

Date: 01/12/12

Exam no. _____

Maliba Pharmacy College
Uka Tarsadia University
Mid-Semester Examination
M. Pharm. (Pharmaceutical Analysis) (1st Semester)
040060103: Advanced Spectroscopic Techniques

Duration: 3 hours

Maximum marks: 70

Instructions:

1. Attempt all questions
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks allocated to that question.
4. Draw diagrams/figures wherever necessary.

Q.1] Answer the following:

[14 x 1 = 14]

- 1) What is pulse?
- 2) Write limitation of CW-NMR spectroscopy.
- 3) What is topicity?
- 4) Give full form of HETCOR.
- 5) Give full form of INADEQUATE.
- 6) Define Eximers.
- 7) What do you mean by lasing medium?
- 8) Name the reference standard used in ESR spectroscopy.
- 9) Define Accelerators.
- 10) Define hyperfine splitting.
- 11) What do you mean by fast neutrons?
- 12) What is chemical shift value of acetylene carbon in ^{13}C -NMR?
- 13) What is shift reagent?
- 14) Name two detectors for radio activity measurement.

Q.2 Answer in brief: (any eight)

[8 x 2 = 16]

- 1) How is S/N ratio increased in pulse NMR?
- 2) Write benefits of 2D NMR.
- 3) Give classification of LASERS used in pharmaceutical analysis.
- 4) What is population inversion?
- 5) What is the significance of depolarization ratio in Raman spectroscopy?
- 6) Explain principle of Photo acoustic spectroscopy.
- 7) Proton less carbon exhibit low intensity in CMR. Explain.
- 8) What is deuterium substitution?
- 9) Differentiate α , β and γ rays.
- 10) What do you mean by ENDOR and ELDOR?

Q.3] Answer in detail: (any eight)

[8 x 5 = 40]

- 1) Explain the principle of pulse NMR spectroscopy.
- 2) Discuss diastereotopic groups with their effects in NMR spectrum.
- 3) Describe principle of COSY with example.
- 4) Explain the principle of chemi luminescence and describe its instrumentation.
- 5) Write note on resonance Raman spectroscopy.
- 6) Explain principle of ESR spectroscopy. State its applications.
- 7) Write note on PET.
- 8) Discuss factors affecting chemical shift in CMR spectroscopy.
- 9) Describe proton decoupled and off resonance technique used in CMR spectroscopy.
- 10) Write note on neutron activation methods.