PSLE INDEX NO. | | | | | | |

MAHA BODHI SCHOOL

2014 PRIMARY SIX PRELIMINARY EXAMINATION

SCIENCE

Name : _____( ) Date : 21 Aug 2014

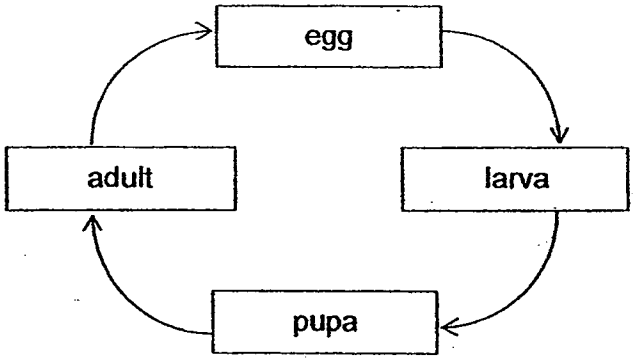
Class : Primary 6 ( )

Duration : 1 h 45 min (Booklets A and B)

BOOKLET 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 your answer on the Optical Answer Sheet.**

1. The diagram below shows the stages in the life cycle of an animal.



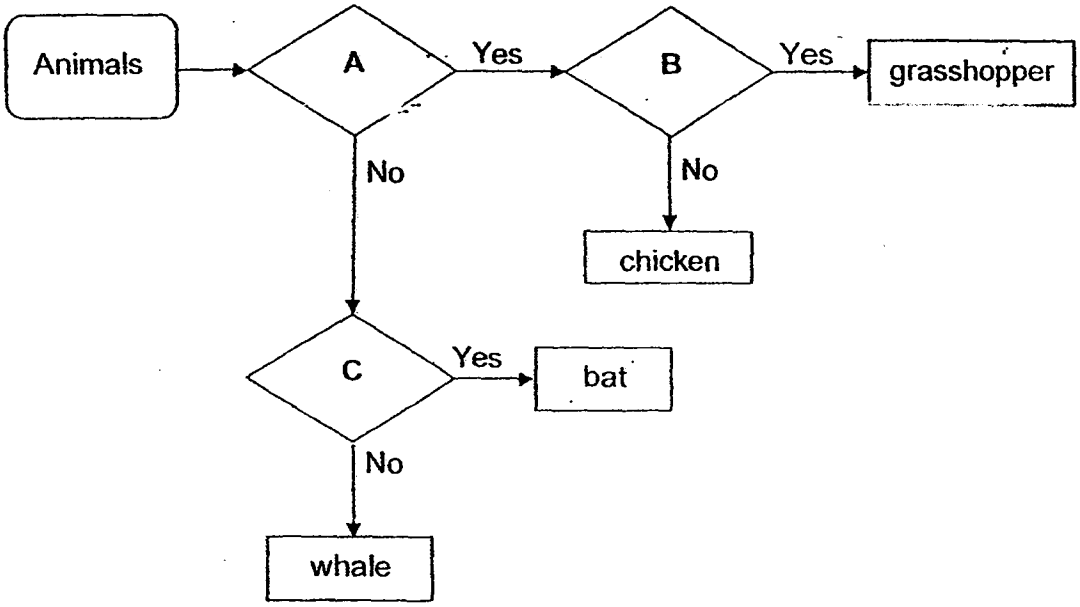
Which animal has the life cycle as shown above?

(1) frog
(2) chicken
(3) butterfly
(4) grasshopper

2. Alex had to classify the four animals shown.

whale bat grasshopper chicken

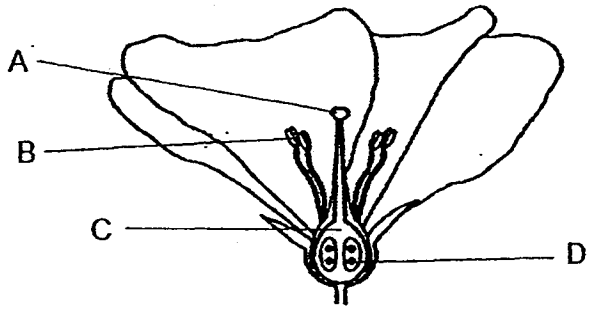
The flow chart below compares the characteristics of four animals.



Based on the flow chart above, which one of the following best represents A, B and C?

	A	B	C
(1)	Does it have hair?	Does it live in water?	Does it lay eggs?
(2)	Does it lay eggs?	Does it have six legs?	Does it have wings?
(3)	Does it live on land? x	Can it swim?	Does it lay eggs?
(4)	Can it swim?	Does it lay eggs?	Can it swim?

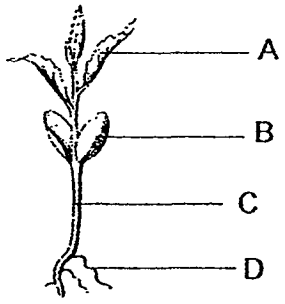
3. The diagram below shows the cross-section of a flower.



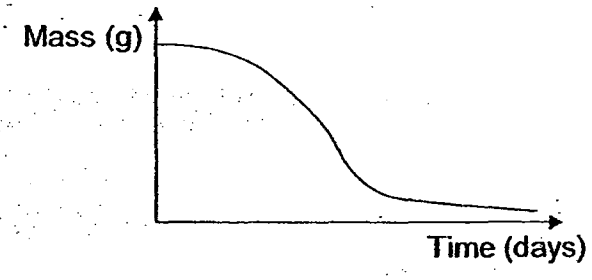
Which of the parts, A, B, C or D, becomes the fruit after fertilisation?

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

4. Observe the diagram of a seedling below.



The graph below shows the mass of one part of the seedling during its growth.

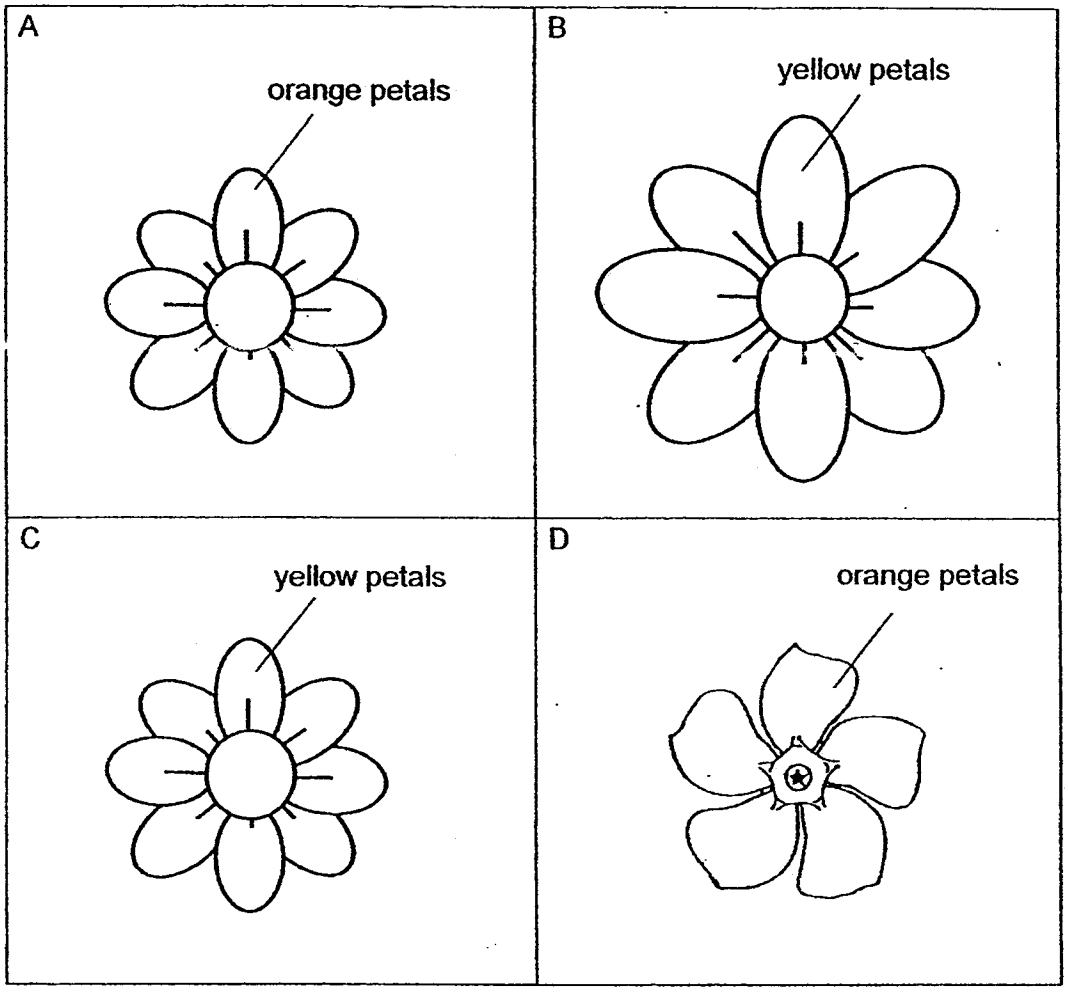


The part of the seedling is _____.

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

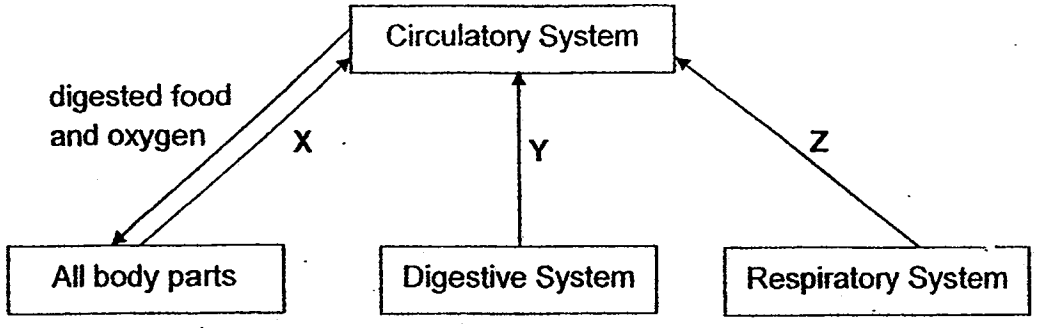
5. Susan wants to investigate whether the size of petals of flowers will affect the number of pollinators visiting them.

Which two of the following flowers should she use in order to conduct a fair test?



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

6. The diagram below shows the transport of substances in our body.



Which one of the following correctly represents substances X, Y and Z?

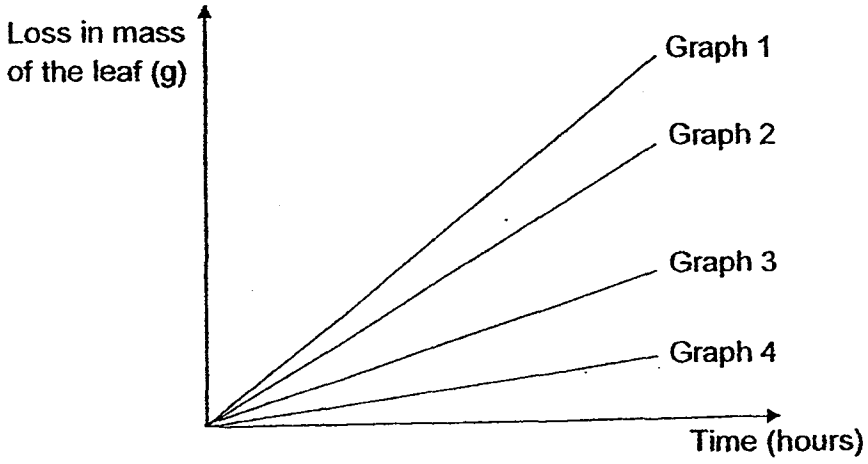
	X	Y	Z
(1)	oxygen	undigested food	carbon dioxide
(2)	digested food	oxygen	carbon dioxide
(3)	carbon dioxide	digested food	oxygen
(4)	undigested food	carbon dioxide	oxygen

7. Ali set up an experiment using four similar leaves, A, B, C and D.
The leaves have more openings known as stomata on the lower surfaces than on their upper surfaces. Leaves lose water through their stomata.

He coated some of the leaves with oil that did not drip. He hung the leaves in an open area.

Leaf	Part of leaf surface coated with oil
A	Oil coating on upper surface
B	Oil coating on lower surface
C	Oil coating on upper and lower surfaces
D	No oil coating on upper and lower surfaces

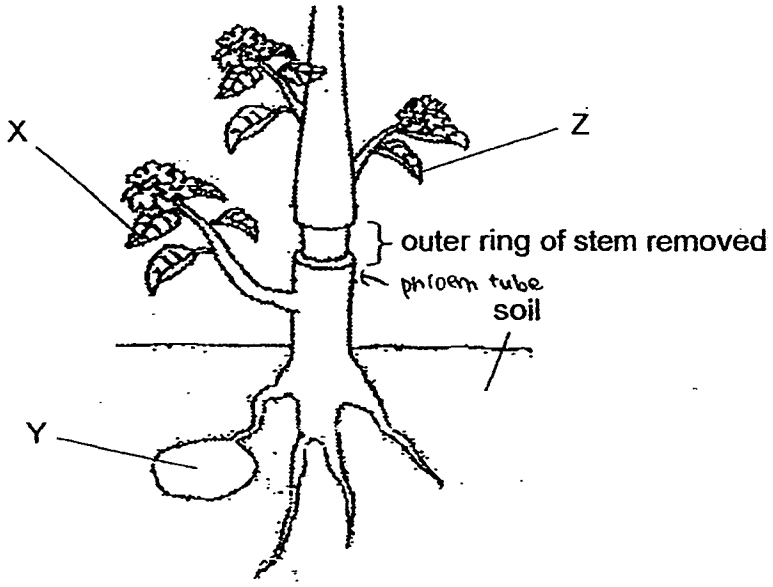
He weighed the leaves every two hours and recorded the loss in mass for each leaf in the graph below.



Which graphs would show the result for leaf B and D?

	Leaf B	Leaf D
(1)	Graph 1	Graph 4
(2)	Graph 4	Graph 2
(3)	Graph 2	Graph 3
(4)	Graph 3	Graph 1

8. The tubes carrying food and water were removed from the outer ring of a stem as shown in the diagram below.



It was observed that Y grew bigger after one week.

Which one of the following statements best explains the observation?

(1) Food was made by Y itself.

(2) Food was transported from X to Y.

(3) Food was transported from Z to Y.

(4) Food was absorbed by Y from the soil.

9. The use of plastics bags in some supermarkets in Singapore is reduced when customers are required to pay for them. Customers are given discounts when they bring their own shopping bags.

Which of the following statements about plastics best explain these practices in the supermarkets?

A: They can cause land and water pollution.

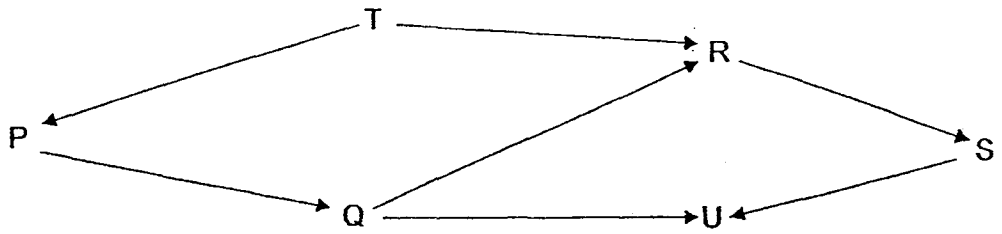
B: They give off poisonous gases when burnt.

C: They are easily broken down by decomposers.

D: They are made from crude oil which comes from fossil fuels.

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

10. Study the food web below.



Which of the following statements is/are correct?

A: When population P decreases, populations Q and T will decrease.

B: When population U decreases, populations Q and S will increase

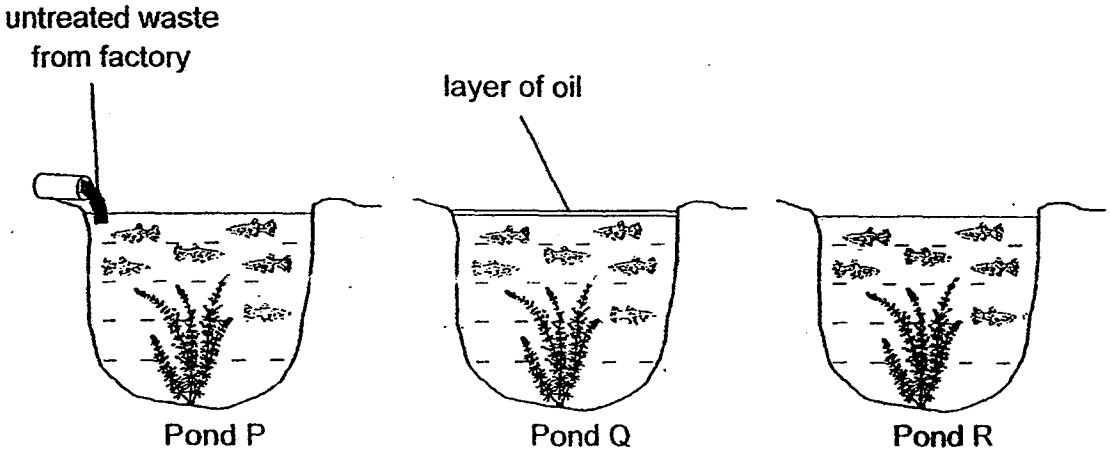
C: When population R increases, populations P and S will increase.

D: When population S increases, populations Q and R will increase.

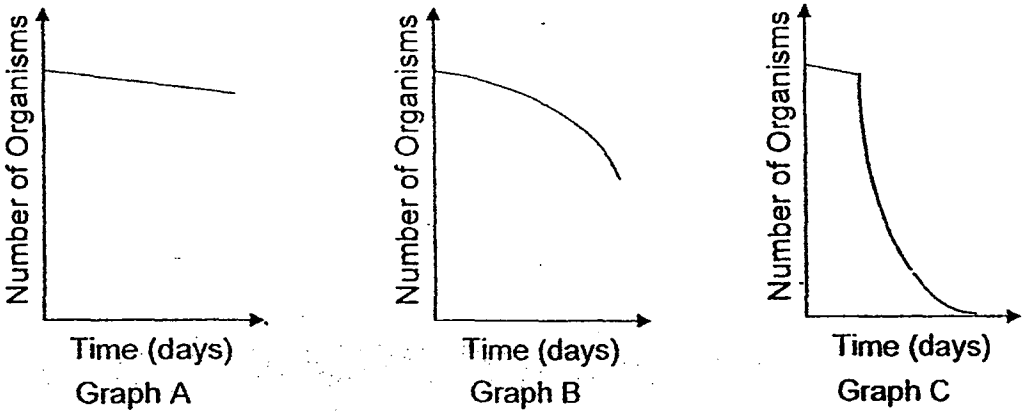
(1) A only
(2) B only
(3) A and D only
(4) B and C only

11. Mr Wong wanted to study the effect of untreated waste and oil on the survival of organisms in a pond.

Three similar man-made ponds were set up as shown below. He filled the three ponds with the same number of fishes and water plants.



His pupils recorded the number of live organisms in each pond over a period of time and presented the results in the graphs below.



Which one of the following best represents the results for the three ponds?

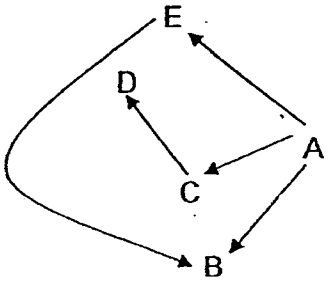
	Graph A	Graph B	Graph C
(1)	Pond Q	Pond P	Pond R
(2)	Pond P	Pond R	Pond Q
(3)	Pond R	Pond P	Pond Q
(4)	Pond R	Pond Q	Pond P

12. A food web consists of five organisms, A, B, C, D and E.
Information about these organisms is given below.

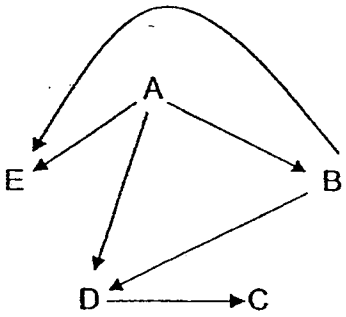
- A is the food producer.
- Only one animal eats plants only
- Only one animal eats meat only.
- Two of the animals eat plants and one other animal.

Which one of the following shows correctly the food relationships of the organisms in the food web?

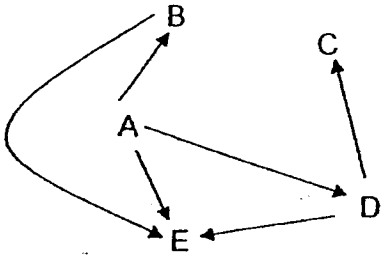
(1)



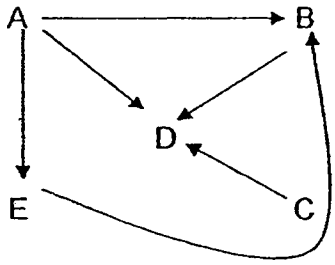
(2)



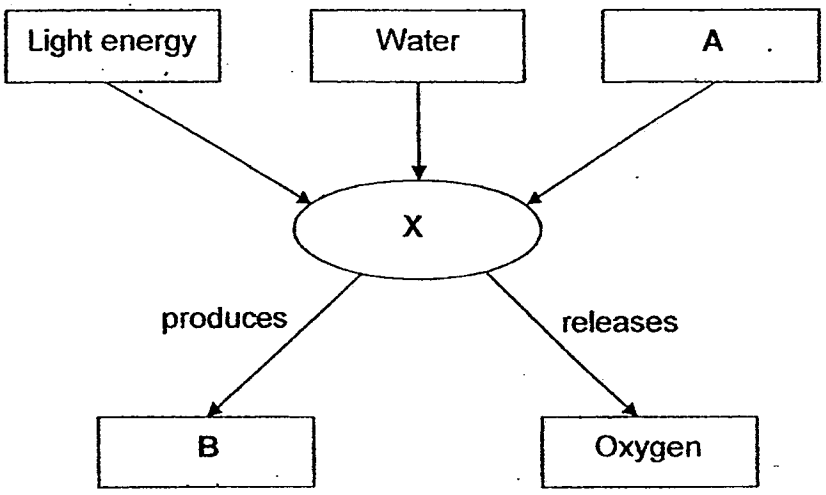
(3)



(4)



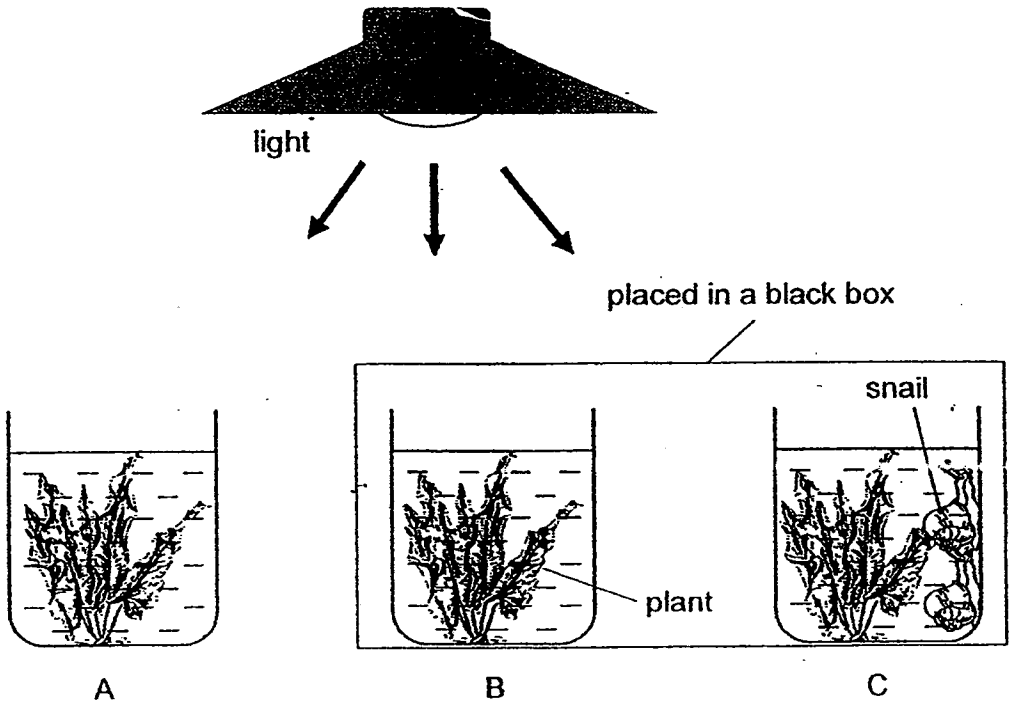
13. Study the concept map below.



Which of the following correctly show what process X and substances A and B are?

	X	A	B
(1)	Respiration	Sugar	Carbon dioxide
(2)	Respiration	Carbon dioxide	Sugar
(3)	Photosynthesis	Sugar	Carbon dioxide
(4)	Photosynthesis	Carbon dioxide	Sugar

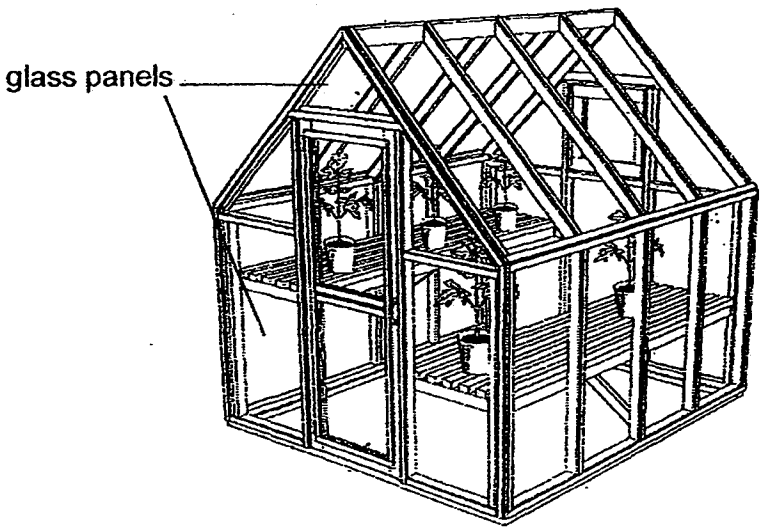
14. Some water snails and a water plant were placed in three similar containers of water, A, B and C.



Which of the following shows the containers arranged according to the amount of carbon dioxide in them after six hours, in increasing order?

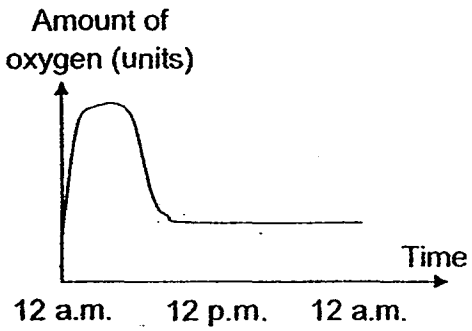
	Least ----------> Most		
(1)	A	B	C
(2)	B	C	A
(3)	B	A	C
(4)	C	B	A

15. A greenhouse is a structure in which plants are grown. The greenhouse below is made mostly of glass, which allows sunlight into it.

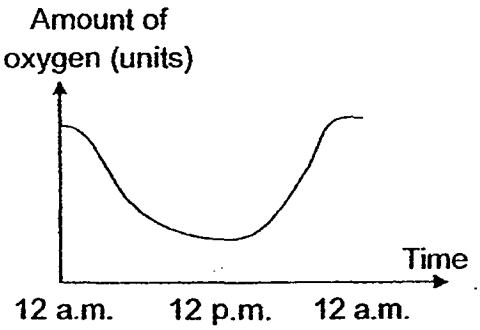


Which of the following graphs correctly shows the amount of oxygen measured in the greenhouse over a period of time?

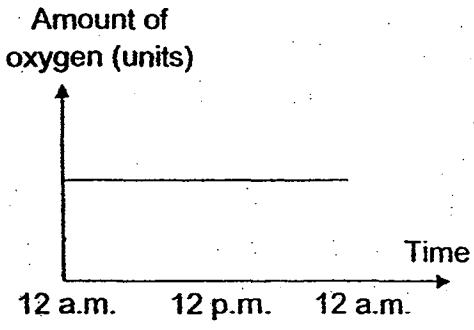
(1)



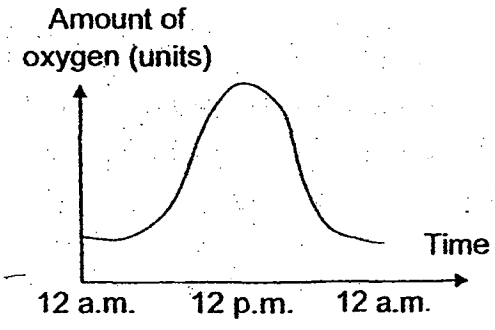
(2)



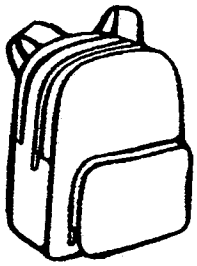
(3)



(4)

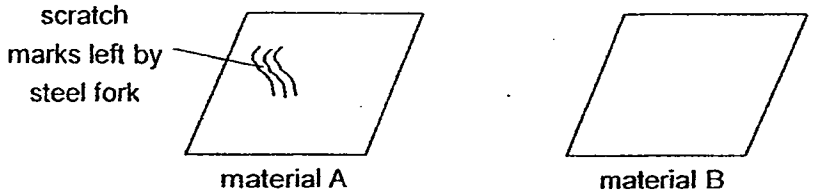


16. The bag below is able to contain plenty of heavy objects without tearing because the material it is made of is _____.



(1) hard
(2) strong
(3) flexible
(4) waterproof

17. Lisa used a steel fork and rubbed it against two different materials, A and B. She noticed that this left some scratch marks on material A but none on material B.



Based on her observations, which of the following conclusions is/are true?

A: Material A is harder than steel.
B: Material B is harder than steel.
C: Material A is harder than material B.
D: Material B is harder than material A.

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

18. The table below shows the freezing and boiling points of three substances X, Y and Z.

	Substance X	Substance Y	Substance Z
Freezing Point	10°C	-7°C	15°C
Boiling Point	100°C	20°C	110°C

Which of the following statements about the substances is/are correct?

A: Only substance Z is a solid at 12°C.

B: Only substances X and Y are liquids at 9°C.

C: Only substance X is in the gaseous state at 100°C.

D: None of the substances is a solid at room temperature of 25°C.

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

19. Which of the following statements about the water cycle is/are correct?

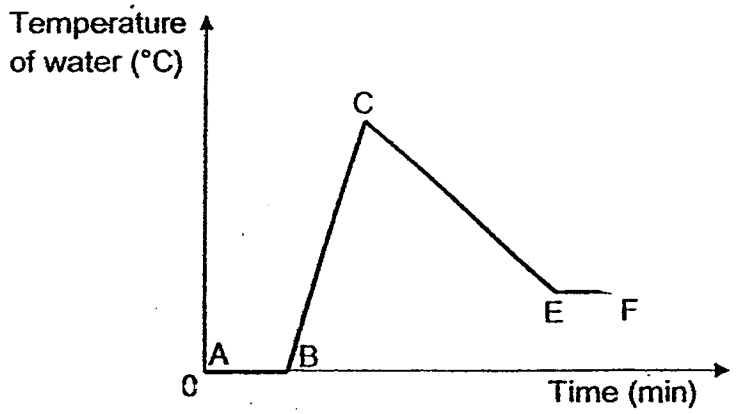
A: Water vapour cools as it rises.

B: Clouds are made up of water vapour.

C: Evaporation of water only takes place at 100°C.

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

20. Cindy heated a beaker of ice cubes until the water boiled. Then she left the boiled water on the table. She recorded the temperature of the water during her investigation.



Which of the following statements below is/are not correct?

A: There was heat loss at CE.

B: There was heat gain at BC.

C: There was no heat gain at EF

D: There was no heat loss or gain at AB.

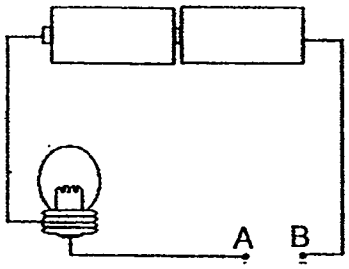
(1) C only

(2) D only

(3) A and B only

(4) C and D only

21. The bulb lit up when a metal bar X was placed over the circuit below to connect point A to point B.



Which of the following conclusions is/are correct?

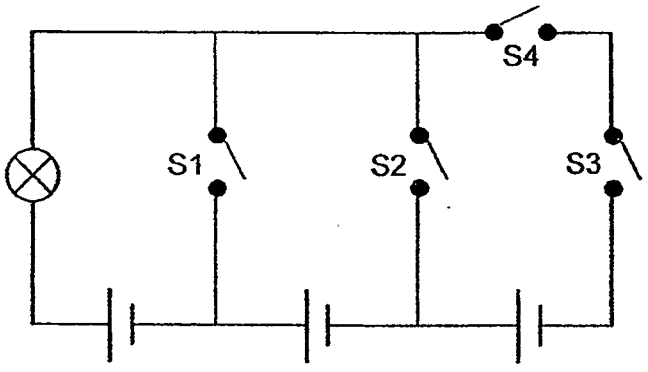
A: X is a conductor of electricity.

B: All metals can conduct electricity.

C: The bulb allows electricity to pass through.

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

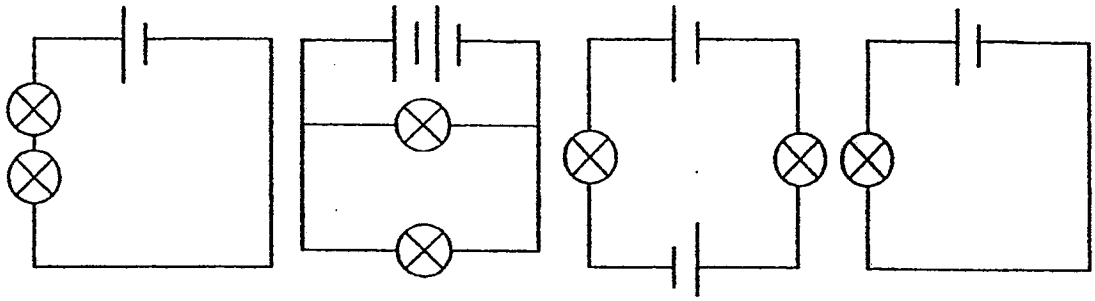
22. A bulb is connected to three identical batteries and four switches that are opened.



If only one switch is to be used, which switch should be closed to give the brightest bulb?

(1) S1
(2) S2
(3) S3
(4) S4

23. Study the circuit diagrams below.



Which of the following matches correctly the set-ups with the aim of the experiment?

	Set-ups	Aim of experiment
(1)	A and B	How the arrangement of bulbs affects their brightness.
(2)	A and D	How the number of bulbs affects their brightness.
(3)	B and C	How the arrangement of batteries affects the brightness of bulbs.
(4)	C and D	How the number of batteries affects the brightness of bulbs.

24. Which of the following methods can be used to make a magnet weaker?

A: Heating the magnet

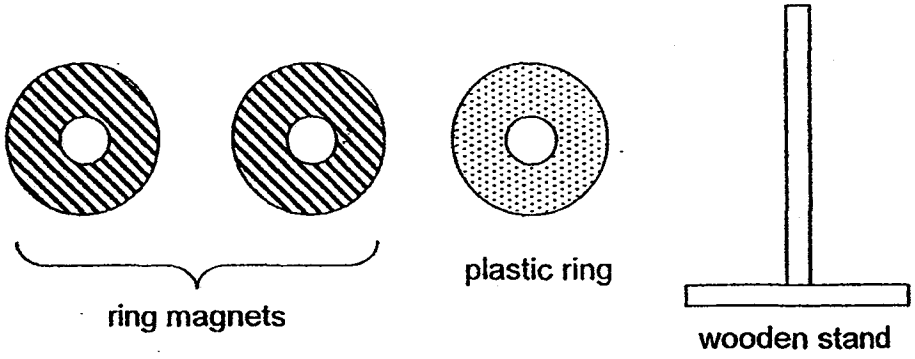
B: Dropping the magnet

C: Stroking the magnet with an iron rod

D: Stroking the magnet with a plastic rod

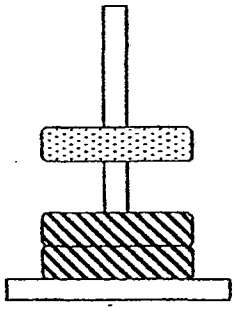
(1) A and B only
(2) B and C only
(3) B and D only
(4) A, B and D only

25. The diagram below shows three rings and a wooden stand.

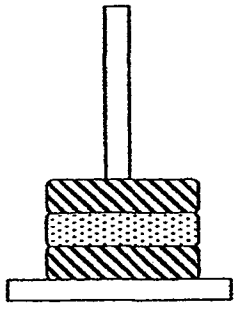


Which of the following are possible observations when all three rings are slotted through the wooden stand?

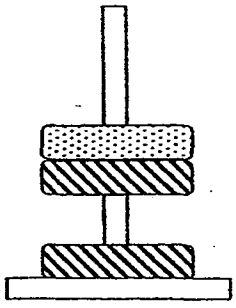
A



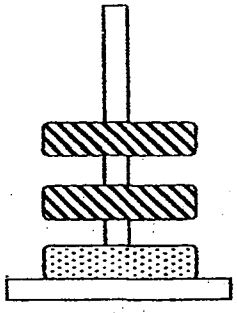
B



C

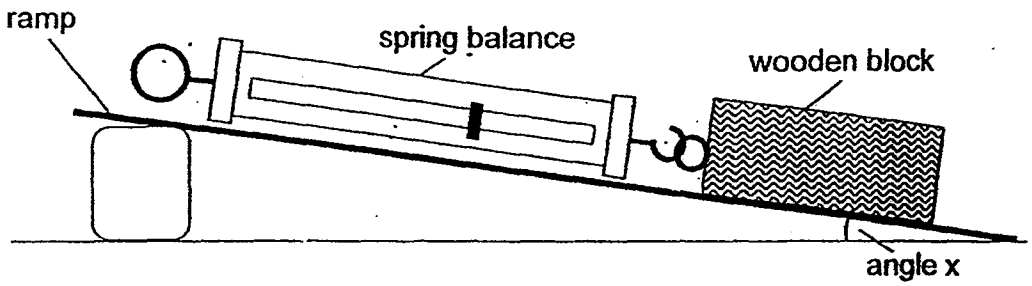


D



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

26. Cai Ling wants to test if the amount of force needed to pull an object is affected by the size of angle x in the set-up as shown below.

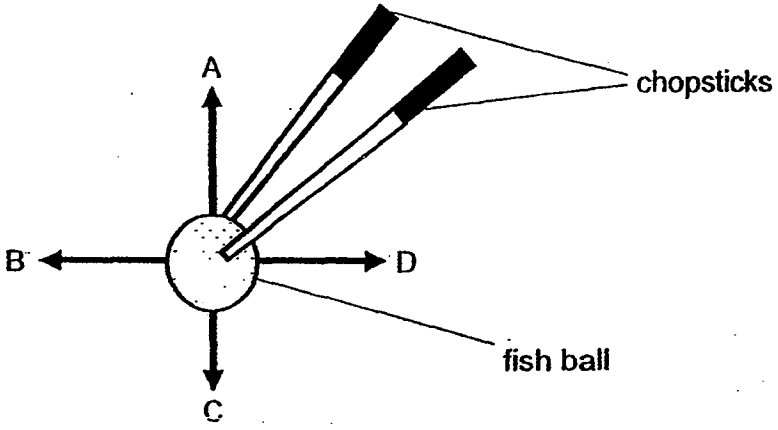


Which of the following variables must be kept the same?

A: Size of angle x
B: Surface of ramp
C: Mass of wooden block

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

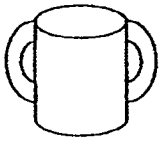
27. Xiao Ming used a pair of chopsticks to pick up a fish ball from his bowl of noodles. As he was lifting it up, the fish ball dropped into the bowl again.



Which arrow represents the direction of friction between the fish ball and chopsticks?

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

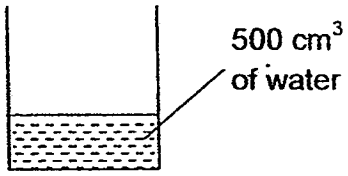
28. Devi shone a light on the container below.



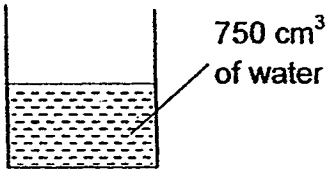
Which one of the following is/are not possible shadow(s) of the container?

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

29. Containers X and Y contained 500 cm^3 and 750 cm^3 of water respectively.
The containers are of the same size and thickness.
Both containers were heated over two separate flames until the water boiled.



Container X



Container Y

The water in both containers took 10 minutes to reach boiling point.
Which of the following statements can be concluded for the experiment?

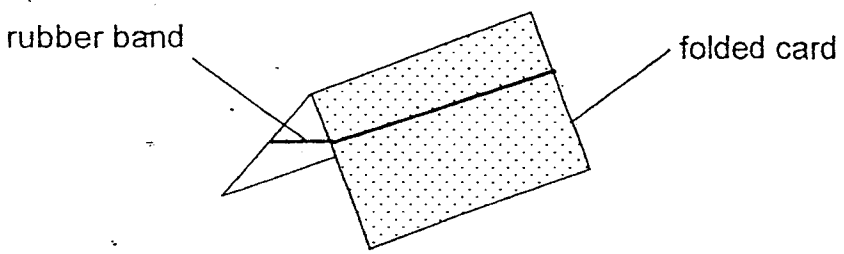
A: Container Y was a better conductor of heat.

B: The flame used for container X was weaker.

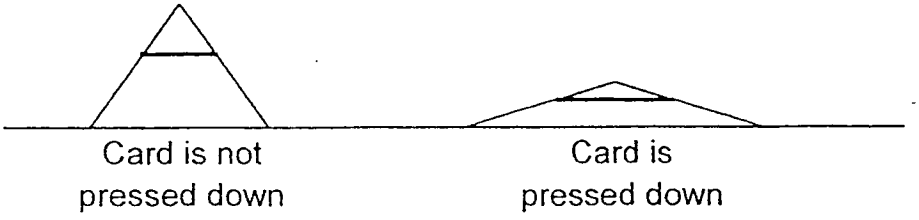
C: The water in container Y was at a lower temperature at the beginning of the experiment.

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

30. Jerry made a jumping toy using a folded card and a rubber band fastened to both ends of the card.



He pressed the card down on the floor and then released it as shown in the diagram below.



He observed that the card jumped up.

Which of the following can make the card jump higher?

A: Use a bigger card

B: Use two rubber bands

C: Press the card flatter on the floor

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

END OF BOOKLET A

GO ON TO BOOKLET B

PSLE INDEX NO. | | | | | | |

MAHA BODHI SCHOOL

2014 PRIMARY SIX PRELIMINARY EXAMINATION

SCIENCE

Name : _____ ( )

Class : Primary 6 ( )

Duration : 1 h 45 min (Booklets A and B)

Date : 21 Aug 2014

Parent's Signature: _____

Booklet A (60 marks)	
Booklet B (40 marks)	
Total (100 marks)	

BOOKLET 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. Plant X produces fruits that are sweet and fleshy, and have small and hard seeds. Animal Y eats only the fruit of Plant X.

Fruits of Plant X

Animal Y

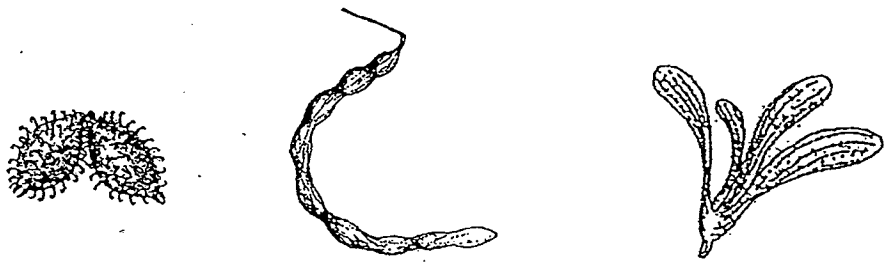
(a) Why is Animal Y able to prevent overcrowding of Plant X? [1]

_____

_____

Marks : / 1

31. (b) Animal Y can also help to prevent overcrowding of another type of plant.

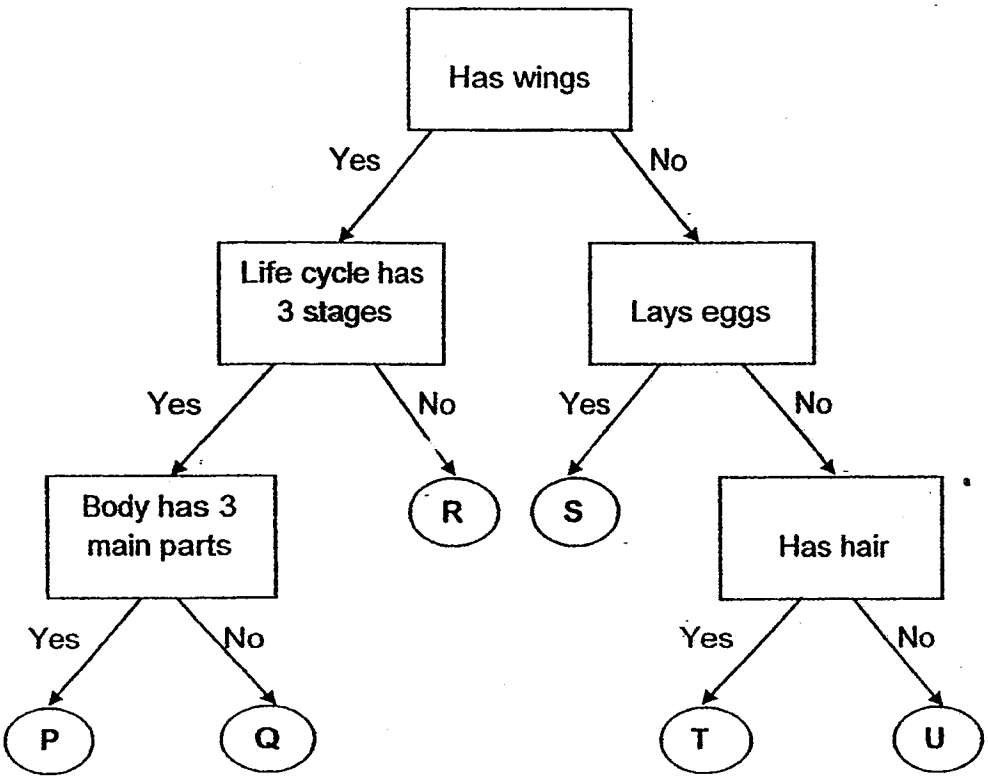


A B C

Which of the fruits, A, B and C, shown above is most likely to belong to this plant? Explain your answer. [2]

Marks : /2

32. Fandy classified six organisms, P, Q, R, S, T and U as shown below.



(a) What are the characteristics of P? [1]

_____

_____

(b) Which characteristic of organism T tells us that it is a mammal? [1]

_____

(c) Can you conclude that organism S belongs to the group of fish? Give a reason for your answer. [1]

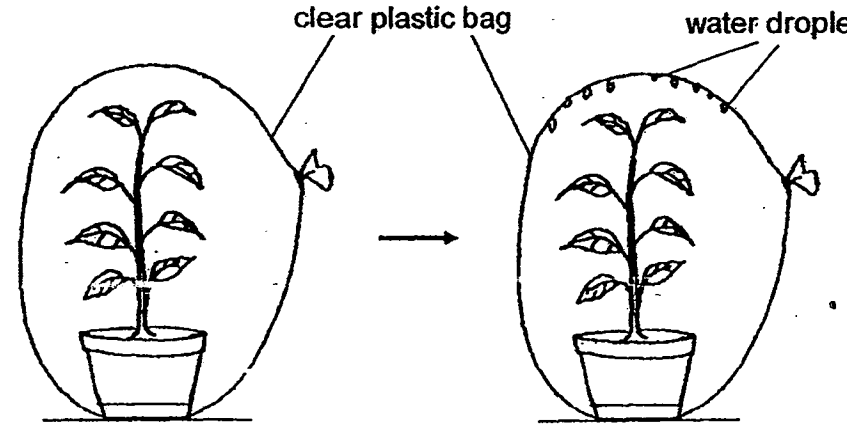
_____

_____

Marks : / 3

33. Gerard carried out an experiment to show that plants give out water vapour through the leaves. He covered a well-watered potted plant with a clear plastic bag.

The diagrams below show the set-up at the start of the experiment and at the end of the experiment two days later.



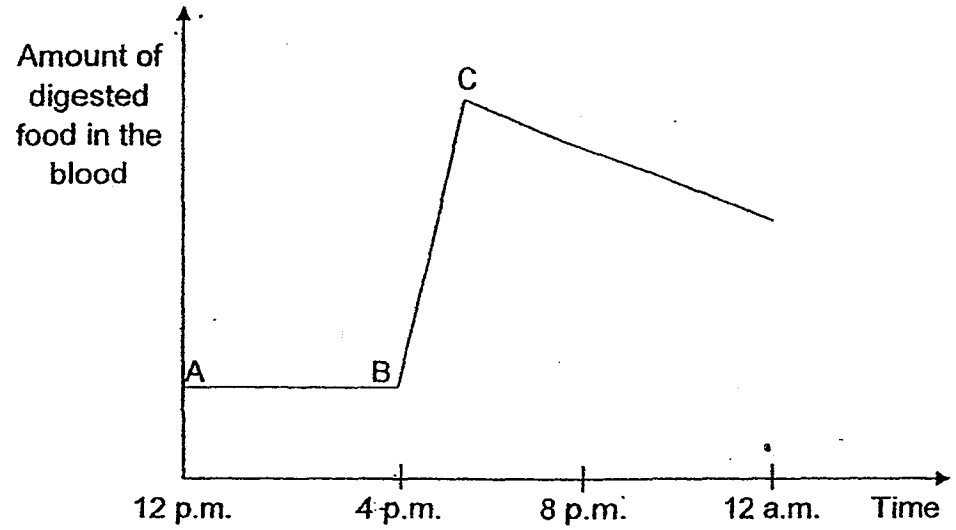
(a) Gerard observed some water droplets on the inner surface of the plastic bag two days later. He concluded that water droplets were formed from the water vapour lost by the plant.

His teacher told him that his conclusion was not correct.
Explain why. [1]

(b) Using only the materials in the set-up above, how could Gerard improve on the set-up to show that the water droplets came from the plant? [1]

Marks : /2

34. Halim recorded the amount of food in the blood after he had his lunch at 12 p.m., as shown in the diagram below.



(a) Which part of the graph, A, B or C, shows when the digested food from Halim's lunch was first absorbed? [1]

_____

(b) Why did the amount of digested food in the blood increase only after four hours? [1]

_____

_____

_____

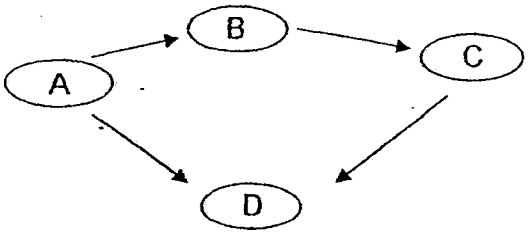
(c) Explain why the amount of digested food in the blood dropped at C. [1]

_____

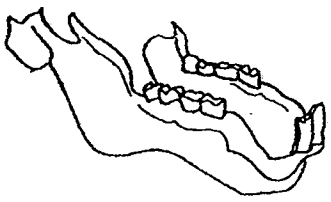
_____

Marks : / 3

35. Study the food web below.



The diagram below shows the set of teeth of an organism in the food web.



Teeth Y

Which organism, A, B, C or D, would have this set of teeth? Explain how this set of teeth is used by the organism for feeding. [2]

Organism

Explanation:

_____

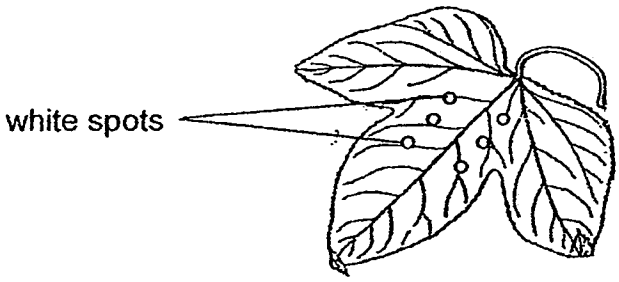
_____

_____

_____

Marks : / 2

36. Plant P has white spots on some of its leaves which resemble eggs of butterfly H.



leaf of plant P

When butterfly H sees the spots on the leaves, it will not lay eggs on them. Instead, it lays eggs on leaves without the white spots.

Caterpillars of Butterfly H eat a lot of leaves of Plant P.

(a) State the type of adaptation of Plant P. [1]

_____

(b) Based on the information provided above, give a reason why Butterfly H does not lay eggs on the leaves with white spots. [1]

_____

_____

(c) Flowers of Plant P produce nectar that attracts ants. These ants attack caterpillars of Butterfly H.

How does Plant P and the ants benefit from this relationship? [2]

(i) Benefit for Plant P: _____

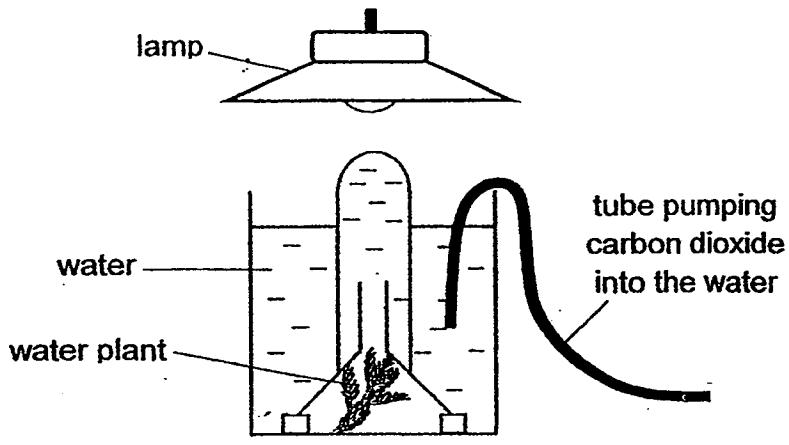
_____

(ii) Benefit for ants: _____

_____

Marks : / 4

37. Glenda placed a water plant in a container of water. She placed the set-up under a lighted lamp. For every two-minute interval, she increased the amount of carbon dioxide in the water using the set-up shown below.



Glenda counted the number of bubbles produced by the water plant for each time interval and recorded her results in the table below.

Minute interval	Carbon dioxide in water (unit)	Number of bubbles produced
0 to 2 min	10	2
2 to 4 min	30	5
4 to 6 min	50	7
6 to 8 min	70	11
8 to 10 min	90	11
10 to 12 min	110	11
12 to 14 min	110	13
14 to 16 min	110	15

(a) Explain the increase in the number of bubbles produced from 0 to 8 minutes. [1]

Marks : / 1

(b) From the 12th minute, Glenda added a change to the set-up without increasing the number of plants.

(i) State the change that she has added. [1]

_____

_____

(ii) Explain how this change affected the results shown in the table. [1]

_____

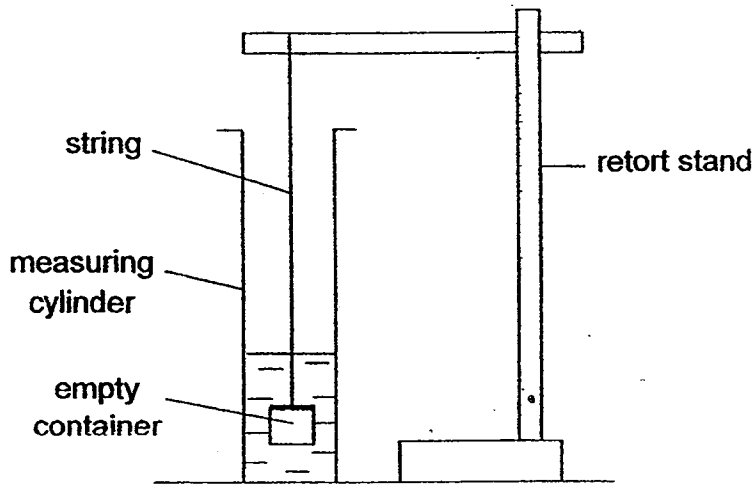
_____

_____

_____

Marks : /2

38. Kevin lowered an empty 100-g container with an air-tight lid into a measuring cylinder containing 400 cm^3 of water. He noted the new level of water in the measuring cylinder.



He recorded his observation in the table below.

Mass of empty container (g)	Original level of water in measuring cylinder (cm^3)	New level of water in measuring cylinder (cm^3)
100	400	550

He repeated his experiment by filling a similar container with marbles.
He lowered the container into the measuring cylinder filled with 400 cm^3 of water.

(a) What would be the new level of water in the measuring cylinder? [1]

_____

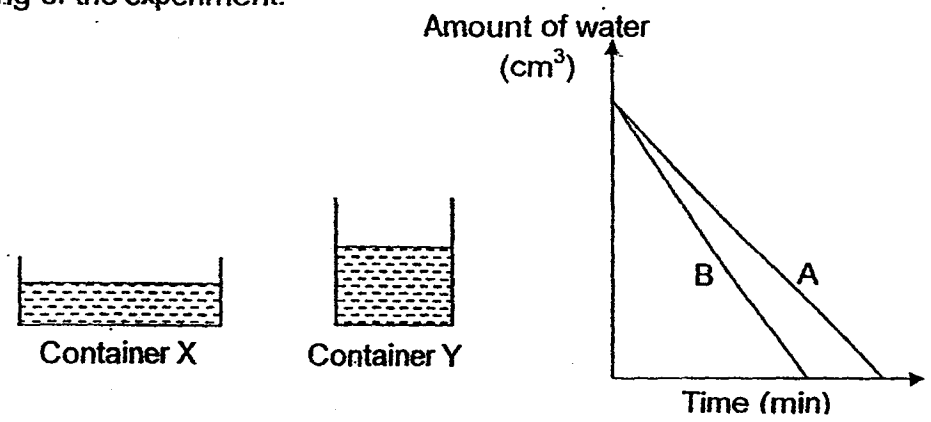
(b) Explain your answer in (a). [1]

_____

_____

Marks : / 2

39. The graph below shows the amount of water in containers X and Y that were left in the Sun. Each container contained the same amount of water at the beginning of the experiment.



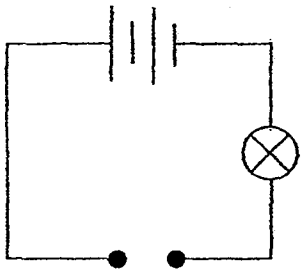
(a) Which graph, A or B, shows the amount of water in container X over a period of time? Explain your answer. [2]

(b) How would the change in the amount of water be affected if containers X and Y were kept in a cupboard in the room? [1]

(c) Explain your answer in (b). [1]

Marks : /4

40. Siti set up the circuit as shown below.



She placed a few different materials to connect the two points of the gap in the circuit and observed whether the bulb lit up. She recorded her results in the table below.

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

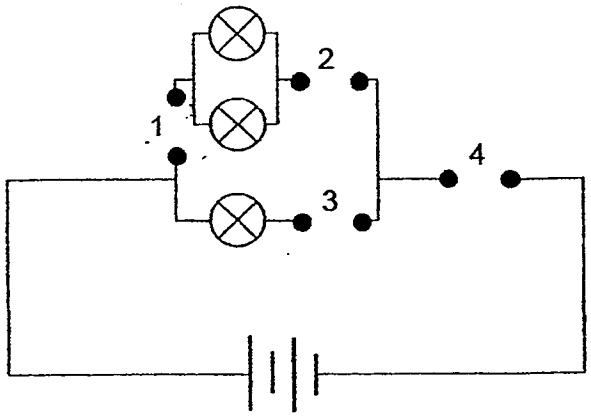
(a) Why did the bulb light up when materials B, C or D was placed across the gap in the circuit? [1]

_____

_____

Marks : / 1

(b) Study the circuit diagram below.



In the tables below, fill in where you can place materials A, B, C and D such that:

(i) the most number of bulbs will light up. [1]

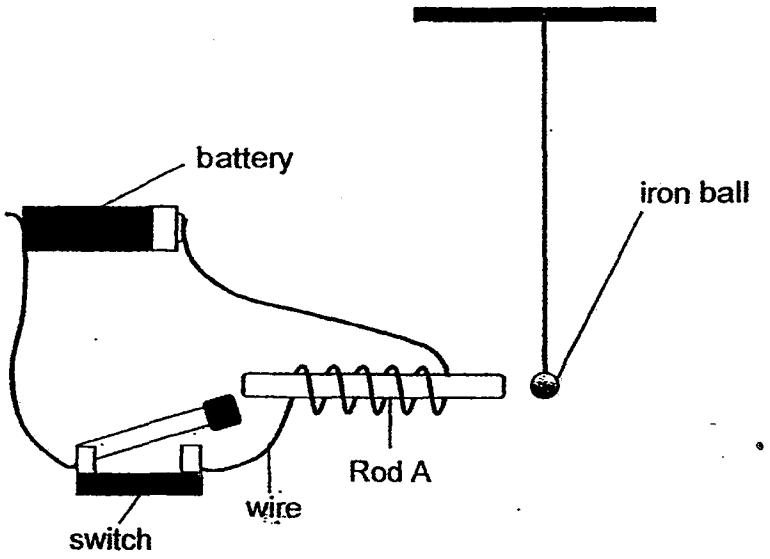
Position	1	2	3	4
Material				

(ii) the least number of bulbs will light up. [1]

Position	1	2	3	4
Material				

Marks : / 2

41. Alicia hung an iron ball on a string near rod A as shown below.



The iron ball moved towards Rod A once the switch was closed.

(a) Explain why the iron ball moved towards rod A. [1]

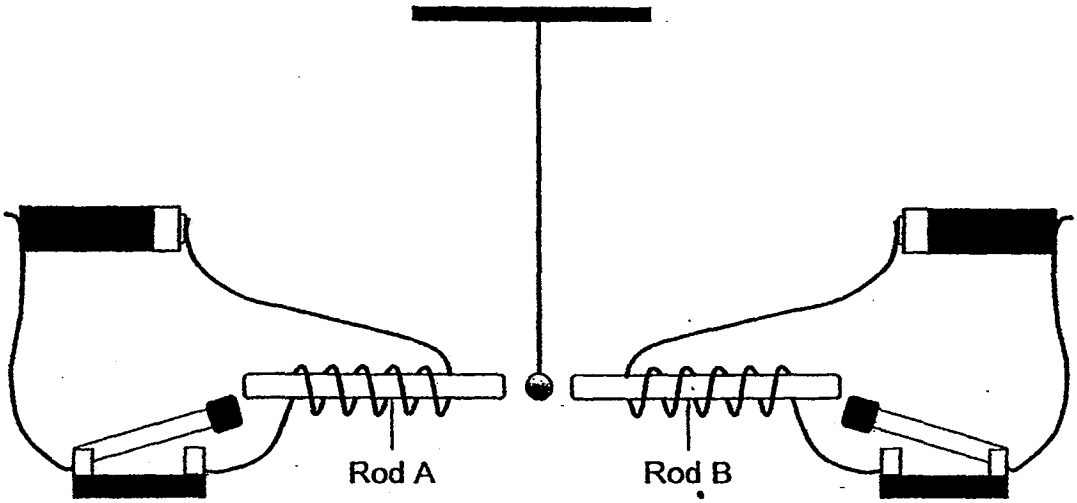
_____

_____

_____

Marks : / 1

(b) Alicia changed the set-up to the one shown below.



When both switches were closed, the ball moved towards Rod B.

(i) Explain why the iron ball moved towards Rod B [1]

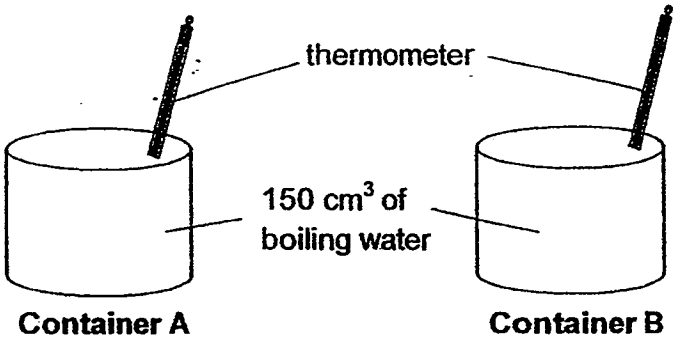
(ii) State two changes Alicia could make to the circuit to make the iron ball move back towards Rod A, when switches were closed. [1]

Change 1:

Change 2:

Marks : /2

42. Limei poured 150 cm^3 of boiling water into two containers, A and B, which were of similar shape and size. The containers were then tightly sealed and left on her table in the classroom.



She recorded the time taken for the water in each container to cool to room temperature of 28°C in the table below.

Container	Time taken to cool to room temperature (min)
A	45
B	30

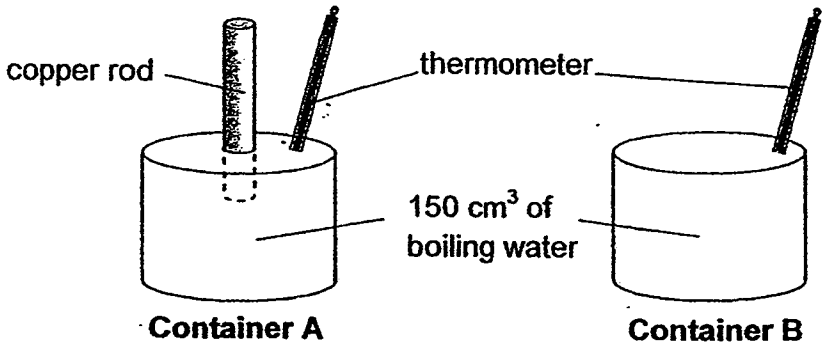
(a) State one reason why the water in the two containers took different lengths of time to cool to room temperature. [1]

_____

_____

Marks : / 1

Limei repeated the experiment with a copper rod inserted through the lid of Container A.



She recorded the time taken for the boiling water to cool to room temperature of 28°C in the table shown below.

Container	Time taken to cool to room temperature (min)
A	20
B	30

(b) Explain how the copper rod inserted into Container A allowed the boiling water to cool down in a shorter time than in (a). [1]

_____

_____

_____

Marks : / 1

43. Christine and Justin measured and compared how much shade two trees, X and Y, in the school provided on a Monday afternoon at 2 p.m. The procedure for the investigation is given below.

Procedure for Investigation

Out in the field

a. Choose a tree in the school.

b. Place a large piece of paper under the tree.

c. Use a marker to outline the patches of light on the piece of paper.

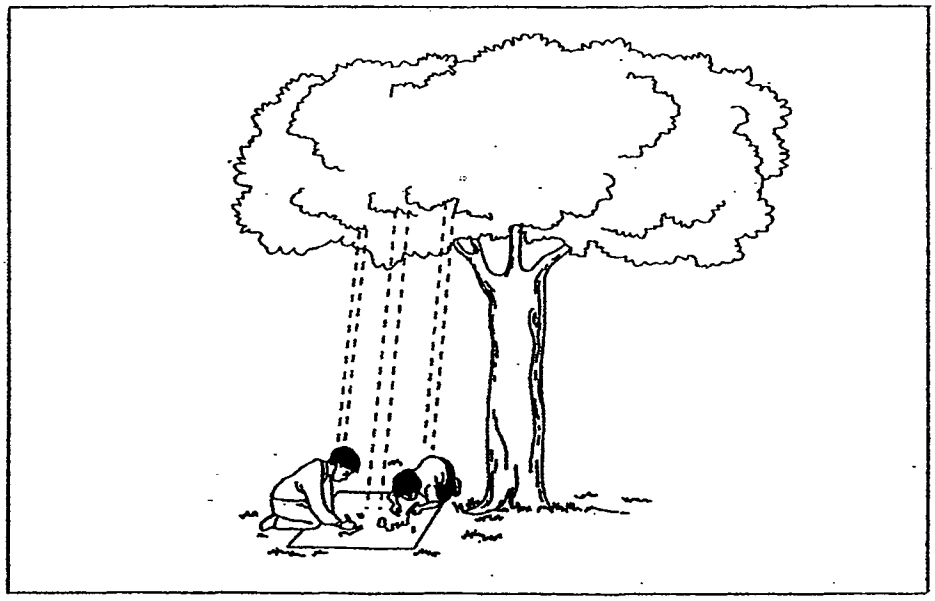
d. Choose a second tree.

e. Repeat the steps (b) to (c), using a piece of paper of the same size.

Back in the Science Laboratory

a. Cut away the light patches on each piece of paper.

b. Weigh the remaining pieces of paper.



(a) Which concept of light is this investigation based on? [1]

_____

_____

Marks : / 1

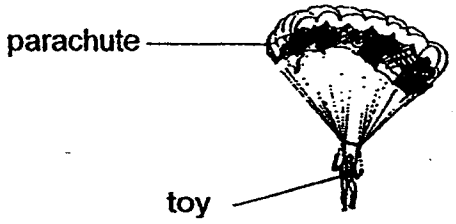
(b) The table below shows the weight of the remaining pieces of paper for trees X and Y.

Tree	Mass of remaining pieces of paper (g)
X	320
Y	520

Which tree provided more shade? Explain your answer. [1]

(c) State one other variable that Christine and Justin must keep the same to ensure a fair test. [1]

44. Thomas attached a toy to a parachute as shown below.



He released the toy from a height of 2 m and observed it falling towards the ground.

(a) What caused the toy to fall to the ground? [1]

Marks : /3

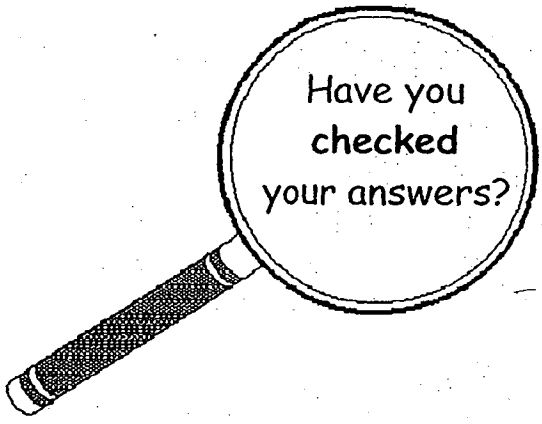
(b) Thomas wanted to study if the surface area of the parachute affected the time it took to reach the ground. Using the same toy, he tested three parachutes with different surface areas and recorded the results in the table below.

Parachute	Surface area (cm^2)	Time taken to reach the ground (s)
A	50	8
B	30	4
C	40	6.5

(i) Give a reason how using the same toy helped to make Thomas' experiment a fair test. [1]

(ii) Explain why parachute A stayed in the air longest. [1]

~ END OF PAPER ~



Marks : / 2

Maha Bodhi School P6 Preliminary Exam Science 2014

Booklet A

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

Booklet B

31 a Animal Y disperses the seeds of fruits of Plant X further away from the parent plants.
b Fruit A belongs to this plant. The fruit has hooks that enable the fruit to cling onto the fur of animal Y.

32 a P has wings, a 3-stage life cycle and 3 main body parts.
b Organism T has hair.
c No, I cannot. There are other groups of animals that do not have wings and lay eggs too.

33 a Water from the soil can also evaporated into water vapour. This water vapour can condense on the clear plastic bag to form water droplets.
b He could use the plastic bag to cover the plant only. (Excluding the plant pot and soil)

34 a Part B
b It takes time for the food to be digested first before it can be absorbed into the bloodstream.
c The digested food has been used by the body to provide energy for life processes.

35 a Organism B
b Organism B is a plant eater. Its front sharp teeth are use for cutting food. Its back blunt teeth are used for grinding food.

36 a Structural adaptation (mimicry)
b The adult butterfly is tricked into thinking that the spots are eggs that will hatch into caterpillars later. Its young will later have to compete for the food with these caterpillars.
c (i) Leaves will not be eaten thus the leaves can continue to make food and survive.
(ii) Ants get nectar as food.

37 a When the amount of carbon dioxide increased, the rate of photosynthesis increased, thus producing more oxygen bubbles.
b (i) Increase the light intensity of the lamp. / Add more lamps.
(ii) When the amount of light increased, the rate of photosynthesis increased, thus producing more oxygen bubbles.

38 a 550 cm^3
b The water level remained the same as the marbles were placed inside the containers. The container had a definite volume that occupied the same space.

39 a Graph B. The water in container X has a larger exposed surface area that increases the rate of evaporation of water.
b The amount of water would decrease more slowly.
c The temperature of air in the cupboard is lower. Thus the rate of evaporation of water is lesser.

40 a They are electrical conductors.
b (i) 2 bulbs lighted up.

Position	1	2	3	4
Material	B	C	A	D

(ii) No bulb lighted up.

Position	1	2	3	4
Material	B	C	D	A

41 a Rod A became an electromagnet and attracted the iron ball.

b (i) Rod B exerted a stronger magnetic force of attraction.

(Ii) Change 1: Add more batteries to the circuit with Rod A.
Change 2: Coil the wire more times around Rod A.

42 a Container B was a better conductor of heat than Container A, hence Container B conducted heat away from the water faster than Container A.

b Copper was a good conductor of heat. The rod gained heat from the water faster and lost heat to the surroundings faster.

43 a A shadow is formed when the light is blocked.

b Tree Y provided more shade. The mass of the remaining pieces of paper was greater. The greater the mass of the remaining pieces of paper, the greater the amount of shade.

c Same type of paper must be used.

44 a Gravity.

b (i) Different toys have different shapes or sizes that may affect the time taken to reach the ground.

(ii) The parachute had the biggest surface area. Thus, it had the most amount of air resistance to allow parachute A to stay in the air the longest.