

Roll No.

Total No. of Pages : 02

Total No. of Questions : 06

**M.Pharma(Pharmaceutical Chemistry) (2017 & Onwards) (Sem.-1)**

**MODERN PHARMACEUTICAL ANALYTICAL TECHNIQUES**

**Subject Code : MPC-101T**

**Paper ID : [74663]**

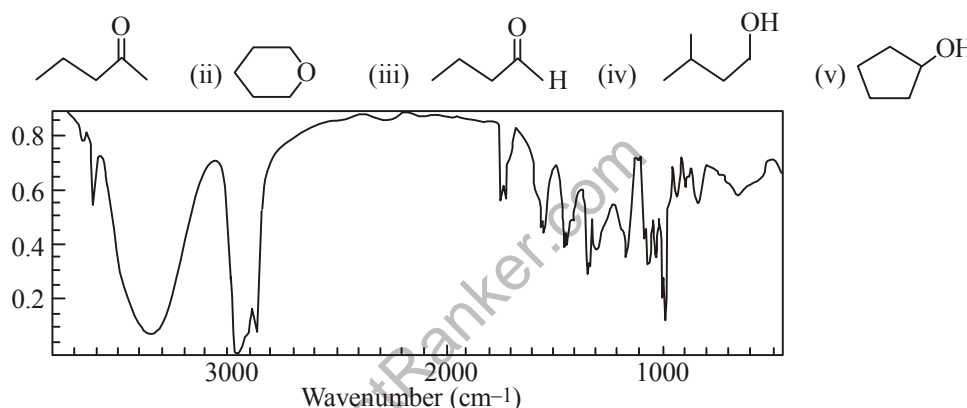
**Time : 3 Hrs.**

**Max. Marks : 75**

**INSTRUCTIONS TO CANDIDATES :**

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

Q1 a) Which of these molecules best corresponds to the IR spectrum below and why? (5)



b) Discuss various types of wavelength selectors used in molecular spectroscopy. (10)

Q2 a) What is the relationship between relaxation rate and NMR signal sharpness? Give examples. (5)

b) The following is the <sup>1</sup>H-NMR data of a compound of molecular formula C<sub>5</sub>H<sub>10</sub>O: 3H triplet at δ 0.85, 2H sextet at δ 1.7, 3H singlet at δ 2.13, and 2H triplet at δ 2.40. Predict the structure of the compound with relevant explanations. (10)

Q3 a) What is an isotope peak? Discuss its importance in structural elucidation with examples. (5)

b) How will you distinguish between 2-pentanol and 1-pentanol on the basis of their mass spectra recorded in EI mode? (5)

- c) What are soft ionization techniques? Explain any one. Give their advantages over hard ionization methods. (5)
- Q4 a) What is the principle of Gel chromatography? Discuss the stationary and mobile phases used in it. Give its specific applications. (7)
- b) What are advantages and limitations of UHPLC over HPLC? How the instrumentation for UHPLC differs from that for HPLC? (8)
- Q5 a) What is the principle of zone electrophoresis? Discuss the factors affecting electrophoretic separation. (10)
- b) Write a note on rotating crystal technique. (5)
- Q6 Discuss in brief about :
- a) Modulated and Hyper DSC. (5)
- b) DDTA. (5)
- c) Ion selective electrodes. (5)