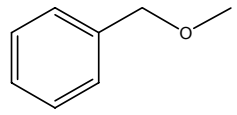
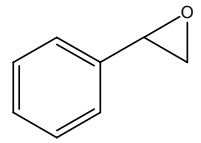
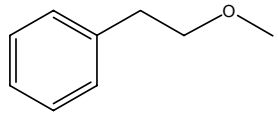
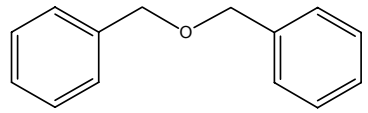
Chem 220a Problem Set 10 Due Wednesday Dec 3, 2003

1. Provide efficient synthetic routes to the following compounds starting from bromobenzene and any other reagents containing two or fewer carbon atoms.

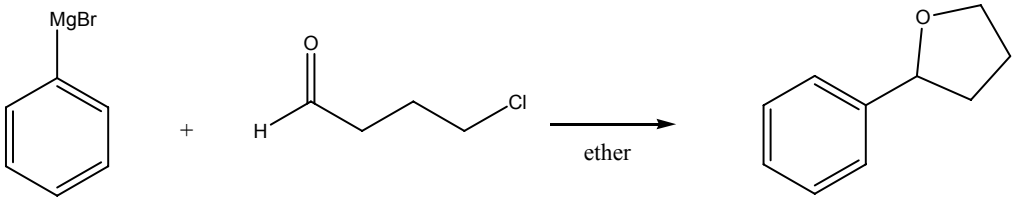
(a) 

(b) 

(c) 

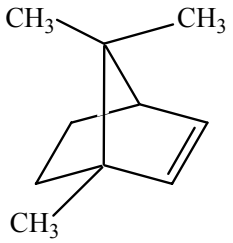
(d) 

2. Account for the following observation.



3. Optically active (2R,3S)-3-chloro-2-butanol is allowed to react with sodium hydroxide in ethanol to give an optically active oxirane, which is treated with potassium hydroxide in water to obtain 2,3-butanediol. What is the stereostructure of the diol? What can you say about its optical rotation?

4. When bornene is epoxidized by using (a) a peroxyacid or (b) aqueous bromine followed by NaOH, two different epoxides are formed. Explain.



bornene

5. Treatment of trans-2-chlorocyclohexanol with NaOH yields cyclohexene oxide, while identical treatment of the cis isomer yields cyclohexanone. Explain.