

Question Paper

Exam Date & Time: 13-May-2024 (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 -S3]

Marks: 75

Duration: 180 mins.

SECTION - A

Answer all the questions.

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

- 1) A. Describe the factors affecting the chemical shift in ^1H NMR spectrum. 5 M (10)
B. Explain HETCOR & NOESY NMR spectrum with suitable examples. 5 M
- 2) A. 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 alcohol 6 Marks (10)
B. Explain the principle and applications of ATR-IR 4 Marks
- 3) A. Discuss with examples the inductive cleavage. 5marks (10)
B. Discuss about fragmentation pattern of aromatic compounds and alkanes with example. 5marks
- 4) A. Outline the instrumentation and applications of Flash chromatography technique. 6M (10)
B. Enlist and interpret the properties of HPLC solvents. 4M
- 5) A. Summarize the advantages of LC over GC. 4M (10)
B. Discuss the basic principle and applications involved in ion-exchange chromatography. 6M

SECTION - B

Answer all the questions.

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

- 6) Explain with the suitable examples the Woodward Fieser rules for Conjugated Dienes. (5)
- 7) Provide the δ values for ^1H and ^{13}C NMR of the following compounds: (5)
a) methyl ethyl ketone b) benzaldehyde
- 8) Discuss the COSY technique in 2D NMR with an example. (5)
- 9) Explain the factors that influence ion abundance. (5)
- 10) Explain the applications of mass spectrometry. (5)

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