UKA TARSADIA UNIVERSITY

Maliba Pharmacy College

M. Pharm. Pharmaceutical Analysis **1**st Semester Internal Examination December 2013

040060103 Advanced Spectroscopic Techniques

Time: 10:30 a.m. To 1:30 p.m.   Max. Marks: **70**

Date: 09/12/2013

Instructions:

➢ Attempt all questions.

➢ Make suitable assumptions wherever necessary.

➢ Figures to the right indicate full marks.

➢ Draw diagrams/figures wherever necessary.

Q.1] **(a)** **Write full forms of:**   **[6 x 1 = 6]**

1) HETCOR   2) INADEQUATE 3) HMQC

4) NOESY 5) LASER   6) TOCSY

(b) **Define the following:**   **[6 x 1 = 6]**

1) Accelerators 2) Chemical shift   3) Eximers

4) Stokes effect 5) Population inversion 6) Coupling constant

(c) **Answer the following in brief: (any five)**   **[5 x 2 = 10]**

1) Classify LASERs used in pharmaceutical analysis.

2) Explain the significance of depolarization ratio in Raman spectroscopy.

3) What do you mean by lasing medium? Name some lasing mediums.

4) What do you mean by slow and fast neutrons?

5) Explain the working of semiconductor diode laser with suitable diagram.

6) What do you mean by three and four level laser systems?

Q.2 **Answer in detail: (any eight)**   **[8 x 6 = 48]**

1) Explain the mechanism of laser action.

2) Describe the instrumentation of Raman spectroscopy. State its applications.

3) Explain the principle of Chemiluminescence and describe its instrumentation.

4) Discuss the factors affecting chemical shift in CMR with suitable examples.

5) Predict the PMR and CMR spectra of methyl isopropyl ketone. Justify your predictions. Consider proton decoupled and off resonance spectra for CMR.

6) Write a note on neutron activation methods.

7) Describe the COSY spectra of 1-chloro 2-propanol.

8) Differentiate α, β and γ rays.

9) Explain the theory and procedure for isotopic dilution method.