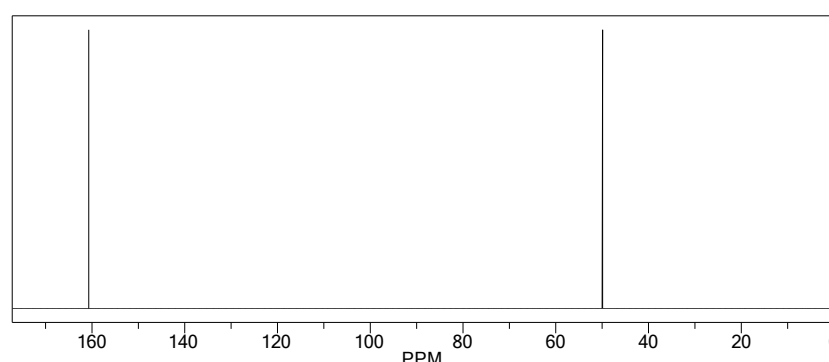
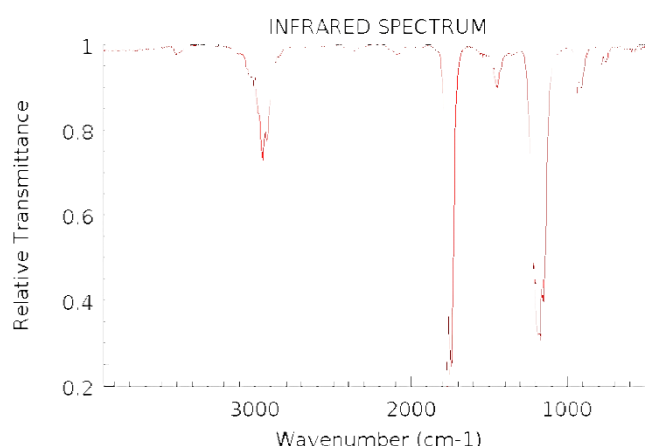
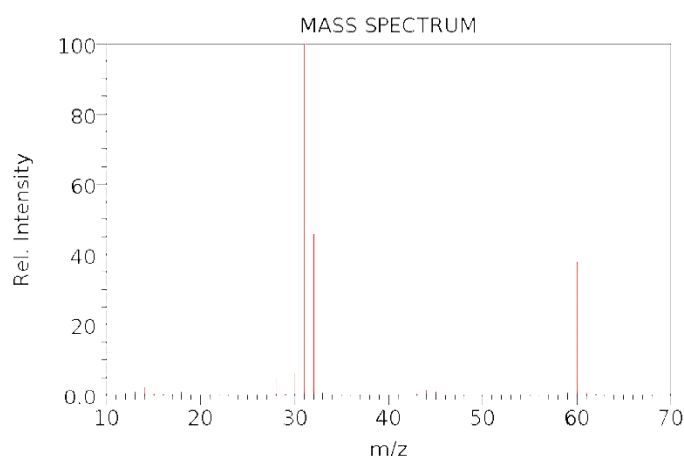


Below are the spectra-data for Compound C



The molar mass of compound C is 60 m/z, and since there is a “special isotope” pattern, I would predict there are no Br and no Cl.

On the IR two major absorption,  $\sim 1800\text{ cm}^{-1}$  (C=O) and  $\sim 1200\text{ cm}^{-1}$  (C-O)

On the  $^{13}\text{C}$  NMR, there are two carbon environments and the  $\sim 160\text{ ppm}$  peak can be an ester or carboxylic acid

C=O has a mass of  $12 + 16 = 28$

$60 - 28 = 32$

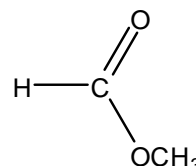
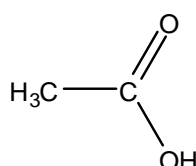
The IR spectrum indicates there is another oxygen atom in the molecule

$32 - 16 = 16$

Therefore, I predict there are one carbon atom and four hydrogen atoms left (CH<sub>3</sub> and H)

The molecular formula is C<sub>2</sub>H<sub>4</sub>O<sub>2</sub>

Two possibilities



Both molecules would contain 2 different carbon environments. However since the IR spectrum does not contain a typical broad -OH peak usually due to carboxylic acid, therefore I predict compound C is **methyl methanoate**