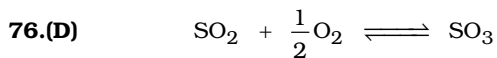


Daily Tutorial Sheet-6

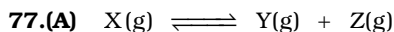
Level-2



$t = 0 \quad 5 \quad 5 \quad 0$

$t = t_{\text{eq}} \quad 2 \quad 5 - \frac{3}{2} \quad 3$

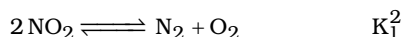
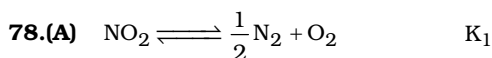
Total moles at equilibrium $= 2 + \frac{7}{2} + 3 = \frac{17}{2} \Rightarrow P_{\text{O}_2} = 0.4 \text{ atm}$



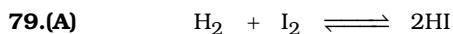
$a \quad 0 \quad 0$

$a/2 \quad a/2 \quad a/2$

$P_X = \frac{P}{3}$ and $K_P = \frac{\frac{P}{3} \cdot \frac{P}{3}}{\frac{P}{3}} = 1 \Rightarrow \frac{P}{3} = 1$ and $P = 3$. Hence $P_X = 1$

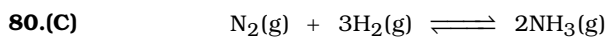


Adding (i) and (ii); $\text{N}_2 + \text{O}_2 \rightleftharpoons \text{N}_2\text{O}_4 \Rightarrow K = \frac{1}{K_1^2} \cdot \frac{1}{K_2}$



Initially $1 \quad 1 \quad 0$
 $0.2 \quad 0.2 \quad 1.6$

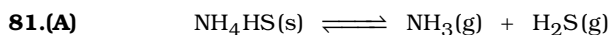
$K_c = \frac{(1.6)^2}{(0.2)^2}$



at $t = 0 \quad 2 \quad 4 \quad 0$

at $t = t_{\text{eq}} \quad 2 - x \quad 4 - 3x \quad 2x$

$2x = \frac{34}{17}$ (Given) $\Rightarrow x = 1$



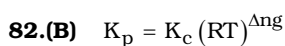
$t = 0 \quad 0.5 \quad 0$

$t = t_{\text{eq}} \quad 0.5 + P \quad P$

$0.5 + 2P = 0.84$

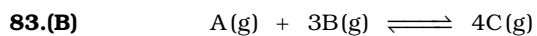
$2P = 0.34 \Rightarrow P = 0.17$

$K_P = P_{\text{NH}_3} \times P_{\text{H}_2\text{S}} = 0.67 \times 0.17 = 0.11$



$K_P = K_C$ since temperature is constant and $\Delta n_g = 0$

Then value of K_P or K_C will not change.

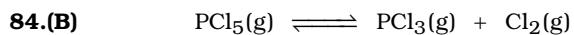


$$t = 0 \quad a \quad a \quad 0$$

$$t = t_{eq} \quad a - x \quad a - 3x \quad 4x$$

$$a - x = 4x \Rightarrow x = \frac{a}{5}$$

$$K_C = \frac{[C]^4}{[A][B]^3} = \frac{(4a/5)^4}{\left(\frac{4a}{5}\right) \times \left(\frac{2a}{5}\right)^3} = \frac{4^4}{4 \times 2^3} = 8$$



$$t = 0 \quad 2 \quad 0 \quad 0$$

$$t = t_{eq} \quad 1.2 \quad 0.8 \quad 0.8$$

$$K_C = \frac{0.8/2 \times 0.8/2}{1.2/2} = \frac{0.4 \times 0.4}{0.6} = 0.266$$

85.(A) $K_c = \frac{[Z]}{[X][Y]}$

Given $\frac{[Z]}{[X]} = 2$

$$10^4 = \frac{2}{[Y]} \Rightarrow [Y] = 2 \times 10^{-4} \Rightarrow [Z] = 2 \times 10^{-4}$$