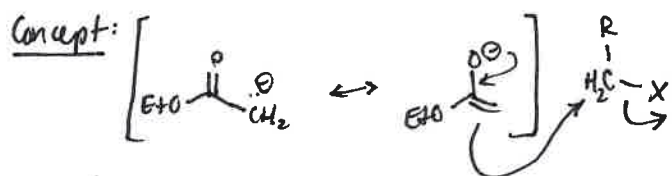


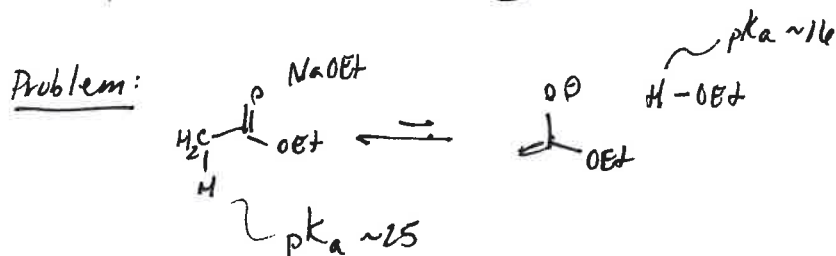
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Recall: How can we harness S_N2 reactivity to introduce alkyl groups α to a carbonyl?

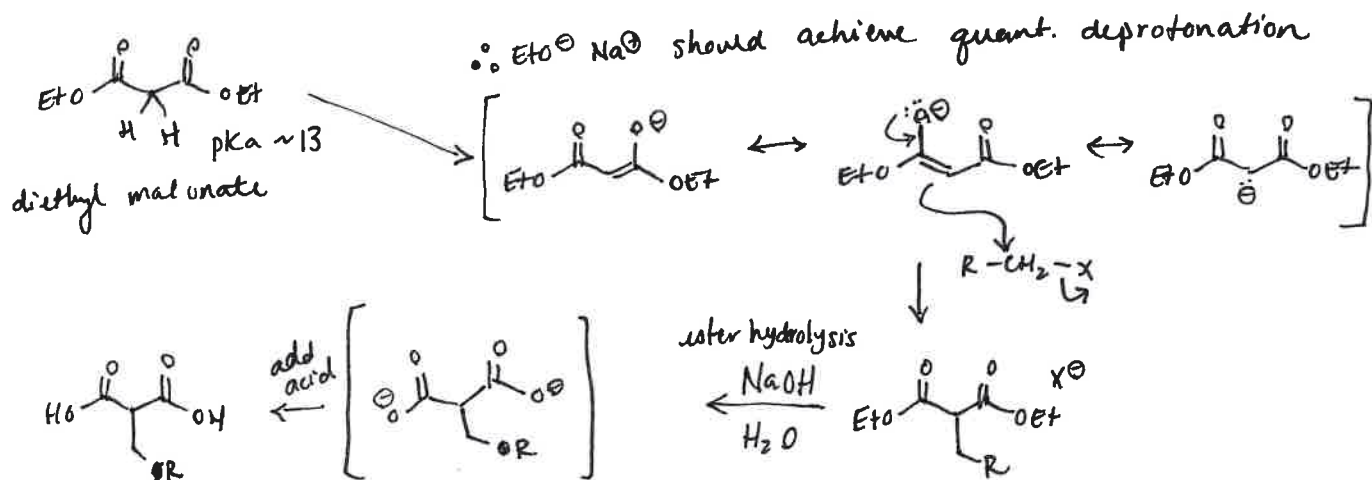


Two Solutions:

- 1- Use a stronger base (more modern)
- 2- make α -H more acidic



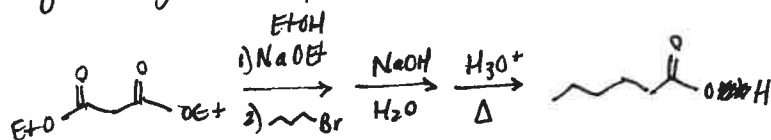
Solution 2 - make α -H more acidic



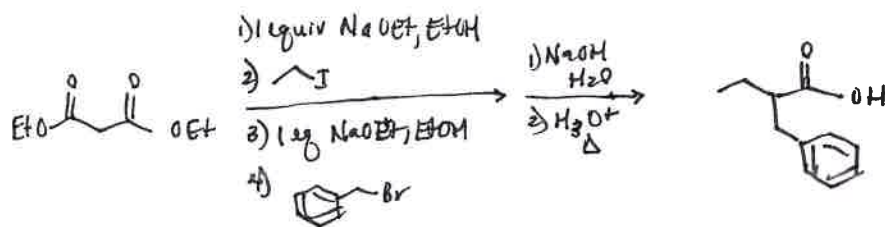
* see pg 1030-1
for mech

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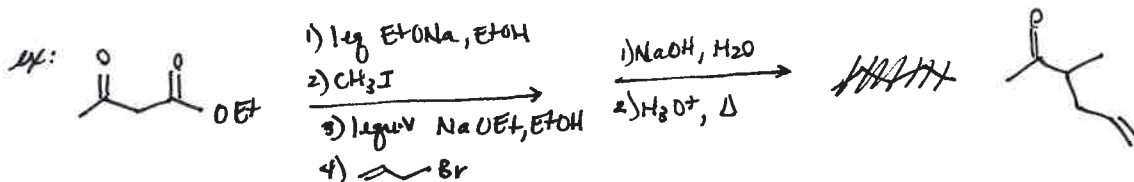
Thus, from synthetic perspective:



* two cycles of alkylation possible!

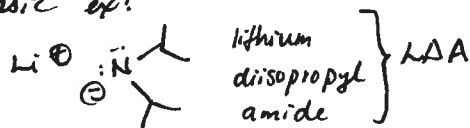


* analogous process for synthesizing substituted ketones!



Solution #1 - Use a very strong base

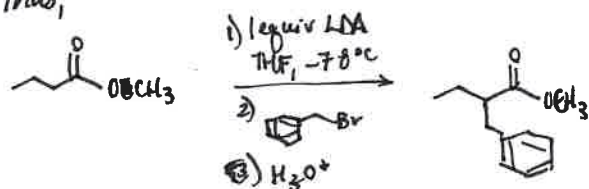
classic ex:



(note: "amide" has 2 meanings)



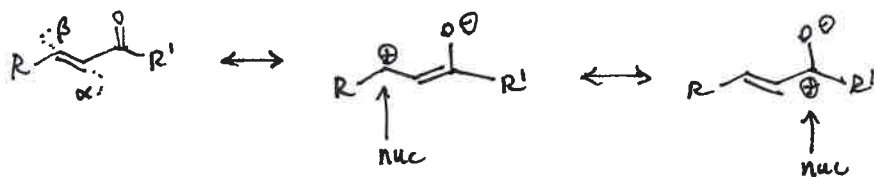
Thus,



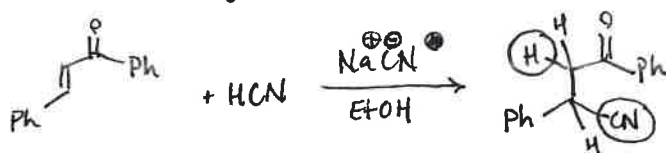
* fill in mech!

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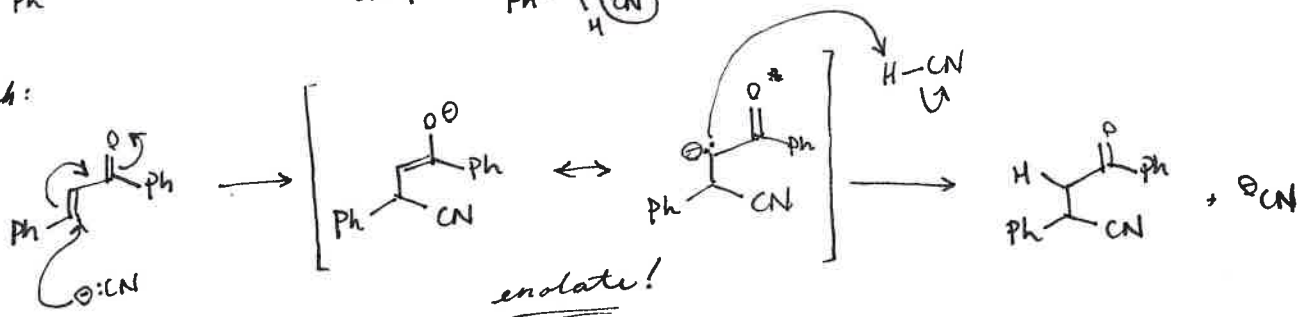
• *Revs* of α, β -unsaturated carbonyl compounds w/ nucleophiles



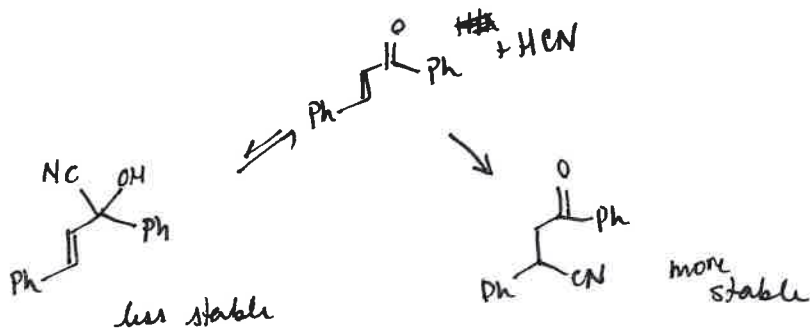
an example: Conjugate Addition



mech:



• Recall: $\ominus\text{CN}$ can add to ketone to form a cyanohydrin, less stable than conjugate addition



- in general, for rev. addition, conj add is favored
- rule of Hammett - Nuc's that are weak bases (conj acids w/ $\text{pKa} \leq \sim 12$) favor conj add
- other ex (aside from $\ominus\text{CN}$) include thiolates (RS^-)
 amines

note: $\text{C}=\text{O}$ "better" than $\text{C}=\text{C}$ when there is a choice

