

① g CaCl_2 Solute, $100\text{g H}_2\text{O}$ Solvent, 1.8m

$$M = \frac{\text{mdes Solute CaCl}_2}{\text{Kg Solvent H}_2\text{O}} = \frac{\frac{\text{g}}{\text{mw}}}{\text{Kg}}$$

$$\frac{1.8}{1} = \frac{\frac{\text{g}}{110}}{0.1}$$

$$0.18 = \frac{\text{g}}{110}$$

(19.8g)

$\text{CaCl}_2 \rightarrow (\text{Ca}^{+2} + 2\text{Cl}^-)$
3 particles

$$\frac{19.8\text{g}}{3 \text{ particles}} = 6.6\text{g/particle}$$

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② Benzene + Toluene

$X_{\text{Bz}} = 0.65$	}	$X_{\text{tol}} = 0.35$
25°C		25°C
VP: 94.6 torr	}	VP = 29.1 torr
Pure		Pure

$VP = X_{\text{Solute}} P_{\text{Pure solvent}}$

Bz	}	Tol
VP = 0.65(94.6 torr)		VP = 0.35(29.1)
= 61.5 torr		= 10.2 torr
(71.7 torr)		

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(19) $\frac{292\text{g Mg(NO}_3)_2}{l}$ Solute, $D = \frac{1.108\text{g}}{\text{ml}}$ Solution

Find Molality

$292\text{g Mg(NO}_3)_2$	$(\text{mole Mg(NO}_3)_2)$
$\frac{1108\text{g}}{\text{ml}} = 1108\text{g}$	$\frac{\text{mole Mg(NO}_3)_2}{\text{Kg Solvent}}$

$\frac{292\text{g Mg(NO}_3)_2}{1108\text{g Mg(NO}_3)_2} = 1.97 \text{ mole Mg(NO}_3)_2$

0.816Kg

Solution = Solute + Solvent

$\frac{1108\text{g}}{l} = \frac{292\text{g}}{l} + \frac{816\text{g}}{l}$

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$\Delta T = (K \times m) i$

$K \downarrow$ $i \downarrow$

$\text{KCl} \quad (2) \quad \leftarrow \# \text{ ions}$

$\text{CaSO}_4 \quad (2)$

$\quad \quad (1)$

$\text{Na}_2\text{SO}_4 \quad (3)$

$\quad \quad (1)$

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