Department of Biochemistry,UCS&I,MGU,Nalgonda
Semester – III, Interdisciplinary paper-I (C.B.C.S)
w.e.f 2015-16 admitted Batch

Subject: **Chemistry of Biomolecules and Methods of Study**

Unit-I: Chemistry of Biomolecules and Metabolism

Introduction of Biochemistry and evolution (outline only).Water properties, interactions, pH scale, buffers.Biomolecules (aminoacids,proteins, polysaccharides, lipids and nucleic acids) classification, chemical nature, structure and functions. Peptide bond. Outlines of metabolism of proteins, polysaccharides, lipids and nucleic acids.

Unit-II: Biocatalysis and Bioenergetics

Introduction to enzymes. Nomenclature and classification of enzymes, Difference between chemical and biological catalysis.Specific activity, Metal and cofactor requirements, Factors effecting rate of reaction: pH,Temperature,Pressure,Michaels Menten Kinetics,Types of enzyme inhibitors, Allosteric proteins and cooperativity. Laws of thermodynamics, Gibbs free energy, Entropy, Enthalpy. High energy compounds, ETC in mitrochondria, Bioluminescence

Unit-III: Instrumental Methods-I

Beer Lamberts Law, Molar extinction coefficient, Colorimetry-Principle, instrumentation, application, UV-Vis spectroscopy -principle, instrumentation, application, NMR, ESR-principle, instrumentation, application, Mass spectrometry -Principle, instrumentation, application. Fluorescence spectroscopy -principle, instrumentation, application, X-Ray crystallography.

Unit-IV:Instrumental Methods-II

Partitioning and counter current distribution, PC- principle, instrumentation, application,TLC-principle, instrumentation, application, Affinity chromatography-principle, instrumentation, application,Gel filtration (gel exclusion chromatography)-principle, instrumentation, application, Ion exchange chromatography-principle, instrumentation, application, GC- principle, instrumentation, application, HPLC-principle, instrumentation, application.