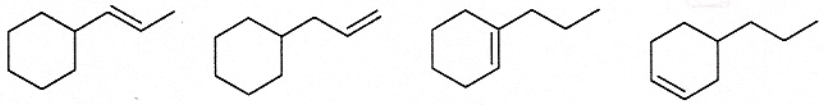
Jasperse Chem 350 Test 3 Version 3 Answers

JASPERSE CHEM 350 TEST 3 VERSION 3
Ch. 7 Structure and Synthesis of Alkenes
Ch. 8 Reactions of Alkene
The number of points per problem is indicated in parentheses following each problem.

1. Rank the following alkenes in order of stability, 1 being most stable, 4 being least stable. (4)



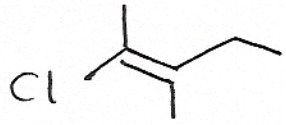
2 4 1 3

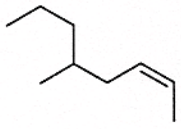
2. Determine the number of elements of unsaturation for C_5H_7ClO. (3)

EU=2

3. Give the proper IUPAC name or the structure for the following compounds. (4 points each)

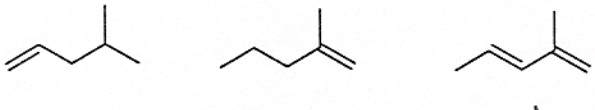
a. (E)-2-chloro-3-methyl-2-pentene



b. 

cis-5-methyl-2-octene
or Z-

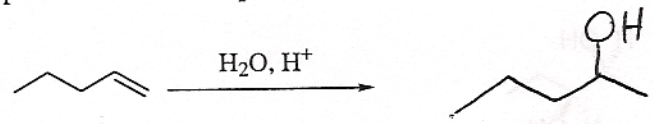
4. Rank the reactivity of the following alcohols towards HBr, 1 being the fastest reactant, 3 being the slowest reactant. (3 points)

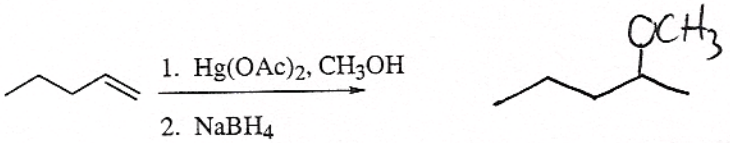


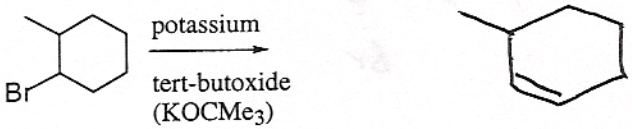
3 2 1

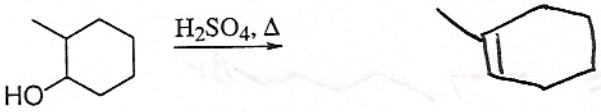
Cation stability

5. Predict the major product for the following reactions. You needn't bother to show any side products or minor products. Pay careful attention to orientation. (3 points each)

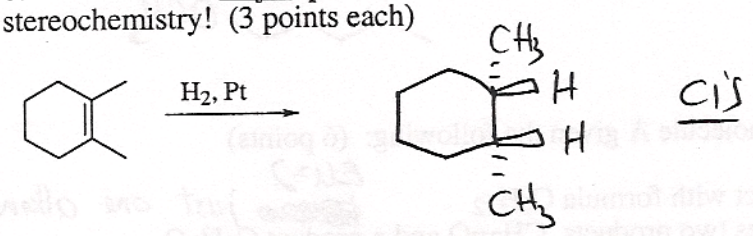


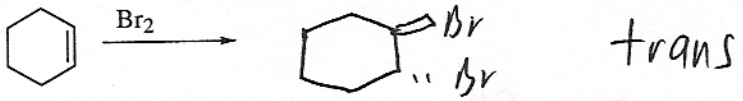


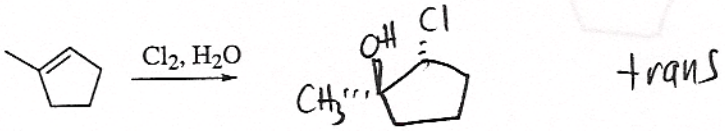


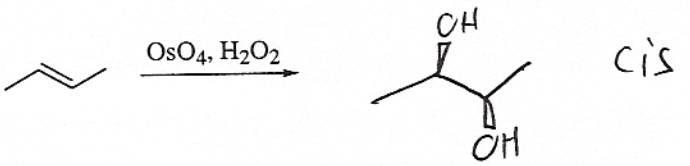


6. Predict the major product in each of the following reactions. Pay careful attention to stereochemistry! (3 points each)

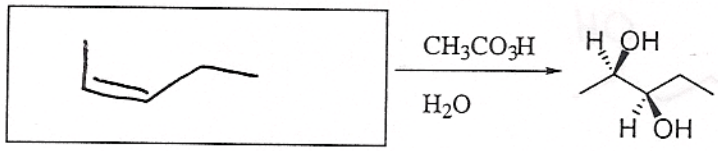




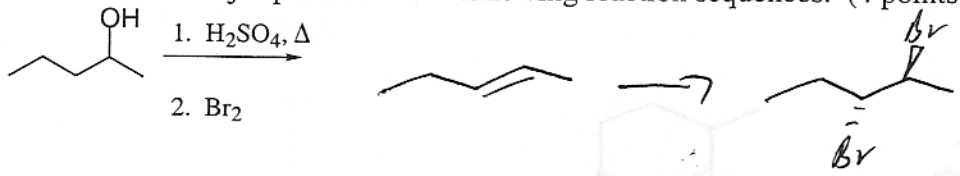


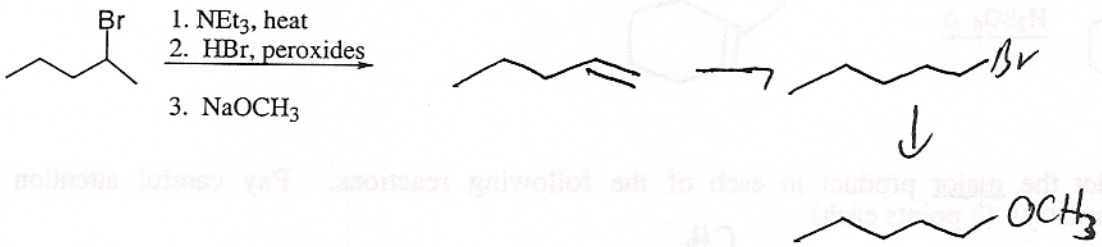


7. Fill in the starting reactant. (4 points each)



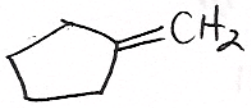
8. Provide the major product of the following reaction sequences. (4 points each)



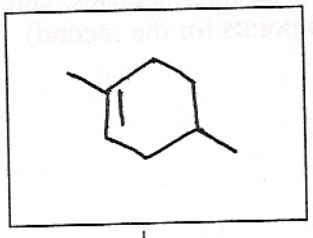


9. What is a possible structure for a molecule **A** given the following: (6 points)
a. is has the formula C_6H_{10}
b. it reacts with H_2/Pt to give a product with formula C_6H_{12}
c. upon ozonolysis (O_3; Me_2S) it gives two products, $CH_2{=}O$ and a product C_5H_8O.

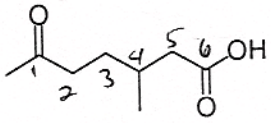
EU=2 just one alkene



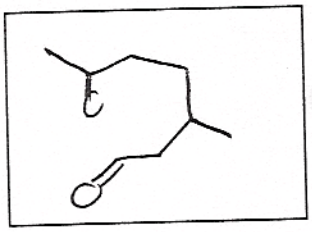
10. Fill in the boxes. (6 points total)



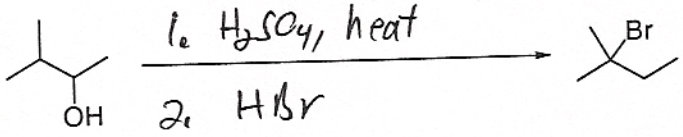
$KMnO_4$, Δ

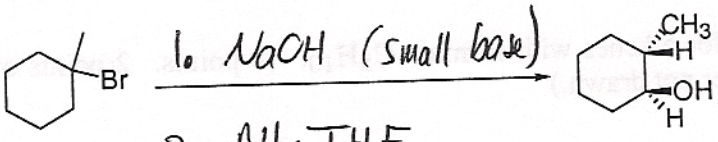


1. O_3
2. Me_2S

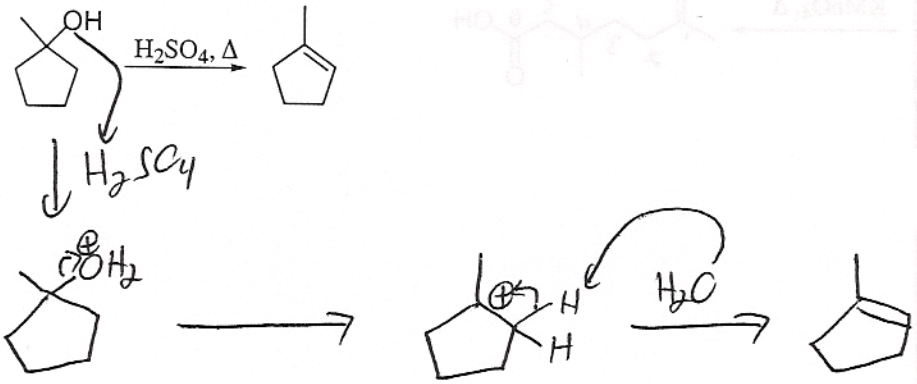


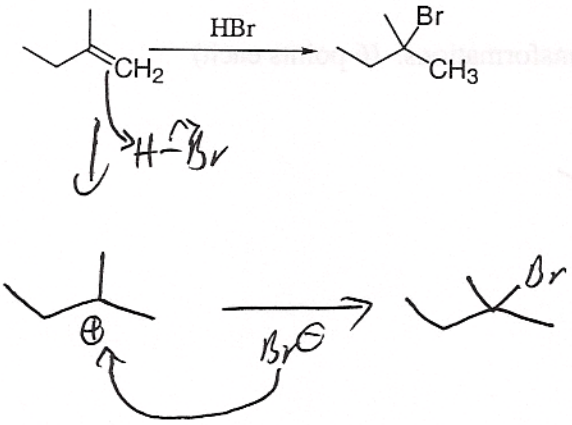
11. Provide reagents to accomplish the following transformations. (6 points each)





12. Draw the mechanisms for the following reactions. Be sure to draw all intermediates, and try to correctly draw "electron-movement" arrows. (8 points for the first, 6 points for the second)





13. Draw as many isomers as you can for alkenes with formula C_5H_{10}. (8 points. 2 points off for each duplicate or each possible isomer not drawn.)