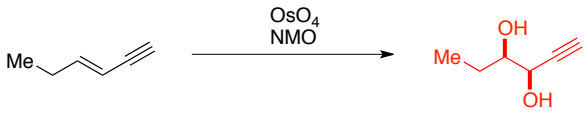
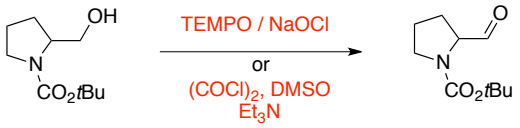
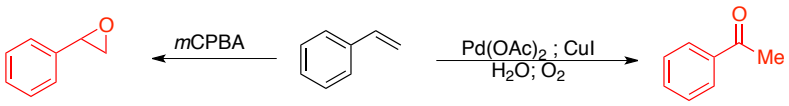
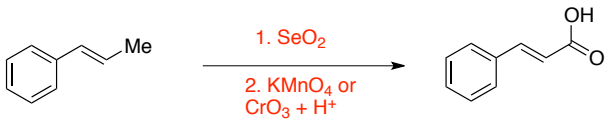
Last name First Name ID Number

1. Fill in the missing reagents or products (no mechanism).

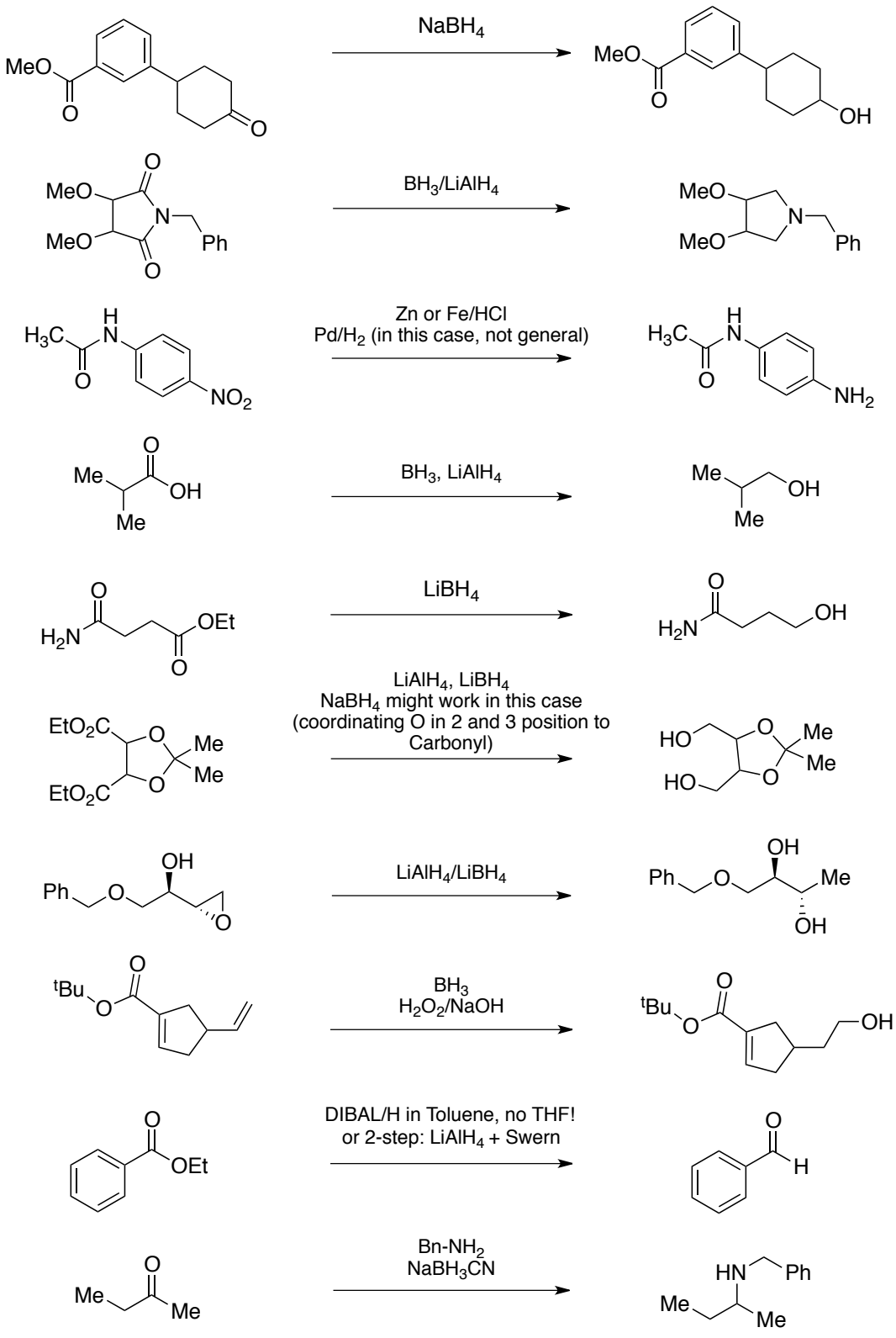




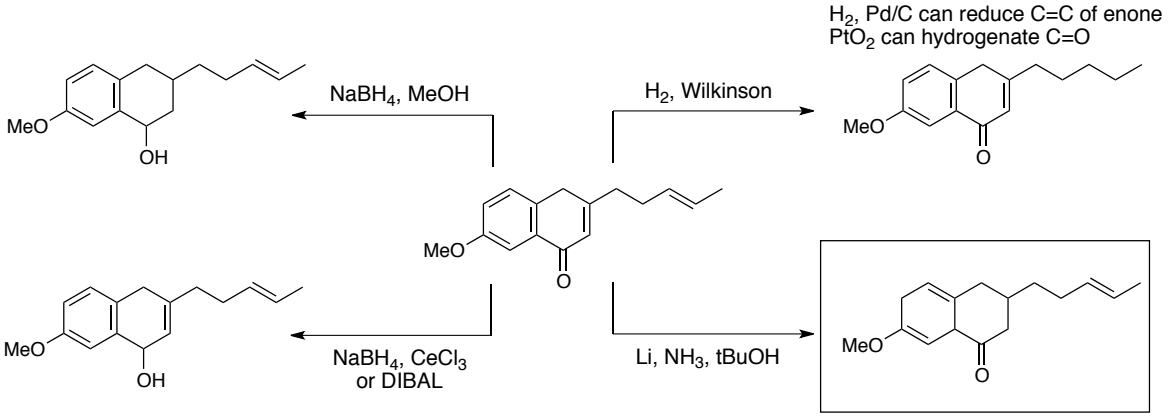




2) Give the reagents for the following transformations.

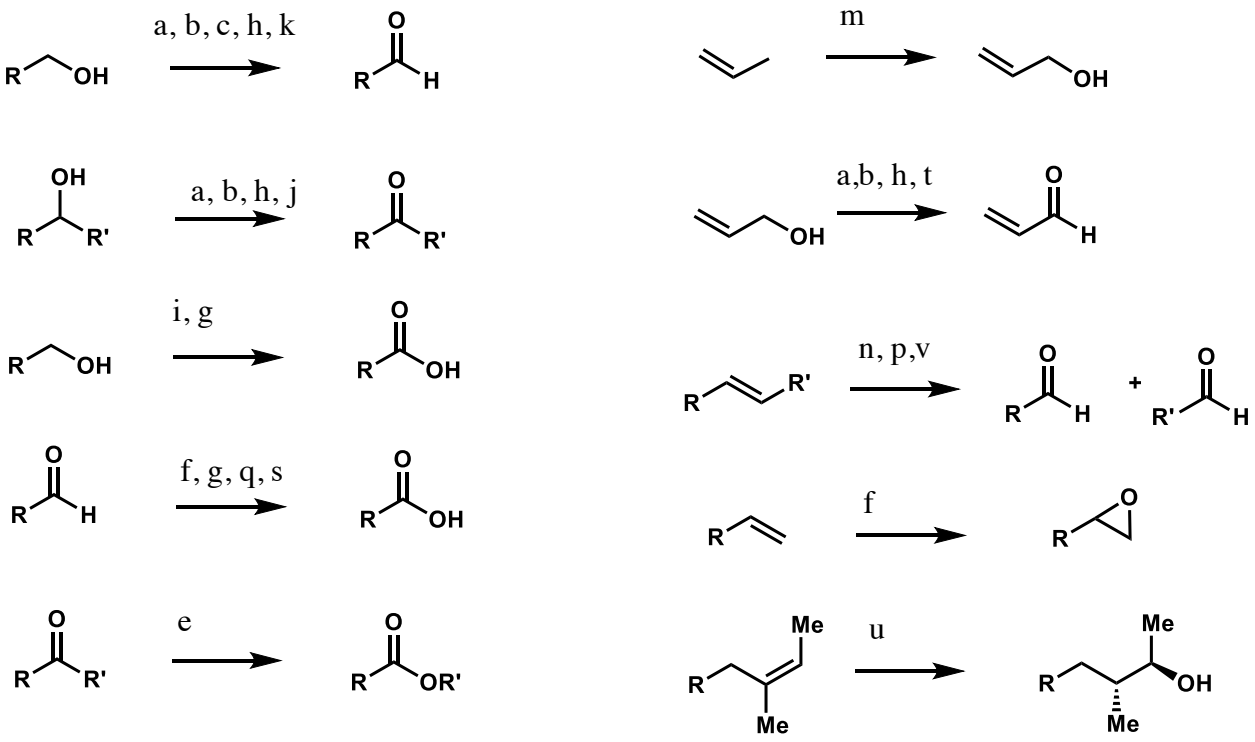


3. Provide the missing reagents or products



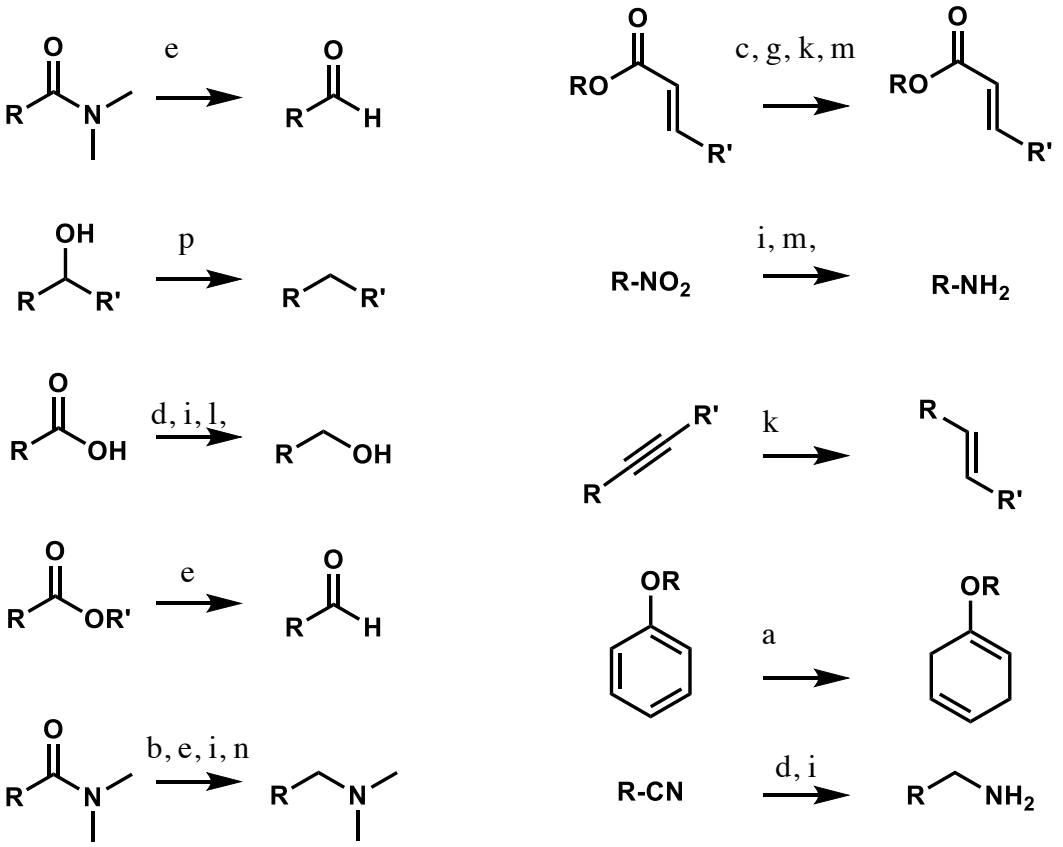
4) Match all applicable oxidation reactions and reagents listed here to the following transformations:

a.Swern	b. TPAP	c. PCC	d. Oxone
e. Baeyer-Villager	f. DMDO	g. Jones	h.Dess-Martin Periodinane
i. TEMPO	j. Oppenauer	k. Mofatt	l. IBX
m. SeO_2, *t*-BuOOH	n. $NaIO_4$	o. LDA; TMSCl: $Pd(OAc)_2$	
p. OsO_4 (cat.), NMO	q. $KMnO_4$	r. LDA; PhSeCl: H_2O_2	
s. $NaClO_2$	t.MnO_2	u. BH_3; H_2O_2, NaOH	v. O_3



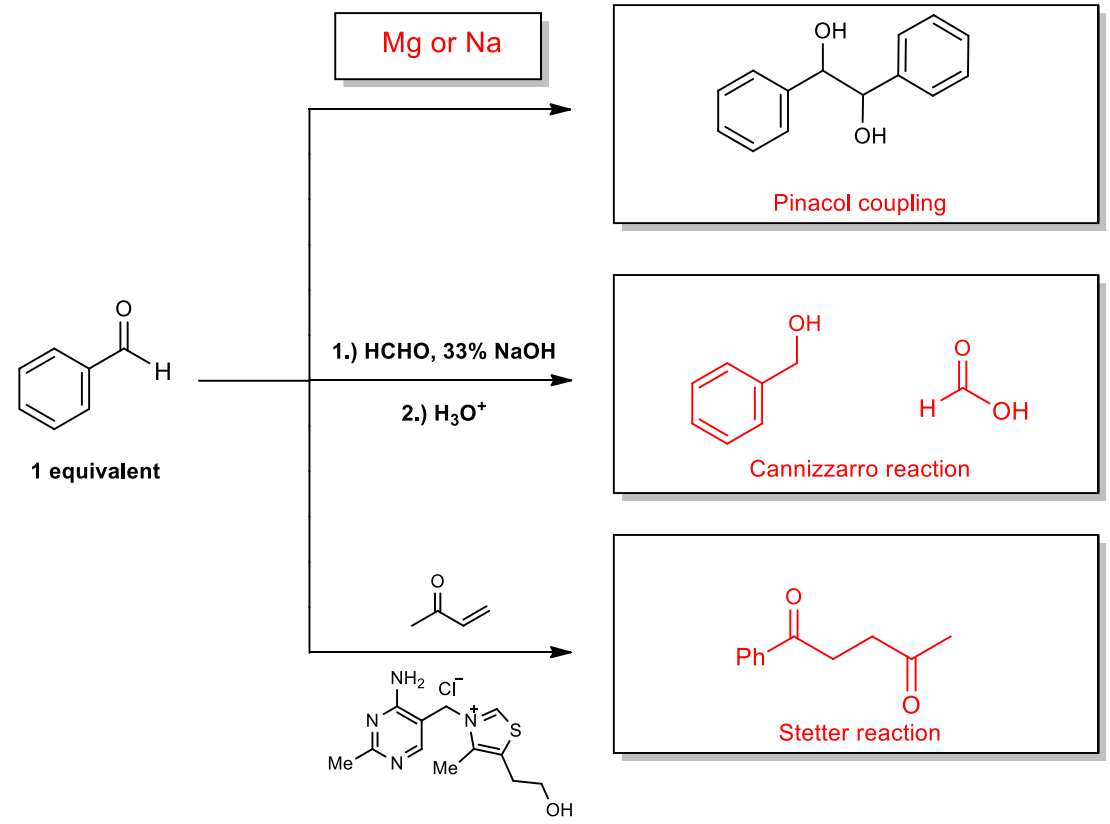
a. Match all applicable reduction reactions and reagents listed here to the following transformations:

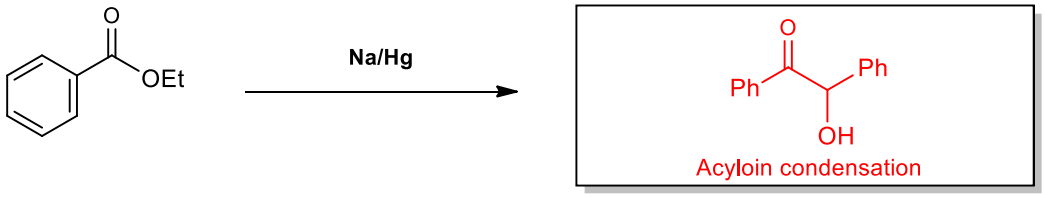
a. Birch Reduction	b. Red-Al	c. Raney Nickel	d. Super Hydride
e. DIBAl	f. Cathecol Borane	g. L-selectride	h.Barton Deoxygenation
i. $LiAlH_4$	j. $NaBH_4$	K. Na, NH_3	l. BH_3·THF
m. Pd-C, H_2	n. $LiBH_4$		



6)

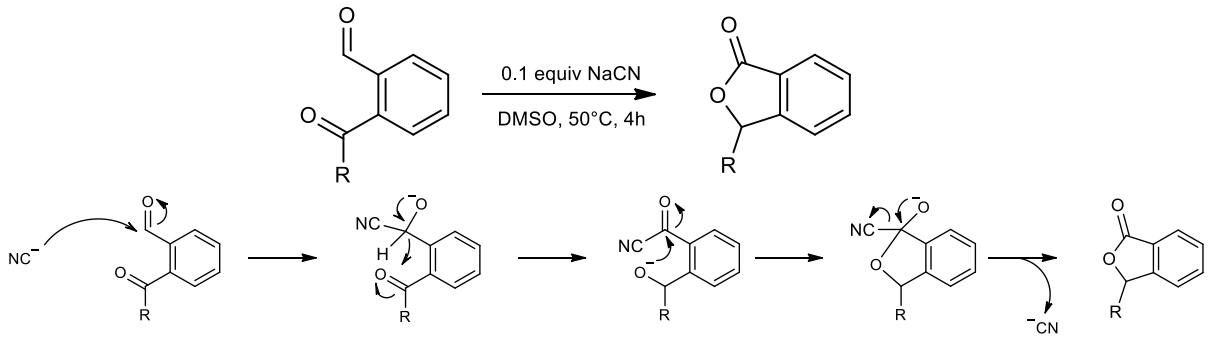
Provide the missing reagent(s) or product. What are the names of these reactions?





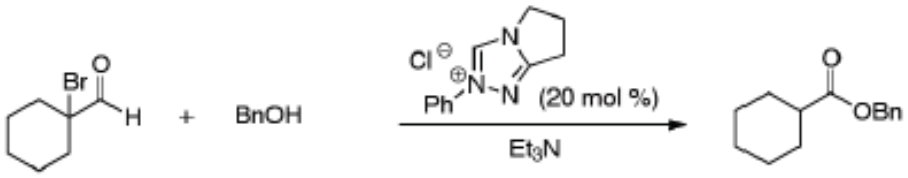
7)

The following reaction is a cyanide-catalyzed (nucleophile catalysis) variant of a redox neutral reaction that we encountered in the lecture. What is the name of the parent redox neutral reaction? Provide a detailed mechanism for the transformation below.

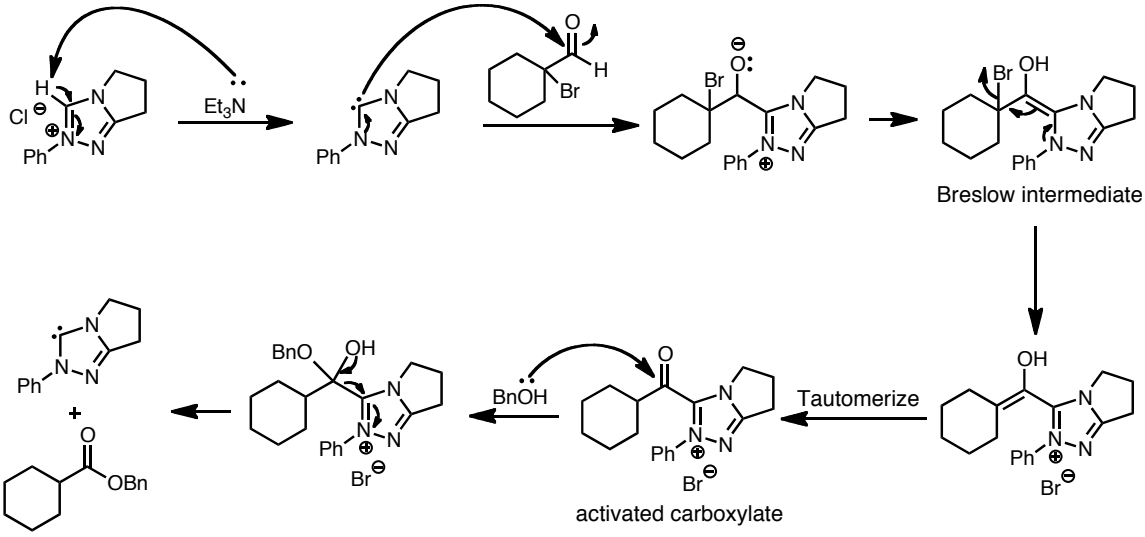


8)

For the following NHC (N-heterocyclic carbene) catalyzed internal redox reaction, provide a detailed mechanism for the transformation.

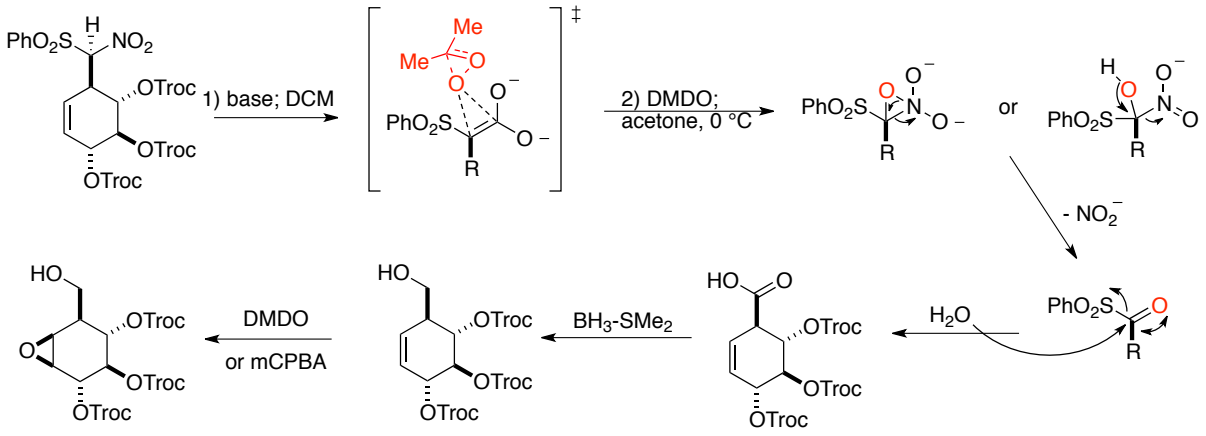


Mechanism:



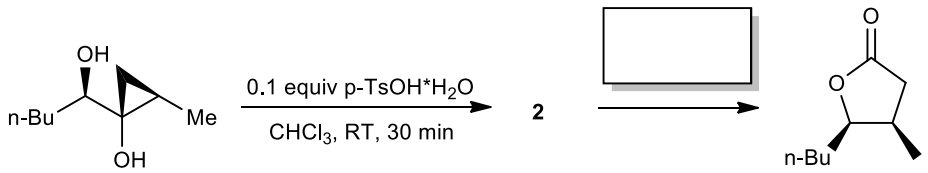
9)

In the synthesis below, provide the name and the mechanism for the reaction in Part A. For Part B, provide the missing reagents. Make your that your sequence is appropriate.



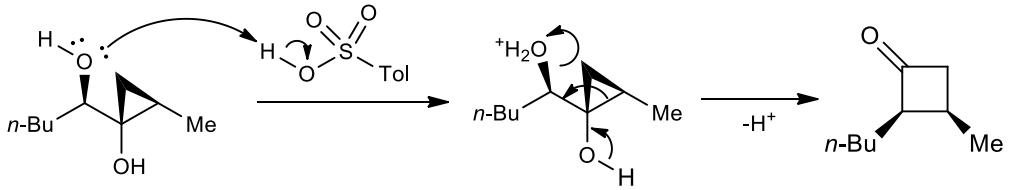
10)

The synthesis of Quercus lactone B was accomplished using a redox neutral reaction from precursor **1** via intermediate **2**.



1 **Quercus lactone B**

- Provide a detailed mechanism for the transformation of **1** to **2**.



- Give the missing reagent(s) for the synthesis of Quercus lactone B from **2**.

*m*CPBA

- In both steps, a migration takes place. Explain, for both steps, which group migrates preferentially.

The group that stabilizes a positive charge better migrates first in pinacol rearrangement. Largest group usually migrates in Baeyer-Villiger oxidation