RED SWASTIKA SCHOOL

SCIENCE
2022 PRELIMINARY EXAMINATION
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 23 August 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. Which one of the following is a similarity between mushroom and bacteria?

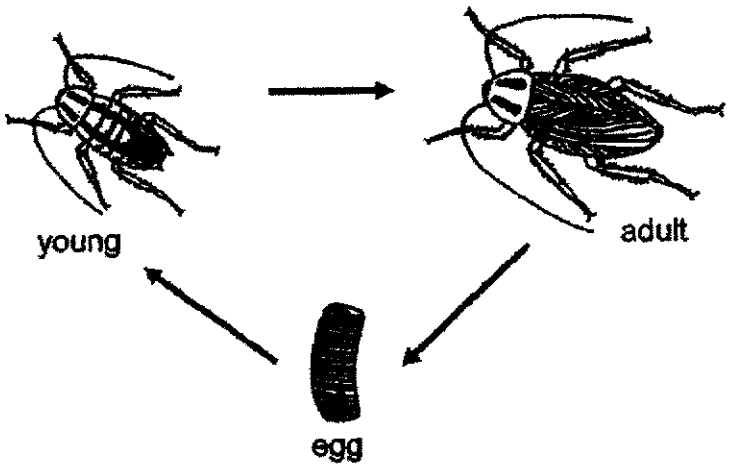
   (1) Both can make food.

   (2) Both are decomposers.

   (3) Both reproduce by spores.

   (4) Both are microscopic organisms.

2. Study the life cycle of the organism shown below.



Which of the following observations can allow us to conclude that the organism shown is an insect?

(1) The adult of the organism has wings.

(2) The organism reproduces by laying eggs.

(3) The young of the organism looks like the adult.

(4) The organism has six legs and three body parts.

3. Four seeds, E, F, G and H, from a plant are placed under the conditions shown below.

seed	conditions			
	water	air	light	temperature (°C)
E	✓	✓	×	28
F	×	✓	✓	3
G	×	✓	×	28
H	✓	×	✓	3

Key
✓: present
× : absent

Which seed will germinate?

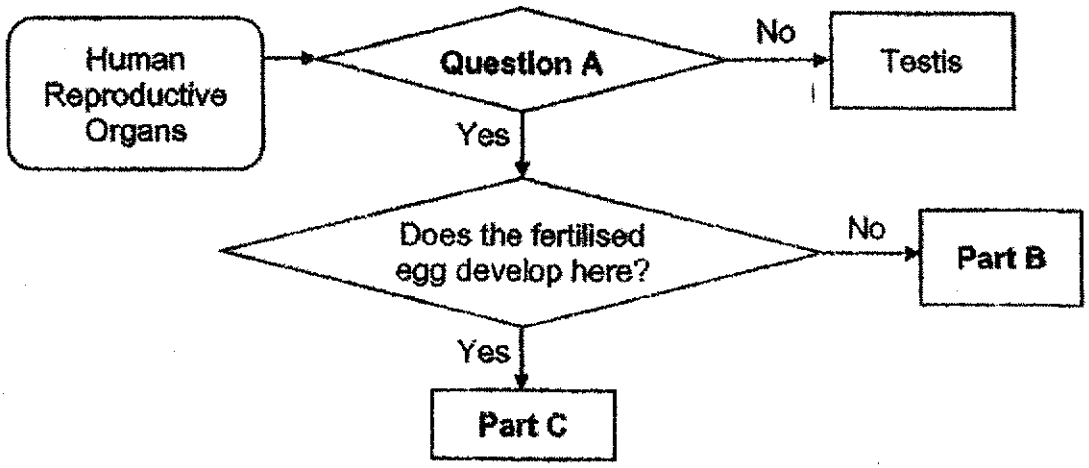
(1) E

(2) F

(3) G

(4) H

4. Study the flowchart.



Which one of the following is correct?

	Question A	Part B	Part C
(1)	Is it found in males?	Ovary	Womb
(2)	Is it found in males?	Penis	Ovary
(3)	Is it found in females?	Ovary	Womb
(4)	Is it found in females?	Womb	Vagina

5. Chun Ling wanted to find out how the presence of wing-like structure of seeds would affect the distance travelled.

Which of the following should be kept constant for Chun Ling to carry out a fair test?

A mass of seeds
B place where the seeds were dropped
C presence of wing-like structure of seeds
D height from which the seeds was dropped

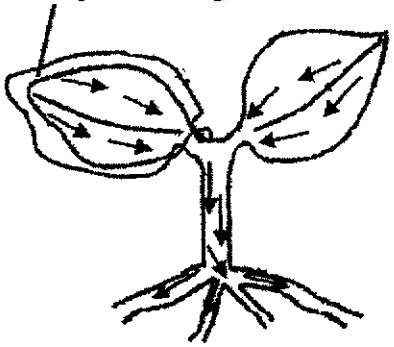
(1) C only
(2) B and D only
(3) A, B and C only
(4) A, B and D only

6. Which of the following is a function of the human muscular system?

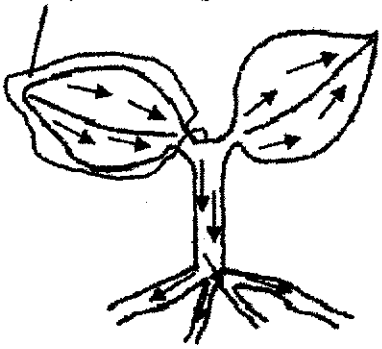
(1) breaks down food
(2) protects organs in the body
(3) enables different parts of the body to move
(4) transports waste materials away from different parts of the body

7. One of the leaves of a plant is wrapped with a black plastic bag for three days. The arrows represent the direction of the movement of food. Which diagram shows the correct movement of food in the plant after three days?

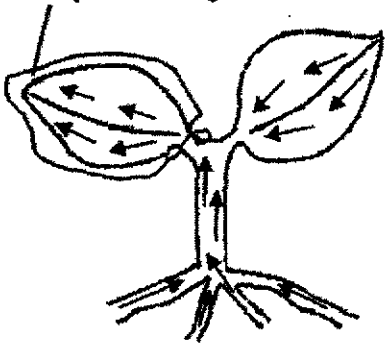
(1) black plastic bag



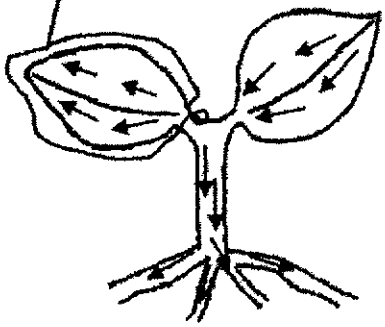
(2) black plastic bag



(3) black plastic bag



(4) black plastic bag



8. Study the table below.

Characteristics	Cells		
	R	S	T
makes its own food	yes	no	no
has a regular shape	yes	no	yes
contains a nucleus	yes	yes	yes

Which cell(s) is/are not an animal cell?

(1) R only

(2) R and T only

(3) S and T only

(4) R, S and T

9. Which of the following human activities will reduce the rate of global warming?

E burning rubbish

F recycling papers

G clearing trees to increase the number of animal farms

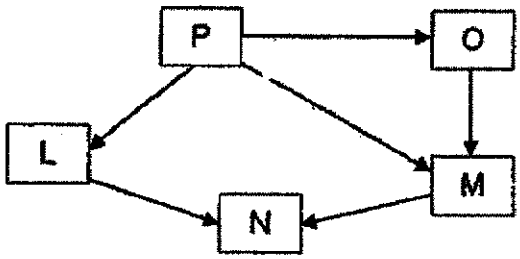
(1) F only

(2) E and F only

(3) E and G only

(4) E, F and G

Study the food web and answer Questions 10 and 11.



10. Kayden made three statements about the food we

X L is a predator.

Y P is the only producer.

Z M and N eat animals only.

Which statement(s) is/are correct?

(1) X only

(2) Y only

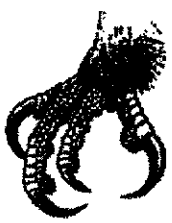
(3) X and Y only

(4) X, Y and Z

11. Organism N is a bird that does not swim and flies high in the sky. It needs to hold on to the tree branches when it is not flying.

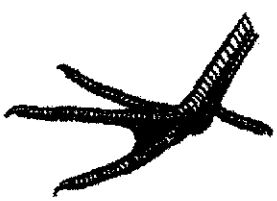
Which one of the following feet most likely belongs to organism N?

(1)



(2)

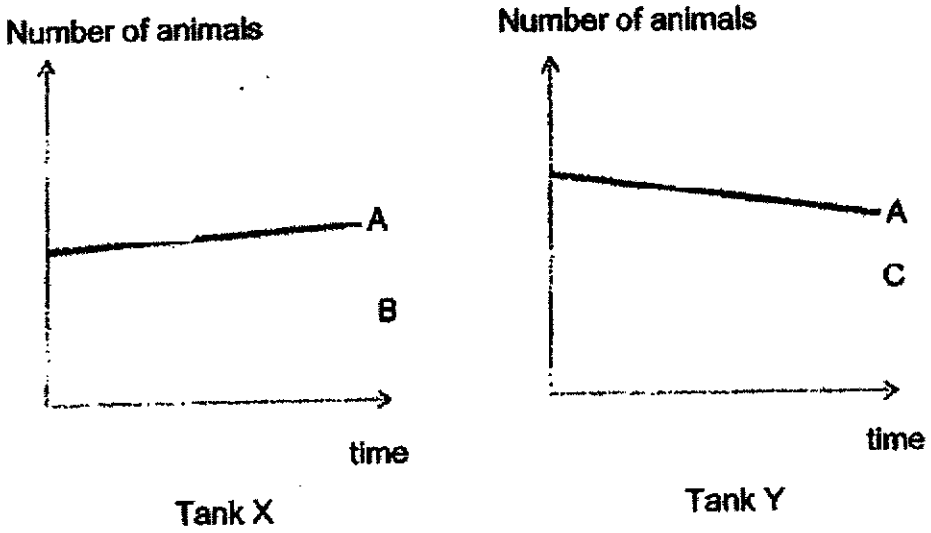
(3)



(4)

12. Animals A, B and C are three different types of animals. Jun Hao put animals A and B in Tank X and animals A and C in Tank Y. He also put some plants in both tanks.

He counted the number of animals in the tanks every week for a month. His results are shown in the graphs below. He did not see any dead animals in the tanks.



From the graphs, which one of the following shows part of the food chain linking these three animals?

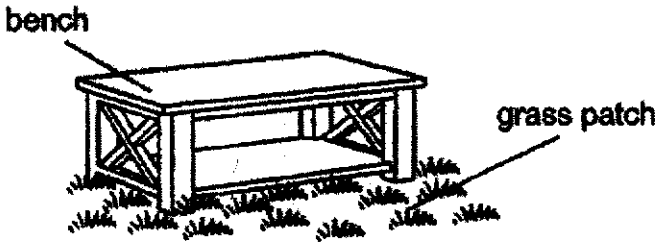
(1) A → B → C

(2) B → A → C

(3) C → A → B

(4) C → B → A

13. Germaine placed a bench on the grass patch in her garden. After one month, she noticed that the grass patch under the bench turned yellow while the surrounding grass were green.



Which of the following best explains why the grass patch under the bench turned yellow?

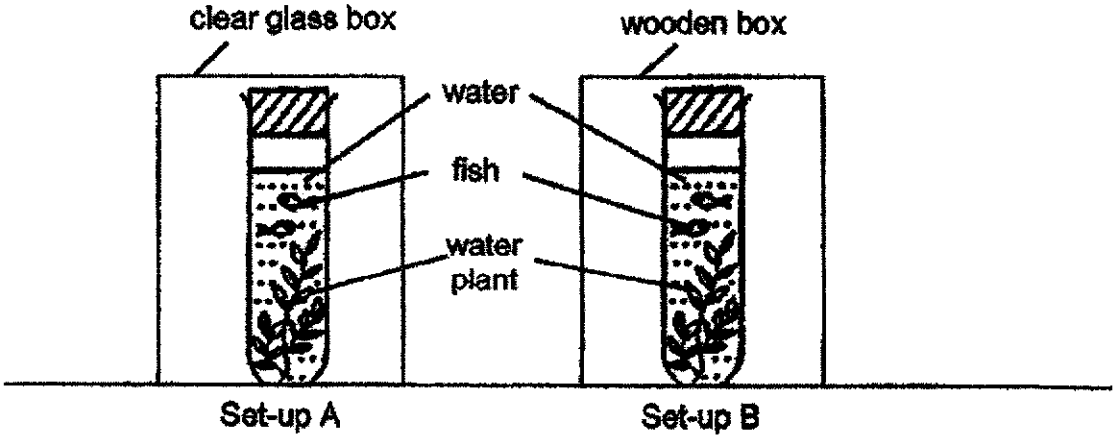
(1) There is not enough water for the grass.

(2) There is not enough oxygen for the grass.

(3) There is not enough sunlight for the grass.

(4) There is not enough mineral salts for the grass.

14. Devi prepared two similar set-ups, A and B. She put them in two boxes of different materials and placed them in the sun at her balcony.



After a few days, Devi observed that the fish in set-up A were alive, but all the fish in set-up B had died. What could Devi conclude from her experiment?

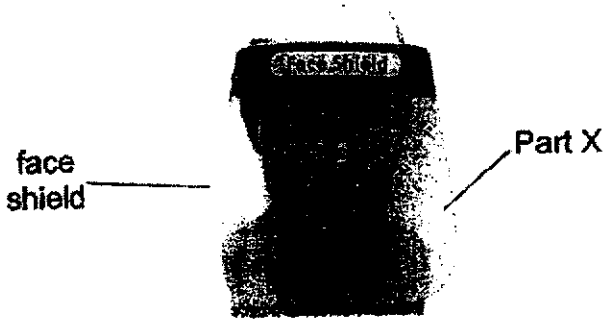
(1) Fish need oxygen to survive.

(2) Fish need water to survive.

(3) Plants need water for photosynthesis.

(4) Plants need carbon dioxide for photosynthesis.

15. The diagram shows a person wearing a face shield to protect the face from droplets that may contain viruses.

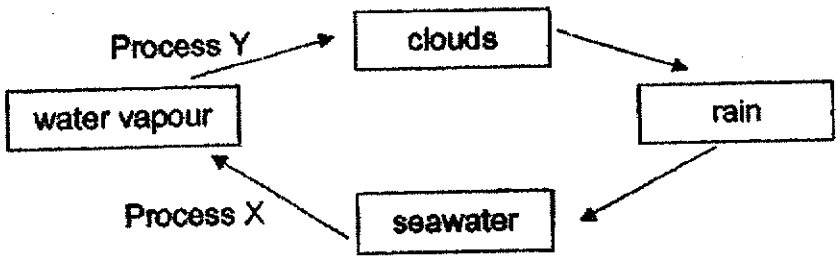


Based on the properties shown below, which material is most suitable for making part X of the face shield?

	Material	Property			
		Waterproof	Flexibility	Ability to float in water	Ability to allow light to pass through
(1)	A		✓	✓	✓
(2)	B	✓	✓	✓	
(3)	C	✓	✓		✓
(4)	D	✓		✓	

Key
✓ : yes

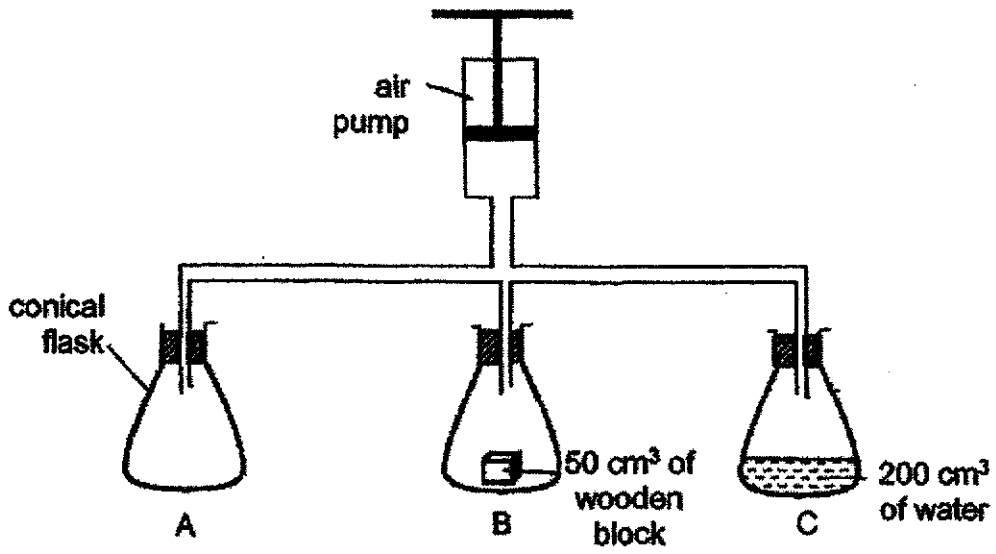
16. The diagram shows the water cycle.



What are processes X and Y?

	X	Y
(1)	evaporation	evaporation
(2)	evaporation	condensation
(3)	condensation	evaporation
(4)	condensation	condensation

17. Three 500 cm^3 conical flask, A, B and C are joined to an air pump as shown in the diagram below.



The handle of the air pump is pushed down three times, pushing in 100 cm^3 of air with each pumping action.

What is the final volume of air in each flask at the end of the experiment?

	Flask A (cm^3)	Flask B (cm^3)	Flask C (cm^3)
(1)	800	800	800
(2)	500	450	300
(3)	300	350	500
(4)	800	750	600

18. The table below shows the properties of substances P and Q at different temperatures.

Substance	Properties of substance at		
	15 °C	35 °C	65 °C
P	definite volume, definite shape	definite volume, no definite shape	definite volume, no definite shape
Q	definite volume, definite shape	definite volume, definite shape	definite volume, no definite shape

Based on the table, which statement is definitely true?

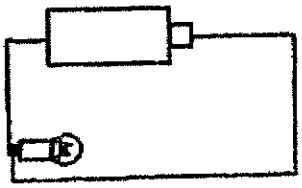
(1) P is a solid at 20 °C.

(2) Q is a solid at 50 °C.

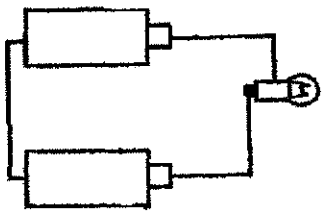
(3) P has a higher boiling point than Q.

(4) Q has a higher freezing point than P.

19. Erica set up two circuits using identical bulbs and batteries in working condition.



Circuit A



Circuit B

In which circuit(s) will the bulb light up?

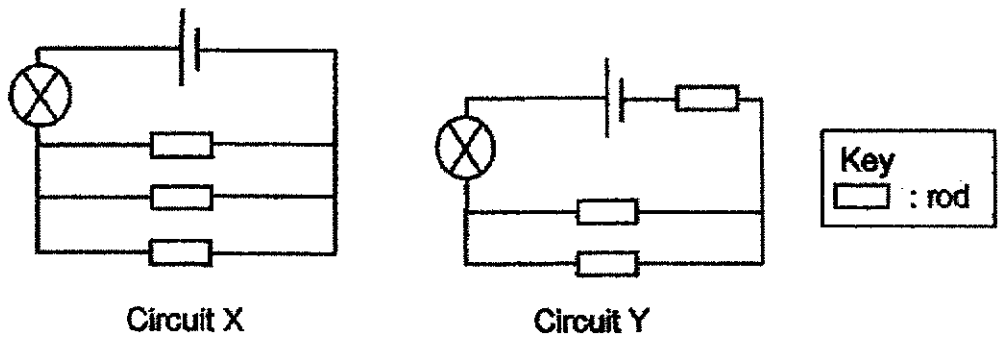
(1) Circuit A only

(2) Circuit B only

(3) Circuits A and B

(4) None of the circuits

20. Ron set up two circuits, X and Y, as shown below. In each circuit, there is a plastic rod, a glass rod and a copper rod.



Circuit X Circuit Y

In which circuit(s) will the bulb light up?

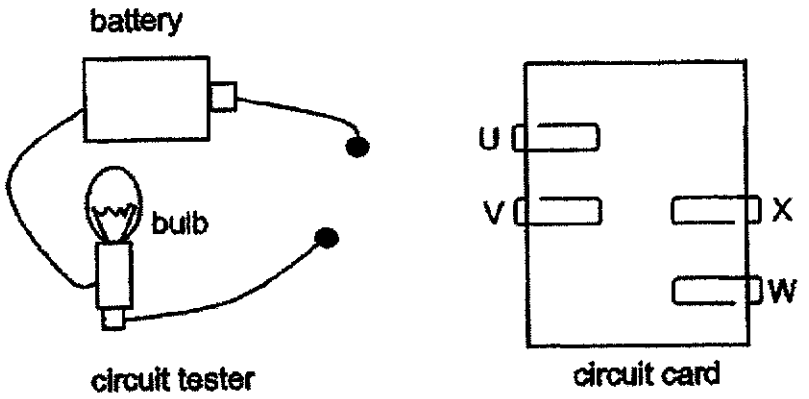
(1) Circuit X only

(2) Circuit Y only

(3) Circuits X and Y

(4) None of the circuits

21. The diagram shows a circuit tester and the top view of a circuit card with four steel clips, U, V, W, and X. The steel clips are connected with wires on the underside of the circuit card.

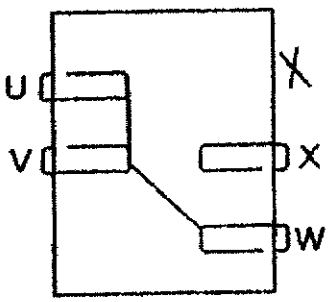


The table shows the results when the circuit tester is connected to two of the steel clips.

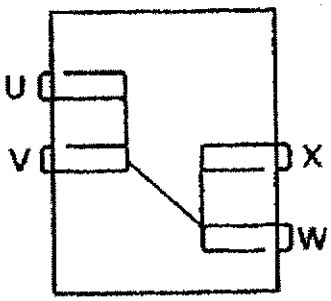
Circuit tester is connected to				Does the bulb light up?
U	V	W	X	
✓			✓	No
	✓	✓		Yes
✓		✓		Yes
	✓		✓	No

Which of the following is not possible on the underside of the circuit card?

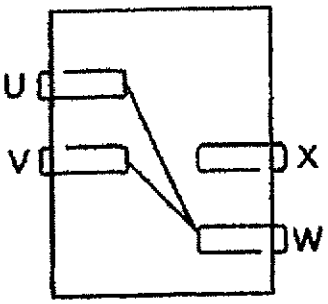
(1)



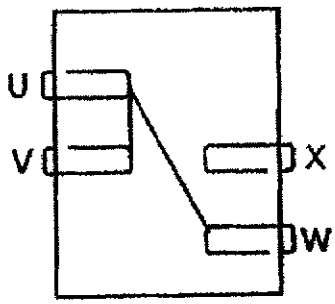
(2)



(3)



(4)



22. Amy had three objects, A, B and C. She brought two of the objects close to each other and recorded her observations.

Her observations are shown below.

Objects	Observation
A and B	attraction
A and C	no attraction or repulsion
B and C	no attraction or repulsion

Which of the following are possible examples of objects A, B, and C?

	A	B	C
(1)	magnet	iron rod	aluminium bar
(2)	magnet	aluminium bar	iron rod
(3)	iron rod	magnet	magnet
(4)	iron rod	aluminium bar	magnet

23. Which of the following are effects of a force?

A It causes an object to move faster.

B It causes an object to stop moving.

C It causes an object to change its mass.

D It causes an object to change its shape.

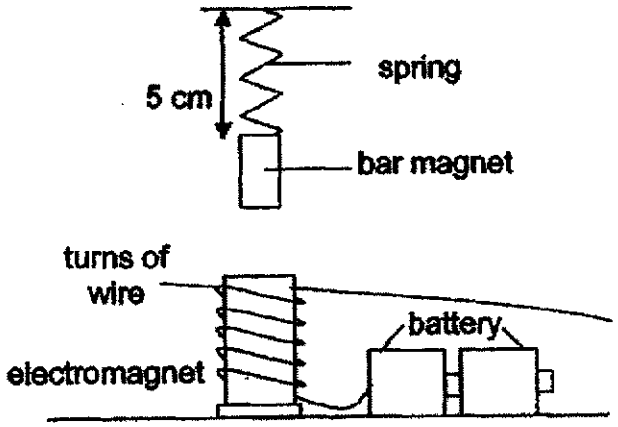
(1) A and B only

(2) B and C only

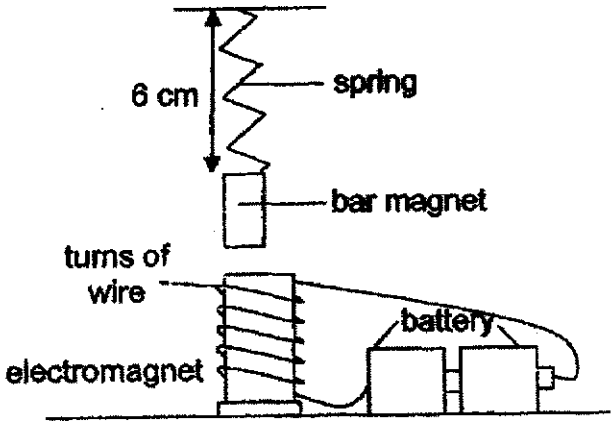
(3) A, B and D only

(4) A, C and D only

24. Teri attached a bar magnet to a spring and hung it above an electromagnet as shown below. The original length of the spring with the bar magnet is 5 cm.



The diagram below shows what happens when the circuit is closed.



Which of the following could cause the length of the spring to decrease?

A Remove one battery from the setup.

B Replace the spring with a stiffer one.

C Increase the number of turns of wire around the electromagnet.

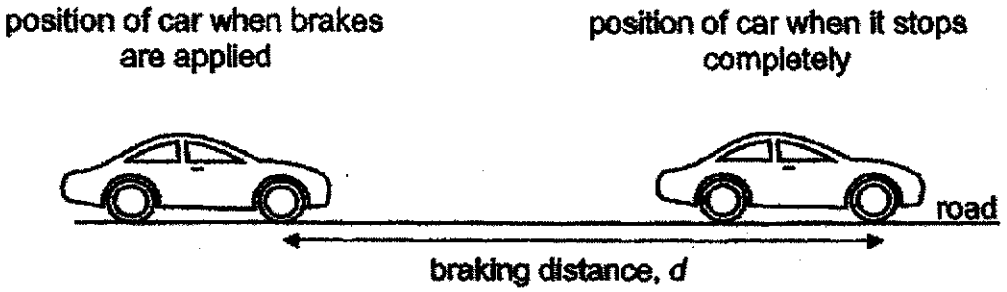
(1) A and B only

(2) A and C only

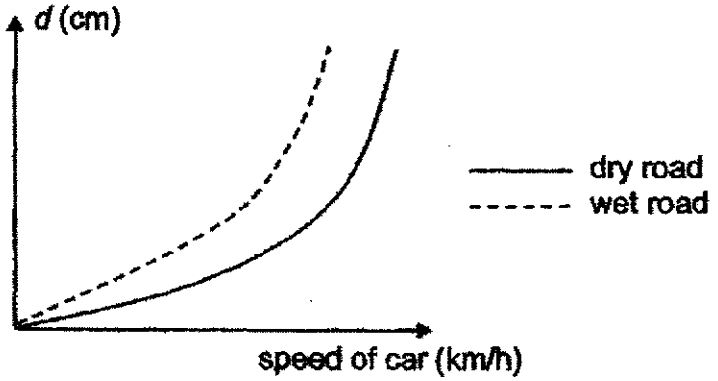
(3) B and C only

(4) A, B and C

25. David conducted an experiment to determine the braking distance of a car travelling at different speeds on dry and wet roads. The braking distance is the distance the car travels before coming to a complete stop after the brakes are applied.



The graph shows the results of the experiment.



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

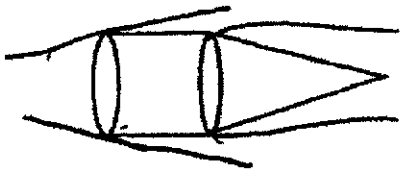
(1) The braking distance is unaffected by the speed of the car.

(2) The braking distance decreases on both wet and dry roads when the speed of the car increases.

(3) The braking distance for a car travelling at the same speed is longer on a wet road than a dry road.

(4) The braking distance for a car travelling at the same speed is longer on a dry road than a wet road.

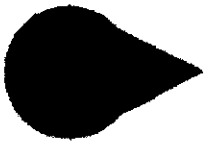
26. Kimberly glued a cylinder and a cone with the same base together to form the structure below.



Which of the following shadows can be formed by the structure?

A

B



C

(1) A only

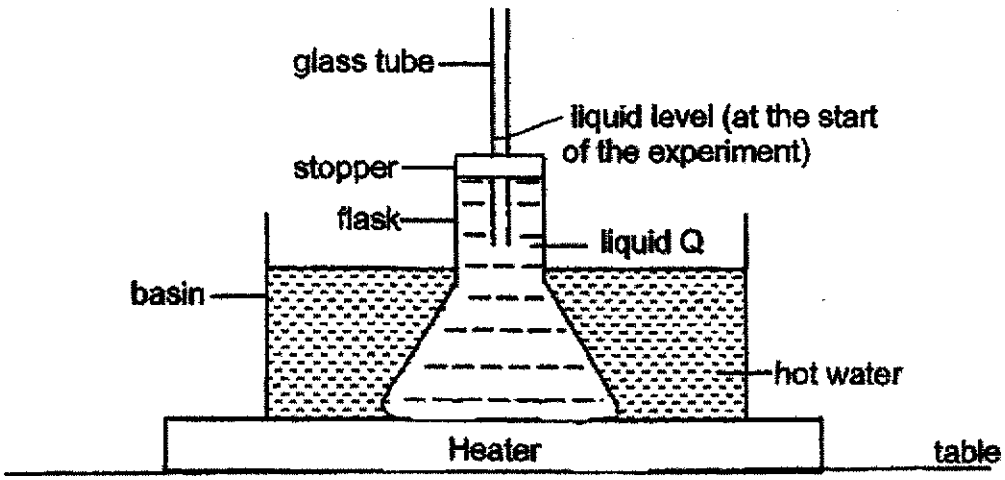
(2) B only

(3) A and B only

(4) A, B and C

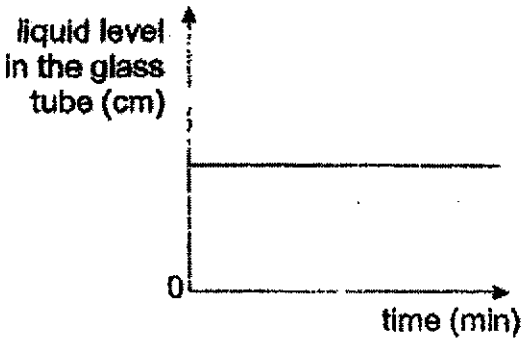
27. Susan filled a flask with liquid Q and lowered it into a basin of hot water. The set-up was placed on top of a heater as shown below. The liquid level in the glass tube was recorded at 3 cm at the start of the experiment.

She recorded the liquid level in the glass tube every minute for the next ten minutes.

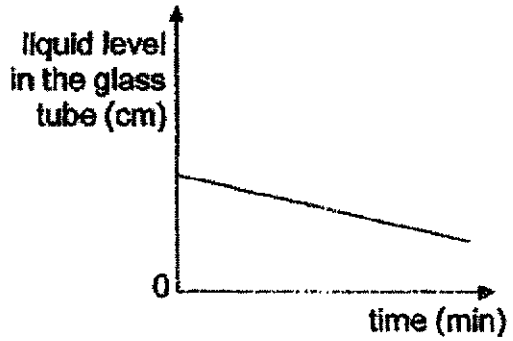


Which one of the following is the correct graph for her results?

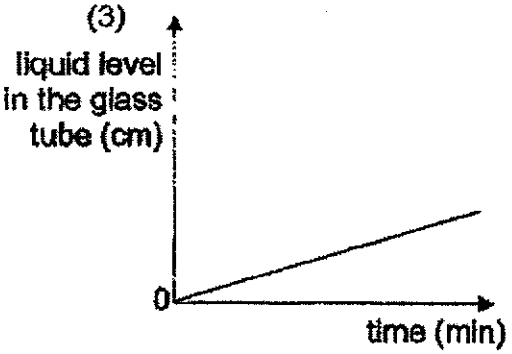
(1)



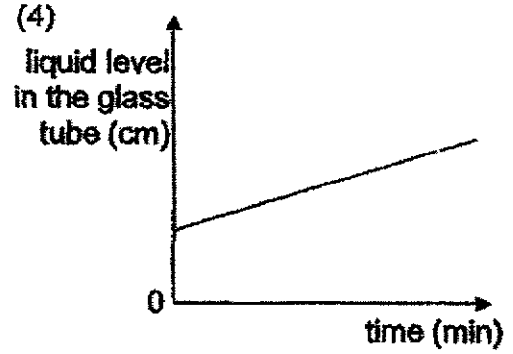
(2)



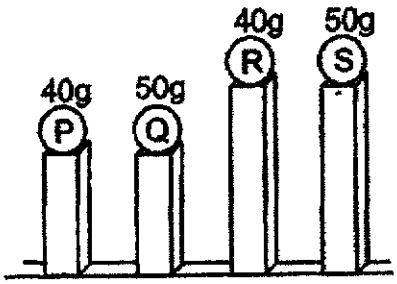
(3)



(4)



28. Kumar placed four balls, P, Q, R, and S, of similar sizes but different masses at different heights.



Which of the following statement(s) is / are true?

A Ball P has the least potential energy.

B Ball R has less potential energy than ball S.

C Balls Q and S have the same amount of potential energy.

(1) A only

(2) A and B only

(3) B and C only

(4) A, B and C

END OF BOOKLET A

RED SWASTIKA SCHOOL

SCIENCE
2022 PRELIMINARY EXAMINATION
PRIMARY 6

Name : _____ ( )

Class : Primary 6/ _____

Date : 23 August 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

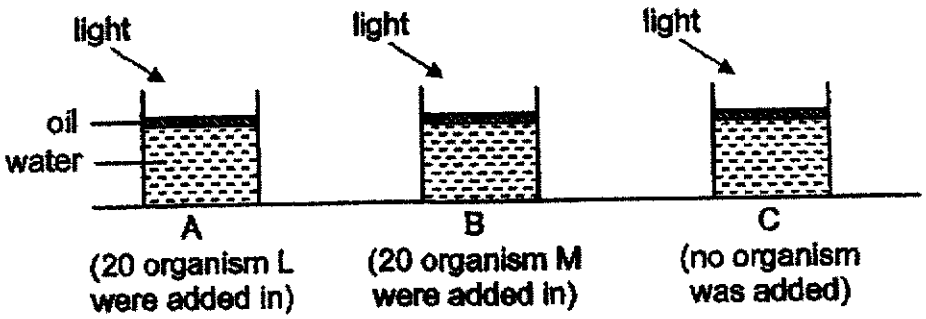
MARKS

	OBTAINED	POSSIBLE
BOOKLET A		56
BOOKLET B		44
TOTAL		100

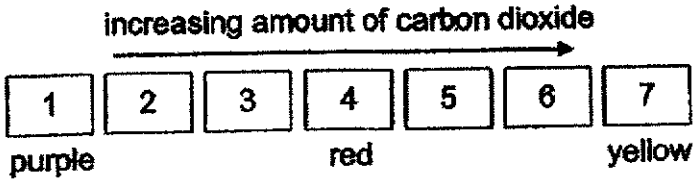
Parent's Signature : _____

Answer all the questions in the spaces provided.

29. Samantha conducted an experiment using three beakers as shown.



After a few hours, a drop of liquid Q was added to each beaker. When liquid Q was mixed with the water, the colour of water changed according to the amount of carbon dioxide present. Each number below represents a different colour.



Samantha recorded the number representing the colour of water in each beaker as shown in the table below.

Beaker	Number representing the colour of water
A	2
B	6
C	4

(a) Which organism, L or M, is likely a plant? Explain your answer. (2m)

_____

_____

_____

2

29.

(b) Explain the purpose of having beaker C. (1m)

_____

_____

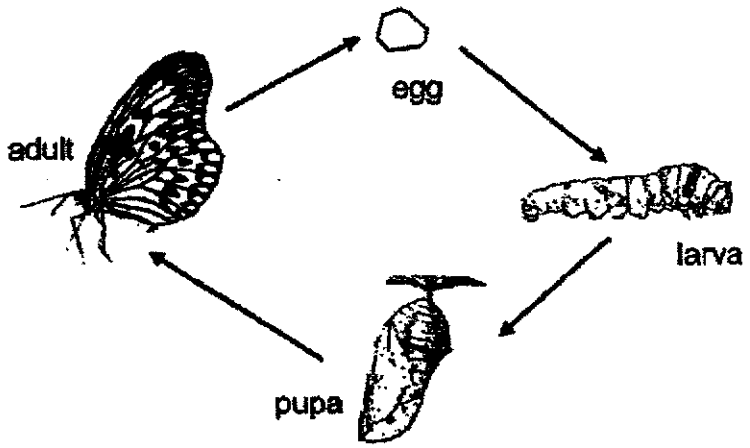
Samantha conducted another similar experiment but increased the amount of organism M in beaker B to 50.

(c) Suggest a number that represents the colour of liquid Q in beaker B. (1m)

_____

2

30. The life cycle of insect H is shown below.



Pam studied the effect of the surrounding temperature on the life cycle of insect H. Her findings are shown below.

Surrounding Temperature (°C)	Number of days for one complete life cycle
20	90
25	40
30	30
35	22

(a) From Pam's findings, how did the surrounding temperature affect the duration of one complete life cycle of insect H? (1m)

_____

_____

(b) Insect H lays its eggs under the leaves of a plant. The larvae become bigger after some time. Suggest and explain two benefits for insect H to lay its eggs under the leaves. (2m)

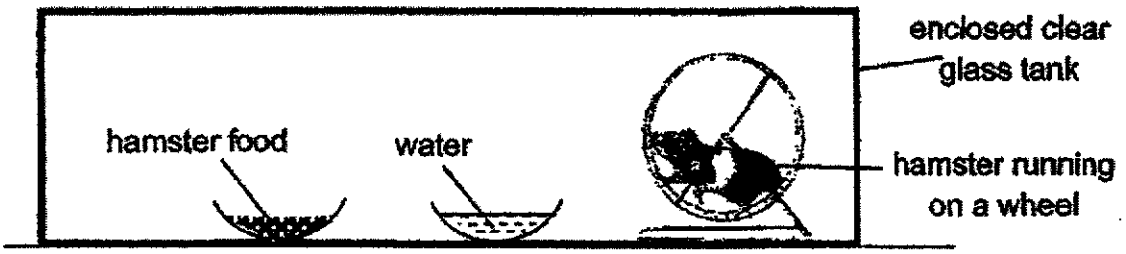
_____

_____

_____

3

31. Ashley kept his hamster in an enclosed clear glass tank with a dish of water and hamster food. He let his hamster run on a wheel in the glass tank.



(a) Would the amount of oxygen and nitrogen in the tank increase, decrease or remain the same after a day? (1m)

Oxygen: ___ _____

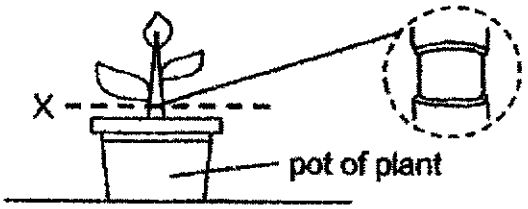
Nitrogen: ___ _____

Ashley realised his hamster may not have enough air to survive in the glass tank. He decided to put a pot of plant into the glass tank.

(b) Which part of the plant would directly help the hamster survive in the tank? (1m)

_____

Before placing the pot of plant into the glass tank, Ashley removed an outer ring from the stem at X.



(c) Ashley watered the plant daily, but it died after a few days. Explain why. (2m)

_____

_____

_____

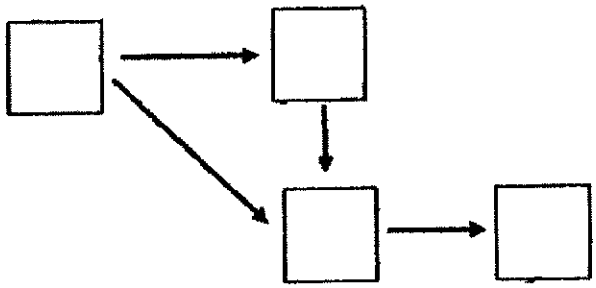
4

32. Study the information given below carefully.

- P eats only Q.
- S feeds on P.
- S is both a prey and a predator.
- R eats animals only.

(a) Complete the food web below by writing the correct letter (P, Q, R and S) in each box using the information above. (1m)

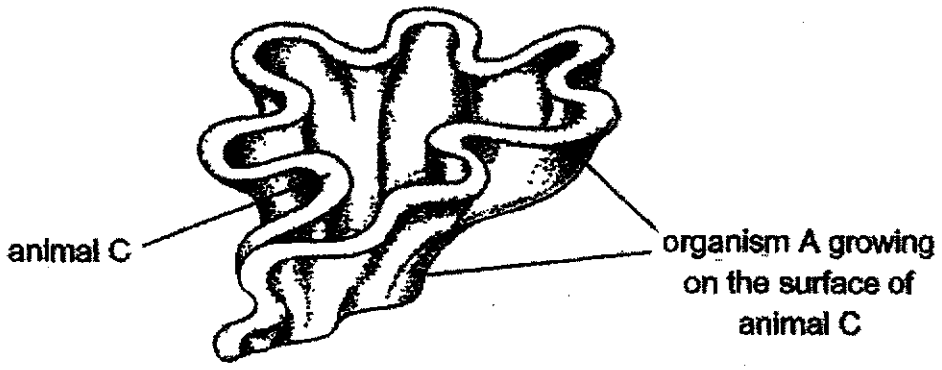
producer



(b) Explain clearly what happens to the population of Q when there is an overhunting of S. (2m)

3

33. Organism A is found growing on the surface of animal C as shown below.



Organism A is a single cellular organism that has chloroplasts and grows on the surface of animal C.

Animal C is found in the ocean and is a predator of the animals that eat organism A. Animal C does not eat organism A.

(a) Based on the information above, explain how animal C would benefit from its relationship with organism A. (1m)

_____

_____

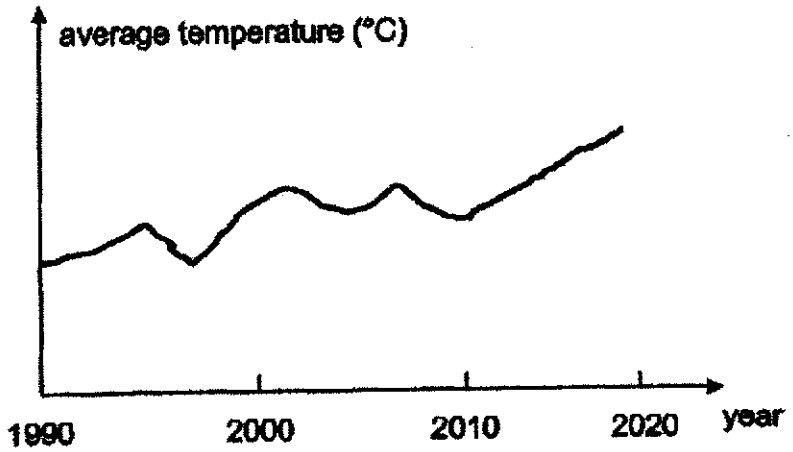
(b) Organism A can grow on rocks. Explain why it is an advantage for organism A to grow on animal C instead of growing on a rock. (1m)

_____

_____

2

33. The graph below shows the average temperature on Earth over a period of time.



(c) Identify the main gas responsible for the increase in average temperature from 1990 and 2020 as shown in the graph above. (1m)

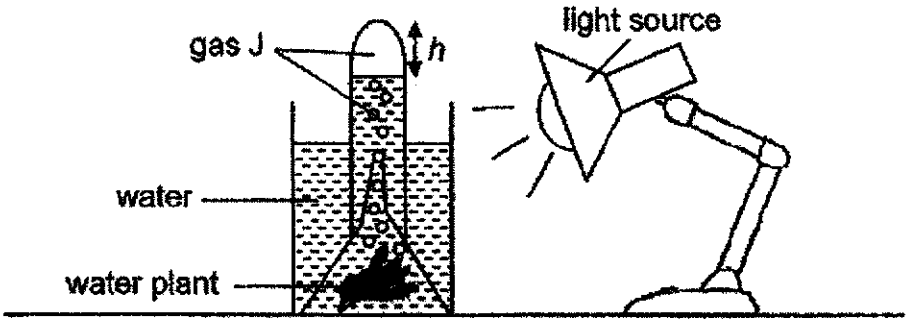
(d) Explain how the gas in (c) causes the increase in the average temperature on Earth. (1m)

Scientists investigated that an increase in temperature in the ocean reduces the amount of oxygen in the water. It also resulted in less organism A growing on the surface of animal C.

(e) Based on the information above, explain how the increase in average temperature between 2010 and 2020 affects the population of animal C? (1m)

3

34. Xiao Nan conducted an experiment to find out which coloured light allows the highest rate of photosynthesis to take place. He prepared three similar set-ups as shown. Each set-up was placed under different coloured lights.



Xiao Nan measured the height, *h*, of the air space before and after the experiment for each set-up and recorded the results in the table below. During the experiment, Xiao Nan noticed that the water plant was producing gas J.

Colour of light	*h* (cm) before experiment	*h* (cm) after experiment
Red	3.0	3.5
Blue	3.0	4.0
Green	3.0	3.1

(a) Identify gas J. (1m)

_____

(b) What conclusion could Xiao Nan make based on the results of his experiment? (1m)

_____

_____

(c) Xiao Nan conducted his experiment in a dark room. Explain how this had helped to ensure a fair test. (1m)

_____

_____

3

35. Mary baked two loaves of bread. She removed the first loaf of warm bread from the baking tin and placed it into a plastic bag as shown in Diagram 1.

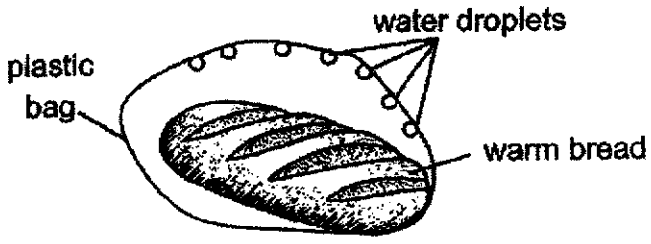


Diagram 1

After a few minutes, she noticed some water droplets forming on the inner surface of the plastic bag.

(a) Name the process that caused the formation of the water droplets. (1m)

_____

Mary placed the second loaf of warm bread in a baking tin on a dry towel as shown in Diagram 2.

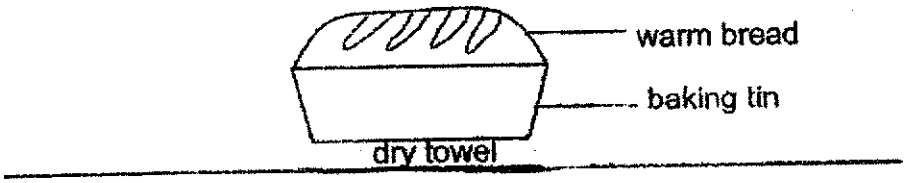


Diagram 2

Her mother suggested that she cool her bread by putting a wet towel under her baking tin instead as shown in Diagram 3.

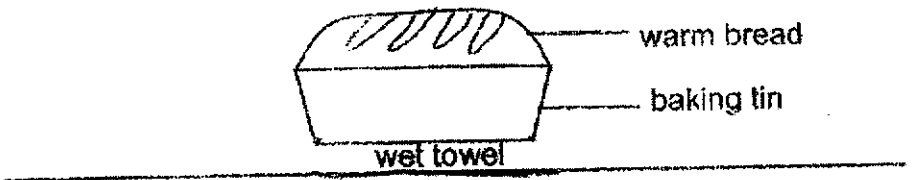


Diagram 3

(b) Explain how putting a wet towel under the baking tin will allow the bread to cool faster. (2m)

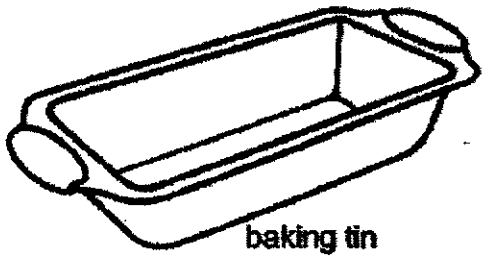
_____

_____

_____

3

35. The baking tin is made of a thin layer of metal of a certain thickness.



(c) Describe one way for Mary to find the volume of metal used to make the baking tin. (2m)

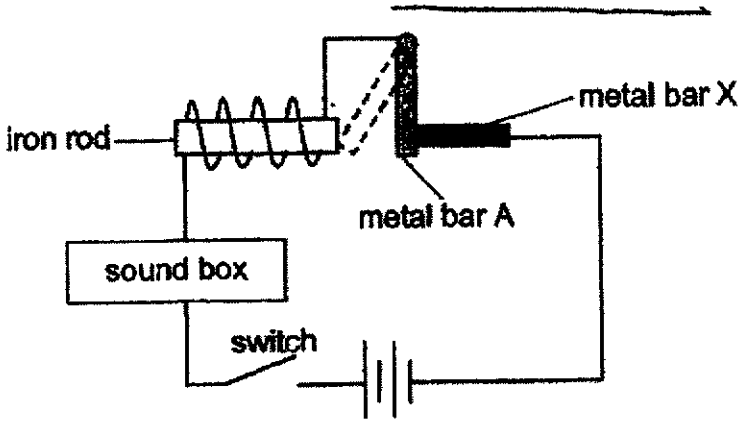
_____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

2

36. Charles set up a circuit as shown. When he closed the switch, a melody was played from the sound box. After a short while, the melody stopped.



(a) Explain why the melody stopped after a while. (2m)

_____

_____

_____

(b) Charles replaced bar A with a bar made of a different material. When he closed the switch, the melody was played continuously and did not stop.

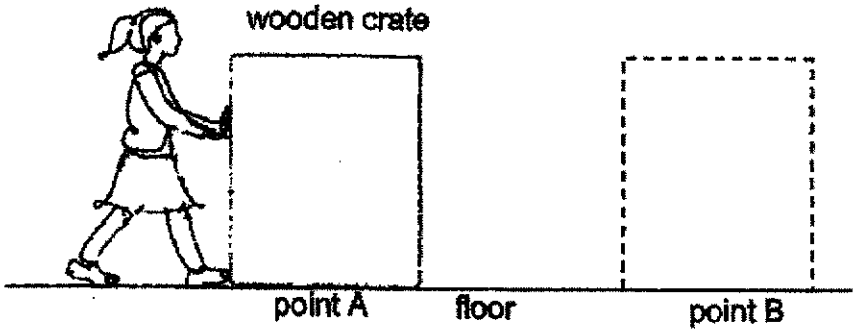
Based on the above results, state two properties of the new material used. (2m)

1. _____

2. _____

4

37. Mandy wanted to push a wooden crate from point A to B as shown below. She tried to push it across the floor but could not do so.



(a) Explain, in terms of forces, why Mandy was unable to push the wooden crate across the floor. (1m)

_____

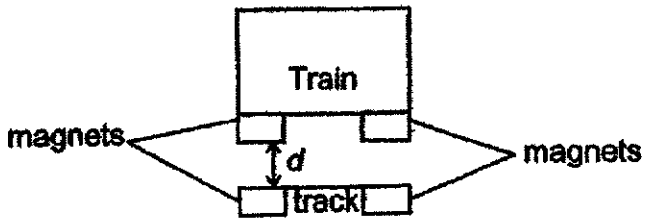
_____

(b) Besides using more force, what can Mandy do to make it easier to push the wooden crate across the floor? (1m)

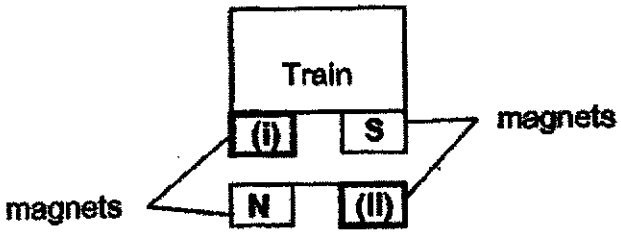
_____

2

38. Ken designed a train system that uses magnets on the train and its track as shown below. The train and the track do not come into contact.



(a) Name the poles of the magnets at (i) and (ii) in the two boxes below. (1m)



(i) _____

(ii) _____

(b) Explain how the train can stay afloat above the track. (2m)

_____

_____

_____

(c) He added different number of weights onto the train and the distance, *d*, was measured. The table below shows the results.

Number of weights added	Distance, *d* (cm)
0	6
2	4
4	2
6	0

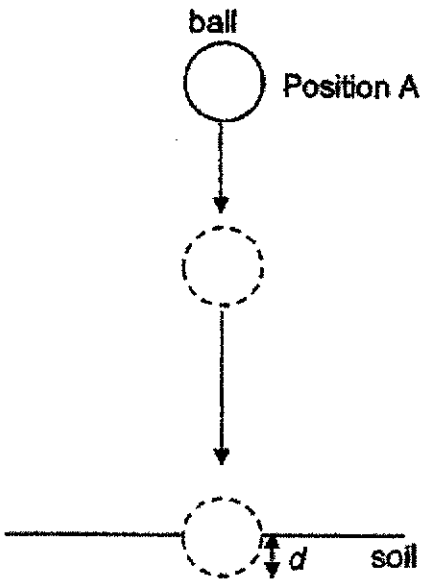
Other than the weights, suggest one change to the set-up above to help the train stay afloat above the track when six weights are added to the train. (1m)

_____

_____

4

39. Joel released a ball at position A. The diagram below shows the positions of the ball as it dropped from position A to the soil.



(a) State the main form(s) of energy of the ball at position A. (1m)

_____

(b) Joel measured the depth of the depression, *d*, produced by the ball in the soil.

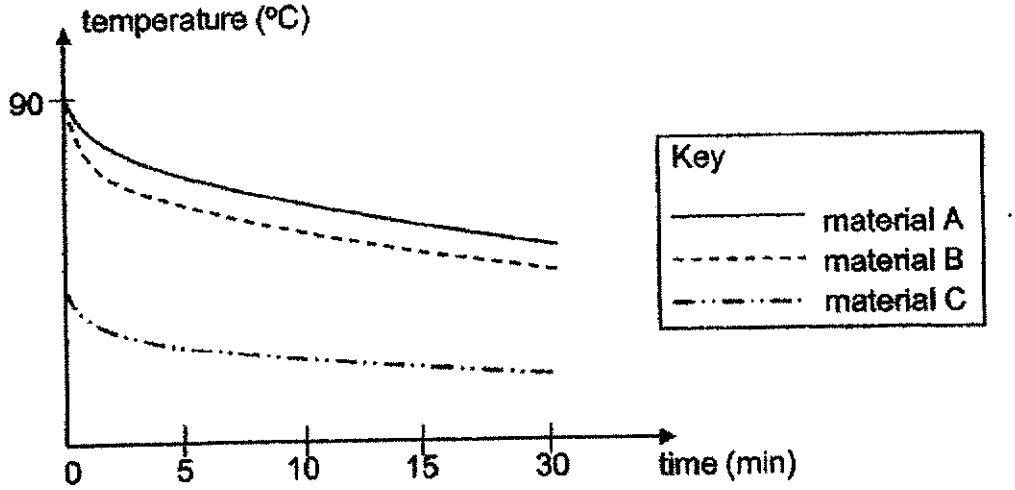
Suggest two ways to increase the depth of depression produced by the same ball in the soil. (2m)

1. _____

2. _____

3

40. Sylvia heated three materials, A, B, and C, to a temperature of 90°C. She measured and recorded the temperatures of the three materials for the next 30 minutes. The graph below shows the change in the temperature of the materials after they were left to cool.



(a) Sylvia's friend noticed that the graph for material C was wrong. Give a reason why the graph was wrong. (1m)

(b) After the materials were left to cool for two hours, she measured the temperatures of the three materials and found that they were the same. Why was that so? (1m)

(c) Sylvia would like to bring some cold drinks for a picnic. Which material, A or B, is more suitable to make a container that will keep the cold drinks cool for a longer time? Explain your answer. (2m)

End of Section B
Please check your work.

4

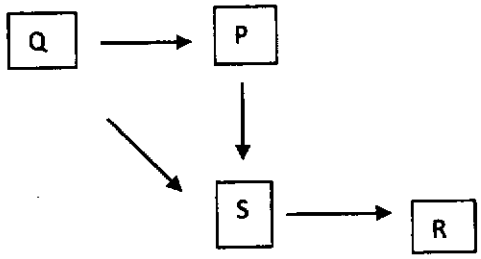
SCHOOL : RED SWATIKA PRIMARY SCHOOL
LEVEL : PRIMARY 6
SUBJECT : SCIENCE
TERM : Prelims SA2 2022

SECTION A

Q 1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
2	4	1	3	4	3	4	2	1	2
Q 11	Q12	Q13	Q14	Q15	Q16	Q17	Q18	Q19	Q20
1	2	3	1	3	2	2	4	4	1
Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28		
2	1	3	1	3	1	4	2		

SECTION B

Q29)	a) Organism L. based on the graph, there is the least amount of carbon dioxide in beaker A which L is present. Plants photosynthesise in the presence of light and carbon dioxide which are both present. When plants photosynthesise, it takes in carbon dioxide and gives out oxygen, Hence the beaker where a plant is present should have the least amount of carbon dioxide which is beaker A with organism L in it. b) Beaker C is a control setup that ensures a fair test and the amount of carbon dioxide present is solely due to the presence of the organism. c) 7
Q30)	a) The increase in surrounding temperature causes the number of days for one complete life cycle to decrease. b) Laying eggs under the leave can increase the chance of survival as the eggs are hidden from predators who eat the

	egg, lowering the chance of getting eaten. The leaves also serve as a food source for the larvae and larvae do not need to look for its food.
Q31)	a) Oxygen: Decrease Nitrogen: Remain the same b) leaves c) As the outer ring of the food carrying tube was removed, food made by the leaves cannot be transported down to the roots. Without food, the roots died, and the plant could not take in water. Without water which the plants needs to survive, the plant died.
Q32)	a) .  b) When there is an over hunting of S, the population of P will increase. With more P to feed on Q, the population of Q will decrease.
Q33)	a) When the predator of A which is the prey of C, tries to eat A and move close to C, C can eat its prey, the predator of A and obtain food. b) There is a lower chance of getting eaten by its predator when A grows on C than when A grow on rock as C will eat A's predator, decreasing the chance of A getting eaten and increase A's chance of survival. c) Carbon dioxide d) Carbon dioxide trap heat on earth and reduce the amount of heat lost to space, increasing the temperature on earth by trapping air.

	e) The increase of average temperature decreases the population of C. the increase temperature causes less A to grow on C, which means less of A's predator and C's orey will come and eat A and go near C. This will result in less food for C and a decrease in the population of C.
Q34)	a) Oxygen b) Blue light allows the highest rate of photosynthesis followed by red light and G light allowing the lowest rate of photosynthesis. c) Conducting the experiment in a dark room ensures that, the lamp emitting light is the only light source and there is no other light source, ensuring a fair test.
Q35)	a) Condensation b) The water in the wet towel will evaporate as it gains heat from the tin, causing heat last in the tin and the bread. c) Melt the metal tin over very high heat. After melting, pour the liquid metal into a measuring cylinder and measure the amount of the melted metal.
Q36)	a) When the switch is closed, electricity flows through and the iron is magnetised. The magnetism is strong enough to attract the metal bar A towards the iron rod, causing metal bar A not attached to metal bar X. So there is an open circuit and the melody stopped. b) 1)non-magnetic material. 2)Conductor of electricity.
Q37)	a) The gravitational force acting on the crate and the frictional force between the crate and the floor was greater than her push force. b) She should put oil on the floor to decrease the amount of friction between the floor and the crate.
Q38)	a) i) North Pole ii) South Pole

	b) The like poles of magnetic on the train and the track are facing each other, causing a repulsion between the train and the track. The magnetic force of repulsion greater than the gravitational force acting on the train,causing the train to stay afloat. c) She should change the magnets to ones with strong magnetic strength
Q39)	a) Gravitational Potential Energy b) 1. Increase the height at which the ball was dropped. c) Pump more air into the ball so that the ball become heavier.
Q40)	a) The three materials were all heated to 90°c so when Sylvia allowed them to cool down, all three materials temperature should be 90°c, but C is not at 90°c b) The 3 materials lost heat to the surrounding air and were at room temperature. c) Material A as it took a longer time to lose heat compared to B. Thus, it is a poor conductor of heat and the drink will be not gain heat from the surround and will keep the drink cool for a longer time.