

Question Paper

Exam Date & Time: 03-May-2018 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

MANIPAL COLLEGE OF PHARMACEUTICAL SCIENCES

END SEMESTER THEORY EXAMINATIONS- MAY 2018

PROGRAM: MPHARM SEMESTER 2 (PHARMACEUTICAL ANALYSIS)

DATE: 03/05/2018

TIME: 2:00 PM - 5:00 PM

Advanced Instrumental Analysis [PCH-MPA201T]

Marks: 50

Duration: 180 mins.

a

Answer all the questions.

Answer the following (5 marks x 8 = 40 marks)

- 1) Explain the various steps involved in 2D NMR Spectroscopy with diagram. List out the various 2D NMR techniques. (5)
- 2) Explain the Mass fragmentation rules. (5)
- 3) List out the similarities and differences between Proton NMR and ^{13}C NMR. (5)
- 4) What are metastable ions? When do they appear in a spectra and what is their importance? (5)
- 5) Explain GC-MS in terms of its principle and application in pharmaceutical sciences (5)
- 6) What are the common problems in chromatographic columns and how are they solved? (5)
- 7) What is flash chromatography? Explain the advantages and applications (5)
- 8) With an example, explain Woodward-Fieser rule for α, β carbonyl compounds (5)

b

Answer all the questions.

Answer the following with specific answers (2 marks x 5 = 10 marks)

- 9) Write the respective chemical shift value for the following protons: (2)

- A)
- i) Aromatic protons
 - ii) Methyl protons
 - iii) NH₂ protons
 - iv) OH protons
- B) What are deuterium exchange reactions? (2)
- C) Define Mass Fragmentation. (2)
- D) Mention the IR values for any four important functional groups (2)
- E) What you mean by MALDI and TOF? (2)

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