

2021
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) TEM grid
- b) Resolving Power of Microscopes
- c) Principle of Fluorescence Microscopy
- d) Resonance condition in NMR
- e) TOF analyzer
- f) NOE
- g) Peptide Mapping
- h) Chaperones

(8x1½)

UNIT – I

- II. a) Explain the principle and applications of Phase contrast microscopy?
- b) Write a detailed note on Dark Field Microscopy. (8,4)
- III. a) Discuss general design and working principle of SEM. How is it different from TEM?
- b) Explain Confocal Microscopy and its advantages. (8,4)

UNIT – II

- IV. a) What are the principal ionization methods used in sample ionization of biomolecules in MS?
- b) Explain the method to determine protein disulphide patterns. (6,6)
- V. a) Explain the principle of MS and various equipment used in MS analysis.
- b) Explain the principle and instrumentation of GC/MS spectroscopy. (6,6)

UNIT – III

- VI. a) Discuss the basis of crystallization of biomacromolecules and various methods used for crystallization.
- b) Write in brief about PDB database? (8,4)

P.T.O.

(2)

VII. Write notes on the following:-

- a) X-ray crystallography for structure determination of proteins.
- b) Chemical shift and spin coupling in NMR.

(6.6)

x-x-x