**CHEMISTRY**

For Class X (marks 65)

**1. Chemical Equilibrium**

 Introduction

 9.1 Reversible Reaction and Dynamic Equilibrium

9.2 Law of Mass Action and Derivation of the Expression for the Equilibrium Constant

 9.3 Equilibrium Constant and Its Units

9.4 Importance of Equilibrium Constant

**2. Acids, Bases, and Salts**

 Introduction

 10.1 Concepts of Acids and Bases

 10.1.1 Arrhenius Concept of Acids and Bases

 10.1.2 Bronsted Concept of Acids, and Bases

 10.1.3 Lewis Concept of Acids and Bases

 10.2 pH Scale

 10.3 Salts

 10.3.1 Preparation

 10.3.2 Types of

 10.3.3 Uses of some Salts

**3. Organic Chemistry**

 Introduction

 11.1 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 the Lab

 11.3 Uses of Organic Compounds

 11.4 Alkanes and Alkyl Radicals

 11.5 Functional Groups

 11.5.1 Functional Groups Containing Carbon, Hydrogen and Oxygen

 11.5.2 Functional Groups Containing Carbon, Hydrogen and Nitrogen

 11.5.3 Functional Groups Containing Carbon, Hydrogen and Halogens

 11.5.4 Double and Triple Bond

**4. Hydrocarbons**

Introduction

12.1 Alkanes

12.1.1 Preparation

12.1.1.1 Hydrogenation of Alkenes and Alkynes

12.1.1.2 Reduction of Alkyl Halides

 12.1.2 Important Reactions

 12.1.2.1 Halogenation

 12.1.2.2 Combustion

12.2 Alkenes

 12.2.1 Preparation

 12.2.1.1 Dehydration of Alcohols

 12.2.1.2 Dehydrohalogenation of Alkyl Halides

 12.2.2 Important Reactions

 12.2.2.1 Addition of Halogens

 12.2.2.2 Addition of Hydrogen Halides

 12.2.2.3 Oxidation with KMnO4

12.3 Alkynes

12.3.1 Preparation

12.3.1.1 Dehalogenation of Adjacent Dihalides

 12.3.1.2 Dehalogenation of Tetrahalides

 12.3.2 Important Reactions

 12.3.2.1 Addition of Halogens

 12.3.2.2 Oxidation with KMnO4

**5. Biochemistry**

 Introduction

 13.1 Carbohydrates

 13.1.1 Monosaccharides

13.1.2 Oligosaccharides

13.1.3 Polysaccharides

 13.1.4 Sources and Uses

13.2 Proteins

13.2.1 Amino Acids as Building Blocks of Proteins

13.2.2 Sources and Uses

13.3 Lipids

13.3.1 Fatty Acids

13.3.2 Sources and Uses

13.4 Vitamins

13.4.1 Types of Vitamins

13.4.2 Importance of Vitamins

**6. Environmental Chemistry I: The Atmosphere**

Introduction

14.1 Composition of Atmosphere

14.2 Layers of Atmosphere

14.2.1 Troposphere

14.2.2 Stratosphere

14.3 Pollutants

14.3.1 Major Air Pollutants

14.3.2 Sources of Air Pollutants

14.4 Acid Rain and Its Effects

 14.5 Ozone Depletion and Its Effects

**7. Environmental Chemistry II: Water**

Introduction

15.1 Water

15.1.1 Properties of Water

15.1.2 Water as Solvent

15.2 Soft and Hard Water

15.2.1 Types of Hardness of Water

15.2.2 Methods of Removing Hardness

15.2.3 Disadvantages of Water Hardness

15.3 Water Pollution

15.3.1 Industrial Wastes

15.3.2 Household Wastes

15.3.3 Agricultural Waste

15.4 Water Borne Diseases

**8. Chemical Industries**

Introduction

16.1 Basic Metallurgical Operations with Reference to Copper

16.1.1 Concentration

16.1.2 Extraction

16.1.3 Electro-Refining

16.2 Manufacture of Sodium Carbonate by Solvay’s Process

16.2.1 Raw Materials

16.2.2 Basic Reactions

16.2.3 Flow Sheet Diagram

16.3 Manufacture of Urea

16.3.1 Raw Materials

16.3.2 Reaction

16.3.3 Flow Sheet Diagram

16.4 Petroleum Industry

16.4.1 Petroleum

16.4.2 Origin of Petroleum

16.4.3 Mining of Petroleum

16.4.4 Important Fractions of Petroleum

**LIST OF PRACTICALS**

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| **S #** | **PRACTICAL** | **STATUS** |
| 1. Fundamentals of Chemistry |
| 1. | Separate the given mixture by physical method. | Minor  |
| 5. Physical States of Matter |
| 2. | Determine the Melting Point of Naphthalene. | Major |
| 3. | Determine the Boiling Point of Ethyl Alcohol. | Major |
| 4. | Separate naphthalene from the given mixture of sand and naphthalene by sublimation. | Major |
| 5. | Separate the given mixture of alcohol and water by distillation. | Major |
| 6. | Demonstrate that a chemical reaction release energy in the form of heat. | Minor |
| 6. Solutions |
| 7. | Prepare 100 cm­3 of 0.1M NaOH solution. | Major |
| 8. | Prepare 100 cm­3 of 0.1M Na2CO3 solution. | Major |
| 9. | Prepare 250 cm­3 of 0.1M HCl solution. | Major |
| 10. | Prepare 250 cm3 of 0.1M of oxalic acid solution. | Major |
| 11. | Prepare 100 cm3 of 0.1M NaOH solution from the given 1M solution. | Major |
| 12. | Prepare 100 cm3 of 0.01M Na2CO3 solution from the given 0.1M solution. | Major |
| 13. | Prepare 100 cm3 of 0.01M HCl solution from the given 0.1M solution. | Major |
| 14. | Prepare 100 cm3 of 0.01M oxalic acid solution from the given 0.1M solution. | Major |
| 15. | Prepare pure copper sulphate crystals from the given impure sample. | Minor |
| 16. | Demonstrate that miscible liquids dissolve in each other and immiscible liquids do not. | Minor |
| 17. | Demonstrate that temperature affects solubility. | Minor |
| 7. Electrochemistry |
| 18. | Demonstrate the conductivity of different given solutions. | Minor |
| 19. | Demonstrate a metal displacement reaction in aqueous medium. | Minor |
| 8. Chemical Reactivity |
| 20. | Demonstrate that two elements combine to form a binary compound. | Major  |
| 21. | Demonstrate that compounds can be products of a decomposition reaction. | Minor |
| 22. | Demonstrate that an element and a compound can react to form a different element and a different compound. | Minor |
| 23. | Demonstrate that some chemical reactions absorb energy.  | Minor |
| 10. Acids, Bases and Salts |
| 24. | Identify sodium, calcium, strontium, barium, copper, potassium radicals by flame test. | Minor  |
| 25. | Standardize the given NaOH solution volumetrically. | Major |
| 26. | Standardize the given HCl solution volumetrically. | Major |
| 27. | Determine the exact molarity of the Na2CO3 solution volumetrically. | Major |
| 28. | Determine the exact molarity of a solution of oxalic acid volumetrically. | Major |
| 29. | Demonstrate that some natural substances are weak acids. | Minor |
| 30. | Classify substances as acidic, basic or neutral | Minor |
| 11. Organic Chemistry |
| 31. | Identify aldehydes using Fehling’s test and Tollen’s test. | Major |
| 32. | Identify ketones using 2, 4-dinitrophenyl hydrazine test. | Major |
| 33. | Identify carboxylic acids using sodium carbonate test. | Major |
| 34. | Identify phenol using Ferric Chloride test. | Major |
| 12. Hydrocarbons |
| 35. | Identify saturated and unsaturated organic compounds by KMnO4 test. | Minor |
| 13. Biochemistry |
| 36. | Demonstrate that sugar decomposes into elements or other compounds. | Minor |
| 15. Water |
| 37. | Demonstrate the softening of water by removal of calcium ions from hard water. | Major |

**RECOMMENDED REFERENCE BOOKS FOR CLASS X**

 The question papers will be syllabus oriented. However, the following book is recommended for reference and supplementary reading:

 An interactive approach to Chemistry 10

 National Book Foundation, Islamabad.

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| LOGO |  |
| Federal Board SSC Examination Chemistry Practical Model Question Paper  |  |

Time allowed: 2 hours Total Marks: 20

**Note:** Write procedure, equation, observation and calculation for Q.1 & Q.2.

**Major Experiments:**

Q.1Preparation of standard solution. (5)

Q.2Identification of functional group. (5)

 **(OR)**

 Identification hardness of water. (5)

**Miner Experiments** (only performance)**:**

Q.3 Identify the acid, base and salt. (2)

Q.4 Identification of saturated and unsaturated substances. (2)

Note Book (4)

Viva Voce (2)

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