Reg. No. : | | | | | | | | | | |

S 4802

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2007.

Annual Pattern — First Year

Biotechnology

BT1X01 — BIOCHEMISTRY – I

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Differentiate between Amylose and Amylopectin.

2. Water is amphoteric in nature. Justify.

3. What are epimers? Give example.

4. What are reducing sugars? Give examples.

5. Write the chemical equation for the hydrolysis reaction of fats.

6. What are enzyme inhibitors?

7. Give any two examples for each of the following :

   (a) Water soluble vitamins

   (b) Fat soluble vitamins.

8. What do you mean by phosphoryl shift?

9. Mention the role of water in Citric Acid cycle.

10. Write a short note on anaerobic glycolysis.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the various biological functions of water. (8)

(ii) Describe the important unique properties of water. (8)

Or

(b) (i) Define hydrogen bonding. Mention its importance in biomolecules. (8)

(ii) What are biological buffers? Give any two examples. (8)

12. (a) (i) Draw the structure of sucrose. Why it is called as invert sugar? (6)

(ii) What are the products formed during the hydrolysis of the following carbohydrates?

(1) Chitin

(2) Glycogen

(3) Lactose. (6)

(iii) Mention the uses of the following derivatives.

(1) Cellulose nitrate

(2) Cellulose acetate. (4)

Or

(b) (i) Give atleast one example for each of the following type of amino acids.

(1) Aromatic amino acid

(2) Acidic amino acid

(3) Non essential amino acid

(4) Non protein amino acid. (4)

(ii) Describe α-Helix structure of proteins. (8)

(iii) What is Biuret test? (4)

13. (a) (i) List out the differences between DNA and RNA. (6)

(ii) What are nucleosides? Write the structure of

(1) Ribo nucleoside

(2) De oxy ribonucleoside. (6)

(iii) Animal fats are solids at ordinary temperature but vegetable fats are liquids. Why? (4)

Or

(b) (i) What are steroids? How steroids differ with fats. (4)

(ii) Draw the structure of cholesterol. Mention its biological significance. (8)

(iii) What are the functions of nucleotides? (4)

14. (a) (i) What do you mean by catabolism and anabolism? Mention the important differences between these two process. (8)

(ii) Write short notes on :

(1) Vitamin – D

(2) Vitamin – K. (8)

Or

(b) (i) Explain the important characteristics of enzymes. (10)

(ii) Describe the biosynthesis of proteins. (6)

15. (a) (i) What is glycolysis? Clearly explain the various steps in the first phase of glycolysis process. (10)

(ii) Calculate the number of ATP molecules which are formed from one mole of glucose on complete oxidation. (6)

Or

(b) (i) Describe the various steps in citric acid cycle. Mention the nature of enzymes in each step. (10)

(ii) Write a short note on the following :

(1) Inhibitors of electron transport.

(2) Inhibitors of oxidative phosphorylation. (6)