Dougherty Valley HS Chemistry - AP
Electrochemistry Study Materials
Quick Checks #1-3

S-89, 90, 91

Name: **Period:** **Seat#:**

Directions: Try these problems. If you can DO them, check the box (☑).
If you CANNOT do them, write some notes TO YOURSELF about what you need to study to succeed at these problems.

S88 – Quick Check #1

☐ **Electrolysis Reactions**

Use your Reduction Potential Chart to determine the reaction at the anode, reaction at the cathode, and the overall reaction during the electrolysis of a solution of copper(II) chloride.

☐ **Electrolysis Stoichiometry**

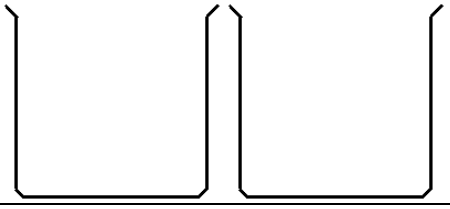
A current of 2.50 amps is passed through a solution of $Ni(NO_3)_2$ for 2.00 hours.
What mass of Ni metal is deposited?

☐ **Electrochemical Cell**

Sketch the cell made from Au in a 1.0 M solution of gold(III) nitrate and Zn in a 1.0 M solution of Zn(II) sulfate.

$Au^{3+} + 3e^- \rightarrow Au(s)$ +1.50

$Zn^{2+}(aq) + 2e^- \rightarrow Zn(s)$ -0.763

Anode Reaction	Sketch the Cell	Cathode Reaction
		

Overall Reaction & E° (volts)

Struggled? Got some wrong? Do some self-study!

S89 – Quick Check #2

☐ **Balancing Redox Equations**

An acidified solution of potassium dichromate is added to a solution of iron(II) sulfate.

Aluminum metal is added to a strongly basic solution of sodium hydroxide forming bubbles of hydrogen gas and the complex ion, $Al(OH)_4^-$.

☐ **Electrolysis Reactions**

Use your Reduction Potential Chart to determine the reaction at the anode, reaction at the cathode, and the overall reaction during the electrolysis of a solution of copper(II) chloride.

☐ **Electrolysis Stoichiometry**

A current of 2.50 amps is passed through a solution of $Ni(NO_3)_2$ for 2.00 hours.
What mass of Ni metal is deposited?

☐ **Predicting Spontaneous (Product-Favored) Reactions**

State whether each reaction below is product-favored or not. Use your reduction potential chart.

____ $Br_2 + 2Cl^- \rightarrow Cl_2 + 2Br^-$

____ $Cu^{2+} + 2I^- \rightarrow I_2 + Cu$

____ $2Au^{3+} + 3Zn \rightarrow 3Zn^{2+} + 2Au$

☐ **Electrochemical Cell**

Sketch the cell made from Au in a 1.0 M solution of gold(III) nitrate and Zn in a 1.0 M solution of Zn(II) sulfate.

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	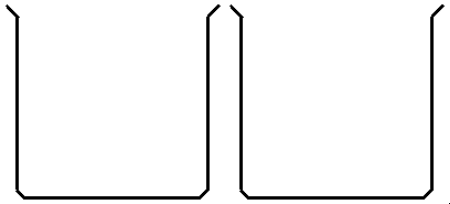	

Overall Reaction & E° (volts)

☐ **Non-Standard Electrochemical Cell**

Calculate the voltage of the above cell if the $[Au^{3+}]$ = 5.00 M and $[Zn^{2+}]$ = 0.100 M.

☐ **Alkali Metal in Water**

Write the balanced chemical equation for the reaction of potassium metal dropped into water.

☐ **Oxidation-Reduction of Alkali Metals in Water**

Which element in the chemical equation above, was oxidized and which element was reduced?

_____ was oxidized and was the _____agent

_____ was reduced and was the _____agent

☐ **Electrolysis of Water**

Write the balanced chemical equation for the electrolysis (or decomposition) of water.

What are the two **half-reactions** for this overall reaction, showing the reduction and the oxidation?

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S90 – Quick Check #3

☐ Write a balanced chemical equation for the reaction of Rubidium reacting with water:

☐ Which chemical above went through OXIDATION? _____ (Show it)

☐ Which chemical above went through REDUCTION? _____ (Show it)

☐ Of the two elements Rubidium, Rb and Cesium, Cs, which one would you expect to have a faster reaction with water? Explain why?

☐ Write the balanced chemical equation for the reaction of barium metal with water:

☐ What would the addition of the acid/base indicator, phenolphthalein indicate?

Struggled? Got some wrong? Do some self-study!