

Total number of printed pages-5

53 (FPT 603) BIBI

2019

**BIOCHEMISTRY AND
BIOTECHNOLOGY**

Paper : FPT 603

Full Marks : 100

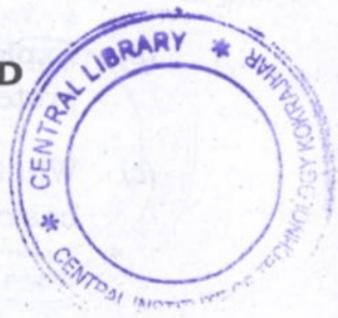
Time : Three hours

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

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

1. (a) What is a cellular pool? What are its two phases? 4
- (b) Explain the positive and negative nitrogen balance. 4
- (c) Define K_m and explain the effect of substrate concentration on enzyme activity. 2+4
- (d) Explain the important tools used in genetic engineering. 6

Contd.



2. (a) What is ES complex? What are the main theoretical models that try to explain the formation of the ES complex? 2+4
- (b) Explain the alpha-helical structure of protein with examples. 4
- (c) What is callus culture? Explain the basic techniques of plant tissue culture. 6
- (d) What is isoelectric pH of protein and write its importance. 4
3. (a) Give a brief account of glycolysis mentioning the steps and the energy yield per molecule of glucose. 6
- (b) What is Salt bridge? Give three examples of non-essential amino acid. 4
- (c) What are Endo and Exo-peptidases? Give examples of each. 4
- (d) What is peptide bond? What can cause denaturation of protein? 6

4. 8 (a) Write brief notes on : (any five) 2x5=10
- (i) Active site
 - (ii) Totipotency
 - (iii) Kinase
 - (iv) GTP
 - (v) Apoenzyme
 - (vi) Substrate
- (b) Explain the major components of ETC. 5
- (c) Describe the digestion and absorption of dietary lipids. 5
5. (a) Distinguish between : 3x4=12
- (i) Acidic and basic amino acids
 - (ii) D and L-isomer
 - (iii) C and N-terminal
 - (iv) Sugar and Non-sugar.

(b) What are enzyme co-factors ?
Distinguish between co-enzymes and co-factors. 4

(c) Name the key enzymes involved in gluconeogenesis. 4

6. (a) What are the basic requirements of plant tissue culture ? Explain the various applications of plant tissue culture. 2+3=5

(b) What is enzyme inhibition ? Explain how competitive inhibition is different from non-competitive inhibition. 2+4=6

(c) Write the important applications of recombinant DNA technology in the field of agriculture. 6

(d) Give examples of storage and transport classes of protein. 3

7. (a) How is the tertiary structure of a protein held together ? 6

(b) What is the role of NAD and FAD in citric acid cycle ? 4

(c) What is Ribose-5-phosphate and why is it important ? 4

(d) Write short notes on : 3x2=6

(i) Bioelements

(ii) Amino acid pool

(iii) Triple helix.

