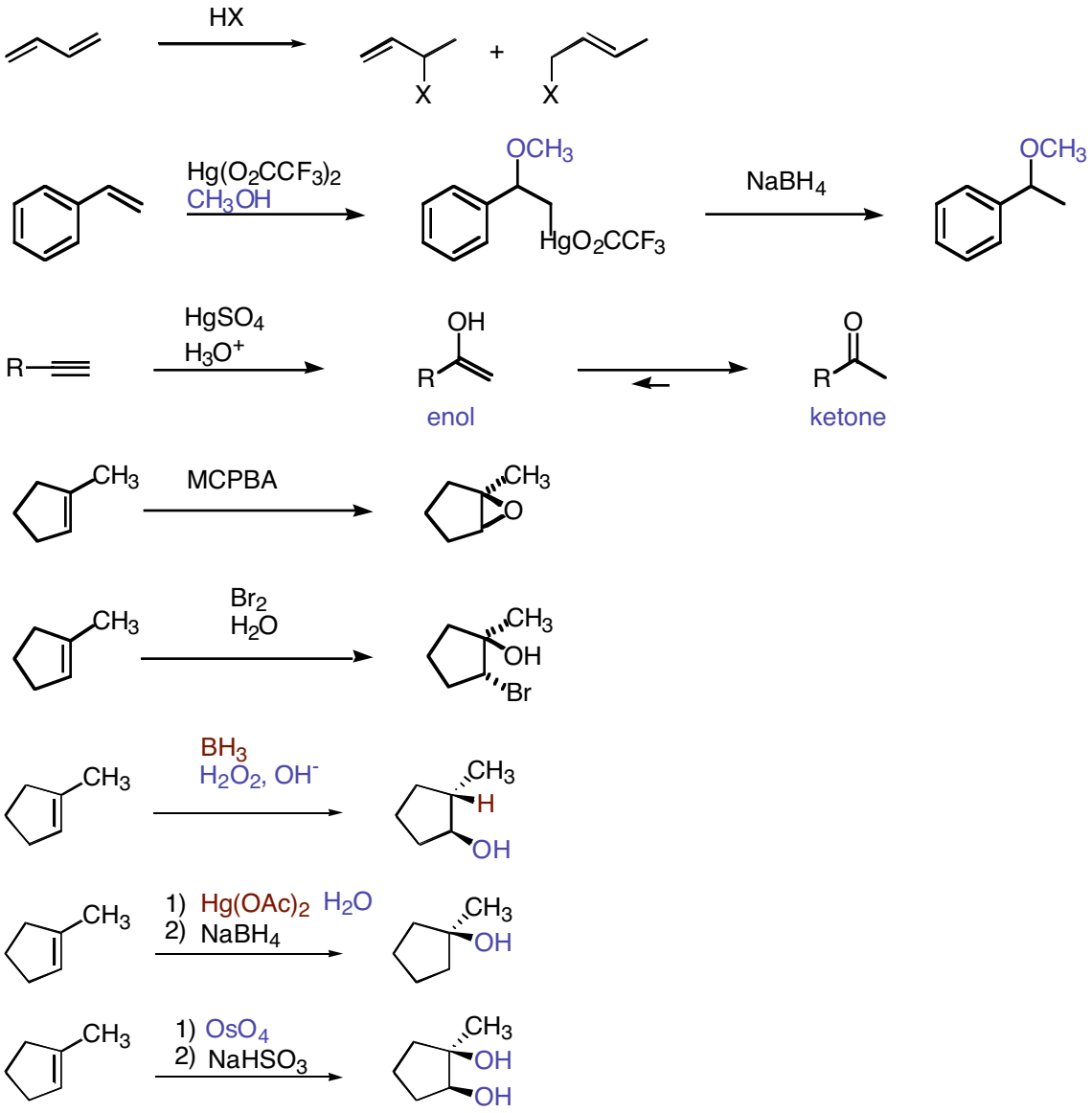
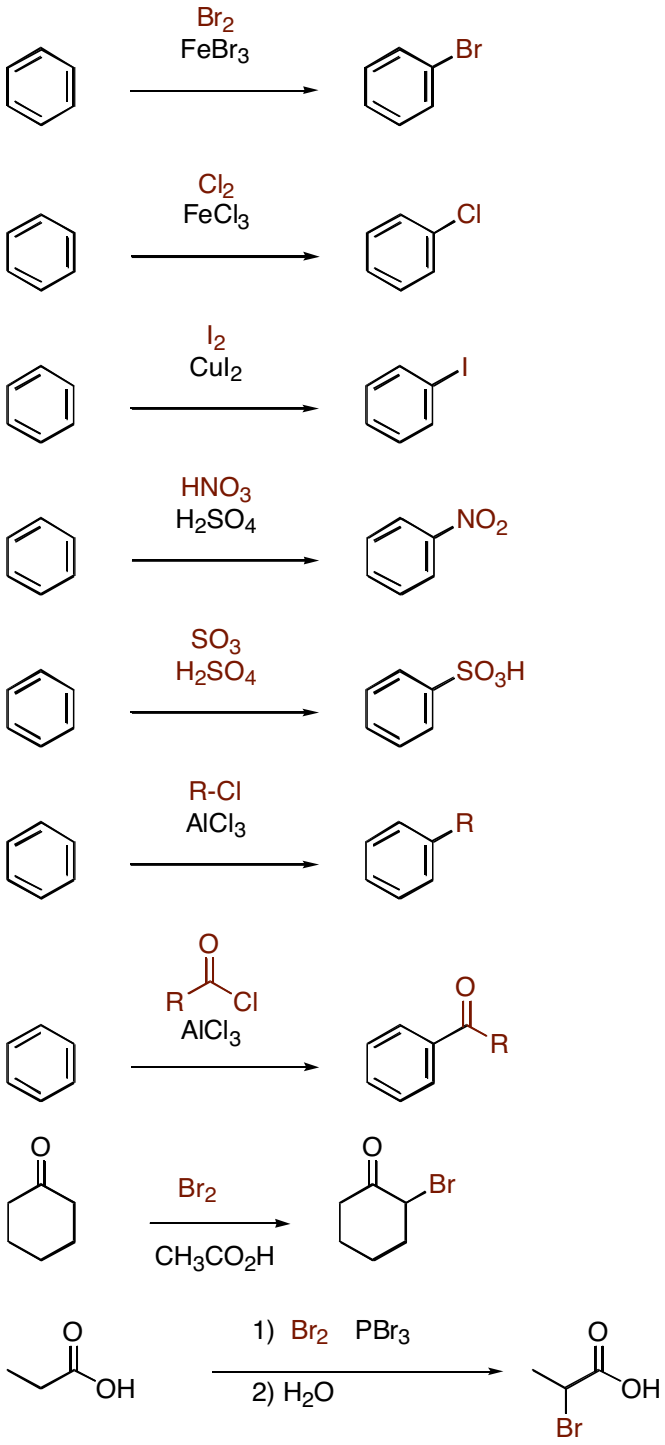
Reactions for Final Exam

Although you don't need to know all of the mechanisms for these reactions, knowing them makes it easier to understand the reactions and to figure out a reaction if you forget it. Consult the lecture notes for more details on the mechanisms and issues of stereo- and regioselectivity.

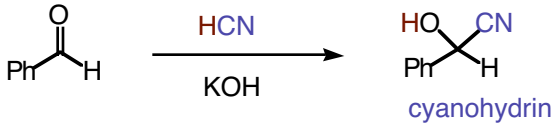
ELECTROPHILIC ADDITION REACTIONS



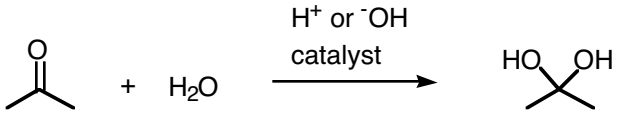
ELECTROPHILIC SUBSTITUTION REACTIONS



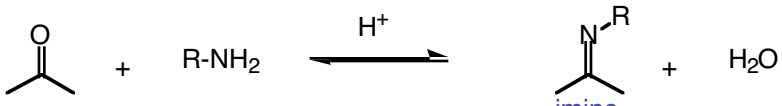
NUCLEOPHILIC ADDITION REACTIONS



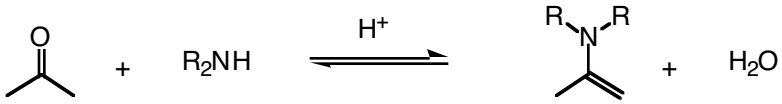
cyanohydrin



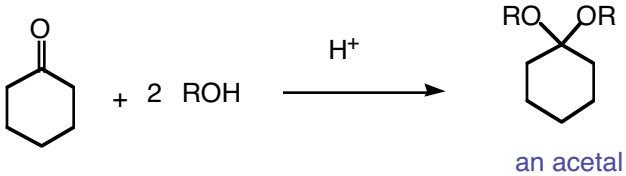
hydrate



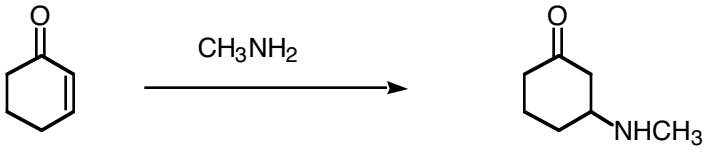
imine



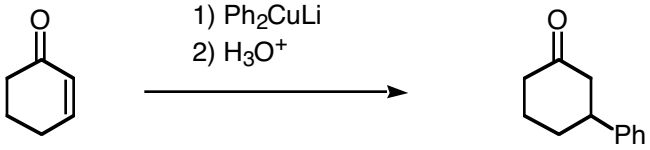
enamine



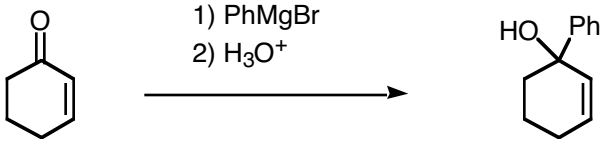
an acetal



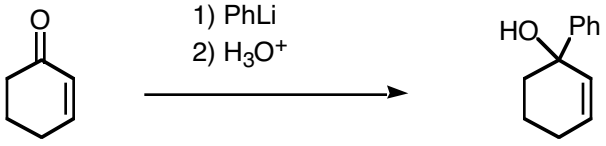
1,4-addition



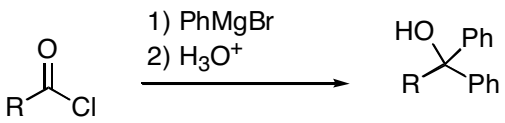
1,4-addition

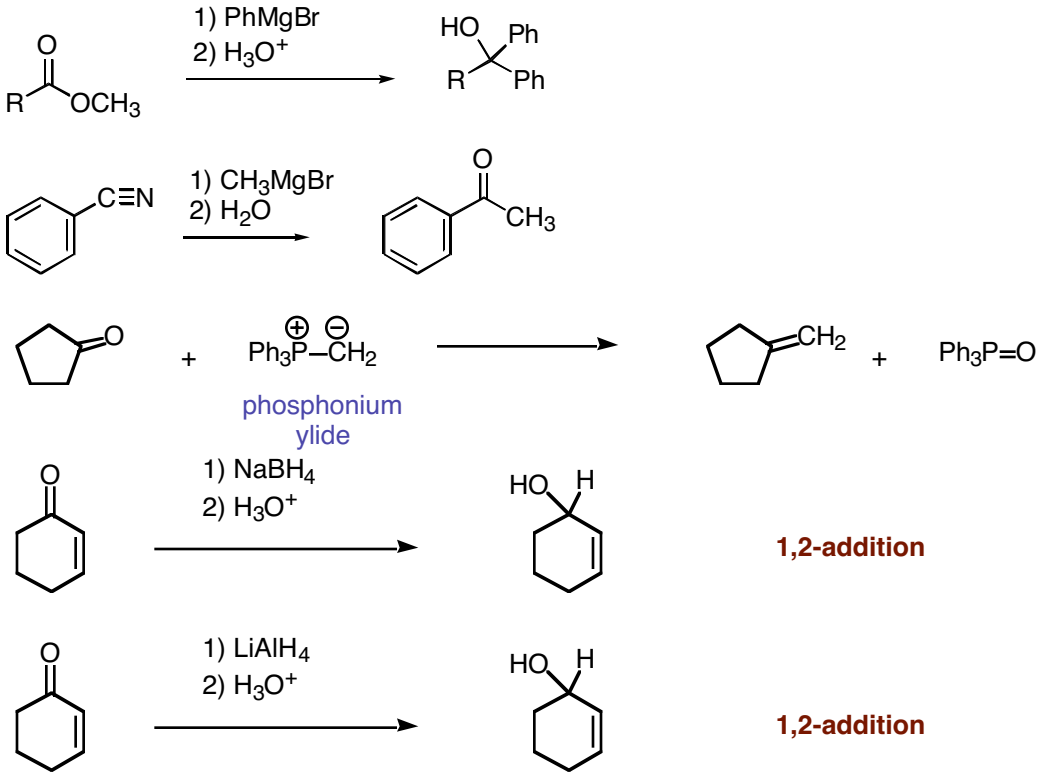


1,2-addition

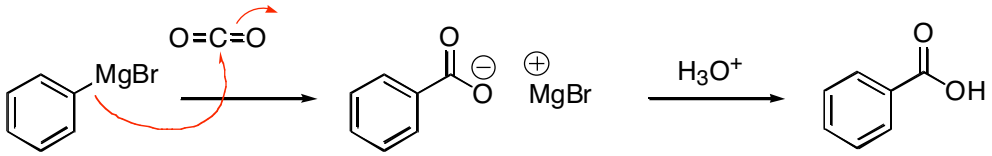


1,2-addition

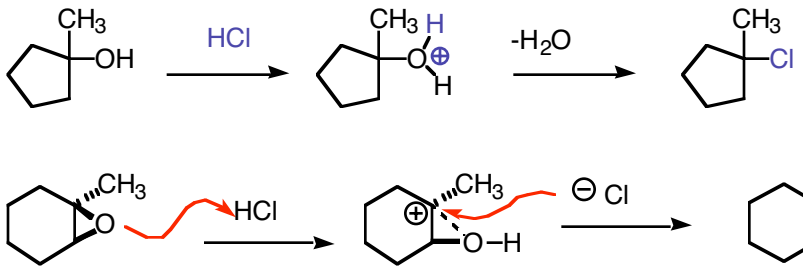




The addition of hydrides to carbonyls is also considered reductions and more examples are listed under reduction reactions.

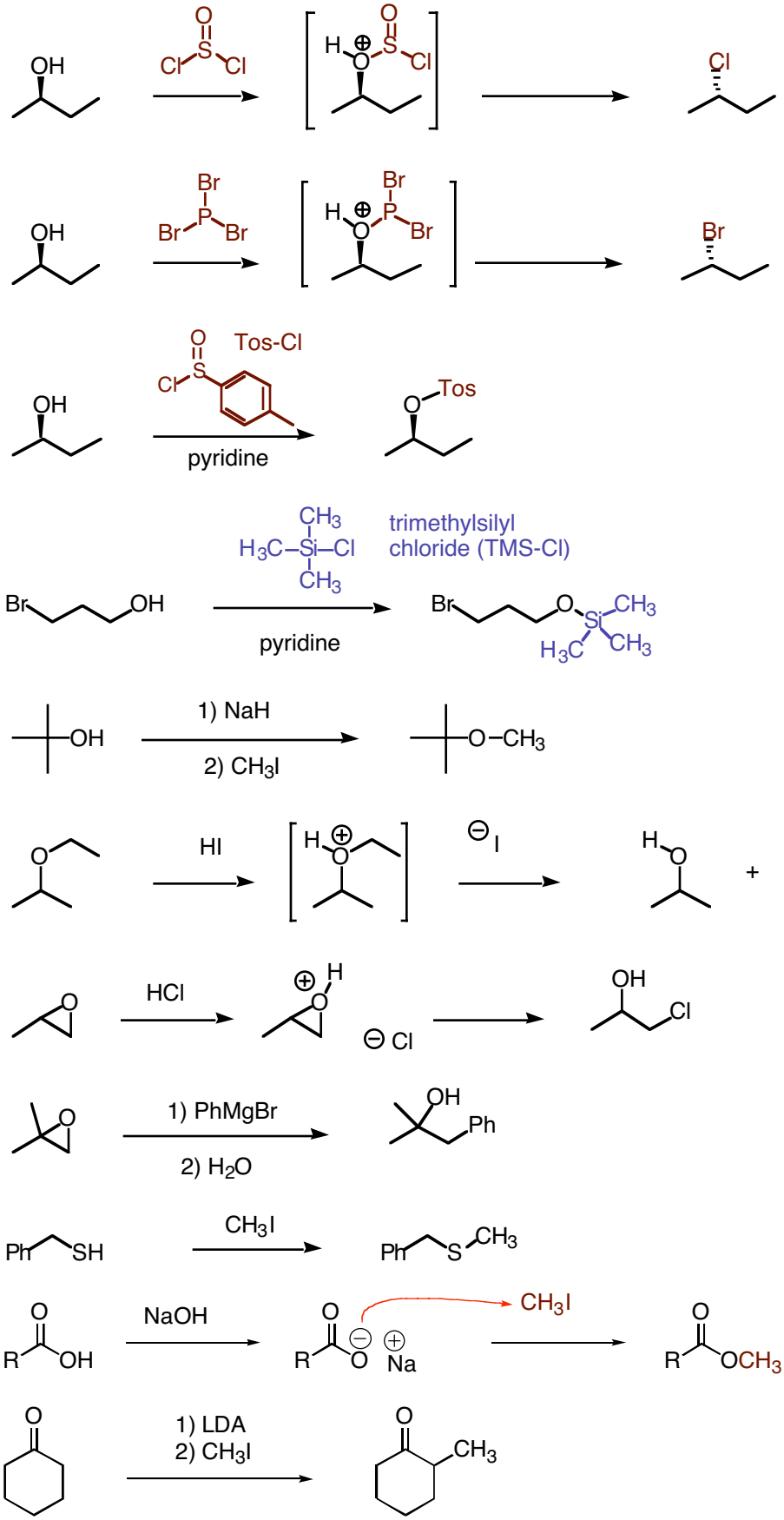


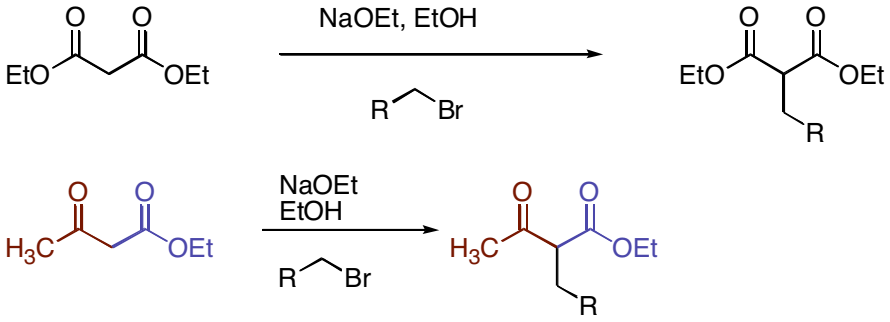
SUBSTITUTION REACTIONS (S_N1)



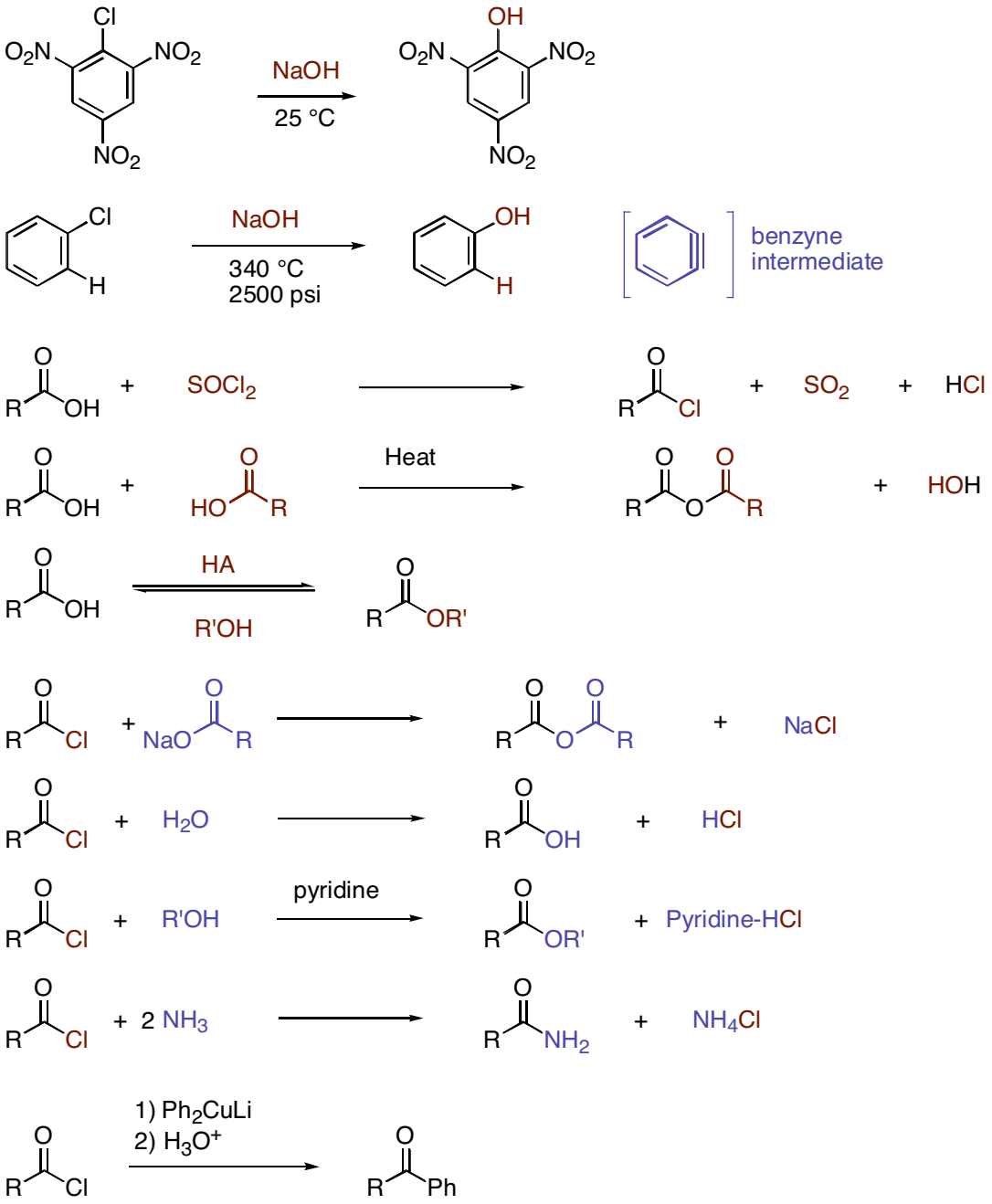
(regioselective like S_N1 but stereoselective like S_N2) (also opens with water to make trans diol)

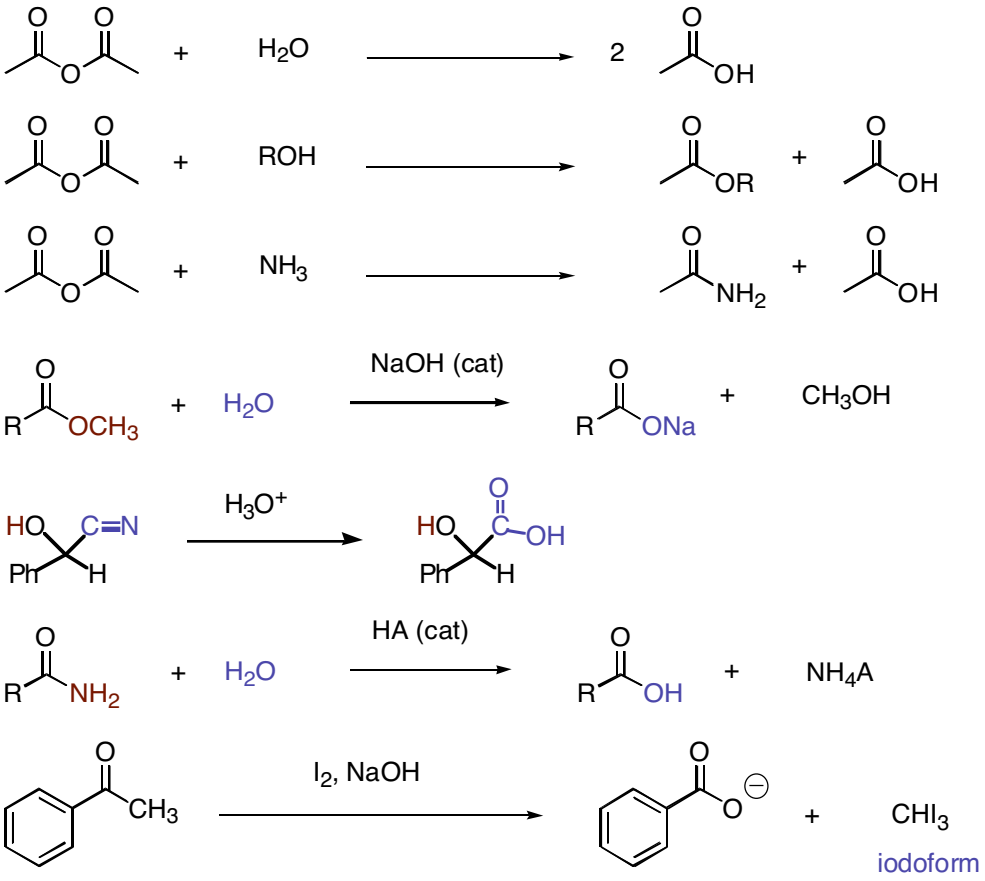
SUBSTITUTION REACTIONS (S_N2)



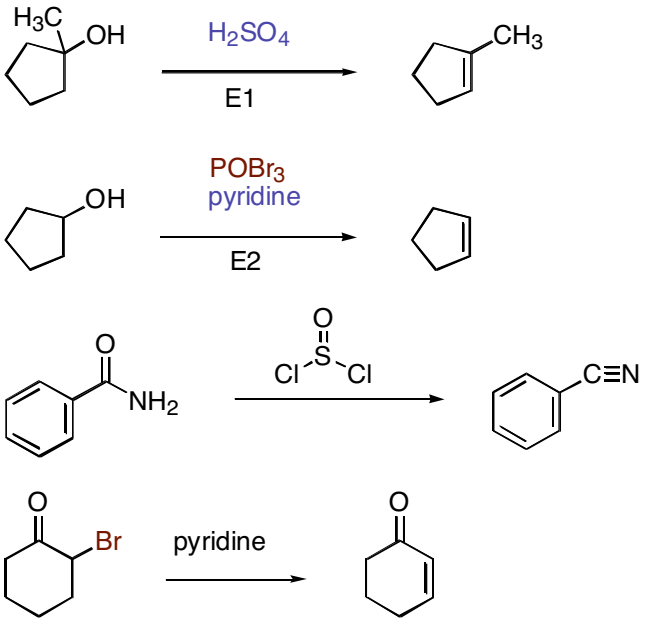


SUBSTITUTION REACTIONS (Nucleophilic Aromatic and Nucleophilic Acyl)

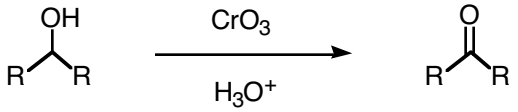


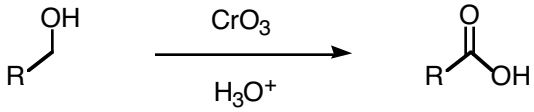


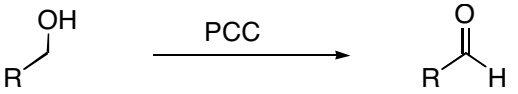
ELIMINATION REACTIONS

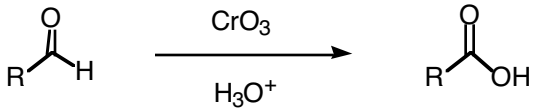


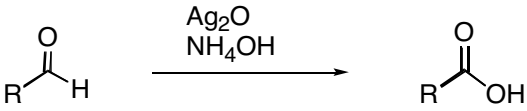
OXIDATION REACTIONS

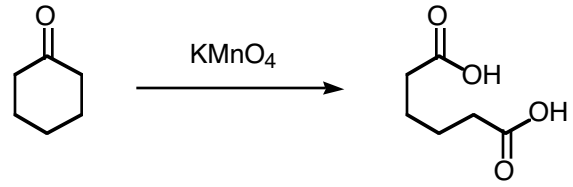


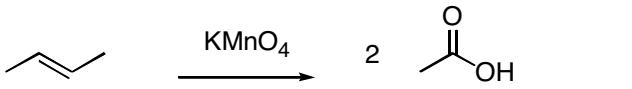


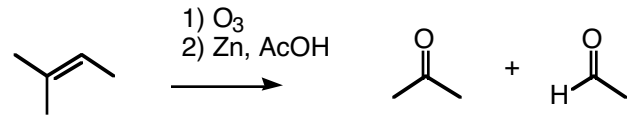


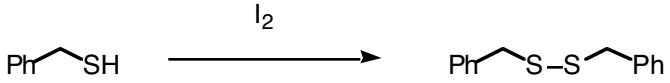


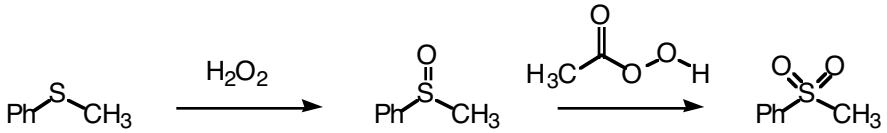




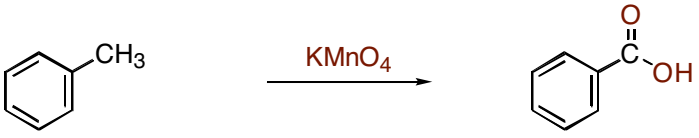


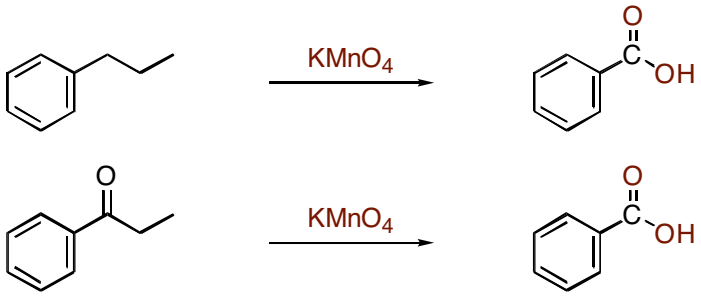




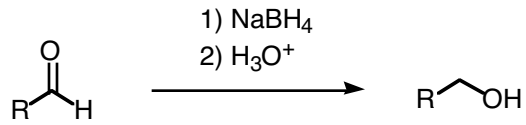


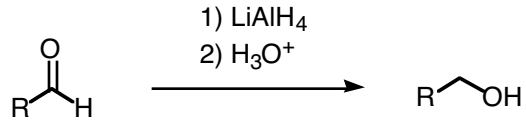
a sulfoxide a sulfone

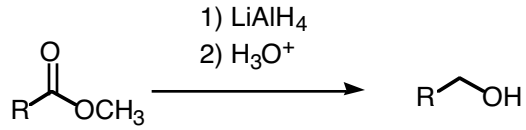


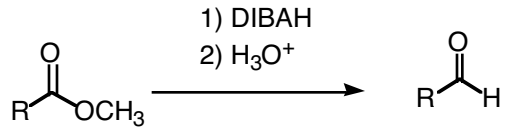


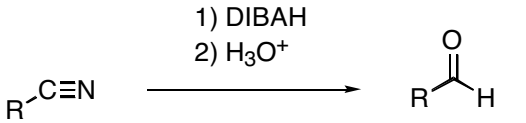
REDUCTION REACTIONS

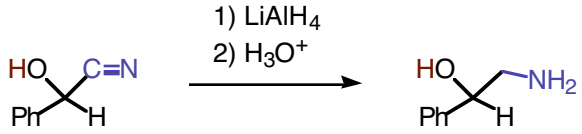


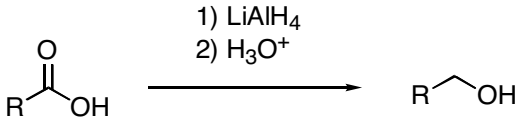


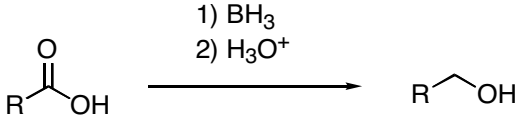


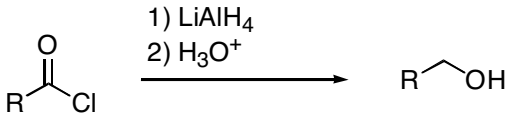


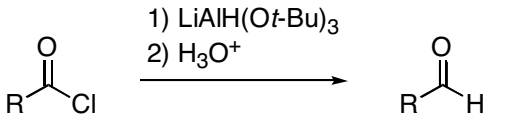


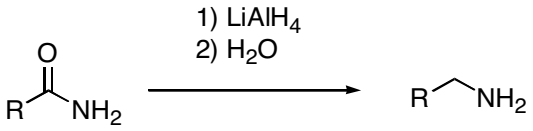


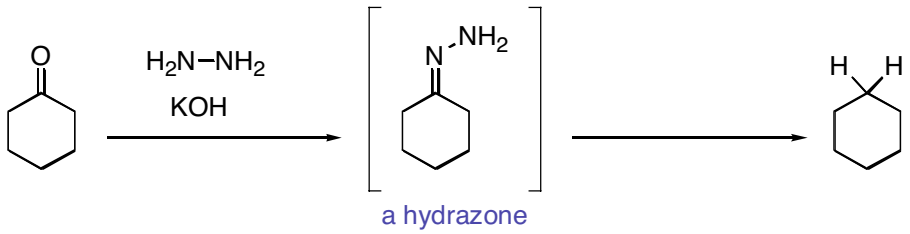


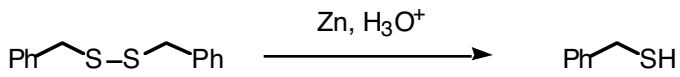


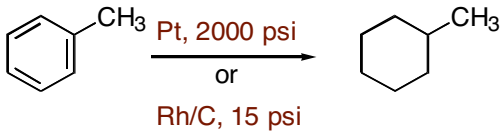

1) LiAlH4
2) H3O+
R
Cl
O
R
OH

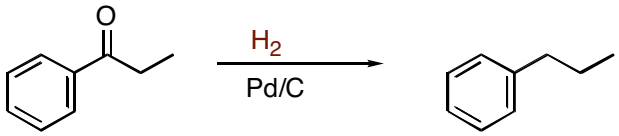

1) LiAlH(Ot-Bu)3
2) H3O+
R
Cl
O
R
H
O

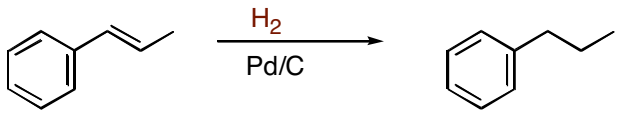

1) LiAlH4
2) H2O
R
NH2
O
R
NH2

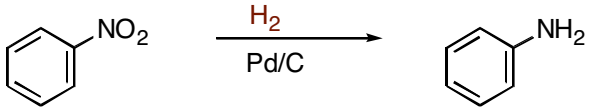

H2N–NH2
KOH
O
N
NH2
H
H
a hydrazone

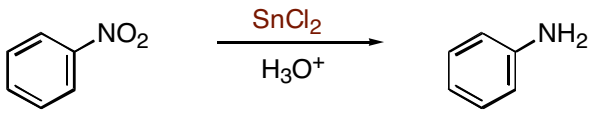

Zn, H3O+
Ph
S–S
Ph
Ph
SH


CH3
Pt, 2000 psi
or
Rh/C, 15 psi
CH3


O
H2
Pd/C


H2
Pd/C


NO2
H2
Pd/C
NH2


NO2
SnCl2
H3O+
NH2

OTHER REACTIONS