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OSMOSIS

- Definition and Mechanism

Osmosis is a process where solvent molecules move through a semi-permeable membrane from an area of lower solute concentration to an area of higher solute concentration until equilibrium is reached. This movement is driven by the concentration gradient and does not require energy input. Osmosis plays a crucial role in maintaining balance in living organisms by regulating the fluid levels within cells and tissues.

- Osmotic Pressure

Osmotic pressure is the pressure required to prevent the flow of solvent particles across a semipermeable membrane due to osmosis. It is directly proportional to the concentration of solute particles in a solution. Osmotic pressure plays a crucial role in various biological processes, such as cell absorption and maintaining fluid balance in living organisms.

- Importance in Biological Systems

Osmosis is essential in biological systems as it helps regulate the movement of water and nutrients within cells. This process is crucial for maintaining proper cell hydration and overall cell function. Osmosis also plays a vital role in maintaining the balance of electrolytes in the body, ensuring proper organ and tissue function.

- Cell Membrane Permeability

Cell membrane permeability is crucial for osmosis as it controls the passage of substances in and out of the cell. Osmosis, the movement of water molecules across a selectively permeable membrane, depends on the permeability of the cell membrane. The selective nature of the cell membrane allows water to freely pass through while regulating the passage of solutes to maintain cellular balance.