MAHA BODHI SCHOOL
2022 SEMESTRAL ASSESSMENT 2
PRIMARY FOUR SCIENCE
(BOOKLET A)

Name : _____ ( )

Class : Primary 4 _____

Date : 31 Oct 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. Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of **18** 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. Which one of the following is **NOT** a source of heat?

   (1) the Sun

   (2) a campfire

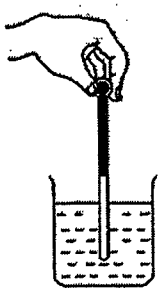
   (3) a winter jacket

   (4) a candle flame

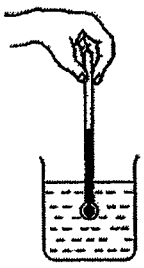
2. Catherine wants to measure the temperature of hot water in a beaker.

   Which one of the following diagrams shows the correct position of the thermometer when taking the temperature reading?

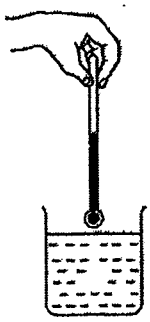
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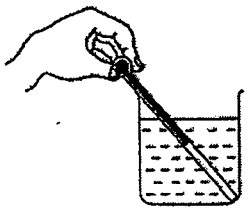
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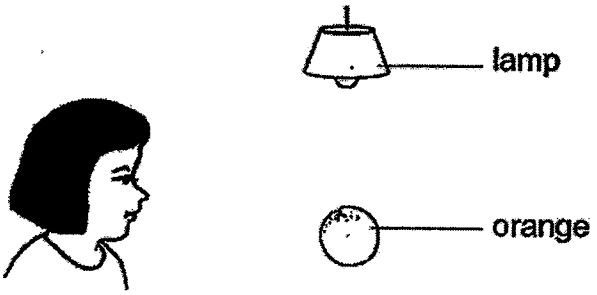
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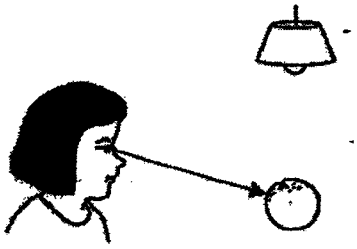
3. Look at the picture below.



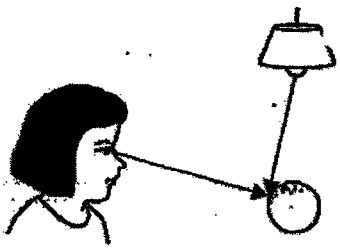
Which one of the following explains why Sue can see the orange?

direction of light

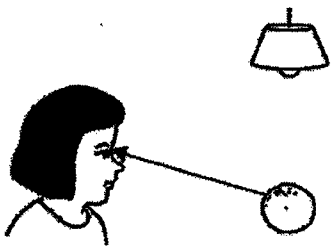
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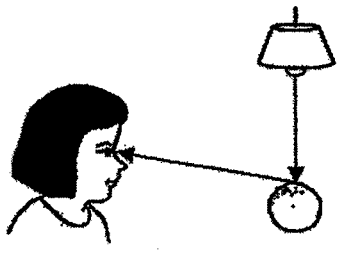
(2)



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4. Which animal has a pupa stage in its life cycle?

(1) frog
(2) beetle
(3) chicken
(4) grasshopper

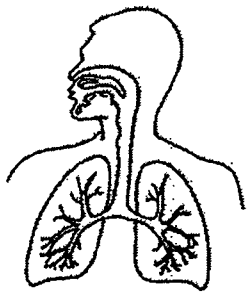
5. Which one of the following properties is true for both air and a ping pong ball?

(1) Both can be seen.
(2) Both take up space.
(3) Both have fixed shapes.
(4) Both have fixed volumes.

6. Which one of the following is the function of a leaf on a plant?

(1) makes food
(2) takes in water
(3) holds plant upright
(4) takes in mineral salts

7. Study the diagram below.



Which organ system is shown in the diagram above?

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

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8. An object W was attracted to a magnet, as shown in the figure below.



Object W is made of _____.

(1) plastic
(2) rubber
(3) steel
(4) wood

9. A millipede curls itself into a ball when touched.

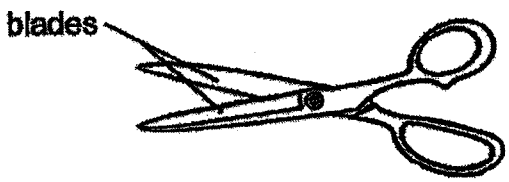


millipede 

This shows that the millipede is a living thing because it can _____.

(1) move
(2) breathe
(3) respond
(4) reproduce

10. The diagram shows a pair of scissors.



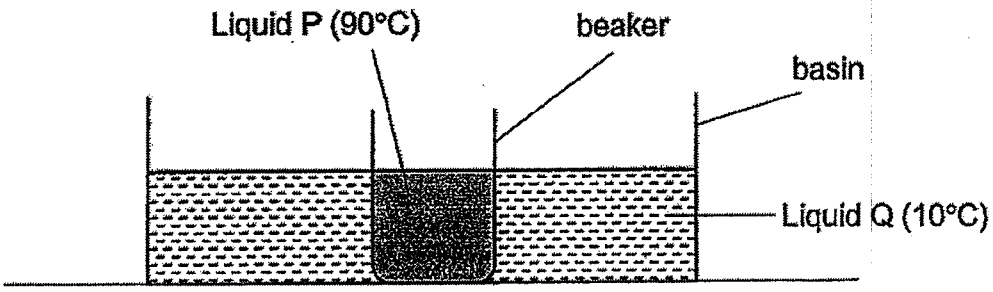
Metal is used to make the blades of the scissors because metal _____.

(1) is shiny
(2) does not break easily
(3) can bend without breaking
(4) does not allow light to pass through

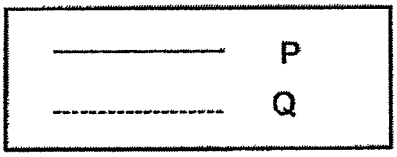
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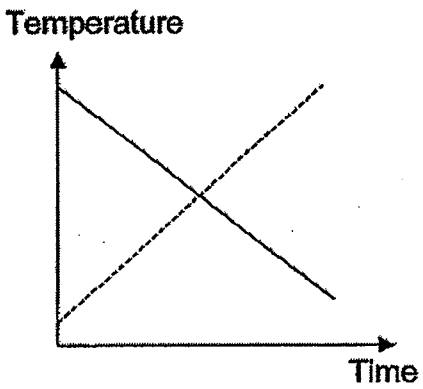
11. Thomas placed a beaker of liquid P into a basin of liquid Q as shown in the diagram below.



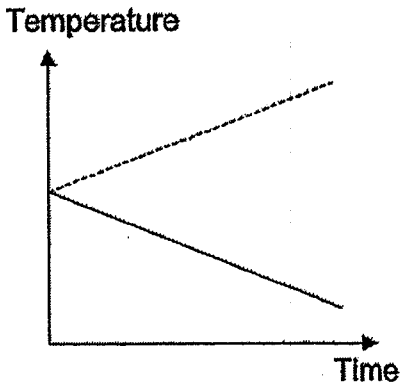
Which of the following graphs correctly shows the temperature changes of liquids P and Q?



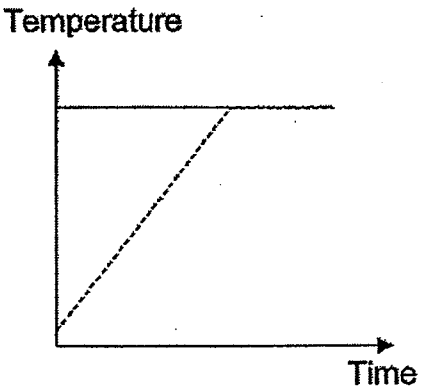
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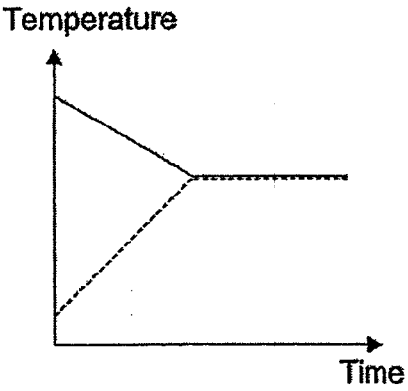
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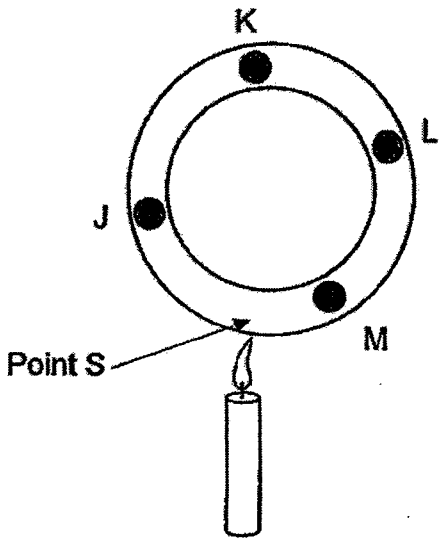
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12. Julie placed 4 pieces of wax, J, K, L and M, on a circular metal frame. She then placed a lit candle at point S.



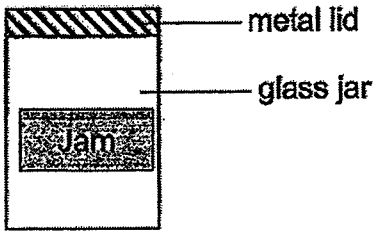
Which of the following correctly shows the order in which the wax dropped off?

	First → Last			
(1)	J	K	L	M
(2)	M	J	L	K
(3)	K	L	J	M
(4)	J	M	K	L

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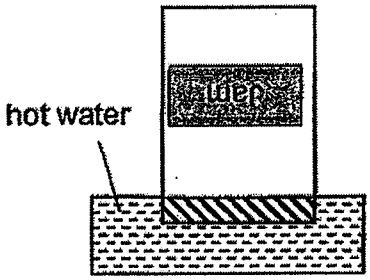
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13. Jane is unable to open a glass jar of jam as the metal lid is screwed on too tightly.

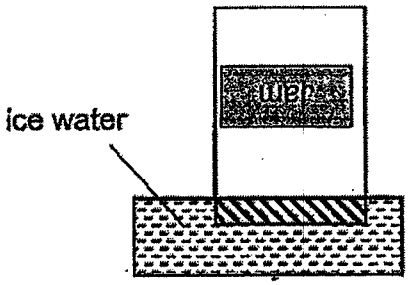


Which of the following methods will allow Jane to open the lid easily?

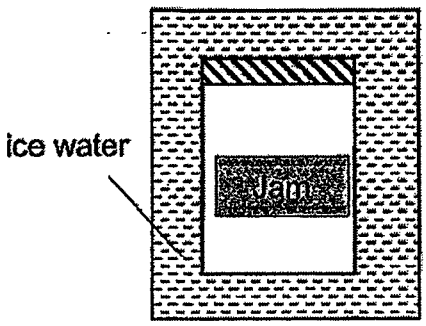
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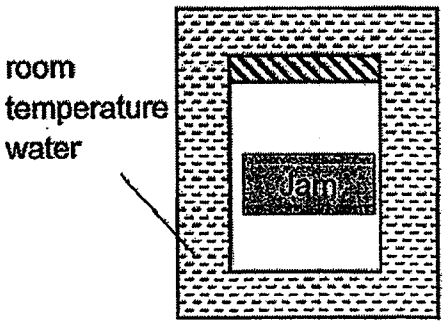
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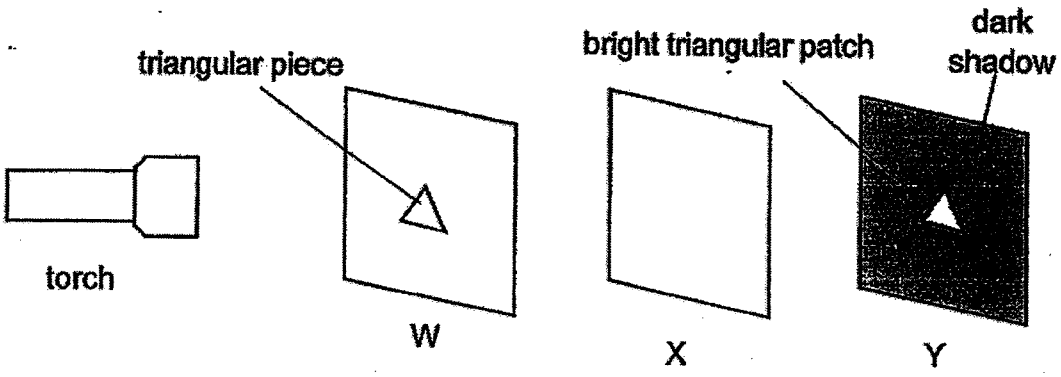
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14. Three sheets of different materials W, X and Y, were arranged in front of a torch as shown in the diagram below. A triangular piece was cut out of W.



When the torch is switched on, a bright triangular patch was seen on sheet Y only.

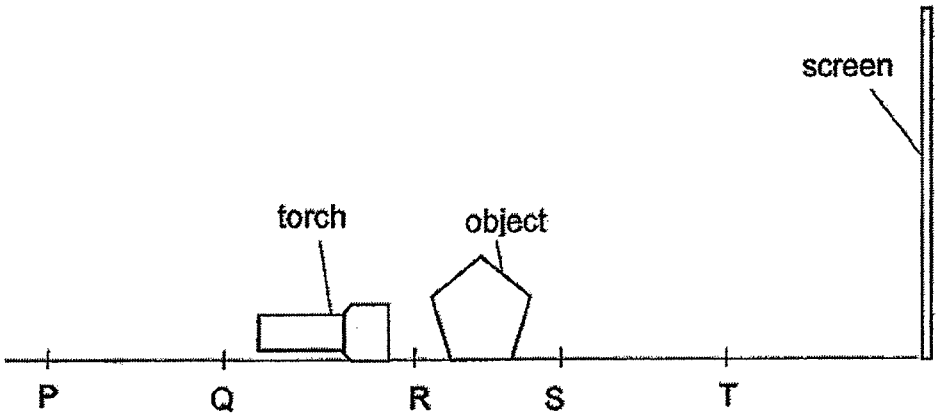
Which of the following correctly shows what the materials W, X and Y are made of?

	W	X	Y
(1)	ceramic	clear plastic	wood
(2)	glass	wood	ceramic
(3)	wood	metal	glass
(4)	clear plastic	glass	wood

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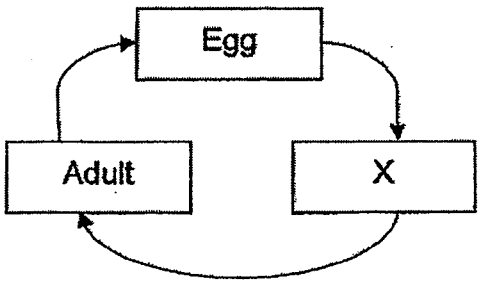
15. The diagram below shows a torch, an object and a screen. When the torch is switched on, a shadow of the object is formed on the screen.



At which positions, P, Q, R, S or T, would the torch and object need to be placed to form the largest shadow?

	Torch	Object
(1)	P	S
(2)	Q	R
(3)	R	T
(4)	S	T

16. Study the life cycle of a cockroach below.



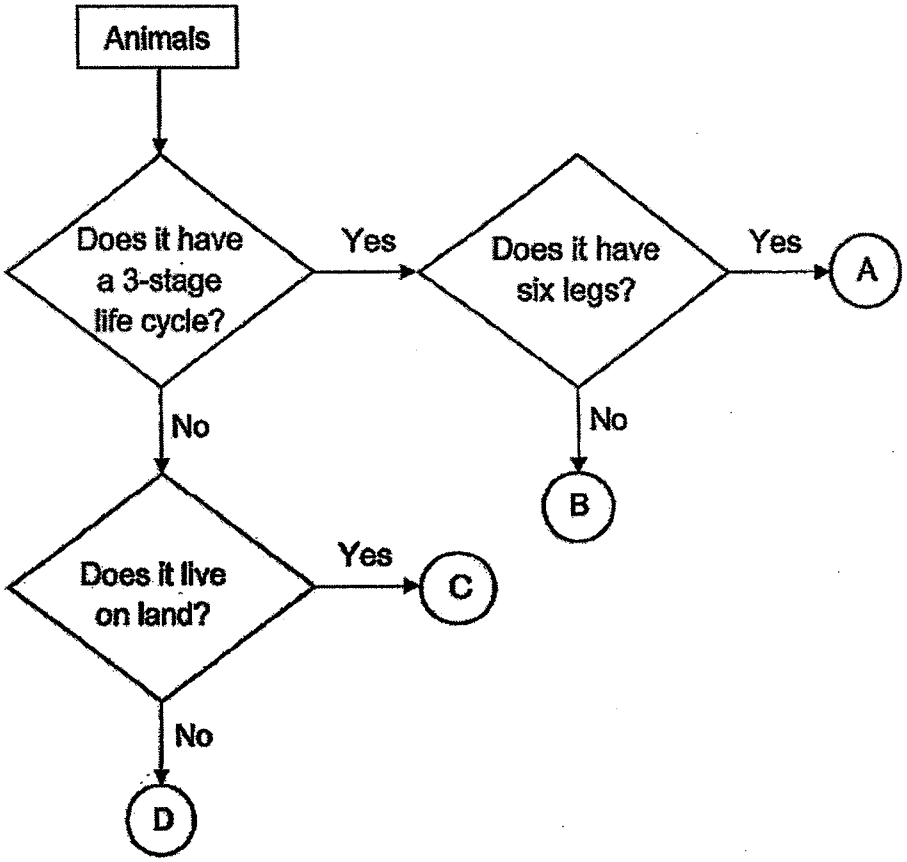
Stage X is a _____.

(1) larva
(2) pupa
(3) nymph
(4) seedling

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17. Study the flowchart below.



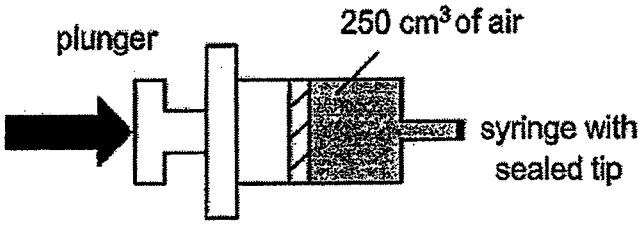
Based on the flowchart, which letter best represents a frog?

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

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18. The diagram below shows a syringe filled with air.



What would happen to the volume and mass of air in the syringe when the plunger was pushed in?

	Volume of air	Mass of air
(1)	decreases	decreases
(2)	remains the same	remains the same
(3)	decreases	remains the same
(4)	remains the same	decreases

19. Mable used clay to make a cube. Then she reshaped the same clay used to make the cube into a cylinder as shown below.



Both the cube and cylinder have the same _____.

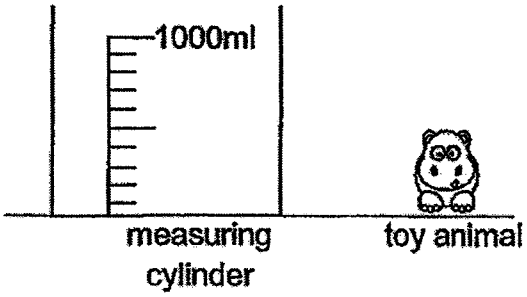
A. mass
B. shape
C. volume

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

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20. Kayden wanted to find out the volume of his toy animal using a measuring cylinder shown.



The following are the steps he took to find the volume of the toy animal.

A. Record the volume of water.
B. Fill the measuring cylinder with 500ml of water.
C. Lower the toy animal into the beaker slowly.
D. Calculate the difference between the new and old volume.

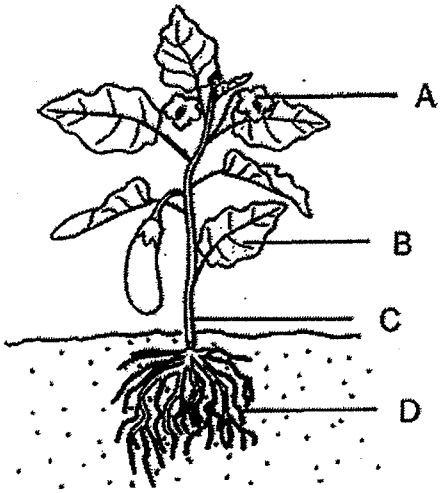
Which of the following shows the correct steps he took to find the volume of the toy?

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

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21. The diagram shows a plant.



Based on the diagram, which part will develop into a fruit?

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

22. Ted described the function of a part of a plant.

- It supports the plant.
- It holds the leaves up.

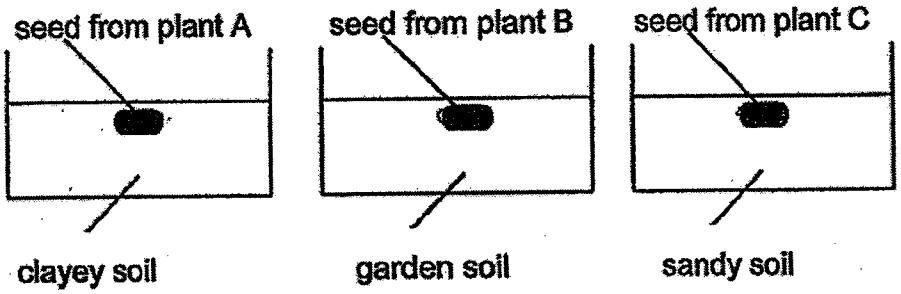
Which of the following part of a plant is he describing?

(1) leaf
(2) root
(3) stem
(4) flower

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23. Alice wanted to find out which plant produced seeds that take the least time to grow into a young plant. She took a seed from each of the three different plants A, B and C and planted them in the same location. However, Alice's teacher told her that her set-up was not fair.



What should Alice do to make the experiment a fair test?

(1) Use seeds from the same plant.

(2) Place the seeds in different locations.

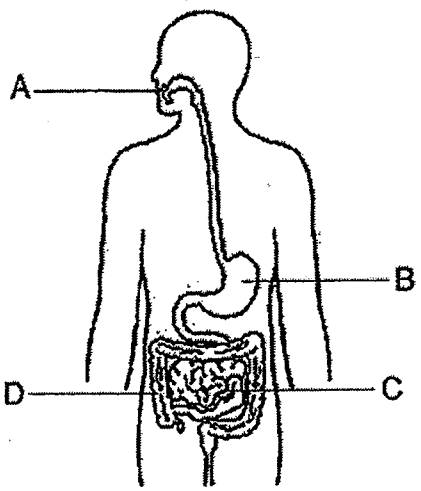
(3) Plant the seeds in the same type of soil.

(4) Plant different number of seeds in the soil.

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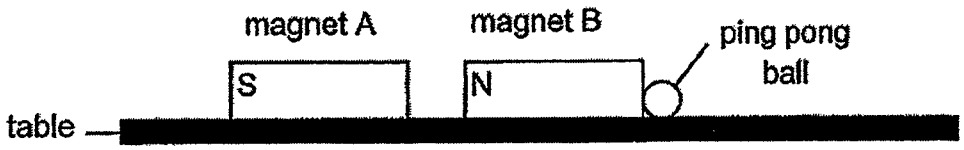
24. The diagram below shows the human digestive system.



Identify the parts where digestion takes place.

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

25. Two magnets, A and B, are placed next to each other on a table.



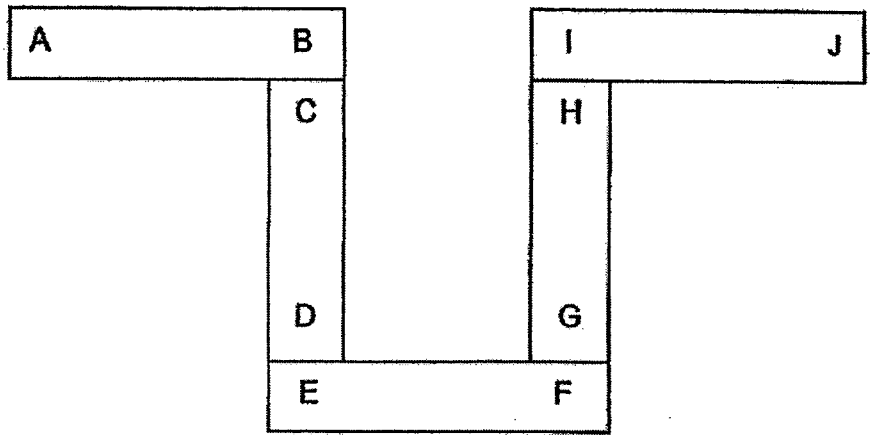
When magnet A is moved nearer to magnet B, which of the following is least likely to happen to the ping pong ball?

(1) It will not move.
(2) It will move nearer to magnet B.
(3) It will move away from magnet B.
(4) It will roll off the edge of the table.

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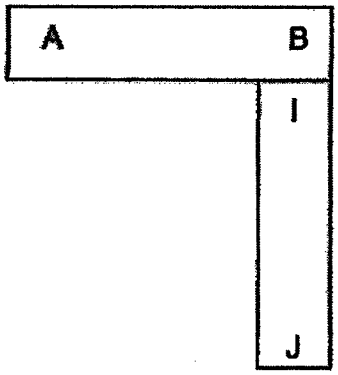
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26. Five bar magnets with their ends marked A to J can be arranged as shown.

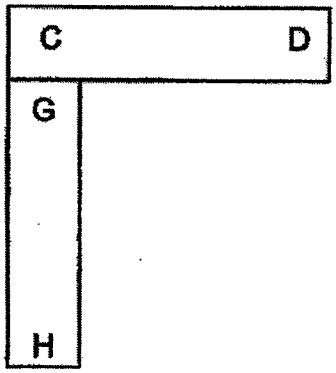


Which of the following diagrams shows a possible arrangement of two of the magnets?

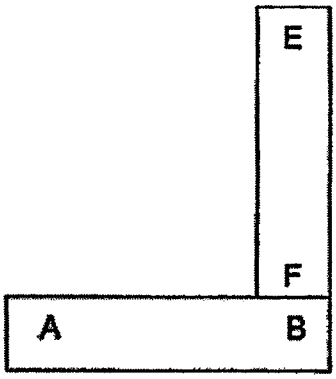
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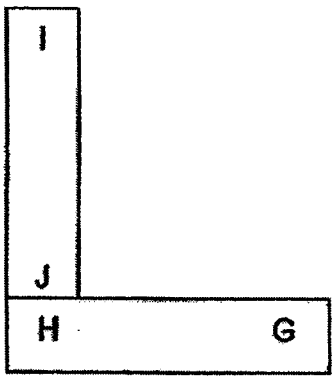
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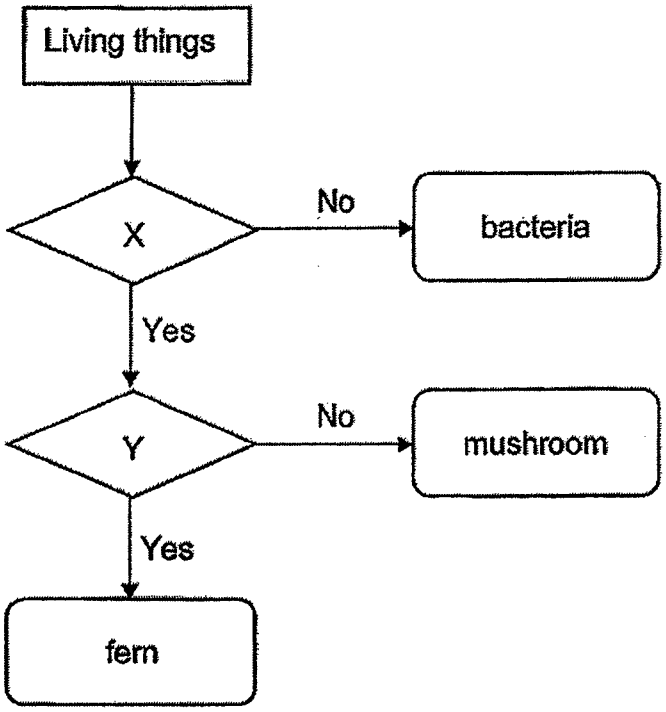
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27. Study the flowchart as shown below.



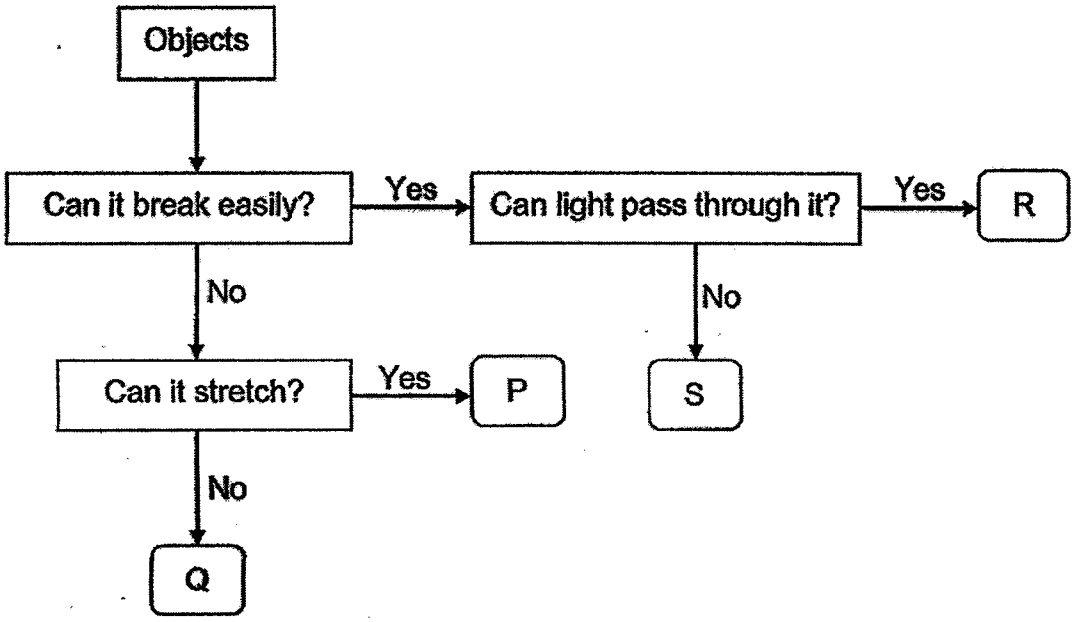
What could questions X and Y be?

	X	Y
(1)	Does it make its own food?	Does it reproduce by spores?
(2)	Can it be seen without a microscope?	Does it grow?
(3)	Does it reproduce by spores?	Does it have leaves?
(4)	Can it only be seen with a microscope?	Does it make its own food?

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28. Study the flow chart below.



Classify the following objects into P, Q, R and S as stated above.

	rubber band	glass vase	ceramic cup	iron nail
(1)	P	S	R	Q
(2)	Q	S	R	P
(3)	P	R	S	Q
(4)	Q	R	S	P

END OF BOOKLET A

GO ON TO BOOKLET B

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MAHA BODHI SCHOOL
2022 SEMESTRAL ASSESSMENT 2
PRIMARY FOUR SCIENCE
(BOOKLET B)

Name: _____ ( )

Class: Primary 4 _____

Date : 31 Oct 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. Write all your answer in this booklet.

Booklet	Marks Obtained	Max Marks
A		56
B		44
Total		100

Parent's signature: _____

This booklet consists of 11 printed pages.

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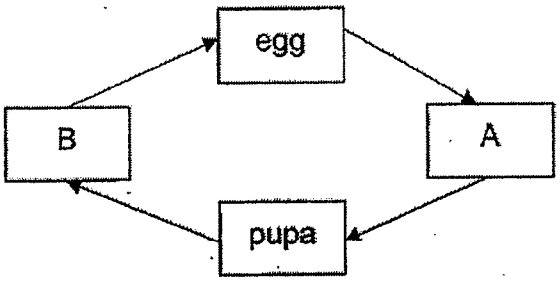
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BOOKLET B : [44 marks]
For questions 29 to 40, write your answers in this booklet.

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

29. The diagram below shows the stages in the life cycle of a mealworm beetle.



Choose the correct words from the box below to answer the questions.

larva	seed	nymph	adult

(a) Name the two stages A and B. [2]

A : _____

B : _____

(b) State one other animal that has a similar life cycle as the mealworm beetle. [1]

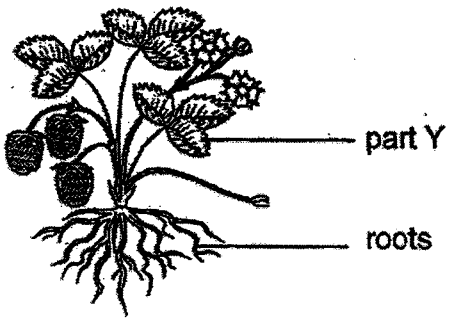
_____

Marks : / 3

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30. The diagram shows a plant.



(a) Name plant part Y. [1]

_____

(b) One substance that the roots of plant take in from the soil is

_____ [1]

31. Draw lines to match the following animals to the correct group. [3]

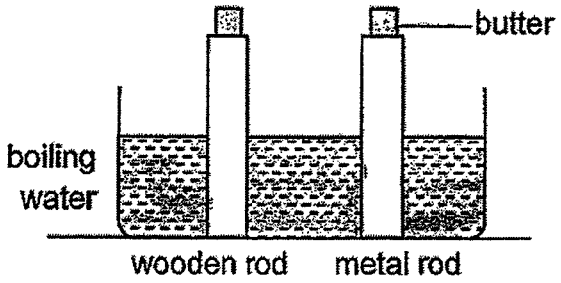
Animals		Groups
	•	• mammal
	•	• bird
	•	• fish
		• reptile

Marks : / 5

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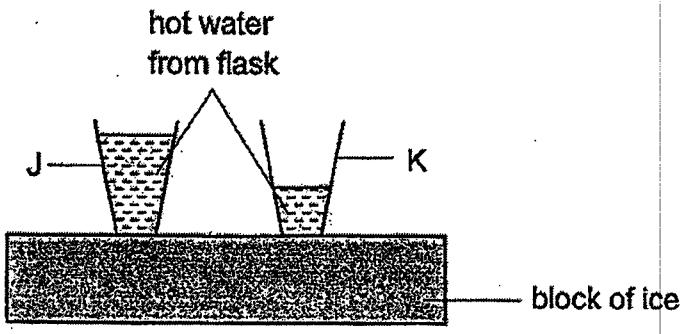
32. Kenneth placed a metal rod and a wooden rod into a tank of boiling water as shown below. Equal amounts of butter were put on both rods.



What would he observe and why? [2]

The butter on the metal rod melted _____ than the butter on the wooden rod, as metal is a _____ conductor of heat than wood.

33. (a) Alan placed two identical glasses, J and K, onto a block of ice. He poured the hot water into both glasses but in different amounts.



Put a tick (✓) to show if the following statements are true or false. [2]

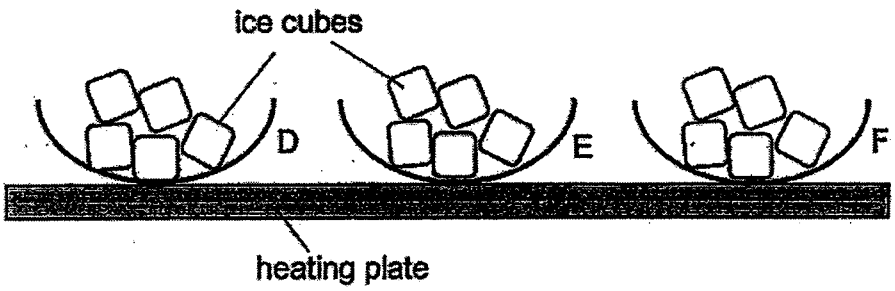
Statements	True	False
The water in both glasses have the same temperature in the beginning.		
The water in both glasses have the same amount of heat in the beginning.		
The water in J will gain heat from the ice.		
The water in K will lose heat to the ice.		

Marks : / 4

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(b) Alan conducted an experiment as shown in the diagram below. He placed the same number of ice cubes in 3 bowls made of different materials, D, E and F. He then placed the bowls on a heating plate.



He measured the time taken for all the ice cubes to melt and recorded it in the table below.

Material	Time taken for all the ice to melt (minutes)
D	13
E	8
F	2

(i) Which material is the best conductor of heat? Explain why. [2]

(ii) Alan needed two containers. One to keep his hot food warm and another to keep his drinks cold for as long as possible.

Which materials, D, E or F, should he use to make the containers? [1]

Container use	Material
to keep hot food warm	
to keep drinks cold	

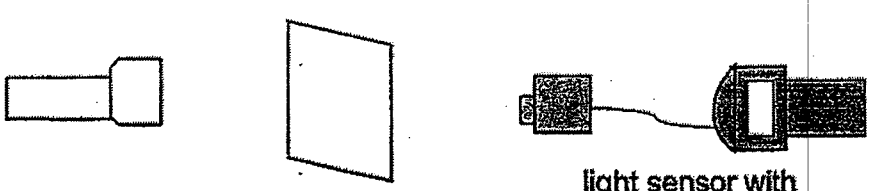
Marks : /3

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34 (a) How is a shadow formed? [1]

(b) Susie conducted an experiment in a dark room. She used a torch to shine through three different materials P, Q and R. She used a data logger with a light sensor to record the amount of light passing through the materials when the torch was switched on.



The table below shows the results of the experiment.

Material	Amount of light detected by the datalogger (unit)
P	369
Q	245
R	455

(i) The diagram below shows a pair of sunglasses.



Based on the results, which material, P, Q or R would be most suitable for making part X of a pair of sunglasses? Explain why. [2]

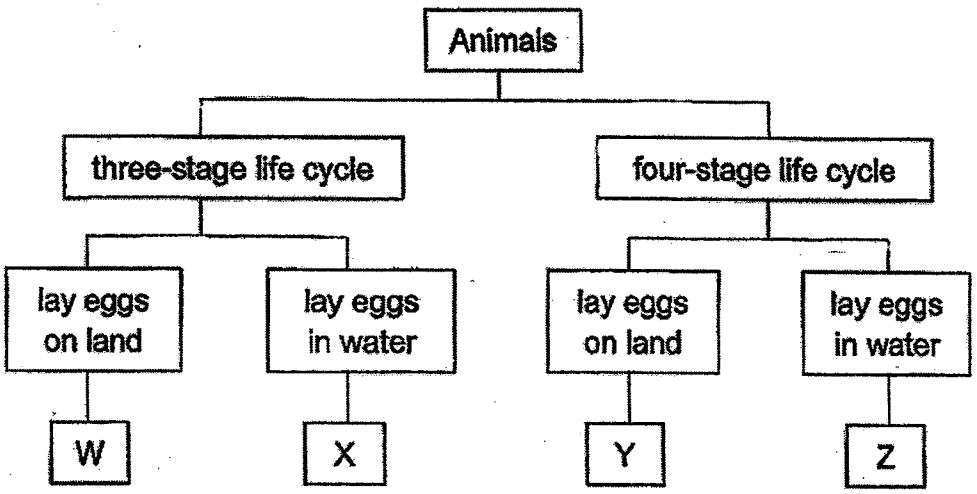
(ii) Suzie conducted the experiment with material S and there was '0' units of light detected.
She concluded it was not a suitable material to make X. Explain why. [1]

Marks : / 4

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35. Study the classification chart below.



(a) Based on the classification chart above, describe Animal X. [1]

(b) State one difference between animals W and Y based on the classification chart above. [1]

(c) Based on the classification chart above, which animal W, X, Y or Z best represents a mosquito? [1]

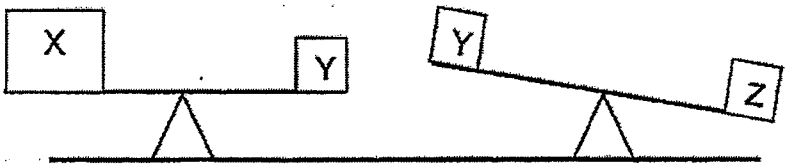
(d) Mosquitoes spread diseases like dengue fever. Give a reason why it is difficult to kill the mosquito at the adult stage compared to other stages. [1]

Marks : / 4

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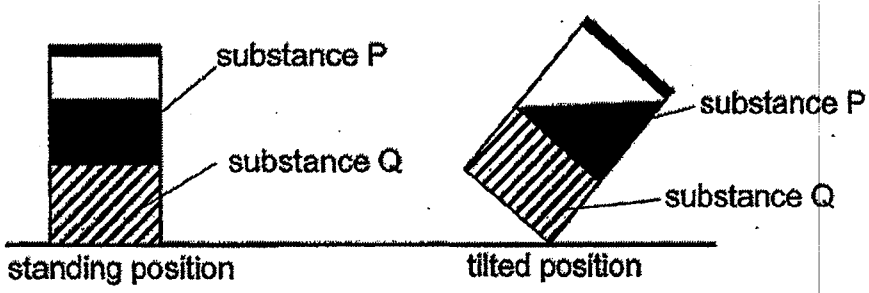
36. (a) Judy wanted to compare the mass of 3 objects X, Y and Z. She placed them on a balance scale as shown in the diagrams below.



(i) Which object X, Y or Z, has the biggest mass? [1]

(ii) Which object X, Y or Z, has the biggest volume? [1]

(b) Judy had a container containing substances P and Q. She observed the following when the container was placed in two different positions.



(i) What is the state of matter for substance P and substance Q? Write "P" or "Q" in the boxes below. [2]

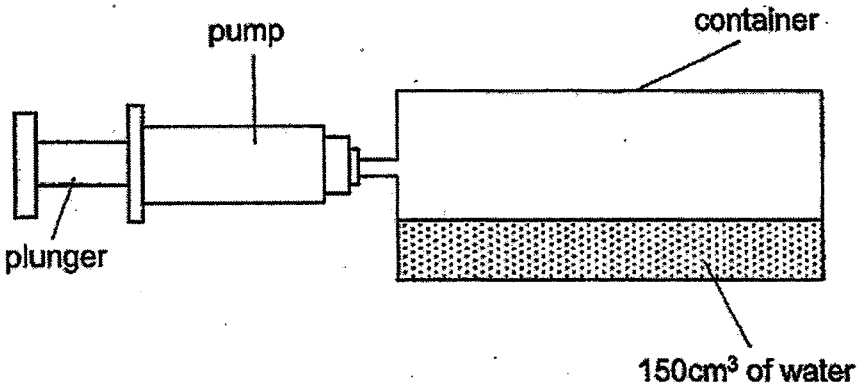
liquid ☐ solid ☐ gaseous ☐

(ii) Based on the experiment above, state the property of matter shown by substance P? [1]

Marks : / 5

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37. Anna has a container with a capacity of 350cm^3. It has 150cm^3 of water inside. She connected an air pump to the container and pushed the plunger of the pump once. Each push pumps 90cm^3 of air into the container.



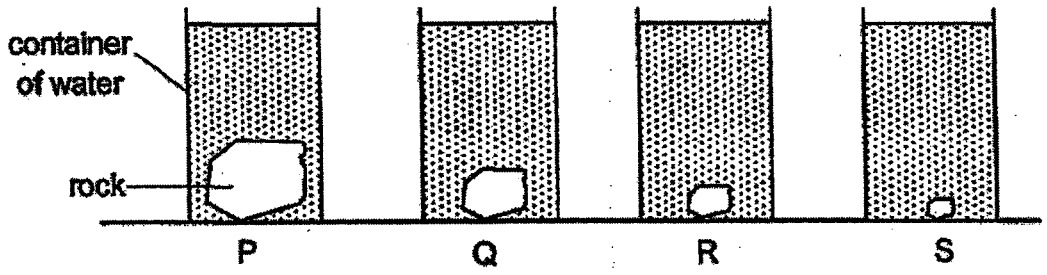
(a) In the table below, write down the volume of air in the container before and after air was pumped into the container. [2]

Volume of air in the container **before** air was pumped (cm^3)	Volume of air in the container **after** air was pumped (cm^3)

(b) What property of air is shown in this experiment? [1]

_____

(c) Next, Anna took four identical containers P, Q, R and S. He placed four rocks of different volumes into each container. Then, he filled each container to the brim with water as shown in the diagram.



Which container, P, Q, R or S, is filled with the largest amount of water? Give a reason for your answer. [1]

_____

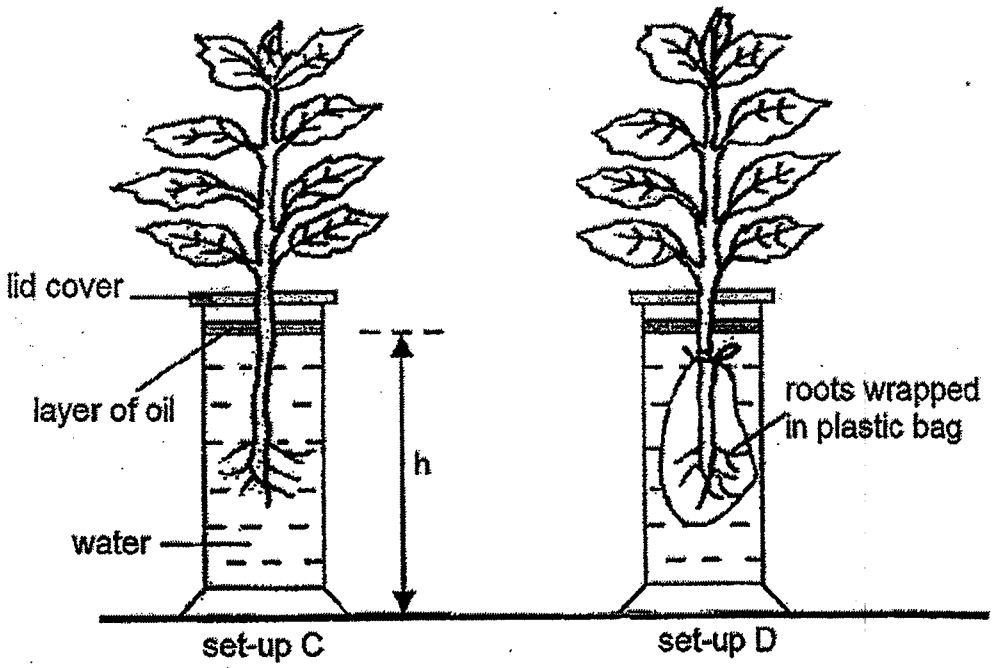
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Marks : / 4

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38. Ken placed two plants in identical jars, each containing water at the same level as shown below. He then placed the two set-ups C and D next to the window for a few hours.



(a) Ken measured the height of the water level, *h*, in each jar at the end of the experiment. He found the height *h* in the jars to be 140 mm and 200 mm. Write C and D in the table below to show the correct results of the experiment. [2]

h (mm)	Set-up
140	
200	

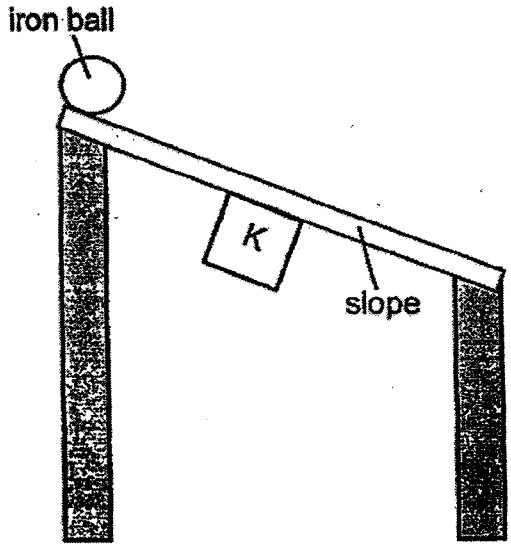
(b) What would happen to the plant in set-up D after 10 days? Explain your answer. [2]

Marks : 4 /4

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39. Mrs Lee slides an iron ball down a slope and it stops when it reaches a point just above object K.



(a) What could object K be? [1]

(b) Why did the iron ball stop above object K? [1]

(c) (i) Mrs Lee repeated the experiment using an aluminium ball instead. What would she observe? [1]

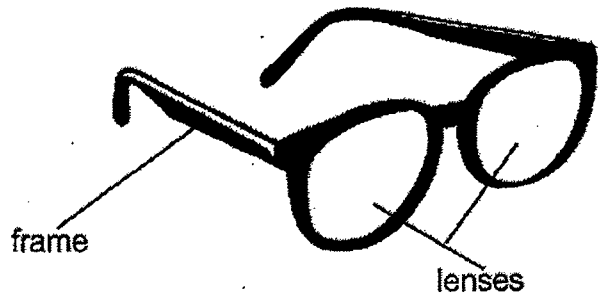
(ii) Explain your answer in (c)(i). [1]

Marks : / 4

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40. Spectacle lenses used to be made of glass. However, in recent years, they have mostly been made of plastic



(a) What is the property that makes both glass and plastic suitable for making spectacle lenses? [1]

(b) State one property of the material that is used to make the spectacle frame. [1]

(c) State two more reasons why plastic lenses are more suitable compared to glass lenses. [2]

(i)

(ii)

Marks : / 4

~ END OF PAPER ~

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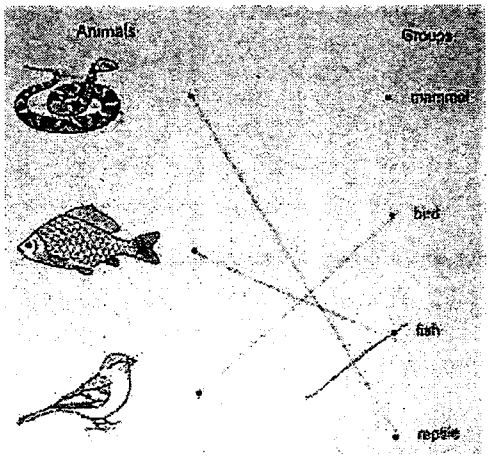
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SCHOOL : MAHA BODHI PRIMARY SCHOOL
LEVEL : PRIMARY 4
SUBJECT : SCIENCE
TERM : 2022 SA2

SECTION A

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

SECTION B

Q29)	a) A: larva B: adult b) Butterfly
Q30)	a) leaf b) water
Q31)	
Q32)	The butter on the metal rod melted <u>faster</u> than the butter on the wooden rod, as metal is a <u>better</u> conductor of heat than wood.

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Q33)

a)

√	
	√
	√
√	

b) i) Material F as the ice took the shortest amount of time to melt. The heat from the heating plate flowed the fastest through F to the ice.

ii)

D
D

Q34)

a) light travels in a straight line and gets blocked by the object. Hence, a shadow is formed.

b) i) Material Q allowed the least amount of light to pass through it. Part X of the sunglasses should block out most of the sunlight.

ii) It is not a suitable material as material S is opaque. The user would not be able to see through the pair of sunglasses.

Q35)

a) Animal X has a three-stage life cycle and lays eggs in water.

b) Animal W has a three-stage life cycle while animal Y has a four-stage life cycle.

c) Animal Z

d) Hs difficult as adult mosquitos have wings and can fly.

Q36)

a) i) Z

ii) X

b) i) liquid [P] solid [Q]

ii) No definite shape

Q37)

a)

200	200

b) Air has no definite volume.

c) S as the rock in S takes up the least amount of space.

Q38)

a)

C
D

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	b) The plant set-up D will die as the roots are unable to absorb water for the plant. Without water, the plant will die.
Q39)	a) A magnet b) The iron ball was attracted to object K. c) i) The aluminium ball would not stop above object K. ii) Aluminium is not a magnetic material. Hence, object K would not attract the aluminium ball.
Q40)	a) Allows most light to pass through. b) stiff c) i) Plastic lenses are stronger than glass lenses. ii) Plastic lenses are less fragile than glass lenses.

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