**Name: Period: Seat#:**

**Worksheet #5**

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

FILL IN THE BLANKS:

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| 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?

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