

2122  
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) Enlist various electron lenses and their biological applications.
- b) Give main difference between TEM and SEM.
- c) What is resolving power of a microscope?
- d) Briefly explain peptide mapping.
- e) Differentiate between LC / MS and GC/MS.
- f) Define chemical shift.
- g) Give any 1 crystallization method.
- h) Differentiate between X-ray crystallization and NMR.

(8x1½)

UNIT - I

II. a) Discuss working principle of phase contrast microscope.

b) What are various types of TEM grids?

(8,4)

III. a) Explain general design, working and applications of SEM.

b) Briefly explain working principles of confocal microscope.

(2x6)

UNIT - II

IV. a) What is the principle and experimental set up of MS analysis?

b) How are post-translational modifications of proteins analysed using MS? (2x6)

V. a) Discuss sequencing of proteins using MS.

b) How are peptide disulphide patterns determined?

(8,4)

(2)

Sub. Code: 3506

**UNIT - III**

- VI. a) What is the principle and experimental set of structure determination by NMR?  
b) Write a note on protein folding problem and folding transition states. (8,4)
- VII. a) Define R-factor and explain the principles of x-ray crystallography.  
b) Write a note on protein structure databases and their importance. (2x6)

x-x-x