

Massachusetts Institute of Technology

5.13: Organic Chemistry II

May 10, 2002

Test 4

Question 1 _____/26 points

Question 2 _____/08 points

Question 3 _____/14 points

Question 4 _____/12 points

Question 5 _____/12 points

Question 6 _____/16 points

Question 7 _____/12 points

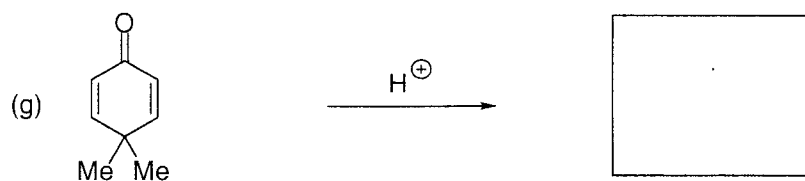
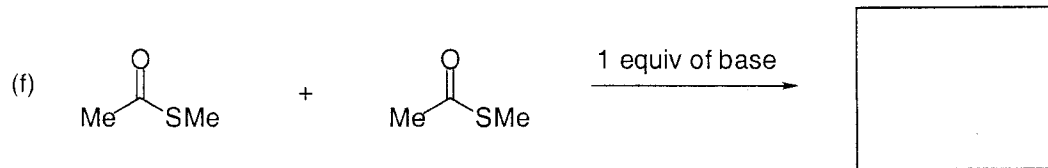
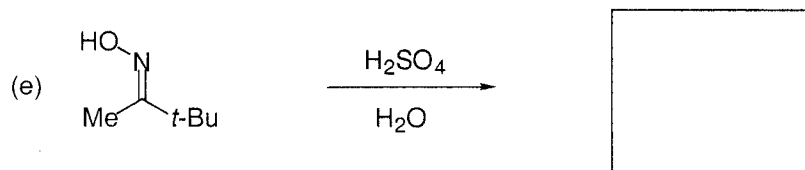
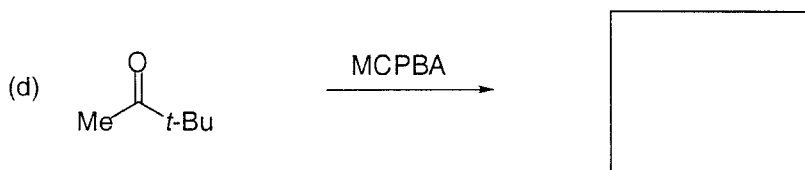
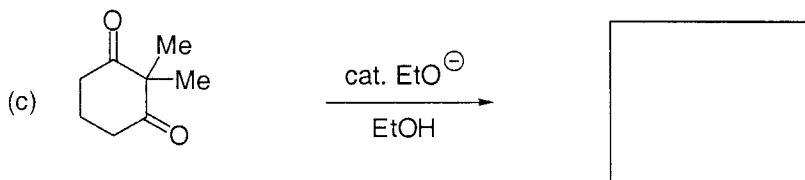
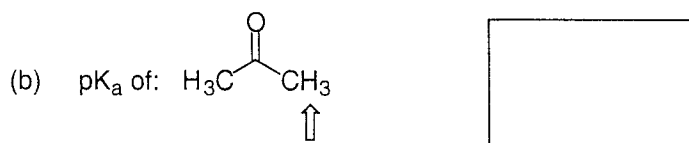
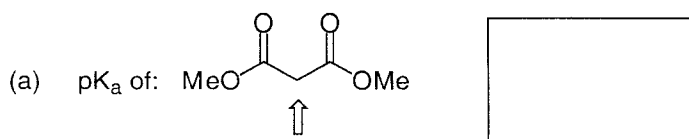
TOTAL _____/100 points

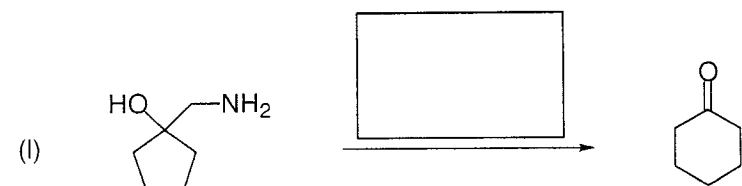
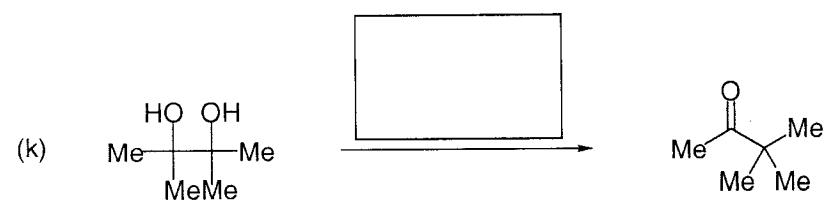
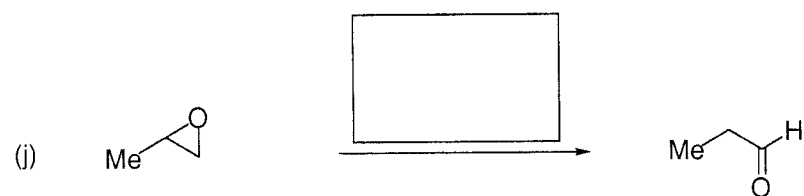
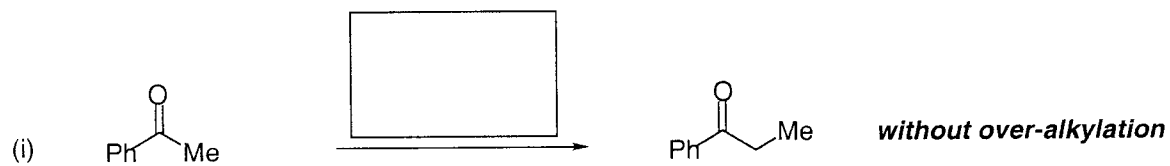
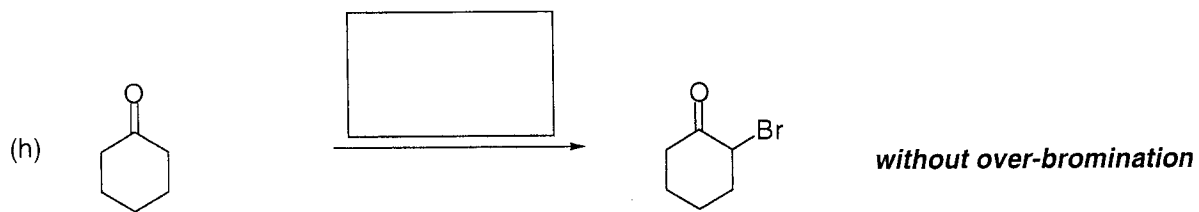
Name _____

T.A. _____

There are eight pages (2-9) of questions in this exam.

(1) (2 points each, 26 points total) Please provide the requested answer/data/reagents. If no reaction is expected, write "NR".

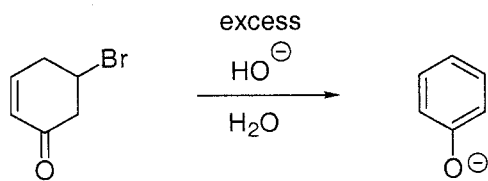




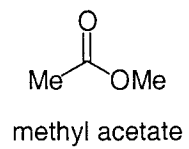
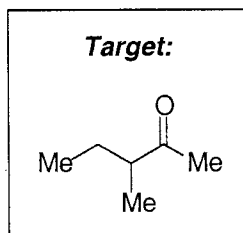
(m) Circle the cation that is more stable:



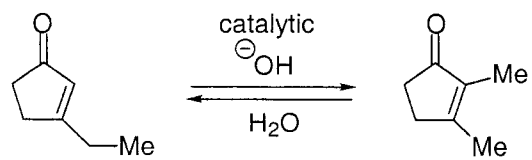
(2) (8 points) Provide the best mechanism. Please show all arrow pushing.



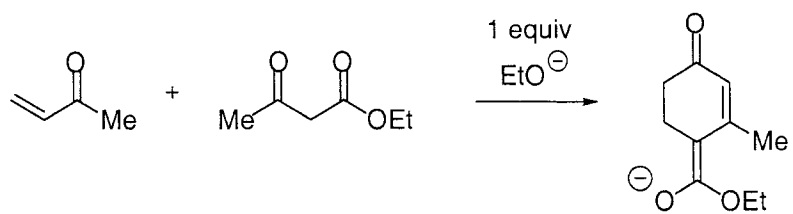
- (3) (14 points) Synthesize the illustrated ketone. ALL carbons of the ketone must be derived from molecules of methyl acetate, which has three carbons. You may not use lithium diisopropylamide in your synthesis.



- (4) (12 points) Provide the best mechanism for the illustrated transformation. Please show all arrow pushing.

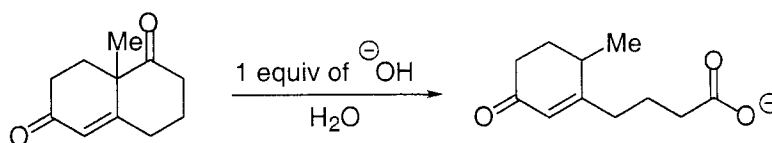


(5) (12 points) Provide the best mechanism. Please show all arrow pushing.

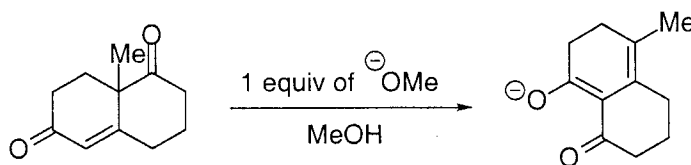


(6) (16 points total) Provide the best mechanism for each of the reactions illustrated below. Hint: The mechanism for part (a) only requires three or four steps. Please show all arrow pushing.

(a) (7 points)



(b) (7 points)



(c) (2 points) Succinctly explain why different pathways are observed under the different reaction conditions.

- (7) (12 points) Provide the best mechanism for the illustrated transformation.
Please show all arrow pushing.

