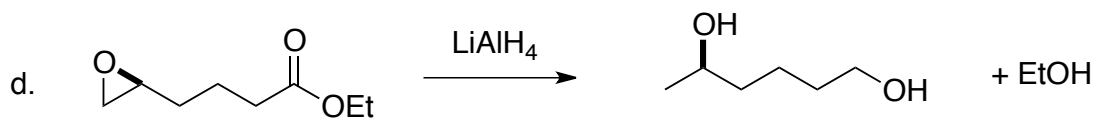
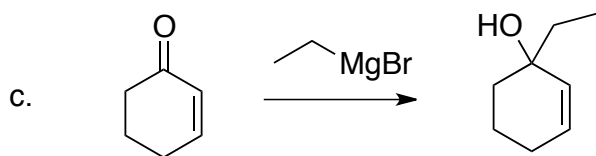
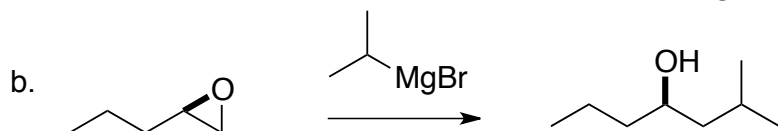
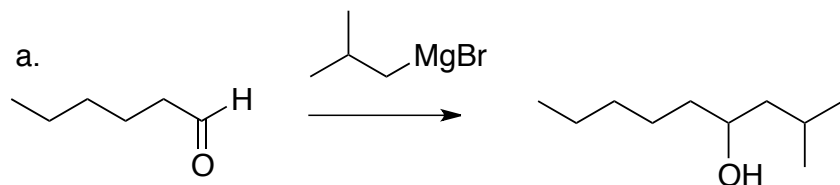
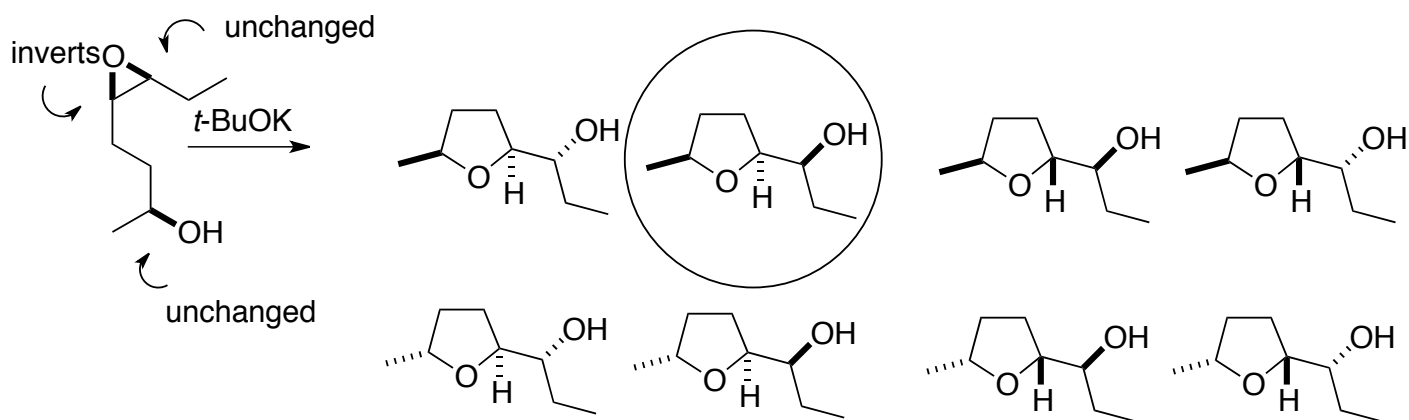


This is an open-book, open notes exam. No electronic devices are allowed.

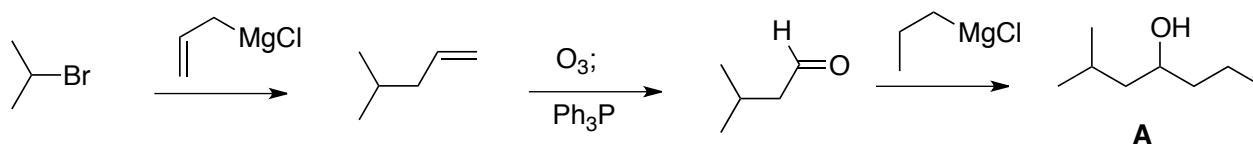
1. (5 points each) These reactions would not proceed as indicated. Please draw the correct product of each reaction. Stereochemistry is important!



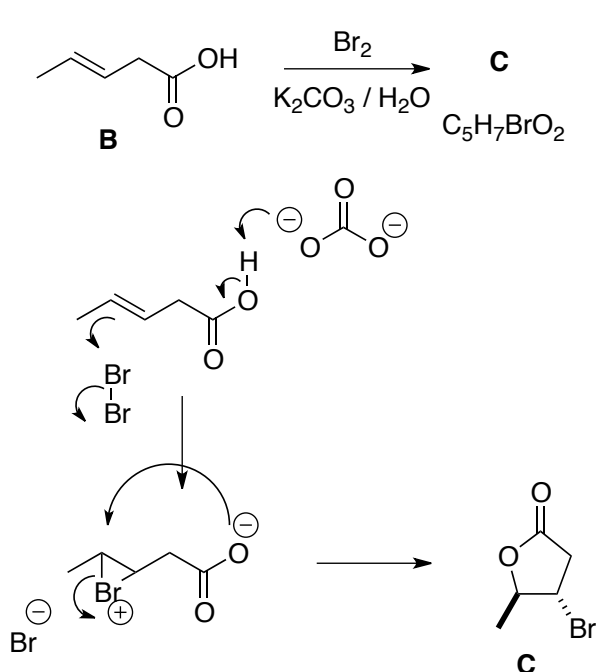
2. (20 points) Which product would be formed, and why?



3. (20 points) Outline a synthesis of **A**. You may use any piece that contributes three or fewer carbons to the final product.



4. (20 points) Deduce the structure of **C**, and draw an arrow-pushing mechanism for the conversion of **B** to **C**.



5. (20 points) Draw an arrow-pushing mechanism for the conversion of **D** to **E**.

