

P 113

$$\#1) P_T = P_1 + P_2$$

$$P_T = 98 + 202.65$$

$$P_T = 300.65 \text{ kPa}$$

$$\#2) P_T = P_{Ne} + P_{Ar}$$

$$102.7 = 52.5 + P_{Ar}$$

$$P_{Ar} = 50.2 \text{ kPa}$$

$$\#3) P_{Ne} = \frac{12}{100} \cdot 116$$

$$P_{Ne} = 13.92 \text{ kPa}$$

$$P_{He} = \frac{23}{100} \cdot 116$$

$$P_{He} = 26.68 \text{ kPa}$$

$$P_{Rn} = \frac{65}{100} \cdot 116$$

$$P_{Rn} = 75.4 \text{ kPa}$$

$$\#4) P_{Ar} = \frac{n_{Ar} \cdot P_T}{n_T}$$

$$325 = \frac{40 \cdot P_T}{100}$$

$$\frac{325(100)}{40} = P_T$$

$$812.5 \text{ mmHg} = P_T$$

↓  
convert to kPa

$$108.3 \text{ kPa}$$

$$5) P_T = 2573 \text{ kPa}$$

$$n_T = 0.55 + 1.25 + 0.27 + 0.85 \\ = 2.92 \text{ moles}$$

$$P_{\text{CH}_4} = \frac{0.85}{2.92} \cdot 2573 = 748.99 \text{ kPa}$$

$$P_{\text{O}_2} = \frac{0.55}{2.92} \cdot 2573 = 484.64 \text{ kPa}$$

$$P_{\text{N}_2} = \frac{1.25}{2.92} \cdot 2573 = 1101.45 \text{ kPa}$$

$$P_{\text{C}_3\text{H}_8} = \frac{0.27}{2.92} \cdot 2573 = 237.91 \text{ kPa}$$

6) 30% Nitrogen  
70% Carbon dioxide  
100% total

$$P_{\text{CO}_2} = \frac{70}{100} \cdot 1$$

$$P_{\text{CO}_2} = 0.7 \text{ atm}$$

$$7) P_{\text{CO}_2} = \frac{3.5}{100} \cdot 102.6 = \underline{3.591 \text{ kPa}}$$

$$P_{\text{O}_2} = \frac{4}{100} \cdot 102.6 = \underline{4.104 \text{ kPa}}$$

$$P_{\text{H}_2\text{O}} = \frac{92.5}{100} \cdot 102.6 = \underline{94.905 \text{ kPa}}$$

$$8) P_T = P_{\text{O}_2} + P_{\text{H}_2} + P_{\text{Cl}_2}$$

$$1000 = 125 + 235 + P_{\text{Cl}_2}$$

$$P_{\text{Cl}_2} = 640 \text{ mm Hg.}$$

$$\text{Percentage of Cl}_2 = \frac{640}{1000} \times 100\% = \underline{64\%}$$