Third Semester B. Sc. Examination

BIOCHEMISTRY

Paper – I

(Macromolecules)

Time : Three Hours] [Max. Marks : 50

N. B. : (1) All questions are compulsory and carry equal marks.
(2) Draw well labelled diagram wherever necessary.

1. Describe the following reactions of amino acids :—
   (a) Edman's reaction.
   (b) Ninhydrin reaction. 10

OR

Describe the Merrifield-Gutt method of peptide synthesis in detail. 10

2. (a) Describe the α–helical structure of proteins. 5

   (b) Describe the structure and biological function of collageh. 5

OR

Write short notes on the following :—

(c) β–pleated sheet structure of proteins. 5

(d) Quaternary structure of proteins. 5

3. Describe the double helical model of DNA proposed by Watson and Crick. Write the chemical structure of A–T and G–C pairs. 10

OR

(a) What are Chargaff's rules ? $2\frac{1}{2}$

(b) How does native DNA differ from the B-DNA model of Watson and crick ? $2\frac{1}{2}$

(c) Describe DNA dehaturation. $2\frac{1}{2}$

(d) Write a note on A-DNA. $2\frac{1}{2}$

4. Describe DNA sequencing method of Sahger. 10

OR

(a) Describe the cloverleaf model of tRNA. 5

(b) Describe the structure of Eucaryotic mRNA. 5

5. Answer any ten of the following :—

(I) Write the names of any two unusual amino acids.

(II) Write the chemical structure of glycine

(iii) The bond formed between the α–NH2 group of one amino acid and the α–COOH group of a second amino acid is commonly known as____

(IV) What is meant by a subunit in quaternary structure of a protein? 1

(v) A disulphiate bond is formed between which two amino acids ? 1

(vi) "All proteins do not have a quaternary structure? Why? 1

(vii) DNA is a left–handed helix. 1

(viii) Base stacking is a type of____ interaction. 1

(ix) The phosphodiester bond in nucleotides connects the ___ carbon atom of a sugar to the ____ carbon atom of another sugar. 1

(x) Repetitive base sequences are present in ___ DNA. 1

(xi) Chemical cleavage method of DNA sequencing is also called____ . 1

(xii) DNA Renaturation is done at a temperature 20–25^{0}C lower than the _____. 1