PHYSICAL CHEMISTRY

Theory of dil Sol^{n}

Solution

Solute + solvent ⟶ solution

Solute

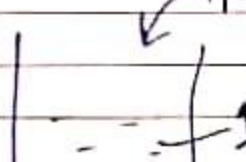
volatile solute : Kerosine oil + Nail polish remover

non-volatile " : salt + water.

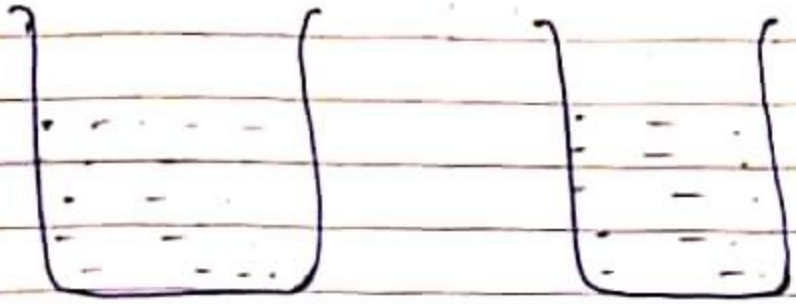
Nature of sol^{n}

1) Dilute 2) Concentrated.

Dil sol^{n} → it is defined as when an infinite decimally small amount of solute is dissolved in a large amount of solvent then the sol^{n} is said to be dilute in nature.



Colligative property



bluish sol^{n}
$CuSO_4$ /
$NiCl_2$

green sol^{n}
$FeSO_4$ /

The properties of the sol^{n} which depends upon the no. of atoms / molecules / ions present in the solution but doesnot depend upon the nature of sol^{n} ..

The colligative property is dependent upon the following factors:

1) vapour pressure
2) osmotic pressure
3) elevation in boiling point
4) depression in freezing point.
5) abnormal molecular weight

* prior to verge of boiling.

Vapour Pressure ~~of Temp~~

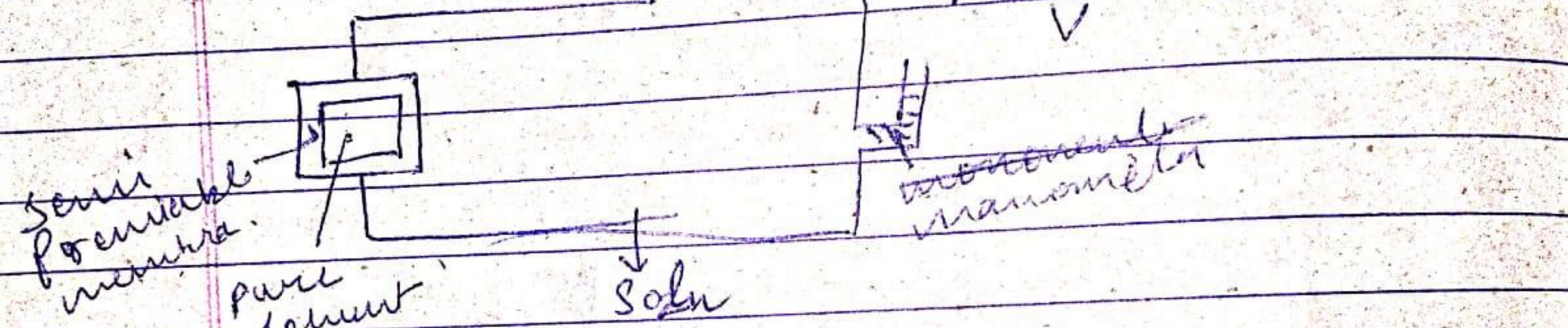
The pressure exerted by vapours present on the surface of liq

VP $\propto$ Temp.

but if temp is constant VP also remains to be as constant..

Osmosis & Osmotic Pre.-

Osmosis - defined as the spontaneous flow of the solvent molecule from region of higher conc. through region of lower conc through a semi permiable membrane is called osmosis



O·P → defined as P applied to the soln to stop the passage of pure solvent into the soln. through a semi permeable membrane.
Also known as hydrostatic P. & is represented to be as ~~P = hρg~~ π = hdg. (P)

BIRKLEY & HARTLEYS METHOD.

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Osmosis and Osmotic pressure

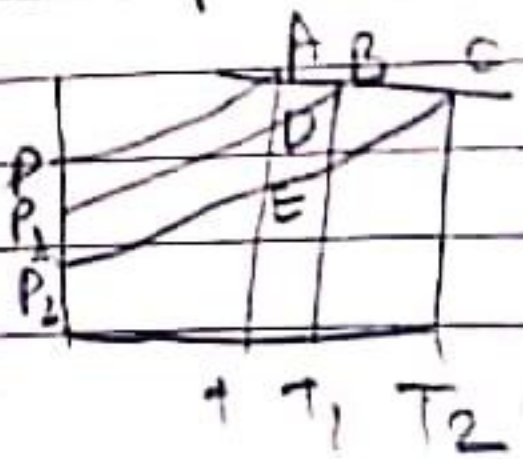
- The spontaneous flow of the solvent molecule from the region of higher concentration through a semi permiable membrane is called osmosis

Osmotic pressure is the pressure applied to the solution to stop the passage of pure solvent into the solution through a semipermeable membrane is called osmotic pressure.

Osmotic pressure is also know as hydrostatic pressure is defined to be as $\pi = hfg$

Boiling point is defined as the temp. at which the vapour pressure of liquid is equal to the atmospher pressure

Since the solution is dilute all the curve represent the straight line.



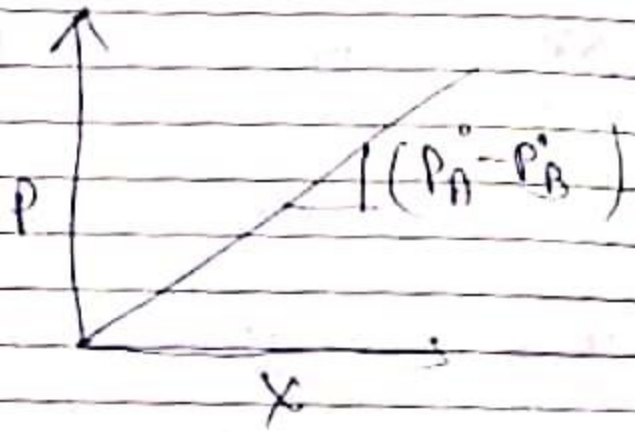
Teacher's Signature .....

$$\frac{n_A}{n_A+n_B} + \frac{n_B}{n_A+n_B} = \frac{n_A+n_B}{n_A+n_B} = 1$$

$$P = P^\circ_A x_A + P^\circ_B (1-x_A)$$

$$= P^\circ_A x_A + P^\circ_B - P^\circ_B x_A$$

$$= (P^\circ_A - P^\circ_B) x_A + P^\circ_B$$



Ideal solution graph.