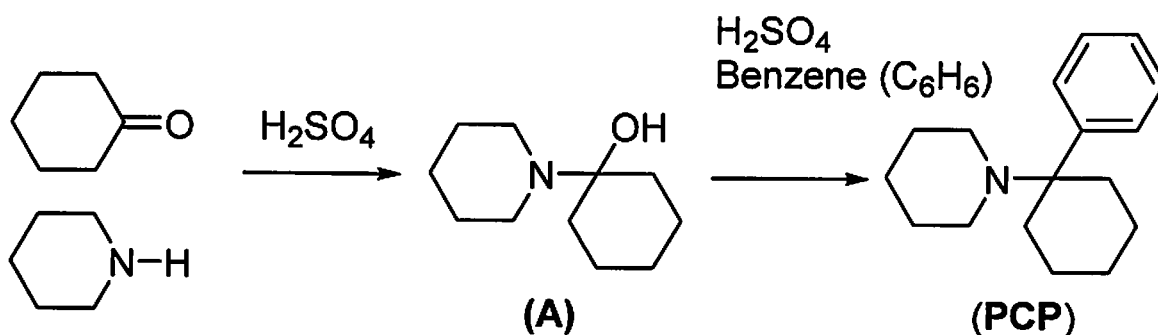


## 2019 ORG MECH: Electrophiles and Acids

Quiz #3     25 pts

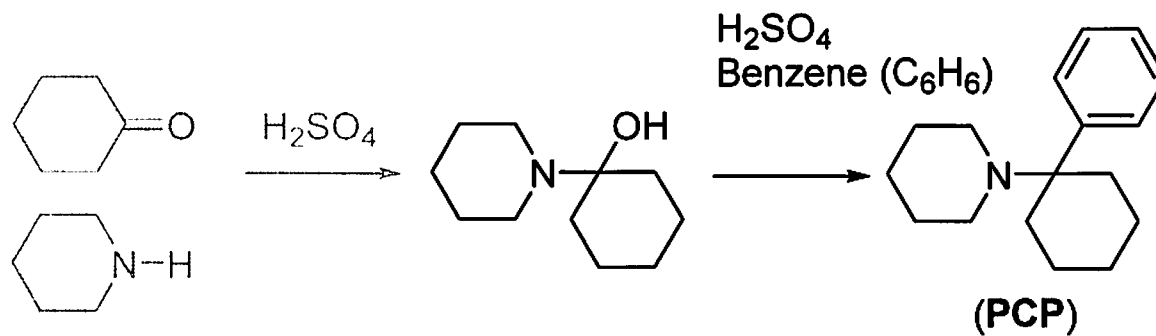
NAME: \_\_\_\_\_

A) Phenylcyclohexyl Piperidine (“PCP” or “angel dust”) is a drug used for its mind-altering effects. PCP may cause hallucinations, distorted perceptions of sounds, and violent behavior. Adverse effects may include seizures, coma, addiction, and an increased risk of suicide. Flashbacks may occur despite stopping usage. Pharmacologically, it is a dissociative anesthetic, and PCP works primarily as an NMDA receptor antagonist.

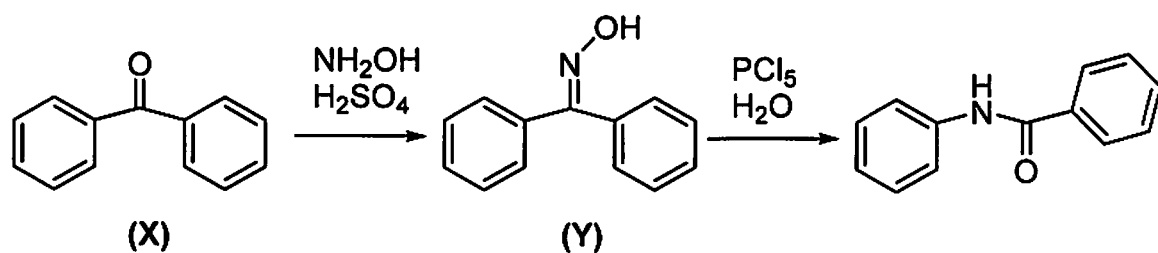


1-5) Write the mechanism for the (*acid catalyzed nucleophilic addition*) first step of this mechanism producing intermediate (A).

6-10) Write the mechanism for the (*Electrophilic Aromatic Substitution*) second step of this reaction, producing PCP.



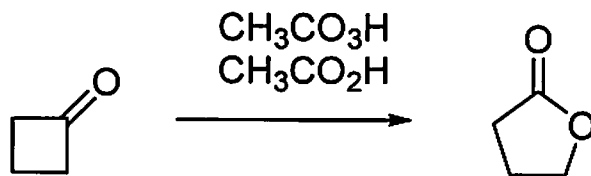
B) The Beckmann Rearrangement was accidentally discovered in 1886, using Benzophenone (X) as the starting ketone.



11) Ultimately what functional group is produced from a Beckmann Rearrangement?

12-17) Draw the mechanism for the conversion of the intermediate Oxime (Y) into the final rearranged product.

C) The following transformation is a famous reaction where oxidative cleavage of a carbon-carbon bond adjacent to a carbonyl, converts ketones to esters (and as shown here cyclic ketones to lactones).



18) What is the name of this reaction?

19) In this particular case, what is the thermodynamic driving force for this reaction to proceed?

20-25) Write the mechanism for this reaction.

**\*\*Up to 3.5 Bonus Points\*\***

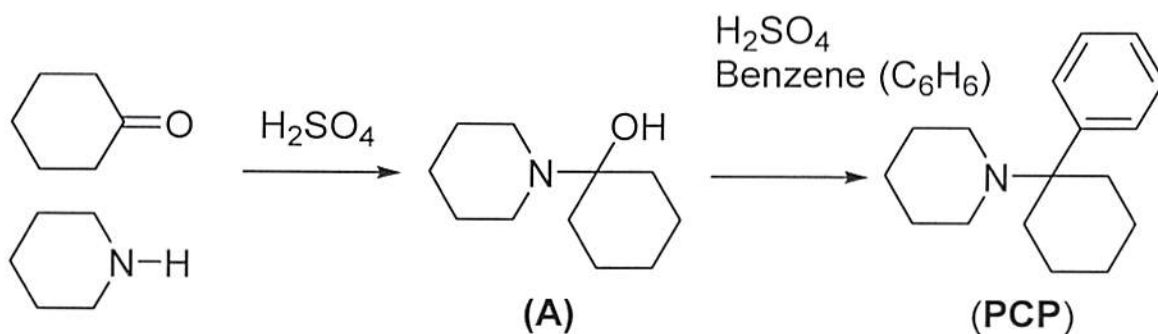
For each of the 7 different *reagents* used in this exam, write the reagent and the number of lone pairs it has (0.5 point for each = 3.5 bonus points).

## 2019 ORG MECH: Electrophiles and Acids

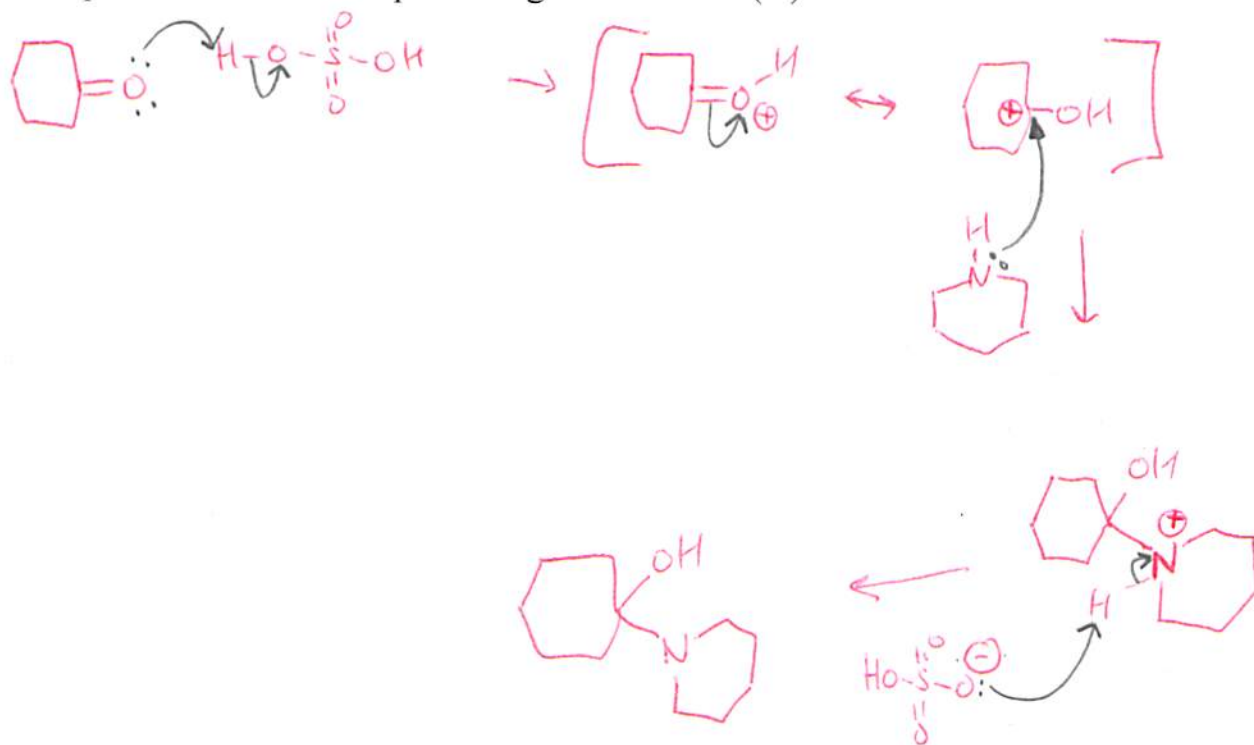
Quiz #3 25 pts

NAME: Perfect Answers

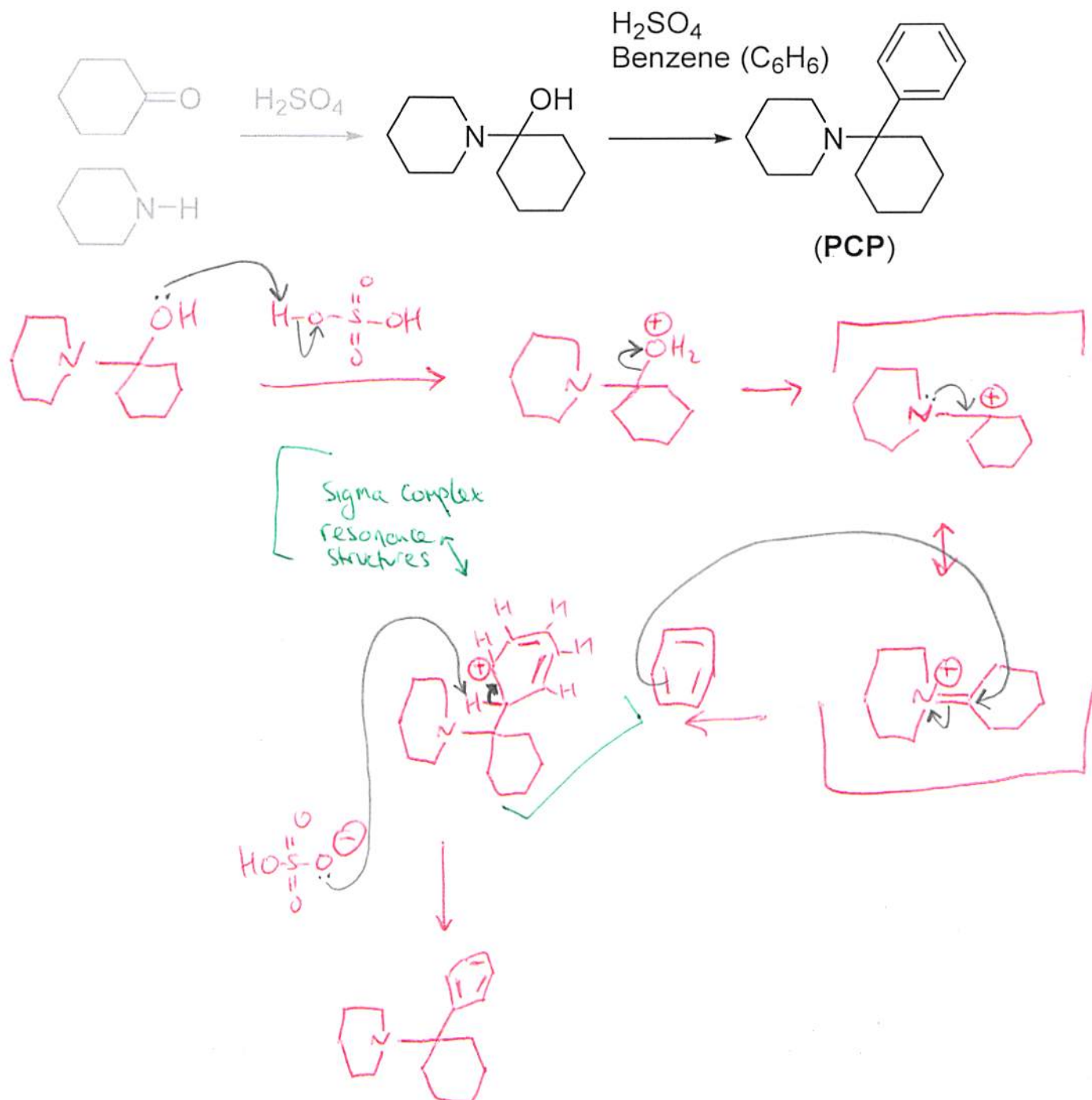
A) Phenylcyclohexyl Piperidine ("PCP" or "angel dust") is a drug used for its mind-altering effects. PCP may cause hallucinations, distorted perceptions of sounds, and violent behavior. Adverse effects may include seizures, coma, addiction, and an increased risk of suicide. Flashbacks may occur despite stopping usage. Pharmacologically, it is a dissociative anesthetic, and PCP works primarily as an NMDA receptor antagonist.



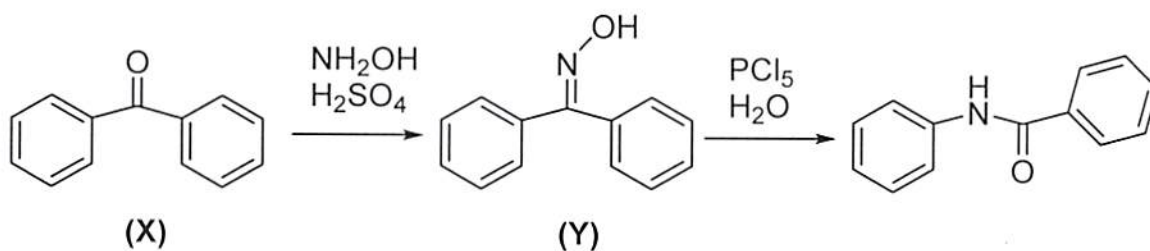
1-5) Write the mechanism for the (*acid catalyzed nucleophilic addition*) first step of this mechanism producing intermediate (A).



6-10) Write the mechanism for the (*Electrophilic Aromatic Substitution*) second step of this reaction, producing PCP.



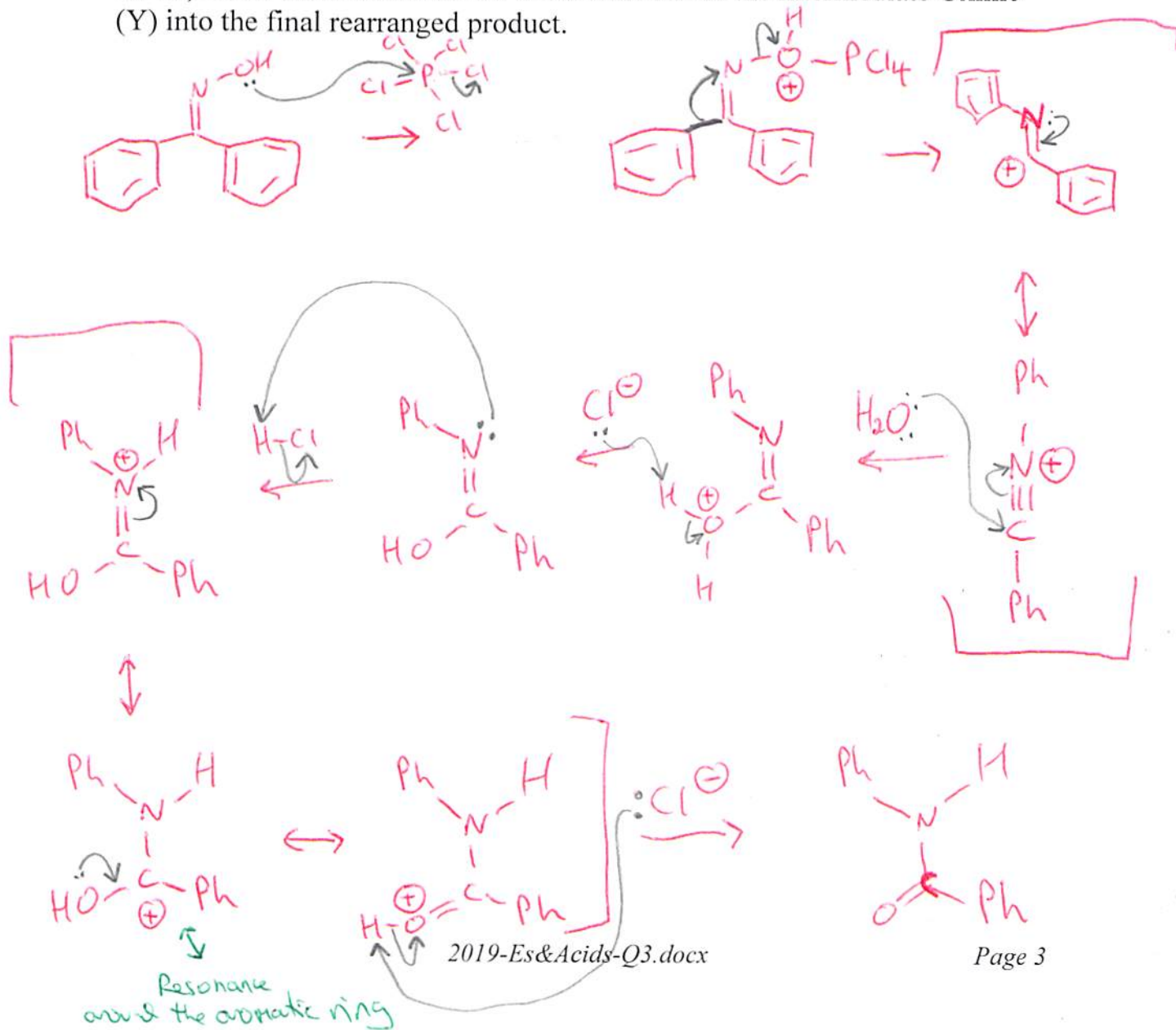
B) The Beckmann Rearrangement was accidentally discovered in 1886, using Benzophenone (X) as the starting ketone.



11) Ultimately what functional group is produced from a Beckmann Rearrangement?

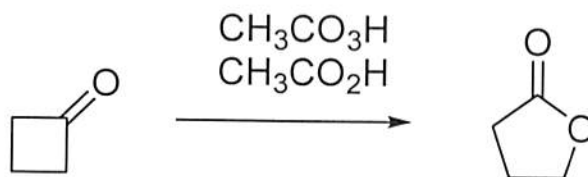
AMIDE

12-17) Draw the mechanism for the conversion of the intermediate Oxime (Y) into the final rearranged product.





C) The following transformation is a famous reaction where oxidative cleavage of a carbon-carbon bond adjacent to a carbonyl, converts ketones to esters (and as shown here cyclic ketones to lactones).



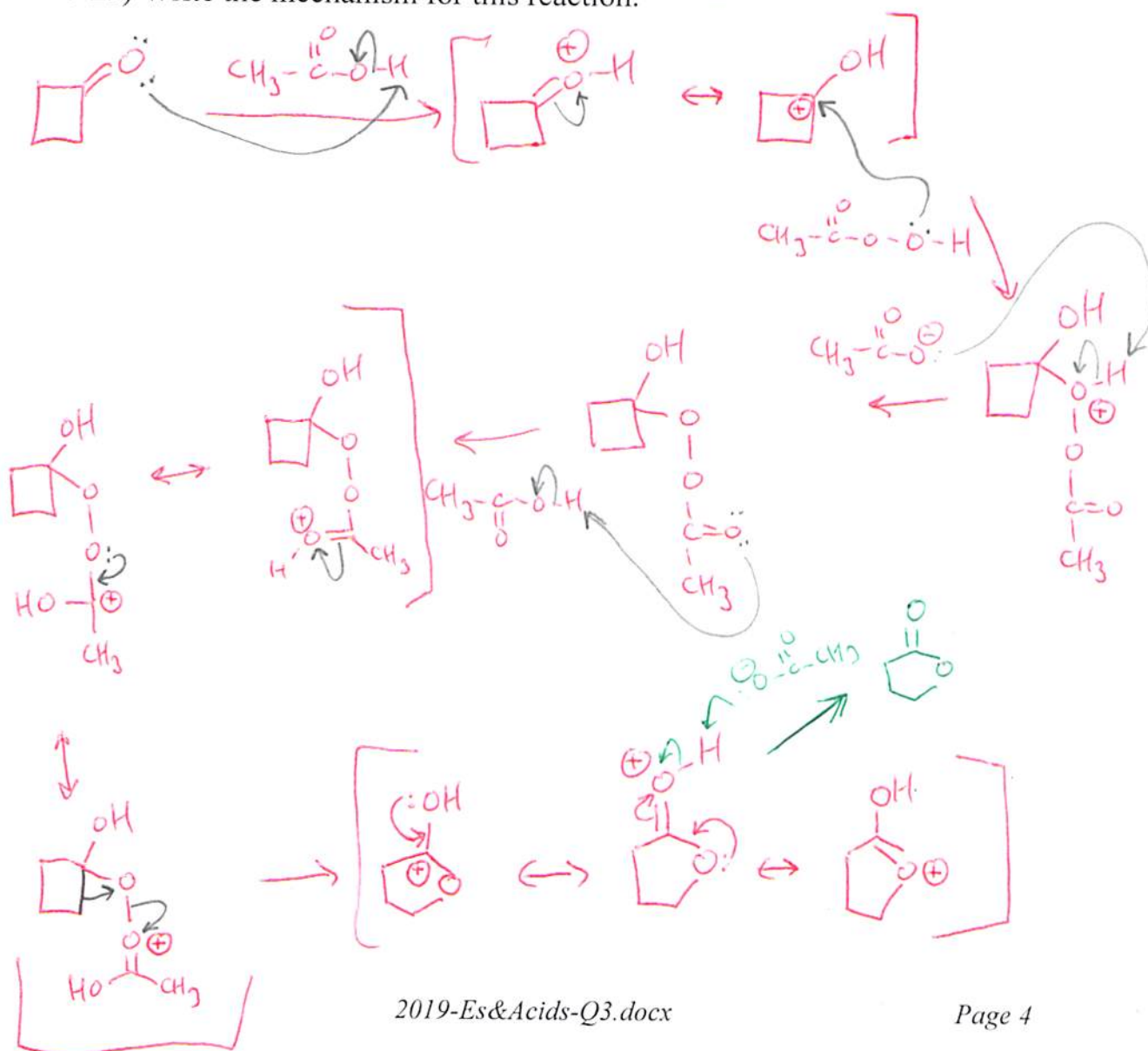
18) What is the name of this reaction?

*Baeyer Villiger Oxidation*

19) In this case, what is the thermodynamic driving force for this reaction to proceed?

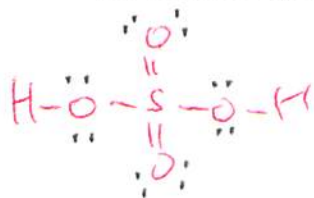
*Release of ring strain*

20-25) Write the mechanism for this reaction.



**\*\*Up to 3.5 Bonus Points\*\***

For each of the 7 different *reagents* used in this exam, write the reagent and the number of lone pairs it has (0.5 point for each = 3.5 bonus points).



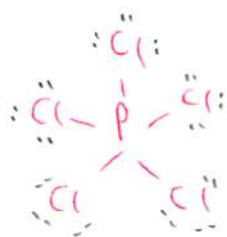
8 lp



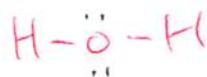
0 lp



3 lp



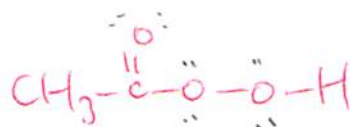
15 lp



2 lp



4 lp



6 lp