Rosyth School
Mid-Year Examination 2019
SCIENCE
Primary 5

Total Marks: /56

Name: _____

Class: Pr 5 _____ Register No. _____

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

Date: 16 May 2019 Parent's Signature: _____

Booklet A

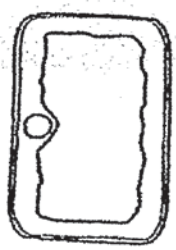
Instructions to Pupils:

1. Do not open the booklets 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.
5. For questions 29 to 40, give your answers in the spaces given in the Booklet B.

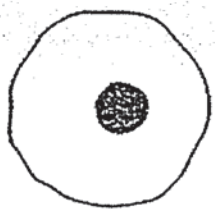
* This booklet consists of 26 printed pages (including cover page).

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 Four students, Aidan, Bala, Cinta and Dave, made the following statements after observing cells A and B as shown below.



Cell A



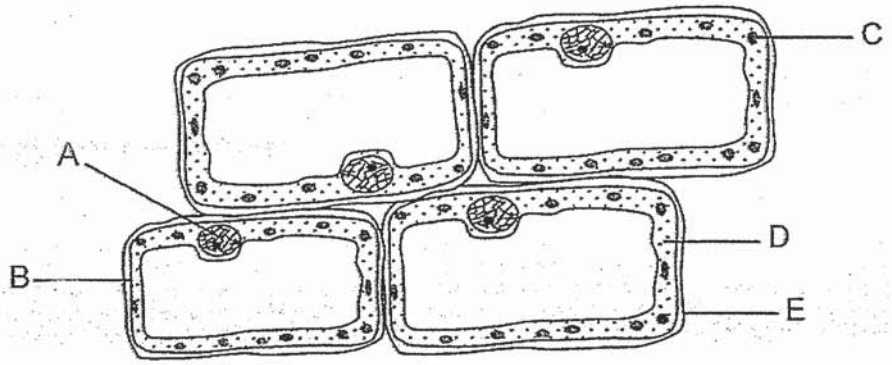
Cell B

Aidan	Both cells have chloroplasts.
Bala	Cell A has a cell membrane but not cell B.
Cinta	Both cells have a nucleus each to control all activities within the cell.
Dave	Both cells have cytoplasm which allows certain substances to enter and exit the cell.

Which student(s) made the correct statement(s) about cells A and B?

(1) Cinta only
(2) Aidan and Dave only
(3) Bala and Cinta only
(4) Cinta and Dave only

2 Raju observed some plant cells, A, B, C, D and E, under a microscope as shown below.

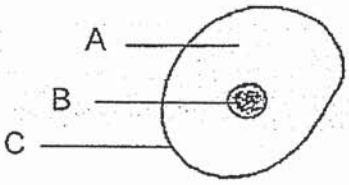


Which of the following parts of the plant cells, A to E, have been matched correctly to the information provided in the table?

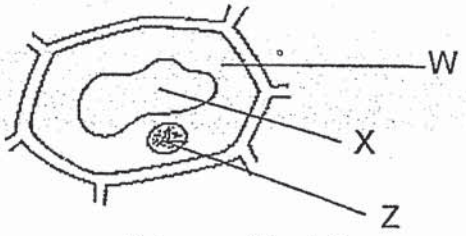
	Where light energy is being trapped	Also found in animal cells
(1)	C	A, D, E
(2)	C	A, B, D
(3)	A	B, D, E
(4)	B	A, C, E

3 A scientist wanted to create a new breed of Plant Q with flowers that will glow in the dark. She took some glowing genes from Organism P and implanted the glowing genes into Plant Q.

The diagram below shows the cells taken from Organism P and Plant Q.



cell from Organism P



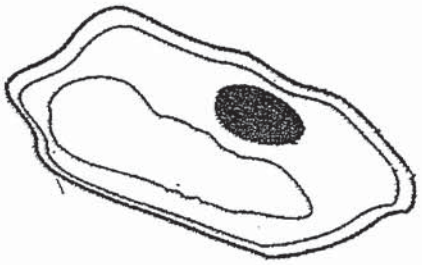
cell from a Plant Q

Which parts of the cells will the scientist use in order to achieve her aim?

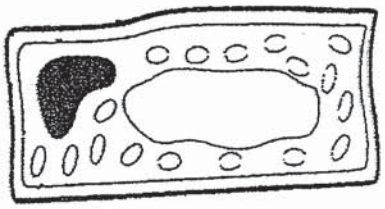
	Part of Cell from Organism P	Part of Cell from Plant Q
(1)	B	Z
(2)	B	X
(3)	A	W
(4)	C	X

4 The diagram below shows a fruit plant with its parts labelled, P, Q, R and S.

Which of its parts, P, Q, R or S, could cell A and cell B have been taken from?



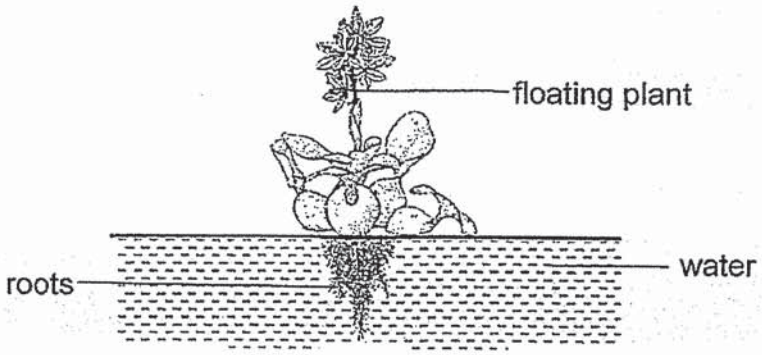
Cell A



Cell B

	Cell A	Cell B
(1)	Q	S
(2)	P	Q
(3)	R	S
(4)	S	P

5 The diagram below shows a floating plant.



Which of the following are possible functions of the roots of this floating plant?

A. Make food for the plant.
B. Take in dissolved mineral salts.
C. Hold the plant firmly to the ground
D. Take in water for all parts of the plant.

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

6 Mary wanted to find out if the amount of water given to the plant affects its growth.

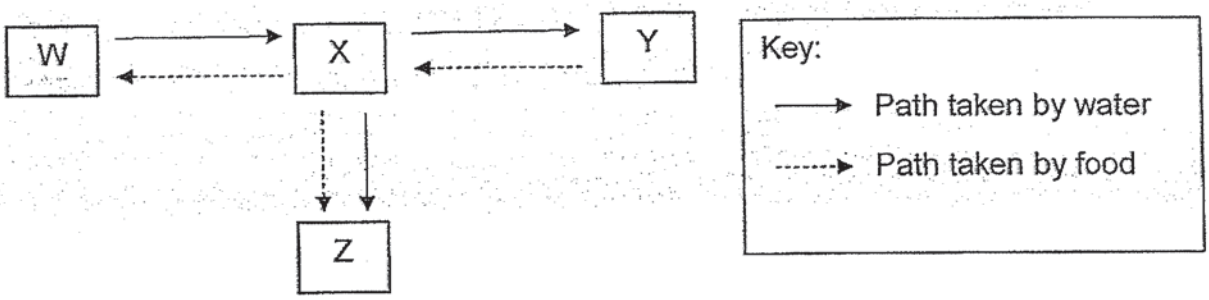
Set-up	Amount of water/ ml per day	Height of the plant at the beginning of the experiment (m)	Height of plant at the end of experiment (m)
A	500	1.0	1.5
B	1000	1.0	1.9
C	1500	1.0	2.1

From her results, what can she conclude?

(1) The amount of water does not affect the growth of the plant.
(2) As the amount of water increases, the growth of the plant decreases.
(3) As the amount of water decreases, the growth of the plant increases.
(4) The greater the amount of water, the greater the growth of the plant.

Study the diagram carefully and answer **Questions 7 and 8.**

The diagram below shows the different paths taken by water and food in a plant. W, X, Y and Z represent the various parts of a plant.



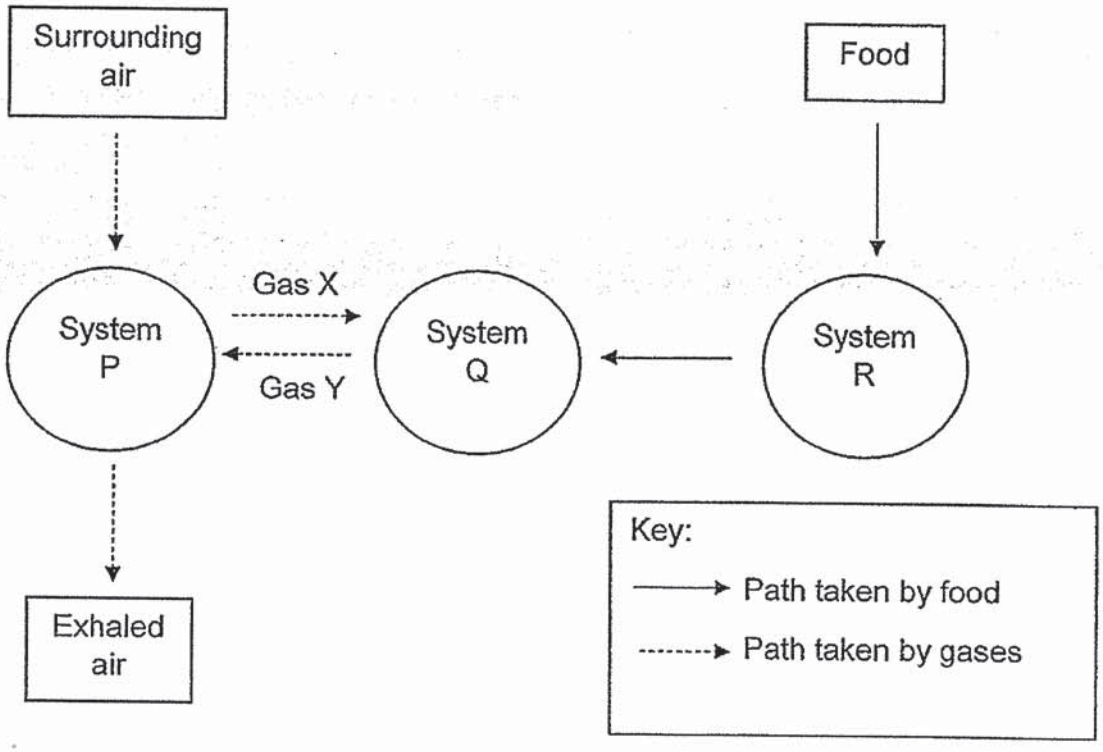
7 Which of the following best represent parts W, X, Y and Z?

	W	X	Y	Z
(1)	roots	leaves	flowers	stem
(2)	roots	stem	leaves	fruits
(3)	leaves	flowers	stem	roots
(4)	leaves	roots	stem	flowers

8 Which one of these body systems performs similar function as the one in the diagram above?

(1) Skeletal system
(2) Digestive system
(3) Circulatory system
(4) Respiratory system

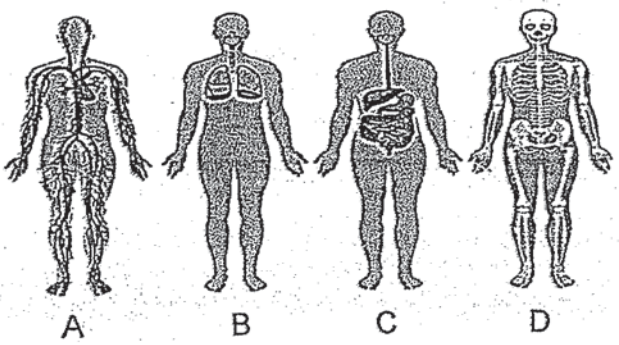
9 The diagram below shows how food and various gases are transported in the human body.



Which system does P, Q and R represent and what is gas X?

	System P	System Q	System R	Gas X
(1)	Digestive	Respiratory	Circulatory	Carbon Dioxide
(2)	Circulatory	Respiratory	Digestive	Carbon Dioxide
(3)	Respiratory	Digestive	Circulatory	Oxygen
(4)	Respiratory	Circulatory	Digestive	Oxygen

10 The diagrams below show four different systems in a human body.

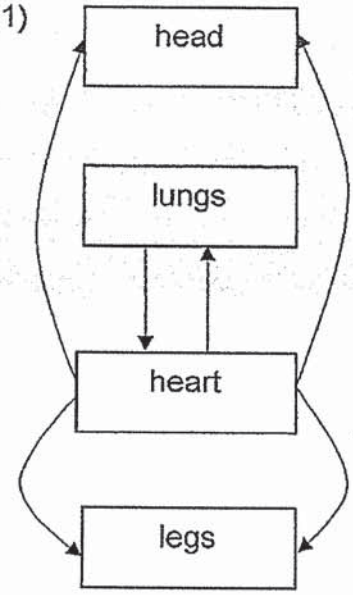


Which of the systems above function when a person is sleeping?

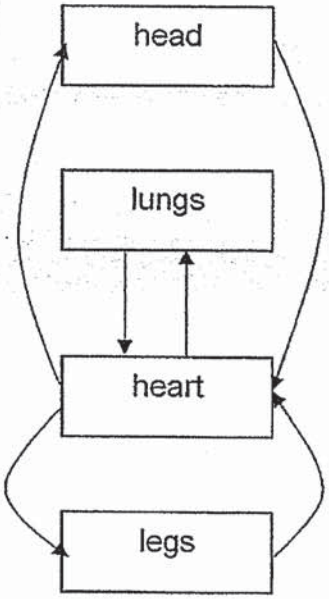
(1) A and B only
(2) A, B and C only
(3) A, B and D only
(4) A, B, C and D

11 Which one of the following diagrams correctly shows the flow of blood in a human body?

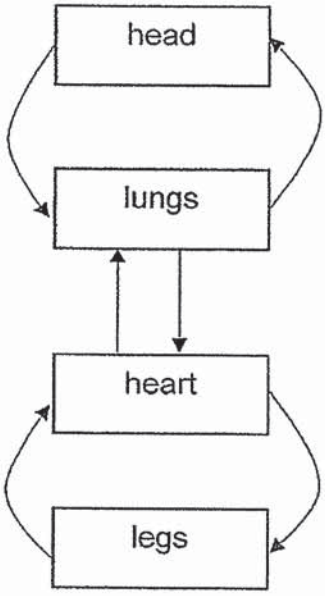
(1)



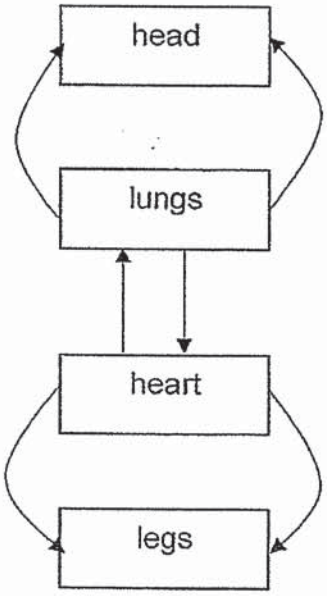
(2)



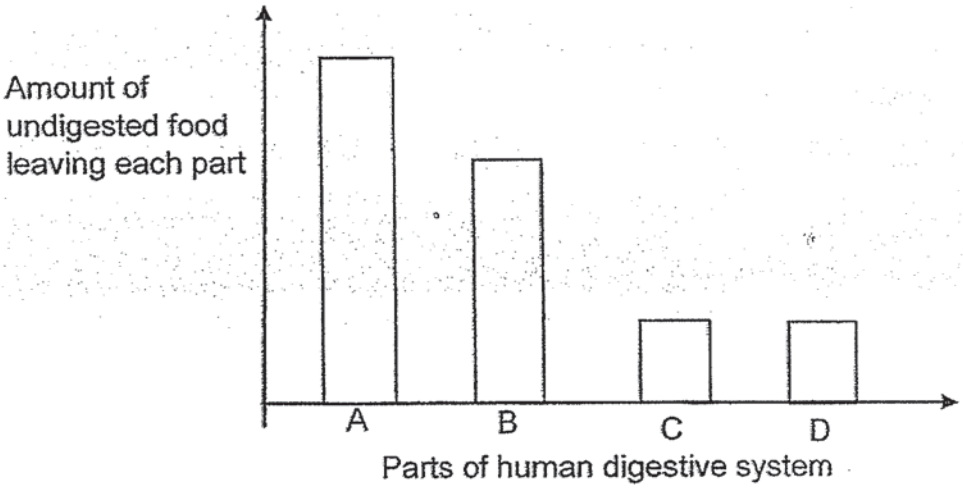
(3)



(4)



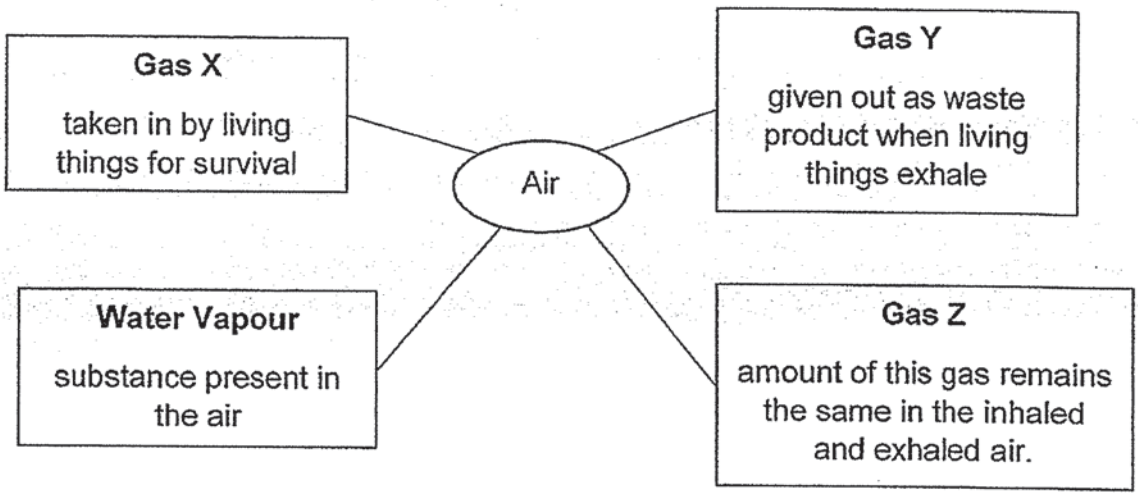
12 The graph below shows the amount of undigested food found leaving the different parts of the human digestive system.



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

	A	B	C	D
(1)	mouth	gullet	stomach	small intestine
(2)	mouth	gullet	small intestine	large intestine
(3)	gullet	stomach	small intestine	large intestine
(4)	gullet	small intestine	large intestine	stomach

13 The diagram shows the different type of gases in the air.



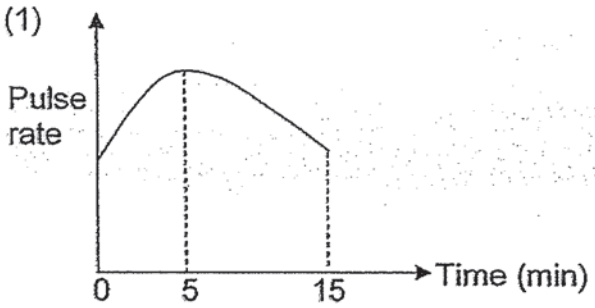
Which one of the following is correct?

	Gas X	Gas Y	Gas Z
(1)	carbon dioxide	oxygen	nitrogen
(2)	oxygen	nitrogen	carbon dioxide
(3)	nitrogen	carbon dioxide	oxygen
(4)	oxygen	carbon dioxide	nitrogen

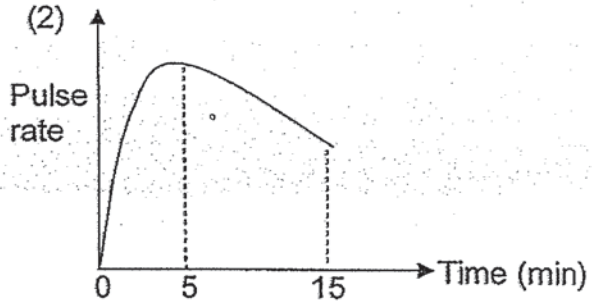
14 Davy ran towards the bus stop for 5 minutes and rested for 10 minutes before he boarded the bus.

Which graph shows his pulse rate during the 15 minutes period?

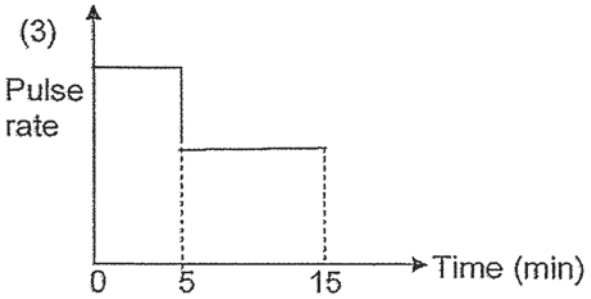
(1)



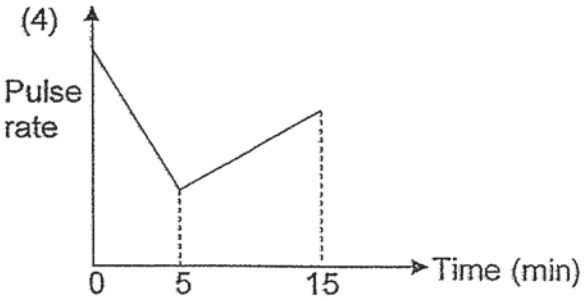
(2)



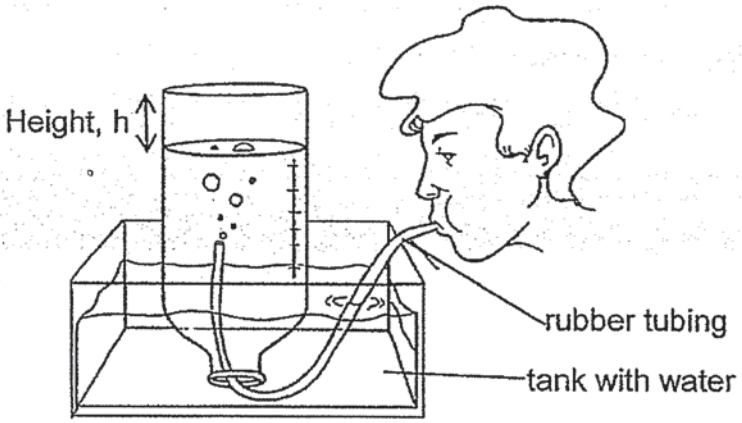
(3)



(4)



15 A group of students set up an experiment to find out whose lungs can hold most air. The bottle was filled with water fully. Peter took a deep breath and blew as much air as possible through the rubber tubing. The height (h) of air in the bottle was measured. The experiment was repeated by John and Mark respectively.



The results is shown in the table below.

Name of students	Height, h (cm)
Peter	17
John	25
Mark	19

Which of the following statements are correct?

A. Mark has the greatest lung capacity.
B. Peter exhaled the least amount of air.
C. John displaced more water in the bottle than Mark.
D. John could hold the smallest amount of air in his lungs.

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

16 Lynn made a comparison between the Human Circulatory System and the Plant Transport System in the table below. Which of the comparisons was correct?

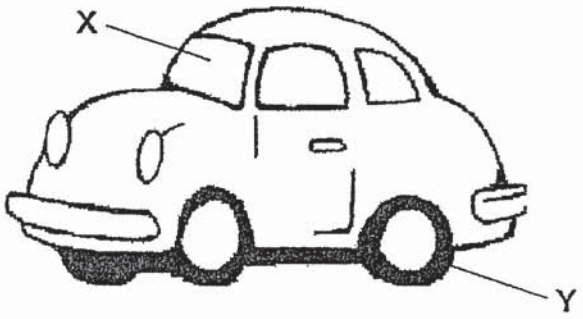
	Human Circulatory System	Plant Transport System
(1)	Oxygen is taken in through the nose.	Oxygen is taken in through the stomata
(2)	Different tubes transport all different substances around the body.	One main tube transports all the different substances around the plant.
(3)	Water enters the body through the mouth.	Water enters the plant through the roots.
(4)	A heart is required to pump substances around the body.	No organ is needed to pump substances through the tubes.

17 John observed four materials, P, Q, R and S, based on the following properties:

A tick (√) in the box indicates the property which the material has.

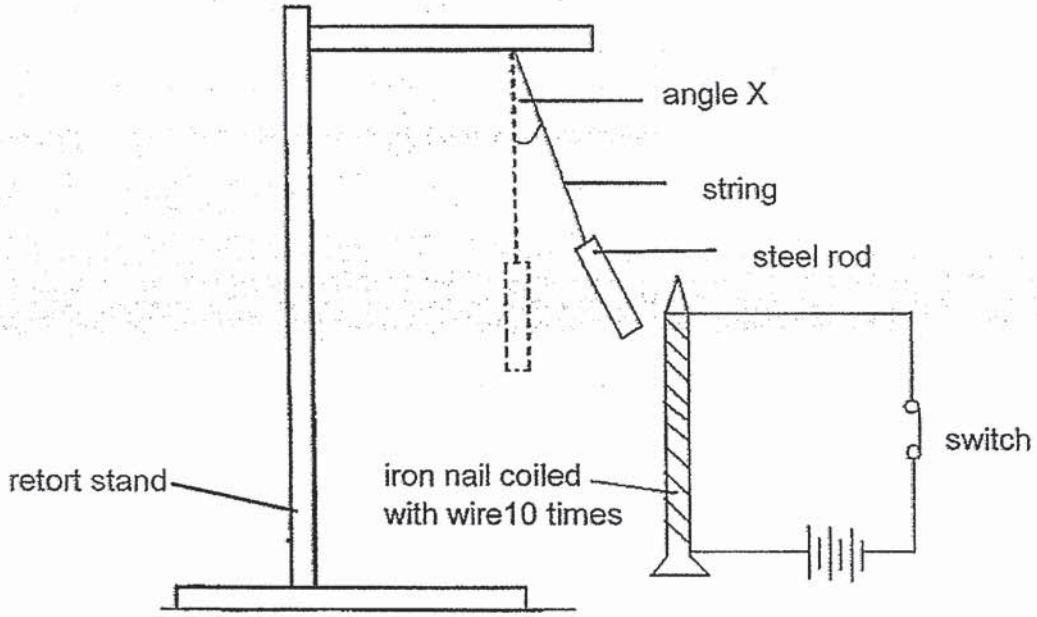
Material	Waterproof	Transparent	Flexible	Floats on water
P	√		√	
Q			√	√
R	√	√		
S	√	√	√	√

Based on his observations, which one of the following is most suitable to make parts X and Y of the car as shown below?



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

18 Sue set up an experiment which included a wire coiled 10 times round an iron nail. Angle X was formed when the switch was closed.



Which one of the following statements suggests a way to increase the angle X when the switch is closed?

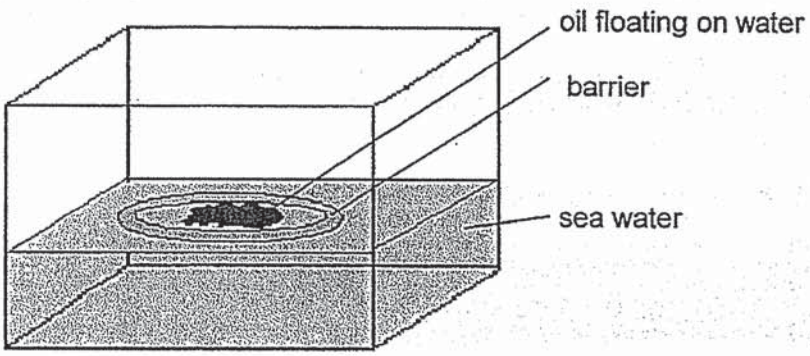
(1) Use fewer batteries

(2) Use a shorter string

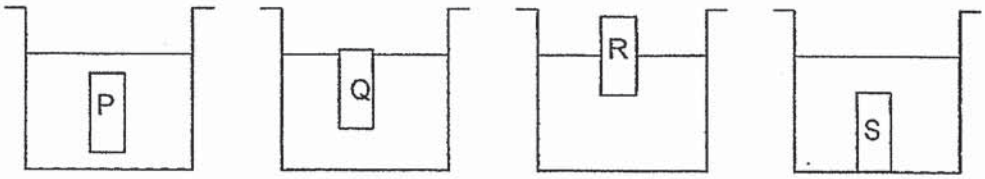
(3) Coil the wire around the nail 20 times

(4) Replace the steel rod with a lighter copper rod

19 A method of controlling oil spill in the sea is to surround the spillage with a barrier. This barrier prevents the oil from spreading to other parts of the sea.



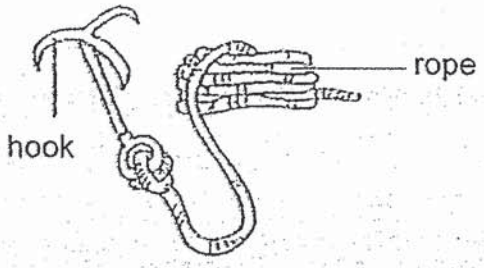
Joe conducted an experiment using four different materials of blocks, P, Q, R and S. He ensured that the size and shape of each block is the same. He placed each block into a beaker filled with equal amounts of sea water as shown in the diagrams below.



Which one of the materials, P, Q, R or S, is the most suitable for making the barrier?

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

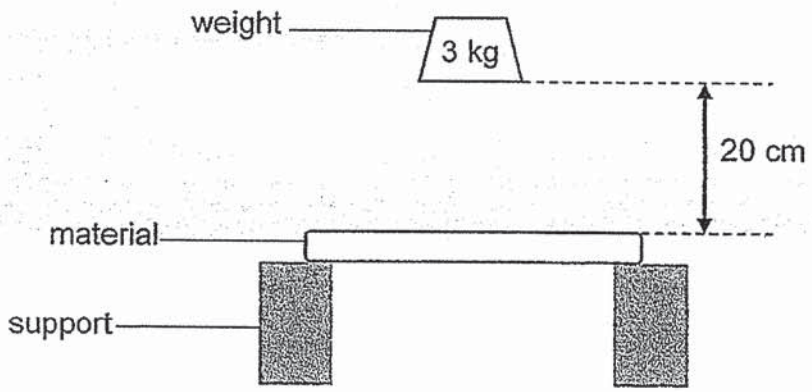
20 The equipment, as shown in the diagram below, is used to climb up rocky or snow-covered mountains.



The material used to make this mountain-climbing equipment is very important. Which of the following show the most suitable properties of the materials needed to make the hook and rope respectively?

	Hook	Rope
(1)	strong and waterproof	strong and flexible
(2)	strong and opaque	stiff and transparent
(3)	opaque and flexible	opaque and waterproof
(4)	waterproof and transparent	strong and stiff

21 Dave dropped a 3-kg weight from a height of 20 cm on five different materials A ,B, C, D and E. He ensured that the materials had the same size and shape. He recorded the number of times the weight was dropped before the material broke into two pieces.

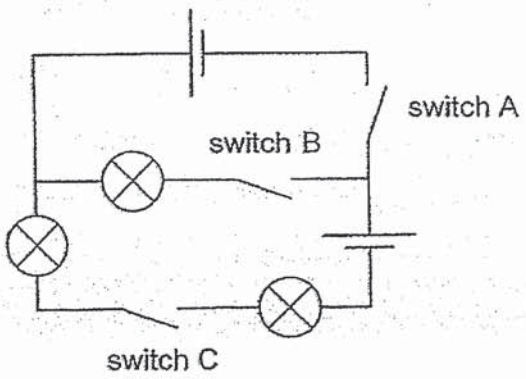


Material	Number of hits before the material broke
A	49
B	38
C	65
D	24
E	52

Based on the results in the table, which one of the following describes the materials correctly?

(1) Material E is a metal.
(2) Material A is stronger than Material C.
(3) Material C is more flexible than Material B.
(4) Material D is the first one to break if a 4 kg weight is used instead.

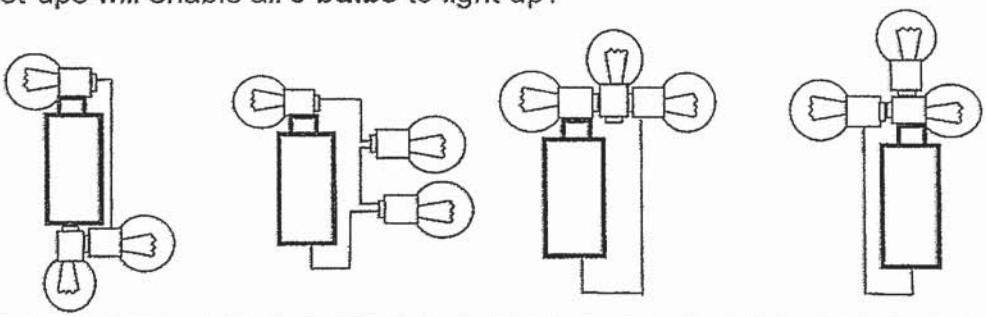
22 A circuit as shown below is connected to three bulbs, two batteries and three switches, A, B and C.



Which of the following will light up only one bulb?

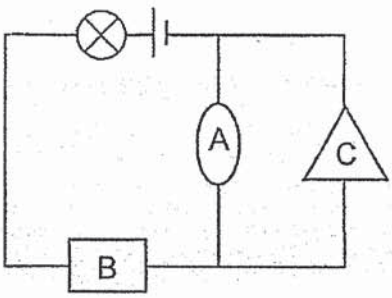
	Switch A	Switch B	Switch C
(1)	Closed	Closed	Open
(2)	Closed	Open	Closed
(3)	Open	Closed	Open
(4)	Open	Open	Closed

23 Azmi connected the four circuits as shown below. Which one of the following set-ups will enable all **3 bulbs** to light up?

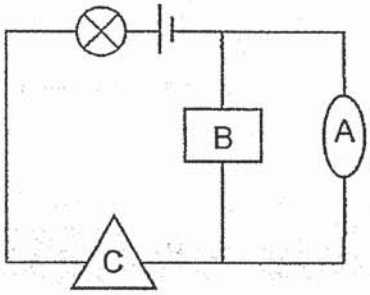


(1) (2) (3) (4)

24 The circuits Y and Z, as shown below, are each connected to objects A, B, C, a bulb and a battery. Only the bulb in circuit Z lit up.



Circuit Y:
Bulb did **not** light up

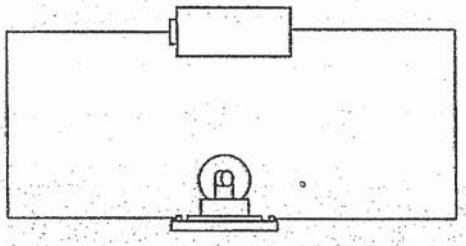


Circuit Z:
Bulb lit up

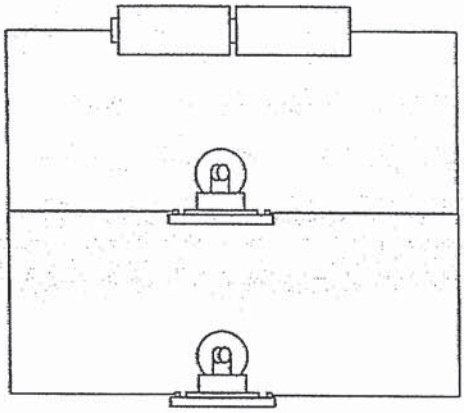
Which of the following is/are insulator(s) of electricity?

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

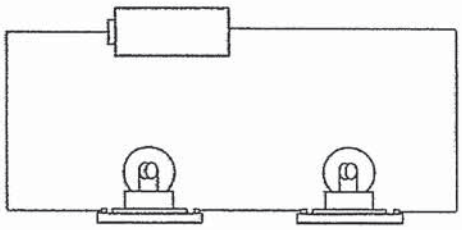
25 The diagram below shows three circuits with different numbers and different arrangements of identical batteries and identical bulbs. The bulbs in all three circuits light up.



set-up A



set-up B

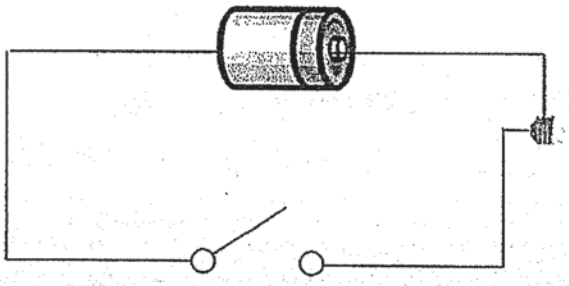


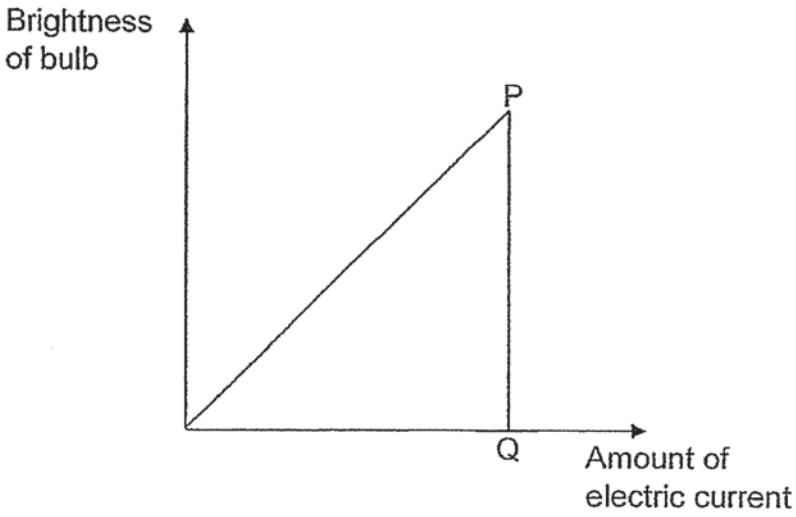
set-up C

Which one of the following shows the set-ups, from the dimmest to the brightest?

	Brightness of bulb		
	Dimmest →		Brightest
(1)	B	C	A
(2)	C	B	A
(3)	A	C	B
(4)	C	A	B

26 Claire wanted to find out whether a bulb would glow more brightly if she increased the number of batteries in the circuit. Each time, she arranged the batteries in series and used only new batteries.



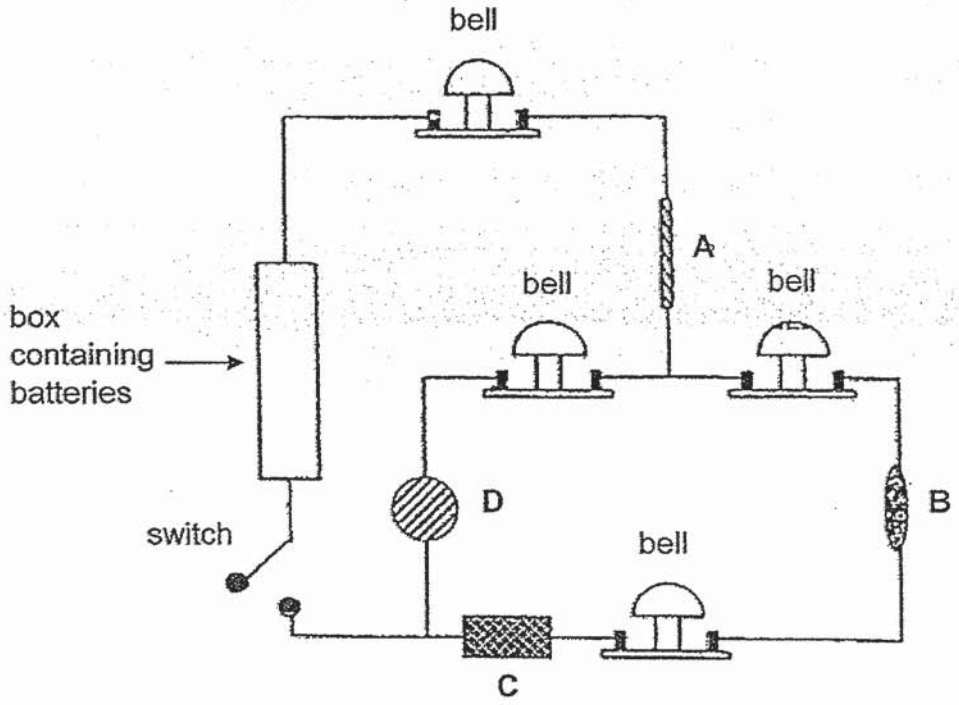


Based on the graph she had plotted, what does line PQ show?

A. The bulb had fused.
B. There was an open circuit.
C. The light from the bulb remained bright.
D. The bulb had reached maximum brightness.

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

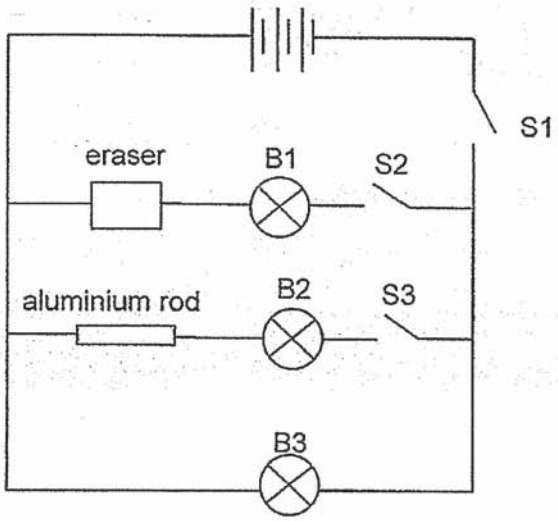
27 Joe set up a circuit as shown below. He was told that one of the objects, A, B, C or D, in the circuit was an electrical insulator.



When he closed the switch, he observed that only 3 bells in the circuit rang. Which one of the four objects, A, B, C or D was the electrical insulator?

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

28 Study the circuit diagram shown below.



Lionel turned the switches S1, S2 and S3 on and off and made the following observations. Which one of his observations is correct?

(1) When only S3 is closed, only B2 lights up.
(2) When only S1 and S2 are closed, only B3 lights up.
(3) When all switches are closed, all the bulbs light up.
(4) When only S1 and S3 are closed, only B2 lights up.

End of Booklet A

(Go on to Booklet B)

Rosyth School
Mid-Year Examination 2019
SCIENCE
Primary 5

Total Marks: ____/100

Name: _____

Class: Pr 5 _____ Register No. _____

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

Date: 16 May 2019 Parent's Signature: _____

Booklet B

Instructions to Pupils:

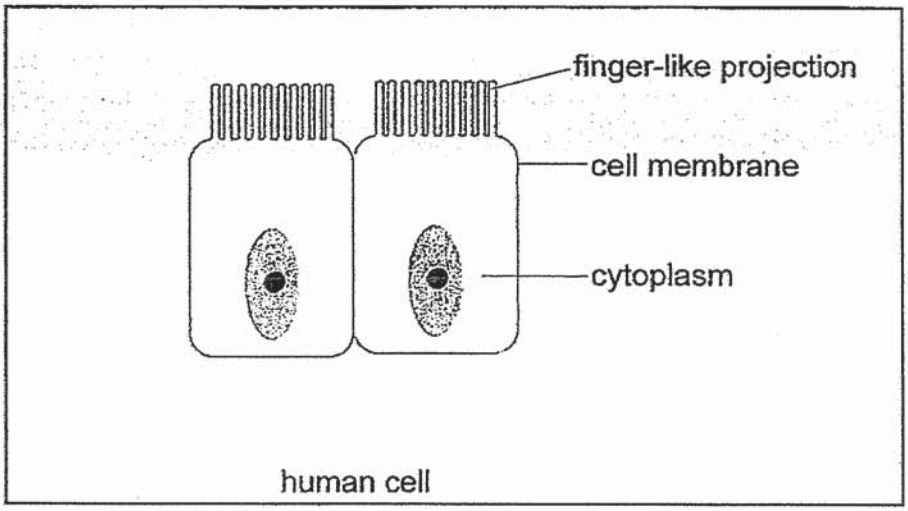
1. For questions 29 to 40, give your answers in the spaces given in Booklet B.

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

* This booklet consists of 15 printed pages (including cover page).

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

29 Study the diagram below.

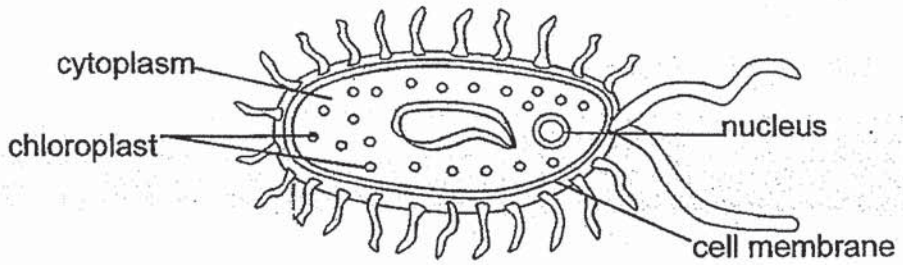


(a) Why is the cell membrane important to the cytoplasm? [1]

The above cell were taken from the small intestine.

(b) How does the finger-like projection help the small intestine to carry out its function? [1]

30 A biologist discovered a single cell organism X. He observed organism X under microscope and found out that organism X has both the characteristics of a plant cell and an animal cell.



organism X

(a) State the observation that suggest that organism X is a [2]

Plant cell : _____

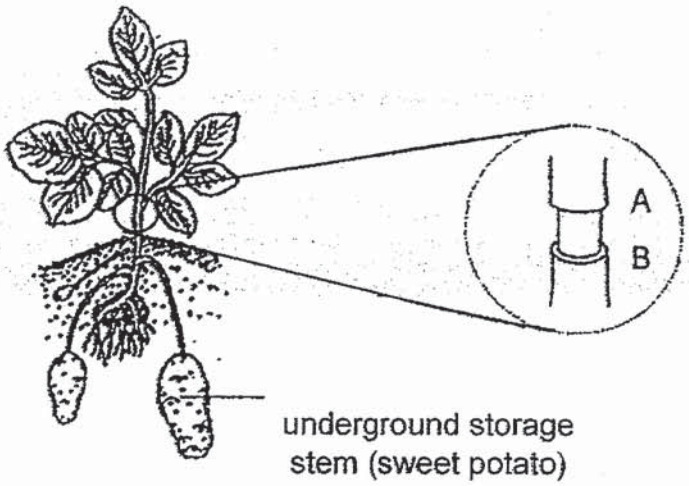
Animal cell: _____

(b) The biologist concluded that organism X does not feed on other organisms to survive. Do you agree with him? Explain your answer. [1]

_____

_____

31 The diagram below shows a sweet potato plant. It is a plant with underground storage stem.



Farmer Lim removed the outer ring (food-carrying tube) of the stem of this plant removed to yield bigger sweet potatoes.

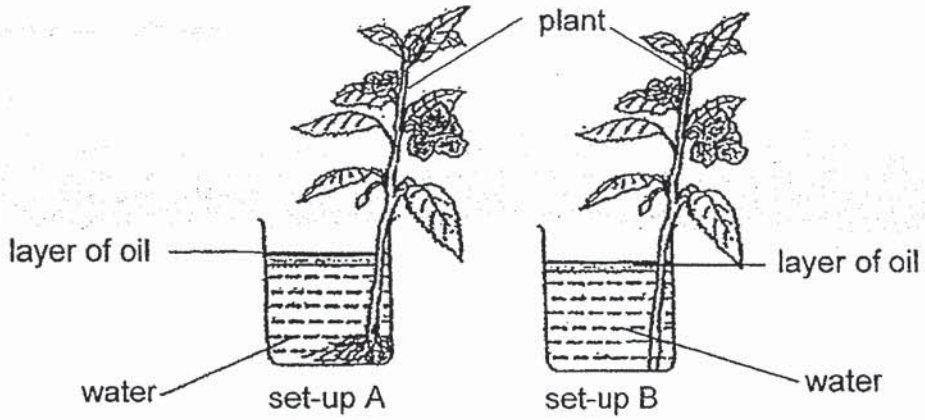
After a few weeks, he observed that the stem at which he cut looked different.

(a) Draw how the stem would look like in the box provided. Label parts A and B. [1]

(b) Farmer Lim's sweet potatoes stopped growing bigger. Explain why. [1]

(c) After some time, he observed that outer ring was replaced by a new layer. Name the process that has taken place. [1]

32 Bruce set up an experiment as shown below. He prepared two identical beakers A and B and filled them with equal amount of water. He placed a plant in each set-ups, A and B. He also added a layer of oil on top as shown in a diagram below.

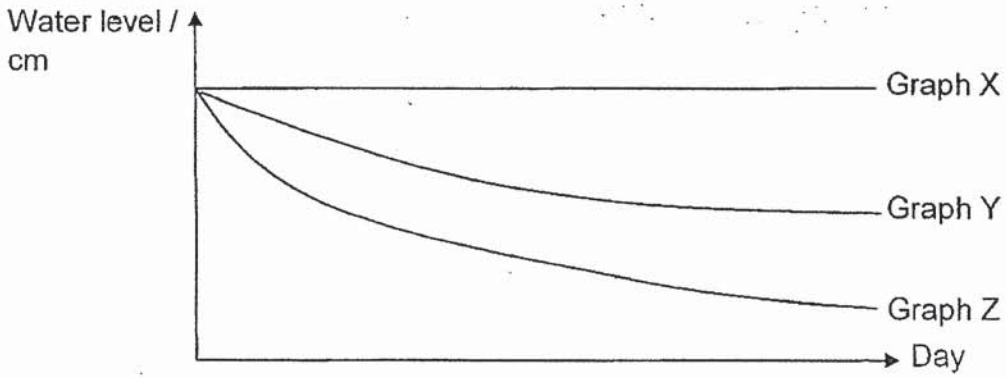


(a) What is the aim of his experiment? [1]

_____

_____

The graph below shows the change in the water level in the beaker over a few days.



Question 32 continues on page 6

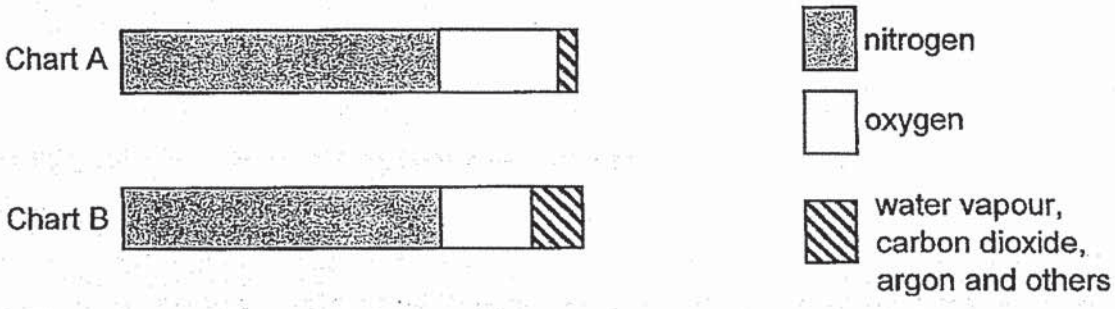
(b) Which graph, Y or Z represents the results for set-up A?
Explain your answer. [1]

_____

_____

(c) The water level for graph X remained the same. Draw a set-up in the box below to obtain that result. [2]

33 The two charts below show the composition of inhaled and exhaled air.



(a) Identify the chart that represents the composition of exhaled air. Explain your answer. [2]

_____

_____

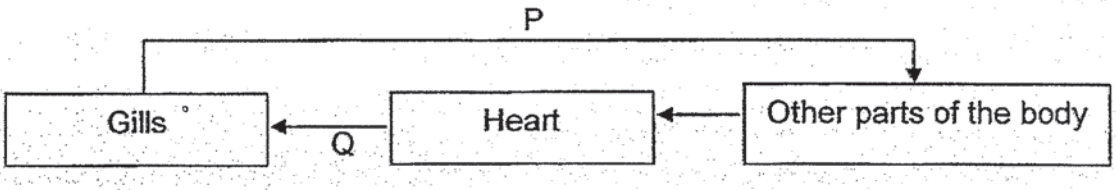
(b) Explain why the amount of nitrogen is the same in both charts. [1]

_____

_____

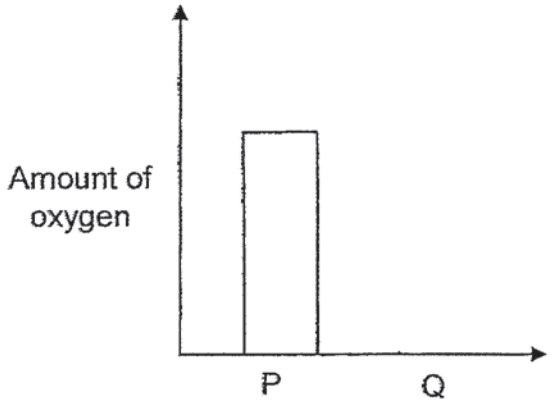
34 The diagram below shows how blood flows in a fish.

P represents the blood vessel that carries blood directly from the gills to other parts of the body. Q represents the blood vessel that carries blood from other parts of the body back to the gills.



The amount of oxygen in blood P is represented in the bar graph below.

(a) Draw the amount of oxygen in blood Q in the graph below. [1]



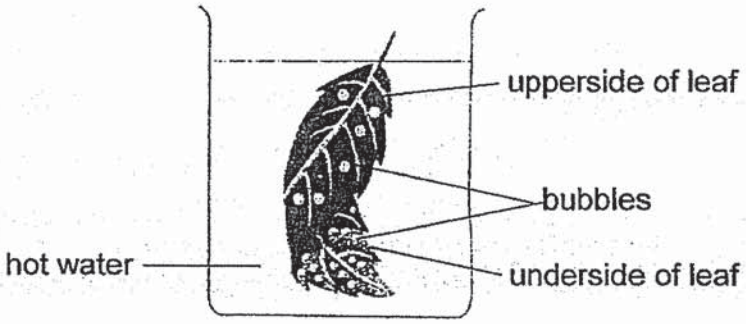
(b) Give a reason for your answer in (a). [1]

_____

_____

Question 34 continues on page 9

A leaf was placed in a beaker of hot water. There were air bubbles escaping in the water.



(c) Dan claims that there are more stomata on the underside of the leaf than the upper side.

State the observation to support Dan's claim. [1]

_____

_____

(d) What is the function of the stomata? [1]

_____

35 (a) State one function of the following human organ systems.

(i) Circulatory system: [1]

_____

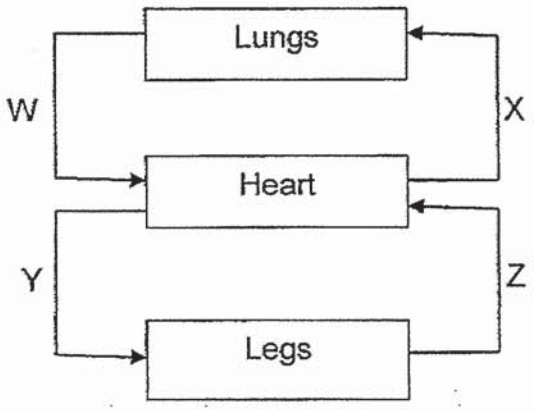
_____

(ii) Digestive system: [1]

_____

_____

(b) The diagram below shows how blood travels in the body. Blood vessels, W, X, Y and Z, represent the movement of blood.



(i) Which two blood vessels carries blood rich in carbon dioxide? [1]

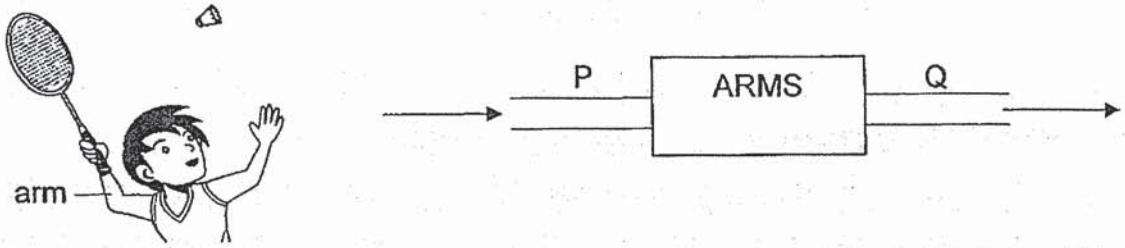
_____ and _____.

(ii) Explain why. [1]

_____

_____

36 The diagram shows the direction of blood flow in the blood vessels, P and Q, in Ronald's arms.



(a) Compare the difference between the amount of oxygen at P and at Q. [1]

_____

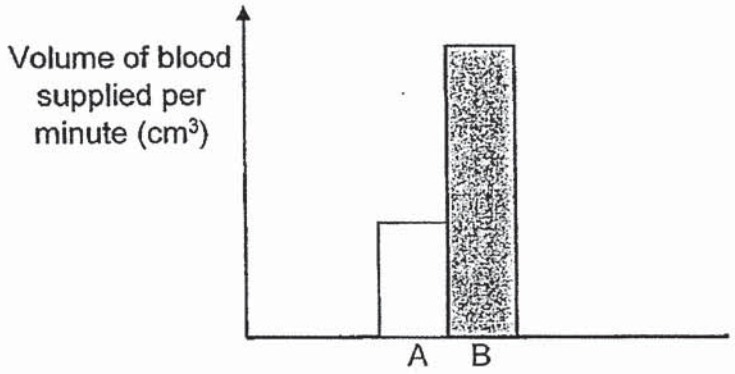
(b) Describe how oxygen from Ronald's lungs reaches his arms. [2]

_____

_____

_____

Ronald carried out some experiments to measure the volume of blood supplied per minute to his arms during two activities, reading and playing badminton.



(c) Which bar, A or B, represents the volume of blood supplied to the arms when he was playing badminton? [1]

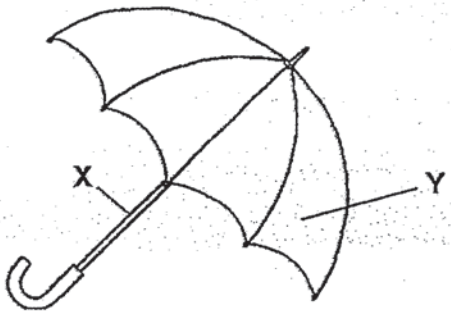
Bar: _____

(d) Explain your answer. [1]

_____

_____

37 Sam has an umbrella with its different parts labelled X and Y as shown in the diagram below.



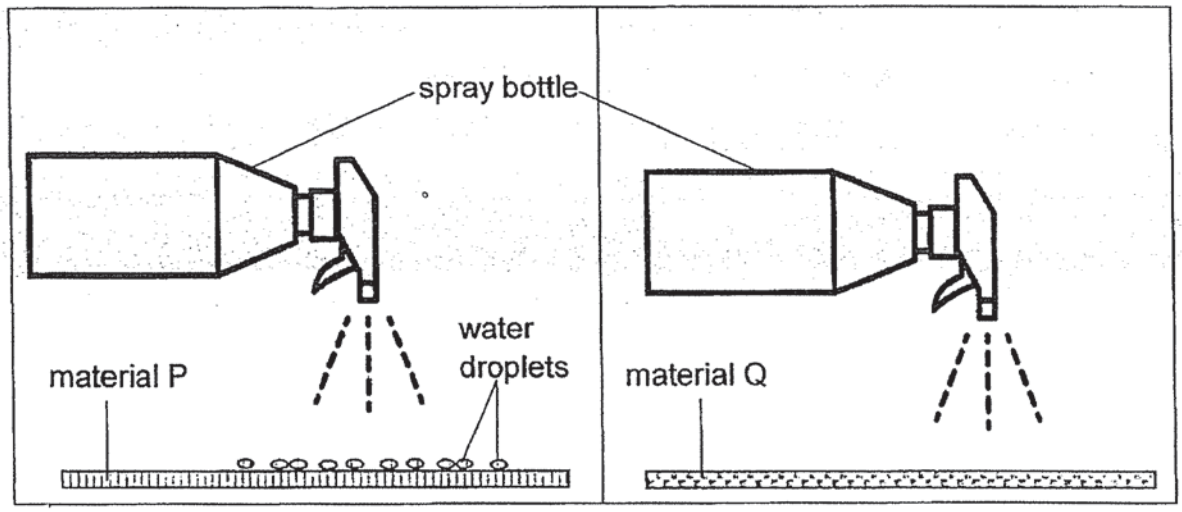
Answer the following questions to complete the table below.

(a) Suggest suitable material(s) to make parts X and Y. [2]

(b) Give a reason for each material selected. [2]

part	material	reason for material used
X		
Y		

38 Jim conducted an experiment on two different materials, P and Q, of equal size and thickness. He sprayed equal amounts of tap water on each of the materials and made the following observation **5 seconds later.**



Jim observed that water droplets were formed on material P but not on material Q. Based on the above results, answer the following questions:

(a) What was the aim of Jim's experiment? [1]

_____

_____

(b) State one other variable that must be kept unchanged to make his experiment fair. [1]

_____

(c) Which material, P or Q, would be suitable to be made into a kitchen towel? Explain your answer. [2]

_____

_____

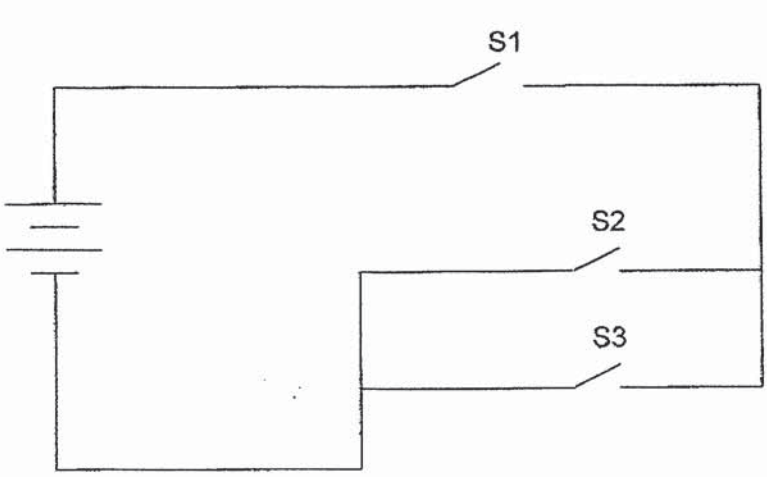
39 Mr Amin drew a circuit diagram as shown below and told his class to draw in three bulbs that will meet the conditions he has set.

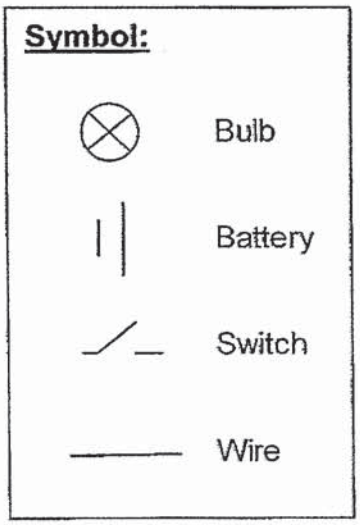
Conditions:

(i) When S1 and S2 are closed, only two bulbs will light up.

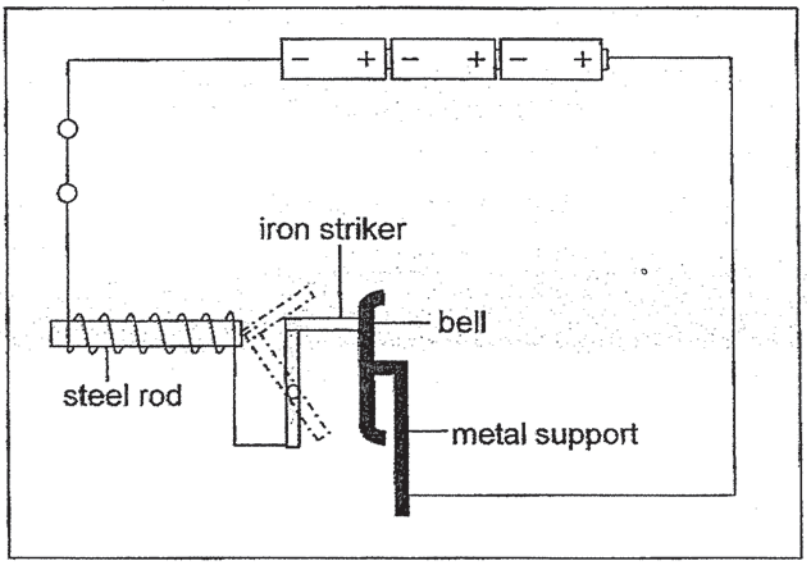
(ii) When S1 and S3 are closed, only one bulb will light up.

In the circuit diagram below, draw in the three bulbs, using symbol, that will meet Mr Amin's two conditions. [3]





40 Sue set up a circuit of an alarm system as shown in the diagram below.



When the switch was closed, Sue observed that the striker was pulled back towards the steel rod, as represented by the dotted lines, before the striker suddenly move forward to hit the bell, sounding it.

(a) Explain how this alarm system works when the switch is closed. [2]

(b) Explain what would happen to the alarm system if the steel rod is replaced with a copper rod. [2]

(c) Suggest one change that can be made to the alarm system that would allow the striker to hit the bell at a faster rate. [1]

End of Paper

ANSWER KEY

YEAR : 2019
LEVEL : PRIMARY
SCHOOL : ROSYTH SCHOOL
SUBJECT : SCIENCE
TERM : MID-YEAR EXAMINATIONS

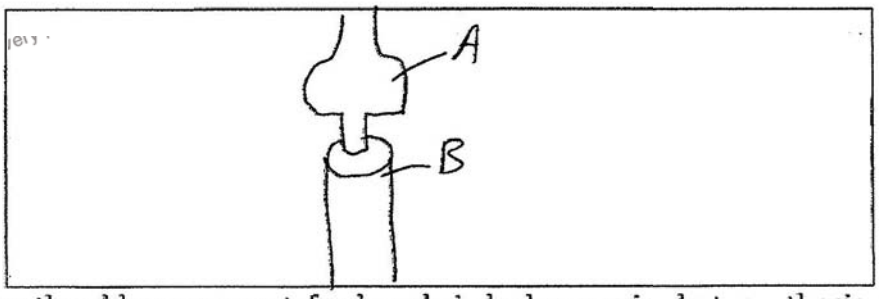
BOOKLET A

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

BOOKLET B

Q29.
(a) The cell membrane only allows certain substances to enter and exit the cell.
(b) There is more exposed surface area to the digested food , thus absorbing more digested food and nutrients.

Q30.
(a) Plant cell: Organism X has chloroplasts.
Animal cell: Organism X does not have a cell wall.
(b) Yes. Organism X has chloroplast that contain chlorophyll to trap sunlight and make food via photosynthesis.



(b) When the phloem was cut, food made in he leaves via photosynthesis could not be transported to the underground storage stem below the cut causing the underground storage stem to stop growing bigger.

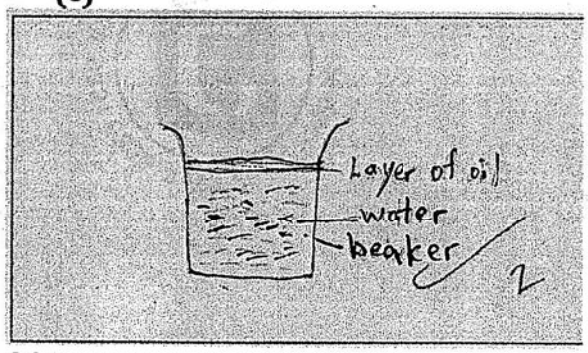
(c) Replacement of damaged cells.

Q32.

(a) It is to find out if the presence of roots affects the amount of water taken in by the plant.

(b) Graph Z. The presence of roots allows set-up A's plant to absorb more water causing the water level to decrease at a higher rate.

(c)



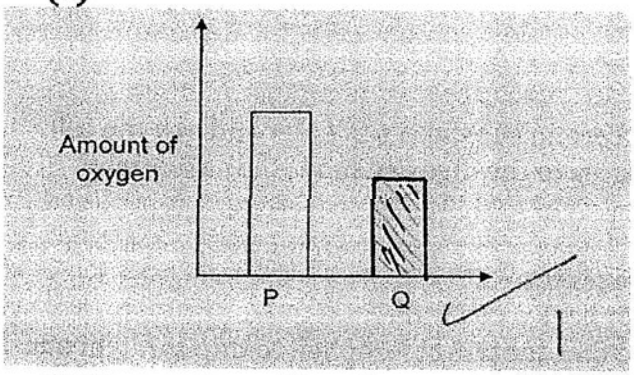
Q33.

(a) Chart B. The oxygen in inhaled air is used for respiration causing the amount of oxygen to decrease in exhaled air. During respiration, carbon dioxide is released causing the amount of carbon dioxide in exhaled air to increase.

(b) Human body do not use nitrogen for life processes hence, the amount of nitrogen remains the same in inhaled air and exhaled air.

Q34.

(a)



(b) Oxygen is used by other parts of the body for respiration causing the amount of oxygen in Q to reduce from the amount of oxygen in P.

(c) More air bubbles were escaping the stomata on the underside of the leaf than the stomata on the upper side on the leaf.

(d) To allow gaseous exchange.

Q35.

(a) **(i)** To transport oxygen, water, and digested food throughout the body.

(ii) To digest most of the food thoroughly and absorb the digested food into the bloodstream. To excrete all the waste material and undigested food out of the body.

(b) **(i)** Blood vessel Z and Blood vessel X

(ii) The oxygen rich blood that travels through blood vessel W to Y is used by the legs for respiration. During respiration, carbon dioxide is

given out causing the blood in blood vessel Z and X to be rich in carbon dioxide as the product of respiration is carbon dioxide.

Q36.

(a) Q has lesser oxygen than P.

(b) Blood rich in oxygen from the lungs in pumped to his arms by his heart. The oxygen is then used for respiration to release energy.

(c) B

(d) When he plays badminton, he needs more energy so his heart pumps blood that is rich in oxygen and digested food faster to the arms for a higher rate of respiration to release more energy.

Q37.

(a) (b)

Part	Material	Reason for material used
X	Iron	It is strong and stiff
Y	Plastic	It is waterproof and flexible

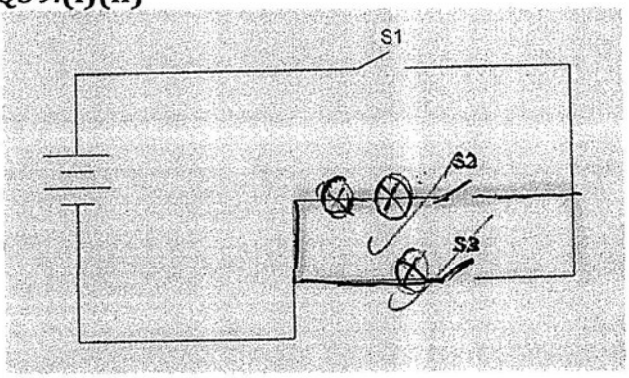
Q38.

(a) To find out if the two different materials affected the amount of water absorbed.

(b) The location to do the experiment.

(c) Material Q. material Q absorbs water but P does not. A kitchen towel must absorb water so that the user's hand will be dry.

Q39.(i)(ii)



Q40.

(a) When the switch is closed, the circuit is closed and current can flow through, making the steel rod an electromagnet causing the iron striker to be attracted. When the iron striker is attracted to the electromagnet the circuit is open and current cannot flow through causing the iron striker to fall back, hit the bell and make the bell sound.

(b) The bell would not work as copper is a non-magnetic material so it would not become an electromagnet.

(c) Increase the number of batteries.

END