

CHEMICAL EQUILIBRIUM

1. The equilibrium constant for the reaction $\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}$ is K_1 and for the reaction $2\text{NO} + \text{O}_2 \rightleftharpoons 2\text{NO}_2$ is K_2 . The equilibrium constant K for the reaction



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

Ans:4

- 2) The value of ΔH for the reaction $\text{X}_2(\text{g}) + 4\text{Y}_2(\text{g}) \rightleftharpoons 2\text{XY}_4(\text{g})$ is less than zero, Formation 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 $\text{AB}(\text{g}) \rightleftharpoons \text{A}(\text{g}) + \text{B}(\text{g})$, 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) $P = 8 K_P$

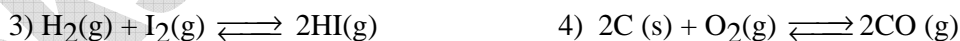
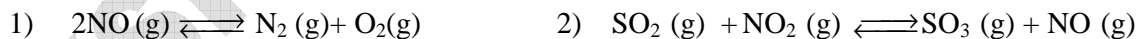
Ans:4

- 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 $2\text{CO}_2(\text{g}) \rightleftharpoons 2\text{CO}(\text{g}) + \text{O}_2(\text{g})$ is [BHU2010]

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

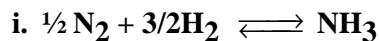
Ans:1

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



Ans; 4

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



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 equilibrium
 $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$? (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 $27^\circ C$ 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