

ch 4.4 oxidation # & redox Rx

ex occurs in a battery
& mitochondria

background: oxidation #
"it's the charge"

• for atom: oxid # = 0

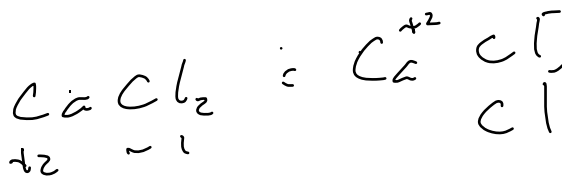
ex Na
K
Ca
S
etc

• for ions: it's the charge

ex Ca⁺²; oxid # = +2
S⁻²; oxid # = -2

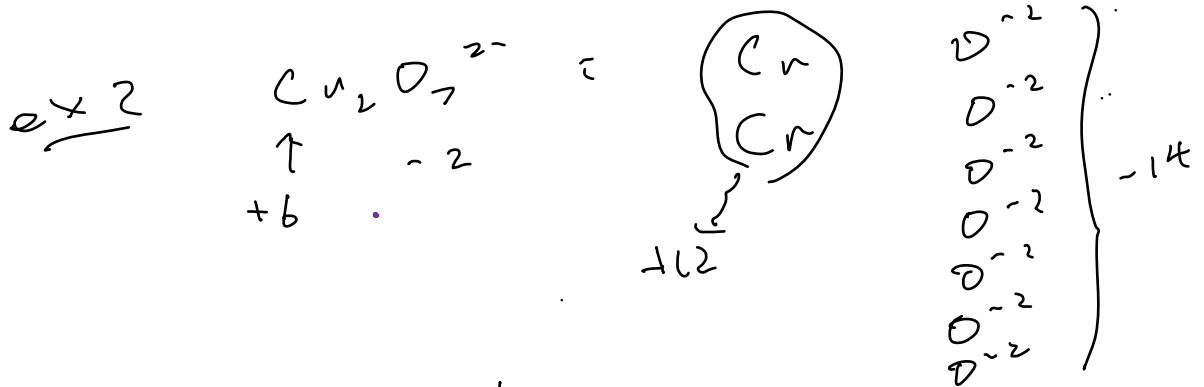
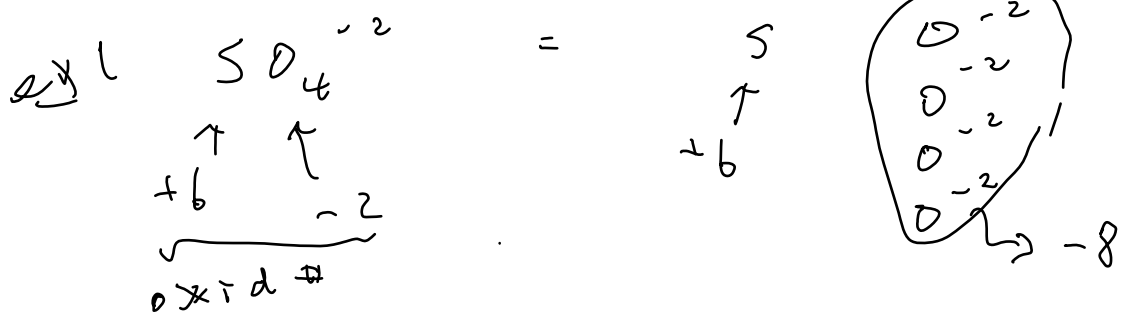
• in an ionic cpd

ex NaCl
+1 -2

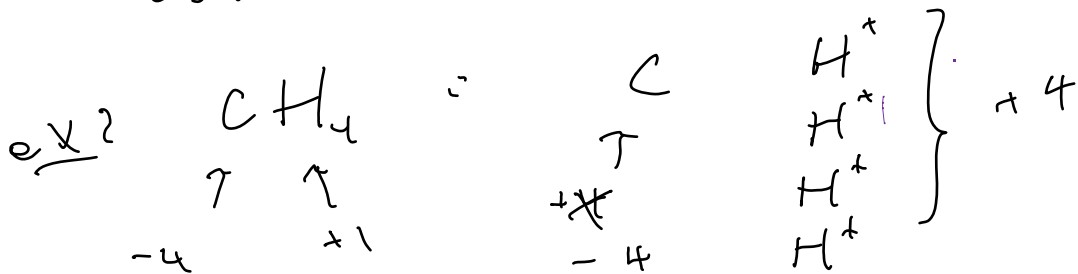
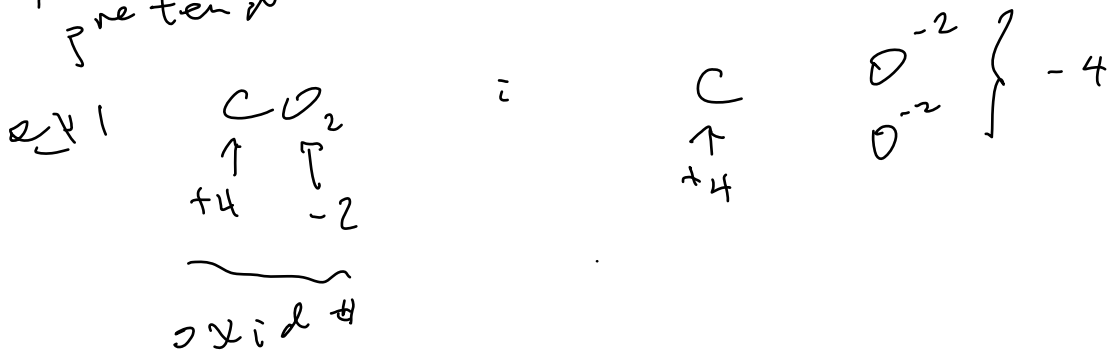


• oxid # in these ionic cpd
is the corresponding charge of
the ion in the ionic cpd

for an "atom" in an ion or ionic cpd



for covalent cpd
'pretend' it is an ionic cpd



hydride = H⁻
hydrate = "tho"

noy

redox Rx involve

reduction

and

oxidation

• reduction in oxid #

• increase in oxid #

alternatively

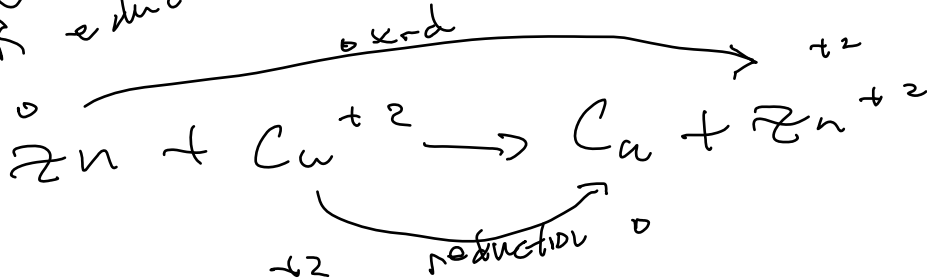
Losing electrons is
Oxidation

Gaining electrons is
Reduction

Oxidation
Loss of e^-
Reduction

Gain of e^-

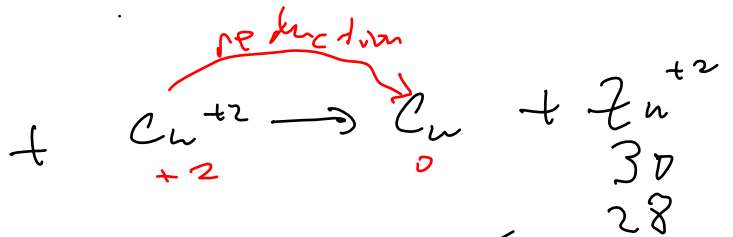
ex



alternatively,

$\# P : 30$
 $\# e^- : 30$

$\# P$
 $\# e^-$



lost e^-
oxid

29 29

27 29

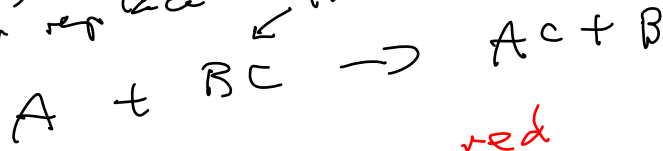
gain e^-
reduction

Ch 3.2 redox Rx II

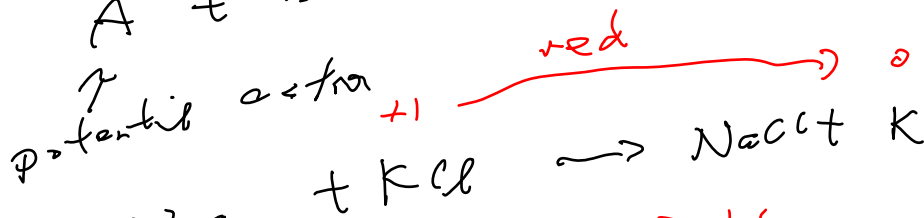
types of Rx

single replacement Rx

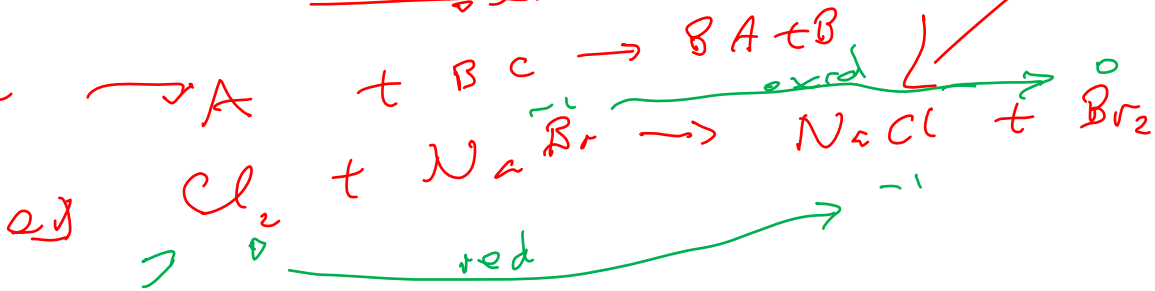
"switch the cation" or "switch the anion"
 or replace ionic cpd



ex



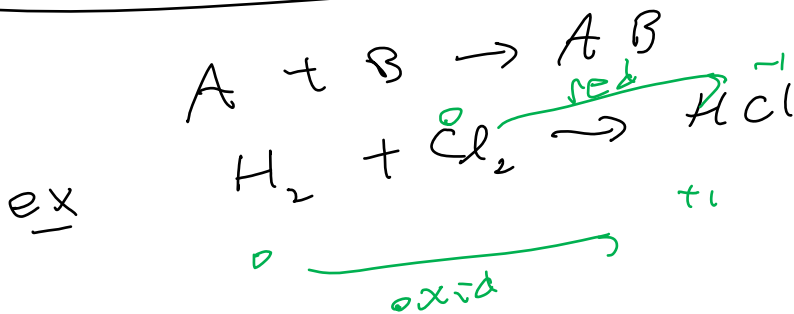
Possible anion



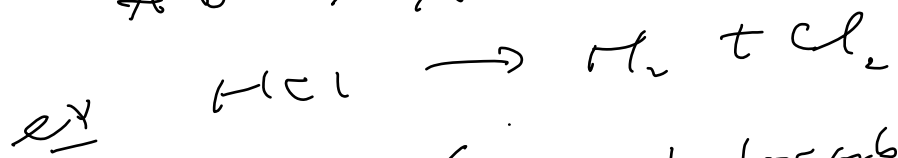
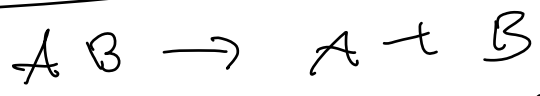
$$2x = 0$$

$$x = 0$$

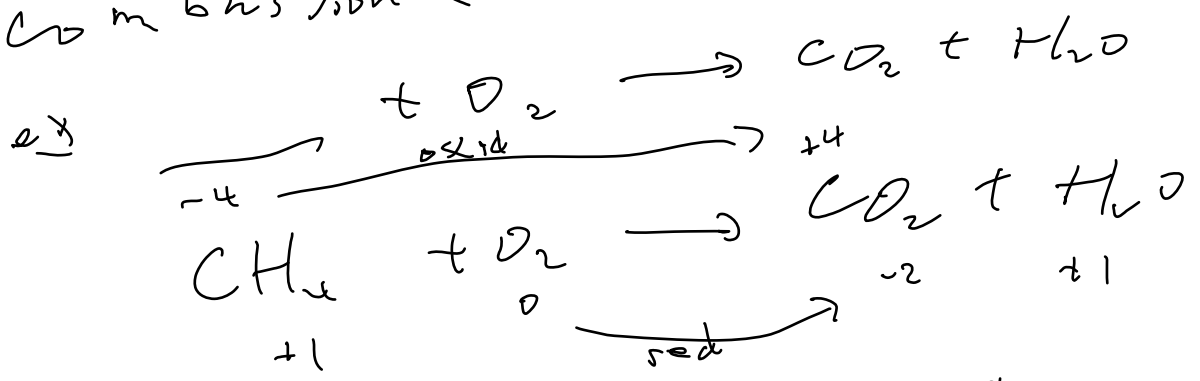
synthesis / combination Rx



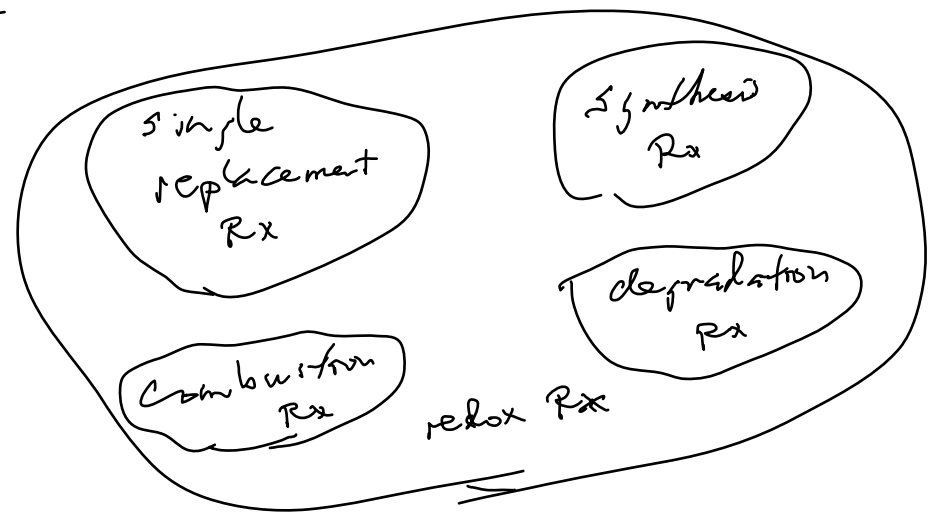
decomposition / degradation Rx



combustion (of a hydrocarbon $\pm O$)



note: all above Rx are redox Rx



oxidizing agent

- oxidizes something
- it's reduced

reducing agent

- reduces something
- it's oxidized