

**2005 JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY**

**IV B.TECH I SEMESTER REGULAR EXAMINATIONS  
SPECTROSCOPIC ANALYSIS OF BIOMOLECLES  
(BIO-TECHNOLOGY)**

NOVEMBER 2005

**TIME: 3 HOURS  
MARKS: 80**

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**Answer any FIVE Questions  
All Questions carry equal marks**

**MARK [5\*16]**

1. (a) Explain the different properties of electromagnetic radiation.  
(b) Describe the use of electromagnetic radiation for different spectral studies.
2. (a) Explain the solid sampling technique in IR spectrometer.  
(b) Discuss the inductive and mesomeric effects influencing the carbonyl absorption frequency. Give examples.
3. Discuss the stretching and bending frequencies of different functional groups.
4. Describe briefly how an ultraviolet spectrum can be scanned for a pure organic compound. Why are absorption bands formed instead of sharp lines in the spectra?
5. Explain the study of metal chelates and their stability constants by using U.V. visible spectrophotometer.
6. Draw a schematic diagram of an NMR Instrument and discuss the components of it.
7. (a) What arrangement of photons would give two triplets of equal area?  
(b) Explain the patterns and intensities of the isopropyl group in isopropyl chlorid.
8. (a) Write a brief note in spin trapping and spin labels.  
(b) Discuss about time scale of ESR.