or, $\frac{p^\circ - p}{p^\circ} = \frac{n_1}{n_1+n_2} = x_2$

This is the Raoult's law.

Date 07/02/06 Proff P.N. Jha

Freezing Point of liquid (Depression of freezing Point) :-

freezing Poin :- The F.P of a liquid is the temp. at which liquids and Solids forms of a Substance have the same V.P.

Thus, at the F.P the Solid and liquid forms co-exis is Equilibrium.

$$\text{Liquid} \rightleftharpoons \text{Solid.}$$

Since upon disolution of a Solid in a Solvent there decrease in a V.P, it follows therefore, ~~is a decrease in a~~ at When Solid is dissolve in a Solvent there will be a rease in F.P. This is called the depression of F.P.

$$p^\circ - p = \Delta P = L. \text{ of V.P.}$$

Similarly,

$p^\circ - p = \Delta T_f$ is called depression in F.P.

i.e., $\Delta P \propto \Delta T_f$ — (I)

ΔP is directly Proportional to (ΔT_f) the freezin of ΔT_f.

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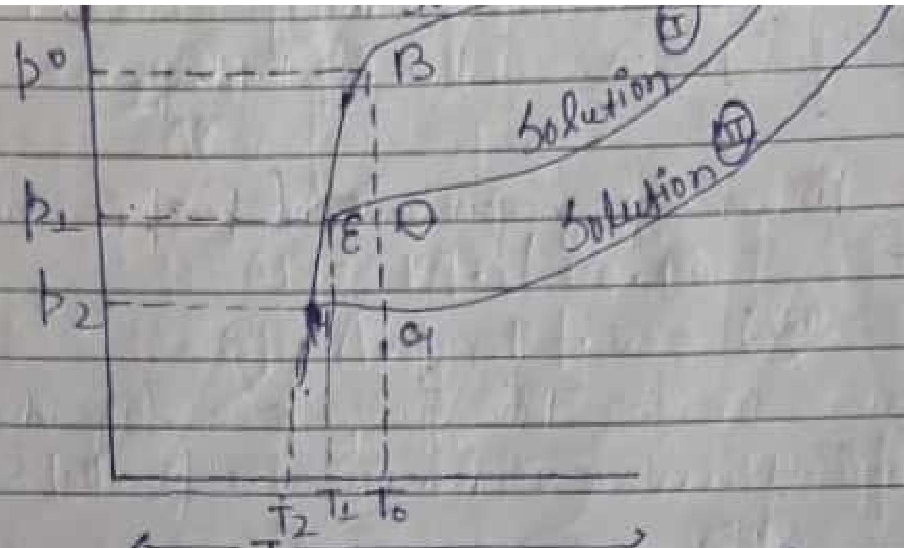

p° and T_0 are V.P and F.P for solvent.
p_1 " T_1 " " " " " Solution (I).
p_2 " T_2 " " " " " " " (II).

Since the solutions are fairly dilute, the curve ED and HG are considered as parallel straight lines.

Hence the triangles BHG and BED are similar.

So, $\frac{BG}{BD} = \frac{GH}{DE}$

or $\frac{p^\circ - p_2}{p^\circ - p_1} = \frac{T_0 - T_2}{T_0 - T_1}$

or $\frac{\Delta P_2}{\Delta P_1} = \frac{\Delta T_2}{\Delta T_1}$

or $\Delta P \propto \Delta T$ ——— (I)