Date Planned : __ / __ / __	Daily Tutorial Sheet-6	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration :_____

76. 5 moles of SO_2 and 5 moles of O_2 are allowed to react. At equilibrium, it was found that 60% of SO_2 is used up. If the partial pressure of the equilibrium mixture is one atmosphere, the partial pressure of O_2 is :

(A) 0.82 atm **(B)** 0.52 atm **(C)** 0.21 atm **(D)** 0.41 atm

77. At $600^{\circ}C$, K_p for the following reaction is 1 atm. $X(g) \rightleftharpoons Y(g) + Z(g)$

At equilibrium, 50% of X (g) is dissociated. The total pressure of the equilibrium system is p atm. What is the partial pressure (in atm) of $X(g)$ at equilibrium ?

(A) 1 **(B)** 4 **(C)** 2 **(D)** 0.5

78. Consider the reaction, $NO_2 \rightleftharpoons \frac{1}{2}N_2 + O_2, K_1$; $N_2O_4 \rightleftharpoons 2NO_2, K_2$

Give the equilibrium constant for the formation of N_2O_4 from N_2 and O_2.

(A) $\frac{1}{K_1^2} \times \frac{1}{K_2}$ **(B)** $\frac{1}{K_1 K_2}$ **(C)** $\sqrt{\frac{1}{K_1 K_2}}$ **(D)** $\frac{K_2}{K_1}$

79. Equivalent amounts of H_2 and I_2 are heated in a closed vessel till equilibrium is obtained. If 80% of the hydrogen can be converted to HI, the K_c at this temperature is :

(A) 64 **(B)** 16 **(C)** 0.25 **(D)** 4

80. 56 g of nitrogen and 8 g of hydrogen gas are heated in a closed vessel. At equilibrium 34 g of ammonia are present. The equilibrium number of moles of nitrogen, hydrogen and ammonia are respectively :

(A) 1, 2, 2 **(B)** 2, 2, 1 **(C)** 1, 1, 2 **(D)** 2, 1, 2

81. An amount of solid NH_4HS is placed in a flask already containing ammonia gas at a certain temperature and 0.50 atm pressure. Ammonium hydrogen sulphide decomposes to yield NH_3 and H_2S gases in the flask when the decomposition reaction reaches equilibrium, the total pressure in the flask rises to 0.84atm. The equilibrium constant for NH_4HS decomposition at this temperature is :

(A) 0.11 **(B)** 0.17 **(C)** 0.18 **(D)** 0.30

82. For the reaction: $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$, the value of K_c at 800°C is 0.1. When the equilibrium concentration of both the reactants is 0.5 mole, what is the value of K_p at the same temperature ?

(A) 0.5 **(B)** 0.1 **(C)** 0.01 **(D)** 0.025

83. $A(g) + 3B(g) \rightleftharpoons 4C(g)$ Initially concentration of A is equal to that of B. The equilibrium concentrations of A and C are equal. K_c is :

(A) 0.08 **(B)** 8 **(C)** 80 **(D)** 1 / 8

84. Two moles of PCl_5 is heated in a closed vessel of 2 L capacity. When the equilibrium is attained 40 % of it has been found to be dissociated. What is the K_c in mol/dm^3 ?

(A) 0.532 **(B)** 0.266 **(C)** 0.133 **(D)** 0.174

85. At 550 K, the K_c for the following reaction is $10^4\ mol^{-1}L$. $X(g) + Y(g) \rightleftharpoons Z(g)$. At equilibrium, it was observed that $[X] = \frac{1}{2}[Y] = \frac{1}{2}[Z]$. What is the value of $[Z]$ $\left(\text{in mol } L^{-1}\right)$ at equilibrium ?

(A) 2×10^{-4} **(B)** 10^{-4} **(C)** 2×10^4 **(D)** 10^4