

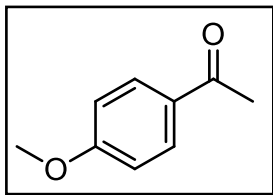
Discussion Section 8

Helpful Tips for Arrow Pushers

Adapted from Prof. K. A. Woerpel and Prof. C. J. Douglas

1. Electrons flow from sites of high electron density to sites of low electron density. Arrows represent this electron flow.
2. Balance the equation. It really helps.
3. Don't violate the basic rules of physics.
 - a. Conservation of mass and energy (a corollary to step 2)
 - b. Conservation of charge (a more common error than you might think)
4. Draw out all intermediates.
 - a. Take your time here: a common mistake is to improperly draw an intermediate.
 - b. Draw out the lone pairs and H's on reacting atoms.
 - c. A 3-D depiction can be useful. Use models if necessary.
 - d. Consider the reaction conditions when drawing intermediates: Do not draw carbocations under basic conditions or anionic leaving groups under acidic conditions.
5. Use your lone pairs.
6. The correct mechanism gives the observed product.
7. Always identify the nucleophiles and electrophiles at every step.

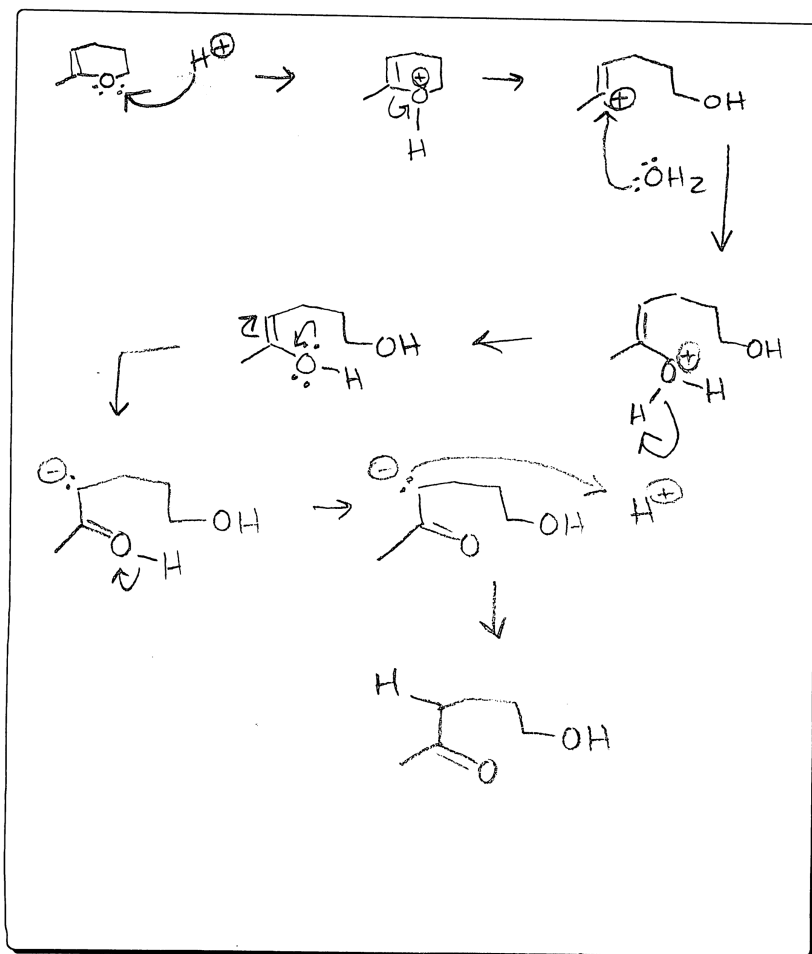
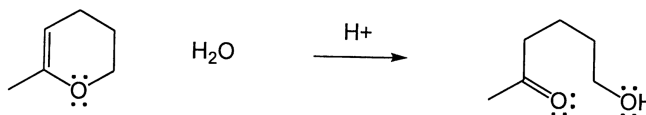
1. Please draw all possible resonance structures for the following compound:



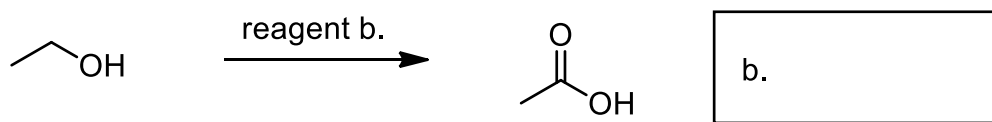
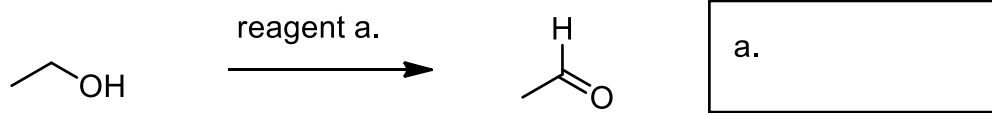
2. Please correct the following arrow pushing mechanism:

Name: _____

9. (40 points) Please draw a reasonable arrow-pushing mechanism for the following reaction.



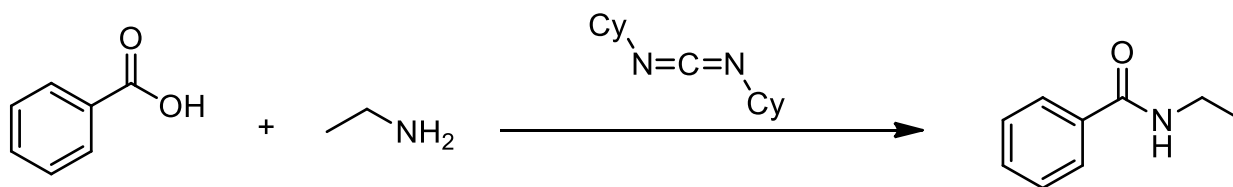
3. Please fill in the reagents required for each of the transformations below, and draw an arrow pushing mechanism for both reactions:



Mechanism for first reaction:

Mechanism for second reaction:

4. Please draw a reasonable arrow-pushing mechanism for the following transformation:



5. You will do a Fischer esterification in your lab this week, please write a detailed arrow-pushing mechanism of this transformation:

