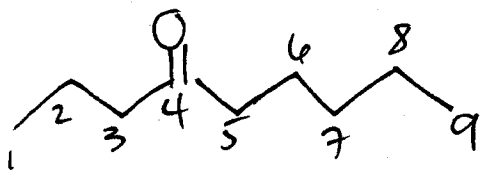


Ketone nomenclature

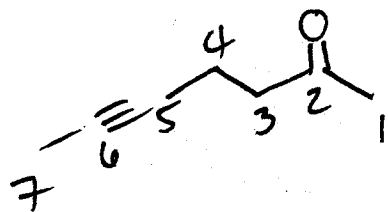


4-nonanone

number the chain so the $C=O$ has lowest possible #.

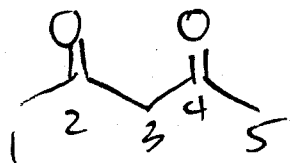
change "e" to "one"

use # to indicate position of $C=O$.

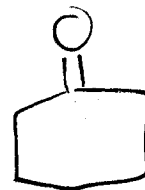


5-heptyn-2-one

$C=O$ takes priority in numbering



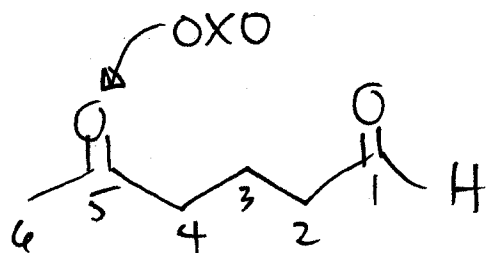
2,4-pentanedione




cyclohexanone

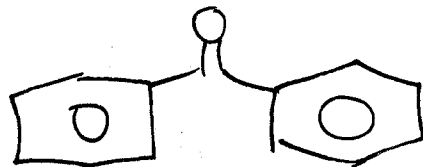
($C=O$ is #1 when it's part of a ring)

Aldehyde > Ketone

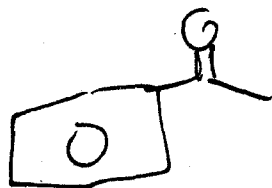


5-oxohexanal

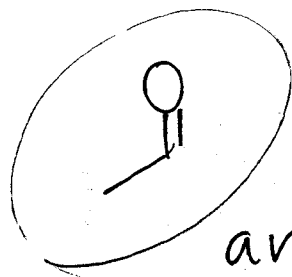
common names:  acetone



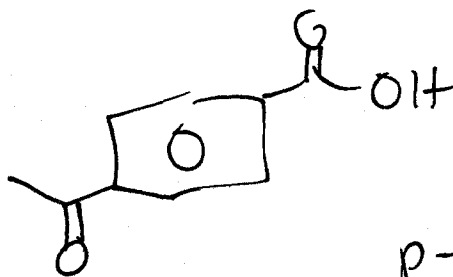
benzophenone



acetophenone

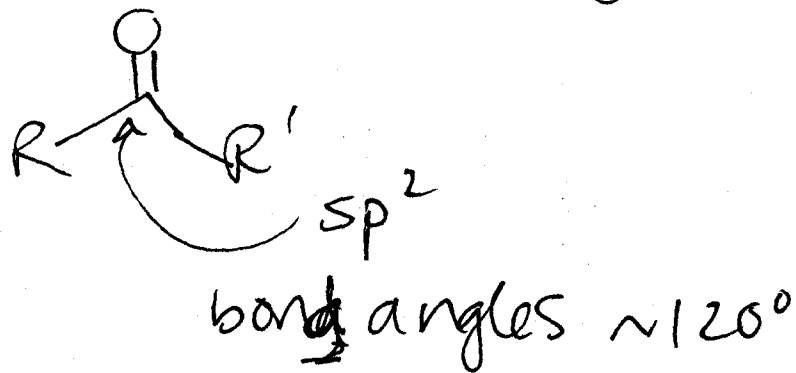


an acetyl group

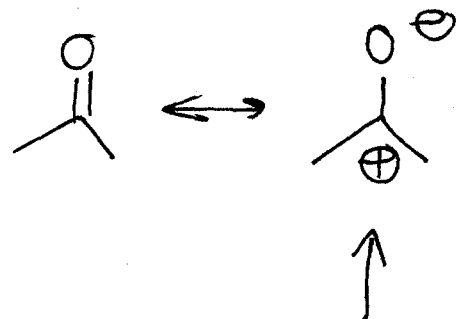


p-acetylbenzoic acid

Structure + Bonding

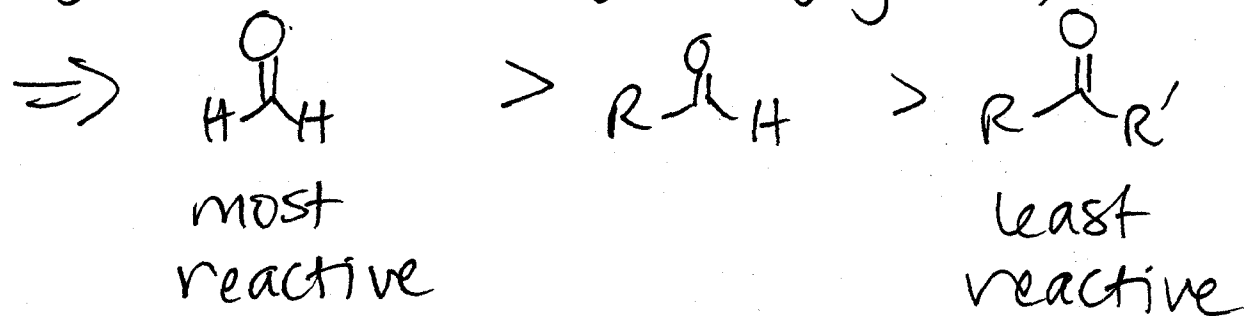


$\text{C}=\text{O}$ is polar
 \longleftrightarrow



susceptible
to nucleophilic
attack - more
so than carbox.
acids + derivs.

Alkyl substitution
stabilizes a \oplus charge
by induction (hyperconjugation)

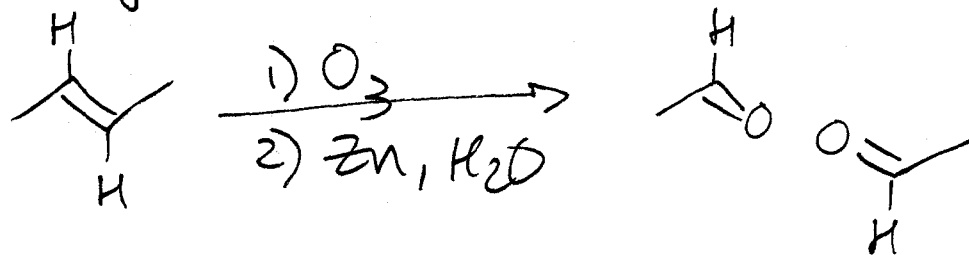


Physical Properties

tend to have higher bp than corresponding alkanes
(dipole-dipole) but lower than alcohols (no H bonds)

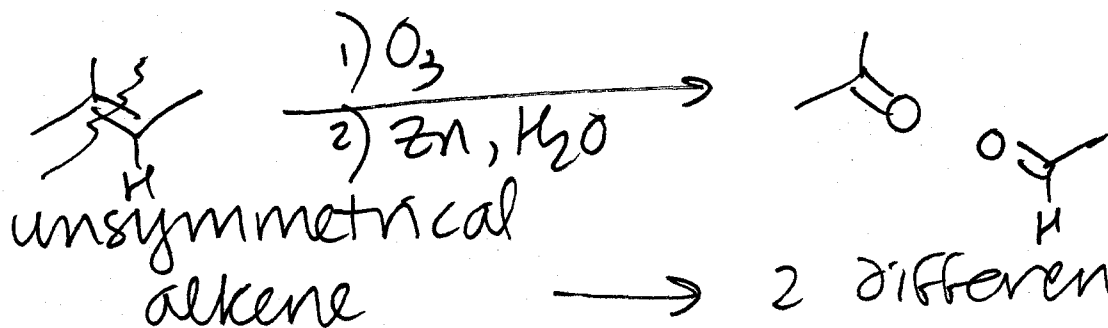
Syntheses of Aldehydes + Ketones

1. Ozonolysis of alkenes



symmetrical
alkene

→ 2 equiv. of one compound



unsymmetrical
alkene

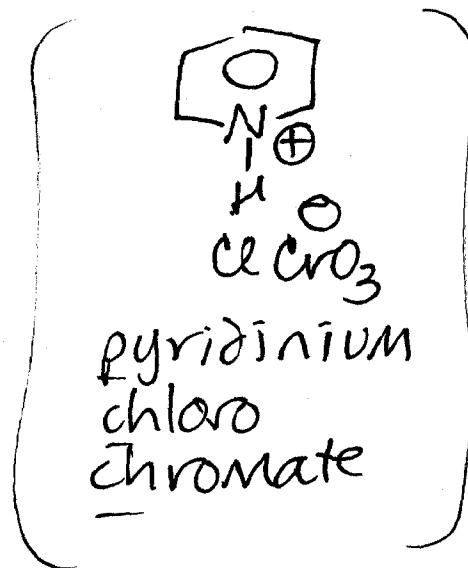
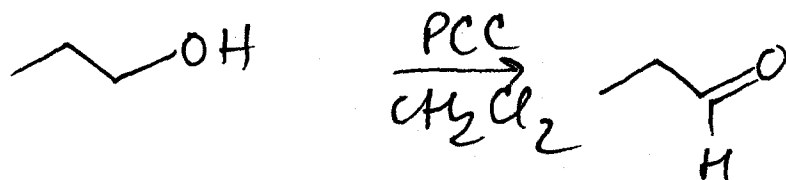
→ 2 different compounds

2. Friedel-Crafts acylation

⇒ aromatic ketones only

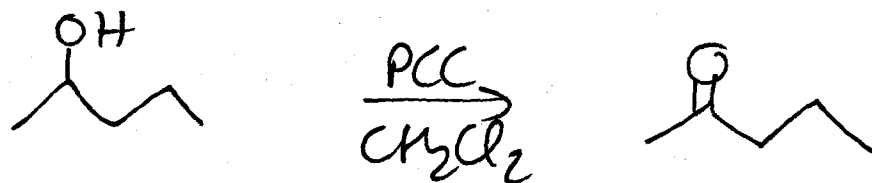
3. oxidations

a. 1° alcohol $\xrightarrow{\text{PCC}}$ aldehyde

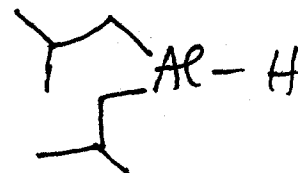
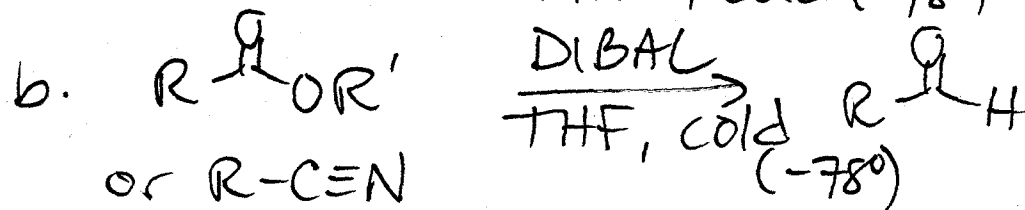
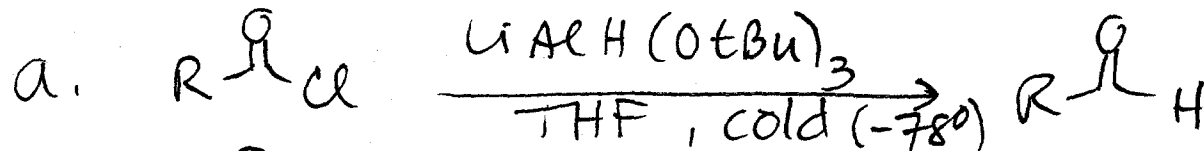


b. 2° alcohol \rightarrow ketone

use PCC or other oxidizing agents

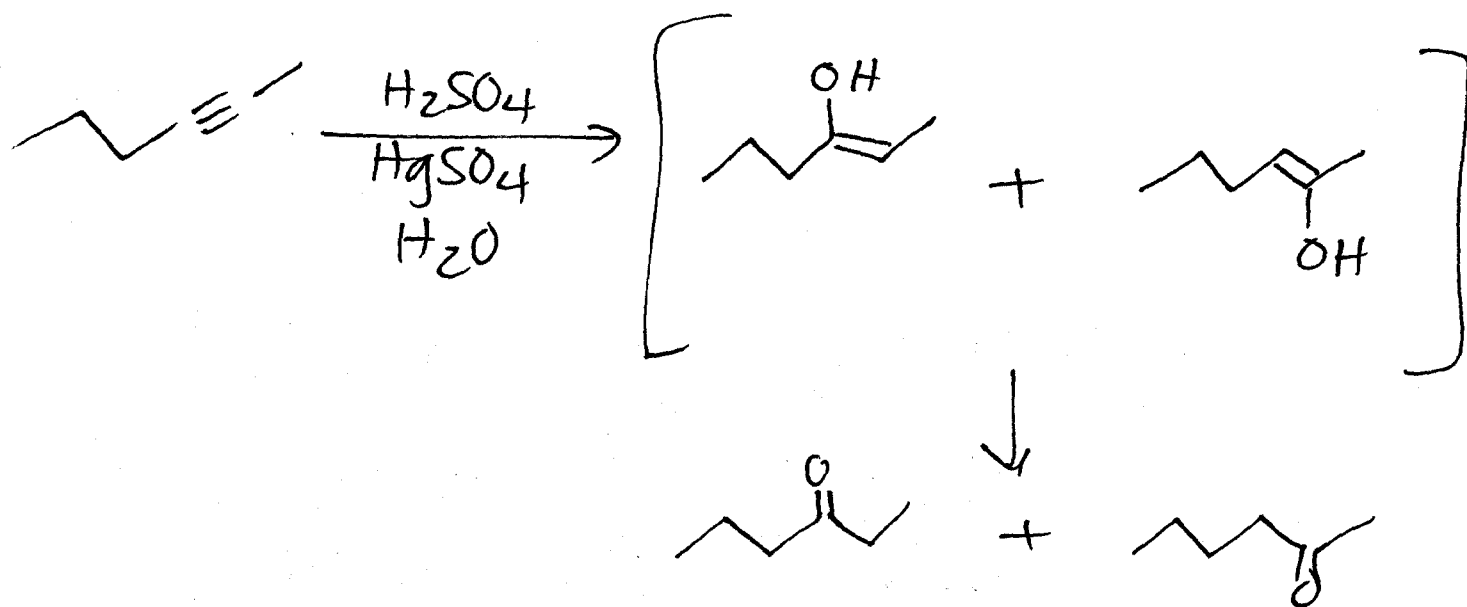
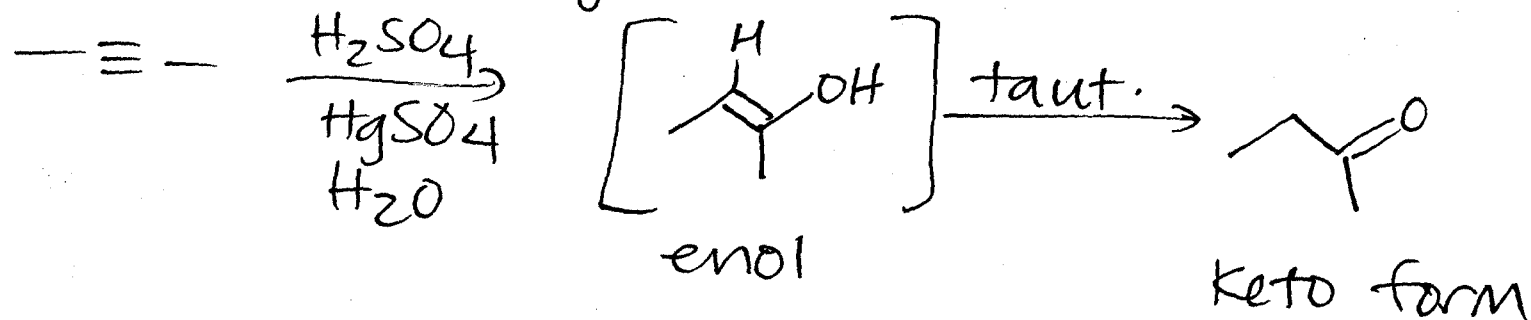


4. Reductions

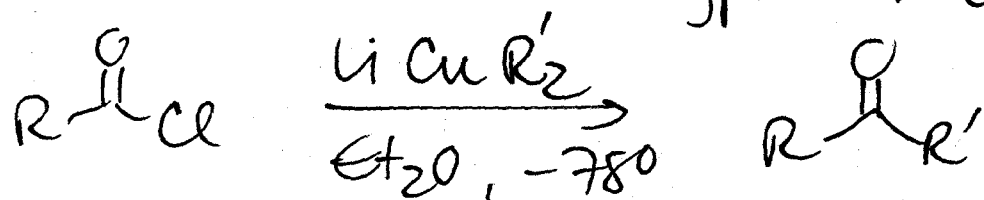


~~di-isopropyl~~ di-isobutyl aluminum hydride

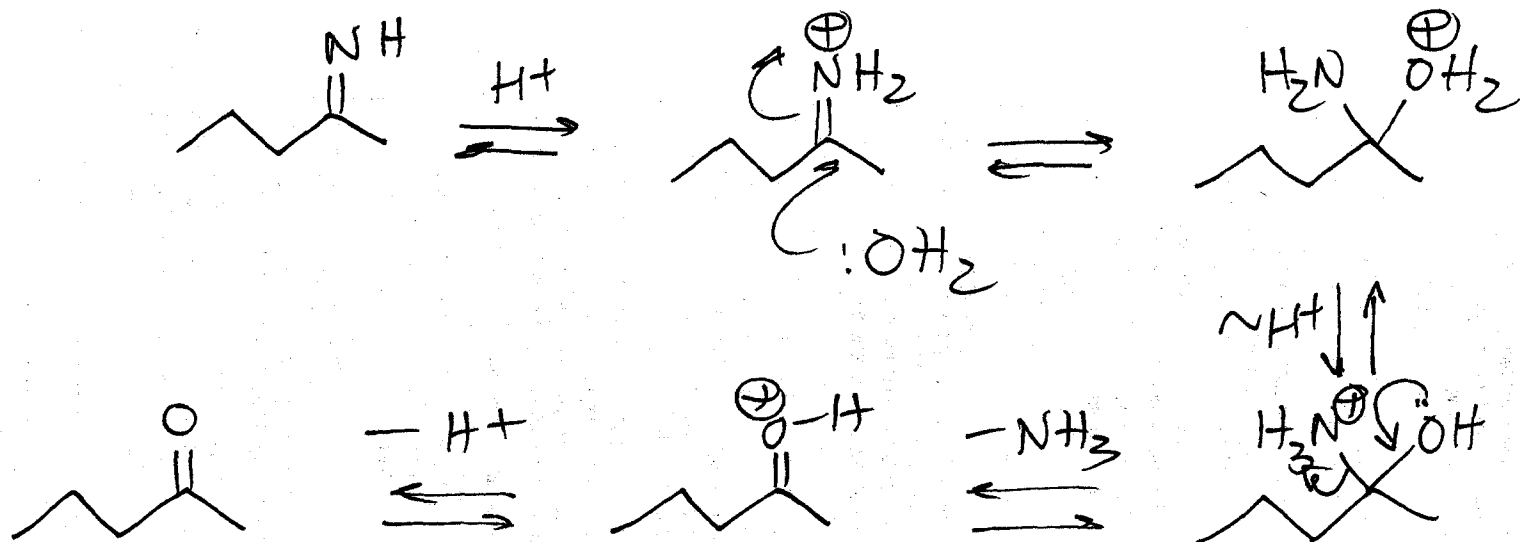
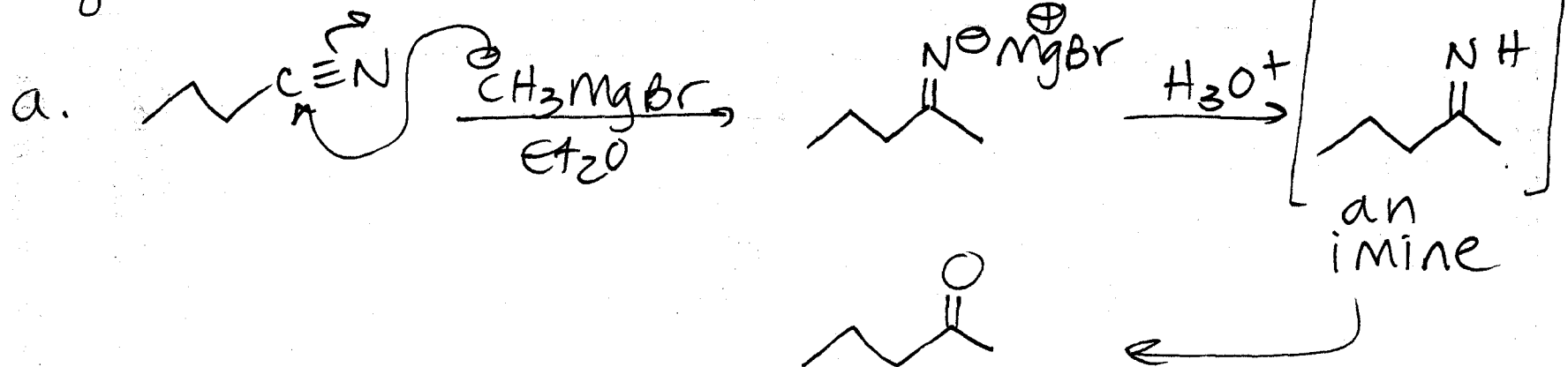
5. Hydration of Alkynes



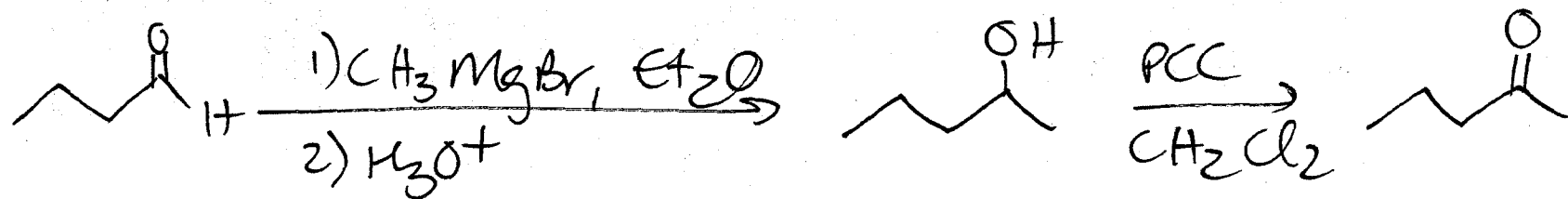
6. Another Gilman-type rxn



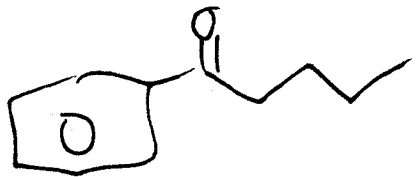
7. Grignard variations



b. aldehyde \rightarrow ketone



make:



General rules:
start w/ benzene +
any 3-carbon or less
alcohol or alkyl halide
+ any inorganic reagent.

Solution #1

