



PRIMARY 6 MID-YEAR EXAMINATION 2013

Name . _____ () Date: 20 May 2013

Class : Primary 6 ()

Time: 8.00 a.m. – 9.45 a.m.

Duration: 1h 45 min

Parent's Signature : _____

Marks: _____ / 60

SCIENCE BOOKLET A

INSTRUCTIONS TO CANDIDATES

Write your name, register number and class.

Do not turn over this page until you are told to do so.

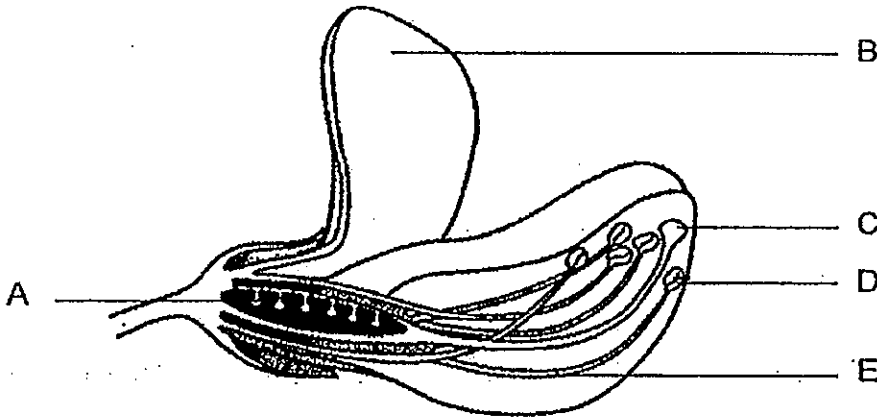
Follow all instructions carefully.

Answer all questions.

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 (OAS) provided.

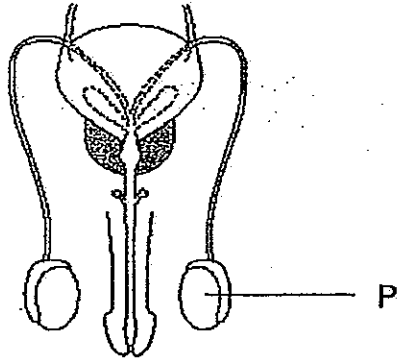
- 1 The diagram below shows the parts of a flower.



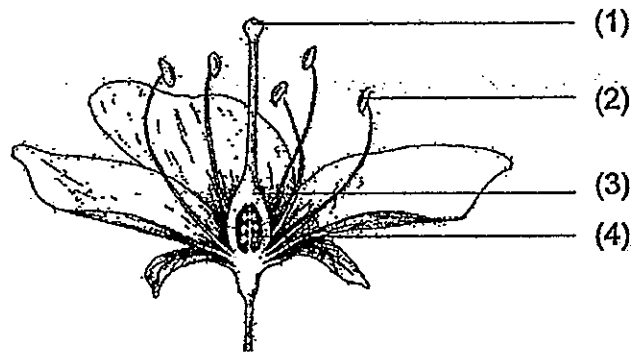
Where does pollination and fertilisation take place?

	Pollination	Fertilisation
(1)	B	A
(2)	C	A
(3)	C	D
(4)	D	E

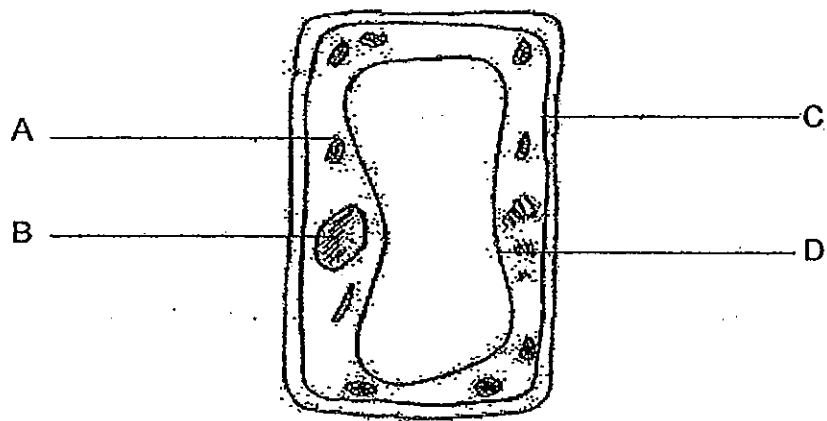
2. The diagram below shows the male reproductive system of a human.



Which part of the reproductive system of a plant below has the same function as P in the male reproductive system of a human-above?



3. The diagram below shows a plant cell.



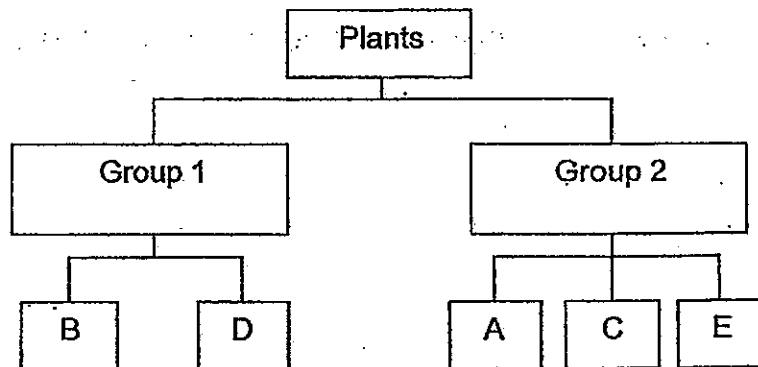
Which of the following part of the plant cell above is correctly matched to its function?

	Part	Function
(1)	A	Allows cell activities to take place within the cell
(2)	B	Controls cell activities
(3)	C	Gives the cell a fixed shape
(4)	D	Makes food for the cell

4. The table below shows the characteristics of 5 plants, A, B, C, D and E.

Plant	A	B	C	D	E
Texture of leaves	Smooth	Hairy	Waxy	Smooth	Smooth
Type of leaf edge	Lobed	Entire	Toothed	Toothed	Toothed
Vein pattern of leaves	Parallel	Network	Parallel	Network	Parallel
Flowers grow in clusters or singly	Clusters	Singly	Clusters	Clusters	Singly

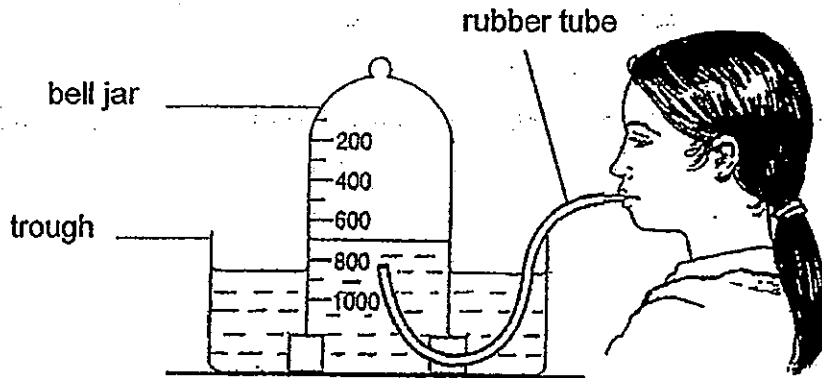
Joy classified the plants as shown below.



Which of the following characteristic was used to classify the plants?

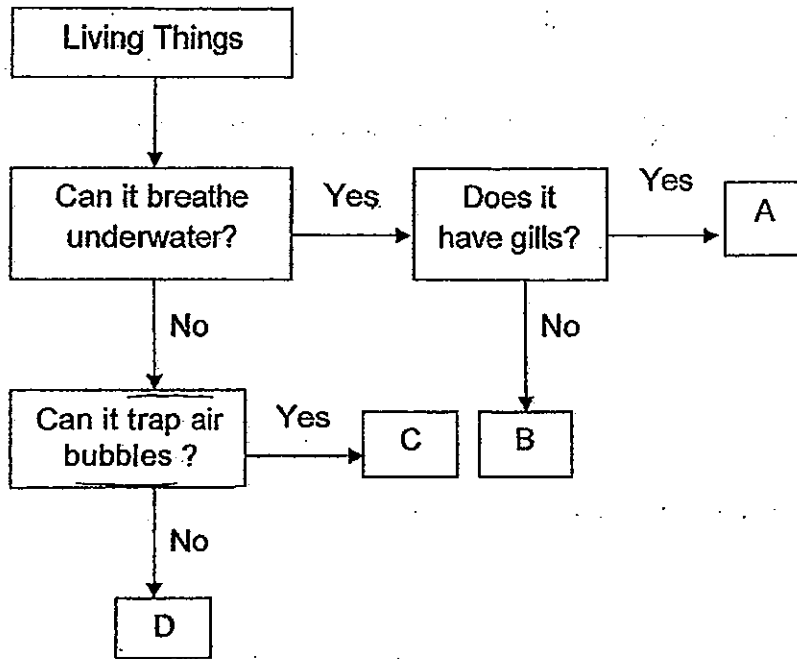
- (1) Texture of leaves
- (2) Type of leaf edge
- (3) Vein pattern of leaves
- (4) Flowers grow in clusters or singly

Study the diagram below and use it to answer the questions, 5 and 6.



5. What happens to the respiratory system of the girl when she blows into the rubber tube?
- (1) Her lungs expand.
 - (2) Her ribcage expands.
 - (3) Her diaphragm relaxes.
 - (4) Her windpipe contracts.
6. Which of the following would be observed after the girl blows into the rubber tube?
- (1) The water level in the bell jar and trough increase.
 - (2) The water level in the bell jar and trough decrease.
 - (3) The water level in the bell jar decreases while the water level in the trough increases.
 - (4) The water level in the bell jar increases while the water level in the trough decreases.

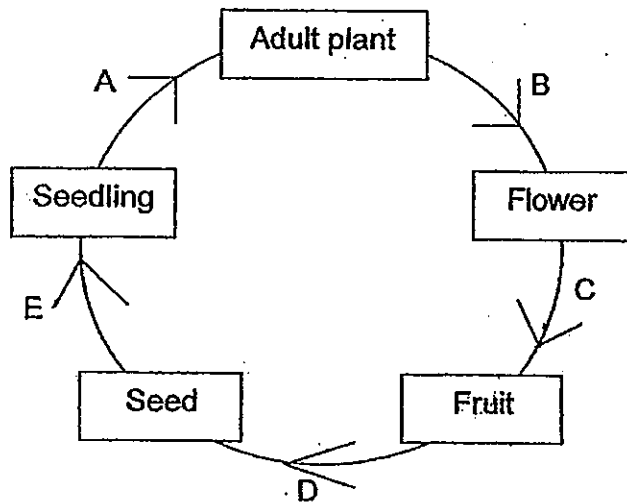
7. Study the flowchart below.



Which of the following represents A, B, C and D?

	A	B	C	D
(1)	mudskipper	shark	water scorpion	mosquito larva
(2)	dragonfly nymph	frog	water spider	mosquito pupa
(3)	goldfish	dugong	water beetle	dolphin
(4)	tadpole	whale	water stick insect	duck

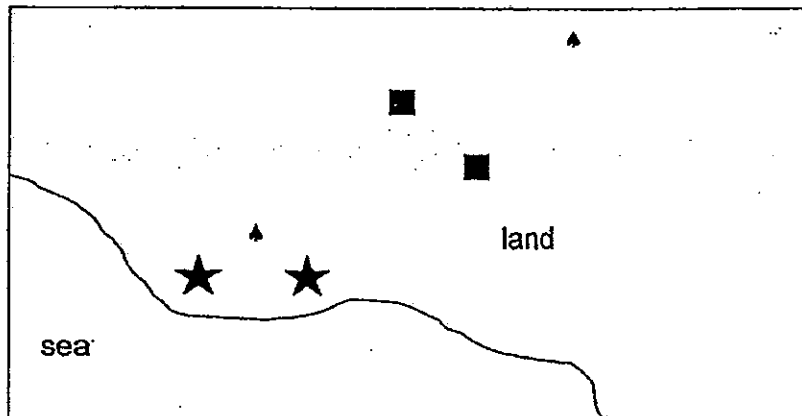
8. The diagram below shows the stages of growth of a plant.



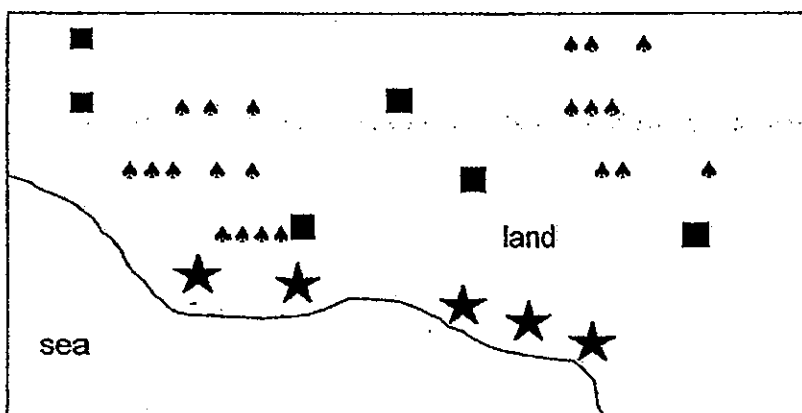
Which of the following is true about the stages of growth of the plant above?

- (1) Light is needed at all stages.
- (2) Water is needed at all stages.
- (3) A and E represent the processes of germination and dispersal respectively.
- (4) C and D represent the processes of pollination and fertilization respectively.

9. The diagram below shows part of an island where 3 types of plants (▲, ■ and ★) are growing.



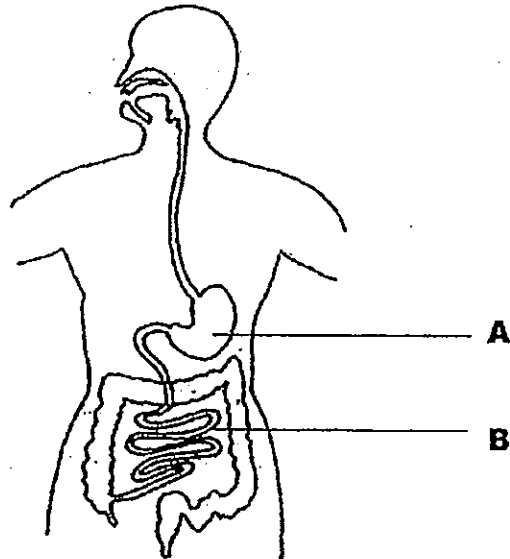
The diagram below shows where the 3 types of plants are located after 3 months.



How are the seeds or fruits of the 3 types of plants dispersed?

	▲	■	★
(1)	explosive action	animals	water
(2)	animals	wind	explosive action
(3)	wind	explosive action	water
(4)	animals	explosive action	wind

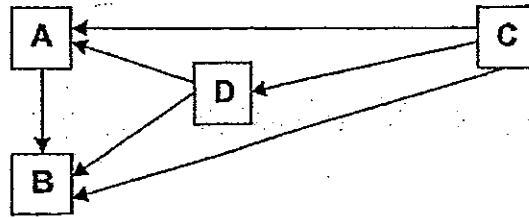
10. The diagram below shows the human digestive system.



Which of the following takes place at the parts labelled A and B?

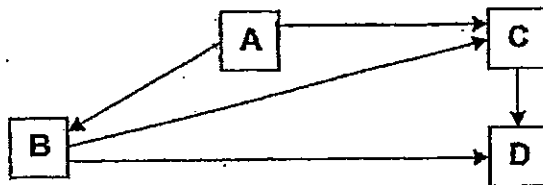
	A	B
(1)	Digestion of food starts	Absorption of digested food
(2)	Food is digested	Digestion of food ends
(3)	Removal of water from undigested food	Transfers food from the stomach to the rectum
(4)	Storage of undigested food	Passes waste out of the body

Study the food web below and use it to answer the questions, 11 and 12.



11. Which of the following is the food producer?
- (1) A
 - (2) B
 - (3) C
 - (4) D
12. Which of the following is both prey and predator?
- (1) A
 - (2) B
 - (3) C
 - (4) D

13.



Which of the following is definitely true about the food web above?

- (1) A is a food consumer.
- (2) B is both a predator and prey.
- (3) C is a plant-and-animal eater.
- (4) D is both a plant and a food producer.

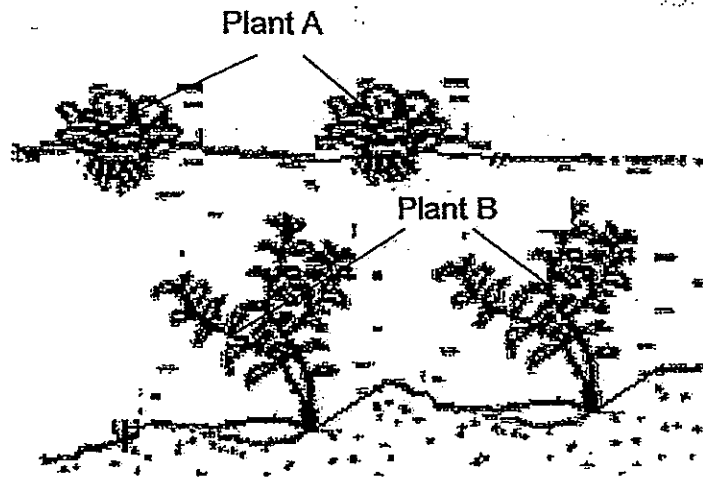
14. Jessica counted the number of different organisms in her garden and recorded the data in the table below.

Organism	Number of organisms
Rose	8
Aphid	6
Hibiscus	5
Butterfly	7
Ladybird	2
Grasshopper	3
Grasshopper nymph	4
Caterpillar of butterfly	4

Based on the table above, which of the following is correct?

- (1) There is one community with six populations.
- (2) There is one community with eight populations.
- (3) There are two communities with six populations.
- (4) There are two communities with eight populations.

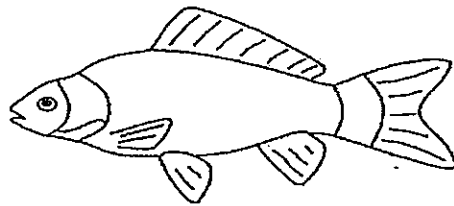
15. Study the pond community below.



Which of the following would cause the population of Plant B to decrease when the population of Plant A increases?

- (1) Insufficient sunlight entering the water
- (2) Insufficient oxygen dissolving in the water
- (3) Insufficient mineral salts from the pond animals
- (4) Insufficient carbon dioxide from the pond animals

16. Study the fish below.



Based on what you can observe only, which of the following is its adaptation for survival in water?

- (1) It has 4 fins to propel it forward in water
- (2) It has gill chambers to store water with dissolved oxygen.
- (3) It has a streamlined body shape to reduce water resistance.
- (4) It has an outer covering to camouflage it amongst seaweeds.



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SCIENCE BOOKLET A

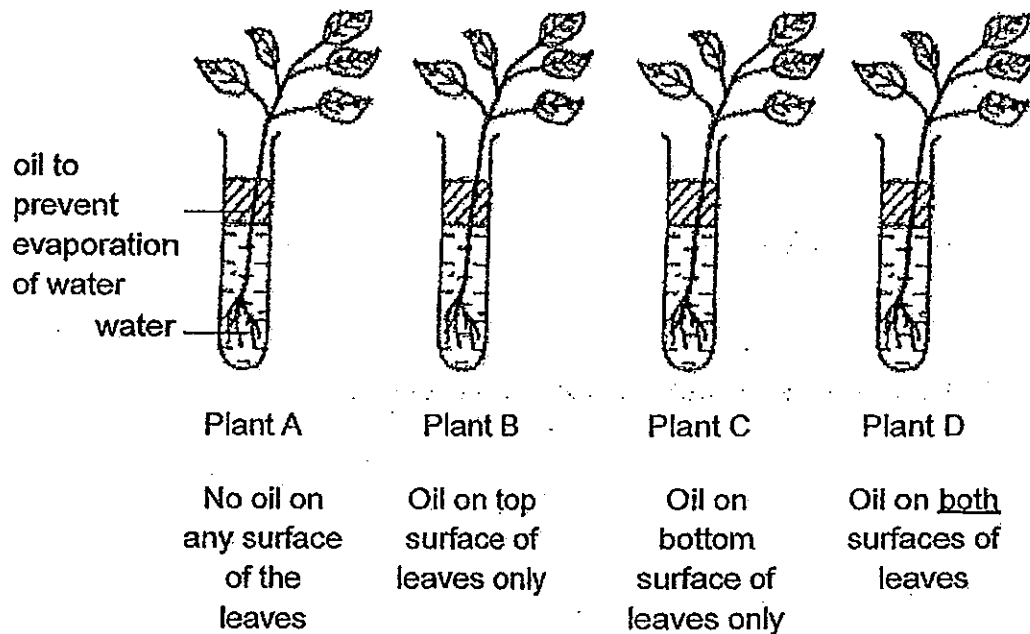
Question 17 to Question 30

INSTRUCTIONS TO CANDIDATES

Write your name, register number and class.

17. Rashim set up an experiment using 4 similar plants, Plant A, Plant B, Plant C and Plant D. The leaves of the plants have more tiny openings on the bottom surfaces than on the top surfaces. Water is lost through these tiny openings.

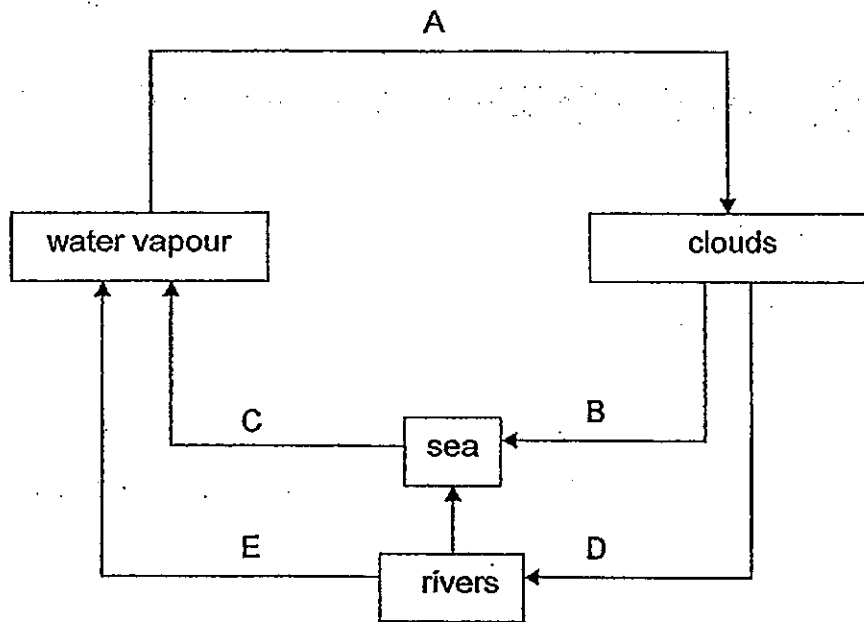
He coated some surfaces of the leaves with oil. Each plant was placed in a test-tube with equal amounts of water. The plants were then placed in an open field.



The amount of water in each test-tube after 5 days was recorded. Which of the following shows the correct order of the amount of water in each test-tube after 5 days?

	Greatest amount of water → Least amount of water			
(1)	A	B	C	D
(2)	A	C	B	D
(3)	D	B	C	A
(4)	D	C	B	A

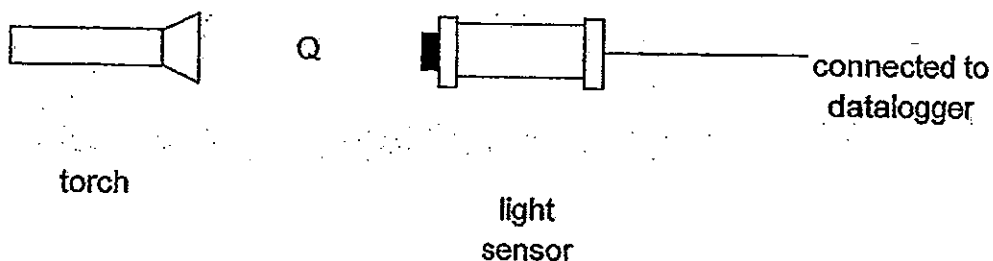
18. Study the water cycle below. A, B, C, D and E represent the processes in the water cycle.



At which process(es), is there a change from gaseous state to liquid state?

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

19. Joshua set up the following experiment.



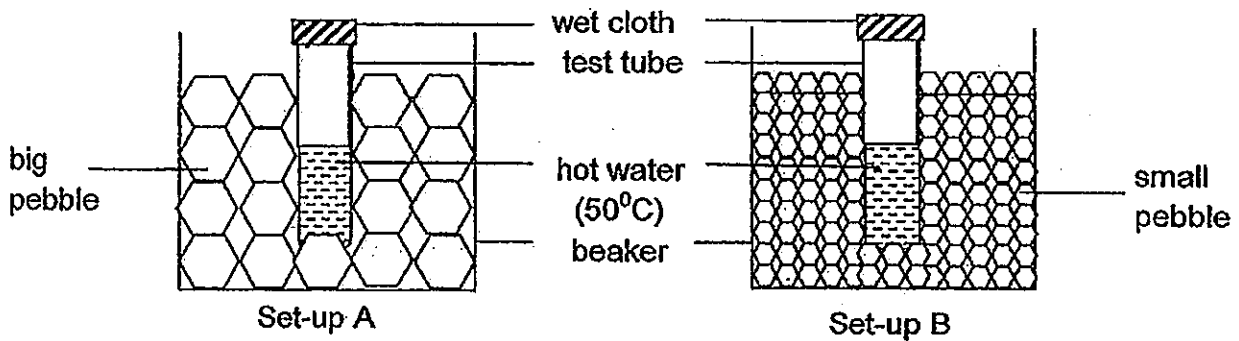
When nothing was placed at point Q, the light sensor showed a reading of 2 000 lux. 4 objects, W, X, Y and Z, were placed at point Q, and the readings are shown in the table below.

Object	Reading (lux)
W	0
X	1 750
Y	800
Z	0

Which of the following is object X?

- (1) Plastic lens
- (2) Frosted glass
- (3) Aluminium foil
- (4) Wooden board

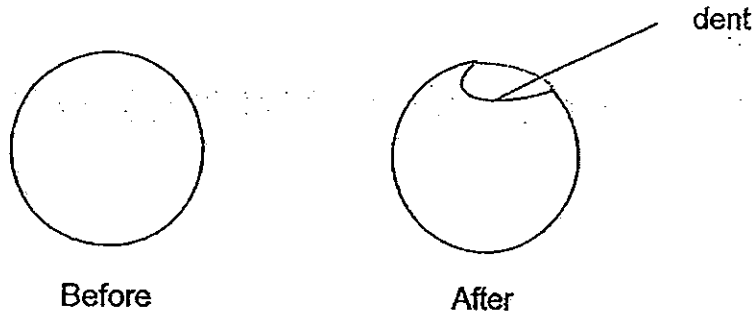
20. John set up the experiment below to find out if the size of pebbles surrounding a test-tube would affect the temperature of water in the test-tube. After 5 minutes, he measured the temperature of water in both test-tubes and found that the temperature of water in Set-up A was higher than the temperature of water in Set-up B.



Which of the following caused the hot water in Set-up A to lose heat slower?

- (1) There were fewer pebbles.
- (2) There were more air spaces in between the pebbles.
- (3) There was more exposed surfaced area of each pebble.
- (4) There was more contact between the test-tube and each pebble.

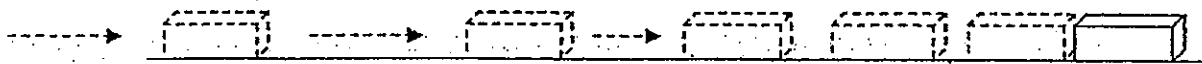
21. A table-tennis ball, before and after it has been dented, is shown in the diagram below. There are no holes in the dent.



Which of the following best shows the changes after the table-tennis ball has been dented based on the headings of the table below?

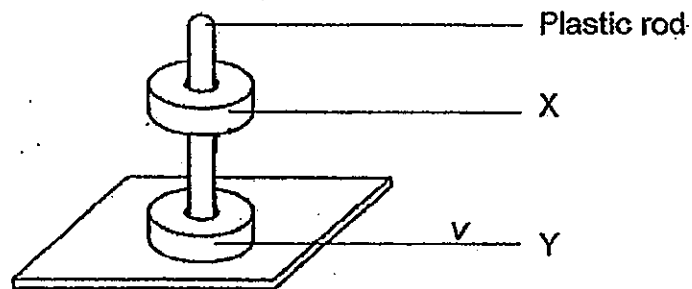
	Before		After	
	Mass of table-tennis ball with air (g)	volume of air in the table-tennis ball (cm ³)	Mass of table-tennis ball with air (g)	Volume of air in the table-tennis ball (cm ³)
(1)	2	8	1.5	6
(2)	2	8	1.5	8
(3)	2	8	2	6
(4)	2	8	2	8

22. The diagram below shows the position of a bar magnet over a wooden surface after it was given a push.



What are the forces acting on the bar magnet during the experiment ?

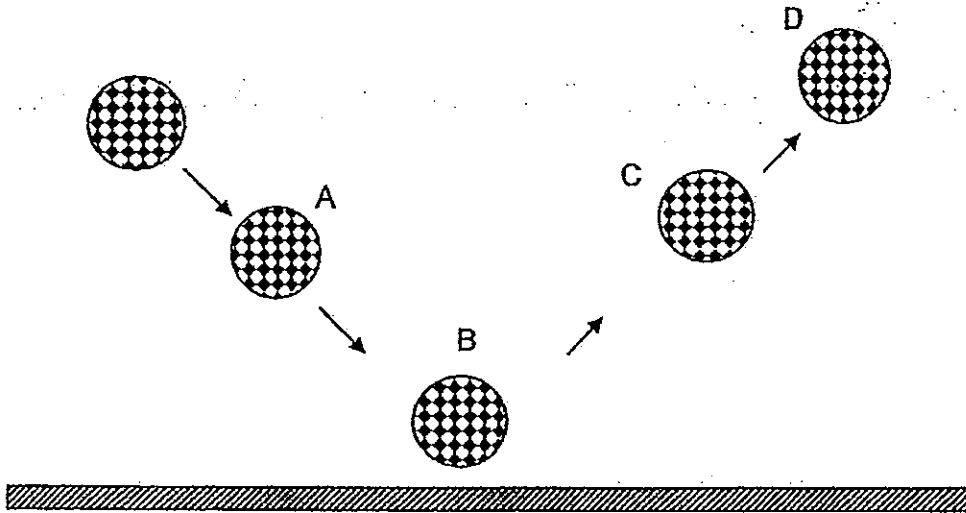
- (1) Friction and gravity
 - (2) Gravity and magnetic force
 - (3) Friction, gravity and air resistance
 - (4) Friction, magnetic force and air resistance
23. There are 3 identical ring magnets, X, Y and Z. 2 of the ring magnets, X and Y, are put through a plastic rod as shown below. X is suspended above Y.



What will definitely happen when Z is placed above X?

- (1) Z will repel X.
- (2) Z will attract X.
- (3) X will move closer to Y.
- (4) X will move further away from Y.

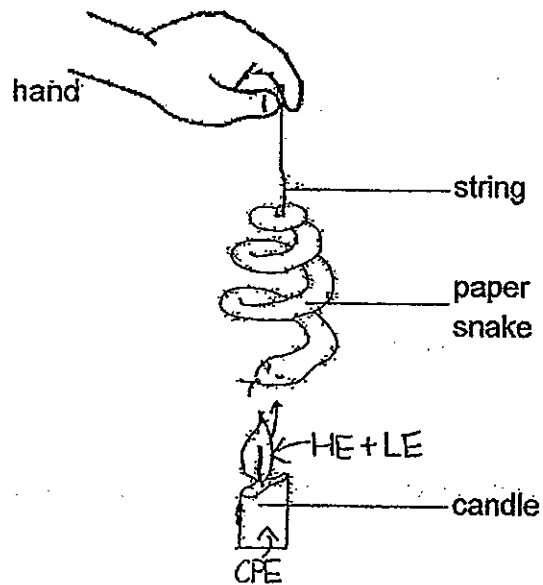
24. The diagram below shows the movement of a ball from the point, A, to the point, D.



Which of the following shows the points with the most amount of gravitational potential energy and kinetic energy of the ball as it moves from point A to point D?

	Most amount of gravitational potential energy	Most amount of kinetic energy
(1)	A	B
(2)	B	C
(3)	D	A
(4)	D	B

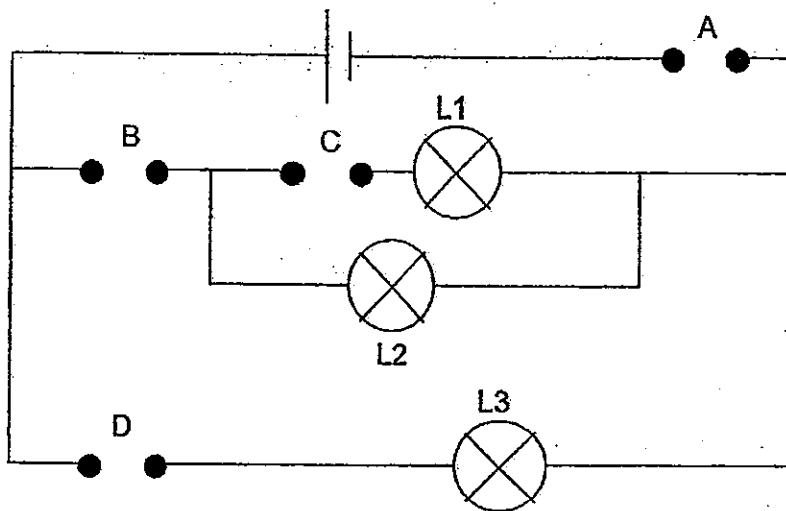
25. Jess set up an experiment as shown below. The paper snake started spinning after a while.



Which of the following describes the energy change from the candle to the spinning paper snake?

- (1) heat energy \rightarrow kinetic energy
- (2) heat energy + light energy \rightarrow kinetic energy
- (3) chemical potential energy \rightarrow heat energy \rightarrow kinetic energy
- (4) chemical potential energy \rightarrow heat energy + light energy \rightarrow kinetic energy

26. Heidi had 4 rods, P, Q, R and S, of unknown materials. She placed them in various positions; A, B, C and D, in the electric circuit below.



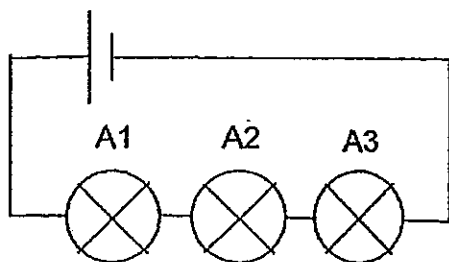
The results of the experiment were shown in the table below. When any of the lamps, L1, L2 or L3, lit up during the experiment, a tick was placed in the box.

Position where the rods were placed				Lamps		
A	B	C	D	L1	L2	L3
P	Q	R	S		√	√

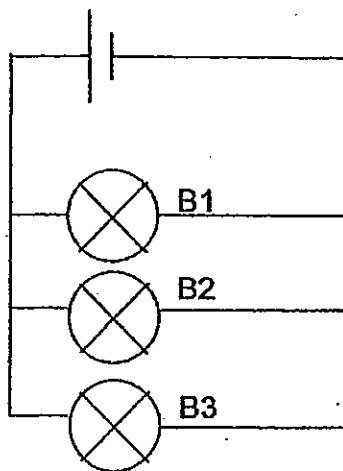
Which of the following shows the result when the rods, P, Q, R and S, were placed at different positions?

	Position where the rods were placed				Lamps		
	A	B	C	D	L1	L2	L3
(1)	P	S	Q	R		√	√
(2)	Q	R	P	S			√
(3)	R	Q	S	P	√	√	√
(4)	S	P	R	Q	√	√	

27. Jamie set up 2 electric circuits, Circuit A and Circuit B, with identical components as shown below.



Circuit A



Circuit B

Which of the following is true?

- (1) A1 is as bright as B1
- (2) B1 is as bright as B2.
- (3) A2 is brighter than B3
- (4) B3 is dimmer than A3

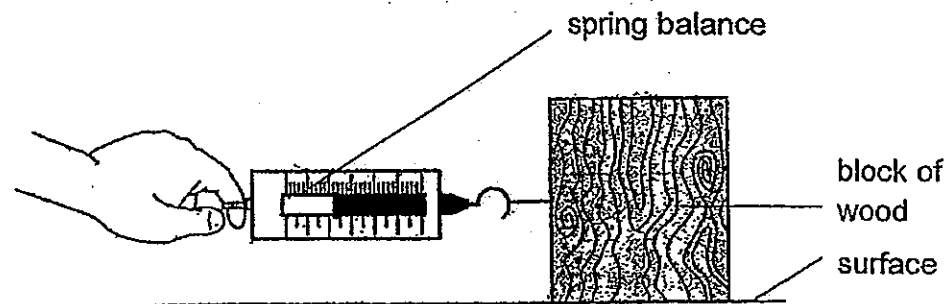
28. The picture below shows a boy trying to move a giraffe. The giraffe did not move from its position.



Which of the following is true?

- (1) The giraffe is exerting a pull on the boy.
- (2) The giraffe is exerting a push on the boy.
- (3) The boy uses gravitational potential energy to pull the giraffe.
- (4) The boy has the same amount of chemical potential energy as the giraffe.

29. A block of wood with a spring balance hooked to it was pulled across the surface, W. The experiment was repeated by replacing the surface, W, with different surfaces, X, Y and Z.



The amount of force required to move the block of wood are shown in the table below.

Surface	W	X	Y	Z
Amount of force required to move the block of wood (units)	110	80	240	180

Which of the following is definitely true?

- (1) Surface X is glass.
- (2) Surface Y is the roughest.
- (3) Surface Z is smoother than Surface W.
- (4) Surface Z is most suitable for making anti-slip bathroom floor.



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SCIENCE BOOKLET B

INSTRUCTIONS TO CANDIDATES

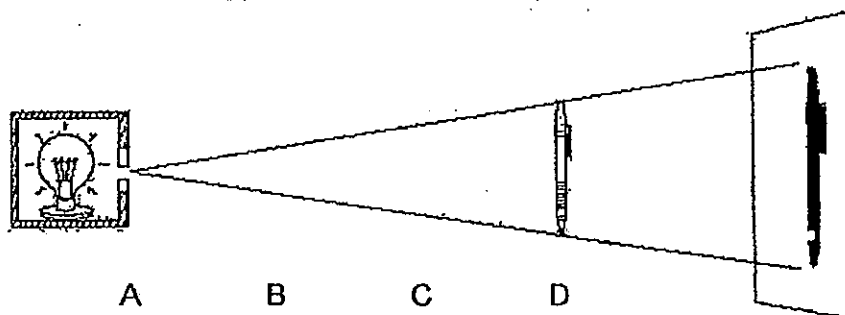
Write your name, register number and class.

Do not turn over this page until you are told to do so.

Follow all instructions carefully.

Answer all questions.

30. Jane wanted to find out how the distance between a light source and a pen would affect the length of shadow cast by the pen. She placed the light source at position A and the pen at position D as shown in the diagram below and observed a 10cm long shadow on a screen fixed on a wall.



She then placed the light source and the pen at different positions, A, B, C and D, as marked in the diagram above and recorded her observations. Which of the following is correct?

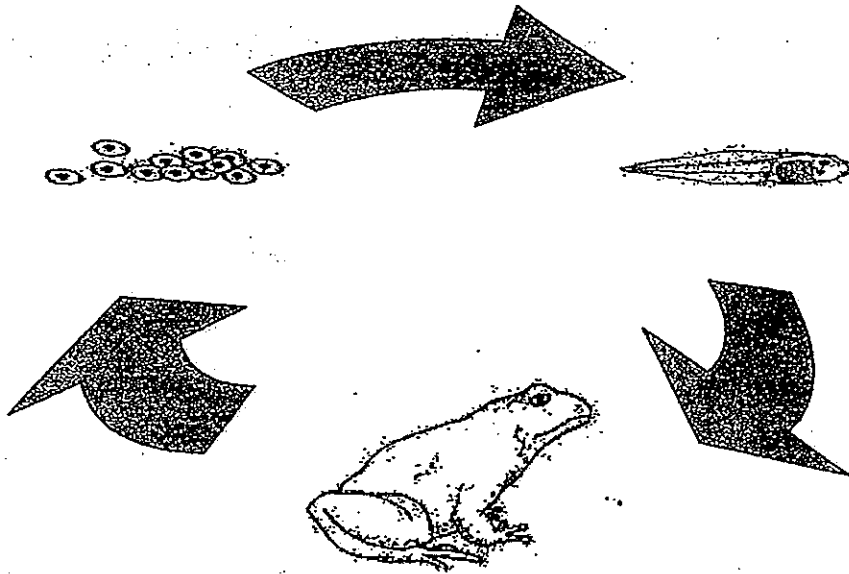
	Position of light source	Position of pen	Length of shadow (cm)
(1)	A	B	15
(2)	A	C	8
(3)	B	C	10
(4)	B	D	7

End of Booklet A

Section B (40 marks)

For the questions, 31 to 44, write your answers clearly in the spaces provided.

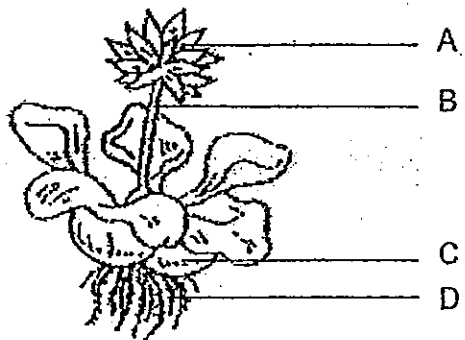
31. The diagram below shows the life cycle of a frog.



(a) Why must the frog lay many eggs at one time during reproduction? [1]

(b) The young of the frog lives in water while the adult lives on land. What is an advantage of them living in different surroundings? [1]

32. The picture below shows a water hyacinth.



(a) Which part of the plant, A, B, C or D, allows it to float on water? [1]

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

33. The picture below shows part of a bougainvillea plant.



Why are the leaves surrounding the bougainvillea flower big and pink? [2]

34. Figures 1 and 2 show how gases are transported in the circulatory system of a fish and human respectively.

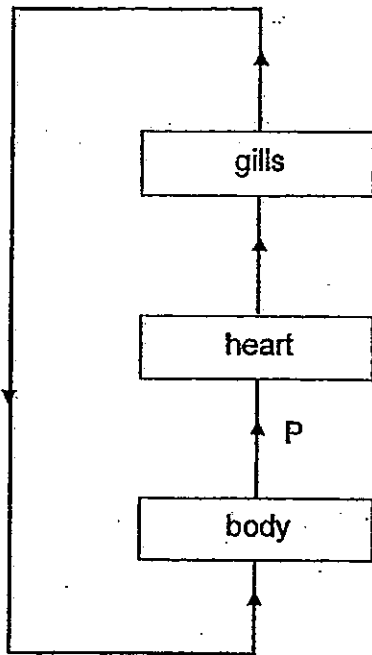


Figure 1 (fish).

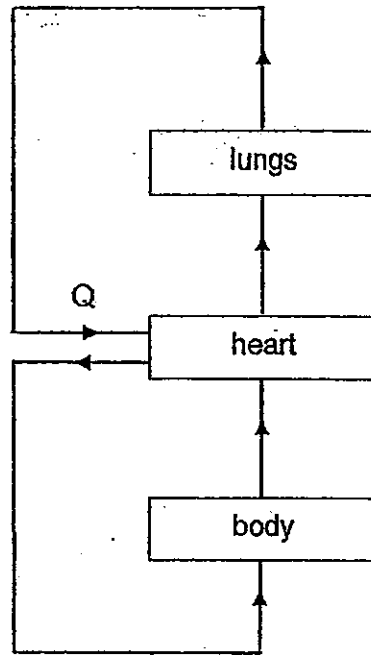


Figure 2 (human)

- (a) State one difference between the flow of blood in a fish and in a human.

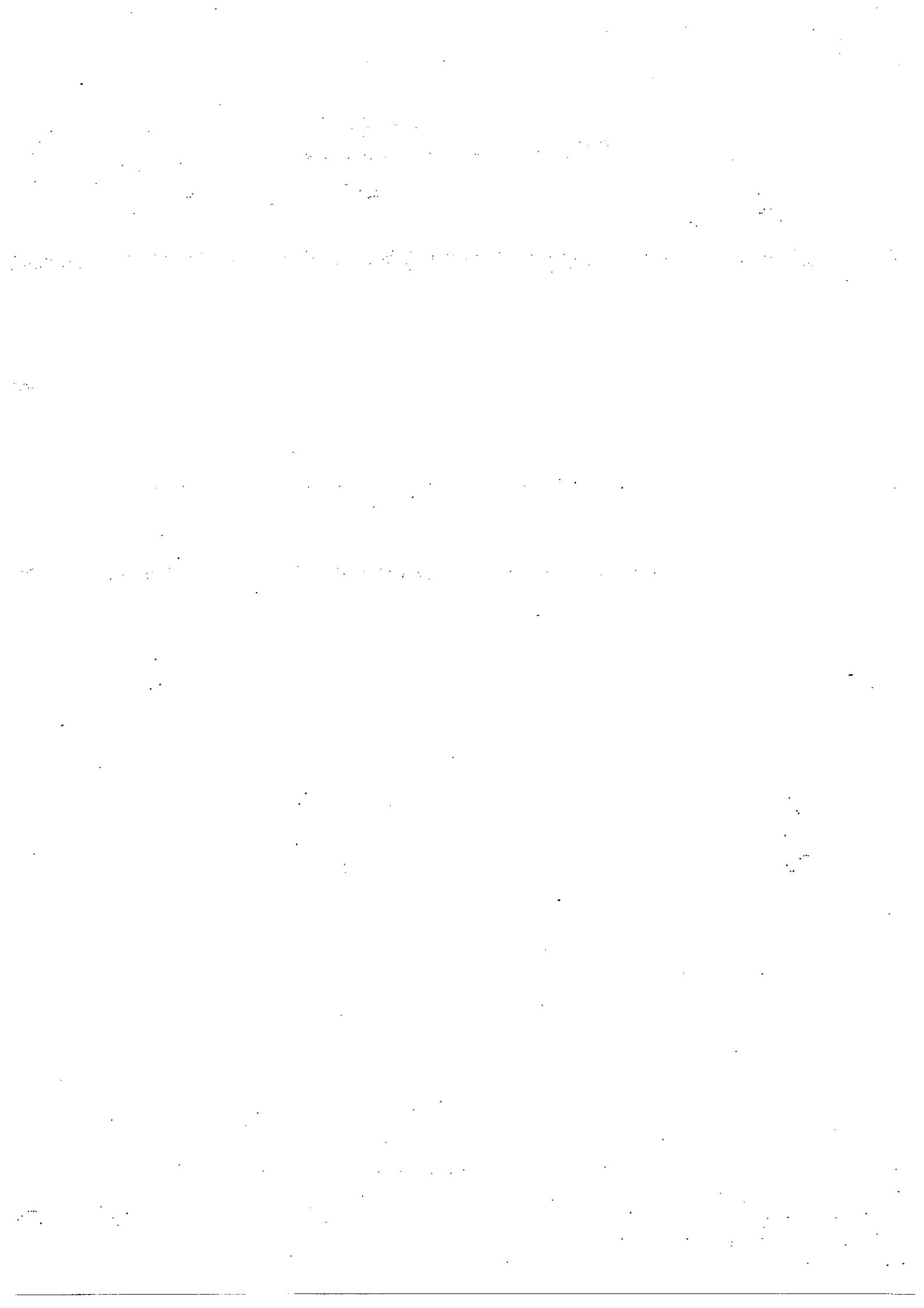
[1]

- (b) State one difference between the gases found in the blood flowing at P and Q.

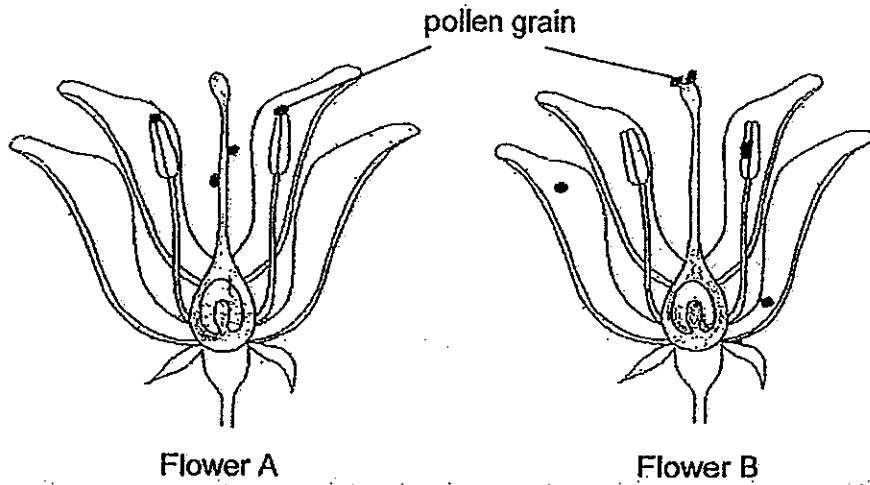
[1]

- (c) Besides transporting gases, which other materials are transported by the blood?

[1]



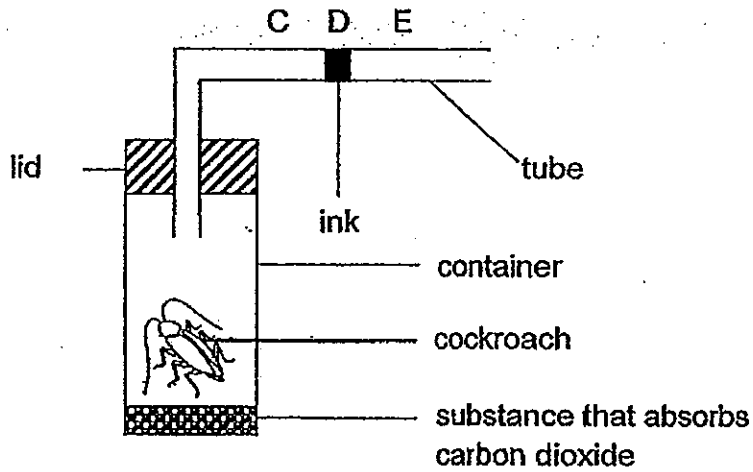
35. The diagram below shows Flower A and Flower B, from two different plants of the same type. The black dots represent pollen grains from the same type of plant.



- (a) Which flower(s) will most likely develop into a fruit? [1]

- (b) Explain your answers in (a). [2]

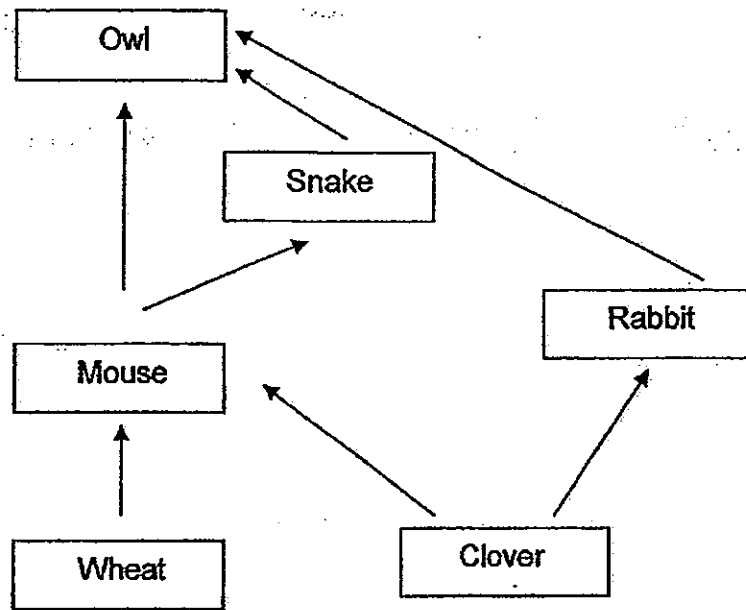
36. Study the set-up below. There is a drop of ink at D.



(a) Where would the drop of ink be after one day? [1]

(b) Explain your answer in (a). [2]

37. The diagram below shows a food web.



(a) Construct 2 food chains based on the food web above. [2]

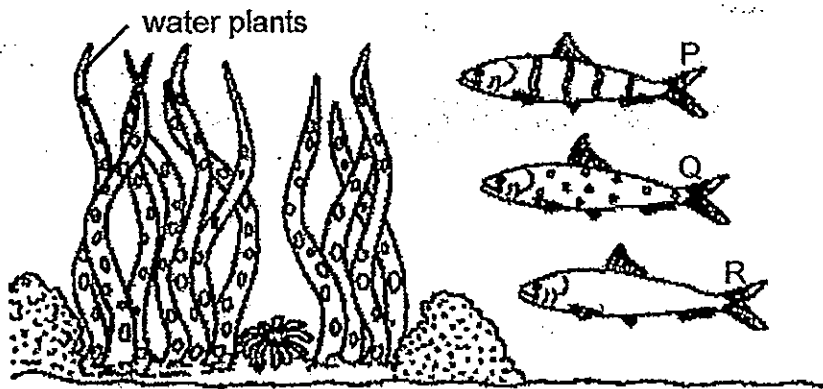
(i) Clover → _____ → _____

(ii) Wheat → _____ → _____ → _____

(b) If all the mice are removed from the food web, what would happen to the population size of the owls? [1]

(c) Explain your answer in (b). [1]

38. Study the picture below. Fish, P, Q and R. feed on water plants only.



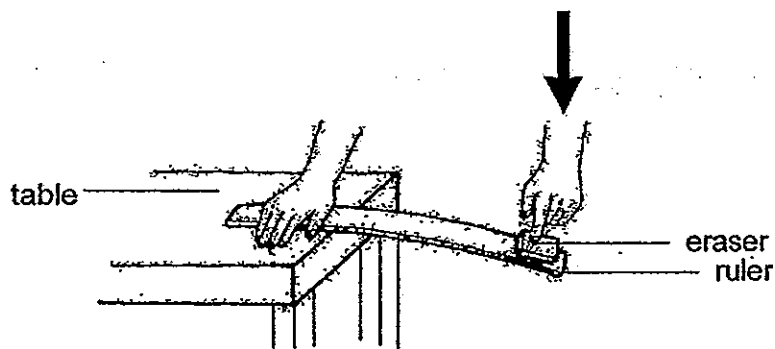
(a) Besides providing food, suggest another reason why the water plants are important to the fish. R. [1]

(b) A new organism, S, is introduced into the habitat. It feeds on fish, P, Q and R. Which fish, P, Q or R, would have the greatest decrease in population? [1]

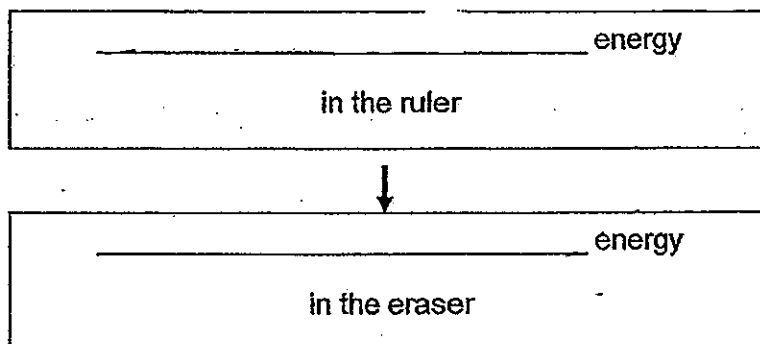
(c) Explain your answer in (b) [1]

(d) Draw a food web with the fish, P, Q and R, the organism, S, and the water plants in the box below. [1]

39. Bernice conducted the experiment below.

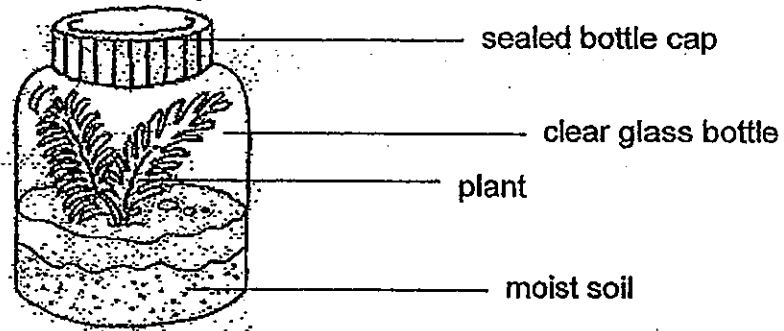


(a) The eraser flew into the air once she moved her finger away. State the energy changes in the diagram below. [1]



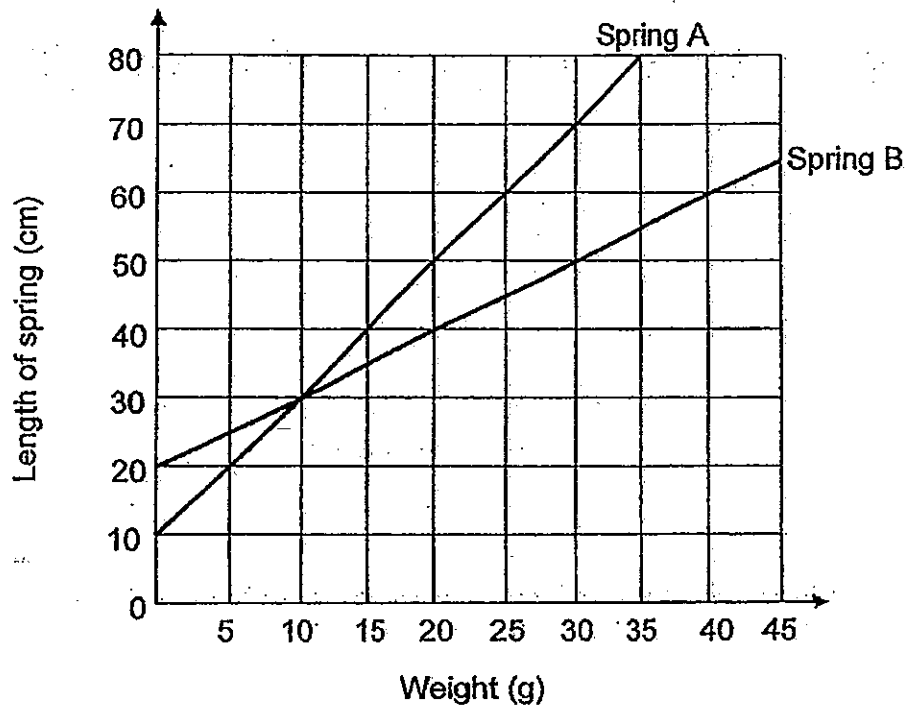
(b) What should she do to increase the distance travelled by the eraser (without replacing the current eraser and ruler)? [1]

40. A bottle garden was sealed tightly and left in an air-conditioned room for an hour. Water droplets were observed on the inner surface of the bottle garden after the hour.



Explain how the water droplets formed on the inner surface of the bottle garden. [2]

41. Hamid carried out an experiment to find out which spring, Spring A or Spring B, is stronger. He recorded the length of spring when different weights were hung on it and plotted the graph below.

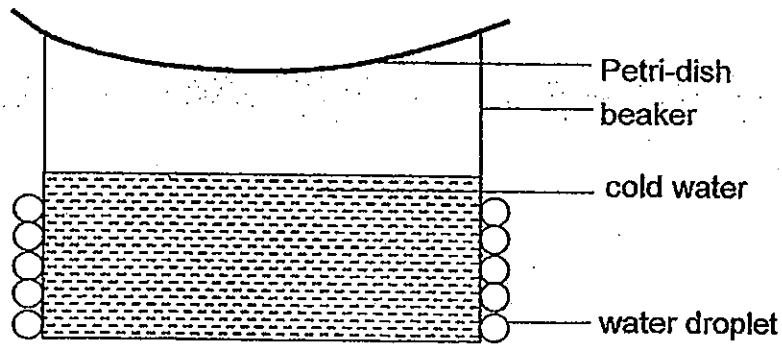


- (a) What is the extension of Spring B when a 30g weight is hung on it? [1]

- (b) Which spring, Spring A or Spring B, is stronger? [1]

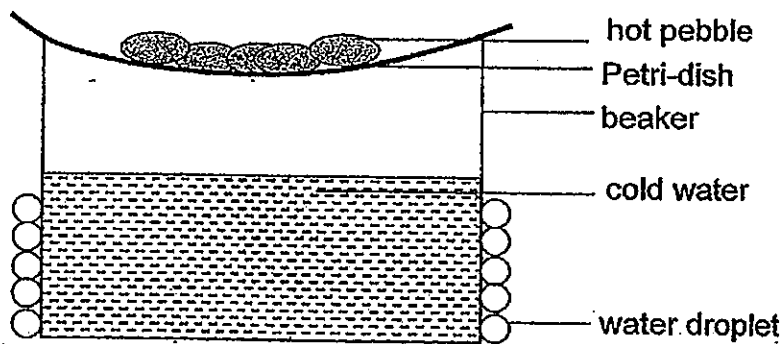
- (c) Explain your answer in (b). [1]

42. Jon set up an experiment. The diagram below shows the results of his experiment.



- (a) What should he do to get water droplets in the beaker instead? [1]

Jon then set up another experiment as shown in the diagram below.

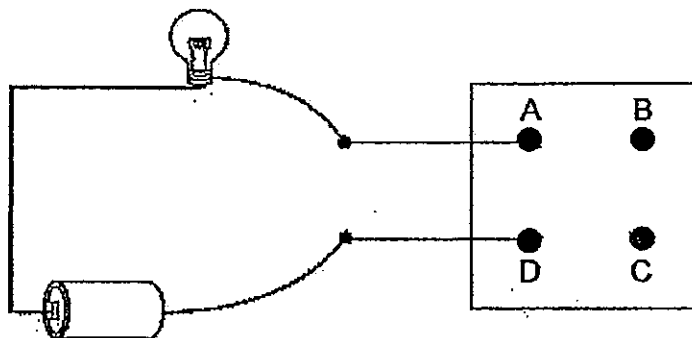


- (b) He observed that no water droplet formed on the underside of the Petri-dish. Explain why. [2]

43. A circuit card is tested with a circuit tester. The results are recorded in the table below.

Clips tested	Bulb of circuit tester
A and B	Does not light up
A and C	lights up
A and D	lights up
B and C	Does not light up
B and D	Does not light up
C and D	Lights up

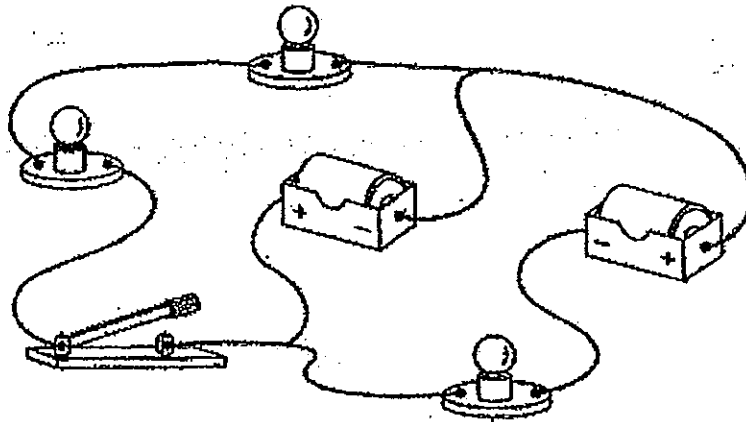
- (a) Complete the circuit card below to show how the wires are connected based on the results recorded in the table above. [1]



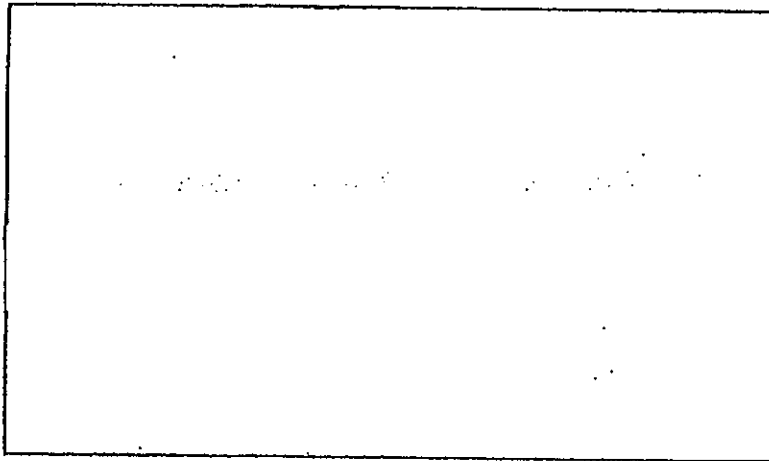
- (b) A pupil tried to connect A and D in the electrical circuit with Object X. The bulb did not light up. What can we conclude about Object X? [1]

- (c) Name an object that can be used to connect A and D in the electrical circuit so that the bulb lights up. [1]

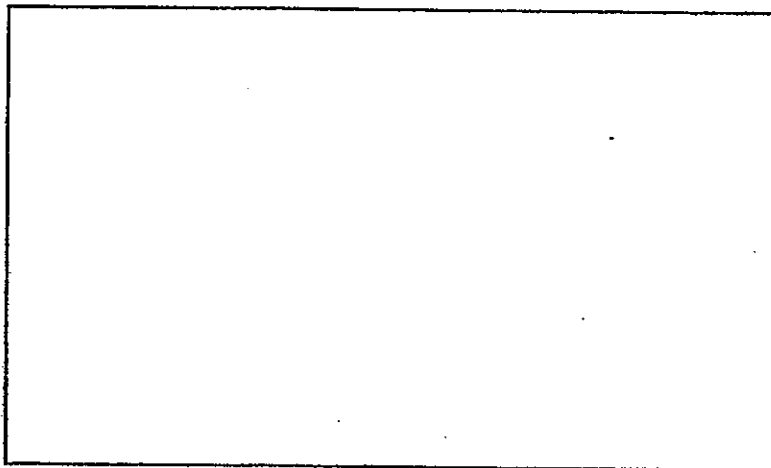
44. Study the electric circuit below.



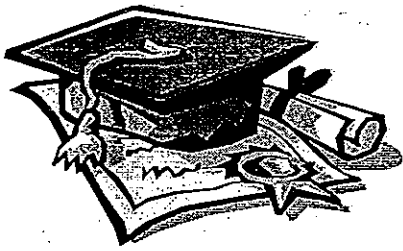
(a) Draw a circuit diagram of the electric circuit above in the box provided.[2]



(b) Draw another circuit diagram in the box provided using the same components as the electric circuit above such that all 3 bulbs are at their brightest and the switch controls all 3 bulbs at the same time. [2]



End of Paper



ANSWER SHEET

EXAM PAPER 2013

SCHOOL : TAO NAN

SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16	Q17
2	2	2	3	3	3	2	2	1	2	3	1	3	1	1	3	4

Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
1	1	2	3	3	3	4	3	2	2	1	2	1

31)a)The frog does not take care of its young, by laying many eggs, the frog is increasing the chances of the young surviving and also, the continuity of its kind.

b)They will not compete with one another for food.

32)a)Part C.

b)Part C is filled with air to make it light enough to float on water.

33)As the bougainvillea has small and white flowers, which are pollination coloured and small, it cannot attract many insect, which pollinate flowers. The plant has adapted and grows pink and big leaves to attract more insects.

34)a)The blood in the fish flows in one direction, while the blood in humans flows in two directions.

b)At P the amount of carbon dioxide found in the blood is more than the amount of oxygen the opposite of Q.

c)Glucose and waste materials are transported by the blood.

35)a) Flower B.

b) For the flower to develop into a fruit, its egg cell must first be fertilised by a pollen grain. Pollen grains enter the flower through the stigma. There are pollen grains stuck on the stigma of B, while there are none on A, hence B will most likely develop into a fruit.

36)a) It would be at C.

b) Even though the cockroach respires and gives out carbon dioxide, the substance in the container will absorb it. The cockroach takes in oxygen, which takes up space, hence there will be less oxygen in the container and the ink drop will move towards C to fill up the space which was once occupied by the oxygen.

37)a) i) Rabbit, Owl ii) Mouse → Snake → Owl

b) It will decrease.

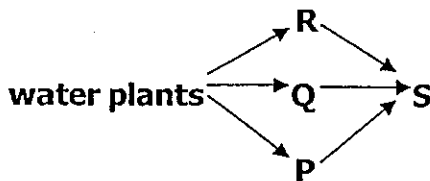
c) Both the snake and owl depend on the mouse for food. When all the mice are removed, both animals will have less food and their population size will decrease. The owls also feed on the snakes, with less snakes and no mice left the owls will compete for food and some may die of starvation.

38)a) Water plants photosynthesise in the presence of light. They take in carbon dioxide and give out oxygen, which is needed by R for respiration.

b) Fish R.

c) Fish R has no patterns on its body unlike Fish P and Q, making it have a harder time camouflaging around the water plants and thus easily spotted and eaten by Fish S.

d



39)a) Elastic Potential

Kinetic

b) She should push the ruler down more before launching the eraser.

40) The clear glass bottle lost heat to the cooler surrounding air in the air-conditioned room. Water from the moist soil evaporated into water vapour. The plant transpired and water vapour was released through the stomata of the plant. Water vapour from both the soil and plant rose and touched the cooler inner surface of the glass bottle, and condensed and formed water droplets.

41)a) It is 30cm.

b) Spring B.

c) As with the weight of 30g each hung on them, length of spring B is only 50cm while spring A is 70cm, showing that spring B is strong and harder to be pulled down by the weights.

42)a) He should use hot water instead of cold water.

b) Warm water vapour on a cooler surface to form water droplets. In this experiment, it is cold water vapour touching a warmer surface, hence no condensation took place in the beaker, resulting in no water droplets under the Petri-dish.

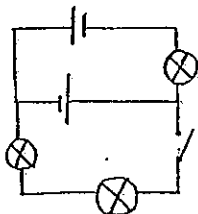
43)a) A B

D C

b) Object X is an insulator of electricity.

c) Steel rod.

44)a



b)

