Rulang Primary School

END OF YEAR EXAMINATION
SCIENCE
2022

Name: _____ ( )

Level: Primary 5

Class: Primary 5 ( )

Setter: Mrs Wong Yin Foong

Marks: _____ / 56

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

Date: 1 Nov 2022

Total Marks: /100

BOOKLET A

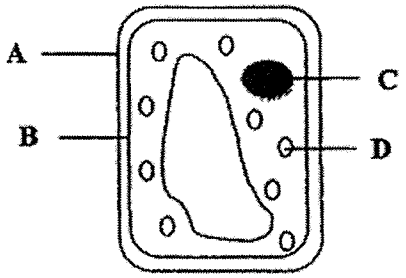
Instructions to pupils:

1. **Do not open this booklet until you are told to do so.**
2. You are required to answer **all** the questions in this booklet.
3. This question booklet consists of **16** printed pages, including the cover page.

Section A (28 x 2 marks)

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

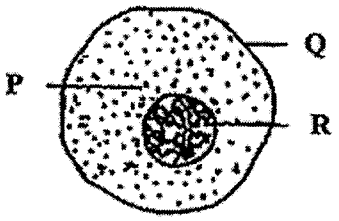
1. The diagram below shows parts of a plant cell, A, B, C and D.



Which parts are also found in an animal cell?

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

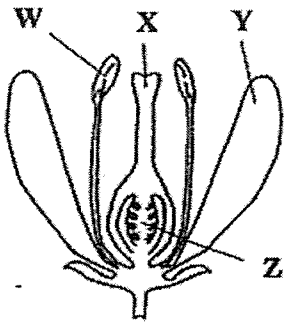
2. The diagram below shows three parts of a cheek cell, P, Q and R.



Which one of the following statements is true?

(1) R is a jelly-like substance.
(2) Q gives the cell its fixed shape.
(3) P controls all activities in the cell.
(4) R contains genetic information of the cell.

3. Study the flower shown below.



Two parts of the flower were removed. After some time, the flower could still develop into a fruit. Which two parts of the flower were removed?

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

4. Seeds A, B and C from the same plant are placed under the conditions in the table shown below.

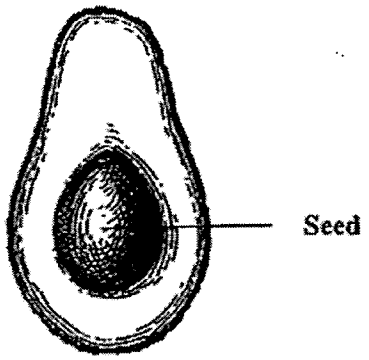
	Conditions			
Seed	**Air**	**Light**	**Water**	**Temperature (°C)**
A	✓	✓	✓	25
B	✓	*	✓	25
C	*	✓	✓	4

Key:
✓ present
*** absent**

Which seed(s) will germinate after a few days?

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

5. The diagram below shows a cross-section of fruit X.

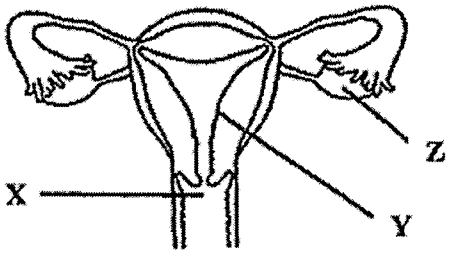


Fruit X

Which one of the following statements is most likely true about the flower which fruit X has developed from?

(1) The flower has only one ovule.
(2) The flower does not have a stigma.
(3) The flower does not have an ovary.
(4) The flower has been pollinated but not fertilised.

6. The diagram below shows the human reproductive system.

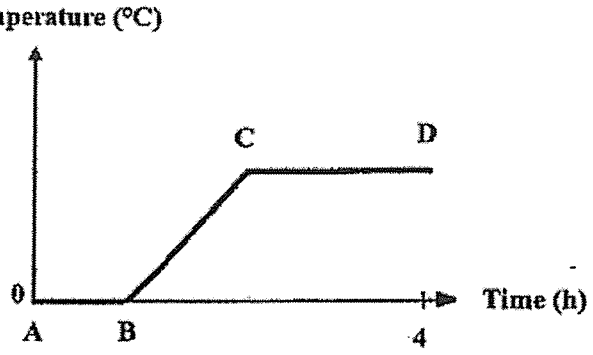


Which of the following statements is/are true?

A: Z is where the egg fuses with the sperm.
B: X is where female reproductive cells are produced.
C: Y is where the fertilised egg develops into a baby.

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

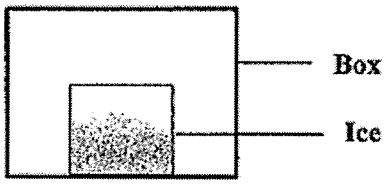
7. A beaker containing ice cubes has been left on the table for 4 hours. The graph below shows the change in temperature of the contents of the beaker.



Which one of the following statements is correct?

(1) The ice cubes only gain heat from C to D.
(2) The ice cubes have started to boil from C to D.
(3) All ice cubes are still found in the beaker from B to C.
(4) Some ice cubes and water are in the beaker from A to B.

8. A block of ice is placed in a closed box as shown in the diagram below.



During melting, what will happen to both the ice and the temperature of air in the box?

	Ice	Temperature of air in the box
(1)	Gains heat	Decreases
(2)	Loses heat	Decreases
(3)	Gains heat	Remains the same
(4)	Loses heat	Remains the same

9. The diagram below shows the changes in the states of a substance.

What are the processes A, B, C and D?

	A	B	C	D
(1)	Melting	Boiling	Condensation	Freezing
(2)	Freezing	Boiling	Evaporation	Condensation
(3)	Freezing	Evaporation	Condensation	Melting
(4)	Melting	Evaporation	Freezing	Condensation

10. The table below shows the freezing and boiling points of four different substances, P, Q, R and S.

Substance	Freezing point (°C)	Boiling point (°C)
P	8	26
Q	93	104
R	15	65
S	46	200

Which substance will be a liquid at 40°C?

(1) P
(2) Q
(3) R
(4) S

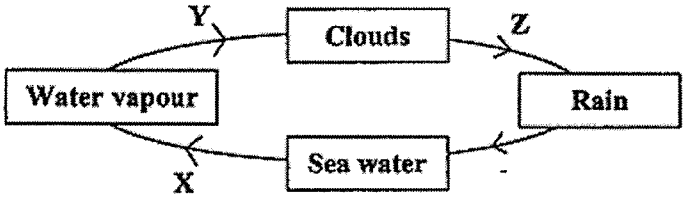
11. Enoch wants to find out if the surrounding temperature affects the rate of evaporation of water. He prepared three set-ups, A, B and C, using three beakers of water. The table below shows the variables of his experiment.

	Set-up		
	A	B	C
Temperature (°C)	X	28	34
Exposed surface area of water (cm^2)	60	Y	60
Volume of water (cm^3)	400	400	Z

What should be the values of X, Y and Z for his experiment to ensure a fair test?

	X	Y	Z
(1)	40	100	400
(2)	40	60	500
(3)	20	60	400
(4)	20	100	500

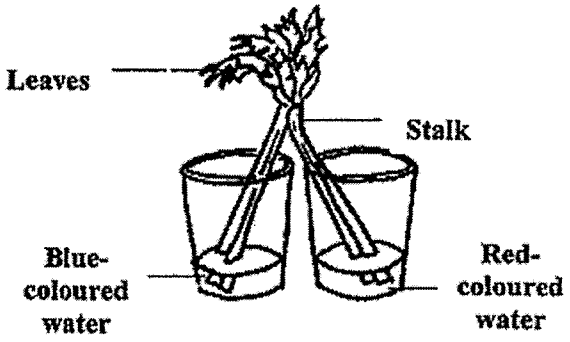
12. The diagram below shows the water cycle.



Which one of the following is correct?

	Evaporation occurs at	Condensation occurs at
(1)	X	Y
(2)	X	Z
(3)	Y	Z
(4)	Z	X

13. Tanya cut the stalk of a celery into two equal parts and placed each part in a beaker. Both beakers contain the same amount of water in 2 different colours.



After two hours, she observed that some parts of the celery stalk and leaves had turned blue or red. What could she conclude from her observations?

A: The parts that had turned blue or red contained water-carrying tubes.
B: The water-carrying tubes transported the coloured water to the leaves.
C: The food-carrying tubes transported the coloured water to the different parts of the stalk.

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

14. Faith wrote some statements about the respiratory systems of a human and a fish. Which one of the following statements is correct?

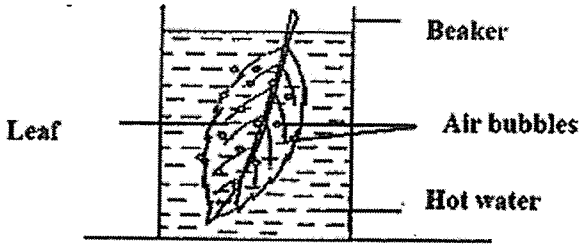
(1) Gaseous exchange takes place in the lungs of a fish.
(2) Oxygen is transported by the blood in a human and a fish.
(3) Water rich in carbon dioxide passes out through the mouth of a fish.
(4) The windpipe is part of the respiratory system in a human and a fish.

15. A group of children were trapped in a lift. After one hour, they felt uncomfortable as the composition of air in the lift changed.

Which one of the following shows correctly the changes in the composition of oxygen and water vapour after the children were trapped in the lift for one hour?

	Change in amount of oxygen after one hour	Change in amount of water vapour after one hour
(1)	Increased	Stayed the same
(2)	Stayed the same	Decreased
(3)	Increased	Decreased
(4)	Decreased	Increased

16. Wendy put a leaf in a beaker of hot water. After a while, she noticed that a lot of air bubbles appeared on the lower surface of the leaf but only a few air bubbles were found on the upper surface of the leaf.

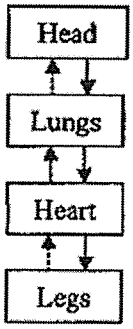


What could be a possible reason for these observations?

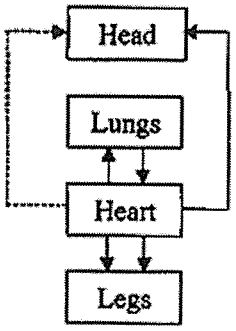
(1) More air is taken in by the tiny openings on the upper surface of the leaf.
(2) The number of tiny openings found on both lower and upper surfaces is the same.
(3) There are more tiny openings on the lower surface than the upper surface of the leaf.
(4) There are more tiny openings on the upper surface than the lower surface of the leaf.

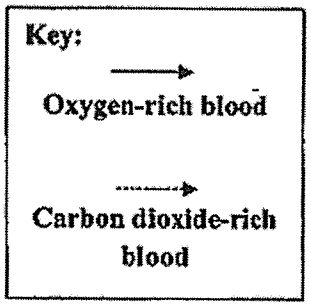
17. Which one of the following correctly represents the direction of blood flow to certain parts of the human body?

(1)

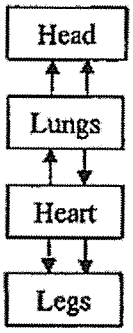


(2)

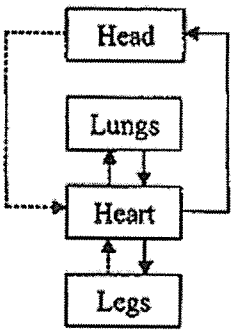




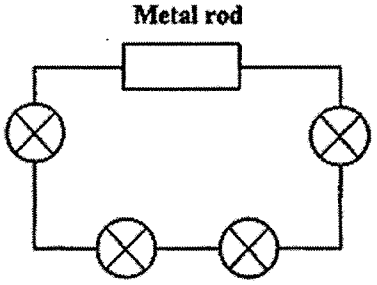
(3)



(4)



18. Jaycus set up a circuit as shown below.

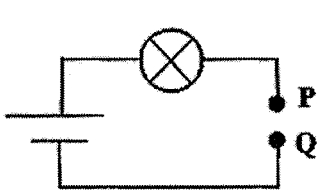


He observed that all the bulbs did not light up.

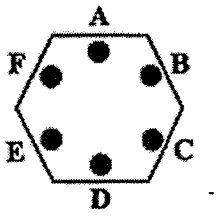
Which one of the following explains why all the bulbs in Jaycus's circuit did not light up?

(1) There is no switch in the circuit.
(2) There is no battery in the circuit.
(3) The metal rod is an electrical insulator.
(4) There are too many bulbs in the circuit.

19. The diagram below shows a circuit tester and a circuit board. A, B, C, D, E and F are connecting points of the circuit board. Only three of the points are connected by wires.



Circuit tester



Circuit board

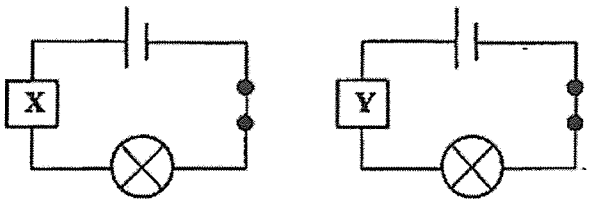
The 2 points, P and Q, of the circuit tester are connected to 2 points on the circuit board and the results are shown in the table below.

Points connected	Does the bulb light up?
A and E	No
B and D	Yes
B and F	Yes
C and E	No

Which 2 points on of the circuit board should be connected to the circuit tester in order for the bulb to light up?

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

20. Materials X and Y were connected to circuits A and B as shown in the diagrams below. The bulb in circuit A lit up but the bulb in circuit B did not light up.

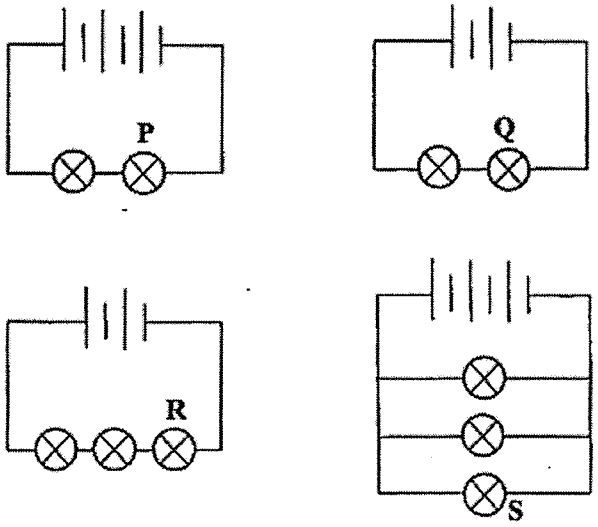


Circuit A Circuit B

What could materials X and Y be?

	Material X	Material Y
(1)	Iron	Glass
(2)	Plastic	Rubber
(3)	Rubber	Steel
(4)	Steel	Iron

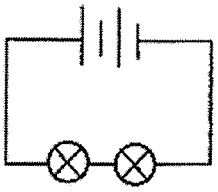
21. Fred set up 4 different circuits as shown in the diagrams below. All the bulbs in each circuit lit up.



Arrange the four bulbs, P, Q, R and S, based on their brightness, starting with the brightest.

	Brightest ⟶ Dimmest			
(1)	P,	S,	Q,	R
(2)	Q,	S,	P,	R
(3)	R,	Q,	P,	S
(4)	S,	P,	Q,	R

22. Rahman set up a circuit as shown below.

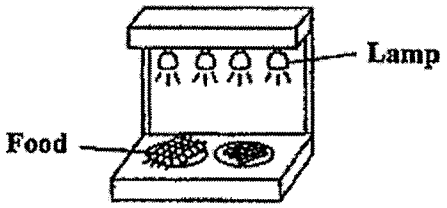


Which of the following can Rahman do to increase the brightness of the bulbs?

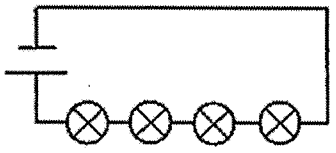
A: Remove one battery.
B: Add one more bulb in series.
C: Add one more battery in series.
D: Arrange the bulbs in parallel to each other.

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

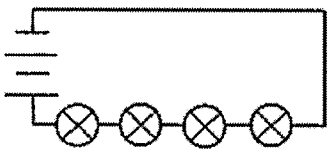
23. The diagram below shows a set-up that uses identical lamps to keep food warm. Vera wants to find out if the arrangement of lamps in a circuit affects the amount of heat given out.



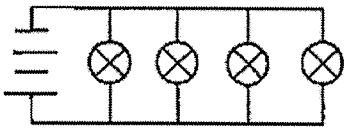
Which two set-ups should she use in her experiment?



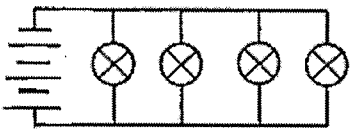
Set-up W



Set-up X



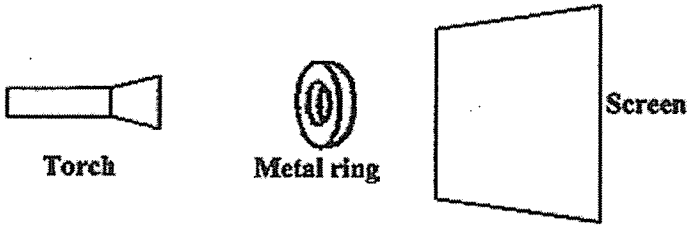
Set-up Y



Set-up Z

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

24. The diagram below shows a torch, a metal ring and a screen in a dark room.



The position of the metal ring can be changed. Which shadow cannot be formed on the screen when the torch is switched on?

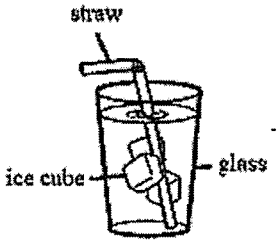
(1) 

(2) 

(3) 

(4) 

25. The diagram below shows a glass of iced water.

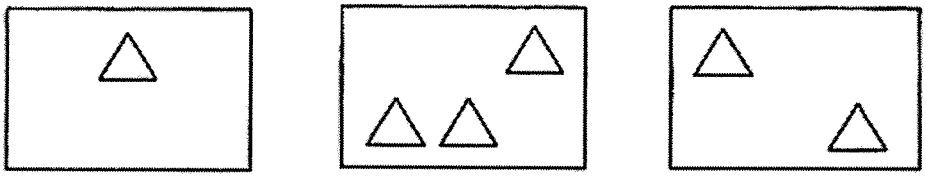


Which of the following statements is/are correct?

A: The straw loses heat to the ice cubes.
B: The ice cubes gain heat from the water.
C: The glass gains heat from the surrounding.

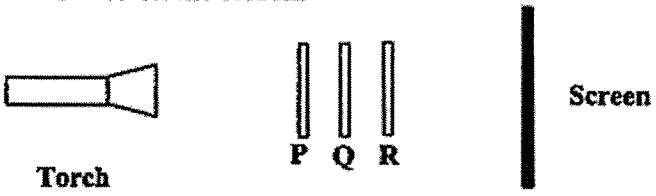
(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

26. Sanjay cut out shapes from three sheets, P, Q and R, as shown below. The sheets were of the same size but made of different materials.



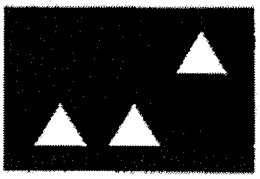
Sheet P **Sheet Q** **Sheet R**

He arranged the three sheets in a straight line and shone a torch on them to observe the shadow formed on the screen.



Torch

The shadow observed on the screen is shown below.



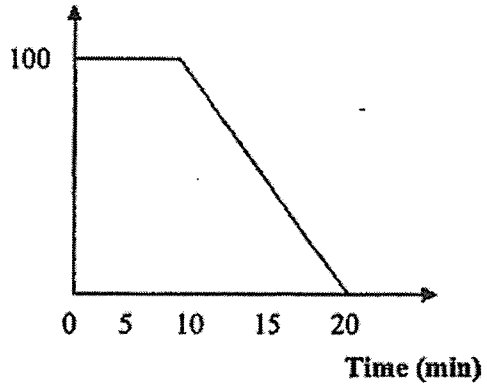
Which one of the following sets correctly identifies the material of each sheet?

	Sheet P	Sheet Q	Sheet R
(1)	Clear glass	Metal	Wood
(2)	Wood	Metal	Clear plastic
(3)	Clear plastic	Wood	Clear glass
(4)	Frosted glass	Clear glass	Clear plastic

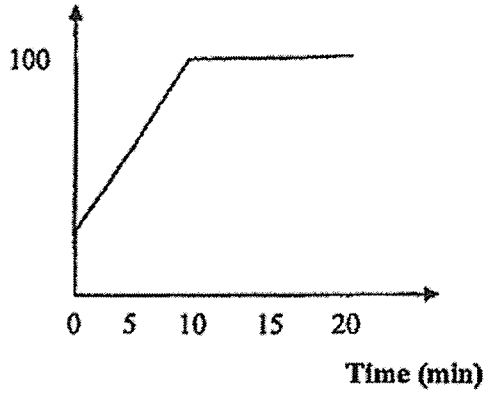
27. Sam heats up a beaker of tap water at room temperature over time.

Which one of the following graphs correctly shows how the temperature of water changes over 20 minutes?

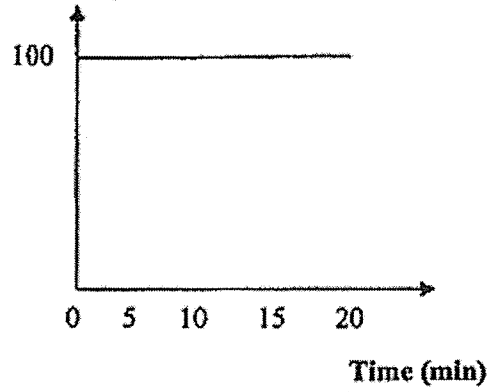
(1)



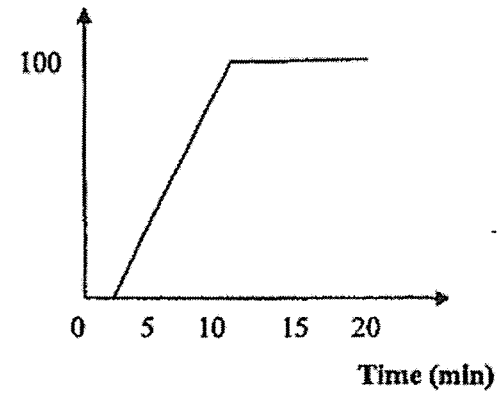
(2)



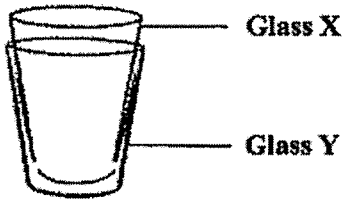
(3)



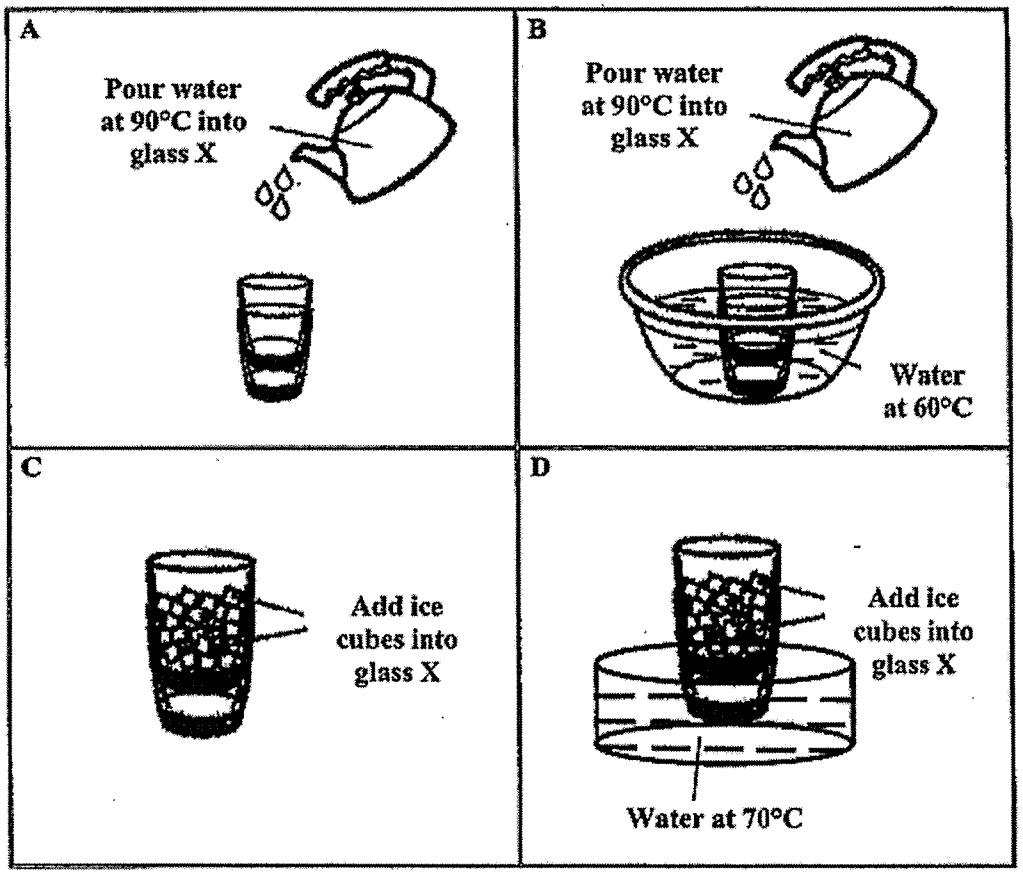
(4)



28. Justin had two thick glasses, X and Y, at room temperature, stuck together as shown in the diagram below.



Study the diagrams below carefully.



Which of the following method(s) could he use to separate the two glasses without breaking them?

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

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Name: _____ ( ) **Marks:** _____ / 44

Level: Primary 5 **Date:** 1 Nov 2022

Class: Primary 5 ( ) **Parent's**

Signature: _____

BOOKLET B

Instructions to pupils:

1. **Do not open this booklet until you are told to do so.**

2. You are required to answer **all** the questions in this paper using your own words / expressions as far as possible.

3. All drawings / diagrams must be clearly shown and labelled.

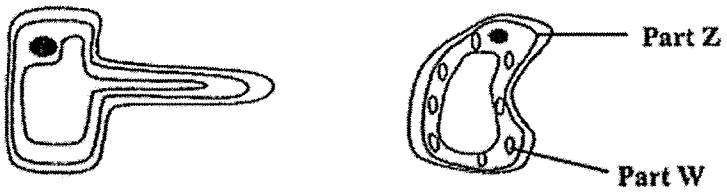
4. Marks will be deducted for wrongly spelt key words.

5. This question booklet consists of **16** printed pages, including the cover page.

Section B (44 marks)

Write your answers to questions 29 to 40 in this booklet.

29. Jeremy examines two cells, X and Y, and concludes that they are taken from the same plant.



Cell X Cell Y

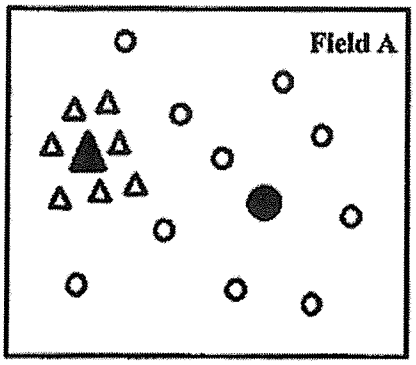
(a) Is Jeremy's conclusion that cells X and Y are taken from the same plant correct? Explain your answer based on the diagrams above. [1]

(b) Write down the name of part W. What does it contain and how does it help the plant? [2]

(c) How does part Z protect the cell Y from harmful substances outside the cell? [1]

Total Score on this page:

30. Andy studied the positions of two different types of plants, X and Y, in field A as shown below.



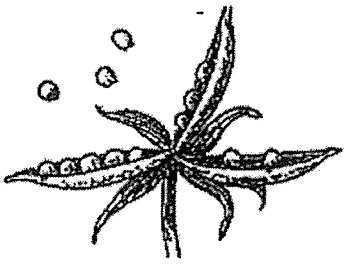
Key:

Plant	X	Y
Adult	▲	●
Young	△	○

(a)(i) Plant Y would grow more healthily than plant X. Explain why this was so based on the diagram above. [2]

The diagrams below show the fruits of plants X and Y.

Fruit P



Fruit Q

(a)(ii) Which fruit, P or Q, is the fruit of plant X? Explain your answer. [1]

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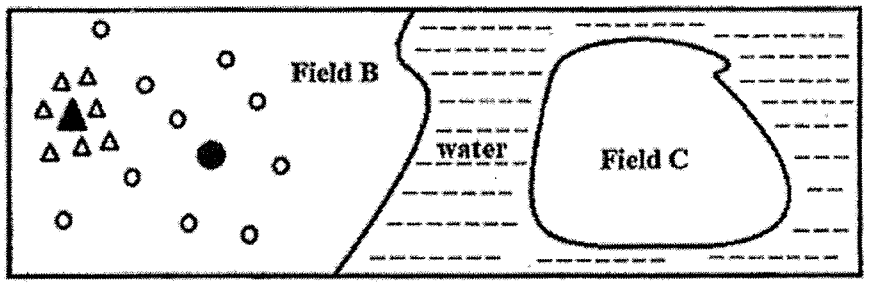
(b) There were two fields, B and C, as shown below. At the beginning, field B had plants and animals, but field C had no plants and no animals.

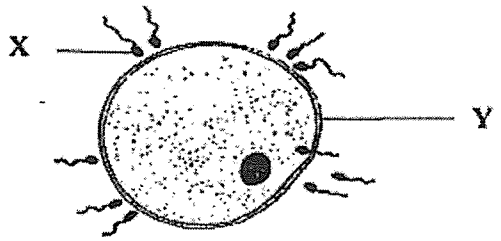


A few years later, field C started to have plants.

Describe two ways through which field C started to have plants. [2]

Total Score on this page:

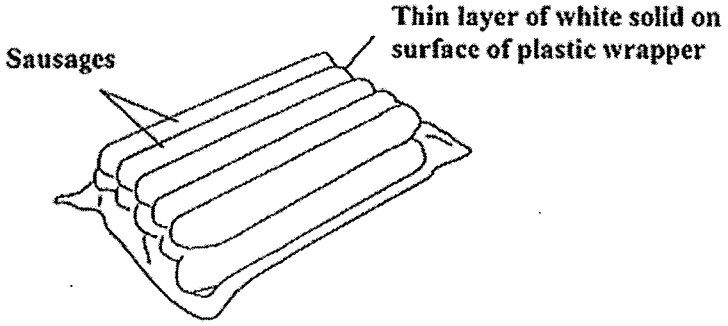
31. The diagram below shows a process that takes place in a female human body.



(a) State and describe the process shown in the diagram above. [2]

(b) Explain why there is a need to have many cell X. [1]

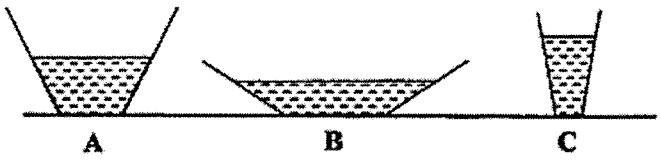
32. A packet of sausages wrapped in clear plastic was taken out from the freezer and placed on the dining table. After a while, a thin layer of white solid was formed on the surface of the plastic wrapper.



Explain how the white solid was formed. [2]

Total Score on this page:

33. Joanna filled three containers, A, B and C, with the same amount of tap water and left them in the same location.



She measured and recorded the amount of water left in each container after one day in the table below.

Container	Volume of water in the container (cm^3)	
	Start of experiment	After one day
A	60	38
B	60	20
C	60	45

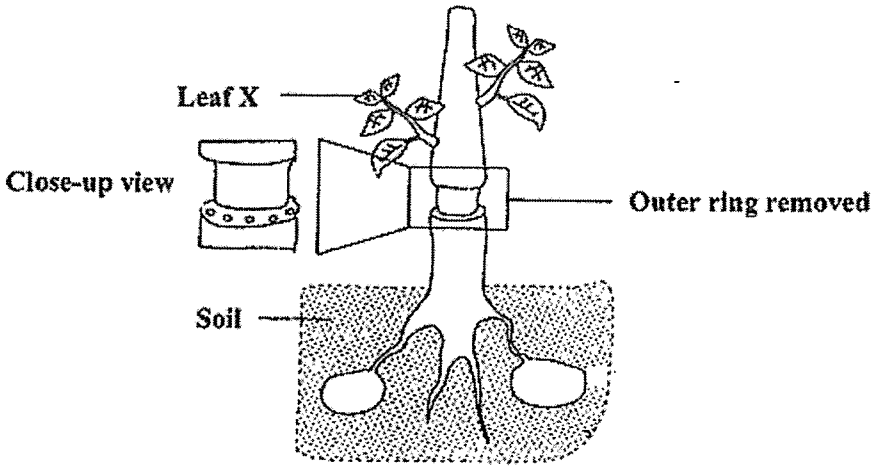
(a) Based on the results, what can be concluded about the exposed surface area of the water in the container and the rate of evaporation of the water? [1]

(b) Explain why placing all three containers at the same location would help ensure a fair test. [1]

(c) Joanna conducted another experiment and filled container A with $60cm^3$ of hot water. The amount of water left in container A after one day was less than $38cm^3$. Explain why it was so. [1]

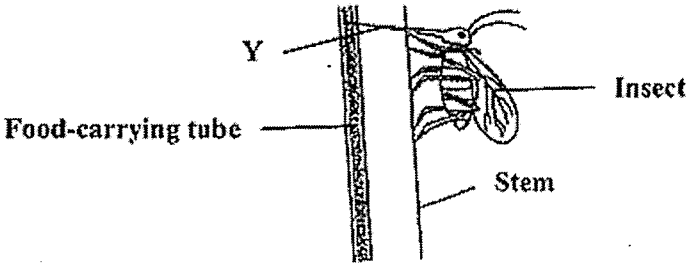
Total Score on this page:

34. The diagram below shows the stem of a plant with an outer ring removed.



(a) It was observed that leaf X continued to grow bigger after two weeks. Explain why this happened. [2]

An insect uses part Y to poke into the food-carrying tube of a stem.



(b) Explain how the roots of the plant could be affected after some time. [2]

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35. The respiratory system plays an important role in humans.

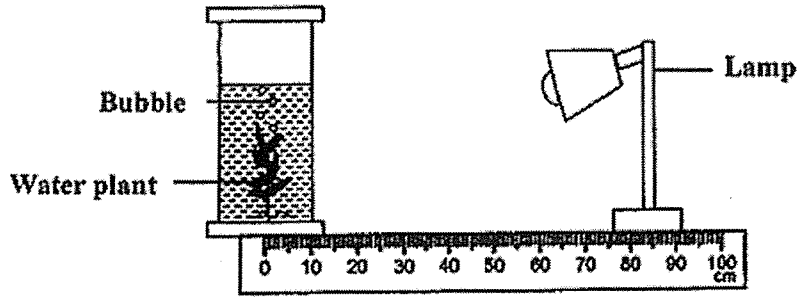
(a) Name the three main parts that make up the human respiratory system. [1]

(b) Explain why the breathing rate of a person increases when he / she is running. [1]

(c) The respiratory system works with the circulatory system to remove a gas when we breathe out. Name the gas. [1]

Total Score on this page:

36. Plants produce a gas when light is present. Michael set up an experiment, as shown below, to find out if the amount of light affects the amount of gas produced.



He placed a lamp at various distances and recorded the number of bubbles produced in one minute by the water plant. The results are shown in the table below.

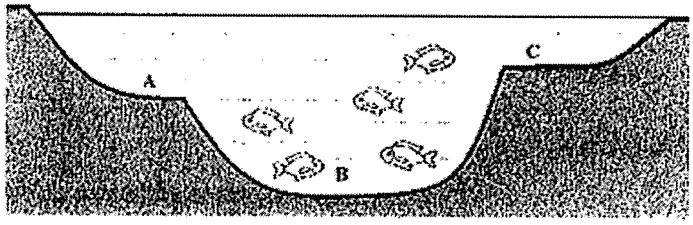
Distance between the lamp and the water plant (cm)	20	40	60	80
Number of bubbles produced in one minute	25	17	8	3

(a) Based on Michael's results, what is the relationship between the number of bubbles produced and the distance between the lamp and the water plant? [1]

(b) Michael conducted the experiment in a dark room. Give a reason why this would have made the results more accurate. [1]

Total Score on this page:

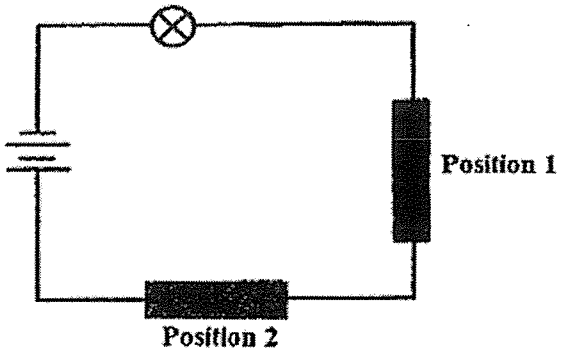
(c) Michael found out later that the gas produced by the plant is oxygen when light is present. That gave him an idea of planting water plants in his pond as shown below.



Based on the results of the experiment, Michael decided that he should avoid planting his water plants in the pond at B. Explain Michael's decision so that more fish would survive. [1]

Total Score on this page:

37. Stephen wanted to find out if bars P, Q, R, S and T are electrical conductors. He set up the circuit as shown below.



He placed the bars at positions 1 and 2 and recorded his observations in the table below.

Position 1	Position 2	Did the bulb light up?
P	Q	Yes
R	S	No
P	R	Yes
Q	T	No

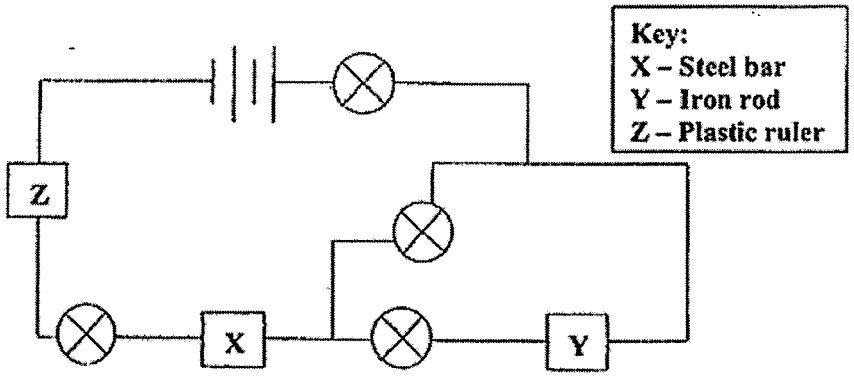
(a) Define an electrical conductor. [1]

(b) Complete the table below with P, Q, R, S and T in the correct column. [2]

Electrical conductor(s)	Electrical insulator(s)

Total Score on this page:

(c) Stephen set up another circuit A and connected objects X, Y and Z to the circuit as shown below. All the bulbs and batteries were in working condition.

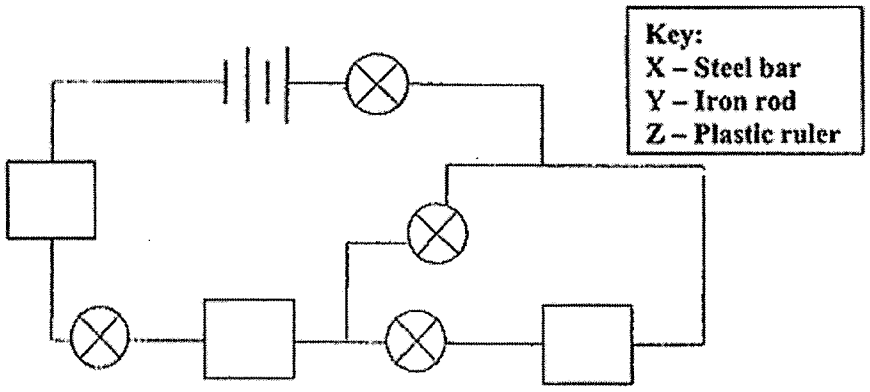


Circuit A

(i) He observed that none of the bulbs in circuit A lit up. Explain why this was so. [1]

(ii) At which positions in the circuit below should Stephen place objects X, Y and Z so that the most number of bulbs would be lit up?

Write X, Y or Z in each of the boxes provided below. Use each letter once only. [1]



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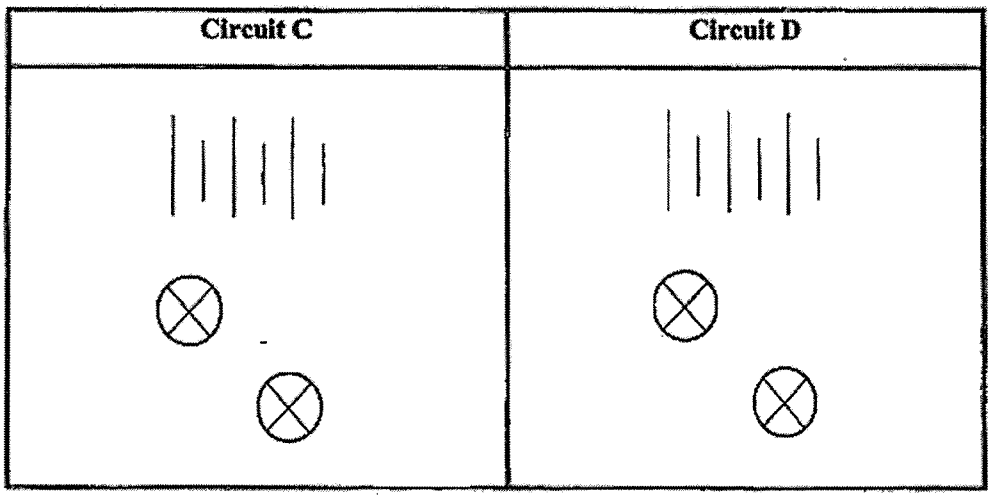
38. Noah conducted an experiment using 2 identical bulbs and 3 batteries. He set up two different circuits, C and D, and arranged the bulbs either in series or parallel. He recorded his results in the table below.

Number of bulbs in circuit	Brightness of each bulb in circuit C (units)	Brightness of each bulb in circuit D (units)
2	3	6

Next, he conducted another experiment using 3 identical bulbs and 3 batteries. Using the same bulb arrangement in the first experiment, he recorded his results in the table below.

Number of bulbs in circuit	Brightness of each bulb in circuit C (units)	Brightness of each bulb in circuit D (units)
3	2	6

(a) Using 2 bulbs and 3 batteries for each circuit, complete the circuit diagram in each of the boxes below to show how the bulbs in circuits C and D are arranged in the first experiment. [2]

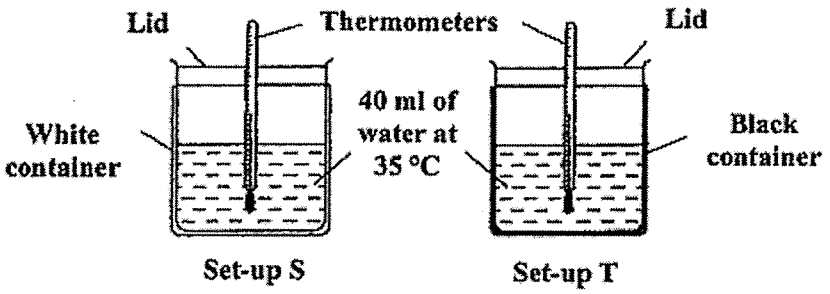


(b) A bulb is removed from circuit C in the diagram above. What would happen to the brightness of the other bulb when the wires are connected again? [1]

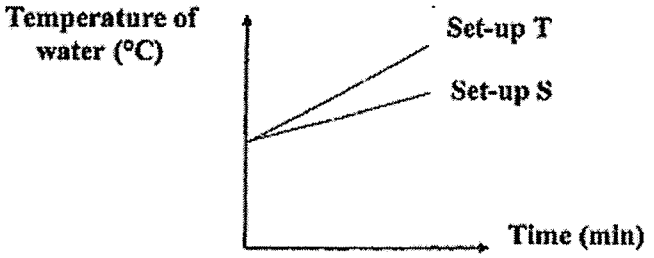
(c) State an advantage of circuit D as compared to circuit C. [1]

Total Score on this page:

39. Insyirah wanted to find out whether the different colours of 2 containers will affect the rate at which water in the containers gains heat. She prepared two set-ups, S and T, as shown below, using 2 containers of different colours and placed them outside under the Sun for two hours.



The results are shown in the graph below.



(a) Based on the graphs above, what could Insyirah conclude about her experiment? [1]

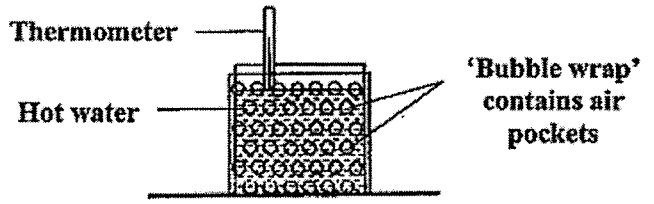
(b) Insyirah observed more tiny water droplets forming on the underside of the lid of the black container than the white one after some time.

Based on the graphs above, explain your answer. [2]

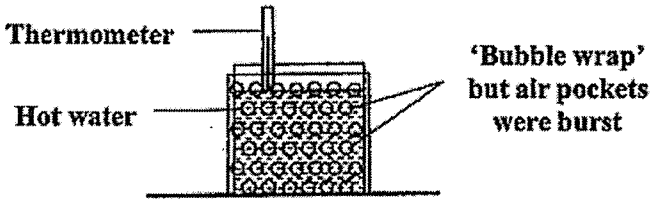
Total Score on this page:

40. Gopal conducted an experiment to investigate how 'bubble wrap' affects the temperature of water. He used two identical containers as shown below.

Container A was covered with "bubble wrap" that contains air pockets while container B was covered with "bubble wrap" but the air pockets were burst and the wrap did not have air in the pockets. Both containers were filled with hot water.



Container A



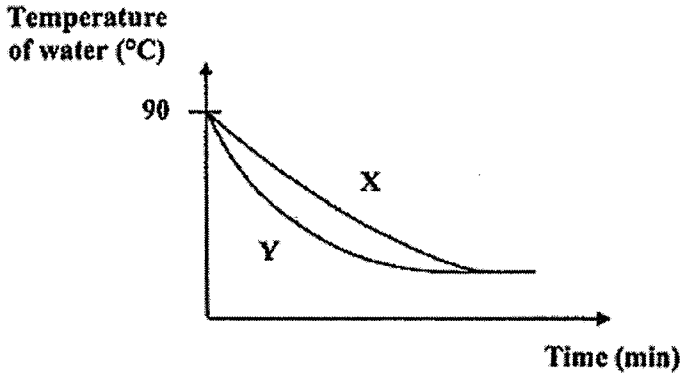
Container B

(a) What are the variables that must remain the same for a fair test? [1]

Variables	Tick (✓) the variables to remain the same
Amount of water	
Temperature of water	
Size of containers	

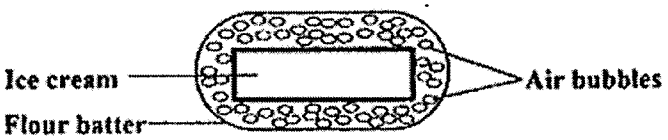
Total Score on this page:

(b) Gopal recorded the temperature of water in containers A and B over time in the graph shown below.



Based on the graph above, explain why line Y represents the change of temperature of water in container B. [2]

(c) A restaurant prepares fried ice cream to sell as desserts as shown below. A slab of ice cream is covered with flour batter that is whipped to create air bubbles. The ice cream is then fried in hot oil where the batter is cooked.



Explain why the ice cream does not melt easily while it is being fried in hot oil. [2]

END OF PAPER

Total Score on this page:

SCHOOL : RULANG PRIMARY SCHOOL
LEVEL : PRIMARY 5
SUBJECT : SCIENCE
TERM : 2022 SA2

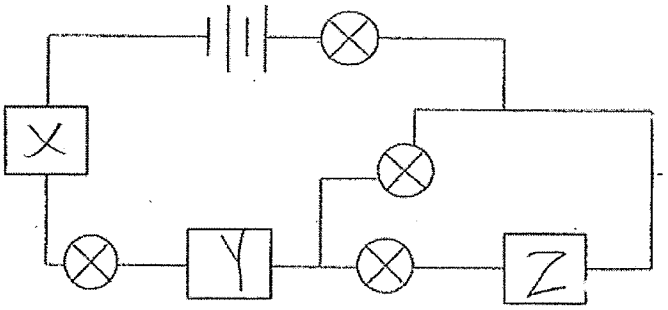
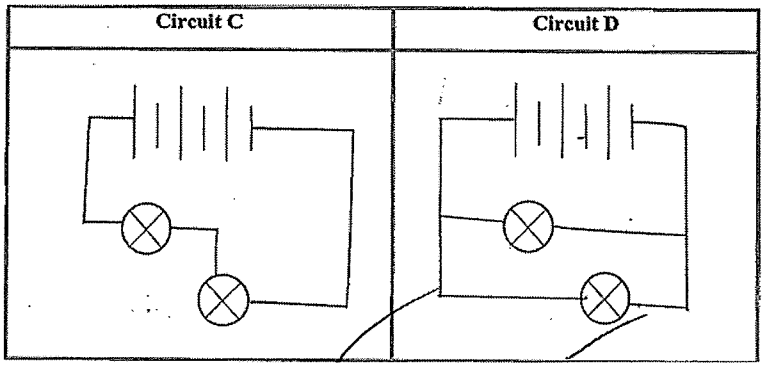
SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	4	2	3	1	2	4	1	1	3
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
3	1	3	2	4	3	4	2	4	1
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
4	2	3	1	4	3	2	4		

SECTION B

Q29)	a) Yes, Jeremy's conclusion is correct. Both cell are plant cell and cell X is a root cell while cell Y is a leaf cell. b) Chloroplast. Chloroplast contain chlorophyll which helps to trap sunlight and make food for the plant. c) Part Z controls the movement in and out of the cell which prevent harmful substances from entering the cell.
Q30)	a) i) Plant Y's young are scattered further away, while plant X's young are scattered altogether causing them to fight for water and sunlight. ii) Fruit Q. Fruit Q's dispersing method is by splitting and plant X's young are near, thus it is fruit Q. b) Plants that disperse by water's seeding must have ended up there and plant Y's young must have grown up and the wind dispersed its seeds there.

Q31)	a) Fertilisation. Fertilisation happens when a sperm fuses with the egg making a fetus. b) During the process a lot of cell X would die to increase the chances of fertilising the egg there are many cell X.
Q32)	The warmer water vapour from the surrounding corners into contact with the cooler surface of the plastic and condenses. The water droplets froze.
Q33)	a) The bigger the exposed surface area is the rate of evaporation will be faster. b) If the temperature increases the rate of evaporation will increase to, to prevent that the three container were placed at the same place. c) The rate of evaporation increases when the temperature of water increases as water's boiling point is 100°c.
Q34)	a) As the water-carrying tubes are present water is transported to leaf X to make food. b) The roots would not be able to receive the food, so the roots would die.
Q35)	a) Nose, lungs and windpipe. b) A person requires more oxygen when running as more systems are working together. c) Carbon-dioxide
Q36)	a) The number of bubbles produced decreased as the distance increase. b) There would not be an external source of light which would affect the results of the test. c) The least amount of light would reach Part B. The plants would produce the least amount of oxygen and the fish might die.
Q37)	a) An electrical conductor allows electrical currents to flow through. b) P , Q , R | S , T c) i) Z which was an electrical insulator was not letting the electrical current flow through, thus no bulbs lights up.

	ii) 
Q38)	a)  b) The brightness of the other bulb would increase. c) I one bulb fuses the other bulb would still be able to work.
Q39)	a) The black container gains heat faster than the white container. b) The water evaporated into water vapour faster. Thus, more water vapour condensed into water droplets.
Q40)	a) √ √ √ b) Graph Y shows that the temperature of water decrease faster than graph X. The bubbles wrap did not have air pockets and heat was lost faster. c) The air in the bubbles is poor conductor of heat. Thus, the heat from the oil is lost slowly to the ice cream.