Rosyth School
Semestral Assessment 1 2015
STANDARD SCIENCE
Primary 6

Total Marks: ____/60

Name: _____

Class: Pr 6 _____ Register No. _____ Duration: 1 h 45 min

Date: 14 May 2015 Parent's Signature:

Booklet A

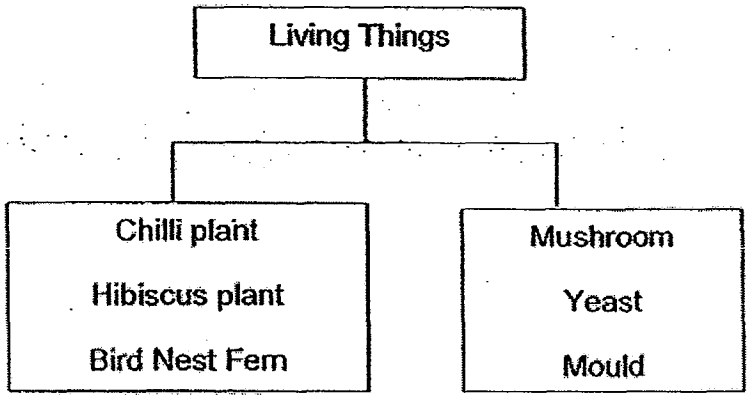
Instructions to Pupils:

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 30 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 31 to 44, give your answers in the spaces given in the Booklet B.

* This booklet consists of 18 pages.

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. (60 marks)

1 The classification chart shows how some living things are grouped.



How are the above living things grouped?

(1) Dispersal methods
(2) Reproduction methods
(3) The way they obtain food
(4) Number of stages in the life cycle

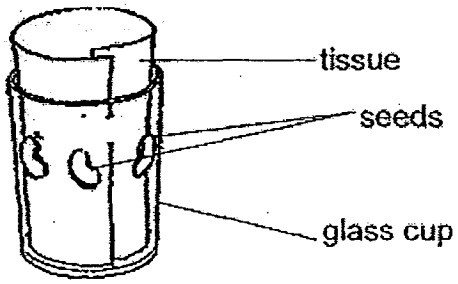
2 John made the following observations of the characteristics of animals X and Y. A tick (√) shows that the animal has the characteristic.

Characteristics	Animal X	Animal Y
Can fly	√	√
Have hair	-	√
Lay Eggs	√	
Produce milk	-	√

Which one of the following correctly grouped animals X and Y?

	Animal X	Animal Y
(1)	Bird	Mammal
(2)	Insect	Bird
(3)	Insect	Fish
(4)	Mammal	Bird

3 Halim prepared three set-ups similar to the one shown below.



He prepared the three set-ups according to the table shown below.

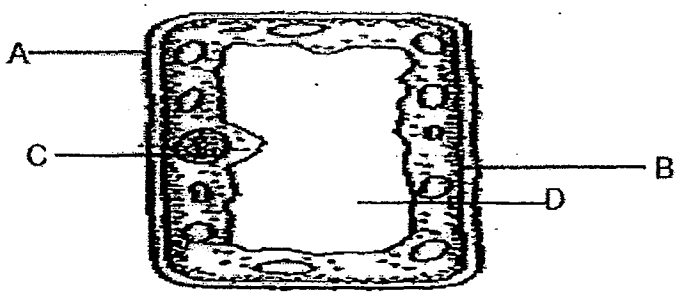
Set-up	Presence of Water	Place
E	√	Refrigerator
F	√	Near Window
G	X	Refrigerator

Which of the following is/are possible aim(s) of his experiment?

A. To find out if seeds need air to germinate.
B. To find out if seeds need water to germinate.
C. To find out if seeds need warmth to germinate.

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

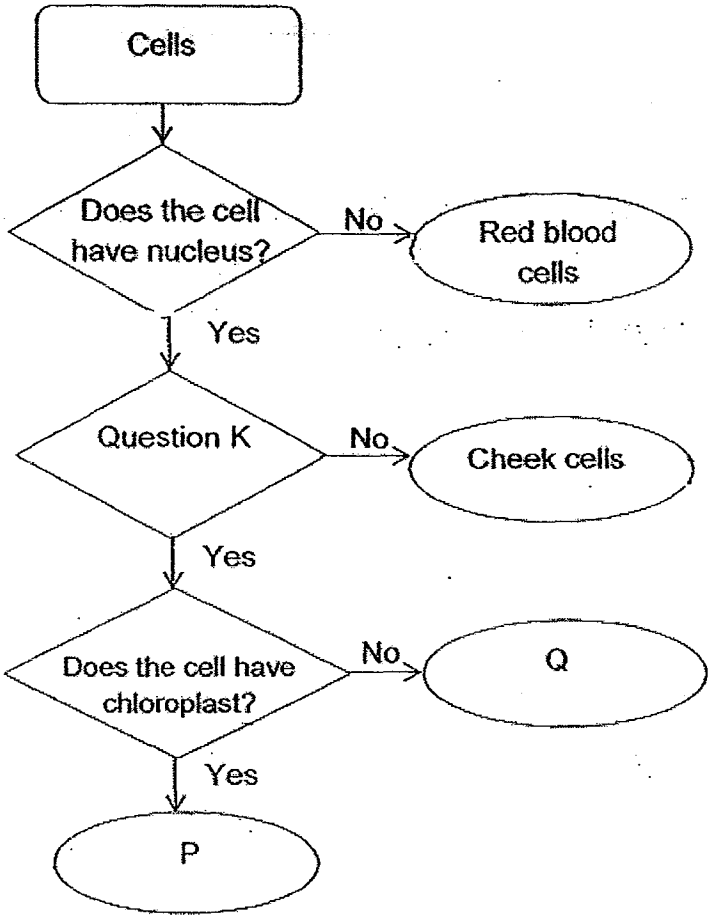
4 The diagram below shows a plant cell with parts labelled A, B, C and D.



Which one of the following statements correctly compare the function of the labelled part of the plant cell to that of a school?

	Comparison statement	Plant cell part
(1)	The canteen provides food for the students.	C
(2)	The principal controls all activities of the school.	B
(3)	The walls support and give the school its shape.	A
(4)	The security guard controls the people entering or leaving the school.	D

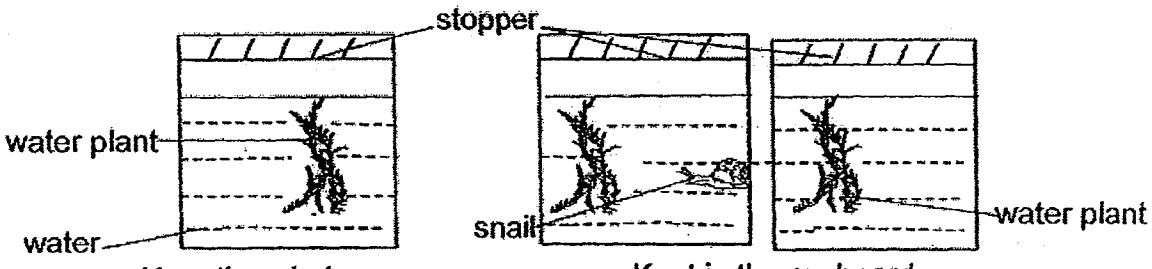
5 Kishan classified four types of cells as shown below.



Which one of the following below completes the above chart correctly?

	Question K	Cells from	
		P	Q
(1)	Does the cell have cell wall?	Leaf	Root
(2)	Does the cell have a cell membrane?	Root	Leaf
(3)	Does the cell have cell wall?	Root	Leaf
(4)	Does the cell have a cell membrane?	Leaf	Root

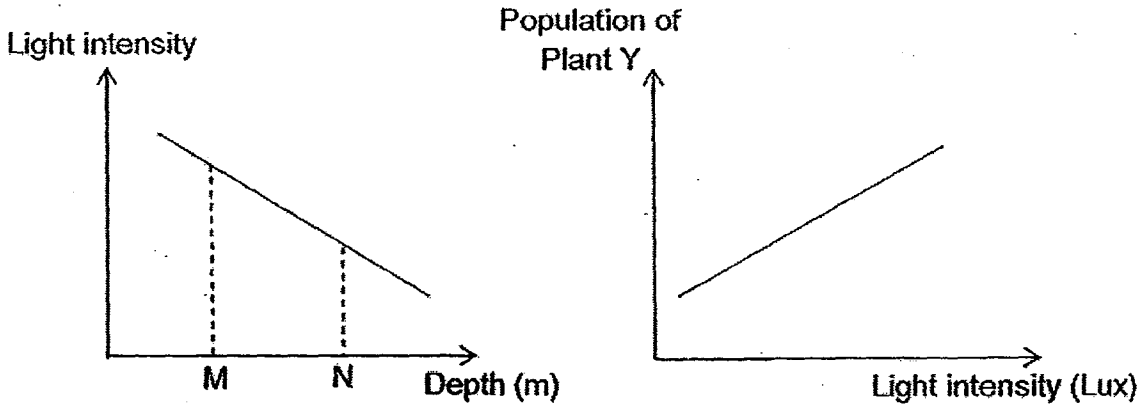
6 Sharifah conducted an experiment using the following set-ups.



What would be the likely change in the amount of dissolved oxygen in each set-up after a few hours?

	Amount of dissolved oxygen in the water		
	A	B	C
(1)	increase	decrease	decrease
(2)	increase	decrease	no change
(3)	decrease	increase	no change
(4)	decrease	decrease	increase

7 The graphs below show how light intensity changes with depth of the pond and how the population of fully submerged plant Y in the pond changes with the light intensity.



Based on the above graphs, which of the following statements made by the following children is/are likely to be correct?

Andrew: More plant Y would be found in part N than in part M.

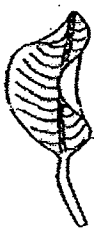
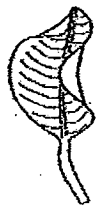
Benson: The greater the depth of the pond, the greater the intensity of light.

Suresh: Population of plant Y is affected by the depth of the pond.

(1) Andrew only
(2) Benson only
(3) Suresh only
(4) Andrew, Benson and Suresh

8 Plant W has green and red leaves at different parts of its stem. The leaves opened at different times.

Hong Lin plucked four leaves to prepare four set-ups for his experiment.

	P	Q	R	S
Set-up				
Colour of leaf	green	green	red and green	red and green

Which variable(s) of the leaves can he investigate to find out if it/they affect(s) the rate of photosynthesis?

A: Colour
B: Exposed surface area
C: Position of the leaves

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

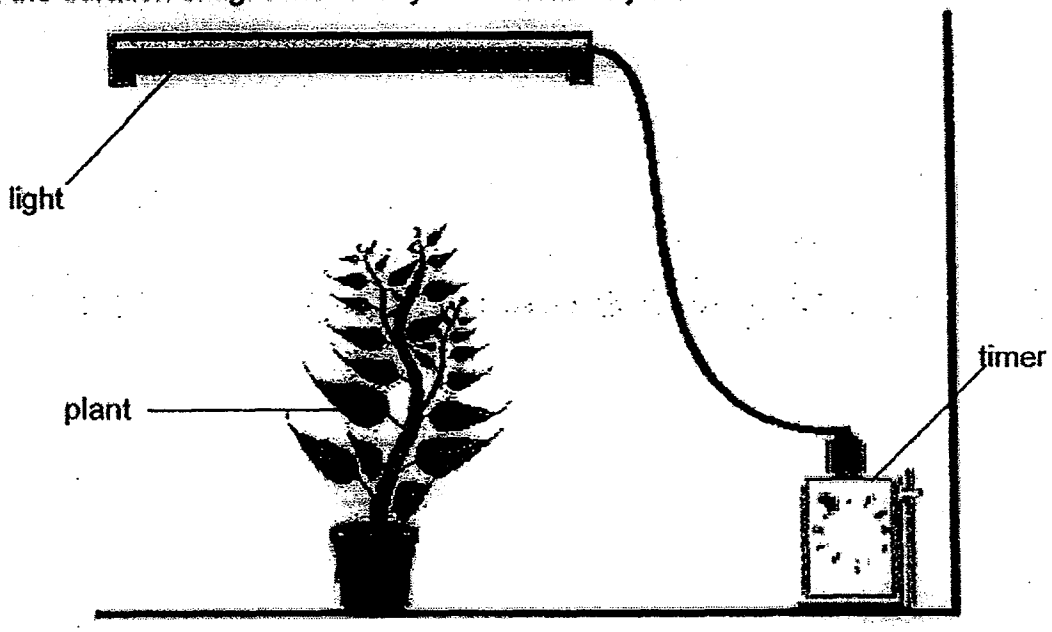
9 The following food relationships were observed among four organisms E, F, G and H.

H feeds on E.
F is eaten by G.
E is a predator of G.
H does not feed on G but feeds on F.

Which one of the following describes the roles of these organisms correctly?

	Both a prey and a predator	a predator only	a prey only	a food producer
(1)	H	E	G	F
(2)	E	H	G	F
(3)	H	E	F	G
(4)	E	G	H	F

10 Halim prepared four similar set-ups, J, K, L and M as shown below. In each set-up, the duration of light availability is controlled by a timer.



Set-up	Duration of availability of light (hours)
J	3
K	6
L	9
M	12

He measured the height of the plants. The plants are considered to have grown well if there is an increase of 15 cm in height at the end of the fifteen days.

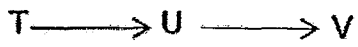
Day	Average height of plant (cm)			
	Set-up J	Set-up K	Set-up L	Set-up M
0	6	6	6	6
5	8	9	9	10
10	10	11	14	18
15	16	18	25	31

What conclusion can he make based on the results above?

A. The plant needs at least 6 hours of light to grow well.
B. The greater the intensity of light, the greater the plant growth.
C. The longer the duration of light availability, the greater the plant growth.

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

11 The diagram below shows a food chain.



Which of the following would cause a decrease in population of organism U?

A: Organism V is killed drastically.
B: New organism that feeds on T is introduced.
C: Organism T is killed by disease outbreak.

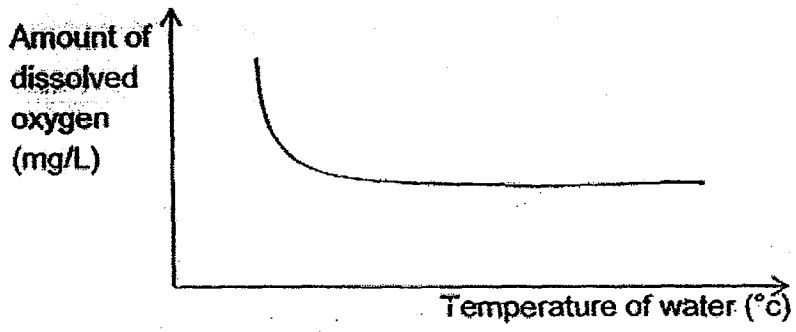
(1) A only
(2) B only
(3) A and C only
(4) B and C only

12 Reforestation replaces trees that have been destroyed in deforested areas. Which of the following are benefits of reforestation?

A: Reducing soil erosion.
B: Reducing likelihood of flood.
C: More nutrients from the soil would be lost.
D: More carbon dioxide would be released to the surrounding air.

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

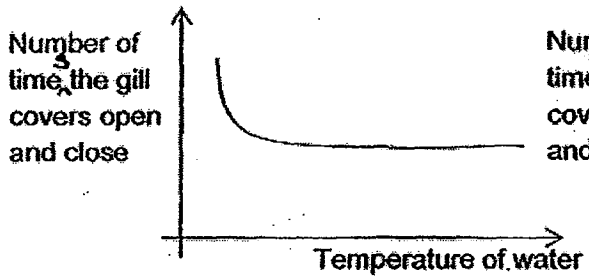
13 The graph below shows the relationship between dissolved oxygen level in water and temperature of the water .



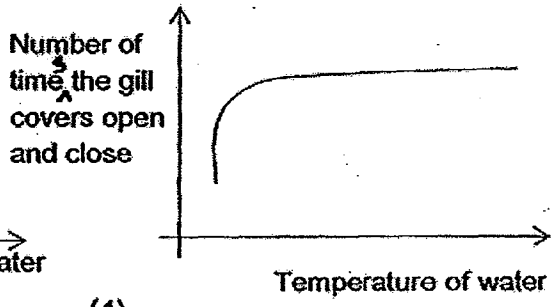
Then he measured the average number of times the gill covers of some fish open and close at different temperature of water.

Which one of the following graphs would be the result of his experiment?

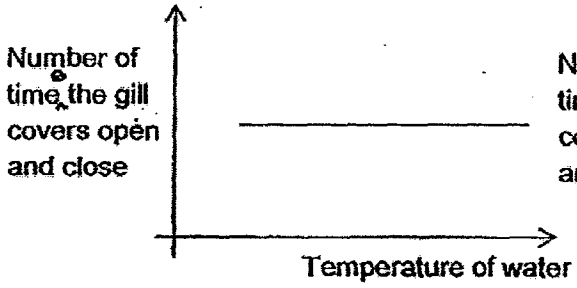
(1)



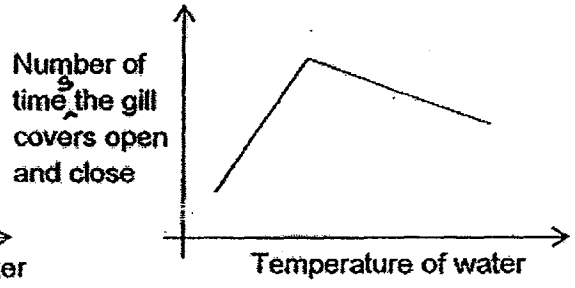
(2)



(3)



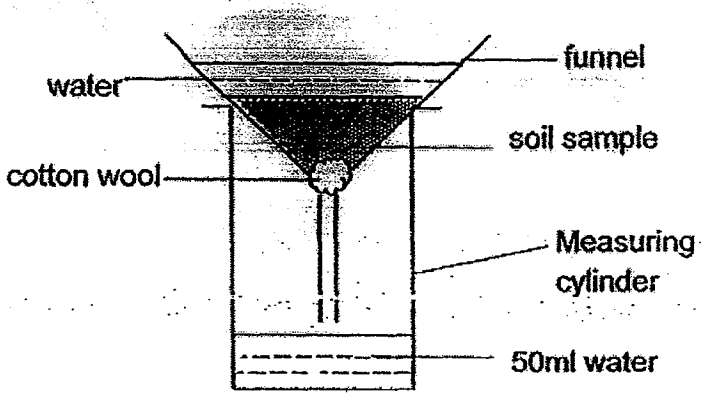
(4)



14 What is a group of organism of the same kind living and reproducing in the same place called?

(1) habitat
(2) ecosystem
(3) population
(4) community

15 Kelly used the set-up as shown below to measure the time taken to collect 50ml of water using four samples of soil each.



The table below shows the average time taken to collect 50ml of water.

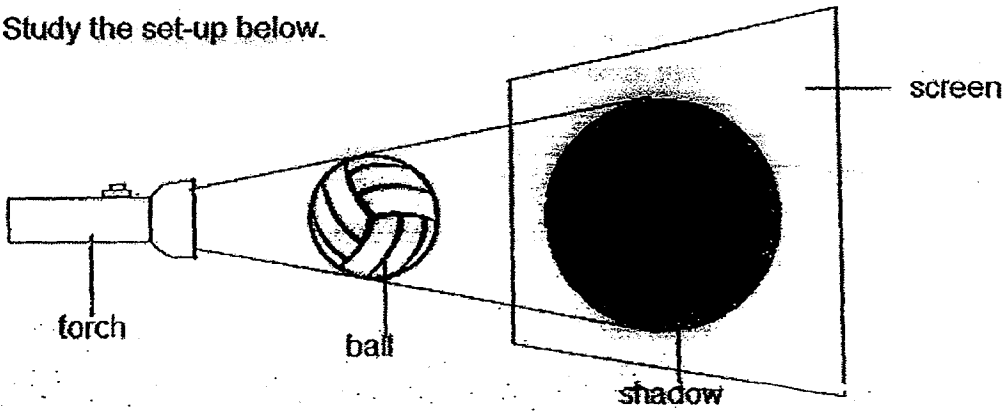
Soil sample	Average time taken (min)
W	5
X	6
Y	45
Z	50

Kelly found a certain plant which has deep penetrating roots.

Which two soil samples are most suitable for the plant ?

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

16 Study the set-up below.



What should be done to get a smaller shadow?

(1) Move the ball nearer to the torch.
(2) Move the ball nearer to the screen.
(3) Move the torch nearer to the screen.
(4) Move the torch nearer to the ball and the screen further from the ball.

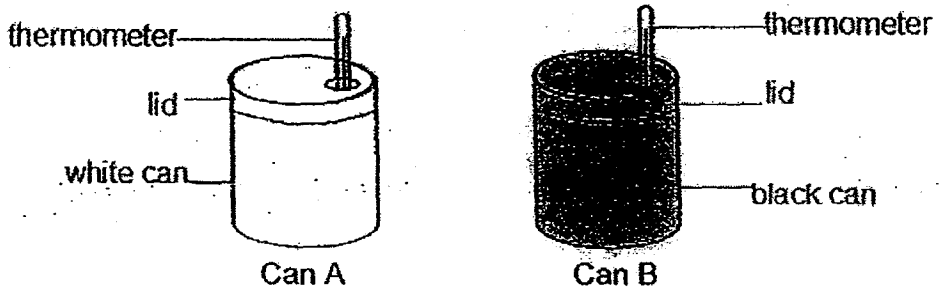
17 Jalil conducted an experiment where she poured an equal amount of cold water at 12 °C into 4 similar-sized bottles made of different materials A, B, C and D. After 15 minutes, the temperature of the water in each bottle was measured and recorded as shown in the table below.

Material of bottle	Temperature of water after 15 minutes (°C)
A	15
B	26
C	22
D	19

Based on the results from the table above, which one of the following conclusions is most likely to be correct?

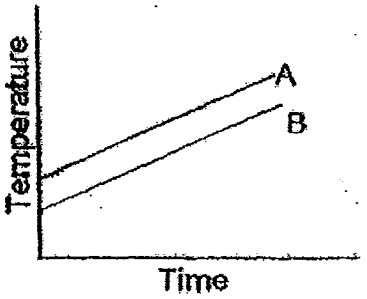
(1) Material A is the best conductor of heat.
(2) Material B is the poorest conductor of heat.
(3) Material B is a better conductor of heat than Material C.
(4) Material D is a poorer conductor of heat than Material A.

18 Jake used two empty cans, A and B. Can A was painted white while Can B was painted black. Both cans were at room temperature at the start of the experiment. The cans were placed in the middle of an open field and the temperature of each can was recorded over 30 minutes. He then plotted graphs using the data that he had collected.

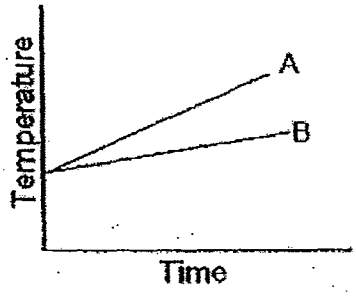


Which one of the following graphs shows the possible temperature changes of Cans A and B over thirty minutes?

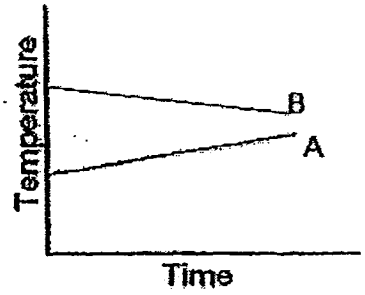
(1)



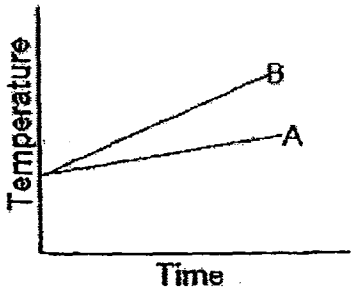
(2)



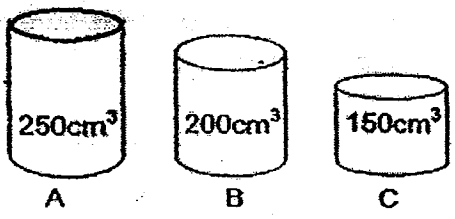
(3)



(4)

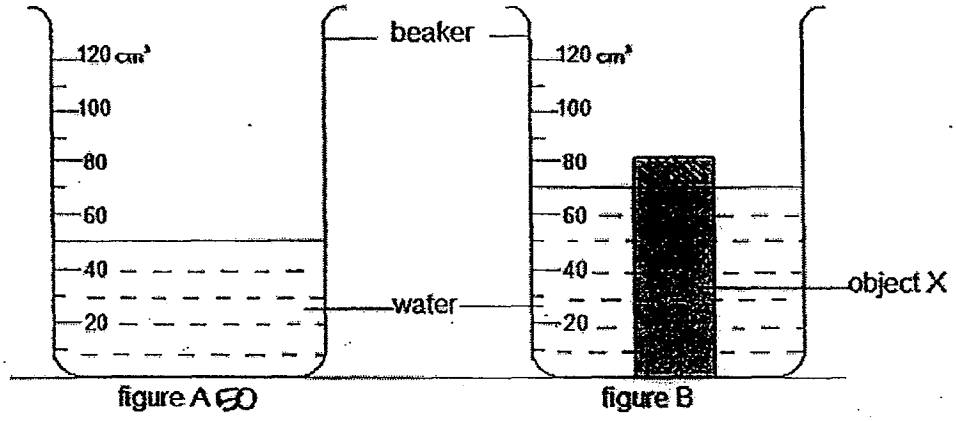


19 **Jeff wants to transfer 200 cm³ of carbon dioxide from a gas tank into another container. Which of the following container(s) can he use to hold the carbon dioxide?**



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

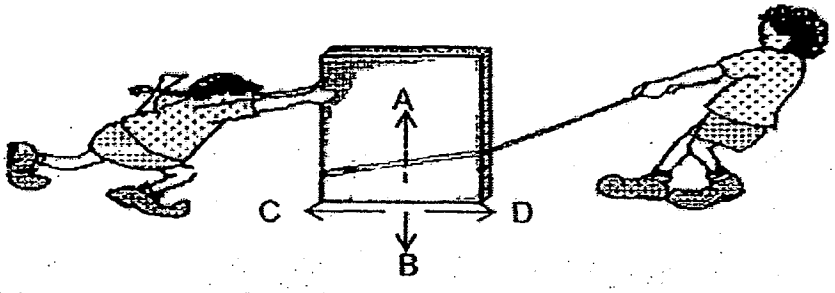
20 Figure A shows a beaker containing a certain amount of water. Figure B shows the same beaker of water when an object X is placed in it.



From the diagram, the volume of the object X is _____.

(1) 20 cm³
(2) 70 cm³
(3) between 20 cm³ and 40 cm³
(4) between 50 cm³ and 80 cm³

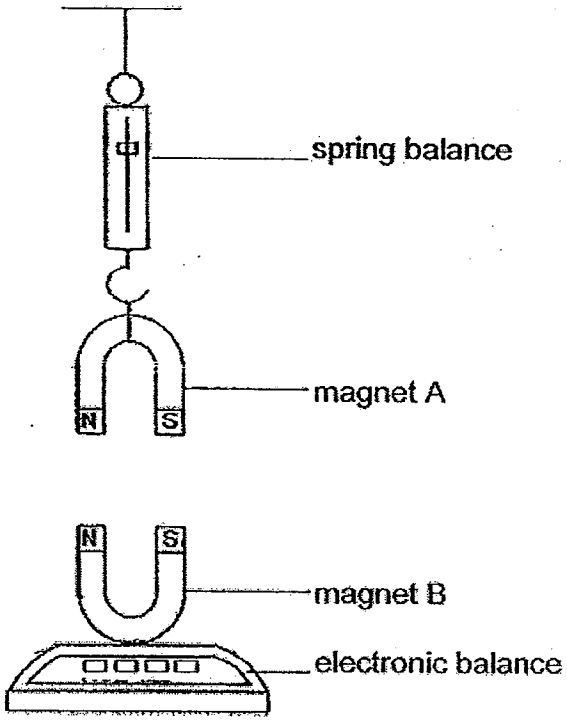
21 A box was moved across the floor by two children as shown in the diagram below.



Which of the arrows A, B, C or D represent the direction that frictional force and gravitational force act on the box?

	Frictional Force	Gravitational Force
(1)	C	B
(2)	D	A
(3)	D	B
(4)	A	C

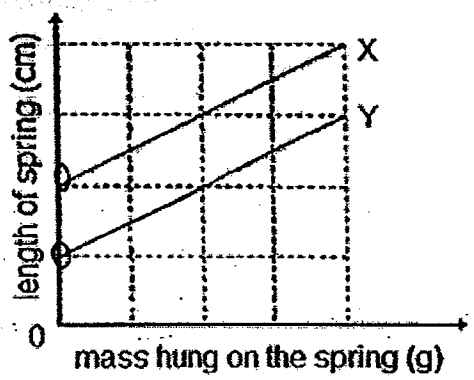
22 Mary set up an experiment using two identical U-shaped magnets of the same mass as shown in the diagram below. Magnet A was suspended from a spring balance while Magnet B was placed on an electronic balance.



Which one of the following statements about the readings on the electronic balance and spring balance is correct?

(1) The reading on the electronic balance is greater than the reading on the spring balance.
(2) The reading on the electronic balance is less than the reading on the spring balance.
(3) The reading on the electronic balance is the same as the reading on the spring balance.
(4) The combined readings of the electronic balance and the spring balance is the force of repulsion of the two magnets.

23 The graph below shows how the length of two springs, X and Y, are affected by the mass hung on each of them.

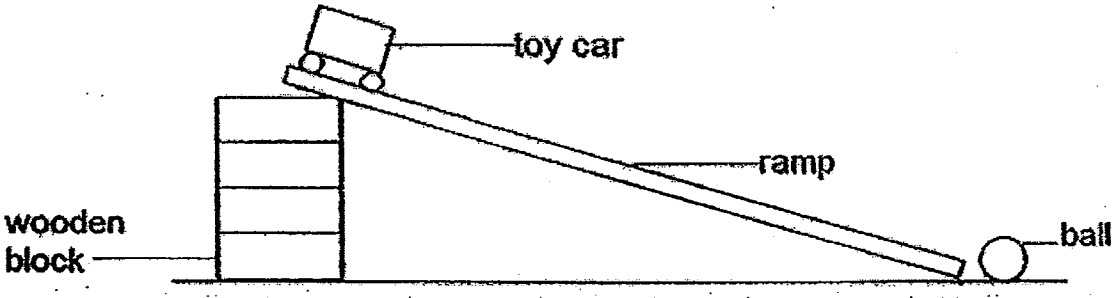


Which of the following statement(s) about the graph is/are true?

A: The original length of spring X is longer than the original length of spring Y.
B: For the same amount of mass hung on the spring, spring X extends more than spring Y.
C: The greater the mass hung on the spring, the greater the extension of spring for both spring X and spring Y.

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

24 Amanda carried out an experiment to find out whether the slope of a ramp affected the distance travelled by the ball after being hit by a toy car.

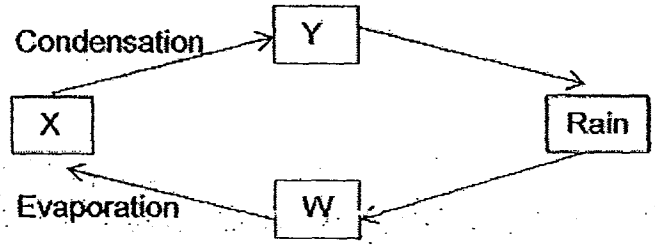


Which of the following variables must she keep the same in order to have a fair test?

A: Length of ramp
B: Number of wooden blocks
C: Position the toy car is released
D: Distance moved by the ball
E: Surface of the ramp

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

25 The diagram below shows how the water cycle recycles the water from the earth. The arrows show the different stages of water in motion. Study the diagram carefully and answer the question below.



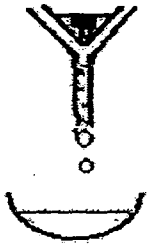
In which stage(s), W, X or Y in the water cycle does water have definite volume but no definite shape?

(1) W only
(2) W and Y only
(3) X and Y only
(4) W, X and Y.

26 Solid A can dissolve in water. Solid B cannot dissolve in water.
The diagrams below show 4 steps used to separate Solid A from Solid B. The diagrams are not in the correct order.

P

Solid A remains in the dish.

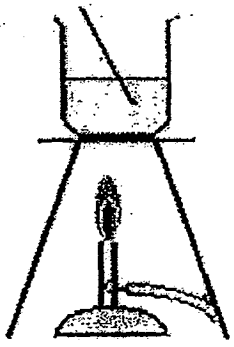


Q

Filter the mixture to separate Solid B. A clear solution drops into the dish.

R

Add Solid A and Solid B to water and stir.



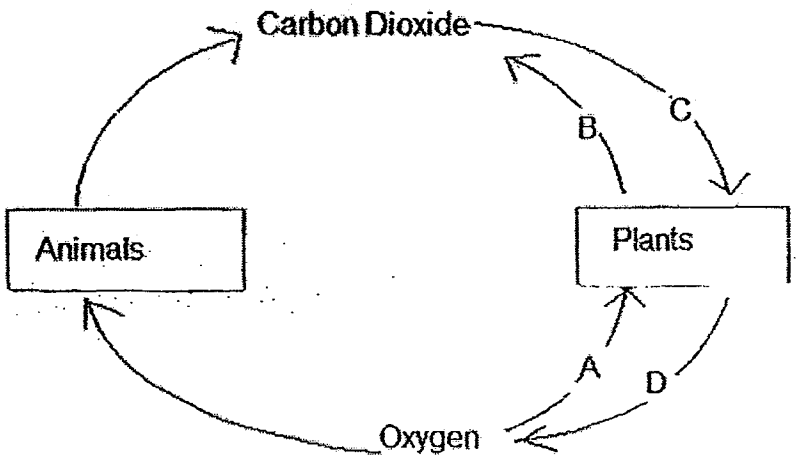
S

Evaporate the solution to dryness.

What is the correct order of the steps?

(1) R,Q,S,P
(2) R,S,Q,P
(3) P,R,Q,S
(4) P,Q,R,S

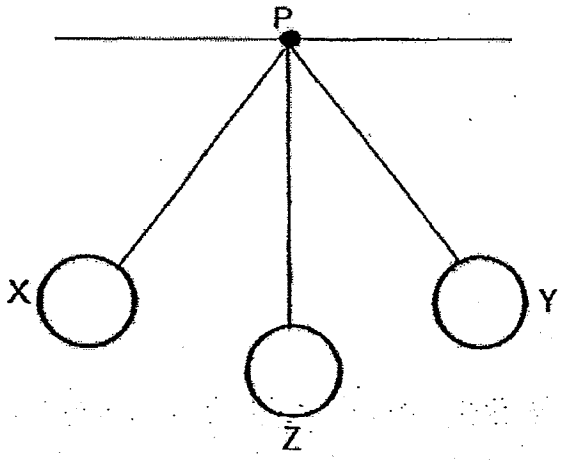
27 In the diagram below, the four arrows A, B, C and D, show the exchange of gases between living things and their surroundings.



Which two arrows in the above diagram show plants undergoing the process of converting light energy to potential energy?

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

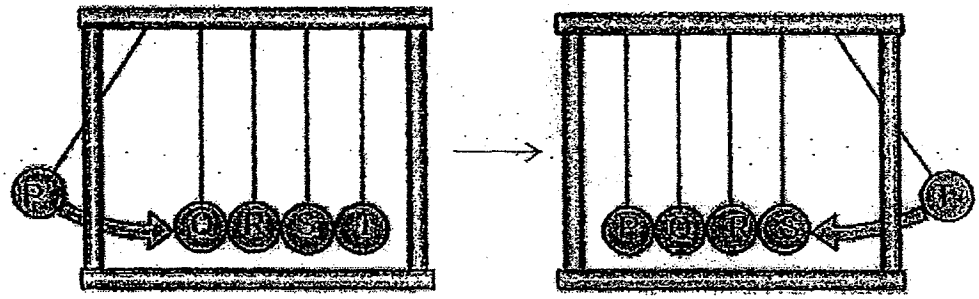
28 A metal ball hangs on a string fixed at point P. It starts from position X and swings to the furthest position on the opposite side, position Y. It then swings to and fro several times before stopping at position Z.



When does the ball have the most kinetic energy?

(1) the last time at position X
(2) the first time at position Y
(3) the first time at position Z
(4) the last time at position Z

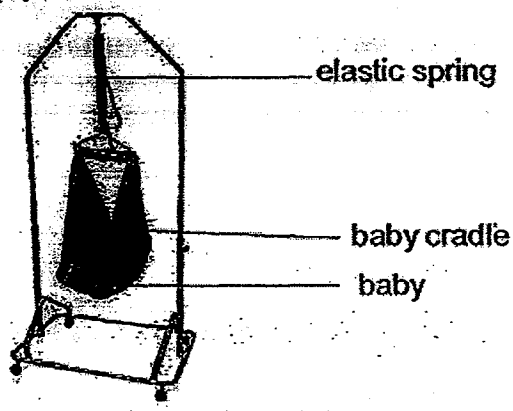
29 The toy shown below consists of a row of five metal balls suspended from a frame by thin wires. When Ball P is pulled away from the others and then released, it strikes the next ball, which remains motionless. But Ball T on the opposite end of the row is thrown into the air, then swings back to strike the other balls, starting the chain reaction again in reverse.



Which of the following explains what happens to ball T after P is released?

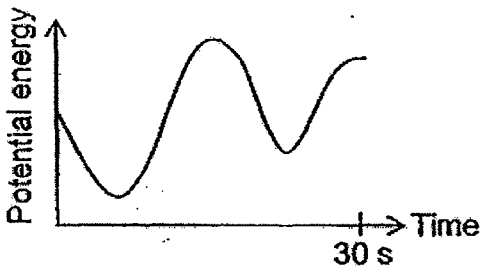
(1) Ball T swung to a lower height than P as kinetic energy has been converted to potential energy.
(2) Ball T swung to a lower height than P as some energy has been converted to sound energy.
(3) Ball T swung to a greater height than P as potential energy has been converted to kinetic energy.
(4) Ball T swung to a greater height than P as some energy has been converted to heat energy.

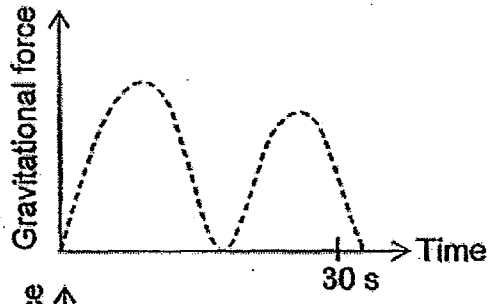
30 The picture below shows a baby cradle that will move the baby up and down to soothe the baby to sleep.



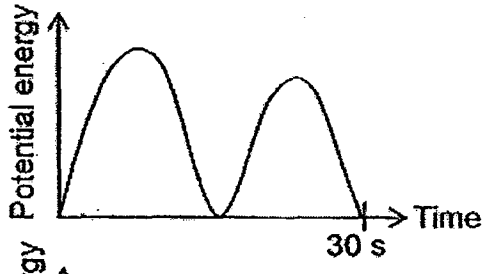
The elastic spring was pulled downwards gently and the cradle moved up and down for a period of 30 seconds. Which of the following pairs of graphs correctly shows the potential energy possessed by the baby and the gravitational force that was acting on the baby for the 30 seconds?

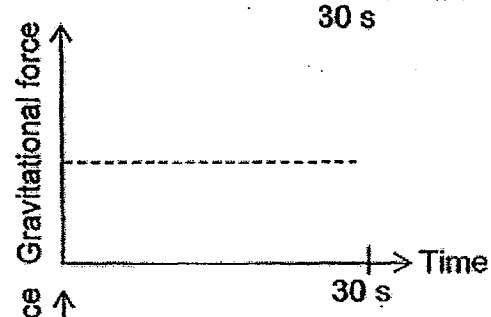
(1)



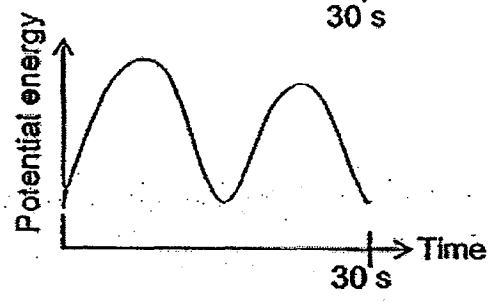


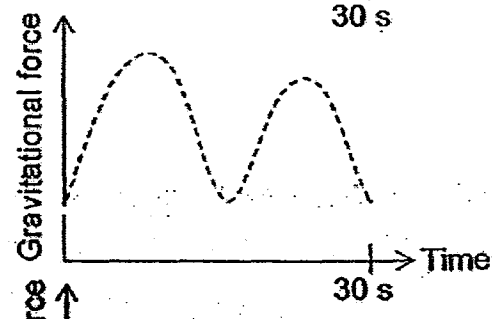
(2)



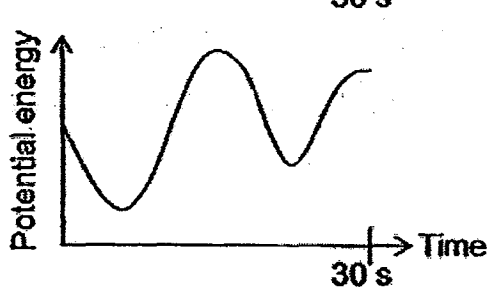


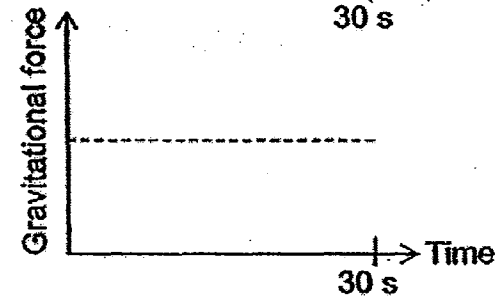
(3)





(4)





END OF BOOKLET A

Rosyth School
Semestral Assessment 1 2015
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: ____/100

Class: Pr 6 Register No. _____ Duration: 1 h 45 min

Date: 14 May 2015 Parent's Signature: _____

Booklet B

Instructions to Pupils:

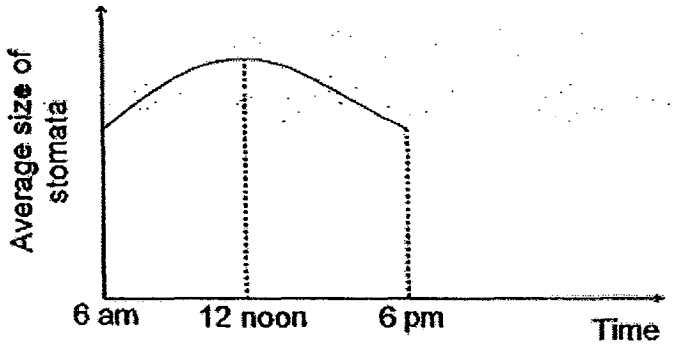
1. For questions 31 to 44, give your answers in the spaces given in Booklet B.

	Maximum	Marks Obtained
Booklet A	60 marks	
Booklet B	40 marks	
Total	100 marks	

* This booklet consists of 13 pages.

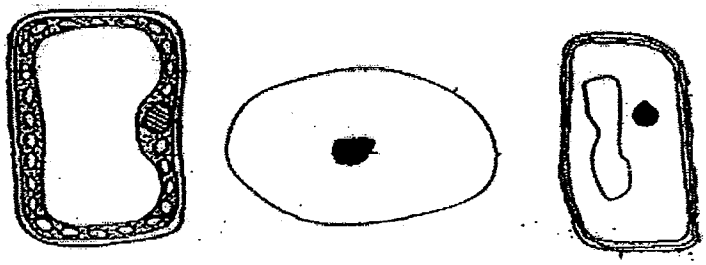
For questions 31 to 44, write your answers in this booklet. The number of marks available is shown in the brackets [ ] at the end of each question or part question.

31 The graph below shows the average size of the opening of stomata found on the leaves of certain plants over a period of 12 hours.



Based on the graph, at what time is the rate of photosynthesis highest for the above type of plants? Explain why. [2]

32 The diagram below shows three different cells.



R S T

(a) Match the cells correctly by writing the letter R, S or T in the table below. Write the reason for your choice in the table. [2]

Cell	Letter	State your reason
Cheek		
Leaf		

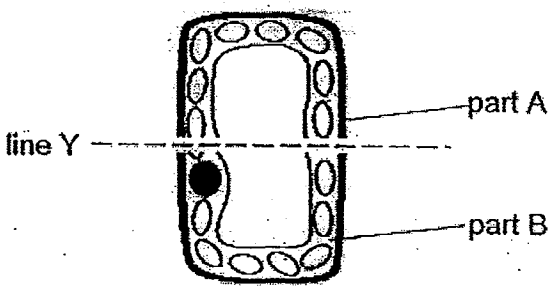
(b) Cells S and T were placed in a dish of water. After some time, one of them burst.

Which cell did not burst? Explain your choice. [1]

_____

_____

33 Leela wanted to do an investigation on some plant cells. She cut the plant cells at line Y as shown below.



After a few days, she recorded her observation in the table below.

Part A	Part B
Shrink and died	Continued to grow part A

(a) What do you think is the aim of her experiment?

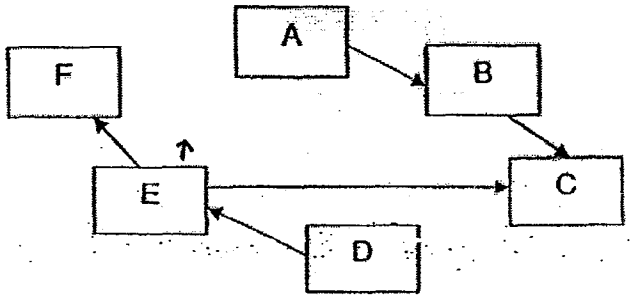
_____

(b) Explain why part A of the cell is important for her investigation? [1]

_____

_____

34 The diagram below shows a food web of a community.



(a) How many food chains are interlinked in the above food web? [1]

_____

(b) A disease caused F to die in large numbers. How would the population of D be affected? Explain your answer. [2]

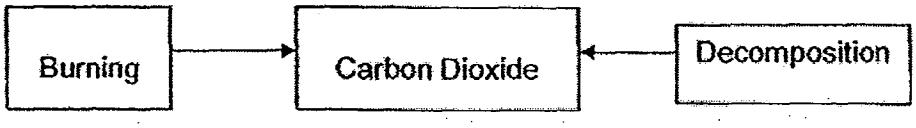
Effect on population of D:

_____

Reason:

_____

35 The diagram below shows how carbon dioxide is added into the air around us by the following processes.



(a) Name a process that can remove carbon dioxide in the air naturally. [1]

_____

(b) Global warming is the increase of temperature in the environment. Based on the diagram above, explain how clearing of large area of land by burning contributes to global warming. [1]

_____

_____

(c) The table below shows the effect of temperature on the life cycle of Organism D.

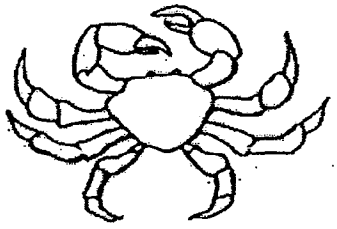
Temperature (°c)	Number of days for organism D to complete life cycle
15	56
20	40
25	30
30	21
35	16

Organism D reproduces in large number. It is a pest in its adult stage as it feeds on plant G. Based on the table above, how does global warming affects plant G? [1]

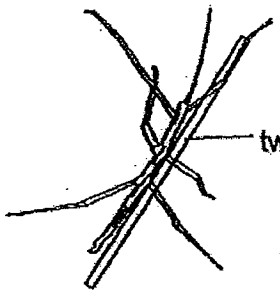
_____

_____

36 The diagram below shows a crab and a stick insect. Both animals have ways in which they protect themselves from their predators.



crab



(a) Explain how the structural adaptation of each animal helps them escape from their predators. [2]

Crab:

_____

_____

Stick insect:

_____

_____

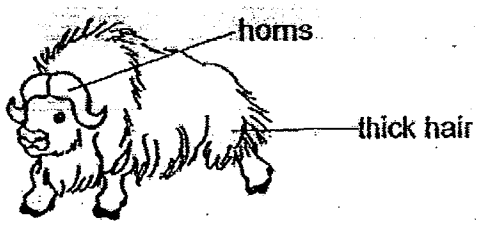
(b) The crab lives along the shorelines and near water. In the day, it is found hidden among rocks and plants and comes out to look for food at night. How does the behavioural adaptation of the crab helps it to survive? [1]

_____

_____

_____

37 The diagram below shows animal Y.



Animal Y adapts to living on high mountains which has very cold conditions with less oxygen in the air. The body of animal Y is covered with a thick growth of hair that touches the ground. Animal Y also have more red blood cells than any other animals and a large lung. It is able to breathe rapidly and take in large amount of air.

(a) Explain how the two structural adaption by animal Y helped it to survive the following conditions of its environment? [2]

i) Low temperature: _____

_____

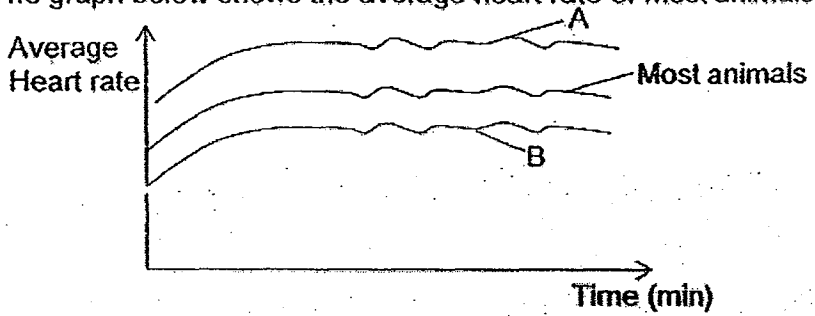
ii) Less oxygen in the air: _____

_____

(b) Based on the picture above, how does animal Y protect itself from its predator? [1]

_____

(c) The graph below shows the average heart rate of most animals.

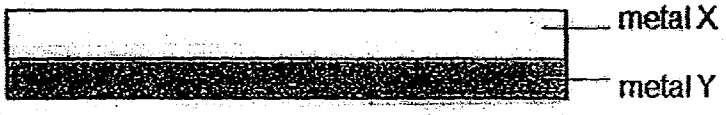


Which of the above, A or B, is likely the heart rate of animal Y? Explain your choice. [1]

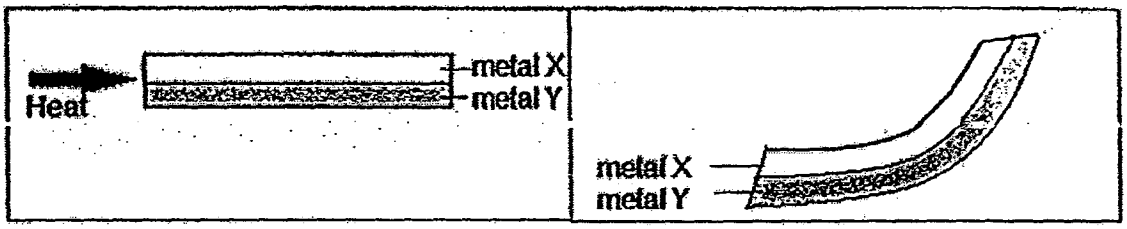
_____

_____

38 A strip consists of two metals, X and Y, attached firmly to each other as shown below.



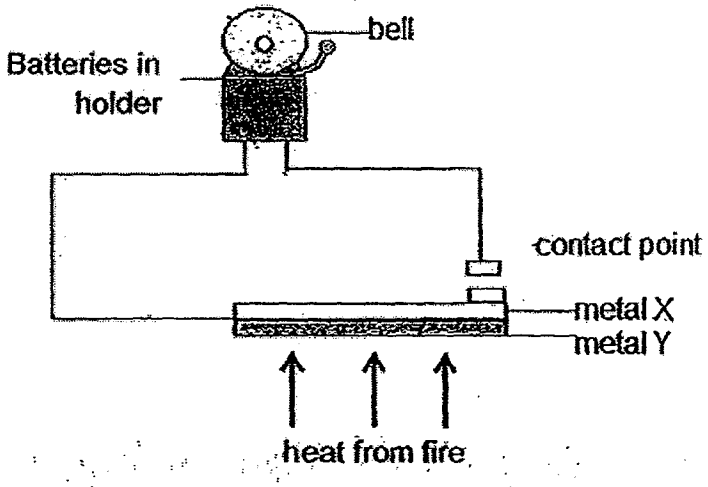
The diagram below shows the strip before and after it is heated.



Before heating After heating

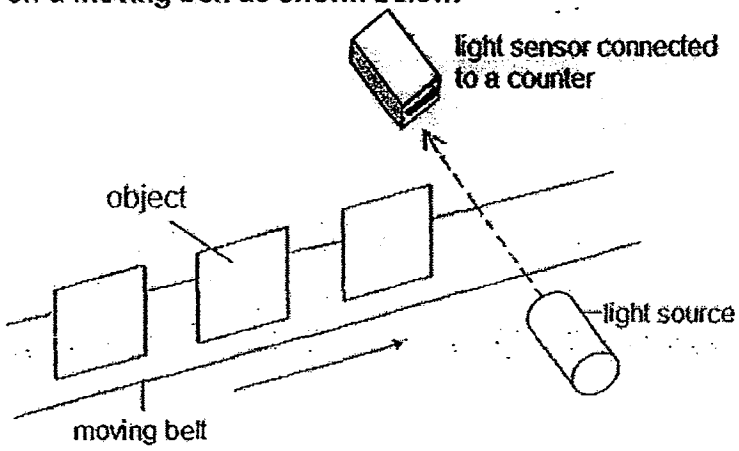
(a) Explain why metal Y is bent more than metal X? [1]

The same type of strip is used to construct a fire alarm system shown below.

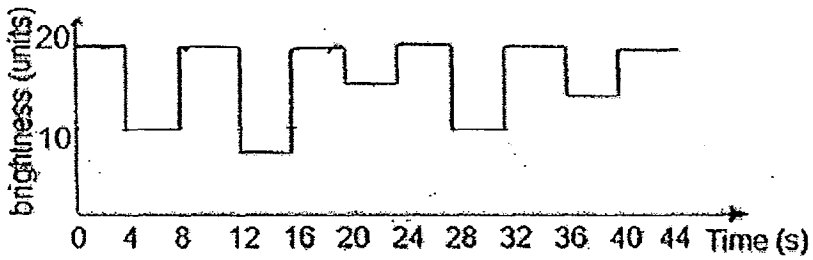


(b) Explain how the fire alarm system shown above works for the bell to ring when there is a fire. [2]

39 A light sensor is used to determine the amount of light that can pass through objects on a moving belt as shown below.



The belt moves at a constant speed. Objects which block less than 10 units of light are rejected. The data recorded is shown in the graph below as the objects move on the belt.



(a) Based on the graph above, how many object(s) has/have to be rejected? [1]

_____

(b) How many objects are inspected using the light sensor in 44 seconds? [1]

_____

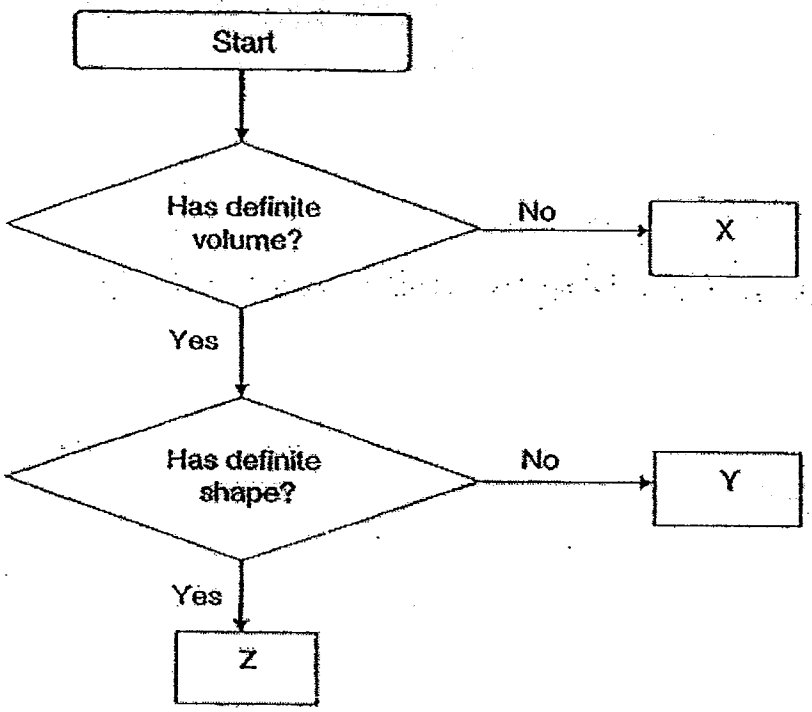
(c) State the property of light that enables this set-up to work. [1]

_____

(d) State the property of the materials used to make the objects. [1]

_____ _____

40 Study the following flow-chart carefully. X, Y and Z are 3 different types of matter.



(a) Write down the states of X, Y and Z. [2]

X - _____

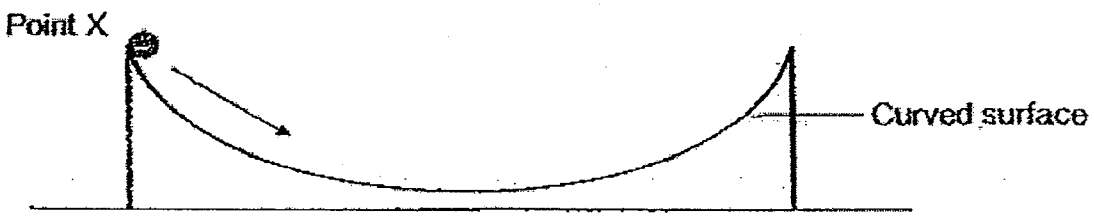
Y - _____

Z - _____

(b) If X, Y and Z are the three states of water, what is X? [1]

_____

41 An investigation was conducted to find out which of the liquids, Q, R, S and T, worked best as a lubricant to overcome friction.



A small amount of each type of liquid was applied on the curved surface as shown in the diagram above. A metal ball was then released from point X and it was allowed to roll up and down along the surface for a few times before it became stationary at point Y. The time taken for the ball to come to rest was recorded in the table below.

Liquid	Time taken for the ball to come to rest (sec)
Q	21
R	8
S	26
T	14

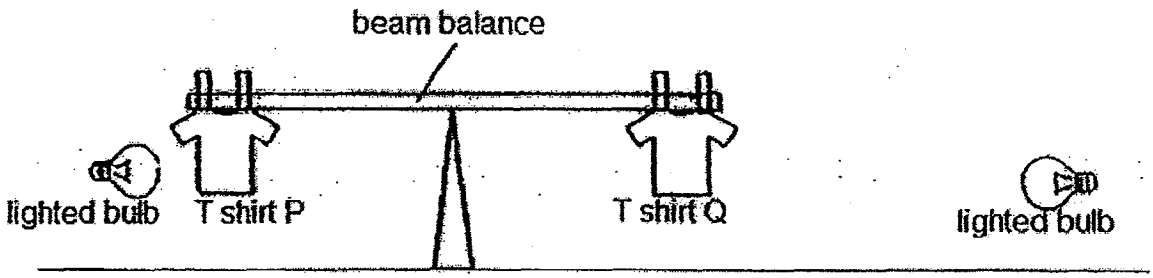
(a) Arrange the four liquids in descending order from the best lubricant to the worst lubricant. [1]

_____

(b) Put a tick (√) in the box beside the variable(s) that must be kept the same for the investigation to be fair. [1]

Variables	To be kept the same
Material of the ball	
Time taken for the ball to come to rest	
Amount of liquid applied on the curved surface	
Amount of force applied when releasing the metal ball	

42 Alan soaked two similar T-shirts with 400ml of water. He then squeezed the T-shirts till no water dripped from them. He hung the two T-shirts on a beam balance. The 2 ends of the balanced beam were balanced at the start of the experiment. He placed similar lighted bulbs at different distances from the T-shirts as shown in the figure below.

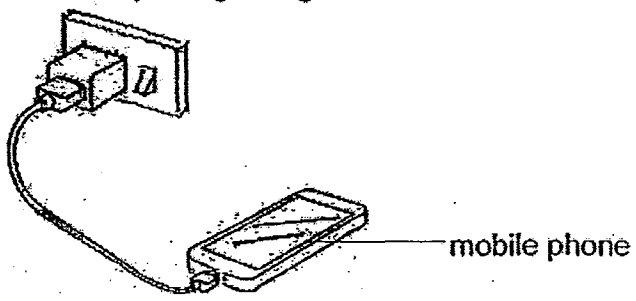


(a) What is the aim of the experiment? [1]

(b) What will happen to the balance beam at the end of the experiment? [1]

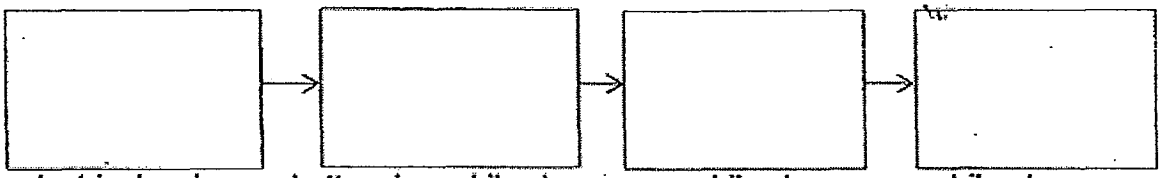
(c) Explain your answer in (b). [1]

43 Hamid has a mobile phone. Energy is stored in the battery of the phone. The diagram below shows the battery being charged.

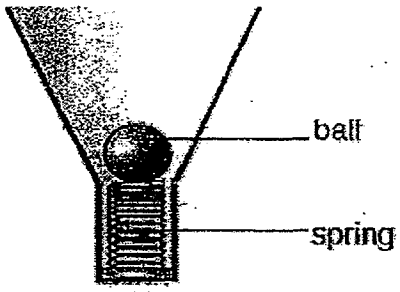


While the mobile phone was being charged, it rang.

State the energy conversion when it rang. [2]



44 Peter bought a toy gun as shown in the diagram below.



(a) What would you do to shoot the ball upwards? [1]

_____

_____

Peter wants to find out how the size of the ball affects the height reached by the ball when it is shot upwards.

(b) Identify the 2 variables as stated below. [2]

(i) measured variable : _____

(ii) changed variable : _____

END OF PAPER

Answer Ke

EXAM PAPER 2015

SCHOOL : ROSYTH

SUBJECT : P6 SCIENCE

TERM : SA1

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

31)12pm the size of the stomata is greater to take in most amount of carbon dioxide and to photosynthesize at the highest rate.

32)a)S / It does not have cell wall.

R / The leaf cell is a plant cell and needs to have nucleus, cell wall, cell membrane, cytoplasm and chloroplasts.

b)T, it has a cell wall that maintains, it's shape and prevents it from bursting.

33)a)To find out if nucleus is needed for cell to repair/replace damaged part.

33)b)Part A is to ensure that prove that present of nucleus is needed for cell to replace damaged part.

34)a)3.

b)It would decrease.

When the population of F declines, the population of E would increase,and in order to feed the large population of E, they would then fed more on D, causing the population of D to decrease.

35)a)Photosynthesis.

b)Burning in creases/produces gives off carbon dioxide which absorbs more heat/traps heat/keeps heat.

c)Global warming increases the temperature, causing the number of days for Organism D to complete it's life cycle to dcrease,which will then feed on plant G and will result in plant G's population to decrease.

36)a)Crab: Has pincers to defend itself from attackers.

Stick insect: Can camouflage and blend into surroundings, making it hard for predators to spot.

b)Most of the crab's predators are asleep during the night and thus will not be able to catch it's prey, most of the crab's food are also resting, making it easy for the crabs to catch their food.

37)a)i)It has thick fur to trap body neat to stay warm.

ii)It has more red blood cells than any other animals to transport more oxygen in the body.

b)It has horns to attack it predators.

37)c)A. The heart rate is higher than most animal as the heart rate increases to pump more blood to provide more oxygen.

38)a)Metal Y expands more than metal X after heating.

b)Heat from the fire causes the metals to bent which pushes the contact points together, which results in a closed circuit and causes the bell to ring.

39)a)2 b)5

c)Light travels in a straight line.

d)The material allows some light to pass through.

40)a)X: gas Y: Liquid Z: solid b)Water vapour.

41)a)S, Q, T, R

b)Material of the ball

Amount of liquid applied on the curved surface

Amount of force applied when releasing the metal ball

42)a)To find out how the lighted bulb's distance from the T-shirt affect the rate of evaporation.

b)It will tilt towards T-shirt Q.

c)Higher temperature in the surrounding causes more water evaporated for from P.

43)Electrical energy→Chemical potential energy→Electrical energy→sound energy

44)a)push the spring down and release.

b)i)Height reached by the ball.

ii)size of the ball.