RED SWASTIKA SCHOOL

RED SWASTIKA SCHOOL

SCIENCE
2021 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 18 May 2021

BOOKLET A

Total time for Booklets A & B: 1h 45 min

Booklet A: 28 questions (56 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 22
   b. Questions 1 to 28

For Questions 1 to 28, choose the most suitable answer and shade its number in the OAS provided.

1. Wen Wei made an observation of four different types of organisms. She recorded her observations in the table below.

Characteristic	Organism A	Organism B	Organism C	Organism D
Has six legs				√
Has streamlined body shape	√	√	√	
Has feathers		√		
Has hair	√			

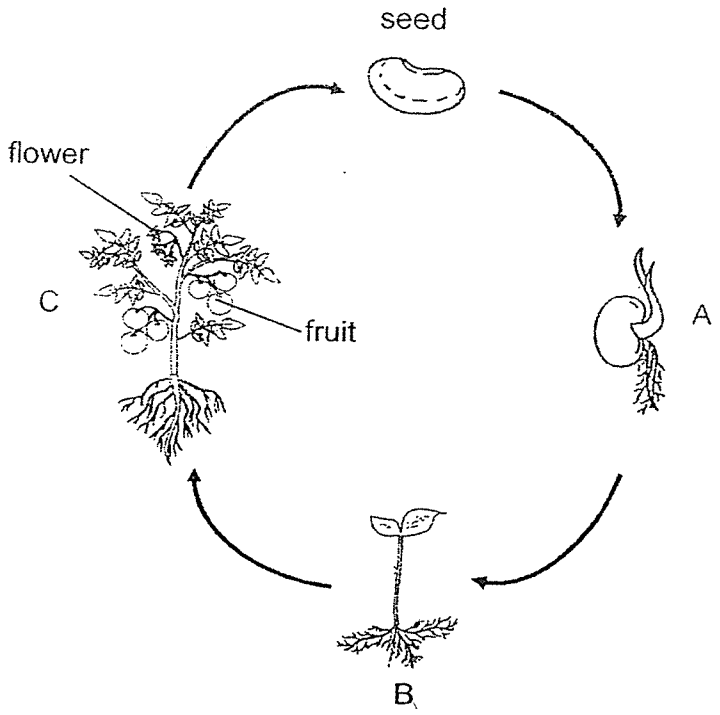
Study the following statements.

A: Organism A is a fish.
B Organism B is a bird.
C: Organism C is a mammal.
D: Organism D is an insect.

Which of the statements are true?

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

2. Ali studied the life cycle of a plant.



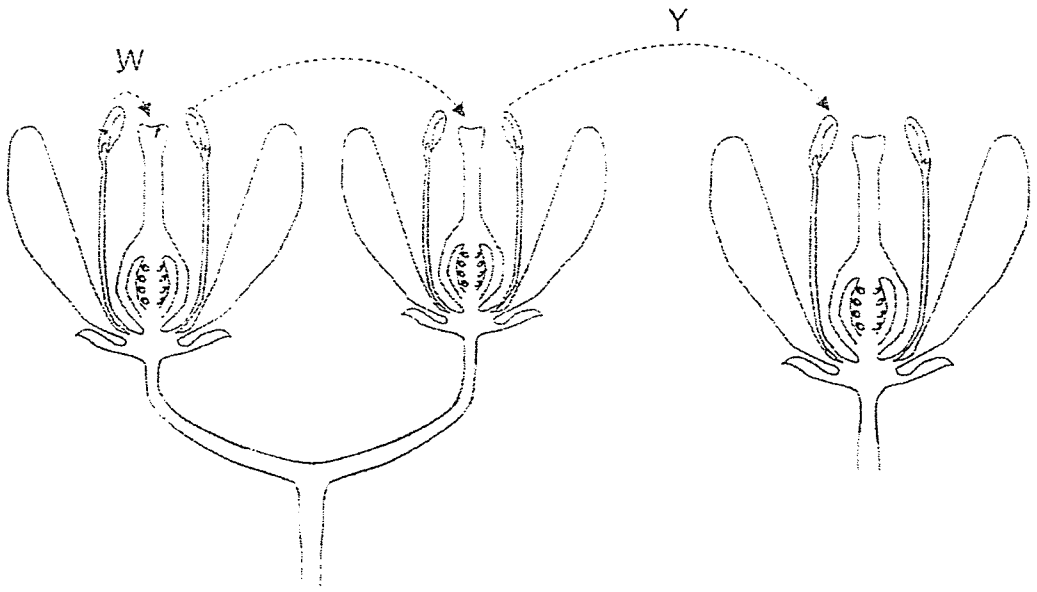
After observing the life cycle, he made the following statements.

W: Pollination occurs at A.
X: The plant at B has seeds for dispersal.
Y: Light is needed at B to make food.
Z: Fertilisation can take place in the fruit at C.

Which of the statements is/are correct?

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

3. The diagrams show flowers of two plants. Plant A and plant B are of the same type.



Plant A Plant B

Which arrow(s) will result in the plant producing fruits?

(1) W only
(2) X and Y only
(3) W and X only
(4) W, X and Y

4. Diagrams 1 and 2 below show the reproductive parts of a flower and a human respectively.

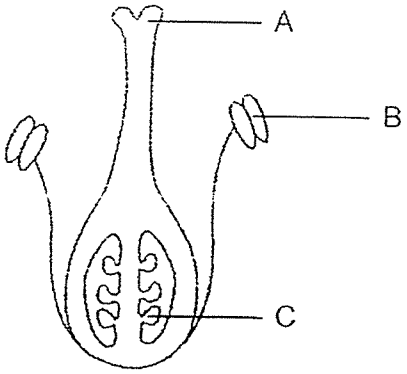


Diagram 1

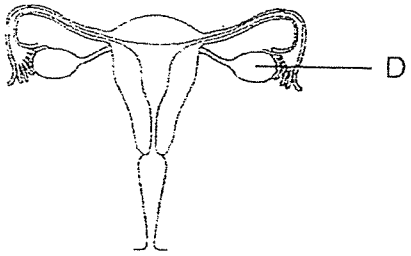
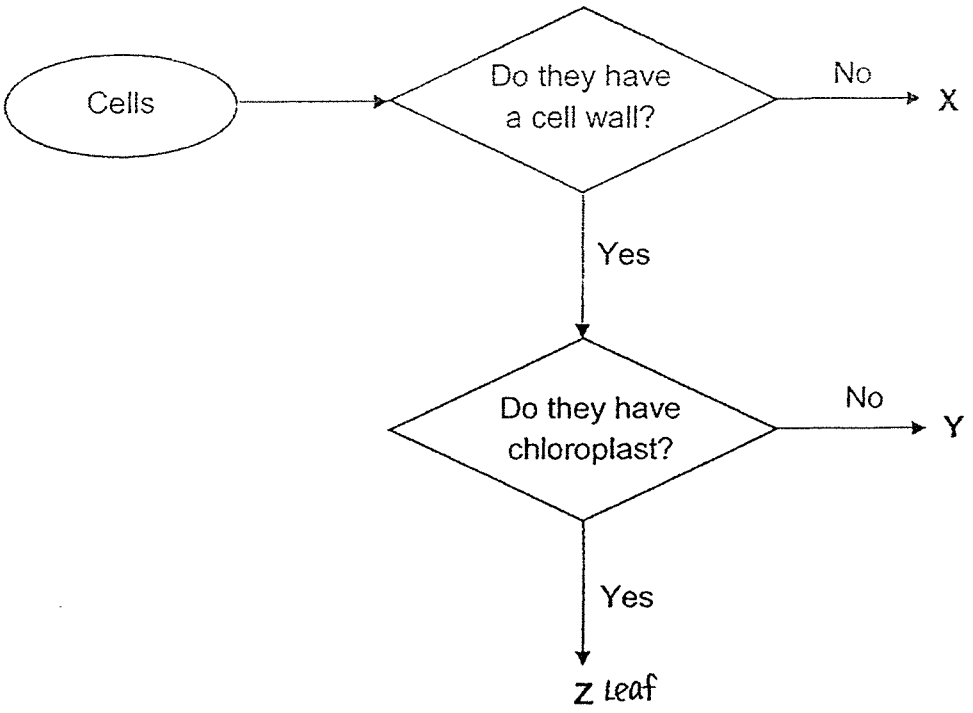


Diagram 2

Which of the following statements is correct?

(1) Parts B and D are ovules.
(2) Fertilisation occurs at part A.
(3) Parts C and D contain the female egg cells.
(4) Pollination takes place at part B.

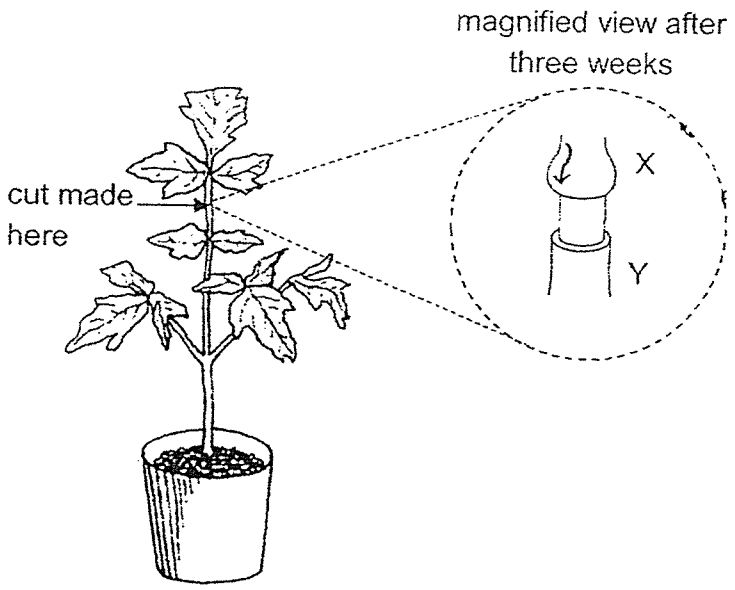
5. Study the chart shown below.



Which of the following are correctly represented by the letters X, Y and Z?

	X	Y	Z
(1)	cheek	leaves	roots
(2)	roots	cheek	leaves
(3)	roots	leaves	cheek
(4)	cheek	roots	leaves

6. Ken has a potted plant. He cut a portion of the stem and placed the plant next to an open window. He watered the plant daily.

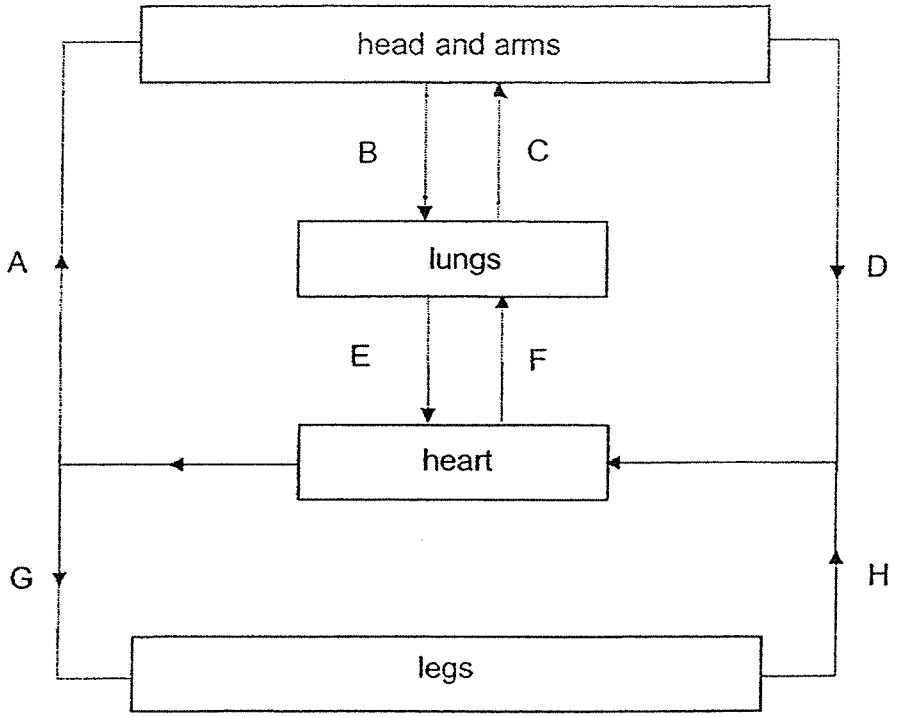


After three weeks, it was observed that the plant was still alive and all leaves remained green. The magnified view of the cut portion of the stem is shown above.

Which of the following is correct?

	Can water from the roots be transported to the leaves above X?	**Can food from the leaves above X be transported to Y?**
(1)	no	no
(2)	no	yes
(3)	yes	yes
(4)	yes	no

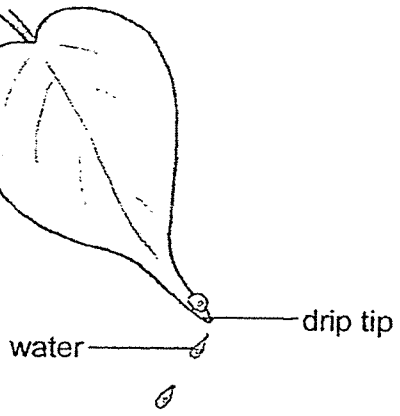
7. Jack drew the diagram below to show the blood flow in some parts of the human body.



Which two arrows were not drawn correctly?

(1) B and C
(2) E and F
(3) G and H
(4) A and D

8. Plant Q grows on an island which is prone to heavy rain once every two days.



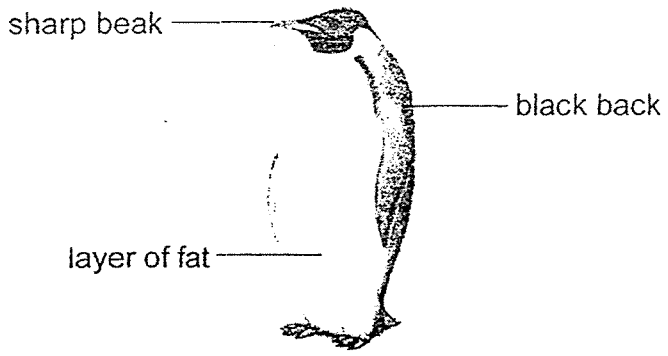
Leaf of plant Q

Plant Q has a drip tip at the corner of its leaves. The drip tip is pointy and allows rain water to flow off the leaves quickly. The diagram above shows an example of a leaf from plant Q.

Which of the following best explains how the drip tip is useful for plant Q?

(1) It reduces water loss.
(2) It prevents the leaves from breaking.
(3) It prevents insects from eating the leaves.
(4) It can take in more water through the leaves and make more food.

9. Organism Q is found in location Z which has a constant temperature of below 0°C throughout the year.



Organism Q

Location Z is surrounded with white snow.

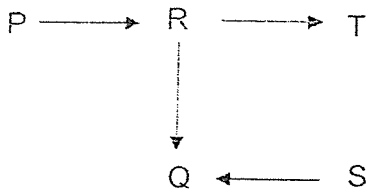
Jenny made the following statements about organism Q.

A: Its black back absorbs heat from the sun to keep it warm.
B: Its black back allows it to camouflage with the snow.
C: It has a sharp beak to allow it to move easily.
D: It has a layer of fat to keep it warm.

Which of the above statements are correct?

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

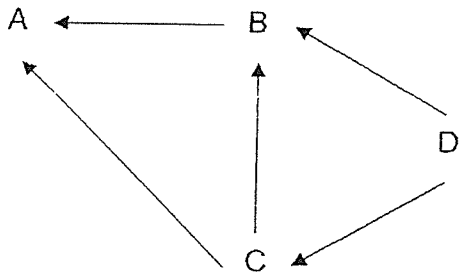
10. The diagram below shows a food web in a habitat.



Which of the following is a correct conclusion?

(1) R is a decomposer.
(2) Q eats plants and animals.
(3) P is the only producer in the food web.
(4) When the population of R increases, the population of T decreases.

11. Study the food web below.



Siva made the following statements about the food web.

A: D is a prey of B and C.
B: C is a prey of A.
C: B is a predator of C.
D: A provides energy to B.

Which statements are correct?

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

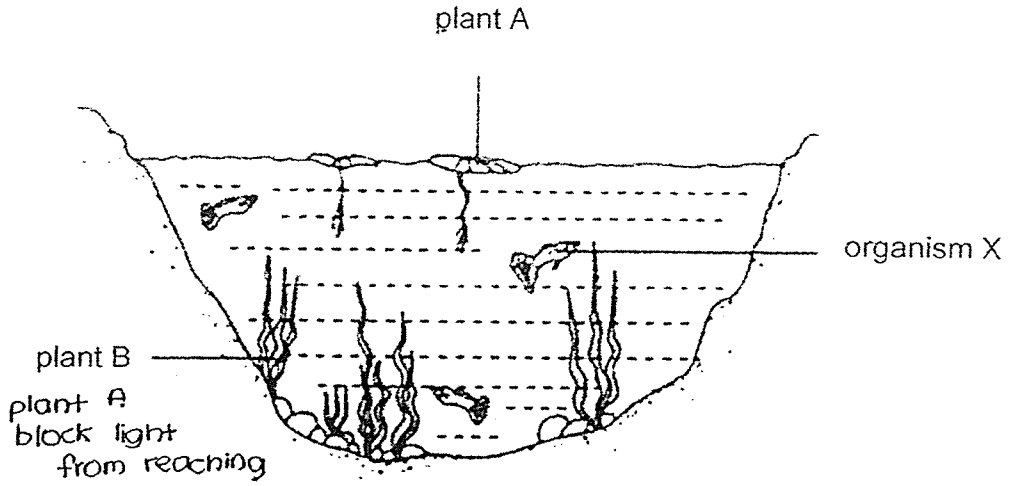
12. Jacob made the following statements about plants and animals.

A: They are made up of cells.
B: They depend directly on the sun for energy.
C: They need energy to carry out life processes.

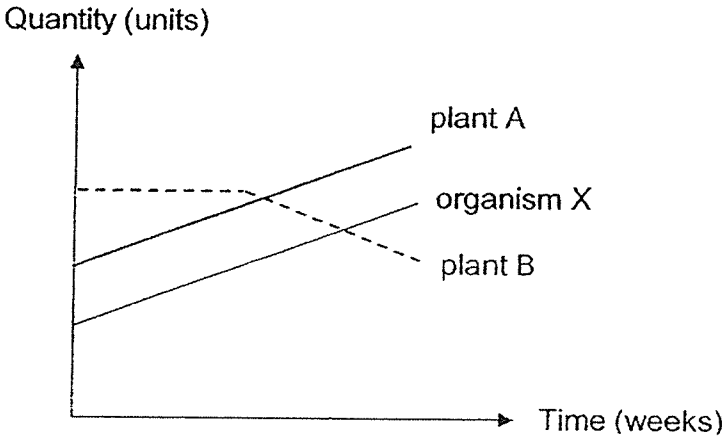
Which of the statement(s) is/are correct?

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

13. The diagram below shows the different populations of living things in a pond.



Jill recorded the change in population size of the organisms in the pond over a period of time as shown below.

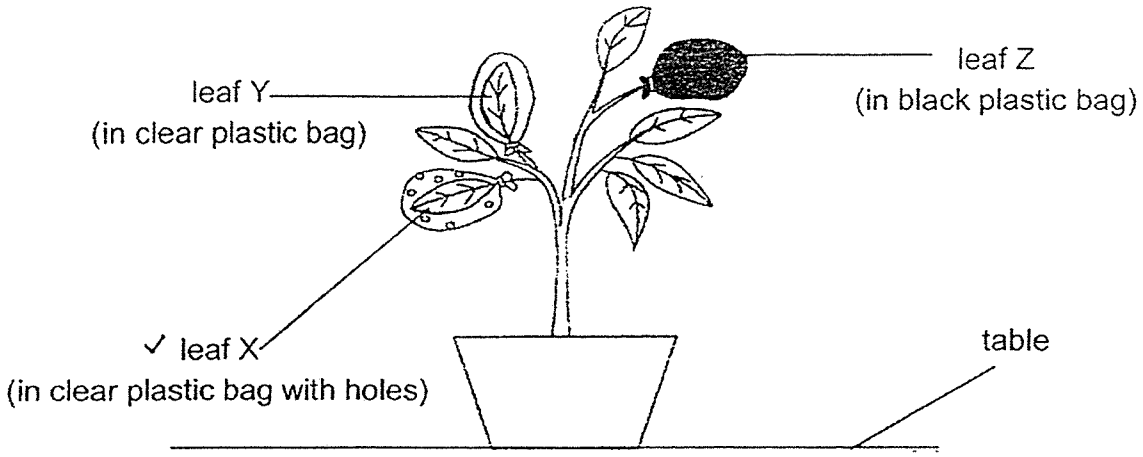


Which of the following possibly explains the change in the population size of the three living things?

A: Plant A was able to make food.
B: Organism X has insufficient food.
C: Plant B could not get enough sunlight.

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

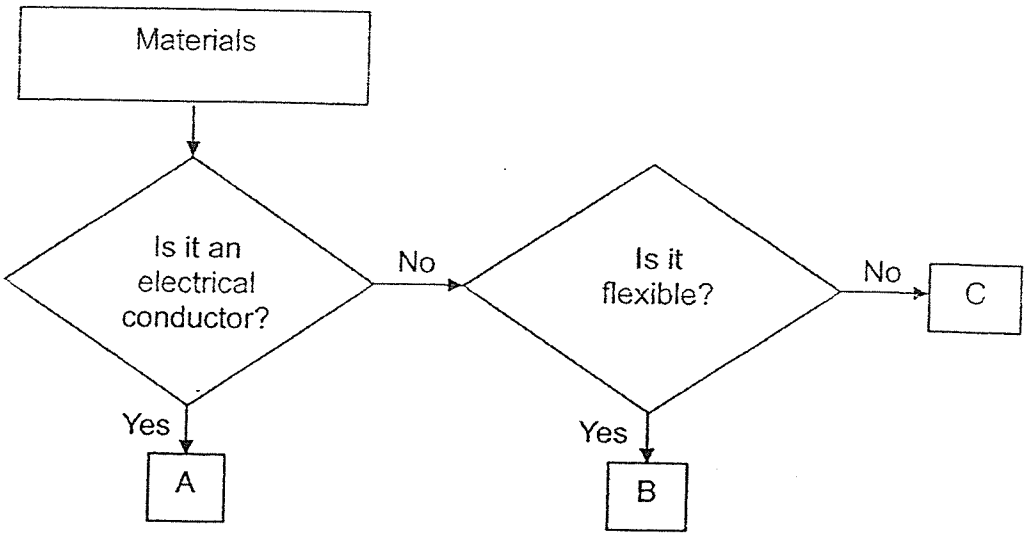
14. Aileen set up an experiment. She wrapped three similar leaves in different types of plastic bags. The plastic bags were of the same size. She left the plant under bright light for some time.



After two days, Aileen carried out a starch test on the three leaves. Which of the following change in iodine solution colour will she most likely observe?

	Leaf X	Leaf Y	Leaf Z
(1)	dark blue	dark blue	yellowish brown
(2)	yellowish brown	yellowish brown	dark blue
(3)	dark blue	yellowish brown	yellowish brown
(4)	yellowish brown	dark blue	dark blue

15. Study the flow chart below.



Which of the following could A, B and C be?

	A	B	C
(1)	steel	rubber	ceramic
(2)	iron	ceramic	rubber
(3)	iron	rubber	steel
(4)	ceramic	wood	steel

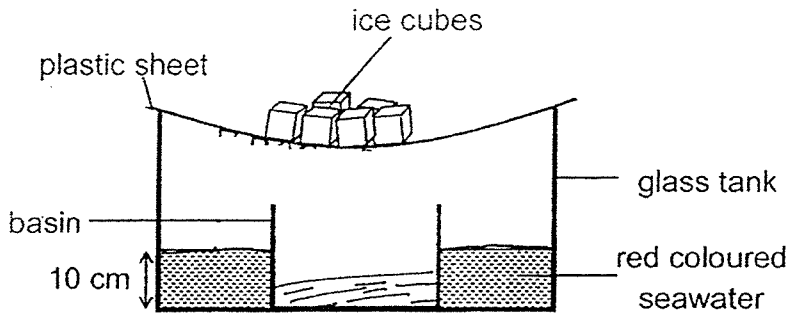
16. Tom hung a wet cloth in the Science Room. Which of the following ways would help to dry the cloth faster?

A: Fold the cloth in half.
B: Close the windows in the Science Room.
C: Use a hairdryer to blow the cloth.

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

Questions 17 and 18 are based on the set-up below.

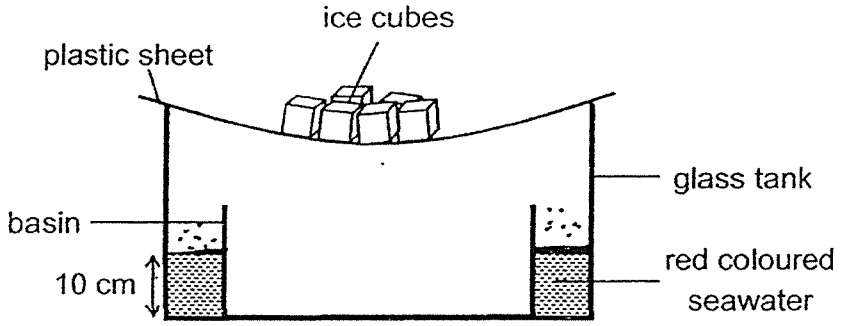
Joanna prepared the following set-up to demonstrate Earth's water cycle.



17. Joanna placed the set-up in an open field on a sunny day for an hour. She observed some liquid collected in the basin. Which of the following is true about her observations of the liquid collected in the basin?

	Colour	Taste
(1)	red	salty
(2)	red	tasteless
(3)	colourless	salty
(4)	colourless	tasteless

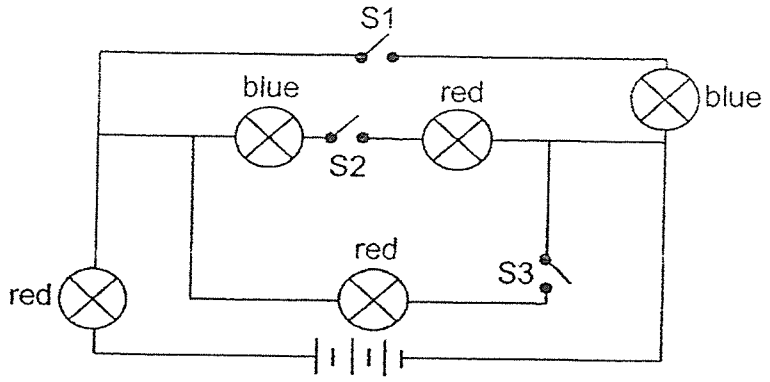
18. Joanna repeated the experiment for the same duration by changing the basin into a wider basin as shown in the diagram below.



Which of the following correctly explains the change in the amount of liquid collected in the basin?

	Amount of liquid collected	Explanation
(1)	increase	A bigger basin can collect more water.
(2)	increase	More water in the glass tank evaporated and condensed into the basin.
(3)	decrease	Less water in the glass tank evaporated and condensed into the basin.
(4)	no change	The size of the basin has no effect on the amount of water collected.

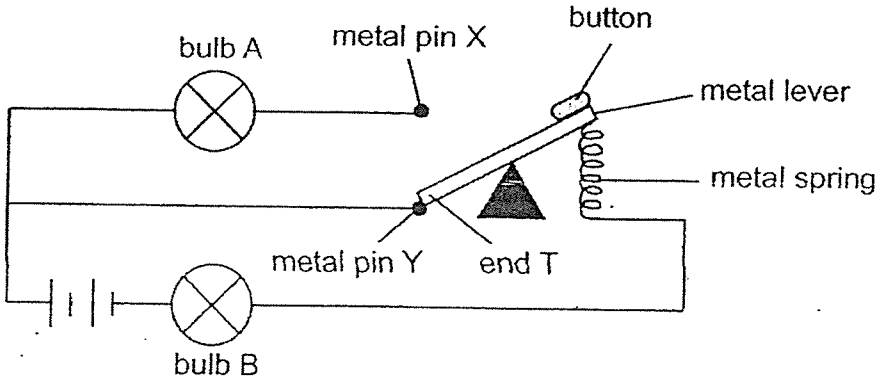
19. The circuit below consists of some blue and red bulbs, switches and batteries.



Which switches, S1, S2 and/or S3, should be closed in order for exactly two blue and two red bulbs to be lit up at the same time?

(1) S1 and S2 only
(2) S1 and S3 only
(3) S2 and S3 only
(4) S1, S2 and S3

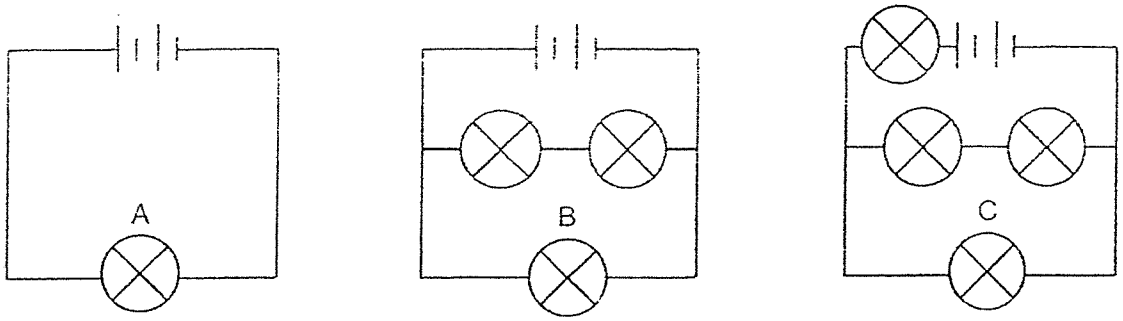
20. The electrical circuit below contains two identical bulbs and two identical batteries. Matt used a datalogger to measure the brightness of the bulbs. He observed that Bulb B was lit with a brightness of 20 units while Bulb A was not lit.



What would be the reading on the datalogger when the button is pushed down such that end T of the metal lever touches metal pin X?

	Bulb A	Bulb B
(1)	less than 20 units	less than 20 units
(2)	20 units	more than 20 units
(3)	20 units	20 units
(4)	more than 20 units	less than 20 units

21. Hanis used some identical bulbs and identical batteries in the circuits below.

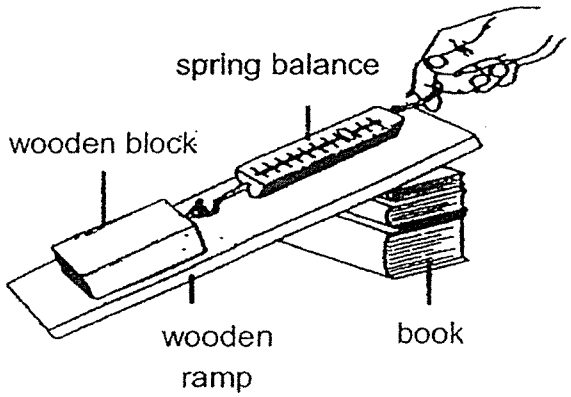


Circuit 1 Circuit 2 Circuit 3

She compared the brightness of bulbs A, B and C. Which of the following statements is correct?

(1) Bulb A is brighter than bulb B.
(2) Bulb B is brighter than bulb A.
(3) Bulb C is the least bright.
(4) Bulbs A, B and C have the same brightness.

22. The diagram below shows a student using a spring balance to pull a wooden block up a wooden ramp that is resting on a stack of books.

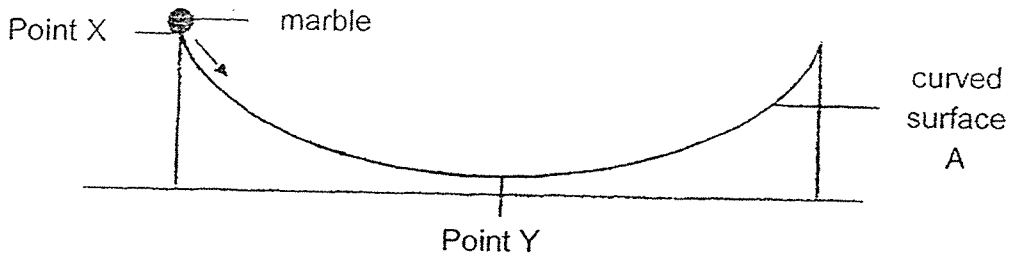


Which of the following two changes would require more force to pull the wooden block up the ramp?

A: Increase the mass of the wooden block.
B: Apply oil to the bottom surface of the wooden block.
C: Glue some sandpaper to the bottom surface of the wooden block touching the ramp.
D: Restack the same number of books so that the thinnest book is at the bottom.

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

23. Study the diagram below. Bala released a marble from point X. The marble rolled up and down curved surface A a few times before slowing down and stopping at point Y.



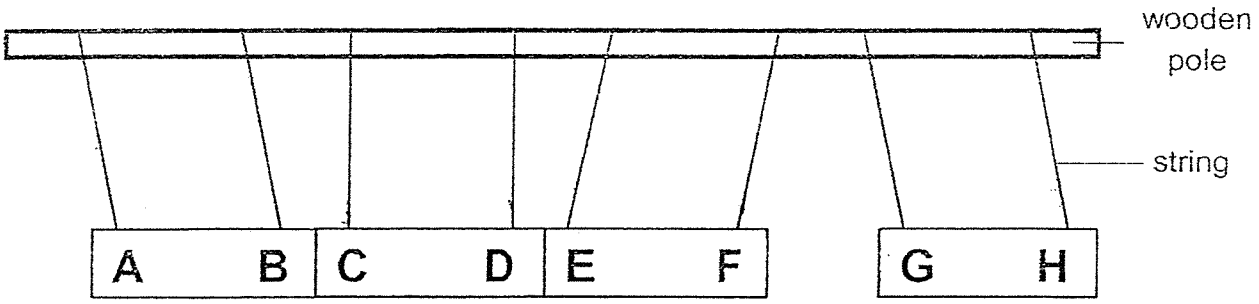
He repeated the experiment on a similar curved surface B, which was made of a different material. He recorded the results of his experiment in the table below.

Curved surface	Time taken for marble to stop at point Y (seconds)
A	30
B	40

Which of the following statements is true?

(1) There is no gravitational force exerted on the marble on both surfaces.
(2) The amount of gravitational force exerted on the marble on both surfaces is the same.
(3) The amount of gravitational force exerted on the marble on surface A is greater than when it is on surface B.
(4) The amount of gravitational force exerted on the marble on surface B is greater than when it is on surface A.

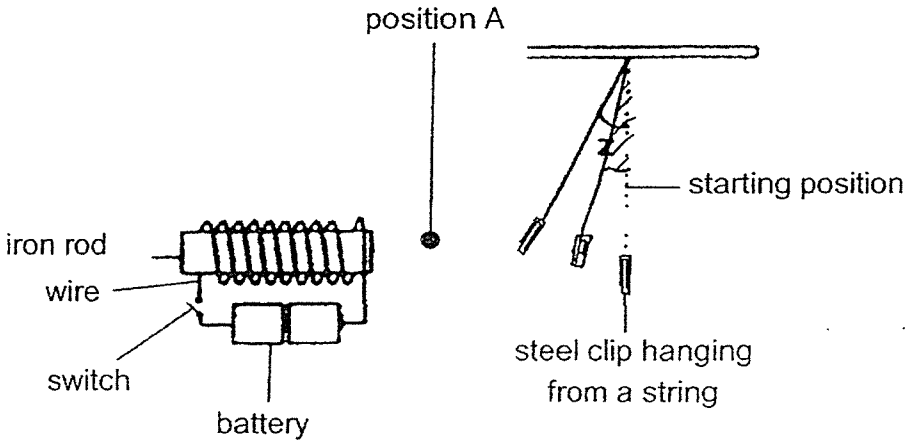
24. The diagram below shows the interaction between four similar bar magnets when they are hung on a horizontal wooden pole using strings.



Based on the results above, which of the following statements about the poles of the bar magnets is true?

(1) A and G are like poles
(2) D and H are like poles
(3) A and E are unlike poles
(4) C and F are unlike poles

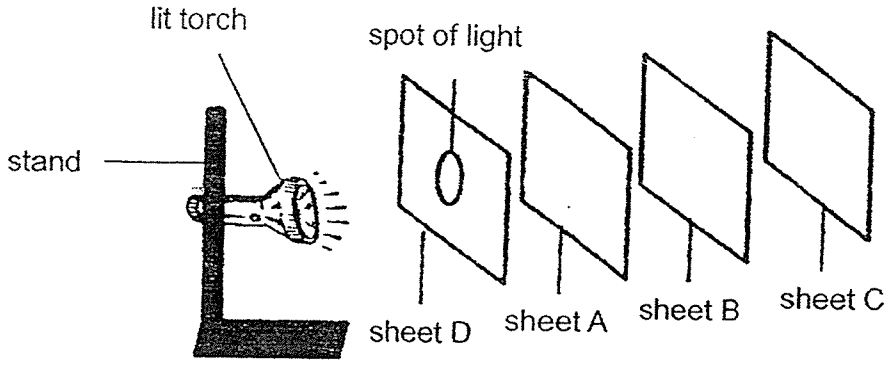
25. Joe set up an experiment as shown below. When the switch is closed, the steel clip moved towards the iron rod. He then measured angle z from the starting position.



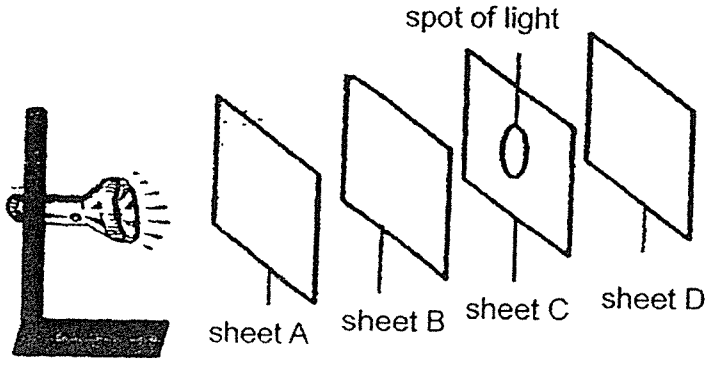
Which of the following changes could be made to the experiment to make angle z smaller?

(1) Increase the number of batteries.
(2) Move the circuit closer to position A.
(3) Replace the steel clip with a heavier one.
(4) Increase the number of coils around the iron rod.

26. Sheets A, B, C and D are made of different materials. An experiment was conducted to investigate whether light can pass through them. The sheets were arranged at equal intervals in the two set-ups as shown below.



set-up X



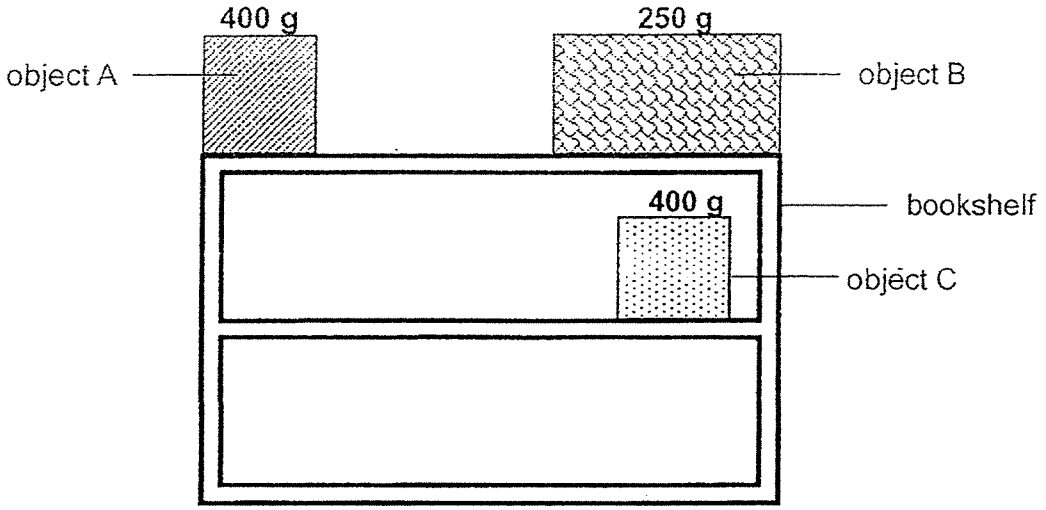
set-up Y

A bright spot of light was seen on Sheet D in Set-up X and Sheet C in Set-up Y.

Which of the following correctly shows whether the material allows light to pass through?

	Does the material allows light to pass through?			
	A	B	C	D
(1)	yes	yes	no	no
(2)	yes	no	yes	yes
(3)	no	yes	no	yes
(4)	no	no	yes	no

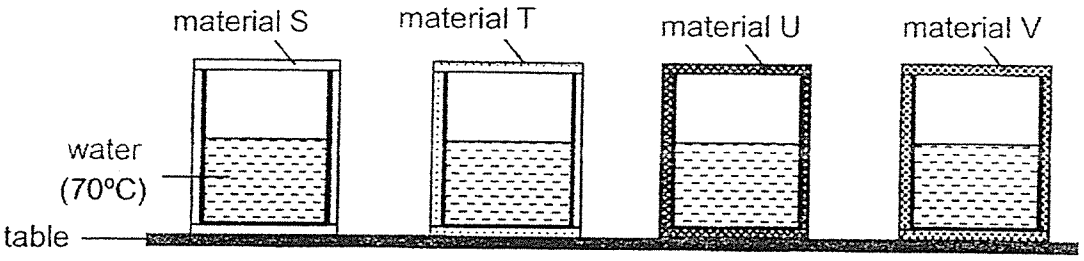
27. Aaron placed objects A, B and C as shown in the diagram below.



Which of the following statements correctly explains the amount of potential energy the objects have?

(1) C has no potential energy because it is at a lower height.
(2) B has more potential energy than A as it is larger in size.
(3) A has more potential energy than B as it has more mass.
(4) A and B have the same potential energy as they are at the same height.

28. Jia Ying carried out an experiment on four different materials. She used four beakers of identical size and filled each one with the same amount of water. The temperature of water in all beakers was 70°C at the start of the experiment. She then wrapped each beaker with a different material as shown in the diagram below.



After 15 minutes, she measured the temperature of water in each beaker and recorded the results in the table below.

Material used	Temperature of water (°C)
S	40
T	45
U	50
V	55

Which material should Jia Ying choose to wrap around a box of ice cream to prevent it from melting for the longest period of time?

(1) S
(2) T
(3) U
(4) V

END OF BOOKLET A

RED SWASTIKA SCHOOL

RED SWASTIKA SCHOOL

SCIENCE
2021 SEMESTRAL EXAMINATION 1
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ Leadership

Date : 18 May 2021

BOOKLET B

12 Questions
44 Marks

In this booklet, you should have the following:
a. Page 23 to Page 35
b. Questions 29 to 40

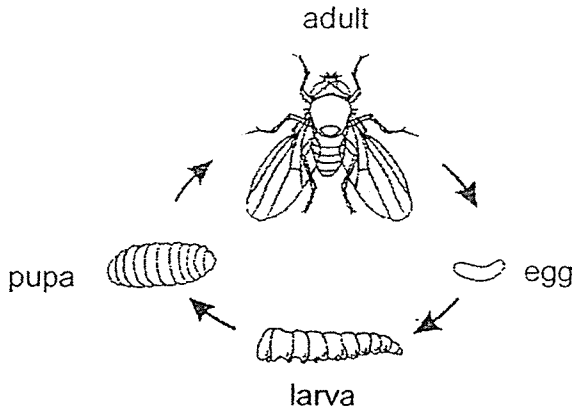
MARKS

	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

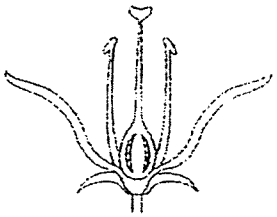
Parent's Signature : _____

Answer all the questions in the spaces provided.

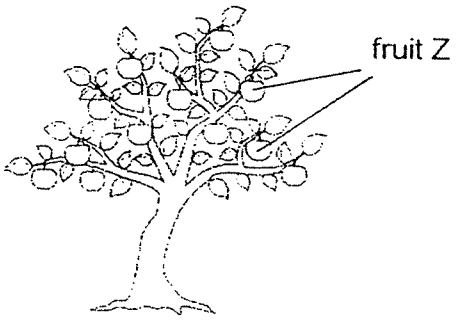
29. Study the diagram shown. The adult of organism A is often found near flower Z. It is a pest and it harms flower Z.



Life cycle of organism A



flower Z



(a) Name the part of flower Z that will develop into a fruit after fertilisation. (1m)

_____

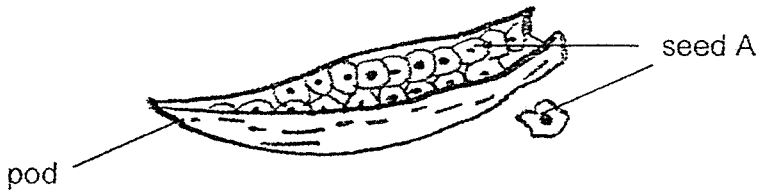
(b) During the year, there was an increase in the number of eggs laid by organism A. Explain how this will affect the number of fruit Z produced. (1m)

_____

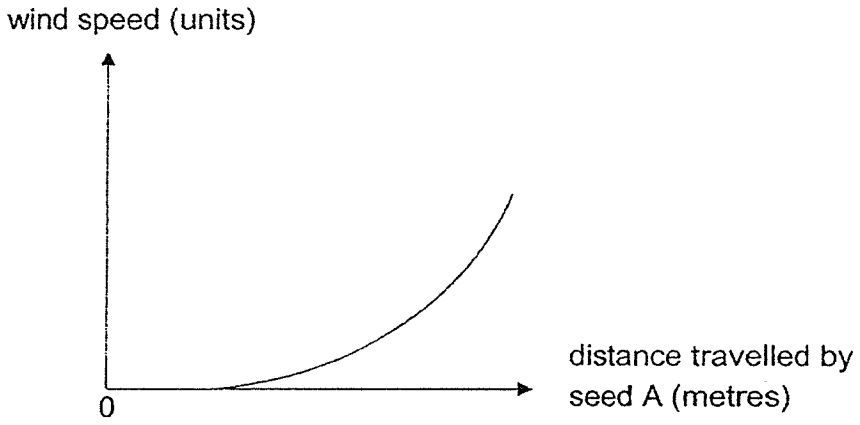
_____

2

30. The diagram below shows fruit X. The fruit is not edible. When the fruit is ripe, the pod splits open forcefully. James observed the distance travelled by seed A and recorded his observations in the graph shown below.



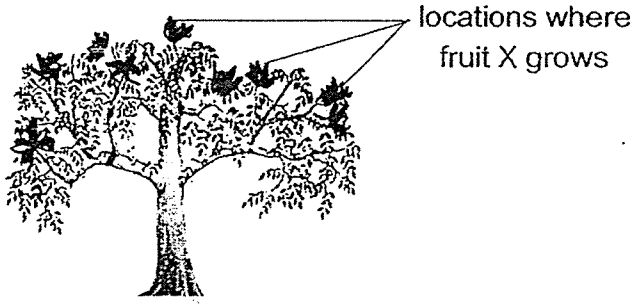
Fruit X



(a) State a physical characteristic of seed A based on the dispersal method mentioned above. Do not mention size. (1m)

_____

Fruit X is found growing mostly on the outer part of the tree as shown below.



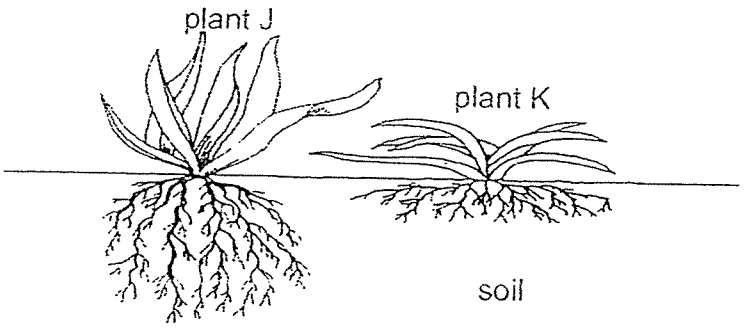
(b) Based on the graph, explain how this is beneficial for the plant's reproduction. (2m)

_____

_____

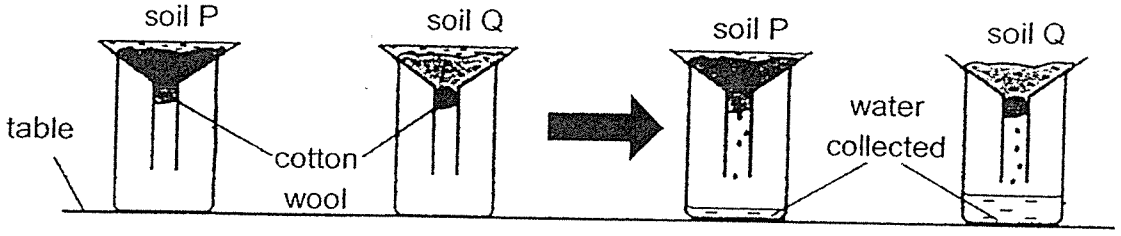
_____

31. The diagram below shows plants J and K.



(a) Describe how the leaves of plant K help in the growth of its roots. (2m)

Jason conducted an experiment with two types of soil, P and Q, as shown below.

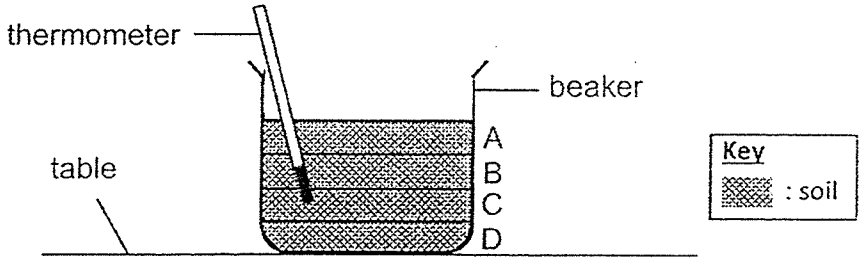


He added 200ml of water to the soil in both set-ups and observed the amount of water collected at the end of the experiment.

(b) Based on the above observations, explain why plant J is able to survive better than plant K in soil Q. (2m)

4

32. Alan placed some soil in a beaker as shown in the set-up below.

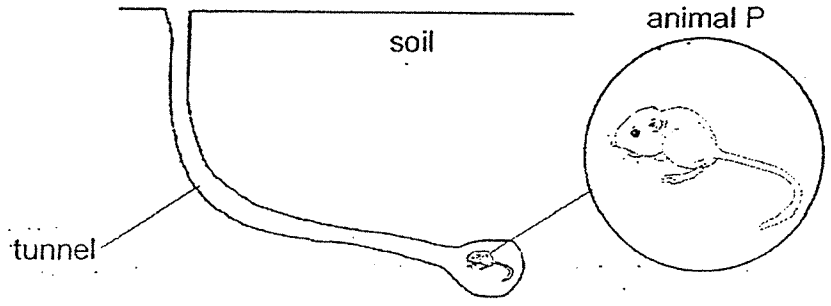


He placed the set-up under the hot sun for some time and took the temperature of the soil at positions A, B, C and D at the end of the period. He recorded the temperature reading at each position in the table below.

Position	Temperature (°C)
A	32
B	31
C	30
D	29

(a) How does the depth in the soil affect the temperature measured? (1m)

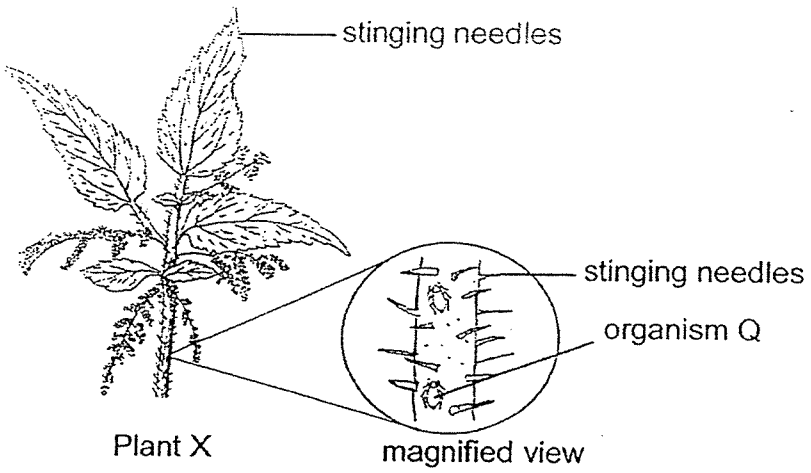
Animal P lives in a habitat whereby the temperature in the day is very high. Animal P usually stays underground during the day and hunts at night. It has excellent hearing.



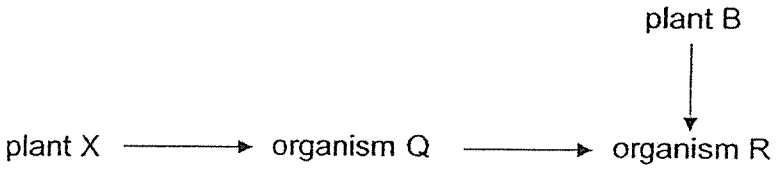
(b) How does having excellent hearing help animal P to hunt at night? (1m)

(c) State two advantages for animal P to stay underground during the day. (2m)

33. Plant X has stinging needles on its leaves and stem as shown below. Its needles sting and kill organism R, but does not affect organism Q. Organism Q is often found on the stem of plant X.



The food web below shows the relationship amongst the organisms.



(a) Give two reasons how plant X helps organism Q to survive. (2m)

Reason 1: _____

_____

Reason 2: _____

_____

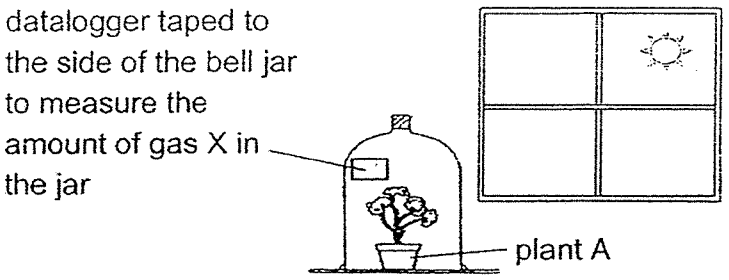
(b) A disease killed most of plant X. Based on the food web, explain what will happen to the population of organism R. (1m)

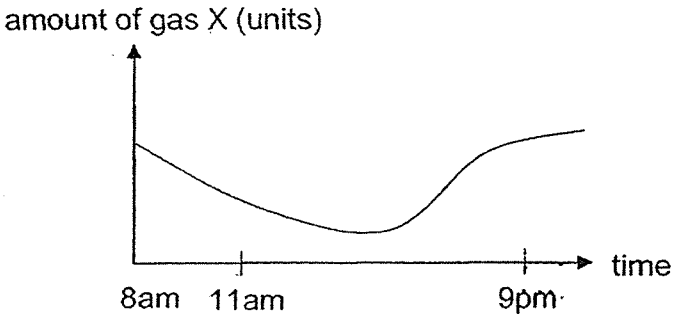
_____

_____

3

34. Sarah wants to investigate how the amount of gas X around plant A will change over time. She placed plant A in a bell jar next to the window and recorded the amount of gas X in the jar over a period of time.





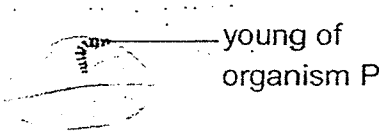
(a) Based on the graph, what is gas X? (1m)

_____

(b) Sarah created another identical set-up and she placed it in a dark cupboard. State the change in the amount of oxygen inside the bell jar in the new set-up. (1m)

_____

The eggs and young of organism P are usually found on the leaves of plant A.



(c) How is plant A and the young of organism P different in the way they obtain food? (2m)

Plant A: _____

_____

Young of organism P: _____

_____

35. Mandy placed some wet plates she had washed on top of one another and left them to dry as shown in diagram 1 below.

Diagram 1

(a) Identify the process that allowed the plates to become dry. (1m)

_____

Her sister suggested to arrange the plates on the drying rack as shown in diagram 2. This helps the plates to dry faster.

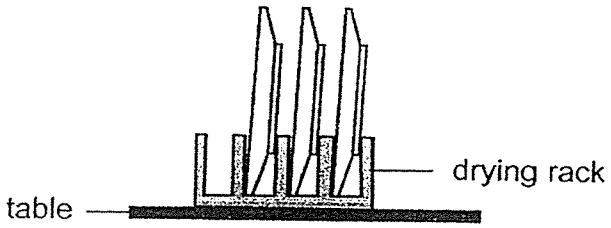


Diagram 2

(b) Give a reason why the plates in diagram 2 would dry faster. (1m)

_____

_____

Mandy used a fan to blow at the plates on the drying rack as shown below.

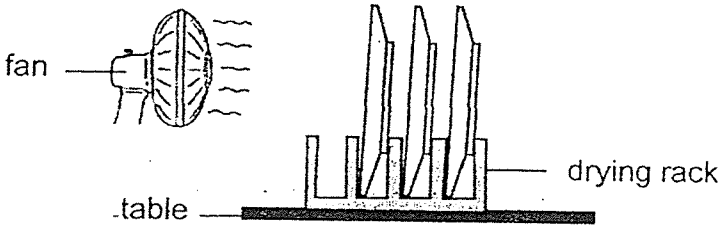


Diagram 2

(c) Explain how the use of a fan would affect the time taken for the plates to dry. (2m)

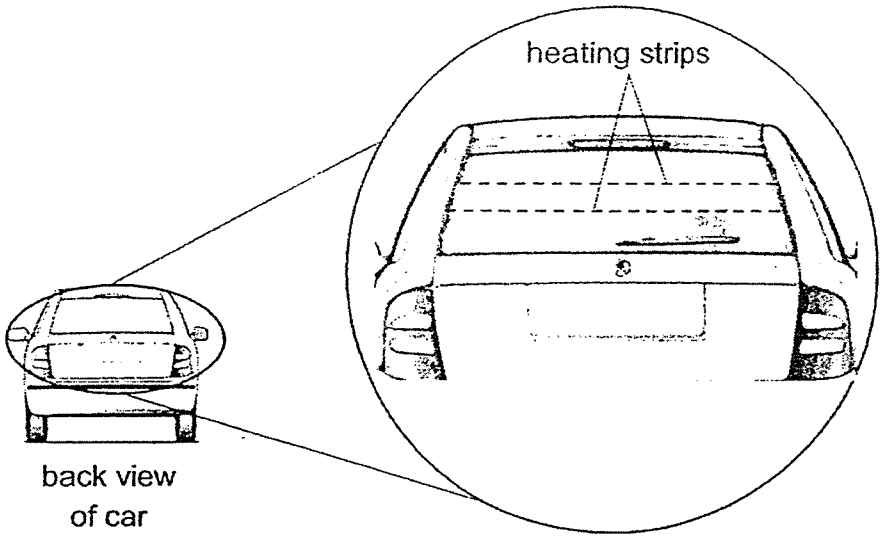
_____

_____

_____

4

36. The back window of a car usually contains heating strips which are connected to the electrical circuit of the car. The heating strips shown in the diagram below help to keep the back window dry, allowing the driver to see the traffic conditions clearly.



(a) Which of the following material(s) is/are suitable material(s) to be used to make the heating strips? (1m)

to conduct heat

Material	Tick (✓) if the material is suitable
glass	
copper	
plastic	
wood	

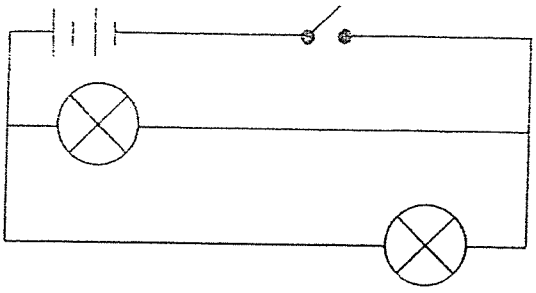
(b) Besides conducting heat, give another reason for your answer in part (a). (1m)

_____

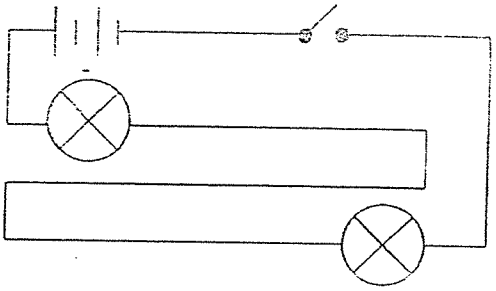
_____

2

36. Study the two circuits shown.



Circuit A



Circuit B

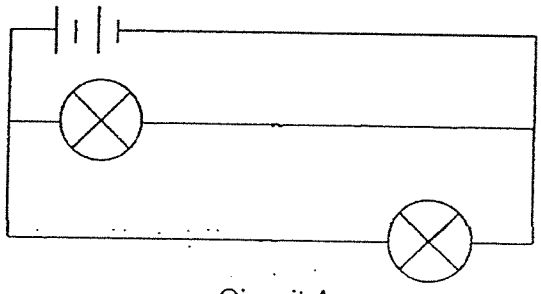
(c) Mr Ravi wants to install bulbs inside the car to help passengers see better in the dark. Explain why circuit A is a better choice than circuit B to connect the bulbs. (2m)

_____

_____

_____

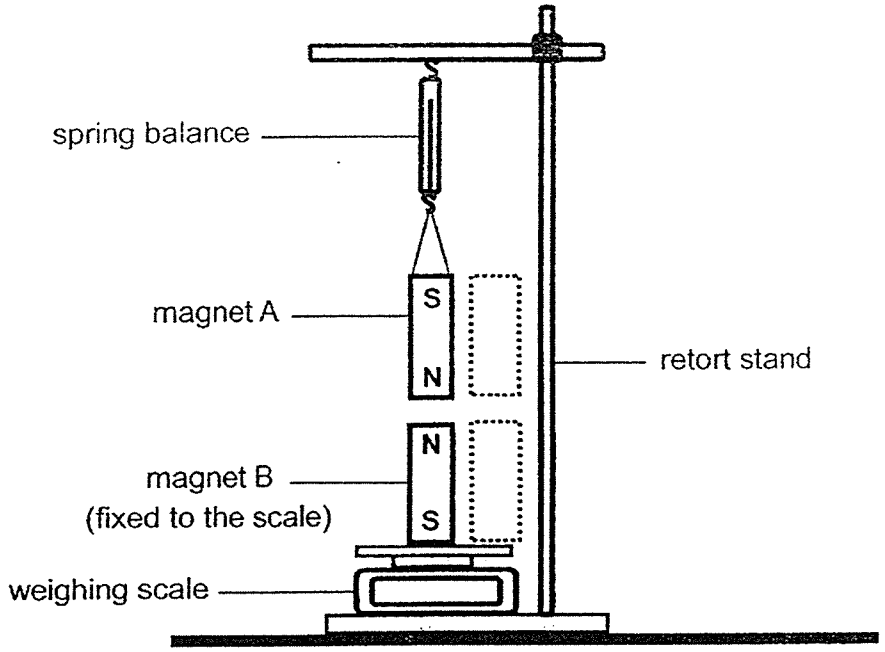
(d) Mr Ravi wants to improve the design of circuit A by installing two switches that can control the bulbs separately. In the diagram below, draw two "X" to show the locations of where the switches can be installed. (1m)



Circuit A
(improved design)

3

37. Lisa set up the experiment below using identical bar magnets. Magnets A and B have a mass of 100g each.



(a) In the diagram above, draw 2 arrows ($\rightarrow$) in the dotted boxes to show the direction of magnetic force between the two magnets. (1m)

(b) Tick (✓) in the correct box to indicate the reading on the weighing scale. (1m)

Reading on weighing scale		
Less than 100g	**100g**	**More than 100g**

(c) Without adding or removing any of the items in the set-up, how can Lisa increase the reading on the weighing scale? (1m)

_____

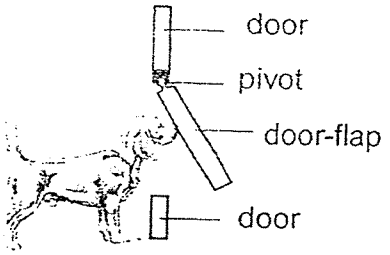
(d) Explain the answer for part (c). (1m)

_____

_____

4

38. Kenji designed a door-flap that allows his dog to enter and leave the house freely. The pivot is movable and allows the door flap to open and close.

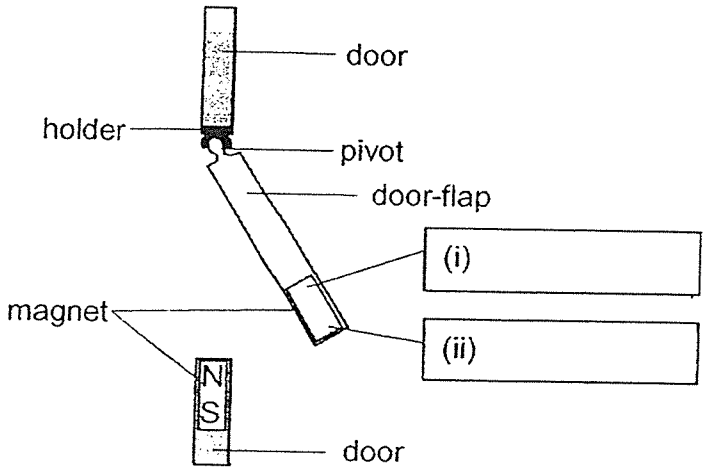


(a) When the dog had gone through the door-flap, the flap could close on its own. Identify the force that caused the door-flap to close. (1m)

_____

(b) When a strong wind blows, the door-flap blows open on its own. Kenji decided to add two bar magnets to keep the door-flap closed so that it will not be blown open by the wind.

In the diagram below, label the North and South pole of the magnet on the door-flap. (1m)



(c) Kenji noticed that a squeaky sound is made by the pivot whenever the dog goes through the door-flap. Suggest a solution for Kenji to reduce the squeaky sound. Explain why the solution works. (2m)

Solution: _____

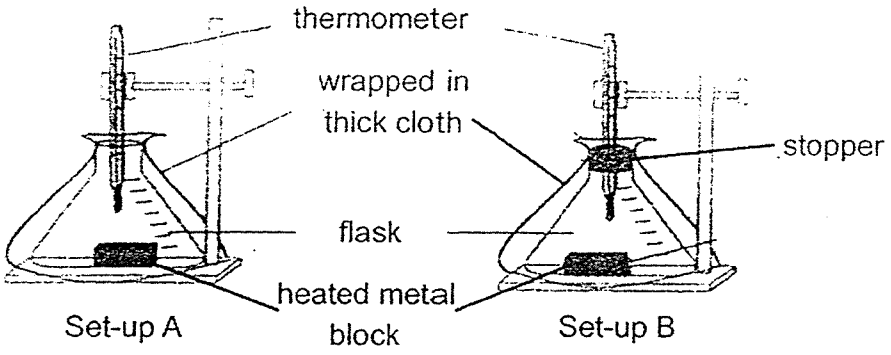
_____

Explanation: _____

_____

4

39. Tim conducted an experiment by placing the two set-ups shown below at the same location. Identical heated metal blocks were used in both set-ups.



He recorded the temperature change in the flask in the table below.

Time (min)	Set-up A (°C)	Set-up B (°C)
0	30	30
5	33	35
10	36	40
15	34	40

(a) What were the thermometers in both set-ups measuring during the experiment? (1m)

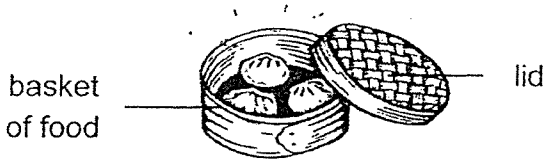
_____

(b) Based on the diagram, explain why the temperature in set-up B increased more than set-up A during the experiment. (1m)

_____

_____

At a restaurant, Tim's mother advised him to cover the food with the lid while waiting for other dishes to be served.



(c) Based on the experiment above, explain why Tim's mother asked him to do so. (2m)

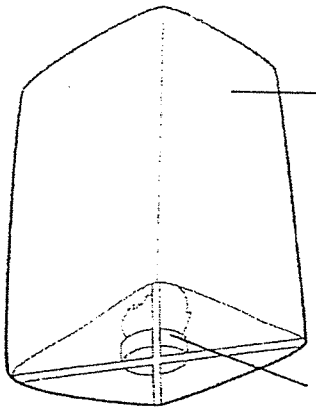
_____

_____

_____

4

40. A sky lantern is made of paper and works like a hot air balloon. It has a covered top and an opening at the bottom. A lit candle helps the sky lantern to rise into the sky.



(a) Complete the main energy conversions that take place in the lantern. (1m)

	→	Heat	→	Heat	+	
energy of unlit candle		energy of the burning candle		energy of hot air in the lantern		energy of moving air in the lantern

(b) Explain, in terms of energy conversion, why using a candle that burns at a higher temperature will cause the sky lantern to rise faster into the air. (2m)

_____

_____

_____

END OF BOOKLET B
PLEASE CHECK YOUR ANSWERS.

3