

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

Answer any FIVE Questions
All Questions carry equal marks

MARK [5*16]

1. (a) Write electromagnetic spectrum with their wavelengths and explain the use of each light.
(b) The wavelength range of visible light is 3800 Å to 7600 Å. Calculate the corresponding frequency range?
2. Define the IR spectroscopy and describe the various molecular vibrations in the technique. What is the major requirement of IR absorption.
3. (a) Explain the role of IR in the study of metallo proteins
(b) X- compound obtained by metabolite from an antibiotic formation. Its molecular weight is around at 136. Its IR spectrum showed the presence of a bonded carbonyl function and a bonded -OH group heating with alkali yielded toluene and CO₂. Deduce the structure of the compound.
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. Discuss the study of different amino acids and proteins by using U.V. visible spectrophotometer.
6. (a) Write a brief note on geminal and vicinal couplings.
(b) How can you distinguish cis and trans compounds by coupling constant values?
7. (a) Predict the appearance of the high resolution NMR spectrum of 2- hydrox yproponic acid.
(b) Explain the coupling constants and their applications.
8. (a) Discuss in detail about hyperfine splitting in ESR.
(b) Write a brief notes on determination of g-value.