

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -3 EXAMINATION- 2025

B.Tech-IV Semester (BI)

COURSE CODE (CREDITS): 18B11BI413 (3)

MAX. MARKS: 35

COURSE NAME: Structural Biology

MAX. TIME: 2 Hours

COURSE INSTRUCTORS: Dr. Raj Kumar, Dr. Poonam Sharma.

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

Q.No	Question	CO	Marks
Q1.	Write an experiment that demonstrates that all the information necessary for folding into its native structure is contained in the amino acid sequence of the protein.	3,4	4
Q2.	How does Levinthal's Paradox challenge the assumption that proteins fold by randomly sampling all possible conformations?	3,4	4
Q3.	Various diseases are associated with alterations in the quaternary structure of proteins. Discuss this with an appropriate example.	3,4	4
Q4.	State the general equation for calculating the angular displacement of residues in a helical wheel representation	3,4	3
Q5.	Short notes: a) Tertiary structure b) Heptad repeat c) Greek Key Motif	1-5	$2 \times 3 = 6$
Q6.	Explain the difference: a) TEM and SEM. b) Linear polarized light and Circular polarized light	2,5	$2 \times 4 = 8$
Q7.	a) Explain the Emission and Absorption pathways. b) Describe the principle of NMR spectroscopy. What is chemical shift?	2,5	$2 + 4 = 6$