

1125

M.Sc. (Bio-Informatics) First Semester
MBIN-8004: Macromolecular Bio-Chemistry

Time allowed: 3 Hours

Max. Marks: 60

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

x-x-x

I. Attempt the following:-

- a) Distinguish between polar and non polar covalent bonds?
- b) Justify the statement "Glycine is prominent in loops and turns region of protein structure".
- c) Differentiate between hemoglobin and Myoglobin structure.
- d) Discuss helical stacking and its significance?
- e) What is amino acid ionization?
- f) Discuss the role of studying macromolecules structures to understand biology of a cell.
- g) What is canonical form of DNA?
- h) What are glycoproteins? (8x1½)

UNIT - I

- II. a) Discuss fibrous protein & their structure.
- b) Discuss the importance of "Ramachandran Plot" in the prediction of protein structure. (6,6)
- III. a) Discuss the role of buffer & titration of amino acids.
- b) Write a note on proteins stability. (6,6)

UNIT- II

- IV. a) Discuss Helix coil transition in proteins.
- b) Write a note on folding & misfolding pathways. (6,6)
- V. a) What is statistical thermodynamics and its significances?
- b) Differentiate between cooperative and excluded binding. (6,6)

UNIT- III

- VI. a) Discuss DNA polymorphism and its different form.
- b) What is secondary & tertiary structure of polysaccharides. (6,6)
- VII. a) Discuss helical properties of DNA.
- b) Discuss conformation of starch and glycogen. (6,6)

x-x-x