H-1 NMR: LOW RESOLUTION

The spectral data in this file are taken from the SDBS (SDBSWeb : http://sdbs.db.aist.go.jp (National Institute of Advanced Industrial Science and Technology, 26/8/2014).

1. For the tables of low resolution ^1H NMR data below, work out the structure of the molecules concerned. You will find a short table of useful chemical shifts at the bottom of the page.

   I am giving you tables of data rather than spectra, because I can't find any reliable source of real low resolution NMR spectra.

   a) A molecule with the molecular formula $C_3H_6O_2$ which gave this pattern of peaks:

chemical shift (ppm)	11.73	2.380	1.159
ratio of areas under the peaks	1	2	3

   b) A molecule with the molecular formula C_4H_8O which gave this pattern of peaks:

chemical shift (ppm)	9.764	2.37	1.64	0.97
ratio of areas under the peaks	1	2	2	3

   c) A molecule with the molecular formula $C_5H_{10}O_2$ which gave this pattern of peaks:

chemical shift (ppm)	4.132	2.319	1.259	1.140
ratio of areas under the peaks	2	2	3	3

Chemical shifts

	chemical shift, δ
R-C**H**$_3$	0.7 - 1.6
R-C**H**$_2$-C(=O)-	2.0 - 2.9
-O-C**H**$_3$ or -O-C**H**$_2$-R	3.3 - 4.3
H-C(=O)-	9.0 - 10.0
-COO**H**	11.0 - 12.0

(I have used the table of shifts from the Chemguide page to save time in redrawing the structures. The R-C**H**$_2$-R group has shifts in the same region as the R-C**H**$_3$ group.)