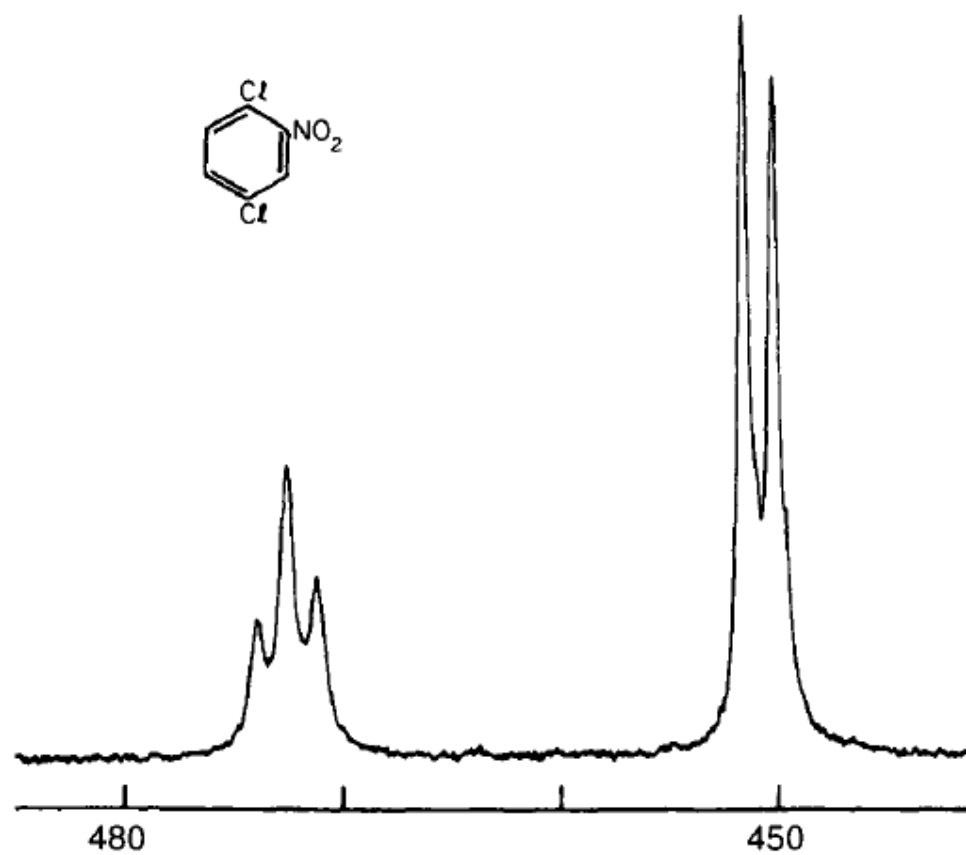


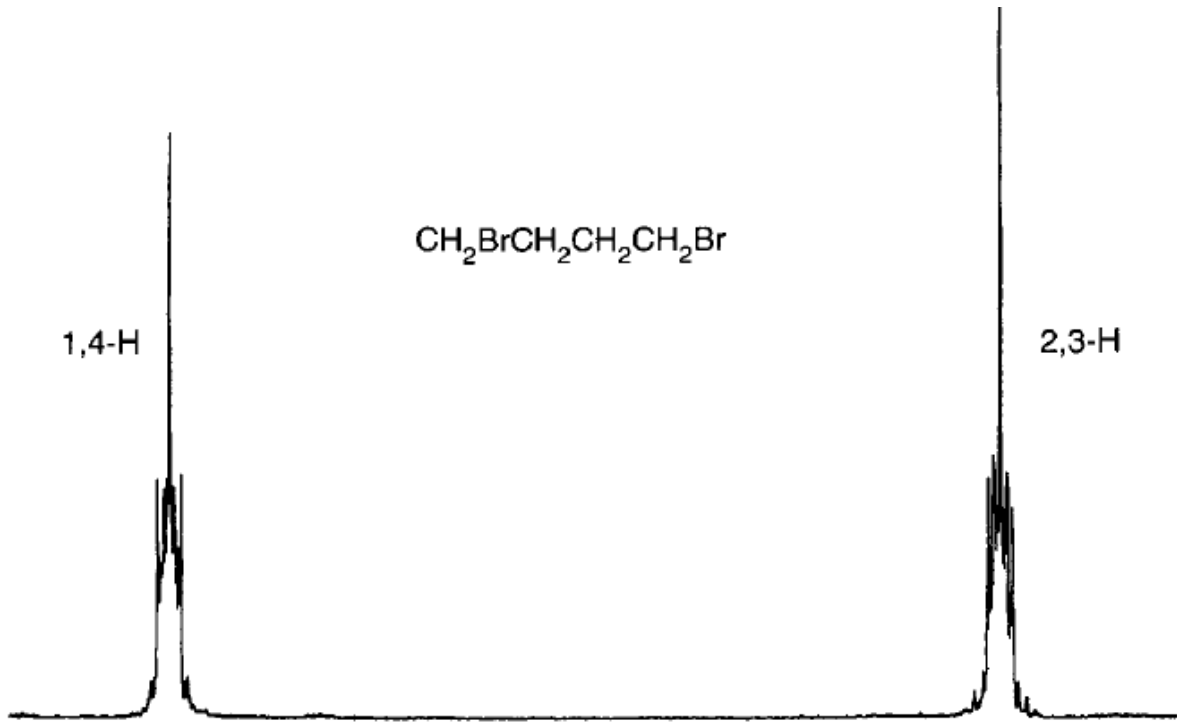
### Problem # 23

Try to interpret each spectrum, and clarify the spin system!

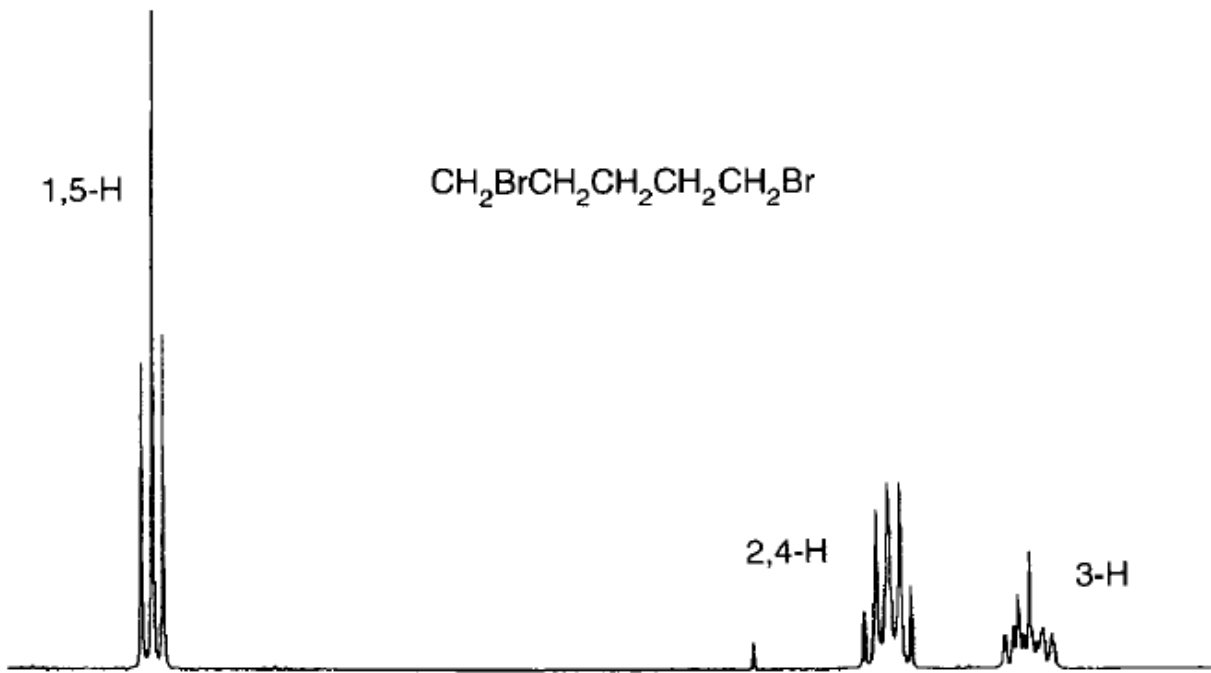


<sup>1</sup>H NMR spectrum (60 MHz) of 2,5-dichloronitrobenzene in CDCl<sub>3</sub>.

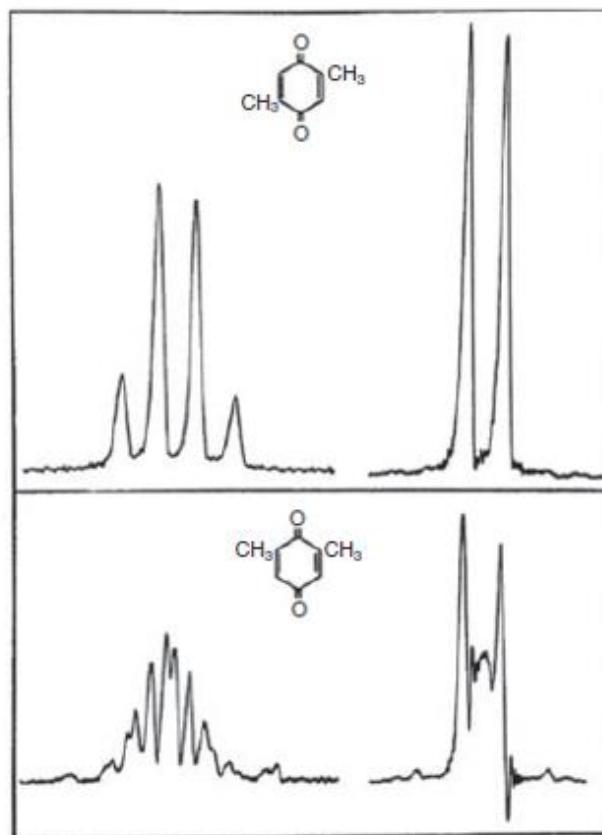
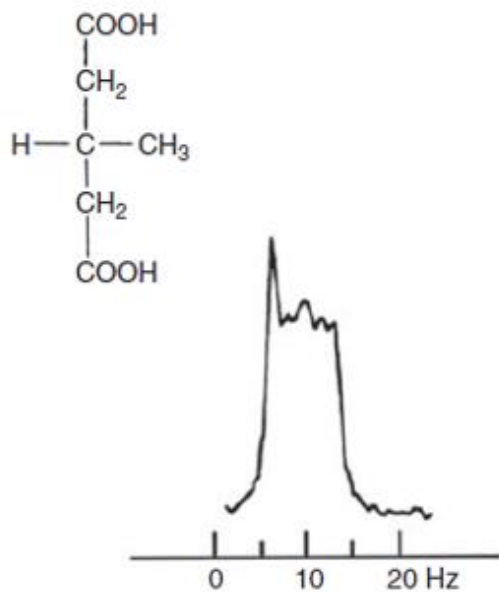
2-



3-



4-



(left) The 60 MHz methyl  $^1\text{H}$  resonance of  $\beta$ -methylglutaric acid. (right) The 60 MHz spectra of the 2,5- and 2,6 dimethylquinones.