

FACULTY OF SCIENCE

**M.Sc. (Chemistry)**

**Atomic Structure, Periodic Properties, Chemical Bonding** – Covalent Bond, Ionic Solids, Weak Interactions, Comparative study of s and p block of elements, diborane, oxides and oxyacids of Phosphorous, Interhalogen Compounds. Valence shell electron pair repulsion (VSEPR) theory

Chemistry of Elements of First Transition Series, Chemistry of Elements of Second and Third Transition Series, Coordination Compounds, Chemistry of Lanthanide Elements, Chemistry of Actinides, Acids and Bases, Hard and Soft Acids and Bases (HSAB), Chemistry of Noble Gases, Non aqueous Solvents. Metal – ligand Bonding in Transition Metal Complexes, Valence bond & Crystal field Theories Magnetic Properties of Transition Metal Complexes, Electronic Spectra of Transition Metal Complexes, basics of Organo metallic Chemistry, Bioinorganic Chemistry, Silicones and Phosphazenes.

Structure Bonding, Mechanism of Organic Reactions, Introduction to Stereochemistry of Organic Molecules, Aliphatic Hydrocarbons, (Alkanes, Alkenes, Dienes and Alkynes, Cycloalkanes, Cycloalkenes), Arenes and Aromaticity, Polynuclear Aromatic Hydrocarbons.

Alcohols, Aldehydes, Ketones and Active methylene compounds, Carboxylic Acids and derivatives, Amins, Organometallic Compounds, Organosulphur compounds, Heterocyclic Compounds, Carbohydrates, Amino Acids, Peptides, Proteins and Nucliec Acids, Fats, Oils and Detergents, Synthetic Polymers, Synthetic Dyes, Introduction to Spectroscopy, IR, UV, IR, HNMR Mass.

Gaseous State, Solid State, Colloidal State, Solutions, Chemical Kinetics and Catalysis.

Thermodynamics, Chemical Equilibrium, Phase Equilibrium, Electrochemistry Quantum Mechanics, Rotational, Vibrational and Electronic Spectroscopy, Photochemistry, Physical Properties and Molecular Structure.

Introduction to Analytical Chemistry, Error and Treatment of Analytical Data; Solvent Extraction, chromatography: Principle, theory-Plate and rate, Van Deemter equation; Spectrophotometry: Principle of UV-Visible spectrophotometry, instrumentation; titrimetric methods: neutralization, precipitation and complexometric titration.