Rosyth School
End-of-Year Examination 2024
SCIENCE
Primary 5

Name: _____ Total Marks: /56

Class: Pr _____ Register No. _____

Date: 24 October 2024

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

Booklet A

Instructions to Pupils:

1. Do not open the booklet until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.

* This booklet consists of **23** printed pages (including this cover page).

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** **(56 Marks)**

1 Which of the following is made up of cells?

(1) Air

(2) Rock

(3) Wooden table

(4) Plastic ball

2 Celia observed two cells, X and Y, and recorded her observations in the table below. A tick (√) shows that the cell structure is present.

Cell Structure	Cell X	Cell Y
Nucleus	√	√
Cytoplasm	√	√
Cell membrane	√	√
Cell wall	√	√
Chloroplast	√	

Which of the following statement(s) is / are most likely to be correct?

A Cell X is a plant cell but not Cell Y.

B Cell X can make food but not Cell Y.

C Cell X can carry out cell division but not Cell Y.

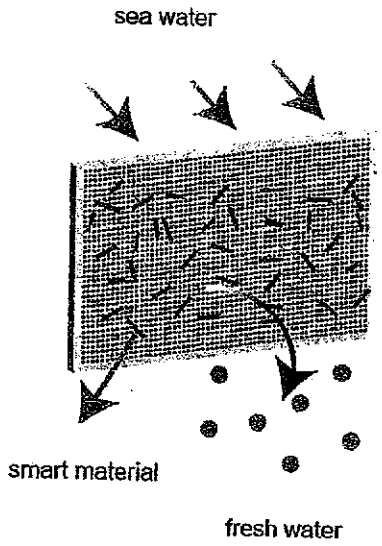
(1) A only

(2) B only

(3) A and C only

(4) B and C only

3 Researchers have developed a "smart" material which can remove the dissolved mineral salts from sea water to become fresh water as shown below.



The "smart" material functions like the _____ of a plant cell.

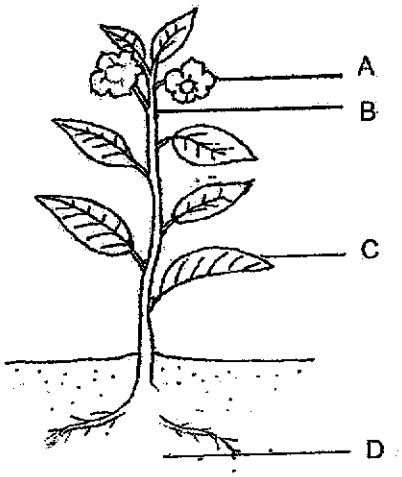
(1) cell wall

(2) nucleus

(3) cytoplasm

(4) cell membrane

4 The diagram below shows a flowering plant.



At which parts of the plant, labeled A, B, C, and D, are both the food-carrying and water-carrying tubes found?

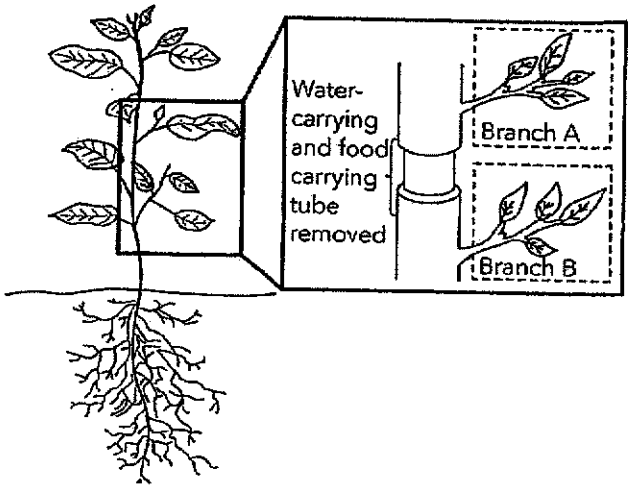
(1) All the parts

(2) A and B only

(3) C and D only

(4) None of the parts

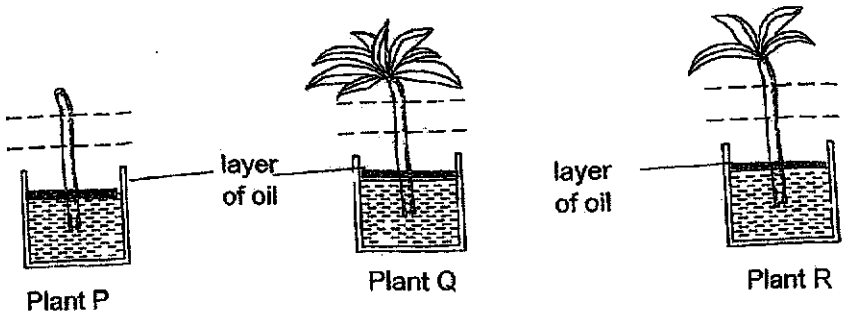
5 A ring of bark of the plant is removed as shown in the diagram below.



Which of the following correctly shows what will happen to Branch A after three weeks and the reason for it?

	Observation	Reason
(1)	Branch A will become swollen	Food made in Branch A cannot be transported downwards as there is no food-carrying tubes.
(2)	Branch A will die	Branch A did not receive water as there is no water-carrying tubes.
(3)	Branch A will become swollen	Branch B transported food to Branch A as Branch B can still make its own food.
(4)	Branch A will die	Branch B cannot transport food to Branch A as Branch B cannot make its own food as there is no water transported to it

6 Jo chose three similar plants P, Q and R for an experiment. She cut off all the leaves from plant P and a few leaves from plant R. She also cut off the roots of all three plants and placed each plant into blue-coloured water with a layer of oil at the top.



After a day, she cut across the stems as shown in the diagram above and observed the height of the blue colouring on the stem.

Which of the following questions was Jo trying to investigate through this experiment?

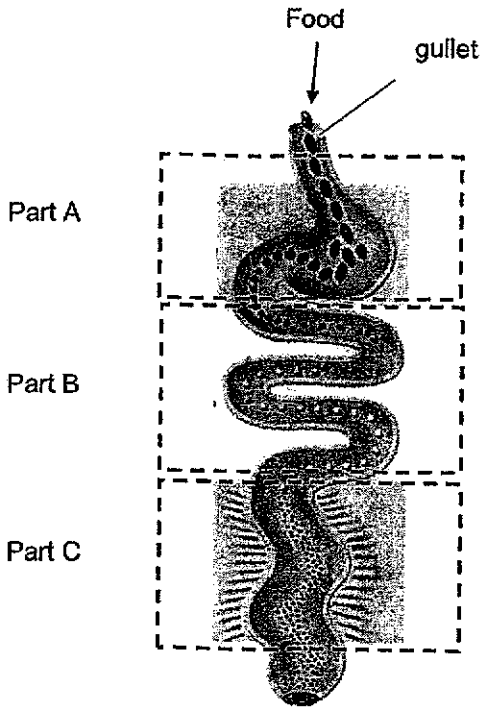
(1) Do plants need roots to take in water?

(2) Does the stem transport water to the leaves?

(3) Do the leaves of the plant help to take in water?

(4) Does the number of leaves affect how fast water travels up the stem?

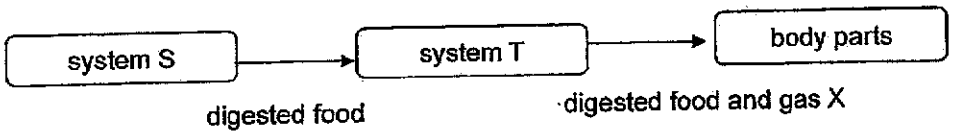
7 The diagram below shows the human digestive system.



Which of the following correctly represents the change in the amount of digested food as it passes through Parts, A, B and C ?

	Part A	Part B	Part C
(1)	increases	increases	increases
(2)	increases	increases	decrease
(3)	increases	increases	no change
(4)	decreases	decreases	no change

8 The diagram below shows how digested food and gas X are transported in the human body.



Which of the following correctly represents the systems S, T and gas X?

	system S	system T	gas X
(1)	circulatory	respiratory	carbon dioxide
(2)	digestive	circulatory	carbon dioxide
(3)	digestive	circulatory	oxygen
(4)	circulatory	respiratory	oxygen

9 Max wants to measure his heart rate to see how it changes after running to the stadium. What should he do to get an accurate measurement?

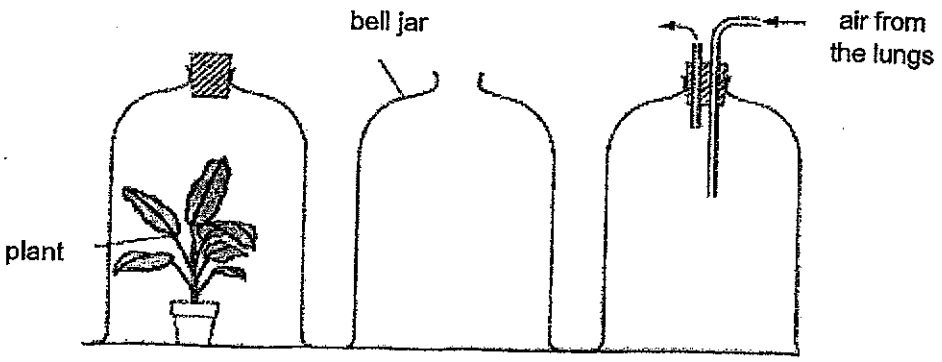
(1) Measure his heart rate after reaching the stadium

(2) Measure his heart rate 10 minutes after reaching the stadium

(3) Measure his heart rate just before running and immediately after reaching the stadium

(4) Measure his heart rate 10 minutes after running and 10 minutes after reaching the stadium

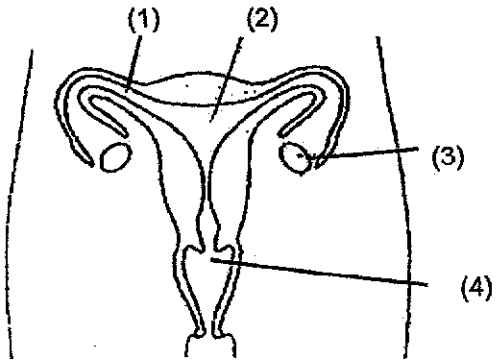
10 In an experiment three glass bell jars were set up as shown in the diagram.



At the end of the experiment, which bell jar has the most oxygen and which has the least oxygen?

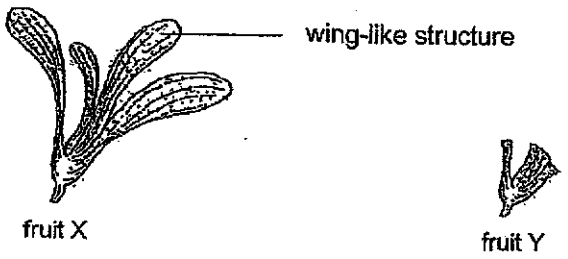
	Most oxygen in bell jar	Least oxygen in bell jar
(1)	K	M
(2)	K	L
(3)	L	M
(4)	M	K

11 The diagram below shows a female human reproductive system with parts labelled 1 to 4.

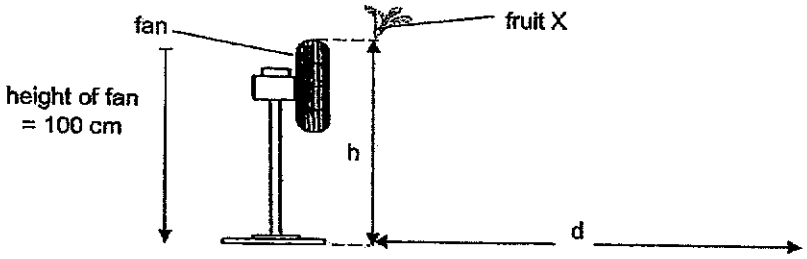


The fertilised egg is developed at part _____.

12 Ethan conducted an experiment using two similar fruits to find out if wing-like structure affects the distance they travelled. One of the fruits had its wing-like structure removed.



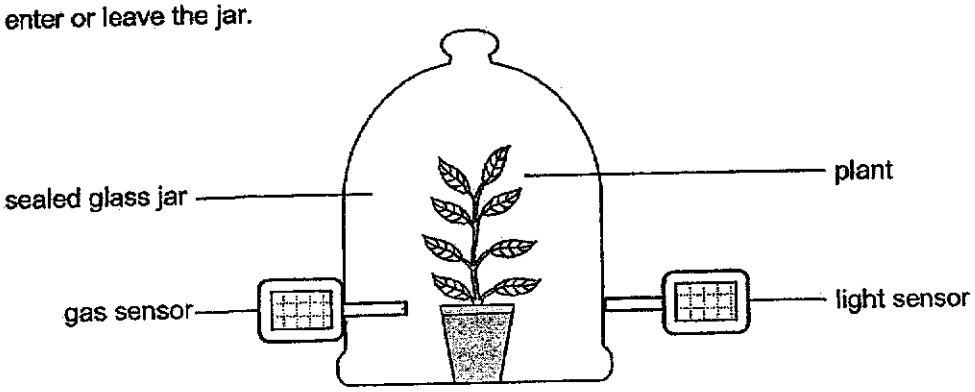
He dropped fruit X from the height (h), in front of a fan as shown in the diagram below. He measured the distance, d, travelled by fruit X and recorded the readings. He repeated the experiment with fruit Y.



Which one of the following sets of readings for the distance, d, was most likely recorded by Ethan?

	Distance (d) travelled by fruit X	Distance (d) travelled by fruit Y
	h = 100 cm	**h = 100 cm**
(1)	50 cm	20 cm
(2)	100 cm	120 cm
(3)	50 cm	60 cm
(4)	100 cm	100 cm

13 The diagram below shows a plant in a sealed glass jar in a bright place. Air cannot enter or leave the jar.



Which of the following shows that photosynthesis **is not** taking place accurately?

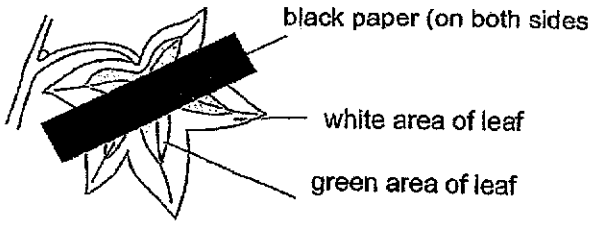
(1) Amount of light decreases.

(2) Amount of oxygen increases.

(3) Amount of water vapour decreases.

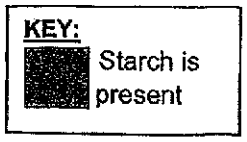
(4) Amount of carbon dioxide increases.

14 Plant X has leaves that are green in the centre and white around the leaf. It was left in a dark room for three days and one of its leaves was partly covered with black paper on both sides of the leaf as shown below.

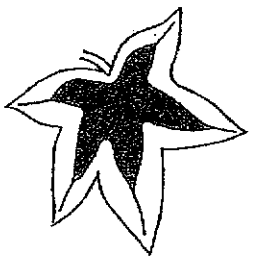


The plant was then placed in bright light for 48 hours and the leaf was tested for starch. The darkened area of the leaf shows the presence of starch.

Which of the following diagrams correctly shows the area(s) that contain starch?

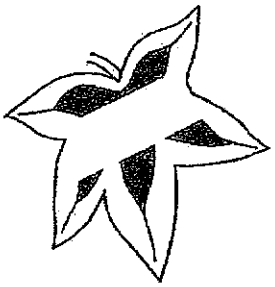


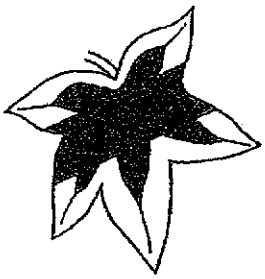
(1)



(2)

(3)





15 Which of the following is a matter?

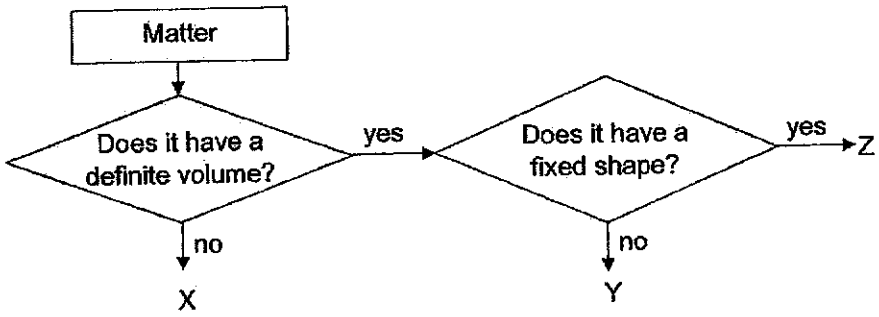
(1) air

(2) heat

(3) light

(4) sound

16 Study the flowchart carefully.



Which of the following can be inferred from the flowchart?

(1) X, Y and Z have mass.

(2) X has a definite shape.

(3) X, Y and Z cannot be compressed.

(4) X has a definite volume while Y does not.

17 Which of the following is a poor conductor of heat?

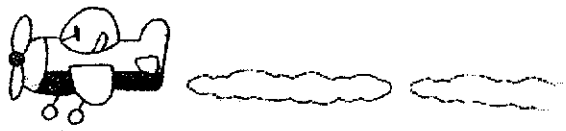
(1) iron

(2) wool

(3) steel

(4) aluminum

18 When a high-flying airplane passes through the very cold air high up in the sky, the water vapour from its jet engines often leaves a white trail behind as shown in the picture below.



What is the process responsible for the white trail?

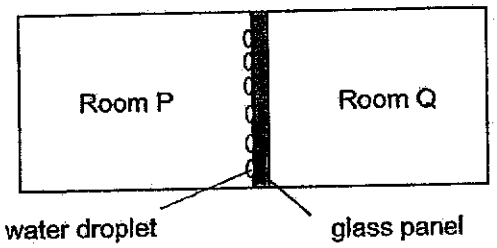
(1) boiling

(2) melting

(3) evaporation

(4) condensation

19 Study the diagram below. Water droplets are formed on the glass panel in Room P only.



What could be a possible reason for the above observation?

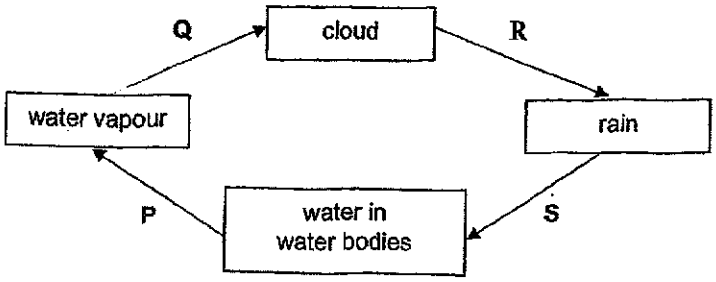
(1) Air-conditioner was switched on in P only.

(2) Air-conditioner was switched on in Q only.

(3) Air-conditioners were switched on in P and Q.

(4) Air-conditioners were not switched on in P and Q.

20 The diagram below shows the water cycle in nature.



Which of the process(es) P, Q , R or/and S involve(s) a change in state?

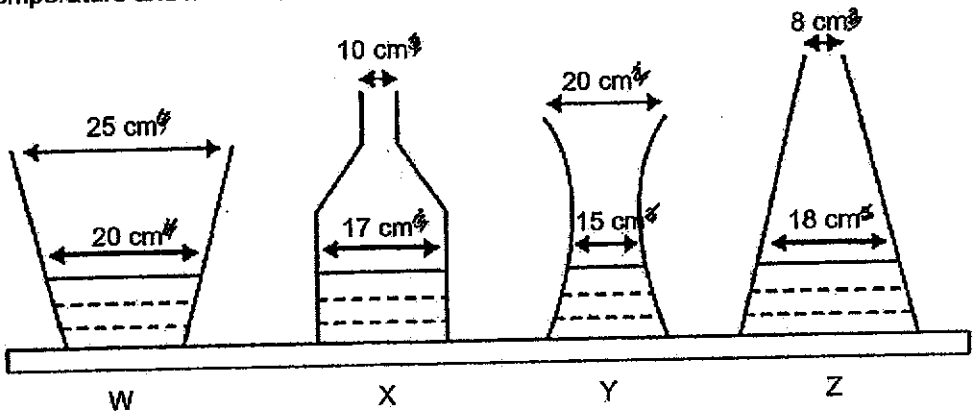
(1) P only

(2) P and Q only

(3) P and R only

(4) P, Q and S only

21 Sue carried out an experiment as shown below using 100 ml of water at the same temperature and measured the volume of water left after an hour.



The results of her experiment are shown below.

Containers	W	X	Y	Z
Volume of water after an hour (ml)	40	60	64	45

What can she conclude from her experiment?

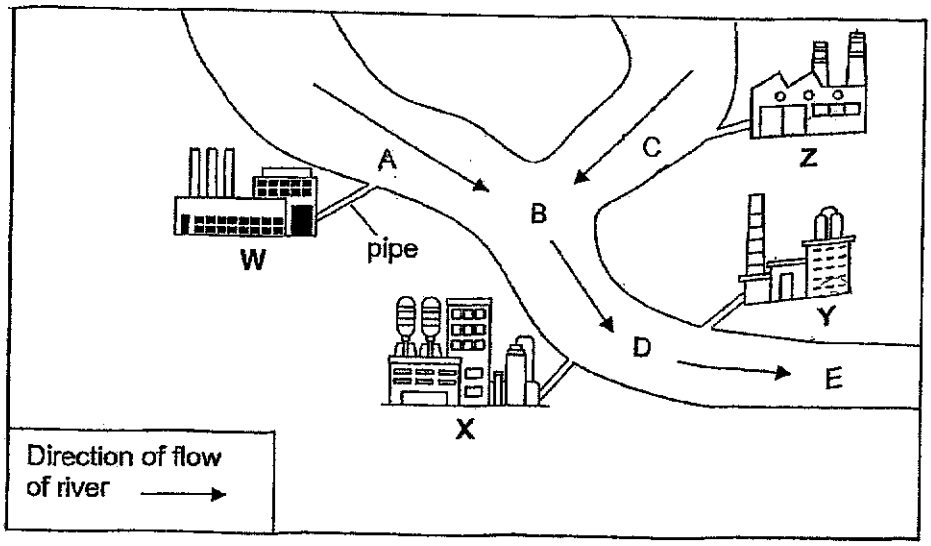
(1) A larger container opening increases the rate at which water evaporates.

(2) A smaller container opening increases the rate at which water evaporates.

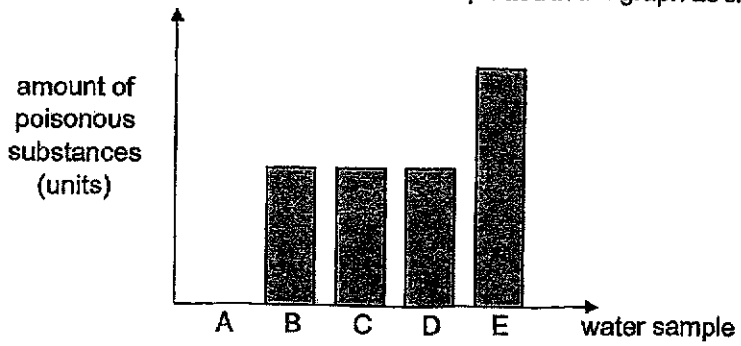
(3) The larger the water's exposed surface area, the faster the rate of evaporation.

(4) The smaller the water's exposed surface area, the faster the rate of evaporation.

22 The map shows the locations of factories, W, X, Y and Z, along the river.



Water samples were obtained from five different locations, A, B, C, D and E, along the river for testing by the scientists. The results were plotted in the graph as shown.



Based on the above results, which factories, W, X, Y or Z, discard poisonous substances into the river?

(1) W and X

(2) W and Y

(3) X and Z

(4) Y and Z

23 Sarah added a small amount of hand sanitiser on her and noticed that the hand sanitiser dried faster when she rubbed her hands.

Which statement **does not explain** why the sanitiser dried faster?

(1) Rubbing increases the temperature of the hand.

(2) The hand sanitiser gained heat from the skin faster.

(3) Heat from the hand sanitiser is lost to the skin faster.

(4) Rubbing increases the surface area in contact of the hand sanitiser.

24 Substance X is a solid at 25 °C. When in contact with the skin, which has a temperature of 37 °C, substance X melts.

What property can we infer about substance X?

(1) It is a gas at 37 °C.

(2) It is a liquid at 20 °C.

(3) The melting point of it is above 37 °C.

(4) The freezing point of it is below 25°C.

25 Which of the following objects **is not** an insulator of electricity?

(1) eraser

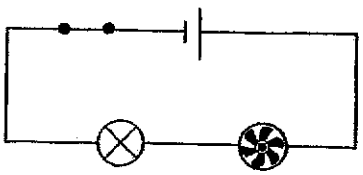
(2) steel clip

(3) plastic ruler

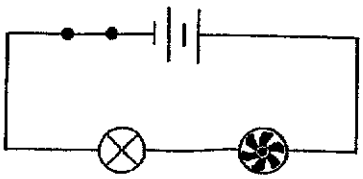
(4) wooden ruler

26 Jane wants to dry a wet towel using a heat lamp and a fan as quickly as possible. Which of the following circuits should she use?

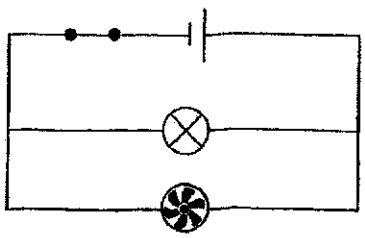
(1)



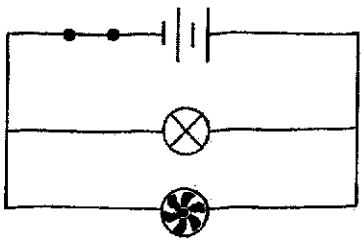
(2)



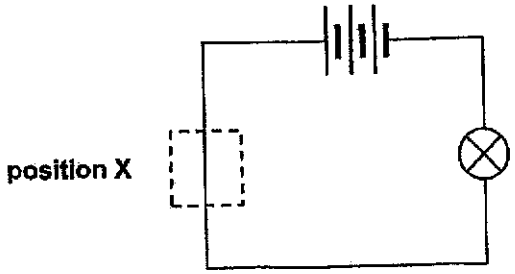
(3)



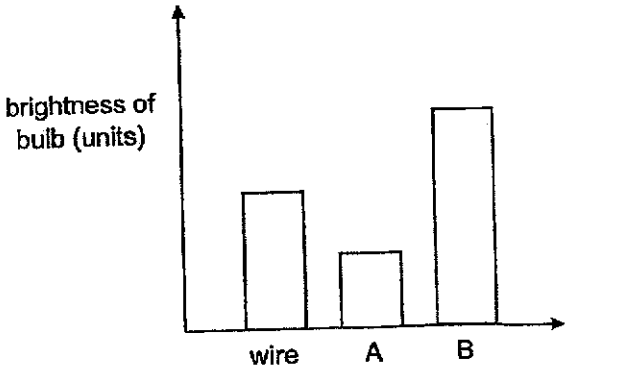
(4)



27 Megan set up the circuit using identical bulbs and batteries in working condition.



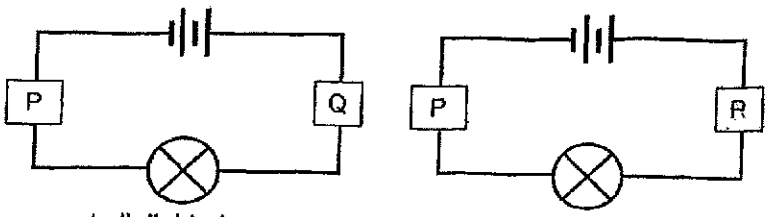
She replaced the wire at position X with electrical components A and B. The results are shown in the graph.



Which of the following represents electrical components A and B?

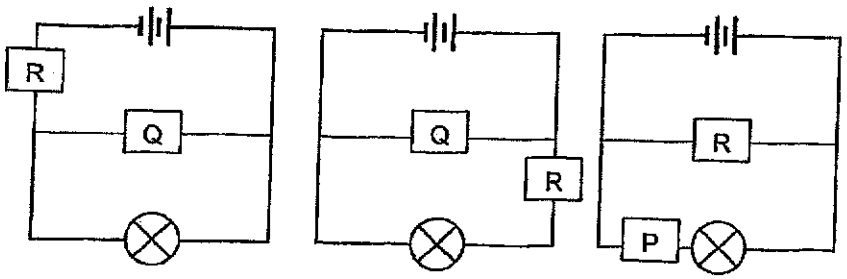
	A	B
(1)	bulb	battery
(2)	bulb	switch
(3)	switch	battery
(4)	battery	bulb

28 Linda set up two circuits using bulbs, batteries and objects, P, Q and R, as shown below. She drew her observations in the circuit diagrams below.



bulb lighted up bulb did not light up

She then used objects P, Q and R, to form three other circuits as shown below.



Circuit X Circuit Circuit Z

In which of the circuit(s) will the bulb light up?

(1) X only

(2) Z only

(3) X and Z only

(4) Y and Z only

GO TO BOOKLET B

Rosyth School
End-of-Year Examination 2024
SCIENCE
Primary 5

Total Marks: 44

Name: _____

Class: Pr 5 _____ Register No. _____

Date: 24 October 2024 Parent's Signature: _____

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

Booklet B

Instructions to Pupils:

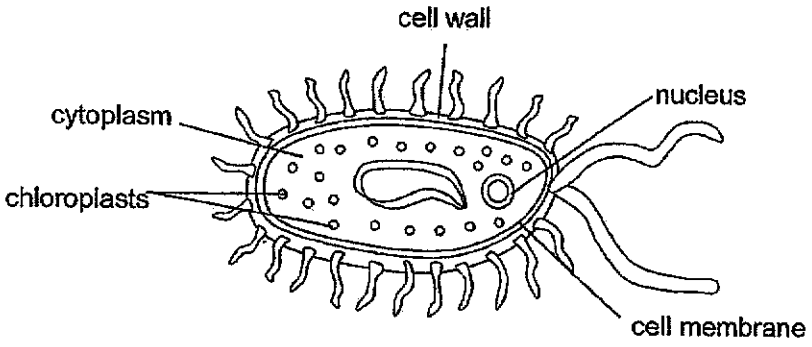
1. For questions 29 to 40, write your answers in the spaces given in this booklet.

	Maximum marks	Marks Obtained
Booklet A	**56**	
Booklet B	**44**	
Total	**100**	

* This booklet consists of **16** printed pages (including this cover page).

For questions 29 to 40, write your answers in the space provided. **(44 Marks)**

29 Eric found a single-celled organism, bacteria A, living in a pond. The figure below shows bacteria A.



(a) Name two parts in bacteria A that show that it is more similar to a plant cell than an animal cell. [1]

_____

(b) Eric was investigating a hypothesis as shown below.

'Which toothpaste, P,Q, R, kills the bacteria in your mouth'

He carried out the investigation and recorded his results in the table.

	Size of the bacteria colony(mm)		
	P	**Q**	**R**
Before brush	0.4	0.5	0.4
After brush	0.2	0.3	0.4

(i) What is the conclusion for his investigation? [1]

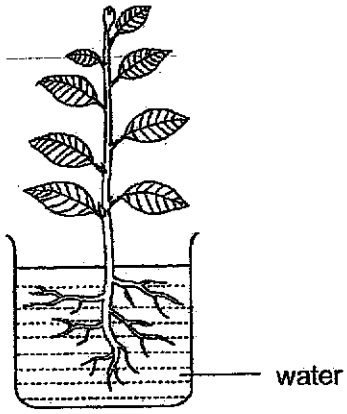
_____

_____

(ii) Eric waited 24 hours before measuring the size of the bacteria colony. Explain how this helps to obtain a more accurate result. [1]

_____

30 Patricia placed a plant in a beaker of water as shown in the diagram.



Set-up P

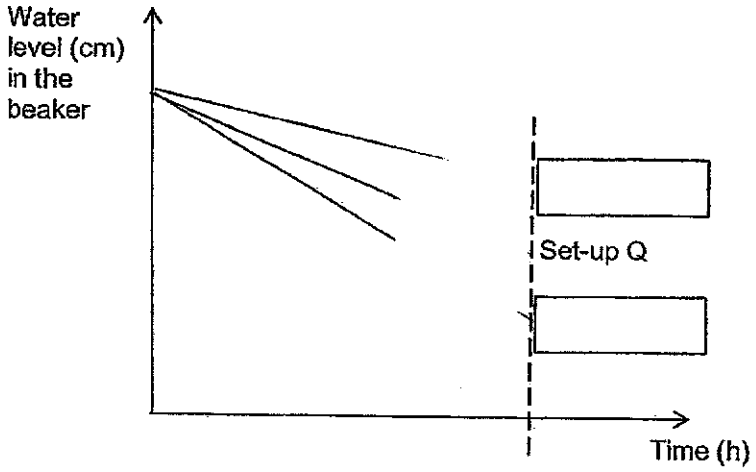
Two other set-ups, Q and R, were prepared using two similar plants. The leaves of the set-up Q and R were covered with a layer of transparent oil as shown in the table.

	Leaves surface(s) covered with transparent oil	
Set-up	**Top surface**	**Bottom surface**
P	No	No
Q	No	Yes
R	Yes	Yes

Question 30 continues on the next page.

All three set-ups P, Q and R were placed at the same place under the sun for six hours. The changes in water levels for the set-ups were recorded as shown in the graph. The change in water level for set-up Q has been indicated.

(a) Label the graphs that represent set-ups P and R. [1]



(b) The three set-ups were then left under the sun for a week.
Explain why Jenny observed that the plant in set-up R died after a week. [2]

_____

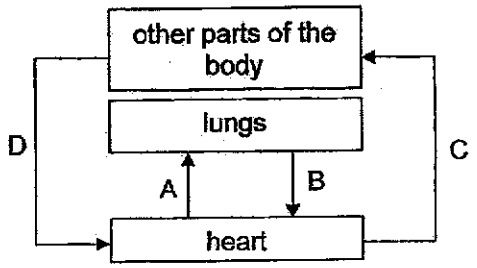
_____

_____

(c) Give a reason how placing all set-ups at the same place helps to make the experiment a fair test. [1]

_____

31 The diagram below shows the circulatory system of a human.



(a) Which of the following is / are the main substance(s) transported by the circulatory system from all parts of the body to the heart. Tick (✓) the correct box(es). [1]

☐ oxygen ☐ carbon dioxide

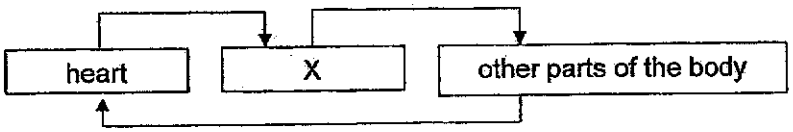
☐ waste products ☐ undigested food

(b) State one similarity between the blood in B and C only. [1]

_____

_____

The diagram below shows the circulatory system of a fish.



(c) Name the organ X. [1]

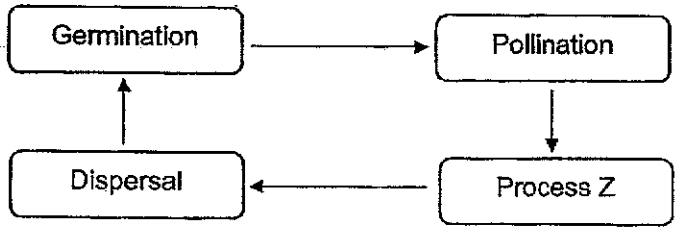
_____

(d) State one difference between the movement of blood at the heart of a fish and at the heart of a human body. [1]

_____

_____

32 The diagram below shows four processes that occur during reproduction in flowering plants.



(a) What is Process Z? [1]

_____

Tom grew apple trees in his farm. Lately, he noticed that there was a lack of insects in his farm for natural pollination.

(b) He wanted to do hand pollination using a small brush. Describe his method to help the flowers produce fruits. [1]

_____

_____

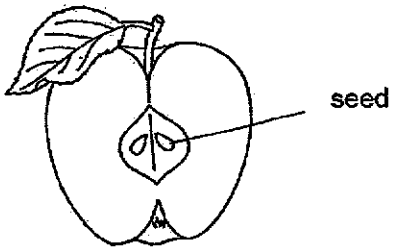
(c) Research indicates that hand pollination is five times more effective than natural pollination for fruit production. Explain why. [1]

_____

_____

Question 32 continues on the next page.

Study the diagram of an apple fruit as shown below.



(d) Explain how two characteristics of the seed (other than hard) helps in its dispersal. [2]

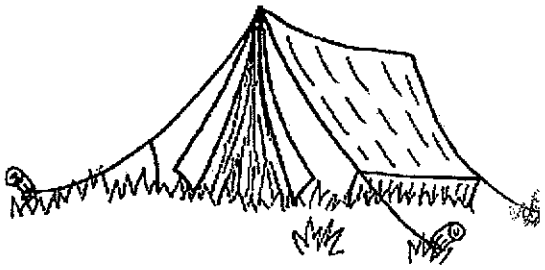
Characteristic One: _____

How it helps: _____

Characteristic Two: _____

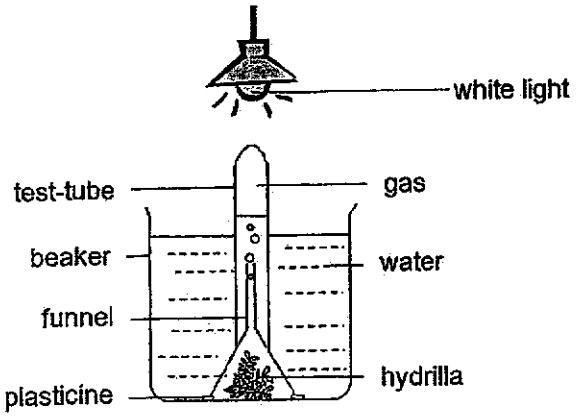
How it helps: _____

33 The diagram below shows a tent pitched on a field. After a week, the tent was removed. It was observed that the grass growing under the tent, had turned brown and died.



Explain why the grass under the tent died. [2]

34 The diagram below shows an experiment to investigate how the colour of light will affect photosynthesis in hydrilla.



Bubbles of gas produced during photosynthesis were given off from the hydrilla and collected in the test tube.

(a) State **two** substances that are taken in by the hydrilla and used for photosynthesis. [1]

_____

Blue, green and red light were then shone, in turn, onto the same set-up. The number of bubbles of the gas given off in one minute was counted and recorded in the table below.

Colour of light	Number of bubbles given off in one minute
White	140
Blue	85
Green	10
Red	68

Question 34 continues on the next page.

(b) What steps can be taken to improve and ensure the reliability of the results when testing the effects of blue, green, and red light on the same setup? [2]

_____

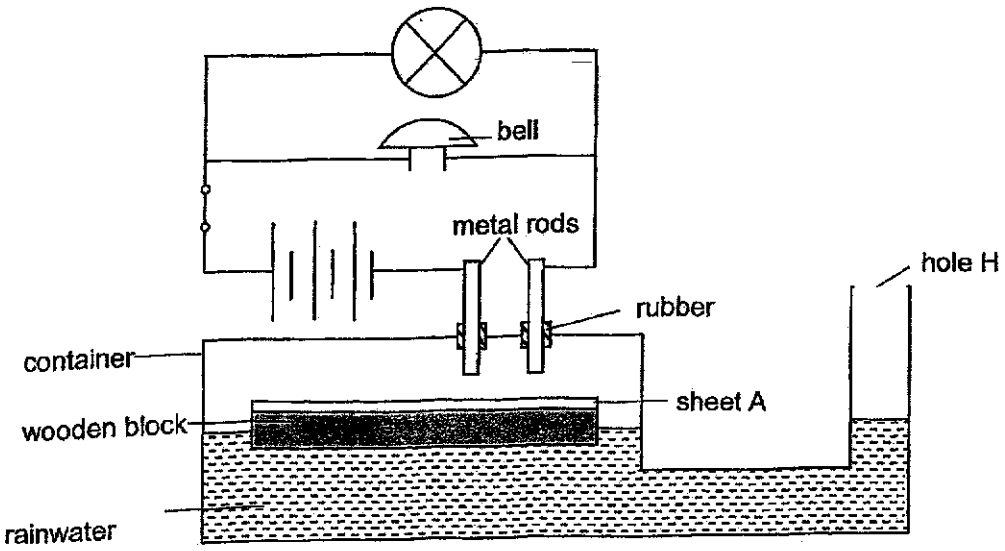
_____

(c) Do you agree, blue light is the most effective light for photosynthesis to take place? Explain why. [1]

_____

_____

35 David designed a simple flood warning system as shown below.



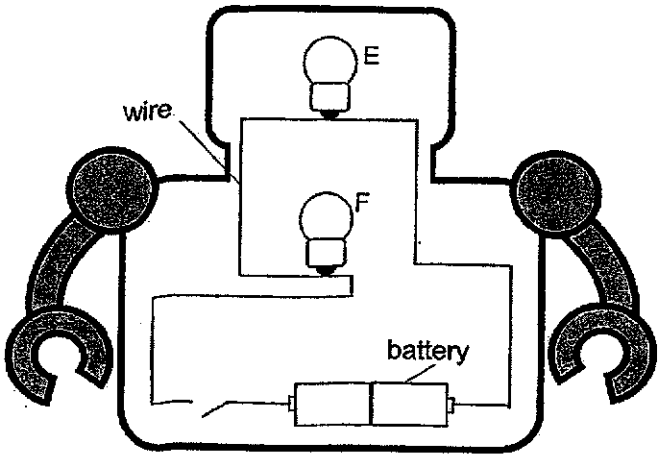
Rainwater enters the container through hole H.

(a) State the property of sheet A that allows the set-up to work. [1]

(b) What is the advantage of arranging the bulb and bell in the arrangement as shown above? [1]

(c) Describe and explain how the flood warning system is turned on when it rains heavily. [2]

36 James sets up an electric circuit for his toy robot using two identical bulbs, E and F, two identical batteries and a switch. All the circuit components are working well.



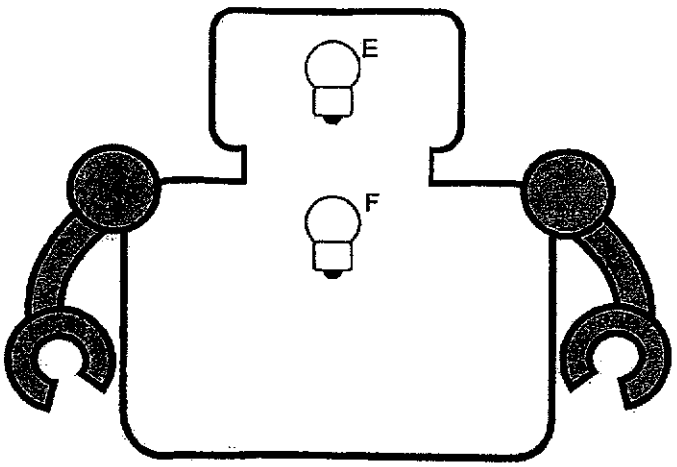
When he closed the switch, the bulbs did not light up.

(a) Give a reason why the bulbs did not light up when the switch is closed. [1]

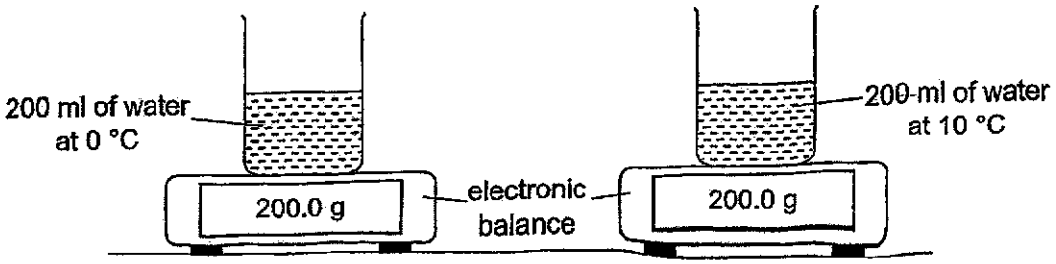
_____

(b) Use a pencil to draw the circuit so that two bulbs will light up when the switch is closed. [3]

- Draw two batteries and a switch.
- When bulb E blows, bulb F can still light up.



37 Timmy set up two similar experiments as shown below.



He recorded the mass of the beakers with water after five minutes as shown in the table below.

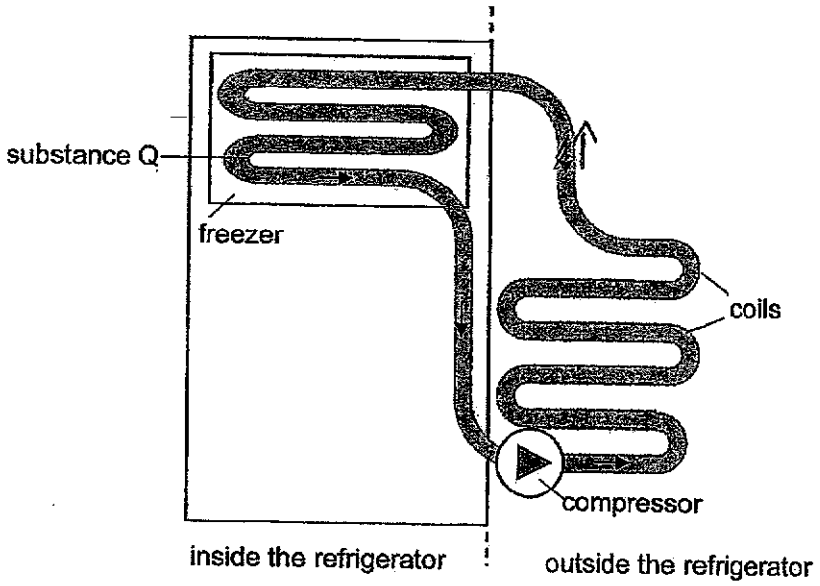
Temperature of water (°C)	Mass of beaker with water (g)		
	1st measurement	2nd measurement	3rd measurement
0	205	206	205
10	202	202	201

(a) Why did the mass of the beakers with water increase after five minutes? [1]

(b) Describe the control set-up for this experiment. [1]

(c) Explain why the results were reliable. [1]

38 Substance Q is a cooling agent used in refrigerator.



When substance Q flows through the coils inside the freezer, it changes from a liquid to a gas.

(a) Name the process which takes place when substance Q changes to a gas. [1]

_____

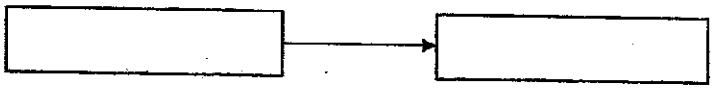
(b) Explain how the process named in part **(a)** keeps the air in the freezer cool. [1]

_____

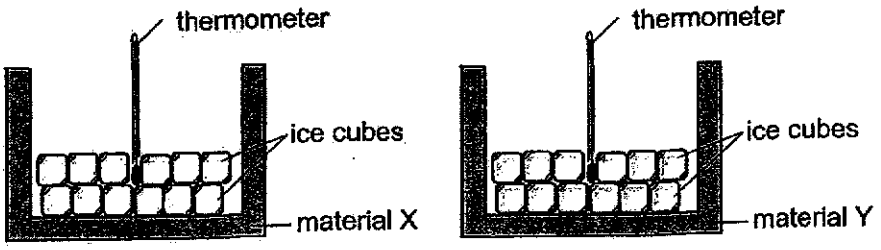
_____

(c) Outside the refrigerator, the compressor causes substance Q to condense.

State the change of state of substance Q in the compressor. [1]



39 Derrick carried out an experiment below to find out more about a property of material X and Y.



set-up A set-up B

He placed the two similar set-ups at the same place under the sun and recorded the time taken for all the ice cubes to melt completely. His results are shown in the table below.

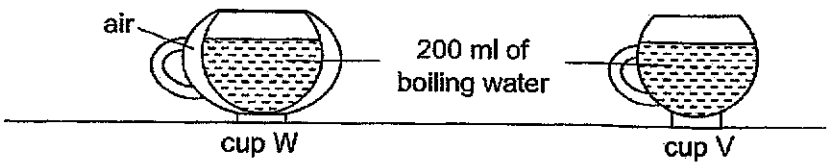
	Material X	Material Y
Time taken (min)	34	57

(a) State what melting means. [1]

(b) What is the temperature reading in set-up B at the 50th minute? [1]

(c) Derrick would like to bring some hot soup to school. Which material, X or Y, is more suitable for making a container to keep the soup warm for a longer time? Explain your answer. [2]

40 Amirah poured 200 ml of boiling water into two similar glass cups, W and V. Cup W is made of two layers of glass with air trapped between the two layers, while cup V is only made of a single layer.



(a) What is the temperature of boiling water? [1]

_____

(b) Besides temperature of water, name another variable of water that was kept the same. [1]

_____

(c) Amirah decided to add equal number of ice cubes into the emptied cups W and V. Water droplets begin to form faster at cup V. Explain why. [2]

_____

_____

_____

_____

End of the Paper

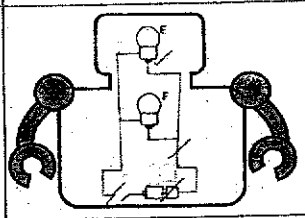
SCHOOL : ROSYTH SCHOOL
LEVEL : PRIMARY 5
SUBJECT : SCIENCE
TERM : 2024 SA2

SECTION A

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

SECTION B

Q29a)	Chloroplast and cell wall.
Q29bi)	Both toothpaste P and toothpaste Q kill some bacteria while toothpaste R does not.
Q29bii)	This allows the bacteria to grow more visibly.
Q30a)	Label 'Set-up R' in the top box, 'Set-up P' in the bottom box.
Q30b)	Both the top and bottom surfaces of the leaf in R were covered with oil, blocking the stomata and gaseous exchange could not take place. The leaves in R could not take in carbon dioxide to photosynthesise and make food for the plant.
Q30c)	Placing all setups at the same location ensures that there is the same amount of sunlight reaching all setups.
Q31a)	Waste products, carbon dioxide
Q31b)	They are both rich in oxygen.
Q31c)	Gills.
Q31d)	The movement of blood in a human goes to the heart twice, while movement of blood in a fish goes to the heart once.
Q32a)	Fertilisation.
Q32b)	Use the small brush to brush pollen grains from the anther onto the brush and brush it on the stigma of the same species of plant.

Q32c)	There is a higher chance for pollination and fertilisation.
Q32d)	Characteristic 1: Small. How it helps: Animals are able to eat the small seeds and pass them out in their droppings. Characteristic 2: Indigestible. How it helps: Seeds would not be digested in the animal's stomach and be passed out in the droppings of animals.
Q33)	The grass under the tent could not trap sunlight to photosynthesise and make food as the tent was made of opaque material.
Q34a)	Carbon dioxide and water.
Q34b)	Repeat the experiment another three times for each light and take the average result for each light.
Q34c)	No. The blue light did not produce the highest number of bubbles given off in one minute, which is what the most effective light should produce. Hence, the blue light did not have the highest rate of photosynthesis.
Q35a)	Conductor of electricity.
Q35b)	They are arranged in parallel, so if either the bulb or bell fuses, the other will still be able to function.
Q35c)	Water enters hole H when it is raining, making the water level in container rise. Wooden block floating on top of water would also rise, allowing sheet A to touch the metal rods, forming a closed circuit. Electric current is able to flow through the circuit, lighting the bulb and sounding the bell.
Q36a)	The bulbs are not connected properly, one end of the wire should touch the metal casing and the other end should touch the metal tip.
Q36b)	
Q37a)	Water vapour in the surrounding air lost heat to the cooler surface of the beakers and condensed into water droplets, increasing the mass.
Q37b)	A beaker of the same size filled with 200ml of room temperature water.
Q37c)	Multiple measurements were taken and the measurements are similar.
Q38a)	Evaporation.
Q38b)	Air in the freezer loses heat to substance Q.

Q38c)	Gas → liquid
Q39a)	It is the process where a solid gains heat and changes state to liquid at a fixed temperature.
Q39b)	0°C.
Q39c)	Y. The ice lost heat at a slower rate so Y is a poorer conductor of heat.
Q40a)	100°C.
Q40b)	Amount of water.
Q40c)	Cup V only has one layer, so it allows the cup to lose heat at a faster rate, lowering the temperature of the surface of cup V faster, so the warmer water vapour in the surrounding air can condense faster into tiny water droplets at cup V.