2022 PRIMARY 5 END-OF-YEAR EXAMINATION

Name : _____ ( )

Class : Primary 5 ( )

Date: 28 October 2022

Time: 8.00 a.m. - 9.45 a.m.

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET A

INSTRUCTIONS TO CANDIDATES

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

Booklet A (28 x 2 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) and shade your answer on the Optical Answer Sheet.

(56 marks)

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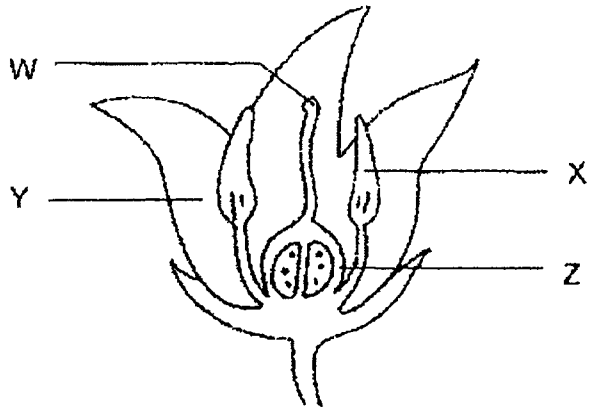
1. Study the diagram below carefully.



Which part of the flower produces pollen grains?

(1) W

(2) X

(3) Y

(4) Z

2. Which of the following statements about sexual reproduction in humans is correct?

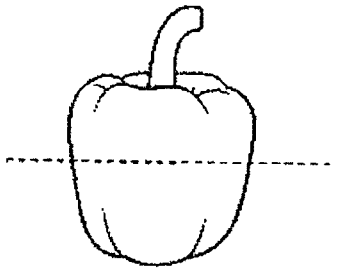
(1) The egg is produced in the testis.

(2) The sperm is produced in the womb

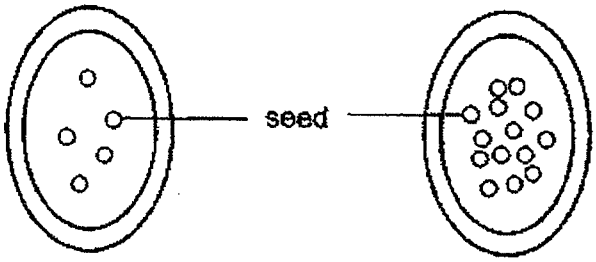
(3) The fertilised egg develops in the ovary

(4) The baby develops from a fertilised egg.

3. Gregory cut two similar type of fruits into halves as shown below. He noticed that the fruit of plant S had more seeds than the fruit of plant R.



Top view of the fruits



Fruit from plant R

Fruit from plant S

Based on Gregory's observation, which of the following can be concluded?

(1) The flower of plant R had fewer ovules than the flower of plant S.

(2) The flower of plant R had a smaller ovary than the flower of plant S.

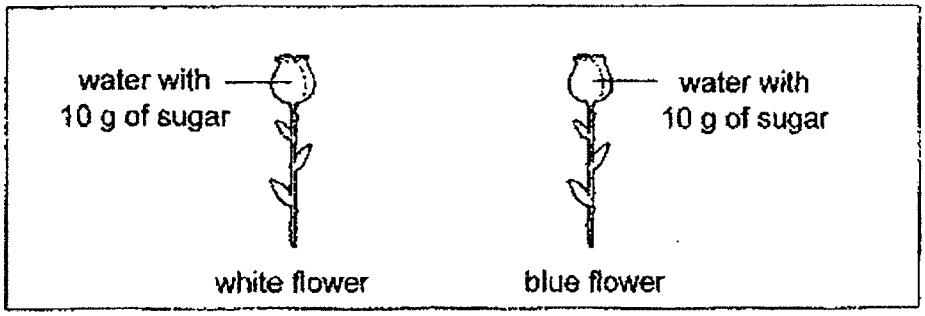
(3) The flower of plant R was less brightly-coloured than the flower of plant S.

(4) The flower of plant R produced fewer pollen grains than the flower of plant S.

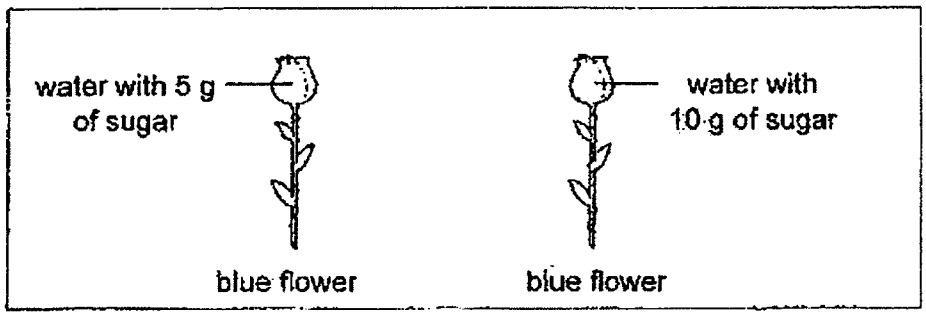
4. Faith wanted to investigate if more butterflies are attracted to sugar solution. She made flowers using blue or white coloured paper. She then coated each of them with a solution of 10 ml of water mixed with different amounts of sugar.

Which of the following set-ups should she use for her experiment?

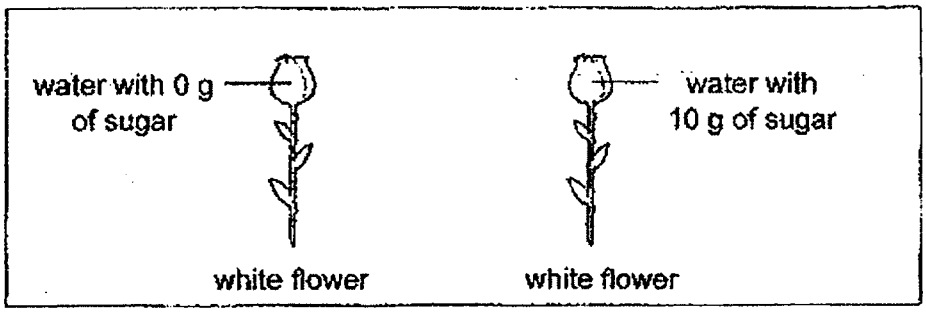
(1)



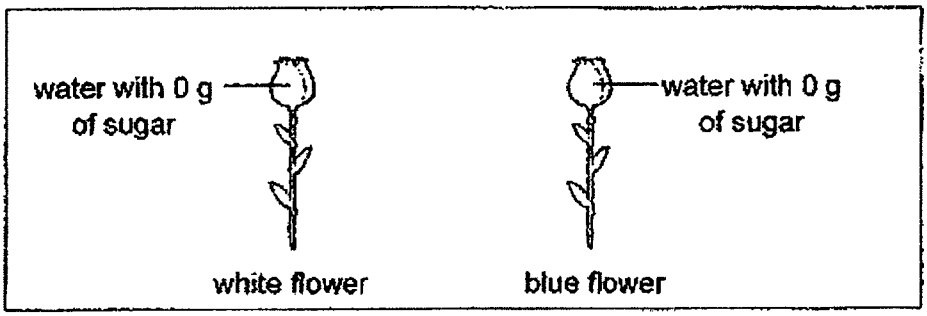
(2)



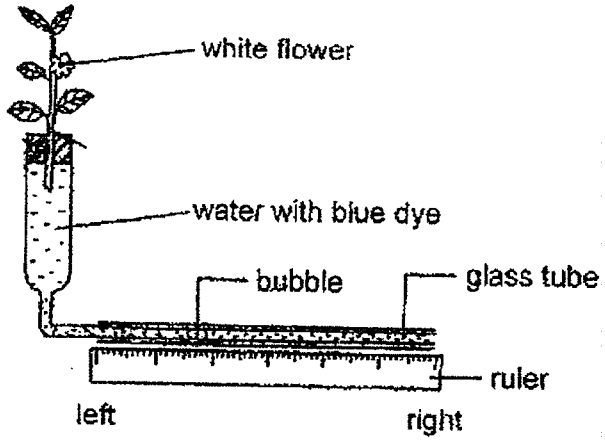
(3)



(4)



5. Study the set-up below.



Which of the following will be observed after a few days?

A The flower will turn blue.

B The flower will remain white.

C The air bubble will move to the left.

D The air bubble will move to the right.

(1) A only

(2) A and C only

(3) A and D only

(4) B and C only

6. Animal X is large and fierce. When mated with Animal Y, which is small and timid, their offspring are large and fierce.

Which of the following best explains why this was observed?

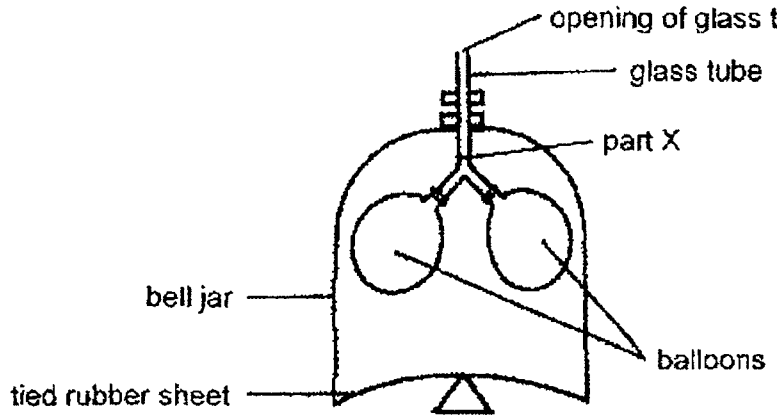
(1) Animal X is larger than Animal Y.

(2) The parents of the offspring are both fierce.

(3) Their offspring inherited only Animal Y's traits.

(4) The traits of Animal X are passed on to their offspring.

7. The following diagram shows a model of the human respiratory system.



Which part of the respiratory system does part X of the glass tube represent?

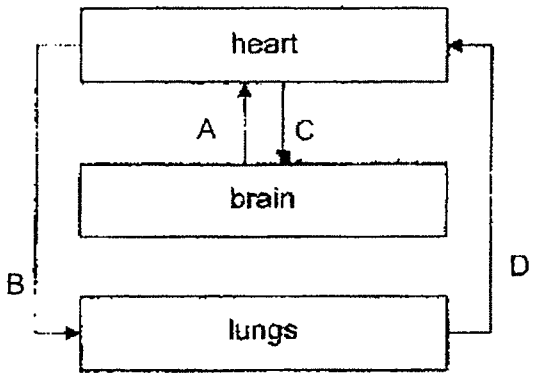
(1) Lungs

(2) Mouth

(3) Gullet

(4) Windpipe

8. The diagram below shows the human circulatory system.



Which of the arrows above shows the flow of oxygen-rich blood?

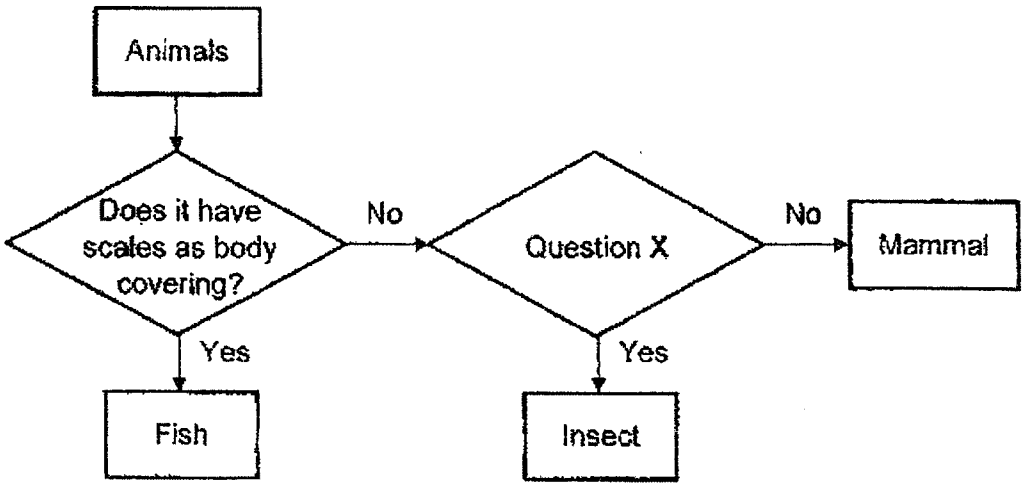
(1) A and B only

(2) A and C only

(3) B and D only

(4) C and D only

9. Study the flowchart below.



Which of the following can Question X be in the flowchart above?

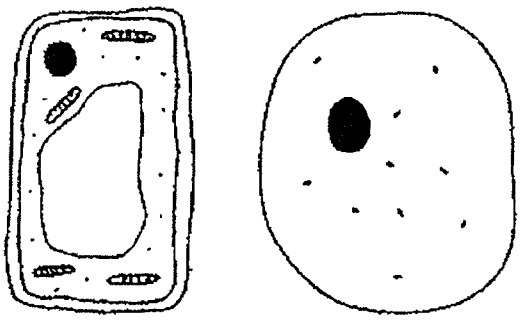
(1) Does it lay eggs?

(2) Does it have a beak?

(3) Does it have 3 body parts?

(4) Does it have a pair of wings?

Study the two cells shown below to answer questions 10 and 11.



cell X cell Y

10. Which of the following statements is true about cells X and Y?

(1) Both cells have a cell wall.

(2) Only cell Y contains genetic information.

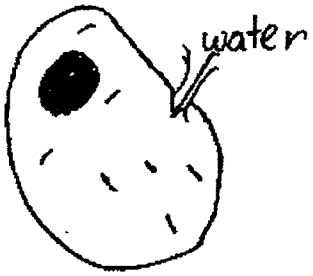
(3) Cell X has cytoplasm while cell Y does not.

(4) Cell X is a plant cell while cell Y is an animal cell.

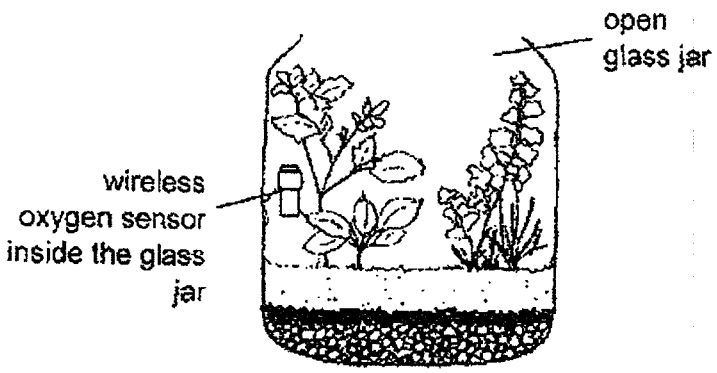
11. Ahmad knows that when cells are placed in water, water will enter the cells. He then placed cells X and Y in water and observed them under the microscope.

Which of the following will happen to cells X and Y?

	cell X	cell Y
(1)	burst	burst
(2)	burst	did not burst
(3)	did not burst	burst
(4)	did not burst	did not burst

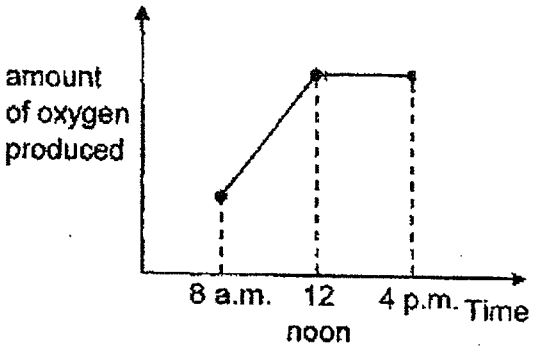


12. Study the diagram below.

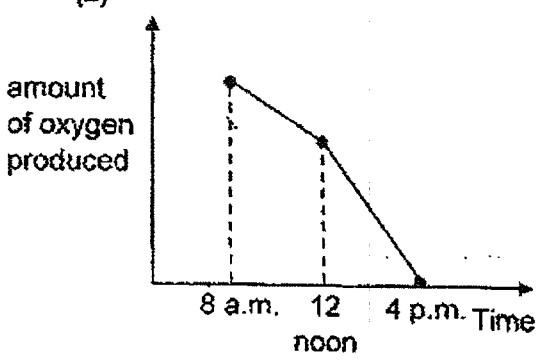


The above jar was placed in an open field. Which of the following graphs shows the oxygen produced by the plants in the jar on a sunny day at 8 a.m., 12 noon and 4 p.m.?

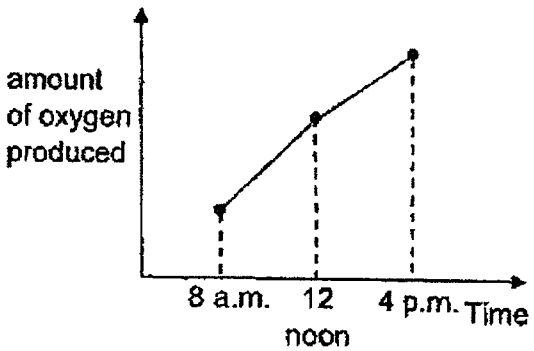
(1)



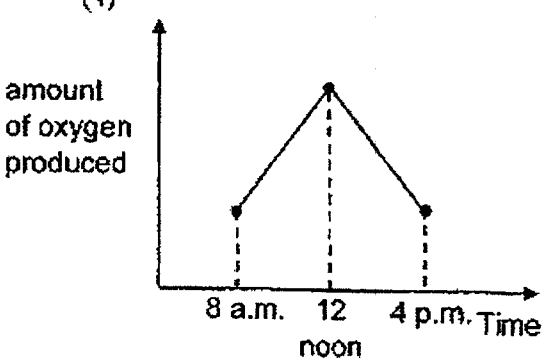
(2)



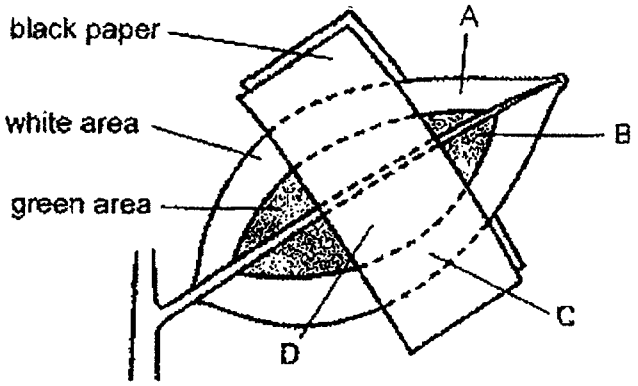
(3)



(4)



13. Wendy placed two pieces of black paper on a leaf of a plant as shown below. The plant was placed in a cupboard for 48 hours before it was placed outdoors on a sunny day for six hours. Then, the black papers were removed and parts A, B, C and D were tested with iodine solution .Wendy's teacher told her that the iodine solution turns dark blue when starch is present.



Which of the part(s), A, B, C or D, will cause the iodine solution to turn dark blue?

(1) A

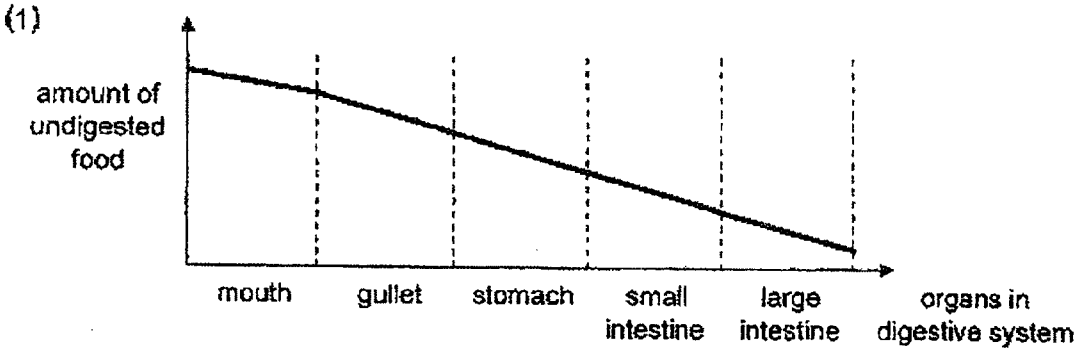
(2) B

(3) C

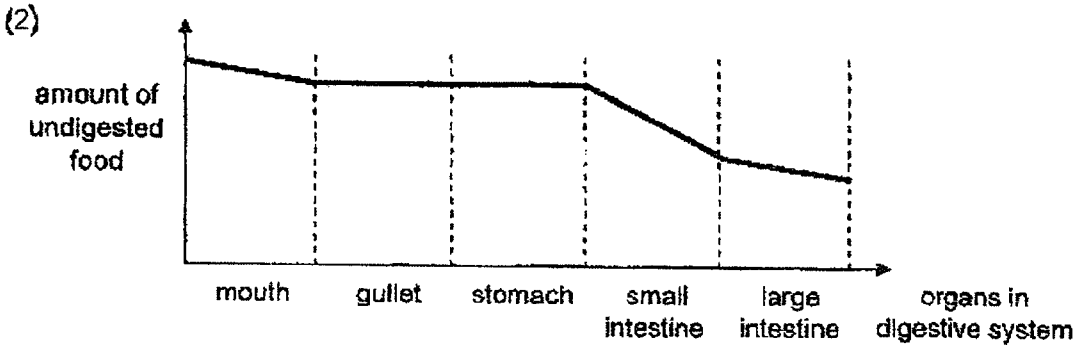
(4) D

14. Jack ate a hamburger for lunch. Which of the graphs below shows how the amount of undigested food changes as it travels through the human digestive system?

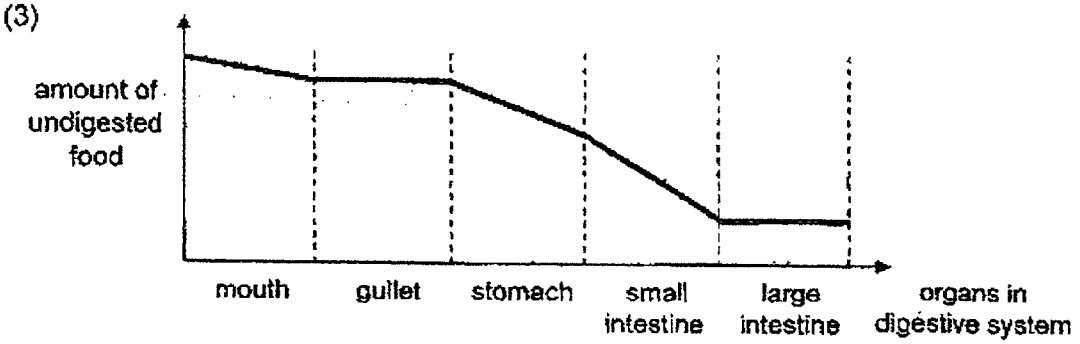
(1)



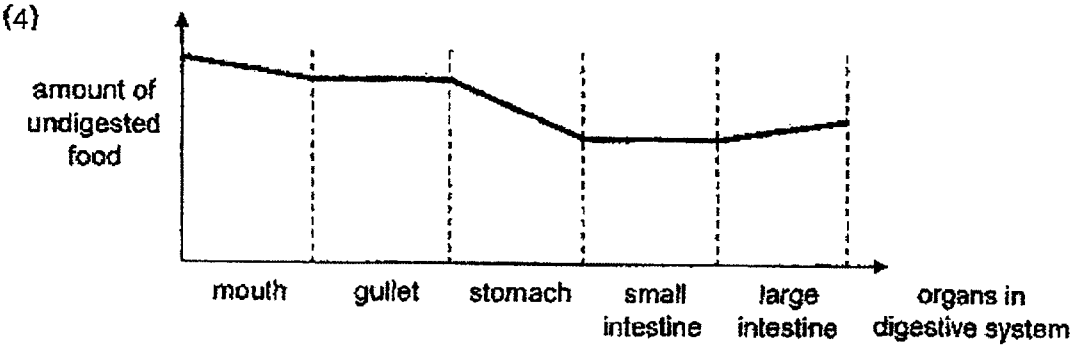
(2)



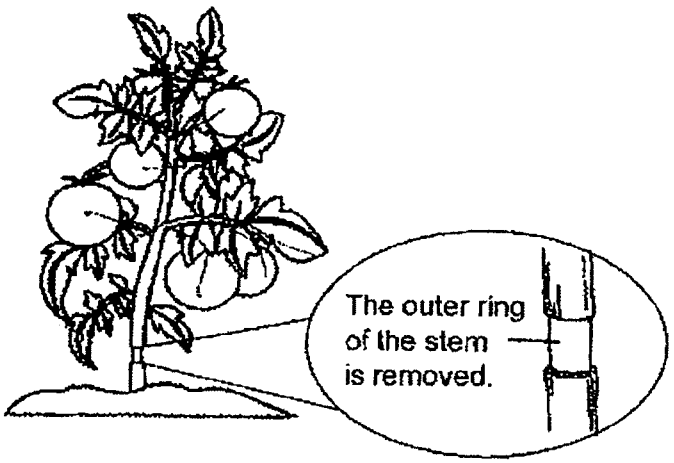
(3)

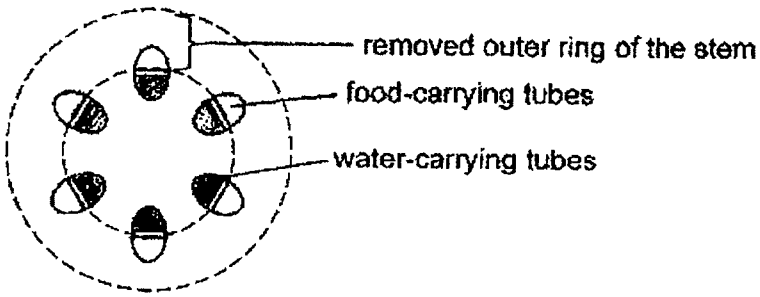


(4)



15. Some farmers remove the outer ring of the stem of fruit trees to produce larger fruits.





cross section of stem

How does this action help the plants produce bigger fruits?

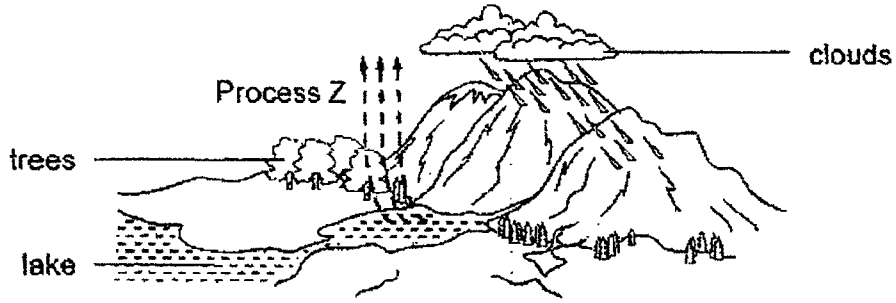
(1) More water is transported from the leaves to the fruits.

(2) More food is produced by the leaves after the stem is cut.

(3) Food made is transported to the fruits instead of the roots.

(4) Less water escapes from the leaves hence more food can be made.

16. Study the diagram of the water cycle below carefully.



What is process Z?

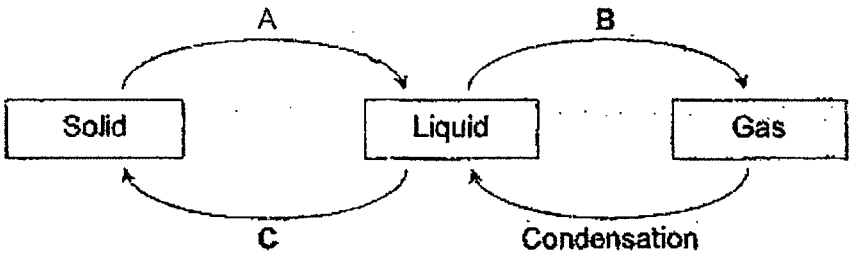
(1) Melting

(2) Freezing

(3) Evaporation

(4) Condensation

17. The diagram below shows the processes A, B and C during the changes of states of water.



What processes do the arrows A, B and C represent?

	A	B	C
(1)	freezing	boiling	melting
(2)	melting	boiling	freezing
(3)	evaporation	melting	freezing
(4)	melting	evaporation	boiling

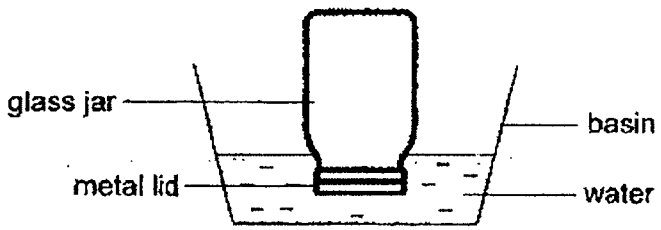
18. The table below shows the freezing and boiling points of substance D.

Substance	Freezing point / °C	Boiling point / °C
D	17	290

Which of the following correctly shows the correct states of substance D at 10°C and 250°C?

	State of substance D at	
	10°C	250°C
(1)	solid	gas
(2)	solid	liquid
(3)	liquid	liquid
(4)	liquid	gas

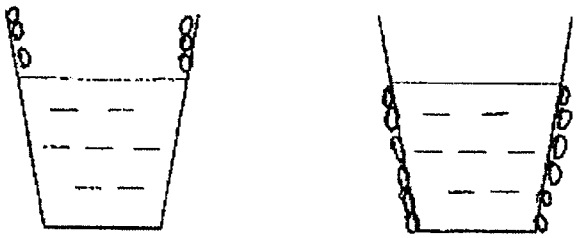
19. Calvin could not open the metal lid of a jar after it was removed from the fridge. He placed only the metal lid in a basin of water as shown below.



Which of the following shows the correct temperature of water in the basin and the explanation of why he was able to open the lid after some time?

	Temperature of water	Explanation
(1)	10°C	The metal lid lost heat to the water and expanded.
(2)	10°C	The metal lid lost heat to the water and contracted.
(3)	80°C	The metal lid gained heat faster from the water than the glass jar and expanded more.
(4)	80°C	The metal lid gained heat slower from the water than the glass jar and contracted less.

20. Howard carried out an experiment using two cups of water, P and Q, as shown below. The cups were left on the same table at a room temperature of 30°C for three minutes.

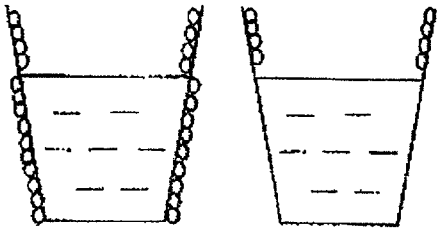


100 ml of water in cup P (80°C)

100 ml of water in cup Q (10°C)

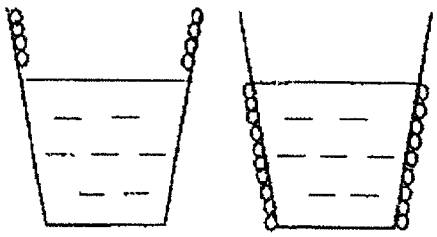
Which of the following correctly shows where the water droplets were formed on the cups P and Q after three minutes?

(1)



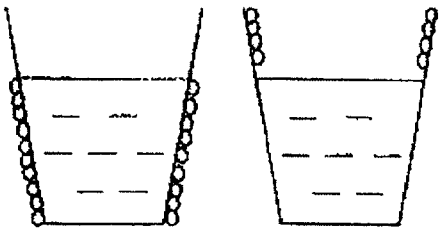
cup P cup Q

(2)



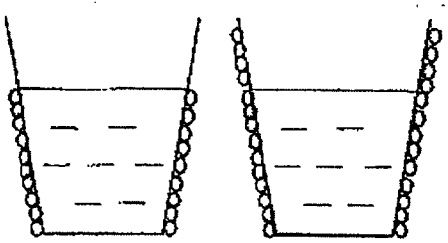
cup P cup Q

(3)



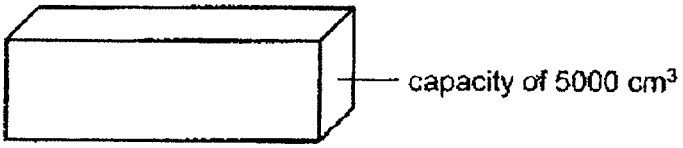
cup P cup Q

(4)



cup P cup Q

21. The tank below has a capacity of 5000 cm^3.



Which of the following can be completely stored in this tank?

A 4000 cm^3 of oxygen

B 6000 cm^3 of carbon dioxide

C 6000 cm^3 of water

(1) A and B only

(2) A and C only

(3) B and C only

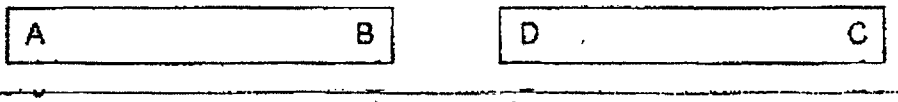
(4) A, B and C

22. The following observation was made when Helen placed the ends, B and C, of two magnets near each other as shown below. The arrows indicate the movement of the magnets.

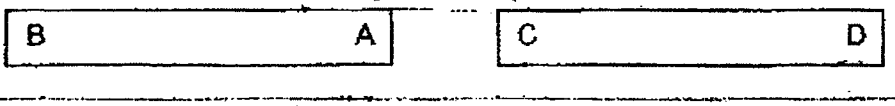
Which one of the following observations is possible if the magnets is/are flipped over?

(1)

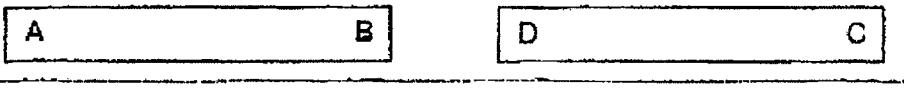
(2)



(3)



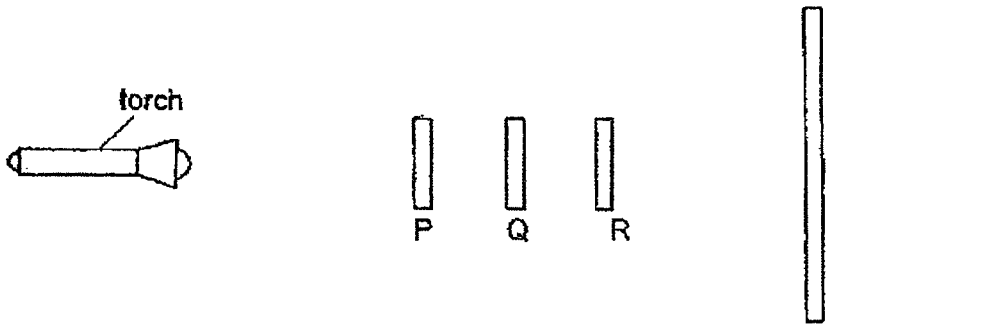
(4)



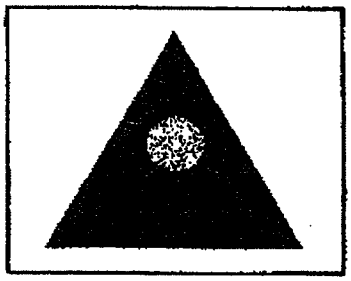
23. Xiao Li has 3 cut-outs which were made of different materials, P, Q and R, but of the same height.

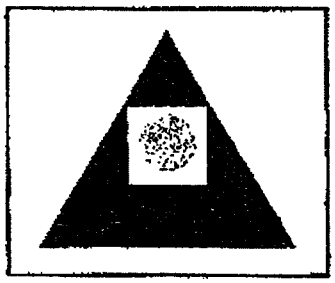
	Shape	Material
P		frosted glass
Q		clear plastic
R		cardboard

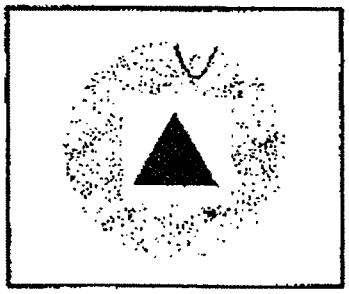
She placed them in a straight line as shown below.

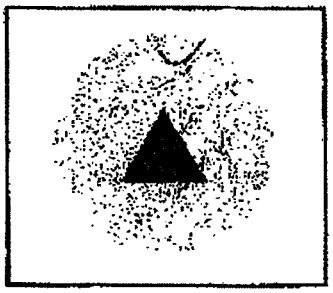


Which one of the following shadows could be seen on the screen?

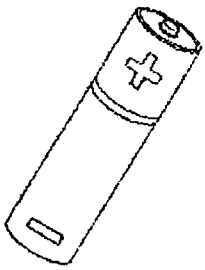
(1)


(2)


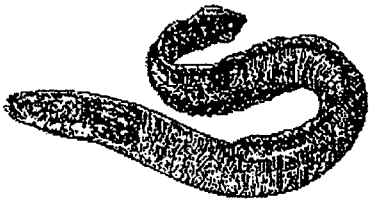
(3)


(4)


24. Which of the following is a natural source of electricity?

(1) 

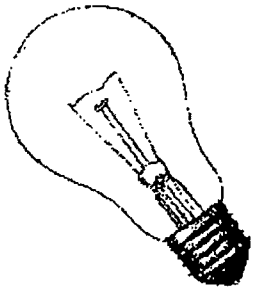
battery

(2) 

electric eel

(3) 

candle

(4) 

light bulb

25. Which of the following actions does *not* help to conserve electricity?

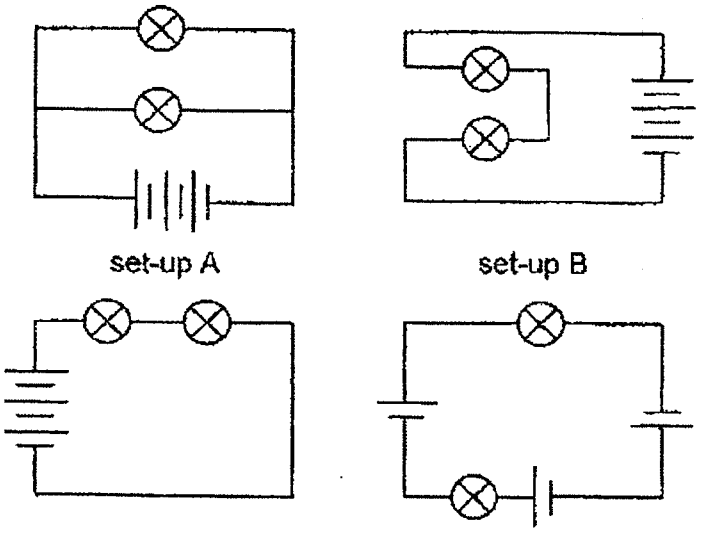
(1) Use energy-saving bulbs.

(2) Turn off the fan when not in use.

(3) Adjust the air-conditioner to a lower temperature.

(4) Switch the television to standby mode instead of leaving it turned on.

26. Jacob connected four circuits using similar bulbs and batteries.



If a bulb fuses, in which of the above circuits, will the other bulb remain lit?

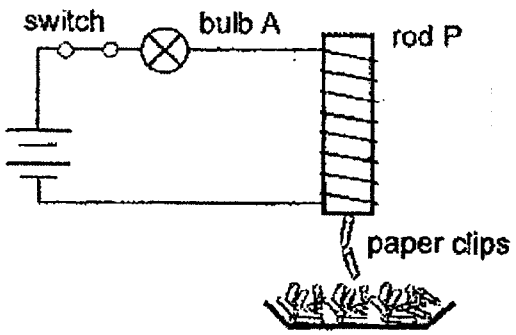
(1) A

(2) B

(3) C

(4) D

27. Caili set up the circuit below.



What can she do to increase the number of paper clips attracted by rod P?

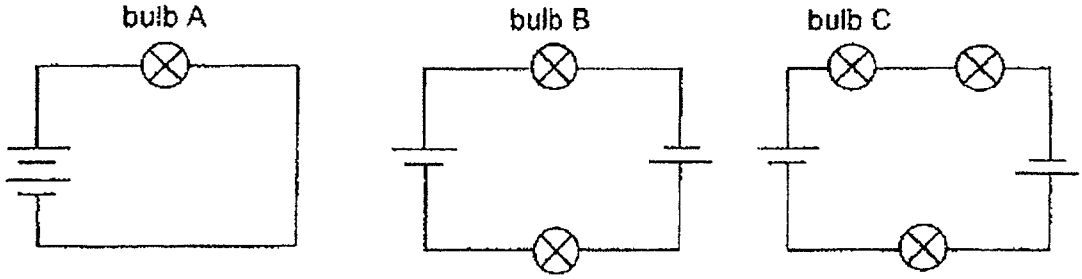
(1) Change rod P to a plastic rod.

(2) Remove bulb A from the circuit.

(3) Add another bulb in series with bulb A.

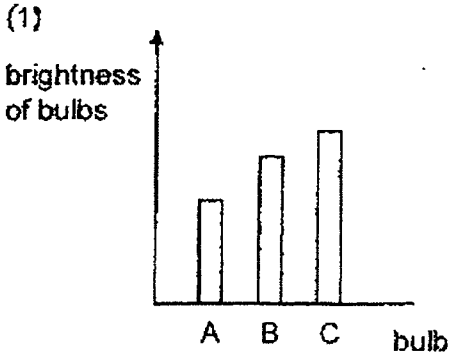
(4) Reduce the number of coils of wire around rod P.

28. Elaine carried out an experiment with similar bulbs and batteries to find out how the number of bulbs added in series will affect the brightness of the bulbs.

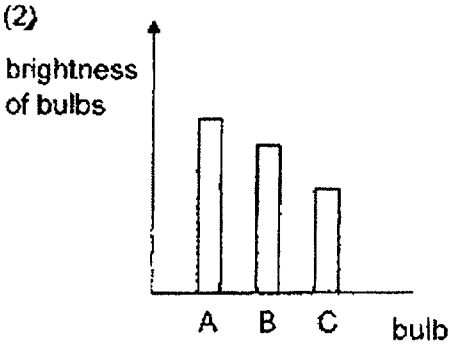


Which of the graphs below correctly shows the brightness of the bulbs, A, B and C ?

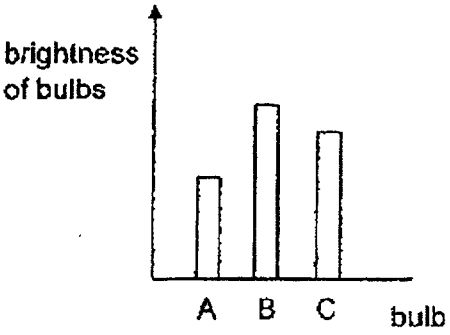
(1)



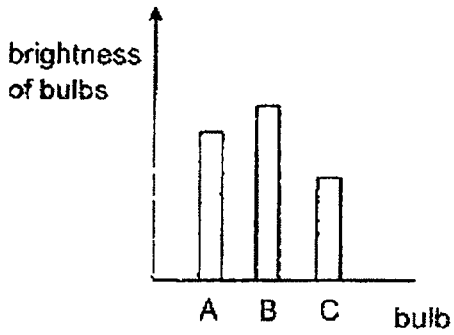
(2)



(3)



(4)



End of Booklet A

2022 PRIMARY 5 END-OF-YEAR EXAMINATION

Name : _____ ( )

Class : Primary 5 ( )

Parent's Signature : _____

Date: 28 October 2022

Time: 8.00 a.m. – 9.45 a.m.

Duration: 1 hour 45 minutes

SCIENCE

BOOKLET B

INSTRUCTIONS TO CANDIDATES

1. Write your name, class and register number.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Use a dark blue or black ballpoint pen to write your answers in the space provide for each question.
6. Do not use correction fluid/tape or highlighter.

Booklet A	56
Booklet B	44
Total	100

Booklet B (44 marks)

For questions 29 to 41, write your answers clearly in this booklet.

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

(44 marks)

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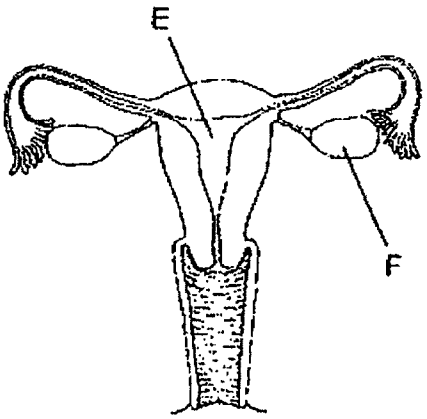
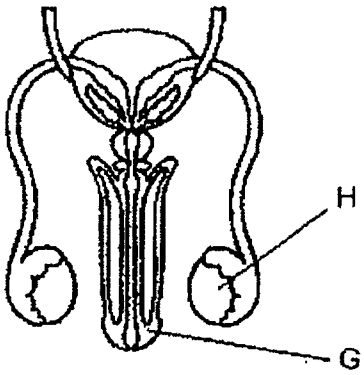
29. The diagrams below show the female and male reproductive systems of a human.



female reproductive system



male reproductive system

(a) Identify the following. [2]

Part E: _____

Part F: _____

Part G: _____

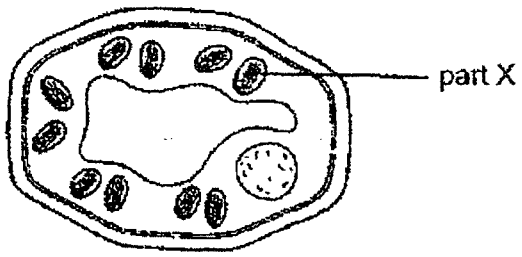
Part H: _____

(b) State the main function of part *F*. [1]

_____

Score 3

30. Andy studied cell A under a microscope.

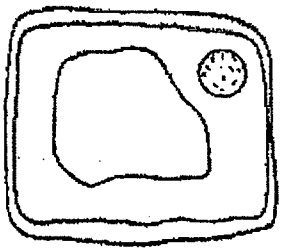


cell A

(a) Identify part X. [1]

(b) How does cell part X help the plant to grow? [1]

He studied another cell, cell B, as shown below.

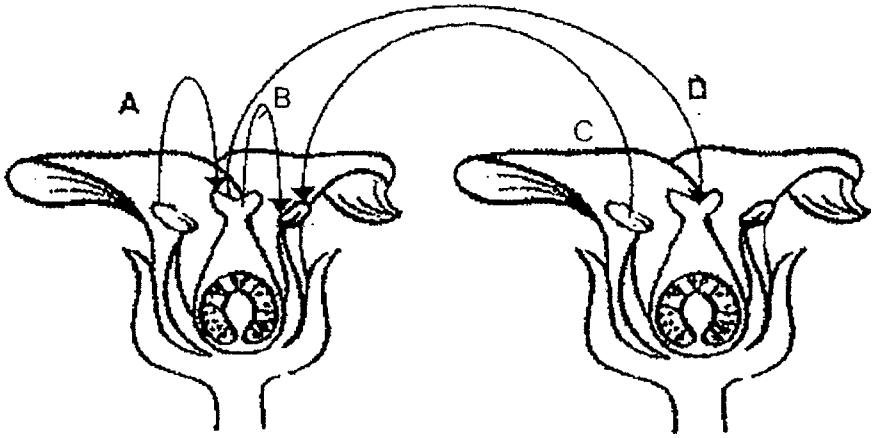


cell B

(c) Andy has taken cell A and B from the same plant. Identify which cell, A or B, was taken from the roots. Explain your answer. [1]

Score 3

31. The diagram below shows two flowers of plant F.

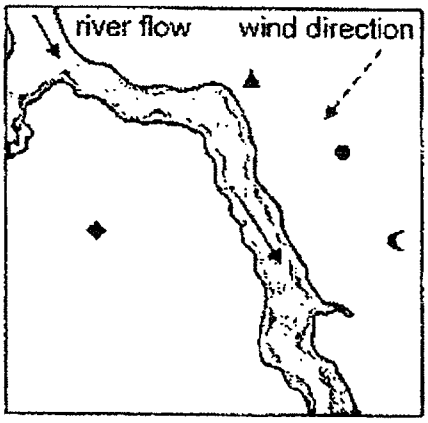


(a) Based on the diagrams above, which arrow(s), A, B, C or D, show(s) the process of pollination? [1]

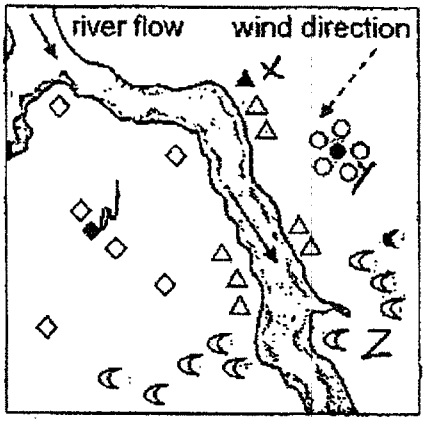
(b) Dominic thinks that the flowers of plant F are pollinated by insects. Based on the diagrams above, state one characteristic of the flowers that has helped him infer this. [1]

Score 2

(c) Nancy planted four different types of plants, W, X, Y and Z. After a year, she found more young plants and recorded their positions as shown below.



One year ago



One year later

	W	X	Y	Z
Parent plant	◆	▲	●	☾
Young plant	◇	△	○	☾

Based on the two diagrams above, suggest the likely fruit/seed dispersal methods for plants W, X, Y and Z. [2]

Plant W: _____

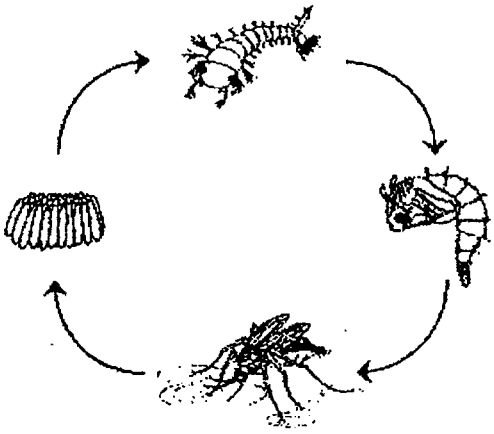
Plant X: _____

Plant Y: _____

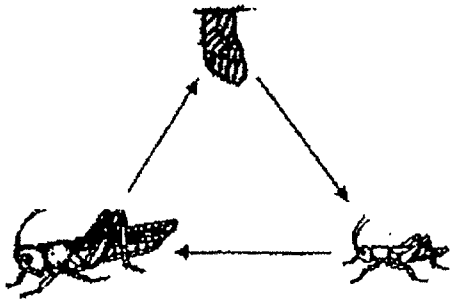
Plant Z: _____

Score	2

32. Study the life cycles of animals, X and Y, below.



animal X



animal Y

(a) State one difference between the life cycles of animal X and animal Y. [1]

_____

_____

(b) Based on the life cycle of animal X above, suggest a reason why it is easier to get rid of animal X at the pupal stage than at the adult stage. [1]

_____

_____

Score	/ 2

Macy kept some mosquitoes at different surrounding temperatures and recorded the number of days these mosquitoes remained in each stage of the life cycle.

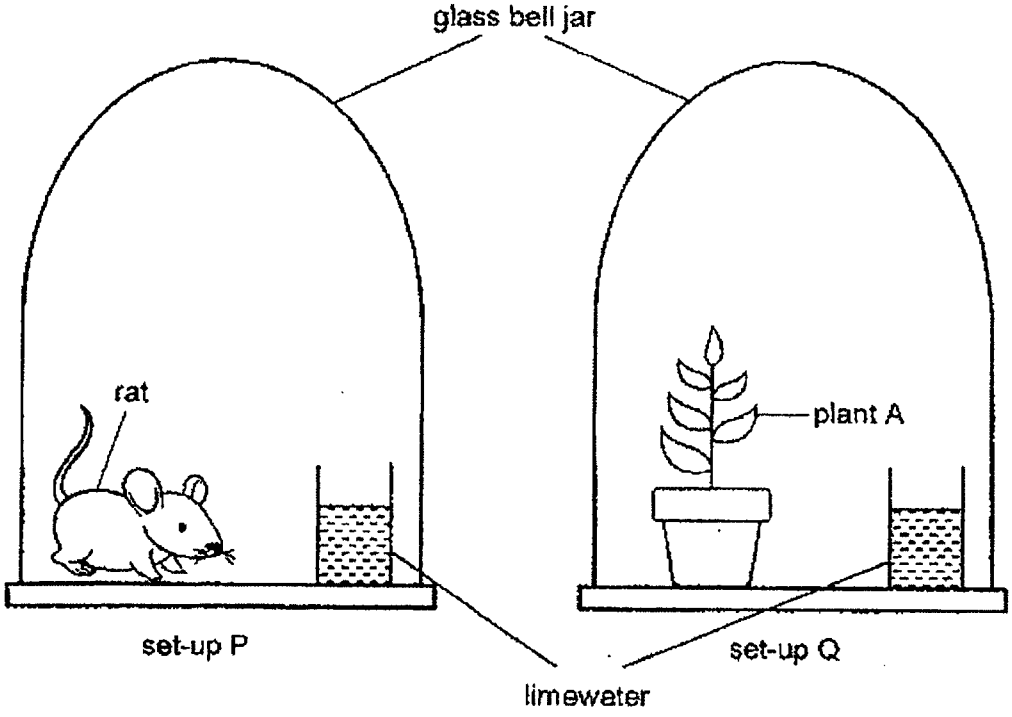
The results are recorded in the table below.

Surrounding Temperature (°C)	Number of days in each stage		
	Egg	Larva	Pupa
24	2	12	3
25	2	10	3
26	2	7	3

(c) Based on the table above, what is the relationship between the surrounding temperature and the number of days the mosquito eggs take to reach their adult stage after hatching? [1]

Score	/ 1

33. Jane prepared two similar set-ups, P and Q, as shown in the diagram below. Both set-ups were placed in a brightly-lit room. Limewater turns chalky in the presence of carbon dioxide.



She noticed that the limewater in set-up Q was less chalky than set-up P after an hour.

(a) Explain why the limewater in set-up Q was less chalky. [2]

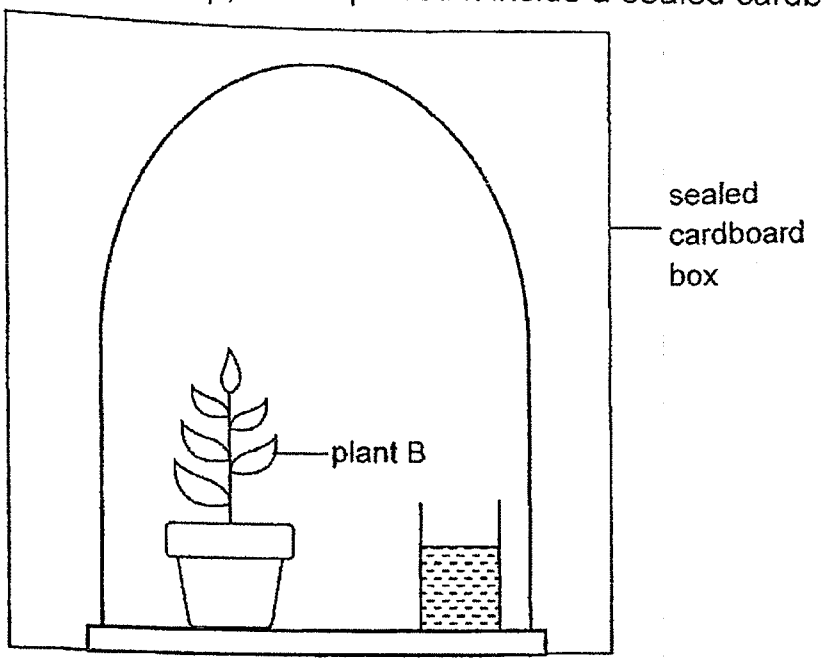
_____

_____

_____

Score	2

Jane prepared another set-up, R and placed it inside a sealed cardboard box.



set-up R

(b) After an hour, what is the difference in the observation of the limewater in set-up R compared to that in set-up Q? [1]

_____

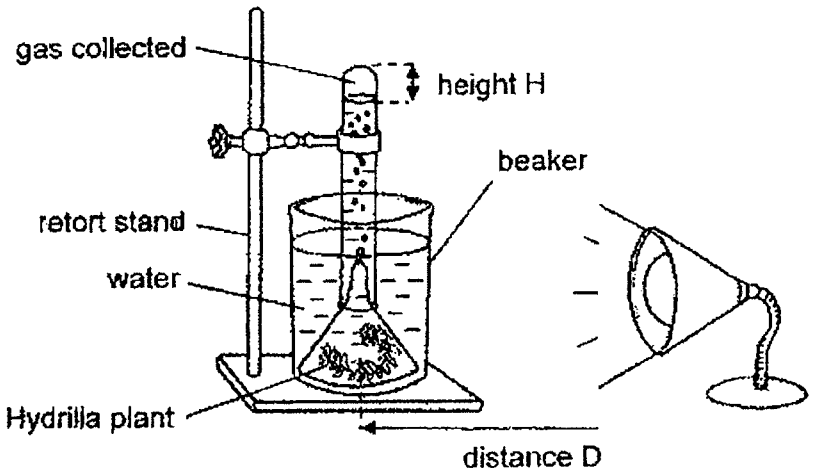
(c) Explain the difference in the observations of the limewater between the two set-ups, Q and R [2]

_____

_____

Score 3

34. An experiment on photosynthesis was carried out in a dark room using the set-up shown below.



The experiment was repeated with different distances, D, between the lit lamp and the plant. Each time, the height of the gas collected in the test tube, H, was recorded after 30 minutes.

Distance D (cm)	10	12	14	16
Height H (cm)	1.9	?	1.2	1.0

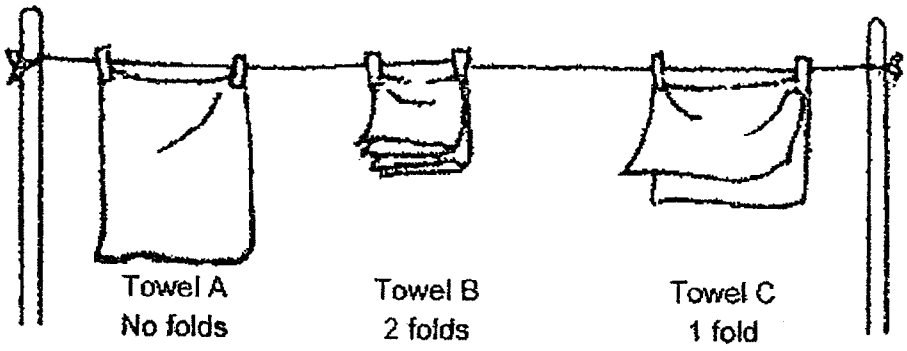
(a) Describe the process of photosynthesis. [1]

(b) Based on the readings above, what is a possible value of H when the distance D is 12 cm? [1]

(c) Explain your answer in (a), comparing it against one of the readings in the table? [2]

Score	/4

35. Heidi carried out an experiment to investigate how the number of folds of the towel affects the time taken for the towel to dry. She soaked three similar towels with the same volume of water and hung them on a clothes line with different number of folds as shown below.

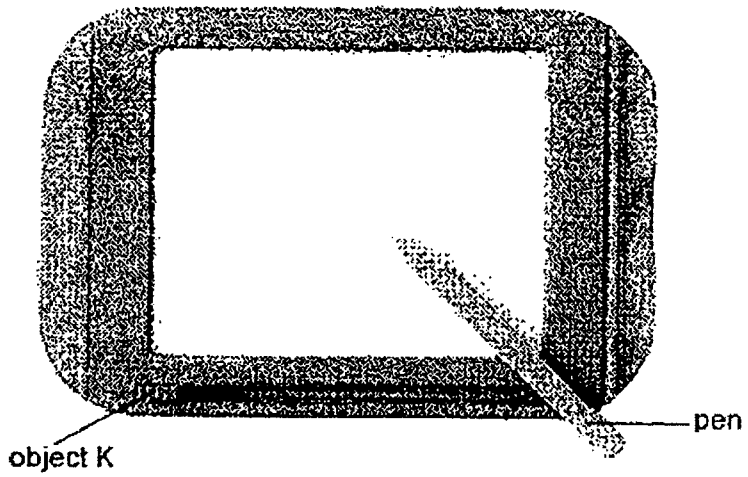


(a) Name the process that causes the towel to dry. [1]

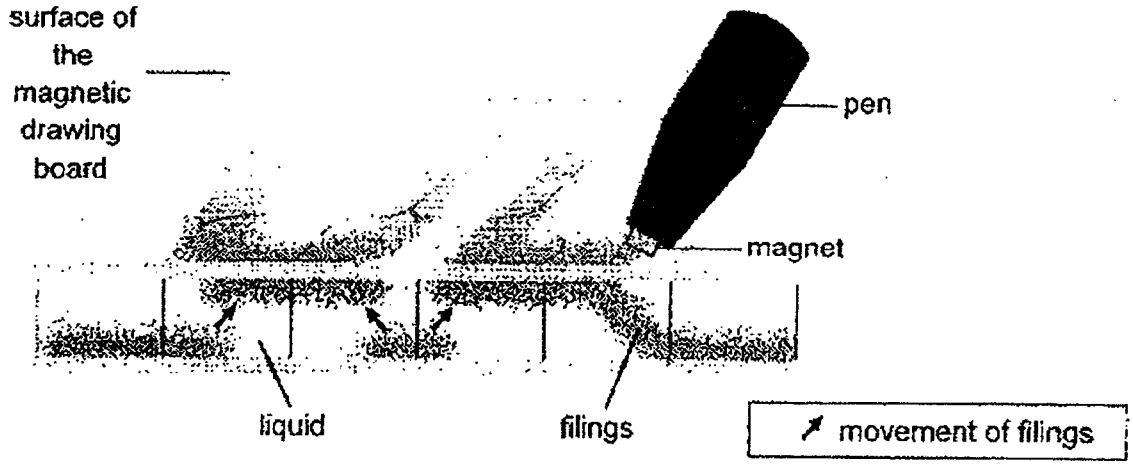
(b) Which towel took the longest time to dry completely? Explain why. [2]

Score	3

36. Rachel has a magnetic drawing board as shown below. The tip of the pen is made of a magnet.



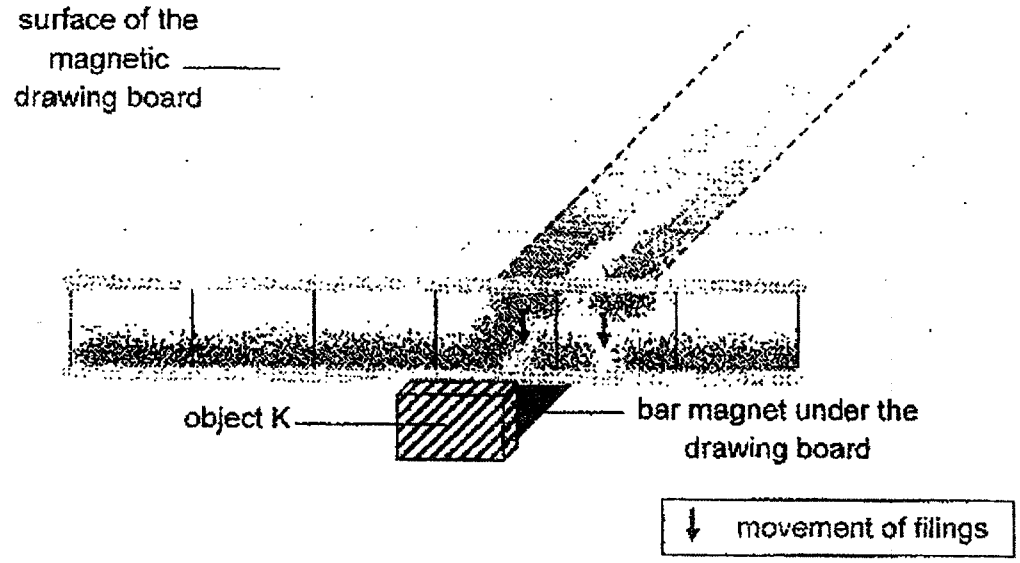
She notices that whenever her pen tip touches the surface of the magnetic drawing board, a black dot would form directly under the pen tip. When she drags the pen tip across the board, the black dots will appear to form a pattern according to where her pen moves.



Her mother explains that there are filings inside the thick magnetic drawing board that causes these black dots to form. When the tip of the pen moves over the surface of the drawing board, these filings move up to the surface. There is a layer of thick liquid that prevents these filings from sinking to the bottom.

(a) What is the type of material needed to make these filings? [1]

Object K is attached to a long bar magnet placed at the base of the drawing board. To erase the drawings on the board, Rachel has to slide object K across the board.

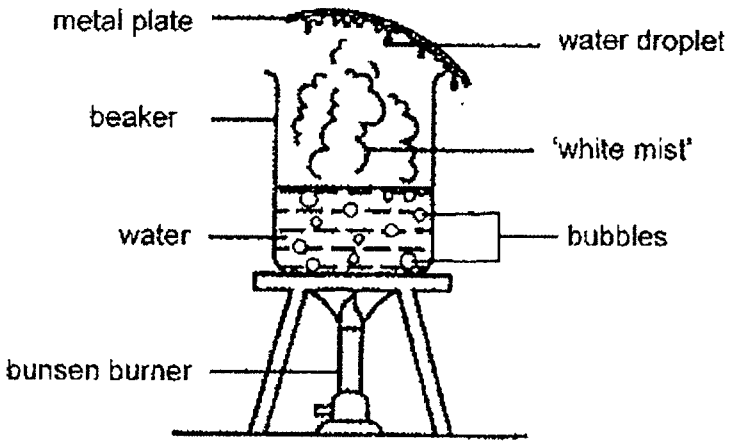


(b) Explain how this action erases the drawings on the board. [1]

(c) When she replaces the pen with an iron rod, she was not able to draw on the board. Explain why. [1]

Score 3

37 Lauren set up an experiment as shown below.



The water in the beaker was heated over a bunsen burner.

When the water is boiling, Lauren noticed bubbles moving to the surface of the water and 'white mist', rising from the surface of the water.

(a) In the experiment set-up above,

i. Identify the state of the 'white mist'. [1]

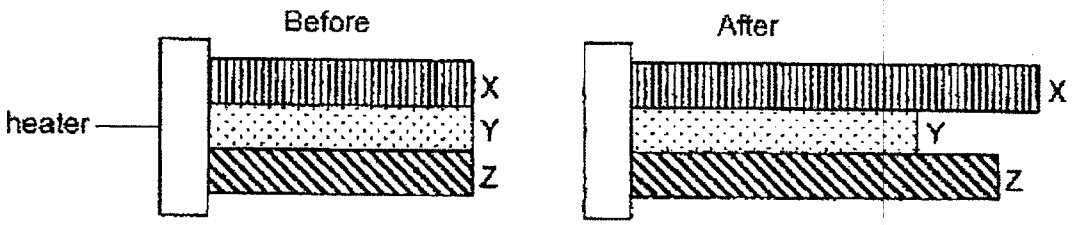
ii. When the water is boiling, what can be found inside the bubbles? [1]

(b) Lauren wanted to reduce the amount of water droplets formed on the plate within a given period of time.

Suggest a material to replace the metal plate. Explain your answer. [2]

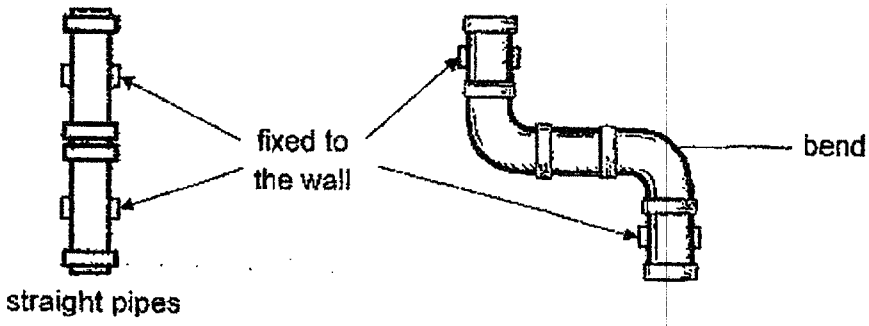
Score 4

38. Peter secured three similar metal plates made of different materials, X, Y and Z, against the heater. After ten minutes, he noticed that the three plates have increased in their lengths. His observations are shown below.



(a) What conclusion can he make about plates X, Y and Z? [1]

Peter notices that in industrial areas, pipes are constructed with bends instead of long straight pipes, allowing very hot liquid to flow through without the pipes breaking.

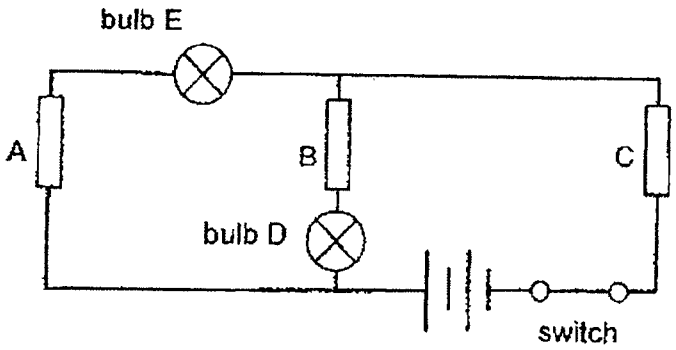


(b) Explain how bending the pipes helps to prevent them from breaking when hot liquid flows through them? [1]

(c) Which material, X, Y or Z, will be most suitable to make these pipes? Explain your answer. [2]

Score 4

39. Bala set up a circuit as shown below with rods of different materials, A, B and C.



When the switch was closed, bulb D lighted up but bulb E did not light up.

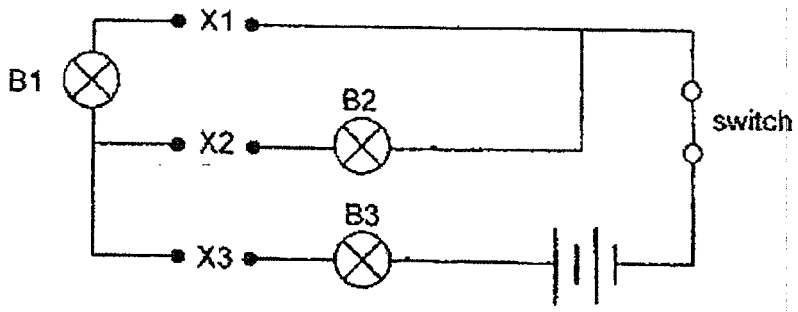
(a) Suggest a material that rod A could have been made of. [1]

(b) Explain why did bulb D light up but not bulb E? [2]

Continued next page

Score	3

(c) Bala set up another circuit as shown below. He placed rods A, B and C, from the earlier experiment, in different positions, X1, X2 and X3.



In the table below, fill in the boxes with letters A, B and C to indicate the possible positions of these rods for the bulbs to light up in the following arrangements (i) and (ii). [2]

	Rods that were placed in positions			Bulbs that lit up		
	X1	X2	X3	B1	B2	B3
(i)				✓		✓
(ii)					✓	✓

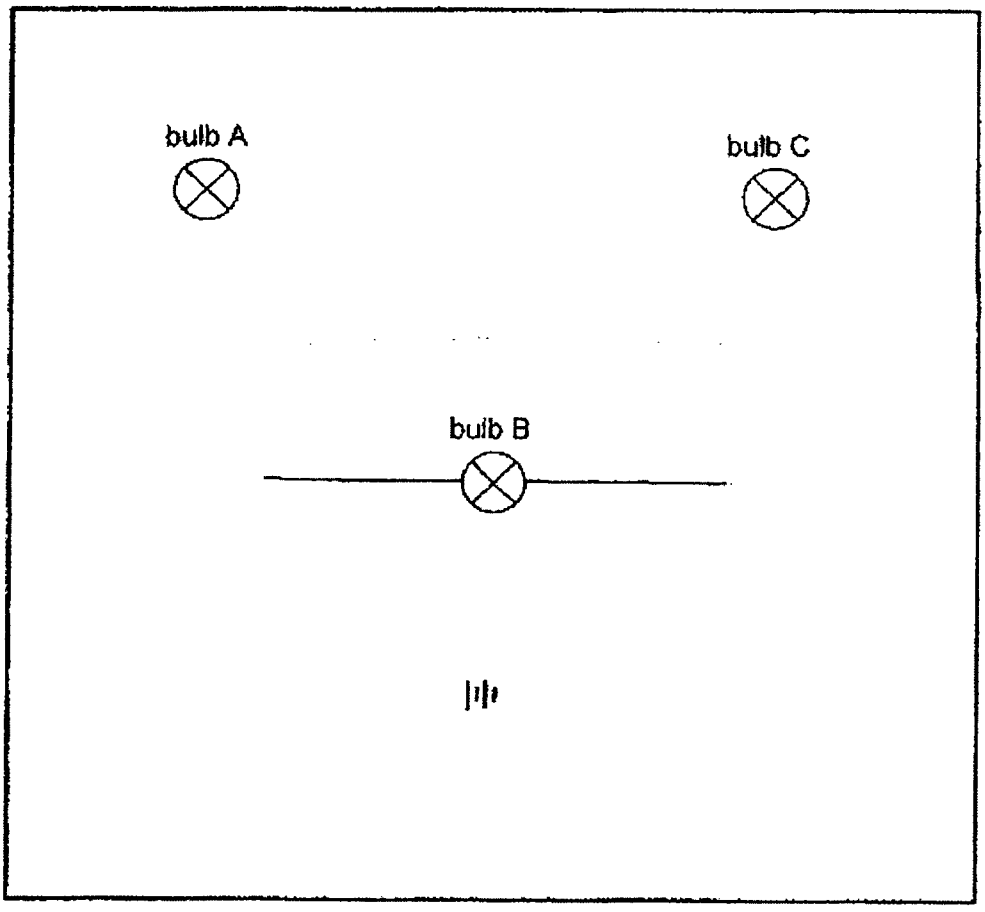
Score	2

40. Abdul set up a circuit with two batteries, three identical bulbs, A, B and C, and some wires. All the bulbs lit up.

As Bulbs A, B and C are removed one at a time from the circuit, Abdul observed the following:

Bulb removed	Observation
A	B remained lit but C did not light up
B	A and C remained lit
C	A did not light up but B remained lit

Using the information above, complete the circuit diagram below to show how Adbul had connected the given components. [3]



End of Paper

Score / 3

Suggested answers for 2022 P5 Science EOY Exam

Booklet A

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

Booklet B

Qn	Correct / Acceptable Answer
29a	Part E: womb/uterus Part F: ovary Part G: penis Part H: testis
29b	F produces eggs.
30a	Chloroplast(s)
30b	Chloroplast contains chlorophyll (optional) that helps a plant to **trap light** (c) to **make food** (e) during photosynthesis.
30c	Cell B as it **does not have chloroplast** (c) so it **does not photosynthesise/make food**(e).
31a	Arrow A
31b	Large petals /Anthers and stigma are within the flowers
31c	Plant W: Animal Plant X: Water Plant Y: Splitting Plant Z: Wind
32a	Animal X has 4 stages in its life cycle but animal Y has 3 stages in its life cycle. OR The young of animal Y looks like its adult but the young of animal X does not.
32b	The pupa's movement is very limited in the water but the adult can fly around anywhere in the air.
32c	As the surrounding temperature **increases**, the number of days the mosquito eggs takes to reach its adult stage after hatching **decreases.**

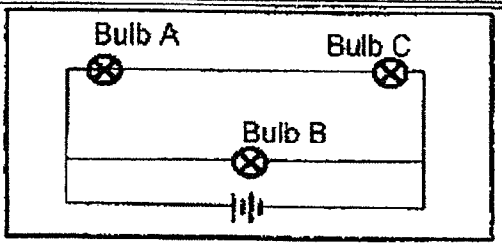
33a	There is **more carbon dioxide** in P than in Q. In Q, the plant **takes in carbon dioxide** to **makes food / photosynthesise.** In P, the rat releases **carbon dioxide**.
33b	The limewater in set-up R would be chalkier/more chalky.
33c	**Plant B cannot receive light** as the cardboard does not allow light to pass through (opaque) so Plant B **cannot photosynthesie** so it can only **produce carbon dioxide.** **Plant A can receive light** as the glass allows most light to pass through (transparent) so **it takes in carbon dioxide to photosyntheise.** This results in set-up **Q having less carbon dioxide** than set-up P.
34a	The **chlorophyll** in the leaf traps **light**. With **carbon dioxide** and **water,** the leaf makes food which **produces sugar** (and **oxygen**).
34b	1.5 cm
34c	When D is at 12 cm compared to 14 cm, the leaves **took in more light. The rate of photosynthesis is higher** so the plant **produced more oxygen.**
35a	Evaporation
35b	Answer is B. B had the **least exposed surface area** so the **evaporation of water is the slowest.**
36a	**Magnetic** material
36b	The **bar magnet** will **attract** the iron **filings** to the **bottom** of the board as it is being slid across.
36c	The iron rod is **not a magnet** and **cannot attract the filings.**
37ai	Liquid
37aii	Water vapour at 100°C / Steam
37b	Plastic wood / Foam/ Clay. Plastic is a **poorer conductor of heat than metal so condensation is slower** (e).
38a	X expands the most, followed by Z and then Y
38b	The bends allow space for the **pipes to expand** the pipes will not **break.**
38c	**Y expands the least (evidence) so there is less chance for the pipe to break (e).**
39a	plastic/rubber/glass/wood

39b Material/Rod **A is an electrical insulator** and so it **forms an open circuit** (or **electricity can flow through bulb B**). Material/Rods B and C **are electrical conductors** and so it forms a closed circuit (or **electricity can flow through bulb**

39c

Rods that were placed in positions			Bulb that would light up		
X1	**X2**	**X3**	**B1**	**B2**	**B3**
B/C	A	C/B	✓		✓
B/C A	C/B	~~A~~ C/B		✓	✓

40



Bulbs A & C are in parallel arrangement of bulb to B.

A & C are in series arrangement of bulb.

or