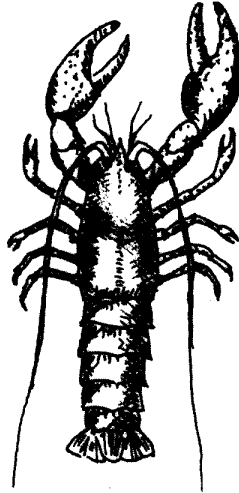


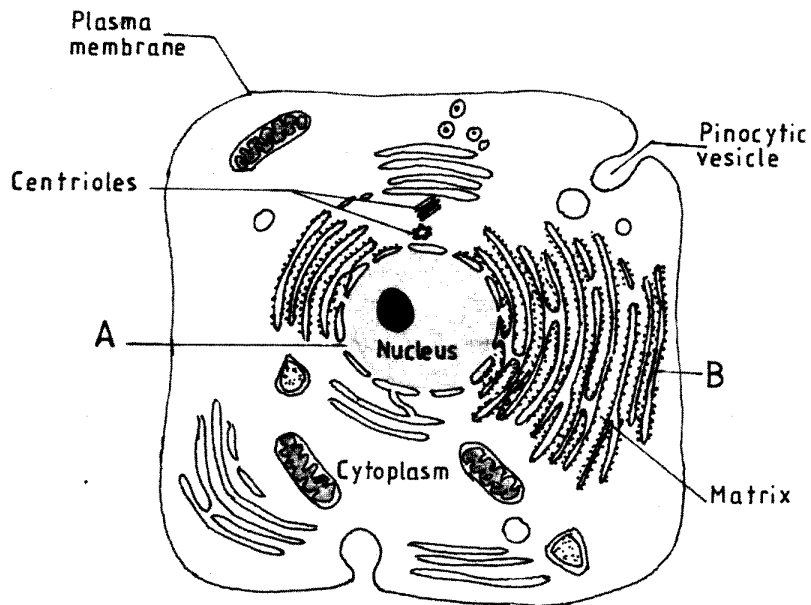
4.2 **BIOLOGY (231)**

4.2.1 **Biology Paper 1 (231/1)**

- 1 How does nutrition as a characteristic of living organisms differ in plants and animals? (2 marks)
- 2 The diagram below represents a certain organism collected by a student at the sea shore.



- (a) Name the class to which the organism belongs. (1 mark)
 - (b) Give **three** reasons for your answer in (a) above. (3 marks)
- 3 The figure below is a fine structure of a generalised animal cell as seen under an electron microscope.



- (a) Name the parts labelled **A** and **B**. (2 marks)

A

B

- (b) How is the structure labelled **B** adapted to its function? (2 marks)

- 4 In an investigation, a student extracted three pieces of paw paw cylinders using a cork borer. The cylinders were cut back to 50 mm length and placed in a beaker containing a solution.

The results after 40 minutes were as shown in the table below.

Feature	Result
Average length of cylinders (mm)	56 mm
Stiffness of cylinders	stiff

- (a) Account for the results in the table above. (3 marks)

- (b) What would be a suitable control set-up for the investigation? (2 marks)

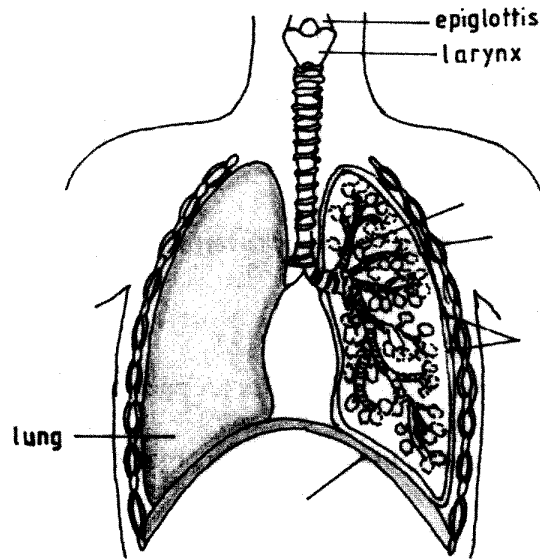
- 5 The table below shows results of a study of three plants **C**, **D** and **E** growing in different habitats.

Feature	Plant C	Plant D	Plant E
Number of stomata on upper surface of leaf per square area	4	20	6
Number of stomata on lower surface of leaf per square area	6	0	8
Thickness of leaf cuticle (mm)	0.4	0.1	0.2
Surface area of roots (cm ²)	2000	1000	1200

- (a) Which one of the plants **C**, **D** and **E** grows in an area of relatively low water availability? (1 mark)

- (b) Explain your answer in (i) above. (3 marks)

- 6 The diagram below represents part of the gaseous exchange system in human.



- (a) Name the parts labelled F and G. (2 marks)

F

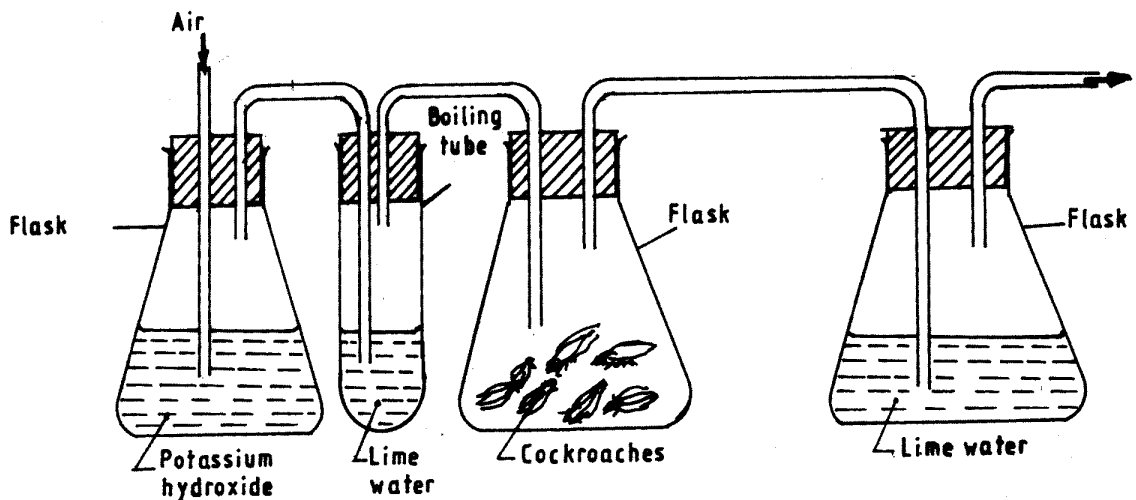
G

- (b) State **one** function of each of the parts labelled H and J. (2 marks)

H

J

- 7 The diagram below represents a set-up that students used in an investigation.



- (a) Name the physiological process that was being investigated. (1 mark)

- (b) State the role of potassium hydroxide in flask K. (1 mark)

(c) Account for the observation in boiling tube L and flask N. (2 marks)

L
N

8 What is the probability of a couple with blood group AB getting a child with blood group AB? Show your working. (4 marks)

9 State the importance of negative phototaxis to termites. (1 mark)

10 What is meant by the term irritability? (1 mark)

11 (a) State **two** ways in which heart muscles are special. (2 marks)

(b) Name the muscles found in the following organs: (2 marks)

stomach;
bone.

12 (a) Name the part of a light microscope used to bring an image of a specimen into sharp focus. (1 mark)

(b) Why is it recommended to keep the stage of the microscope dry? (1 mark)

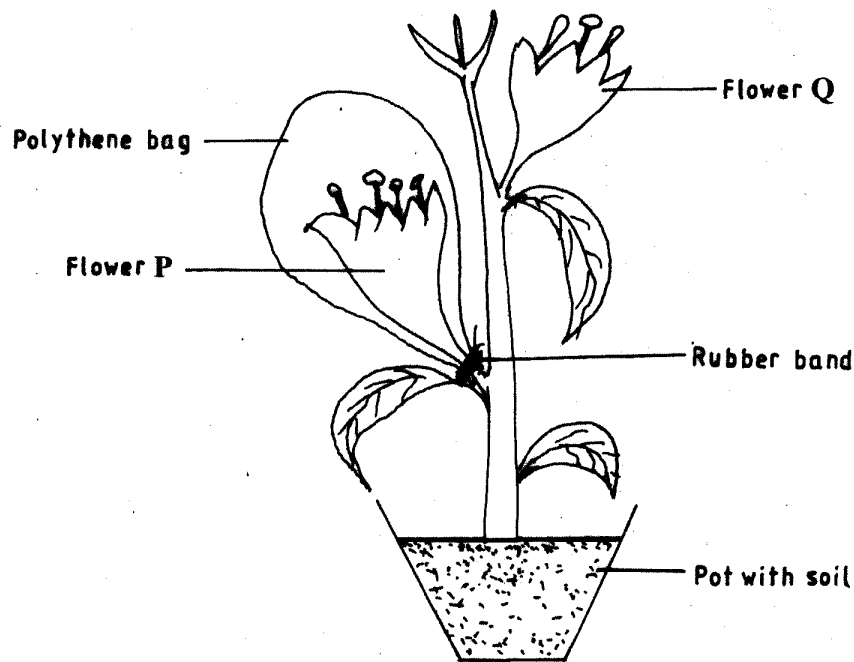
13 State **three** factors that affect the rate of diffusion. (3 marks)

14 (a) Name the type of respiration that is most efficient. (1 mark)

(b) Give a reason for your answer in (a) above (1 mark)

15 What name is given to a group of hormones that controls the development of secondary sexual characteristics in a human male? (1 mark)

16. The diagram below represents an experimental set-up used by students to investigate a certain process.



- Flower Q produced seeds while P did not. Account for the results. (3 marks)
17. Name **two** substances that leave the foetal blood through the placenta. (2 marks)
18. Why are plants able to accumulate most of their waste products for long? (1 mark)
19. List **four** symptoms of diabetes mellitus. (4 marks)
20. State **three** aspects that can be used to estimate growth in seedlings (3 marks)
21. Name the process through which free atmospheric nitrogen is converted into nitrates. (1 mark)
22. State the importance of divergent evolution to organisms. (2 marks)
23. Name the strengthening materials found in the following support tissues: (2 marks)
- (a) collenchyma;
- (b) xylem.
24. State **four** characteristics of apical meristem cells. (4 marks)

- 25 State the role of the following hormones in the life cycle of insects: (2 marks)
- ecdysone hormone;
- juvenile hormone.
- 26 (a) State the theories of evolution proposed by the following scientists. (2 marks)
- Charles Darwin
- Jean-Baptiste de Lamarck
- (b) State the evidence of evolution based on (2 marks)
- (i) cell organelles
- (ii) fossils.
- 27 What is the function of contractile vacuoles in amoeba? (1 mark)
- 28 State **two** differences between open and closed circulatory systems. (2 marks)
- 29 Name **two** nutrients that are absorbed without being digested by enzymes in humans. (2 marks)
- 30 Name the organelle that is involved in each of the following: (2 marks)
- (a) manufacture of lipids
- (b) formation of lysosomes.....