CHEM 51C LEC A (40550)

Midterm 2 (Fall Qtr 2016) - LETTER SIZE

ver. A

7497 (3416)

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

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

Graded by: _____ Total Correct: _____

1	2	3	4	5	total
22	21	13	16	16	88

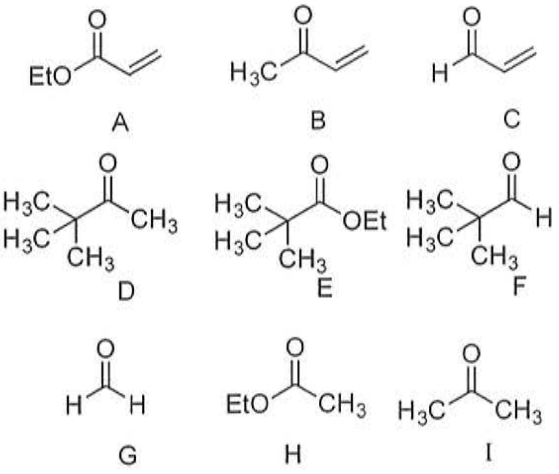
Midterm 2, Chem 51C, Jarvo, Fall 16 Initials: A

Practice M2 F16, S16

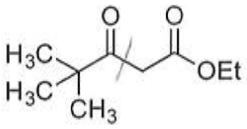
1 (22 points)

a. Which starting materials would you combine in the presence of NaOEt and HOEt to complete the syntheses?

Starting materials

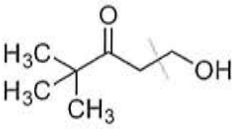


12

i. E + H → (NaOEt, HOEt) 

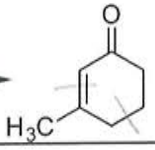
1 1

Name of reaction: Claisen 2

ii. D + G → (NaOEt, HOEt) 

1 1

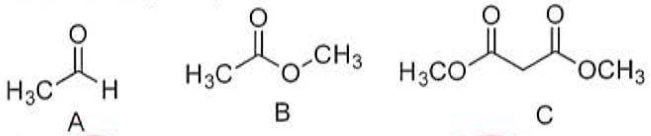
Name of reaction: aldol 2

ii. I + B → (NaOEt, HOEt) 

1 1

Name of reaction: Robinson annulation 2

b. Rank the following compounds from **most to least** acidic.

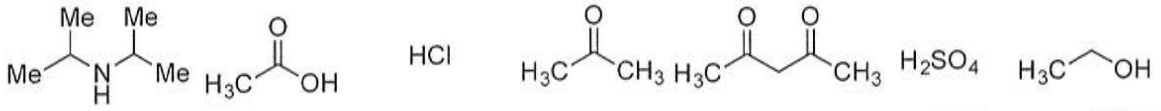


Practice M2, # 1b. WS 5 # 7b

4

2 C > A > B 2

c. Provide pKa's for **any 6** of the following compounds (if you do them all, we will count your best 6). Practice M2 #1c



6

38	5	-7	20	9	-10	16
34-40	3-6	-9 to -6	19-21	7-11	-11 to -8	14-18

Acceptable ranges:

1 pt each maximum 6.

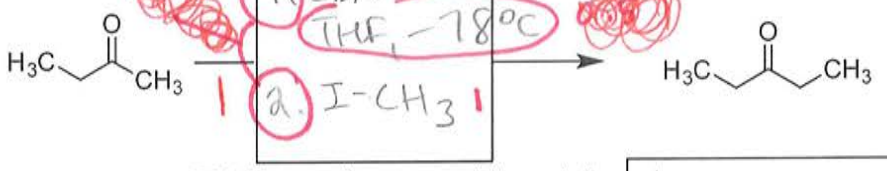
22

2. Fill in the boxes with the appropriate starting material, reagent or major product (21 points).
Show stereochemistry where appropriate (you must DRAW the enantiomers/diastereomers)

Initials: A

WS 5 #10

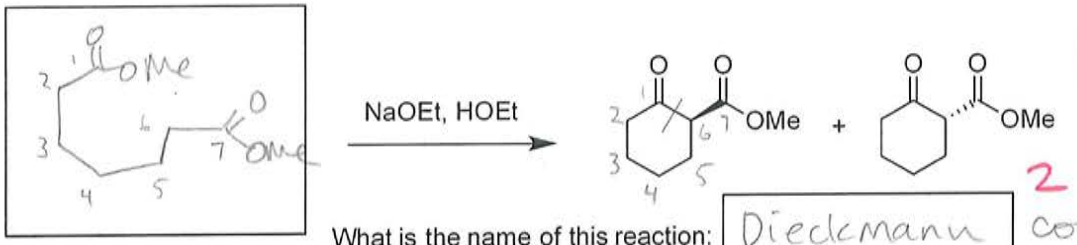
3 a.



2 Did this reaction proceed through the kinetic or thermodynamic enolate? kinetic 2

WS 6 #2d
WS 6 #3d

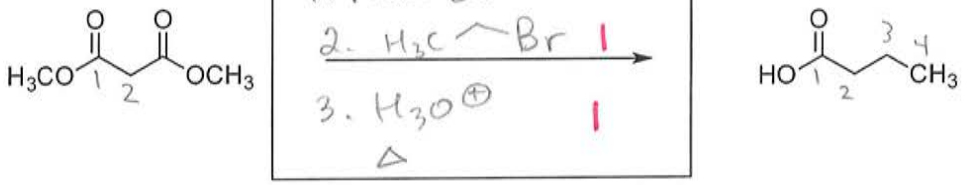
3 b.



2 What is the name of this reaction: Dieckmann 2 condensation

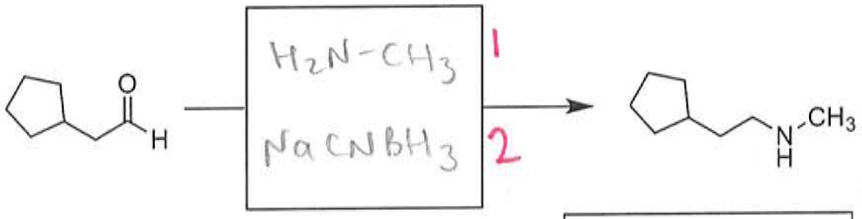
WS 6 #5e
WS 5 #8e

3 c.



WS 6 #3a

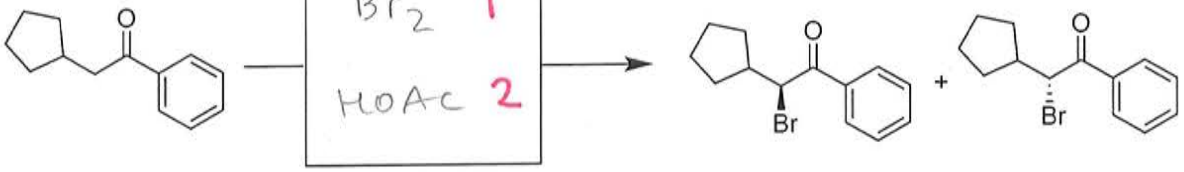
3 d.



2 What is the name of this reaction: reductive amination 2

WS 5 #8a

3 e.



21

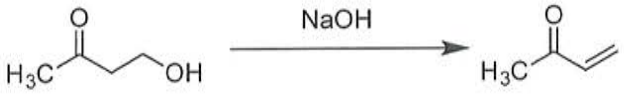
Practice M2 S16 #3a
WS 6 #3c

13

3. (10 points) Provide an arrow-pushing mechanism.

Initials: A

a.



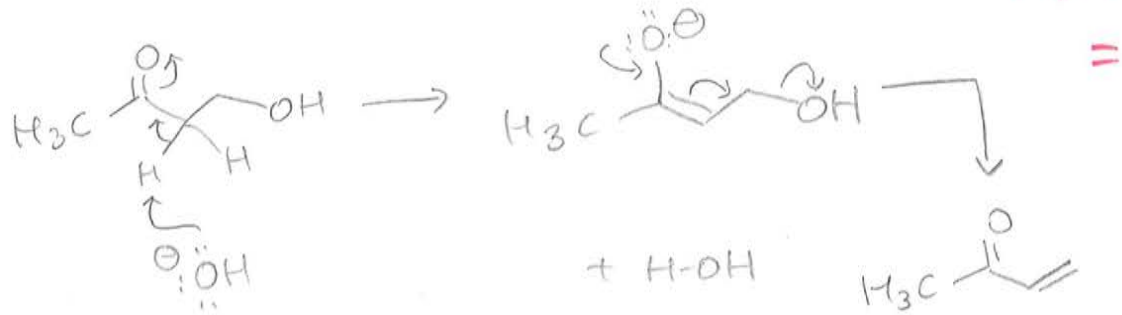
What is the name of this mechanism?

E1cB

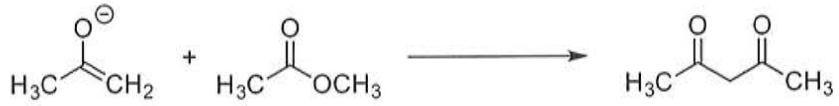
2

Mechanism:

1 pt/arrow
= 6



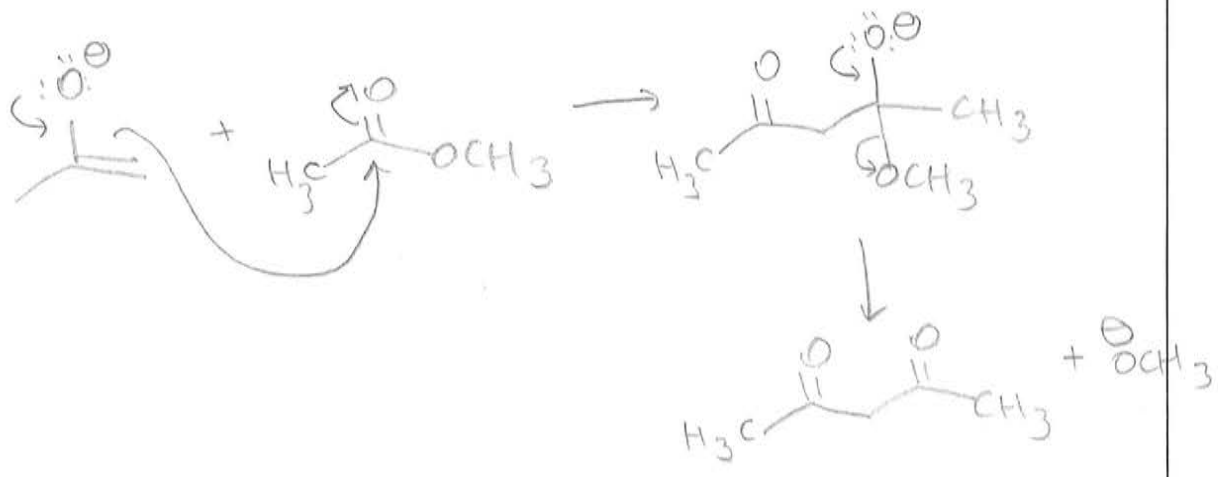
b.



Practice M2 f14
36.

1 pt/arrow
= 5

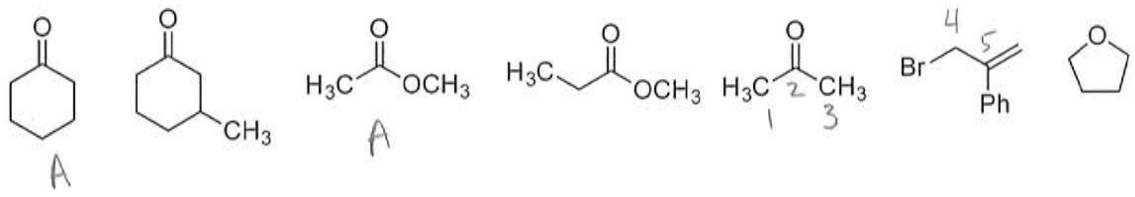
Mechanism:



Initials: A

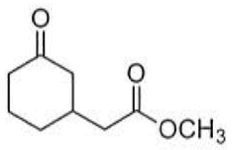
4. (12 points) Propose syntheses of the targets below.
All carbons must come from the starting materials provided, you can use any reagent you wish.
YOU CAN IGNORE STEREOCHEMISTRY.

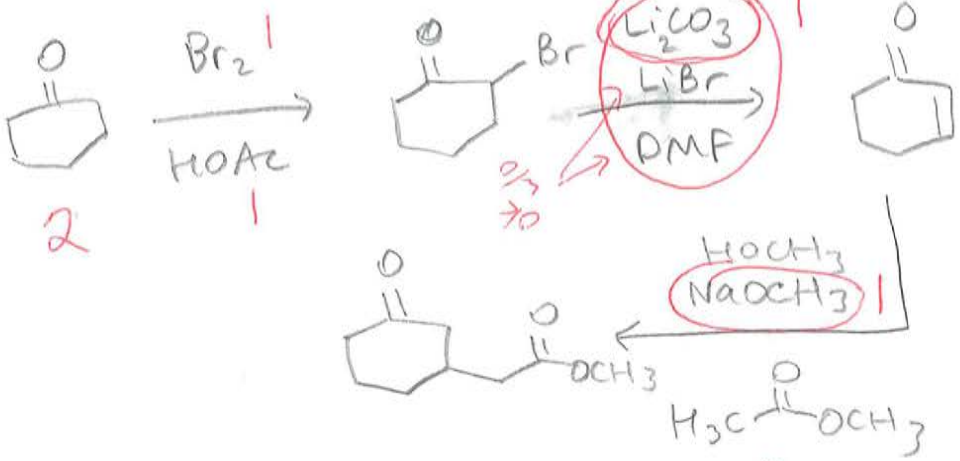
Starting Materials:



Target A.

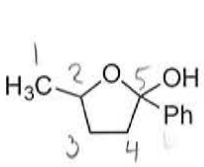
WSL #5a





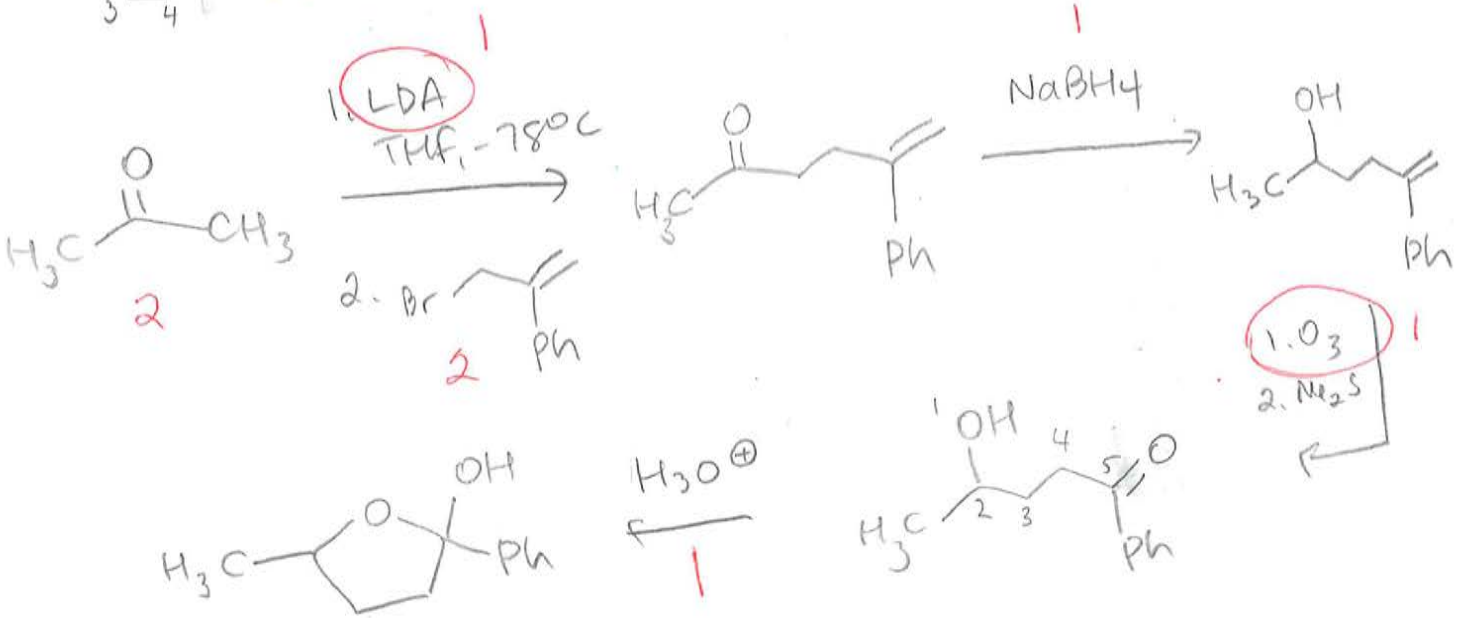
8

Target B.



M1, #5a
WS 5 #11c

8

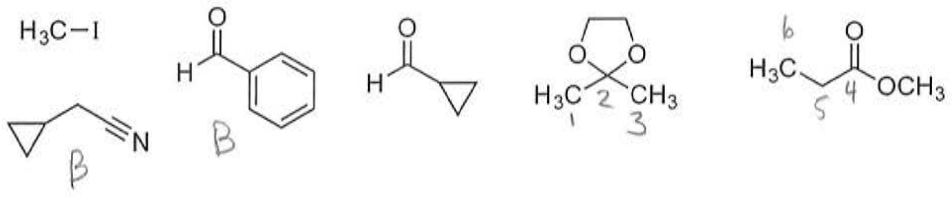


16

Initials: A

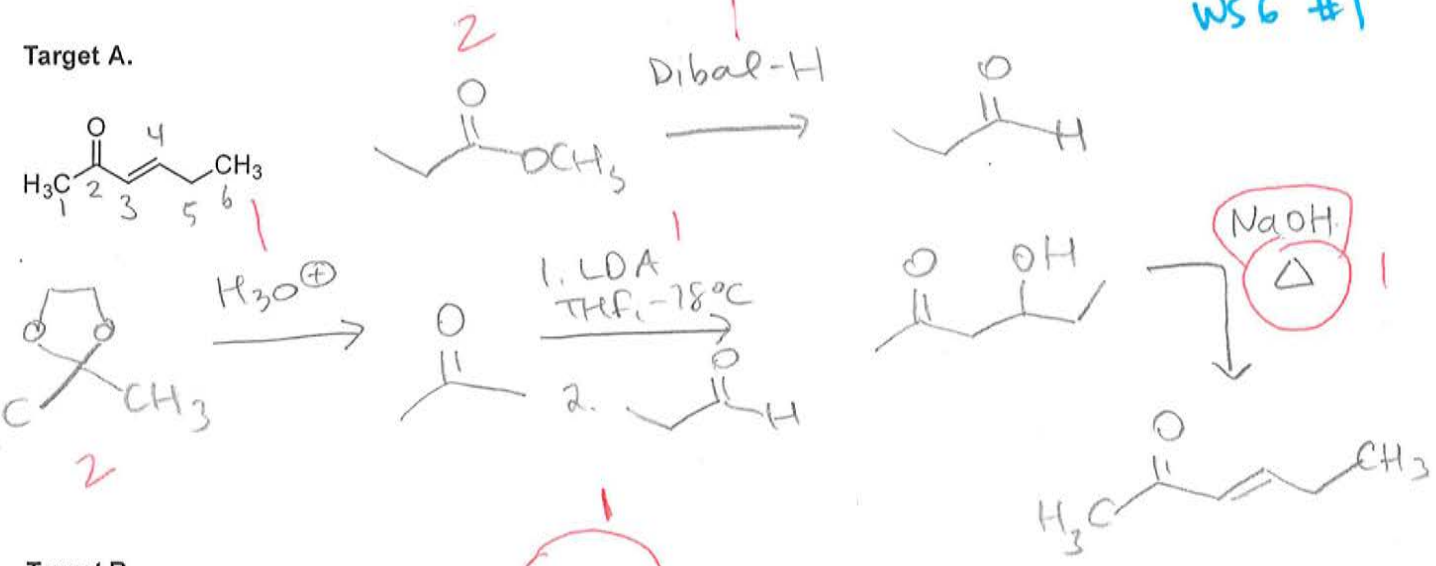
5. (16 points) Propose syntheses of the targets below (10 points).
All carbons must come from the starting materials provided, you can use any reagent you wish.
YOU CAN IGNORE STEREOCHEMISTRY.

Starting Materials:



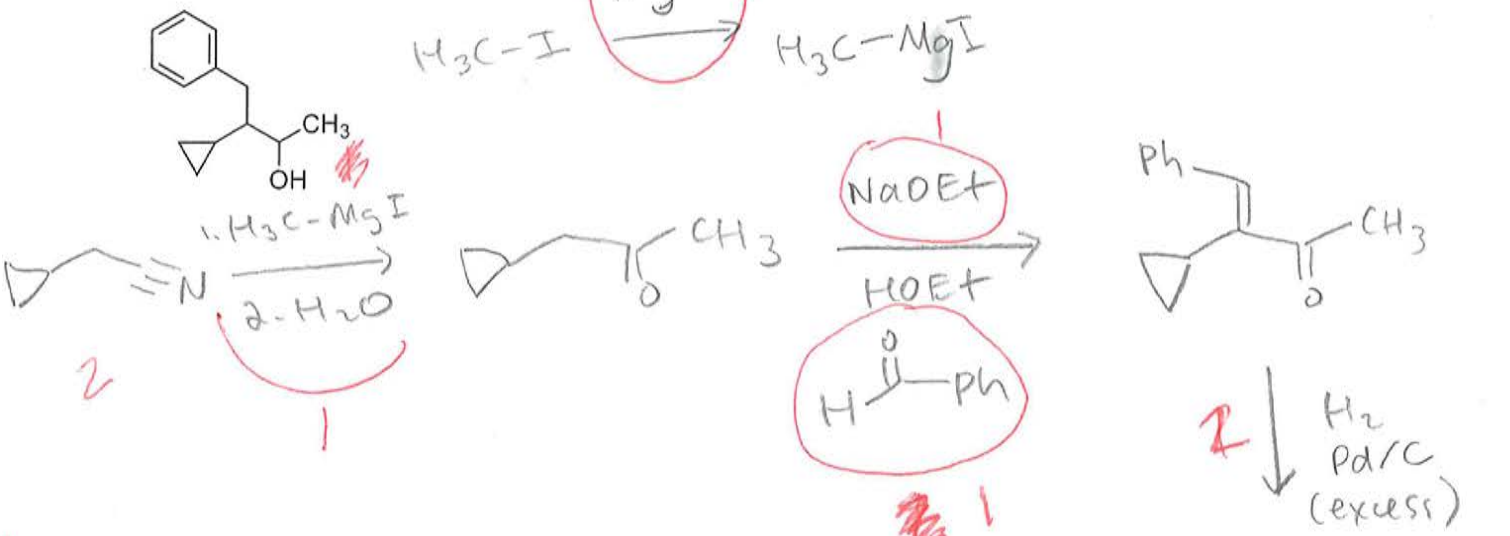
WS 6 #1

Target A.



8

Target B.



8

m1 #4b
m2 514 #4b
ws 5 #1 b iii

16