Exam 1 Corrections- 1 week from today

Friday Quiz - mostly Ch. 20 reactions

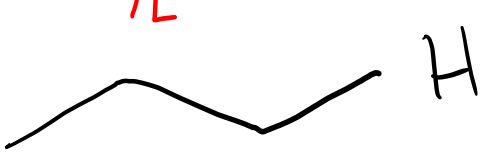
Enols and Enolates

3/15/2023

Acidity of C-H bonds

1L

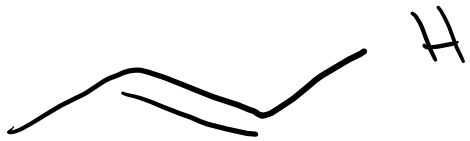
pKa



~ 50

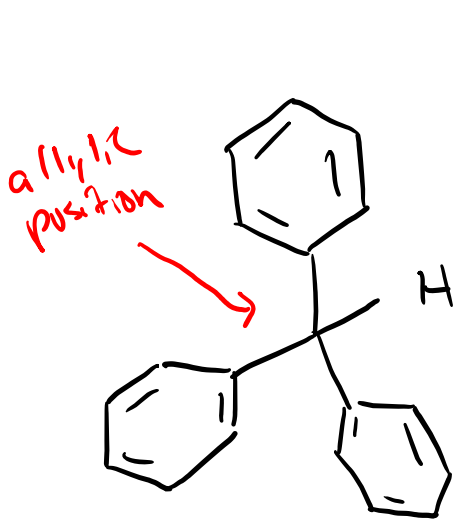
alkane

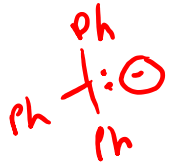
$K_a = 10^{-50}$



~ 45

alkene





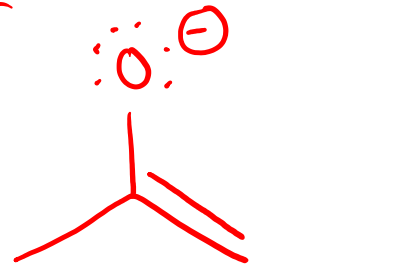
resonance stabilized!

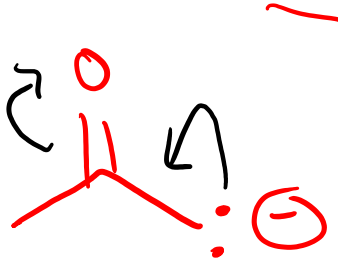
~ 33

e⁻ deficient

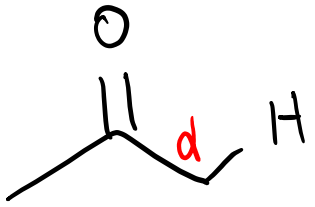
~ 25

alkyne





much more stable!

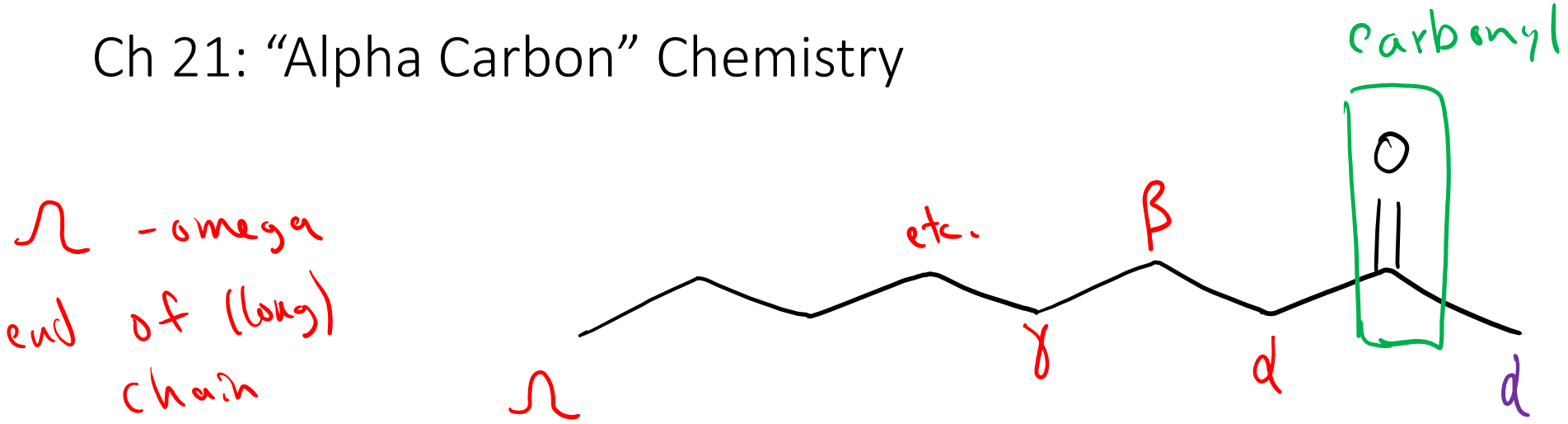


ketone / aldehyde

pKa = 20

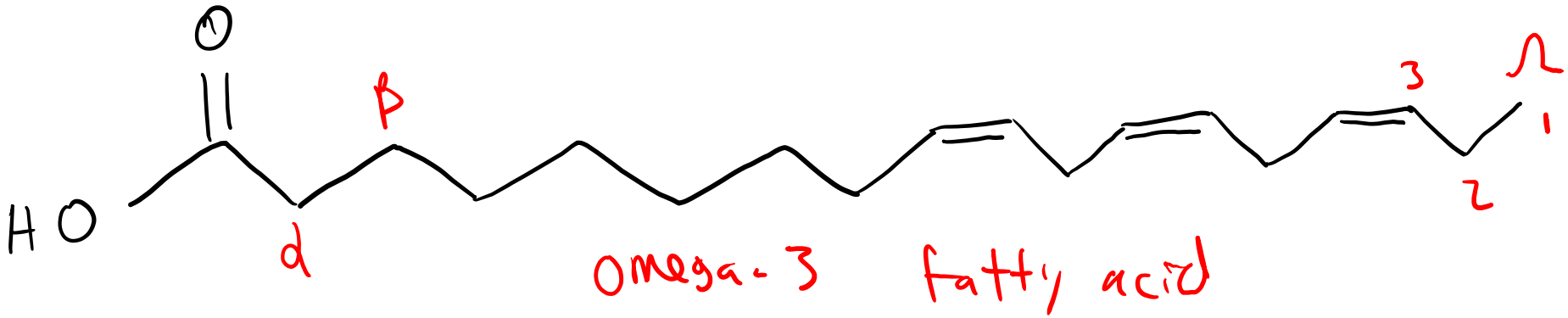
why so low?! very acidic for C-H!

Ch 21: "Alpha Carbon" Chemistry



α - carbon (alpha-carbon) :) 1 carbon away from C=O (carbonyl)

α carbon to C=O is relatively acidic



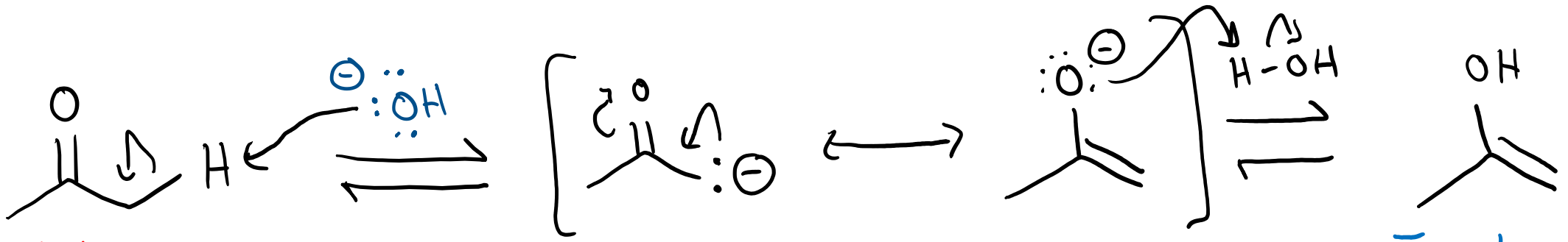
omega-3 fatty acid

Keto-enol Tautomerism

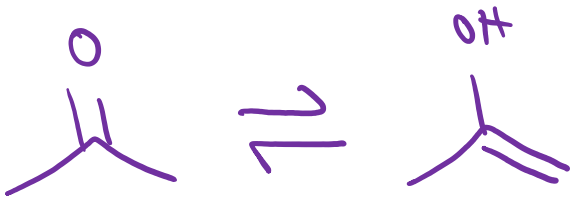
(21.1)

Tautomers: constitutional isomer that easily interconvert

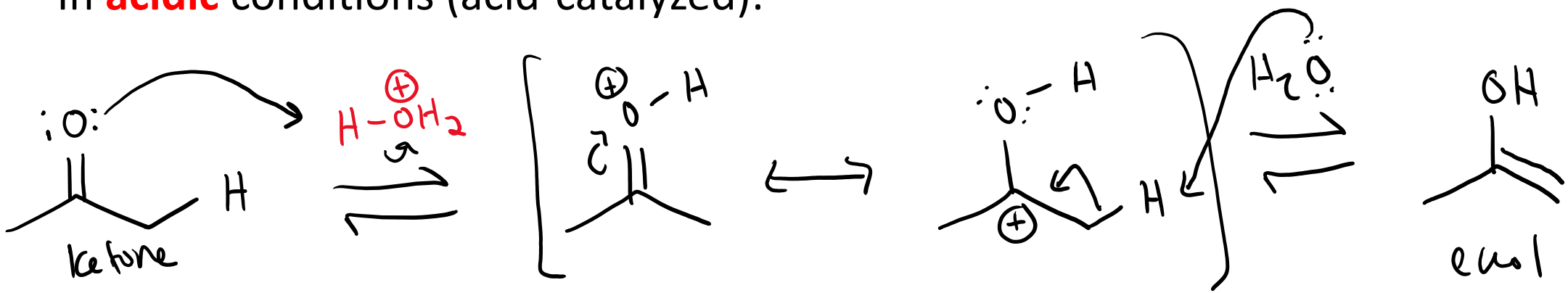
In **basic** conditions (base-catalyzed):



overall:



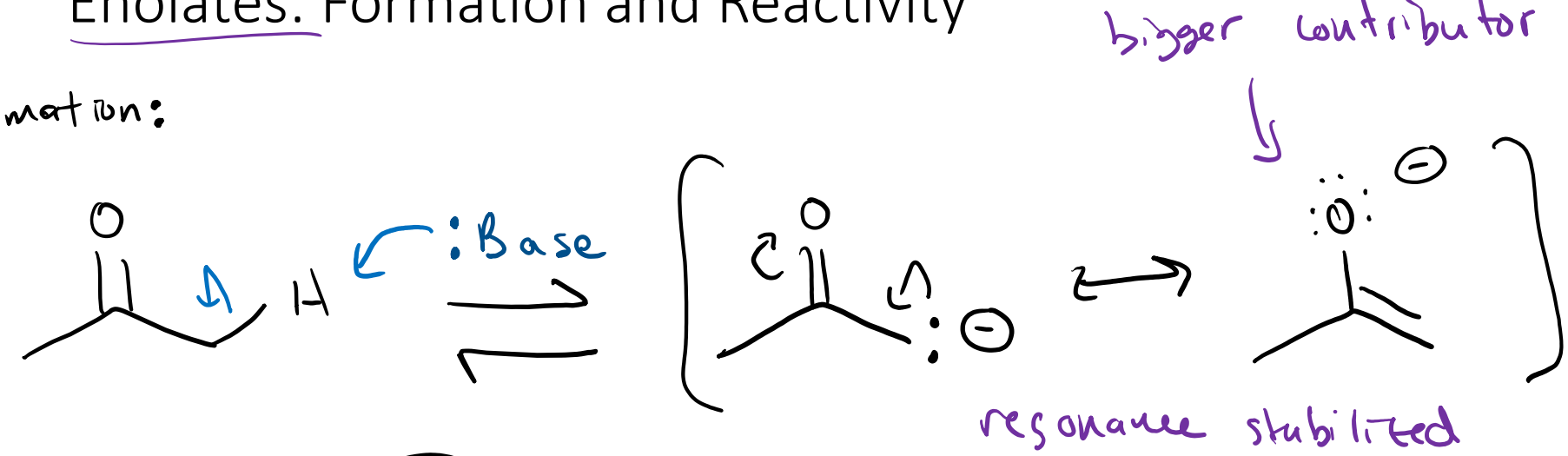
In **acidic** conditions (acid-catalyzed):



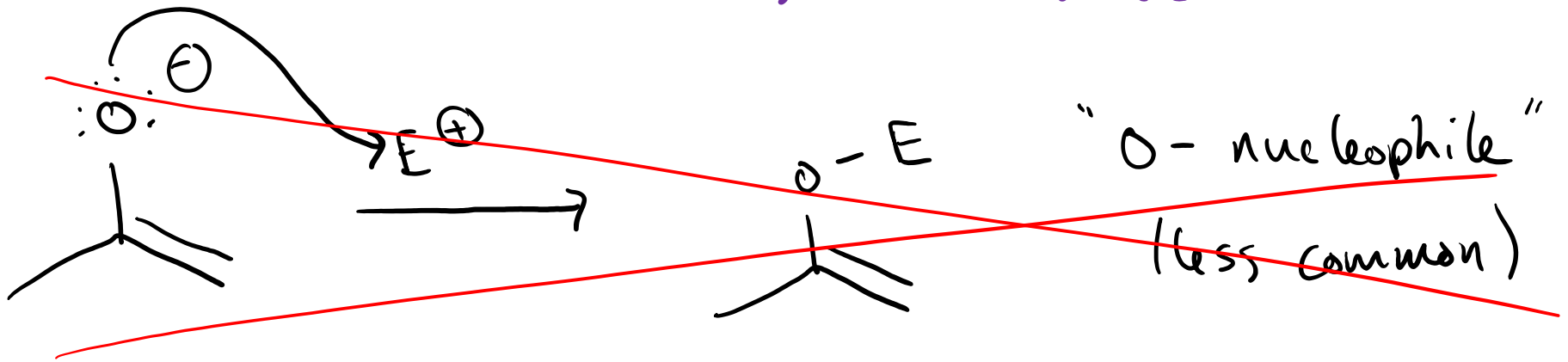
END OF 3/17 quiz material

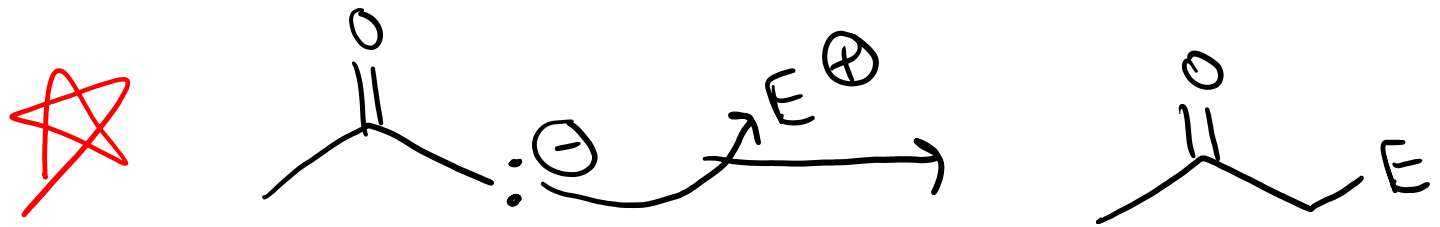
Enolates: Formation and Reactivity

Formation:



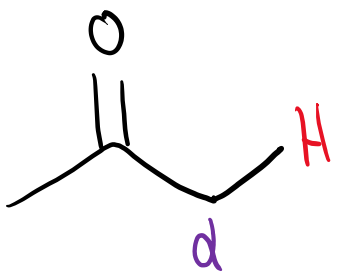
Reactivity:



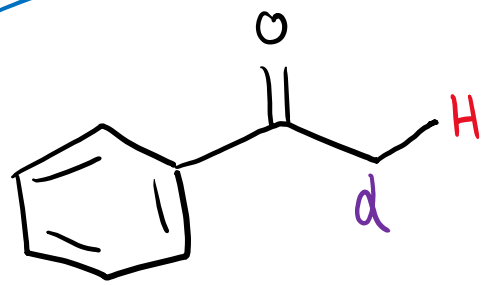


Forming Enolates Reversibly

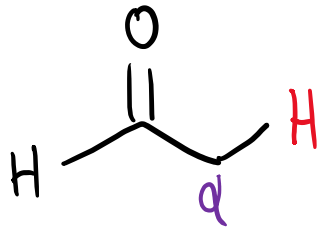
Deprotonating α-carbon to carbonyl



pka : 19



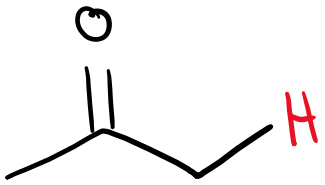
18



16.5

α-carbon pka ranges from ca. 16-20

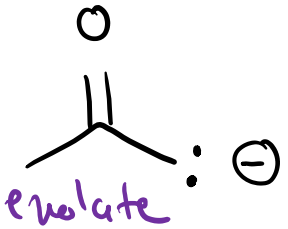
★ pka_H of the base you choose is crucial! ★



pka : 19

ketone

+ $:\ddot{O}Et$ ⇌



enolate

+ HOEt

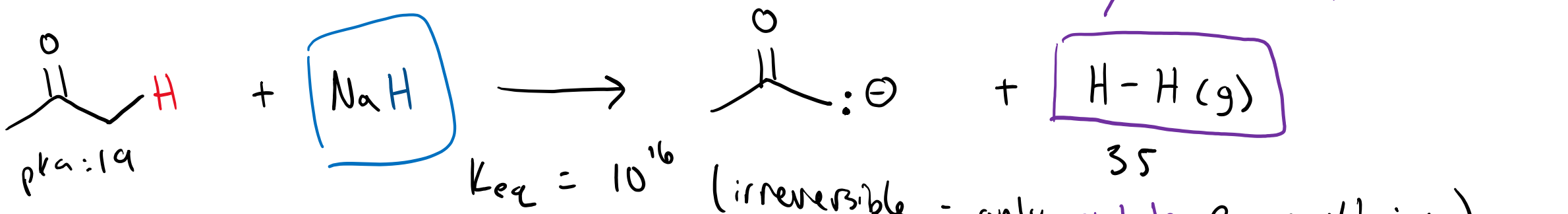
16

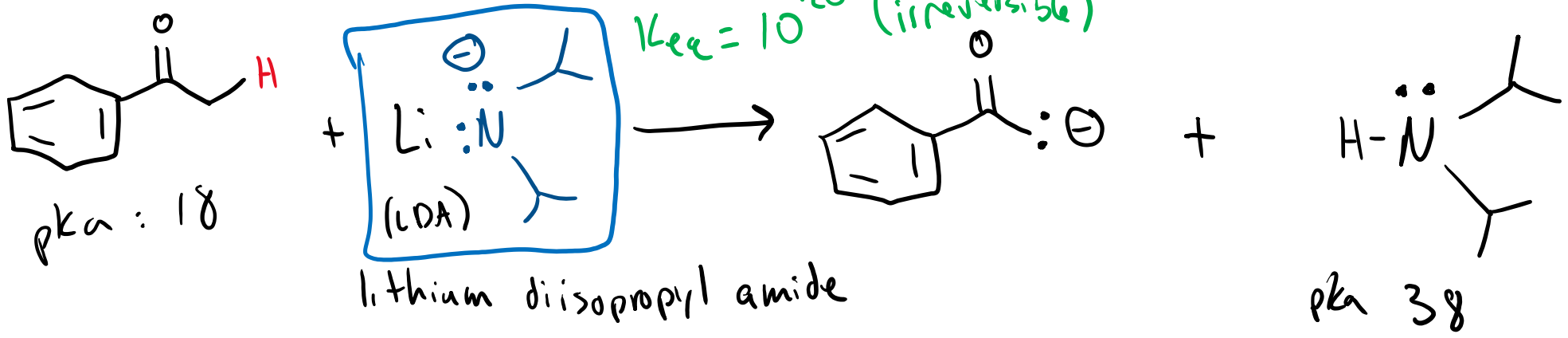
left side favored

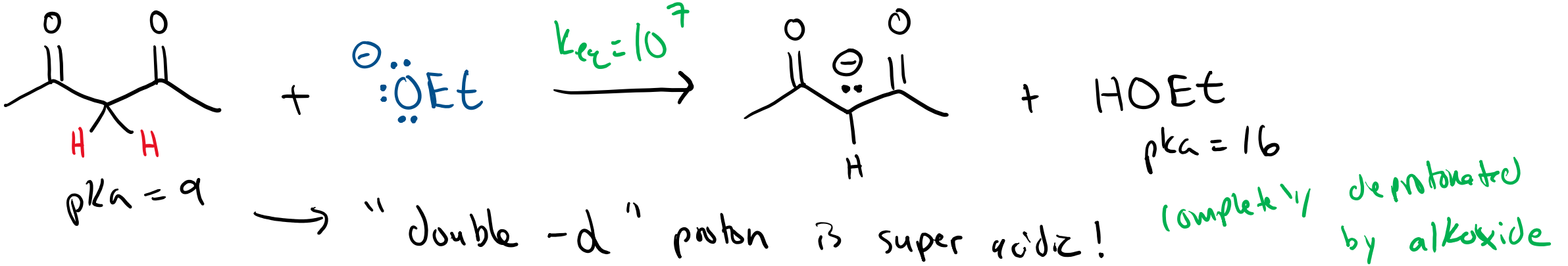
$10^{-3} = K_{eq}$

Both ketone & enolate are present @ equilibrium

Forming Enolates Irreversibly



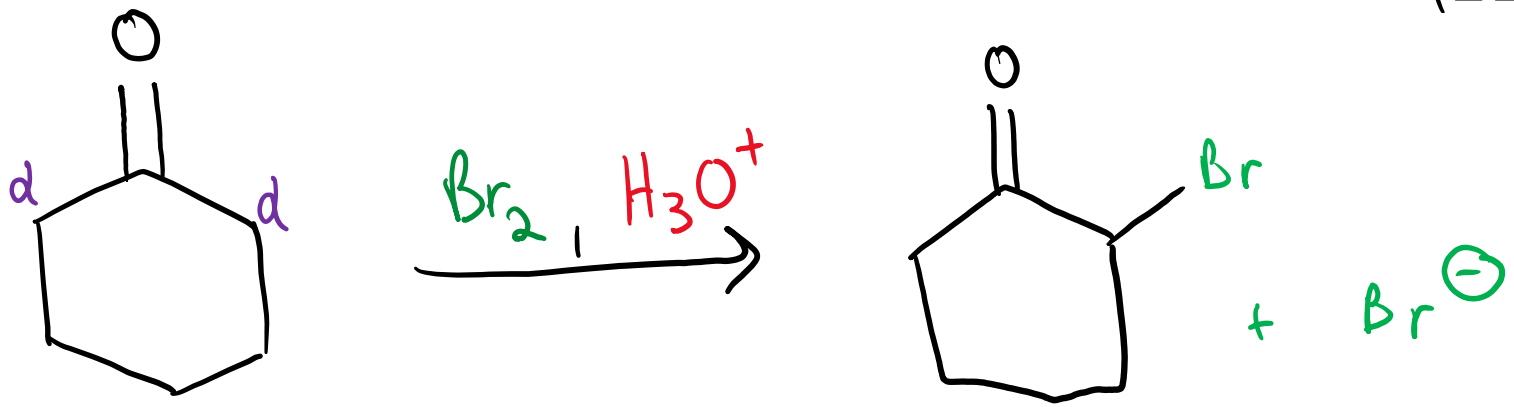




Alpha-halogenation

(21.2)

In acidic conditions:



Mechanism: