Date Planned : __ / __ / __	Daily Tutorial Sheet-7	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration :_____

86. For the reaction $H_2(g) + CO_2(g) \rightleftharpoons CO(g) + H_2O(g)$,

If the initial concentration of $[H_2] = [CO_2] = 1$ and x mol/L of hydrogen is consumed at equilibrium, the correct expression of K_p is :

(A) $\frac{x^2}{(1-x)^2}$ **(B)** $\frac{(1+x)^2}{(1-x)^2}$ **(C)** $\frac{x^2}{(2+x)^2}$ **(D)** $\frac{x^2}{1-x^2}$

87. Calculate the percentage dissociation of $H_2S(g)$ if 0.1 mole of H_2S is kept in 0.4 litre vessel at 1000 k for the reaction :

$2H_2S(g) \rightleftharpoons 2H_2(g) + S_2(g)$ the value of K_c is 1.0×10^{-6}.

(A) 5% **(B)** 2% **(C)** 6% **(D)** 8%

88. For the reaction equilibrium, $N_2O_4(g) \rightleftharpoons 2NO_2(g)$, the concentrations of N_2O_4 and NO_2 at equilibrium are 4.8×10^{-2} and 1.2×10^{-2} mol / L respectively. The value of K_c for the reaction is :

(A) 3×10^{-3} mol / L **(B)** 3.3×10^{-3} mol / L

(C) 3×10^{-1} mol / L **(D)** 3.3×10^{-1} mol / L

89. The equilibrium constant for the reaction $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$ at temperature T is 4×10^{-4}. The value of K_c for the reaction $NO(g) \rightleftharpoons \frac{1}{2}N_2(g) + \frac{1}{2}O_2(g)$ at the same temperature is :

(A) 25 **(B)** 50 **(C)** 75 **(D)** 100

90. Which factor will shift the following equilibrium in forward direction ?

$AgCl(s) \rightleftharpoons Ag^+(aq) + Cl^-(aq)$

(A) Addition of $NH_3(aq)$ **(B)** Addition of $AgNO_3(aq)$

(C) Addition of $NaCl(aq)$ **(D)** Addition of $AgCl(s)$

91. For the reaction,

$2NO_2(g) \rightleftharpoons 2NO(g) + O_2(g)$ $\left(K_c = 1.8 \times 10^{-6} \text{ at } 184^\circ C\right)$ $\left(R = 0.00831 \text{ kJ}/(\text{mol K})\right)$

When K_p and K_c is compared at 184°C, it is found that :

(A) Whether K_p is greater than less than or equal to K_c depends upon the total gas pressure

(B) $K_p = K_c$

(C) K_p is less than K_c

(D) K_p is greater than K_c

92. For the homogeneous reaction, $4NH_3(g) + 5O_2(g) \rightleftharpoons 4NO(g) + 6H_2O(g)$ the equilibrium constant K_c has the units :

(A) conc^{+10} **(B)** conc^{+1}

(C) conc^{-1} **(D)** it is dimensionless

93. What is the value of K_c for the reaction

$$I_2(g) \rightleftharpoons 2I(g)$$

At 1473 K, when 1 mole of $I_2(g)$ introduced into an evacuated 1 litre flask such that only 5% of it gets dissociated ?

(A) 0.0105 **(B)** 0.046 **(C)** 0.034 **(D)** 0.5

94. For the following three reactions I, II and III, equilibrium constants are given :

I. $H_2(g) + \frac{1}{2}O_2(g) \longrightarrow H_2O(g)$ K_1

II. $C_2H_4(g) + 3O_2(g) \longrightarrow 2CO_2(g) + 2H_2O(g)$ K_2

III. $C_2H_6(g) + \frac{7}{2}O_2(g) \longrightarrow 2CO_2(g) + 3H_2O(g)$ K_3

IV. $C_2H_4 + H_2 \longrightarrow C_2H_6$ K_4

Which of the following relations is correct?

(A) $k_4 = k_1k_2k_3$ **(B)** $k_4 = \frac{k_2k_3}{k_1}$ **(C)** $k_4 = \frac{k_1k_2}{k_3}$ **(D)** $k_4 = \frac{k_1^2k_2}{k_3}$

95. 0.1 mole of $N_2O_4(g)$ was sealed in a tube under atmospheric conditions at $25°C$. Calculate the number of mole of $NO_2(g)$ present, if the equilibrium $N_2O_4(g) \rightleftharpoons 2NO_2(g), (K_p = 0.04)$ is reached after some time.

(A) 0.04 **(B)** 0.034 **(C)** 0.46 **(D)** 0.54