

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 KMnO_4
- 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 KMnO_4

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

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 cm ³ of 0.1M NaOH solution.	Major
8.	Prepare 100 cm ³ of 0.1M Na ₂ CO ₃ solution.	Major
9.	Prepare 250 cm ³ of 0.1M HCl solution.	Major
10.	Prepare 250 cm ³ of 0.1M of oxalic acid solution.	Major
11.	Prepare 100 cm ³ of 0.1M NaOH solution from the given 1M solution.	Major
12.	Prepare 100 cm ³ of 0.01M Na ₂ CO ₃ solution from the given 0.1M solution.	Major
13.	Prepare 100 cm ³ of 0.01M HCl solution from the given 0.1M solution.	Major
14.	Prepare 100 cm ³ 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 Na ₂ CO ₃ 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 KMnO_4 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.



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.1 Preparation of standard solution. (5)
- Q.2 Identification 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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