Sangola Taluka Shetkari shikshan Prasarak Mandal's

VIDNYAN MAHAVIDYALA, SANGOLA

(Teaching Plan)

Department Of Chemistry

Name of Faculty**: Mr. R. S. Gaikwad** (Associate Professor)

Academic Year**: 2019 – 20** Class: **B.Sc. I** Semesters**: I**

Paper No. **: II** Paper Name**: Inorganic chemistry**

Sr.No.	Class	Month	Chapter Details
1	B.Sc. I	July	**1. Atomic Structure and periodic properties (Contact hrs: 06)** 1.1 Atomic Structure a) Shapes of s, p, d orbitals. b) Aufbau and Pauli's exclusion principle, Hund's rule of maximum multiplicity c) General electronic configuration of s and p block elements. 1.2 General Characteristics of s and p block elements w.r.t. Atomic and Ionic radii, Ionization energy, Electron affinity, Electronegativity, Reactivity, Melting and Boiling point
2	B.Sc. I	August	**2. Chemical bonding and Ionic Solids (Contact hrs: 08)** 2.1 Types of chemical bonding 2.2 Ionic Bonding a) Formation of ionic bond, Energetics of ionic bonding : Ionisation potential, Electron affinity and Lattice energy. b) Characteristics of ionic compounds. c) Born-Haber Cycle for Alkali metal halide (NaCl). d) Fajan's rules. 2.3 Radius ratio and crystal structure.

			a) Definition: Radius ratio (r+ / r-), Coordination number, Stoichiometry and unit cell. b) Concept and calculation of radius ratio (r+ / r-) for ionic solid with octahedral geometry. c) Radius ratio effect on geometry. d) Crystal structure of NaCl and CsCl w.r.t. unit cell, radius ratio, coordination number and stoichiometry.
3	B.Sc. I	September	**4. Covalent bonding: Molecular Orbital Theory (MOT) Approach (Contact hrs: 08)** 4.1 Atomic and Molecular orbitals. 4.2 L.C.A.O. Principle 4.3 Bonding, Antibonding and Nonbonding Molecular orbitals. 4.4 Conditions for successful overlap 4.5 Different types of overlap (s-s, s-px, px - px and py- py or pz- pz) 4.6 Energy level sequence of molecular orbitals for n = 1 and n = 2 4.7 M. O. Diagrams for: a) Homonuclear diatomic molecule. H_2, Li_2, Be_2, C_2, N_2 and O_2 b) Heteronuclear diatomic molecules CO and NO w.r.t. bond order stability and magnetic properties.
4	B.Sc. I	October	**3. Covalent bonding: Valence Bond Theory (VBT) Approach (Contact hrs: 08)** 3.1 Valence Bond Theory: Heitler–London Theory and Pauling-Slater Theory 3.2 Limitations of VBT 3.3 Need of Hybridization 3.4 Types of hybridization and shapes of simple inorganic molecules: $BeCl_2$, BF_3, $SiCl_4$, PCl_5, SF_6, IF_7. 3.5 Valence Shell Electron Pair Repulsion (VSEPR) Theory w.r.t. NH_3, H_2O, ClF_3