Midterm 1, Chem 51C, Jarvo, Fall 16

Initials: _____

1. (22 points)

a. Fill in the correct compound from the table to complete the retrosyntheses.

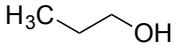
Compounds

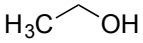
A $(CH_3)_2CuLi$

B Dibal-H

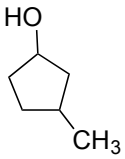
C $LiAlH_4$

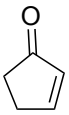
D $BrMgCH_3$

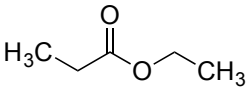
E 

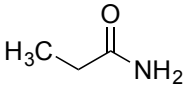
F 

G H_3C-CN

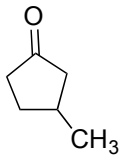
H 

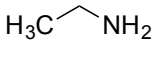
I 

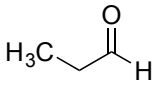
J 

K 

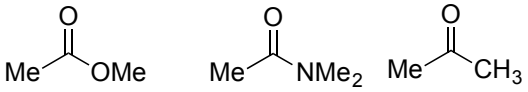
Products

i. 

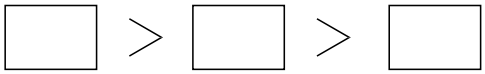
ii. 

iii. 

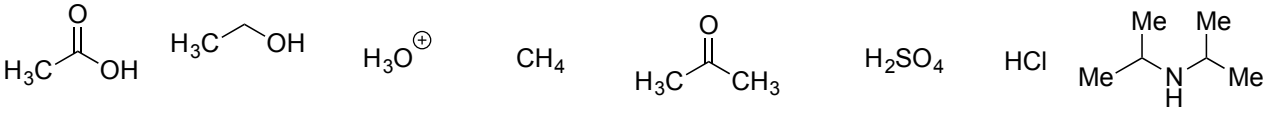
b. Rank fastest to slowest reaction with BuLi



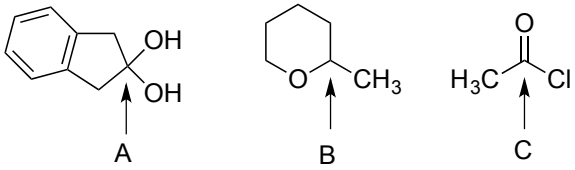
A B C



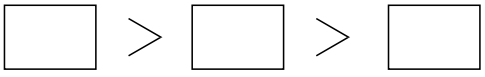
c. Provide pKa's for **any 6** of the following compounds (if you do them all, we will count your best 6).



d. Rank highest to lowest oxidation state

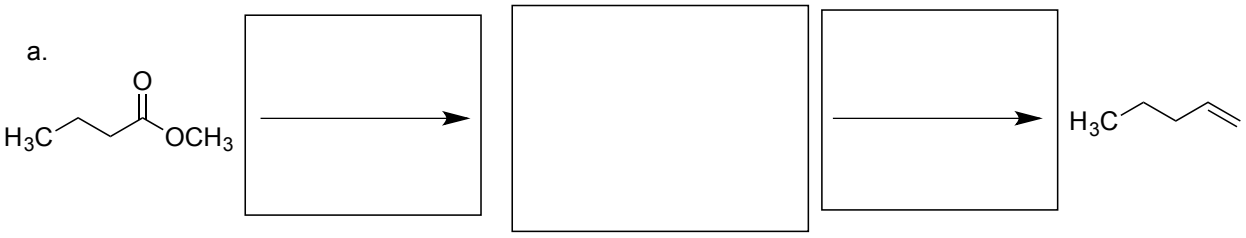


A B C

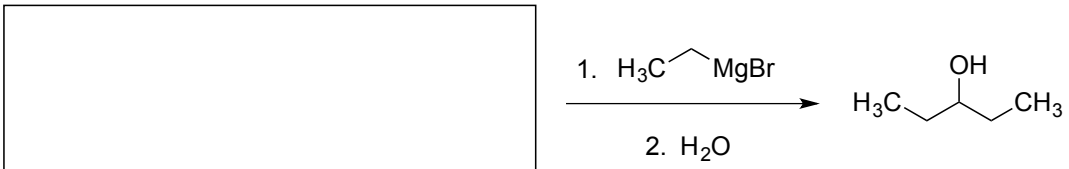


2. (26 points) Fill in the boxes with the appropriate starting material, reagent or major product. Show stereochemistry where appropriate. Initials: _____

a.

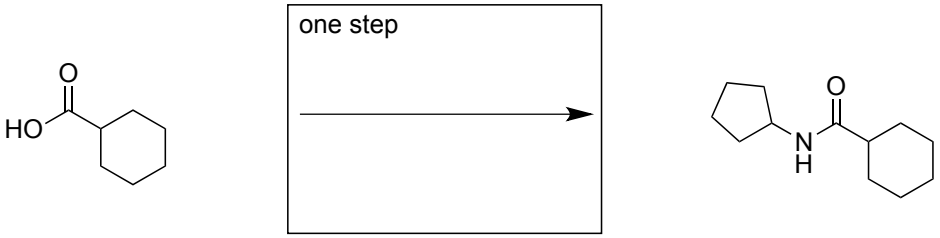


b.

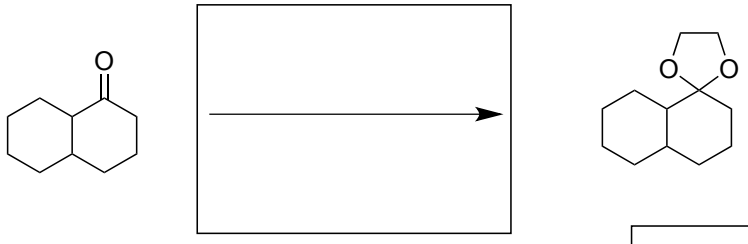


What is the name for this type of reagent? [ ]

c.

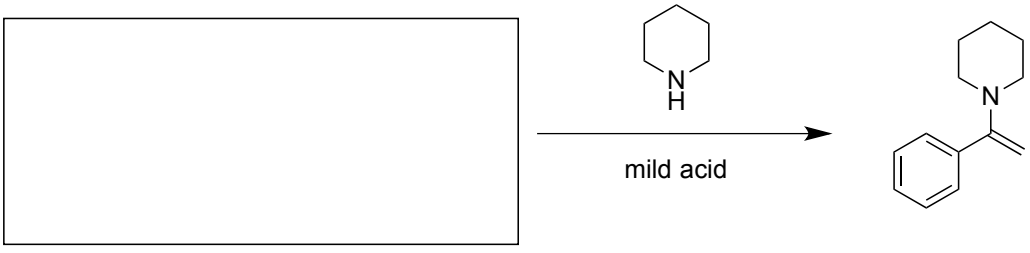


d.

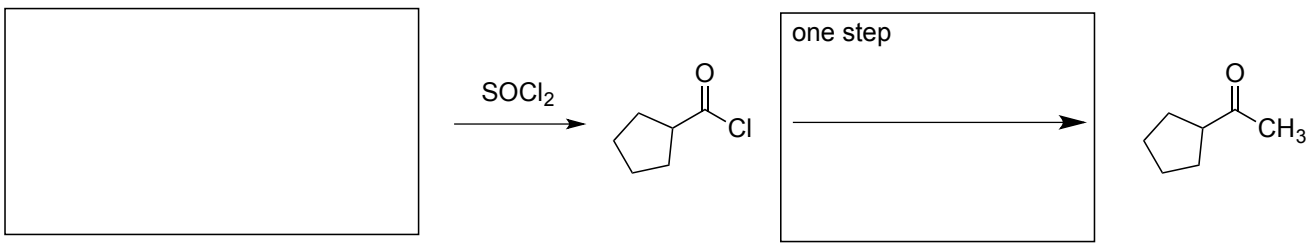


Is this reaction an oxidation, a reduction, or neither? [ ]

e.



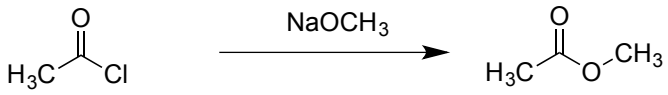
f.



Initials: _____

3.

a. Provide an arrow-pushing mechanism (7 points).



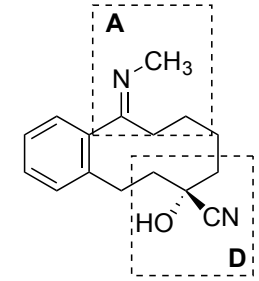
Mechanism:

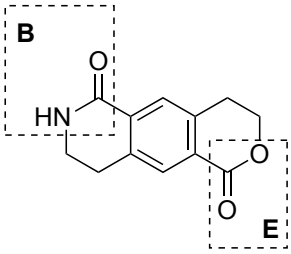
b.Match the names of the functional groups with labeled examples (3 points).

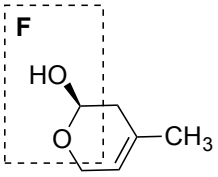
lactone ☐

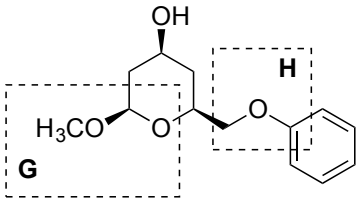
hemiacetal ☐

cyanohydrin ☐





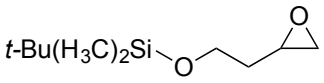


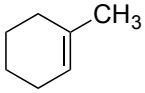


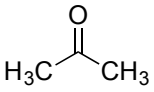
Initials: _____

4. Propose syntheses of the targets below (14 points).
All carbons must come from the starting materials provided, you can use any reagent you wish.
YOU CAN IGNORE STEREOCHEMISTRY.

Starting Materials:

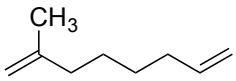




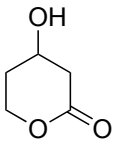


NaCN CH_3I

Target A.



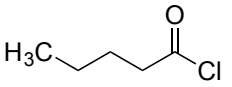
Target B.



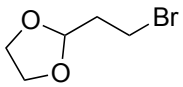
Initials: _____

5. Propose syntheses of the targets below (8 points).
All carbons must come from the starting materials provided, you can use any reagent you wish.
YOU CAN IGNORE STEREOCHEMISTRY.

Starting Materials:



CH_3I



CO_2

Target A.