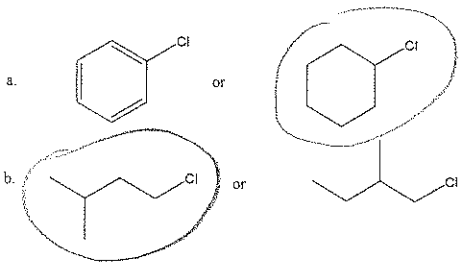
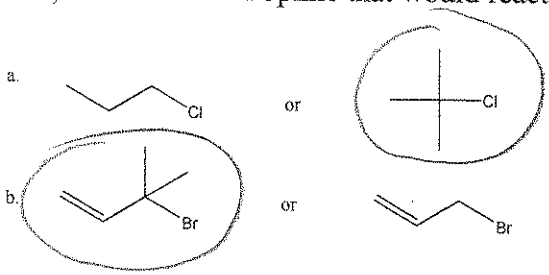
Key

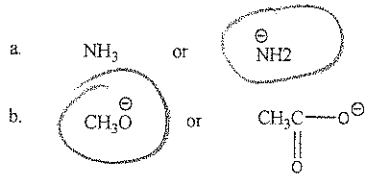
1. For each example shown below, circle the electrophile that would react more rapidly in an S_N2 reaction: (4 pts, 3 minutes)



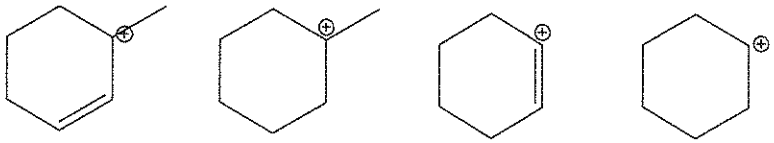
2. For each example shown below, circle the electrophile that would react more rapidly in an S_N1 reaction: (4 pts, 3 minutes)



3. For each example shown below, circle the nucleophile that would react more rapidly in an S_N2 reaction: (4 pts, 3 minutes)

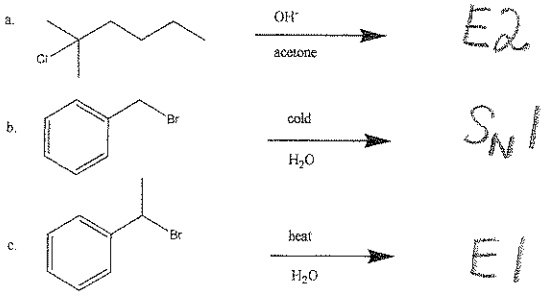


4. (4 pts, 3 minutes)
   a. Which of the carbocations shown below is the most stable? A
   b. Which is the least stable? C

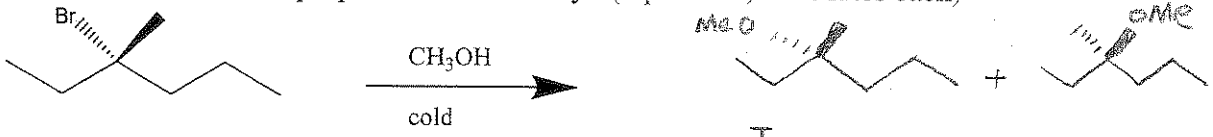


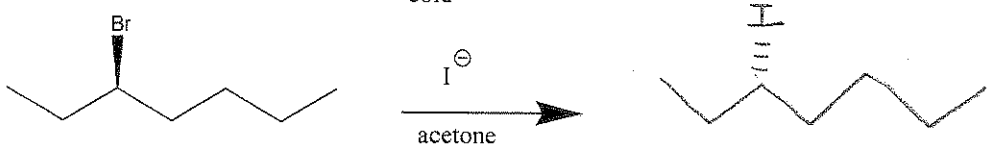
A B C D

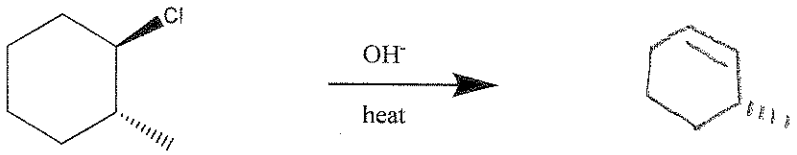
5. Which mechanism (S_N1, S_N2, E1 or E2) is favored in each of the following reactions? (10 pts, 5 minutes)

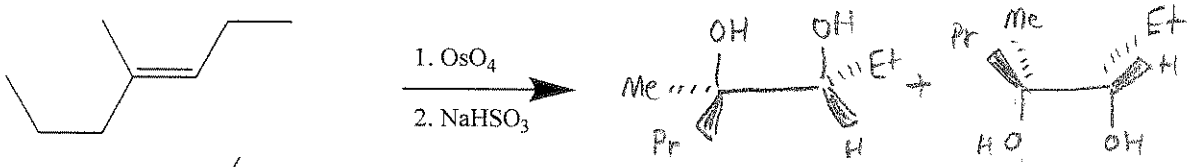


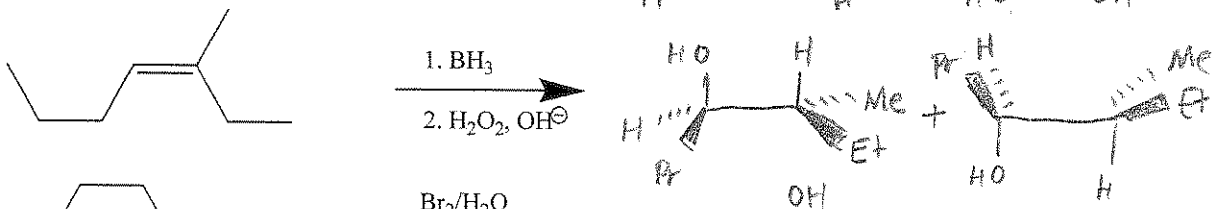
6. Show the **major** product or products in each of the following reactions. Do not show minor products. Be sure to show proper stereochemistry. (5 pts each, 4 minutes each)

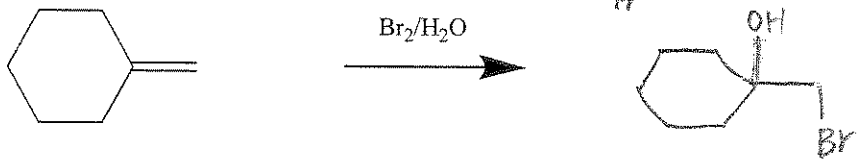
a. 

b. 

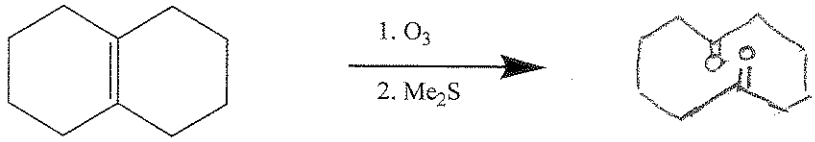
c. 

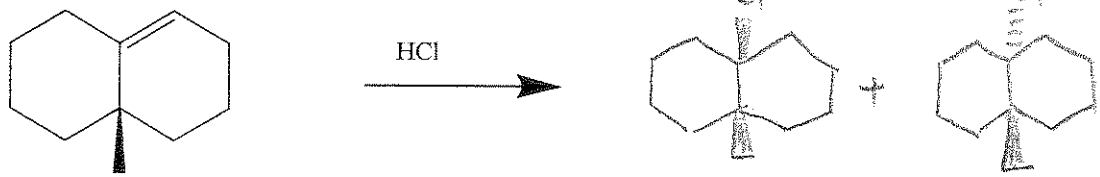
d. 

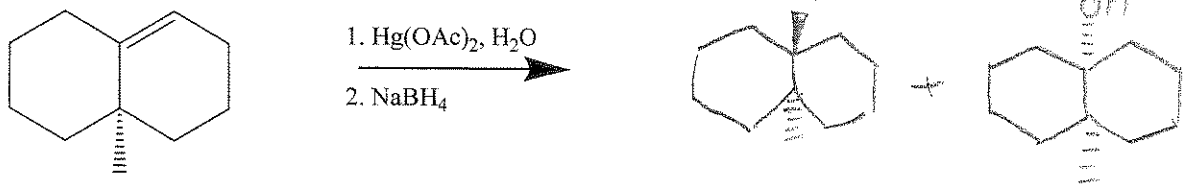
e. 

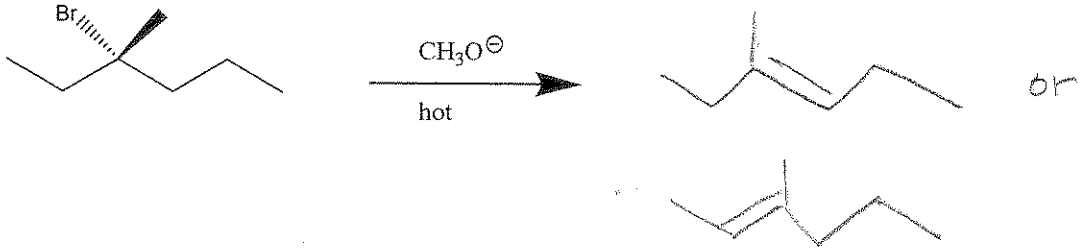
f. 

one product, achiral

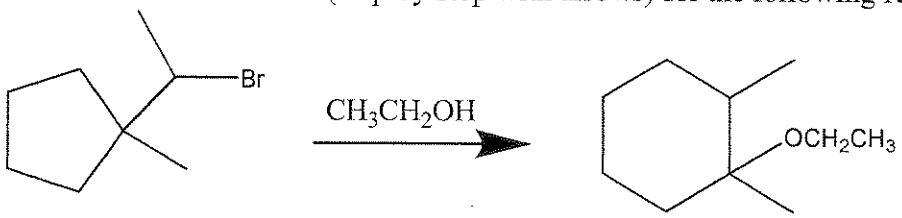
g. 

h. 

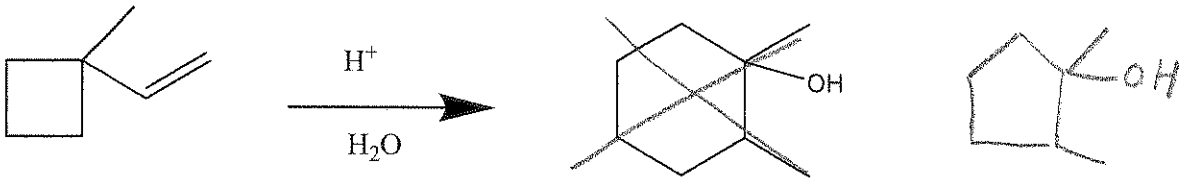
i. 

j. 

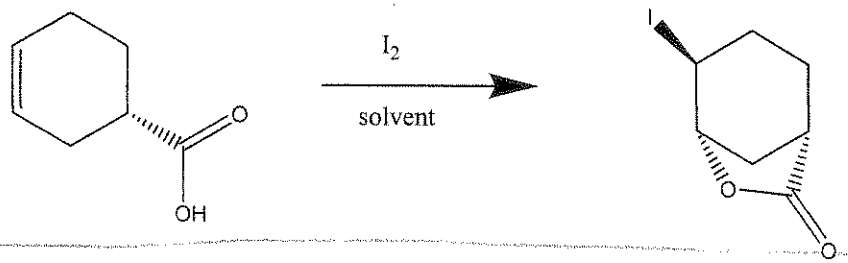
7. Show the mechanism (step by step with arrows) for the following reaction. (8 pts, 6 minutes)



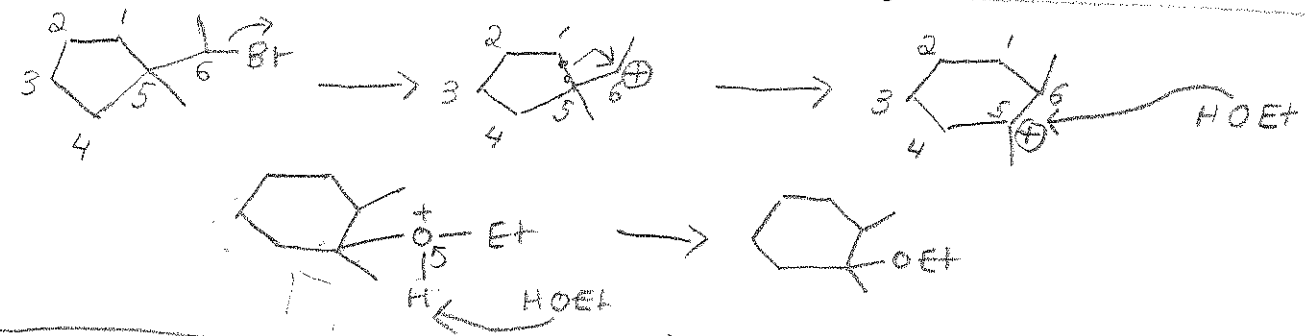
8. Show the mechanism (step by step with arrows) for the following reaction. (8 pts, 6 minutes)



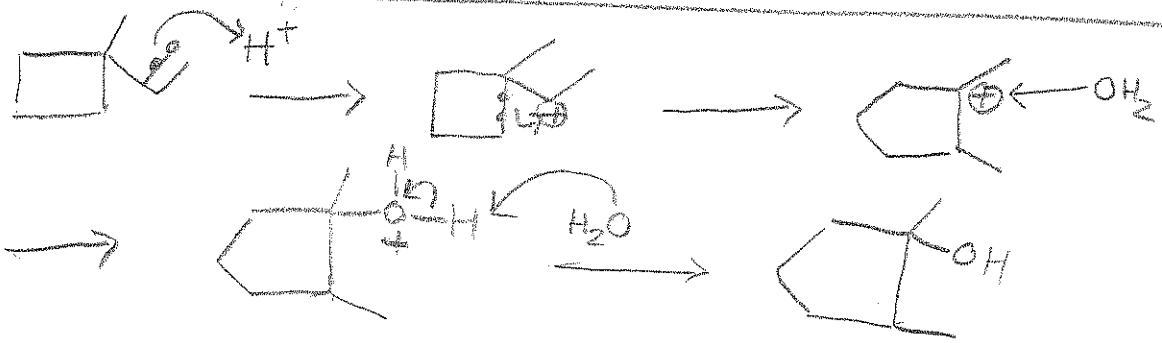
9. Show the mechanism (step by step with arrows) for the following reaction. (8 pts, 6 minutes)



7.



8.



9.