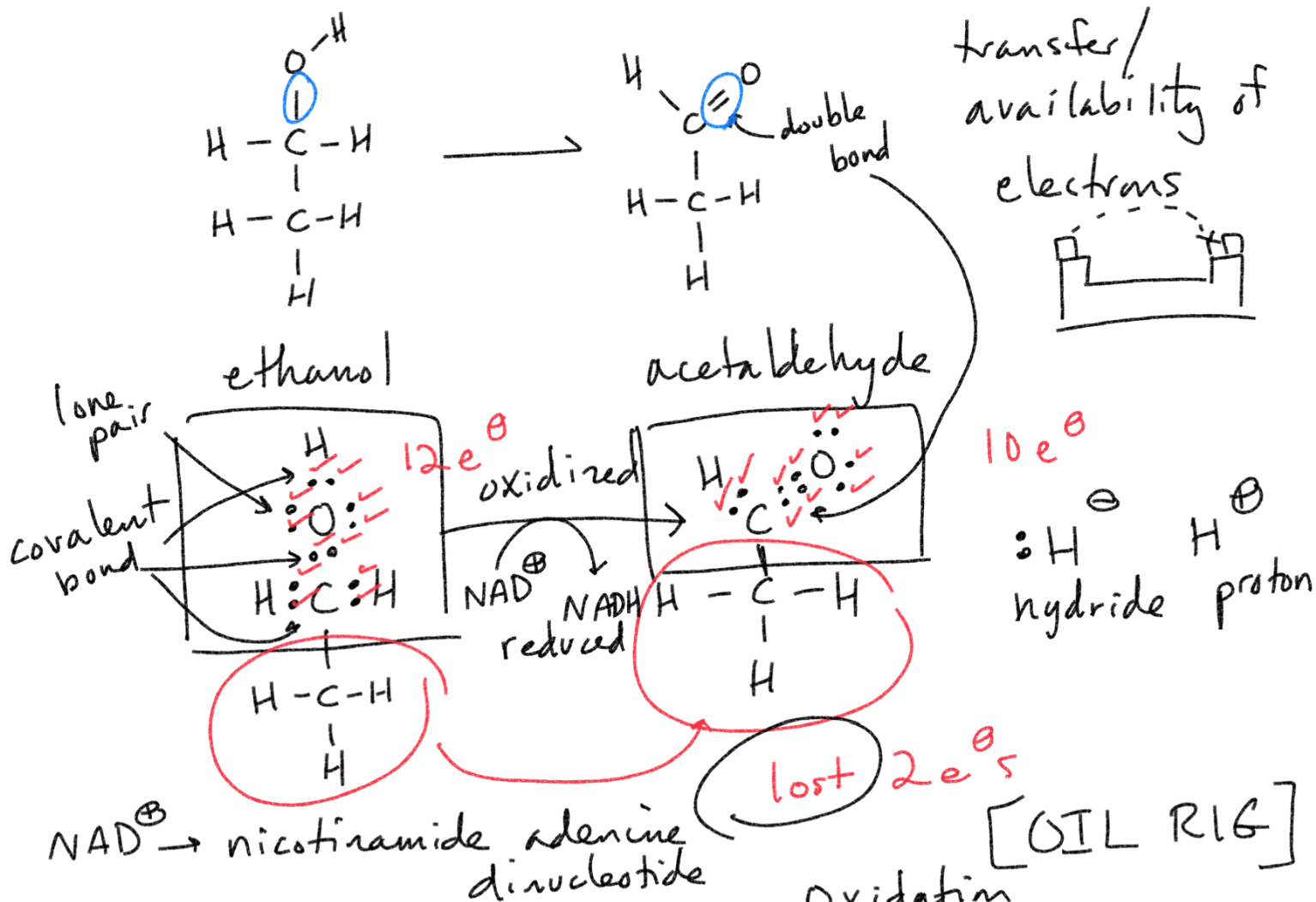
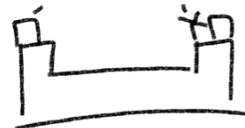


Energy is released upon the breaking and formation of bonds.

Bonds formed by sharing valence electrons (covalent)

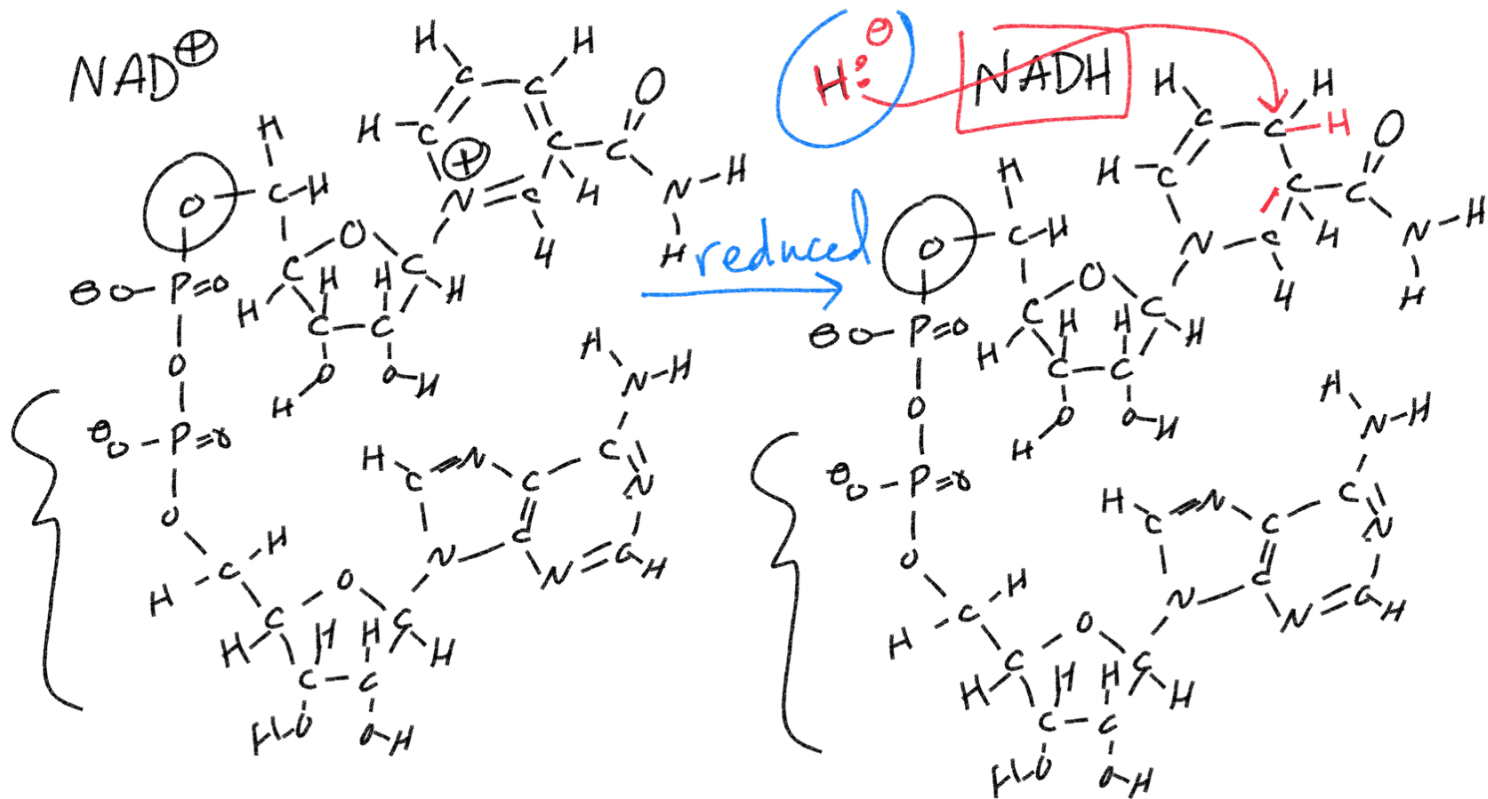
## Redox Reaction (Oxidation-Reduction)

Involves the transfer/availability of electrons

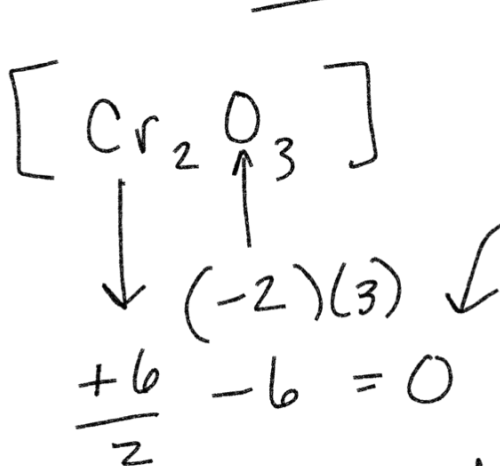


Reduction is  $\hookrightarrow$  Gain of electron(s)

Oxidation is  $\hookrightarrow$  loss of electrons



Find oxidation number



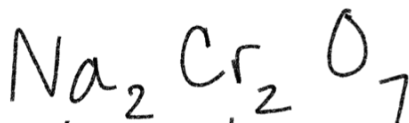
net charge = 0

single atom  $\rightarrow 0$

$\text{H} \rightarrow +1$

$\text{O} \rightarrow (-2)$

+3 oxidation state of Cr



$\downarrow$

$(+1)(2)$

$(-2)(7) = -2$

$+2 + 2(x) - 14 = -2$

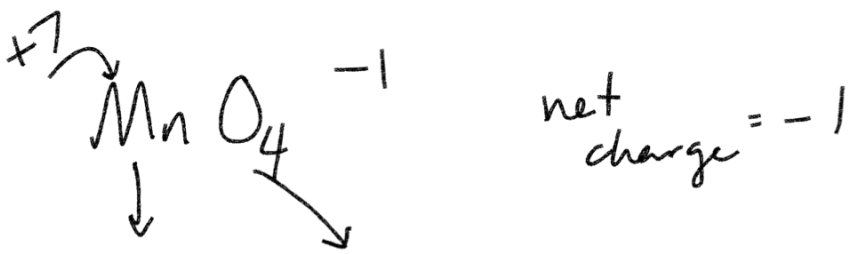
$2x - 12 = -2$

$+12 +12$

$\left. \begin{array}{l} \text{Atom} \rightarrow 0 \\ \text{H} \rightarrow +1 \\ \text{O} \rightarrow -2 \\ \text{Group 1} \rightarrow +1 \end{array} \right\}$

$\frac{2x}{2} = \frac{+10}{2}$

x = +5



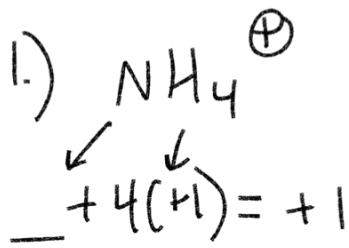
net charge = -1

$$\underline{\quad} + 4(-2) = -1$$

$$\underline{\quad} + (-8) = -1$$

+8      +8

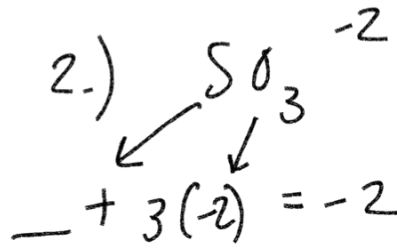
$$\underline{\quad} = (+7)$$



$$\underline{\quad} + 4 = 1$$

-4   -4

$$\underline{\quad} = (-3)$$



$$\underline{\quad} + (-6) = -2$$

+6      +6

$$\underline{\quad} = +4$$

