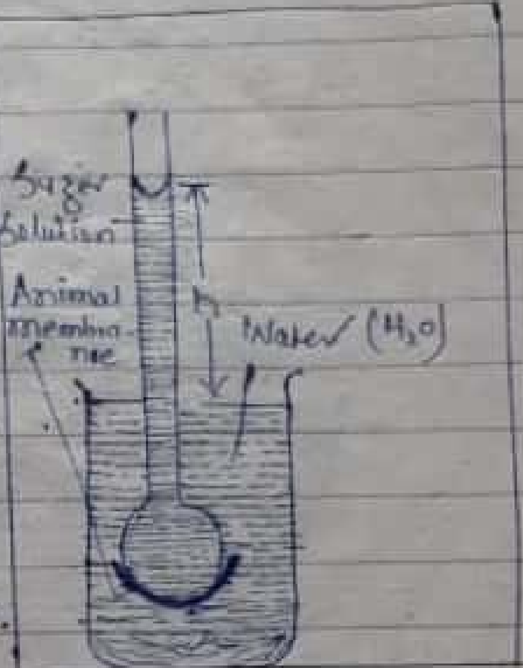
of the movement of Particles of a Solute from a more Concentrated to a less Concentrated Solutions so as to bring about ultimately a uniform Concentration troughout the bulk, is Known diffusion.

Let us now Consider a Solution of Sugar Contained in an inverted thistle funnel, the lower end of Which Closed by a Parchament Paper or animal bladder. The Parchament Paper or animal bladder acts as a Semipermeable membrance, that is, a membrane which allows free Passage to the Solvent molecules but not to the Solute molecules. Let the funnel be lowered into a beaker Containing Water, as shown in figure. Water will soon Pass into the funnel through the membrane. A Considerable rise in level of the liquid will be noticed. This Phenomenon of the Passes of Pure Solvent into a Solution through a Semipermeable membrance is Known as osmosis.



(Osmosis through an animal membrane)

The flow of the Solvent through the Semipermeable membrane will Continue till an

Vapour Pressure. Eq(3) may thus be stated as

("The relative lowering of vapour Pressure of a Solution is equal to the mole fraction of the Solute Present in the Solution.")

(This is one of the statements of the Raoult's law.

(V.V.I)

Vapour Pressure lowering - a Collegative Property :-

Since mole fraction of the solute x_2, is given by $\frac{n}{N+n}$, Eq. (III) be expressed as

$$\frac{P_1^0 - P_1}{P_1^0} = \frac{n}{N+n} \quad \text{—— (IV)}$$)

It is evident from Eq. (IV) that the lowering of vapour Pressure of a Solution depends upon the number of moles (and hence on the number of molecules) of the solute and not upon the nature of the solute dissolved in a given amount of the solvent. Hence, lowering of vapour Pressure is a Colligative Property.

Determination of Molar Masses from vapour Pressure Lowering :-

It is Possible to Calculate molar

Suppose, a given mass, w (small) gram, of a Solute of molar mass m, dissolved in W (capital) gram of a Solvent of molar mass Mm, lowers the vapour Pressure from P_1° to P_1. Then, applying Eq. (IV),

$$\frac{P_1^\circ - P_1}{P_1^\circ} = \frac{n}{N+n} \quad \text{——— (V)}$$

Since in dilute Solutions, n is very Small as Compared to N, Eq. (V) may be Put in the approximate from as

$$\frac{P_1^\circ - P_1}{P_1^\circ} = \frac{n}{N} = \frac{w/m}{W/M_m} = \frac{w M_m}{W m} \quad \text{——— (VI)}$$

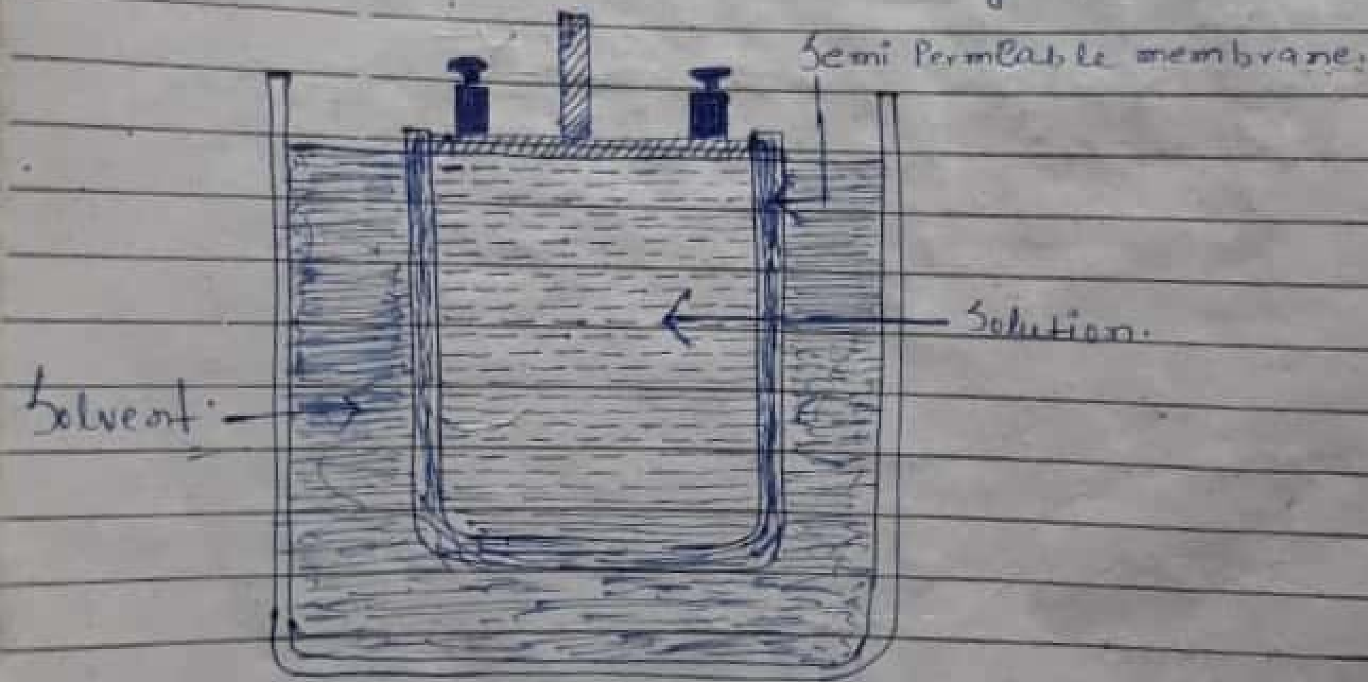
(use notes of Pant Sir) (for it)

(II) Osmosis and Osmotic Pressure :→

equilibrium is reached when the hydrostatic Pressure of the liquid Column exactly balances the tendency of water to Pass inward through the Semipermeable membrane. The hydrostatic Pressure set up as a result of Osmosis, is a measure of the Osmotic Pressure of the Solution. For instance, if the liquid rises to a height h then,

$$\text{Osmotic Pressure, } \Pi = h \times \rho \quad \text{— (xiii)}$$

Where ρ is the density of the Solution.



Measurement of Osmotic Pressure.

In order to get a Clear Concept of Osmotic Pressure, Consider an other simple Experiment. Let the Sugar Solution be Placed