

INORGANIC CHEMISTRY- I

Block 1 Structures of atom, Periodic Properties and Chemical bonding

Unit 1- Atomic Structures

Idea of de Broglie matter wave, Heisenberg uncertainty principle, Schrodinger wave equation (No derivation), Significance of ψ and ψ^2 , Radial and angular wave functions, Probability distribution curve, Quantum numbers, shape of different orbitals, Pauli exclusion principle, Hund's multiplicity rule, Aufbau principles, Electronic configuration of the elements, Effecting nuclear charge.

Unit 2 The Periodic Table

History of Periodic Table, Laws of Periodic Table

Unit 3 Periodic Properties

Periodic Properties, Atomic and ionic radii, Ionization energy, Electron affinity, Electronegativity, Methods of determination or evaluation of electronegativity, Trends in periodic table

Unit 4 Chemical bonding I

Covalent bond, Valence bond theory and its limitation, Directional characteristics of covalent bond, Hybridization, Types of hybridization, Shape of simple inorganic molecule and ion, Valence shell electron pair repulsion theory (VSEPR) theory
 NH_3 , H_3O^+ , SF_4 , ClF_3 , ICl_2^- and H_2O molecules, Molecular Orbital theory, Homonuclear diatomic molecules, Heteronuclear (CO and MO) diatomic molecules, Multicenter bonding in electron deficient molecules, Bond strength, Bond energy, Percentage ionic character, Dipole moment and electronegativity difference.

Unit 5 Chemical bonding II

Ionic solid, Ionic characters, Radius ratio effect, Coordination number, Limitations of radius ratio rule, Lattice defect, Semiconductors, Lattice energy, Born-Haber cycle, Fajan's rule, Weak interactions, Hydrogen bonding, van der Waal forces

Unit 6 Hydrogen's

Protic and Aprotic Solvents, Reactions in Non-aqueous Solvents

Unit 7 Alkali metals

General characteristics and use (Flame Colouration), Oxides and Hydroxides, Solubility and hydration, Complexation of alkali metal ions, Anomalous Behavior of Lithium.

Unit 8 Alkaline earth metals

General introduction, General characteristics and uses, Halides and Hydrides of Beryllium, Preparation, properties, Complexation behavior, Anomalous Behavior of Beryllium.

Unit 9 Elements of group 13

general characteristics and uses ,Hydrides of Boron Diborane and Borazine,Properties,Preparation ,Structure, Halides of Boron and Aluminium ,Oxides of Boron and Borates,Anomalous behavior of Boron

Unit 10 Elements of group 14

General characteristics and uses,Oxides of carbon and Silicon,Halides carbon,Organosilicon Compounds,Anomalous behavior of Carbon

Unit 11 Elements of group 15

General characteristics and uses, Hydrides, Halides, Oxides and Oxoacids ,Properties and structure,Anomalous behavior of Nitrogen

Unit 12 Elements of group 16

General characteristics and uses,Oxides of Sulphur,Oxoacides of Sulphur, Halides of Sulphur and their properties,Preparation, properties, Anomalous behavior of Oxygen.

Unit 13 Elements of group 17

General characteristics and uses,Halides, Halogen oxides ,Preparation, properties, Oxoacides of halogens, Interhalogen compounds,Polyhalides, Basic properties of halogens, Anomalous behavior of Fluorine

Unit 14 Chemistry of noble gases elements

General characteristics and uses, Compounds of Noble gases, Compounds of Xenon, Preparation, Properties and structures.