
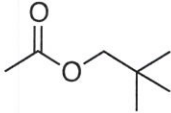

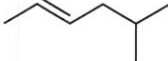
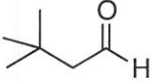

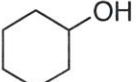

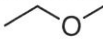
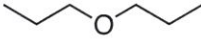
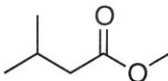




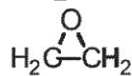



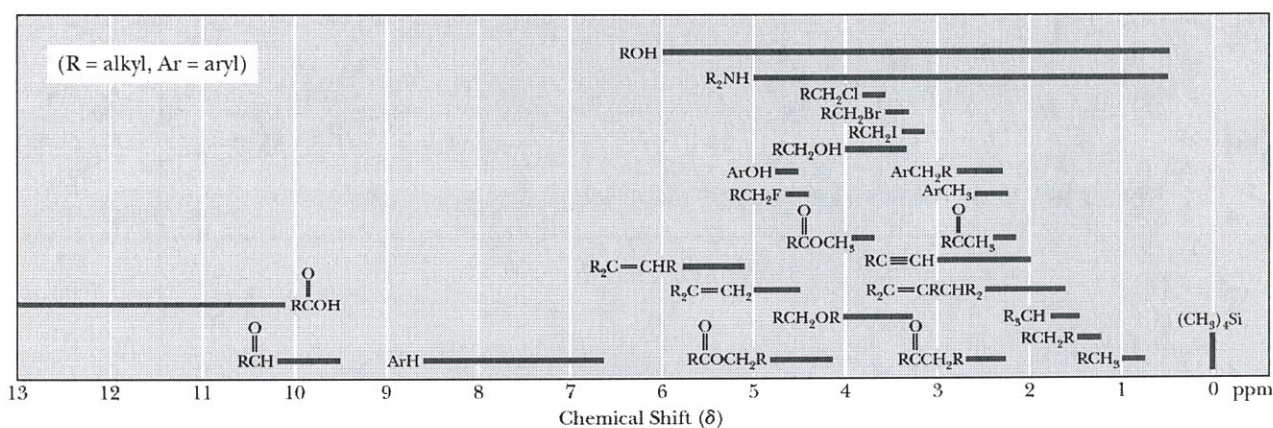
2015-02-03 CH320N Problem Solving Session  
<sup>1</sup>H NMR Problems

Molecule	# of Sets of Equivalent H Atoms	Ratio of Signal Integrations	Splitting Patterns	Other Notes
				
				
				
				
				
				
				
				
				
				
				

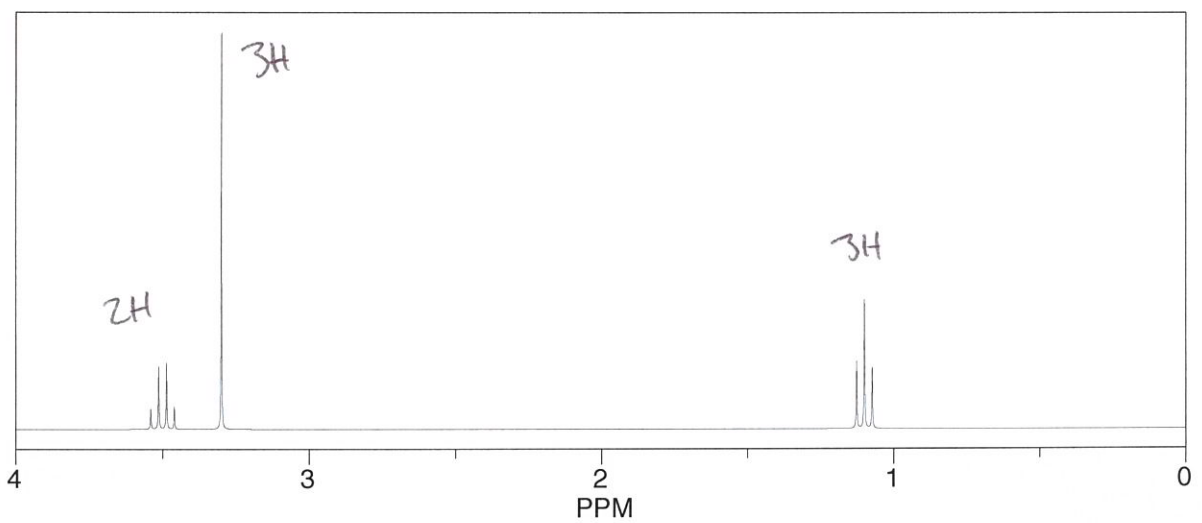
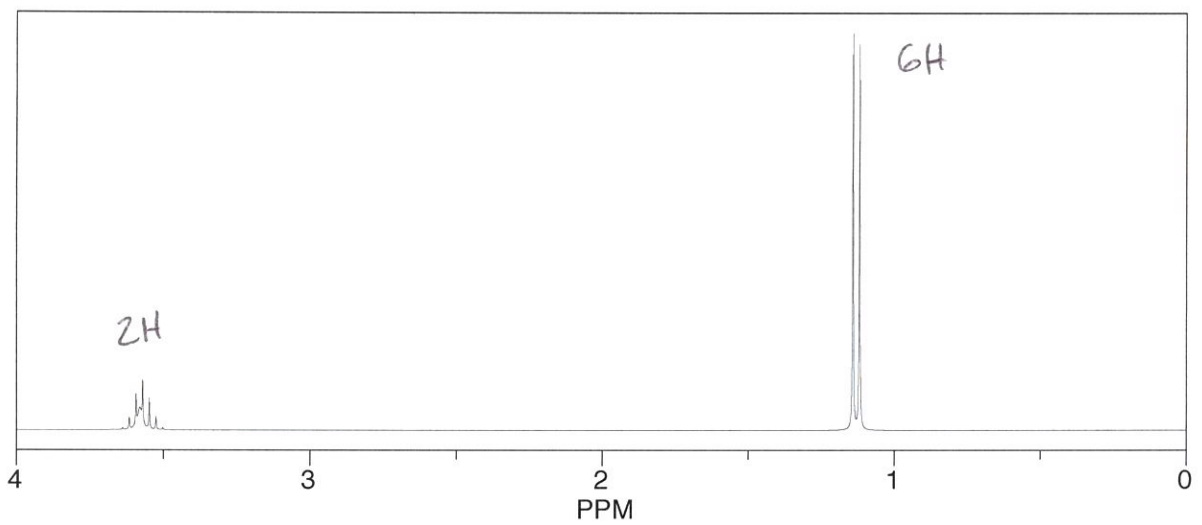
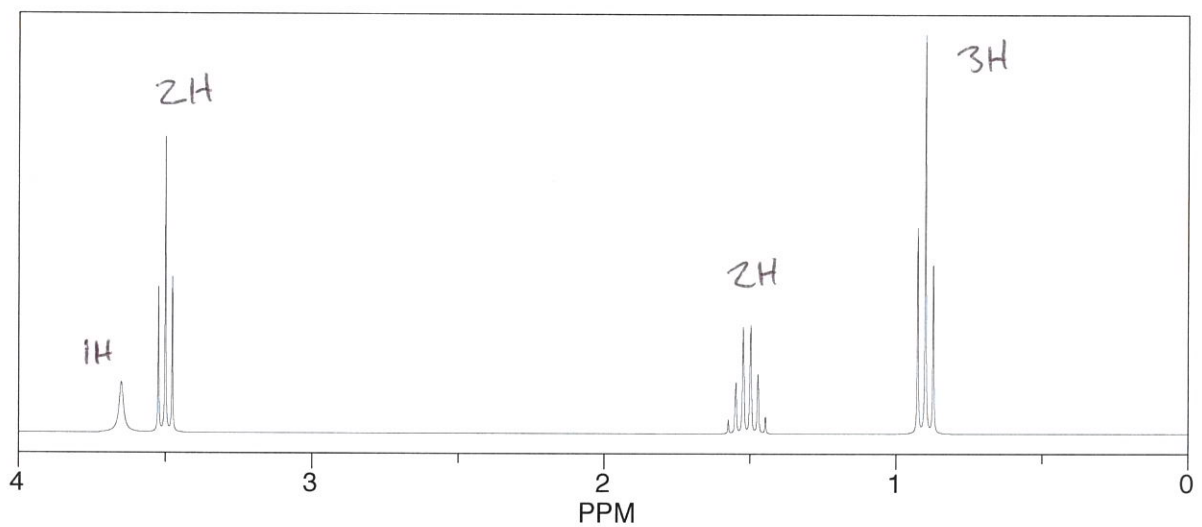
2015-02-03 CH320N Problem Solving Session  
<sup>1</sup>H NMR Problems

Type of Hydrogen (R = alkyl, Ar = aryl)	Chemical Shift (δ)*	Type of Hydrogen (R = alkyl, Ar = aryl)	Chemical Shift (δ)*
R <sub>2</sub> NH	0.5-5.0	RCH <sub>2</sub> OH	3.4-4.0
ROH	0.5-6.0	RCH <sub>2</sub> Br	3.4-3.6
RCH <sub>3</sub>	0.8-1.0	RCH <sub>2</sub> Cl	3.6-3.8
RCH <sub>2</sub> R	1.2-1.4		3.7-3.9
R <sub>3</sub> CH	1.4-1.7		4.1-4.7
R <sub>2</sub> C=CRCHR <sub>2</sub>	1.6-2.6	RCH <sub>2</sub> F	4.4-4.5
RC≡CH	2.0-3.0	ArOH	4.5-4.7
	2.1-2.3	R <sub>2</sub> C=CH <sub>2</sub>	4.6-5.0
	2.2-2.6	R <sub>2</sub> C=CHR	5.0-5.7
ArCH <sub>3</sub>	2.2-2.5		3.3-4.0
RCH <sub>2</sub> NR <sub>2</sub>	2.3-2.8	RCH	9.5-10.1
RCH <sub>2</sub> I	3.1-3.3		10-13
RCH <sub>2</sub> OR	3.3-4.0		

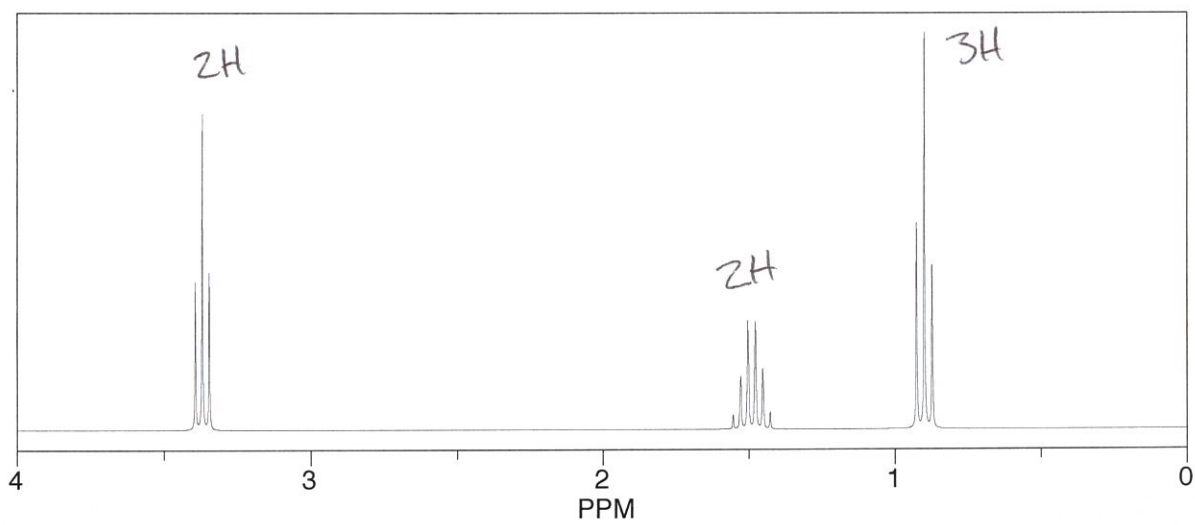
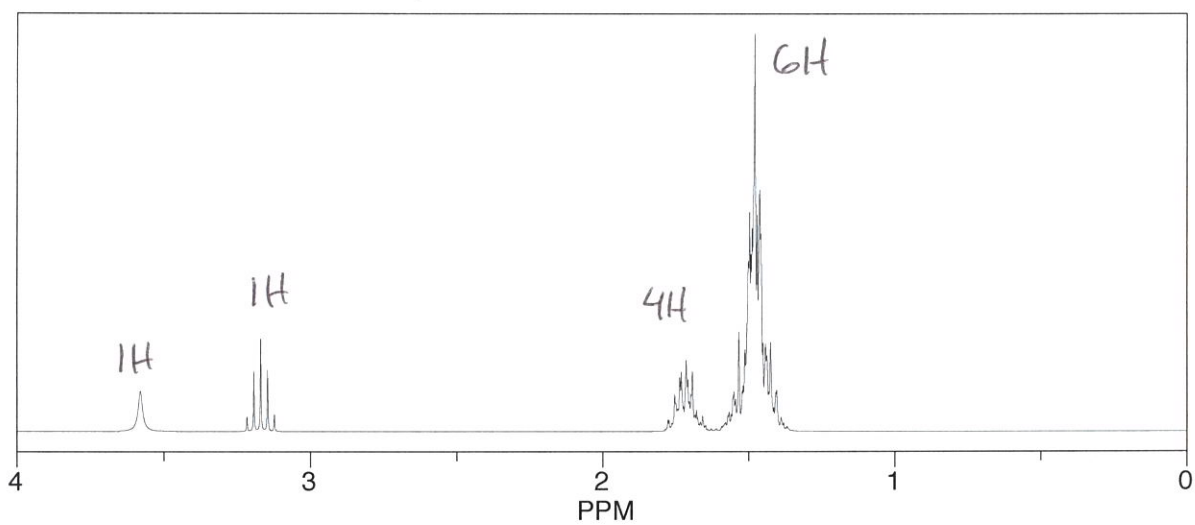
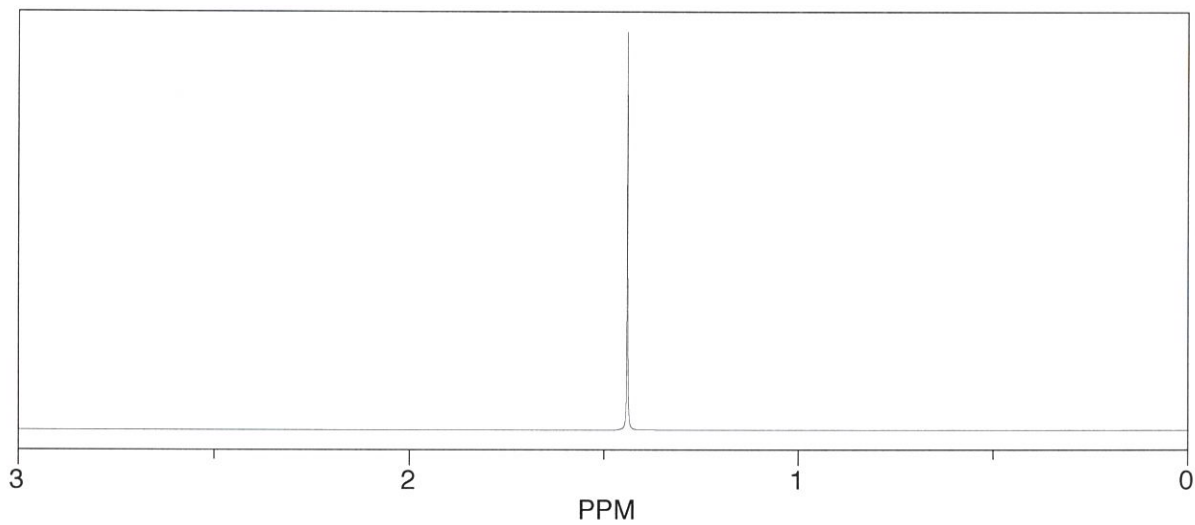
\* Values are relative to tetramethylsilane. Other atoms within the molecule may cause the signal to appear outside these ranges.



2015-02-03 CH320N Problem Solving Session  
<sup>1</sup>H NMR Problems



2015-02-03 CH320N Problem Solving Session  
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<sup>1</sup>H NMR Problems

