

Module wise Study Plan

Module	Chemistry
Module 1	Laws of Chemical Combinations
	Mole Concept and Molar Masses
	Percentage Composition
	Stoichiometry and Stoichiometric Calculations
Module 2	Sub-atomic Particles
	Developments Leading to the Bohr's Model of Atom - Part I
	Developments Leading to the Bohr's Model of Atom - Part II
	Developments Leading to the Bohr's Model of Atom - Part III
	Bohr's Model for Hydrogen Atom
	Towards Quantum Mechanical Model of the Atom
	Quantum Mechanical Model of the Atom
	Bond Parameters
	The Valence Shell Electron Pair Repulsion(VSEPR) Theory
	Valence Bond Theory
	Hybridization
	Molecular Orbital Theory
	Hydrogen Bonding
Module 3	The Gas Laws
	Ideal Gas Equation
	Kinetic Molecular Theory of Gases
	Behavior of Real Gases: Deviation from Ideal Gas Behavior
	Calculations Involving Unit Cell Dimensions
	Imperfections in Solids
Module 4	Cumulative test based on Module 1,2,3
	Expressing Concentration of Solutions
	Solubility
	Vapour Pressure and Liquid Solutions
	Ideal and non Ideal Solutions
	Colligative Properties and Determination of Molar Mass - Part I

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Module 5	Colligative Properties and Determination of Molar Mass - Part II
	Abnormal Molar Masses
Module 6	Thermodynamics - Applications
	Measurement of Delta U & Delta H: Calorimetry
	Enthalpies for Different Types of Reactions
	Spontaneity
	Gibbs Energy Change and Equilibrium
Module 7	Law of Chemical Equilibrium and Equilibrium Constant
	Applications of Equilibrium Constant
	Factors Affecting Equilibria
	Ionic Equilibrium in Solution
	Acids, bases and salts
	Ionization of acids and bases
	Solubility and Solubility Product
Module 8	Cumulative test based on Module 5,6,7
Module 9	Rate of a chemical reaction
	Factors Influencing Rate of a Reaction
	Integrated Rate Equations
	Temperature Dependence of the Rate of a Reaction
	Collision Theory of Chemical Reactions
Module 10	Oxidation Number
	Redox Reactions and Electrode Processes
	Galvanic Cells
	Nernst Equation
	Conductance of Electrolytic Solutions
	Electrolytic Cells and Electrolysis
	Fuel cells
	Corrosion
Module 11	Adsorption
	Catalysis
	Colloids
	Atmospheric pollution
Module 12	Cumulative Test based on Module 9,10,11
	Electronic Configurations and Types of Elements: s, p, d, f - Blocks

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Module 13	Periodic Trends in Properties of Elements
	Occurrence of Metals
	Concentration of Ores
	Extraction of Crude Metal from Concentrated Ore
	Thermodynamic Principles of Metallurgy
	Electrochemical Principles of Metallurgy
	Oxidation- Reduction
	Refining
Module 14	Occurrence and Isotopes of Hydrogen
	Hydrogen - Preparation
	Hydrogen - Properties
	Hydrides
	Water
	Hydrogen Peroxide
	Heavy Water
	Group 1 Elements: Alkali Metals
	Group 2 elements: Alkaline Earth Metals
	Group 13 elements: The Boron Family
	Group 14 elements: The Carbon family
	Group 15 Elements - The Nitrogen Family
	Group 15 Nitrogen And Its Compounds
	Group 15 Phosphorus And Its Compounds
	Group 16 Elements - The Oxygen Family
	Group 16 Oxygen And Ozone
	Group 16 Sulphur And Its Compounds
	Group 17 Elements - The Halogens
	Group 17 Chlorine, Oxoacids of Halogens And Interhalogen Compound
	Group 18 Elements - The Noble Gases

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Module 15	
Module 16	Cumulative Test based on Module 13, 14, 15
	General Properties of the Transition Elements(d-block)-Part 1
	General Properties of the Transition Elements(d-block)-Part 2
	Some Important Compounds of Transition Elements
	f-Block Elements(Lanthanoids and Actinoids)
	Definitions of Some Important Terms Pertaining to Coordination Compounds
	Nomenclature of coordination compounds
	Isomerism in co-ordination compounds
	Bonding in co-ordination compounds Part -1
	Bonding in co-ordination compounds Part - 2
	Bonding in Metal Carbonyls
	Stability of Coordination Compounds
	Importance of coordination compounds
	Important inorganic structures
	Module 17
	Structural representations of organic compounds
	Classification of organic compounds
	Nomenclature of organic compounds
	Isomerism in Organic Compounds
	Methods of Purification of Organic Compounds
	Qualitative and Quantitative Analysis of Organic Compounds
	Fundamental Concepts in Organic Reaction Mechanism
Module 18	
	Alkanes
	Alkenes
	Alkynes
	Aromatic Hydrocarbons
Module 19	
Module 20	Cumulative Test based on Module 17, 18, 19

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Module 21	Classification & Nomenclature of Haloalkanes and Haloarenes
	Nature of C-X bond
	Methods of Preparation of Haloalkanes and Haloarenes
	Physical Properties of Haloalkanes and Haloarenes
	Chemical Reactions of Haloalkanes and Haloarenes
	Poly halogen compounds
Module 22	Classification & Nomenclature of Alcohols, Phenols and Ethers
	Structures of functional groups
	Alcohols
	Phenols
	Ethers
Module 23	Nomenclature and Structure of Carbonyl Group
	Preparation of Aldehydes and Ketones
	Physical Properties of Aldehydes and Ketones
	Chemical Reactions of Aldehydes and Ketones
	Uses of Aldehydes And Ketones
	Nomenclature And Structure of Carboxylic Acids
	Methods of Preparation of Carboxylic Acids
	Physical Properties of Carboxylic Acids
	Chemical Reactions of Carboxylic Acids
	Uses of Carboxylic Acids
Module 24	Cumulative Test based on Module 21, 22, 23
	Classification of Amines
	Nomenclature of Amines
	Preparation of Amines
	Physical Properties of Amines
	Chemical Reactions of Amines
	Diazonium Salts
	Carbohydrates
	Proteins
	Enzymes
	Vitamins

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	Nucleic Acids
Module 25	
	Classification of polymers
	Types of polymerization
	Bio Degradable Polymers
	Drugs
	Chemicals in food
	Cleansing agents
	Important organic named reactions
	Reaction Mechanisms
	Distinction Tests
Module 26	
Module 27	Cumulative Test based on Module 25, 26
Module 28	Revision Test 1
Module 29	Revision Test 2
Module 30	Revision Test 3
Module 31	Revision Test 4
Module 32	Revision Test 5
Module 33	Revision Test 6
Module 34	Revision Test 7
Module 35	Revision Test 8
Module 36	Revision Test 9
Module 37	Revision Test 10