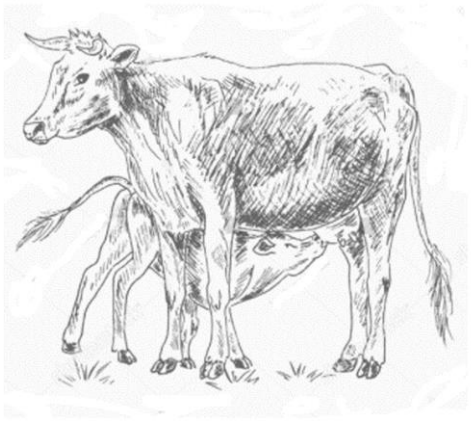
Part 1 (56 marks)

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice and write the answer (1, 2, 3 or 4) in the brackets provided.

1. Study the picture of the animal below.



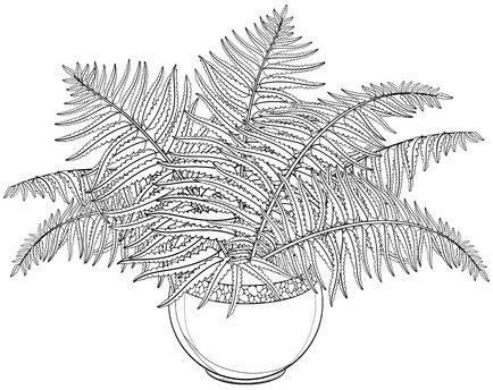
Which of the following best describes the animal pictured above?

	Animal	Can it fly?	Hairy body covering?	Feeds young with milk?
(1)	A	No	Yes	Yes
(2)	B	Yes	No	Yes
(3)	C	No	Yes	No
(4)	D	Yes	Yes	No

( )

2. Study the two pictures below.

jewelweed



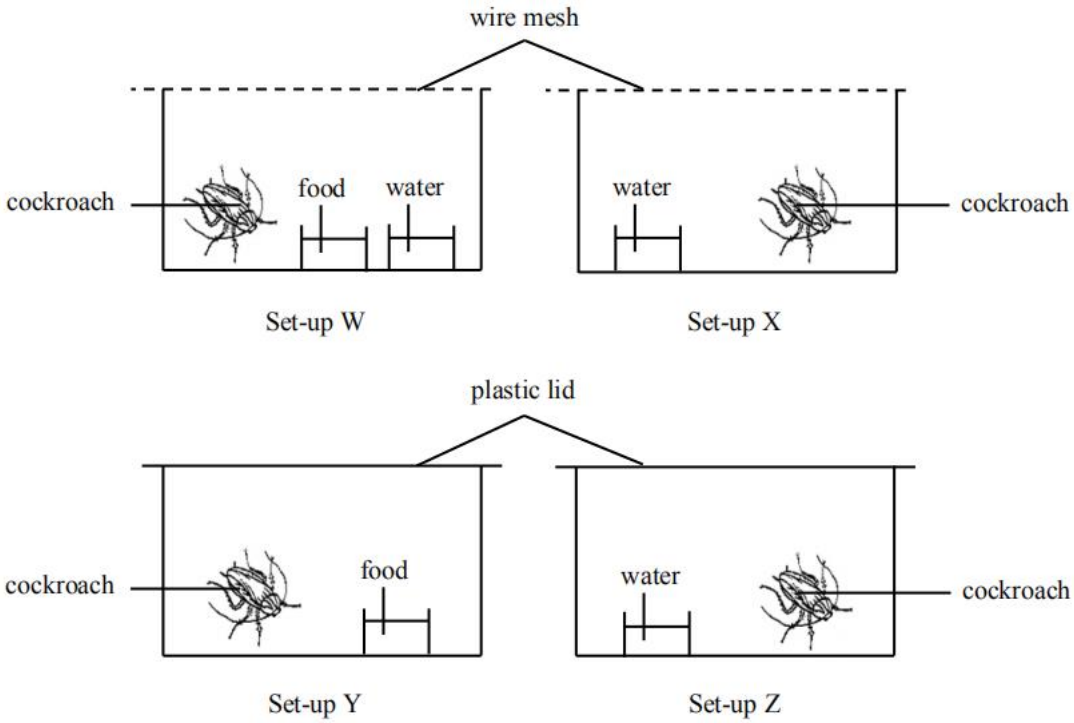
bird's nest fern

In what ways are they different from each other?

A: The jewelweed is a plant but a fern is not.
B: The jewelweed bears flowers but the fern does not.
C: The jewelweed can make its own food but the fern cannot.
D: The jewelweed reproduces by seeds but the fern reproduces by spores.

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

3. Study the set-ups below.



Which two set-ups should you use if you want to find out if cockroaches need food to survive?

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

4. Clothes are mostly made of cotton because the material is _____.

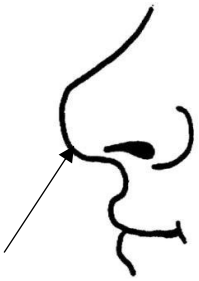
A: waterproof
B: light and soft
C: able to float in water
D: able to absorb water easily

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

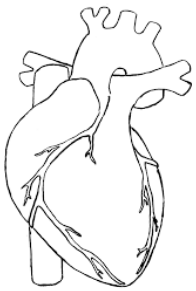
5. Which one of the following statements best explains why the tree below will fall easily when there are strong winds or heavy rains?

(1) The trunk is too thick.
(2) The roots are too weak.
(3) The leaves are too heavy.
(4) The branches are too thin. ( )

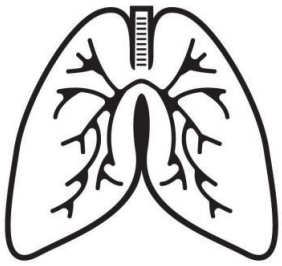
6. The pictures below show four different parts of the body.



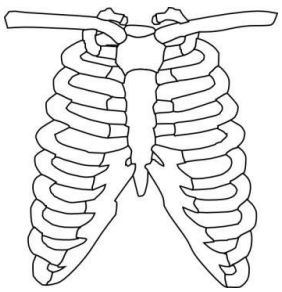
nose



heart



lungs



ribcage

A human body's respiratory system consists of the _____.

(1) nose only
(2) nose and lungs only
(3) nose, heart and lungs only
(4) nose, heart, lungs and ribcage ( )

7. After a marathon, Haris felt dizzy and had difficulty breathing. Which of his body systems were affected?

A: muscular system
B: circulatory system
C: respiratory system

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

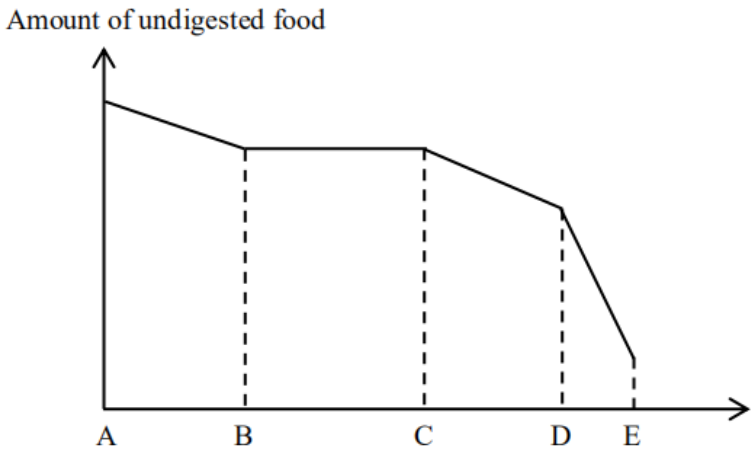
8. Four pupils were discussing about the human digestive system.

Elias : The gullet does not produce digestive juices.
Harun : Digestion is completed in the small intestines.
Farhan : Chewing food is not considered part of the digestive process.
Johan : All the organs in the digestive system produces digestive juices.

Which of the students made correct statements?

(1) Elias and Harun only
(2) Elias and Farhan only
(3) Farhan and Harun only
(4) Farhan and Johan only ( )

9. The graph below shows the amount of undigested food as it travels through the human digestive system.



Which part of the graph represents the stomach?

(1) AB
(2) BC
(3) CD
(4) DE ( )

10. Indraj carried out an experiment on three objects with a magnet. He wanted to find out how the objects would respond when both the poles of the magnet are placed near them. The table below shows the results of his experiment.

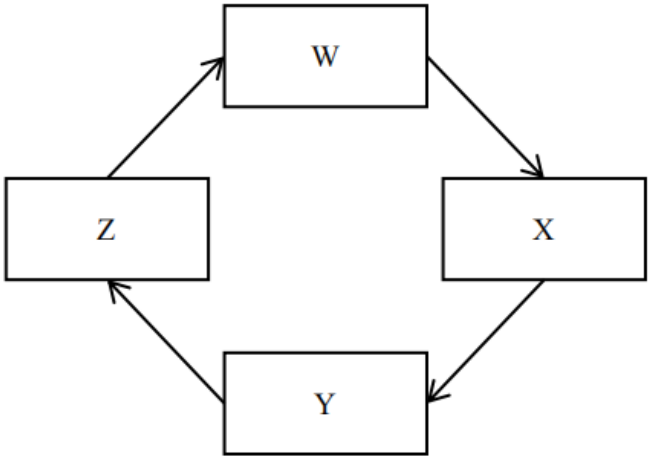
Object	Moved towards the magnet	Pushed away by the magnet
J	**Yes**	**No**
K	**No**	**No**
L	**Yes**	**Yes**

What could objects J, K and L be?

	Object J	Object K	Object L
(1)	magnet	aluminium ball	iron rod
(2)	steel pin	copper rod	magnet
(3)	iron clip	kitchen towel	steel rod
(4)	aluminium foil	copper coin	magnet

( )

11. Each letter, W, X, Y and Z, in the diagram below represents a stage in the life cycle of a mosquito.



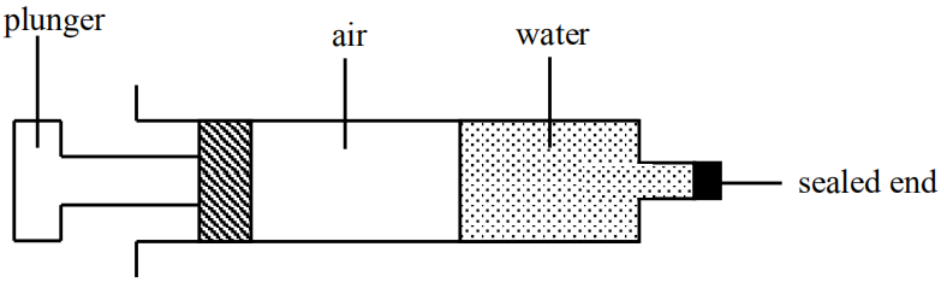
Life cycle of a mosquito

If Stage Y represents the adult stage of the mosquito, which of the following statements are correct?

A: It is underwater at Stage Z.
B: It develops wings at Stage Y.
C: It moults several times at Stage W.
D: It does not feed or grow at Stage Z.

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

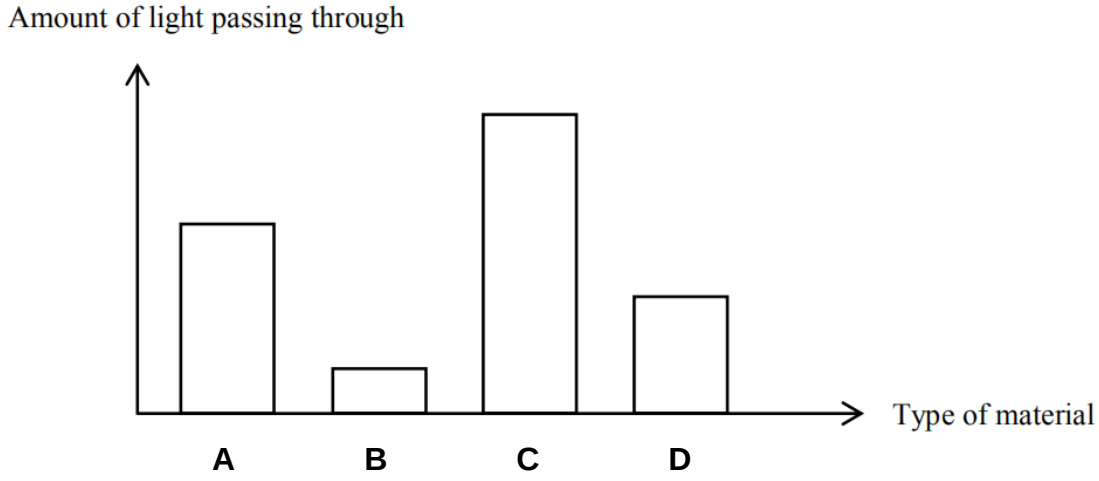
12. Study the picture below.



Which of the following correctly describes what will happen to the volume of air and water in the syringe after the plunger is pushed?

(1) The volume of air and the volume of water will decrease.
(2) The volume of air and the volume of water will remain the same.
(3) The volume of air will decrease while the volume of water will remain the same.
(4) The volume of air will remain the same while the volume of water will decrease. ( )

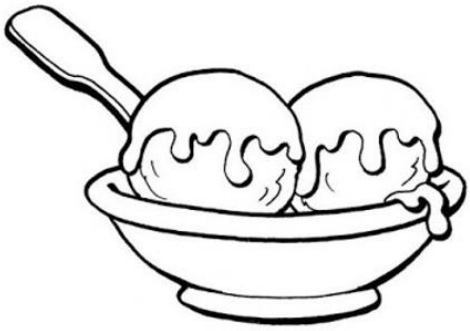
13. Below are the results of an experiment that was conducted to find out how much light could pass through four different materials.



Based on the results, which of the following statements is true?

(1) Material C allows all light to pass through.
(2) Material A will form a bigger shadow than Material D.
(3) Material B will form a darker shadow than Material C.
(4) Material D will form a lighter shadow than Material A. ( )

14. Nyla scooped some ice cream into a metal cup.



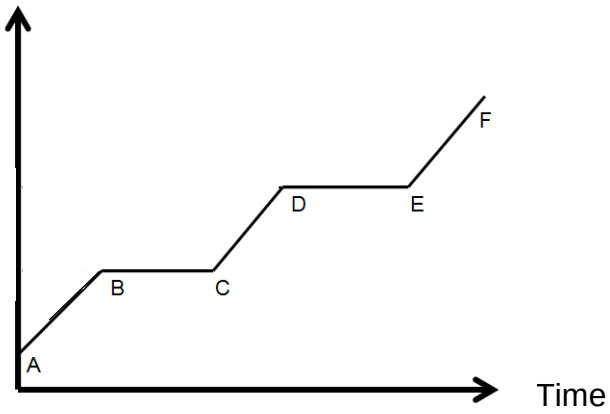
She noticed that the ice cream melted quickly. The side of the bowl also felt cold when she touched it with her hands.

Which of the following best explains Nyla's observations?

	The melting ice cream	The cold bowl
(1)	lost heat to the bowl	gained heat from the ice cream
(2)	gained heat from the bowl	lost heat to Nyla's hands
(3)	lost heat to its surroundings	lost heat to the ice cream
(4)	gained heat from its surroundings	gained heat from Nyla's hands

( )

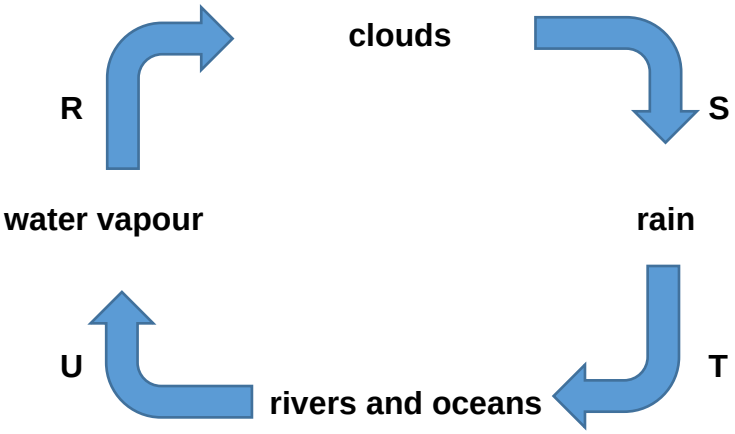
15. Substance Q was heated. The graph below shows its temperature at different points of the heating process.



Which parts of the graph show heat gained by Substance Q during the process?

(1) BC and DE only
(2) AB, CD and EF only
(3) BC, CD and DE only
(4) AB, BC, CD, DE and EF ( )

16. The diagram below represents the water cycle.



Which of the letters (R, S, T and U) represent(s) a change of state in water?

(1) U only
(2) R and U only
(3) R, S and U only
(4) R, S, T and U ( )

17. Kingsley observed a cell from Organism K under a microscope. He observed that the cell did not contain any chloroplasts. He proceeded to make three notes:

A: This organism cannot be a plant.
B: This cell cannot perform photosynthesis.
C: This cell can possess a cell wall even without chloroplasts.

Which of Kingsley's statements is/are correct?

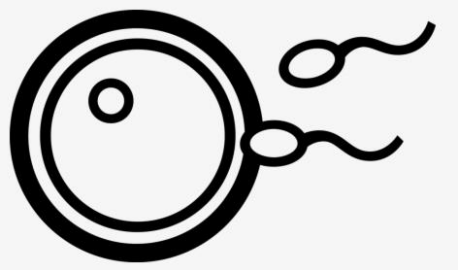
(1) B only
(2) A and B only
(3) B and C only
(4) A, B and C ( )

18. Which of the following statements is/are true about all single-celled organisms?

A: They can make their own food.
B: They can produce their own energy.
C: They do not depend on other organisms to survive.

(1) B only
(2) A and C only
(3) A, B and C
(4) None of the statements are correct. ( )

19. The illustration below shows a process which takes place within human reproduction.



Four students made the following statements.

Leroy : This takes place in the female womb.
Maniam: This is the fusion of an egg cell and a sperm cell.
Noah : Genetic information from only the male will be passed on.
Osman : It is possible for two sperm cells to fertilise two separate egg cells at the same time.

Which of the students made correct statements?

(1) Leroy and Maniam only
(2) Maniam and Osman only
(3) Maniam, Noah and Osman only
(4) Leroy, Maniam and Osman only ( )

20. Tolha wants to find out the effect of overcrowding on the growth of Plant V. He used three similar pots to conduct his experiment.

Which of the following must Tolha keep to ensure a fair test?

A: Amount of water given
B: Place of experiment
C: Number of seeds of Plant V
D: Duration of experiment
E: Type of soil

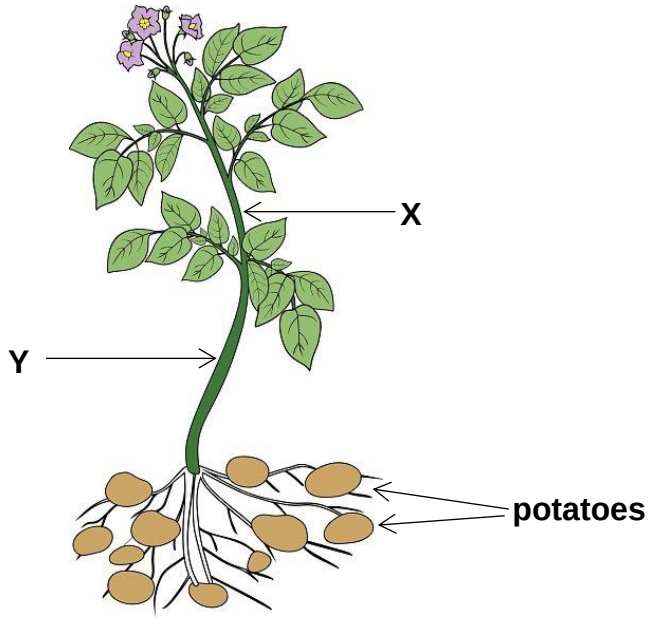
(1) A, B and E only
(2) A, D and E only
(3) A, B, D and E only
(4) A, B, C, D and E ( )

21. Which one of the following statements about the process of breathing is correct?

(1) Only oxygen is breathed into the human body.
(2) Only carbon dioxide and nitrogen are breathed out of the human body.
(3) Only oxygen and carbon dioxide are breathed into and out of the human body.
(4) Nitrogen, water vapour and other rare gases are breathed into and out of the human body.

( )

22. The picture below shows a potato plant. A cut was made at X to remove both food-carrying and water-carrying tubes. Another cut at Y was made to remove only the food-carrying tubes.

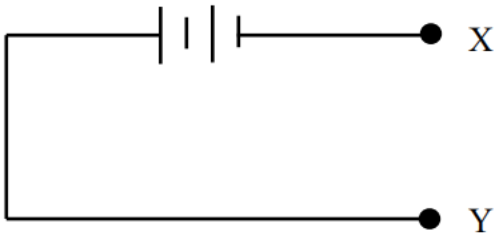


Which of the following is/are likely to happen after four days?

A: All the leaves between X and Y will wither.
B: The potatoes will become smaller.
C: All the leaves above X will wither.
D: The potatoes will grow larger.

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

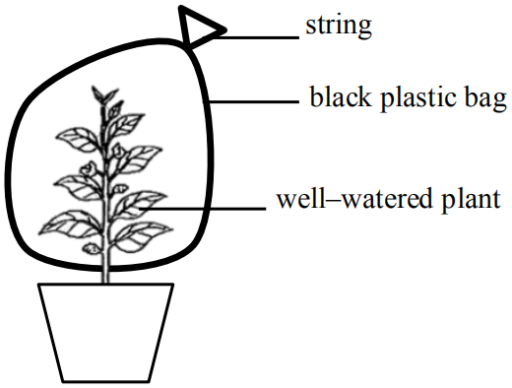
23. Leon created a circuit tester as shown below because he wanted to test the electrical conductivity of some materials. He connected points X and Y to the material that he was testing.



However, his Science teacher told him that his circuit tester will not work. What did Leon do wrongly?

(1) He did not add a bulb.
(2) He did not add a switch.
(3) The wire he used was too short.
(4) The batteries he had used were faulty. ( )

24. Amelia placed a well-watered plant into a black plastic bag. She then tied the black plastic bag with a string and placed it in an open field at noon. She left it there for three hours.



Which one of the following will show the changes in the amount of oxygen and carbon dioxide in the black plastic bag after three hours?

	Amount of carbon dioxide	Amount of oxygen
(1)	increase	increase
(2)	decrease	increase
(3)	increase	decrease
(4)	decrease	decrease

( )

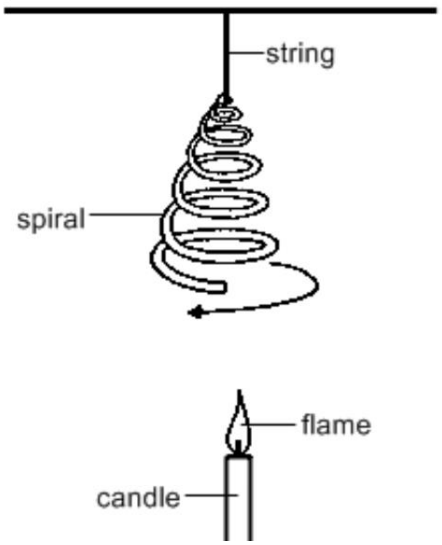
25. Mr Ariff asked four of his students to write down one situation each where there is an increase of potential energy being possessed by an object.

Hadi: burning a candle
Isa: pushing a ball up a slope
Jackson: compressing a spring
Kamal: releasing a stretched rubber band

Which student/s came up with the correct situation?

(1) Jackson only
(2) Isa and Jackson only
(3) Hadi, Isa and Kamal only
(4) Hadi, Jackson and Kamal only ( )

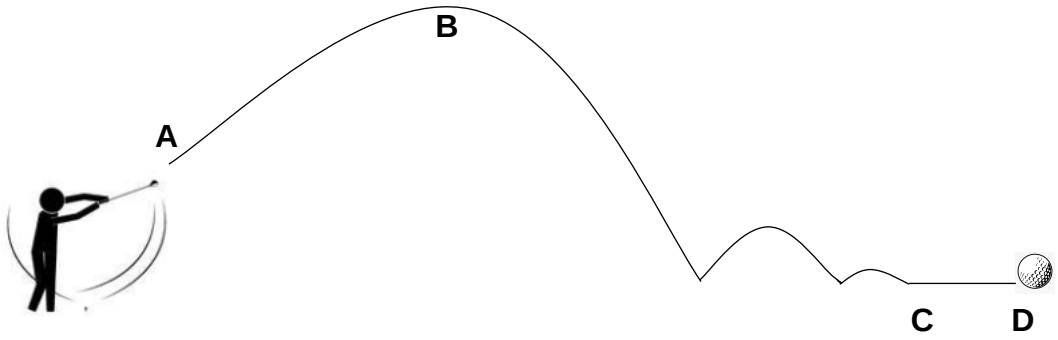
26. In the set-up below, the paper spiral started to spin when the candle was lit.



What caused the paper spiral to spin?

(1) chemical potential energy of the candle
(2) kinetic energy of the hot air
(3) heat energy of the flame
(4) light energy of the flame ( )

27. The illustration bellow shows the flight of a golf ball after it has been struck.

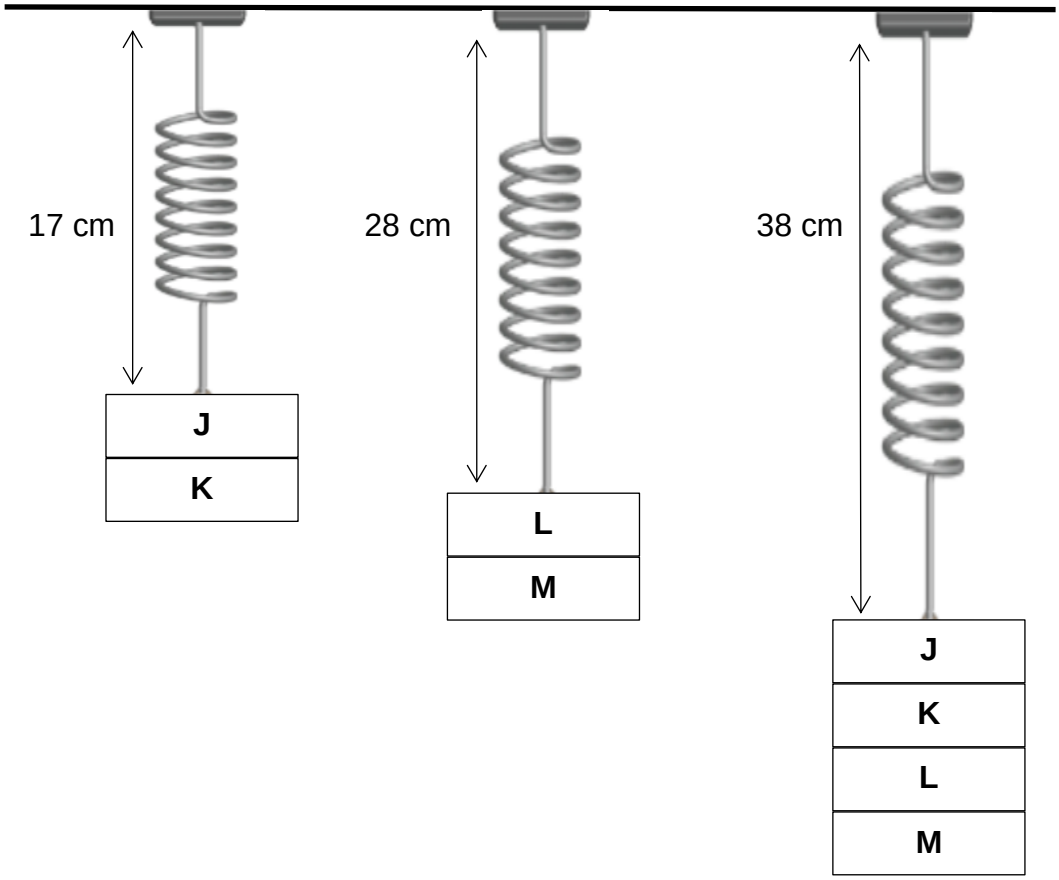


Which of the following statements are **not** correct?

W : From point A to point B, there is an increase in gravitational force.
X : At point B, the ball starts to drop as no more force is acting on it.
Y : Heat is produced as the ball rolls along from point C to point D.
Z : At point D, there are no forces acting on the ball.

(1) W and X only
(2) X and Y only
(3) W, X and Z only
(4) W, X, Y and Z ( )

28. The set-up below shows 3 similar springs with different number of similar weights hanging from them.

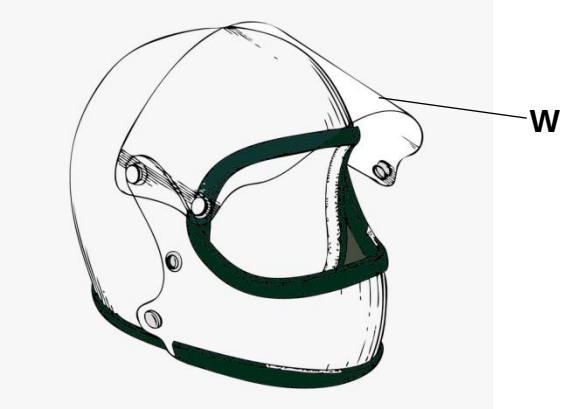


What is the original length of the spring?

(1) 7 cm
(2) 10 cm
(3) 11 cm
(4) 17 cm ( )

Section B (44 marks)
Write your answers in the spaces provided.

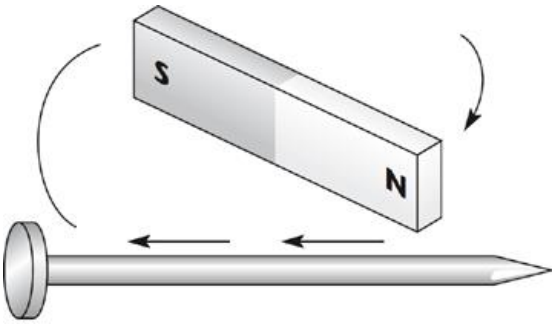
29. The picture below shows a motorcycle helmet.



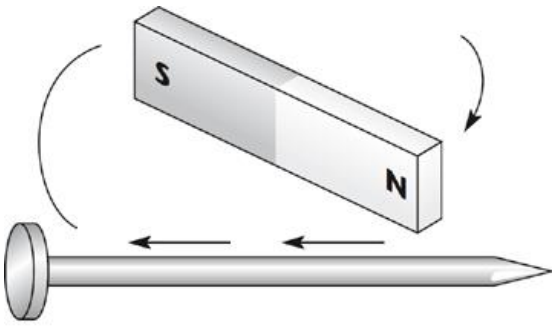
What three properties are important for Part W to possess? Explain your answer. [3]

Property	Reason
	_____ _____
	_____ _____
	_____ _____

30. Bashir wanted to conduct an experiment to test the magnetic strength of two nails. He stroked two nails of different materials with two similar magnets the same number of times.



iron nail



copper nail

Bashir made predictions on the number of steel clips each nail would attract and recorded it in the table below.

Magnet	**No. of steel clips attracted**
iron nail	6
copper nail	3

(a) Do you think Bashir's predictions are correct? Explain your answer. [1]

_____

_____

(b) Explain one other way to turn a nail into a temporary magnet. [1]

_____

_____

31. The table below shows the descriptions, and results, of four different set-ups.

Conditions	Set-up			
	A	B	C	D
colour of light	yellow	green	yellow	green
amount of light (lux)	300	300	500	500
no. of leaves on plant	25	35	25	25
amount of water given to plant (ml)	200	150	150	150
amount of water absorbed by plant (ml)	40	30	50	40

(a) What is the aim of the experiment? [1]

_____

_____

(b) Which two set-ups should you use to ensure a fair test? [1]

_____

32. Mariam filled three identical beakers, E, F and G with the same amount of water but at different temperatures. She then left them on a table in a room at 28°C. After some time, she observed that water droplets were formed on beakers E and G only.

Beaker E **Beaker F** **Beaker G**

(a) Arrange the beakers (E, F and G) in decreasing order based on the temperature of water inside each beaker. [1]

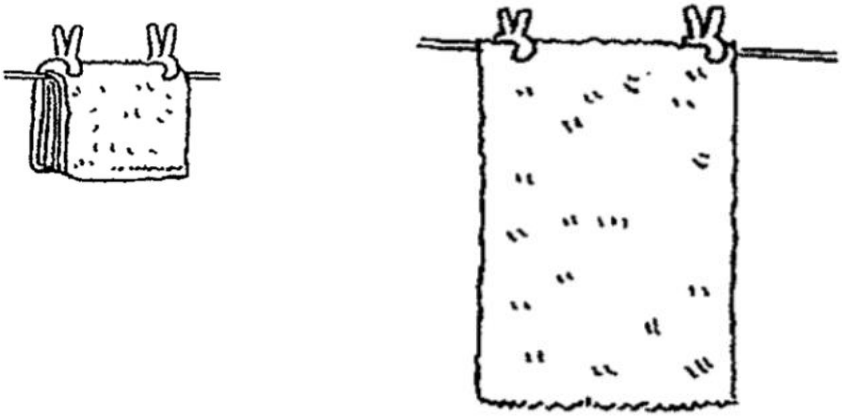
_____

(b) Explain why no water droplets appeared on beaker F. [2]

_____

_____

33. Thomas soaked two towels in water for two minutes each and then hung them out to dry as shown in the illustration below.



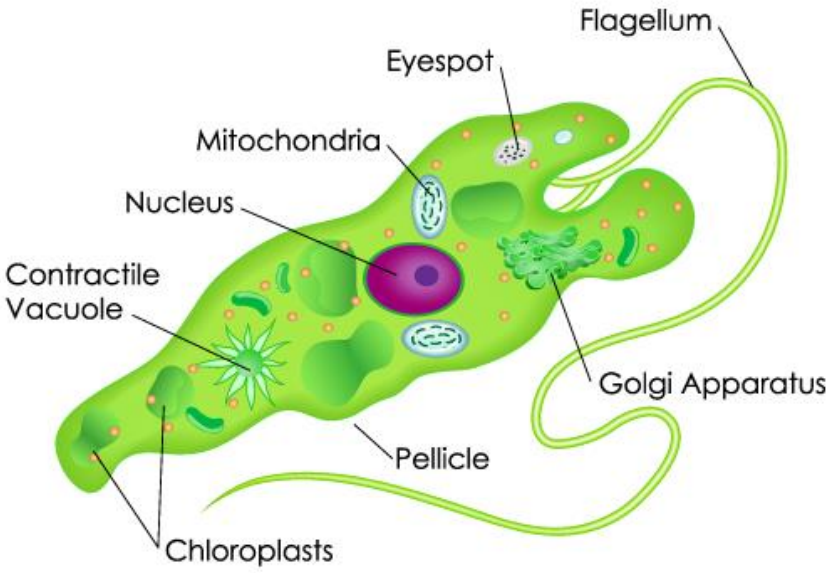
(a) Which of the following variables must he keep the same if he wants to make this a fair experiment? Put a tick (√) next to the variable that needs to be kept the same. [2]

	Variable to be kept the same	
(i)	Size of towels	
(ii)	Material of towels	
(iii)	Location of experiment	
(iv)	Duration of experiment	
(v)	Mass of towels after the experiment	
(vi)	Exposed surface area of both towels	

(b) State one other variable, not listed in the table above, that needs to be kept the same for this to be a fair experiment. [1]

_____

34. Adam studied a unicellular organism, Euglena, under a microscope.



(a) He concluded that this Euglena does not depend on other organisms to survive. Do you agree with his conclusion? Explain your answer. [1]

_____

_____

(b) Adam observed that this Euglena was able to move around. He also observed that it moved to where there was light.

(i) Which part of the Euglena enabled it to move around? [1]

_____

(ii) Why was the Euglena attracted to light? [1]

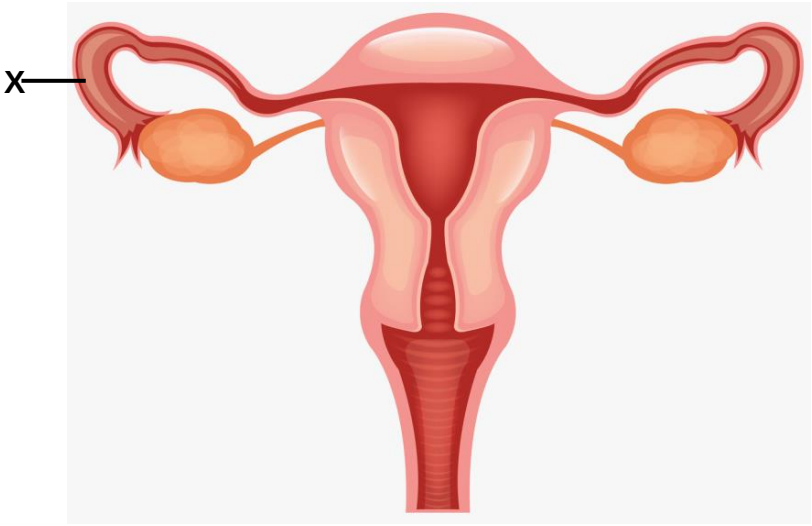
_____

(c) Adam decided to cut off the flagellum, or tail, of this Euglena. After a few days, he noticed that a new tail had grown. How is this possible? [1]

_____

_____

35. The diagram below shows the human female reproductive system.



(a) In the diagram above, label Part F where fertilisation takes place. [1]

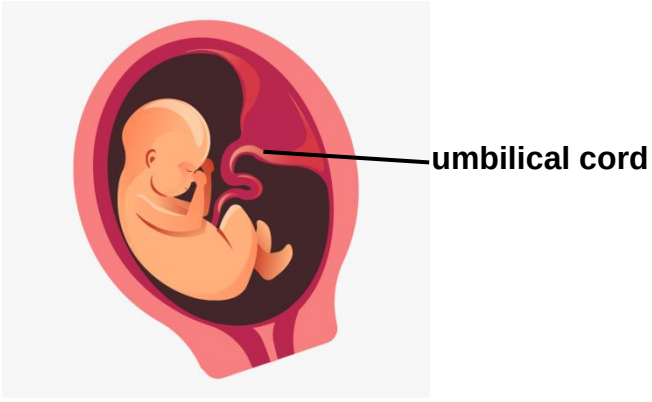
(b) In the diagram above, label Part D where a fertilised egg develops. [1]

(c) Due to a complication, Mary was forced to perform surgery where a cut was made at X. The tube at X was then completely sewed up. Will Mary still be able to conceive and reproduce after performing this surgery? Explain your answer clearly. [1]

_____

_____

The picture below shows a foetus inside the mother's womb during pregnancy.

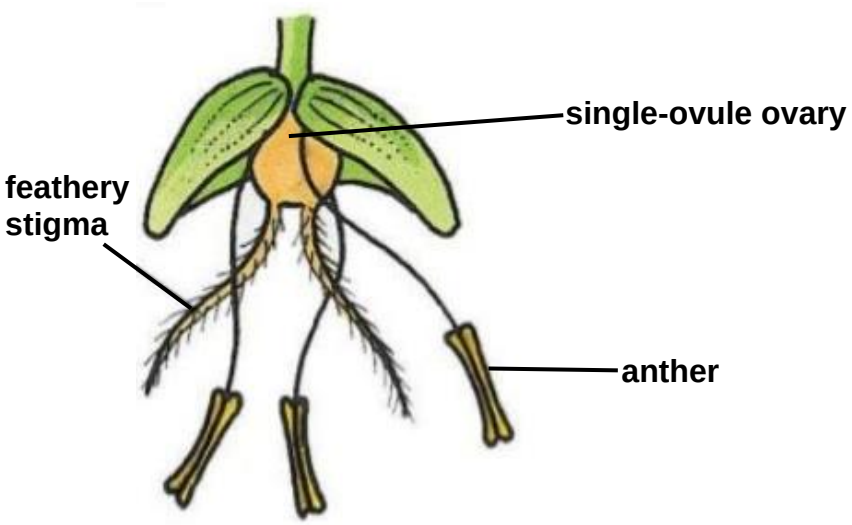


(d) Clearly explain the exchanges that take place in the umbilical cord during this period. [2]

_____

_____

36. Omar and Hannah both observed the flower below. It had small, dull-coloured petals and there is no nectar present.



Each of them proceeded to make the following statements:

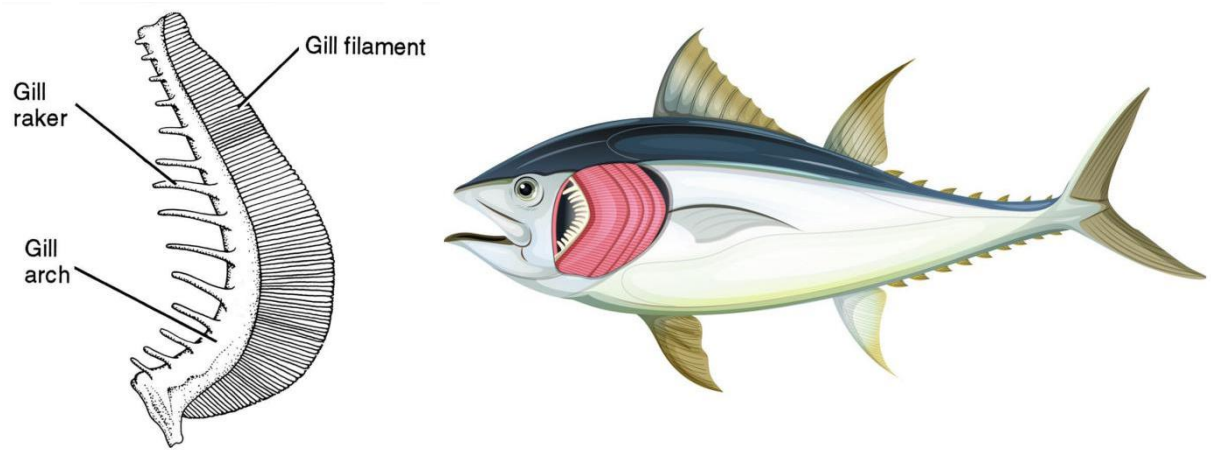
Omar: Insects and birds help to pollinate this flower.
Hannah: When pollinated, this flower will develop into a fruit with many seeds.

Mr Fadly, their Science teacher, informed them that they were both incorrect.

Clearly explain why each of them were incorrect, using the information given in the diagram above.

	Why the statement was incorrect
Omar	_____ _____ _____ _____[3]
Hannah	_____ _____ _____ _____[1]

37. The diagram below shows a fish with a magnified image of its gills.



(a) Explain how the structure of the gill filaments helps the fish. [2]

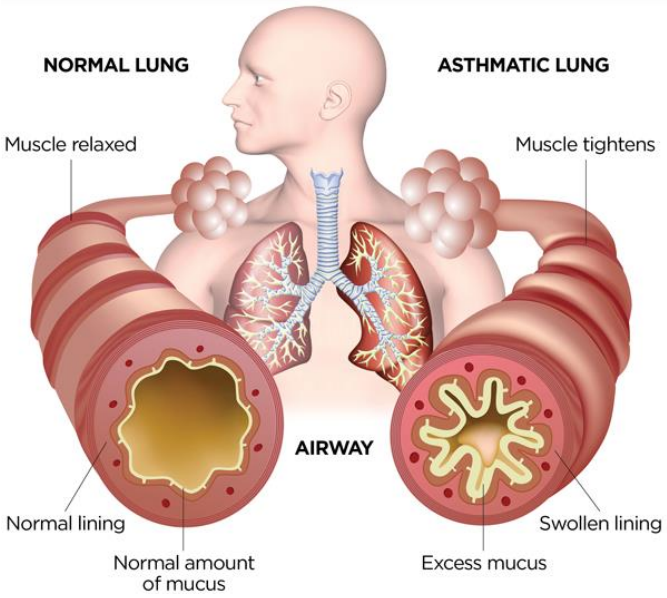
_____

_____

(b) Name the part of a plant leaf which performs a similar function as the gill filaments of a fish. [1]

_____

The diagram below shows the difference between a normal lung and an asthmatic lung.

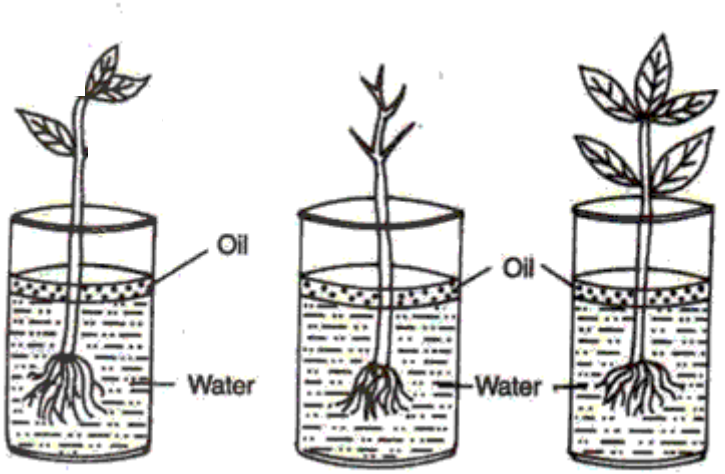


(c) How does excess mucus affect a patient suffering from asthma? [2]

_____

_____

38. Adeen set up an experiment as shown below. Each beaker was filled with equal volume of water. All three set-ups were placed out in a garden on a sunny day for an equal duration of time.



Beaker A **Beaker B** **Beaker C**

(a) What is the purpose of the oil? [1]

_____

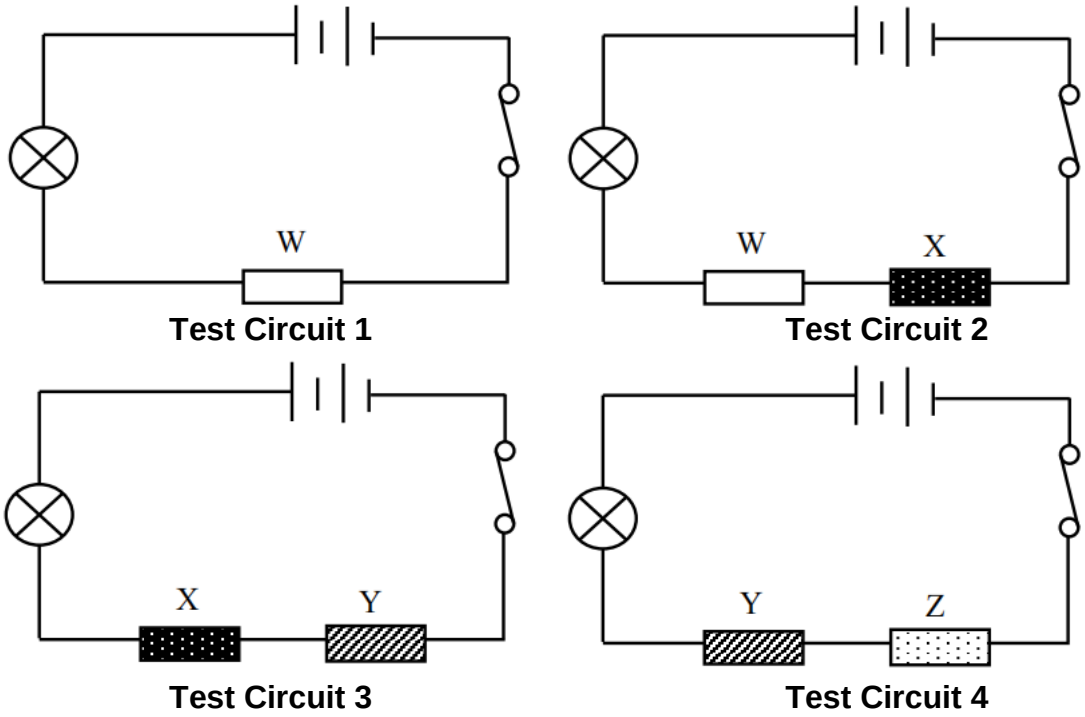
Adeen recorded the volume of water remaining in each beaker before and after the experiment.

Plant	Volume of water in the beginning (ml)	Volume of water remaining (ml)
A	**300**	**260**
B	**300**	**300**
C	**300**	**220**

(b) Adeen realised that he can come up with two conclusions based on the result of the experiment, using two different pairs of beakers from the set up above. Write down the conclusions in the table below. [2]

Paired beakers	Conclusion
B and C	_____ _____
A and C	_____ _____

39. Hazeeq tested the electrical conductivity of four objects, W, X, Y and Z, using identical test circuits, as shown below.



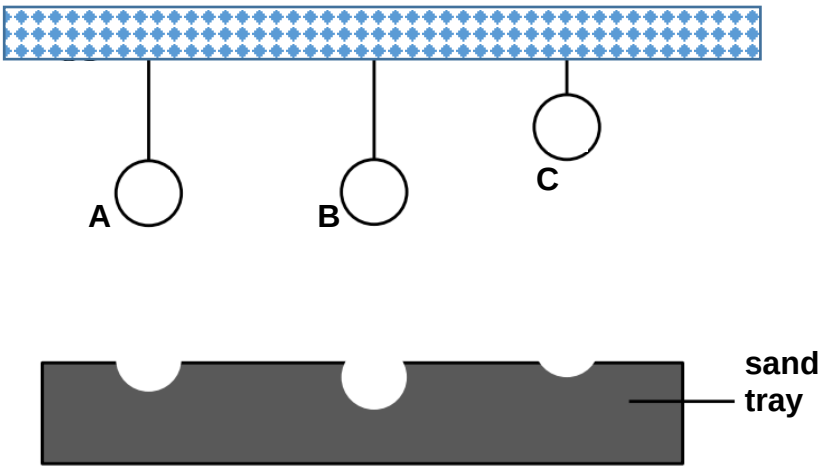
He recorded what happened when he closed the switch for each circuit.

Test Circuit	Did the bulb light up?
1	Yes
2	Yes
3	No
4	No

Based on the results, fill in the table below by ticking (√) the correct boxes. [2]

Conductors of electricity	Yes	No	Not possible to tell
W			
X			
Y			
Z			

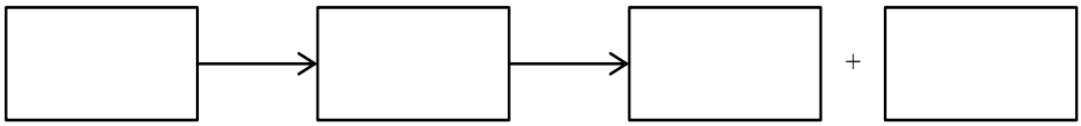
40. Three similar-sized balls, A, B and C, were hung from a suspended platform as shown below. All three balls were then released at the same time, making depressions when they landed on the sand tray.



(a) Based on the depressions observed on the sand tray, arrange the three metal balls, A, B and C, in increasing order of mass. [1]

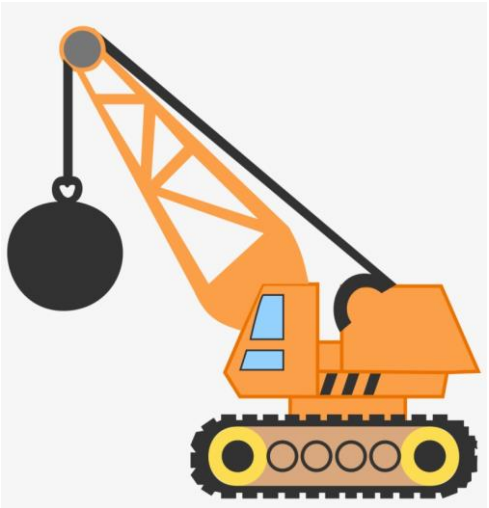
_____

(b) State the energy conversions from the point when a metal ball was released to the point when it hits the tray. [2]



The illustration below shows a crane with a wrecking ball attached to its arm.

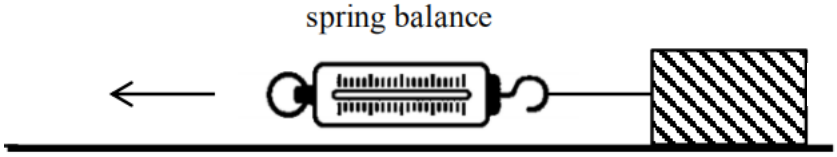
This machine is used to demolish buildings and other large structures. The wrecking ball will be swung at the building or structure to demolish it.



(c) Without changing any of the equipment, how can a building or structure be demolished faster, using this machine? [1]

_____

41. Aisha wanted to find out if the surface area of an object will affect the force needed to pull the object. He used the set up below using four blocks of the same mass and material but with different surface areas. Each block was pulled over an equal distance.



He recorded the results in the table below.

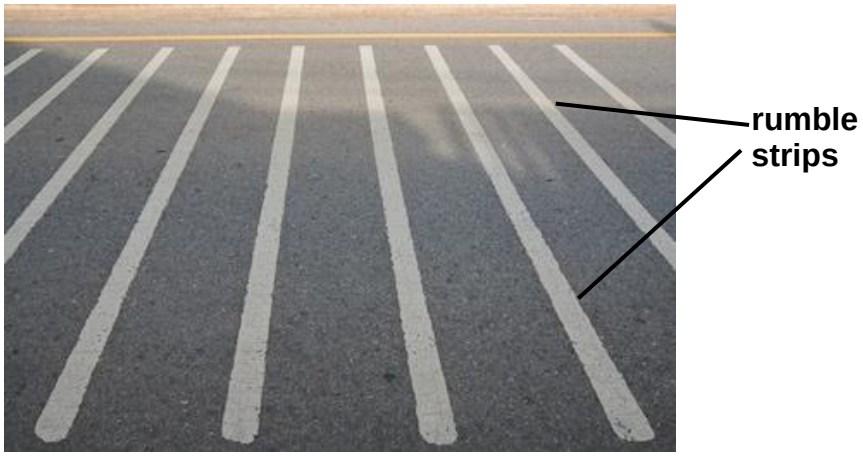
Surface area of block (cm^2)	Force needed to pull the block (in units)
13	22
6	10
16	26
11	19

(a) Based on the results, what is the relationship between the surface area of a block and the force needed to pull it? [1]

_____

_____

These thick white strips, or rumble strips, as shown in the picture below, can often be found on the roads outside schools, hospitals and childcare centres.



(b) Clearly explain why these rumble strips are painted on the roads outside schools, hospitals and childcare centres. [1]

_____

_____

Seat belts are safety devices found in vehicles. It is highly encouraged, and even compulsory in some countries, for all drivers and passengers to wear his or her seat belt throughout the journey. The statistics found in the poster below highlights the importance of wearing seatbelts.

In the event of a vehicular accident or collision, according to the poster above, an occupant is 30 times less likely to be flung forward when wearing a seat belt.

(c) Clearly explain how wearing a seat belt helps to prevent an occupant from being flung forward during accidents or collisions? [2]

_____

_____

End of Paper