AIPMT-Pre 2010

1. The reaction :

$2A(g) + B(g) \rightleftharpoons 3C(g) + D(g)$

is start with the concentrations of A and B both at an initial value of 1.00 M. When equilibrium is reached, the concentration of D is measured and found to be 0.25 M. The value for the equilibrium constant for this reaction is given by the expression.

(1) $[(0.75)^3\ (0.25)] \div [(0.50)^2\ (0.75)]$
(2) $[(0.75)^3\ (0.25)] \div [(0.50)^2\ (0.25)]$
(3) $[(0.75)^3\ (0.25)] \div [(0.75)^2\ (0.25)]$
(4) $[(0.75)^3\ (0.25)] \div [(1.00)^2\ (1.00)]$

AIPMT-Mains 2010

2. In which of the following equilibrium K_c and K_p are not equal ?

(1) $2C_{(s)} + O_{2(g)} \rightleftharpoons 2CO_{2(g)}$

(2) $2NO_{(g)} \rightleftharpoons N_{2(g)} + O_{2(g)}$

(3) $SO_{2(g)} + NO_{2(g)} \rightleftharpoons SO_{3(g)} + NO_{(g)}$

(4) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI_{(g)}$

AIPMT-Pre 2011

3. For the reaction $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$, the equilibrium constant is K_1. The equilibrium constant is K_2 for the reaction $2NO(g) + O_2(g) \rightleftharpoons 2NO_2(g)$. What is K for the reaction $NO_2(g) \rightleftharpoons \frac{1}{2} N_2(g) + O_2(g)$?

(1) $1/(2K_1K_2)$ (2) $1/(4K_1K_2)$
(3) $[1/K_1K_2]^{1/2}$ (4) $1/(K_1K_2)$

AIPMT-Mains 2012

4. Given that the equilibrium constant for the reaction

$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$

has a value of 278 at a particular temperature. What is the value of the equilibrium constant for the following reaction at the same temperature ?

$SO_{3(g)} \rightleftharpoons SO_{2(g)} + \frac{1}{2} O_{2(g)}$

(1) 6.0×10^{-2} (2) 1.3×10^{-5}
(3) 1.8×10^{-3} (4) 3.6×10^{-3}

5. Given the reaction between 2 gases represented by A_2 and B_2 to give the compound AB(g)

$A_{2(g)} + B_{2(g)} \rightleftharpoons 2AB_{(g)}$

At equilibrium, the concentration

of $A_2 = 3.0 \times 10^{-3}$ M

of $B_2 = 4.2 \times 10^{-3}$ M

of AB = 2.8×10^{-3} M

If the reaction takes place in a sealed vessel at 527°C, then the value of K_C will be :-

(1) 0.62 (2) 4.5
(3) 2.0 (4) 1.9

AIPMT 2014

6. For the reversible reaction :

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g) + \text{Heat}$

The equilibrium shifts in forward direction :

(1) By increasing the concentration of $NH_3(g)$
(2) By decreasing the pressure
(3) By decreasing the concentrations of $N_2(g)$ and $H_2(g)$
(4) By increasing pressure and decreasing temperature

7. For a given exothermic reaction, K_p and K'_P are the equilibrium constants at temperatures T_1 and T_2, respectively. Assuming that heat of reaction is constant in temperature range between T_1 and T_2, it is readily observed that :-

(1) $K_p > K'_P$ (2) $K_p < K'_P$

(3) $K_p = K'_P$ (4) $K_p = \frac{1}{K'_P}$

AIPMT-2015

8. If the value of an equilibrium constant for a particular reaction is 1.6×10^{12}, then at equilibrium the system will contain :-
(1) mostly reactants
(2) mostly products
(3) similar amounts of reactants and products
(4) all reactants

Re-AIPMT-2015

9. If the equilibrium constant for
$N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$ is K, the equilibrium constant for $\frac{1}{2}N_2(g) + \frac{1}{2}O_2(g) \rightleftharpoons NO(g)$ will be:-
(1) K (2) K^2 (3) $K^{1/2}$ (4) $\frac{1}{-}K$

NEET(UG) 2017

10. The equilibrium constant of the following are :

$N_2 + 3H_2 \rightleftharpoons 2NH_3$; K_1

$N_2 + O_2 \rightleftharpoons 2NO$; K_2

$H_2 + \frac{1}{2}O_2 \rightarrow H_2O$; K_3

The equilibrium constant (K) of the reaction :

$2NH_3 + \frac{5}{2}O_2 \overset{K}{\rightleftharpoons} 2NO + 3H_2O$, will be :

(1) $K_2 K_3^3 / K_1$ (2) K_2K_3/K_1
(3) $K_2^3K_3 / K_1$ (4) $K_1K_3^3 / K_2$

11. A 20 litre container at 400 K contains $CO_2(g)$ at pressure 0.4 atm and an excess of SrO (neglect the volume of solid SrO). The volume of the container is now decreased by moving the movable piston fitted in the container. The maximum volume of the container, when pressure of CO_2 attains its maximum value, will be :-

(Given that : $SrCO_3(s) \rightleftharpoons SrO(s) + CO_2(g)$, Kp = 1.6atm)

(1) 10 litre (2) 4 litre
(3) 2 litre (4) 5 litre

NEET(UG) 2018

12. Which one of the following conditions will favour maximum formation of the product in the reaction,

$A_2(g) + B_2(g) \rightleftharpoons X_2(g)$ $\Delta_rH = -X$ kJ ?

(1) Low temperature and high pressure
(2) Low temperature and low pressure
(3) High temperature and high pressure
(4) High temperature and low pressure

Que.	1	2	3	4	5	6	7	8	9	10	11	12	
Ans.	**1**	**1**	**3**	**1**	**1**	**4**	**1**	**2**	**3**	**1**	**4**	**1**	