Lesson Plan

B. Sc. Ist Year (Ist Semester)

Paper-I (CH-101) Inorganic Chemistry (Theory)

Teacher name: Dr. Neha Aggarwal

October 2020

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| Atomic Structure Idea of de Broglie matter waves, Heinsenberg’s uncertainty principle, atomic orbitals, quantum numbers, radial and angular wave functions, normal and orthogonal wave functions, significance of Ψ and Ψ2 , probability distribution curves, shapes of s, p, d, f orbitals, Aufbau and Pauli exclusion principles, Hund’s multiplicity rules,  |

November 2020

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| Electronic configuration of elements, effective nuclear charge, Slater’s rules. Periodic table and atomic properties Classification of periodic table into s, p, d, f blocks, atomic and ionic radii, ionisation energy, electron affinity and electronegativity definition, methods of determination or evaluation, trend in periodic table (in s and p-block elements), Pauling , Mulliken, Allred Rachow and Mulliken Jaffe’s electronegativity scale, Sanderson’s electron density ratio. |

December 2020

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| Covalent Bond Valence bond theory (Heitler-London and Pauling approach) and its limitation, directional characteristics of covalent bond, various type of hybridisation and shapes of simple inorganic molecules and ions (BeF2, BF3, CH4, PF5, SF6, IF7, SO4 -2 , ClO4 -1 , NO3 -1 ) valence shell electron pair repulsion (VSEPR) theory to NH3, H3O + , SF4, ClF3, H2O, SnCl2, ClO3 -1 and ICl2 -1 . |

January2021

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| Molecular orbital theory of homonuclear (N2, O2) heteronuclear (CO and NO) diatomic molecules and ions, bond energy, bond angle, bond length and dipole moments, percentage ionic character from dipole moment and electronegativity difference. 4 Ionic Solids Ionic structures (NaCl, CsCl, ZnS (Zinc blende), CaF2) size effects, radius ratio rule and its limitations, Madelung constant, Stoichiometric and Non stoichiometric defects in crystals, |

February 2021

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| Lattice energy (mathematical derivation excluded) and BornHaber cycle, Solvation energy and its relation with solubility of Ionic solids, Polarizing power and Polarisability of ions, Fajan’s rule. |