

**B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING SECOND YEAR
FIRST SEMESTER – 2025**

Subject: BIOCHEMISTRY & NUTRITION – I

Time: 3hrs

Full Marks 100

Answer any ten questions:10x10=100

1a. Classify lipoproteins.

b. Why HDL is called good cholesterol?

c. What are micelles?

4+3+3

2a. Give structure of three ketone bodies.

b. Under what conditions ketone bodies are synthesized?

c. Schematically show the steps of ketogenesis.

3+3+4

3a. Describe carnitine shuttle. Give diagram.

b. Define chemical score.

(4+3) +3

4a. Mention the factors that raise the blood glucose level.

b. Discuss the significances of HMP Shunt.

c. What is the site of TCA cycle?

4+4+2

5a. What are lipotropic factors?

b. Mention any four lipotropic factors.

c. What is PER?

3+4+3

6a. Write the names of enzymes of urea cycle.

b. What is the role of aspartate in urea cycle?

c. What is the function of muscle glycogen?

5+4+1

7a. Show the four steps of β oxidation proper of fatty acid that occur in mitochondrial matrix.

b. What is atherosclerosis? (4x2) +2

8a. Name the enzymes in sequence required for conversion of pyruvate to glucose.

b. Schematically show the transamination reaction between aspartate and α -keto glutarate. 5+5

9a. Why divalent cation is required during phosphorylation reaction catalyzed by kinase? Give diagram to illustrate your answer.

b. Give the structure of carnitine. (4+3)+3

10a. Do all proteins have quaternary structure? Give reasons for your answer.

b. Describe the structure of α - helix. (2+4) +4

11a. Show the major pathway of fructose entry into glycolysis in muscles?

b. Describe Cori cycle.

c. Distinguish between parallel and antiparallel β sheet structure. 3+4+3

12a. Show the steps of branch removal in glycogenolysis.

b. Show how ribulose-5-phosphate serves as substrate of two different enzymes. 4+(3+3)