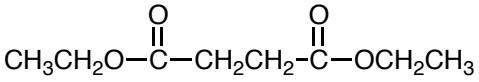
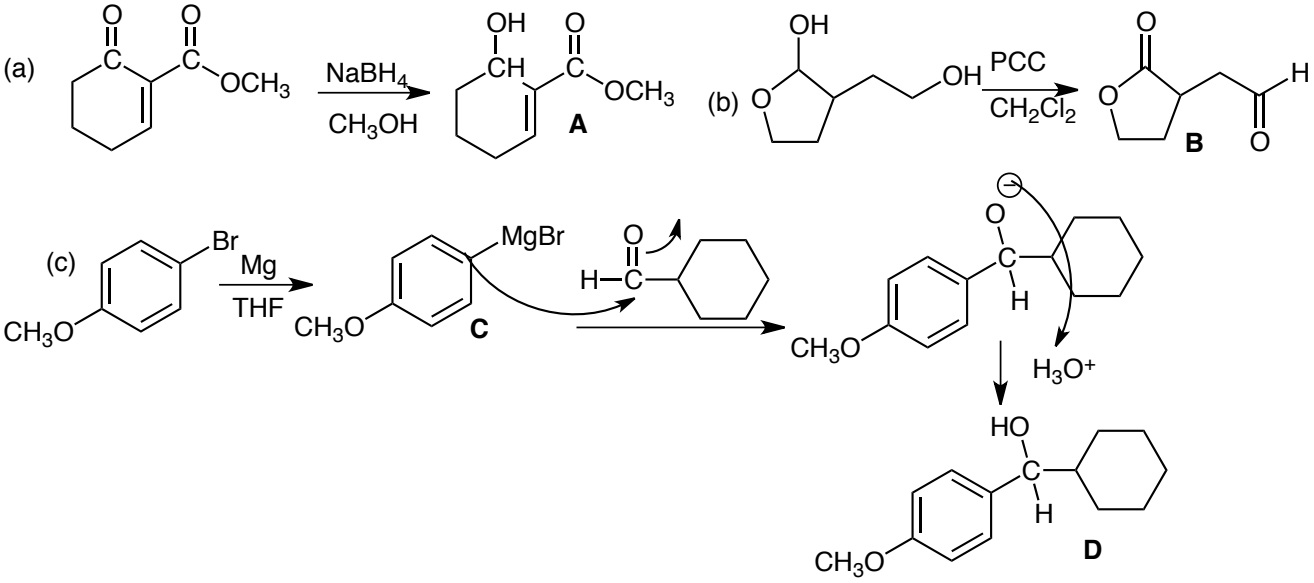
Long Island University, Department of Chemistry

Chem. 122, Sect 008, Exam 1, 100 pts, Spring, 2011

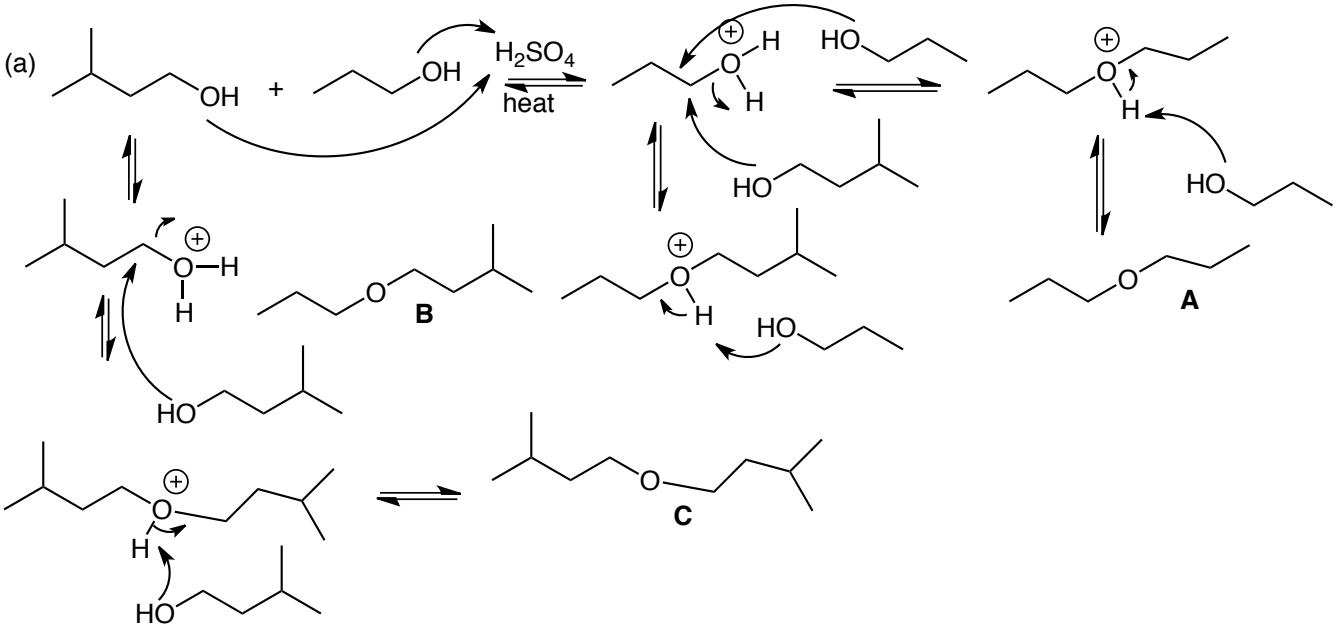
1. Identify the following molecule: formula ($C_8H_{14}O_4$); IR: 1745 cm^{-1}; ^1H NMR: δ 1.2, 6H, triplet; 2.2, singlet, 4H, 3.8, quartet, 4H. (10 pts)

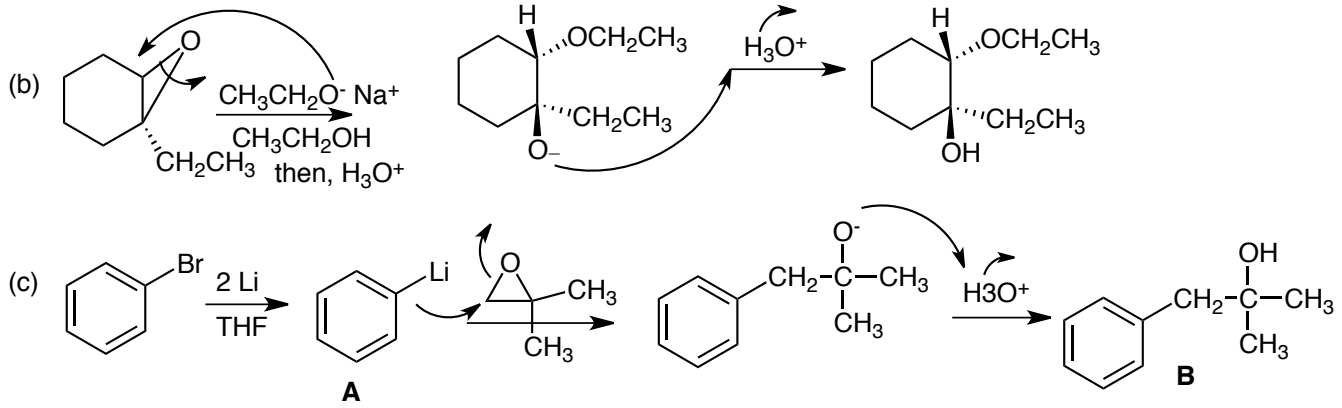


2. Give the product of the following reactions. It is not necessary to show the full mechanism. (30 pts)

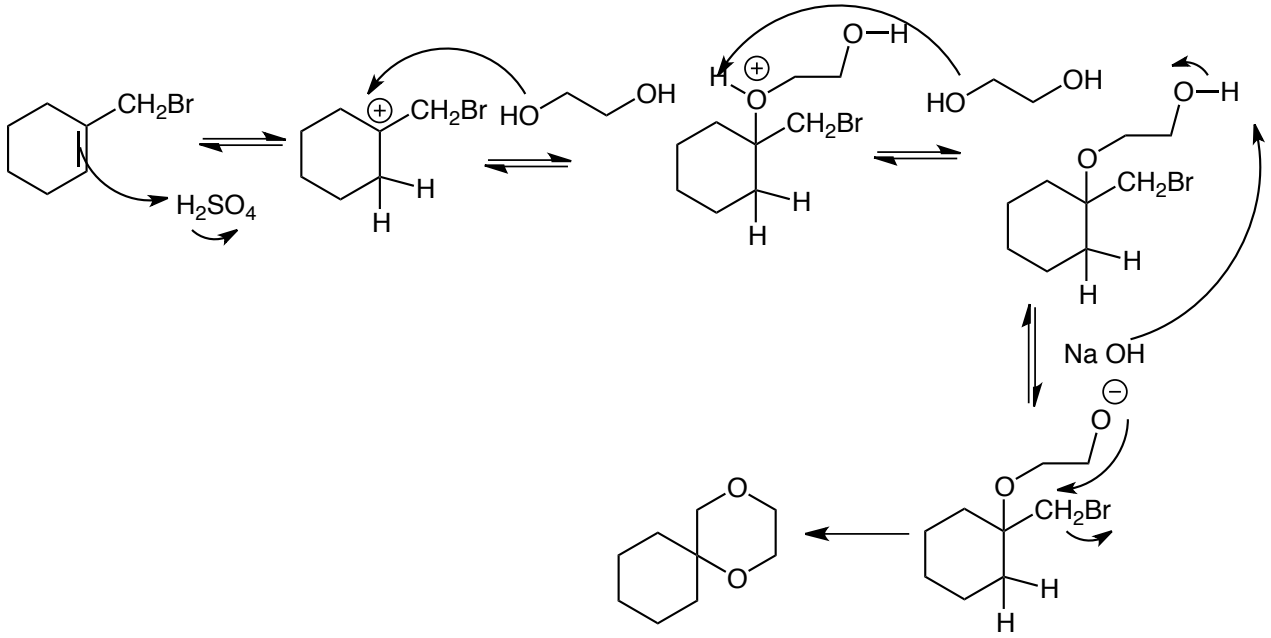


3. For the following reactions, give the product(s) and the complete reactions mechanisms by which they are formed. Pay careful attention to stereochemistry where appropriate. (30 pts)

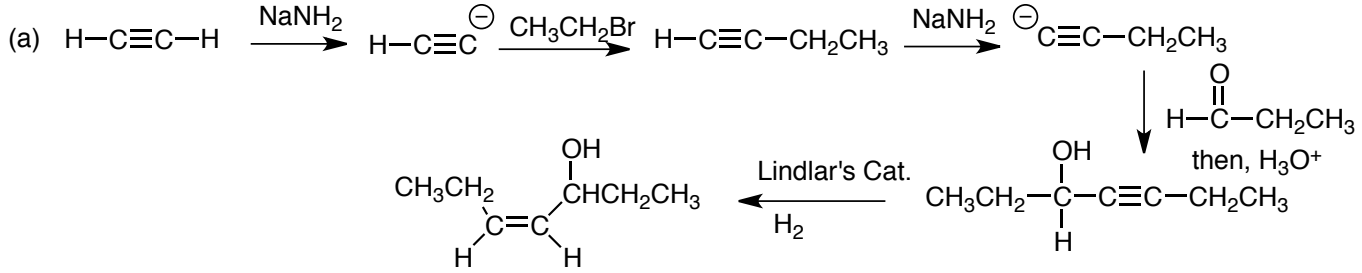


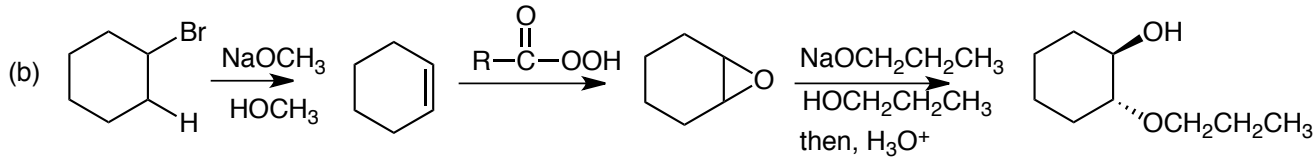


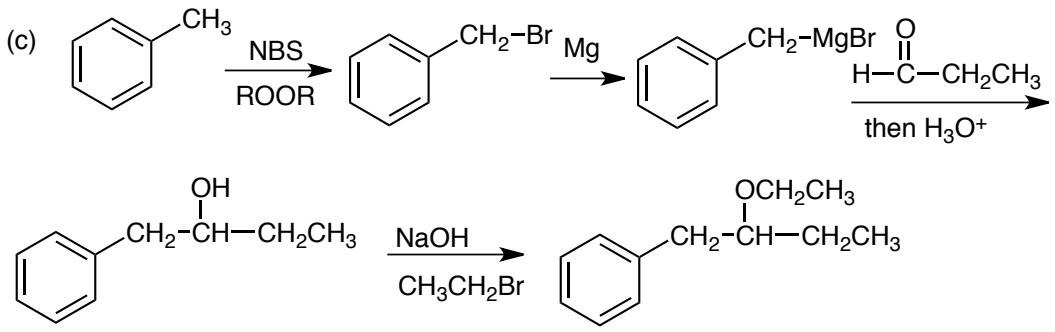
4. Show how the following transformation occurs, giving all the steps of the mechanism including all intermediates. (10 pts)



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





(c) 
CH3
NBS
ROOR
CH2–Br
Mg
CH2–MgBr
O
H—C—CH2CH3
then H3O+
OH
CH2–CH—CH2CH3
NaOH
CH3CH2Br
OCH2CH3
CH2–CH—CH2CH3