NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1

2010

BOOKLET A

Date : 11 May 2010

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

Parent's signature: .....

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Booklet A consists of 24 printed pages including this cover page.

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Section A (30x2 = 60 marks)

For each question, 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 provided.

1. Muscles are found in the walls of the gullet, stomach, small intestine and large intestine of the digestive system. How do these muscles help in the digestion of food?

   A The muscles break down the food into smaller pieces.

   B The muscles help to mix and churn the digestive juices and food.

   C The muscles help to move food from one part of the digestive tract to another.

   (1) A and B only

   (2) A and C only

   (3) B and C only

   (4) A, B and C

2. Which of the following sentences about mosses are correct?

   A They have leaves to help them photosynthesize.

   B They are flowering plants.

   C They reproduce by spores.

   D They have strong stems.

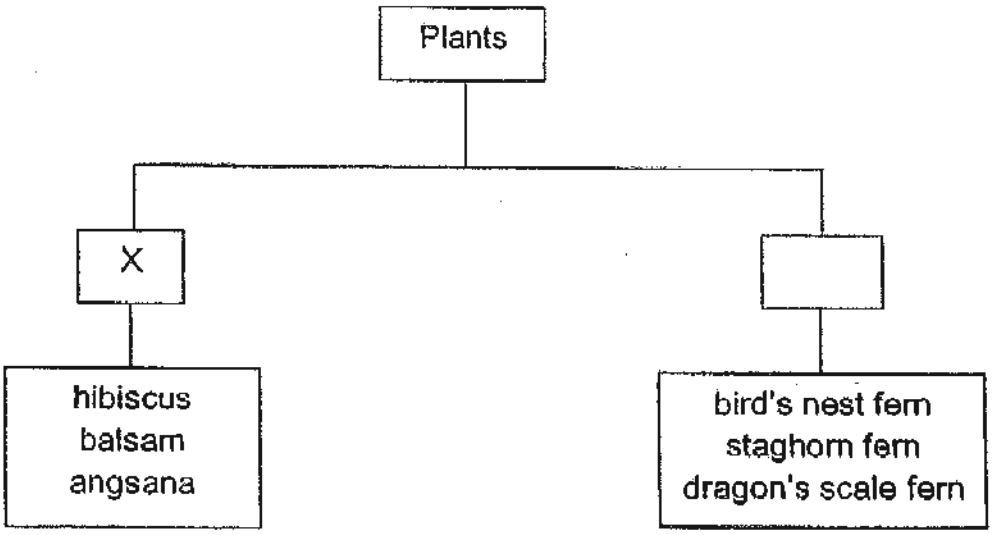
   (1) A and B only

   (2) A and C only

   (3) A, C and D only

   (4) B, C and D only

3. Study the classification table below. Characteristics X and Y are used to classify the plants.



What could characteristics X and Y be?

	X	Y
(1)	have stems	do not have stems
(2)	have chlorophyll	do not have chlorophyll
(3)	reproduce by seeds	reproduce by spores
(4)	grown on land	grown in water

4. Which one of the following statements is true about cells of organisms?

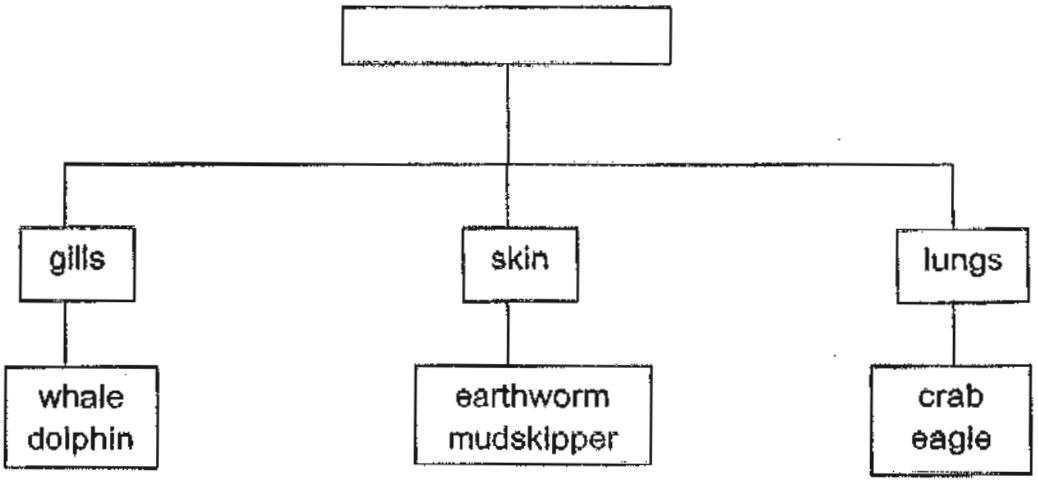
(1) Organisms that are bigger have bigger cells.

(2) The cells in a multicellular organism are all the same.

(3) All the cells in an organism are identical in shape and size.

(4) Bigger organisms have more cells than smaller organisms.

5. The classification chart below shows the breathing organs of some animals.



How many organisms have been classified wrongly?

(1) 1

(2) 2

(3) 3

(4) 4

6. Which of the following parts form the female reproduction system of the flower?

A ovary

B petals

C anther

D stigma

E ovules

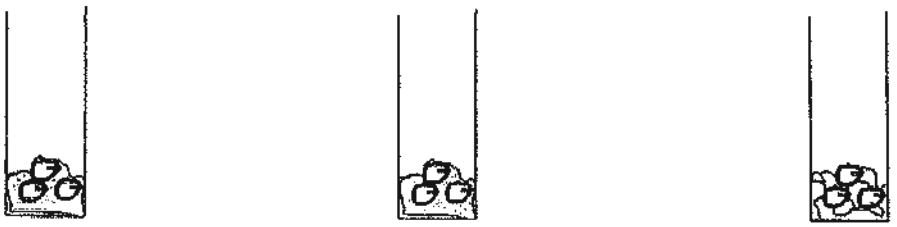
(1) A, B and E

(2) A, C and E

(3) A, D and E

(4) B, C and D

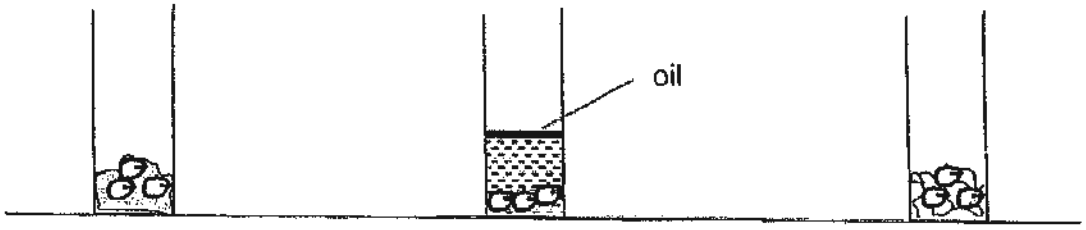
7. The following sets-up were used by Jim to investigate the germination of seeds.



Set-up A
Temperature at 30°C
Wet Cotton Wool
Placed in a room

Set-up B
Temperature at 30°C
Wet Cotton Wool
Placed in a cupboard

Set-up C
Temperature at 30°C
Dry Cotton Wool
Placed in a room



Set-up D
Temperature at 5°C
Wet Cotton Wool
Placed in a fridge

Set-up E
Temperature at 30°C
Seeds submerged in
boiled cooled water
Placed in a room

Set-up F
Temperature at 5°C
Dry Cotton Wool
Placed in a fridge

Which two sets-up should he select if the aim of his experiment is to find out if warmth is needed for seeds to germinate?

(1) A and F

(2) B and D

(3) C and D

(4) E and F

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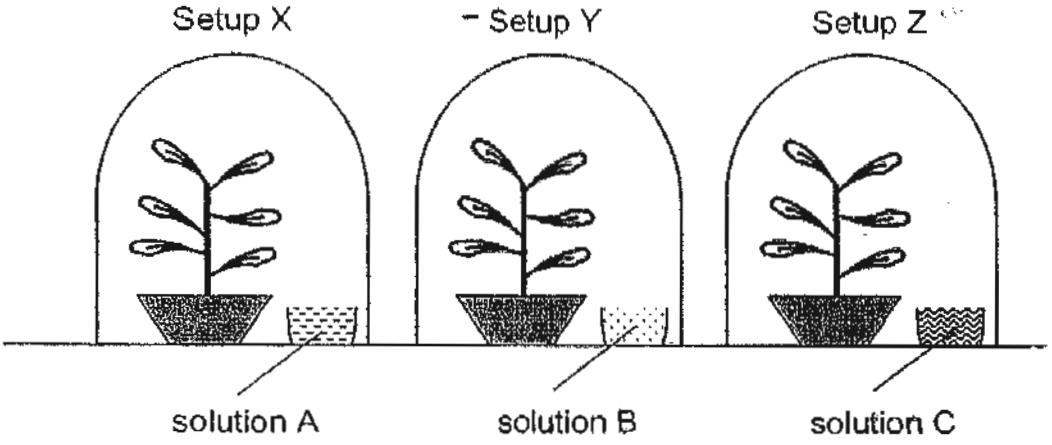
8. Rihana conducted an experiment on photosynthesis. She left 3 similar pots of plants in a dark room for 3 days and she watered them daily.
She then put the pots of plants in the 3 set-ups shown below. The solution in each set-up served different functions.
The set-ups were placed in the sun in the garden.



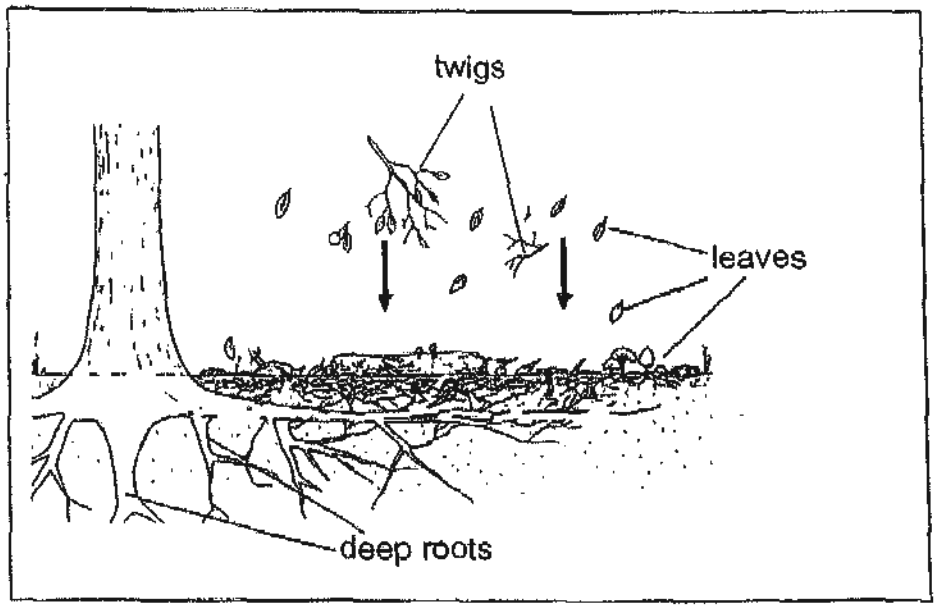
After 6 hours, Rihana removed a leaf each from the set-ups X, Y and Z and labelled them as X, Y and Z. She conducted a starch test on each of them and the results were as followed.

Leaf X	Iodine turned dark blue.
Leaf Y	Iodine turned dark blue.
Leaf Z	Iodine remained brown

Which one of the following was most likely to be solutions A, B and C?

	Solution A	Solution B	Solution C
(1)	chemical that absorbs oxygen	vinegar with baking soda to produce carbon dioxide	chemical that absorbs carbon dioxide
(2)	chemical that absorbs water vapour	chemical that absorbs oxygen	vinegar with baking soda to produce carbon dioxide
(3)	chemical that absorbs carbon dioxide	water	chemical that absorbs oxygen
(4)	vinegar with baking soda to produce carbon dioxide	chemical that absorbs water vapour	water

9. Look at the drawing below.



How are dead leaves and twigs important to the survival of a tree in a rainforest?

(1) They provide food for the tree.
(2) They provide water for the tree.
(3) They keep the soil cool by providing shade.
(4) They decompose and become nutrients for plants.

10. Which one of the following statements is incorrect?

(1) Different habitats have different conditions.
(2) There are only animal populations in a habitat.
(3) A habitat provides food and shelter for the organisms living in it.
(4) The populations in a habitat interact and depend on one another.

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11. The table below shows the changes in the population size of 4 freshwater organisms in different water temperatures.

	Temperature of Water			
	0° C - 15° C	20° C - 35° C	40° C - 55° C	60° C - 75° C
Organism R	25	27	49	146
Organism S	94	65	25	4
Organism T	241	183	74	21
Organism U	20	40	60	15

If these organisms are found in a lake where factories are continuously discharging waste water at 50° C, which one of the organisms will grow best in this condition?

(1) Organism R
(2) Organism S
(3) Organism T
(4) Organism U

12. Study the food chain given below.

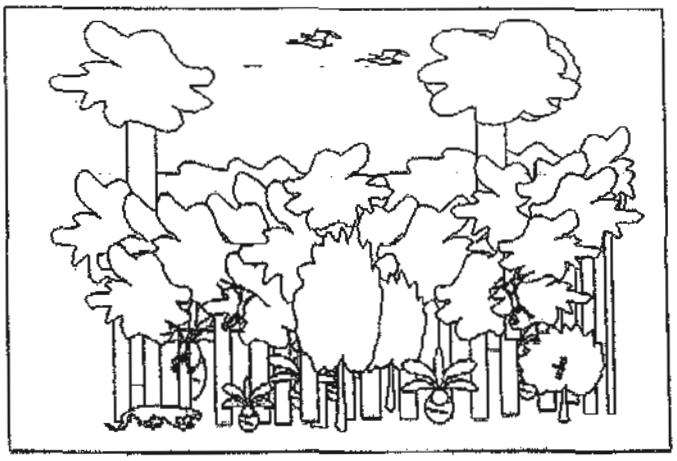
rice grains → field mouse → snake → owl

Which one of the following describes the food chain correctly?

(1) Energy is transferred from the owl to the snake.
(2) All the organisms depend on the rice grains directly.
(3) An increase in the population of owls results in an increase in the population of field mouse.
(4) The amount of energy transferred from the snake to owl is greater than that from rice grains to field mouse.

13. The diagrams below show a tropical rainforest at different times of the year.

January 2007



November 2007

Which of the following are likely to happen to the animals in the rainforest in November 2007?

A They become endangered and then extinct.
B They migrate to other parts of the rainforest.
C They travel further to look for food and water.
D They remain in the same location in the rainforest.

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

14. Which of the following are decomposers?

A bacteria
B earthworm
C mushroom
D dead leaves

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

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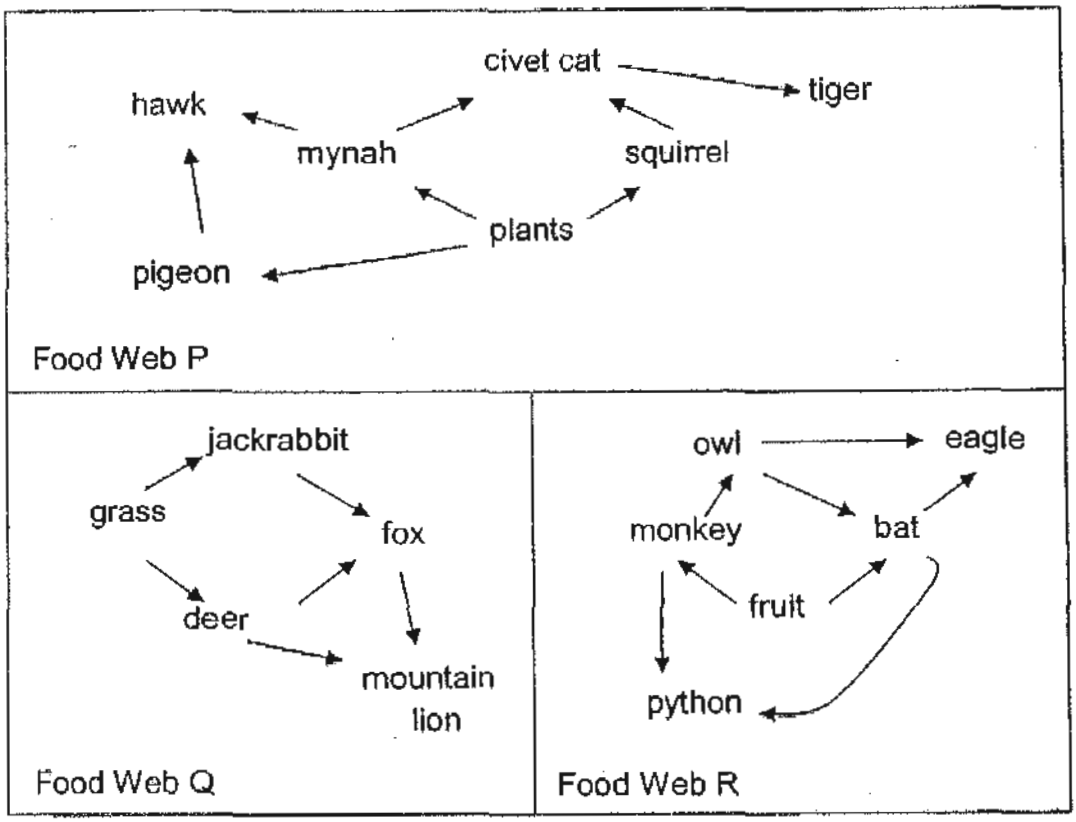
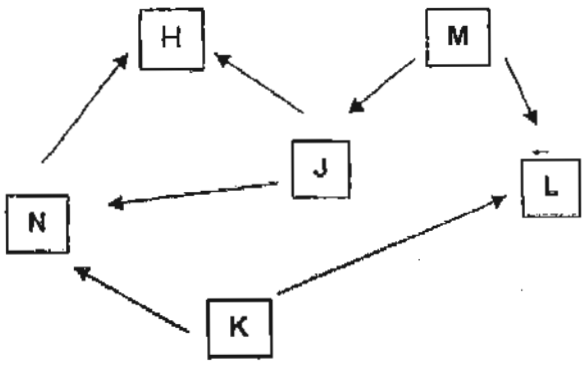
15. Study the three food webs shown below.



Arrange the food webs according to increasing number of food chains in each food web.

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

16. Study the food web given below.



Which of the following statements about the food web are correct?

A There are two food producers.
B There are more carnivores than herbivores.
C Only one animal is both a predator and a prey.
D An increase in the population of organism H has no effect on the food web.

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

17. How are whales adapted for living in oceans that are very cold?

(1) They have a strong tail.
(2) They have a streamlined body.
(3) They have a thick layer of fat under their skin.
(4) They are able to hold their breath when they dive.

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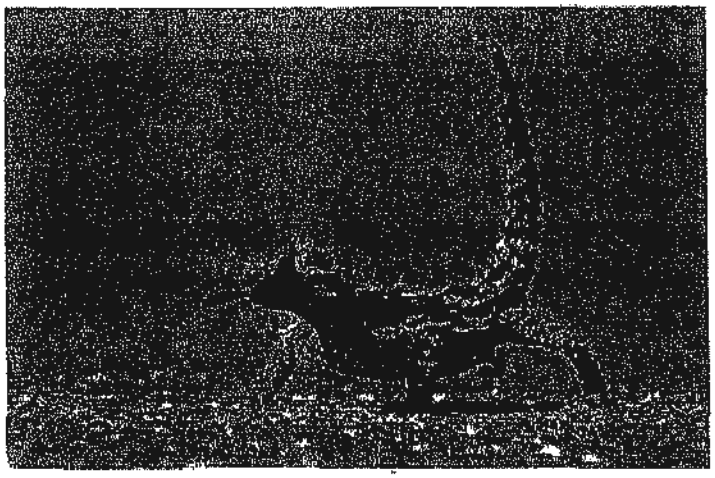
18. The picture below shows a Thorny Devil, a lizard found in the Mojave Desert of USA, as it is moving in the desert.
This animal has adapted well to the harsh desert environment. It has a strong body armour to protect itself against predators. In addition, it has certain behaviours that allow it to manage the hot temperatures in the daytime.

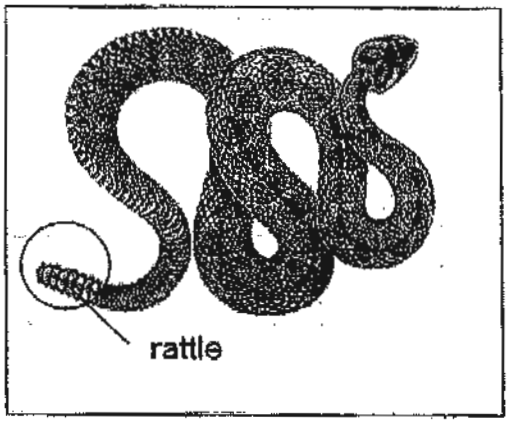


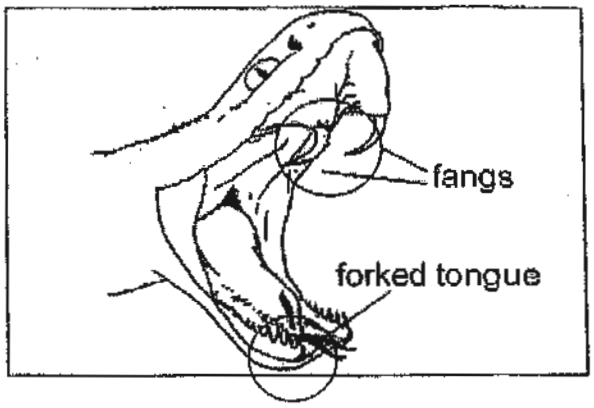
Which of the following are the most likely adaptations of the Thorny Devil for survival in the hot climate of the desert?

A Ability to change colour.
B Ability to burrow into the sand.
C Thorn-like structures on its body.
D Ability to move around with its body and tail lifted off the ground.

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

19. The diagrams below show two drawings of rattlesnakes.





Rattlesnakes are well-adapted for hunting prey in their habitat.
Which of the following correctly describes these adaptations?

	Structural Adaptation	Behavioural Adaptation
(1)	sharp, hooked and poisonous fangs	using its rattle to warn prey
(2)	forked tongue that can sense changes in the environment.	making a hissing sound while hunting
(3)	patterns on its body for camouflage.	ability to wait silently in ambush
(4)	the rattle can be shaken to produce a sound	hiding in narrow spaces between rocks

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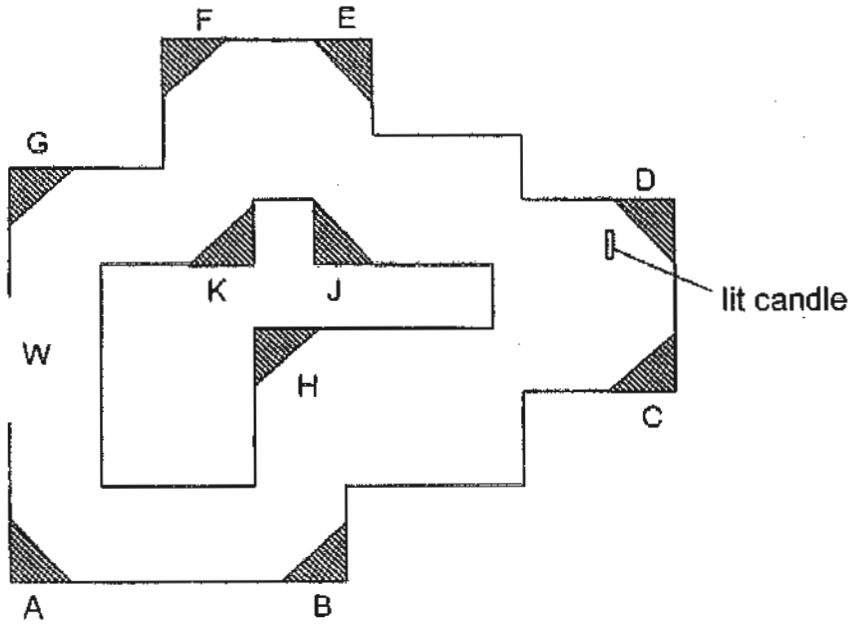
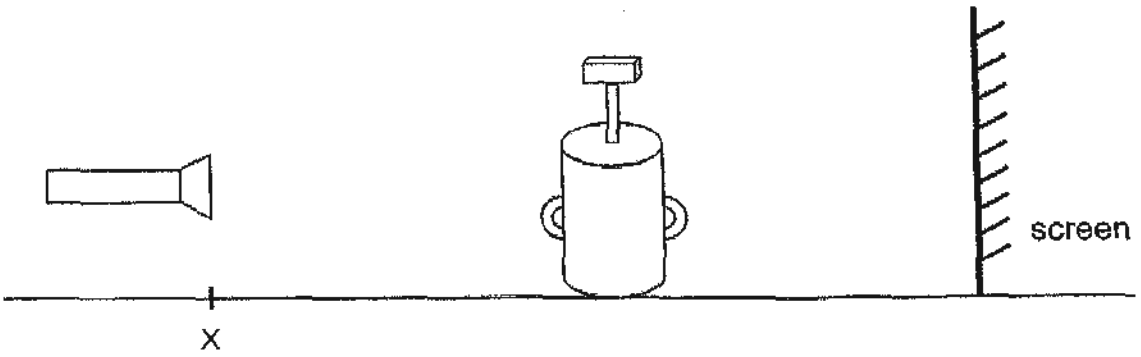
20. The diagram below shows the top view of a room. A ,B, C, D, E, F, G, H, J and K are positions in the room where mirrors could be placed.



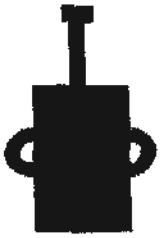
Where should the mirrors be placed so that a person standing at position W can see the lit candle?

(1) B, C and H
(2) F, G and K
(3) A, B, C and H
(4) E, F, J and K

21. The diagram below shows a torch shining at a porcelain object from position X.



Which one of the following shadows could be seen on the screen?



(1)

(2)

(3)

(4)

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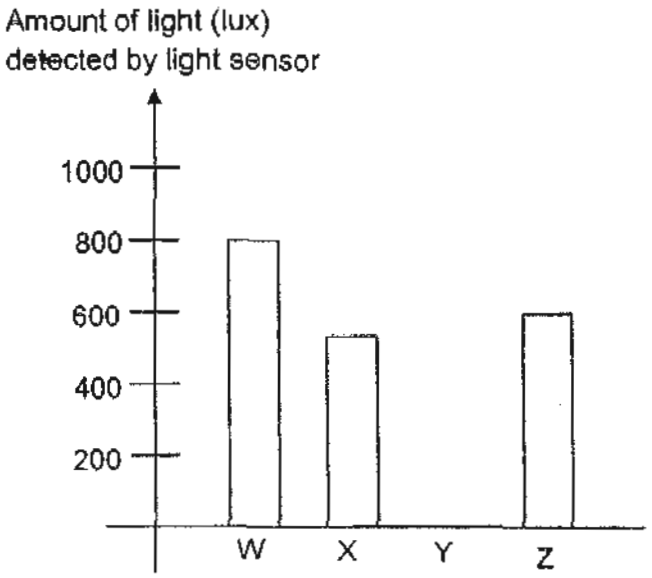
22. An experiment was conducted to find out how much light can pass through four different materials W, X, Y and Z using a datalogger with light sensor.



Based on the graph above, which one of the following statements is true?

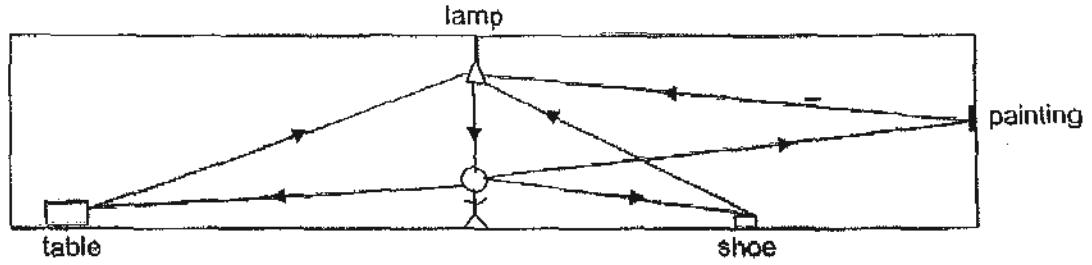
(1) Material Y allows very little light to pass through.

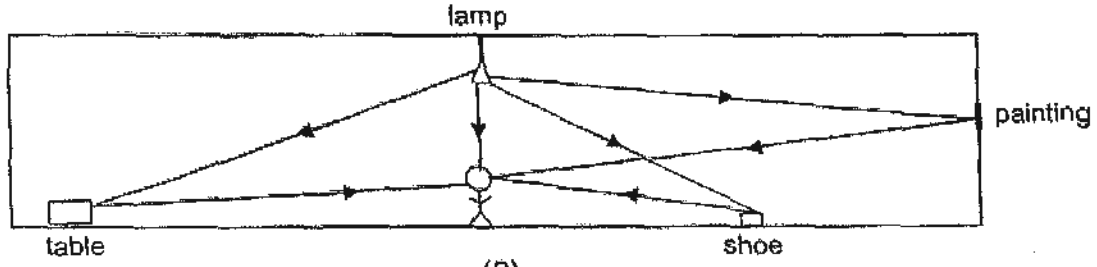
(2) Material Z allows less light to pass through than Material X

(3) When Material X and Material Y are stacked together, no light can pass through them.

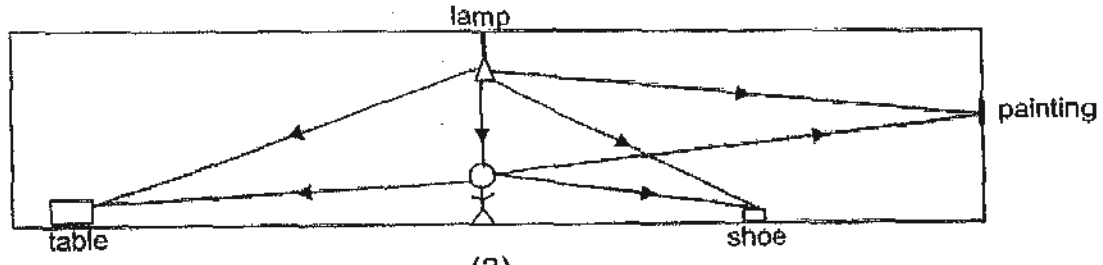
(4) The total amount of light that can pass through Material W and Material Z when they are stacked together is 1400 lux.

23. Mengli is standing in the centre of a brightly lit room. Which one of the following correctly shows the paths and directions of light that enters his eyes to enable him to see the objects around him?

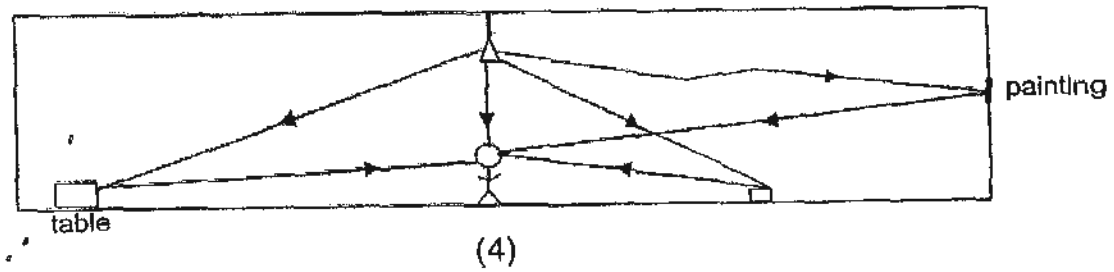




(2)



(3)



(4)

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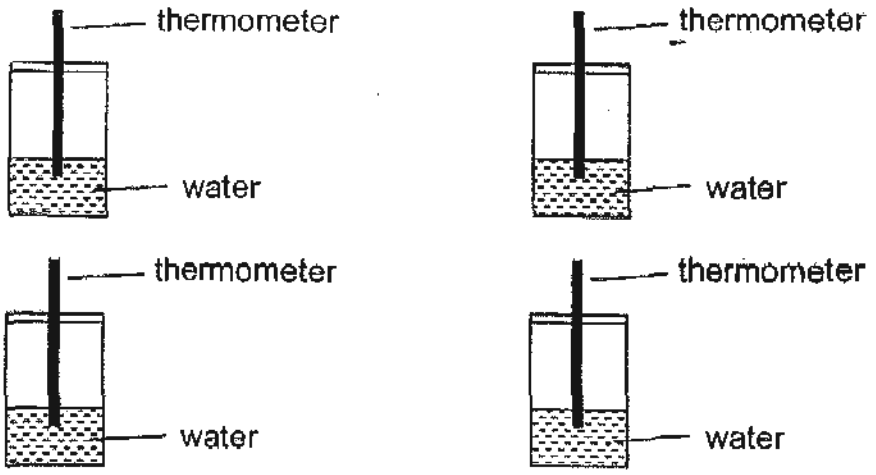
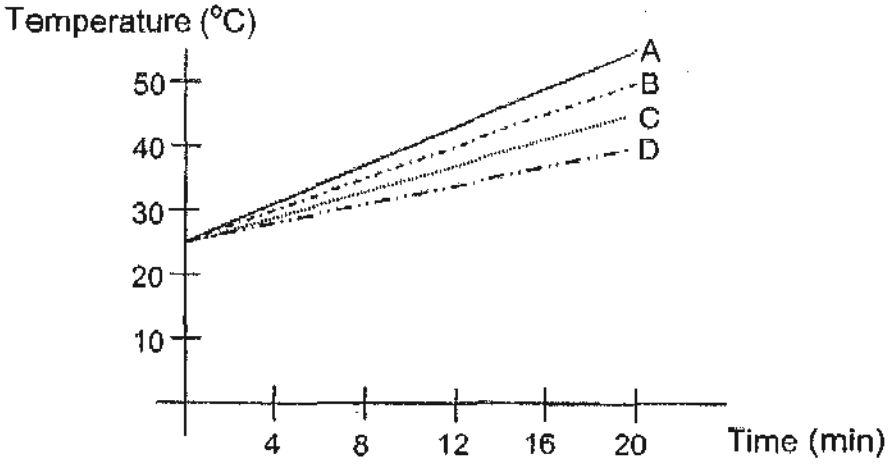
24. Equal amount of tap water was poured into four cans of identical shape and size. The cans were made of different materials, A, B, C and D. A thermometer was inserted into each can. The cans were then placed in an open field on a sunny day.



A graph was plotted to show the changes of temperature of the water in each tin for 20 minutes at 4-minute intervals.



Which one of the materials A, B, C and D should be used to make a box to prevent ice cubes from melting too quickly?

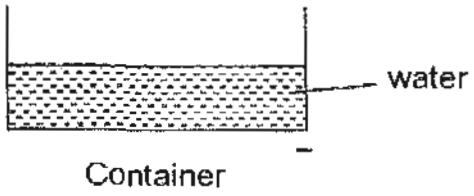
(1) A

(2) B

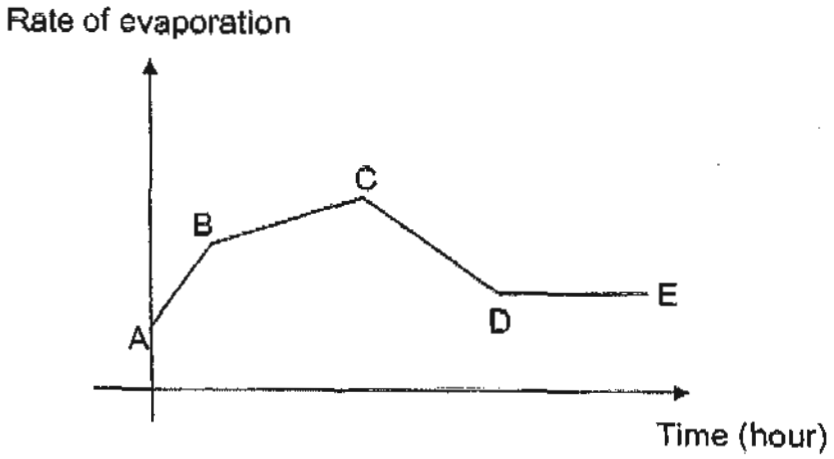
(3) C

(4) D

25. The graph below shows the changes in the rate of evaporation of water in the container shown below over a period of time.



Container



Which of the following statements are true?

A There was no change in the rate of evaporation during Period DE.

B The change in the rate of evaporation during Period CD was due to the decrease in the exposed water surface area.

C The change in the rate of evaporation during Period BC was due to the increase in temperature of the air around the container.

D The rate of evaporation increased quickly during Period AB because there was a lot of water in the container at the start of the experiment.

(1) B only

(2) A and C only

(3) A, B and C only

(4) B, C and D only

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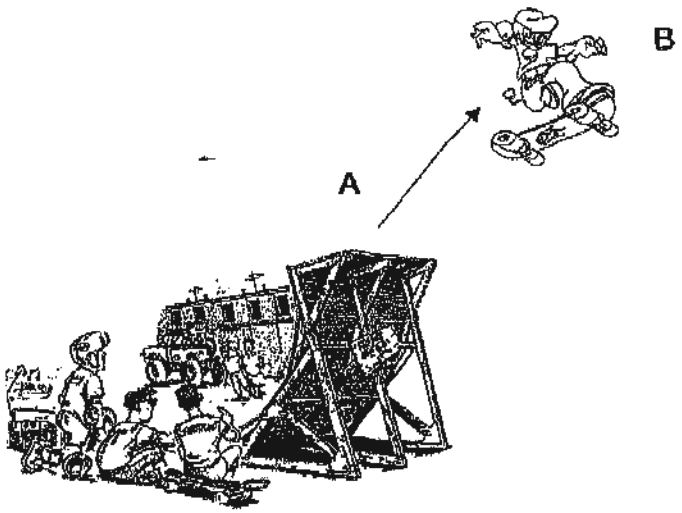
26. The diagram below shows a skateboarder jumping off a ramp.



Which one of the following described the energy that the skateboarder possessed from position A to position B?

	Gravitational Potential Energy	Kinetic Energy
(1)	decreasing	increasing
(2)	increasing	increasing
(3)	increasing	decreasing
	decreasing	decreasing

27. The following solar-powered toy was used by Pete to find out the effect of light intensity on how the toy moves.

The toy flower had moved 1 round when it moved from left to right and then back to its starting point again. Pete counted the numbers of rounds that the flower made in 5 minutes.

Pete wrote the following aims and hypothesis for the experiment.

	Aim	Hypothesis
A	To find out the effect of light intensity on the amount of electricity produced.	When there is more electrical energy, the light is more intense.
B	To find out the effect of light intensity on the speed at which the toy moved.	The greater the light intensity, the faster the toy moved.
C	To find out the effect of light intensity on the amount of electricity produced.	The greater the light intensity, the greater the amount of electrical energy.
D	To find out the effect of light intensity on the speed at which the toy moved.	Light intensity has no effect on the amount of electrical energy produced.

Based on the table above, which of the following sets of aim and hypothesis could be used for the experiment?

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

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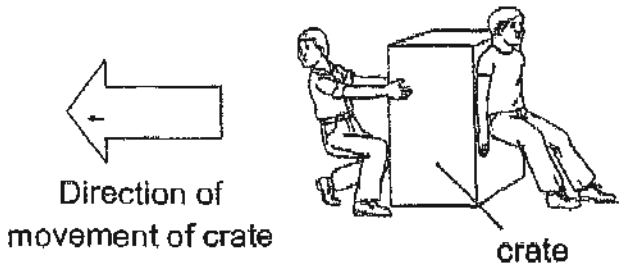
28. The picture below shows a boy hitting a volleyball.

Which of the following are most likely to happen when he hits the ball?

A The volleyball increases speed.
B The volleyball becomes smaller.
C The volleyball changes direction.
D The volleyball stops immediately.

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

29. Look at the drawing below.



Which of the following statements best describe the forces present?

A Gravity is present.
B Only a push or a pull force is present.
C Both a push and a pull force are present.
D The force exerted by each man is opposing each other.
E The force exerted by the men is greater than the weight of the crate.

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

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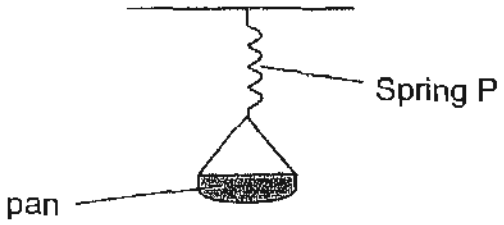
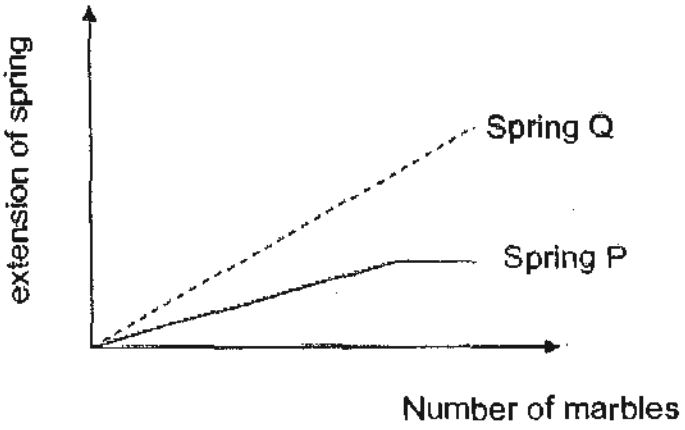
30. The diagram below shows an experimental setup using Spring P.



Similar number of marbles were placed in the pan and the length of the spring was recorded. The same experiment was repeated using Spring Q. The results of the two springs are shown in the graph below.



Based on the results in the graph, the following statements were made by four pupils.

Alice : Spring Q was stronger than spring P.
Bala : Spring P extended less than spring Q for the same mass added.
Christine : Both springs had reached their maximum extended length.
Dollah : Both springs had the same original length.

Who had made the correct statement?

(1) Alice only
(2) Bala only
(3) Alice and Christine only
(4) Bala and Dollah only

NANYANG PRIMARY SCHOOL

PRIMARY 6 SCIENCE

SEMESTRAL ASSESSMENT 1

2010

BOOKLET B

Date : 11 May 2010

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

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Booklet B consists of 18 printed pages including this cover page.

81

Section B (40 marks)

Write your answers to questions 31 to 44 in the spaces provided. Marks will be deducted for misspelt key words.

31. The table below shows the differences and similarities between plant and animal cells.

Cell Part	Animal Cell	Plant Cell	
Nucleus	Present	Present	☐
Chloroplasts	Has no chloroplasts	Have chloroplasts	☐
Cytoplasm	Present	Present	☐
Vacuole	One or more vacuole	Two large central vacuoles	☐
Cell wall	Has a cell wall	Has a cell wall	☐
Cell membrane	Has a cell membrane	Has a cell membrane	☐

(a) Some of the comparisons between the animal cell and plant cell are wrong. Put a cross (X) in the box next to those wrong comparisons. [1]

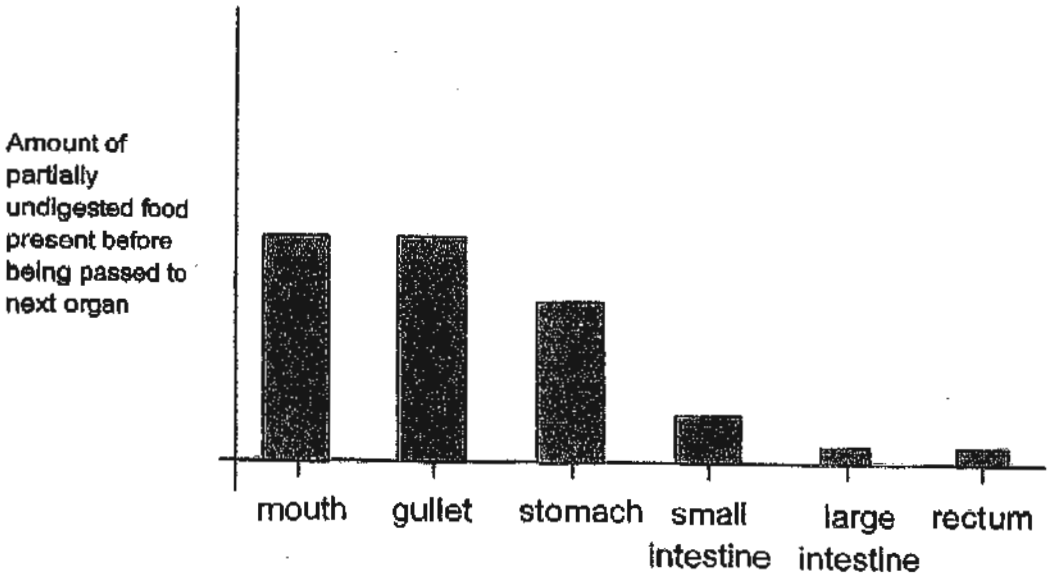
Jim observed a muscle cell and a red blood cell under a microscope. He noticed that the muscle cell had a cell part that was not found in the red blood cell.

(b) Identify the cell part found in the muscle cell but not in the red blood cell that allows it to divide and increase in number. [1]

_____

_____

32. The graph below shows the amount of partially undigested food that was passed from one organ to the other along the digestive system.



(a) Based on the graph, in which organ did most of the digestion take place? [1]

_____

_____

(b) Explain why there was undigested food in the rectum which would be passed out of the body. [2]

_____

_____

_____

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33. Table A shows the composition of inhaled air by volume expressed in percentage taken in by an adult. Table B shows the composition of exhaled air by volume expressed in percentage given out by an adult.

Table A
Composition of Inhaled air by volume

Gas	Percentage
Oxygen	21%
Carbon Dioxide	0.03%
Nitrogen	78%
Others	0.97%

Table B
Composition of Exhaled air by volume

Gas	Percentage
Oxygen	16%
Carbon Dioxide	4%
Nitrogen	78%
Others	2%

(a) The volume of oxygen in inhaled air is more than that of exhaled air. Explain the difference. [1]

_____

_____

(b) Explain why the composition of nitrogen, in the inhaled and exhaled air is the same. [1]

_____

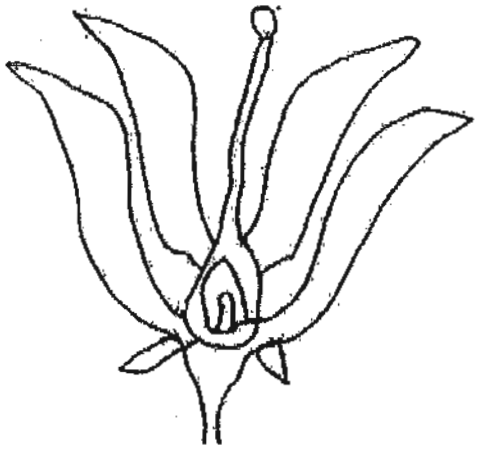
_____

(c) The composition of other gases increases from 0.97% in inhaled air to 2% in exhaled air. Identify the gas which causes the increase. [1]

_____

_____

34. The diagram below shows the picture of a bisexual flower.



(a) Draw and label the missing male reproductive parts of the flower. [1]

(b) Predict and explain whether a bisexual flower with missing male reproductive parts will still develop into a fruit. [1]

Prediction:

_____

Explanation:

_____

_____

_____

35. Ali planted a bean seed under suitable conditions and observed the seed leaf and the seedling. He recorded the changes in the mass of the seed leaf and the seedling in the tables shown below.

Table A

Day	2	4	6	8
Mass	5 g	7 g	10 g	11 g

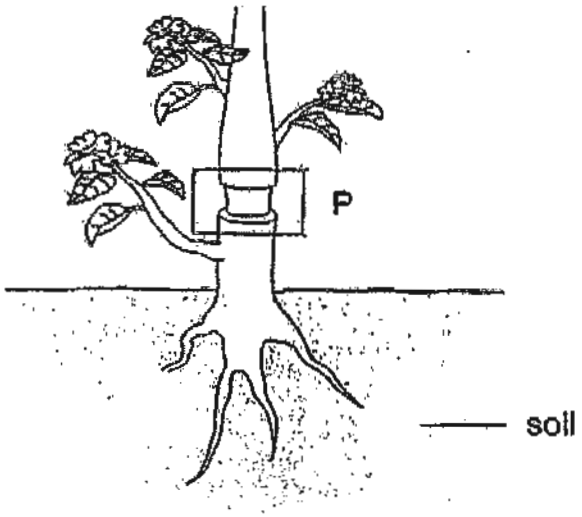
Table B

Day	2	4	6	8
Mass	4 g	3 g	2 g	1 g

(a) Which table, A or B, correctly shows the changes in mass of the seedling? Give a reason for your answer. [1]

(b) How did the seedling get its food for growth after Day 8? [1]

36. The diagram below shows a plant.



George cut a ring around the stem at P. As a result, the tubes carrying food were removed.

Explain whether the plant would die eventually. [2]

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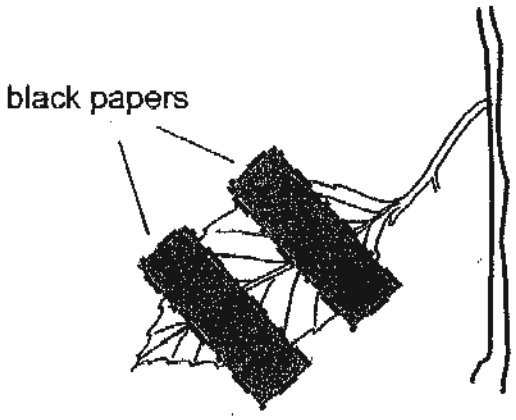
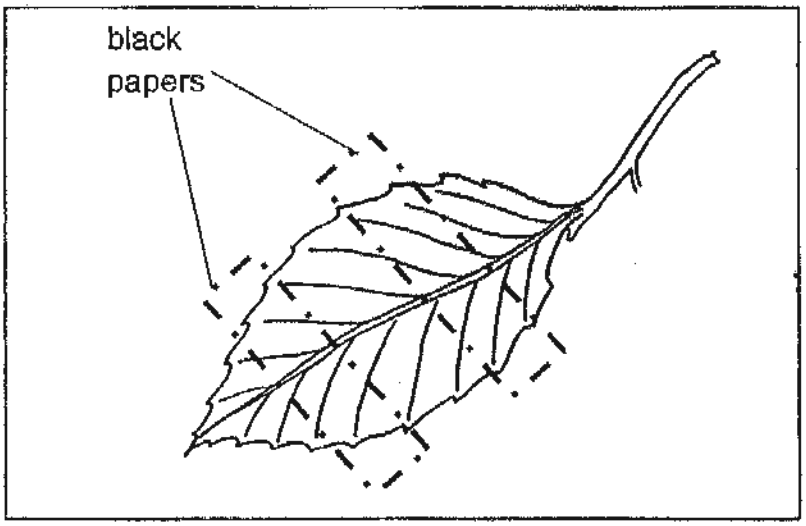
37. The diagram below shows a leaf on a plant used in an experiment. While it was still on the plant, the leaf was partly covered with black paper on the upper surface as shown in the diagram



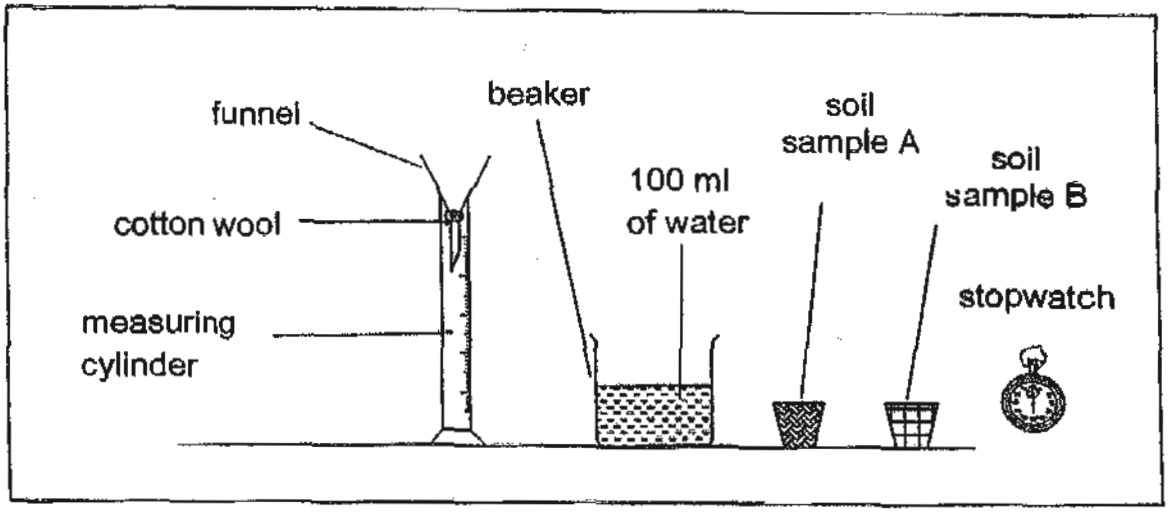
After 48 hours in the garden, the leaf was then removed from the plant and tested with iodine.

(a) Shade the areas on the leaf that turned the iodine dark blue. [1]



(b) Other than chlorophyll and light, what are the other two conditions that must be present for photosynthesis to take place? [1]

38. An experiment was conducted to find out which soil sample can hold water for a longer period of time. The following materials were given for the experiment:
The experiment is set up as shown below.



(a) Write down the procedure in the table given below. Steps 1, 5 and 6 are completed for you. [3]

Steps	Procedure
1	**Set up the measuring cylinder, funnel and cotton wool as shown in the drawing.**
2	
3	
4	
5	**Repeat the experiment for soil sample B.**
6	**The soil sample that took the longer time to allow all the water to pass through is the soil that can retain the water longer.**

(b) Based on the results recorded, how would you decide the soil sample to use to grow a cactus? [1]

_____

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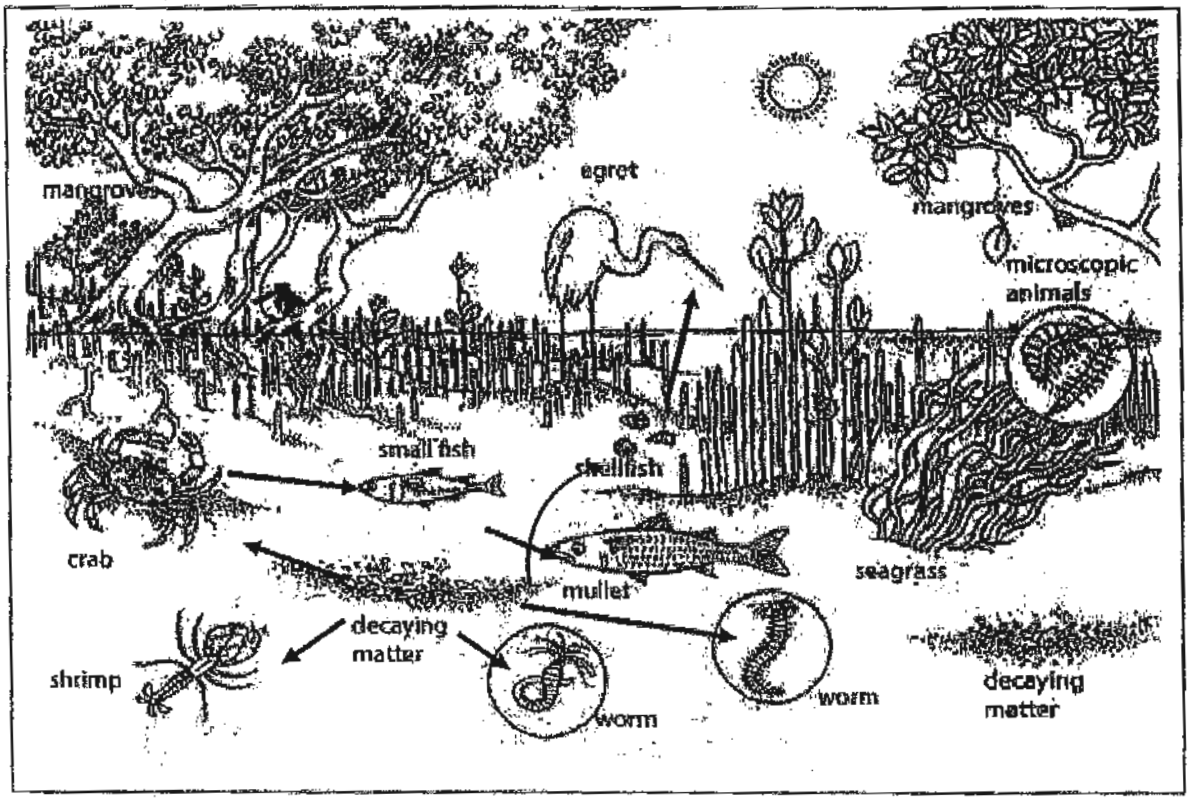
39. Study the following diagram of a mangrove ecosystem carefully.



(a) Explain the role of decomposers in the mangrove ecosystem. [1]

_____

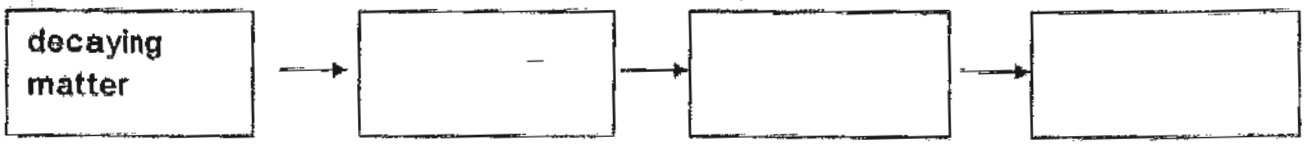
_____

_____

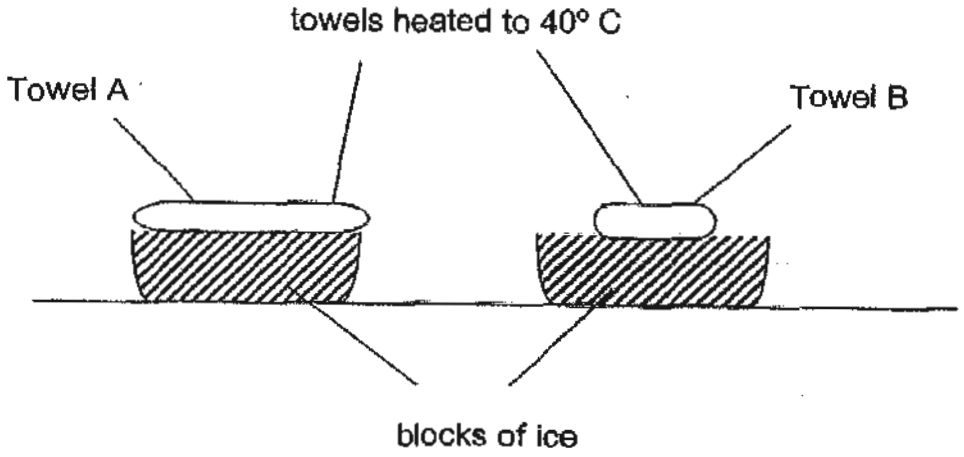
(b) What is the role of the sun in the mangrove ecosystem? [1]

_____

(c) Complete the following food chain using only organisms shown in the diagram. [1]



40. The experiment below was set up to find out about heat loss.



Towel A and Towel B were similar in size. The two towels heated to 40° C and Towel B was folded before they were each placed on top of a block of ice. The amount of time taken for the hot towels to reach a temperature of 20°C was noted.

(a) Which towel took a shorter time to reach a temperature of 20°C? Explain [1]

_____

_____

(b) Write down 2 possible ways how heat is lost from the 2 towels. [1]

_____

_____

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Look at the diagram of a penguin below.

(c) Based on your answer in (a), explain why penguins spend more time walking on ice using its two legs rather than sliding on its stomach. [1]

_____

_____

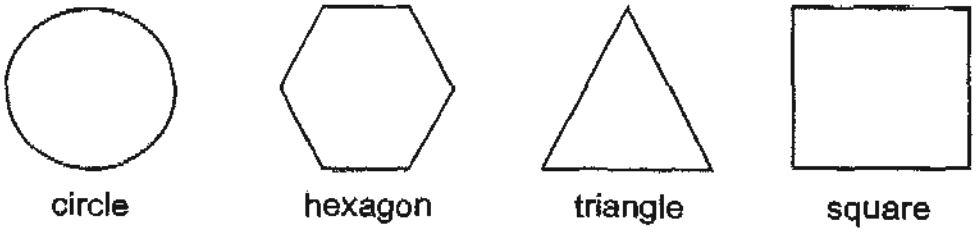
_____

(d) What are two adaptations that enable the penguin to swim at a fast speed in water? [1]

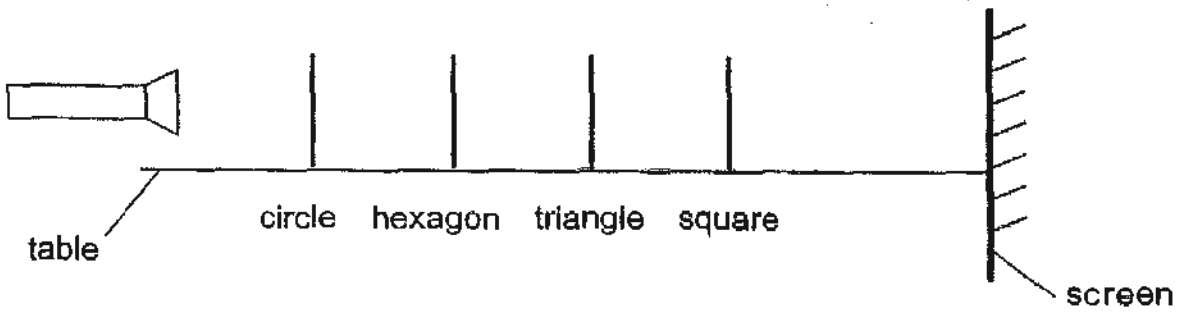
(i) _____

(ii) _____

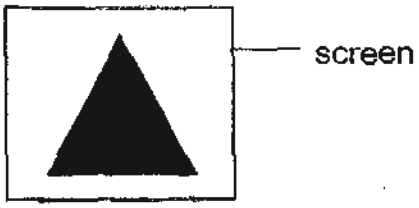
41. The diagram below shows four different shapes cut from sheets made of different materials.



The shapes were then arranged in a straight line as shown in the diagram below. A very bright light source was used to shine on the shapes.



A shadow as shown below was obtained on the screen as the light source was shone.



(a) Based on the shadow formed, complete the following table by ticking the correct box for each shape to show if it is opaque, transparent or not possible to tell to tell its property. [2]

Shape	Opaque	Transparent	Not possible to tell
Circle			
Hexagon			
Triangle			
Square		–	

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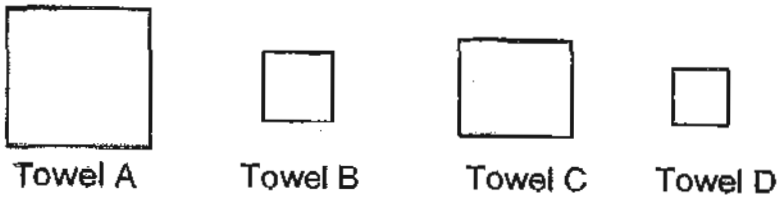
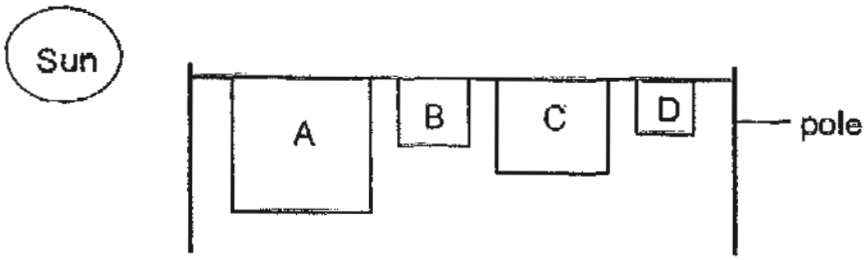
(b) The positions of the square and the triangle were swapped. Would you still obtain the shadow of a triangle? Explain your answer. [1]

42. The diagram below shows four towels A, B, C and D, made of the same material.



Daniel dipped each towel into a basin of water and weighed it to ensure that the mass of the water in each towel was exactly 200 g. He hung the towels on a cloth line as shown in the diagram below.



He weighed the towels at 20-minute intervals and recorded the mass of water in each towel in table below.

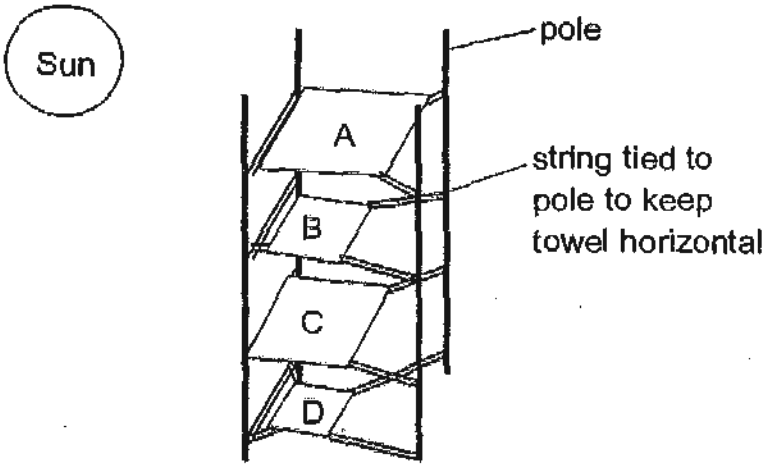
Towel	0 min	20 min	40 min	60 min	80 min
A	200 g	160 g	130 g	95 g	75 g
B	200 g	185 g	172 g	158 g	140 g
C	200 g	170 g	142 g	118 g	90 g
D	200 g	195 g	188 g	180 g	174 g

(a) What was the aim of Daniel's experiment? [1]

(b) Complete the table below to show the possible masses of the two towels at the 50th minute. [1]

Towel	Mass of Towel (g)
A	
B	

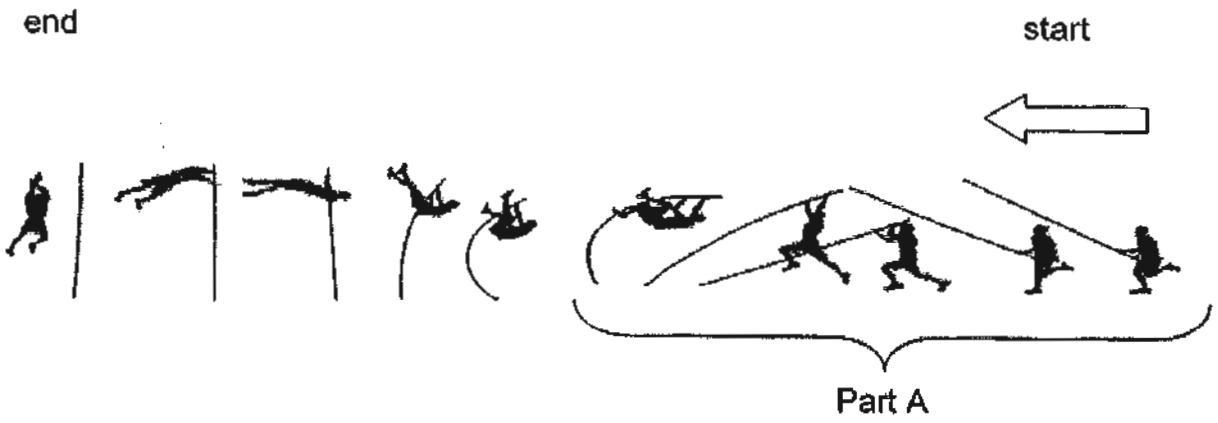
John conducted another experiment with the same aim as Daniel. His experimental set-up was exactly the same as Daniel except that he hung the towels differently as shown in the diagram below.



The teacher commented that John's experiment was not a fair one.

(c) Explain why John's experiment was not a fair one. [1]

43. The following is part of a series of action clips showing how a pole vault is done.



(a) What is the source of energy for the athlete doing the pole vault? [1]

_____

_____

(b) What is the energy conversion taking place in part A? [1]

(athlete) (athlete) (pole) (athlete)

(c) Name the forces which are acting on the athlete. [1]

_____

(d) What is the relationship between how much the pole bends and the height achieved by the athlete? [1]

_____

_____

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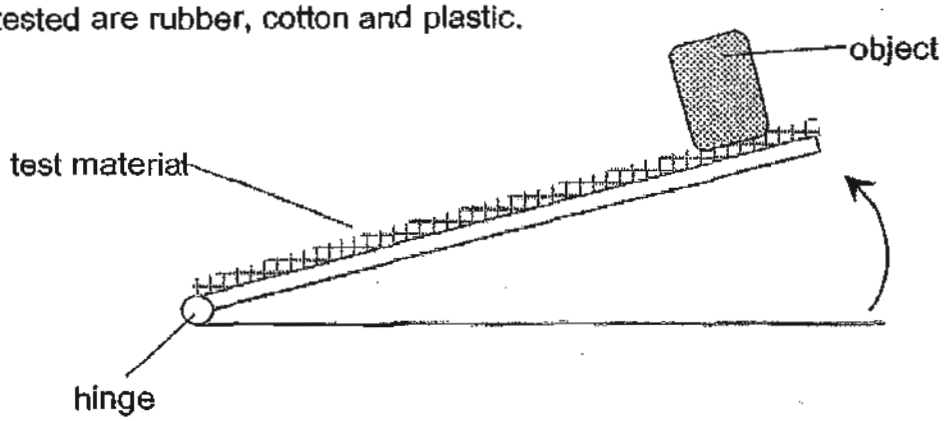
44. Viknesh set up the following experiment to find out which is the best material to use for a bathroom mat that prevent slipping. The materials tested are rubber, cotton and plastic.



The material to be tested was glued onto the plank and an object was then placed on it.
The plank was then raised 5° at a time and the angle at which the object started to slip was noted.

(a) Based on the experiment, how could Viknesh decide which material was best for making the non-slip bathroom mat? [1]

_____

_____

(b) What is a variable that must be controlled to make this a fair test? [1]

_____

_____

(c) Why is it important to take at least 3 readings for each test? [1]

_____

END OF PAPER

Setters: Mr Ting Huat Seng
Mr Lee Kin Leong

ANSWER SHEET

EXAM PAPER 2010

SCHOOL : NANYANG PRIMARY
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA1

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

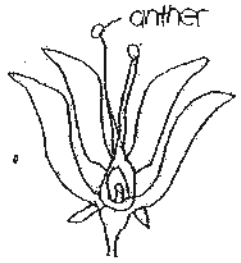
Q18	Q19	Q20	Q21	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
2	3	3	2	3	2	4	2	3	2	1	3	2

31)a)Two large central vacuoles. Has a cell wall.
b)Nucleus.

32)a)Small intestine.
b)Not all food eaten can be digested and undigested food which are not needed by the body is passed out as waste.

33)a)Some of the oxygen taken in is used in the process of respiration.
b)The amount of nitrogen taken in by the body is not being used for any body processes.
c)Water vapour.

34)a)

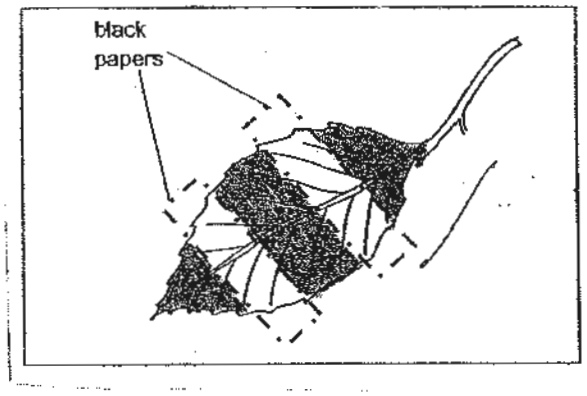


b)Prediction: The plant may not be able to fertilise and develop into a fruit.
Explanation: Yes. The flower may get pollinated by pollen grains from another flower of the same kind.
(No. The flower will not get pollinated)

35)a)The seedling grew bigger in size, the mass increased.
b)The seedling get its food from the leaves as the leaves photosynthesis.

36)The plant would die eventually. The leaves can continue to photosynthesis and make food. However the food made is not transported to the roots. The roots would die after using up the stored food. Without the roots absorbing water, the leaves cannot photosynthesis.

37)a)



b)Carbon dioxide and water.

38)a)2)Pour soil sample A into the funnel.
3)Pour 500ml of water into soil sample A in the funnel.
4)Use the stopwatch to measure the time taken for all the water to pass through the soil.
b)The soil that can retain the water longer should be used to grow a cactus.

39)a)They break down the dead matter into simpler substances that are absorbed.
b)Provide sunlight for plants to photosynthesise.
c)crab--.small fish→mullet

40)a)A. It has a larger exposed surface area so more heat was lost.
b)1)Heat is lost to the block of ice.
2)Heat is lost to the surrounding air.
c)The surface area of the legs is smaller than the surface of the stomach so less heat will be lost.
d)i)Streamline-shaped body.
ii)Flippers.

41)a)

	√	
	√	
√		
	√	

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41)b)Yes. The square is transparent and so it allows light to pass through.

42)a)To see if the amount of exposed surface area affects the rate of the towel drying.

b)A: 115g B: 165g

c)Only towel A was exposed to the sun while the others were shaded by the towel above it.

43)a)Digested food.

b)Chemical potential energy→kinetic energy→elastic potential energy + gravitational potential energy

c)Gravity and frictional force.

d)The more the pole bends the greater the height achieved by the athlete.

44)a)The test material allowed the abject to slip down the last as the plant was being raised.

b)The mass of the object.

c)To ensure reliable, accurate and valid result.