

2022
M.Sc. (Bio-Informatics) Third Semester
MBIN-8014: Structural Biology

Time allowed: 3 Hours

Max. Marks: 60

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

x-x-x

I. Attempt the following:-

- a) Define resolution of a microscope
- b) What are applications of a confocal microscope?
- c) Give one application of GC/MS and LC/MS.
- d) What is microheterogeneity of proteins?
- e) Give full forms of NOE and COSY
- f) Briefly explain protein folding problem
- g) Name one database each for protein sequence and protein structures
- h) Define R- factor with respect to X Ray diffraction (8x1½)

UNIT - I

II. Compare and contrast:-

- a) Dark field and bright field microscope
- b) SEM & TEM (2x6)

- III. a) Enlist various types of electron lenses & give their biological applications.
b) Explain principle and working of fluorescence phase contrast microscope (2x6)

UNIT - II

- IV. a) Write a note on the applications of MS in structure determination.
b) Explain identification of post translational modifications of proteins using MS taking a suitable example (2x6)

V. Write notes on the following:-

- a) Peptide mapping using MS
- b) DNA component analysis by MS (2x6)

P.T.O.

(2)

UNIT - III

- VI. Compare and contrast:-
- a) X-ray crystallography and NMR
 - b) Chemical shift and spin coupling (2x6)
- VII. a) Discuss principle and working of NMR to explain how it is used for structure determination.
- b) What are the various crystallization methods? (8,4)

x-x-x