CH101 Chemistry (3-1-0-8)
Prerequisite: Nil
Structure and Bonding; Origin of quantum theory, postulates of quantum mechanics; Schrodinger wave equation: operators and observables, superposition theorem and expectation values, solutions for particle in a box, harmonic oscillator, rigid rotator, hydrogen atom; Valence Bond and Molecular Orbital Theories; Hydrogen Molecule; Hybridization; Molecular Symmetry; Electronic Spectroscopy and Lasers. Chemical Thermodynamics and Chemical Kinetics. Coordination compounds: ligand, stereochemistry, crystal _eld and molecular orbital theories; Bioinorganic chemistry and organometallic chemistry; Chemistry of materials. Stereochemistry of more than two stereo-centers, R&S and E&Z nomenclature, Conformation of cyclohexane and 1,2-disubstituted cyclohexane; Pericyclic reac- tions; Bioorganic chemistry: proteins, enzymes, carbohydrates, nucleic acids and lipids; Natural products: classi_cation and origin of terpenoids, alkaloids and steroids. Macro- molecules (polymers); Solid phase synthesis; Green chemical processes. Modern spectro- scopic techniques in structural elucidation of organic compounds (UV-vis, IR, NMR).
Texts:

1. P. W. Atkins, Physical Chemistry, 5th edition, ELBS, 2009.
2. C. N. Banwell, and E. M. McCash, Fundamentals of Molecular Spectroscopy, 4th edition, Tata McGraw-Hill, 2017.
3. F. A. Cotton, and G. Wilkinson, Advanced Inorganic Chemistry, 6th edition, Wiley, 1999.
4. D. J. Shriver, P. W. Atkins, and C. H. Langford, Inorganic Chemistry, 3rd edition, ELBS, 2008.
5. S. H. Pine, Organic Chemistry, 5th edition, McGraw-Hill, 2006.

References:

1. I. A. Levine, Physical Chemistry, 4th edition, McGraw-Hill.
2. I. A. Levine, Quantum Chemistry, EE edition, Prentice Hall.
3. G. M. Barrow, Introduction to Molecular Spectroscopy, International Edition, McGraw- Hill.
4. J. E. Huheey, E. A. Keiter and R. L. Keiter, Inorganic Chemistry: Principle, structure and reactivity, 4th edition, Harper Collins.
5. L. G. Wade (Jr.), Organic Chemistry, Prentice Hall.