4.11 EXERCISE 3 – Combined spectral analysis

1. A compound containing 58.8% carbon, 9.8% hydrogen and 31.4% oxygen is subjected to mass spectrometry and found to give intense peaks at m/z = 43 and m/z = 71, in addition to a molecular ion peak at m/z = 102.

   Infra-red analysis of the molecule showed a sharp peak at m/z = 1710 cm^{-1}.

   A proton nmr spectrum of the molecule yielded the following peaks:

Chemical shift	Splitting	Integration factor
0.8	Triplet	3
1.1	Sextet	2
2.3	Triplet	2
3.7	Singlet	3

   Deduce the structure of the molecule and account for the formation of all the peaks the spectra.