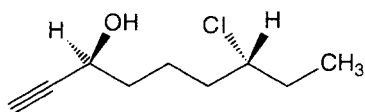


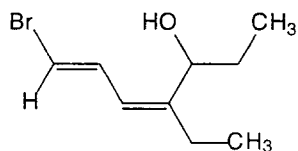
A. NOMENCLATURE: (12 points, 4 pts. each)

Give an acceptable IUPAC name for each of the following compounds. Be sure to indicate the stereochemistry where appropriate.

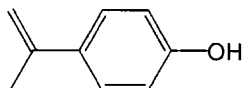
a.



b.

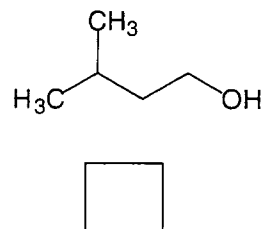
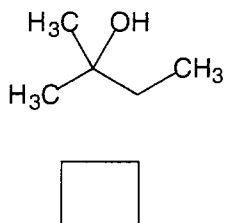
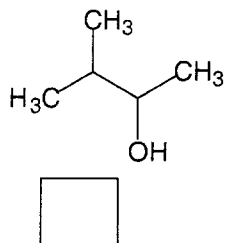


c.

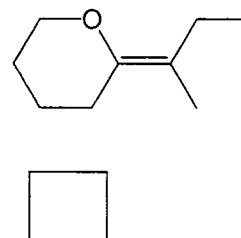
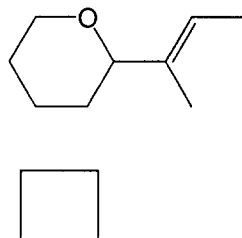
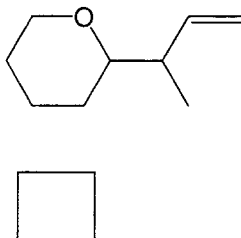


B. FACTS (Total 26 points)

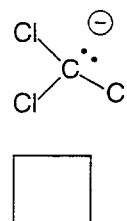
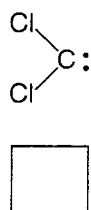
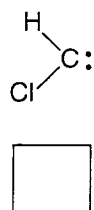
1. Place the following alcohols in order of their increasing reactivity in acid-catalyzed dehydration reactions (1 = least reactive, 3 = most reactive). (3 pts)



2. Place the following alkenes in order of their increasing reactivity in reaction with HCl (1 = least reactive, 3 = most reactive). (3 pts)



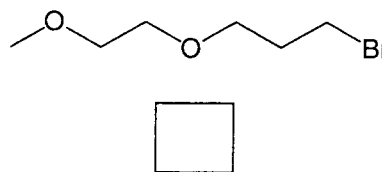
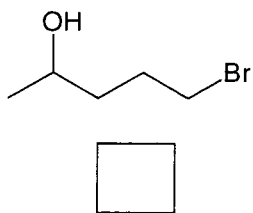
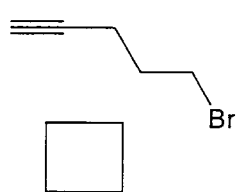
3. Check the box(es) below the reactive intermediate(s) that are generated during the reaction of CHCl_3 with KOH . (3 pts)



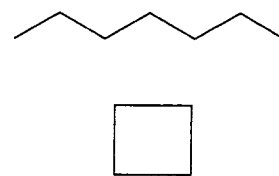
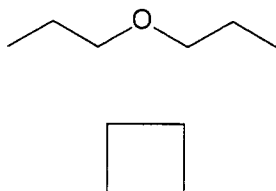
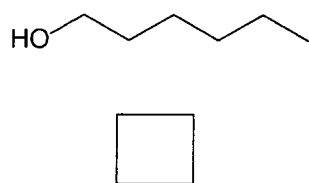
2



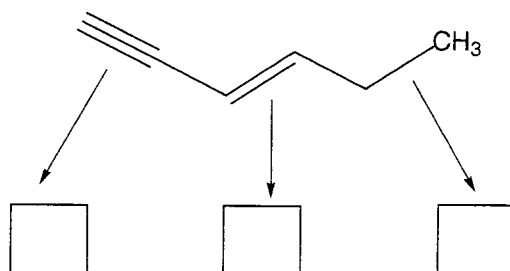
4. Check the box(es) below the reagent(s) that can be used to produce Grignard reagent. (3 pts)



5. Place the following compounds in order of their increasing boiling points (1 = lowest boiling point, 3 = highest boiling point). (3 pts)



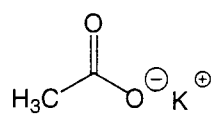
6. Place the following indicated bonds in order of their increasing bond length (1 = shortest, 4 = longest). (3 pts)

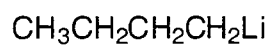


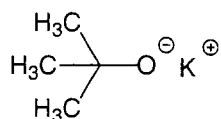
3



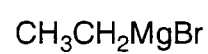
6. Check the box(es) below the reagent(s) that can be used to convert acetylene into acetylide anion. (5 pts)



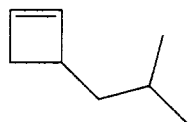


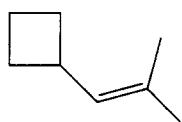


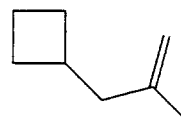




7. Place the following compounds in order of their increasing stability (1 = least stable, 3 = most stable). (3 pts)



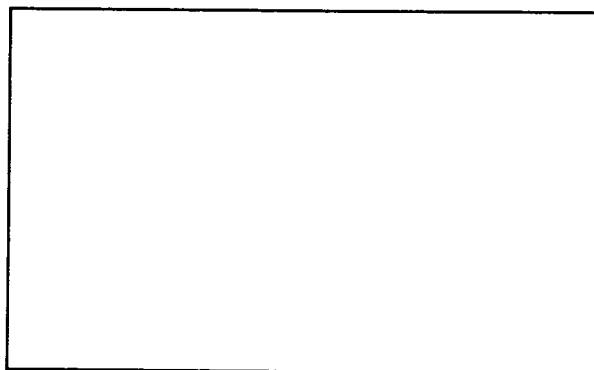
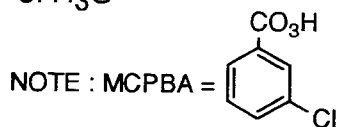
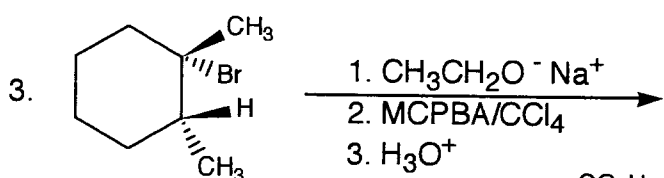
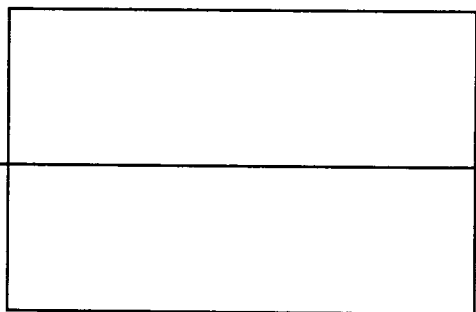
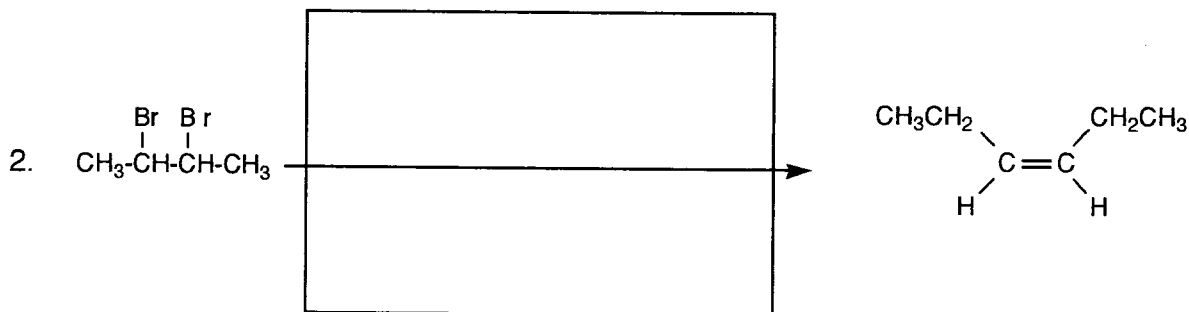
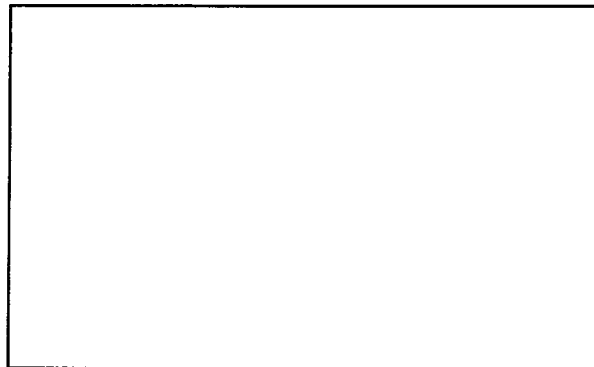
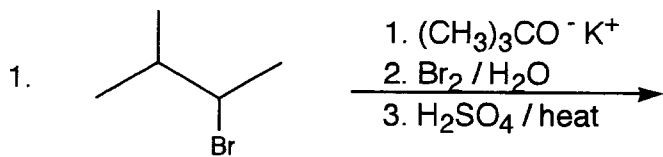


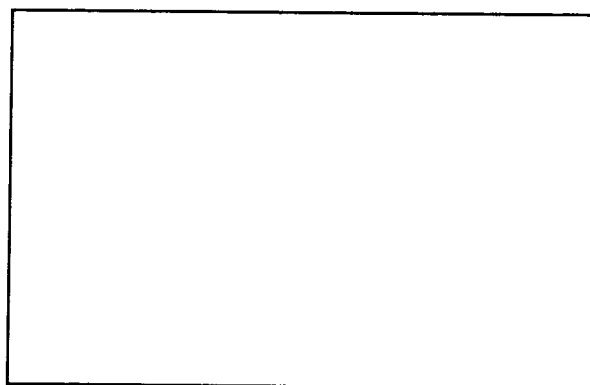
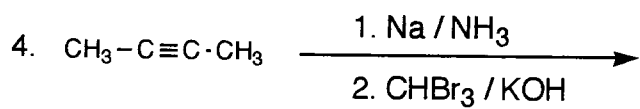




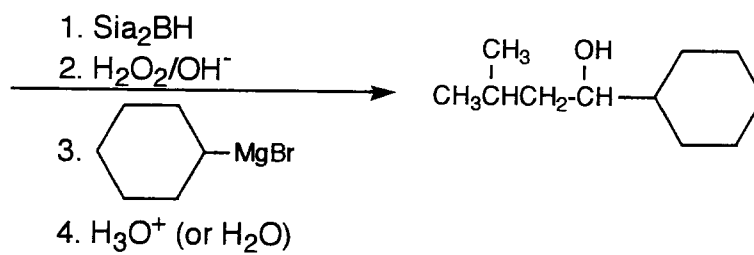
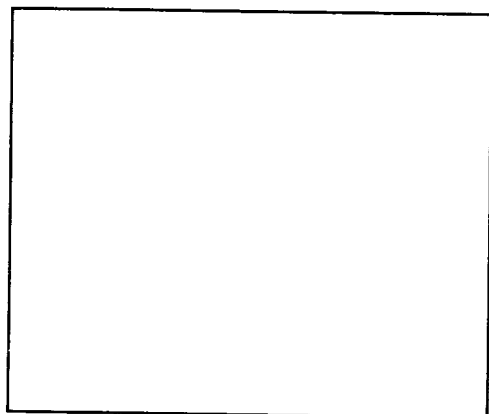
C. REACTIONS: (42 points, 7 pts. each)

Please give the final **major** product, the starting material, or the reactants for each of the following reactions in the box provided. Be sure your answers indicate **stereochemistry** where appropriate. Intermediate products may be placed below the reaction for partial credit but not in the answer box.

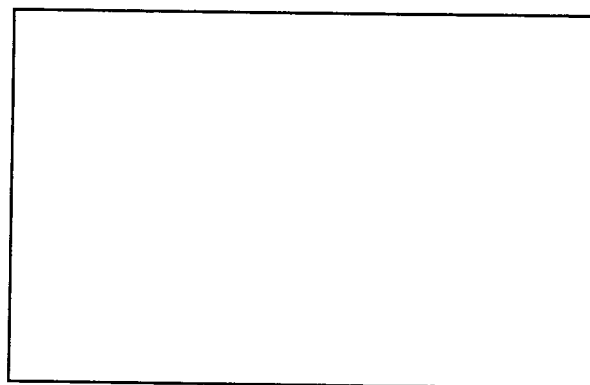
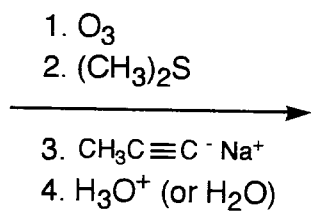
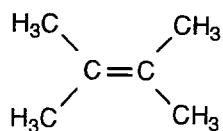




5.

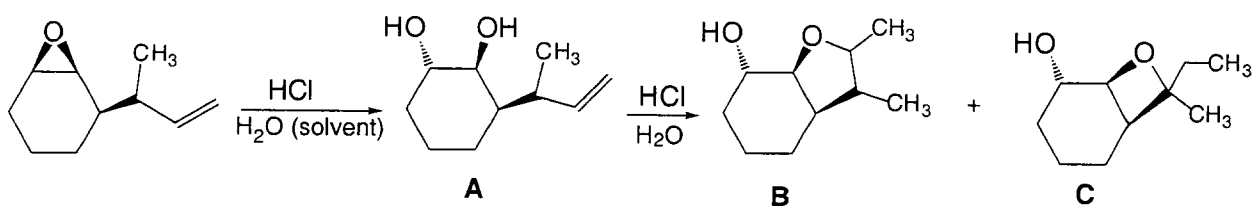


6.



D. MECHANISM: (10 points)

The following reaction yields a mixture of products. Provide a clear mechanism for the formation of **A**, **B** and **C**. Use curved arrow notation to indicate “electron flow”, and show all intermediates and formal charges.



E. Synthesis: 10 Points

From cyclohexane, any alkanes, alkenes or alkynes of **two** carbons or less, and any inorganic reagents, synthesize the compound below.

