

## Midterm 2

1	2	3	4	5	6	7
23	32	17	6	6	88	

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68

$$\text{Total} = 100$$

one point each box

23

Midterm 2, Chem 51C, Jarvo, Spring 18

Initials:

A

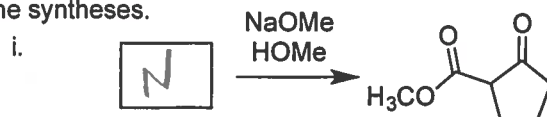
Lecture 1  
WS 6 #3  
WS 6 #2

1 (22 points)

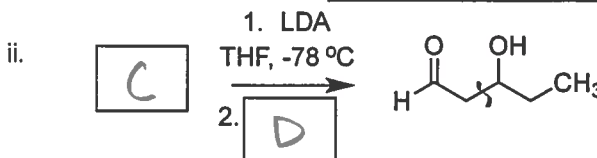
a. Fill in the correct compounds from the table to complete the syntheses. You can use the same compound more than once.

**Starting materials**

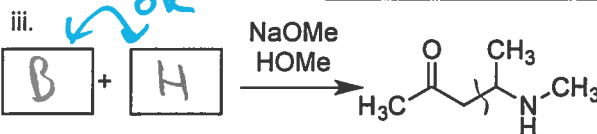
<chem>CC(=O)OC</chem> A	<chem>CC(=O)C</chem> B	<chem>CC=O</chem> C	<chem>CCC=O</chem> D
<chem>CCC(=O)C</chem> E	<chem>C=CC=O</chem> F	<chem>CC(=O)C=C</chem> G	
<chem>CC(=O)N</chem> H	<chem>CC(=O)N</chem> J	<chem>C=O</chem> K	<chem>C=O</chem> L
<chem>COC(=O)CCCCC=O</chem> M	<chem>COC(=O)C1CCC(C1)C(=O)OC</chem> N		
<chem>COC(=O)CCCC=O</chem> Q	<chem>COC(=O)CCCC(=O)OC</chem> R		



Name of reaction:



Name of reaction:

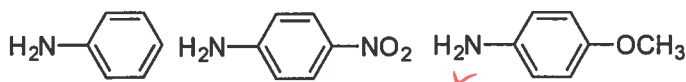


Name of reaction:



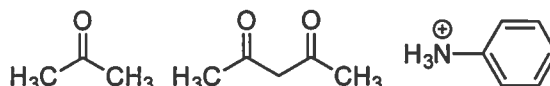
Name of reaction:

b. Rank the following compounds from most to least basic.



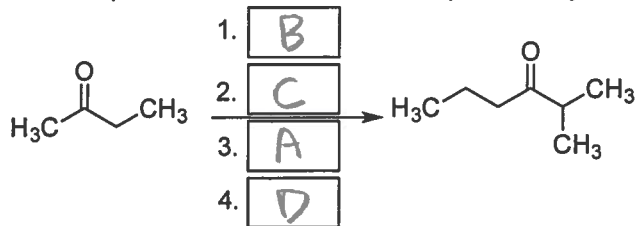
>  >

c. Provide pKa's for any 2 of the following compounds (if you do them all, we will count your best 2).



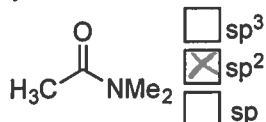
d. Fill in the compounds from the table to complete the synthesis. You can use the same compound more than once.



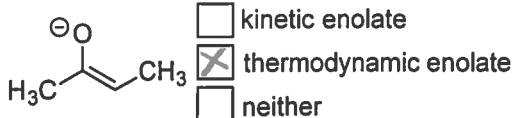
LDA, THF, -78 °C	NaOMe, HOME
A	B
H <sub>3</sub> C-I	H <sub>3</sub> C-CH <sub>2</sub> -I
C	D

e. Check the appropriate box or boxes.

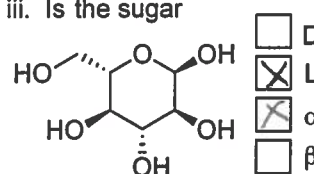
i. Hybridization of the nitrogen:



ii. Is this the:



iii. Is the sugar



WS 7, 1d

WS 5 #E  
ecture

WS 7, 1a

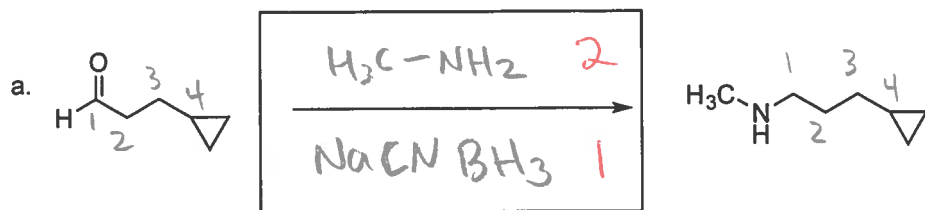
WS 5 #10

WS 7, 1e

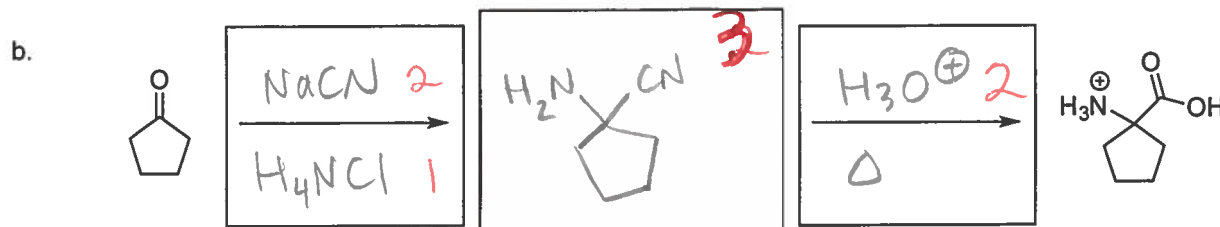
23

2. Fill in the boxes with the appropriate starting material, reagent or major product (35 points). Show stereochemistry where appropriate (you must DRAW the enantiomers/diastereomers)

A  
WS7 #2a

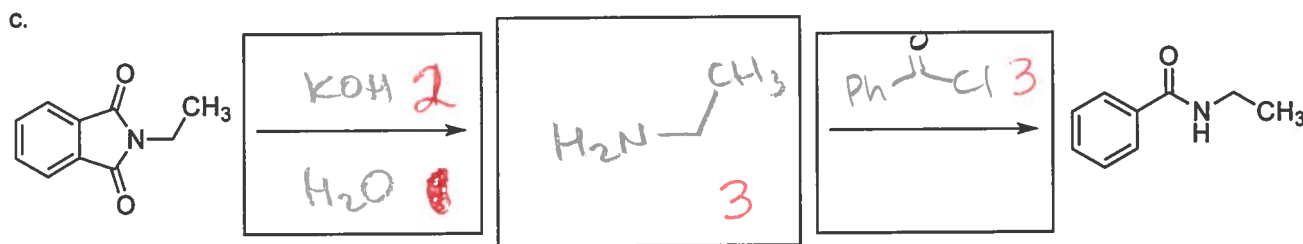


What is the name of this reaction: reductive amination 1

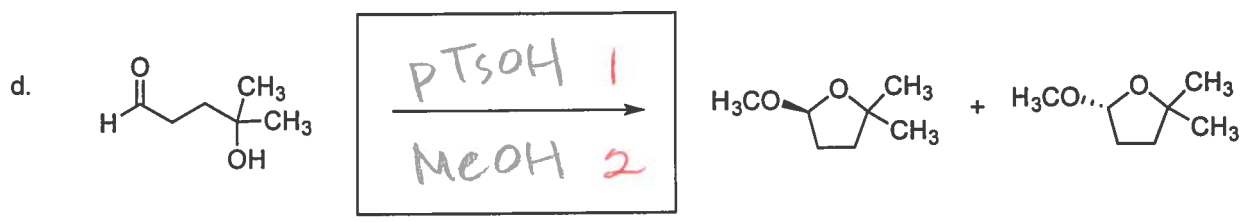


WS7 #4a  
WS7 4c

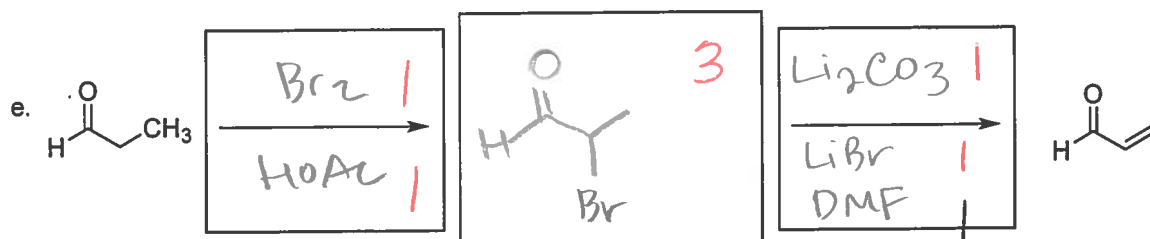
What is the name of this reaction: Strecker 1



WS7 #2c  
WS7 #5A



Midterm #4  
WS7 #3c



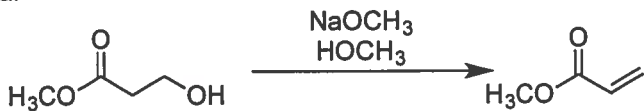
WS6 #5a

32

3. (17 points) Provide an arrow-pushing mechanism.

Initials: A

a.

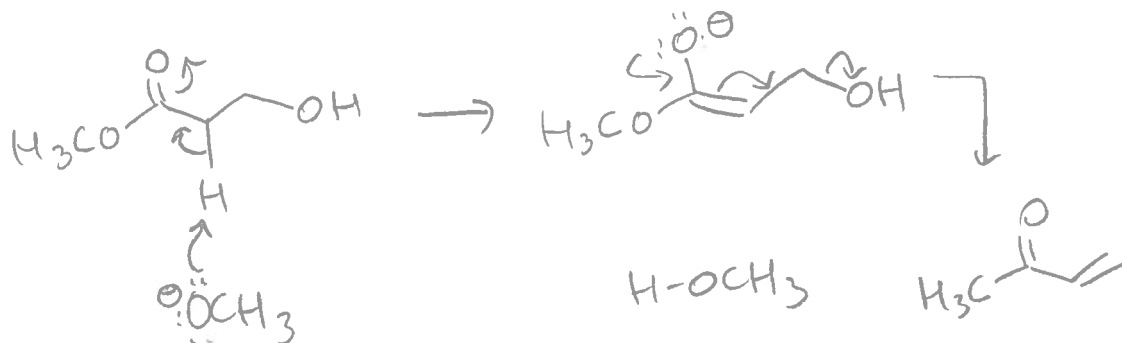


What is the name of this mechanism?

E<sub>1</sub>cb

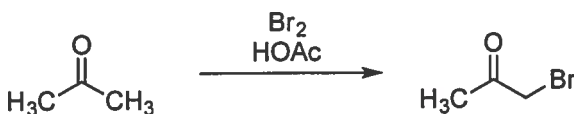
6 points - 1 point each arrow - 0.5 for ~~electron~~ missing electrons, charges.

Mechanism:



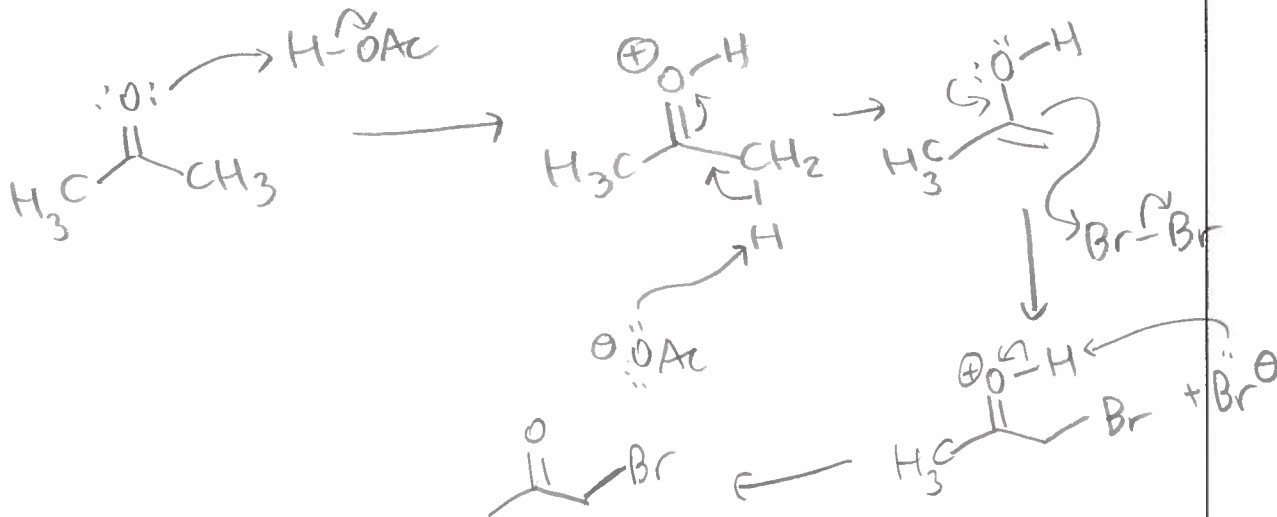
practice midterm #3  
ws 6 # 3c

b.



10 points

Mechanism:



Practice midterm #3  
ws 5 #9b

7

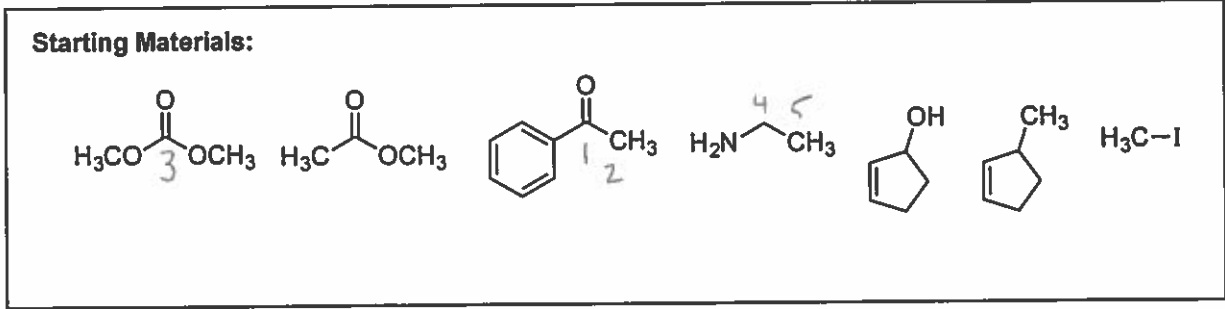
10

17

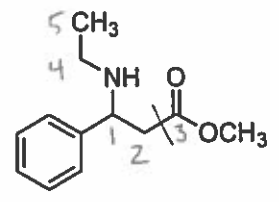
6

Initials: A

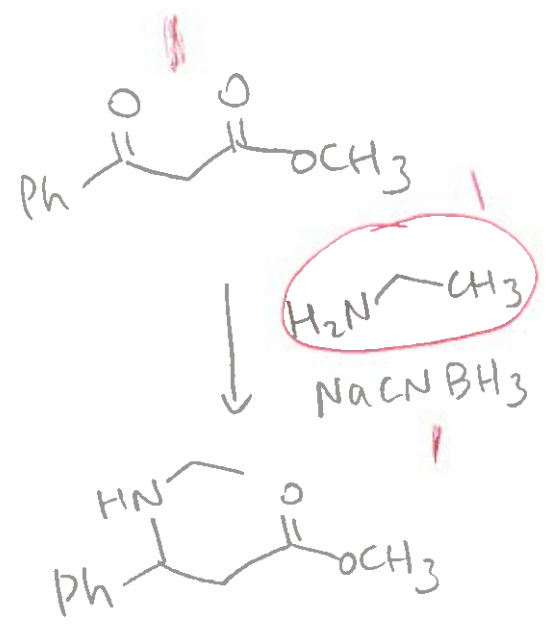
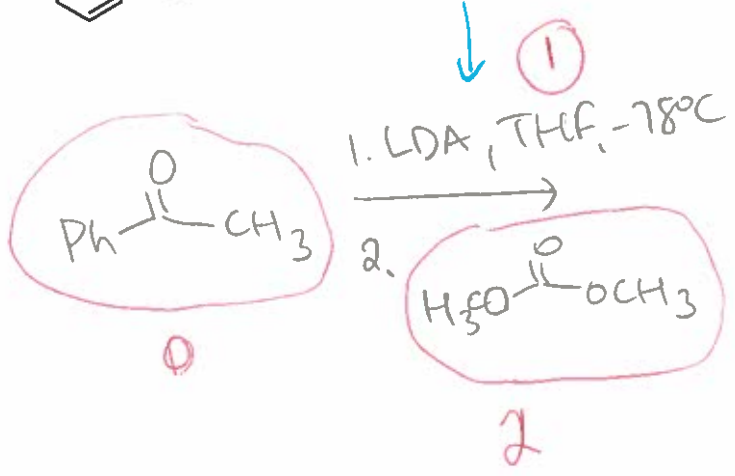
4. (8 points) Propose a synthesis of the target below. All carbons must come from the starting materials provided, you can use any reagent you wish. YOU CAN IGNORE STEREOCHEMISTRY.



Target A.



ok: NaOEt, HOEt

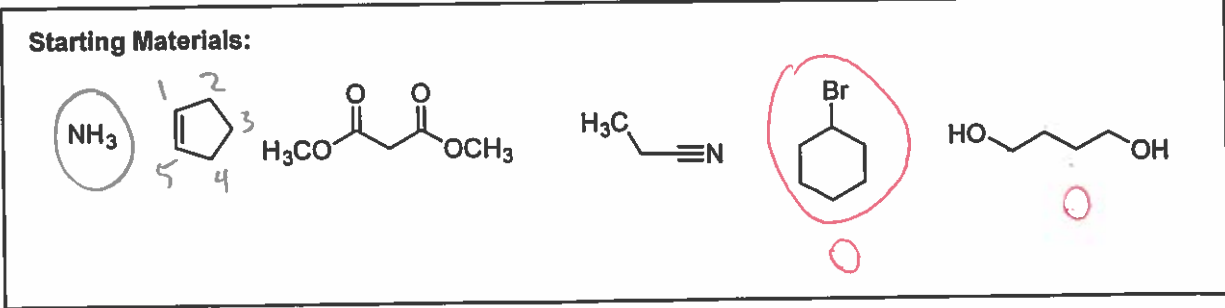


Lecture 17, p14  
WS7 #5D

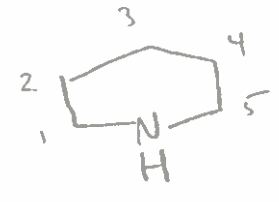
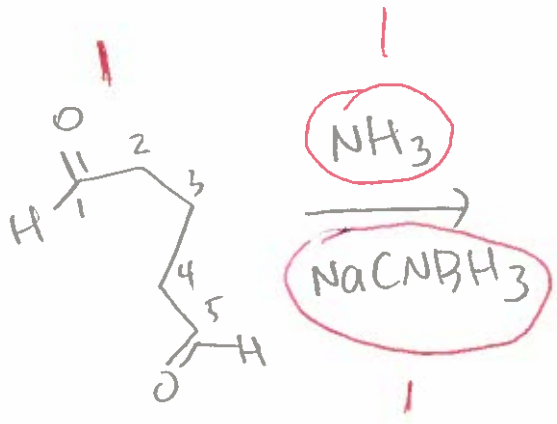
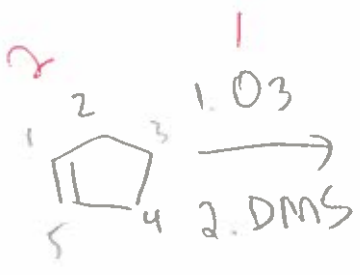
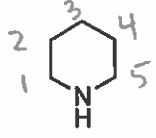


Initials: A

5. (6 points) Propose a synthesis of the target below.  
All carbons must come from the starting materials provided, you can use any reagent you wish.  
YOU CAN IGNORE STEREOCHEMISTRY.



Target A.



WS6 # 5f  
WS7 # 2d

8

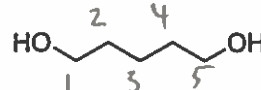
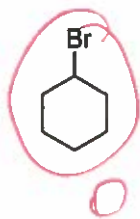
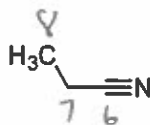
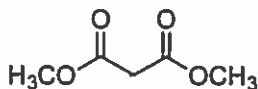
Initials: A

6. (8 points) Propose a synthesis of the target below.

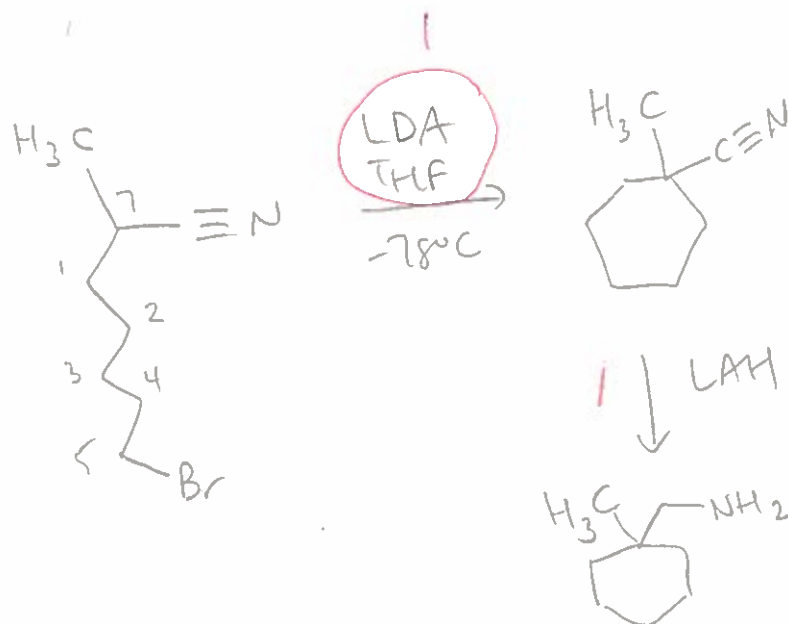
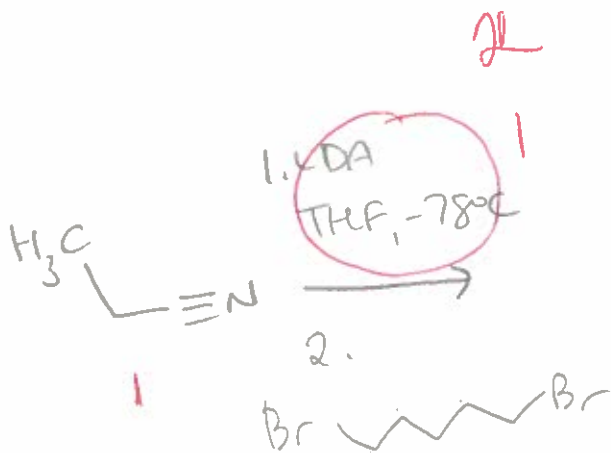
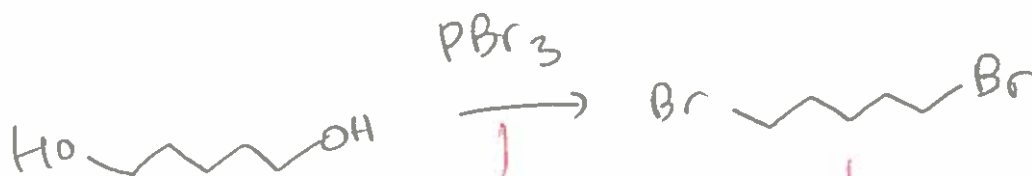
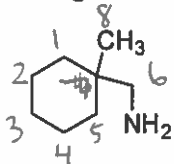
All carbons must come from the starting materials provided, you can use any reagent you wish.

YOU CAN IGNORE STEREOCHEMISTRY.

Starting Materials:

NH<sub>3</sub>

Target A.



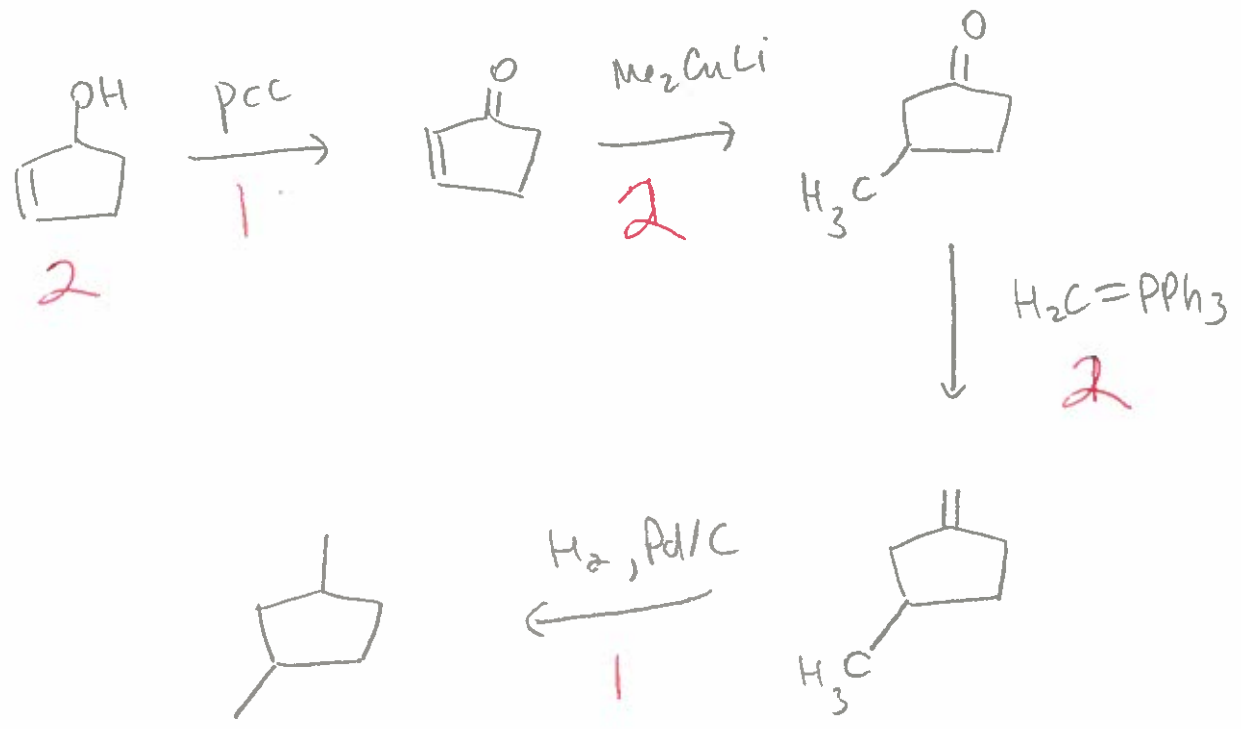
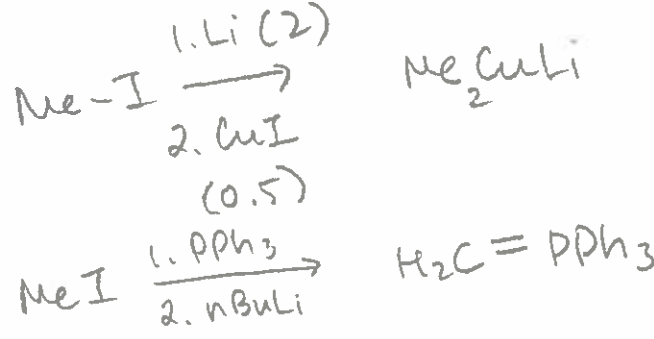
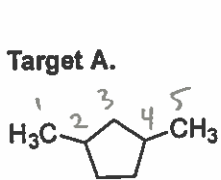
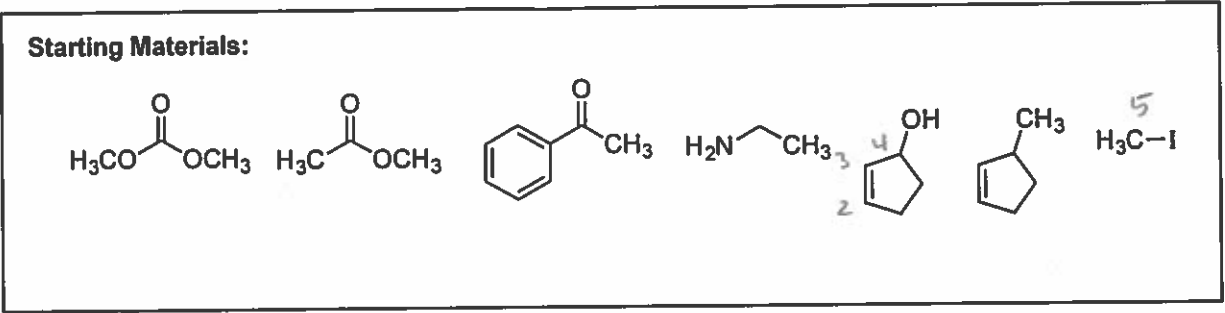
LDA or NaOEt or NaOH or NaOMe

WS 7 #4b

WS 5, #8d

Initials: A

7. (8 points) Propose a synthesis of the target below.  
 All carbons must come from the starting materials provided, you can use any reagent you wish.  
 YOU CAN IGNORE STEREOCHEMISTRY.



WS 2 #4 J  
 WS 5, # 2c  
 midterm 1, SB

