

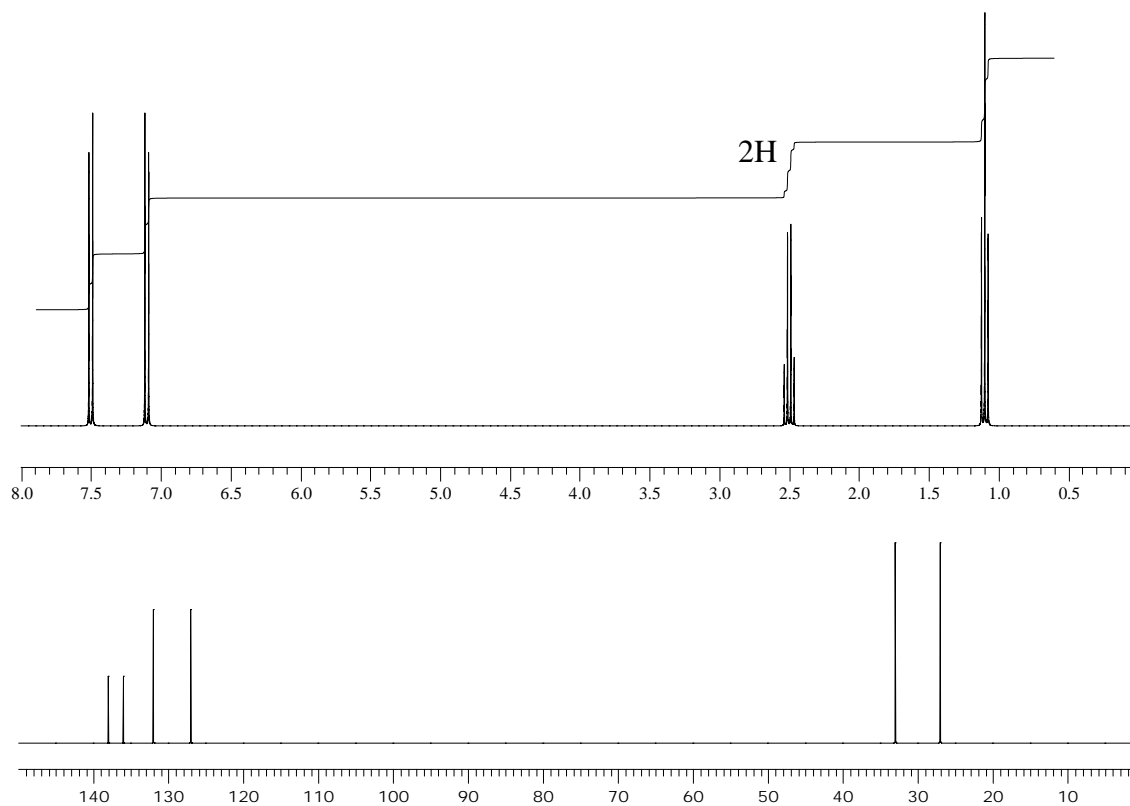
## PROBLEM SET #1

1. The  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra of two isomeric compounds, **A** and **B**, are shown below. The two compounds have very similar MS spectra with the following main features:

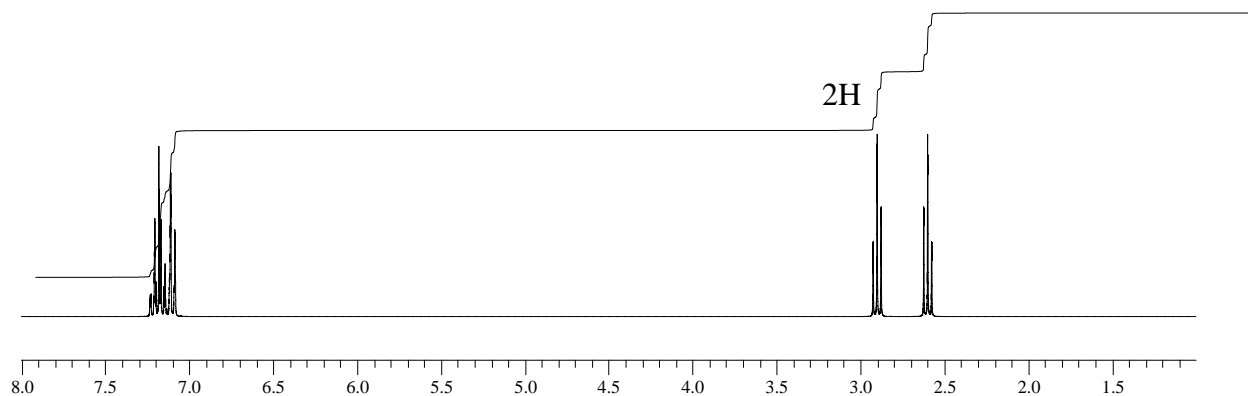
- $M^+ = 184$ ;
- $(M + 2)^+ = 186$  and is equal in intensity to  $M^+$

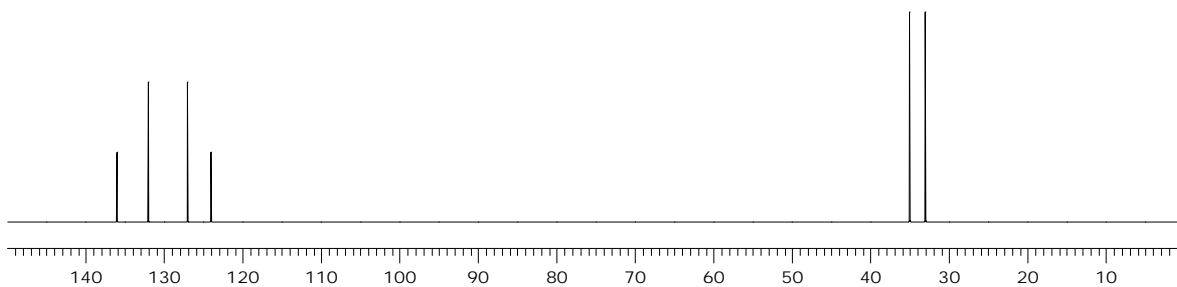
Propose structures for **A** and **B** and support your suggestion by assignment of the NMR signals.

### Compound A:

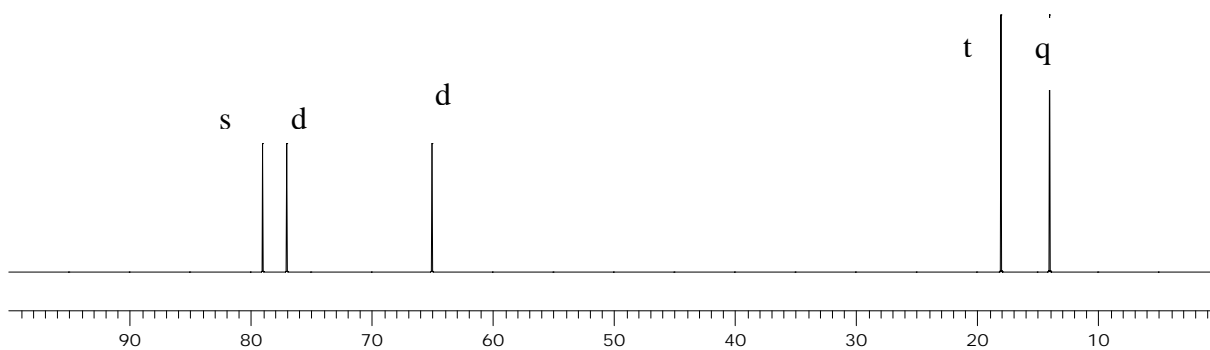
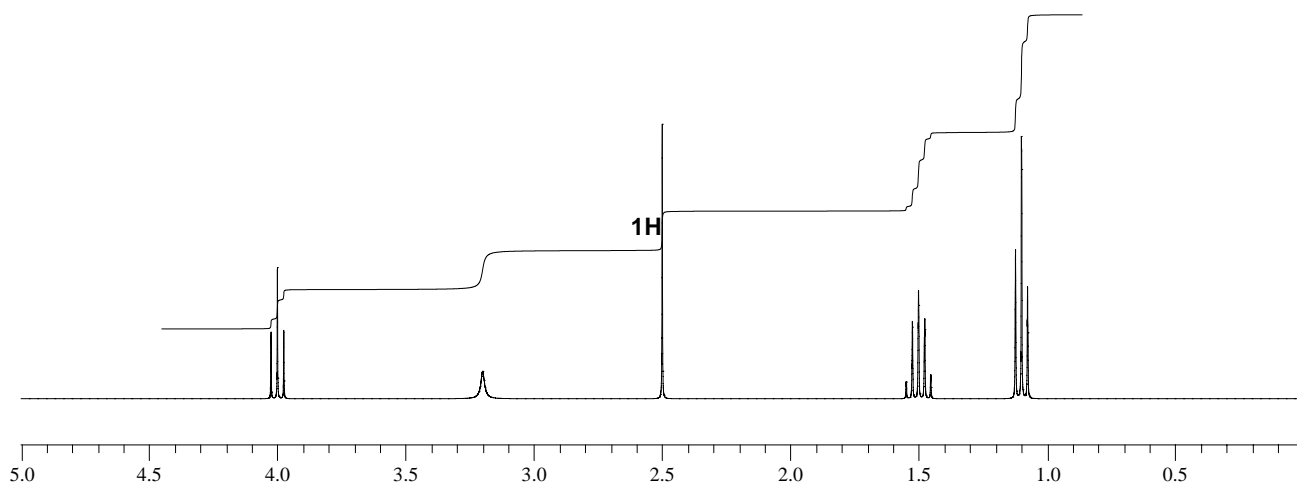


### Compound B:





2. A compound has the molecular formula  $\text{C}_5\text{H}_8\text{O}$ . Using the information from its  $^1\text{H}$  and  $^{13}\text{C}$  NMR spectra (below!), provide the complete structure and support it by assignment of the NMR signals.



3. Three isomers with formula  $\text{C}_7\text{H}_{14}\text{O}$  have their  $^1\text{H}$  NMR spectra given below (Next page actually!!). Assign structure matching each of the spectra.

