
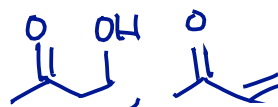



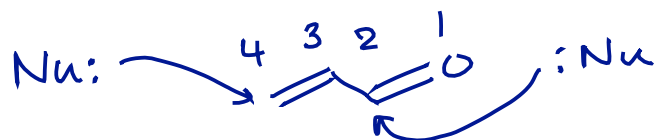


# Recap: General Rxns (not all specifics!)

<u>Nuc</u>	<u>Elect.</u>	<u>Rxn</u>	<u>Product(s)</u>
 (must be dicarbonyl enolate for Michael)	$\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}, \text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{H}$ (ketone ox level)	ALDOL (no $\text{H}^+$ workup)	
	$\text{R}-\overset{\text{O}}{\parallel}{\text{C}}-\text{OR}$ ( $\text{CO}_2$ or carb. acid ox. level)	CLAISEN ( $\text{H}^+$ workup!)	
	$\text{CH}_2=\text{CH}-\overset{\text{O}}{\parallel}{\text{C}}-\text{R}$ $\alpha, \beta$ -unsat.	MICHAEL (no $\text{H}^+$ workup)	
	$\text{Br}-\text{CH}_2-\text{R}$ enolate alkylation		



	1,2	1,4	mix
IRREV.	$\text{RLi}$ $\text{LiAlH}_4$	$\text{R}_2\text{CuLi}$ $(\text{RSH}, \text{RS}^-)$	$\text{NaBH}_4$ $\text{RMgBr}$
REV. $\text{CN}^-$ , amines (OR, OH)	Kinetic control ( $0^\circ\text{C}$ )	therm. control ( $80^\circ\text{C}$ )	

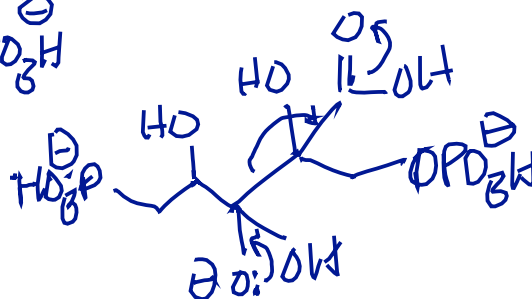
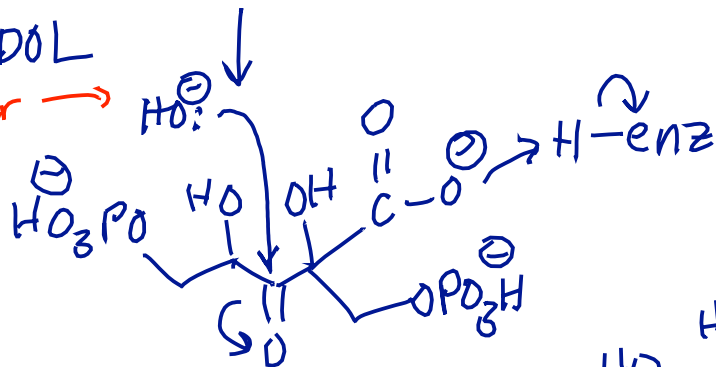
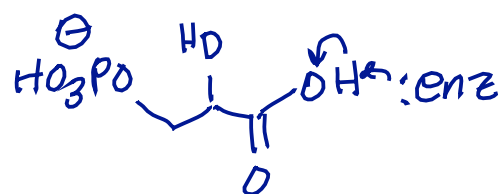
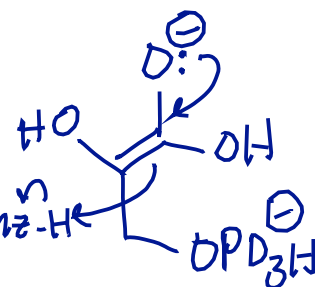
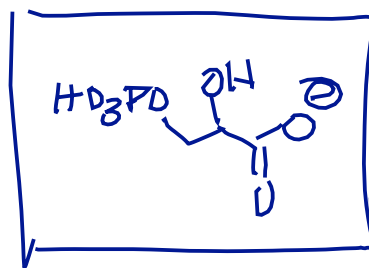
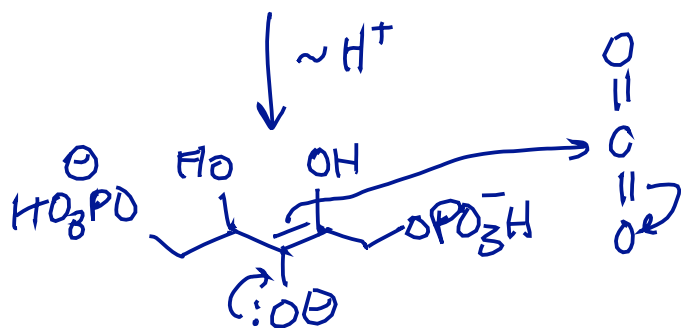
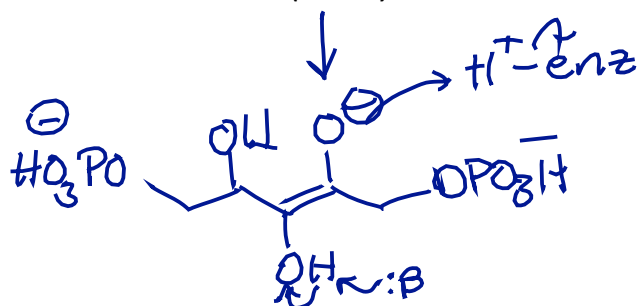
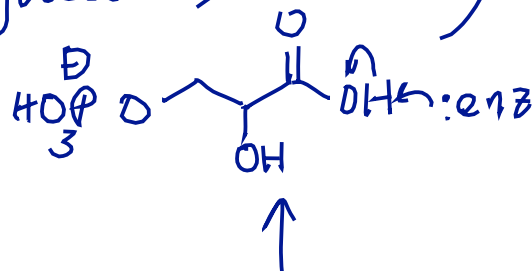
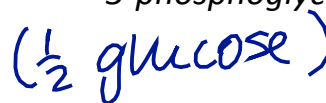
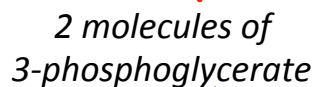
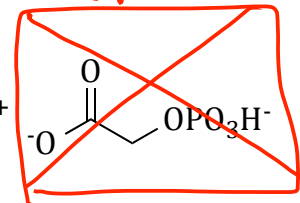
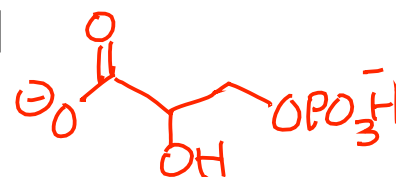
RuBisCO - Ribulose Biphosphate Carboxylase

## Oxygenase

July 25, 2014

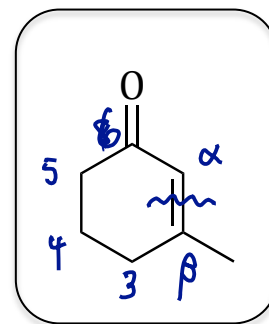
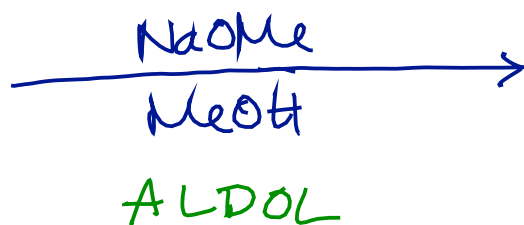
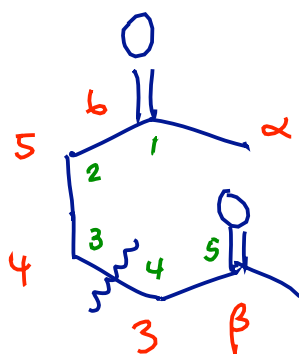
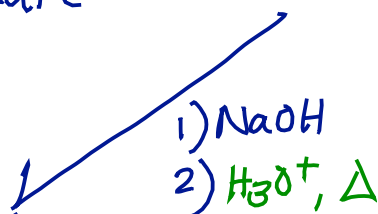
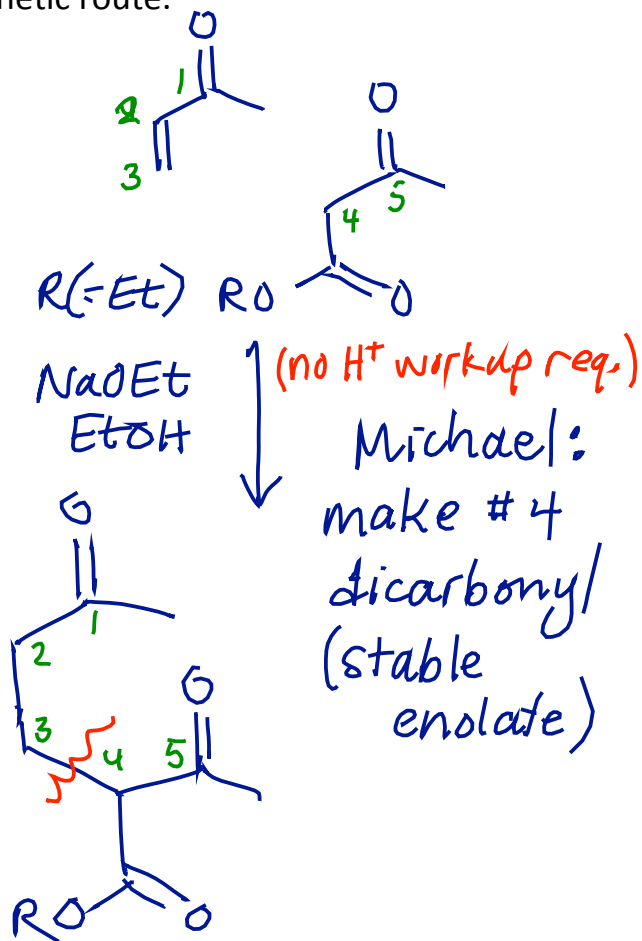
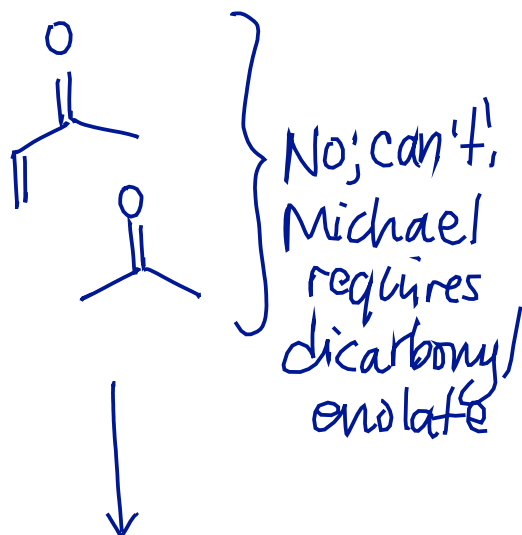
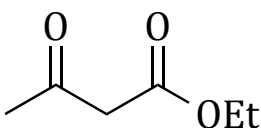
# The Most Important C-C Bond Formation on the Planet

Provide a complete curved-arrow mechanism for the following transformation. Why is this reaction important?

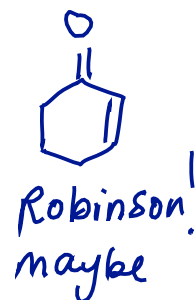


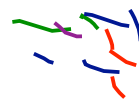
# Synthesis: Test Yourself Now

Provide a multi-step synthesis; you may use *any* organic or inorganic reagents, as long as the starting material is incorporated into the synthetic route.

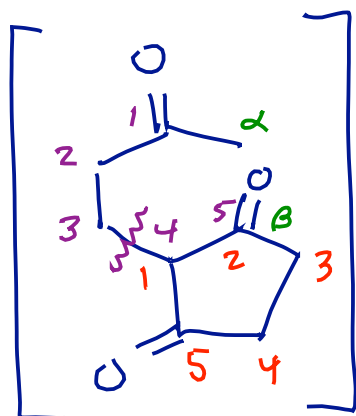
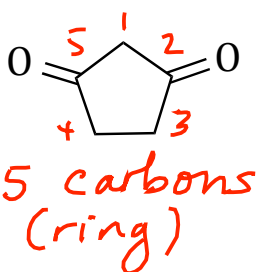


$\alpha, \beta$ -unsat!

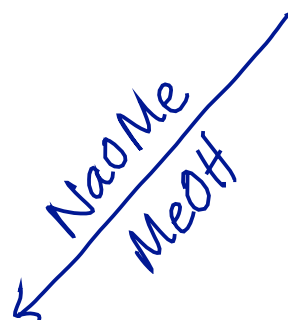
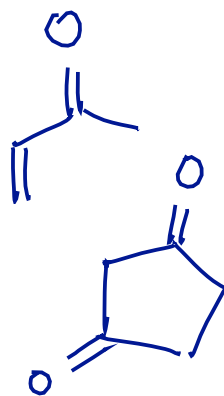




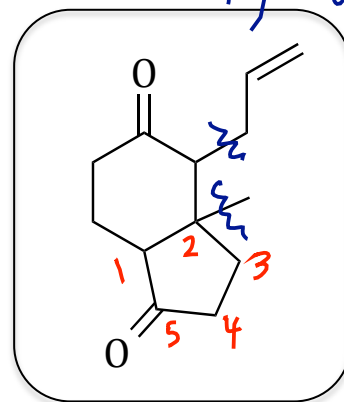
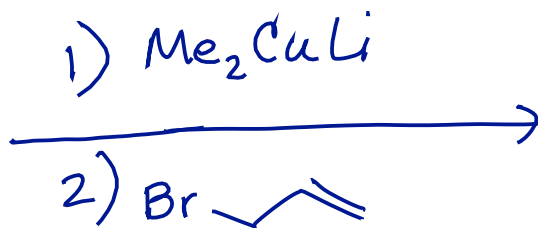
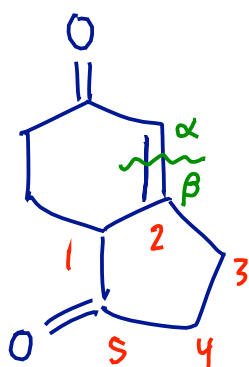
Provide a multi-step synthesis; you may use **ACYCLIC** organic or inorganic reagents, as long as the starting material is incorporated into the synthetic route. The best answer will require **five or fewer steps**. You may neglect stereochemistry.



← MICHAEL

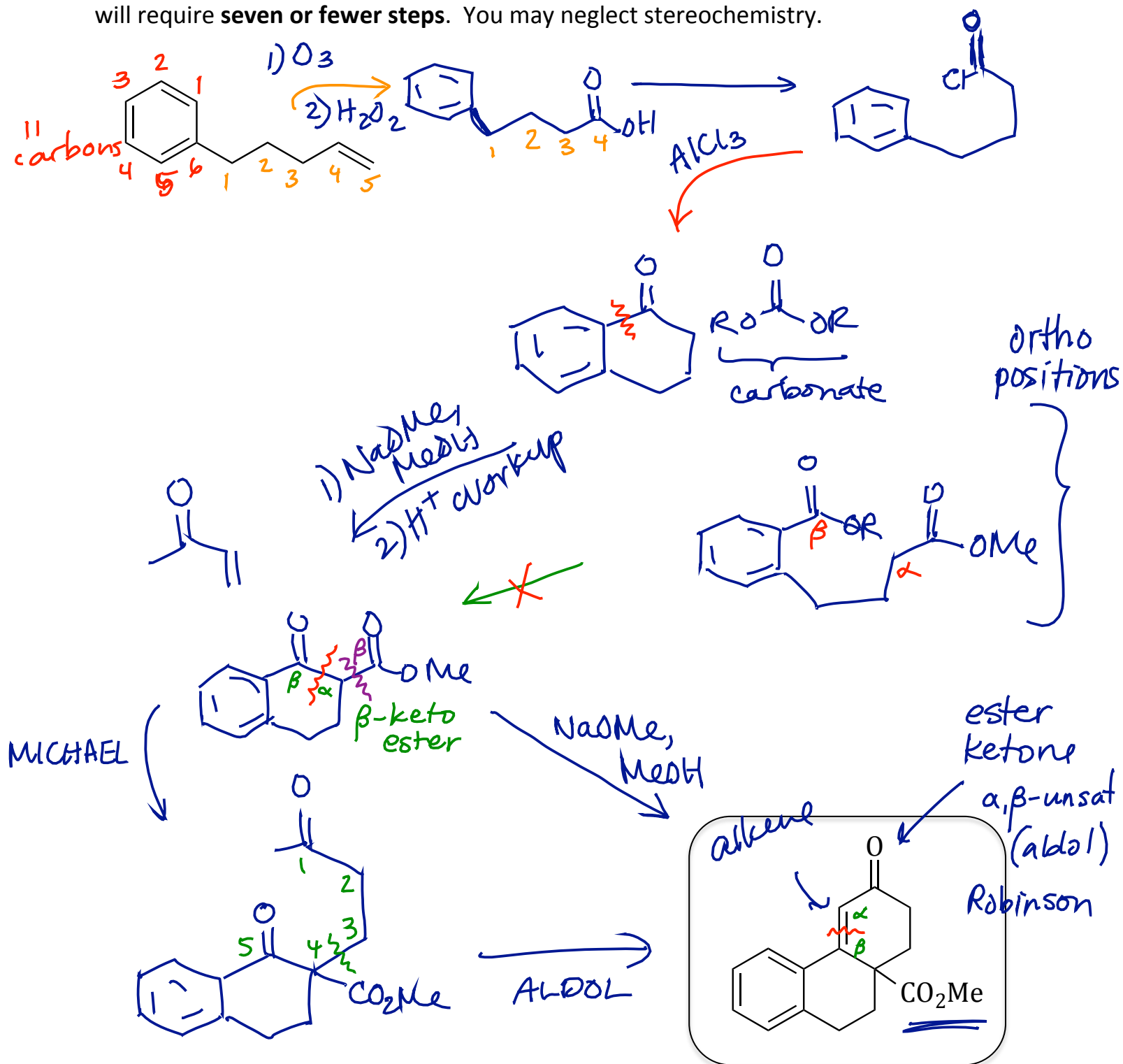


- 1) 2 alkyl gr. adjacent
- 2) 6-memb. ring
- 3) ketones
- 4) alkene



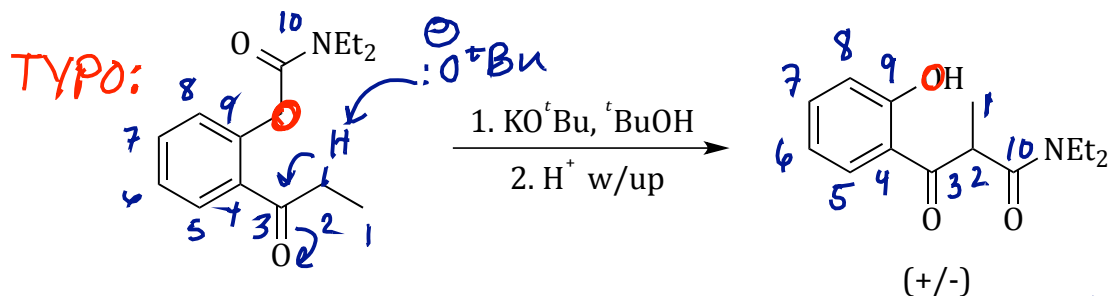


Provide a multi-step synthesis; you may use **ACYCLIC** organic or inorganic reagents, as long as the starting material is incorporated into the synthetic route. The best answer will require **seven or fewer steps**. You may neglect stereochemistry.





Provide a complete curved-arrow mechanism for all steps in the following transformation.

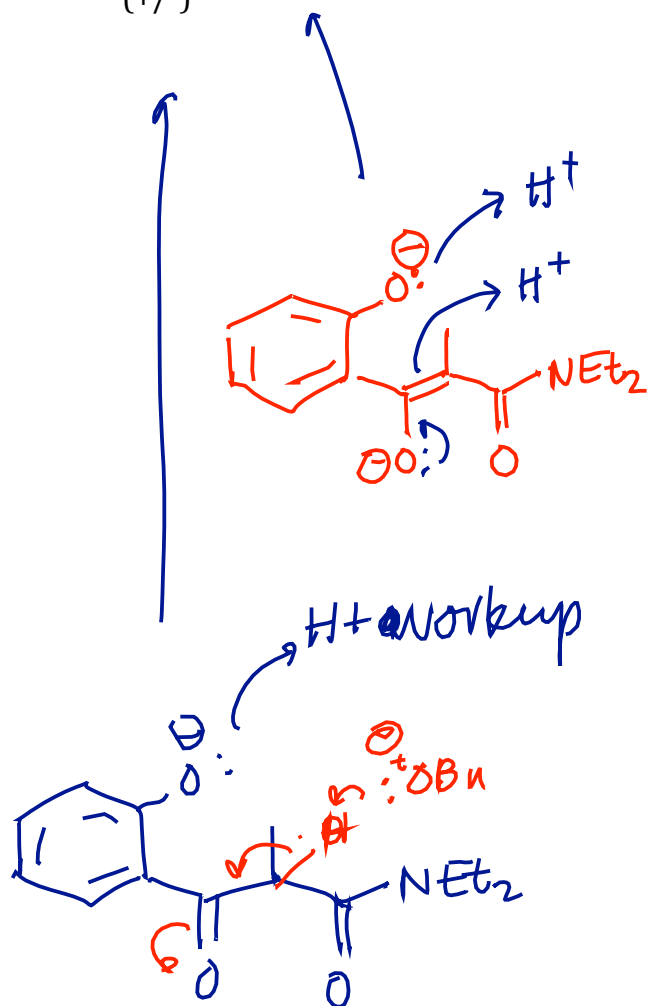
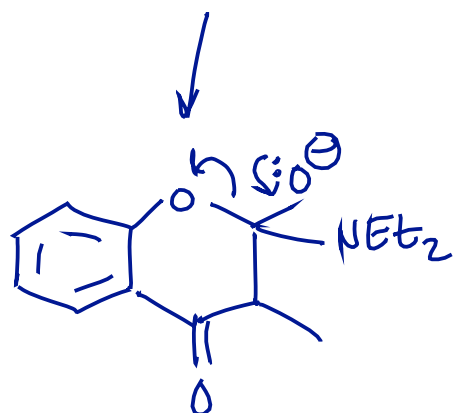
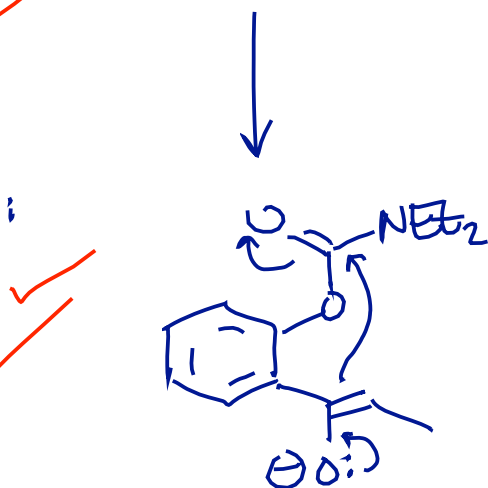


**MAKE:**

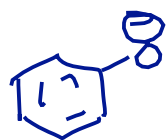
$\text{C}_2 - \text{C}_{10}$  ✓  
 $\text{O} - \text{H}$  ✓

**BREAK:**

$\text{O} - \text{C}_{10}$  ✓  
 $\text{C}_2 - \text{H}$  ✓



**OPTIONS:**



enolate

$\text{pK}_a$ : 10

35

20

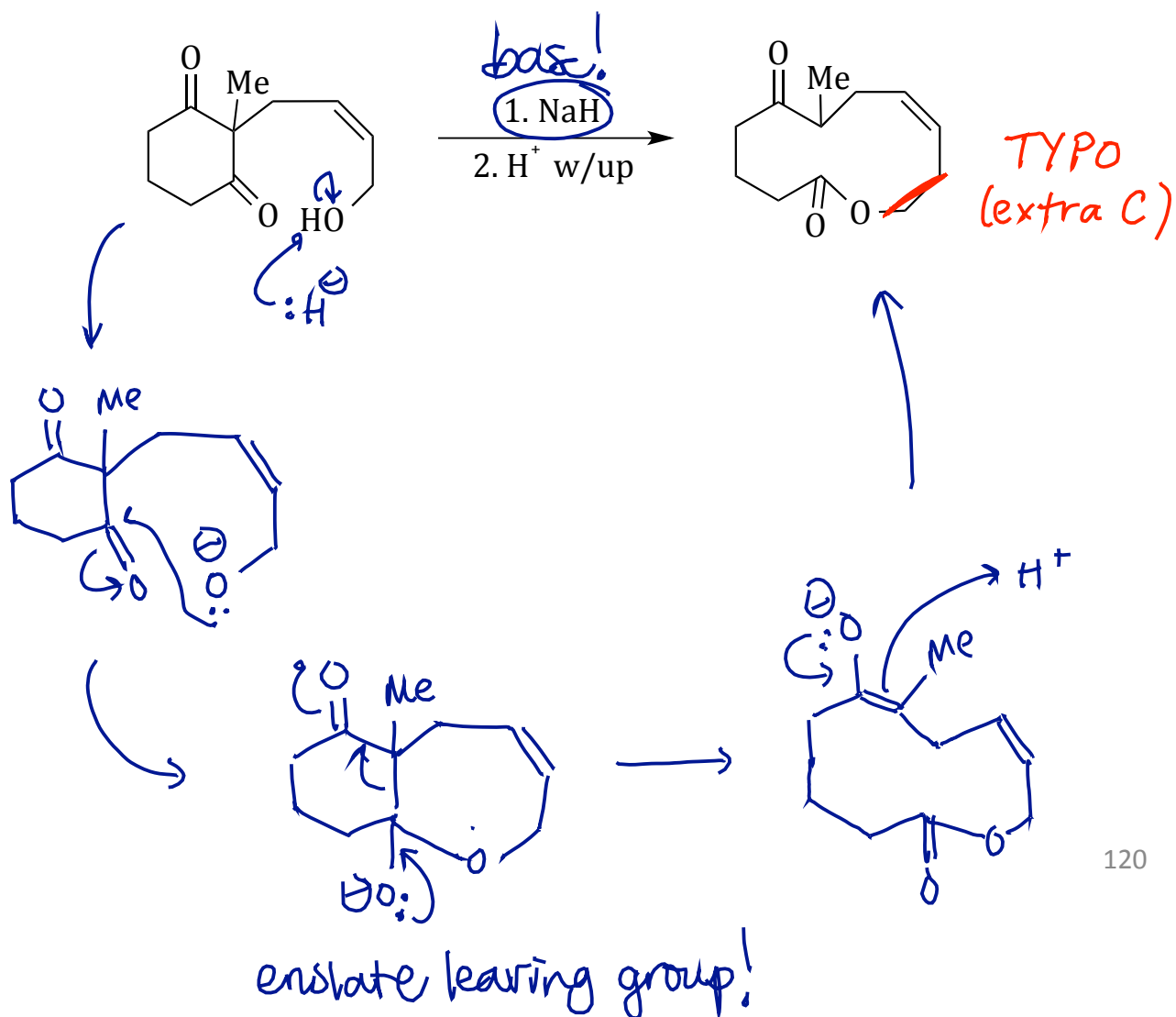
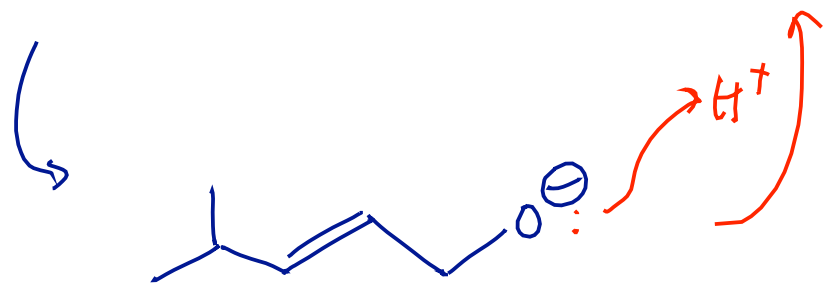
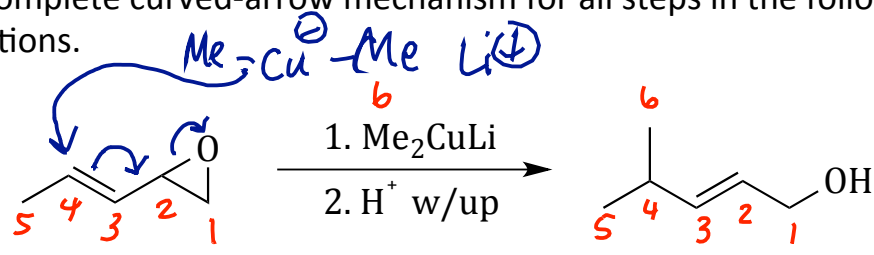
Provide a complete curved-arrow mechanism for all steps in the following transformations.

MAKE

C<sub>6</sub>-C<sub>4</sub> ✓  
C<sub>3</sub>-C<sub>2</sub> π ✓  
O-H

BREAK

C<sub>2</sub>-O ✓  
C<sub>4</sub>-C<sub>3</sub> π ✓





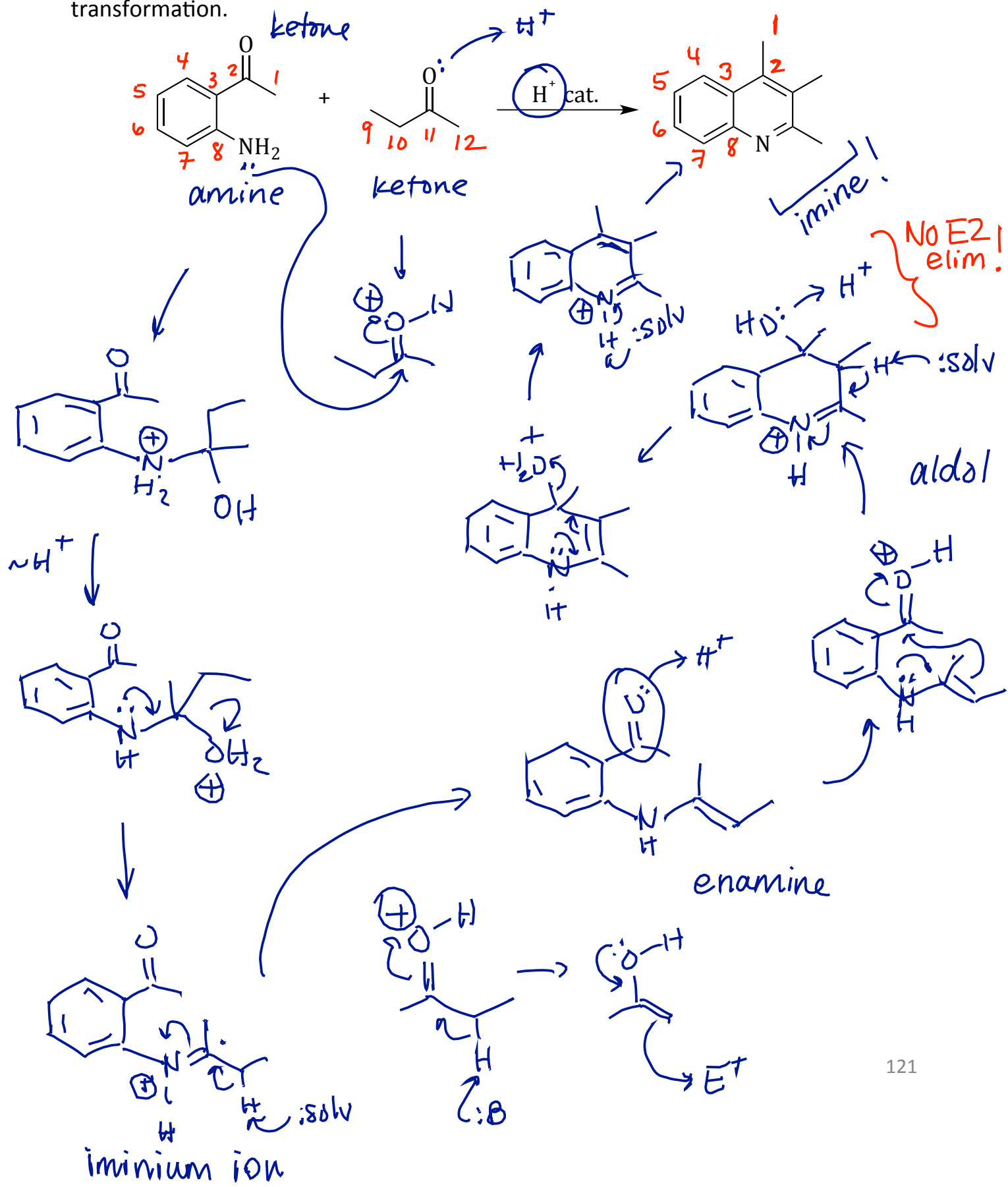
1) # carbons. 2) ID FG's

3) BONDS MADE, BONDS BROKEN

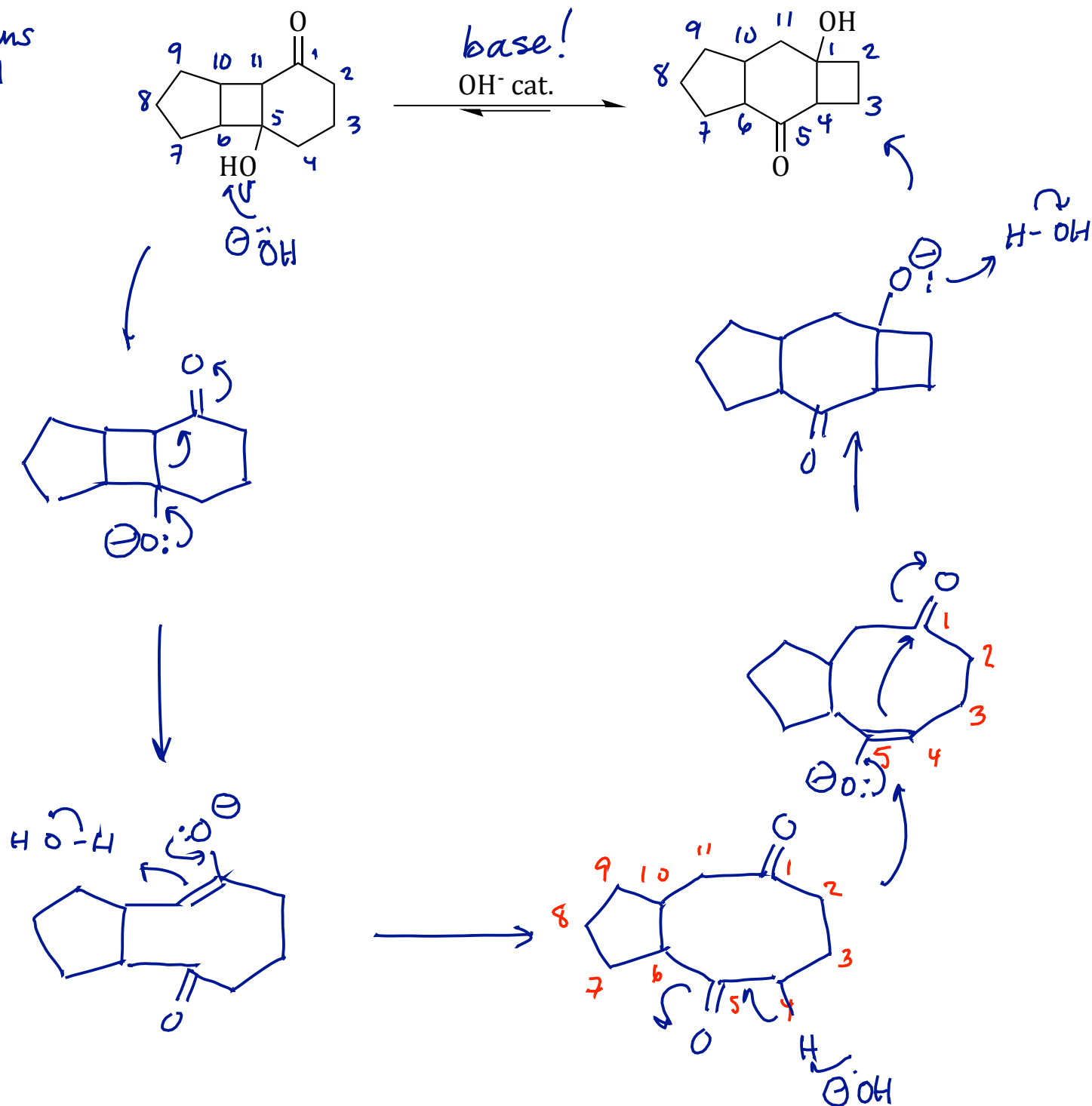
July 25, 2014

Week 5

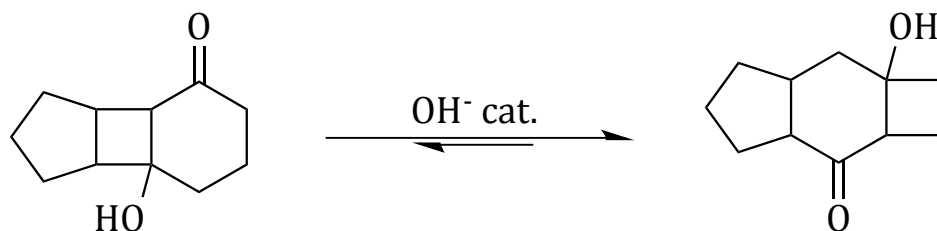
Provide a complete curved-arrow mechanism for all steps in the following transformation.



Provide a complete curved-arrow mechanism the following transformation.  
(Hint: the transformation is reversible.)



Provide a complete curved-arrow mechanism the following transformation.  
(Hint: the transformation is reversible.)



*Dops.*