

First Three Letters of Last Name:

TA Name:

Hour Exam #4
5.13 Fall 2006
Organic Chemistry II
December 6, 2006

Name _____
Signature _____
ID# _____

1. Make sure your exam has 7 numbered pages plus a periodic table.
2. Write your initials on each page.
3. Look over the entire exam before you begin to familiarize yourself with its length. Do what you know first, then attempt the harder problems.
4. Read the instructions carefully and budget your time.
5. Show all of your work. Partial credit receives points!

1. (3pts) For each molecule, write the correct pK_a value for the most acidic proton.

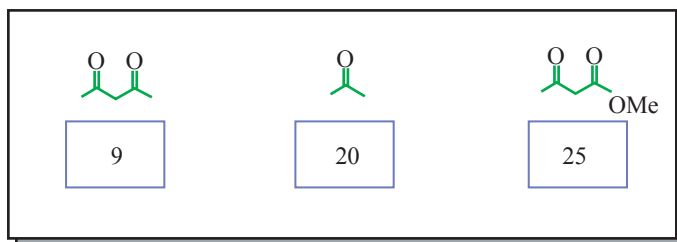


Figure by MIT OCW.

2. (16 pts) Fill in the correct reactants for the following transformations.
Be specific about quantities, where relevant.

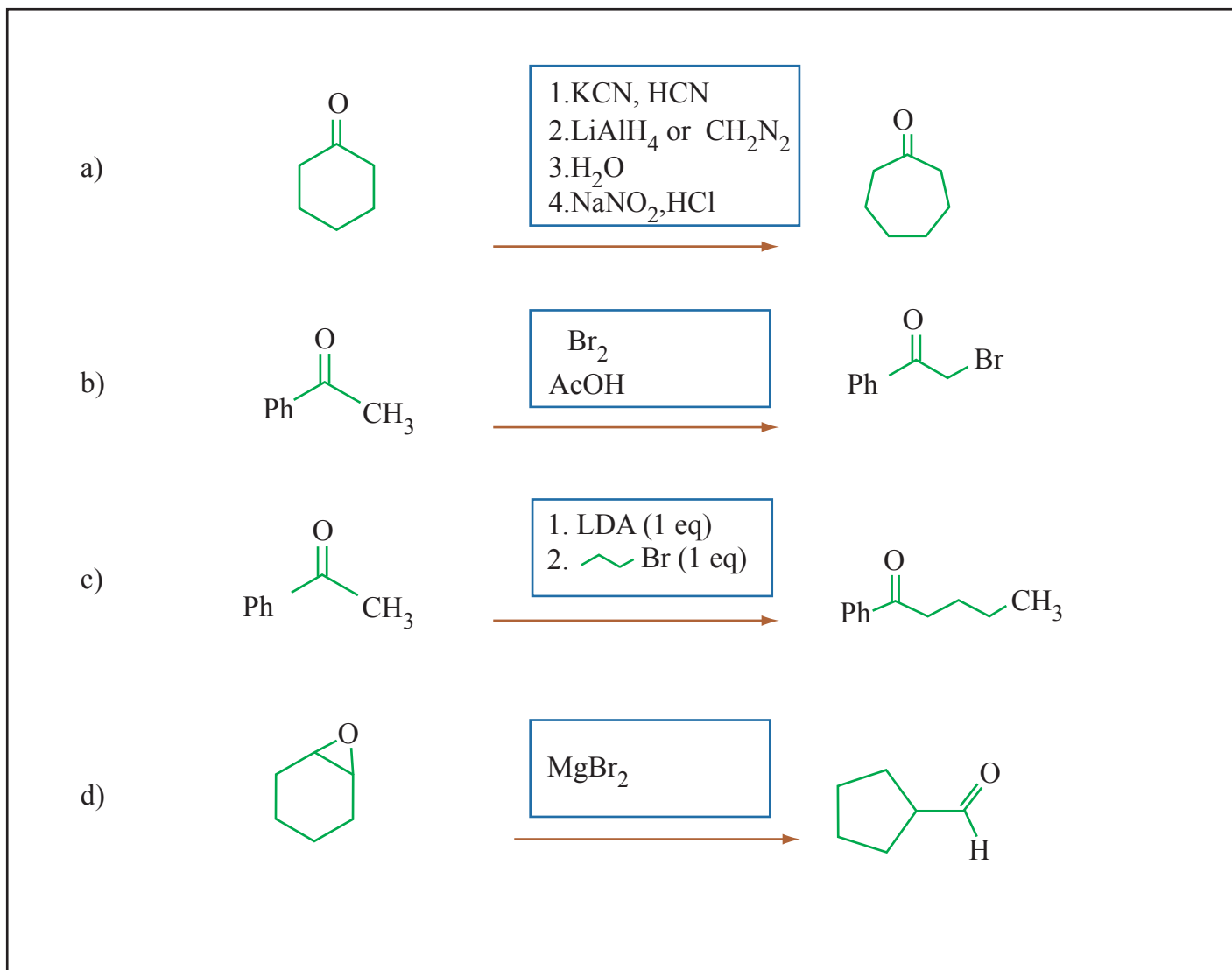


Figure by MIT OCW.

3. (24 pts) Provide the missing products for each reaction. Indicate no reaction with N.R.

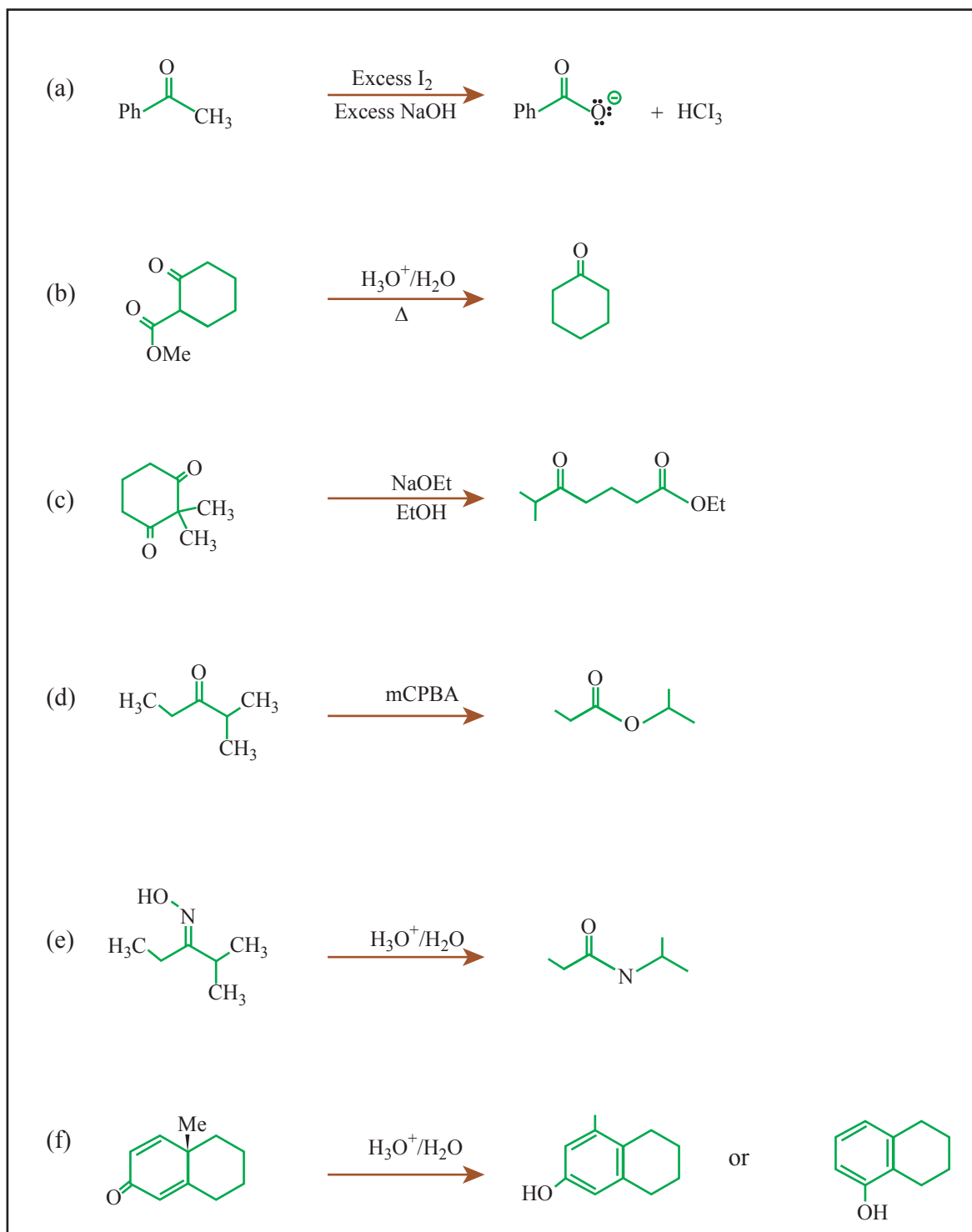


Figure by MIT OCW.

4. (15 pts) Provide a mechanism for the following transformation.

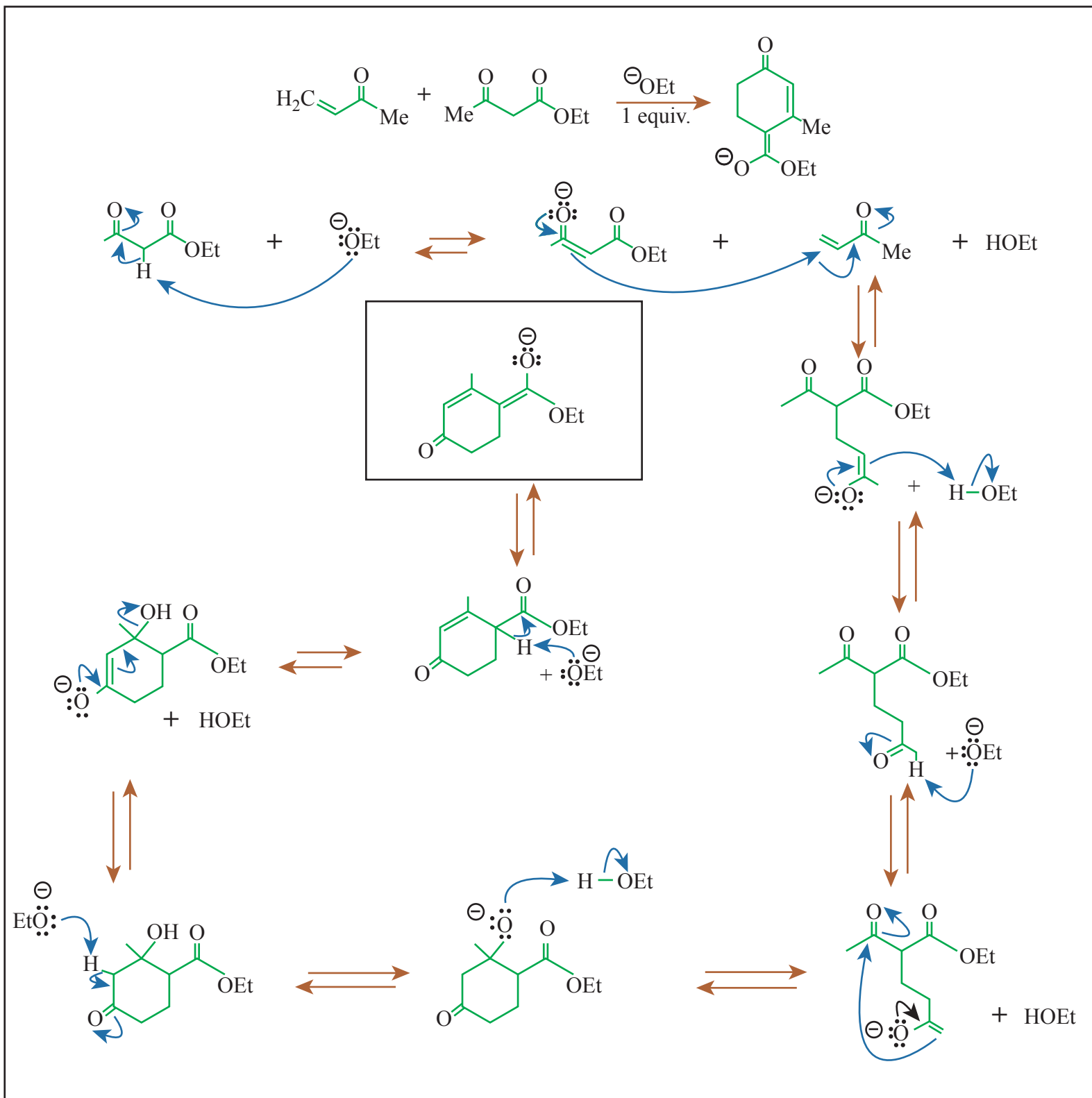


Figure by MIT OCW.

5. (14 pts) Provide a mechanism (*steps 1 and 3 only*)

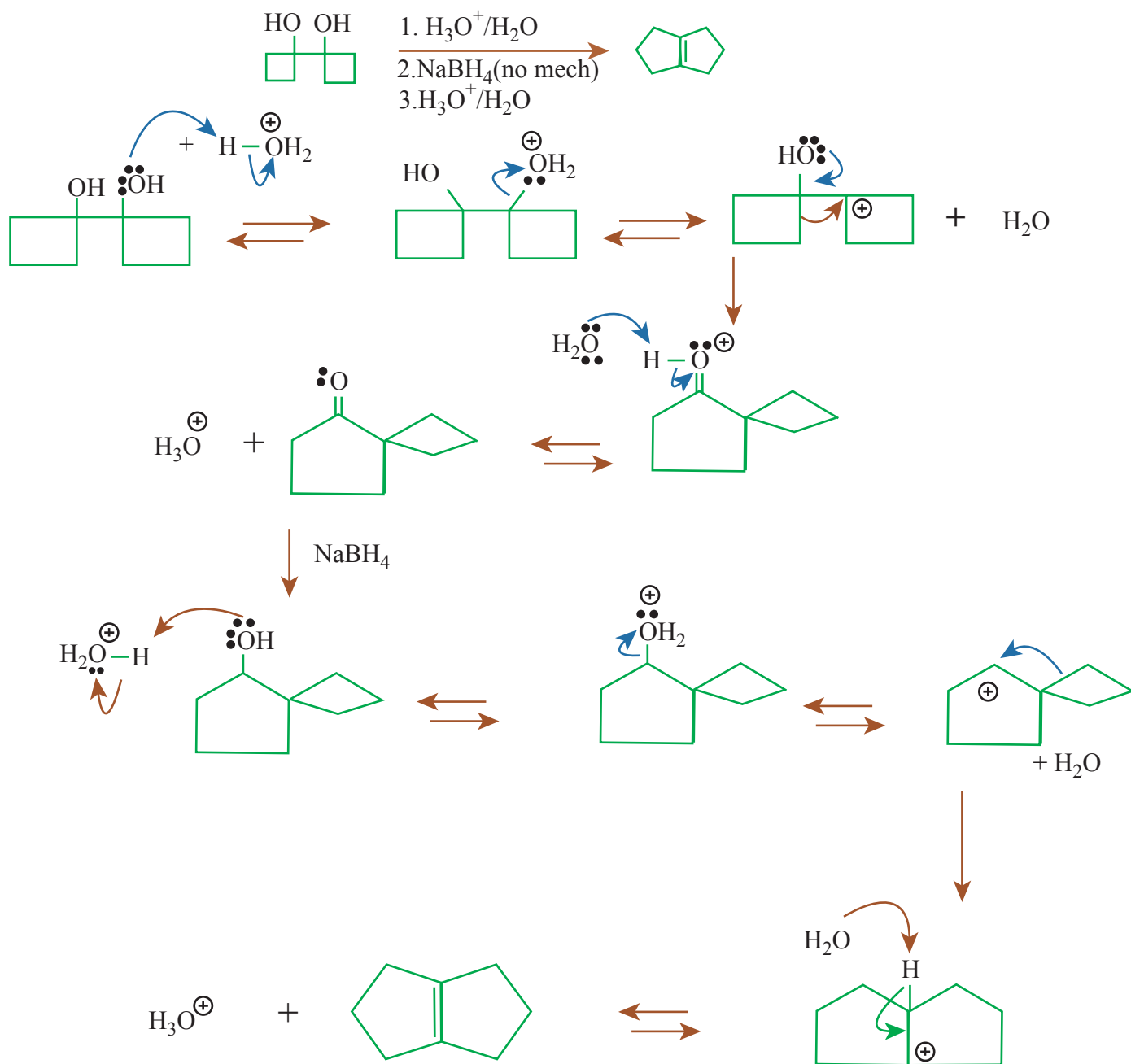


Figure by MIT OCW.

6. (14 pts) Synthesize the target molecule from methyl acetate. Partial credit will be given for a retrosynthetic analysis.

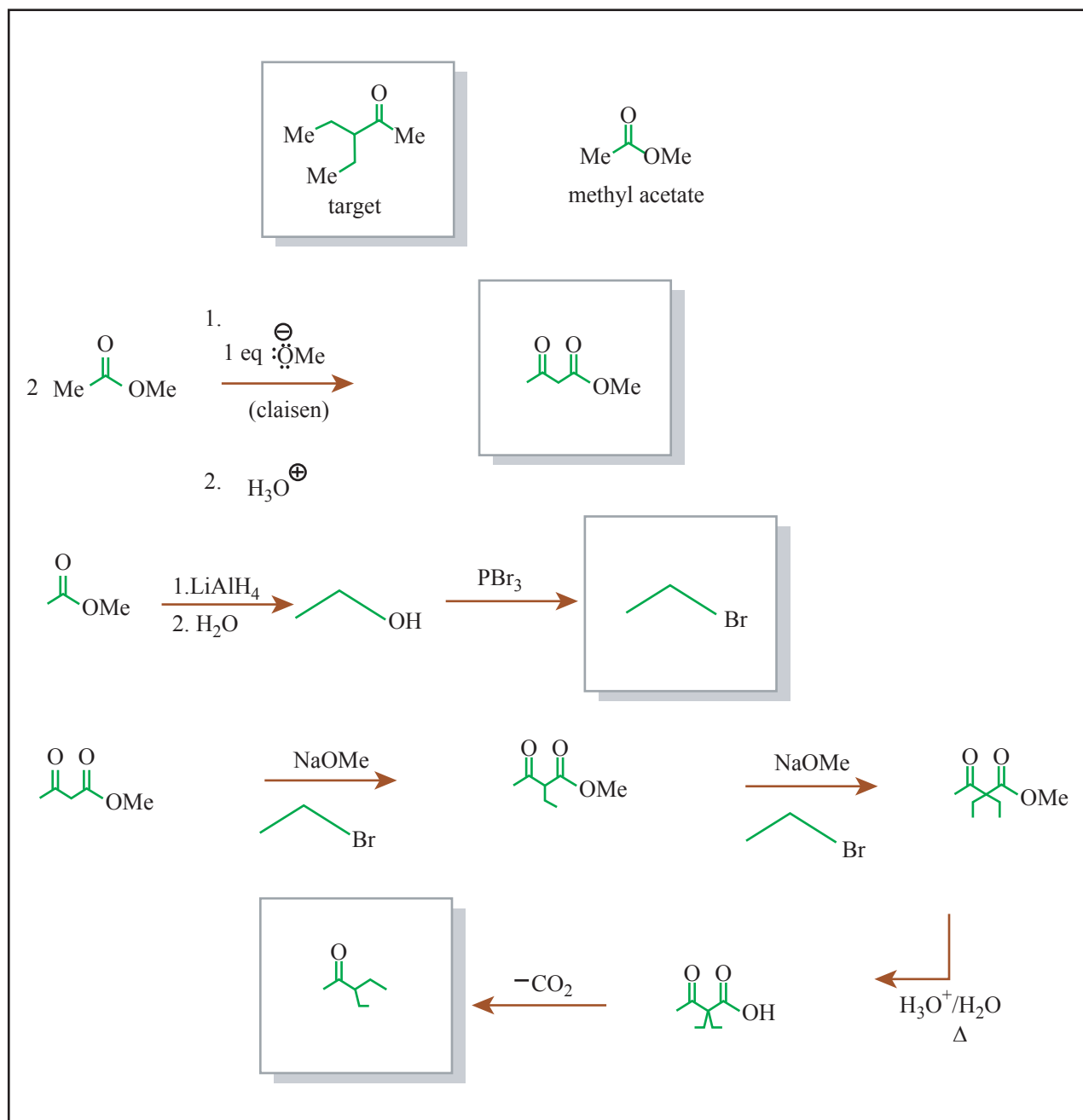


Figure by MIT OCW.

7. (14 pts) Synthesize the target molecule from methyl acetate and 2-butanol. Partial credit will be given for a retrosynthetic analysis.

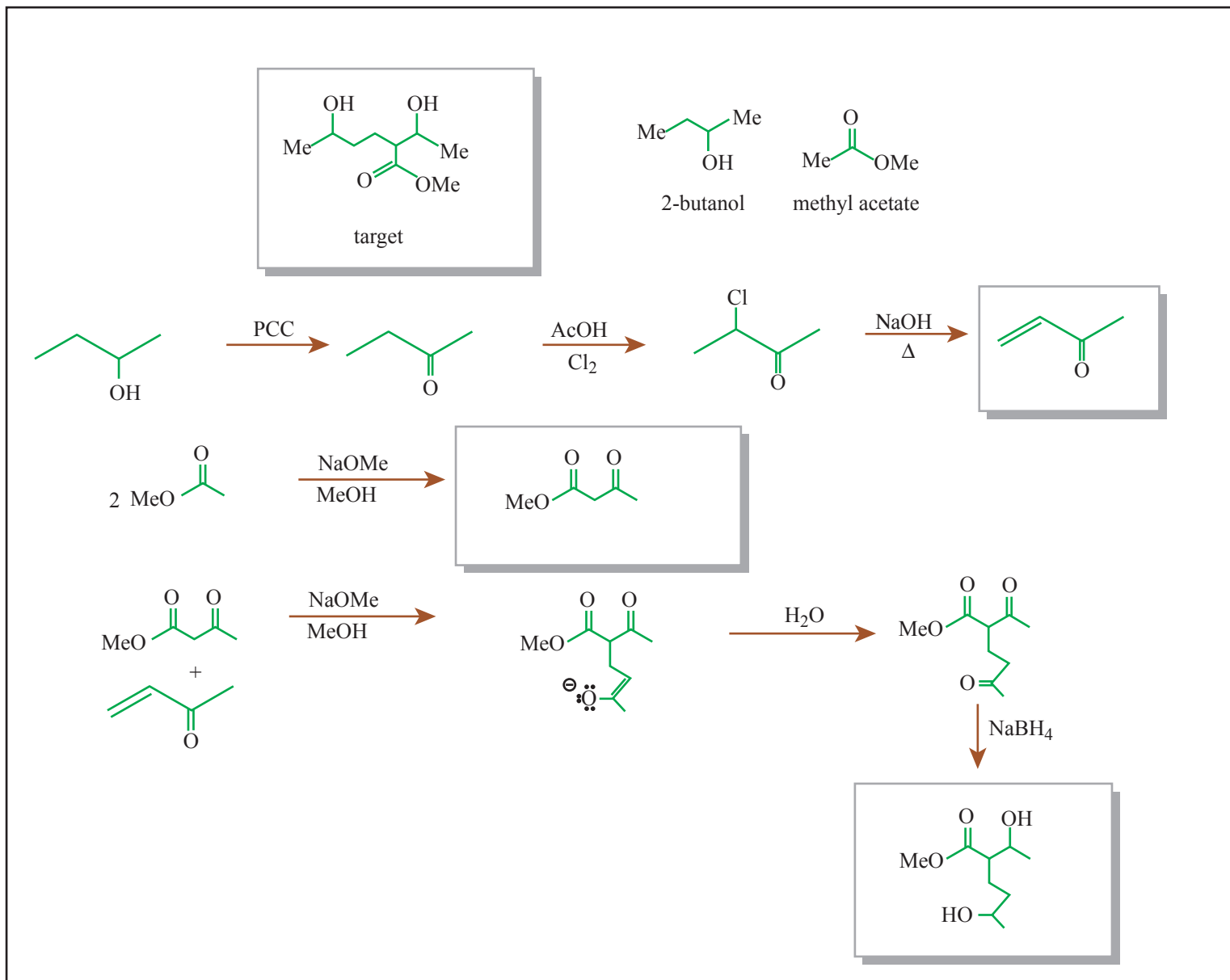


Figure by MIT OCW.

EXTRA CREDIT

(5 pts) Propose a reasonable mechanism for the following transformation.

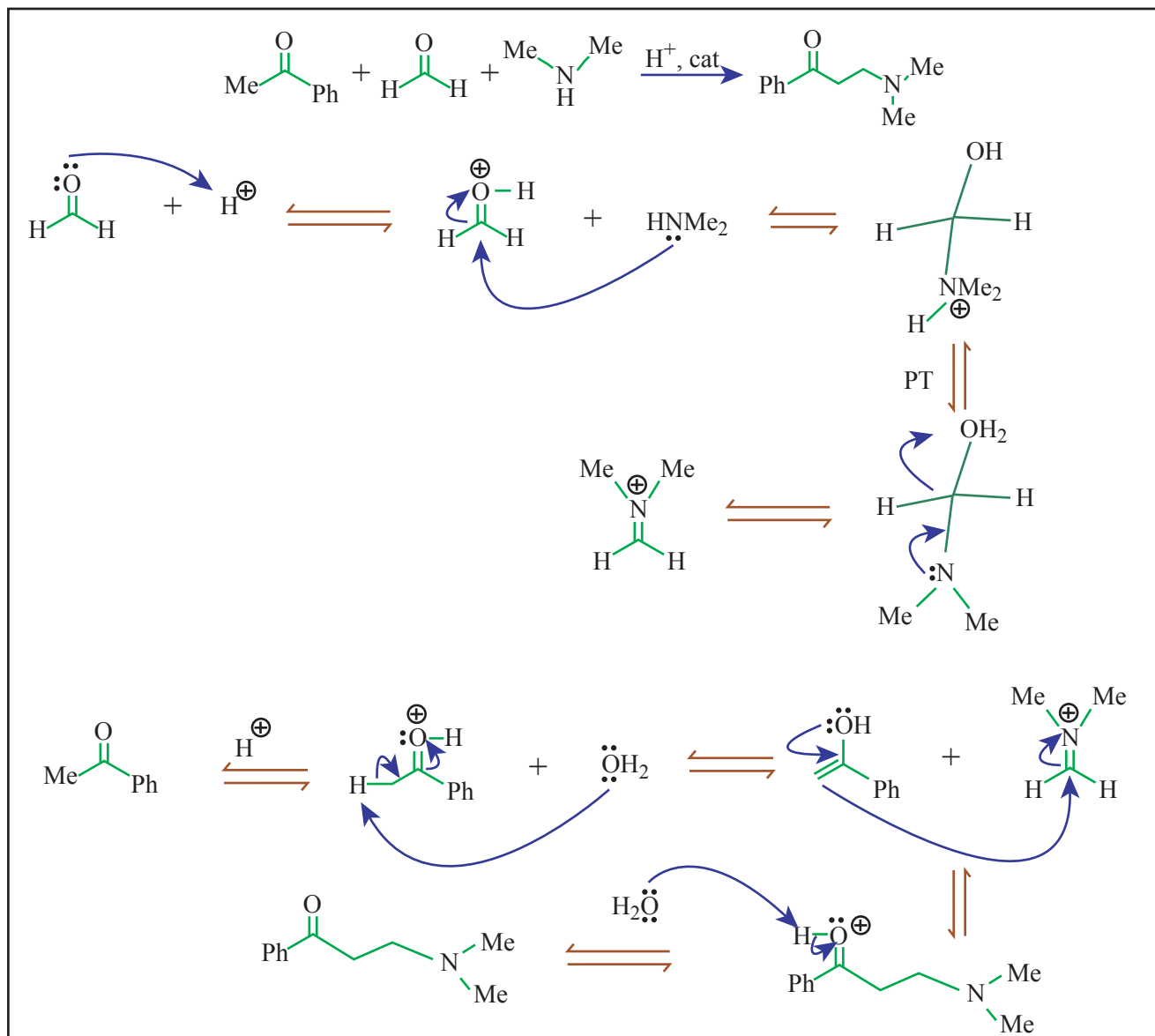


Figure by MIT OCW.