MARIS STELLA HIGH SCHOOL (PRIMARY)

SA2 EXAMINATION

SCIENCE

3 NOVEMBER 2020

BOOKLET A

NAME: _____.( )

CLASS: Primary 5 ( )

28 questions

56 marks

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

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

FOLLOW ALL INSTRUCTIONS CAREFULLY.

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 (OAS).

(56 marks)

---

1 Which of the following is a non-flowering plant?

(1) fern
(2) yeast
(3) mould
(4) mushroom

2 The table below compares the life cycle of a cockroach and a butterfly.

	Characteristics	Cockroach	Butterfly
A	It has an egg stage in its life cycle.	x	✓
B	It has four stages in its life cycle.	x	✓
C	Its young resemble its adult.	✓	x

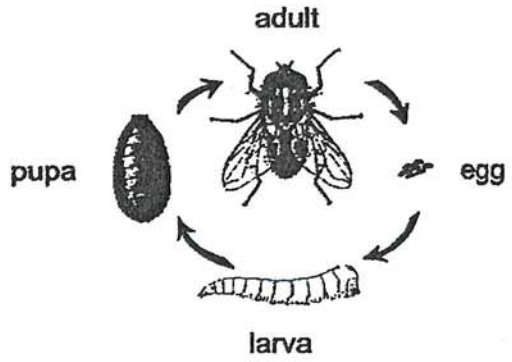
Key
✓: yes
x: no

Which of the following comparison(s) is/are correct?

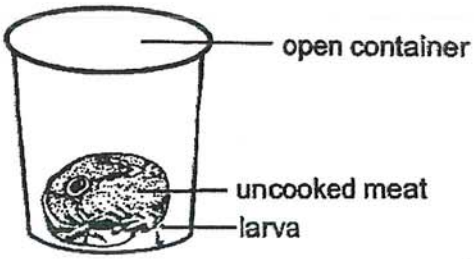
(1) B only
(2) A and C only
(3) B and C only
(4) A, B and C

(Go on to the next page)

3 The life cycle of a housefly is shown below. The adult housefly lays its eggs on food so that its young will have access to an immediate source of food after the eggs hatch.

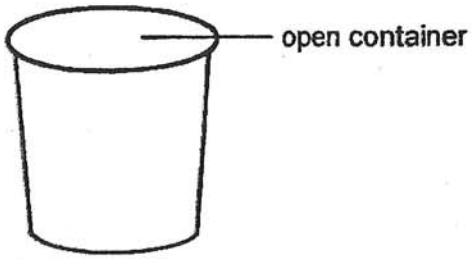


Joshua placed a piece of uncooked meat in an open container in a shady part of a garden. After a week, housefly larvae were observed on the uncooked meat as shown below.

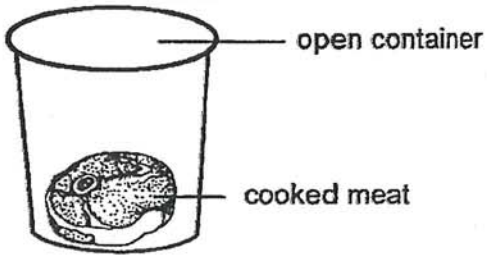


Which of the following set-ups should Joshua use to compare with the set-up above to prove that the larvae were not from the meat but from houseflies found in the garden?

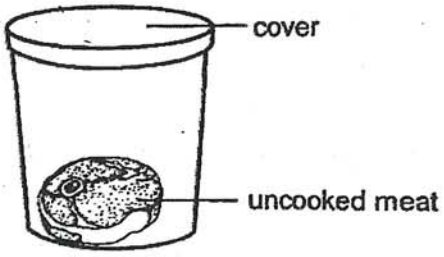
(1)



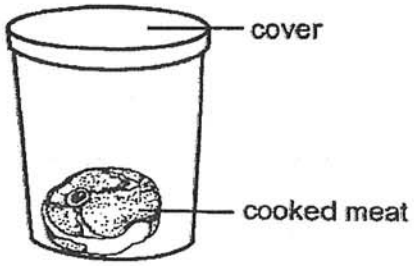
(2)



(3)



(4)



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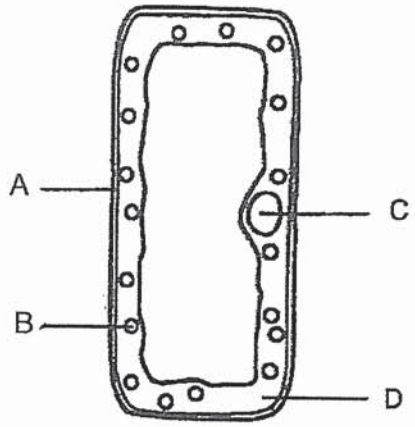
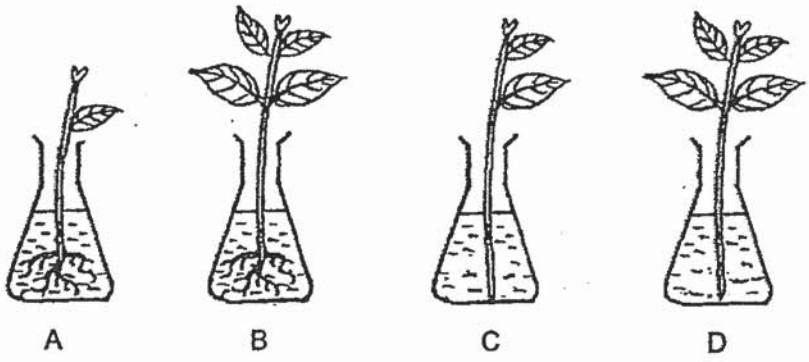
4 The diagram below shows a plant cell.



Which of the following cell parts is/are not found in an animal cell?

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

5 Anna wanted to find out if the presence of roots will affect the amount of water taken in by a plant.

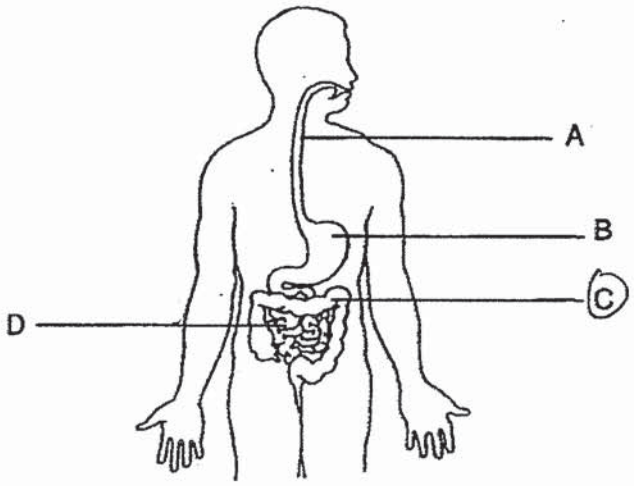


Which two set-ups should Anna choose to conduct her experiment?

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

(Go on to the next page)

6 The diagram below shows the human digestive system.



Which part of the digestive system absorbs water from undigested food?

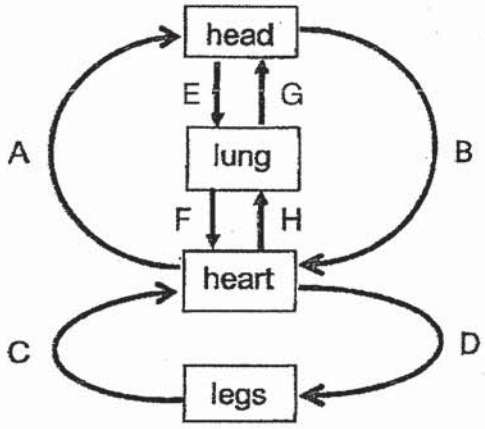
(1) A

(2) B

(3) C

(4) D

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



Which two arrows were **not** drawn correctly?

(1) A and C

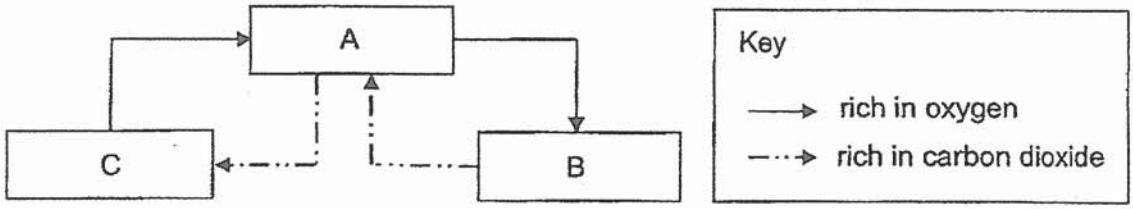
(2) B and D

(3) E and G

(4) F and H

(Go on to the next page)

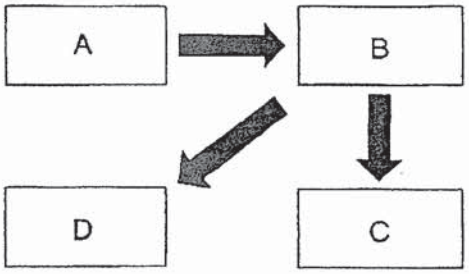
8 The diagram below shows the direction of blood flow in some parts of the human body.



What do A, B and C represent?

	A	B	C
(1)	lungs	heart	other parts of the body
(2)	lungs	other parts of the body	heart
(3)	heart	other parts of the body	lungs
(4)	heart	lungs	other parts of the body

9 The diagram below shows the transport of food in plants.

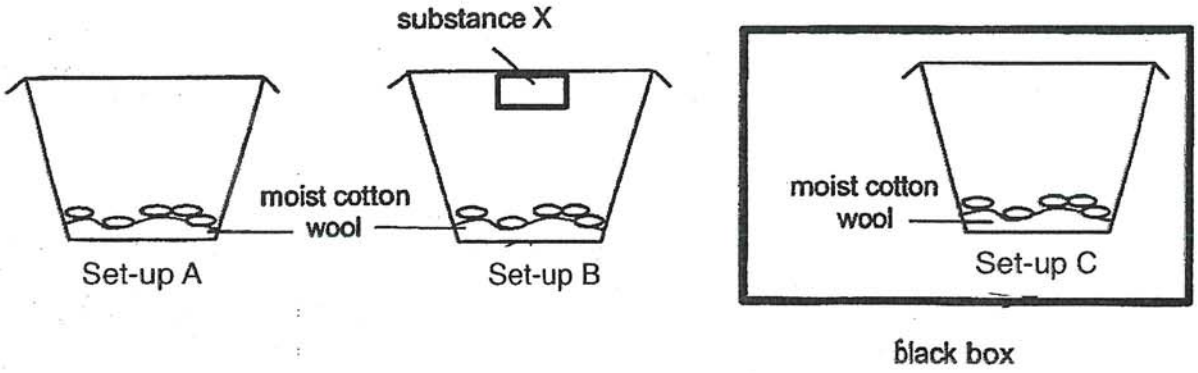


Which of the following correctly represents A, B, C and D?

	A	B	C	D
(1)	leaf	stem	root	fruit
(2)	leaf	fruit	root	stem
(3)	root	stem	leaf	fruit
(4)	fruit	stem	leaf	root

(Go on to the next page)

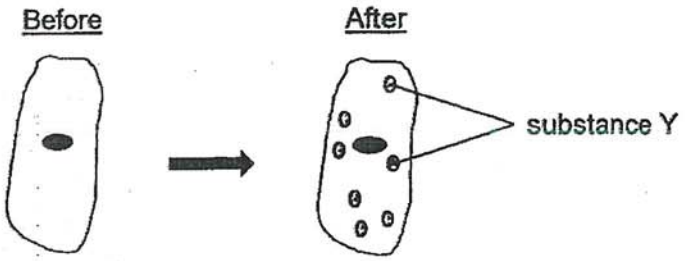
10 Siti placed five identical seeds in three clear plastic containers as shown below in the garden. Substance X absorbs carbon dioxide.



In which of the following set-ups will the seeds germinate?

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

11 The diagrams below show the observations of an animal cell before and after placing it in a liquid containing substance Y.

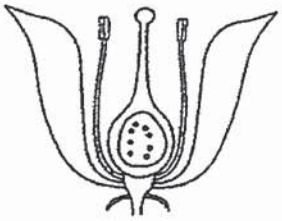


Which cell part allowed for the movement of substance Y into the cell?

(1) nucleus
(2) cell wall
(3) cytoplasm
(4) cell membrane

(Go on to the next page)

12 Below is a diagram of a flower from Plant P.



W, X, Y and Z are flowers from the plant P. However, some of their parts have been removed as shown below.

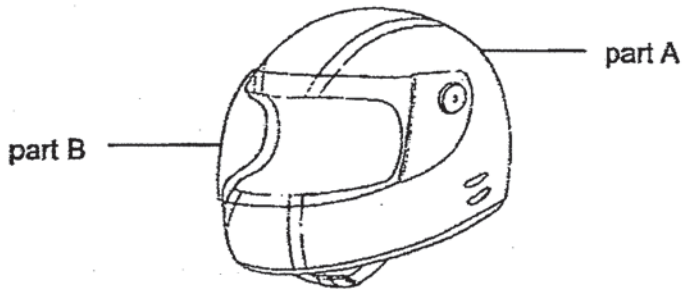
W X Y Z

Which flowers can develop into fruits?

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

(Go on to the next page)

13 A helmet is used to protect the head of a motorcyclist in an event of an accident.



The table below shows the properties of materials W, X, Y and Z.

Material	Property			
	flexible	waterproof	strong	allows light to pass through
W	X	✓	✓	✓
X	✓	✓	X	X
Y	✓	X	X	✓
Z	X	✓	✓	X

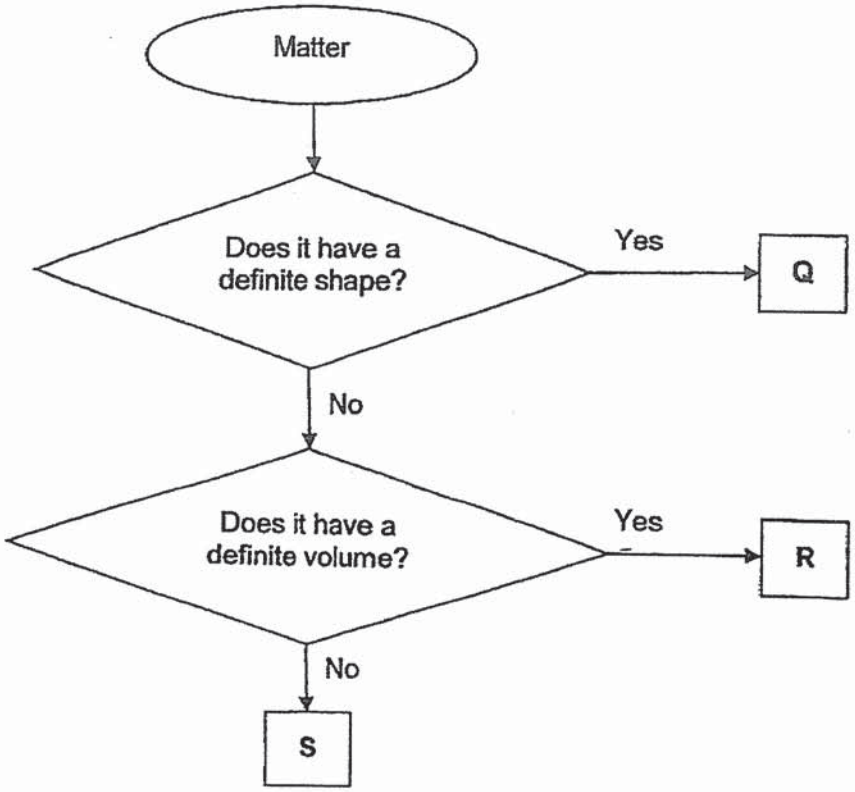
key
✓: yes
X : no

Which of the following shows the most suitable materials for making parts A and B of the helmet?

	Part A	Part B
(1)	W	Z
(2)	Z	W
(3)	Y	X
(4)	X	Y

(Go on to the next page)

14 Study the flow chart below.

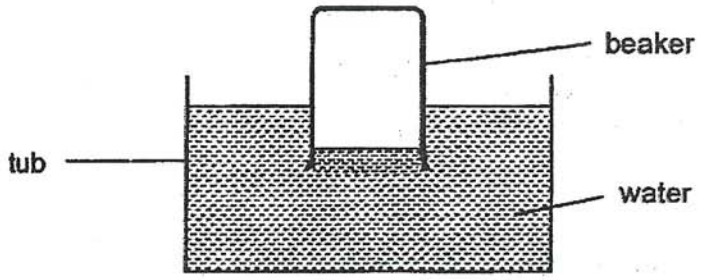


Which of the following could Q, R and S be?

	Q	R	S
(1)	oxygen	orange juice	ice cube
(2)	ice cube	orange juice	oxygen
(3)	ice cube	oxygen	orange juice
(4)	orange juice	ice cube	oxygen

(Go on to the next page)

15 The diagram below shows an empty beaker being inverted and pushed gently into a tub of water.



Which of the following best explains why the water level in the beaker is lower than the water level in the tub?

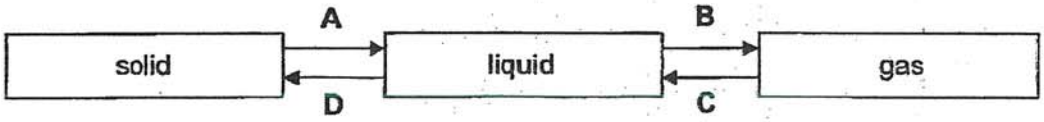
(1) The air in the beaker has mass.

(2) The air in the beaker occupies space and cannot escape.

(3) The air in the beaker is compressed by the water in the beaker.

(4) The air in the beaker occupies space previously occupied by water in the beaker.

16 In the diagram below, A, B, C and D represent the different processes that result in the change of states of water.



Which of the following processes correctly represents A, B, C and D?

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

(Go on to the next page)

17 Which of the following statements about condensation and evaporation are correct?

A Both processes involve a change in state.

B Both processes do not occur at fixed temperature.

C One process involves heat gain while the other involves heat loss.

(1) A and B only

(2) A and C only

(3) B and C only

(4) A, B and C

18 Study the table below.

Substance	State of substance at		
	10°C	50°C	90°C
A	solid	solid	solid
B	solid	liquid	liquid
C	solid	solid	liquid
D	gas	gas	gas

Which of the following statements is definitely correct?

(1) Substance C's boiling point is 85°C.

(2) Substance B's freezing point is 5°C.

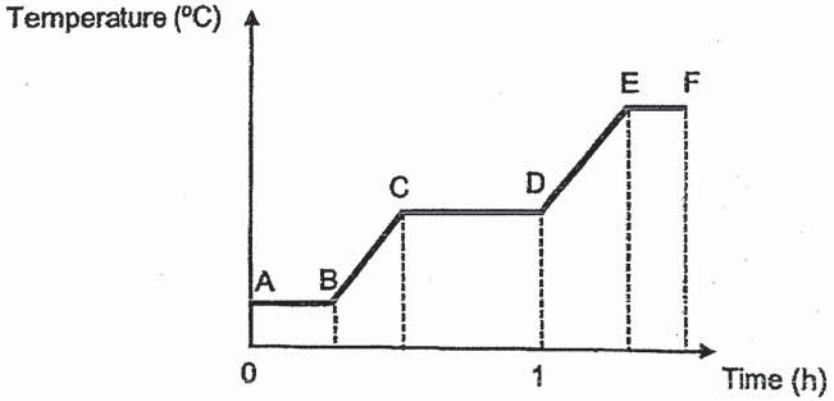
(3) Substance D has the lowest boiling point.

(4) Substance A has the lowest freezing point.

(Go on to the next page)

19 When taken out of the fridge, substance X was in solid state. It was then left on the table for an hour. After one hour, substance X was heated till it boiled.

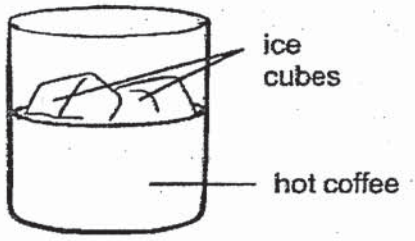
The graph below shows the temperature of substance X recorded from the time it was taken out of the fridge till it boiled.



Which of the following about substance X is correct?

(1) Substance X lost heat from A to B.
(2) Substance X was boiling from C to D.
(3) Substance X was melting from A to B.
(4) Substance X did not gain heat from E to F.

20 The picture below shows ice cubes in a cup of hot coffee.

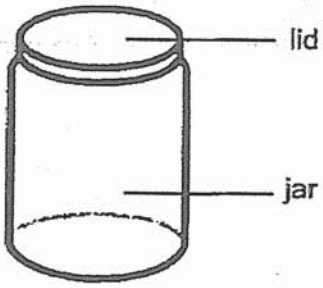


Which of the following statements best describes the heat change involved?

(1) The ice cubes lost heat to the surroundings.
(2) The ice cubes gains heat from the hot coffee.
(3) The hot coffee gains coldness from the ice cubes.
(4) The hot coffee gains heat from the surrounding air.

(Go on to the next page)

21 Bala could not open a jar because the lid was too tight.



Which of the following shows the correct action and explanation that would help Bala open the jar?

	Action	Explanation
(1)	Heat the lid over a flame.	The heat will cause the lid to contract and loosen.
(2)	Wrap the lid with a piece of warm cloth.	The heat will cause the lid to expand and loosen.
(3)	Heat the bottom of the jar.	The heat will cause the lid to contract and loosen.
(4)	Submerge the jar and lid into hot water.	The heat will cause both the jar and the lid to expand and loosen.

(Go on to the next page)

22 Simon had three rods, W, X and Y. He placed one end of each rod, one at a time, to the north-seeking pole of a magnet. He then recorded his observations in the table below.

Rod	Observations
W	moved towards magnet
X	moved away from magnet
Y	remained where it was

Based on Simon's observations, which of the following can he conclude?

A W is a magnet.
B X is a magnet.
C Y is not made of metal.

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

23 Ken conducted an experiment to compare the magnetic strength of magnets A, B, C and D.

He recorded the number of paper clips each magnet attracted when placed 3 cm away from a pile of paper clips in the table below.

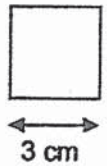
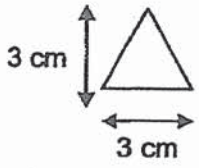
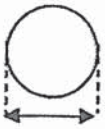
Magnet	Distance between the magnet and the paper clips (cm)	Number of paper clips attracted
A	3	2
B	3	5
C	3	3
D	3	0

Which of the following correctly shows the magnetic strength of the magnets, starting from the magnet with the strongest magnetic strength to the weakest magnetic strength?

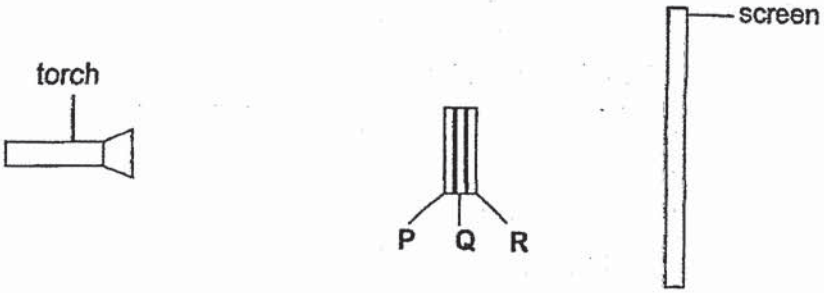
(1) B, A, C, D
(2) C, D, B, A
(3) B, C, A, D
(4) D, A, C, B

(Go on to the next page)

24 The diagram below shows the size and property of objects P, Q and R. The three objects have the same thickness.

P	Q	R
		
allows some light to pass through	does not allow light to pass though	allows most light to pass through

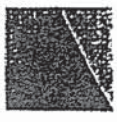
The three objects were positioned as shown below.



Which one of the following shadows will be cast on the screen when the torch is switched on?

(1) 

(2) 

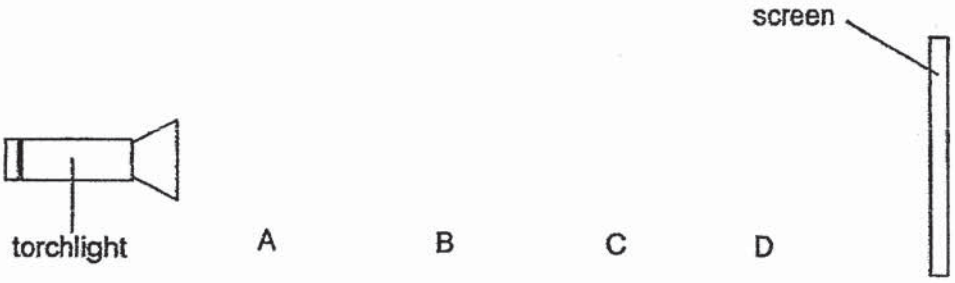
(3) 

(4) 

(Go on to the next page)

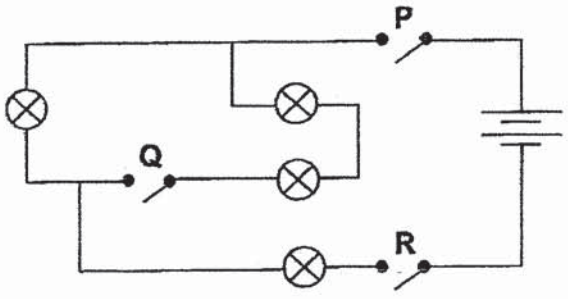
25 A wooden cylinder is shown below.

At which position should Samuel place the wooden cylinder to cast the biggest shadow of the cylinder on the screen?



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

26 Study the circuit diagram below.



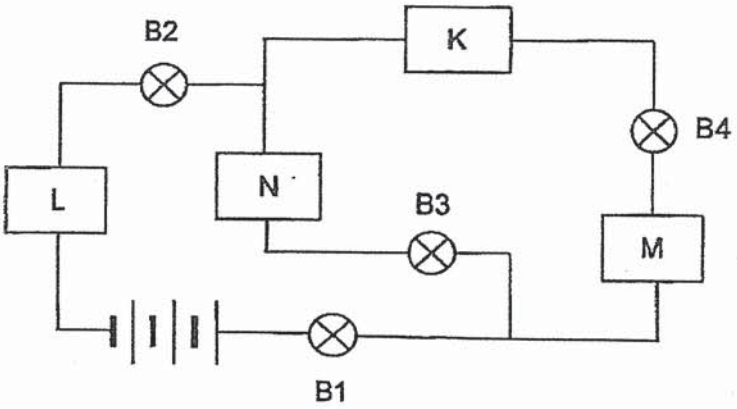
Which switches must be closed so that **only** two bulbs will be lighted up?

(1) Q and P
(2) Q and R
(3) P and R
(4) P, Q and R

(Go on to the next page)

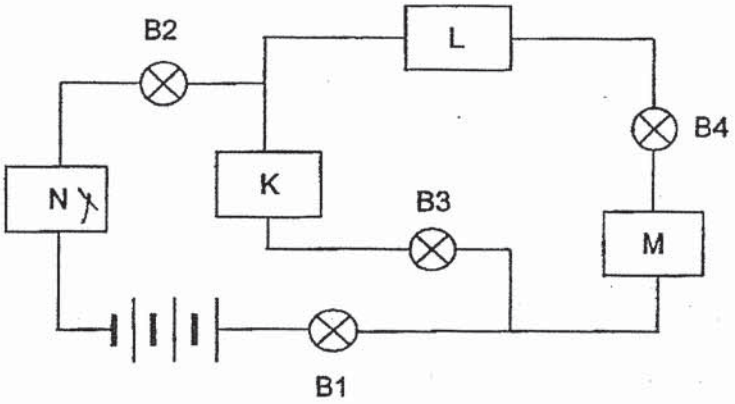
27 Zhi Wei connected four different objects, K, L, M and N, to an electrical circuit as shown in the diagram below. He observed that only bulbs B1, B2 and B4 lit up.

Arrangement 1



He then rearranged the positions of the objects as shown below.

Arrangement 2

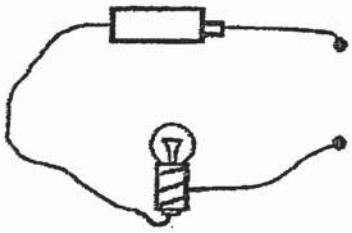


Which of the following shows the correct number of bulbs that light up in Arrangement 2?

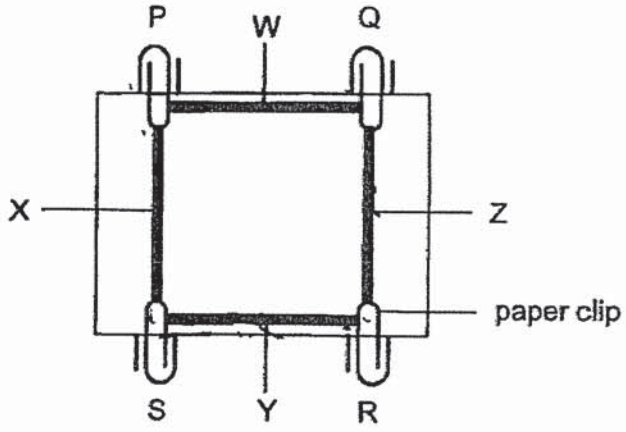
(1) 0
(2) 2
(3) 3
(4) 4

(Go on to the next page)

28 Benjamin set up a circuit card and a circuit tester as shown below. Paper clips P, Q, R and S are connected by four different strips of material, W, X, Y and Z.



circuit tester



circuit card

He connected the circuit tester to the various paper clips and recorded the results in the table below.

Paper clips connected to circuit tester				Did the bulb light up?
P	Q	R	S	
	✓		✓	Yes
✓		✓		No
	✓	✓		No

Based on the results above, which one of the following correctly matches W, X, Y and Z to their electrical properties?

	Conductor of electricity	Non-conductor of electricity
(1)	X	W, Y, Z
(2)	W, X	Y, Z
(3)	W, Z	X, Y
(4)	Y, Z	W, X

END OF BOOKLET A

Go on to Booklet B

MARIS STELLA HIGH SCHOOL (PRIMARY)

SA2 EXAMINATION

SCIENCE

3 NOVEMBER 2020

BOOKLET B

NAME: _____ ( )

CLASS: Primary 5 ( )

13 questions

44 marks

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

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

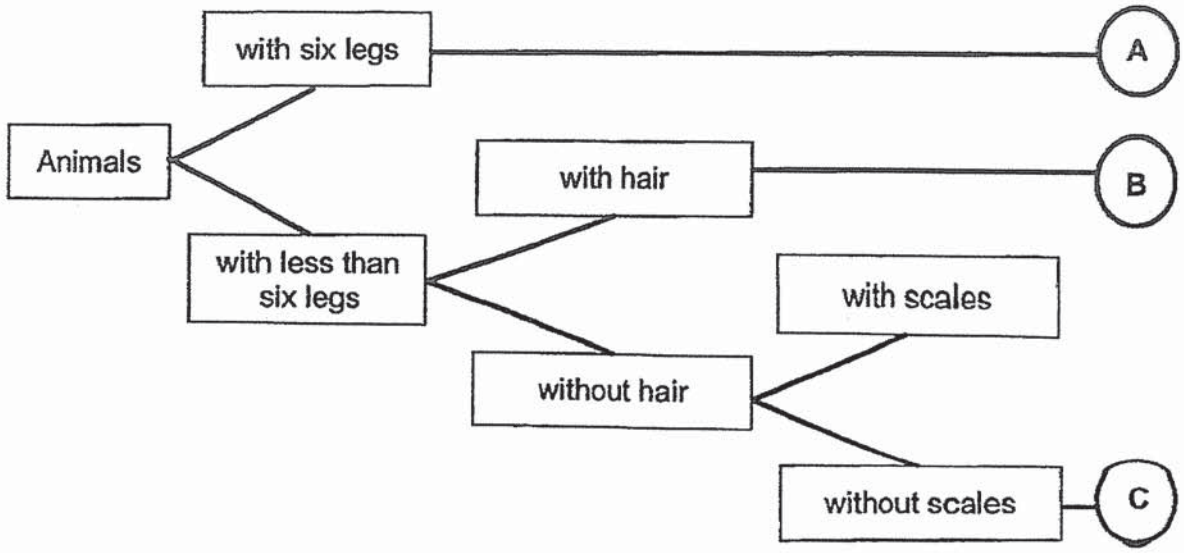
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet A:	**/ 56**
Booklet B:	**/ 44**
Grand Total:	**/ 100**

Parent's Signature: _____

For questions 29 to 41, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part question. (44 marks)

29 Study the chart below.



(a) Other than the characteristic mentioned in the chart above, state another characteristic that animal A will definitely have. [1]

(b) Which animal groups do animals B and C belong to? [2]

B : _____

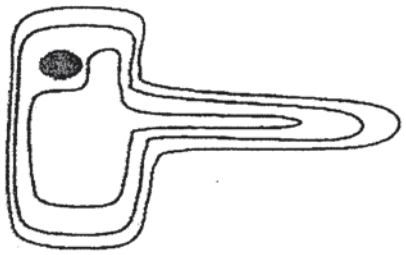
C : _____

(c) Compare the method of reproduction of animals A and B. [1]

4

(Go on to the next page)

30 Cells Q and R are taken from the same organism.



Cell Q

Cell R

(a) Based on the observation of the cells, name all the cell parts that are present in both cells Q and R. [1]

_____

(b) Based on the cell parts observed, state a difference in the function of cells Q and R. [1]

_____

_____

(c) Are cells Q and R taken from an animal or a plant? Explain your answer. [1]

_____

_____

	3

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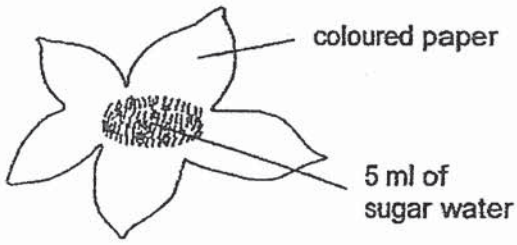
31 Amy wanted to find out the colour of flowers which most bees prefer. She made flower models using different coloured paper. She then put 5 ml of the sugar water in the centre of each flower. These model flowers were left in the open field.



Amy counted the number of bees that visited the flower models over 3 hours. The results are recorded in the table below.

Colour of flower	Number of bees visiting the flower		
	1st hour	2nd hour	3rd hour
Black	1	3	2
Yellow	15	11	7
Green	2	2	3

(a) What is the purpose of placing sugar water on the flower models? [1]

_____

_____

(b) Based on the results, why is it more advantageous for plants to have yellow flowers over black and green flowers? [1]

_____

_____

(c) Amy wanted to find out how the size of the flowers affects the number of bees visiting it. How should Amy make her flower models for a fair experiment? [2]

_____

_____

	4

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32 The picture below shows a seed.

0.5 cm
mass = 0.03 g

(a) State two characteristics of the seed that help in its dispersal. [1]

(b) Explain how the characteristic named in (a) helps the seed in dispersal. [1]

(c) What is the advantage of having seeds dispersed far away from their parent plants? [1]

3

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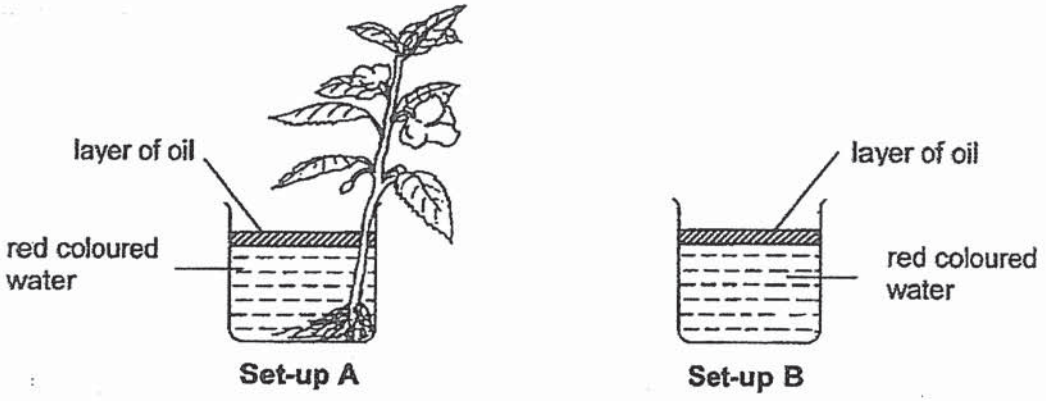
33 Ashley conducted an experiment using similar beakers in the set-ups as shown in the diagram below.



She recorded the amount of water in the beakers at the start of the experiment and after one day.

	Set-up A	Set-up B
Amount of water at the start of the experiment	250 ml	250 ml
Amount of water after one day	200 ml	_____ ml

(a) Fill in the likely amount of water in set-up B after one day in the table above. [1]

(b) Explain your answer for **(a)**. [1]

_____

_____

(c) Explain the decrease in the amount of water in set-up A after one day. [1]

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_____

	3

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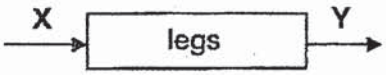
34 The diagram below shows the direction of blood flow in blood vessels, X and Y, in Jane's legs.



(a) State the difference between the amount of oxygen at X and Y. [1]

The graph below shows the volume of blood supplied per minute to Jane's legs during two activities, walking and running.

(b) Describe how oxygen in the surroundings reaches Jane's legs. [2]

(c) Based on the graph above, explain how running affects the amount of oxygen supplied to the legs. [2]

5

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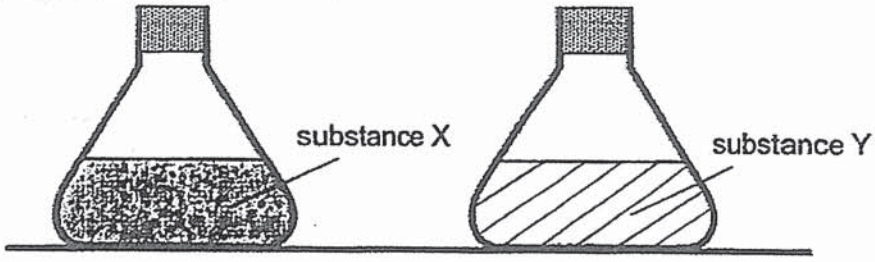
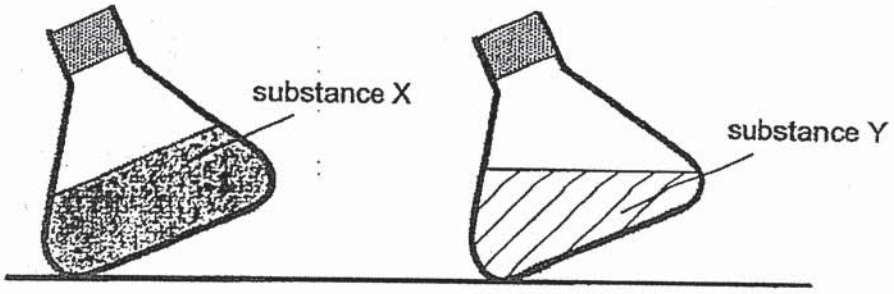
35 Julian placed 500 ml of substance X and Y respectively into two identical flasks as shown below.



Julian then tilted the flasks.



(a) What is the state of substances X and Y? [2]

X: _____ Y: _____

(b) Based on the observations, state a difference in the property of substances X and Y. [1]

_____

_____

3

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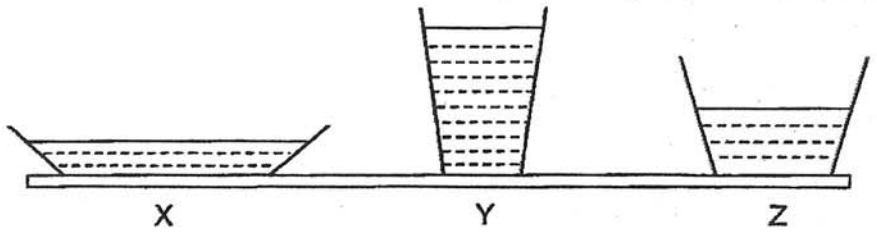
36 Alice filled three containers, X, Y and Z with the same amount of water and left them in the same location.



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

Container	Volume of water in the container (cm^3)	
	Start of the experiment	After one day
X	50	19
Y	50	48
Z	50	28

(a) Based on the results of her experiment, what can you conclude about exposed surface area and rate of evaporation? [1]

(b) Explain why the following actions would help ensure a fair test.

(i) placing all three containers at the same location [1]

(ii) using containers made of the same material [1]

(c) Other than the actions listed in (b), state another action that should be taken to ensure a fair test. [1]

4

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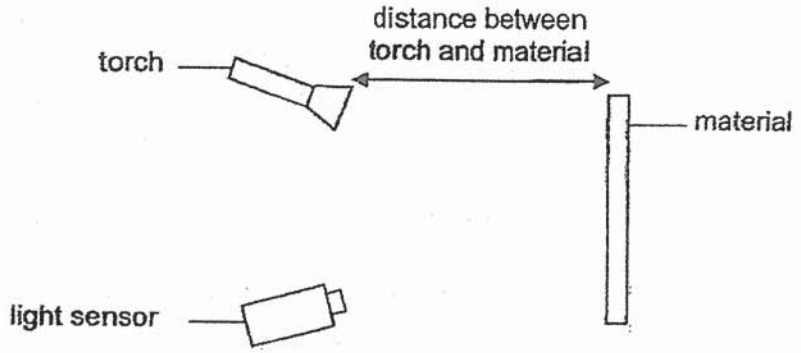
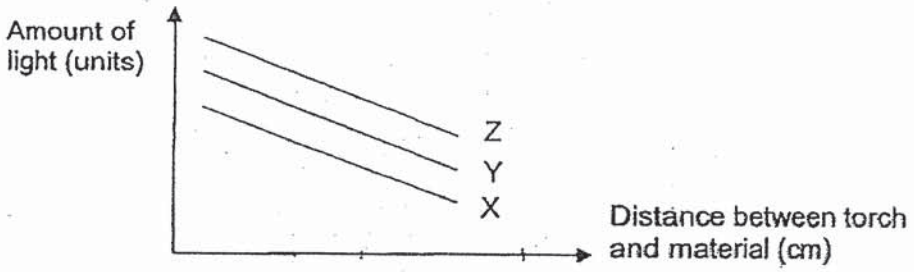
37 Aaron wanted to find out how the amount of light reflected by different materials is affected by the distance between the torch and the materials. He conducted his experiment as shown in the set-up below using materials X, Y and Z in a completely dark room.



Aaron recorded the amount of light reflected by the materials using the light sensor as he changed the distance between the torch and the material. The graph below shows his results.



(a) What is the relationship between the amount of light reflected by material Z and the distance between the torch and material Z? [1]

(b) How does conducting the experiment in a completely dark room ensure that accurate results are obtained? [1]

2

(Go on to the next page)

Wearing a safety vest at night helps cyclists stay safe on the road as they are more visible to drivers on the road.

(c) Based on Aaron's results, which material, X, Y or Z, is most suitable for making the safety vest? Give a reason for your answer. [1]

_____

_____

1

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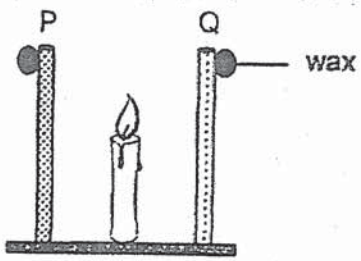
38 Kaven placed a candle at equal distance between two sheets of materials, P and Q. An equal amount of wax was attached to the materials as shown below.

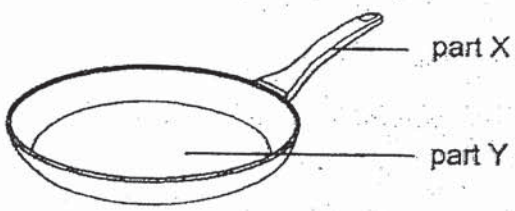


Kaven recorded the amount of time taken for the wax on materials P and Q to melt in the table shown below.

Material	Time taken for the wax to melt (min)
P	10
Q	2

(a) Based on the results, what can you conclude about the physical property of materials P and Q? [1]

The diagram below shows a frying pan.



(b) Which material, P or Q, should he use to make parts X and Y? [1]

Part X: _____ Part Y: _____

(c) Give a reason for the material chosen to make part Y in (b). [1]

3

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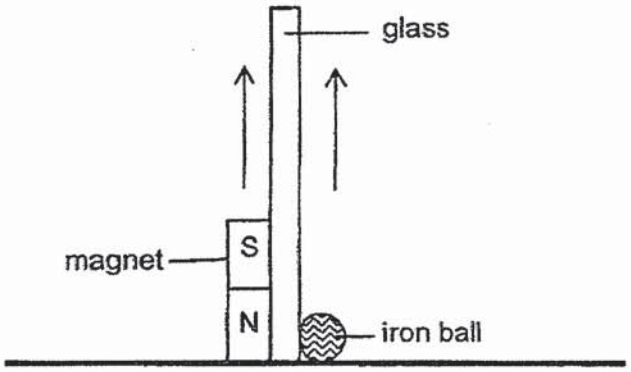
39 Mary prepared the experiment as shown in the diagram below. When she moved the magnet up the glass surface, the iron ball moved up with it.



(a) Based on the observation made, list two properties of magnets. [2]

_____

_____

(b) Mary changed the iron ball to a metal ball. The metal ball did not move up the glass surface when the magnet is moved up. Explain why. [1]

_____

_____

(c) After Mary dropped the magnet on the floor several times, the magnet could no longer move the iron ball up the glass surface. Explain why. [1]

_____

_____

	4

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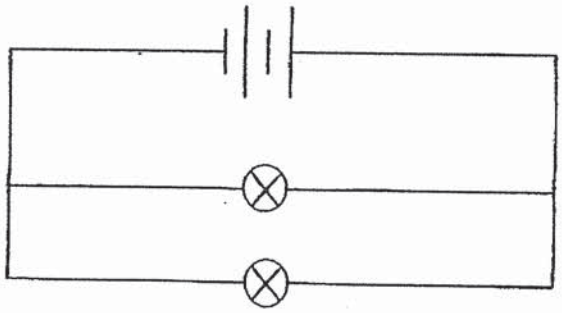
40 Mark wants to find out if the arrangement of the bulbs will affect the bulbs' brightness.

He prepared Set-up 1 as shown in circuit diagram below.

Set-up 1



In order to draw a conclusion to the aim of his experiment, Mark will need another set-up, Set-up 2, for comparison.

(a) Draw a circuit diagram for Set-up 2 using electrical symbols. [1]

Set-up 2

(b) Compare the brightness of bulbs in Set-up 1 and Set-up 2. [1]

_____

_____

	2

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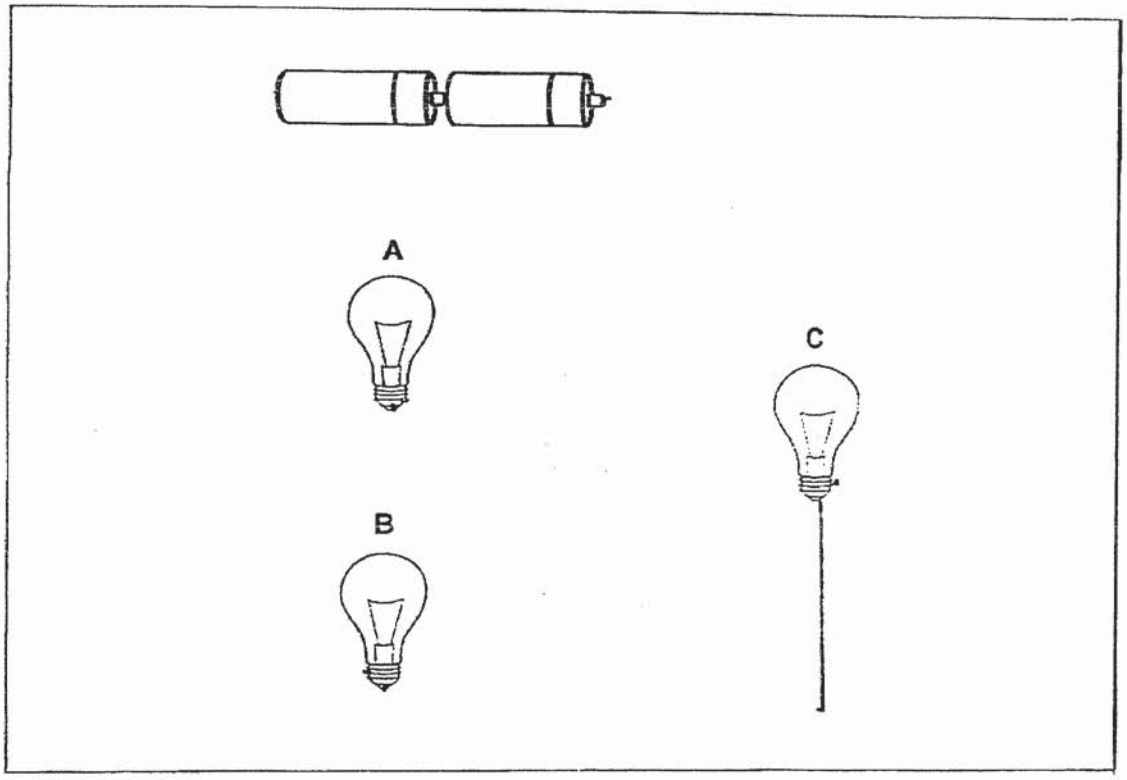
41 Nathan constructed an electrical circuit with three identical bulbs, A, B and C, and two batteries. He then removed one bulb at a time and recorded his observations of the other two bulbs. His observations are recorded in the table below.

Bulbs removed	Observations
A only	B and C remained lit
B only	A remained lit but not C
C only	A remained lit but not B

(a) Based on the observations above, complete the electrical circuit below by adding wires to show how the three bulbs could be connected to the batteries. [2]



(b) Nathan added a switch to the above circuit in (a) so that he could switch all three bulbs on and off at the same time.

Mark 'X' on the wire you have drawn in (a) to indicate where this switch could be placed. [1]

END OF BOOKLET B

	3

ANSWER KEY

YEAR : 2020
LEVEL : PRIMARY 5
SCHOOL : MARIS STELLA
SUBJECT : SCIENCE
TERM : SA2

BOOKLET A

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

BOOKLET B

Q29 a) Animal A has three body parts.
b) B : Mammals
C : Birds
c) A lay eggs while B gives birth to young alive.

Q30 a) Nucleus , cytoplasm , cell membrane and cell wall.
b) R has chloroplasts to make food while Q cannot make food.
c) Cells Q and R are taken from a plant as both have cell walls thus they are both plant cells as only plant cells have cell walls.

Q31 a) The sugar water attracts agents of pollination.
b) Yellow attracts the most number of bees compared to black and green thus yellow will have a higher chance of pollution compared to black and green.
c) Amy should make her flower models have the same colour but different size , same amount of sugary water and location of experiment.

Q32 a) The seed is small and it is very light.
b) The seed is able to float longer in wind , thus dispersing the seed further away from the parent plants.
c) This prevents overcrowding.

Q33 a) 250ml

b) As there is no plant in set-up B no water will be taken in and as there is a layer of oil no water will evaporate thus the water level in B remains the same.

c) The plant had taken in water through its roots thus causing the water level to decrease.

Q34 a) There is more oxygen in X than in Y.

b) Air enters through Jane's nose , flows through her windpipe and into the bloodstream which flows to her heart when it is pumped to her legs.

c) More blood rich in oxygen is transported to the legs.

Q35 a) X : Solid

Y : Liquid

b) X has a definite shape and volume while Y has a indefinite shape but a definite volume.

Q36 a) The greater the exposed surface area , the faster the rate of evaporation.

b) i. The prese of wind will be the same.

ii. The containers have the same conductivity.

c) iii. The temperature of the water in the containers must be the same.

Q37 a) As the distance between the torch and material decreases , the amount of light increases.

b) It ensures that the light detected by the light sensor is only from the light reflected by the torch.

c) Z as it reflects the most amount of light compared to X and Y.

Q38 a) P conducts heat poorer than Q

b) Part X : P

Part Y : Q

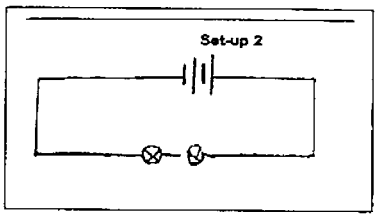
c) Q for Y as Q gains heat faster than P thus allowing us to cook faster while P is for X as we do not want X to be hot while cooking due to P being a poor conductor of heat.

Q39 a) Magnets can attract magnetic materials and magnetism can pass through non-magnetic materials.

b) The metal ball was not a magnetic material and thus it could not be attracted by the magnet.

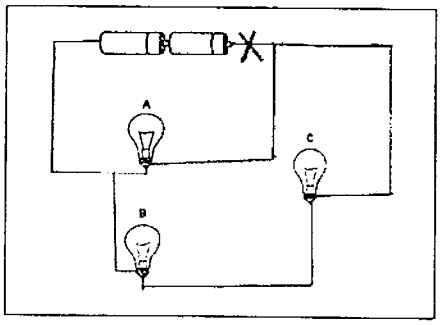
c) By dropping the magnet on the floor several times , Mary decreased the strength of the magnet thus the iron ball was no longer attracted to the magnet.

Q40 a)



b) The bulbs in set-up 1 will be brighter than the bulbs in set-up 2.

Q41 a) and b) Mark X on the wire in a).



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