Experiment 2 - NMR Spectroscopy

1. Draw the structural formulas of the following compounds and indicate the number of NMR signals that would be expected for each compound.

   (a) methyl iodide

   (b) 2,4-dimethylpentane

   (c) cyclopentane

   (d) propylene (propene)
2. Draw the structural formula of the compounds that are indicated by the following data:

(a) an alkyl halide with a molecular formula of \( \text{C}_3\text{H}_7\text{Cl} \) whose NMR spectrum contains two signals: a doublet (6H), and a multiplet (1H).

(b) a compound with molecular formula \( \text{C}_7\text{H}_{14}\text{Cl}_2 \) whose NMR spectra contains three signals: a singlet (9H), a triplet (3H), and a quartet (2H).

3. Figures 3-7 are representative spectra of compounds. Based on the NMR spectra shown, please provide a reasonable structure for each compound.
Figure 5

Figure 6
Figure 7

Figure 8