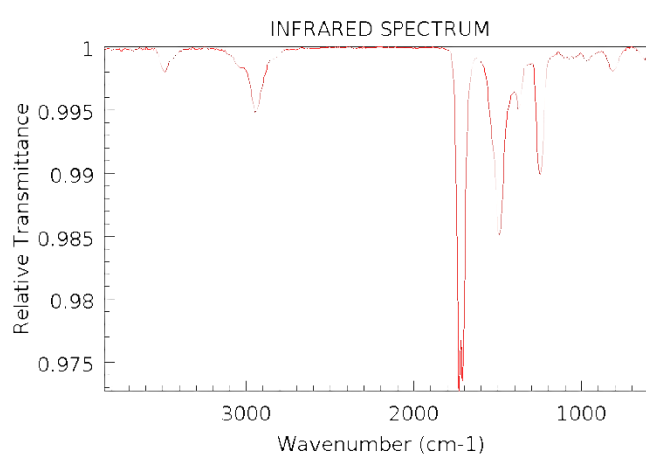
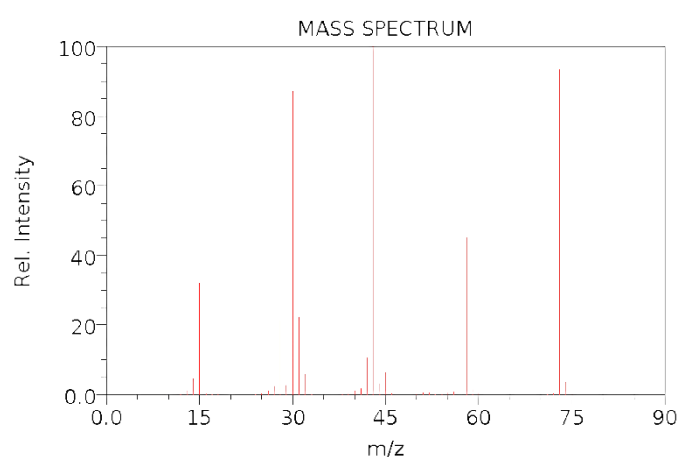
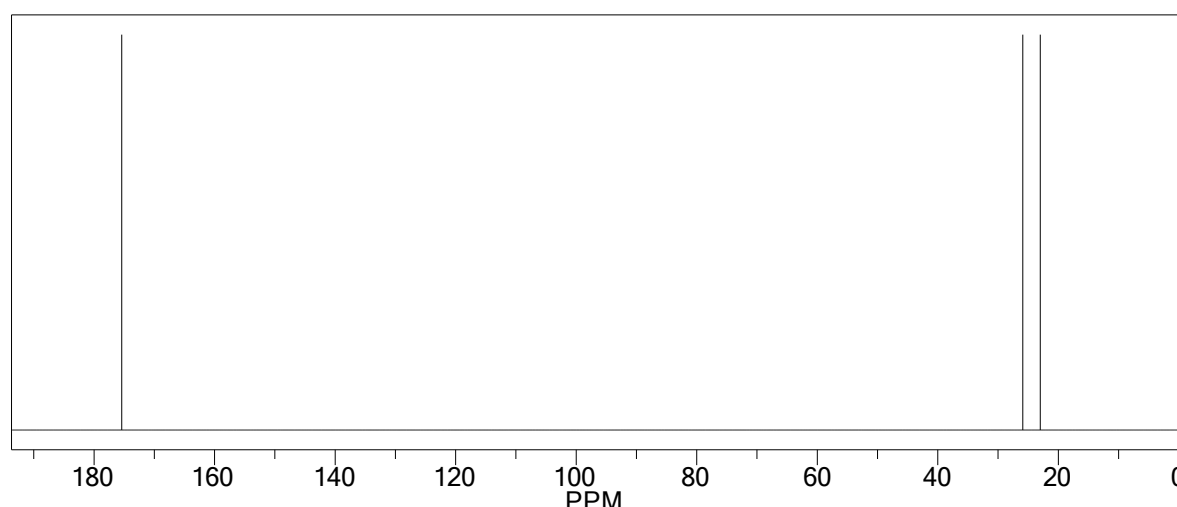


Below are the spectra-data for Compound E



The mass spectrum indicates the molar mass of the compound is 73 m/z. Since it is an odd mass number, there is an odd number of nitrogen. This is formed by the N-H peak around 3500cm^{-1} shown in the IR spectrum. The IR spectrum also shows a C=O peak around 1800cm^{-1} meaning the possible functional group is amide.

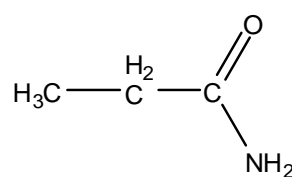
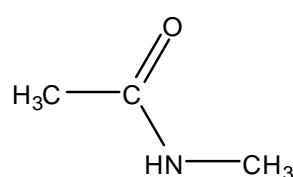
The ^{13}C NMR shows there are three carbon environments.

$$73 - (12 + 16 + 14) = 31$$

I would predict there are 2 carbon atoms and 7 hydrogen atoms

Therefore the molecular formula would be $\text{C}_3\text{H}_7\text{NO}$

There are two possibilities a primary amide and secondary amide



Both molecules contain 3 carbon environments, however the ^{13}C NMR suggest that the secondary amide instead of the primary amide as the signals is higher in ppm, hence the carbon atoms are more electropositive.