

Total number of printed pages-5

53 (FPT 603) BCBT

2015

**BIOCHEMISTRY & 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.

1. (a) Define monomer. Give examples of biological macromolecule. 3
- (b) What is metabolism ? What is the primary function of metabolism ? 3
- (c) Draw the structure of *D* and *L*-amino acid. 2
- (d) What is protein turnover ? Explain Amino acid pool. 6

Contd.

(e) Define bio catalyst. Give a brief account on nomenclature of enzymes. 6

2. (a) What is disulphide bridge ? Give three examples of hydrophilic amino acid. 4

(b) Define co-enzyme. Explain the chemical nature of enzymes. 5

(c) What are bio-chemical reactions ? What are the major types of bio-chemical reactions ? 4

(d) What are the primary requirements of plant tissue culture ? 2

(e) Explain oxidative phosphorylation giving suitable diagram. 5

3. (a) Define the following terms :  $2 \times 4 = 8$

(i) NAD

(ii) Substrate

(iii) Hexose

(iv) Enolase.

- (b) What are the events that take place in the first reaction of citric acid cycle ? 3
- (c) What is Growth regulators ? What are the basic techniques of plant tissue culture ? 1+4=5
- (d) What is mutase ? 2
- (e) Show the formation of peptide bond. 2
4. (a) What is Genetic engineering ? Explain in brief the method of Gene insertion. 2+5=7
- (b) Explain substrate specificity giving examples. 3
- (c) What is Glycolysis ? Give a brief summary of glycolysis. 4
- (d) Describe the induced-fit model of enzymes. 4
- (e) What is non-sugar ? Give examples. 2

5. (a) Differentiate between :  $3 \times 3 = 9$
- (i) Callus and suspension culture
  - (ii) Acidic and Basic amino acid
  - (iii) ATP and GTP
- (b) Explain in brief the ETC showing suitable diagram. 6
- (c) How enzymes are affected by temperature ? 3
- (d) What is endopeptidase ? Give examples. 2
6. (a) Describe the oxidative reactions of Pentose Phosphate pathway. 6
- (b) What is redox reaction ? 2
- (c) Differentiate between competitive and non-competitive inhibitor. 6
- (d) What kind of reaction does the transferases and hydrolases enzymes catalyse ? 3
- (e) Explain tertiary structure of protein. 3

7. (a) What is Michaeli's constant ? Explain the effect of substrate concentration on the velocity of enzymatic reaction.

1+3=4

(b) What are the two functional groups of monosaccharide ? Show the formation of disaccharide molecule. 4

(c) What is Gluconeogenesis ? Discuss the different events that take place in the formation of glucose from pyruvate. 8

(d) How will you evaluate the quality of protein ? 4