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Roll No.

## MPY-101

M. Pharm. (First Semester)

EXAMINATION, Dec., 2010

MODERN ANALYTICAL TECHNIQUES

(MPY-101)

Time : Three Hours

Maximum Marks : 75

Note : Attempt any five questions. All questions carry equal marks.

1. (a) Explain various types of electronic transitions and their regions in electronic spectra.
- (b) Write an explanatory note on Autoradiography.
- (c) Define fluorescence. Give its theory and applications.
2. (a) In IR spectroscopy explain with examples characterization of functional groups and frequency shifts associated with structural changes.
- (b) Discuss theory and applications of X-ray diffraction spectroscopy.
- (c) Explain the principle of ESR and its applications.
3. (a) How will you differentiate between first order and non-first order PMR spectra ? How will you simplify non-first order PMR spectra ?
- (b) Differentiate and justify difference between PMR and  $^{13}\text{C}$  NMR.
- (c) Discuss the theory of Atomic Absorption spectroscopy and its applications.

4. (a) Explain molecular ion fragmentation and rearrangement ions giving suitable examples. Elaborate on applications of mass spectroscopy in structure elucidation of organic compounds.
- (b) Write a note on Ultracentrifugation and its importance.
- (c) Discuss theory and pharmaceutical applications of liquid scintillation spectrometry.
5. (a) Give different stationary phases used in different modes of HPLC.
- (b) Discuss about carrier gas, column and solid support stationary phases in GLC.
- (c) Elaborate on factors affecting electrophoretic mobility.
6. (a) Draw a diagram of apparatus and give methodology of DTA. Discuss factors affecting DTA results.
- (b) How will you ascertain purity of a sample by DSC ? Discuss the principle of DSC.
- (c) Discuss principle and applications of thermogravimetry.
7. (a) Write a note on cytometry and flow cytometry.
- (b) Discuss principle and applications of ORD and CD.
- (c) Discuss theory, methods and applications of RIA.

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