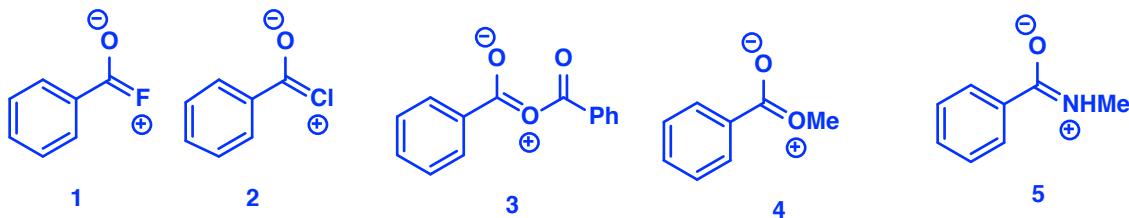
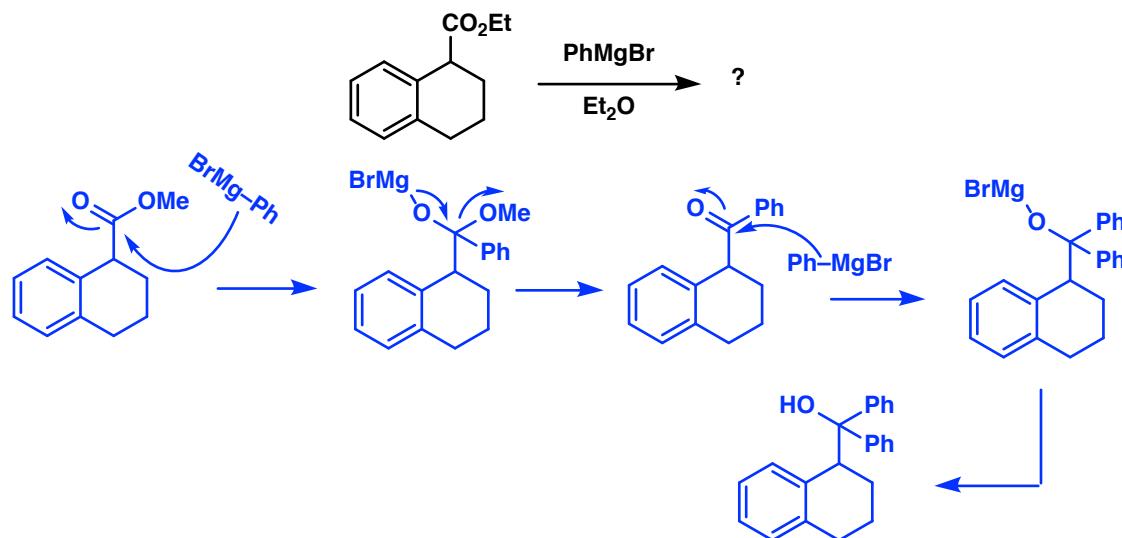


Problem Set 10 Answer Key
CHM 2211

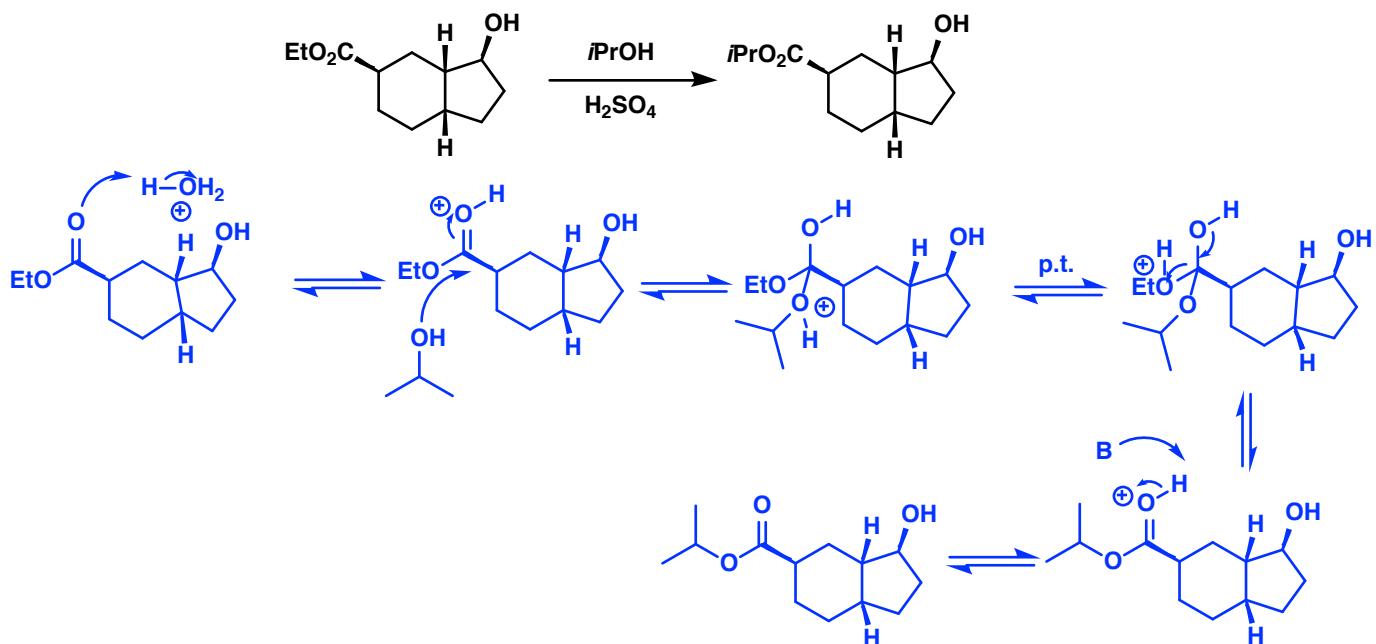
1. a. Draw resonance structures of the following functional groups and rank them in reactivity (1 is highest reactivity).



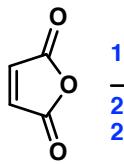
b. Predict the product of the following transformation and provide a mechanism explaining its formation



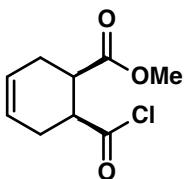
c. Transesterification can occur in the excess of one particular nucleophile. Provide a mechanism for the following reaction.



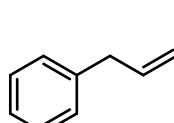
2. Provide reagents and/or products to the reactions below.



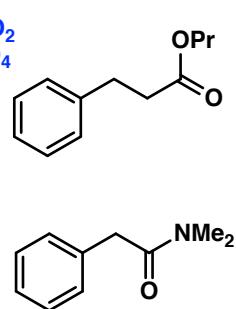
1. butadiene, heat
2. NaOMe, MeOH
2. SOCl_2



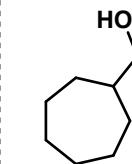
1. $\text{Na}_2\text{Cr}_2\text{O}_7$, H_2SO_4
2. SOCl_2
3. Et_2NH , pyridine



1. BH_3 ; NaOH , H_2O_2
2. $\text{Na}_2\text{Cr}_2\text{O}_7$, H_2SO_4
3. HOPr , H_2SO_4

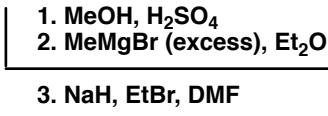


1. OsO_4 , NaIO_4 , $\text{H}_2\text{O}/\text{THF}$
2. $\text{Na}_2\text{Cr}_2\text{O}_7$, H_2SO_4
3. SOCl_2
4. HNMe_2 , pyridine



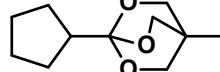
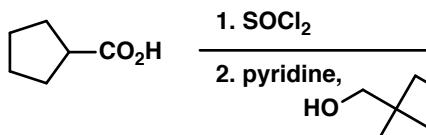
1. $\text{Na}_2\text{Cr}_2\text{O}_7$, H_2SO_4
2. SOCl_2
3. Et_2NH , pyridine

1. SOCl_2
2. PhSH , pyridine

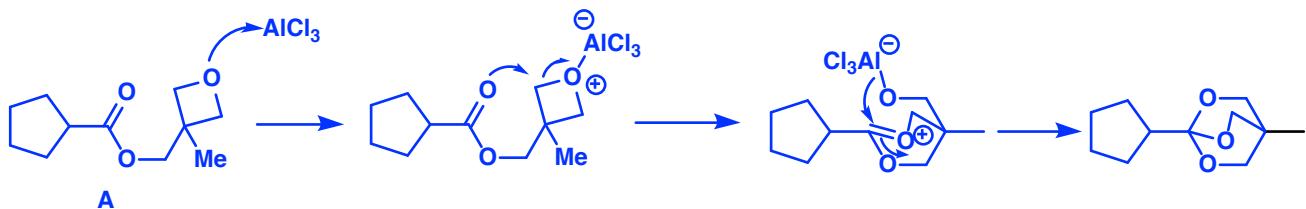


1. MeOH , H_2SO_4
2. MeMgBr (excess), Et_2O
3. NaH , EtBr , DMF

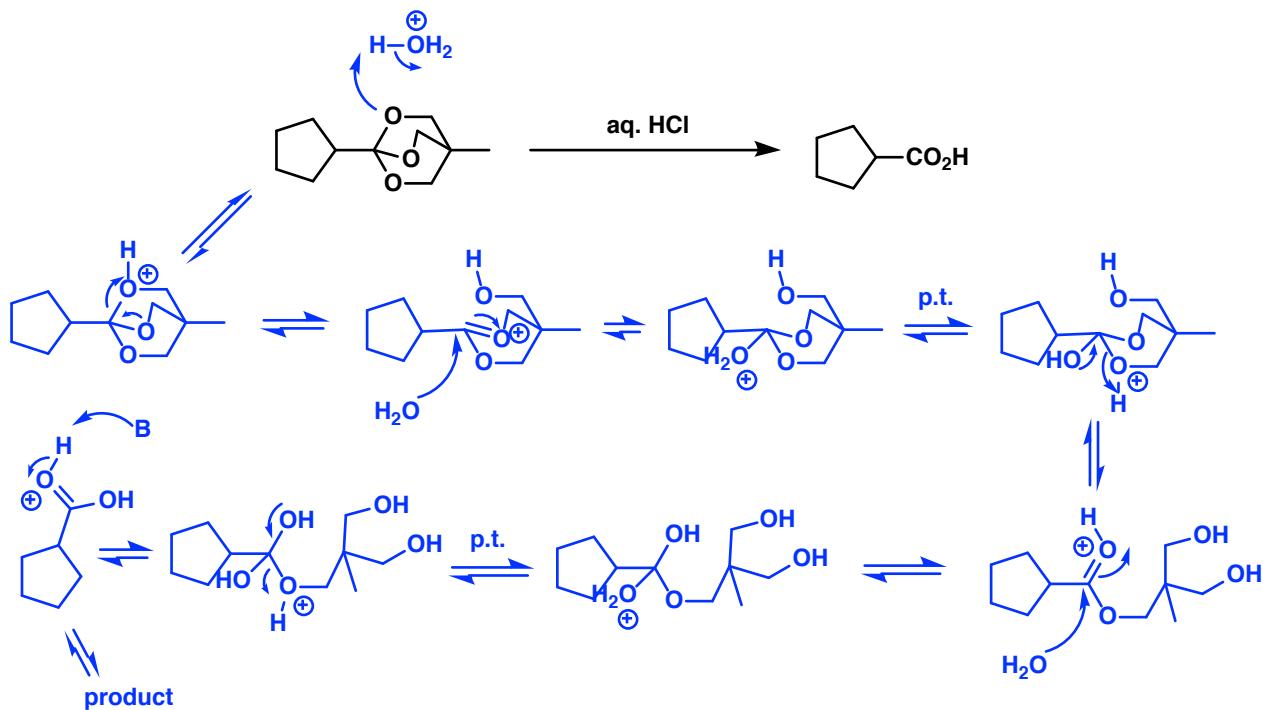
3. a. Cyclic orthoesters are cheeky protecting groups for carboxylic acids. One in particular is the OBO protecting group. Provide structure of **A** and provide a mechanism for the reaction below where indicated.



Hint: start by reacting the cyclic ether oxygen with AlCl_3



b. Show a mechanism for the conversion of the orthoester back to the carboxylic acid under acidic conditions.



4. Provide a forward synthesis of the following compounds from pyrrole and units of 3 carbons or fewer (a retrosynthetic will help you!!).

