Marks: 85	PART –II(CLASS-XII)	Time: 3:00 Hours

CHAPTER:1 PERIODIC CLASSIFICATIN OF ELEMENTS AND PERIODICITY

Introduction: Historical Background, Improvements in Mendeleev's Periodic Table

The Modern Periodic Table: Group and Periods, Some More Families in the Periodic Table, Block in the Periodic Table, Metals, Non-metals and Metalloids

Periodic Trends in Physical Properties: Atomic Size, Ionization Energy, Electron Afinity, Metallic and Non-Metallic Character, Melting and Boiling Points, Oxidation State, Electrical Conductance, Hydration Energy

Periodic Relationship in compounds

The Position of Hydrogen

CHAPTER:2 BLOCK ELEMENTS

Introduction: Electronic Configurations of s-Block Elements, Occurrence of Alkali Metals, Occurrence of Alkaline-Earth Metals, Peculiar Behaviour of Lithium, Peculiar Behaviour of Beryllium

General Behaviour of Alkali Metals

Trends in Chemical Properties of Alkali Metals, Trends in Chemical Properties of Altaline-Earth Metals, General Trends in Properties of Compounds of Alkali and Alkaline-Earth Metals

Commercial Preparation of Sodium by Downs Cell

Commercial Preparation of Sodium Hydroxide by the Diaphragm cell

Role of Gypsum in Agriculture and Industry

Role of Gypsum in Agriculture, Role of Gypsum in Industries

Role of Lime in Agriculture and Industry

Role of Lime in Agriculture, Role of Lime in Industries

CHAPTER:3 GROUP IIIA AND GROUP IVA ELEMENTS

Group IIIA Elements: Occurrence (Boron and Aluminium), Peculiar Behaviour of Boron

Compounds of Boron: Borax (Sodium Tetraborate $Na_2B_4O_710H_2O$), Boric Acids,

Reactions of aluminium: Reaction with Air, Reaction with Non-Metals, Reaction with Acids and Alkalies

Group IVA Elements: Occurrence of Carbon, Peculiar Behaviour of Carbon

Compounds of Carbon and Silicon

Oxides of Silicon, Silicates and their Uses, Silicones

Semiconductors

Uses of Lead Compounds in Paints

Lead Suboxide, Pb_2O, Lead Monoxide (Litharge, Massicot) PbO, Triplumbic Tetra Oxide, (red lead, minium), Pb_3O_4, Lead Dioxide, PbO_2, white Lead, Lead Chromate ($PbCrO_4$)

CHAPTER:4 GROUP VA AND VIA ELEMENTS

Group VA Elements: Introduction, General Characteristics

Nitrogen And Its Compounds: Occurrence, Oxides of Nitrogen, Oxyacids of Nitrogen

Phosphorus and its Compounds: Occurrence, Allotropes of Phosphorus, Halides of Phosphorus, Oxides of Phosphorus, Oxyacids of Phosphorus

Group VIA Elements: Group VIA Elements, General Characteristics, Occurrence, Comparison of Exygen and Sulphur,

Sulphuric Acid (H_2SO_4): Manufacture of Sulphuric Acid, Properties, Uses of Sulphuric Acid

CHAPTER:5 THE HALOGENS AND THE NOBLE GASES

Introduction

Occurrence

Peculiar Behoviour of Fluorine

Oxidizing Properties

Compounds of Halogens: Hydrides (hydrogen halides, HX), Oxides of Halogens, Reactions of Chlorine with Cold and Hot NaOH, Oxyacids, Bleaching Powder, (Ca(OC*l*)C*l*)
Commercial Uses of Halogens and Their Compounds
Noble Gases: Introduction, Compounds of Xenon, Fluorides of Xenon, Xenon Oxyfluorides, Oxides of Xenon, Applications of the Noble Gases

CHAPTER:6 TRANSITION ELEMENTS
Introduction: Typical and Non-Typical Transition Elements
Properties of Transition Elements: General charactetistics
Complex Compounds: Components of Complex Compounds, Chelates, Nomenclature, Geometry of Complexes
Iron: Commercial Forms of Iron, Wrought Iron, Manufacture of Wrought Iron from Cast Iron, Steel, Manufacture of Steel, Open Hearth Process, Bessemer's Process
Corrosion: Electrochemical Theory, Prevention from Corrosion, Tin Plating or Coating Iron with Tin (cathode coating), Galvanizing or Zinc Coating (anode coating)
Chromates and Dichromates: Potassium Chromate (K_2CrO_4), Properties, Potassium Dichromate ($K_2Cr_2O_7$), Properties
Potassium Permanganate ($KMnO_4$): Properties

CHAPTER:7 FUNDAMENTAL PRINCIPLES OF ORGANIC CHEMISTRY
Introduction: Modern Definition of Organic Chemistry
Some Features of Organic Compounds
Importance of Organic Chemistry
Sources of Organic Compounds: Coal, Natural Gas, Petroleum
Cracking of Petroleum
Reforming
Classifications of Organic Compounds
Functional Group
Hybridization of Orbitals and The Shapes of Molecules
Isomerism: Types of Isomerism

CHAPTER:8 ALIPHATIC HYDROCARBONS
Introduction
Nomenclature: Common or Trivial Names,IUPAC Names, Nomenclature of Alkenes, Nomenclature of Alkynes
Alkanes or Paraffins: General Methods of Preparations, Physical Properties, Reactivity of Alkanes, Reactions, Uses of Methane
Alkenes: General Methods of Preparation, Physical Properties, Reactivity of a π-bond, Reactions of Alkenes, Uses of Ethene
Alkynes: General Methods of Preparation, Physical Characteristics, Reactivity of Alkynes, Reactions, Uses of Ethyne, Comparison of Reactivities of Alkanes, Alkenes and Alkynes

CHAPTER:9 AROMATIC HYDROCARBONS
Introduction
Nomenclature
Benzene: Structure of Benzene, Straight Chain Structures Ruled Out:, Kekule's Structure, X-Ray Studies of Benzene Structure, Modern Concepts about the Structure of Benzene Atomic Orbital Treatment of Benzene, The Stability of Benzene, The Resonance Method
Preparation of Benzene
Reactions of Benzene: General Pattern of Reactivity of Benzene towards Electrophiles, Electrophilic Substitution Reactions, Reactions in which Benzene Ring is involved, Orientation in Electrophilic Substitution reactions
Comparison of Reactivities of Alkanes, Akenes and Benzene

CHAPTER:10 ALKHYL HALIDES
Introduction
Nomenclature of Alkhyl Halides
Methods of Preparation of Alkyl Halides

Reactivity of Alkyl Halides
Reactions of Alky Halides: Nucleophilic Substitution Reactions, Mechanism of Nucelophilic Substitution Reactions, Elimination Reactions
Grignard Reagent

CHAPTER:11 ALCOHOLS, PHENOLS AND ETHERS
Introduction
Alcohols: Nomenclature of Alcohols, Industrial Preparation of Alcohols, Physical Properties, Reactions of Alcohols, Reactions in which C — O Bond is Broken, Reactions involving the Cleavage of O — H bond, Some other Reactions of Alcohols
Distinction Between Primary, Secondary and Tertiary Alcohols
Uses of Alcohols
Phenol: Preparation of Phenol, Physical Properties, Reactions of Phenol, Acidic behaviour of Phenol, Reactions of Phenol due to-OH Group, Reactions of Phenol due to Benzene Ring
Ethers: Nomenclature, Preparation of Ethers, Physical Properties, Chemical Reactivity

CHAPTER:12 ALDEHYDES AND KETONES
Introduction
Nomenclature
Preparation of Aldehydes and Ketones
Reactivity of Carbonyl Group
Reactions of Carbonyl Compounds: Nucleophilic addition Reactions, Reduction Reactions, Oxidation Reactions
Identification of Carbonyl Compounds
Uses

CHAPTER:13 CARBOXYLIC ACIDS
Introduction
Nomenclature of Carboxylic Acids: Common or Trivial names, The IUPAC Nomenclature
General Methods of Preparation
Physical Characteristics
Reactivity of Carboxyl Group
Reactions of Carboxylic Acids
Acetic Acid: Laboratory Methods, Manufacture of Acetic Acid, Physical Characteristics, Reactions of Acetic Acid, Uses of Acetic Acid
Amino Acids: Essential and Non-essential Amino Acids, Nomenclature of Amino Acids, Structure of Amino Acids, Acidic and Basic Characters of Amino Acids, Synthesis of Amino Acids, Reactions of Amino Acids, Test of Amino Acids, Peptides and Proteins

CHAPTER:14 MACROMOLECULES
Introduction
Structure of Polymers
Types of Polymers
Polymerization Process
Brief Description of Synthetic Polymers
Biopolymers
Carbohydrates, Classification of Carbohydrates, Proteins, Classification of Proteins, Structure of Proteins, Denaturation of Proteins, Importance of Proteins, Lipids, Sources of Fats and Oils, Structure and Composition of Fats and Oils, Classification, Physical Properties, Chemical Properties, Saponificaton Number, Rancidity of Fats or Oils, Iodine Number, Acid Number, Steroids, Importance of Lipids, Enzymes, Classification of Enzyme, Properties of Enzymes, Factors Affecting Enzyme Activity, Importance of Enzymes, Nucleic Acids, Components of Nucleic Acids

CHAPTER:15 COMMON CHEMICAL INDUSTRIES IN PAKISTAN
Introduction
Fertilizers: Early History, What are Fertilizers

Elements Essential for Plant Growth: Micro-nutrients (Trace elements), Macro-nutrients, Requirement of a Fertilizer, Essential Qualities of a Good Fertilizer

Classification of Fertilizers: Nitrogeneous Fertilizers, Phosphatic Fertilizers, Potassium Fertilizers, Fertilizer Industry in Pakistan

Cement: Early History, Definition, Raw Materials, Manufacturing Process of Cement, Wet Process, Setting of Cement, Cement industry in Pakistan

Paper Industry: Early History, Definition, Brief Description of the Process, Pulping Processes, Neutral Sulphite Semi Chemical Process

CHAPTER:16 ENVIRONMENTAL CHEMISTRY

Introduction: Components of the Environment

Types of Pollution: Air Pollution, The Effects of Polluted Air on Environment, Water Pollution

Factors Affecting the Quality of Water: Purification of Water

Solid Waste Management: Effects of Dumping Waste in Sea and Rivers, Landfill, Incineration of the Muncipal Solid Waste, Treatment of Industrial Waste, Incineration of Indestrial and Hazardous Waste, Recycling of Waste

CONTENTS OF PRACTICAL FOR CLASS XII (PART-II)

1. Preparation of copper ammine complex.
2. Prepare a pure sample of glucosazone.
3. Preparation of a pure sample of iodoform.
4. Preparation of aspirin.
5. Estimation of barium in the given sample solution gravimetrically.
6. Find out the elements present in given organic compound.
7. Write the tests for identification of following functional groups in the giving organic compound. (i) Carboxylic acid (ii) Aldehyde (iii) Phenol
8. Preparation of some important solutions used as reagents
9. Acid radical's classification
10. Salt analysis (Groups and radical identification)
11. Scheme for dilute sulphuric acid group
12. Scheme for conc. sulphuric acid group
13. Scheme for special group
14. Detection of the radicals of dilute acid group
15. Detection of the radicals of concentrated acid group
16. Detection of the radicals of special group
17. List of basic radicals
18. Analysis for basic radicals
19. Dry tests for the basic radical
20. Scheme for detection of the radicals of Group-I
21. Scheme for detection of the radicals of Group-II
22. Scheme for detection of the radicals of Group-III
23. Scheme for detection of the radicals of Group-IV
24. Scheme for detection of the radicals of Group-V
25. Scheme for detection of the radicals of Group-VI
26. Detection of the radicals of Group-I
27. Detection of the radicals of Group-II
28. Detection of the radicals of Group-III
29. Detection of the radicals of Group-IV
30. Detection of the radicals of Group-V
31. Detection of the radicals of Group-VI

Theory Periods CHEMISTRY XII

Chapter	Content	Periods	Weightage
1	Periodic classification of elements	12	6%
2	s-Block elements	8	4%
3	Group III and IV elements	8	4%
4	Group V and Vl elements	10	5%
5	The halogens and noble gases	10	5%
6	The transition elements	12	6%
7	Fundamental principles of organic chemistry	10	5%
8.	Aliphatic hydrocarbons	10	5%
9	Aromatic hydrocarbons	8	4%
10	Alkyl halides	8	4%
11	Alcohol, phenols and ethers	10	5%
12	Aldehydcs and ketones	8	4 %
13	Carboxylic Acids and their derivatives	6	3%
14	Macromolecules	8	4%
15	Common chemical industries	8	4%
16	Environmental chemistry	14	7%
	Total	**150**	**75%**

Recommended Book: Chemistry Part-II
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