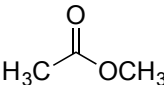
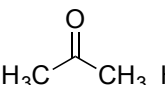
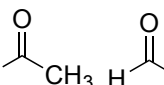
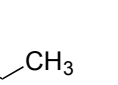
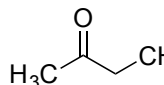
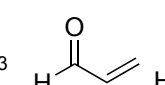
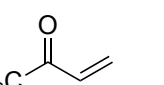
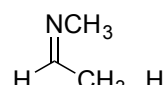
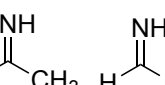
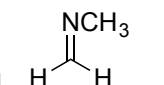

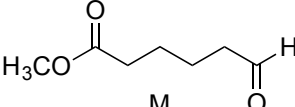
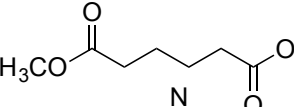
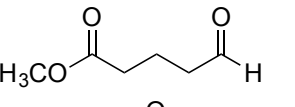
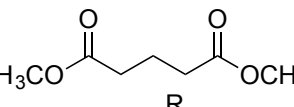
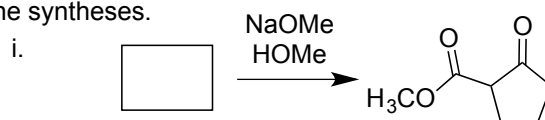
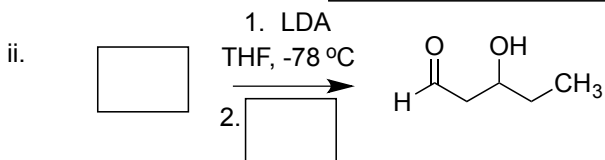
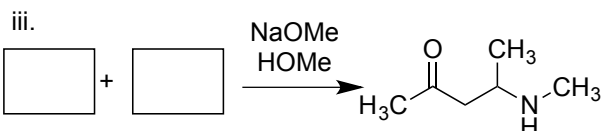
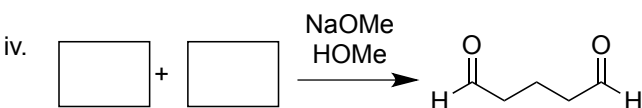
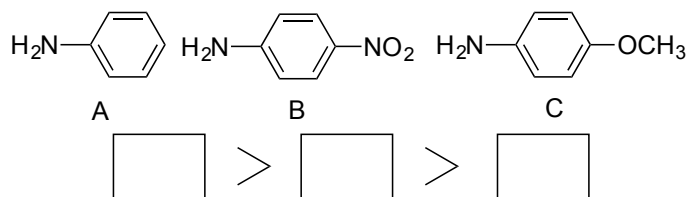
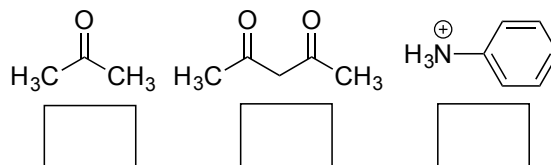


1 (22 points)

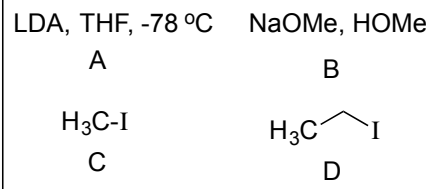
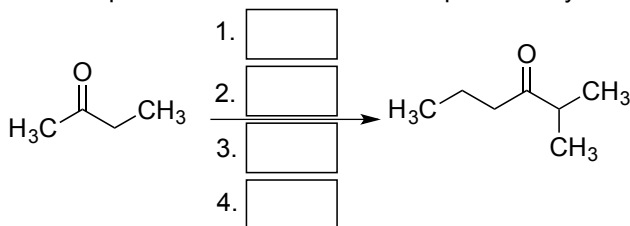
a. Fill in the correct compounds from the table to complete the syntheses. You can use the same compound more than once.

Starting materials

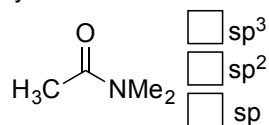
Name of reaction: Name of reaction: Name of reaction: Name of reaction: b. Rank the following compounds from **most to least basic**.c. Provide pKa's for **any 2** of the following compounds (if you do them all, we will count your best 2).

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

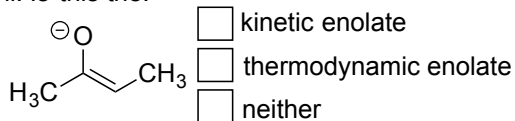


e. Check the appropriate box or boxes.

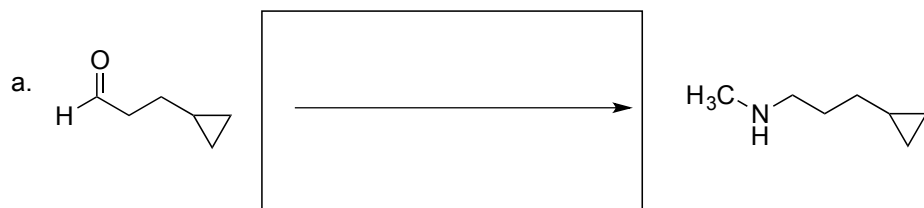
i. Hybridization of the nitrogen:



ii. Is this the:



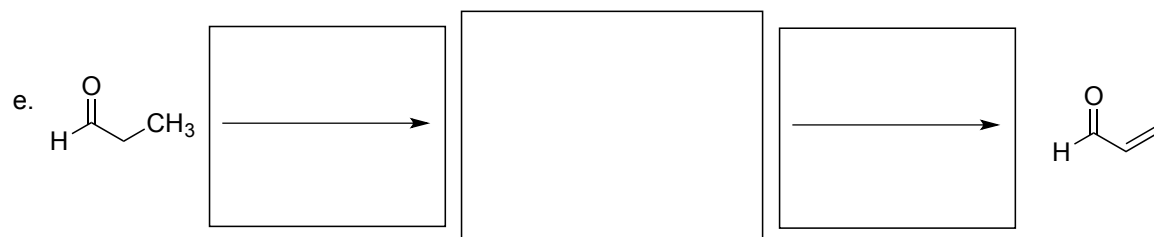
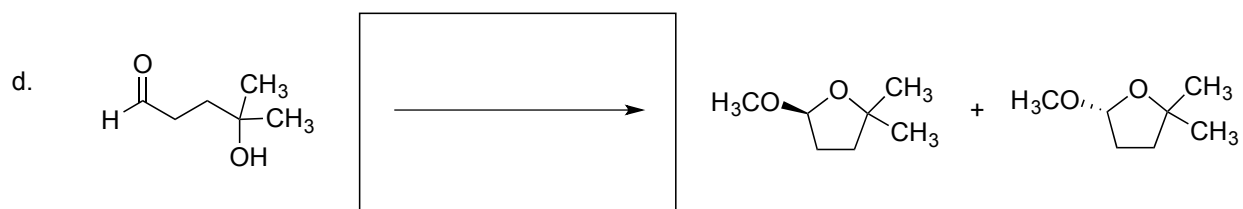
2. Fill in the boxes with the appropriate starting material, reagent or major product (35 points). Show stereochemistry where appropriate (you must DRAW the enantiomers/diastereomers)



What is the name of this reaction:



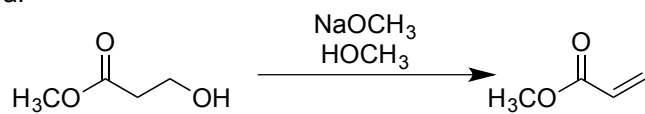
What is the name of this reaction:



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

Initials: _____

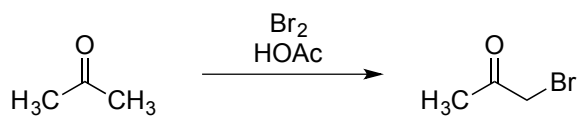
a.



What is the name of this mechanism?

Mechanism:

b.



Mechanism:

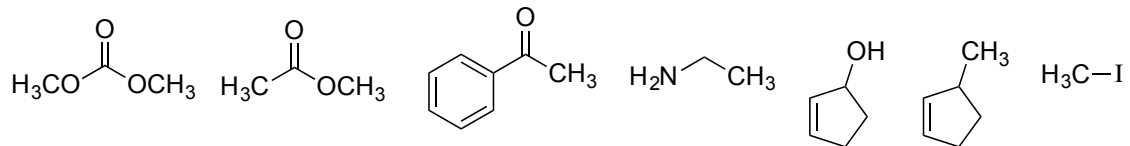
Initials: _____

4. (8 points) Propose a synthesis of the target below.

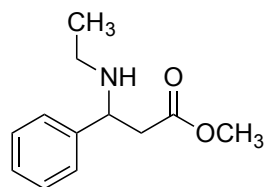
All carbons must come from the starting materials provided, you can use any reagent you wish.

YOU CAN IGNORE STEREOCHEMISTRY.

Starting Materials:



Target A.

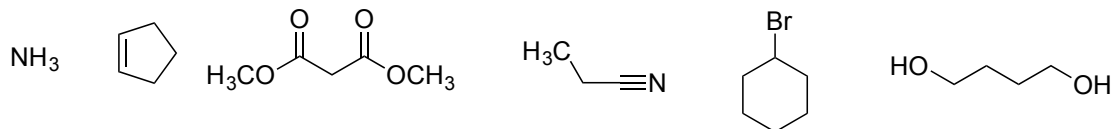


5. (6 points) Propose a synthesis of the target below.

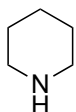
Initials: _____

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

Starting Materials:



Target A.

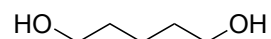
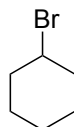
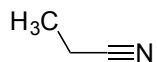
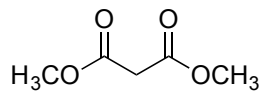


6. (6 points) Propose a synthesis of the target below.

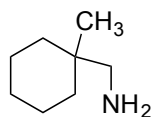
Initials: _____

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

Starting Materials:



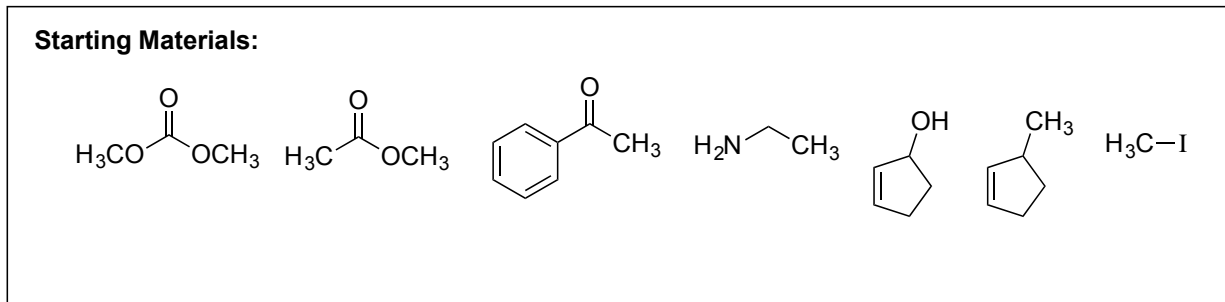
Target A.



Initials: _____

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.



Target A.

