Part-II (Class-X) Marks: 60 Time: 2:00 Hours

Unit-9 : CHEMICAL EQUILIBRIUM

9.1 Reversible Reaction and Dynamic Equilibrium
9.2 Law of Mass Action
9.3 Equilibrium Constant and its Units
9.4 Importance of Equilibrium Constant

Unit-10 : ACIDS, BASES AND SALTS

10.1 Concepts of Acids and Bases
- 10.1.1 Arrhenius Concept of Acids and Bases
- 10.1.2 Limitation of Arrhenius Concept
- 10.1.3 Lewis Concept of Acids and Bases
- 10.1.4 General Properties of Acids
- 10.1.5 General Properties of Bases

10.2 pH Scale
10.3 Salts
- 10.3.1 Preparation
- 10.3.2 Types of Salts
- 10.3.3 Uses of Salts

Unit-11 : ORGANIC CHEMISTRY

11.1 Organic Compounds
- 11.1.1 Classification of Organic Compounds
- 11.1.2 Diversity and Magnitude of Organic Compounds
- 11.1.3 General Characteristics of Organic Compounds

11.2 Sources of Organic Compounds
- 11.2.1 Coal
- 11.2.2 Petroleum
- 11.2.3 Natural Gas
- 11.2.4 Plants
- 11.2.5 Synthesis in Laboratory

11.3 Uses of Organic Compounds
11.4 Alkenes and Alky Radicals
11.5 Functional Groups
- 11.5.1 Functional Groups depend on Carbon, Hydrogen and Oxygen
- 11.5.2 Functional Groups depend on Carbon, Hydrogen and Nitrogen
- 11.5.3 Functional Groups depends on Carbon, Hydrogen and Halogen
- 11.5.4 Double and Triple Bond

11.6 Tests of functional groups
- 11.6.1 Test for unsaturation
- 11.6.2 Test for Alcoholic group
- 11.6.3 Test for Carboxylic group
- 11.6.4 Test for Aldehydic group
- 11.6.5 Test for Ketonic group
- 11.6.6 Test for Primary Amino group
- 11.6.7 Test for ester

Unit-12 : HYDROCARBONS

12.1 Alkanes
- 12.1.1 Preparation of Alkenes (Hydrogenation of alkenes and alkynes, Reduction of alkyl halides)
- 12.1.2 Chemical reactions (Halogenation, Combustion)

12.2 Alkenes
- 12.2.1 Preparation of Alkenes (Dehydration of Alcohols, Dehydrohalogenation of alkyl halides)
- 12.2.2 Chemical reactions (Hydrogenation of alkenes, Halogenation of alkenes, Hydro Halogenation of Alkenes, Oxidation of alkenes with $KMnO_4$)

12.3 Alkynes
- 12.3.1 Preparation of Alkynes (Dehydro Halogenation of vicinal dihalides, Dehalogenation of terahalides)
- 12.3.2 Chemical Reactions (Addition of halogen, Oxidation with $KMnO_4$)

Unit-13 : BIOCHEMISTRY

13.1 Carbohydrates
- 13.1.1 Monosoccharides
- 13.1.2 Oligosaccharides
- 13.1.3 Polysaccharides
- 13.1.4 Sources and uses of carbohydrates

13.2 Protein
- 13.2.1 Amino Acids are building blocks of proteins
- 13.2.2 Sources and uses of proteins

13.3 Lipids
- 13.3.1 Fatty acids
- 13.3.2 Sources and uses of lipids

13.4 Nucleic Acids
- 13.4.1 Deoxyribonucleic acid (DNA)
- 13.4.2 Ribonucleic acid RNA

13.5 Vitamins
- 13.5.1 Types of Vitamins (Fat soluble vitamins, Water soluble vitamins)
- 13.5.2 Importance of vitamins

Unit-14 : THE ATMOSPHERE

14.1 Composition of Atmosphere

14.2 Layers of Atmosphere
- 14.2.1 Troposphere
- 14.2.2 Stratosphere

14.3 Pollutants
- 14.3.1 Types of pollutants
- 14.3.2 Sources of air pollutants

14.4 Acid Rain and its Effects

14.5 Ozone Depletion and its Effects

Unit-15 : WATER

15.1 Properties of Water

15.2 Water as Solvent

15.3 Soft and Hard Water
- 15.3.1 Types of Hardness of Water
- 15.3.2 Methods of Removing Hardness

15.4 Water Pollution
- 15.4.1 Industrial effluents
- 15.4.2 Domestic effluents
- 15.4.3 Agricultural effluents

15.5 Waterborne infectious diseases (Dysentery, Cholera, Cryptosporidium, Fluorosis, Hepatitis, Hookworm, Jaundice, Typhoid)

Unit-16 : CHEMICAL INDUSTRIES

16.1 Basic Metallurgical Operations

16.2 Manufacture of Sodium Carbonate by Solvay's Process
- 16.2.1 Materials
- 16.2.2 Basic reactions

16.3 Manufacture of Urea
- 16.3.1 Raw materials
- 16.3.2 Process

16.4 Petroleum Industry
- 16.4.1 Petroleum
- 16.4.2 Origin of Petroleum
- 16.4.3 Important fractions of Petroleum

LIST OF PRACTICALS FOR CLASS-IX (PART-I)

1. Separate the given mixture of iron fillings and sand by physical method.
2. Determine the melting point of given compounds Naphthalene.
3. Determine the melting point of given compounds Biphenyl.
4. Determine the boiling point of given liquids (Acetone.
5. Determine the boiling point of given liquids (Toluene.
6. Determine the boiling point of given liquids (Ethyl alcohol.
7. Demonstrate sublimation using ammonium chloride.
8. Separate naphthalene from given mixture of sand and naphthalene by sublimation.
9. Separate the given mixture of alcohol and water by distillation.

10. Demonstrate that a chemical reaction releases energy in the form of heat.
11. Prepare 100cm3 of 0.1M sodium hydroxide (NaOH solution.
12. Prepare 100cm3 of 0.1M sodium carbonate (Na_2CO_3 solution.
13. Prepare 250cm3 of 0.1M HCl solution.
14. Prepare 250cm3 of 0.1M oxalic acid ($H_2C_2O_4.2H_2O$ solution.
15. Prepare 100cm3 of 0.1M sodium hydroxide (NaOH solution from the given 1M solution.
16. Prepare 100cm3 of 0.01M Na2CO3 solution from the given 0.1 M solution.
17. Prepare 100cm3 of 0.01M hydrochloric acid (HCl solution from the given 0.1M solution.
18. Prepare 100cm3 of 0.01M oxalic acid solution from the given 0.1M solution.
19. Prepare pure copper sulphate crystals from the given impure sample.
20. Demonstrate that miscible liquids dissolve in each other and immiscible liquids do not.
21. Demonstrate that temperature affects the solubility.
22. Demonstrate the conductivity of different given solution.
23. Demonstrate a metal displacement reaction in aqueous medium.
24. Demonstrate that two elements combine to form a binary compound.
25. Demonstrate that compounds can be products of a decomposition reaction.
26. Demonstrate that some processes absorb energy.

LIST OF PRACTICALS FOR CLASS-X (PART-II)

1. Identify sodium, calcium, strontium, barium, copper and potassium ions by flame test.
2. Standardize the given NaOH solution volumetrically.
3. Standardize the given HCl solution volumetrically.
4. Determine the exact molarity of the Na_2CO_3 solution volumetrically.
5. Determine the exact molarity of a solution of oxalic acid volumetrically.
6. Demonstrate that some natural substances are weak acids.
7. Classify substances as acidic, basic or neutral.
8. Identify aldehydes using Fehling's test and Tollen's test.
9. Identify ketones using 2,4-dinitrophenyl hydrazine test.
10. Identify carboxylic acids using sodium carbonate test.
11. Identify phenol using Ferric Chloride test.
12. Identify saturated and unsaturated organic compounds by $KMnO_4$ test.
13. Demonstrate that sugar decomposes into elements and other compounds.
14. Demonstrate the softening of water by removal of calcium and magnesium ions from hard water.

Prescribed Book: Chemistry for Part – II (Class – X)
Authors: Dr. Jalil Tariq , Dr. Irshad Ahmad Chatha
Published by: The Carvan Book House, Lahore
For: Punjab Curriculum and TextBook Board, Lahore