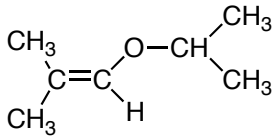
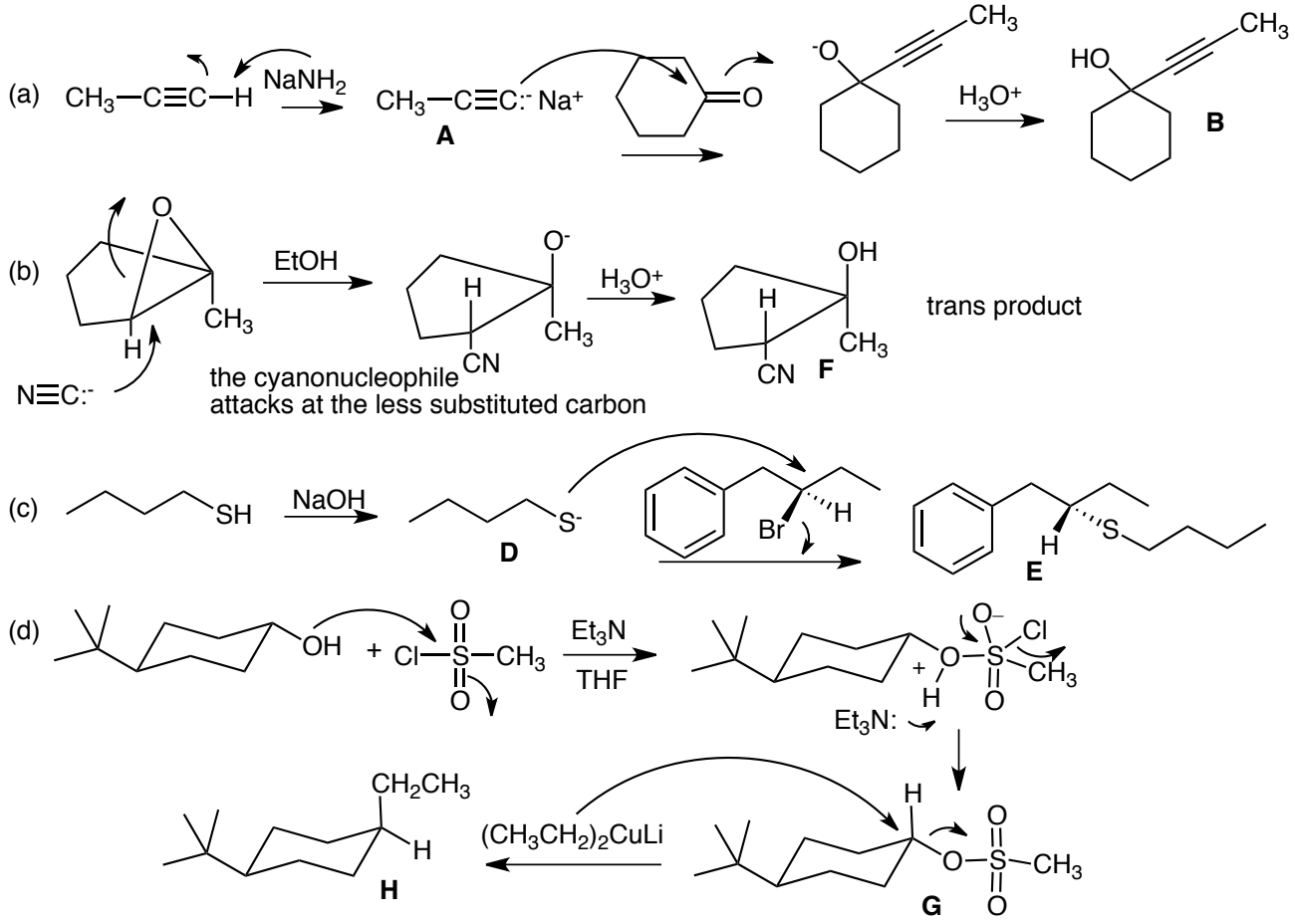
Long Island University, Department of Chemistry

Chem. 122, Sect 007, Exam 1, 100 pts, Spring, 2011

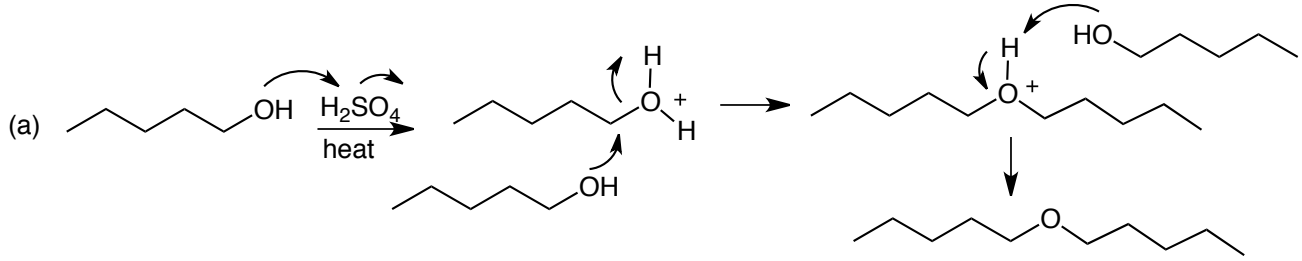
1. Identify the following molecule: formula ($C_7H_{14}O$). IR: 1200 cm^{-1}. ^1H NMR: δ 1.3, 6H, doublet; 1.6, 3H, singlet; 1.7, 3H, singlet; 3.9, 1H, septet; 5.8, 1H, singlet. (10 pts)

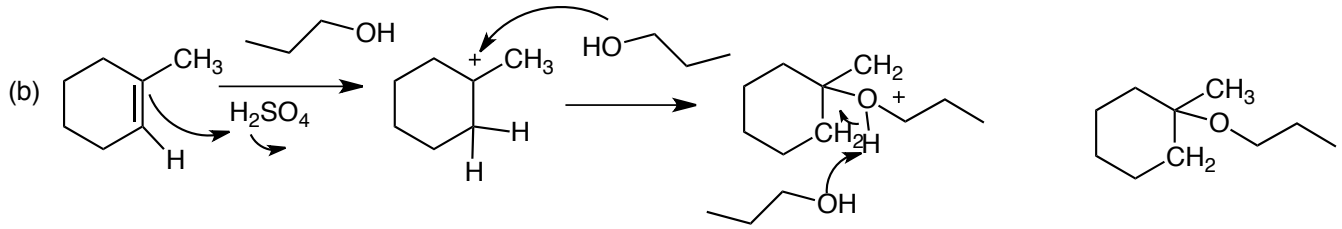


2. Give the product of the following reactions. It is not necessary to show the full mechanism. Be sure to show the stereochemistry where appropriate. (40)

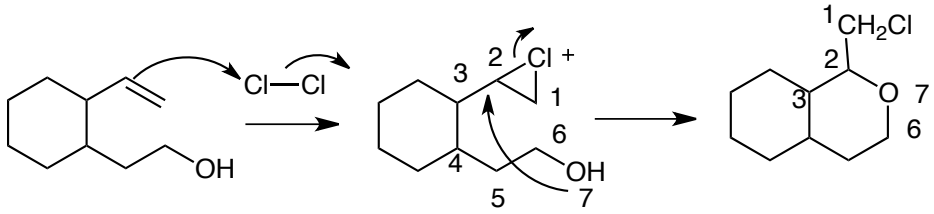


3. For the following reactions, give the product(s) and the complete reactions mechanisms by which they are formed. Pay careful attention to stereochemistry where appropriate. (20 pts)



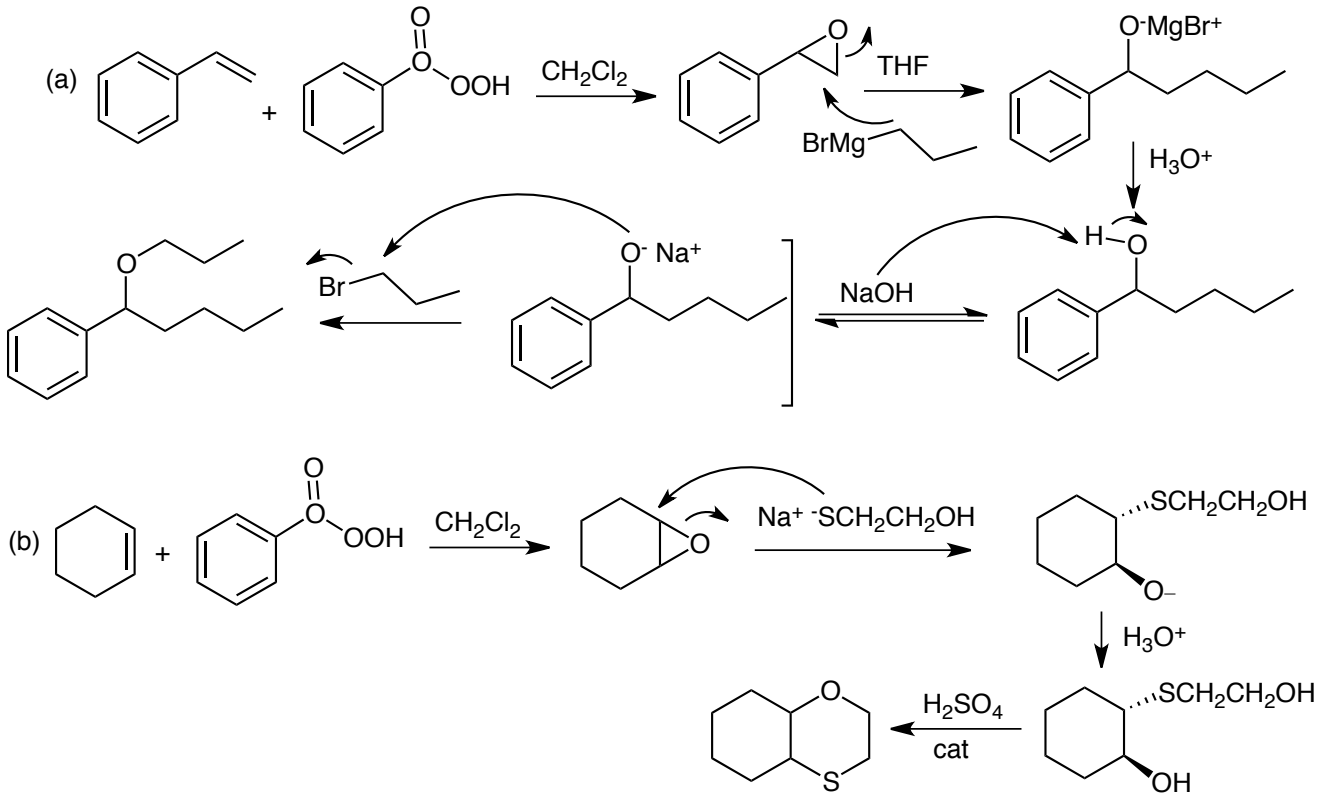


4. Show how the following transformation takes place, giving all of the steps of the mechanism. (10 pts)



The oxygen has to attack at C2 in order to form the 6-membered ring; this is much more favorable than attack at C1 which would form a 7-membered ring.

5. Synthesize **two** of the following three molecules as shown. For extra credit do all three. (20 pts)



intramolecular ether formation using acidic conditions

(c)