



Below is the topics covered in the MSc admission examination:

General Chemistry: Principal of general chemistry, SI and derived units, Significant figures, Atomic structure, Chemical Bonding, Periodic Properties, Acids, Bases, and Non-Aqueous Solvents

Inorganic Chemistry: Chemical, s-Block and p-Block Elements, Chemistry of Noble Gases, Transition Series Elements, Coordination Compounds, Oxidation and Reduction, Lanthanide and Actinide Chemistry, Ionic Solids, Metal-Ligand Bonding, Bio-Inorganic Chemistry, Organometallic Chemistry, Solid-State Chemistry, Spectroscopy and Magnetic Properties, Inorganic Polymers, Industrial Fuels and Chemicals, Thermodynamic and Kinetic Aspects of Complexes

Physical Chemistry: Mathematical Concepts - Gaseous and Liquid States - Chemical Kinetics and Thermodynamics - Solutions and Colligative Properties - Chemical and Phase Equilibrium – Electrochemistry - Solid-State Chemistry - Colloidal State - Quantum Chemistry - Molecular Structure and Spectroscopy - Nuclear Chemistry – Photochemistry.

Organic Chemistry: Structure and Bonding - Fundamentals of Organic Chemistry - Alkanes, Alkenes, Alkynes, Cycloalkanes - Aromaticity and Arenes - Stereochemistry of Organic Compounds - Alkyl and Aryl Halides - Alcohols, Ethers, and Epoxides - Aldehydes, Ketones, and Phenols - Carbonyl Chemistry (Oxidation & Reduction) - Carboxylic Acids and Derivatives - Organic Spectroscopy - Heterocyclic Compounds - Alkaloids, Terpenes, and Vitamins - Peptides, Proteins, and Nucleic Acids - Organic Synthesis via Enolates - Fats, Oils, Detergents, and Polymers,

Analytical Chemistry: Atomic Structure,

References:

- **General Chemistry**, by R. Chang, 11th Edition, McGraw Hill, ISBN-10 : 1259911152
- **Inorganic Chemistry**, G. Missler et. al. Publisher: Pearson, ISBN-10 : 9780321811059
- **Physical Chemistry**, by Peter Atkins, Julio de Paula, James Keeler. Oxford University Press ISBN: 0198769865
- **Organic Chemistry**, by J. McMurray, 10th Edition, Publisher: Cengage Learning, ISBN-10 : 1305080483.
- **Fundamentals of Analytical Chemistry**, by Douglas Skoog, Donald West, F. Holler, Stanley Crouch, 10th Edition, Publisher : Cengage Learning, ISBN-10 : 0357450396.
- **Principal of Instrumental Analysis**, by D. Skoog, 7th Edition, Publisher : Cengage Learning, ISBN-10 : 9781305577213.