NANYANG PRIMARY SCHOOL

2022
PRIMARY 5
END-OF-YEAR EXAMINATION

SCIENCE
(BOOKLET A)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not open this booklet until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. For each question from 1 to 28, four options are given.
   Indicate your choice in this booklet.
   Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.

Name: _____ ( )

Class: Primary 5 ( )

Booklet A consists of 14 printed pages including this cover page.

Section A: Multiple Choice Questions [56 marks]

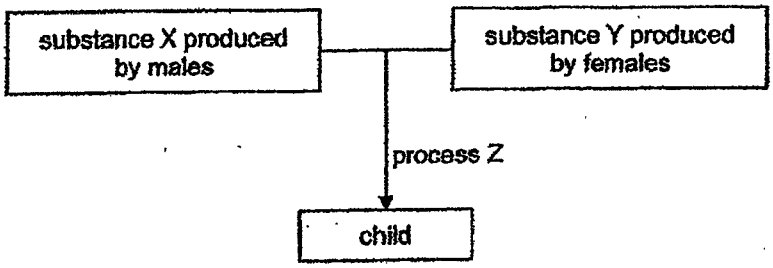
1. Daniel observed that a flower on a plant had turned into a fruit. He then made the following conclusions.

   A Fertilisation had taken place in the flower.
   B The ovule of the flower had developed into a fruit.
   C The ovary of the flower had developed into a seed.

   Which of his conclusions is/are correct?

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

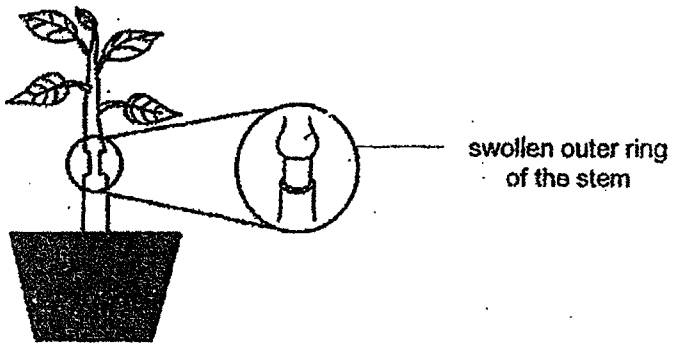
2. Study the diagram below regarding human reproduction.



Which one of the following correctly identifies X, Y and Z?

	X	Y	Z
(1)	pollen grain	sperm	fertilisation
(2)	pollen grain	egg	pollination
(3)	sperm	sperm	pollination
(4)	sperm	egg	fertilisation

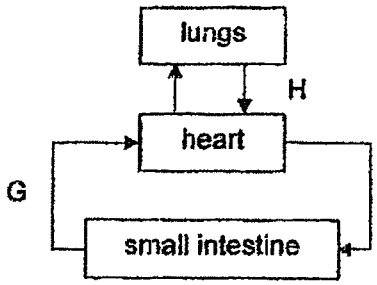
3. Sam removed the outer ring of the stem of a plant. One week later, he observed the plant and made a drawing of his observation in the diagram shown below.



Which one of the following correctly explains his observation of the stem after one week?

(1) Food-carrying tubes were cut so food cannot be transported up to the leaves.
(2) Food-carrying tubes were cut so food cannot be transported down to the roots.
(3) Water-carrying tubes were cut so water cannot be transported up to the leaves.
(4) Water-carrying tubes were cut so water cannot be transported down to the roots.

4. The arrows in the diagram below show the flow of blood in a human body system.

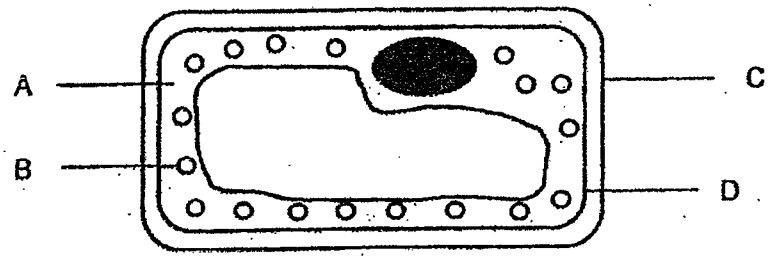


Which of the following correctly represent the blood flowing in G and H?

A There is less oxygen in G than H.
B There is more digested food in H than G.
C There is less carbon dioxide in G than H.

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

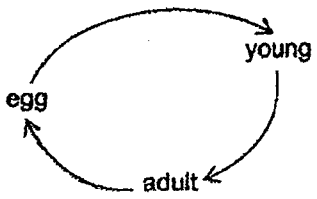
5. The diagram below shows a typical plant cell taken from the leaf of a plant.



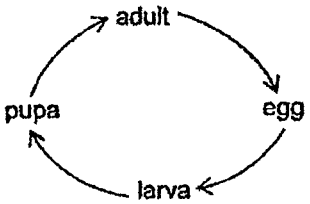
Which part of the cell helps to trap sunlight for making food?

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

6. The diagram below shows the life cycles of animal P and animal Q.



life cycle of animal P

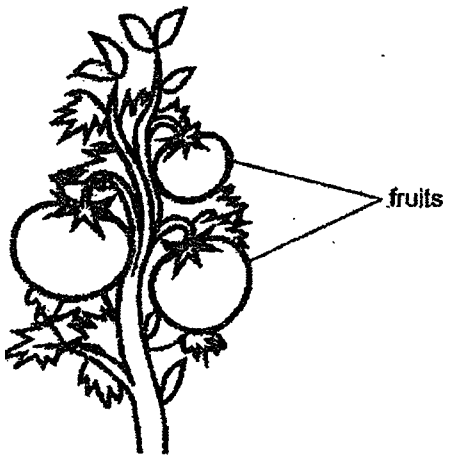


life cycle of animal Q

Based only on the diagram above, which one of the following statements about animals P and Q is definitely correct?

(1) Both animal P and animal Q lay eggs in water.
(2) Both the young of animals P and Q resemble its adult.
(3) Animal Q gives birth to young alive but animal P lays egg.
(4) Animal P has a 3-stage life cycle and animal Q has a 4-stage life cycle.

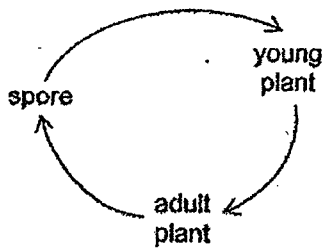
7. The diagram below shows part of plant Z.



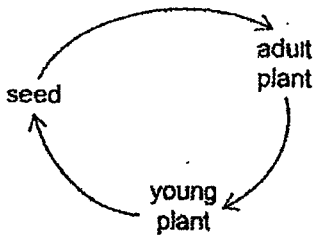
part of plant Z

Which one of the following correctly shows the stages in the life cycle of plant Z?

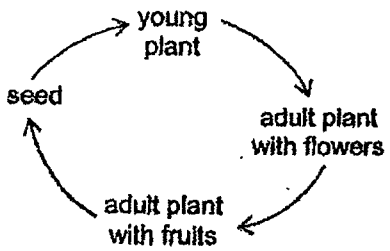
(1)



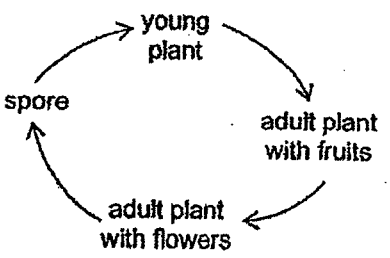
(2)



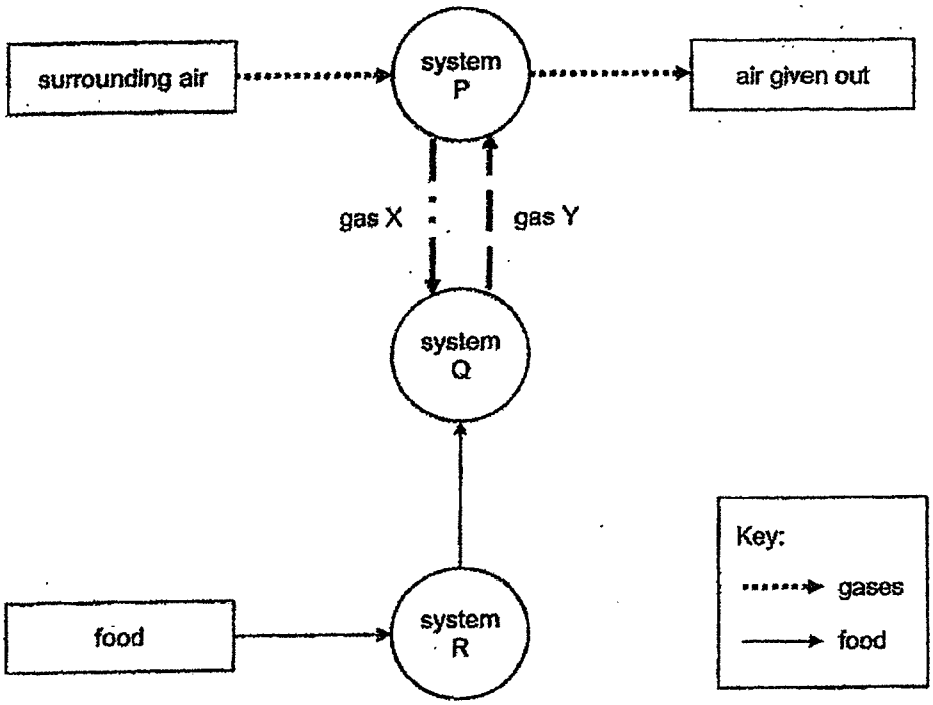
(3)



(4)



8. The diagram below shows how food and various gases are transported in humans.



Based on the diagram above, what do P, Q, R and X represent?

	System P	System Q	System R	Gas X
(1)	circulatory	digestive	respiratory	carbon dioxide
(2)	respiratory	digestive	circulatory	carbon dioxide
(3)	digestive	circulatory	respiratory	oxygen
(4)	respiratory	circulatory	digestive	oxygen

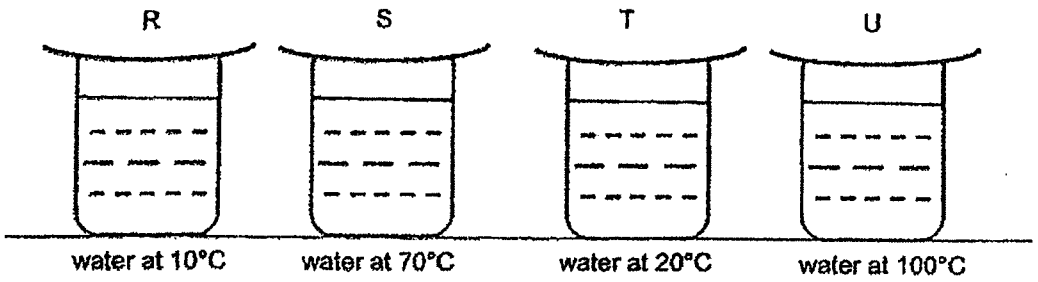
9. Which one of the following statements is **wrong**?

(1) Digestion of food ends in the large intestine.
(2) Food is broken down into smaller pieces in the mouth.
(3) Food is transported from the mouth to the stomach through the gullet.
(4) Digestive juices in the stomach breaks down food into simpler substances.

10. Water can exist in three states.
Which one of the following are correct examples of the different states of water?

	Solid	Liquid	Gas
(1)	snowflakes	clouds	water vapour
(2)	snowflakes	steam	clouds
(3)	clouds	water vapour	steam
(4)	icebergs	water droplets	clouds

11. The diagram below show 4 similar beakers, R, S, T and U, each filled with 100ml of water at different temperatures. Each beaker was covered with a similar lid and was placed on the table at room temperature of 30°C.



Which of the beakers would have water droplets forming on the outer surface of the beaker after some time?

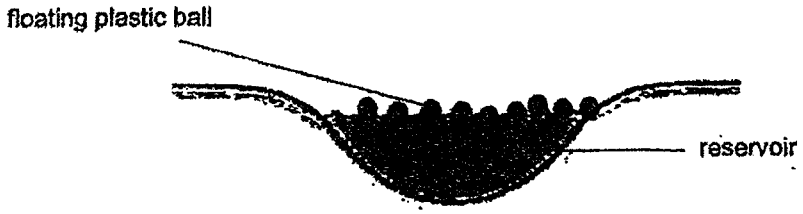
(1) R and S only
(2) R and T only
(3) S and U only
(4) T and U only

12. Which of the following is **wrong** regarding the water cycle?

A When the temperature of the environment increases, the rate of evaporation increases.
B When the temperature of the environment increases, the rate of evaporation decreases.
C When water vapour rises up to the cooler sky, it loses heat and condenses into water droplets.

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

13. The diagram below shows some floating plastic balls released into a reservoir to prevent the reservoir from drying up during long periods of hot weather.



Which of the following correctly shows how the plastic balls slow down the rate of evaporation?

(1) They increase the exposed surface area of the reservoir.
(2) They decrease the exposed surface area of the reservoir.
(3) They increase the temperature of the water in the reservoir.
(4) They decrease the temperature of the water in the reservoir.

14. Which of the following activities could have caused an increase in water pollution?

A Increase in the number of oil spills
B Releasing waste from factories into the river
C Treating sewage before releasing into water bodies

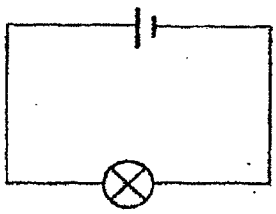
(1) A only
(2) A and B only
(3) B and C only
(4) A, B and C

15. Which of the following activities would help to conserve water?

A Taking a bath instead of a shower
B Using running water to wash the dishes instead of a basin
C Using half-flush instead of full-flush when flushing the toilet
D Brushing teeth with a cup of water instead of running tap water

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

16. Shu Ting set up the circuit with a working bulb and battery as shown in the diagram below.

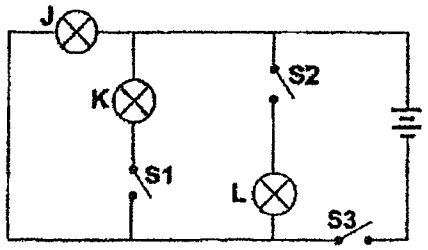


The bulb lit up at first. Shu Ting then connected 1 more working battery to the circuit and the bulb did not light up.

Which one of the following correctly explains why the bulb in the circuit did not light up?

(1) There is no switch in the circuit.
(2) The batteries are arranged wrongly.
(3) One of the batteries have no energy.
(4) There are not enough wires in the circuit.

17. Michelle set up an electric circuit as shown in the diagram below.

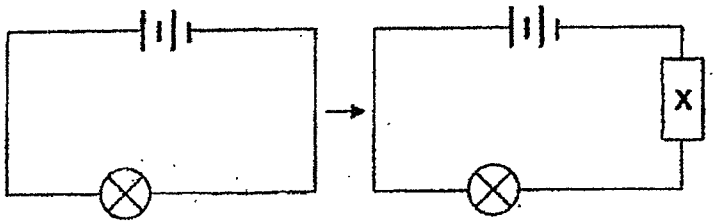


Michelle wanted bulb J to light up first, followed by bulb K and lastly, bulb L.

In which order must the switches, S1, S2 and S3, be closed so that the bulbs will light up according to Michelle's condition?

	First switch to be closed	Second switch to be closed	Last switch to be closed
(1)	S1	S2	S3
(2)	S1	S3	S2
(3)	S3	S1	S2
(4)	S3	S2	S1

18. Juliana set up an electric circuit with 2 working batteries and 1 working bulb as shown below.

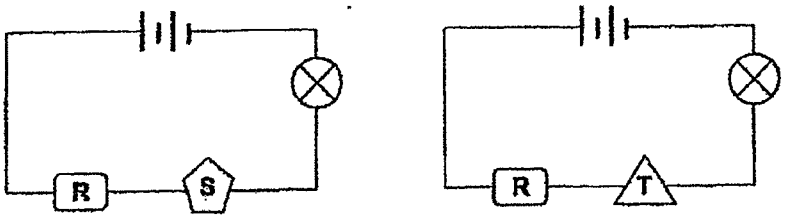


The bulb lit up at first. Juliana then connected material X to the circuit and the bulb did not light up.

Which of the following materials could material X most likely be?

(1) iron
(2) steel
(3) plastic
(4) copper

19. Lucas set up 2 electrical circuits, A and B, as shown in the diagram below. In each circuit, he used a working bulb and 2 working batteries. He placed objects R and S in circuit A and objects R and T in circuit B.



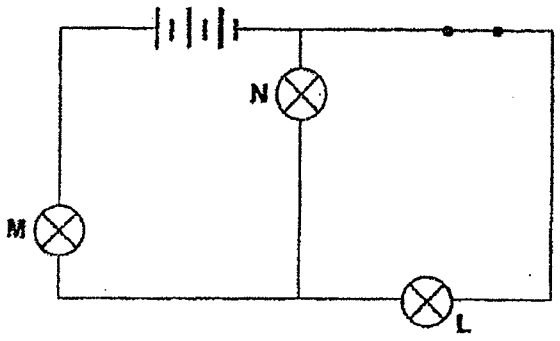
Circuit A Circuit B

He then observed that only the bulb in circuit B lit up.

Which of the following materials did Lucas most likely used to make objects, R, S and T?

	Object R	Object S	Object T
(1)	steel	plastic	rubber
(2)	aluminium	rubber	iron
(3)	rubber	steel	aluminium
(4)	plastic	iron	steel

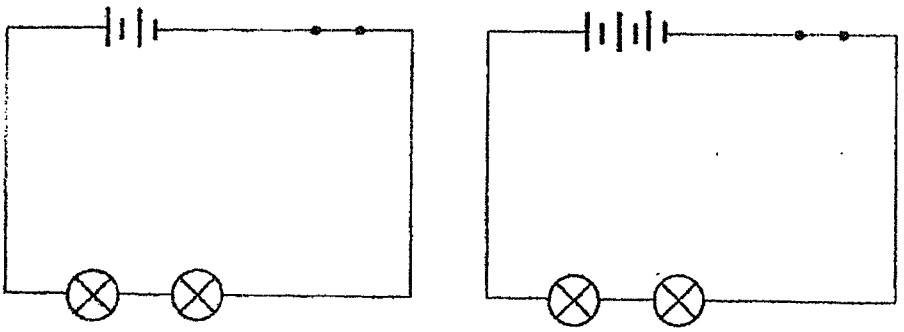
20. The diagram below shows an electrical circuit.



Which one of the following statements is correct?

(1) There are 6 batteries in the circuit.
(2) The switch controls all the bulbs in the circuit.
(3) When bulb M fuses, bulbs N and L will still light up.
(4) When bulb N fuses, bulbs M and L will still light up.

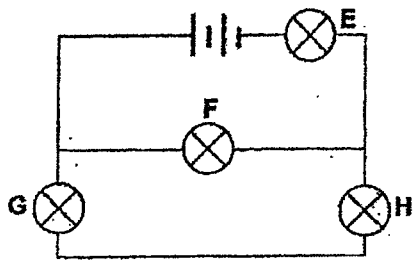
21. Gina set up two electrical circuits, P and Q, as shown in the diagram below.



Which one of the following correctly shows the aim of her experiment?

(1) To find out if the number of wires affects the brightness of the bulbs.
(2) To find out if the number of bulbs affects the brightness of the bulbs.
(3) To find out if the number of switch affects the brightness of the bulbs.
(4) To find out if the number of batteries affects the brightness of the bulbs.

22. The diagram below shows an electrical circuit with 2 working batteries and 4 bulbs, E,F,G and H.



All the bulbs lit up. After some time, one bulb fused and all the 3 other bulbs did not light up.

Which one of the bulbs had fused?

(1) Bulb E
(2) Bulb F
(3) Bulb G
(4) Bulb H

23. Which of the following statements show how to use electricity wisely and safely?

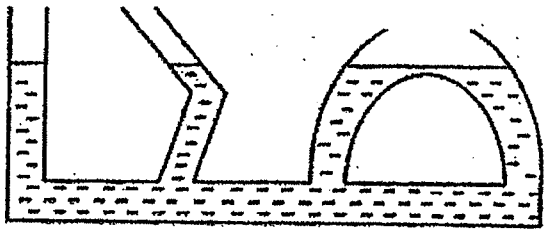
A Put only one plug into each socket.
B Switch off the fan when not in use.
C Leave the television on when sleeping.
D Pull the plug out of the socket when the switch is still on.

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

24. Which one of the following does not have mass and does not take up space?

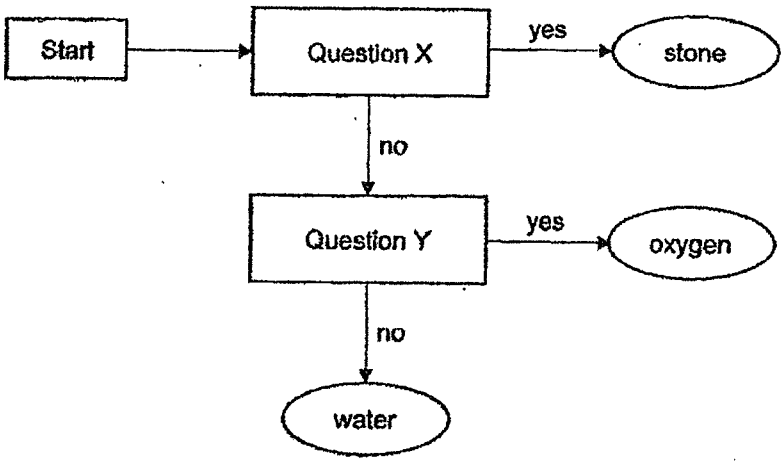
(1) air
(2) heat
(3) stone
(4) water

25. Which property of liquids is shown through the experiment below?



(1) Liquids have mass.
(2) Liquids have definite shape.
(3) Liquids have no definite volume.
(4) Liquids takes the shape of its container.

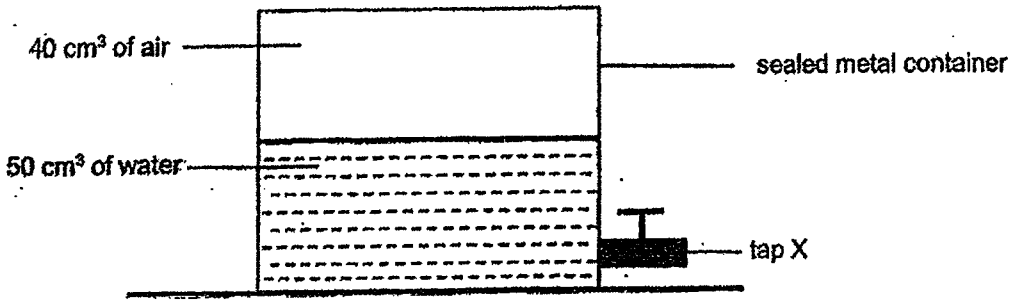
26. Study the flow chart below.



Which of the following correctly represent questions X and Y?

	Question X	Question Y
(1)	Does it have a definite volume?	Can it be compressed?
(2)	Does it have a definite shape?	Does it have a definite volume?
(3)	Does it have a definite shape?	Can it be compressed?
(4)	Can it be compressed?	Does it have a definite shape?

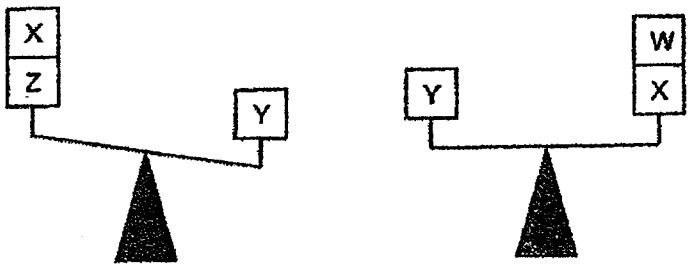
27. An experiment was set up using a sealed metal container which is totally filled with 50 cm^3 of water and 40 cm^3 of air as shown below. 20 cm^3 of water was then removed from the container through tap X.



What is the volume of air and water in the container at the end of the experiment?

	Volume of air	Volume of water
(1)	40 cm^3	50 cm^3
(2)	40 cm^3	30 cm^3
(3)	30 cm^3	60 cm^3
(4)	60 cm^3	30 cm^3

28. The diagram below shows the masses of objects W, X, Y and Z.



Based on the information above, which of the following conclusions correctly represent the masses of objects W, X, Y and Z?

A W has a greater mass than Z.
B X has the same mass as Y.
C The total mass of W, X and Z will be more than Y.

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

~ END OF BOOKLET A ~

NANYANG PRIMARY SCHOOL

2022
PRIMARY 5
END-OF-YEAR EXAMINATION

SCIENCE
(BOOKLET B)

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

INSTRUCTIONS TO CANDIDATES

1. Write your name and index number in the space provided.
2. Do not open this booklet until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Write your answers to Questions 29 to 40 in the spaces provided.

Booklet A:		56
Booklet B:		44
Total:		100

Name: _____ ( )

Class: Primary 5 ( )

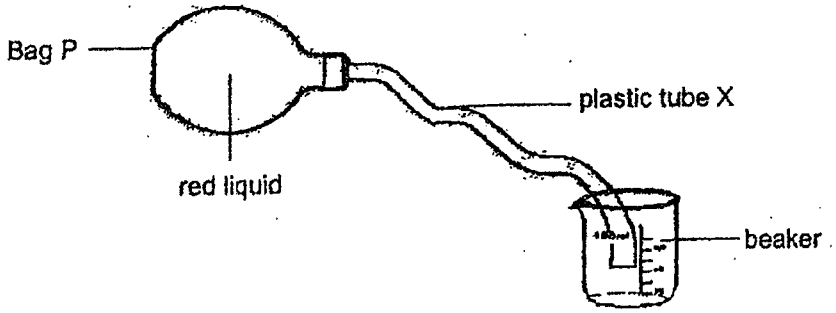
Parent's signature: _____

Please sign and return the paper the next day. Any queries should be raised at the same time when returning the paper.

Booklet B consists of 18 printed pages including this cover page.

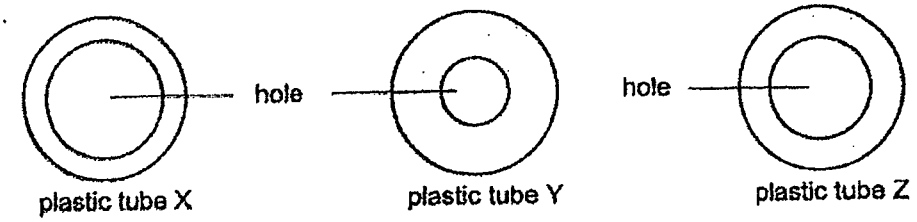
Section B: Open-Ended Questions [44 marks]

29. Frank made a model of the human circulatory system using bag P filled with red liquid and plastic tube X as shown below. When he squeezed bag P, the red liquid flowed through tube X and is collected in the beaker.



(a) Which organ in the human circulatory system can be represented by bag P? State the function of this organ. [1]

Frank filled bag P with 100ml of red liquid and squeezed bag P once. He measured the amount of red liquid collected in the beaker. He repeated the experiment using plastic tubes Y and Z. He used the same strength to squeeze the bag each time. The cross-section of plastic tubes X, Y and Z, are shown below.



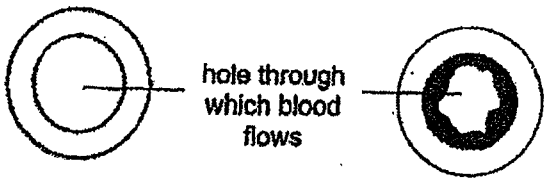
The results of his experiment are shown in the table below.

	Amount of red liquid collected in the beaker (ml)		
	Plastic tube X	Plastic tube Y	Plastic tube Z
1st time	86	40	73
2nd time	88	42	75
3rd time	89	42	71

(b) What is the relationship between the size of the hole in the plastic tube and the amount of red liquid collected in the beaker? [1]

2

The diagram below shows the cross-section of a blood vessel belonging to Lala, a healthy person, and a blood vessel belonging to Nana, who has disease H.



Blood vessel of Lala

Blood vessel of Nana with disease H

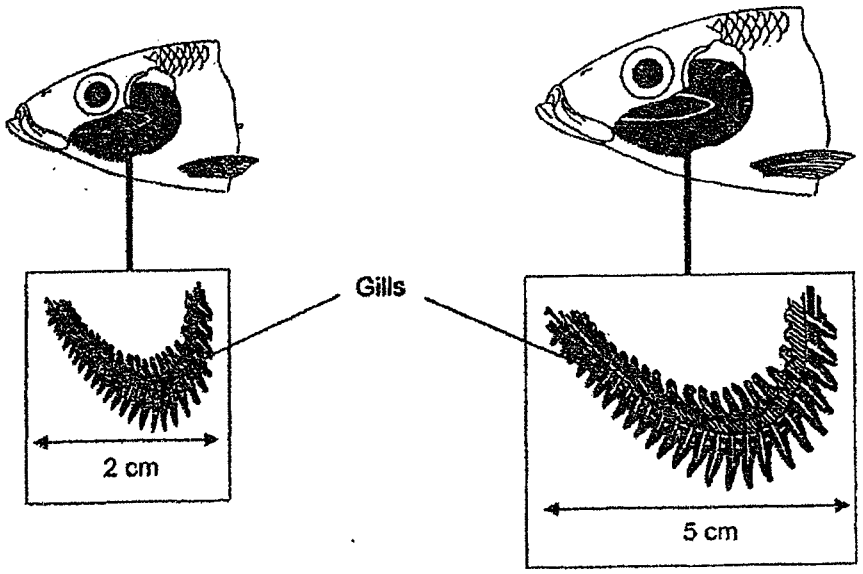
(c) Based only on the information above, if both Lala and Nana's heart rate remains the same, explain why Nana will get less oxygen and digested food than Lala. [2]

2

30. The diagram below shows the gills of a young fish and an adult fish.

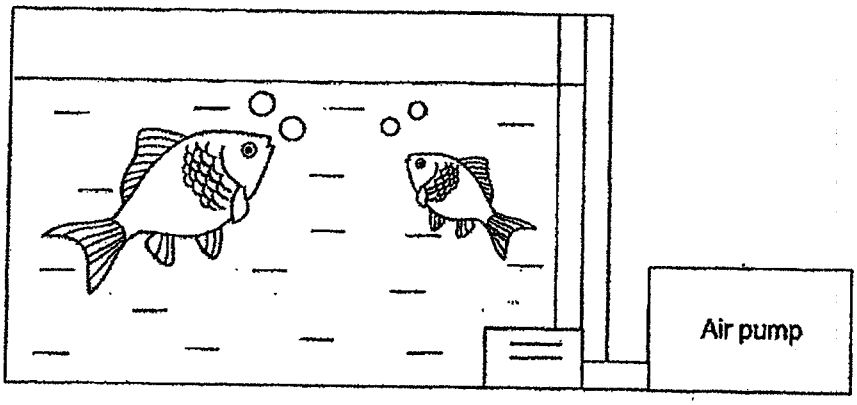
(a) Describe how the fish obtains oxygen from water for life processes. [1]

The diagram below shows the gills of 2 fish of the same kind.

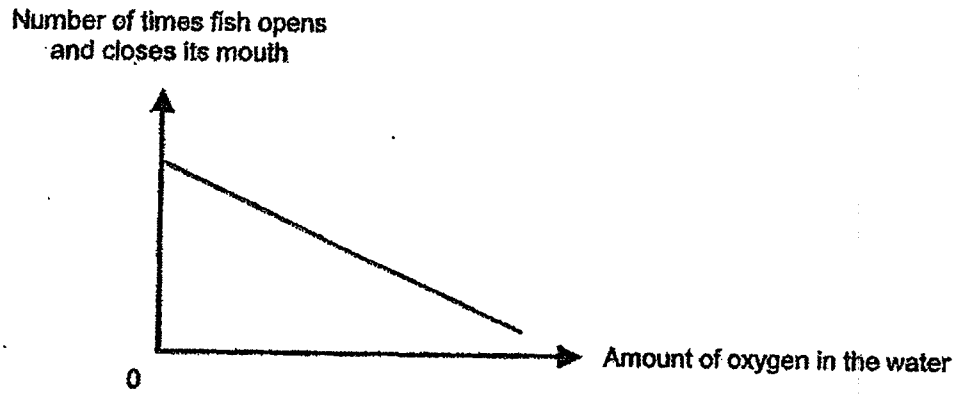


(b) Based on the diagram above, give a reason why gaseous exchange is greater when the fish has bigger gills. [1]

John counted the number of times one of his pet fish opens and closes its mouth after the air pump in the fish tank was damaged.



Study the graph below.

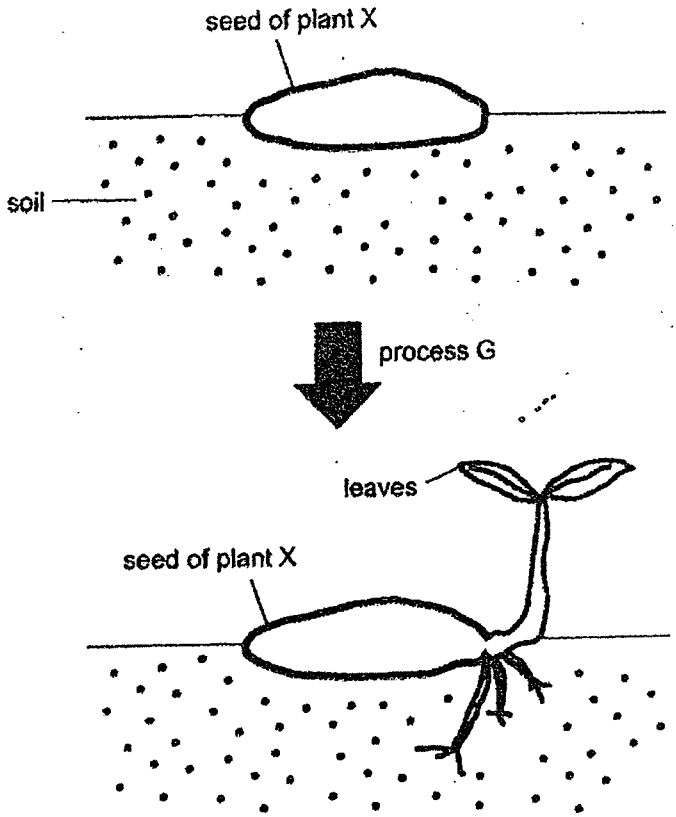


(c) State the relationship between the amount of oxygen in the water and the number of times fish opens and closes its mouth. [1]

(d) Give a reason why the fish's breathing rate increases after the air pump was damaged. [1]

2

31. The diagram below shows a process G that takes place in the life cycle of plant X.

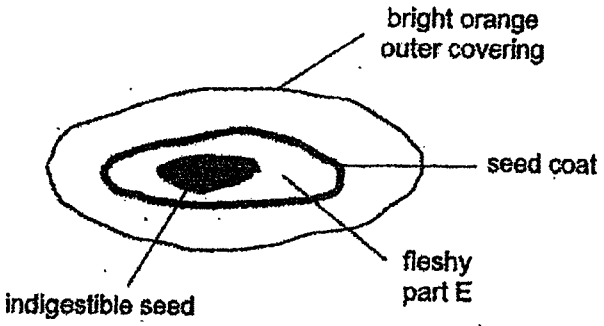


(a) Identify process G. [1]

(b) State all the conditions needed for process G to take place. [1]

2

The diagram below shows some parts of fruit X. The seed coat surrounds a fleshy part E.



Part E serves an important function during process G.

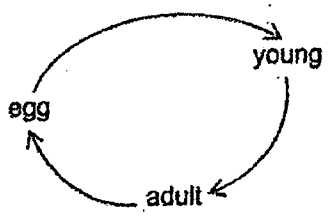
(c) Give a reason why this function is important before the first leaves develops. [1]

(d) Explain how the following characteristics of fruit X helps in its dispersal. [2]

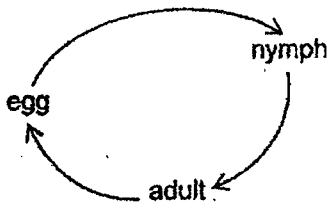
(i) Bright orange outer covering

(ii) Indigestible seed

32. Study the life cycles of two animals as shown in the diagram below.



life cycle of a frog



life cycle of a cockroach

(a) State one similarity and one difference between the two life cycles. [2]

(i) Similarity:

_____

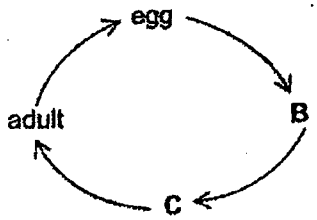
_____

(ii) Difference:

_____

_____

The diagram below shows the life cycle of insect P. In stage B, it eats a lot, grows very quickly, is bigger in size and moults several times. In stage C, it does not feed on anything and it seldom moves.



life cycle of insect P

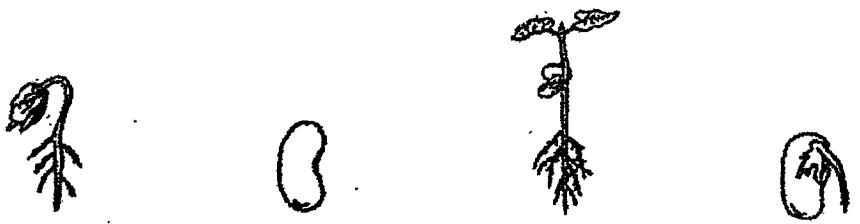
(b) Identify the stages, B and C, in the life cycle of insect P. [1]

(i) Stage B	
(ii) Stage C	

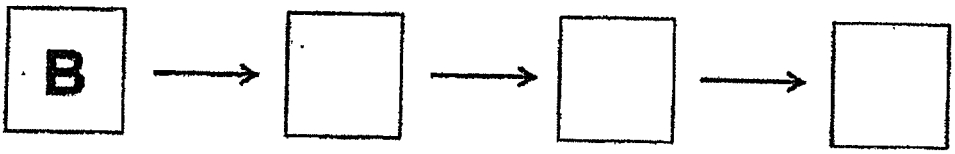
(c) State an example of insect P. [1]

_____

33. The diagram below shows the different stages of the growth of a green bean plant.



(a) Arrange the growth of the green bean seed in the correct order by filling in the letters, A, C and D, in the diagram below. [1]



Gina planted the green bean seed in a pot of soil in a black box. The surrounding temperature was 28°C. The seed did not germinate.

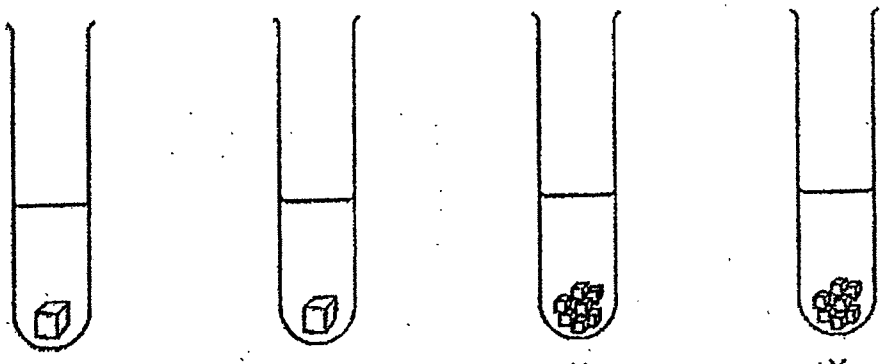
(b) Suggest one change to enable the seed to germinate. Explain your answer. [2]

34. The circulatory system works with the digestive system to provide us with energy to do work.

(a) Beside water, identify the substance provided by the digestive system which is transported in the circulatory system. [1]

(b) Describe how the substance stated in (a) reaches the different parts of the body from the digestive system. [1]

35. Bob carried out the experiment below to find out how food gets digested.



V	W	X	Y
20g sausage cube + 30 cm^3 of water	20g sausage cube + 30 cm^3 of digestive juices	20g cut up sausage cube + 30 cm^3 of digestive juices	20g cut up sausage cube + 30 cm^3 of water

He recorded the time taken for the sausage cube(s) to be digested in each test tube in the table below.

Test tube	Result
V	not digested after 2 hours
W	digested in 2 hours
X	digested in 1 hour
Y	not digested after 2 hours

(a) Based on the information given, what could be concluded from the result of test tubes V and Y? [1]

_____

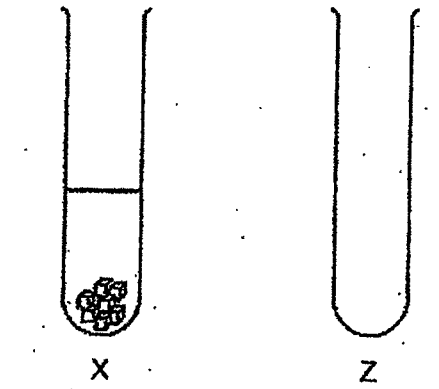
(b) Based on the results in tubes W and X, explain how chewing food helps in digestion. [2]

_____

_____

_____

Bob wanted to find out if boiled digestive juices can help to digest food. He used the set-up below.

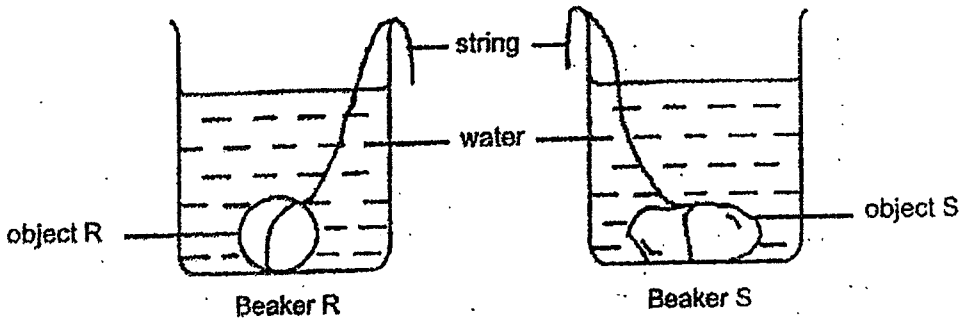


(c) Based on set-up X above, **fill in the table below** by stating the amount of the following variables that Bob must put in test tube Z to conduct a fair test. [1]

	Variables	Amount
(i)	Uncut sausage cube	(g)
(ii)	Cut up sausage	(g)
(iii)	Digestive juices	(cm^3)
(iv)	Boiled digestive juices	(cm^3)

1

36. Joyce lowered objects R and S into similar beakers. Water was then poured into both beakers until they reached the same level as shown below.

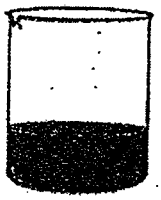
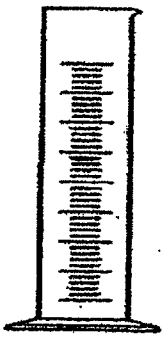
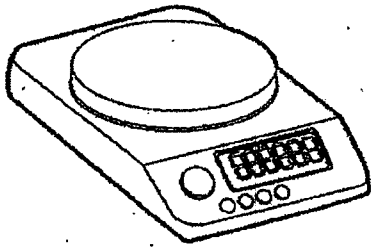


(a) When objects R and S were taken out of the water, what observation about the water level would show Joyce that object S has a bigger volume? [1]

Objects R and S have definite shape.

(b) Based on the results of the experiment, state another property of object R and S. [1]

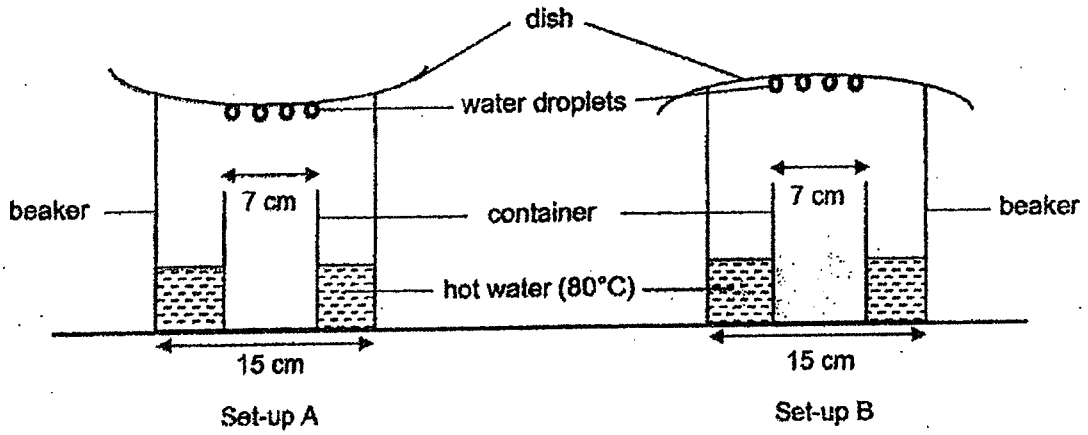
Joyce wanted to find the exact volume of object R. She was given the following items:

			
Object R	A container of water	A measuring cylinder	An electronic balance

(c) Using your choice of any of the item(s) provided, describe the steps that Joyce would need to take to find the volume of object R. (You do not need to fill in all the boxes provided.) [2]

Step	Description
1	Pour the water from the container into the measuring cylinder.
2	
3	
4	
5	

37. John carried out an experiment as shown below.



(a) Give a reason why John observed that more water was collected in the container in set-up A than the container in set-up B. [1]

_____

_____

(b) State the two variables that ensure that the rate of evaporation in the two beakers is the same. [1]

(i) _____

(ii) _____

(c) With reference to processes of evaporation and condensation, explain how the formation of water droplets under the dish is affected when a narrower beaker is used. [2]

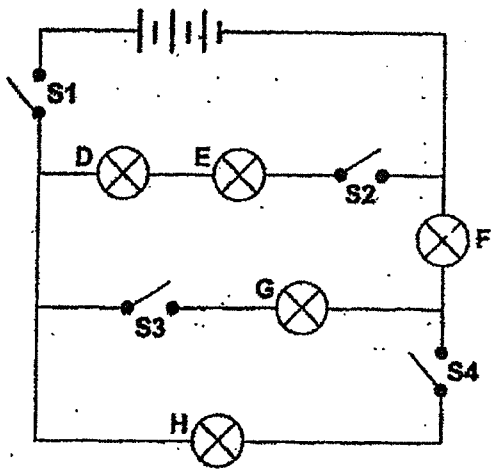
_____

_____

_____

4

38. Wilson set up the electrical circuit with 3 working batteries, 5 working bulbs, D, E, F, G and H, and 4 switches, S1, S2, S3 and S4, as shown below.



(a) Which bulb(s) will light up when only switches, S1 and S3 are closed? [1]

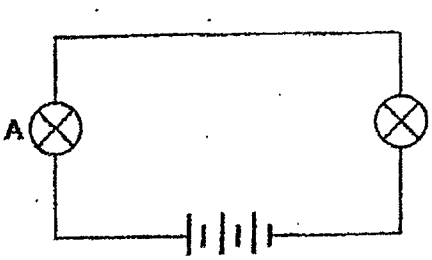
_____

(b) Which switch(es) must be closed in order for bulbs D, E, F and H to light up? [1]

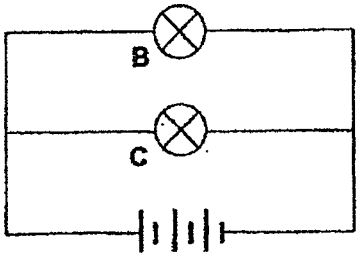
_____

2

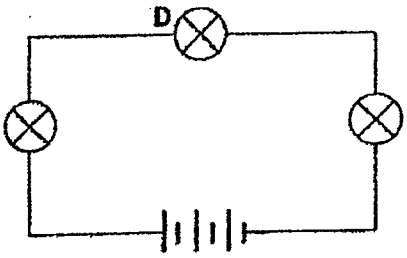
39. Ganesh set up 4 electrical circuits, W, X, Y and Z, as shown in the diagram below.



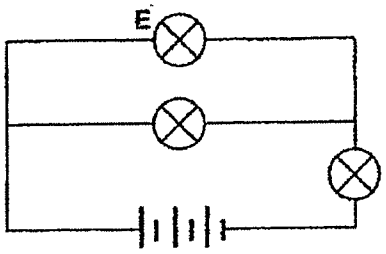
Circuit W



Circuit X



Circuit Y



Circuit Z

(a) State the number of batteries in Circuit X. [1]

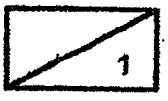
(b) Which bulb(s), A, C, D or E will have the same brightness as Bulb B? Give a reason for your answer. [1]

(c) Which bulb is the dimmest? Give a reason for your answer. [1]

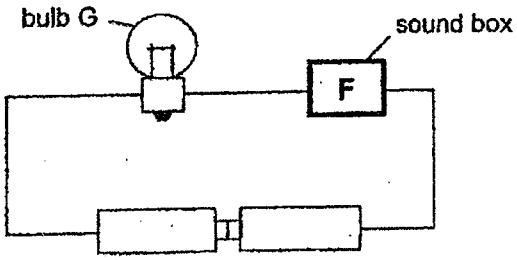
(d) What is the advantage of arranging the bulbs in Circuit Z as compared to Circuit Y? [1]

4

(e) When bulb A fused, will the other bulb in Circuit W light up? Explain your answer. [1]

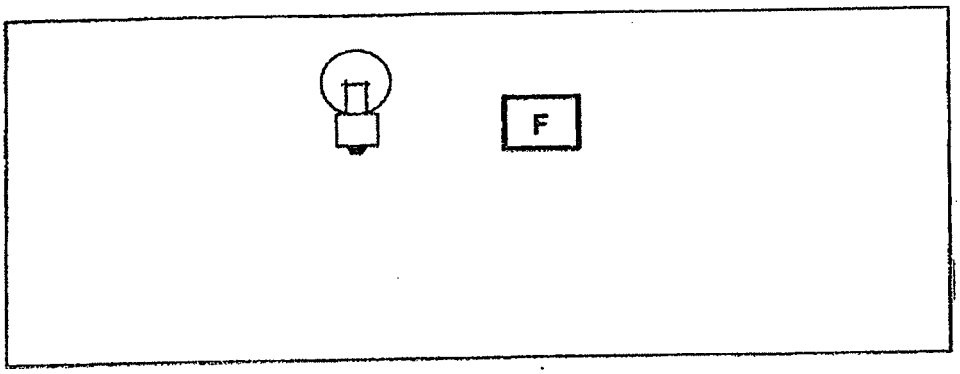


40. Max created a toy alarm system. He set up the electric circuit in the alarm using a sound box F, bulb G and two batteries as shown in the diagram below.



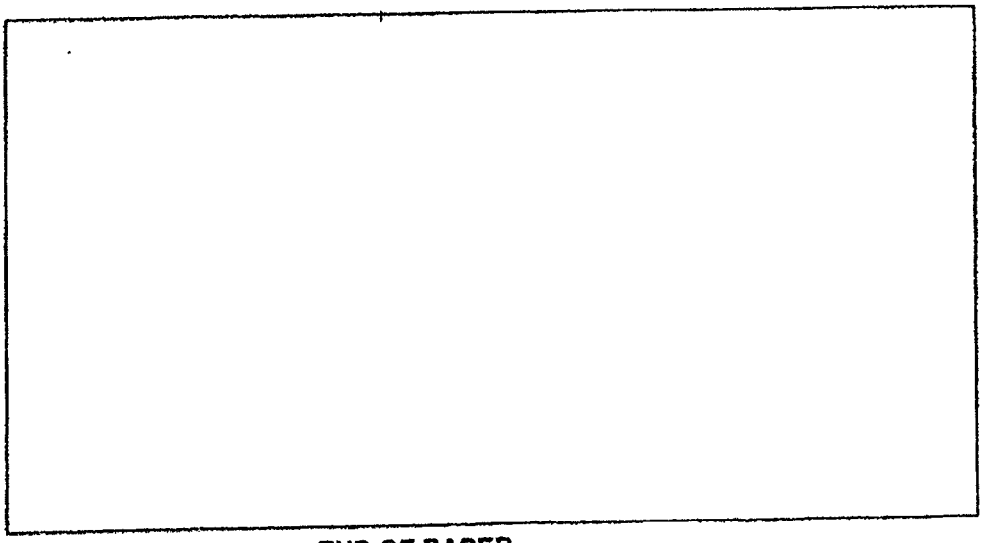
Max noticed that there was no sound and the bulb did not light up. His teacher told him that he had made a few mistakes in setting up his circuit.

(a) Draw a circuit below to correct his mistakes. [1]



Max added another bulb, H and a switch. When he closes the switch, both bulbs light up at the same time and the sound box rings. However, when bulb G fuses, bulb H will still light up.

(b) Using **symbols**, draw a **circuit diagram** to show how you would connect the switch, sound box F, bulb G and bulb H to the circuit. [2]

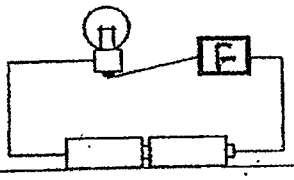
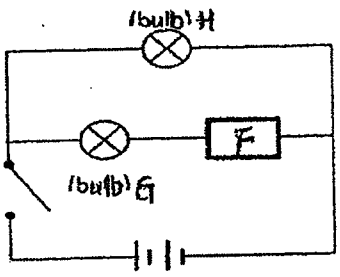


~ END OF PAPER ~

Suggested Answer Key – P5 EYE 2022

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

Qns No		Answer
29	a	Heart. To pump blood around the body.
	b	The bigger the size of the hole in the plastic tube, the more amount of red liquid collected in the beaker.
	c	Data: Blood vessel is partially blocked. Explain: Less blood containing oxygen and digested food can be transported to all parts of the body.
30	a	Water with dissolved oxygen enters through the mouth. The gills absorb oxygen from the water into the blood.
	b	The fish with bigger gills have a larger exposed surface area than the fish with smaller gills.
	c	As the amount of oxygen in the water decreases, the number of times fish opens and closes its mouth increases.
	d	Data: The amount of dissolved oxygen in the water decreases over time. Explain: Hence, the fish breathing rate increases to take in enough dissolved oxygen from the water.
31	a	germination
	b	water, warmth and oxygen/air
	c	**(Void)** Without the leaves, the seedling cannot make food. Part E provides food for the seedling.
	d	i. To attract animals to eat the fruits
		ii. Animals will throw away / pass out the seed after eating the fruit.
32	a	i. Both life cycles have 3 stages.
		ii. The young of the frog does not resemble its adult but the nymph of the cockroach resembles its adult. OR The frog spends part of its life cycle in water but the cockroach spends its entire life cycle on land.
	b	(i) Stage B – larva (ii) Stage C – pupa
	c	Mosquito / Butterfly / Beetle
33	a	B → D → A → C
	b	Pour water on the seed / water the seed daily. The seed needs water to germinate.
34	a	Digested food
	b	At the small intestine,digested food is absorbed into the blood stream and transported by the blood to the different parts of the body.
35	a	Water cannot digest food
	b	Chewing breaks down food into smaller pieces and it increases the surface area of food exposed to digestive juices.Hence, digestion can be completed faster.

	c	(i) Amount of uncut sausage cube: 0 g (ii) Amount of cut up sausage: 20 g (iii) Amount of digestive juices: 0 cm^3 (iv) Amount of boiled digestive juices: 30 cm^3
36	a	Beaker S has a lower water level/ less water than beaker R.
	b	They have (definite or fixed) volume / occupy space.
	c	Step 2: measure the volume of water in the measuring cylinder (A) Step 3:submerge R into the water Step 4: measure the volume of R and the water (B) Step 5: subtract the initial volume (A) from the new volume (B)
37	a	Data: Dish is curved downwards towards the container Explain: More droplets rolled to the center of the dish and dripped from the middle into the container
	b	i. The exposed surface area of hot water
		ii. The temperature of the hot water/surroundings
	c	There is less exposed surface area of the water. Hence, there is less evaporation taking place.Therefore,less water vapour will condense into less water droplets.
38	a	Bulbs F and G
	b	S1, S2 and S4
39	a	3
	b	Choice: Bulb C Data: Bulb B and C are arranged in parallel. Explain: The same amount of electric current flows through the two bulbs
	c	Choice: Bulb D Data: It is arranged in series Explain: The least amount of electric current flowed through the bulbs.
	d	The bulbs in circuit Z are brighter than the bulbs in circuit Y.
	e	Choice: No Data:The bulbs in circuit W are arranged in series Explain: When bulb A fused, it creates an open circuit and electric current cannot flow through the circuit.
40	a	
	b	

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