Chem. 6A: Quiz 2                  Test form A                  25 February 2003

Instructions: Use a soft, #2 pencil. Your marks must be dark to be counted correctly. Bubble in FORM A on your Scantron Form.
Write your perm number and bubble in your perm number. Correct perm – 2 pts!

Each question is worth 3 points. You will not lose more than 3 pts. For incorrect answers.

Turn in the Scantron form only. Keep the quiz so that you can check your work and answers, later. The answers to the quiz will be posted on the web (http://www.chem.ucsb.edu/%7Elittle/6AWinter03/). Only you can check your score.

1. Which set of protons in 1-chloropentane are the farthest upfield?
   [a] the hydrogens on C-3
   [b] the hydrogens on C-4
   [c] the hydrogens on C-1
   [d] the hydrogens on C-5
   [e] the hydrogens on C-2

2. Which compound has its signal farthest downfield?
   [a] methyl bromide
   [b] methyl fluoride
   [c] methyl chloride
   [d] methanol
   [e] methyl iodide

3. Each of the following compounds has a singlet in its $^1$H NMR spectrum. Which compound would have its singlet at the highest frequency (farthest downfield)? [HINT: Write structural formulas and examine each.]
   [a] CH$_3$CH$_2$OC(CH$_3$)$_3$
   [b] 1,2-dibromoethane
   [c] 1-bromo-2,2-dimethylpropane
   [d] CH$_3$CH$_2$OCH$_3$
   [e] CH$_3$CH$_2$C(OEt)(CH$_3$)CH$_3$ [that’s 2-ethoxy-2-methylbutane]

4. A single hydrogen bonded to a carbon is called what?
   [a] an isolated hydrogen
   [b] a single hydrogen
   [c] a methyl hydrogen
   [d] a methine hydrogen
   [e] a methylene hydrogen

5. Which hydrogens in CH$_3$CH$_2$-C(=O)-CH$_2$CH(CH$_3$)$_2$ are the most deshielded?
   [a] the methylene hydrogens of the carbons bonded to C=O
   [b] the methine hydrogen
   [c] the methyl hydrogens of the ethyl group
   [d] the methylene hydrogens of the carbon bonded to oxygen
   [e] the methyl hydrogens of the isobutyl group

6. Which of the following is not a true statement?
   [a] The effective magnetic field is the magnetic field the proton senses.
   [b] All protons in a compound experience the same shielding.
   [c] The radiation used in NMR spectroscopy is rf radiation.
   [d] The energy difference between the alpha and beta spin states depends on the strength of the applied magnetic field.
   [e] The operating frequency of an NMR spectrometer depends on the strength of the magnet.