School of Basic and Applied Sciences

Chemistry

ETE - Jun 2023

Time : 3 Hours **Marks : 50**

Sem II - MSCH5008 - Organic Spectroscopy

Your answer should be specific to the question asked

Draw neat labeled diagrams wherever necessary

1.	Protons of a organic compound shows a NMR signal at 8 2.5. what will be the value of chemical shift of protons in Hz if the spectrum is recorded on a 60 MHz spectrometer?	K1 CO3	(2)
2.	Explain the nitrogen rule.	K2 CO4	(2)
3.	Outline the different types of stretching and bending vibrations in phenols and amines in their IR spectrum.	K2 CO2	(2)
4.	Relate briefly the absorption and emission spectra.	K1 CO1	(2)
5.	Compare the major difference between ESR and NMR	K2 CO5	(2)
6.	Simplify few recent spectroscopic techniques for the analysis of organic compounds with suitable examples and justifications.	K4 CO6	(6)
7.	Construct the Woodward-Fieser rules for calculating the absorption maximum in α, β unsaturated carbonyl compounds or ketones. Calculate λmax of an suitable example of organic molecule.	K3 CO1	(5)
8.	Organize the different factors influencing vibrational frequencies in IR spectroscopy.	K3 CO2	(5)
9.	Simplify the theory of Raman spectroscopy and relevance of stoke and anti-stoke line.	K4 CO5	(8)
10.	Apply the concept of coupling constant (J) and their relevance in germinal and vicinal coupling discuss with graphically	K3 CO3	(8)
11.	Simplify the important features of the mass spectra of aromatic compounds justify your answer with considering the examples showing one of the modes of fragmentation is as per Mc Lafferty rearrangement	K4 CO4	(8)