

B. Sc. IIIrd Year (VIth Semester) Paper-XX
(CH-306) Organic Chemistry (Theory)

M. Marks: 32

Time: 3 Hrs.

Note: Nine questions will be set. **Q. No. 1**, based on whole syllabus, is compulsory. There will be four questions from section **A** and four from section **B**. Candidates will be required to attempt five questions in all, selecting at least two questions from each section. Question no. 1 carry 8 marks and all questions in Section A & B (not more than 2 - 3 parts) carry 6 marks each.

Section– A (23 Periods)

Organic Synthesis via Enolates

Acidity of α - hydrogens, alkylation of diethyl malonate and ethyl acetoacetate. Synthesis of ethyl acetoacetate: the Claisen condensation. Ketoenol tautomerism of ethyl acetoacetate.

Heterocyclic Compounds

Introduction: Molecular orbital picture and aromatic characteristics of pyrrole, furan, thiophene and pyridine. Methods of synthesis and chemical reactions with particular emphasis on the mechanism of electrophilic substitution. Mechanism of nucleophilic substitution reactions in pyridine derivatives. Comparison of basicity of pyridine, piperidine and pyrrole.

Introduction to condensed five and six- membered heterocycles. Preparation and reactions of indole, quinoline and isoquinoline with special reference to Fisher indole synthesis, Skraup synthesis and Bischler-Napieralski synthesis. Mechanism of electrophilic substitution reactions of, quinoline and isoquinoline.

Section– B (22 Periods)

Amino Acids, Peptides & Proteins

Classification, of amino acids. Acid- base behavior, isoelectric point and electrophoresis. Preparation of α - amino acids.

Structure and nomenclature of peptides and proteins. Classification of proteins. Peptide structure determination, end group analysis, selective hydrolysis of peptides. Classical peptide synthesis, solid-phase peptide synthesis. Structures of peptides and proteins: Primary & Secondary structure.

Synthetic Polymers

Addition or chain- growth polymerization. Free radical vinyl polymerization, ionic vinyl polymerization, Ziegler- Natta polymerization and vinyl polymers.

Condensation or step growth polymerization. Polyesters, polyamides, phenol formaldehyde resins.

Natural and synthetic rubbers.

