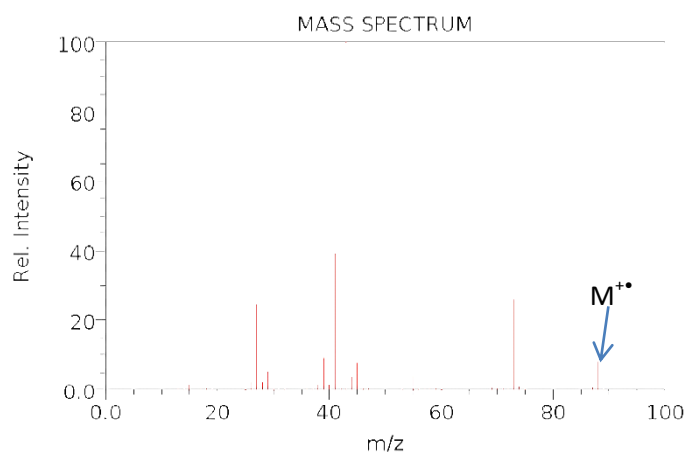
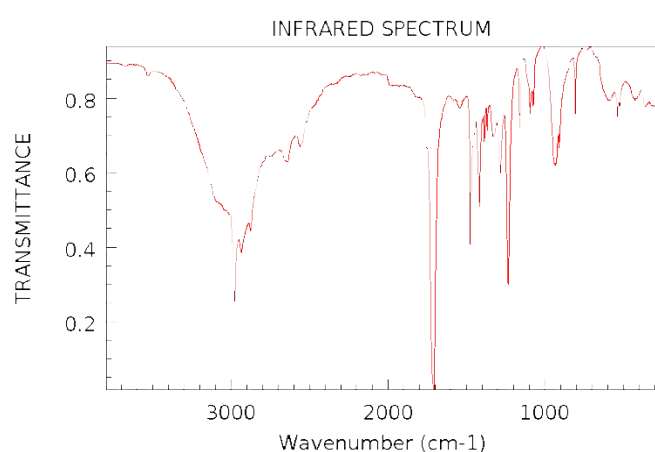
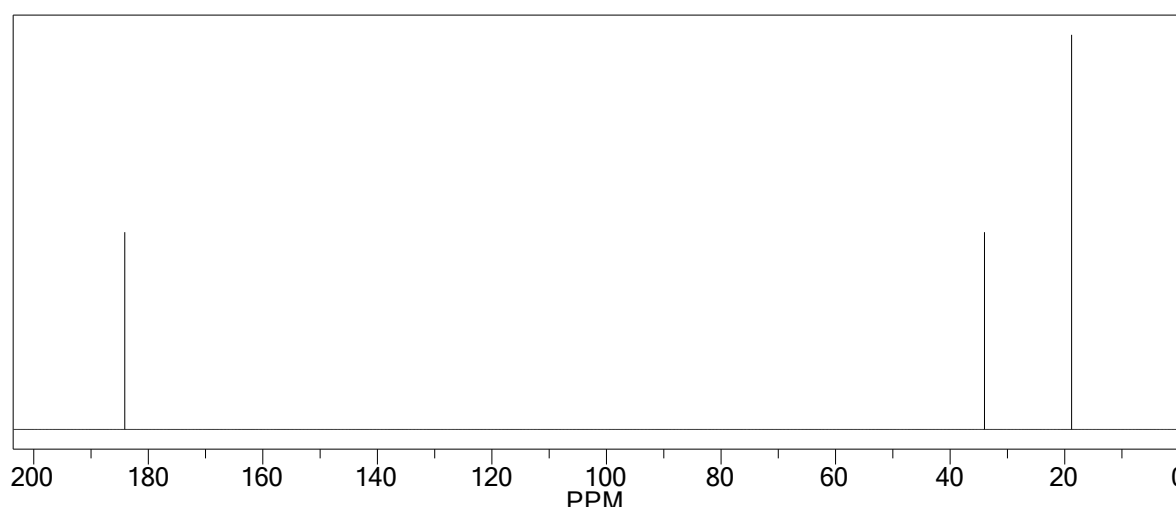


Below are the spectra-data for Compound H



From the mass spectrum, the molar mass of the compound is 88  $m/z$

Peak in  $^{13}\text{C}$  NMR around  $\sim 180$  it is in the Acid or ester region

Because IR shown a board peak around the 3000  $\text{cm}^{-1}$  region, therefore the molecule contain a carboxylic acid group.

This is confirmed by the extra peak on the 1800  $\text{cm}^{-1}$  corresponds to  $\text{C}=\text{O}$  and 1250  $\text{cm}^{-1}$  correspond to  $\text{C}-\text{O}$

Since there are three carbon environments in the  $^{13}\text{C}$  NMR meaning the molecule would have atleast three carbons

Propanoic acid  $\text{CH}_3\text{CH}_2\text{COOH}$  has a mass of 74 which is 14 mass lower than the MS molar mass

Butanoic acid and its isomer, 2-methyl propanoic acid would give a molar mass of 88

However, for butanoic acid, it has 4 different carbon environments while 2-methyl propanoic acid has 3, therefore compound H is 2-methyl propanoic acid