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(February)

BIOCHEMISTRY

(Honours)

(Intermediary Metabolism)

[BCHEM–501]

Marks : 56

Time : 3 hours

The figures in the margin indicate full marks for the questions

Answer *any* **four** questions

1. *(a)* Define the term 'metabolism'. State the differences between catabolism and anabolism. 1+3=4

(b) Give the name of the enzymes that catalyze the three irreversible reactions in glycolysis and discuss their roles in the regulation of the pathway. 8

(c) Why is the reaction catalyzed by PFK–1 considered to be the committed step in glycolysis? 2

2. *(a)* Under what condition does fermentation take place in a cell and what is its primary role? Describe the process of alcoholic fermentation. 2+5=7

(b) Explain the role of glycogen synthase and glycogen phosphorylase in the regulation of glycogen metabolism. 7

3. Why is -oxidation of fatty acids so-called and in which cellular compartment does it occur? Elucidate the scheme of -oxidation of palmitic acid. Discuss the yield of ATP from such an oxidation. 2+8+4=14

4. What is the source of ammonia in the body? Illustrate the pathway by which ammonia is detoxified in ureotelic organisms. 1+13=14

5. Write notes on the following : 7×2=14

(a) Regulation of purine nucleotide biosynthesis

(b) Degradation of pyrimidine nucleotides

6. Outline the basic characteristics of a photo-system and explain how photosystem I differs from photosystem II. Describe the process of ATP synthesis by photo-phosphorylation. 4+10=14

7. Differentiate between the following : 3+4+3+4=14

(a) Substrate level phosphorylation and Oxidative phosphorylation

(b) Transamination and Oxidative deamination

(c) Glucogenic amino acids and Ketogenic amino acids

(d) NAD /NADH ratio and NADP /NADPH ratio

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