UNIVERSITY OF JAFFNA, SRI LANKA
BACHELOR OF PHARMACY
FOURTH YEAR FIRST SEMESTER EXAMINATION – FEBRUARY 2018
PHAPA 4114 PHARMACEUTICAL ANALYSIS - PAPER II

Date: 19/02/2018 **Time: 02 Hours**

Answer all six questions

1 1.1 List five (05) applications of High Performance Liquid Chromatography (HPLC). (20 Marks)

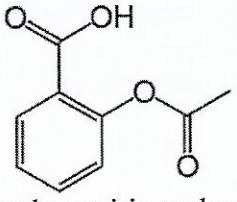
1.2 Draw a schematic diagram to describe the components of the HPLC. (40 Marks)

1.3 Describe the normal-phase and reverse-phase columns. (40 Marks)

2 2. How the structural information are obtained from ^1H Nuclear Magnetic Resonance (NMR)? (20 Marks)

2.2 Explain how the 13C NMR could be used to identify CH_3CH_2OH and CH_3OCH_3 molecules. (20 Marks)

2.3



The above structure represent the aspirin molecule. Predict the ^1H NMR spectrum and assign protons in the ^1H NMR spectrum. (40 Marks)

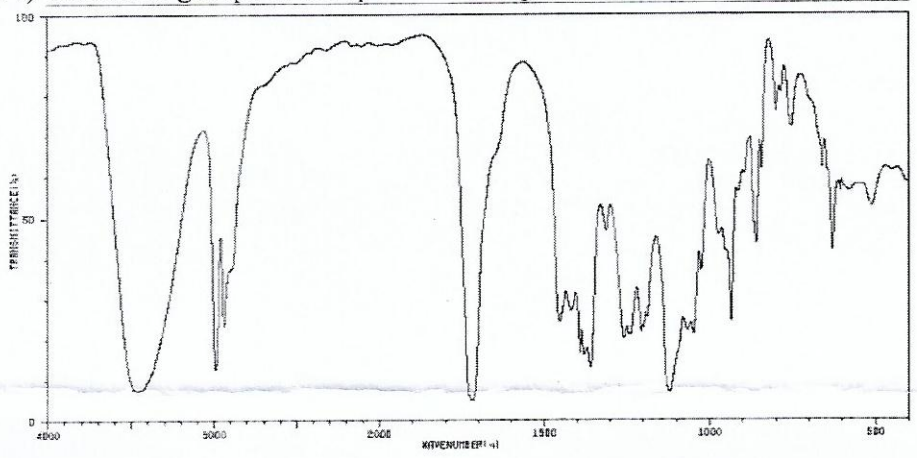
2.4 Explain the reason for observing a triplet in $BrCH_2CHBr_2$ molecule. (20 Marks)

3 3.1 Give the principle of Infra-Red (IR) spectroscopy (20 Marks)

3.2 List five (05) applications of IR spectroscopy. (20 Marks)

3.3 Predict the approximate positions of all the important absorptions in the IR spectrum for C_5H_8O. (30 Marks)

3.4 The following IR spectrum belongs to a molecue of $C_4H_8O_2$. Identify four (04) functional groups in the spectrum and give their wave numbers.



(30 Marks)

4 4.1 Write an account on instrumentation and applications of gass chromatography. (70 Marks)

4.2 A standard operating procedure states that a column must have an efficiency > 30 000 theoretical plates/m. Explain whether the 15cm of the column A or B meet the specification?

Name of the coloum	Retention time	$W_{1/2}$
A	6.4	0.2
B	10.6	0.6

(30 Marks)

5 5.1 Give the basic principle of mass spectrometry. (20 Marks)

5.2 List the advantages and disadvantages of Matrix Assisted Laser Desorption Ionization (MALDI) spectroscopy. (30 Marks)

5.3 Draw a schematic diagram to illustrate the major components in the MALDI spectroscopy. (50 Marks)

6 6.1 List five (05) key principles of quality management. (20 Marks)

6.2 Define "Quality Assurance". (10 Marks)

6.3 Breifly describe the functions of the quality assurance section of a pharmaceutical company. (40 Marks)

6.4 Describe a test used to check the chemical resistantce for glass containers. (30 Marks)