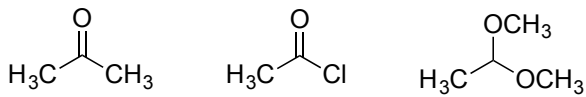
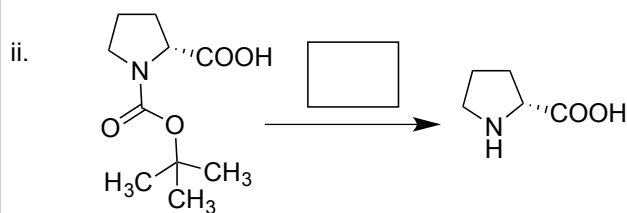
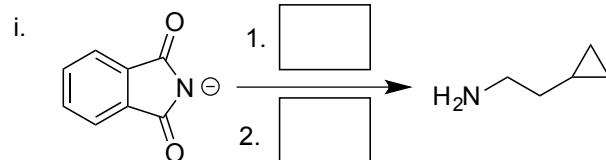
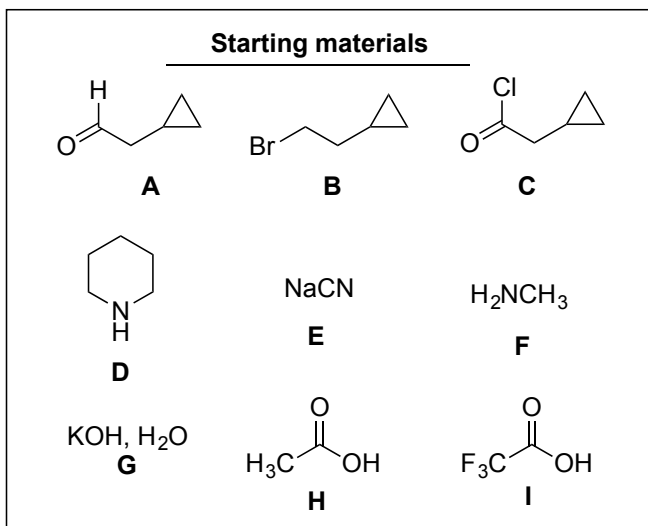


1 (16 points).

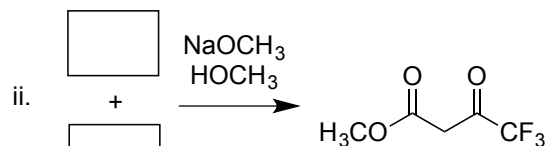
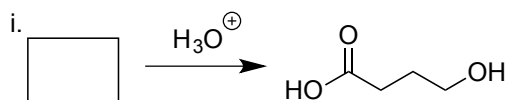
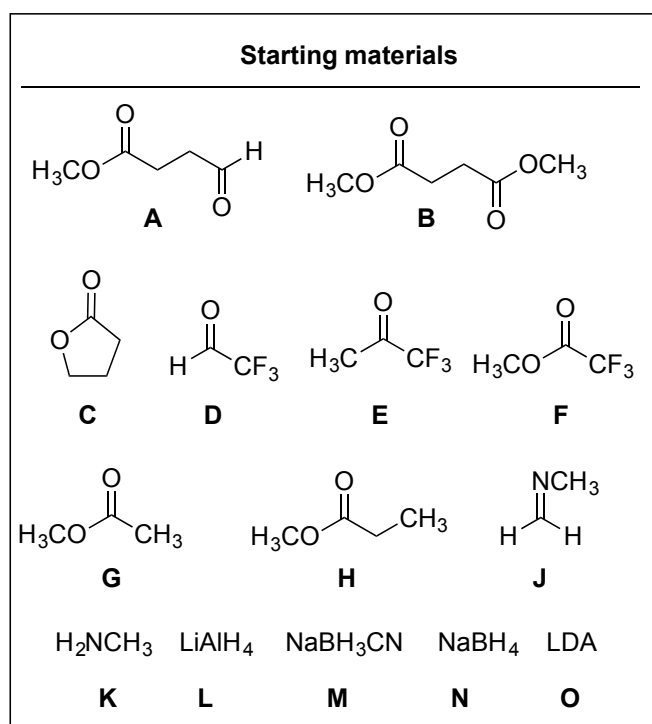
a. Rank the following compounds from fastest to slowest reaction with PhMgBr:



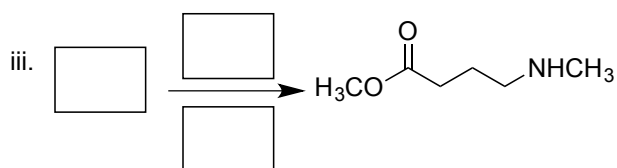
b. Fill in the starting materials to complete the syntheses



c. Fill in the starting materials to complete the syntheses



Name of reaction:

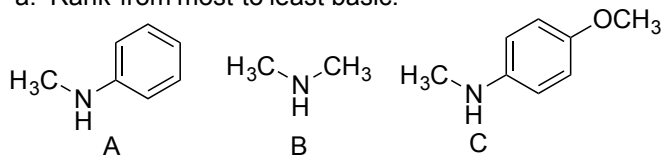


Name of reaction:

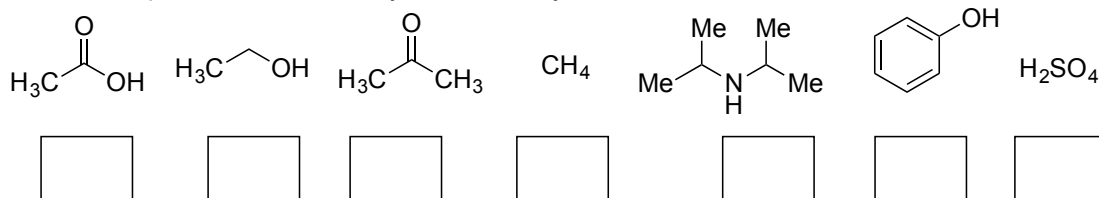
Initials: _____

2 (22 points)

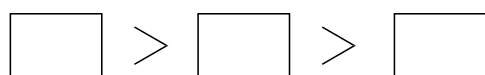
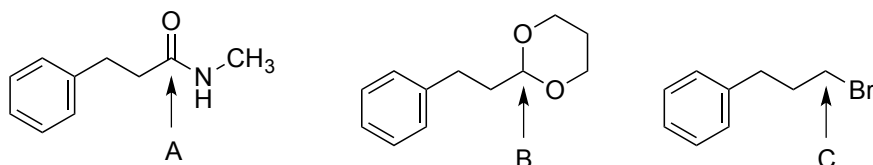
a. Rank from most to least basic:



b. Fill in the pKas. We will count your best 6, if you do all 7.

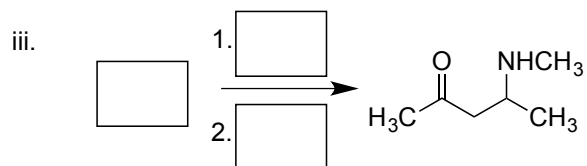
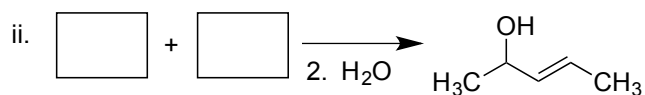
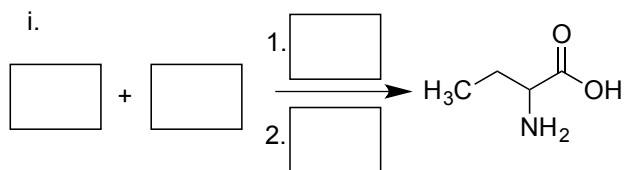


c. Rank from highest to lowest oxidation state:



d. Fill in the starting materials to complete the syntheses

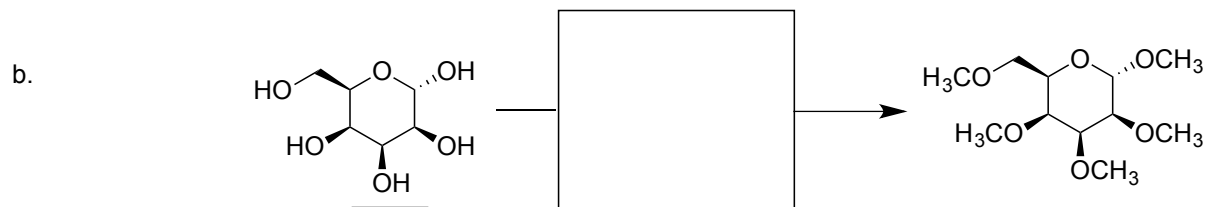
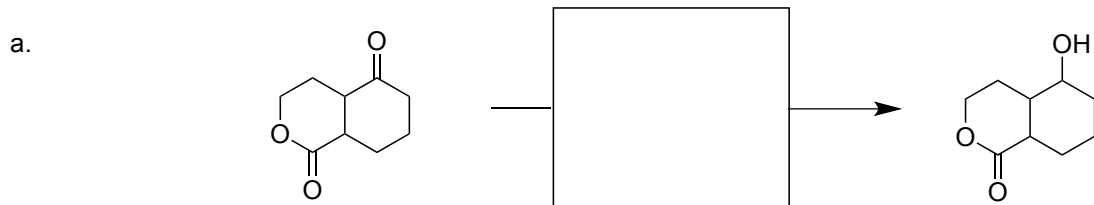
Starting materials				
<chem>CC=O</chem>	<chem>CCC=O</chem>	<chem>C=O</chem>	<chem>CC(=O)C</chem>	
A	B	C	D	
<chem>CC(O)C=C</chem>	<chem>CC=O</chem>	<chem>LiAlH4</chem>	<chem>NaBH4</chem>	
E	F	G	H	
<chem>BrMgCH3</chem>	<chem>LiCu(CH3)2</chem>	<chem>NaCN</chem>	<chem>NH4Cl</chem>	<chem>CO2</chem>
I	J	K	L	M
<chem>CN(C)C=C</chem>	<chem>CC(=O)N(C)C</chem>	<chem>H3O+</chem>	<chem>LDA</chem>	
N	O	P	Q	



Name of reaction:

4. Fill in the boxes with the appropriate starting material, reagent or major product (26 points).
 Show stereochemistry where appropriate (you must DRAW the enantiomers/diastereomers)

Initials: _____

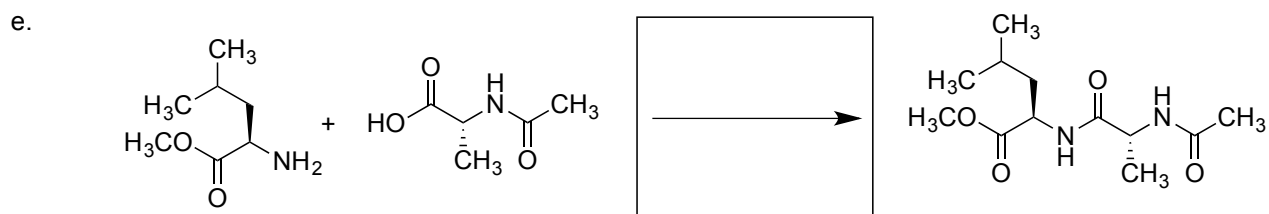
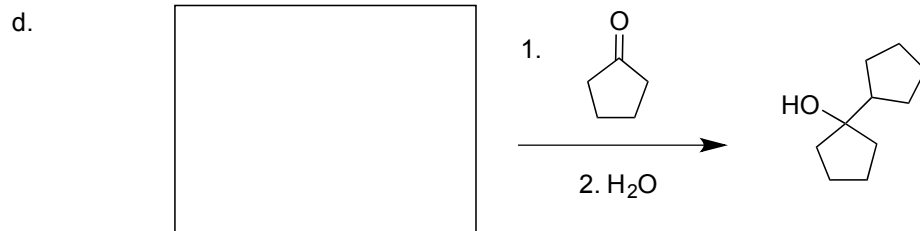


Is this carbohydrate α or β :

D or L:



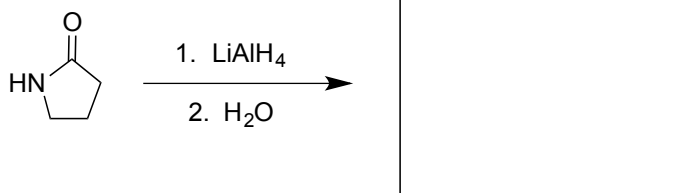
What is the name of this reaction?



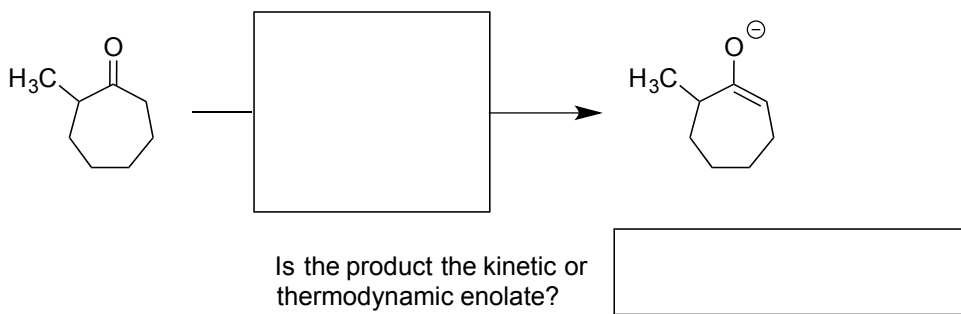
3. Fill in the boxes with the appropriate starting material, reagent or major product (31 points).
 Show stereochemistry where appropriate (you must DRAW the enantiomers/diastereomers)

Initials: _____

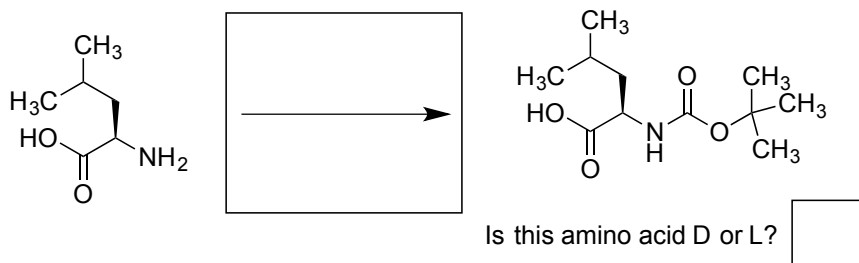
a.



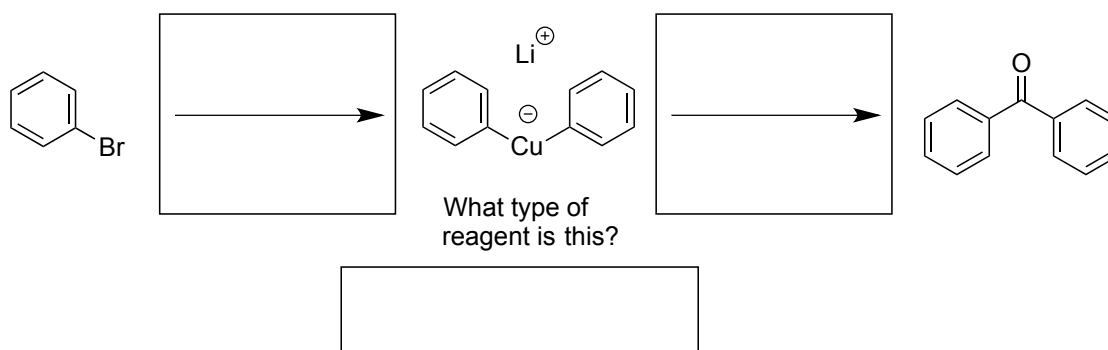
b.



c.



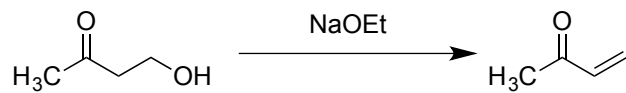
d.



6. (13 points) Provide an arrow-pushing mechanism.

Initials: _____

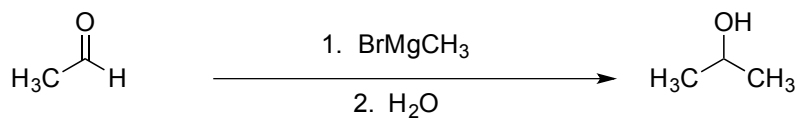
a.



What is the name of this mechanism?

Mechanism:

b.

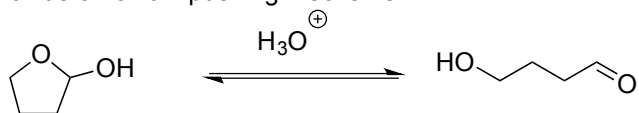


Mechanism:

5. (8 points)

Initials: _____

a. Provide an arrow-pushing mechanism.

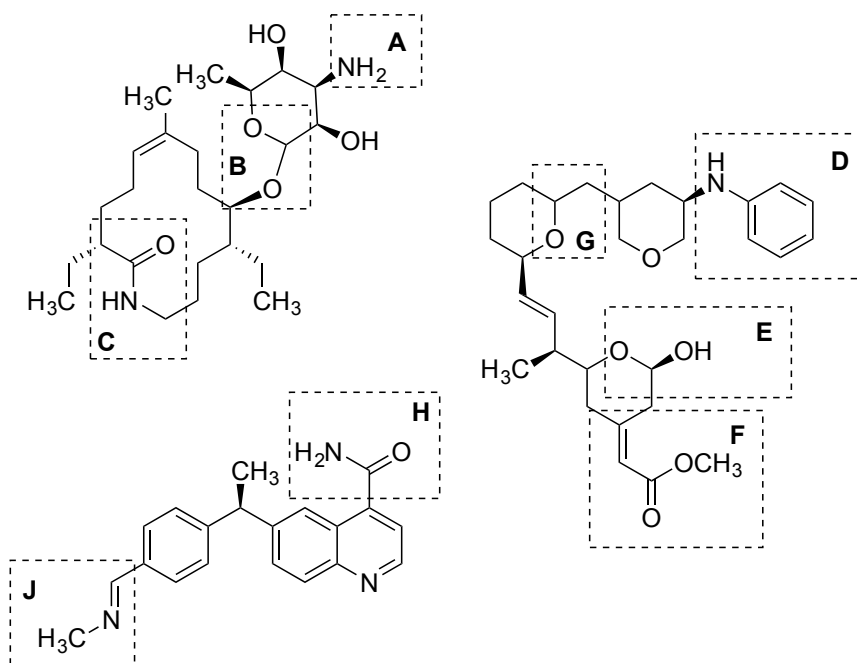


Is this reaction an oxidation, reduction, or neither?

Mechanism:

b. Match the names of the functional groups with labeled examples from the compounds.

- acetal
- aniline
- hemiacetal
- imine



BONUS (1 point):

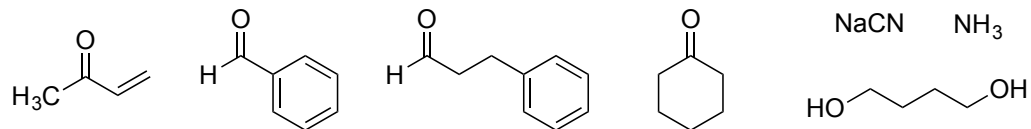
What was your favorite song that was played at the beginning of a lecture?

7. (16 points) Propose syntheses of the targets below.

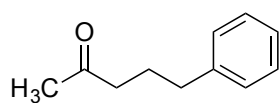
Initials: _____

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

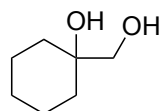
Starting Materials:



Target A.



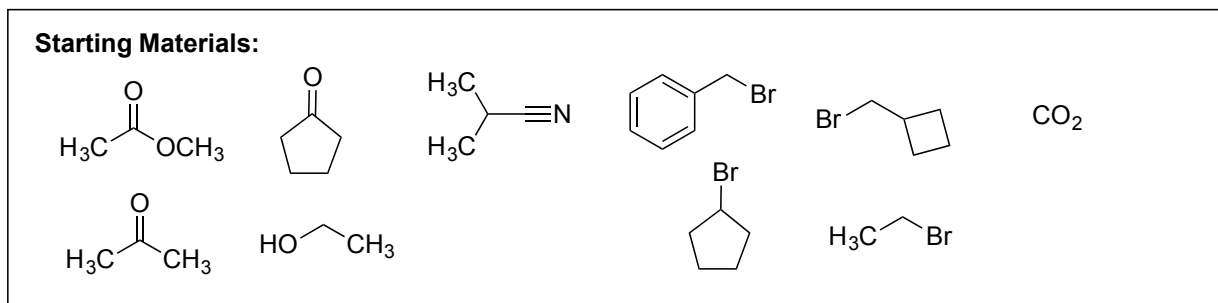
Target B.



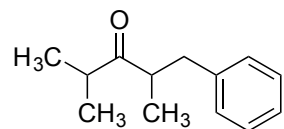
8. (16 points) Propose syntheses of the targets below.

Initials: _____

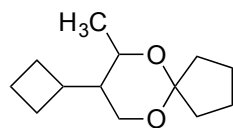
All carbons must come from the starting materials provided, you can use any reagent you wish.
YOU CAN IGNORE STEREOCHEMISTRY.



Target A.



Target B.

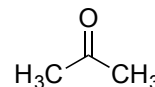
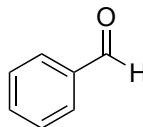
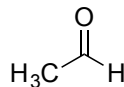
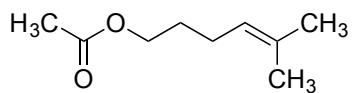
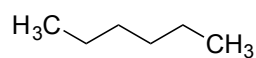


9. (16 points) Propose syntheses of the targets below.

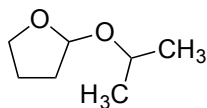
Initials: _____

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

Starting Materials:



Target A.



Target B.

