Rosyth School
First Continual Assessment for 2012
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: ____/100

Class: Pr_____ Register No.:_____ Duration: 1 h 45 min

Date: 29th February 2012 Parent's Signature:_____

Booklet A

Instructions to Pupils:

1. Do not open the booklets until you are told to do so.
2. Follow all instructions carefully.
3. This paper consists of 2 booklets, Booklet A and Booklet B.
4. For questions 1 to 30 in Booklet A, shade the correct ovals on the Optical Answer Sheet (OAS) provided using a 2B pencil.
5. For questions 31 to 44, give your answers in the spaces given in the Booklet B.

	Maximum	Marks Obtained
Booklet A	60 marks	
Booklet B	40 marks	
Total	100 marks	

* This booklet consists of 19 pages.

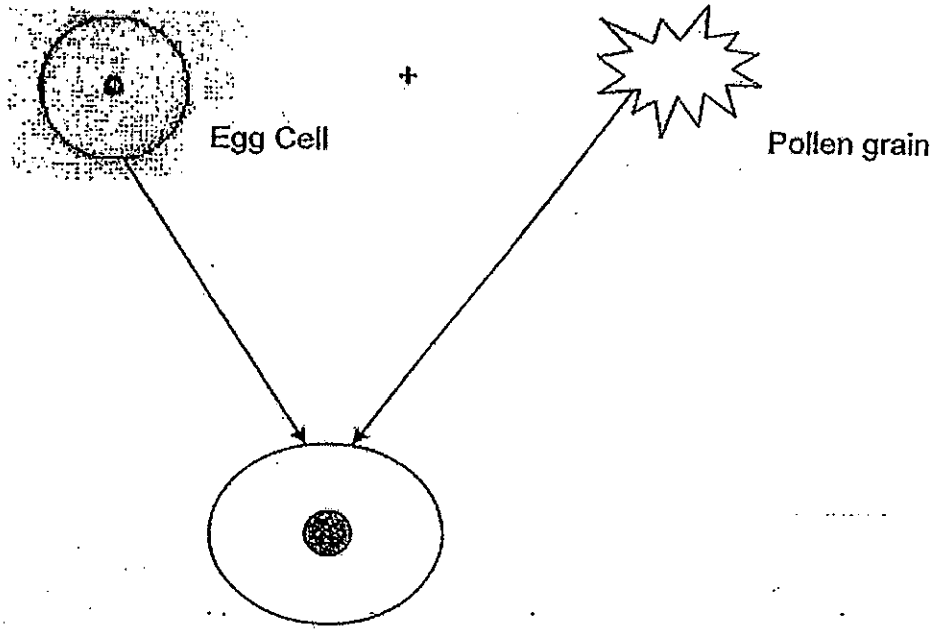
Part I (60 Marks)

For each question from 1 to 30, four options are given. One of them is the correct answer. Make your choice (1, 2, 3 or 4). **Shade the correct oval (1, 2, 3 or 4) on the Optical Answer Sheet.**

1. Which part of a flower is not essential in a wind-pollinated flower?

(1) Anther
(2) Ovary
(3) Petal
(4) Stigma

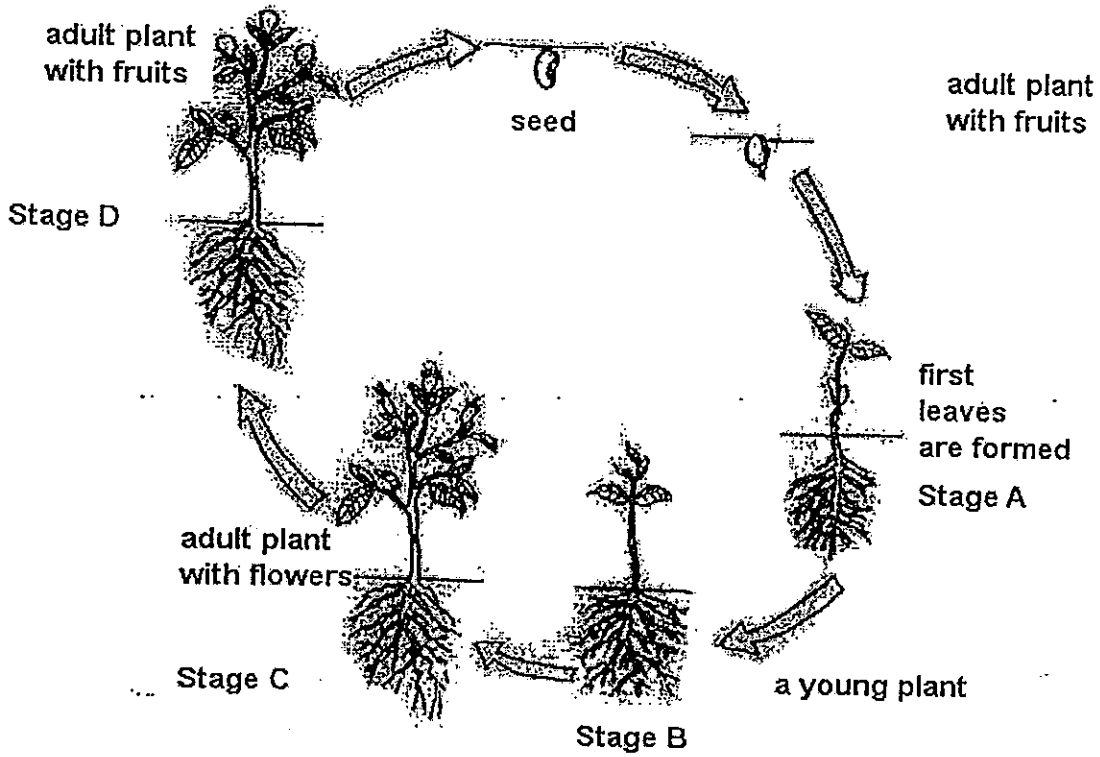
2. Study the process as shown below.



During which stage of reproduction will the above process take place in a flowering plant?

(1) dispersal
(2) pollination
(3) fertilization
(4) germination

3. Study the diagram shown below. This plant is pollinated by insect.



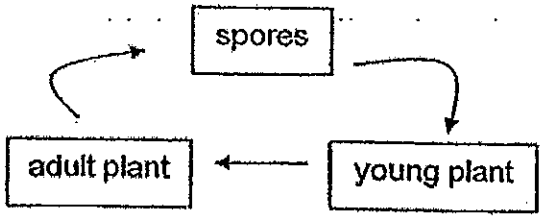
If the insects pollinating the plants above are completely destroyed, which stage will decrease first?

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

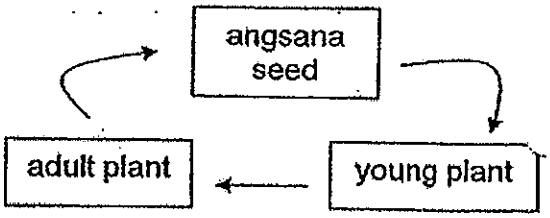
4. The following table shows some characteristics of two plants, A and B.

	Plant A	Plant B
Dispersed by water?	Yes	No
Bears flowers?	Yes	No

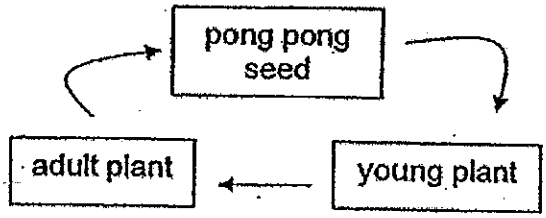
The following show the life cycles of four plants W, X, Y and Z.



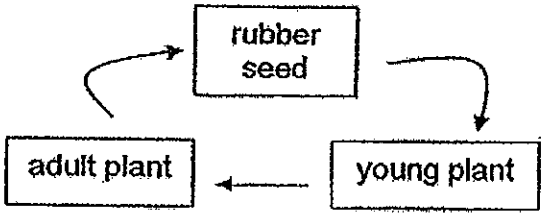
W.



X



Y



Z

Which life cycles (W, X, Y and Z) do Plant A and Plant B belong to respectively?

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

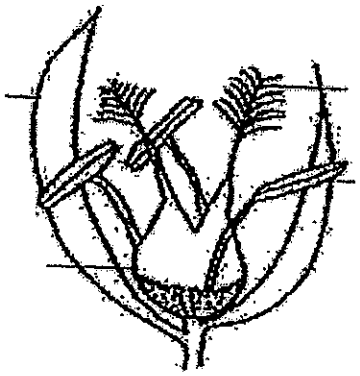
5. Susan conducted an experiment using 2 seedlings of the same type. She ensured that the variables for her experiment were as stated in the table below.

Types of Variable	Variable
Changed Variable	Amount of fertilizers
Measurable Variable	Height of the seedling
Unchanged Variables	Amount of water
	Intensity of light

Based on the information given above, what was the likely aim of the experiment?

(1) To find out if the intensity of light affects the growth of the seedlings.
(2) To find out if the height of the plant affects the growth of the seedlings.
(3) To find out if the amount of water given affects the growth of the seedlings.
(4) To find out if the amount of the fertilizer given affects the growth of the seedlings.

6. The following diagram shows parts of a flower.

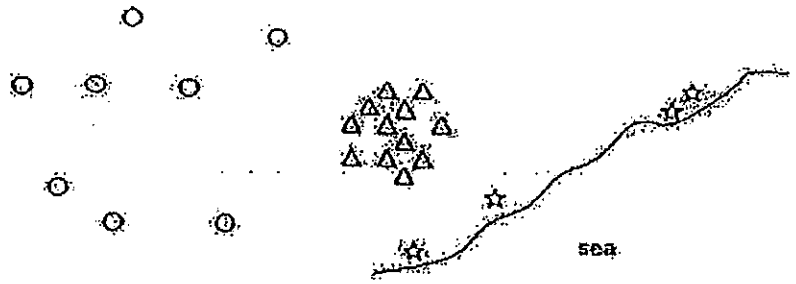


Which of the following statements correctly describes the function of each part?

Part	Function
A	Protects the egg cell
B	Receives the pollen grain
C	Protects the anther
D	Protects the pollen grain

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

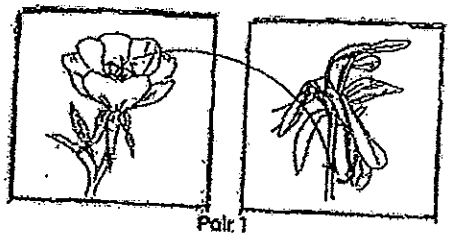
7. Plants have different types of fruits to adapt to their dispersal method. The diagram below shows how 3 types of plants are found growing naturally in a habitat.



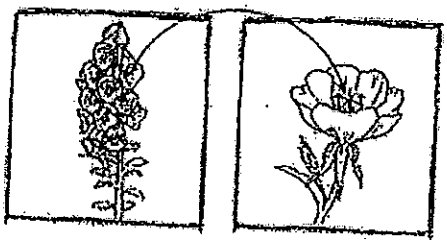
Which type of fruits do the plants represented by △ would most likely have?

(1) Spongy fruits
(2) Waterproof fruits
(3) Pod-like fruits with wing-like seeds
(4) Fruits that dry up when ripe with rounded seeds

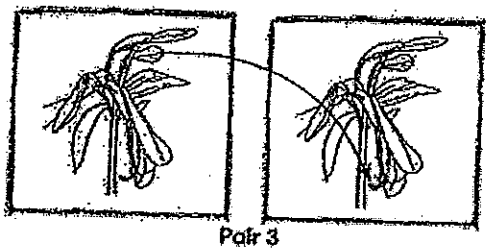
8. The arrows in the following diagrams show the transfer of pollen grains between two pairs of flowers.



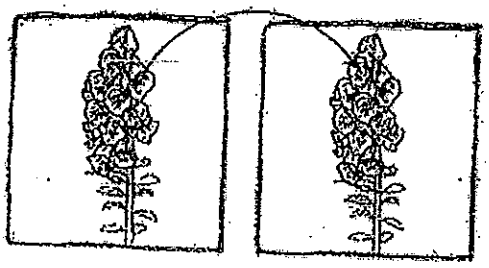
Pair 1



Pair 2



Pair 3

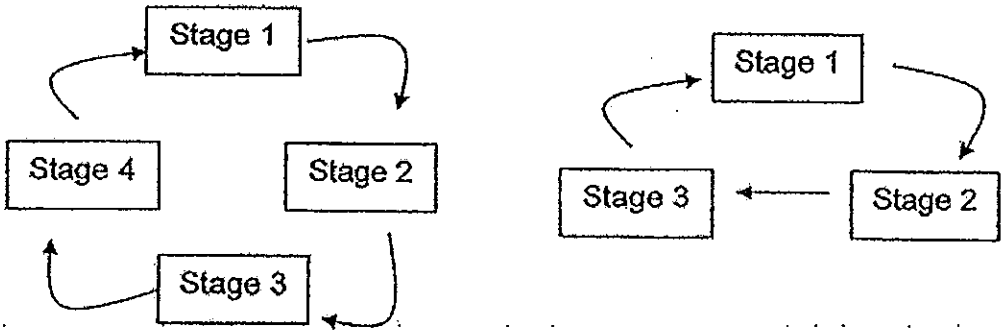


Pair 4

Which of pairs of flowers would definitely not produce fruits?

(1) Pairs 1 and 2
(2) Pairs 1 and 3
(3) Pairs 2 and 3
(4) Pairs 3 and 4

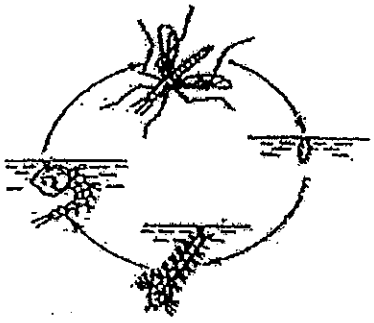
9. Study the life cycles below. It shows two types of life cycles an animal can go through with 4 stages or 3 stages.



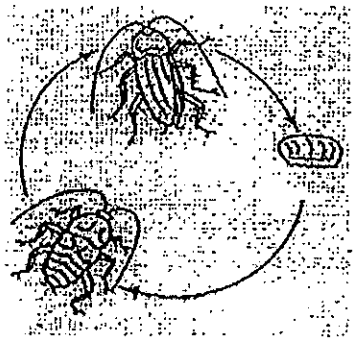
In which group of animals can both types of life cycle be found?

(1) birds
(2) fish
(3) insects
(4) mammals

10. The diagrams below show the life cycles of two organisms, M and N.



Organism M



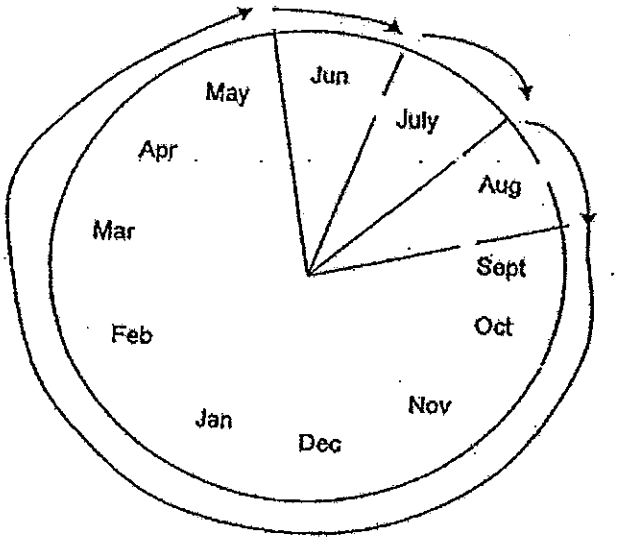
Organism N

Which of the following statements about organisms M and N is/are correct?

A: Both organisms lay their eggs in water.
B: Both organisms have 3 stages in their life cycles.
C: The young of both organisms resemble the adult.
D: In the adult stage, both organisms have six legs.

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

11. The table below represents the period in a year of the life cycle of a special type of blue butterfly.



The adult butterfly is on the wings throughout the month of July. At which period would there be a lot of eating and shedding of skin to grow bigger?

(1) July to August
(2) September to May
(3) May to June
(4) June to July

12. Which of the following correctly shows where the sperms travel when they have entered the vagina?

(1) vagina→ uterus→ fallopian tube
(2) vagina→ fallopian tube →uterus
(3) vagina→ fallopian tube → ovary
(4) vagina→ ovary → fallopian tube

13. Study the characteristics in the Tan family.

Family members	Characteristics
Father	blood group B and single eyelid
Mother	blood group O and double eyelid
Daughter 1	blood group B and single eyelid
Daughter 2	blood group B and double eyelid
Son 1	blood group O and single eyelid
Son 2	blood group O and double eyelid

How many of Mr and Mrs Tan's children inherited from each of them one of their characteristics?

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

14. The two diagrams X and Y below show two ways an organism can increase the number of its kind.

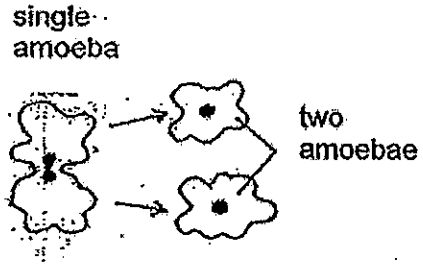


Diagram X

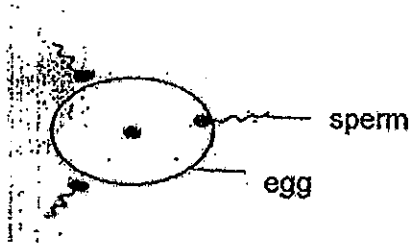


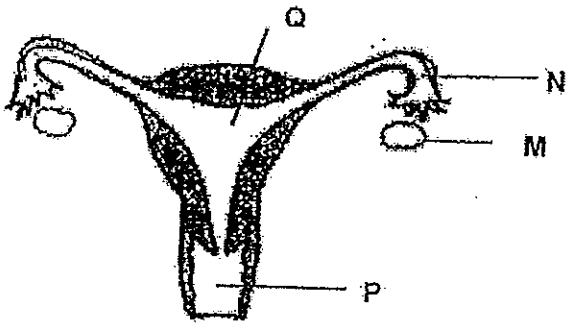
Diagram Y

Which of the following statements about the two ways are true?

Statement	Diagram X	Diagram Y
A	Only one parent is involved	Two parents are involved
B	The offspring is genetically identical to the parent	The offspring are not genetically identical to the parents
C	It involves external fertilisation	It involves internal fertilisation

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

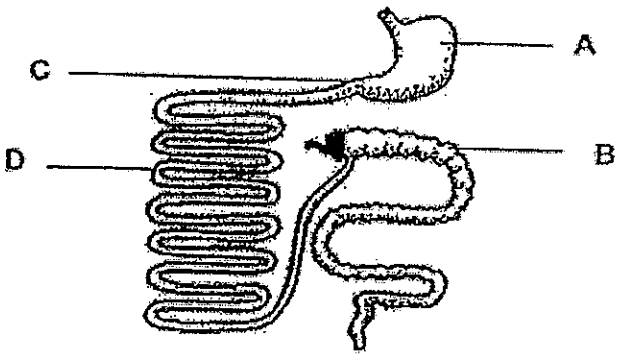
15. The following diagram shows the female human reproductive system.



Which part of this system produces egg cells?

(1) M
(2) N
(3) P
(4) Q

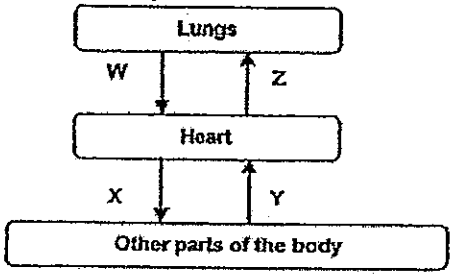
16. Study the digestive system in Man as shown below.



In which part of the system is digestion completed?

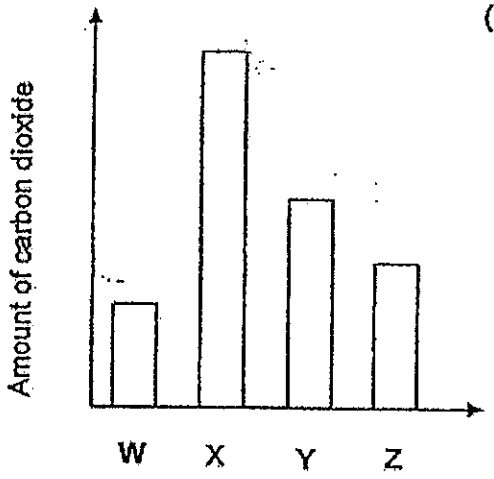
(1) A
(2) B
(3) C
(4) D

17. The diagram below shows a simple representation of blood circulation in a human body. Arrows W, X, Y and Z represent the flow of blood to different parts of the body.

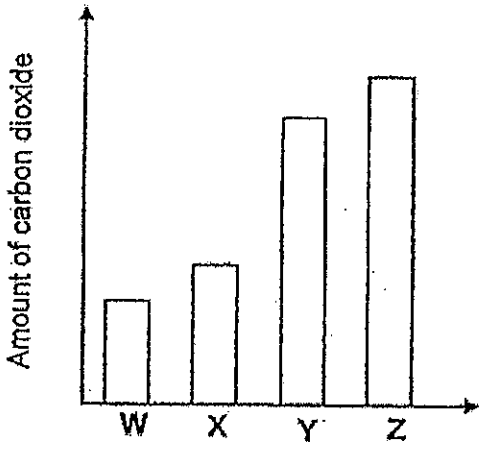


Which one of the following graphs correctly represents the amount of carbon dioxide in W, X, Y and Z?

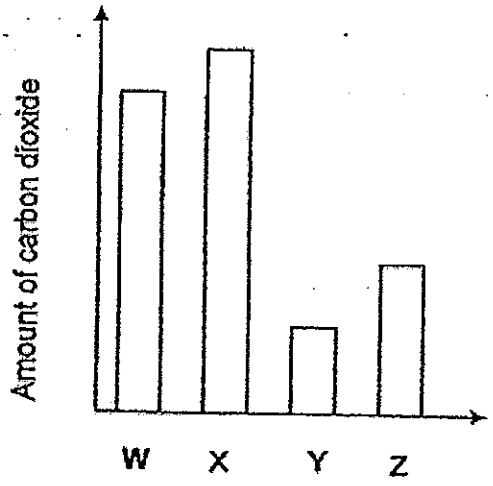
(1)



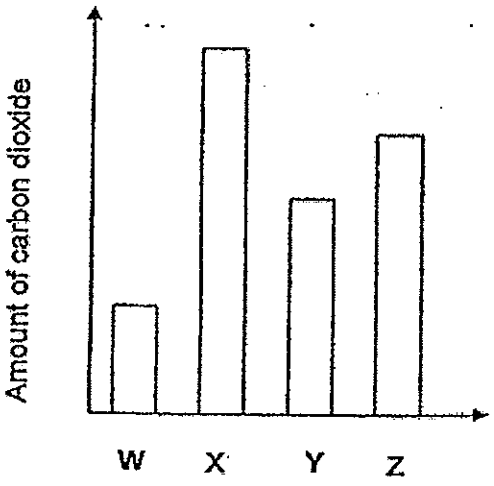
(2)



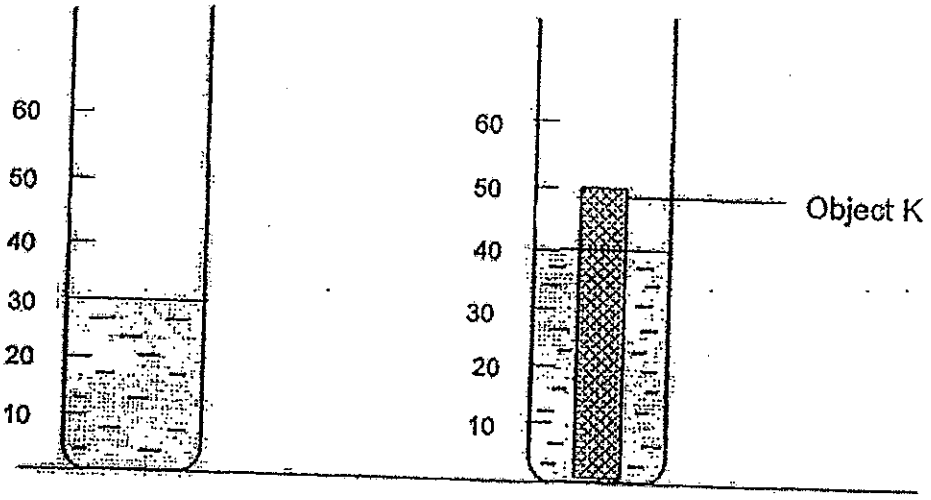
(3)



(4)



18. Study the set-up as shown below. A measuring cylinder contains 30 cm^3 of water. Object K is placed into the cylinder as shown in the diagram.



What is the volume of object K likely to be?

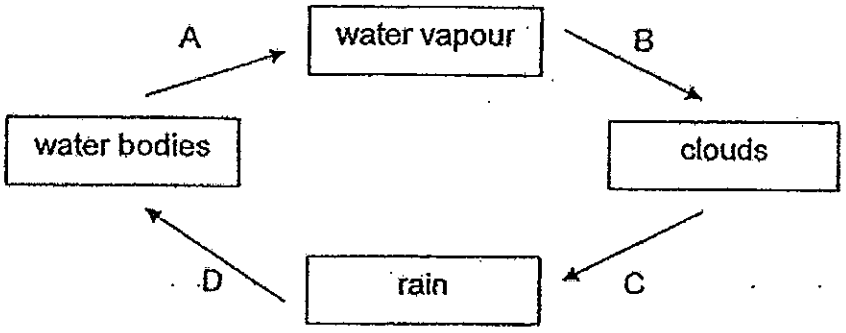
(1) 10 cm^3
(2) 13cm^3
(3) 33 cm^3
(4) 40 cm^3

19. David always observed water droplets formed on the windows of his car early in the morning.

Which process has caused his above observation?

(1) melting
(2) freezing
(3) condensation
(4) evaporation

20. The diagram below shows the water cycle. A, B, C and D are processes occurring in the water cycle.



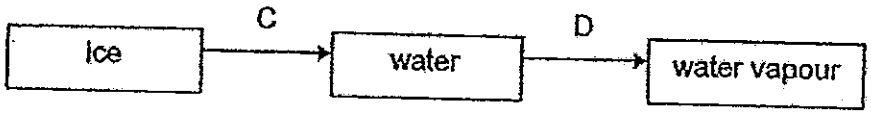
In which of the processes would a change of state occur?

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

21. Which one of the following statements about both evaporation and boiling is false?

	Evaporation	Boiling
(1)	Water changes into water vapour	Water changes into steam
(2)	Occurs at all times	Occurs at fixed temperature
(3)	Loses heat	Gains heat
(4)	Takes place in all parts of liquid	Takes place at the surface of liquid

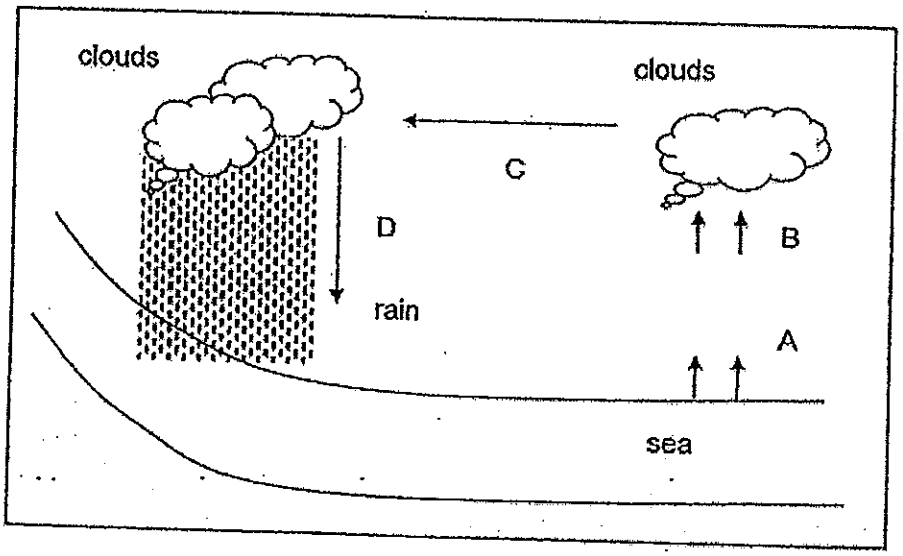
22. Water can change from one state to another as shown below.



C and D represent the processes which change water from one state to another. Which of the following statements is true about C and D?

(1) Ice and water gain heat during C and D respectively.
(2) Ice and water lose heat during C and D respectively.
(3) Ice gains heat during C but water loses heat during D.
(4) Ice loses heat during C but water gains heat during D.

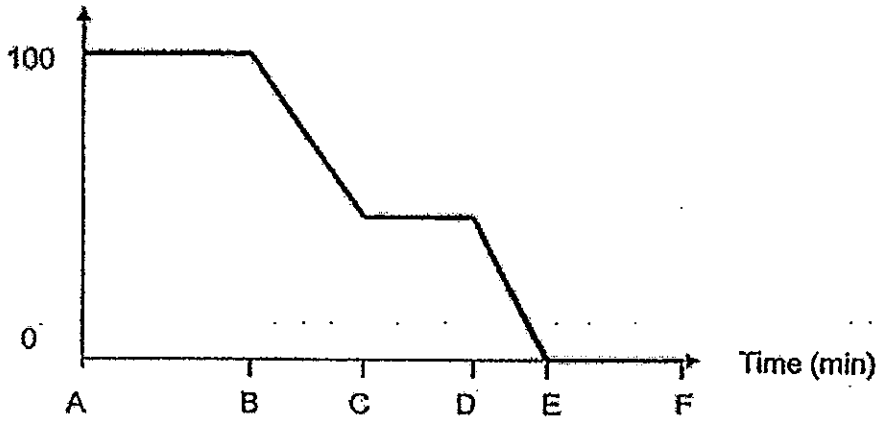
23. Study the diagram below.



At which point in the diagram above will the surrounding air lose heat?

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

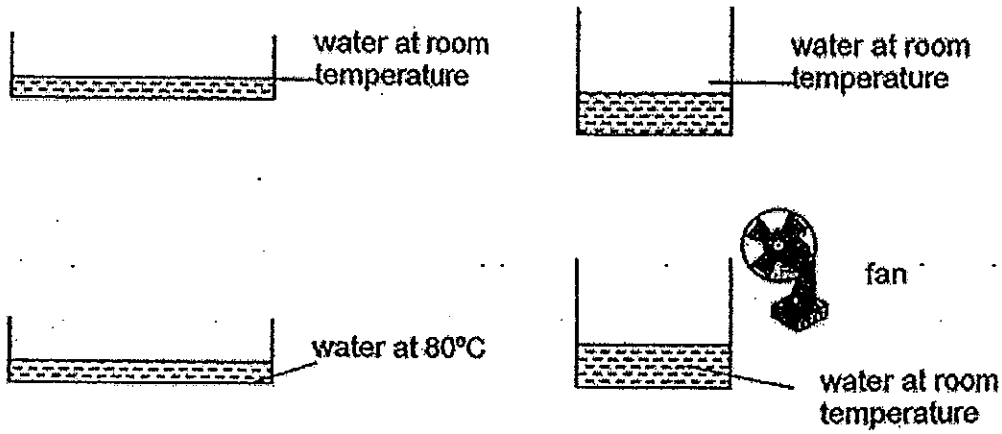
24. Study the graph below which shows the changes in temperature over a period of time.



At which part of the graph was ice formed?

(1) AB
(2) CD
(3) DE
(4) EF

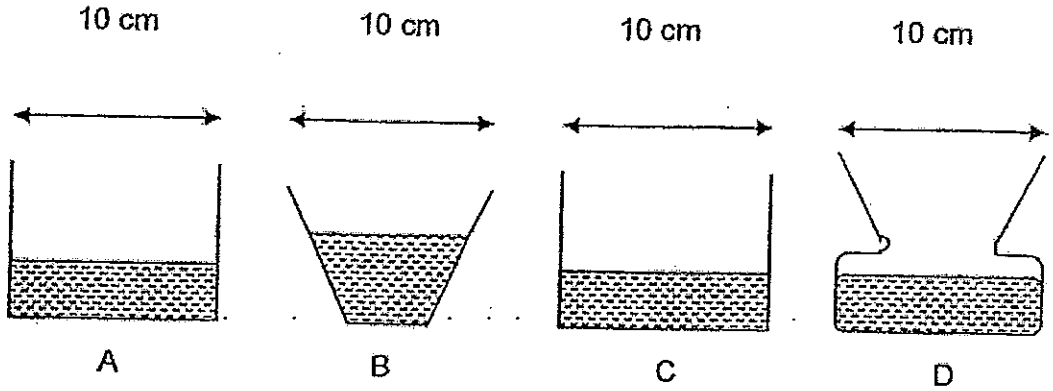
25. Ali prepared the following set-ups.



Which factor(s) of evaporation can be investigated using all the set-ups above?
A: presence of wind
B: temperature of water
C: exposed surface area

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

26. Gopal wanted to find out if the temperature of the surroundings affects the rate of evaporation of water. He poured an equal amount of water into each of the four containers A, B, C and D.



Each container was put in a different surrounding temperature as shown in the table below.

	A	B	C	D
Temperature of surrounding (°C)	30	50	70	90
Material of container	metal	metal	metal	plastic

Which of these containers should Gopal choose to ensure that his experiment is a fair one?

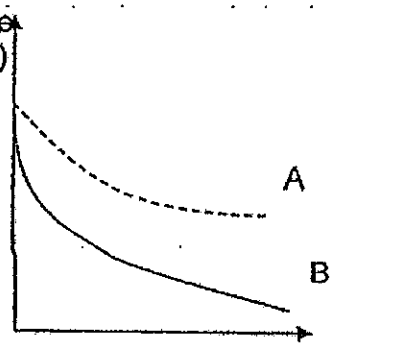
(1) A and C only
(2) B and C only
(3) A, C and D only
(4) A, B, C and D

27. Edwin conducted an experiment to investigate how the presence of wind affects the rate of evaporation of water. He obtained two identical containers and filled them with water. He then placed the containers in two locations as described in the table below.

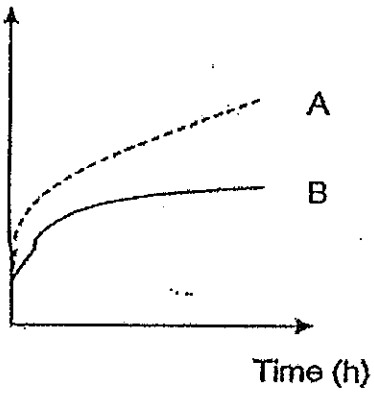
Container	Location
A	Inside the classroom with the fans switched off
B	Inside the classroom with the fans switched on

Which of the following graphs correctly represents the amount of water left in the containers over some time?

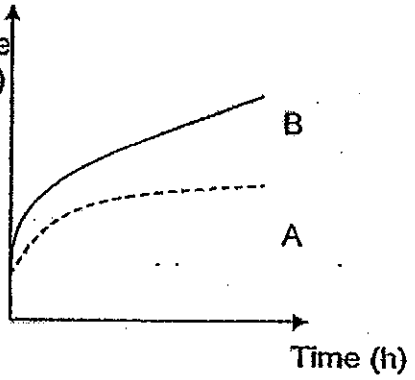
(1) Volume (ml)



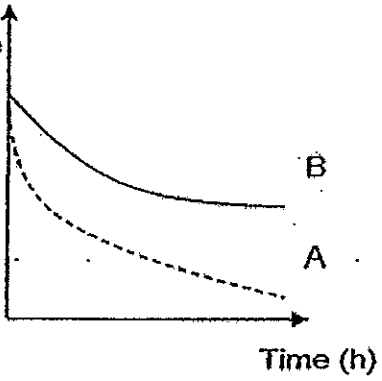
(2) Volume (ml)



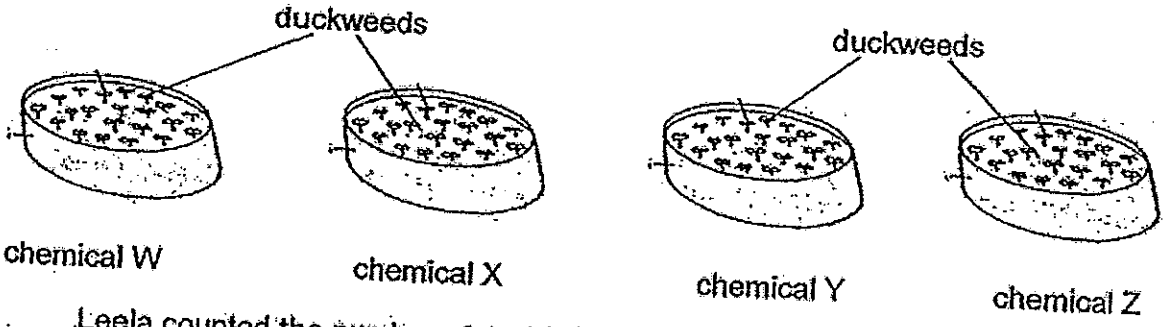
(3) Volume (ml)



(4) Volume (ml)



28. Leela set up the following experiment as shown in the diagrams below. She put 12 duckweeds and poured 100 ml of pond water into each container. She then added 100ml of chemical W, X, Y and Z into each containers respectively.



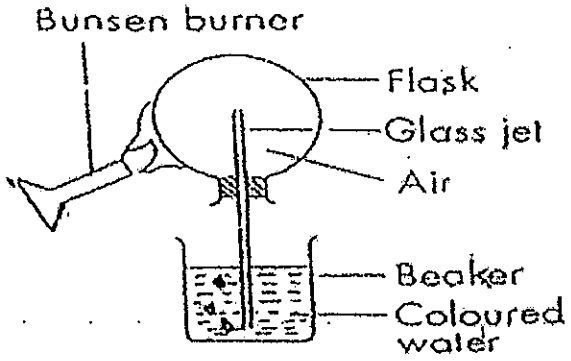
Leela counted the number of duckweeds in each container over a 2-weeks period. She recorded her findings in the table below.

Chemical	Number of duckweeds		
	At the beginning	After 1 week	After 2 weeks
W	12	12	12
X	12	14	16
Y	12	15	18
Z	12	14	12

Which chemical would you recommend to a farmer producing duckweeds?

(1) W and X only
(2) X and Y only
(3) W, X and Y only
(4) Y and Z only

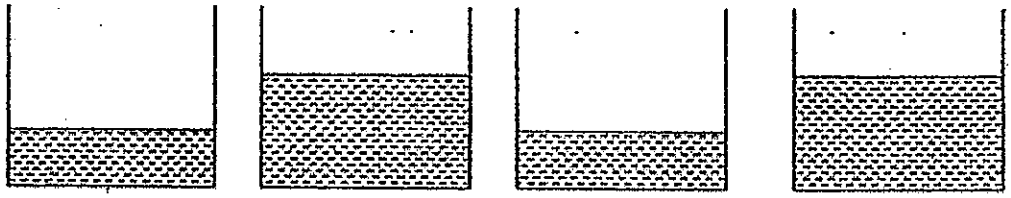
29. Study the following set-up. Ali heated the flask using a Bunsen burner. He observed bubbles forming in the beaker of water.



He removed the bunsen burner and allowed the flask to cool down. What would he observe?

(1) The air in the flask compressed.
(2) The flask would become smaller.
(3) There would be more bubbles formed in the beaker of water.
(4) A small water fountain formed at the tip of the glass jet inside the flask.

30. Study the diagrams below. Jane placed an ice cube of the same size into each of the 4 beakers containing different amounts of water at different temperatures.



A	B	C	D
100ml at 60°C	200ml at 80°C	100ml at 40°C	200ml at 60°C

In which order would the ice melt from the fastest to slowest?

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

End of Booklet A

Rosyth School
First Continual Assessment for 2012
STANDARD SCIENCE
Primary 6

Name: _____ Total Marks: /40

Class: Pr_____ Register No._____ Duration: 1 h 45 min

Date: 29th February 2012 Parent's Signature: _____

Booklet B

Instructions to Pupils:

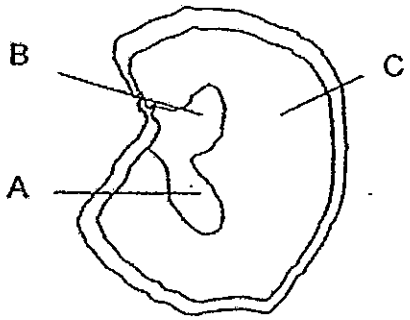
1. For questions 31 to 44, give your answers in the spaces given in this Booklet B.

* This booklet consists of 15 pages.

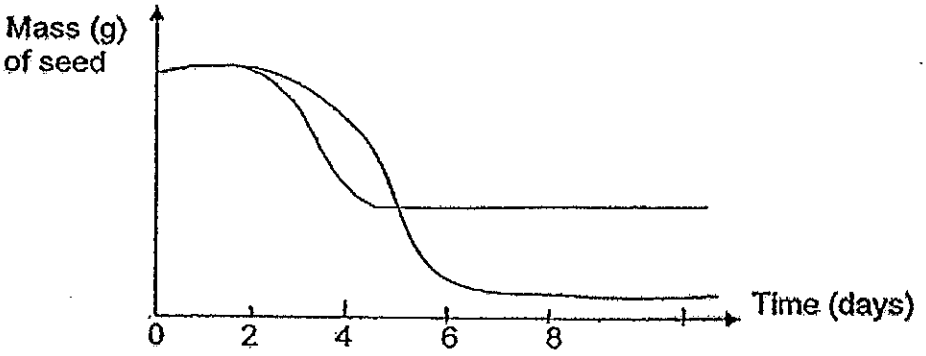
Part II (40 marks)

For questions 31 to 44, write your answers in this booklet.

31. Susan made an observation on the development of a seed as shown below. She observed that part A of the seed grew first followed by part B.



She then plotted the mass of the seed over a period of time.



(a) Which part of the seed (A, B or C) is the graph referring to? Support your choice. [1m]

_____

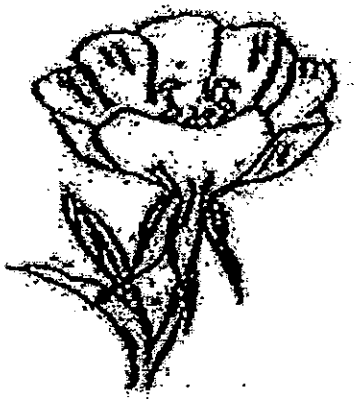
_____

Susan also recorded the total mass of parts A and B.

(b) Draw a line on the graph above to show the total mass of parts A and B for the 10 days. [1m]

32 Study the diagrams shown below.

Flower A



Flower B

(a) Based on your observations, state the agents of pollination for flowers A and B. Support your choice with a reason.

Flower A

Agent : _____ [½ m]

Reason: _____ [½ m]

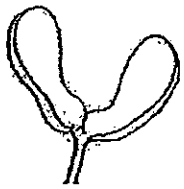
Flower B

Agent : _____ [½ m]

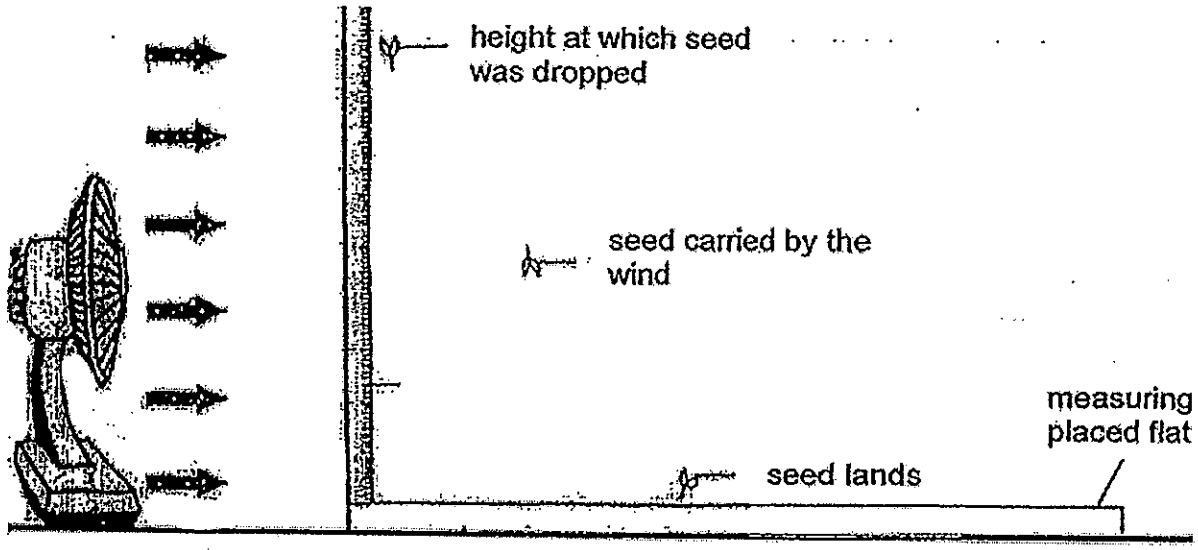
Reason: _____ [½ m]

(b) Explain why agents of pollination are important for plant reproduction. [1m]

33. Study the experimental set-up shown below. Wilfred carried out an experiment with a wind-dispersed seed. He dropped the wind-dispersed seed from various heights in front of a fan.



wind-dispersed seed



He recorded the horizontal distance travelled by the seed in a table as shown below.

Height at which seed was dropped (cm)	Horizontal distance travelled by seed (cm)			Average horizontal distance travelled by seed (cm)
	1st reading	2nd reading	3rd reading	
5	7	12	11	10
10	24	19	17	20
15	27	29	34	30
20	41	43	36	40
25	49	54	47	50

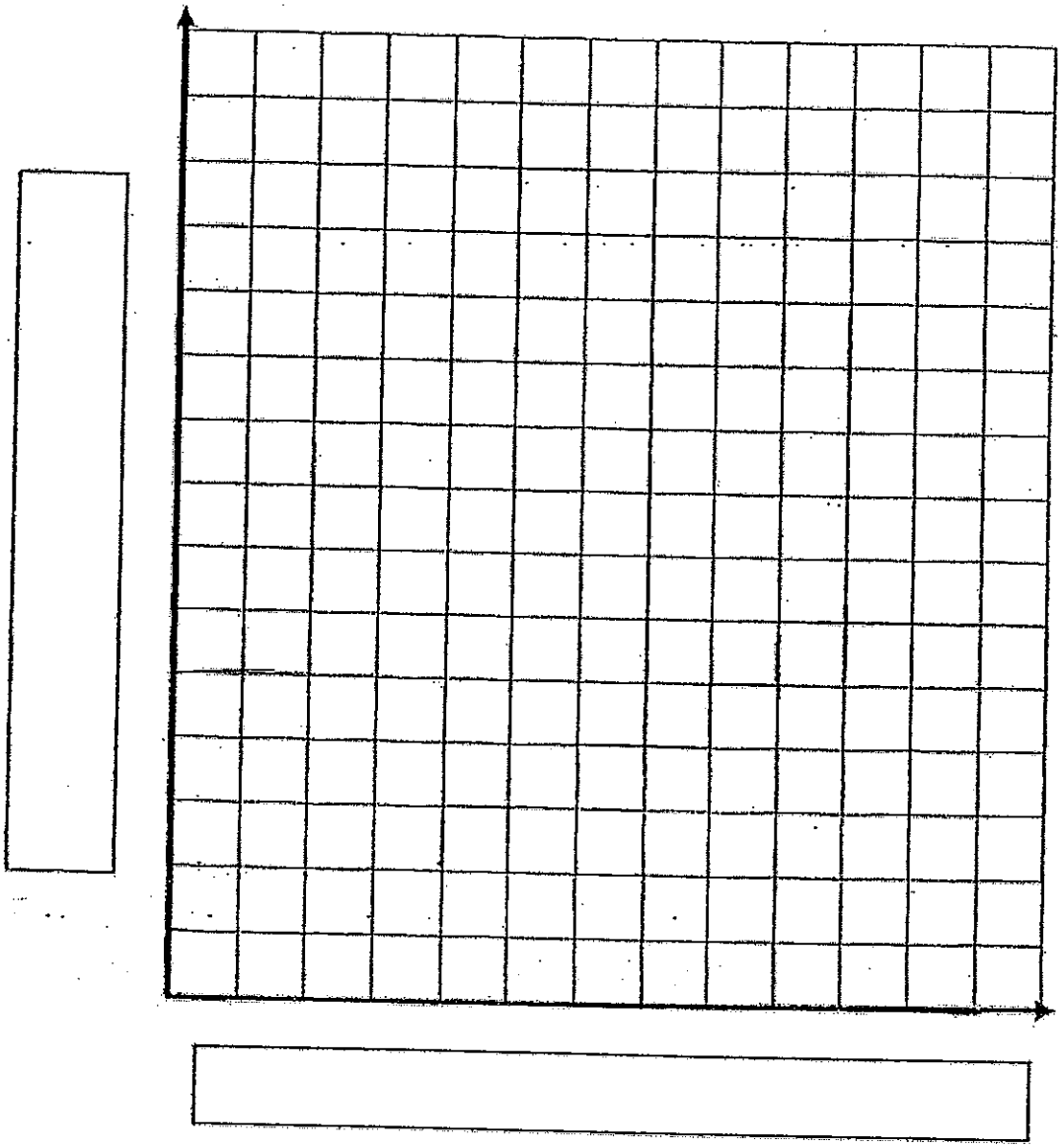
(a) What pattern can Wilfred observe from his experimental results? [1m]

_____

_____

Question 33 is continued on page 4

(b) Based on the results given in the table, plot a line graph of the height above the ground at which the seed was dropped against the average horizontal distance travelled by the seed. Label the axes of the graph. [2m]



(c) Using the plotted line graph, predict at which height Wilfred would have to release the seed in order for it travel to a horizontal distance of 25cm. [1m]

_____

34. Jeremy conducted his investigation using the following materials:

1 torchlight
1 retort stand
10 mealworms
1 box, half covered with a lid

(a) Arrange the steps that Jeremy must take to conduct his investigation. Step 2 is already done for you. [1m]

Place the mealworms in the centre of the box.	
Observe the mealworms for a few minutes and record his observations.	
Place the box under the light.	2
Attach the torchlight to the retort stand so that the light is shining downwards.	

(b) What was the aim of his investigation? [1m]

_____

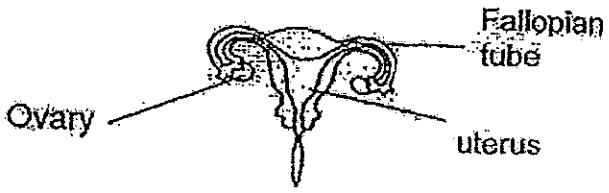
_____

(c) What do you think will be the result of his investigation? [1m]

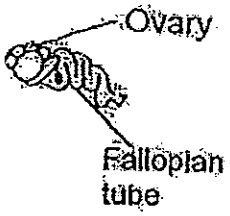
_____

_____

35. Compare the female reproductive systems of two organisms, P and Q, as shown in diagram below.



Organism P



Organism Q

(a) State a similarity between the two systems [1m]

_____

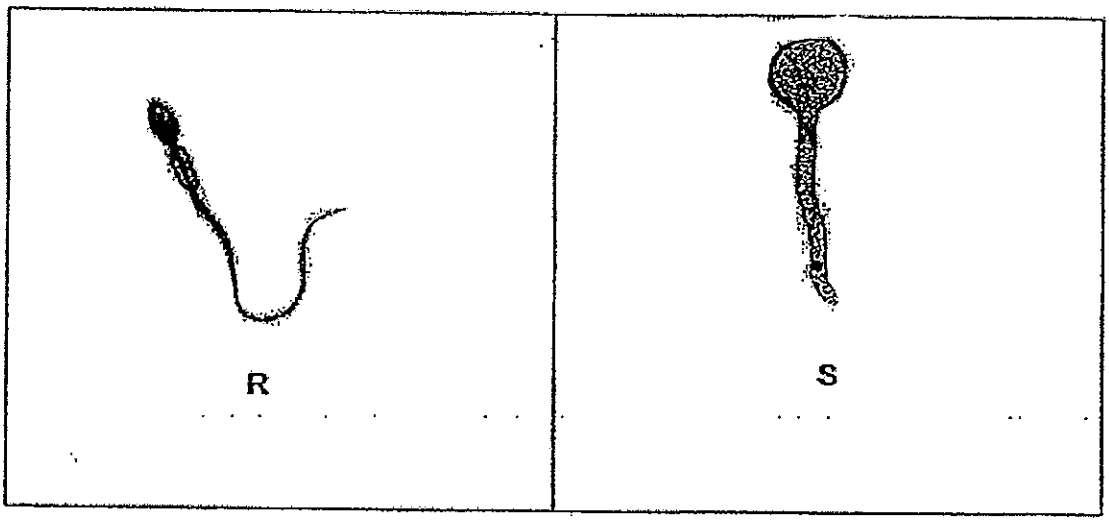
_____

(b) Does the organism Q lay eggs or give birth? Explain your choice. [1m]

_____

_____

36. Study the two reproductive cells from a man and a plant as shown below.



(a) Identify the parts that produce R and S respectively. [1m]

R : _____

S : _____

(b) State the difference between R and S with regard to movement towards the egg. [2m]

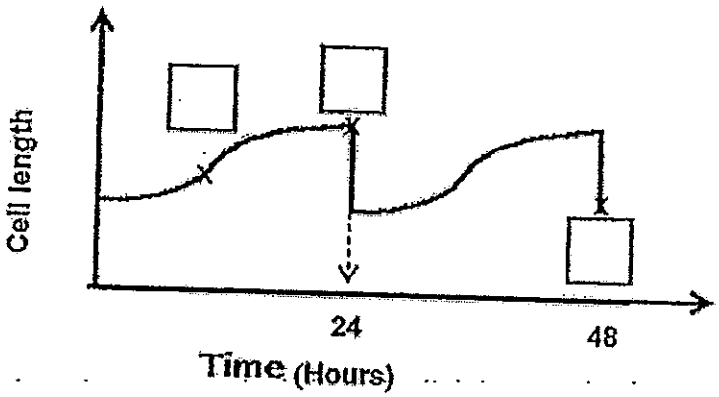
Difference:

_____

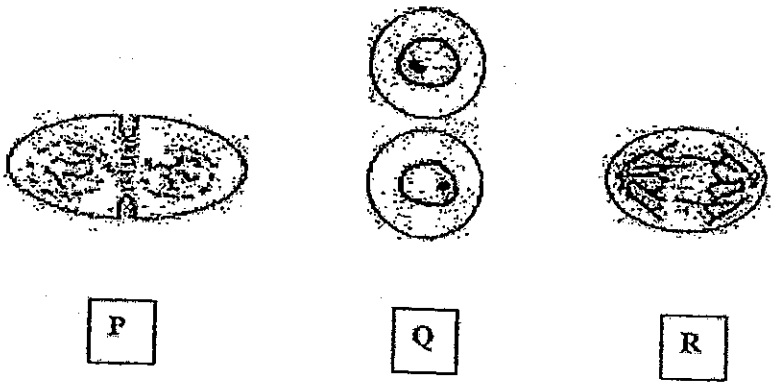
_____

_____

37. A cell taken from a mammal takes about 24 hours to complete one cell division. The graph below shows how the length of an animal cell changes over a period of time.



(a) Write the letters P, Q and R in the boxes in the above graph to indicate the different stages in the cell division. [1m]

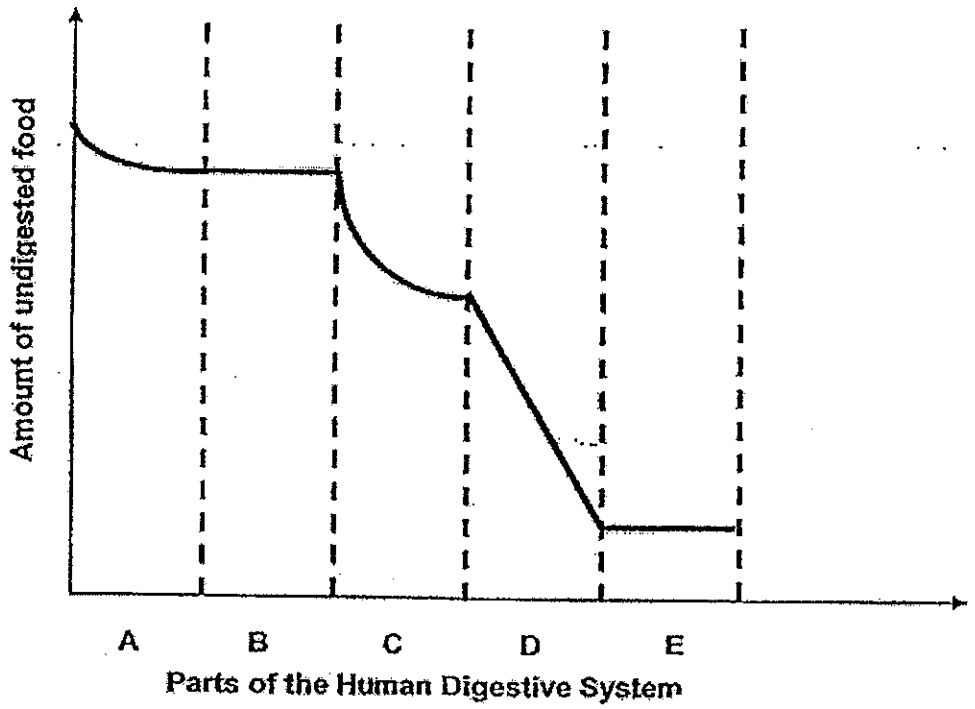


(b) Kevin had a fall while playing. He had a wound on his knee.
How does cell division help him in the healing of the wound? [1m]

_____

_____

38 Donald ate a chicken burger for lunch. The graph below shows the changing amounts of the undigested chicken burger as it passed through his digestive system.



(a) In which part of the digestive system (A, B, C, D and E) has the digestion come to an end? Support your answer. [1m]

_____

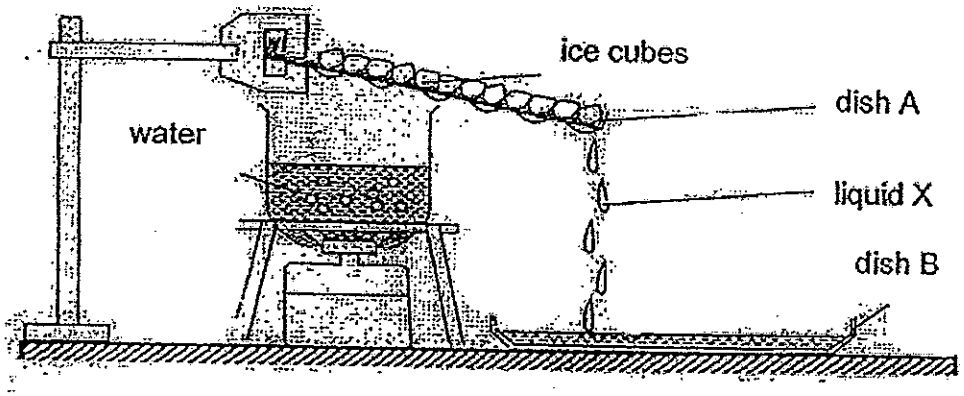
_____

(b) What happens to the undigested food before it is released from the body? [1m]

_____

_____

39. Roy set up an experiment as shown below.



(a) Name the two processes that cause X to be formed and collected in the ~~beaker~~. dish B [1m]

(i) _____

(ii) _____

(b) How does the ice cubes in dish A help in the collecting of water in dish B? [1m]

_____

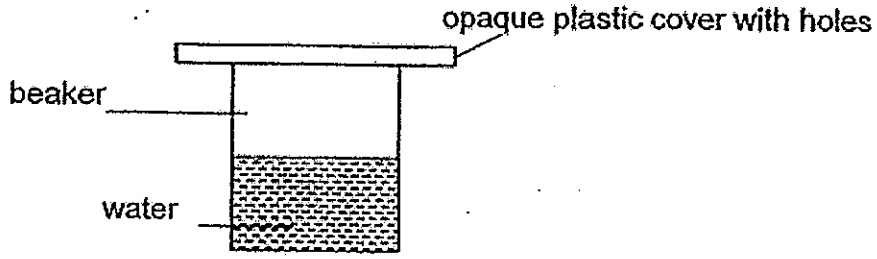
_____

(c) Do you think the set-up above can be used to obtain drinking water from sea water? Explain why. [1m]

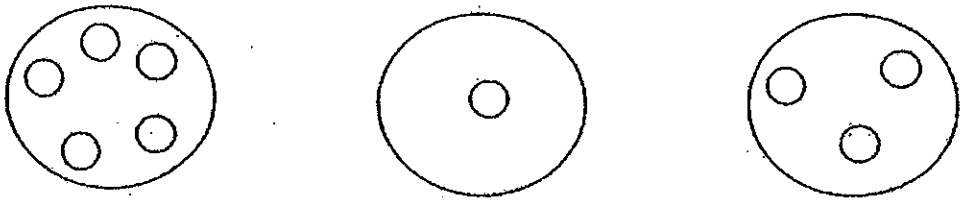
_____

_____

40. Alex prepared the following experimental set-up to determine how one factor affects the rate of evaporation.



In order to carry out his experiment, Alex prepared 3 opaque plastic covers with different number of holes as shown below. Each cover was placed over a beaker of water of the same temperature.



cover E cover F cover G

(a) Which factor of evaporation is Alex testing using the above set-ups? [1m]

_____

(b) Why must he keep the temperature of water in the beaker the same? [1m]

_____

_____

(c) What must Alex measure to determine the rate of evaporation? [1m]

_____

_____

(d) In which set-up (E, F or G) will the rate of evaporation be the greatest? Explain your choice. [1m]

_____

_____

41. Sally prepared 3 fish tanks with the variables as stated in the table below. She placed them at different places in her house.

Variable	Tank 1	Tank 2	Tank 3
Number of guppies	5	5	5
Amount of water in the tank	500 ml	500 ml	500 ml
Amount of food given to the guppies daily	10 g	10 g	10 g

She then observed the guppies for a few days. She noticed that there were different amount of algae growing in the fish tanks as shown below.

patches of algae Tank 1

patches of algae Tank 2

patches of algae Tank 3

(a) What causes the algae to reproduce at different rate in the 3 fish tanks? [1m]

_____

After a few days, she noticed the fish in tank 1 died.

(b) How did the algae growth affect the survival of the fish in tank 1? [1m]

_____

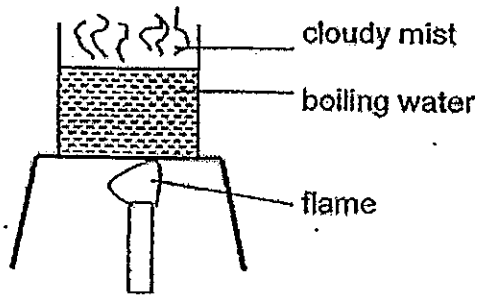
_____

42. Lishan placed some ice cubes in a beaker. She heated the beaker using a flame. She recorded the temperature and the observations as shown below.

(a) Match the temperature with the correct observation made. Use lines to match. [2m]

	Temperature	Observations
(i)	0°C	Small water bubbles formed and rose up.
(ii)	100°C	Cloudy mist was formed. The temperature remains the same.
(iii)	70°C	Ice was melting.
(iv)	30°C	All ice cubes changed to water

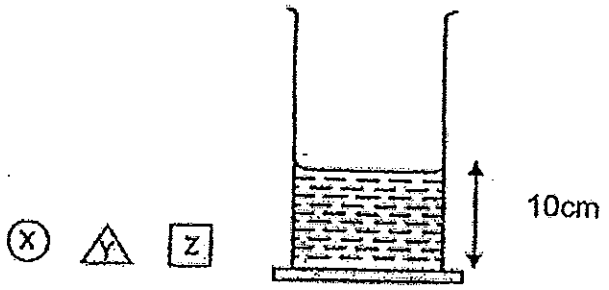
Lishan drew her set-up as shown below.



She observed cloudy mist formed just above the boiling water.

(b) Describe how the cloudy mist is formed. [2m]

43. Bernice placed three objects, X, Y and Z, into a measuring cylinder. The cylinder initially contained water to a height of 10 cm.



She added object X and recorded the height of water. Then she removed object X. She repeated the same steps for objects Y and Z respectively. Each time she added an object into the cylinder, she recorded the height of the water in the table below.

Object added	Height of water (cm)
None	10
X	12
Y	15
Z	18

(a) Why did the height of water increase when the object was added into the cylinder?

[1m]

_____

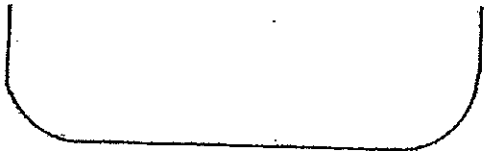
_____

(b) If Bernice added Objects X and Y together in the cylinder, what will be the height of water?

[1m]

_____

Bernice repeated the same experiment using the container below.

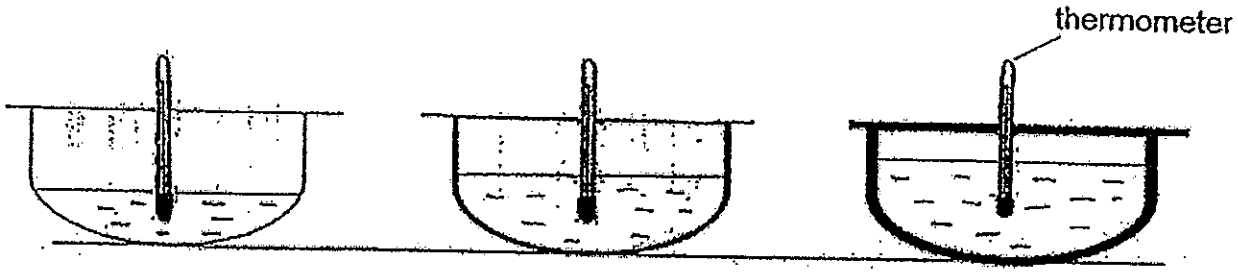


(c) Would the volume of the objects be the same? State the property of solid to explain your choice.

[1m]

_____

44. Ryan wanted to compare the heat conductivity of three bowls. They were made of materials, A, B and C with different thickness. He set up the apparatus as shown below. The temperature of the soup in all 3 bowls at the beginning of the experiment was the same. He conducted his experiment for 20 minutes.



Bowl A with cover | Bowl B with cover | Bowl C with cover

He concluded that Bowl C is the best bowl to keep the soup the hottest.

(a) What observation would he have made for the above conclusion? [1m]

_____

_____

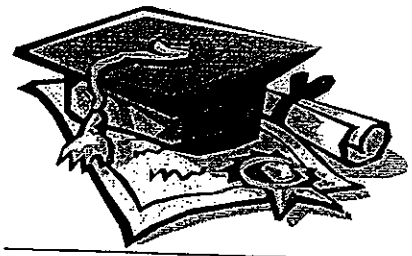
His friend said that his experiment was not a fair test.

(b) State two changes Ryan can make to the set-ups to ensure a fair test. [2m]

i) _____

ii) _____

End of Booklet B



ANSWER SHEET

EXAM PAPER 2012

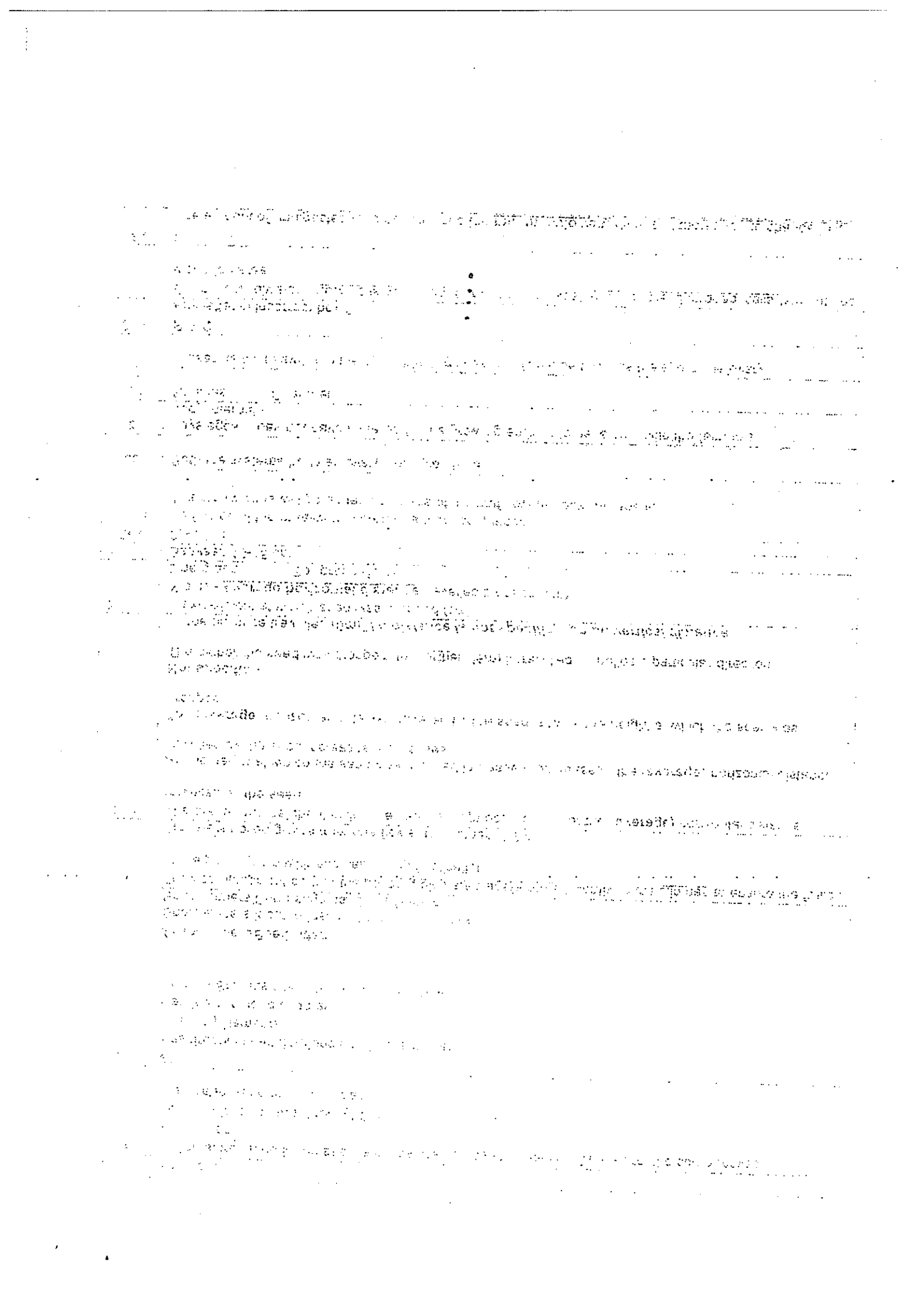
SCHOOL : ROSYTH
SUBJECT : PRIMARY 6 SCIENCE

TERM : CA1

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

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

Qn No	Answers
31a	C. The stored food in the seed leaf was used up by the seedling. Therefore, the curve moved downwards. Contains food for *shoot/root* (1/2 m)
b	The line must be moving upwards.
32a	Wind Has drooping/hanging/long/pendulous anthers Has long filaments Has feathery/long stigmas Anthers/Stigmas are outside the petals/flowers. Animal/Insect/Bee/Butterfly Short anthers located inside of the flower/petals Short anthers/Short stigmas//Short filament
b	They are important so that the pollen grains are transferred efficiently to the stigmas to ensure the fusion of the pollen grain with egg cell during fertilisation Transfers pollen grains from one flower to another (1/2 m)
33a	The greater the height at which the seed is dropped, the greater the **(average)** horizontal distance travelled by the seed. As the height at which the seed was dropped increases (*decreases*), the **(average)** horizontal distance travelled by the seed increases (*decreases*). The **(average)** horizontal distance travelled by the seed is twice the height at which the seed was dropped. **Not specific –** The higher the seed was dropped, the further (½m) it travelled. –implies a particular direction ....the distance travelled (0m)*The distance is not specific; can be vertical distance*
b	Y axis-Height at which seed was dropped (cm) X-axis - **Average horizontal distance** travelled by seed (cm) Line graph Bar graph (½m)
c	Between 10-15 cm
34a	3, 4, 2 ,1
b c	To find out if the mealworms prefer dark or light places The mealworms will go under the shade of the half covered box with the lid.
35	Both the systems have an ovary / fallopian tube
b	Lays eggs. Does not have a uterus for the growing embryo to develop inside the female's body/internally.
36a	R:testes S: anther
b	R uses its *tail to* swim to the egg while S grows *a pollen tube* towards the egg/ovule/ovary
37a	R,P,Q Any letter in incorrect box-0m
b	During cell division, new cells will grow (½m) and replace/repair of the damaged cells(½m) at the wounded area
38a	D The amount of undigested food has reached the **minimum/lowest** (½m) and thereafter no change in it /



	remains constant (½m)
b	Water is absorbed from the undigested food at the large intestine
39a	(i) evaporation (ii) condensation
b	The ice-cubes keep the surface of dish A cool (½m) for condensation to take place for water droplets to be formed. (½m)
c	Yes. **Only the water will evaporate** (½m) to form water vapour which condensed to form water **leaving the salt behind** (½m).
40 a	Area of exposed surface (of water) Amount of exposed area
b	To ensure that the rate of evaporation is only affected by exposed surface area of water. To ensure that the rate of evaporation is not affected by the temperature. So the temperature does not affect the rate of evaporation The difference in the amount of water left is not due to the different temperature but due to the different amount of exposed surface area.
c	The amount of water **left** (in the beaker after a certain amount of time.)
d	E. E has the most/greatest number of holes (½m) so it has the most/greatest exposed surface of water (½m) E. E has **more/greater** number of holes **than F and G** (½m) so it has greater exposed surface of water. (½m)
41a	The amount of sunlight exposed to the tanks.
b	It reduces the amount of oxygen available for the fish.
42a	0°C – Ice was melting 100°C – Cloudy mist was formed. The temperature remains the same. 70°C – small water bubbles formed and rose up. 30°C – All ice cubes changed to water.
b	Water **gained heat** (½m) to become **hot water vapour** / steam (½m) and rises. The hot water vapour **loses heat** (½m) and **condenses** (½m) to form water droplets.
43a	The object displaced the water to take up space. orThe object took the space previously occupied by the water
b	17cm
c	Yes. (0m) Solids have a definite volume. or Solids have a definite volume and cannot be compressed. Solids have a definite volume and shape. (-1/2)
44a	The **temperature** of the soup was the **highest after 20 min/ at the end. /** **Bowl C** loses the **least heat**./ Took the **longest time** to reach room temperature./**Temperature** of the soup in bowl C was the **highest.**
b	Ensure **the thickness of the bowl** is the same /OR The **material of the bowl** is the same. / Make all **materials to same thickness.** The **volume of the soup** must be same./ Same amount of soup.