

Final ExamCarboxylic acids + derivatives

- relative reactivity of carbonyl compounds
- cationic (acidic) versus anionic (basic)
- mechanisms of carboxylic acid derivatives
- reversibility
- esterification / hydrolysis (cationic)
- saponification, diazomethane (anionic)
- solvolysis
- transesterification
- alkylation + reduction
 - DIBAL-H + $L_2^M H(O^+)_3$
 - $NaBH_4$ vs $LiAlH_4$
- lactones + lactams; nitriles

types of problems: mechanism, synthesis,

fill-in-the-blank

5/10/12 - stability of polyfunctional carbonyls

enolates

- pKa's
- cationic vs anionic
- α -halogenation (including haloform)
- aldol / mixed aldol, Claisen, Dieckmann, Michael addition, Robinson, Stork, α -alkylation
- malonic ester synthesis

type of question: given a product, give the rxn type + substrates used to make it

amines

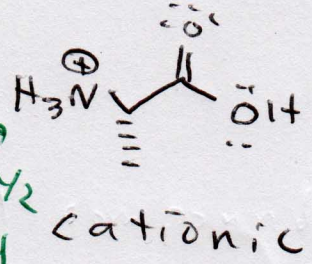
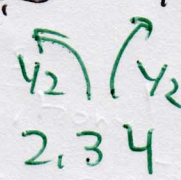
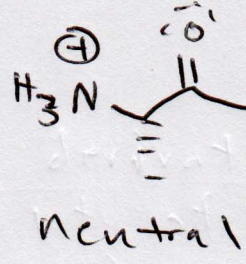
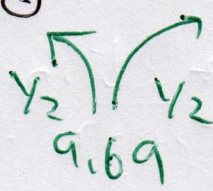
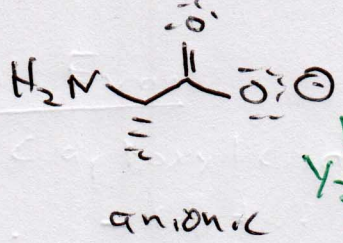
"Iq" was to synthesize amines (5/10/12) including Curtius + Hofmann rearrangements

acid/base properties of amines

Carbohydrates

+

Amino Acids



- mechanism of carbonyl acid derivatives
- reactivity
- esterification / hydrolysis (Fischer)
- saponification / emulsification (sapon)
- solubility
- alkylation + reduction
 - DIBAL-H + $\text{Li}^+ \text{O}^-$
 - NaBH₄ + LiAlH₄
- lactams + lactones + nitriles

types of problems: Mechanism, synthesis
 Fischer-Blank
 stability
 enolates

- pKa
- reactivity of anionic
- α-hydrogen (acidic)
- aldol vs. ketone aldol (Enamine)
- Michael addition in Robinson Smith or aldol
- Aldol reactivity
- type of electrophile given, method, give
- reactivity of substrate, yield + mechanism
- synthesis including reagents + conditions (Fischer)
- aldol base reactivity of enolates

Carbonyl + ...