PRIMARY SIX SCIENCE

PRELIMINARY EXAMINATION

2012

BOOKLET A

Date : 24 August 2012

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

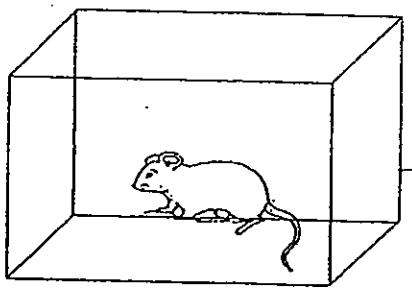
Parent's signature: .....

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

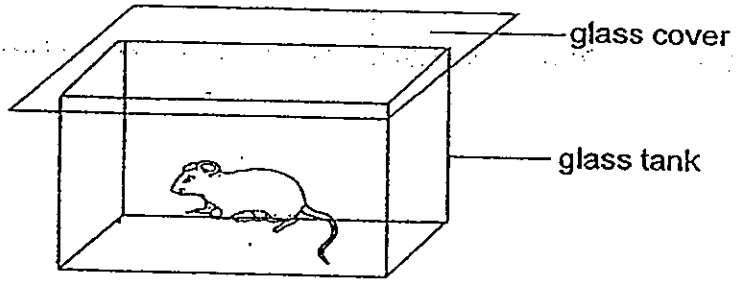
Booklet A consists of 22 printed pages including this cover page.

Section A (30 x 2 marks = 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 provided.**

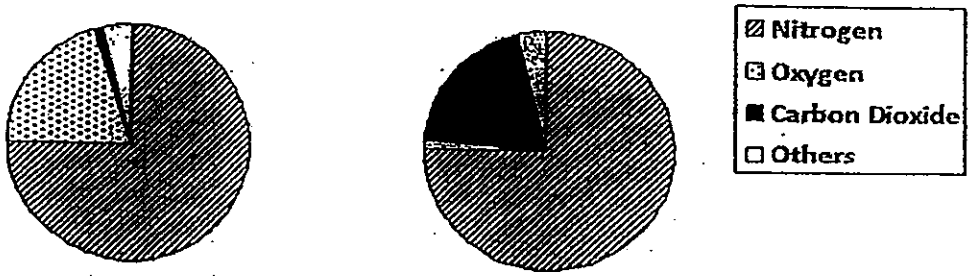
1. Yi Ming placed a mouse in an open tank for 5 hours in the shade. Using a datalogger, he measured and recorded the proportion of the different gases in the air of the tank at the start and at the end of the 5 hours.



He then covered the tank and left the mouse in the tank for another 5 hours. He also took the same measurements at the start and at the end of the 5 hours. The mouse remained alive at the end of 5 hours.

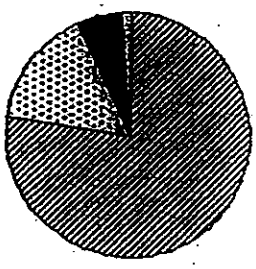


The pie charts below, A, B, C and D, show the proportions of the gases in the air.

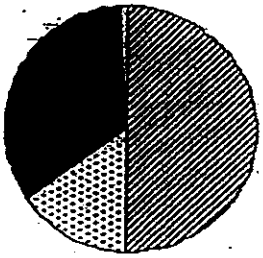


A

B



C



D

Which one of the following shows the correct pie charts representing the air in the tank at different times of the experiment?

	Open tank		Closed tank	
	Start of 5h	End of 5h	Start of 5h	End of 5h
(1)	A	C	A	C
(2)	A	B	C	D
(3)	A	A	A	C
(4)	C	C	B	A

2. Photosynthesis and respiration are two processes that plants carry out. Which of the statements below describe the differences of the two processes **correctly**?

A Water is required for only photosynthesis but not respiration.
B Photosynthesis requires energy while respiration releases energy.
C Photosynthesis takes place in the day only while respiration takes place at night only.
D Both carbon dioxide and oxygen are taken in during photosynthesis while during respiration, only oxygen is taken in.

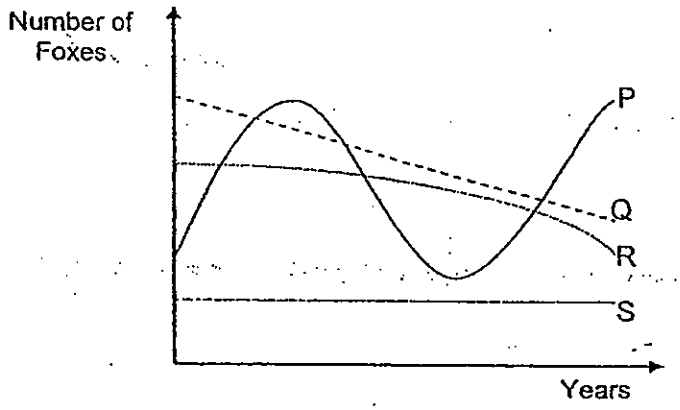
(1) A and B only
(2) B and C only
(3) A, B and D only
(4) A, C and D only

Refer to the information below and answer Questions 3 and 4.

Foxes are animals which are active at night. A team of conservationists used a fixed spotlight on the roof of their trucks to estimate the numbers of foxes in 4 different nature reserves, P, Q, R and S found in Country M.

To carry out the "spotlight count", the team
- drives the same route each time
- counts all foxes seen
- does a count on 3 consecutive nights

With the data collected during the "spotlight count", the team was able to calculate and estimate the total number of foxes in each reserve. The graph below shows the estimated number of foxes for each nature reserve over a period of 5 years.



The conservationists need to ensure that the population size of the foxes in each reserve does not decrease as the years past. When the fox population size decreases, the foxes have to be placed in a breeding programme.

3. In which of the following nature reserves should the foxes be placed under the breeding programme?

(1) P and Q only
(2) Q and R only
(3) P, Q and R only
(4) P, Q, R and S

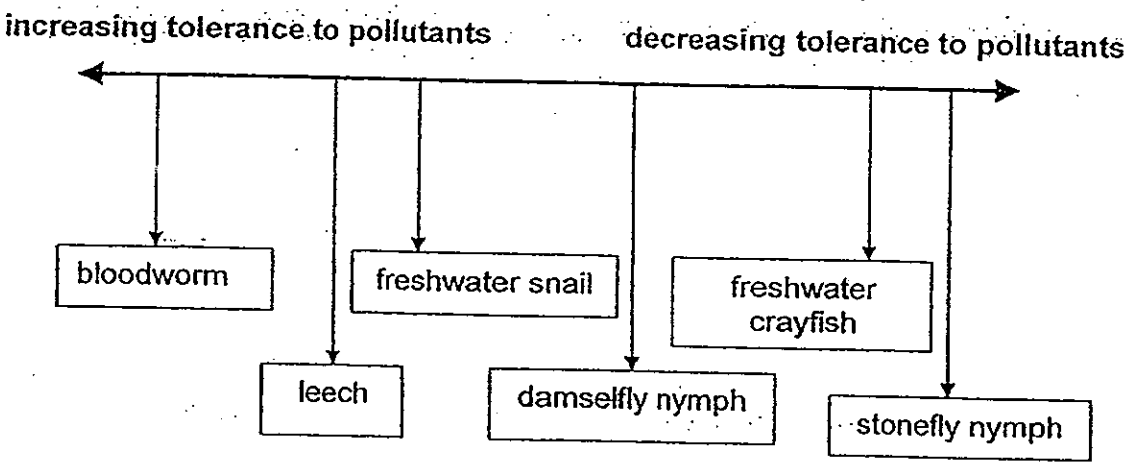
4. Which of the following variables should the conservationists keep the same when they do the "spotlight count"?

A time of the count
B speed of the truck
C light intensity of spotlight
D same person to do the count

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

5. Different aquatic animals are able to tolerate different levels of pollutants. As the level of pollutants increases, the number of sensitive animals will decrease and the number of tolerant animals will increase.

The chart below shows the tolerance of some aquatic organisms to water pollutants.



An investigator counted the number of individual organism in samples from 4 different streams and recorded his findings in the table below.

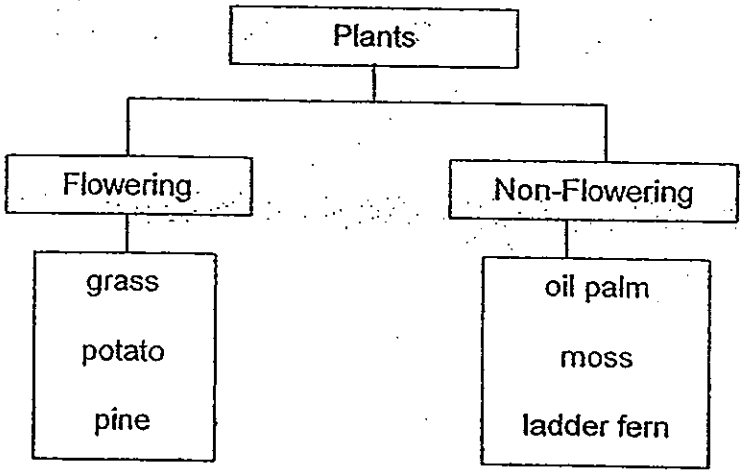
Stream	blood-worm	leech	fresh-water snail	damselfly nymph	fresh-water crayfish	stonefly nymph
A	4	5	4	5	5	3
B	2	2	4	4	6	5
C	6	4	4	3	2	0
D	7	5	4	6	0	0

Arrange the streams from the most polluted to the least polluted.

most polluted ← → least polluted

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

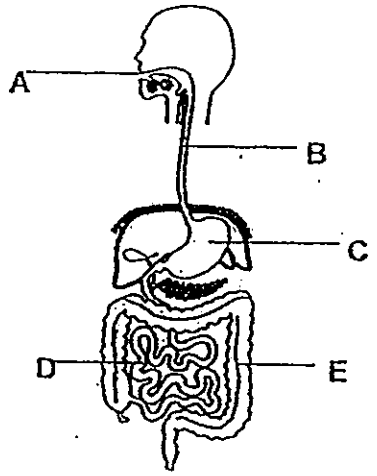
6. Study the classification chart below.



How many of the organisms above have been placed **incorrectly**?

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

7. The diagram below shows the human digestive system.



In which of the following parts of the digestive system do digestion take place?

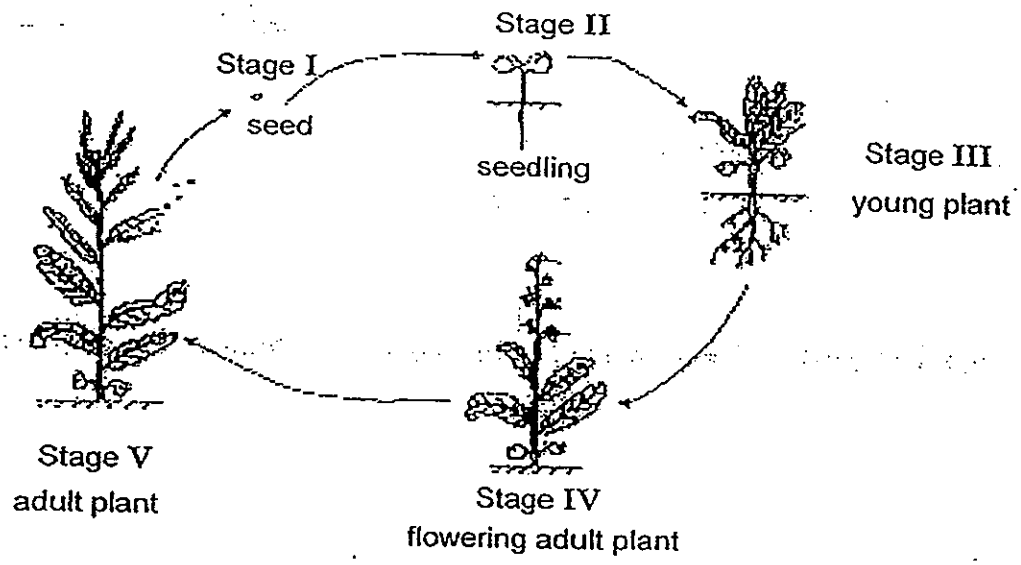
(1) A and D
(2) C and D only
(3) A, C and D only
(4) A, C and E only

8. Which of the following best describe the importance of seed dispersal?

A prevent overcrowding
B increase the seedling's chances of survival
C obtain enough nutrients from the parent plant
D have same characteristics as the parent plant

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

9. Study the life cycle of the plant given below.



Which of the following statement(s) describe(s) the life cycle of the plant **incorrectly**?

A Water is only needed at stages II and III
B Fertilization must take place at Stage IV before Stage V can take place.
C Light is needed throughout the life cycle of the plant, from Stage I to Stage V.

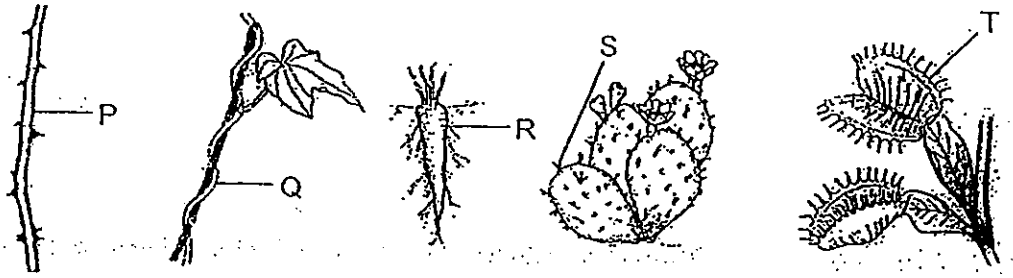
(1) A only
(2) A and C only
(3) B and C only
(4) A, B and C

10. Which of the following statements about fertilization of a flower are **correct**?

A Fertilization of a flower takes place only in the ovary.
B Fertilization is complete when the pollen grain fuses with the ovary
C All parts of the flower except the ovary will wither and drop off after fertilization.
D Fertilization takes place when the pollen grain from the anther lands on the stigma of the flower.

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

11. In the diagrams below, P, Q, R, S and T are different adaptive features of plant parts.



Which of the features, P, Q, R, S and T, help the plant to reach for more light ?

(1) P and Q only
(2) S and T only
(3) Q, R and S only
(4) P, S and R only

12. The diagrams below show a wasp and another fly D that looks like the wasp.

wasp fly D

The wasp can sting and it feeds on small animals such as ant, spider and bee. Fly D does not sting and it feeds on nectar and green flies.

What advantage does fly D have in looking like the wasp?

(1) Predators of wasp would stay away from fly D.
(2) Wasp would mate with female fly D to produce more young.
(3) Fewer animals would prey on fly D as they thought it is a wasp.
(4) Fly D could catch preys of wasp easily and hence has more food.

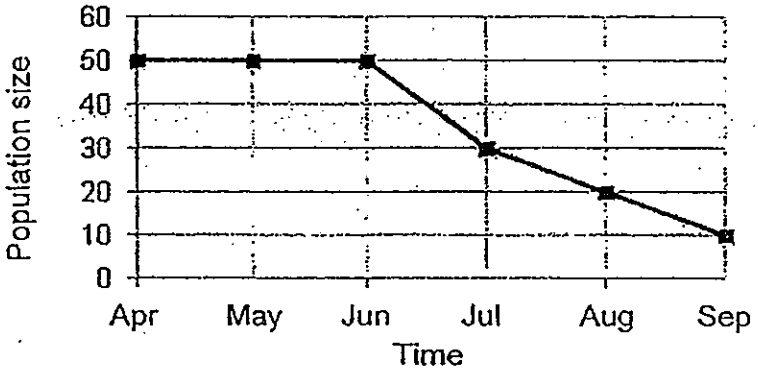
13. There are many tall trees in Forest A and B. The table below shows the conditions of the forest floor in Forest A and Forest B.

Conditions of forest floor	Forest A	Forest B
Amount of light reaching forest floor	Very little	Moderate
Amount of mineral salts in topsoil of forest floor	Very little	Large

Based only on the information above, which one of the following options correctly states both the observation and explanation for the distribution of plant and animal life found in each of the forest?

	Observation	Explanation
(1)	More animals live on forest floor than tall trees of Forest A.	Many small plants grow on forest floor of A to provide shade for animals from the hot sun.
(2)	More animals live on tall trees than on forest floor of Forest A.	There are too few plants on forest floor of A to provide food for animals.
(3)	More animals live on forest floor than tall trees of Forest B	Many small plants growing on forest floor of B need the animals to help disperse their seeds or fruit.
(4)	More animals live on tall trees than on forest floor of Forest B.	Many small plants grow on the forest floor of B driving the animals to live on the tall trees to reduce competition for light.

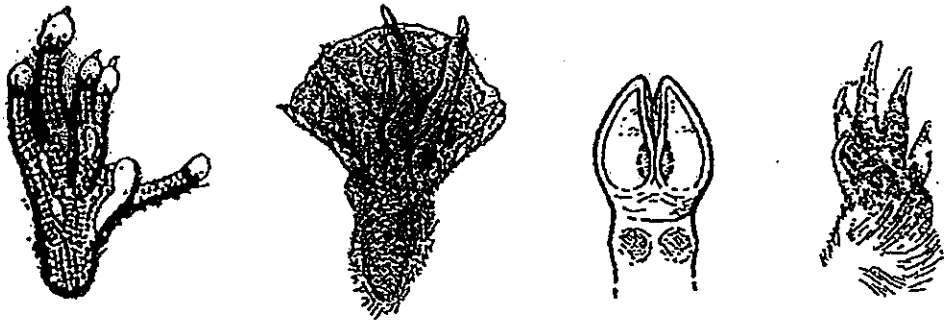
14. Plant Y grows in Mary's garden and she plotted a graph below to show the change in the population size of plant Y over a period of 6 months.



Which one of the following changes in **either** the abiotic or biotic factors of the garden could have caused the difference in size of the population between April and September?

(1) A leaf litter was set up in the garden in June.
(2) A roof over the garden was removed in June to allow more light to reach Y.
(3) The air became less polluted when a nearby factory was shut down in May
(4) The population of a bird feeding on a consumer of Y started to decrease in June.

15. The diagrams below show 4 feet labelled A, B, C and D. The diagrams are not drawn to scale.

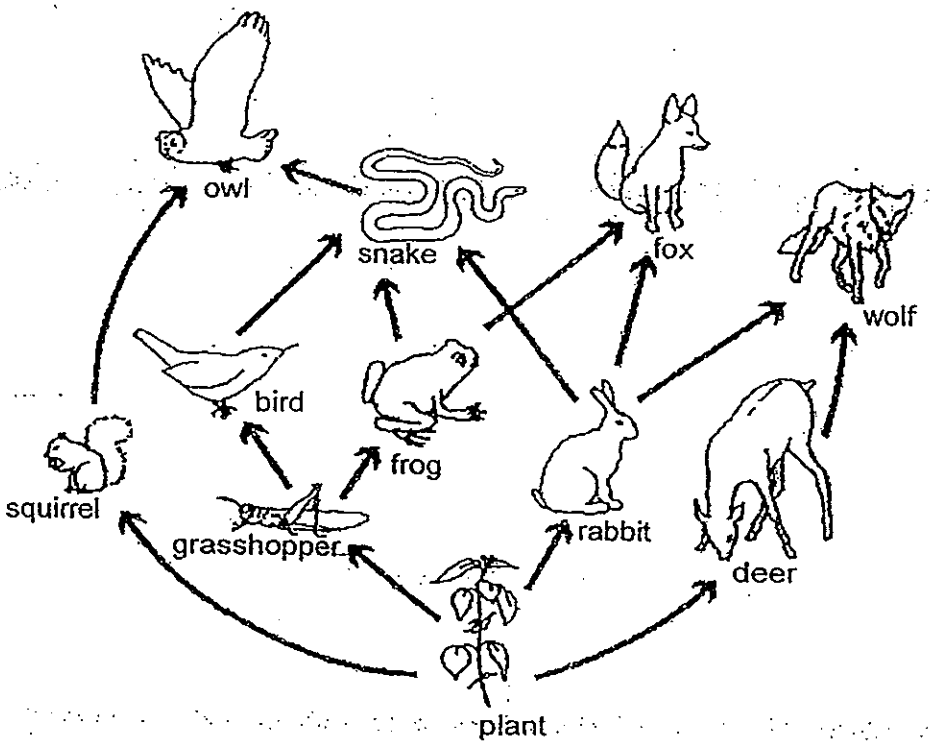


A B C D

Which of the following correctly state the functions of the feet A, B, C and D ?

	Feet A	Feet B	Feet C	Feet D
(1)	For grabbing	For walking	For tearing	For climbing
(2)	For flying	For swimming	For digging	For running
(3)	For digging	For tearing	For kicking	For swimming
(4)	For climbing	For swimming	For running	For digging

16. The food web below shows the relationships between some organisms in a forest.



It was also noted that the population of the owl was the smallest compared to the snake, fox and wolf.

Based only on the information and food web above, which one of the following correctly explains what would happen within a short time if the population of the grasshopper greatly decreased suddenly ?

(1) The population of the squirrel would increase faster than the rabbit as it had fewer predators than the rabbit.

(2) The population of the frog would decrease much faster than the bird because the frog was both a prey and a predator.

(3) The population of the deer would increase faster than the squirrel because the deer had fewer competitors for food than the squirrel.

(4) The population of fox and wolf would be the same because both feed on two other animals which were increasing in number.

17. The following observations were made about the conditions in a temperate grassland

- Windy
- Grassland fires are common
- Rainfall is uncertain and drought is common

The prairie grass is well adapted to living in the temperate grassland. Below is a list of physical adaptations that it has.

A Grows from the base which is below ground surface
B Long roots that extend deep into the ground
C Narrow leaves
D Soft stem that bends easily

Which one of the following correctly matches the physical adaptations of the prairie grass to the conditions of the temperate grassland?

	Windy	Grassland fires are common	Rainfall is uncertain and drought is common
(1)	B	D	C
(2)	A	C	D
(3)	D	A	B
(4)	C	B	D

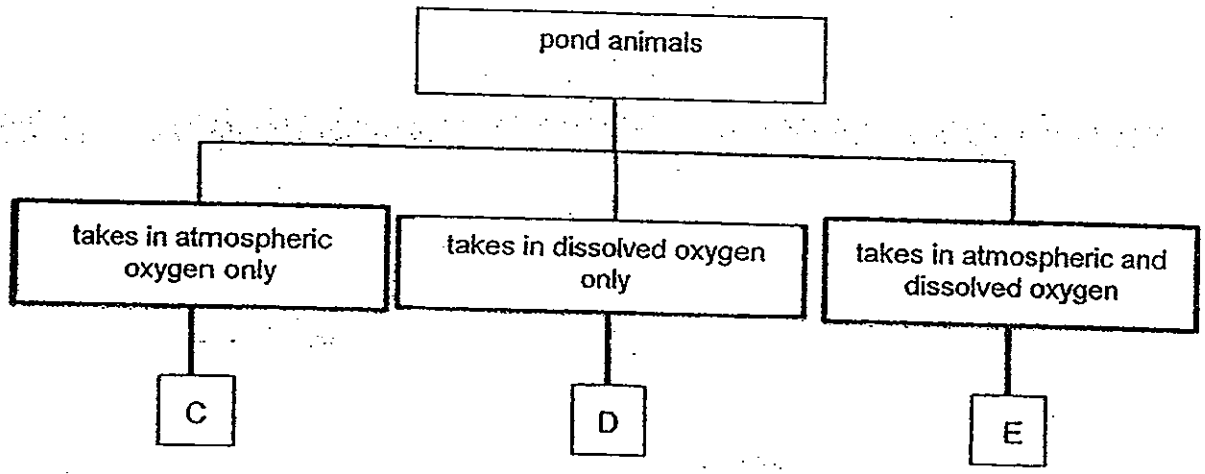
18. Muthu noticed some mealybugs feeding on a plant in his garden. He made the following observations:

- The mealybugs damaged the plant while feeding on it.
- There were also many ants on the plant.
- These ants fed on the waste product of the mealybugs.
- Ants were attacking Black Ladybugs that feed on mealybugs.

Based on the above information, which of the following correctly state the relationships between the different organisms?

	Both organisms benefitted	Only one of the organisms benefitted
(1)	ant and plant	mealybug and Black Ladybug
(2)	plant and Black Ladybug	ant and Black Ladybug
(3)	mealybug and ant	mealybug and plant
(4)	ant and Black Ladybug	ant and plant

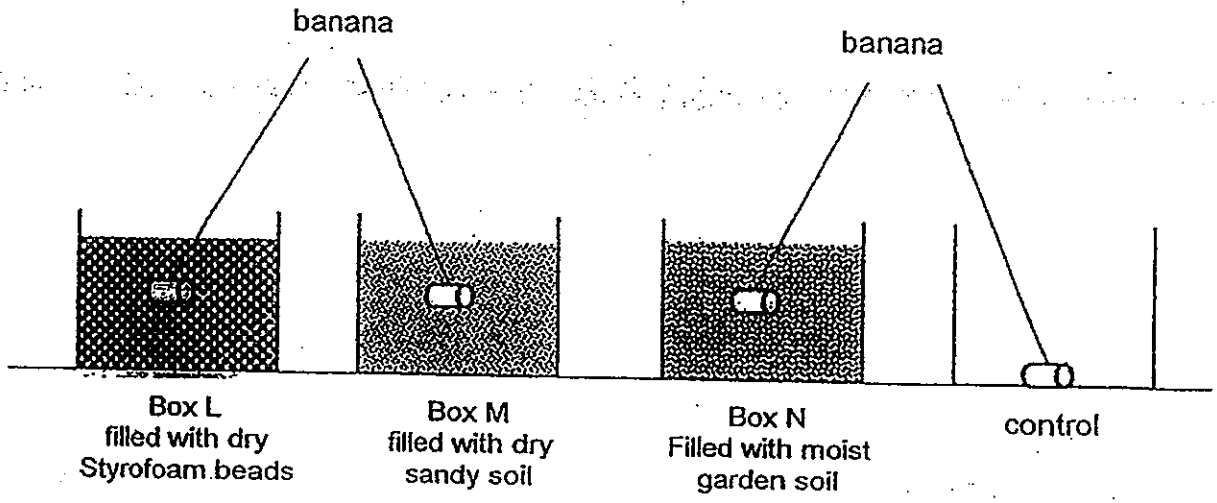
19. Sally used the classification chart shown below to group 3 organisms, C, D and E.



Which of the following are possible examples of C, D and E?

	C	D	E
(1)	hydrilla	water stick insect	toad
(2)	mosquito larva	dragonfly nymph	frog
(3)	water spider	tadpole	great diving beetle
(4)	water hyacinth	guppy	tubifex worm

20. Lela cut a banana into 4 pieces of equal mass. She buried each piece under different materials to the same depth, in 3 identical boxes without lid. She then labelled the boxes L, M and N. She placed the last piece in an empty box as the control. The diagram below shows her set-ups.



The table below shows whether living organisms were found in the boxes at the beginning of the experiment.

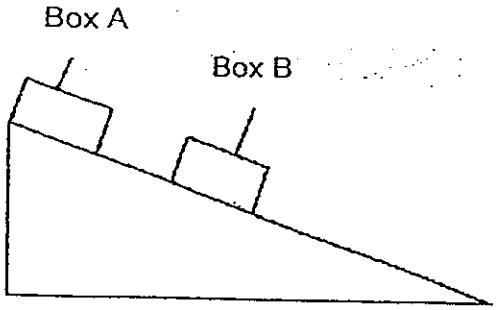
Box	L	M	N	Control
presence of living organism	no visible organism	spiders	ants, mould	no visible organism

After the boxes were left in a warm and dimly lit room for 2 days, Lela observed that the banana in the control set-up had decomposed.

Which one of the following observations would she most likely make for box L, M and N after the 2 days?

(1) The banana in box M did not decompose.
(2) The banana in box L and box N were equally decomposed.
(3) The banana in box N was more decomposed than that in the control.
(4) The banana in box L was more decomposed than that in box M.

21. Alston, Betty, Charlie and Dexter were presented with the diagram below in an assessment book. Box A and Box B have the same dimension, mass and volume. Each of them commented on the diagram.



Alston	The gravitational force acting on both the boxes are the same.
Betty	The gravitational force acting on Box A is more than that of Box B.
Charlie	The frictional force experienced by both the boxes is the same.
Dexter	Box A experience more frictional force than Box B.

Which of the following pupils are correct?

(1) Alston and Charlie only
(2) Alston and Dexter only
(3) Betty and Charlie only
(4) ~~Better~~ and Dexter only
Betty

22. Diagram 1 below shows a ball placed at the edge of a thick wall. The ball was pushed and it fell downwards towards the ground. The ball caused a dent on the ground as shown in diagram 2.

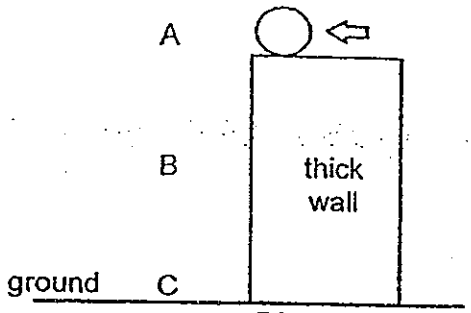


Diagram 1

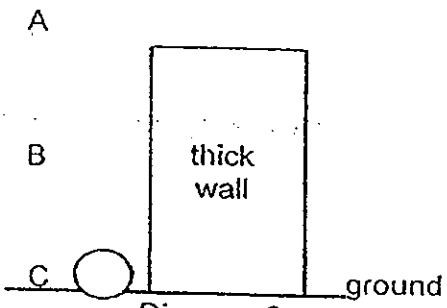


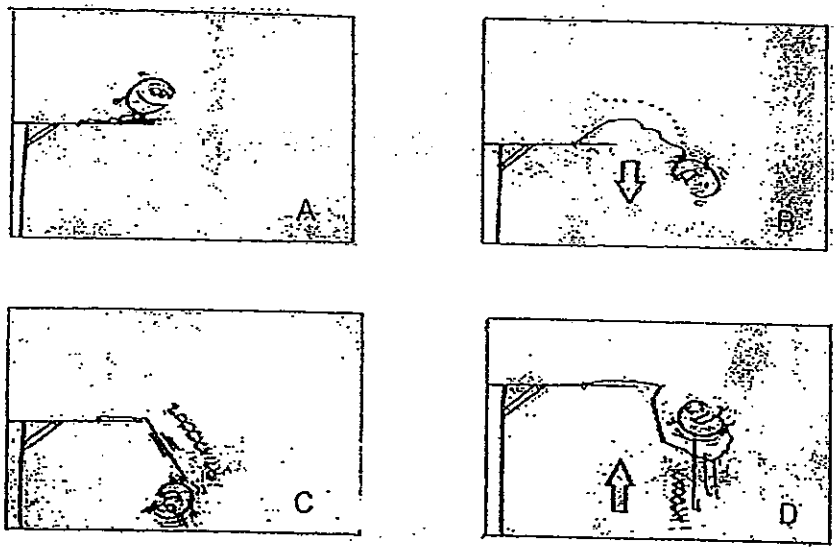
Diagram 2

Based on the 2 diagrams only, which of the following statements is/are true?

A The ball possessed only gravitational potential energy when it was placed on the edge of the wall.
B The ball possessed both gravitational potential energy and kinetic energy as it falls through the air at point B.
C The kinetic energy of the ball is at its maximum at point C just before it touches the ground.
D All the energy of the ball has been used up when it lands on the ground.

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

23. The comic strip below shows Mr. Egg doing a bungee jump. His feet were tied to a long rubber rope. Mr. Egg stood at the edge of the platform and jumped off the platform. He fell downwards before bouncing up again.



Which one of the following correctly describes the main energy change from comic strip A to D?

	A		B		C		D
(1)	gravitational potential energy	→	kinetic energy	→	sound energy	→	kinetic energy
(2)	kinetic energy	→	kinetic energy	→	elastic potential energy	→	kinetic energy
(3)	gravitational potential energy	→	kinetic energy + gravitational potential energy	→	kinetic energy + elastic potential energy	→	gravitational potential energy + kinetic energy
(4)	kinetic energy	→	sound energy	→	gravitational potential energy	→	gravitational potential energy + sound energy

24. Jason used two bar magnets to set up the experiment as shown in figure 1. The magnets were hung loosely with a string. The poles of the magnets were not known to him. A horse shoe magnet was placed in between the two bar magnets and the positions of the bar magnets changed as shown in Figure 2.

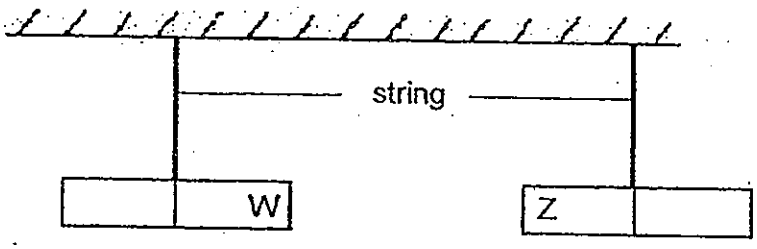


Figure 1

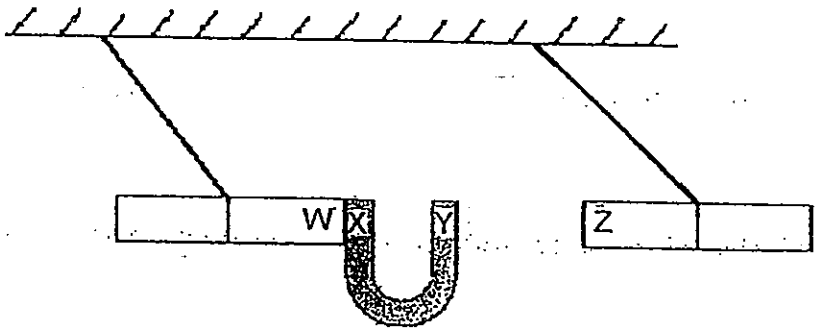


Figure 2

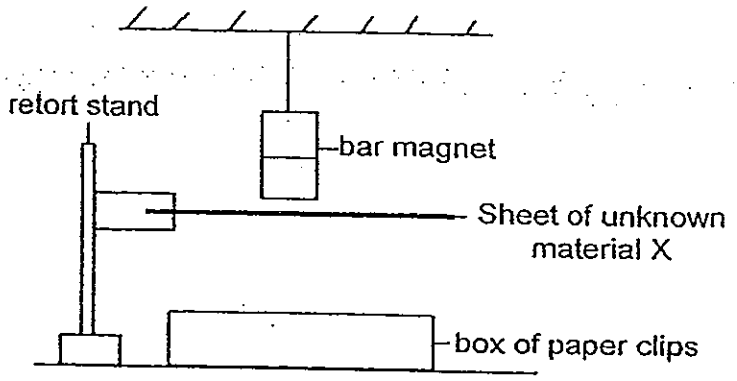
Jason listed the possible combination of the poles of the bar and horse shoe magnet as shown in the table below.

	W	X	Y	Z
A	North	South	South	South
B	North	South	North	North
C	South	North	South	South
D	South	North	South	North

Which one of the following combinations are possible poles of the horse shoe and bar magnets?

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

25. Michael hung a bar magnet from the ceiling. He then brought a box of paper clips, placed it under the bar magnet and placed a thin sheet of material between them as shown in the diagram below. He then counted the number of paper clips that the magnet could still attract.



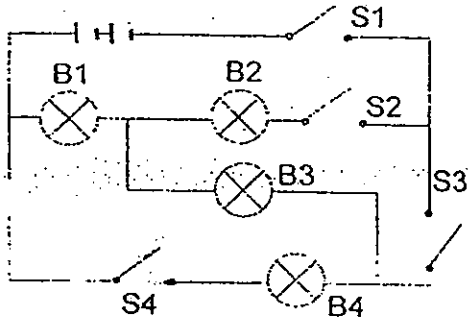
Michael repeated the experiment with a sheet of unknown material Y and recorded his results as shown in the table below.

Unknown material	Number of paper clips attracted by the magnet
X	0
Y	8

Based on his results what are materials X and Y most likely to be?

	Material X	Material Y
(1)	copper	wood
(2)	plastic	iron
(3)	iron	nickel
(4)	steel	aluminium

26. Marcus set up a simple circuit as shown in the diagram below.

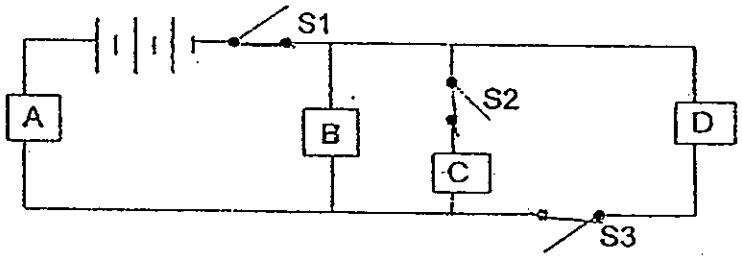


Which of the following switches should he close in order to ensure that only 2 bulbs will light up?

A S1 and S2
B S1 and S3
C S1 and S4
D S2 and S4

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

27. Ella set up the circuit as shown below



She placed a plastic ruler, a coin, a bulb and a plastic clip at positions A, B, C and D in random order. Some of the switches were then closed and the results are recorded in the table below.

Switches	Did the bulb light up
S1 and S2	Yes
S1 and S3	No
S2 and S3	No

Based on the results in the table, which of the following is/are possible positions of the light bulb?

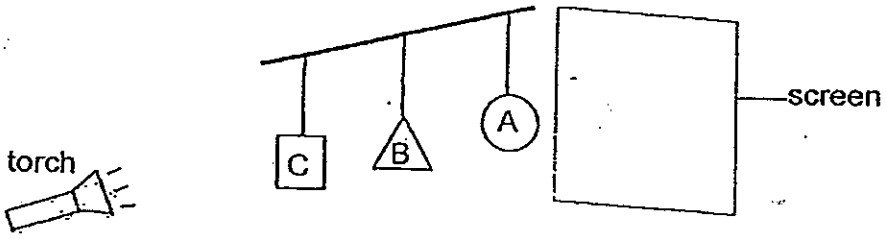
(1) C only
(2) B and C only
(3) C and D only
(4) B, C and D only

28. Study the diagram shown below. The boy is reading a book in the presence of light.

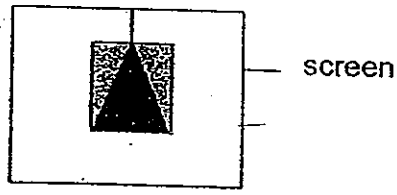
Which one of the following correctly identifies the path of light that makes it possible for the boy to read the words in the book?

(1) lamp → boy → book
(2) lamp → book → boy
(3) book → boy → lamp
(4) book → lamp → boy

29. Mark set up an experiment as shown in the diagram below. The objects which were made of different materials, were hung from the ceiling. A circle, a triangle, and a square were placed in positions A, B and C respectively. A torch light was shone as shown below.



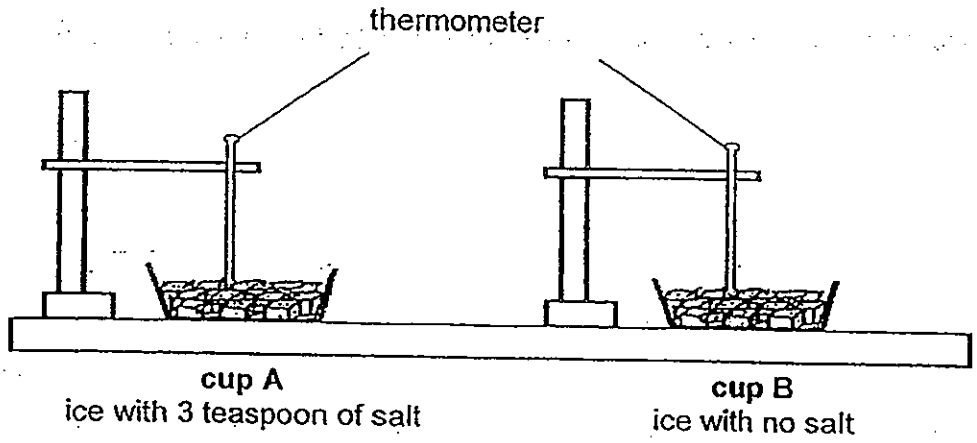
The diagram below shows the shadow that was seen on the screen.



Which one of the following correctly represents the characteristics of objects A, B and C?

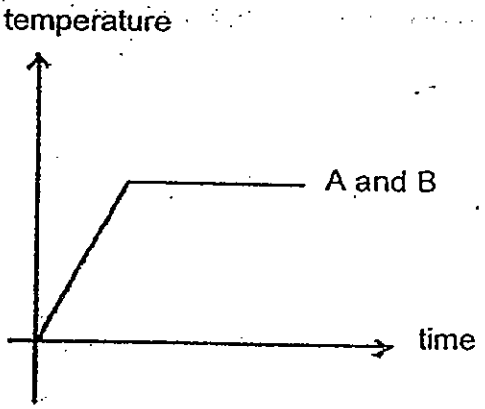
	A	B	C
(1)	opaque	transparent	translucent
(2)	translucent	opaque	transparent
(3)	transparent	translucent	opaque
(4)	transparent	opaque	translucent

30. Jordan set up the experiment as shown below. He wanted to find out if adding salt would increase the rate of melting. Both the cups had the same amount of ice and the experiment was carried out under similar conditions. Jordan timed the time taken for the ice to melt and reach room temperature. He then recorded it and plotted his results into a graph.

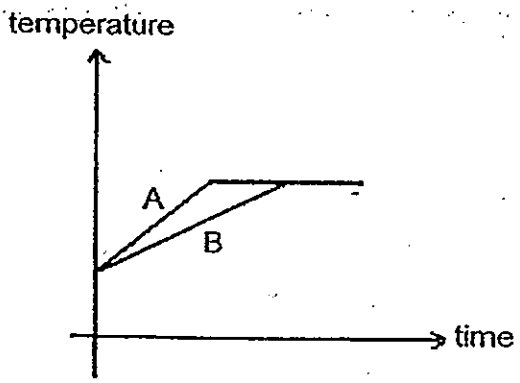


Which one of the following graph correctly shows how the temperature of ice in each cup varies with time?

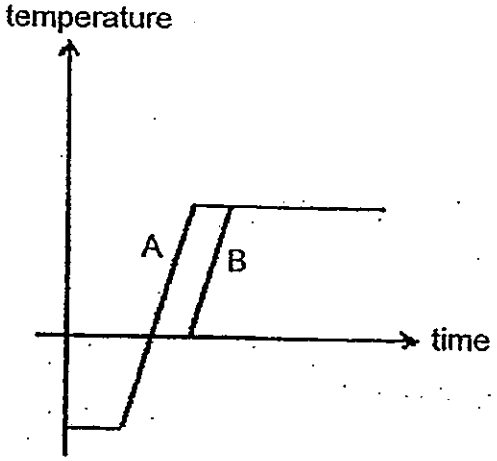
(1)



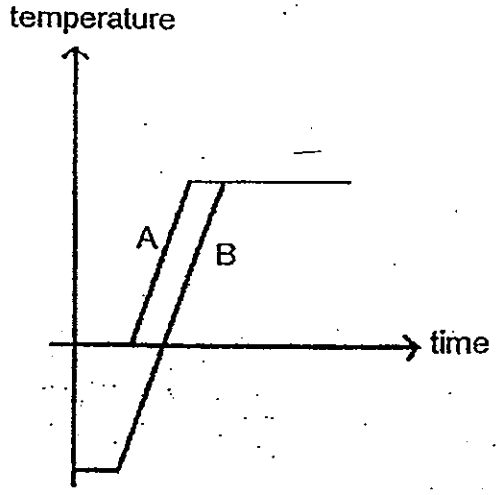
(2)



(3)



(4)



PRIMARY SIX SCIENCE

PRELIMINARY EXAMINATION

2012

BOOKLET B

Date : 24 August 2012

Duration : 1 h 45 min

Name : _____ ( )

Class: Primary 6 ( )

Marks Scored:

Booklet A:		60
Booklet B :		40
Total :		100

Any query on marks awarded should be raised by _____.
We seek your understanding in this matter as any delay in the confirmation of marks will lead to delays in the generation of results.

Parent's signature: .....

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE TOLD TO DO SO.
FOLLOW ALL INSTRUCTIONS CAREFULLY.

Booklet B consists of 15 printed pages including this cover page.

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. Diagram 1 below represents the transport system of a plant.

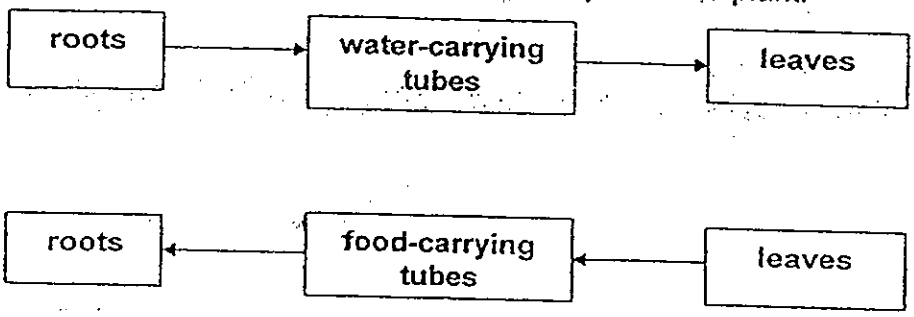


Diagram 1

Diagram 2 shows the circulatory system of an animal.

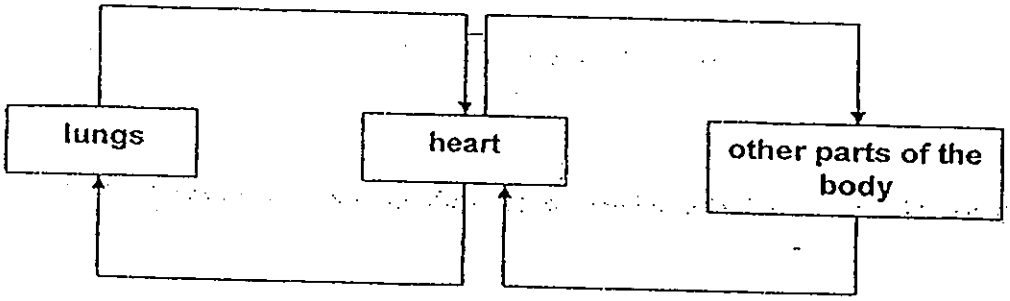


Diagram 2

(a) State 2 differences between the transport system of a plant and the circulatory system of an animal. [2]

(i) _____

_____

(ii) _____

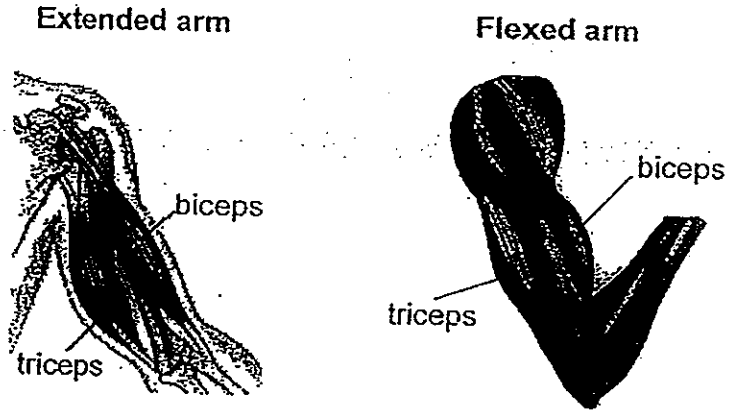
_____

(b) Explain why plants do not have a digestive system like that found in animals. [1]

_____

_____

32. The diagrams below show part of the human skeletal and muscular system.



(a) Explain how each muscle, biceps and triceps, works when the extended arm is flexed and extended again. [2]

Flexed

_____

_____

Extended

_____

_____

(b) Explain how the respiratory systems and digestive systems work together to allow the muscle cells to work. [2]

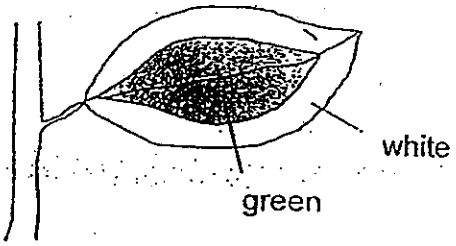
Respiratory system : _____

_____

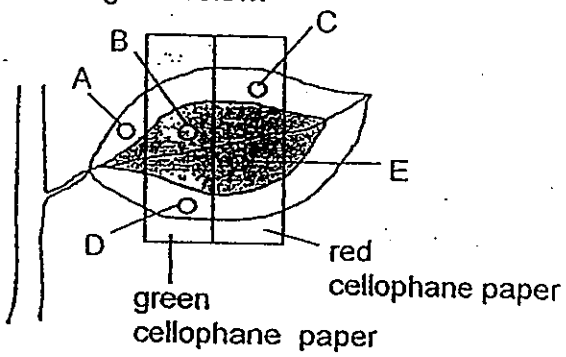
Digestive system : _____

_____

33. The diagram below shows a leaf on a plant used in an experiment. At the start of the experiment, there was no starch in the leaf.



Next, the leaf was covered by 2 different coloured cellophane papers, as shown in the diagram below.



The plant was then put in the sun. After several hours, the leaf was plucked off and the cellophane papers were removed. The leaf was then tested for starch.

With the setup above, 2 investigations can be done using different areas of the leaf, A, B, C, D and E. Write down the aims of each investigation and the respective areas for the experiment. [2]

Investigation 1
Aim of Experiment:

_____

_____

Areas of the leaf : _____

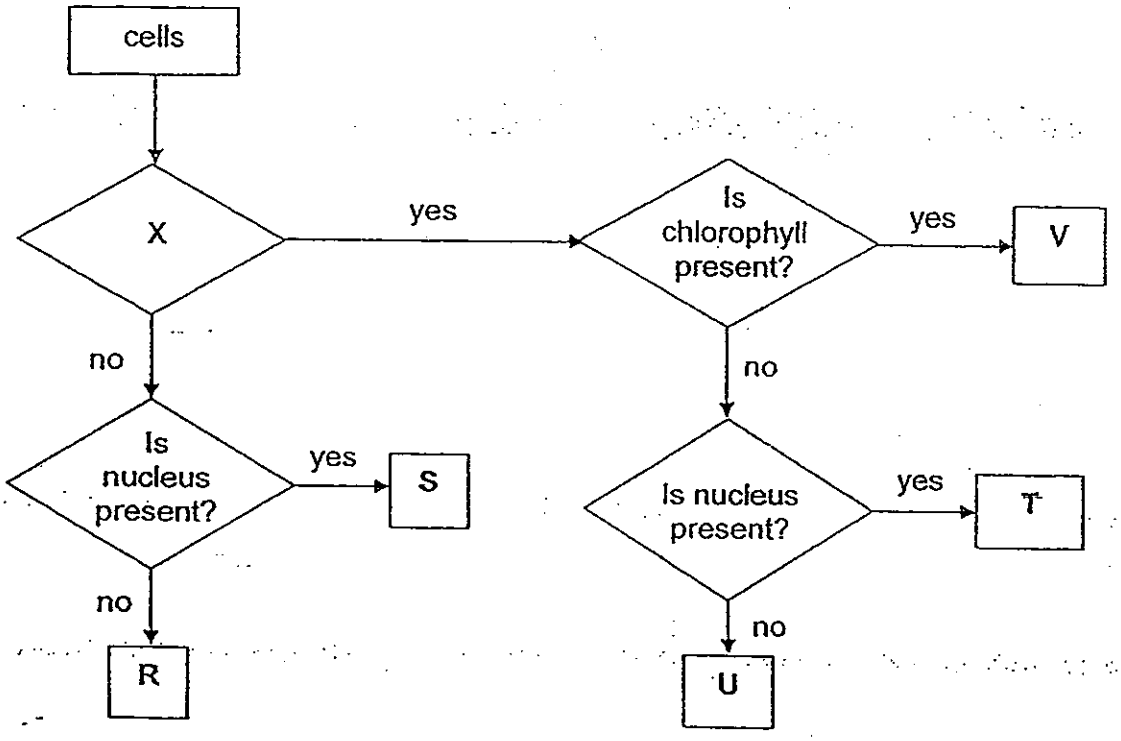
Investigation 2
Aim of Experiment:

_____

_____

Areas of leaf : _____

34. In a Life Science Laboratory class, Emily was given 5 specimens of cells, R, S, T, U, and V. She then constructed a flow chart to classify the different cells.



(a) Write down the question about cell part as represented by X. [1]

_____

(b) (i) Write down the characteristics of cell T. [1]

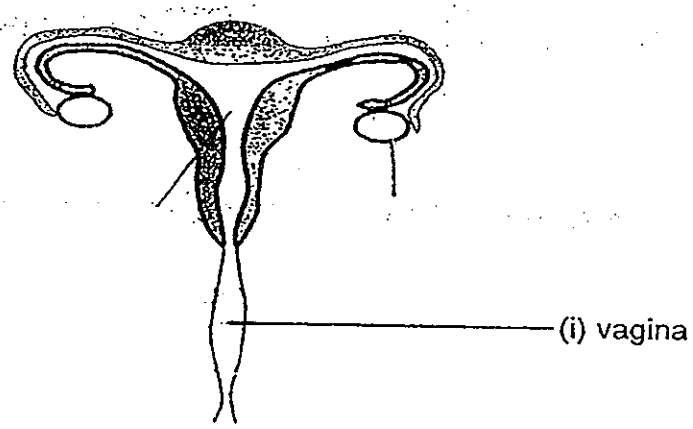
_____

_____

(ii) Give an example of cell T. [1]

_____

35. The diagram below represents the female reproductive system.



(a) In the diagram, **label** and **name** the parts of the female reproductive system with the following functions. The first one has already been done for you. [1]

(i) receive sperms
(ii) produces and stores the eggs
(iii) place for development of the foetus

(b) In a pregnancy, it is discovered that the umbilical cord is not well developed. Explain how this will affect the foetus in the mother's body. [1]

_____

_____

_____

36. Some animals travel together as part of a herd.
Explain the importance of the following behaviours of certain animals when they are in a herd.

(i) Running in different directions when chased by predator. [1]

_____

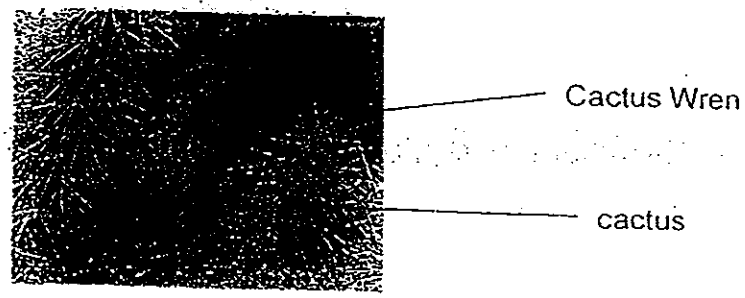
_____

(ii) Adults forming a circle around the young when a predator approaches. [1]

_____

_____

37. Cactus Wren is a bird that can be found living in hot and dry semi-desert. It feeds on insects and often builds its nest on thorny cacti plants. They feed their young chicks until the chicks learn to look for their own food.



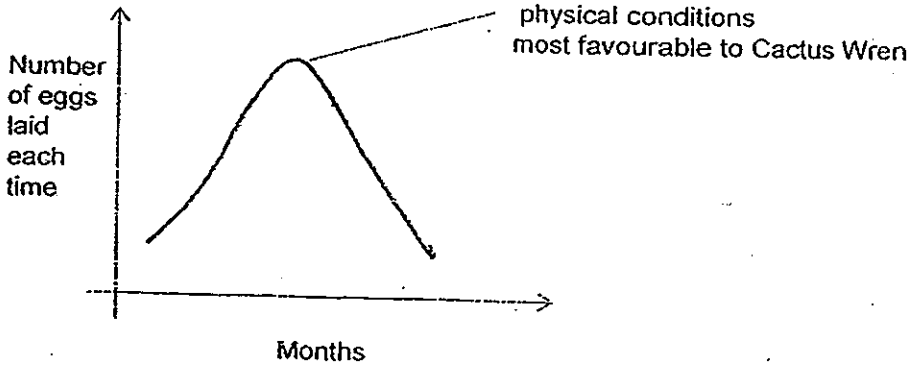
(a) Based only on the information above, explain one benefit for the Cactus Wren to build a nest on a cactus plant. [1]

_____

_____

The physical conditions in the desert change throughout the year and this affects the population of the insects. Throughout the year, the female wren may lay 6 to 10 eggs at one time or only 1 to 3 eggs.

The graph below shows the number of eggs in relation to the physical conditions.



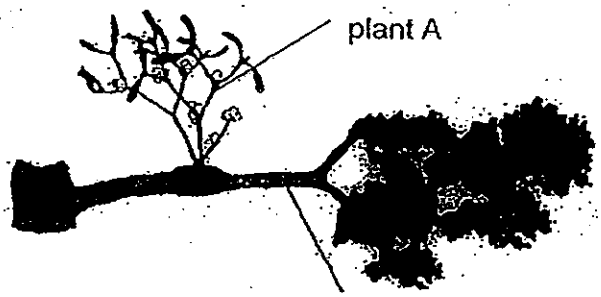
(b) Explain why laying different number of eggs each time throughout the year is beneficial to the young chicks of the Cactus Wren. [2]

_____

_____

_____

38. The diagram below shows plant A which grows on the branch of tree W.



Plant A is able to photosynthesise but it also grows roots into the branch of tree W to absorb food, water and mineral salts from the tree. Trees with plant A growing on them are usually unhealthy.

(a) Explain the relationship between plant A and tree W. [1]

_____

_____

(b) The adult plant A is bushy and light. Explain why its light weight is important for its survival. [1]

_____

_____

Plant A is always found growing on higher branches of a tree. It produces a fruit that splits open to throw out its sticky seeds several metres away.

(c) State and explain two adaptations that plant A has for reproduction.

(i) Adaptation 1 : [2]

_____

Explanation :

_____

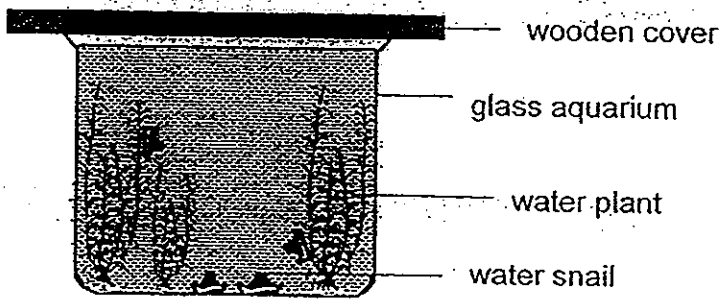
(ii) Adaptation 2 :

_____

Explanation :

_____

39. Sammy set up an aquarium as shown below.



The aquarium was sealed and placed at a bright corner. After two weeks, both the population of the plants and snail increased.

(a) Besides their gaseous needs, state one other way in which the snail and plant are interdependent for thriving in the aquarium. [1]

_____

_____

On the third week, Sammy noticed algae growing on the wall of the aquarium. The algae population was increasing more quickly than they could be eaten by the snail. By the fourth week, Sammy noticed that only the population of the snail had increased but not the plant.

(b) Draw a food web to show the food relationship between the plant, algae and snail in the space provided below. [1]

(c) Explain why the population of the snail continued to increase on the fourth week but not the plant. [1]

_____

_____

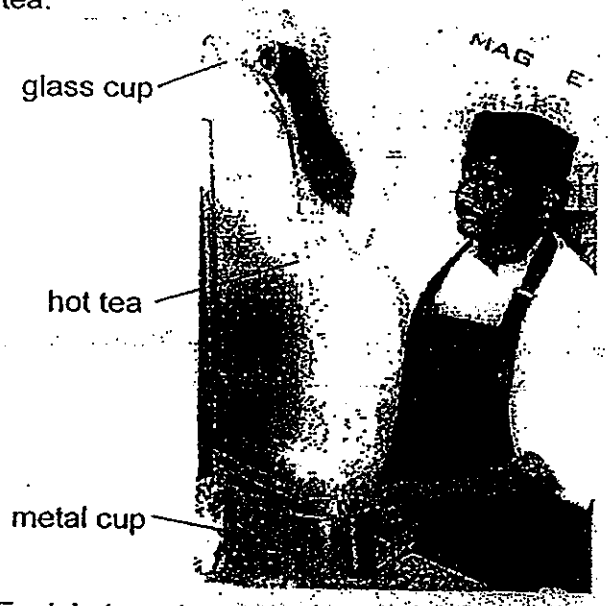
By the eighth week, Sammy observed that there were few plants left and the algae had formed a thick layer on the wall of the aquarium.

(d) Besides being eaten by the snails, give another reason why the number of plants decreased. [1]

_____

_____

40. The diagram below shows a man transferring a cup of tea from one glass cup to another metal cup. He repeats this action a few times before serving the tea.



(a) Explain how the action of transferring the tea from one glass cup to another metal cup helps to cool the tea down. [2]

_____

_____

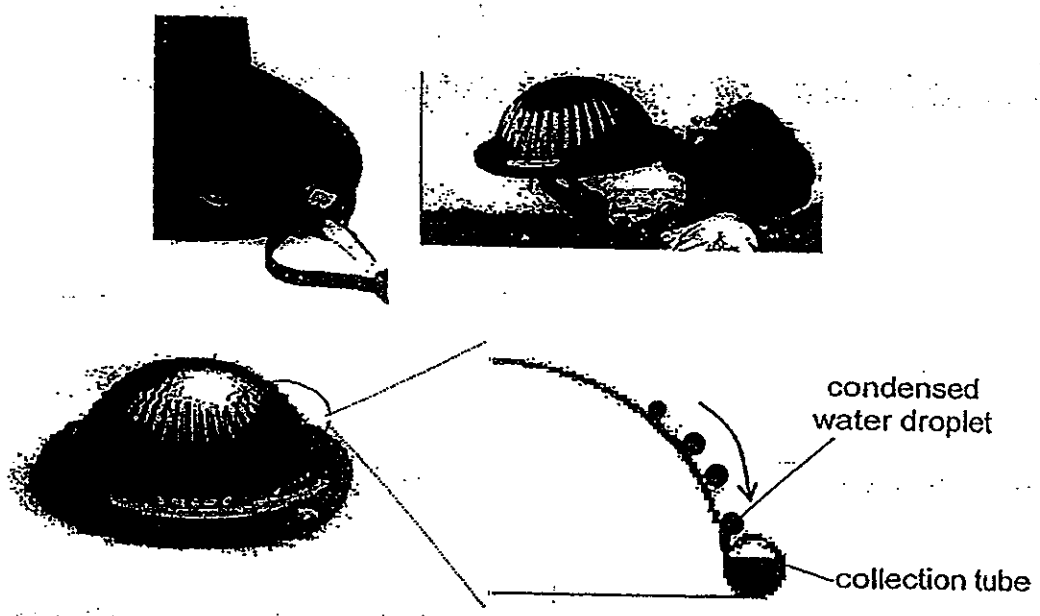
_____

(b) Without using any additional item, suggest how the man could cool the tea down even faster. [1]

_____

_____

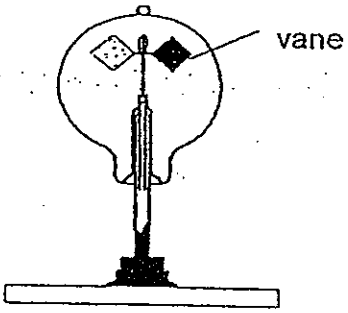
41. The diagram below shows an invention known as the "dew bank". It is being used in countries where clean water is hard to obtain. The "dew bank" is placed out in the open to obtain water through the process of condensation. Water is then collected in the dew bank for drinking.



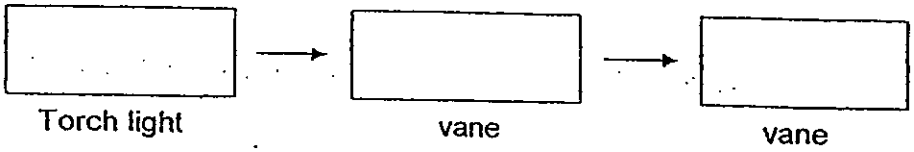
Images courtesy of: http://www.yankodesign.com/2010/07/05/beetle-juice-inspired/

Suggest whether it is better to place the dew bank out in the day or at night. Explain your choice. [2]

42. The diagram below shows a radiometer. The vanes are silver on one side and black on the other side. When Tom shone a torch light at the black part of the vanes of the radiometer, the vanes started to rotate.



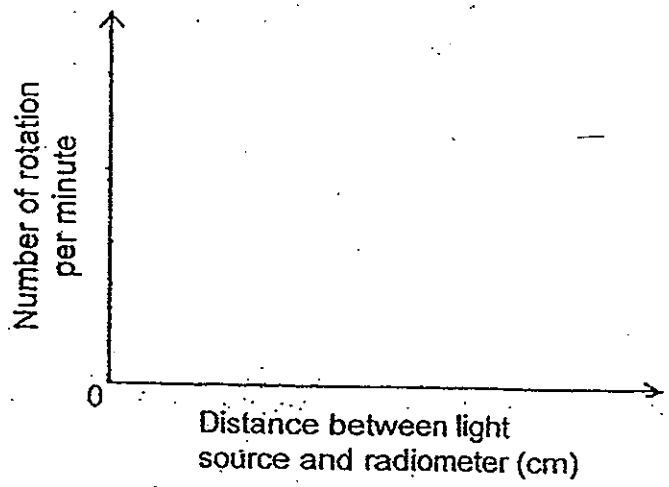
(a) Write down the energy conversion that caused the vanes to rotate.[1]



Tom wanted to investigate how the intensity of the light source affects the number of rotations per minute. Tom recorded the results in a table as shown below.

Distance between light source and radiometer (cm)	Number of rotations per minute
10	28
20	20
30	14

(b) In the graph provided, draw the line graph showing how the number of rotations would vary with the distance between the light source and the radiometer. [1]



(c) Besides increasing the intensity of the light source, suggest another possible method on how Tom could enable the vanes of the radiometer to spin faster. [1]

43. The diagram below shows an educational toy which has a ring magnet on each of the 4 sides of the square plastic. This special ring magnet has the North pole on one side and South pole one the other side. The magnet is able to rotate freely as shown in figure **1** and the poles of the magnet are shown in figure 2.

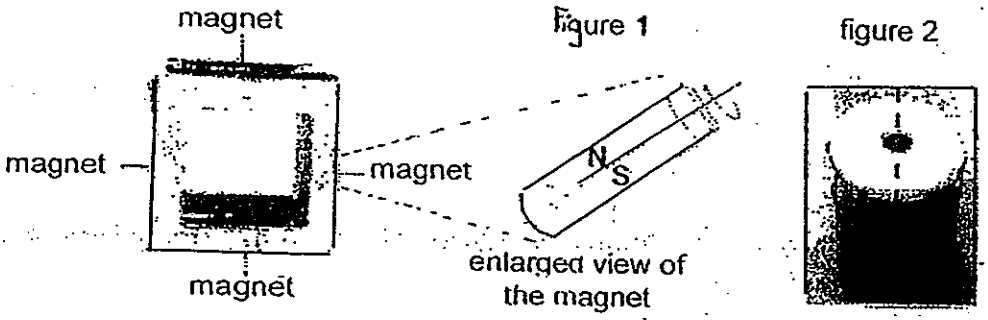


Figure 1 figure 2

Jimmy was given a stack of these toy magnets. He found that sometimes he was able to stack them as shown in figure 3, but when he tried to stack them two at a time, he found that he was unable to put them together as shown in figure 4.

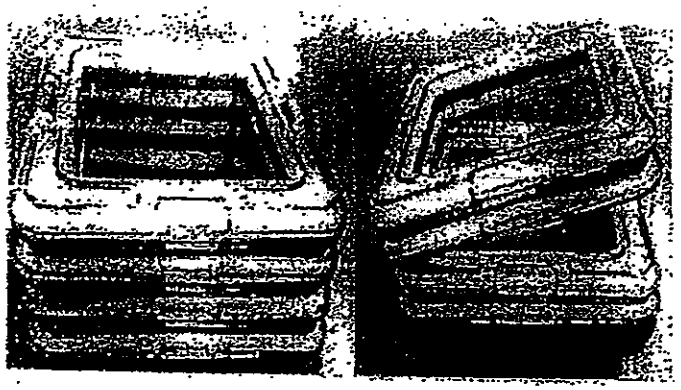
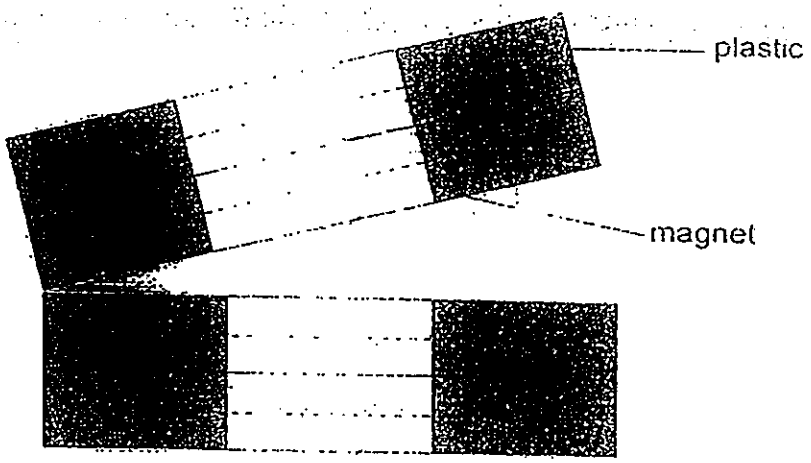


figure 3 figure 4

(a) In the diagram below, state the poles of the four magnets in figure 4. The N-pole of one magnet has already been labelled for you. [1]



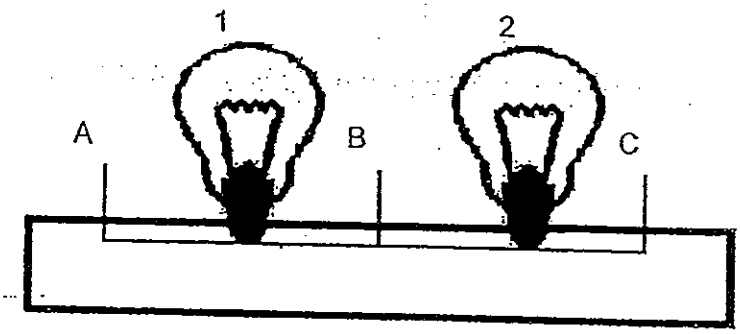
(b) Explain what Jimmy should do in order to stack the toy up as in figure 3. [2]

_____

_____

_____

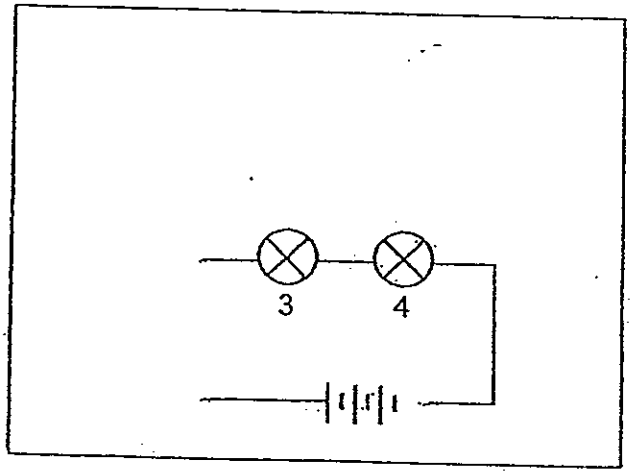
44. Jason was given 4 bulbs. These 4 light bulbs come attached in a pair as shown in the diagram below. Wires can be connected to terminals A, B and C. Either light bulb 1 or 2 had fused and Jason was asked to determine exactly which light bulb had fused.



Jason was given the following items.

- Battery holder with 4 batteries connected in series (cannot be removed)
- Bulbs 3 and 4 which are in working condition.
- Wires

(a) In the space provided below, **complete** the circuit diagram to show how Jason could determine which light bulb had fused. Bulbs 3 and 4 had already been drawn for you. [1]



(b) In the table below, put a (√) to indicate which light bulbs would light up based on the diagram you have drawn. [1]

Bulb Fused	Observation			
	1	2	3	4
1				
2				

END OF PAPER

Answer Ke

EXAM PAPER 2012

SCHOOL : NANYANG
SUBJECT : PRIMARY 6 SCIENCE

TERM : SA2

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

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

31)a)i)Food and water are transported in different tubes of the plan's transport system while they are transported in the stem vessels of the animal's.

ii)The transport system of the plant is in one direction, from the roots up to the leaves a from leaves down to roots.

b)Food made by the plant is already in the simplest form ready for use.

32)a)Flexed: The biceps contract and the triceps relax, allowing the hand to flex.

Extended: The biceps relax and the triceps contracts, allowing hand to extend.

b)Respiratory system: allows gaseous exchange to provide oxygen for respiration.

Digestive system: allows food to be broken down.

33)Investigation 1: To find out how if coloured lights would affect the presence of starch.

Areas of the leaf: B, E.

Investigation 2: To find out how the presence of chlorophyll will affect the presence of starch.

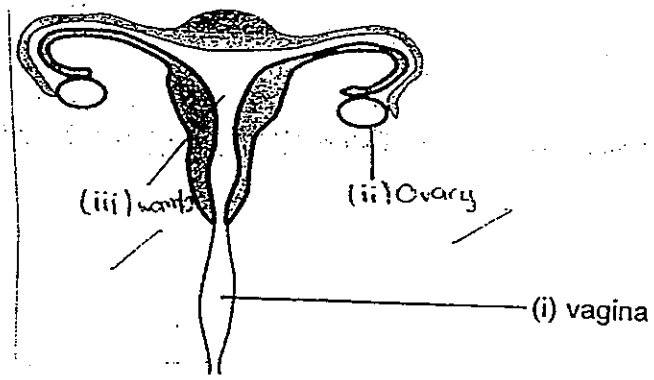
Areas of leaf: B and D, or C and E

34)a)Is cell wall present?

b)It is a plant cell but does not have chlorophyll but has a nucleus.

c)Root cell.

35)a)



b)The foetus will not be able to receive enough nutrition as it would not be able to receive sufficient oxygen, digested food, and water for the foetus' important life processes and will eventually die.

36)i)This causes the predator to be confused as it is unsure which prey it should go after to ensure that it does not get eaten.

ii)This ensures that the young, who are weaker do not get eaten by the predator easily as there are the adults protecting the young.

37)a)It prevents predators from entering its nest easily and eating the young chicks easily as the cacti act as a form of protection and predators do not dare to go near it.

b)When there are more insects, there is more food to support more chicks.

38)a)It is a parasitic relationship in which only plant A benefits and free W is affected.

b)This is so that it does not cause the branch to break. It is then unable to carry out the parasitic relationship as well as obtain maximum sunlight for photosynthesis.

c)i)Adaptation 1 : Grows on higher branches of a tree.

Explanation : Allows seeds to be dispersed further away from the parent plant.

ii)Adaptation 2: Dispersal by explosive action.

Explanation : This prevents overcrowding and the young seedlings need not compete with the parent plant for sunlight, space, water and dissolved mineral salts.

39)a)The plants are food for the snail and the snail's droppings act as fertiliser for the water plant to allow it grow heal their.

b) Plant → Snail
Algae → Snail

c)The snail population continued to increase as there was more food, water and oxygen for the snail to carry out important life processes, the plant population did not increase as the algae covered the walls of the glass aquarium. This meant that the plants did not receive as much sunlight as could not photosynthesise as well to make food.

d)The algae blocked out night, so the plants could not photosynthesise as well. Therefore, there was lesser food for them which was insufficient and the death rate was greater than the birth rate, leading to a decreasing trend.

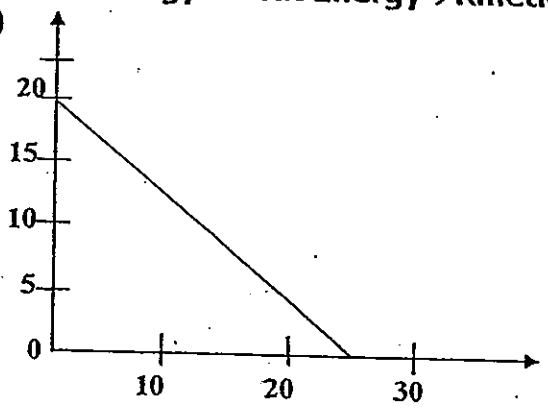
40)a)Metal is a good conductor of heat and it conducts heat away from the tea quickly.

b)Longer distance between the 2 cups.

41)It is better to place it at night as the dew bank will cool down faster and gets colder than the air thus allowing the water vapour in the air to condense faster on the cooler surface of the metal cone.

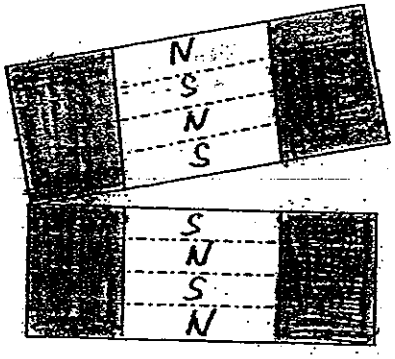
42)a)Heat Energy→Heat Energy→Kinetic Energy

b)



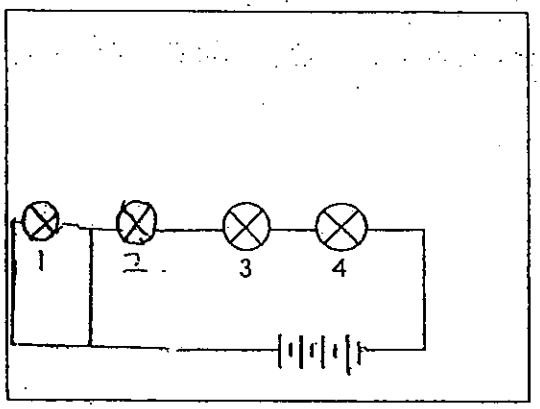
c)Put a hairdryer.

43)a)



43)b)He should flip the bottom stack stock where by the North pole is facing the South pole. This allows the magnets to attract one another as unlike poles attract while like poles repel.

44)a)



b)

1	2	3	4
	✓	✓	✓