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PARISHRAMA NEET ACADEMY

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BIOLOGY

TOPIC: TRANSPORT IN PLANTS

51. (1)
Root pressure is positive hydrostatic pressure. It develops in tracheary element at night and in early morning. Root pressure iscaused by active distribution of mineral nutrient ions into the root xylem. Without transpirationto carry the ions up the stem, they accumulatein the root xylem and lower the water potential.Water then diffuses from the soil into the rootxylem due to osmosis.

52. (4)
When a plant cell is placed in hypotonic solution water will flow into the cell as water moves from high water potential to low water potential.

53. (2)
In actively growing plants, water is continuously evaporating from the surface ofleaf cells through stomatal opening exposed to air. This is called transpiration. Through the same stomatal opening carbon dioxide diffuses into the plant during photosynthesis simultaneously as both are the process of simple diffusion occurs in order to diffusion pressure gradient or diffusion coefficient.

54. (3)
Osmosis is the movement of solventparticles from a region of low soluteconcentration to a region of high soluteconcentration through a selectivelypermeablemembrane. Active absorption involves use of ATP.

55. (2)
Movement of ions against concentrationgradient involves the expenditure of energy.Diffusion involves the movement of soluteparticles from region of higher concentrationto a region of lower concentration. Pinocytosisis cell drinking. Brownian movement is therandom to and for movement of atoms andmolecules.

56. (4)
By convention, the water potential ofpure water at standard temperature, which isnot under any pressure, is taken to be zero. ($\psi_w = 0$)

57. (4)
A fresh water protozoan when placed inmarine water medium, loss of water takesplace i.e., exosmosis. Hence the contractilevacuole will decrease in size.

58. (3)

The hydrostatic pressure developed inside the cell wall due to endosmosis is called turgor pressure. Due to turgor pressure, the rigid cell wall offers resistance. This resistance which works in a direction opposite to turgor pressure is the wall pressure.

59. (1)

60. (4)

The direction of movement of sugar in phloem is bi-directional.

The pressure flow Flow Hypothesis, also known as the Mass Flow Hypothesis, is the best supported theory to explain the movement of sap through the phloem. It was proposed by Ernst Munch, a German plant physiologist in 1930.

A high concentration of organic substances, particularly sugar, inside cells of the phloem at a source, such as a leaf, crates a diffusion gradient (osmotic gradient) that draws water into the cells from the adjacent xylem.

This creates turgor pressure, also known as hydrostatic pressure, in the phloem, Movement of phloem sap occurs by bulk flow (mass flow) from sugar sources to sugar sinks. The movement in phloem is bidirectional, whereas in xylem cells, it is unidirectional (upward). Because of this multi-directional flow, coupled with the fact that sap cannot move with ease between adjacent sieve-tubes to be flowing in opposite directions.