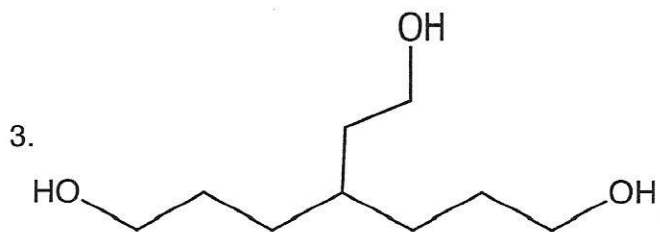
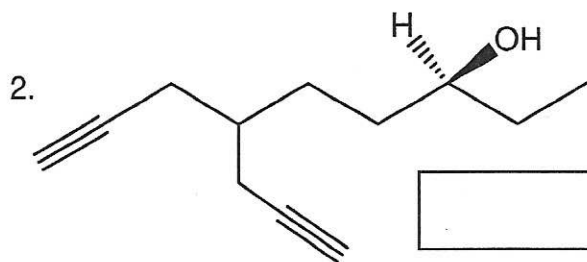
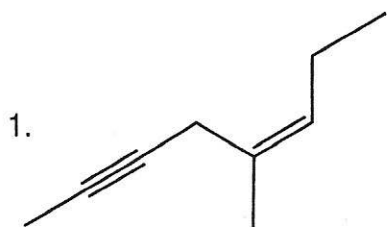


Exam 3B, Fall

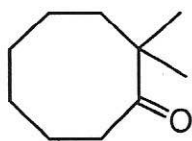
A. Nomenclature: (15 points)

Give an acceptable IUPAC name for each of the following compounds. Be sure to include the **stereochemistry** when indicated and appropriate.

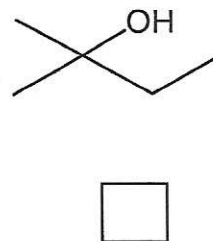
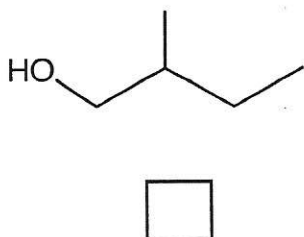
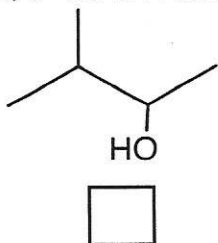


B. FACTS: Total = 25 points

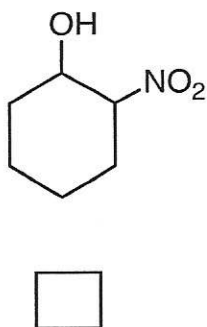
1. Draw the tautomer of the compound below. (3 points)



2. Place the alcohols in order of increasing reactivity in an acid catalyzed dehydration. (1=least reactive, 3=most reactive) (6 points)



3. Place the compounds in order of increasing acidity. (1=least acidic, 3=most acidic) (6 points)



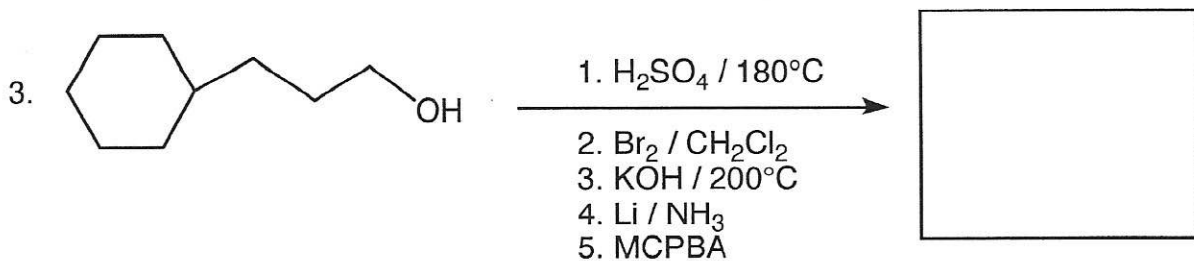
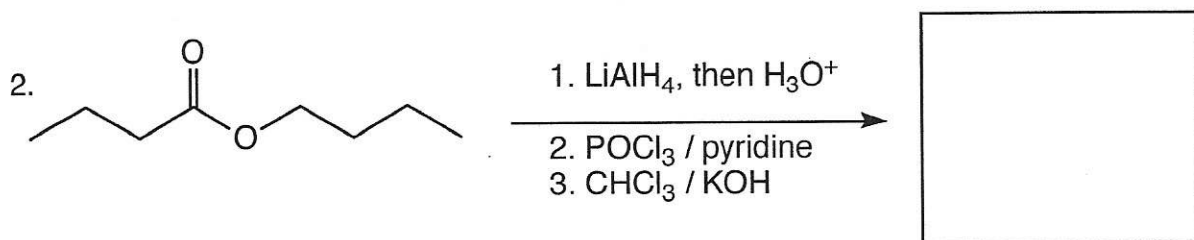
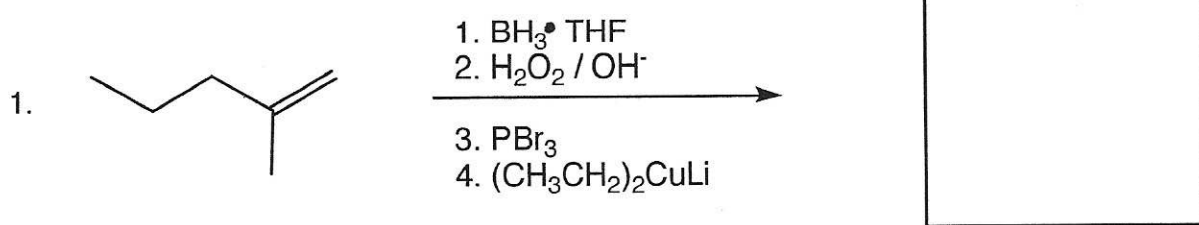
4. Although the product of an alkene and HBr/peroxide is described as a non-Markovnikov product, the reaction follows the general principle of Markovnikov's rule. Explain. (4 points)

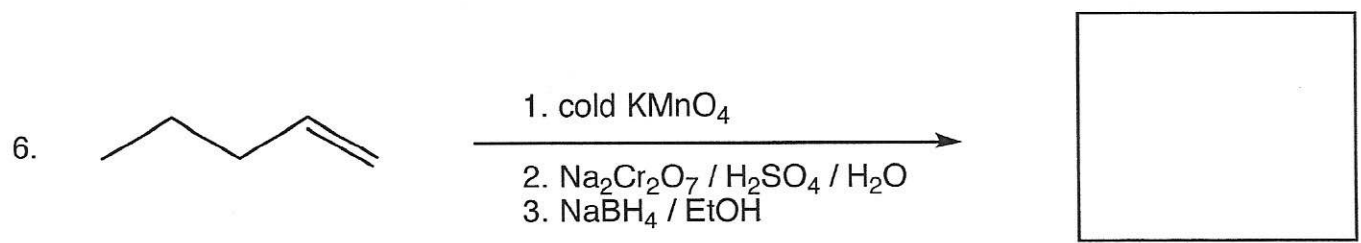
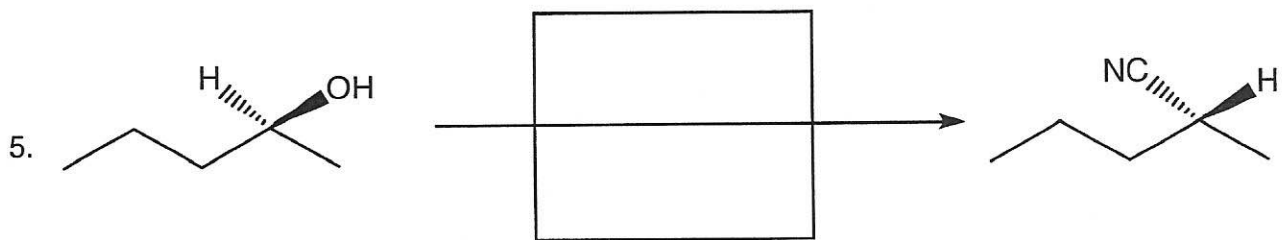
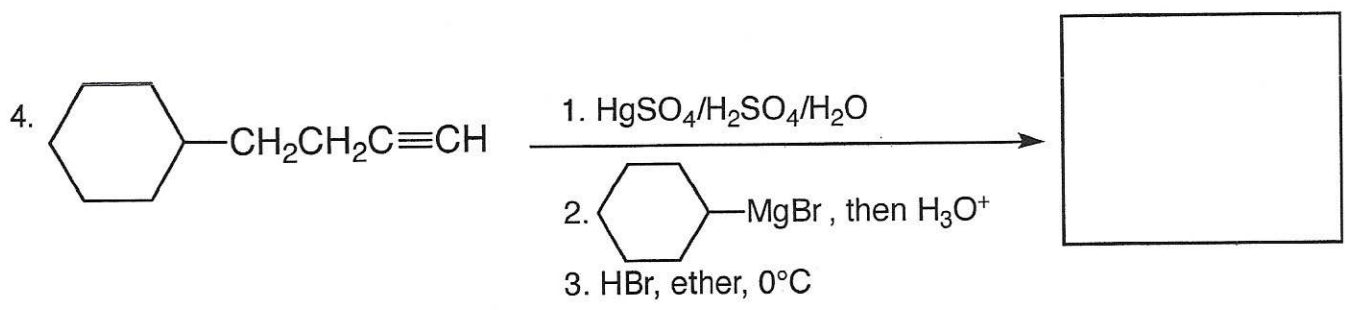
5. List three methods for converting an alcohol functional group to a good leaving group in SN2 or SN1/E1 reactions. (6 points)



C. Reactions: Total = 36 points, 6 points each

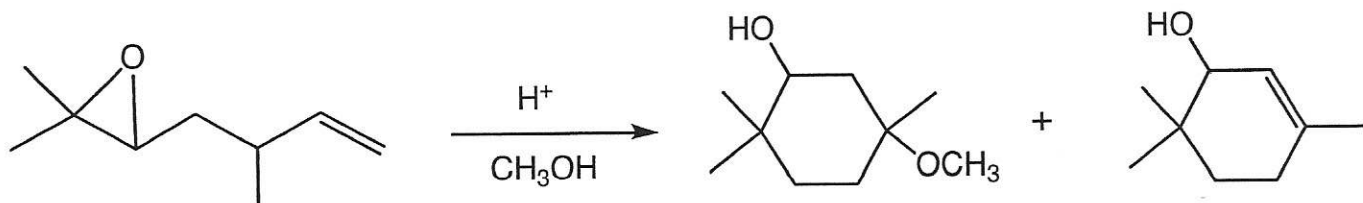
Please provide the major product or the reagents in the answer box. Indicate **stereochemistry** if applicable. **Full credit is awarded only when the product of each step in a multi-step reaction is shown below the reaction.**





D. Mechanisms: (12 points)

The reaction below produces a mixture of products. Provide a clear mechanism to explain the formation of the products shown. Use curved arrows to indicate "electron flow". Remember to show only one step at a time. **Show all intermediates and all formal charges.** **Do not show transition states.**



E. Synthesis: (12 points)

Synthesize the molecule below from **cyclohexanol** and alcohols or alkynes of **three** carbons or less, any peroxyacids, any oxidizing or reducing agents, and any other inorganic reagents. The **stereochemistry** of the final product **is** important. (Please do not include mechanisms.)

