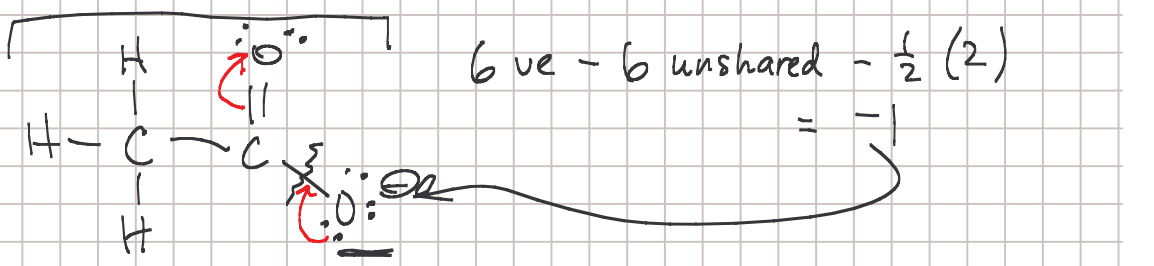
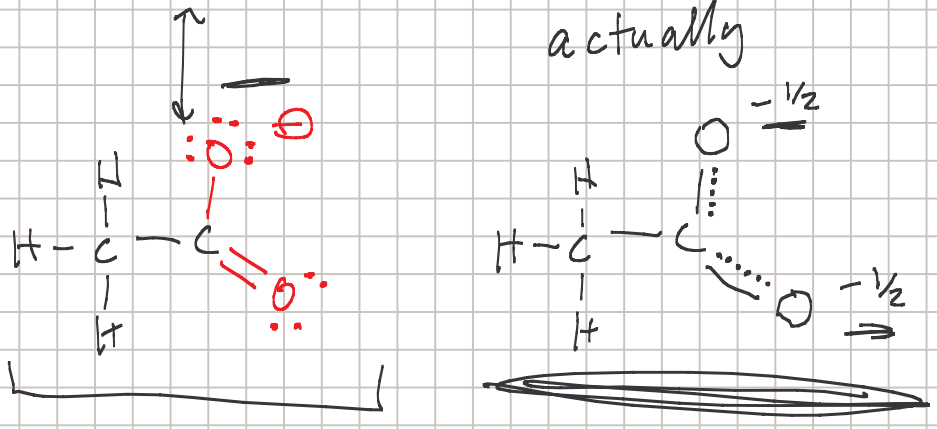
Ch 1

Note Title 8/26/2005

Resonance structures rules

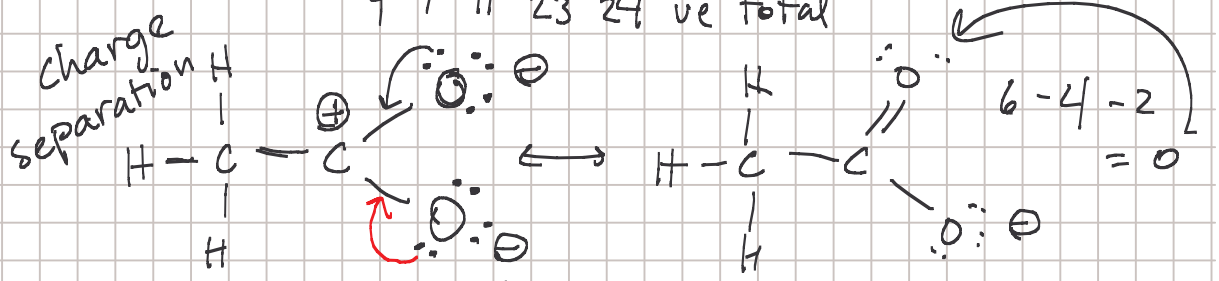
1. Res. str. must be valid Lewis str
2. Only electrons may move
   nuclei can't move
   bond angles must stay same
3. "major" res. str. = lowest energy (most stable)
   - all octets full (or as many as poss)
   - least amt. of charge separation
   - ⊖ on more e-neg atoms (O/N/S)
4. resonance stabilization adds stability
   - a charge is declocalized over more than 1 atom



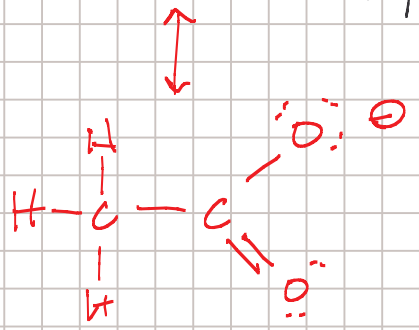


Acetate ion $[CH_3CO_2]^{\ominus}$

4 7 11 23 24 ve total



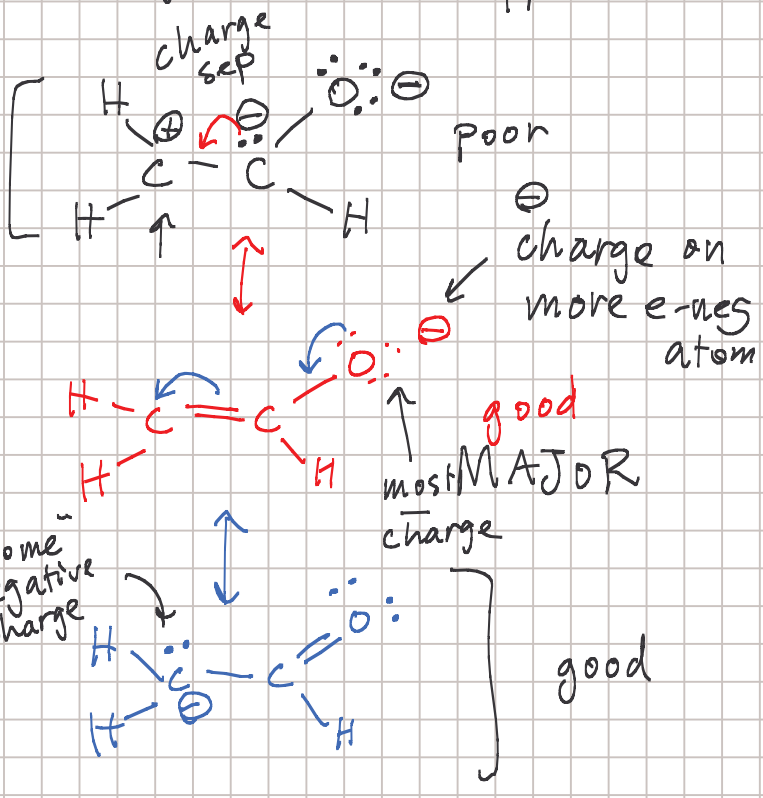
(: 4 - 3 = 1

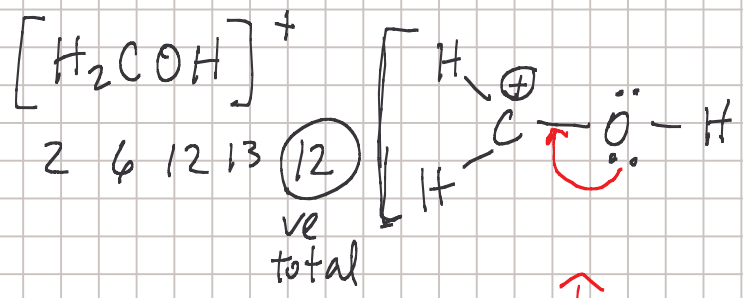


$[CH_2CHO]^{\ominus}$

draw important resonance structures
label major struct if applicable

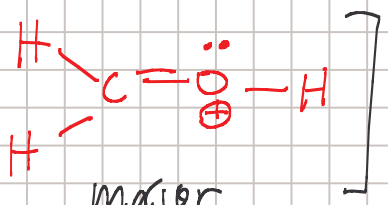
4 6 10 11 17 (18) ve total





Simek

sol man

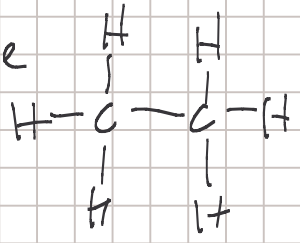


major

all octets full (more bonds too)

condensed structures

ethane



Lewis str.

$CH_3\,CH_3$

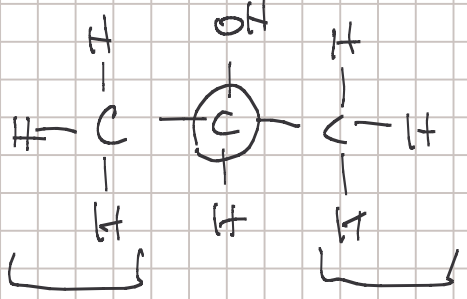
condensed struct.

hexane 6-C chain

$CH_3\,\underline{CH_2}\,\underline{CH_2}\,\underline{CH_2}\,\underline{CH_2}\,CH_3$

$CH_3\,(CH_2)_{\underline{4}}\,CH_3$

isopropyl alcohol

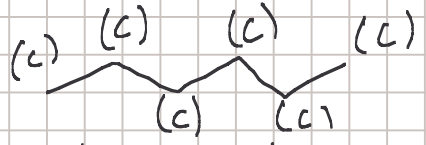


$(CH_3)_2\,\underline{C}HOH$

Line-angle formula

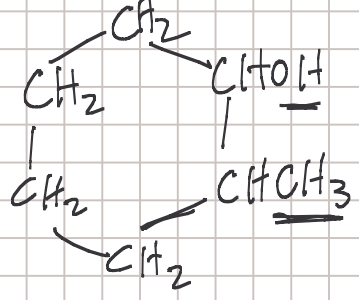
$CH_3(CH_2)_4CH_3$

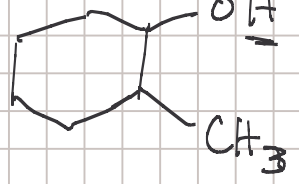
condensed



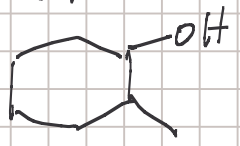
Line-angle

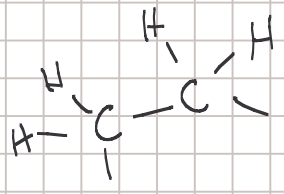
- assumes C at end of a line or where 2 lines meet
- draw non-C atoms
- only draw H's attached to non-C

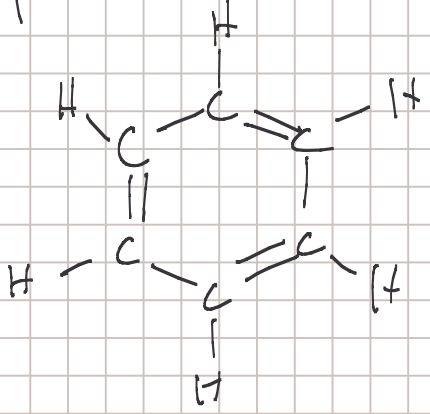


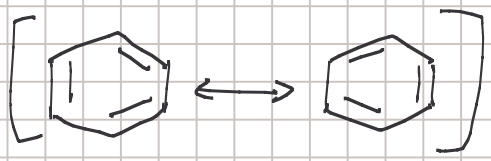


or



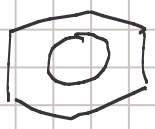






benzene

=



Review 1.11