St. Hilda's Primary School
Preliminary Examination, 2012
SCIENCE
PRIMARY 6

Name : _____ ( ) Marks : _____ / 60

Class : P6 / _____ Parent's Signature: _____

Duration: 1 h 45 min

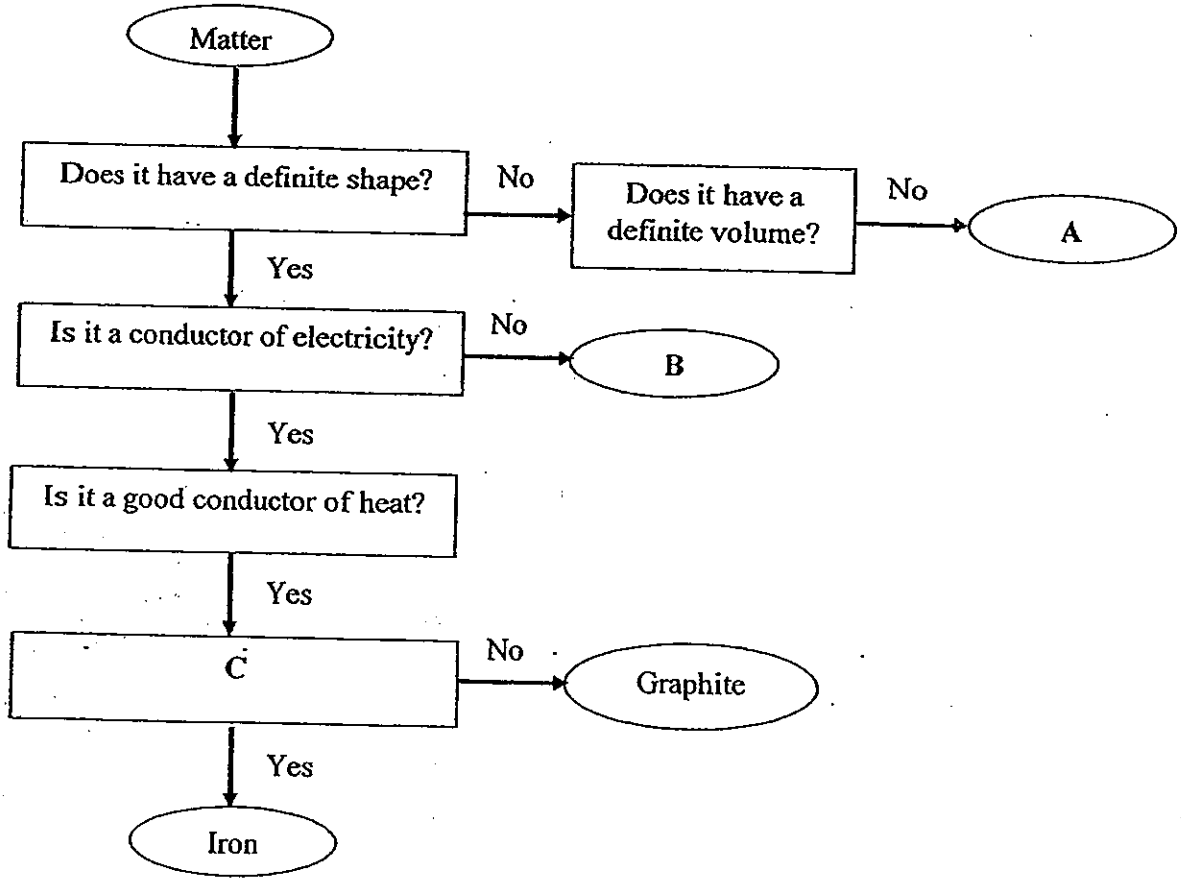
(30 Questions x 2 marks)

Booklet A

For each question, four options are given. One of these is the correct answer. Make your choice (1, 2, 3 or 4). Shade the correct ovals on the Optical Answer Sheet.

---

1. Study the flow chart below.



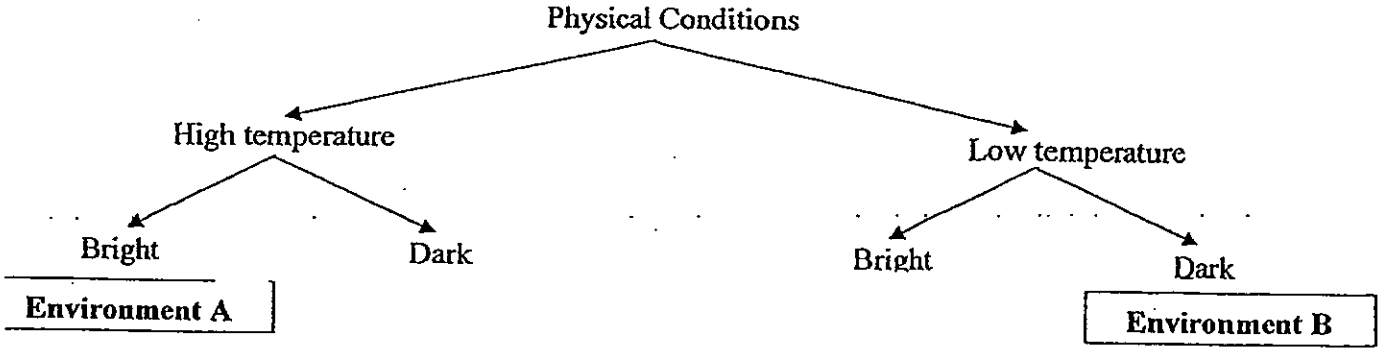
Which one of the following correctly represents A, B and C?

	A	B	C
(1)	Oxygen	Wood	Is it a magnetic material?
(2)	Ice	Rubber	Can it float in water?
(3)	Carbon dioxide	Steel	Is it a magnetic material?
(4)	Water	Glass	Can it float in water?

2. The table below shows the most suitable physical conditions of the environments for some animals to live in.

Animal	Physical Conditions	
	Temperature	Amount of sunlight
W	High	Bright
X	Low	Bright
Y	High	Dark
Z	Low	Dark

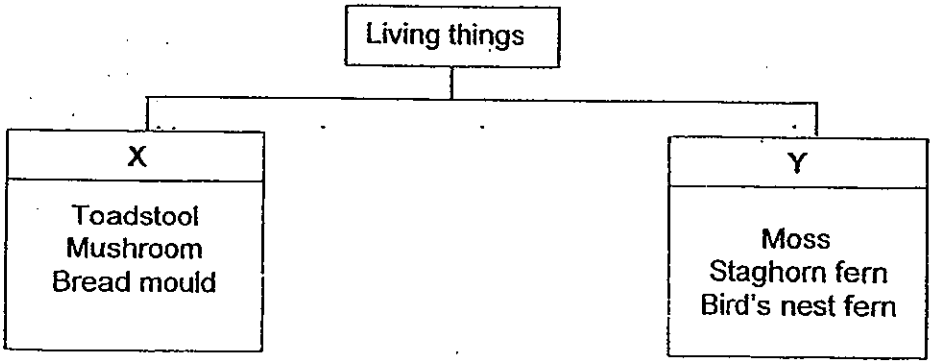
Study the chart below.



Which two types of animals can you find in Environment A and Environment B?

	Environment A	Environment B
(1)	Y	W
(2)	W	Z
(3)	Z	W
(4)	W	X

3. Study the classification chart below.

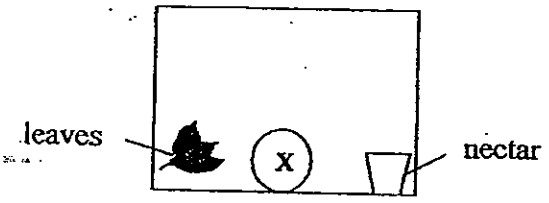


Which of the following is/are possible heading(s) for X and Y?

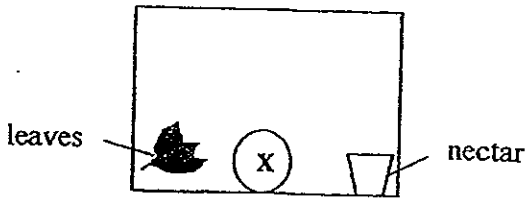
	X	Y
A	Fungi	Green plants
B	Non-green plants	Green plants
C	Cannot make its own food	Can make its own food
D	Reproduces from spores	Reproduces from seeds

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

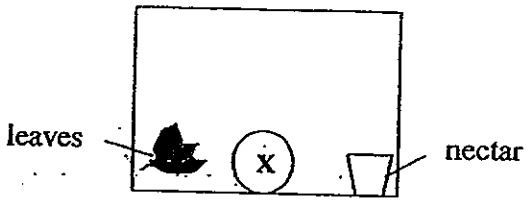
4. Ben kept 3 Organism X, each at a different stage of growth in 3 separate containers. He placed 15g of green leaves and 15g of nectar in each container and recorded the amount of green leaves and nectar left in the containers after 5 days. The results are shown in the table below.



Container A



Container B



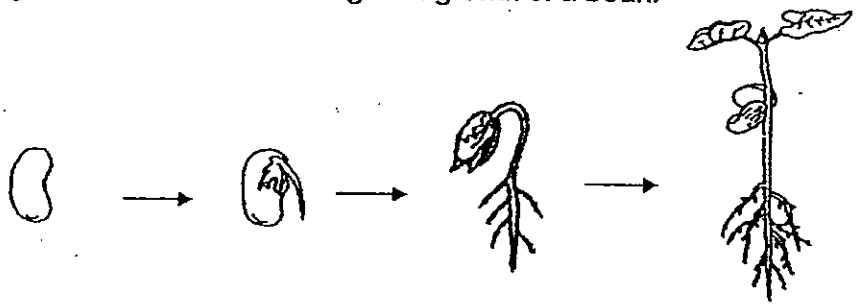
Container C

Container	Amount of green leaves left (g)	Amount of nectar left (g)
A	15	5
B	5	15
C	15	15

Which one of the following matches the stage of growth of Organism X in the following containers if the adult of Organism X is a butterfly?

	Container A	Container B	Container C
(1)	Adult	Pupa	Larva
(2)	Larva	Adult	Pupa
(3)	Pupa	Larva	Adult
(4)	Adult	Larva	Pupa

5. The diagram below shows the stages of growth of a bean.



W X Y Z

Which of the following statement(s) is/are true about the stages of growth of the bean?

A : Light is needed at all stages for the bean to grow.

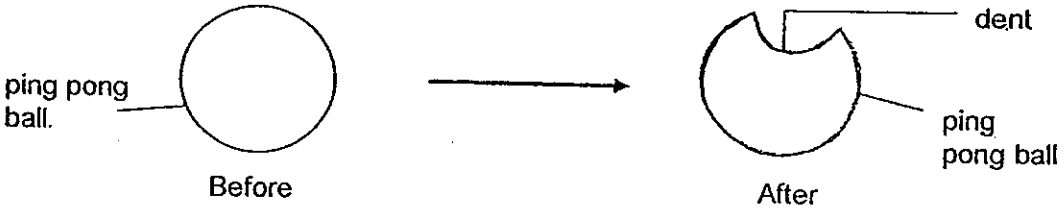
B : The seedling starts to take in carbon dioxide at Stage Z.

C : The bean only carries out respiration for Stages X and Y.

D : Water, oxygen and warmth are needed at Stage W for the bean to germinate.

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

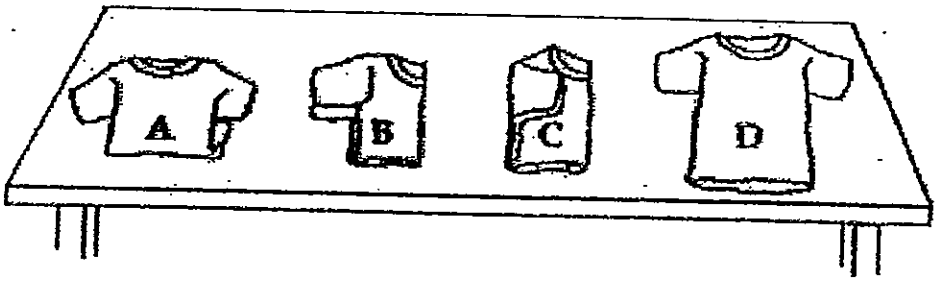
6. The diagram below shows a ping pong ball before and after it has been dented.



Which one of the following correctly describes the changes in the mass of the ping pong ball and volume of air in the ping pong ball before and after it was dented ?

	Before		After	
	Mass of ball (g)	Volume of air in the ball (cm^3)	Mass of ball (g)	Volume of air in the ball (cm^3)
(1)	3	10	2	10
(2)	3	10	2	8
(3)	3	10	3	10
(4)	3	10	3	8

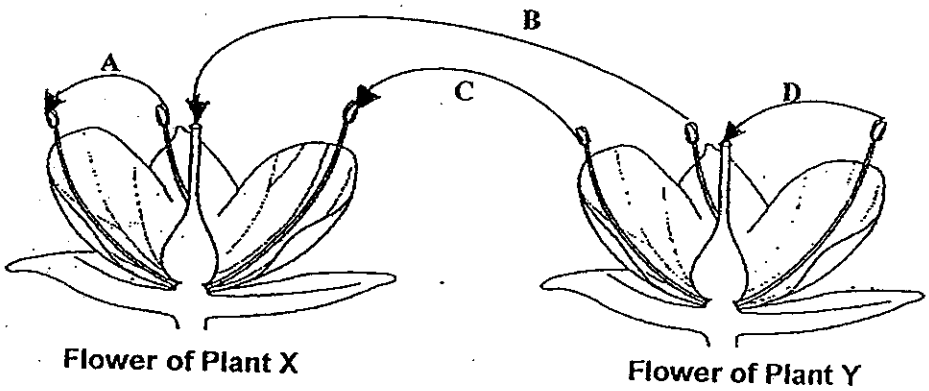
7. Kumar carried out an experiment. He took 4 identical shirts and wet each shirt with 500ml of water. Then he folded the shirts. Shirt A was folded once. Shirt B was folded twice. Shirt C was folded 3 times and Shirt D was not folded. The shirts were put on a table and left under the sun. Kumar measured the time taken for each shirt to dry up completely.



The aim of his experiment is to find out if Variable A affects Variable B.
Which one of the following are possibly Variable A and Variable B?

	Variable A	Variable B
(1)	Shape of the shirt	Rate of condensation
(2)	Amount of water on the shirt	Rate of evaporation
(3)	Humidity of the surrounding air	Rate of condensation
(4)	Amount of exposed surface area of shirt	Rate of evaporation

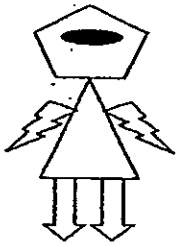
8. The diagram below shows 2 flowers from different plants, X and Y.



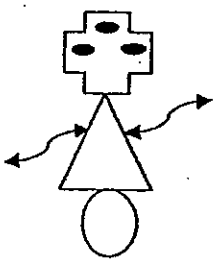
Which one of the following correctly shows the pollination processes that have taken place?

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

9. Study the diagrams of Parent A and Parent B.



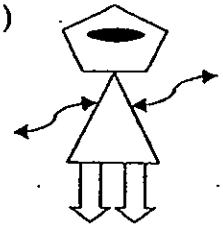
Parent A



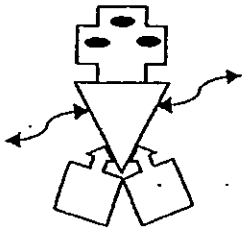
Parent B

Which one of the following babies is possibly the baby of Parent A and Parent B?

(1)



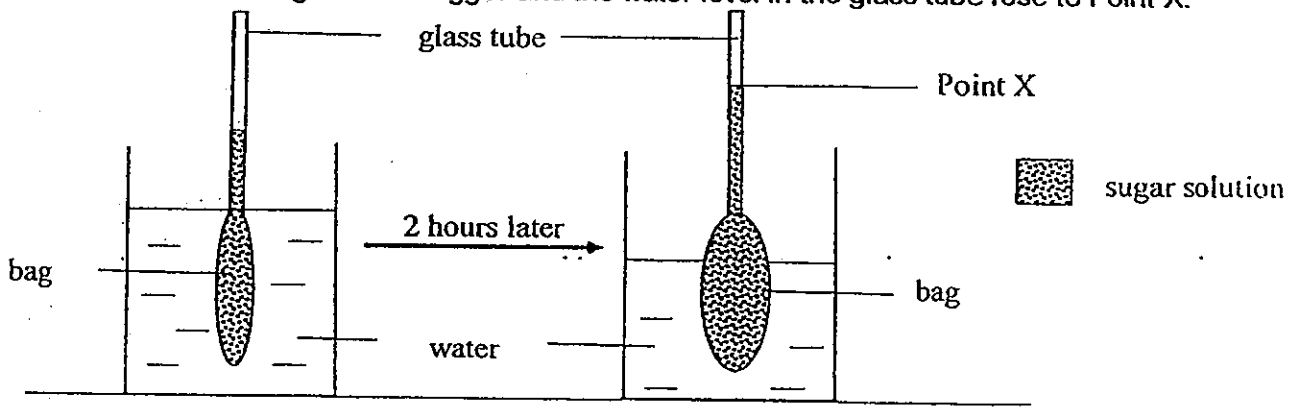
(2)



(3)

(4)

10. Ailin set up the experiment as shown below at room temperature. After 2 hours, she noticed that the bag became bigger and the water level in the glass tube rose to Point X.

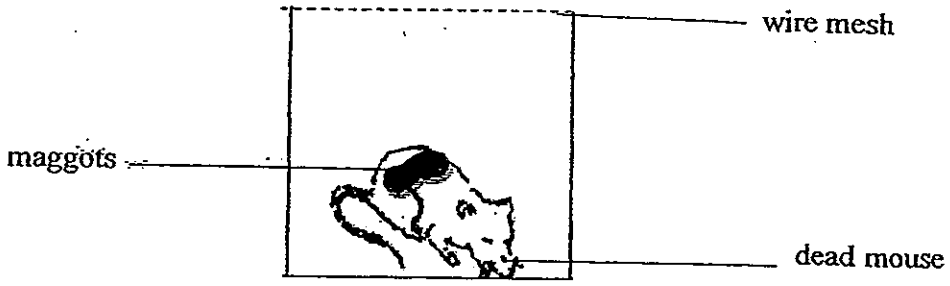


Which of the following statement(s) is / are possible reasons to the above results?

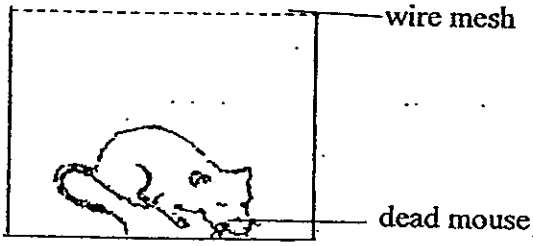
A : The water enters the bag but cannot leave the bag
B : The sugar solution is contained in the bag but cannot leave the bag.
C : The sugar solution gains heat from the surrounding air and expands.
D : The bag allows both the water and sugar solution to pass through.

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

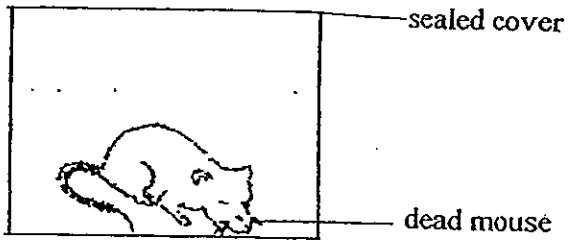
11. Sally's mouse died when she was away on holiday for a week. There were maggots observed on the dead mouse as shown below. Maggots are the larvae of housefly.



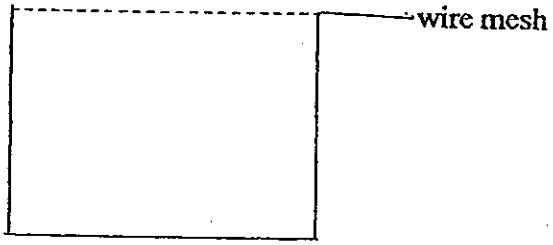
Sally wanted to prove that the maggots did not come from the mouse.
Which of the following two set-ups should Sally use to conduct her experiment?



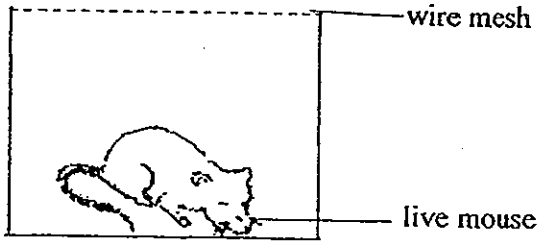
Set-up A



Set-up B



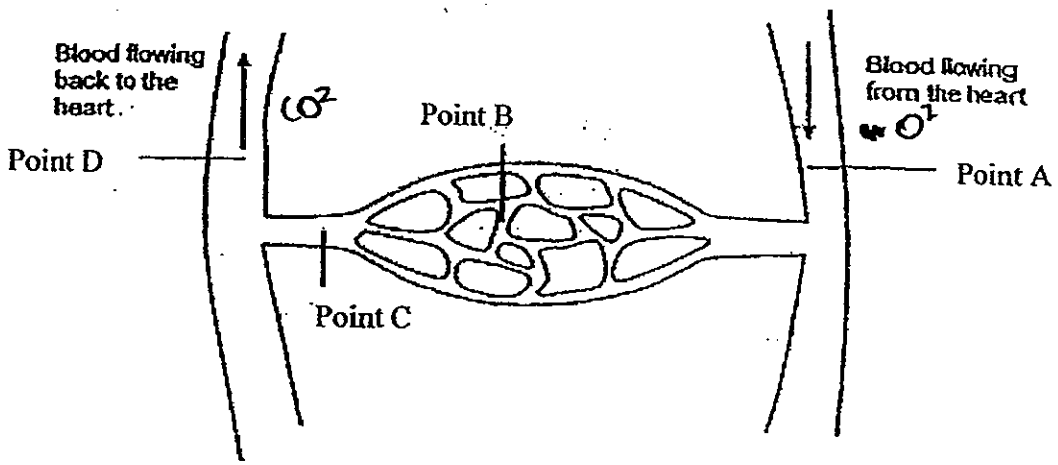
Set-up C



Set-up D

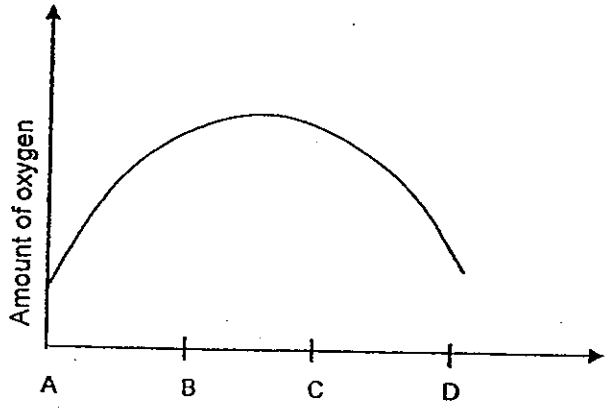
(1) A and B
(2) A and D
(3) B and D
(4) C and D

12. The diagram below shows the path of blood flow in the human body from Point A to Point D.

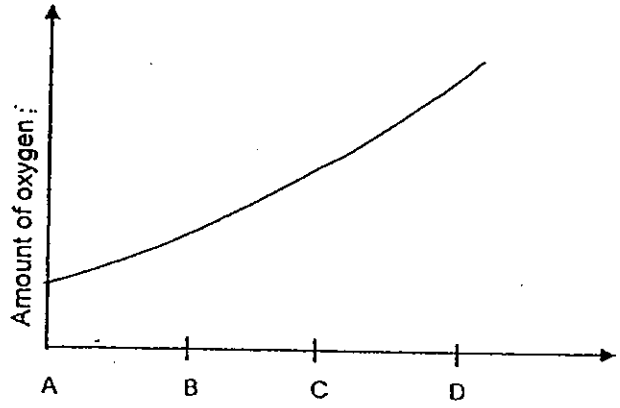


Which one of the following graphs shows the correct amount of oxygen at Points A, B, C and D as the blood flows **from** the heart and **back** to the heart?

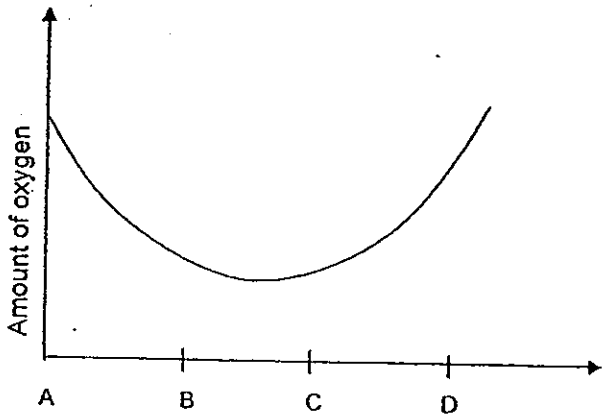
(1)



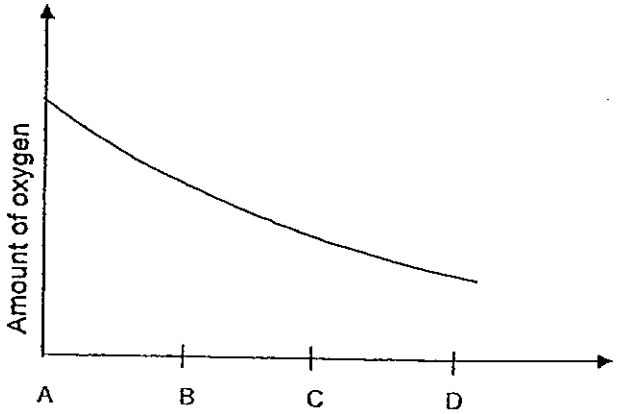
(2)



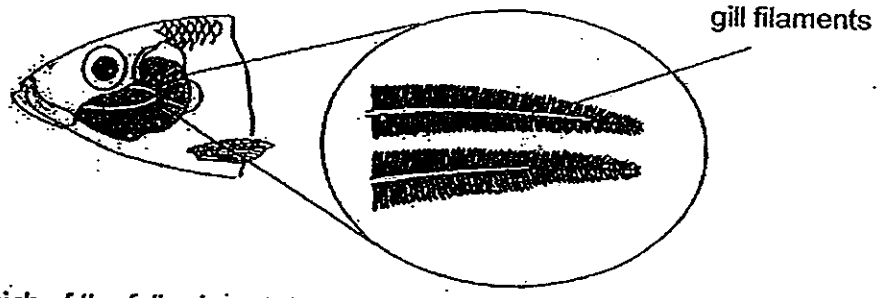
(3)



(4)



13. The diagram below shows the gill filaments of a fish.



Which of the following statement(s) is/are true?

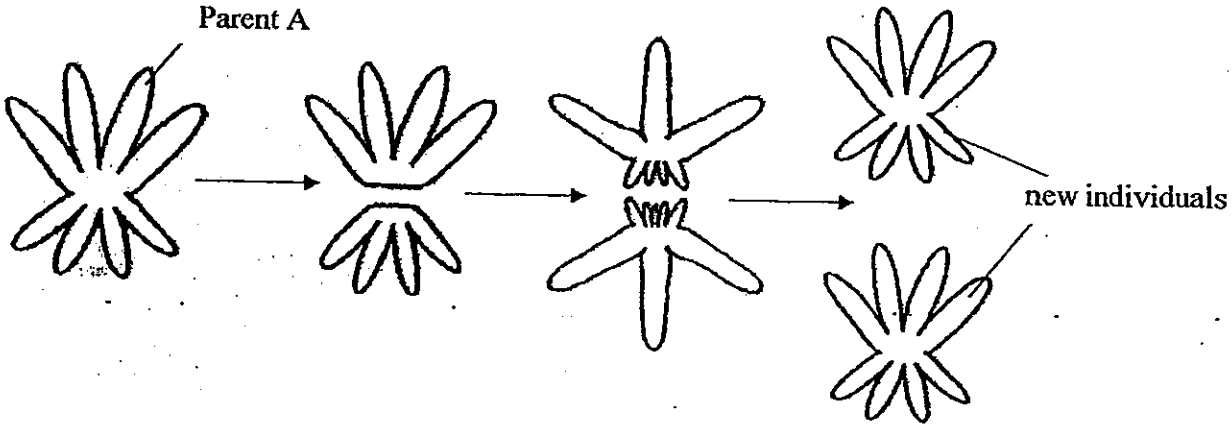
A : The gill filaments digest small pieces of food and transport the digested food to the bloodstream.

B : The gill filaments expose a larger surface area so that more dissolved oxygen can be taken in by the bloodstream.

C : Air sacs of the human respiratory system have the same function as the gill filaments.

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

14. The diagram below shows the reproduction of starfish.
In this type of reproduction, a piece of the parent detaches and grows into a new individual.

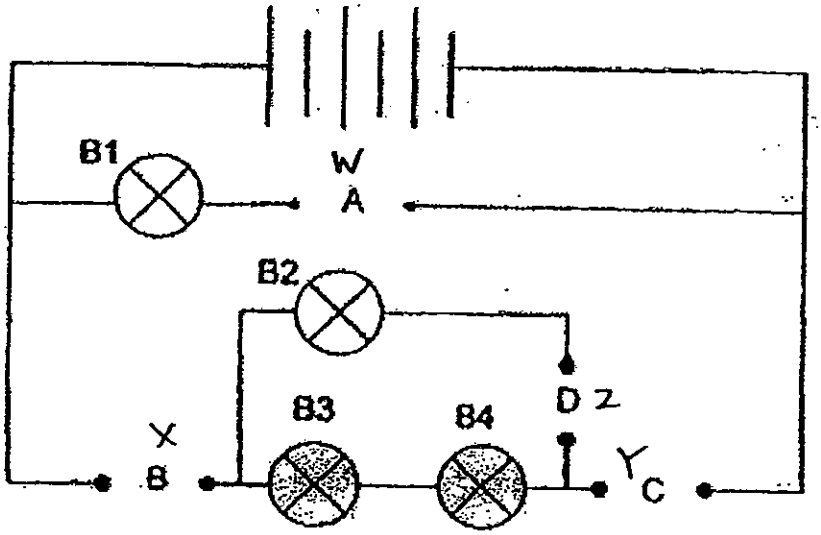


Which one of the following statements is true about the type of reproduction shown above?

Both new individuals _____.

(1) receive only half of the traits from the Parent A
(2) receive an identical set of traits from the Parent A
(3) receive completely different traits from the Parent A
(4) will not pass on the traits of Parent A to their next generation

15. Study the circuit below.



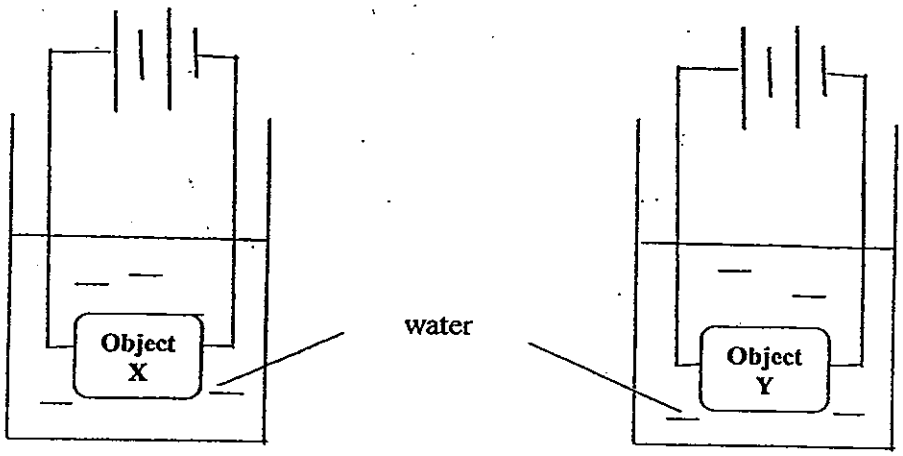
Ben connected Objects W, X, Y and Z to each of the gaps at A, B, C and D respectively. He recorded his observations in the table below.

Position of Object				Bulb(s) that lit up			
A	B	C	D	B1	B2	B3	B4
W	X	Y	Z			✔	✔

Which one of the following shows the correct observations made for Objects W, X Y and Z placed at various gaps?

	Position of Object				Bulb(s) that lit up			
	A	B	C	D	B1	B2	B3	B4
I)	X	Y	W	Z	✔			
:)	Y	W	Z	X	✔	✔	✔	✔
I)	W	Z	Y	X		✔		
·)	Z	X	Y	W	✔		✔	✔

16. Ali set up the experiment as shown below.



He recorded the temperature of the water in Beaker P and Beaker Q before and after the experiment. The results are recorded in the table.

	Temperature of water in P (° C)	Temperature of water in Q (° C)
Before the experiment	28	28
After the experiment	28	50

Which one of the following pairs are possible materials of Object X and Object Y?

	Object X	Object Y
(1)	Wood	Iron
(2)	Iron	Steel
(3)	Plastic	Rubber
(4)	Copper	Rubber

17. Diagram 1 shows Magnet A repelling Object B. A flame is then placed under Magnet A as shown in Diagram 2. After a while, Object B started to move towards Magnet A.

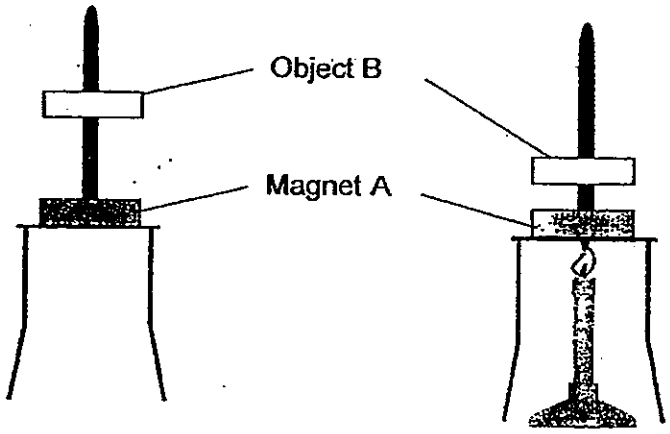


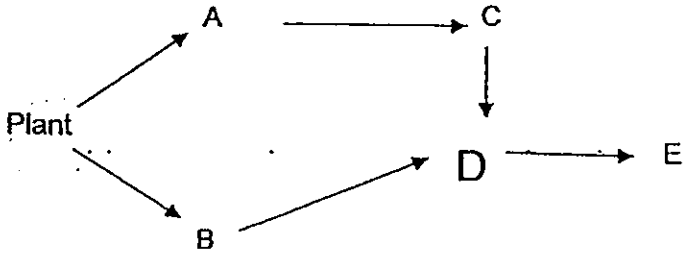
Diagram 1 **Diagram 2**

Which of the following statement(s) is / are true?

A : Object B is a magnet.
B : Object B is made of non-magnetic material.
C : Object B gains heat and becomes heavier.
D : Magnet A loses some of its magnetism due to the heat.

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

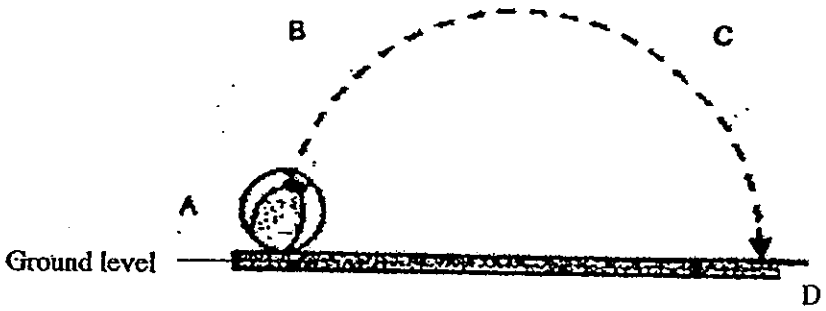
18. Study the food web below.



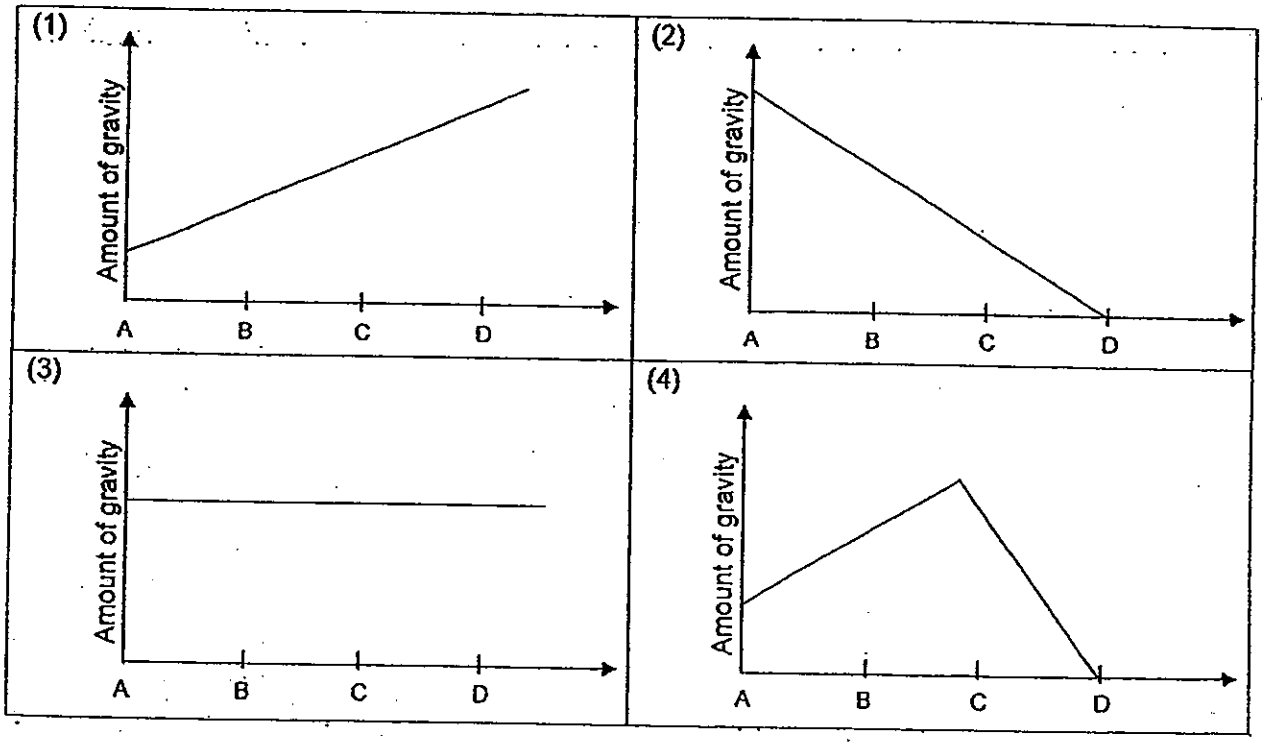
Which one of the following shows how Populations A, B, C and E are likely to be affected immediately if D is wiped out by a disease?

	Changes in population size			
	A	B	C	E
(1)	Increases	Increases	Increases	Decreases
(2)	Increases	Increases	Decreases	Increases
(3)	Decreases	Decreases	Increases	Decreases
(4)	Decreases	Increases	Increases	Decreases

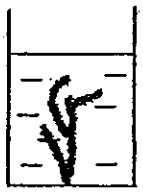
19. The diagram below shows the path of a ball which was thrown into the air and landed a short distance away.



Which one of the following graphs shows the **amount of gravity** acting on the ball at Points A, B, C and D?

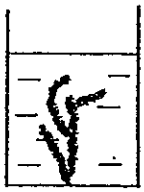


20. Mei Mei conducted an experiment to investigate the effects of Pollutants A, B and C on hydrilla. She observed the change in the population size of hydrilla in the following four set-ups for three weeks.

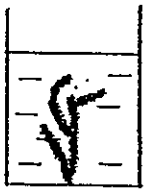


Pond water only

Pond water with Pollutant A

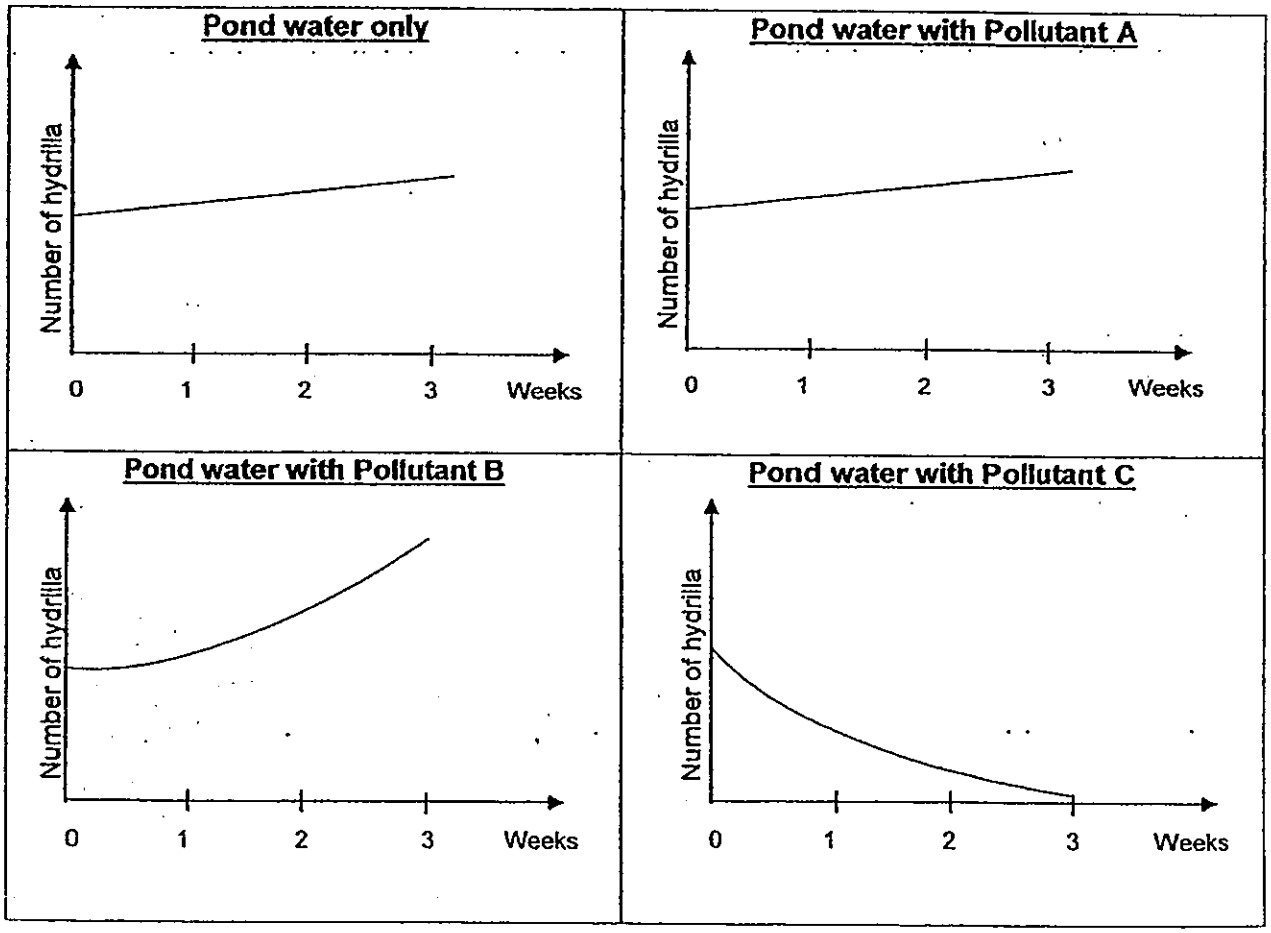


Pond water with Pollutant B



Pond water with Pollutant C

Mei Mei recorded her observations in the graphs shown below.

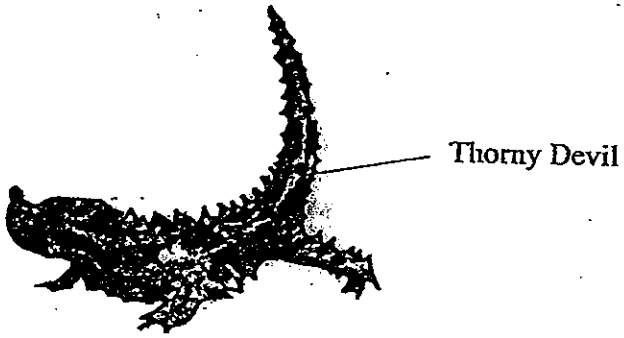


Which of the following statement(s) is / are true?

A : Pollutant C is harmful to hydrilla.
B : Pollutant B helps hydrilla to reproduce.
C : Pollutant A has no observable effect on hydrilla.
D : Pollutant A and B has no observable effect on hydrilla.

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

21. The diagram below shows a Thorny Devil which is well-adapted to the harsh desert environment. It has a strong body armour to protect against predators. It is also able to adapt to the hot climate of the desert in other ways.



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

A : Ability to change colour.
B : Ability to run quickly across sand.
C : Ability to scoop ants using its tongue.
D : Ability to move around with its body and tail lifted off the ground.

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

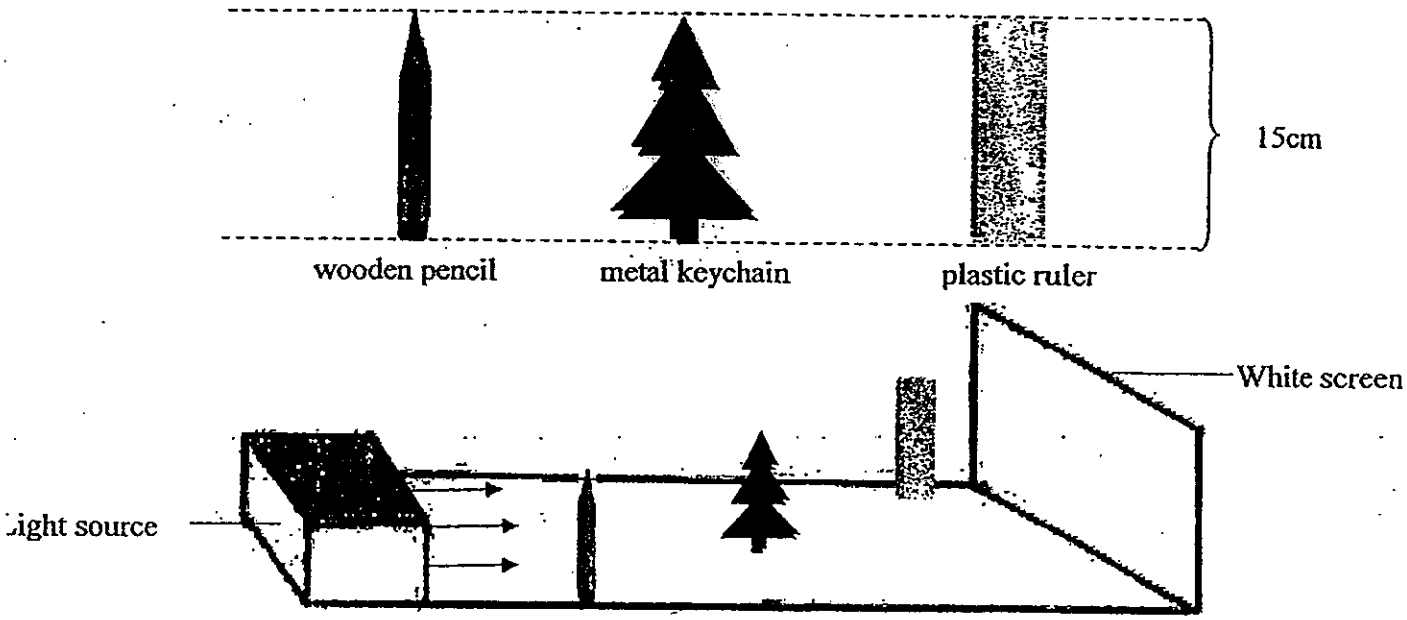
22. Two ships collided in the sea and large amount of oil was spilled into the water. The seabirds living in that area were badly affected.

Which of the following statement(s) is/are true about how some seabirds are affected immediately by the oil spill?

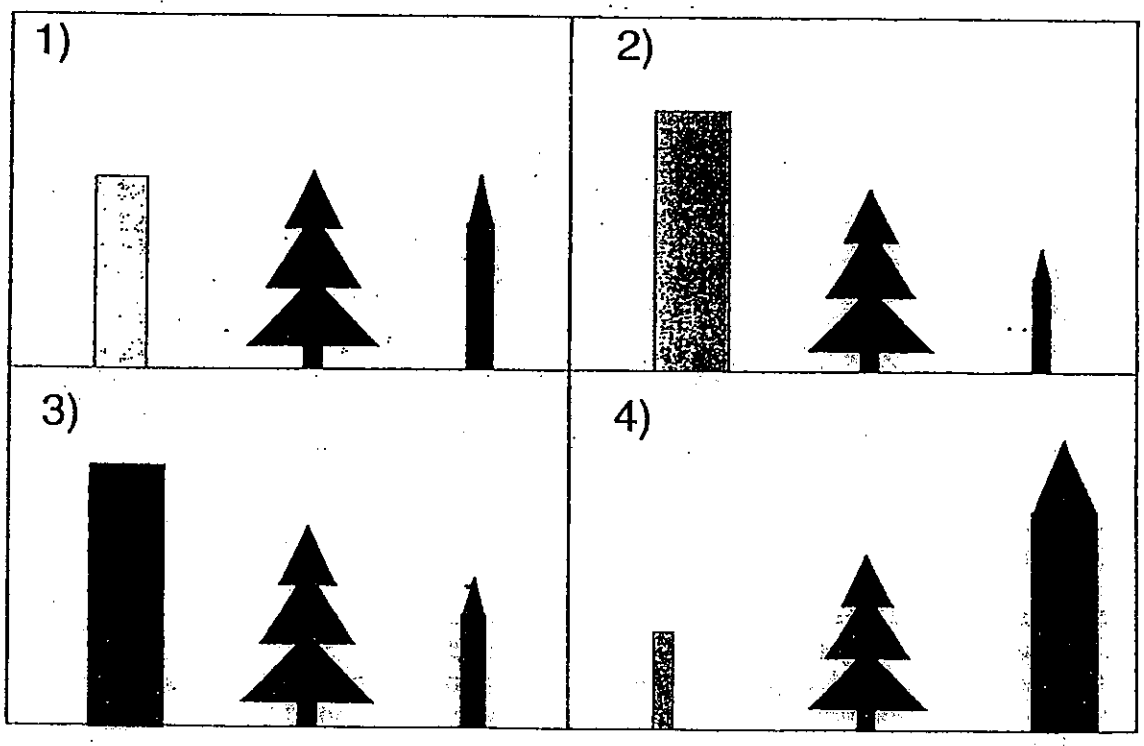
A: They will be poisoned when they drink the contaminated water.
B: They will not be able to fly and will be killed by their predators.
C: Their feathers will be stuck together by oil and they cannot keep themselves warm.
D: Their population will increase as their predators will also be poisoned by the contaminated water.

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

23. The diagram below shows 3 objects of same height, a wooden pencil, metal keychain and plastic ruler, placed at different distances in front of a white screen. A light source was switched on and shadows of A, B and C were cast on the white screen.

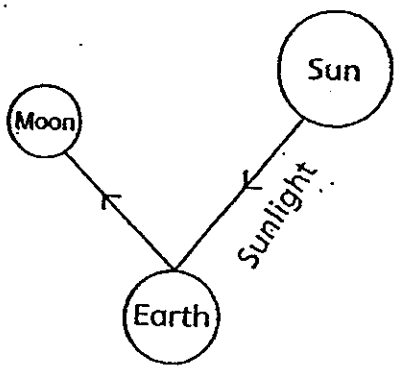


Assuming the objects do not block one another, which one of the following diagrams correctly shows the shadow of objects?

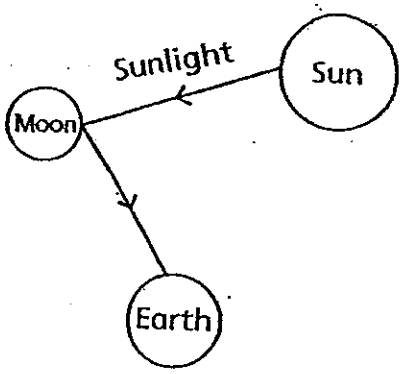


24. Which one of the following shows why we can see moon at night?

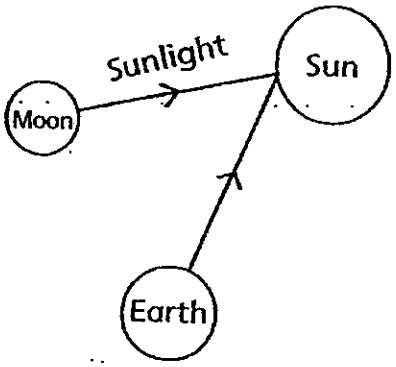
(1)



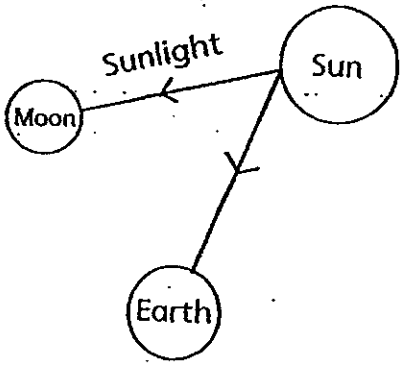
(2)



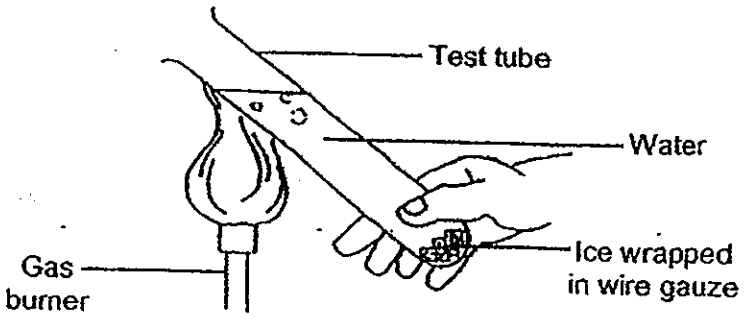
(3)



(4)



25. The experiment below shows the water near the top of the test tube boiling when it is heated. The ice wrapped at the bottom of the test tube does not melt.



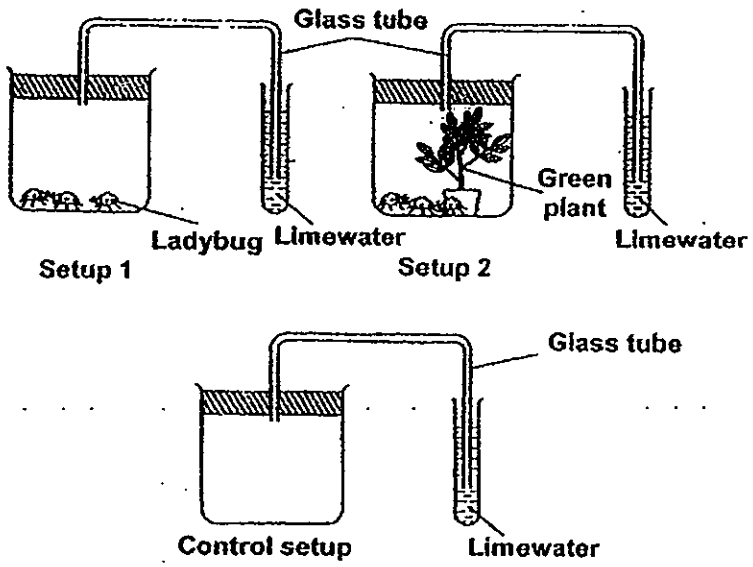
Which of the following statement(s) is / are possible explanations to the results?

A : The wire gauze prevents heat from reaching the ice.
B : The ice is losing heat slowly so it does not melt easily.
C : Water in the test tube conducts very little heat to the ice.
D: The boiling point of water is higher than the melting point of ice.

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

Study the experiment below and answer Questions 26 and 27.

26. Jenny set up the experiment as shown below. She placed the 3 set-ups under the Sun.



The aim of the experiment is to find out if _____.

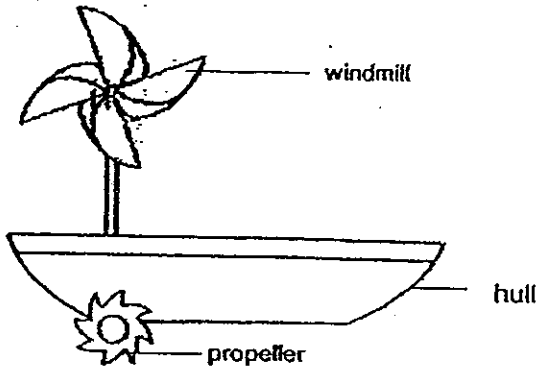
1) plants take in oxygen when they respire
2) ladybugs take in oxygen when they respire
3) ladybugs give out carbon dioxide when they respire
4) plants take in carbon dioxide when they photosynthesize

27. What will be the possible results of the experiment above?

	Changes in limewater		
	Clear ⟶ Chalky		
(1)	Set-up 1	Set-up 2	Control Set-up
(2)	Control Set-up	Set-up 2	Set-up 1
(3)	Set-up 2	Set-up 1	Control Set-up
(4)	Control Set-up	Set-up 1	Set-up 2

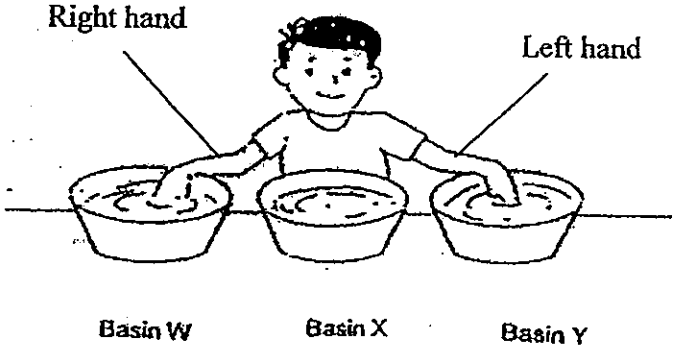
28. Xiao Ming makes a toy boat as shown below. The windmill is attached to the propeller at the bottom of the boat. He places the boat in a pond and the boat moves forward quickly. After a while, the windmill stops turning and the boat stops moving.

Which one of the following shows the correct energy conversion of the toy boat moving in the pond?



1)	Kinetic energy → Kinetic energy → Kinetic energy → Kinetic energy (wind) (windmill) (propeller) (toy boat) ✓
2)	Potential energy → Kinetic energy → Kinetic energy → Kinetic energy (wind) (windmill) (propeller) (toy boat)
3)	Potential energy → Kinetic energy → Elastic Potential energy → Kinetic energy (wind) (windmill) (propeller) (toy boat)
4)	Kinetic energy → Kinetic energy → Kinetic energy (water) (propeller) (toy boat)

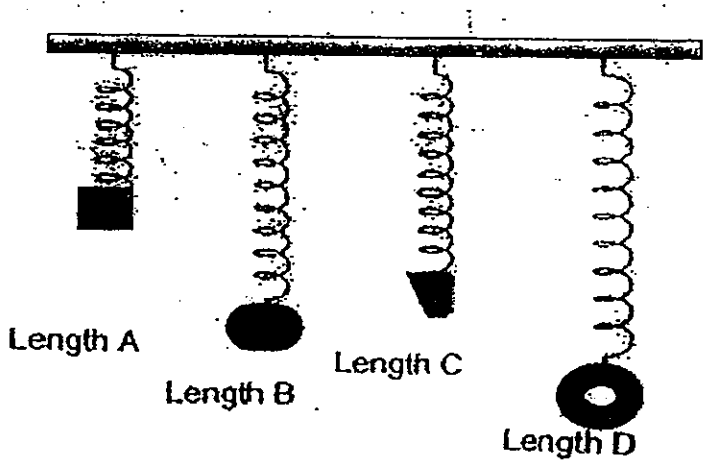
29. Max put his left hand in Basin Y and right hand in Basin W. Then he put both his hands in Basin X. His left hand feels cold while his right hand feels warm in Basin X.



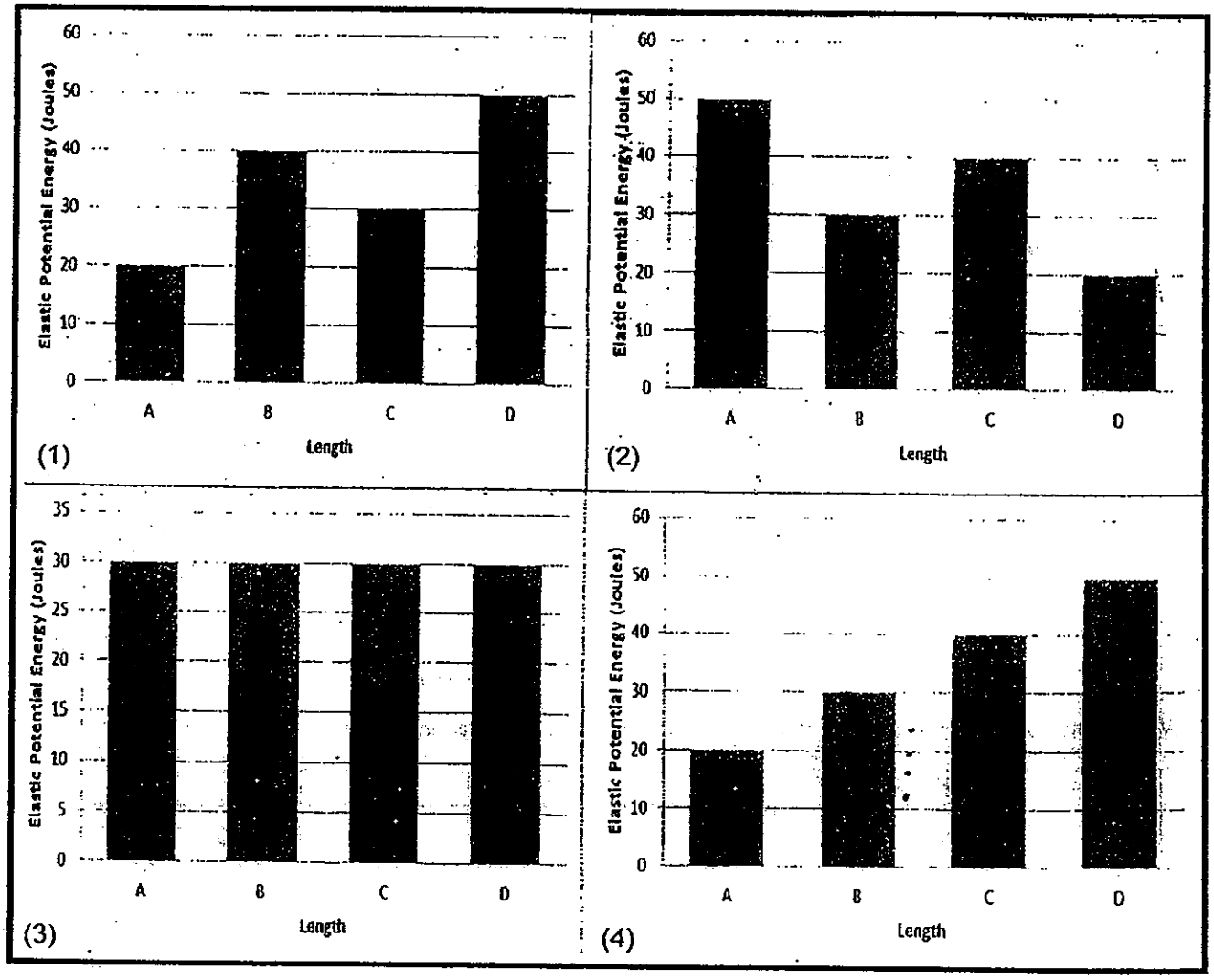
Which one of the following are the likely temperatures of water in Basin W, X and Y?

	Basin W	Basin X	Basin Y
(1)	10 °C ✓	30°C ✓	50°C ✓
(2)	50°C	30°C ✓	10 °C
(3)	30 °C	30°C	50°C ✓
(4)	30°C	30°C	30°C

30. The diagram below shows 4 similar springs stretched to different lengths using different masses:



Which one of the following graphs shows the correct amount of elastic potential energy for each length?



ST. HILDA'S PRIMARY SCHOOL
PRELIMINARY EXAMINATION, 2012
SCIENCE
PRIMARY 6

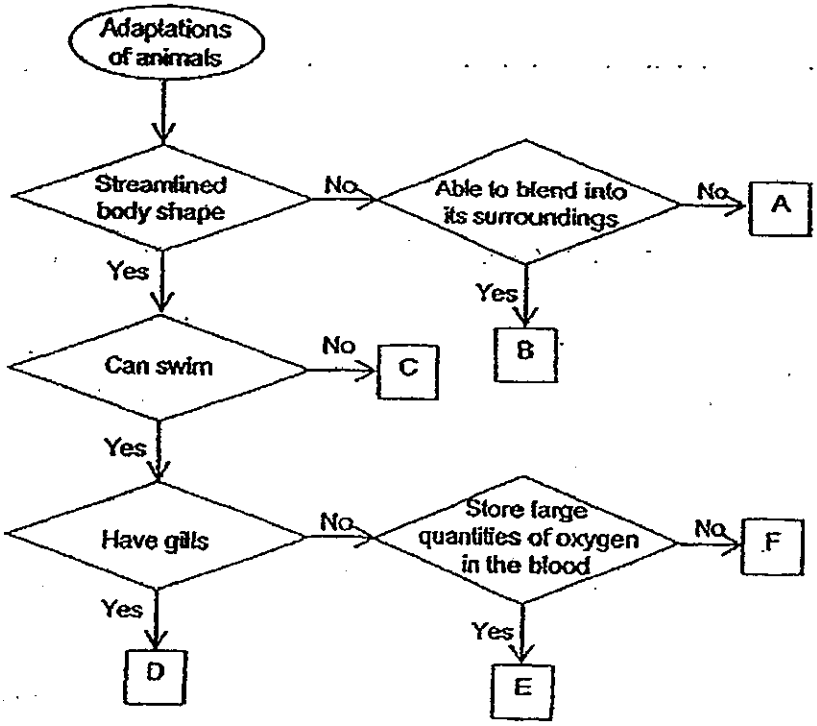
Name: _____( ) Marks: 40

Class: Primary 6/_____ Parent's signature: _____

Booklet B: 14 questions (40 marks)

Study all diagrams and read each question carefully. Write down your answer in the space provided. The number of marks given is shown in brackets [ ] at the end of each question.

31. Study the flowchart below. A, B, C, D, E and F represent different groups of animals. Answer the questions based on the flowchart.



a) Describe the characteristics of animals in group B. [1m]

_____

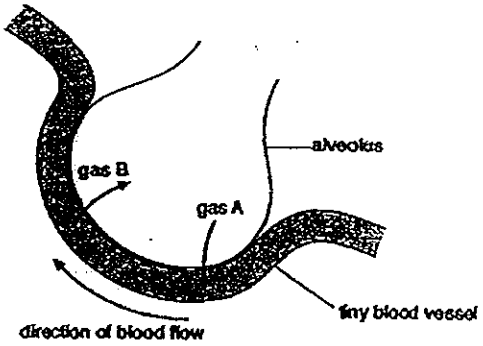
_____

b) Which group of animals does D belong to? [1m]

_____

2

32. The exchange of gases in the lungs takes place in balloon-like structures called alveoli. The diagram below shows an alveolus and its blood supply.



a) Gas A enters the blood from the alveolus.
Gas B leaves the blood and enters the alveolus.
What are the names of gases A and B?

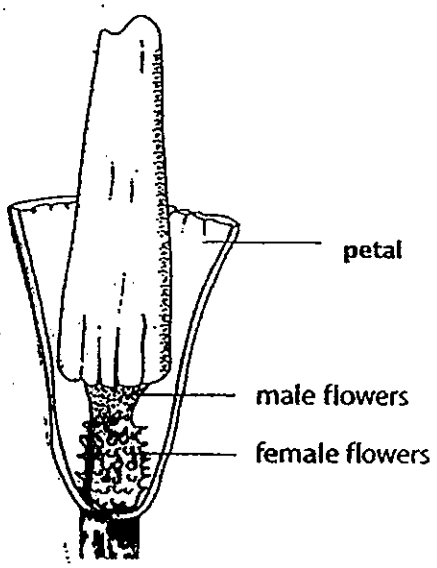
Gas A: _____ [½m]

Gas B: _____ [½m]

b) Give one reason why it is easy for gases to pass through the wall of an alveolus. [1m]

_____

33. Study the cross section of Flower A shown below carefully.



Nathanael made the following observations about Flower A.

- The flower produces a scent that smells like rotting meat.
- It does not have ~~bright~~ colourful petals.
- It has both male and female flowers in one flower.

Is Flower A likely to be wind-pollinated or insect-pollinated? Explain your answer. [2m]

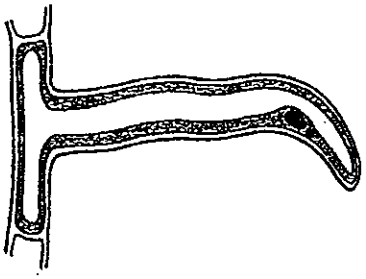
_____

_____

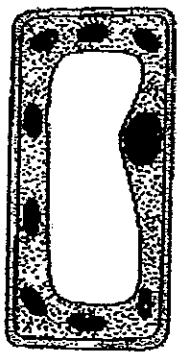
_____

4

34a) Jordan was given 2 cell samples, X and Y as shown below.



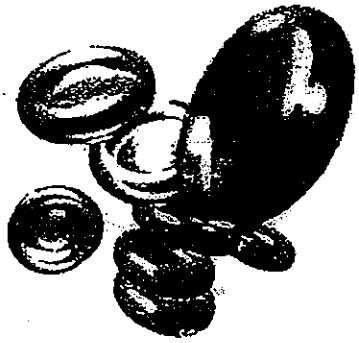
Cell X



Cell Y

After examining the cells, he concluded that both X and Y were plant cells.
Give the evidence that helps him arrive at this conclusion. [1m]

b) The red blood cells shown below are responsible for carrying and transporting important substances in the human body.

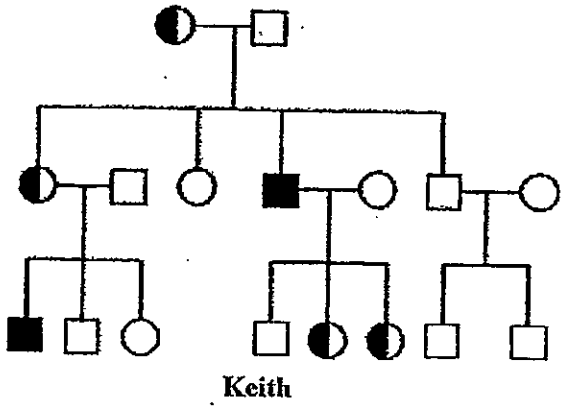


i) What structure is missing in these red blood cells that is normally found in other human cells ? [1m]

ii) Which cell function will red blood cells **not** able to perform because of the missing structure? [1m]

3

35a) The diagram below shows Keith's family tree of 3 generations that carry the genetic trait for colour-blindness. Study the family tree carefully and answer the following questions.

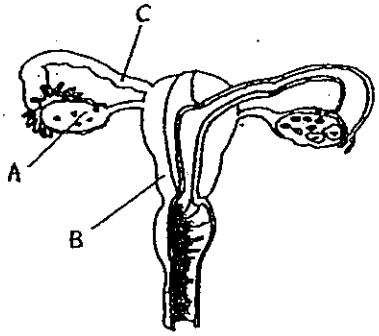
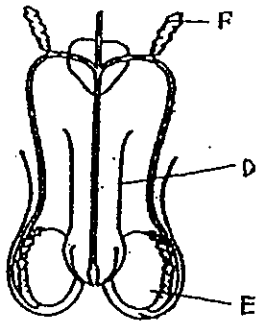


Key: Normal male, Normal female, Carrier female, Colour-blind male

Tick **"True"**, **"False"** or **"Unable to tell"** for the following statements. [1m]

		True	False	Unable to tell
i)	There is a possibility of Keith's sister bearing a son with colour-blindness.			
ii)	The genes of colour-blindness is passed on to only the male members of the family.			

b) The diagrams below show the male and female human reproductive systems.

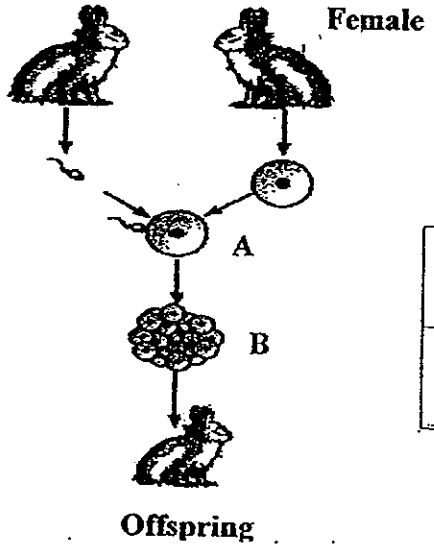
Female Reproductive System	Male Reproductive System
	

In which of these parts, A, B, C, D, E and/or F are the eggs and sperms produced? [1m]

Eggs are produced at _____ while sperms are produced at _____

2

35c) The diagram below shows information about the sexual reproduction and development of rabbits. Identify **Processes A and B.** [1m]



	Name of Process
A	
B	

36) The table below shows the percentage of female and male alligators that hatch from the eggs when the eggs are kept at different temperatures.

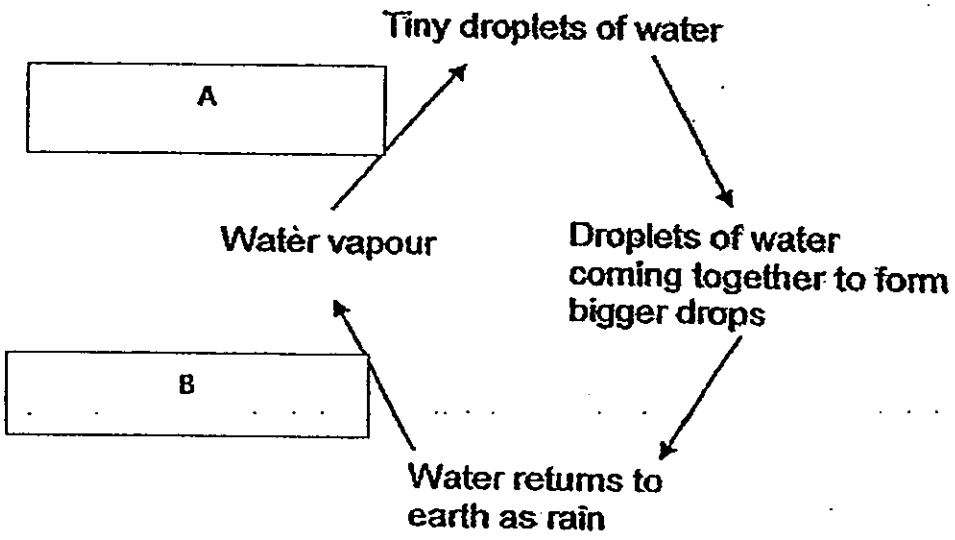
Temperature (°C)	% eggs hatching as females	% eggs hatching as males
26	100	0
28	100	0
30	100	0
32	86	14
34	0	100
36	0	100

a) Describe the effect of temperature on the percentage of eggs hatching as male alligators. [1m]

b) From the table above, suggest how a zookeeper could make sure only females hatch from the eggs. [1m]

3

37) The diagram below shows the water cycle. A and B are processes in the wa.er cycle that involve a change in states.



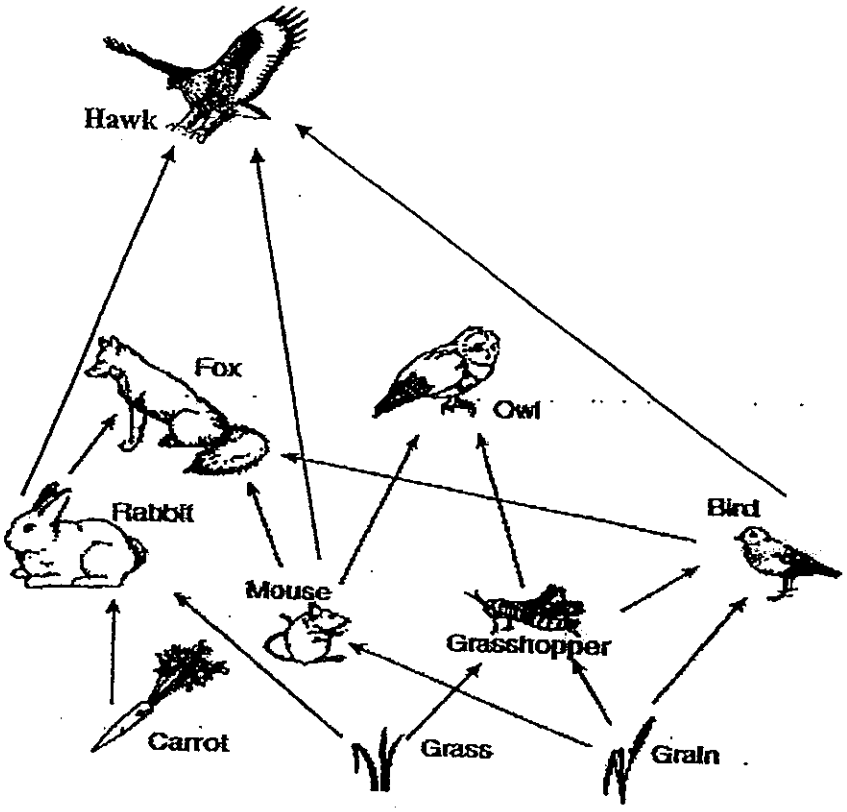
Fill in the table below by writing the names of the two processes, A and B, and state whether there is **'heat gain'** or **'heat loss'** during these processes. [2m]

	Name of Process	Heat gain or Heat loss
A		
B		

2

38. Farmers in a community were concerned about the growing pest population. Animals, such as rabbits, mice, grasshoppers and birds were feeding on their crop plants. The farmers introduced a population of hawks into the farm food web to help control the pest population.

The diagram below shows the food web in the farm after the introduction of hawks.



a) Identify the 3 top consumers found in the food web above. [1m]

_____

b) Give a reason why the hawk was chosen to control the pest population. [1m]

_____

_____

c) If the population of hawk increases, which animal would show an immediate increase in population. Give *one* explanation. [2m]

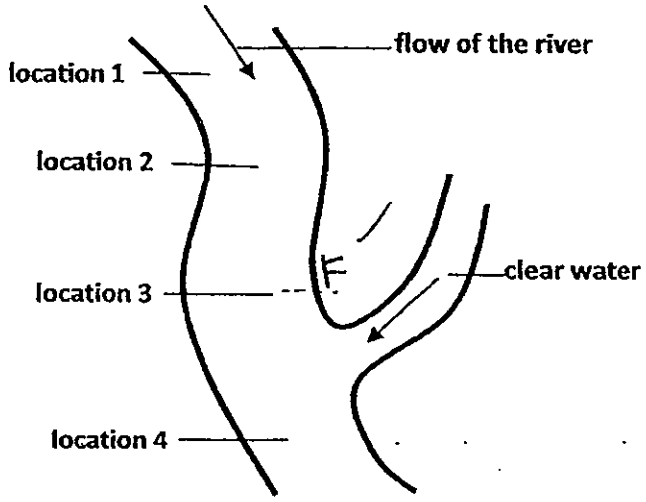
_____

_____

_____

4

39. The diagram below shows a river. Two aquatic organisms, X and Y, can be found in the water. Waste products are discharged by a nearby factory directly into the river. The waste products cause the population of aquatic organism X to increase but the population of organism Y to decrease.



The table below shows the population of organisms X and Y present in samples taken at 4 different locations of the river.

Location	Population of X	Population of Y
1	14	81
2	13	80
3	30	37
4	16	41

a) In the diagram above, **mark** the possible location of the factory with an "F". [1m]

b) Explain your answer in (a).

_____

_____

_____

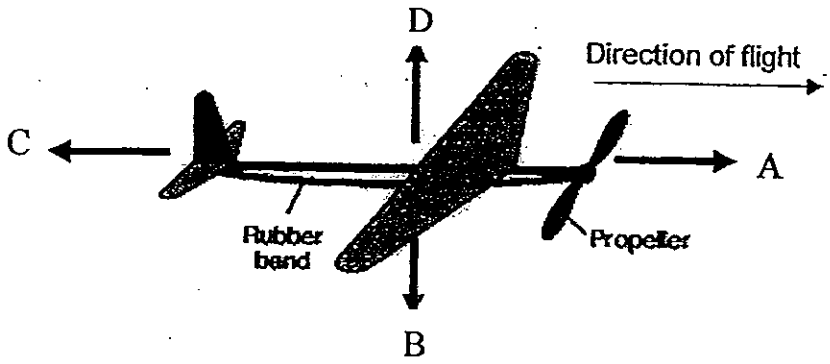
c) It is observed that as the river flows further downwards, population of Y starts to increase again as shown in location 4. State a possible reason for this increase. [1m]

_____

_____

4

40. The diagram below shows a model airplane.



When the propeller is turned twenty times, it twists the rubber band connected to it. As the propeller is released, the rubber band unwinds and the propeller turns at a high speed, enabling the airplane to fly.

a) State the type of energy that causes the rubber band to unwind and turn the propeller. [1m]

_____

b) Which arrow, A, B, C or D represents air resistance acting on the airplane when it is flying?. [1m]

Arrow _____

c) Identify *one* change that you could make to help the airplane fly a greater distance through the air. (You are **not** allowed to make any structural changes to the airplane.) [1m]

_____

3

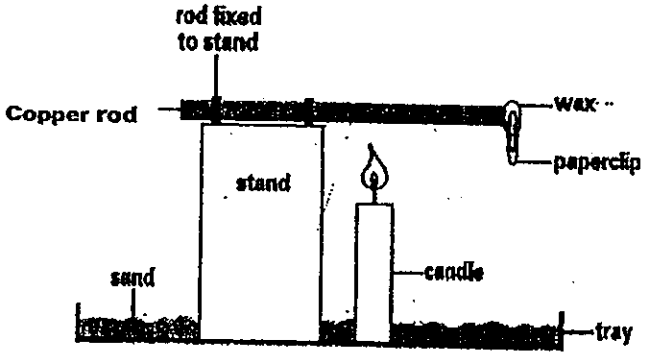
41. John conducted an experiment to find out how fast heat travelled through different materials. He used 3 rods of the same thickness and length but made of different materials.

He followed closely the instructions given in the worksheet as shown below.

1. Dip a paperclip into some melted wax. Then attach the wax to a copper rod.
2. Set up the apparatus as shown in the diagram.
3. Light up the candle to heat up the copper rod.
4. Use a stopwatch to measure the time taken for the paperclip to fall off the copper rod.
5. Repeat steps 1 to 4 with a glass rod and a steel rod.

The results of his experiment are shown below

Material of rod	Time taken for the paperclip to drop (s)
Copper	16
Glass	280
Steel	26

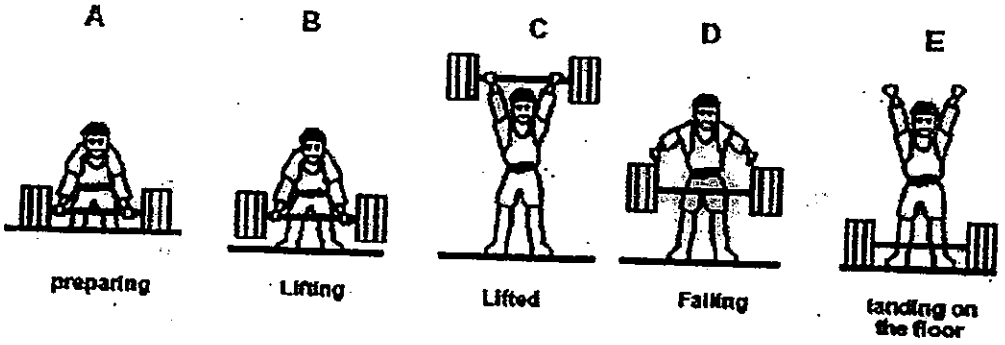


a) What could John conclude about theeffect of heat on the different materials? [1m]

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

2

42. The diagrams below show a weightlifter. The stages in weightlifting are labelled A, B, C, D and E.



a) As the weights were lifted up, energy was transferred from the man to the weights. Write down the energy conversion when the weights were lifted up from Stages A to C. [2m]

Stage A:

_____

Energy

(in weightlifter's arms)

Stage B:

_____

Energy +

_____

Energy

(in weights and bar)

Stage C:

_____

Energy

(in weights and bar)

b) When the weightlifter let go of the weights at D, what happened to its energy? Describe the energy conversion from <u>D to E</u>. [2m]

_____

_____

_____

_____

_____

4

43a) Robert tested four materials, A, B, C and D to see how these materials insulated a beaker of hot water. He wrapped each beaker with the materials as shown below.

He recorded the temperature of water at the start and 20 minutes later.
The results of his experiment are shown below.

time (minutes)	temperature of water (°C) wrapped in			
	material A	material B	material C	material D
0	60	60	60	60
20	34	40	38	36

Using the above results, Robert has to decide on a material that would prevent a tub of ice-cream from melting for as long as possible.

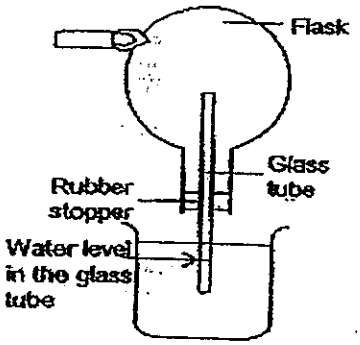
Which material, A, B, C or D will prevent the ice-cream from melting for the longest time? Explain your answer. [2m]

2

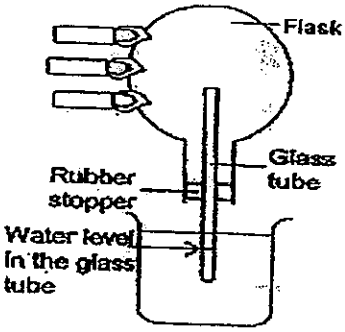
43b) Jane inserted a glass tube into a flask and secured the glass tube with a rubber stopper. She then inverted the flask with the glass tube and placed one end of the glass tube into a beaker of water.

She prepared another similar set-up using the same type of apparatus. She noticed that the water levels in the 2 glass tubes were the same at the **start of the experiment**.

At the Start of the Experiment



Set-up A



Set-up B

Jane heated each of the flasks with different amount of heat for 2 minutes as shown above.

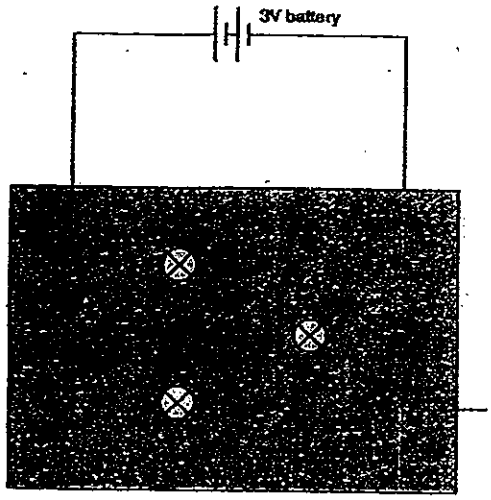
After that, she stopped the heating. As the flasks were cooling down, she noticed that the water level in the glass tube was higher than the water level at the start of the experiment.

i) Explain why the water level in the glass tube increased as each flask was cooled down.
[1m]

ii) After the 2 flasks had cooled down to room temperature, in which set-up, A or B would the water level in the glass tube be higher?
[1m]

2

44. Edwin built a circuit with a mystery card as shown below.



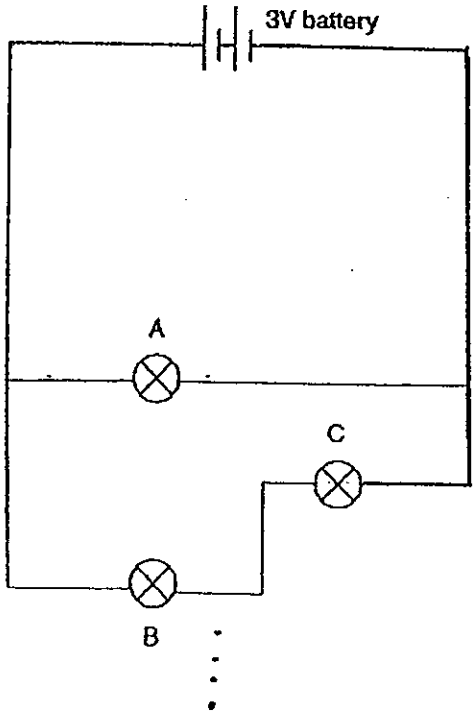
Results of the experiment

Bulb Removed	Observations
A	B and C stayed lit
B	C went off, A stayed lit
C	B went off, A stayed lit

The bulbs could be seen through the holes in the card.

Edwin removed bulb A first, followed by bulb B and then bulb C, one at a time. Before connecting each bulb back into the circuit, he observed the effect each had on the other two bulbs. He recorded his observations in the table above.

a) Complete the circuit diagram below to show how the three bulbs could be connected. [2m]



Edwin added a switch to the circuit so that he could turn all three bulbs on and off at the same time. Place a letter "S" on your circuit diagram where this switch could be placed. [1m]

END OF BOOKLET B

3

ST.Hilda Primary School
Preliminary Examination, 2012
Answer Key for P6 Science

Booklet A :

1)	1	6)	4	11)	1	16)	1	21)	2	26)	4
2)	2	7)	4	12)	4	17)	3	22)	3	27)	2
3)	1	8)	1	13)	3	18)	4	23)	4	28)	1
4)	4	9)	1	14)	2	19)	3	24)	2	29)	1
5)	4	10)	4	15)	1	20)	4	25)	2	30)	1

Booklet B :

31. (a) The animals in Group B do not have streamlined body shapes and are able to blend into its surroundings.
    (b) D belongs to the group of fishes.

32. (a) Gas A: Oxygen
    Gas B: Carbon dioxide
    (b) The wall of an alveolus is very thin and moist, thus gases can pass through it easily.

33. Insect-pollinated. It produces a scent that may attract flies or other insects. The male flowers are located above the female flowers and they both are found in the same flower.

34. (a) Both of the cells have a cell wall which all plant cells have.
    (b)(i) The nucleus.
    (b)(ii) They will not be able to carry out cell division.

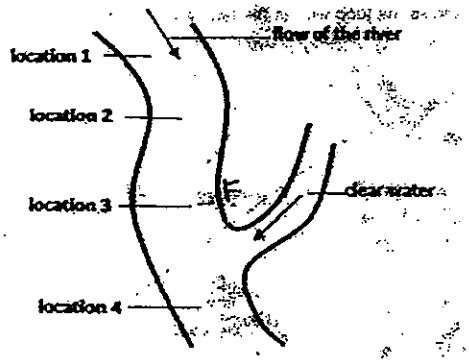
35. (a)(i) True
    (a)(ii) False
    (b) A. E.
    (c) A- Fertilisation B- Cell division

36. (a) No eggs hatch as males at temperatures 30°C and below. At 32°C, 14% of the eggs hatched were males. As the temperature increases to 34°C and 36°C, 100% of the eggs hatched were males.
    (b) He could set the temperature to range between 26°C and 30°C to ensure that only females hatch from the eggs.

37. A- Condensation. Heat loss
    B- Evaporation. Heat gain

38. (a) The fox, hawk, owl.
    (b) The hawk eats the rabbits, mice and the birds which feed on the crops.
    (c) The grasshopper. When the population of hawk increases, its preys; the rabbit,mouse and the bird will decrease. This in turn will led to a decline in fox and owl population too as they also feed on them. Thus when owl and bird population decline, their prey; the grasshopper will increase.

39. (a)



(b) It is only at location 3 that the population of organism X increased sharply and organism Y decreased sharply. This is due to discharge wastes at location 3.

(c) The clear water mixes with the polluted water and the polluted water becomes less polluted, causing population of Y to increase again.

40. (a) Elastic potential energy.

(b) C

(c) I can turn the propeller more than twenty times.

41. (a) Copper is the best conductor, followed by steel and glass.

(b) The paperclip on the copper rod took 16 seconds, the shortest time to drop, proving that copper is the best conductor of heat among the three materials. This is followed by the steel rod which took 26 seconds and the glass rod which took 280 seconds to drop the paperclip.

42. (a) A- Chemical potential B- Kinetic. Gravitational potential C- Gravitational potential

(b) The weight possessed gravitational potential energy at stage D. When the weights were released, some of the gravitational potential energy converted into kinetic energy. When it hits the floor at stage E, all the gravitational potential energy convert into kinetic energy which was used to overcome air resistance and also converted into sound and heat energy when the weight hit the floor.

43. (a) Material B will prevent the ice-cream from melting for the longest time. In the experiment, the cup wrapped with material B had the highest temperature, after 20 minutes, proving that material B is the best insulator of heat among the four materials with the least amount of heat loss.

(bi) The flask and the air in it lost heat and contracted and the water will travel a little bit up the glass tube to fill up the space previously occupied by the air.

(bii) Set-up B

44. (a)