Question Paper

Exam Date & Time: 11-May-2023 (02:00 PM - 05:00 PM)

MANIPAL ACADEMY OF HIGHER EDUCATION

Manipal Academy of Higher Education, Manipal MPharm Theory End-Semester Examinations.

Advanced Spectral Analysis [PCH-MPC201T -S2]

Marks: 75 **Duration: 180 mins.**

SECTION - A

Answer all the questions.

Answer the following (10 marks x 5 = 50 marks)

1)	1A. Why C=O vibrational frequency shifts from its normal value? How do you differentiate the following from IR spectra? Benzoic acid and Benzaldehyde; Phenol and ethyl alchol. 5 M 1B. Explain the principle and applications of ATR-IR. 5 M	(10)
2)	2. Discuss with suitable example, the fragmentation pattern of carbonyl compounds in electron impact ionisation. 10 M	(10)
3)	3. Discuss the different types of ionic peaks produced in electron impact ionisation. 10 M	(10)
4)	4A. List out the various 2D NMR techniques. Explain any one in detail. (1M+4M) 4B. Define Shielding, Deshielding, equivalent and non-equivalent protons. Write a note on NOE and its Significance in NMR. (2M+ 3M)	(10)
5)	5A. List out the similarities and differences between Proton NMR and 13C NMR. (2.5M x 2) 5B. Explain the principle involved in 1D NMR spectroscopy for 1H and 13C. With help of a neat diagram, explain the instrumentation of a NMR spectrometer. (2 M+3 M)	(10)

SECTION - B

Answer all the questions.

Answer the following (5 marks x 5 = 25 marks)

6)	Explain the Woodward Fieser rules for Conjugated Dienes.	(5)
7)	Explain the principle and instrumentation of GC-MS.	(5)
8)	Write a note on supercritical chromatography.	(5)
9)	Illustrate the different steps involved in HPTLC.	(5)
10)	Write a note on HPLC solvents and their characteristic features.	(5)

-----End-----