

# SYLLABUS

## CHEMISTRY – II

## SECOND YEAR

S. No.	TOPIC	
<b>1</b>	<b>SOLID STATE</b>	
	1.1	General Characteristic of Solid State
	1.2	Amorphous and Crystalline Solids
	1.3	Classification of Crystalline Solids
	1.4	Probing the structure of solids: X-Ray Crystallography
	1.5	Crystal Lattices and Unit Cells
	1.6	Number of Atoms in a Unit Cell
	1.7	Close Packed Structures
	1.8	Packing Efficiency
	1.9	Calculation involving unit cell Dimensions
	1.10	Imperfection in Solids
	1.11	Electrical Properties
	1.12	Magnetic Properties
<b>2</b>	<b>SOLUTIONS</b>	
	2.1	Types of Solutions
	2.2	Expressing concentration
	2.3	Solubility
	2.4	Vapour Pressure of Liquid Solutions
	2.5	Ideal and Non-Ideal Solutions
	2.6	Colligative Properties and Determination of Molar Mass
	2.7	Abnormal Molar Masses
<b>3</b>	<b>ELECTROCHEMISTRY AND CHEMICAL KINETICS ELECTROCHEMISTRY</b>	
	3.1	Electrochemical Cells
	3.2	Galvanic Cells
	3.3	Nernst Equation
	3.4	Conductance Electrolytic Solutions
	3.5	Electrolytic Cell and Electrolysis
	3.6	Batteries
	3.7	Fuel Cells
	3.8	Corrosion
	<b>CHEMICAL KINETICS</b>	
	3.9	Rate of Chemical Reaction

	3.10	Factors influencing Rate of Reaction
	3.11	Integrated Rate Equations
	3.12	Pseudo First Order Reaction
	3.13	Temperature Dependence of the Rate of a Reaction
	3.14	Collision Theory of Chemical Reaction Rates
<b>4</b>	<b>SURFACE CHEMISTRY</b>	
	4.1	Adsorption
	4.2	Catalysis
	4.3	Colloids
	4.4	Classification of Colloids
	4.5	Emulsions
	4.6	Colloid Around Us
<b>5</b>	<b>GENERAL PRINCIPLES OF MEALLURGY</b>	
	5.1	Occurrence of Metals
	5.2	Concentration of Ores
	5.3	Extraction of crude Metal from Concentrated Ore
	5.4	Thermodynamic Principles of Metallurgy
	5.5	Electrochemical Principles of Metallurgy
	5.6	Oxidation and Reduction
	5.7	Refining of Crude Metal
	5.8	Uses of Aluminium, Copper, Zinc and Iron
<b>6</b>	<b>P-BLOCK ELEMENTS GROUP -15 ELEMENTS</b>	
	6.1	Introduction
	6.2	Dinitrogen
	6.3	Ammonia
	6.4	Oxides of nitrogen
	6.5	Nitric Acid
	6.6	Phosphorous –allotropic forms
	6.7	Phosphine
	6.8	Phosphorous halides
	6.9	Oxoacids of phosphorous
	<b>GROUP – 16 ELEMENTS</b>	
	6.10	Introduction
	6.11	Dioxygen

	6.12	Simple Oxides
	6.13	<b>Ozone</b>
	6.14	Sulphur – Allotropic forms
	6.15	Sulphur dioxide
	6.16	Oxoacids of Sulphur
	6.17	Sulphuric Acid
		<b>GROUP – 17 ELEMENTS</b>
	6.18	Introduction
	6.19	Chlorine
	6.20	Hydrogen Chloride
	6.21	Oxoacids
	6.22	Interhalogen Compounds
		<b>GROUP – 18 ELEMENTS</b>
	6.23	Introduction – Occurrence, Electronic configuration Ionisation Enthalpy, Atomic radii, Electron Gain Enthalpy Physical and Chemical Properties.
<b>7</b>		<b>d AND f BLOCK ELEMENTS &amp; COORDINATION COMPOUNDS</b>
	7.1	Position in the Periodic Table
	7.2	Electronic Configuration
	7.3	General Properties of Transition Elements (d-Block)
	7.4	Some Important Compounds of Transition Elements
	7.5	Inner Transition Elements (f-Block)
	7.6	Actinoids
	7.7	Some Applications of d and f Block Elements
	7.8	Werner's Theory of Coordination Compounds
	7.9	Definitions of Some Terms used in Coordination Compounds
	7.10	Nomenclature of Coordination Compounds
	7.11	Isomerism in Coordination Compounds
	7.12	Bonding in Coordination Compounds
	7.13	Bonding in Metal Carbonyls
	7.14	Stability of Coordination Compounds
	7.15	Importance and Applications of Coordination Compounds
<b>8.</b>		<b>POLYMERS</b>
	8.1	Classification of Polymers
	8.2	Types of Polymerization Reactions

	8.3	Molecular Mass of Polymers
	8.4	Biodegradable Polymers
<b>9</b>	<b>BIOEMOLECULES</b>	
	9.1	Carbohydrates
	9.2	Proteins
	9.3	Enzymes
	9.4	Vitamins
	9.5	Nucleic acids
	9.6	Hormones
<b>10</b>	<b>CHEMISTRY IN EVERYDAY LIFE</b>	
	10.1	Drugs and their classification
	10.2	Drug – Target Interaction
	10.3	Therapeutic Action of Different Classes of Drug
	10.4	Chemicals in Food
	10.5	Cleansing Agents
<b>11</b>	<b>HALO ALKANES AND HALOARENES</b>	
	11.1	Classification
	11.2	Nature of C-X bond
	11.3	Methods of Preparation
	11.4	Physical Properties
	11.5	Chemical Reactions
	11.6	Polyhalogen Compounds
<b>12</b>	<b>ORGANIC COMPOUNDS CONTAINING C, H AND O (Alcohols, Phenols, Ethers, Aldehydes, Ketones and Carboxylic acids)</b>	
		<b>Alcohols, Phenols, Ethers</b>
	12.1	Classification – Alcohols , Phenols and Ethers
	12.2	Nomenclature – Alcohols, Phenols and Ethers
	12.3	Structures of Hydroxy and Ether Functional Groups
	12.4	Alcohols and Phenols
	12.5	Physical Properties
	12.6	Chemical Reactions
	12.7	Some Commercially Important Alcohols
	12.8	Ethers
		<b>Aldehydes, Ketones</b>

	12.9	Nomenclature and Structure of Carbonyl Group
	12.10	Preparation of Aldehydes and ketones
	12.11	Physical Properties
	12.12	Chemical Reactions
	12.13	Uses of Aldehydes and Ketones
	<b>Carboxylic acids</b>	
	12.14	Nomenclature and Structure of Carboxyl Group
	12.15	Methods of Preparation of Carboxylic Acids
	12.16	Physical Properties
	12.17	Chemical Reactions
	12.18	Uses of Carboxylic Acids
<b>13</b>	<b>ORGANIC COMPOUNDS CONTAINING NITROGEN</b>	
	<b>Amines</b>	
	13.1	Structure of Amines
	13.2	Classification
	13.3	Nomenclature
	13.4	Preparation of Amines
	13.5	Physical Properties
	13.6	Chemical Reactions
	<b>Diazonium Salts</b>	
	13.7	Methods of Preparation of Diazonium Salts
	13.8	Physical Properties
	13.9	Chemical Reactions
	13.10	Importance of Diazonium Salts in Synthesis of Aromatic Compounds
	<b>Cyanides and Isocyanides</b>	
	13.11	Structure of cyanides and isocyanides
	13.12	Preparation
	<b>Appendices (I to IV)</b>	