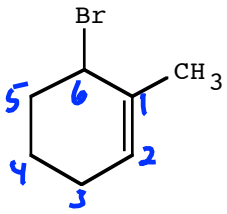
JASPERSE CHEM 350 TEST 3 VERSION 2
Ch. 7 Structure and Synthesis of Alkenes
Ch. 8 Reactions of Alkenes

1. How many elements of unsaturation are in the formula C_8H_9N?
   a. 0
   b. 1
   c. 2
   d. 3
   e. 4
   f. 5

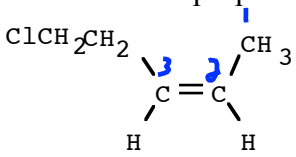
$(18+1)-9=10H$

2. Provide the proper IUPAC name for the alkene shown below.



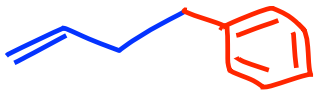
6-bromo-1-methyl cyclohexene

3. Provide the proper IUPAC name for the alkene shown below.

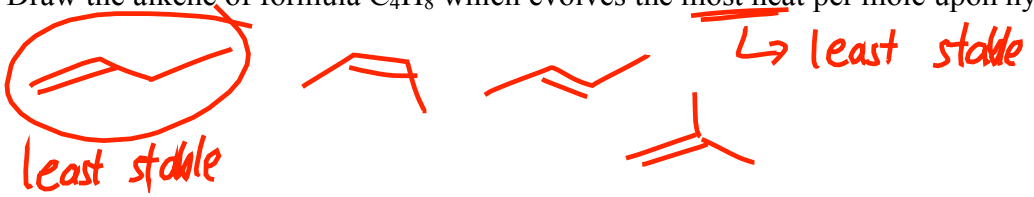


(Z)-5-chloro pent-2-ene
or cis
or (Z)-5-chloro-2-pentene

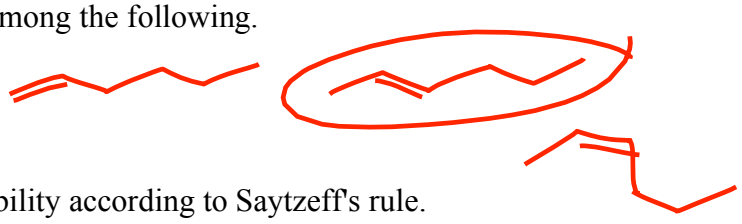
4. Draw an acceptable structure for 4-phenyl-1-butene.



5. Draw the alkene of formula C_4H_8 which evolves the most heat per mole upon hydrogenation

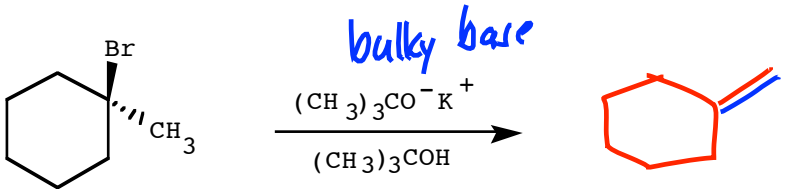


6. Choose the most stable alkene among the following.

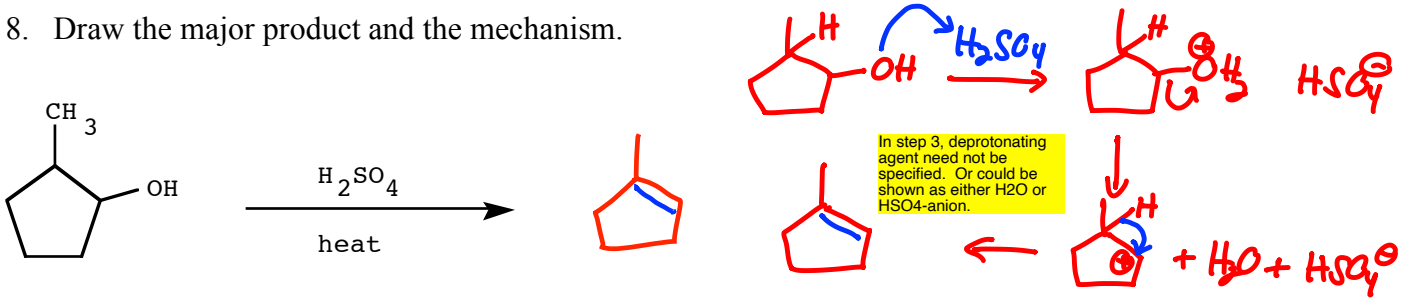


   a. 1-hexene
   b. (E)-2-hexene
   c. (Z)-2-hexene
   d. They are all of equal stability according to Saytzeff's rule.

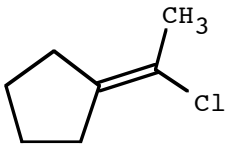
7. Draw the major product of the following reaction.



8. Draw the major product and the mechanism.

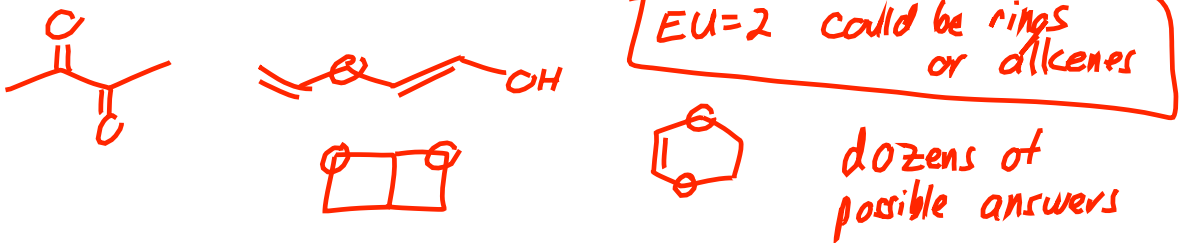


9. Which of the following best describes the geometry about the carbon-carbon double bond in the alkene below?

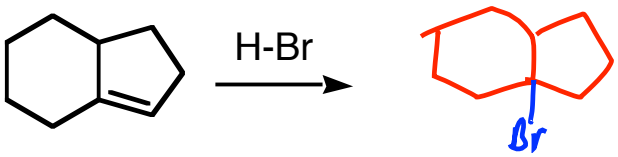


a. E
b. Z
c. Neither E nor Z

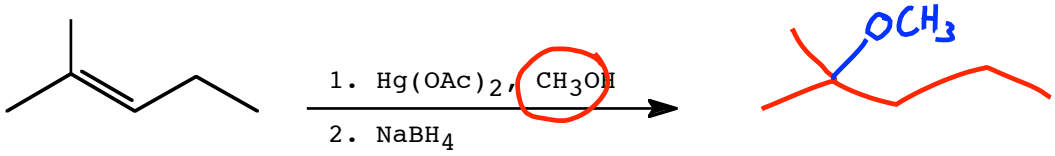
10. Draw 3 examples of molecules with the formula $C_4H_6O_2$



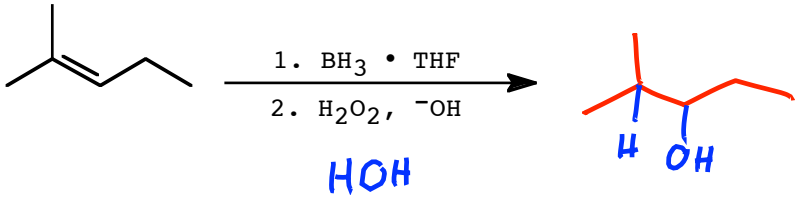
11. Draw the major product.



12. Draw the major product.

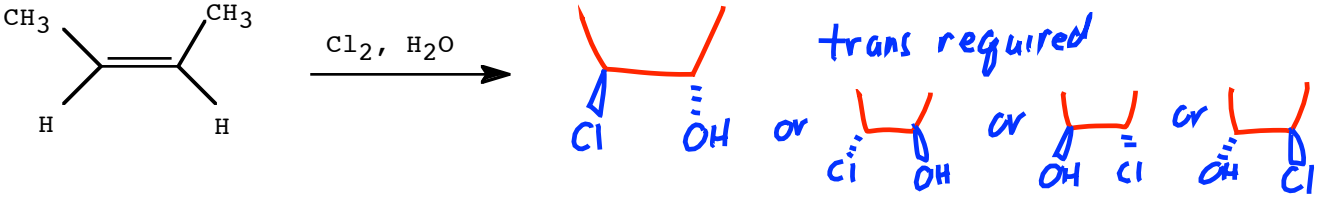


13. Draw the major product.

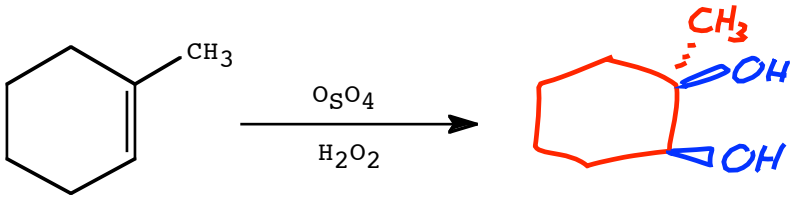


only one chiral C produced, need not use hash/wedge stereo

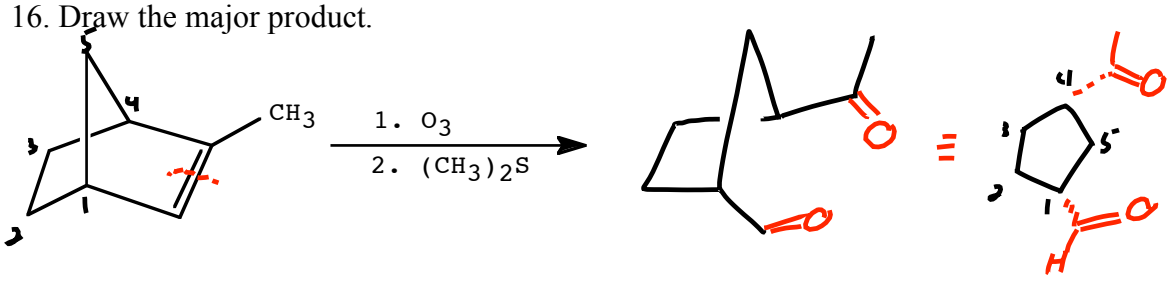
14. Draw the major product.



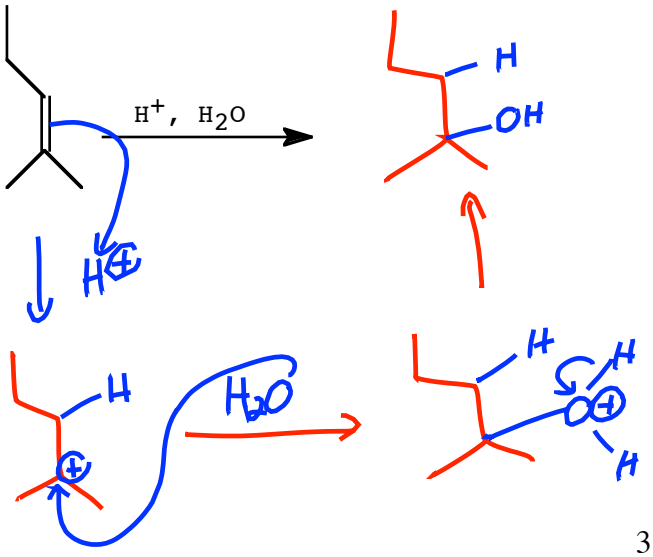
15. Draw the major product.



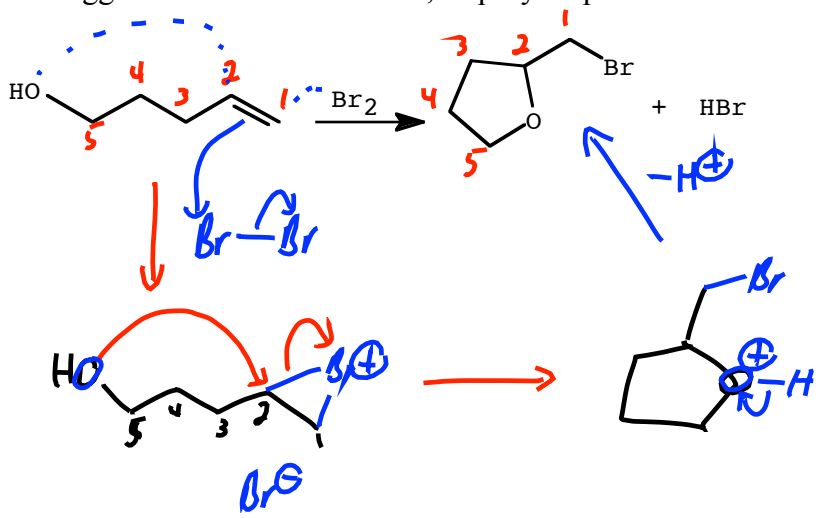
16. Draw the major product.



17. Complete the following reaction and provide a detailed, step-by-step mechanism for the process.

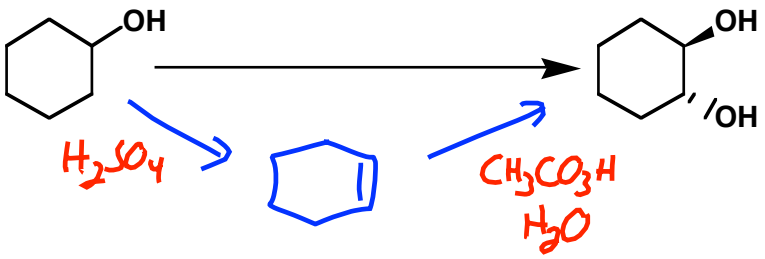


18. Suggest a reasonable detailed, step-by-step mechanism for the reaction shown below.



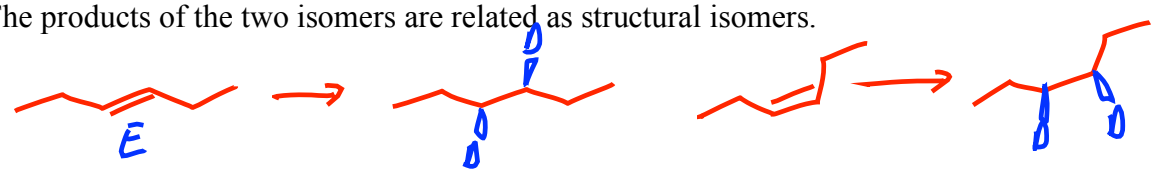
This one is very hard. It's a challenge problem. Kind of an extension using ideas from class but pushing a little bit beyond what was covered. Few students got this one correct.

19. Provide the reagents necessary to complete the following transformation. (2 steps minimum).

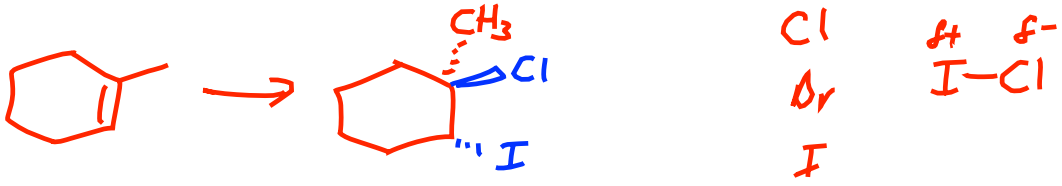


20. Both (E)- and (Z)-3-hexene can be treated with D_2 in the presence of a platinum catalyst. How are the products from these two reactions related to each other?

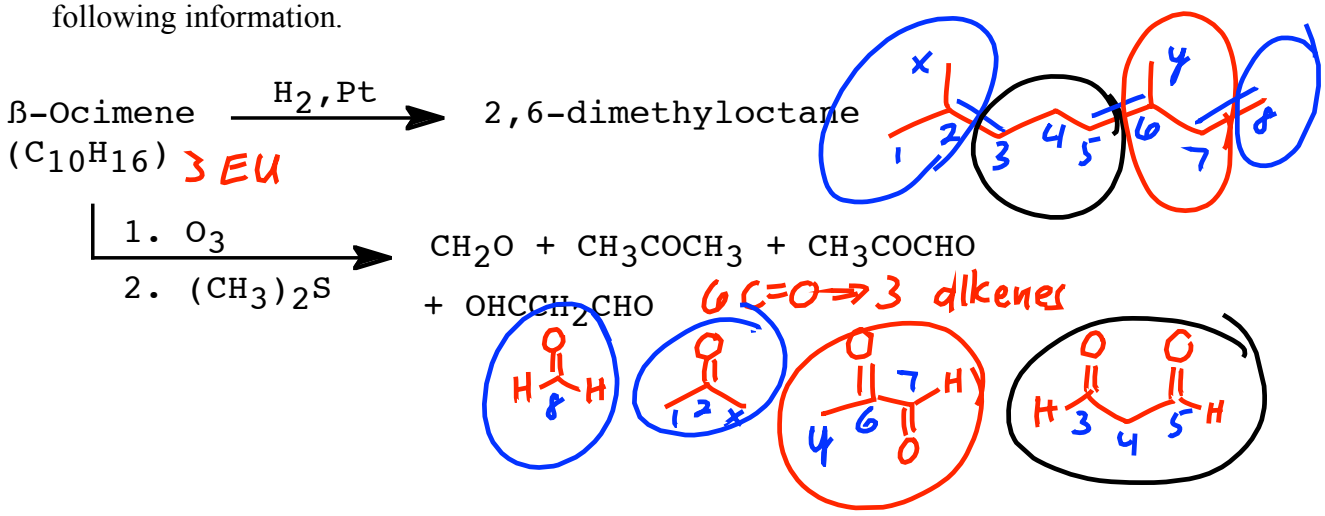
a. The (E)- and (Z)-isomers generate the same products in exactly the same amounts.
b. The (E)- and (Z)-isomers generate the same products but in differing amounts.
c. The products of the two isomers are related as diastereomers.
d. The products of the two isomers are related as enantiomers.
e. The products of the two isomers are related as structural isomers.



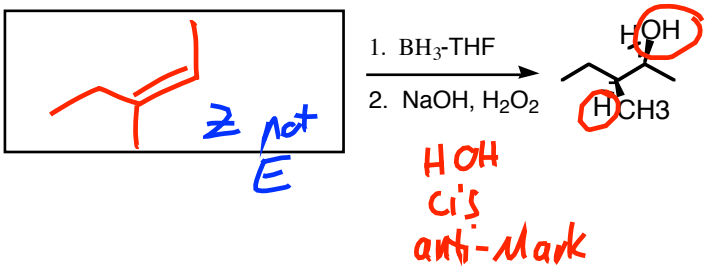
21. Consider how the I-Cl bond is polarized and predict the product which results when this mixed halogen adds to 1-methylcyclohexene.



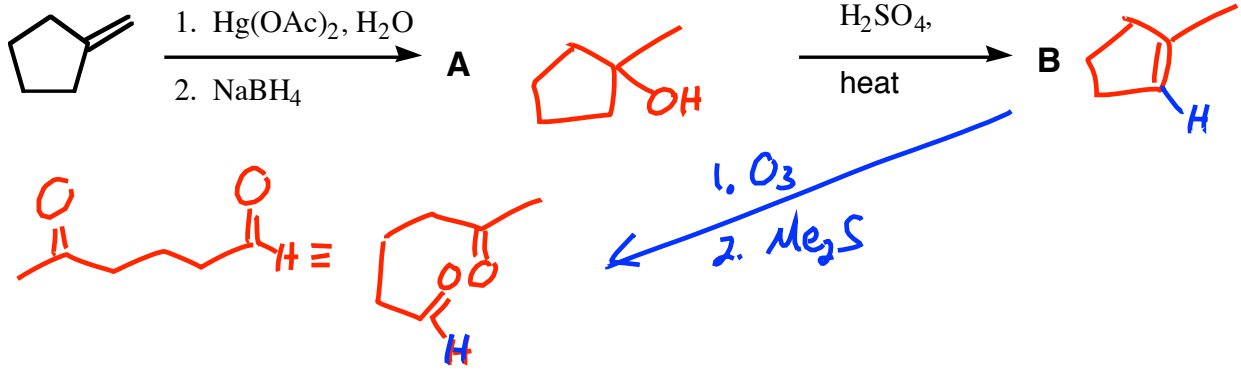
22. β-Ocimene is a perfume. Suggest a possible structure for β-ocimene that is consistent with the following information.



23. Fill in the starting reactant.



24. Fill in the blanks for the following reaction sequence.



25. Provide reagents to carry out the following transformation: (3 steps minimum)