First Semestral Assessment 2016
STANDARD SCIENCE
Primary 5

Name: _____ Total Marks: 56

Class: Pr 5 _ __ __ Register No. _____ Duration: 1 h 45 min

Date: 11 May 2016 Parent's Signature: _____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets - Booklet A and Booklet B
4. For questions 1 to 28 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 29 to 41, give your answers in the spaces given in the Booklet B.

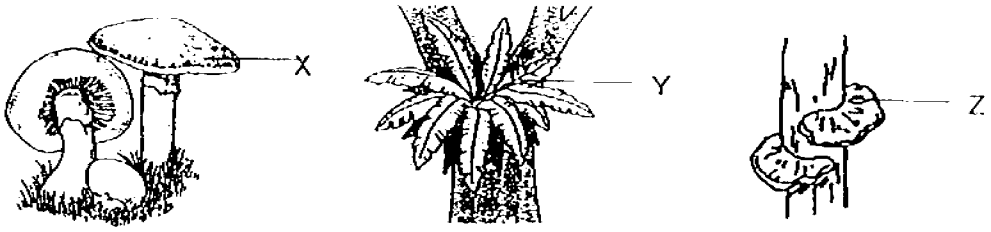
* This booklet consists of 19 printed pages (including cover page).

Part I

For each question from 1 to 28, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.** (56 marks)

---

1. What is/are the common characteristic(s) of all the organisms X, Y and Z shown below?

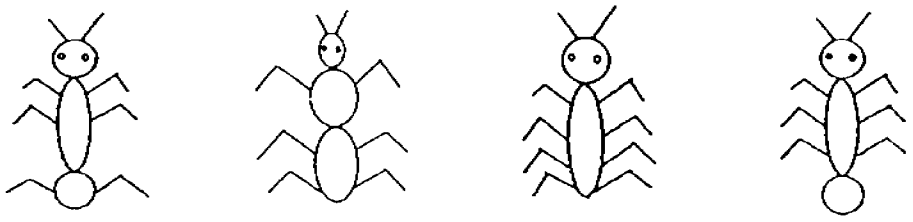


toadstools | bird's nest fern | bracket fungus

A: They reproduce by spores.
B: They can make their own food.
C: They take in water through their roots.
D: They can respond to changes around them.

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

2. Which of the following animals can be grouped as an insect?

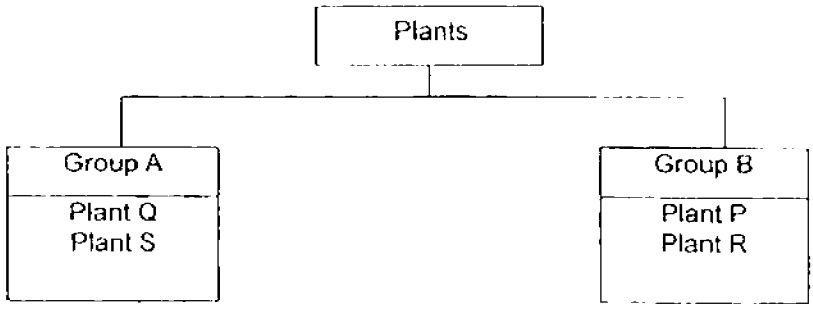


(1) A only
(2) D only
(3) A and C only
(4) A, B and D only

3. The following table shows some characteristics of four plants P, Q, R and S.

Characteristics	Plant			
	P	Q	R	S
It is a land plant.	Yes	No	Yes	No
It bears fruit.	No	Yes	No	Yes
It reproduces by spores.	Yes	No	Yes	No

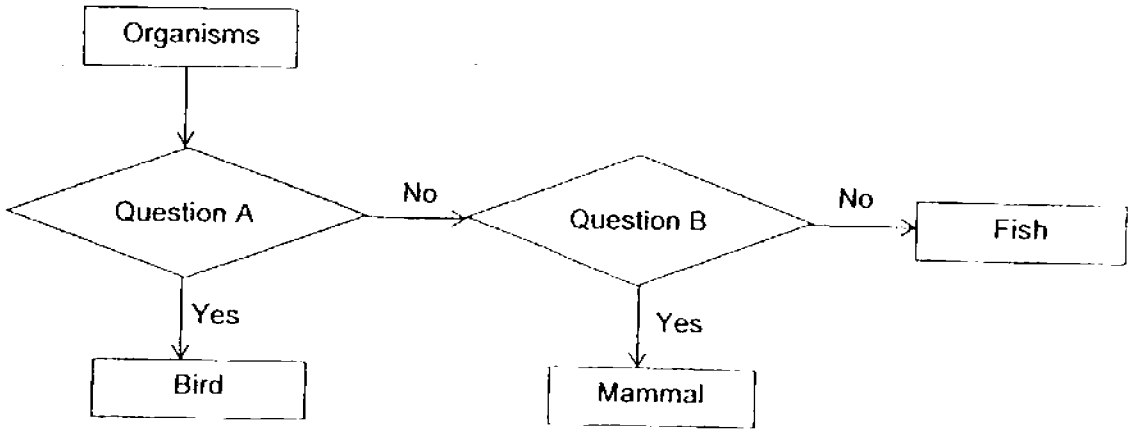
Using the information above, the plants were classified into two groups as shown below.



What are the suitable sub-headings for group A and group B?

	Group A	Group B
(1)	Ferns	Land plants
(2)	Land plants	Fungi
(3)	Non-flowering plants	Flowering plants
(4)	Flowering plants	Non-flowering plants

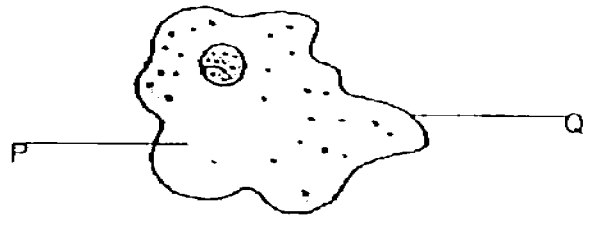
4. The flowchart below shows how some animals are grouped.



Which one of the following correctly identifies questions A and B?

	Question A	Question B
(1)	Does it have feathers?	Does it breathe through lungs?
(2)	Does it have six legs?	Does it lay eggs?
(3)	Does it have wings?	Does it breathe through gills?
(4)	Does it breathe through lungs?	Does it have scales?

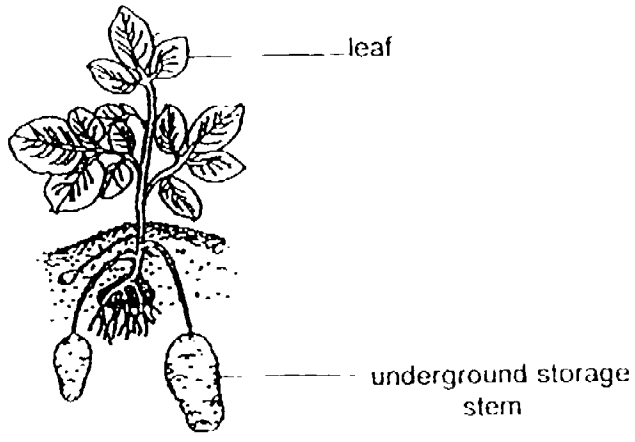
5. The diagram below shows a cell.



What are the functions of parts P and Q?

	P	Q
(1)	produces chlorophyll	gives the cell a fixed shape
(2)	controls the movement of substances in and out of the cell	controls the activities in the cell
(3)	gives the cell a fixed shape	allows cell activities to take place
(4)	allows cell activities to take place	controls the movement of substances in and out of the cell

6. The diagram below shows a sweet potato plant. It is a plant with underground storage stems.



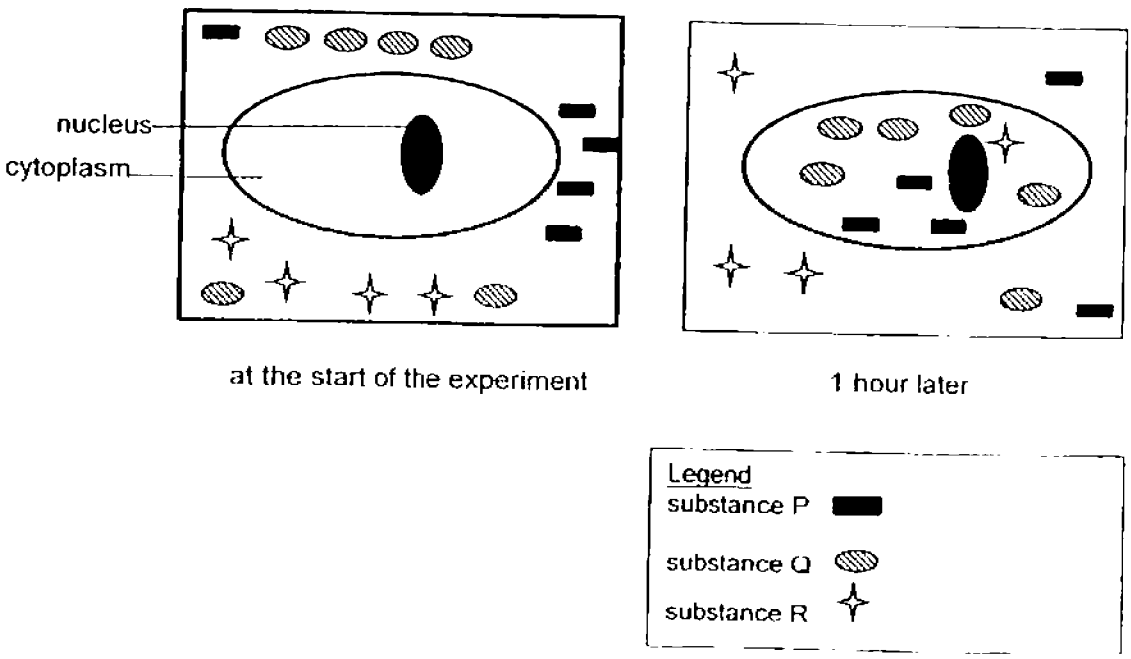
A tick (✓) represents the presence of a cell part.

cell	cell wall	chloroplasts	cell membrane
P		✓	✓
Q	✓	✓	
R	✓		✓
S	✓	✓	✓

Which one of the following is correct?

	underground storage stem	leaf
(1)	cell Q	cell P
(2)	cell P	cell S
(3)	cell S	cell Q
(4)	cell R	cell S

7. The diagram below shows a plant cell. John wanted to know which substances are able to pass through the cell membrane. He placed the cell in a plate of solution with substances P, Q and R.

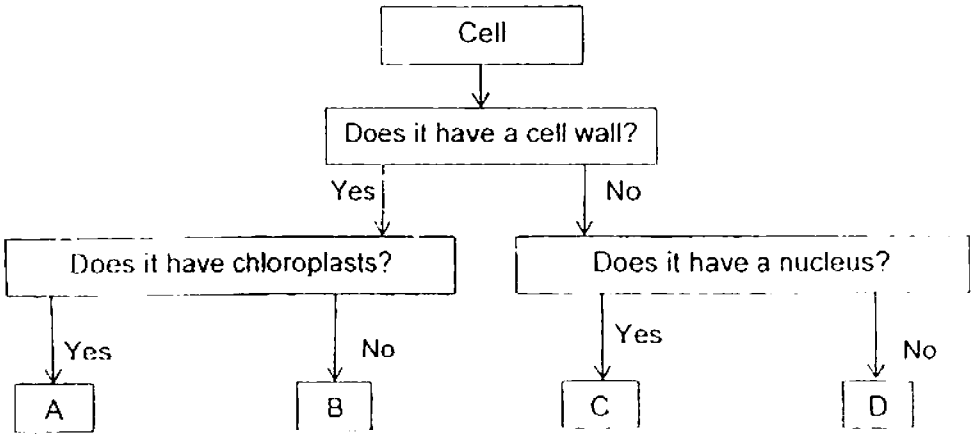


At the end of the experiment, different substances could be found in the cytoplasm. What could John conclude from the experiment?

A: More of substance P entered the cell than substance R.
B: More of substance R moved out of the cell than into the cell.
C: The cell membrane allows substance Q to pass through most easily.
D: All three substances P, Q and R can pass through the cell membrane.

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

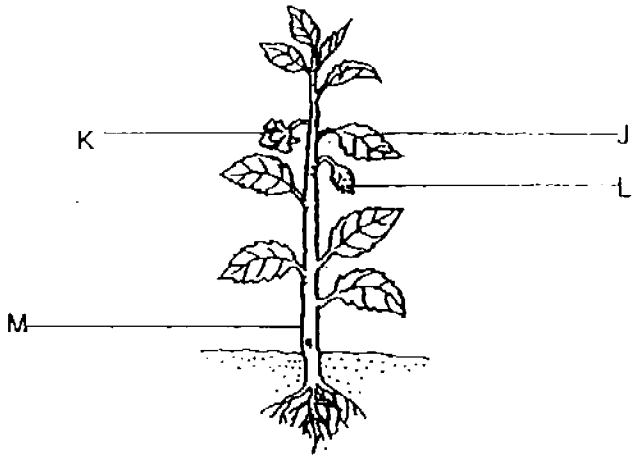
8. Jen observed and grouped four cells according to the chart below.



Based on Jen's grouping, where were the cells A, B, C and D taken from?

	A	B	C	D
(1)	leaf	red blood cell	onion	cheek
(2)	onion	leaf	cheek	red blood cell
(3)	leaf	onion	cheek	red blood cell
(4)	onion	leaf	red blood cell	cheek

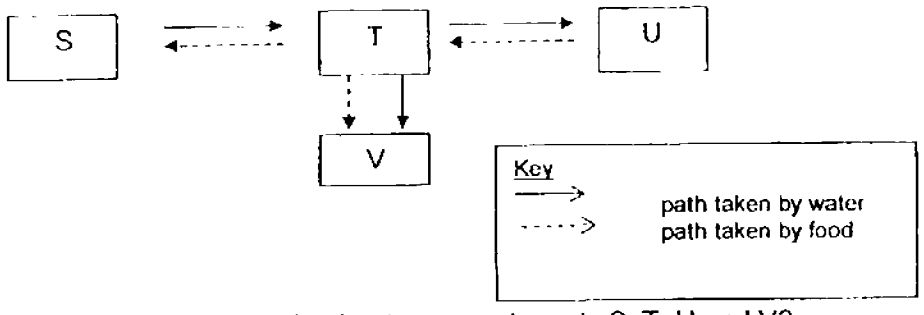
9. The diagram below shows a flowering plant.



At which parts of the plant can the food-carrying tubes be found?

(1) J and K only
(2) K and M only
(3) J and M only
(4) J, K, L and M

10. The diagram below shows the different paths taken by water and food in a plant . S, T, U and V represent the various parts of a plant.

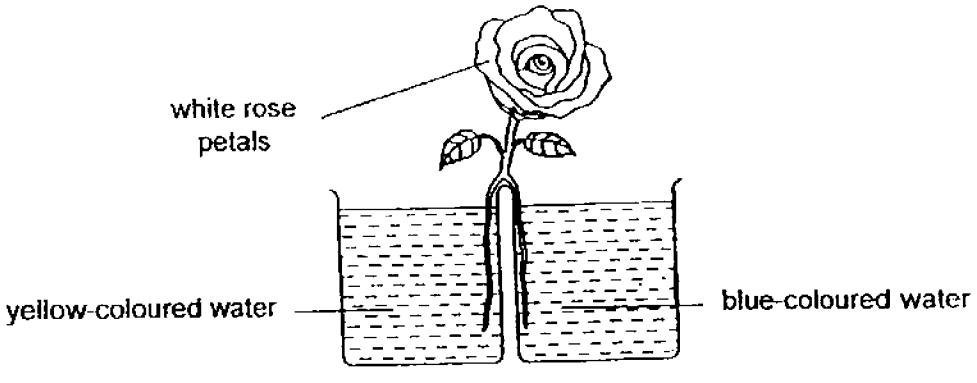


Which one of the following best represents parts S, T, U and V?

	S	T	U	V
(1)	roots	leaves	flowers	stem
(2)	leaves	flowers	stem	roots
(3)	roots	stem	leaves	fruits
(4)	leaves	roots	stem	flowers

11. Ying Zhen mixed some yellow and blue coloured water in a beaker. She observed that the colour of the water had turned green.

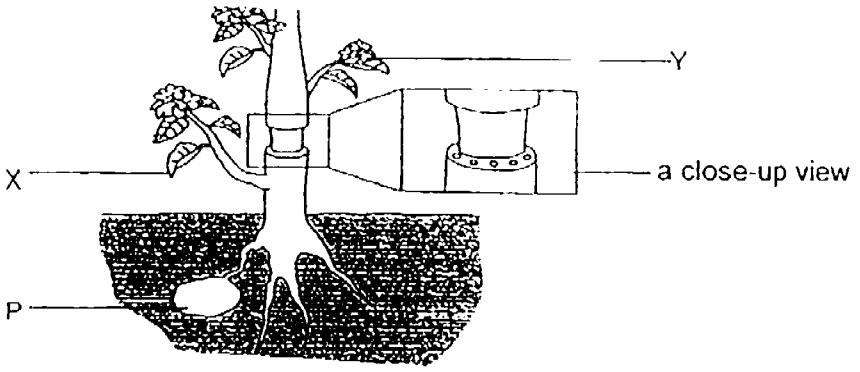
Next, she cut the stalk of a white rose and placed it in two separate beakers of yellow-coloured and blue-coloured water as shown below.



What colour(s) would she observe on the rose petals after a few days?

(1) green only
(2) blue and yellow only
(3) green and yellow only
(4) blue, yellow and green

12. An outer ring of a stem was removed from a plant as shown below. As a result, the tubes carrying food and water were removed.



It was observed that P grew bigger after 5 days. What could be a possible explanation for this?

(1) P was able to make its own food.
(2) Food made at Y was able to reach P.
(3) P only needed water to increase in size.
(4) The food made by X was transported to P and stored there.

13. Which one of the following is correct?

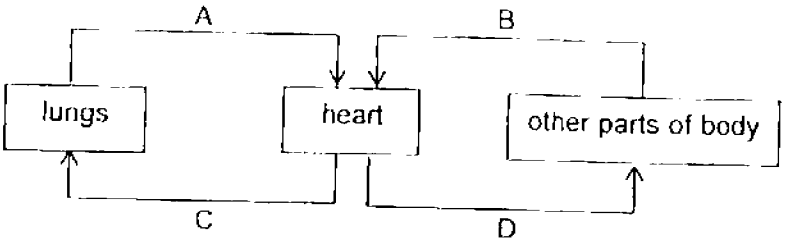
	Organ involved in digestion of food	Organ involved in absorption of most water
(1)	mouth	small intestine
(2)	stomach	small intestine
(3)	small intestine	large intestine
(4)	large intestine	large intestine

14. Which of the followings are functions of the human digestive system?

A: To break down food into simpler substances
B: To absorb digested food into the bloodstream
C: To remove the undigested food from the body
D: To absorb water and gases into the bloodstream

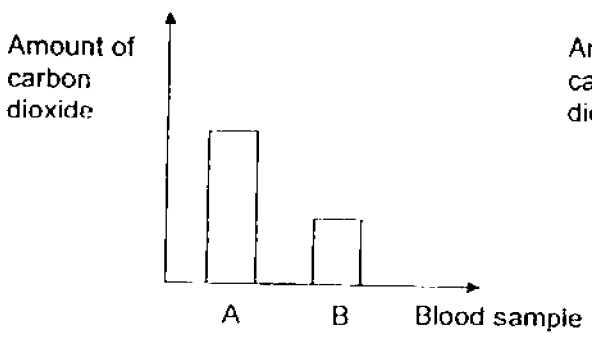
(1) A and B only
(2) B and C only
(3) A, B and C only
(4) A, B, C and D

15. The diagram below shows the direction of blood flow in some parts of the body.

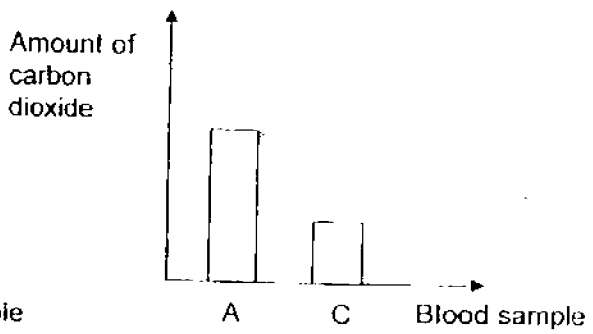


The same amount of blood was taken from A, B, C and D. Which chart shows the correct comparison of the amount of carbon dioxide in the blood samples?

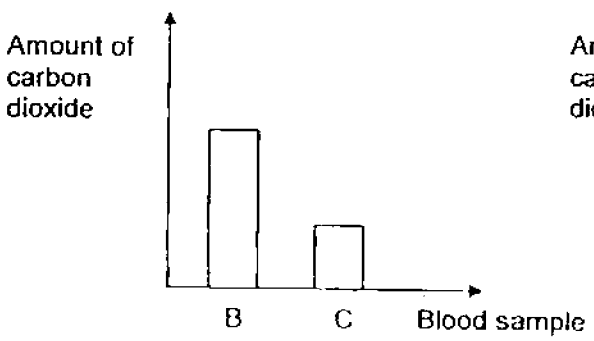
(1)



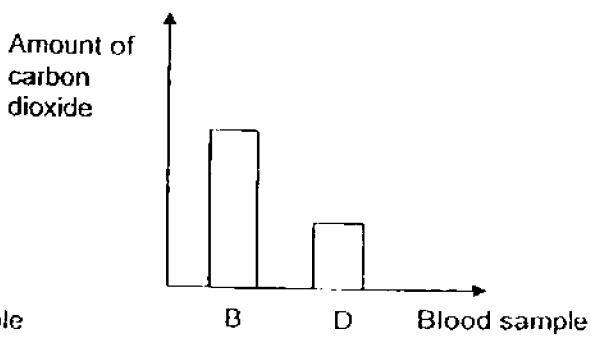
(2)



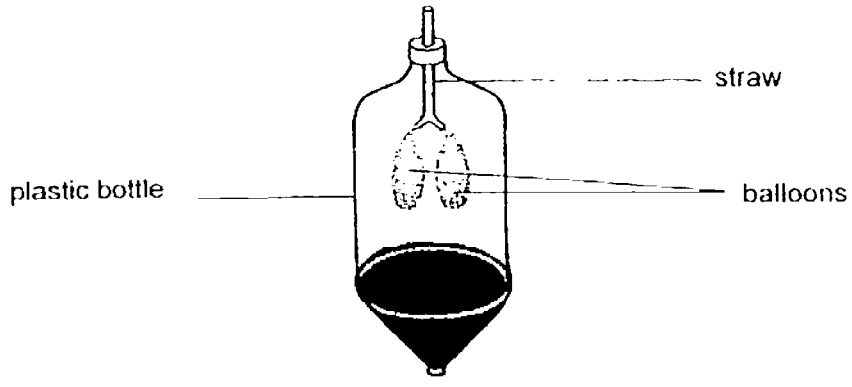
(3)



(4)



16. The diagram below shows a human respiratory model.



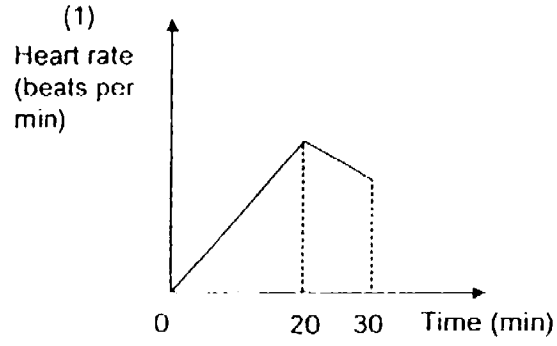
Which parts of the human respiratory system correctly represent the parts of the model?

	parts of the model	parts of the respiratory system
A:	straw	windpipe
B:	balloons	lungs
C:	plastic bottle	nose

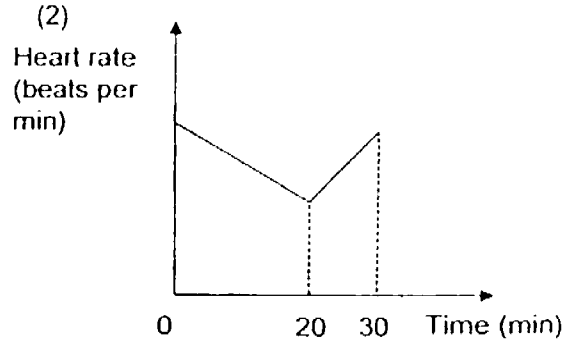
(1) B only
(2) C only
(3) A and B only
(4) A, B and C

17. Ignatius ran continuously for 20 minutes up a hill and then took a short break for 10 minutes. Which graph shows his heart rate during the 30 minutes?

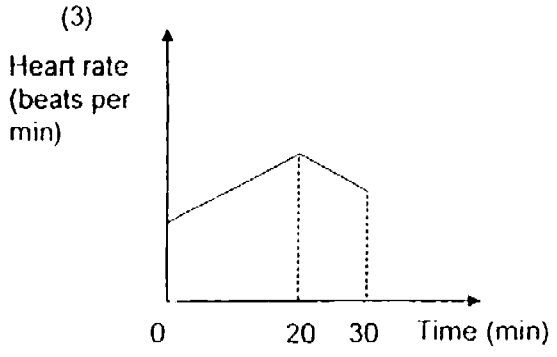
(1)



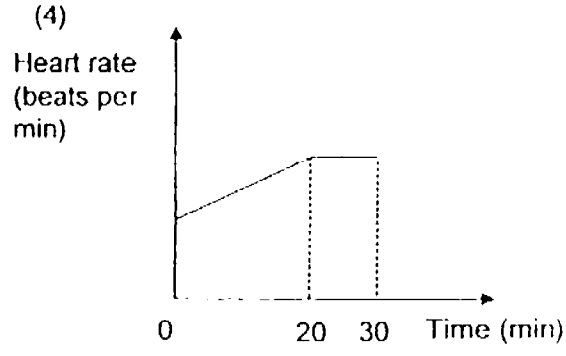
(2)



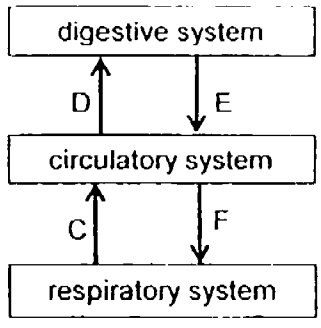
(3)



(4)



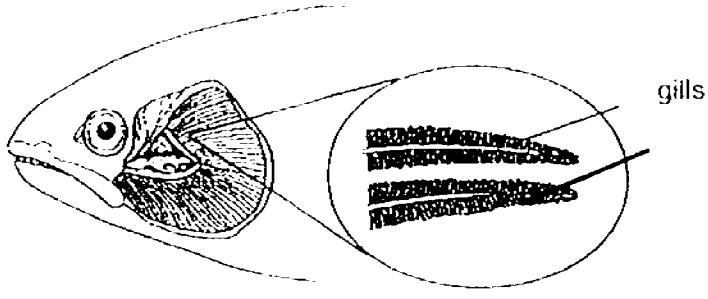
18. Devi drew a flowchart below to show blood is transported in the human body.



Which two arrows are blood rich in oxygen?

(1) C and D only
(2) C and E only
(3) D and F only
(4) E and F only

19. The picture below shows a close-up view of the gills of a fish.



Which of the following statements is/are true about the gills of the fish?

A: It allows water containing dissolved oxygen to pass through.
B: It has a large surface area for gaseous exchange to take place.
C: It prevents water containing dissolved carbon dioxide to pass through.
D: It allows oxygen and carbon dioxide to be absorbed into the bloodstream.

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

20. Roshan conducted an experiment to find out how the amount of carbon dioxide in the surrounding air would affect the size of the stomata on a leaf cell. He recorded his observation as shown below.

Temperature of surrounding air (°C)	28	28	28	28
Amount of carbon dioxide in the surrounding air (units)	1000	1500	2000	2500
Size of stomata (units)	2000	4000	6000	7000

Based on the information provided, which one of the following conclusion is correct?

(1) As the size of the stomata increases, the temperature of the surrounding air remains the same.
(2) As the size of the stomata increases, the amount of carbon dioxide in the surrounding air increases.
(3) As the amount of carbon dioxide in the surrounding air decreases, the size of the stomata decreases.
(4) As the amount of carbon dioxide in the surrounding air decreases, the temperature of the surrounding air remains the same.

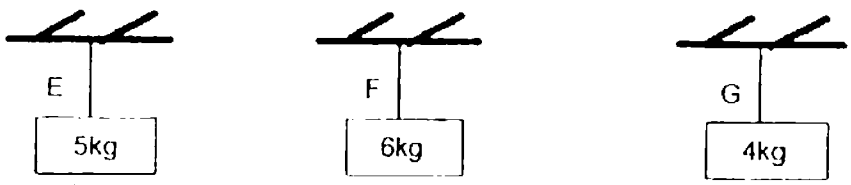
21. The properties of 4 different materials A, B, C and D are shown in the table below. A tick (✓) represents the presence of the property of the material.

Property	Materials			
	A	B	C	D
Is it light?	✓		✓	
Is it waterproof?	✓		✓	✓
Is it flexible?		✓	✓	✓

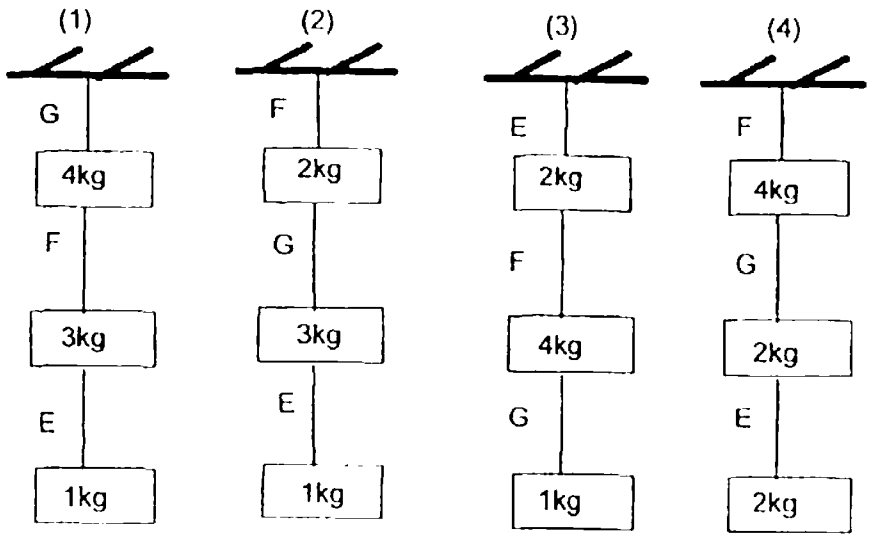
Which materials can bend and float in water?

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

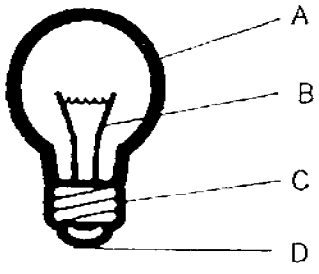
22. Charmaine tested three types of strings made of materials E, F and G by hanging weights from each material. She increased the weights until the material broke. The maximum weight that the materials could hold before breaking is shown below.



Charmaine then tried a few arrangements of hanging different weights. Which one of the following arrangements would be possible?



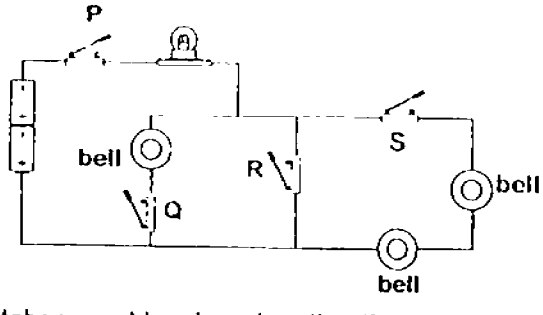
23. The diagram below shows a light bulb.



Which part(s) of the light bulb is/are non-conductor of electricity?

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

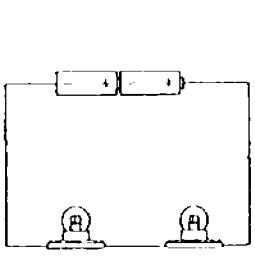
24. Jerome set up the circuit as shown below.



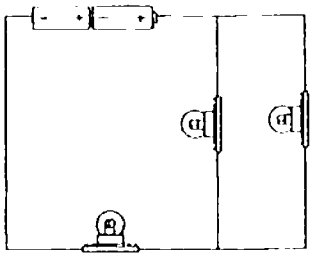
Which two switches must be closed so that the bulb lights up without any of the bells ringing?

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

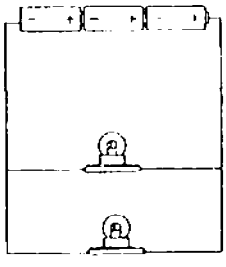
25. Calysta set up four circuits as shown below using identical bulbs and batteries.



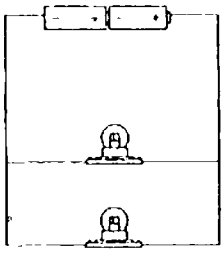
A



B



C

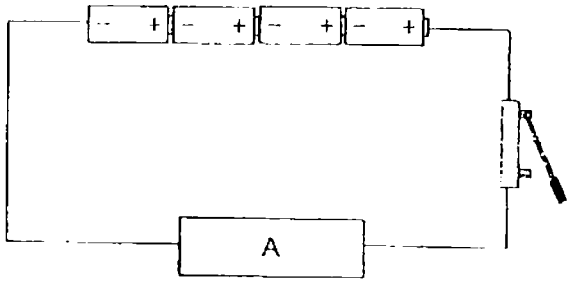


D

She wanted to find out how the arrangement of the bulbs would affect the brightness of the bulbs. Which two set-ups should she use to ensure it was a fair experiment?

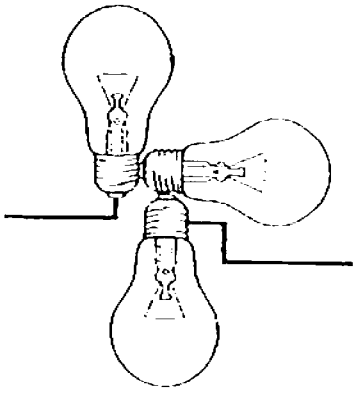
(1) A and B only
(2) A and D only
(3) B and C only
(4) C and D only

26. Zachary set up the circuit as shown below. He arranged three bulbs in box A and when he closed the circuit, all the bulbs lit up.

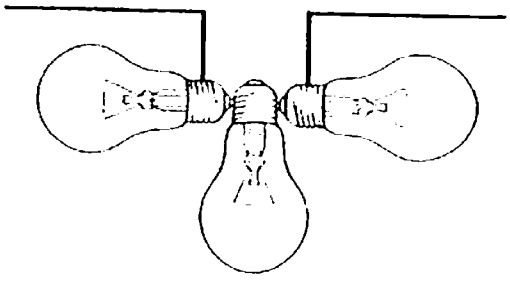


Which one of the following arrangements of bulbs could Zachary have made?

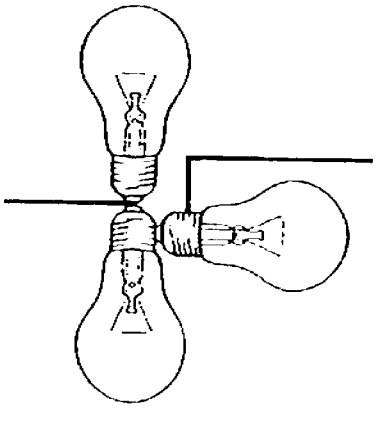
(1)



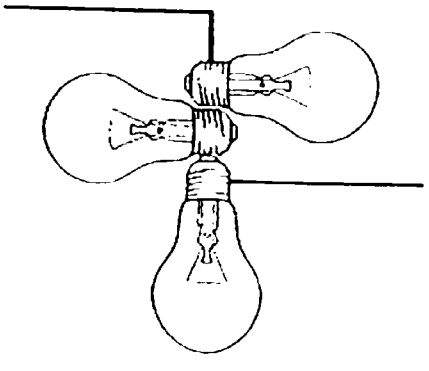
(2)



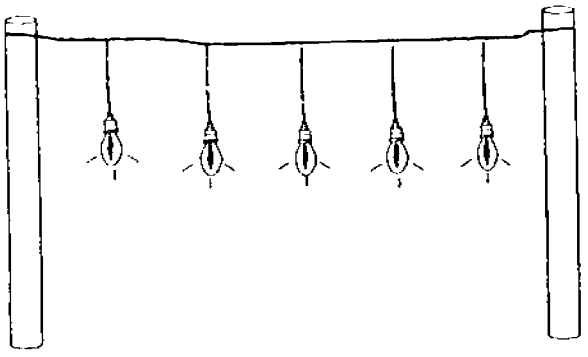
(3)



(4)



27. Alexis had 4 different set-ups, W, X, Y and Z, each with a different number of bulbs connected to a series circuit as shown below.



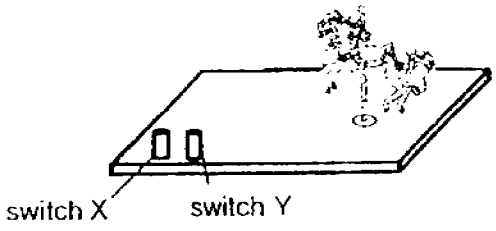
She recorded the brightness of each bulb as shown in the table below.

	W	X	Y	Z
Brightness of each bulb (lux)	5	2	3	7

Which one of the following shows the arrangement of the most number of bulbs to the least number of bulbs?

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

28. Saira has a toy that works on batteries as shown in the diagram below.

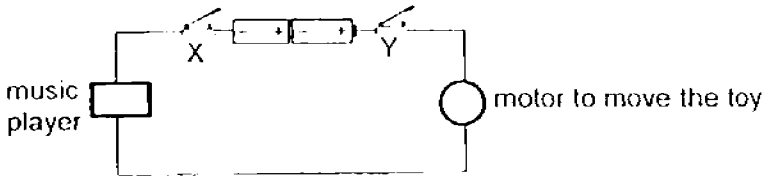


Her observations are shown below. A tick (✓) shows the presence of an observation.

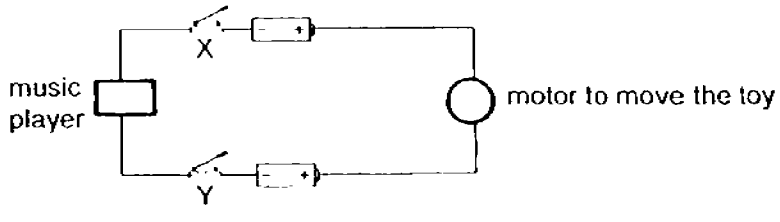
Switches turned on	Observations	
	Toy moved	Music was heard
X and Y	✓	✓
X only		✓
Y only	✓	

Which one of the circuits below is possible for all the observations to occur based on her actions?

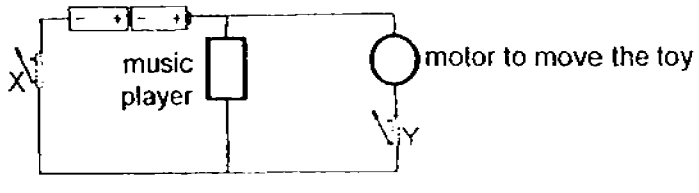
(1)



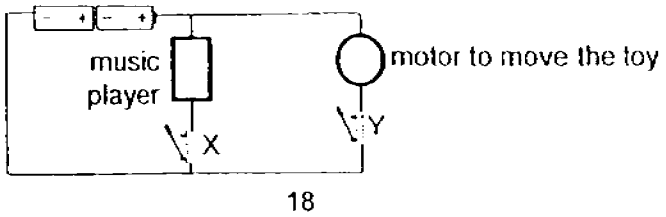
(2)



(3)



(4)



First Semestral Assessment 2016
STANDARD SCIENCE
Primary 5

Name: _____ Total Marks: /100

Class: Pr 5 _____ Register No. _____ Duration: 1 h 45 min

Date: 11 May 2016 Parent's Signature: _____

Booklet B

Instructions to Pupils:

1. For questions 29 to 41, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	56 marks	
Booklet B	44 marks	
Total	100 marks	

* This booklet consists of 19 printed pages (including cover page).

Part II

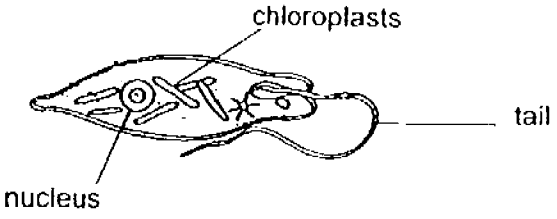
For questions 29 to 41, write your answers in this booklet.

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

(44 marks)

---

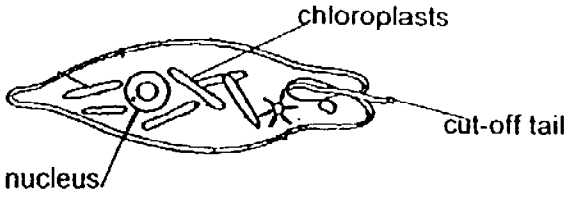
29. A scientist discovered a single-cell organism, organism Y, in a freshwater pond. The diagram below shows how organism Y looks like under the microscope.



organism Y

(a) The scientist concluded that organism Y does not need to feed on other organisms. Do you agree with him? Explain your answer. [1]

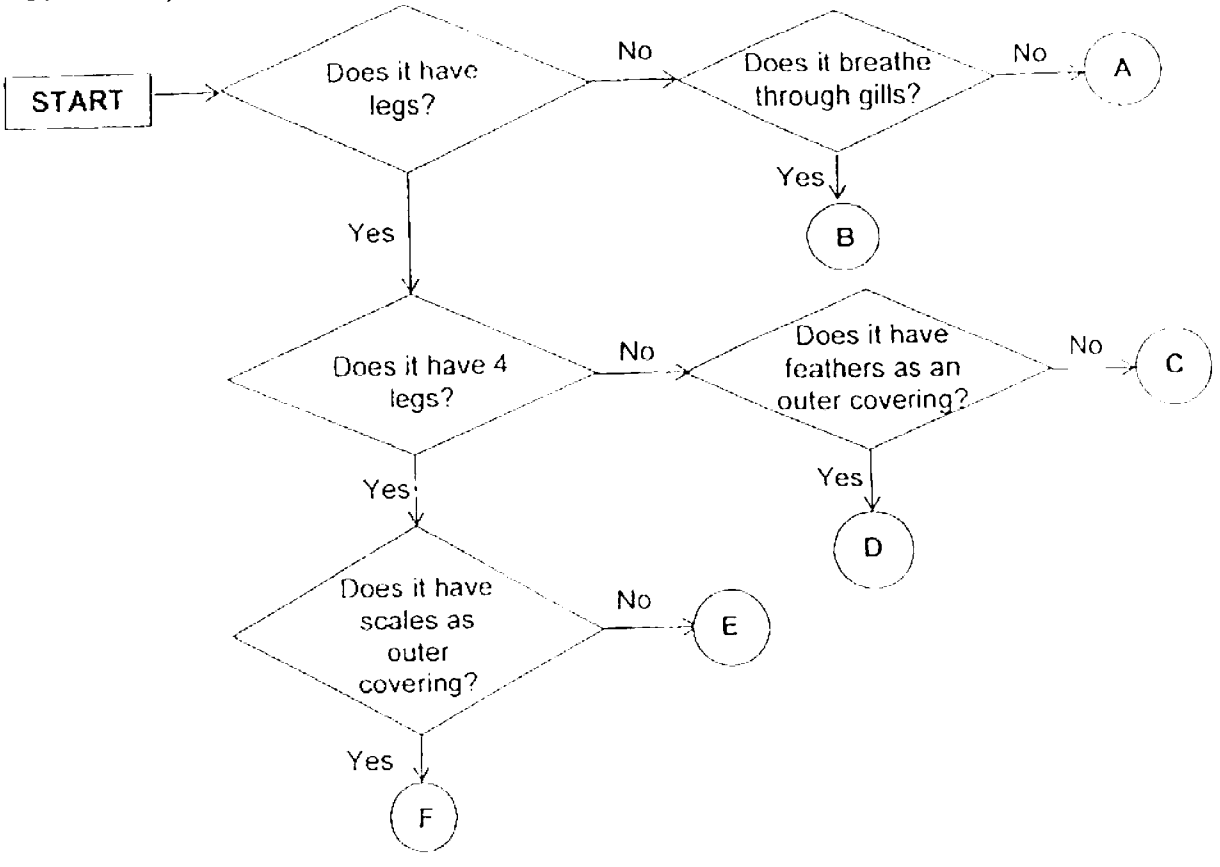
When the scientist cut away the tail of organism Y as shown in the diagram below, he observed that a new tail started to form.



organism Y

(b) How was it possible for organism Y to form a new tail? [1]

30. Study the flowchart below. Letters A to F represent different animals.



(a) Peter told his teacher that a crocodile could be represented by animal F.
Do you agree? Support your answer. [1]

_____

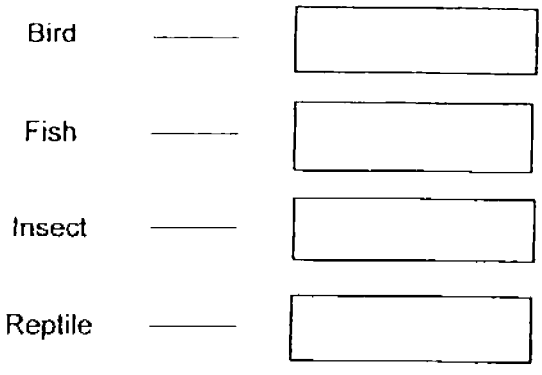
_____

(b) Based on the flowchart above, state one difference between animals C and D. [1]

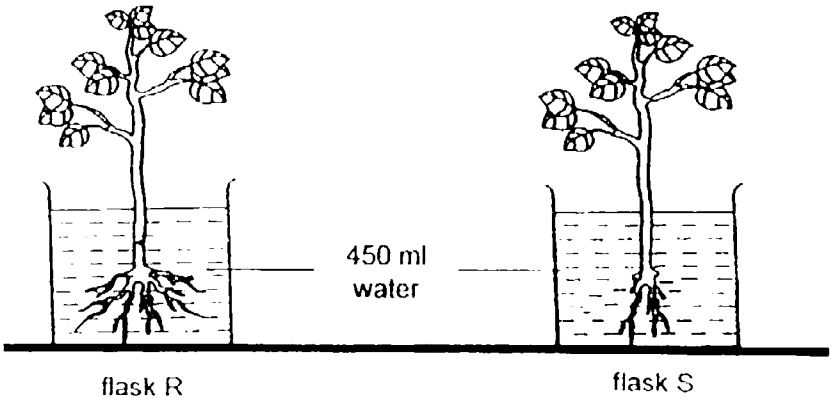
_____

Question 30 continues on page 3

(c) Write down the letters (A, B, C, D, E or F) that best represent the animal group in the boxes. [2]

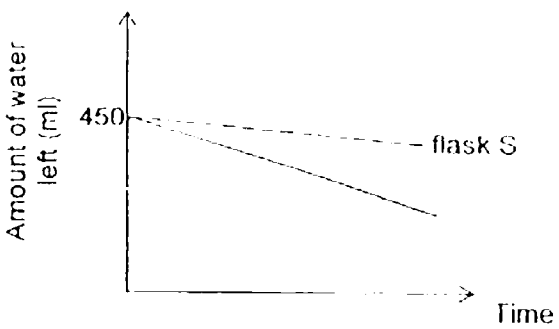


31. Mei Lin set up an experiment as shown below. Flasks R and S contained 450 ml of water. They were left in the open at the same location and the volume of water was measured at the end of each day.



(a) Based on the experimental set-up, what was the aim of the experiment? [1]

The graph below shows the change in the volume of water in flask S over a period of 5 days.

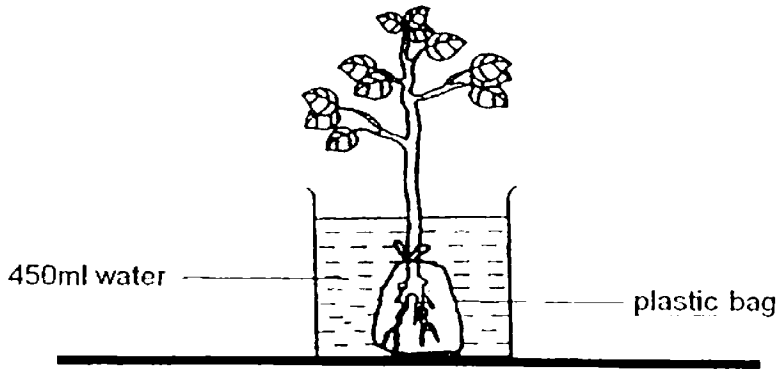


(b) Draw a line in the graph above and label it "flask R" to show the change in the volume of water in flask R. [1]

(c) If Mei Lin had added a layer of oil in flasks R and S at the beginning of the experiment, will the change in the volume of water be more or less? Explain why. [1]

Question 31 continues on page 5

Mei Lin set-up another flask as shown below.

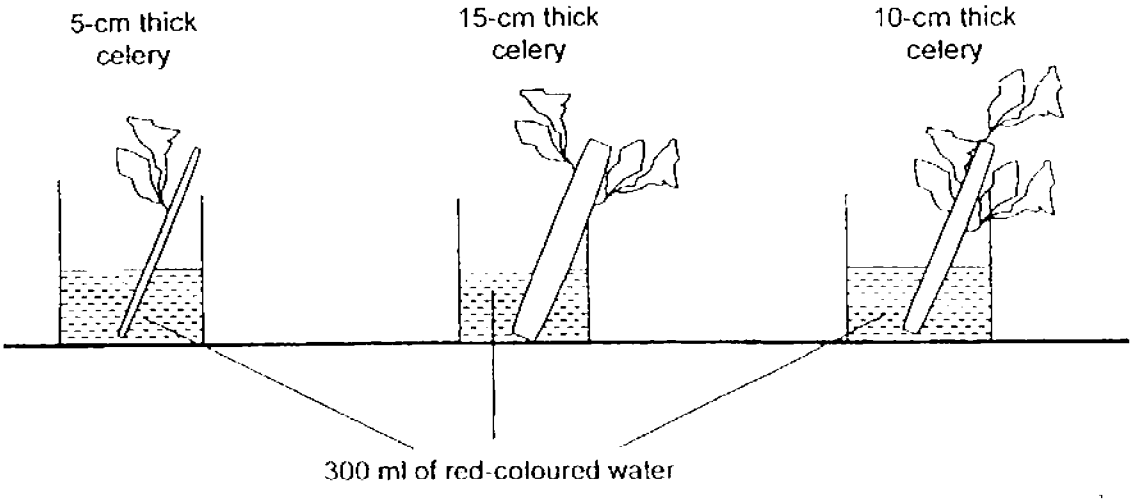


(d) What is the purpose of the set-up above? [1]

_____

_____

32. Rani wanted to find out if the thickness of the celery stalks affects the time taken for red-coloured water to reach the leaves. She cut out three stalks of celery of different thickness and placed them in 300ml of red-coloured water as shown in the diagram below.



(a) Why did she use red-coloured water instead of tap water in this experiment? [1]

_____

_____

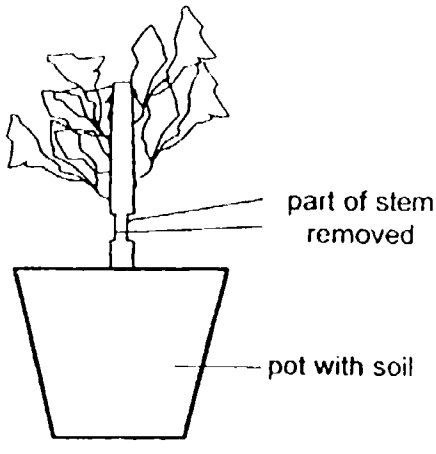
(b) Rani's teacher told her that the experiment was not fair. What could be a possible reason for this? [1]

_____

_____

Question 32 continues on page 7

Rani conducted another experiment as shown below.



(c) When Rani removed part of the stem of the celery plant, she observed that the leaves were still green in colour after a few days. Explain why. [1]

33. Devi wanted to find out how the temperature of sugar solution affects the rate of cell division. She placed 10 yeast cells in 3 similar containers A, B and C. Each container had the same amount of sugar solution. The table below shows the yeast cell division after 1 hour.

Container	Number of yeast cells at the beginning	Temperature of sugar solution	Number of yeast cells after 1 hour
A	10	10°C	30
B	10	30°C	55
C	10	60°C	82

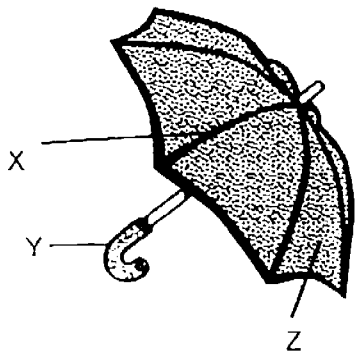
(a) State one other variable that Devi should keep the same to ensure a fair experiment. [1]

(b) Based on the information provided, what can Devi conclude from this experiment? [1]

Yeast feeds on sugar in the flour mixture to make little carbon dioxide bubbles that get trapped in the flour mixture and make it rise.

(c) If Devi wanted to make yeast bread, which container of sugar solution should she use to mix the yeast cells? Explain your answer. [1]

34. Grace had an umbrella with its different parts labelled X, Y and Z as shown in the diagram below.



Answer the following questions to complete the table below.

(a) Suggest suitable material(s) to make parts X and Y. Give a reason for each material selected. [2]

part	material	reason for material used
X		
Y		

Grace needed to choose a suitable material to make part Z of the umbrella. She weighed 4 materials, P, Q, R and S, which were of similar sizes. She placed each of them in a bowl of water which contained 40ml of water for 2 minutes. Then, she removed them from the bowl before weighing them again.
She recorded her findings in the table below.

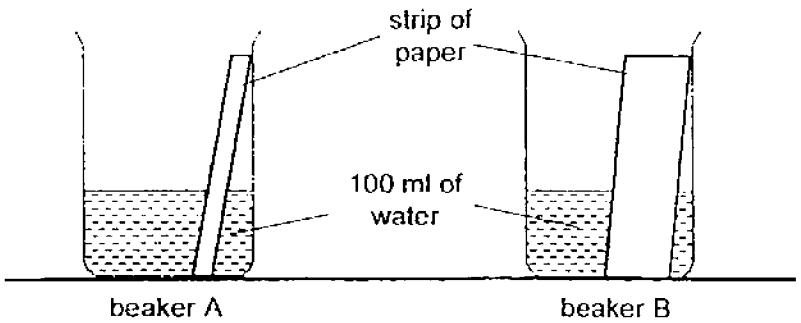
Part	Mass of material before placing into the bowl of water (g)	Mass of material after removing from the bowl of water(g)
P	30	38
Q	30	50
R	30	30
S	30	40

(b) From the data given, which one of the materials, P, Q, R or S, is most suitable for making part Z of the umbrella? Explain your answer. [1]

_____

_____

35. Henry cut a piece of paper into 2 strips with different surface area. He set up the experiment as shown below using 2 similar beakers.



After 30 minutes, he recorded his results in the table as shown.

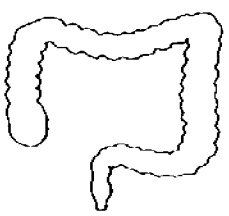
	beaker A	beaker B
Amount of water left in the beaker (ml)	95	80

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

_____

_____

The diagram below shows the large intestine of the human digestive system.



(b) Henry's grandmother had part of her large intestine removed due to disease. Based on the data above, explain how she would be affected? [2]

_____

_____

36. Muthu conducted an experiment to find out how the volume of sound would affect his heart rate. He recorded his results as shown below.

	normal heart rate before listening to loud sound (beats/min)	heart rate after listening to loud sound (beats/min)	normal heart rate before listening to soft sound (beats/min)	heart rate after listening to soft sound (beats/min)
1st attempt	94	104	94	92
2nd attempt	96	108	95	94
3rd attempt	96	107	95	93

(a) Why did Muthu conduct the same experiment for three attempts? [1]

(b) What could Muthu conclude from the above results? [2]

37. Simon carried out different activities and measured his breathing rate and pulse rate for each activity. He recorded his observations in the table below.

Activity	Breathing rate (Number of breaths/ min)	Pulse rate (Number of beats/min)
P	50	?
Q	30	50
R	90	110

(a) Suggest a possible pulse rate for activity P. [1]

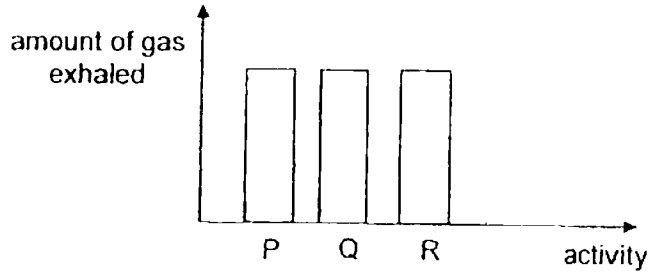
_____

(b) Simon walked, ran and slept. Complete the table of activities below by writing P, Q, or R to match the activity to the results in the above table. [1]

Actual activities	Represented letter
walking	
running	

Question 37 continues on page 13

(c) Simon measured the amount of gas exhaled and plotted a graph as shown below immediately after each activity he had done for 10 minutes.



(i) What can you conclude about the amount of gas exhaled for all the activities? [1]

_____

(ii) Name the gas that Simon has measured in part (c). [1]

_____

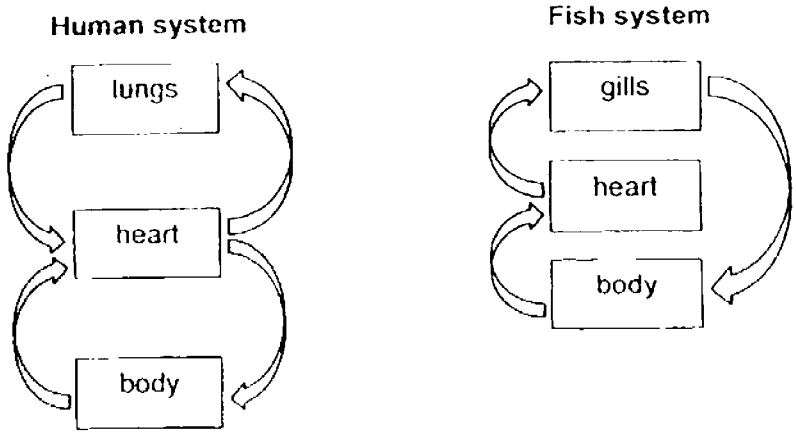
(d) Explain why Simon's breathing rate decreased when his pulse rate decreased? [1]

_____

_____

_____

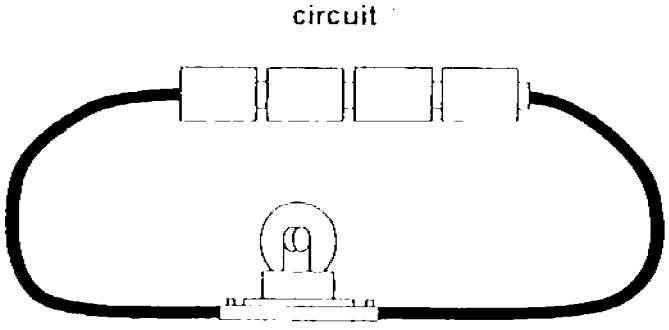
38. Kassim studied the two systems as shown below

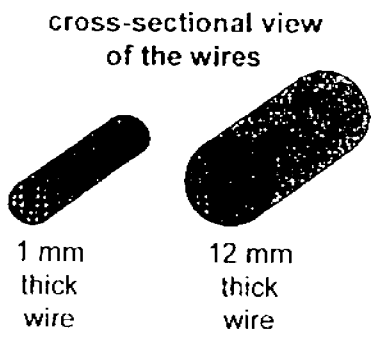


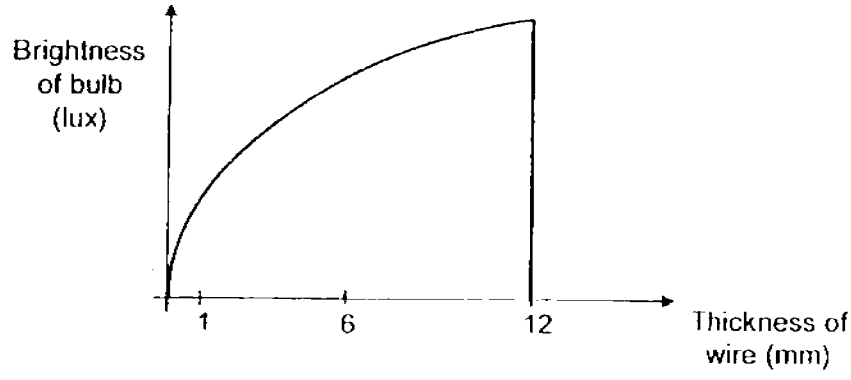
(a) State a difference between how the blood flows in the two systems above. [1]

(b) What happens to Kassim's heart rate when he carries a stack of heavy books from level 1 to level 6? Explain why. [2]

39. Zhi Wei conducted an experiment to find out how the thickness of wir
the brightness of the bulb.







(a) What was the variable that was measured in this experiment? [1]

_____

(b) What observation could he make based on the results shown in the graph? [1]

_____

_____

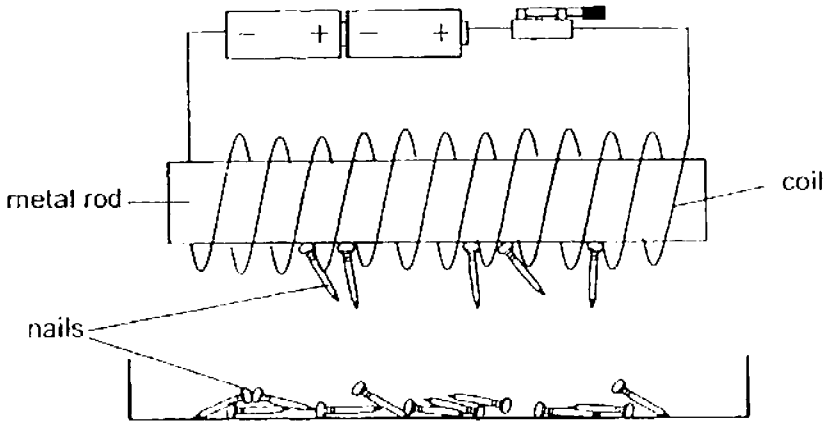
(c) Explain the observation in part (b). [1]

_____

_____

_____

40. Lisa conducted an experiment by coiling some wires around a metal rod and connecting it to a circuit as shown below. When the switch was closed, she observed that some nails were attracted to the rod as shown below.



(a) What would she observe when she open the switch? [1]

_____

_____

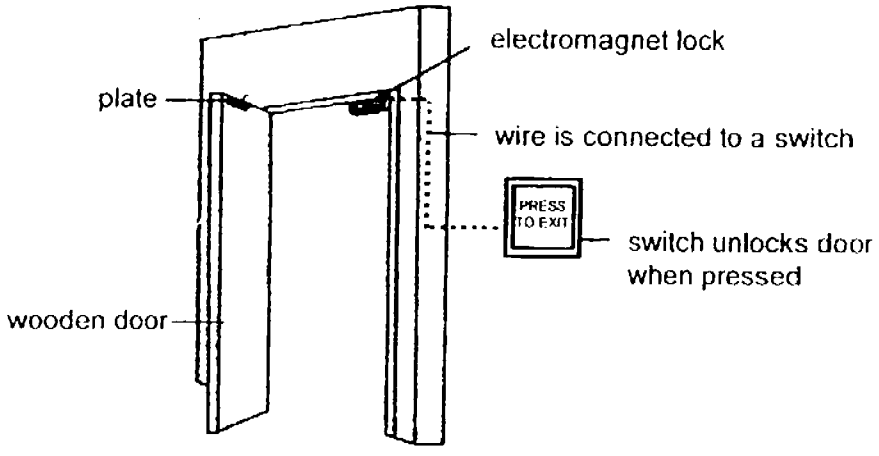
(b) What should she do to the circuit if she wanted to attract more nails to the metal rod? [1]

_____

_____

Question 40 continues on page 17

Lisa installed an electromagnetic door-lock system as shown in the diagram below.

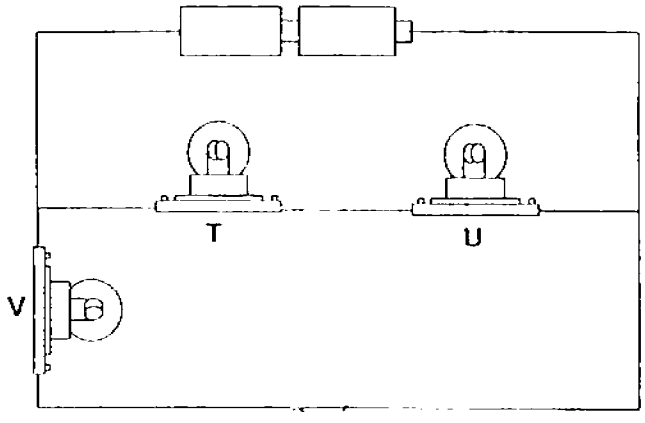


When the switch is pressed, the door unlocks.

(c) Based on Lisa's experiment conducted earlier, explain how pressing the switch allows the door to be unlocked. [2]

(d) Suggest one suitable material that can be used to construct the plate.

41. The diagram below shows a circuit with 3 bulbs T, U and V.



(a) A switch is placed in the circuit so that it controls only bulb V. Mark a cross (X) on the circuit above to show where the switch should be placed. [1]

(b) What is the advantage of connecting bulbs T and V in the manner shown in the diagram above? [1]

_____

_____

(c) What will happen to bulbs T and V if bulb U is replaced with an aluminium paper clip? Explain your answer. [1]

_____

_____

End of Paper

ANSWER KEY

YEAR : 2016
LEVEL : PRIMARY 5
SCHOOL : ROSYTH
SUBJECT : SCIENCE
TERM : SA1

Booklet A

Q1	2	Q5	4	Q9	4	Q13	3	Q17	3	Q21	1	Q25	2
Q2	2	Q6	4	Q10	3	Q14	3	Q18	1	Q22	2	Q26	1
Q3	4	Q7	3	Q11	2	Q15	4	Q19	1	Q23	1	Q27	4
Q4	1	Q8	3	Q12	4	Q16	3	Q20	3	Q24	2	Q28	4

Booklet B

Q29a Yes, organism Y has chloroplasts that can makes food.

Q29b Organism Y has a nucleus which enables it to grow a new tail.

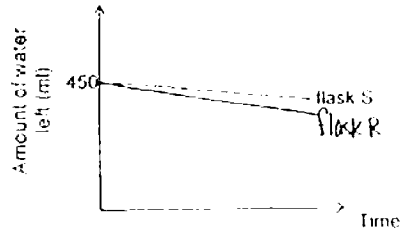
Q30a Yes, crocodile lay eggs, have four legs and have scales as outer covering.

Q30b Animal C does not have feathers but animal D have feathers.

Q30c
Bird ----- D
Fish ----- B
Insect ----- C
Reptile ----- F

Q31a To find out how the number of roots affects the amount of water taken in by the plant.

Q31b



Q31c Less. The layer of oil prevents evaporation.

Q31d To confirm that the presence of roots is the only variable that affect the amount of water absorbed by the plant.

Q32a To see if the red-coloured water travelled to the celery's leaves.

Q32b The amount of leaves in each celery was different.

Q32c The water-carrying tubes were still present so the leaves can still absorb water to make food.

Q33a Amount of light.

Q33b As the temperature of sugar solution increases, the number of yeast cells after 1 hour increases.

Q33c Container C. The number of cells increased the most after 1 hour and this would have made the bread rise the most.

Q34a

part	material	reason for material used
X	Metal	Able to hold the cloth of the umbrella
Y	Rubber	Able to provide a good grip

Q34b R, it did not absorb water so the material can keep the person dry.

Q35a To find out how the surface area of the paper affects the amount of water absorbed.

Q35b There is lesser surface area to absorb water from undigested food.

Q36a To ensure the result of the experiment is reliable.

Q36b The higher intensity of sound, the higher the heart rate.

Q37a 70

Q37b

Actual activities	Represented letter
walking	P
running	R

Q37c (i) They exhale the same amount of gas.
(ii) Nitrogen

Q37d Less energy is needed to take in less oxygen.

Q38a The blood flows twice to the heart in human while the blood flows once to the heart in the fish.

Q38b His heart needs to pump blood at a faster rate to provide more oxygen and digested food to the body.

Q39a The brightness of the bulb.

Q39b As the thickness of the wires increases, the brightness of the bulb increases but when the thickness of the wire reaches 12mm, the bulb did not light up.

Q39c More electric current can pass through the thicker wires.

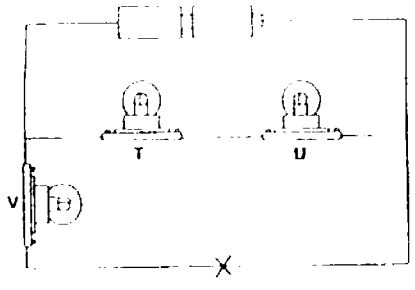
Q40a The nails would drop.

Q40b Add more batteries.

Q40c When the switch is pressed, the circuit is open, hence, electricity cannot pass through the circuit and the electromagnet loses it magnetism and cannot attract the plate.

Q40d Iron or Steel.

Q41a



Q41b If one bulb fuses, the other bulb will still light up.

Q41c Bulb T and V will still light up. Aluminium paper clip is a conductor of electricity so it allows electricity to pass through the circuit.