10/20/17

A closer look at Redox

Redox- a chemical reaction that involves the transfer of e^- between two species.

oxidation – the process in which a species loses one or more e^-

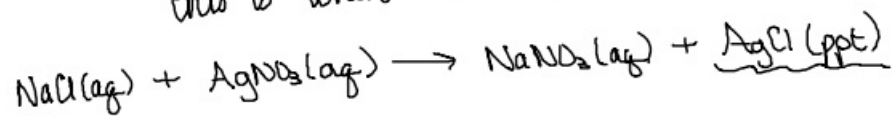reduction – the process in which a species gains one or more e^-

LEO – GER   OIL RIG

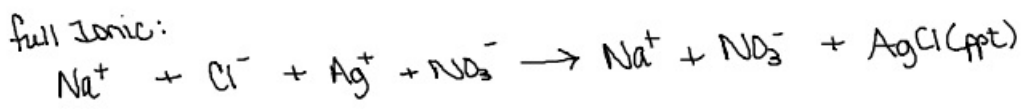oxidizing agent – is an e^- acceptor
reducing agent – is an e^- donor

Cathode – negative electrode that attracts <u>cations</u> this is where reduction occurs

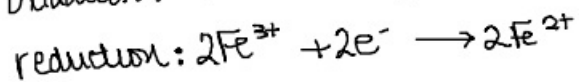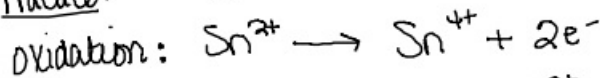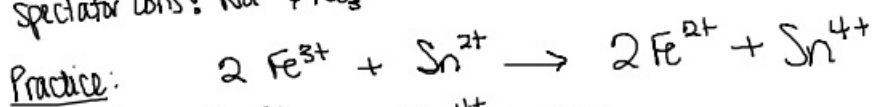anode – positive electrode that attracts <u>anions</u> this is where oxidation occurs.

$$NaCl(aq) + AgNO_3(aq) \longrightarrow NaNO_3(aq) + \underline{AgCl(ppt)}$$

full Ionic:
$$Na^+ + Cl^- + Ag^+ + NO_3^- \longrightarrow Na^+ + NO_3^- + AgCl(ppt)$$

Net Ionic:
$$Cl^- + Ag^+ \longrightarrow AgCl(ppt)$$

Spectator ions: Na^+ & NO_3^-

<u>Practice</u>: $2 Fe^{3+} + Sn^{2+} \longrightarrow 2Fe^{2+} + Sn^{4+}$

oxidation: $Sn^{2+} \longrightarrow Sn^{4+} + 2e^-$

reduction: $2Fe^{3+} + 2e^- \longrightarrow 2Fe^{2+}$

oxidizing agent: $\underline{Fe^{3+}}$
reducing agent: $\underline{Sn^{2+}}$

w/w% Practice

what is the w/w% of sodium Chloride (560mg) in 10.4g H_2O?
.56g

$$\frac{.56g}{10.96g} \times 100 = 5.1\% \, NaCl$$

A 500.0g aqueous Sucrose soln. in which water is 65% w/w
what is the mass of sucrose present?

500.0g X 0.35 = 175 → 180g Sucrose

An aqueous soln. is 42.00% w/w ethanol, if the mass of the
soln. is 250.0g, what is the mass of the ethanol?

250.0g x 0.4200 = | 105.0g EtOH |

H_2O %H $\frac{2.02g}{18.02g} \times 100 = 11.2\%$ Hydrogen

if we have 600.0g of water, what is the mass of Hydrogen
                                                    present?

10/20/17

A closer look at Redox

A chm rxn that involves the transfer of e^- between two species

Oxidation: the process in which the species loses one or more e^-

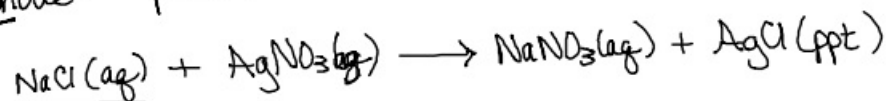Reduction: the process in which the species gains one or more e^-

LEO - GER   OIL - RIG
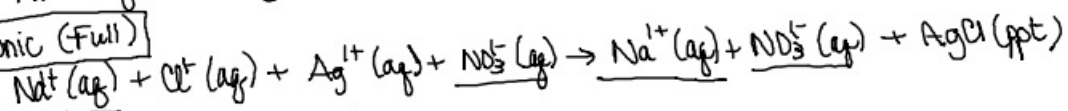
oxidizing reagent — is an electron acceptor

reducing reagent — is an e^- donor

Cathode — negative electrode, attracts cations (Reduction occurs)

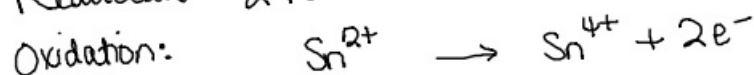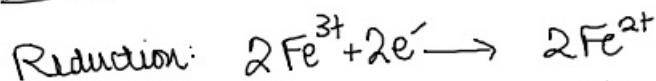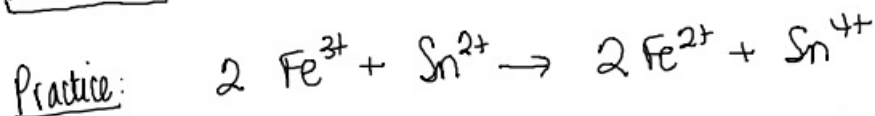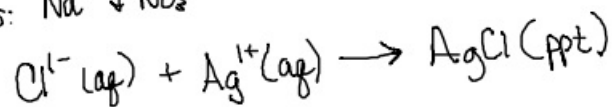anode — positive electrode, attracts anions (Oxidation occurs)

$$NaCl(aq) + AgNO_3(aq) \longrightarrow NaNO_3(aq) + AgCl(ppt)$$

Ionic (Full)

$$Na^+(aq) + Cl^-(aq) + Ag^{1+}(aq) + NO_3^-(aq) \rightarrow Na^{1+}(aq) + NO_3^-(aq) + AgCl(ppt)$$

Spectator Ions: Na^{1+} & NO_3^{1-}

Net Ionic.

$$Cl^-(aq) + Ag^{1+}(aq) \longrightarrow AgCl(ppt)$$

Practice: $2\ Fe^{3+} + Sn^{2+} \longrightarrow 2\ Fe^{2+} + Sn^{4+}$

Reduction: $2Fe^{3+} + 2e^- \longrightarrow 2Fe^{2+}$

Oxidation: $Sn^{2+} \longrightarrow Sn^{4+} + 2e^-$

Oxidizing reagent: Fe^{3+}

reducing reagent: Sn^{2+}

$$Cr(s) + 3Ag^{1+} \rightarrow Cr^{3+} + 3Ag(s)$$

oxidation: $Cr^\circ \longrightarrow Cr^{3+} + 3e^-$ (reducing reagent)

reduction: $3Ag^{1+} + 3e^- \longrightarrow 3Ag^\circ$ (oxidizing reagent)
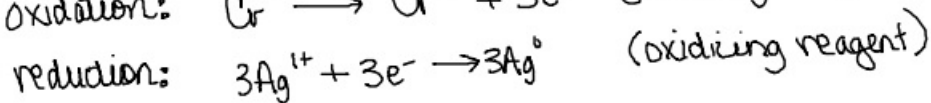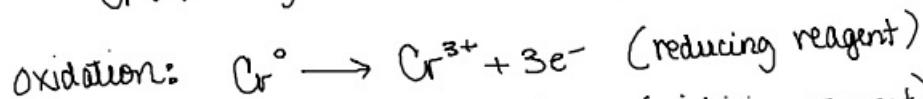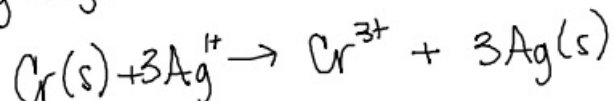
% composition of a compound.

H_2O ? Hydrogen $\dfrac{2.02g}{18.02g} \times 100 = 11.2\% \ H$

what is the mass of hydrogen if you have 200.0g H_2O?

$$\boxed{22.4g \ H}$$

$w/w\%$ $\dfrac{w \ of \ ind.}{Total \ w} \times 100 = \%$

In an aqueous sodium chloride soln. of $\overset{.56g}{560mg \ NaCl}$ in $10.4g \ H_2O$ — what is the $w/w\%$ for NaCl?

$$\dfrac{.56g}{10.96g} \times 100 = 5.1\% \ w/w$$

What is the mass of sucrose present in a 500.0g aqueous soln in which water is 65.00% w/w?

100 − 65 = 35% Sucrose • 500.0g = 175.0g Sucrose

500.0g × 65% H_2O = 325.0g H_2O

$\begin{array}{r} 500 \\ - \ 325 \\ \hline 175.0g \ Sucrose \end{array}$

An aqueous soln of $\overset{42.0}{\cancel{42}\%}$ w/w of ethanol has a total mass of 250.0g, what is the mass of ethanol (EToH)? $\boxed{105g}$