Dr Raghu

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-3 EXAMINATION – May 2019

B.Tech 2nd Semester

COURSE CODE: 10B11BI211 MAX. MARKS: 35

COURSE NAME: Structural Biology

COURSE CREDITS: 4 MAX. TIME: 2HRS

Note: All questions are compulsory. Carrying mobile phone during examinations will be treated as a case of unfair means.

1. Describe the method of X-ray crystallography. What is it used for? Explain Bragg's law. Draw the flowchart of determining protein structures. **(5 Marks) COIII**
2. Name all the structural motifs in all alpha proteins. Describe the knobs in hole model. **(5 Marks) COI**
3. How many beta strands are present in a single beta-propeller motif? Name one protein containing this motif. **(5 Marks) COI**
4. Describe the folding intermediates of BPTI with a diagram. Explain the importance of disulphide bonds in a protein structure. **(5 Marks) COII**
5. What are the various ways to design proteins? Explain the limitations of protein engineering. **(5 Marks) COIII**
6. What are the various methods of protein secondary structure prediction? Compare and contrast in detail with suitable diagrams. What is Q3 and Q8 accuracy? Describe the equations. **(5 Marks) COIII**
7. Describe hydropathy plots. How is it used in transmembrane prediction? **(2.5 Marks) COIII**
8. Compare and contrast the various forms of DNA. What is a major groove and minor groove. Explain with a diagram. **(2.5 Marks) COIII**