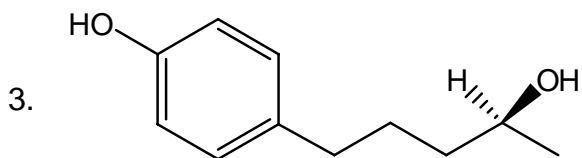
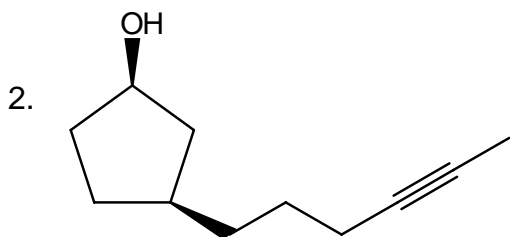
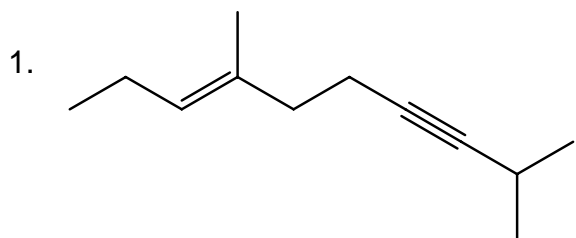




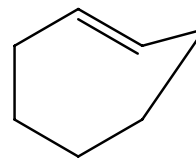
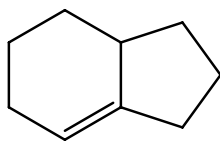
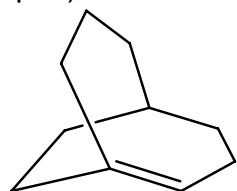
**A. Nomenclature:** Total = 12 points

Please provide a proper IUPAC name for each of the following compounds. Include stereochemistry where appropriate.

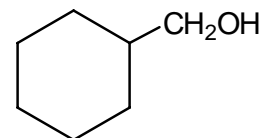
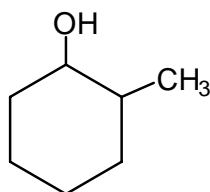
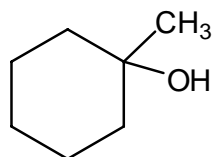


**B. Facts: Total Points = 24**

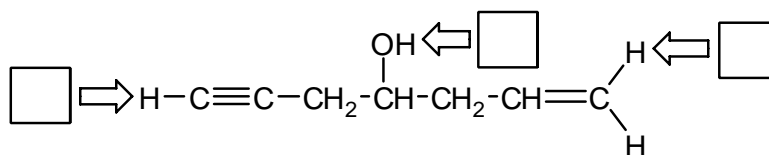
1. Label each alkene below as stable (S) or unstable (U) at room temperature. Place your answers in the boxes. (6 pts.)



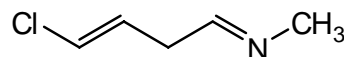
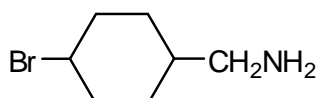
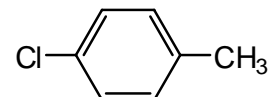
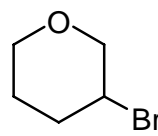
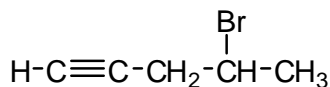
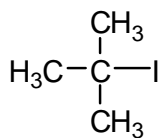
2. Rank the following alcohols in order of increasing rate of dehydration. (1=slowest, 3=fastest) (6 pts.)



3. Rank the indicated hydrogens in order of increasing acidity. (1=least acidic, 3=most acidic) (6 pts.)

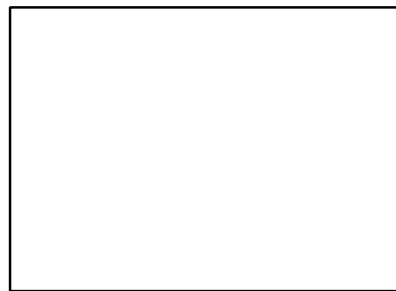
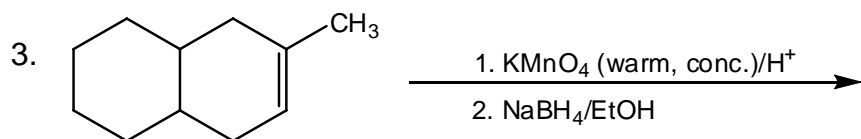
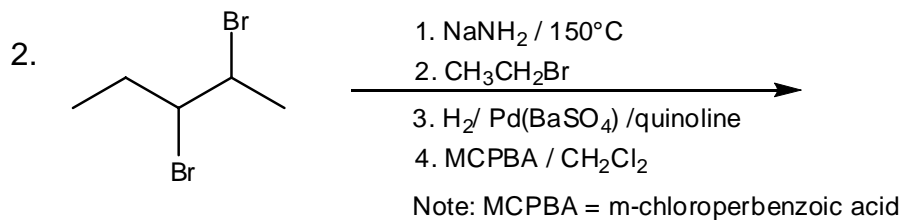
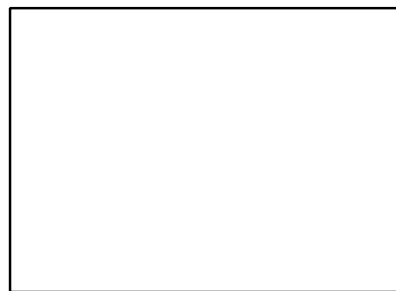
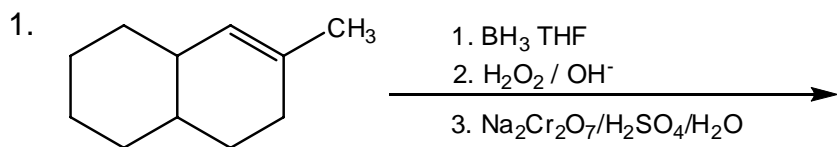


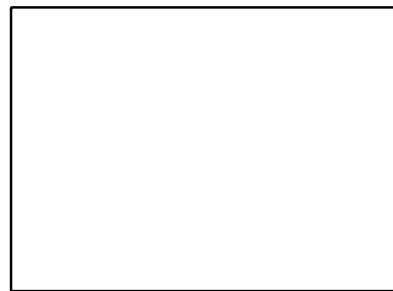
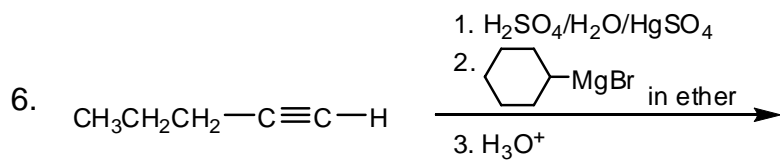
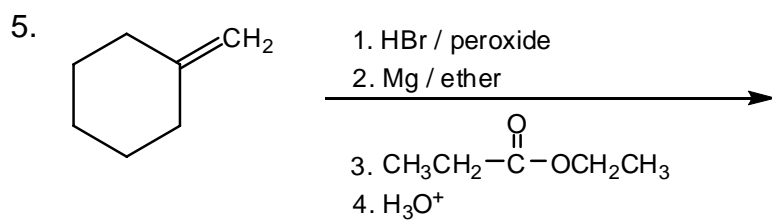
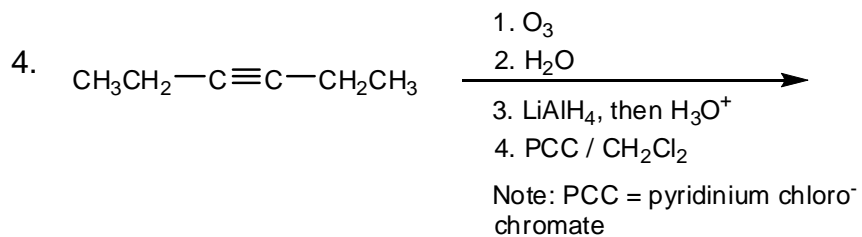
4. Place an "X" in the box below any compound that may be used to produce a useful Grignard reagent. (6 pts.)



**C. Reactions:** Total = 42 points, 7 points each

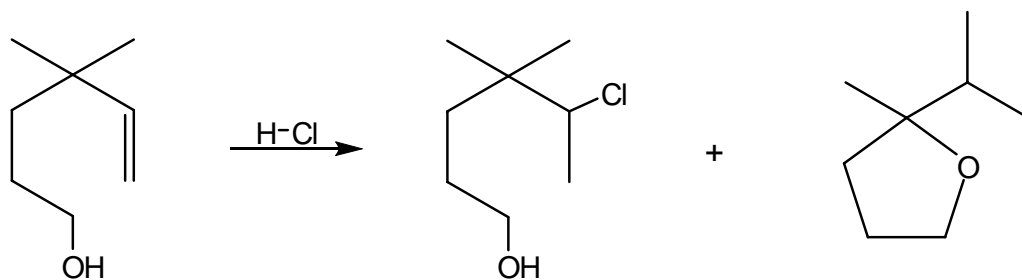
Please provide the major product in the answer box. Be sure your drawing indicates stereochemistry if applicable. Partial credit is awarded only when intermediate products are shown below the reaction.





**D. Mechanisms:** (11 points)

The reaction presented below produces several products. Provide clear mechanisms to explain the formation of the two 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:** (11 points)

Synthesize the molecule below using any of the following reagents: cyclohexene, and alkanes, alkenes, or alkynes of no more than **two carbons**, any inorganic reagents, and any oxidizing or reducing agents.

