

OBM551 BIO CHEMISTRY

DETAILED SYLLABUS

OBJECTIVE:

- To study the structural and functional properties of carbohydrates, proteins, lipids and nucleic acids
- To discuss the impairments in metabolism of the above, including inborn errors of metabolism.

UNIT I BIOLOGICAL PRINCIPLE

Composition & properties of the cell membrane, membrane transports, permeability Coefficient & partition coefficient, body fluids, electrolytes, acid-base balance, blood viscosity and Newtonian nature, colloids, filtration, diffusion, osmosis, dialysis, ultrafiltration, ultracentrifugation, cellular fractionation, electrophoresis, radioimmunoassay, Photochemical reaction, law of photochemistry, fluorescence and phosphorescence.

UNIT II MACROMOLECULES

Classification and functions of carbohydrates, glycolysis, TCA cycle, Blood Sugar analysis and glucose tolerance test, Classification and functions of proteins, architecture of proteins, Classification of amino acids, Oxidative and non-oxidative deamination, transamination, decarboxylation, urea cycle, Purification/separation of proteins, Classification and functions of lipids, biosynthesis of long chain fatty acids, oxidation and degradation of fatty acids.

UNIT III ENZYMES

Chemical Nature, General Properties, Spectrophotometric measurement of enzymes, Isolation techniques, Diagnostic enzymes. Hormones: Chemical Nature, Properties of hormones, Hormonal Assay and their Significance.

UNIT IV METABOLIC DISORDER

Diabetes mellitus, Diabetic ketoacidosis, lactose intolerance, Glycogen storage disorders, Lipid storage disorders, obesity, atherosclerosis, Plasma proteins in health and disease, Inborn error of amino acid metabolism, Disorders associated with abnormalities in the metabolism of bilirubin – Jaundice.

SSLC, HSE, DIPLOMA, B.E/B.TECH, M.E/M.TECH, MBA, MCA

Notes

Syllabus

Question Papers

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UNIT V

Liver Function tests, Renal Function Tests, Blood gas Analysis, Measurement of Electrolytes. Their abnormal and Normal Values and Conditions. Biochemistry of Urine and Stools testing.

OUTCOMES:

After the successful completion of this course, the students will be able to,

- Explain the fundamentals of biochemistry
- Have in-depth knowledge about the classification, structures and properties of carbohydrates, lipid, protein and amino acid.
- Demonstrate about the mechanism of actions of enzymes and co-enzymes, clinical importance of enzymes, hormonal assay and significance.

TEXT BOOKS:

1. Keith Wilson & John Walker, "Practical Biochemistry - Principles & Techniques", Oxford University Press, 2009.
2. Rafi MD —Text book of biochemistry for Medical Student, Second Edition, University Press, 2014.
3. W. Rodwell, David Bender, Kathleen M. Botham, Peter J. Kennelly, P. Anthony Weil—Harper's Review of biochemistry, 30 th Edition, LANGE Medical Publications, 2015.
4. Trevor palmer and Philip L Bonner "Enzymes: Biochemistry, Biotechnology, Clinical Chemistry", 2 nd Edition, Woodhead Publishing, 2009.

REFERENCES:

1. Lehninger Principles of Biochemistry, Fourth Edition - by David L. Nelson & Michael M.Cox , - W. H. Freeman; 4 edition (April 23, 2004)
2. Fundamentals of Biochemistry: Life at the Molecular Level - by Donald J. Voet , Judith G. Voet & Charlotte W. Pratt. - Wiley; 2 editions (March 31, 2005)
3. Pamela.C.Champe & Richard.A.Harvey, —Lippincott Biochemistry Lippincott's Illustrated Reviews, 6 th Edition, LWW publishers, 2013. DETAILED SYLLABUS