10

Name: _____( )

Class: Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Semestral Assessment 1 – 2016
SCIENCE

BOOKLET A

12 May 2016

Total Time for Booklets A and B: 1 hour 45 minutes

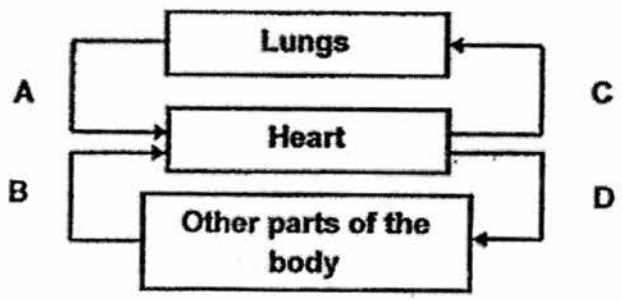
30 questions
60 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

This booklet consists of 22 printed pages.

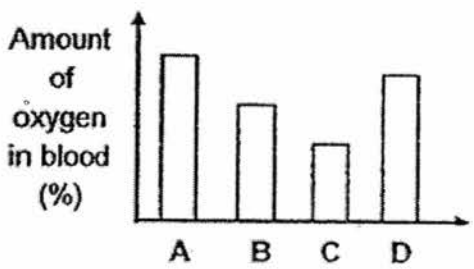
Section A (30 x 2 marks = 60 marks)
For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet provided.**

1. The diagram below shows how blood flows in some parts of the human body.

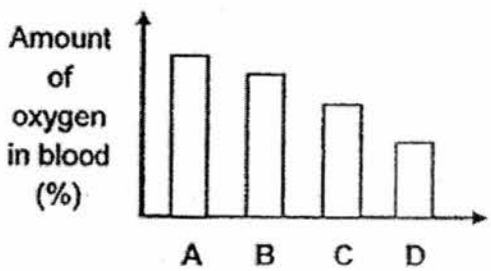


Which one of the following graphs correctly represents the amount of oxygen in the blood found in A, B, C and D?

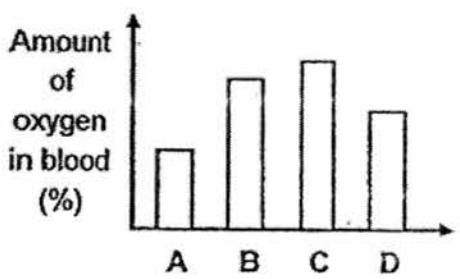
(1)



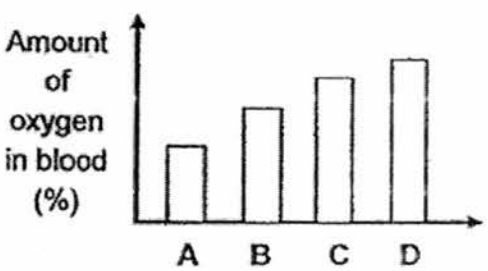
(2)



(3)

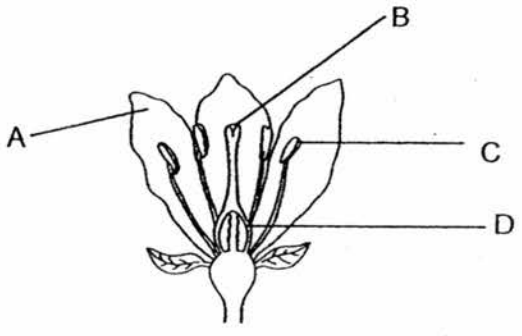


(4)



2. Jordan conducted an experiment to find out which parts of flower P shown below were necessary to form a fruit. He removed two parts of flower P. He then transferred some pollen from another flower of the same plant to the remaining flower parts of P.

After some time, flower P formed a fruit.



flower P

Which two parts were removed from flower P?

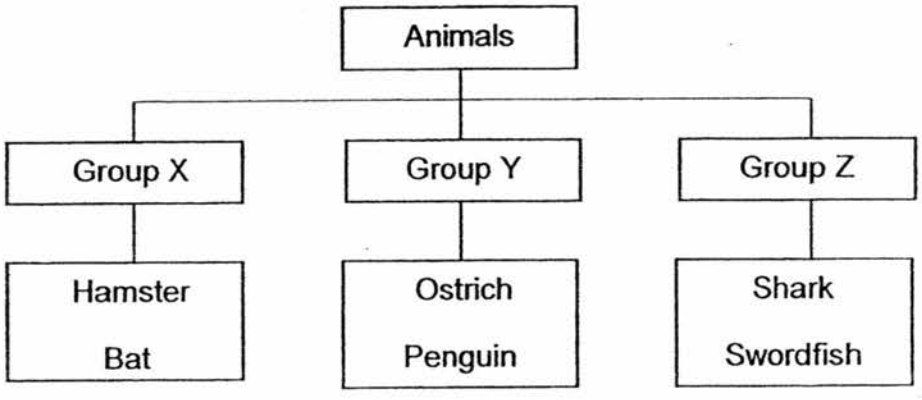
(1) A and D only

(2) A and C only

(3) B and D only

(4) C and D only

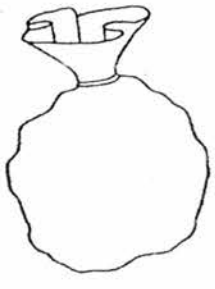
3. Study the classification chart below.



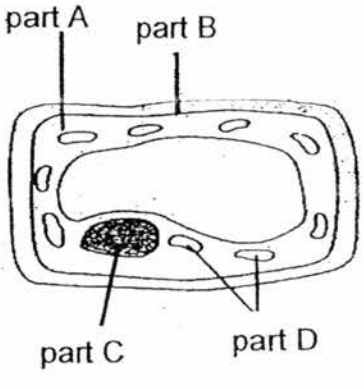
Which of the following are appropriate headings for groups, X, Y and Z?

	Group X	Group Y	Group Z
(1)	Live on land	Live on land and water	Live in water
(2)	Give birth	Give birth	Lay eggs
(3)	Has hair	Has feathers	Has scales
(4)	Fish	Birds	Mammals

4. Maggie placed some wet towels into a cloth bag after her swim. Although she tied the bag up, she noticed that water was seeping out of the cloth bag.



cloth bag

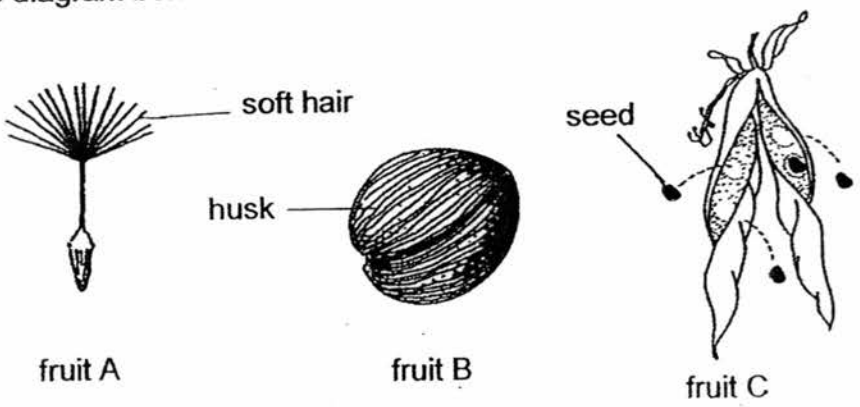


cell X

Which part of cell X has a similar function as displayed by the cloth bag?

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

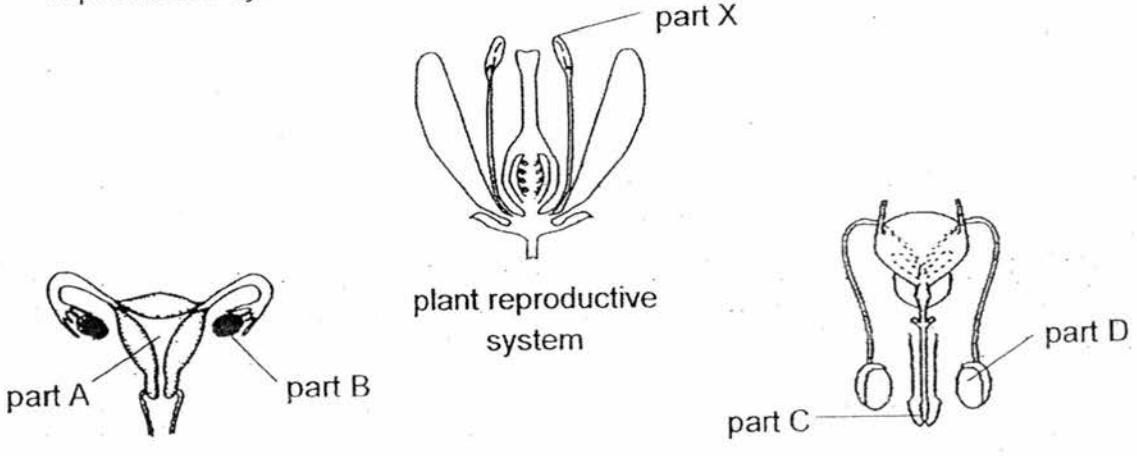
5. The diagram below shows the fruit of some plants.



How are fruits, A, B and C, dispersed?

	A	B	C
(1)	splitting action	animal	water
(2)	wind	water	splitting action
(3)	water	splitting action	animal
(4)	wind	animal	wind

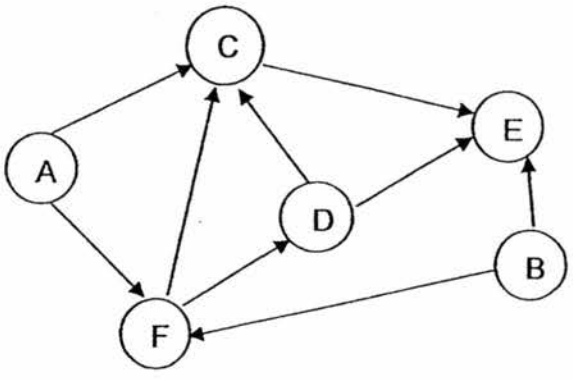
6. The diagrams below show the human reproductive systems and a plant reproductive system.



Which part of the human reproductive system has a similar function as part X of the plant?

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

7. **Study the food web below carefully.**



Which one of the following is correct?

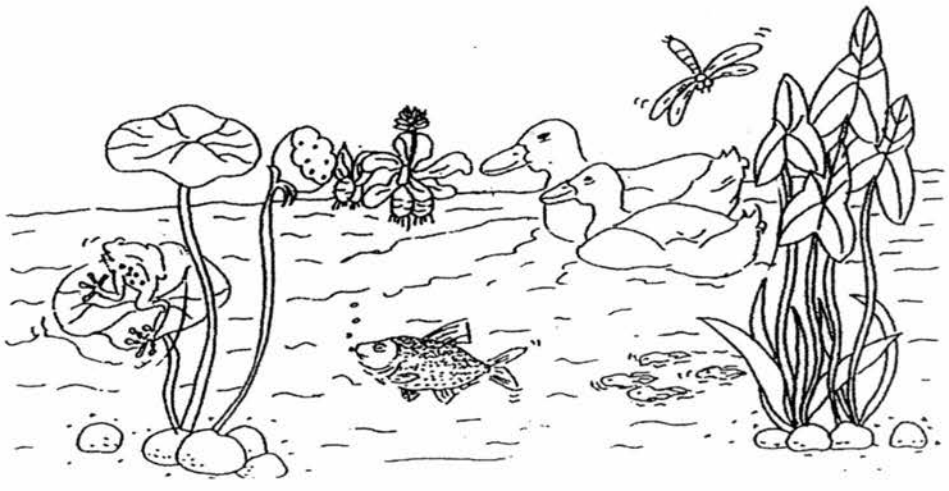
	Food producer	Prey	Predator
(1)	C	D	B
(2)	F	A	E
(3)	B	C	D
(4)	A	F	C

8. Which of the following statement(s) about bacteria and fungi is/are not correct?

A They are decomposers.
B All bacteria are harmful to humans.
C Bacteria are not useful to human while fungi are useful to human.
D Fungi only feed on dead plants while bacteria only feed on dead animals.

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

9. Look at the diagram below carefully.



Which of the following is/ are correct?

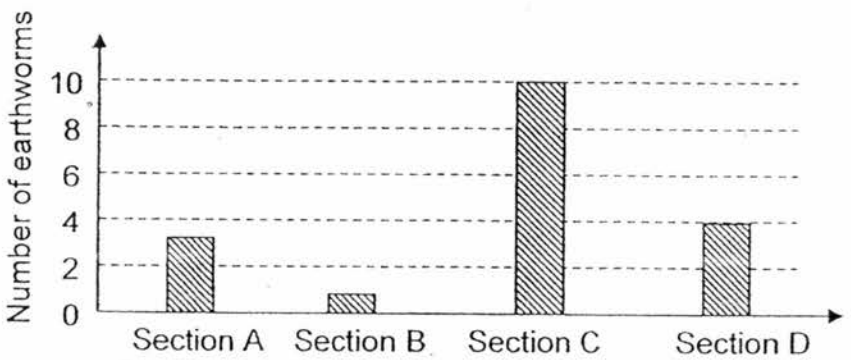
A There is only one community.
B There are 6 populations in total.
C Only the fish is not considered as a population here.
D There is only one population of animal and one population of plant.

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

10. Dan carried out an investigation to find the preferred habitat of earthworms. He divided a tray into four equal sections as shown in the diagram below. Five earthworms were placed in each sections and were free to move between the sections.

Section A Dry soil covered with a black cloth.	**Section B** Dry soil exposed to light.
Section C Wet soil covered with a black cloth.	**Section D** Wet soil exposed to light

Four weeks later, he counted the number of earthworms found in each section. The graph below shows the results of his investigation.

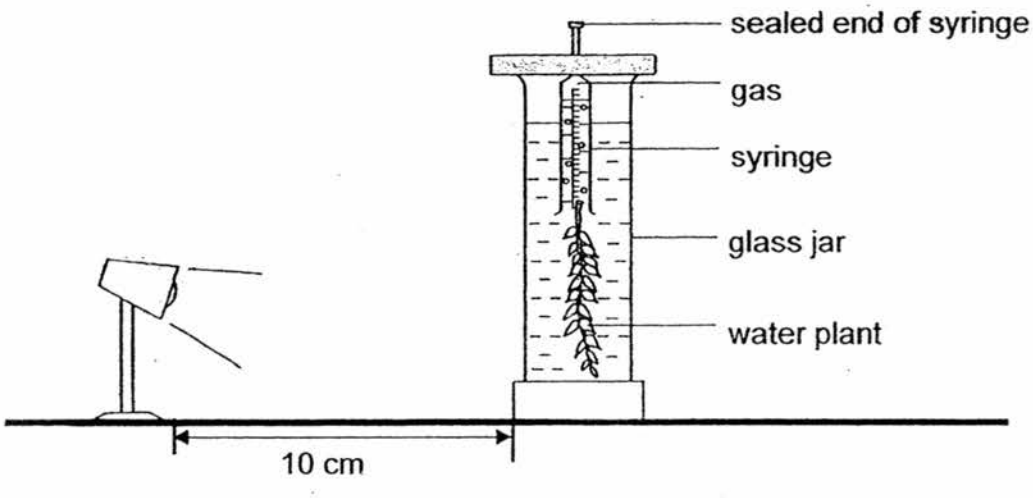


Based on the results above, what can Dan conclude about the preferred characteristics of the earthworm's habitat?

A Dry
B Dark
C Damp
D Bright

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

11. Elisa set up an experiment in a dark room as shown below.



She placed a table lamp at a distance of 10cm from the glass jar. After one hour, she observed that the syringe had collected 5cm^3 of gas. She repeated the experiment by placing the lamp at different distances from the glass jar.

Which one of the following shows the most likely result of her experiment?

	Distance from the lamp (cm)	Gas collected
(1)	5	Less than 5cm^3
(2)	5	More than 5cm^3
(3)	15	Equal to 5cm^3
(4)	15	More than 5cm^3

12. Which one of the following are some of the factors that affect the survival of different organisms in a habitat?

A The amount of food.
B The amount of sunlight.
C The presence of predators.
D The presence of disease-causing organisms.

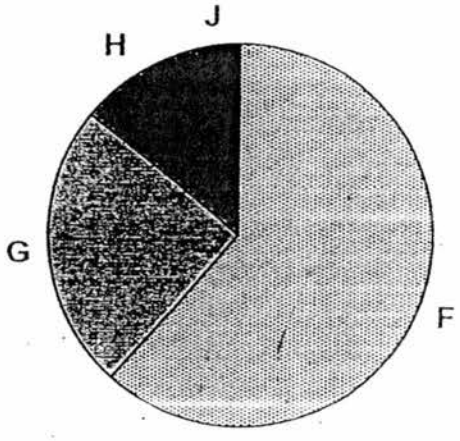
(1) A and C only
(2) B and D only
(3) A, B and C only
(4) A, B, C and D

13. Which of the following statements is/are correct?

A Plants are the main source of energy for all living things.
B Plants need sunlight and oxygen only in order to make food.
C All living things depends directly and indirectly on plants for food.
D Energy from the Sun is transferred to the plants during photosynthesis.

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

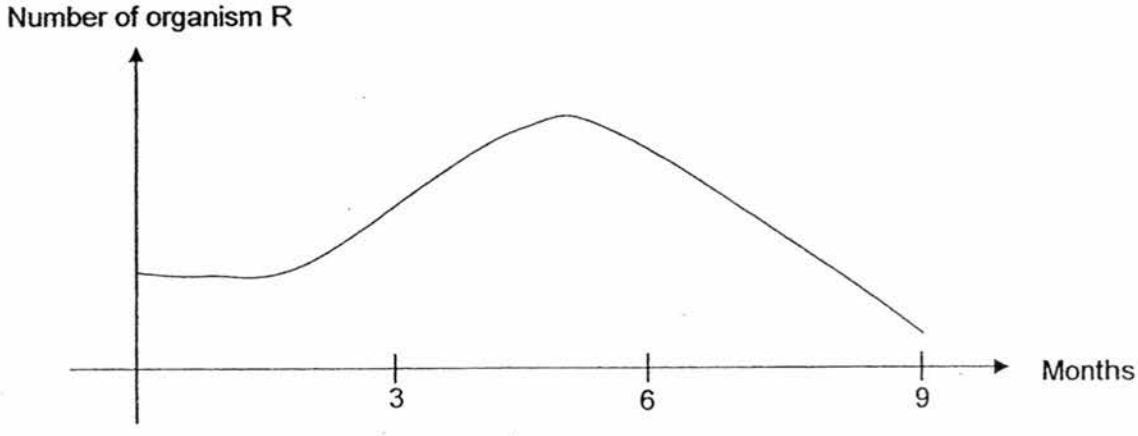
14. The pie chart below shows five different populations of organisms in a forest community. These five populations forms a food chain.



Which one of the following illustrates the food chain of the community?

(1) F → G → H → J
(2) F → H → G → J
(3) J → H → G → F
(4) J → G → H → F

15. **The graph below shows the population of organism R over a period of 9 months.**

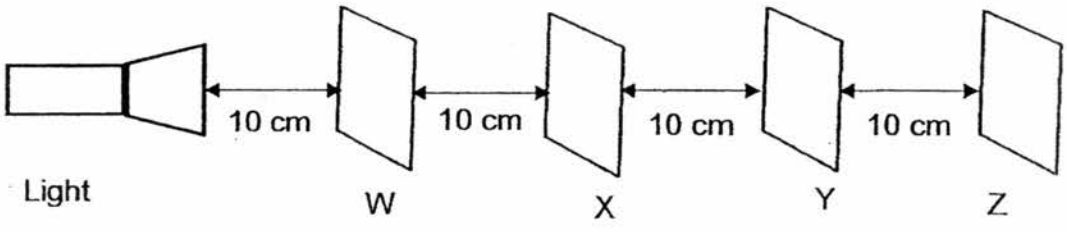


Which of the following are the possible reasons for the decline of the number of organism R during the last few months?

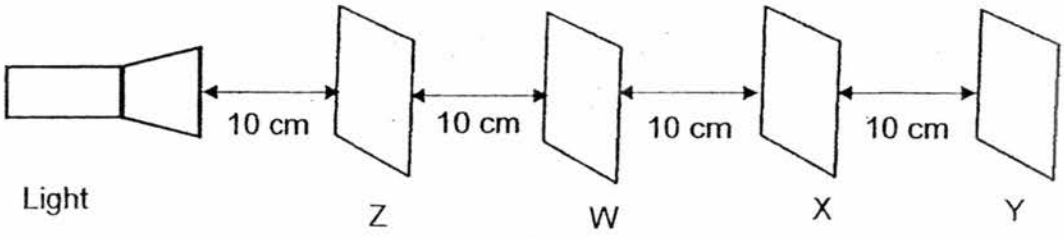
A A disease has attacked the predator of organism R.
B A prey of organism R is introduced to the community.
C A prey of organism R is removed from the community.
D A new predator of organism R is introduced to the community.

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

16. An experiment was conducted to investigate whether light can pass through four sheets, W, X, Y and Z, made of different materials. The sheets were arranged in the set-ups shown below.



set-up A



set-up B

The distance travelled by the light was measured and the result is shown in the table below.

Set-up	Distance travelled by the light
A	20 cm
B	30 cm

Which one of the following correctly describes sheets, W, X, Y and Z?

	Allows light to pass through	Does not allow light to pass through	Not possible to tell
(1)	W	Y	X and Z
(2)	Y	X	W and Z
(3)	W and Z	X	Y
(4)	X and Y	Z	W

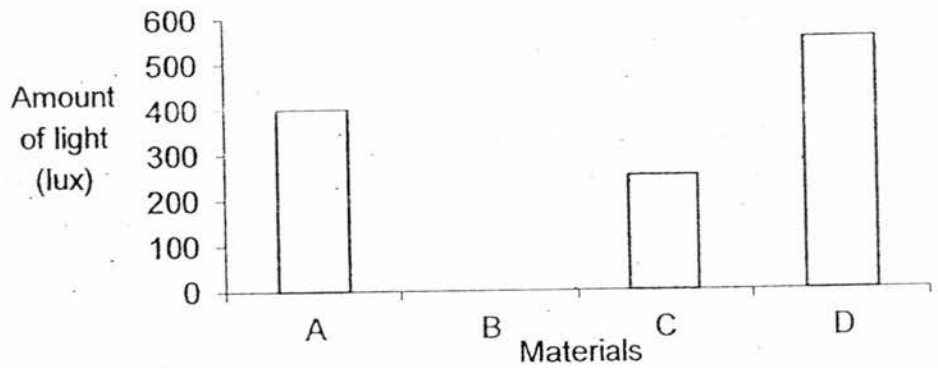
17. Study the diagram below. Three bowls of the same size were filled with the same amount of hot porridge at 90°C. The bowls were left for 10 minutes in the kitchen with a room temperature of 30 °C.

plastic bowl metal bowl styrofoam bowl

Which one of the following is the most possible temperature of the porridge after 10 minutes?

	plastic bowl	metal bowl	styrofoam bowl
(1)	70 °C	70 °C	70 °C
(2)	50 °C	70 °C	60 °C
(3)	60 °C	50 °C	70 °C
(4)	70 °C	60 °C	50 °C

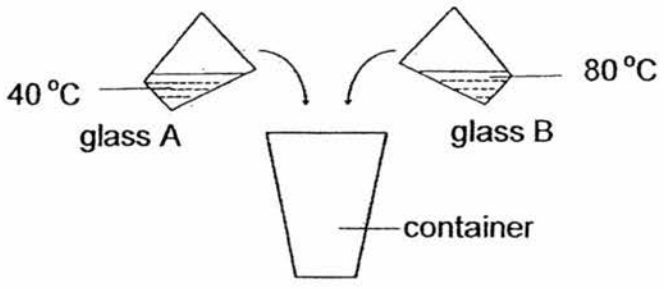
18. Janice conducted an experiment to find out how much light could pass through four different materials, A, B, C and D, using a data logger connected to a light sensor.



The results are shown in the graph above. Based on the graph, which one of the following statements is true?

(1) Material A is opaque.
(2) Material B is transparent.
(3) Material A allows lesser light to pass through than material C.
(4) Material B does not allow light to pass through when placed in front of Material D.

19. Alice filled two glasses, A and B, with the same amount of water. She then poured all the water into a container.



Immediately, she measured and recorded the temperature of the water in the container.
Which one of the following statements about the temperature of water in the container is true?

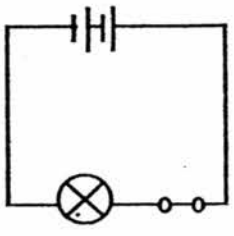
(1) The temperature of the water in the container is the same as the room temperature.

(2) The temperature of the water in the container is lower than the temperature of water in Glass A.

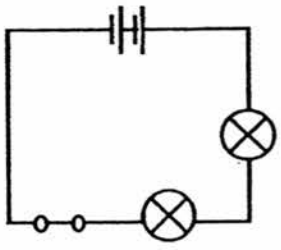
(3) The temperature of the water in the container is the same as the temperature of water in Glass B.

(4) The temperature of the water in the container is higher than the temperature of water in Glass A.

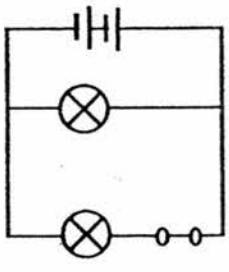
20. Study the four circuits, P, Q, R and S, as shown below.



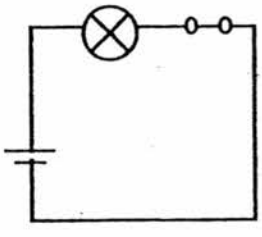
circuit P



circuit Q



circuit R



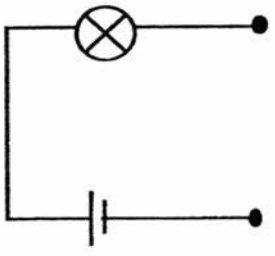
circuit S

The bulbs and the batteries in the four circuits are identical. All the bulbs light up when the circuits are closed.

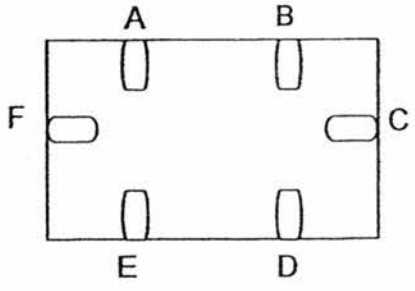
Which one of the following statements is correct?

(1) The bulb in circuit S is as bright as the bulb in circuit P.
(2) Each bulb in circuit Q ia as bright as each bulb in circuit R.
(3) The bulb in circuit P is brighter than each bulb in circuit Q.
(4) The 2 bulbs in circuit R will be dimmer than the bulb in circuit S.

21. The diagram below shows a circuit tester and a circuit card with six paper clips, A, B, C, D, E and F.



circuit tester



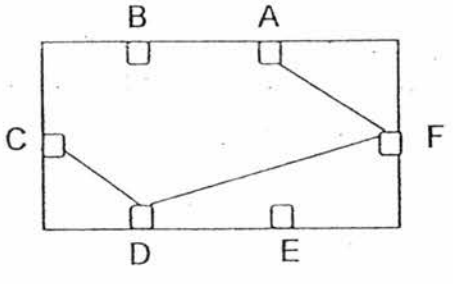
circuit card (front view)

The circuit tester was used to connect the paper clips on the circuit card. The following observations were made.

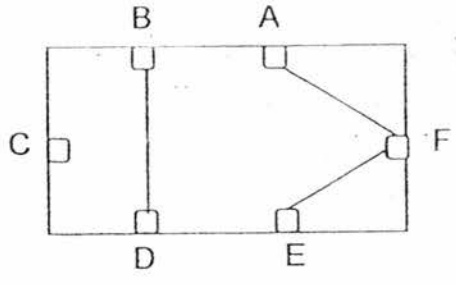
Paper clips connected	Did the bulb light up?
A and F	Yes
A and D	Yes
E and F	No
A and C	Yes
D and F	Yes
B and D	No

Which one of the following diagram shows the correct back view of the circuit card?

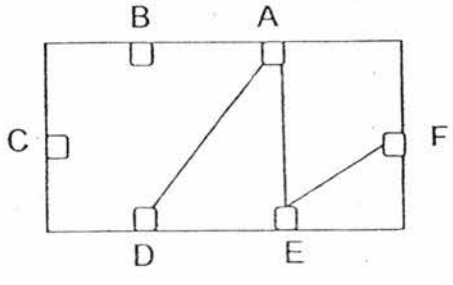
(1)



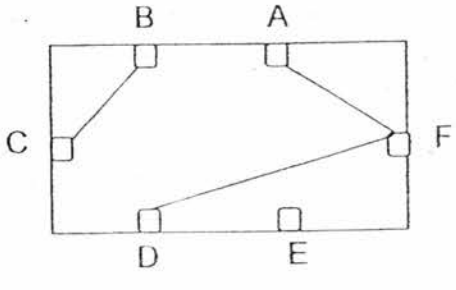
(2)



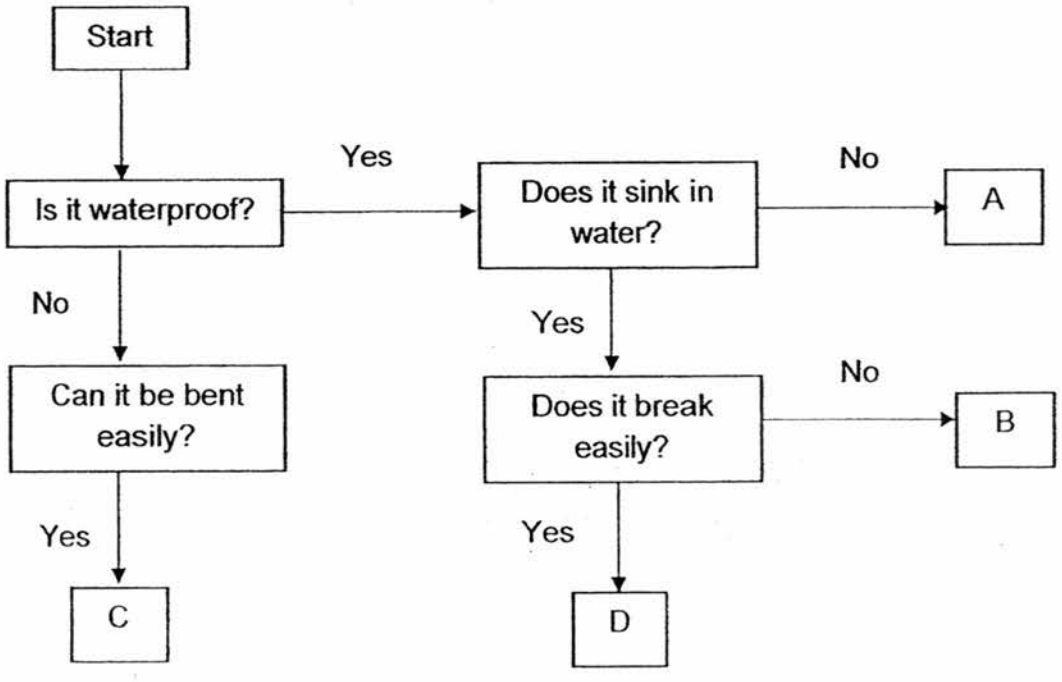
(3)



(4)

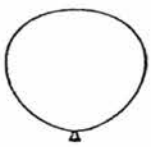


22. Study the flowchart shown below.



	A	B	C	D
(1)	glass vase	ceramic tile	iron ball	nail clipper
(2)	beach ball	swimming float	towel	paper plate
(3)	paper plate	towel	ceramic tile	beach ball
(4)	swimming float	nail clipper	handkerchief	ceramic tile

23. Four objects are classified into two groups as shown below.

Group 1	Group 2
 balloon	 sewing needle
 tyre	 aluminium foil

The objects are grouped according to _____.

(1) how hard they are
(2) whether they are waterproof
(3) what materials they are made of
(4) whether they are made of magnetic materials

24. Amelia wanted to find out how the exposed surface area of a container affects the rate of evaporation of water.

Set-up	Volume of water in the container (ml)	Exposed surface area of container (cm^2)	Where the container is placed
A	200	120	Classroom
B	250	100	Field
C	200	110	Classroom
D	250	100	Classroom

Which two set-ups should Amelia use for her investigation?

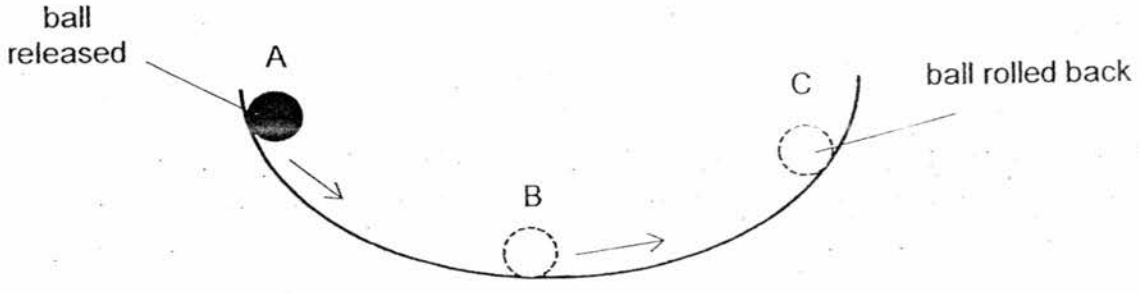
(1) A and B
(2) A and C
(3) B and D
(4) C and D

25. The diagram below shows an ice cube left on a table in a room. The room temperature is 30 °C.

Which of the following is correct?

	Heat Gain	Heat Loss	Temperature of ice cube	Temperature of air surrounding the ice cube
(1)	ice cube	surrounding air	remains the same	decreasing
(2)	ice cube	water	increasing	increasing
(3)	water	ice cube	remains the same	increasing
(4)	water	ice cube	decreasing	remains the same

26. Daniel released a ball at position X along a slope as shown below. The ball rolled to position B and then to position C where it rolled back.



Which of the following shows the energy conversion when the ball rolled from B to C?

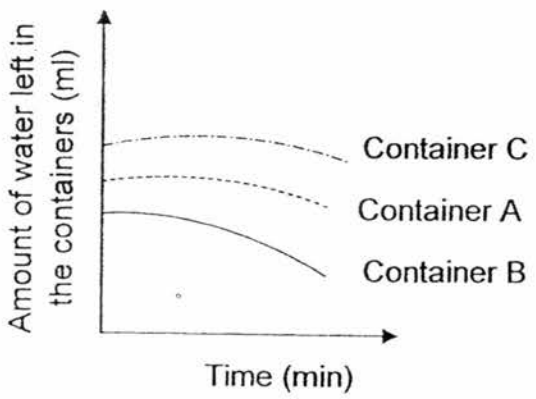
(1) kinetic energy ⟶ potential energy
(2) kinetic energy ⟶ potential energy + sound energy + heat energy
(3) potential energy + sound energy + heat energy ⟶ kinetic energy
(4) potential energy ⟶ kinetic energy + sound energy + heat energy

27. Sally conducted an experiment as shown below. Each container was filled with the same amount of water and left in the same room.

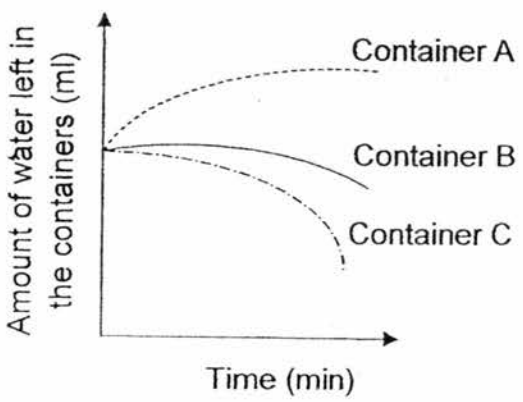
Container A Container B Container C

Which one of the following graph shows the correct amount of water left in the containers after 50 minutes?

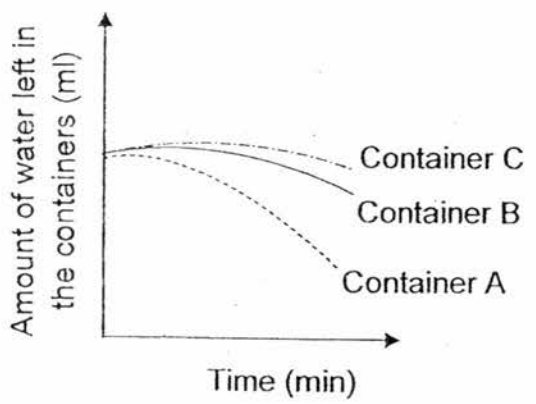
(1)



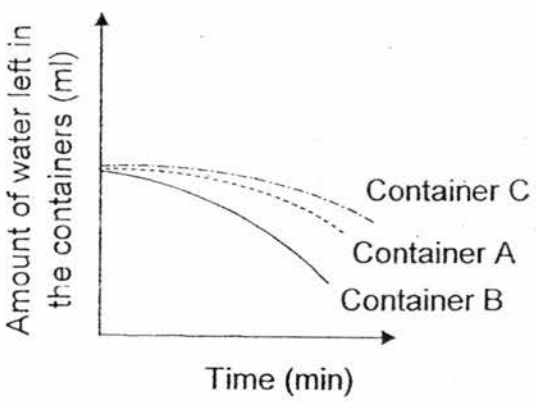
(2)



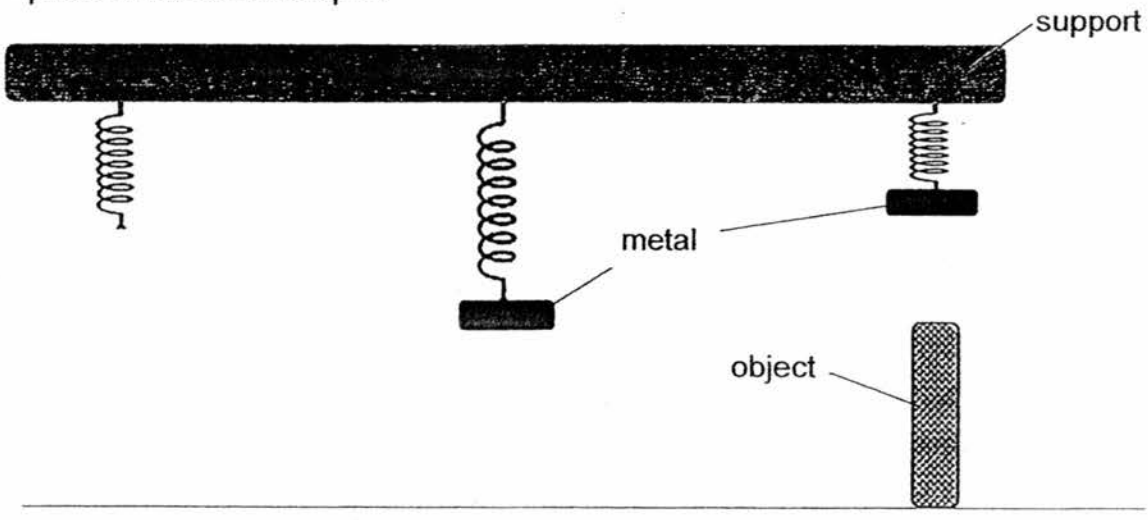
(3)



(4)



28. **3 similar springs were hung from a support as shown below. A piece of metal was hung on the spring of set-ups B and C. An object was placed under the piece of metal of set-up C.**



Which one of the following is a possible reason that cause the springs in setup B and C to behave as shown?

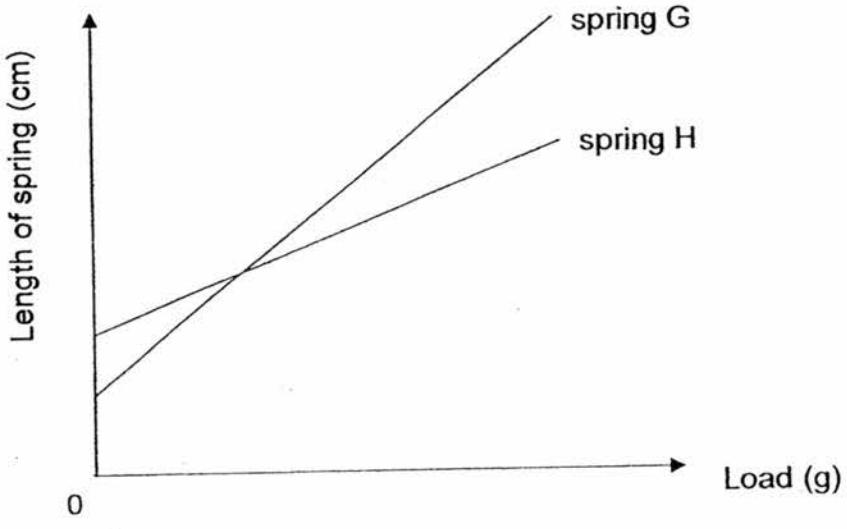
	Set-up B	Set-up C
(1)	The metal piece has gravitational potential energy.	Elastic spring force is acting on the metal piece.
(2)	The metal piece has gravitational potential energy.	The metal piece has kinetic energy.
(3)	Gravitational force is acting on the metal piece.	Magnetic force is acting on the metal piece.
(4)	There is a pushing force acting on the piece of metal.	The metal piece has chemical potential energy.

29. Which of the following are effects of a pull?

A Playing tug-of-war.
B Cycling on a bicycle.
C A ball rolling away.
D Lifting a box from the floor.

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

30. **Mandy hung different weights on 2 springs, G and H. She recorded her results and plotted the graph below.**



Based on the graph, which one of the following is correct?

	Spring with longer original length	Spring that is more elastic
(1)	spring G	spring H
(2)	spring H	spring H
(3)	spring G	spring G
(4)	spring H	spring G

End of Booklet A

Name : _____ ( )

Class : Primary 6 _____

CHIJ ST NICHOLAS GIRLS' SCHOOL

Primary 6
Semestral Assessment 1 – 2016
SCIENCE

BOOKLET B

12 May 2016

Total Time for Booklets A and B: 1 hour 45 minutes

14 questions
40 marks

Do not open this booklet until you are told to do so.
Follow all instructions carefully.
Answer all questions.

Booklet A	60
Booklet B	40
Total	/100

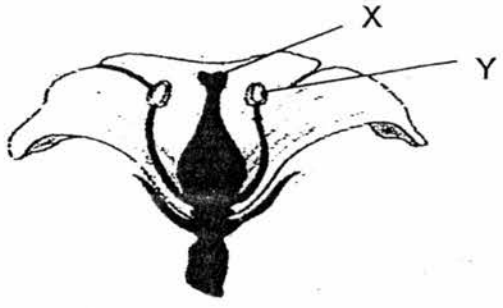
This paper consists of 16 printed pages.

_____
Parent's Signature/Date

Section B (40 marks)
For questions 31 to 44, write your answers in this booklet.

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

31. The diagram below represents a cross section of a flower.



a) Many ants are seen crawling on parts, X and Y. Describe how the ants help to pollinate the flower. [1]

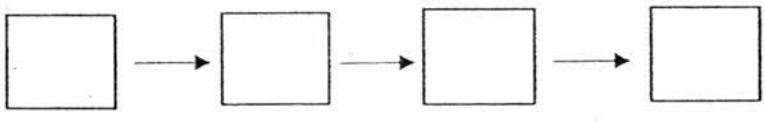
_____

_____

The following sentences describe how sexual reproduction in plants takes place.

A. Pollen grains are transferred to the stigma.
B. The anther of flower releases pollen grains.
C. The male and female reproductive cells fused.
D. Pollen tubes grow down the style towards the ovary.

b) Write the letters, A, B, C and D, in the boxes below in the correct sequence. [1]



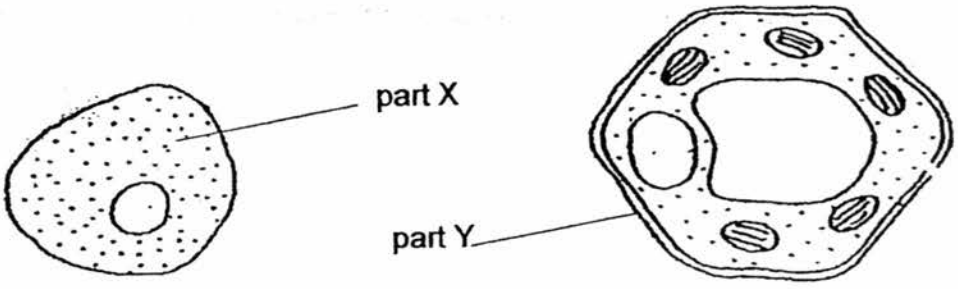
Stage 1 Stage 2 Stage 3 Stage 4

c) Describe what happens to the female parts of the flower after Stage 4? [1]

_____

_____

32. The diagram below shows an animal cell and a plant cell.



Animal cell

Plant cell

a) Name part X and state its main function. [1]

_____

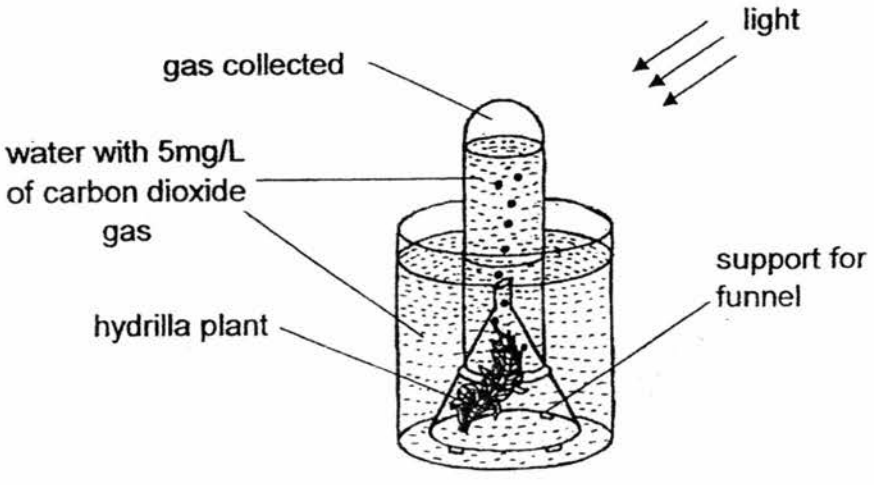
_____

b) Other than part Y, name another cell part present in the plant cell but not in the animal cell. State its function. [1]

_____

_____

33. Ashlyn wanted to find out if the concentration of carbon dioxide present in the water will affect the rate of photosynthesis of the hydrilla plant. She conducted the experiment using the set-up as shown in the diagram below. After 3 hours, she recorded the amount of gas collected in the test-tube. She repeated the experiment with different concentrations of carbon dioxide present in the water.



The table below shows the results of Ashlyn's experiment.

Set-up	A	B	C	D
Concentration of carbon dioxide in the water (mg/L)	5	10	15	20
Amount of gas collected (cm^3)	10	20	X	40

a) Predict the value of X, the amount of gas collected for set-up C.

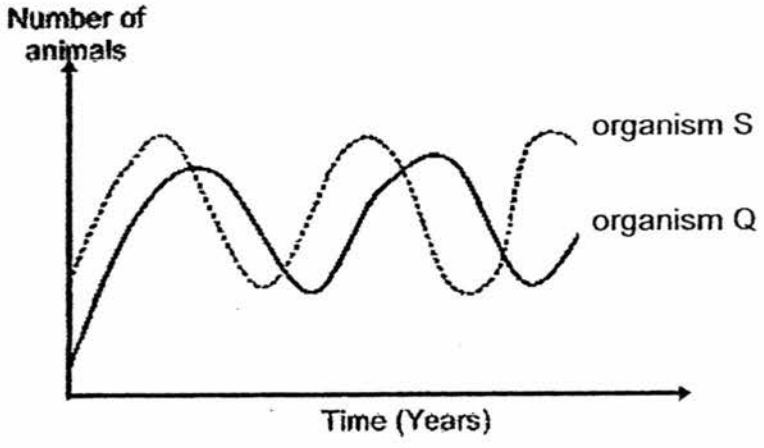
[1]

b) Based on the table above, what can you conclude about the concentration of carbon dioxide present in the water and the rate of photosynthesis of the hydrilla plant?

[1]

c) If Ashlyn conducted the experiment with a hydrilla plant of a greater mass, would the amount of gas collected be the same, lesser or more? Explain your answer. [1]

34. The graph below shows the change in the population size of organisms, S and Q, within a community over a period of time. Organisms S and Q have a predator and prey relationship.



a) Identify which organism is the prey and which organism is the predator. Write the letter 'S' or 'Q' in the space below. [1]

Prey: _____

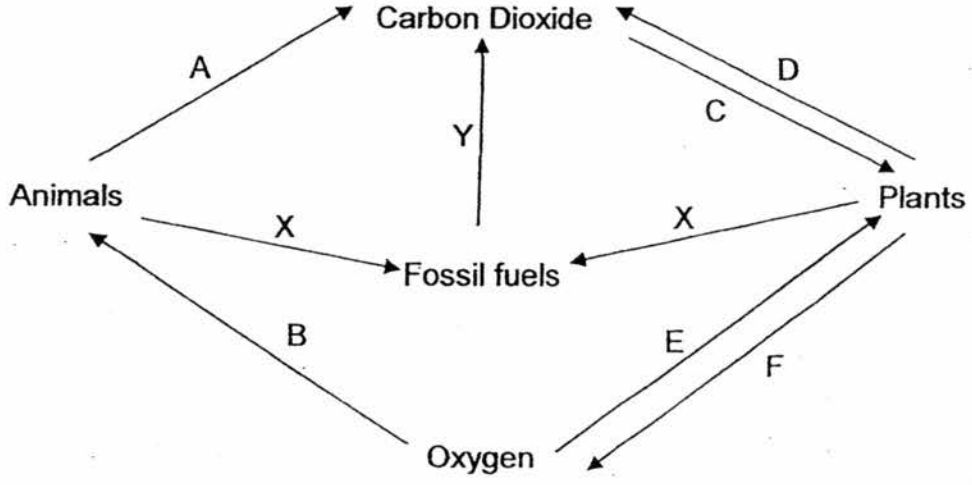
Predator: _____

b) What will happen to the population of organism S if a predator of organism Q is introduced to the community? Explain your answer. [1]

_____

_____

35. The diagram below shows the exchange of gases between living things and their surroundings.



a) Name the processes that X and Y represent. [1]

Arrow	Name of process
X	
Y	

b) Identify the 2 arrows that show a process plants undergo which **does not** depend on the presence of light. [1]

_____

c) Name the process in (b). [1]

_____

36. Juanita made observations of a pond community and noted the interdependence of 4 organisms, P, Q , R and S, living in that community.

Observation A: If population of P decreases, population of Q will also decrease.
Observation B: If population of S increases, population of P will also gradually increase.

a) Based on the information above, describe the food relationship among organisms, P, Q and S. [1]

_____

_____

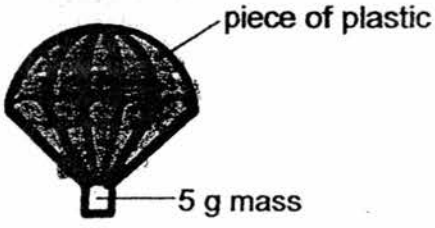
b) When Juanita removed all the organism R from the pond, she observed that organisms, P, Q and S, started to swim near the surface of the water. What is organism R most likely to be? Explain your answer. [2]

_____

_____

_____

37. Sandra made a parachute as shown below.



She then made another 3 parachutes of different sizes using the same plastic material. She attached a 5g mass to each parachute and dropped them from the same height. She recorded the time taken for each of the four parachutes to reach the ground.

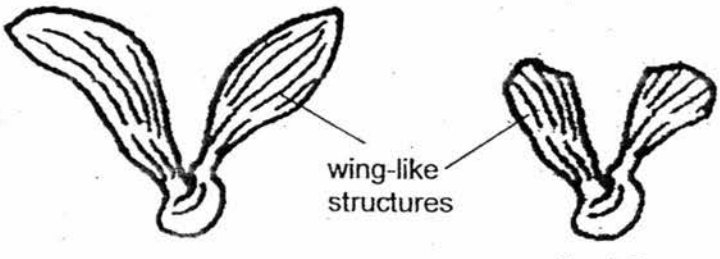
Area of parachute (cm^2)	50	75	100	125
Time taken to reach the ground (s)	4.2	7.3	10.5	14.1

a) What is the relationship between the area of the parachute and the time taken for the parachute to reach the ground? [1]

_____

_____

Sandra found the fruits below in her garden.



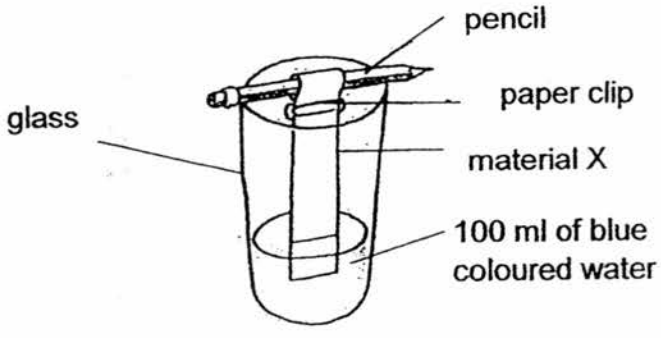
Fruit A Fruit B

b) Which fruit, A or B, is more likely to be dispersed further away from the parent plant? Explain your answer. [1]

_____

_____

38. Jim carried out an experiment as shown below. He dipped material X into the blue coloured water for five minutes. He then removed material X and measured the amount of water left in the glass. He repeated the experiment with materials, Y and Z.



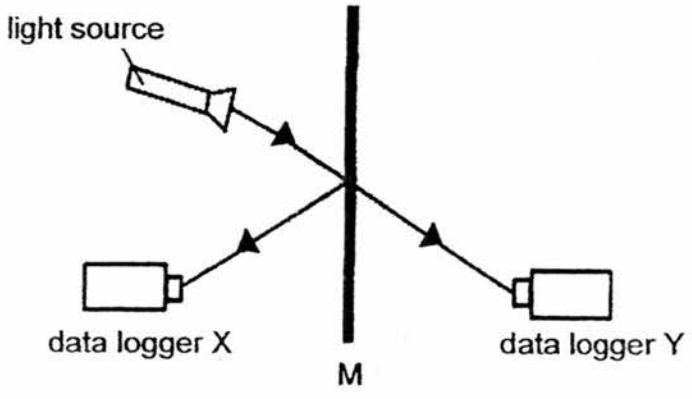
He recorded his observations in the table below.

Material	Amount of blue coloured water left (ml)
X	50
Y	100
Z	75

(a) Which material, X, Y or Z, was able to absorb the most water? Explain your answer. [1]

(b) Which material is most suitable for making part Q of an umbrella? Give a reason for your choice. [1]

39. Tom carried out an experiment in a dark room. He wanted to compare the amount of light different materials reflect and allow to pass through them. He fixed the positions of the light source, materials and data loggers X and Y as shown below.



He placed a different material at position M, one at a time and recorded his results in the table below.

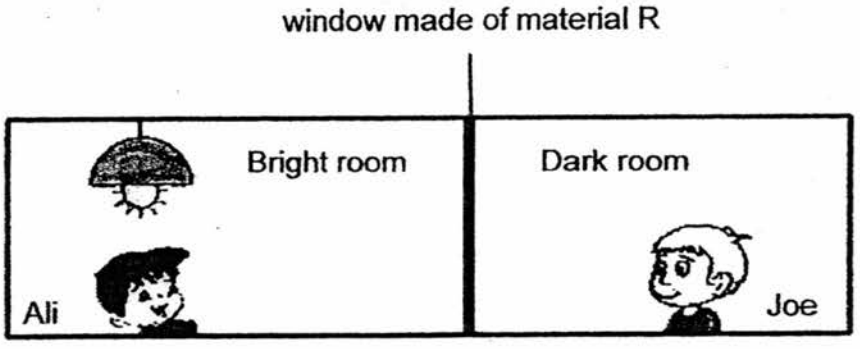
Material	Amount of light received by data logger X (lux)	Amount of light received by data logger Y (lux)
Aluminium	1200	0
R	700	200
Clear glass	150	900

a) Explain why the experiment must be conducted in a dark room. [1]

_____

_____

Ali was playing in a brightly-lit room while Joe was in a dark room next to Ali's. The window that separated the boys' rooms was made of material R.



Very little amount of light passed through the window from Joe's room into Ali's room. Hence, Ali saw **ONLY** his own reflection but could not see Joe's. Joe could see Ali through the window.

b) Based on the results recorded in the table, explain why Ali saw **ONLY** his own reflection on the window made of material R. [1]

_____

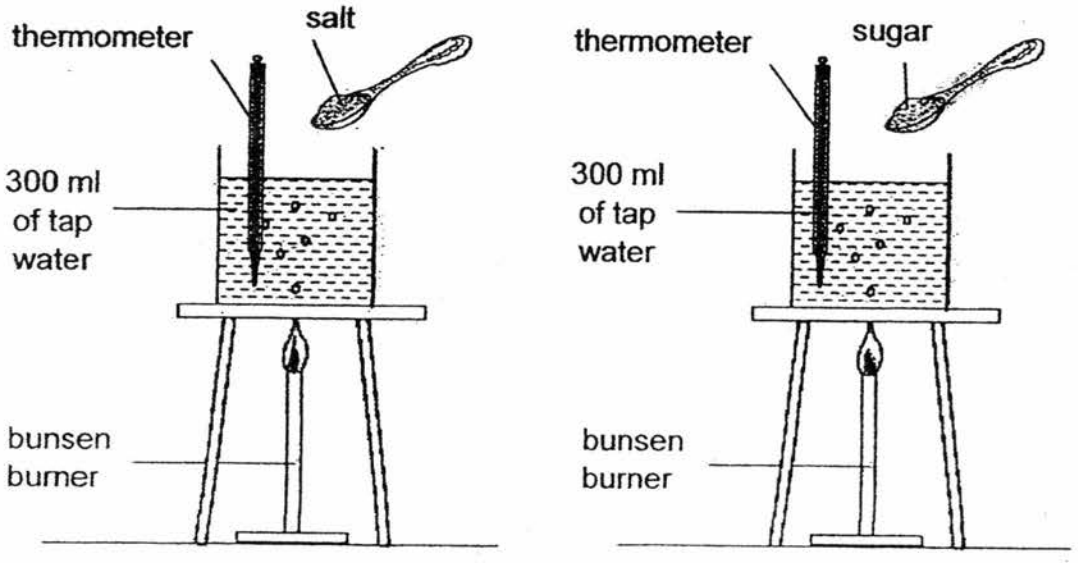
_____

c) Based on the results recorded in the table, explain why Ali could not see Joe through the window made of material R. [1]

_____

_____

40. Xavier conducted an experiment to find out if adding different substances to water would affect the boiling point of the water. He added salt to the water in Set-up A and sugar to Set-up B. He stirred the mixtures to make sure the salt and sugar had dissolved completely. He measured the boiling points of the solutions in both set-ups.



set-up A set-up B

a) State two variables Xavier must keep the same in order to carry out a fair test. [2]

i) _____

ii) _____

b) Other than a thermometer, what else can Xavier use to measure the boiling points of the solutions? [1]

_____

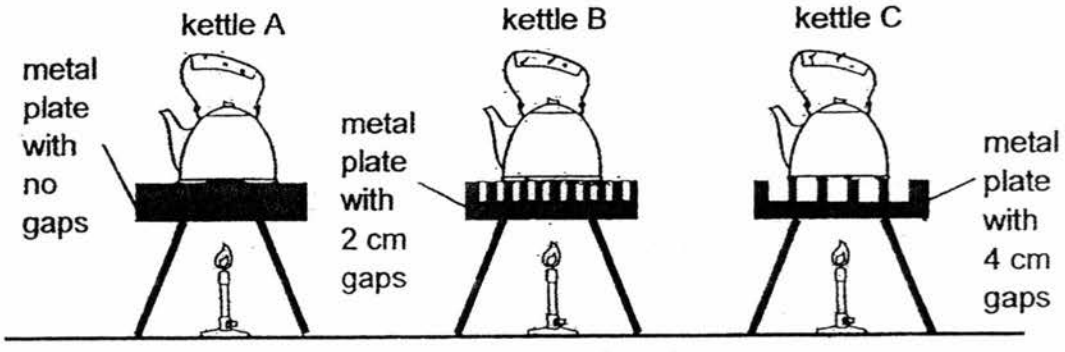
_____

b) Suggest a control set-up to show that the change in the boiling point of water was caused by the addition of the salt and sugar. [1]

_____

_____

41. Study the diagram below. Candy placed three identical kettles, A, B and C, on three metal plates of the same material but with different surfaces. The kettles contained the same amount of water at room temperature. The metal plates were then heated with the same amount of heat.



She then recorded the time taken for each kettle to boil as shown in the table below.

Kettle	Time taken for the water to boil (minutes)
A	9
B	14
C	22

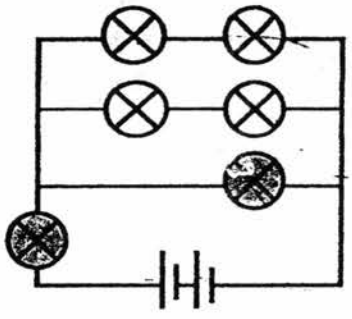
a) Based on the information in the table above, Kettle C took the longest time to boil. Explain why. [2]

b) Give a reason how each of the following actions helps to make her experiment a fair test. [2]

(i) Using similar kettles of the same size

(ii) Using the same material for all the 3 metal plates

42. Look at the circuit diagram below. All the bulbs are lit.



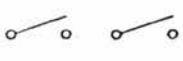
a) Complete the table below by writing down the minimum and maximum number of bulbs that will remain lit when one of the bulbs fuses. [1]

Minimum number of bulbs that will remain lit	
Maximum number of bulbs that will remain lit	

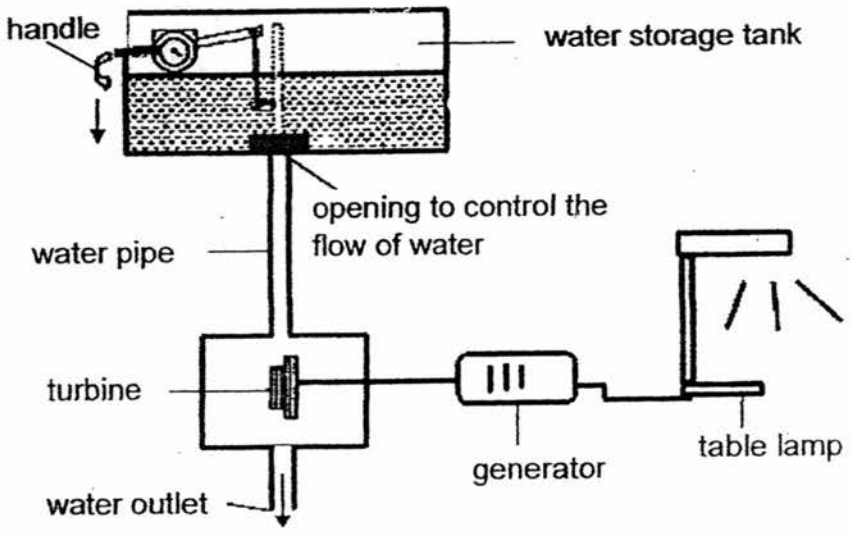
b) Using all the symbols of the electric components given below, draw a circuit such that:

- When one bulb is fused, the other bulb remains lighted
- Only one bulb will light up at a time when one switch is turned on

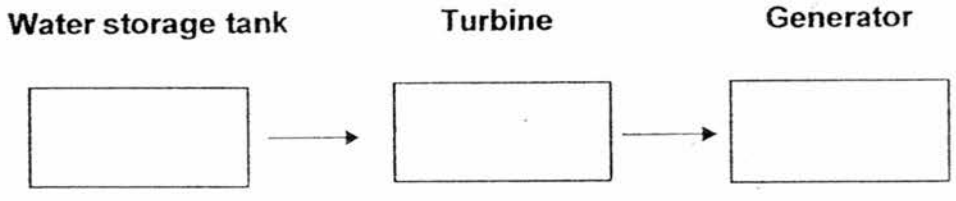
[2]

			
2 bulbs	2 batteries	2 switches	wires

43. Harry designed a simplified hydro-electric power station by connecting the toilet flushing system to a generator as shown below.



a) Complete the boxes to show the energy conversion when the handle is pushed down. [1]



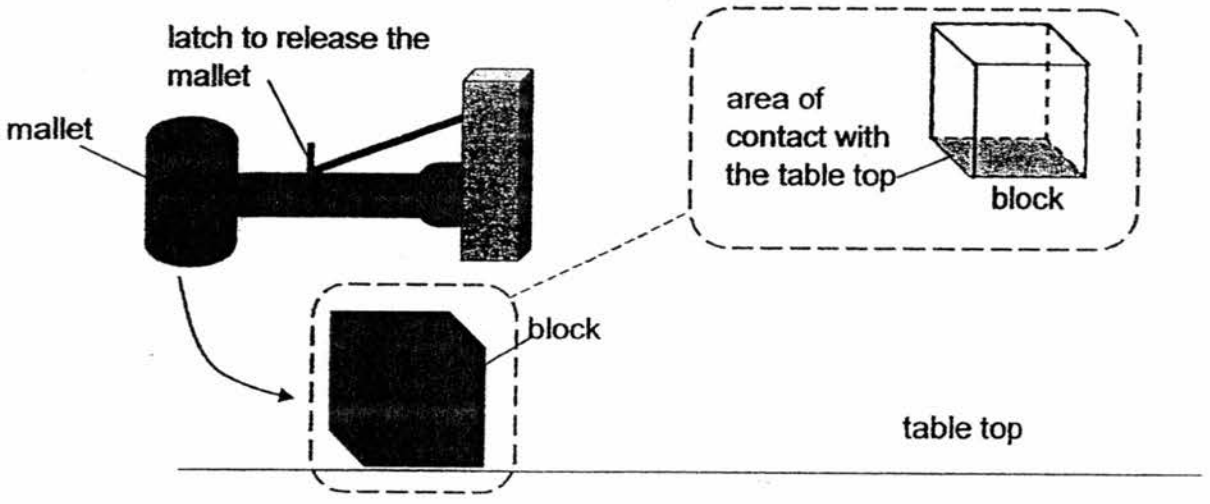
b) Without changing the turbine and generator, suggest two ways Harry can re-design the flushing system so that more energy can be produced to light the table lamp. [2]

_____

_____

_____

44. Jason set up the experiment as shown below.



When the latch is released, the mallet will swing towards the block and move it across the table top. The distance moved by the block was measured and recorded. Jason repeated the experiment using blocks made of the same material, but with different mass and area of contact with the table.

His results are shown below.

Block	Mass (g)	Area of contact with the table top (cm^3)	Distance moved (cm)
X	50	25	10
Y	50	36	10
Z	30	36	15

a) Based on Jason's results, what is the relationship between the mass of the block and the friction acting on the block? [1]

b) Based on Jason's results, did the area of contact with the table affect the friction on the block? Explain your answer. [1]

c) Other than changing the mass of the block, what should Jason do to the setup if he wants the block to move a shorter distance? Explain your answer. [1]

END

YEAR : **2016**
LEVEL : **PRIMARY 6**
SCHOOL : **CHIJ ST NICHOLAS GIRLS'**
SUBJECT : **SCIENCE**
TERM : **SA1**

Booklet A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
1	2	3	2	2	4	4	4	1	3
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
2	4	3	1	3	3	3	4	4	3
Q21	**Q22**	**Q23**	**Q24**	**Q25**	**Q26**	**Q27**	**Q28**	**Q29**	**Q30**
1	4	3	2	1	2	4	3	2	4

Booklet B

Q31a The ants has tiny hair on their legs. The legs will trap some pollen grains from Y. When it crawls onto X, the pollen grains will get stuck onto the sticky stigma.

Q31b B → A → D → C

Q31c The ovule becomes the seed and the ovary becomes the fruit.

Q32a Cytoplasm. It allows cell activity to occur within the cell.

Q32b Chloroplast. It contains chlorophyll which traps sunlight for photosynthesis.

Q33a 30

Q33b As the concentration of the carbon dioxide in the water increases, the rate of photosynthesis increases.

Q33c The amount of gas collected will be greater as greater mass hydrilla will have more leaves to photosynthesize more thus more oxygen will be produced by the plant.

Q34a Prey : S
Predator : Q

Q34b It will increase. Organism Q will be eaten by the next predator and there will be lesser organism Q to feed on organism S. Therefore organism S will increase.

Q35a

Arrow	Name of process
X	Decomposition
Y	Burning

Q35b E and D

Q35c Respiration

Q36a Organism S is a prey of organism P and organism Q is a predator of organism P.

Q36b Organism R could be a plant. Organism P, Q and S swimming near the surface of the water shows that there is a lack of dissolved oxygen in the water. Plants provide oxygen which is required by the living organisms in the water. Hence organism R is most likely to be plant.

Q37a The bigger the area of parachute, the longer the time taken to reach the ground.

Q37b Fruit A, because the longer the wing like structure, the more air-resistance it has than Fruit B to be dispersed further away from parent plant.

Q38a Material X, because there was the least amount of water left in the beaker.

Q38b Material Y, because it has to be waterproof whereas material Y did not absorb any of the blue coloured water.

Q39a So, it is easier for the data logger Y and X to measure the amount of light and to make sure it does not measure the amount of light from the room.

Q39b Light is reflected off Ali onto material R and from R back into Ali's eyes.

Q39c Very little light can pass through material K to Joe. Therefore, very little light is reflected off Joe to material R and then to Ali's eyes. Thus Ali cannot see Joe.

Q40a (i) The amount of salt or sugar added.
(ii) The type of bunsen burner.

Q40b Data logger with temperature sensor.

Q40c Using the same bunsen burner, similar beaker with 300ml of tap water and thermometer but without adding any salt, sugar or other substances.

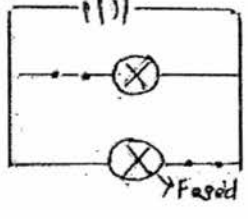
Q41a The surface area in contact with the plate is the least. Therefore lesser heat is conducted to the kettle and water will gain heat slower.

Q41b (i) Same surface area of kettle.
(ii) So it gains heat at the same time.

Q42a

Minimum number of bulbs that will remain lit	0
Maximum number of bulbs that will remain lit	5

Q42b



Q43a Potential energy → Kinetic energy → Electrical energy.

Q43b Change to a bigger water storage tank so that water will flow out with a greater force when flushed.
Use a longer water pipe so that gravitational potential energy increased.

Q44a The heavier the block, the more the friction acting on the block.

Q44b No. The distance moved by block X and Y are the same ev though the area of contact is different. This shows that the amount of frictional force is the same.

Q44c Make the top rougher by adding sand paper.