








Date Planned : __ / __ / __	Daily Tutorial Sheet-9	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-2	Exact Duration : _____

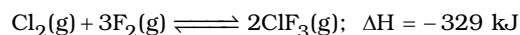
- 106.** The equilibrium constant K_{p_1} and K_{p_2} for the reaction $X \rightleftharpoons 2Y$ and $Z \rightleftharpoons P + Q$, respectively are in the ratio of 1 : 9. If the degree of dissociation of X and Z be equal, then the ratio of total pressure at these equilibria is : (All gaseous)
- (A) 1 : 36 (B) 1 : 1 (C) 1 : 3 (D) 1 : 9 
- 107.** The equilibrium constant K_c for the reaction $P_4(g) \rightleftharpoons 2P_2(g)$ is 1.4 at 400°C . Suppose that 3 moles of $P_4(g)$ and 2 moles of $P_2(g)$ are mixed in 2 litre container at 400°C . What is the value of reaction quotient (Q) ?
- (A) $\frac{3}{2}$ (B) $\frac{2}{3}$ (C) 1 (D) None of these 
- 108.** Formaldehyde polymerizes to form glucose according to the reaction, $6\text{HCHO} \rightleftharpoons \text{C}_6\text{H}_{12}\text{O}_6$. The theoretically computed equilibrium constant for this reaction is found to be 6×10^{22} . If 1M solution of glucose dissociates according to the above equilibrium, the concentration of formaldehyde in the solution will be :
- (A) $1.6 \times 10^{-2}\text{ M}$ (B) $1.6 \times 10^{-4}\text{ M}$ (C) $1.6 \times 10^{-6}\text{ M}$ (D) $1.6 \times 10^{-8}\text{ M}$ 
- 109.** The vapour density of N_2O_4 at a certain temperature is 30. Calculate the percentage dissociation of N_2O_4 at this temperature.
- (A) 53.5% (B) 60% (C) 74.5% (D) 64.5% 
- 110.** In the following equilibrium 
- $$\text{N}_2\text{O}_4(g) \rightleftharpoons 2\text{NO}_2(g)$$
- When 5 moles of each is taken and the temperature is kept at 298 K, the total pressure was found to be 20 bar
- Given : $\Delta G_f^\circ(\text{N}_2\text{O}_4) = 100\text{ kJ}$
 $\Delta G_f^\circ(\text{NO}_2) = 50\text{ kJ}$
 Find ΔG° of the reaction at 298 K
- (A) -4.68 kJ (B) -6.04 kJ (C) -5.705 kJ (D) 0.4 kJ
- 111.** At a particular temperature, $\text{PCl}_5(g)$ undergoes 50% dissociation. The equilibrium constant for $\text{PCl}_5(g) \rightleftharpoons \text{PCl}_3(g) + \text{Cl}_2(g)$ is 2atm. The pressure of the equilibrium mixture is 
- (A) 2 atm (B) 6 atm (C) 8 atm (D) 5 atm
- 112.** Calculate the partial pressure of carbon monoxide from the following data's 
- $$\text{CaCO}_3(s) \xrightarrow{\Delta} \text{CaO}(s) + \text{CO}_2(g); K_p = 8 \times 10^{-2}$$
- $$\text{CO}_2(g) + \text{C}(s) \longrightarrow 2\text{CO}(g); K_p = 2$$
- (A) 0.2 (B) 0.4 (C) 1.6 (D) 4

- 113.** Given the equilibrium system $\text{NH}_4\text{Cl(s)} \rightleftharpoons \text{NH}_4^+(\text{aq}) + \text{Cl}^-(\text{aq})$

What change will shift the equilibrium to the right? ($\Delta H = +3.5 \text{ kcal/mol}$)

- (A) Decreasing the temperature
- (B) Increasing the temperature
- (C) Dissolving NaCl crystals in the equilibrium mixture
- (D) Dissolving NH_4NO_3 crystals in the equilibrium mixture

- 114.** The exothermic formation of ClF_3 is represented by the equation



Which of the following will increase the quantity of ClF_3 in an equilibrium mixture of Cl_2 , F_2 and ClF_3 ?

- (A) Adding F_2
- (B) Increasing the volume of the container
- (C) Removing Cl_2
- (D) Increasing the temperature

- 115.** For the gaseous reaction, $\text{C}_2\text{H}_4(\text{g}) + \text{H}_2(\text{g}) \rightleftharpoons \text{C}_2\text{H}_6(\text{g})$, $\Delta H(\text{g}) = -130 \text{ kJ mol}^{-1}$ carried in a closed vessel, the equilibrium concentration of the C_2H_6 can definitely be increased by :

- (A) Increasing temperature and decreasing pressure
- (B) Decreasing temperature and pressure both
- (C) Increasing temperature and pressure both
- (D) Decreasing temperature and increasing pressure