

Module I**Chapter 1 : Atomic and Molecular Structure****1-1 to 1-41**

Syllabus : Atomic orbitals (s,p,d,f) orbital shapes, Electronic Configuration, Molecular orbital theory (MOT), bonding and anti-bonding orbitals, Molecular orbital diagrams of Homonuclear and Heteronuclear diatomic molecules- Be_2 , O_2 , CO , NO their bond order and magnetic properties.

1.1	Introduction.....	1-1
1.1.1	Atomic and Molecular Structure.....	1-1
1.1.2	Scientific History of Work.....	1-1
1.2	Rutherford's Atomic Model.....	1-2
1.2.1	Conclusions by Rutherford.....	1-3
1.2.2	Definition of Proton.....	1-3
1.2.3	Drawbacks of Rutherford's Atomic Model.....	1-3
1.3	Bohr's Atomic Theory.....	1-4
1.3.1	Significance/Advantages of Bohr's Atomic Model.....	1-5
1.3.2	Drawbacks/Limitations of Bohr's Atomic Model.....	1-6
1.3.3	Atomic Spectrum of Hydrogen Atom.....	1-7
1.3.4	Structure of Hydrogen Atom.....	1-7
1.4	Quantum Numbers.....	1-8
1.4.1	Principal Quantum Number (n).....	1-8
1.4.2	Azimuthal Quantum Number (l).....	1-9
1.4.3	Magnetic Quantum Number (M).....	1-9
1.4.4	Spin Quantum Number (s).....	1-9
1.5	Atomic orbitals (s, p, d, f) orbital shapes.....	1-9
1.5.1	Atomic Orbital Shapes.....	1-10
1.5.2	Hydrogenic Energy Levels.....	1-12
1.5.3	Radial and Angular shapes of Orbitals.....	1-14
1.5.4	Radial Distribution Function.....	1-15
1.6	Electronic Configuration.....	1-15
1.6.1	Pauli's Exclusion Principle.....	1-16
1.6.2	Hund's Rule of Maximum Multiplicity.....	1-16
1.6.3	Aufbau Principle.....	1-20
1.6.4	Anomalies in Electronic Configurations.....	1-25
1.7	The Molecular Orbital Theory.....	1-26
1.7.1	Combination of Atomic Orbitals to form Molecular Orbitals.....	1-27
1.7.2	Difference Between Bonding and Anti Bonding Molecular Orbitals.....	1-28



1.7.3	Conditions for the Combination of Atomic Orbitals	1-29
1.7.4	Sigma (σ) Bond and Pi (π) Bond	1-29
1.7.5	Difference between σ and π - Bonds.....	1-30
1.7.6	Energy Level Diagram for Molecular Orbitals	1-30
1.7.7	Rules for Adding Electrons to MOs	1-31
1.7.8	Molecular Orbital Energy Level of Homonuclear Diatomic Molecules	1-31
1.7.8 (A)	Hydrogen Molecule (H_2)	1-31
1.7.8 (B)	Helium Molecule (He_2).....	1-32
1.7.8 (C)	Carbon Molecule (C_2)	1-32
1.7.8 (D)	Oxygen Molecule (O_2)	1-33
1.7.8 (E)	Beryllium Molecule (Be_2)	1-34
1.7.9	Molecular Orbital Energy level Diagrams of Heteronuclear Diatomic Molecules.....	1-34
1.7.9 (A)	Carbon Monoxide Molecule (CO).....	1-34
1.7.9(B)	Nitric Oxide Molecule (NO)	1-35
1.7.9 (C)	Cyanide Molecule (CN)	1-36
1.8	Solved Examples.....	1-37

Module II

Chapter 2 : Aromatic Systems & their Molecular Structure

2-1 to 2-12

Syllabus : Define Aromaticity, Huckel's rule, Structure and bonding of benzene and pyrrole.

2.1	Introduction.....	2-1
2.2	Aromaticity.....	2-1
2.3	Huckel's Rule.....	2-2
2.3.1	Structure and Bonding of Benzene and Pyrrole.....	2-2
2.3.1(A)	Structure and Bonding of Benzene	2-2
2.3.1(B)	Structure and Bonding of Pyrrole.....	2-6

Module III

Chapter 3 : Intermolecular Forces & Critical Phenomena

3-1 to 3-28

Syllabus : Ionic, dipolar and Vander Waal's interactions, Equations of state of real gases and critical phenomena.

3.1	Introduction.....	3-1
3.2	Intermolecular Forces.....	3-1
3.2.1	Types of Intermolecular Forces.....	3-1
3.2.1(A)	Ionic Forces.....	3-2
3.2.1(B)	Dipole-Dipole Interactions	3-2
3.2.1(C)	London Dispersion Forces	3-2



3.2.1(D)	Hydrogen Bonding Interactions.....	3-2
3.3	Equation of State for Real Gases and Critical Phenomena	3-3
3.3.1	Gas Laws	3-4
3.3.1(A)	Boyle's Law (1662).....	3-4
3.3.1(B)	Charle's Law (1787).....	3-4
3.3.1(C)	Avogadro Law	3-5
3.3.2	Kinetic Theory of Gases.....	3-5
3.3.3	Maxwell's Distribution of Velocities	3-6
3.3.3(A)	Most Probable Velocity	3-8
3.3.3(B)	The Average Velocity.....	3-8
3.3.3(C)	Root Mean Square Velocity	3-8
3.3.4	Ideal and Real Gases.....	3-8
3.3.4(A)	Deviation of Gases from Ideal Behaviour	3-8
3.3.5	Vander Waals Equation of State for Real Gases.....	3-11
3.3.5(A)	Correlation for Volume	3-11
3.3.5(B)	Compressibility Factor.....	3-12
3.3.5(C)	Correction for Forces of Attraction	3-13
3.3.5(D)	Vander Waals Equation and the Deviation of Gases from Ideal Behavior	3-14
3.3.5(E)	Critical Phenomena.....	3-15
3.3.5(F)	Critical Constants of a Gas in Terms of Vander Waals Constants	3-17
3.3.6	Joule-Thomson Effect	3-20
3.3.6(A)	Joule-Thomson Experiment	3-20
3.3.6(B)	Liquefaction of Gases-concept of Inversion Temperature	3-21
3.4	Solved Examples.....	3-22

Module IV

Chapter 4 : Phase Rule

4-1 to 4-20

Syllabus : Statement of Gibbs' Phase Rule, Terms involved with examples, One Component System (Water), Reduced Phase Rule, Two Component System (Pb- Ag), Advantages and Limitations of Phase Rule. Numerical problems on Phase Rule.

4.1	Introduction.....	4-1
4.2	Gibb's Phase Rule.....	4-1
4.2.1	Explanation of Phase Rule.....	4-2
4.3	Terms Involved in Gibb's Phase Rule - with examples	4-2
4.3.1	Phase [P].....	4-3
4.3.2	Components [C]	4-4
4.3.3	Degree of Freedom (Variance) [F]	4-5
4.4	One Component System (Water)	4-7



4.4.1	Water System.....	4-7
4.5	Reduced or Condensed Phase Rule.....	4-10
4.6	Two Component Systems	4-11
4.6.1	Lead Silver System	4-11
4.7	Advantages / Applications of Phase Rule	4-14
4.8	Limitations / Demerits of Phase Rule	4-14
4.9	Numerical Problems on Phase Rule	4-15

Module V

Chapter 5 : Polymers

5-1 to 5-41

Syllabus : Introduction : Definition- Polymer, polymerization, Properties of Polymers- Molecular weight (Number average and Weight average), Numerical problems on molecular weight, effect of heat on polymers (glass transition temperature), Viscoelasticity, Conducting Polymers, Classification -Thermoplastic and Thermosetting polymers; Compounding of plastic, Fabrication of plastic by Compression, Injection, Transfer and Extrusion moulding, Preparation, properties and uses of PMMA and Kevlar.

5.1	Introduction.....	5-1
5.2	Classification of Polymers	5-1
5.2.1	Homopolymers and Hetero / Mixed / Co-polymers.....	5-2
5.2.2	Classification on the basis of classific Tacticity / Configuration	5-4
5.2.3	Classification based on chemical constitution: Organic and Inorganic Polymers.....	5-5
5.3	Properties of Polymers	5-6
5.4	Polymerization.....	5-6
5.4.1	Types of Polymerisation.....	5-7
5.4.2	Addition/Chain Polymerisation	5-7
5.4.3	Copolymerisation	5-8
5.4.4	Condensation/Step Polymerisation.....	5-8
5.5	Plastics.....	5-10
5.5.1	Classification of Plastics.....	5-10
5.5.2	Thermo Plastics or Thermosoftening Plastics.....	5-10
5.5.3	Thermo Setting Plastics	5-11
5.5.4	Comparison of Plastics	5-11
5.6	Compounding of Plastics.....	5-12
5.7	Fabrication of Plastics or Moulding of Plastics.....	5-16
5.7.1	Compression Moulding	5-16
5.7.2	Injection Moulding	5-17
5.7.3	Transfer Moulding	5-18
5.7.4	Extrusion Moulding.....	5-19
5.8	Synthesis, Properties and Uses of Various Plastics	5-20
5.8.1	Phenol Formaldehyde Resins	5-20
5.8.2	PMMA (Polymethyl Methacrylate).....	5-23



5.8.3	Kevlar	5-23
5.9	Glass Transition Temperature (T _g)	5-24
5.9.1	Effect of Temperature on Polymer	5-24
5.9.2	Factors Affecting T _g	5-25
5.9.3	Importance Significance of T _g	5-26
5.10	Viscoelasticity of Polymers	5-26
5.11	Conducting Polymers	5-27
5.11.1	Intrinsically Conducting Polymers (ICP).....	5-27
5.11.2	Doped Conducting Polymers (DCP)	5-28
5.11.3	Extrinsically Conducting Polymers (ECP)	5-29
5.11.4	Co-ordination Conducting Polymers (CCP) - (Inorganic Polymers).....	5-29
5.11.5	Applications of Conducting Polymers	5-30
5.12	Applications of Polymers	5-30
5.12.1	Applications of Industrial Polymers	5-30
5.12.2	Polymers in Medicine and Surgery	5-31
5.13	Numerical on Molecular Weight of Polymer	5-31

Module VI

Chapter 6 : Water

6-1 to 6-66

Syllabus : Introduction - Impurities in water, hardness of water- units (no conversions), types and numerical problems, determination of hardness of water by EDTA method and numerical problems. Softening of water by Ion Exchange process and numerical problems, BOD, COD- definition, significance and Numerical problems. Water purification-membrane technology- Electrodialysis, Reverse osmosis, and Ultra filtration.

6.1	Introduction	6-1
6.2	Sources of Water	6-1
6.3	Impurities in Water.....	6-2
6.4	Hard and Soft Water	6-2
6.5	Hardness of Water.....	6-2
6.6	Types of Hardness	6-3
6.6.1	Temporary or Carbonate or Alkaline Hardness	6-3
6.6.2	Permanent or Non-carbonate or Non-alkaline Hardness.....	6-4
6.7	Factors Influencing Hardness of Water (Causes of Hardness).....	6-5
6.7.1	Dissolved Minerals	6-5
6.7.2	Dissolved Oxygen	6-6
6.7.3	Dissolved CO ₂	6-6
6.8	Measurement of Hardness	6-6
6.8.1	Calculation of Equivalents of CaCO ₃	6-7
6.9	Units of Hardness	6-8
6.10	Determination of Hardness of Water	6-9



6.10.1	Determination of Hardness by EDTA Method.....	6-9
6.10.2	Principle of EDTA Method.....	6-10
6.10.3	Procedure for EDTA Titration.....	6-10
6.11	Softening of Water.....	6-12
6.11.1	Hot and Cold Lime-Soda Process / Method.....	6-13
6.11.2	Zeolite or Permutit Process.....	6-17
6.11.3	Ion Exchange Process / Demineralization Process.....	6-21
6.12	BOD and COD.....	6-26
6.12.1	Biochemical Oxygen Demand (BOD).....	6-26
6.12.2	Chemical Oxygen Demand (COD).....	6-27
6.12.3	Difference between BOD and COD.....	6-28
6.13	Water Purification (Membrane Technology).....	6-29
6.13.1	Electrodialysis (ED).....	6-29
6.13.2	Reverse Osmosis (RO).....	6-31
6.13.3	Ultrafiltration.....	6-33
6.14	Solved Problems.....	6-34
6.14.1	Problems based on Carbonates and Non Carbonates Hardness (Total, Permanent, Temporary Hardness).....	6-34
6.14.2	Problems based on Calculation of Hardness by EDTA Method.....	6-40
6.14.3	Numericals based on Ion Exchange Method.....	6-50
6.14.4	Numericals on COD and BOD.....	6-53

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