



MAHA BODHI SCHOOL  
2019 PRELIMINARY EXAMINATION  
PRIMARY 6  
SCIENCE  
(BOOKLET A)

Name : \_\_\_\_\_ (      )

Class : Primary 6 \_\_\_\_\_

Date : 29 August 2019

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

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**INSTRUCTIONS TO CANDIDATES:**

1. Write your Index No. in the boxes at the top right hand corner.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. Shade your answers in the Optical Answer Sheet (OAS) provided.

This booklet consists of 19 printed pages.

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

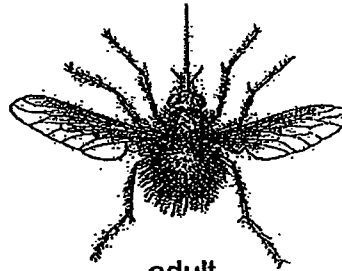
For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade your answer on the Optical Answer Sheet.**

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1. Study the young and adult of the animal shown below.



young

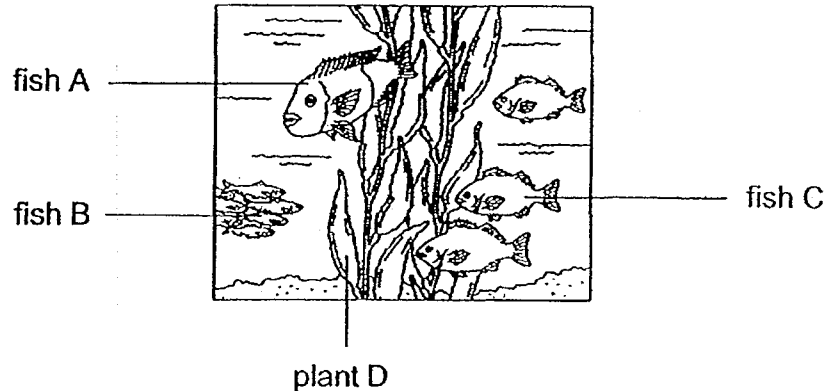


adult

Which of the following statements is not true?

- (1) The animal has a 3-stage life cycle.
  - (2) The young does not look like the adult.
  - (3) The animal reproduces by laying eggs.
  - (4) The young of the animal needs air, food and water.
2. From which of the following organs will water be absorbed into the bloodstream?
- (1) heart
  - (2) lungs
  - (3) small intestine
  - (4) large intestine
3. Which of the following could be used to tell the difference between a plant cell and an animal cell?
- (1) presence of nucleus
  - (2) presence of cell wall
  - (3) presence of cytoplasm
  - (4) presence of cell membrane

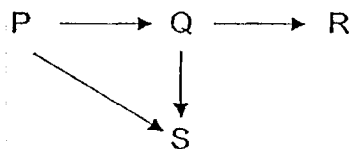
4. The diagram below shows a marine aquarium.



Based on the diagram, which of the following statement is correct?

- (1) There are four communities.
- (2) Fish C forms three populations.
- (3) The four populations of organisms form a community.
- (4) The community is made of populations of fish A, B and C only.

5. Study the food web below.



Based on the food web, which of the following is correct?

- (1) R is a producer.
- (2) P is a prey to Q and S.
- (3) Q, R and S are consumers.
- (4) Q is both a prey and a predator.

6. Which of the following shows the incorrect way in which organisms obtain energy?

- (1) sun → plant
- (2) sun → plant-eater
- (3) plant-eater → plant and animal eater
- (4) animal-eater → plant and animal eater

7. Study the table below.

Living things	Does it make its own food?	Question U	Does it produce flowers?
grass	Yes	Yes	Yes
T	No	No	No
papaya tree	Yes	Yes	Yes

Which of the following is correct?

	Living thing T	Question U
(1)	moss	Does it produce spores?
(2)	bacteria	Does it produce seeds?
(3)	rose plant	Is it dispersed by wind?
(4)	bird's nest fern	Is it dispersed by wind?

8. Kumar wanted to find out if light is needed for seeds to germinate.

He placed a similar number of seeds into set-ups with different conditions as shown below.

Set-up	Amount of water given (ml)	Amount of light received (units)	Surrounding temperature (°C)
A	50	1000	5
B	50	200	30
C	50	0	35
D	100	0	35
E	100	1000	35

Which pair of set-ups should he use for a fair experiment?

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

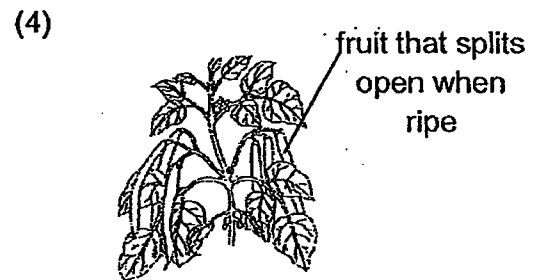
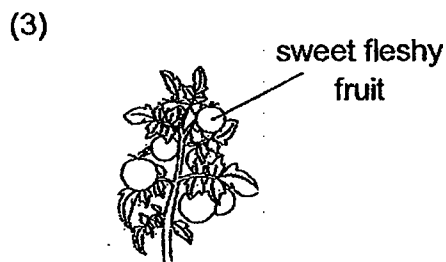
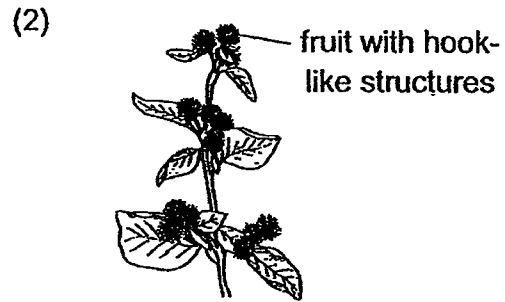
9. Which of the following are the functions of a stem?

- A. absorb water and mineral salt
- B. hold the plant firmly to the ground
- C. transport water to other parts of the plant
- D. support the leaves so they can get more sunlight

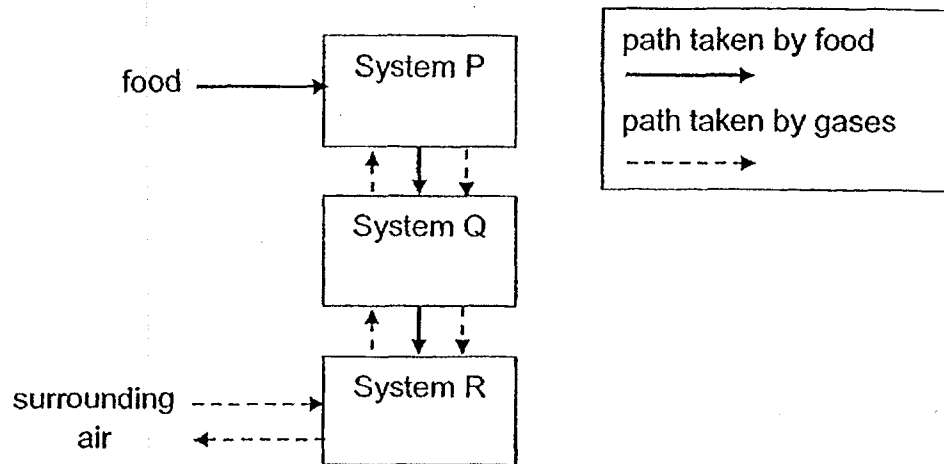
- (1) A and B only
- (2) A and C only
- (3) B and D only
- (4) C and D only

10. A new island was formed in the middle of the sea due to volcanic eruptions. Within a few years, plants started growing before any animals started living on the island.

Which of the following plant is most likely to be found on the island before the animals started living on the island?



11. The diagram below shows how food and gases are transported in the human body.

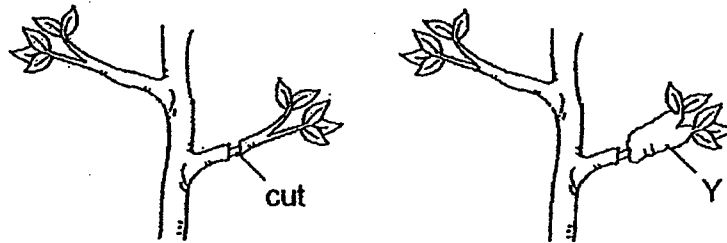


Which systems do P, Q and R represent?

	Circulatory system	Respiratory system	Digestive system
(1)	R	Q	P
(2)	P	R	Q
(3)	R	P	Q
(4)	Q	R	P



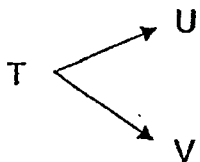
12. A cut was made on the branch of a plant as shown below. After some time, part Y was observed to be swollen.



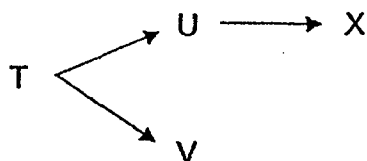
Based on your observation, which of the following statement(s) is/are correct?

- A. Food was accumulated at Y.
  - B. The roots could not receive any food.
  - C. Water could not be transported above the cut.
  - D. The food-carrying tubes were removed at the cut.
- (1) C only
- (2) A and D only
- (3) B and C only
- (4) A, B and D only

13. Food relationships between organisms T, U and V, are shown in the food web below.

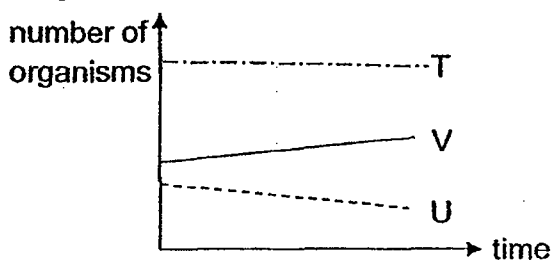


After some time, organism X was introduced to the habitat as shown in the food web below.

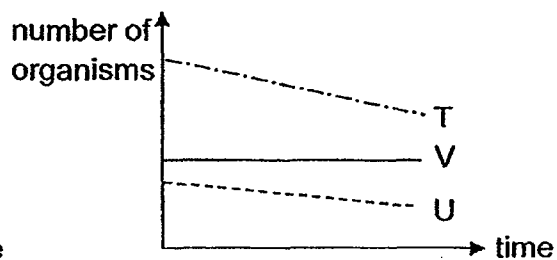


Which of the following graphs correctly shows how the number of organisms, T, U and V change after organism X was introduced?

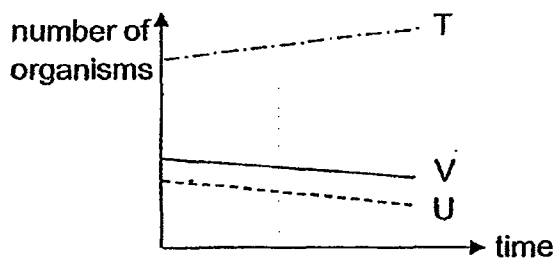
(1)



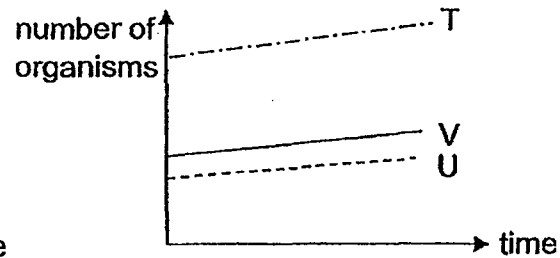
(2)



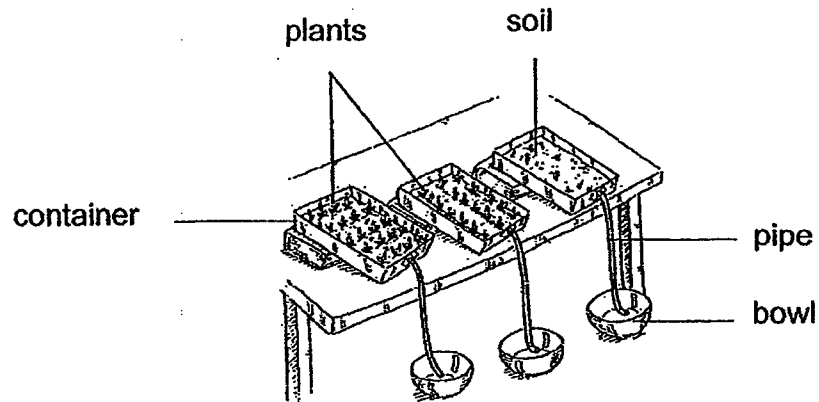
(3)



(4)



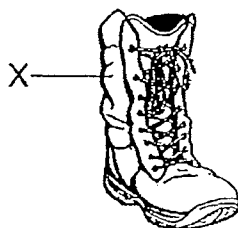
14. Tom set up an experiment as shown below to find out how plants affected soil erosion. He used the same type of plants for his experiment. He would pour water into the soil and after some time, water and soil would flow into the bowl.



Which of the following variables should Tom keep the same to ensure a fair test?

- A. amount of roots in the soil
  - B. amount of soil in the container
  - C. amount of water and soil collected
  - D. amount of water poured into the soil
- (1) A and C only  
(2) A and D only  
(3) B and C only  
(4) B and D only

15. A pair of boots needs to be able to be used in different environments without tearing and keeping the feet dry.



Which of the following properties must the material for Part X of the boots have?

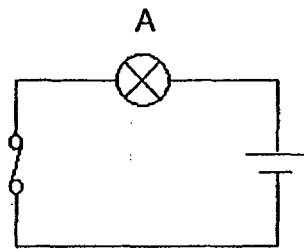
- A. strong
  - B. flexible
  - C. waterproof
  - D. able to float in water
- (1) A and C only
- (2) B and D only
- (3) A, B and C only
- (4) A, B, C and D

16. Which of the following statements about evaporation and boiling of water is correct?

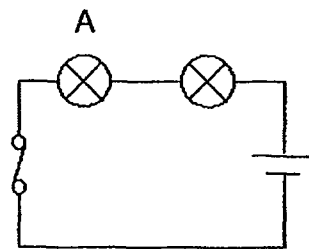
	Evaporation	Boiling
(1)	water gains heat	water gains heat
(2)	occurs at a specific temperature	occurs at many temperatures
(3)	Water vapour changes from gas to liquid	water changes from liquid to gas
(4)	bubbles are observed during the process	bubbles are observed during the process

17. In which of the following circuits will bulb A be the brightest?

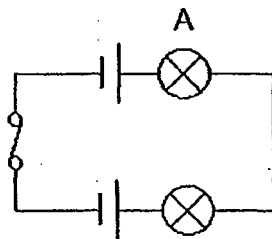
(1)



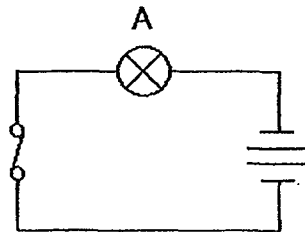
(2)



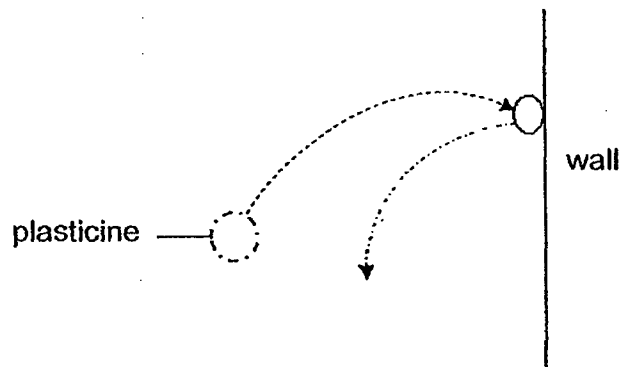
(3)



(4)



18. A piece of plasticine was thrown against a wall as shown in the diagram.



Which of the following could have happened to the piece of plasticine?

- A. The plasticine changed shape.
- B. The plasticine stopped moving.
- C. The plasticine bounced off the wall.
- D. The mass of the plasticine increased.

(1) C only

(2) A and C only

(3) A, B and C only

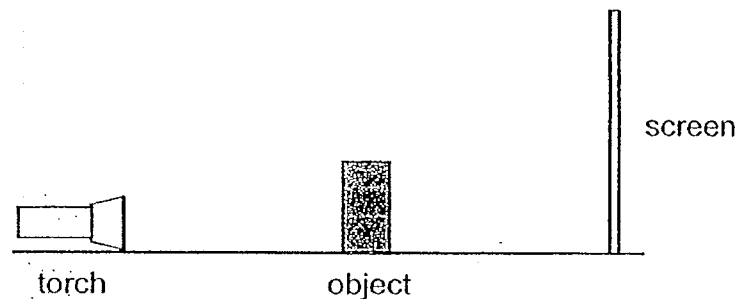
(4) A, B, C and D

19. In which of the following would friction be useful?

- A. Car moving on the road.
- B. Man pushing a heavy box.
- C. Boy holding a cup of water.
- D. Girl writing on a piece of paper.

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

20. The diagram below shows how a shadow of an object is formed on a screen.



What can be done so that a bigger shadow can be formed?

- A. Move the object nearer to the torch.
- B. Move the object nearer to the screen.
- C. Move the screen further away from the object.
- D. Move the torch and screen further away from the object.

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

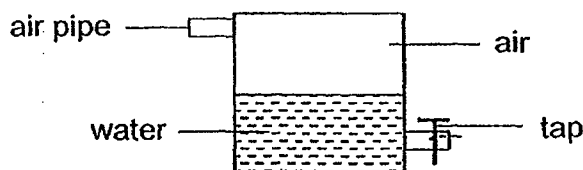
21. Jason conducted an experiment by heating substance Q. The table below shows the characteristics of Q at starting temperature of 30°C and at 100°C after being heated for some time.

Temperature of Q (°C)	Characteristics of Q
30	Has a definite volume and a definite shape
100	Has a definite volume but no definite shape

Based on Jason's experiment, which of the following is possible?

	Melting point of Q (°C)	Boiling point of Q (°C)
(1)	10	200
(2)	20	100
(3)	30	50
(4)	40	300

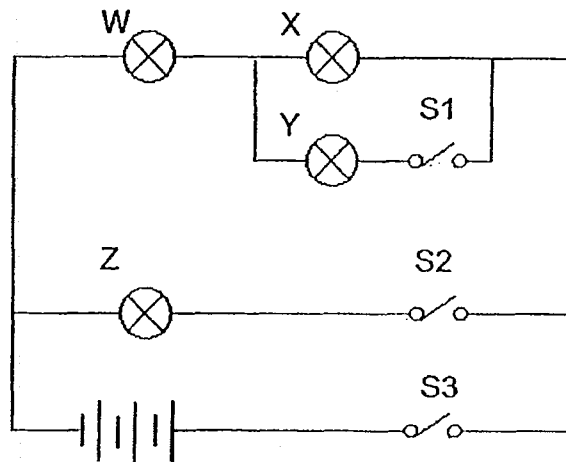
22. The diagram below shows a sealed metal container filled with water and air.



Which of the following is most likely to be correct after more air is pumped into the container?

	Volume of air	Reason
(1)	increase	Air has no definite shape.
(2)	increase	Air has no definite volume.
(3)	remain the same	Air occupies space.
(4)	remain the same	Air can be compressed.

23. A circuit diagram is shown below.

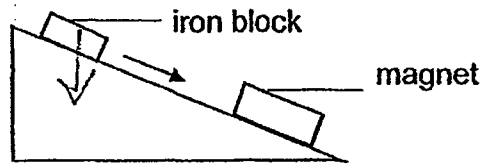


Which of the following is correct?

		Bulb that lights up			
Closed switch(es)		W	X	Y	Z
(1)	S1	✓		✓	
(2)	S2	✓	✓		✓
(3)	S1 & S3	✓	✓	✓	✓
(4)	S2 & S3	✓	✓		✓



24. A stationary iron block was resting on a slope. A magnet was then placed at the bottom of the slope as shown in the diagram below. The iron block then moved down the slope until it touched the magnet.

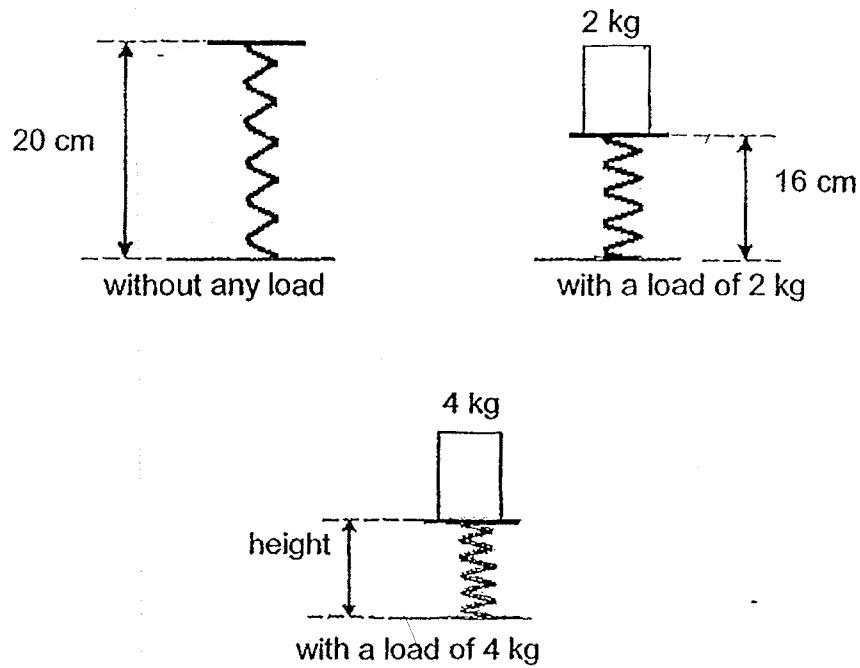


Which of the following statements are correct?

- A. Gravitational force is acting on the iron block.
- B. Frictional force is acting on the iron block when it is at rest.
- C. Frictional force acting on the iron block is greater than the magnetic force acting on it.
- D. Gravitational force and the magnetic force are acting on the iron block in the same direction.

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

25. The diagram below shows the length of a spring before and after a mass of 2 kg and 4kg are placed on it.



What is the height of the spring when a mass of 4 kg is placed on the spring as shown in the diagram below?

- (1) 8 cm
- (2) 12 cm
- (3) 16 cm
- (4) 18 cm

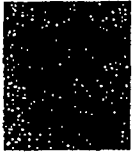
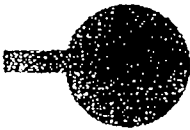
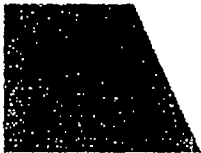
26. A boy has a four pieces of metals, P, Q, R and S. The table below shows the interaction between the metals when they are brought closed together.

Metals	Observation
P and Q	no attraction or repulsion
P and S	attraction
Q and S	attraction
R and S	no attraction or repulsion

Which of the following about metals P, Q, R and S is correct?

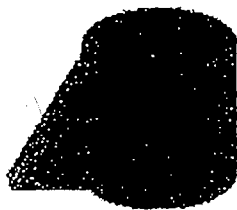
	P	Q	R	S
(1)	magnetic material	magnetic material	non-magnetic material	magnet
(2)	magnetic material	non-magnetic material	magnet	magnetic material
(3)	non-magnetic material	magnet	magnetic material	magnetic material
(4)	magnet	magnet	non-magnetic material	magnet

27. The diagram below shows the shadow cast by an unknown object from three different directions.

Direction 1	Direction 2	Direction 3
		

Which of the following is the unknown object?

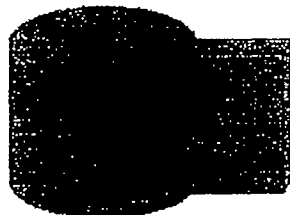
(1)



(2)



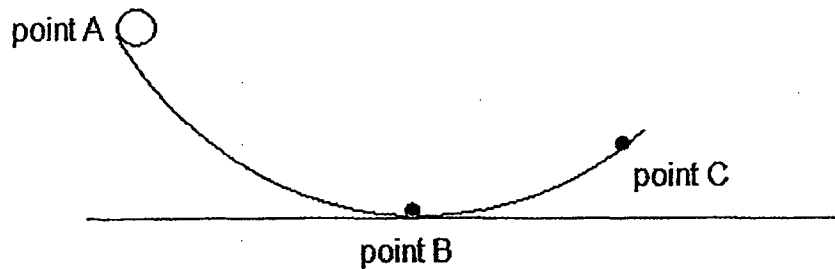
(3)



(4)



28. A ball was released at point A on a ramp and it rolls down the ramp.



Which of the following correctly shows the amount of potential energy and kinetic energy of the ball from point A to point C?

	Point A		Point B		Point C	
	Kinetic Energy (units)	Potential Energy (units)	Kinetic Energy (units)	Potential Energy (units)	Kinetic Energy (units)	Potential Energy (units)
(1)	10	20	30	0	15	15
(2)	0	40	40	0	25	20
(3)	30	0	30	5	20	15
(4)	0	20	20	0	15	5

**END OF BOOKLET A**

**GO ON TO BOOKLET B**





MAHA BODHI SCHOOL  
2019 PRELIMINARY EXAMINATION  
PRIMARY 6  
SCIENCE  
(BOOKLET B)

Name: \_\_\_\_\_ ( )

Class: Primary 6 \_\_\_\_\_

Date : 29 August 2019

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

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**INSTRUCTIONS TO CANDIDATES:**

1. Write your Index No. in the boxes at the top right hand corner.
2. Do not turn over this page until you are told to do so.
3. Follow all instructions carefully.
4. Answer all questions.
5. 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 19 printed pages.





**BOOKLET B : [44 marks]**

For questions 29 to 41, 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. A student observed some animals and recorded her observations in the table below.

Animals	has scales	has wings	has 4 legs	breathes underwater	breathes on land
P	x	x	✓	x	✓
Q	✓	x	x	✓	x
R	x	x	✓	✓	✓
S	x	✓	x	x	✓

- (a) Based on the table, state the animal group that animal R belongs to. [1]

- (b) The animals P, Q, R and S were classified into two groups X and Y.

Group X	Group Y
P	Q
S	R

Write a suitable heading for X and Y.

[1]

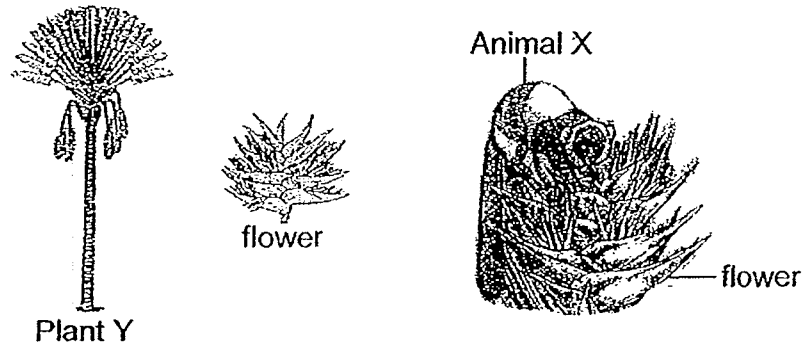
X: \_\_\_\_\_

Y: \_\_\_\_\_

Marks :

/ 2

30. The pictures below show Plant Y, its flower, and Animal X which belong to the same habitat. Animal X feeds on the nectar inside the flower.



- (a) State how Animal X benefits Plant Y. [1]

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- (b) Fruits of Plant Y split open to reveal seeds with bright blue flesh that Bird Z feeds on.

How does the bright blue flesh of the seeds benefit Plant Y? [2]

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- (c) A disease wiped out the population of Animal X in the area.  
Give a reason why this will lead to a decrease in the population of Bird Z. [1]

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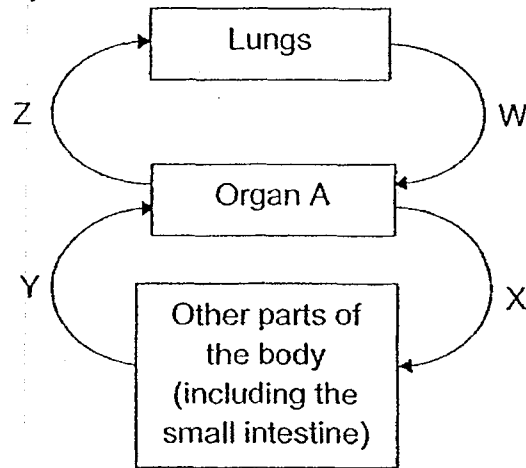
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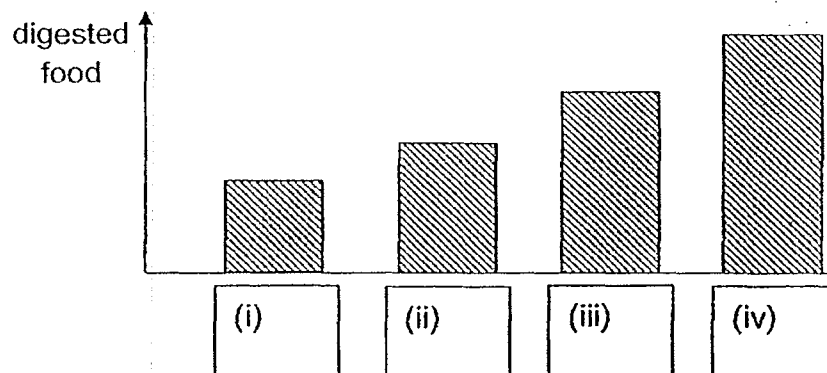
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31. The diagram below shows how blood flows in blood vessels W, X, Y and Z in a human.



- (a) What is organ A? [1]

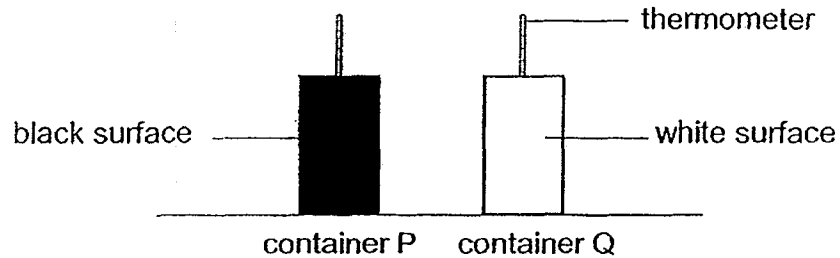
- (b) The graph below shows the amount of digested food found in blood taken from different parts of the body. Place the correct labels, W, X, Y and Z, in the boxes below. [1]



- (c) All the digested food has already been absorbed into the bloodstream. Will the amount of digested food in the blood vessels decrease faster or slower during exercise compared to before exercising? Give a reason for your answer. [1]

Marks : / 3

32. William wanted to find out how colour of the surface affects the rate of heat absorption. He conducted an experiment using two identical air-tight containers, P and Q, as shown. Container P had a black surface while container Q had a white surface. He placed the containers under the sun. At first, the thermometers showed the same reading.



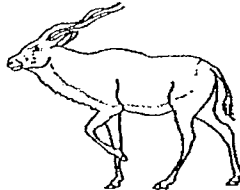
After a few hours, he observed that the temperature in container P was higher than that in container Q.

- (a) What could William conclude from this observation? [1]

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Animal G lives in a hot and sandy place.



- (b) Explain why having a white outer covering benefits animal G. [1]

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Marks :

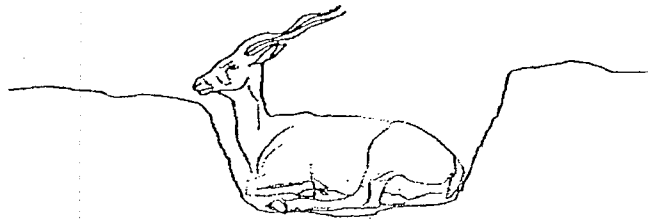
/ 2

- (c) The young of animal G usually has a sand-coloured outer covering instead of a white one.  
Explain why having such an adaptation enhances its survival. [1]

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- (d) During cold windy nights, animal G would be resting inside a hole it dug instead of just resting on top of the sandy ground.



Explain how this behavior helps to keep animal G warm. [2]

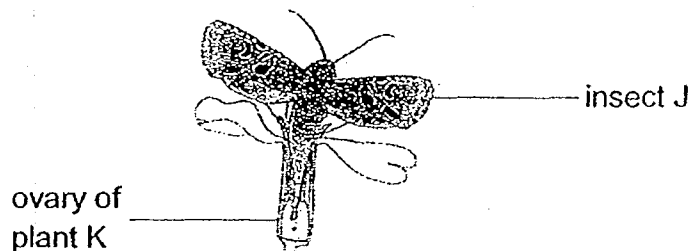
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Marks :

/ 3

33. The diagram below shows insect J laying eggs into the ovary of a flower of plant K. Insect J is a pollinator of plant K. The young of insect J eats the seeds of plant K.



- (a) Explain how pollination enhances the survival of young insect J. [1]

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- (b) Before insect J flies off, it would mark the flower with a smell to prevent other insects from laying eggs.

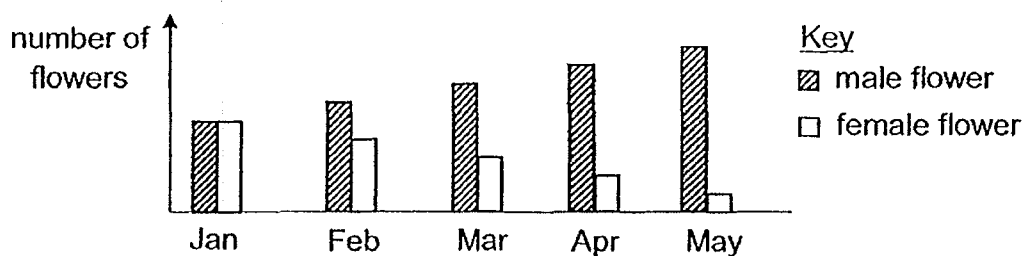
Explain why this is an advantage to the young insect J when it eats the seeds of plant K. [1]

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- (c) The graph below shows how the number of flowers of plant K change over time.



Based on the information given above, how would the population of insect J change over time? Explain your answer. [1]

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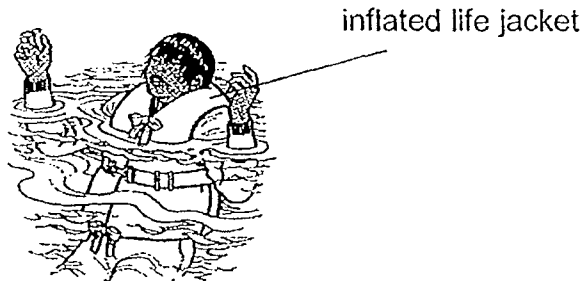


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Marks :

/ 3

34. A life jacket is used to prevent a person from drowning in water. The life jacket must be inflated with air as it is the air that prevents the person from sinking in water.



- (a) Material W was used to make a life jacket. The life jacket was inflated and placed in water. After some time, the life jacket sank and the inside was filled with water. There were no holes in the life jacket.

Suggest a property that was missing in Material W that did not allow the life jacket to stay afloat. [1]

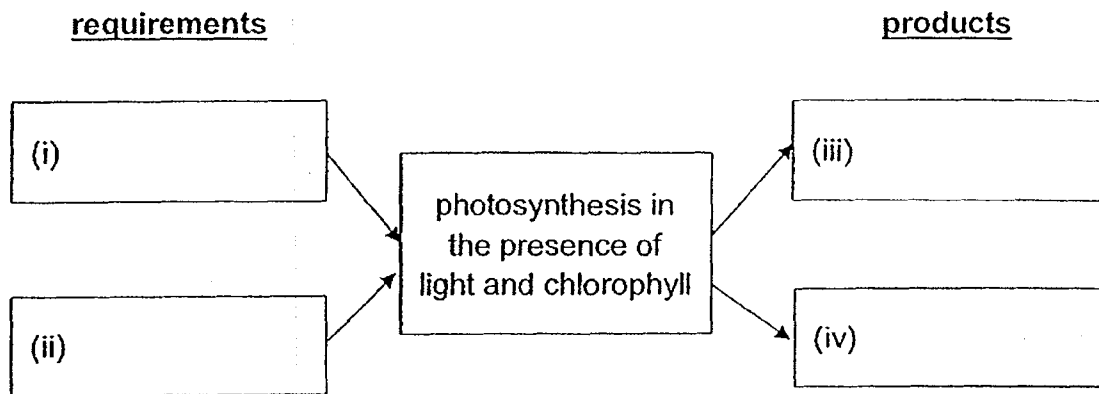
- (b) Life jackets are usually kept under the seats of airplanes. It is deflated in order for it to take up less space.

State the property of the material that allows life jackets to be deflated. Explain how this property allows the life jacket to fit neatly under the seat. [1]

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35. (a) Fill in the boxes to list the requirements and products of photosynthesis. [1]

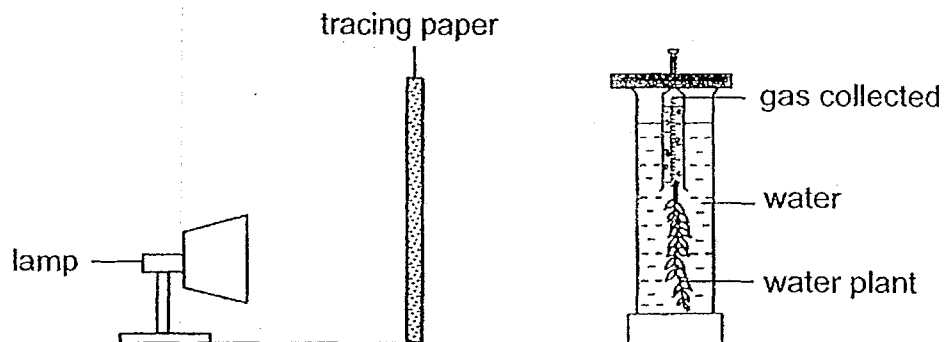


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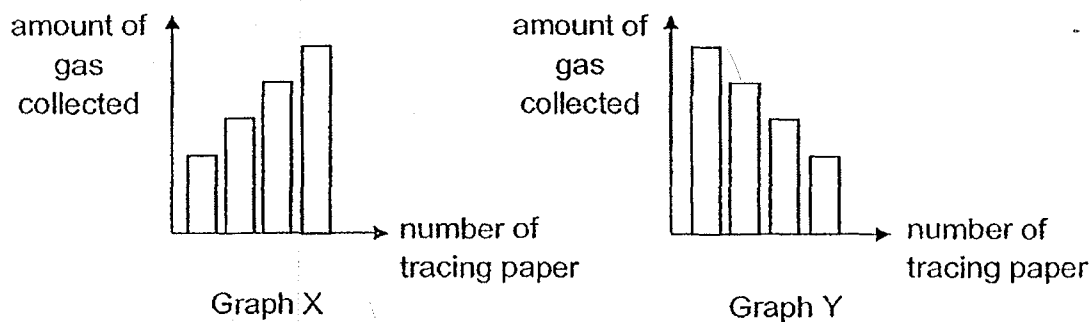
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- (b) Zelia conducted an experiment on photosynthesis in a dark room using the set-up below. She measured the amount of gas collected in the tube after some time.



Zelia repeated her experiment by increasing the number of pieces of tracing paper and keeping all other variables constant. The graphs X and Y below show her possible results.



Which graph, X or Y, correctly shows how the amount of gas collected changed as the number of pieces of tracing paper changed? Explain your answer. [2]

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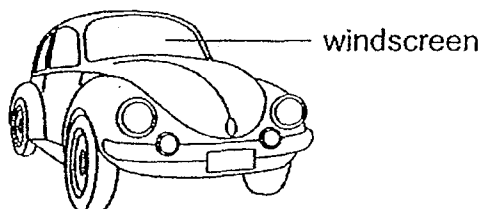
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36. The diagram below shows a car.



After a cool night, tiny water droplets are observed on the windscreen the next morning.

- (a) Explain how water droplets are formed on the windscreen. [1]

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- (b) Give a reason why water droplets are less likely to form when the windscreen becomes warm after some time. [1]

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- (c) Explain how the water droplets disappear when the windscreen continues to remain warm for a long time. [1]

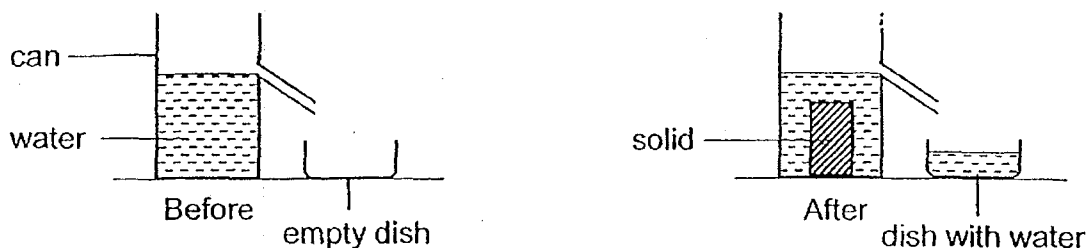
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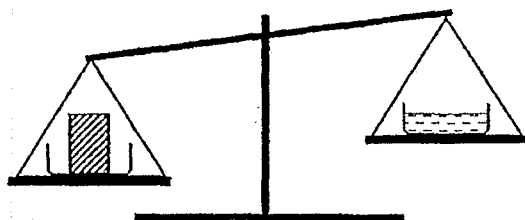
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37. Shanti filled a can with water as shown below. She then placed a solid into the can and collected the water that flowed out from it.



- (a) Based on the information above, which property of the solid allowed water to flow out? [1]

Shanti wanted to compare the mass of the water that was collected with the mass of the solid. She took the solid out from the can and dried it. She then placed the dish of water and the solid onto a balance. She used similar dishes to hold the solid and water on the balance. The diagram below shows her observation.



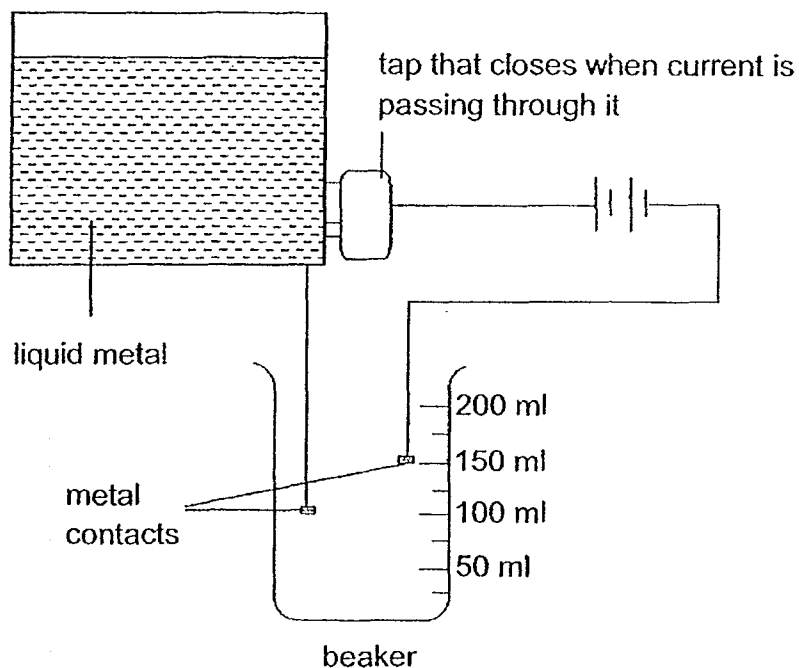
- (b) (i) Explain why the same piece of solid had to be dried before placing it onto the balance. [1]

- (ii) Based on the above observation, what could she conclude about the mass of the water that was collected? [1]

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/ 3

38. (a) The circuit shown below is designed to dispense a fixed amount of liquid metal into a beaker.



- (i) Based on the circuit diagram above, how much liquid metal will fill the beaker before the tap closes? [1]

\_\_\_\_\_ ml

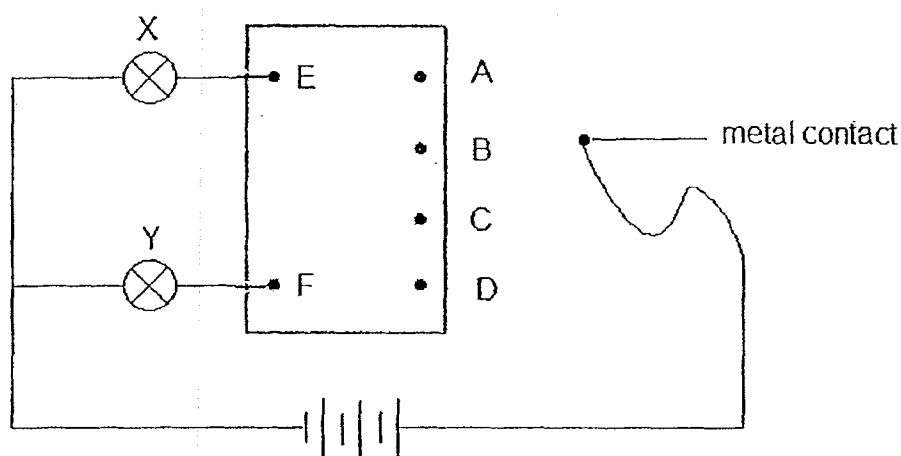
- (ii) How can you change the design to dispense 200 ml of liquid metal instead? [1]

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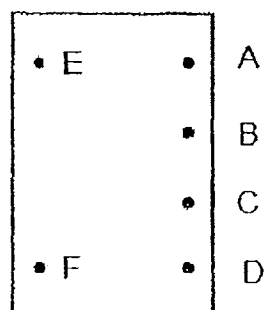
- (b) A student conducted an experiment using a circuit card joined to a parallel circuit as shown below.



The table below shows the results when the metal contact is placed at points A to D.

Metal contact at point	Bulb that lights up	
	X	Y
A	✓	
B	✓	
C		✓
D		

Draw in the circuit card below to show how the points are connected. [1]

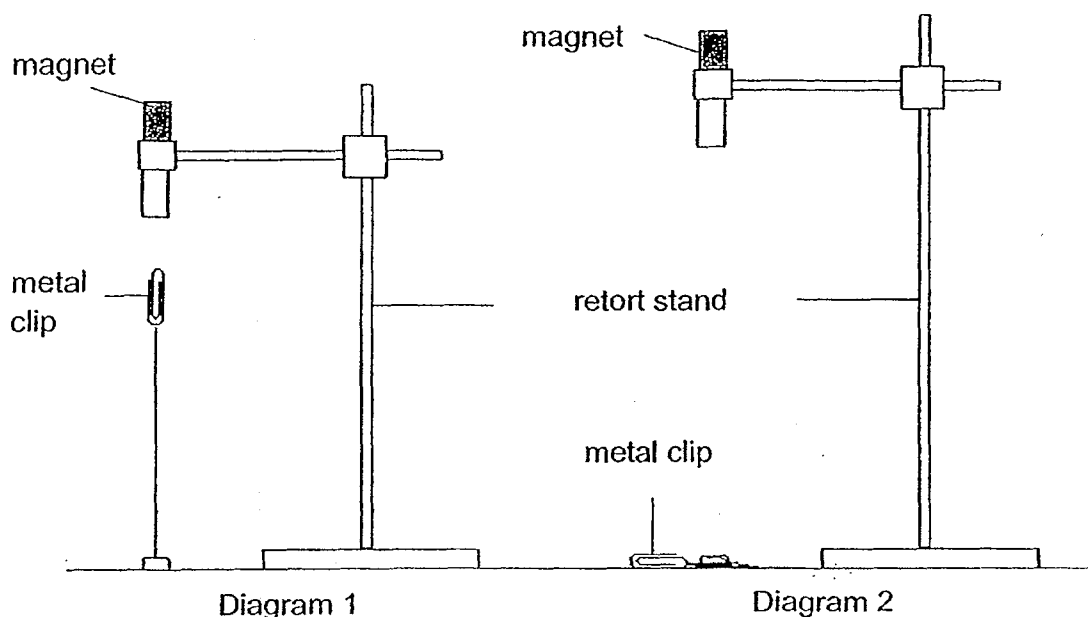


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39. A metal clip, held by a string to the table, was attracted by the magnet and remained hanging in the air as shown in Diagram 1.

The experiment was then repeated by placing the magnet at a higher position above the table and the metal clip did not remain hanging in the air as shown in Diagram 2.



- (a) Explain why the metal clip dropped to the table when the magnet was placed higher. [2]

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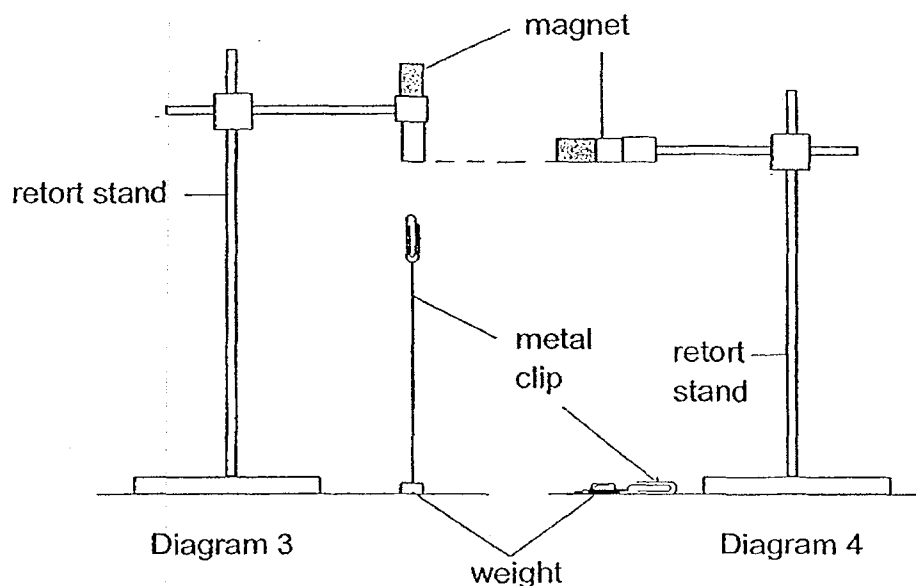
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- (b) Another experiment was conducted as shown in Diagram 3 where the weight holding the metal clip is placed directly below the magnet. The experiment was repeated by placing the same magnet horizontally as shown in Diagram 4 where the weight holding the metal clip is placed directly below the center of the magnet.



Explain why the metal clip in Diagram 4 will not be attracted.

[1]

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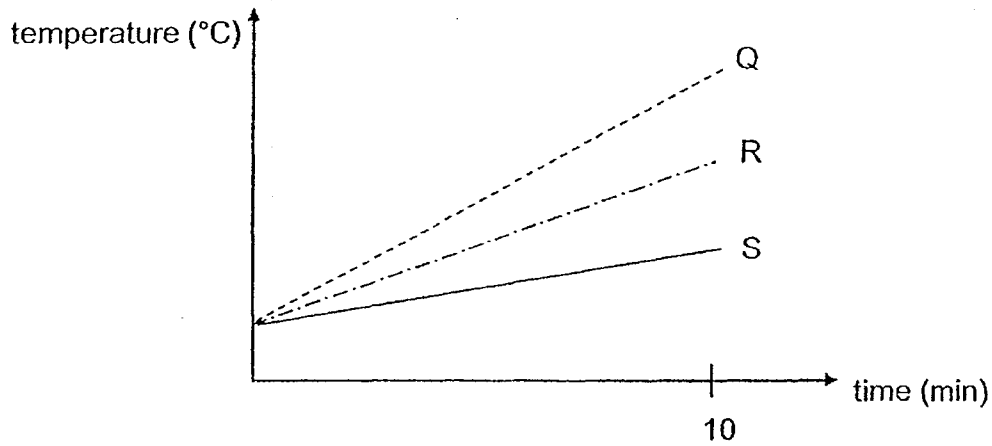
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40. Three different materials, Q, R and S were heated up and the graph below shows how temperatures of the materials change over time.



- (a) What is the relationship between the time taken to heat the materials and the temperature of the materials? [1]

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- (b) Which material is most suitable for making a box to keep ice so that the ice will take the longest time to melt? Explain your answer. [2]

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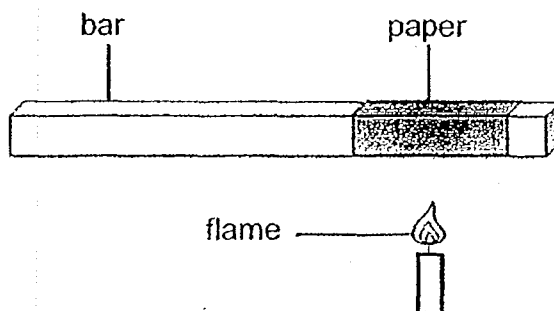
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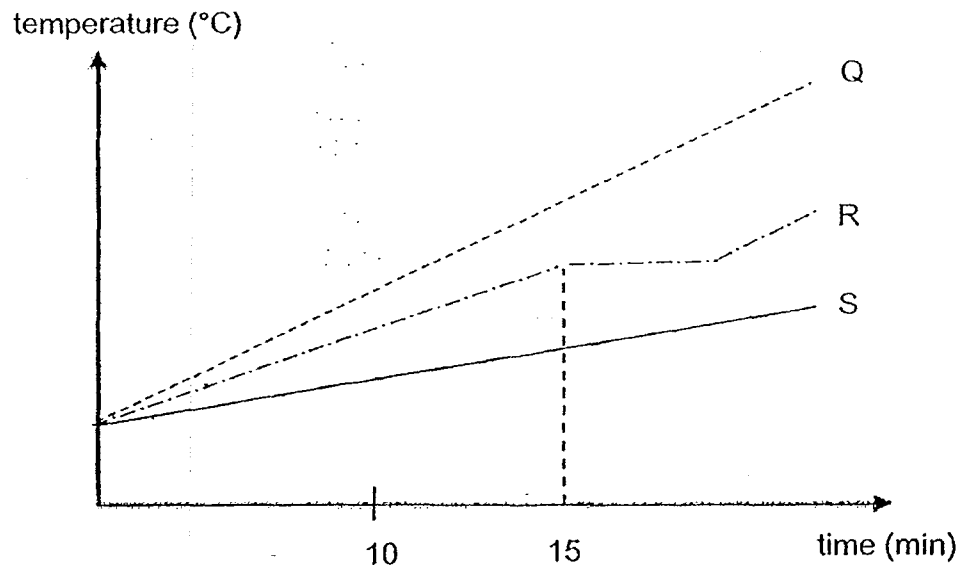


- (c) A piece of paper was used to cover a bar made of material Q and held over a flame as shown in the diagram. The experiment was repeated with materials R and S.



The paper took the longest time to burn when it is placed on material Q. Explain this observation. [1]

- (d) The three materials were heated over a longer period of time.

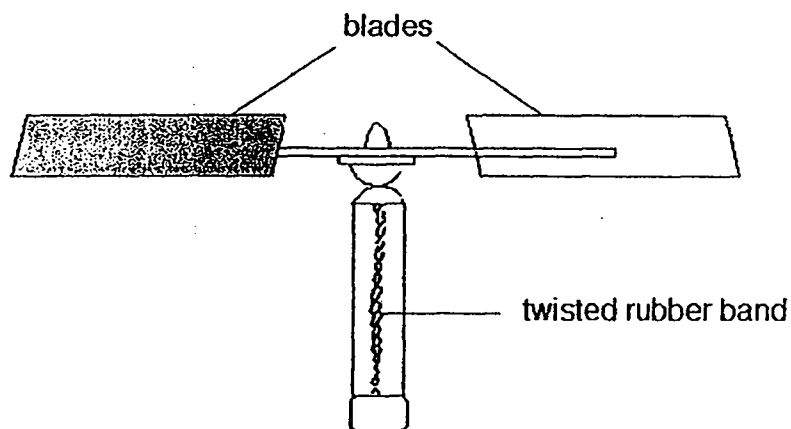


State the process that occurred to material R at the 15<sup>th</sup> minute. [1]

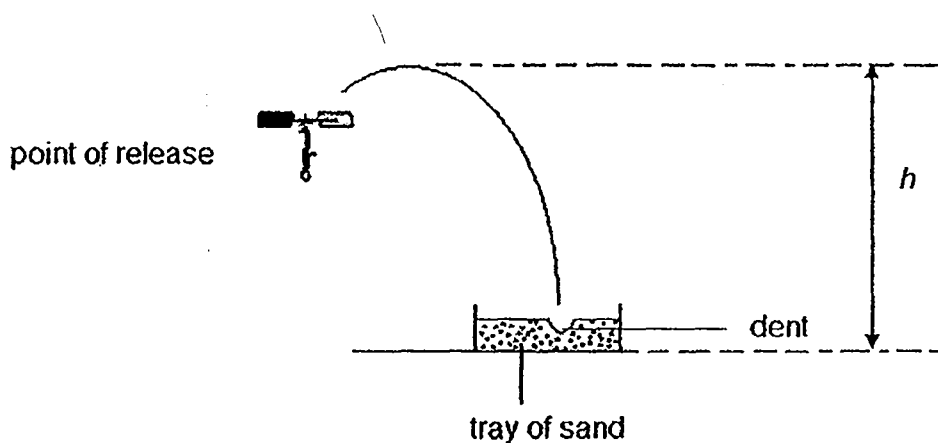
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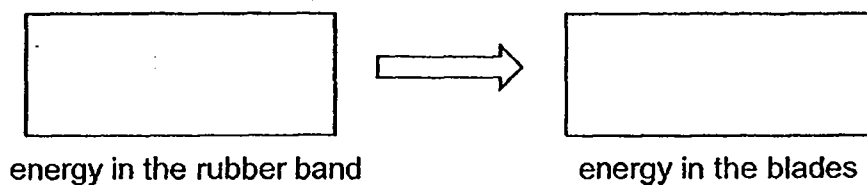
41. Alan made a toy as shown below.



The blades were joined to the bottom of the toy with a rubber band. When the blades were turned several times, the rubber band was twisted. Upon release, the blades turned and the toy flew upwards to height  $h$  before it dropped onto a tray of sand. The toy made a dent in the sand.



- (a) State the energy conversion that occurs in the toy. [1]



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- (b) In his second attempt to fly the toy, Alan twisted the rubber band fewer times. The toy created a smaller dent when it landed.  
Explain this observation. [2]

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- (c) Alan replaced the blades with similar-sized but heavier blades. The toy flew to the same height,  $h$  before it landed in the tray of sand.  
Would the depth of the dent remains the same, increase or decrease?  
Explain your answer in terms of energy changes. [2]

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~ END OF PAPER ~

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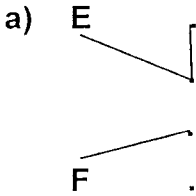
**SECTION A**

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

**SECTION B**

Q29)	<p>a)Amphibian</p> <p>b)X: Does no breathe underwater</p> <p>Y: Breathes underwater</p>
Q30)	<p>a)When animal X goes to the flower of plant Y, its body will brush past the anther, causing pollen grains to stick on its body. When X goes to the flower of another plant Y, in body will brush past the stigma, so pollen grains on X's body would be transfer to the stigma pollinate the flower.</p> <p>b)The bright blue colour attracts birds which help disperse the seeds of plant Y further away.</p> <p>c)The population of Plant Y would decrease as there are no X to pollinate the flower, so less fertilisation would occur and less ovules would develop into seeds. There would be less seeds for Z to consume, so the population of Z would decrease.</p>

Q31)	<p>a)Heart</p> <p>b)(i) X (ii) W (iii) Z (iv) Y</p> <p>c)Decrease faster. When exercising, the body needs more energy and digested food is needed for energy, so the amount of digested food in the blood vessels would decrease faster.</p>
Q32)	<p>a)The colour black absorbs heat faster than the colour white.</p> <p>b)Animal G would gain heat slower from the surroundings, so G would be able to keep cool.</p> <p>c)The sand-coloured outer covering would blend in with the surroundings, so it would be harder for predators of the young of animal G to spot and feed on the young.</p> <p>d)Less surface area of the body is exposed to the wind. Animal G loses less heat to surrounding.</p>
Q33)	<p>a)The flower will be fertilised and develop into fruits, the young can feed on the seeds of the fruit.</p> <p>b)There would be less competition for food which is the seeds, so young insect J would have more food to consume.</p> <p>c)The population will decrease. There are less ovaries for insect J to lay eggs in.</p>
Q34)	<p>a)Waterproof</p> <p>b)Flexibility. It needs to be flexible so that the life jackets can be folded.</p>
Q35)	<p>a)(i) Carbon dioxide (ii) Water (iii) Food (iv) Oxygen</p> <p>b)Y. As the number of tracing paper increased, the amount of light received by the plant decreases, the plant would photosynthesis slower and give out less oxygen, so the amount of gas collected decreases.</p>
Q36)	<p>a)The windscreen lost heat to the surroundings during the night, so temperature of the windscreen is lower than the surroundings in the morning. The water vapour in the surroundings air lost heat to the windscreen and condense into water droplets.</p> <p>b)The water vapour could not lose heat to the windscreen.</p> <p>c)The water droplets gained heat from the warm windscreen and</p>

	evaporated into water vapour.
Q37)	<p>a)The solid occupies space</p> <p>b)i) Water has mass, so the water would add mass to the solid, causing the solid to have a different mass.</p> <p>ii)The mass of the water that was collected was lighter than the mass of the solid.</p>
Q38)	<p>a) i) 150ml</p> <p>ii) Place both metal contacts at the 200ml mark on the beaker.</p> <p>a) </p>
Q39)	<p>a)The magnetic force of attraction acting on the metal clip was weaker, as the distance between the metal clip and the magnet increased, so the metal clip could not be attracted to the magnet and was pulled down by gravitational force. The magnetic force of attraction is unable to overcome the gravitational force acting on the metal clip.</p> <p>b)The magnet is the weakest at the centre.</p>
Q40)	<p>a)As the time taken to heat the materials increases, the temperature of the materials increases.</p> <p>b)S. The temperature increases the slowest. Heat from surrounding will be conducted to the ice the slowest as S is the poorest conductor of heat.</p> <p>c)Q is the best conductor of heat, so it would conduct heat from the paper to the surroundings the fastest, so the paper would gain heat the slowest and burn the slowest.</p> <p>d)Melting</p>
Q41)	<p>a)Elastic potential → Kinetic</p> <p>b)The rubber band contains less potential energy to be converted to less kinetic energy, resulting in less impact.</p> <p>c)Increase. When the toy with the heavier blades is flew to the same</p>



	<p>height, the toy would have more gravitational potential energy as the toy has a greater mass. More gravitational potential energy of the toy would be converted to kinetic energy of the toy.</p>
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