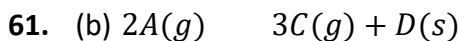


K_p & K_c Relationship and Characteristics of K

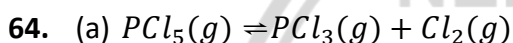


For this reaction, $\Delta n_g = 3 - 2 = 1$

$$\therefore K_p = K_c[RT]^1 \text{ or } \frac{K_p}{K_c} = RT \text{ or } K_c = \frac{K_p}{RT}$$

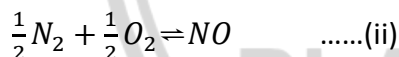
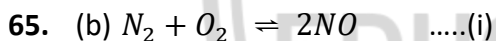
62. (a) According to Le-Chatelier principle exothermic reaction is forwarded by low temperature, in forward direction number of moles is less, hence pressure is high.

63. (d) In this reaction ΔH is negative so reaction move forward by decrease in temperature while value of $\Delta n = 2 - 3 = -1$ i.e., negative so the reaction move forward by increase in pressure.



For this reaction $\Delta n = 2 - 1 = 1$

Value of Δn is positive so the dissociation of PCl_5 take forward by decrease in pressure & by increase in pressure the dissociation of PCl_5 decrease.



For equation number (i)

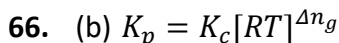
$$K_1 = \frac{[NO]^2}{[N_2][O_2]} \text{ (iii)}$$

For equation number (ii)

$$K_2 = \frac{[NO]}{[N_2]^{1/2}[O_2]^{1/2}} \text{ (iv)}$$

From equation (iii) & (iv) it is clear that

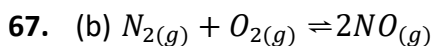
$$K_2 = (K_1)^{1/2} = \sqrt{K_1}; \text{ Hence, } K_2 = \sqrt{K_1}$$



$$\Delta n_g = 1 - 1.5 = -0.5$$

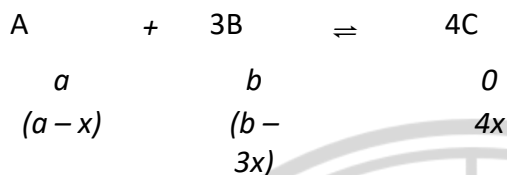
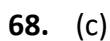
$$K_p = K_c[RT]^{-1/2} \therefore \frac{K_p}{K_c} = [RT]^{-1/2}$$





$$K_c = 0.1, K_p = K_c(RT)^{\Delta n}$$

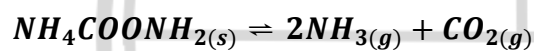
$$\Delta n = 0, K_p = K_c = 0.1$$



$$K_c = \frac{[C]^4}{[A][B]^3} = \frac{4x \cdot 4x \cdot 4x \cdot 4x}{(a-x)(b-3x)^3}$$

Given $a = b, a - x = 4x \Rightarrow a = 5x = b$

$$K_c = \frac{4x \cdot 4x \cdot 4x \cdot 4x}{(5x-x)(5x-3x)^3} = \frac{4x \cdot 4x \cdot 4x \cdot 4x}{4x \cdot 2x \cdot 2x \cdot 2x} = 8.$$



$$K_p = p_{NH_3}^2 \cdot p_{CO_2} = 3^2 \cdot 3 = 27$$

