

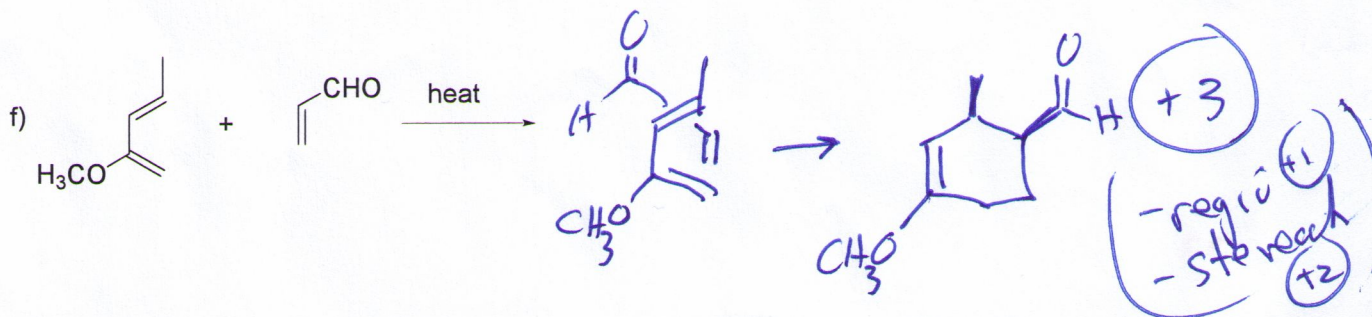
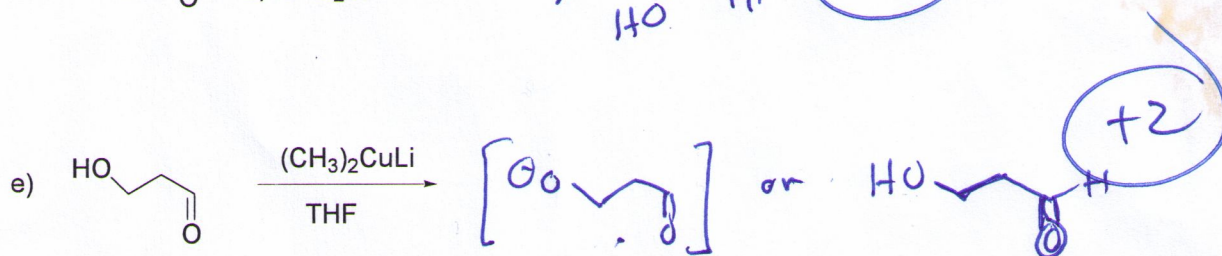
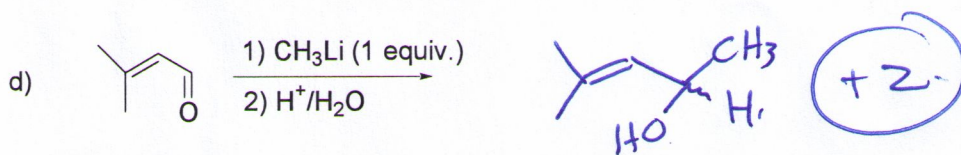
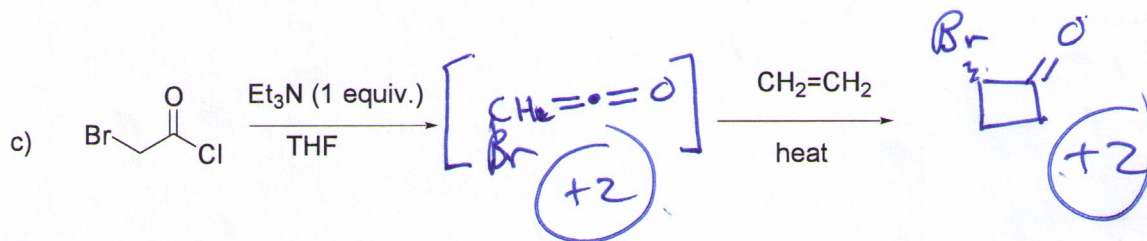
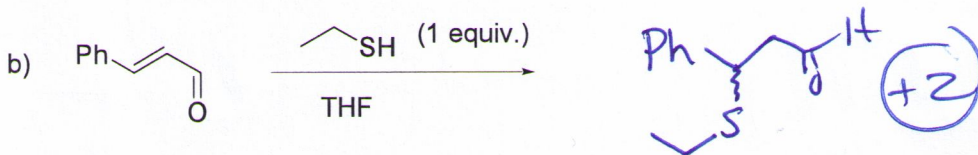
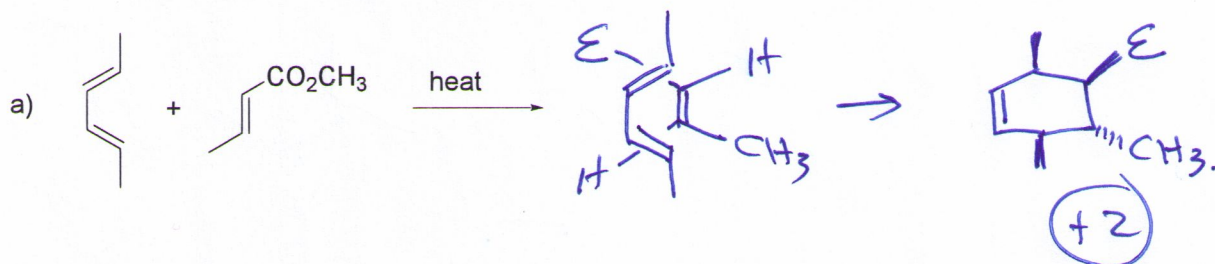
Name:
Student #:

CHM 3120
Intermediate Organic Chemistry (Fall 2010)
EXAM #2

Instructions: Please answer all questions in the space provided. If you require additional space use the back pages. Model kits are permitted.

Time allotted: 2 hrs.

1. Provide the major product(s) expected in the following reactions. Be sure to denote relevant stereochemistry where necessary. (15 points)

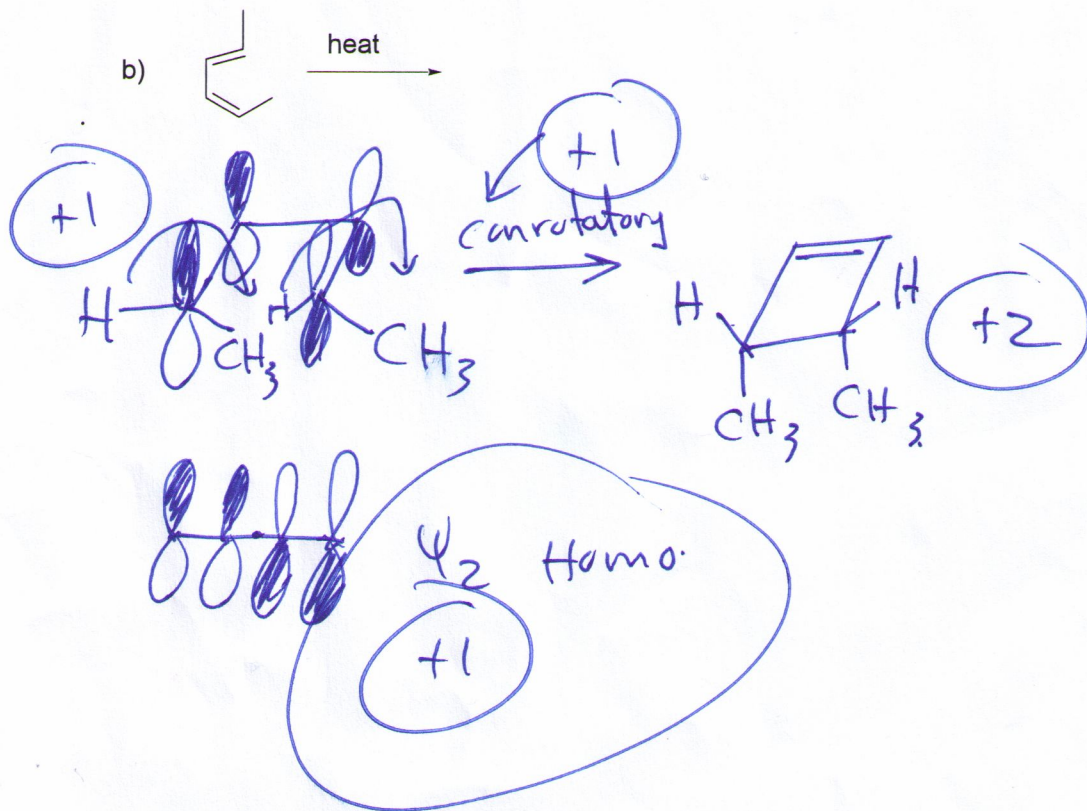
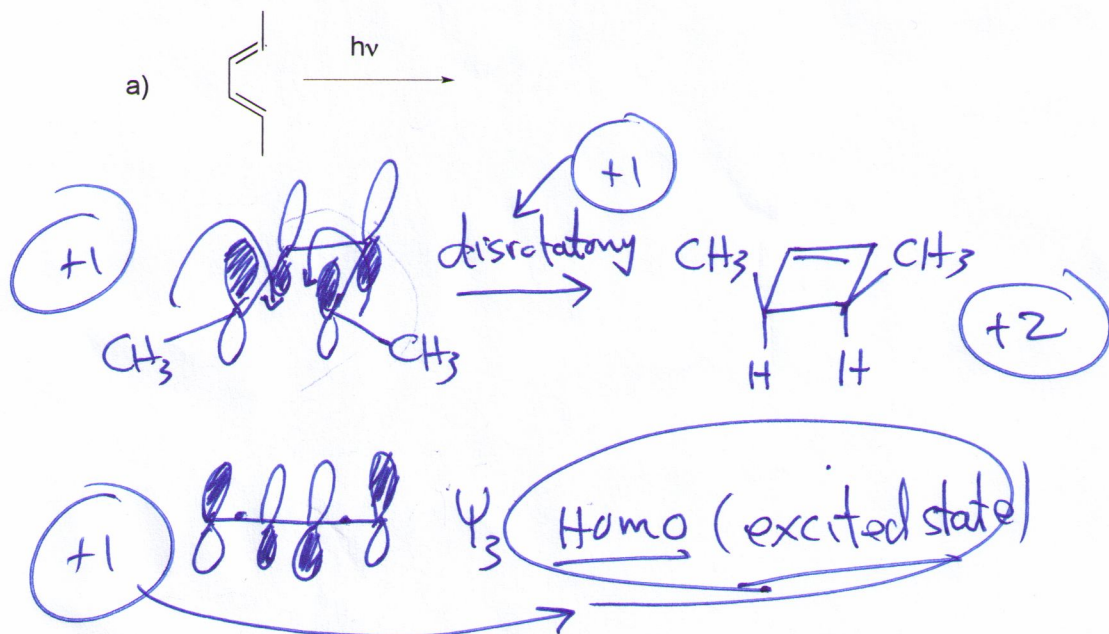


TEAC

Name:

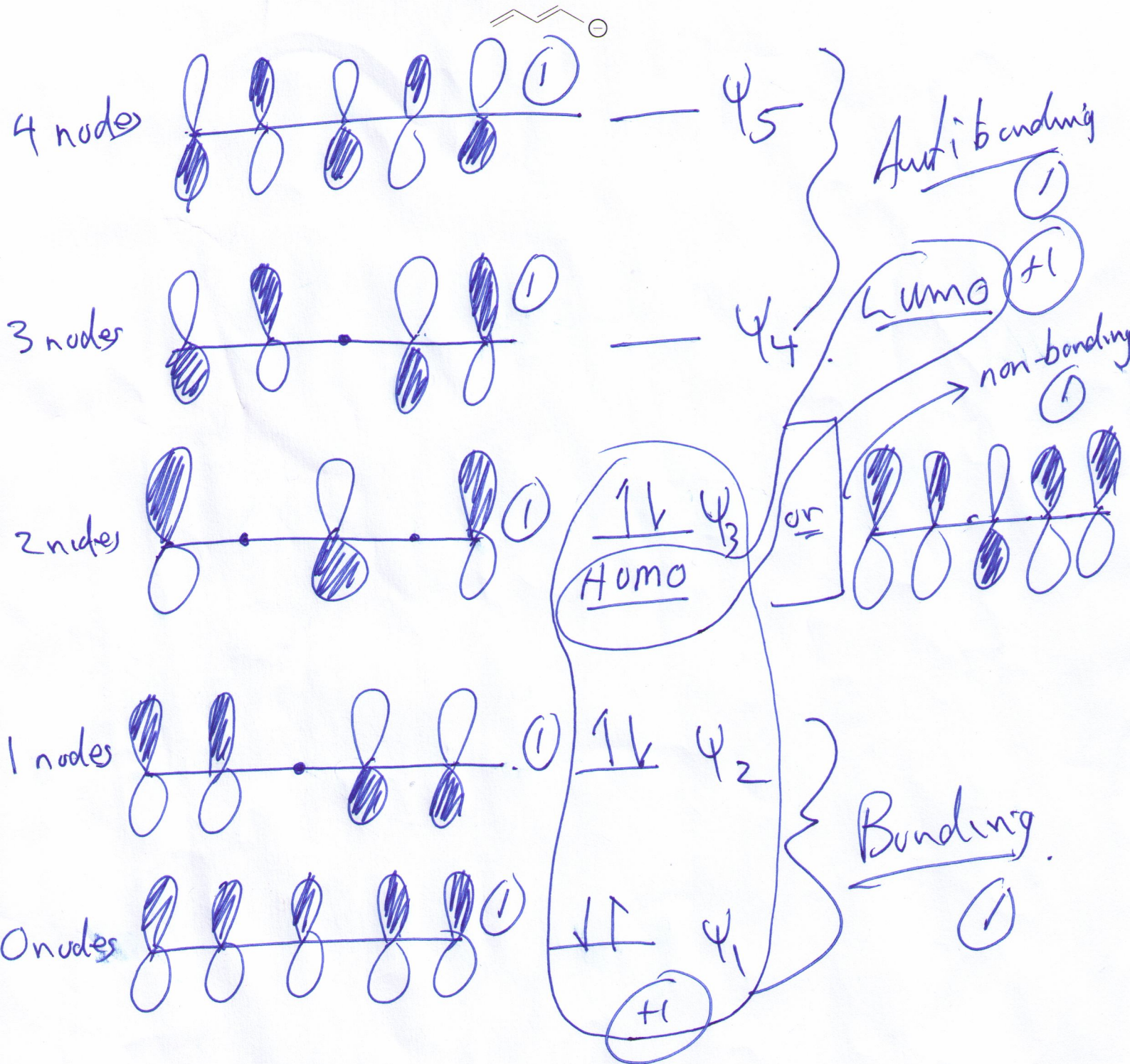
Student #:

2. Predict the products from the following reactions using FMO theory. What do the orbitals in the HOMO of each example look like? Finally, clearly identify and illustrate the nature of bond rotation. (10 points)



Name:
Student #:

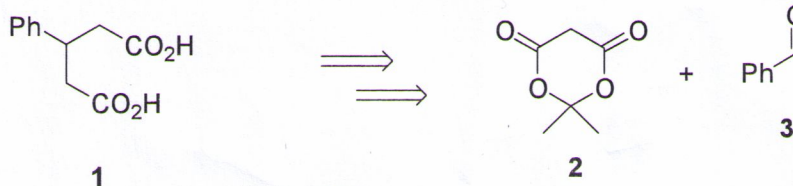
3. Consider the following molecule. Draw the LCAO representation of all the π molecular orbitals. Clearly label all bonding and antibonding orbitals and show the symmetry of each molecular orbital. (10 marks)



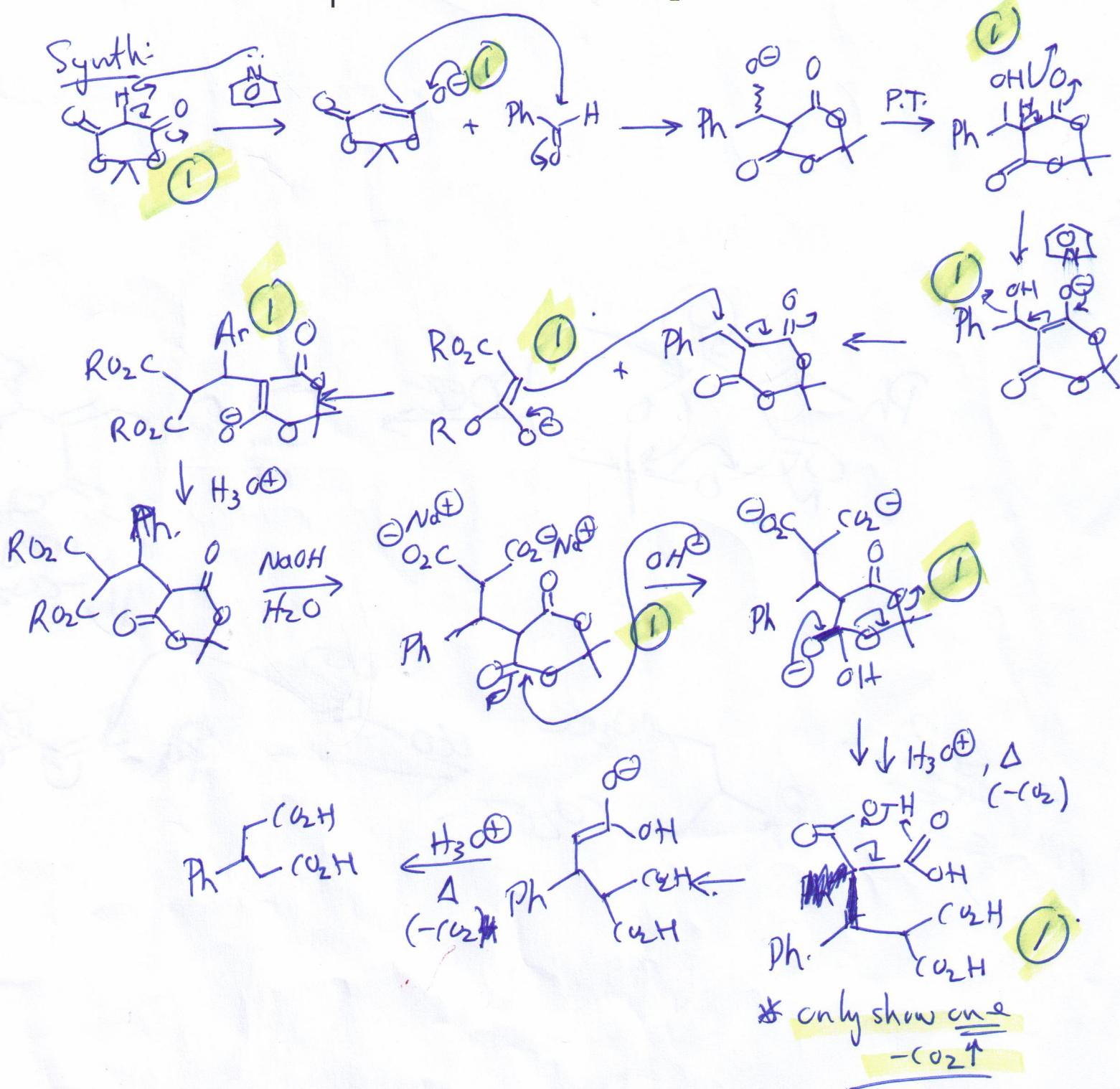
Name:
Student #:

4. Propose a synthesis of compound **1** starting from compound **2** and **3** and any other reagents or starting materials that you may require. For full credit you must show detailed mechanisms, all enolate intermediates and your retrosynthetic analysis. (10 points)

↳ show retro gwei (+1)

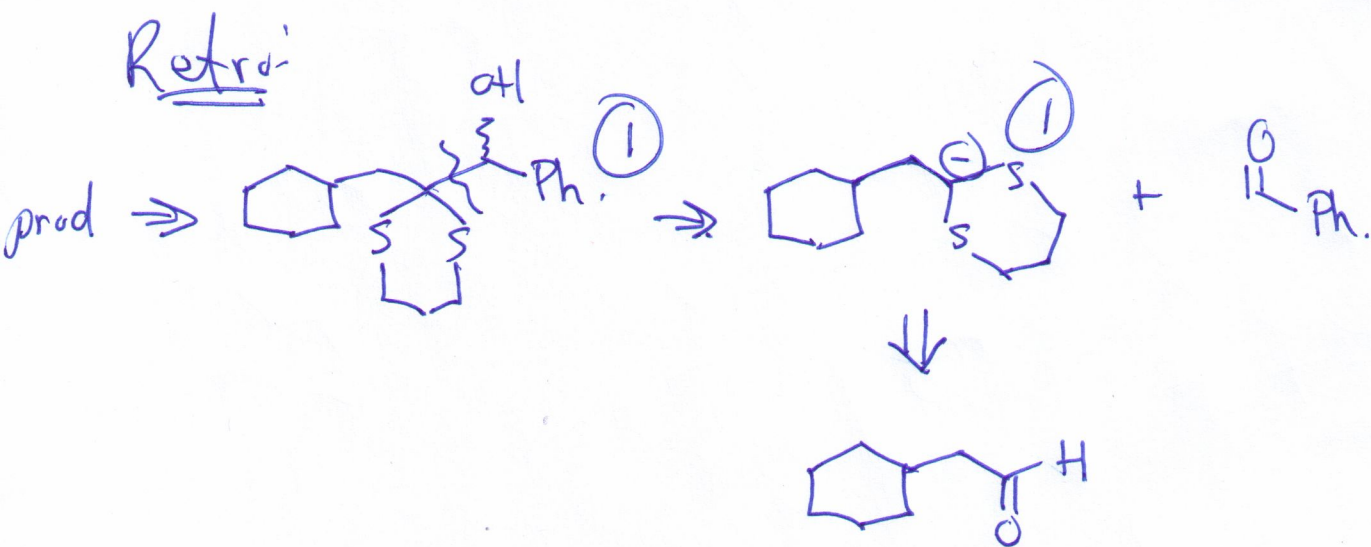
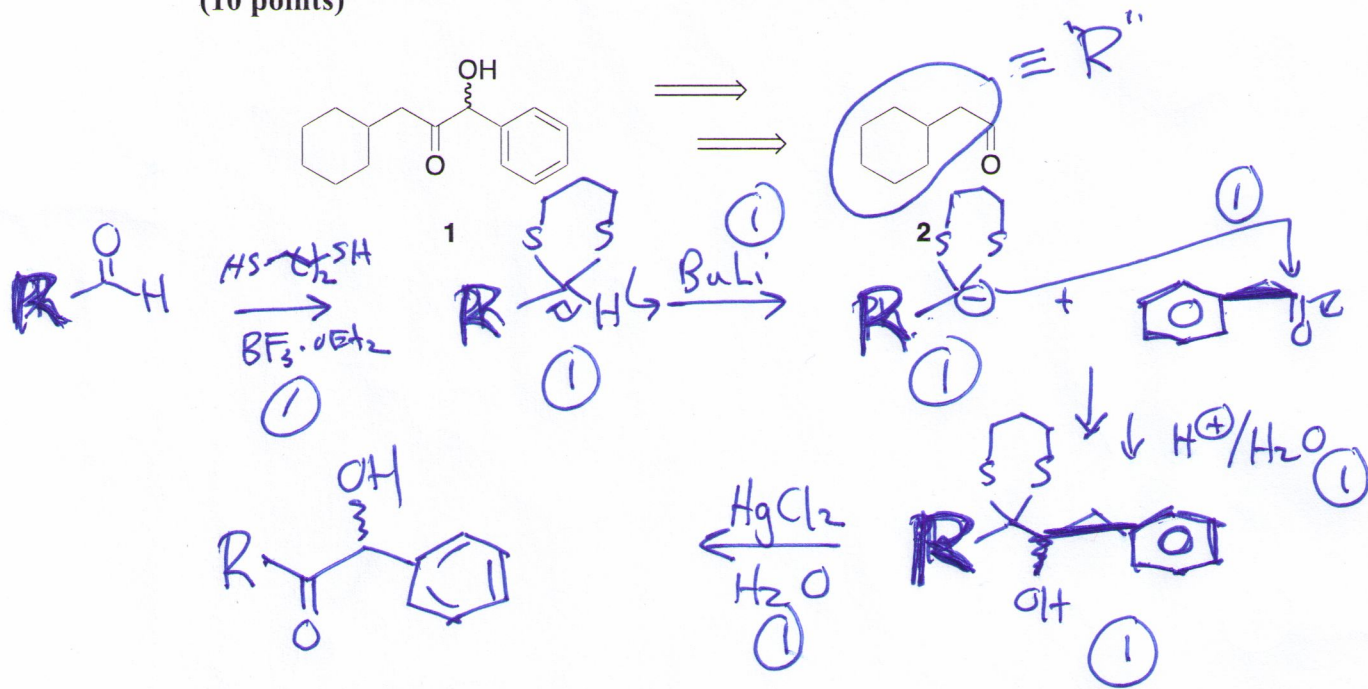


Synthi:

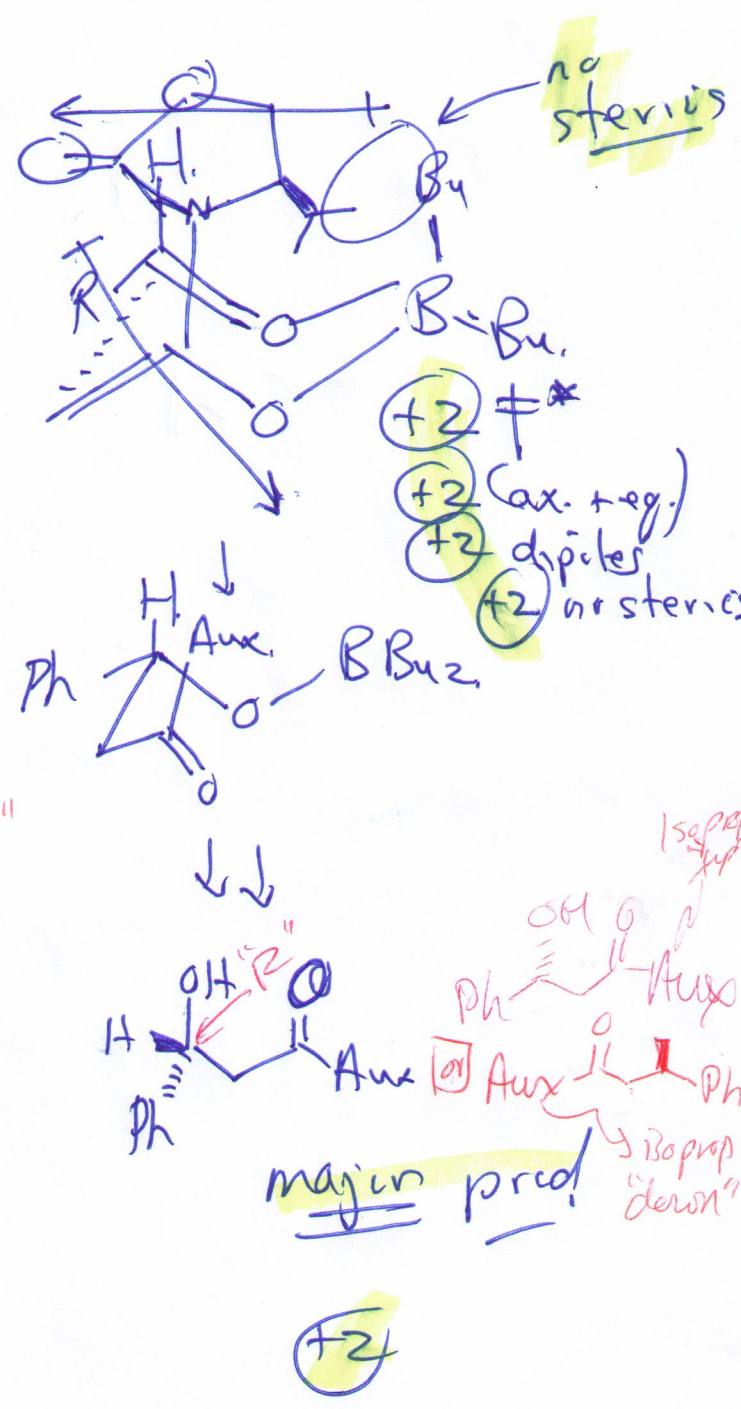
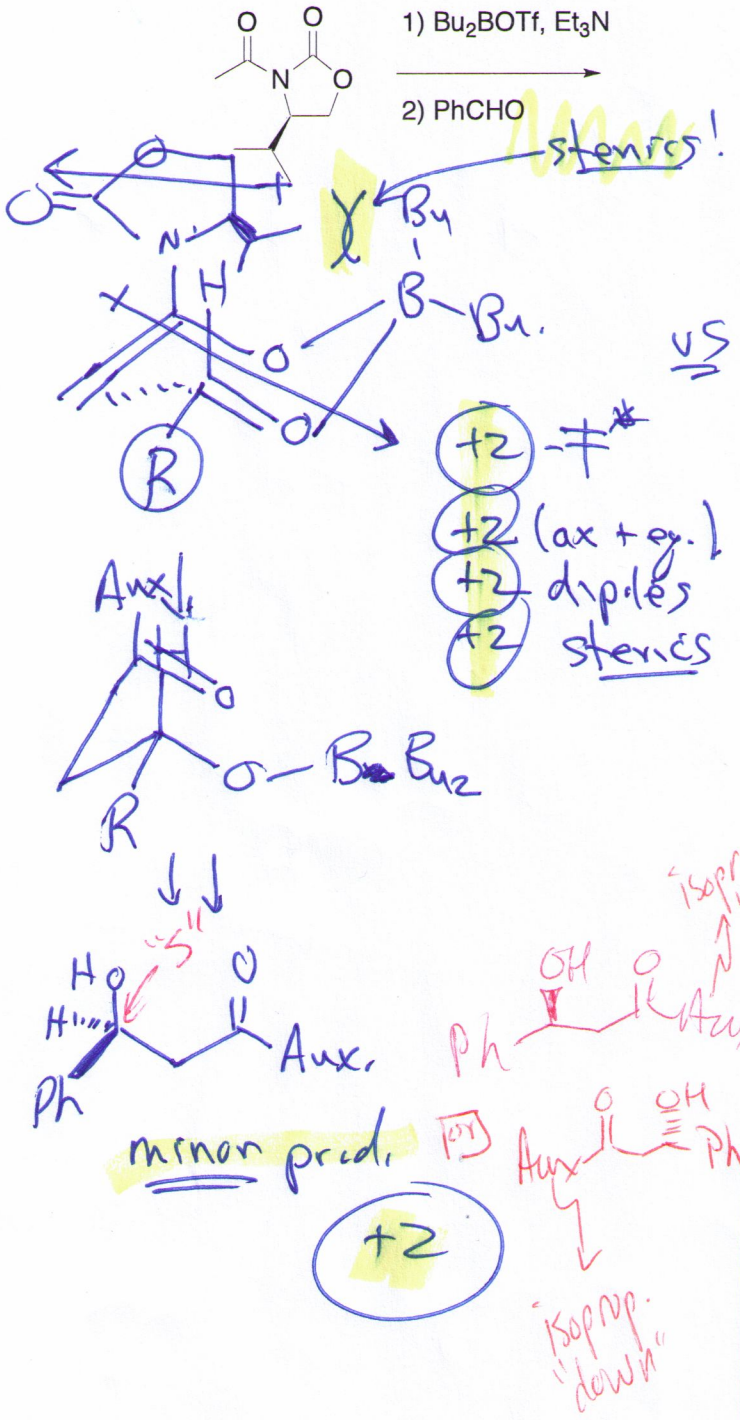


Name:
Student #:

5. Propose a synthesis of compound **1** starting from compound **2** and any other reagents or starting materials that you may require. For full credit you must show detailed mechanisms, all enolate intermediates and your retrosynthetic analysis. (10 points)

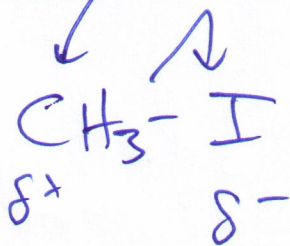
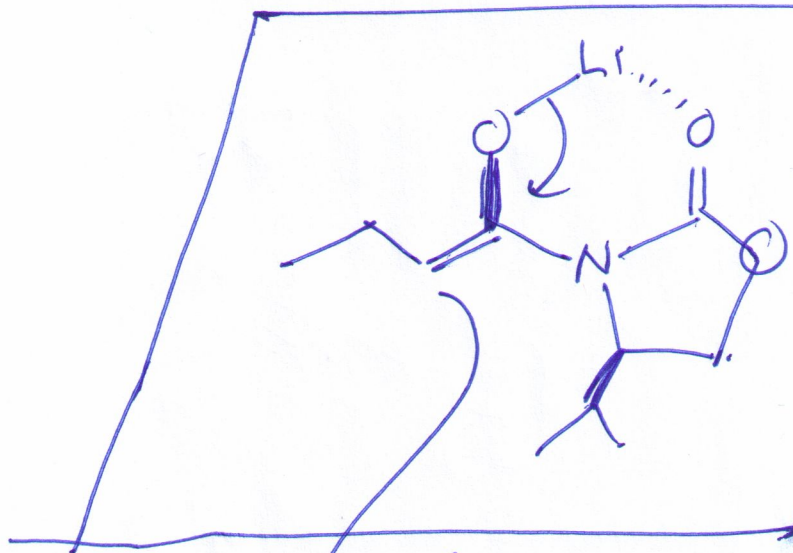
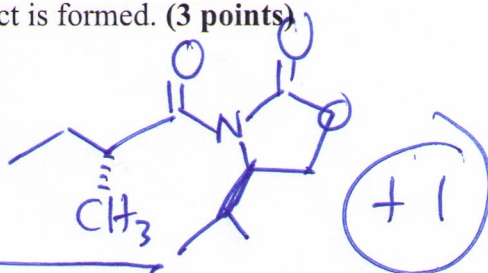
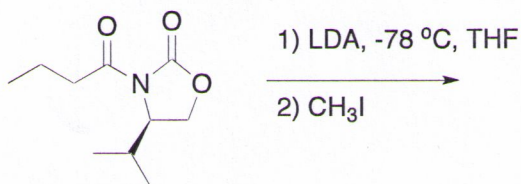


6. Consider the following reaction. There is a major and minor product formed. Provide the structure of **either** the major or minor product (your choice) **and** the transition state corresponding to that product. (10 points)



Name:
Student #:

7. **BONUS:** What is the structure of the major product in the following reaction? Draw a transition state that explains how this product is formed. (3 points)



+1 ~~\neq~~

+1

- approach from
bottom face
(- isopropyl gp blocks
top face)