DEPARTMENT OF BOTANY
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SUBSIDIARY PART - II

GROUP C - PLANT PHYSIOLOGY

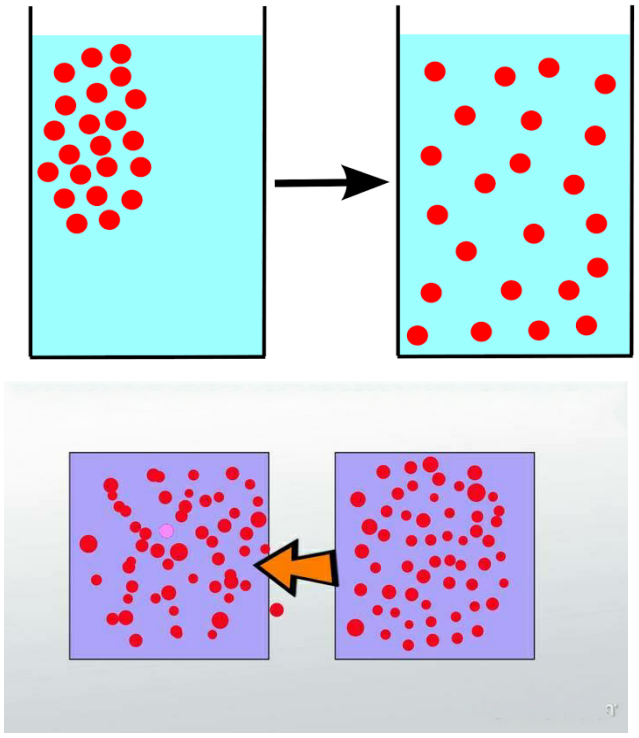
DIFFUSION - I

Diffusion is the movement of a substance resulting from the independent motion of its individual molecules, colloidal particles or ions of solution or gas. It is always along the gradient i.e. from an area of higher concentration to an area of lower concentration.

If a crystal of potassium permanganate or copper sulphate is taken in a beaker and water is gently poured in the beaker then the pink violet colour of potassium permanganate or the blue colour of copper sulphate gradually extends into the beaker and after sometime the crystal disappears gradually and the solution in the beaker becomes uniformly coloured. Similarly, if a cube of sugar is carefully dropped in a cup of tea than even without exceeding one can find that each sip of tea is better than the previous one due to diffusion of sugar molecule or if a small phial of scent is opened and kept in a corner of the room then after sometime the fragrance of the scent fills

up the whole room due to diffusion.

Diffusion is due to inherent energy of the molecules which keep them in constant motion. This purely physical phenomenon of the fusion is of utmost importance to the living cells of the plant since they have a high percentage of water. Water is absorbed by the root hair of the plant and passes through the cells of root stem and leaves after taking part in metabolic processes like photosynthesis and respiration. The major portion of water is lost as water vapour during transpiration. Minerals or organic solutes dissolved in water may move into the cells by diffusion. Diffusion is involved in almost all the physiological process at least in part.



Across the parenchymatous tissue water passes by osmosis (a special type of unilateral diffusion across the

differentially permeable membrane) and solutes pass by diffusion. The gases passing in and out of the tissues of the submerged parts of aquatic plants or moving in and out of young, actively respiring root systems of land plants are in solution, and their passage is governed by the laws of diffusion of solutes.