Date Planned : __ / __ / __	Daily Tutorial Sheet-5	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-1	Exact Duration :_____

61. The reaction $2SO_2 + O_2 \rightleftharpoons 2SO_3$ + heat . The equilibrium reaction proceeds in forward direction by :

(A) Addition of O_2 **(B)** Removal of O_2

(C) Additional of inert gas **(D)** Cannot proceed

62. $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ + heat . What is the effect of the increase of temperature on the equilibrium of the reaction ?

(A) Equilibrium is shifted to the left **(B)** Equilibrium is shifted to the right

(C) Equilibrium is unaltered **(D)** Reactions rate does not change

63. Formation of SO_3 from SO_2 and O_2 is favoured by :

(A) Increase in pressure **(B)** Decrease in pressure

(C) Increase in temperature **(D)** Addition of SO_3

64. According to Le-Chatelier principle, adding heat to solid and liquid in equilibrium will cause the :

(A) Amount of solid to decrease **(B)** Amount of liquid to decrease

(C) Temperature to rise **(D)** Temperature to fall

65. For the reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$, $\Delta H = -93.6$ kJ mol^{-1} the formation of NH_3 is expected to increase at :

(A) High pressure and low temperature

(B) Low pressure and low temperature

(C) High pressure and high temperature

(D) Low pressure and high temperature

66. In the manufacture of ammonia by Haber's process, $N_2(g) + 3H_2 \rightleftharpoons 2NH_3(g) + 92.3$ kJ.
Which of the following condition is unfavourable ?

(A) Increasing the temperature

(B) Increasing the pressure

(C) Reducing the temperature

(D) Removing ammonia as it is formed

67. In a lime kiln, to get higher yield of CO_2, the measure that can be taken is :

$$\left[CaCO_3(s) \rightleftharpoons CO_2(g) + CaO(s)\right]$$

(A) To remove $CaCO_3$ **(B)** To add more CaO

(C) To add CO_2 **(D)** To pump out CO_2

68. For the reaction, $PCl_3(g) + Cl_2(g) \rightleftharpoons PCl_5(g)$ the position of equilibrium can be shifted to the right by:

(A) Doubling the volume

(B) Increasing the temperature

(C) Addition of equimolar quantities of PCl_3 and PCl_5

(D) Addition of Cl_2 at constant volume

69. What is the equilibrium expression for the reaction, $P_4(s) + 5O_2(g) \rightleftharpoons P_4O_{10}(s)$?

(A) $K_c = \frac{1}{[O_2]^5}$ **(B)** $K_c = [O_2]^5$ **(C)** $K_c = \frac{[P_4O_{10}]}{5[P_4][O_2]}$ **(D)** $K_c = \frac{[P_4O_{10}]}{[P_4][O_2]^5}$

70. For the reaction, $CO(g) + Cl_2(g) \rightleftharpoons COCl_2(g)$, the K_p/Kc is equal to :

(A) $1/RT$ **(B)** RT **(C)** $\sqrt{RT}$ **(D)** 1.0

71. For the reaction $C_2H_4(g) + H_2(g) \rightleftharpoons C_2H_6(g)$, which of the following expressions between K_p and K_c is true at $27^\circ C$?

(A) $K_p > K_c$ **(B)** $K_p < K_c$ **(C)** $K_p = K_c$ **(D)** Cannot be predicted

72. For the reaction, $PCl_3(g) + Cl_2(g) \rightleftharpoons PCl_5(g)$, the value of K_c at 250°C is 26. The value of K_p at this temperature will be :

(A) 0.41 **(B)** 0.51 **(C)** 0.61 **(D)** 0.71

73. Of the following which change will shift the reaction towards the product ?

$$I_2(g) \rightleftharpoons 2I(g), \quad \Delta H_r^\circ(298\ K) = +150\ kJ$$

(A) Increase in temperature **(B)** Increase in total pressure

(C) Increase in concentration of I **(D)** Decrease in concentration of I_2

74. In the following reversible reaction,

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

Most suitable condition for the higher production of SO_3 is :

(A) Low temperature and high pressure

(B) Low temperature and low pressure

(C) High temperature and high pressure

(D) High temperature and low pressure

75. For the following equilibrium

$N_2O_4(g) \rightleftharpoons 2NO_2(g)$

K_p is found to be equal to K_c . This is attained when

(A) $T = 1K$ **(B)** $T = 12.18K$ **(C)** $T = 27.3K$ **(D)** $T = 273K$