**Name: Period: Seat#:**

**S-89, 90, 91**

**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(NO3)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.

Au3+ + 3e- → Au(s) +1.50

Zn2+(aq) + 2e- → Zn(s) -0.763

|  |  |  |
| --- | --- | --- |
| Anode Reaction | Sketch the Cell | Cathode Reaction |
|  | Shape  Description automatically generatedShape  Description automatically generated |  |
|  | Overall Reaction & E° (volts) |  |
|  |

**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(NO3)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.

 \_\_\_\_ Br2 + 2Cl → Cl + 2Br

 \_\_\_\_ Cu2+ + 2I → I2 + Cu

 \_\_\_\_ 2Au3+ + 3Zn → 3Zn2+ + 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.

Au3+ + 3e- → Au(s) +1.50

Zn2+(aq) + 2e- → Zn(s) -0.763

|  |  |  |
| --- | --- | --- |
| Anode Reaction | Sketch the Cell | Cathode Reaction |
|  | Shape  Description automatically generatedShape  Description automatically generated |  |
|  | Overall Reaction & E° (volts) |  |
|  |

🞎 **Non-Standard Electrochemical Cell**

 Calculate the voltage of the above cell if the [Au3+] = 5.00 M and [Zn2+] = 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?

**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?