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MBC-005

**M.SC. IN BIOCHEMISTRY
(MSCBCH)**

**Term-End Examination
December, 2025**

**MBC-005 : CONCEPTS AND CONNECTIONS IN
METABOLISM**

Time : 3 Hours

Maximum Marks : 100

Note : Answer any *five* questions. All questions carry equal marks.

1. (a) Give salient features of chemiosmotic theory. Explain F_0-F_1 ATP synthased complex.
(b) Explain how glycolysis is regulated.
10+10=20
2. (a) Discuss glucuronate pathway with suitable flowchart.
(b) Describe the mechanism of activation and transport of fatty acids to mitochondria.
10+10=20

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3. Write detailed notes on the following (any two) : 10+10=20
- (a) Regulation of ketogenesis
 - (b) Synthesis of unsaturated fatty acids
 - (c) Cholesterol biosynthesis from acetyl-CoA
4. (a) Differentiate between mitochondrial and peroxisomal β -oxidation pathways. 10
- (b) What is galactosemia ? Enlist its symptoms, diagnosis and treatment. 5
 - (c) Explain hormonal regulation of carbohydrate metabolism. 5
5. (a) With the help of flowchart, describe urea cycle and its mechanism. 10
- (b) Write short notes on the following : 10
- (i) Alkaptonuria
 - (ii) Maple syrup urine disease
6. (a) Describe the catabolism of aminoacids that generate fumarate.
- (b) Explain synthesis of serine and glycine from 3-phosphoglycerate. 10+10=20

7. (a) Discuss denovo synthesis of pyrimidine ribonucleotides. 10
- (b) Enumerate characteristics of ribonucleotide reductases. 5
- (c) Explain the biosynthesis of flavinco enzymes *or* biosynthesis of CoA from pantothenic acid. 5
8. (a) Describe catabolism of pyrimidine nucleotides.
- (b) Discuss the metabolic profile of muscle. Tabulate characteristics of red and white muscle. 10+10=20

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