GUJARAT TECHNOLOGICAL UNIVERSITY

B.Pharm

SEMESTER: III

Subject Name: Pharmaceutical Chemistry-III (Biochemistry – I)
Subject Code: 2230003

Teaching Scheme				Evaluation Scheme			
Theory	Tutorial	Practical	Total	Theory		Practical	
				External	Internal	External	Internal
3	0	3	6	80	20	80	20

Sr. No.	Course contents	Proposed Hours
1	Biochemical Organization of the cell and Transport Processes Across cell Membrane.	04
2	Introduction to Carbohydrates, Lipids	08
3	**a. Carbohydrate Metabolism:** Conversion of Polysaccharides to Glucose-1-Phosphate. Glycolysis and Fermentation and their Regulation, Gluconeogenesis, Glycogenesis and Glycogenolysis, Metabolism of Galactose and Fructose. Role of Sugar Nucleosides in Biosynthesis and Pentose-Phosphate Pathway. **b. The Citric Acid Cycle:** Significance, Reaction and Energetic of the Cycle, Amphibolic Role of the Cycle and Glyoxalic Acid Cycle, Uric Acid Cycle **c. Role of Hormones in Maintenance of Blood Sugar Level.**	15
4	**Lipid metabolism**: oxidation of fatty acids, beta-oxidation and energetic, alpha-oxidation, omega-oxidations, biosynthesis of ketone bodies and their utilization, biosynthesis of saturated and unsaturated fatty acids, control of lipid metabolism and metabolism of cholesterol.	07
5	**Enzymes:** Nomenclature, Enzyme Kinetics and its Mechanism of action, Mechanism of Inhibition, Enzymes and Iso-Enzymes in Clinical Diagnosis.	05
6	**Co-Enzymes:** Vitamins as Co-Enzymes and their Significance. Metals as Co-Enzymes and their Significance.	03
7	**Water and mineral metabolism: brief introduction**	03

PRACTICAL – 22300P3

1.	To perform the identification for carbohydrates (Glucose, Maltose, Lactose, Sucrose, Fructose etc…..)
2.	Detection and identification of lipids (Glycerol, Cholesterol, Oleic Acid, Stearic Acid etc…..).
3.	To determine the Acid value and Saponification value of the given fixed oil.
4.	To determine the Iodine value of the given fixed oil.
5.	To estimate glucose in urine by Benedict's method.
6.	To determine glucose content in blood by folin Wu method.
7.	To estimate the total cholesterol in plasma.
8.	To perform biochemical analysis of flour and potato.

9.	To perform biochemical analysis of cheese or milk or bread.
10.	To perform biochemical analysis of (i) gastric juice and (ii) estimation of total acidity in gastric juice.
11.	To perform the estimation of pepsin in gastric juice.
12.	To perform the Gastric juice analysis.
13.	To perform estimation of diastase in urine.
14.	To determine the achromic point and chromic period of salivary amylase.
15.	To estimate acidity and ammonia in Uria.

References Books:

1. E. E. Conn and P. K. Stumpf, Outlines of biochemistry, John Wiley and Sons, New York.
2. A. L. Lehninger, Principles of biochemistry, CBS Publishers and Distributors.
3. R. K. Murray, D. K. Granner, P. A. Mayes. V.W. Rodwell, Harpers Biochemistry, Prentice hall International Inc. latest edn.
4. S. C. Rastogi, Biochemistry, Tata McGraw Hill New delhi, Latest edn.
5. M.Cohn, K.S. Roth, Biochemistry and Disease. William and Wilkins co. Baltimore, Latest edn.

6. U.Satyanarayan, Biochemistry, Books and allied (P) ltd. Calcutta, latest edn.
7. G. F. Zubay, W. W. Parson, D. E. Vance, Principles of Biochemistry, WCB Publishers, England, latest edn.
8. S. Ramkrishnan, K. G. Prasannan, R. Rajan. Textbook of medical Biochemistry, Orient Longman Madras, Latest edn.
9. S.K. Sawhney, Randir Singh Eds, Introductory practical Biochemistry, Narosa Publishing house New Delhi.
10. D. T. Plummer, An Introduction to Practical Biochemistry, Tata McGraw Hill New Delhi.
11. J. Jayaraman, Laboratory manual in Biochemistry, Wiley eastern Ltd. New Delhi