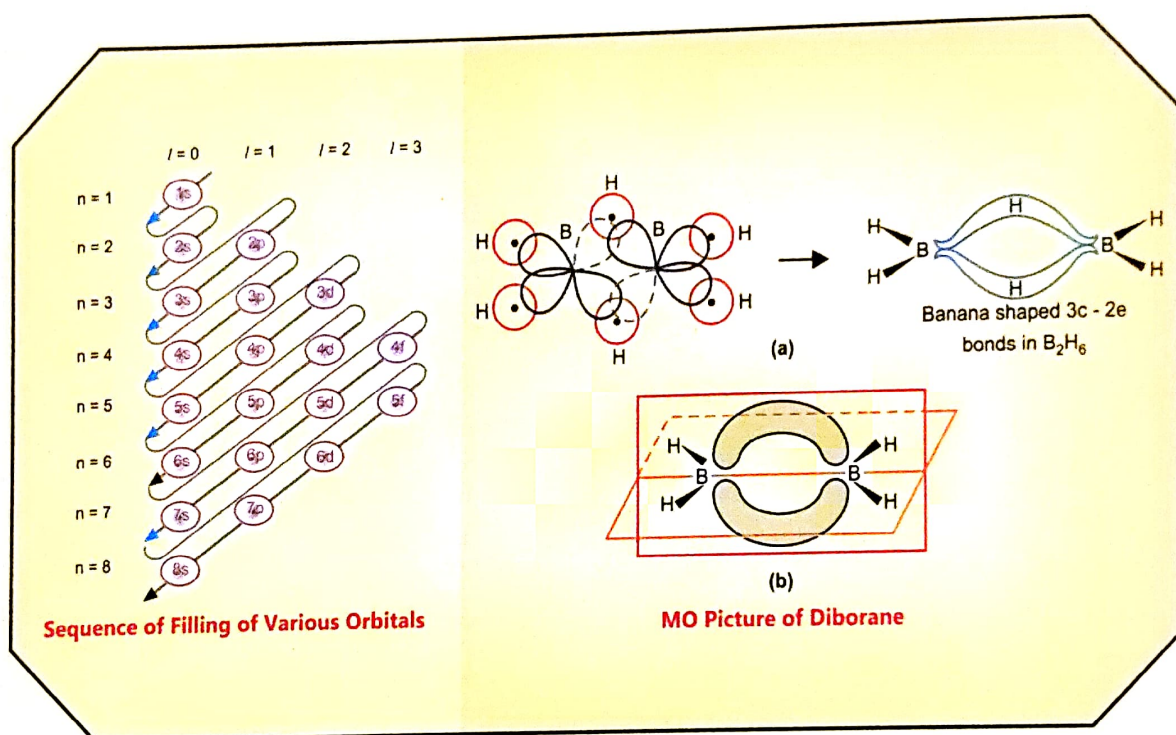


As Per New NEP 2.0 Syllabus 2024
Shivaji University, Kolhapur
B.Sc. Part-I : Semester-I

INORGANIC CHEMISTRY

CHEMISTRY (ICH 101) : PAPER-I



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A Text Book Of
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ICH-101 : Paper - I
For
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As Per New Revised NEP-2.0 Pattern
Syllabus of Shivaji University,
Kolhapur w.e.f. June 2024

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Syllabus

Unit - I : Atomic Structure and Periodicity of Elements

(10 Hours)

- 1.1 Bohr's Theory of Hydrogen Atom and its Limitations
- 1.2 Wave Particle Duality
- 1.3 Heisenberg's Uncertainty Principle
- 1.4 Quantum Numbers and their Significance
- 1.5 Shapes of s, p and d Atomic Orbitals
- 1.6 Electrons Filling Rules in various Orbitals:
 - (a) Aufbau's Principle
 - (b) Hund's Rule of Maximum Multiplicity
 - (c) Pauli's Exclusion Principle
- 1.7 Electronic Configuration of Elements. Stability of Empty, Half-filled and Completely Filled Orbitals
- 1.8 Periodicity of the Elements: General discussion of the following properties of the elements with reference to 's' Block Elements:
 - (a) Electronic Configuration
 - (b) Atomic Radii
 - (c) Ionic Radii
 - (d) Ionization Energy
 - (e) Electron Affinity
 - (f) Electronegativity
 - (g) Metallic Characters
 - (h) Reactivity
 - (i) Oxidation State
 - (j) Melting and Boiling Points
 - (k) Chemical Properties

Unit - II : p-Block Elements (Group 13, 14, 15) (09 Hours)

- 2.1 Position of Elements in the Periodic Table
- 2.2 Characteristics of Group 13th, 14th and 15th Elements with Special Reference to, Electronic Configuration and Periodic Properties
- 2.3 Compounds of Group 13th, 14th and 15th elements
 - 2.3.1 Boron-Diborane (on Structure)
 - 2.3.2 Allotropes of Carbon and Phosphorus
 - 2.3.3 Oxyacids of Nitrogen - HNO₂, HNO₃

Unit - III : Chemical Bonding and Molecular Structure:

Ionic Bonding

(07 Hours)

- 3.1 Types of Chemical Bonds:
 - (a) Ionic Bond
 - (b) Covalent Bond
 - (c) Co-ordinate Bond
 - (d) Metallic Bond
 - (e) Hydrogen Bond
 - (f) Van-der Waal's Force
- 3.2 Definition and Formation of Ionic Bond, General Characteristics of Ionic Bonding
- 3.3 Energetics in Ionic Bond formation
- 3.4 Born-Haber Cycle for NaCl and its applications
- 3.5 Fajan's Rule and its applications

Unit - IV : Acids and Bases

(04 Hours)

- 4.1 Theories of Acids and Bases - Arrhenius Concept, Bronsted - Lowry Concept, Lewis Concept, Lux-Flood Concept (Definition and Exampels only)
- 4.2 Hard and Soft Acids and Bases (HSAB Concept)



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