**Name: Period: Seat#:**

**Worksheet #5**

**Directions:** Show all work when applicable.

FILL IN THE BLANKS:

|  |
| --- |
| 1. All of the equations in the chart above are written as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(oxidations/reductions)*.
 |
| 1. The chemicals at the upper left (Cl2 and O2) are the most likely to be *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (oxidized/reduced)* and therefore the best \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(oxidizing agents/reducing agents)*.
 |
| 1. The chemicals at the lower right (Na and K) are the most likely to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(oxidized/reduced)* and therefore the best \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(oxidizing agents/reducing agents)*.
 |
| 1. In an electrolytic cell, the (−) electrode is negative because is has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(too many/too few)* electrons. Chemicals that come into contact with the (−) electrode will \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(gain/lose)* electrons and be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(oxidized/reduced).* The (−) electrode in electrolysis is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(cathode/anode)*.
 |
| 1. Write the change that water goes through at the (−) electrode. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. In an electrochemical cell, the (+) electrode is positive because is has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(too many/too few)* electrons. Chemicals that come into contact with the (+) electrode will \_\_\_\_\_\_\_\_\_\_\_\_ *(gain/lose)* electrons and be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(oxidized/reduced).* The (+) electrode in electrolysis is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(cathode/anode).*
 |
| 1. Write the change that water goes through at the (+) electrode. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. Add these two reactions together (make certain the electrons cancel) and write the overall reaction for the electrolysis of water. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. We will perform this electrolysis using an aqueous solution of sodium sulfate. Both the Na+ and H2O will be near the (−) electrode. Which chemical is more likely to be reduced? \_\_\_\_\_\_\_\_\_\_\_\_
 |
| 1. Both the SO42− and H2O will be near the (+) electrode. Which chemical will be oxidized? \_\_\_\_\_\_\_\_\_\_
2. In the electrolysis of KI(aq)

Both the K+ and H2O will be near the (−) electrode. Which chemical is more likely to be reduced? \_\_\_\_\_\_Both the I− and H2O will be near the (+) electrode. Which chemical is more likely to be oxidized? \_\_\_\_\_\_\_Write the reactions at each electrode and the overall reaction:

|  |  |
| --- | --- |
| Cathode | Anode |
| Overall |

 |

1. In the electrolysis of CuSO4(aq)
Both the Cu2+ and H2O will be near the (-) electrode. Which chemical will be reduced? \_\_\_\_\_\_\_\_

Both the SO42- and H2O will be near the (+) electrode. Which chemical will be oxidized? \_\_\_\_\_\_\_\_

Write the reactions at each electrode and the overall reaction:

|  |  |
| --- | --- |
| Cathode | Anode |
| Overall |

1. Silver plating occurs when electrolysis of a Ag2SO4 solution is used because silver metal is formed at the

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ *(cathode/anode).* This is the \_\_\_\_\_\_\_\_\_ *( + / - )* electrode. The reaction at this

electrode is: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Recall that 1 amp•sec = 1 Coulomb and 96,500 Coulombs = 1 mole e-‘s (Faraday’s constant).
If a cell is run for 200. Seconds with a current of 0.250 amps, how many grams of Ag0 will be deposited?

|  |
| --- |
|  |