

Roll No.

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT  
TEST-3, EXAMINATION – 2016  
B. TECH-B.T. ( IV SEM)

Course Code: 10B11PH212

Max Marks: 35

Course Name: Biophysical Techniques

Course Credits: 04

Max Time: 2 Hrs

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

**Q.1-Q.8 each of 4 marks (4 x 8= 32)**

Q.1. What do you understand by quantization of energy? Explain the regions of the spectrum? How the spectra can be represented, also discuss the width and intensity in the spectra?

Q.2. Discuss about biological chromophores? Explain the substituent effect in general and for conjugation?

Q.3. Draw and explain the Jablonski diagram along with the fluorescence process in detail. What is mirror image rule? Discuss FRET in brief.

Q.4. What is circular dichroism? Discuss circular birefringence and optical rotation? Compare between CD and absorption spectra? Give the details for standard curves and peak positions for alpha-helix, beta-sheet and random coil structures?

Q.5. What are the necessary conditions for IR absorbance? What types of molecular transitions occur in IR vibrational modes? Discuss about the mechanical model of stretching vibration.

Q.6. What information can be deduced by IR spectroscopy from biological samples? What is the relation between protein secondary structure and infrared absorption?

Q.7. Discuss about the all types of the rotational symmetries in microwave rotational spectroscopy?

Q.8. What are the applications of mass spectrometry in biology? What is MALDI, what is the selection of matrix in MALDI? What are its advantages and disadvantages?

Q.9. Write short notes on: (3 x 1=3)

- IR active and inactive species.
- Application of CD in structural biology.
- Discovery of Z-form DNA.