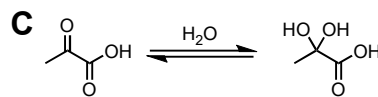
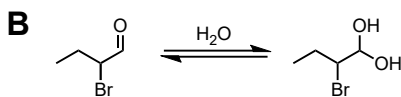
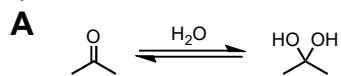


ADDITION TO C=O

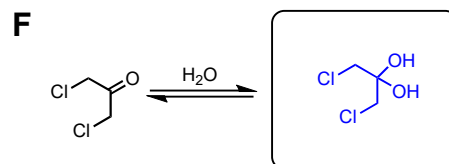
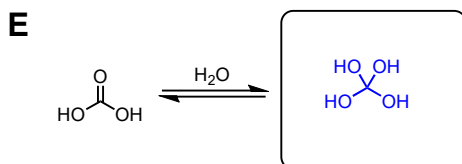
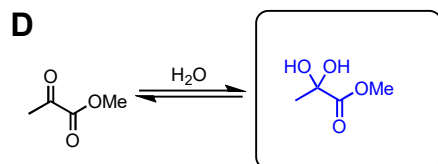
Fill in the empty boxes. Provide mechanisms for the following transformations, all of which involve nucleophilic attack on a carbonyl or carbonyl-like functional group. Do this on a separate piece of paper of course.

Hydrate Formation

provide a mechanism:

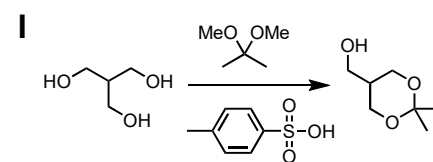
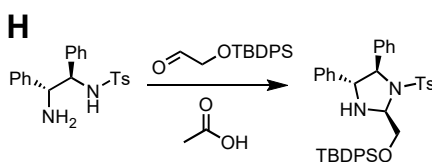
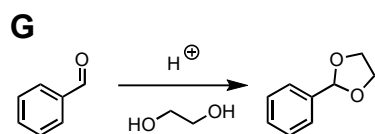


predict product:

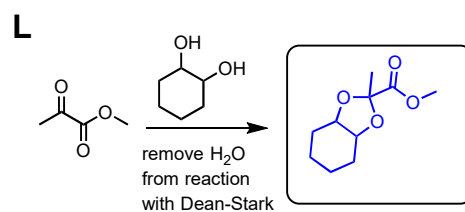
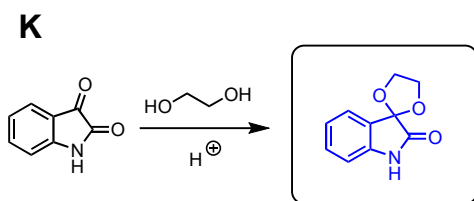
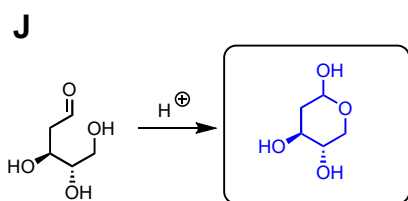


(Hemi)acetal Formation

provide a mechanism, notice these are all acid-catalyzed:

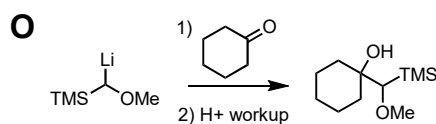
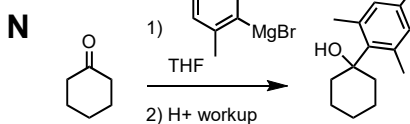
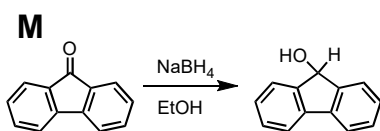


predict product:



Hydride and Carbanion Addition

provide a mechanism:



predict product:

