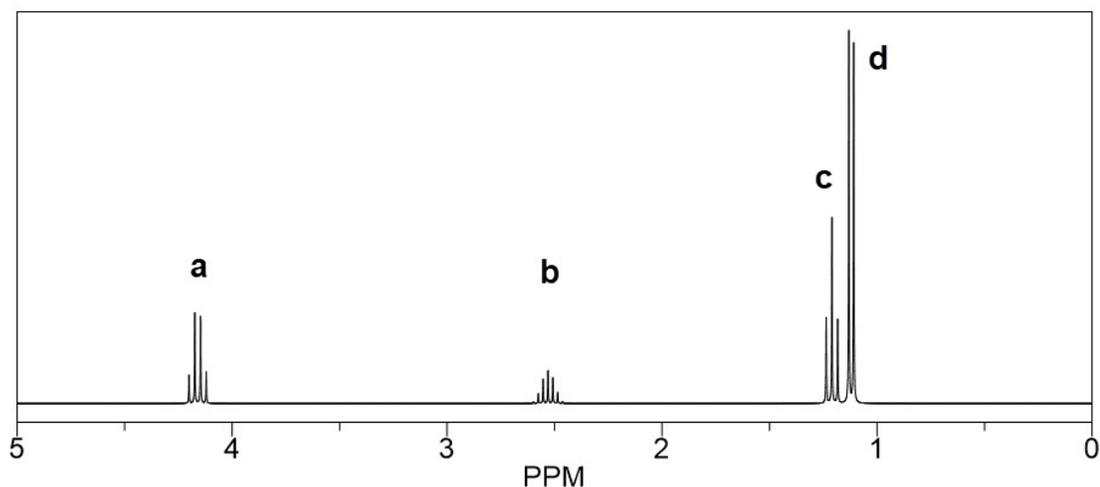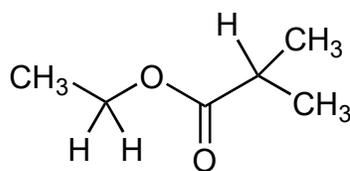9A. (4 pts) What are TWO ways you could use ^1H NMR to distinguish between the following two compounds? In other words, what are two significant differences expected in their ^1H NMR spectra?

9B. (6 pts) Match the labeled peaks in the ^1H NMR with the protons on the given structure. In other words, **label every proton on the structure as a, b, c, or d.**

^1H NMR Protons on Carbon	
Type of C-H	δ (ppm)
R−CH₃	0.9
R−CH₂−R	1.3
R₃C−H	1.5-2
=CH₃ (vinyl)	1.8
R−C(=O)−CH₃	2-2.3
Ar−CH₃	2.3
RC≡C−H	2.5
R₂N−CH₃	2-3
R−CH₂−X	3-3.5
RO−CH₃	3.8
R−CH₂−F	4.5
R₂C=CR−H	5-5.3
Ar−H	7.3
R−C(=O)−H	9.7

Protons on Oxygen	
Type of H	δ (ppm)
ROH	0.5-5
ArOH	4-7
R−C(=O)−OH	10-13