Index Number: | | | | | | |

CHIJ ST. NICHOLAS GIRLS' SCHOOL

SIMPLE IN VIRTUE

STEADFAST IN DUTY

慈 纯 义 学

PRELIMINARY EXAMINATION

2011

P6 SCIENCE

(BOOKLET A)

25 August 2011

NAME : _____ ( )

CLASS : Primary 6_____

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

30 questions
60 marks

INSTRUCTIONS TO CANDIDATES

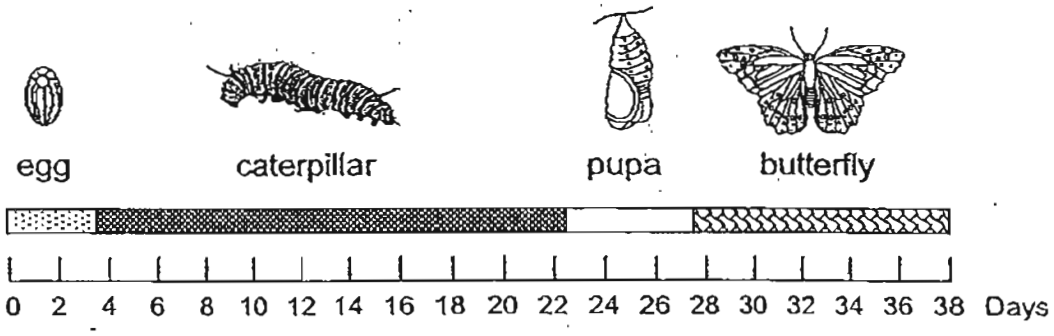
- Do not open this booklet until you are told to do so.
- Follow all instructions carefully.
- Answer all questions.

This booklet consists of 22 printed pages.

Section A (30 x 2 = 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. The following graph shows the length of time taken for the four stages in the life cycle of a butterfly.



How many days are there in the larval stage?

(1) 4
(2) 11
(3) 19
(4) 23

2. It is observed that fishes living near the bottom in clear water tend to be dark-coloured while those living in murky water usually have silvery skin.

The table below shows the types of fish that are most likely to be caught by fishermen from village Y when they go out to fish.

Type of fish caught	Type of weather		Type of water	
	Hot	Cold	Clear	Murky
Cod	√		√	
Tuna	√			√
Salmon		√		√
Leatherjacket		√	√	

Which silver-skinned fish is most likely to be caught during summer?

(1) Cod
(2) Tuna
(3) Salmon
(4) Leatherjacket

3. Jack and Jill were asked to classify the following fruits into two groups.

rambutan	mango	brinjal	kiwi fruit

They grouped the fruits as shown below:

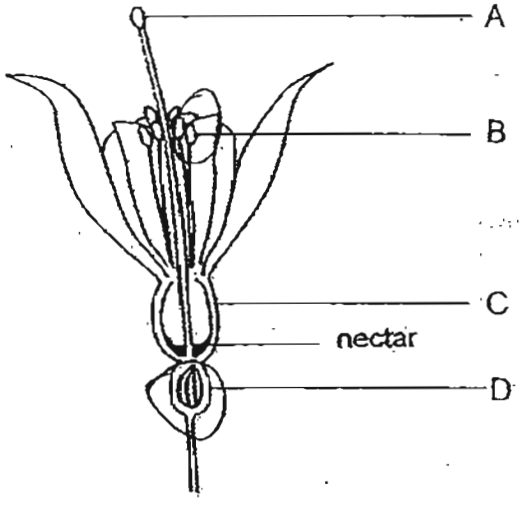
Jack	
Group A	**Group B**
mango	kiwi fruit
rambutan	brinjal

Jill	
Group A	**Group B**
kiwi fruit	brinjal
rambutan	mango

How did Jack and Jill group the fruits?

	Jack	Jill
(1)	By the number of the seeds	By the outer covering
(2)	By the number of the seeds	By the colour of the fruit
(3)	By the outer covering	By the size of the fruit
(4)	By the outer covering	By the number of the seeds

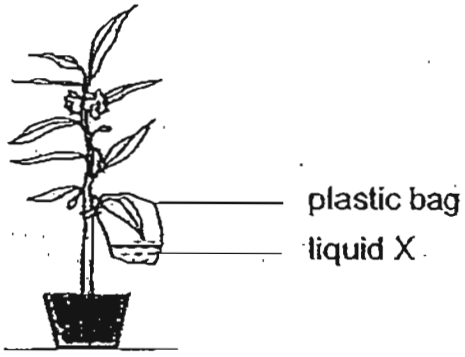
4. The diagram below shows the cross-section of a flower.



In which parts of the flower are pollen grains and the ovules produced?

	Pollen Grains	Ovules
(1)	A	C
(2)	A	D
(3)	B	C
(4)	B	D

5. The diagram below shows a potted balsam plant in the open. One of the leav is placed in a plastic bag containing liquid X.



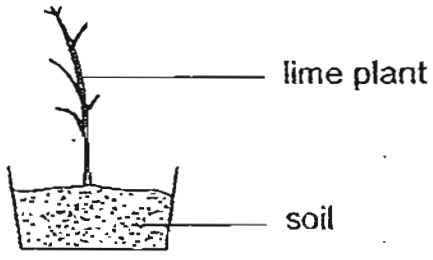
The table below shows the changes in the colour of liquid X with differ amount of carbon dioxide.

Colour	Amount of carbon dioxide
purple	less than the amount present in the air
red	same as the amount in the air
yellow	more than the amount in the air

What is the colour of liquid X at noon and midnight respectively?

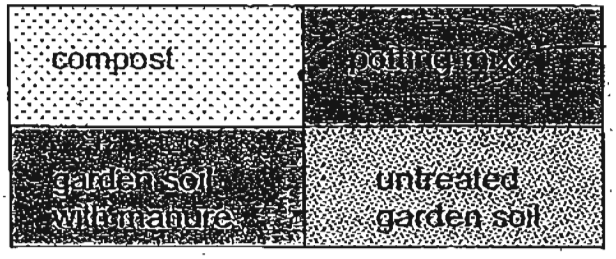
	Noon	Midnight
(1)	purple	yellow
(2)	yellow	purple
(3)	red	yellow
(4)	purple	red

6. Ling Ming decided to pluck off all the leaves on her lime plant as shown in the diagram below because it was full of pests. She continued to water the plant d What do you think will happen to her plant?



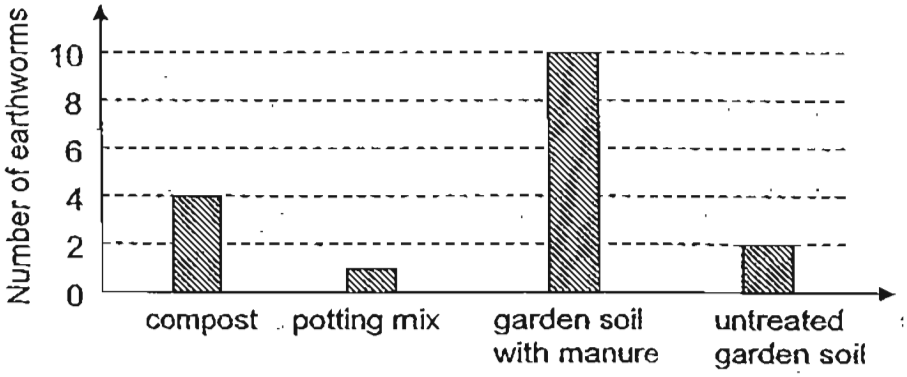
(1) The plant will die.
(2) The plant will produce new shoots.
(3) The plant will take in more food from the soil.
(4) The plant will not be able to absorb water and mineral salts.

7. Wang Dan carried out an investigation to find the preferred habitats of earthworms. He created four adjoining habitats as shown in the diagram below and placed five earthworms in each habitat.



The earthworms were free to move between the habitats. After four weeks, he counted the number of earthworms found in each habitat and noticed that some earthworms were missing.

The graph below shows the results of his investigation.



What can be concluded from his experiment?

(1) The potting mix killed the missing earthworms.
(2) Earthworms preferred to live in dark and damp habitats.
(3) Earthworms preferred to live in garden soil with manure to the other habitats.
(4) The missing earthworms' preferred habitat was not provided in the experiment.

8. Figure 1 shows the location of a parent plant before it disperses its fruits while Figure 2 shows the location of its seedlings a few months later.

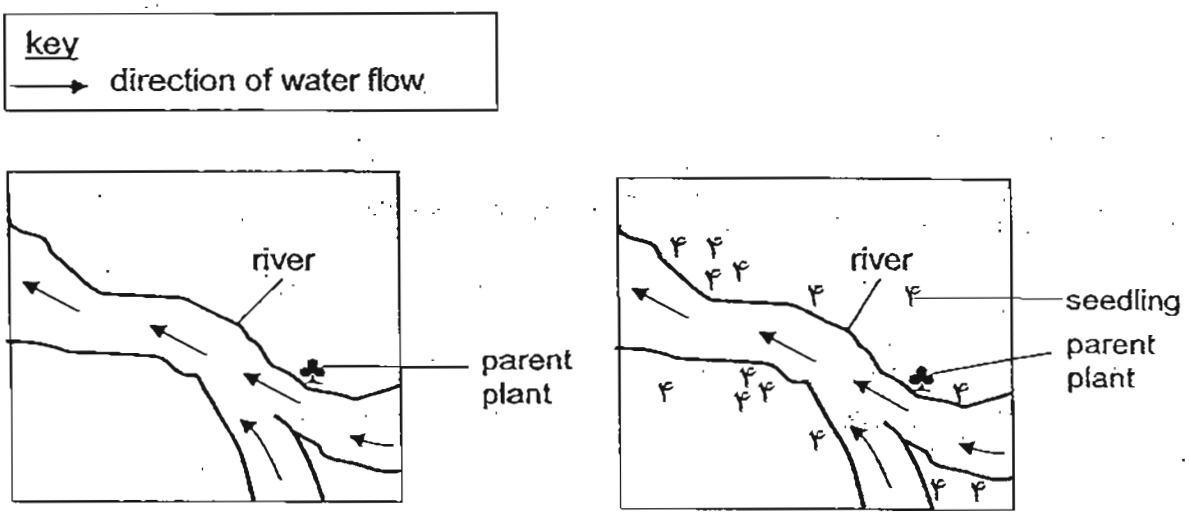
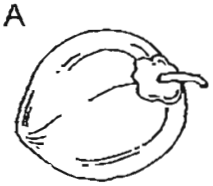


Figure 1 Figure 2

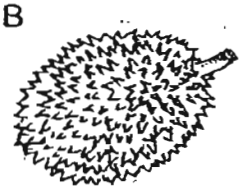
Which of the fruits below could **not** have been dispersed in the way as shown in the diagram?

A



coconut

B



durian

C

mangrove fruit

D

angsana

E

pong pong fruit

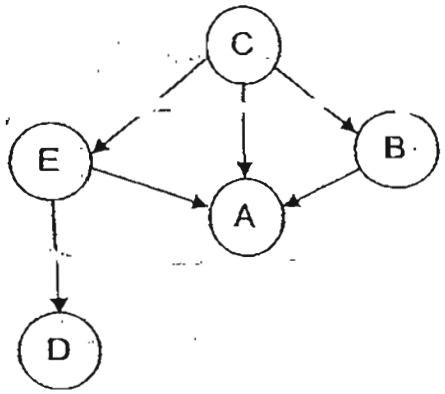
(1) A and E only
(2) B and D only
(3) C and D only
(4) A, C and E only

9. There are five organisms, A, B, C, D and E, in a food web.

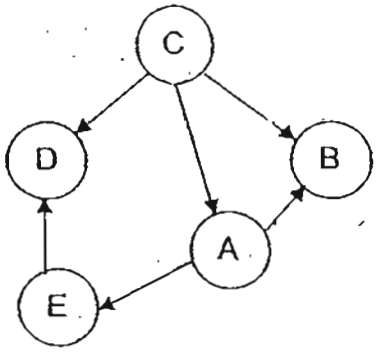
B and E are predators of A
C is the food producer
E is the prey of D
A is a herbivore
B is a carnivore

Which one of the following food webs represents correctly the relationship of the five organisms?

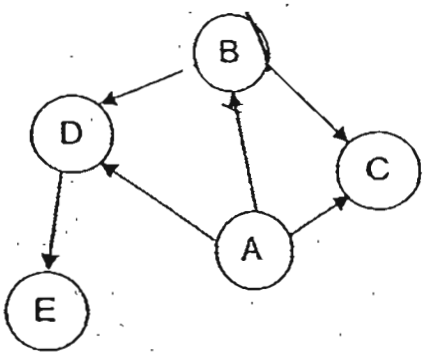
(1)



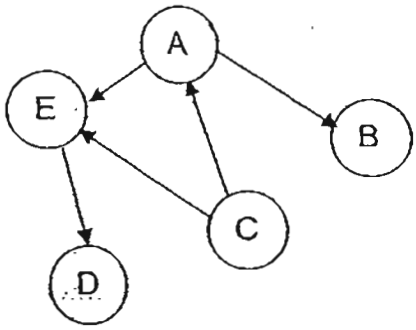
(2)



(3)



(4)



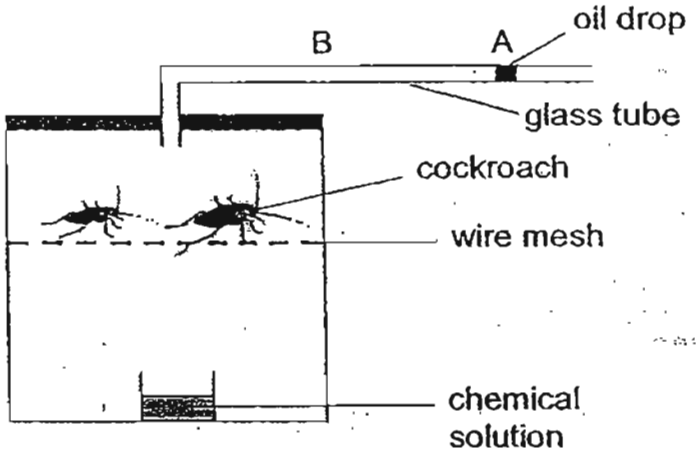
10. The table below shows the comparisons of the life cycles of two animals, X and Y.

Animal X	Animal Y
Internal fertilization	External fertilization
3-stage life cycle	3-stage life cycle
Young resembles adult	Young does not resemble adult

Which one of the following pairs of animals fits the descriptions for animals X and Y?

	Animal X	Animal Y
(1)	Goat	Frog
(2)	Dragonfly	Chicken
(3)	Cockroach	Housefly
(4)	Butterfly	Grasshopper

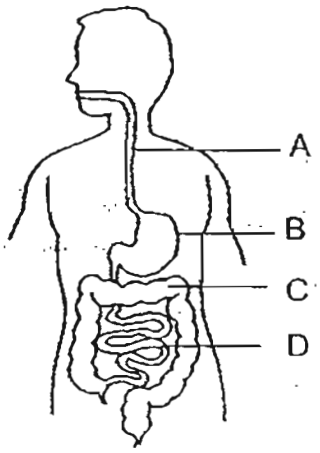
11. Raja set up an experiment as shown in the diagram below.
An oil drop was seen initially at Point A.



After 3 hours, he observed that the oil drop had moved to Point B.
Which one of the following is the correct explanation for his observation?

(1) The chemical solution released a gas that killed the cockroaches.
(2) The cockroaches gave out water vapour during respiration and the chemical solution evaporated.
(3) The cockroaches and the chemical solution took in carbon dioxide and water vapour during respiration.
(4) The chemical solution absorbed carbon dioxide and water vapour and at the same time, the cockroaches breathed in oxygen.

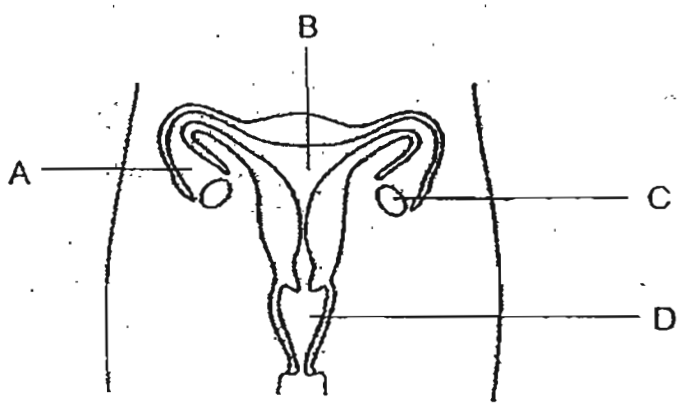
12. The diagram below shows the human digestive system.



As the food passes through the system, at which part, A, B, C or D, does it contain the least digested food?

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

13. The following diagram shows a female reproductive system.
In which part of the system does the foetus develop?



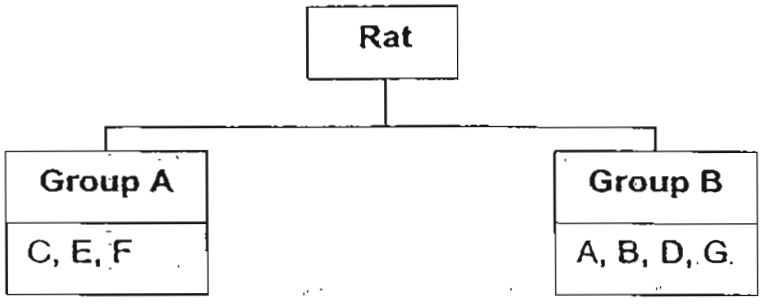
(1) A
(2) B
(3) C
(4) D

14. The table below shows the characteristics of seven rats.

Characteristic \ Rat	A	B	C	D	E	F	G
Straight tail	√	√	√	√	√	X	√
Pointed ears	√	X	X	√	√	√	√
Curved claws	X	X	√	X	√	√	√
Long fur	√	√	√	√	X	X	X
Fur on underside of tail	√	√	X	√	X	X	√
Whiskers longer than ears	√	X	√	X	X	√	√
Tail longer than body	X	√	X	X	√	√	X

A tick (√) indicates that it has the characteristic.

Shan Shan classified the rats into two groups below.



What is the characteristic used by her to classify the rats?

(1) Whether they have pointed ears.
(2) Whether they have curved claws.
(3) Whether the whiskers are longer than the ears.
(4) Whether they have fur on the underside of their tails

15. Hassan wants to find out whether duckweeds grow well in water containing soap powder.

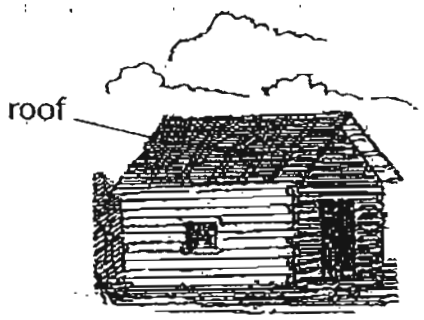
He uses two 500 ml beakers for his experiment. The items in beaker A are shown in the table below.

Beaker	Soap powder	Tap water	Duckweeds of the same size
A	5g	400 ml	50
B			

Which one of the following shows how he should set up beaker B as a control?

	Soap powder	Tap water	Duckweeds of the same size
~~(1)~~	0g	400 ml	50
~~(2)~~	5g	400 ml	25
~~(3)~~	5g	200 ml	50
~~(4)~~	10g	400 ml	50

16. In a tropical country, a farmer wants to keep his house cool during hot days.



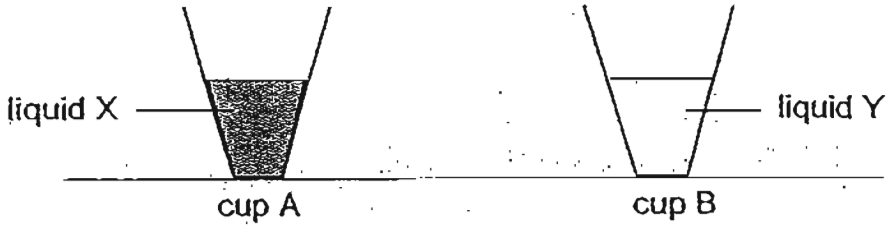
The table below gives some information about four different materials, W, X, Y and Z.

Material	Is it strong?	Is it waterproof?	Is it flexible?	What is the colour?
W	Yes	Yes	No	Black
X	Yes	No	Yes	Black
Y	Yes	Yes	No	Silver
Z	No	Yes	Yes	Silver

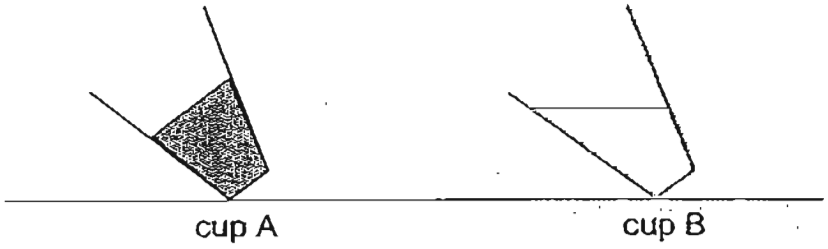
Which material is most suitable for building the roof?

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

17. Marina poured equal volume of liquid X and liquid Y into two similar cups A and B respectively. The temperature of the liquids was 50°C. She left the two cups on a table as shown in the diagram below.



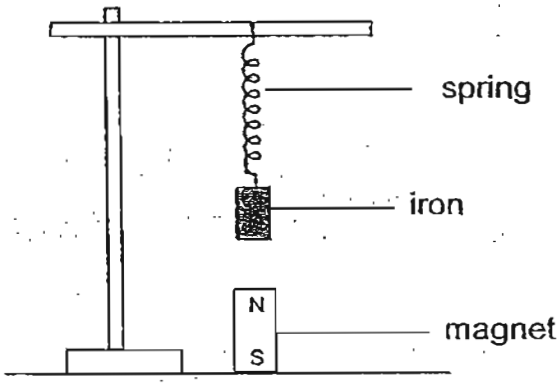
After a few hours, she tilted them as shown in the diagram below.



Which one of the following conclusions can be drawn from her experiment?

(1) Cup A conducts heat better than cup B.
(2) Liquid X is candle wax while liquid Y is water.
(3) Liquid X freezes at room temperature while liquid Y does not.
(4) Liquid X loses heat to the surrounding while liquid Y gains heat.

18. The diagram below shows a piece of iron hung on a spring. A magnet is placed directly under the iron.

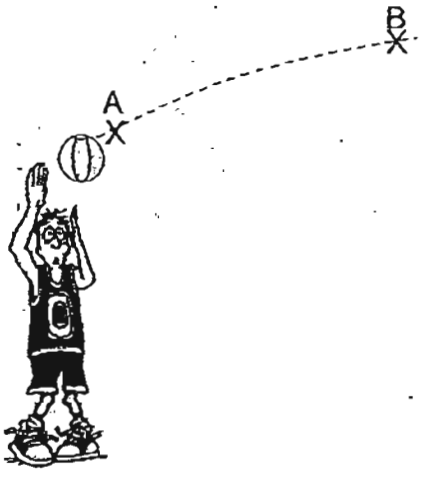


Which of the following forces are acting on the iron?

A frictional force
B gravitational force
C elastic spring force
D magnetic force of repulsion

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

19. Jack threw a ball from A to B as shown below.



Which one of the following statements is **not** correct?

(1) The mass of the ball remained the same.
(2) The force exerted by Jack moved the ball.
(3) The potential energy of the ball increased from A to B.
(4) The gravitational force acting on the ball increased from A to B.

20. Each of the three metal bars, A, B and C, was suspended with a string as shown in the diagram.

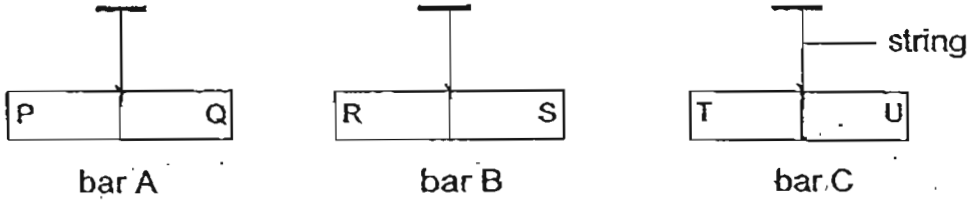


Figure 1 below shows what happened when bars A and B were brought together.

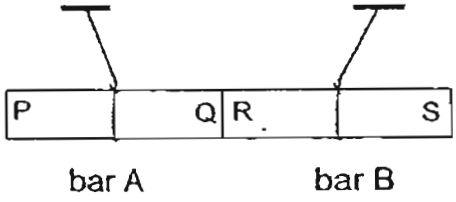


Figure 1

Figure 2 below shows what happened when bar C was placed between bar A and bar B.

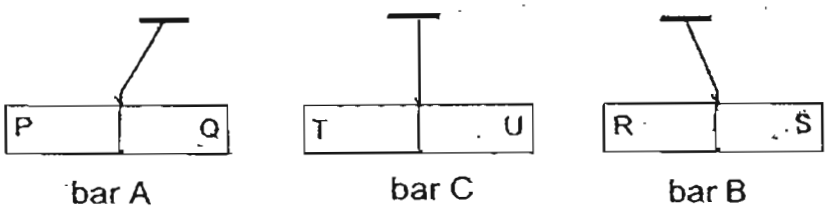


Figure 2

Based on the results above, which of the following statement(s) is/are correct?

A Ends T and S are like poles.
B Ends P and U are unlike poles.
C Only bar A and bar B are magnets.
D Bar C is made of a non-magnetic material.

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

21. Raju wanted to find out whether a nail was magnetized. He put it near a magnet, a compass and a paper clip. He recorded his observations below.

A It repelled the magnet.
B It attracted the magnet.
C It attracted the paper clip.
D It could move the compass needle.

From which of the above observations can he be sure that the nail was magnetized?

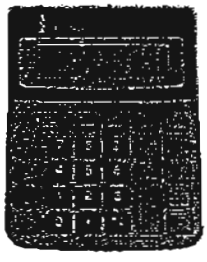
(1) A only
(2) A and C only
(3) B and C only
(4) A, B, C and D

22. Which of the following have chemical potential energy?

A sugar
B battery
C cooking oil
D a compressed spring

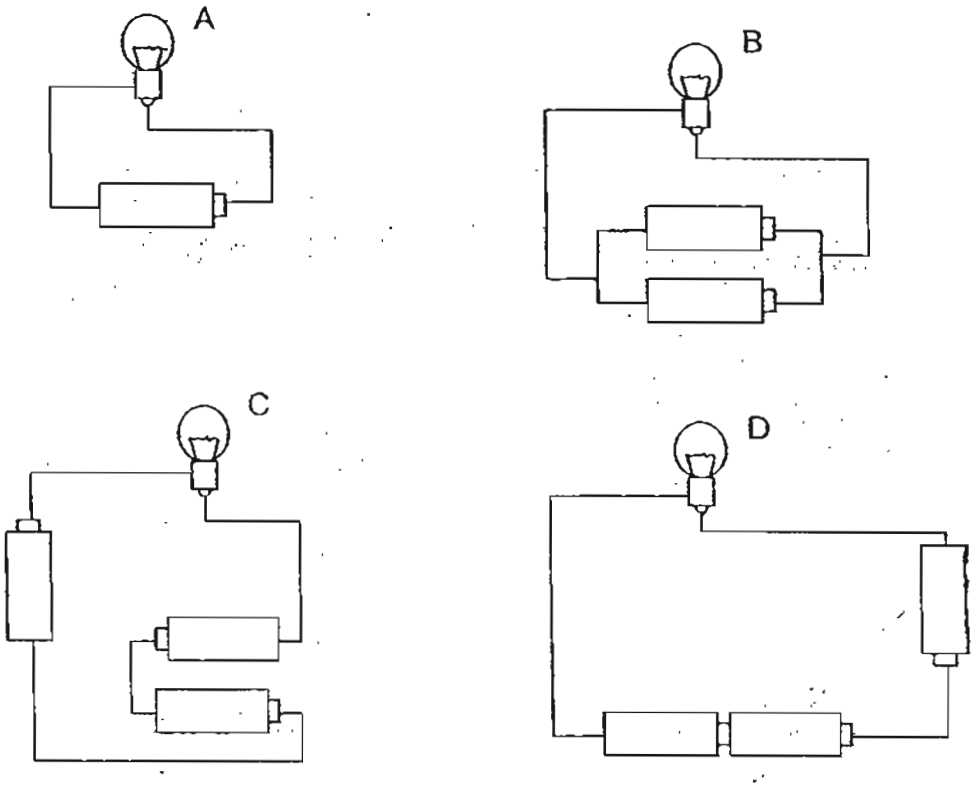
(1) A and B only
(2) C and D only
(3) A, B and C only
(4) A, B, C and D

23. The diagram below shows a solar-powered calculator. Which one of the following shows the correct energy conversion when it is turned on?



(1) Heat energy → light energy → kinetic energy
(2) Light energy → electrical energy → light energy
(3) Light energy → electrical energy → kinetic energy
(4) Chemical potential energy → electrical energy → light energy

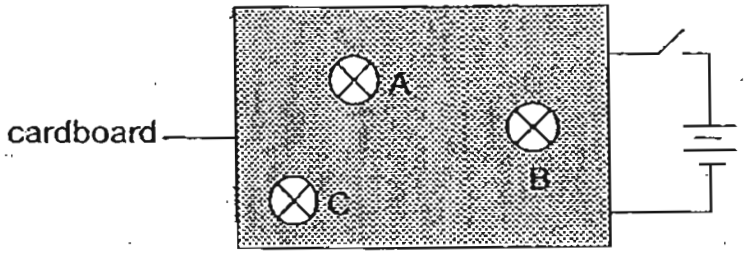
24. The batteries and the bulbs used in the circuits below are identical.



In which of the above circuits do the bulbs produce light of equal brightness?

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

25. John set up a circuit with three identical bulbs, A, B and C, and two batteries. He covered the wires connecting to the bulbs with a cardboard while the bulbs can be seen through holes in the cardboard as shown in the diagram below.

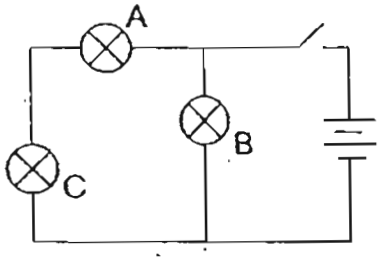


John then removed bulbs A, B and C, one at a time, while keeping the rest of the circuit intact. Before connecting each bulb back into the circuit, he observed the effect on the other two bulbs and recorded his observations in the table below.

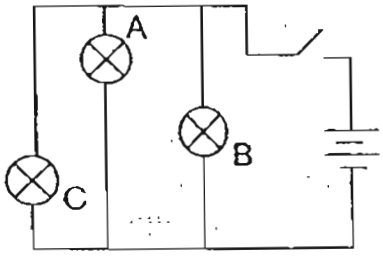
Bulb removed	Observations
A	B and C stay lit
B	C went off while A stayed lit
C	B went off while A stayed lit

Which one of the following circuits shows how the three bulbs were connected?

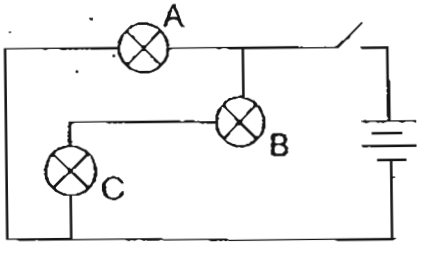
(1)



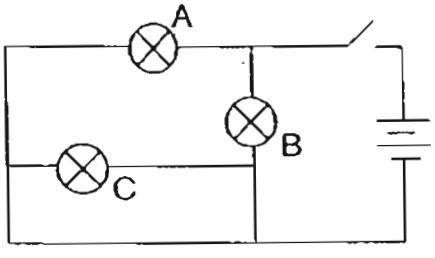
(2)



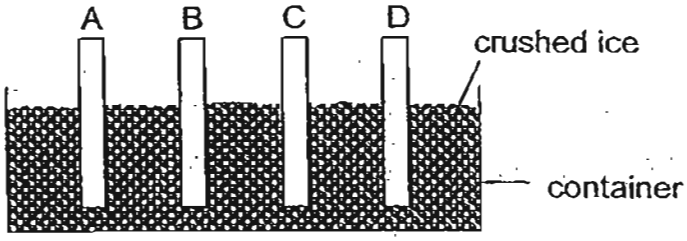
(3)



(4)



26. Salim carried out an investigation to find out how well different materials conduct heat. He used four similar rods, A, B, C and D, of different materials at room temperature to set up the experiment as shown in the diagram below.



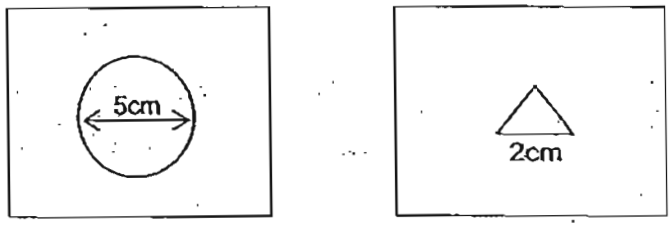
The table below shows the temperature of each rod after five minutes.

Rod	Temperature (°C)
A	13
B	22
C	19
D	10

Based on the results of his experiment, which one of the following statements is correct?

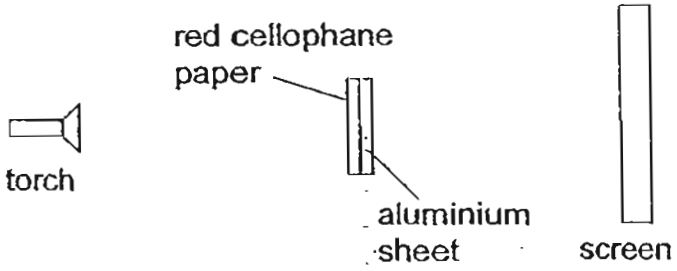
(1) Rod A is made of metal.
(2) Rod B is the best conductor of heat.
(3) Rod C is a poorer conductor of heat than rod D.
(4) Rod D is the best conductor of heat and electricity.

27. Mei Fang carried out an investigation with a sheet of red cellophane paper and a sheet of aluminium of the same size. She cut out a circle from the middle of the red cellophane paper and a triangle from the middle of the aluminium sheet as shown in the diagram below.



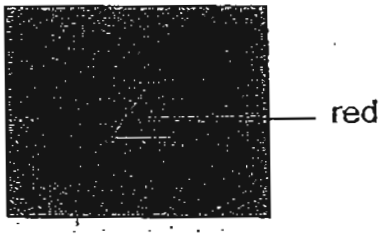
red cellophane paper aluminium sheet

She glued the two sheets together and placed them between a torch and a screen as shown in the diagram below.

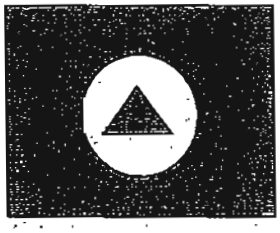


Which one of the following shows the correct shadow cast on the screen?

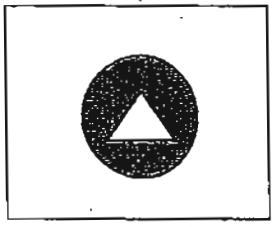
(1)



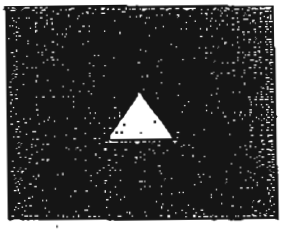
(2)



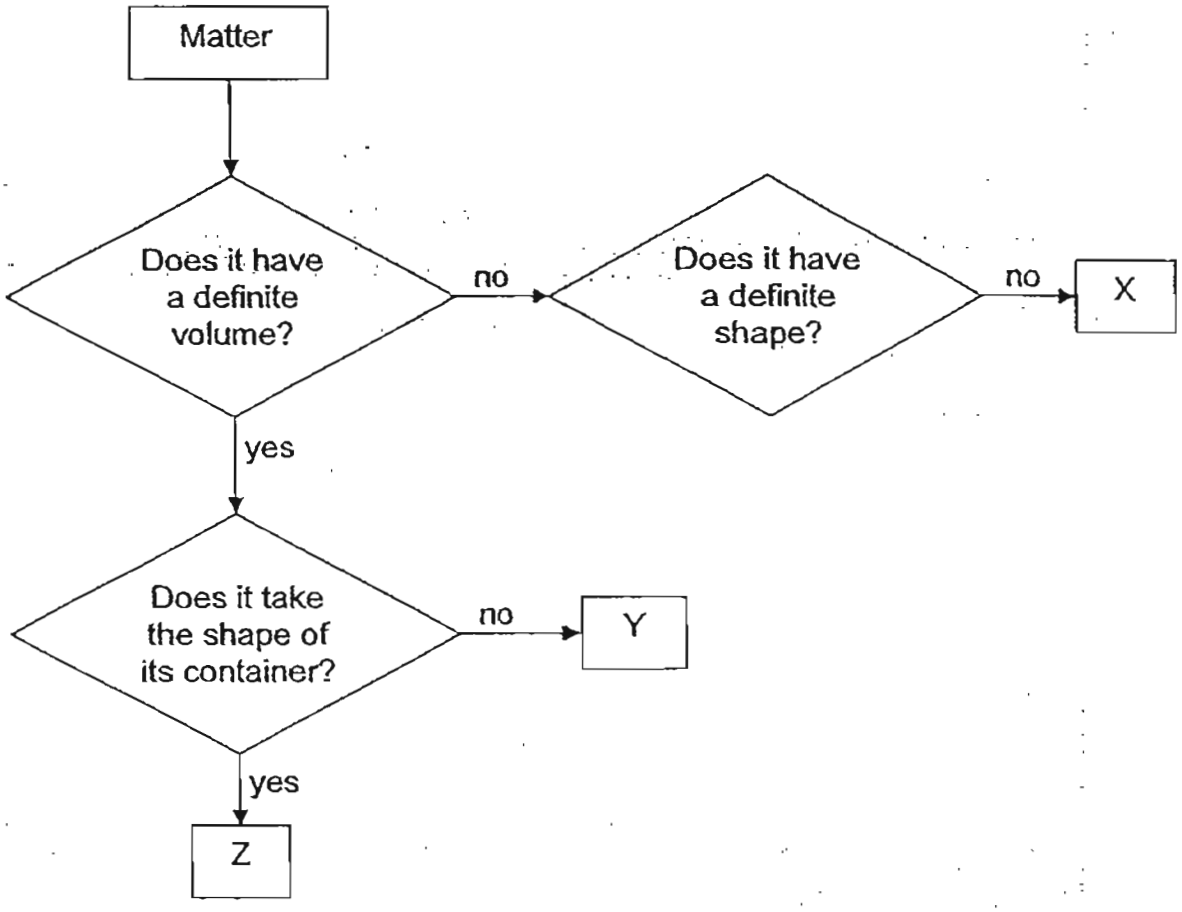
(3)



(4)



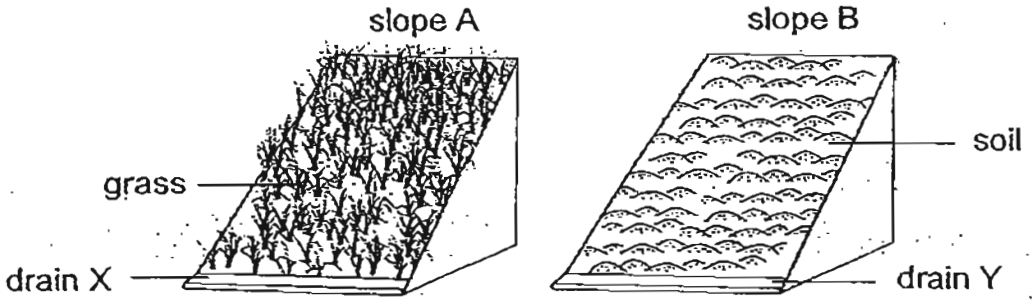
28. The flowchart below shows the properties of matters, X, Y, and Z.



Based on the flowchart above, which one of the following statements is correct?

(1) Matters X and Z are liquids.
(2) Matter Y is a solid while matter Z is a gas.
(3) Both matters X and Z do not have a definite shape.
(4) Matter Y cannot be compressed while matters X and Z can.

29. The diagram below shows two slope models, A and B, slanted at the same angle.



The two models were put out in the open when it rained and the rainwater collected in drains, X and Y, were compared. The observation is recorded in the table below.

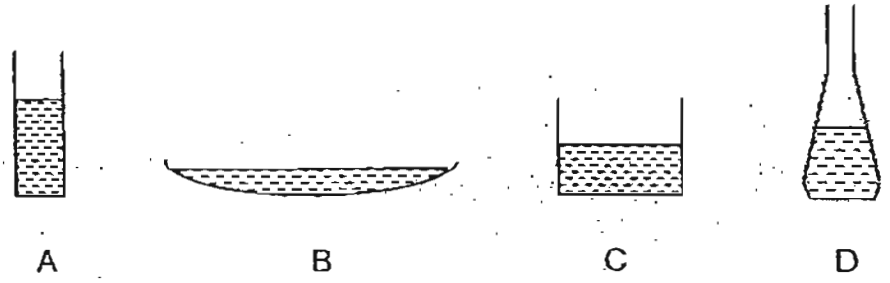
Drain	Appearance of water	
	Not murky	Very murky
X	√	
Y		√

What could have prevented the rainwater collected in drain X from being murky?

A The roots of the grass absorbed the mud in the water.
B The grass prevented the rainwater from reaching the soil.
C The roots of the grass held the soil together preventing it from being carried away by running water.
D The leaves of the grass reduced the force of the falling raindrops thus preventing the soil from being loosened.

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

30. Paul carried out an experiment to find out how long it would take 50cm³ of water to dry up completely in different containers of the same material. He poured 50cm³ of water into each of the four containers, A, B, C and D, and left them in a room as shown in the diagrams below.



A B C D

He recorded his findings in the table below.

Container	A	B	C	D
Time taken for water to dry up completely	14h	8h	12h	11h

He noticed that one of the results recorded was not as he had expected. Which one of the above results was unexpected?

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

~~ End of Section A ~~

Index Number: | | | | | | |

CHIJ ST. NICHOLAS GIRLS' SCHOOL

PRELIMINARY EXAMINATION

2011

P6 SCIENCE

(BOOKLET B)

25 August 2011

NAME : _____( )

CLASS : Primary 6 _____

Total time for booklets A & B: 1 hour 45 minutes

14 questions
40 marks

Booklet A	60
Booklet B	40
Total	100

INSTRUCTIONS TO CANDIDATES

- Do not open this booklet until you are told to do so.
- Follow all instructions carefully.
- Answer all questions and write your answers on this booklet.

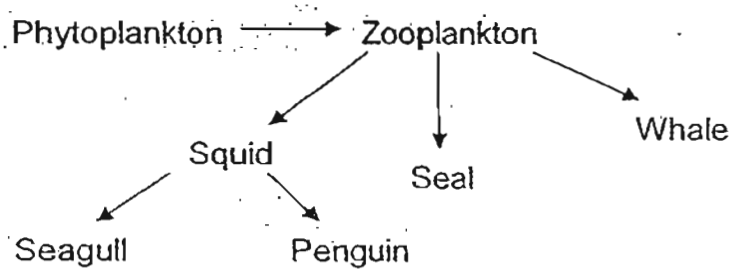
_____
Parent's Signature/Date

This booklet consists of 14 printed pages.

Section B (40 marks)

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

31. The food web below is found in country X.



(a) From the food web above, state the relationship between the penguin and the squid. [½]

_____

(b) From the food web above, state the relationship between the squid and the whale. [½]

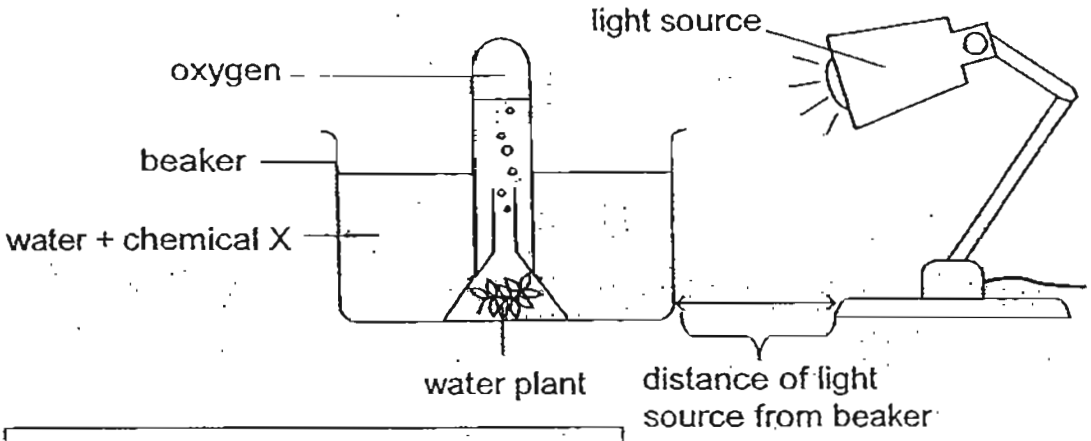
_____

(c) The period of daylight is shorter from June to December in country X. Explain how this affects the population of zooplankton. [1]

_____

_____

32. John carried out an experiment as shown in the diagram below.

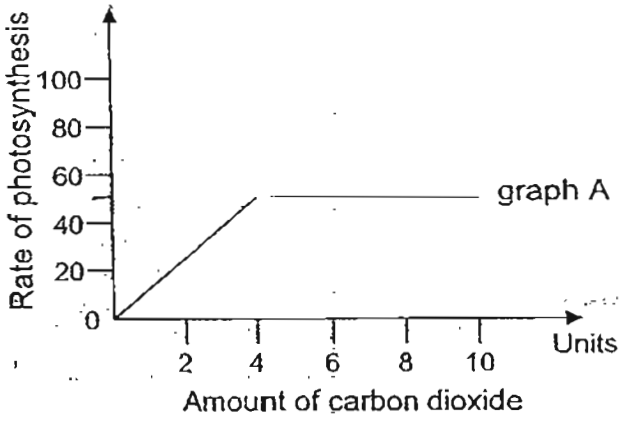


Note: *Chemical X provides carbon dioxide*

After setting up the experiment, he carried out the following procedure:

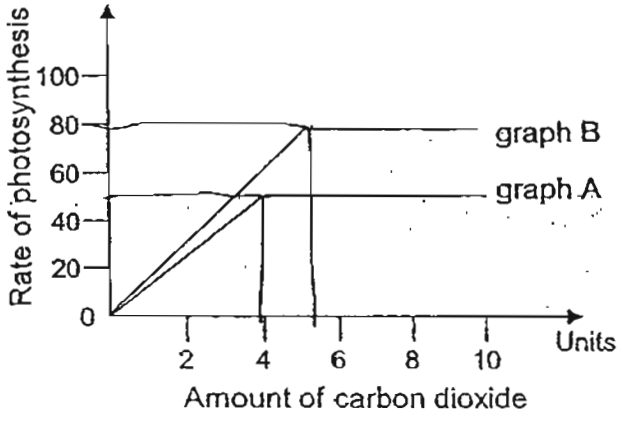
i. After 15 minutes, he counted and recorded the number of bubbles released.
ii. Next, he added 5g of chemical X, stirred and after about 15 minutes he counted and recorded the number of bubbles released.
iii. He repeated the above procedure a few more times by adding 5g of chemical X each time and recorded the results.

The graph below shows the results of his experiment.



(a) Based on the results of his experiment, what is the relationship between the rate of photosynthesis and the amount of carbon dioxide in the water? [1]

John repeated his experiment above by readjusting his set-up without introducing or removing anything from his set-up. He obtained a new set of results as shown in graph B below.



(b) What could John have done to obtain the new results? Explain your answer clearly. [2]

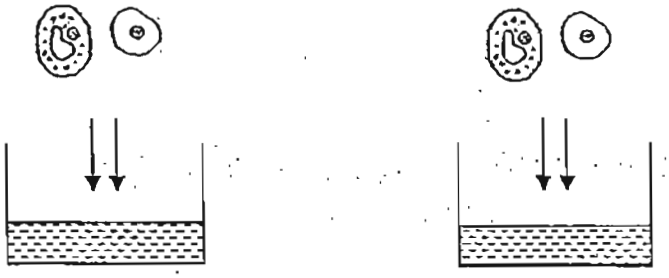
33. Mr. Brown wanted to find out the effect of overcrowding on plant growth. The table below shows the set-ups he had prepared.

Set-up	No. of seeds	Types of soil	Size of pot
A	20	garden	big
B	10	garden	medium
C	10	loamy	small
D	10	garden	small
E	10	garden	big
F	5	loamy	medium

(a) Which three set-ups must he use to conduct a fair test? [1]

(b) What can he find out if he is comparing set-ups C and D? [1]

34. Katy carried out an investigation with two pairs of cells, a plant cell and an animal cell. She placed one plant cell and one animal cell in pure water and the other pair in salt water as shown in the diagrams below.



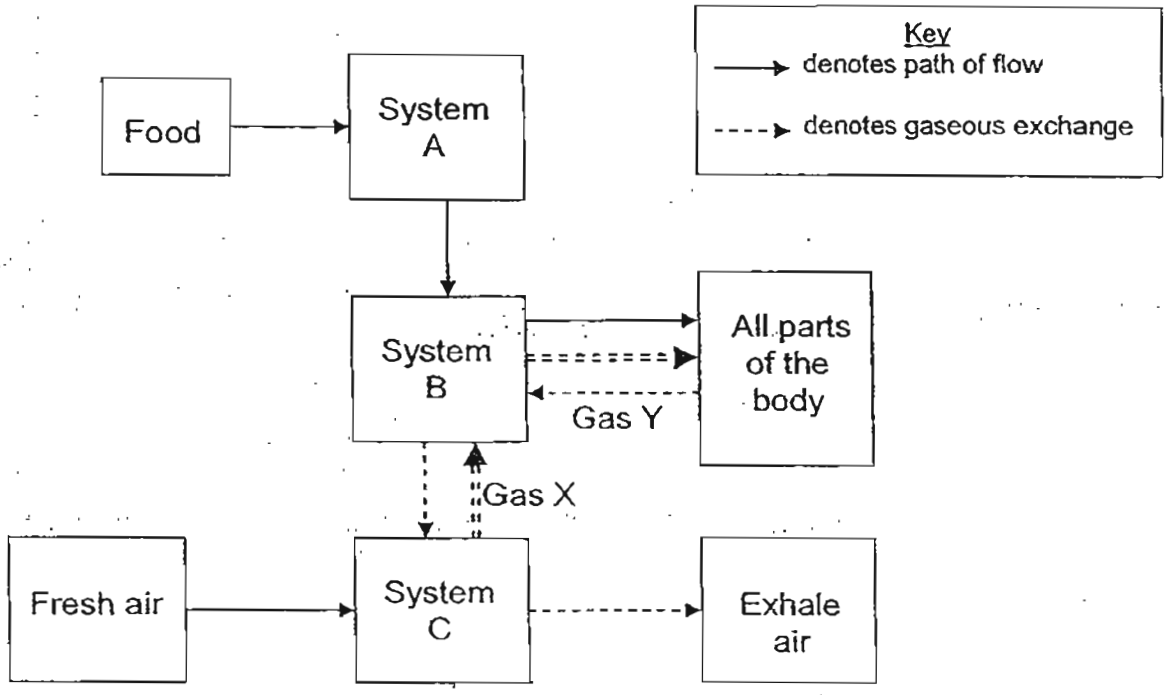
After 30 minutes, she recorded her observations in the table below.

Pure water		Salt water	
Animal cell	**Plant cell**	**Animal cell**	**Plant cell**
Burst	Shape remained the same	Shrank in size	Shape remained the same

(a) Explain the difference in her observations when the two cells were placed in pure water. [1]

(b) What could have caused the animal cell to shrink in salt water? [1]

35. The chart below shows how food and air is transported in the human body.



(a) Identify systems A and B. [1]

System A: _____

System B: _____

(b) Identify gases X and Y. [1]

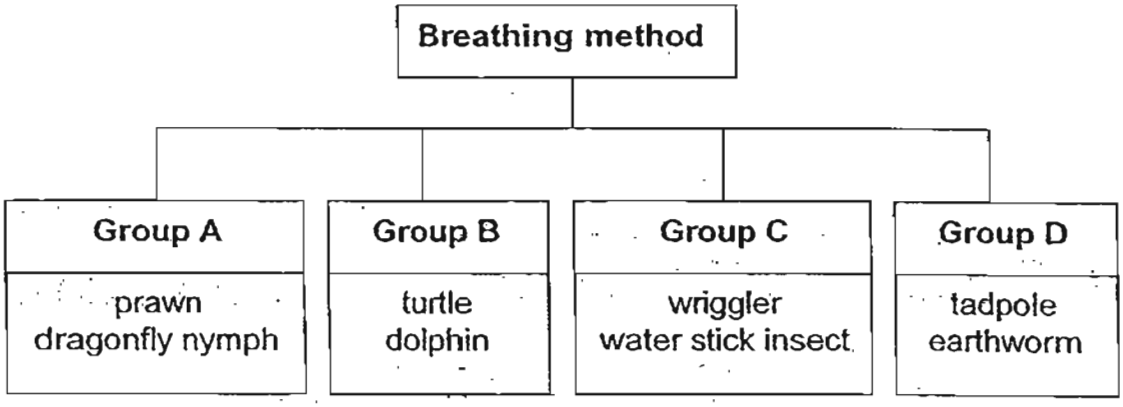
Gas X: _____

Gas Y: _____

(c) Gas X is needed for an important life process in our body. Name the process. [1]

_____

36. The chart below shows the classification of some animals according to the way they breathe.



(a) One of the animals was classified wrongly. Name the animal and explain why it was not in the right group. [1]

_____

_____

(b) Water spider cannot be placed in any of the above groups. How do they obtain oxygen in water? [1]

_____

37. The pictures below show a desert fox and a polar bear.

desert fox

polar bear

The desert fox has big ears while the ears of the polar bear are small.

(a) What kind of adaptation is it? [1]

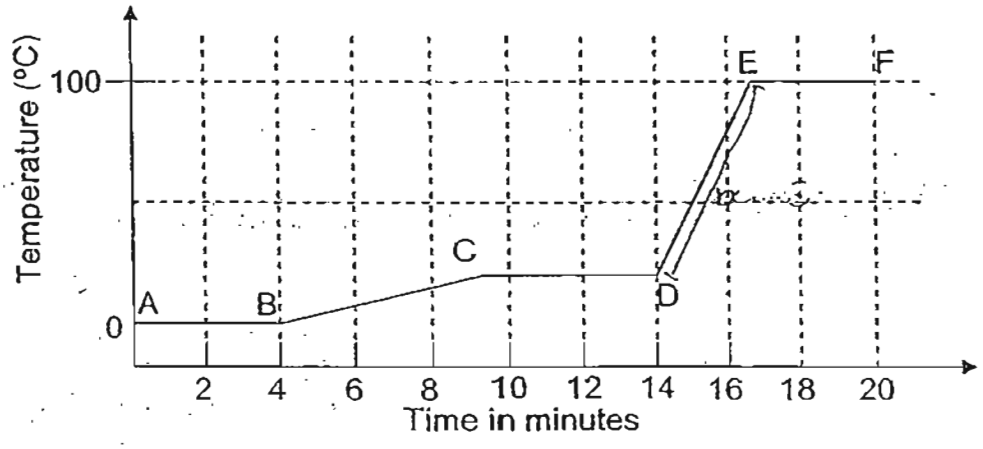
_____

(b) Explain clearly how the ears help them survive the extreme weather conditions in their respective habitats. [2]

_____

_____

38. The graph below shows the changes in temperature of a beaker of ice cubes over a period of 20 minutes.



(a) Based on the graph above, what can we conclude about the ice as it is melting? [1]

(b) What does part CD of the graph show? [1]

(c) Is there heat gain at part AB of the graph? Explain your answer. [1]

39. Three containers, A, B and C, were filled with the same amount of water. They were left at the same place in the sun for the same period of time and put back in a room with a room temperature of 30°C. The temperature of the water in the three containers were taken at a two-minute interval and recorded in the table below.

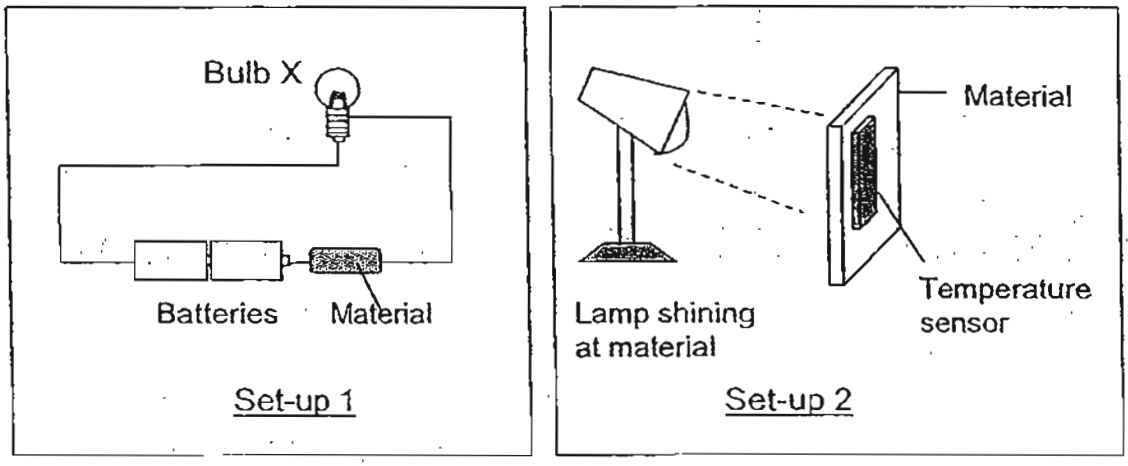
Time (min)	Temperature of water in the container (°C)		
	Container A	Container B	Container C
2	42.3	40.0	41.7
4	41.0	39.2	40.8
6	39.2	38.3	38.2
8	36.5	37.0	36.3
10	33.7	36.4	34.3
12	30.0	34.1	32.0

(a) What would be the temperature of water in container A if it was left in the room for another 4 minutes? [1]

(b) Explain why there is a difference in temperatures of the water in the three containers after being left in the sun for the same period of time? [1]

(c) Name two other variables that must be kept constant to ensure that the test is a fair one. [1]

40. Paul conducted two experiments to find out the properties of four different materials, A, B, C and D.
The diagram below shows the set-ups of his experiments.

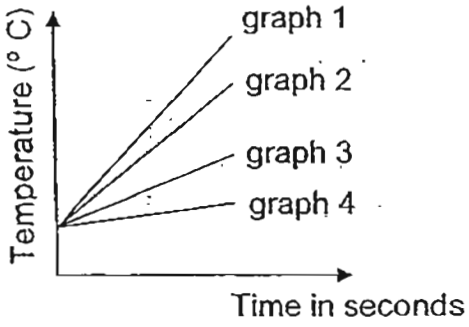


For set-up 1, he recorded his findings in the table and for set-up 2, he recorded them in the graph.

Results for set-up 1

Material	Brightness of bulb X
A	Dim
B	Very bright
C	No light
D	Bright

Results for set-up 2



Paul had forgotten to write down the materials for the temperature-time graph. However, he found out that the materials that are good conductors of electricity are usually good conductors of heat.

(a) Complete the table below by matching the materials, A, B, C and D, to the respective graphs. [2]

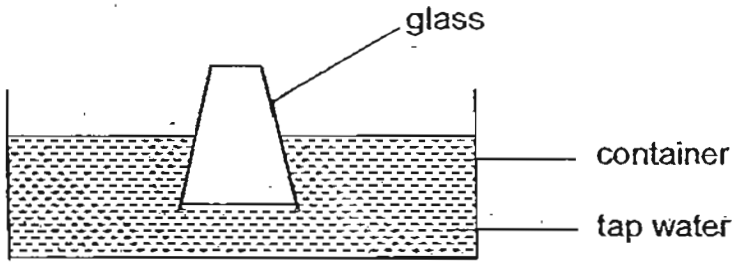
Graph	Material
1	
2	
3	
4	

(b) Based on the results of his experiment, can pencil lead be material C? Explain your answer. [1]

_____

_____

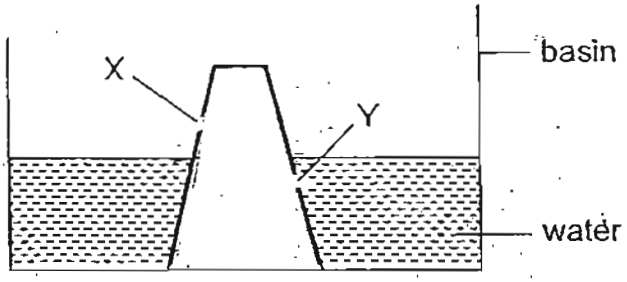
41. The air in the glass was heated before it was inverted into the basin of tap water as shown in the diagram below.



(a) What will happen to the water level in the glass after some time? [1]

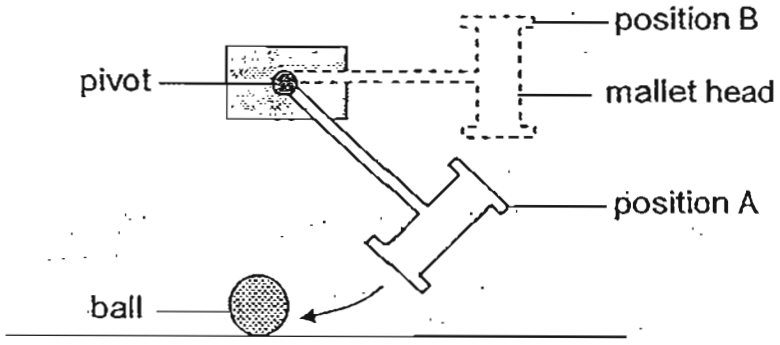
(b) Explain your answer in (a) above. [1]

An inverted plastic cup with two small holes, X and Y, was pushed into a container of water as shown in the diagram below.



(c) In the diagram above, draw the water level in the plastic cup. [1]

42. The diagram below shows a mallet pivoted at one end. It was allowed to swing freely and hit a ball upon release from position A and then from position B.

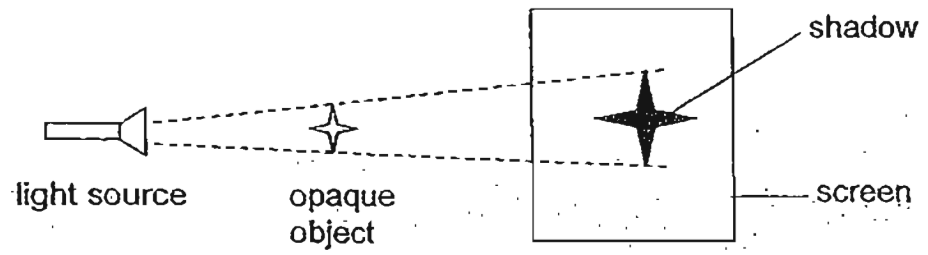


(a) Compare the speeds of the ball when the mallet head is released from the two positions. [1]

(b) Explain your answer in (a) above. [2]

(c) If the mallet is replaced with a heavier one, how would it affect the speed of the ball? Explain your answer. [1]

43. The diagram below shows the shadow of an object on a fixed screen.

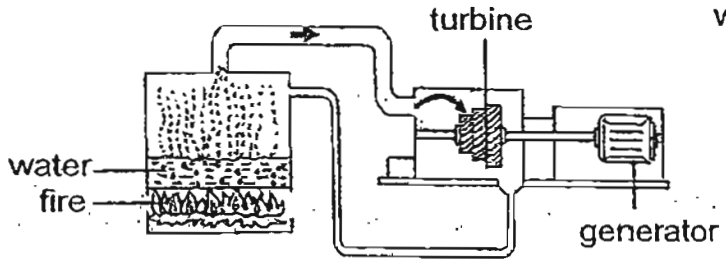


(a) What will happen to the shadow if a stronger light source is used? [1]

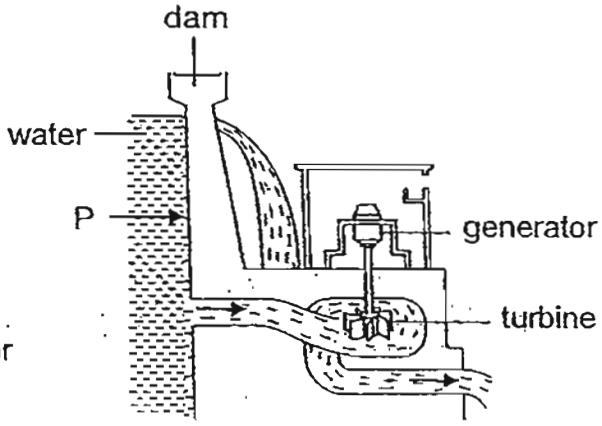
(b) State two ways to increase the size of the shadow. [1]

(c) What will happen to the colour of the shadow if a piece of blue cellophane paper is placed between the light source and the object? Explain your answer. [1]

44. The diagrams below show two different power stations, A and B.

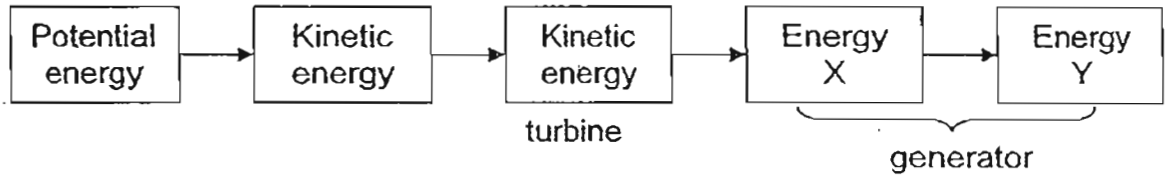


power station A



power station B

The diagram below shows the energy conversions that take place in the two power stations.



(a) Identify energy X and energy Y. [1]

Energy X: _____

Energy Y: _____

(b) Is there a difference in the potential energy involved in the two power stations? Explain your answer. [1]

_____

_____

(c) Will there be any effect to the amount of energy produced by the generator if the water level in power station B drops to the level marked P? Explain your answer. [2]

_____

_____

~~ End of Paper ~~

Answer Ke

EXAM PAPER 2011

SCHOOL : CHIJ
SUBJECT : PRIMARY 6 SCIENCE

TERM : PRELIMINARY

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

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

31)a)The penguin is a predator of the squid.
b)Both are competitors for food.
c)There'll be less sunlight for the phytoplankton to photosynthesize and decrease in population, and the Zooplankton population also decrease as there's less food.

32)a)As the amount of carbon dioxide increases, the rate of photosynthesis increases, up to an optimal point (4 units). After which, the rate of photosynthesis remained constant.
b)He moved the lamp toward the beaker and made there closer. More light energy'll be obtained by the plant to make more food, thus the rate of photosynthesis will increase.

33)a)B,D,E
b)He'll find out which type of soil (loamy or garden) is better for plant growth.

34)a)When too much water enters the animal cell, it bursts but a plant cell has a cell wall to give it a regular shape so it won't burst.
b)The salt causes water in the animal cell to moved out of it into the salt solution, causing it to shrink.

35)a)A: Digestive system B: Circulatory system
b)X: Oxygen Y: Carbon dioxide
c)Respiration

36)a)Tadpole. It breathes though its gills instead of skin, unlike the earthworm in D.
b)They obtain oxygen in water by trapping air bubbles.

37)a)Structural adaptation.

b)The large ears of the desert fox have a lot of blood vessels near the skin and as the warm blood pumps through the ears, more heat is last to the surrounding. The polar bear's ears are small thus there're lesser blood vessels to help reduce heat loss as its environment is very cold.

38)a)Its temperature stays at 0℃through the melting process.

b)Water at room temperature.

c)Yes. Heat is gained to break the bond between the molecules.

39)a)30℃

b)The containers are made of different, materials so the heat conductivity of the containers are different.

c)1.The shape of the containers. 2.The thickness of the containers.

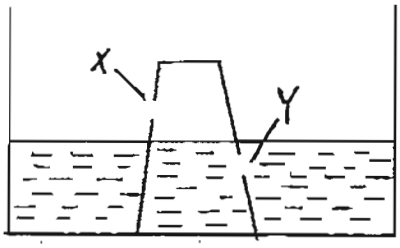
40)a)1)B 2)D 3)A 4)C

b)No. Pencil lead is a conductor of electricity so the bulb should light up.

41)a)It will rise.

b)The heated air'll lose, heat to the water and glass and contracts, creating space for the water to enter.

c)



42)a)When the mallet hits the ball when released at B, the speed of ball will be faster. But when the mallet hits the ball when released from A, the speed of ball'll be slower.

b)The mallet at B has more gravitational potential energy which's converted to more kinetic energy as it moves down. This in turn's converted to move faster.

c)A heavier mallet has more gravitational potential energy, resulting in more kinetic energy, a greater impact on the ball, and thus the ball traveled faster.

43)a)It'll be darker.

b)1.Move the object closer to the light source.

2.Move the light source closer to the object.

c)The color of the shadow'll not change as the object's opaque and doesn't allow light to pass through, so the blue light created when the light passes through the blue cellophone'll be blocked, resulting in no color change of the shadow.

44)a)X: kinetic energy Y: electricity energy

b)Yes. In A it is chemical potential energy form fossil fuels but in B it is gravitational energy possessed by the water.

c)Yes. The water possessed less gravitational potential energy at P which converts to less kinetic energy of the turbine and generator, producing less electricity energy.