**Roll No.** | | | | | | | | | | | | **Total No. of Pages : 01**

**Total No. of Questions : 06**

**M.Pharma(Pharmaceutical Chemistry) (2017 & Onwards) (Sem.–2)**

# ADVANCED SPECTRAL ANALYSIS

**Subject Code : MPC-201T**

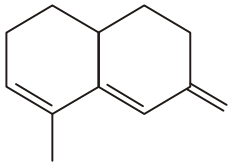
**Paper ID : [74955]**

**Time : 3 Hrs.** **Max. Marks : 75**

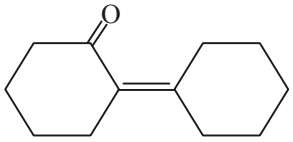
**INSTRUCTIONS TO CANDIDATES :**

1. **Attempt any FIVE questions out of SIX questions.**
2. **Each question carries FIFTEEN marks.**

I a. Use Woodward rules to calculate $\lambda_{max}$ for following compounds: (5)



A




B

b. Discuss fundamental vibrations in the 4000-2500 $cm^{-1}$ region in IR spectroscopy. (5)

c. Give comparative analysis of carbonyl stretching in IR spectrum for various carboxylic acid derivatives. (5)

II a. Predict the multiplicities of the signals in $^{1}$H-NMR spectra of following compounds: (7.5)

A. 1-Nitropropane B. Isopropyl methyl ether

b. What is COSY technique in NMR? Discuss the signal obtained in COSY spectrum of 2-Nitropropane. (7.5)

III a. By citing suitable example, describe McLafferty rearrangement in Mass spectrometry. (5)

b. What are isotopic peaks? Discuss their importance in interpretation of Mass spectrum. (5)

c. Discuss Mass spectrum of butane. (5)

IV a. Describe construction of LC-MS. (5)

b. Describe applications of LC-NMR. (5)

V a. Give schematic diagram of a classical DTA apparatus. (5)

b. Enlist various processes that can be studied by DTA and DSC. (5)

c. Discuss the factors affecting a TGA Curve. (5)

VI a. Explain the principle and describe the procedure for radioimmune assay of insulin. (7.5)

b. Explain the principle of an indirect competitive enzyme immunoassay (ELISA) using a labeled schematic diagram. (7.5)