Revision of analytical chemistry.

1) An unknown compound was analysed and found to have an empirical formula C_2H_4O.

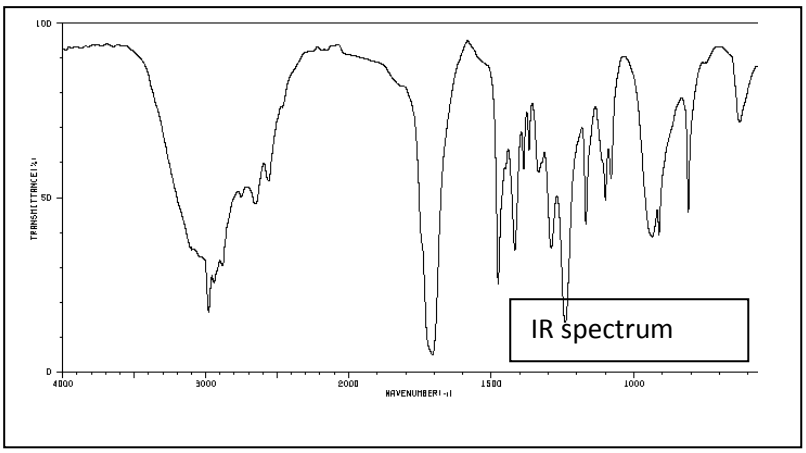
a) Consider the IR spectrum. What information about the molecule can you derive from the spectrum ?

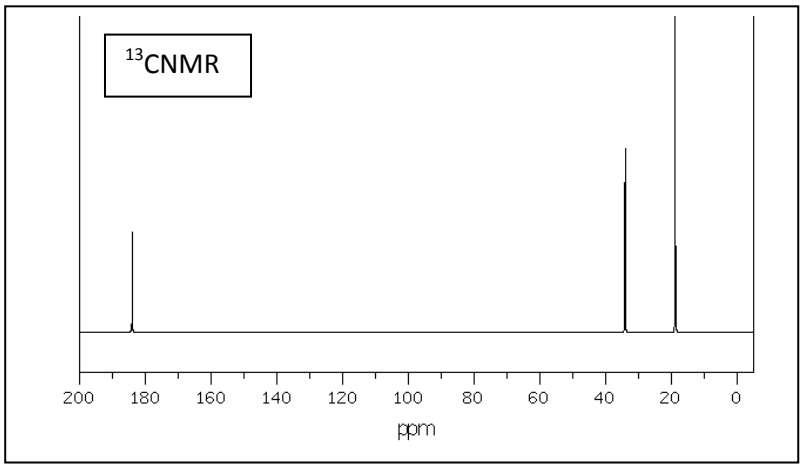
b) Determine the molecular formula of the compound

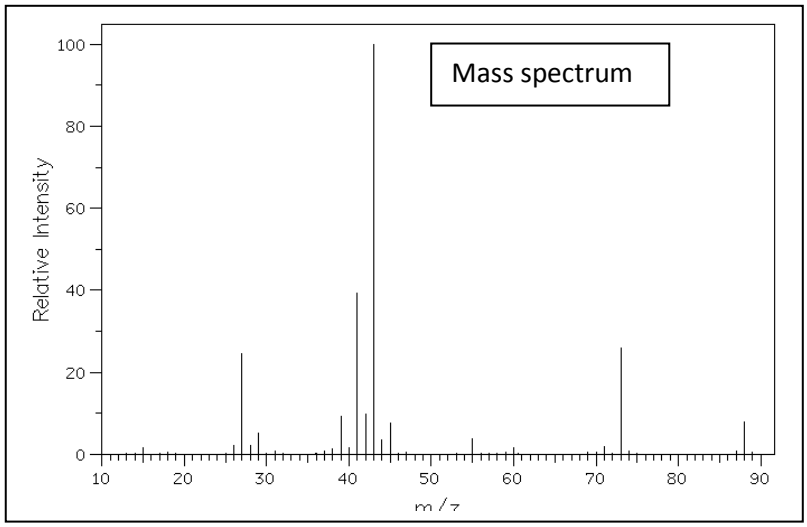
c) Draw its structural formula

d) Consider the mass spectrum. What fragment formed the base peak.

e) Explain the peak at m/z 89 in the mass spectrum.

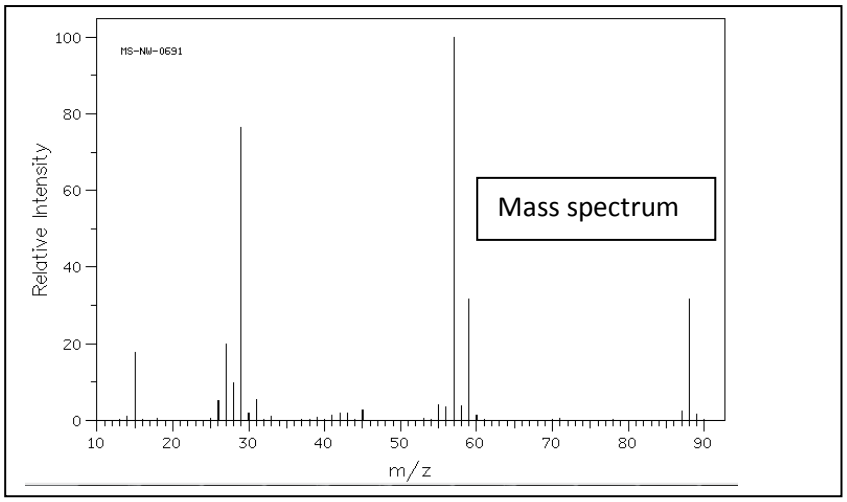


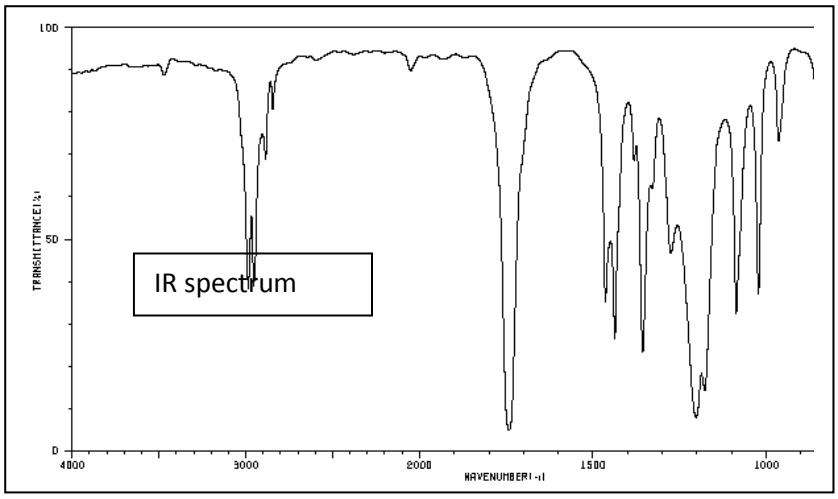


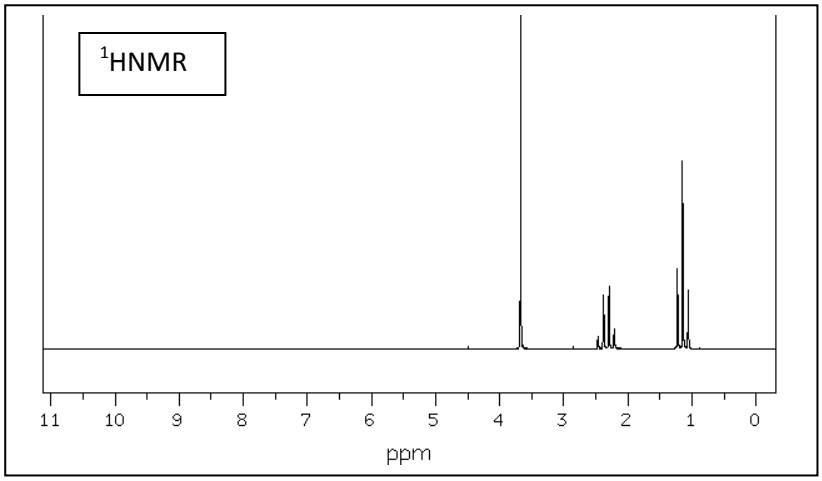


2) Another unknown compound was analysed and also found to have an empirical formula C_2H_4O.

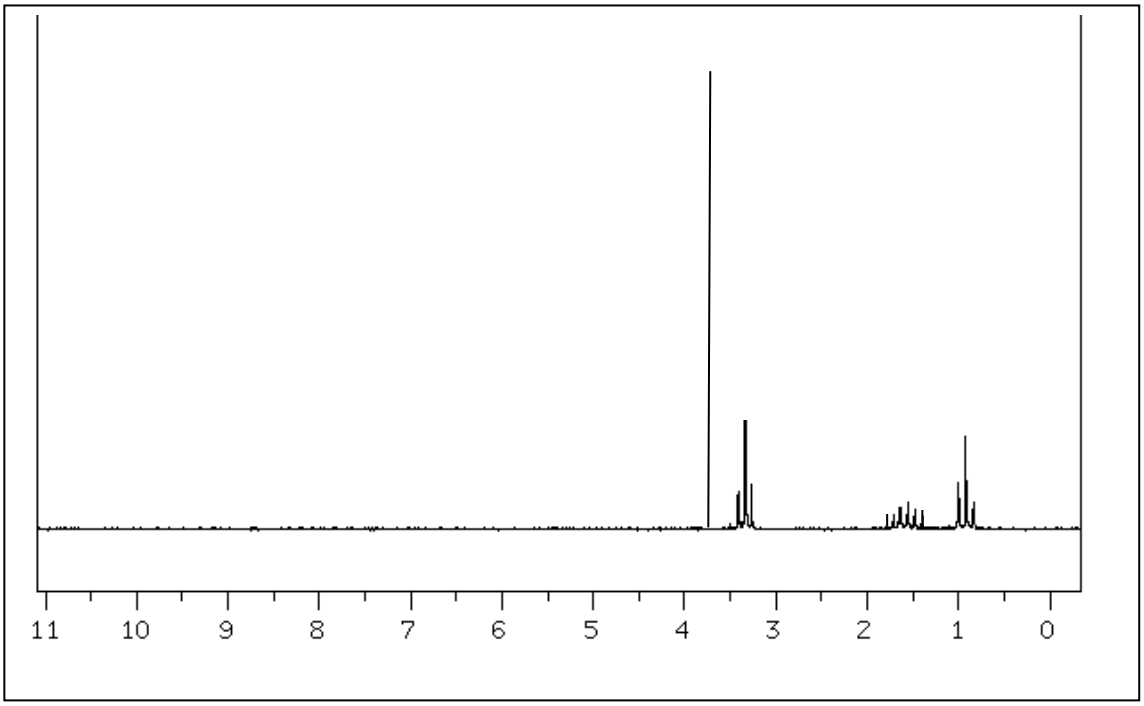
a) Consider the IR spectrum. What information about the molecule can you derive from the spectrum?
b) Determine the molecular formula of the compound
c) Draw its structural formula
d) What fragment produced the base peak in the mass spectrum?

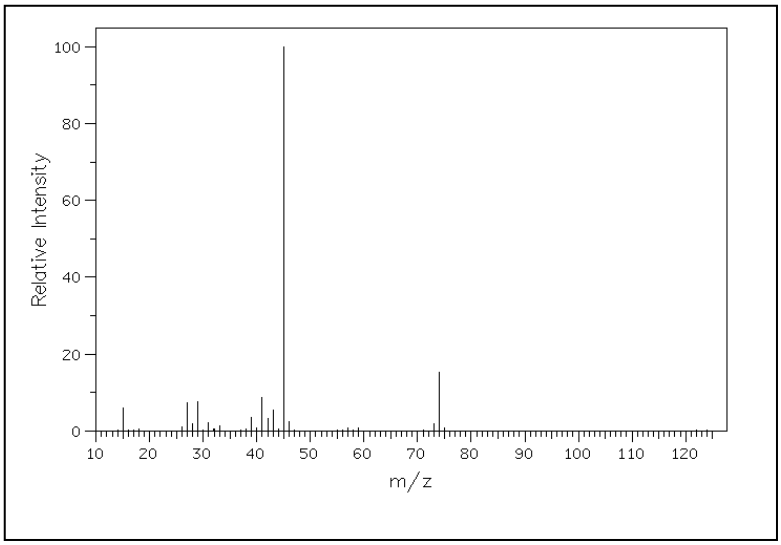


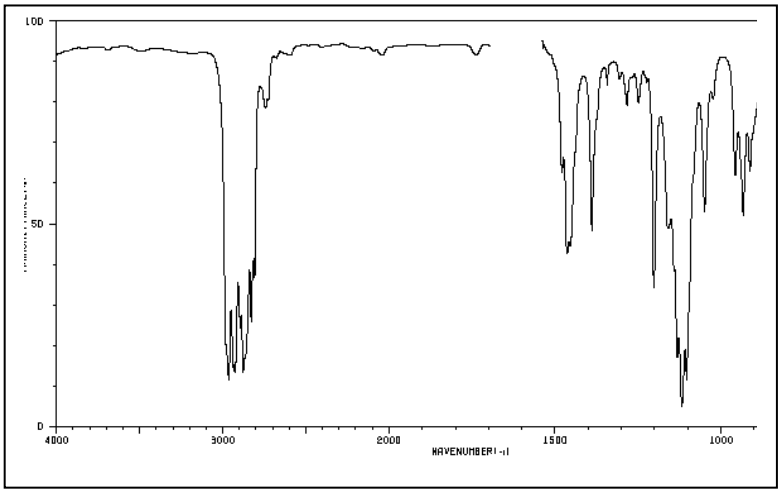




3) An unknown compound was analysed and found to have the molecular formula $C_4H_{10}O$. Draw the structural formula of the compound. Below are the compound's ^{1}HNMR, IR and mass spectra







4) Another unknown compound was analysed and also found to have the molecular formula $C_4H_{10}O$. Name the compound. Below are the compound's ^{1}HNMR, IR and mass spectra