M.Sc Chemistry
Department of chemistry
Session (2022-23)
Course outcome

I semester

- Students will have a firm foundation in the fundamentals and application of current chemical and scientific theories including those in Analytical, Inorganic, Organic and Physical Chemistries.
- Understand the common themes running through ionic, covalent and metallic descriptions of chemical bonding, including principles of main group elements. Enhance the knowledge on metal clusters and nuclear chemistry.
- The master's specialization, Organic Chemistry, will give you in-depth knowledge about organic-chemical reactions with a focus on principles for effective synthesis strategies, stereo selectivity, catalysis, as well as organometallic chemistry.
- Explain the fundamentals of atomic structures with respect to quantum mechanical approach in detail by understanding wave mechanics in three dimensions and able to discuss about the advanced concepts of chemical kinetics.
- Students will appreciate the central role of chemistry in our society and use this as a basis for ethical behavior in issues facing chemists including an understanding of safe handling of chemicals, environmental issues and key issues facing our society in energy, health and medicine.

II SEMESTER

- Illustrate the principles behind the Metal Ligand equilibria in solution with respect to the formation, their Kinetic and thermal stability, and determinations, crystal field theory of transition metal complexes in octahedral and tetrahedral geometry.
- Predict and account for the most commonly encountered reaction mechanisms in organic chemistry including aromatic substitution reaction, addition reactions, elimination reactions and rearrangements as well as basics of amino acids and peptides.
- Understand concepts of partial molar properties, concept of fugacity and their determination methods including Debye-Huckel theory to strong electrolytes and also learn the thermodynamics of electrified interface.
- Recognize symmetry elements in a molecule; State the point group a molecule belongs to;
- Understand the role of symmetry in electronic spectroscopy, selection rules;
- Develop skills in numeracy and problem solving. The subject specific skill is the acquisition of a theoretical framework which underlies much of spectroscopy.

III Semester

- Have the core idea about advanced organic chemistry principles and theories to develop research oriented skills in applied organic chemistry.
- Understand the concept and definitions of Aliphatic nucleophilic and electrophilic substitution reactions, fundamentals of free-radicals, pericyclic chemistry.
- In depth knowledge about organic chemical reactions with a focus on principles for effective synthetic strategies.
- Describe and apply stereochemical concepts such as Chirality, stereoisomerm and stereoselectivity in relation to chemical transformations.
- Encompass achieved advanced knowledge about the interactions of electromagnetic radiation and matter and their applications in organic spectroscopy to elucidate the structure of the organic compounds.

IV SEMESTER

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