

1. (6 pts. each) Predict the organic products for the following reactions. Remember to indicate the stereochemistry of the products where appropriate.

1. _____

2. _____

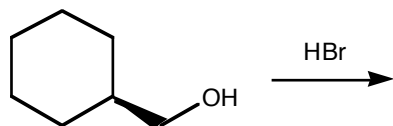
3. _____

4. _____

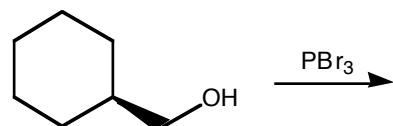
5. _____

6. _____

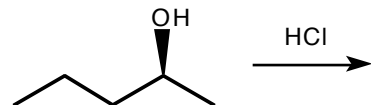
a.



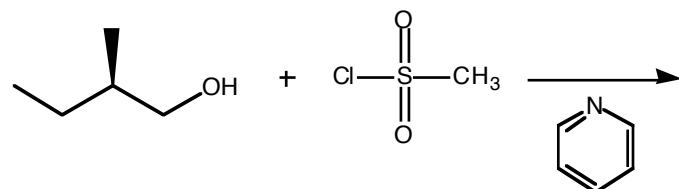
b.



c.

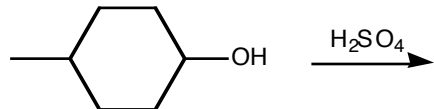


d.

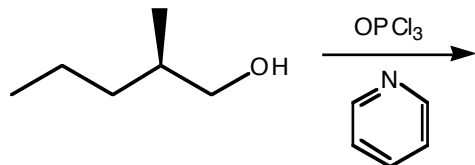


2. (6 pts. each) Predict the organic products for the following reactions. Remember to indicate the stereochemistry of the products where appropriate.

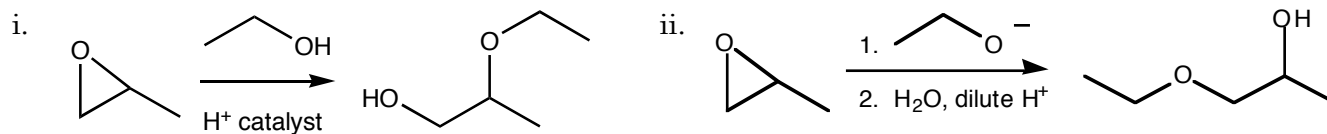
a.



b.



3. (8 pts. each) Propylene oxide reacts with ethanol and ethoxide as indicated in reactions i and ii respectively.

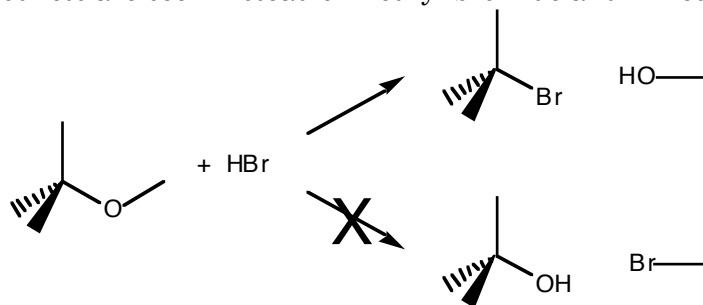


Explain the regioselectivity of the two reactions. Remember, reaction i. is believed to occur via an acid catalyzed mechanism.

4. (8 pts. each) The reaction of 1 equivalent of HBr with 2-methoxy-2-methylpropane produces methanol and 2-bromo-2-methylpropane.

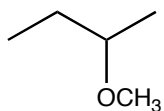
a. Explain the mechanism of the reaction (the role of the H^+ and the role of the Br^-).

b. Explain why these products are seen instead of methyl bromide and 2-methyl-2-propanol.

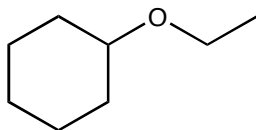


5. (8 pts. each) From an alkoxide and an alkyl halide, make the following ethers.

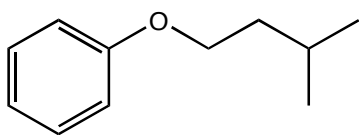
a.



b.

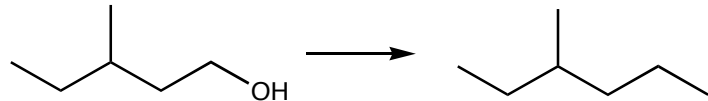


c.



6. (8 pts. ea.) Synthesize the following compounds from the indicated starting materials and any other reagents needed.

a.



b.

