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Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (Bio Tech.) EL-I (2018 Batch) (Sem.–1)

BIOANALYTICAL TECHNIQUES

Subject Code : MTBT-106-18

M.Code : 75766

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :
1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

1. a. Explain the different Modes of Molecular Vibrations, sample handling and applications of IR Spectroscopy.

   b. Discuss Bragg's law, types of crystals and applications of X-ray diffraction.

2. Explain in detail the theory and instrumentation of NMR spectrometer.

3. a. Write the principle of Magnetic Resonance Imaging (MR)I and explain its applications.

   b. Describe the principle and instrumentation of double beam Infrared Spectrophotometer.

4. a. Explain in detail the theory and instrumentation of Transmission Electron microscope and its applications.

   b. Explain in detail with examples the fragmentation pattern of organic compounds by mass spectroscopy.

5. Write short notes on the following :

   a. Free Induction decay

   b. Sample handling techniques in IR

   c. Diamagnetic Shielding

   d. Geiger-Muller counter

   e. X-ray diffraction

   f. Radiotracers

6. a. Explain Ultra Centrifugation and its underlying principal. Write about the different applications of ultra-centrifugation.

   b. Explain the principle and applications of radio scintillation counters.

7. a. Explain the different types of electronic transitions involved in UV Spectroscopy.

   b. Explain the principal of GC-MS and its applications.

8. a. Explain the different interferences in Atomic absorption spectrophotometry and its applications.

   b. Write about Chemical shift and spin-spin coupling and add a note on the factors influencing them.

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.