Date Planned : __ / __ / __	Daily Tutorial Sheet-3	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-1	Exact Duration :_____

31. A reversible reaction is one which :

(A) Proceeds in both directions **(B)** Proceeds in one directions

(C) Proceeds spontaneously **(D)** All the above statements are wrong

32. In a reaction, the rate of reaction is proportional to its active mass. This statement is known as:

(A) Law of mass-action **(B)** Le-Chatelier principle

(C) Faraday law of electrolysis **(D)** Law of constant proportion

33. In the equilibrium, $AB(s) \rightleftharpoons A(g) + B(g)$, if the equilibrium concentration of A is doubled, the equilibrium concentration of B would become :

(A) Half **(B)** Twice **(C)** 1 / 4th **(D)** 1 / 8th

34. According to law of mass action, for the reaction : $2A + B \longrightarrow$ Products

(A) Rate = k[A] [B] **(B)** Rate = $k[A]^2$ [B]

(C) Rate = $k[A]\,[B]^2$ **(D)** Rate = $k\,[A]^{1/2}$ [B]

35. For the system; $3A + 2B \rightleftharpoons C$, the expression for equilibrium constant is :

(A) $\dfrac{[A]^3[B]^2}{[C]}$ **(B)** $\dfrac{[C]}{[A]^3[B]^2}$ **(C)** $\dfrac{[3A][2B]}{[C]}$ **(D)** $\dfrac{[C]}{[3A][2B]}$

36. 5 mole of X are mixed with 3 moles of Y. At equilibrium for the reaction, $X + Y \rightleftharpoons Z$, 2 moles of Z are formed. The equilibrium constant for the reaction will be :

(A) 2 / 3 **(B)** 1 / 2 **(C)** 3 / 2 **(D)** 1 / 4

37. The equilibrium constant in a reversible reaction at a given temperature :

(A) Does not depend on the initial concentrations

(B) Depends on the initial concentrations of the reactants

(C) Depends on the concentration of the products at equilibrium

(D) It is not a characteristic of the reaction

38. For the reaction, $Fe(s) + S(s) \rightleftharpoons FeS(s)$ the expression for equilibrium constant is :

(A) $\dfrac{[FeS]}{[Fe][S]}$ **(B)** $\dfrac{[Fe][S]}{[FeS]}$ **(C)** [Fe] [S] [FeS] **(D)** None of these

39. For which of the following reactions, does the equilibrium constant depend on the units of concentration?

(A) $NO(g) \rightleftharpoons \frac{1}{2}N_2(g) + \frac{1}{2}O_2(g)$

(B) $Zn(s) + Cu^{2+}_{(aq)} \rightleftharpoons Cu(s) + Zn^{2+}(aq)$

(C) $COCl_2(g) \rightleftharpoons CO(g) + Cl_2\,(g)$

(D) $C_2H_5OH(\ell) + CH_3COOH(\ell) \rightleftharpoons CH_3COOC_2H_5(\ell) + H_2O(\ell)$

40. On a given condition, the equilibrium concentration of HI, H_2 and I_2 are 0.80, 0.10 and 0.10 mol/L. the equilibrium constant for the reaction, $H_2 + I_2 \rightleftharpoons 2HI$ will be :

(A) 8 **(B)** 16 **(C)** 32 **(D)** 64

41. The unit of equilibrium constant, K for the reaction, $A + B \rightleftharpoons C$, would be :

(A) mol L^{-1} **(B)** mol L **(C)** L mol^{-1} **(D)** Dimensionless

42. In the reaction, $A + 2B \rightleftharpoons 2C$, if 2 moles of A, 3.0 moles of B and 2.0 moles of C are placed in a 2 L flask and the equilibrium concentration of C is 0.5 mol/L, the equilibrium constant (K_c) for the reaction is:

(A) 0.21 **(B)** 0.50 **(C)** 0.75 **(D)** 0.05

43. In which one of the following gaseous equilibrium, K_p is less than K_c?

(A) $N_2O_4(g) \rightleftharpoons 2NO_2(g)$ **(B)** $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$

(C) $2HI(g) \rightleftharpoons H_2(g) + I_2(g)$ **(D)** $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$

44. The equilibrium constant for the reaction $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ is K then the equilibrium constant for the equilibrium, $NH_3(g) \rightleftharpoons \frac{1}{2}N_2(g) + \frac{3}{2}H_2(g)$ is :

(A) $\frac{1}{K}$ **(B)** $\sqrt{K}$ **(C)** $\frac{1}{K^2}$ **(D)** $\frac{1}{\sqrt{K}}$

45. For the reaction, $2NO_2(g) \rightleftharpoons 2NO(g) + O_2(g)$, $K_c = 1.8 \times 10^{-6}$ at 185°C , the value of K_c for the reaction $NO(g) + \frac{1}{2}O_2(g) \rightleftharpoons NO_2(g)$ is :

(A) 0.9×10^6 **(B)** 1.9×10^6 **(C)** 7.5×10^2 **(D)** 5.7×10^2