

## CHEMISTRY-11

### CHAPTER 1: BASIC CONCEPTS

TOPIC: (1.3(1.3.1, 1.3.3), 1.5, 1.6, 1.7, 1.8)

Isotopes (Relative Abundance of Isotopes (Pg.3-4), Average Atomic Mass(Pg. 6-6),  
Concept of Mole, Stoichiometry, Limiting Reactant, Yield (Pg. 11-22)

**Classwork:** Q.1 (i, ii, iii, v, x), 2Q.(i, ii, iii, v, vii, viii), Q.3 (i, v, vi, viii) Q.9 to Q.18,  
Q.20, Q.21, Q.22, Q.25

**Homework:** Q.5 (a, b), Q.6, Q.7, Q.8 (vi, vii, viii)

### CHAPTER 2: EXPERIMENTAL TECHNIQUES IN CHEMISTRY

TOPIC: (2.3, 2.4, 2.5)

Solvent Extraction, Chromatography (Pg. 34 to 37).

**Classwork:** Q.1 (iii, iv, v) Q.2 (1, 4, 5) Q.3 (iv, v) Q.7

**Homework:** Q.6, Q.8, Q.9, Q.10

### CHAPTER 3: GASES

TOPIC: (3.2, 3.3, 3.4, 3.5, 3.7, 3.8, 3.11)

Gas Laws, Dalton's Law of Partial Pressure (Pg. 41 - 57). Kinetic Molecular Theory of  
Gases, Kinetic Interpretation of Temperature (Pg. 60 - 65). Plasma State (Pg. 73 - 75).

**Classwork:** Q.1 (i, ii, iii, iv, v, vi, vii, viii), Q.2 (i, ii, iii, v) Q.3(i, ii), Q.8,9, 16,17, 18,  
19, 20, 22, 23

**Homework:** Q.4, Q.5, Q.6, Q.7, Q.10, Q.12.

### CHAPTER 4: LIQUIDS AND SOLIDS

TOPIC: (4.1, 4.3, 4.4, 4.5, 4.6)

Intermolecular Forces (Pg. 81 - 88). Crystal lattice, Crystals and Their Classification  
(Pg. 95 - 101).

QUESTIONS ON LIQUIDS

**Classwork:** Q.1 (i, ii, iii, iv), Q.2 (i, ii, iii, iv, v, vi, viii), Q.3 (i, ii, iii, iv, v, vi, ix), Q.4, Q.5, Q.6, Q.7, Q.8.

**Homework:** Q.12.

QUESTIONS ON SOLIDS

**Classwork:** Q.1 (ii, iii, iv) Q.2, Q.12(vi, vii, viii, ix, x, xi)

**Homework:** Q.4, Q.5, Q.6.

### CHAPTER NO 5: ATOMIC STRUCTURE

TOPIC: (5.1, 5.2, 5.3, 5.4, 5.5, 5.7, 5.8)

Sub-Atomic Particles of Atoms, Rutherford's Model of Atom (Discovery of Nucleus), Plank's Quantum Theory, Bohr's Model of Atom, Spectrum (Pg. 118- 137).

Wave-Particle Nature of Matter (Dual Nature of Matter), Heisenberg's Uncertainty Principle, (Pg. 138- 146).

**Classwork:** Q.1 (i, ii, iii, iv, v, vii, viii, ix, x), Q.2 (i to viii), Q.3, Q.4, Q.17, Q.19, Q.23, Q.24, Q.25

**Homework:** Q.5, Q.6, Q.7, Q.8, Q.9, Q.10, Q.11, Q.14, Q.15, Q.16.

### CHAPTER NO 6: CHEMICAL BONDING

TOPIC: (6.1, 6.2, 6.3, 6.4)

Chemical Bond, Atomic Sizes, Ionization Energy, Electron Affinity and Electronegativity, Types of Bonds (Pg. 155 -182).

**Classwork:** Q.1 (i, ii, iii, v, vi), Q.2 (i, ii, iii, iv, v), Q.3 (i, ii, iii, iv, v, vii, viii, ix, x, xi, xii), Q.6, Q.10, Q.18 (ii, vi).

**Homework:** Q.4, Q.5, Q.7, Q.8, Q.9, Q.11, Q.12.

### CHAPTER NO: 7 THERMOCHEMISTRY

TOPIC: (7.2, 7.3, 7.4, 7.5)

System, Surrounding And State function, Internal Energy and First Law of Thermodynamics, Enthalpy, Hess's Law of Constant Heat Summation (197- 209).

**Classwork:** Q.1, Q.2 (i, ii, iii, v), Q.3(ii, iii, iv, v), Q.13, Q.14, Q.15, Q.16, Q.17, Q.18, Q.19, Q.20, Q.21.

**Homework:** Q.4, Q.5, Q.7, Q.8, Q.9, Q.10, Q.11, Q.12.

### CHAPTER NO: 8 CHEMICAL EQUILIBRIUM

TOPIC: (8.1, 8.2, 8.3, 8.4, 8.5, 8.7, 8.8)

Reversible and Irreversible Reactions, Application of Chemical Equilibrium In Industry, Ionic Product of water, Ionization Constants of Acids ( $K_a$ ), Ionization Constant of Bases ( $K_b$ ). (Pg. 214-235). Common Ion Effect, Buffer Solutions (Pg. 236- 242).

**Classwork:** Q.1 (i, ii, iii, v), Q.2, Q.3 (i, ii, iii, iv), Q.10(a, b), Q.11, Q.19, Q.20, Q.21, Q.22, Q.23.

**Homework:** Q.6, Q.7, Q.8, Q.17.

### CHAPTER NO: 9 SOLUTION

TOPIC: (9.3, 9.5, 9.6, 9.7)

Ideal and Non- Ideal Solutions (Pg. 260-262). Solubility and Solubility Curves,

Colligative Properties of Solutions, Energetics of Solution (265-277).

**Classwork:** Q.1(ii, v, vi, vii, viii, ix, x), Q.2 (ii, iii, iv, v, vi, vii, viii, ix, x), Q.3(iii, iv, v, vi, vii, viii), Q.4, Q.5, Q.12, Q.12, Q.21, Q.22, Q.23.

**Homework:** Q.7, Q.8, Q.9, Q.10, Q.11, Q.13, Q.14, Q.15, Q.16.

### **CHAPTER NO: 10 ELECTROCHEMISTRY**

TOPIC: (10.1(10.1.1, 10.1.2), 10.2, 10.3, 10.4)

Definition of Electrochemistry, Oxidation State and Balancing of Redox Equations (Oxidation Number or State, Finding Oxidation Number of an Element in a compound or a Radical) (Pg. 284-285), Electrolytic Conduction, Electrode Potential, Electrochemical Series (Pg. 289-300).

**Classwork:** Q.1, Q.2(i, ii, iii, iv, vi), Q.3 (i, ii, iii, iv, v, vi, vii, viii), Q.4, Q.15, Q.16 (b, d, e, g, h).

**Homework:** Q.7, Q.8, Q.9, Q.10, Q.11, Q.12, Q.13, Q.14 (a, b).

### **CHAPTER NO: 11 REACTION KINETICS**

TOPIC: 11.1, 11.3, 11.4, 11.5(11.5.6).

Rate of Reaction (308-313), Energy of Activation, Finding of Order of Reaction. (Pg. 316-319). Arrhenius Equation (Pg. 322-324).

**Classwork:** Q.1, 2, Q.3(i, ii, iv, v), Q.8, Q.19, Q.20, Q.21, Q.22.

**Homework:** Q.4, Q.5, Q.6, Q.7 (i, iii, iv), Q.9, Q.15.

### **LIST OF EXPERIMENTS (CHEMISTRY) PART- I**

- 1 Crystallization of benzoic acid from water.
- 2 To separate a mixture of various inks by paper chromatography.
- 3 Separation and Identification of lead and cadmium ions in a mixture solution by paper chromatography.
- 4 Determination of heat of neutralization of NaOH and HCl.
- 5 Preparation of standard solution of alkalis and acids e.g., NaOH, KOH, Oxalic acid, succinic acids.
- 6 Preparation of solution of  $H_2SO_4$  of approximate strength and then determination of its exact strength with the help of standard  $Na_2CO_3$  solution.
- 7 To prepare a standard solution of oxalic acid and standardize a solution of NaOH.
- 8 To determine the solubility of oxalic acid at room temperature .You are provided with 0.1 M NaOH.
- 9 Determination of acetic acid in vinegar.
- 10 The given solution contains 15 g of mixture of NaOH and  $Na_2SO_4$  per  $dm^3$ . Calculate the amount of NaOH in 45 grams of the mixture. 0.1 M HCl is given.
- 11 Determination of free alkali in soap.
- 12 Determination of  $Na_2CO_3$  in washing soda.
- 13 Determination of percentage of purity of  $Na_2CO_3$  in the given solution containing
- 14 10 g. of impure  $Na_2CO_3$  sample/ $dm^3$ . You are provide with 0.1 M HCl solution.

- 15 28.6 grams of washing soda ( $\text{Na}_2\text{CO}_3 \cdot x\text{H}_2\text{O}$ ) have been dissolved/ $\text{dm}^3$ . Calculate the number of water molecules of crystallization. You are provided with 0.1 M HCl solution.
- 16 Determination of  $\text{NaHCO}_3$  in the given sample of baking soda. 0.1M HCl soln. is provided.
- 17 8.4 gram M  $\text{HCO}_3$  are dissolved per  $\text{dm}^3$  of solution. Find out At. Wt. of M. 0.05 M  $\text{H}_2\text{SO}_4$  is given.
- 18 You are given the solution of  $\text{KMnO}_4$ . Calculate its volume required to prepare 1.0  $\text{dm}^3$  of 0.002M  $\text{KMnO}_4$  solution.
- 19 The given soln. 'A' contains 10 grams of a mixture of  $\text{H}_2\text{SO}_4$  and oxalic acid dissolved/ $\text{dm}^3$ . Determine the percentage of  $\text{H}_2\text{SO}_4$  in the mixture. 0.02M  $\text{KMnO}_4$  is given.
- 20 Determine the no of molecules of water of crystallization in a given sample of oxalic acid by permanganate titration. The amount of oxalic acid dissolved per  $\text{dm}^3$  is 6.3 g.
- 21 Determination of solubility of oxalic acid at room temperature.
- 22 To determine the strength of ferrous sulphate solution by titrating it against 0.02M  $\text{KMnO}_4$ .
- 23 The given solution contains 30 gram of partially oxidized  $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$  dissolved per  $\text{dm}^3$ . Determine the %age of oxidation of the given sample.
- 24 To determine the strength of given ferrous ammonium sulphate (Mohr's salt) by titrating it against standard potassium permanganate solution.
- 25 The given solution contains 40g. of  $\text{FeSO}_4(\text{NH}_4)_2\text{SO}_4 \cdot x\text{H}_2\text{O}$  dissolved per  $\text{dm}^3$ . Determine the value of x.
- 26 Determine the solubility of given sample of Mohr's salt at room temperature. You are provided with 0.02M  $\text{KMnO}_4$ .
- 27 Prepare a standard (M/10) 250  $\text{cm}^3$ . Solution of iodine. 0.1 M  $\text{Na}_2\text{S}_2\text{O}_3$  is provided.
- 28 24.8 grams of a sample of alkali thiosulphate ( $\text{M}_2\text{S}_2\text{O}_3$ ) are dissolved in 1  $\text{dm}^3$  of the given solution. Calculate the atomic weight of the metal by a volumetric method. Given M/10 iodine solution.
- 29 20 gram of  $\text{Na}_2\text{S}_2\text{O}_3$  are dissolved in one  $\text{dm}^3$  solution. Find out the %age of sulphur. You are provided with 0.05M iodine solution.