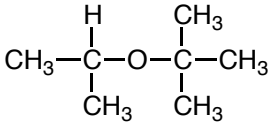
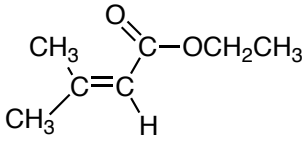
Name .....

L.I.U.

Chem. 122, Sect 007, Quiz 1, 50 pts, Spring, 2011

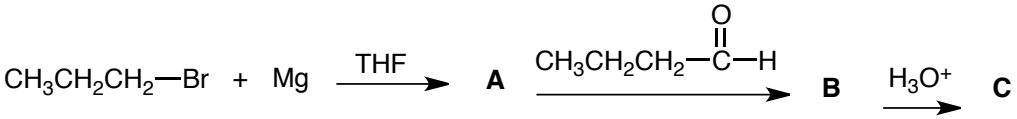
1. For the following molecules identify (a) the number of carbon signals (b) the number of proton signals (c) the spin-spin splittings or multiplicities of the proton signals. (10 pts)

(a) 

(b) 

2. Identify the following molecule of formula $C_{17}H_{18}O$; IR: 1740 cm^{-1}; ^1H: δ 2.2, triplet, 4H; 2.3, triplet, 4H; 7.2-7.5, broad singlet, 10 H. (10 pts)

3. Give the product of the following reactions. (10 pts)



4. In the recrystallization of aspirin from hexane and ethyl acetate, the general procedure is to transfer all of the solid to a medium test tube, cover the solid with ethyl acetate and hexane and heat the test tube to boiling in a water bath. (a) What should you do if the solid does not dissolve completely when the solvent mixture starts to boil? (b) What is the purpose of keeping the spatula in the test tube? (c) What would be the best substitute for ethyl acetate as a co-solvent with hexane? (i) water (ii) propane (iii) acetone (CH_3COCH_3). Explain briefly. (10 pts)

5. In the preparation of triphenylcarbinol from bromobenzene, magnesium and methyl benzoate ($C_6H_5CO_2CH_3$) in THF (a) What was the purpose of flame drying the glassware? (b) What would be a good substitute for THF as a solvent? (i) ethanol (ii) 1,4-dioxane  (iii) hexane. Explain briefly, discussing each of the choices in turn. (c) Why was it important to have the pH of the reaction mixture be acidic before doing the steam distillation? Explain briefly and show any reactions that occurred on adding the aqueous acid. (10 pts)