



NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

**PRELIMINARY EXAMINATION
2014**

BOOKLET A

**Date : 21 Aug 2014
Duration : 1 h 45 min**

Name : _____ ()

Class: Primary 6 ()

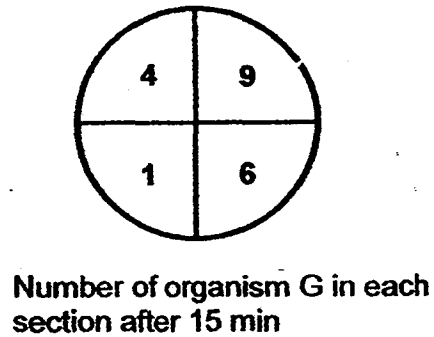
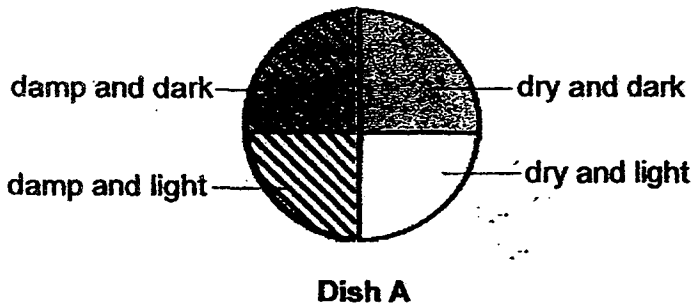
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FOLLOW ALL INSTRUCTIONS CAREFULLY.**

Booklet A consists of 18 printed pages including this cover page.

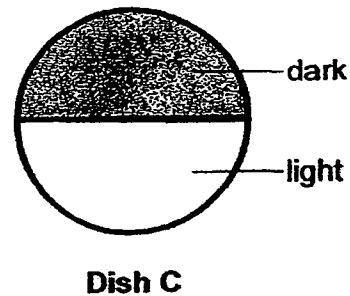
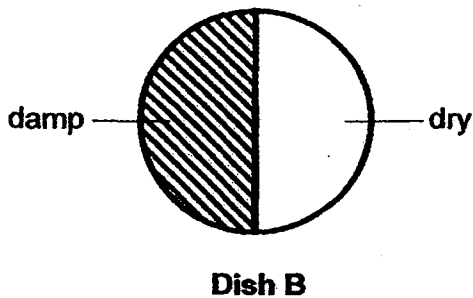
Section A (30 x 2 marks = 60 marks)

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

1. Salifa carried out an investigation to find out the preferred environment of an organism G. Twenty organisms G were put in the middle of Dish A. After 15 minutes, the number of organism G in each section of Dish A was counted.



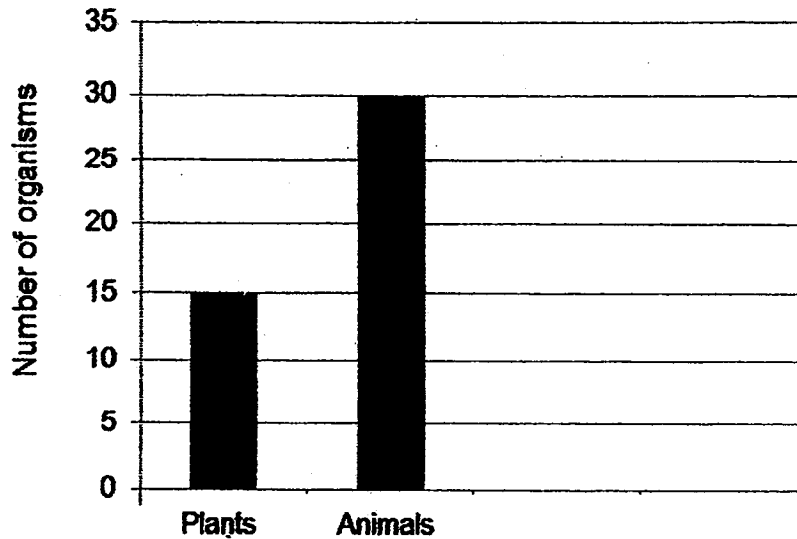
She repeated the investigation with Dish B and Dish C while using the same number of organism G in each dish.



Which of the following shows the likely number of organism G in each section of Dish B and C?

Number of organism G in each section				
	Dish B		Dish C	
	damp	dry	dark	light
(1)	10	10	4	16
(2)	9	11	10	10
(3)	6	14	12	8
(4)	15	5	13	7

2. Peter counted the plants and animals in his aquarium. The results are shown below.



Which of the following statement(s) about the plants and animals in the aquarium is/are definitely correct?

- A There is one aquarium community.
- B There are more types of animals than plants.
- C The population size of all the animals is greater than that of all the plants.

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

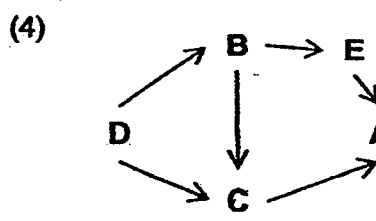
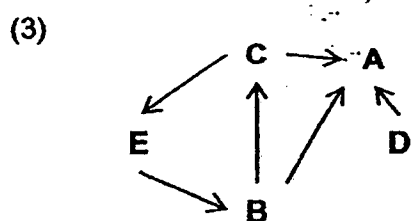
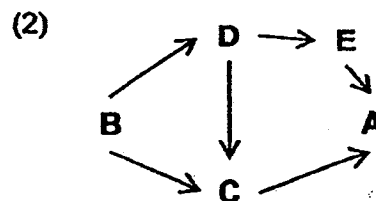
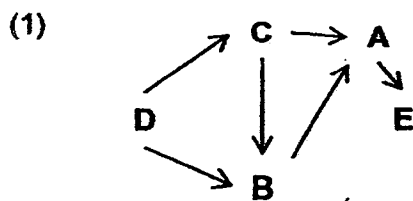
3. Which of the following is a reason for the young of some animals to be travelling in groups with their parents?

- (1) Parents may protect their young from danger.
- (2) Predator could distract the young instead of the parents.
- (3) The young prevent their prey from escaping when parents are hunting.
- (4) The young spot their predator and lead the group to attack the predator.

4. A food web consists of five organisms, A, B, C, D and E. The table below shows some information about the organisms.

Food producer	Prey only	Both predator and prey	Predator only
D	B	C,E	A

Which one of the following shows a possible food relationship among the five organisms?



5. The diagram below shows organisms in a food chain.

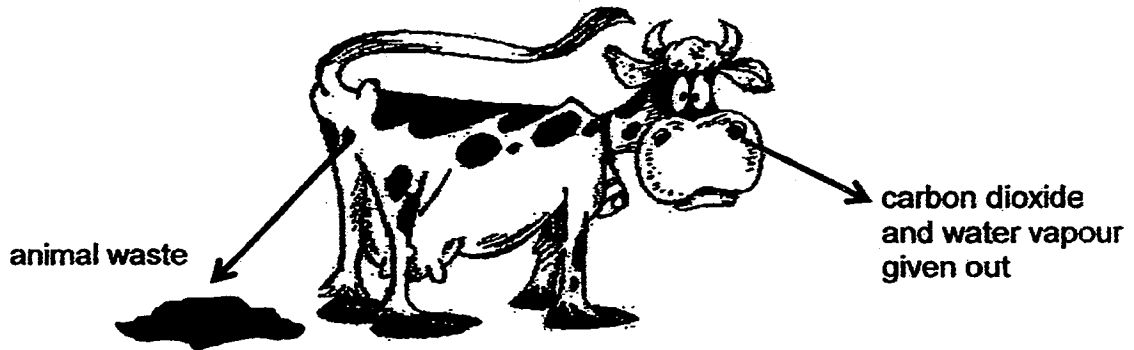


Which of the following statements are true about the food chain?

- A The insect obtains its food from the plant only.
- B The source of energy for the food chain is the sun.
- C Not all the energy from the plant could be transferred to the bird.
- D The bird does not depend on the plant for food directly or indirectly.

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

6. Study the diagram below.



The substances produced by the cow undergo a process to release other substances that are returned to the soil.

Which of the following correctly matches the process with the substance(s) that are returned to the soil for plants to absorb for growth?

	Process	Substance(s) returned to soil
(1)	Respiration	sugar
(2)	Evaporation	water vapour
(3)	Respiration	carbon dioxide and water
(4)	Decomposition	mineral salts

7. The diagram below shows a fish in its habitat.



Which of the following characteristics help the fish to swim fast and hide from its predator?

	swim fast	hide from predator
(1)	fins	long body
(2)	short tail	scales on its body
(3)	eyes on side of body	triangle-shaped body
(4)	streamlined body	stripes on its body

8. ~~Four~~ ^{Three} pupils made the following statements about adaptation of organisms.

Lenny: An organism must have adaptations for it to survive the physical conditions of its habitat.

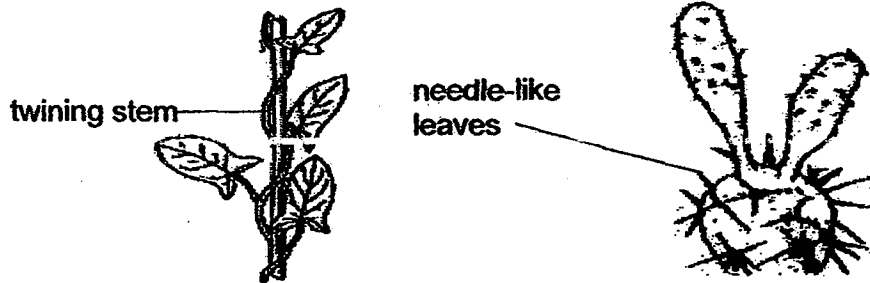
Manju: Only plants develop adaptations for conserving water.

Neela: Both the young and adult of mammals show behavioural adaptations for reproduction.

Which pupil(s) had made the correct statement about adaptation?

- (1) Manju only
- (2) Lenny only
- (3) Lenny and Neela only
- (4) Lenny, Manju and Neela

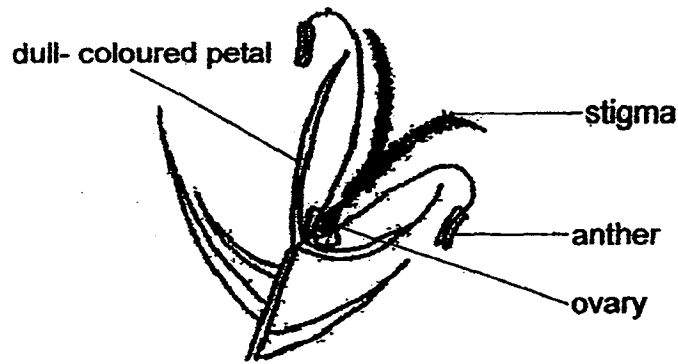
9. The diagrams below show two different plant adaptations.



Which of the following correctly matches the adaptations of each plant to its purpose?

	twining stem	needle-like leaves
(1)	to obtain food	to keep herbivore away
(2)	to increase in height	to obtain water
(3)	to obtain more light	to reduce water loss
(4)	to avoid wind	to cope with high temperature

10. The diagram below shows a wind-pollinated flower.



What adaptation does the flower have for wind pollination?

- (1) Feathery stigma
 - (2) Dull-coloured petals
 - (3) Ovary hidden in flower
 - (4) Stigma located far from ovary
11. Acid rain is harmful to our environment. Which one of the following is most likely to cause more acid rain?
- (1) more pollutants in the air
 - (2) more use of recycled material
 - (3) more variety of aquatic animals
 - (4) more trees being chopped down
12. Which one of the following actions indirectly contributes to flooding due to rising sea level?
- (1) oil spill
 - (2) burying household garbage
 - (3) more people driving instead of taking public transport
 - (4) using renewable sources of energy to generate electricity

13. Three plants, Q, R and S, were planted as shown in Figure 1 in 2010. Figure 2 shows the locations of the plants in 2014.

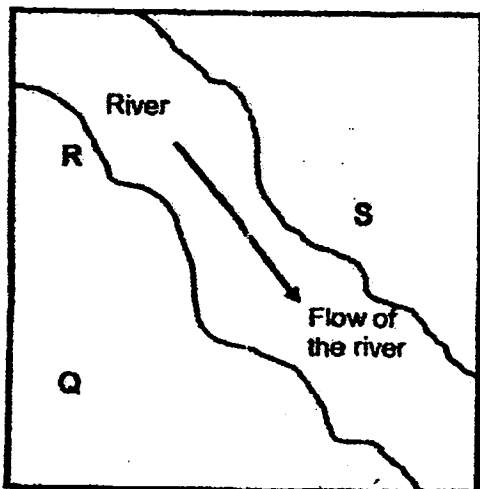


Figure 1

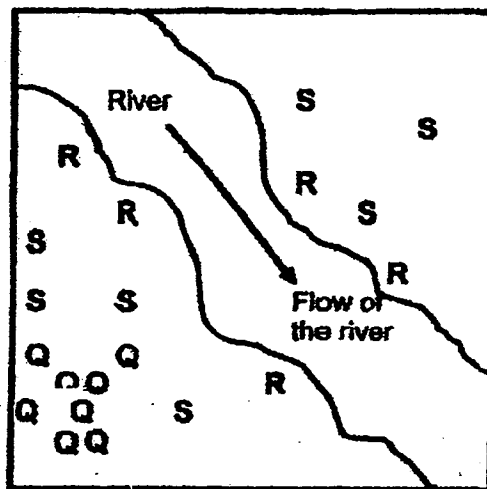
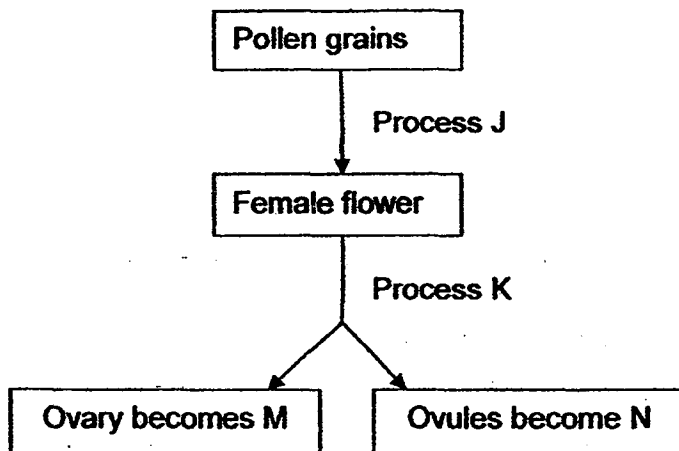


Figure 2

Which of the following is the most likely method of dispersal for the fruits of plants Q, R and S?

	Q	R	S
(1)	By water	By wind	By explosive action
(2)	By wind	By explosive action	By water
(3)	By wind	By water	By explosive action
(4)	By explosive action	By water	By wind

14. Study the diagram below.



Which of the following correctly identifies J, K, M and N?

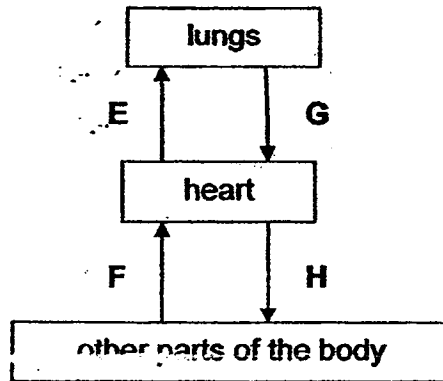
	Process J	Process K	M	N
(1)	fertilisation	pollination	fruit	seed
(2)	fertilisation	pollination	seed	fruit
(3)	pollination	fertilisation	fruit	seed
(4)	pollination	fertilisation	seed	fruit

15. Which of the following statement(s) about human reproduction is/are true?

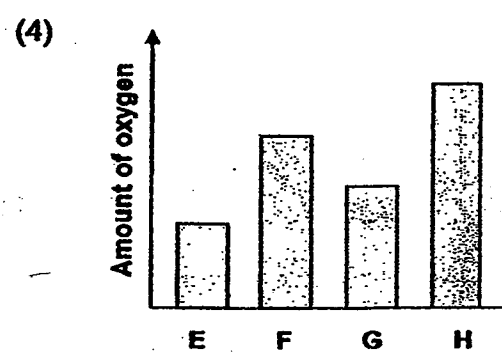
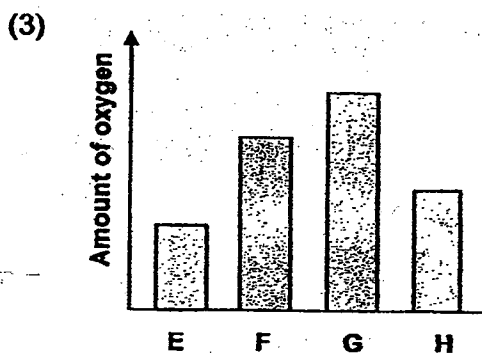
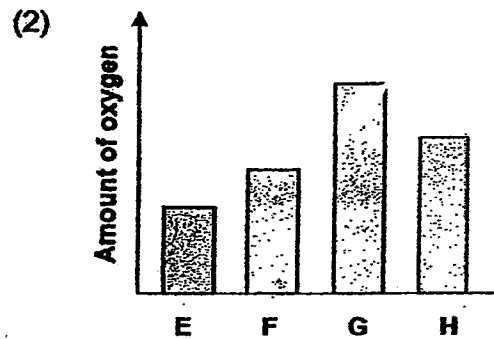
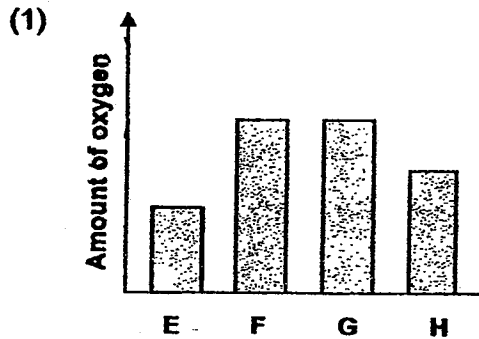
- A The ovaries produce eggs.
- B The sperms are produced in the penis.
- C Only one sperm is needed to fertilise an egg.
- D The ovaries usually release many eggs at a time.

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

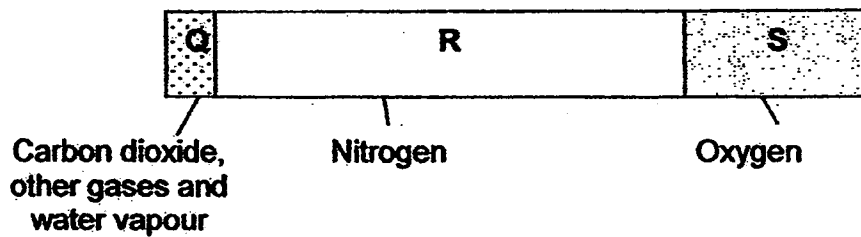
16. The diagram below shows a simple representation of the human circulatory system. Arrows E, F, G and H represent the flow of blood to different parts of the body.



Which one of the following graphs correctly represents the amount of oxygen in E, F, G and H?



17. The diagram below represents the composition of gases in the air inhaled by a human.



Which of the following statements are false about the composition of gases in the exhaled air of a human?

- A Amount of Q increases.
- B Amount of S increases.
- C Amount of R remains the same.
- D Amount of Q, R and S decrease.

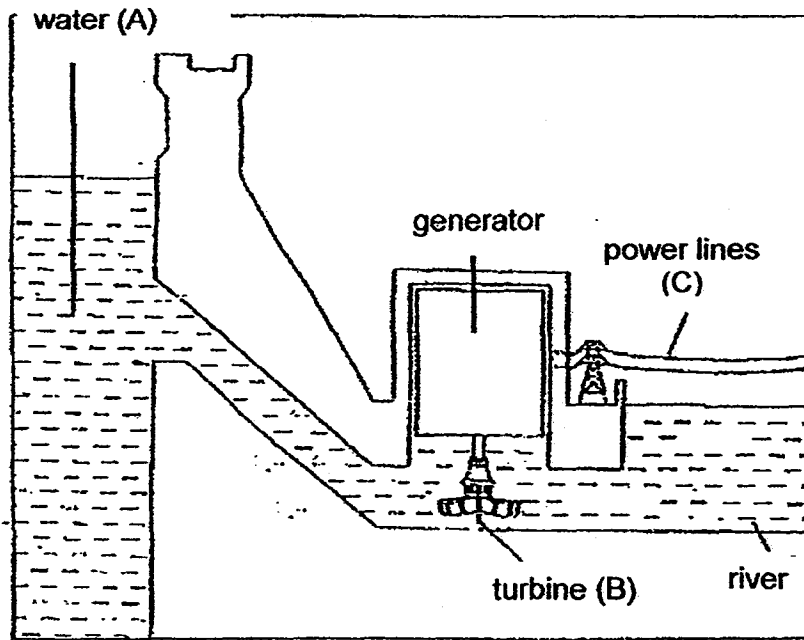
- (1) A and C only
- (2) B and D only
- (3) A, C and D only
- (4) B, C and D only

18. Which of the following statements is true about the human digestion system?

- A Absorption of water takes place in the small intestine.
- B Absorption of digested food takes place in the small intestine
- C The start of the digestion process takes place in the stomach.
- D Chewing food into smaller pieces can speed up the rate of digestion.

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

19. The diagram below shows a hydroelectric power station.

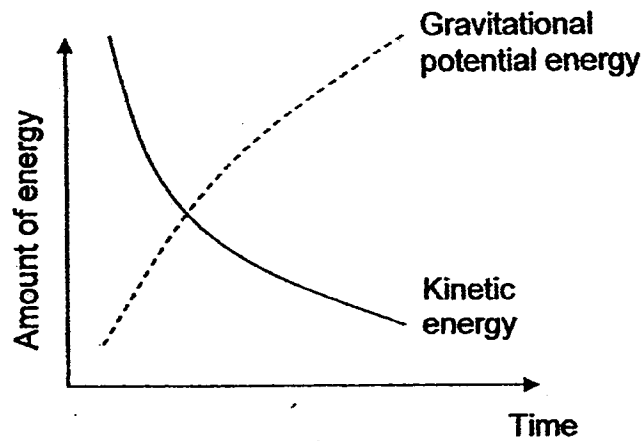


The water turns the turbine such that the generator can produce electricity.

Which of the following identifies the main forms of energy at points A, B and C?

	A	B	C
(1)	Gravitational potential energy	Electrical energy	Kinetic energy
(2)	Gravitational potential energy	Kinetic energy	Electrical energy
(3)	Kinetic energy	Electrical energy	Gravitational potential energy
(4)	Chemical potential energy	Kinetic energy	Electrical energy

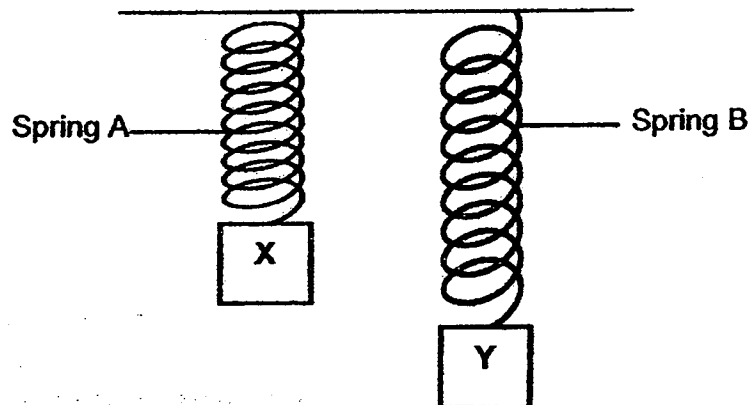
20. Study the graph below.



Which of the following actions would show the same energy conversions as the graph above?

- (1) Skating down a slope.
- (2) Kicking a ball upwards
- (3) Pushing a pen off a table.
- (4) Coconut falling from a tree.

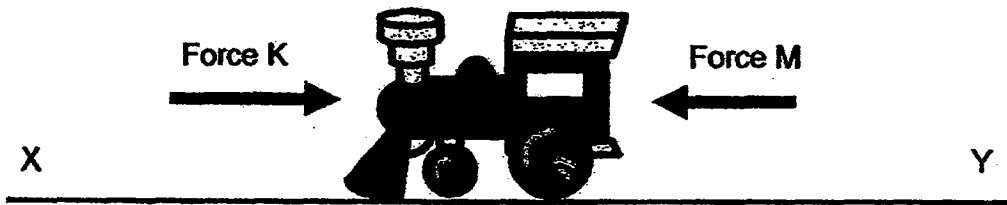
21. Hui Yin hung two objects X and Y on two identical springs as shown below.



Which one of the following statements correctly explains why Spring B is longer than Spring A after the objects are hung on them?

- (1) The mass of object Y is more than that of object X.
- (2) Spring A stretches less than Spring B for the same amount of mass.
- (3) The elastic spring force acting on object Y is less than that acting on object X.
- (4) The gravitational force acting on object X is less than that acting on object Y.

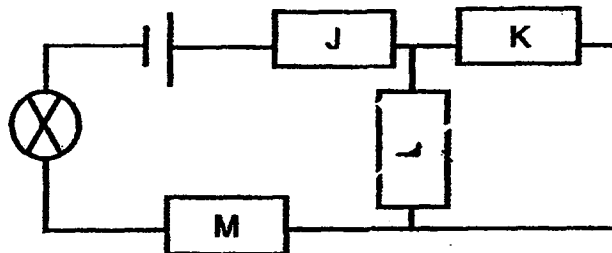
22. The diagram below shows a toy train on a flat surface. The direction of the toy train's movement depends on the amount of forces K and M.



Which of the following are the correct reasons for the train's possible movements?

	Movement	Explanation
A	The train moves towards X	Force K is greater than Force M
B	The train moves towards Y	Force M is smaller than Force K
C	The train does not move	Force M is equal to Force K

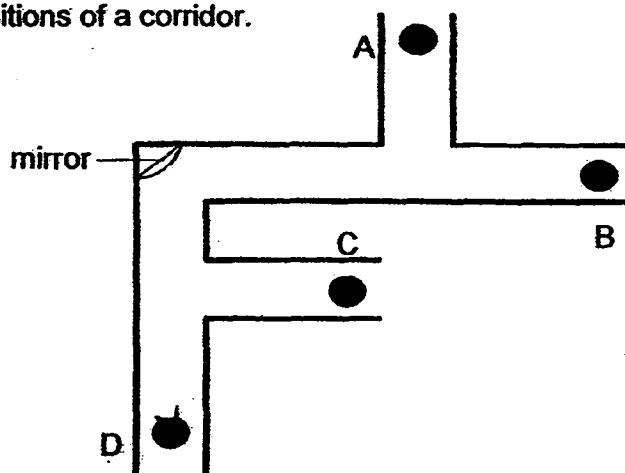
- (1) A and B only
 (2) A and C only
 (3) B and C only ✓
 (4) A, B, and C only
23. The diagram below shows an electrical circuit that consists of four objects, J, K, L and M, that are made of different materials.



It was observed that the bulb lit up. Which of the following correctly shows the materials that the objects could be made of?

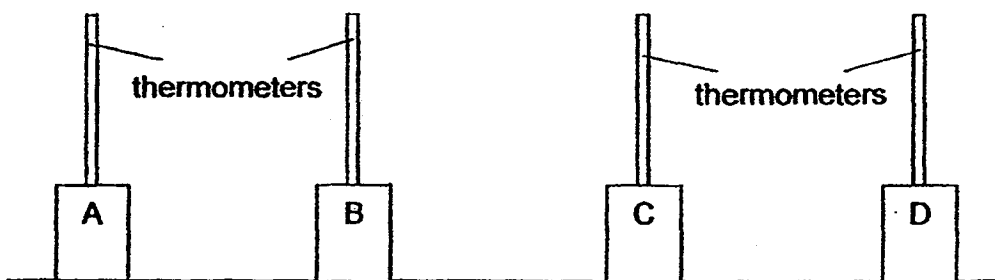
	J	K	L	M
(1)	Iron	Paper	Wood	Copper
(2)	Copper	Aluminum	Iron	Paper
(3)	Aluminum	Iron	Wood	Copper
(4)	Paper	Copper	Iron	Wood

26. The letters, A, B, C and D, represent four students standing at different positions of a corridor.



Without moving from their current positions, which pair of students will be able to see each other in the mirror?

- (1) A and D
 (2) A and C
 (3) B and D
 (4) B and C
27. Aini carried out an experiment to find out the effect of the Sun's heat on different materials. She used 4 identical empty cans made of different materials, A, B, C and D, for the set-ups shown below. These set-ups were placed under direct sunlight.



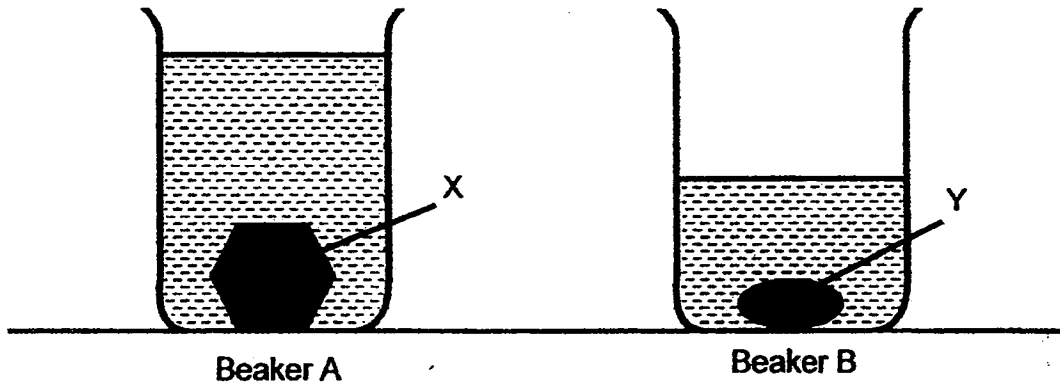
She recorded the temperature of air in the cans over time, as shown in the table below.

Time (min)	Temperature of air ($^{\circ}\text{C}$)			
	A	B	C	D
0	28	28	28	28
5	32	31	31.5	33
10	34	34.5	33	36
15	37	36.5	34.5	39

Based on her results, which of the materials is most suitable for making a lunch box to keep food warm for the longest time?

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

28. Lucy filled two identical containers with the same amount of water. She then added different objects, X and Y, into each container and observed the final water level in each container as shown below.



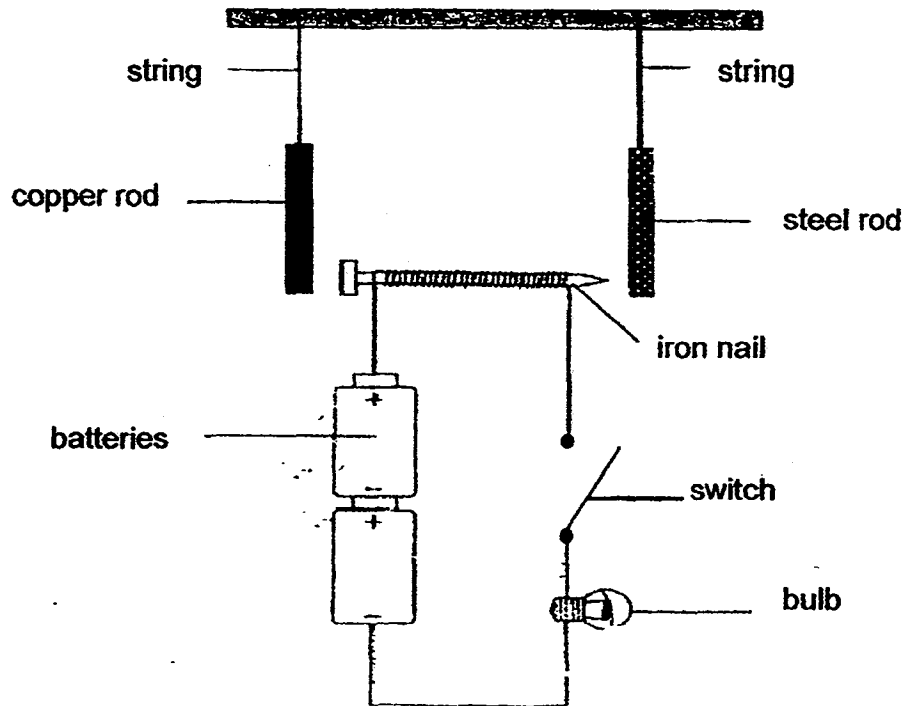
Based on her results, what can Lucy conclude?

- A Objects X and Y have different masses.
- B Objects X and Y have different volumes.
- C Object X absorbs more water than object Y.

- (1) B only
- (3) B and C only

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

29. Zec placed an iron nail near a steel rod and a copper rod as shown in the set-up below.



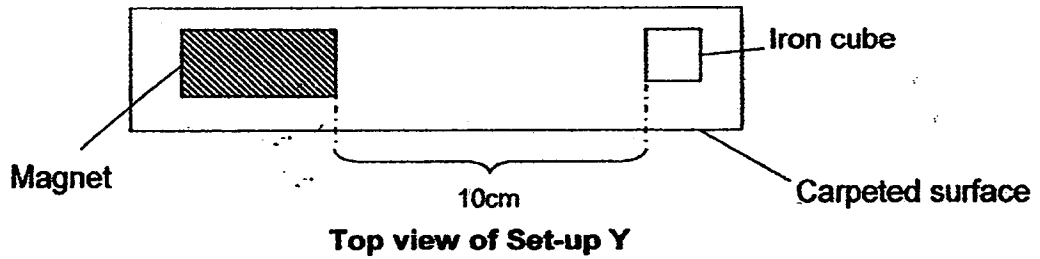
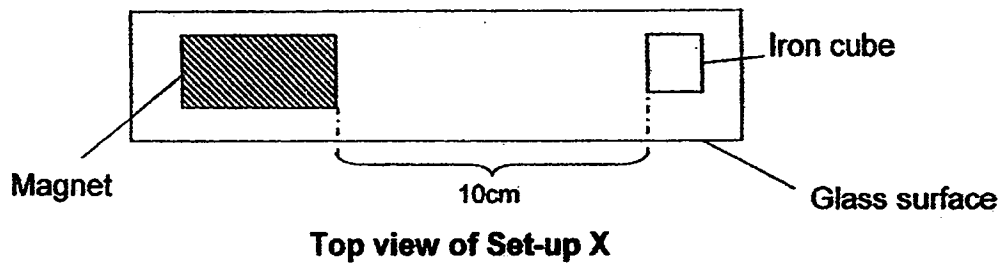
Which of the following will Zec most likely observe when he closes the switch?

- A The bulb lights up.
- B The steel rod moves towards the iron nail.
- C The copper rod remains at the same position.
- D Both the steel rod and copper rod will move towards the iron nail.

- (1) A and D only
- (3) C and D only

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

30. Shannon placed 2 similar iron cubes on 2 different surfaces as shown in the diagram below. The 2 magnets used were of the same strength.



The table below shows the time taken for the iron cubes to come into contact with the magnets.

	Time taken for each iron cube to come into contact with the magnet (s)		
	1 st try	2 nd try	3 rd try
Set-up X	3	3	2
Set-up Y	4	5	4

Based on her findings in the table above, which one of the following best explains her observations?

- (1) The iron cube in set-up Y had a bigger mass.
- (2) The magnet in set-up X exerted a greater force on the iron cube.
- (3) There was more friction between the iron cubes and the surfaces in set-up X than set-up Y
- (4) There was less friction between the iron cubes and the surfaces in set-up X than set-up Y.



NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

PRELIMINARY EXAMINATION

2014

BOOKLET B

Date : 21 Aug 2014
Duration : 1 h 45 min

Name : _____ ()

Class: Primary 6 ()

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

Any query on marks awarded should be raised by 3 September 2014. We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature:

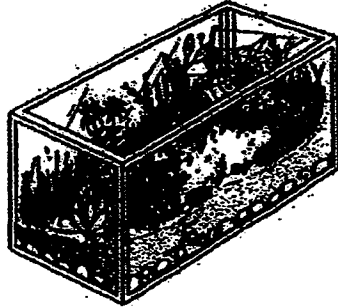
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Booklet B consists of 15 printed pages including this cover page.

Section B (40 marks)

Write your answers to questions 31 to 44 in the spaces provided.

31. Robert set up a glass tank which contains plants and animals as shown below.



After putting some plants and animals into the tank, he added some water before it was sealed tightly.

- (a) Give one reason why the tank must be kept in a brightly-lit place for the animals to survive. [1]

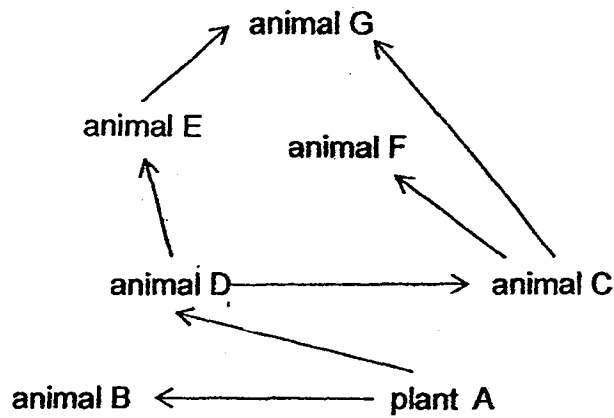
Robert observed that spiders feed only on the grasshoppers in the tank. He recorded the number of spiders and grasshoppers over time in the tank in the table as shown below.

Day	Number of animals	
	Grasshopper	Spider
1	70	5
17	20	2
125	50	3

- (b) Give a reason for the change in number of spiders from Day 1 to Day 17. [1]

- (c) Explain why the number of grasshopper on Day 125 was higher than Day 17 although the number of spiders had also increased. [2]

32. The figure below shows a food web in a particular community.



A disease that only killed animal E caused a sharp decrease in its population.

How would this decrease affect the population of animals B and G? [2]

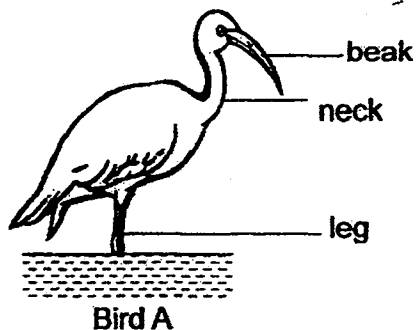
(i) Immediate effect on animal G: _____

Reason: _____

(ii) Effect on animal B after some time: _____

Reason: _____

33. The diagram below shows a water bird A which feeds on fish.



(a) Based on the diagram above, state and explain the function of two structural adaptations that bird A has for catching fish. [2]

(i) Adaptation 1: _____

Function: _____

(ii) Adaptation 2: _____

Function: _____

Bird A stands very still in water and waits for its prey before catching it.

(b) Explain how this behavioural adaptation helps bird A catch its prey. [1]

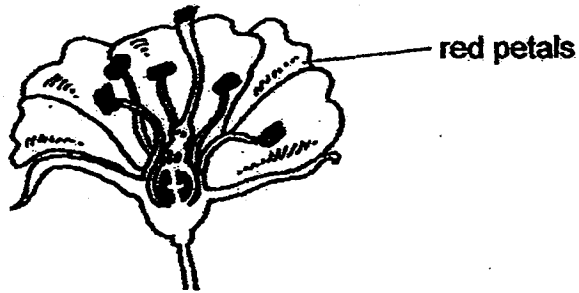


Bird B

Bird B, which is short and feeds on fish, is found in the same habitat as bird A.

(c) Explain why being short could be an advantage for its survival. [1]

34. The diagram below shows a flower.



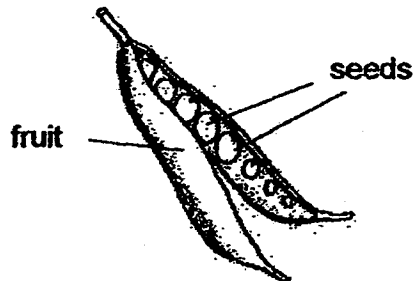
(a) Based on the diagram above, how would this flower most likely get pollinated? [1]

(b) After pollination and fertilisation, state what would happen to the flower parts below. [1]

Petals : _____

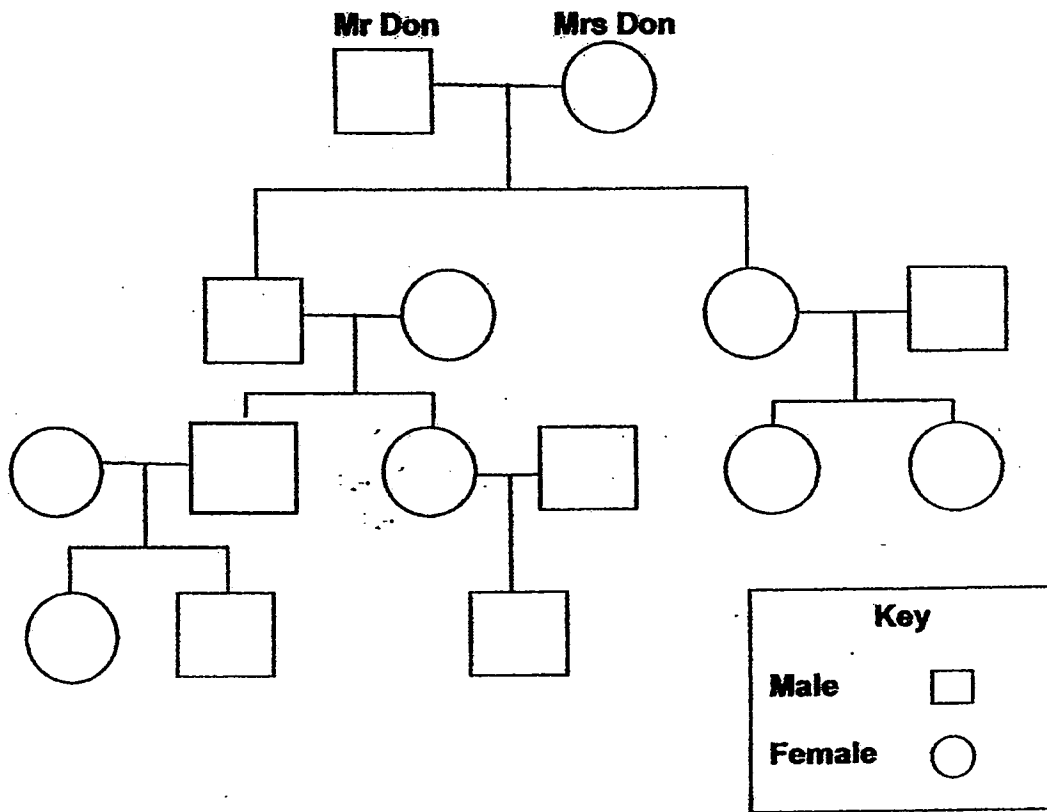
Anther : _____

The diagram below shows the fruit and its seeds of the flower after it had been fertilised.



(c) State the most likely method of dispersal for this fruit. [1]

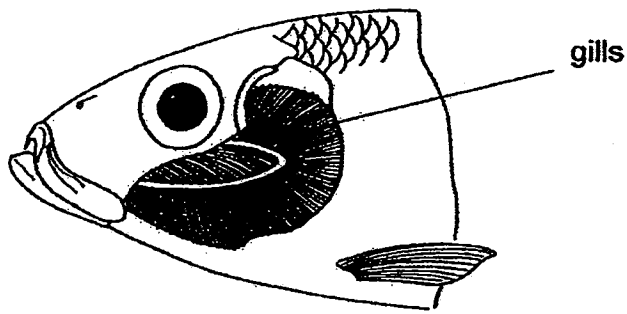
35. The diagram below shows Don Min Joon's family tree.



Don Min Joon is Mrs Don's grandson.

- (a) **Shade** the correct shape representing Min Joon in the family tree above. [1]
- (b) How many female cousin(s) does Min Joon have? [1]
-

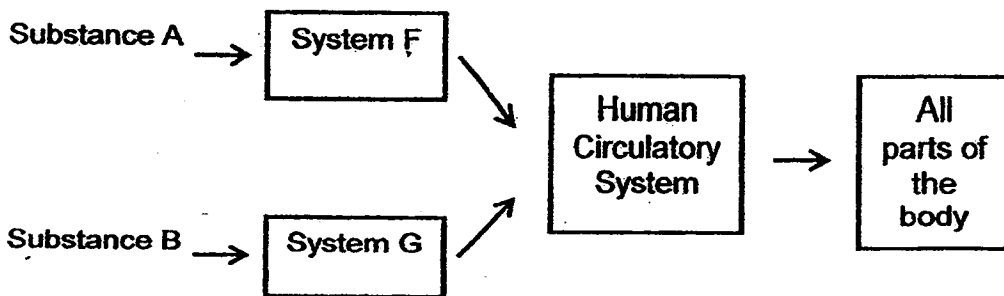
36. Fish have special breathing organs called gills which are located on the sides of their heads. Fish absorb dissolved oxygen as water passes through these gills.



- (a) Which part of the human respiratory system is similar to the fish gills? [1]

- (b) Give a reason why it is necessary for the gills to have many blood vessels. [1]

37. The diagram below describes how different systems work together in a human body to take in substances A and B that are needed for life processes.

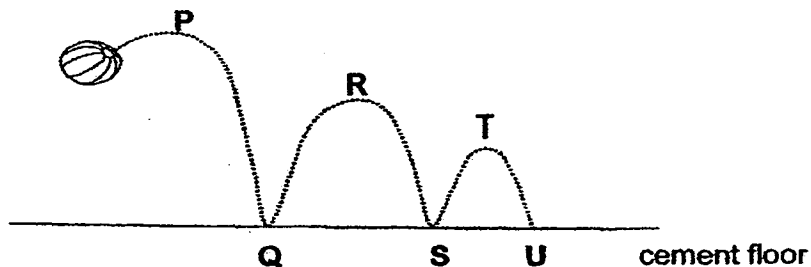


Identify substances A, B and systems F, G. [2]

(a) A: _____ ; F: _____

(b) B: _____ ; G: _____

38. The diagram below shows the path of a ball when it was being kicked to position P and left to bounce before it came to a stop at position U.



The activity above was repeated a few more times to obtain an average height of the ball at positions P, R and T. The results are recorded in the table shown below.

Position	Average height (cm)
P	100
R	70
T	40

- (a) Describe the energy change for the ball as it moves from position P to R. [2]

- (b) At which position, P, Q, R, S, T or U, did the ball have the greatest kinetic energy and greatest gravitational potential energy? [1]

Greatest kinetic energy : _____

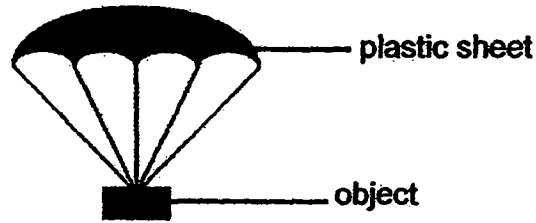
Greatest gravitational potential energy : _____

The activity was conducted again in an open field using the same force. The results are recorded in the table shown below.

Position	Average height (cm)
P	90
R	60
T	35

- (c) State one factor that had affected the results of this experiment. [1]

39. Wei Xing carried out an experiment by dropping an object of mass 15g attached to a plastic sheet from a certain height as shown below.



She recorded her findings in the table below.

Surface area of plastic sheet (cm ²)	Time taken for toy to reach the ground (s)
10	8
15	11
20	17
25	20
35	24

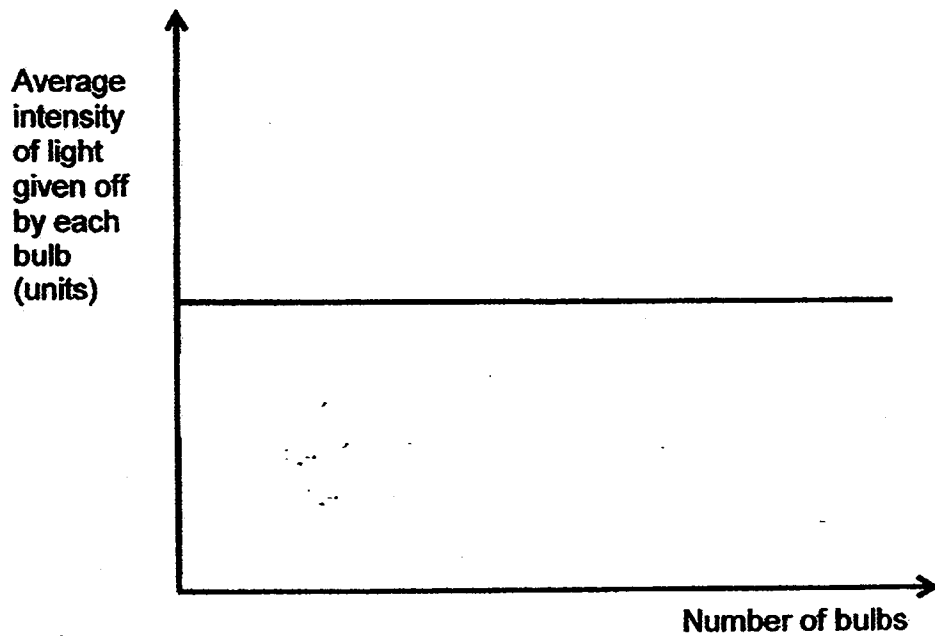
- (a) What is the aim of her experiment? [1]

- (b) Describe an experiment to determine how the mass of the object affects the time taken for the toy to reach the ground. [2]

Step	Instruction
1	Attach an object of mass 15g to a plastic sheet of 20cm ² .
2	
3	
4	

- (c) Predict how the results will be affected if three holes are made in the plastic sheet.

40. Bala carried out an experiment using 4 batteries and some similar bulbs. He then plotted his results in the graph as shown below.

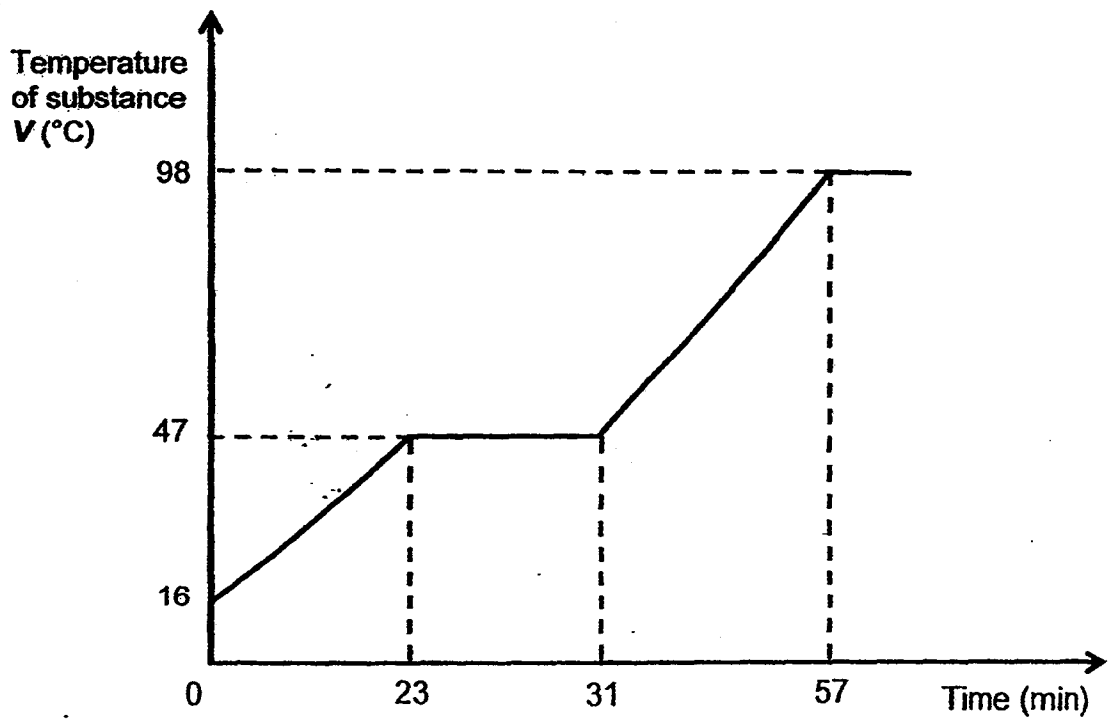


- (a) From the graph, state the relationship between the number of bulbs and the average intensity of light given off by the bulb. [1]

- (b) Based on the results, what can be concluded about how the bulbs had been arranged? [1]

- (c) Bala then reduced the number of batteries used and repeated the experiment. In the graph above, draw the line graph to show the results that he would obtain. [1]

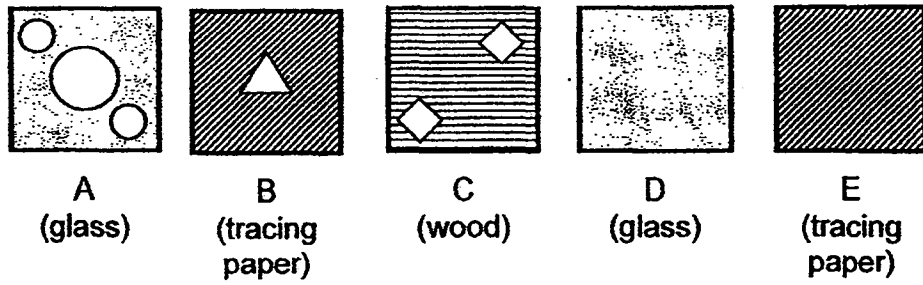
41. Luqman carried out an experiment by heating substance **V**. He recorded the temperature of the substance every 5 minutes. He then plotted his results in the graph below.



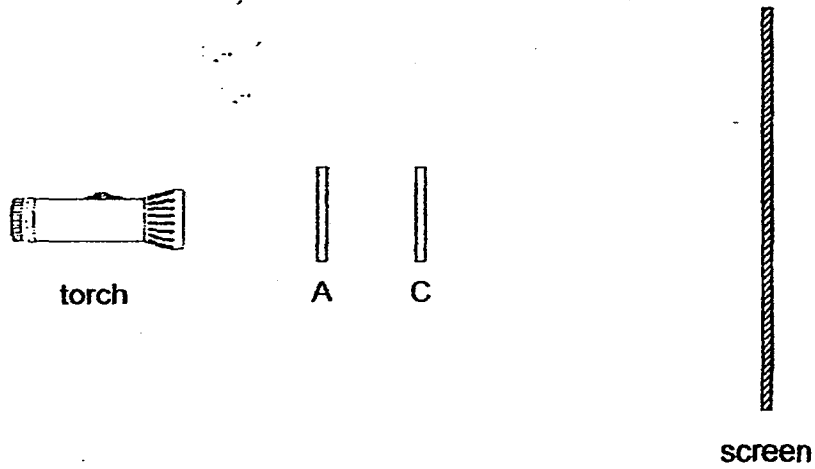
- (a) What would the state of substance **V** be at 60°C ? [1]

- (b) How long did it take for the substance **V** to melt completely? [1]

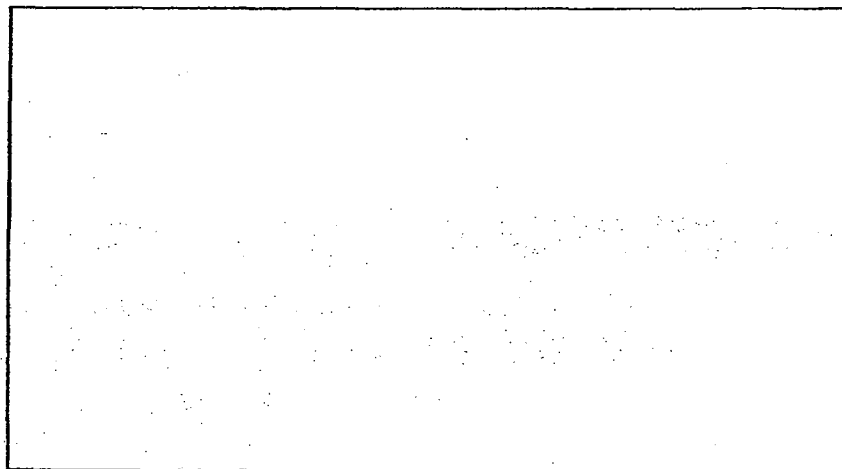
42. Clarice carried out an experiment using the following five sheets made of different materials.



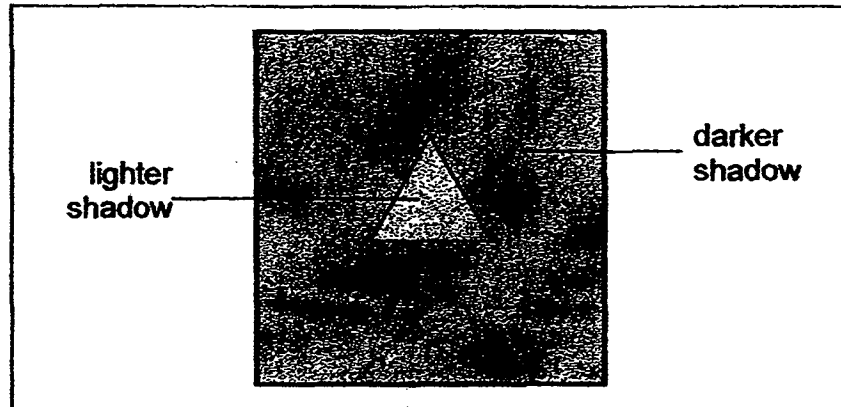
She used some of the cards for her experimental set-up as shown below.



(a) In the space below, draw the shadow she would observe on the screen. [1]

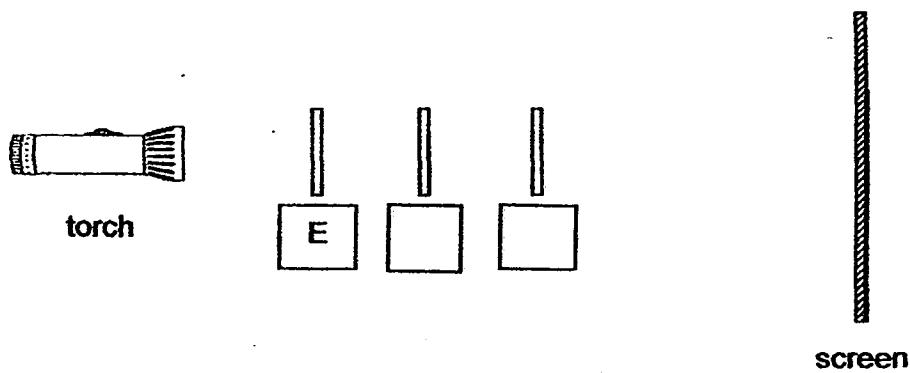


She then repeated her experiment using different sheets and observed the shadow formed below.

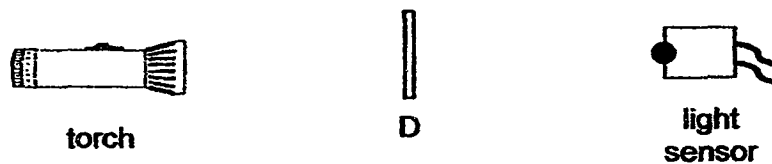


(b) In the diagram below, fill in the correct letters in the boxes to show the sheets that had been used to obtain the shadow.

[1]

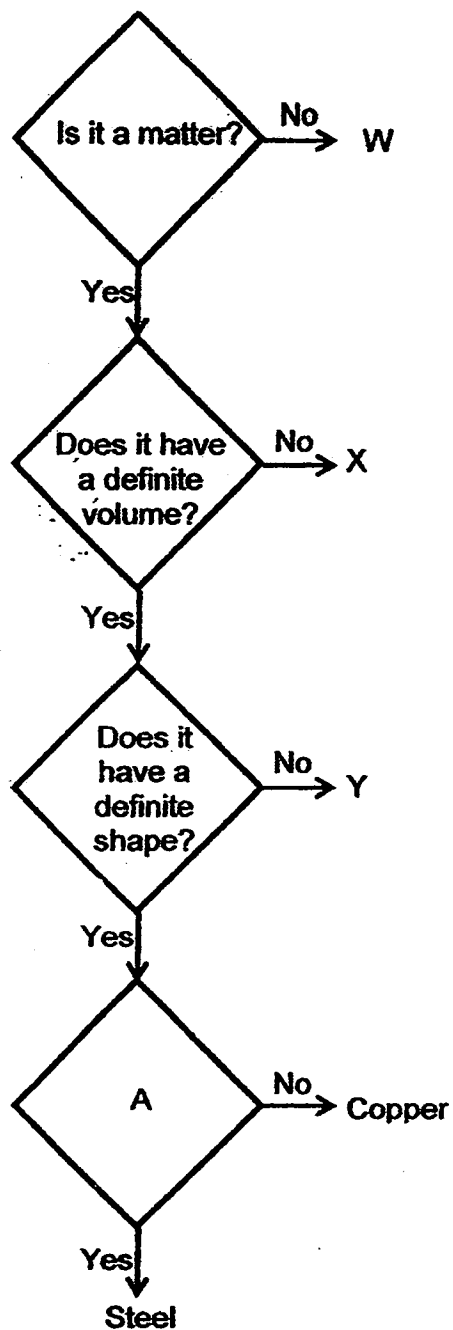


Clarice then used sheet D for the set-up shown below to find out how the distance between the torch and the sheet affects the amount of light that is detected by the light sensor.



(c) After recording the results, she replaced sheet D with sheet E and conducted the same experiment again. She realized that the amount of light detected was less. Explain her observation. [1]

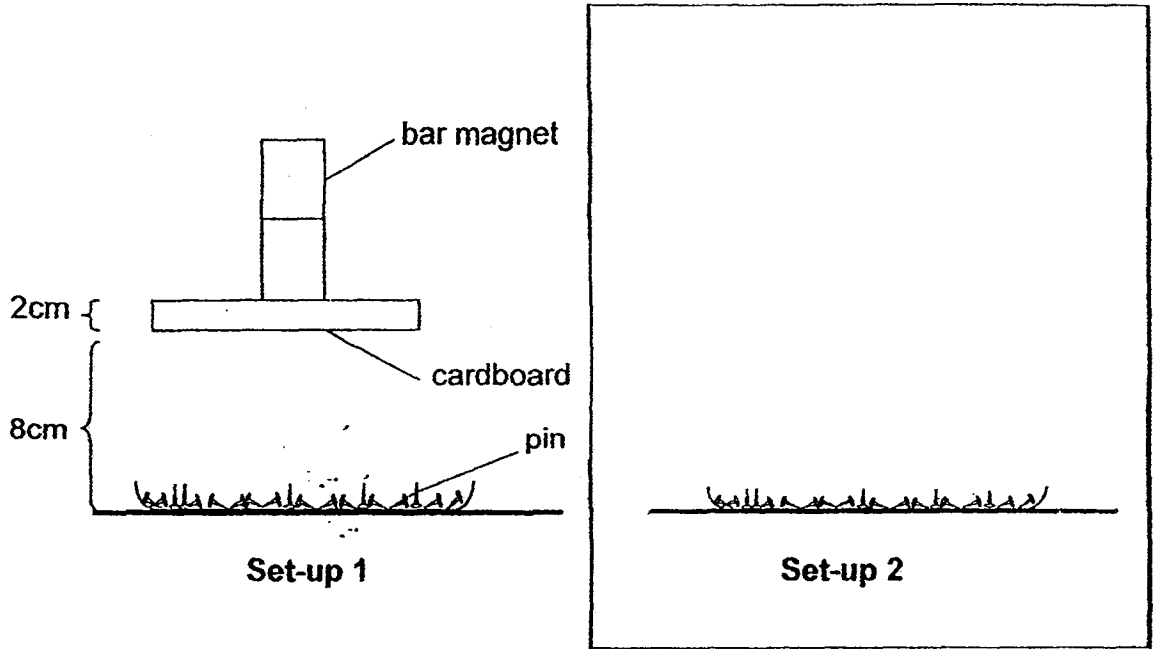
43. Study the flowchart below.



(a) Based on the flowchart, describe the properties of Y. [1]

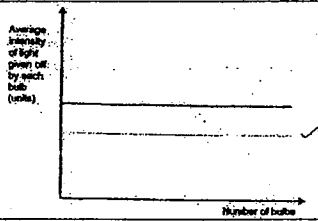

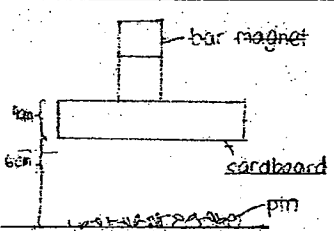
(b) State a question to represent A. [1]

44. Mrs Kim wanted to carry out an experiment to find out how the thickness of cardboards affects the pulling force of a magnet. The diagram below shows one of the set-ups.



- (a) In the box above, draw a **labelled** diagram to show how Mrs Kim should prepare set-up 2. [2]
- (b) Describe what Mrs Kim should do to find the maximum thickness of the cardboard that would still allow the bar magnet to pick up a pin. [1]

~ End of Paper ~

Q36	(a)	Lungs
	(b)	To increase the exposed surface area so that gaseous exchange can be more efficient.
Q37	(a)	Food ; Digestive system
	(b)	Oxygen ; Respiratory system
Q38	(a)	From P to Q, gravitational potential energy is converted to kinetic energy. At Q, some kinetic energy is converted to sound energy and heat energy. From Q to R, kinetic energy is converted to gravitational potential energy.
	(b)	Q ; P
	(c)	Presence of wind / Friction between ball and the ground / More air resistance / Softer ground
Q39	(a)	To find out how the surface of the plastic sheet affects the time taken for the toy to reach the ground.
	(b)	Step 2: Drop a toy from certain height and time how long it takes to reach the ground. Step 3: Repeat step 1 & 2 with objects of different mass. Step 4: Repeat each experiment at least 3 times.
	(c)	The plastic sheet with three holes will reach the ground faster than the plastic sheet without holes.
Q40	(a)	As the number of bulbs used increases, the average intensity of light given off by each bulb remains the same.
	(b)	The bulbs had been arranged in a parallel arrangement.
	(c)	
Q41	(a)	Liquid and gas
	(b)	8 minutes
Q42	(a)	
	(b)	B, D
	(c)	Sheet E allowed less light to pass through than D.
Q43	(a)	Y is a matter which has a definite volume but it has no definite shape.
	(b)	Is it a magnetic material?
Q44	(a)	
	(b)	She should keep increasing the thickness of the cardboard until the magnet could only pick up one pin.

