

**FACULTY OF PHARMACY****M. Pharmacy (Pharm. Analysis) II-Semester (PCI) (Main) Examination,****August 2019****Subject : Advanced Instrumental Analysis****Time: 3 Hrs****Max. Marks: 75****Note:** Answer any Five Questions. All Questions Carry Equal Marks.

1. (a) Explain the following chromatographic parameter (i) Capacity factor (ii) Selectivity (iii) Resolution 9  
(b) Explain the principle involved in UPLC and compare it with HPLC in terms of different parameters? 7
2. (a) Explain the Principle involved in size exclusion chromatography and write abt commercially available columns and their properties. 7  
(b) Explain in detail abt derivatisation in Gas chromatography 8
3. (a) Explain the principle and applications of super critical fluid chromatography? 7  
(b) What is capillary electrophoreses? Explain its principle, methods and modes of CE? 8
4. (a) What is the theory involved in mass spectrometry and explain the following ionization techniques (i) Electron impact (ii) field ionization (iii) MALDI ionization 10  
(b) Explain Mc. Lafferty arrangement with example. 5
5. (a) Define chemical shift? Explain the factors influencing chemical shift. 7  
(b) Draw a schematic NMR spectra and explain the interpretation for the following compnds (i) Diethylether (ii) Ethoxyacetic acid (iii) n - propyl formate
6. (a) Explain the following techniques 8  
1. NOESY 2. COSY  
(b) Explain the following mass analyzers in detail  
1. Quadruple 2. Time of flight
7. (a) What is enantiomeric separations? Explain role of HPLC in chiral analysis? 7  
(b) Write the principle, head space sampling and columns used in gas chromatography
8. (a) Explain the principle involved in the following hyphenated techniques 7  
(i) LC-MS (ii) LC-NMR (iii) CE-MS  
(b) Write the applications of  
(i) LC-MS (ii) LC-NMR (III) CE-MS 8

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