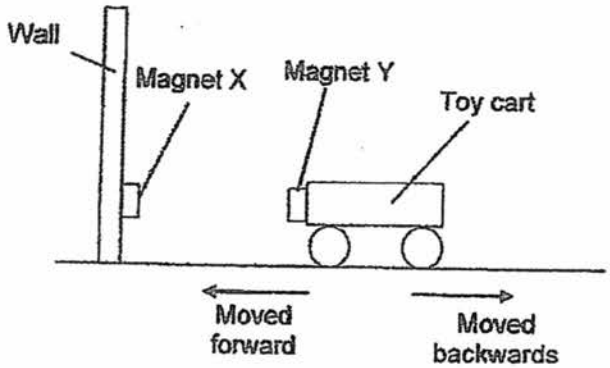
Which one of the following is most likely P, Q, R and S?

	P	Q	R	S
(1)	Sound	Snow	Oil	Steam
(2)	Heat	Ice	Oxygen	Water
(3)	Shadow	Sponge	Water vapour	Air
(4)	Light	Paper	Water	Dew

19. Alvin glued Magnet X to a wall and Magnet Y to the toy cart as shown in the diagram below. Then, he pushed the toy cart towards the wall.



The toy cart moved forward for a short distance before moving backwards again. The toy cart did not hit Magnet X at all.

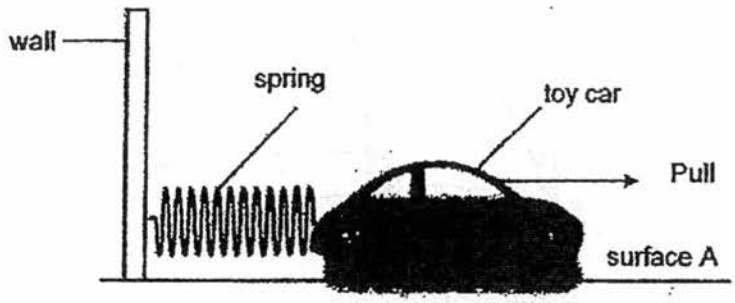


What were the forces acting on the toy cart when it moved backwards?

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

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

20. Susan secured a spring to a wall. Next, she attached a toy car to the other end of the spring. Then, she pulled the toy car and released it on Surface A. She recorded the time taken for the spring to return to its original length.



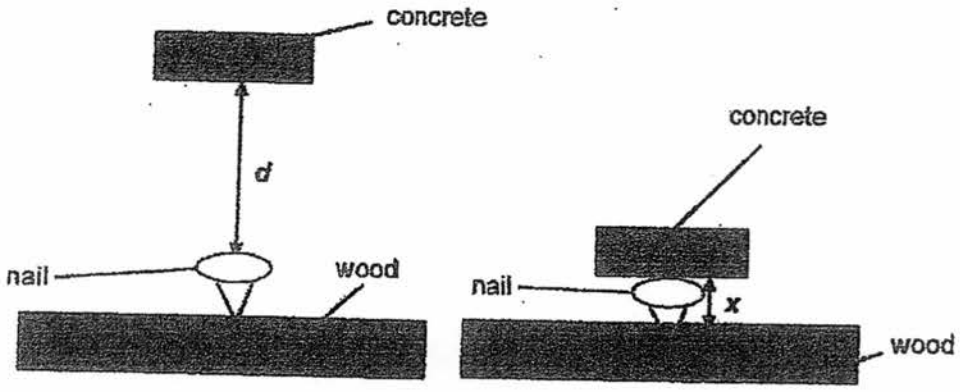
She repeated the experiment on 3 other types of surfaces, B, C and D using the same pulling force. The table below shows the results of the experiment.

Type of surface	Time taken for the spring to return to its original length (seconds)
A	4
B	3
C	8
D	5

Susan's mother wanted to choose a suitable material for her bathroom mat to prevent people from slipping easily when they come out of the bathroom. Which material should she choose?

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

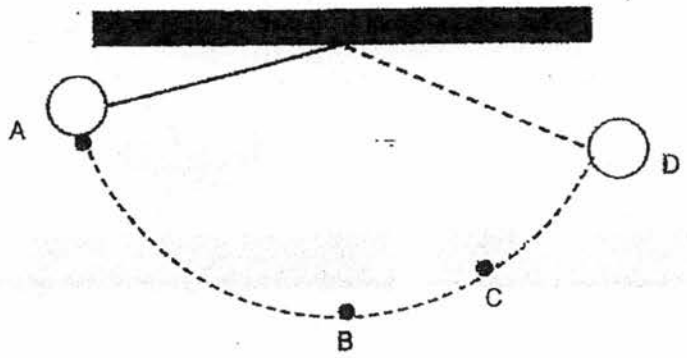
21. Adam dropped a slab of concrete to push a nail into a piece of wood as shown in the diagram below. *d* is the distance between the concrete and the nail at first. The slab of concrete pushed the nail into the wood. He then measured the distance, *x*, between the top of the nail and the surface of the wood.



Which one of the following statements is definitely correct?

(1) The distance *d* does not affect the distance *x*.
(2) The shorter the distance *d*, the longer the distance *x*.
(3) The smaller the mass of the slab of concrete, the shorter the distance *x*.
(4) When the distance *x* increases, the mass of the slab of concrete increases.

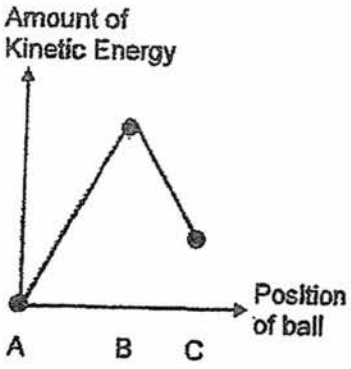
22. A ball was attached to a string from a beam as shown below. John held the ball at Position A and released it. The dotted line shows the path of the ball swinging from Position A to Position D at its first swing.

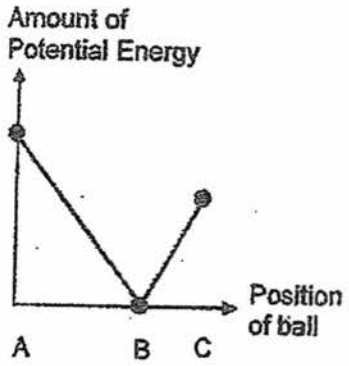


Which one of the following graphs best represents the changes in kinetic energy and potential energy from Position A to Position C?

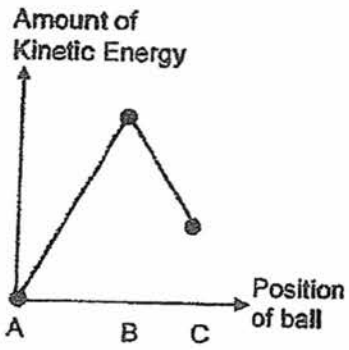
Please turn over to the next page for the options.

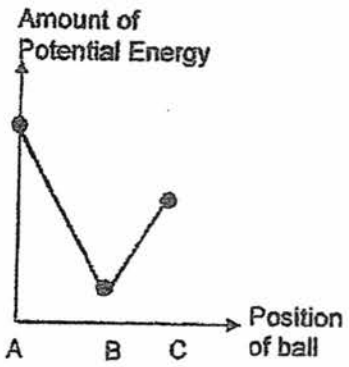
(1)



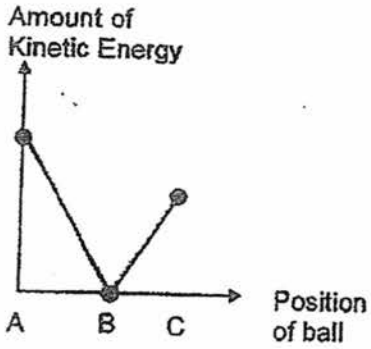


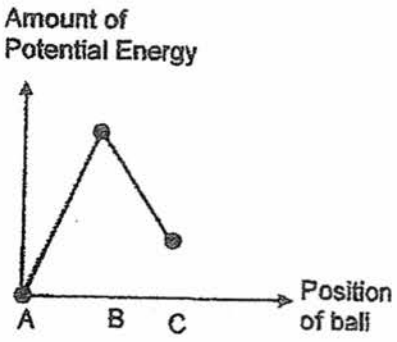
(2)



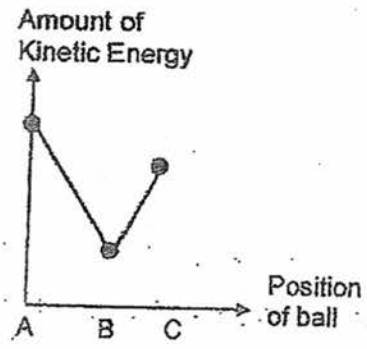


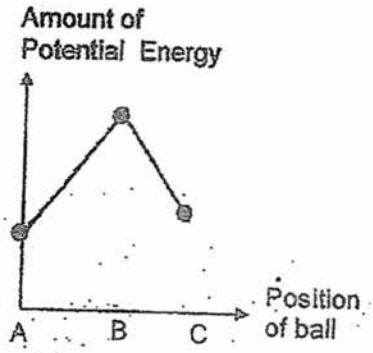
(3)





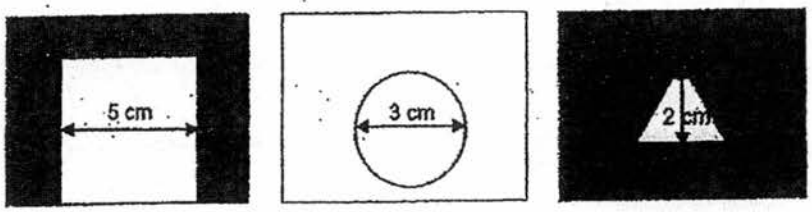
(4)





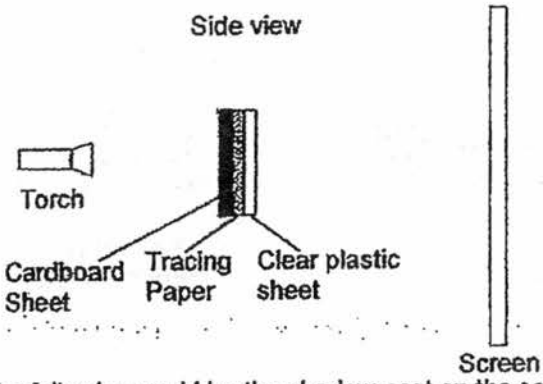
23. Tom cut out a square from a cardboard sheet, a circle from a clear plastic sheet and a triangle from a tracing paper as shown below. All the 3 rectangular sheets are of the same size.

Front View



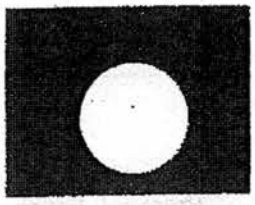
Cardboard Sheet | Clear Plastic Sheet | Tracing Paper

Then, he glued the three remaining rectangular sheets together and placed it between a torch and a screen in a dark room as shown below.

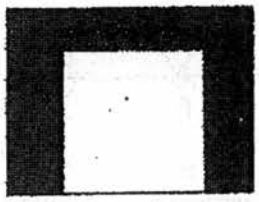


Which of the following could be the shadow cast on the screen?

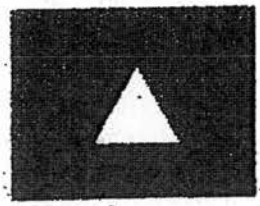
(1)



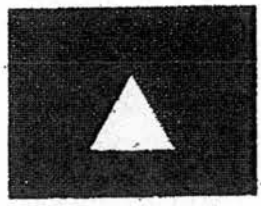
(2)



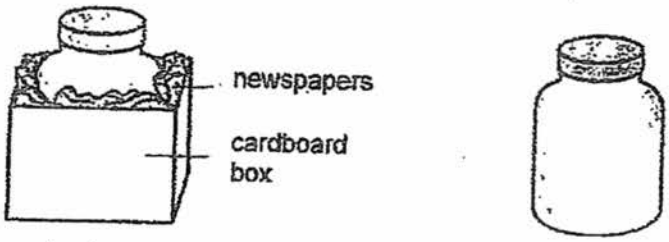
(3)



(4)



24. The diagram below shows 2 identical plastic jars. Jar A was wrapped with newspapers and placed in a cardboard box. Hot water at 90°C was poured into the 2 jars and covered with lids. Coco left the two jars at room temperature in the Science Laboratory for 15 minutes.



Jar A

Jar B

She then measured the temperature of water in the jars and recorded the temperature of the water at the start of the experiment and at the end of the experiment.

Which one of the following tables best shows the temperature change in Jar A and Jar B?

(1)

Jar	At the start of the experiment	At the end of the experiment
A	90°C	90 °C
B	90°C	55 °C

(2)

Jar	At the start of the experiment	At the end of the experiment
A	90°C	55 °C
B	90°C	40 °C

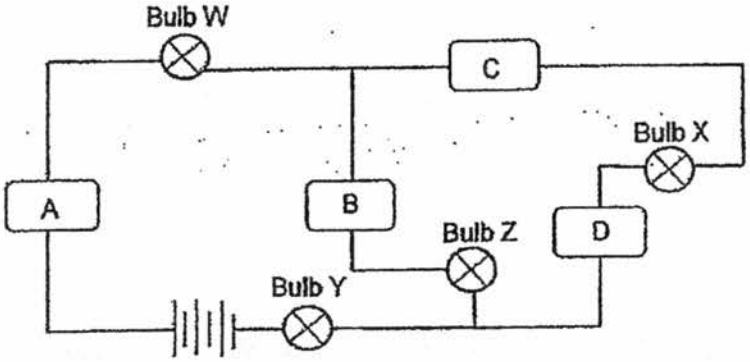
(3)

Jar	At the start of the experiment	At the end of the experiment
A	90°C	40 °C
B	90°C	55 °C

(4)

Jar	At the start of the experiment	At the end of the experiment
A	90°C	55 °C
B	90°C	55 °C

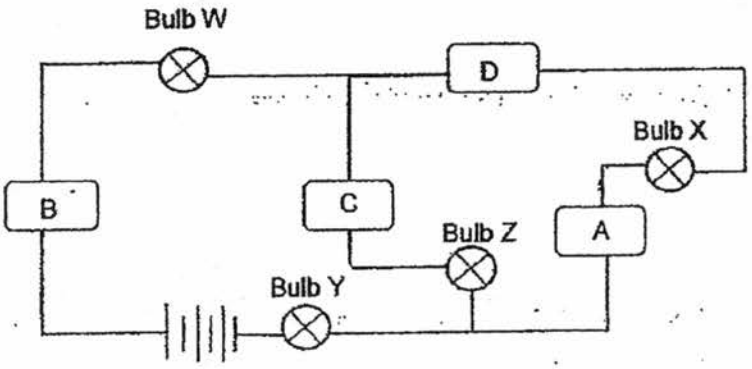
25. Jamie conducted an experiment on four different materials, A, B, C and D. She positioned them in different parts of an electric circuit and observed if the light bulbs, W, X, Y and Z, lit up.



The table below shows the results.

Did Bulb W lit up?	Did Bulb X lit up?	Did Bulb Y lit up?	Did Bulb Z lit up?
Yes	No	Yes	Yes

She then rearranged the four blocks in different parts of the electric circuit.



The table below shows the results.

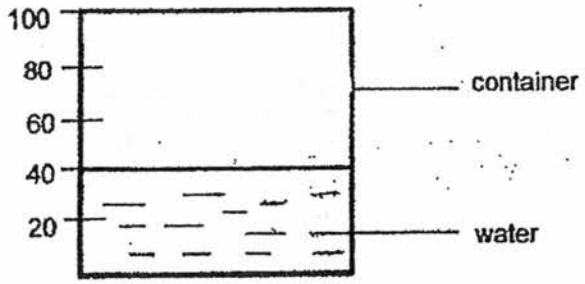
Did Bulb W lit up?	Did Bulb X lit up?	Did Bulb Y lit up?	Did Bulb Z lit up?
Yes	Yes	Yes	No

Please turn over to the next page for the options.

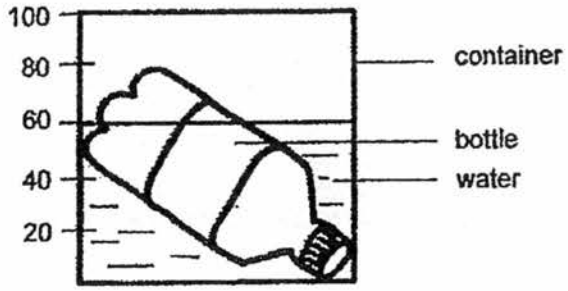
Based on the results in the tables, which one of the following best describes materials A, B, C and D?

	Is the material a conductor of electricity?			
	Material A	**Material B**	**Material C**	**Material D**
(1)	Yes	Yes	No	No
(2)	No	No	Yes	Yes
(3)	Yes	Yes	No	Yes
(4)	Yes	No	Yes	No

26. The diagram below shows an enclosed container which holds 40 cm^3 of water and 60 cm^3 of air.



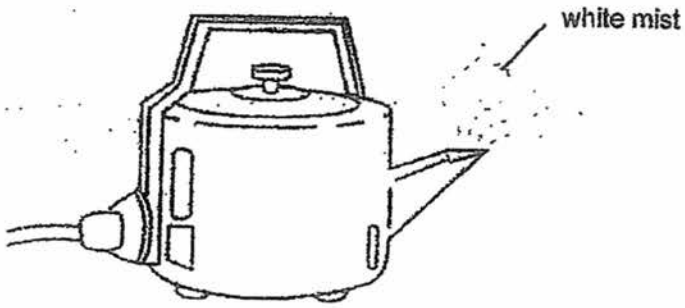
Then, a bottle completely filled with water was submerged into the container of water.



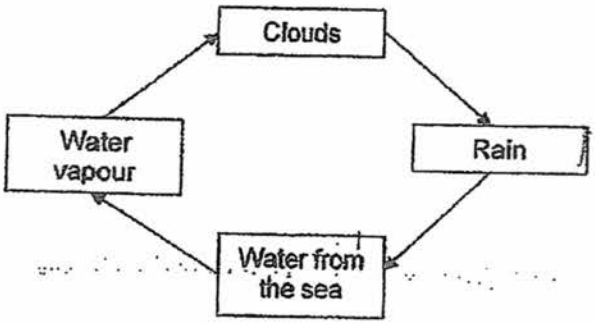
What is the most likely volume of the bottle and the volume of the air in the container now?

	Volume of bottle	Volume of air
(1)	Between 10 cm^3 and 20 cm^3	Above 40 cm^3
(2)	Between 10 cm^3 and 20 cm^3	Between 30 cm^3 and 40 cm^3
(3)	Between 20 cm^3 and 30 cm^3 ✓	Above 40 cm^3
(4)	Between 20 cm^3 and 30 cm^3 ✓	Between 30 cm^3 and 40 cm^3 ✓

27. Aaron was boiling some water in a kettle when he observed some white mist coming out from the spout of the kettle.

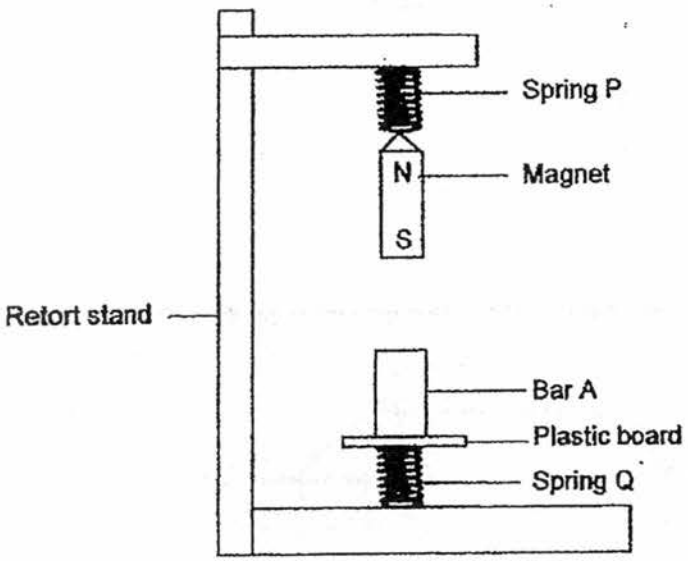


Which part of the water cycle is the white mist most similar to?



(1) Rain
(2) Clouds
(3) Water vapour
(4) Water from the sea

28. Mr Chua was given 3 bars, A, B and C. One of them was a magnet while the other two bars were made of iron and copper. He hung a magnet from Spring P which was attached to the top of the retort stand.
Another spring, Spring Q, was attached securely onto the plastic board and placed at the base of the retort stand.
Both springs have an original length of 4 cm
He then placed each bar onto the plastic board and measured the length of both the springs.



The results are recorded in the table below

	Length of Spring P (cm)	Length of Spring Q (cm)
Bar A	3	3
Bar B	7	4
Bar C	5	3

Which one of the following shows what Bar A, Bar B and Bar C could be?

	Bar A	Bar B	Bar C
(1)	Magnet	Copper	Iron
(2)	Copper	Magnet	Iron
(3)	Iron	Copper	Magnet
(4)	Magnet	Iron	Copper

NAN HUA PRIMARY SCHOOL
SEMESTRAL ASSESSMENT 1 – 2017
PRIMARY 6

SCIENCE

BOOKLET B

12 Open-ended questions (44 marks)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not turn over the page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers in this booklet.

Marks Obtained

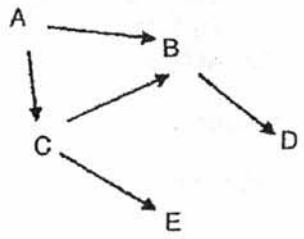
Section B		/ 44

Name: _____ ( ) Class: P 6 _____

Date : 8 May 2017 Parent's Signature: _____

Section B: (44 marks)
Write your answers to question 29 to 40.
The number of marks available is shown in brackets [ ] at the end of each question or part question.

29. The diagram below shows a food web in a certain community.

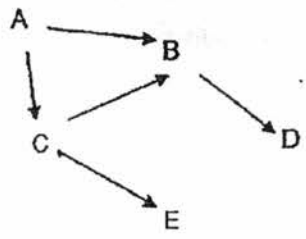


(a) Which organism, when totally wiped out, will cause the rest of the organisms to die off eventually? Explain your answer clearly. [1]

_____

_____

(b) A new organism, F, was introduced into the community. It preyed only on organisms C and E. Draw organism F in the food web below. [1]



(c) With the introduction of organism F, what will be the immediate changes to the population of C and D? In the boxes provided below, write "increase", "decrease" or "no change" to indicate the immediate changes to the population of the 2 organisms. [1]

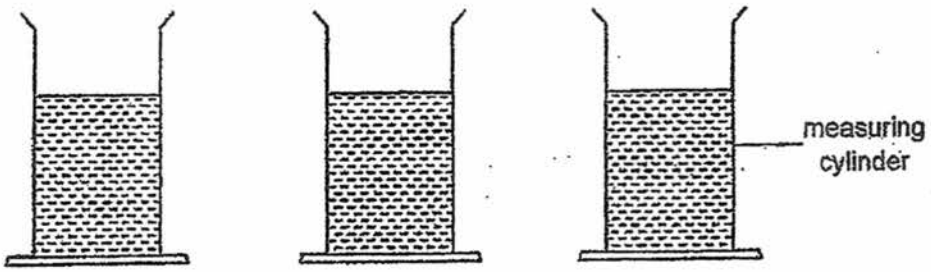
Population of C

Population of D

Score 3

1

30. Alan set up an experiment as shown in the diagram below.



He placed 5 organism X in each of the 3 measuring cylinders. They are filled with 100 ml of 3 different solutions. At the end of 2 days, he noted the number of surviving organism X and recorded the result in a table as shown below. He then repeated the experiment with 2 other types of organisms, Y and Z.

Type of solution	Number of organisms left after 2 days		
	X	Y	Z
River water	5	5	0
Mixture of river and sea water	1	5	2
Sea water	0	5	5

(a) Alan placed all set-ups at the same location so that the surrounding temperature was the same. How does placing all the set-ups at the same location helps to ensure a fair test? [1]

_____

_____

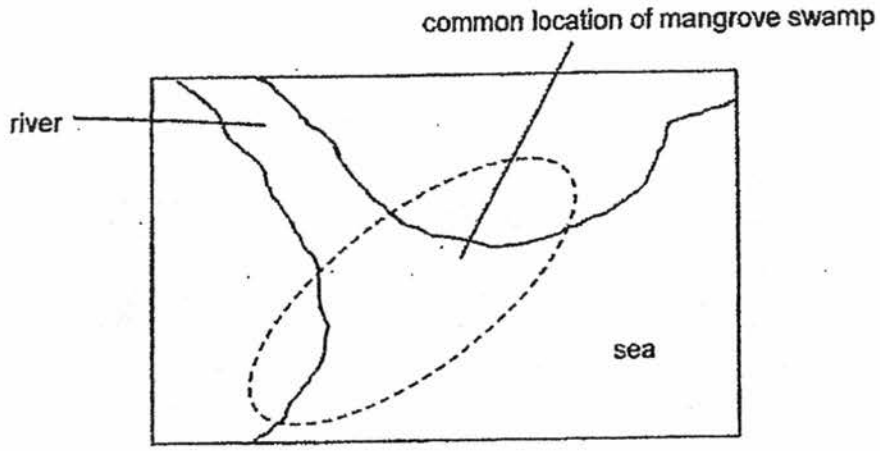
(b) Other than repeating the experiment, what is another way to improve the reliability of the results? [1]

_____

_____

_____

A mangrove swamp is normally located at the mouth of a river as shown in the diagram below.



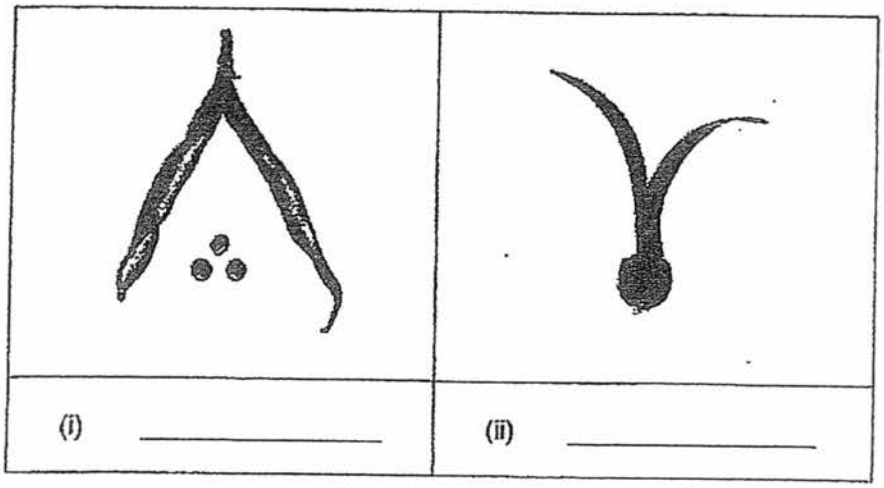
(c) Based only on the information obtained from the experiment above, explain clearly which organism, X, Y or Z, can survive the best in a mangrove swamp. [2]

Score	4

31. Peter conducted an experiment on 2 different types of seeds to find out how far away they were dispersed once they have ripened. He recorded down the results in the table shown below.

Distance away from the parent plant (m)	Number of seeds found	
	Seed A	Seed B
2	3	10
4	5	12
6	8	7
8	12	3
10	13	1

(a) Based on the information given above, which seed is most likely to be Seed A and Seed B? Fill in the blanks below with the correct label, "Seed A" and "Seed B". [1]



(i) _____ (ii) _____

(b) Which seed's dispersal method above is more advantageous to the plant? Explain your choice clearly. [2]

_____

_____

Peter made some changes to the following seed as shown in the diagram below.

	
Original seed	Seed after changes have been made

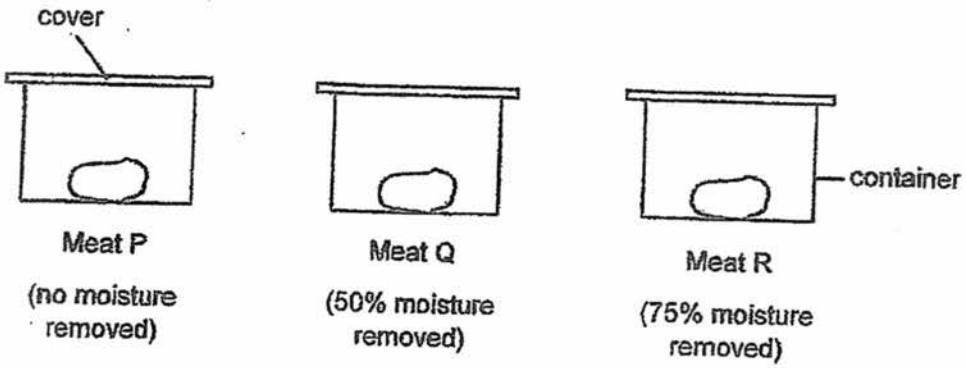
(c) Will the distance dispersed from its parent plant increase or decrease once the changes have been made to the above seed? Explain your answer clearly. [1]

_____

_____

Score	4

32. Jane wanted to find out how long it would take for mould to start to grow on pieces of meat that contained different amount of moisture. She set up an experiment as shown in the diagram below. The containers were all placed in a room which is at room temperature.



Jane recorded her findings in the table below.

Meat	Days it takes for mould to appear
P	6
Q	22
R	31

(a) How is the number of days taken for mould to appear affected by the moisture content of the meat? [1]

_____

_____

(b) Name the process that has taken place on the pieces of meat. [1]

_____

_____

(c) In the past, when refrigerator had not been invented, people often dehydrated (removed moisture from) their meat to prevent them from spoiling easily. Based on the information in the above experiment, explain clearly how dehydrating their meat could help their meat last longer. [2]

_____

_____

_____

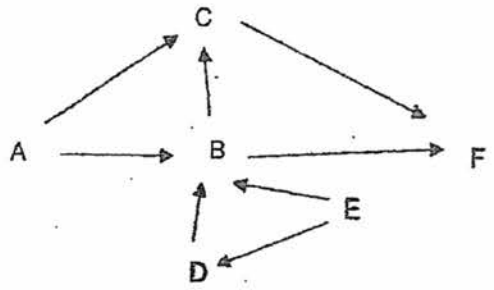
(d) Based on her findings above, will Jane be able to conclude how long mould will take to appear if the set-ups are placed in a room which is at 3°C? Explain your answer. [1]

_____

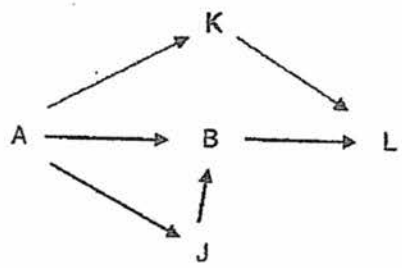
_____

Score	/ 5

33. The diagram below shows 2 food webs that are found in 2 different habitats.



Habitat T



Habitat U

(a) List down all the organisms in habitat T that are both a prey and a predator. [1]

_____

_____

(b) How many food chains are there in habitat U? [1]

_____

(c) One organism from habitat T was introduced to habitat U but it was not able to survive. Which organism would it most likely be? Explain your choice clearly. [1]

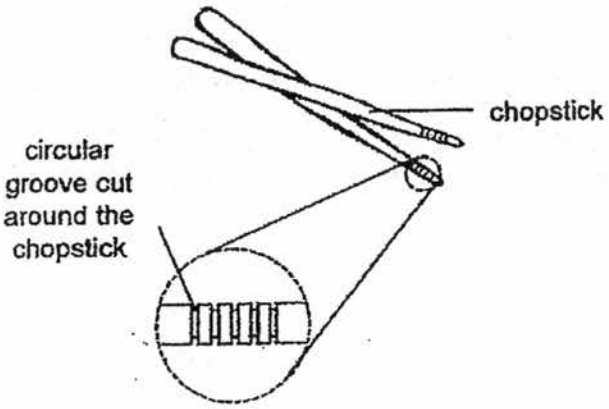
_____

_____

Score 3

34. Mary was learning how to use a pair of chopsticks to eat. She was given a pair of chopsticks as shown in the diagram below.

Mary found that the slice of fish that she was trying to pick up kept sliding off her chopsticks. Her mother then passed her another pair of chopsticks that is shown in the diagram below.



magnified side view of chopstick

Mary then found that it was easier to pick up a slice of fish with the second pair of chopsticks.

Explain, in terms of forces, why it is easier to pick up the slice of fish with the second pair chopsticks. [2]

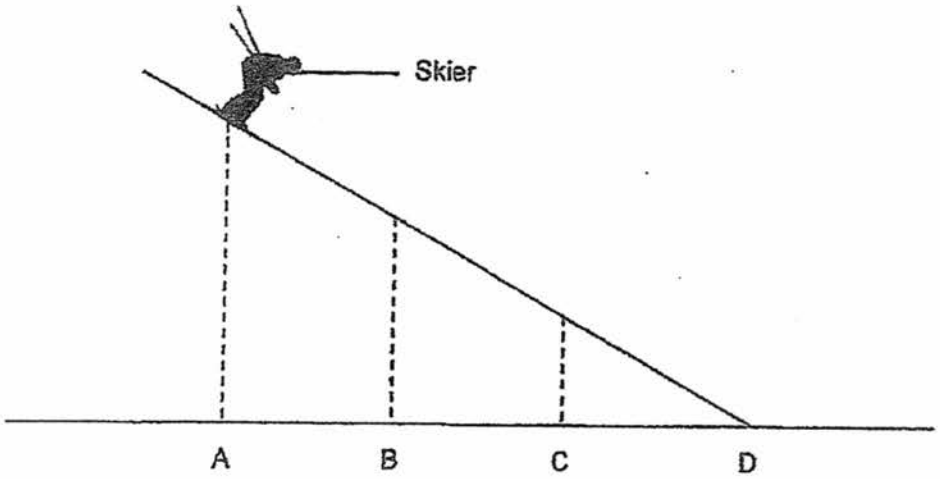
_____

_____

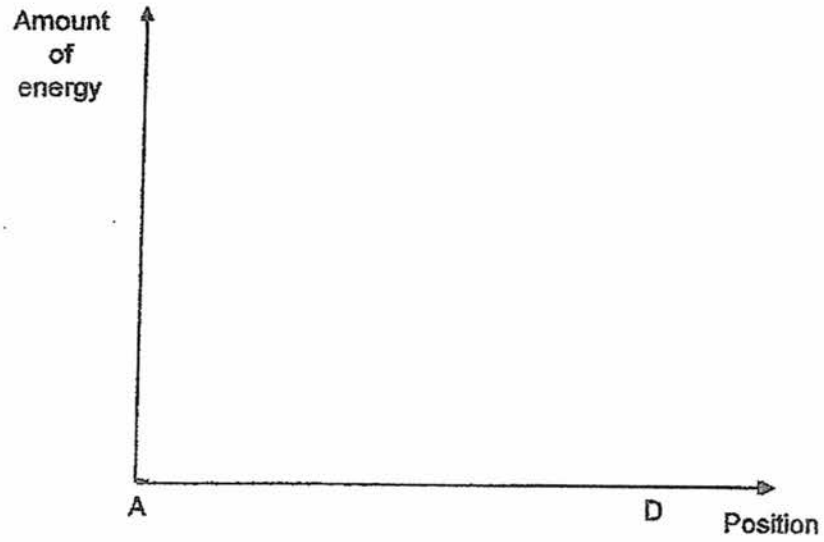
_____

Score 2

35. The picture below shows a skier skiing down a slope.



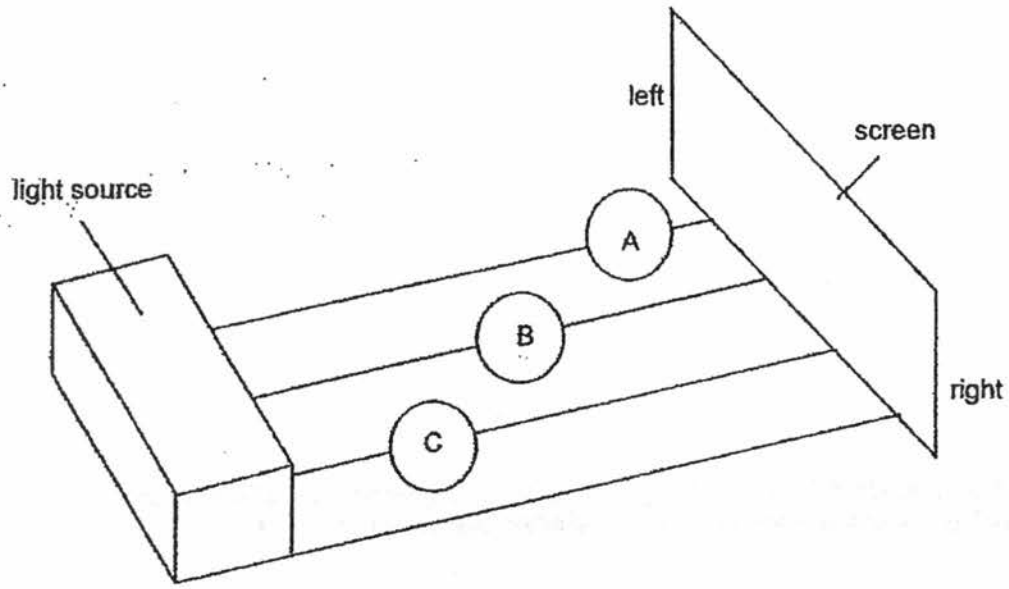
(a) Draw and label 2 lines on the graph representing the amount of kinetic energy and gravitational potential energy the skier has from point A to D. [2]



(b) At which point, B or C, does the skier have more kinetic energy? Explain your answer clearly. [1]

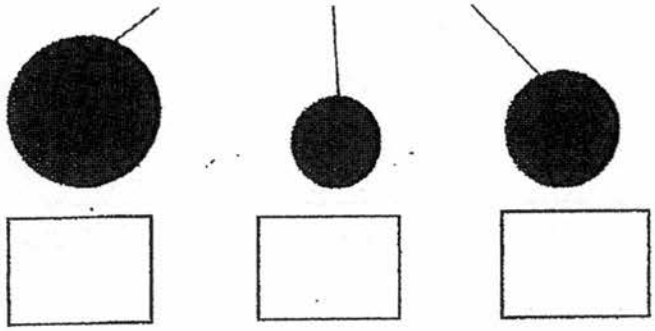
Score 3

36. John set up an experiment as shown in the diagram below. 3 similar balls, A, B and C, were placed at different distances in front of a screen. A light is shone on them and the shadows of balls A, B and C were cast on the screen.



(a) Write down A, B or C in the boxes provided below to correctly represent the shadows cast by the 3 different balls in the experiment above. [1]

Shadows cast by balls A, B and C



(b) What can John do if he wanted the shadows of B and C to be the same size? [1]

_____

_____

(c) If John were to move the screen further away from the balls, what will be the likely changes to the size of the shadows of the 3 balls? [1]

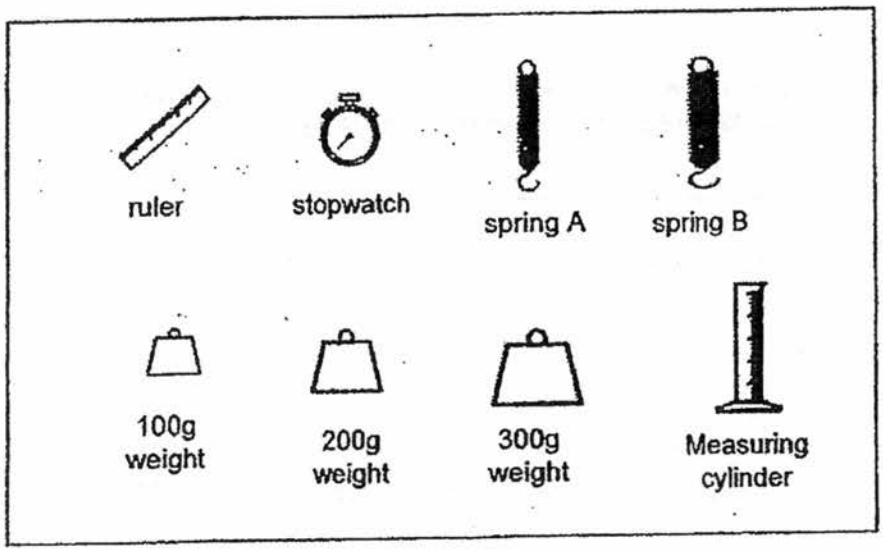
_____

_____

Score 3

37. Henry wanted to conduct an experiment to find out which spring, A or B, would stretch more when weights were hung on it.

He was given a set of items as shown in the diagram below.

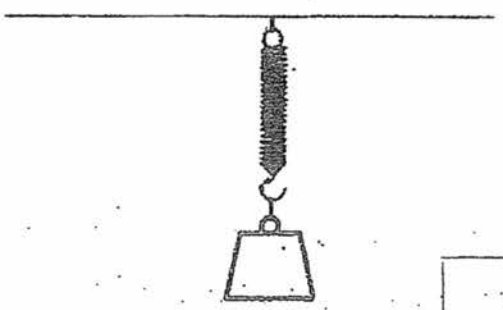


(a) List down the items he will need to conduct the experiment. [1]

(b) Write down the experimental procedures (steps 1 to 6) for Henry to conduct an experiment with reliable results in the blanks provided below. Step 7 has been done for you. [3]

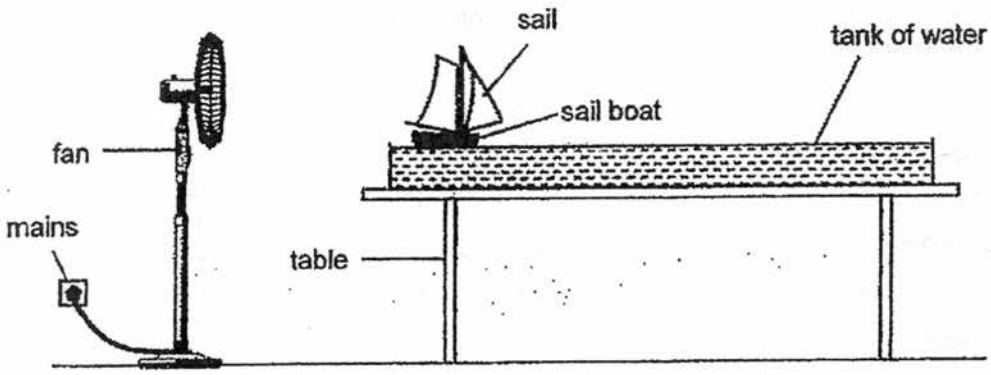
Step	Procedures
1	Measure _____
2	Hang _____
3	Measure and record _____
4	Repeat steps 2 and 3 with _____
5	Repeat steps 2, 3 and 4, record _____
6	Repeat steps 1 to 5 _____
7	Compare the results and conclude the experiment.

(c) When a weight was hung on Spring A as shown in the diagram below, what was/were the force(s) acting on the stretched spring? Draw and label the arrow(s) showing the direction of the force(s). [1]



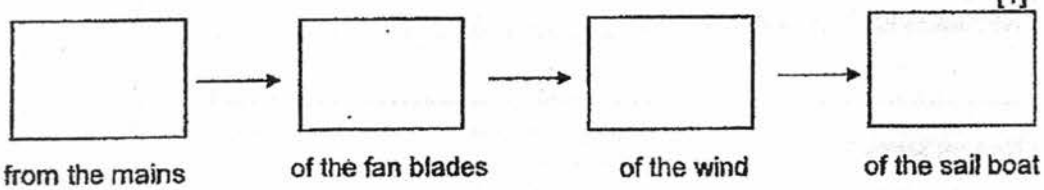
Score	/ 5

38. Sarah set up an experiment as shown in the diagram below.



She switched on the fan which is connected to the mains and observed that the sail boat moved across the tank of water.

(a) Write down the energy conversion for the above activity in the blanks provided. [1]

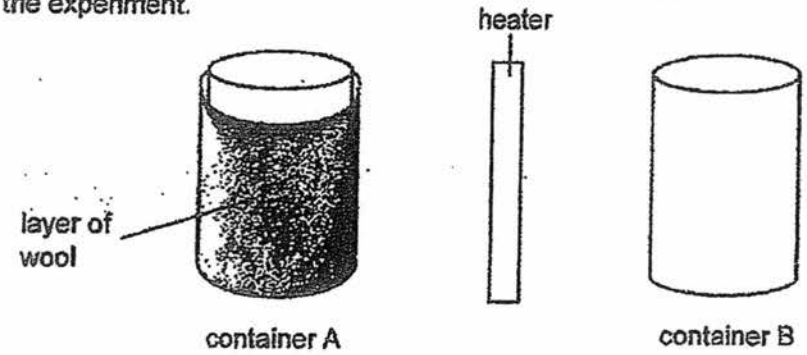


(b) Sarah increases the speed of the fan from speed 1 to speed 2. Explain, in terms of energy, what will happen to the sail boat. [2]

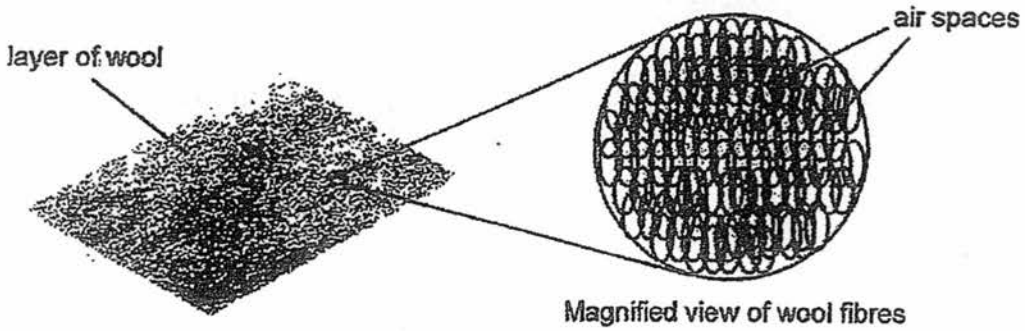
(c) Without removing the sail from the sail boat, state one change Sarah can make to the sail if she wanted the boat to move slower. [1]

Score / 4

39. The diagram below shows a heater placed at the same distance from 2 identical metal containers A and B. Container A was wrapped with a layer of wool. Both containers were filled with water at room temperature at the start of the experiment.

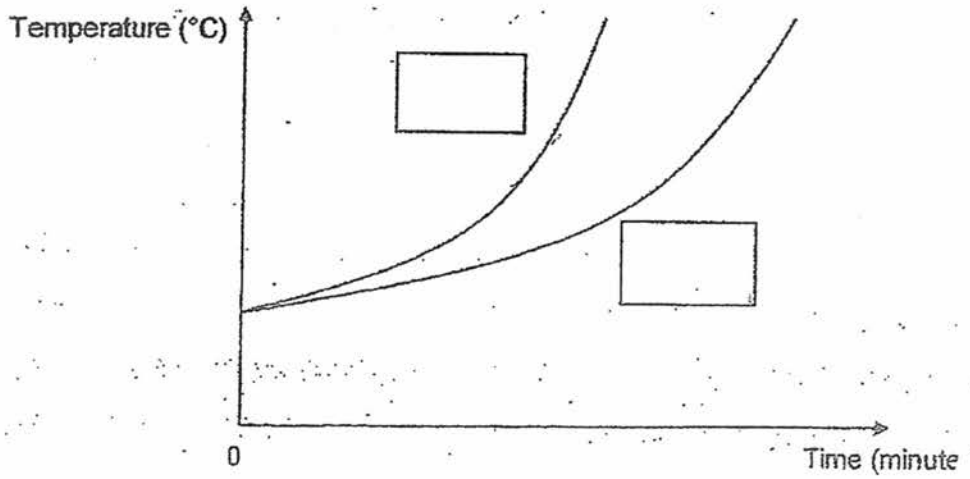


A magnified picture of the layer of wool is shown in the diagram below.



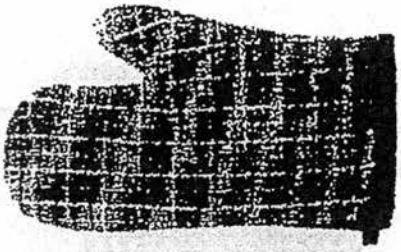
The temperature of the water in both containers were taken and the data is shown in the graph below.

(a) Label the 2 lines with A and B to indicate how the temperature of the water changes in each container as time passes. [1]

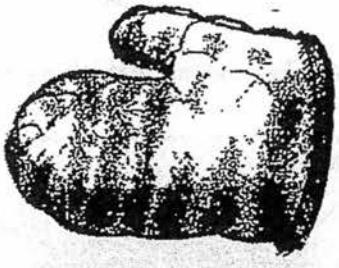


(b) Explain your answer in (a) clearly. [2]

Mrs Lim recently bought 2 pot holders. One of them has a thin layer of wool in it whereas the other has a thick layer of wool in it as shown in the diagram below.



pot holder X (thin layer of wool)



pot holder Y (thick layer of wool)

(c) Which pot holders, X or Y, is more suitable for holding hot pots for a longer period of time? Explain your answer clearly. [2]

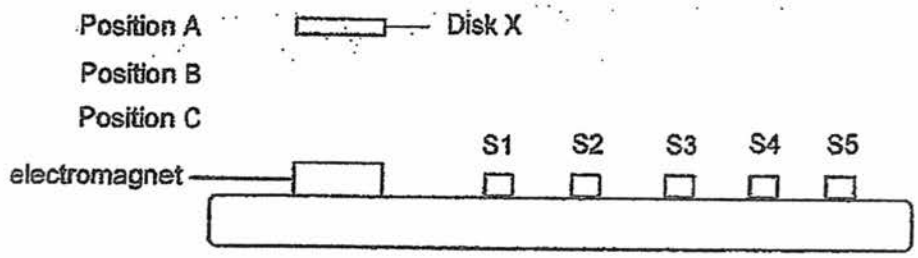
_____

_____

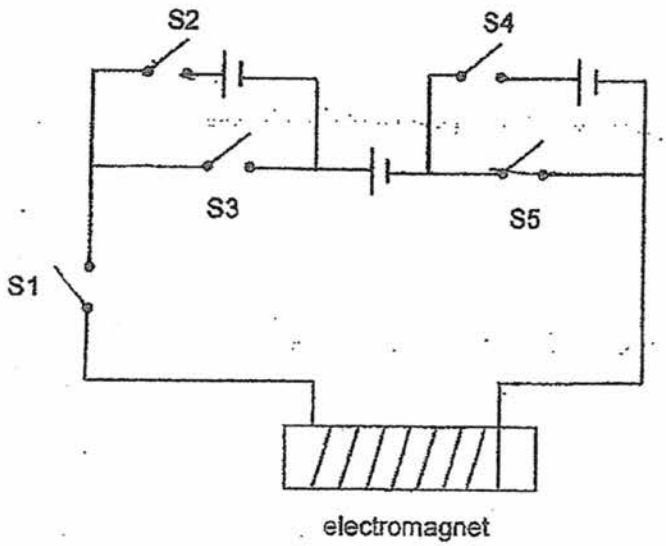
_____

Score 5

40. The diagram below shows a toy designed by John. He was able to make Disk X float at different positions, A, B and C, by controlling the circuit that is connected to the electromagnet. John can turn the switches, S1 to S5, on and off to control the circuit and in turn controls the magnetic strength of the electromagnet.



The diagram below shows the circuit that is connected to the toy.



In order for Disk X to float at position B, switches, S1, S2 and S5 have to be turned on.

(a) In the table below, which switch(es) does John need to turn on in order for Disk X to float at positions A and C? Make your choice by ticking in the correct boxes. [1]

Position	S1	S2	S3	S4	S5
A					
B					
C					

(b) Other than changing the number of batteries that are connected to the electromagnet, what can John do to the electromagnet if he wants Disk X to float at a distance that is further to the electromagnet than at position A? [1]

_____

_____

(c) What will happen if John were to change Disk X to an iron coin? [1]

_____

_____

End of Paper

Score	/ 3

YEAR : 2017
LEVEL : PRIMARY 6
SCHOOL : : NAN HUA PRIMARY
SUBJECT : : SCIENCE
TERM : SA1

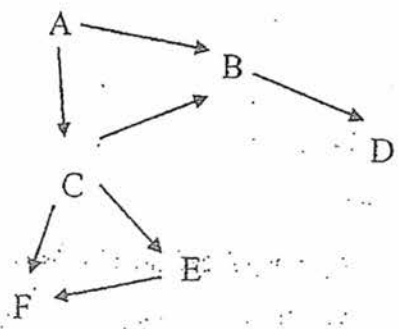
Booklet A

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

Booklet B

Q29 (a) Organism A, this is because organism A is the food producer, without it organism C will die off first as organism A is organism C's source of food, without organism C, organism B will die off too as organism A and C were it's sources of food and organism E will also die off as organism C is it's source of food and thus it will die of starvation and lastly organism D will die as organism B is it's source of food.

Q29 (b)



Q29 (c) Population of C | decrease |

Population of D | no change |

Q30 (a) So that the surrounding temperature will not affect the number of organisms left after 2 days.

Q30 (b) Conduct the experiment with more organisms X, Y and Z.

Q30 (c) Organism Y can survive the best in a mangrove swamp but for organism X and Z, some of the organisms died.

Q31 (a) (i) Seed B (ii) Seed A

Q31 (b) Seed A's dispersal method, it is because seed A's dispersal method allows it to be dispersed further away from the parent plant in order to avoid overcrowding which might lead to competition for space, sunlight, nutrients and water.

Q31 (c) The distance dispersed from it's parent plant will decrease, this is Because now the seed does not have it's wing-like structures, thus when dispersed it experience less air resistance and will be dispersed closer to the parent plant.

Q32 (a) As the moisture content of the meat decreases, the days taken for the mould to appear increases.

Q32 (b) Decomposition.

Q32 (c) Dehydrating their meat could increase the number of days for their meat to decompose and spoil as one of the factors for decomposition is moisture.

Q32 (d) No, she will not. This is because the meat in the experiment were left at room temperature.

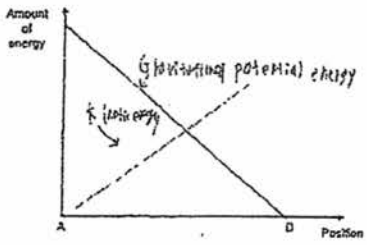
Q33 (a) Organisms C and B

Q33 (b) 3

Q33 (c) Organism D, this is because organism D only eats organism E but there is no organism E in Habitat U, thus it will die.

Q34 It is because the circular groove cut around the chopstick increases the friction between the fish and the circular groove cut, which made this part of the chopstick rougher, causing the fish to be picked up easier.

Q35 (a)



Q35 (b) At point C, it is because at point C, more gravitational potential energy would be converted to kinetic energy compared to when the skier as at point B.

Q36 (a)

C	A	B

Q36 (b) John could place all 3 balls side by side, with all 3 balls having the same distance in front of the screen.

Q36 (c) The shadows of the balls would increase in size.