53 (FPT 603) BCBT

2018

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. What are the chemical elements that form most of living biological matter ? 3

   (b) What is protein denaturation ? What are some factors that can lead to denaturation of protein ? 4

   (c) What is active site ? How does it participate in enzyme catalysis ? 3

Contd.

(d) Explain the various steps involved in fat absorption with suitable diagram. 5

(e) What is phosphorylation ? What is the purpose of oxidative phosphorylation ? 5

2. (a) What is optimum pH ? How does temperature affect the action of enzymes on their substrates ? 5

(b) What kind of reaction does the oxidoreductases and transferases enzymes catalyze ? 3

(c) Define suspension culture. Explain the basic techniques involved in plant tissue culture. 5

(d) What is GTP ? How ATP is different from GTP ? 3

(e) Write the two events that occur in reaction three of citric acid cycle. 4

3. (a) Define the following terms : 2×5

(i) Apoenzyme

(ii) NADH

(iii) Explant

(iv) ADP

(v) Kinase.

(b) What is HMP ? What is a by-product of the electron transport chain ? 5

(c) What are Bioelements ? What are the two phases of cellular pool ? 5

4. (a) What are restriction enzymes ? How do these enzymes participate in recombinant DNA technology ? 6

(b) Discuss the different events that take place in the formation of glucose from pyruvate. 7

(c) How do cofactors and coenzymes work ? 3

(d) What is amino acid residue ? Give *three* important characteristics of amino acid. 4

5. (a) Distinguish between : ***(any four)*** 4×4

(i) Endo and Exopeptidases

(ii) Competitive and Non-competitive inhibition

(iii) Acidic and Basic amino acids

(iv) Anabolism and Catabolism

(v) Sugar and Non-sugar.

(b) What are the key enzymes of Gluconeogenesis ? 2

(c) Give some examples of growth regulators commonly used in plant tissue culture. 2

6. (a) Define callus culture. What are the uses of callus culture ? 3

(b) What is DNA technology ? Give some applications. 7

(c) Define ETC. Describe the purpose and name of each electron carriers in the ETC. 6

(d) Describe the induced-fit model in enzymes. 4

7. *(a)* Write brief notes on : ***(any four)*** 4×4

(i) Enzyme specificity

(ii) Alpha-helix

(iii) Tools used in genetic engineering

(iv) Digestion and absorption of proteins

(v) Amino acid Pool.

(b) What is positive and negative nitrogen balance ? 2

(c) What is Ribose-5-Phosphate and why is it important ? 2