(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 9589 Roll No. | | | | | | | | | | |

B. Tech

(SEMESTER-III) THEORY EXAMINATION, 2012-13

BIO-CHEMISTRY

Time : 3 Hours] *[Total Marks : 100*

Section – A

1. Attempt **all** question parts. **10 × 2 = 20**

(a) What is the pH when 100 ml of 0.1 N NaOH is added to 50 ml of 0.1 M acetic acid if pKa for acetic acid is 4.76 ?

(b) Write short notes on auxins.

(c) What are diasteriomers ? Explain with example.

(d) Write about the regulation of glycolysis reaction.

(e) Give the structure of two poly unsaturated fatty acids.

(f) What is the precursor of Vitamin D. Give its structure.

(g) Why coeliac disease is caused ? What are the symptoms ?

(h) Illustrate the gamma glutamly cycle or meister cycle.

(i) What are basis for DNA and RNA structure ? How they are classified ?

(j) Explain the disorders of purine and pyramidine metabolism.

Section – B

2. Attempt any **three** question parts. **10 × 3 = 30**

(a) Illustrate the following metabolic reaction of carbohydrate mentioning their significance :

(i) Rapaport Leubering Cycle

(ii) Gluconeogenesis

(b) What are biological enzymes ? Explain different types of hormones in human body.

(c) Explain the biosynthesis and degradation of cholesterol and also how it is regulated in our body.

(d) Describe the major reactions by which amino acids are metabolized with enzymes and cofactors. What is nitrogen balance ? How is excess ammonia excreted by a human body ? Give a schematic diagram.

(e) Explain the Biosynthesis of vitamins.

Section – C

3. Attempt **all** questions. **10 × 5 = 50**

(a) Discuss how TCA cycle is amphibolic pathway and also called as Anaplerotic reactions.

(b) Describe the Pentose phosphate pathway and how it is regulated.

(c) What are the different types of isomers seen in carbohydrates ? Explain with examples.

4. Attempt any **one** part : $10 \times 1 = 10$

(a) What are vitamins ? How they are classified ? Explain the source, uses, deficiency diseases, and symptoms for each vitamin.

(b) Explain in detail about the plant hormones.

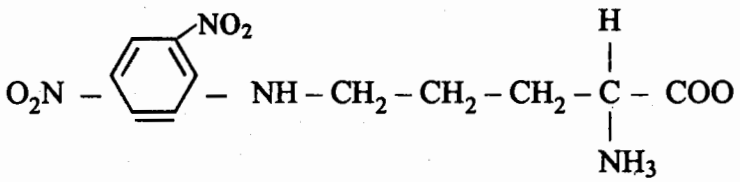
5. Attempt any **one** part : $10 \times 1 = 10$

(a) What is β oxidation ? What are the reactions in this spiral ? Give the total ATP yield by the complete oxidation of plamitic acid.

(b) What are the different types of lipids ? Explain in detail with structure.

6. Attempt any **one** part : $10 \times 1 = 10$

(a) Treatment of an intact peptide with 1-fluoro 2, 4-dixitiobenzene followed by complete hydrolysis & chromatography yielded only free amino acids and the following derivative :



(Hint : 2, 4-DNP amino acid involves the amino group of the side chain rather than the α-amino group.)

Partial hydrolysis of the peptide followed by chromatographic separation and sequence analysis yielded the following di-and tri-peptides.

L-F, F-P, O-L, V-O, V-O-L, F-P-V, P-V-O

Given the above information, deduce the amino acid sequence of the peptide antibiotic. Show your reasoning when you have arrived at the structure. Demonstrate it is consistent with the above findings.

(b) A protein can function as carrier of a specific functional group. What is it called ? Explain in detail with examples.

7. Attempt any **two** parts : **5 × 2 = 10**

(a) Catabolic reaction of any one purine.

(b) Explain the De novo synthesis of purine nucleotides.

(c) Explain the catabolism of Thiamine.