UNIT 4: PLANT PHYSIOLOGY

CHAPTER 11: TRANSPORT IN PLANTS

ONE MARK QUESTIONS:

- 1) What is diffusion? (K)
- 2) Define facilitated diffusion. (K)
- 3) What are porins?(K)
- 4) What is passive transport?(K)
- 5) Define uniport. (K)
- 6) Define symport.(K)
- 7) Define antiport.(K)
- 8) What are pumps, with reference to active transport in plants?(K)
- 9) What is water potential? (K)
- 10) What is concentration gradient?(K)
- 11) Which is the symbol of water potential? (K)
- 12) What is the conventional value of pure water at standard temperature?.(K)
- 13) Define solute potential.(K)
- 14) Define pressure potential.(K)
- 15) Define osmosis.(K)
- 16) What is plasmolysis?(K)
- 17) How does plasmolysis occur?
- 18) What is isotonic solution? (K)
- 19) What is hypotonic solution? (K)
- 20) What is hypertonic solution? (K)
- 21) What happens to a cell if it is kept in hypotonic solution? (U)
- 22) What happens to a cell if it is kept in hypertonic solution? (U)
- 23) What is turgor pressure?(K)
- 24) Define imbibition. (K)
- 25) What is translocation in plants ?(K)
- 26) What is apoplast?(K)
- 27) What is symplast?(K)
- 28) What is a mycorrhiza?(K)
- 29) What is root pressure?(K)
- 30) Define transpiration. (K)
- 31) Define guttation .(K)
- 32) Define cohesive force .(K)
- 33) Define adhesive force.(K)
- 34) Define capillarity.(K)
- 35) What is transpiration pull? (K)
- 36) Which is the only means for gaseous movement within the plant ?(K)
- 37) What are membrane proteins?(K)
- 38) Diffusion of any substance across a membrane depends on its solubility in lipids. Why?(A)
- 39) What are water channels called ?(K)
- 40) A seed though it appears dry is alive and respiring. How?(U)
- 41) Terrestrial plants take up huge amounts of water daily. Why?(K)

- 42) How is water potential expressed?(K)
- 43) Name the structure that connects protoplasts of neighbouring plant cells.(K)
- 44) *Pinus* seeds cannot germinate and establish without the presence of mycorrhiza . Why?(K)
- 45) Why guttation occurs at night and early morning ?(A)
- 46) Which is the immediate cause of the opening and closing of stomata?(K)
- 47) Orientation of the microfibrils in the cell was of the guard cells also play on important role in opening and closing of stomata -Justify.(U)
- 48) What is meant by saturation in transport? (K)
- 49) Why is endodermis of root impervious to water? (U)
- 50) Name a simple experiment that is used to identify the tissues of food transportation. (K)
- 51) When does a cell become flaccid ?(K)
- 52) What do you mean by mineral remobilization? (U)
- 53) How many types of aquaporins make up water channels? (K)

TWO MARKS QUESTIONS:

1) Facilitated diffusion cannot cause net transport of molecules from a low to a high concentration region. Substantiate the statement. (U)

(K)

- 2) What are porins? What is their role in diffusion? (K)
- 3) Active transport occurs "against concentration gradient" . Justify the statement(A)
- 4) Define water potential. Mention its components.
- 5) Explain why pure water has maximum water potential.(U)
- 6) Differentiate between diffusion and osmosis.(U)
- 7) Differentiate between imbibition and diffusion .(U)
- 8) The process of plasmolysis is reversible. Justify.(U)
- 9) Differentiate osmotic pressure and osmotic potential.(U)
- 10) Explain how mycorrhizae are helpful in absorption of water and mineral salts.(U)
- 11) Differentiate between Transpiration and Guttation .(U)
- 12) Draw a labelled diagram of stomatal apparatus. (S)
- 13) Explain the girdling experiment to demonstrate phloem transport.(U)
- 14) Phloem transport is bidirectional -justify the statement. (A)
- 15) All solutions have a water potential lower than pure water. Justify. (U)
- 16) Water potential of a solution is always negative. Why?(A)
- 17) Write two characteristics of facilitated diffusion .(K)
- 18) Write a note on cohesion-tension-transpiration pull model of water transport. (U)
- 19) What is mass flow movement or Bulk flow movement ? How is it achieved?(K)
- 20) List plant factors that affect transpiration.(K)
- 21) List external factors that affect transpiration.(K)
- 22) What do you mean by high tensile strength and high capillarity?(K)

THREE MARKS QUESTIONS:

- 1) What is passive transport ?Explain the types .(K)
- 2) Define water potential. Explain the relationship between water potential and its components .(U)
- 3) "Uptake of most of the mineral ions occurs only by Active absorption". Explain.(A)
- 4) Explain the role of root endodermis in mineral absorption .(U)
- 5) Explain whether water is pushed or pulled through the plant.(U)

- 6) Explain the mechanism of opening of stomata.(U)
- 7) Explain the three physical properties of water.(U)
- 8) "Water is often the limiting factor for plant growth and productivity" Justify with examples .(A)
- 9) Movement of substances in phloem is bidirectional -Explain .(A)
- 10) Name the regions of a plant where you find chief mineral sinks.(K)
- 11) What is girdling experiment?

FIVE MARKS QUESTIONS:

- 1) With a neat labelled diagram explain the thistle funnel experiment.(S)
- 2) With the help of labelled diagrams explain the process of plasmolysis.(S)
- 3) With a neat labelled diagram explain the absorption of water by the root form the soil.(S)
- 4) Explain the transpiration pull model of water transport in plants.(U)
- 5) Discuss the factors (forces) responsible for ascent of sap in plant .(A)
- 6) Xylem transport is unidirectional but phloem transport is bidirectional. Explain .(U)
- 7) Explain mass flow or pressure flow hypothesis.(U)
- 8) Explain how opening and closing of stomata occurs during transpiration .(U)
- 9) Explain the importance (Significance) of transpiration .(U)
- 10) Explain Apoplastic movement of water .(U)
- 11) Explain symplastic movement of water .(U)
- 12) Explain the translocation process from source to sink according to pressure flow hypothesis .(U)