



# RAFFLES GIRLS' PRIMARY SCHOOL

## SEMESTRAL ASSESSMENT (1) 2013

Section A	60
Section B	40
Your score out of 100 marks	
Parent's signature	

Name : \_\_\_\_\_ Index No: \_\_\_\_\_ Class: P 6 \_\_\_\_\_

7 May 2013

**SCIENCE**

Attn: 1h 45min

### SECTION A (30 X 2 marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct oval on the Optical Answer Sheet.

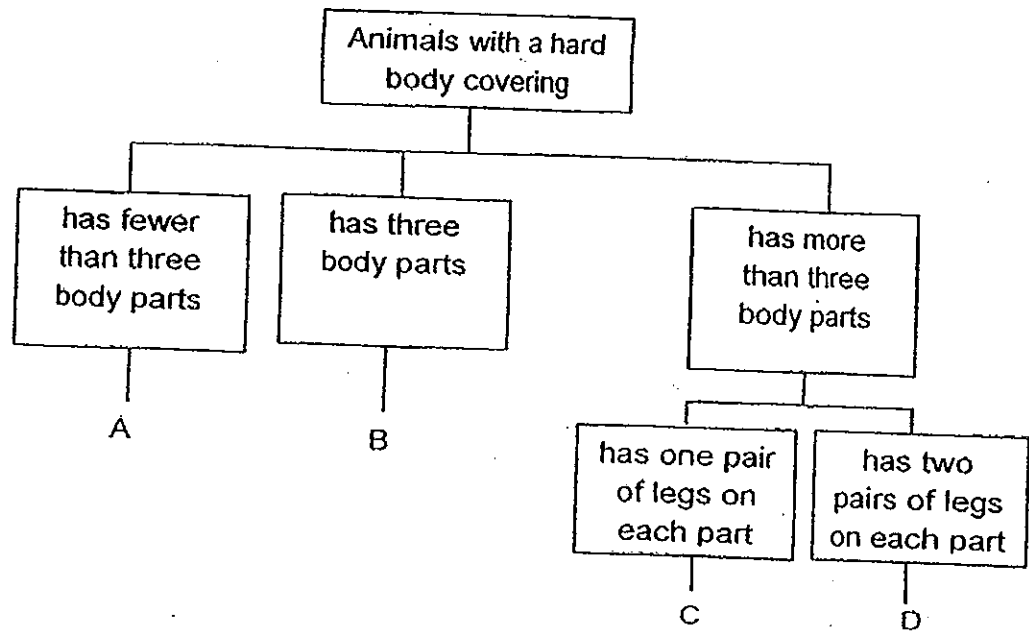
1. Plants W, X, Y and Z, have common characteristics as shown in the table below. A tick (✓) shows the presence of the characteristics of the plant.

Characteristics \ Plants	W	X	Y	Z
Bears fruit	✓			✓
Grows in water		✓	✓	✓

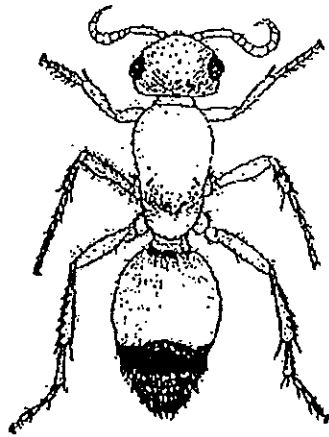
Based on the given information above, which one of the following shows the correct classification of the plants?

	Flowering Plant	Aquatic plant
(1)	W	X
(2)	X	Y
(3)	Y	Z
(4)	Z	W

2. The diagram below shows how organisms A, B, C and D are classified.



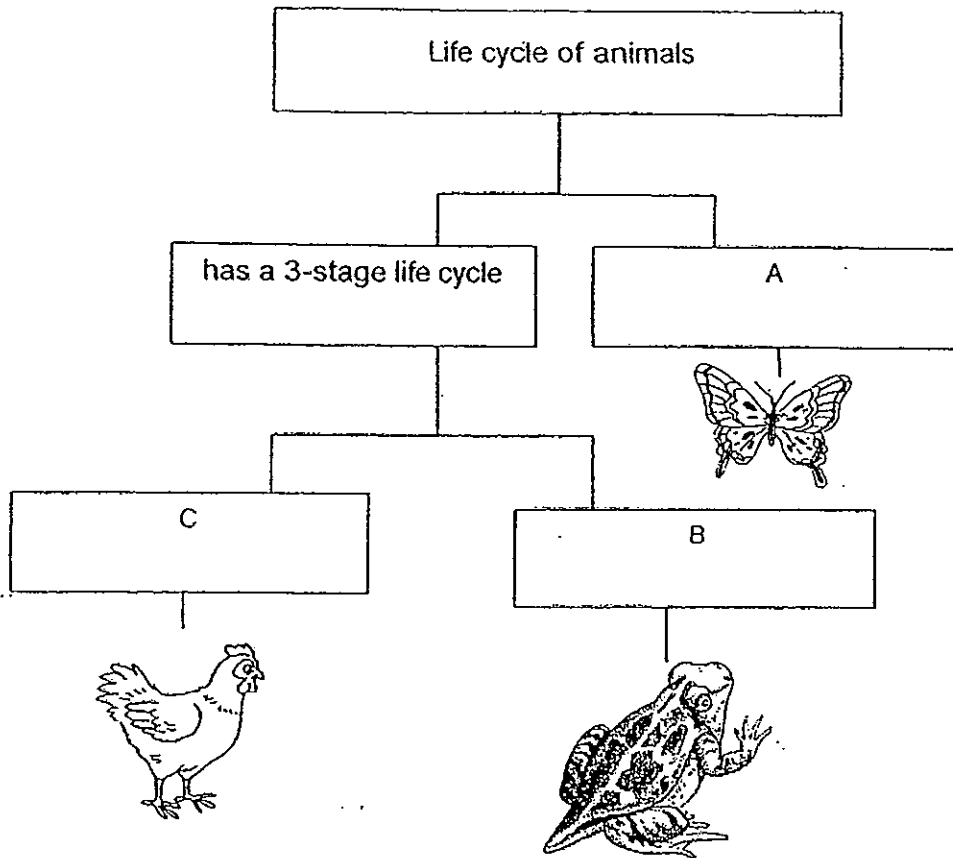
Randy found an animal which has a hard body covering as shown below.



Which one of the following, A, B, C or D, best represents the above organism?

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

3. The classification below shows how animals can be classified according to their life cycles.



Which one of the following best represents the sub-headings for A, B and C?

	A	B	C
(1)	has 2 stage life cycle	its young looks like the adult	its young does not look like the adult
(2)	has 2 stage life cycle	its young does not look like the adult	its young looks like the adult
(3)	has 4 stage life cycle	its young does not look like the adult	its young looks like the adult
(4)	has 4 stage life cycle	its young looks like the adult	its young does not look like the adult

4. John carried out an experiment to find out how the temperature of the surroundings affects the germination of seeds. He planted the same number of seeds of the same type in five identical pots of soil. The pots were exposed to different temperatures. He observed the seeds over a period of 5 days and recorded his results in the table shown below.

Temperature (°C)	Total number of seeds germinated				
	Day 1	Day 2	Day 3	Day 4	Day 5
0	0	0	0	0	0
10	0	0	0	1	5
20	0	2	5	10	13
30	0	6	11	14	18
40	0	0	0	0	0

Based on the information in the table above, John made the following statements.

- A Most seeds germinated at 30°C.
- B At 10°C, germination of seeds started at day 3.
- C The average number of seeds germinated increases as the surrounding temperature increases from 10°C to 40°C.

Which of John's conclusion(s) is/are definitely true?

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

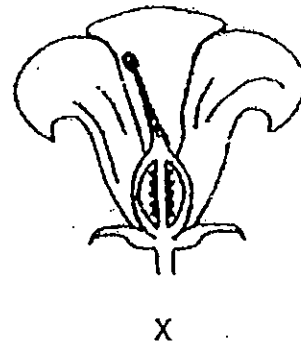
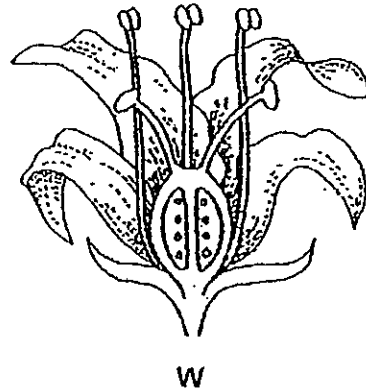
5. The table below shows the comparison between the male and female reproductive systems in a human.

	Reproductive organs	Reproductive cells
Female	W	Eggs
Male	Testis	X

Which of the following correctly represents W and X?

	W	X
(1)	Ovary	Womb
(2)	Sperms	Ovary
(3)	Ovary	Sperms
(4)	Womb	Sperms

6. The diagrams below show the cross-sections of two different types of flowers, W and X.

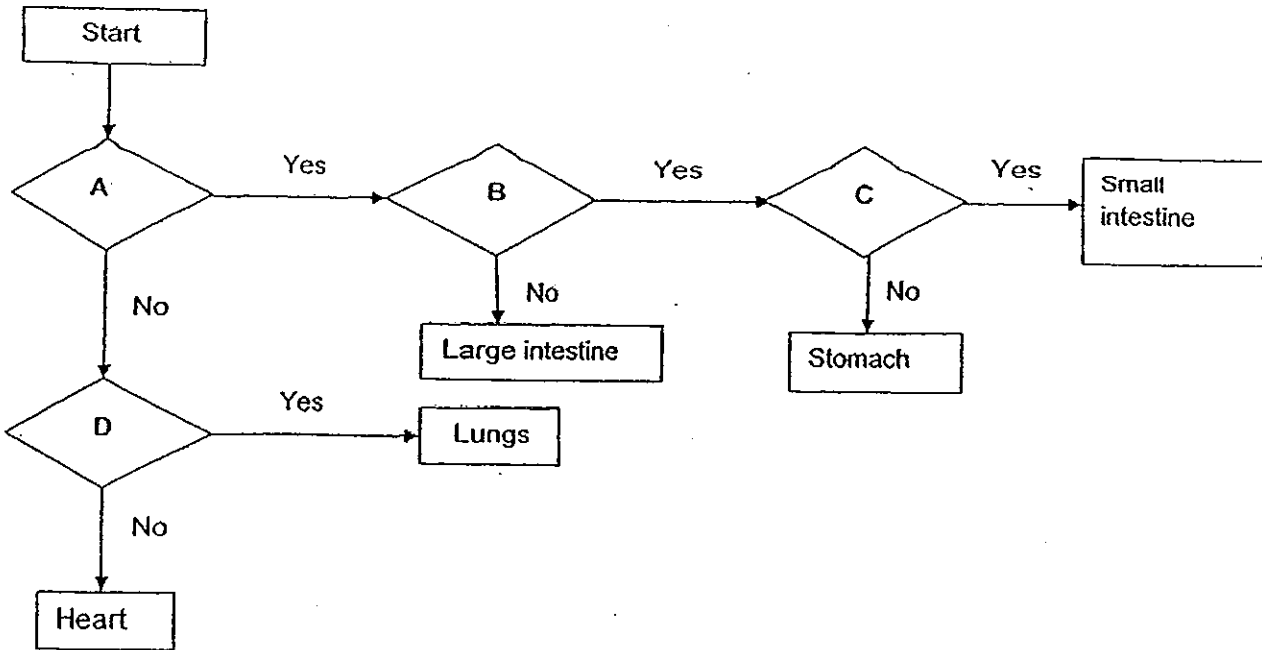


Which of the following are true about flowers, W and X?

- A Both flowers have female parts.
- B Both flowers can be pollinated by insects.
- C Pollen can be transferred to the stigma within flower W.
- D After fertilisation, only flower W can develop into a fruit.

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

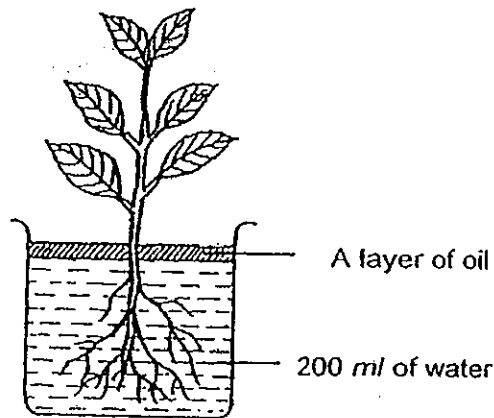
7. Study the flow chart shown below carefully.



With reference to the above table, which of the following best represents A, B, C and D?

	A	B	C	D
(1)	Is it part of the respiratory system?	Does it break down food?	Does it absorb digested food into the bloodstream?	Is it part of the digestive system?
(2)	Is it part of the respiratory system?	Does it absorb digested food into the bloodstream?	Does it break down food?	Is it part of the digestive system?
(3)	Is it part of the digestive system?	Does it absorb digested food into the bloodstream?	Does it break down food?	Is it part of the respiratory system?
(4)	Is it part of the digestive system?	Does it break down food?	Does it absorb digested food into the bloodstream?	Is it part of the respiratory system?

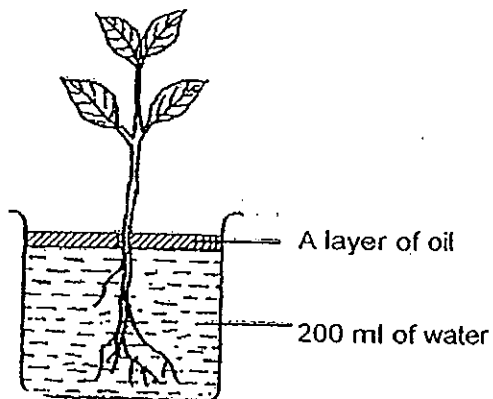
8. John set up an experiment as shown below to find out if the amount of roots affects the rate of absorption of water from the roots.



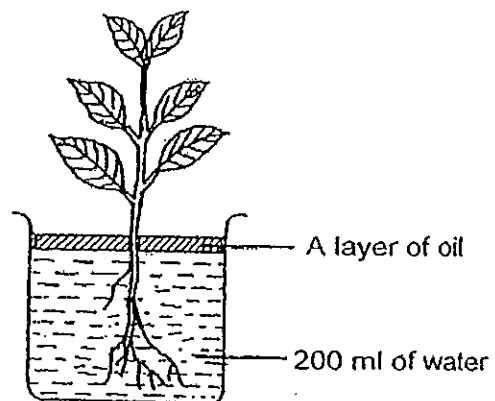
His friend, Jake, told him to prepare another set-up so that he can compare his findings.

Which one of the following set-ups should John use in order to ensure a fair test?

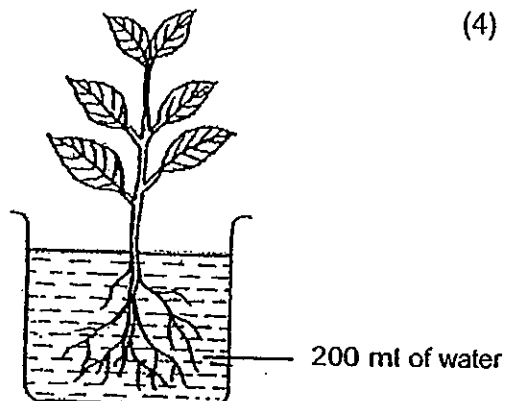
(1)



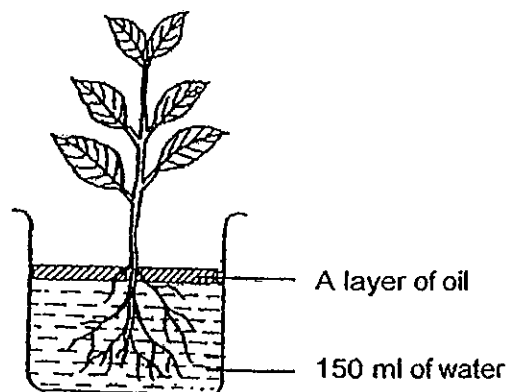
(2)



(3)

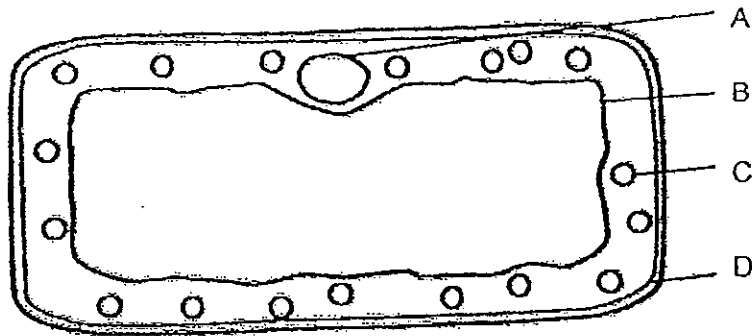


(4)





9. The diagram below shows a cell.



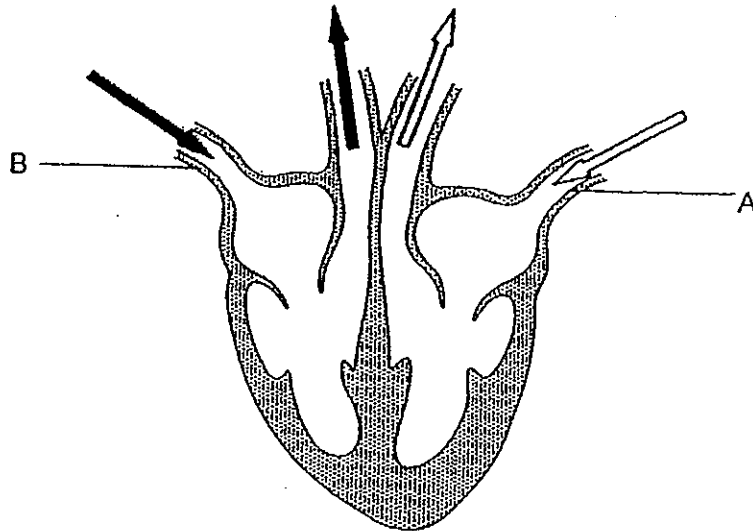
When one part of the cell was removed, the cell was not able to undergo cell division.

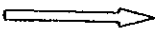

Which part of the cell, A, B, C or D, was removed?

- (1) A
  - (2) B
  - (3) C
  - (4) D
10. Tom took a slow walk for 10 minutes just before he started running continuously for 20 minutes. His heartbeat was increasing while he was running.
- Which of the following statement(s) is/are most likely to be correct?
- A His pulse rate was higher during running than during walking.
  - B The air he inhaled contained more oxygen during running than during walking.
  - C His heart pumped blood more quickly to the lungs during running than during walking.
- (1) A only
  - (2) A and C only
  - (3) B and C only
  - (4) A, B and C only

11. The diagram below shows the cross-section of a human heart with arrows showing the direction of blood-flow.

A and B are blood vessels transporting blood to the heart.



Key	
	blood rich in oxygen
	blood rich in carbon dioxide

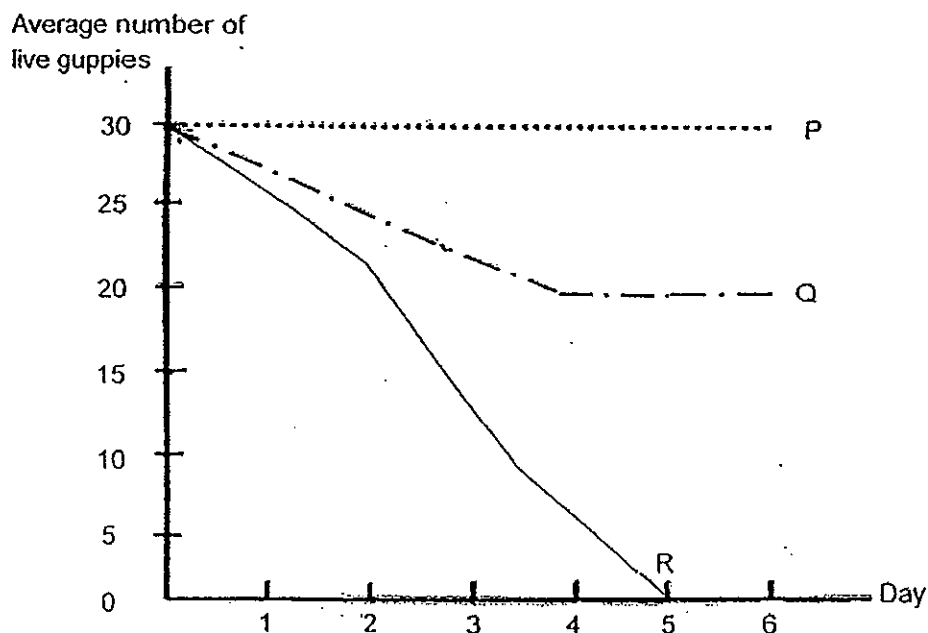
Which of the following correctly identifies the blood vessels, A and B, that receives the blood flowing from the head, lungs and legs respectively?

Blood vessel that receives blood from		
Head	Lungs	Legs
(1) A	B	A
(2) A	A	B
(3) A	B	B
(4) B	A	B

12. Pollutant X is known to be harmful to aquatic organisms. Hence, Ryan wanted to find out how the amount of pollutant X affects the survival rate of guppies.

He released 30 healthy male guppies into 3 identical aquariums, P, Q and R. Then he added different amounts of pollutant X into two of the aquariums. He counted the number of guppies in each aquarium over a period of six days.

He repeated the experiment and plotted the results as shown in the graph below.

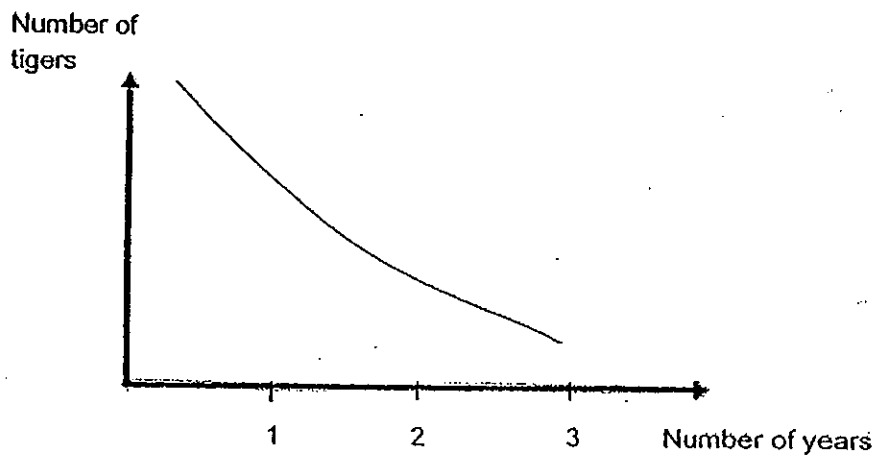


Based on the above information, which of the following statement(s) is/are true?

- A R has a larger amount of pollutant X than Q.
- B The number of live guppies in Q remains constant on Day 4 onwards.
- C The death rate of guppies is the same as the birth rate of guppies in P.
- D The death rate of guppies in Q is higher than the death rate of guppies in R.

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

13. Mr Tan studied a population of tigers in a habitat over a period of three years. The graph below shows the change in the tiger population over a 3-year period.

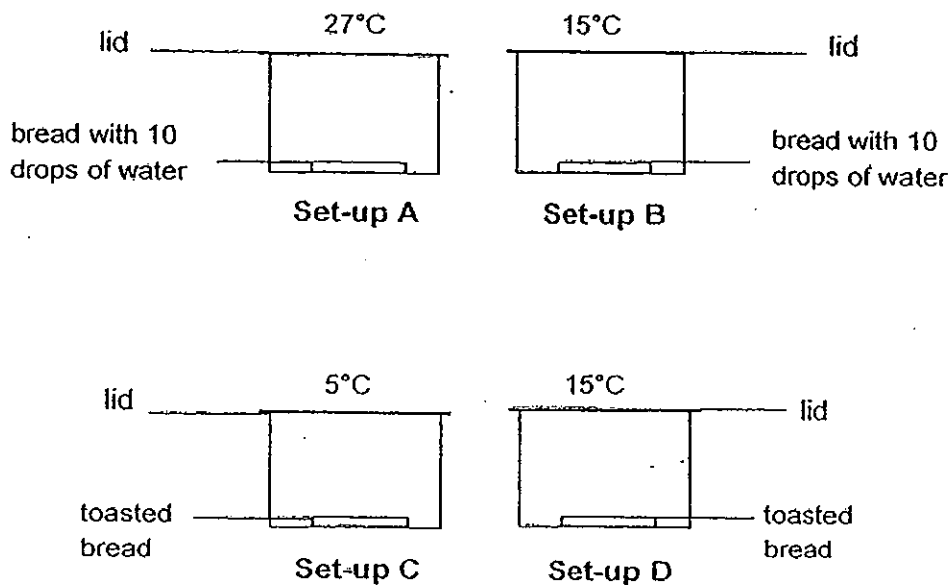


Which of the following could possibly explain the change in the population of tigers?

- A There was a natural disaster in the habitat.
- B The number of zebras in the habitat increased.
- C The number of tiger hunters in the habitat increased.
- D The number of flowering plants in the habitat increased.

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

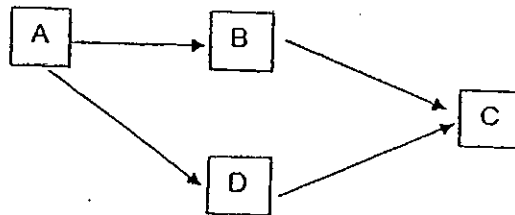
14. Ahmad wanted to find out how different conditions affect the growth of mould. He placed an identical slice of bread in each of the 4 sealed containers A, B, C and D. Each slice of bread was exposed to different conditions and observed over 3 days.



Which of the following correctly identifies the set-ups with the greatest amount and the least amount of mould on the bread?

	Set-up with the most amount of mould on the bread	Set-up with the least amount of mould on the bread
(1)	A	B
(2)	A	C
(3)	B	D
(4)	C	D

15. Organisms A, B, C and D were being kept in an enclosed man-made habitat. One of the organisms is a plant. The diagram below shows a food web involving organisms A, B, C and D.



When a new organism, E, was introduced into the habitat, the following observations were made:

- an increase in the populations of B and D
- a decrease in the populations of A and C

Based on the information above, which one of the following statements about E is correct?

- (1) E is a plant
- (2) E preys on A only
- (3) E preys on C only
- (4) E preys on D only

16. The table shows some animals found on a plant and the food they eat.

Animals	Food
P	plant sap
Q	Animal P
R	leaves
S	fruit

Based on the above information, which of the following statements is/are correct?

- A Q is a predator.
- B S can help the plant to disperse its seeds.
- C There are 4 populations of plant-eaters on the plant.
- D An increase in the number of R on the plant will help the plant to make more food.

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

17. X and Y are two different types of foxes living in different natural habitats. X lives in a habitat, which is warm in summer. However, it is covered in snow during winter. Y lives in a desert.

Which one of the following shows the structural adaptation of the fox and its purpose correctly?

	Adaptation	Purpose
(1)	X has small ears.	To help it lose heat to its surroundings more quickly
(2)	X has fur on soles of feet.	To help it to reduce heat gain from the snow during winter
(3)	Y has large ears.	To help it to gain heat from its surroundings more quickly
(4)	Y has fur on soles of feet.	To help it to reduce heat gain from the hot sand.

18. Scientists have predicted that the average temperature of the Earth will continue to rise in the next ten years.

~~Which of the following can help to slow down the rate of the rising Earth's temperature?~~

- A An increase in reforestation activities
- B An increase in the number of vehicles owned by people
- C A decrease in the use of paper for making disposable utensils
- D A decrease in the amount of rubbish being sent to incinerators

~~Which of the above items can be sent to a factory for recycling?~~

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

19. Ali carried out a scratch test to compare the hardness of material A, B, C and D. He recorded his findings below.

- C leaves a scratch mark on D.
- A leaves a scratch mark on B.
- B leaves a scratch mark on C.

Which one of the following conclusions is correct?

- (1) B is harder than A.
- (2) A is the softest material.
- (3) B is the softest material.
- (4) C is harder than D but softer than A.



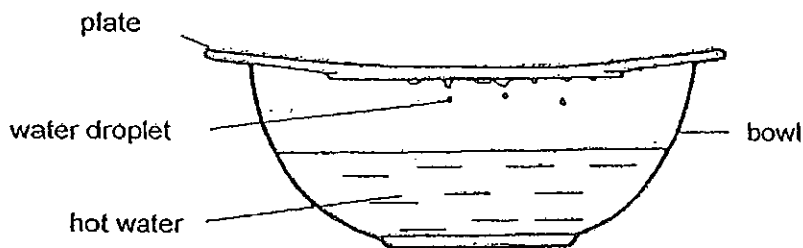
20. Mike poured an equal amount of water into three rectangular containers, P, Q and R, which were made of the same material.

Mike left all the three containers in direct sunlight from 8am to 4pm. Then he recorded the amount of water left in each container. He observed that Q had the greatest amount of water left in it, followed by R, and then P.

Which one of the following shows the correct arrangement of the exposed surface area of water in increasing order?

	container with the largest exposed surface area of water →		
(1)	P	Q	R
(2)	P	R	Q
(3)	R	P	Q
(4)	Q	R	P

21. Chi Keong placed a cold metal plate over a bowl of hot water. After some time, he saw water droplets on the underside of the metal plate but he observed that the rate at which the water droplets were formed changed over time.



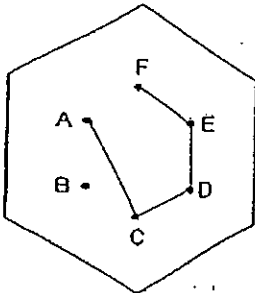
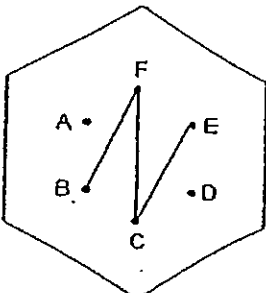
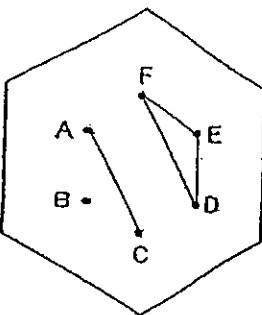
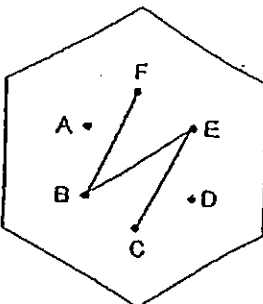
Which one of the following shows the correct observation and explanation?

	Observation	Explanation
(1)	Amount of water droplets formed increased over time.	The plate gained heat from the water vapour outside the bowl and became warmer.
(2)	Amount of water droplets formed increased over time.	The plate lost heat to the surrounding air and became cooler.
(3)	Amount of water droplets formed decreased over time.	The plate gained heat from the water vapour in the bowl and became warmer.
(4)	Amount of water droplets formed decreased over time.	The plate lost heat to the surrounding air and became cooler.

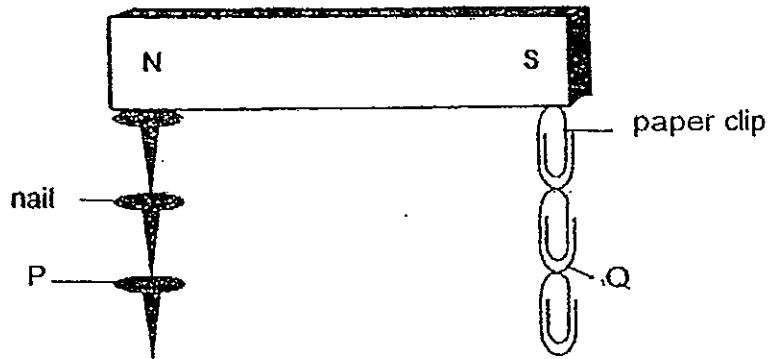
22. A circuit card with six metal pins, A, B, C, D, E and F, are connected by wires on its underside. It is tested with a circuit tester and the results are recorded below.

Metal pins connected to the circuit tester	Did the bulb light up?
A and B	no
A and F	yes
B and D	no
C and E	yes
D and E	yes

Which one of the following identifies the circuit card used?

<p>(1)</p> 	<p>(2)</p> 
<p>(3)</p> 	<p>(4)</p> 

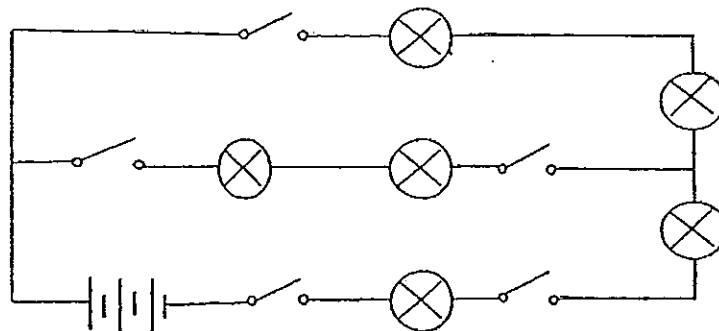
23. A strong bar magnet was able to attract a string of iron nails at one end and a string of steel paper clips at the other end as shown in the diagram below.



Which one of the following correctly identifies the poles of the iron nail at P and steel paper clip at Q?

	P	Q
(1)	N-pole	N-pole
(2)	N-pole	S-pole
(3)	S-pole	S-pole
(4)	S-pole	N-pole

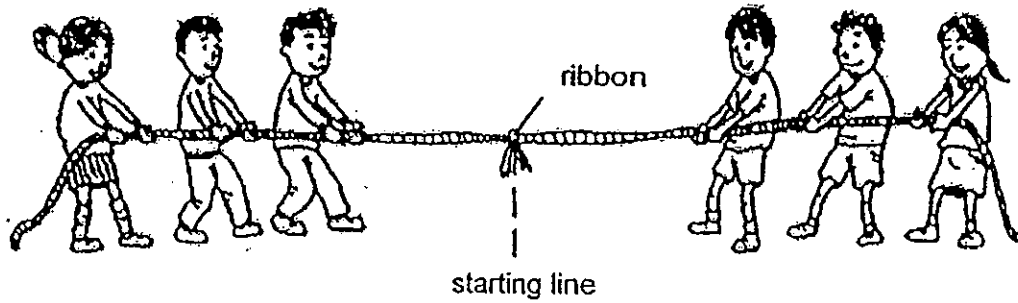
24. The diagram below shows an electrical circuit.



What is the minimum number of switches which need(s) to be closed to light up **only** four bulbs?

- (1) one  
 (2) two  
 (3) three  
 (4) four

25. The diagram below shows two groups of children playing tug-of-war. The group, which gets the ribbon on the rope over to their side, wins the game.

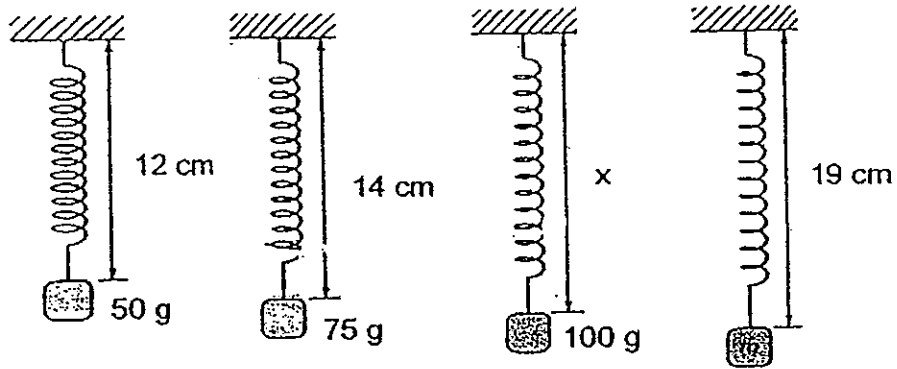


The ribbon remained at the starting line even though both groups had been pulling the rope for some time.

Which one of the following explains why the ribbon on the rope remained at the starting line?

- (1) No force was acting on the rope.
- (2) Both groups exerted the same amount of force.
- (3) One group did not exert as much force as the other group.
- (4) Gravity acting on the rope prevented the ribbon on it from moving.

26. The diagram below shows four identical springs with different masses attached.

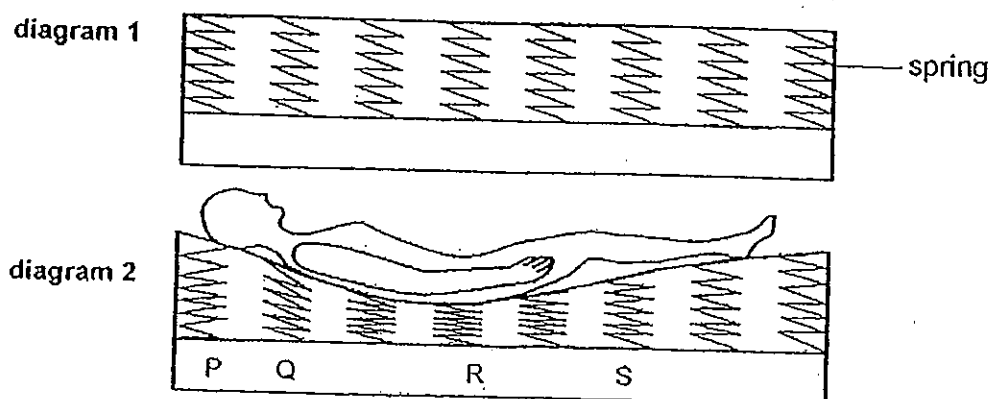


Which one of the following correctly identifies the values of x and m respectively?

	x (cm)	m (g)
(1)	16	125.0
(2)	16	137.5
(3)	18	125.0
(4)	18	137.5

27. The mattress of a bed contains identical springs spread evenly over a hard surface as shown in diagram 1.

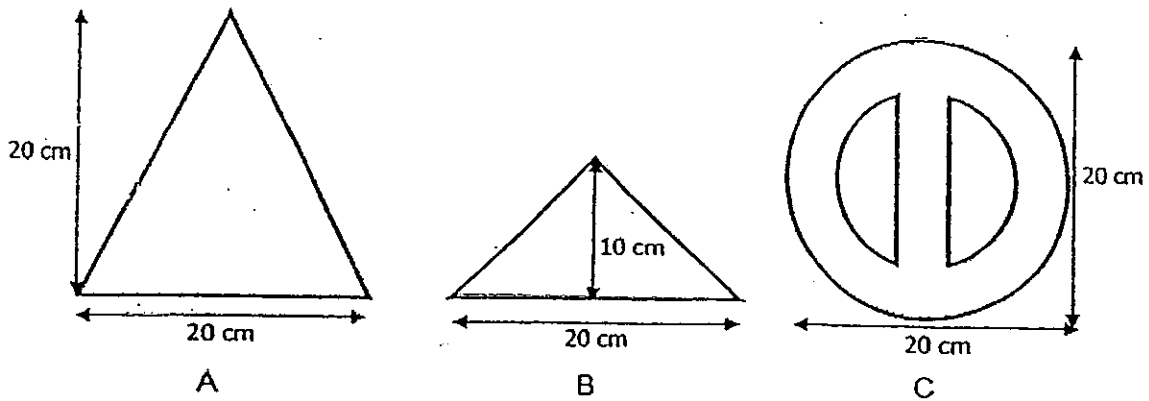
Diagram 2 below shows the change that takes place when a person lies on the bed.



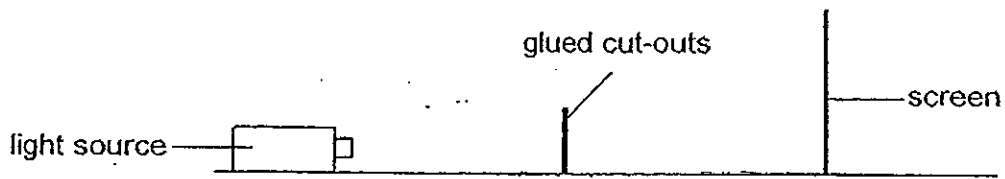
Which of the following statements about the forces acting on the springs in diagram 2 are true?

- A R compresses the most as the greatest force is acting on it.
  - B P extends more than S as more force is acting on P than R.
  - C Q compresses less than R as less force is acting on Q than R.
  - D All springs have the same extension as an equal amount of force is acting on each spring.
- (1) A and C only  
(2) B and D only  
(3) A, B and C only  
(4) A, B and D only

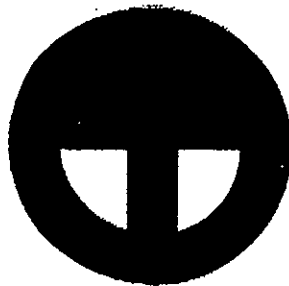
28. The diagrams below show three cut-outs, each from a different material.



The three cut-outs were glued together and then placed between a light source and a screen as shown below.



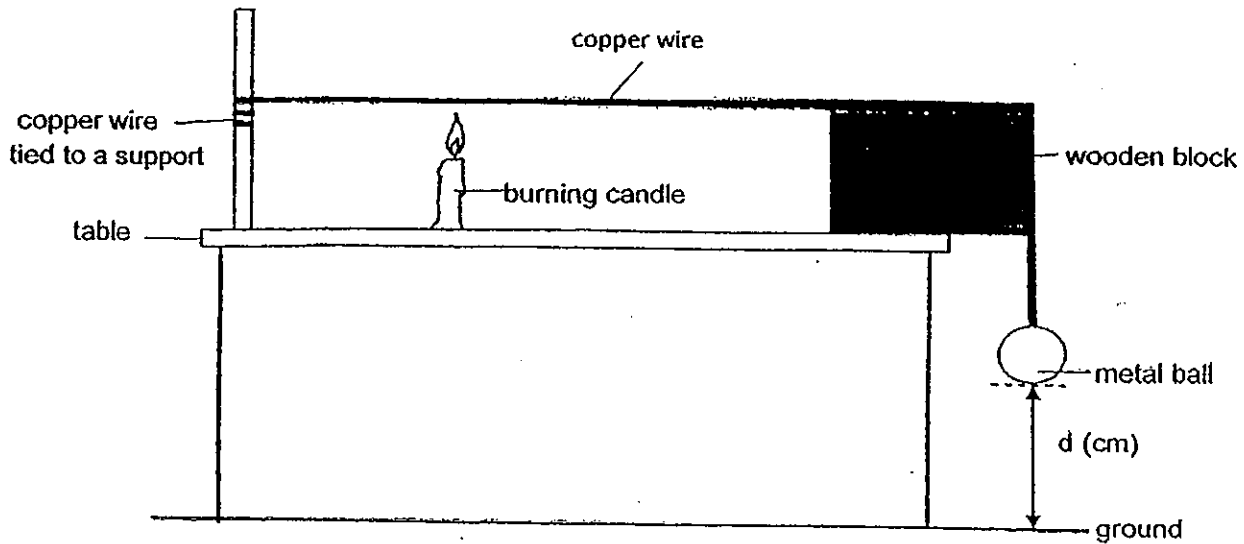
The diagram below shows the shadow shown on the screen.



Which one of the following correctly identifies the material for each cut-out?

	A	B	C
(1)	cardboard	clear glass	aluminium foil
(2)	cardboard	aluminium foil	clear glass
(3)	clear glass	aluminium foil	cardboard
(4)	aluminium foil	clear glass	cardboard

29. Kumar placed a burning candle flame just below a copper wire with one of its end attached to a metal ball as shown in the diagram below.

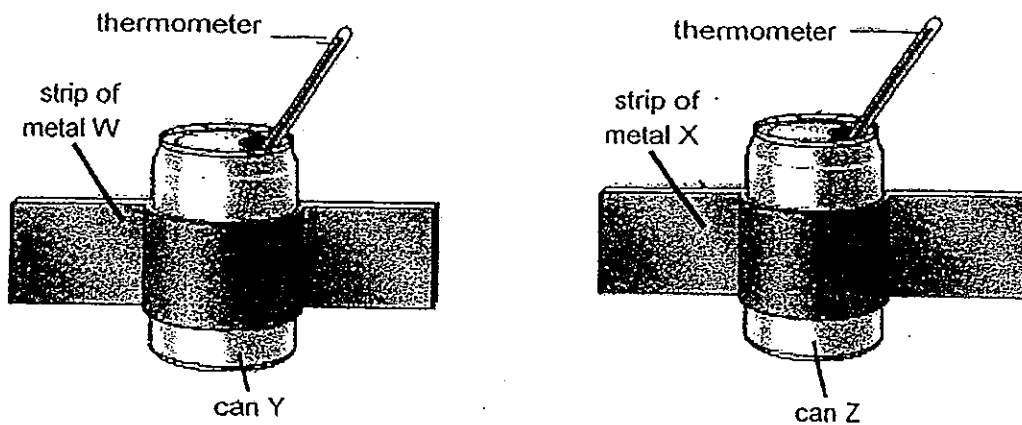


Which of the following took place when the lighted candle continued to burn under the copper wire for some time?

- A The copper wire gained heat and expanded.
  - B The wooden block gained heat and contracted.
  - C The copper wire contracted and shortened slightly.
  - D The distance between the metal ball and the ground,  $d$  (cm), decreased.
- 
- (1) A and D only
  - (2) B and C only
  - (3) A, C and D only
  - (4) B, C and D only



30. Ben filled two identical metal cans, Y and Z, with  $150 \text{ cm}^3$  of water at  $80^\circ\text{C}$ . Next, he wrapped a strip of metal W around can Y and another strip of metal X around can Z, as shown in the diagrams below. The metal strips, which extended out of the cans, were made of a different material but of the same length and thickness.



Ben recorded the temperature of the water in each can every 5 minutes as shown in the table below.

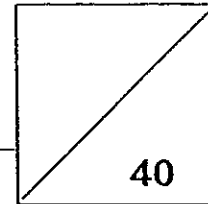
Time (min)	Temperature of the water in can ( $^\circ\text{C}$ )	
	Y	Z
0	80.0	80.0
5	64.0	60.0
10	53.0	49.0
15	51.0	48.0
20	48.5	43.5

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

- A Metal X is a better conductor of heat than metal W.
- B The temperature of water in can Y drops more quickly than that in can Z.
- C The water in can Z loses heat more quickly to the surroundings than the water in can Y.

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

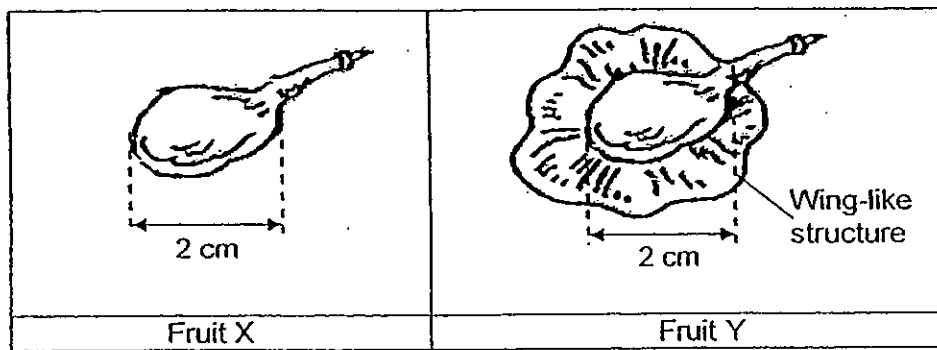
Name : \_\_\_\_\_ Index No : \_\_\_\_\_ Class : P6



**SECTION B ( 40 marks)**

For questions 31 to 44, write your answers clearly in the spaces provided. The number of marks available is shown in the brackets [ ] at the end of each question or part question.

31. Ali wanted to find out if the presence of the wing-like structure of a fruit affects the time the fruit stay afloat in the air. He had two fruits, X and Y, of the same species. The wing-like structure of fruit X was removed as shown in the diagram below.



Ali dropped each fruit from the fourth storey and measured the time taken for each fruit to reach the ground. He repeated his experiment twice.

Fruit	Time taken for each fruit to reach the ground (s)			
	1 <sup>st</sup> try	2 <sup>nd</sup> try	3 <sup>rd</sup> try	Average
X	6.2	6.5	6.3	6.3
Y	7.5	7.4	7.1	7.3

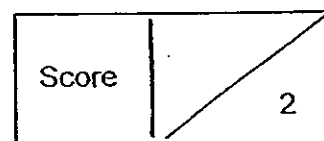
- (a) What conclusion can Ali draw from the results? [1]

\_\_\_\_\_

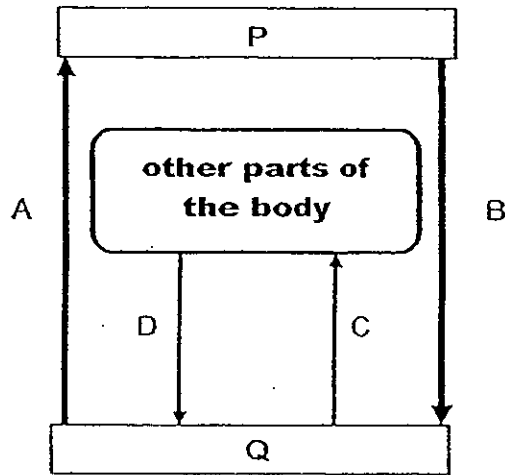
\_\_\_\_\_

- (b) Name one force which was acting on the falling fruits, X and Y. [1]

\_\_\_\_\_



32. The diagram below shows how the blood flows from one part to another part in the human body. The directions of blood flow are indicated by arrows A, B, C and D.



- (a) What do organs P and Q represent? [1]

(i) P : \_\_\_\_\_

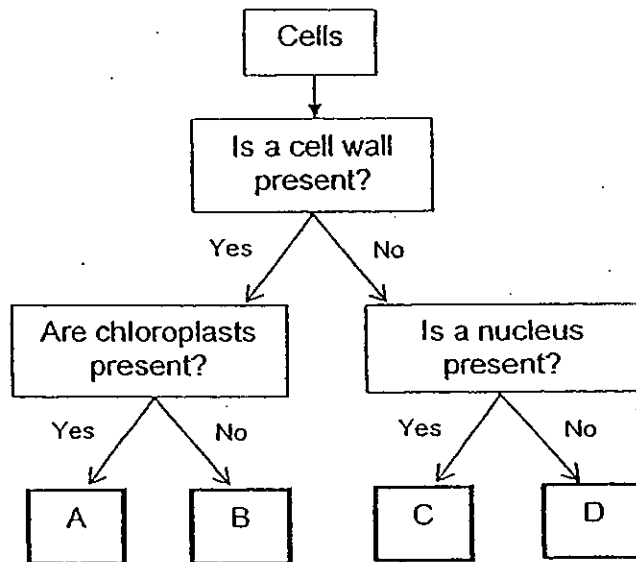
(ii) Q : \_\_\_\_\_

- (b) Name the part of the skeletal system which protect(s) organ P and Q. [1]

\_\_\_\_\_

Score	2
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33. The diagram below shows how cells A, B, C and D are classified.



(a) Which of these cells, A, B, C and/or D, is an /are animal cell(s)? Give a reason for your answer. [1]

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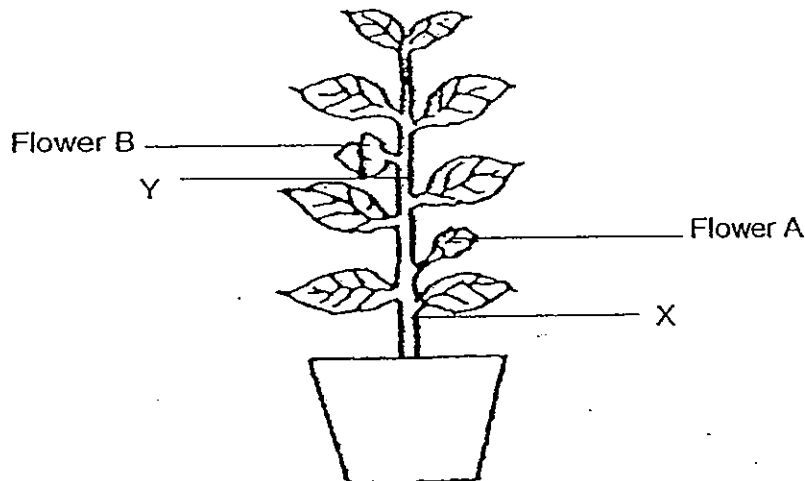
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(b) Which of these cells, A, B, C and/or D, can be found in the leaf of a balsam plant? [1]

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Score	2
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34. The diagram shows a potted plant with white flowers, A and B. Blue-coloured water was poured into the soil. After some time, Flower A was stained blue but Flower B remained the white.



- (a) Name one substance needed by the plant that was transported from the roots towards point X in the stem. [1]

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The plant was removed from the pot and a cross-sectional cutting was made at points X and Y of the stem. Diagrams 1 and 2 below show the cross-sections of the 2 cuttings.

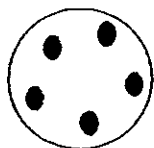


Diagram 1

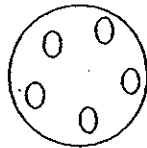
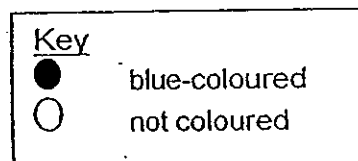


Diagram 2



- (b) Which diagram, 1 or 2, shows the cross-section at point X? Explain your answer. [2]

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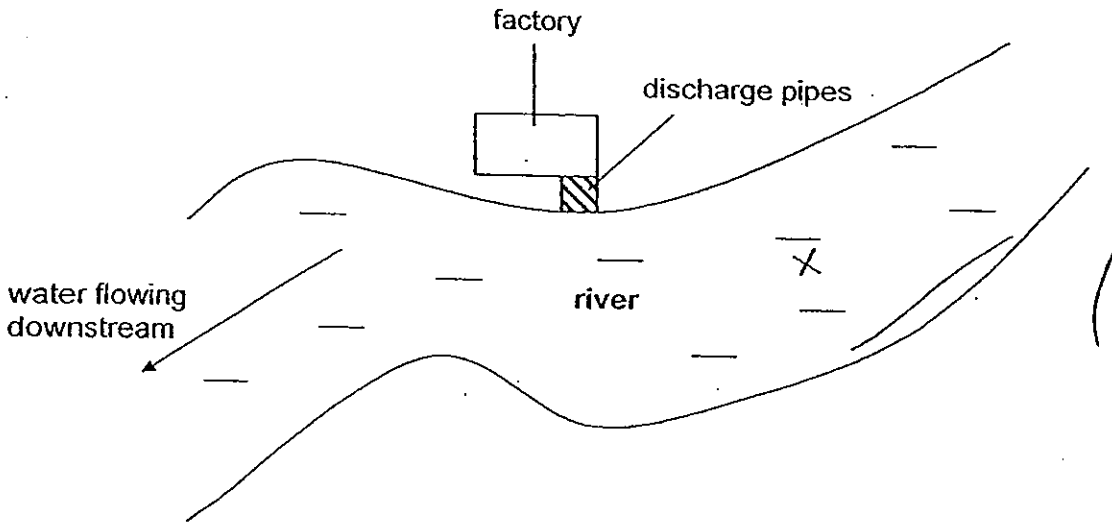
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Score	3
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35. The diagram below shows a newly-built factory which releases chemical Z through the pipes into a river. Chemical Z is harmful to the reproductive organs of living things. The river is the habitat for trouts, which are freshwater fish often eaten by bears and humans.



- (a) Draw an 'X' to mark a spot in the river where the water is least likely to be polluted by chemical Z. [1]
- (b) An environmentalist predicts that several years later, the population of bears living near the river will decrease. Give 2 possible reasons for his prediction. [2]

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- (c) Along a certain part of the river bank, soil erosion has increased rapidly after the grass growing near the water began dying due to unknown causes.

How does the decrease in the grass population in that part of the river increase the rate of soil erosion? [1]

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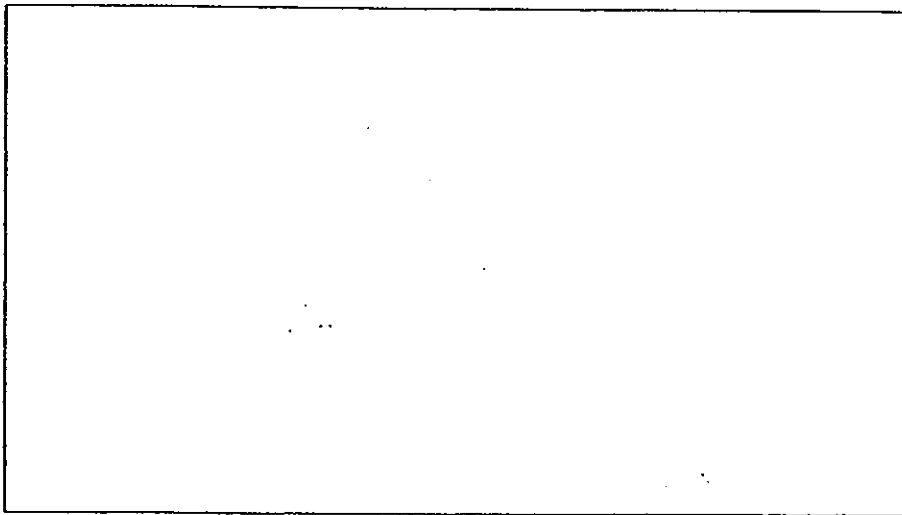
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Score	4
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36. A, B, C and D are organisms found in a pond community. They interact with one another in the following ways:

- B preys on D
- D is a herbivore
- C is an omnivore
- C feeds on A and D

(a) Based on the information above, draw a food web involving organisms A, B, C and D. [1]



b  
(c) Explain how organism D depends on the aquatic plant in ANOTHER way. [1]

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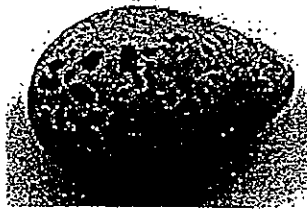
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Score	2
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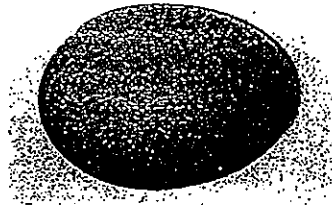
37. The following two case studies show how organisms adapt to their environment to increase their chance of survival.

Case 1

Sally's teacher gave her two eggs as shown in the diagrams below.



Egg X



Egg Y

She wanted to compare the way the two eggs roll when a force is exerted on each of them. She placed them on a table at the same distance from the edge of the table. She then exerted same amount of force on each egg in the same direction. She observed that Egg X spun around in a small circle on the table while Egg Y rolled off the table.

Sally's teacher told her that one of the eggs was laid on the edge of narrow and steep cliffs.

- (a) Based on Sally's observations on the movement of the egg after a force is exerted on them, which egg, X or Y, was laid on the edge of narrow and steep cliffs? Explain your choice. [1]

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- (b) How does laying eggs on narrow and steep cliffs increase the chance of survival of an organism? [1]

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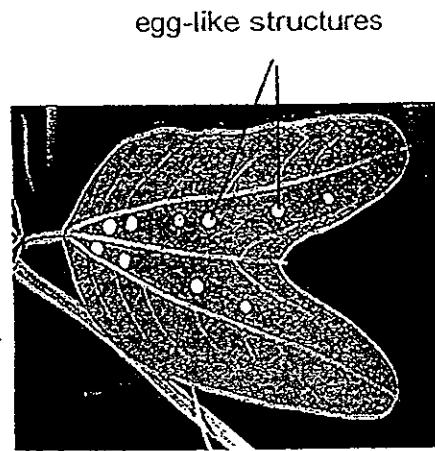
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Score	2
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Case 2

Plant P has egg-like structures on its leaves as shown in the diagram below.



These egg-like structures on the leaves look like the eggs of Butterfly Q, which usually lays its eggs on Plant P.

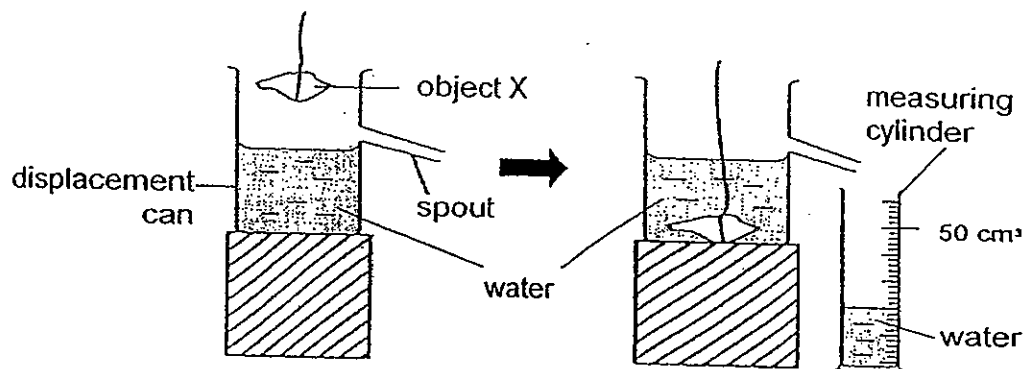
- (c) Explain clearly why Butterfly Q avoids laying eggs on Plant P when it sees the egg-like structures of the plant. [1]

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Score	1
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38. Peng Hui used the following set-up to find out the volume of an irregular object X.



- (a) What property of matter did the experiment show? [1]

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Using the same set-up and object X, Peng Hui decided to measure the volume of a cork.

- (b) Describe what Peng Hui should do to find the volume of the cork. [2]

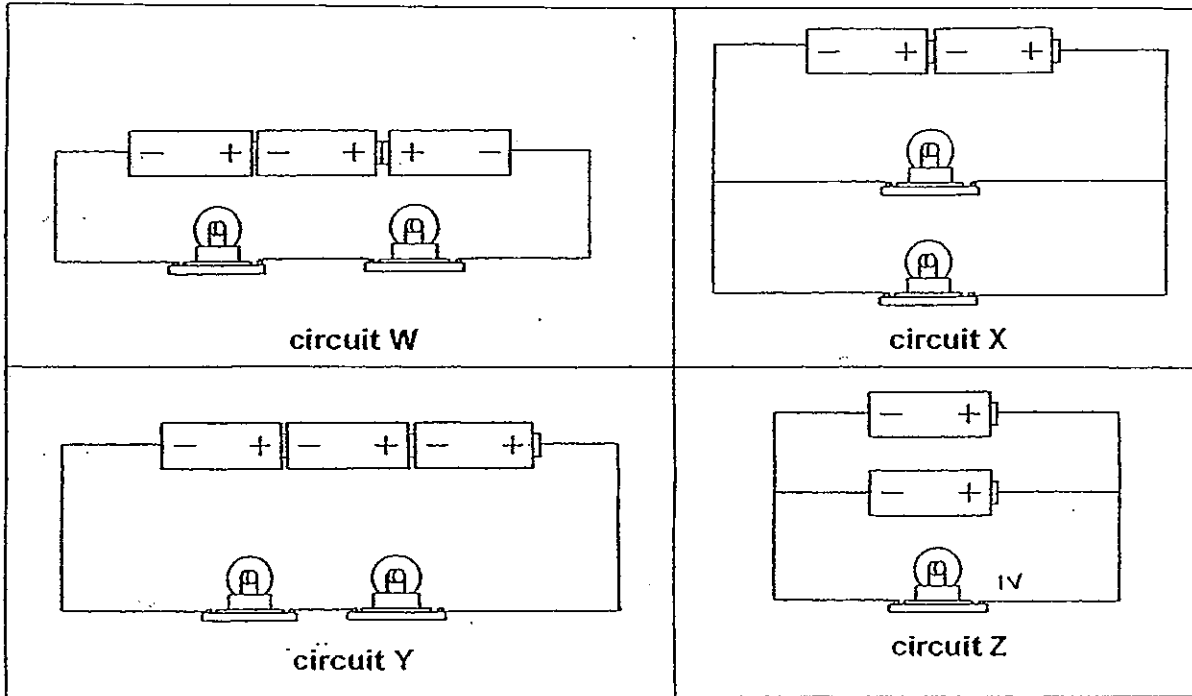
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Score	3
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39. Identical bulbs, batteries and wires were connected to form the following circuits, W, X, Y and Z.

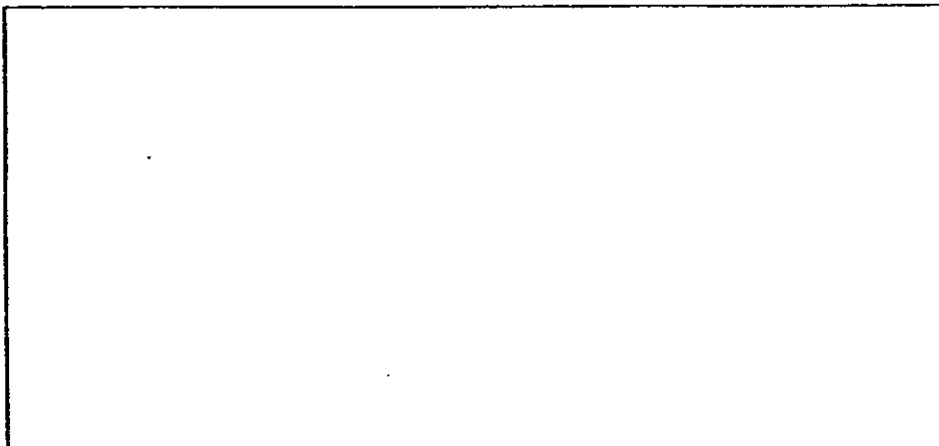


(a) Arrange the circuits above according to the brightness of the bulb(s) in descending order. [1]



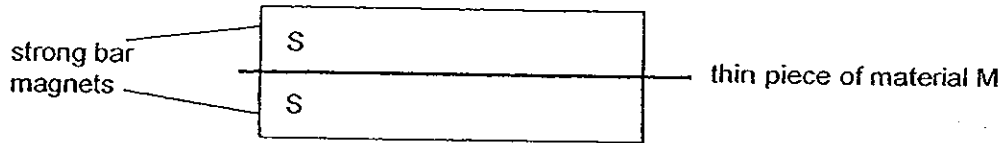
brightest  $\longrightarrow$  least bright

(b) In the box below, draw lines to connect the electrical components to show how the bulb can light up when either one of the switches is closed. [2]



Score	3
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40. Ali placed a thin piece of material M between two strong bar magnets. The diagram below shows the interaction between the magnets.



- (a) Based on your observation above, give an example of material M. Explain your answer. [1]

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When Ali removed the thin piece of material M, he observed that the two strong bar magnets repelled from each other.

- (b) Explain Ali's observations. [1]

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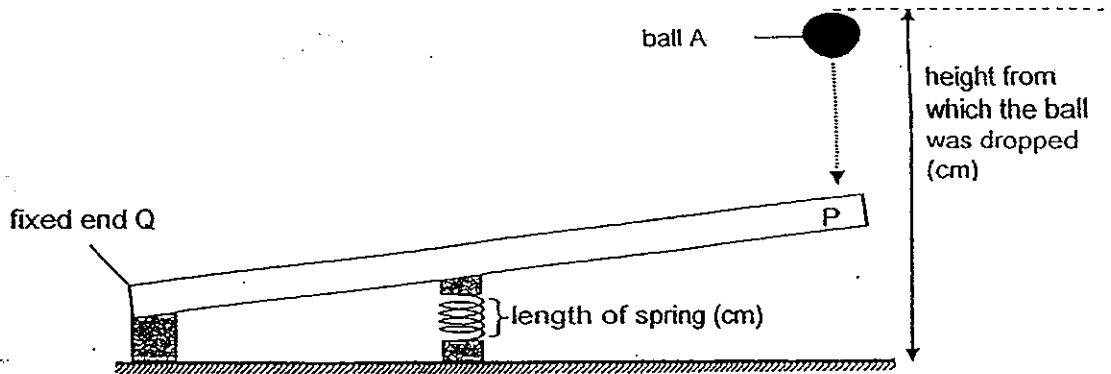
- (c) What would happen to the bar magnets when Ali replaced the piece of material M with a piece of plastic sheet of the same thickness? [1]

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Score	3
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41. A wooden plank, fixed at Q, was placed on a flexible spring on the underside at its centre as shown below.



Lawrence dropped ball A from a height. He measured the length of the compressed spring when the ball hit the plank just before it bounced off at P.

He tabulated the results of his experiment as shown below.

Height from which the metal ball was dropped (cm)	Length of compressed spring (cm)			
	1 <sup>st</sup> try	2 <sup>nd</sup> try	3 <sup>rd</sup> try	Average
120.0	8.5	8.3	8.2	8.33
125.0	7.9	7.8	7.7	7.80
130.0	7.2	7.0	6.9	7.03
135.0	6.2	6.5	6.4	6.37
140.0	5.8	6.0	5.5	5.77

- (a) State the relationship between the extent to which the spring was compressed and the height from which the ball was dropped. [1]

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Using the same apparatus, Lawrence repeated his experiment using ball B, which was of a greater mass. He dropped ball B at 120 cm from the ground.

- (b) Based on the information above, predict the length of the compressed spring when Lawrence dropped ball B at 120 cm from the ground. Give a reason for your answer. [2]

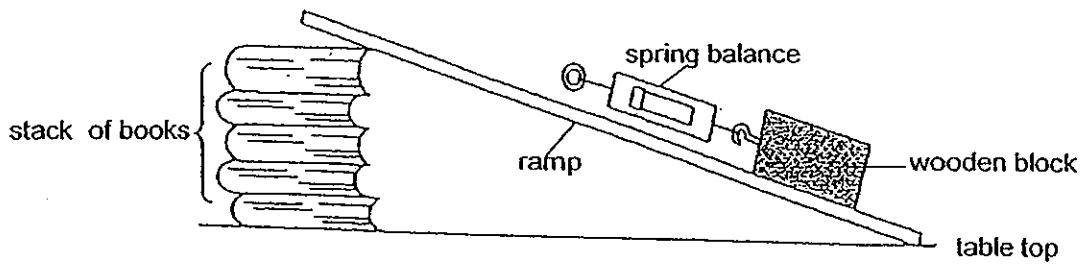
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Score	3
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42. Jason pulled a wooden block using a spring balance up the ramp as shown in the diagram below.



He recorded the amount of force needed to pull the wooden block up the ramp. As he increased the number of books, he found it more difficult to pull the wooden block.

- (a) What was the effect of the increased number of books on the reading shown on the spring balance? [1]

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Using the same stack of books, Jason measured the amount of force needed to pull the wooden block up the ramp and then down the ramp. He recorded the amount of forces as 45 N and 54 N.

- (b) Complete the table below by writing '45' and '54' in the correct blanks.

Amount of force needed to pull the wooden block up the ramp (N)	Amount of force needed to pull the wooden block down the ramp (N)

Explain your answers. [2]

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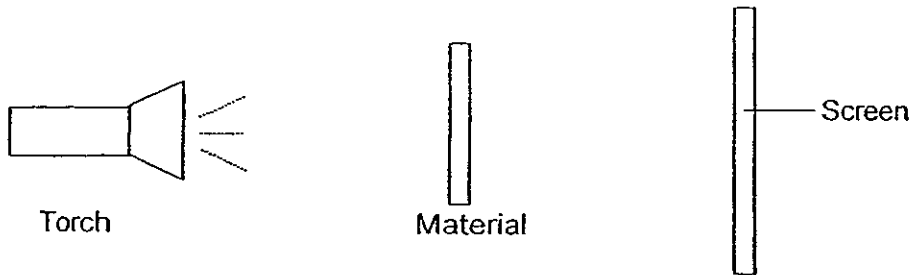
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Score	3
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43. In a pitch dark room, Sammy conducted an experiment as shown below. He used 3 different pieces of materials of identical size and thickness. He shone a torch at each of the materials one at a time. The same torch and screen were used throughout the experiment.

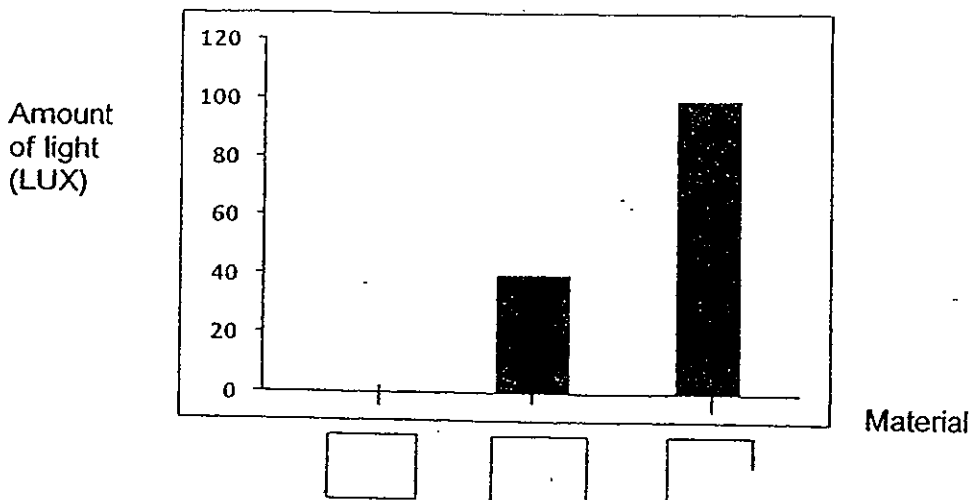


He observed the shadow cast by the materials and recorded his results as shown below.

Material	Observation
A	Dark shadow
B	Very faint shadow
C	Faint shadow

- (a) Name another variable that is to be kept constant to ensure that Sammy's experiment is a fair test. [1]

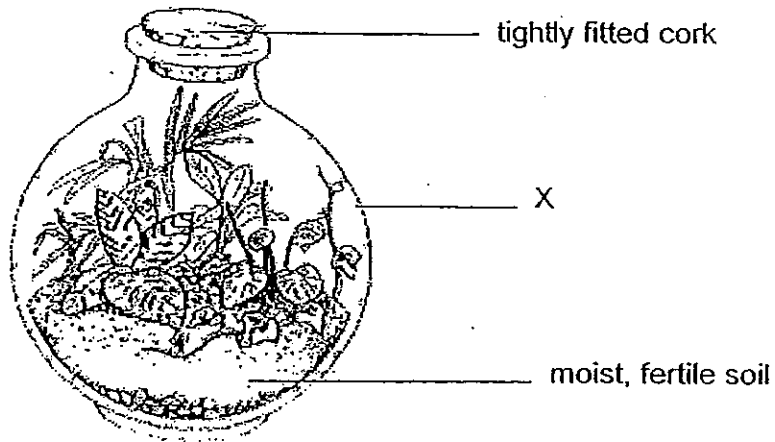
Sammy repeated the experiment by replacing the screen with a light-sensor. He represented the results in a bar graph as shown below.



- (b) Based on Sammy's observations on the shadows cast on the screen, label the material, A, B and C in the boxes provided in the above graph. [1]

Score	2
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Samy decided to build his own terrarium using plants that thrives in a sunny and warm climate as shown below.



(c) Which material, A, B or C, would be the most suitable for X? Explain your answer. [2]

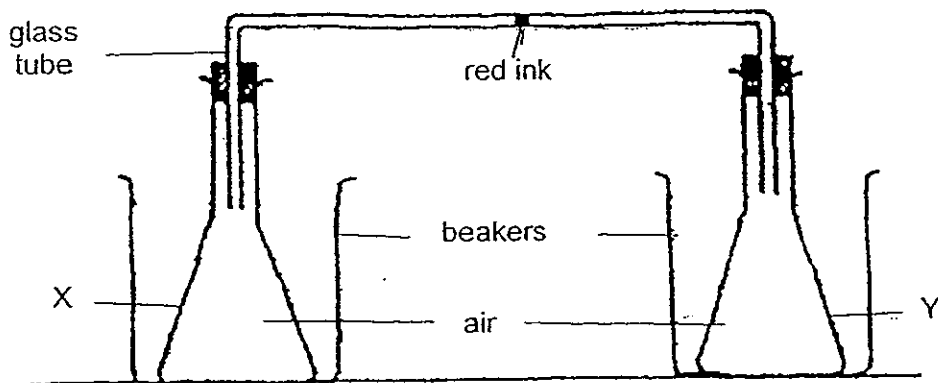
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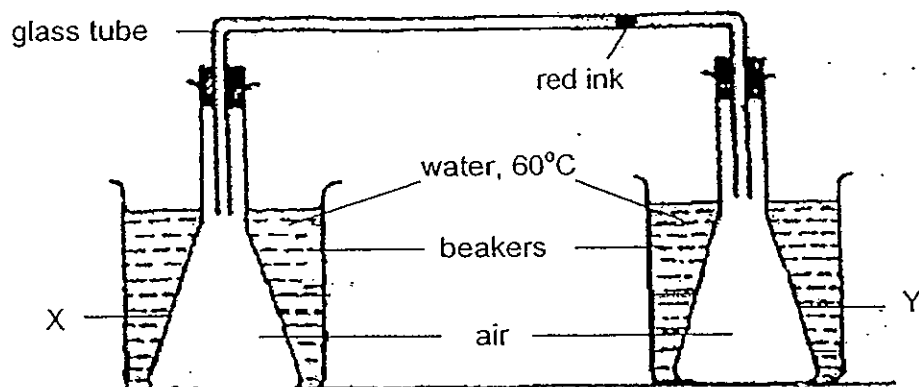
Score	2
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44. The diagram below shows two flasks, X and Y, connected by a glass tube with a drop of red ink at the centre. Flasks X and Y were identical in size but each made of a different material.



When an equal amount of water at  $60\text{ }^{\circ}\text{C}$  was poured into the beakers at the same time, the drop of red ink moved towards beaker Y as shown in the diagram below.



- (a) Explain why the drop of red ink moved towards beaker Y. [2]

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- (b) What would happen to the drop of red ink in the glass tube when both beakers of water reach the same temperature as the surrounding? [1]

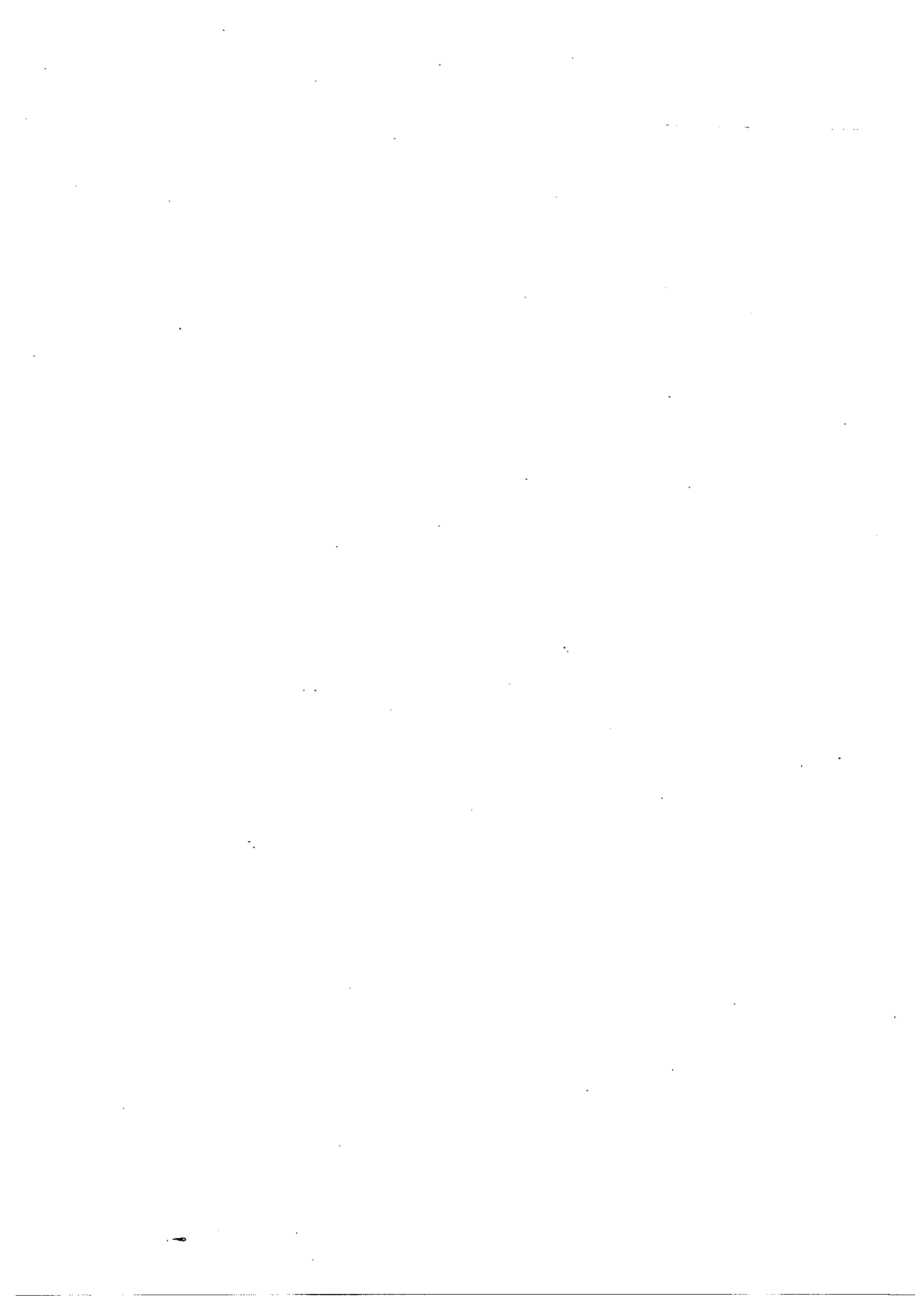
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-END OF PAPER-

Score	3
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## Exam Paper 2013 Answer Sheet

**School: RAFFLES GIRLS' PRIMARY SCHOOL**

**Subject: PRIMARY 6 SCIENCE**

**Term: SA1**

1) 1	6) 3	11) 4	16) 1	21) 3	26) 2
2) 2	7) 4	12) 2	17) 4	22) 1	27) 1
3) 3	8) 2	13) 2	18) 4	23) 3	28) 3
4) 1	9) 1	14) 2	19) 4	24) 3	29) 1
5) 3	10) 2	15) 3	20) 4	25) 2	30) 2

31. (a) The wing-like structure of the fruit enables the fruit to stay afloat in the air for a longer time.

(b) Gravitational force.

32. (a) i. P: Lungs

ii. Q: Heart

(b) Ribcage

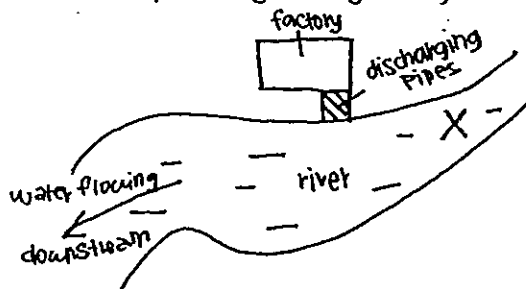
33. (a) C and D are animal cells. All animal cells do not have a cell wall but most, unlike the red blood cells for example, have a nucleus.

(b) A

34. (a) Water.

(b) Diagram 1. The water was transported from the roots to the part of the stem up to flower A passing through X by the water carrying tubes.

35. (a)

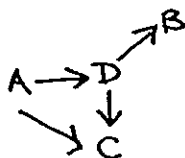


(b) 1. The bears drink the water from the river and eat the trouts containing chemical Z and were not able to reproduce.

2. The reproduction rate of the trouts will decrease due to chemical Z. Hence, the bears will have lesser trouts to eat so their population will decrease (starvation).

(c) The river bank's water is also polluted so when the grass growing near the river take in water from the river, the grass population will decrease, there is no roots to hold onto the soil, increasing the rate of soil erosion.

36. (a)



SECRET

SECRET

SECRET

SECRET

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SECRET

(b) The aquatic plant gives out oxygen dissolved in water from organism D to take in during respiration.

37. (a) Egg X. Egg X has a rougher shell texture than Egg Y, so when Egg X is laid on the edge of narrow and steep cliffs there will be more friction between the egg and the cliffs so that Egg X will not roll off the cliff so easily.

(b) Not many predators can reach and eat the eggs.

(c) Butterfly Y will think that another butterfly has already laid its eggs on plant P and when the eggs hatch into caterpillars, they will need to compete for food with the others.

38. (a) Matter has volume.

(b) 1. Tie the cork to object X using a string.

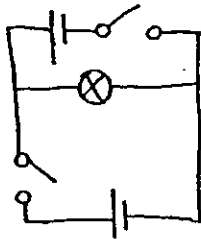
2. Submerge them gently into the water completely.

3. Record the total volume of object X and the cork.

4. Find the difference in volume between the total volume of cork and X and X only. (Vol. of cork + X) – (Vol. of X)

39. (a) X, Y, Z, W

(b)



40. (a) Iron. Iron is a magnetic material so the magnetic force cannot pass through and the strong bar magnets will not repel each other but will attract the thin piece of material M.

(b) When M was removed, the magnetic force could pass through and the magnets repelled each other as the like poles were facing each other.

(c) They would still repel each other because plastic is a non-magnetic material and it is not thick enough so the magnetic force can still pass through.

41. (a) The greater the height from which the metal ball was dropped, the shorter the length of the compressed spring.

(b) 6.6 cm. ball B experienced more gravitational force thus pushing P further down.

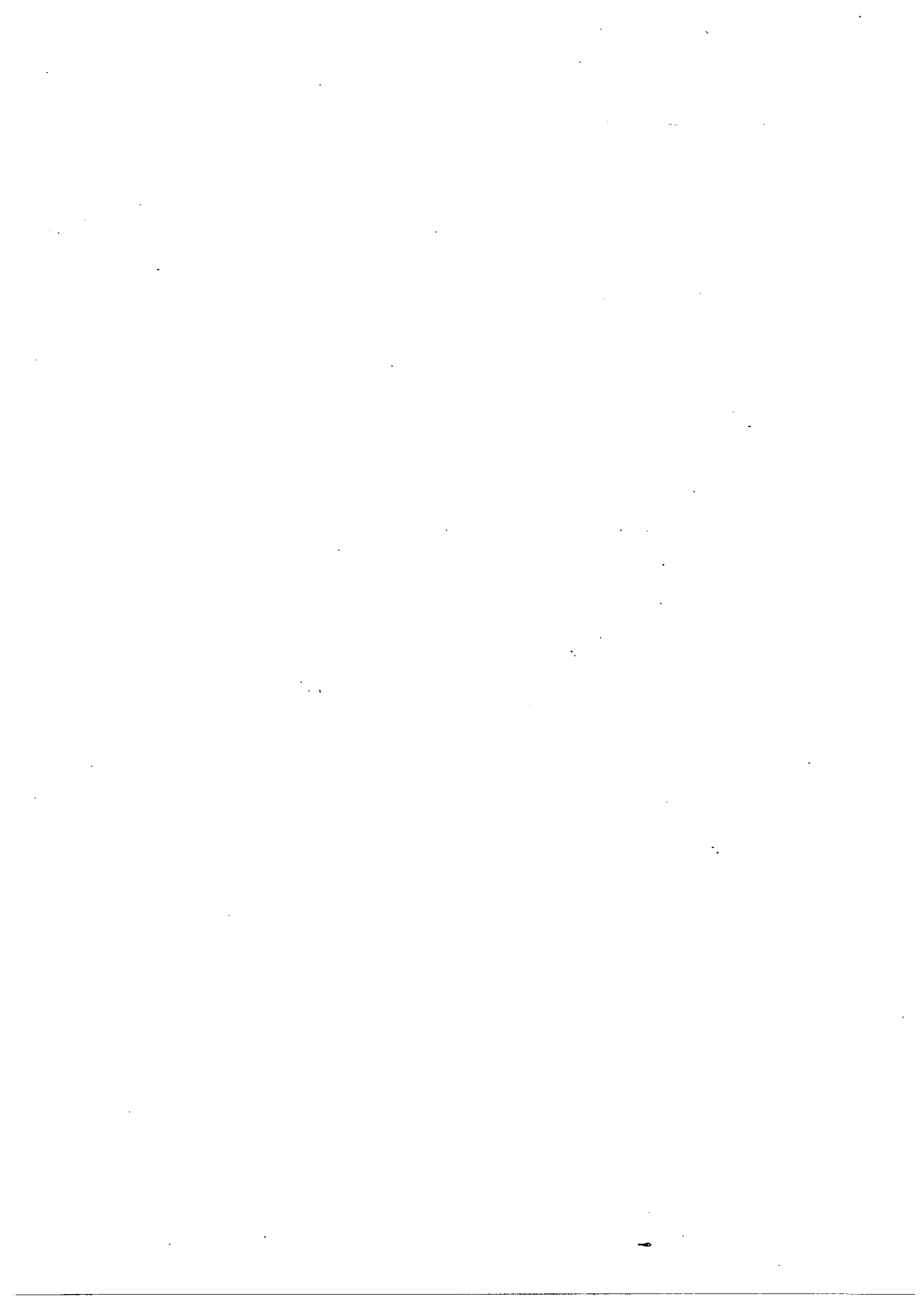
42. (a) When the number of books increased, the reading shown on the spring balance increased as well.

(b) 54N, 45N

When the block was pulled up the ramp, the force needed was more as the block is going against gravity. However when the block is going down the ramp, it was acting in the same direction as gravity.

43. (a) The distance from the torch to the material must be the same.

(b) A, C, B



(c) Material B: B allows the most amount of light to pass through and light is needed for the plants to photosynthesis. Hence most light would likely increase the rate of photosynthesis for the plants to thrive in the terrarium.

44. (a) Air in X gained heat from the water more quickly and expanded more quickly, pushing the ink drop towards Y.

(b) The drop of red ink would return to its original position at the start of the experiment.

