HENRY PARK PRIMARY SCHOOL

2009 PRELIMINARY EXAMINATION

PRIMARY 6 SCIENCE

PART 1

Name:_____ **( )**

Class: Primary _____

60

30 Questions
60 Marks

Total Time for Part 1 and 2: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

PART 1 (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.

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1. Which of the following characteristics distinguish the mammals from the other groups of animals?

   A: They have hair.
   B: They are warm-blooded.
   C: They suckle their young.
   D: They have hollow bones.

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

   ( )

2. Which of the following statements are true about the life cycle of a cockroach and the life cycle of a mosquito?

   A: Both the cockroach and the mosquito lay many eggs at a time.

   B: Both the young of the mosquito and the cockroach develop from pupae.

   C: The young of the mosquito live in the water but the young of the cockroach live on land.

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

   ( )

3. The table shows the cell division of 3 types of cells, **A**, **B** and **C**, each dividing at a different rate over a period of 30 seconds.

Time (s)	Cell		
	A	B	C
0	1	1	1
6	2	1	4
12	4	2	16
18	8	2	64
24	16	4	256
30	32	?	?

How many cells will there be for **Cell B** and **Cell C** at the end of 30 seconds?

	Cell B	Cell C
~~(1)~~	4	1024
~~(2)~~	4	2048
~~(3)~~	8	1024
~~(4)~~	8	2048

( )

4. John was observing a flower which has just been pollinated.

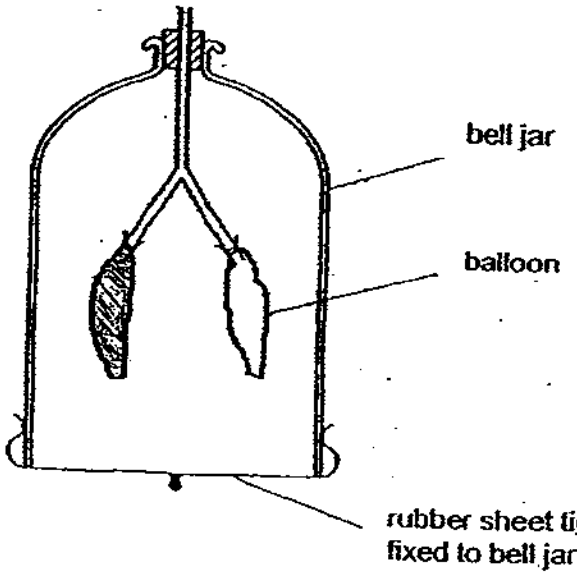
Which of the following will take place after pollination ?

A: The ovules will develop into seeds.
B: The whole flower will wither and drop off.
C: The petals, stigma and anthers will drop off.
D: The ovary may swell and become thicker.

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

( )

5. Zhen Hong built the following model to demonstrate breathing in a human being.



Which of the following statements describe why the above is <u>not</u> an accurate model to show the action of breathing when the rubber sheet is pulled down?

A: The movement of the ribs is not shown during breathing.
B: The movement of muscles is not shown during breathing.
C: The balloons do not inflate when air is drawn in during breathing.
D: The bell jar cannot be enlarged when air is drawn in during breathing.

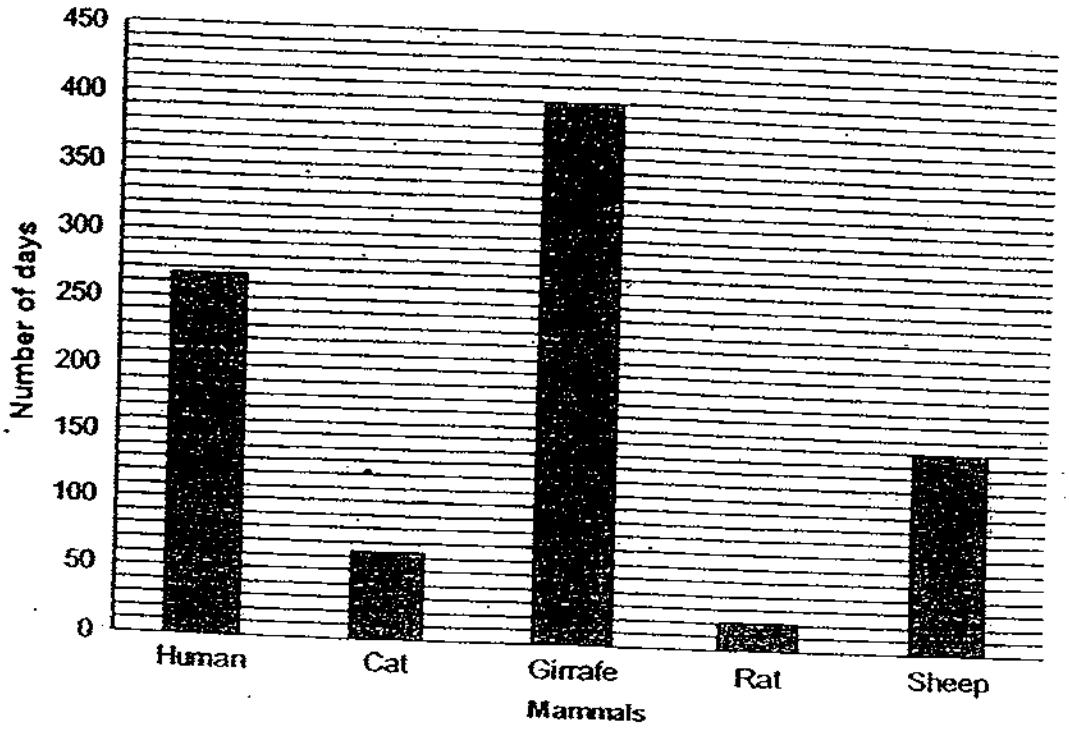
(1) A and B only
(2) C and D only
(3) A, B and D only
(4) A, C and D only

( )

6. The **gestation period** of a mammal refers to the development of the young from the time where the sperm fertilises the egg till the birth of the young.

Generally, the greater the size of a mammal, the longer its gestation period.

The bar graph below shows the gestation period of some selected mammals.



The gestation period of a rabbit is likely to be greater than a _____.

(1) rat's but less than a cat's
(2) sheep's but less than a human
(3) giraffe's but less than a human's
(4) human's but less than a giraffe's

( )

7. Which of the following functions of the backbone of the human ~~are~~ is/are correct?

A: It keeps the body upright.
B: It protects the spinal cord.
C: It protects the lungs and heart.

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

( )

8. Which of the following substances are transported by the xylem in a green plant and the blood vessels of a mammal respectively?

A: gases
B: food
C: water
D: mineral salts

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

( )

9. Beatrice noticed that her mother put garlic into the rice bin to keep away rice weevils. Her classmates carried out an activity in class to find out whether garlic can keep away rice weevils.

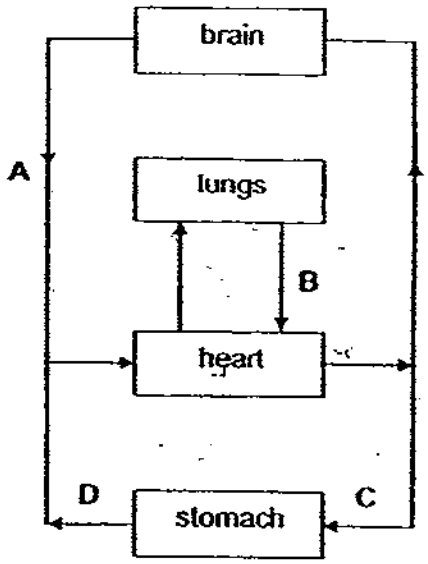
They used 2 similar containers, A and B, without lids. In container A, they put in rice, rice weevils and garlic.

What should Beatrice's classmates put in Container B?

(1) rice only
(2) rice weevils only
(3) rice and garlic only
(4) rice and rice weevils only

( )

10. The diagram below shows how blood flows in certain parts of the human body.



Which of the above parts A, B, C and D contain blood rich in oxygen and blood rich in carbon dioxide?

	Parts	
	Blood rich in oxygen	Blood rich in carbon dioxide
(1)	A, B	C, D
(2)	A, D	B, C
(3)	B, C	A, D
(4)	B, D	A, C

( )

11. The chart below shows the classification of organisms in different communities.

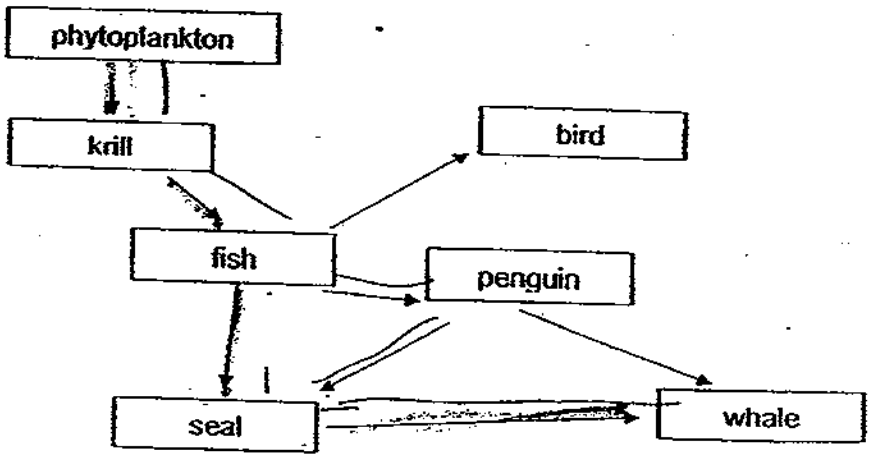
Community X	Community Y	Community Z
Mussel Anemone Horseshoe crab	Spider Centipede Earthworm	Pondskater Tadpole Water lettuce

Which one of the following sets of organisms for communities X, Y and Z is correctly classified?

	Community X	Community Y	Community Z
(1)	Algae	Bull frog	Millipede
(2)	Starfish	Millipede	Dragonfly nymph
(3)	Sea slug	Mushroom	Woodlouse
(4)	Jew's ear	Aphids	Banana plant

( )

12. Study the food web in the Antarctic and answer questions 12 and 13.



How many food chains are there in this food web?

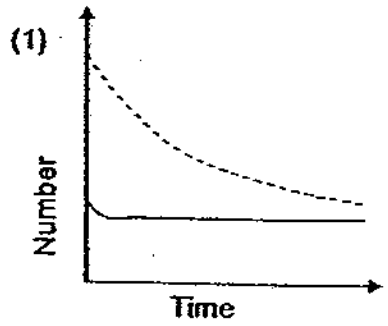
(1) 5
(2) 7
(3) 3
(4) 4

( )

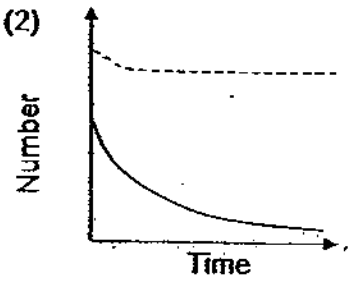
13. It was the mating season for the fish and thousands of eggs were laid and fertilised. However, a chemical disposed by a marine vessel destroyed the fish eggs and killed only fishes less than 5 cm long.

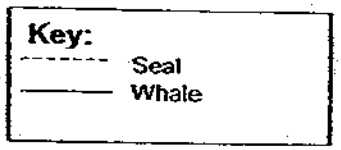
Which one of the following graphs shows correctly the change in populations of the seal and the whale **immediately** after the chemical spill?

(1)

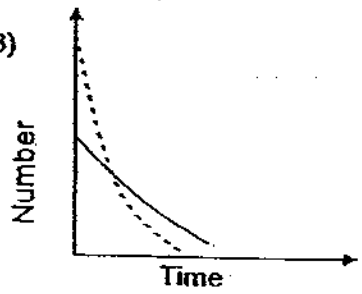


(2)

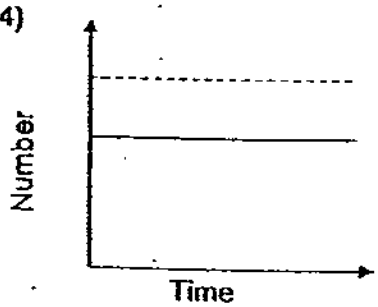




(3)



(4)



( )

14. Animals adapt for better survival in their environment. Some adaptations are **behavioural** while others are **structural**. Which one of the following shows the correct type of adaptation?

	structural	behavioural
(1)	camouflage	mimicry
(2)	mimicry	migration
(3)	hibernation	camouflage
(4)	migration	hibernation

( )

15. Which one of the following food items will give a dark blue colouration when tested with iodine solution?

(1) prawn
(2) chicken
(3) broccoli
(4) milk powder

( )

16. Which one of the following statements about respiration is not true?

(1) Respiration takes place all the time in living things.
(2) Respiration releases energy from food for the organisms' survival.
(3) Respiration involves the use of oxygen and carbon dioxide.
(4) Respiration does not rely on the presence of light to occur.

( )

17. The table below shows the melting point and boiling point of 2 substances X and Y.

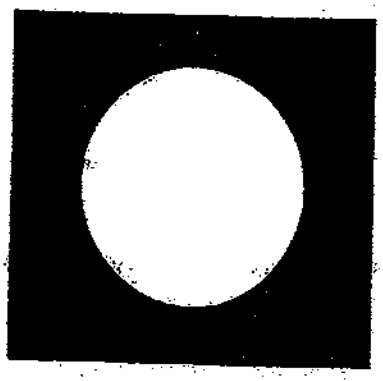
Substance	Melting Point (°C)	Boiling Point (°C)
X	-39	357
Y	39	688

Which of the following shows the correct state of substances X and Y at 0°C and 500 °C respectively?

	Substance X		Substance Y	
	0°C	500 °C	0°C	500 °C
(1)	solid	solid	liquid	gas
(2)	solid	gas	liquid	gas
(3)	liquid	gas	solid	liquid
(4)	liquid	liquid	solid	gas

( )

18. The diagram below shows a particular phase of the moon which Karl saw on the first night.

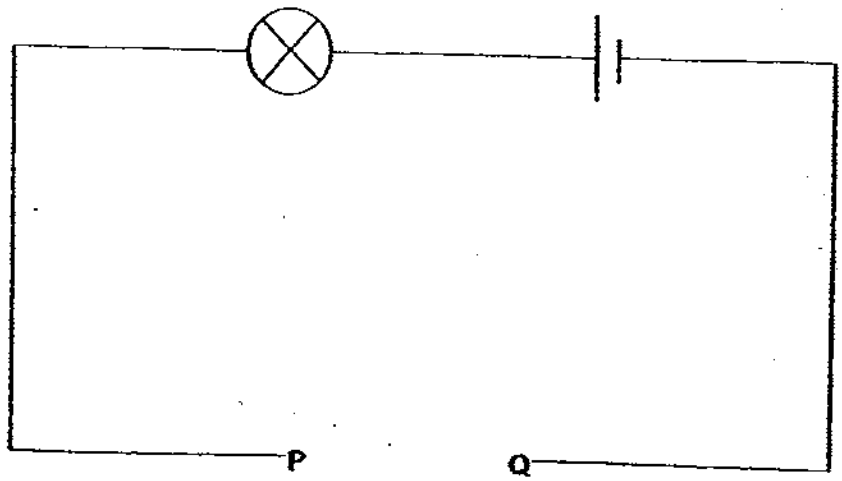


On which of the following nights would Karl most likely see this phase of the moon again?

(1) 14th night
(2) 27th night
(3) 30th night
(4) 56th night

( )

19. Barney cut 4 pieces of wire, A, B, C and D, each of different length and thickness from the same material. The circuit diagram below shows how he set up the experiment.



He placed each of the wires, joining P to Q and observed the brightness of the bulb. Then, he recorded his observation in the table below.

Wire	Length (m)	Thickness (mm)	Brightness of bulb
A	1	1	Bright
B	1	2	Very bright
C	2	1	Not bright
D	2	2	Bright

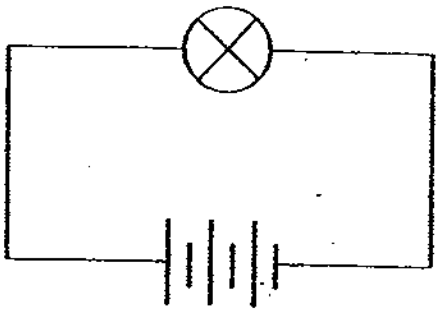
Based on the information in the table, what can Barney conclude from his experiment ?

A: As the length of the wire decreases, the brightness of the bulb decreases.
B: As the length of the wire decreases, the brightness of the bulb increases.
C: As the thickness of the wire increases, the brightness of the bulb decreases.
D: As the thickness of the wire increases, the brightness of the bulb increases.

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

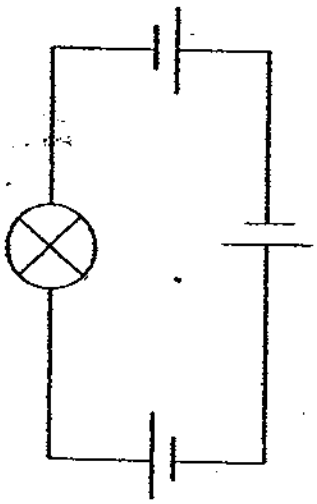
( )

20. Nicholas set up an electrical circuit as shown below.

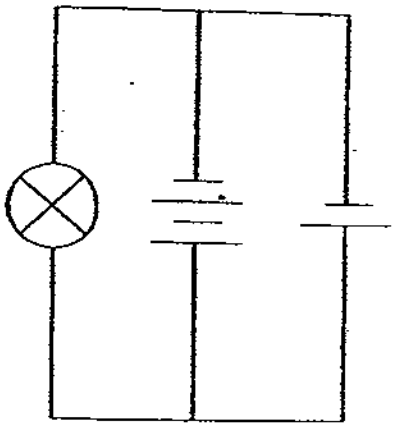


If all the batteries, bulbs and wires were similar, which of the following circuits would the bulb have the same brightness as Nicholas' ?

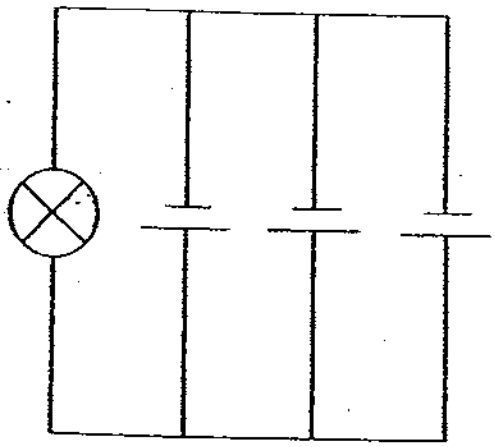
(A)



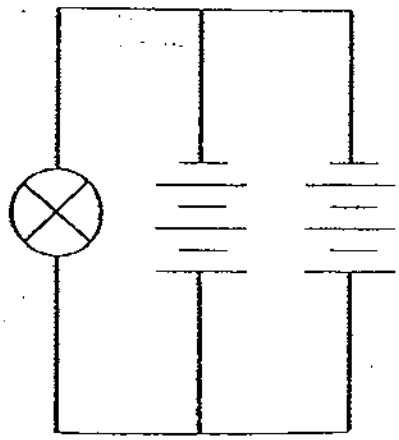
(B)



(C)



(D)



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

( )

21. James wanted to investigate the effect of substances on the boiling point of water. He used 2 similar round-bottomed flasks and 2 gas burners for his experiment.

Besides the above variables, which of the following variables must James control to ensure a fair test for his experiment ?

A: The amount of water
B: The type of substances
C: The amount of substances
D: The initial temperature of water

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

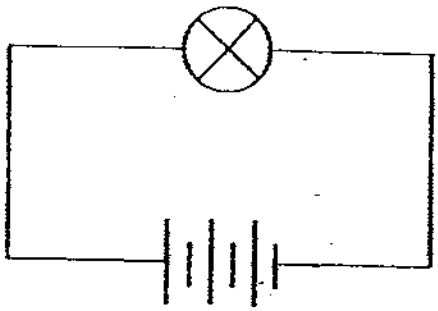
( )

22. Which one of the following statements about magnets is not true?

(1) Magnets must have North and South poles.
(2) Repulsion is the only test for identifying a magnet.
(3) Magnetism cannot pass through magnetic materials.
(4) A permanent magnet never loses any magnetism, but a temporary magnet loses its magnetism over time.

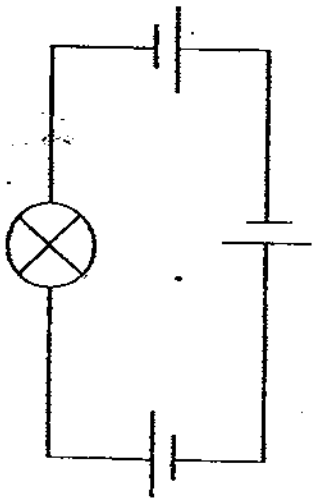
( )

20. Nicholas set up an electrical circuit as shown below.

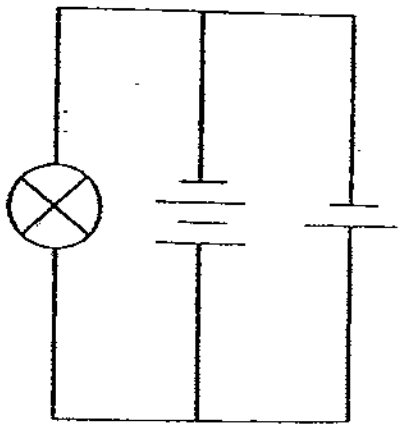


If all the batteries, bulbs and wires were similar, which of the following circuits would the bulb have the same brightness as Nicholas' ?

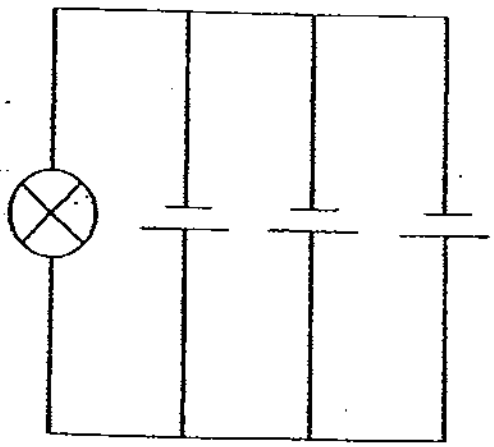
(A)



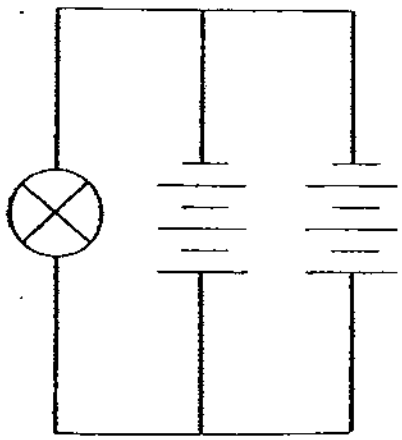
(B)



(C)



(D)



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

( )

21. James wanted to investigate the effect of substances on the boiling point of water. He used 2 similar round-bottomed flasks and 2 gas burners for his experiment.

Besides the above variables, which of the following variables must James control to ensure a fair test for his experiment ?

A: The amount of water
B: The type of substances
C: The amount of substances
D: The initial temperature of water

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

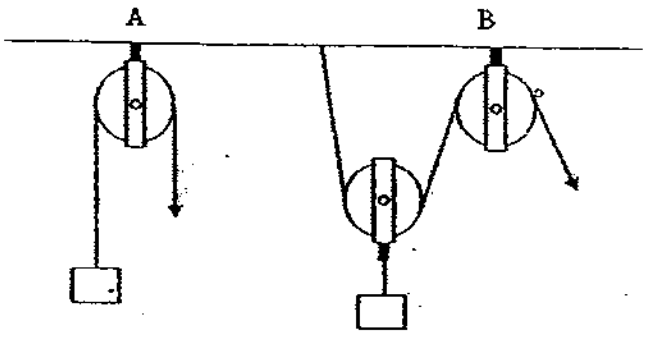
( )

22. Which one of the following statements about magnets is not true?

(1) Magnets must have North and South poles.
(2) Repulsion is the only test for identifying a magnet.
(3) Magnetism cannot pass through magnetic materials.
(4) A permanent magnet never loses any magnetism, but a temporary magnet loses its magnetism over time.

( )

23. The diagram below shows 2 pulley systems, A and B.

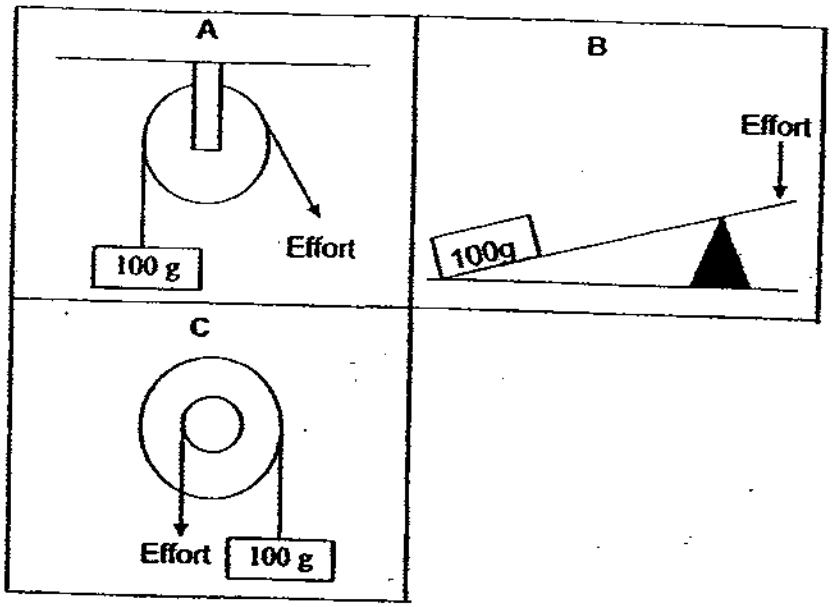


Which one of the following statements is correct?

(1) The effort needed in pulley system B is about 90 g.
(2) The effort needed in pulley system A is less than 180g.
(3) The distance moved by the effort in pulley system A is the same as the distance moved by the effort in pulley system B.
(4) There is no change in the direction of force applied in both pulley systems.

( )

24. Study the following diagrams carefully.



In which of the above is effort used smaller than 100 g if the [illegible]

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

( )

25. When a force is applied to an object, several effects are possible. Which one of the following effects cannot occur?

(1) The object spinning.
(2) The object moving faster.
(3) The object's mass changing.
(4) The object changing in its direction of travel.

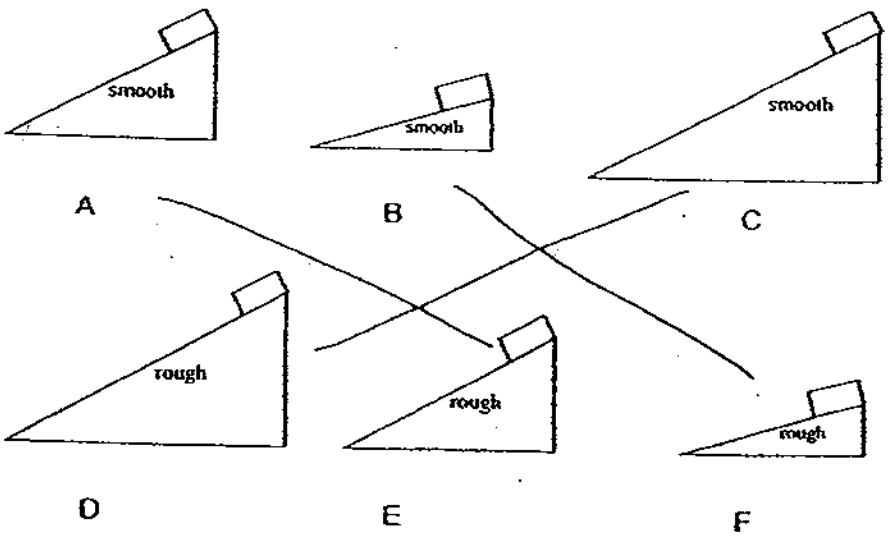
( )

26. A woman was wiping the table as shown by the picture below. What force(s) is/are involved in this situation?

(1) push only
(2) pull only
(3) push and pull
(4) no force is involved

( )

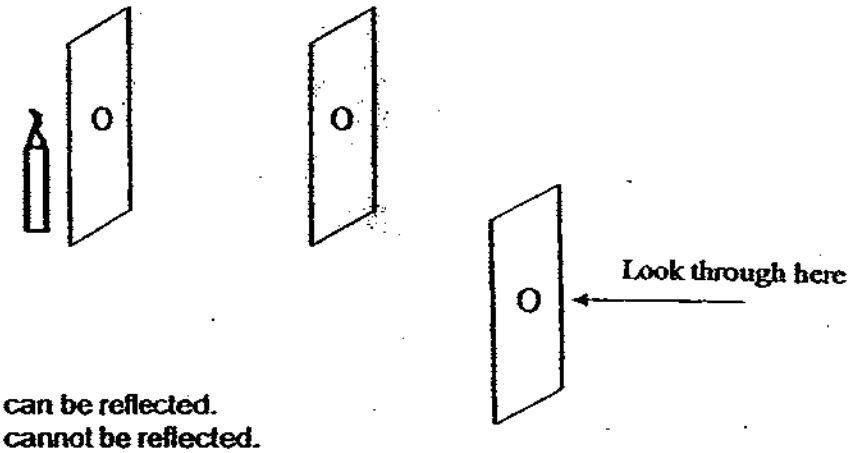
27. James wants to find out how the surface texture affects the amount of time required for a matchbox to slide down the ramp. Which two set-ups should he use?



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

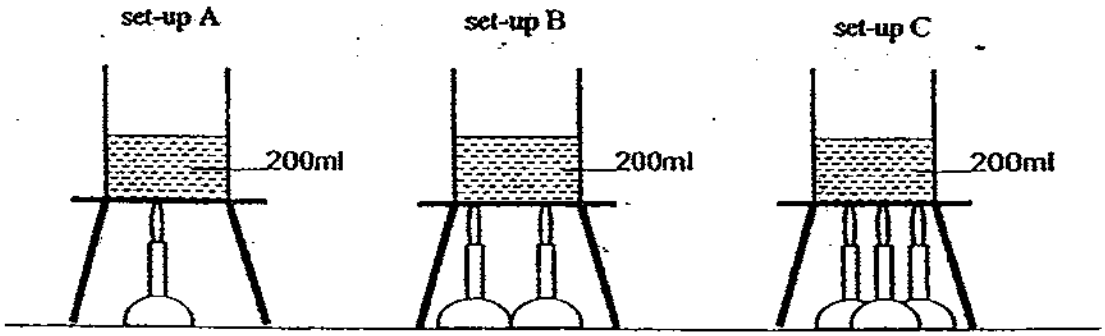
( )

28. Ali carried out an experiment using the set-up below. A lit candle and 3 opaque cards with a hole in the centre were arranged as shown. What property of light was he trying to find out here?



(1) Light rays can be reflected.
(2) Light rays cannot be reflected.
(3) Light rays travel in straight lines.
(4) Light rays travel from shiny objects to our eyes. ( )

29. The diagram below shows 3 similar set-ups A, B and C. The water in each beaker is heated and its temperature is taken once it starts to boil.

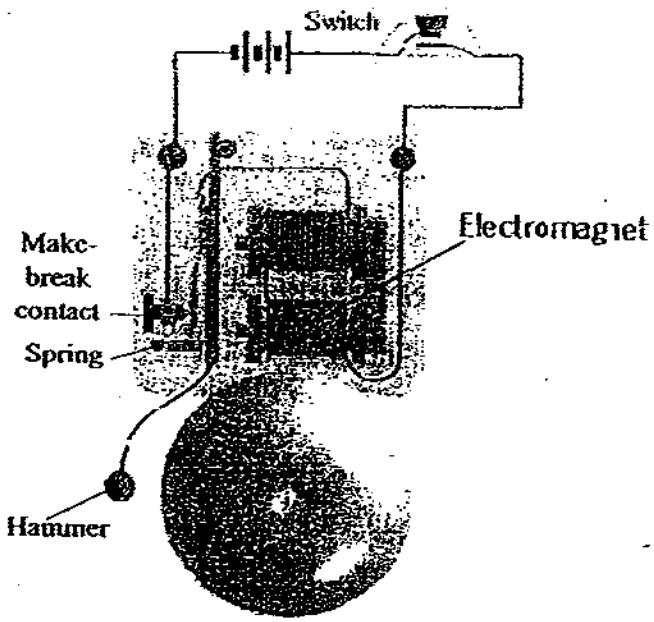


Which of the following statements is/are true?

A: Set-up A takes the longest time to boil.
B: Set-up C takes the shortest time to boil.
C: Temperature reading for set-up C is highest.
D: Temperature reading for set-up B is higher than temperature reading for set-up A.

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

30. Which one of the following shows the correct energy conversion in the door bell?



(1) chemical potential energy → electrical energy → sound energy

(2) chemical potential energy → electrical energy → kinetic energy → light energy

(3) chemical potential energy → electrical energy → kinetic energy → sound energy

(4) electrical energy → kinetic energy → heat energy and sound energy

( )

End of Part 1

HENRY PARK PRIMARY SCHOOL

2009 PRELIMINARY EXAMINATION

PRIMARY 6 SCIENCE

PART 2

Name:_____( )

Class: Primary 6_____

40

16 Questions
40 Marks

Total Time for Part 1 and 2: 1 h 45 min

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.

READ AND FOLLOW INSTRUCTIONS CAREFULLY.

PART 2 (40 marks)

Write your answers to questions 31 to 46 in the spaces given.

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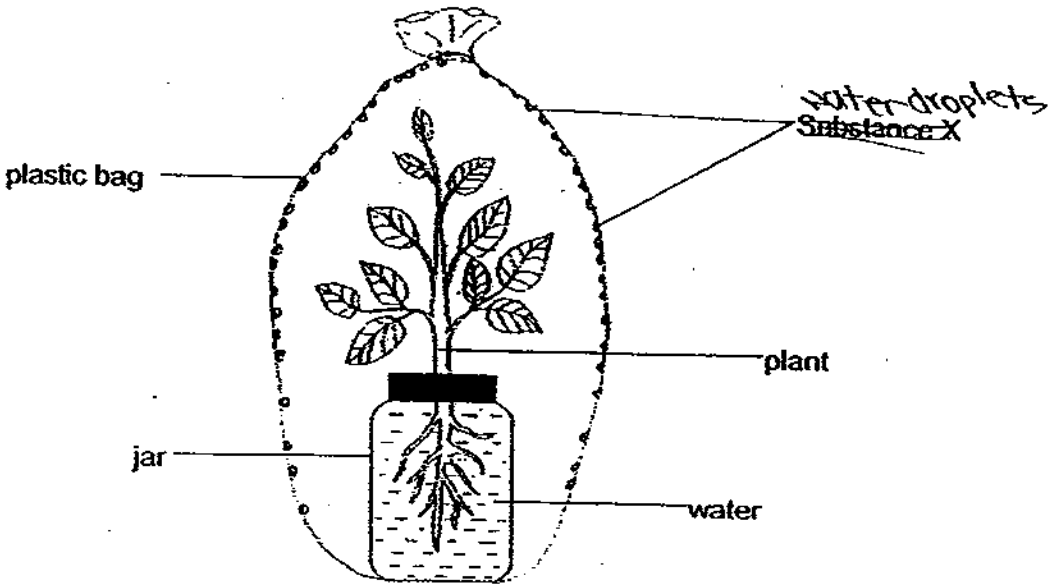
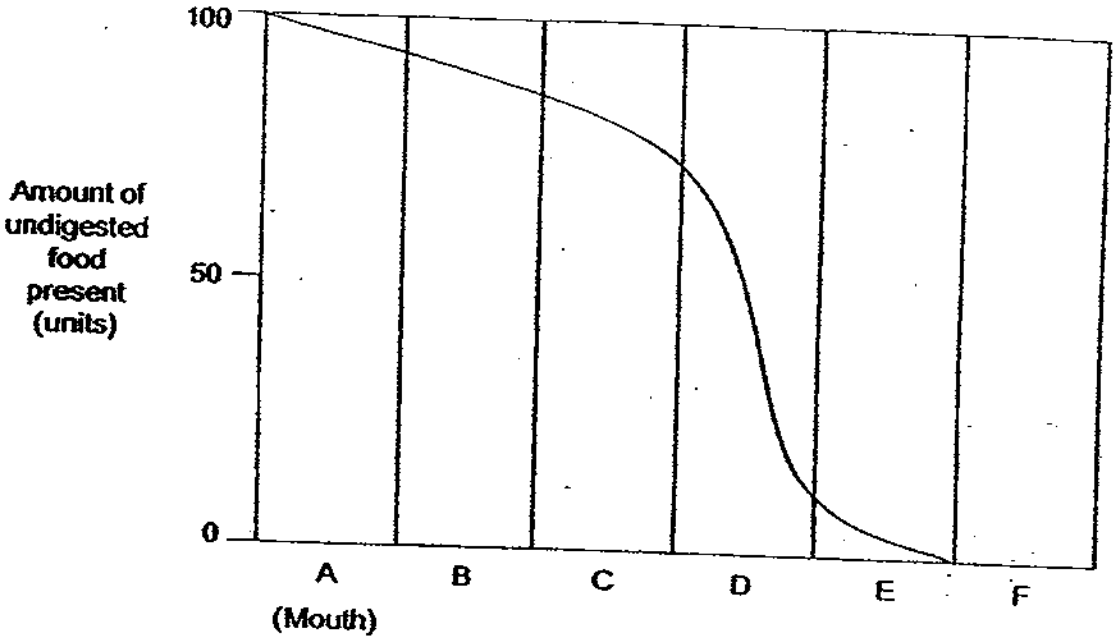
31. An experiment was carried out with a healthy plant growing in a sealed jar covered by a clear dry plastic bag as shown in the diagram below.



After sometime, some water droplets are found on the inner surface of the plastic bag.

Explain how the water from the jar get on to the inner surface of the plastic bag. *(2m)*

32. The figure below shows the amount of undigested food as it passes through the digestive system. The letters (**A to F**) represent the successive parts of the digestive system. Letter **A** represents the mouth where digestion begins.



a) Which part of the digestive system do **B** and **C** represent? *(1m)*

Part B : _____

Part C : _____

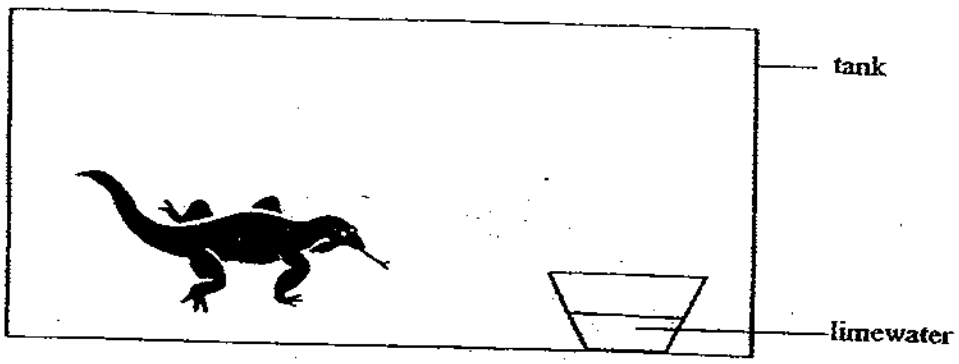
b) Explain why there is a sharp decrease in the amount of undigested food in part D? *(1m)*

_____

_____

_____

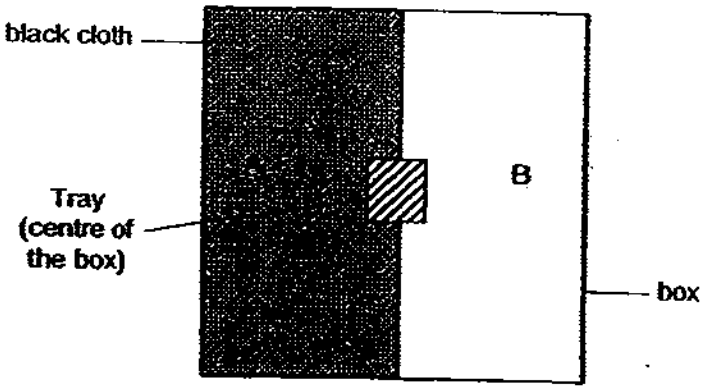
33. A lizard is put in an enclosed tank for 2 weeks as shown in the diagram below.



Put a tick in the appropriate boxes next to each statement. *(2m)*

		True	False	Not possible to tell
a)	The lizard may not survive as there is no fresh air.			
b)	The limewater will turn chalky after a while.			
c)	The lizard will die after 2 days as there is no food.			
d)	The lizard will stay very still at one spot to minimise activities to conserve energy.			

34. A fair test was conducted to investigate the preferred living conditions of two different organisms, X and Y. A box filled with soil was divided into two equal areas, A and B. Both areas were given equal amount of water. A thick black cloth was used to cover area A. Equal number of organisms X and Y were placed in the tray in the centre of the box at the beginning of the experiment.



At the end of the experiment, the number of the organisms in each area was counted and recorded in the table below.

Organism	X		Y	
Number	Before	After	Before	After
Tray	20	3	20	3
Area A in box	0	16	0	1
Area B in box	0	1	0	19

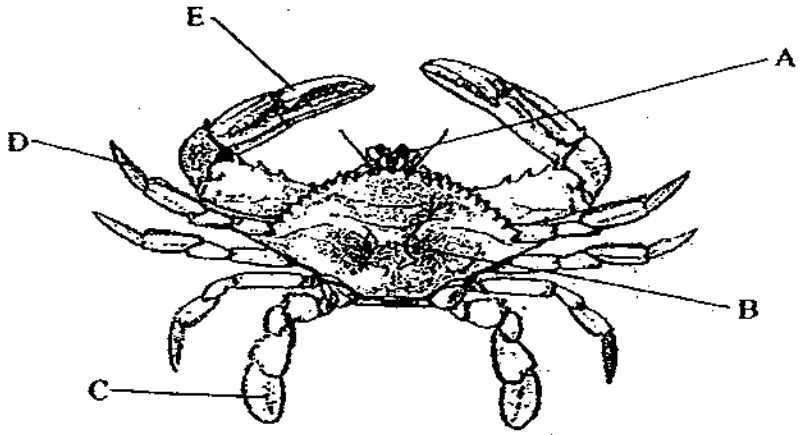
a) State a natural habitat in which organism Y can be found. *(1m)*

_____

b) Why are there more organism Y at the end of the experiment than the beginning? *(1m)*

_____

35. The figure below shows a crab. Each part of the crab has a special role to enhance the survival of the crab.

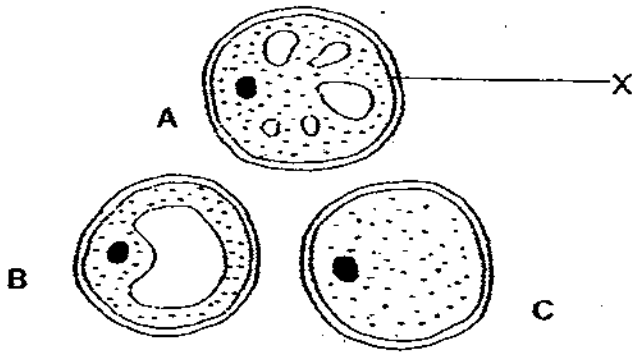


Fill in the letters A to E in the correct boxes below to indicate the function of each part.

Function	To swim better in water	To protect its internal organs	To walk on sand	To see front, back and sideways	To feed, and for defence
Part					

(2m)

36. The diagram shows the different stages of the growth of a plant cell.



a) Arrange the stages of the growth of this plant cell starting from the first stage to the last stage by writing the letters, **A**, **B** and **C**, in the boxes. *(1m)*

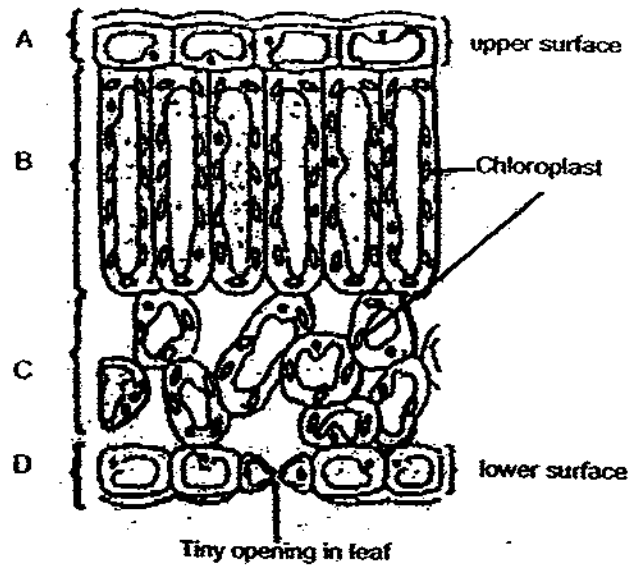
First Stage ⟶ **Last Stage**

b) State a function of the part marked **X** of the cell. *(1m)*

_____

_____

37. The diagram below shows the cross-section of a leaf of a Balsam plant.



a) Which layer A, B, C, or D release most of the gas given out during photosynthesis? Explain your answer. *(1m)*

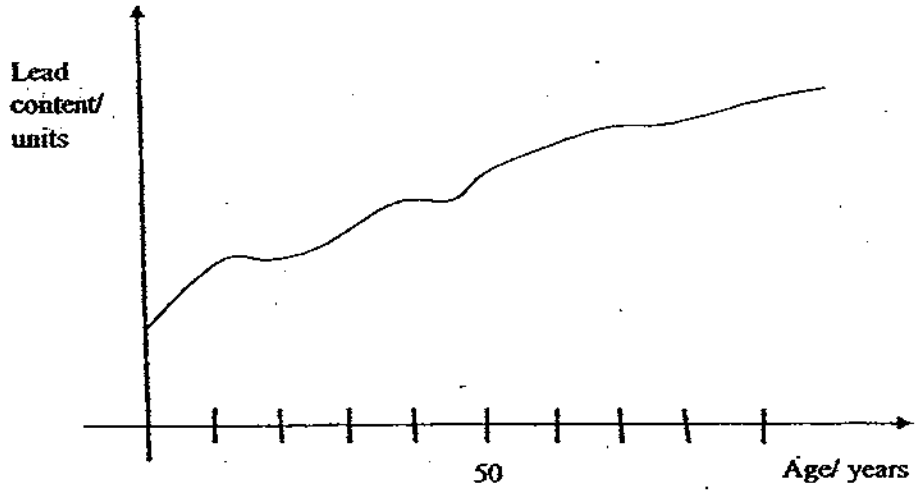
_____

_____

b) Which layer, A, B, C or D can trap light energy most efficiently for photosynthesis to take place? *(1m)*

_____

38. In the village of Abee, villagers depended on fishing for their livelihood. They have been fishing in a river over many generations. Recent developments near Abee saw many factories being set up near the river upstream.
A report on a recent study of lead content in the villagers' bodies is shown below.



a) Why does the lead content in the villagers' bodies increase as they age? *(2m)*

_____

_____

_____

b) Will the villagers survive better if they move further upstream than where the factories are located? Why? *(1m)*

_____

_____

39. **'Forever Fresh'** is a soluble substance that helps to keep flowers fresh for a longer time.

Mrs Lim wanted to investigate if this is true. She used 2 similar vases, **X** and **Y**, for her experiment.

The items in Vase **X** are shown in the table below. She also set up a control using Vase **Y**.

Vase	Rose from the same stock	Amount of 'Forever Fresh'	Amount of tap water	Temperature of tap water
X	12	5 ml	2500 ml	30°C
Y				

a) **Complete the above table** to show how Mrs Lim set up Vase Y. *(1m)*

b) **State one other important variable** Mrs Lim must keep constant during the experiment ? *(1m)*

_____

_____

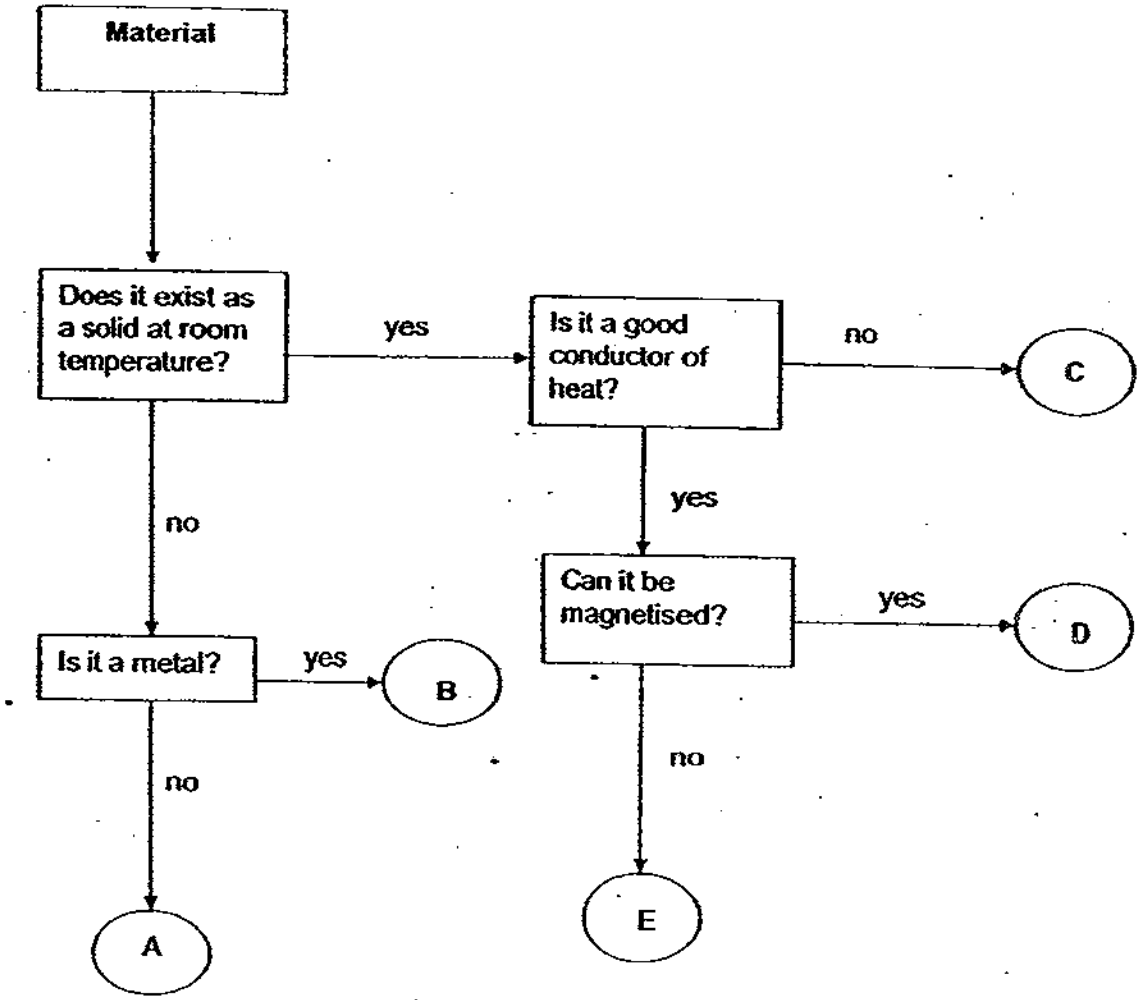
c) Explain why Mrs Lim has set up a control for her experiment. *(2m)*

_____

_____

_____

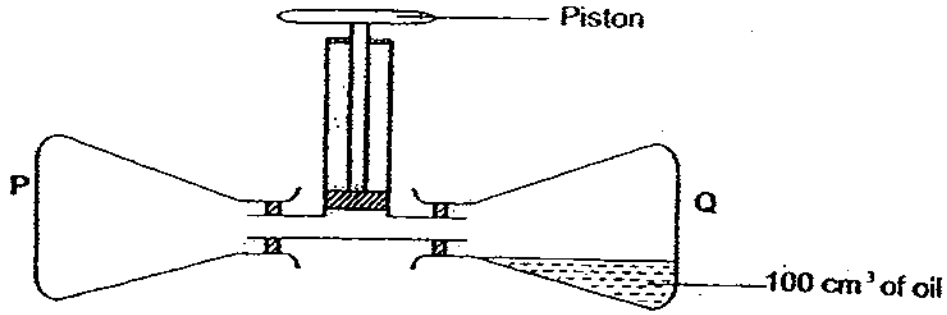
40. Study the flow chart below.



(a) State 2 properties of Material C based on the above chart. *(1m)*

(b) Which material, D or E, allows magnetism to pass through? Give a reason for your answer. *(2m)*

41. The setup below contains 2 conical flasks, P and Q, each with a volume of 500 cm^3. The conical flasks are connected to a piston.

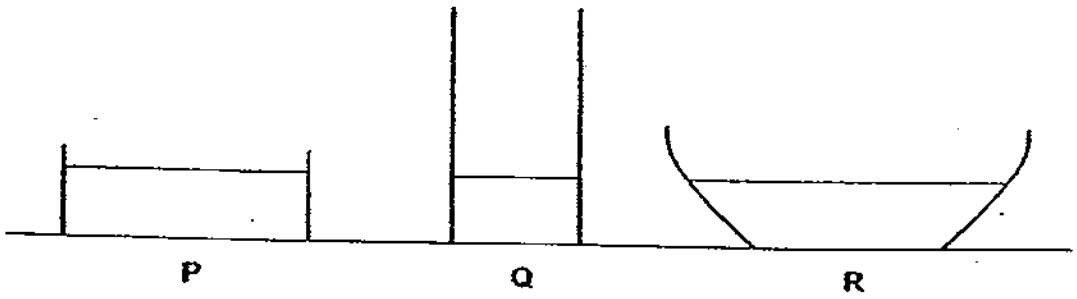


Each time the piston is pushed down, 100 cm^3 of air is forced into the 2 conical flasks.

a) Is there a difference in the volume of air in each of the conical flasks when the piston is pushed down 5 times ? *(1m)*

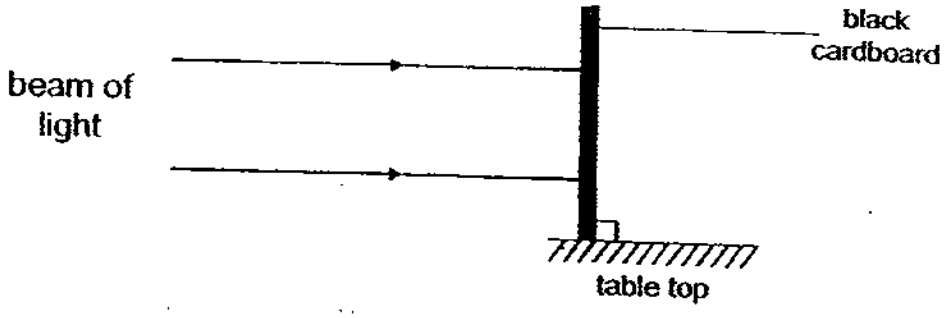
b) Explain your answer in (a). *(1m)*

42. The diagram shows 3 containers, P, Q and R. Water is poured into each of them until it reaches the same height for all the containers.



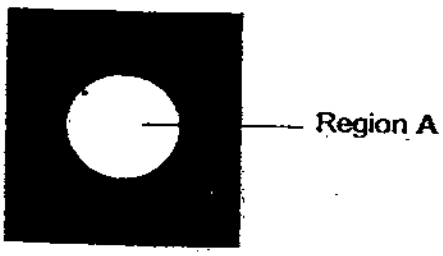
Describe what you should measure to determine how fast water evaporates in each container. *(2m)*

43. An experiment was carried out with a beam of light shone on a piece of black cardboard placed at 90° on a table top as shown in the diagram below.

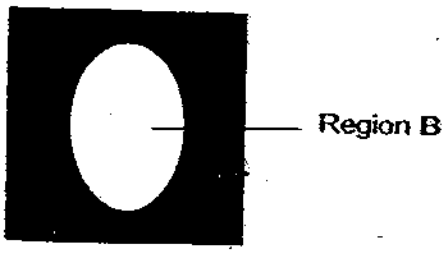


The experiment was repeated with the same beam of light and the piece of black cardboard tilted at 30° on the table top.

The beam of light cast appears as shown in the diagram below.



Front view of cardboard at 90°



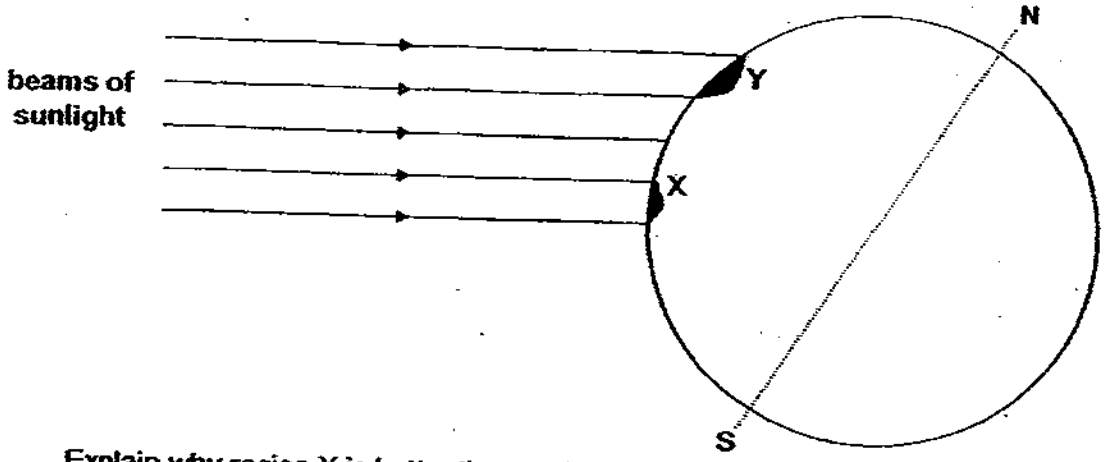
Front view of cardboard at 30°

A sensor device was used to measure the temperature of the light beam cast on the 2 regions, A and B.

The results are shown in the table below.

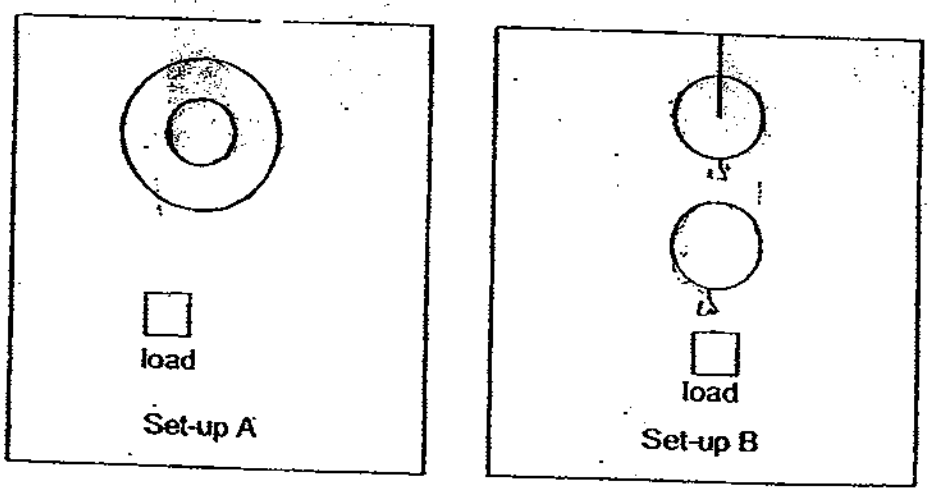
Region	Surface Area (cm^2)	Temperature of Light Beam (°C)
A	616	31
B	950	22

The information given can be used to explain the effect of sunlight on different regions on Earth.



Explain why region X is hotter than region Y. *(2m)*

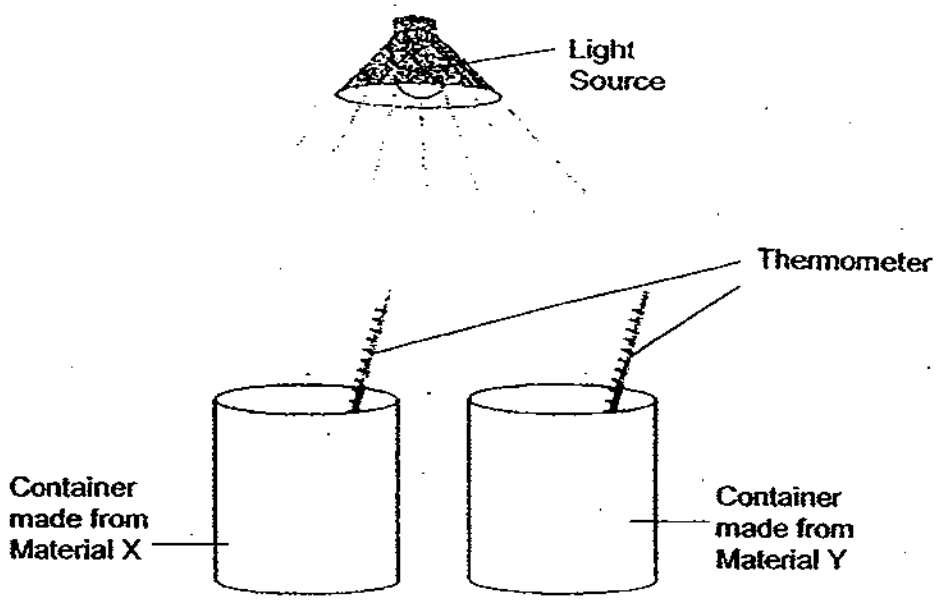
44. Set-up A shows a wheel and axle while Set-up B shows a pulley system made up of a fixed and a movable pulley.



a) Draw the ropes in each set-up to show how the respective machine uses a smaller effort to lift a heavier load. *(2m)*
Indicate the direction of effort with an arrowhead on the rope in each set-up.

b) Give an example of a simple machine that uses a smaller effort to overcome a bigger load. *(1m)*

45. Janice wanted to find out whether material X, or Y is a better conductor of heat. She used two similar containers, made of material X and Y respectively, for her investigation. She filled each container with 400 ml of water and left them under a light source as shown below.



After 1 hour, the thermometer in the water in the container made from material Y had a higher reading.

a) Which material, X or Y, is more suitable for making cooking ware? Why? *(1m)*

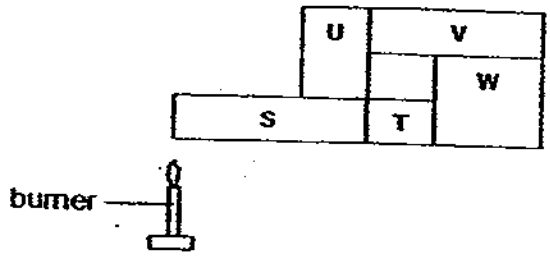
_____

Janice modified her experimental set-up and raised the height of the light source 3 times as far away. After an hour, both thermometers registered the same temperature reading.

b) What can be concluded about the thermal property of air? *(1m)*

_____

c) Materials S,T, U, V, W are arranged in the positions as shown below. A burner is placed at the end of material S and material V becomes hot eventually.



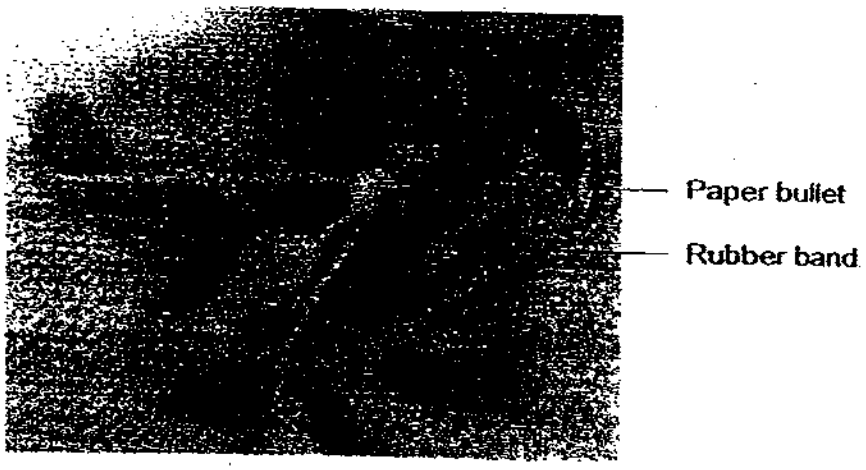
State the direction of heat transfer from S to V, if W is a poor conductor of heat. *(1m)*

Study the diagram below.

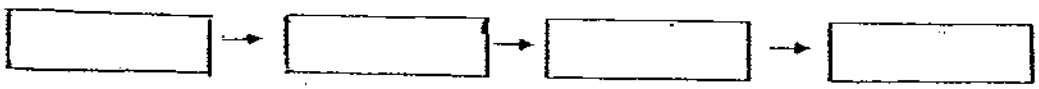
46. a) What form of energy does a stretched rubber band have? *(1m)*

_____

Mingfa uses a rubber band and paper bullet to shoot at an apple on the dining table.



b) State the energy conversion from his hands to the apple. *(1m)*



c) In his next attempt, Mingfa uses two rubber bands instead of one. He discovers that he has to use more energy in pulling back the rubber bands to the same extent, but is able to hit the apple with more force. Explain why is this so. *(2m)*

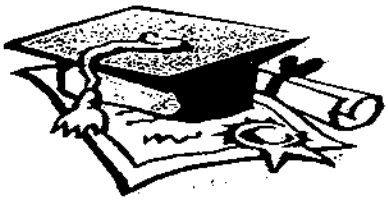
_____

_____

End of Part 2

Setters:

Mr Tan Joo Nam
Ms Lee Yoke Cheng



ANSWER SHEET

EXAM PAPER 2009

SCHOOL : HENRY PARK PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA2

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

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

31)The roots absorb in the water which is carried to the leaves where water is evaporated through the leaves is lost through transpiration and condensed on the plastic.

32)a)B: gullet C: stomach
b)D is the small intestine where the greatest amount of digestion most of the food is digested.

33)a)T b)T c)Not d)Not

34)a)The garden.
b)The organism reproduce.

35)C, B, D, A, E

36)a)C, A, B
b)It allows substances to enter the cell and leaving the cell.

37)a)Part D. It is the only one with opening to let gas be given out during photosynthesis.
b)Part B.

38)a)The factories polluted the river with lead and fishes had lead in their bodies. When the villagers eat the fishes over a period of time, lead accumulates in their bodies.

b)Yes the river further upstream is less likely to be polluted by factory.

39)a)12, 0ml , 2500ml, 30℃

b)Temperature of the surrounding.

c)It is to compare the differences to confirm that the roses stay fresh due to the presence of forever fresh.

40)a)Material C exist as a solid at room temperature and it is not a good conductor of heat.

b)Material E. It cannot be magnetized as it a non-magnetic material. Non-magnetic material allow magnetism to pass through.

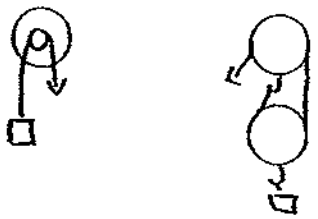
41)a)Yes.

b)Air can be compressed buy not liquid.

42)How much water is evaporated over a fixed period of time.

43)The heat is concentrated in X but the heat is spread out over.

44)a)



b)Screwdriver.

45)a)Y. It is a better conductor of heat than X.

b)Air is a poor conductor of heat.

c)S→U→V

46)a)Elastic potential energy.

b)Chemical potential energy→Kinetic energy→Elastic potential energy→Kinetic energy.

c)More energy is required by the hand to convert to more elastic potential energy stored in 2 rubber bands. When the bullet is real eased, more kinetic energy is converted and carried to hit the apple and hence it hits the apple with a greater impact.