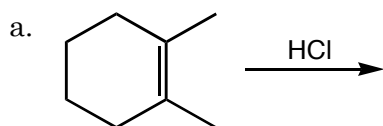


1. (8 pts. each) Predict the major product(s) for the following reactions. Remember to indicate the stereochemical outcome of the reaction and to use wedge (▲) and dash (◻) bonds where appropriate.

1. _____



2. _____

3. _____

4. _____

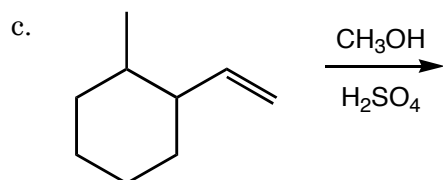
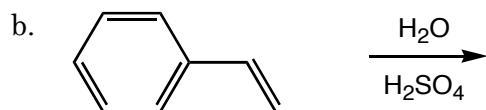
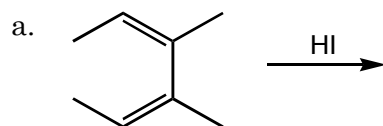


5. _____

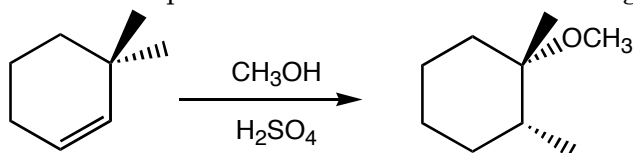
6. _____

7. _____

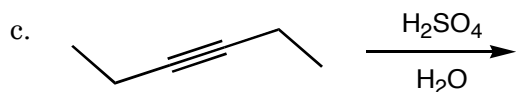
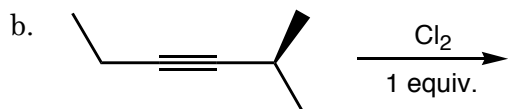
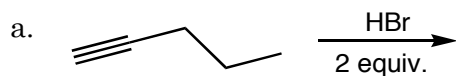
2. (8 pts. each) Predict the major product(s) for the following reactions. Ignore stereochemistry.



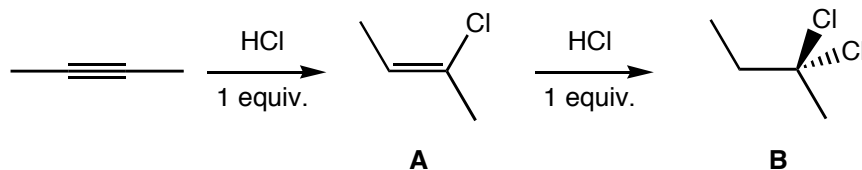
3. (10 pts.) Draw a mechanism that explains the outcome of the following reaction.



4. (8 pts. each) Predict the major product(s) for the following reactions. Remember to indicate the stereochemical outcome of the reaction and to use wedge (▴) and dash (▾) bonds where appropriate.



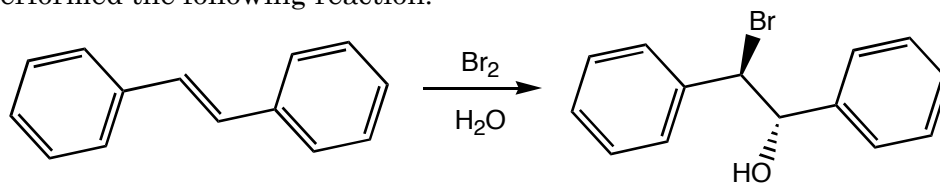
5. When alkynes react with excess HCl, a geminal dihalide is produced; that is, both chlorine atoms are attached to the same carbon atom. The reaction pathway, without intermediates, is drawn below.



a. (4 pts) Draw the intermediate for the reaction that converts A to B.

b. (8 pts.) Explain why the product has two chlorine atoms on one carbon atom instead of having a chlorine on C₂ and C₃. Hint: compare the intermediates that lead to each product.

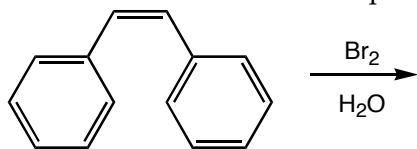
6. In lab, we performed the following reaction.



a. (4 pts.) Draw the intermediate of the reaction.

b. (8 pts.) Explain the stereochemical outcome of the reaction.

c. (4 pts) Would the following reaction produce a molecule that was the same as, a diastereomer of, or an enantiomer of the product drawn above? Explain your response.



7. (10 pts) Would the following carbocation be resonance stabilized? Explain your response.

