

*Two solutions having same osmotic pressure at a given temperature are called isotonic solutions.

- V. Van's hoff factor: It's defined as the ratio of observed colligative property to calculated colligative property.

$$\text{Van's hoff factor } i = \frac{\text{observed colligative property}}{\text{calculated colligative property}} = \frac{\text{calculated molecular wt.}}{\text{observed molecular wt.}}$$

$$\text{Also, } i = \frac{\text{Total no. of moles after association/dissociation}}{\text{no. of moles before association/dissociation}}$$

- Colligative properties: These are properties which depend on the number of solute particles irrespective of their nature relative to the total number of particles present in the solution.

A colligative properties for ideal solutions;

i. $\frac{p^0 - p}{p^0} = x$

ii. Elevation in boiling point = $T_b - T_b^0 = \Delta T_b$

T_b = Boiling point of pure solvent.

T_b^0 = Boiling point of pure solution.

$$\Delta T_b = K_b \cdot m$$

iii. Depression in freezing point = $T_f^0 - T_f = \Delta T_f$