

Course code	Course Title	C	H	I	E	T
17P2BMC6	BIOCHEMISTRY	6	6	25	75	100

Unit I **20 Hrs**

Carbohydrates: Classification, mono, oligo and polysaccharides - structure, physical and chemical properties: Aldoses and ketoses, mutarotation. Monosaccharides - Trioses, Tetroses, Pentoses and Hexoses. Gluconeogenesis (synthetic pathways).

Unit II **20 Hrs**

Amino acids and proteins - Essential and Non-essential amino acids. Classification of amino acids - (based on structure). Physical and Chemical properties of amino acids. Proteins – Classification. Four levels of structural organization (Primary, Secondary, Tertiary and Quaternary). Urea cycle. Synthesis of aromatic amino acids.

Unit III **20 Hrs**

Lipids – Classification - simple, complex and derived. Functions, saturated and unsaturated fatty acids, Triacylglycerols. Structure, properties and Functions of phospholipids, glycolipids. α – oxidation and β -oxidation of fatty acids. Biosynthesis of long chain fatty acids - Palmitate.

Unit IV **15 Hrs**

Enzymes - Nomenclature, IUB system of enzyme classification, properties, enzyme kinetics. K_m value, Michaelis-Menten constant, Lineweaver-Burk model, Active sites - Salient features, enzyme inhibition, coenzymes, Mechanism of enzyme action - Lock and Key model and induced fit model. Regulation of enzyme action.

Unit V **15 Hrs**

Nucleic acids - Chemistry of DNA and RNA - e.g. mRNA and tRNA. Biosynthesis of purine and pyrimidine ribonucleotides. Types, structures and biological significance of vitamins and alkaloids.

REFERENCES

1. Zubay, G, Biochemistry, 1998, Macmillan Publishing Co, New York.
2. Lehninger, A. L., Nelson D. L and Cox, M. M., Principles of Biochemistry, 1993, Worth Publishers, New York.
3. Stryer, Biochemistry 1994, Freeman & Co, New York.
4. Jain, J. L., Fundamentals of Biochemistry (5THEdn). 2001, S.Chand & Company, New Delhi.

PRACTICALS

1. Estimation of glucose.
2. Estimation of protein.
3. Estimation of Lipid.
4. Estimation of DNA.
5. Estimation of RNA.
6. Paper chromatography.
7. Thin layer chromatography.
8. Column chromatography.
9. Determination of pKa value.
10. Nitrate reductase activity.
11. Agarose gel electrophoresis.
12. Qualitative test for carbohydrate, protein and lipid.
13. Estimation of starch.
14. Amylase activity.
15. Isoelectric point.