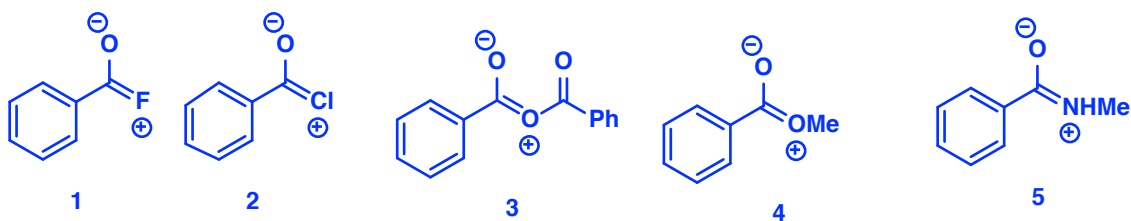
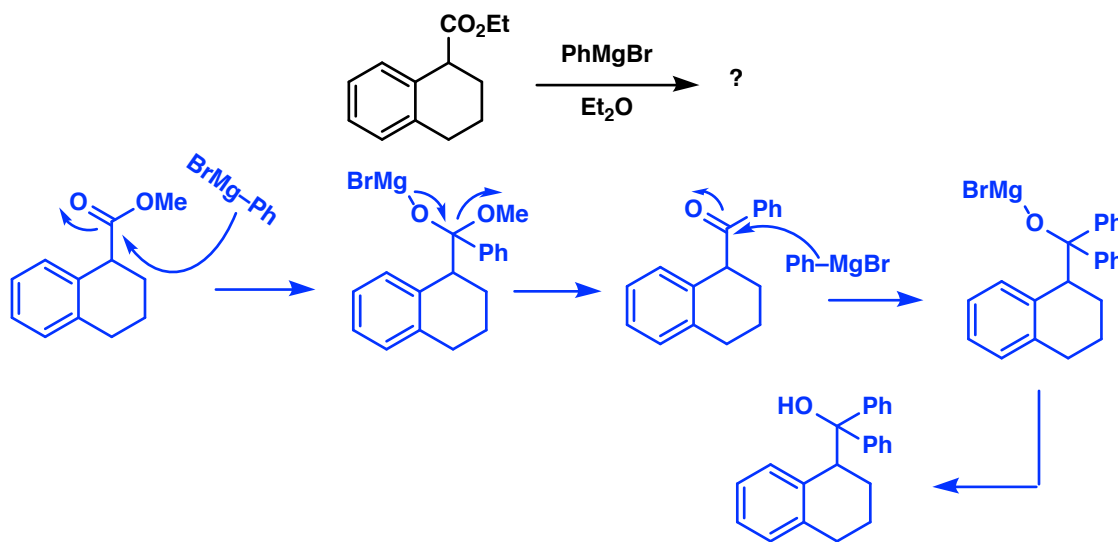


**Problem Set 10 Answer Key**  
**CHM 2211**

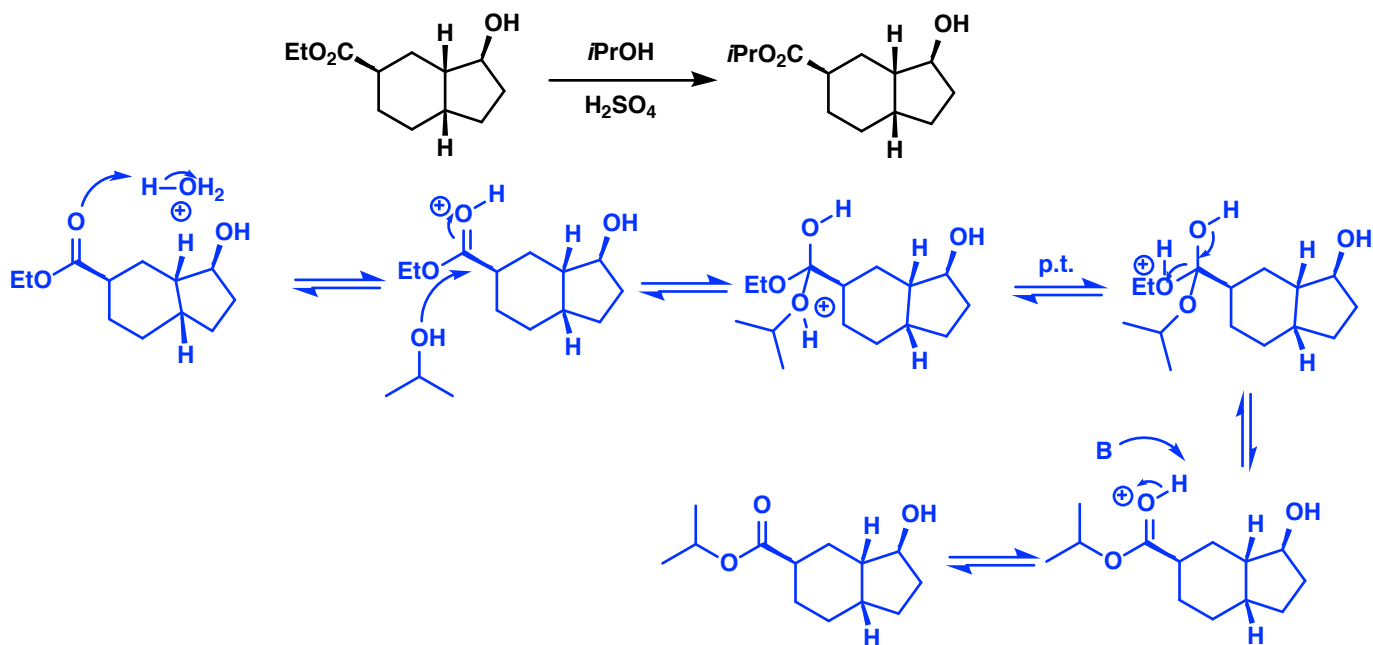
1. a. Draw resonance structures of the following functional groups and rank them in reactivity (1 is highest reactivity).



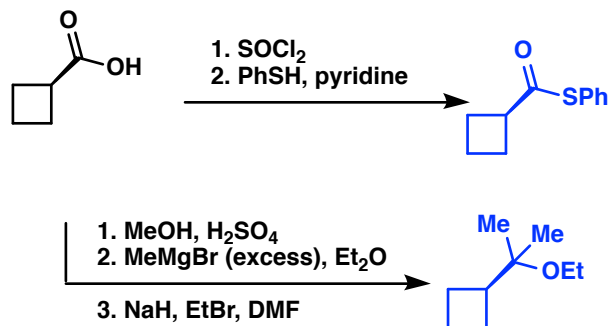
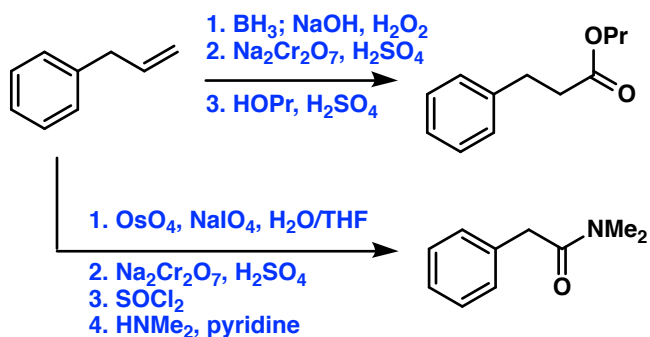
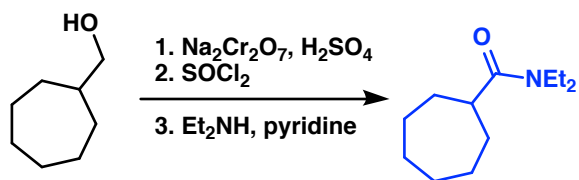
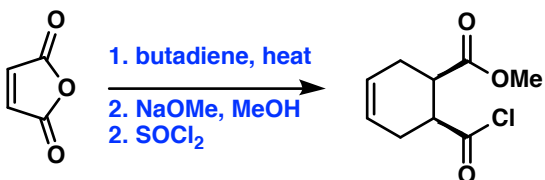
b. Predict the product of the following transformation and provide a mechanism explaining its formation



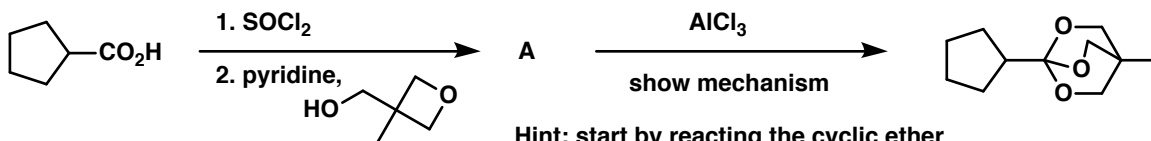
c. Transesterification can occur in the excess of one particular nucleophile. Provide a mechanism for the following reaction.



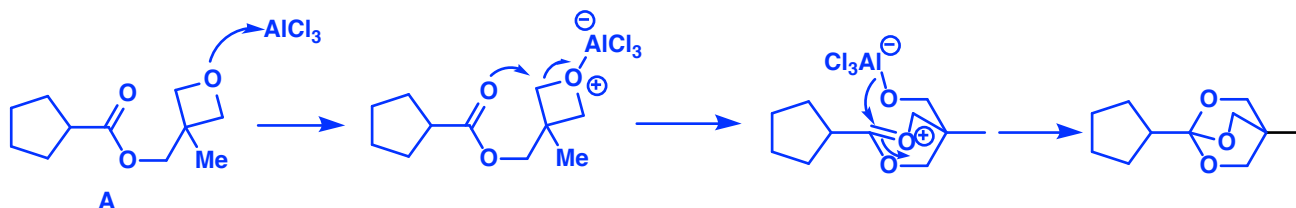
2. Provide reagents and/or products to the reactions below.



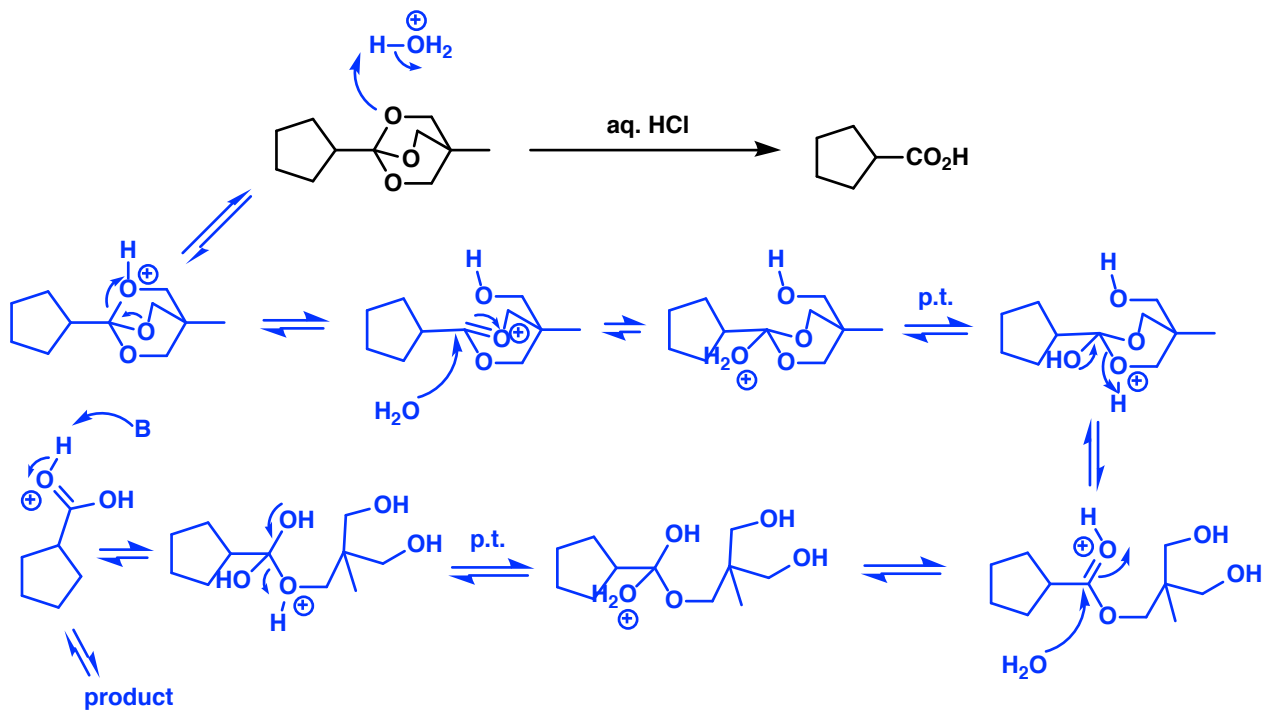
3. a. Cyclic orthoesters are cheeky protecting groups for carboxylic acids. One in particular is the OBO protecting group. Provide structure of **A** and provide a mechanism for the reaction below where indicated.



Hint: start by reacting the cyclic ether oxygen with AlCl<sub>3</sub>



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 retrosynthesis will help you!!).

