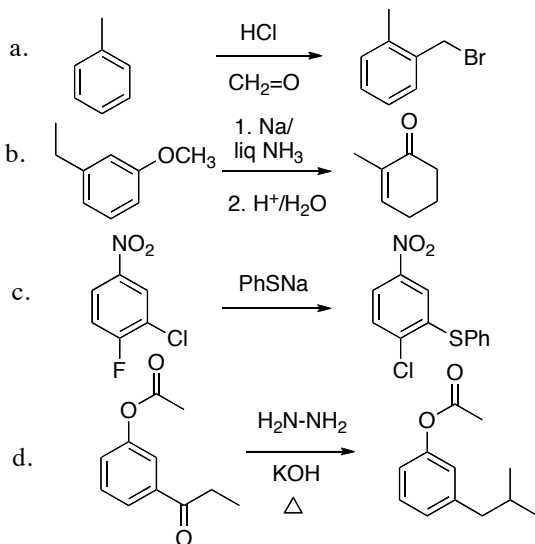
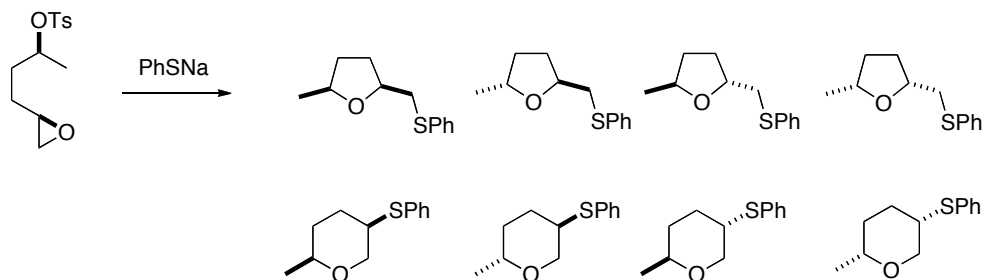


This is an open-book, open notes exam.

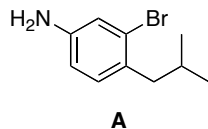
1. (20 points) The reactions shown would not proceed as indicated. Draw the actual products. You do not need to draw mechanisms.



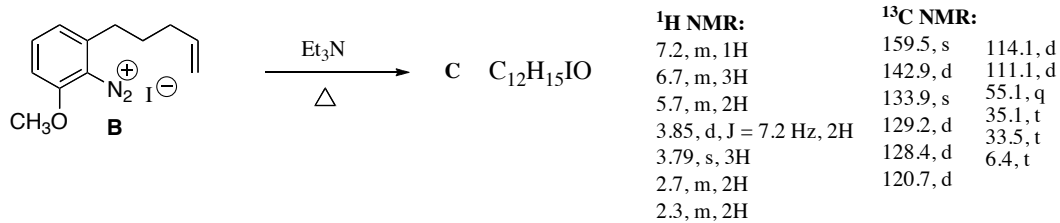
2. (20 points) Circle the expected product. Explain your answer in detail. Stereochemistry is important!



3. (20 points) Outline a synthesis of **A** using only starting materials that contribute three or fewer carbons to the final product, and a monosubstituted benzene that contributes seven or fewer carbons to the final product.



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



5. (20 points) Draw the letters on the product where they belong. Make a list of bonds formed and bonds broken, and draw the mechanism in detail.

