# Chapter:11 Transport in Plants

## True and False

| Q.No | Question | Answer True/ False | Typology |
|---|---|---|---|
| Q.1 | In rooted plants, transport through xylem is essentially bidirectional. | False | Knowledge |
| Q.2 | Facilitated diffusion takes place along the gradient and without use of energy. | True | Evaluation |
| Q.3 | When some solute is dissolved in pure water, its water potential decreases due to increase in the concentration of water. | False | Understanding |
| Q.4 | Water absorbed by root hairs moves into the root tissues by two distinct pathways- apoplast and symplast. | True | Knowledge |
| Q.5 | Rate of diffusion of Lipid soluble substances across a cell membrane is faster than water soluble substances. | False | Analysis |
| Q.6 | Passive transport across the cell is a physical process. | True | Knowledge |
| Q.7 | Cells shrink in hypotonic solution and swell in hypertonic solution. | False | Evaluation |
| Q.8 | The net direction and rate of osmosis depends on both the pressure gradient and concentration gradient. | True | Knowledge |
| Q.9 | The lower surface of leaf has more number of stomata in a dorsiventral leaf. | True | Knowledge |
| Q.10 | Imbibition is also diffusion since water movement is along a concentration gradient. | True | Knowledge |
| Q.11 | In a symport transport, both molecules move across the cell membrane in the opposite direction. | False | Understanding |

## Multiple Choice Questions

| Q.No | Question | Answer | Typology |
|---|---|---|---|
| Q.1 | The porins present in the outer membranes of the plastids, mitochondria and some bacteria which are made of-<br>A. Carbohydrates<br>B. Proteins<br>C. Minerals<br>D. Glycoproteins | B. Proteins | Knowledge |

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| Q.2 | The water potentialof pure water at standard temperature, which is not under any pressure,is taken to be<br>A. Zero<br>B. – 1<br>C. +1<br>D. Any value greater than 1 | A. zero | Knowledge |
| Q.3 | Imbibition is a special type of diffusion when water is absorbed by<br>A. Liquids– colloids – causing decrease in volume.<br>B. Solids – colloids – causingdecrease in volume.<br>C. Liquids – colloids – causing no change in volume.<br>D. Solids – colloids – causing increase in volume. | D. | Knowledge |
| Q.4 | Guttation is mainly due to<br>A. Transpiration<br>B. Root pressure<br>C. Osmosis<br>D. Imbibition | B. | Knowledge |
| Q.5 | Guard cells differ from epidermal cells in having—<br>A. Mitochondria<br>B. Vacuoles<br>C. Cell wall<br>D. Chloroplast | D. | Knowledge |
| Q.6 | Force of cohesion develops due to-<br>A. Attraction between similar molecules.<br>B. Attraction between dissimilar molecules.<br>C. Repulsion between dissimilar molecules.<br>D. Repulsion among similar molecules. | B. | Analysis |
| Q.7 | In an isobilateral leaf, number of stomata presentis-<br>A. Equal on both the surfaces.<br>B. More on the lower surface.<br>C. Less on the lower surface.<br>D. More on the upper surface. | A. | Knowledge |
| Q.8 | The correct pathway of water movement in root is<br>A. Epidermis → Endodermis → Cortex → Pericycle → Xylem<br>B. Epidermis → Cortex → Endodermis → Pericycle →Xylem<br>C. Epidermis → Endodermis → Pericycle → Cortex →Xylem<br>D. Epidermis → Pericycle → Cortex → Endodermis →Xylem | B | Understanding |

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| Q.9 | Mycorrhiza is a symbiotic association of<br>A. Fungi with a root system of higher plants.<br>B. Algae with fungi.<br>C. Algae with a root system of higher plants.<br>D. Bacteria in root nodules. | A. | Knowledge |
| Q.10 | In higher plants, the translocation in phloem is best explained by<br>A. Transpiration pull model.<br>B. Root pressure model.<br>C. Pressure flow hypothesis.<br>D. Potassium sodium pump | C | Knowledge |
| Q.11 | The rate of transpiration is affected by the plant factors like-<br>A. Wind speed and temperature.<br>B. Temperature of the surroundings and humidity<br>C. Distribution of stomata and water status of the plant.<br>D. Humidity and percent of open stomata | C | Analysis |
| Q.12 | Stomata help in<br>A. Transpiration and guttation<br>B. Guttation and exchange of gases<br>C. Photosynthesis and guttation<br>D. Transpiration and photosynthesis | D | Evaluation |
| Q.13 | The value of osmotic pressure depends on<br>A. Concentration of solute<br>B. Concentration of solvent<br>C. Concentration of solution<br>D. Concentration of substrate. | C | Analysis |
| Q.14 | Membrane proteins are responsible for transport of-<br>A. Water molecules<br>B. Transpiration<br>C. Active transport<br>D. Passive transport | C | Evaluation |

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## Fill in the Blanks

| Q.No | Question | Answer | Typology |
|---|---|---|---|
| Q.1 | The process of loss of water droplets from the tips of leaves is termed as _____. | Guttation | Knowledge |
| Q.2 | To initiate cell plasmolysis, surrounding solution should be _____. | Hypertonic | Understanding |
| Q.3 | With rise in turgidity, wall pressure in cell will _____. | Increase | Analysis |
| Q.4 | The immediate cause of opening and closing of stomatal aperture is the change in the turgidity of the _____ . | Guard cell | Understanding |
| Q.5 | When amolecule moves across a membrane independent of other molecules, the process is called _____ transport. | Uniport | Knowledge |
| Q.6 | The form of sugar transported through phloem is _____ | Sucrose | Knowledge |
| Q.7 | Active transport uses _____ to transport and pump molecules against a concentration gradient. | ATP/energy | Understanding |
| Q.8 | Solute potentialand _____ are the two main components that determine water potential. | Pressure potential | Knowledge |
| Q.9 | Minerals are present in the soil in the form of _____ and they move actively against concentration gradient. | Ions | Understanding |
| Q.10 | The root endodermis has the layer of _____ due to which transport of ions occurs in one direction only. | Suberin | Analysis |
| Q.11 | Osmotic pressure is the positive pressure and osmotic potential is _____. | Negative | Understanding |

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## Match the Following

| Q.No | Question | | Answer | | Typology |
|---|---|---|---|---|---|
| Q.1 | Column A<br>a. Xylem<br>b. Phloem | Column B<br>i) Transport of heat<br>ii) Transport of water<br>iii) Transport of food<br>iv) Transport of energy | Column A<br>a.<br>b. | Column B<br>ii)<br>iii) | Knowledge |
| Q.2 | Column A<br>a. Cohesion<br>b. Adhesion | Column B<br>i) Attraction between similar molecules.<br>ii) Attraction between dissimilar molecules.<br>iii) Repulsion between dissimilar molecules.<br>iv) Repulsion among similar molecules. | Column A<br>a.<br>b. | Column B<br>i)<br>ii) | Understanding |
| Q.3 | Column A<br>a. Apoplast<br>b. Symplast | Column B<br>i) Transport of protein through xylem<br>ii) Pathway of water movement through the intercellular spaces<br>iii)Transport of protein through phloem<br>iv) Pathway of water movement through the cell membrane. | Column A<br>a.<br>b. | Column B<br>ii)<br>iv) | Understanding |
| Q.4 | Column A<br>a.Symport<br>b.Antiport | Column B<br>i) Diffusion in same direction<br>ii)Transpiration in opposite directions<br>iii) Diffusion in opposite direction<br>iv)Transpiration in same direction | Column A<br>a.<br>b. | Column B<br>i)<br>iii) | Understanding |
| Q.5 | Column A<br>a. Hypotonic solution<br>b. Hypertonic solution | Column B<br>i) The external solution is more dilute than the cytoplasm<br>ii) The external solution is more concentrated than the cytoplasm<br>iii) The external solution has same concentration that of the cytoplasm<br>iv) The external solution is more dilute than the nucleoplasm. | Column A<br>a.<br>b. | Column B<br>i)<br>ii) | Analysis |

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|---|---|---|---|---|---|
| Q.6 | Column A<br>a. Osmosis<br>b. Diffusion | Column B<br>i) Through semipermeable membrane<br>ii) Occurs only in solids<br>iii)Occurs in solid, liquids and gas<br>iv) Transportation through cork | Column A<br>a.<br>b. | Column B<br>i)<br>iii) | Understanding |
| Q.7 | Column A<br>a.Flaccid cell<br>b. Plasmolysed cell | Column B<br>i) When water flows out of the cell<br>ii) When water flows into the cell<br>iii) Inward movement is in equilibrium with outward movement of water.<br>iv) When ions flows out of the cell. | Column A<br>a.<br>b. | Column B<br>iii)<br>i) | Analysis |
| Q.8 | Column A<br>a. Imbibition<br>b. Guttation | Column B<br>i) Loss of water through stomata<br>ii) Loss of water droplets through leaf tips.<br>iii) Absorption of water by solid colloids<br>iv) Absorption of water through root hairs. | Column A<br>a.<br>b. | Column B<br>iii)<br>ii) | Knowledge |
| Q.9 | Column A<br>a. Diffusion<br>b.Hydrophilic substance | Column B<br>i) The only means for water transport in plant body.<br>ii)Find it difficult to pass through the membrane<br>iii) Easily pass through the cell membrane.<br>iv)The only means for gaseous movement within the plant body. | Column A<br>a.<br>b. | Column B<br>iv)<br>ii) | Understanding |
| Q.10 | Column A<br>a. Plant factors effecting rate of transpiration<br>b. External factors effecting rate of transpiration | Column B<br>i) wind speed and water status of the plant<br>ii) Temperature and humidity<br>iii)Number and distribution of stomata<br>iv)Per cent of open stomata, and humidity | Column A<br>a.<br>b. | Column B<br>iii)<br>ii) | Knowledge |