



**CATHOLIC HIGH SCHOOL  
PRIMARY 6  
PRELIMINARY EXAMINATION 3  
2009**

**SCIENCE  
EM 1 / EM 2**

Name: \_\_\_\_\_

Class : Primary 6 \_\_\_\_\_

Date : 28 August 2009

**BOOKLET A**

30 Questions  
60 Marks

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

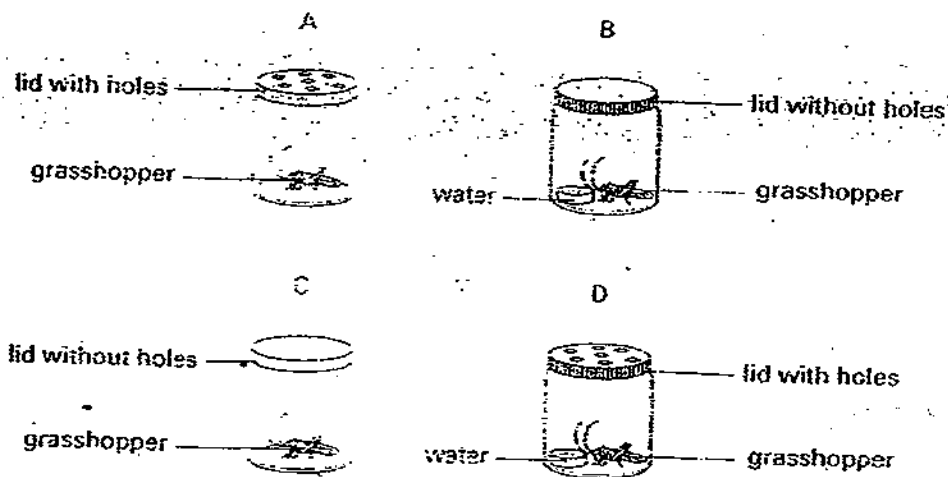
**Instructions to Candidates**

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

**Section A (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 Kimberly set up four jars, A, B, C and D, as shown in the diagram below.



Which two jars should she use to find out if a grasshopper requires water to survive?

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

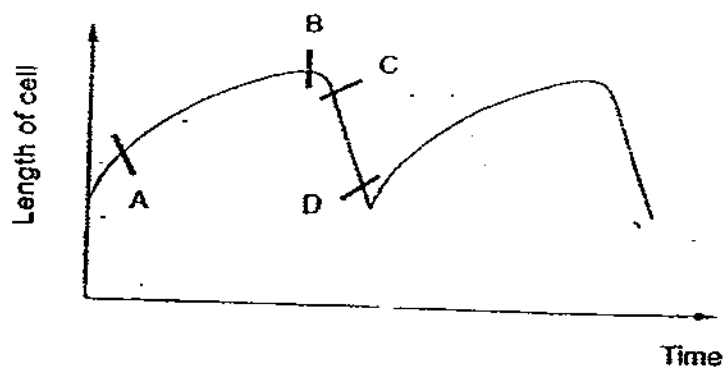
- 2 The table below shows the characteristics of organisms A, B and C.

Organism	Characteristics			
	Respond to changes	Can reproduce	Moves freely on its own	Produce its own food
A	✓	✓	✓	
B	✓	✓		✓
C	✓	✓		

Based on the information provided in table above, which of the following are correctly classified?

	Organism		
	A	B	C
(1)	Amoeba	Angsana tree	Bread mould
(2)	Cow	Jew's ear	Duckweed
(3)	Frog	Arrowhead	Lotus
(4)	Housefly	Bracket fungi	Yeast

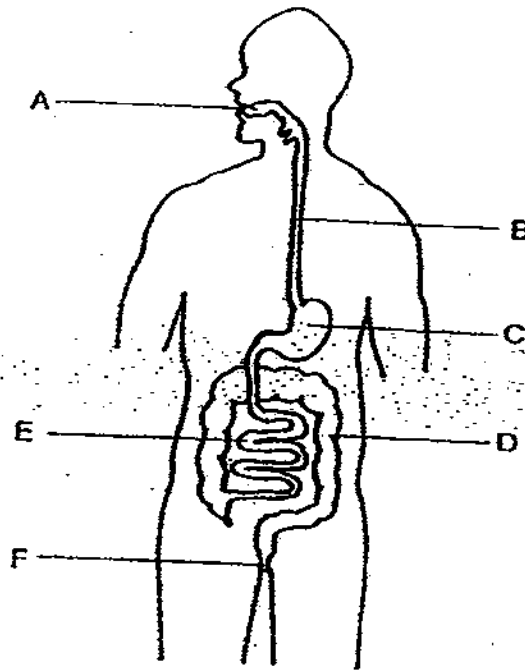
- 3 The graph below shows the length of a cell that was measured over a period of time.



What is the process that probably took place at the part labelled CD?

- (1) Death
- (2) Respiration
- (3) Cell division
- (4) Photosynthesis

- 4 The diagram below shows the digestive system of a human body.



Based on the diagram above, which of the following correctly matches the parts of the human digestive system with their functions?

Parts of the human digestive system where		
Digestion takes place	Absorption of digested food substances takes place	Absorption of water takes place
(1) A, C	E	D
(2) C, E	D	F
(3) A, C, E	E	D
(4) A, B, C, E	F	E

- 5 The table below describes some characteristics of animals J and K.

Characteristics	Animal J	Animal K
It has three stages in its life cycle.	✓	✓
The young resembles the adult.	✓	
It spends part of its life cycle in water.		✓
The mother looks after its young.	✓	

Using information from the table above, which of the following animals would be the most appropriate examples?

	Animal J	Animal K
(A)	Hen	Grasshopper
(B)	Cow	Mosquito
(C)	Mealworm Beetle	Frog
(D)	Eagle	Dragonfly

- 6 The table below shows the number of days each stage of the life cycles of insects R and S lasts.

Number of days in	Insects	
	R	S
Egg stage	8	9
Larva stage	6	10
Pupa stage	9	12

Which stage of the life cycle would insects R and S respectively be, on the 15<sup>th</sup> day after the eggs are laid?

	Insect R	Insect S
(A)	Pupa	Larva
(B)	Pupa	Pupa
(C)	Larva	Pupa
(D)	Larva	Larva

- 7 Yvonne had two similar pots of soil, labelled L and M. She placed 10 bean seeds in each pot. She placed Pot L in a dark cupboard and Pot M in a well-lit area. The pots of plants were watered daily. The average height of the plants are shown in the table below.

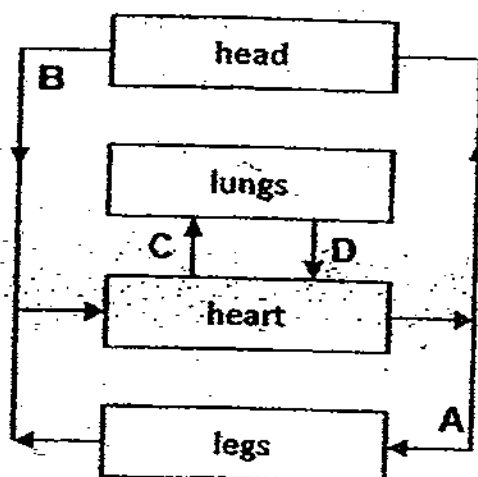
Day	Average height of plants / cm	
	Pot L	Pot M
1	0	0
2	0	0
3	0	0
4	1	1
5	3	2
6	5	3
7	7	4

Based on the information provided, which of the following statement(s) is/are true?

- A All the seeds germinated by the 4<sup>th</sup> day.
- B The average height of the plants grown under light are taller than those grown in the darks.
- C The difference in the average height of the plants between those grown under light and in darkness increases with the number of days.

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

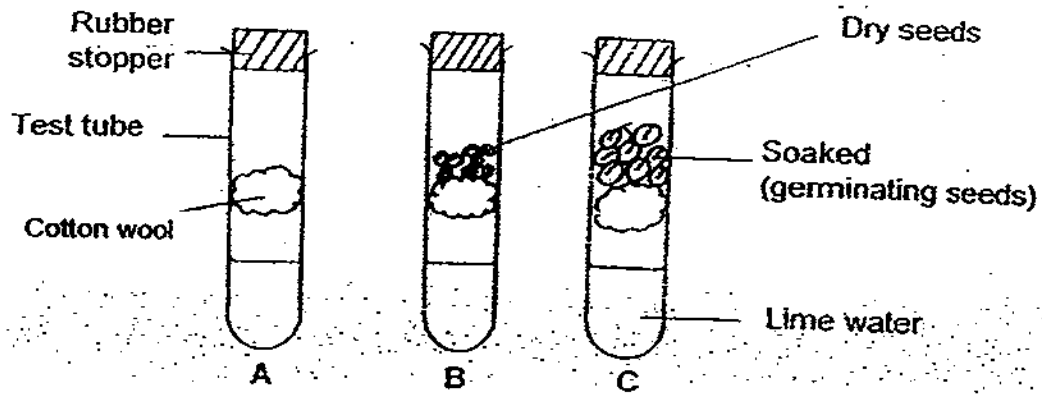
- 8 The diagram below represents the human circulatory system. The arrows represent the direction of the flow of blood in the blood vessels.



Based on the diagram above, which blood vessels are correctly matched with its gaseous content?

Blood with higher oxygen content	Blood with higher carbon dioxide content
A	C
B	D
C	B
D	A

- 9 Jerome set up an experiment as shown below.



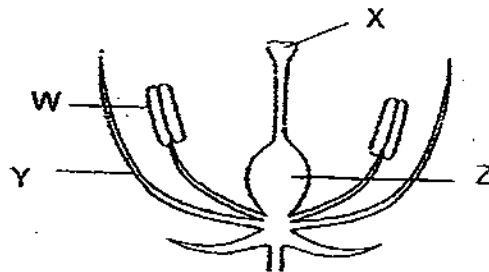
He left the seeds for one week and made sure that the seeds in test tube C were kept damp.

Which of the following correctly describes the observation of the limewater in each of the test tube?

	Test tube A	Test tube B	Test tube C
(A)	Limewater remained clear.	Limewater turned chalky.	Limewater turned chalky.
(B)	Limewater turned chalky.	Limewater remained clear.	Limewater remained clear.
(C)	Limewater turned chalky.	Limewater turned chalky.	Limewater remained clear.
(D)	Limewater remained clear.	Limewater remained clear.	Limewater turned chalky.



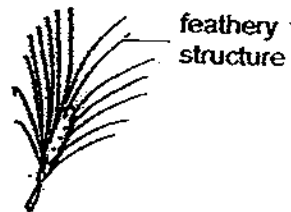
- 10 The diagram below shows the cross-section of a flower.



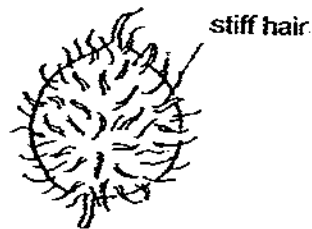
In which part of the flower will the male and the female cells fuse?

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

- 11 The diagrams below show the fruits of two species of plants.



Species 1

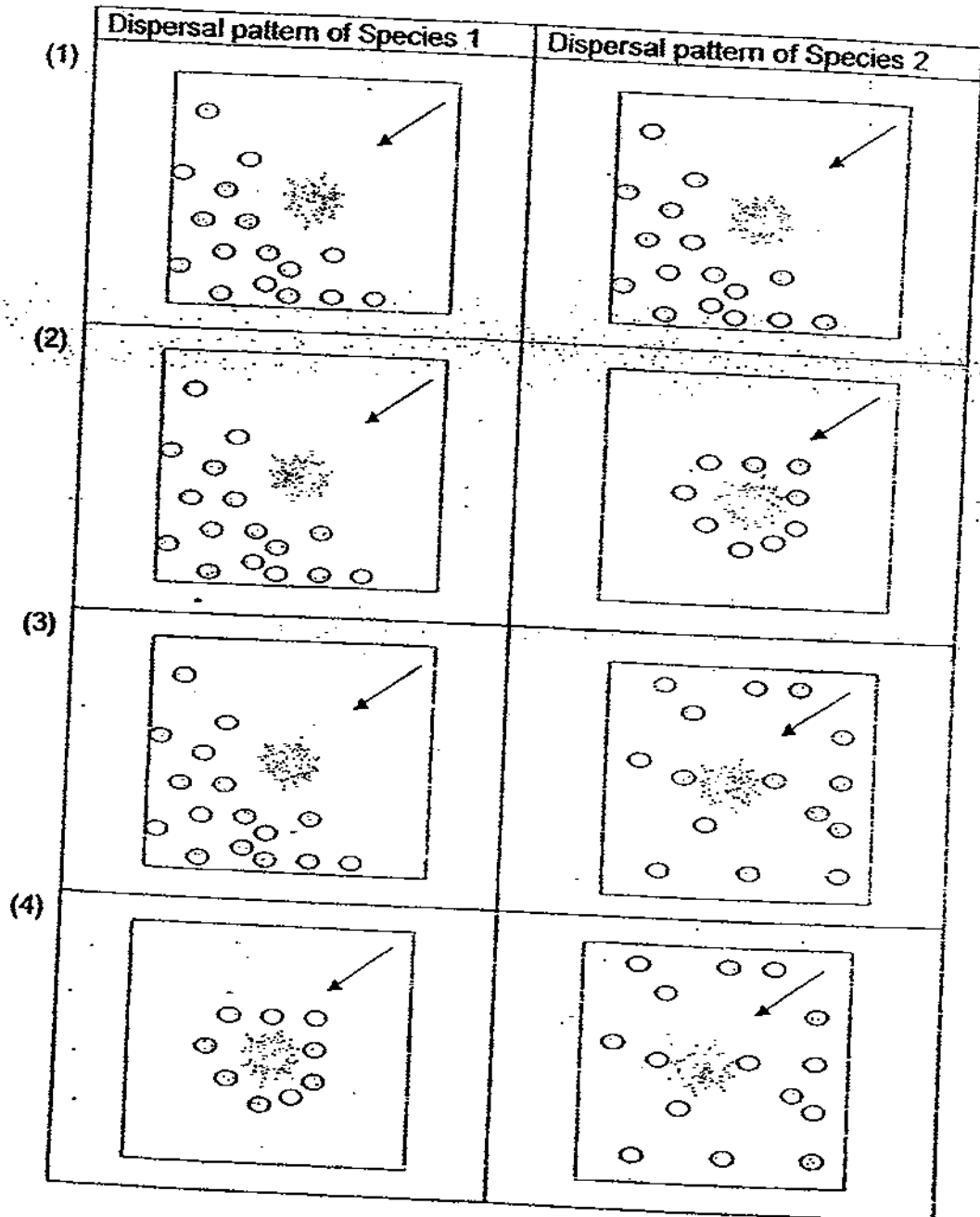


Species 2

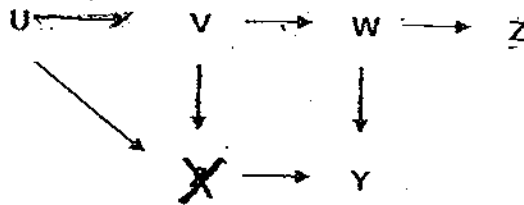
Legend:

	Represents the parent plant
	Represents the seedlings
	Represents the direction of wind

Which of the following shows the correct dispersal pattern of Species 1 and 2 respectively?



- 12 How many food chains are there in the food web shown below?



- (1) 3  
(2) 4  
(3) 5  
(4) 6

- 13 The three pots shown below are packed with soil particles of different sizes.



Soil A



Soil B

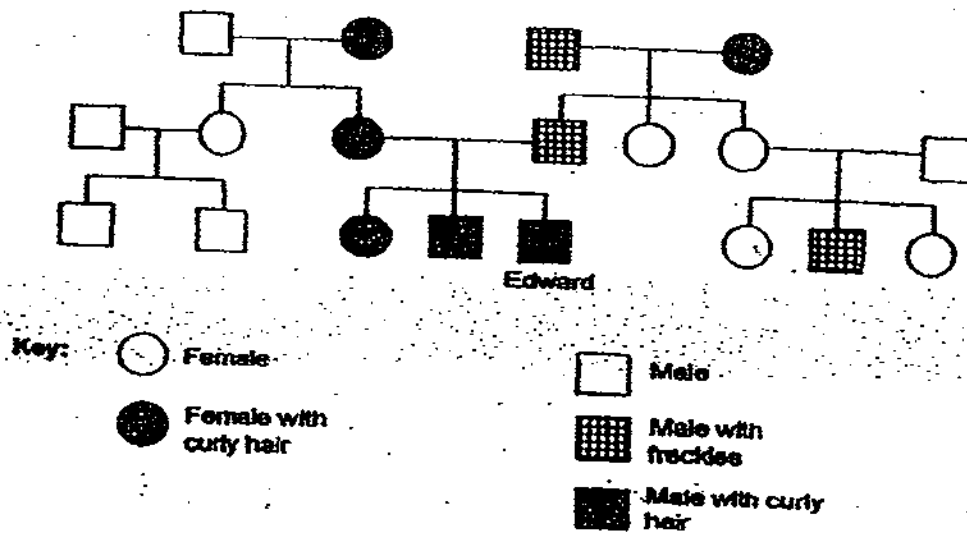


Soil C

Which one of the following correctly matches the type of soil to the type of plants grown?

	A	B	C
(1)	Rose	Mangrove	Cactus
(2)	Mangrove	Rose	Cactus
(3)	Cactus	Rose	Mangrove
(4)	Cactus	Mangrove	Rose

- 14 The diagram below shows Edward's family tree.



Based on the information provided, which of the following statements are true?

- A There are 8 off springs in the 3<sup>rd</sup> generation.
- B Edward's sister will definitely bear a daughter with curly hair.
- C Edward's mother inherited the genes for curly hair from her maternal grandfather.
- D The genes that causes freckles will only affect the male members of the family.

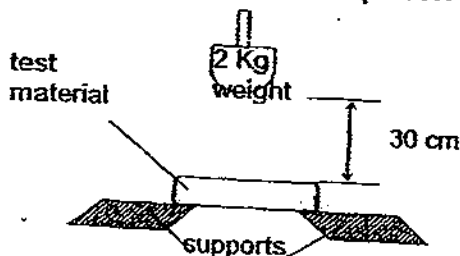
- (1) A and C only
- (2) A and D only
- (3) B and D only
- (4) A, B and C only

- 15 Susan wanted to find out which insecticide W, X, Y or Z was more effective in getting rid of ants. She introduced 20 ants into each of the four tanks. She then placed 20ml of insecticide W, X, Y and Z into Tank 1, 2, 3 and 4 respectively. She counted the number of ants left in each tank after 10 minutes and recorded the data in the table below.

Type of insecticide	Number of ants left in the tank
W	15
X	3
Y	19
Z	10

Which type of insecticide was the most effective?

- (1) W  
(2) X  
(3) Y  
(4) Z
- 16 Lily tested the strength of 5 materials by dropping a 2 kg weight from a height of 30 cm. She ensured that the materials had the same size and shape. She noted the number of times the weight was dropped before the materials broke into two pieces.



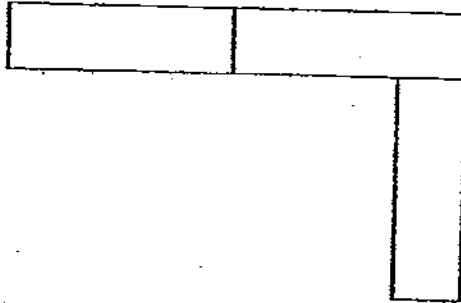
Her results were shown below.

Material	Number of hits
P	48
Q	37
R	64
S	23
T	51

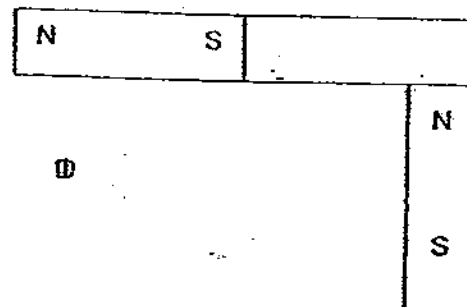
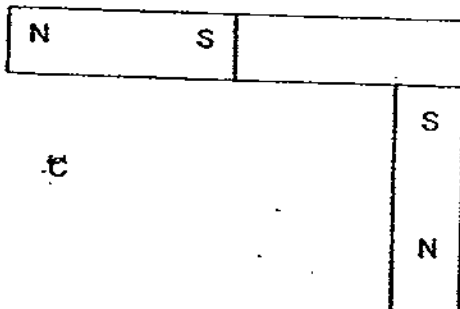
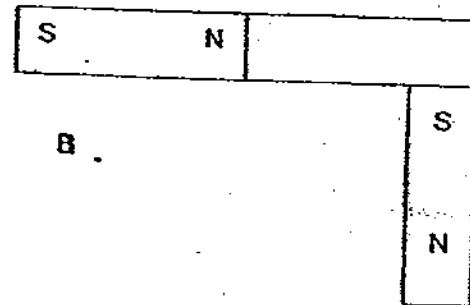
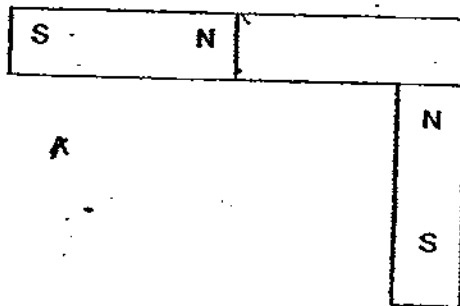
Based on the results in the table, which one of the following describes the materials correctly?

- (1) Material T is a metal.  
(2) Material P is stronger than Material R.  
(3) Material T is hard enough to scratch material Q.  
(4) Material S is the first one to break if a 3 kg weight is used to repeat the experiment.

- 17 Three magnets are joined together as shown in the picture below.



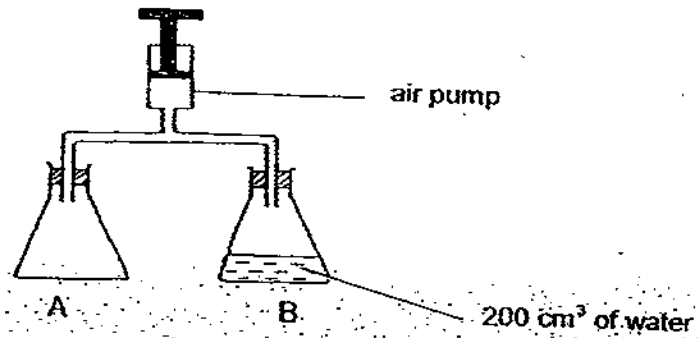
Which of the following pictures show the correct arrangement of their poles?



- (1) A and C only  
(3) A and D only

- (2) B and C only  
(4) B and D only

- 18 Two  $500\text{cm}^3$  conical flasks A and B are joined to an air pump as shown in the diagram below.

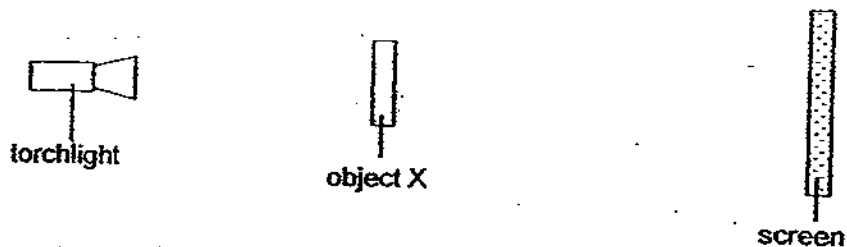


The handle of the air pump is pushed down twice, pushing in  $100\text{cm}^3$  of air with each pumping action.

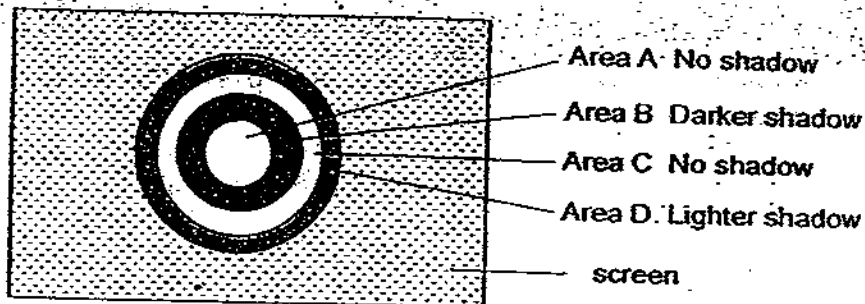
What is the final volume of air in each flask at the end of the experiment?

	Flask A / $\text{cm}^3$	Flask B / $\text{cm}^3$
(1)	200	200
(2)	600	400
(3)	500	300
(4)	700	500

- 19 A setup to find out more about shadows is shown in the diagram below. The object X is made of different materials.



The shadow below is made by object X.



Which of the following correctly describes the different areas of object X?

A	B	C	D
no material	wood	glass	frosted glass
no material	wood	frosted glass	glass
glass	wood	frosted glass	tracing paper
glass	iron	wood	frosted glass



- 20 Linda carried out a scratch test on 3 types of material, A, B and C of the same shape and size. She used the materials to scratch one another using the same amount of force. A new surface of the material is used for every new test.

The table below shows the results of the scratch test. The ticks ( / ) corresponds to the number of scratches on the materials.

A	/ /
B	

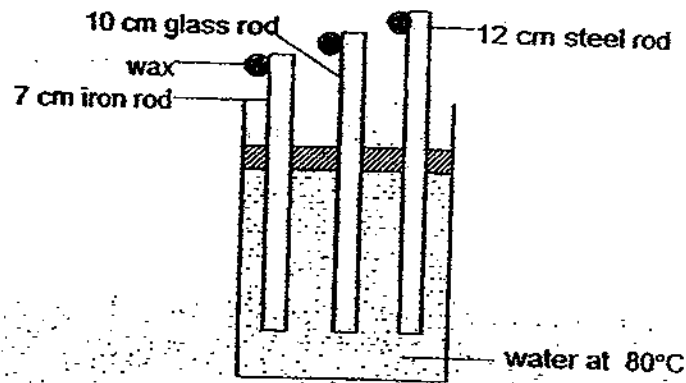
A	
C	/ / /

B	
C	/ /

Which of the followings shows the correct arrangement of the materials according to their strength from the hardest to the softest?

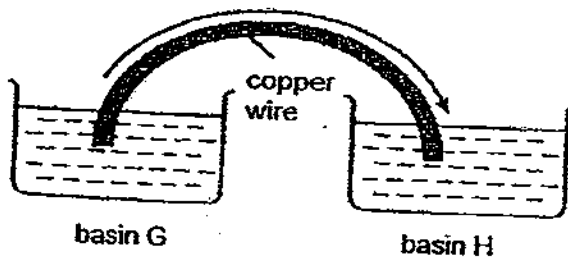
- (1) A, B, C
- (2) A, C, B
- (3) B, A, C
- (4) C, A, B

- 21 Tom sets up an experiment to find out how the length of a rod affects the melting of wax as shown below.



Why is this experiment not a fair test?

- (1) The length of the rods is different.
  - (2) The position of the wax is different.
  - (3) The position of the rods is different.
  - (4) The material of the rods is different.
- 22 The diagram below shows a copper wire that has been placed into 2 basins of water.



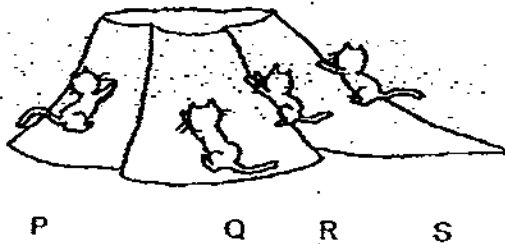
The arrow indicates how heat travels through the copper wire.  
What conclusion can you draw from the information given?

- (1) Heat is a form of energy.
- (2) Water has a fixed volume but no fixed shape.
- (3) The copper wire is a good conductor of heat and electricity.
- (4) The water in basin G has a higher temperature than water in basin H.

- 23 Which of the follow applications is not a major function of the satellites in the sky at the moment?

- (1) Telecommunication
- (2) Weather forecast
- (3) Taking photographs of things on earth
- (4) Generating solar power for use on earth

- 24 Four kittens, P, Q, R and S are climbing up a hill as shown below.



Which of the following statements are true?

- A S needs the greatest effort to reach the top of the hill.
  - B S needs to move over the longest distance to reach the top of the hill.
  - C More effort is needed to reach the top of the hill if the slope is steeper.
  - D All of them need the same amount of effort to reach the top of the hill.
- 
- (1) A and B only
  - (2) A and D only
  - (3) B and C only
  - (4) A, B and C only

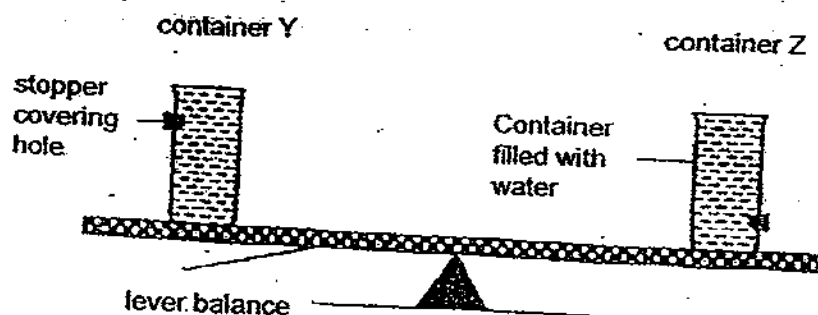
- 25 The table below shows some properties of X and Y.

Property	X	Y
Is it hard?	Yes	No
Is it magnetic?	Yes	No
Does it sink in water?	Yes	No
Is it an electric conductor?	Yes	No

Which of the following can X and Y be?

X	Y
Iron nail	Plastic ball
Ceramic tile	Cardboard
Silver ring	Paper file
Steel spoon	Nickel penny

- 26 Susan balanced 2 containers of water on a lever balance. The containers were of the same volume but each had a similar hole positioned at different parts of the container. The holes were covered by stoppers. She filled the 2 containers completely with water.



She then removed the stoppers and observed that the water flowed out. This resulted in an imbalance in the lever balance when the water stopped flowing. How would she be able to rebalance the lever?

- A Move the fulcrum towards Container Y
- B Move the fulcrum towards Container Z
- C Move Container Y away from the fulcrum
- D Move Container Z away from the fulcrum

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

- 27 Producing electricity using solar panels are more environmentally friendly than using oil fuel generators. Which of the following are possible reasons?

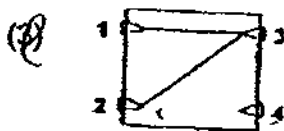
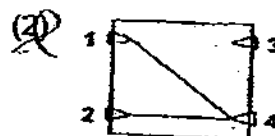
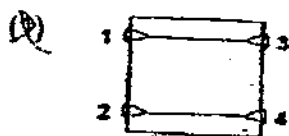
- A Does not pollute the air
- B Produce little or no noise
- C Trap sunlight to produce oxygen
- D Are made from renewable resources

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

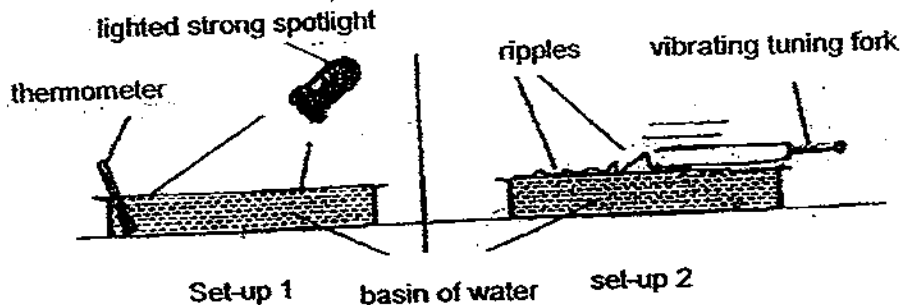
- 28 A circuit card is tested with a circuit tester. The results are recorded as follow.

Clips tested	Bulb of circuit tester
1 and 3	Lights up
1 and 4	Does not light up
2 and 3	Lights up
2 and 4	Does not light up
3 and 4	Does not light up

Which diagram represents the circuit card that was tested?



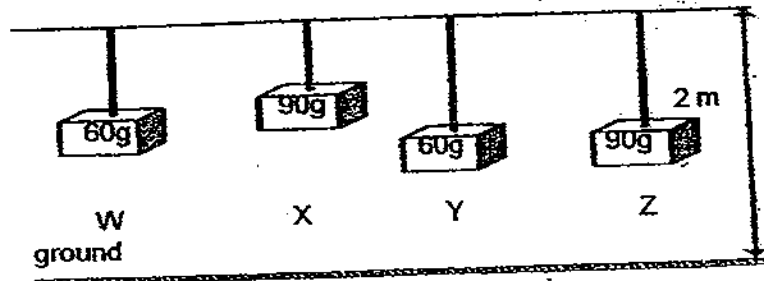
- 29 Jimmy set up an experiment as shown below.



Which one of the following statements best describes the aim of Jimmy's experiment?

- (1) To find out if energy causes changes in matter.
- (2) To compare the amount of energy in set-ups 1 and 2.
- (3) To prove that there is more energy in set-up 1 than 2.
- (4) To show that there is no energy transfer in set-up 1 but there is energy transfer in set-up 2. ☒

- 30 The diagram shows 4 objects which are hung from the ceiling.



Which of the following statements is/are true?

- A Object X has more gravitational potential energy than Object Z.
- B Object Z has more gravitational potential energy than Object Y.
- C Object W and Object Y have the same amount of gravitational potential energy.
- D When the strings are cut all the gravitational potential energy of the objects will change to kinetic energy.

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

- End of Section A -



**CATHOLIC HIGH SCHOOL  
PRIMARY 6  
PRELIMINARY EXAMINATION 3  
2009**

**SCIENCE  
EM 1 / EM 2**

Name: \_\_\_\_\_ ( )

Class : Primary 6 \_\_\_\_\_

Date : 28 August 2009

**BOOKLET B**

16 Questions  
40 Marks

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

**Instructions to Candidates**

Follow all instructions carefully.  
Answer all questions.

Parent's Signature: \_\_\_\_\_

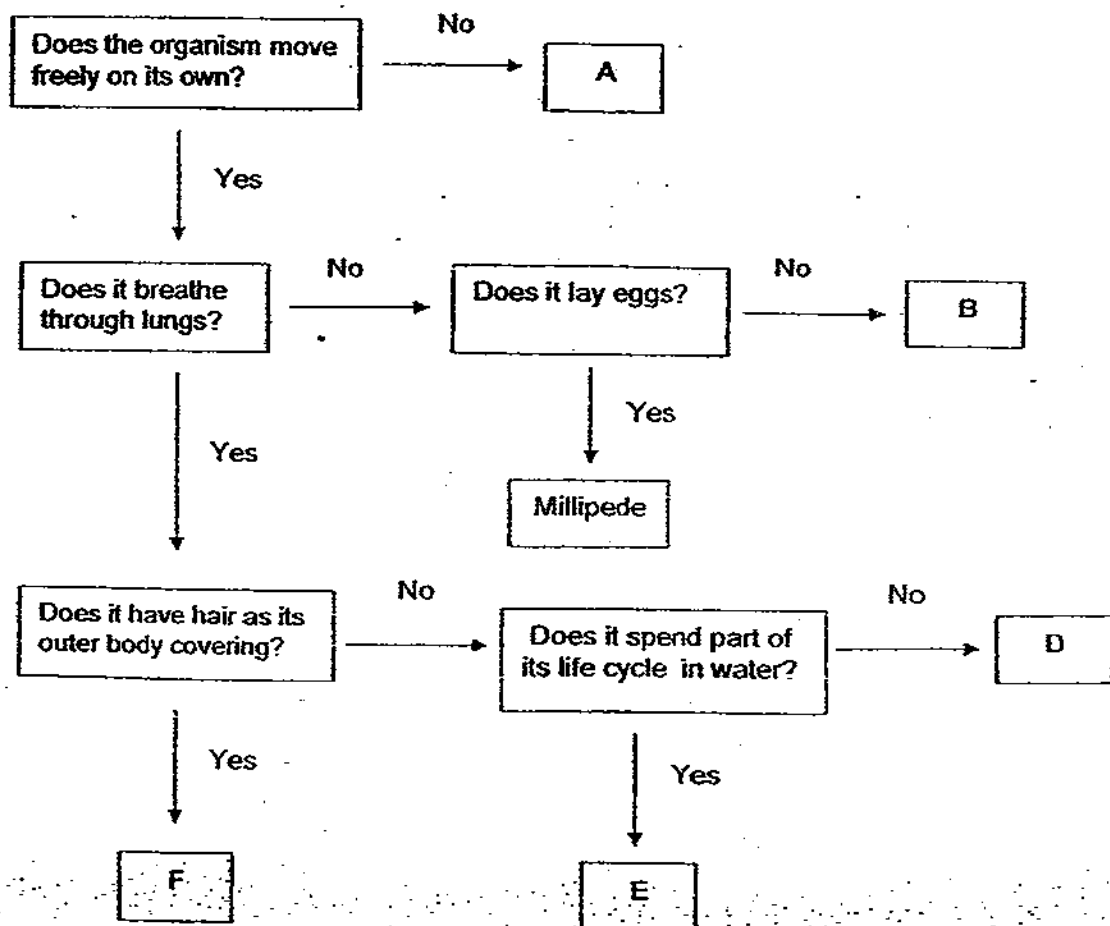
Date: \_\_\_\_\_

Score	
Section A	60
Section B	40
Total	100

**Section B (40 marks)**

For questions 31 to 46, write your answers in this booklet. The number of marks available is shown in brackets [ ] at the end of each question or part of question.

31 Using information from the flowchart, answer the questions below.





- (a) Based on the information from the flowchart above, which group(s) of living things can organism A be classified under? [1]

\_\_\_\_\_

- (b) What would be the most likely body covering of organisms D and E? [2]

Organism D

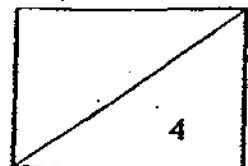
\_\_\_\_\_

Organism E

\_\_\_\_\_

- (c) Suggest a behaviour of the millipede that prevents itself from being seen by its ~~prey~~ *predator*. [1]

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



32 Study the habitat below.



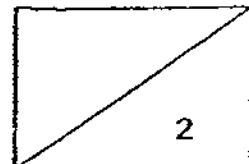
- (a) Microorganism X is found in the above habitat. What physical characteristics of the environment enable organism X to survive in the above habitat? [1]

---

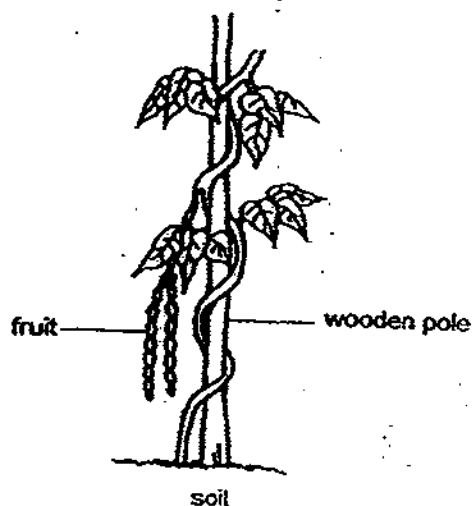
- (b) Is microorganism X found in the above habitat harmful to man? Explain your answer. [1]

---

---



- 33 The diagram below shows a flowering plant with a soft, weak stem.



- (a) Explain how the plant has adapted to make food. [1]

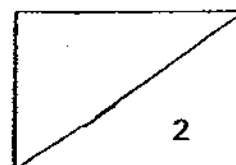
---

---

- (b) If the plant shown above is planted in a desert, explain how it should adapt to survive. [1]

---

---



- 34 Muthu sets up an experiment in which he places five pots containing 10 similar plants each, under different coloured lights of the same intensity, for a month. In each pot of plant, the same amount and type of soil were used and the plants were also given the same amount of water daily. He recorded the masses of the plants in each pot at the beginning and at the end of the experiment in the table shown below.

Pot	Colour of light	Mass of 10 plants at the beginning of the experiment / g	Mass of 10 plants at the end of the experiment / g
A	Red	0.8	4.6
B	Blue	0.7	4.7
C	Green	0.8	1.1
D	Violet	0.9	0.3
E	Yellow	0.7	3.1

- (a) What was the aim of the experiment?

[1]

---



---

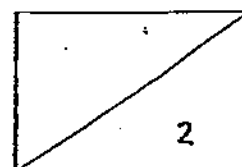
- (b) What conclusion can he draw from the results recorded in the table given above?

[1]

---



---



- 35 A zoologist conducted an investigation to study the behaviour of a species of desert squirrel for a month. This species of squirrel lives in a burrow and comes out of it several times throughout the day to look for food. The ecologist recorded his observations in the table below.

Average number of appearances in a 24 hour period	Time of the day	
	Day	Night
	3	10

The zoologist also made an interesting observation. He noticed that this species of squirrel flipped its tail upwards to cover the top of its head and body when it appears in the day. The tail remains behind its hind legs when it appears in the night.



In the day



In the night

How does the observation in the diagram above help to explain the data that the zoologist has collected?

[2]

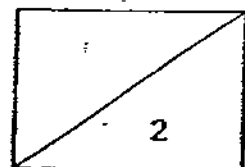
---



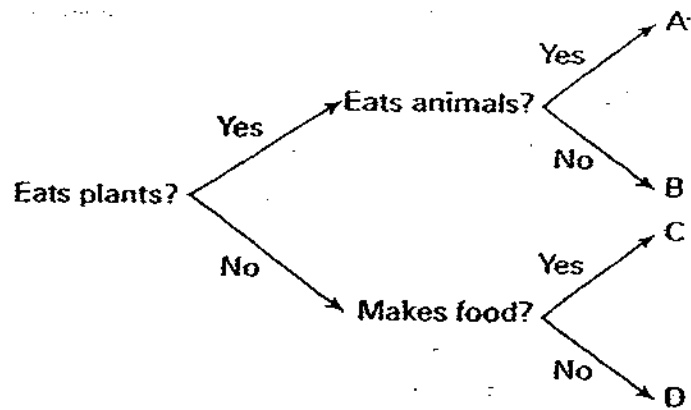
---



---

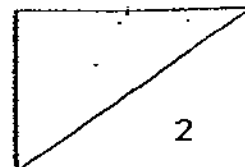
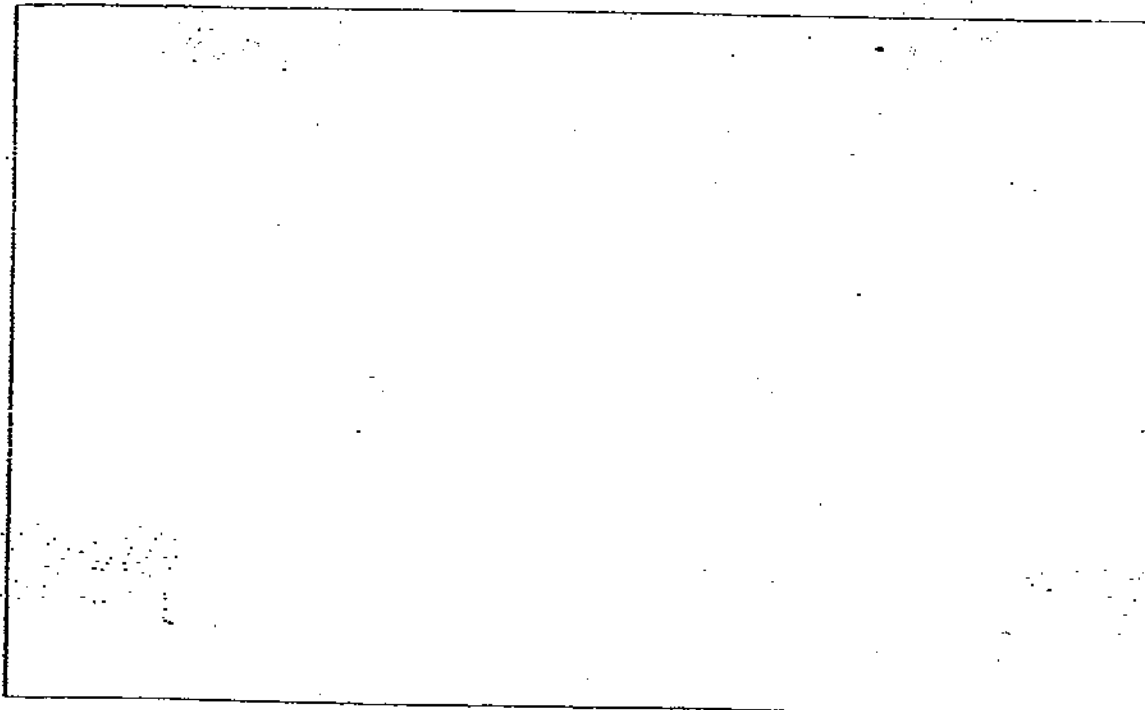


- 36 A, B, C and D are four living things in an ecosystem.  
The following are information about these living things.

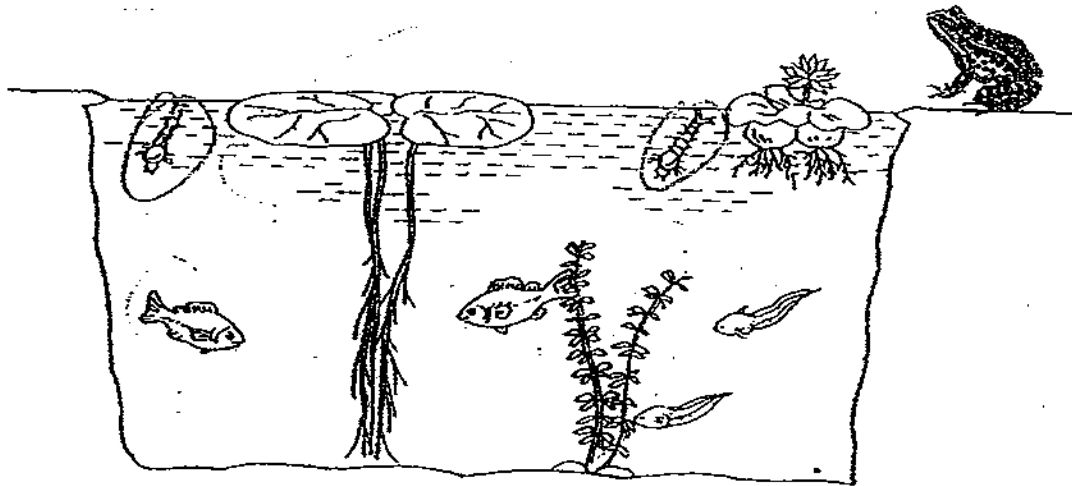


In the box below construct a food web using A, B, C and D

[2]



- 37 The diagram below shows some organisms present in a pond habitat.



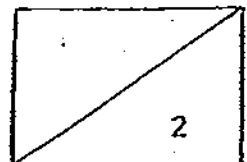
- (a) How many populations of organisms are present in the pond habitat? [½]

---

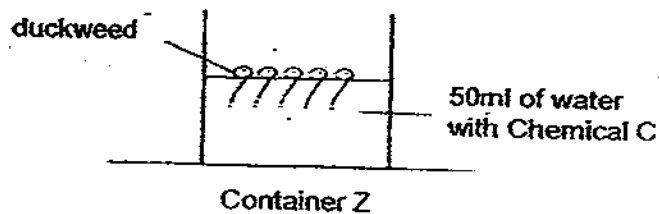
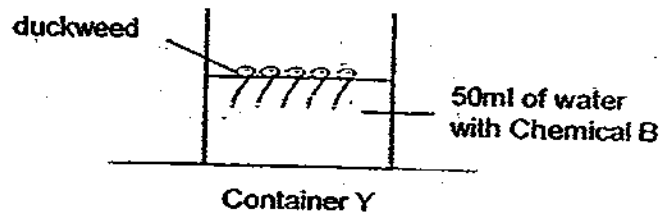
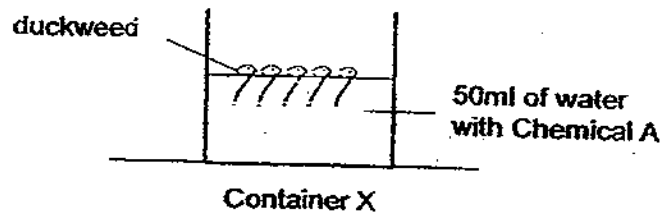
- (b) A few weeks later, a landslide occurred near the pond. The runoffs ended up in the pond water. Tiffany observed that there were many suspended particles in the pond water. Explain how it would affect the organisms found in the pond. [1½]

---

---



- 38 A group of pupils set up an experiment as shown below. In containers X, Y and Z, they added 5 drops of Chemicals A, B and C respectively. Then, they left the containers near a window.

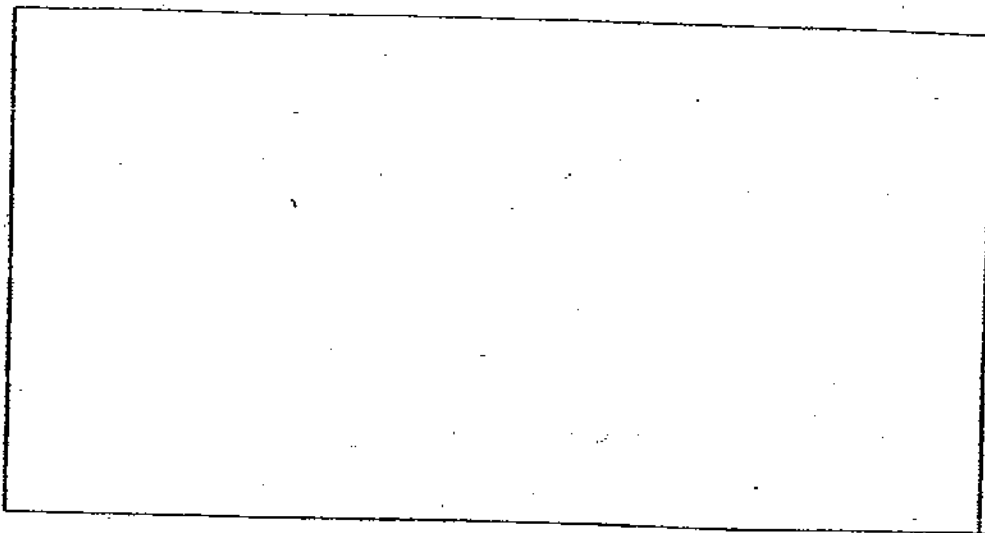


They counted the number of duckweeds that remained alive at the end of each day for a week. The data collected is shown in the table below.

	Number of duckweeds alive at the end of						
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Container X	30	22	16	10	7	5	1
Container Y	30	20	15	9	2	0	0
Container Z	30	18	9	3	0	0	0



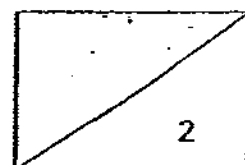
- (a) In the space provided below, draw a control set up of the experiment. [1]



- (b) Based on the data provided, what can the group of pupils conclude from the experiment? [1]



---

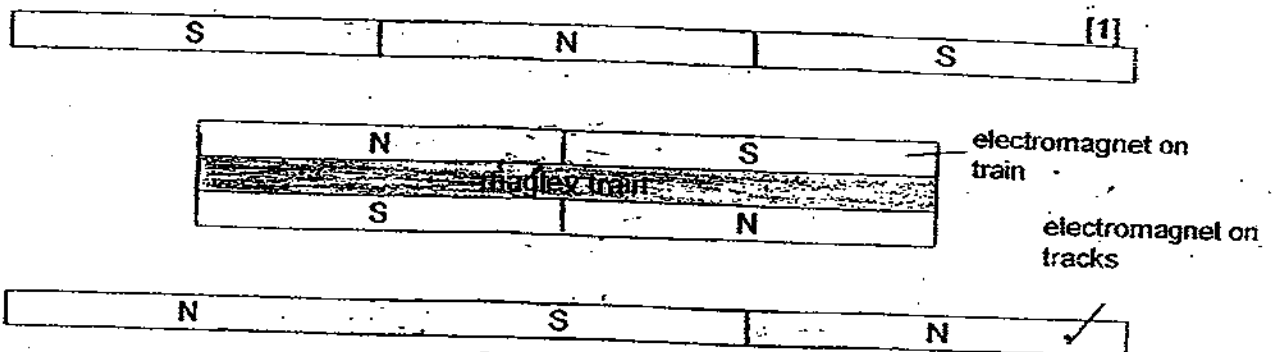
---



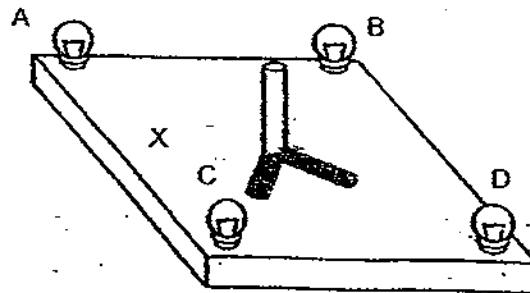
- 39 Maglev trains operate without wheels. They float above the tracks due to magnetic repulsion between electromagnets in the tracks and the underside of the train.

On the diagrammatic representation of the maglev train below

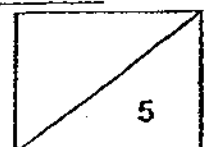
- (a) Draw the magnetic forces involved using  to indicate forces of repulsion and  to indicate forces of attraction. [2]
- (b) Indicate with an arrow the direction in which the train will move. [1]



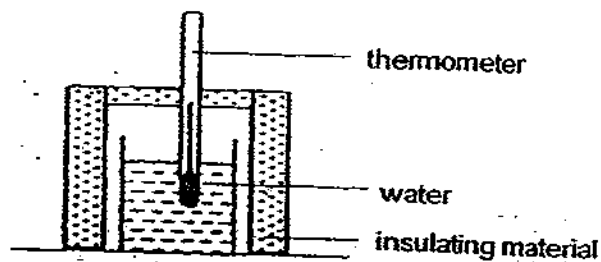
- 40 A stick is placed in the middle of a square board. 4 light bulbs A, B, C and D are at each corner of the square board.



- (a) A torch is shone onto the stick at position X. Draw the shadow that is formed in the diagram above. [1]
- (b) Which of the bulbs have to be switched on to form shadows of the stick as shown in the diagram above? [1]



- 41 Michael set up the apparatus below using different materials of equal thickness in 3 set-ups A, B and C.



He measured and recorded the temperature of water in each beaker at regular intervals. He repeated the experiment three times and the average results of the experiment are shown below.

Time / min	Temperature of water / °C		
	Set-up A	Set-up B	Set-up C
0	100	100	100
5	62	89	54
10	42	76	41
15	33	73	36
20	27	70	31

- (a) Give a reason why the experiment was repeated.

[1]

---



---

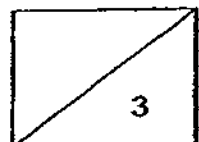
- (b) Which set-up has the material that is the poorest conductor of heat? Explain.

[2]

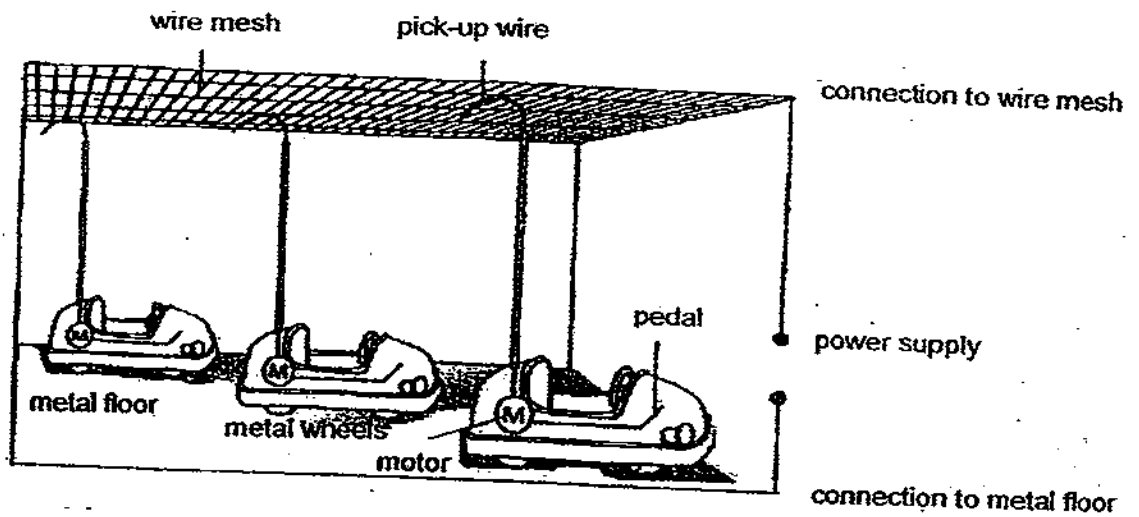
---



---



- 42 The diagram below shows the bumper cars ride at an amusement park.



- (a) Explain how the bumper cars can move when the power supply is switched on and the pedal is depressed.

[2]

---



---



---

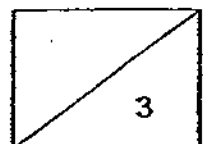
- (b) Suggest a reason for having a pedal in the above set-up.

[1]

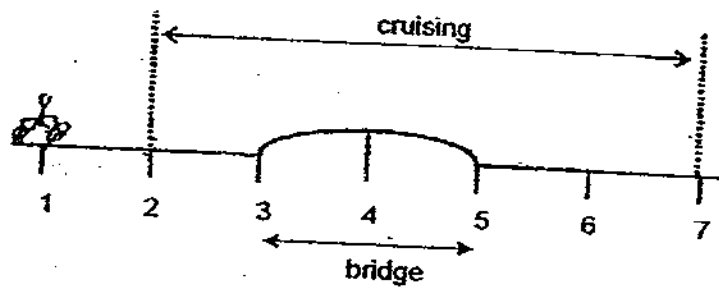
---



---

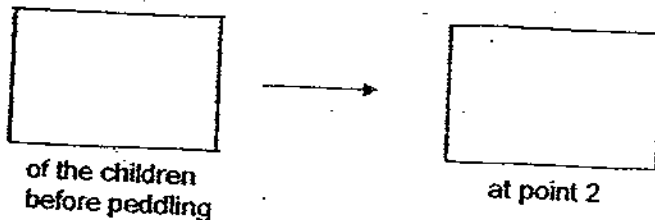


- 43 Jane and her friends had a bicycle riding competition. They peddled as fast as they could from point 1 to point 2 and then they stopped and lifted their feet from the pedal and cruised to point 7. A diagrammatic representation of the path they had taken is shown below.



- (a) At which point did the bicycles travel the fastest? [1]

- (b) Show the energy conversion using the boxes below. [1]

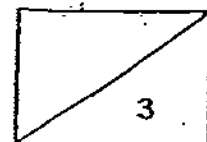


- (c) Suggest a reason why does the Singapore government encourage people to ride a bicycle to the MRT station then take a train to work? [1]

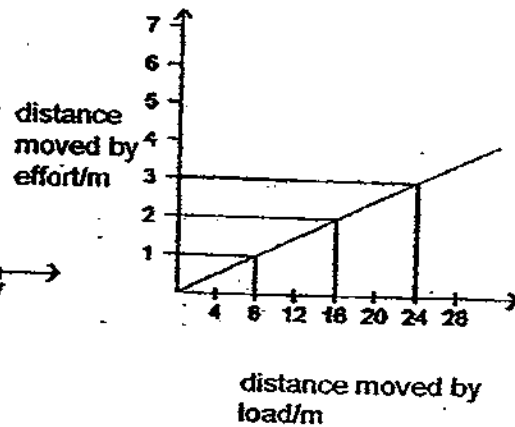
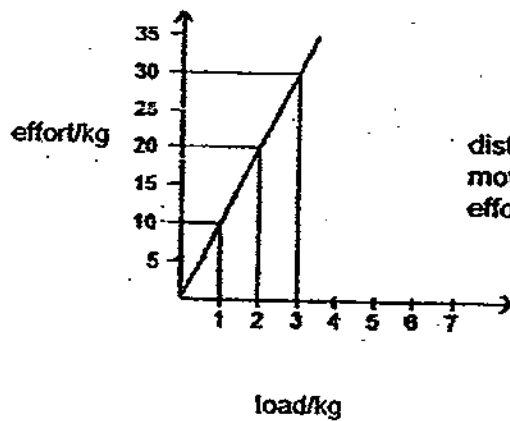
---



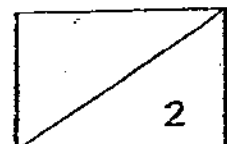
---



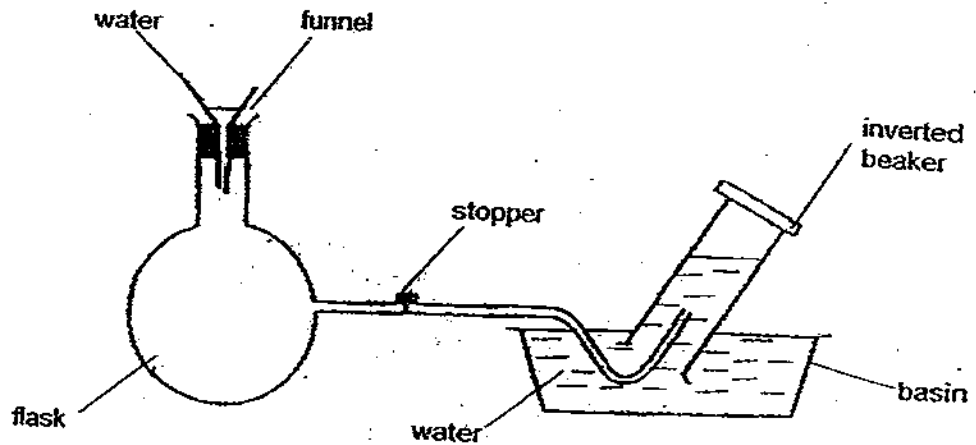
- 44 A machine is used to raise different loads. The minimum effort required to raise the load in each case is then determined. The distances moved by the effort and the load are also measured. The results are shown in the graphs below. Put a tick ( / ) in the appropriate column against each of the statements below. [2]



	True	False	Not possible to tell
(a) When the load increases the effort also increases.			
(b) When the distance moved by the effort increases, the distance moved by the load decreases.			
(c) The effort used is $1/8$ of the load.			
(d) The simple machine used in the experiment is a wheel and axle.			



- 45 Michael conducted the following experiment. He poured water into the funnel and it did not flow into the flask.



- (a) Why did the water in the funnel not flow into the flask? [1]

---

- (b) State one observation that can be made when the stopper is removed. [1]

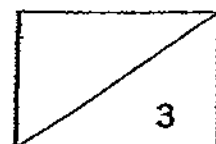
---

- (c) Is the experiment above sufficient for us to conclude that air is matter? Explain your answer. [1]

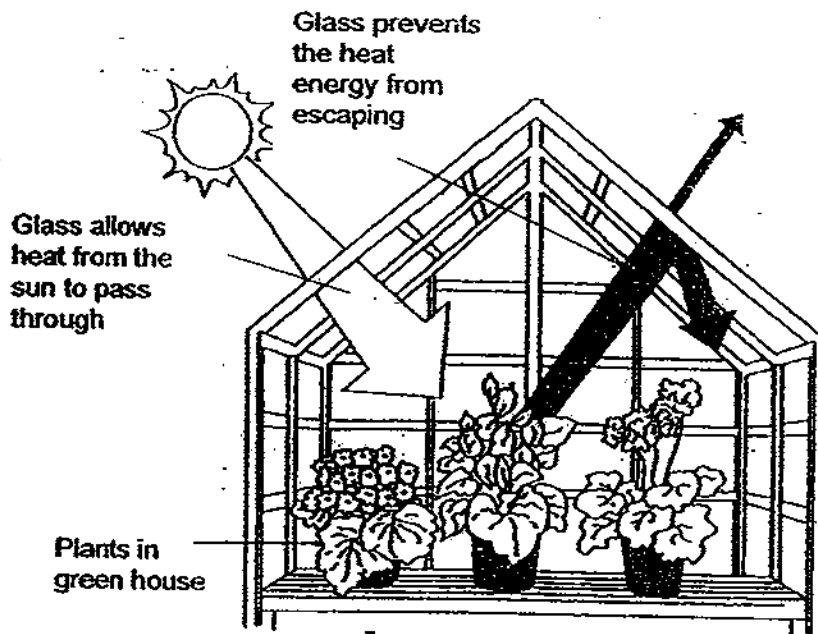
---



---



- 46 Study the picture of a green house in winter below carefully.



- (a) Why are the flowers able to bloom in the green house even though it is winter? [1]

---

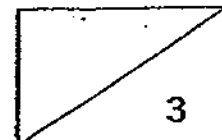
---

- (b) Gases emitted by car exhausts are known as green house gases. Why is it important for the government to encourage the citizens to use public transports? [2]

---

---

- End of Paper -





# Answer Ke

## EXAM PAPER 2009

**SCHOOL : CATHOLIC HIGH PRIMARY**  
**SUBJECT : PRIMARY 6 SCIENCE**

**TERM : SA2 (3)**

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

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

**31)a)Plants and fungi.**

**b)D: Feathers E: Scales.**

**c)It hides in the dark.**

**32)a)Damp, warm, dark**

**b)Yes, it is. X can spread diseases to man.**

**33)a)They go up the wooden pole to get sunlight.**

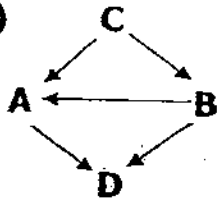
**b)The plant has small and waxy leaves and long roots.**

**34)a)If the colour of plant would affect the growth of the 10 plants at the end of the experiment.**

**b)Blue coloured light is the best.**

**35)The squirrel only appears 3 times during the day as the weather is hot and it flipped its tail upwards to shelter its head and body from the sun's heat. At night the tail remains behind its legs as there is no sun, It is cooler so it appears more often (10 times).**

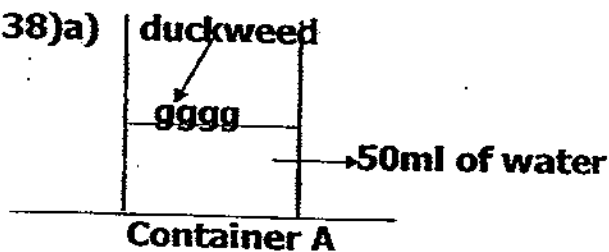
36)



37)a)6

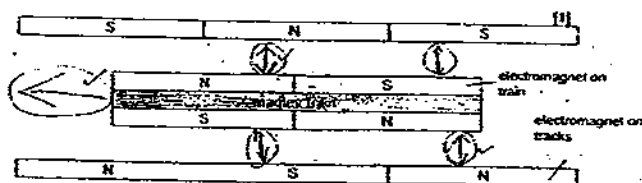
b)The water might become polluted and the aquatic animals such as the tadpoles and fishes would die as they could not get dissolved oxygen. Sunlight could not reach the aquatic plants, so they could not make food and would die too.

38)a)

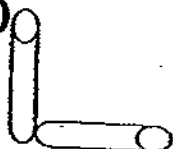


b)Chemical A is the least harmful to duckweeds.  
Chemical B is more harmful than Chemical A.  
Chemical C is the most harmful.

39)a,b)



40)a)



b)A and B

41)a)It was to check its reliability.

b)B. The water takes the longest time to lose its heat.

**42)a)There is electricity. Electrical energy is changed to kinetic energy of the bumper cars.**

**b)The pedal helps to control the direction of movement of the bumper car.**

**43)a)2**

**b)Chemical potential energy→kinetic energy .**

**c)It is to reduce air pollution.**

**44)a)T**

**b)F**

**c)F**

**d)Not**

**45)a)The flask contains air and air occupies space so it blocked the water in the funnel from flowing into the flask.**

**b)Water in the funnel will flow into the flask.**

**c)No, it is not. The experiment above only shows that air occupies space but it does not show that air has mass.**

**46)a)The temperature of the surrounding is lower. In the green house, temperature is higher because glass prevents heat from the sun from escaping.**

**b)Using public transport will reduce the emission of greenhouse gases which prevent heat energy from the sun from escaping, so there would not be effects of global warming.**