CHEMICAL EQUILIBRIUM

1. **The equilibrium constant for the reaction $N_2+O_2 \rightleftharpoons 2NO$ is K_1 and for the reaction $2NO+O_2 \rightleftharpoons 2NO_2$ is K_2. The equilibrium constant K for the reaction $NO_2 \rightleftharpoons 1/2N_2+O_2$ at same temperature is** **[AIPMT2011]**

1/ K_1 K_2 2) 1/2 K_1 K_2 3) 1/4 K_1 K_2 4)[1/ K_1 K_2]$^{1/2}$

Ans:4

2) **The value ofΔH for the reaction $X_2(g) +4Y_2(g) \rightleftharpoons 2XY_4(g)$ is less than zero, Formatioon of is favoured by** **[AIPMT2011]**

1)high pressure and low temperature
2) high pressure and high temperature
3) low pressure and low temperature
4) low pressure and high temperature

Ans: 1

3) **For the reaction $AB(g) \rightleftharpoons A(g) +B(g)$, AB is 33% dissociated at a total pressure of P. Therefore , P is related to K_P as** **[AMU2010]**

1) P= K_P 2)) P=3 K_P 3)) P=4 K_P 4)) P= 8K_P

Ans:4

4) **At 3000K ,the equilibrium pressures of CO_2 , CO and CO_2 are 0.6 ,0.4 and 0.2 atm respectively. K for the reaction $2CO_2 (g) \rightleftharpoons 2CO(g)+ O_2(g)$ is** **[BHU2010]**

1) 0.088 2)) 0.0533 3)) 0.133 4)) 0.177

Ans:1

5) **In which of the following K_C and K_P are not equal?** **[PMT2010]**

1) $2NO(g) \rightleftharpoons N_2(g)+ O_2(g)$ 2) $SO_2(g) + NO_2(g) \rightleftharpoons SO_3(g) + NO(g)$

3) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ 4) $2C(s) + O_2(g) \rightleftharpoons 2CO(g)$

Ans; 4

6) **K_1 and K_2 are the equilibrium constants of the two reactions ,given below**

i. $\frac{1}{2} N_2 + 3/2H_2 \rightleftharpoons NH_3$

ii. $N_2+3H_2 \rightleftharpoons 2NH_3$ .Therefore K and K* are related as **[PMT2009]**

1) $K_1 = K_2^2$ 2) $K_1 = K_2^{1/2}$ 3) $K_1 = 2K_2$ 4) $K_1 = K_2$

Ans; 2

7. **$A_{(g)} + 3B_{(g)} \rightleftharpoons 4C_{(g)}$ Initial concentration of A is equal to that of B. The equilibrium concentration of A and C are equal. K_c is equal to,** **[Kerala -2005(E)]**

1) 0.08 2) 8 3) 1/8 4) 80

Ans;2

8. **In a 500 ml flask, the degree of dissociation of PCl_5 at equilibrium is 40% and the initial amount is 5 moles. The value of equilibrium constant in mole lit^{-1} for the decomposition of PCl_5 is** **(E-2008)**

1) 3.33 2) 2.66 3) 5.32 4) 4.66

Ans;2

9. **What is the effect of a ten-fold increase in pressure on K_p in the reaction at equilibirum $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$?** **(M-2010)**

1) A ten-fold increase 2) A ten-fold decrease 3) No change 4) Equal to K_C

Ans;3

10. **In the reaction $2SO_{3(g)} \rightleftharpoons 2SO_{2(g)} + O_{2(g)}$, $SO_{3(g)}$ is 50% dissociated at 27^0C when the equilibrium pressure is 0.5 atm. Hence partial pressure of $SO_{3(g)}$ at Equilibrium is** **(M - 2007)**

1) 0.5 atm 2) 0.3 atm 3) 0.2 atm 4) 0.1 atm

Ans;3