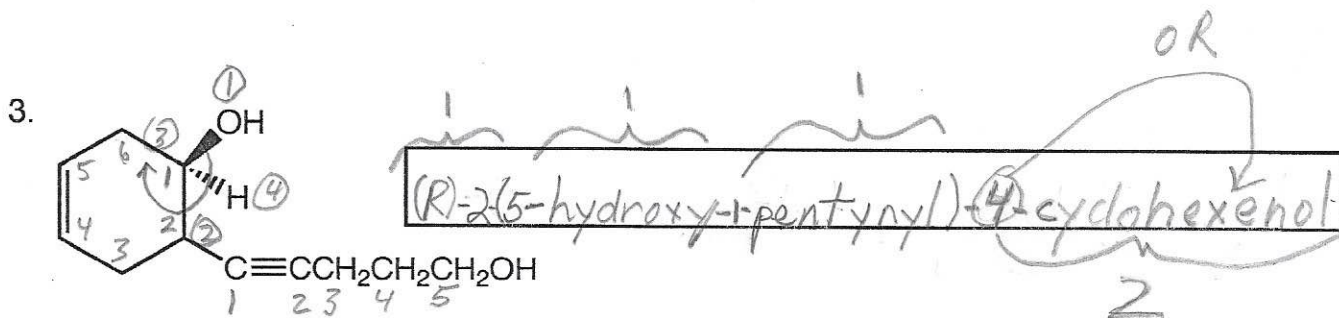
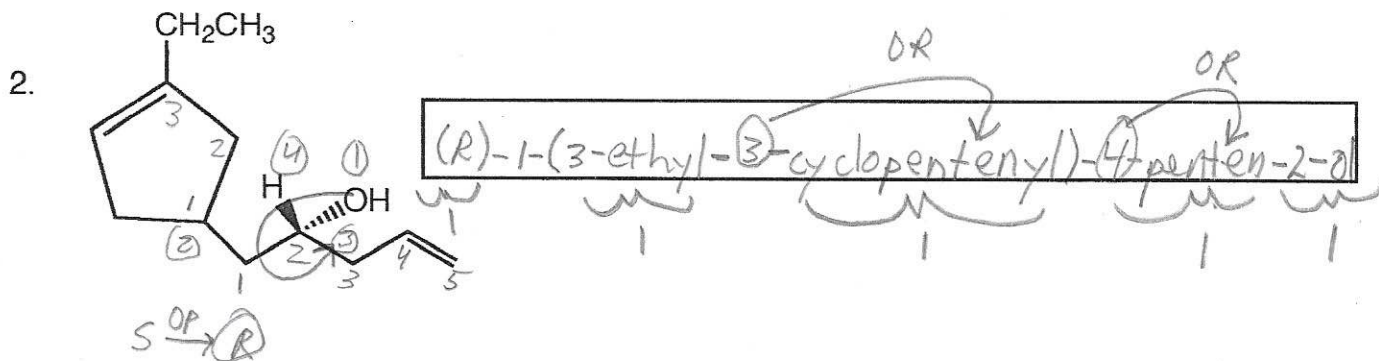
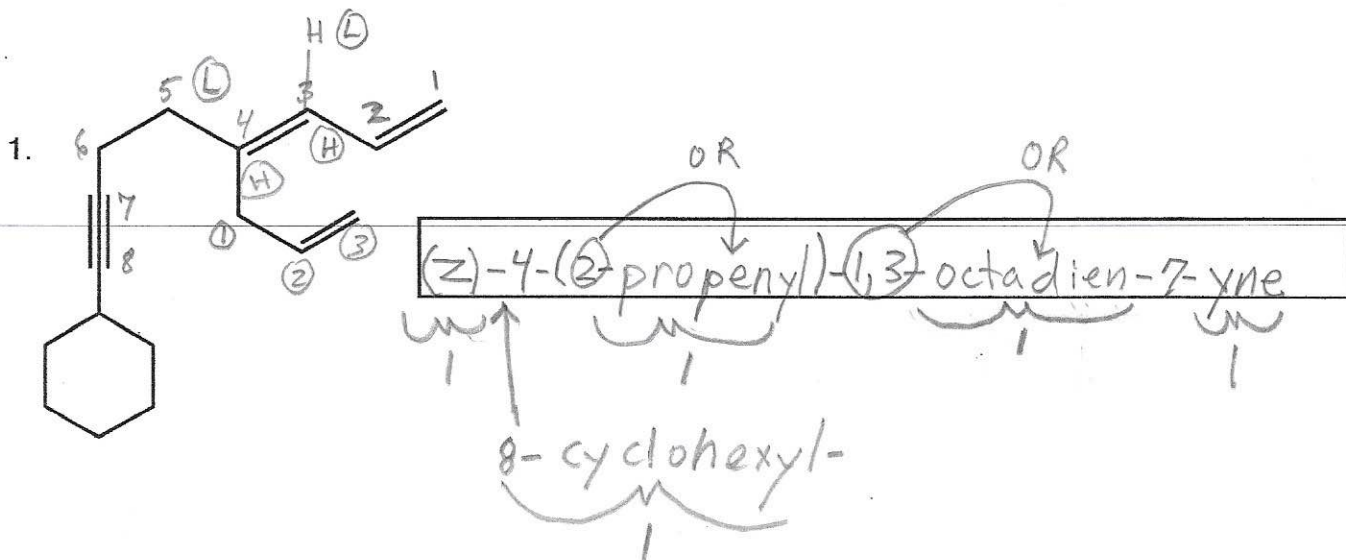


Exam 3, Fall 2024

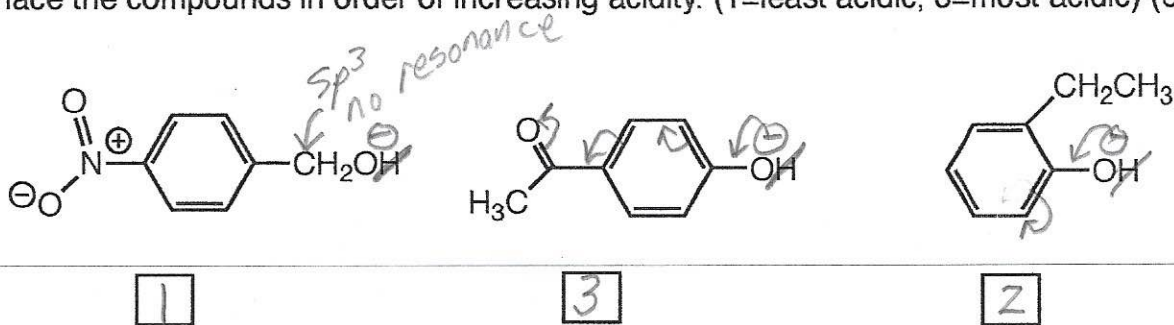
A. Nomenclature: (15 points)

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

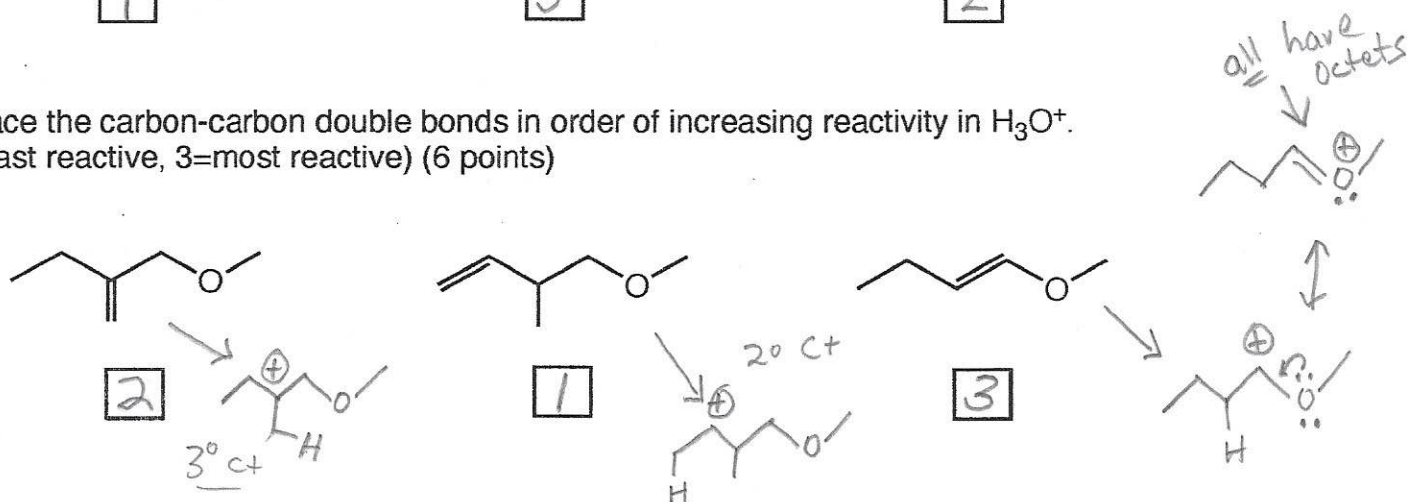


B. FACTS: Total = 24 points

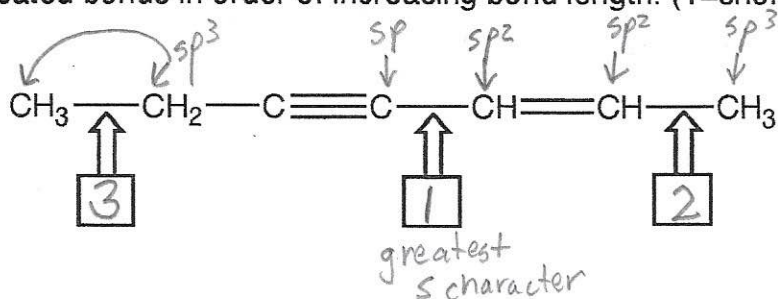
1. Place the compounds in order of increasing acidity. (1=least acidic, 3=most acidic) (6 points)



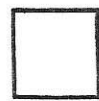
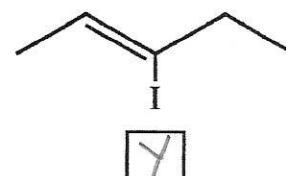
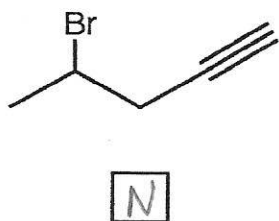
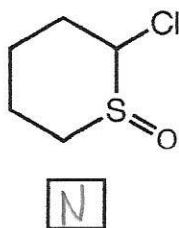
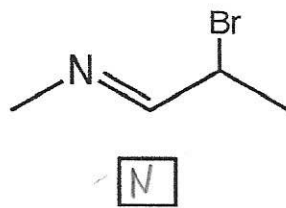
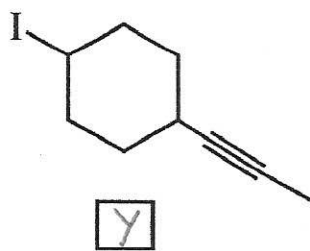
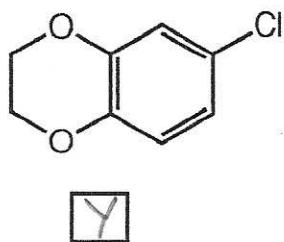
2. Place the carbon-carbon double bonds in order of increasing reactivity in H_3O^+ . (1=least reactive, 3=most reactive) (6 points)



3. Place the indicated bonds in order of increasing bond length. (1=shortest bond, 3=longest) (6 points)

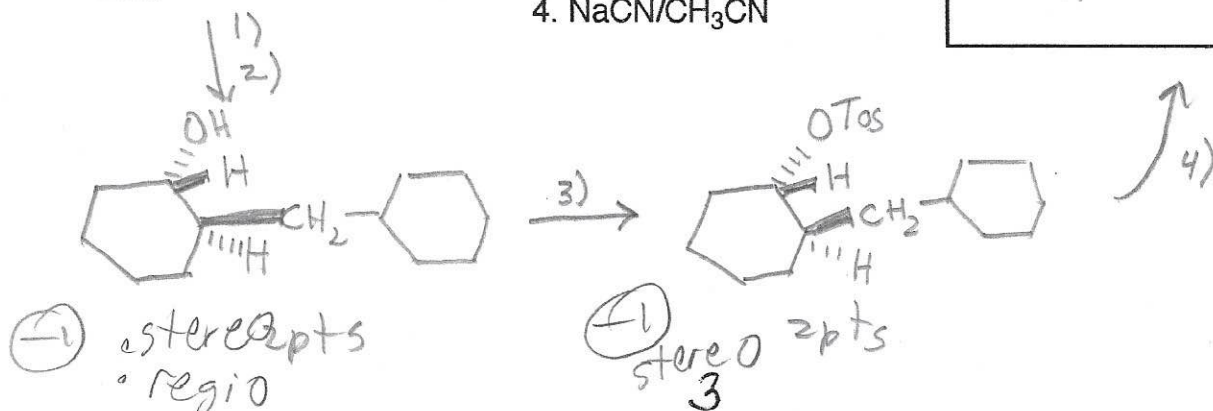
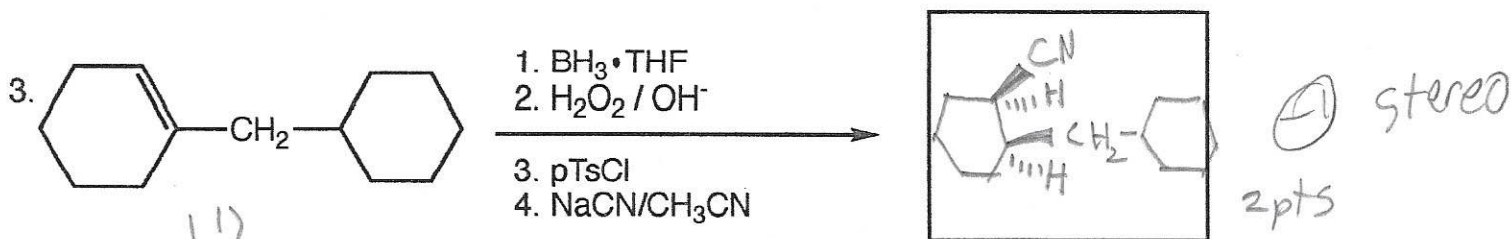
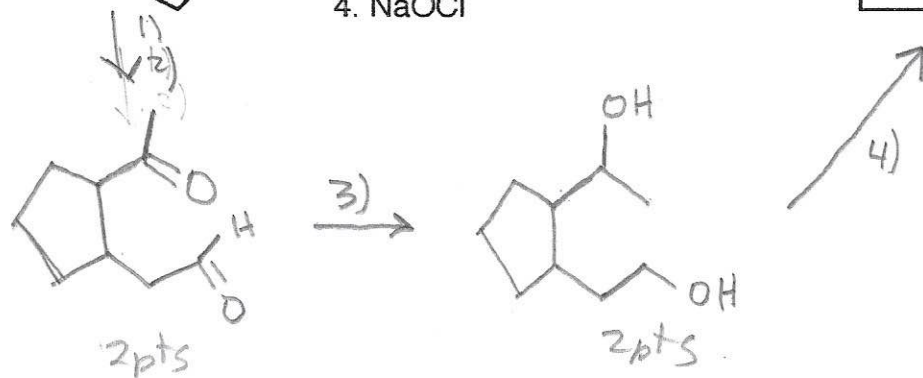
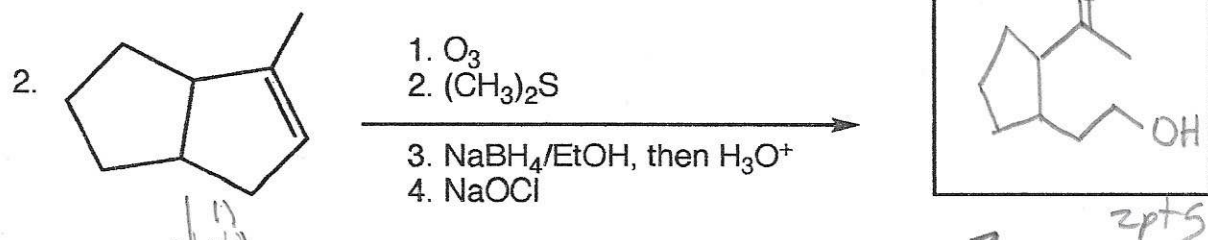
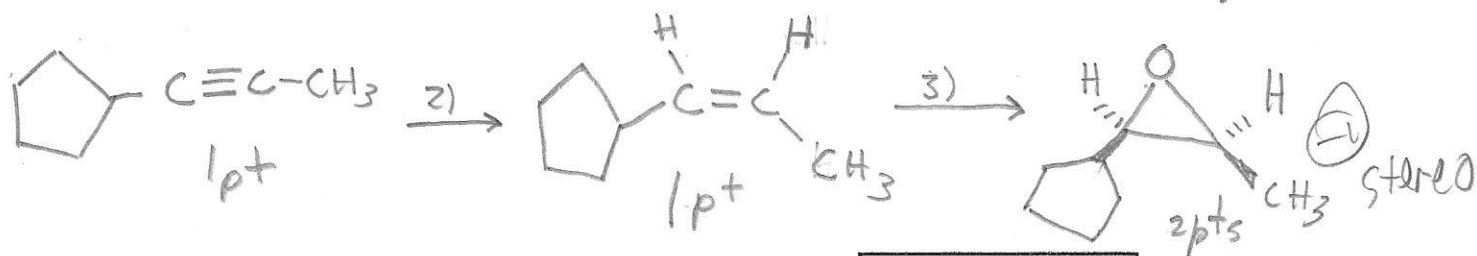
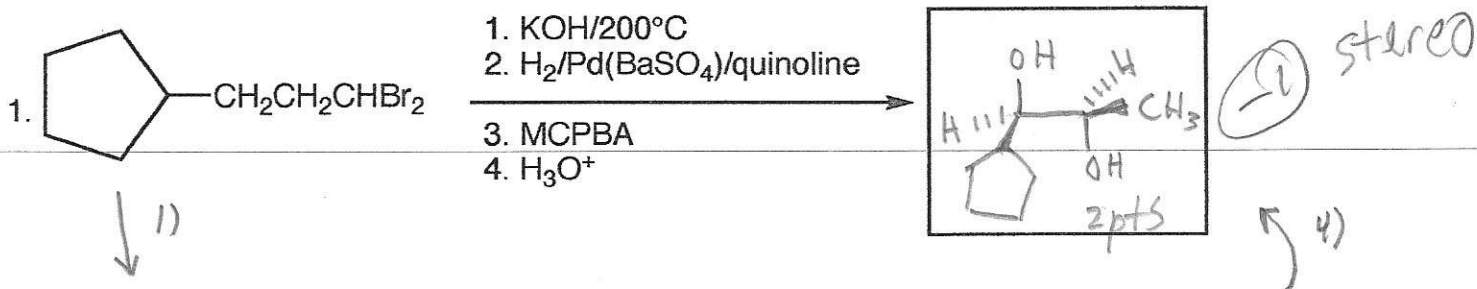


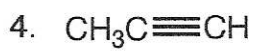
4. Place a "Y" in the box below any halide that will produce a useful Grignard reagent. Place an "N" in the box below any that will not. (6 points)



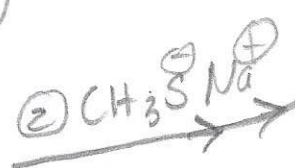
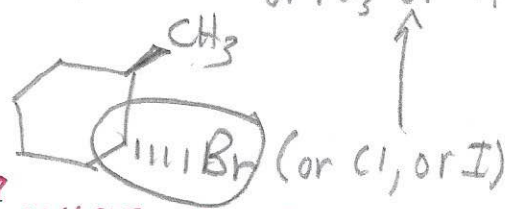
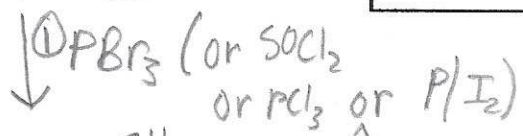
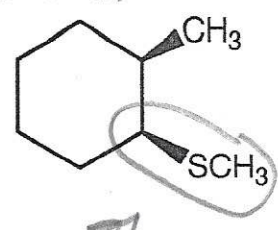
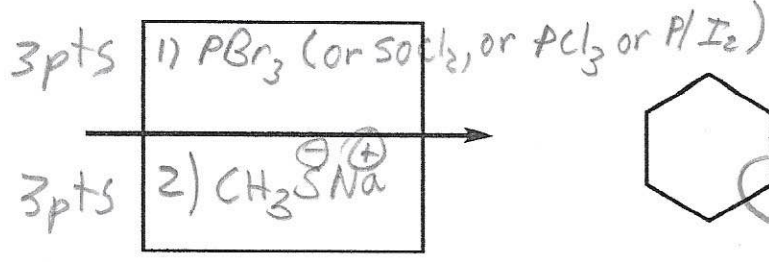
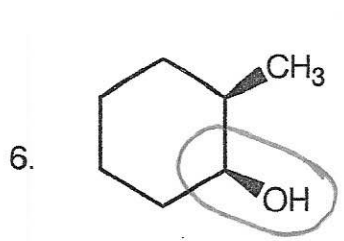
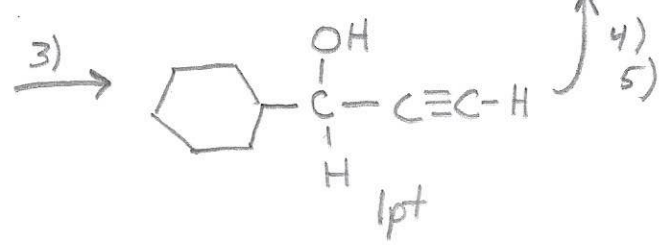
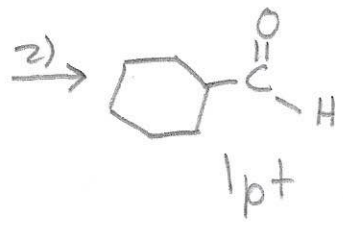
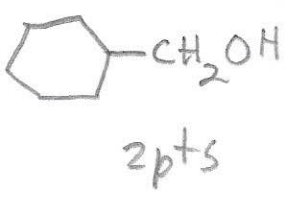
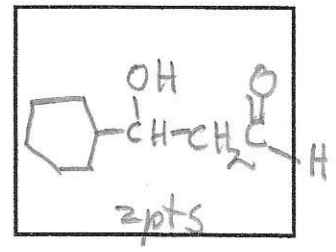
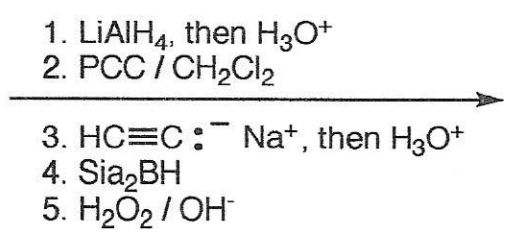
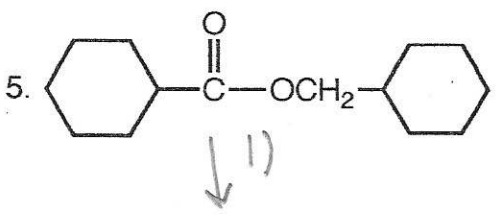
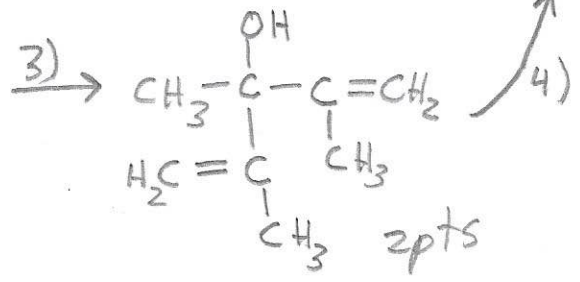
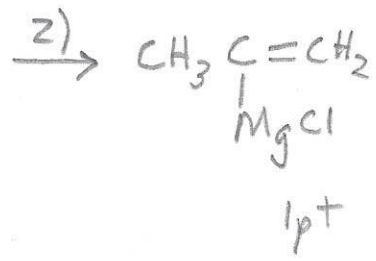
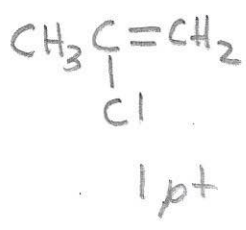
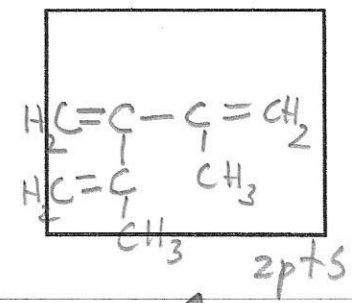
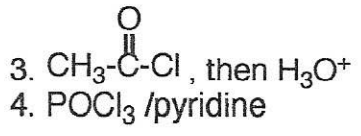
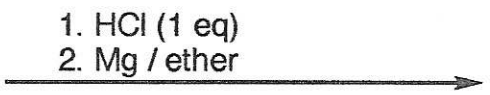
C. Reactions: Total = 36 points, 6 points each

Please provide the major product or 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.**

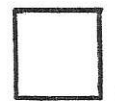




↓ 1)

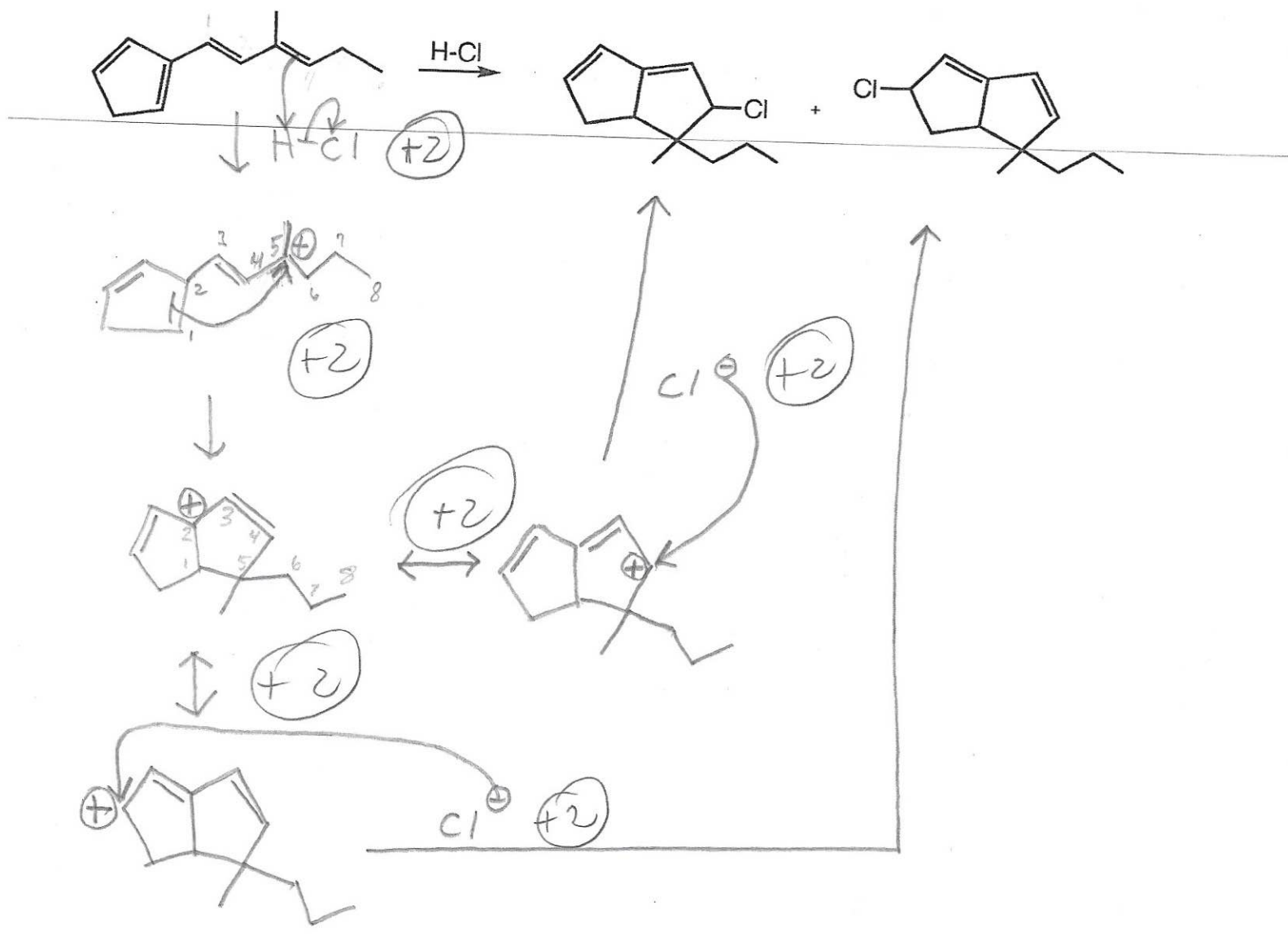


MUST show



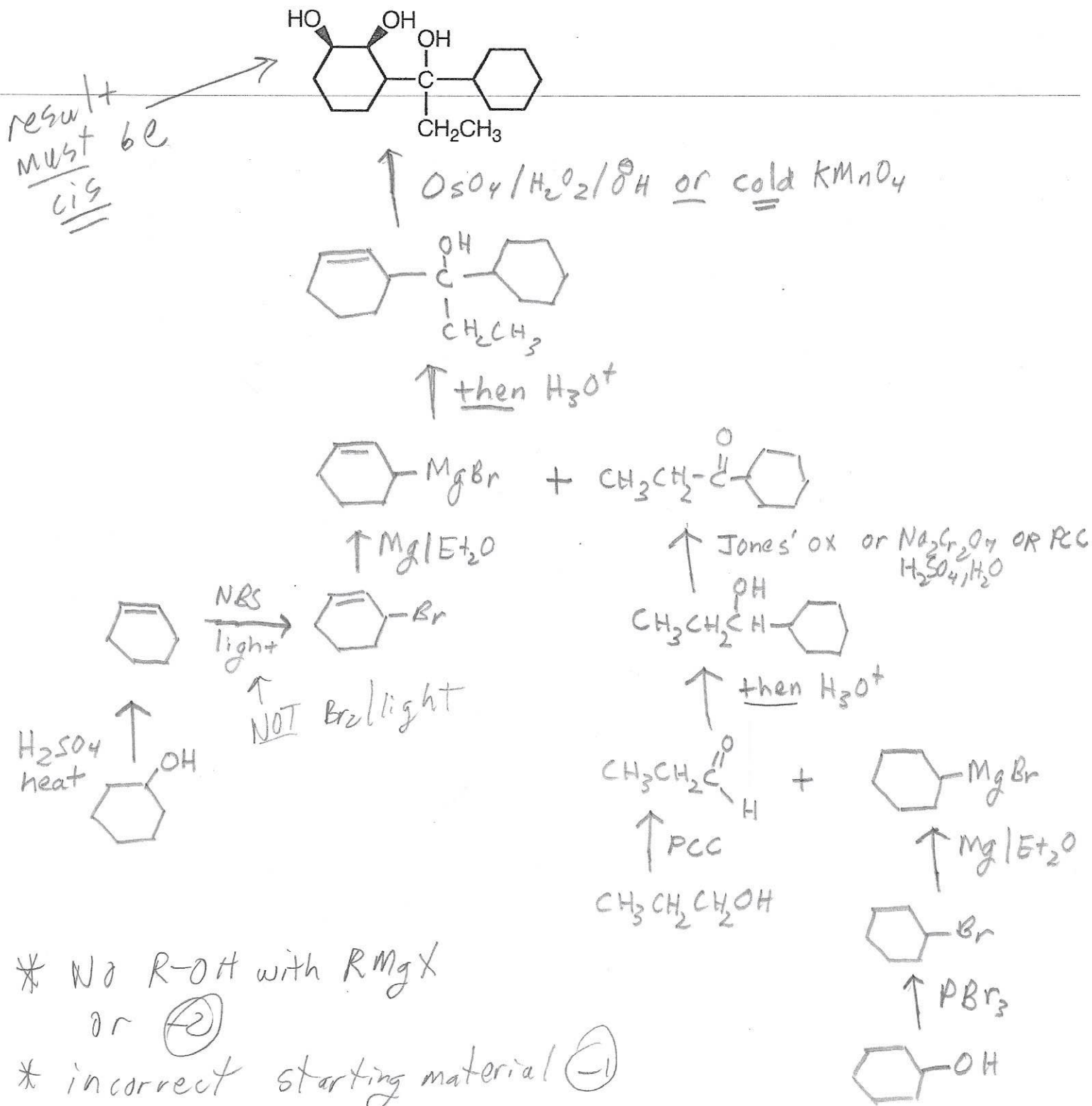
D. Mechanisms: (12 points)

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: (13 points)

Synthesize the molecule below from **cyclohexanol**, **alcohols of three carbons or less**, any oxidizing or reducing agents, and any other inorganic reagents. Your answer must provide the indicated stereochemistry. (Please do not include mechanisms.)



* No R-OH with RMgX
or (2)

* incorrect starting material (-)

* No credit for synthesizing
allowed starting material

