CY-314 NATURAL PRODUCTS

Introduction: Primary and secondary natural products, Biochemistry (Scope and history), Cell structures and their functions, Origin and nature of biomolecules.

Vitamins: Introduction, Fat and water soluble vitamins, Chemistry and structural determination of vitamin B~1~ (Thiamine), B~2~ (Riboflavin) and Vitamin B~6~ (Pyridoxine).

Carbohydrates: Introduction to carbohydrates, Monosaccharaides: Natural occurrence. Structure, Stereochemistry and absolute configuration, Stereo chemical relationship with glyceraldehyde, Stereoisomers of aldoses from D and L glyceraldehyde, Determination of ring size of aldoses and pentoses, Structure determination of D-(+)Glucose: Chemical methods, Spectroscopic methods, Reactions of monosaccharaides, Structure, occurrence and importance of deoxysugars, Amino sugars and Dihydroxy sugars. **Steroids:** Introduction to steroids, Cholesterol, Occurrence, Isolation, Physical properties, Medicinal importance and Structure elucidation by chemical methods and spectroscopic methods.

Proteins: Chemistry, Classification, Physical and chemical properties of amino acids, Biological significance of amino acids, Peptides and Proteins, Primary, Secondary, Tertiary and Quaternary structure of proteins, Denaturation of proteins.

Alkaloids: Introduction, Occurrence, Classification, Nomenclature, General methods for the detection of structure of alkaloids, Physical methods: IR, UV, Mass, 1H-NMR and 13C-NMR spectroscopy and chemical Methods: Oxygen functions; Hydroxyl, Carboxylic, Carbonyl, Ester, Lactone, Amido, Lactam or betaine, Methoxy and methylenedioxy group, Zerewittinoffs active hydrogen, Nitrogen functions, Determination of basic skeleton: Hoffmann's exhaustive methylation, Emed's modification, Von-Braun's method, ZnCl~2~-distillation, Fusion with KOH, Oxidation, Reduction, Presence of unsaturation.

Terpenesand Terpenoids: General introduction, Classification, Isoprene rule, General methods of determining the structure. Monoterpenes: Acyclic: Chemistry and synthesis of myracene, citral and geraniol, Monocyclic: Terpenol, Bicylic: Chemistry and synthesis of pinene and camphor, Diterpenes, Gibbrellins: Chemistry and structural determination using spectroscopic methods.