

NAKASTEAKU. FAKI KETAU.

1. FAKI KETAU

$$100g \text{ dis } \left\{ \begin{array}{l} 30g \text{ CH}_3\text{OH} \cdot \frac{1 \text{ mol}}{32'04g} = 0'936 \text{ mol} \\ 70g \text{ H}_2\text{O} \cdot \frac{1 \text{ mol}}{18'02g} = 3'884 \text{ mol} \end{array} \right.$$

$$M = \frac{8'911 \text{ mol}}{1L} = \frac{0'936}{V} \rightarrow V = 0'1L$$

$$\rho = \frac{m}{V} = \frac{100}{0'1} = 951'7 \frac{g}{L} = 0'9517 \frac{g}{cm^3}$$

$$X = \frac{\text{mol solute}}{\text{mol disol.}} = \frac{0'936 \text{ mol}}{3'884 + 0'936} = 0'194$$

$$1000g \text{ H}_2\text{O} \cdot \frac{30g \text{ CH}_3\text{OH}}{70g \text{ H}_2\text{O}} = 428'57g \cdot \frac{1 \text{ mol}}{32'04} = 13'37 \frac{\text{mol}}{kg \text{ H}_2\text{O}}$$

2. FAKI KETAU

$$0'1 \text{ molal} \left\{ \begin{array}{l} 0'1 \text{ mol NaCl} \cdot \frac{58'5g}{1 \text{ mol}} = 5'85g \text{ NaCl} \\ 1000g \text{ H}_2\text{O} \cdot \frac{1 \text{ mol}}{18'02g} = 55'49 \text{ mol} \end{array} \right. \left. \begin{array}{l} \\ \\ \end{array} \right\} 1005'85g \text{ disoluzio}$$

$$\bar{C}_p(\text{H}_2\text{O}) = 75'28 \frac{J}{molK}$$

$$C_p = n \cdot \bar{C}_p(\text{H}_2\text{O}) + n \cdot \bar{C}_p(\text{NaCl})$$

$$\bar{C}_p(\text{NaCl}) = -71'13 \frac{J}{molK}$$

$$C_p = 55'49 \cdot 75'28 - 0'099 \cdot 71'13 = 4146 \frac{J}{K} = 4'146 \frac{kJ}{K}$$

$$1000g \text{ dis.} \cdot \frac{5'85g \text{ NaCl}}{1005'85g \text{ dis}} = 5'82g \text{ NaCl} \cdot \frac{1 \text{ mol}}{58'44g} = 0'0995 \text{ mol}$$

$$1000g \text{ dis.} \cdot \frac{1000g \text{ H}_2\text{O}}{1005'85g \text{ dis}} = 994'18g \text{ H}_2\text{O} \cdot \frac{1 \text{ mol}}{18'02g} = 55'17 \text{ mol}$$

3. FAKI KETAU

$$X_{\text{Alloa}} = 0'4693 = \frac{n_A}{n_A + n_B}$$

$$0'5307 = \frac{n_B}{n_B + n_A}$$

$$\rho = \frac{m_{\text{disol}}}{V_{\text{disol}}} = \frac{56'034 + 30'82}{77'01} = 1'13 \frac{g}{cm^3}$$

$$0'4693 \cdot \frac{1 \text{ mol}}{119'14g} = 56'034g$$

$$V_T = 74'166 \cdot 0'5307 + 80'235 \cdot 0'4693 = 77'01 \text{ cm}^3$$

$$0'5307g \cdot \frac{1 \text{ mol}}{58'08g} = 30'82g$$

$$X_A = 0.47$$

$$X_B = 0.53$$

$$1 \text{ mol disolvente} \left\{ \begin{array}{l} 0.47 \text{ mol et.} \cdot 46 \text{ g} = 21.62 \text{ g et} \\ 0.53 \text{ mol H}_2\text{O} \cdot 18 \text{ g} = 9.54 \text{ g H}_2\text{O} \end{array} \right.$$

$$m \text{ disolvente} = m_{\text{et}} + m_{\text{H}_2\text{O}}$$

$$V_T = \bar{V}_A \cdot n_A + \bar{V}_B \cdot n_B = 57.143 \cdot 0.47 + 16.857 \cdot 0.53 = 35.79 \text{ cm}^3$$

$$\rho = \frac{21.62 + 9.54}{35.79} = 0.87 \frac{\text{g}}{\text{cm}^3}$$

5. PROBLEMA

$$100 \text{ g dis} \left\{ \begin{array}{l} 45.6 \text{ g A} \\ 54.4 \text{ g B} \end{array} \right\} \text{ sol}$$

$$V_T = 5 \text{ L} = \bar{V}_A n_A + \bar{V}_B n_B$$

$$X_A = 0.456 = \frac{n_A}{n_A + n_B} \rightarrow 0.456 n_A + 0.456 n_B = n_A \rightarrow n_B = \frac{n_A - 0.456 n_A}{0.456} \rightarrow 1.19 n_A = n_B$$

$$5000 = 84.64 n_A + 102.61 n_B \rightarrow 5000 = 84.64 n_A + 102.61 \cdot 1.19 n_A \rightarrow n_A = 24.18 \text{ mol}$$

$$24.18 \text{ mol} \cdot \frac{155.7 \text{ g}}{1 \text{ mol}} = 3769.6 \text{ g} \cdot \frac{0.5336 \text{ mL}}{1 \text{ g}} = 2020.54 \text{ mL}$$
$$n_B = 28.78 \text{ mol}$$

$$28.78 \text{ mol} \cdot \frac{87 \text{ g}}{1 \text{ mol}} = 1532.86 \text{ g} \cdot \frac{1.46 \text{ mL}}{1 \text{ g}} = 2937.86 \text{ mL}$$

6. PROBLEMA

$$a) F = C - p + 2 - r = 2 - 1 + 2 = 3$$

$$b) F = 3 - 1 + 2 = 4$$

$$c) F = 3 - 2 + 2 = 3$$

$$d) F = 3 - 3 + 2 = 2$$

$$e) F = 1 - 2 + 2 = 1$$

$$f) F = 2 - 2 + 2 = 2$$

$$g) F = 2 - 3 + 2 = 1$$