

CHEM 3332 Honors

Homework for Epoxides, Ethers, and Thioethers

1. Draw a Lewis dot diagram for the following.

A. diethyl ether

B. isopropyl pentyl ether

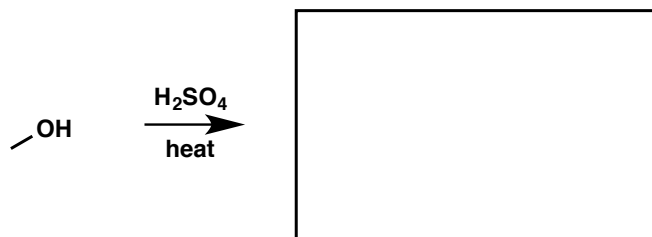
C. methyl vinyl ether

D. 2-ethoxypentane

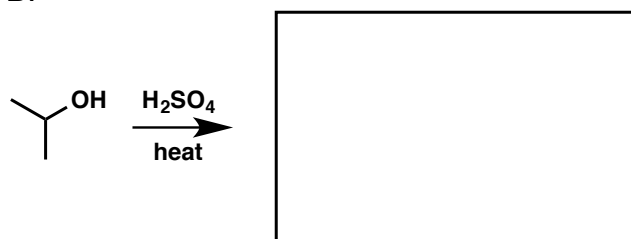
E. methoxycyclohexane

2. Predict the major product for these reactions. Don't forget to show the stereochemistry in the products if the reaction is stereoselective.

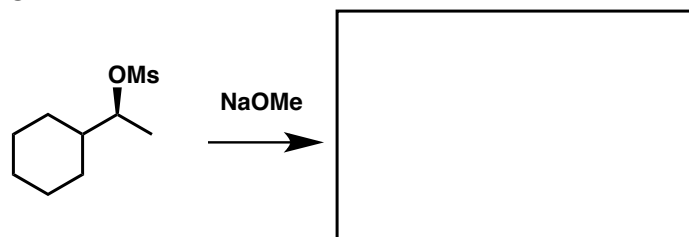
A.



B.

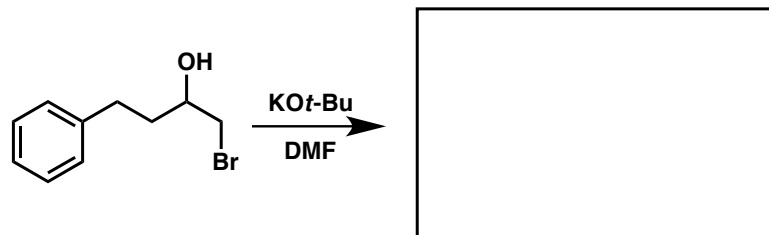


C.

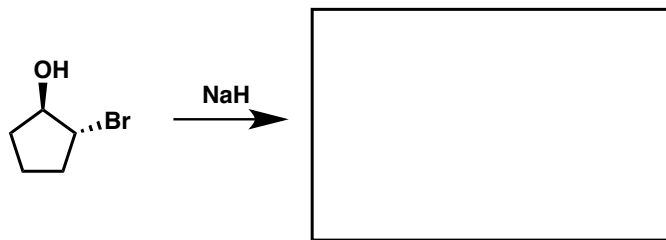


What is the major byproduct of this reaction?

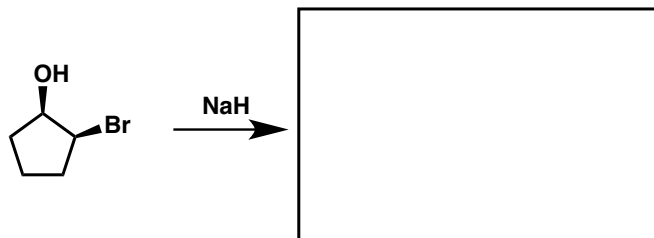
D.



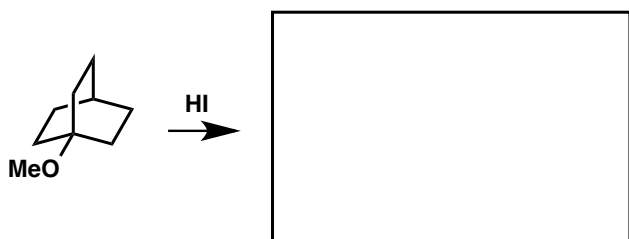
E.



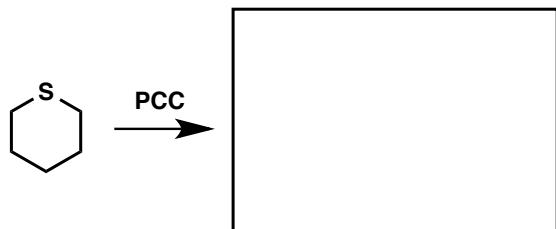
F.



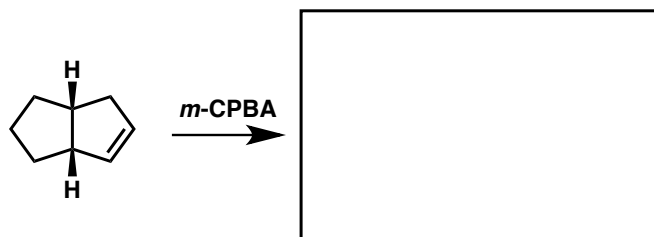
G.



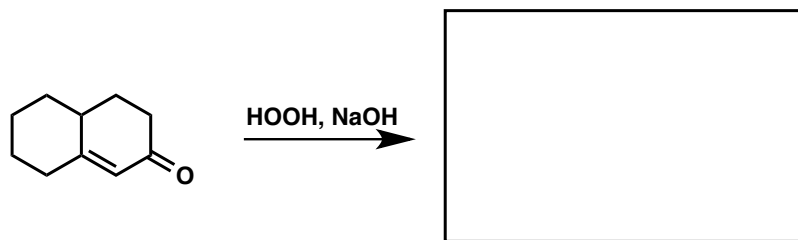
H.



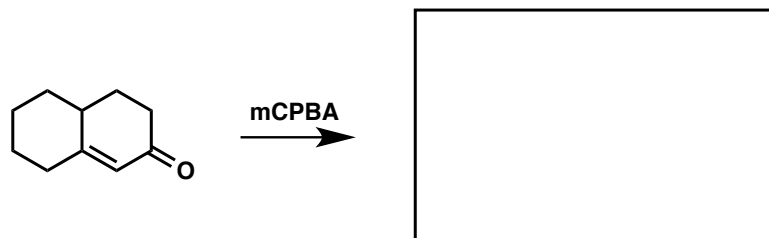
I.



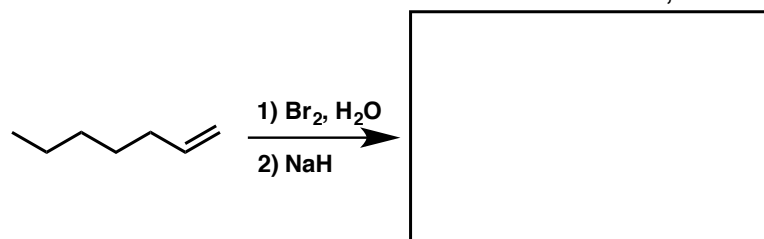
J.



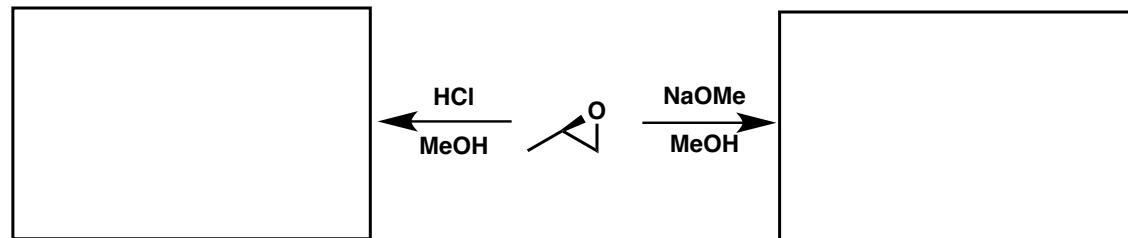
K.



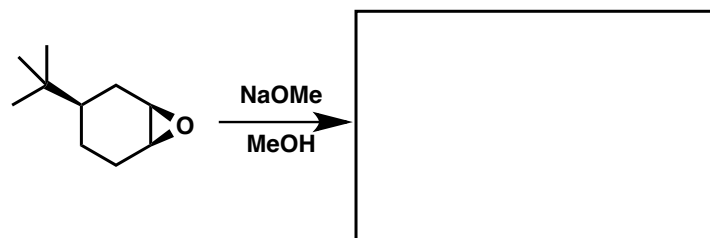
L. Show the mechanism for this transformation, also.



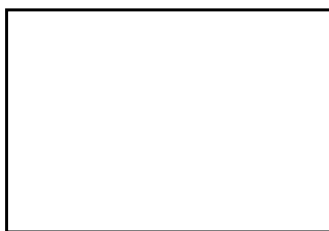
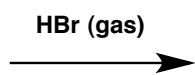
M.



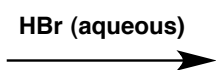
N.



O.

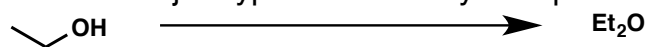


P.

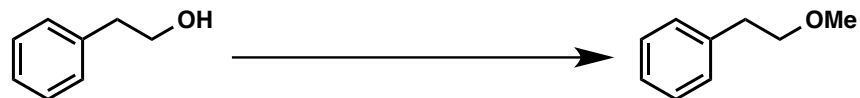


3. Give reagents to perform the following transformations.

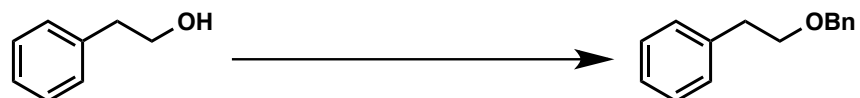
A. What major byproduct would you expect?



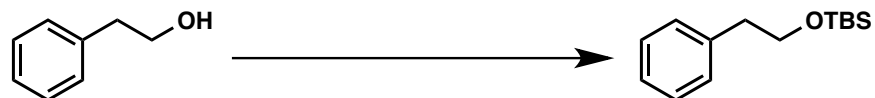
B.



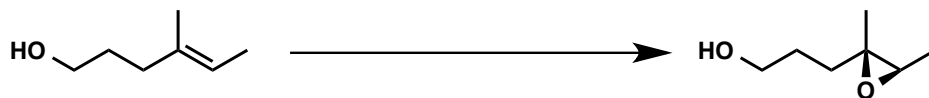
C.



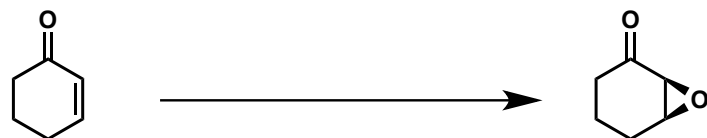
D.



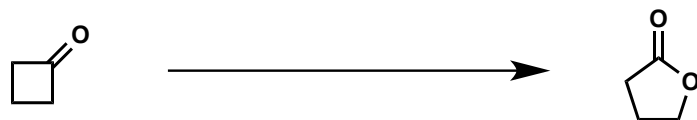
E.



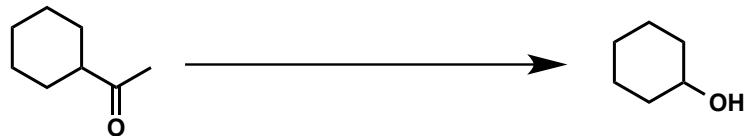
F.



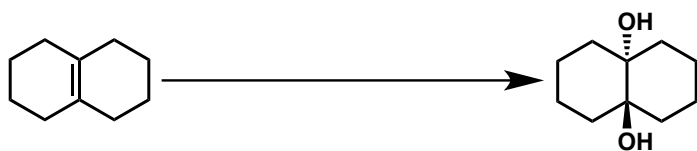
G.



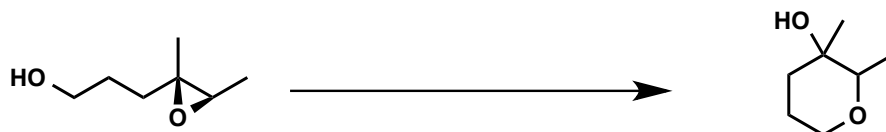
H.



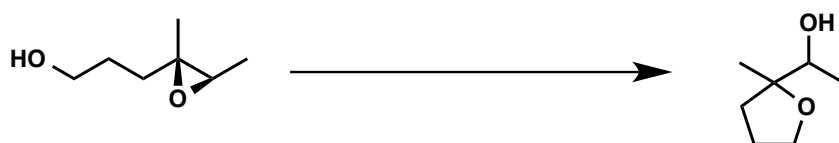
I.



J.

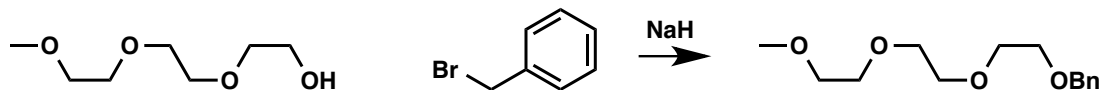


K.

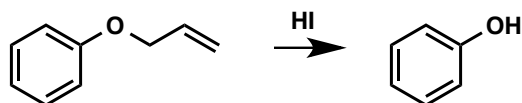


4. Propose a mechanism for these reactions.

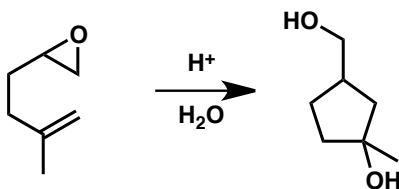
A.



B.

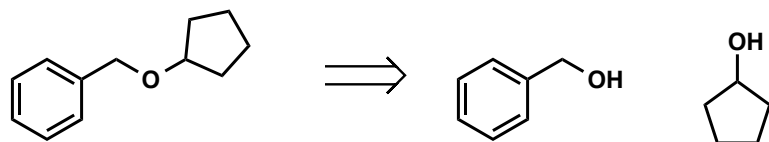


C. The following reaction resembles the acid-catalyzed cyclization of squalene oxide, which is key to the synthesis of steroids.

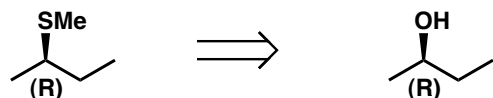


5. Give the transformations and reagents necessary to synthesize the compounds on the left from the compounds on the right.

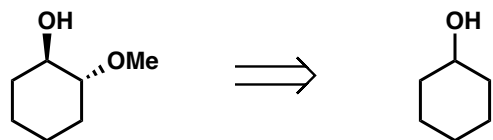
A.



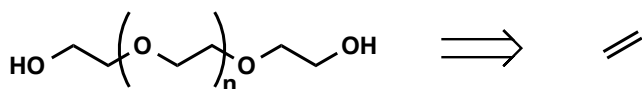
B.



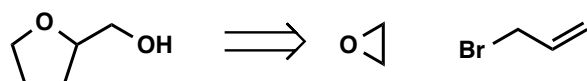
C.



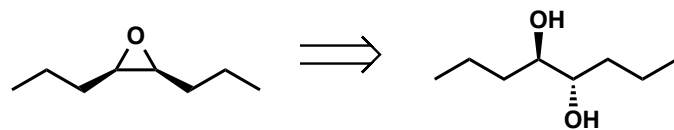
D.



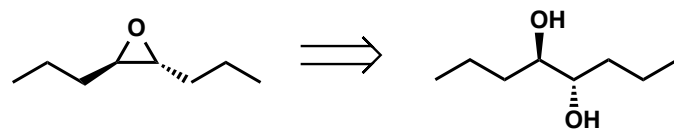
E.



F.

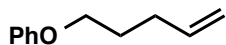


G.

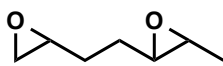


6. Synthesize these products using a monosubstituted benzene or other reasonable starting materials of 4 carbons or less. The products may have any stereochemistry.

A.



B.



C.

