



# MASENO SCHOOL MOCK – 2022

Kenya Certificate of Secondary Education



231/1

Paper 1

## BIOLOGY

### Sept. 2022 – 2 Hours

Name ..... Admission Number .....

Class ..... Date ..... Candidate's Signature.....

#### Instructions to candidates

- Write your name and Admission Number in the spaces provided above.
- Write your class, date of examination and sign in the spaces provided above.
- Answer ALL the questions in this paper.
- All your answer must be written in the spaces provided in the question paper.
- This paper consists of 15 printed pages.
- Candidate should check the question paper to ascertain that all the pages are printed as indicated and that no questions are missing.
- Candidates must answer the questions in English.

#### For Examiner's Use Only

Questions	Maximum Score	Candidate's Score
1-30	80	

1. What happens to thigh muscles in case of oxygen debt when one is running? Explain. (2 marks)

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2. a) State the role of active transport in animal nutrition. (1 mark)

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b) Whooping cough is a disease of the respiratory system, name the causative agent of the disease. (1 mark)

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3. A certain organism K was surgically removed from a rat. Later drastic increase in glucose level in the blood was reported but when substance Q was injected into the animal, the whole process was reversed.

Identify:- (2 marks)

- i) Organ K .....
- ii) Substance Q .....

4. Distinguish between anatomy and morphology. (1 mark)

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5. a) i) Define the term carrying capacity. (1 mark)

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ii) Explain why carrying capacity of wild animals is higher than that of cattle in a give habitat. (2 marks)

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b) Wild beasts in Tsavo National Park were found to be infected with a lot of ticks. State the trophic level occupied by the following;-

i) Wild beasts (1 mark)

.....

ii) Ticks (1 mark)

.....

6. What is eutrophication? (1 mark)

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7. Explain how the following tissues are adapted to provide mechanical support in plants. (3 marks)

a) Parenchyma.....

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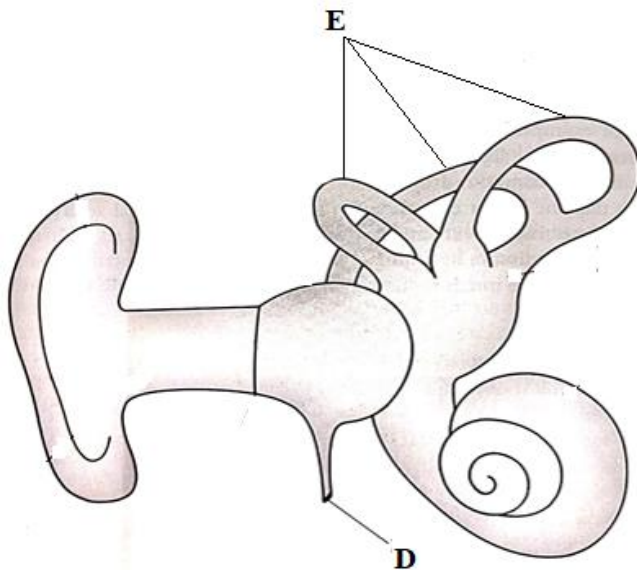
b) Collenchyma.....

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c) Sclerenchyma.....

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8. The diagram below represents the human ear



a) Name the part labelled E (1 mark)

.....

b) State the function of the part labelled D (1 mark)

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.....

9. a) How do the following structures adapt the plant leaf to photosynthesis? (2 marks)

i) Epidermis.....

.....

ii) Palisade cells.....

.....

b) A leaf of a potted green desert plant which had been kept in the dark for 24 hours was smeared with a transparent petroleum jelly on its lower surface and exposed to light for 6 hours. When the leaf was tested for starch the test was negative.

Account for the observation. (3 marks)

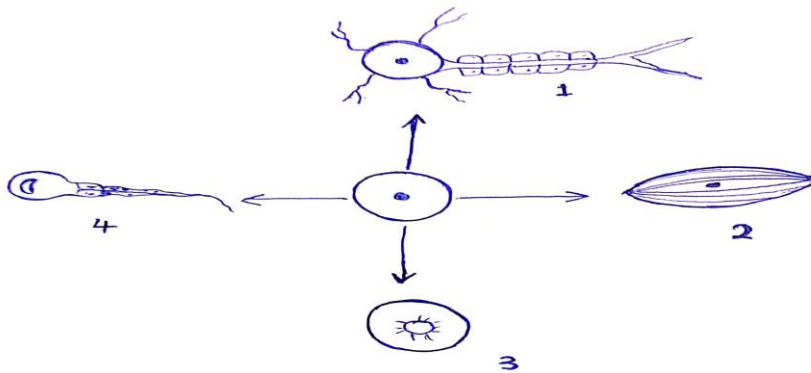
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10. The diagram below shows various specialized animal cells modified from the basic animal cell.



a) Name the process represented by the arrows.

(1 mark)

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b) i) Identify cell 1 and 2.

(2 marks)

1 .....

2 .....

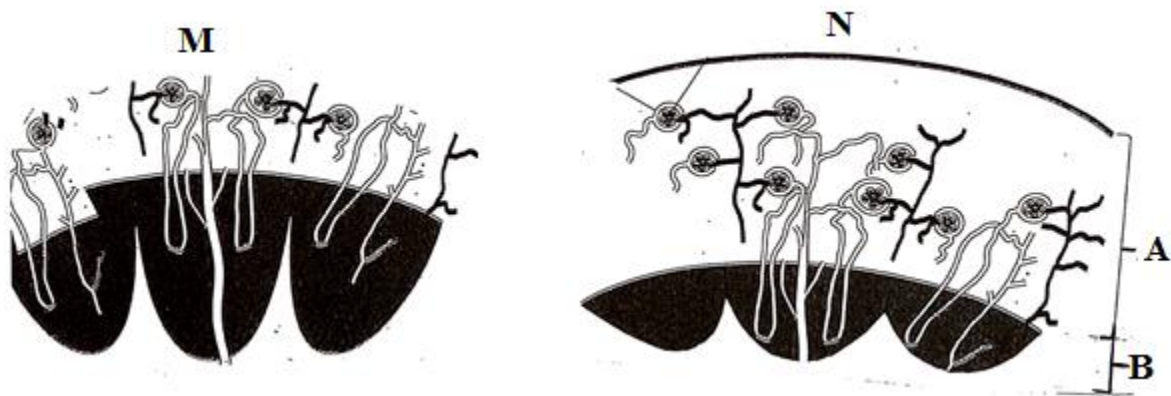
ii) State the specific function of a cell

(1 mark)

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11. The diagram below shows the longitudinal sections of kidneys from different animals.



a) i) Suggest the likely habitat of animal having kidney M.

(1 mark)

.....

ii) Explain two observable reasons for your answer in a) (i) above.

(2 marks)

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.....

.....

b) Name the urine formation process which takes place in the parts labelled A and B in the section of Kidney N.

(2 marks)

A .....

B .....

12. State the role of photosynthesis in plant excretion.

(1 mark)

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.....

13. In an experience to investigate a certain aspect of growth in a maize plant seedling, a radicle measuring 8mm long was measured at equal intervals of 2mm long and left to grow for 5 days. The distance between the successive marks along the radicle were measures and the results recorded as shown below.

Regions along the radicle	Distance
A	2.0
B	3.8
C	2.2

a) What was the aim of the experiment?

(1 mark)

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b) Account for the change in distance in region B.

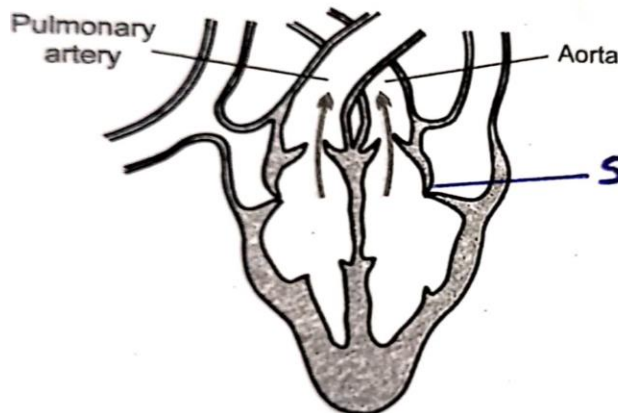
(2 marks)

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14. The diagram below shows the state of a mammalian heart during a stage of cardiac cycle.



a) i) Identify the stage of the cardiac cycle illustrated above.

(1 mark)

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ii) Give a reason for your answer in (a) (i) above.

(1 mark)

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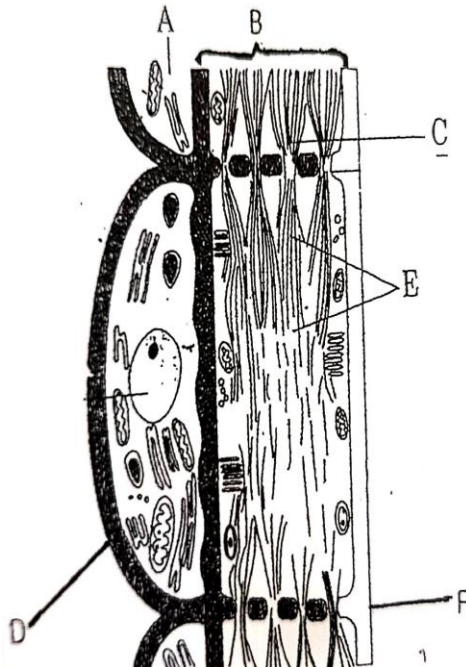
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b) Name the cardiovascular disease associated with the failure of the labelled S to function properly at the back of human leg.

(1 mark)

.....

15. Below is a plant tissue structure.



a) State the role of the tissue.

(1 mark)

.....

b) Explain how the part labelled D adapt the tissue in performing the role stated in (a) above.

(1 mark)

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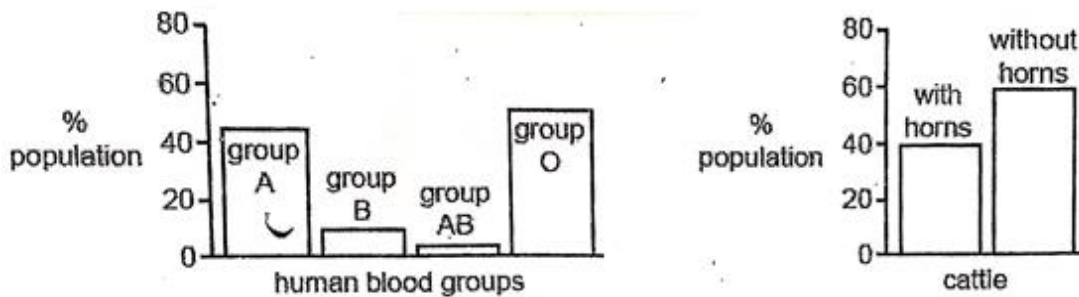
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16. Name the transport fluid in a housefly.

(1 mark)

.....

17. The bar chart below shows the percentage of human population with each type of blood group and percentages of cattle population with and without horns.



a) Identify the types of variation illustrated by the population in cattle.

(1 mark)

.....

.....

b) Name the phenomenon illustrated by the percentage of human population with each type of a blood group.

(1 mark)

18. Define the term heterozygous advantage. Give one example.

(2 marks)

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19. a) What do you understand by sex-linked disorders?

(1 mark)

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b) Name one genetic disorder that is not sex-linked.

(1 mark)

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20. A student obtained a mango leaf whose length was 45mm to confirm if it is similar with the one drawn in his book which measures 9mm in order to calculate the magnification.

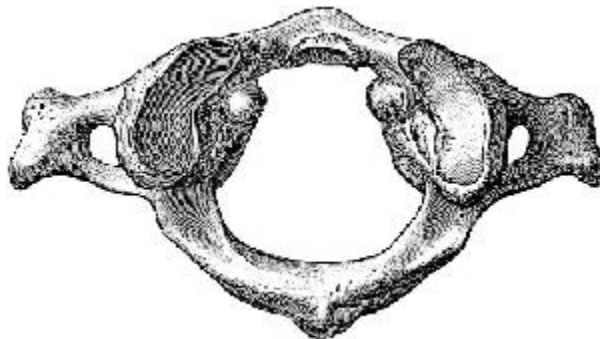
a) Write down the formular he used to calculate magnification.

(1 mark)

b) Use the formular in (a) above to calculate the magnification.

(2 marks)

21. The figure below is a photograph of a bone obtained from a given region in the human body.



a) i) Identify the above bone.

(1 mark)

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ii) Name the bone that articulate with the bone identified in (a) i) above (1 mark)

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b) Give one important of the articulation of the two bones. (1 mark)

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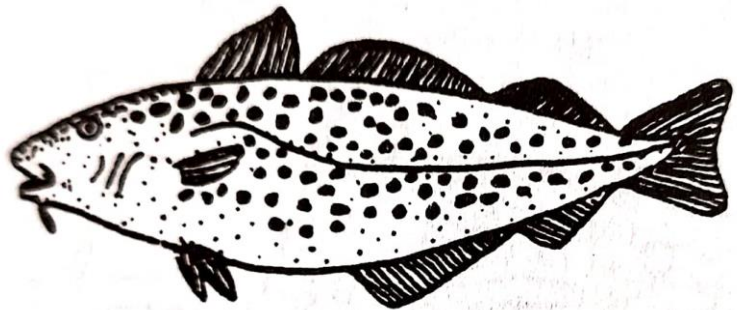
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22. Study the diagram below and use it to answer the questions that follow.



A



B

a) Using observable features only classify the two organisms in their respective classes giving reason in each case.

A ..... (1 mark)

B ..... (1 mark)

b) State **two** observable differences between the two organisms. (2 marks)

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23. a) During a field study. A form one students at Maseno School observed the organism below. Name one appropriate tool the student would use to collect the specimen. Give a reason for your answer.

(2 marks)



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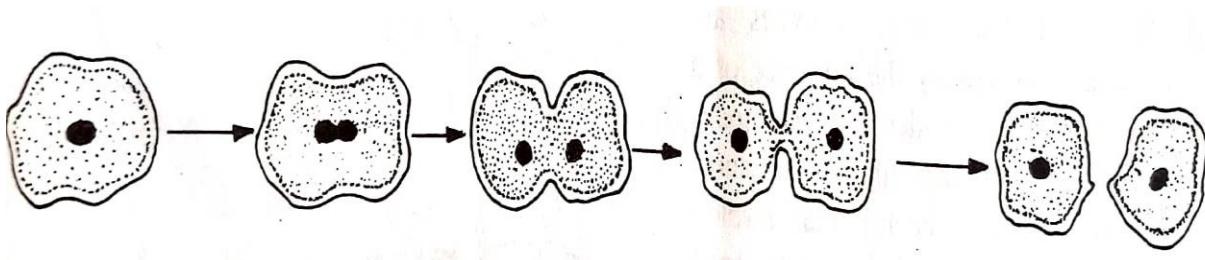
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b) State the main difference between the organisms drawn above and streptococcus. (1 mark)

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24. The diagram below show a type of reproduction in living organism.



a) Name the type of reproduction shown above. (1 mark)

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b) State any one disadvantage of the type of reproduction named in (a) above. (1 mark)

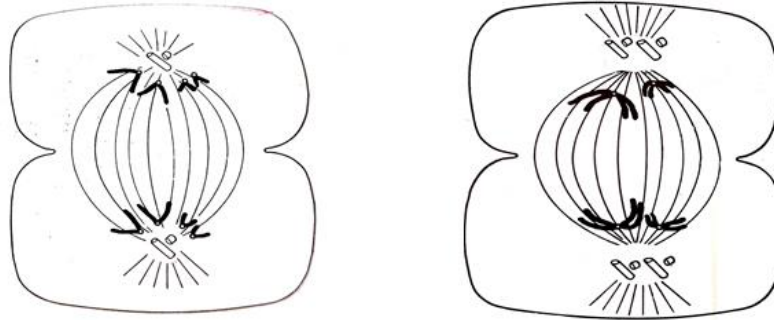
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25. The diagrams below represents certain stages of cell division. Study them and answer the questions that follow.

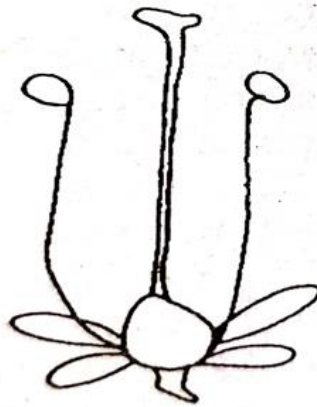


Name the phases of cell division represented by the diagrams below.

A ..... (1 mark)

B ..... (1 mark)

26. The diagram below shows the reproductive structure of a certain plant observed by a form four student at Maseno School during field study.



a) Name the feature shown by the diagram. (1 mark)

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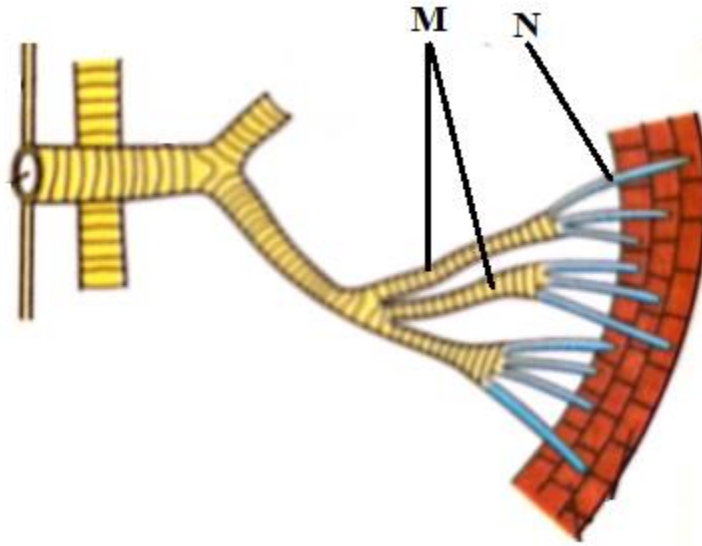
b) State the type of pollination likely to occur on the plant. (1 mark)

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c) State the characteristics of the pollen grain produced by the plant (1 mark)

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27. The diagram below shows part of the gaseous exchange system of a given animal.



a) Name the part labelled M. (1 mark)

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b) How is the part labelled N structurally adapted to its function. (2 marks)

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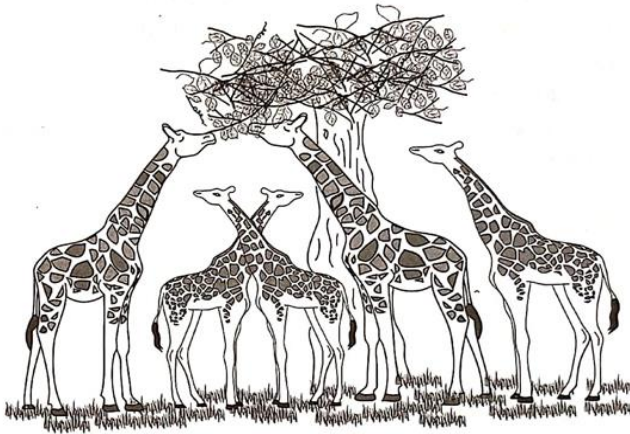
28. a) Explain why a frog is advantageous both to live on land and water than fish. (1 mark)

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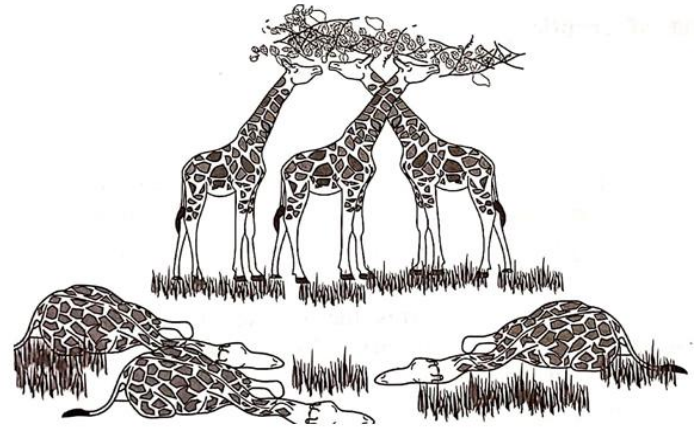
b) A part from the stomata, name other two sites of gaseous exchange in plants. (2 marks)

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29. The diagrams below illustrate two types of Giraffe in a green ecosystem. Study them and answer the questions that follow.



A



B

a) Name the principles expressed by diagram A and B respectively.

A ..... (1 mark)

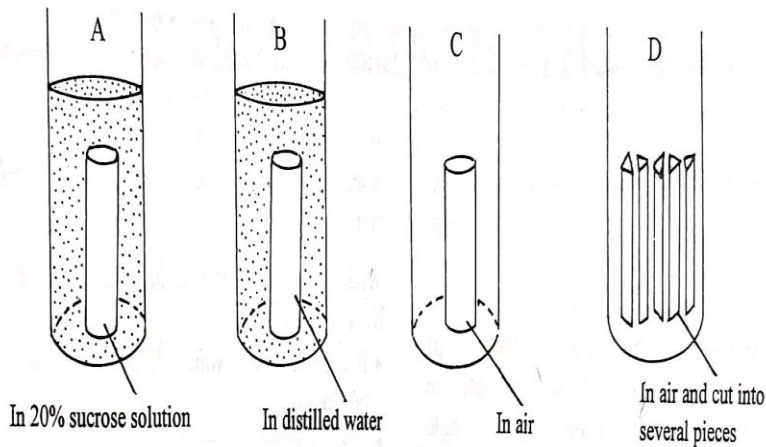
B ..... (1 mark)

b) State the cause of variation in the neck of the two types of the Giraffe

(1 mark)

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 .....

30. Four cylinders of potato were made and trimmed to the same weight. They were placed in different beakers as shown below.



After 48 hours the cylinders were removed, dried using a blotting paper and weighed.

a) Which cylinder would be heaviest and why? (1 mark)

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b) What difference if any would you expect in the weight of C and D? Give a reason for your answer. (2 marks)

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