

CLASS XI – BIOLOGY ASSIGNMENT 3 TRANSPORT IN PLANTS

1. What is translocation? How is movement of minerals different from movement of organic nutrients in plants?
2. (a) Define diffusion. Give its salient features
(b) Give the factors which affect diffusion.
3. What is facilitated diffusion? Give its features alongwith the diagram.
4. What are porins? What are aquaporins?
5. Explain uniport, antiport, symport with help of diagrams.
6. Explain active transport. What are the factors affecting this type of transport across cell membrane?
7. Compare simple diffusion, facilitated diffusion & active transport.
8. Briefly describe water potential. What are the factors affecting it?
9. Explain why pure water has maximum water potential.
10. Why is solute potential always negative?
11. Represent symbolically the relationship between Ψ_w , Ψ_s , Ψ_p .
12. In plant cell which membranes are determinants for the movement of molecules in & out of cell?
13. Define osmosis. What are the factors on which rate of osmosis depends on?
14. (a) Describe the experiment for demonstration of osmosis. (Thistle funnel experiment)
(b) What is external pressure? What happens when a pressure greater than the atmospheric pressure is applied to pure water or a solution?
15. Define isotonic, hypotonic & hypertonic solutions.
16. (a) With help of well labelled diagrams, describe the process of plasmolysis in plants, giving appropriate examples.
(b) What happens to a plant cell when it is kept in isotonic & hypotonic solutions?
17. Why do wooden doors swell during rainy seasons? Explain the phenomenon behind it.
18. What are the factors affecting imbibitions? Give its use in plants.
19. What is mass flow system of transport of substances? How is bulk flow achieved?
20. (a) What are the distinct pathways for movement of water & ions into the root layers?
(b) Why are water molecules unable to cross endodermis of root? Name the substance present in endodermis which prevents apoplastic movement of water.
(c) What are apoplastic & symplastic pathway? Explain.
21. How is mycorrhizal association helpful in absorption of water & minerals in plants?
22. What is root pressure?
23. Explain guttation.
24. Why is root pressure theory for ascent of sap not accepted widely?
25. Describe transpiration pull model of water transport in plants. What factors affect transpiration? How is it useful to plants?
26. What causes opening & closing of guard cells of stomata during transpiration?
27. Which are the physical properties of water on which transpiration driven ascent of xylem sap depend on?
28. Draw labelled diagram showing water movement in the leaf.
29. "Transpiration & photosynthesis" a compromise. Justify this statement.
30. Explain the mechanism by which mineral ions are taken up into root cells from soil.
31. Name the chief sinks for mineral elements in plants.
32. Name the elements which are remobilised & element which is not remobilised in plants.
33. Explain why xylem transport is unidirectional & phloem transport bi-directional.
Explain pressure flow hypothesis of translocation of sugars in plants.