Rosyth School
Semestral Examination for 2012
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: /100

Class: Pr6 _____ Register No. _____ Duration: 1 h 45 min

Date: 14 May 2012 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.

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

* This booklet consists of 17 pages.

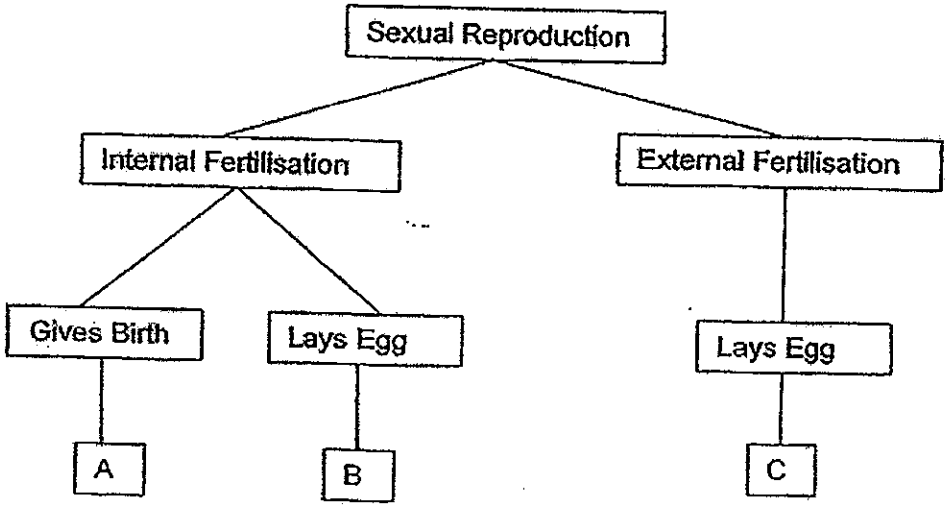
Part I (60 Marks)

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.**

1. How would you determine that a plant you found in a garden is a non-flowering plant?

   (1) Absence of fruits
   (2) Absence of flowers
   (3) Presence of spores
   (4) Presence of leaves

2. Study the following chart below.



In which group would you place birds?

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

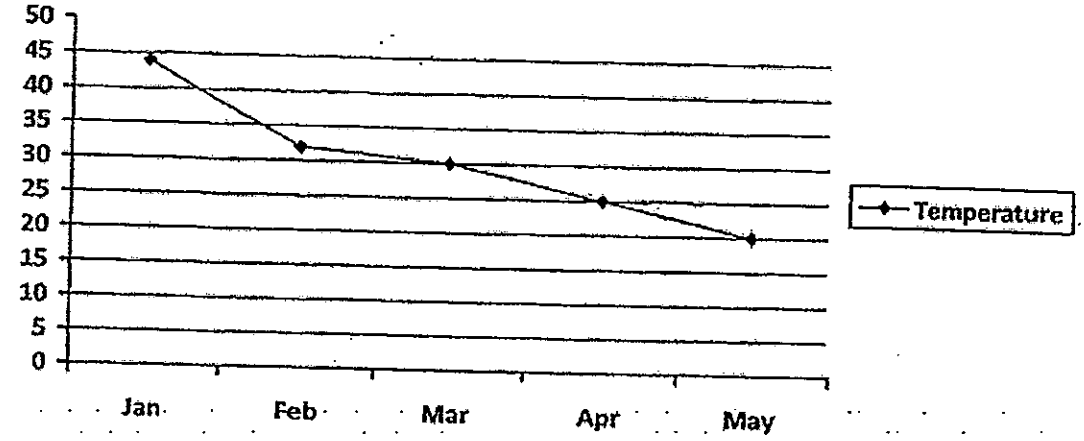
3 Four similar pancakes were kept in different places as shown below.

Places	Places where the pancakes were kept			
	In the freezer	In the hot toaster	In the classroom	Inside the garden soil
A		√		
B	√			
C				√
D			√	

After few days, patches of mould were seen growing only on the pancakes at places, C and D. Which factor affected the growth of mould?

(1) Amount of air
(2) Amount of light
(3) Amount of water
(4) Amount of warmth

4. The graph shows the temperature of a place W from January to May.

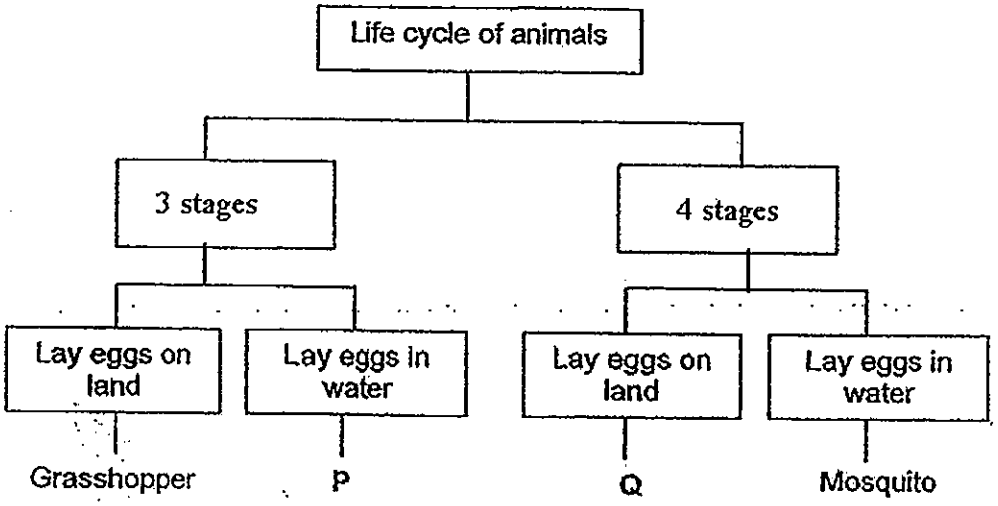


A certain type of insect lives in place W. The insect requires a temperature of between 30°c to 32°c for at least one month to develop from an egg into an adult. The young of the insect feeds on the leaves of the crops grown by farmers.

Based on the graph, from which month would the farmer have to spray the pesticides to protect the crops most effectively?

(1) January to February
(2) February to March
(3) March to April
(4) April to May

5. Study the classification table below.



What are P and Q likely to be?

	P	Q
(1)	Frog	Mealworm Beetle
(2)	Toad	Cockroach
(3)	Housefly	Grasshopper
(4)	Frog	Dragonfly

6. Which of the following statements is/are true for all living things?

A: They respond to changes.
B: They breathe through lungs.
C: They need air, water and food.
D: They inherit their parents' genetic information.

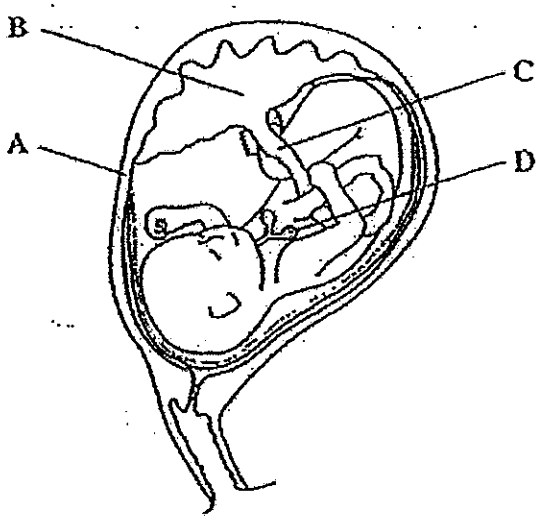
(1) A and C only
(2) A, B and C only
(3) A, B and D only
(4) A, C and D only

7. Which of the following body systems work together with the reproductive system in human for the growth and birth of the baby?

A: Skeletal System
B: Muscular System
C: Digestive System
D: Circulatory System
E: Respiratory System

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

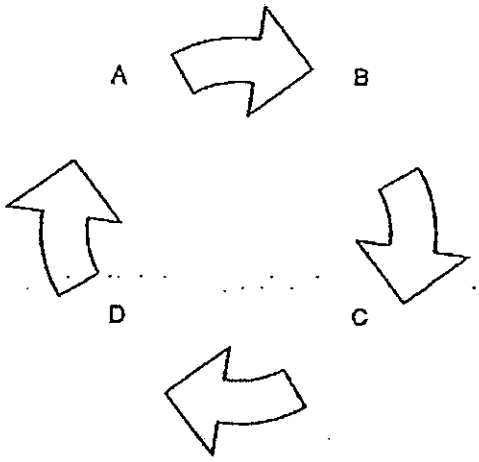
8. The diagram below shows a developing foetus.



Where does the exchange of oxygen and carbon dioxide between the foetus and its mother take place?

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

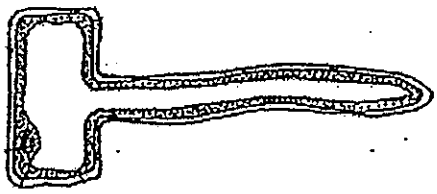
9. Study the diagram below. The points A to D represent the four processes that occur during sexual reproduction of plants respectively.



At D, petals will start to wither and ovules will develop to become seeds. Before which point will the plant become an adult?

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

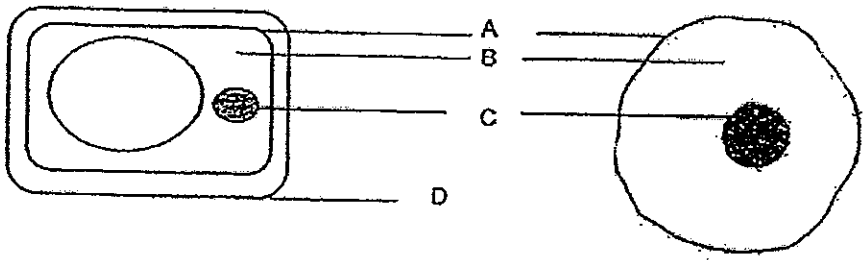
10. The diagram below shows a plant cell.



Which part of the plant is the above cell from?

(1) Root
(2) Stem
(3) Leaf
(4) Fruit

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



Which of the following functions are correctly matched with the cell parts?

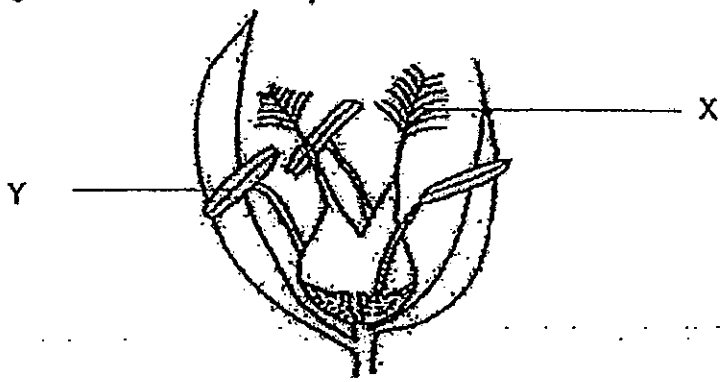
Cell Parts	Functions
A	Gives the cell a definite shape
B	Allows substances to move within the cell
C	Contains hereditary information
D	Supports and protects the cell

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

12. A farmer wanted to grow identical rose plants in his farm. Which is the best way to ensure that the plants are identical?

(1) Grow the seeds produced by self-pollination
(2) Grow the seeds produced by cross- pollination
(3) Grow the rose plants by asexual reproductive method
(4) Provide identical conditions for all the rose plants to grow

13. The diagram below shows the parts of a flower.



Based on the diagram, which one of the following pairs of statements about X and Y is true?

	X	Y
(1)	Female part of the flower where pollen grains are transferred to	Male part of the flower where pollen grains are produced
(2)	Female part of the flower where ovules are	Male part of the flower which holds the anther
(3)	Male part of the flower where pollen grains are transferred to	Female part of the flower where pollen tube grows
(4)	Male part of the flower where pollen grains are	Female part of the flower where the ovules are

Read the following to answer questions 14 and 15.
Alex investigated on the dispersal of a fruit. He recorded the number of fruits initially and after a certain period of time as shown below.

Colour of fruits	Initial number of berries	Number of berries after a certain period of time
Red	200	54
Blue	200	102
Black	200	66
Green	200	189

14. Which colour has the greatest chance of dispersal for the above fruit?

(1) Red
(2) Blue
(3) Black
(4) Green

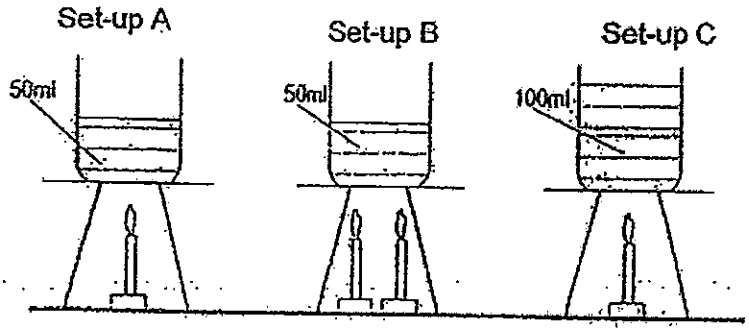
15. Which one of the following features would the above fruit most likely have?

(1) Pod-like fruit
(2) Fruit with stiff hairs
(3) Fruit with sweet flesh
(4) Fruit with feathery hairs

16. Which one of the following factors can determine the state of a matter?

(1) Its shape
(2) Its volume
(3) Its mass
(4) Its temperature

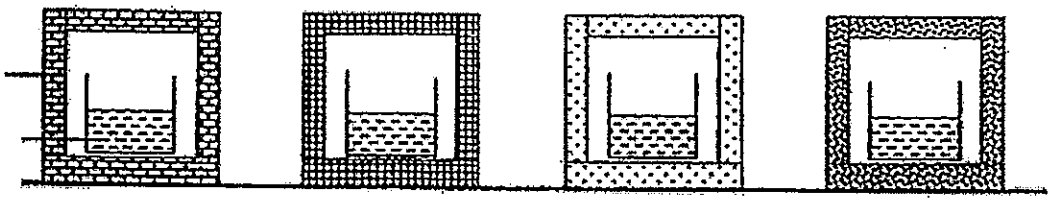
17. Identical bunsen burners were used to heat three beakers containing tap water in the same room. The time taken for each beaker of water to boil was recorded.



Which one of the following is true about the result of the experiment?

(1) Set-up B took the longest time.
(2) Set-up C took the shortest time.
(3) Set-up A took a shorter time than set-up B.
(4) Set-up A took a shorter time than set-up C.

18. Vincent set up the apparatus below using different insulation materials. He used beakers of the same size containing equal amounts of water in each beaker.



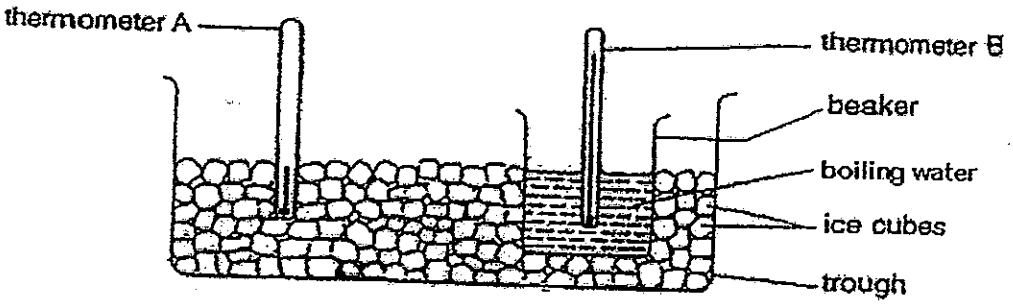
He recorded the temperature of water in each beaker at regular intervals using a temperature sensor. The table below shows the results of the experiment.

Time (min)	Temperature of water (°C)			
	E	F	G	H
0	100	100	100	100
5	77	65	90	88
10	69	42	88	76
15	56	39	83	71
20	40	37	80	69

Based on the results in the table above which material is ideal for making a roof of a house?

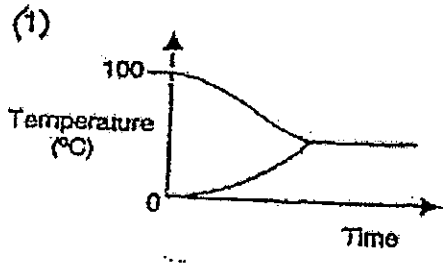
(1) E
(2) F
(3) G
(4) H

19. Sherry placed two thermometers, A and B, into the trough of ice cubes and the beaker of boiling water respectively. She recorded the temperature till there were no more changes in the reading.

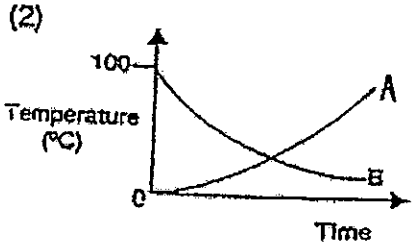


Which one of the graphs below best represents the temperature changes observed by Sherry during the experiment?

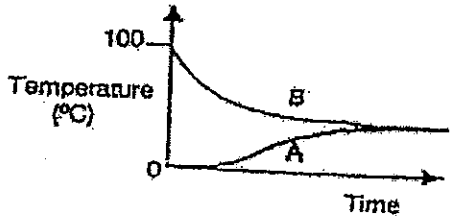
(1)



(2)



(3)



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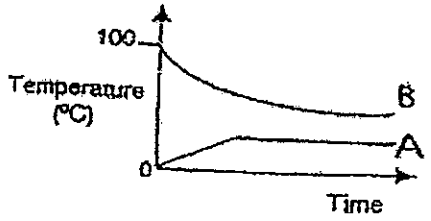
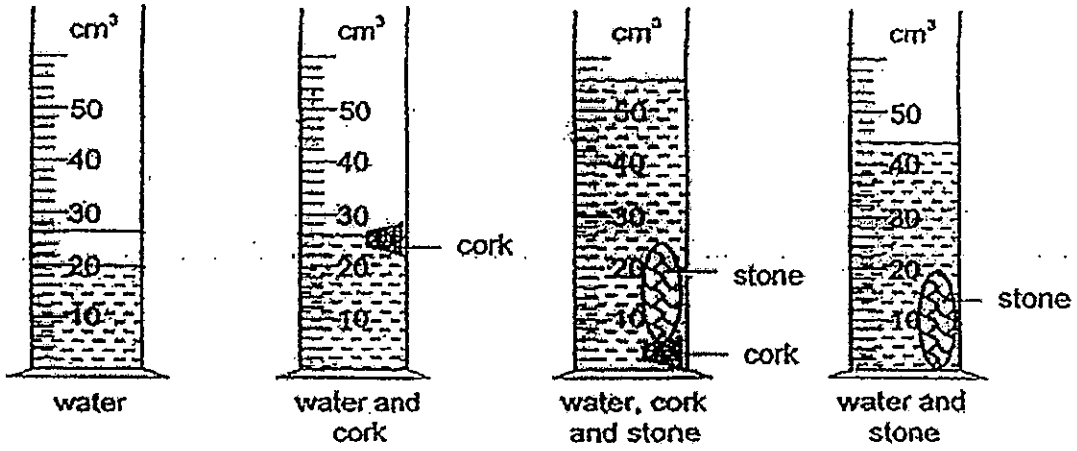


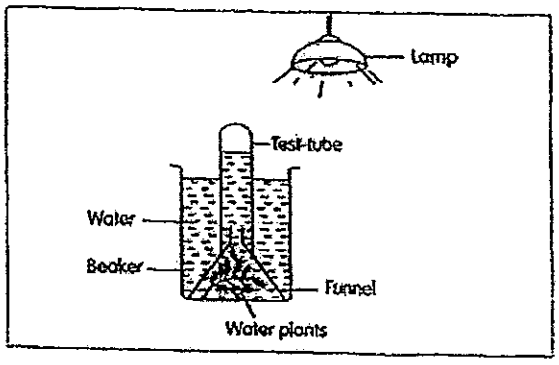
20. Penny wanted to find the volume of a cork and a stone by the following the steps as shown below.



What is the volume of the cork and the stone respectively?

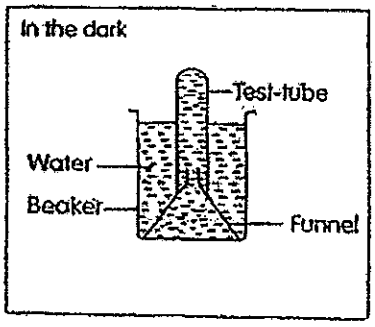
	Volume of cork (cm^3)	Volume of stone (cm^3)
(1)	3	22
(2)	6	24
(3)	11	30
(4)	12	24

21. Mrs Tan used the following set-up to show that a gas is produced when water plants carry out photosynthesis. She placed the set-up under a lamp for two days.

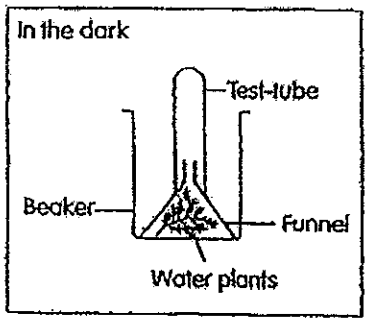


Which one of the following set-ups should she use as a control for her experiment?

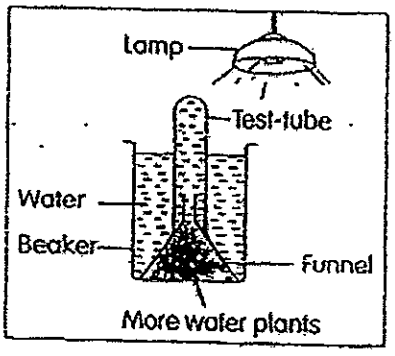
(1)



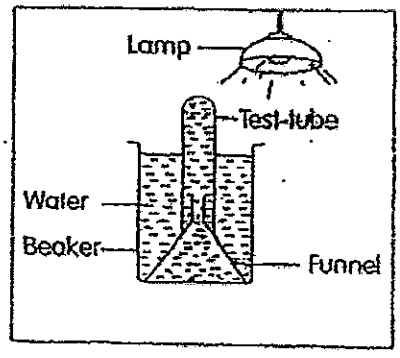
(2)



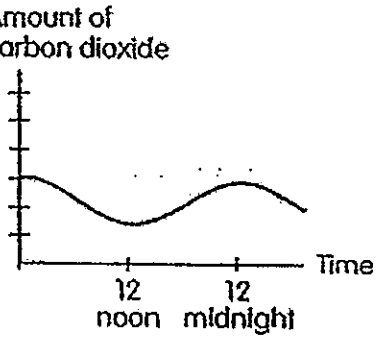
(3)

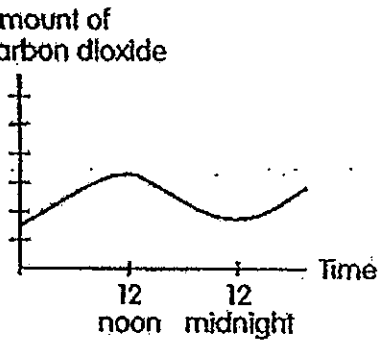


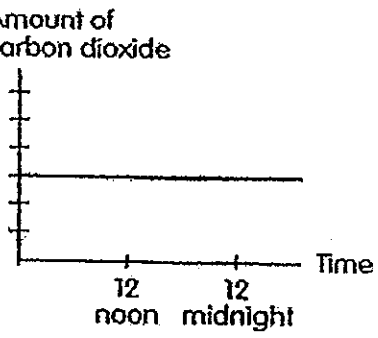
(4)

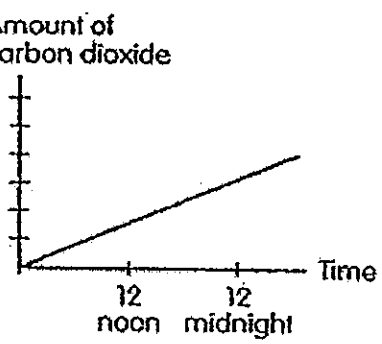


22. Sam placed a potted plant under a large glass jar. He wanted to show how the amount of carbon dioxide inside the jar changed from day to night. Which one of the following graphs correctly shows the change in the amount of the gas in the jar?

(1)


(2)


(3)


(4)


23. Which of the followings are good source of energy for man?

A: Sugar
B: Starch
C: Water
D: Oxygen

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

24. A food web consists of four organisms A, B, C and D. Information about these organisms is given in the box below.

A eats B and D
B is eaten by A and D
D is eaten by C

Which organism in the food web above obtains its energy directly from the Sun?

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

25. Which one of the following factors does not affect rate of evaporation of water?

(1) The amount of water
(2) The presence of wind
(3) The temperature of water
(4) The surrounding temperature

26. A group of pupils compared the rates of evaporation of water in 4 different containers, J, K L and M. The conditions for each container are shown in the table below.

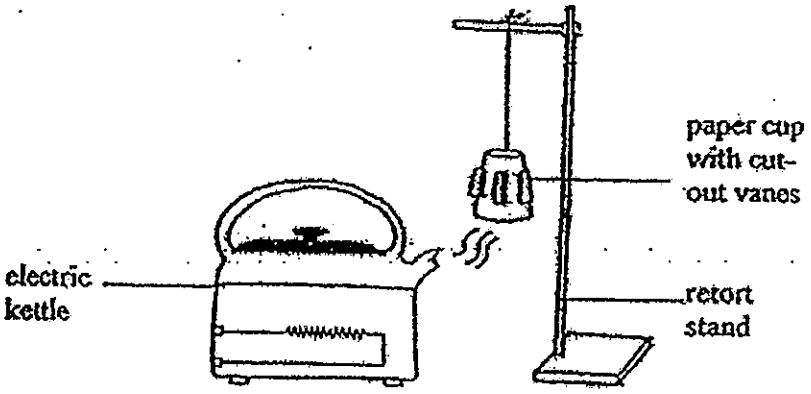
	J	K	L	M
Exposed Surface Area of Container (cm^2)	90	90	50	50
Temperature of water (°C)	90	50	90	50
Speed of Wind (km/h)	10	10	25	21

Which of the following experimental aim(s) can be investigated using 2 of the set-ups above?

A: How speed of wind affects the rate of evaporation
B: How temperature of water affects the rate of evaporation
C: How exposed surface area affects the rate of evaporation

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

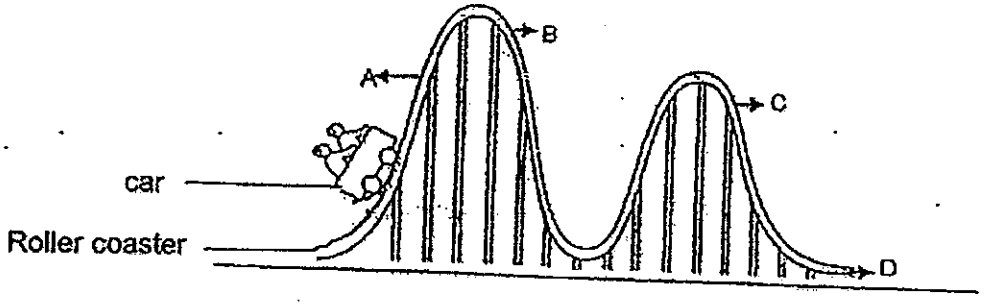
27. The diagram below shows an electric kettle of boiling water. Its spout is placed under a paper cup with cut-out vanes.



Which one of the following gives a correct description of the energy changes occurring in the above diagram?

(1) electrical energy → heat energy → kinetic energy
(2) electrical energy → kinetic energy → kinetic energy
(3) electrical energy → heat energy → light and kinetic energy.
(4) electrical energy → kinetic energy → heat energy → kinetic energy

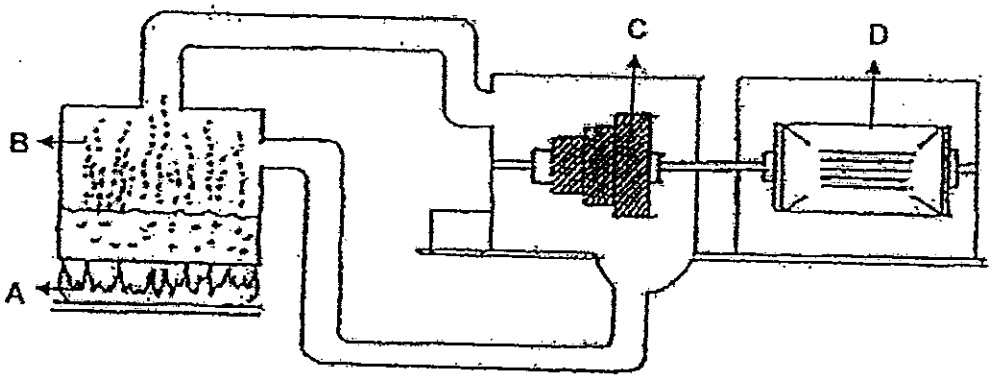
28. The diagram below shows two boys riding on a car along roller coaster.



Which of the following statements is true about the car as it moved from point A to point D?

(1) At A, it has both potential and kinetic energy.
(2) At B, it moves slower that at C.
(3) At C, it has the most energy.
(4) At D, all the energy has been used up.

29. The diagram below shows how electricity is produced using fossil fuels.



For each stage in the production of electricity, the form of energy involved is provided in the table below. At which stage is the energy involved wrongly stated?

Stage	Useful Energy involved
A	Heat energy
B	Kinetic energy
C	Sound energy
D	Electrical energy

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

30. Samuel carried out an investigation to measure the distance travelled by a battery operated car on different tracks. The result was recorded in the table as shown below.

Track	Distance travelled
A	150 cm
B	100 cm
C	250 cm
D	120 cm

The conversion of energy is as follows:

Stored Energy → Electrical Energy → Kinetic Energy + Heat Energy + Sound Energy

In which track will the greatest amount of heat energy and sound energy be produced?

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

End of Part I

Rosyth School
Semestral Examination for 2012
STANDARD SCIENCE
Primary 6

Name:_____ Total Marks: /40

Class: Pr6_____ Register No._____ Duration: 1 h 45 min

Date: 14 May 2012 Parent's Signature:_____

Booklet B

Instructions to Pupils:

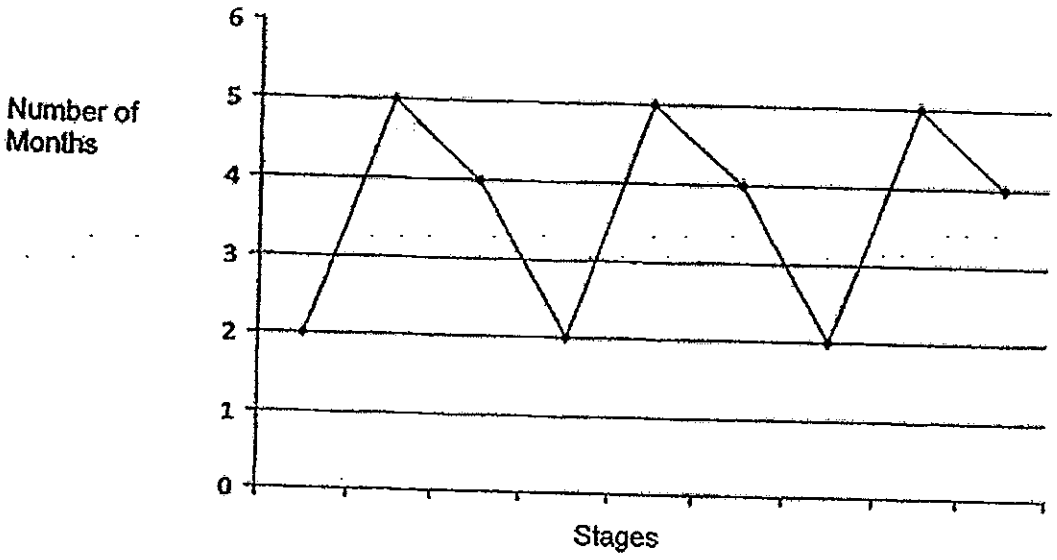
1. For questions 31 to 44, give your answers in the spaces given in this Booklet B.

* This booklet consists of 18 pages.

Part II (40 marks)

For questions 31 to 44, write your answers in this booklet.

31. In 1970s, a group of scientist studied the life cycle of an insect W. They recorded the time period for each stage in the life cycle of insect W. They repeated the investigation a few times to ensure a reliable result.



(a) How many stages does this insect W have? [1m]

_____

In 1980s, the insect W was completely wiped out by the use of pesticides. After sometime, farmers experienced a decrease in the production of their fruits.

(b) Why did the wipe out of insect W affect the production of fruits? [2m]

_____

_____

_____

32. Study the animal cells as shown below.

Nerve cell

Sperm cell

(a) State two similarities between the above cells. [1m]

_____

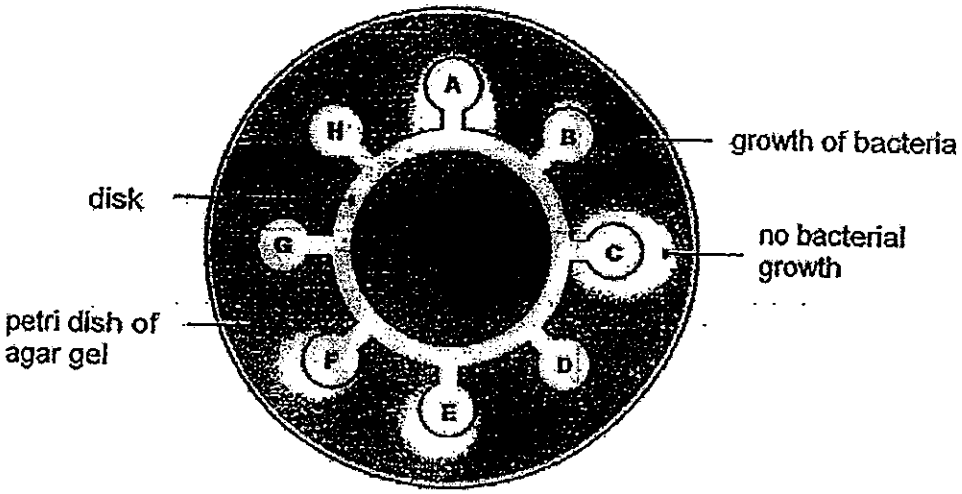
_____

(b) Why do the above cells have different structures and shapes? [1m]

_____

_____

33. Some students poured different hand wash A to H into a special disk. They placed the disk on a petri dish of agar gel which has already been streaked by bacteria. They incubated the dish for a few days and made an observation about the growth of bacteria as shown below.



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

_____

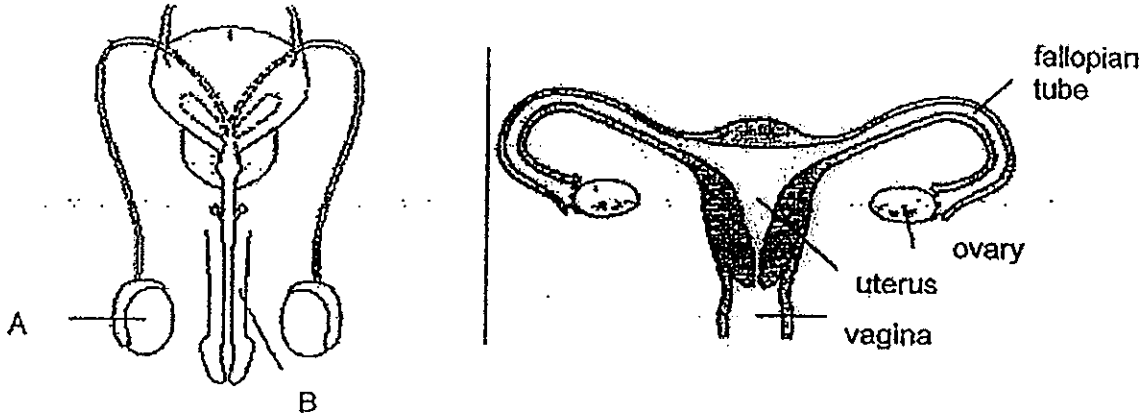
_____

(b) Which hand wash would you recommend? Support your choice. [1m]

_____

_____

34. Study the human reproductive systems.



(a) Label the parts of the male reproductive system. [2m]

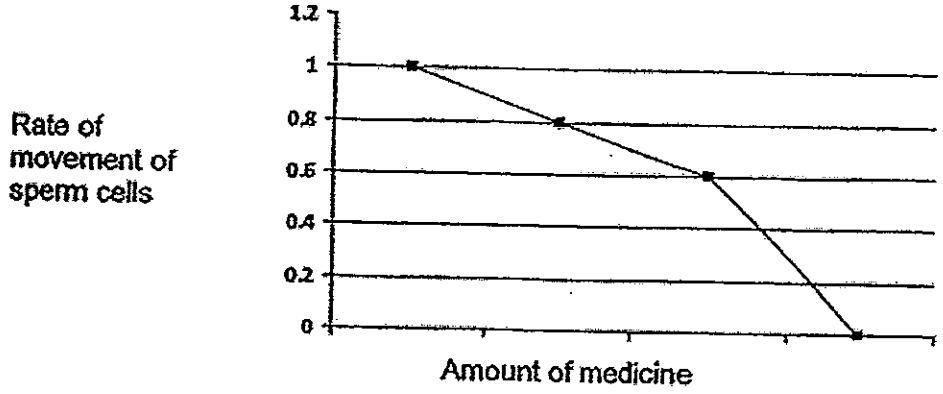
A: _____

B: _____

(b) Read the events that take place in the female reproductive system after sperms are released into it.
Sequence the events in the correct order. Write 1 to 4 in the boxes given below. Number 1 represents the first event. [2m]

☐	Sperms meet the egg released by the ovary.
☐	The fertilised egg implants itself at the uterus lining.
☐	One of the sperms fuses with the egg in the fallopian tube.
☐	Sperms swim up the vagina.

35. A few scientists studied the effect of a medicine on the rate of movement of sperms.



(a) What is the relationship between the amount of medicine and rate of movement of sperms? [1m]

_____

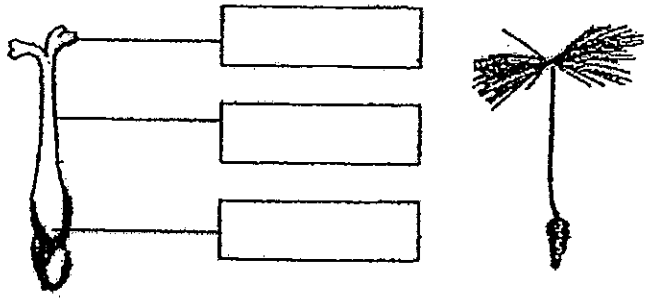
_____

(b) How would reproduction be affected if a man continued to take the medicine? [1m]

_____

_____

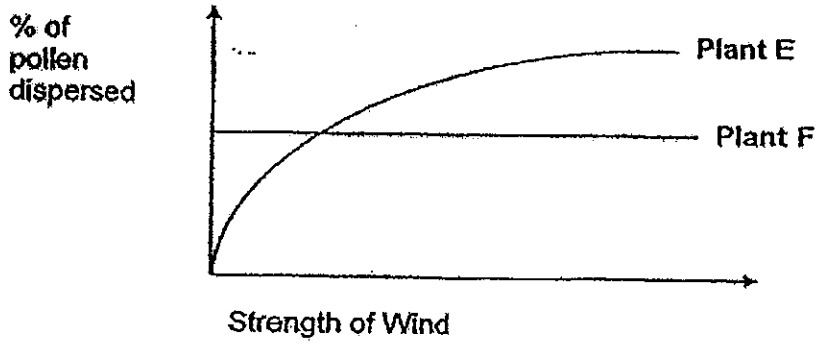
36. Study the diagrams below showing the female parts from two different plants.



M N

(a) Label the parts of M in the boxes given above. [1m]

The graph below shows the percentage of pollen dispersed by the strength of wind.

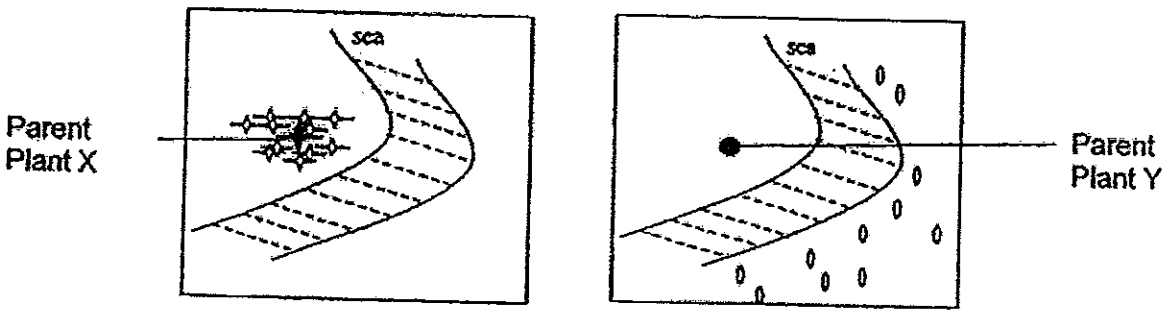


(b) Which female part, M or N, belongs to Plant E? Explain why. [1m]

_____

_____

37. Kim studied the patterns of how two plants X and Y disperse their fruits in an island.



(a) State an adaptive feature each for fruits X and Y. [2m]

i. Fruit X : _____

ii. Fruit Y: _____

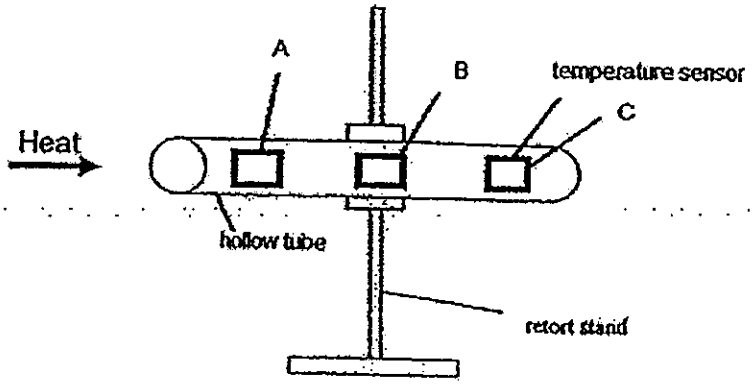
A natural disaster affected the island.

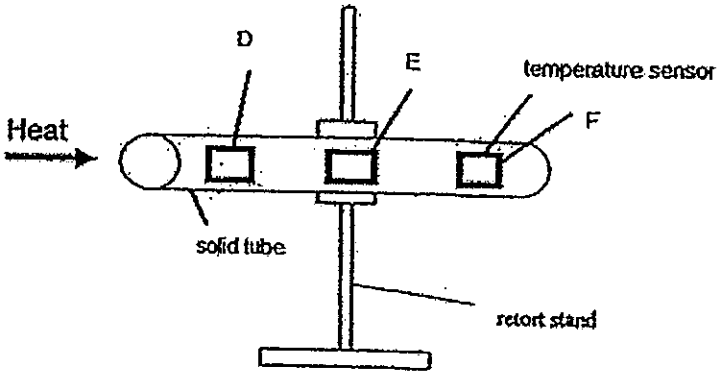
(b) Which plant will have a better chance for its continuity? Explain why. [1m]

_____

_____

38. Susan set up an experiment as shown below. She used two tubes, one hollow and the other solid, of the same length and material. The tubes are fixed with three temperature sensors at equal distances apart from one end to the other. These sensors will change in colour to show how hot the material is.





The temperature sensor range is as shown below:

Temperature	900°C	500°C	100°C
Colour	red	orange	yellow

Question 38 is continued on page 9

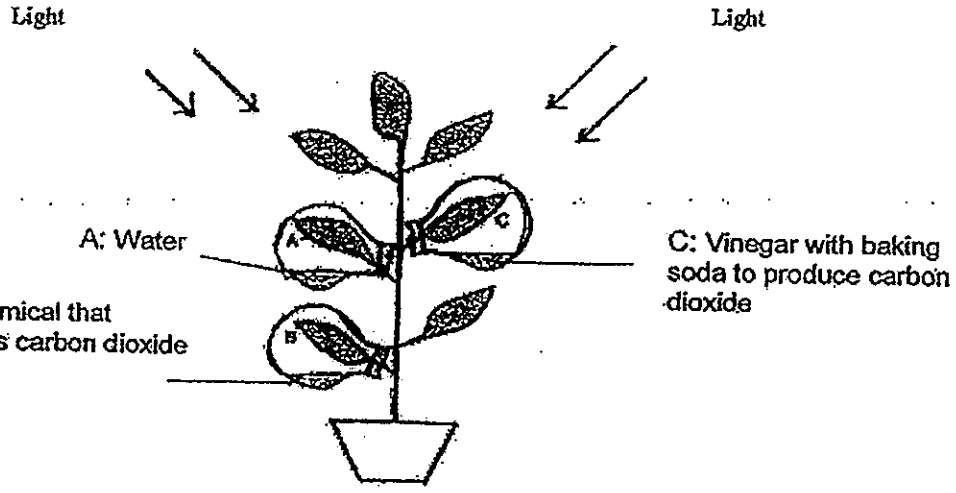
He recorded the results in the table below.

Temperature sensor	Colour
A	Red
B	Orange
C	Yellow
D	Red
E	Red
F	Red

(a) state the difference from A to C and from D to F with regard to the temperature [1m]

(b) On a cold day, a bird fluffs up its feathers as shown below. Explain why. [2m]

39. Ahmad placed a potted plant in the dark for 48 hours. After that he wrapped three leaves A, B and C using clear plastic bags with different substances as shown below. Then he placed the potted plant in the garden.



(a) If Ahmad investigated the rate of photosynthesis, in which leaf will the rate of photosynthesis be the fastest? Explain why. [1m]

_____

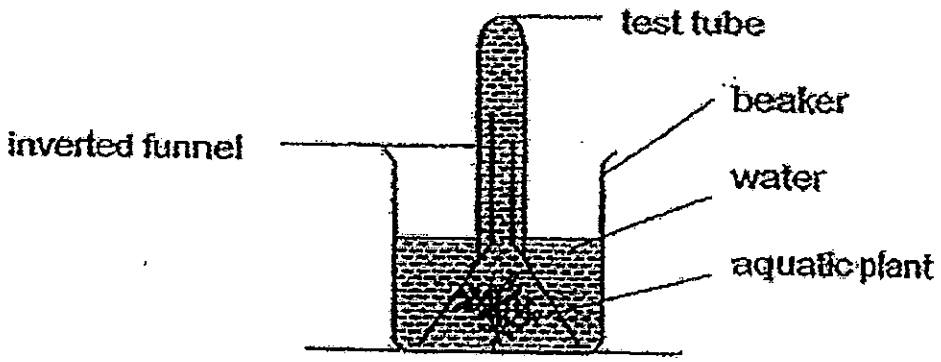
_____

Ahmad conducted a starch test on the leaves A, B and C after a certain period of time using iodine.

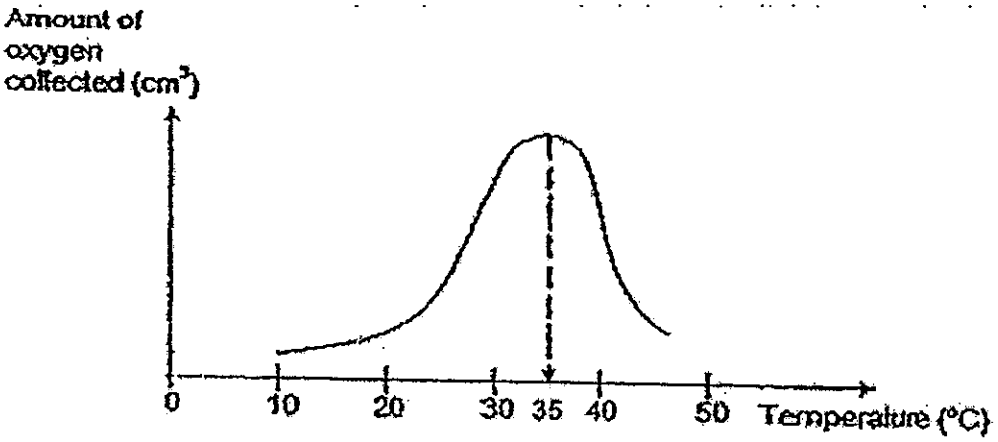
(b) State the result that he would observe for the three leaves. [3m]

Leaf	Result
A	
B	
C	

40. Jenny used the following set-up as shown below to find out the effect of temperature of water on the rate of photosynthesis of an aquatic plant.



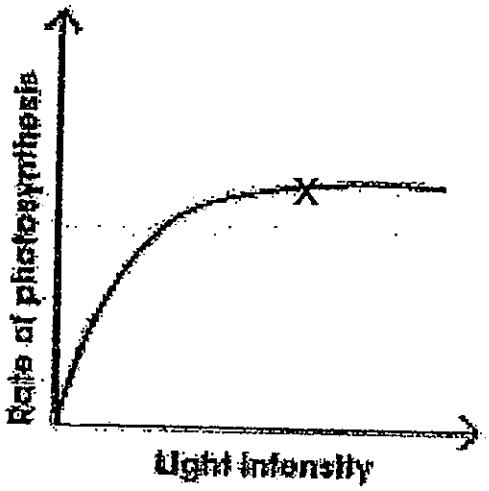
At the end of the experiment, Jenny recorded the amount of oxygen collected in the test tube for each set-up. She plotted the following graph based on the results obtained.



(a) Based on the above graph, describe how temperature of water affects the rate of photosynthesis of an aquatic plant. [2m]

Question 40 is continued on page 12

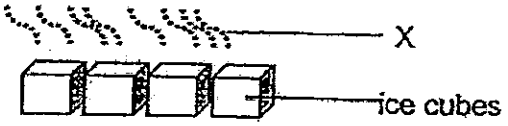
Next Jenny also investigated the rate of photosynthesis against the light intensity. She recorded the result as shown below.



(b) Name the limiting factor for the rate of photosynthesis at point X in the above experiment. [1m]

_____

41. Mary took out some ice cubes from the freezer and laid them on the table. She observed X above the ice cubes as shown below.



(a) What is X? [1m]

_____

_____

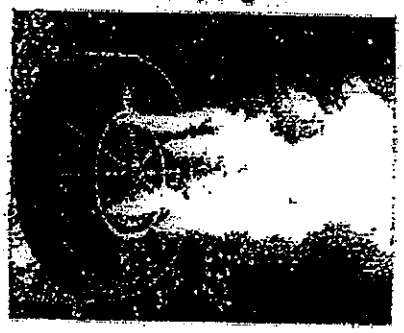
(b) Explain how X is formed. [1m]

_____

_____

The misting fan, as seen below, is equipped with special spray nozzles that release mist in front of an air flow.

A Misting Fan



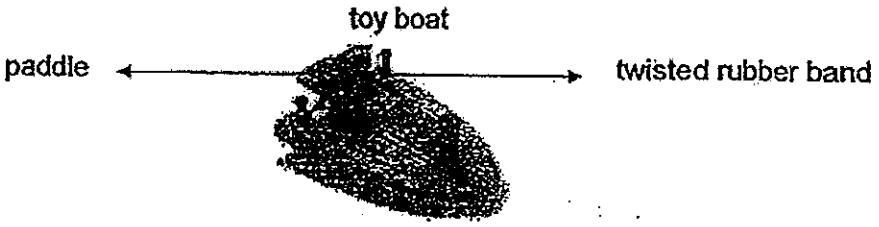
The mist is propelled by the air flow from the fan and travels through the air, causing the people nearby to feel cooler.

(c) Explain how the misting fan causes the people to feel cooler. [1m]

_____

_____

42. Jacob wanted to find out if potential energy affects kinetic energy. He made a toy boat using some wood and a wide-banded rubber band as shown below. The paddle of the boat was powered by twisting the rubber band around it. He set his toy boat in the bathtub and launched it.



Each time he changed the number of turns of the rubber band around the paddle and measured the distance travelled by the boat when it was launched. The table below shows the result of his experiment.

Number of turns of the rubber band	Distance moved by the toy boat
2	20
4	30
6	40
8	50
10	60

(a) What is the source of energy in the toy boat? [1m]

_____

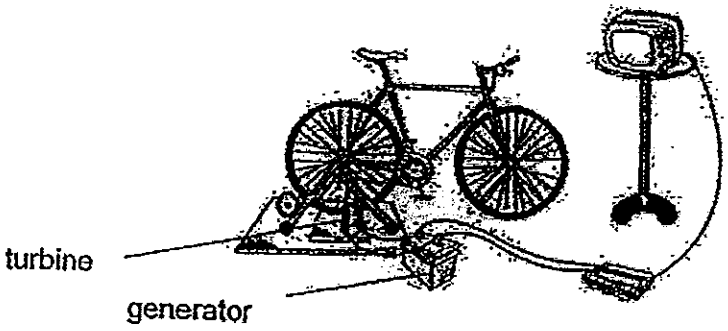
(b) Explain why the toy boat moved further as the number of turns of the rubber band was increased. [1m]

_____

_____

Question 42 is continued on page 15

Study how a bicycle can be used to generate electricity.



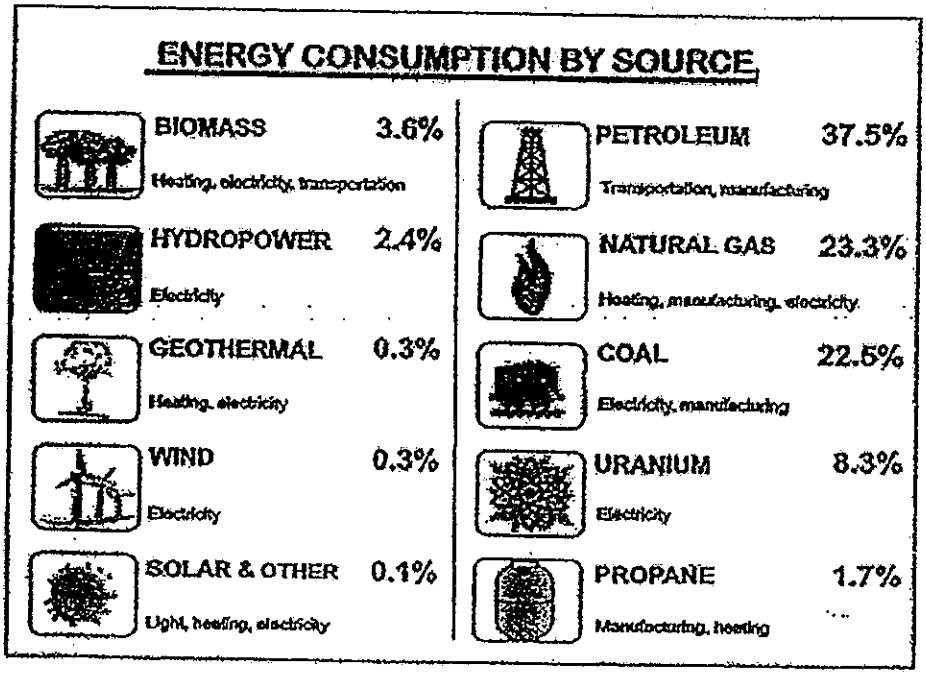
(c) What should you do if you want to generate more electricity in the above situation? [1m]

_____

(d) State the energy change for the bicycle above. [1m]

_____

43. Study the energy consumption by source.



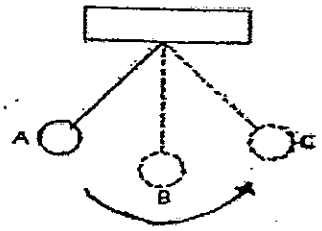
Group 1: _____ **Group 2:** _____

(a) The energy sources above are classified into two groups.
Write the headings for groups 1 and 2 in the blanks provided above. [1m]

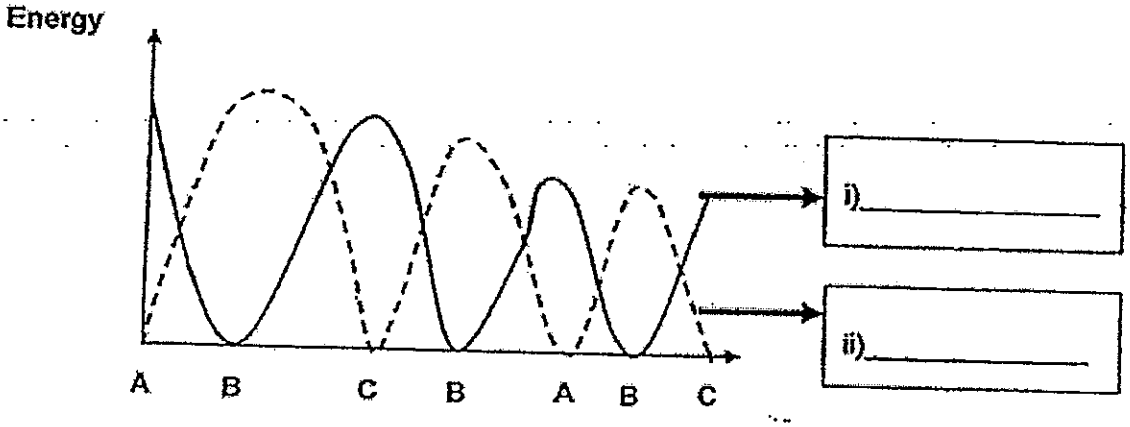
(b) Based on the information above , suggest what can be done to make fossil fuels last longer? [1m]

_____

44. The diagram below shows a pendulum swinging in motion.

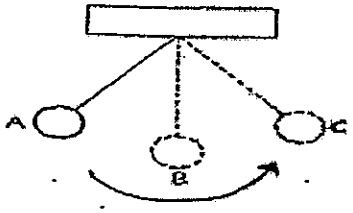


Study the graph that represents how the potential energy and kinetic energy of the pendulum change as shown below.



(a) Label the graph to represent **potential energy** and **kinetic energy** in the boxes above. [1m]

Jasmine stood at point A and released the ball. She was afraid that the ball will hit her when it returned.

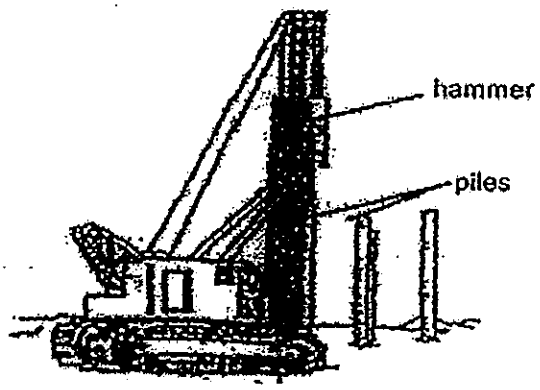


(b) Do you think the ball will hit her when it returns? Explain why. [1m]

_____

Question 44 is continued on page 18

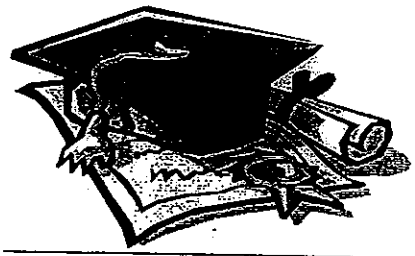
The picture below shows a piling machine which is used in a construction site. The hammer will be raised to a height and then dropped to hit the piles into the ground.



(c) What can you do to hit the piles deeper into the ground with each hit? [1m]

_____

End of Paper



ANSWER SHEET

EXAM PAPER 2012

SCHOOL : ROSYTH
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

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

31)a)3 stages.
b)Insect W has to pollinate their flowers so fertilization can occur and fruits can be produced but when insect W's population was wiped out, pollination did not occur and thus fertilization won't occur and fruits won't be produced.

32)a)Both cells have a nucleus and a tail.
b)The above cells have different functions hence, the structures and shapes should be able to suit the functions hence, the structure and the shapes are different.

33)a)Their aims to find out if different hand wash affect the growth of bacteria.
b)C. It has the least bacteria growth around it.

34)a)A: Testes B: Penis
b)2 4 3 1

35)a)The greater amount of medicine, the slower movement of the sperm cell.
b)As the rate of movement of sperms is reduced they cannot swim to meet the egg for fertilization to take place/no sperms will fuse with the egg.

6)a)stigma, style, ovary
b)The stigma of N is feathery to catch the pollens in the wind for wind ollination. The pollen dispersed in creases as wind strength increases so it is ind pollinated.

7)a)i)Pod-like structure.
ii)Has a fibrous husk that traps air to keep it buoyant.
b)Plant Y. It is dispersed away/ further from the island, so it has a greater ıance of survive.

3)a)The temperature from A to C decreased but the temperature from D to F ımained constant.
b)More air is trapped in the fluff up feathers. Air is a poor/bad ınductor/insulator hear and it will prevent (more)heat from traveling from e bird to the cold surrounding our/reduce heat lost from the body.

)a)C. It has most amount of carbon dioxide.
b)A: Blue-black B: Brown C: Blue-black

)a)As the temperature of the water in creased, the rate of photosynthesis creases until the optimum of 35° .After 35℃ as the temperature increases, e rate of photosynthesis decreases.
b)Amount of carbon dioxide.

.)a)Water droplets.
b)The surrounding water vapour loses heat to condense to form water oplets.
c)The water droplets gains heat from the body to evaporate to form water oplets.

)a)It is the twisted rubber band.
b)When there was more number of turns, more elastic potential energy was nverted into more kinetic energy.
c)Turn the turbine even harder.
d)Chemical potential energy→Kinetic energy + Electrical energy.

)a)1)Renewable 2)Non-Renewable
b)Use more of renewable sources to produced electricity.

)a)i)Potential energy ii)Kinetic energy
b)No. As the pendulum swings not all energy.
c)They should raise the hammer higher as more potential energy will be ıverted to kinetic energy causing the piles to go deeper into the ground with :h hit.