Course Chem 343 Lecturer Gellman 11AM

Day Friday Date 9-16-11

Notes Taken By Derek Salter Total # of Pages 5

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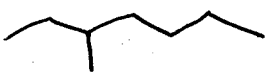
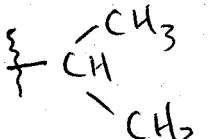
Recall: Nomenclature...

Substituents (ex.  3-methylheptane)

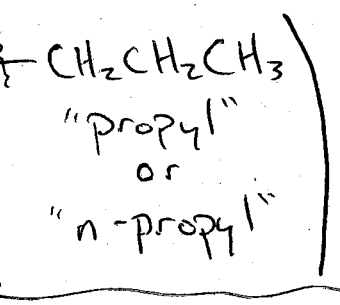
Methane (CH_4) ---> Methyl ($-CH_3$)

Alkane Vs. Alkyl substituent

Branched alkyl:

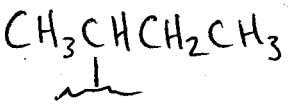


isopropyl

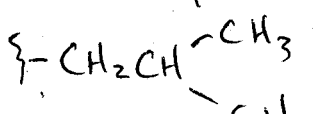


4-carbon: ($-CH_2CH_2CH_2CH_3$)

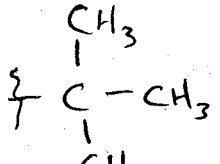
"butyl"



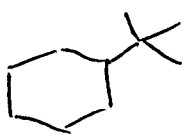
"sec-butyl"



"isobutyl"



"tert-butyl"

Ex:  t-butylcyclohexane

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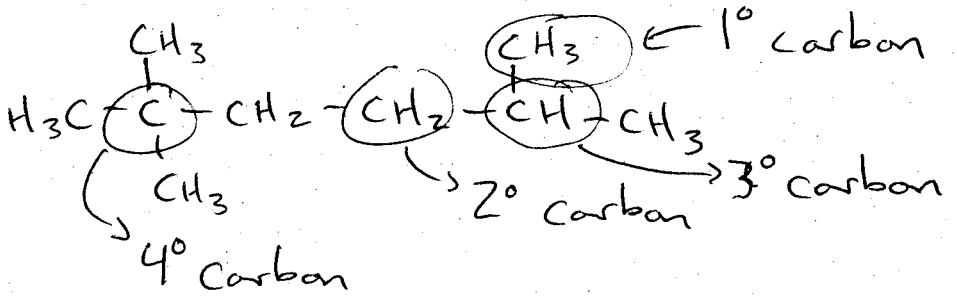
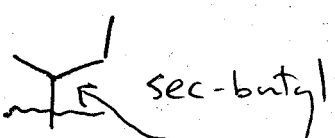
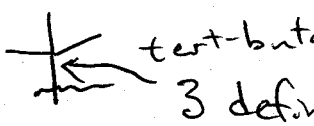
Way of categorizing C's based on # of carbon bonding partners. 1°, 2°, 3°, 4°

Consider:





2 defined carbon bonding partners



3 defined carbon bonding partners

"Functional group" - sets of atoms, often involving atoms other than C&H, that are commonly observed to display characteristic reactivity properties.

Ex: –OH = hydroxyl group HO–CH(CH3)–CH3 isopropanol

= carboxylic acid

$CH_3CH_2CH_2C(=O)OH$

butanoic acid

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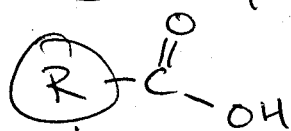
Class of carboxylic acids:



↳ any alkyl group
(or any carbon containing group)

$CO_2 \equiv O=C=O$

Fully oxidized carbon

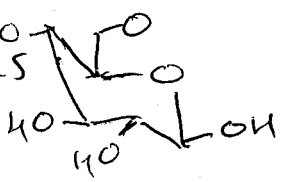
Petroleum - hydrocarbons, mostly alkanes & "aromatics" (⬡)

Alkanes ≡ fully reduced carbons

Petroleum $\xrightarrow{\Delta}$ Heat + CO_2 + H_2O

Plants:

$CO_2 \xrightarrow{h\nu}$ carbohydrates



lightly oxidized relative to alkanes

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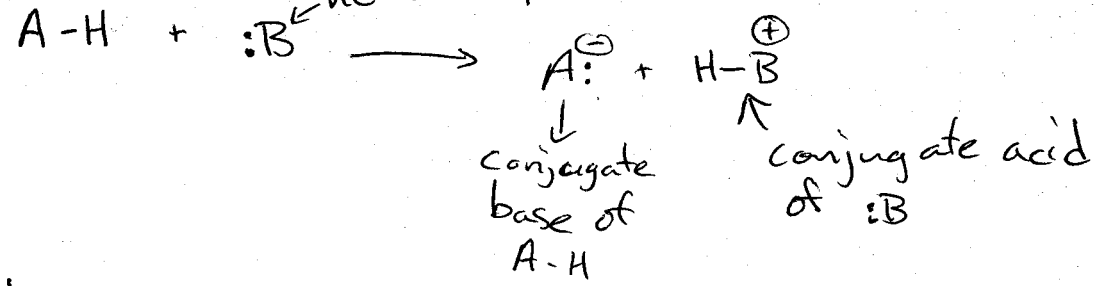
Ch. 3 Acid/Base rxns & beyond.

Rec. Problems - 1-10, 15, 21, 24-37, 39, 42 a & c, 43-45, 49, 50.

Recall: Acid-base reaction ≈ proton transfer

$H^{\oplus}$ = proton

General



Reaction: process in which bonding changes.

How does this process occur?

- what is the reaction mechanism?

Lewis Acid/Base Theory

⇒ focus on $e^{\ominus}$ pairs (lone pairs) rather than $H^{\oplus}$

Lewis base - $e^{\ominus}$ rich species ($e^{\ominus}$ lone pair donor)

Lewis acid - $e^{\ominus}$ poor species ($e^{\ominus}$ lone pair acceptor)

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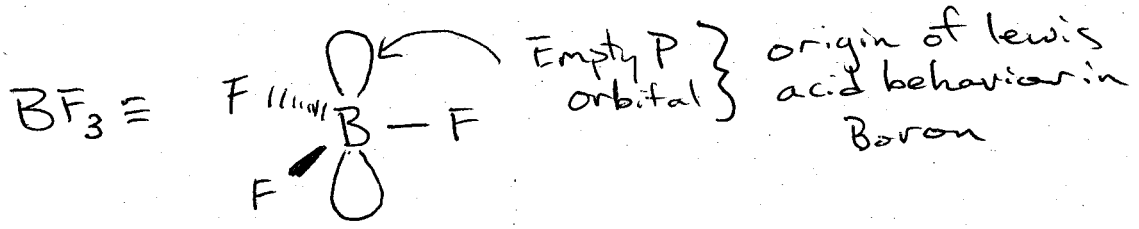
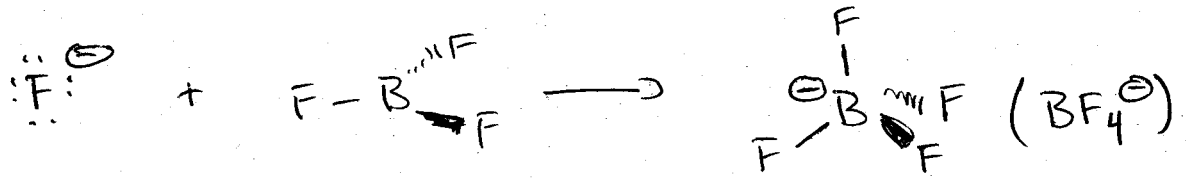
Ex: of non-protan lewis acid



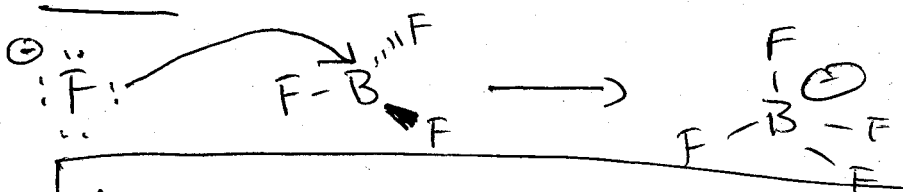
Ge⊖ in valence shell



"Lewis acid-base adduct"

Lone pair becomes bond

Mech:



Arrow starts at electron source & ends at electron destination * very important

Reverse!