

NKT/KS/17/5122

**Bachelor of Science (B.Sc.) Semester—III (C.B.S.) Examination****BIO-CHEMISTRY (Macromolecules)****Paper—I**

Time : Three Hours]

[Maximum Marks : 50

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

1. Give detail account of Merrifield and Gutt method for the synthesis of peptides. 10

**OR**

- (a) Describe the reaction of amino acid with Ninhydrin. 5  
 (b) Describe the reaction of amino acid with Edwan's reagent. 5
2. (a) With the help of suitable diagram describe the structure of collagen. 5  
 (b) Describe in detail the denaturation and renaturation of proteins with suitable example. 5

**OR**

Describe the  $\alpha$ -helical structure and  $\beta$ -pleated sheets of protein structure. 10

3. Draw the chemical structures of dATP, dGTP, dTTP, dCTP and UTP. 10

**OR**

Write short notes on :

- (a) Chargaff's Rule 2½  
 (b) Z-DNA 2½  
 (c) Denaturation of DNA 2½  
 (d) Hydrophobic interactions and base stacking. 2½
4. Describe Maxam-Gilbert's method for sequencing of DNA. 10

**OR**

- (a) Give detail structure of mRNA. 5  
 (b) What is  $T_m$ ? Add a note on its relationship with G-C content in DNA. 5

5. Answer any *ten* of the following :

- (i) Name any two steps involved in the determination of primary structure of proteins. 1
- (ii) What is the name of Sanger's reagent used in end group analysis of a polypeptide ? 1
- (iii) Name any two unusual amino acids. 1
- (iv) Name the amino acids frequently present in the  $\beta$ -pleated sheet of proteins. 1
- (v) What are domains ? 1
- (vi) Name any one protein having quaternary level of structure. 1
- (vii) How many base pairs are present in A-DNA per turn ? 1
- (viii) Name any two unusual bases present in tRNA. 1
- (ix) Why is DNA negatively charged ? 1
- (x) Who proposed the double helical structure of DNA ? 1
- (xi) Sanger's dideoxy method of DNA sequencing is also called ..... method. 1
- (xii) Who proposed the structure of alanyl-tRNA ? 1