

Standard #4-3

What is an oxidation reduction reaction?

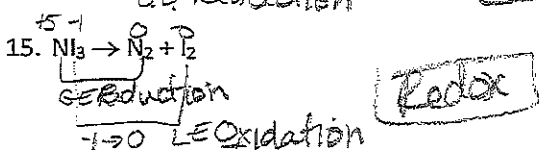
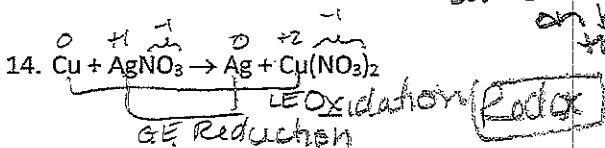
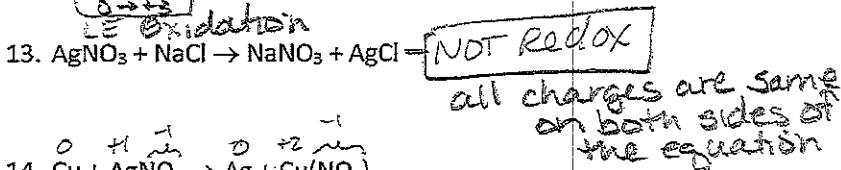
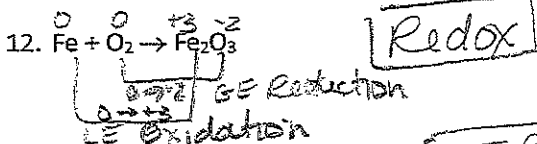
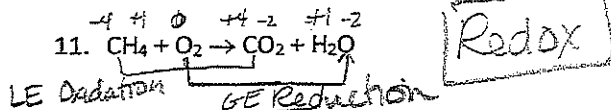
Oxidation states:  
 Oxygen: -2  
 Hydrogen: +1  
 Ionic compounds:  $\text{Na}_2\text{O} = \text{Na}^{+1} \text{O}^{-2}$   
 \* all oxidation states must equal overall charge.

Determine the oxidation states for the following substances

1. NaBr  $\text{Na}^{+1} \text{Br}^{-1}$
2.  $\text{H}_2\text{O}$   $\text{H}^{+1} \text{O}^{-2}$
3.  $\text{CH}_4$   $\text{C}^{-4} \text{H}^{+1}$
4.  $\text{Cr}(\text{NO}_3)_3$   $\text{Cr}^{+3}$   $\text{NO}_3^{-1} \rightarrow \text{N}^{+5} \text{O}^{-2}$
5.  $\text{CaCO}_3$   $\text{Ca}^{+2}$   $\text{CO}_3^{-2} \rightarrow \text{C}^{+4} \text{O}^{-2}$
6.  $\text{Na}_2\text{CrO}_4$   $\text{Na}^{+1}$   $\text{CrO}_4^{-2} \rightarrow \text{Cr}^{+6} \text{O}^{-2}$
7.  $\text{MnO}_4^{-1}$   $\text{Mn}^{+7}$   $\text{O}^{-2}$
8.  $\text{SO}_4^{-2}$   $\text{S}^{+6} \text{O}^{-2}$
9.  $\text{C}_2\text{H}_3\text{O}_2^{-1}$   $\text{C}^0$   $(\text{H}^{+1})_3 (\text{O}^{-2})_2$
10. C  $\text{C}^0$

C is very variable

- In the following reactions label the oxidation states above each atom.
- Indicate if the reaction is in fact an oxidation reduction reaction.
- Indicate which reactant is being oxidized and reduced.



**LEO**  
Lose Electron: Oxidation

**GER**  
Gain Electron: Reduction