



General Instructions :-

- i) All questions are compulsory.
- ii) This question paper consists of five Sections A, B, C, D and E. Section A contains 5 questions of one mark each, Section B is of 5 questions of two marks each, and Section C is of 12 questions of three marks each. Section D is of 1 question of four marks and Section E is of 3 questions of five marks each.
- iii) There is no overall choice. However, an internal choice has been provided in one question of 2 marks, one question of 3 marks and all the three questions of 5 marks weightage. A student has three questions of 5 marks weightage. A student has to attempt only one of the alternatives in such questions.
- iv) Wherever necessary, the diagrams drawn should be neat and properly labelled.

SECTION – A

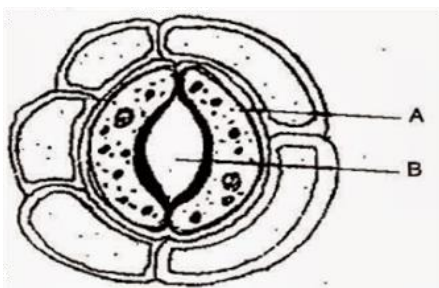
1. Why is binomial nomenclature the most acceptable mode of naming organism? [1]
2. What is functional residual capacity? [1]
3. Name the secretions of Goblet cell & parietal cells. [1]
4. How open vascular bundles are differing from closed vascular bundles? [1]
5. Who first explained that new cells arise from pre-existing cells? [1]

SECTION – B

6. What is the difference between carbaminohaemoglobin and oxyhaemoglobin? [2]
7. How is transpiration different from guttation? Give two points. [2]
8. Fill in the blank spaces in the given table to bring the difference between C3 and C4 plants: [2]

C3 plants		C4 plants	
i)	Cell type: One type (mesophyll)	a)	_____
ii)	CO ₂ acceptor _____	b)	Phosphoenol pyruvate (PEP)
iii)	First CO ₂ fixation Product: 3-PGA	c)	_____
iv)	Optimum temperature _____	d)	30° C to 45° C

9. Observe the figure and answer the following questions : [2]

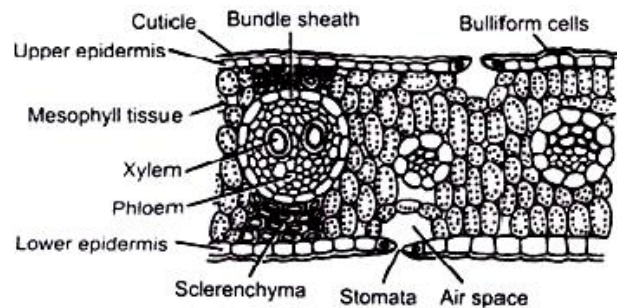
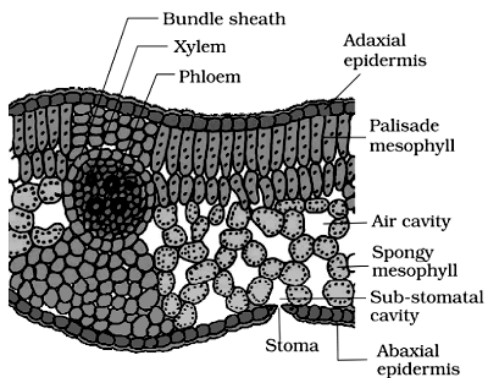


- a) Name parts (a) and (b).
- b) Are these types of stomata observed in monocot or in dicot plants?
- c) Which parts of stomata constitute the stomatal apparatus?

10. Name the type of root for the following : [2]
- Roots performing the function of photosynthesis.
 - Roots come above the surface of the soil to absorb air.
 - The pillar like roots developed from lateral branches for providing mechanical support.
 - Roots coming out of the lower nodes of the stem and provide the support to the plant.

(OR)

Identify and differentiate between the following :-

**SECTION – C**

11. Where are synaptic vesicles found? Name their chemical contents? What is the function of these contents? [3]
12. a) A patient was complaining of frequent urination, excessive thirst, hunger and tiredness. His fasting glucose level was found higher than 130 mg/dL on two occasions :
- Name the disease,
 - Give the root cause of this disease.
 - Explain why the blood glucose level is higher than 130 mg/dL.
- b) Where will you find the following?
- | | | |
|------------|-----------|----------------------|
| i) Nephron | ii) Fovea | iii) Organ of Corti. |
|------------|-----------|----------------------|
- Give one function of each. [3]
13. Differentiate between arteries and veins. [3]
14. Explain the different types of phyllotaxy. Give one example of each type. [3]
15. Give the schematic representation of an overall view of TCA cycle.
(OR)
Schematically represent non-cyclic photophosphorylation in plants. How is it different from the cyclic photophosphorylation? [3]
16. Give steps of ATP synthesis in chloroplasts through chemiosmosis. [3]
17. Explain the Fluid Mosaic Model. Also represent it diagrammatically. [3]
18. a) Differentiate between the cytokinesis of plant and animal cell. [2]
b) What is G₀ phase of cell cycle? [1]
19. Differentiate between a prokaryotic and a eukaryotic cell. [3]

20. State the Blackman's law of the limiting factors. Explain the effect of light and carbondioxide on photosynthesis. [3]
21. Differentiate between the following:- [3]
- Polyp and medusa.
 - Pseudocoelomates and acoelomates.
 - Oviparous and viviparous.
22. Give Reasons for the following :- [3]
- Ferns reproduce by their leaves.
 - Fungal hypha shows the presence of two nuclei per cell in some Basidiomycetes.
 - Mycorrhizal association is advantageous to the plants.

SECTION – D

23. Class XI went for an excursion trip and they saw different structures described as stems by their teacher. How do plants support, store, multiply and protect the plants by their stems? Give examples of each category to explain them. [4]

SECTION – E

24. Draw a detailed diagram of a plant cell and differ it with the animal cell. (OR) [5]
- Explain the following:-
- The phenomenon of crossing over.
 - Anaphase of Mitosis and Meiosis.
 - Plastids.
25. Describe the structure of human heart. Draw the diagram and show the path of blood circulation through it. (OR) [5]
- Draw a labelled diagram of human alimentary canal and describe the role of the following:-
- Bile
 - Pepsin
26. How do plants absorb water? Explain transpiration pull model in this regard. (OR) [5]
- Describe the pressure flow hypothesis of translocation of sugar in plants.
 - Explain the mechanism of closing and opening of stomata.