

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -1 EXAMINATION- 2025

B.Tech-IV Semester (BI)

COURSE CODE(CREDITS): 18B11BI413 (3)

MAX. MARKS: 15

COURSE NAME: Structural Biology

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

MAX. TIME: 1 Hour

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	(a). Describe the law of X-ray crystallography. (b). Discuss two chemical properties of amino acids. (c). What are the general physical properties of amino acids?	1	(2X3=6)
Q2	Most amino acids are optically active. How do L- and D-amino acids differ in terms of their molecular structure? Which amino acid is the only one that is not chiral, and why is it considered achiral?	1-2	2
Q3	A peptide bond is formed between the carboxyl group of one amino acid and the amino group of another. Describe the amide character in the peptide bond, how does it affect the structure of proteins?	1-2	2
Q4	Compare the mechanisms by which signaling proteins and catalytic proteins facilitate cellular processes. How are both types of proteins crucial for maintaining cellular function?	1-2	2
Q5	Write the chemical structures of following amino acids: a) Valine b) Phenylalanine c) Glutamate	1-2	3