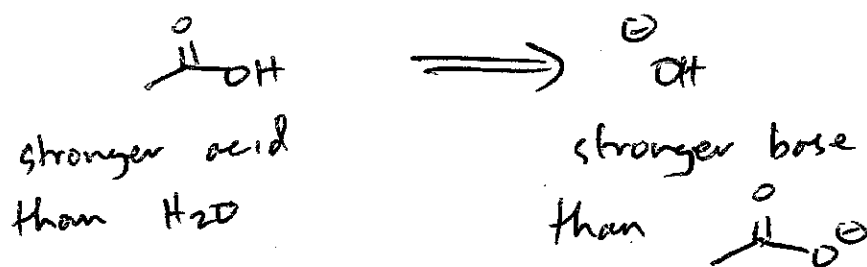
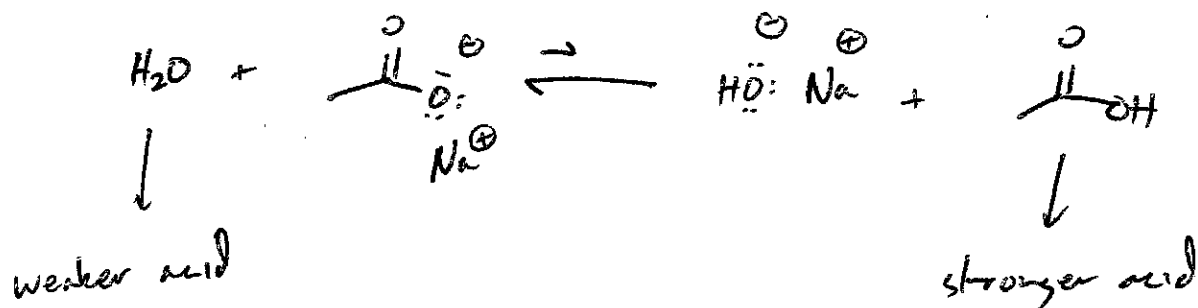


Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

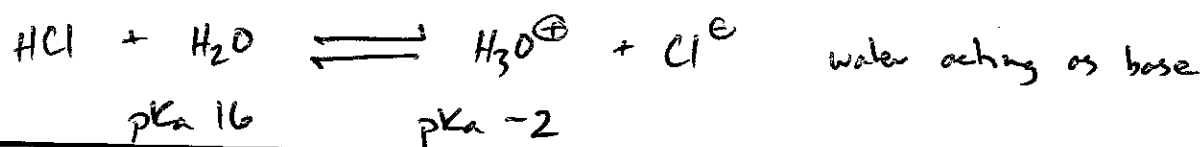
Recall: pKa scale for acidity (stronger acid = lower pKa)

• Students must memorize characteristic pKa values for common functional groups (Table 3.1)

Example: Predict position of equilibrium



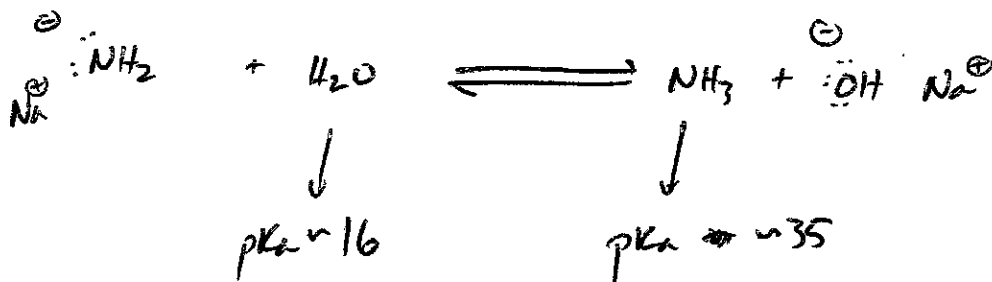
• Potential source of confusion \rightarrow amphoteric acids (multiple protons, \therefore multiple pKa values)
 H₂O - acid and base



Course 343Lecturer Hockenberger - GellmanDay FriDate 9/20Notes Taken By AdamsTotal # of Pages 4

Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

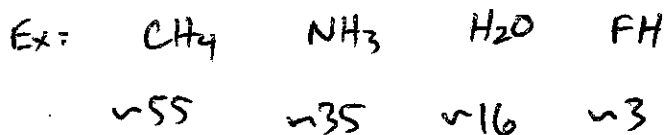
- water acting as acid:



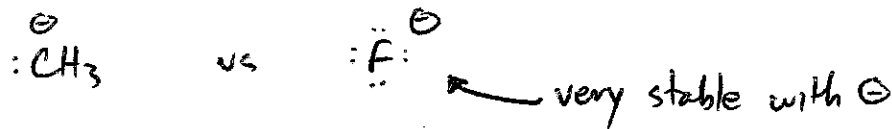
• Relationship between molecular structure and acidity
 (qualitative vs quantitative) (see text)

1) Periodic trends

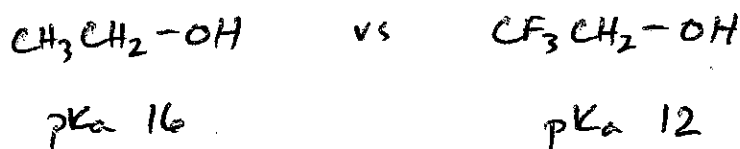
Row: Other things being comparable, acidity increases ~~left~~ ^{left} → right



Rationale: Electronegativity of atom that bears charge in conj. base



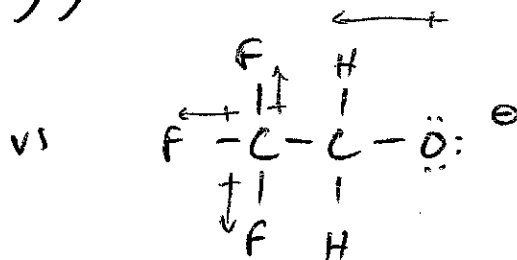
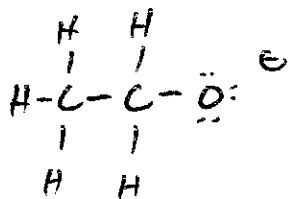
2) Effects of polar substituents (bond dipoles - impact on charged species)



Course 343Lecturer Hackenberg - GellmanDay FriDate 9/20Notes Taken By AdamsTotal # of Pages 4

Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

Again, compare stability of conjugate base



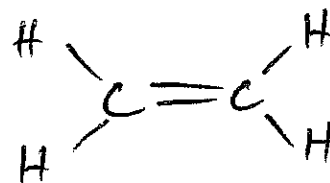
↓
 Weaker base due to inductive
 e^- -withdrawing effect of CF_3

Ch 4 - Alkenes

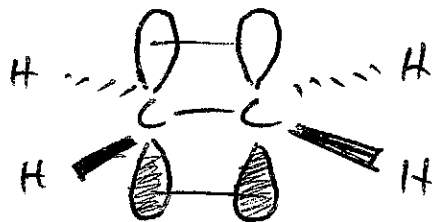
Rec. problems: 1, 2, 5-10, 12-26, 29-37, 39 + 40 (structures, not names)

41-43, 46-53, 55-58, 60-66, 68

• Simplest alkene: C_2H_4 (ethylene)



• Recall: double bond has $\sigma + \pi$ components

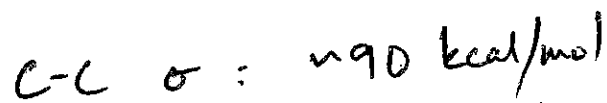


Depiction of ethylene that emphasizes π -bond

Submit a *Single-sided Copy* to the Undergraduate Office
NO NOT STAPLE - ONLY WRITE NOTES INSIDE THE SQUARE BELOW

• Because of their displacement from the internuclear axis, the π e^- 's are less tightly "held" than any other e^- 's

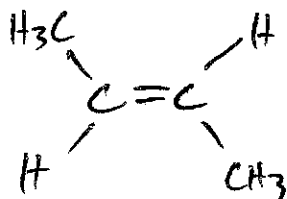
• Difference in ~~energy~~ energies associated w/ breaking σ vs π C-C bond:



• The spatial features of π -bonding and the cost of breaking a π bond lead to "geometric isomerism" (stereoisomerism) in many alkenes.

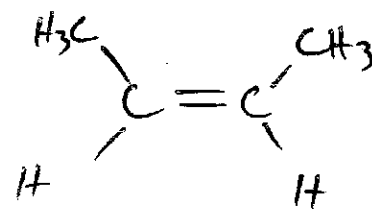
Ex: 2-butene $\text{CH}_3\text{-CH=CH-CH}_3$

2 stereoisomers



trans-2-butene

vs



cis-2-butene