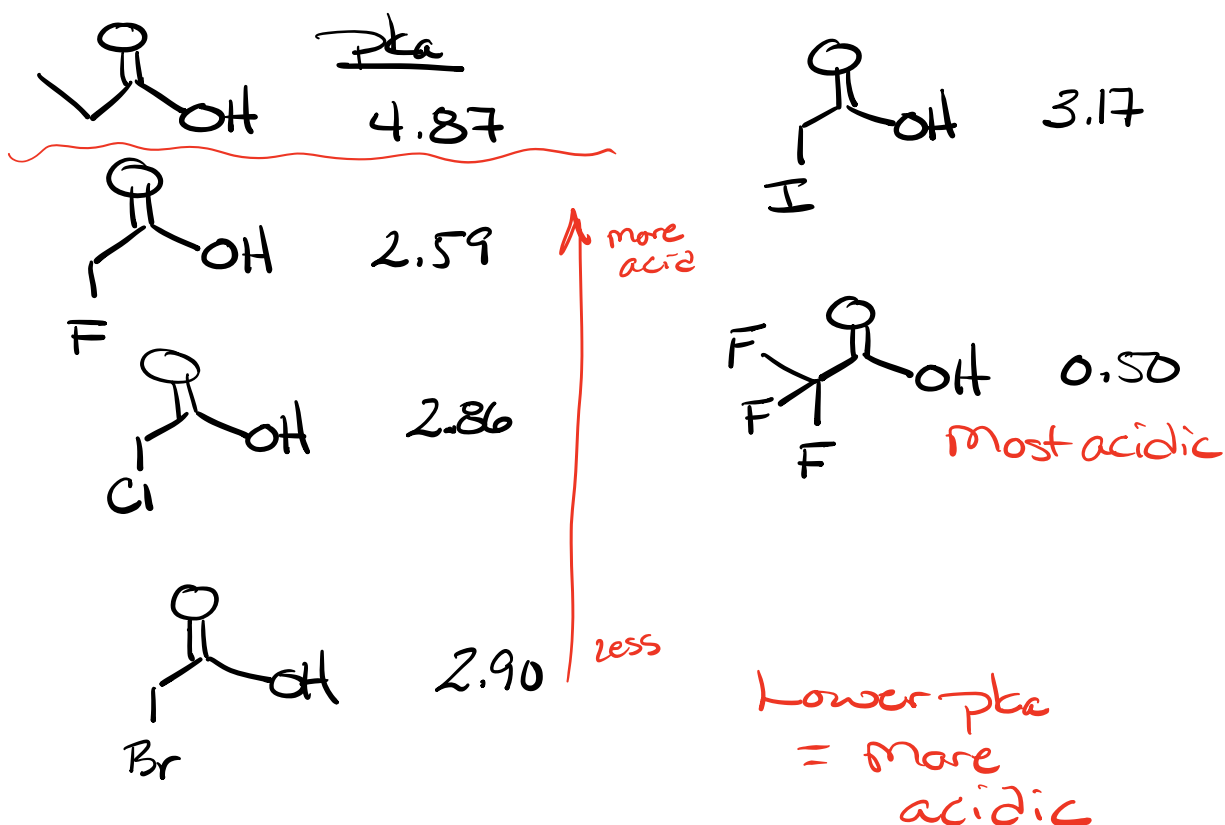
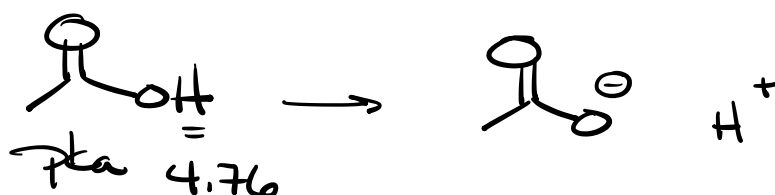


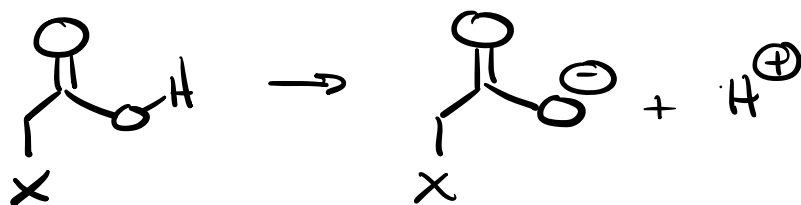
Acid/Base

- looked at resonance
- looked at Size
- looked at EN

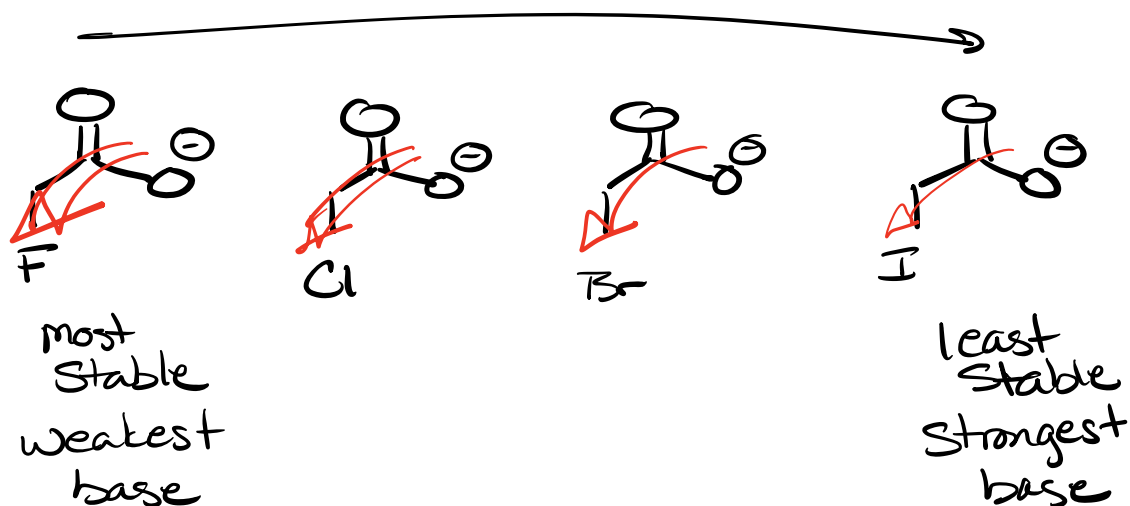
Induction



$\begin{matrix} \text{F} \\ \text{Cl} \\ \text{Br} \\ \text{I} \end{matrix} \nearrow \text{EN}$

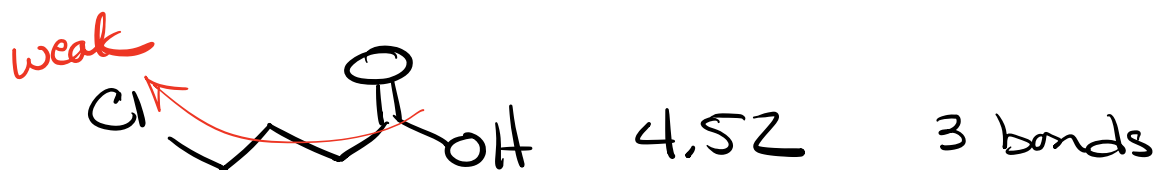
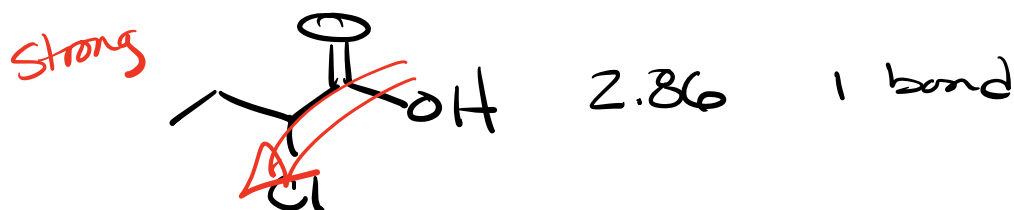
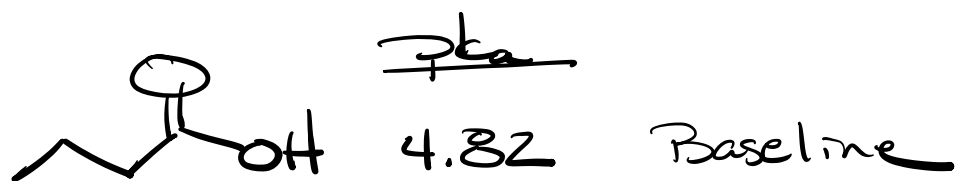
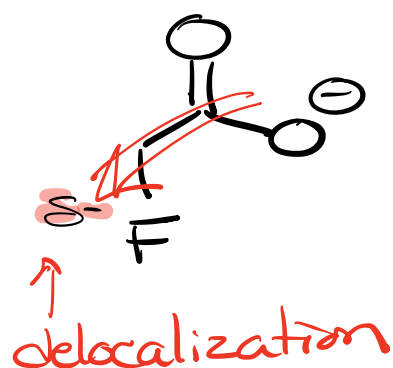


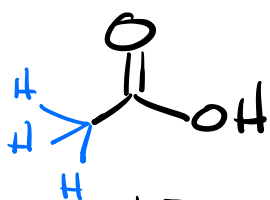
pK_a relates
to stability
of the
Conjugate
base



Delocalizing charge is a
stabilizing factor

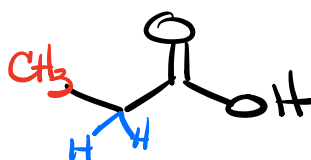
Induction is the pulling (or pushing)
of e^- through bonds.





4.76

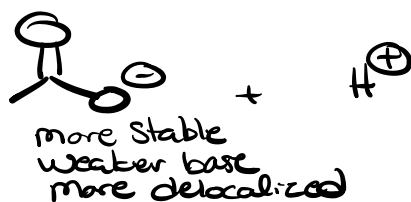
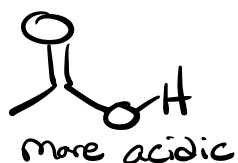
acetic acid
more acidic



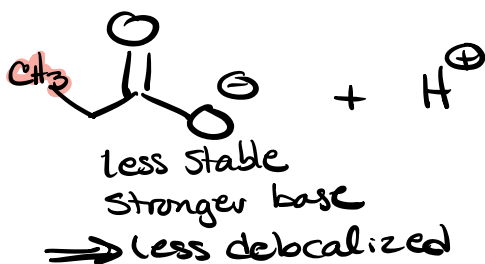
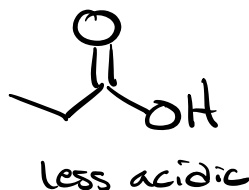
4.87

propanoic acid

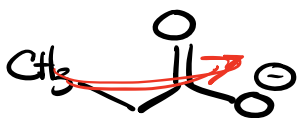
what is the
nature of the
methyl group?



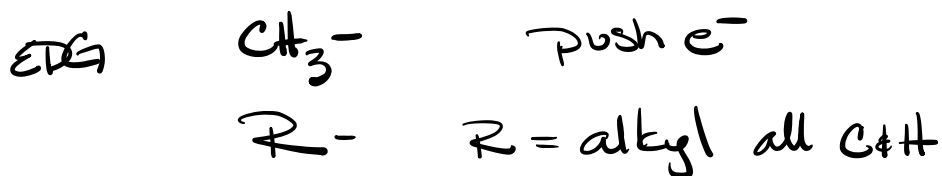
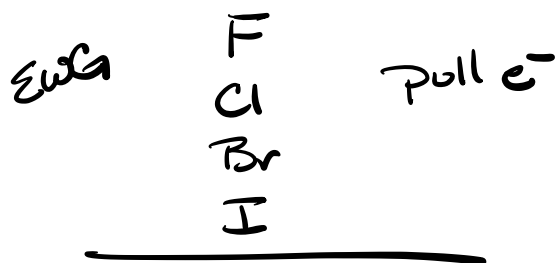
more stable
weaker base
more delocalized



less stable
stronger base
⇒ less delocalized



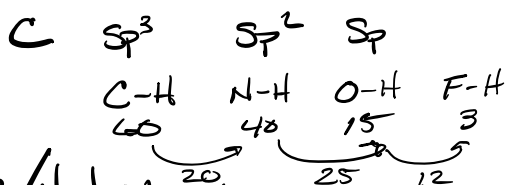
push electron density
localizing charge
less stable
stronger base



Pauling's Factors

20-25

Electronegativity/Hybridization



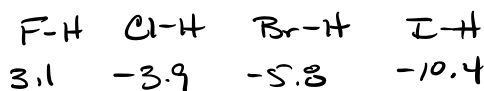
~10

Resonance



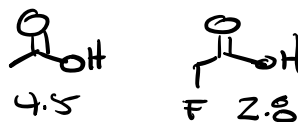
~5-6

Size



1-3

Induction

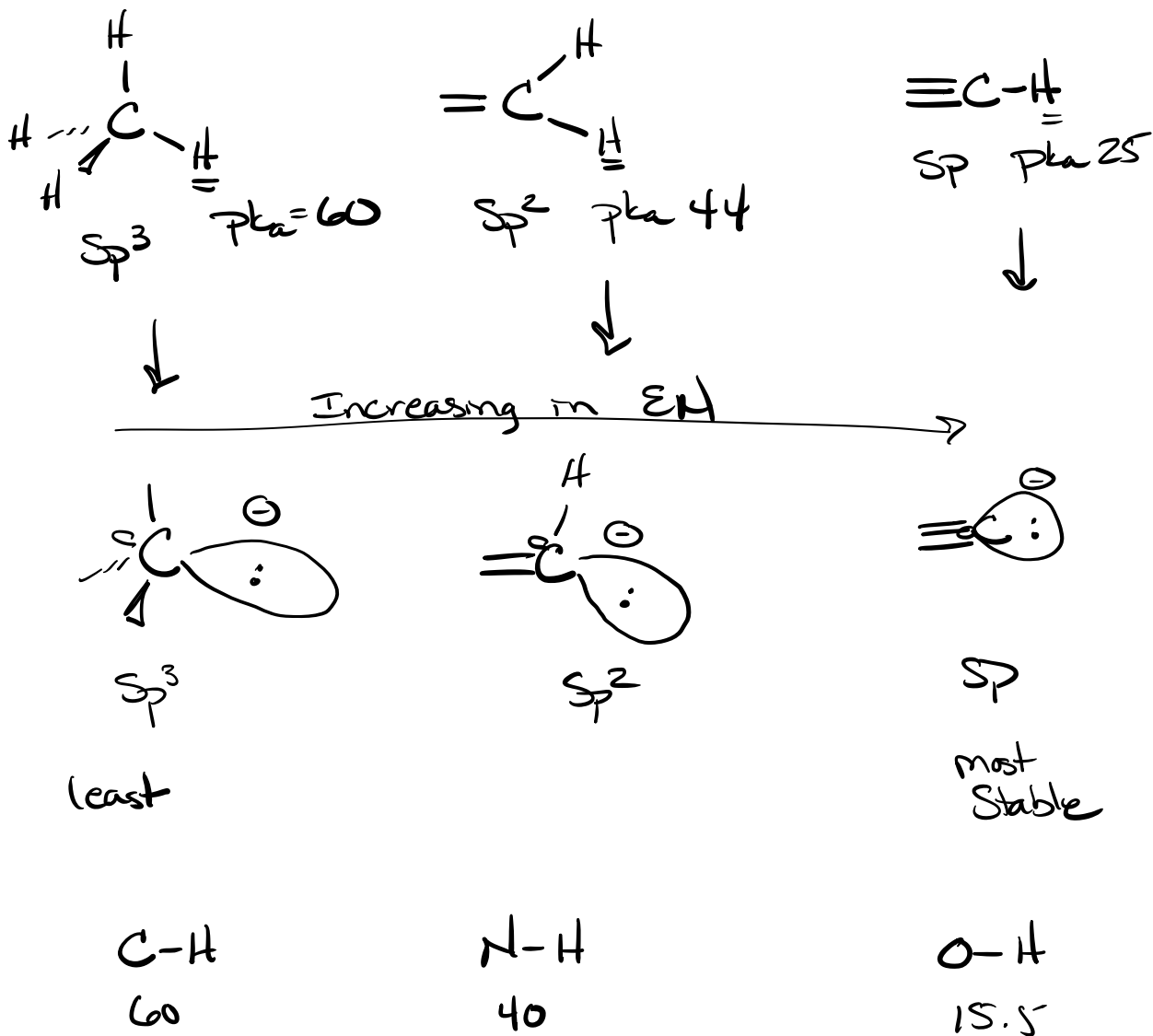


Book ARIO

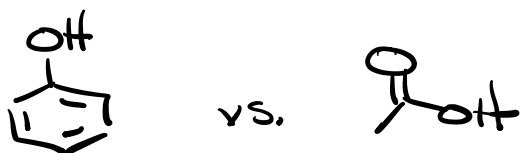
strongest

- A atom
- R Resonance
- I Induction
- O orbital (Hybridization)

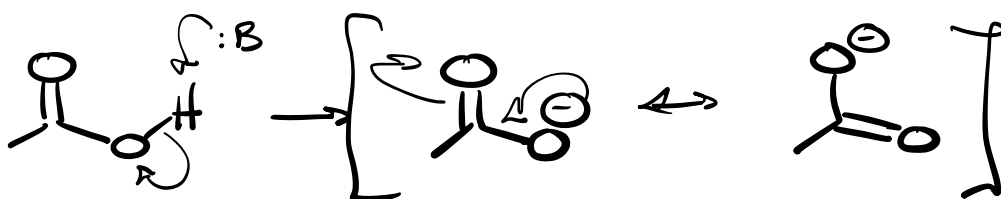
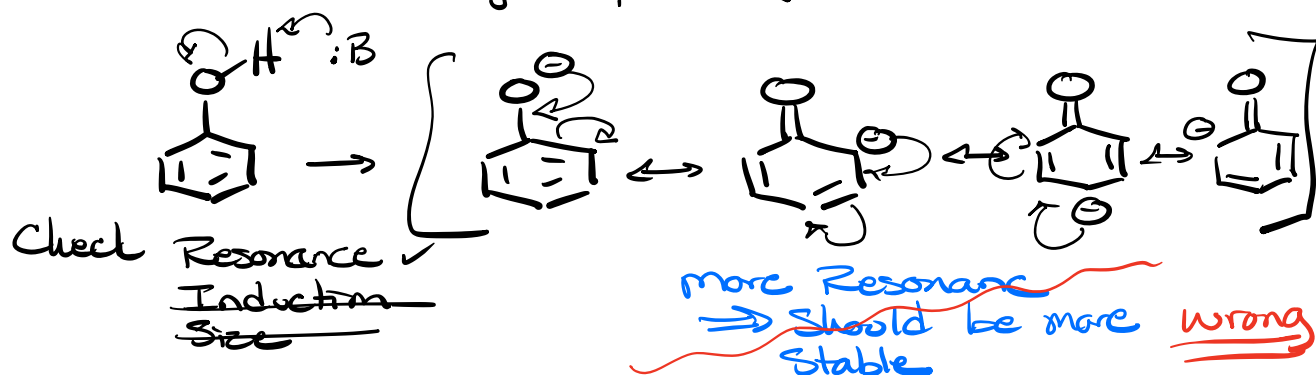
How does hybridization fit in?



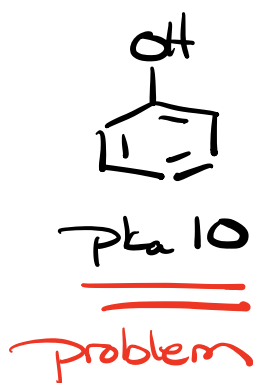
which is more acidic?



① Look at charged species (most often that's the Conj.)



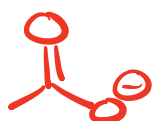
② Which Conj. is more Stable?



It is not the total # of Resonance Contributors

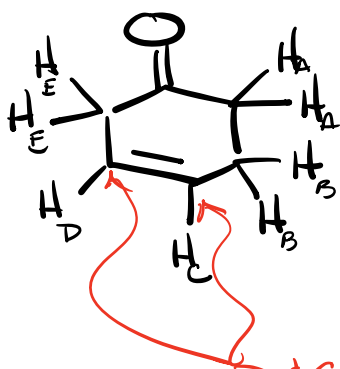
⇒ It is about the quality of the Contributors

$\text{—}\overset{\ominus}{\text{O}}$ is way way more stable than
a $\text{—}\overset{\ominus}{\text{C}}$ due to EN!



This one structure is worth 5 structures
with \ominus on Carbon!

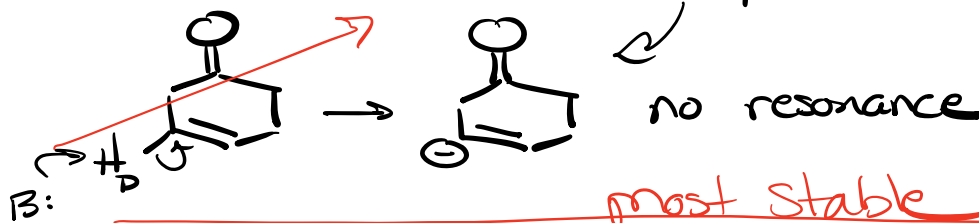
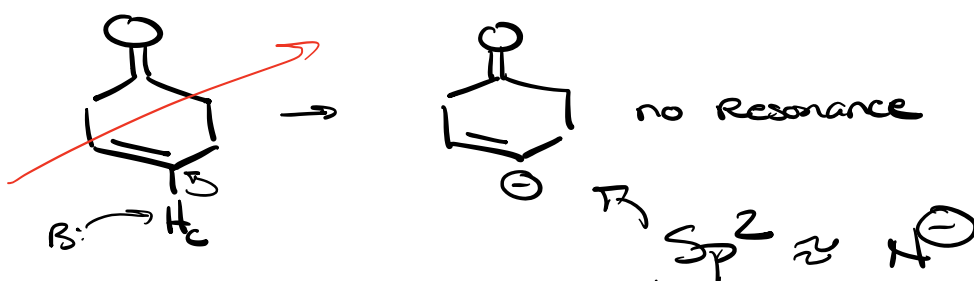
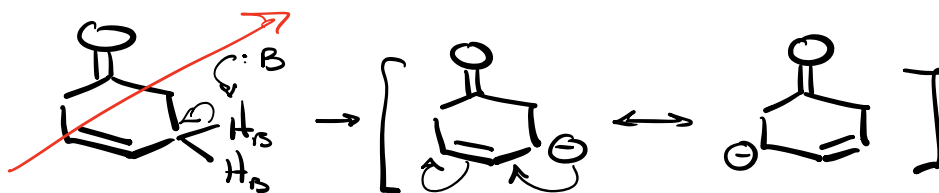
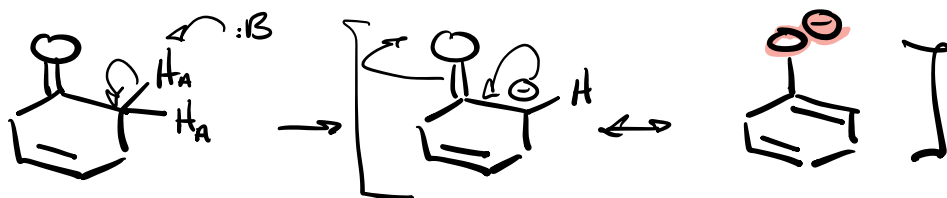
Cannot just Count resonance contributors
We have to look at where the negative
is and add weight to our individual
Structures



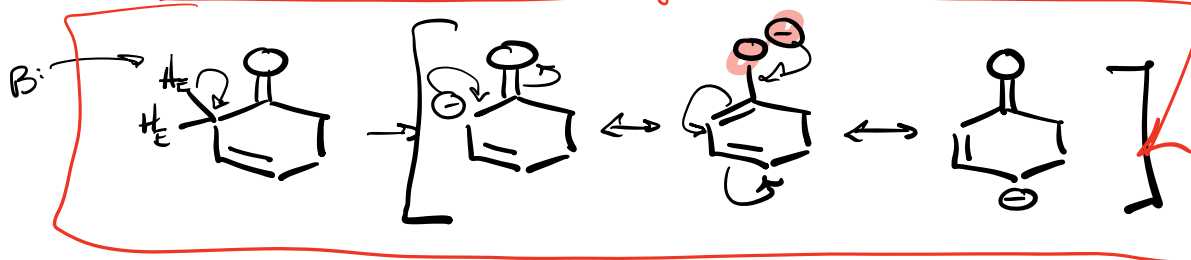
which is the most acidic proton on the molecule?

EN/hybridization
Resonance
Size
Induction

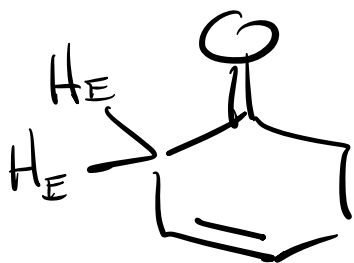
D & C most acidic? Tempting but leads to wrong answer



most stable



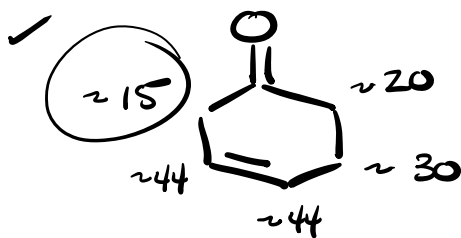
O^{\ominus} is more stable than N^{\ominus}



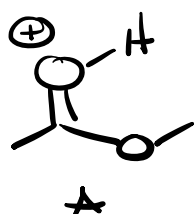
the conjugate base of H_E is most stable, (least reactive and the weakest base.

This makes H_E the most acidic proton!

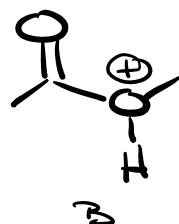
pK_a Values



which molecule is most acidic?



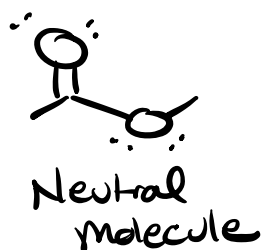
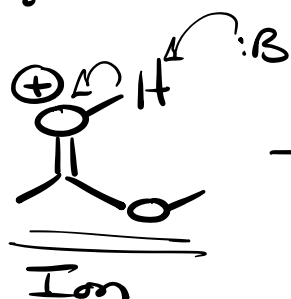
vs.



~~① Deprotonate~~ Error

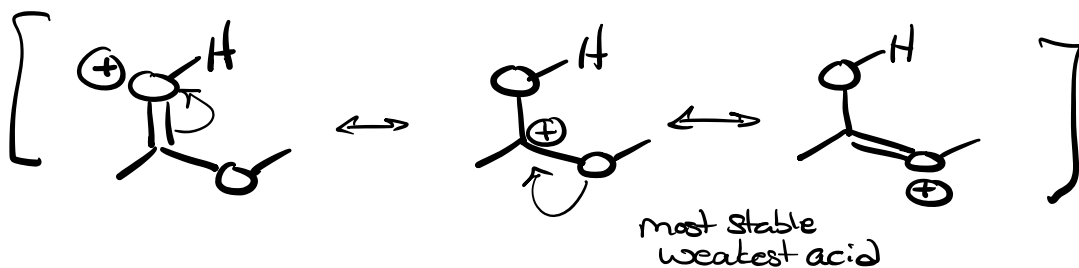
② look for resonance
look for induction

⋮



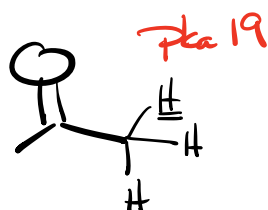
This is where
we need to
look
at the
Charged Species!

Tools do not work
on a neutral
molecule!



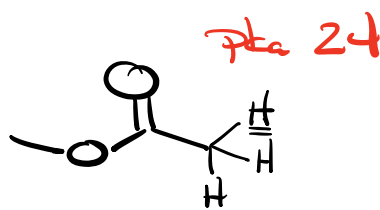
Stronger acid.

which is more acidic

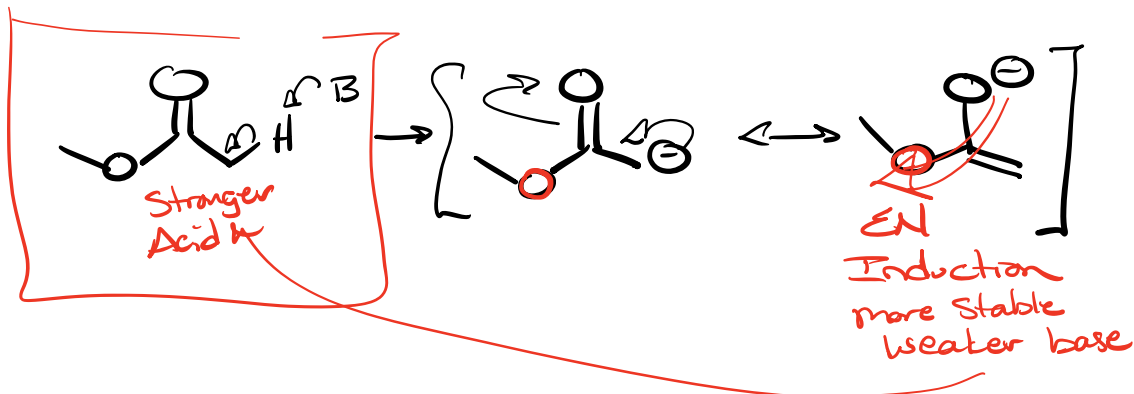


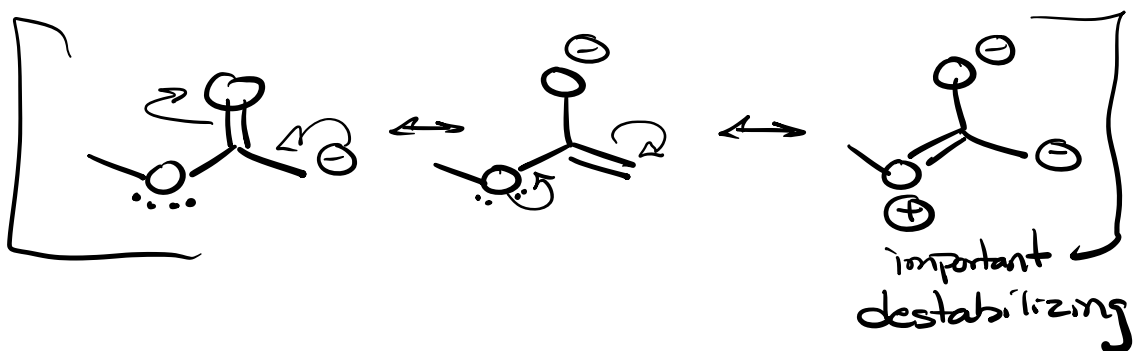
pKa 19

vs

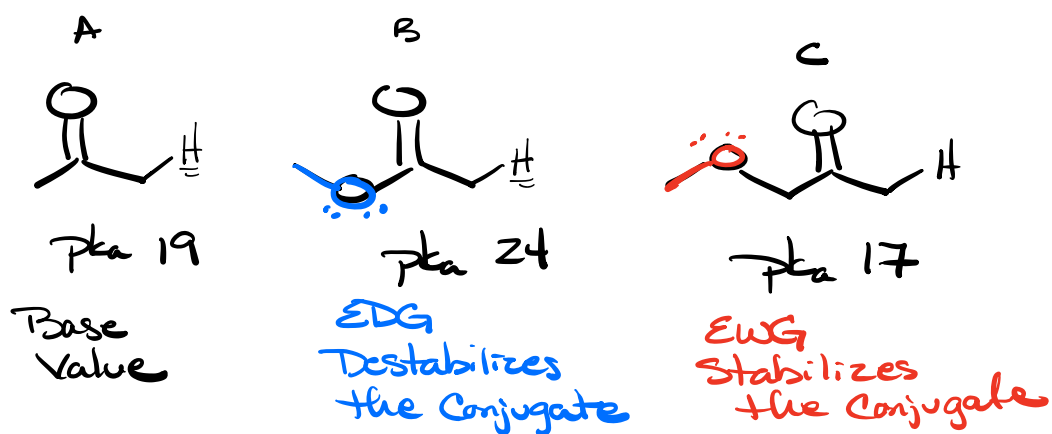


pKa 24





When an oxygen can push \rightarrow it will push!



Connectivity Can change how a group Functions!