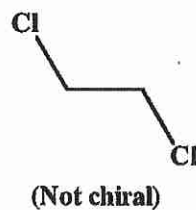
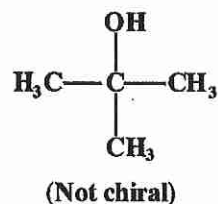
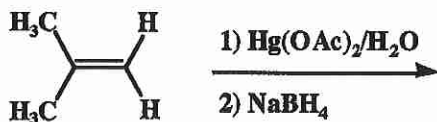


14. (3 or 5 pts each) The following reactions all involve chemistry of alkenes. Fill in the box with the product(s) that are missing from the chemical reaction equations. **Draw only the predominant regioisomer product or products (i.e. Markovnikov)** and please remember that **you must draw the structures of all the product stereoisomers using wedges and dashes to indicate stereochemistry.** When a racemic mixture is formed, you must write "racemic" under both structures **EVEN THOUGH YOU DREW BOTH STRUCTURES.**

A.

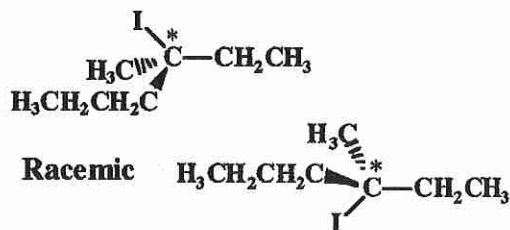
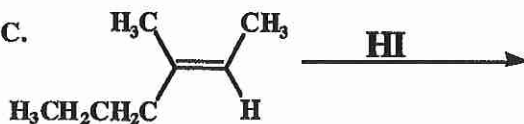


B.



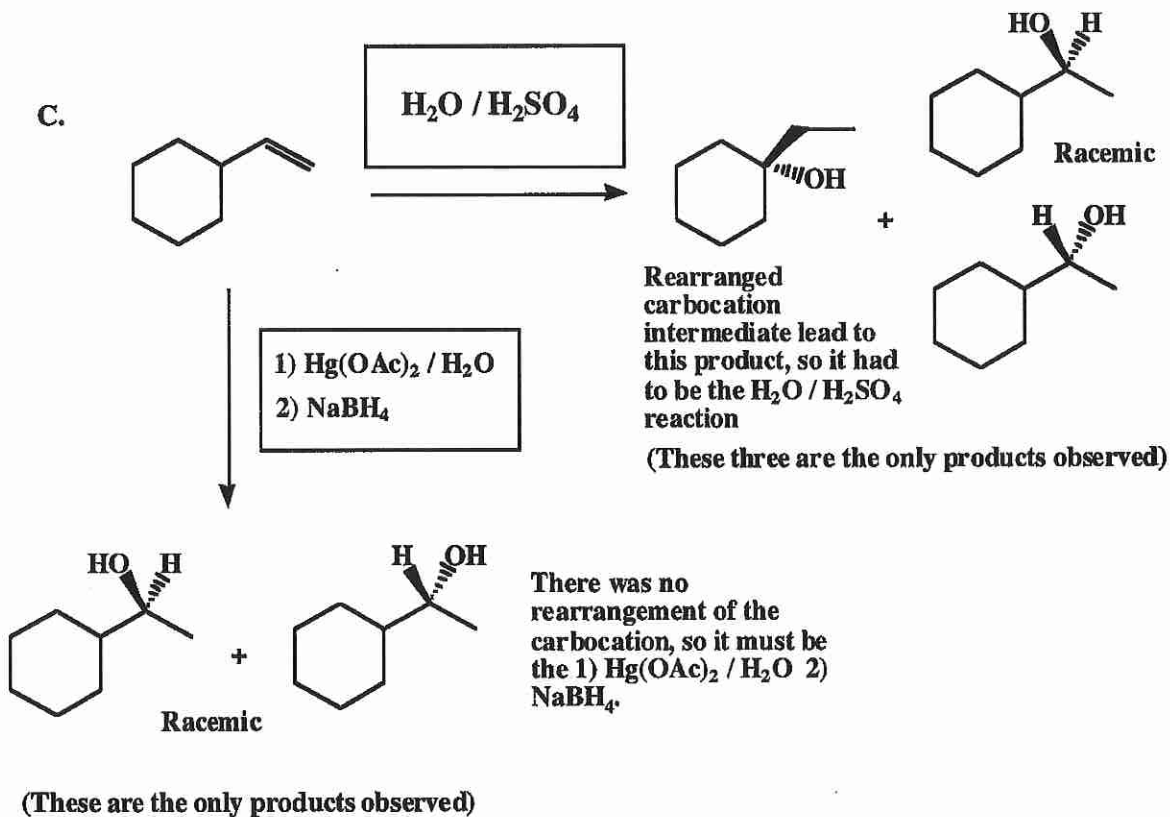
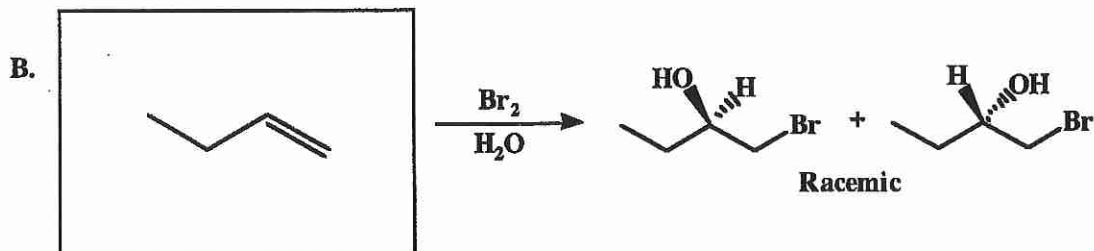
(Markovnikov regiochemistry)

C.



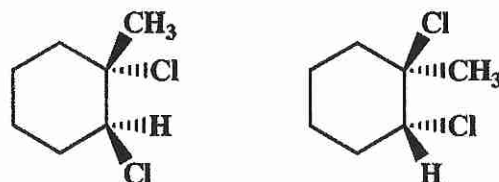
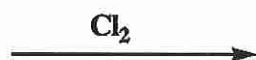
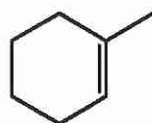
(Markovnikov regiochemistry)

16. (cont.) (3 each) We are changing the format a little. For the following, we give you the predominant product or products and you need to provide either the reagents or the starting material in the box. Take your time and think about these. It is actually an important skill to be able to think about chemical reactions backwards from the product.



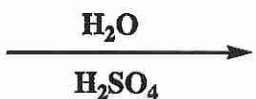
14. (cont.) (3-5 pts each) The following reactions all involve chemistry of alkenes. Fill in the box with the product(s) that are missing from the chemical reaction equations. Draw only the predominant regioisomer product or products (i.e. Markovnikov or non-Markovnikov products) and please remember that you must draw the structures of all the product stereoisomers using wedges and dashes to indicate stereochemistry. When a racemic mixture is formed, you must write "racemic" under all of the structures EVEN THOUGH YOU DREW ALL OF THE STRUCTURES.

F.



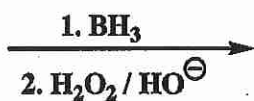
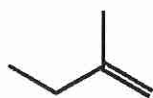
Racemic Mixture

G.



Racemic Mixture

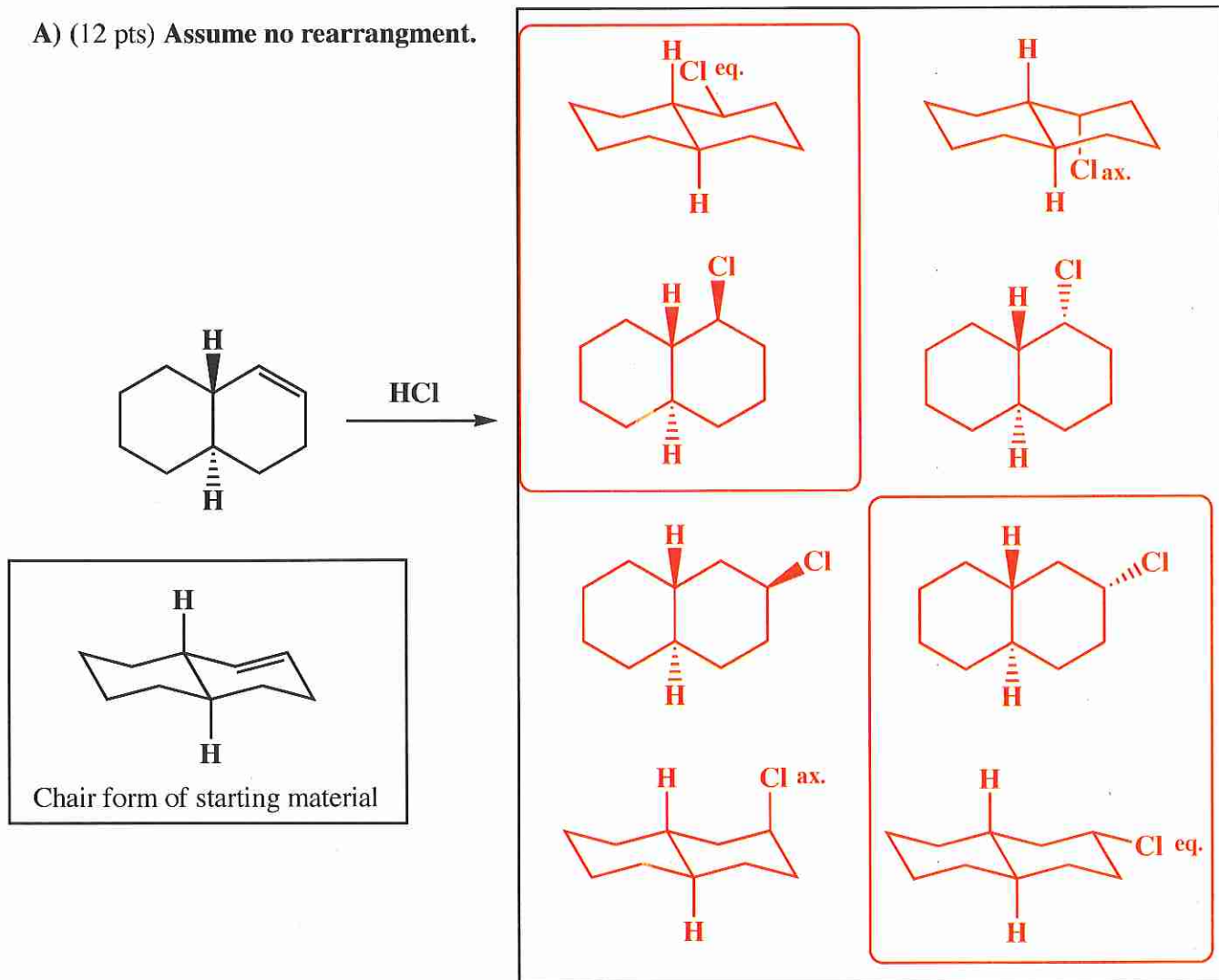
H.



Racemic Mixture

14. For the following reaction, draw all of the expected products including the different regioisomers and stereoisomers. As an aid in understanding the stereochemistry of the starting material, we have drawn the chair form just below. Like before, write **racemic** if a racemic mixture is produced.

A) (12 pts) Assume no rearrangement.



B) (6 pts) For the above mixture of products you drew for part A), would your product mixture rotate the plane of plane polarized light? Explain your answer in one or two sentences.

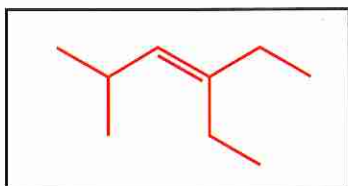
YES

The product mixture rotates the plane of plane polarized light because it is not a racemic mixture. Since the starting material is a single stereoisomer and the chiral centers are maintained during the reaction, the products are not enantiomers of each other, they are a diastereomers, so their optical rotations will not cancel.

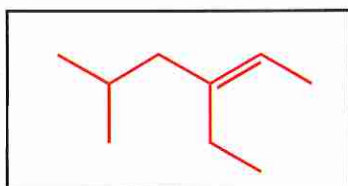
C) (6 pts) For the above products from part A), circle the two that will form the most stable chair conformations.

17. (6 pts each) The following problems are a new format. We turn the tables and give you the product. In the space provided show the starting material required to make that product using the given reagents. When more than one starting material would work, you must draw both.

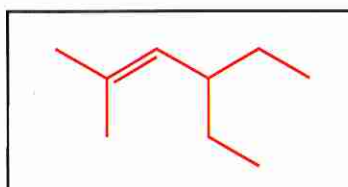
A.



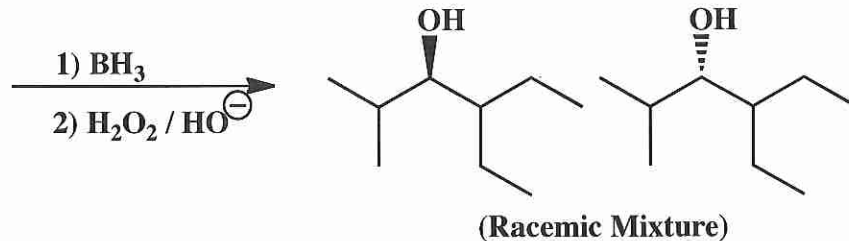
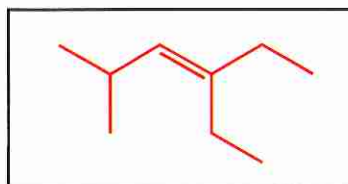
or



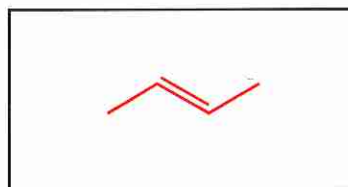
B.



or



C.



or

