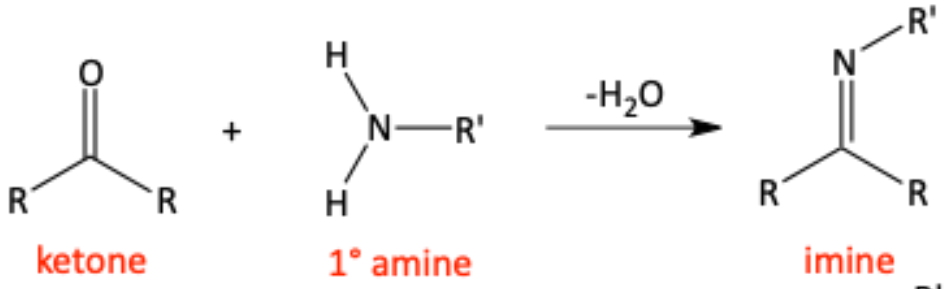
Carbonyl Reaction Review: Answer Key

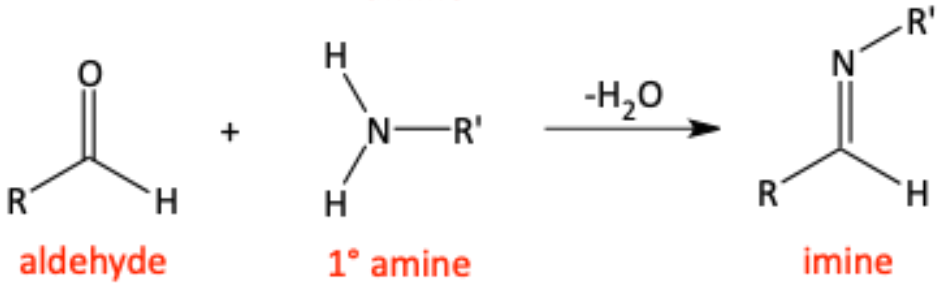
All reactions, complete.

Name: _____ Date: _____

Ketones and Aldehydes to imines

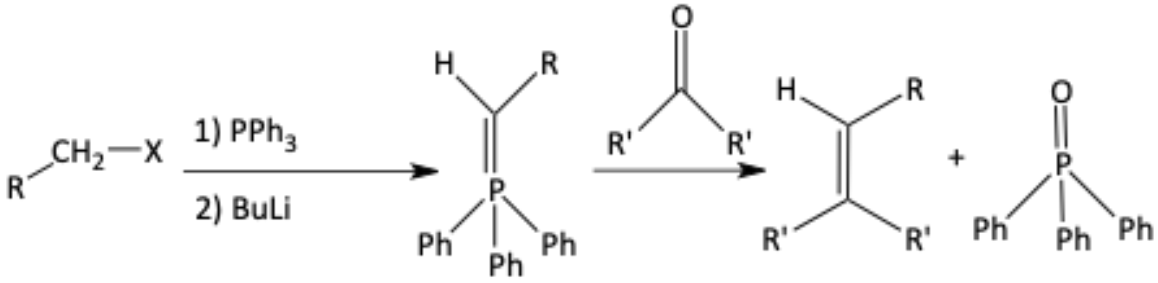


ketone 1° amine imine

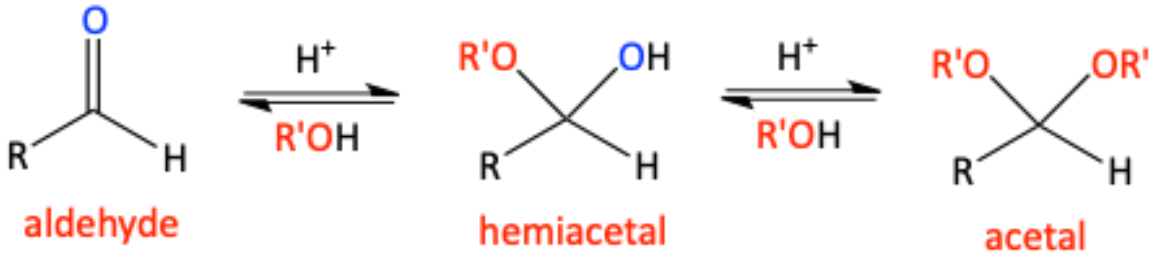


aldehyde 1° amine imine

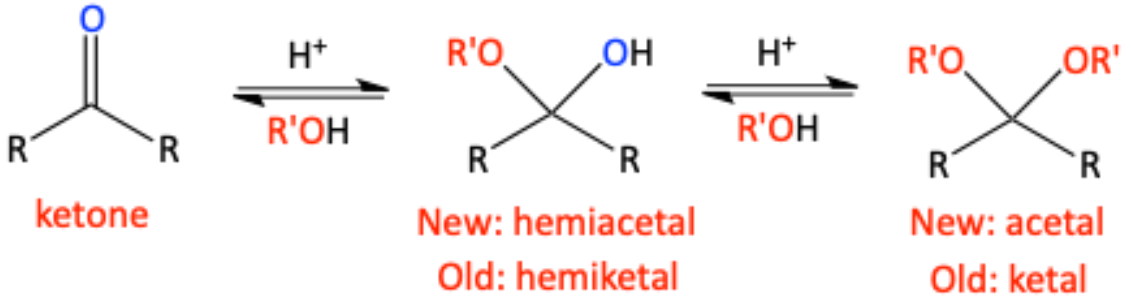
Wittig reaction - Ketones to alkenes



Ketones and aldehydes to acetals and ketals

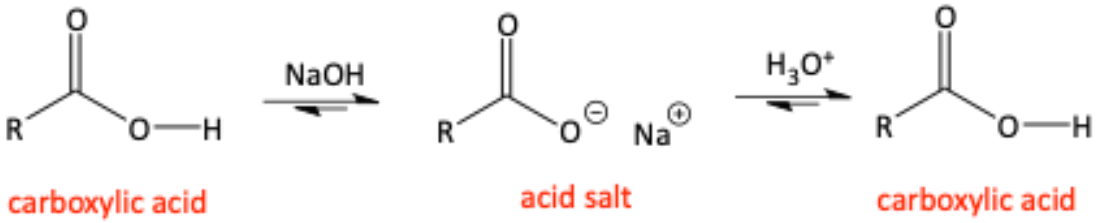


aldehyde hemiacetal acetal

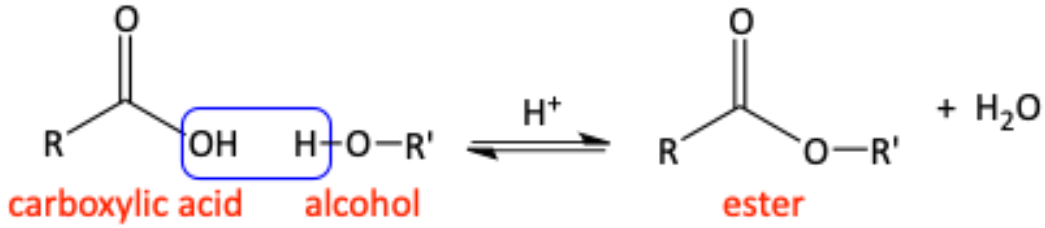


ketone New: hemiacetal Old: hemiketal New: acetal Old: ketal

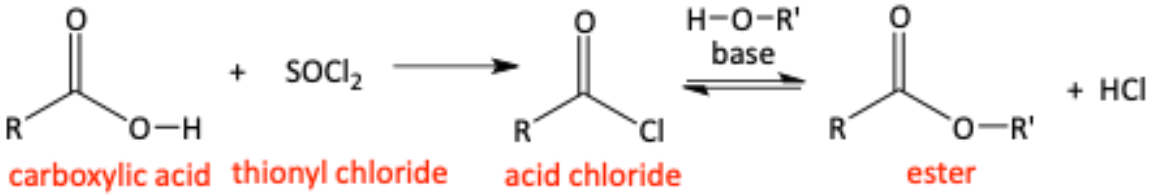
Deprotonation of carboxylic acid



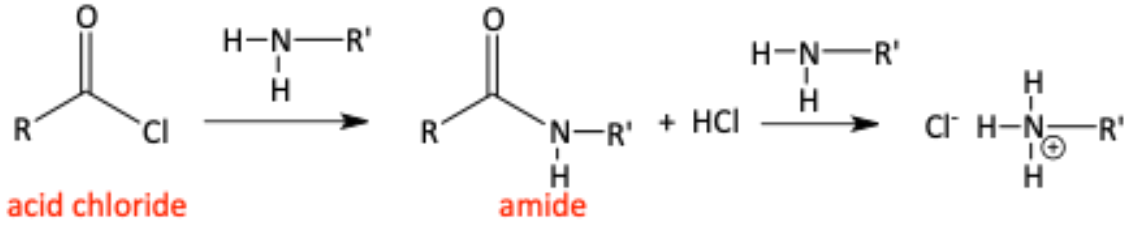
Fischer Esterification – carboxylic acid to ester



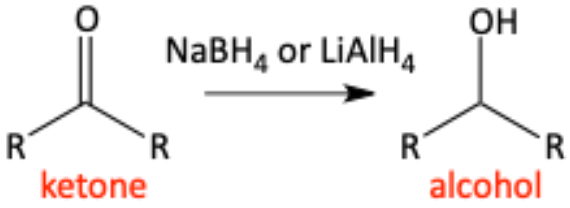
Carboxylic acid to acid chloride to ester

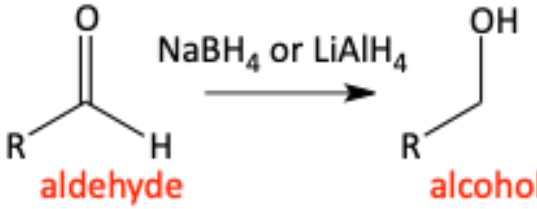


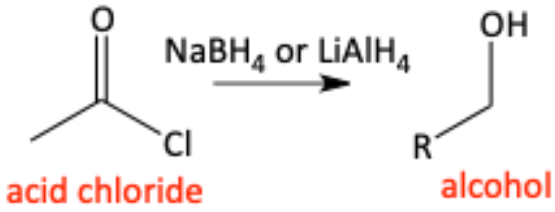
Acid chloride to amide



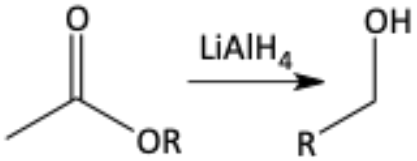
Reductions of carbonyls



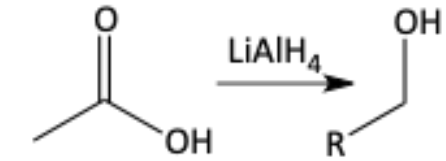




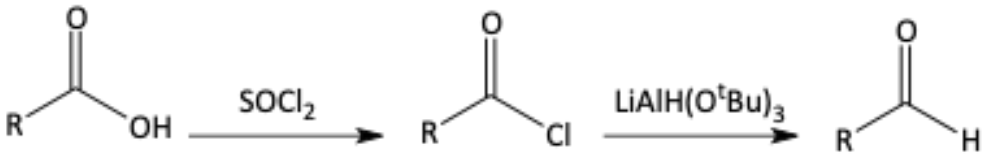
acid chloride alcohol



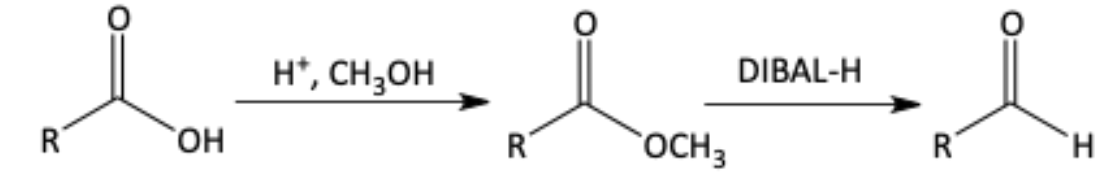
ester alcohol



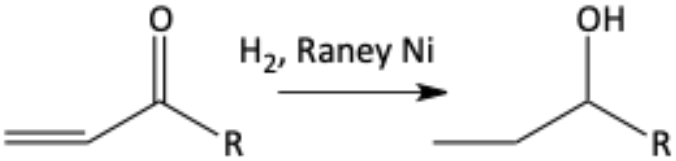
carboxylic acid alcohol



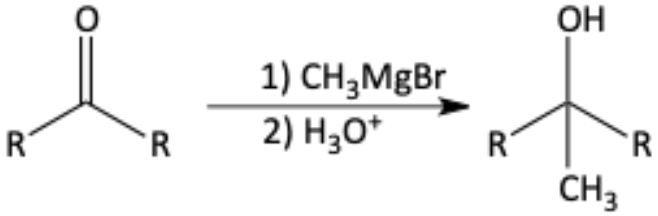
acid chloride aldehyde



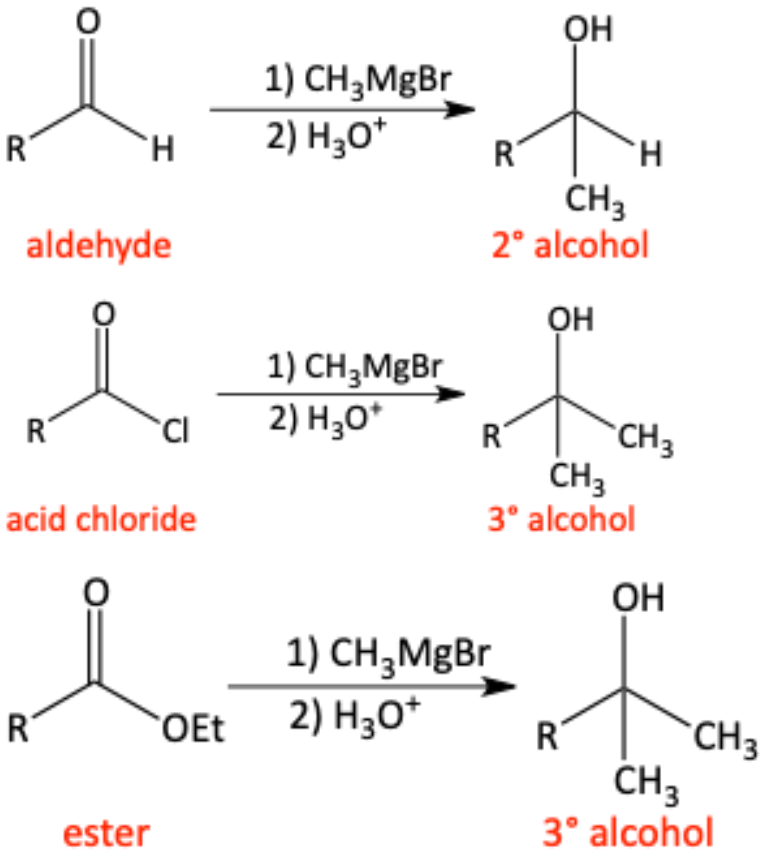
carboxylic acid ester aldehyde



Grignard reagent attacks of carbonyls



ketone 3° alcohol


O
R
H
1) CH_3MgBr
2) H_3O^+
OH
R
H
CH_3
aldehyde
2° alcohol
O
R
Cl
1) CH_3MgBr
2) H_3O^+
OH
R
CH_3
CH_3
acid chloride
3° alcohol
O
R
OEt
1) CH_3MgBr
2) H_3O^+
OH
R
CH_3
CH_3
ester
3° alcohol