# 2013

## M.Sc.

## 2nd Semester Examination

### BIOTECHNOLOGY

**PAPER—BIT-201**

*Full Marks* : 40

*Time* : 2 Hours

*The figures in the right-hand margin indicate full marks.*

*Candidates are required to give their answers in their own words as far as practicable.*

*Illustrate the answers wherever necessary.*

### Group — A

Answer any *five* questions from the following : 2×5

**1.** (a) Mention the steps of glycolysis which require ATP.

(b) Differentiate between substrate level phosphorylation and oxidative phosphorylation.

(c) Distinguish between nucleoside and nucleotide.

(d) Write the difference between transamination and oxidative deamination.

(e) What is isoelectric point of amino acid? Why is it important in biochemical system?

(f) How are fatty acids transported from the cystol into the matrix of mitochondria?

(g) How do you judge the spontaneity of any biochemical reaction?

(h) Mention the importance of pentose phosphate pathway.

## Group — B

Answer any *two* questions from the following : 5×2

**2.** What could be the end products and their prospective fates in catabolism of a fatty acid having 19 carbon atoms. 5

**3.** Write short notes on Urea Cycle. 5

**4.** What are the difference between do novo and salvage pathway of nucleotide biosynthesis? 5

**5.** (a) How do you relate between free energy change and equilibrium constant of any reaction?

(b) 'ATP is known as universal currency of energy in biological system' — explain. 2+3

## Group — C

Answer any *two* questions from the following : 10×2

**6.** (a) What roles different enzymes play during $\beta$-oxidation of a saturated fatty acid ?

(b) How acetyl CoA generates energy during $\beta$-oxidation ?

(c) What is the function of isomerase in the catabolism of unsaturated fatty acid ? 6+3+1

**7.** (a) Write the structure of purine bases.

(b) Name some dietary food stuffs which are rich in purine content.

(c) How pyruvate dehydrogenase mediate the formation of acetyl CoA from pyruvate ? 4+2+4

**8.** Explain the following statements : 2×5

(a) Vitamin D acts as a hormone.

(b) Gout may be aggravated by drinking alcohol.

(c) Starvation gives rise to ketoacidosis.

(d) Reactive oxygen species damages cellular architecture.

(e) Vitamin A deficiency causes night blindness.

**9.** (a) Discuss Vitamin C as reducing agent.

(b) How does fructose 26-bisphosphate control carbohydrate metabolism in the liver?

(c) Describe the chemical nature of insulin and explain its role on lipid metabolism. 2+4+4

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