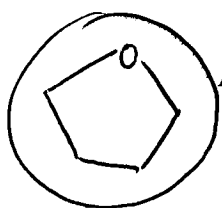


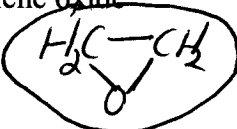
Chem 231: Problem Set #8 (on Chapter 8)

1. Name or draw structural or line formula for the following compounds.

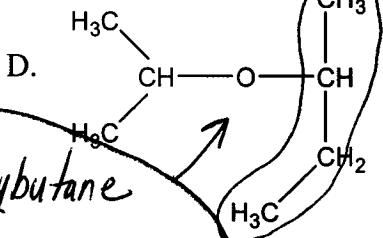
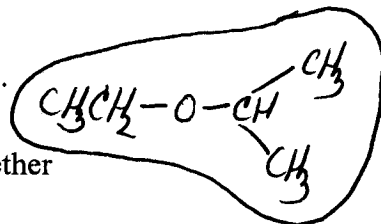


A. THF

B. ethylene oxide

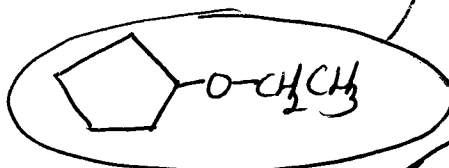


C. ethyl isopropyl ether

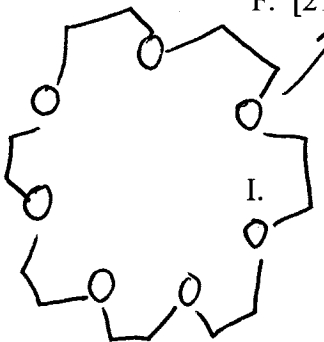


2-isopropoxybutane
OR
sec-butyl isopropyl ether

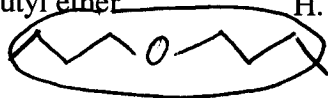
E. ethoxycyclopentane



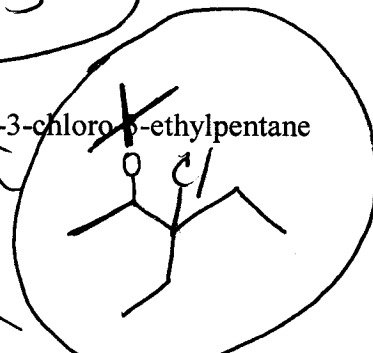
F. [21] crown-7



G. dibutyl ether



H. 2-*t*-butoxy-3-chloro-5-ethylpentane

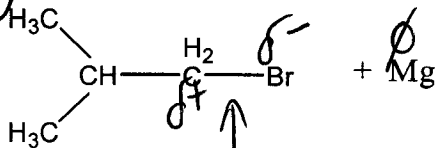
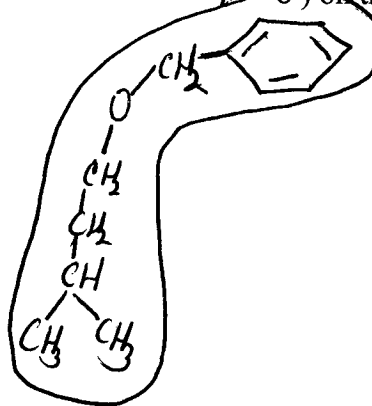


J.

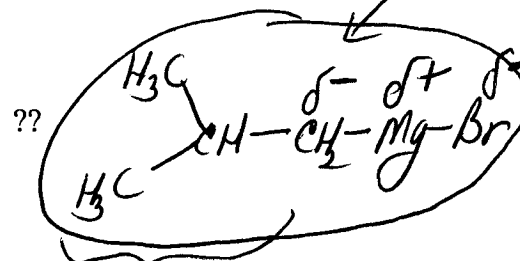
dimethyl ether
OR
methoxy methane

K. benzyl isopentyl ether

2. For the Grignard reaction shown below, predict the product and show partial charges (δ^+ and δ^-) on the reactant and product. What is the role of the THF solvent?



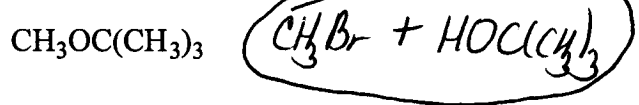
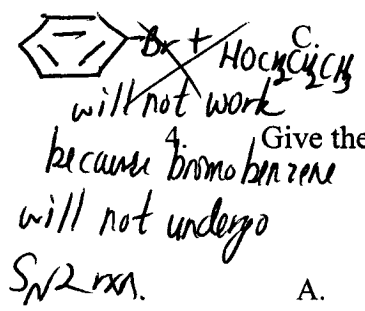
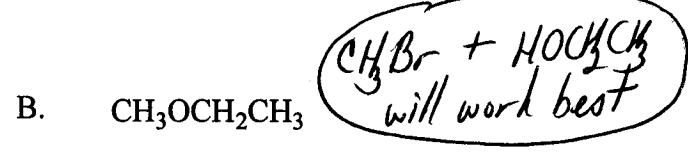
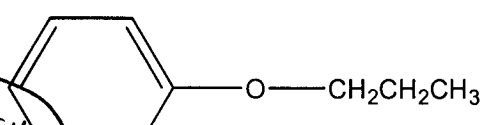
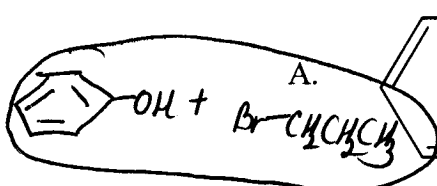
C-Br bond
breaks and Mg
inserts in between.



The THF, a cyclic ether, solvent helps to stabilize the Mg in the Grignard reagent. The lone pairs of e^- on oxygen of THF coordinate to the Mg & stabilize the Grignard reagent.

3. Use a Williamson synthesis, make the ethers in A-C. (Hint: Decide which combination of alcohol and alkyl halide to use.)

SN2 rxn in second step works best if alkyl halide 1° or even better if methyl.



CH₃OH + Br-CH₂CH₃ will also work but SN2 rxn is more rapid w/ methyl than 1° bromide.

4. Give the major organic product or the necessary reagent(s) for each reaction.

