

B.E. Food Technology and Biochemical Engineering

First Year Second Semester (Old) Examination 2019

Biochemistry and Nutrition I

Time:3Hr

Use separate answer script for each part

Full Marks:100

PART I: Answer any ten questions (6 x 10= 60)

1. Name the three irreversible enzymes of glycolysis? (6)
2. a) How many molecules of pyruvate are produced from one molecule of glucose in glycolysis?
b) Name the two kinase enzymes of glycolysis? (2+4)
3. a) What is glycogen?
b) What are the functions of glycogen? (2+4)
4. What are the significances of PPP? (6)
5. a) What do you understand by secondary structure of protein?
b) Give example. (4+2)
6. a) What is transamination reaction?
b) Name any three enzymes that help in protein digestion (3+3)
7. a) What is urea cycle?
b) Name the enzymes of urea cycle? (2+4)
8. a) Define protein efficiency ratio.
b) Name the sources of two nitrogen atoms of urea produced in urea cycle. (3+3)
9. a) What is isoelectric pH?
b) Name the enzymes of pyruvate dehydrogenase complex. (3+3)
10. a) What is oxidative phosphorylation?
b) What is P:O ratio? (3+3)
11. a) What is gluconeogenesis?
b) Where does it occur? (4+2)
12. a) What do you understand by essential and non essential amino acids?
b) What is peptide bond? (4+2)
13. a) What do you understand by primary structure of protein?
b) Can the same amount of amino acids create different proteins? (2+4)
14. a) Name the enzyme of TCA cycle that produces FADH₂.
b) Name the two enzymes acting on the same substrate ribulose-5-phosphate. (2+4)

[Turn over

**B.E. FOOD TECHNOLOGY AND BIO-CHEMICAL ENGINEERING FIRST YEAR
SECOND SEMESTER (Old) – 2019**

Subject: BIOCHEMISTRY & NUTRITION – I Time: 3 hrs. Full Marks: 100

Part – II (40 marks)

Use Separate Answer scripts for each Part

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1. Answer any five questions: (2×5=10)

- i. What is ketosis?
- ii. Give the full form of ATP and LDL.
- iii. Define esterification with an example.
- iv. What is lipotropic agent?
- v. Give the structure and name of the following fatty acid: $\Delta^{9,12}$ -cis-Octadecadienoic acid.
- vi. What is 'Saponification number'?
- vii. Write the name of three essential fatty acids.
- viii. Why HDL called good cholesterol?

2. Answer any five questions: (5×4=20)

- i. Write the mechanism involved in the following conversion:
Acyl-CoA (C₁₆) \longrightarrow L(+)-3-Hydroxyacyl-CoA
- ii. Draw the tentative model of the dimer form of multienzyme fatty acid synthase.
- iii. What is ketogenesis?
- iv. Explain the term 'Emulsification'.
- v. How many ATP molecules are generated during complete β -oxidation of one molecule palmitic acid?
- vi. Give the structure of the following compounds: Succinyl-CoA, Acyl adenylate.

3. i. Carnitine-acylcarnitine antiport: explain the pathway. What is rancidity of fat? (6+4)
Or,
ii. Write in short about fatty liver. Compare the beta-oxidation cycle of monounsaturated and polyunsaturated fatty acids. (6+4)