

Chemistry 547 (Reich)

First Hour Exam

Oct. 17, 2013

Question 1 ____/32

2 ____/16

3 ____/25

4 ____/20

4 ____/7

Total ____/100

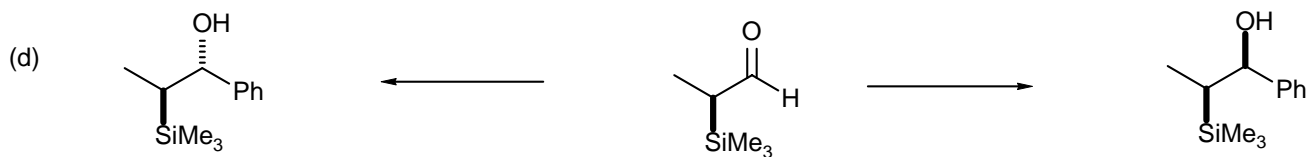
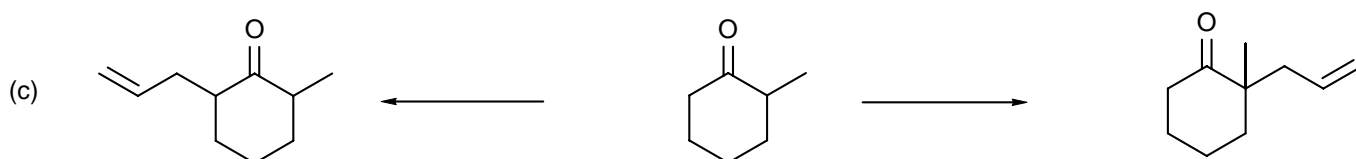
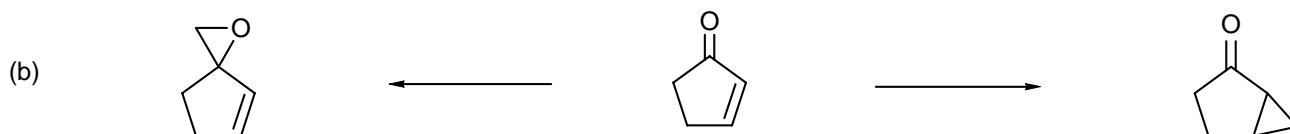
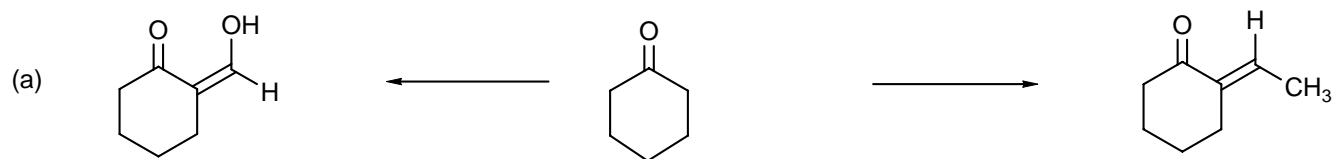
Name _____

If you place answers anywhere else except in the spaces provided,
clearly indicate this on the answer sheets.

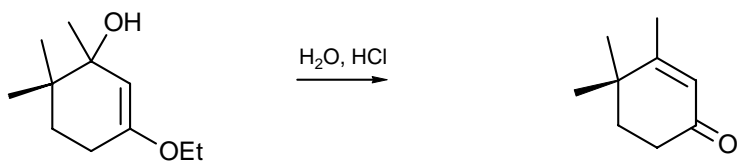
NOTE: Do not use acronyms for reagents or solvents, unless you define them first.

For the synthetic transformations which involve more than one step, you should show the product of the reaction after each step, but you do not need to write mechanisms. Only question 2 requires detailed mechanisms.

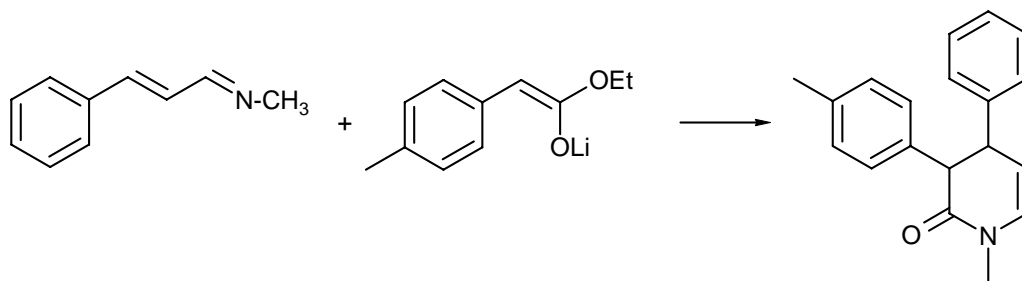
1. (32) Provide reagents and, if pertinent, reaction conditions, to accomplish the following selective transformations. If you use more than two steps show all intermediate products.



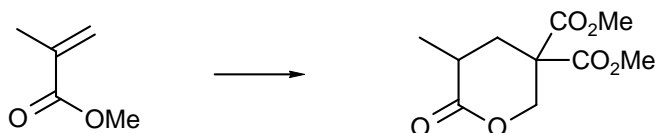
2. (a) (8) Write an electron-pushing mechanism for the transformation below. Show all steps.



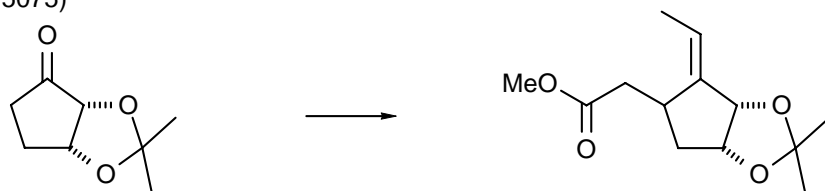
(b) (8) Write an electron-pushing mechanism for the transformation below. Show all steps.



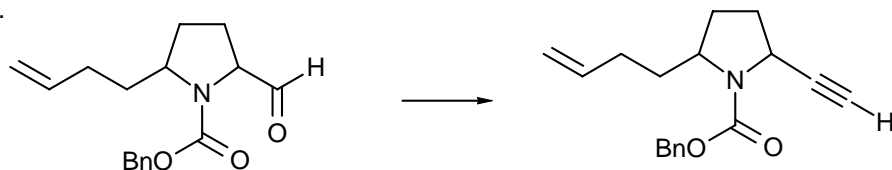
3 (a) (10) In the early part of a synthesis of Erythromycin A the following transformation was carried out. Show how this can be done.



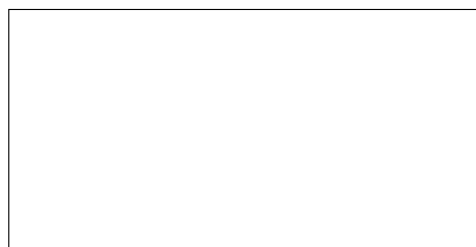
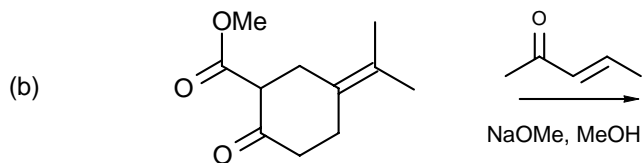
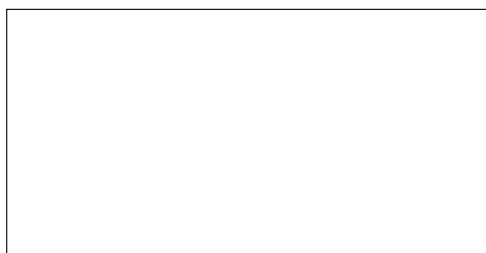
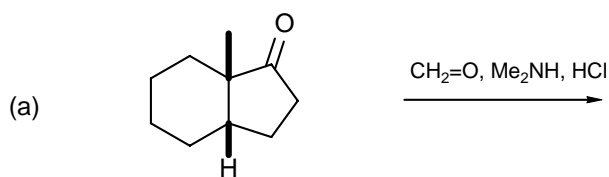
(b) (10) Provide reagents and, if pertinent, reaction conditions, to accomplish the following transformation encountered in the synthesis of Oleocanthal (Smith, A. B.; Han, Q.; Breslin, P. A. S.; Beauchamp, G. K. *Org. Lett.* **2005**, *7*, 5075)



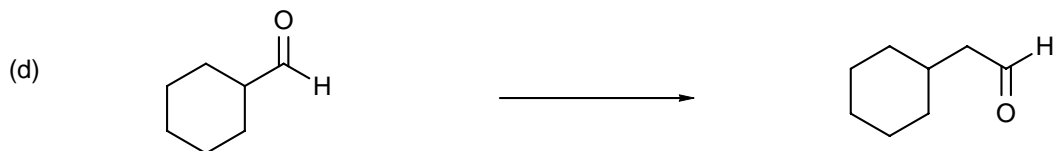
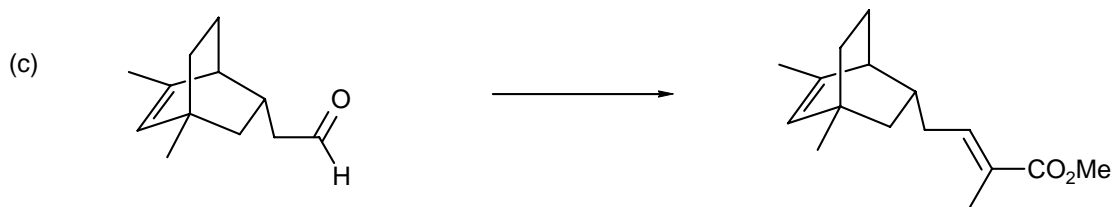
(c) (5) In a 2004 synthesis of Anatoxin A the following transformation was carried out. Show how this can be done.



4. (20) Provide the missing product or reagents for the transformations below. You do not have to write mechanisms. For parts (c) and (d) write the product after each step if you use more than one step



The net reaction involves loss of a molecule of water



5. (7) The following name reactions have been discussed in the course. Give a specific (no "R" or "X" groups) example of two of them. Identify which you have chosen!

Horner-Wadsworth-Emmons Reaction

Mannich Reaction

Claisen Condensation

Corey-Fuchs Reaction

Koevenagel Condensation

Morita-Bayliss-Hillman Reaction

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