

1.  $\pi = \left( \frac{W_B}{M_B} \right) \times \frac{RT}{V(\text{ml})} \times 1000$
2.  $\Delta T_b = k_b \times \left( \frac{W_B}{M_B} \right) \times \frac{1000}{W_A(\text{gm})}$
3.  $\Delta T_f = k_f \times \left( \frac{W_B}{M_B} \right) \times \frac{1000}{W_A(\text{gm})}$
4.  $\frac{P_A^\circ - P_{\text{sol}}}{P_A^\circ} = \left( \frac{W_B \times M_A}{M_B \times W_A} \right)$

Von't Hoff (i)

$i = \frac{\text{Normal or Calculated molar mass}}{\text{Observed molar mass}}$

$$i = \frac{\text{Observed C.P.}}{\text{Calculated C.P.}}$$

$$i = \frac{\text{Total no. of moles produced after dissociation / Association}}{\text{Total no. of moles initially taken}}$$

$i > 1$  [dissociation] normal molar mass > observed molar mass

$i < 1$  [Association] normal molar mass < observed molar mass

$i = 1$  [no dissociation no association]