CHM 202 NMR Problems

1. Identify compound A (C₄H₉Cl) that gives rise to the following ¹H NMR spectrum. The integration of the four signals upfield to downfield is 3:3:2:1.

![NMR Spectrum](image)

2. Draw a compound that is consistent with the following NMR data:

   a) C₄H₉Br, has 3 signals in the ¹H NMR spectrum, 2 doublets and a 9-line multiplet.

   b) C₄H₈Br₂, has 3 signals in ¹H NMR spectrum, a singlet, a triplet and a quartet.

3. Give the structure of a compound with a formula of C₄H₁₀O₂ that gives only two singlets in the ¹H NMR spectrum in an integral ratio of 3:2.

4. For the link that follows, click on “Problems” and choose a problem from the matrix. You can click on the C-13, ¹H NMR, IR and mass spectra. The formula is given. In the proton spectra, click on the peaks to expand them. Suggested problems 1,3,27,46,50,62,64.

   [http://www.nd.edu/~smithgrp/structure/workbook.html](http://www.nd.edu/~smithgrp/structure/workbook.html)
5. Identify the compounds A (C₈H₁₀O) and B (C₈H₉ClO) that give rise to the two ¹H NMR spectra below. Integration for A, upfield to downfield: 3:1:1:5; Integration for B, upfield to downfield: 3:2:2:2