

[Paper-B : Nitrogen Containing Biomolecules]

Time Allowed : Three Hours

Maximum Marks : 45

Note : Attempt five questions in all, including Question No. 1 is compulsory and selecting one question from each Unit.

1. Attempt the following :

- (a) What do you mean by hyperchromic shift, what information does it provide.
- (b) Why are amino acids called alpha amino acids. Also provide an example of amino acid which are not an alpha amino acids.
- (c) Amino acid can exist as zwitter ions, Justify the statement.
- (d) How cytidine is different from-cytidylic acid.
- (e) What are metalloporphyrins give at least one example.
- (f) Justify the statement that peptide bond has a partial double bond character.
- (g) What are ribozymes.
- (h) What is the chemical nature of bile pigments?
- (i) Why is RNA unstable as compared to DNA? (9x1)

Unit-I

- 2. (a) Discuss the structure and function of three amino acids having non polar R-groups.
- (b) Discuss stereoisomerism with respect to amino acids with suitable examples. (2x4½)
- 3. (a) Write a note on the biologically active peptide along with providing suitable examples.
- (b) Discuss the titration curve of glycine giving a pictorial representation. (2x4½)

Unit-II

- 4. (a) Write a short note on behavior of proteins in solution.
- (b) Discuss the process of protein denaturation. (2x4½)
- 5. (a) Discuss the organization of proteins at primary, secondary and tertiary levels, giving suitable examples.
- (b) Write a note on conjugated proteins with suitable examples. (6,3)

Unit-III

- 6. (a) Enumerate differences among A, B and Z forms of DNA. 6
- (b) Write a note on biologically important nucleotides with examples. 3
- 7. (a) Provide the details about sequencing of polynucleotides. (6,3)
- (b) Elaborate on different types of RNA molecules. (6,3)

Unit-IV

8. (a) How would you define a porphyrin nucleus, citing some examples of biological molecules having porphyrin nucleus add a note on their classification.
- (b) Write a note two biologically occurring bile pigments. (7,2)
9. (a) Discuss different methodologies to detect porphyrins in biological solutions.
- (b) Write a short note on biological significance of heme. (7,2)