



**NAVRACHANA  
UNIVERSITY**  
a UGC recognized University

**School:** School of Science  
**Program:** B. Sc. in Chemistry  
**Year:** 3<sup>rd</sup> **Semester:** 5<sup>th</sup>  
**Examination:** End Semester Examination  
**Examination year:** December - 2021

**Course Code:** CH303 **Course Name:** SPECTROSCOPY AND SEPARATION TECHNIQUES  
**Date:** 02/12/2021 **Total Marks:** 40  
**Time:** 11:30 am to 1:30 pm **Total Pages:** 2

**Instructions:**

- Write each answer on a new page.
- Use of a calculator is not required.
- \* COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping

Q. No.	Details	Marks	COs*	BTL#
Q.1	Choose the most appropriate answers	7		
	A. Which of the following is required for a molecule to undergo McLafferty rearrangement? (a) $\alpha$ -H      (b) $\beta$ -H      (c) $\gamma$ -H      (d) $\delta$ -H			
	B. Abundance of $^{13}\text{C}$ in nature is ..... % (a) 0.9      (b) 1.1      (c) 1.2      (d) 1.3			
	C. Which of the following will be inactive in IR? (a) $\text{H}_2\text{O}$ (b) $\text{NH}_3$ (c) $\text{S}_8$ (d) $\text{SO}_2$			
	D. Which of the following will have the greatest wavelength? (a) microwave    (b) infrared    (c) X-rays    (d) visible			
	E. The number of NMR signals in 5-Hydroxyhexanoic acid is ..... (a) 5      (b) 6      (c) 7      (d) 8			
	F. If several compounds are present in a sample which is developed on a TLC plate, a column of spots is seen on the developed plate, with: a) More polar compounds toward the top of the plate and less polar toward the bottom b) More polar compounds toward the bottom of the plate and less polar toward the top c) Lower boiling compounds toward the bottom of the plate and higher boiling toward the top d) Lower boiling compounds toward the top of the plate and higher boiling toward the bottom		CO1, CO2, CO4	BT1, BT2, BT3, BT4, BT5
	G. Which of the following cannot be used as adsorbent in Column adsorption chromatography? a) Magnesium oxide b) Silica gel c) Activated alumina			



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