Subject Code : UBA **Internal Marks: 25**

Exam Hrs : 3 **CC I - SEMESTER -I** **External Marks: 75**

Total Marks: 100

BIOMOLECULES

OBJECTIVES:

To enable the students understand the structure, classification, properties And Various functions of nutrients.

UNIT I: CARBOHYDRATES

Carbohydrates: Occurrence, chemical properties, Classification, and elucidation. Configuration of Glucose, Fructose. Inter conversion of sugars. Structure and biological functions of Mono, Di, Oligo and Polysaccharides**. Homoglycans and Heteroglycans Rea**ction due to functional groups Aldehyde groups &ketone.

UNIT II: AMINOACIDS & PROTEINS:

Amino acids - Structure, classification.& properties Zwitterion isoelectric point. Proteins –Classification, primary, secondary, tertiary and Quarternary structure. Protein in biological membrane properties peptides, polypeptides, peptide bond, Denaturation-physical &chemical agents.

.UNIT III: LIPIDS

Lipids-Structure, classification, chemistry and properties. Fatty acids-Saturated &unsaturated Essential fatty acids.Lipds in biological membrane.

UNIT IV: NUCLEIC ACIDS

Purine and pyrimidine bases, nucleotides, nucleosides. Structure and functions of DNA.Isolation,structure and types of DNAand RNA

UNIT V: VITAMINS

Vitamins - Classification, occurrence,Requirements&deficiency Disorders of fat soluble and water soluble Vitamins.

TEXT BOOK:

Fundamentals of Biochemistry for Medical Students – Ambika Shanmugam

REFERENCE BOOKS:

1. Biochemistry - Agarwal, 1996
2. Biochemistry - Dulsy Fathima, 1997
3. Fundamentals of Biochemistry - J.L. Jain 2004
4. Biochemistry - L.Veerakumari-2004
5. Biochemistry - J.C.Blackstock, 2007
6. Biochemistry of Biomolecules - SmritiGanguly, 2008
7. Biochemistry of Biomolecules - Kestav Trehan, 2008

Subject Code : UBBY **Internal Marks: 40**

Exam Hrs:3 **CC II - MAJOR PRACTICAL – I** **External Marks: 60**

Total Marks: 100

OBJECTIVES:

To enable the students can get practical knowledge about the qualitative and Quantitative analysis of Biomolecules.

I. QUALITATIVE ANALYSIS:

a. Carbohydrates

Glucose

Fructose

Maltose

Galactose

Lactose

Sucrose

b.Amino acids

Trytophan

Tyrosine

Proline

Histidine

Arginine

cysteine

C.Lipids

II. QUANTITATIVE ANALYSIS

a. Estimation of reducing sugar by Benedict's quantitative method

b. Estimation of Amino acids by Formal titration.

c. Estimation of Ascorbic acid by titrimetric method using 2, 6 dichlorophenolindophenol dye.

d. Acid number, Iodine number and saponification number of lipids.

REFERENCE BOOKS:

1. Manuals in biochemistry Dr. J.Jayaraman - 1996
2. Manuals in biochemistry Dr.S. Ramakrishnan – 2000
3. Practical biochemistry Plummer – 2008
4. Practical biochemistryVarley 2008

CC III - ANALYTICAL BIOCHEMISTRY

II SEMESTER

Subject Code : UBC **Internal Marks: 25**

Exam Hrs:3 **External Marks: 75**

Total Marks: 100

OBJECTIVES:

To enable the students understand the principles , instrumentation and application of various biochemical techniques.

UNIT - I: CHROMATOGRAPHY:

Principles, Materials, Methods & Applications of Paper chromatography, thin layer chromatography, Column chromatography, Gas liquid chromatography, Ion exchange Chromatography, High performance liquid chromatography and Molecular Sieve chromatography.

UNIT - II: ELECTROPHORESIS

Principles, Methods, Instrumentation & Applications of Paper electrophoresis, Agar gel electrophoresis, PAGE, Immuno electrophoresis, Isoelectro focusing. Factors affecting migration rate.

UNIT -III: CENTRIFUGATION

Centrifugation, Homogenization and Cell fractionation. Centrifuge, relative centrifugal force, Principles instrumentation and uses of Analytical and preparative Ultra centrifuge, Molecular weight determination by sedimentation Velocity Method& sedimentation co-efficent methods.

UNIT – IV: SPECTROSCOPY

Colorimetry, Beer's-Lambert's law. Instrumentation and applications of Spectrophotometer- Flame photometer, NMR, Applications and Instrumentation of Atomic Absorption Spectroscopy and fluorescence spectroscopy.

UNIT - V: RADIO ISOTOPE

Radioactive decay, Measurement of Radioactivity - GM counter, Scintillation counter, Autoradiography, Manometry- Warburg Constant Volume, Gilson Respirometer, uses of Warburg and Gilson manometry.Biological hazards of radiation in handling radio isotopes

TEXT BOOK:

Instrumental Method of Chemical Analysis – Chatwal / Anand2005

REFERENCE BOOKS:

1. Instrumental method of chemical analysis - B.K. Sharma - 2000
2. Biophysical chemistry -Upadhyay, Upadhyay Nath - 2004
3. Analytical biochemistry - Wilson & walker - 2001
4. Analytical biochemistry – Dr.P.Ashokan -2009