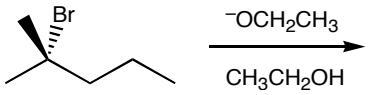
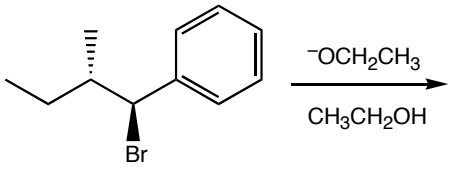
Name _____ Test 2 (3/23)
CHEM 0203 (Organic II) Spring 2011

1. (6 pts. ea.) Predicts the products of the following elimination reactions. Remember to indicate the stereochemistry of the products where appropriate.

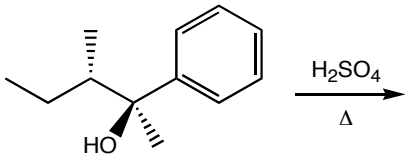
a.
E2



c.
E2

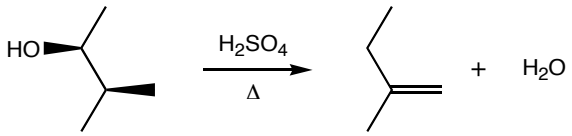


d.
E1

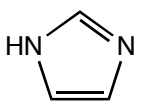
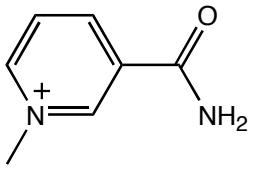
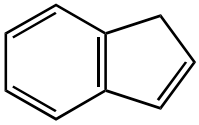
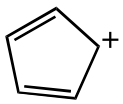


1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____

2. (10 pts.) Draw a mechanism that explains the formation of the product in the following reaction.



3. (4 pts. each) Determine which of the following molecules is(are) aromatic.

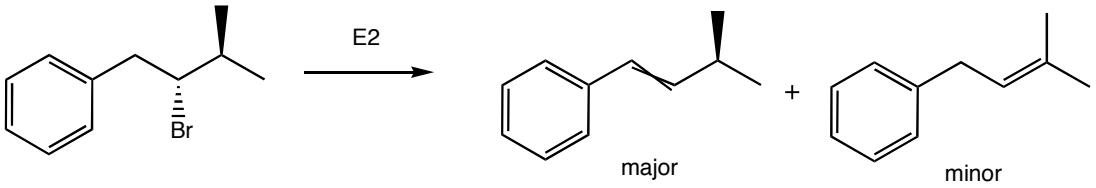
			

4. A rotamer for *S*-2-bromo-3-methylbutane is drawn to the right. The specific rotamer that is drawn cannot undergo an E2 reaction to form 2-methyl-2-butene, yet *S*-2-bromo-3-methyl butane will react under E2 conditions to form 2-methyl-2-butene.

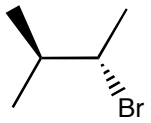
a. (4 pts.) Describe the specific geometry that is required for an E2 reaction.

b. (4 pts.) Draw a rotamer for *S*-2-bromo-3-methylbutane that will react to form 2-methyl-2-butene.

5. Normally, we expect the more substituted alkene to be the major product of an elimination reaction; however, in the following reaction we see that the less substituted alkene is actually the major product. This is a striking reminder that the degree of substitution is not the reason a product is favored, but just a method for helping us determine what will likely be the major product.

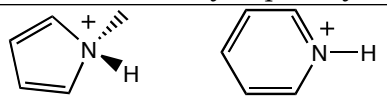


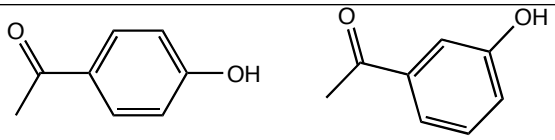
a. (6 pts.) When one is not dealing with a poor leaving group or a sterically demanding base what is the basis for saying that the major product is the more substituted product.



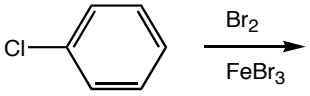
b. (4 pts.) Why is the less substituted alkene the major product in this reaction?

6. (6 pts. each) For each of the following pairs of molecules identify the molecule that is the stronger acid and briefly explain your choice.

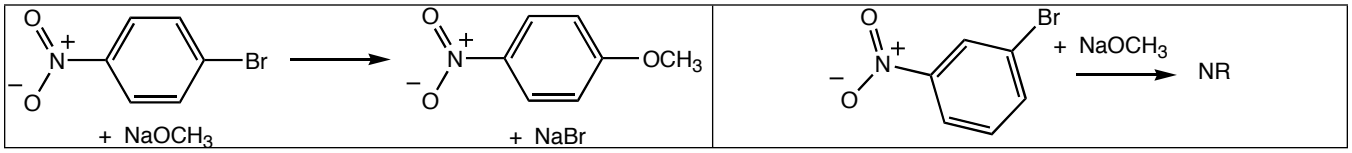




7. In the following electrophilic aromatic substitution reaction, only one product is observed. (a. 4 pts.) Draw that product, and (b. 6 pts.) explain why it is the only product (in your explanation consider whether the Cl is a π-donor, π-acceptor, σ-donor, and/or σ-acceptor of electron density).



8. When performing a nucleophilic aromatic substitution, an electron withdrawing group is required. Additionally, the electron withdrawing group must be positioned correctly for the reaction to proceed.



a. (5 pts.) Explain why an electron withdrawing group is needed, and (b. 5 pts.) why the position of the electron withdrawing group is critical.