

Total number of printed pages-4

53 (FPT 603) BCBI

2016

**BIOCHEMISTRY AND  
BIOTECHNOLOGY**

Paper : FPT 603

Full Marks : 100

Time : Three hours

***The figures in the margin indicate  
full marks for the questions.***

Answer **any five** questions from **seven**.

1. (a) Define biomolecules. Which atom is a major part of biomolecules? What is biochemistry used for? 5
- (b) What is N-equilibrium? Explain amino acid pool. 5
- (c) Explain endo and exo-peptidases giving examples. 5
- (d) What is HMP? What is a byproduct of the electron transport chain? 5

Contd.

2. (a) What is the alternative pathway for breakdown of glucose? What is Ribose-5-phosphate and why it is important? 5
- (b) What is saturated and unsaturated fatty acid? Give *one* example each. 4
- (c) Discuss in detail how you will evaluate the quality of protein. 6
- (d) What is C and N-terminal? Why amino acids are considered as amphoteric molecules? 3+2
3. (a) Define bio-catalyst. Explain the chemical nature of enzymes. 5
- (b) What is Explant culture? What are the basic techniques of plant tissue culture? 5
- (c) Describe the Induced-fit model. 5
- (d) What is ATP? Where is the energy stored in ATP? How is GTP different from ATP? 5

4. (a) Define the following terms :  $2 \times 5 = 10$

(i) Kinase

(ii) Glucose

(iii) Apoenzyme

(iv) Oxidation

(v) Hydrogen bond.

(b) Draw the ring form of G6P. Explain the reaction that takes place in first step of Glycolysis. 5

(c) What is di-peptide ? Draw the structure of Alpha-helix. 5

5. (a) What is meant by substrates of enzymatic reactions ? Explain that enzymes lower the activation energy of the chemical reactions that they catalyze. 7

(b) Explain competitive inhibition with reference to *one* example. 5

(c) What holds a protein into its tertiary structure ? 4

(d) Give *two* examples each of hydrophobic and hydrophilic amino acid. 4

6. (a) Define totipotency. What are the various applications of plant culture? 2+3
- (b) What is glycosidic bond? Give two examples of polysaccharides. 4
- (c) Differentiate between callus and suspension culture. 4
- (d) What is DNA technology? What are the important tools used in genetic engineering? 7
7. (a) Write brief notes on : **(any four)** 4×4=16
- (i) Quaternary Structure
  - (ii) Nomenclature of enzymes
  - (iii) Protein denaturation
  - (iv) Absorption of protein
  - (v) Lipids
- (b) What is optimum pH? Explain how enzymes are affected by pH? 4