# L 1033

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2006.

Second Semester

Biotechnology

BT 1151 — BIOCHEMISTRY – I

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. What is a nucleotide? Give an example.

2. What is substrate level phosphorylation? Give an example.

3. What are ketone bodies?

4. Define mutarotation.

5. With a scheme show the various fates of acetyle COA in cellular metabolism.

6. Define protein modification.

7. Give the structure of $20 : 4^{\Delta 5.8,11,14}$.

8. Give two characteristics of a peptide bond.

9. Calculate the pH of a $1.0 \times 10^{-5}$ M solution of NaOH.

10. What are hydrophobic amino acids? Give two characteristics.

PART B — (5 × 16 = 80 marks)

11. Describe the four levels of protein structure.

12. (a) (i) Describe the major differences between glycolysis and gluconeogenesis. (4)

(ii) What do the three irreversible reactions of glycolysis have in common? (6)

(iii) How are the two apposing pathways coordinately regulated? (6)

Or

(b) (i) Describe the major reactions that amino acids undergo. (6)

(ii) Show where the carbon skeletons of the amino acids enter the TCA cycle. (6)

(iii) Write a balanced equation for the synthesis of glutamate that is mediated by the enzyme glutamate dehydrogenase. (4)

13. (a) (i) Give the reactions of the urea cycle. (5)

(ii) What is the source of the two amino groups and the carbonyl group? (3)

(iii) What is hyperammonemia? How are mild forms of the disease treated? (4)

(iv) Describe the Krebs bicycle. (4)

Or

(b) Describe the double–helical structure of DNA.

14. (a) Describe the electron transport chain and oxidative phosphorylation.

Or

(b) Write short notes on :

(i) steroids

(ii) prostaglandins

(iii) starch

(iv) heteropolysaccharides.

15. (a) (i) Give the reactions of the $\beta$–oxidation spiral. (10)

(ii) Calculate total ATP yield from palmitri acid oxidation. (4)

(iii) Give an overall equation for $\beta$–oxidation. (2)

Or

(b) Describe the biosynthesis of fatty acids and the role of ACP.

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