M.Sc. Part-I (Semester-I) (C.B.C.S. Scheme) Examination

BIOTECHNOLOGY (1 BTB 2)

(Macromolecules & Enzymology)

Time : Three Hours] [Maximum Marks : 100

Note :— (1) **ALL** questions are compulsory and carry equal marks.

(2) Draw well labelled diagrams wherever necessary.

1. (a) What portion of ETC is inhibited by CN (a cyanide) ? What is the effect of cyanide inhibition upon protein pumping and ATP synthesis. 5

(b) Discuss the properties of water. 5

(c) Explain complex I involved in ETC. 5

(d) Give examples of inhibitors of energy transfer. 5

OR

(p) Describe in brief—ATP synthase complex. 5

(q) What do you understand by pH ? Comment upon its significance in biological system. 5

(r) Comment upon reversed electron transfer. 5

(s) Characteristics of covalent bonds. 5

2. (a) Draw the structure of any two aliphatic amino acids. 5

(b) What do you understand by non-essential amino acids ? Name any five non-essential amino acids. 5

(c) What is Tertiary structure of protein ? Discuss its importance. 5

(d) Discuss the factors that can lead to protein denaturation. 5

OR

(p) Draw the structure of any two amino acids having R-group with positive net charge at pH 7.0. 5

(q) Do changes in primary, secondary or tertiary structure of a protein normally have consequences for their functions. 5

(r) What is the difference between alpha-helix and beta-sheet protein conformations ? 5

(s) Are proteins with the same number of their respective amino acid components necessarily identical ? 5

3. Explain allostesic enzymes and discuss their sequential and cooperative models. 20

OR

Write the salient features of enzymes and discuss why and how the enzymes are efficient catalysts. 20

4. Discuss the enzymatic control of glycolysis. 20

OR

What is glycogen ? Discuss its metabolism. 20

5. (a) Explain yeast—two hybrid system. 5

(b) Why multiple proteases are used in amino acid sequencing ? 5

(c) What is the principle of Sanger's sequencing of DNA ? 5

(d) Explain structure of nucleosome. 5

OR

(p) Discuss ELISA for protein-protein interaction. 5

(q) Enlist the steps involved in protein sequencing. 5

(r) What are the advantages of automated DNA sequencing ? 5

(s) Discuss the structural conformation of Cellulose. 5