RED SWASTIKA SCHOOL

SCIENCE
2023 PRELIMINARY EXAMINATION
PRIMARY 6

Name : _____( )

Class : Primary 6/ _____

Date : 22 August 2023

BOOKLET A

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

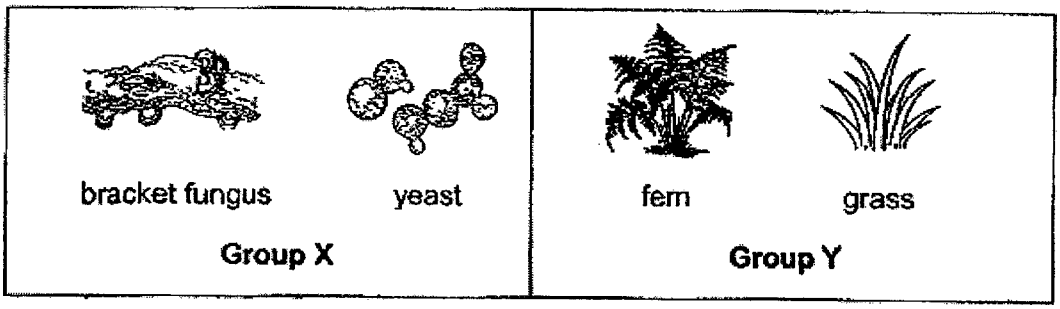
Booklet A: 28 questions (56 marks)

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 20
   b. Questions 1 to 28

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

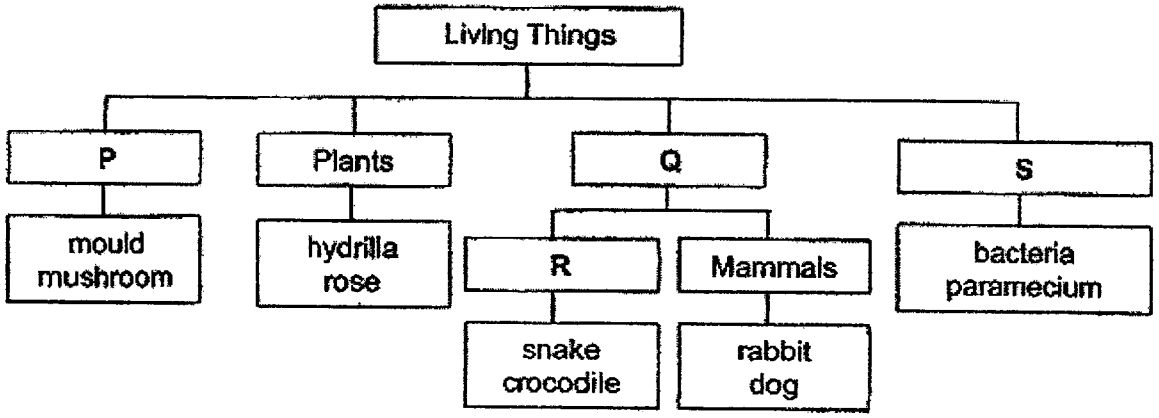
1 The diagram below shows two groups of living things, Groups X and Y.



Which of the following statements about Groups X and Y is correct?

	Group X	Group Y
(1)	Reproduce from spores	Reproduce from seeds
(2)	Unable to make their own food	Able to make their own food
(3)	Cannot be seen by the naked eye	Can be seen by the naked eye
(4)	Unable to move on its own	Able to move on its own

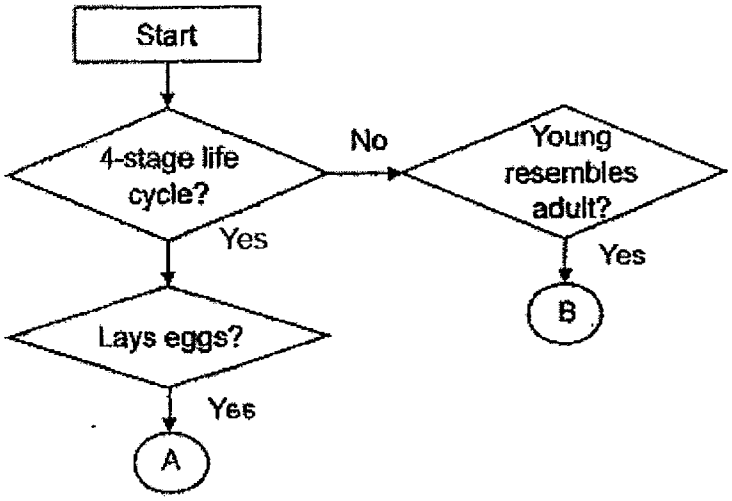
2 Living things can be grouped using the classification chart shown below.



Which of the following correctly represents P, Q, R and S?

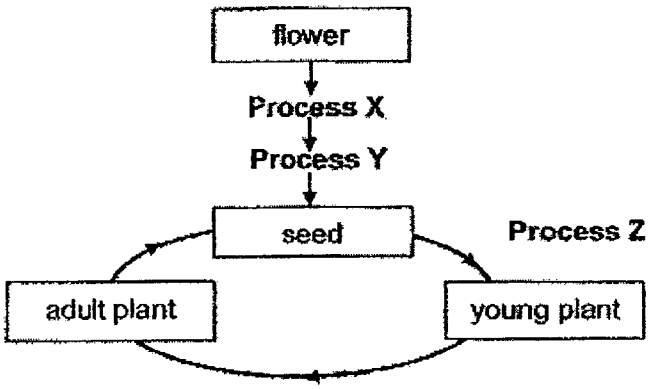
	P	Q	R	S
(1)	Fungi	Amphibians	Reptile	Micro-organisms
(2)	Fungi	Animals	Reptile	Micro-organisms
(3)	Micro-organisms	Reptile	Mammals	Fungi
(4)	Micro-organisms	Amphibians	Reptile	Fungi

3 Study the flow chart below.



	A	B
(1)	frog	grasshopper
(2)	mosquito	butterfly
(3)	butterfly	grasshopper
(4)	grasshopper	frog

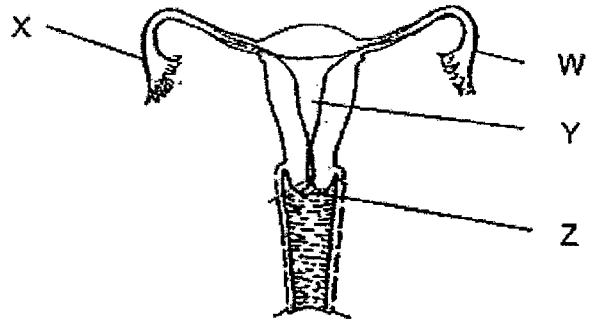
4 A plant goes through processes X, Y and Z as shown in the diagram.



Which of the following correctly represents the processes X, Y and Z?

	X	Y	Z
(1)	pollination	fertilisation	germination
(2)	germination	seed dispersal	fertilisation
(3)	fertilisation	germination	pollination
(4)	seed dispersal	pollination	germination

5 The diagram of a female human reproductive system is shown below.



One part of the female reproductive system is missing. Based on the information given, which statements are true?

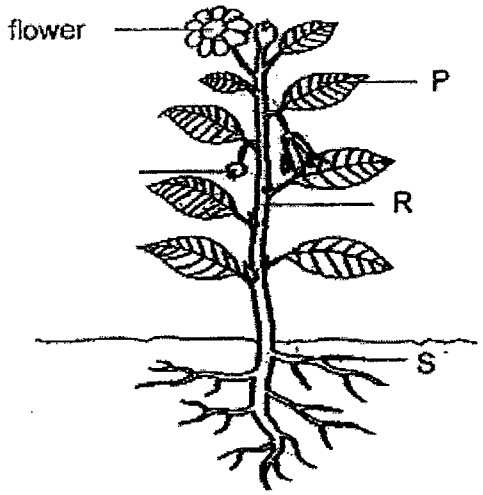
	Can fertilisation take place?	Organ where the fertilisation takes place
(1)	yes	W
(2)	no	X
(3)	yes	Z
(4)	no	Y

6 Which of the following human body systems work together to enable one to run?

A digestive
B muscular
C skeletal
D circulatory

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

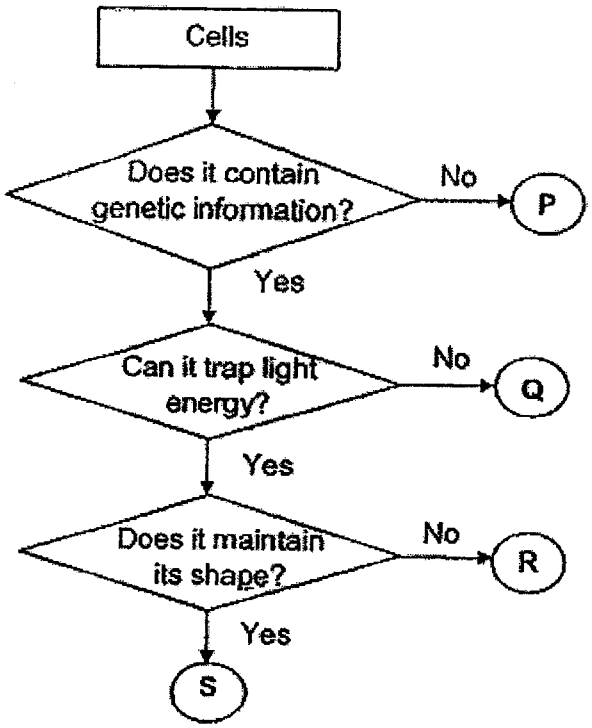
7 The diagram below shows a flowering plant.



What are the functions of the parts labelled P, R and S?

	P	R	S
(1)	make food for the plant	absorb water for the plant	transport food to the leaves
(2)	absorb water for the plant	hold the plant upright	transport food to the leaves
(3)	make food for the plant	hold the plant upright	absorb water for the plant
(4)	absorb water for the plant	transport food to the leaves	hold the plant upright

8 Study the flowchart below carefully.

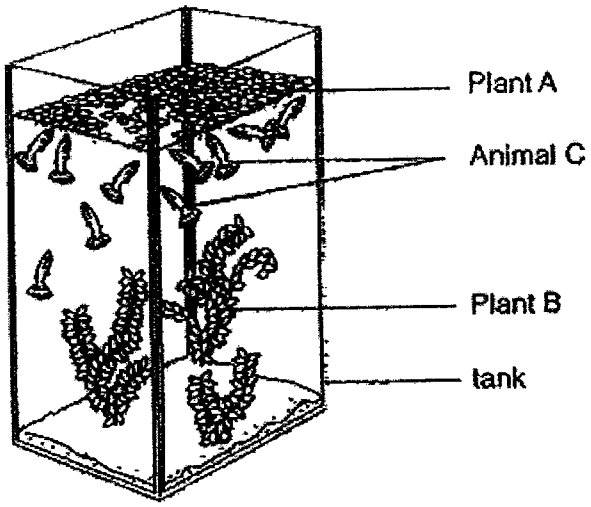


Cell A Cell B

Based on the information above, which letter, P, Q, R or S, represents the cells A and B?

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

9 Devi set up her aquarium as shown below.



Which of the following about the organisms in the tank is correct?

	Population of producer	Population of consumer	Number of community
(1)	2	1	1
(2)	2	2	3
(3)	1	1	2
(4)	1	1	3

10 Two birds, E and F, were spotted at the bird park. Bird E was seen feeding near the branches while bird F was seen feeding in the pond. Bird F waddled through the shallow waters and it can swim.

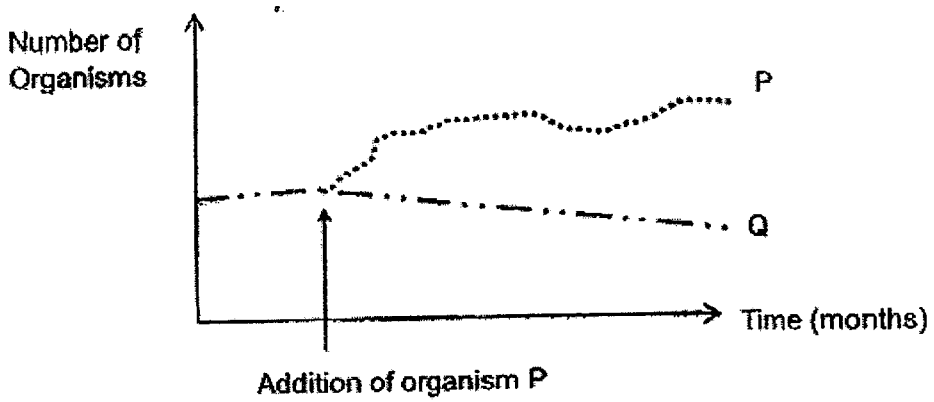
Bird	Habitat	Physical Characteristic	How does it help?
E	forest	sharp and hooked claws	grip its prey
F	pond	webbed feet	move easily in water

Which of the following correctly represents the feet of bird E and F?

A B C D

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

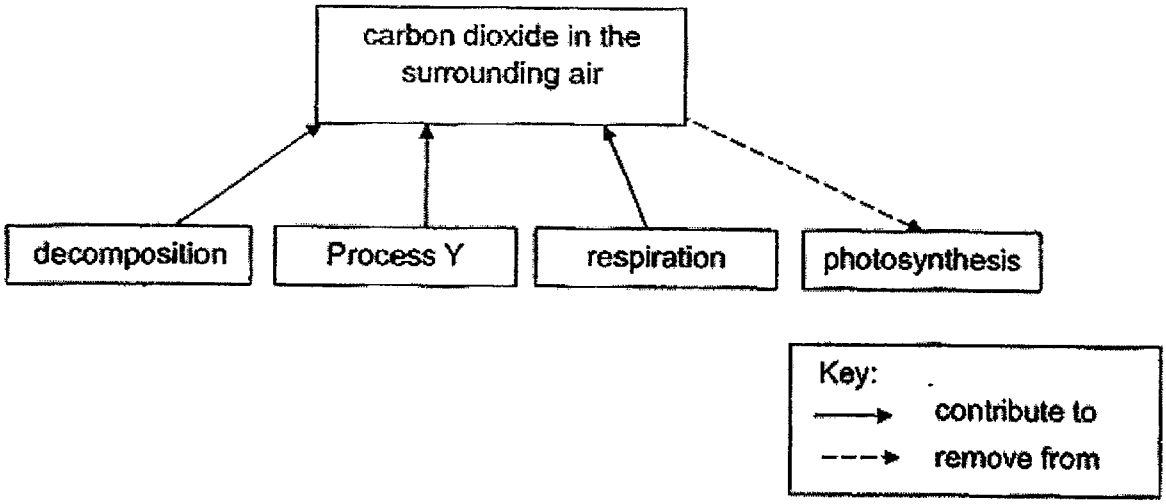
11 The graph below shows the number of organisms P and Q in a community over a long period of time. Organism P is introduced to the community after some months. The number of Organism P is shown by the dotted line.



What are the possible causes for the changes in the populations of Organism P and Q?

	Change in population of P	Change in population of Q
(1)	decrease in prey	increase in prey
(2)	increase in predator	decrease in prey
(3)	increase in prey	increase in predator
(4)	decrease in predator	decrease in predator

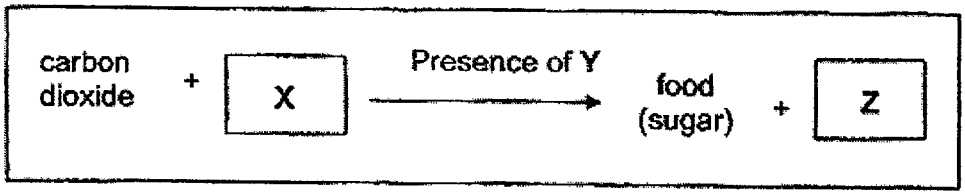
12 The diagram below shows different processes in which carbon dioxide can be contributed or removed from the surrounding air.



Which of the following correctly represents process Y?

(1) littering
(2) soil erosion
(3) reforestation
(4) burning of trees

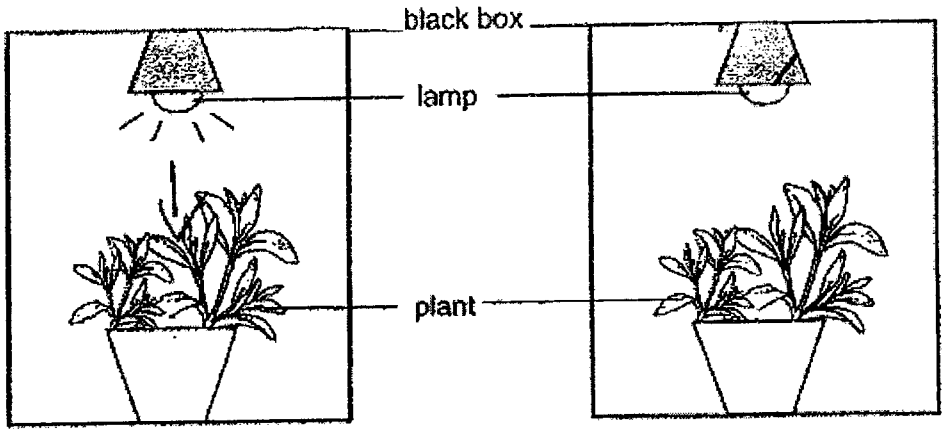
13 Devi wrote the following summary about the process of photosynthesis.



Which of the following correctly represents X, Y and Z?

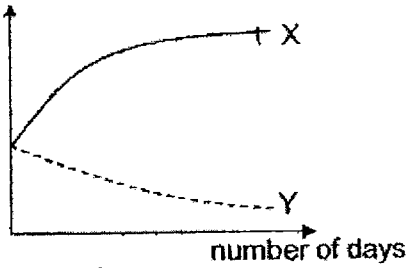
	X	Y	Z
(1)	oxygen	light	water
(2)	oxygen	heat	carbon dioxide
(3)	water	light	oxygen
(4)	water	heat	oxygen

14 Ray prepared two set-ups, X and Y, and placed them in the black metal boxes for three days, as shown in the diagrams below. Only the lamp in set-up X was switched on for three days.

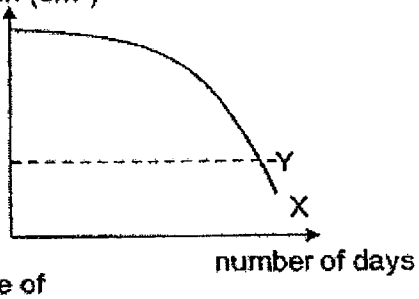


Which of the following graphs shows the change in the volume of oxygen in the set-ups X and Y over the three days?

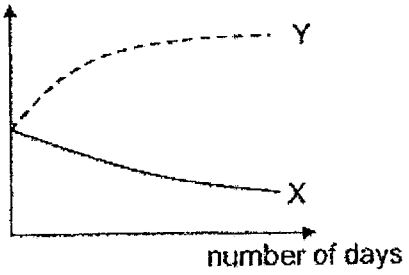
(1) volume of oxygen (cm^3)



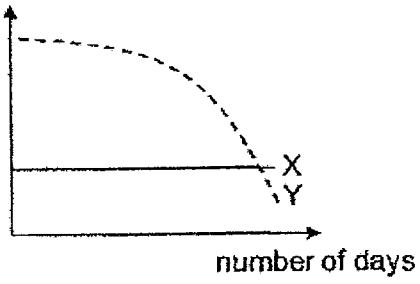
(2) volume of oxygen (cm^3)



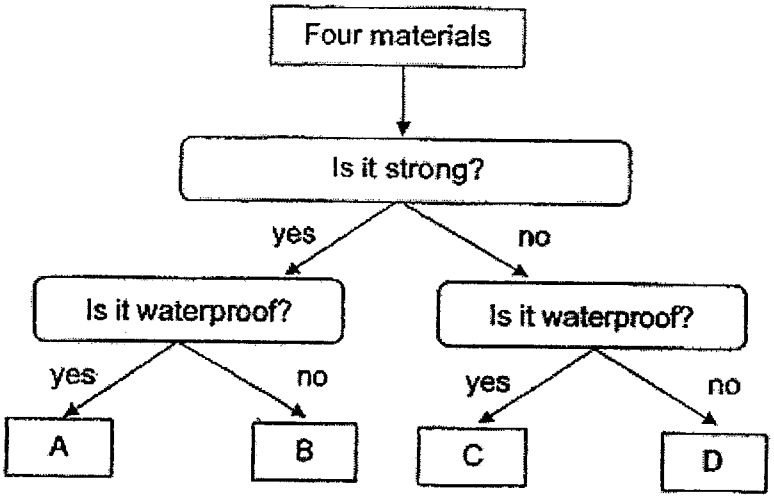
(3) volume of oxygen (cm^3)



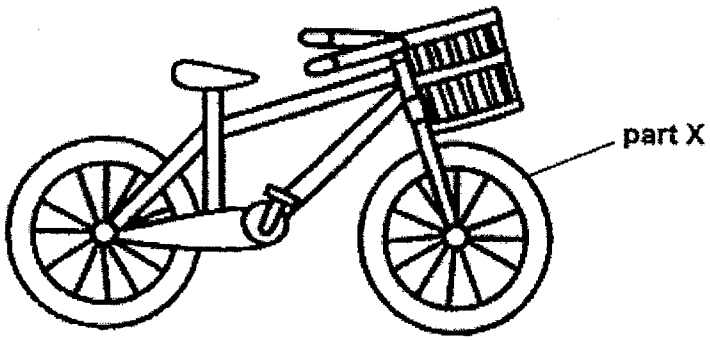
(4) volume of oxygen (cm^3)



15 Ahmad observed four materials, A, B, C and D. He classified them as shown below.



Which material, A, B, C or D, is suitable to make part X of a bicycle?

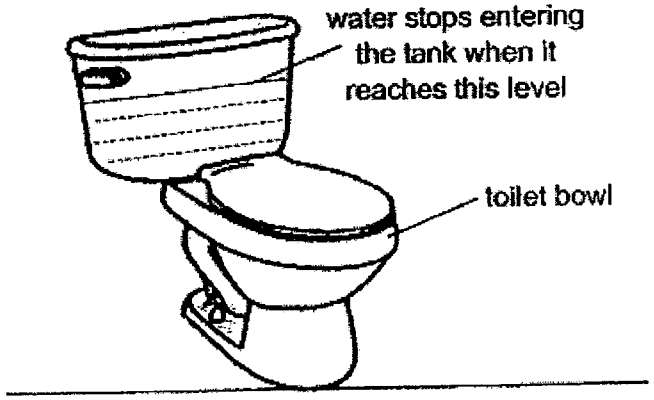


(1) A
(2) B
(3) C
(4) D

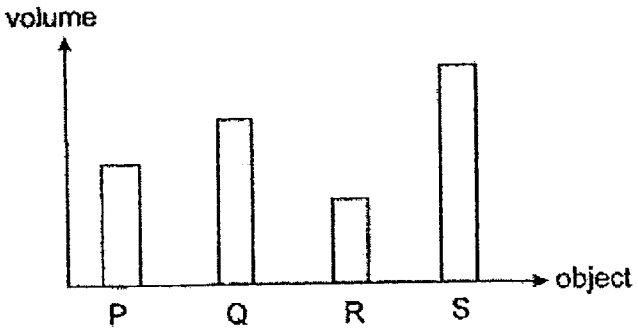
16 Which of the following is correct when water changes to water vapour at room temperature?

(1) The water is boiling.
(2) The water loses heat to the surroundings.
(3) The water gains heat from the surroundings.
(4) There is no change in state of matter for the water.

17 Benice studied the water tank used to flush the toilet bowl. After flushing, water enters to fill the tank. Water will stop entering the tank when it reaches a certain level as shown below.



Bernice wanted to conserve water by placing an object into the water tank. She recorded the volume of four objects P, Q, R and S.



Which object, P, Q, R or S, should Bernice put inside the water tank to conserve the most water?

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

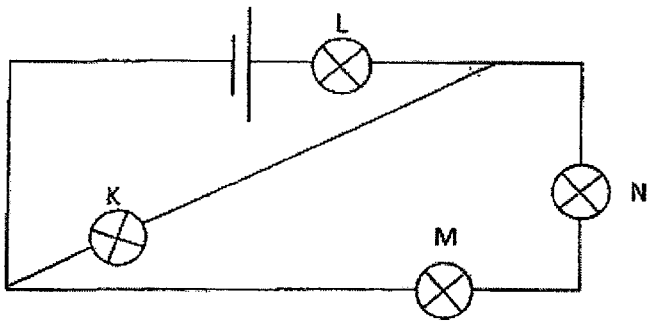
18 The table shows the state of three substances, X, Y and Z, at different temperatures.

	State of substance at		
Substance	20 °C	50 °C	80 °C
X	solid	liquid	liquid
Y	liquid	liquid	gas
Z	liquid	gas	gas

Which statement can be concluded about X, Y and Z?

(1) X has the lowest freezing point.
(2) Y has a lower melting point than Z.
(3) Y has a higher boiling point than X.
(4) Z has the lowest boiling point.

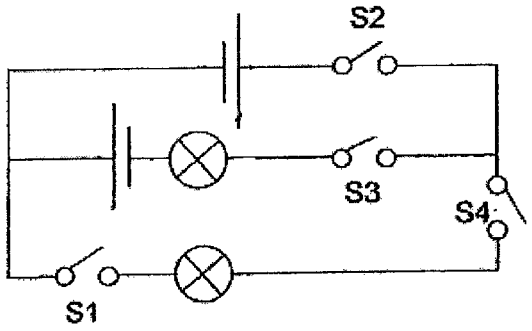
19 Study the circuit below.



When a bulb was blown, the other bulbs did not light up.
Which bulb was blown?

(1) K
(2) L
(3) M
(4) N

20 The diagram shows a circuit with four open switches.

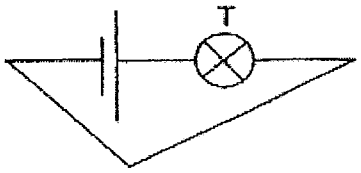


Which of the switches should be closed so that only one bulb in the circuit is able to light up most brightly?

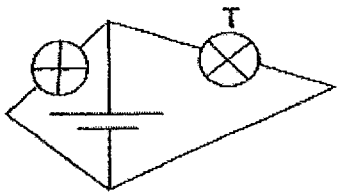
(1) S2 and S3 only
(2) S3 and S4 only
(3) S1, S3 and S4 only
(4) S1, S2 and S4 only

21 Chin Keong sets up four circuits using identical batteries and bulbs in working condition.

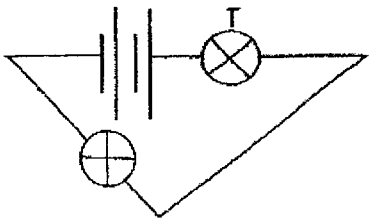
(A)



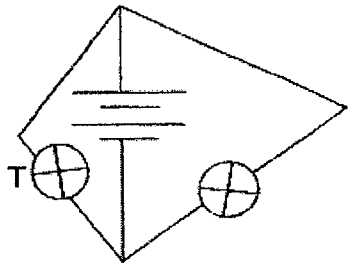
(B)



(C)



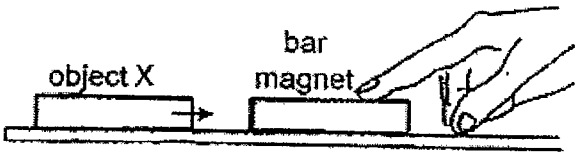
(D)



In which circuits will bulb T have the same brightness?

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

22 Object X moved towards the bar magnet when brought near to one end of the magnet.

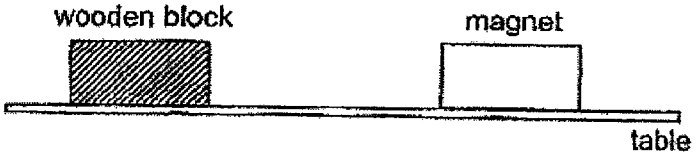


Which of the following can be concluded from the results?

A	Object X is a magnet.
B	Object X is made of a magnetic material.
C	The North pole of the bar magnet is attracting object X.

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

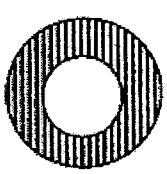
23 Zi Ling placed a wooden block and a magnet on a table as shown.

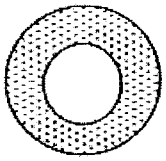


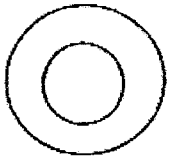
Which force(s) acted on the wooden block?

	Friction	Gravitational force	Magnetic force
(1)	No	Yes	No
(2)	No	Yes	Yes
(3)	Yes	Yes	No
(4)	Yes	No	Yes

24 The diagram shows four different rings which are made of different materials.

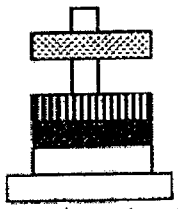

Magnet 1


Magnet 2

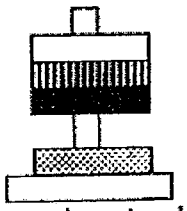

Magnetic material


Non-magnetic material

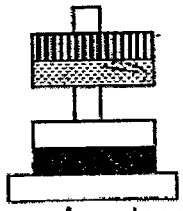
Which of the following observations are not possible when all four rings are placed through the wooden stand one on top of another?



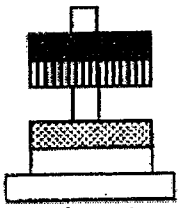
A



B



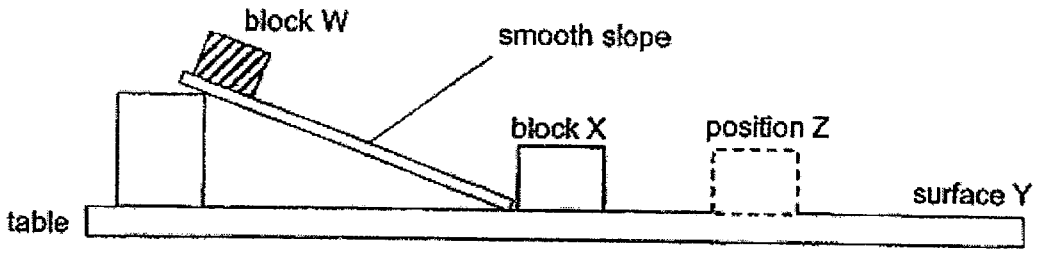
C



D

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

25 Wendy released block W from the top of a smooth slope. It moves down and hits block X at the bottom of the slope.

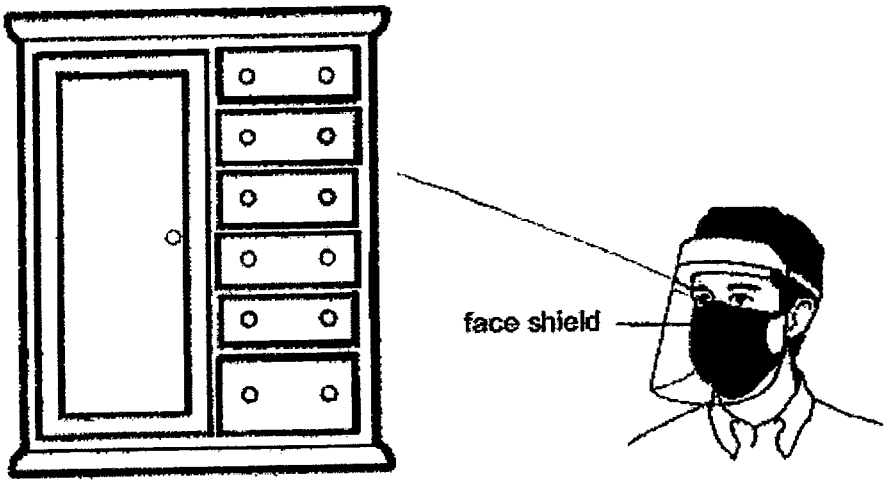


After being hit by block W, block X slides along surface Y before coming to a stop at position Z.

Which of the following changes can increase the distance moved by block X along surface Y?

(1) increasing the width of the slope
(2) increasing the height of the slope
(3) increasing the length of the slope
(4) increasing the thickness of the slope

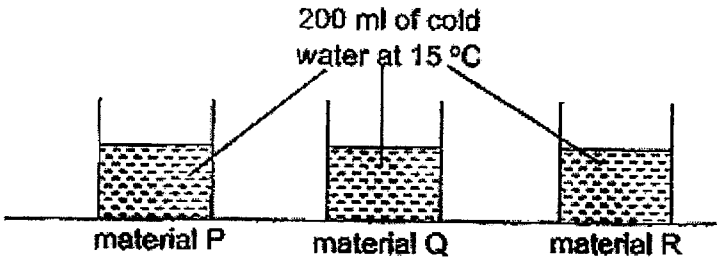
26 Zhiming looks at the cupboard as shown.



Which statement best explains why he can see the cupboard?

(1) Light is reflected from the cupboard.
(2) Light is reflected from the face shield.
(3) Light passes through the cupboard.
(4) Light passes through the face shield.

27 Kumar poured 200 ml of cold water measuring 15 °C into three similar containers made of different materials. The containers were placed near an open window during the experiment at room temperature of 25 °C.

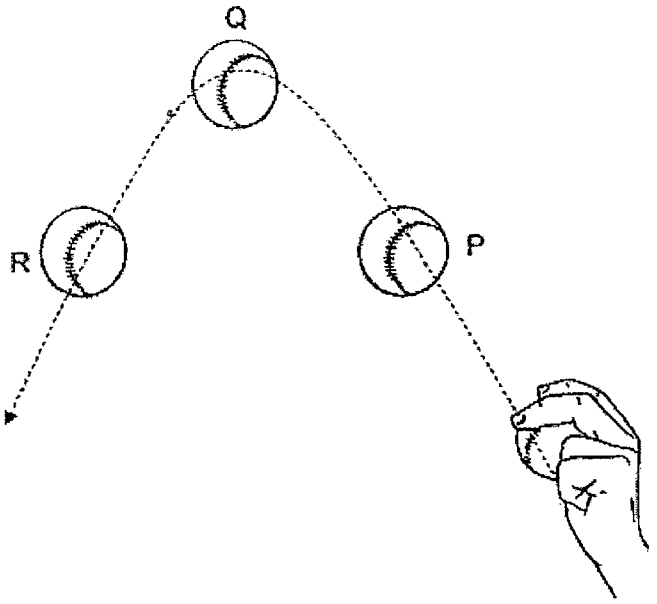


After 10 minutes, he recorded the temperature of the water in each container. He concluded that material P is the best conductor of heat and material Q is the poorest conductor of heat.

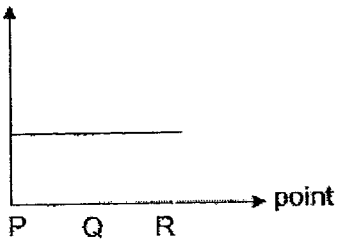
Which of the following shows the possible temperatures of the water in the three containers after 10 minutes?

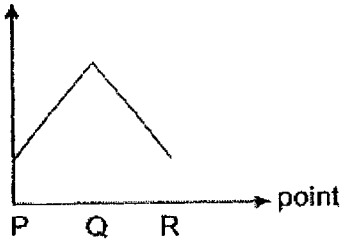
	Temperature of water after 10 minutes (°C)		
	P	Q	R
(1)	18	25	20
(2)	18	20	25
(3)	25	18	20
(4)	25	20	18

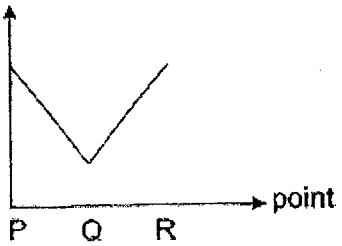
28 Mary threw a ball up in the air as shown below.

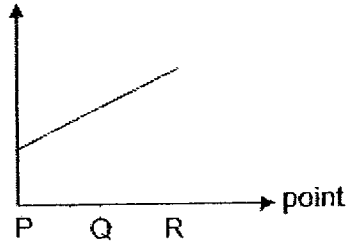


Which of the following graphs show the gravitational potential energy possessed by the ball as it moved from point P to R?

(1)


(2)


(3)


(4)


End of Section A

RED SWASTIKA SCHOOL

SCIENCE
2023 PRELIMINARY EXAMINATION
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 22 August 2023

BOOKLET B

12 Questions
44 Marks

In this booklet, you should have the following:
a. Page 21 to Page 36
b. Questions 29 to 40

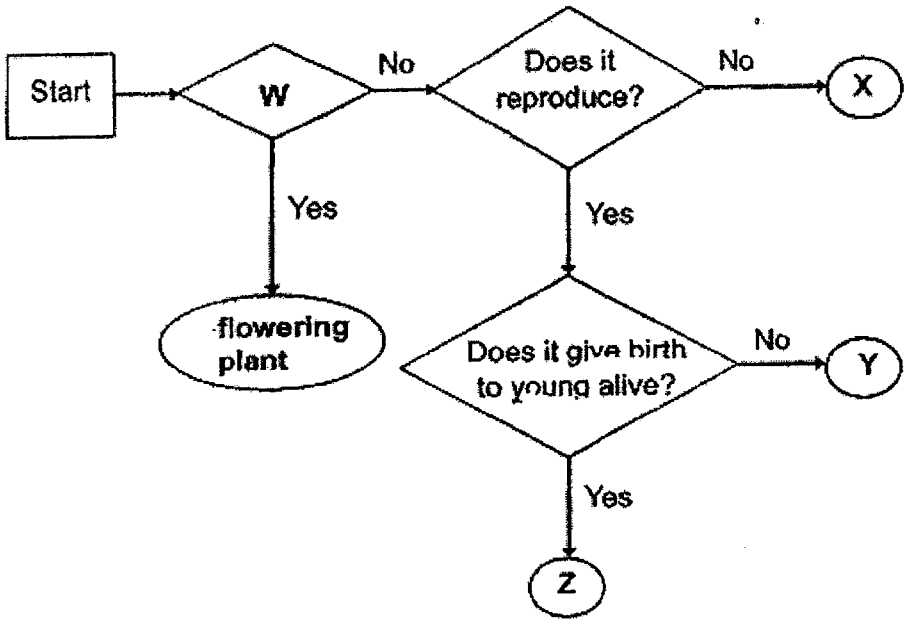
MARKS

	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

Parent's Signature : _____

Answer all the questions in the spaces provided.

29 Study the flowchart below.



(ai) What could be a possible question for W? (1m)

_____ ?

(aii) Which group of living things could Y and Z possibly represent? (1m)

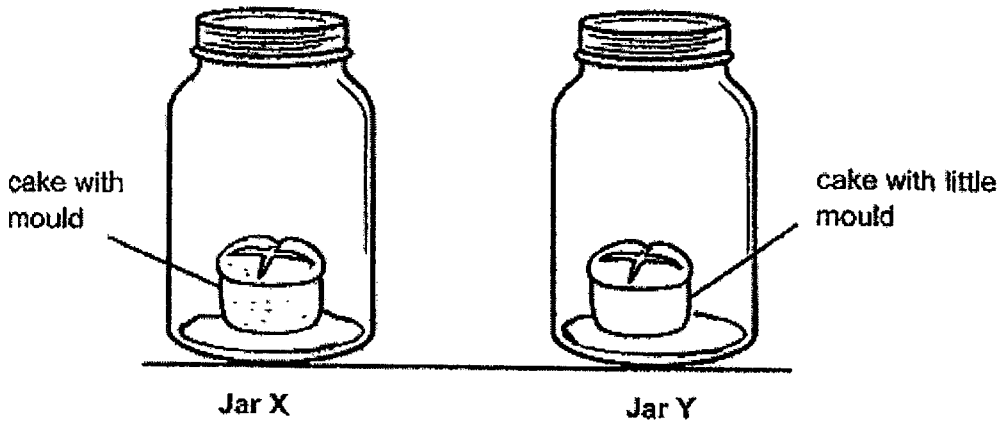
Y : _____

Z : _____

2

29 Mr Low left two pieces of cake in two identical jars, X and Y. A few drops of water were added to the cake in Jar X only. He covered the jars to make them air-tight and placed them in a room. The room temperature was 30°C.

The following diagrams showed the experiment after five days.



(bi) Mr Low made the jars air-tight. How does this make the experiment a fair test? (1m)

_____

(bii) A third piece of cake was heated in the oven. If this cake were put in another air-tight jar, what would you expect to see after 5 days? Give a reason for your answer. (1m)

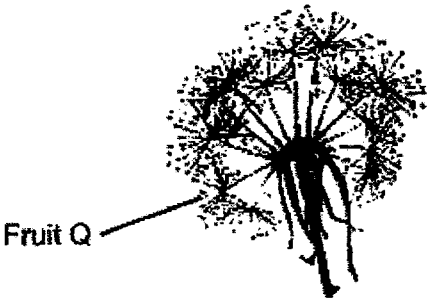
_____

_____

2

30 Minah found fruits P and Q which were shown below. She carried out an experiment to investigate if the fruits were dispersed by wind.

Fruit P



Fruit Q

(a) The list below showed some steps that Minah took when she conducted the experiment. Put a tick (√) next to the step which should be included in her experiment. (1m)

Step taken	Procedure
	Drop fruit from a height of 1m in front of a fan.
	Record the time taken for fruit to reach the ground.
	Cut the fruit to see if it has seeds.
	Fill up a pail with water.
	Place the fruit into a pail of water.

(b) For a fair test to be carried out, state two variables that Minah should keep the same. (1m)

Variable 1: _____

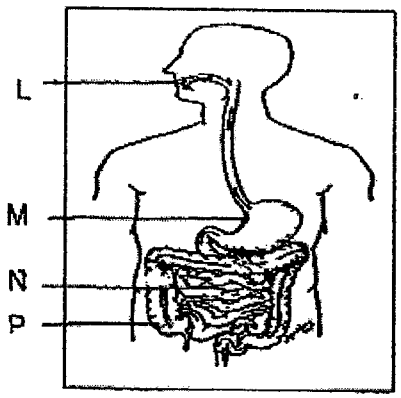
Variable 2: _____

(c) State one physical characteristic that the fruit has for it to be dispersed by wind (1m)

_____

3

31 Chris wanted to study more about the substances carried in the systems of humans and plants. The diagram below shows the human digestive system.

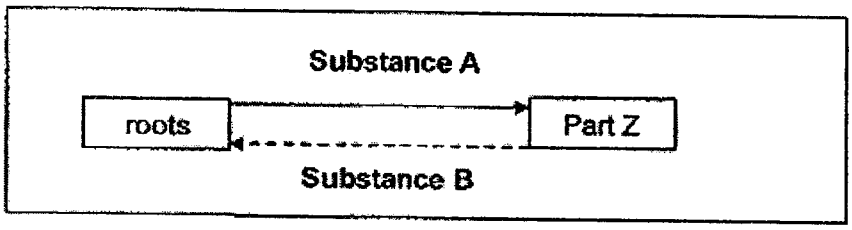


(a) Fill out the blanks with the letters, L, M, N and P (1m)

(i) Organ(s) whereby digestive juices are found : _____

(ii) Organ(s) involved in absorption of water: _____

The diagram below shows the movement of substances in parts of a plant.



(b) Gaseous exchange for the plant occurs through part Z. Identify part Z. (1m)

Part Z : _____

(c) Name substance A. (1m)

_____

(d) State one similarity between the human circulatory system and plant transport system? (1m)

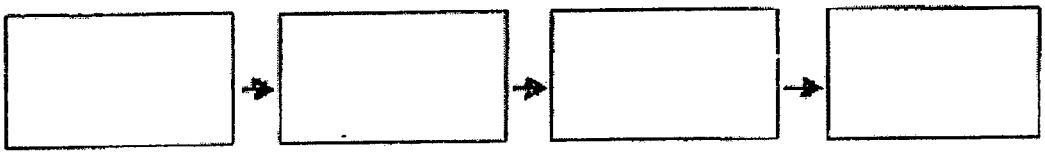
_____

4

32 Sam studied some organisms in a pond and noted the following observations.

- Water snail feeds on algae.
- Dragonfly nymph is eaten by fish.
- Dragonfly nymph eats water snail.

(a) Construct a food chain using all the organisms mentioned above. (1m)



(b) Based on the food chain, which organism is the food producer? (1m)

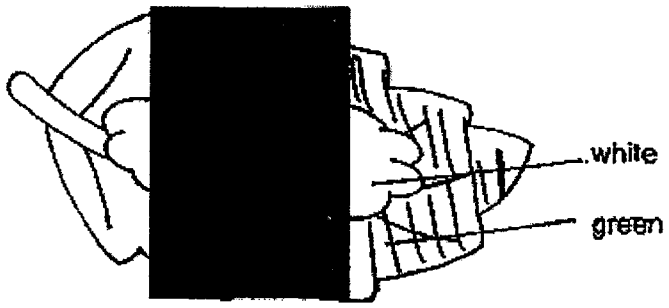
_____

(c) Identify an organism which is both a prey and a predator. (1m)

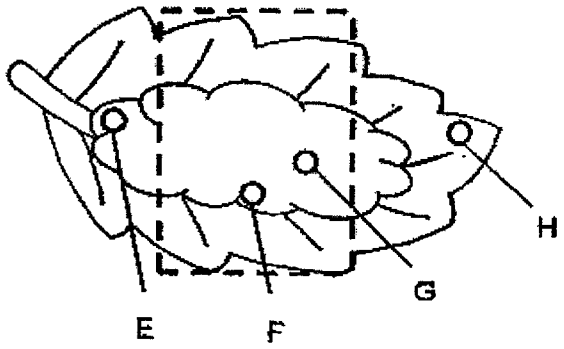
_____

3

33 The diagram below shows a leaf on plant Z that was kept in the dark for five days. At the start of the experiment, it was showed that there was no starch in the leaf. Then, the leaf was covered by a piece of black paper as shown in the diagram below.



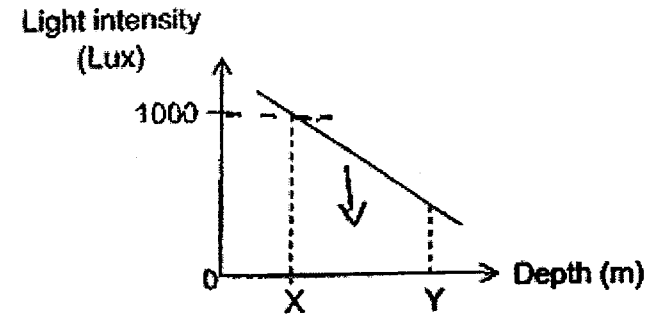
Next, the plant was placed in the sun for 12 hours. The leaf was plucked out from the plant and the black paper was removed. The leaf was tested for starch again.

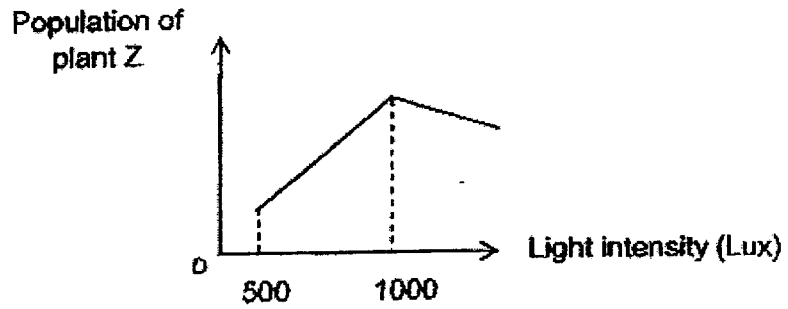


(a) In which of the labelled area(s) was starch found? Explain your answer (1m)

1

33 The graphs below show how light intensity changes with depth of the pond and how the population of plant Z changes with light intensity.





(b) What is the relationship between the depth of the pond and the light intensity? (1m)

_____

(c) Based on the information above, what can you conclude about the depth that plant Z grows best at? (1m)

_____

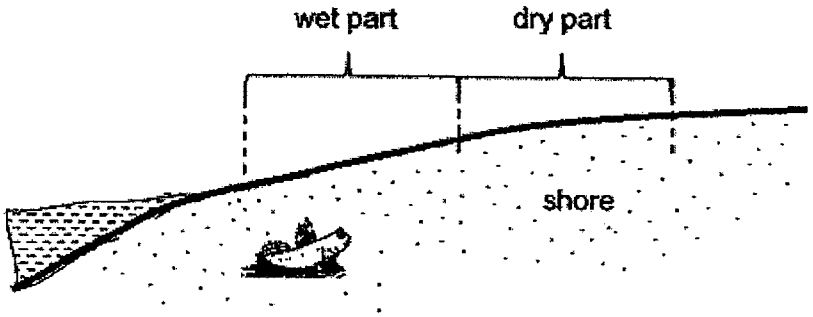
_____

2

34 Organism L is found near the wet part of the shore during low tide. Its prey and predators of Organism L can be found in the sea and near the shore.

Organism L

It has strong fins to move on land and buries itself below the wet part of the shore. It breathes through its special gills that need to be kept moist. Thus, it can breathe on land for a short period of time.



(a) Based on the information above, identify one structural and one behavioral adaptation of Organism L. (2m)

(i) Structural adaptation: _____

(ii) Behavioural adaptation. _____

(b) The prey and predators of Organism L can be found in the sea and near the shore. Explain how its behavioural adaptation enhances Organism L's survival on land. (1m)

_____

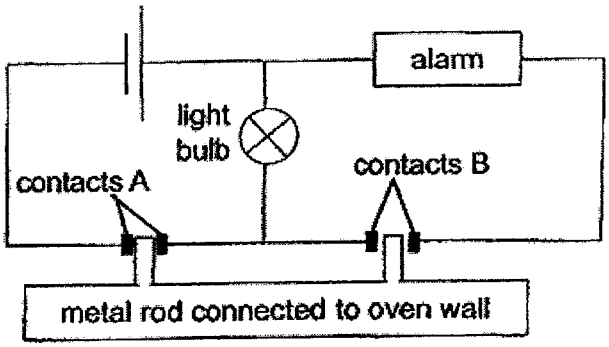
_____

(c) Why does Organism L need to keep its special gills moist? (1m)

_____

4

35 An engineer set up a system to enable the light bulb and alarm to switch on at different temperatures. The alarm turns on when the temperature is too high. The metal rod expands easily when the temperature increases.



The table shows his results at different temperatures.

Temperature (°C)	Light bulb	Alarm
40	off	off
80	on	off
300	on	on

(a) Name the property that the contacts A and B must have in order for the system to work. (1m)

_____

(b) How are the light bulb and alarm arranged in the circuit? (1m)

_____

(c) Describe how the system enables the light bulb and alarm to be turned on at different temperatures. (2m)

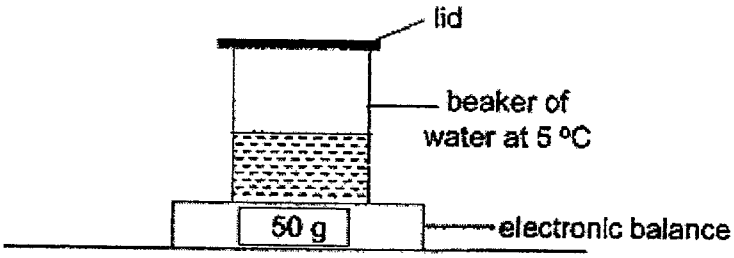
_____

_____

_____

4

36 Clarissa conducted an experiment at room temperature of 30 °C. She placed a beaker with 50 cm^3 of water at 5 °C on an electronic balance and covered the beaker with a lid as shown below.



(a) After leaving the set-up in the room for 30 minutes, the reading on the electronic balance increased. Explain why the reading on the electronic balance increased. (2m)

_____

_____

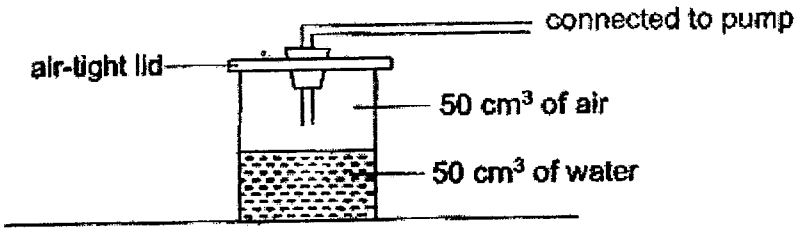
_____

(b) Clanssa removed the lid and left the beaker of water near the window exposed to the sun. She found that the volume of water decreased after a few days. Name the process that caused the volume of water to decrease. (1m)

_____

3

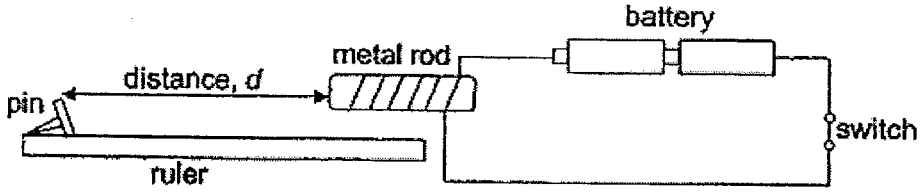
(c) She replaced the lid of the beaker with another one that is air-tight and connected to a pump as shown below.



Using the pump, 10 cm^3 of water and 10 cm^3 of air are added into the beaker. What is the final amount of air in the beaker? Explain your answer. (2m)

2

37 James set up an experiment as shown below. He wanted to find out the distance at which the pin will get attracted to the metal rod.



He placed a pin at one end of a plastic ruler and moved the pin slowly towards the metal rod. He measured the distance, *d*, when the pin was attracted to the metal rod.

(a) Name one suitable material that the pin can be made of. (1m)

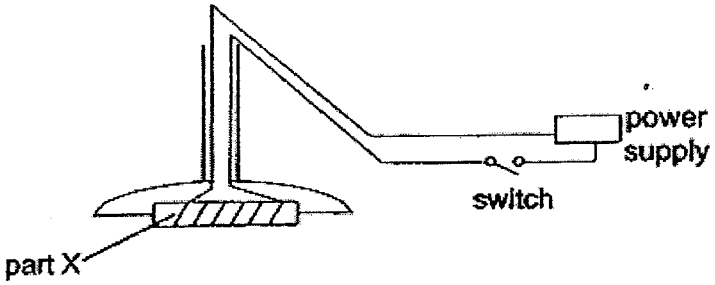
_____

(b) Besides changing the number of batteries, name one other way James can increase the distance, *d*. (1m)

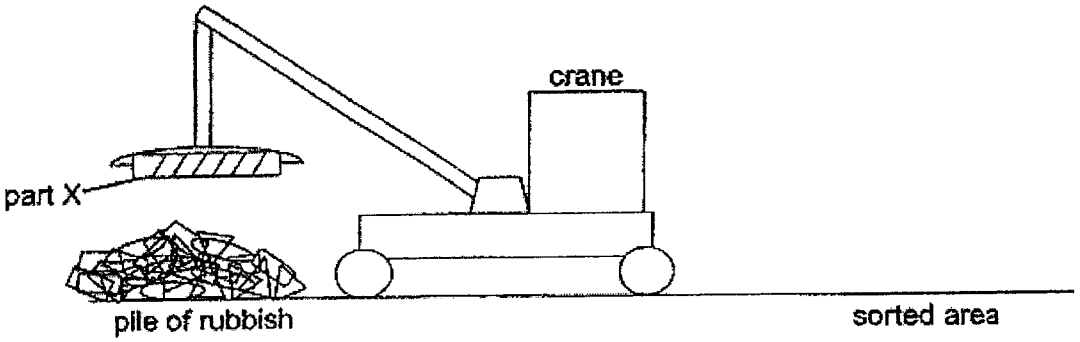
_____

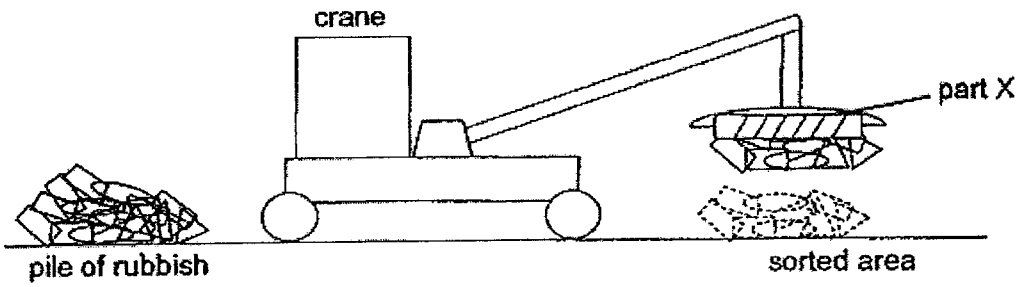
2

Using a similar method, cranes are used to remove scrap metals from a pile of rubbish. The diagram below shows the electrical circuit connected to part X of the crane.



By making use of the switch, the scrap metals can be picked up from a pile of rubbish and brought over to the sorted area where they can be released from the crane.

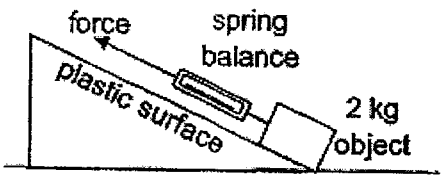




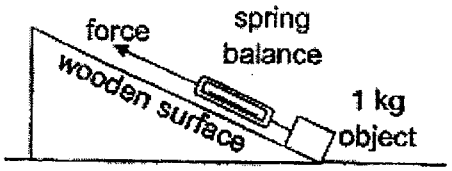
(c) Explain how the scrap metals can be picked up from the pile of rubbish and released at the sorted area. (2m)

2

38 Boon Hwee conducted an experiment to find out how the mass of an object affects the force needed to start moving the object up a slope. She used the similar slopes and spring balance in the set-ups shown below.



Set-up 1



Set-up 2

(a) Boon Hwee's experiment was not a fair test. Suggest one change to set-up 2 so that her experiment would be a fair test. (1m)

_____

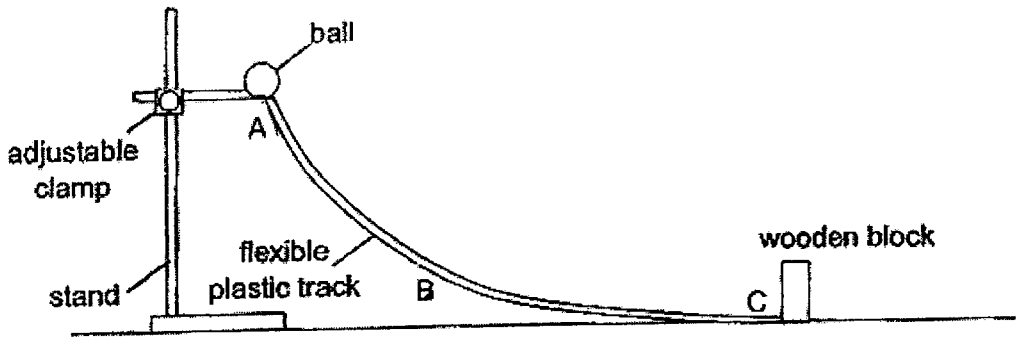
(b) Boon Hwee repeated her experiment several times. She touched the plastic surface and it felt warm after the object was moved over it. Explain your answer in terms of forces. (1m)

_____

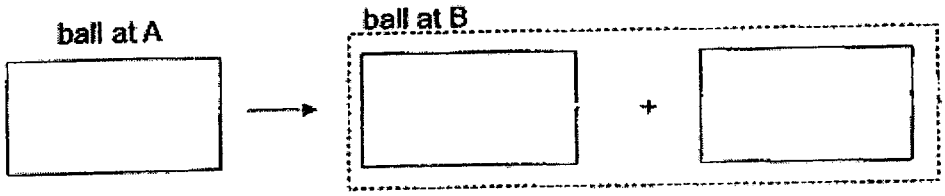
_____

2

39 Aisha designed a game that involves releasing a ball down from the top of the slope at A to knock down wooden blocks at the bottom of the slope at C.

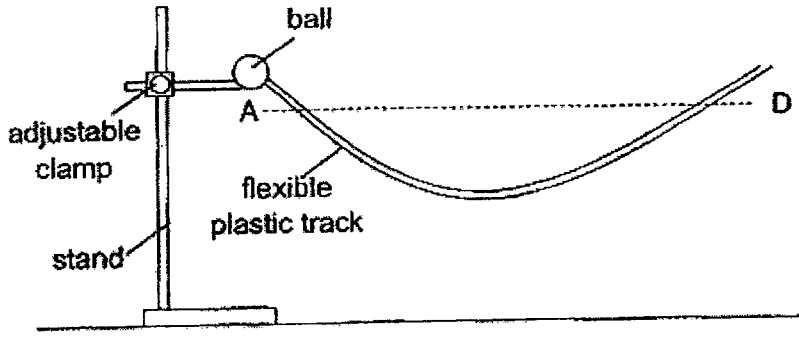


(a) Fill in the boxes with the main form of energy when the ball moves from A to B. (1m)



(b) Without using different apparatus and additional materials, suggest one way for the ball to knock down the block with bigger force. (1m)

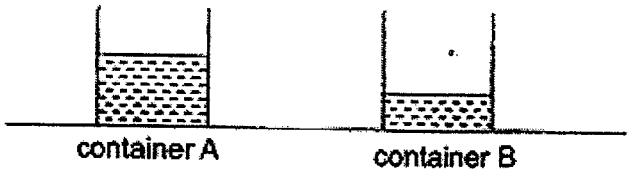
(c) Aisha removed the wooden block and re-shaped the flexible plastic track to form the set-up below.



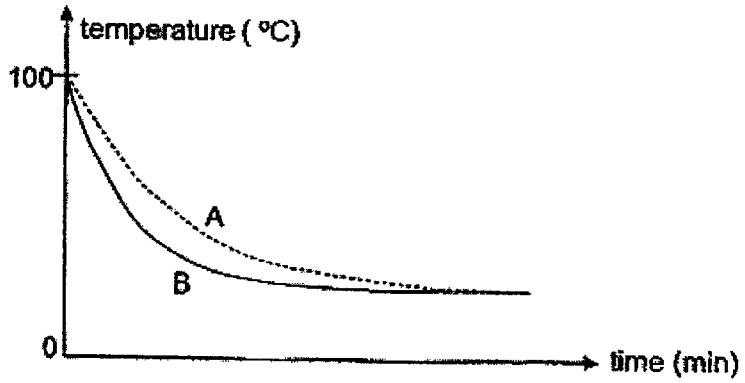
She released the ball at point A and found that it could not reach point D. Give a reason for this. (2m)

4

40 Sammy placed two empty identical containers, A and B, both initially at room temperature, on a table. He poured 1000 ml of boiling water into container A and 500 ml of water into container B.



The temperatures of water in containers A and B were recorded every minute for some time.



(a) State what is temperature. (1m)

_____

(b) Explain why the temperatures of water in both A and B decreased to the same temperature. (1m)

_____

_____

(c) Sammy had to finish a cup of hot milo in a short period of time without burning his tongue. He decided to pour his milo equally into two different cups. Using his experiment above, explain how pouring the milo into two different cups helps him finish his milo in a shorter period of time. (2m)

_____

_____

_____

End of Section B
Please check your work!

4

SCHOOL : RED SWASTIKA PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : 2022 PRELIM

SECTION A

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

Q29 a) i) can it be fruits?

ii) Y : birds

Z : mammals

b) i) This ensures that the change

ii) Little mould. The heated cake would soon lose heat to the cooler surroundings at room temperature. Since there was still moisture in the air trapped in the new air-tight jar, mould would soon grow on the cake and survive.

Q30 a) Drop fruit from a height of 1m in front of a fan

Record the time taken for fruit to each the ground.

b) Variable 1 : The weight of each fruits

Variable 2 : The location

c) Light weighted

Q31 a) (i) L , M , N

(ii) P

b) Stomata

c) Water and mineral

d) The human circulatory system and plant transport system transports substance to all parts of the human and plant.

Q32 a) algae → water snail → dragonfly nymph → fish

b) Algae

c) Dragonfly nymph

Q33 a) Part H. Part H of the leaf was not covered by the black pepper. H also contained chlorophyll as it is green. Thus, part H could trap light energy and photosynthesize in the presence of light, water and carbon dioxide and make its own food, sugar. This allowed the sugar to be stored in part H in form of starch. Thus, only starch was found in H.

b) As the depth of pond increased, the light intensity decreased.

c) Part Z grown best closer to the surface of pond at which is at the lowest depth of the pond. Making the light intensity 1000Lux.

Q34 a) (i) Structure Adaptation : It has strong fins to move on land

(ii) L buries itself below the wet part of the shore.

b) It makes it easier for L to find and eat its prey since it is on the shore. With more food to eat, L's survival rate increases. The shore acts as protection against L's predator. When L's is in water, it just needs to go up onto the shore. This prevents predators of L to eat, increasing its survival rate so the population increase.

c) L's gill need water to work. By keeping it moist, gaseous exchange can occur, allowing L to stay on land for a short time of carbon dioxide for oxygen.

Q35 a) "A" and "B" must be electrical conductors and allow electricity current to flow through.

b) The light bulb and alarm are arranged in parallel arrangement with the battery.

c) When temperature is 80°C, the metal rod expands quickly as it is a good conductor of heat when gained heat from oven wall and comes in contact with contacts A. A is an electrical conductor, allowing electrical current to flow through. It was a closed circuit of battery and light bulb as there was gaps, causing light bulb to light up. But, when temperature increases to 300 the second the metal gains heat from the hot oven wall and expands coming in contact with contact B which were electrical conductor too. It was a closed circuit and electrical current flow through light bulb and alarm at the same time. Thus alarm and light bulb will work at the same time.

Q36 a) Warmer water vapour surroundings came into contact with cooler outer surface of beaker when beaker loses heat to the cold water at 5°C and becomes cooler surface and the warmer water loses heat to the cooler outer surface of beaker and condensed into tiny water droplets. Water is matter and has mass, thus there was more mass of water and the reading electronic balance increased.

b) Evaporation

c) $40cm^3$. As when $10cm^3$ of air and water is added, the volume of water lose to $60cm^3$ as it was $50cm^3$ at the start. The total volume of beaker is $100cm^3$ and since more water occupied more space in beaker trapped air occupied the remaining 40 cm^3

Q37 a) Iron

b) Increase the number of coils of wire around the metal rod

c) The crane work as a electromagnet, so by using a switch, it will attract all the magnetic material causing it to be separated from the pile of rubbish.

Q38 a) Change the wood surface in set-up 2 to a plastic surface

b) When the object was moved on the plastic surface, there was frictional force between the plastic surface and object. This produced heat. Thus, the plastic surface felt warm.

Q39 a) Gravitational potential energy ⟶ Kinetic ⟶ Thermal energy

b) Make the point A at a higher position by adjusting the adjustable clamp to a higher position.

c) Gravitational potential energy of ball was converted to kinetic energy, heat and sound energy when rolling down the flexible plastic track. Since some kinetic energy was converted to heat and sound energy, the ball did not have enough kinetic energy to be converted to the same gravitational potential energy at A. Thus the ball could not reach D.

Q40 a) Temperature is the measure of hotness or coldness expressed in terms of any of several scales.

b) The water in A and B both lost heat to the cooler surroundings at room temperature. Thus both A and B decreased to same temperature.

c) By pouring milo into two equally cups, the milo had a greater exposed surface area in contact with the cooler surroundings at room temperature. The milo lost more heat to the cooler surroundings at a faster rate and decreased faster. This allows Sammy to drink he's milo in a shorter time.