



MAHA BODHI SCHOOL
2022 SEMESTRAL ASSESSMENT 1
PRIMARY SIX SCIENCE
(BOOKLET A)

Name : _____ ()

Class : Primary 6 _____

Date : 12 May 2022

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

INSTRUCTIONS TO CANDIDATES:

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Use a 2B pencil to shade your answers on the Optical Answer Sheet (OAS).

This booklet consists of 19 printed pages.



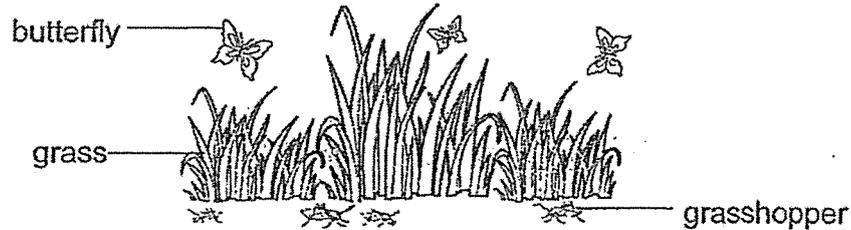
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BOOKLET A : [28 x 2 marks = 56 marks]

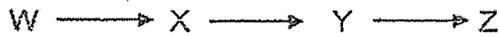
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade your answer on the Optical Answer Sheet.

1. The diagram shows a garden habitat.



Which of the following statements is incorrect?

- (1) The grass forms one population.
 - (2) The grass and grasshoppers form two populations.
 - (3) The butterflies and grasshoppers form two communities.
 - (4) The grass, butterflies and grasshoppers form one community.
2. Study the food chain below.



Which of the following statements is correct?

- (1) Z is a producer.
 - (2) W is the prey of X.
 - (3) X is the prey of Y.
 - (4) Y is the predator of Z.
3. Which of the following is not an adaptation for keeping warm in a cold environment?
- (1) large ears
 - (2) thick layer of fat
 - (3) thick outer covering
 - (4) stay close to each other

4. Which of the following statements about energy are correct?

- A. Energy can be created or destroyed.
- B. A moving object possesses kinetic energy.
- C. Most energy on Earth can be traced back to the Sun.
- D. An object with more heat energy must have a higher temperature.

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

5. Which of the following show(s) the effect of a force?

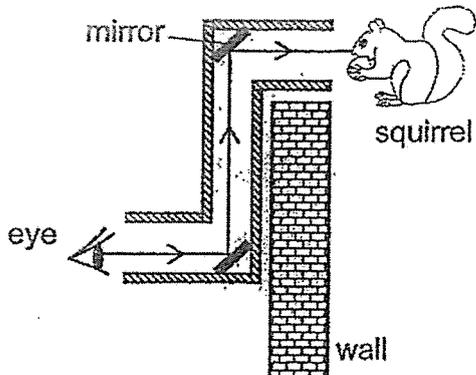
- A. Bending a ruler.
- B. A man kicking a ball.
- C. A bird lands on a branch.
- D. A car turning left at a traffic junction.

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

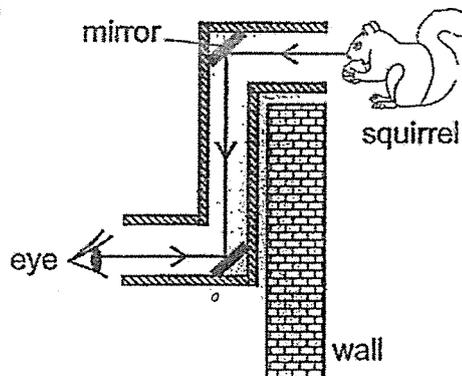
6. A periscope has mirrors and it can be used to look at an object over a wall.

Which of the following shows correctly the path of light that makes it possible for us to see the squirrel with a periscope?

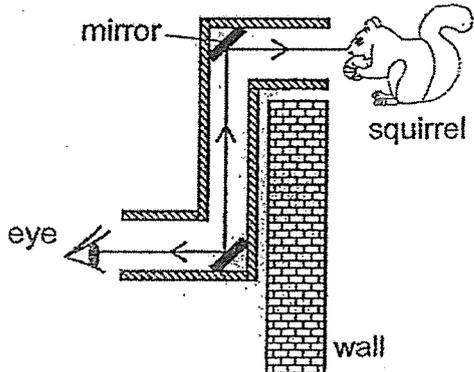
(1)



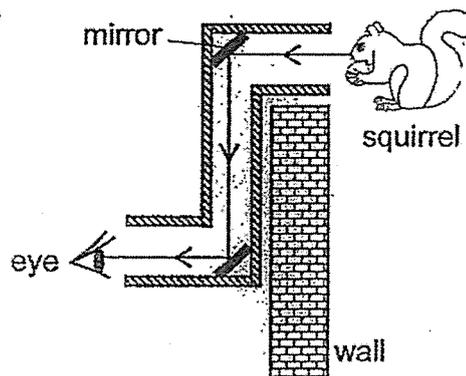
(2)



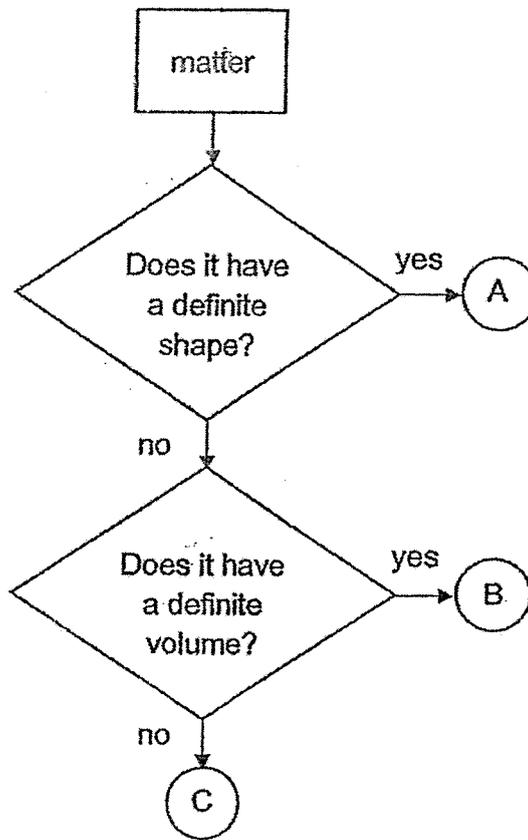
(3)



(4)



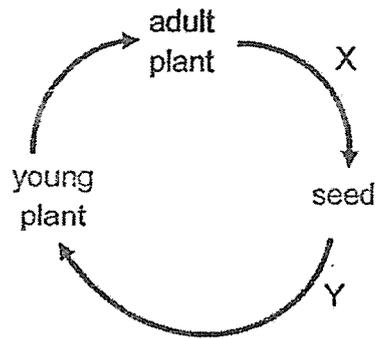
7. Study the flow chart below



Which of the following correctly represents A, B and C?

	A	B	C
(1)	rock	oil	steam
(2)	rock	steam	oil
(3)	oil	steam	rock
(4)	steam	rock	oil

8. The diagram below shows the life cycle of a flowering plant.

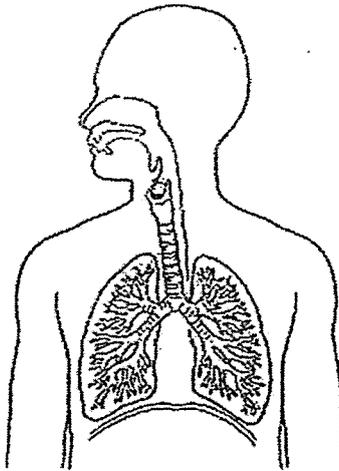


Which of the following correctly represents the processes that take place at X and Y?

	X	Y
(1)	germination and fertilisation	pollination
(2)	pollination and fertilisation	germination
(3)	pollination	fertilisation and germination
(4)	fertilisation	pollination and germination

9. Which of the following statements must be true for an insect that goes through a 4-stage life cycle?
- (1) The adult lays eggs.
 - (2) The young looks like the adult.
 - (3) The young of the insect is called a nymph.
 - (4) The insect spends some stages of its life cycle in water.

10. The diagram below shows a human system.



What is the system?

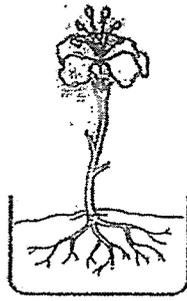
- (1) digestive system
- (2) muscular system
- (3) circulatory system
- (4) respiratory system

11. In which of the following organs of the digestive system will digestive juices be produced?

- A. mouth
- B. gullet
- C. stomach
- D. large intestine

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

12. The diagram below shows a pot of plant with all the leaves removed.



Which of the following statements are true?

- A. The plant will die immediately.
- B. Fertilisation cannot occur anymore.
- C. Less water will be lost from the plant.
- D. Photosynthesis cannot occur anymore.

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

13. Decomposers like bacteria and fungi need warmth to carry out decomposition. The graph below shows the change in mass of dead leaves at locations B and C over time.



When decomposition was carried out, the mass of dead leaves decreased.

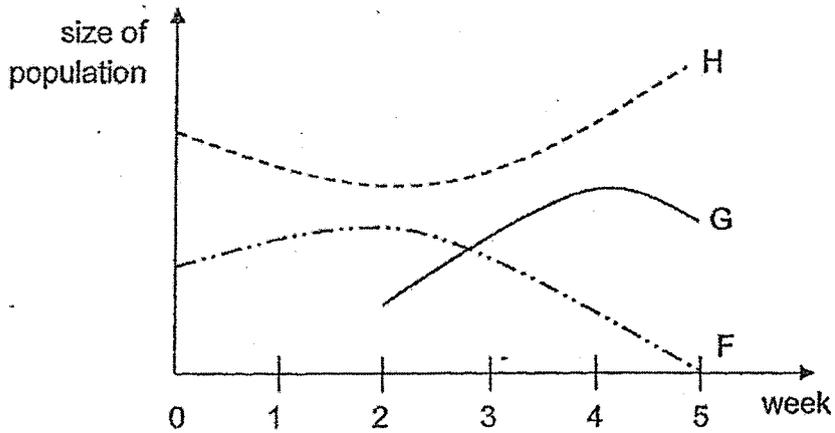
Which of the following explains the results shown in the graph?

- (1) Location B had less water.
- (2) Location B had a lower temperature.
- (3) Location C had less oxygen.
- (4) Location C had more decomposers.

14. Leo conducted an experiment to study the food relationship between animals F, G and H. Animal H feeds on leaves only. Animals F, G and H had no disease.

At the start, Leo placed some animals H and F in a tank with some leaves. He counted the number of animals at the end of each week. After two weeks, he added animal G.

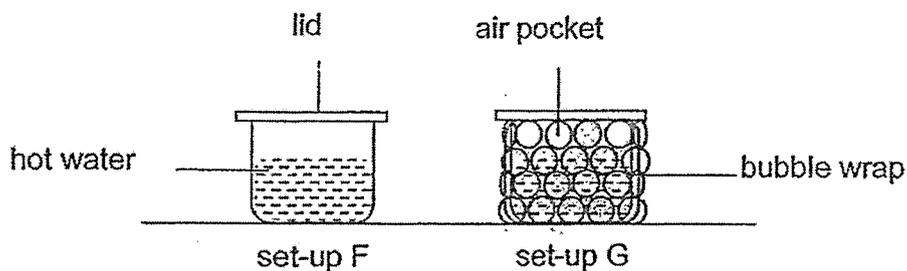
Leo's results are shown below.



Based on the results, which one of the following shows part of the food chain linking these three animals?

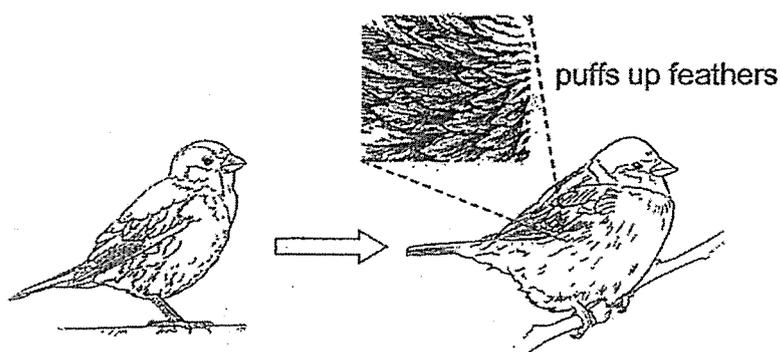
- (1) $F \rightarrow G \rightarrow H$
- (2) $G \rightarrow H \rightarrow F$
- (3) $H \rightarrow F \rightarrow G$
- (4) $H \rightarrow G \rightarrow F$

15. Collin conducted an experiment using the set-ups as shown below. Two identical containers had same amount of hot water at the same temperature. The container in set-up G was covered with a layer of bubble wrap that had many air pockets.



After some time, Collin observed that the temperature of water in set-up G was higher than that in set-up F.

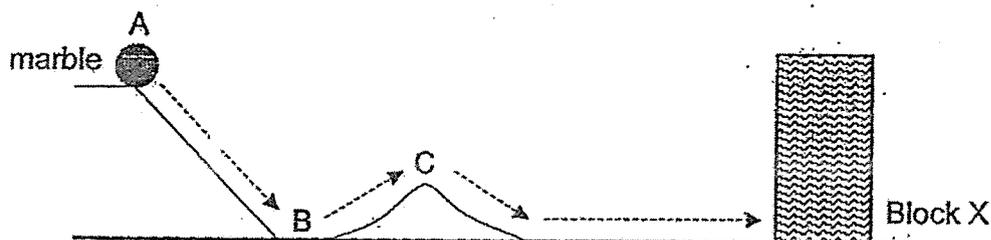
Bird W usually puffs up its feathers on cooler mornings.



Based on his observation, which of the following statements about the behaviour of bird W is correct?

- (1) It is attracting a mate for reproduction.
- (2) It needs to trap more air between the feathers.
- (3) It increases surface area to absorb more heat.
- (4) It makes itself to look bigger to frighten predators.

16. Clement conducted an experiment using the set-up below.



He released a marble from the A. It rolled downwards to B and travelled up to C and rolled down again. It hit against block X with a sound and stopped.

From the experiment above, which of the following statements are true?

- A. From A to B, kinetic energy of the marble decreased.
- B. From A to B, potential energy of the marble increased.
- C. From B to C, kinetic energy of the marble was converted to potential energy.
- D. When the marble hit block X, some of its energy was converted to heat energy and sound energy.

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

17. An astronaut measured the weights of two objects, P and Q, on the planet X and Y. The table below shows the weights of P and Q on the different planets.

	X	Y
Weight of P (units)	10	20
Weight of Q (units)	30	?

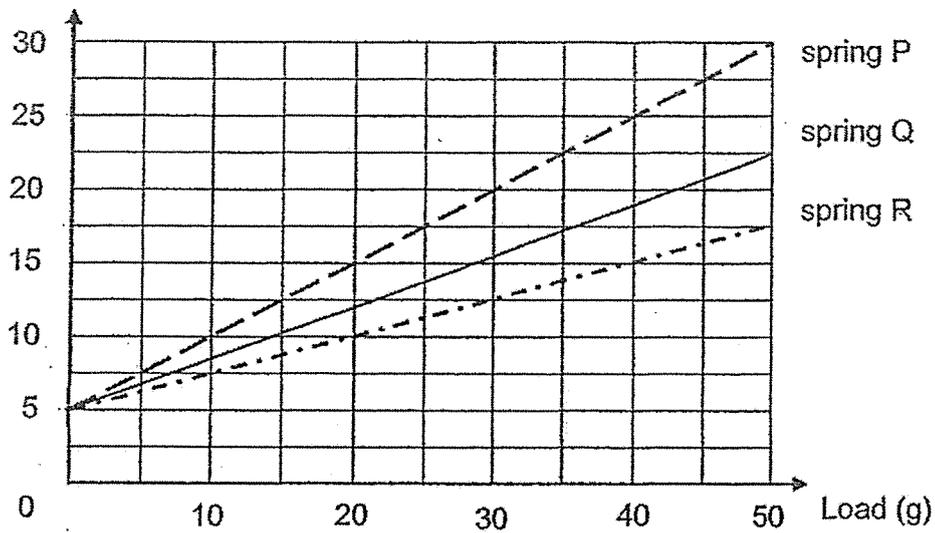
Which of the following statement(s) is/are true?

- A. Object P has smaller mass than Q.
- B. The weight of Q on planet Y will be greater than 30 units.
- C. Planet X exerts a greater gravitational force on P than planet Y.
- D. The gravitational force exerted on Q is the same on both planets.

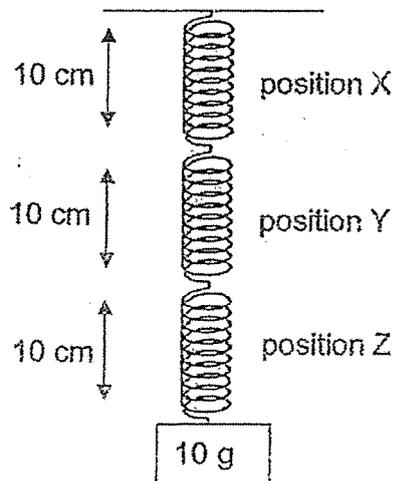
- (1) A only
- (2) D only
- (3) A and B only
- (4) C and D only

18. The graph below shows the length of 3 different springs P, Q and R as they were loaded. Each spring had an original length of 5 cm and weighed 5 g.

Length of spring (cm)



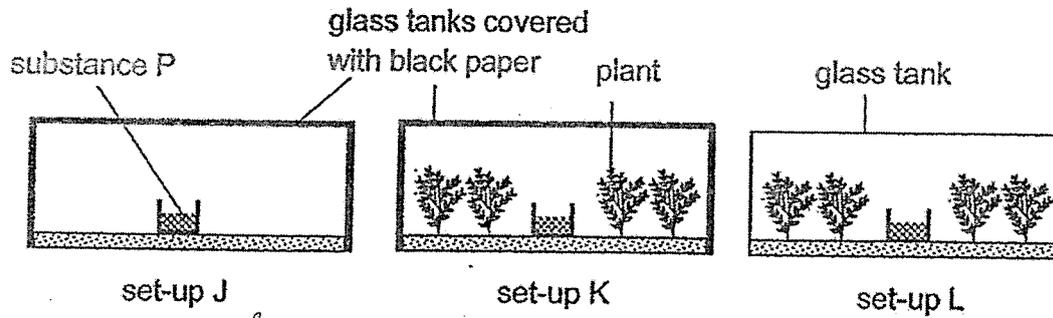
The springs were connected and a mass of 10 g was hung from the spring as shown in the diagram below.



Which one the following shows the correct position of springs P, Q and R?

	Position X	Position Y	Position Z
(1)	P	Q	R
(2)	Q	P	R
(3)	Q	R	P
(4)	R	Q	P

19. Three set-ups J, K and L were placed under the Sun as shown below. At the start, the colour of substance P in each set-up was red. If the amount of carbon dioxide increases, substance P will change from red to yellow.



What is the colour of substance P in each set-up after 3 hours?

	set-up J	set-up K	set-up L
(1)	red	yellow	red
(2)	red	red	yellow
(3)	yellow	yellow	red
(4)	yellow	red	yellow

20. The diagram below shows the layout of the stage for a shadow puppet performance.

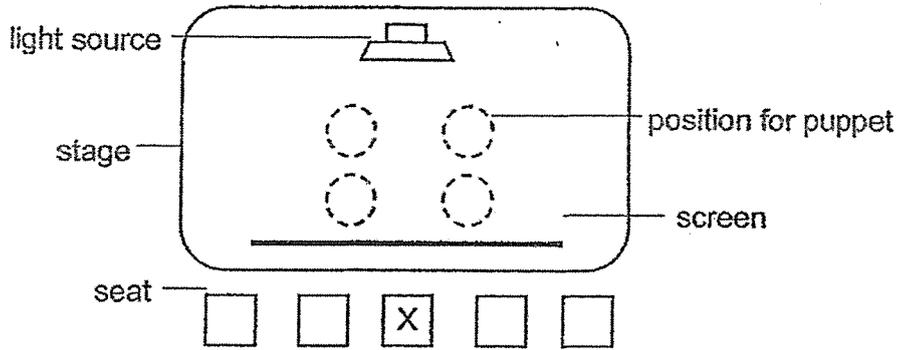
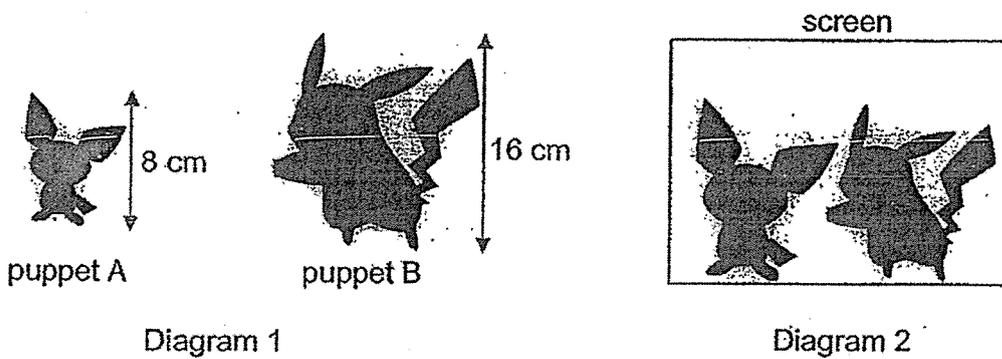


Diagram 1 shows the sizes of the two puppets used. Diagram 2 shows what the person at X saw on the screen at the performance.



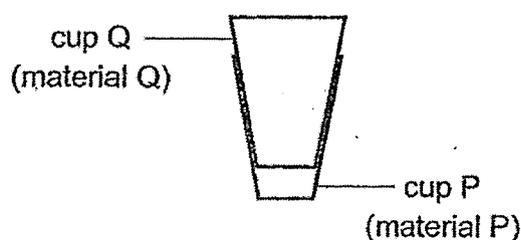
Which of the following shows the positions of puppets A and B?

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

21. The table below shows the length of materials P and Q at different temperatures.

Temperature (°C)	Length of	
	Material P (cm)	Material Q (cm)
5	0.98	0.96
25	1.00	1.00
45	1.02	1.04

Material P and Q are used to make into 2 cups which are then stuck together at room temperature as shown in the diagram shown.

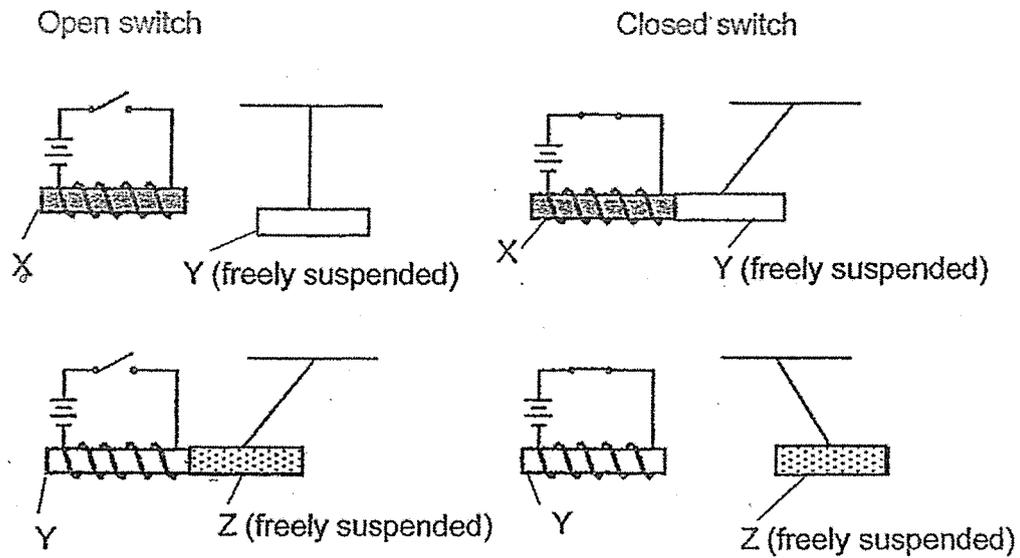


Based on the results, which method(s) is/are possible to separate the two cups?

- A. Submerging both cups in hot water.
 - B. Submerging both cups in cold water.
 - C. Put cup P in cold water and pour hot water into cup Q.
 - D. Put cup P in hot water and pour cold water into cup Q.
- (1) C only
(2) D only
(3) B and D only
(4) A, B and C only

22. Ahmad had 3 metal rods, X, Y and Z. He used the metal rods in different set-ups as shown below where one of the rods is freely suspended.

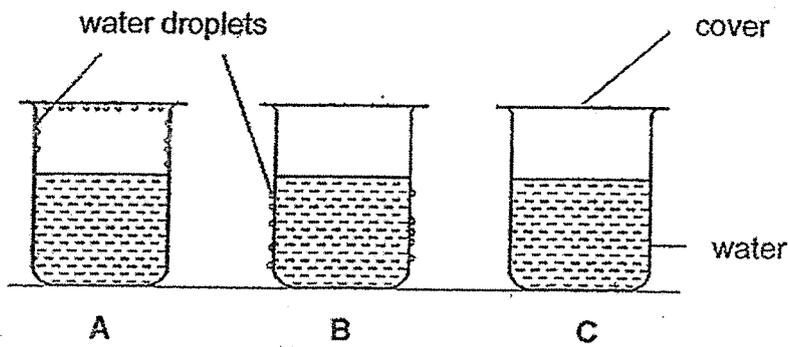
He observed the interaction between any 2 rods before and after he closed the switch of the circuit.



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

- A. Rod Z is a permanent magnet.
 - B. Rod Y is a permanent magnet.
 - C. Rod X is made of iron.
 - D. Rod Y is a magnetic material.
- (1) B only
 (2) A and D only
 (3) B and C only
 (4) A, C and D only

23. Three beakers of water at different temperatures were placed in a room at 28 °C. The diagram below shows what happened after some time.



Which one of the following correctly shows the temperature of the water in each beaker?

	A	B	C
(1)	5 °C	80 °C	28 °C
(2)	28 °C	5 °C	80 °C
(3)	80 °C	28 °C	5 °C
(4)	80 °C	5 °C	28 °C

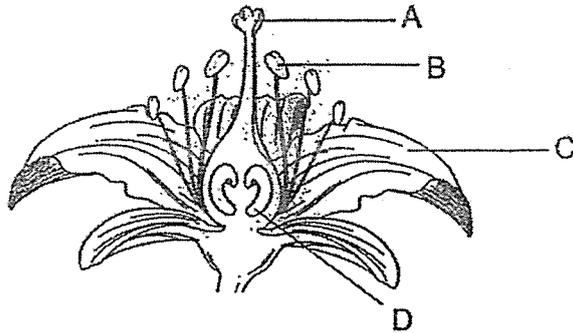
24. The table below shows the melting points and boiling points of four substances, P, Q, R and S.

Substance	Melting Point (°C)	Boiling Point (°C)
P	0	100
Q	5	80
R	20	90
S	40	120

At which temperature(s) would all the substances be in the same state?

- A. 5 °C
 B. 70 °C
 C. 100 °C
 D. 130 °C
- (1) B only
 (2) A and C only
 (3) B and D only
 (4) A, C and D only

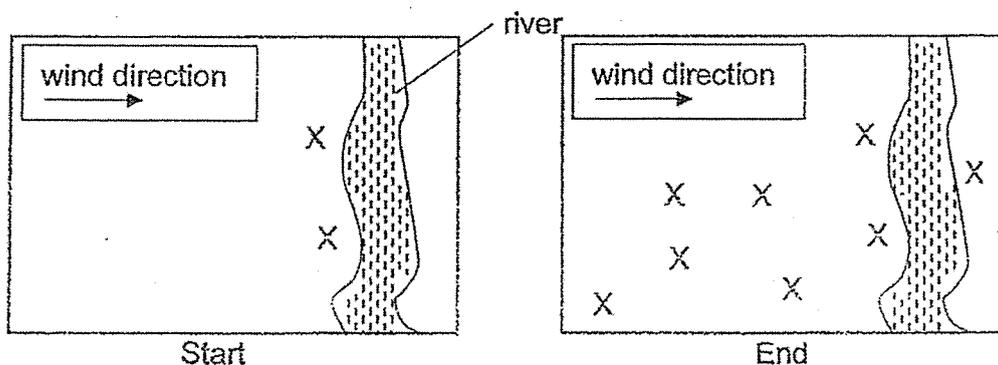
25. The picture below shows a flower from a plant that Caili kept in her garden.



Caili removed some parts from a flower that just opened for the first time before sprinkling some pollen grains over it. The flower developed into a fruit after some time.

Which of the following correctly shows the parts that Caili removed?

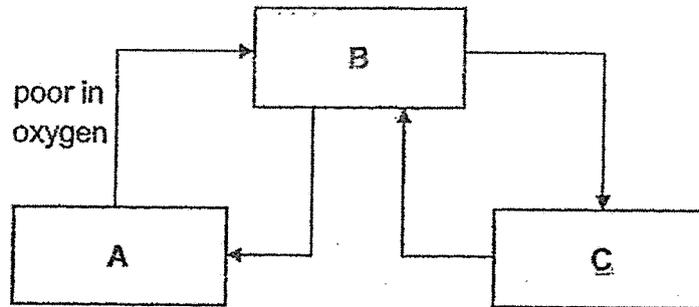
- (1) A and B only
 - (2) A and D only
 - (3) B and C only
 - (4) C and D only
26. A group of scientists studied plant X in an area over a period of time. The diagrams below show how plant X is distributed at the start and at the end of that period.



Based on the diagrams, what is the most likely method of seed dispersal for plant X?

- (1) wind
- (2) water
- (3) animals
- (4) splitting

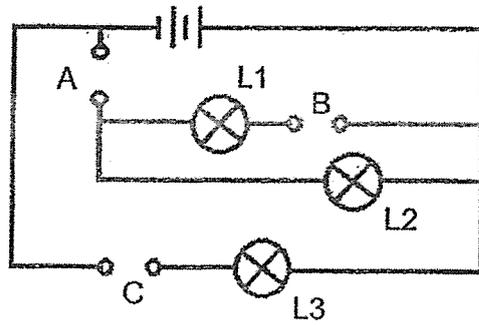
27. The diagram below shows how blood flows in certain parts of the body. A, B and C represent parts of the body.



Based on the diagram above, what do A, B and C represent?

	A	B	C
(1)	heart	lungs	legs
(2)	lungs	heart	legs
(3)	legs	lungs	heart
(4)	legs	heart	lungs

28. Andy had three rods, P, Q and R, of unknown materials. He placed them in various positions, A, B and C, on the circuit below.



The results of the experiment were shown in the table below. When any of the lamps L1, L2 or L3, lit up during the experiment, a tick (✓) was placed in the box.

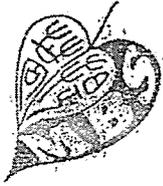
position where rods were placed			Lamps		
A	B	C	L1	L2	L3
Rod P	Rod Q	Rod R		✓	✓

Which of the following would show the correct results if the rods, P, Q and R, were placed at different positions?

	Position where rods were placed			Lamp		
	A	B	C	L1	L2	L3
(1)	Q	R	P			✓
(2)	R	P	Q	✓		
(3)	R	Q	P	✓	✓	
(4)	Q	P	R		✓	✓

END OF BOOKLET A

GO ON TO BOOKLET B



MAHA BODHI SCHOOL
2022 SEMESTRAL ASSESSMENT 1
PRIMARY SIX SCIENCE
(BOOKLET A)



Name: _____ ()

Class: Primary 6 _____

Date : 12 May 2022

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

INSTRUCTIONS TO CANDIDATES:

1. Do not turn over this page until you are told to do so.
2. Follow all instructions carefully.
3. Answer all questions.
4. Use a dark blue or black ballpoint pen to write your answers in the space provided for each question.
5. Do not use correction fluid/tape or highlighters.

Booklet	Marks Obtained	Max Marks
A		56
B		44
Total		100

Parent's signature: _____

This booklet consists of 15 printed pages.

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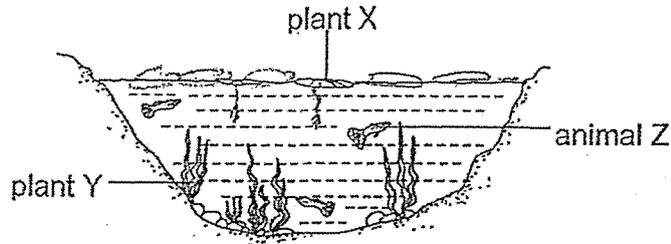
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BOOKLET B : [44 marks]

For questions 29 to 40, write your answers in this booklet.

The number of marks available is shown in the brackets [] at the end of each question or part question.

29. Study the pond habitat below.



After some time, plant X reproduced in large numbers and almost covered the surface of the pond.

(a) Explain why the temperature of the water decreased when the number of plant X increased. [1]

(b) The volume of water decreased over time. Explain why the volume of water decreased slower when the temperature of water decreased. [1]

(c) Explain why more plant Y died when the number of plant X increased. [1]

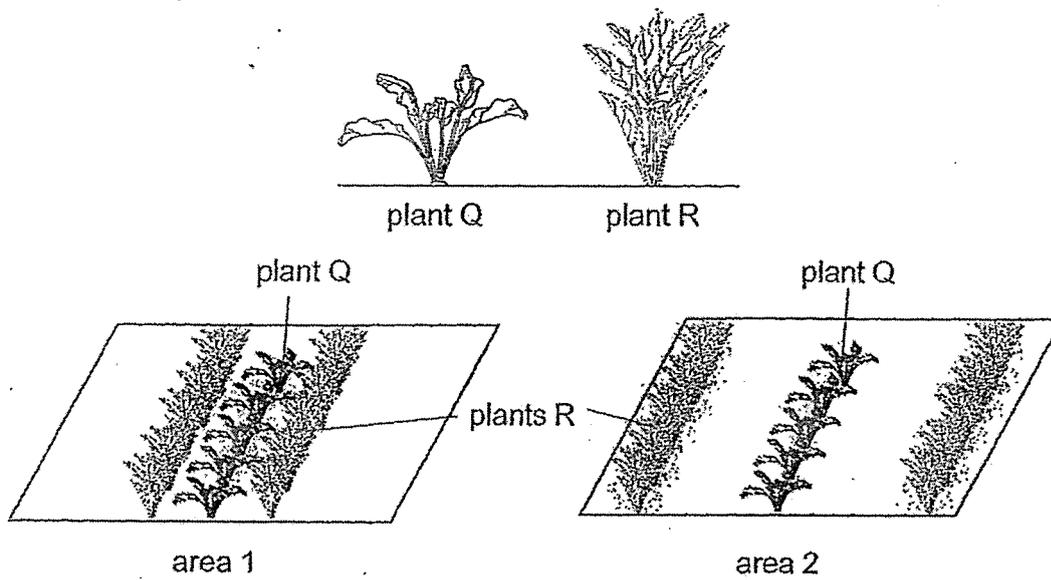
(d) There was sufficient food for animal Z. Yet, animal Z started dying as more plant Y died. Explain why. [2]

Marks :

/ 5

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30. The diagrams below show how plants Q and R were planted in two areas within the same place.



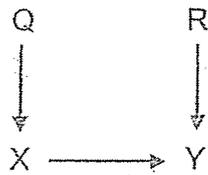
- (a) After some time, it was observed that the stems of plant Q in area 1 were taller and thinner than the stems of plant Q in area 2.

Explain why the stems of plant Q in area 1 were taller and thinner. [1]

Marks :

/ 1

The diagram shows a food web in area 2.



(b) Based on the food web, which organism(s) is/are the predator(s)? [1]

(c) Plants Q and R in area 2 were replanted where the rows of plants were much further apart. He observed that less organism X was eaten by organism Y after some time.

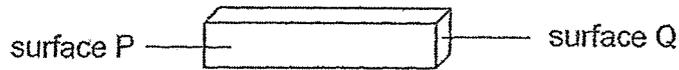
Based on the food web, explain how the population of Q would change. [2]

Marks :

/ 3

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31. (a) Betty wanted to heat a block of metal to a specific temperature as fast as possible.



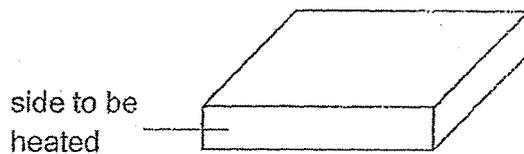
She placed surface P of the block onto a heating plate and recorded the time taken for the block to reach 80°C . She cooled the block to room temperature first before repeating the experiment with surface Q of the same block.

- (i) Betty observed that the block took a shorter time to reach 80°C when she heated it using surface P.

Explain this observation.

[1]

- (ii) Betty repeated the experiment with a bigger metal block using a side that had equal surface area as P.



Explain how a bigger metal block would affect the time taken to reach 80°C .

[1]

Marks :

12

- (b) Plant K grows in a very hot place and has smaller leaves as compared to plant J that grows in a cooler place.



plant J



plant K

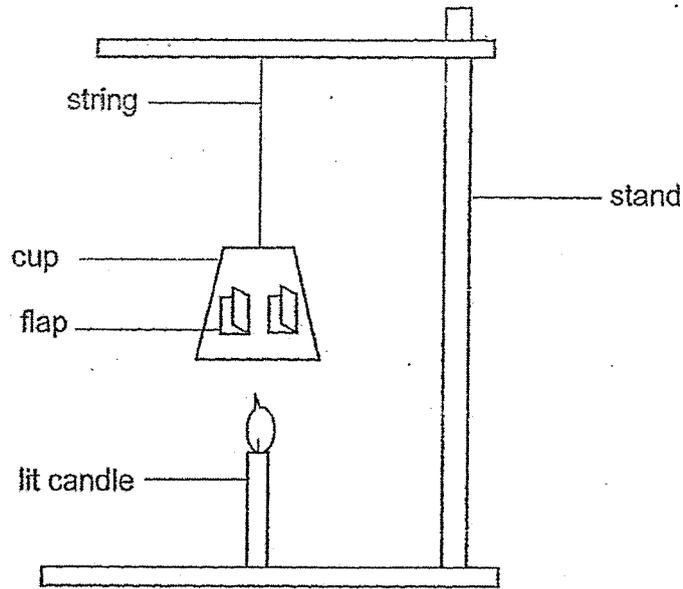
State two advantages of how smaller leaves help to reduce water loss for plant K. [2]

Marks :

12

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32. Ramesh hung a cup on a string as shown in the set-up below.



The cup started spinning when he placed a lit candle under it.

(a) State the energy the candle possessed for the flame to be produced. [1]

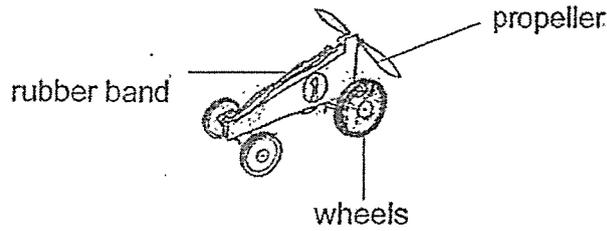
(b) (i) Without touching the cup, what can Ramesh do to the set-up make it spin faster? [1]

(ii) Explain your answer in (i) in terms of energy changes. [1]

Marks :

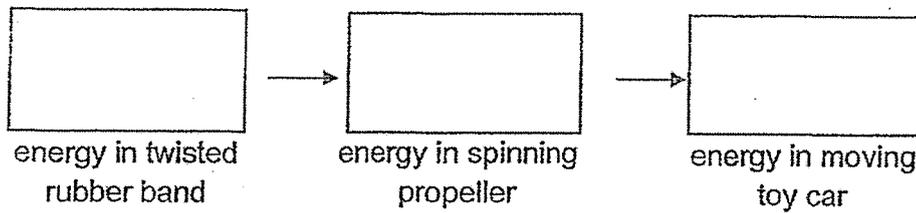
/ 3

33. Nadia made a toy car as shown below.



When she turned the propeller, the connected rubber band would be twisted as well. As she released the propeller, the propeller would spin and the toy car would move.

(a) State the energy conversion in the boxes below. [1]



(b) Nadia conducted an experiment by turning the propeller different number of times and recorded her results as shown below.

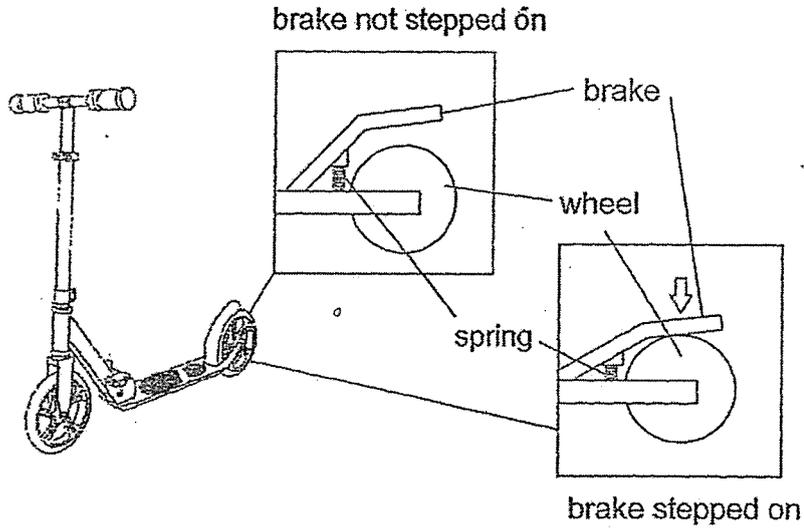
Number of turns of the propeller	Distance moved by car (cm)
20	35
40	60
60	81

(i) Based on the table above, how did the number of turns of the propeller affect the distance moved by the car? [1]

(ii) Nadia wanted to test if the mass of the toy car would affect the distance travelled by the car. State the changes she needs to make to the experiment above. [1]

Marks : / 3

34. The diagram below shows the side view of a simple braking system for a scooter. When the brake is stepped on, the brake will come into contact with the wheel.



- (a) Besides the force pushing the brake down, name two other forces acting on the brake when it is stepped on. [2]

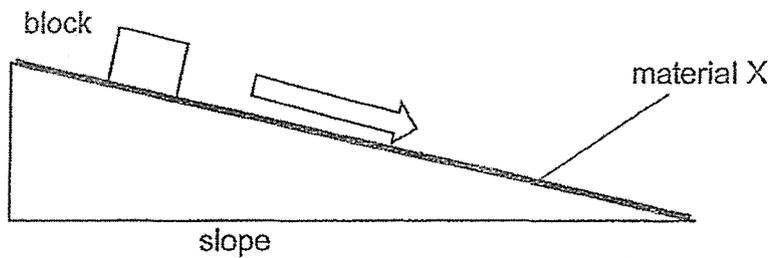
When the brake is stepped on, there is a distance travelled before the scooter stops. This is called 'braking distance'.

- (b) Explain how using a stiffer spring will affect the amount of force needed to get the same braking distance. [1]

Marks :

/ 2

- (c) Stanley wanted to find a suitable material for making the brake. He placed a block on a slope covered with material X and recorded the time taken for the block to reach the bottom of the slopes. He repeated the same experiment using material Y.



The table below shows the results.

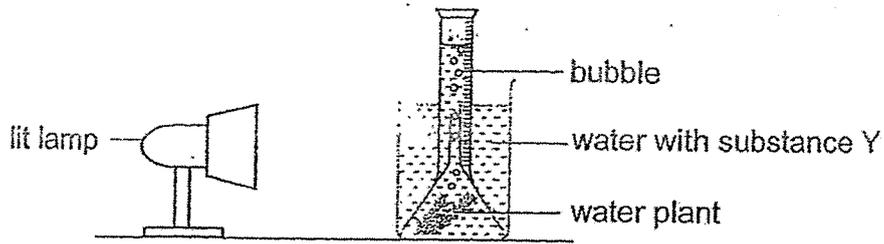
	Time to reach bottom of slope (s)
Material X	2.7
Material Y	3.5

Which is a more suitable material for making the brake so that the braking distance will be shorter? Explain your answer. [2]

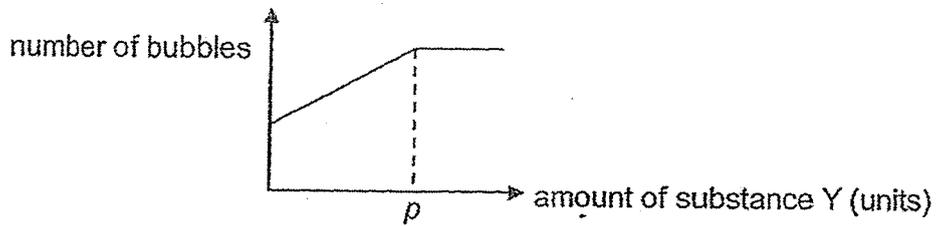
Marks : / 3

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35. Andrew set up an experiment to find out how the amount of substance Y would affect the rate of photosynthesis.



He recorded the number of bubbles produced by the water plant at the end of one minute. He then repeated the experiment with different amounts of substance Y. His results are shown in the graph below.



- (a) Identify the bubbles that are produced by the water plant at the end of one minute. [1]

- (b) Based on the results, how did the amount of substance Y affect the rate of photosynthesis? [1]

- (c) Andrew repeated the experiment with p amount of substance Y. The distance between the plants and the lamp was different. He recorded a greater number of bubbles at the end of one minute.

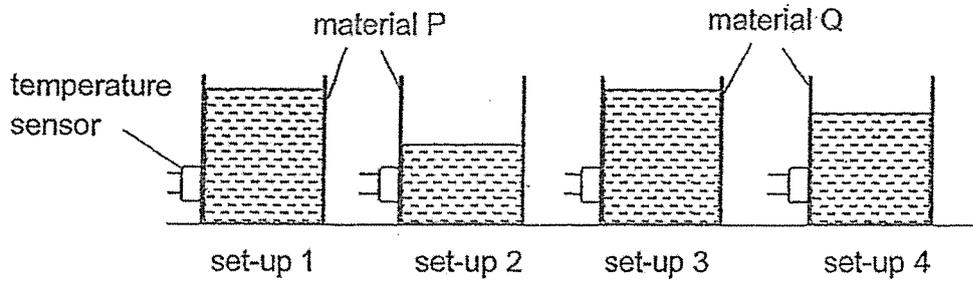
How did Andrew move the lamp? Explain your answer. [2]

Marks :

/ 4



36. Mr Lim set up the experiment below to find out which material, P or Q is a better conductor of heat. Boiling water is poured into the different set-ups and the temperature of the material is recorded 30 minutes later using a temperature sensor connected to a data logger.



The table below shows the results of the experiment.

	set-up 1	set-up 2	set-up 3	set-up 4
temperature (°C)	66	44	50	46

- (a) (i) Which 2 set-ups should be compared to determine which material is a better conductor of heat? [1]

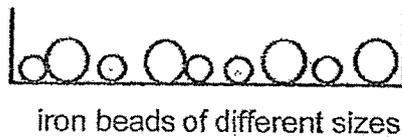
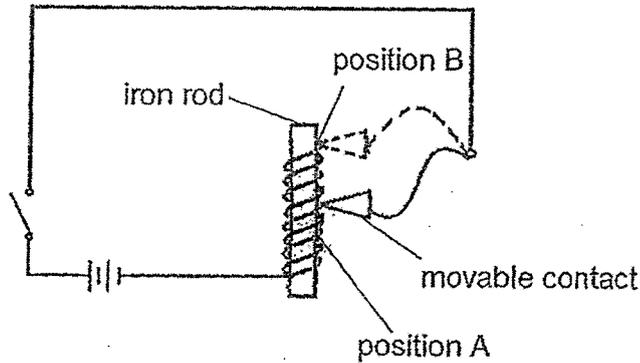
- (ii) Which material is a better conductor of heat? [1]

- (b) Explain why the temperature in set-up 2 is lower than in set-up 4. [2]

Marks :

/ 4

37. The set-up below uses an electromagnet to sort out iron beads of two different sizes. The electromagnet has a movable contact that can move up and down the coils of wire at different positions. The movable contact was first placed at position A so that the smaller beads are removed and then moved to position B to remove the larger beads.

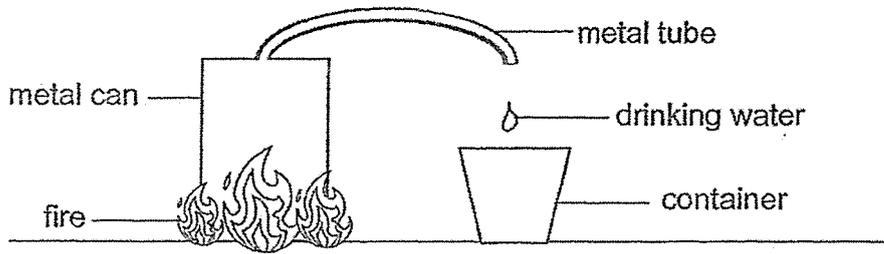


- (a) Explain how the set-up above is used to sort out the different sizes of iron beads. [2]

- (b) Explain how adding more batteries to the circuit will cause the set-up to be unable to sort out the different sizes of iron beads at positions A and B. [1]

Marks : / 3

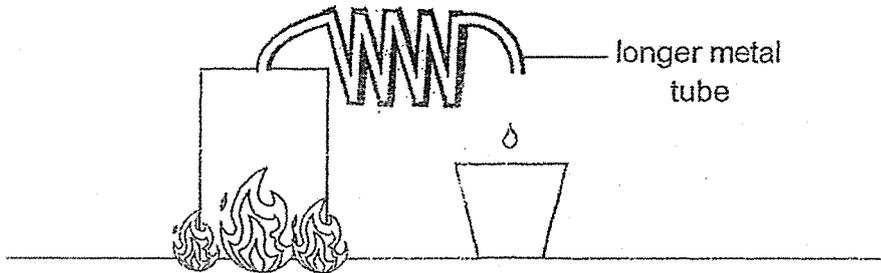
38. The set-up below is used to turn seawater into drinking water.



Seawater is poured into the metal can which is placed over a fire. After some time, drinking water will flow out of the metal tube into a container.

(a) Name the two processes that changed the state of water in the set-up. [1]

(b) The metal tube was replaced with a longer metal tube coiled up as shown below.

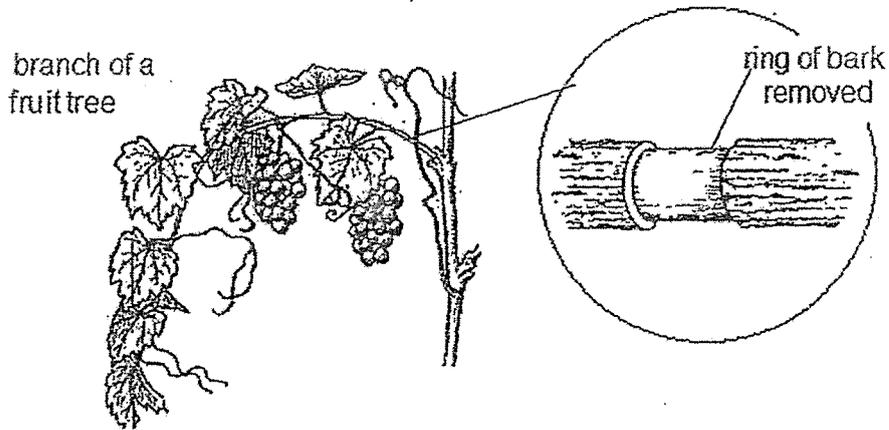


Explain how a longer coiled up metal tube will help collect more drinking water. [2]

Marks :

/ 3

39. A farmer wished to have bigger fruits from his fruit tree so he tried removing a ring of bark to remove the food-carrying tubes. The ring of bark was removed when fruits started to develop.



- (a) Explain how removing the ring of bark helped the fruits grow bigger. [2]

- (b) Explain why the leaves wilted when a thicker ring was removed. [1]

Marks :

/ 3

40. An electric circuit consists of a switch (switch 1), two 2-way switches (switch 2 and 3) and 3 identical bulbs (bulb P, Q and R) connected together. Each of the 2-way switches can be turned to position A or position B as shown in the diagram below.

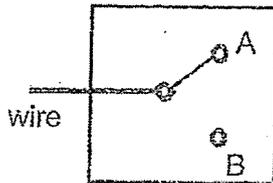
(a) **Draw** to complete the circuit diagram below by adding in the wires and the labeled bulbs such that

- either bulbs P or Q can light up at a time; not both together
 - whenever bulb R is lit, either bulbs P or Q must be lit as well
 - when switch 1 is opened, none of the bulbs can light up
- [2]

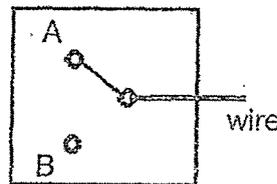
Circuit diagram



Switch 1



Switch 2



Switch 3

(b) List one advantage of connecting the bulbs in parallel. [1]

Marks : / 3

~ END OF PAPER ~

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 LEVEL : PRIMARY 6
 SUBJECT : SCIENCE
 TERM : 2022 SA1

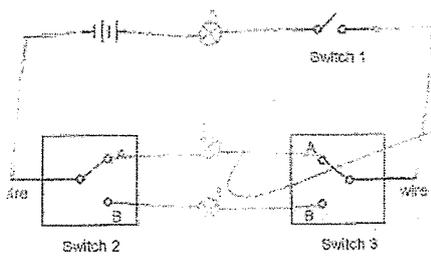
SECTION A

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

SECTION B

Q29)	<p>a) X blocked light from entering the water for the plants and the water gained less heat.</p> <p>b) Rate of evaporation decreased as the temperature decreased.</p> <p>c) X blocked light from Y to make food.</p> <p>d) Less Y to produce oxygen in the water. Z died due to lack of oxygen in the water.</p>
Q30)	<p>a) Overcrowding occurred and there was more competition for light.</p> <p>b) Y.</p> <p>c) Population of Q decrease, thus more organism X would feed on Q.</p>
Q31)	<p>a)i) E: Surface P has a bigger area in contact with the heating plate. R: to gain more heat.</p> <p>aii) It will take a longer time to reach 80c as more heat is needed to heat up a greater block.</p>

	<p>b) Fewer tiny openings for water vapour to escape smaller surface area of leaves to gain less heat. Less photosynthesis so less water used.</p>
Q32)	<p>a) Potential energy b) i) Add more candles ii) More heat energy can be converted to more kinetic energy.</p>
Q33)	<p>a) potential energy → kinetic energy → kinetic energy b) i) As the rubber band is twisted more, the propeller is turned more times, the distance moved by the toy car will be longer. ii) Twist the rubber band the same number of times and use car with different mass.</p>
Q34)	<p>a) Frictional force and gravitational force / elastic spring force. b) More force is required to push the brake down as it requires more strength / force to compress. c) C: Y E: Y takes longest time to reach the bottom R: because there is more friction between the material of the slope and the block.</p>
Q35)	<p>a) Oxygen b) As the amount of substance Y increased, the rate of photosynthesis increases. When the amount of substance Y was greater than P, the rate of photosynthesis remained the same. c) Move the lamp nearer to the plant. There was more light hence, the rate of photosynthesis increased.</p>
Q36)	<p>ai) Set-up 1 and set-up 3 ii) Material P b) Set-up 2 has less water and therefore has less heat energy, so the material gains less heat so temperature increases less.</p>
Q37)	<p>a) When the movable contact is at position A there will be fewer coils around the iron rod the magnetic strength will be weaker so can only pick smaller iron beads.</p>

	<p>b) The strength of the electromagnet will increase and all the beads will be attracted at position A.</p>
Q38)	<p>a) Evaporation and condensation. b) The longer tube has more exposed surface and lose heat faster so water vapour hence, more water vapour will condense to become water droplets.</p>
Q39)	<p>a) Food made by the leaves cannot be transported to other parts of the plant, hence the excess food will be stored in the fruit. b) When carrying tube is removed so water cannot be transported to the leaves.</p>
Q40)	<p>a)</p>  <p>The diagram shows a series circuit with a battery, a bulb, and Switch 1. After Switch 1, the circuit splits into two parallel branches. The left branch contains Switch 2 and a bulb. The right branch contains Switch 3 and a bulb. The circuit then recombines. Labels 'A' and 'B' are placed at various points in the circuit, likely indicating specific components or connections.</p> <p>b) When one of the bulbs is fused, the rest will still be able to work.</p>

