

ASSIGNMENT - 2

For the equilibrium,



the value of the equilibrium constant, K_c is 3.75×10^{-6} at 1069 K. Calculate the K_p for the reaction at this temperature?

$$\text{Ans) } K_P = K_C \cdot (RT)^{\Delta ng}$$

$$\Rightarrow K_C = 3.75 \times 10^{-6}$$

$$\Rightarrow T = 1069\text{K}$$

$\Delta ng =$ moles of product- moles of reactant

$$\Delta ng = 3 - 2 = 1$$

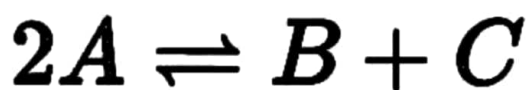
$$\Rightarrow K_P = 3.75 \times 10^{-6} \times (8.314 \times 1069)^1$$

$$\Rightarrow K_P = 3.33$$

The value of K_c for the reaction

$2A \rightleftharpoons B + C$ is 2×10^{-3} . At a given time, the composition of reaction mixture is $[A] = [B] = [C] = 3 \times 10^{-4}$ M. In which direction the reaction will proceed?

Ans) For this reaction



$$K_c = 2 \times 10^{-3} \quad [[A] = [B] = [C]]$$

$$Q_c = \frac{[B][C]}{[A]^2}$$

$$= \frac{[3 \times 10^{-4}][3 \times 10^{-4}]}{[3 \times 10^{-4}]^2}$$

$$Q_c = 1$$

$$\text{value of } K_c = 2 \times 10^{-3}$$

Since $Q_c > K_c$ the direction of reaction is backwards