Sanjay Ghodawat University, Kolhapur

2020-21

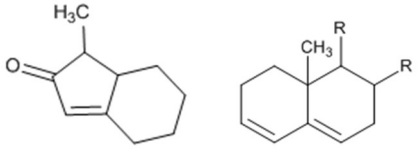
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EXM/P/09/00

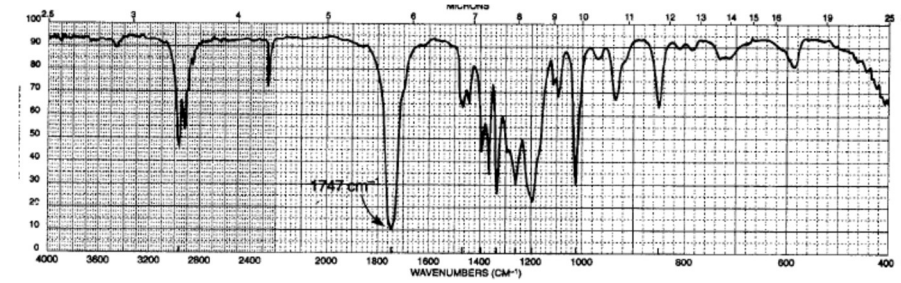
Year and Program: (2020-2021) S. Y. B.Sc.	**School of Science**	**Department: Chemistry**
Course Code: CHS-304	**Course Title: Analytical Chemistry(Spectroscopy)**	**Semester : VI (Even)**
Day and Date: 29/05/2021	**End Semester Examination**	**Time : 2 Hrs.** **Max Marks : 50**

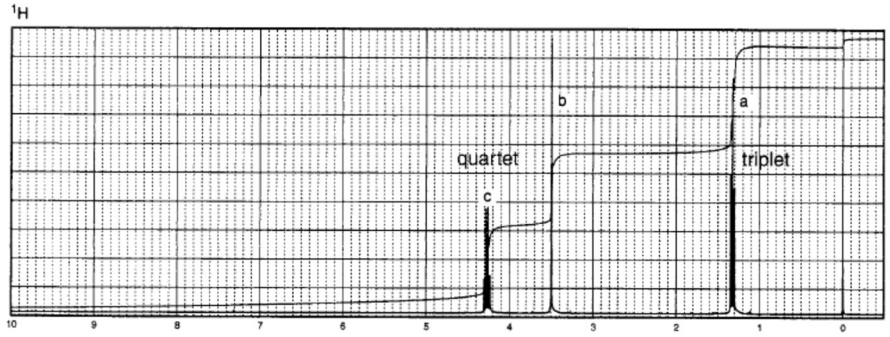
Instructions: 1) All Questions are compulsory.

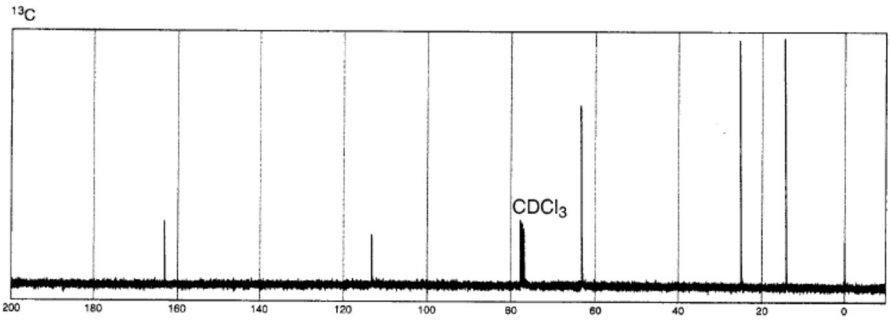
2) Draw neat and systematic diagrams wherever necessary.

		Marks	Bloom's Level	CO
Q.1	**Answer the following**			
a)	Why UV spectrum appears broad? Using Woodward Fischer rules calculate λ_{max} values for following. 	**8**	L2	CO1
b)	i) Write note on Rule of 13. (*4 Marks*) ii) Calculate Degree of unsaturation for following molecules (*4 Marks*) a. $C_7H_{16}O_2$; b. $C_{10}H_{14}N_2$	**8**	L2	CO1
	OR			
c)	i) A compound has molecular formula C_4H_9N. Is there any possibility that this compound has triple bond? Justify your answer. (*4 Marks*) ii) Calculate degree of unsaturation for C_8H_7NO and $C_3H_7NO_3$ (4 *Marks*)	**8**	L2	CO2
Q.2	**Answer the following**			
a)	Discuss different fundamental modes of vibrations in IR spectroscopy.	**8**	L1	CO2
b)	Explain in detail, how we get signal in ^1H NMR spectroscopy?	**8**	L3	CO2
	OR			
c)	i) Write note on spin-spin coupling. (*4 Marks*) ii) What is TMS? Why TMS is used as standard in NMR spectroscopy? (*4 Marks*)	**8**	L3	CO2
Q.3	**Answer the following**			

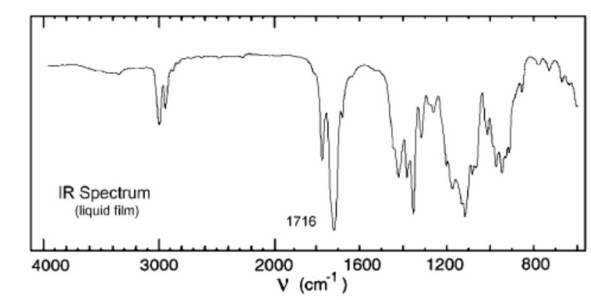
a) A compound with MF $C_5H_7NO_2$ has following spectra. Identify structure of this compound and justify your answer. **9** L4 CO5

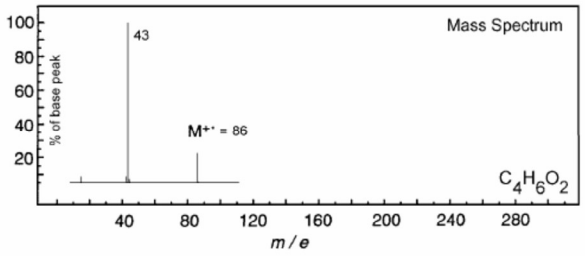






b) Identify structure of compound using following spectral data and justify your answer. **9** L4 CO5

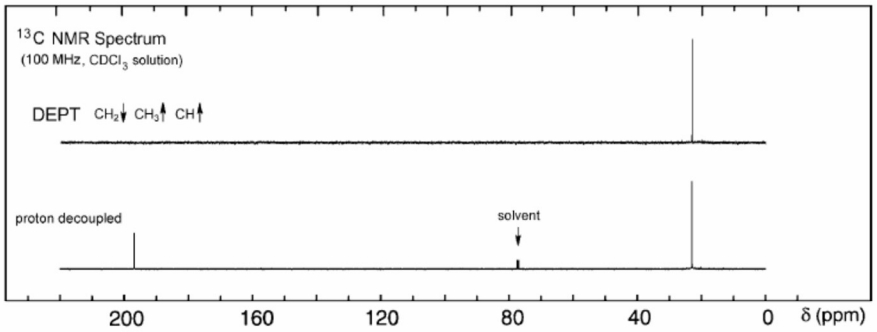


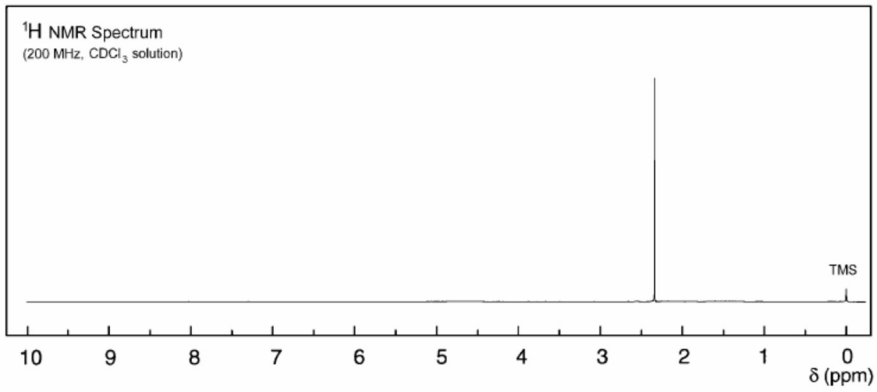


UV Spectrum

λ_{max} 289 nm ($\log_{10}\varepsilon$ 1.4)

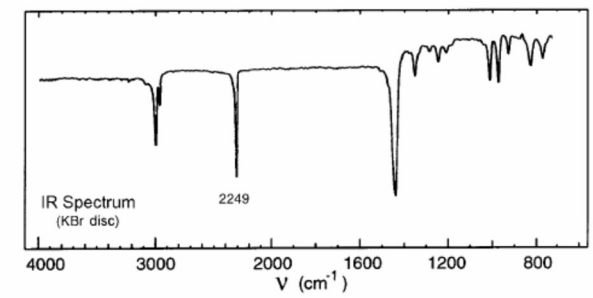
solvent : methanol

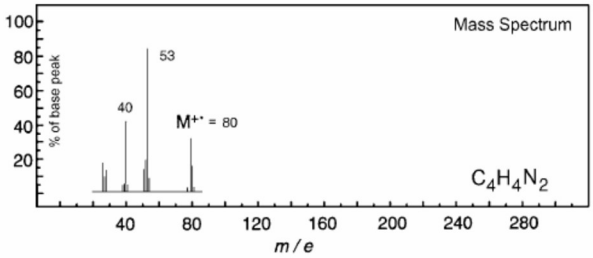




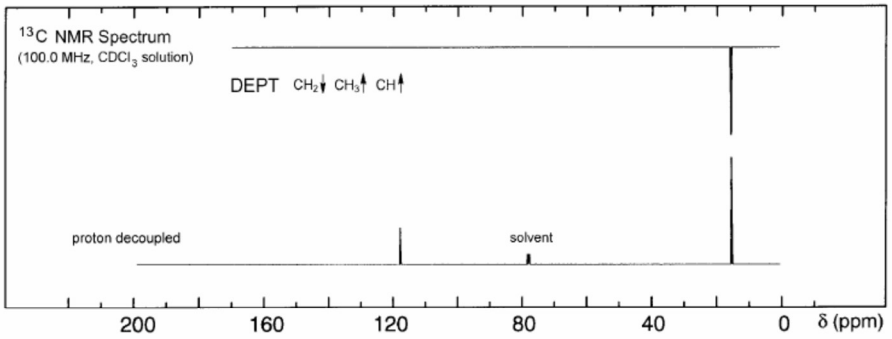
OR

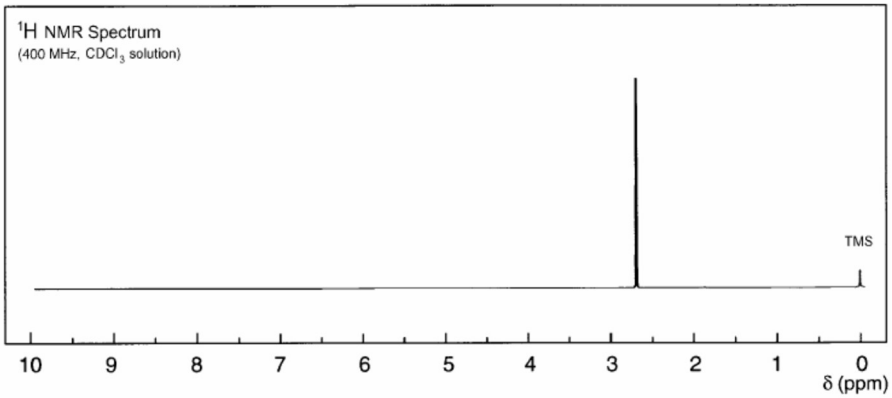
c) Identify the structure of compound using following data and justify your answer. **9** L4 CO5





No significant UV absorption above 220 nm





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