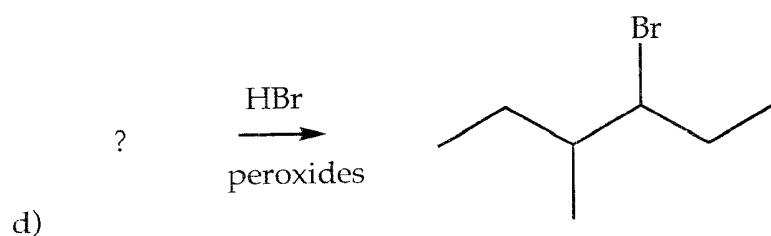
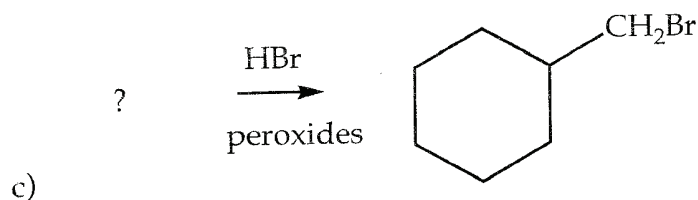
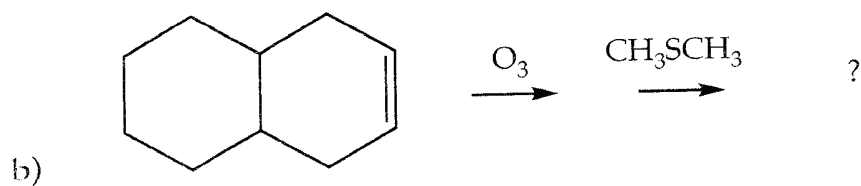
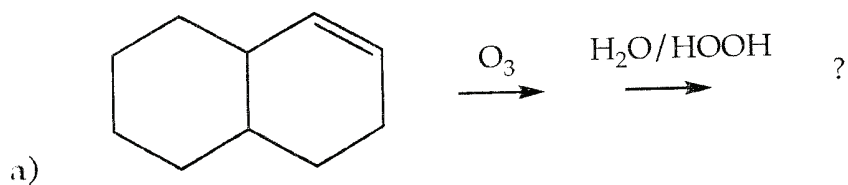


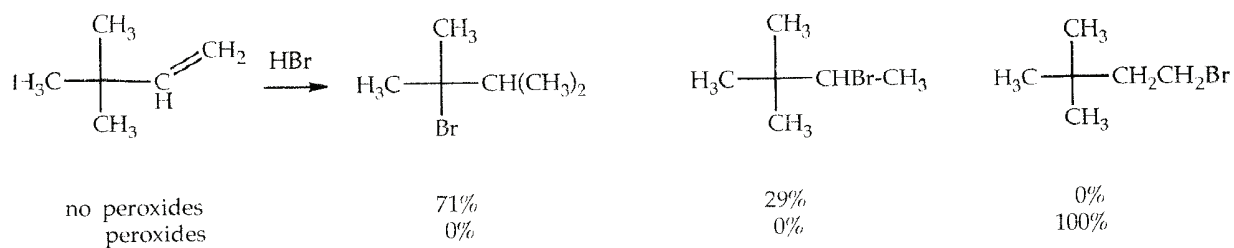
Chemistry 3311-100
 Organic Chemistry / Dr. Barney Ellison
 Thursday: March 11th @ 7:00pm → 9:00 / 2nd Exam / Math 100)

Name: _____ (please print)

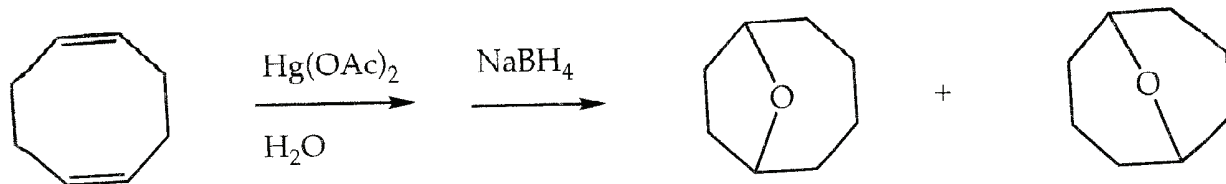
1. (12 pts) Give the missing reactant or product in each of the following equations.



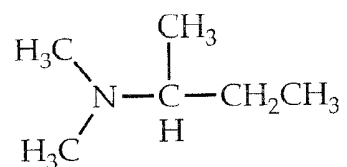
2. (8 pts) When HBr is added to 3,3-dimethyl-1-butene, the following products are observed. Explain why different conditions give different products. Show a mechanism.



3. (10 pts) Show a mechanism for the following reaction.

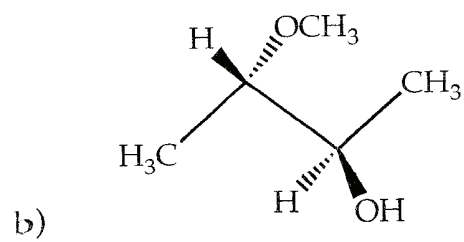
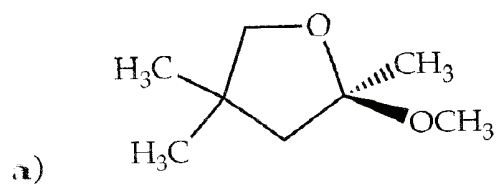


4. (10 pts) The following compound has the (S) configuration at the asymmetric carbon.



- a) What is the isomeric relationship between the two forms of this compound that are interconverted by amine inversion?
- b) Can this compound be resolved into enantiomers?

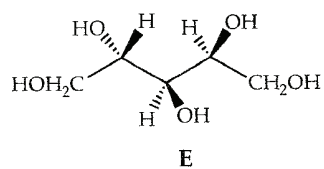
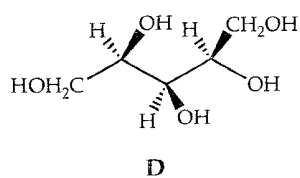
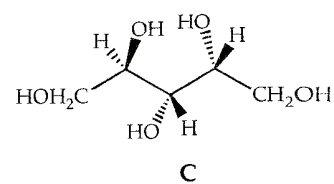
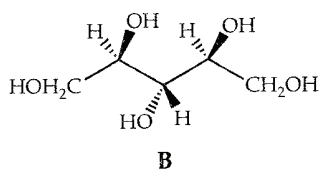
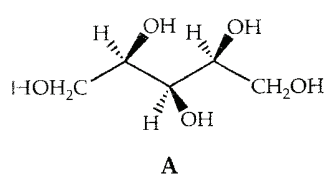
5. (10 pts) Give the configuration (R or S) of each asymmetric center in the following.



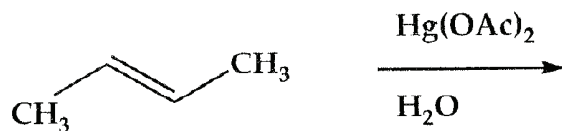
6. (10 pts) Give the stereochemical relationship between each pair of compounds below. (enantiomers, diastereomers, or the same ?)

Are any of these species meso compounds?

Which compounds will be optically active?

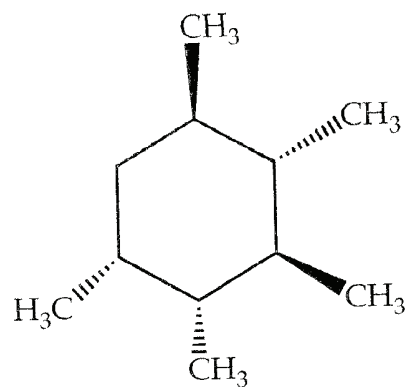
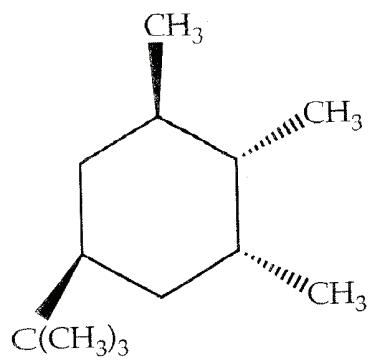


7. (10 pts) Give the products and their stereochemistry when *trans*-2-butene reacts with $\text{Hg}(\text{OAc})_2 + \text{H}_2\text{O}$.



What products result when these products are treated with NaBD_4 in aqueous NaOH ?

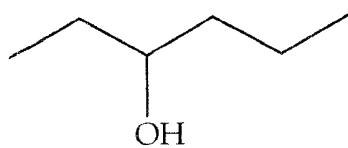
8. (10 pts) Draw the structure of the most stable chair conformation.



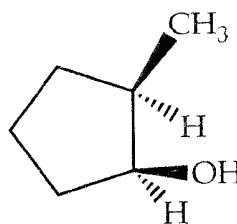
9. (10 pts) Which of the following alcohols can be synthesized free of constitutional isomers and diastereomers by

a) hydroboration-oxidation

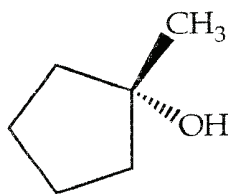
b) oxymercuration-reduction



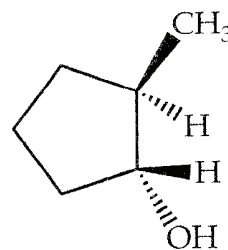
A



B



C



D

10. (10 pts) Give the structure and stereochemistry of the products of:

a) (3R,5R)-3,5-dimethylcyclopentene + Br₂ (solvent CCl₄) → products

b) cyclopentene + Br₂ (solvent H₂O) → products