

CHEM 51C LEC A (40550)



Midterm 1 (Fall Qtr 2016) - LETTER SIZE

7493 (3415)

ver. A

Assigned Seat#: \_\_\_\_\_

Instructions to Instructor:

Do not alter this coversheet in ANY way. Substantial delays and additional fees may apply.

Instructions to Student:

1. Clearly print your Last Name, First Name and the Date
2. Clearly print your Student ID number in the boxes provided. Use large, dark numbers. These numbers are captured automatically during the scanning process.
3. Bubble in each number of your Student ID completely. The bubbles are used only if your written ID number is not captured.
4. Write your Name and Student ID number in the upper right corner of all following pages of your exam.

Last Name, First Name: \_\_\_\_\_

KEY

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

STUDENT ID:

For Access UCI student, leave first column blank then enter your 7-digit Student ID number.

1	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	0	0	2
3	0	0	0	0	0	0	0	0	0	3
4	0	0	0	0	0	0	0	0	0	4
5	0	0	0	0	0	0	0	0	0	5
6	0	0	0	0	0	0	0	0	0	6
7	0	0	0	0	0	0	0	0	0	7
8	0	0	0	0	0	0	0	0	0	8
9	0	0	0	0	0	0	0	0	0	9
0	0	0	0	0	0	0	0	0	0	0

----- (This space for Instructor/TA use only) -----

Question	1	2	3	4	5	Total
Score	20	28	8	14	8	78

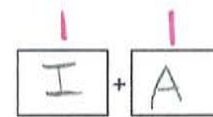
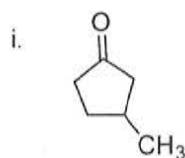
**Do not open your exam until instructed to do so.**  
 Answer the questions you understand best first.  
 Your answers must be neat and legible.

20  
1. (22 points)

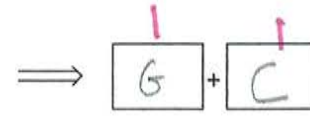
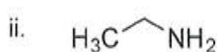
a. Fill in the correct compound from the table to complete the retrosyntheses.

Compounds			
A	$(\text{CH}_3)_2\text{CuLi}$	G	$\text{H}_3\text{C}-\text{CN}$
B	Dibal-H	H	
C	$\text{LiAlH}_4$	I	
D	$\text{BrMgCH}_3$	J	
E	$\text{H}_3\text{C}-\text{CH}_2-\text{CH}_2-\text{OH}$	K	
F	$\text{H}_3\text{C}-\text{CH}_2-\text{OH}$		

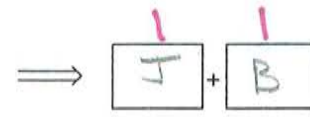
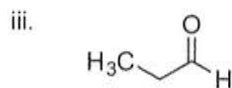
Products



Practice 2a

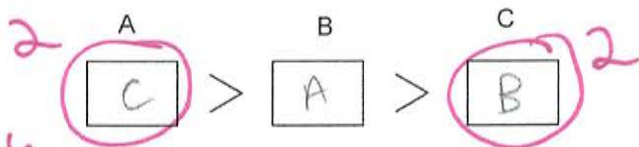
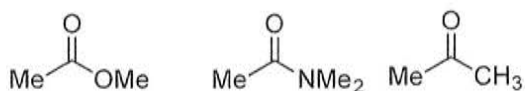


Practice 1dii



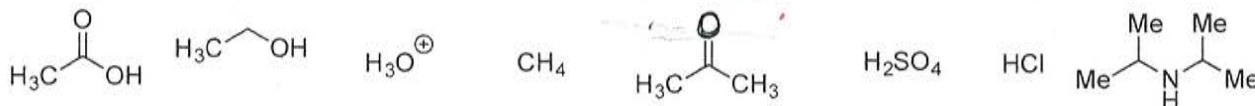
Practice 2c

b. Rank fastest to slowest reaction with BuLi

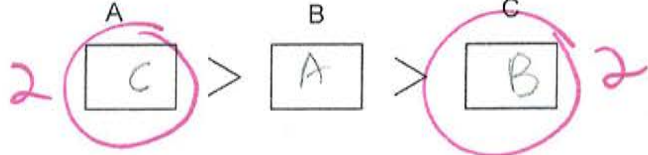
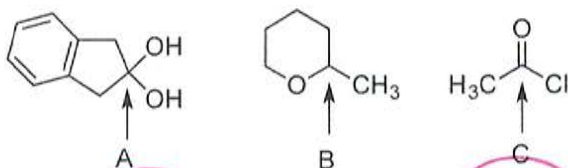


Practice midterm 1b

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



Practice Midterm 1d

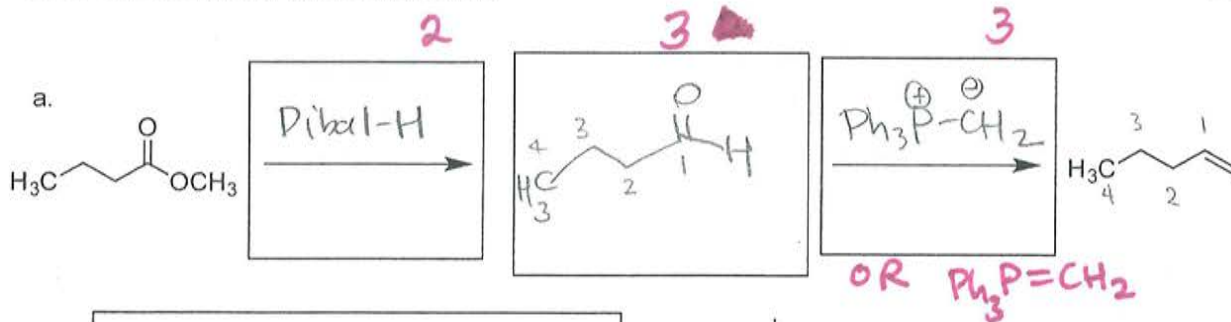
20

28

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

Initials: A

MI F14 #2c

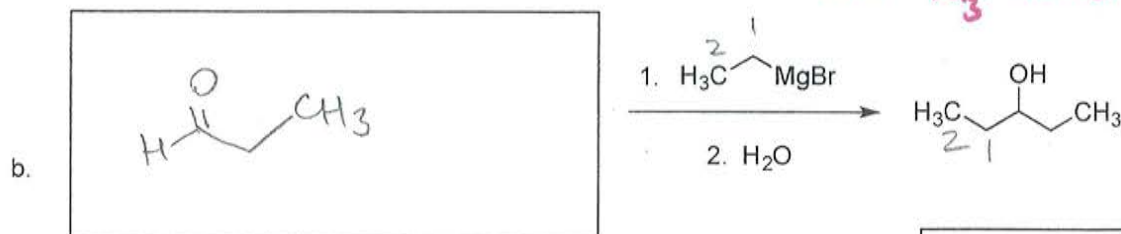


WS 3, target SA

WS 3

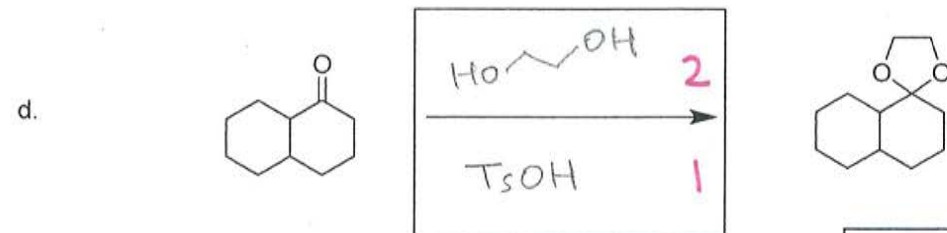
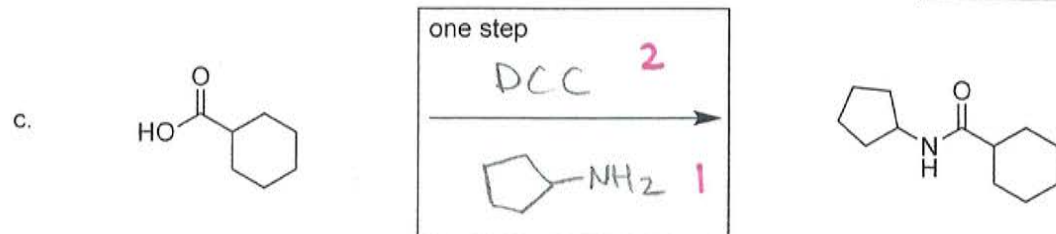
3C

WS 1 2b



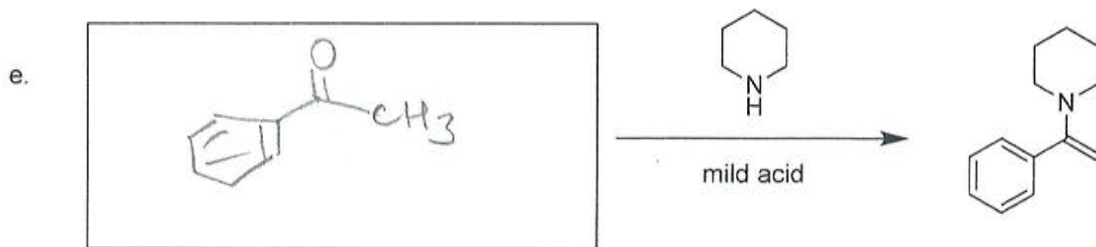
What is the name for this type of reagent? Grignard

WS 4 2e

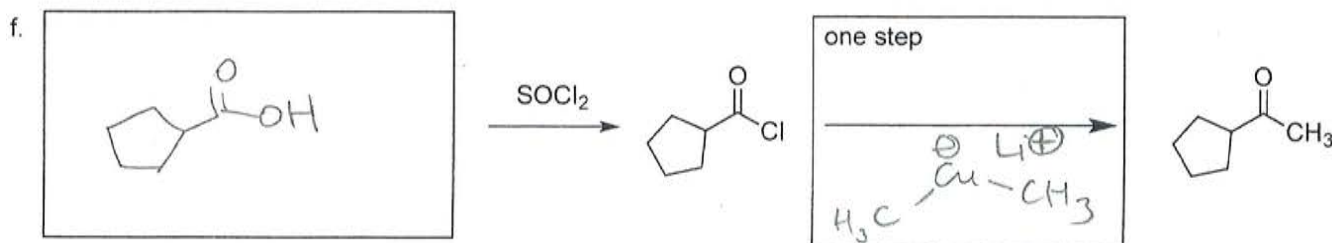


WS 3, 3d

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



WS 3, 2b



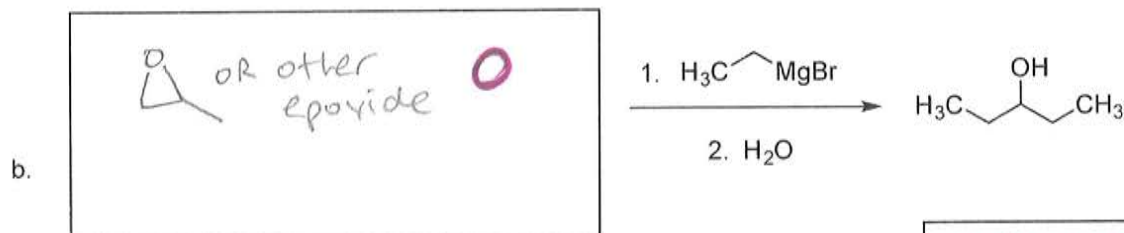
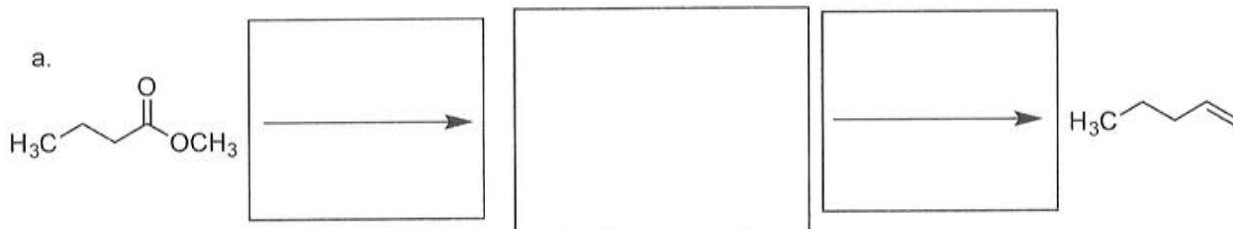
WS 4 2b

WS 3, 1d, ii

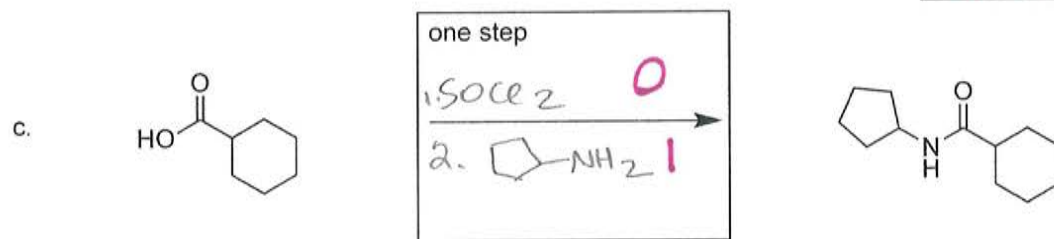
28

# Partial/no credit answers.

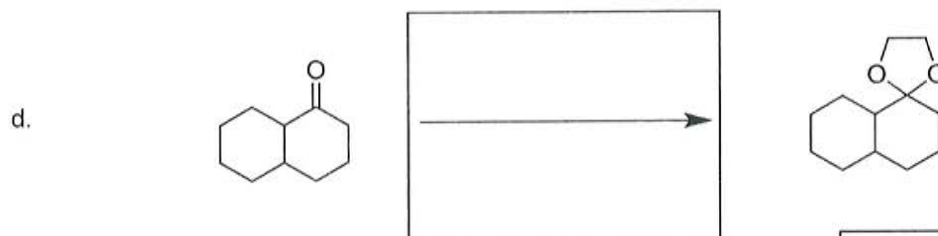
2. (26 points) Fill in the boxes with the appropriate starting material, reagent or major product. Show stereochemistry where appropriate. Initials: \_\_\_\_\_



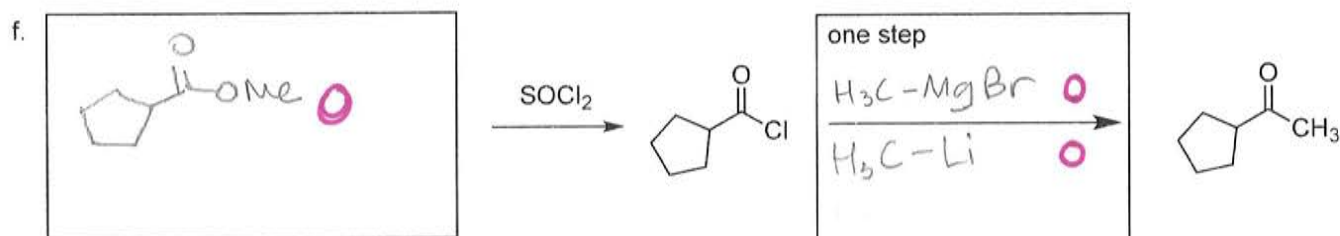
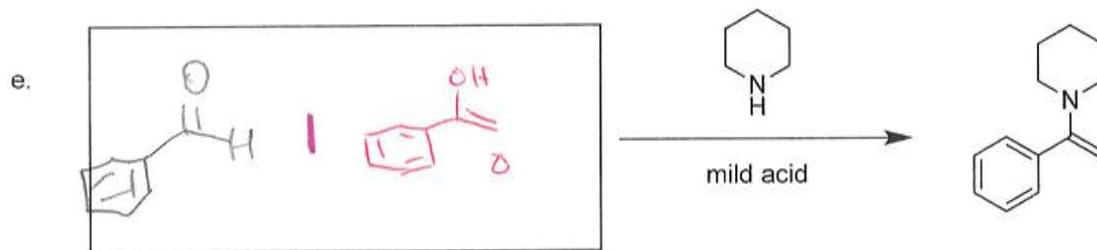
What is the name for this type of reagent? grignard (or other creative spelling)



For reagents/  
SM's  
Carbon count  
typos  
-102-2



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



"Cu-CH<sub>3</sub>" |

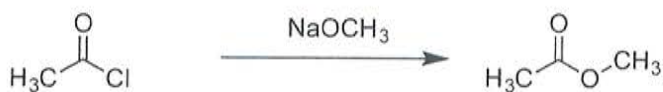
3.

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

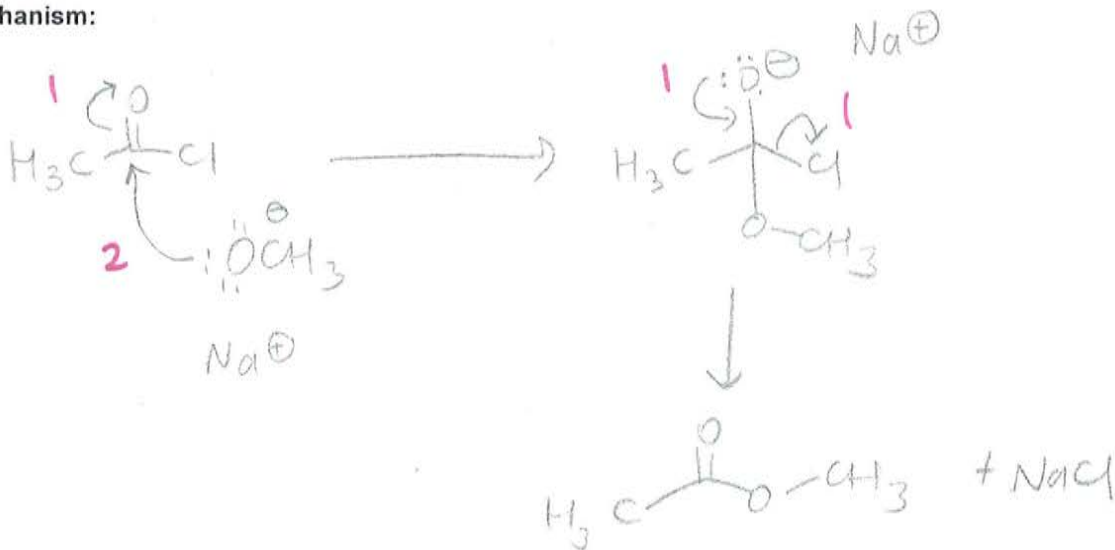
5 pts.

Initials: A

Practice  
2b



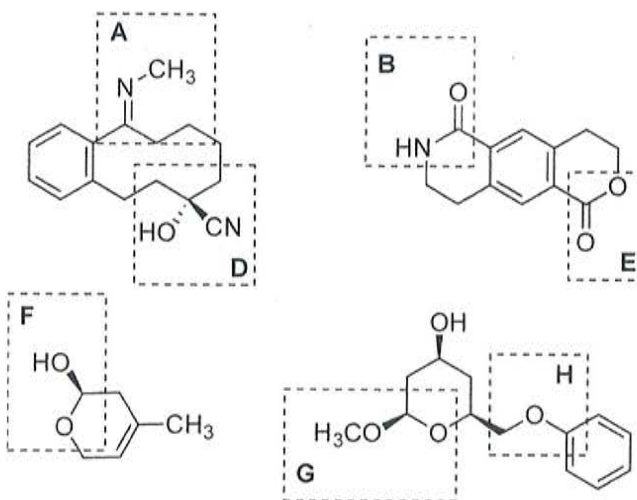
Mechanism:



errors: missing  $\oplus$  or  $\ominus$  sign = -0.5 pt.

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

- lactone E
- hemiacetal F
- cyanohydrin D



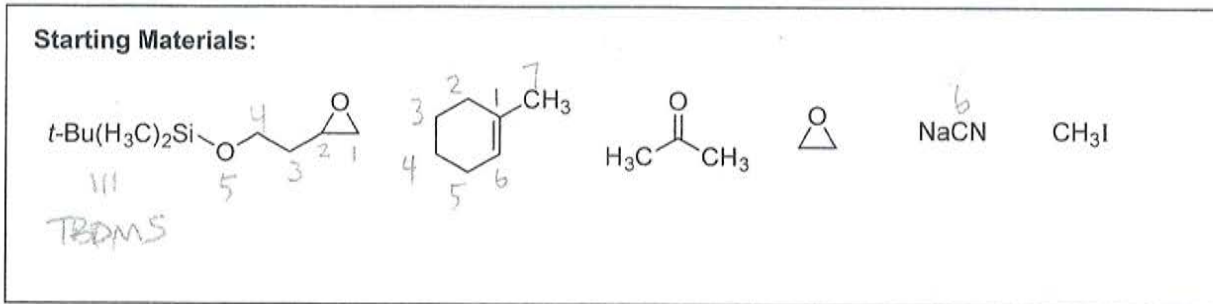
WS4  
#6.  
synth  
review  
#3

1 point each  
total = 3

Initials: A

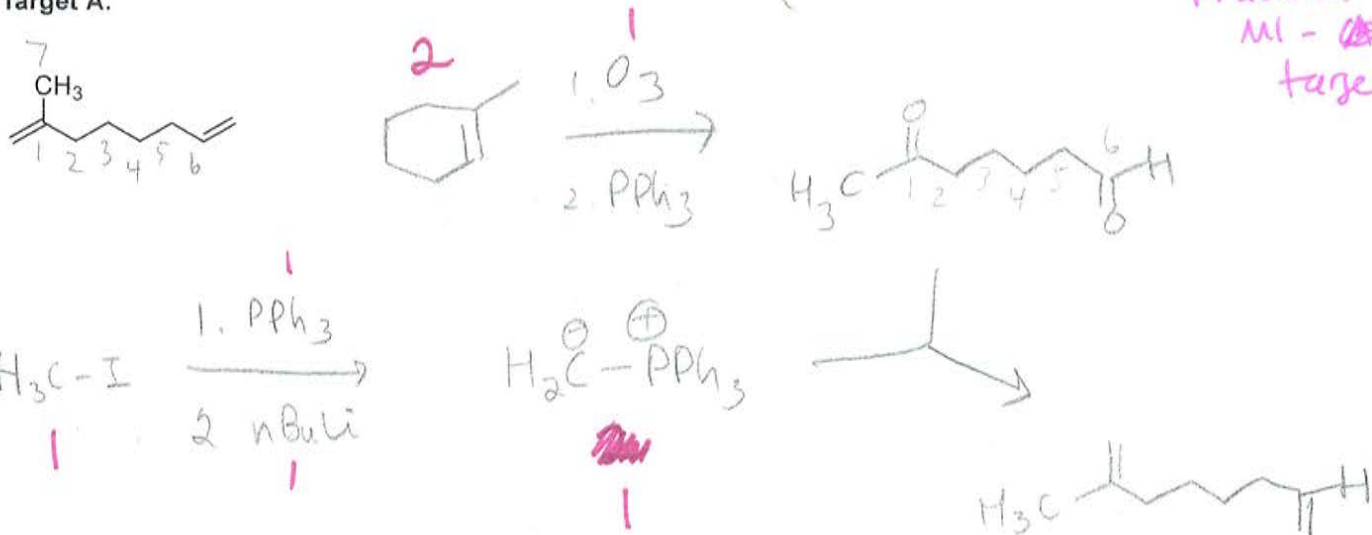
4. Propose syntheses of the targets below (14 points).

All carbons must come from the starting materials provided, you can use any reagent you wish.  
YOU CAN IGNORE STEREOCHEMISTRY.

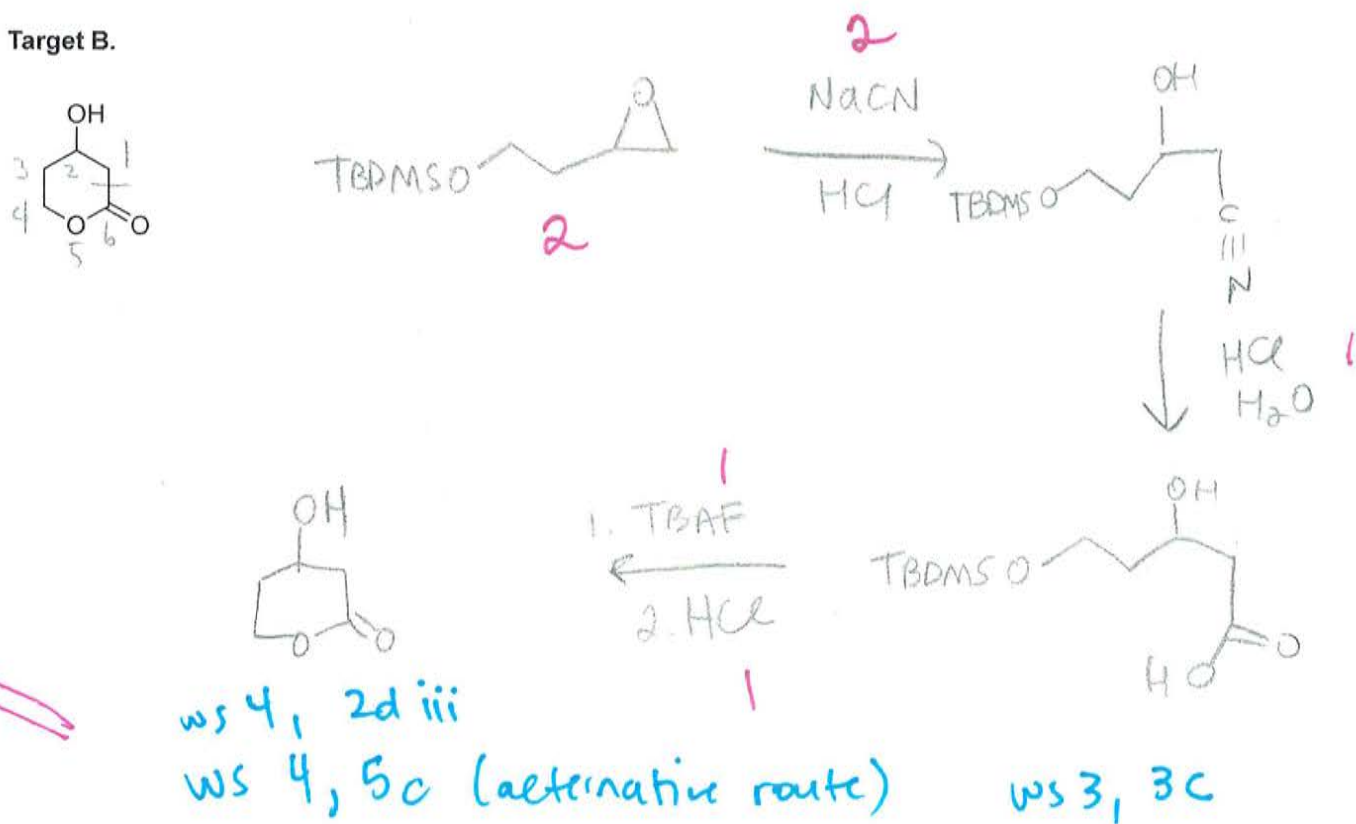


Practice  
M1 - target A

Target A.



Target B.



7

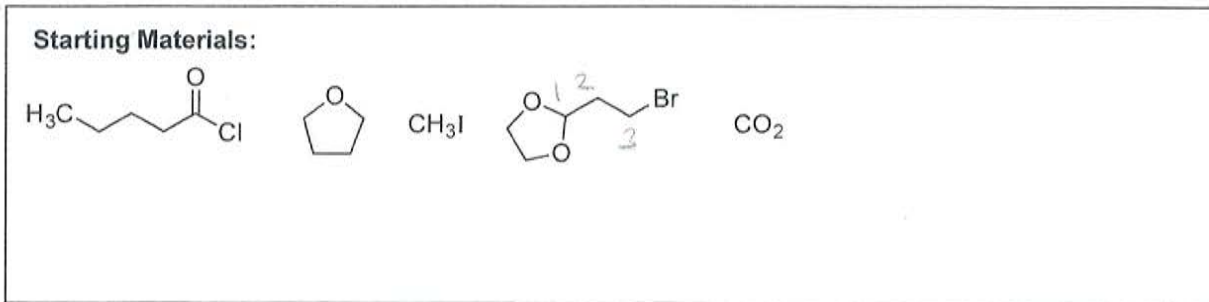
7

14

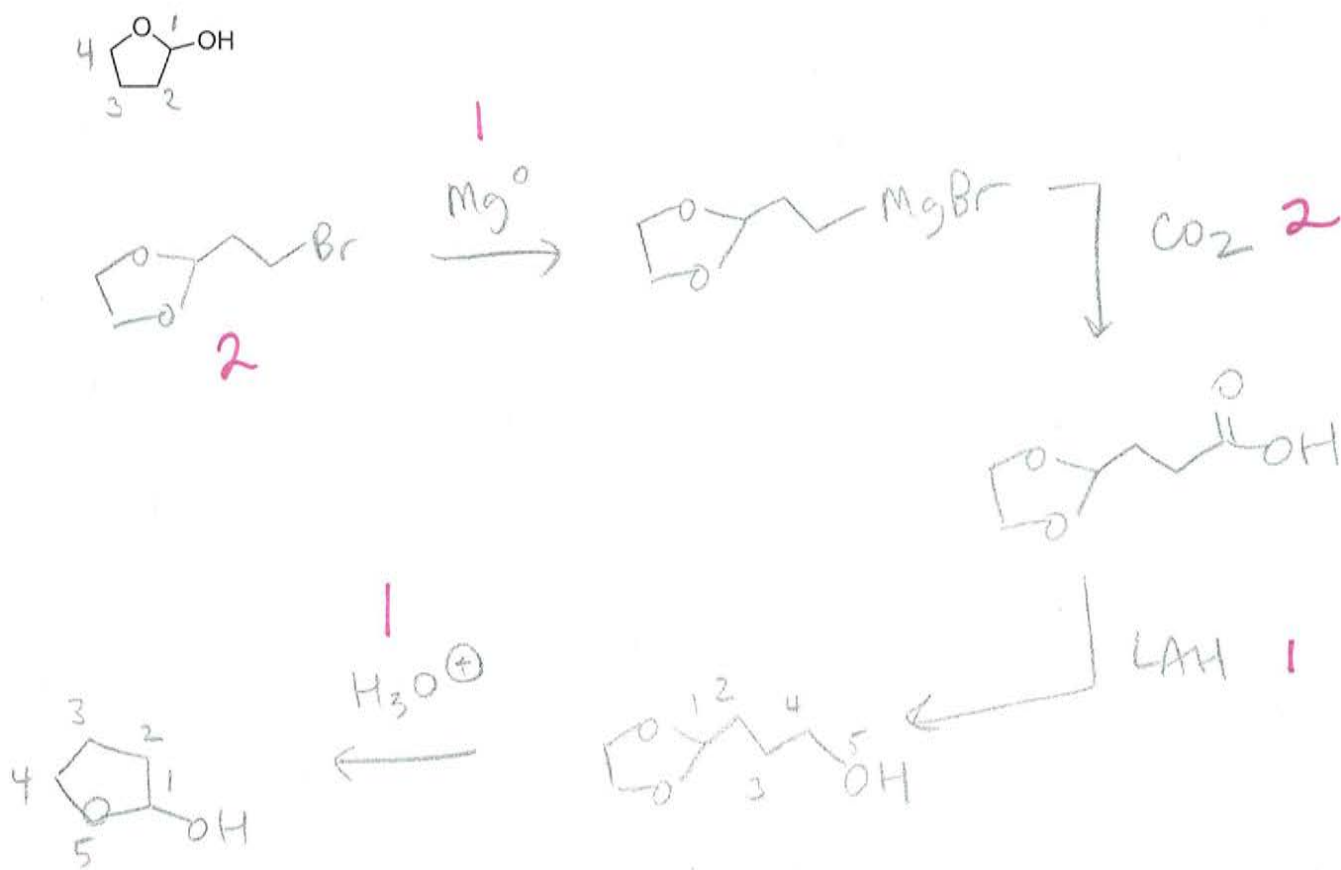
Initials: A

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.



Target A.



WS 3, 2d  
WS 3, 5b.  
WS 3, 3c  
WS 4, 5b

8