

1

Midterm 1 is next Friday!

No quiz in discussion next week
 All Friday sessions cancelled, attend any other session except Wed 3pm

Office hours for NEXT week:

Kirsten: Tues 9-10, RH 523

Alissa: Tues 5pm, location TBA

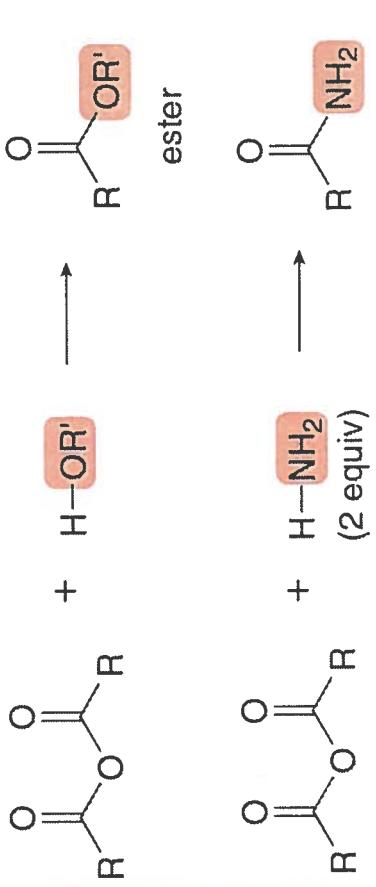
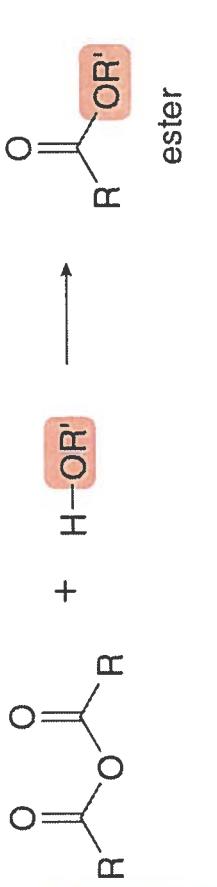
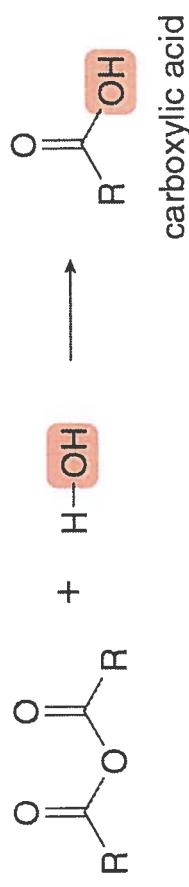
Tristan: Wed 11-12, RH 523

ERJ: Wed 2-3, NS1 4114

ERJ: Thurs 3-4, NS1 4114

+ 10 hours of tutor office hours

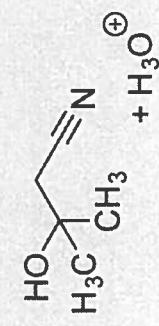
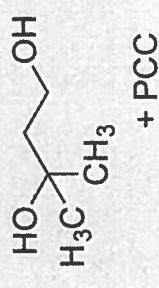
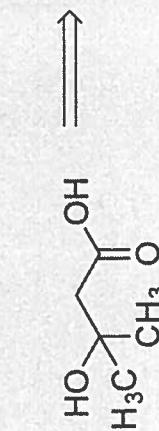
Lecture 11: Anhydrides, acids, and esters



Girls like you (Maroon 5)
 “Girls like you run around with guys like me”

Anhydrides are just looking for a nucleophile.
 Like an alcohol, or water, or an amine, yeah yeah.

Capercard question:



A, B and C
 all work

D

C

B

A

Next week: April 29-May 3

Discussions: WS4; no quiz.

All Friday discussions cancelled: Attend any other section except Wed 3pm

Mon, April 29, Lecture: "synthreview" problems
key will be posted on course website Tues April 30

Peer tutors review session: Monday April 29th 5-7 pm @ BS3 1200

Midterm 1-f14 —

*be prepared to work in groups and go to the board!
key will be posted on course website Tues April 30

Office hours (TAs, tutors, me = 15 hours)

Any questions you have (worksheets, etc)
Tutors: Midterm 1-f14
Midterm 1-S18
key will be posted midnight Wed May 1

Friday: Midterm 1

Link to assigned seats will be sent to you

Bring ID, pencil and eraser

3

Friday: Midterm 1

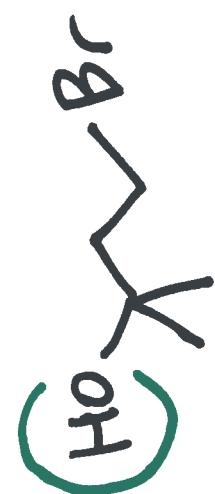
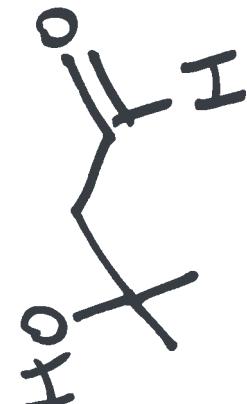
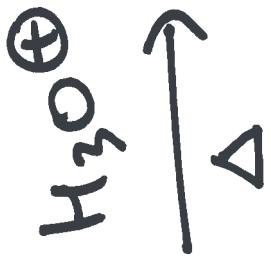
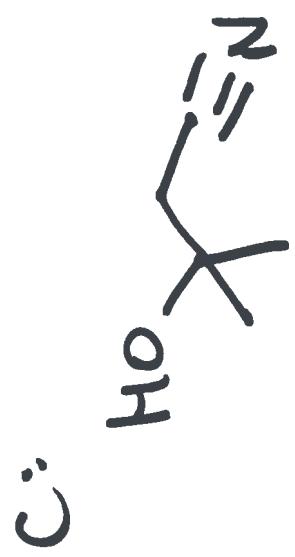
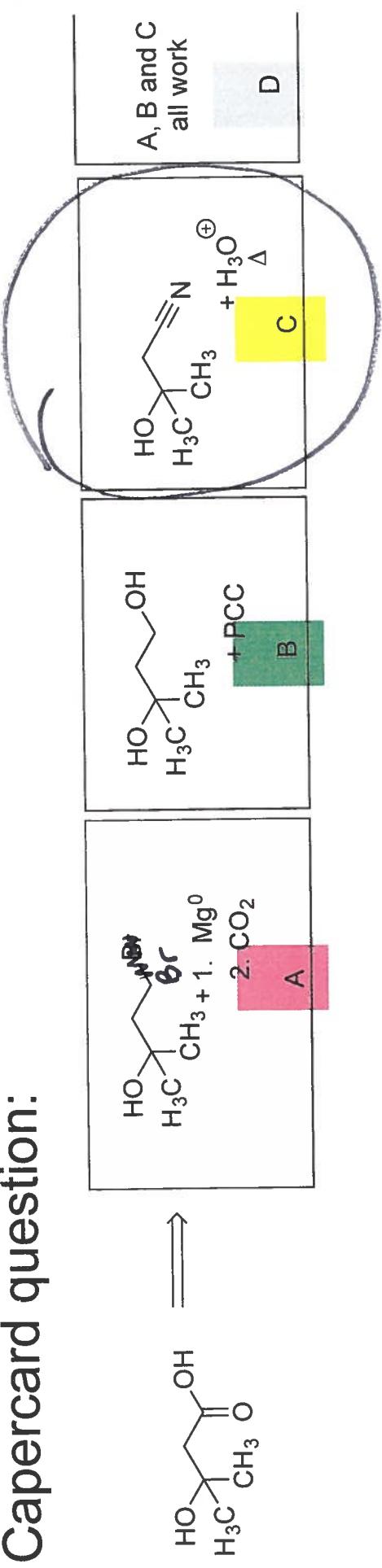
- Link to assigned seats will be sent to you
- Bring ID, pencil and eraser
- Be in your assigned seat and ready (no papers, bags, etc) so we can start on time.

Are you a lefty?

EMAIL me (erjarvo@uci.edu) by Saturday midnight:

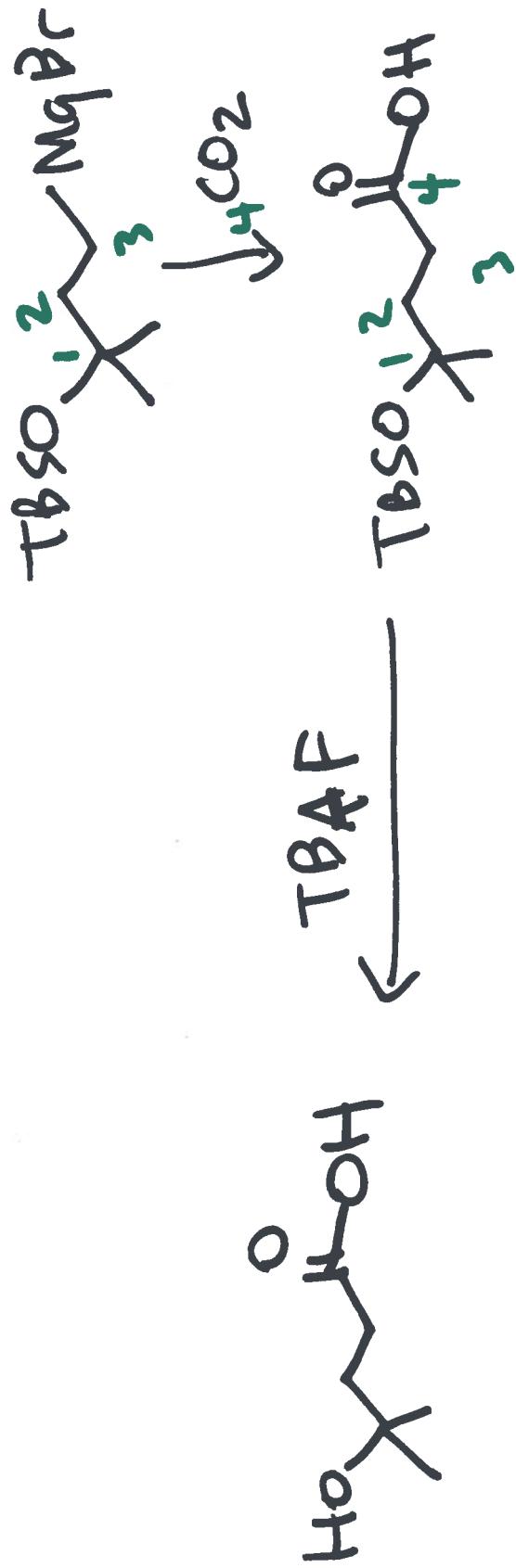
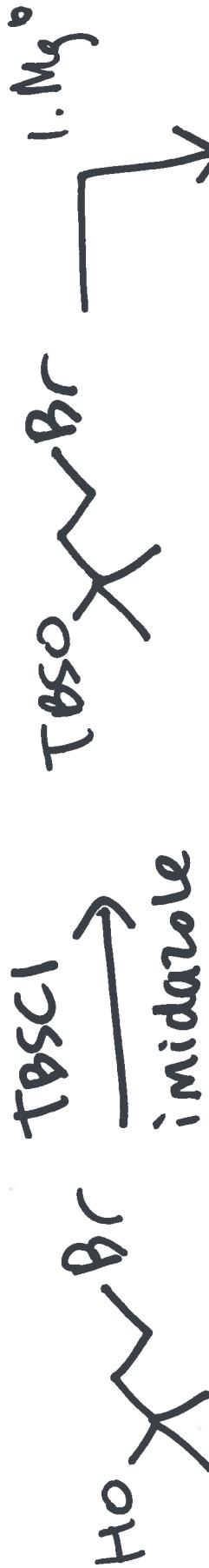
Subject: left handed seat 51C
Name and ID number

Capercard question:



deprotonate
alcohol...
quench.

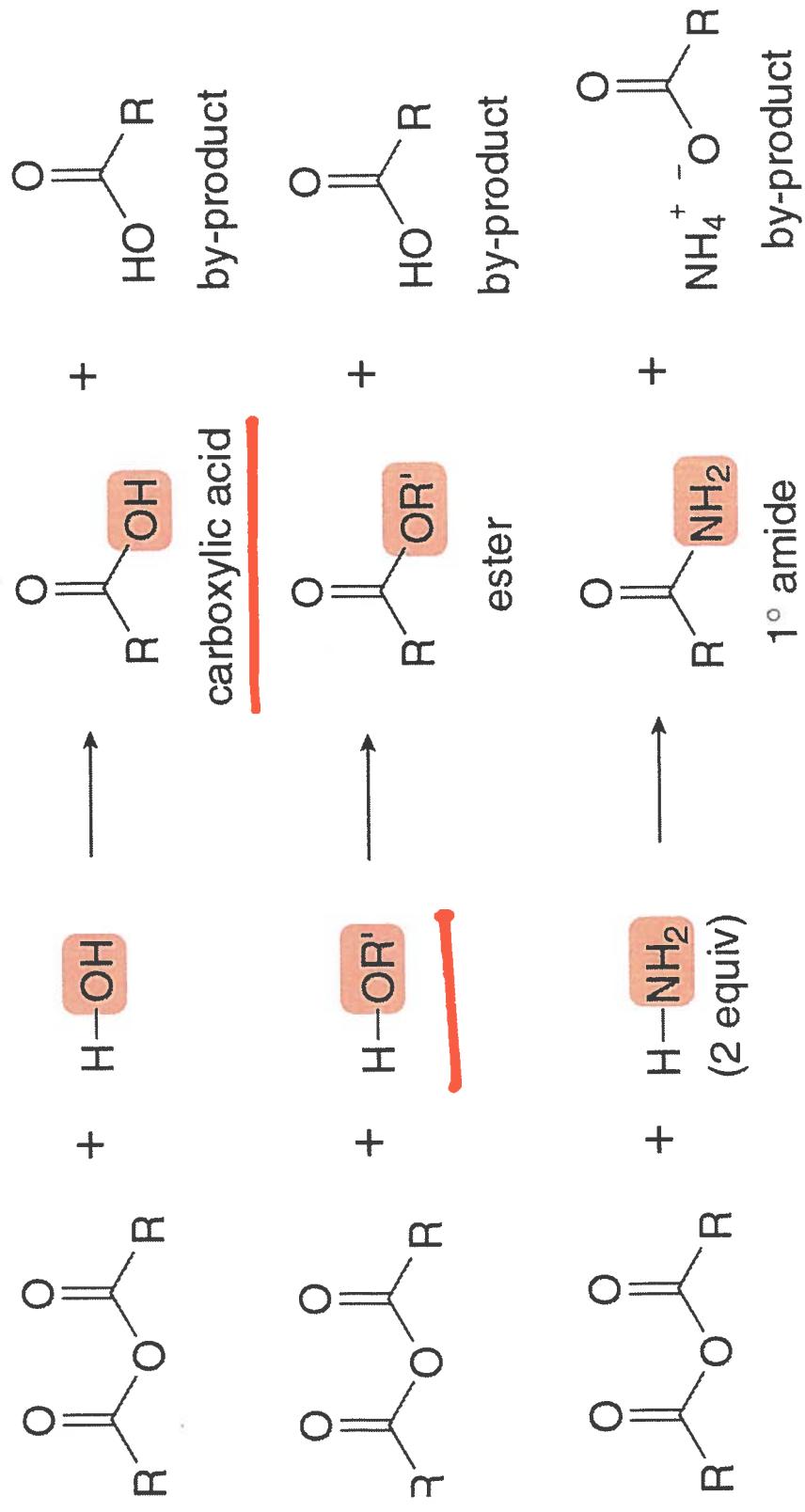
⑤



Todays: Anhydrides::

Similar to acid chloride ...
not as
electrophilic.

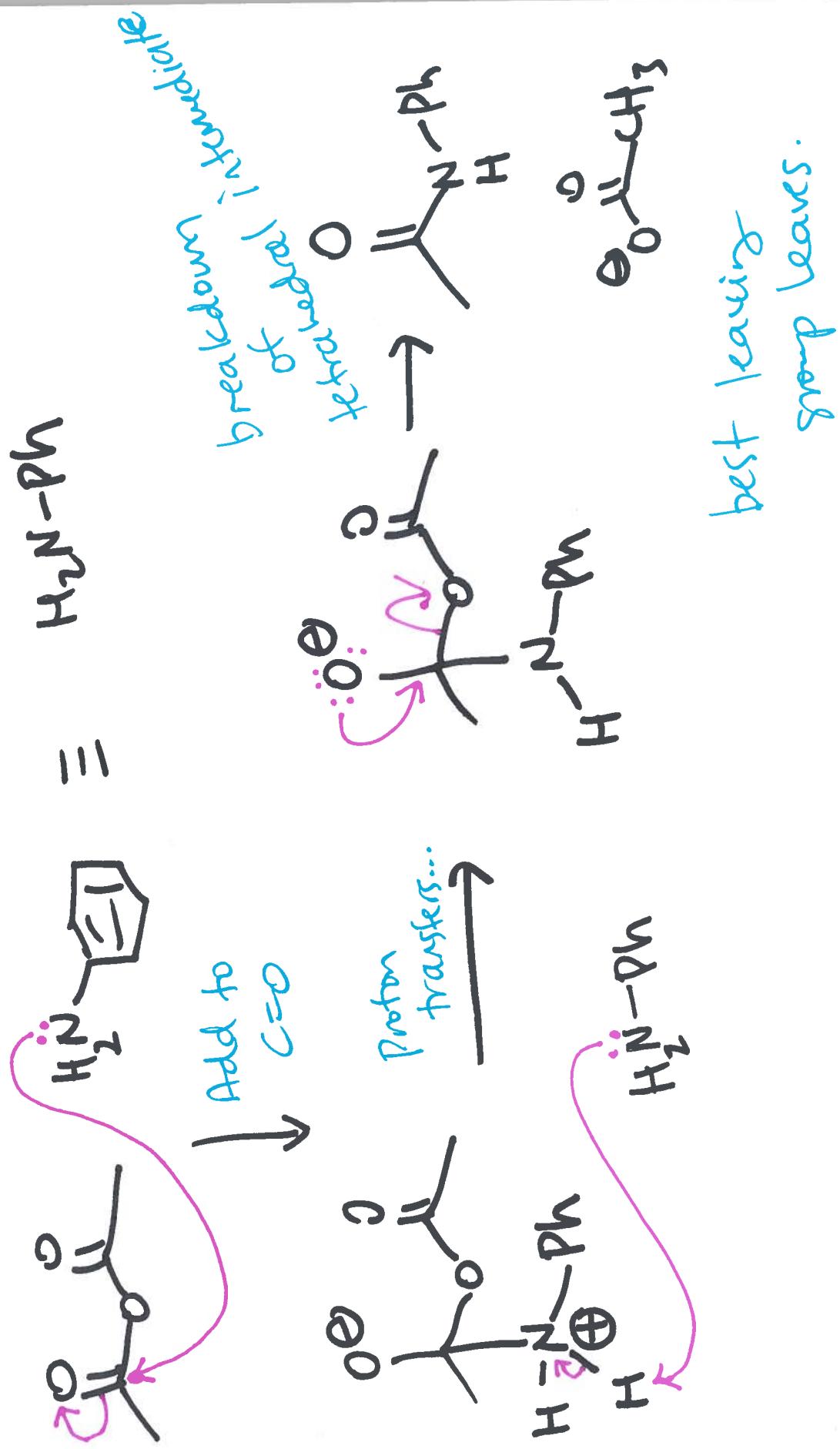
(1) Reactions of Anhydrides



OR 2° (or 3°) amides.

Mechanism for
amide formation . . .

Mechanism for Amide formation



⑥

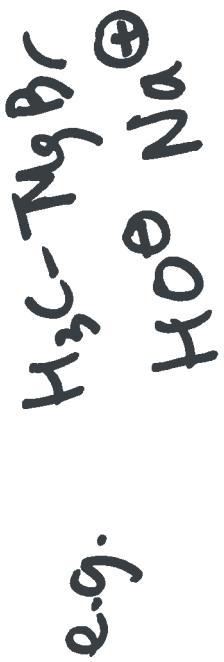
Next: carboxylic acids!

unusual carboxyl because they are
acids.

① Back in Ch 19: They are acids

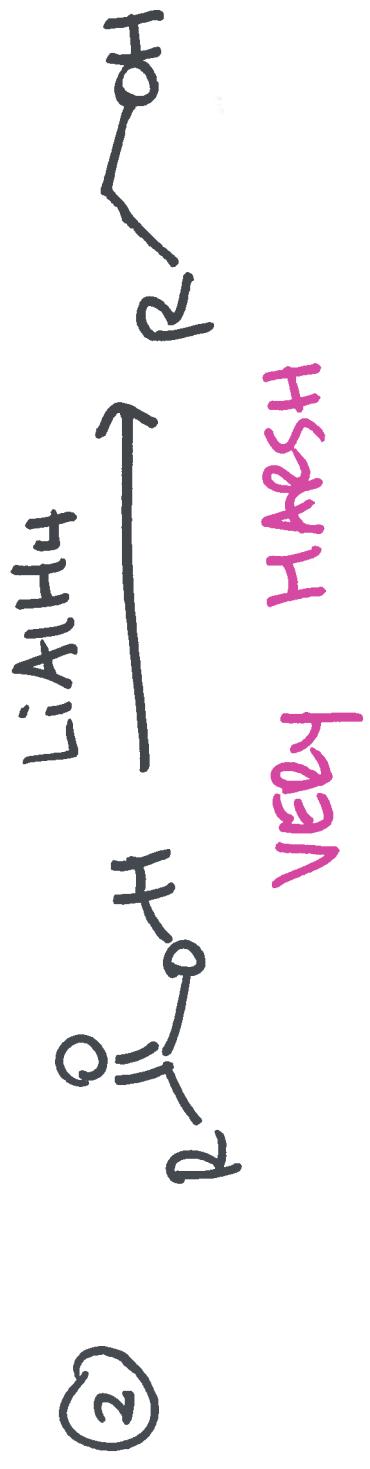


pKa ~ 5



Proton transfer FASTER than nucleophilic addition.

(1)

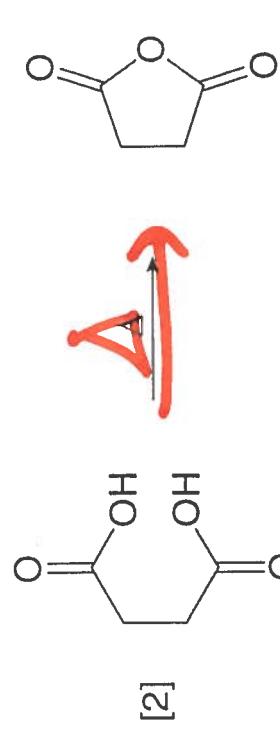


- ③ this section : SPECIAL or forcing
conditions to make
carboxylic acids react.

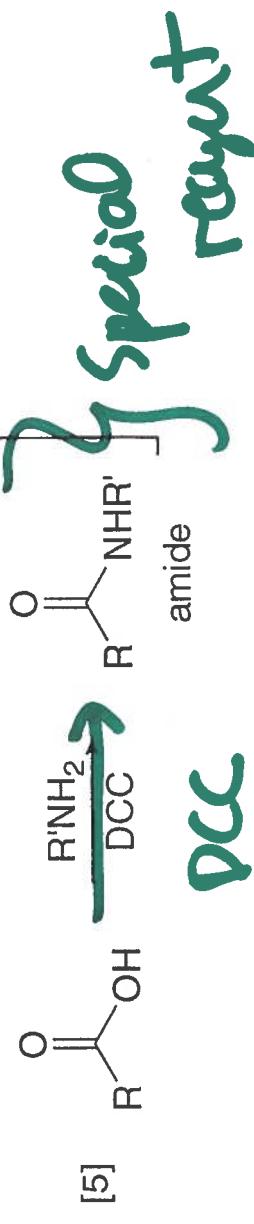
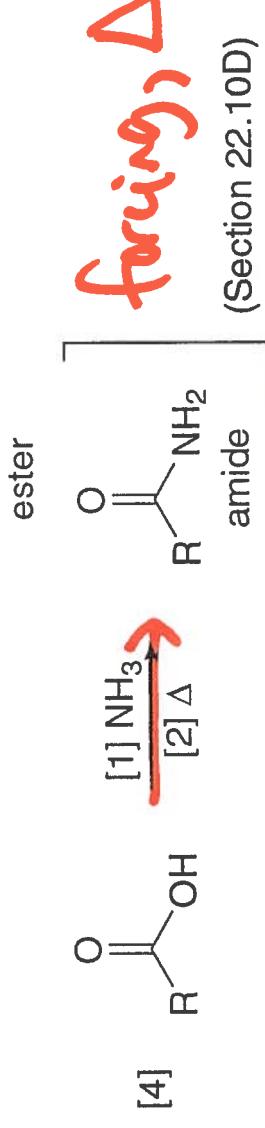
Reactions of Carboxylic Acids

SPECIAL REAGENT

W



**Two
Forcing
conditions
(very harsh)**

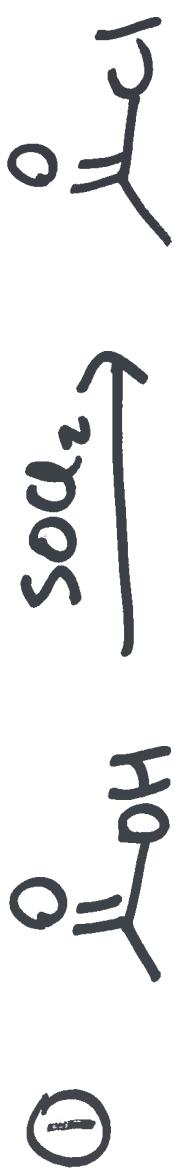


DCC
**Special
reagent**

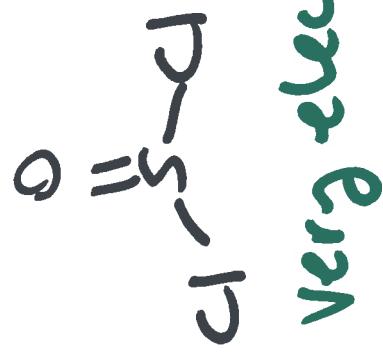
5,6-member rings

**Two
Forcing
conditions
(very harsh)**

(12)



$\text{SOCl}_2 = \text{Thionyl chloride}$

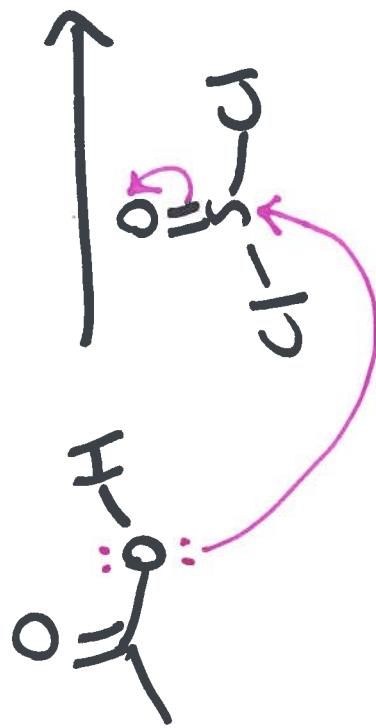
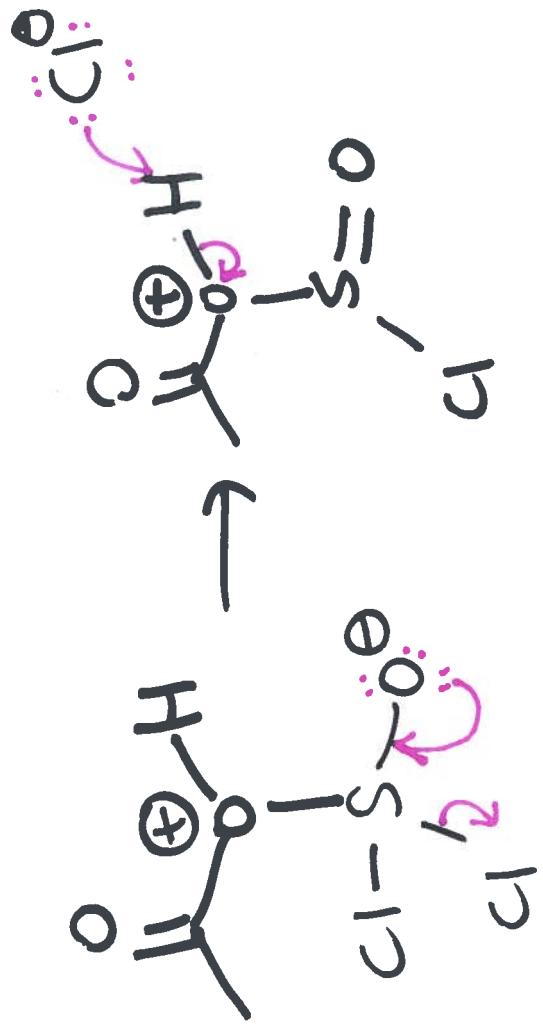


very **electrophilic**

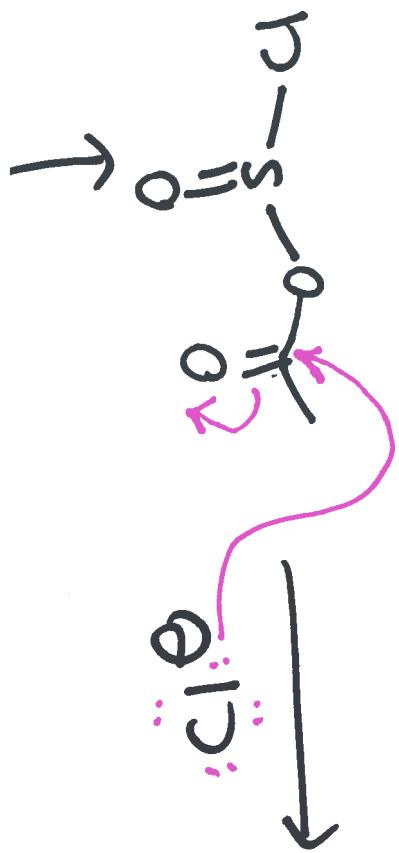
Mechanism

Goal: convert
group.

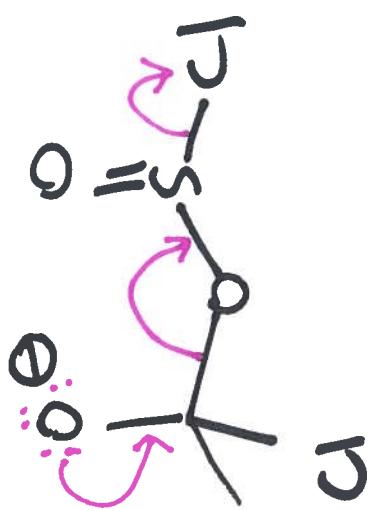
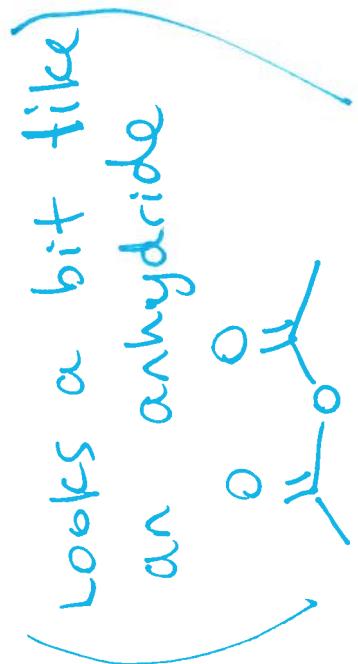
OH^- into better leaving



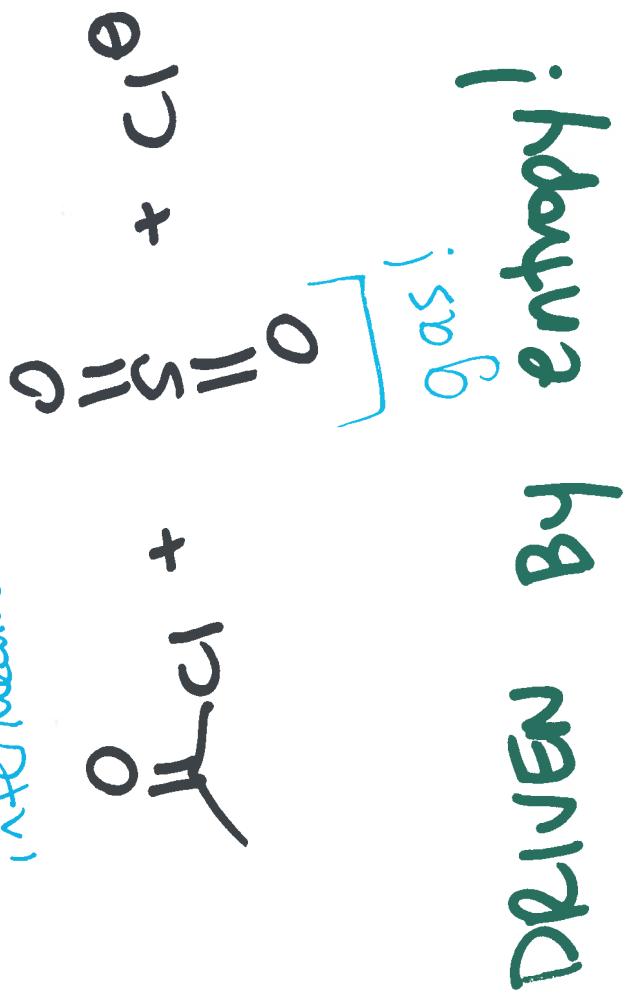
(13)



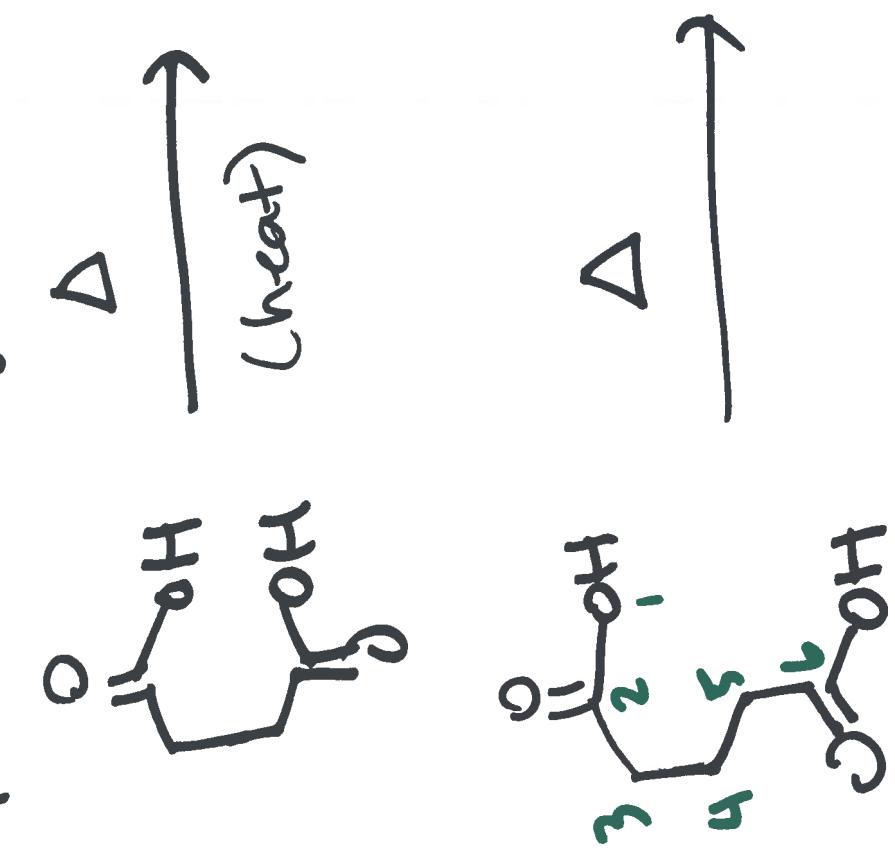
activated!



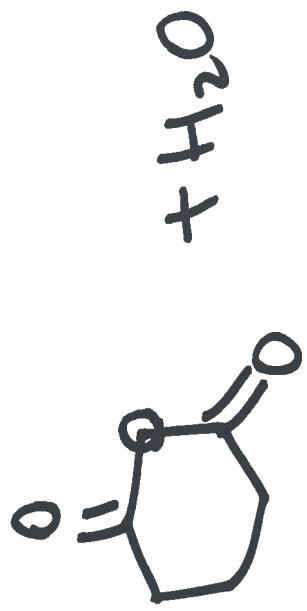
break
down
tetrahedral
intermediate



(2) cyclic anhydrides



5-membered
cyclic anhydride



b-membered
ring.

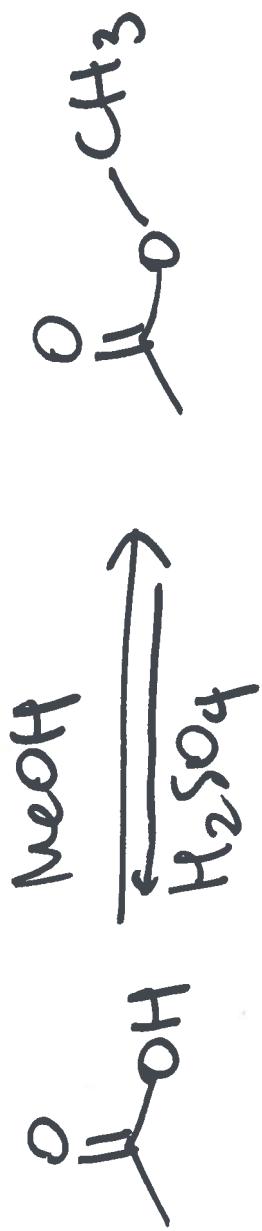
Recall: 5 and b membered rings are extra stable

Stable

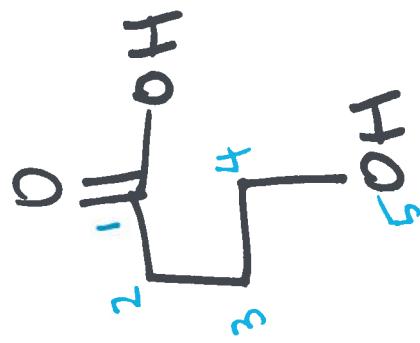
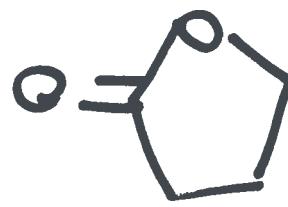
③

Fischer esterification

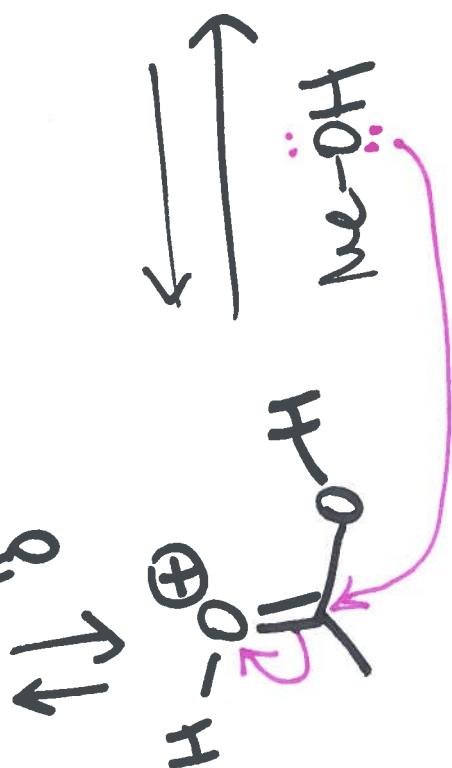
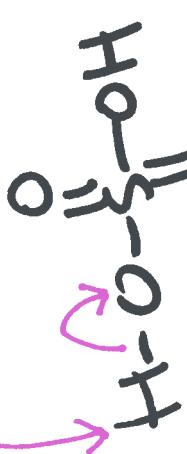
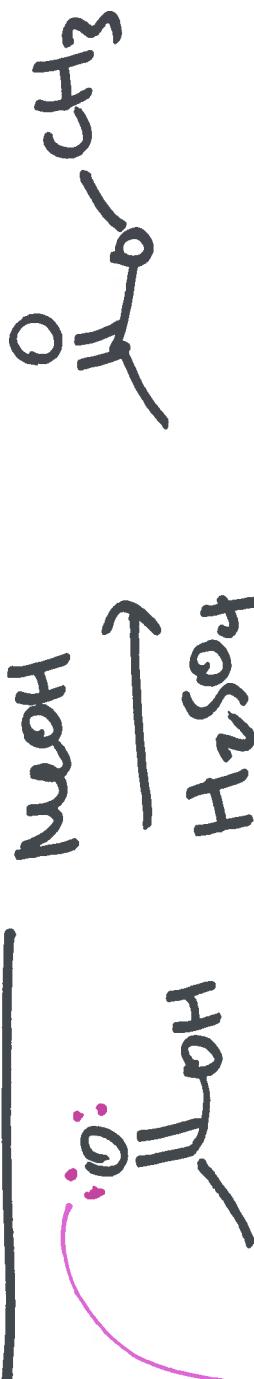
15



can we to make lactones:

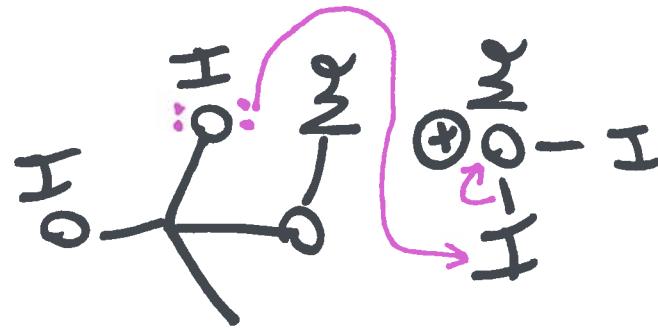
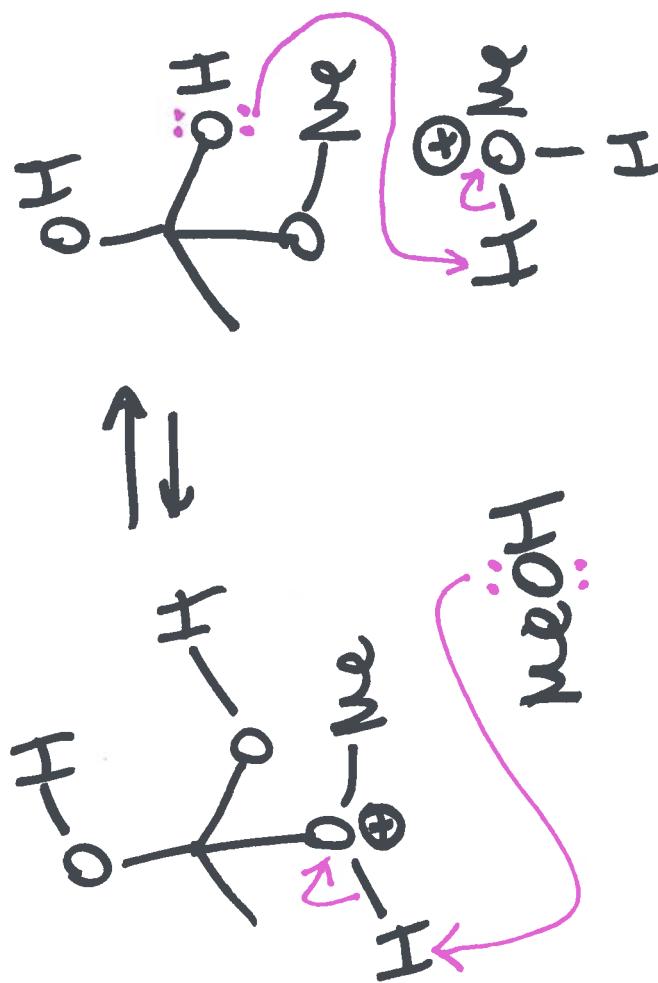


Mechanism:

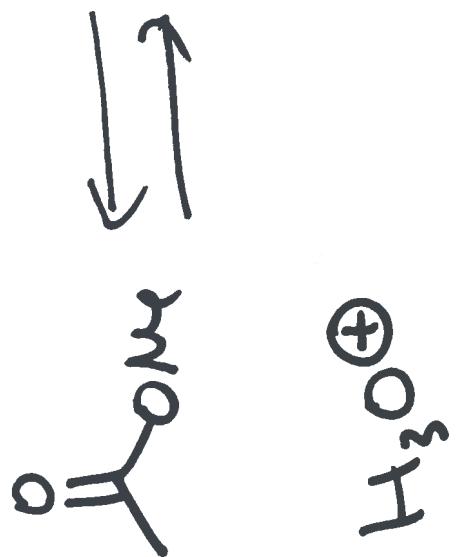
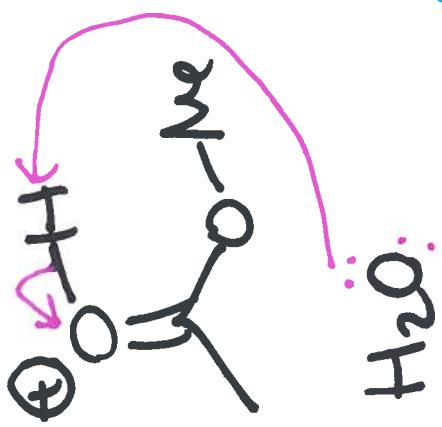
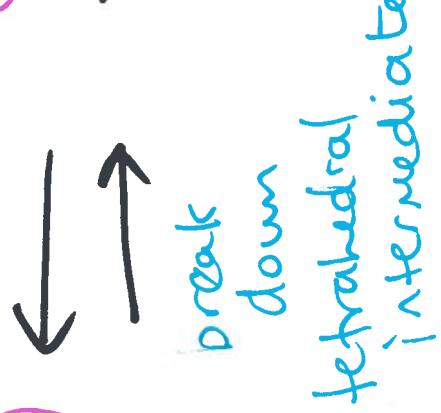
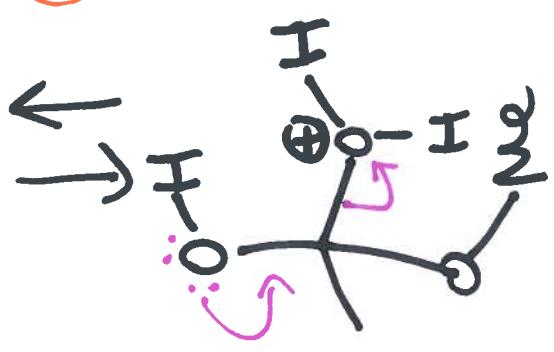


Acidic conditions.

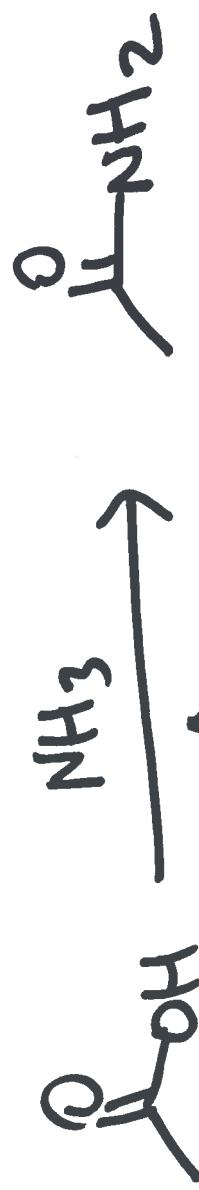
- Protonate.
 - Stack!
 - to



vii



(18)



Not practical :-



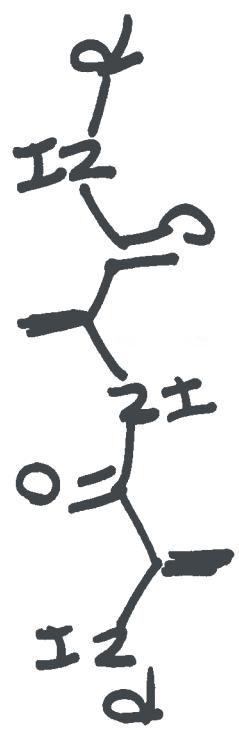
Like SOCl_2 , DCC designed to ACTIVATE
the carboxylic acid.

And ... DCC is very electrophilic



19
this reaction : peptide synthesis.

amide couplings.



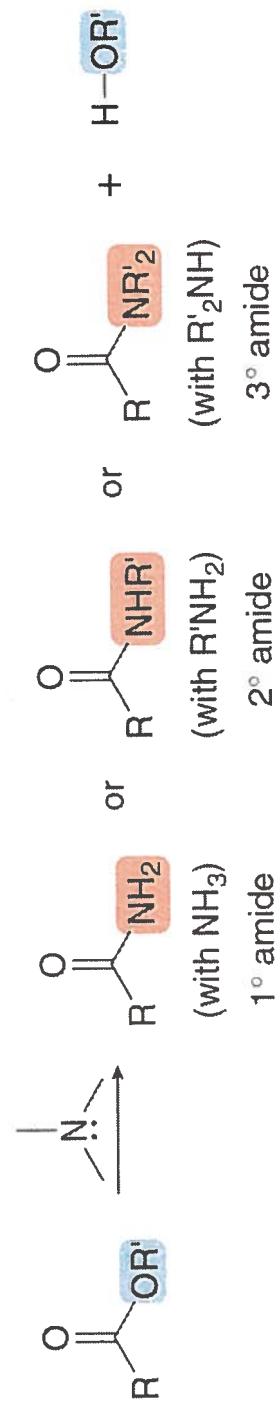
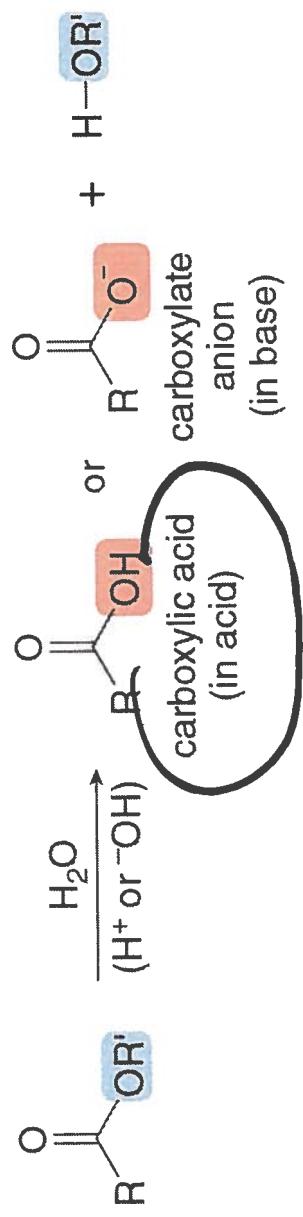
peptides + proteins

amino acids $\xrightarrow{\text{DCC}}$ proteins.

No mechanism

22.12

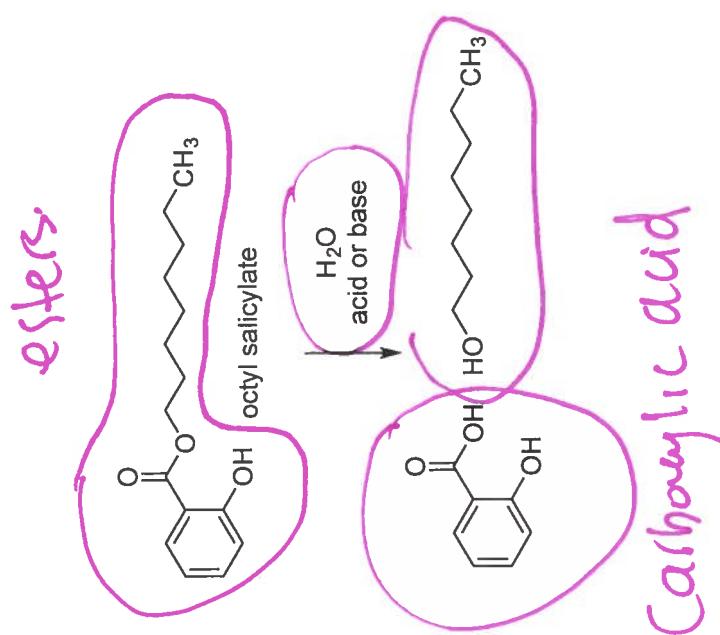
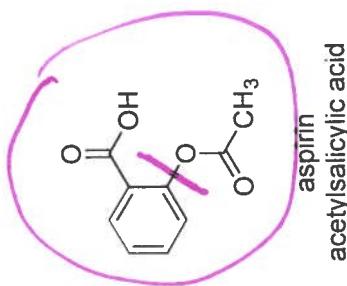
Reactions of Esters



Amides.

20

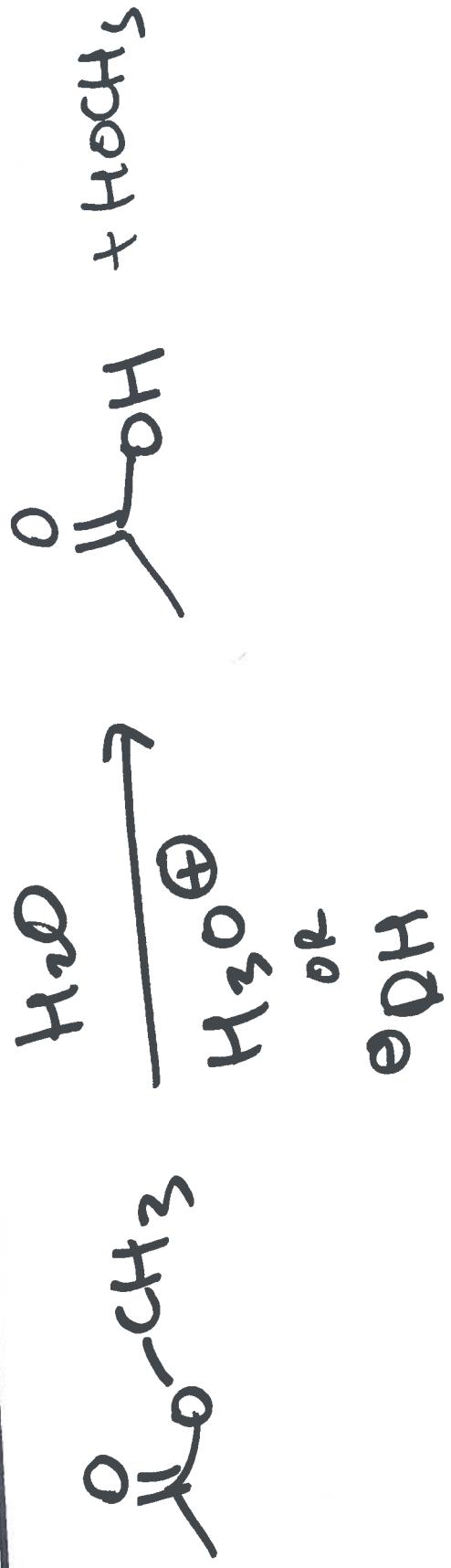
(21)



Ester Hydrolysis

middle
Stop up or
down. Ex.
and including

Ester hydrolysis:



We just drew this mechanism (in reverse)
Mechanism is the same.

(23)

Basic conditions:



"Saponification"

↳ make soap

MIDTERM will cover up to
and including 22. 12.