Homework 1

1) Draw out all of the bromoalkanes with one to four carbons: CH_3Br, C_2H_5Br, C_3H_7Br, and C_4H_9Br. (Hint: There are a total of 8 structures.)

2) Which one of the C1 to C4 bromoalkanes will give one peak in the carbon (C-13) spectrum?

3) Which three of the C1 to C4 bromoalkanes will give two peaks in the carbon spectrum? How do they differ?

4) Which two of the C1 to C4 bromoalkanes will give three peaks in the carbon spectrum? How do they differ?

5) Which two of the C1 to C4 bromoalkanes will give four peaks in the carbon spectrum? How do they differ?

6) Sketch the C-13 NMR spectra you would expect for the isomers of C_3H_7Br.

7) A compound with the molecular formula $C_3H_6Br_2$ has a C-13 NMR spectrum with 2 peaks. The peak with the higher chemical shift is twice the intensity of the lower chemical shift peak. What is the structure of the molecule?