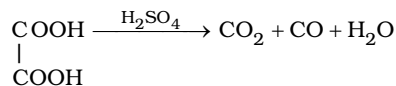
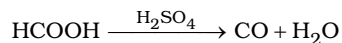


Daily Tutorial Sheet-13

Level-3

- 147.(C)** Let the moles of HCOOH be x and the moles $\begin{array}{c} \text{COOH} \\ | \\ \text{COOH} \end{array}$ be y .



$$\therefore \text{moles of } \text{CO}_2 = y; \quad \text{moles of } \text{CO} = x + y$$

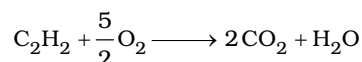
$$\text{Total gaseous moles} = x + 2y$$

$$\frac{y}{x + 2y} = \frac{1}{6} \Rightarrow 6y = x + 2y \Rightarrow x = 4y \Rightarrow \frac{x}{y} = \frac{4}{1}$$

- 148.(B)** Let there be 'a' mole of CH_4 and b mol of C_2H_2



So 'a' mol of CH_4 will give 'a' mol of CO_2



So, 'b' mol of C_2H_2 will give $2b$ mol of CO_2 under same temperature and volume,

$$\frac{P_1}{P_2} = \frac{n_1}{n_2}$$

$$P_1 = 63 \text{ mm} \quad ; \quad P_2 = 69 \text{ mm}$$

$$n_1 = a + b \quad \quad \quad n_2 = a + 2b$$

$$\frac{63}{69} = \frac{a + b}{a + 2b} \Rightarrow 19b = 2a$$

$$\text{Fraction of methane} = \frac{a}{a + b} = \frac{a}{a + \frac{2a}{19}} = 0.90$$

- 149.(B)** $P_{\text{H}_2} = x_{\text{H}_2} \times P_T$

$$x_{\text{H}_2} = \frac{n_{\text{H}_2}}{n_{\text{H}_2} + n_{\text{He}} + n_{\text{CH}_4}} = \frac{\frac{1}{2}}{\frac{1}{2} + \frac{1}{4} + \frac{1}{16}} = 0.615$$

$$P_{\text{H}_2} = 0.615 \times 2.6 = 1.6 \text{ atm}$$

- 150.(B)** $\frac{\text{Rate of diffusion of } \text{H}_2}{\text{Rate of diffusion of He}} = \frac{n_{\text{H}_2}}{n_{\text{He}}} \sqrt{\frac{M_0(\text{He})}{M_0(\text{H}_2)}} = \frac{1}{2} \sqrt{\frac{4}{2}}$
- $$\frac{\text{number of moles of } \text{H}_2 \text{ effused per second}}{\text{number of moles of He effused per second}} = 2\sqrt{2}$$

- 151.(C)** $V \times n$ at constant P and T

- 152.(AC)** K.E. remains constant at constant temperature and same number of molecules.