

BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)

CLASS: M.Sc.
BRANCH: BIO-ENGINEERING AND BIOTECHNOLOGY

SEMESTER : II
SESSION : SP/2025

SUBJECT: BI202 COMPUTATIONAL STRUCTURAL BIOLOGY

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	What do you mean by Proteins Secondary Structure Elements? Explain in detail the DNA double helical structure.	[5] 1	1
Q.1(b)	What is Super Secondary Structures? Differentiate Structural Motifs and Domain.	[5] 1	1
Q.2(a)	Explain how Ramachandran Plot is useful in Protein Structure Determination.	[5] 2	2
Q.2(b)	Give a brief account on Structural Classification of Protein	[5] 2	3
Q.3(a)	Explain representations of Molecular models in Bioinformatics.	[5] 2	2
Q.3(b)	What is molecular modeling? Explain homology-based method for protein tertiary structure prediction.	[5] 2	2
Q.4(a)	Give a brief account on methods of Molecular Docking and its application in healthcare.	[5] 2	1
Q.4(b)	What is PyRx tool? Explain the method and steps used for docking study.	[5] 2	1
Q.5(a)	What is forcefields? Explain how various interaction are used to score forcefield.	[5] 2	2
Q.5(b)	What is MD Simulation ? Describe the steps and its importance in bioinformatics.	[5] 2	2

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