

Bihar Board Class 12 Chemistry Syllabus

Contents

1	Unit 1: Solid State	2
2	Unit 2: Solutions	2
3	Unit 3: Electrochemistry	2
4	Unit 4: Chemical Kinetics	3
5	Unit 5: Surface Chemistry	3
6	Unit 6: General Principles and Processes of Isolation of Elements	3
7	Unit 7: p-block Elements	3
	7.1 Group 15 Elements	3
	7.2 Group 16 Elements	4
	7.3 Group 17 Elements	4
	7.4 Group 18 Elements	4
8	Unit 8: d and f-block Elements	4
9	Unit 9: Coordination Compounds	4
10	Unit 10: Haloalkanes and Haloarenes	5
11	Unit 11: Alcohols, Phenols, and Ethers	5
12	Unit 12: Aldehydes, Ketones, and Carboxylic Acids	5
13	Unit 13: Organic Compounds Containing Nitrogen	5
14	Unit 14: Biomolecules	5
15	Unit 15: Polymers	6
16	Unit 16: Chemistry in Everyday Life	6

1 Unit 1: Solid State

- Classification based on different binding forces
- Crystalline and Amorphous Solids
- Unit cell: in two dimensional and three dimensional lattices, density of unit cell, packing in solids, voids, number of atoms per unit cell, point defects
- Band theory: Metals, Conductors, Semiconductors, and Insulators
- n and p-type semiconductors

2 Unit 2: Solutions

- Types of solutions
- Expressing concentration of solutions
- Osmosis and osmotic pressure
- Colligative properties and determination of molar mass
- Abnormal molecular mass
- Vapour pressure of liquid solutions
- Depression of freezing point

3 Unit 3: Electrochemistry

- Redox reactions
- Electrolytic cells and electrolysis: Electrolytic solutions
- Galvanic cells, dry cells, and electrolytic cells: EMF of a cell
- Nernst equation and its applications
- Kohlrausch's Law
- Corrosion
- Fuel cells

4 Unit 4: Chemical Kinetics

- Rate of reaction: Integrated rate of reactions, factors affecting the rate of reaction, temperature dependence
- Order and molecularity of a reaction, rate law, specific rate constant, integrated rate equations, and half-life
- Concept of collision theory
- Activation energy
- Arrhenius equation

5 Unit 5: Surface Chemistry

- Adsorption: Factors affecting adsorption of gases on solids
- Catalysis: Homogeneous and heterogeneous activity and selectivity; enzyme catalysis
- Colloidal state: Distinction between true solutions, colloids, and suspensions
- Preparation of colloids
- Properties of colloids: Tyndall effect, Brownian movement, electrophoresis, coagulation
- Emulsion: Types of emulsions

6 Unit 6: General Principles and Processes of Isolation of Elements

- Principles and methods of extraction
- Oxidation and reduction
- Electrolytic method and refining
- Occurrence and extraction of aluminium, copper, zinc, and iron

7 Unit 7: p-block Elements

7.1 Group 15 Elements

- Introduction, configuration, oxidation state, occurrence, physical and chemical properties
- Nitrogen: Preparation, properties, uses, compounds, properties of ammonia and nitric acid, oxides of nitrogen
- Phosphorus: Allotropic forms, compounds of phosphorus: preparation and properties of phosphine, halides PCl_3 , PCl_5 , and oxoacids

7.2 Group 16 Elements

- Introduction, configuration, oxidation state, occurrence, physical and chemical properties
- Dioxygen: Preparation, properties, and uses
- Oxides: Classification of oxides, ozone
- Sulphur: Allotropic forms, compounds of sulphur, uses of sulphur dioxide, sulphuric acid, oxoacids of sulphur

7.3 Group 17 Elements

- Introduction, configuration, oxidation state, occurrence, physical and chemical properties
- Halogen compounds, uses of chlorine and hydrochloric acid, interhalogen compounds, oxoacids of halogens

7.4 Group 18 Elements

- Introduction, configuration, oxidation state, occurrence, physical and chemical properties

8 Unit 8: d and f-block Elements

- Introduction, configuration, oxidation state, occurrence, physical and chemical properties
- Transition metals: Characteristics and occurrence
- Potassium dichromate and potassium permanganate: Preparation and properties
- Lanthanoids: Electronic configuration, oxidation states, and lanthanoid contraction
- Actinoids: Electronic configuration, oxidation states

9 Unit 9: Coordination Compounds

- IUPAC nomenclature of mononuclear coordination compounds
- Bonding in metal carbonyls
- Introduction and Werner's theory of coordination compounds
- Valence bond theory and crystal field theory: Structure and stereoisomerism, importance

10 Unit 10: Haloalkanes and Haloarenes

- Haloalkanes: Classification, applications, nomenclature, nature of C-X bond
- Haloarenes: Nature of C-X bond, substitution reactions
- Uses and environmental effects of dichloromethane, trichloromethane, tetrachloromethane, iodoform, freons, DDT

11 Unit 11: Alcohols, Phenols, and Ethers

- Alcohols: Nomenclature, preparation methods, physical and chemical properties, identification of alcohols (primary, secondary, and tertiary), mechanism of dehydration, uses
- Phenols: Nomenclature, methods of preparation, properties, acidic nature of phenol, electrophilic substitution reactions, uses of phenols
- Ethers: Nomenclature, preparation methods, properties, and uses

12 Unit 12: Aldehydes, Ketones, and Carboxylic Acids

- Aldehydes and ketones: Nomenclature, preparation methods, properties, nucleophilic addition reaction
- Carboxylic acids: Nomenclature, acidic nature, methods of preparation, physical and chemical properties, uses

13 Unit 13: Organic Compounds Containing Nitrogen

- Amines: Structure, classification, nomenclature, preparation methods, properties, uses, identification of amines (primary, secondary, and tertiary)
- Cyanides and isocyanides: Structure, classification, nomenclature, preparation methods, properties, and uses
- Diazonium salts: Structure, classification, nomenclature, preparation methods, properties, and importance in synthetic organic chemistry

14 Unit 14: Biomolecules

- Carbohydrates: Classification and uses
- Proteins: Structures, elementary idea of α -amino acids, peptide bond, polypeptides, proteins, denaturation of proteins, and enzymes
- Vitamins: Classification and functions
- Nucleic acids: DNA and RNA structures

15 Unit 15: Polymers

- Classification, polymerization method, copolymerization
- Natural and synthetic polymers
- Biodegradable and non-biodegradable polymers

16 Unit 16: Chemistry in Everyday Life

- Chemicals in foods
- Drugs and their classification
- Chemicals in medicines: Antiseptics, disinfectants, antifertility drugs, antibiotics, antacids, antihistamines
- Chemicals in food: Preservatives, artificial sweetening agents
- Cleansing agents: Soaps and detergents, cleansing action