



Date Planned : __ / __ / __	Daily Tutorial Sheet-13	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-3	Exact Duration : _____


- 147.** At 800°C, the following equilibrium is established as $F_2(g) \rightleftharpoons 2F(g)$ The composition of equilibrium may be determined by measuring the rate of effusion of the mixture through a pin hole. It is found that at 800°C and 1 atm mixture effuses 1.6 times as fast as SO_2 effuses under the similar conditions. What is the value of K_p (in atm) ? 

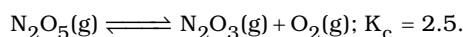
(A) 0.315 (B) 0.685 (C) 0.46 (D) 1.49

- 148.** Calculate $\Delta_r G$ for the reaction at 27°C $H_2(g) + 2Ag^+(aq) \rightleftharpoons 2Ag(s) + 2H^+(aq)$ 

Given : $P_{H_2} = 0.5 \text{ bar}$; $[Ag^+] = 10^{-5} M$; $[H^+] = 10^{-3} M$; $\Delta_r G^\circ [Ag^+(aq)] = 77.1 \text{ kJ/mol}$

(A) -154.2 kJ/mol (B) -178.9 kJ/mol (C) -129.5 kJ/mol (D) None of these


- 149.** When N_2O_5 is heated at certain temperature, it gets dissociated as 

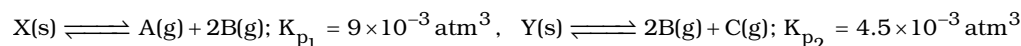


At the same time N_2O_3 also decomposes as : $N_2O_3(g) \rightleftharpoons N_2O(g) + O_2(g)$

If initially 4.0 moles of N_2O_5 are taken in 1.0 litre flask and allowed to dissociate, concentration of O_2 at equilibrium is 2.5M. Equilibrium concentration of N_2O_5 is :

(A) 0.1 M (B) 1.5 M (C) 2.166 M (D) 1.846

- 150.** Two solid compounds X and Y are dissociated at a certain temperature as follows 




The total pressure of gases over a mixture of X and Y is :

(A) 4.5 atm (B) 0.45 atm (C) 0.6 atm (D) None of these

Paragraph for Question No. 151 – 152

Variation of equilibrium constant K with temperature is given by van't Hoff equation $\ln K = \frac{\Delta S_r^\circ}{R} - \frac{\Delta H_r^\circ}{RT}$ from this equation, ΔH_r° can be evaluated if equilibrium constants K_1 and K_2 at two temperature T_1 and T_2 are known.

$$\log \left(\frac{K_2}{K_1} \right) = \frac{\Delta H_r^\circ}{2.303R} \left[\frac{1}{T_1} - \frac{1}{T_2} \right]$$

- 151.** For an Isomerisation reaction $X(g) \rightleftharpoons Y(g)$, the temperature dependency of equilibrium constant is given by : $\ln K = 2 - \frac{1000}{T}$. The value of $\Delta_r S^\circ$ at 300 K is : 

(A) 0.315 (B) 0.685 (C) 0.46 (D) 1.49

- 152.** Select the correct statement : 

- (A) Value of K_{eq} always increases with increase in temperature
 (B) For exothermic reaction value of K_{eq} increases with decrease in temperature
 (C) For endothermic reaction value of K_{eq} increases with decrease in temperature
 (D) For exothermic reaction slope of $\log K$ Vs. $1/T$ is negative