

UNIVERSITY OF JAFFNA, SRI LANKA
 FACULTY OF ALLIED HEALTH SCIENCES
 THIRD YEAR SECOND SEMESTER EXAMINATION IN BPharm Hons - 2021



PHARMACEUTICAL ANALYSIS- PHAPA 3244

Date: 03.10.2023

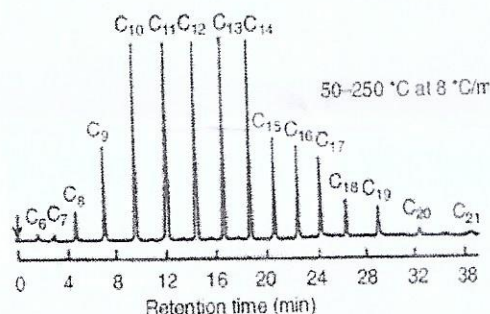
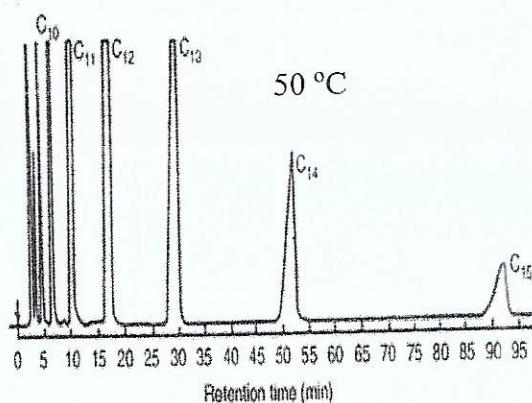
Time: 3 Hours

ANSWER ALL THE SIX QUESTIONS

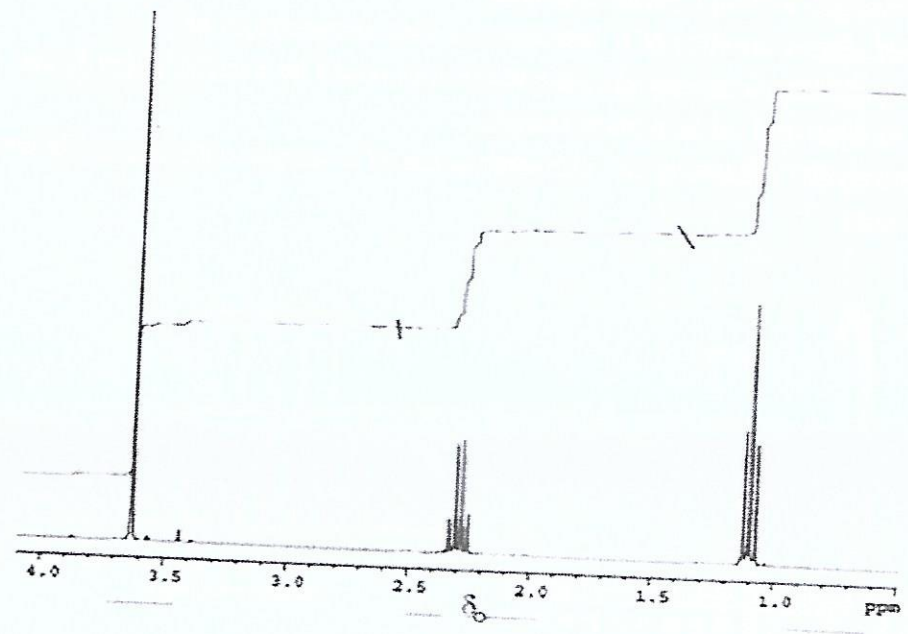
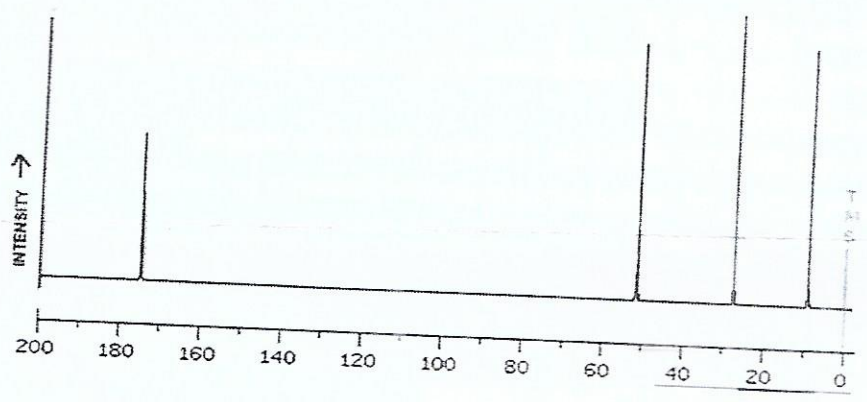
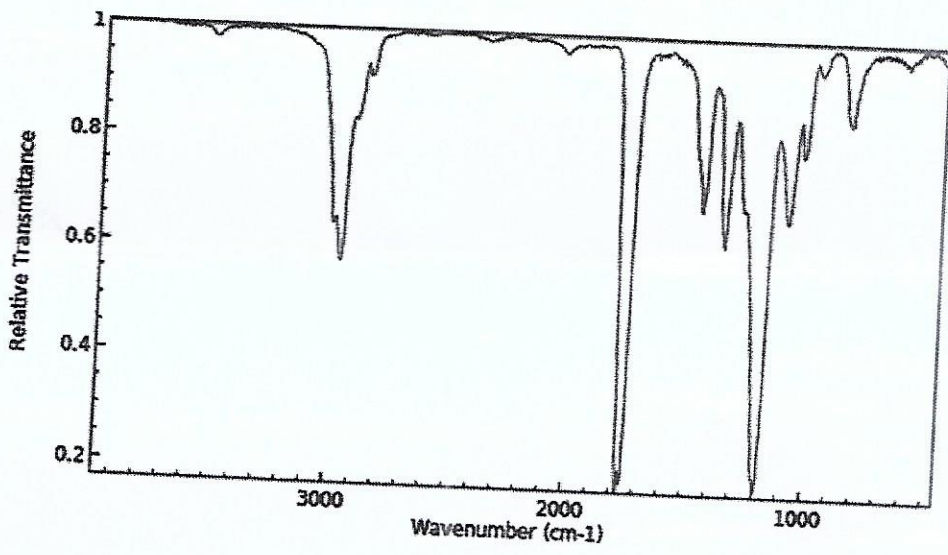
1. 1.1 Define crystallization. (10 Marks)
- 1.2 State the process of crystallization. (30 Marks)
- 1.3 Briefly explain how to purify a synthetic compound using different crystallization techniques. (40 Marks)
- 1.4 Briefly discuss the importance of crystallization. (20 Marks)

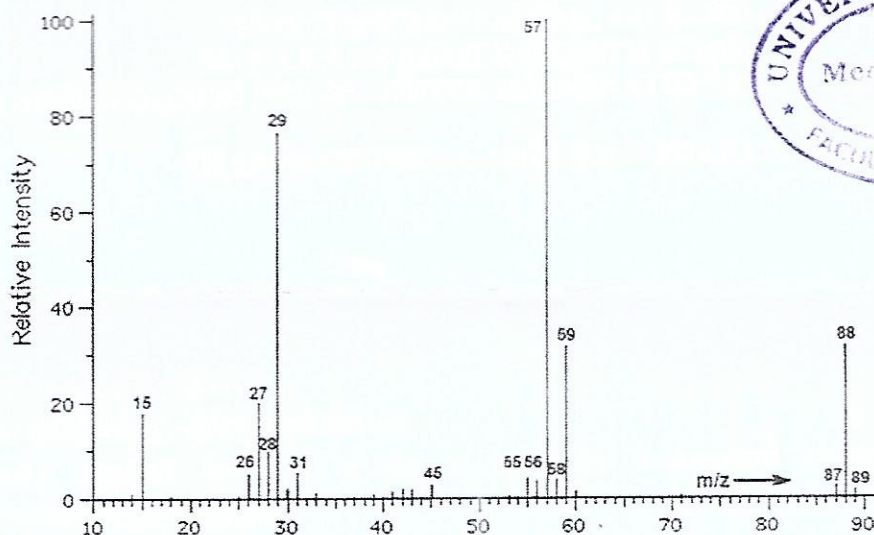
2. 2.1 Give the basic principle of
 - 2.1.1 Reverse phase High-Performance Liquid chromatography (HPLC) (15 Marks)
 - 2.1.2 Normal phase HPLC (15 Marks)
- 2.2 List the parameters that effect the retention time of a sample. (20 Marks)
- 2.3 Explain how the above-mentioned parameters mention in section 2.3, effect the retention time of a sample. (40 Marks)
- 2.4 List the applications of HPLC. (10 Marks)

3. 3.1 Give the principle of Gas Chromatography. (20 Marks)
- 3.2 List the ideal characteristics of a detector in a Gas chromatography. (20 Marks)
- 3.3 Explain how the Gas chromatographic technique could be used to identify the presences of essential oil in a plant sample. (30 Marks)
- 3.4 Briefly discuss the following GC chromatogram of a sample containing different hydrocarbons. (30 Marks)



A Compound has a molecular formula of $C_4H_8O_2$. The structure of the compound is analysed with IR, 1H -NMR, ^{13}C -NMR and Mass spectroscopy. The analysed data of





- 4.1 Determine the degree of unsaturation of the compound. (10 Marks)
- 4.2 Assign the spectrums of IR, $^1\text{H-NMR}$, $^{13}\text{C-NMR}$ and Mass. (70 Marks)
- 4.3 Deduce the structure of the compound. (20 Marks)
5. 5.1 Define Chemical shift. (10 Marks)
- 5.2 State the theory of $^1\text{H-NMR}$ spectroscopy. (40 Marks)
- 5.3 Briefly describe the instrumentation of NMR Spectroscopy. (20 Marks)
- 5.4 The chemical shift of CH_3F (δ 4.3) is greater than CH_3Cl (δ 3.1). Explain. (30 Marks)
6. 6.1 Define the followings:
- 6.1.1 Base peak (10 Marks)
- 6.1.2 Molecular ion peak (10 Marks)
- 6.2 Briefly describe the instrumentation of Mass Spectrometry. (20 Marks)
- 6.3 List the advantages and disadvantages of Mass Spectrometry. (30 Marks)
- 6.4 Write an account on the Nephelometry. (30 Marks)