

Fall Semester 2013
Organic Chemistry I
Midterm Examination #1

Name (print):

Name (sign):

Recitation Instructor (name, day):

Instructions

1. Keep the exam closed until you are instructed to begin.
2. The exam consists of 10 questions. The first thing you should do is make sure that no pages are missing. If a page is missing, notify a proctor immediately
3. You will have 1 hour and 15 minutes. Questions are labeled from easy (*) to hard(***). Budget your time wisely.
4. Make sure to show all of your work, and this should fit into the space provided. If you need to use the back of the paper, you must make note of it in the space provided for credit.

Good Luck!

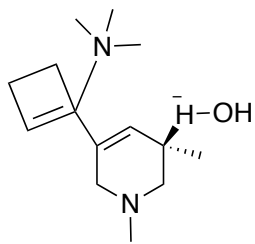
1. ____ (5 points)
2. ____ (5 points)
3. ____ (10 points)
4. ____ (10 points)
5. ____ (10 points)
6. ____ (10 points)
7. ____ (10 points)
8. ____ (10 points)
9. ____ (20 points)
10. ____ (10 points)



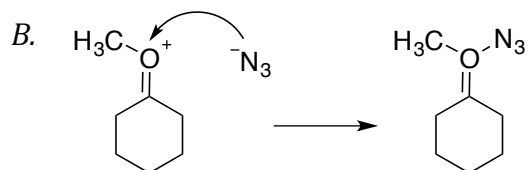
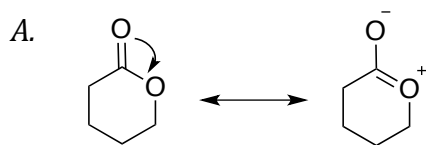
1. Provide an IUPAC Name for the following molecule (5 points).*



2. What is wrong with the following molecule? There may be more than one thing (5 points)*

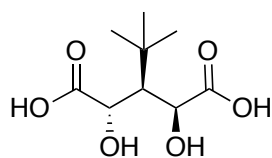


3. What are wrong with the following reaction mechanisms? (10 points)*

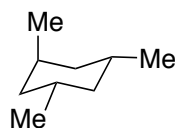


4. Is the following molecule chiral or achiral, and if it is achiral is it meso?
(10 points)**

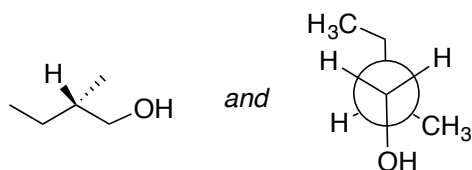
A.



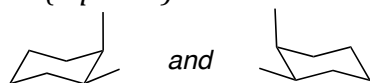
B.



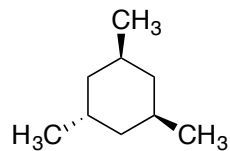
5. Are the following molecules enantiomers, diastereomers, or identical?
a. (5 points)



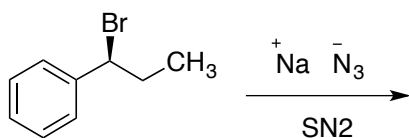
b. (5 points)



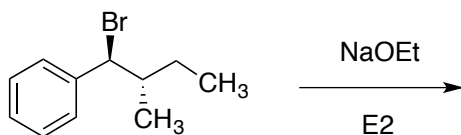
6. Draw both chair conformations of the following molecule, and circle the one that is lower in energy. (10 points)**



7. Predict the product of the following reaction and show a mechanism.**
a. (5 points)

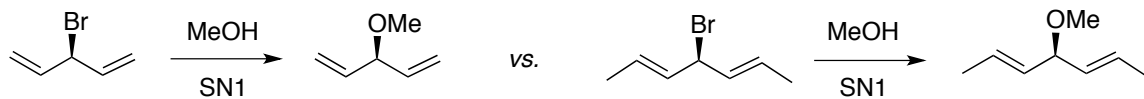


- b. (5 points)

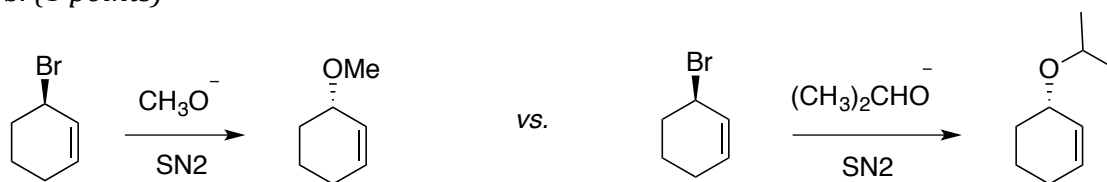


8. Which of the following reactions would you expect to go faster. Explain your answer.

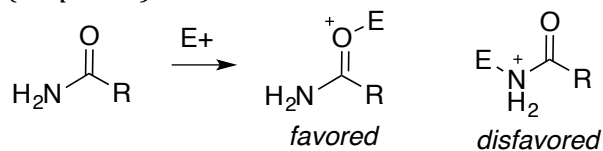
a. (5 points)



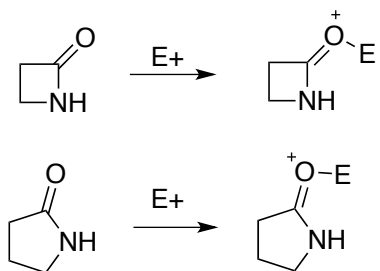
b. (5 points)



9. Explain why the oxygen of an amide is more nucleophilic than the nitrogen.
(10 points)**.



- 9b. Why might you expect the oxygen of a 4-member ring lactam to be less Lewis basic than a 5 member ring lactam? (10 points)***



10. The following is a reaction called a Ritter reaction. Using what you have learned to date (Acid/Base, Resonance forms, Substitution, Elimination) propose a reasonable mechanism (10 points)**

