

Bachelor of Science (S.Y. B.Sc.) (CBCS Pattern) Third Semester  
**USBCT-C05 - Biochemistry Paper-I Macromolecules**

P. Pages : 2

Time : Three Hours



**GUG/W/18/11596**

Max. Marks : 50

- Notes : 1. All questions are compulsory and carry equal marks.  
2. Draw well labelled diagrams wherever necessary.

1. What are proteins? Classify proteins on the basis of solubility and biological functions. **10**

**OR**

- a) Give the reaction of ninhydrin with amino acid. **2½**  
b) Write a note on non proteinaceous amino acids. **2½**  
c) Explain in brief - Peptide mapping. **2½**  
d) Discuss the use of endopeptidase specificity for primary structure determination. **2½**

2. Explain the forces stabilizing quaternary structure of protein add a note on co-operative binding of O<sub>2</sub> to hemoglobin. **10**

**OR**

Discuss the followings in brief:

- a)  $\beta$  Pleated sheet structures. **2½**  
b) Protein denaturation. **2½**  
c) Structure and functions of collagen. **2½**  
d) Concept of domains. **2½**

3. Describe in detail the Watson- Crick model of B-DNA. Give the Chargaff's rules. **10**

**OR**

- a) Draw the ring structures of purine and pyrimidine. Add a short note on base composition of nucleic acids. **2½**  
b) Write a note on A-DNA. **2½**  
c) Give the importance of base stacking and base pairing in the stability of nucleic acid structure. **2½**  
d) Discuss in brief: Z - DNA. **2½**

4. Describe Sanger's dideoxynucleotide sequencing method. **10**

**OR**

- a) Write a note on Satellite DNA. **2½**
- b) Explain the structure of m-RNA. **2½**
- c) Explain the relationship between  $T_m$  and G-C content in DNA. **2½**
- d) Discuss the denaturation of DNA. **2½**

5. Attempt **any ten** of the following. **10**

- a) What is Zwitter ion?
- b) Give the name of Edman's reagent.
- c) Draw the structure of glutathione.
- d) What are 'helix breaker' amino acids?
- e) Give any one example of tertiary structure of protein.
- f) Name the sulfur containing amino acids.
- g) Draw the structure of Uracil.
- h) What is nucleotide?
- i) What is nucleoside?
- j) Who discovered chemical cleavage method for DNA sequencing?
- k) Define renaturation.
- l) Draw the structure of t-RNA.

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