Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ **Electroplating Lab**

**Introduction:** Electroplating is an economically important process, often used to reduce corrosion or to improve the appearance of objects. During electroplating a thin layer of a desirable metal is deposited onto another object. During electroplating, the object to be plated is attached to the negative post of the power source, causing the object to gain a negative charge. This will attract positive metallic cations from the electrolytic solution the object is placed in. In this experiment, positive copper ions from the solution will be attracted to the object carrying the negative charge. When the copper ions reach the object they will gain electrons and be reduced to solid copper.

**Purpose:** To create an electrolytic cell to electroplate an object.

**Materials:** Copper strips, Object to be plated, D- Battery, Beaker, Insulated wire leads with alligator clips at both ends, Electrolytic solution - 1.0M Copper (II) sulfate

**Procedure:** (Put a detailed step by step procedure here)

 **Data:** (Include a picture of YOUR set-up here as well as observations of what occurred.)

| **Picture** | **Observations** |
| --- | --- |
|  |  |

**Analysis:**

1. What was the anode in your set-up?
2. What was the cathode in your set- up?
3. What process occurred at the anode?
4. What process occurred at the cathode?
5. Write the half-reaction that occurred at the anode.
6. Write the half-reaction that occurred at the cathode.
7. Explain, in terms of atoms and ions, what happens to the size of the cathode over time.
8. Explain, in terms of atoms and ions, what happens to the size of the anode over time.
9. Is electrolysis a spontaneous or nonspontaneous process? Explain your answer.
10. Explain in terms of chemical and electrical energy the reaction that you observed?
11. What is the charge of the anode?
12. What is the charge of the cathode?
13. Which ions were attracted to the cathode in your set-up? Where did the ions come from and why are they attracted to the cathode?