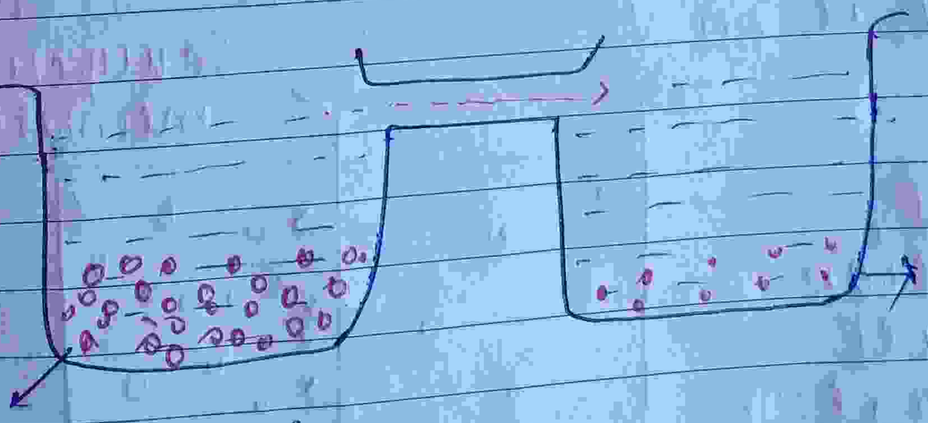
* The extensive hydrogen banding in water gives rise to the property known as cohesion. Cohesion gives water a high tensile strength which is the ability to resist stretching (tension) without breaking. Cohesion among water molecules also accounts for surface tension.

→ **Diffusion** :- Diffusion is the random movement of molecules along the concentration gradient (from an area of higher concentration to an area of lower concentration) by their own kinetic energy. It is a spontaneous and passive process. The rate of diffusion depends on several factors such as concentration difference, size of molecules and temperature.



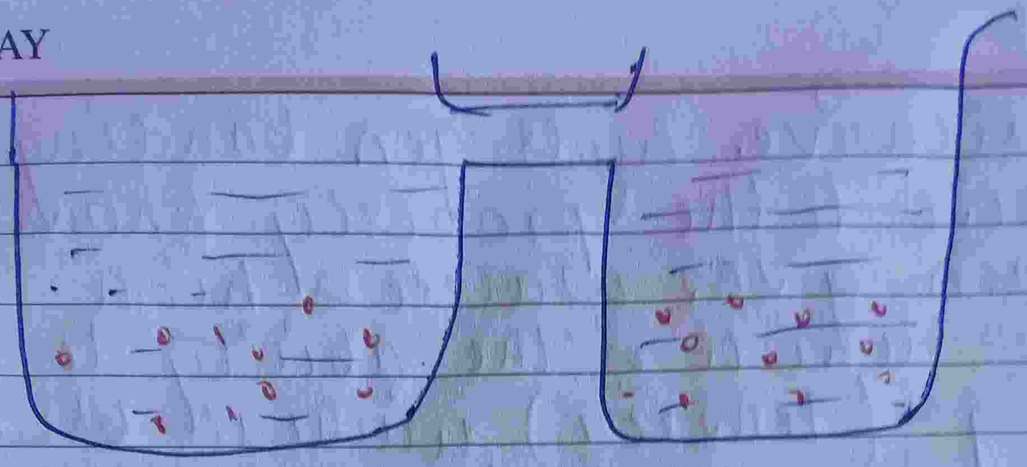
Plant Soil Water Relationship

* Water is essential for life. It is essential for all physiological activities of the plant. Water is a polar molecule. Although water is electrically neutral, it has a partial positive charge on each hydrogen and a partial negative charge on oxygen.

* Water acts as an excellent solvent as it dissolves more substances than any other liquid.

* Water has a high specific heat (the amount of ~~heat~~ energy required to raise the temperature of a unit mass of a substance by 1°C is called its specific heat). They can absorb large quantities of energy without much temperature increase. That's why plants can resist large fluctuation in temperature.

* Water has a high heat of vaporization (the energy necessary to go from a liquid to a gas). 586 cal are required to convert 1g of water at 20°C to 1g of water vapour at 20°C. Thus, evaporation from leaves cools the plants.



normal
higher → lower
concentration concentration

Fig → Diffusion

→ **Osmosis** :- It is a specialized case of diffusion that involves the passive transport of water. In osmosis water moves through a semipermeable membrane from a region of its higher concentration to a region of its lower concentration

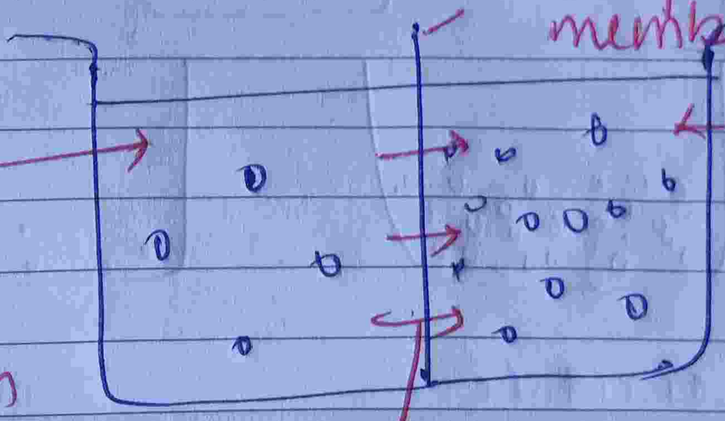


Fig: Osmosis.