Name _____ Test 2 (3/8)
CHEM 0203 (Organic II) Spring 2013

1. (6 pts. ea.) Predict the outcome of the following reactions. Remember to use wedge and dashed bonds to indicate the stereochemical outcome of the reaction where appropriate.

1. _____

2. _____

3. _____

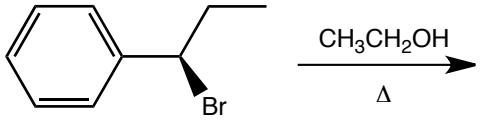
4. _____

5. _____

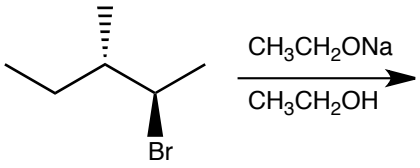
6. _____

7. _____

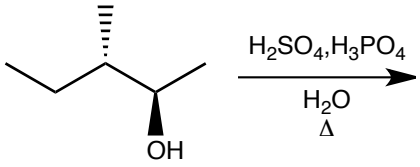
a. E1



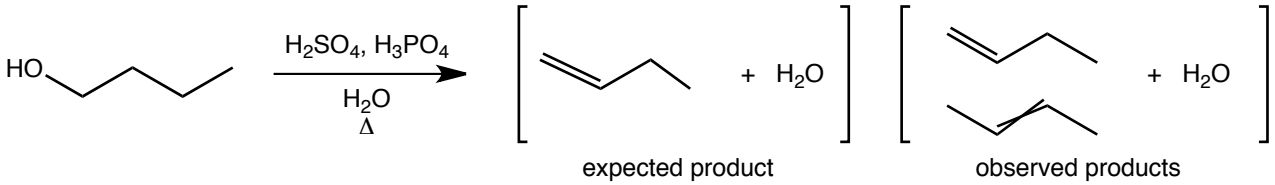
b. E2



c. E1

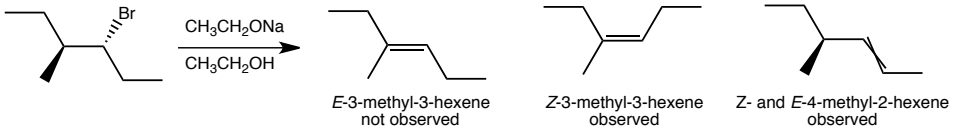


2. In lab we reacted 1-butanol with phosphoric and sulfuric acid. Some may have expected only one product to form since 1-butanol has only one set of β-hydrogens, but three products formed.



(10 pts.) Explain how both 1- and 2-butene form even though the starting alcohol only had one set of β-hydrogens.

3. In the following reaction *Z*- and *E*-4-methyl-2-hexene both form, but only the *Z* form of 3-methyl-3-hexene is observed.



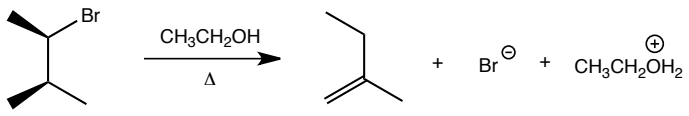
a. (8 pts.) Explain why both *Z*- and *E*-4-methyl-2-hexene are produced. Provide one or more drawings (skeletal structures or Newman projections) to support your explanation.

b. (4 pts.) Which is more stable, *Z*- or *E*-3-methyl-3-hexene. Briefly explain your choice.

c. (8 pts.)Explain why only *Z*- 3-methyl-3-hexene is produced. Provide one or more drawings (skeletal structures or Newman projections) to support your explanation.

4. a. (4 pts.) Is the following reaction an E1 or E2 reaction?

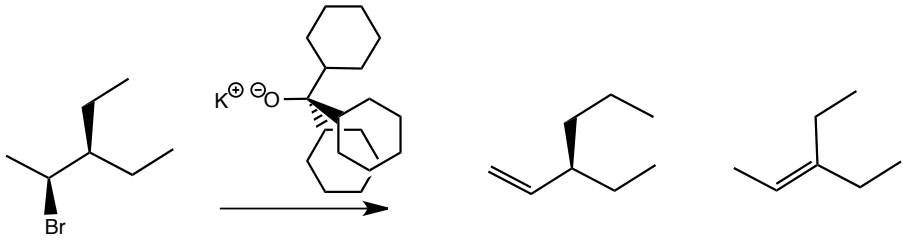
b. (10 pts.) Draw a mechanism that accounts for the formation of the product in the following reaction.



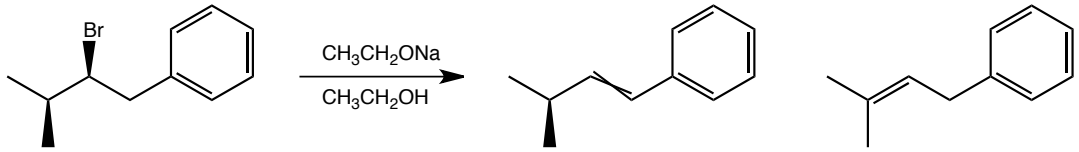
5. a. (6 pts.) For the following reactions determine whether the reaction is preceding via an E1 or an E2 mechanism.

b. (12 pts.) Predict the major products in the following reactions.

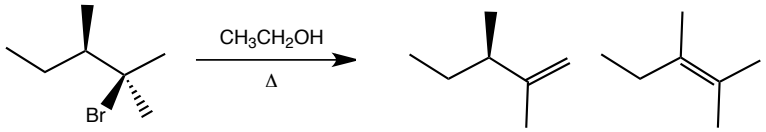
i.



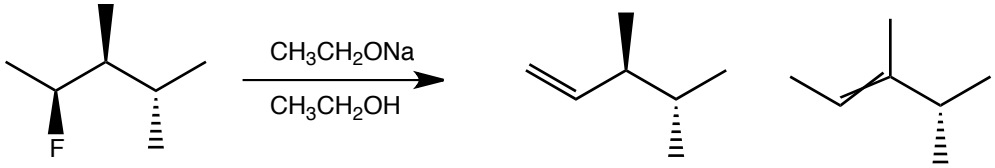
ii.



iii.



6. (10 pts.) Explain why the less substituted product is the major product in the following reaction.



7. (6 pts.) Explain why 3° carbanions are less stable than 1° carbanions.