

Organic Chemistry II
Spring 2015
Exam 1

Name:

Sign:

Recitation Instructor:

Instructions:

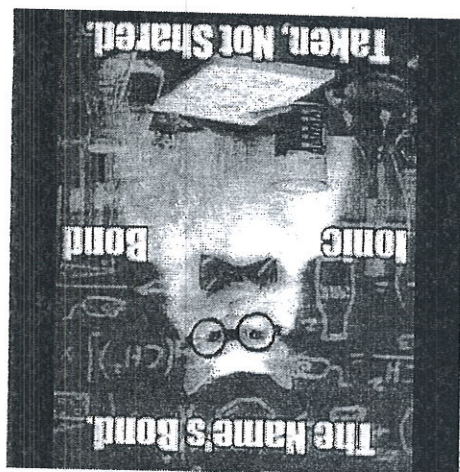
1. The following exam consists of 6 questions. The first thing you should do is check to make sure no questions are missing. If a page is missing, let a proctor know immediately.
2. You have 1 hour and 15 minutes to complete the exam, at which point pencil and paper must be put down. Budget your time wisely.

3. Make sure to show all of your work for full credit. If you need to use the back of the sheet of paper, you must make note of it in the space allotted for credit.

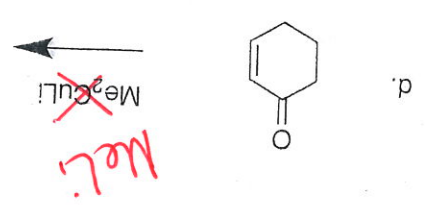
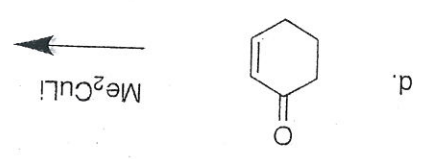
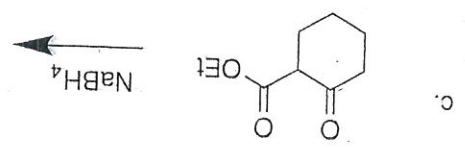
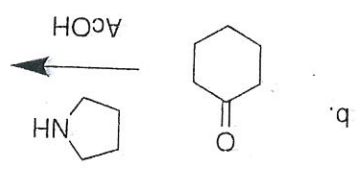
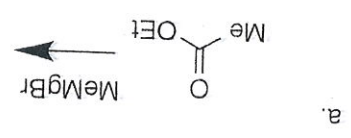
4. Good luck!

Breakdown

1.	___/20
2.	___/20
3.	___/20
4.	___/10
5.	___/10
6.	___/20

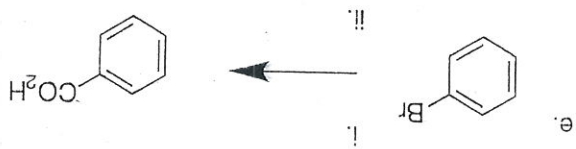
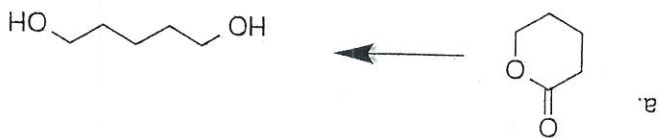


1. Show the products expected for the following reactions after an aqueous workup (meaning, add water after reaction is done to quench reaction) (4 points each, 20 points)

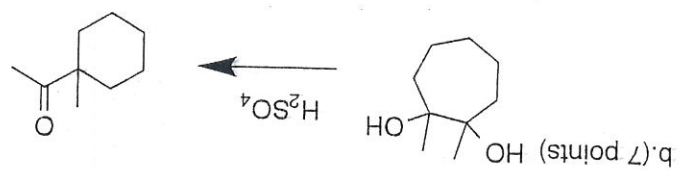
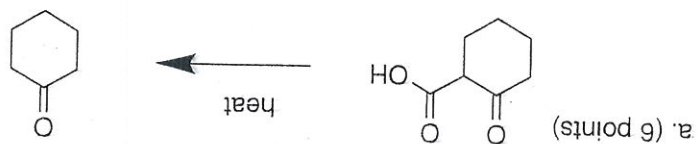


2. Show the reagents necessary for the following reactions. Make sure to show all reactive components (ie, no solvents necessary, unless solvent is reagent). Aqueous workup is assumed for all reactions.

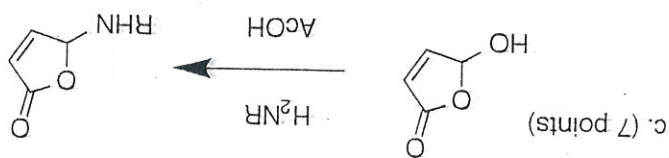
(20 points)



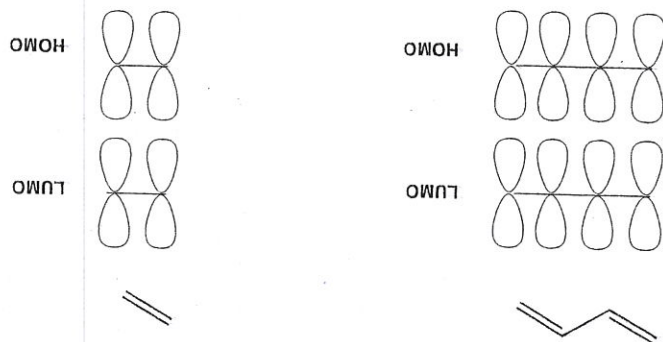
3. Show a mechanism using all curved arrows at each step, for the following reactions (20 points)



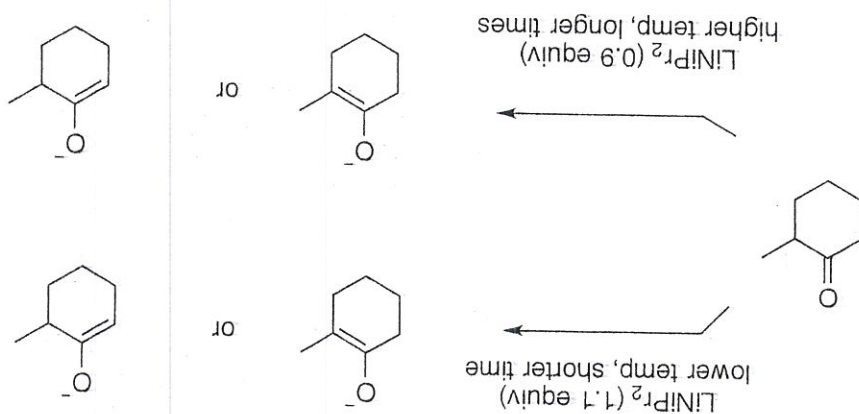
Question continued...



4. Shade in the HOMO (highest occupied molecular orbital) and LUMO (lowest unoccupied molecular orbital) for butadiene and ethylene. Explain why these can react with one another thermally. (10 points)



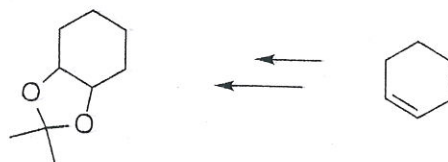
5. For the following, circle the major enolate for each set of conditions (6 points)



5b. Which of these enolates would you consider thermodynamic, and which would you consider kinetic and why? Do not use circular arguments (ie, this one is kinetic because it reacts fastest). Explain using chemical reasoning (ie, why does that one react fastest?). (4 points)

6. Propose a synthesis for the following interconversion. Make sure to show all intermediates for full credit (20 points, 10 points each)

a.



feel free to synthesize either diastereomer

b.

