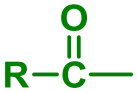
Overheads: - Outline

Quiz # 4

Intro to Carbonyl Compounds (rest of course!)

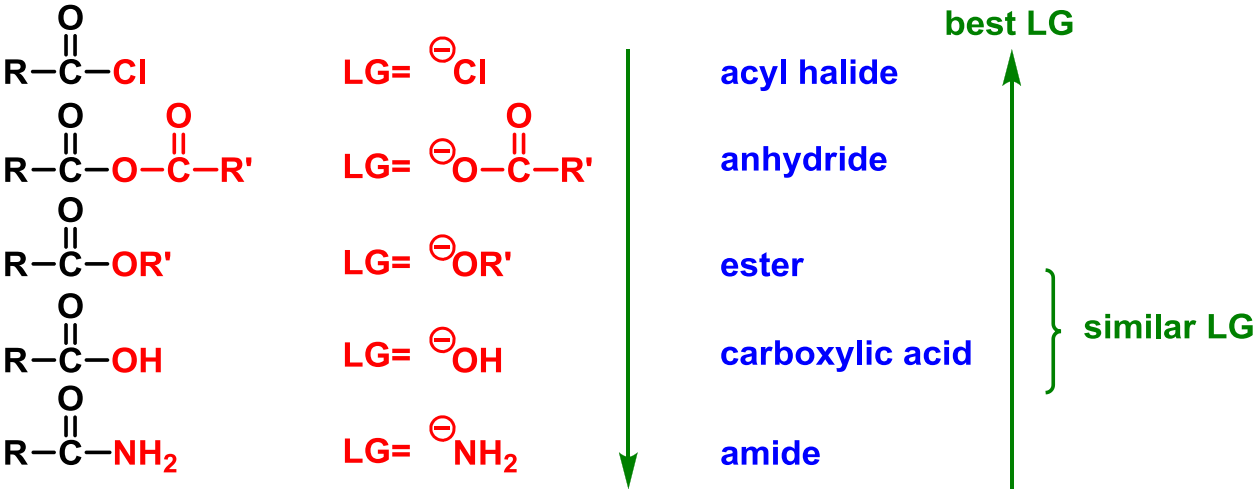
Carbonyl group: 

Acyl group: 

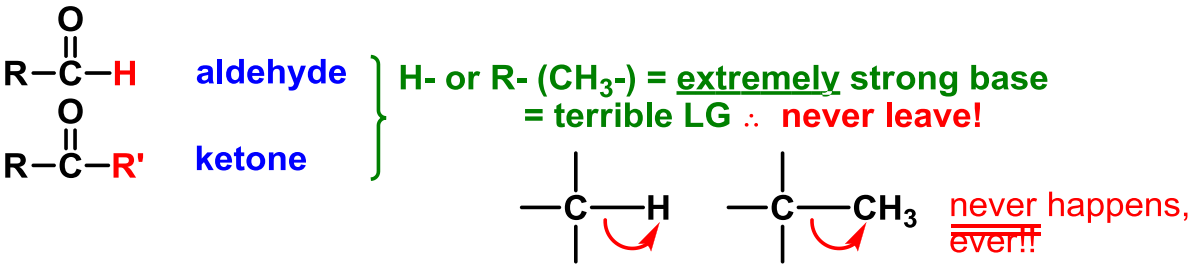
2 Main Categories

- is there a LG attached to the carbonyl?

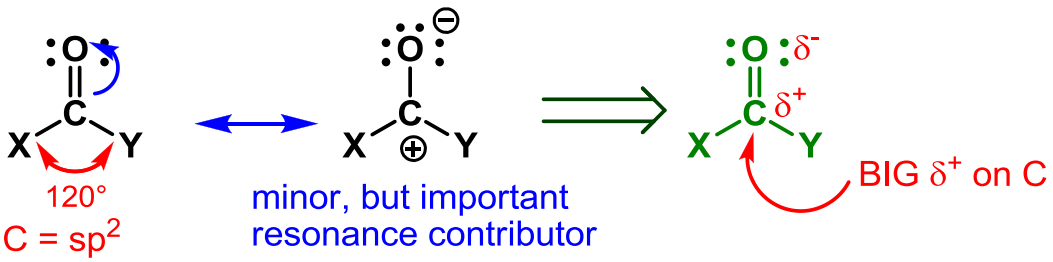
A) With LG Ch. 16 (17 in 6th Ed)



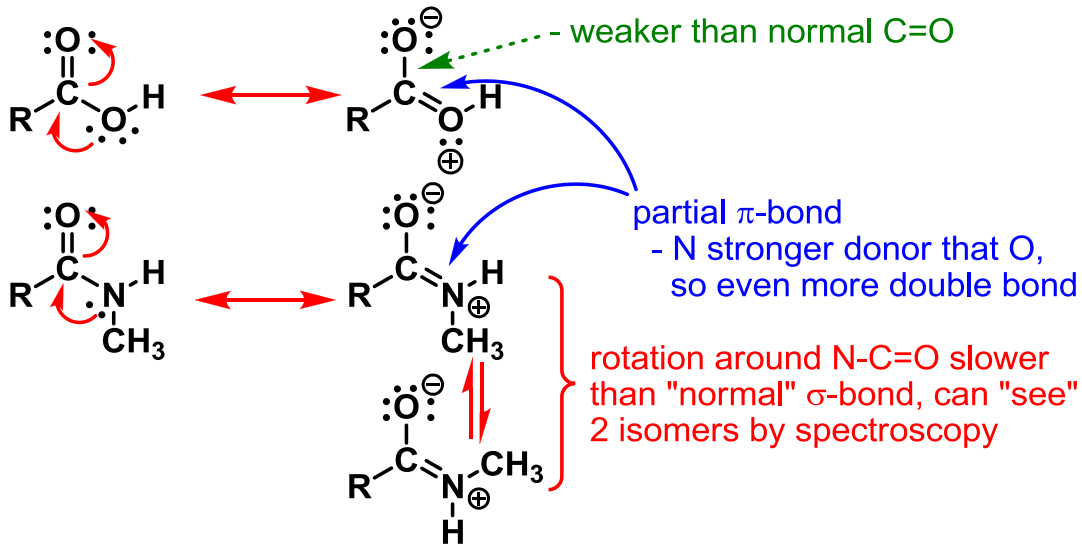

B) No LG Ch. 17 (18 in 6th Ed)




Structure of Carbonyl Group

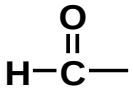


- if "X" or "Y" has lone pair, can do resonance:

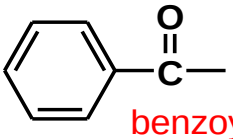


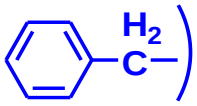

Common Acyl Groups:

acetyl (= 2C)



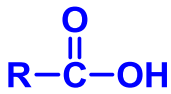
formyl (= 1C)



benzoyl (recall: benzyl=  )

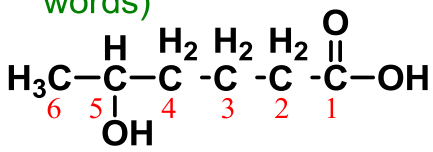
Naming Carbonyl Compounds:

- acyl group gets priority (> OH > $NH_2$ > *etc*)

1) Carboxylic Acids: 

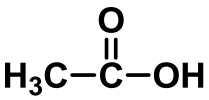
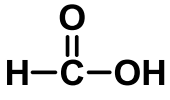
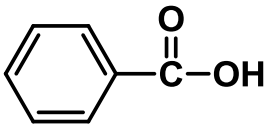
⇒ choose longest C chain that includes the C of the C=O (= C#1)

⇒ name after alkane with that # of C's (incl C=O), replacing -e with "-oic acid" (2 words)

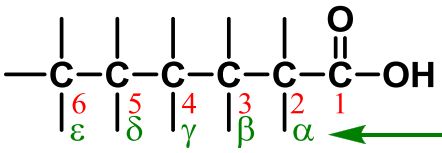


5-hydroxyhexanoic acid

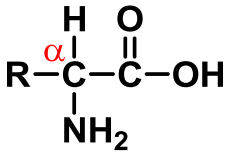
Common Names:

| | IUPAC | Common |
|---|---|---|
|  | ethanoic acid | acetic acid (vinegar!) = 2C |
|  | methanoic acid | formic acid = 1C |
|  | benzoic acid | |

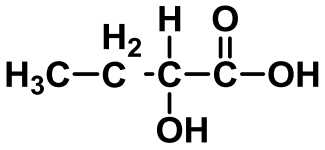
Alternate numbering system:



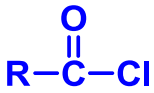

can also use Greek letters,
starting with C next to C=O (= C#2!)




α-amino acids

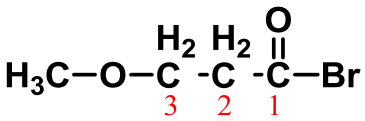



α-hydroxybutanoic acid
"α-hydrox"

2) Acyl Halides: 

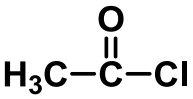

⇒ name after corresponding carboxylic acid (Cl replaces OH)

⇒ replace "-ic acid" with "-yl chloride" (or fluoride *etc*) (still 2 words)

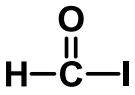



3-methoxypropanoyl bromide

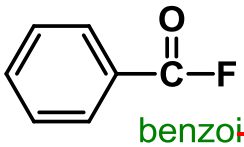
Common Names:




acet~~ic acid~~
acetyl chloride




form~~ic acid~~
formyl iodide




benzo~~ic acid~~
benzoyl fluoride