RED SWASTIKA SCHOOL

SCIENCE
2022 MID-YEAR EXAMINATION
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 13 May 2022

BOOKLET A

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

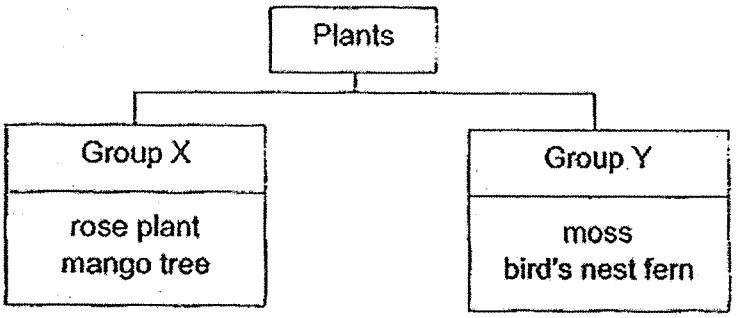
Booklet A: 28 questions (56 marks)

Note:

1. Do not open the booklet until you are told to do so.
2. Read carefully the instructions given at the beginning of each part of the booklet.
3. Do not waste time. If the question is too difficult for you, go on to the next question.
4. Check your answers thoroughly and make sure you attempt every question.
5. In this booklet, you should have the following:
   a. Page 1 to Page 19
   b. Questions 1 to 28

For Questions 1 to 28, choose the most suitable answer and shade its number in the OAS provided.

1. Study the chart below.



Which one of the following shows the correct heading for groups X and Y?

	Group X	Group Y
(1)	grows on land	grows in water
(2)	has a weak stem	has a strong stem
(3)	produces flowers	does not produce flowers
(4)	reproduces from spores	reproduces from seeds

2. The table below shows some characteristics of the male reproductive cells in a flowering plant and a human.

	Flowering plant	Human
A	produced in the anther	produced in the testes
B	required for pollination and fertilisation	required for fertilisation
C	fuses with female reproductive cell in the stigma	fuses with female reproductive cell in the ovary

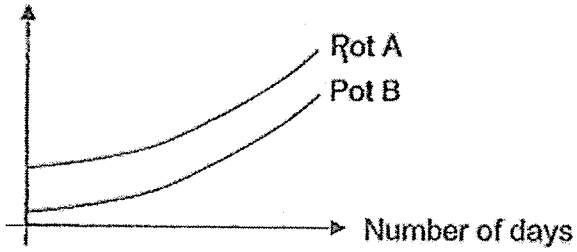
Which of the following is/are correct?

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

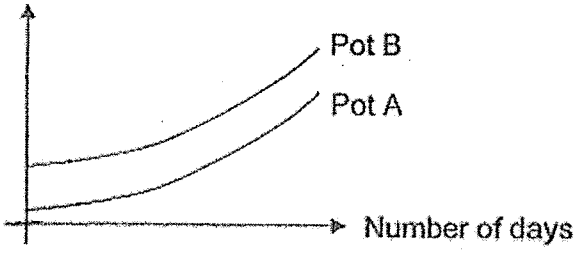
3. Some seedlings of the same height were planted in two identical pots, A and B, for two weeks. The pots had the same amount of soil and water. The pots were given the same amount of sunlight.

Which graph below shows the average height of the seedlings in Pots A and B?

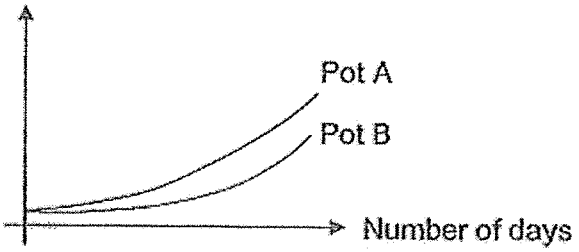
(1)



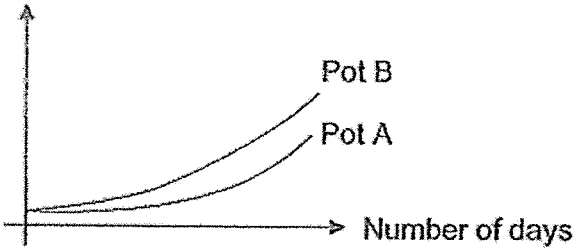
(2)



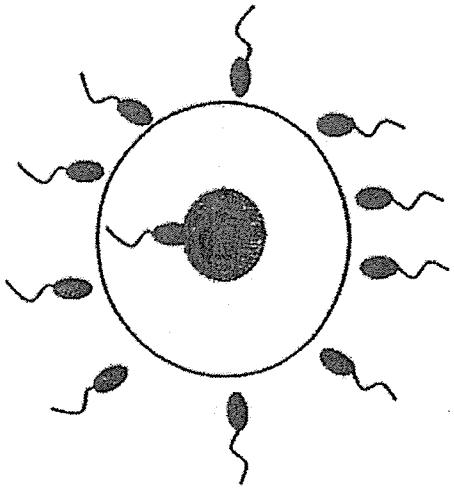
(3)



(4)

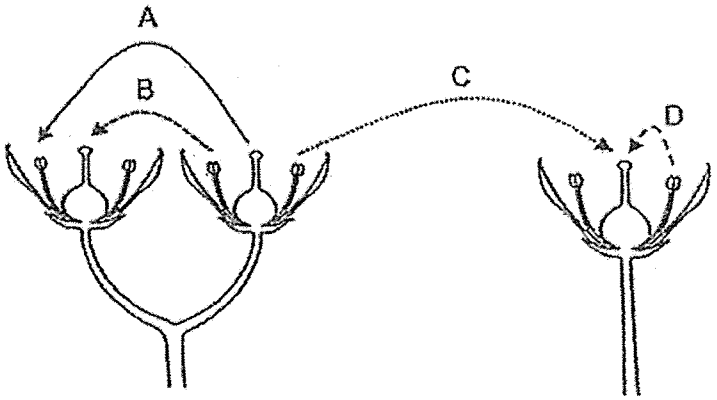


4. Process X takes place in the human reproductive cell as shown below.



process X

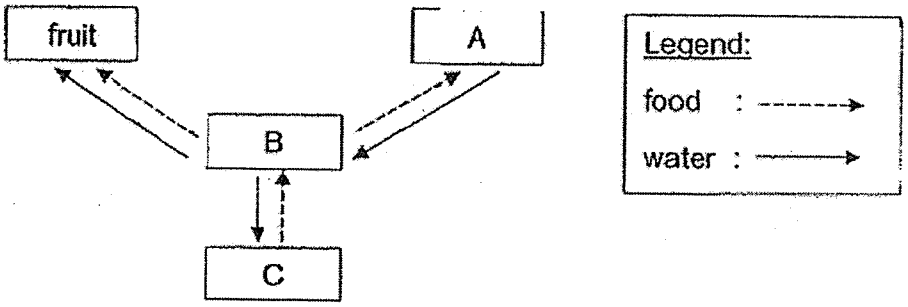
Process X can also take place in plants. The diagram below shows the flowers of two plants. Both plants are of the same type.



Flowers undergo process Y before process X can take place in the flowers.
Which arrow(s) show(s) process Y?

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

5. The diagram below shows how food and water are transported to and from different parts of a plant.



Which one of the following correctly shows the parts of the plant that are represented by A, B and C?

	A	B	C
(1)	roots	stem	leaves
(2)	stem	leaves	roots
(3)	roots	leaves	stem
(4)	leaves	roots	stem

6. Muthu observed three cells, X, Y and Z, under the microscope. He recorded his observations in the table below. A tick (√) indicates the presence of the part of the cell.

Part of cell	Cell X	Cell Y	Cell Z
Cell Wall		√	√
Nucleus	√	√	√
Cloroplasts			√

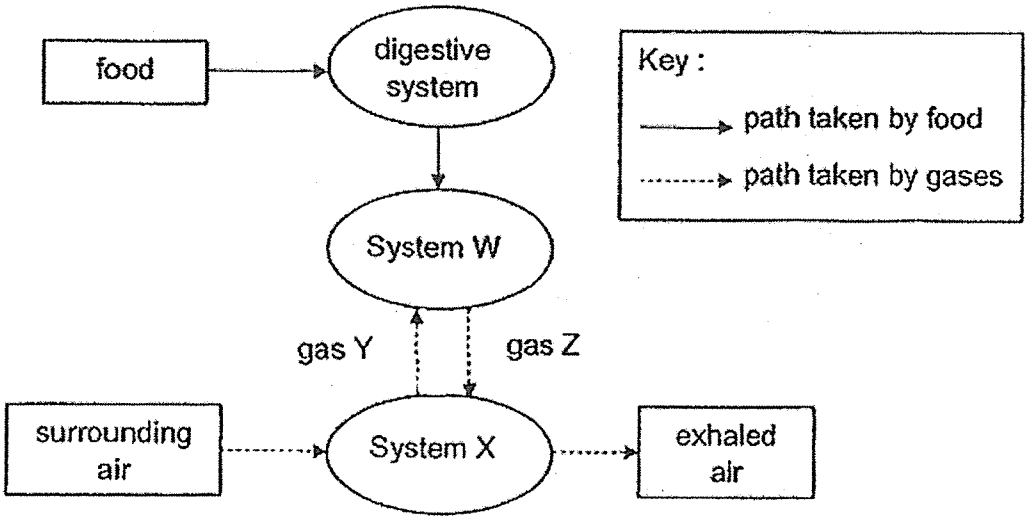
Muthu made some statements about the three cells.

A Cell Y most likely belongs to an animal.
B Cell X can be found in the stem of a plant.
C Cell Z is most likely able to produce oxygen.

Which of the above statements is/are correct about cells X, Y and Z?

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

7. The diagram below shows how human systems work together.



Which systems do W and X represent and what are gases Y and Z?

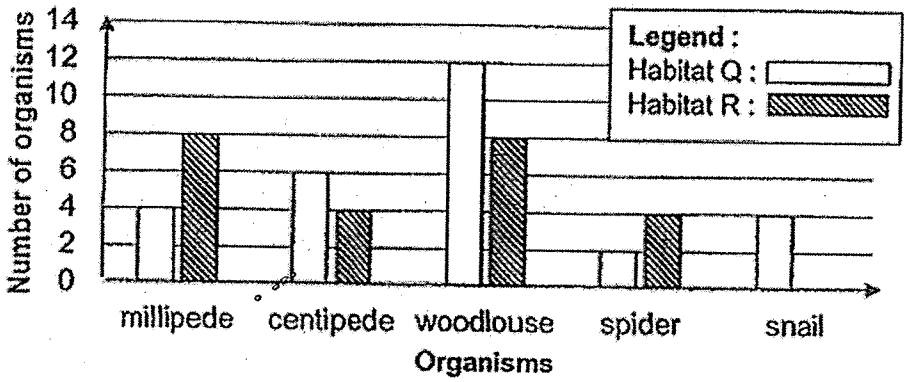
	System W	System X	Gas Y	Gas Z
(1)	circulatory	respiratory	oxygen	carbon dioxide
(2)	circulatory	respiratory	carbon dioxide	oxygen
(3)	respiratory	circulatory	oxygen	carbon dioxide
(4)	respiratory	circulatory	carbon dioxide	oxygen

8. Which of the following organisms are decomposers?

A grass
B bacteria
C caterpillar
D mushrooms

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

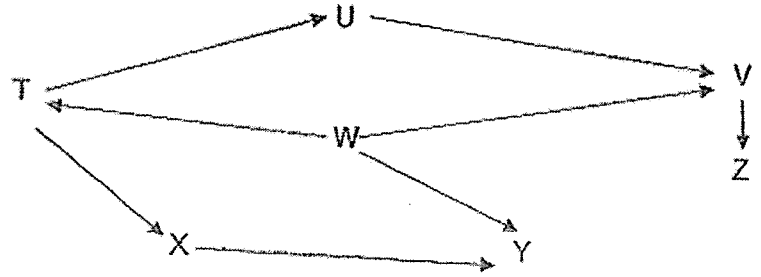
9. The bar graph below shows the number of different organisms living in two different habitats, Q and R.



Based on the graph, which of the following statements is correct?

(1) There are five populations in habitat R.
(2) There are more populations in habitat Q than R.
(3) There are nine communities in habitats Q and R.
(4) There are twelve populations of woodlouse in habitat Q.

10. Study the food web below.

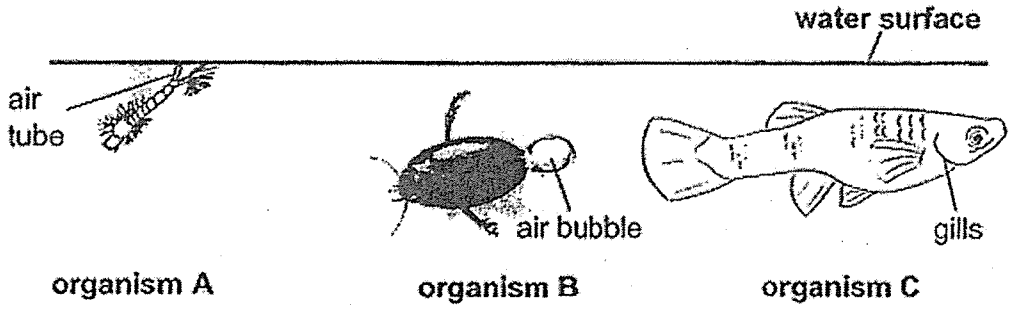


Which of the following statements about the food web are correct?

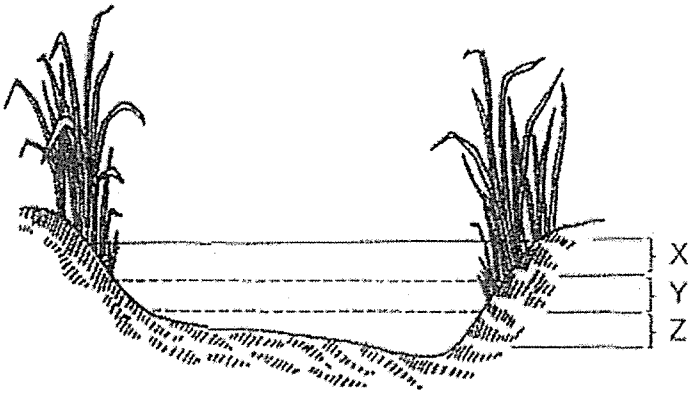
A Y is a food producer.
B U and X are plant-and-animal eaters.
C T is the only plant-eater.
D Population of Z will decrease when population of V decreases.

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

11. The diagram below shows three organisms, A, B and C, which live in the same pond habitat.



James observed for an hour the movement of organisms A, B and C in three areas, X, Y and Z, of the pond.



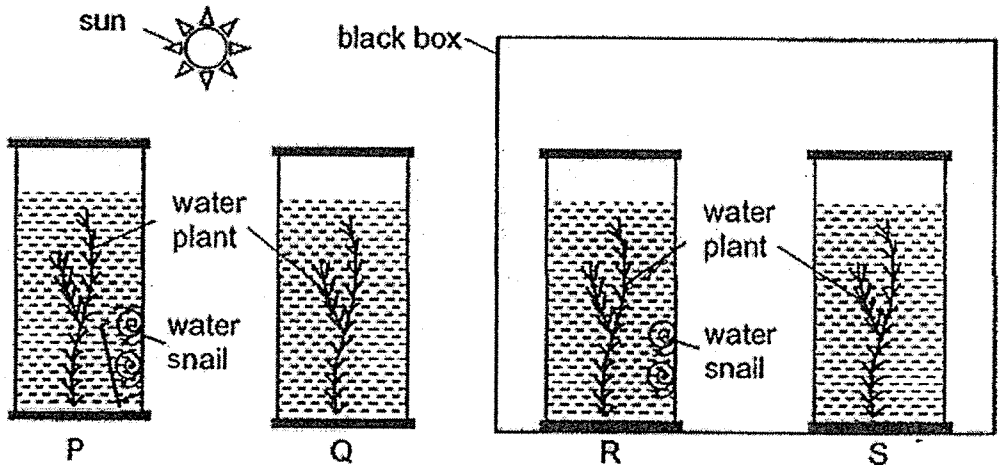
He put a tick in the box below if the organisms entered an area.

Organism	Area X	Area Y	Area Z
A	√		
B	√	√	
C	√	√	√

Based on the information above, which one of the following statements is correct?

(1) The prey of organism A can only be found in Area Z.
(2) Organism A is least adapted to look for food at the bottom of the pond.
(3) Organisms B and C do not need oxygen as they are able to go below area X.
(4) Only organism A will survive if a layer of oil was poured on the surface of the water.

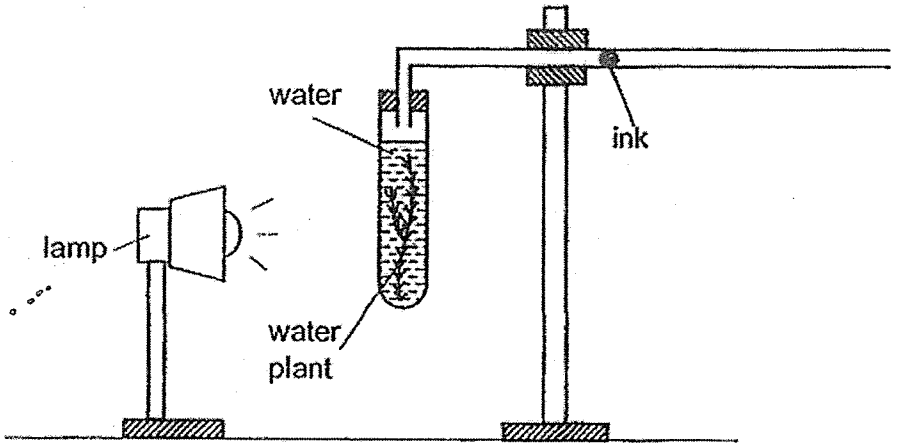
12. P, Q, R and S are airtight jars which contained either water plants or water plants with water snails. Jars P and Q were placed in a garden while Jars R and S were placed in a black box in a room.



At the end of the experiment, which jar would have the least amount of carbon dioxide?

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

13. Bala set up the apparatus below to investigate the factors affecting the rate of photosynthesis.

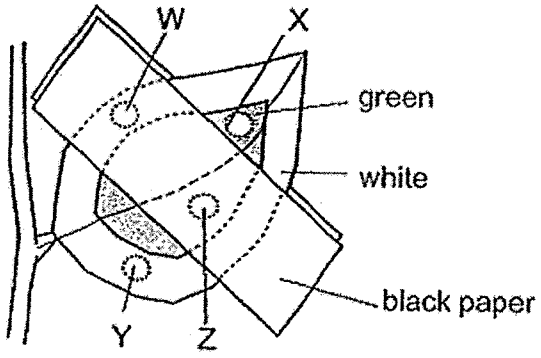


What can Bala do to make the ink move to the right faster?

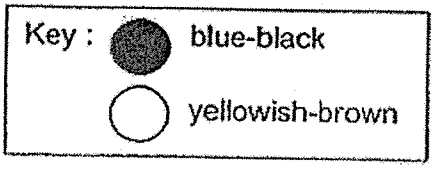
A Add more water plants in the test tube.
B Move the lamp closer to the water plant.
C Remove the water plant in the test tube.
D Move the lamp further away from the water plant.

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

14. The diagram below shows a leaf of a plant used in an experiment. Chlorophyll is only present in the green part of the leaf. At the start of the experiment, there was no starch in the leaf. Next, the leaf was partly covered by black paper.

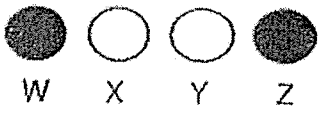


The plant was then put in the sun. After several hours, four discs, W, X, Y and Z, were punched out from the leaf in the positions shown above. The discs were tested for starch using iodine solution. Iodine solution turns from yellowish-brown to blue-black in the presence of starch.

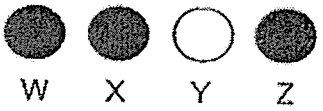


Which one of the following shows the correct colour on the four discs?

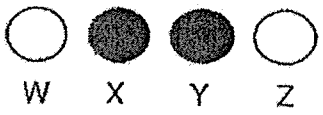
(1)



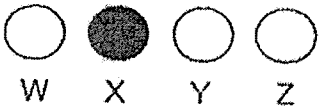
(2)



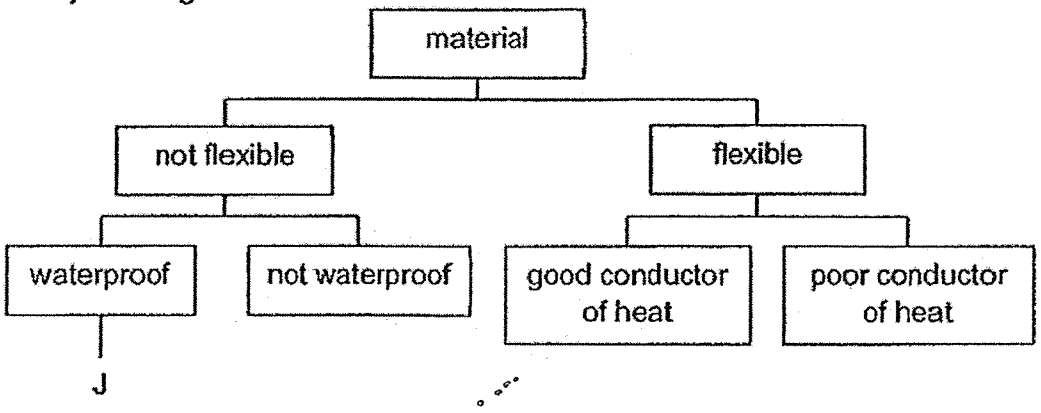
(3)



(4)



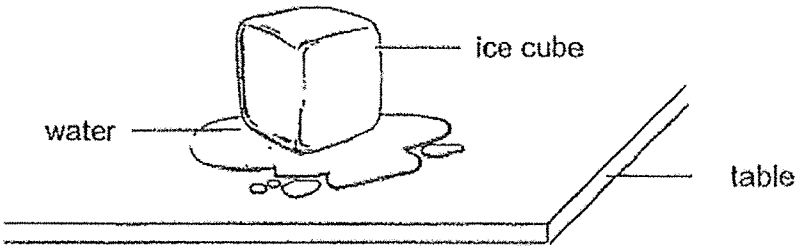
15. Study the diagram below.



Based on the diagram above, which of the following correctly identifies the properties of material J?

	waterproof	flexible	good conductor of heat
(1)	no	yes	no
(2)	yes	yes	not possible to tell
(3)	yes	no	no
(4)	yes	no	not possible to tell

16. A piece of ice was taken out from the freezer and left on a table at room temperature as shown in the diagram below.



Which of the following statements is correct?

(1) The water gained heat fom the ice cube.
(2) The water lost heat to the surroundings.
(3) The ice cube gained heat from the surrounding air.
(4) The surrounding air gained heat from the ice cube.

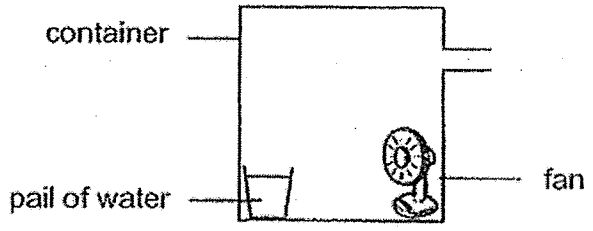
17. The statements below describe the properties of substance S at different temperatures.

- At 30°C, S has definite volume and shape.
- At 45 °C, S does not have a definite shape but a definite volume
- At 95 °C, S can be compressed.

Which of the following are the possible melting and boiling points of substance S described above?

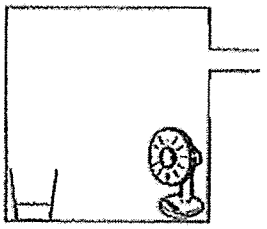
	melting point (°C)	boiling point(°C)
(1)	25	110
(2)	35	100
(3)	40	80
(4)	50	75

18. Dominic carried out an experiment to find out whether the presence of wind affects the rate of evaporation of water.

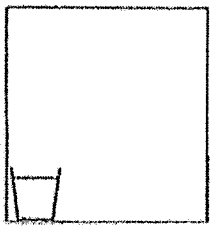


Which of the following should he use as a control set-up for the experiment?

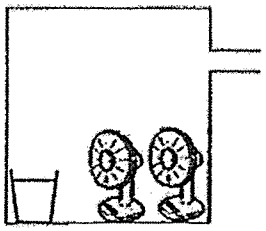
(1)



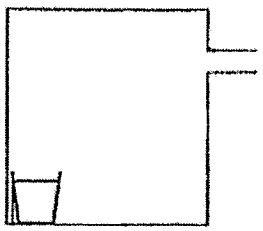
(2)



(3)



(4)

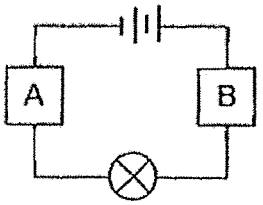


19. Which of the following statements show safe use of electricity?

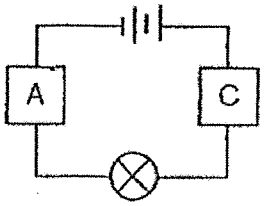
A Handling electrical appliances when hands are wet.
B Checking electrical appliances for any exposed wires.
C Plugging in many electrical appliances into one socket.
D Getting an electrician to repair damaged electrical appliances.

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

20. Two circuits with objects A, B and C were set up as shown below.

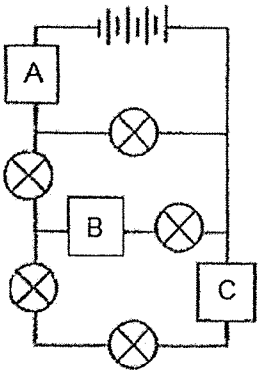


bulb did not light up



bulb lit up

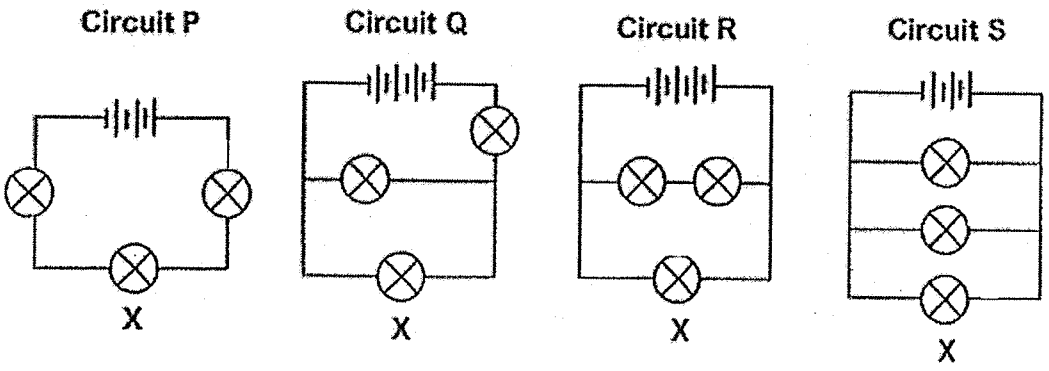
Objects A, B and C were rearranged to form a new circuit below.



How many bulb(s) would light up in the new circuit?

(1) 1
(2) 5
(3) 3
(4) 4

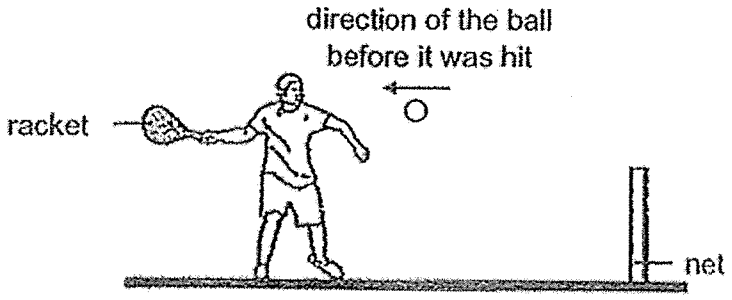
21. Four circuits, P, Q, R and S, were set up as shown below.



Which of the following arrangements shows the brightness of bulb X in the circuits correctly?

	Dimmest ←			→ Brightest
(1)	P	Q	S	R
(2)	P	R	Q	S
(3)	R	S	Q	P
(4)	S	R	Q	P

22. A ball is moving towards Roger as shown in the diagram below.

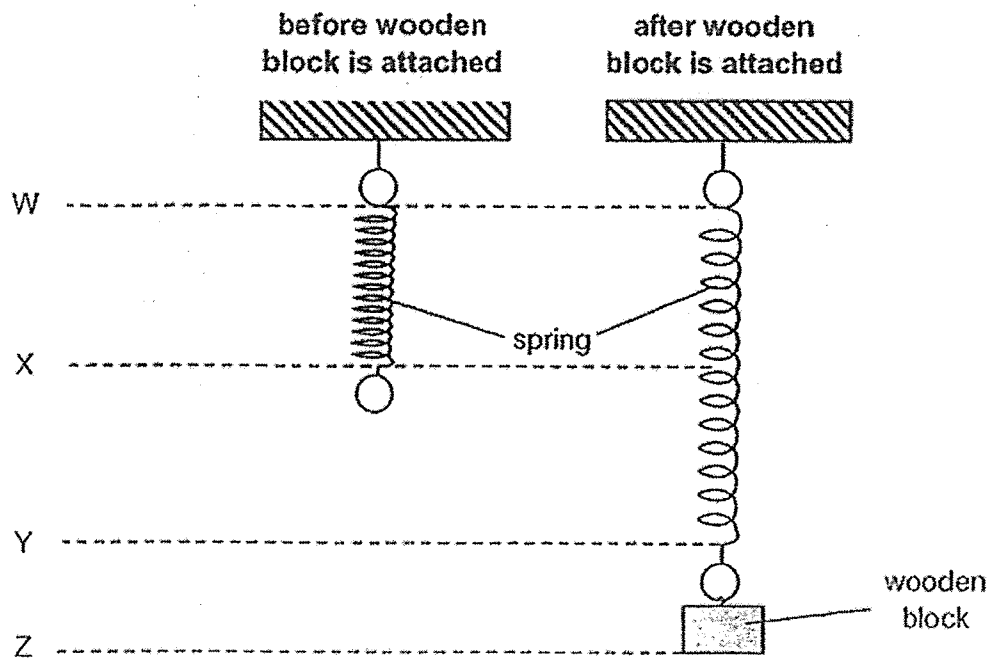


Which of the following change(s) would take place in the ball when Roger hit the ball with his racket?

A Change in mass
B Change in speed
C Change in direction

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

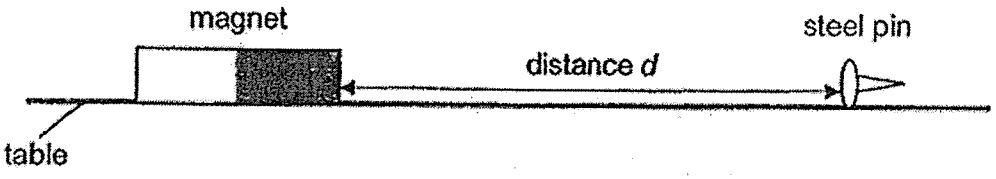
23. Vanessa conducted an experiment using the set-up below.



Based on the results shown above, which distance should Vanessa measure to determine the extension of the spring caused by the wooden block?

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

24. Jaime conducted an experiment using the set-up below.



She moved the magnet towards the steel pin and recorded the distance d at which the steel pin is first attracted to the magnet. She repeated the experiment with three other magnets of different sizes and the results are shown below.

magnet	distance *d* (cm)
 A	10
 B	6
 C	2

Based on the results above, what could Jaime infer from her experiment?

A Only magnet A can attract the pin from 7 cm away.
B Magnet C has a greater magnetic strength than magnet B.
C The bigger the size of the magnet, the greater the magnetic strength.

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

25. Ahmad pasted magnet M on an electronic balance as shown in diagram 1.

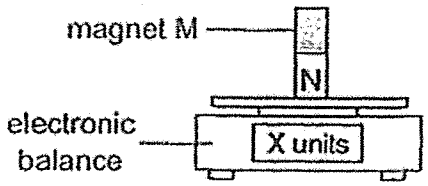


Diagram 1

When another magnet that was clamped on a retort stand was brought near to magnet M, Ahmad noticed that the readings on the electronic balance changed as shown in diagrams 2 and 3.

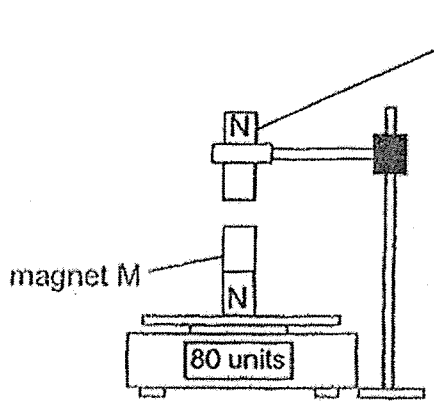


Diagram 2

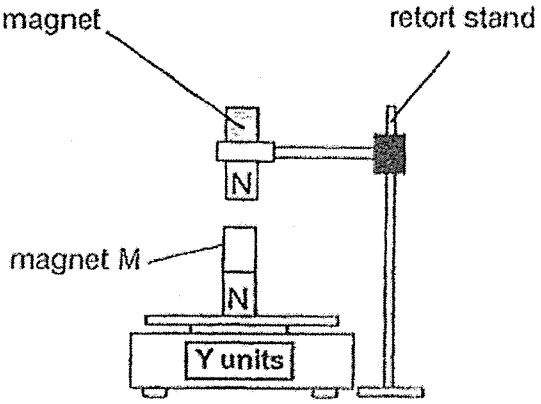
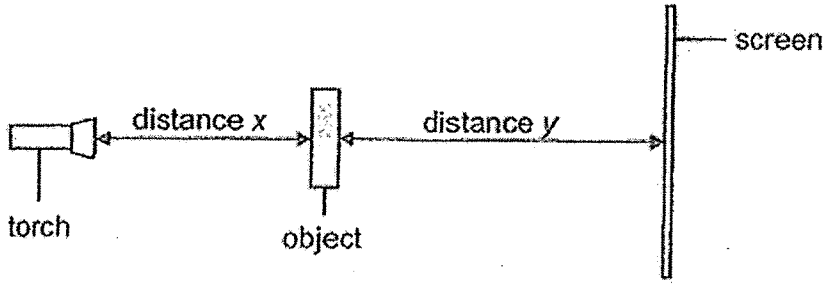


Diagram 3

Which of the following shows the likely readings on the electronic balance for X and Y?

	Electronic balance reading (units)	
	X	Y
(1)	60	90
(2)	70	60
(3)	80	80
(4)	90	60

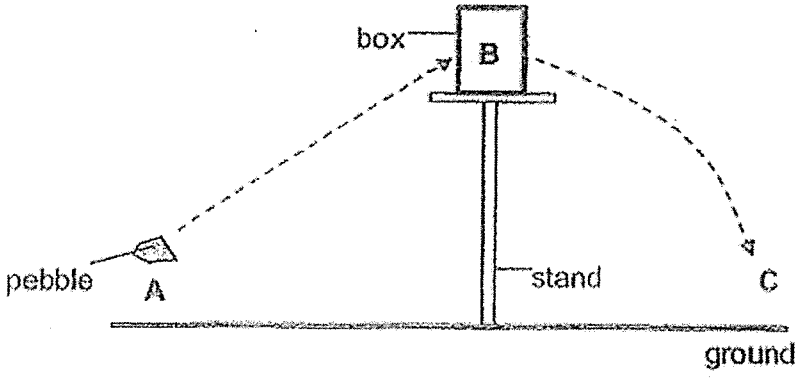
26. The diagram below shows how a shadow of an object can be cast on a screen using a torch. Only the torch and the screen can be moved.



Which of the following correctly shows how the height of the shadow will be affected when distance *x* and *y* is/are changed?

	distance *x*	distance *y*	height of shadow
(1)	decrease	remains the same	increase
(2)	increase	remains the same	increase
(3)	remains the same	increase	remains the same
(4)	remains the same	decrease	increase

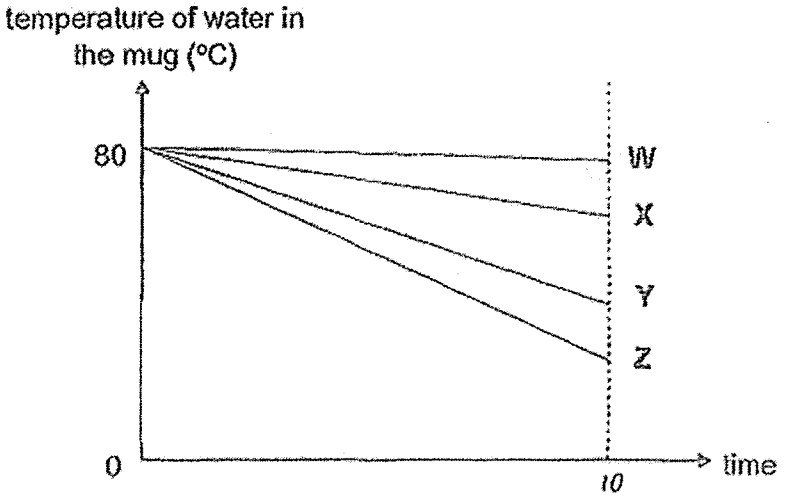
27. Nurul threw a pebble from point A and hit the box off the stand at point B. The box then fell off the stand from point B to point C before hitting the ground.



Which of the following correctly shows the change in the amount of energy possessed by the pebble and the box?

	change in potential energy of pebble from A to B	change in kinetic energy of box from point B to C
(1)	decrease	decrease
(2)	decrease	increase
(3)	increase	decrease
(4)	increase	increase

28. Shannon had four mugs of the same thickness and size but they were made of different materials, W, X, Y and Z. She filled each mug with 250 ml of hot water at 80°C. The temperatures of the water in the mug was measured every two minutes. The results of the experiment were plotted in the graph below.



Which of the following statement(s) about the four materials is/are correct?

A Material Z is the best conductor of heat.
B Material Y is a poorer conductor of heat than material X.
C Material W is a better conductor of heat than material X.

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

END OF BOOKLET A

RED SWASTIKA SCHOOL

SCIENCE
2022 MID-YEAR EXAMINATION
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 13 May 2022

BOOKLET B

12 Questions
44 Marks

In this booklet, you should have the following:
a. Page 20 to Page 34
b. Questions 29 to 40

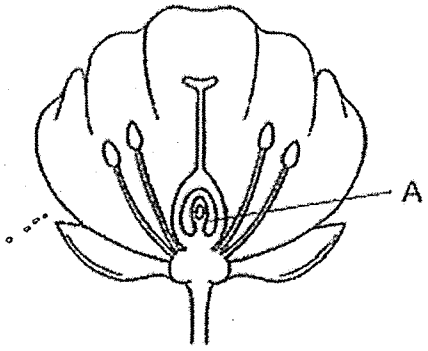
MARKS

	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

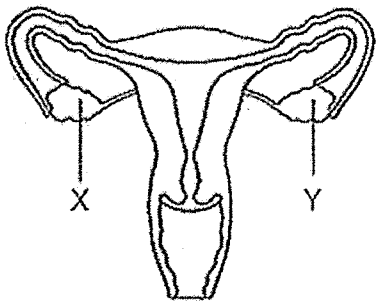
Parent's Signature : _____

Answer all the questions in the spaces provided.

29. Study the plant and human reproductive system as shown below.



plant reproductive system



human reproductive system

(a) State one similarity in the function of parts A and X. (1m)

_____

_____

(b) If only part X is removed, can fertilisation still take place in a human reproductive system? Explain your answer. (1m)

_____

_____

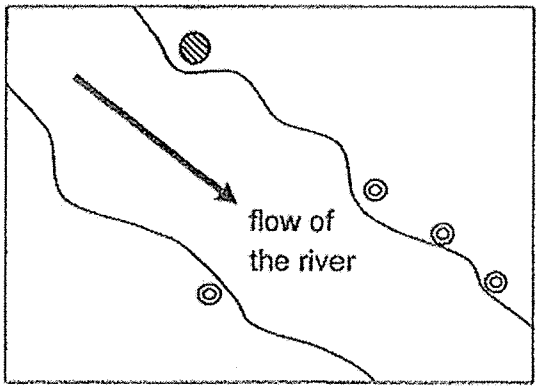
2

30. Seth recorded his observations of fruits A, B and C in the table below.

Description of fruit	fruit A	fruit B	fruit C
Is edible	yes	yes	no
Has fibrous husk	no	yes	no
Is juicy and fleshy	yes	no	no
Has wing-like structure	no	no	yes

(a) What is the likely method of seed dispersal for fruit A? Explain your answer (1m)

The diagram below shows the seed dispersal pattern of one of the fruits.

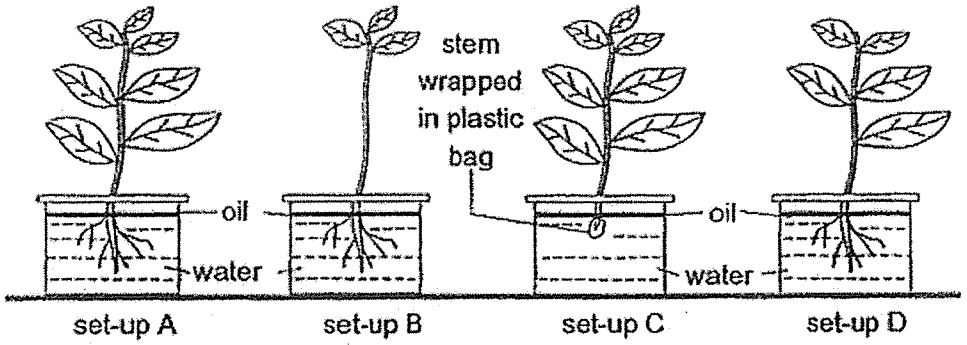


Key:
parent plant
young plant

(b) Which fruit (A, B or C) would likely be dispersed by the method shown in the diagram? Explain your answer. (2m)

3

31. Stephen conducted an experiment as shown below. Each beaker contains 200 cm^3 of water as shown below. The set-ups were placed next to a window.



After two days, the volume of water in each beaker was measured and recorded in the table below.

Plant	Volume of water at the start of experiment (cm^3)	Volume of water left (cm^3)
A	200	160
B	200	180
C	200	200
D	200	190

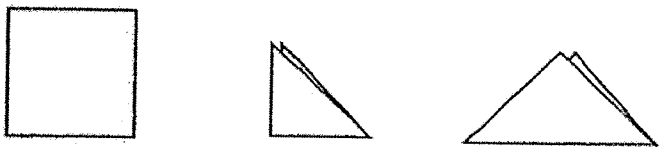
(a) Stephen's friend, Ali, pointed out that the volume of water left in beaker D was incorrect. Explain why this is so. (2m)

(b) Which two set-ups should be compared to show that the roots of the plant absorb water? Give a reason for your answer. (1m)

(c) How does putting a layer of oil ensure that the volume of water taken in by the plant is accurate? (1m)

4

32. Ming Fa conducted an experiment using three identical pieces of paper, X, Y and Z. Paper X was left unfolded while papers Y and Z were folded as shown in the diagram below.



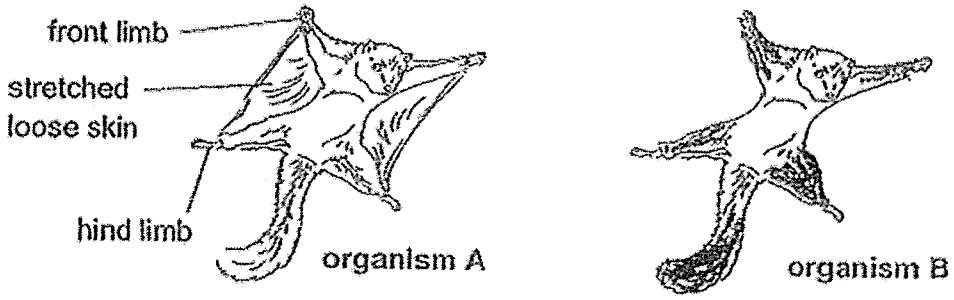
paper X paper Y paper Z

Each piece of paper was dropped from the same height. The time taken for each piece to reach the ground was recorded in the table as shown below.

Paper	X	Y	Z
Time taken for paper to reach the ground (s)	8		

(a) Based on the above result, what could Ming Fa conclude about the surface area of the paper and the time taken for it to reach the ground? (1m)

Study the features of two organisms, A and B, as shown below. They are of similar sizes.



(b) Organisms A and B jumped down from the same height of a tree. Using the findings from Ming Fa's experiment, explain why organism A took a longer time to reach the ground? (1m)

2

(c) Organism A lives in the forest. Suggest two advantages of having stretched loose skin that will help organism A to survive better? (2m)

(i) _____

_____

_____

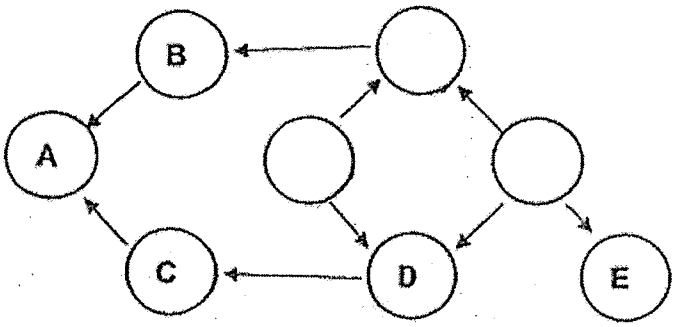
(ii) _____

_____

_____

2

33. The diagram below shows an incomplete food web in a community.



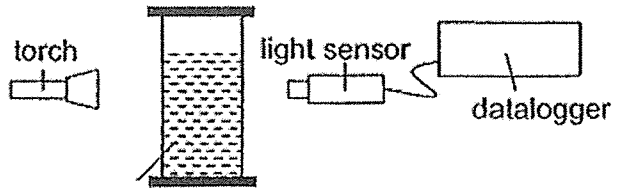
(a) Using the following information, complete the food web by filling in the blank circles with the following letters, X, Y, Z. (1m)

- X is a plant eater.
- Both Y and Z are food producers.
- E feeds on Z

(b) Based on the food web, explain how overhunting of organism D leads to the change in the population of organism B. (2m)

3

34. Lily collected three samples of water from three different ponds, X, Y and Z. Using the set-up below, she placed each sample of water in front of the light sensor of the datalogger. She recorded the amount of light that passed through each sample of water.



Her results are shown below.

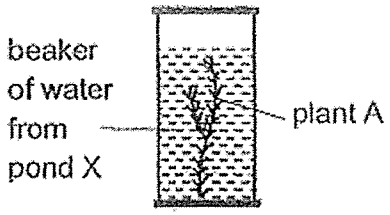
Sample of water from pond	Amount of light measured by the sensor (units)
X	1
Y	143
Z	266

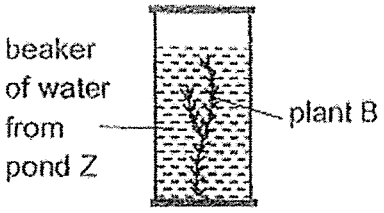
(a) If a coin is dropped into the three beakers containing samples of water from pond X, Y and Z, in which beaker will the coin be most visible? Explain. (1m)

_____

_____

(b) Both plants A and B are the same. Lily placed some plant A in water from pond X and plant B in water from pond Z. She observed that plant B grew better than plant A.





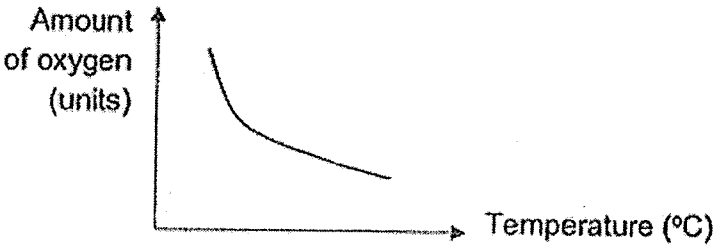
Give a reason for her observation. (1m)

_____

_____

2

(c) In another experiment, Lily conducted an experiment to measure the amount of oxygen present in the water at different temperatures. The results are shown in the graph below.



Lily had some fish in a tank of water. She noted that the breathing rate of the fish increased when the temperature of the water in the fish tank increased.

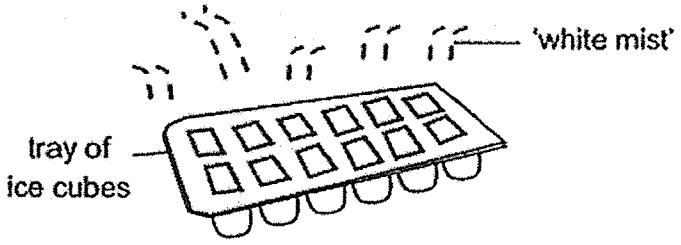
Using the results of the experiment, explain her observation. (2m)

2

35.

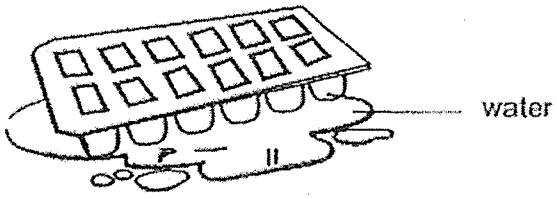
(a) State a difference between boiling and evaporation. (1m)

When Sophie took out a tray of ice cubes from the freezer and placed it on the table, she observed that there was 'white mist' appearing above the tray of ice cubes as shown in the diagram below.



(b) State whether the 'white mist' is a solid, liquid or gas and explain how the mist was formed. (2m)

(c) After an hour, Sophie noticed that all the ice cubes had melted and some water was formed under the tray even though she did not spill any water from the tray.



Explain how the water was formed. (1m)

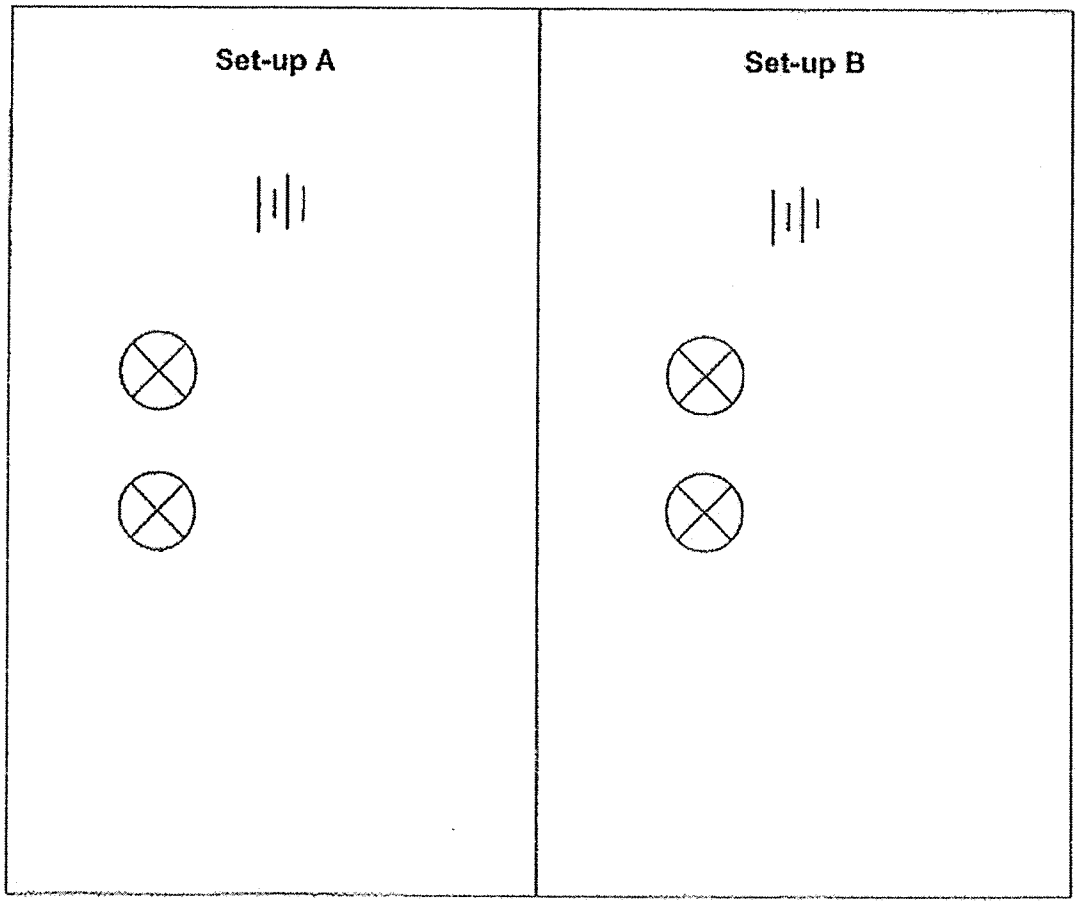
4

36. Mark wanted to investigate how the arrangements of bulbs in a circuit would affect the brightness of the bulbs. He used all the apparatus listed below to create set-ups A and B.

- four identical bulbs
- wires
- four identical batteries

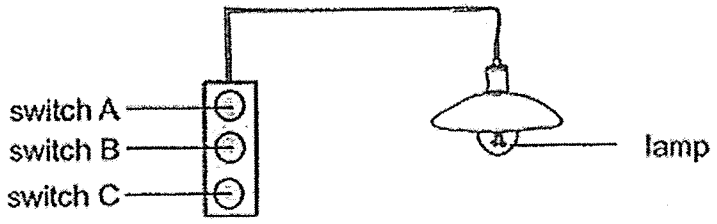
After setting up his experiment, he realised that when one of the bulbs in set-up A fused, the other bulb in the set-up did not light up. This did not happen in set-up B.

(a) The diagram below shows parts of the circuit. Complete the circuit by drawing the wires to show the arrangement of the bulbs in the circuit in set-ups A and B. (2m)

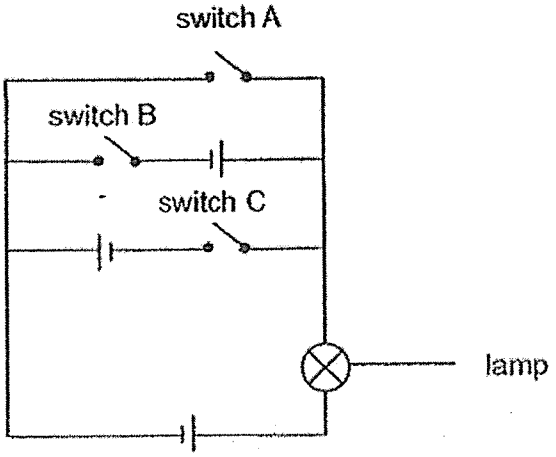


2

(b) Mark wanted to create a light system that would allow him to control the brightness of the lamp depending on which switch, A, B or C was closed.



The circuit diagram below shows how switches A, B and C were connected to the lamp.

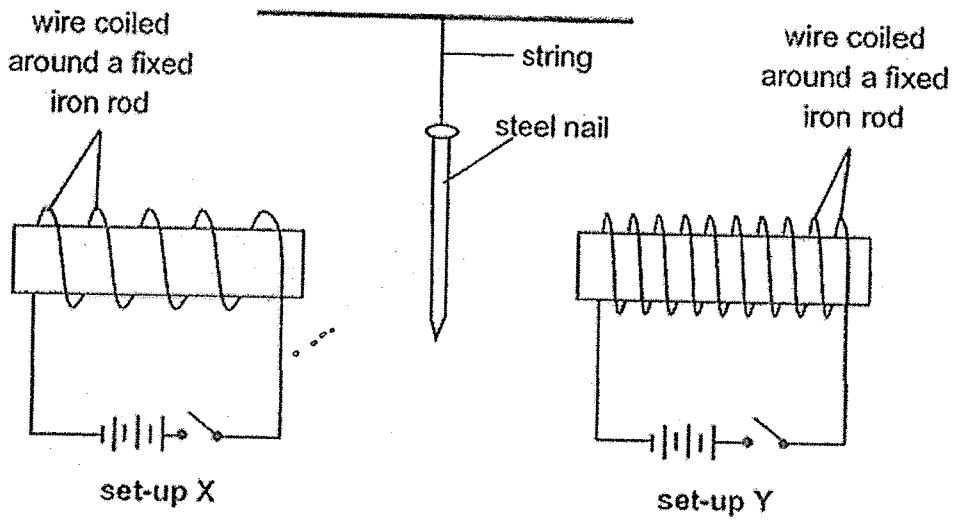


(i) Mark noticed that the brightness of the lamp changed when he closed switch C as compared to when he closed switch A. Will the light of the lamp be brighter or dimmer? Explain why. (2m)

(ii) Explain why the lamp did not light up when Mark closed switch B. (1m)

3

37. Suresh set up an experiment as shown below. He observed where the steel nail would move towards when both switches are closed.



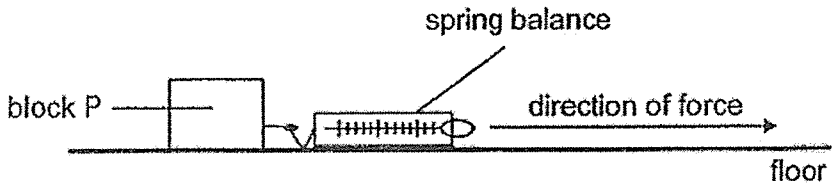
(a) What was the aim of Suresh's experiment? (1m)

(b) When Suresh closed the switches for both set-ups X and Y, he observed that the steel nail moved towards one of the iron rods. Which set-ups, X or Y, did the steel nail move towards? Explain why. (2m)

(c) Suresh would like to investigate whether the number of batteries would affect the result. Other than removing one battery from set-up X, suggest another change to set-up X. (1m)

4

38 Sue had three blocks, P, Q and R, that were of the same mass but of different materials. She pulled block P along the floor as shown in the diagram below and recorded the force needed to move block P.



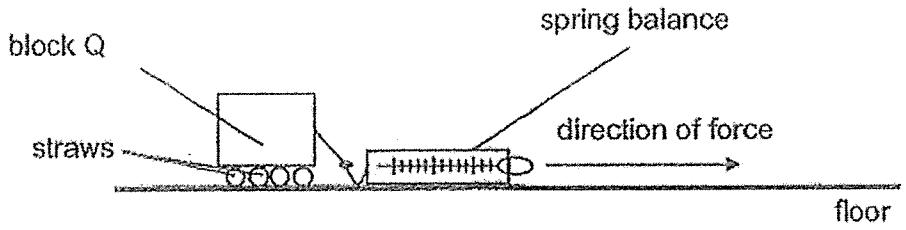
She repeated the experiment using two other blocks, Q and R. The results for each block is recorded in the table below.

Block	Force needed to move the block (unit)
P	18
Q	10
R	25

(a) What force must Sue overcome for the block to start moving? (1m)

(b) Based on the results given, which material P, Q or R is most suitable to make the sole of the shoes of a kitchen staff who needs to walk on wet kitchen floor? Explain your answer. (2m)

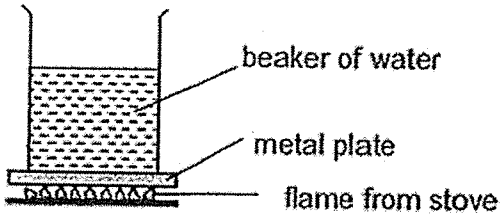
(c) Sue placed some straws under the block made of material Q as shown below.



Sue noticed that the amount of force needed to pull the block was 5 units. Explain why she needed less force to pull the block. (1m)

4

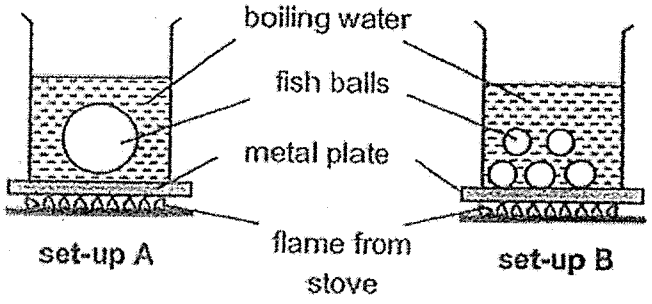
39 Timothy placed a beaker of water on a metal plate. He heated up the metal plate with the flame from the stove as shown in the diagram below.



(a) Explain, in terms of heat transfer, how the beaker of water started to boil after five minutes. (1m)

(b) After switching off the stove, Timothy realised that the beaker of water started to cool down. Explain why. (1m)

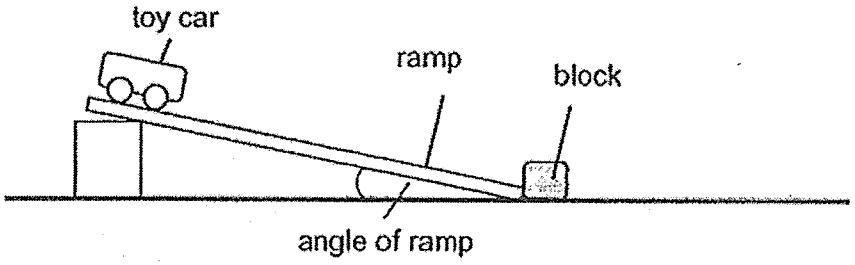
(c) Timothy prepared two sets of fish balls to be cooked in the beaker of boiling water. Set-up A consists of just one big fish ball with a mass of 500g and set-up B consists of five fish balls with a total mass of 500g as shown in the diagram below.



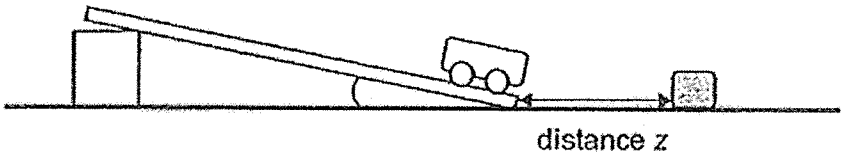
Which set-up, A or B, would enable the fish ball(s) to be cooked faster? Explain why. (2m)

4

40 Yoana set up an experiment as shown in the diagram below. She released a toy car at the top of the ramp. The toy car would move down the ramp and hit the block, causing it to move.



Distance *z* represents the distance moved by the block after the toy car hit it, as shown in the diagram below.



(a) Based on the experiment set-up above, identify how distance z will be affected when each variable is changed. (1m)

		Tick (√) in the correct boxes to show how distance z is affected	
	variable changed	**decrease**	**increase**
(i)	decrease the mass of the block		
(ii)	decrease the angle of ramp		

(b) Explain, in terms of energy conversion, how increasing the mass of the toy car will affect distance z travelled by the block. (2m)

END OF BOOKLET B
PLEASE CHECK YOUR ANSWERS.

3

SCHOOL : RED SWASTIKA PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 20212 SA1

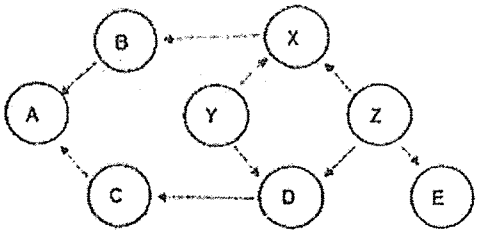
SECTION A

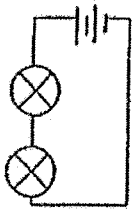
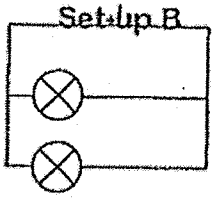
Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
3	2	3	4	1	2	1	2	2	3
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
2	2	1	4	4	3	3	4	4	4
Q 21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
1	3	3	1	2	1	4	1		

Corrections Template for P6 Science SA1

Name:_____ ( ) Class: P6/_____ Date: _____

	Answer
29a	Both part A and X produce the female reproductive cell
29b	Yes. If part X is removed, part Y can still produce egg. The male reproductive cell can still fuse with the female reproductive cell.
30a	The seeds of fruits A is dispersed by animal . The fruit is juicy and freshy when ripe to attract more animals to eat it.
30b	Fruit B. Fruit B has a fibrous nusk which has air spaces. The fibrous husk will enable Fruit B float on water and land along the river bank.
31a	Beaker D should have less water than beaker B as the plant in beaker D has more leaves than the plant in beaker B. Since the plants in beaker D will lose more water through its tiny openings/stomata of the leaves, more water will be taken in by the roots.
31b	Set-up A and set-up C. Since the aim of experiment is to find out if the roots of the plants absorb water, all other variables except the presence of roots in the experiment must be kept constant.
31c	Oil prevents water from evaporating so the water loss in each beaker is only due to the absorption of water by the roots of the plants and not due to other variables.
32a	The greater the surface area of the paper, the greater time taken for paper to reach the ground.
32b	The stretched loose skin provided a greater surface area which allows organism A to stay longer time in the air.
32c	It allows the organism to stay longer in the air to escape from its predators It allows the organism to travel a further distance to find its prey

33a	
33b	Organisms C will have less organisms D to feed on. Organism A will have less organism to feed on. Organisms A can only feed on organism B hence, the population of organisms B will decrease. OR There will be less D that will eat Y, thus population of Y increases. There will be more Y for X to feed on and thus, population of organism X increases. With more X, there is more food for B and population of B will increase.
34a	The beaker containing samples of water from pond Z. The amount of light received by the sensor is the greatest. Since it allows most light to pass through, it allows lily to see the coin the clearest.
34b	Plant B received more amount of light through the water from pond Z to allow it to photosynthesis at a faster rate and grow well.
34c	As the temperature of the water in the fish tank increases, the amount of oxygen produced by the plant through the process of photosynthesis decreases. Thus, the fish would have to breathe faster to take in more oxygen in the water in order to survive.
35a	Boiling only takes place at a fixed temperature while evaporation takes place at any temperature.
35b	The 'white mist' is a liquid. The surrounding air lost heat to the ice cubes to a lower temperature. The water vapour in the air came into contact with the cooler air, lost heat, and condensed into water droplets.
35c	The water vapour in the air came into contact with the cooler surface, lost heat and condensed into water droplets.

36a	Set-up A  Set-up B 
36b (i)	The lamp would be brighter. When switch C was closed, there will be more batteries connected in the circuit, more electricity will flow through the circuit.
36b (ii)	The terminals are connected incorrectly. Hence, there is an open circuit and no electricity flows
37a	To find out if the number of coils of wire around the fixed iron rod affects the magnetic strength of the magnet
37b	Set-up Y. As there are more coils around the fixed iron rod, the electromagnet has a greater magnetic strength exerting a greater force of attraction
37c	He must add more turns around the fixed iron rod such that it is same at the one in set-up Y
38a	Frictional force.
38b	Material R. The most amount of force is needed to move the block. Hence, when used to make the sole of the shoe, there is the greatest amount of frictional force between
38c	The straw acts as rollers and will reduce the amount of frictional force between the floor and the block
39a	The metal plate first gain heat from the flame of the stove. The beaker of water
39b	The beaker of water had lost heat to the surroundings air till it reaches room temperature.
39c	Set-up B. The fish balls have more surface area exposed to the boiling water. Hence, the fish balls gained heat from the boiling water faster, allowing the fish balls to be cooked faster.
40a	(i) increase (ii) decrease
40b	When the mass of the toy car increases, it possesses greater that will be converted to greater kinetic energy of the toy car. The kinetic energy will then be converted/ transferred to more kinetic energy of the wooden block, increasing the distance z travelled.