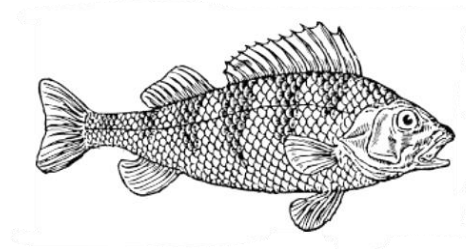
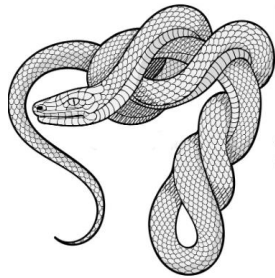


Section A (56 marks)

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 the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet (OAS) provided.

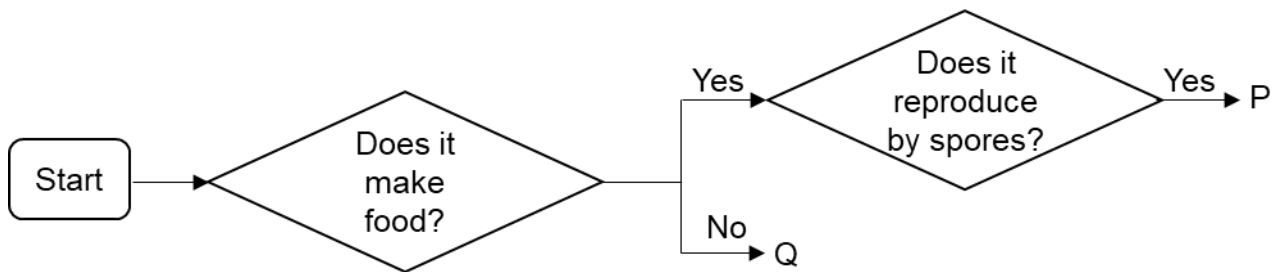
1. The diagrams show two animals.



How are the animals similar?

- (1) have fins
- (2) have scales
- (3) give birth to young
- (4) breathe through gills

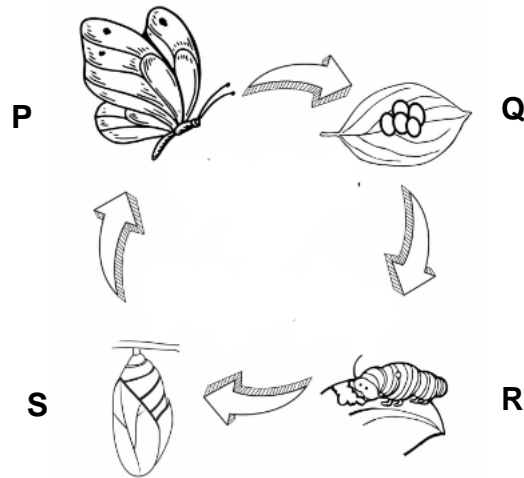
2. The chart below represents the characteristics of organisms P and Q.



Which of the following shows organisms P and Q?

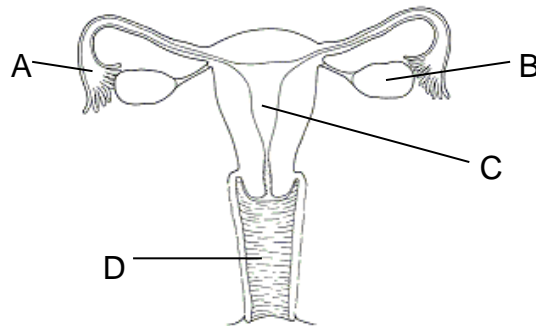
	Organism P	Organism Q
(1)	yeast	fern
(2)	orchid plant	mushroom
(3)	mushroom	orchid plant
(4)	fern	yeast

3. P, Q, R and S are stages in the life cycle of a butterfly.



Which of the following statements is correct?

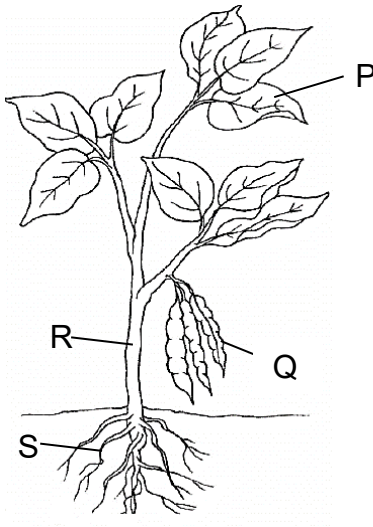
- (1) Stage Q is the pupa.
 - (2) Stage R needs air, food and water.
 - (3) Stage S is where fertilisation occurs.
 - (4) Stage P is the last stage of the life cycle.
4. The diagram below shows the human female reproductive system.



Where does fertilisation of the egg take place?

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

5. The diagram below shows the different parts of a plant.

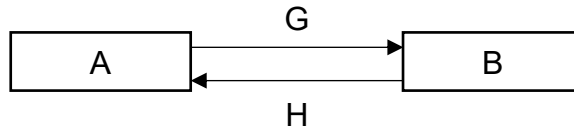


Which of the following shows the direction of movement of food in the plant?

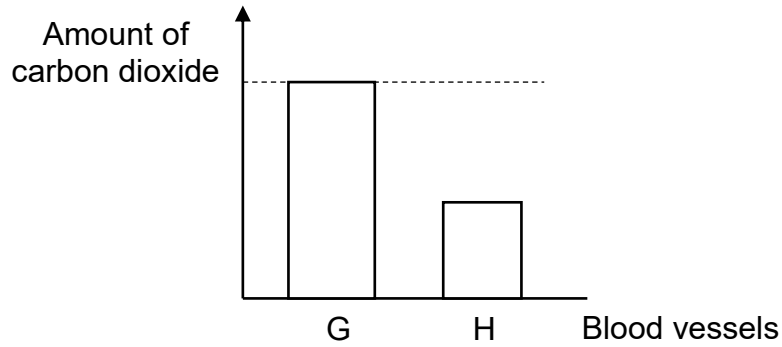
- A $P \rightarrow Q \rightarrow R \rightarrow S$
- B $P \rightarrow R \rightarrow Q$
- C $P \rightarrow R \rightarrow S$
- D $S \rightarrow R \rightarrow P$

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

6. The diagram below shows the flow of blood in blood vessels G and H between 2 organs, A and B.



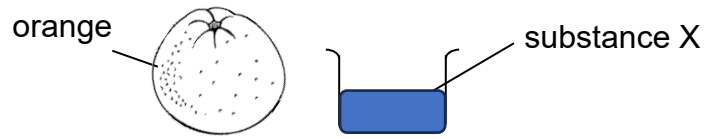
The amount of carbon dioxide in blood vessels G and H are shown below.



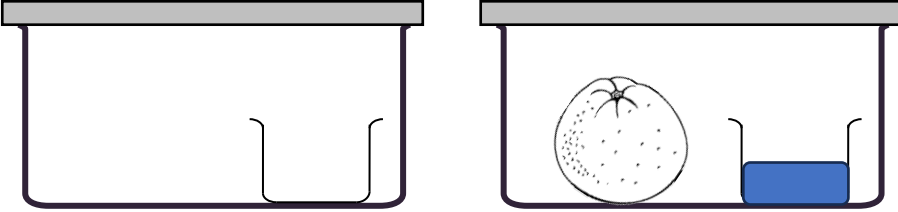
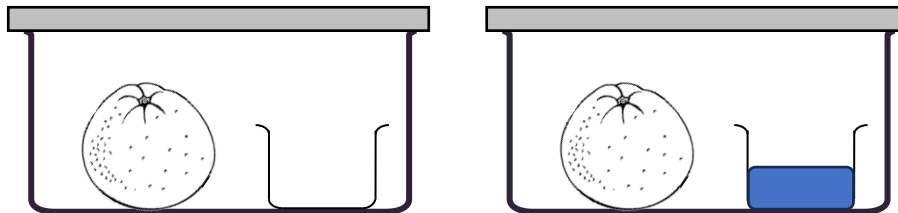
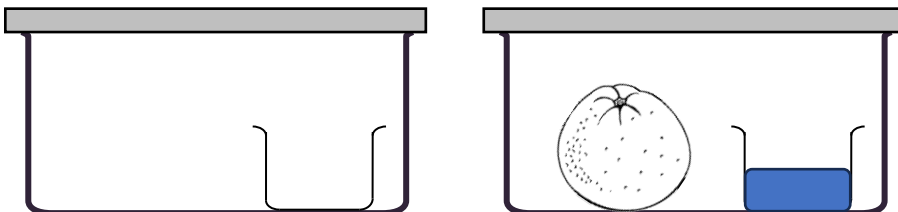
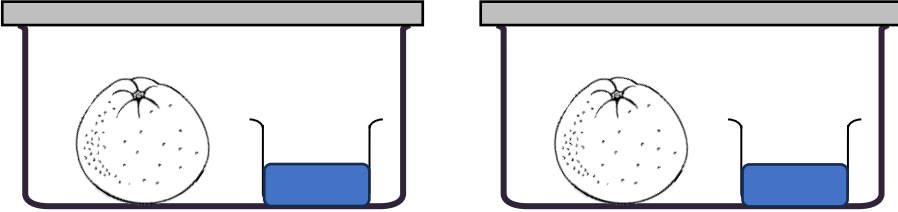
Which of the following represents organs X and Y?

	Organ A	Organ B
(1)	Heart	Lung
(2)	Lung	Heart
(3)	Heart	Leg muscle
(4)	Leg muscle	Lung

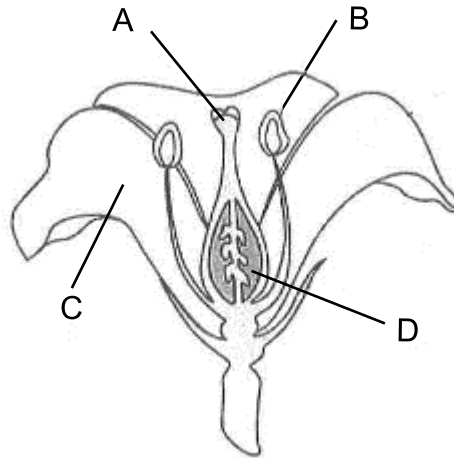
7. Shidah wants to investigate if substance X can slow down the growth of mould on an orange.



Which pair of set-ups should he use to ensure a fair test?

- (1) 
in a fridge in a fridge
- (2) 
in a warm room in a warm room
- (3) 
in a warm room in a warm room
- (4) 
in a fridge in a warm room

8. Brenda conducted an experiment using two flowers, X and Y, from the same plant. One of the flowers is shown below.



She removed one part of the flower from flower X and a different part from flower Y

After some time, she recorded the flower that turned into a fruit.

Flower	Presence of fruit
X	No
Y	Yes

Which of the following correctly shows the parts that have been removed?

	Flower X	Flower Y
(1)	A	D
(2)	B	A
(3)	C	A
(4)	D	B

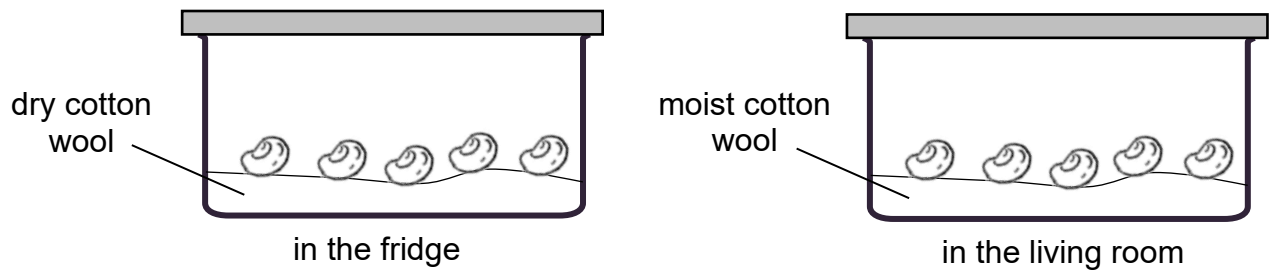
9. The following table shows three different cells, X, Y and Z. A tick (✓) represents the presence of the cell part.

Cell Part	Cell X	Cell Y	Cell Z
Nucleus	✓	✓	✓
Cytoplasm	✓	✓	✓
Cell wall	✓		✓
Cell membrane	✓	✓	✓
Chloroplast			✓

Which statement is correct?

- (1) Cell Y can be an onion cell.
 - (2) Cell X is able to photosynthesize.
 - (3) Cell X has no fixed shape but cell Z does.
 - (4) Cell Z is likely taken from the leaf of a plant.
10. What is/are the impact(s) of global warming?
- A air pollution
 - B rise in sea level
 - C loss of habitat for plants and animals
- (1) A only
 - (2) C only
 - (3) A and B
 - (4) B and C

11. Johan placed 5 seeds each into identical containers at different locations as shown below.



He placed the containers at the locations for one week without removing the lids.

Which of the following is correct about the amount of gases in each container after one week?

Seeds in the fridge		Seeds in the living room	
Oxygen	Carbon dioxide	Oxygen	Carbon dioxide
(1) Increase	Decrease	Increase	Decrease
(2) Decrease	Remains unchanged	Decrease	Increase
(3) Remains unchanged	Remains unchanged	Decrease	Increase
(4) Remains unchanged	Remains unchanged	Remains unchanged	Remains unchanged

12. Diagram 1 below shows parent plants, M and N, growing on a plot of land surrounding a large lake. The water in the lake moves when the wind blows. Diagram 2 below shows the seedlings of M and N growing on the same plot of land six months later.

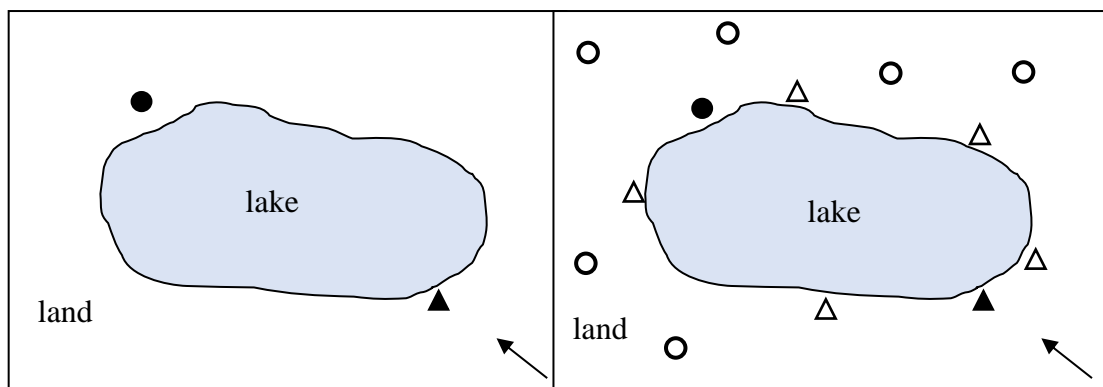


Diagram 1

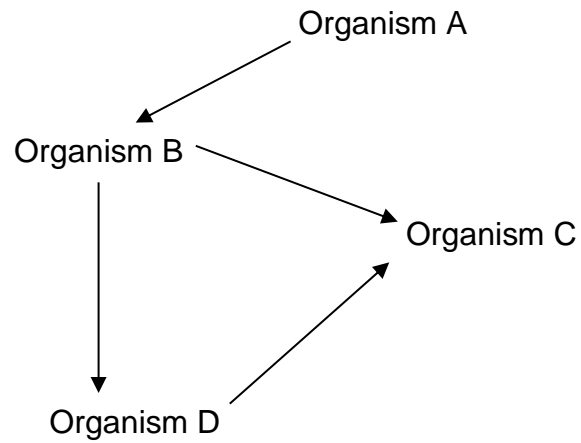
Diagram 2

Key:		
▲ parent plant M	△ young plant M	↙ wind direction
● parent plant N	○ young plant N	

Based on the above diagrams, what are the characteristics of the fruits of plants M and N?

Characteristics of fruits		
	Plant M	Plant N
(1)	waterproof, fibrous husk	fleshy and juicy
(2)	wing-like structure	dry and ripe fruit pod
(3)	sweet flesh with small seeds	hook-like structures
(4)	light with fine hairs	wing-like structure

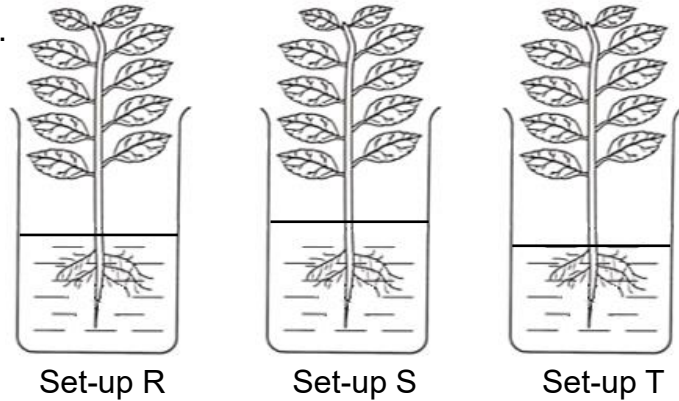
13. Study the food web below.



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

- (1) Organism C is the food producer.
- (2) Organism D is both a predator and a prey.
- (3) There are four consumers in the food web.
- (4) Organism B gets its energy from other animals.

14. Wisnu prepared 3 set-ups using similar plants with more stomata on the upper surfaces of the leaves. He coated a layer of oil on different leaf surfaces for 2 of the plants. He poured water to each set-up and left them at the same location for 6 hours.



His results are shown in the table below.

Set-up	Amount of water (ml)	
	at the start	at the end
R	480	400
S	500	400
T	450	420

Based on his results, which of the following correctly describes the plants in the set-up?

Layer of oil coated on the leaves of plant in set-up			
	R	S	T
(1)	Lower surfaces	None of the surfaces	Upper surfaces
(2)	Upper surfaces	None of the surfaces	Lower surfaces
(3)	None of the surfaces	Upper surfaces	Lower surfaces
(4)	Lower surfaces	Upper surfaces	None of the surfaces

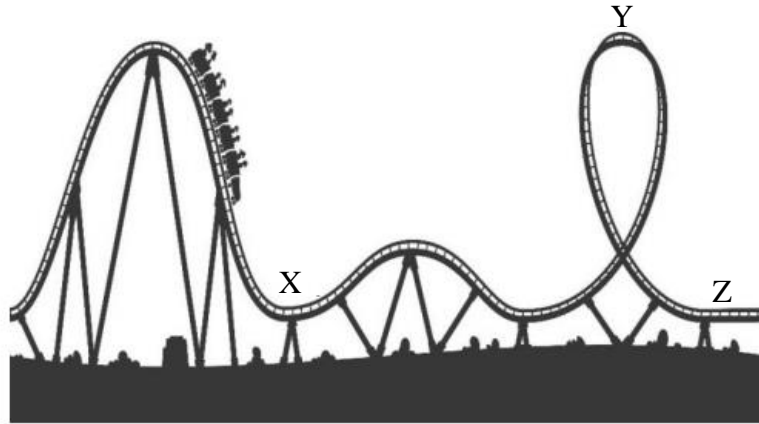
15. The table below shows the freezing and boiling points of four different substances, P, Q, R and S.

Substance	Freezing point (°C)	Boiling point (°C)
P	-5	20
Q	15	78
R	23	105
S	50	170

Which of the substances are liquids at 40°C?

- (1) Q and R only
- (2) P and S only
- (3) P, Q and R only
- (4) Q, R and S only

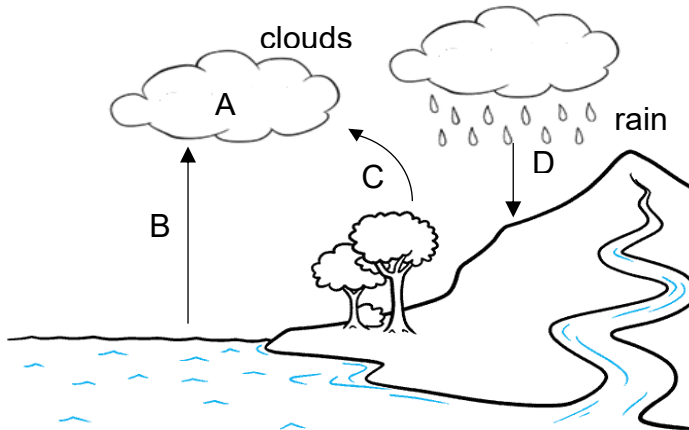
16. The picture below shows a group of children on a roller coaster ride.



Which one of the following correctly shows the changes in the kinetic energy and gravitational potential energy as the roller coaster travelled from X to Z?

	change in potential energy from X to Y	change in kinetic energy from Y to Z
(1)	increase	increase
(2)	increase	decrease
(3)	decrease	increase
(4)	decrease	decrease

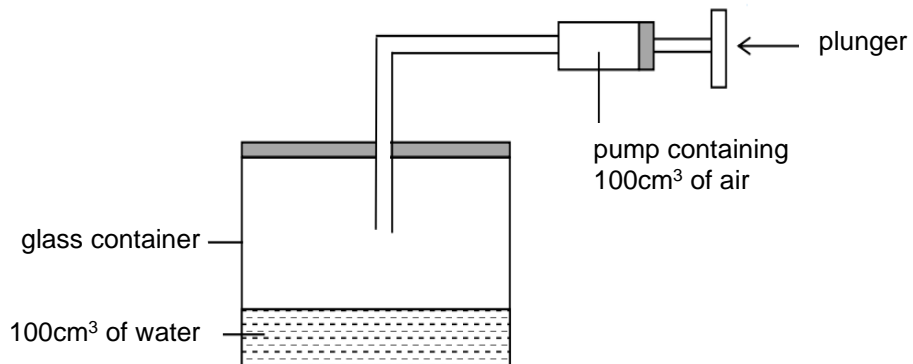
17. The diagram below shows the water cycle.



What parts of the water cycle is water in the gaseous state?

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

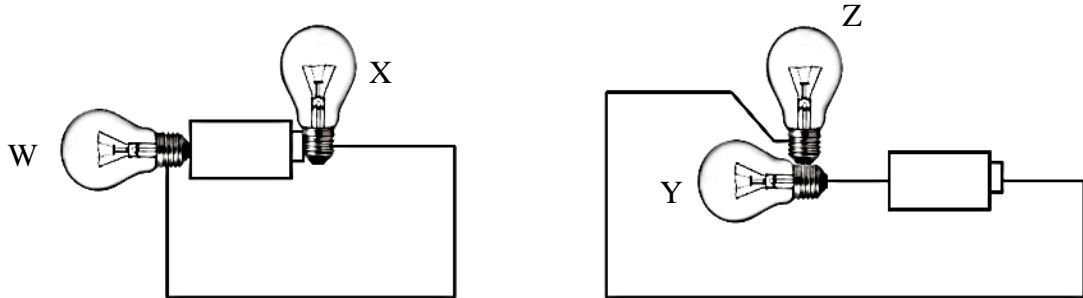
18. A sealed container with a capacity of 500cm^3 is filled with 100cm^3 of water.



What would be the final volume of air in the container if another 100cm^3 of air is pumped into it?

- (1) 100cm^3
- (2) 400cm^3
- (3) 500cm^3
- (4) 600cm^3

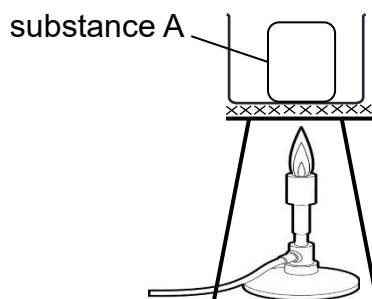
19. Susila set up two electrical circuits with four light bulbs, W, X, Y and Z. The batteries and bulbs were in good working condition.



Which of the following correctly shows what he observed?

	Bulb(s) that did not light up	Bulbs that lit up
(1)	W and X	Y and Z
(2)	W and Z	X and Y
(3)	X	W, Y and Z
(4)	None of them	W, X, Y and Z

20. Aliyah has four substances, A, B, C and D, in the solid state. She heated the solids over a flame for 15 minutes as shown below.



She recorded her results in the table below.

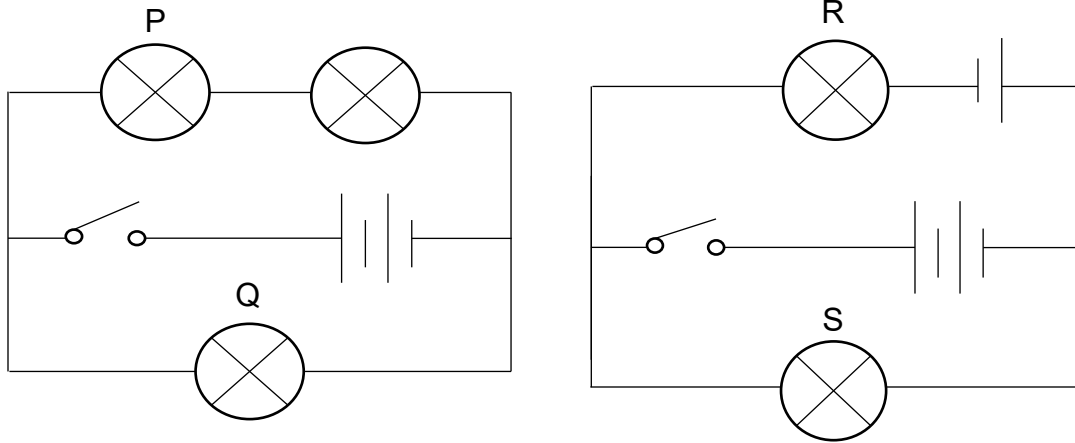
Substance	State of substance after		
	5 minutes	10 minutes	15 minutes
A	liquid	gas	gas
B	solid	solid	solid
C	solid	liquid	liquid
D	solid	liquid	gas

Which one of the following conclusions is correct?

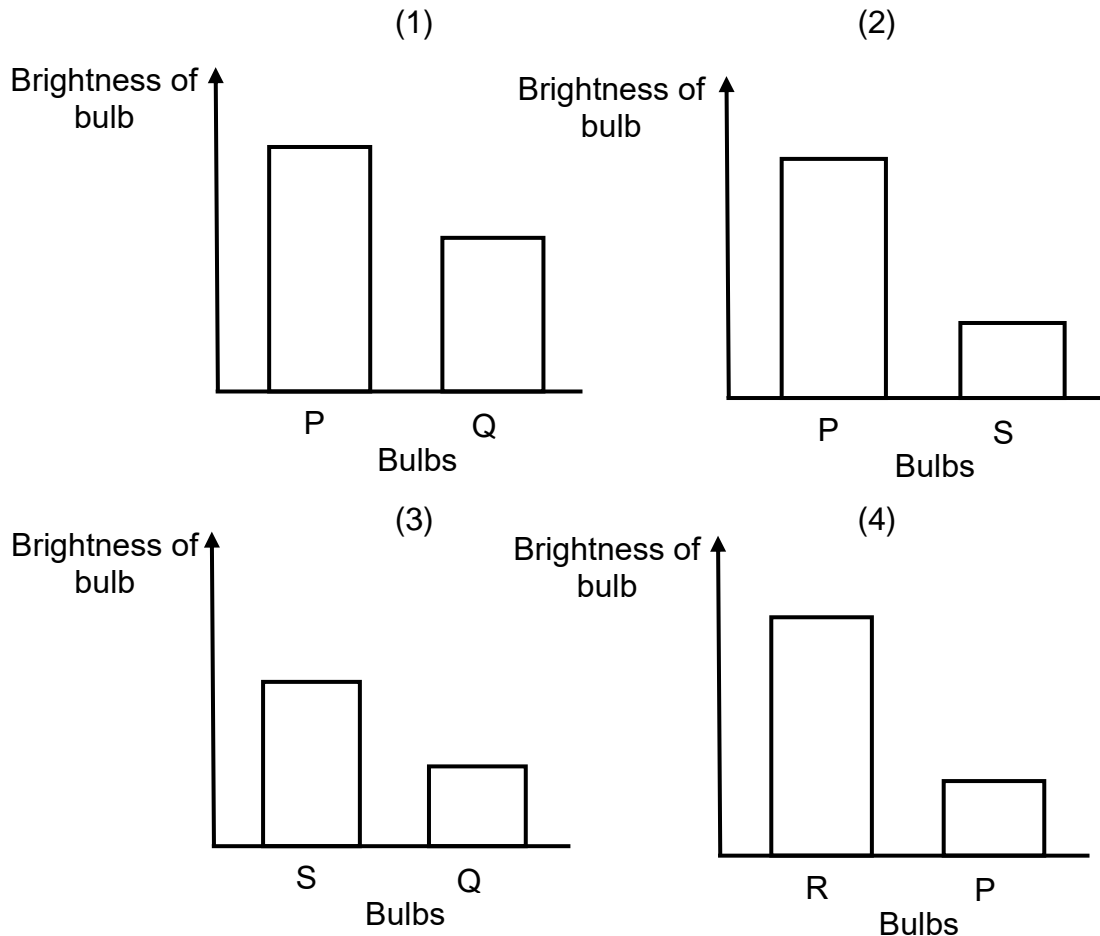
- (1) Substance B has the lowest melting point.
- (2) Substance A has the highest boiling point.
- (3) Substance D has a higher boiling point than substance A.
- (4) Substance C will become a gas if it is continuously heated for another 5 minutes.

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21. Syakir set up two electrical circuits as shown below. All the electrical components are identical and in working order.

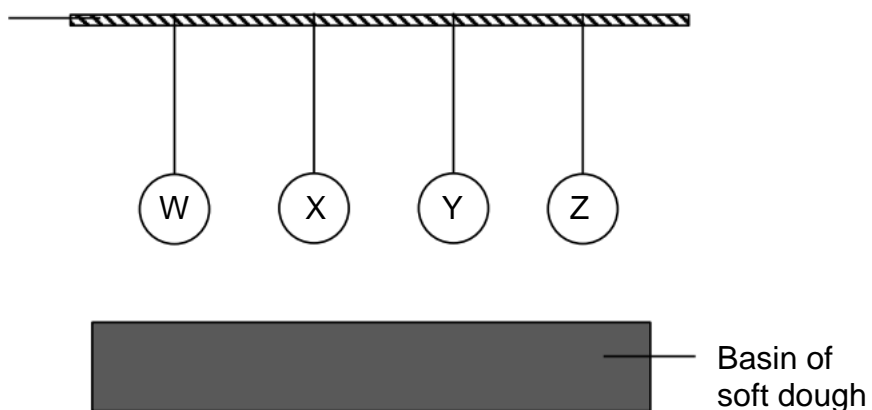


He closed the switches and observed the brightness of the bulbs. Which one of the following graphs shows his observation correctly?



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22. Lukman hung four balls, W, X, Y and Z, which are made of different materials, from a holder. All four balls were released from the holder at the same time and the depth made by each ball in a basin of soft dough was measured.



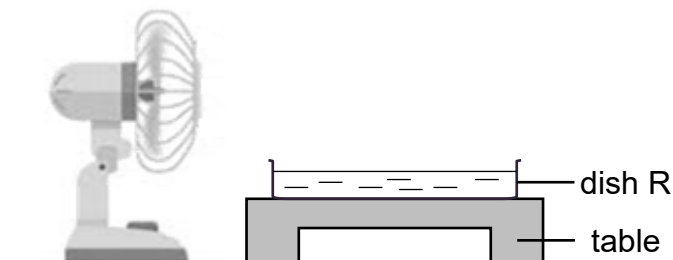
He recorded his results in the table below.

Ball	W	X	Y	Z
Depth (cm)	6	9	4	2

Which of the following shows the correct arrangement of the balls from the lightest to the heaviest?

- (1) W, X, Z, Y
- (2) X, W, Y, Z
- (3) Z, W, Y, X
- (4) Z, Y, W, X

23. Misha wanted to find out how the speed of the wind affects the rate of evaporation of water. She poured water into dish R and set the fan to speed 1 as shown below.



She repeated the experiment with two other dishes and recorded the amount of water in each dish after 3 hours.

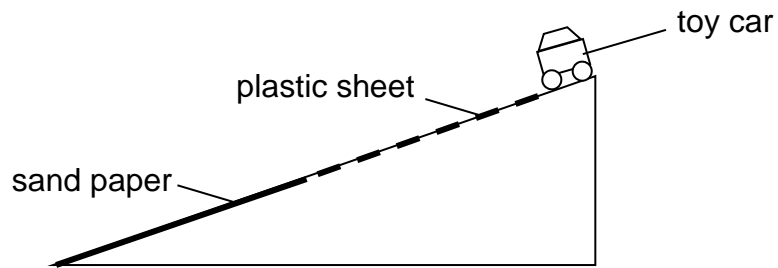
What variables should she keep the same to ensure a fair experiment?

- A Speed of the fan
- B Exposed surface area of the dishes
- C Amount of water left in each dish
- D Height of the table where each dish is placed

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

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24. A toy car was placed at the top of the ramp. The ramp was laid with sand paper and plastic sheet as shown below.



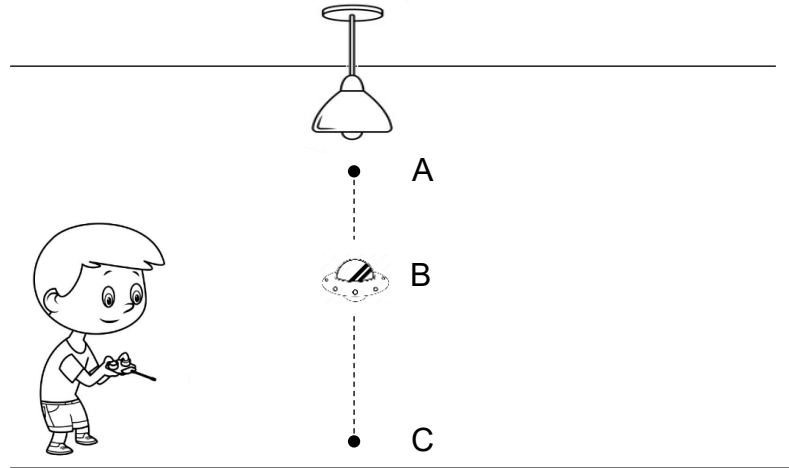
Which of the following describes the changes in the gravitational force and frictional force acting on the toy car as it rolls down the ramp?

	Gravitational Force	Frictional Force
(1)	Decrease	Increase
(2)	Decrease	Decrease
(3)	Remains the same	Increase
(4)	Remains the same	Decrease

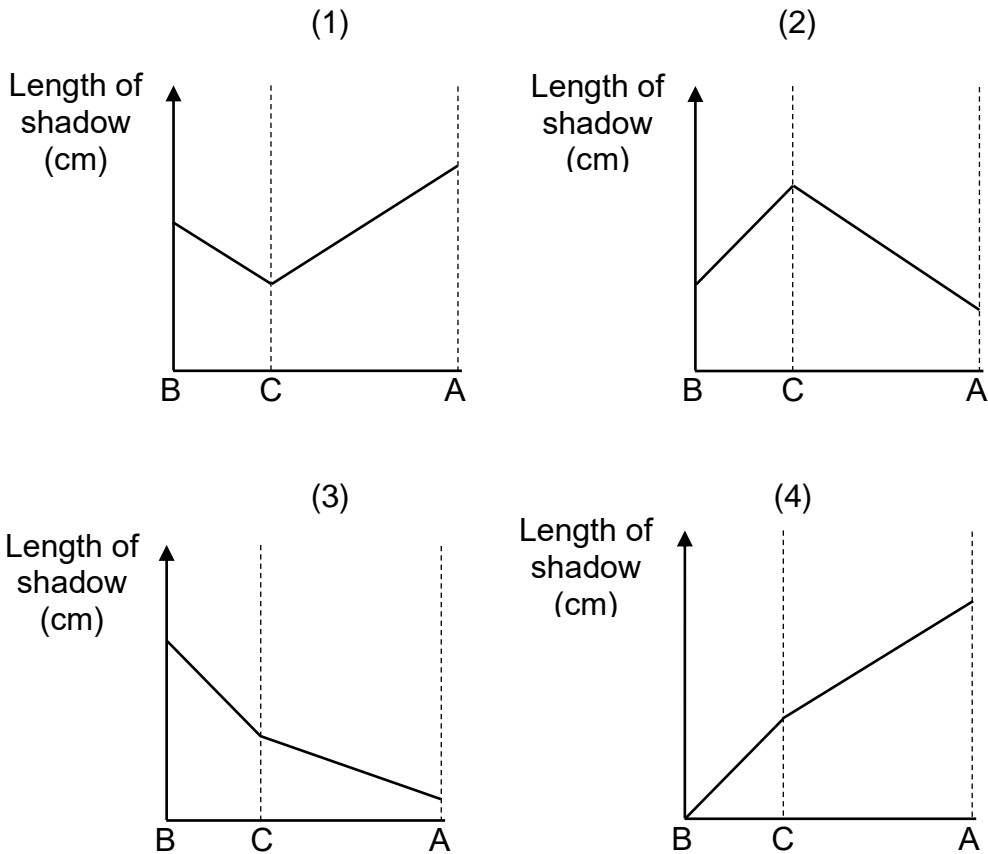
25. Which one of the following statements about energy is false?

- (1) Coal, oil, natural gas and wood are examples of fuels.
- (2) A compressed spring possesses elastic potential energy.
- (3) Sun, wind, running water and fuels are sources of energy.
- (4) Solar panels convert heat energy from the Sun into electrical energy.

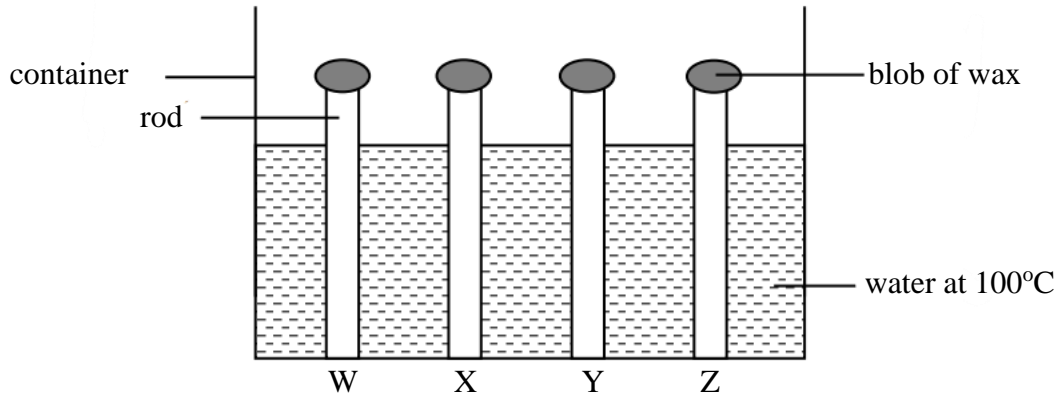
26. Mohammed used a remote control to move his toy spaceship. He observed the shadow formed on the floor.



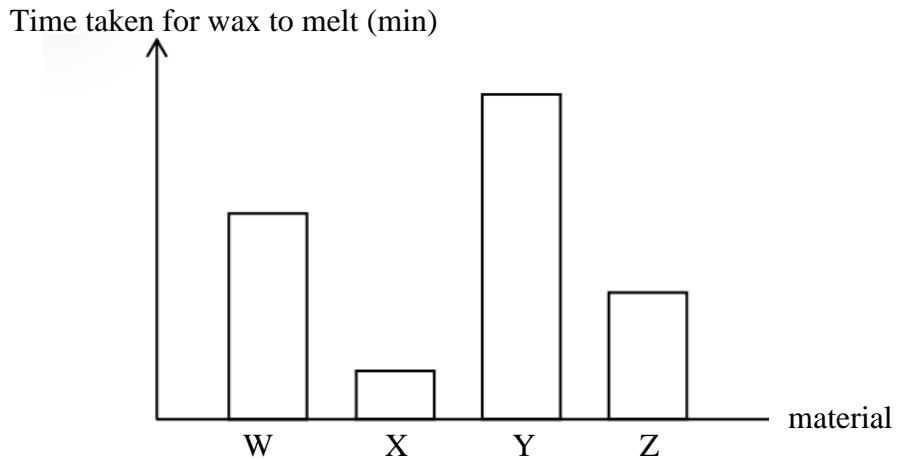
Which of the following graphs shows the length of the shadow cast on the floor when the toy moved from B to C and then to A?



27. Paul set up an experiment with 4 rods of the same size but made from different materials, W, X, Y and Z.



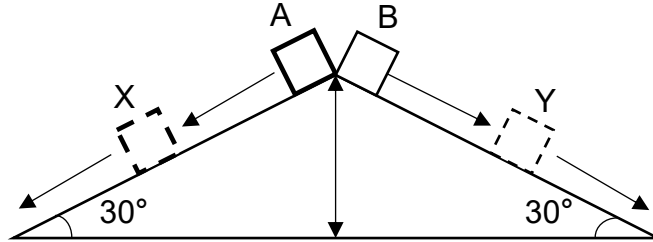
He placed the same amount of wax on the tip of each rod and poured boiling water into the container as shown above. He measured and recorded the time taken for the wax on rods to melt. His results are plotted in the graph shown below.



Which rod is the most suitable for making boxes to store ice cream so that the ice cream will take the longest time to melt?

- (1) W
- (2) X
- (3) Y
- (4) Z

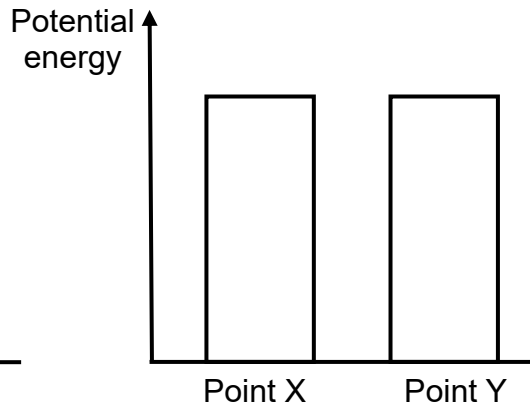
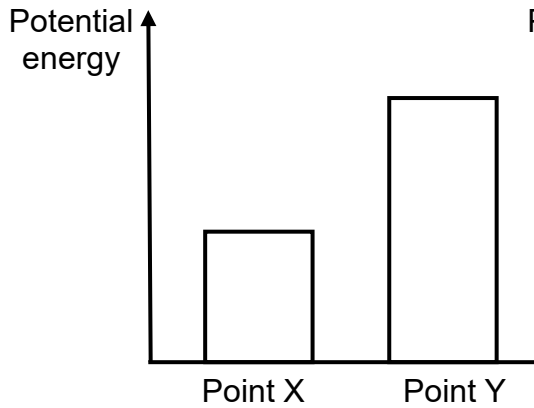
28. Two blocks, A and B, were released from the same height. Both blocks were of the same mass but only Block A was wrapped up with sandpaper. Points X and Y are exactly halfway down the slopes.



Which of the following shows the correct amount of energy of the blocks at points X and Y?

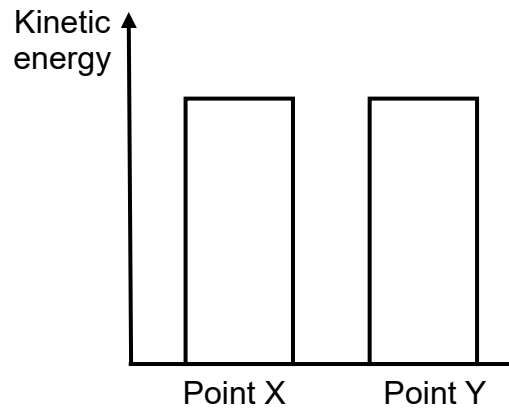
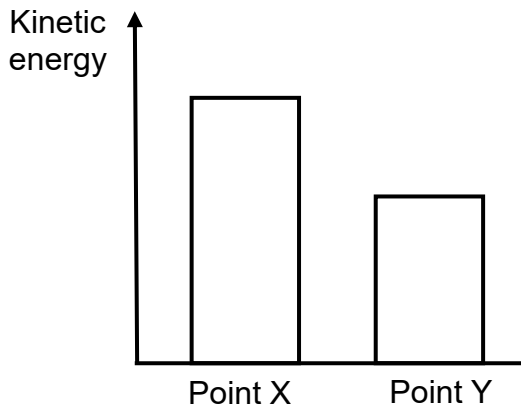
(1)

(2)



(3)

(4)

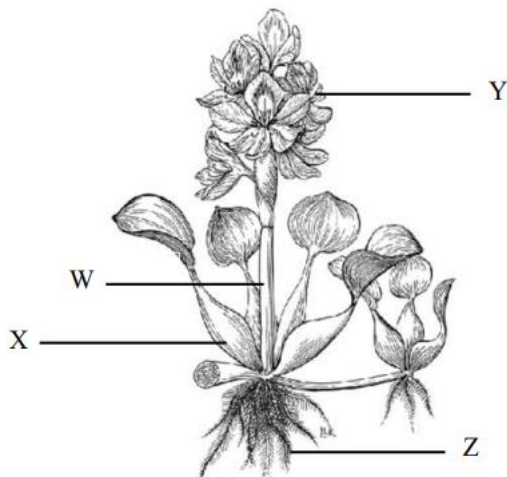


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For questions 29 to 40, write your answers in this booklet.

The number of marks available is shown in brackets [] at the end of each question or part question. (44 marks)

29. The diagram below shows a water hyacinth.



(a) State whether the adaptation of the water hyacinth to float on water is structural or behavioral. [1]

(b) Which part of the plant, W, X, Y or Z, allows it to float on water? [1]

(c) Explain how the part in (b) allows the plant to float on water. [1]

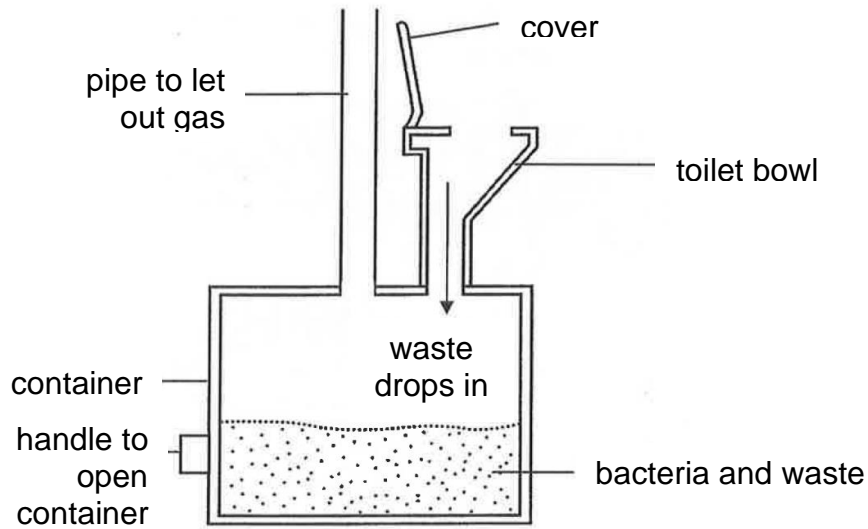
30. Kamar found a loaf of bread in the kitchen which had been left there for two weeks. When he opened the packet, he noticed many large patches of mould on the outer surface of the loaf of bread but there were only a few small patches of mould on the inner flat surfaces as shown below.



(a) Which group of living things does mould belong to? [1]

(b) Explain why there was more mould growing on the outer surfaces of the bread than the inner surfaces. [2]

31. The diagram below shows a toilet that does not use water for flushing. Human waste from the toilet bowl drops into a container with bacteria.



After some time, bacteria turn the waste into a soft brown substance.

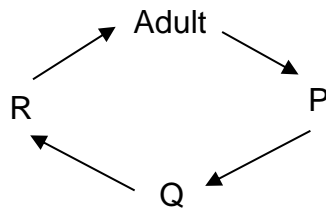
(a) Name this process. [1]

(b) Name the gas produced. [1]

(c) Suggest one use for the soft brown substance. [1]

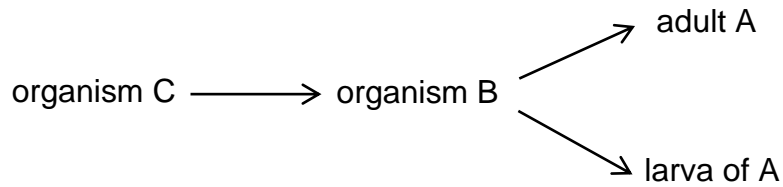
(d) Suggest a way to speed up the process. [1]

32. The diagram below shows the life cycle of an insect A.



(a) State one characteristic of the insect at stage R of its life cycle. [1]

A farmer observed insect A and other organisms on his farm and drew up the food relationship below.



(b) The farmer noticed that insect A would only lay eggs on organism B. Suggest a reason for such a behaviour of insect A. [1]

The farmer studied the effects of surrounding temperature on the life cycle of insect
A. He presented his results below.

Temperature (°C)	Number of days needed from egg to adult stage
16	50
20	36
24	29
28	22
32	15

- (c) Based on the above results, how would an increase in the surrounding temperature affect the population of organism C? Explain. [2]

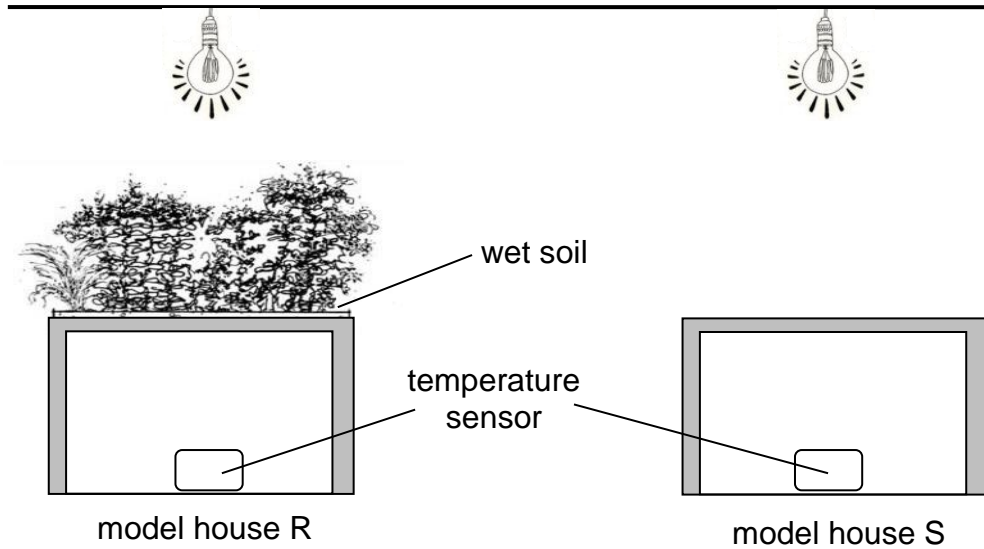
33. Ahmad took part in a race. He noticed that his heart rate and breathing rate increased during the race.

(a) Explain why his breathing rate and heart rate increase during the race. [2]

During the race, Ahmad poured some water over his face and body to cool himself.

(b) How does pouring water over his face and body help Ahmad to cool down? [2]

34. Kelly wanted to find out how the temperature of air inside the buildings will be affected by the rooftop gardens. She constructed two similar model houses R and S and placed some plants on the roof of model house R as shown below. The model houses were placed under similar lit lamps at the same time.



She observed that the temperature of air in model house S is higher than that of model house R after 5 hours.

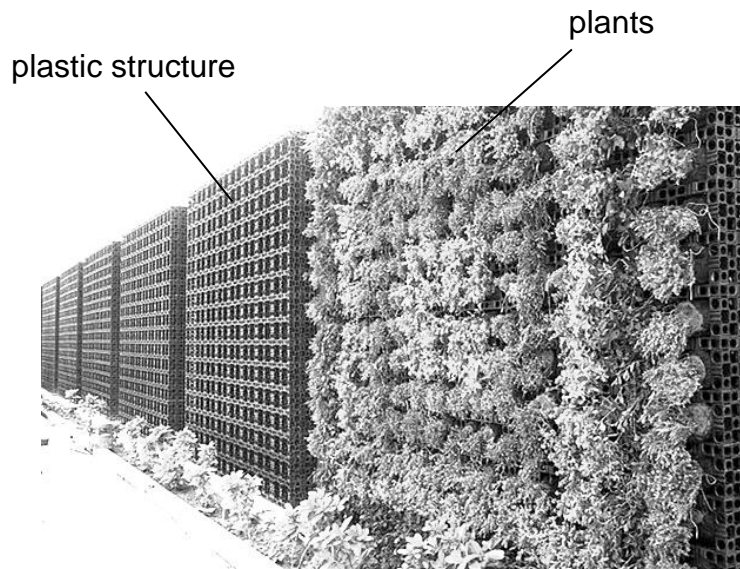
- (a) Suggest two reasons why growing plants on the rooftop helped to lower the temperature of air in model house R. [2]

Reason 1: _____

Reason 2: _____

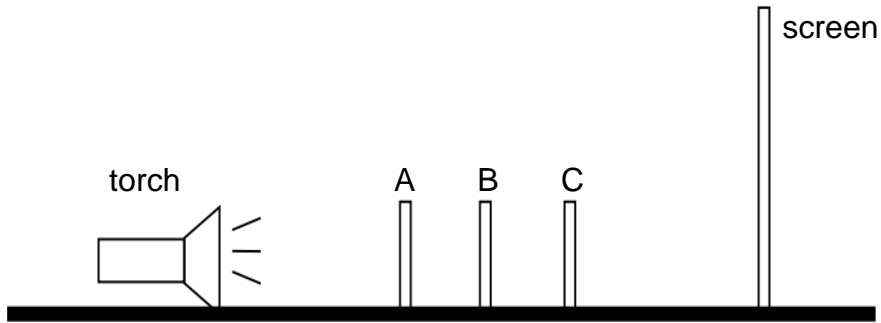
- (b) It was suggested by experts that having more rooftop gardens can help to reduce global warming. Why do you think this is so? [1]

Some buildings set up vertical gardens on their walls. Plants are grown on plastic structures as shown below.

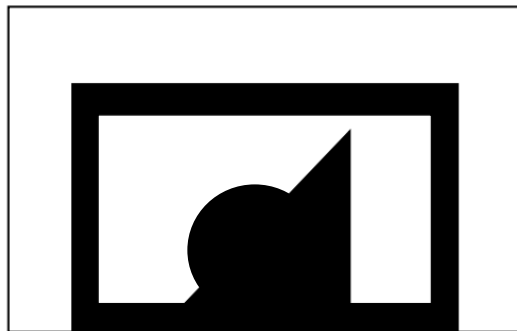


- (c) Suggest a reason why plastic structures instead of metal structures are used for growing the plants for vertical gardens. [1]

35. Rifqi set up an experiment as shown below to study shadows.

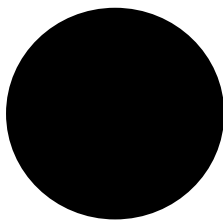


The diagram below shows the shadow that was formed on the screen.



Objects A, B and C are of the same height.

(a) Based on the shadow formed above, identify the objects A, B and C by writing the correct letters in the boxes provided. [1m]



(i)



(ii)



(iii)

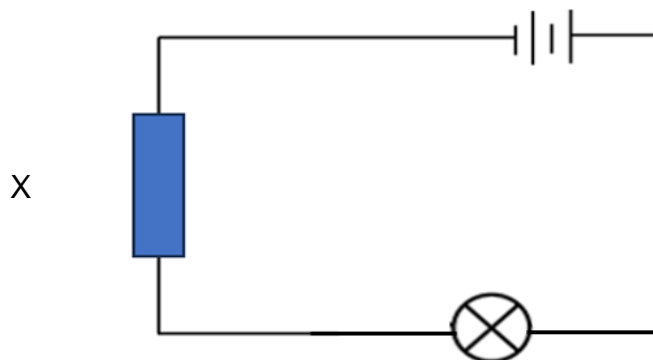
(b) Which property of light allows the shadow to be formed? [1m]

Rifqi wanted the shadow on the screen to appear bigger.

(c) State what he can do to increase the size of the shadow.

[1m]

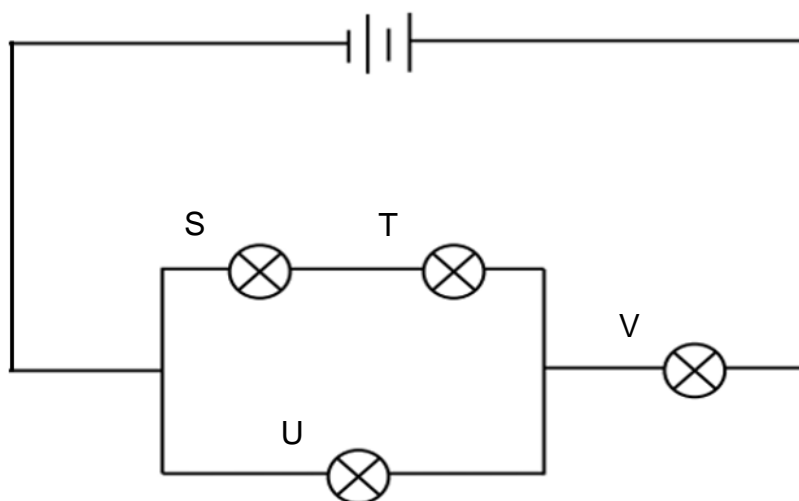
36. Pauline placed object X in a circuit as shown below.



She observed that the bulb did not light up.

(a) State the property of object X that explains this observation. [1m]

She then set up a circuit shown below.

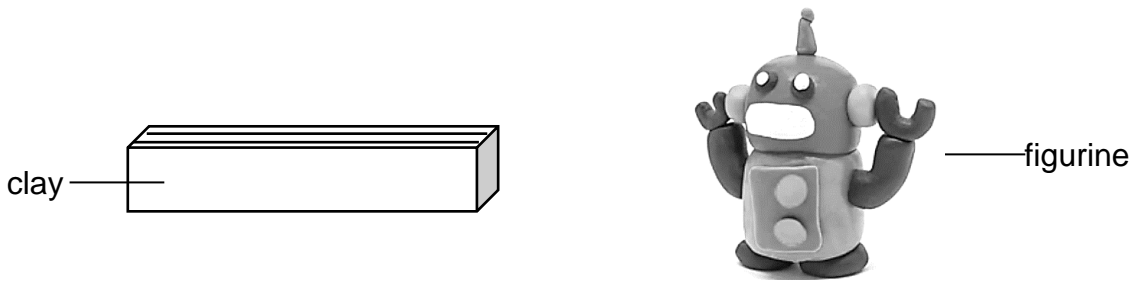


(b) Complete the table below to indicate the number of bulbs that would remain lit if one of the bulbs in the circuit is replaced by object X. [2m]

Bulb that is replaced by X	Number of bulb(s) that remain lit
S	
T	
U	
V	

(c) Pauline's teacher said that it is better to connect the bulbs in the classroom in a parallel arrangement rather than a series circuit. Explain why. [1m]

37. Shirin used a lump of 120g of clay and moulded it into a figurine as shown below.



- (a) Shirin told Aishah that the volume of clay and the volume of the figurine are the same. Describe how Shirin could prove that both the volumes are the same without changing the figurine. [2m]

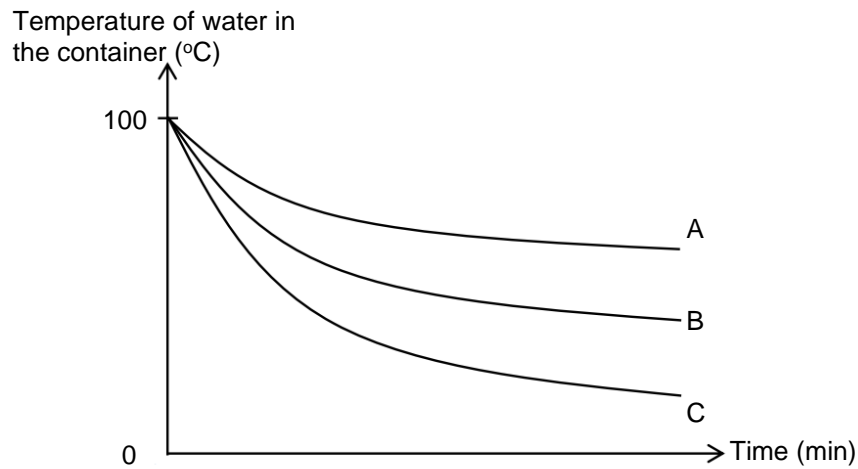
- (b) What is the mass of the figurine? [1m]

The diagram below shows a spring balance.



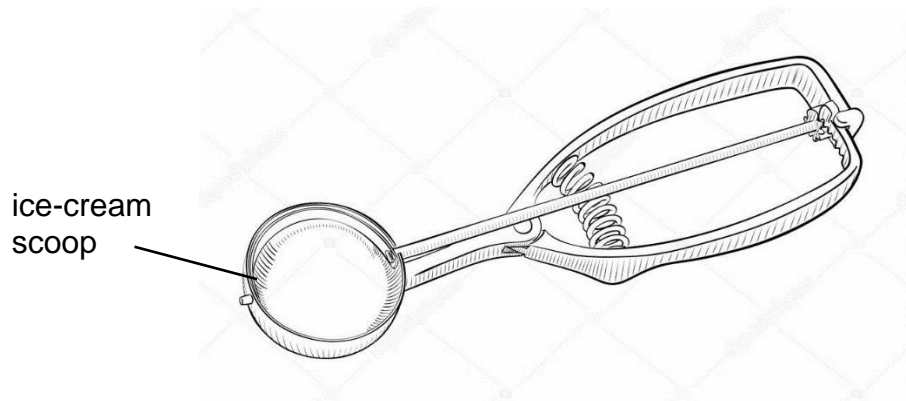
- (c) Give a reason why Shirin cannot use a spring balance to measure the mass of figurine. [1m]

38. Three identical containers, made from different materials, A, B and C, were filled with boiling water and left on a table in the classroom as shown below. The graph below shows the temperature of water in the three containers over a period of time.



- (a) State another variable to be kept constant for the experiment to be fair. [1m]

An ice-cream scoop is used to shape the frozen ice cream into a round ball before it is being placed onto a cup.



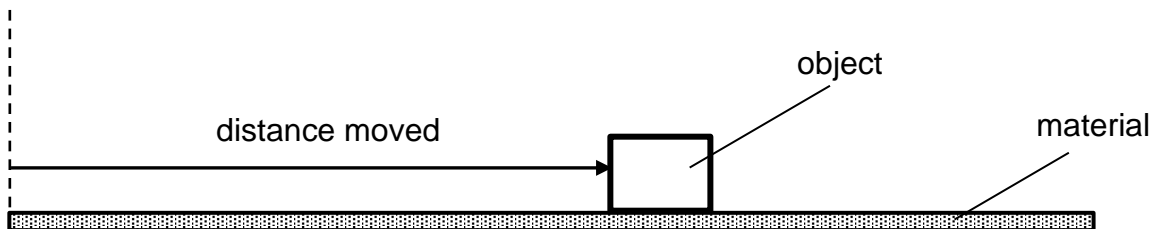
- (b) Which one of the above materials is most suitable to be made into an ice-cream scoop to shape frozen ice cream easily? Explain your answer. [2m]

39. Kumar noticed that the school cleaner always put the signboard shown below outside the toilet after she had washed it.



- (a) Explain why someone could slip and fall when the floor is wet. [1]

Kumar wanted to find a suitable material to cover the floor and prevent falls. He conducted an experiment to find the distance moved by an object over different materials, X, Y and Z. For each material, he gave the object a push with the same amount of force.



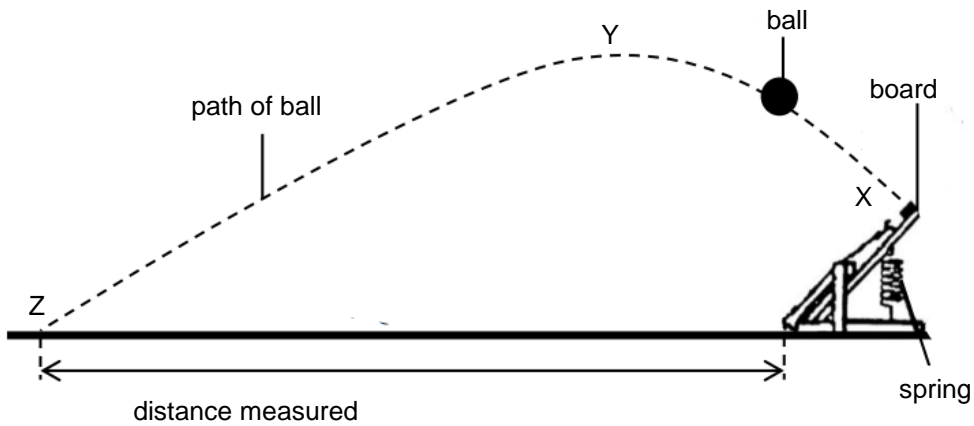
He recorded the distance moved in the table below.

Material	Distance moved by the object (cm)
X	5
Y	10
Z	13

- (b) Which material, X, Y or Z should Kumar use? Give a reason for your answer. [1]

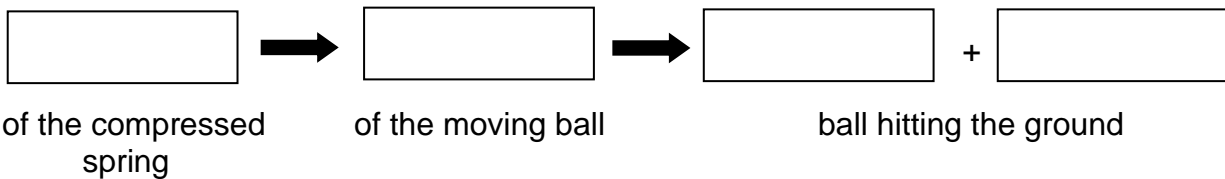
- (c) Explain why it is important for Kumar to use the same amount of force to push the object. [1]

40. Andy conducted an experiment using the set-up below.



He pushed down the board that was attached to a spring and released the ball. He then measured the distance moved by the ball.

(a) Show the energy conversion involved in the experiment below. [2m]



(b) Andy repeated the experiment by pushing the board down further. He then released the ball and measured the distance moved by the ball.

(i) How would the distance moved by the ball change when the board was pushed down further before the ball was released? [1m]

(ii) Give a reason for your answer in part (b)(i). [1m]
