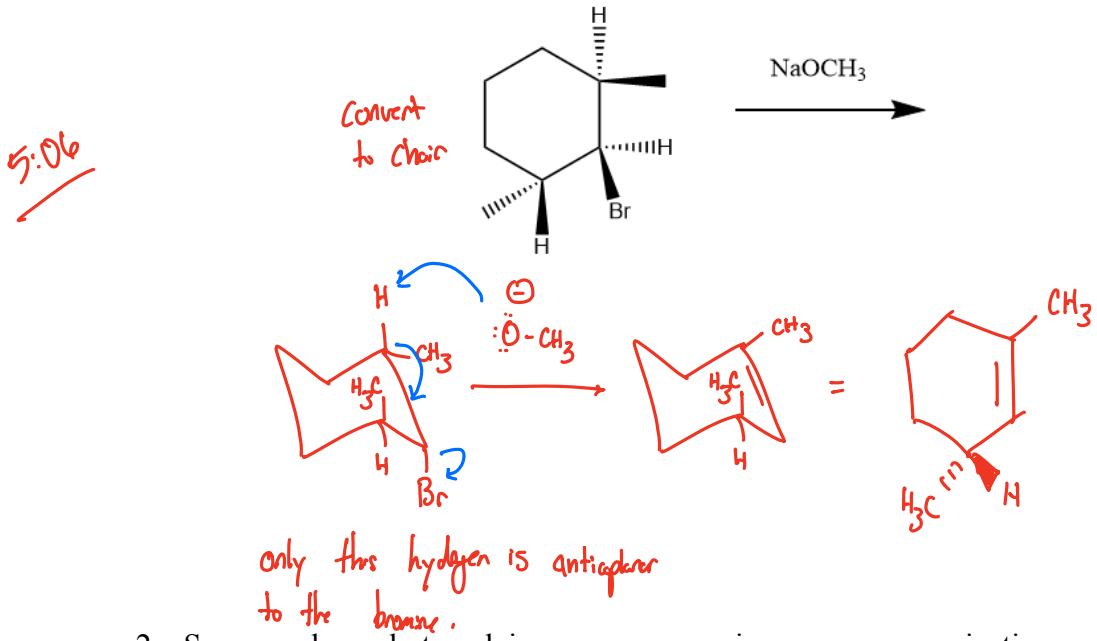
CHEM 223 (2024) SI Session #14

Learning Objectives: By the end of this session, students should be able to:

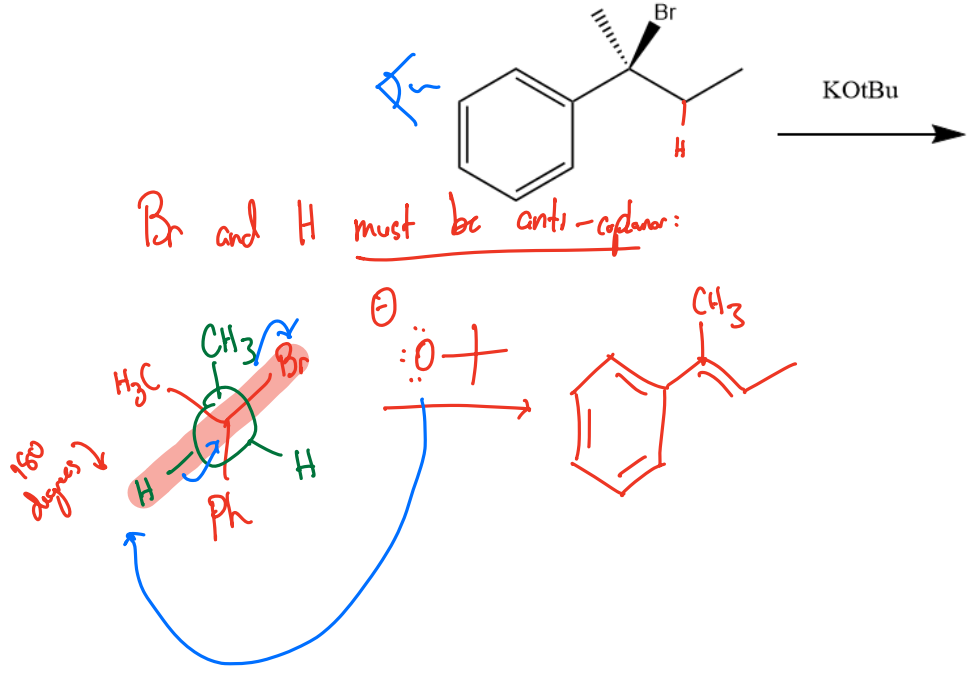
- Apply the stereochemical limits of E2 to given questions
- Answer previous exam questions about E1 and E2
- Draw mechanisms for acid-catalyzed dehydration & ring expansion

Section 1: E2 and stereochemistry

1. For the reaction below, provide the expected E2 product(s) with correct stereochemistry. Additionally, provide a mechanism for the production of this product. Explain your reasoning.

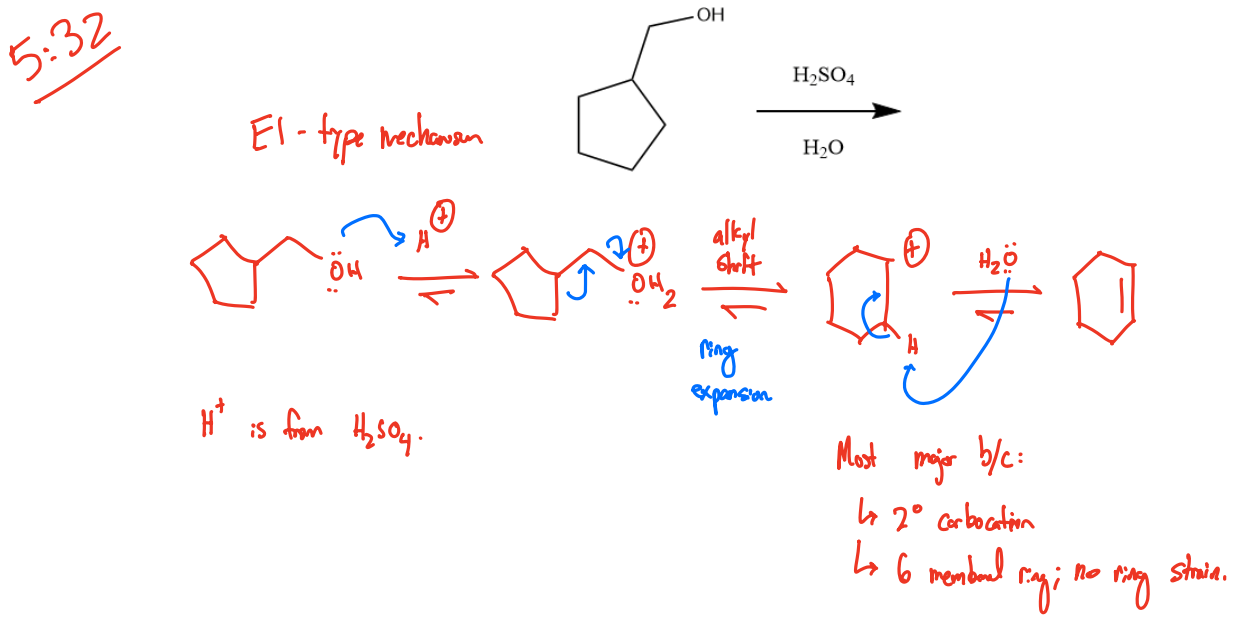


2. Same as above, but explain your answer using a newman projection.

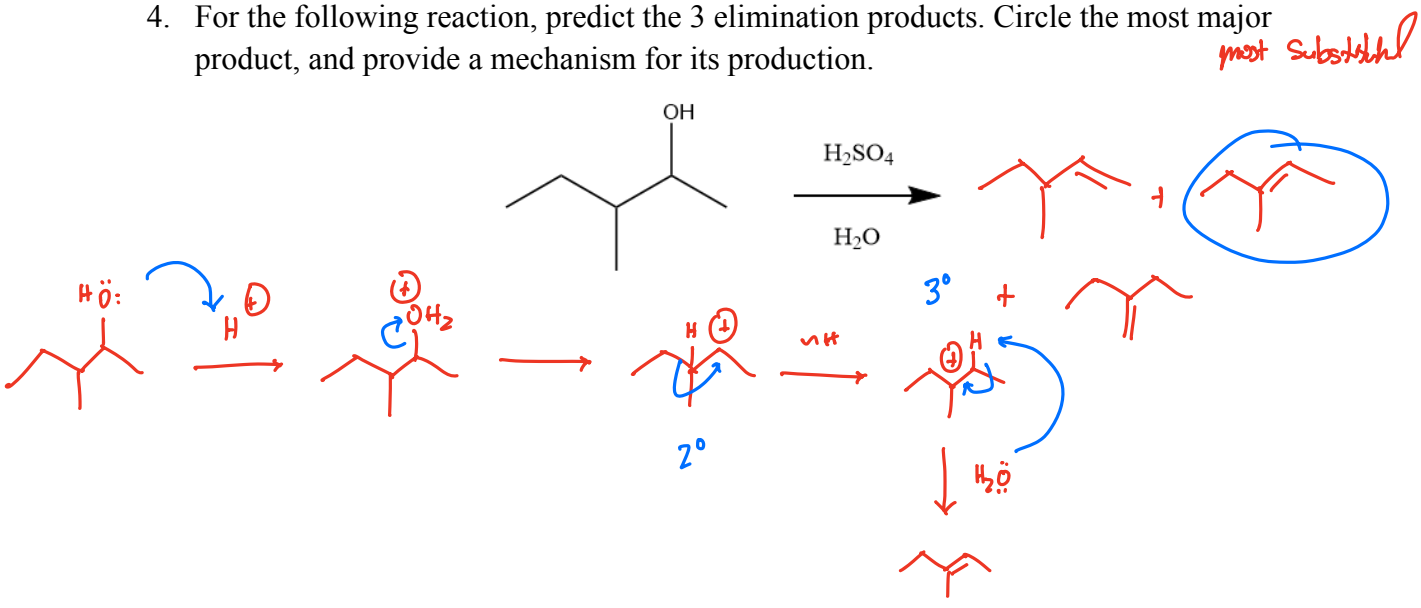


Section 2: Acid-catalyzed dehydration

3. Provide the major elimination product for the reaction below. Provide a mechanism for the production of this product, and explain why it is the most major product.

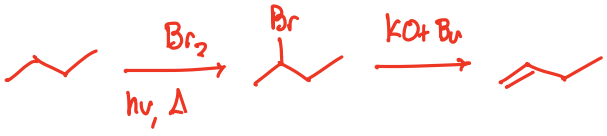


4. For the following reaction, predict the 3 elimination products. Circle the most major product, and provide a mechanism for its production.

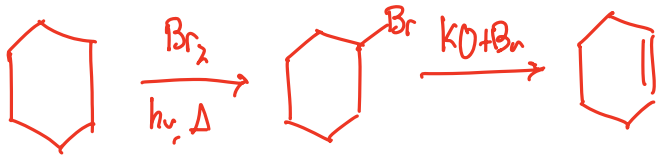


Section 3: Basic synthesis

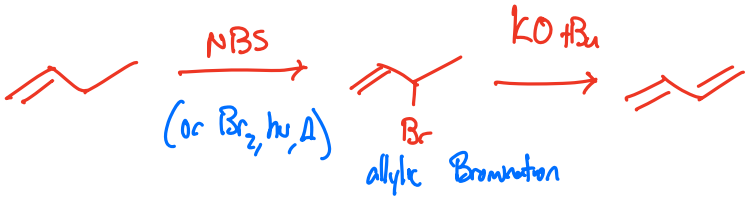
5. Provide a synthesis to convert butane to but-1-ene.



6. Provide a synthesis to convert cyclohexane to cyclohex-1-ene.

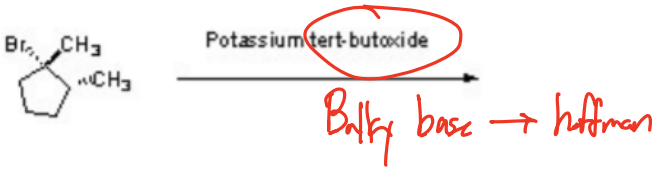


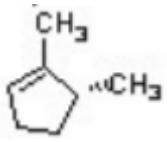
7. Provide a synthesis to convert but-1-ene to buta-1,3-diene.

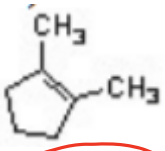


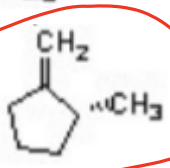
Section 4: Exam practice questions

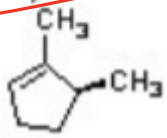
8. Identify the major product of the reaction below



a. 

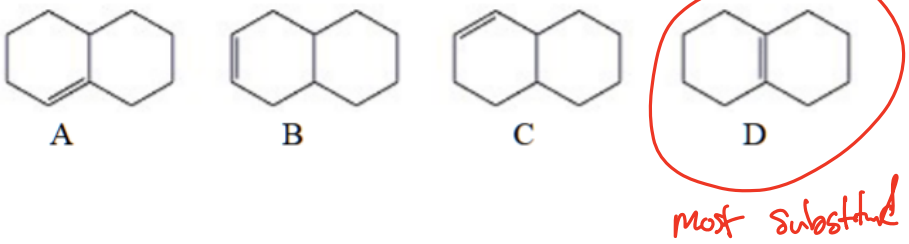
b. 

c. 

d. 

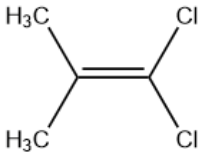
9. Which of the following alkenes produces only pent-2-ene when undergoing dehydrohalogenation?
   a. 1-bromopentane
   b. 2-bromopentane
   c. 3-bromopentane
   d. 2-bromo-2-methylbutane

10. Identify the most stable alkene from the structures below



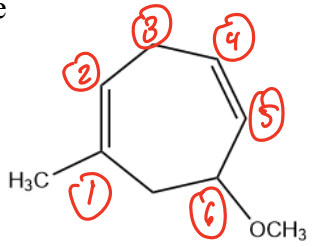
most substituted

11. Label the following compound as E, Z, or Neither



neither

12. Name the following structure



Cycloheptene base name

6-methoxy-1-methylcyclohepta-1,4-diene.