

Examination- June 2004  
 Pharm I semester (All Discipline)

Modern Analytical Techniques

Sub Code : MPY - 101

Time : 3 hrs

Max marks : 75

Min. Marks: 38

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

Q.1. (a) Discuss instrumentation for mass spectroscopy giving a neat diagram of mass spectrometer. (07)

(b) Discuss electron impact ionization method in detail. (04)

(c) Discuss the fragmentation pattern for ethyl benzoate. (04)

Q.2. (a) Discuss the principle of NMR spectroscopy?. Explain why larger samples are required in  $C^{14}$  NMR as compared to  $H^1$  NMR. (06)

(b) Explain the term magnetic anisotropy and coupling constant. (06)

(c) Whether protons of benzene ( $C_6H_5-H$ ) will show upfield signals or down field signals as compared to methylic proton of toluene ( $C_6H_5-CH_3$ ) why? (03)

Q.3. (a) Compare HPLC and HPTLC techniques with respect to instrumentation and pharmaceutical applications. (10)

(b) Discuss the factors influencing the performance of column. (05)

Q.4. (a) Give the instrumentation and applications of atomic absorption spectroscopy. (08)

(b) Discuss the technique of differential thermal analysis and its applications. (07)

Q.5. (a) What do you mean by the term Fourier Transform?. Explain how it has revolutionized the instrumentation of infrared spectroscopy? (10)

(b) Discuss the importance of finger print region with range. (05)

Q.6. (a) What is solvent cut off wavelength? What are the criteria for selection of solvents in development of spectrophotometric analytical method? (04)

(b) Discuss spectrophotometric methods for simultaneous estimation of drugs in the dosage form. (08)

(c) Discuss the chemical derivatization in spectroscopic analysis. (03)

Q.7. Notes on (any two). (7.5x2 = 15)

(a) Ion Pair chromatography.

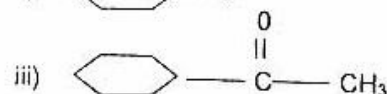
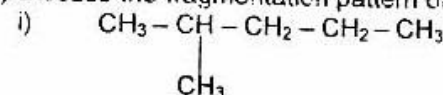
(b) Flow Cytometry.

(c) Enzyme Immunoassay.

Q.4. (a) Write an account of ion sources Explain the instrumentation and working of spectrophotometer.

spectrometry.  
 using mass

(b) Discuss the fragmentation pattern of any two of the following.



Q.5. Discuss the protocol of Radio immune Assay techniques. What are its limitations? Discuss pharmaceutical applications of RIA.

Q.6. (a) Derive a mathematical expression for Beer's law. Under what circumstances Beer's law fails? What are necessary precautions to be observed for successful implementation of Beer's law?

(b) Exemplify the pharmaceutical applicability of Beer's law to pharmaceutical analysis.

Q.7. Write theory, instrumentation, working and pharmaceutical application of any two of the followings.

i) Electrophoresis.

ii) Differential Scanning Calorimetry.

iii) Transmission Electron Microscopy.

Q.8. Write short notes on any three of the followings:

i) Uses of Fluorescence in Pharmaceuticals.

ii) ESR.

iii) Gel Chromatography.

iv) Isothermal temperature programming in GLC

v) Cytometry.

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