## CHEM 110L NMR Problem Set #1

These problems will be incorporated into an auto-graded Canvas quiz...

- **1. Predict the detailed** <sup>1</sup>H NMR spectrum for each compound below using the NMR reference tables online and the table format below. Approximate chemical shifts within provided ranges and relative to other signals in the molecule (no ranges). The correlation tables in the Mohrig textbook can be used as a training tool to calculate more exact values and/or check your work. Work independently on each molecule to the best of your ability before discussing with others!
- **2. Sketch the <sup>13</sup>C NMR spectrum** for each compound, including approximate chemical shifts (no ranges) and peak heights relative to other signals within the molecule. Use NMR tables.

Structure (add letters for labels)	Assignment (corresponds to label on structure)	Chemical Shift (ppm)	Integration (# H's per signal)	Splitting
O 1H NMR				

Sketch of <sup>1</sup>H NMR spectrum:

12 Chemical Shift (ppm) 0

<sup>13</sup>C NMR sketch

220 Chemical Shift (ppm) 0

Structure	Assignment	Chemical Shift (ppm)	Integration	Splitting
0				
<sup>1</sup> H NMR				
Sketch of <sup>1</sup> H NMR spec	trum:			
12	Chemical Sh	nift (ppm)		0
0				
<sup>13</sup> C NMR sketch				
220	Chemi	ical Shift (ppm)		0

Structure	Assignment	Chemical Shift (ppm)	Integration	Splitting
OH N(CH <sub>3</sub> ) <sub>2</sub>				
<sup>1</sup> H NMR				
Sketch of <sup>1</sup> H NMR spe	ctrum:			
12	Chemical Sh	nift (nnm)		0
12	Chemical Si	шт (ррш)		U
OH N(CH <sub>3</sub> ) <sub>2</sub>				
<sup>13</sup> C NMR sketch				
220	Chemi	ical Shift (ppm)		0

Structure	Assignment	Chemical Shift (ppm)	Integration	Splitting
ОН				
<sup>1</sup> H NMR				
Sketch of <sup>1</sup> H NMR spe	ectrum:			
12	Chemic	al Shift (ppm)		0
ОН				
<sup>13</sup> C NMR sketch				
<sup>13</sup> C NMR sketch				
<sup>13</sup> C NMR sketch				
<sup>13</sup> C NMR sketch				

Structure	Assignment	Chemical Shift (ppm)	Integration	Splitting
1				
¹H NMR				
TTIVITY				
Sketch of <sup>1</sup> H NMR spect	trum:			
12	Chem	ical Shift (ppm)		0
12	Chem	ical Shift (ppm)		0
12	Chem	ical Shift (ppm)		0
	Chem	iical Shift (ppm)		0
12  13C NMR sketch	Chem	nical Shift (ppm)		0
	Chem	ical Shift (ppm)		0

Sketch of <sup>1</sup> H NMR spect	rum:	
12	Chemical Shift (ppm)	0
0 1		
130 1117		
13C NMR sketch		