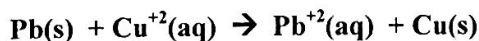
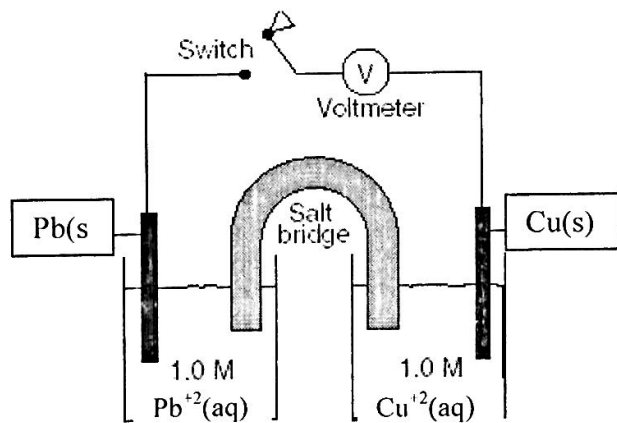


Electrochemistry: Review

- A battery is an example of:
 - An electrochemical cell
 - A electrolytic cell
 - A pressure cell
- In an electrolytic cell, the cathode is
 - neutral
 - negative
 - positive
- What is the purpose of a salt bridge in an electrochemical cell?
 - To act as a reducing agent
 - To act as an oxidizing agent
 - To provide electrons that flow between the two half cells and complete the electrical circuit
 - To provide ions that flow between the two half cells and complete the electrical circuit
- What is NOT the same for a voltaic cell and an electrolytic cell?
 - An oxidation/reduction chemical reaction occurs within them
 - They have two electrodes: a cathode and an anode
 - They produce voltage and an electric current
 - Electrons flow through an external circuit

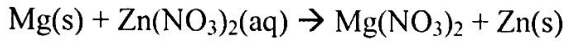
Use the diagram of the electrochemical cell below to answer the next four questions



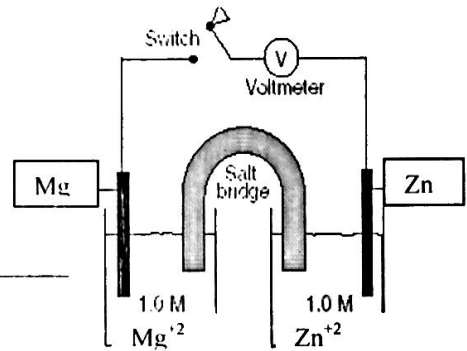
- When the switch is closed which electrode will increase in mass?
 - Pb
 - Cu
 - Both Pb and Cu will increase in mass
 - Neither Pb nor Cu will increase in mass
- Which direction will electrons flow?
 - From Pb through the voltmeter to Cu
 - From Cu through the voltmeter to Pb
 - From Pb through the salt bridge to Cu
 - From Cu through the salt bridge to Pb
- Which metal ion will increase in concentration as the cell runs?
 - Cu^{2+} only
 - Pb^{2+} only
 - Both Cu^{2+} and Pb^{2+}
 - Neither Cu^{2+} nor Pb^{2+}

8. Electroplating is an example of what type of chemical cell?
- Electrolytic cell
 - Electrochemical cell
 - Voltaic cell
 - Galvannic cell

The diagram below represents an electrochemical cell for the reaction:



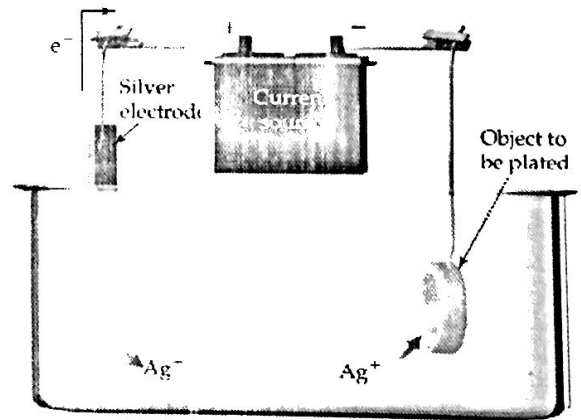
- Label the cathode
- Label the anode
- Write the half reaction which occurs at the cathode



- Write the half reaction which occurs at the anode
- Show the direction of movement of Mg^{+2} ions on the diagram above
- Show the direction of Zn^{+2} ions ion the diagram above
- Label and show the direction of movement of electrons

- The diagram at right shows a cell for silver plating jewelry, adding a thin coat of silver on top of a cheaper metal such as steel.

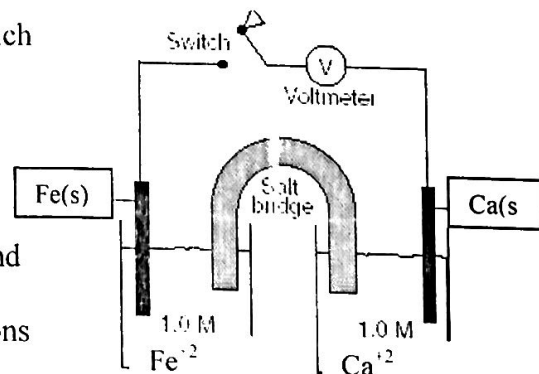
- What is the name of this type of cell?
- There are two electrodes in the diagram, the silver electrode and the copper wire that holds the object to be plated. Label correctly in the diagram with anode or cathode.
- Write the half reaction next to each electrode.
- In what two ways does this differ from the other type of cell you have studied



Honors ONLY

- For the cell at right:
 - Write the line notation, the shorthand, for the process which is occurring

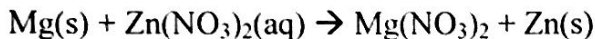
 - Determine the standard cell voltage _____ (use Old Table N)
 - What would be the voltage of this cell if the anode and cathode reactions were reversed? _____
 - Explain what would be necessary to make the reactions in # 3 above to occur



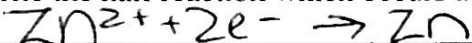
8. Electroplating is an example of what type of chemical cell?

- A. Electrolytic cell
- B. Electrochemical cell
- C. Voltaic cell
- D. Galvannic cell

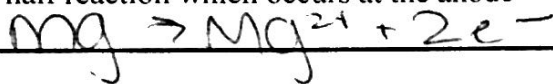
The diagram below represents an electrochemical cell for the reaction:



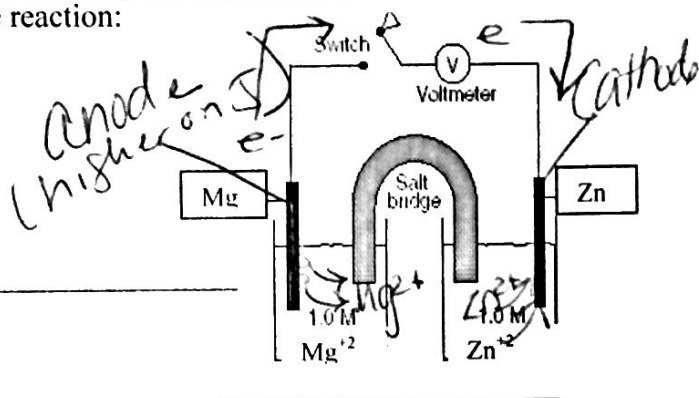
- 9. Label the cathode
- 10. Label the anode
- 11. Write the half reaction which occurs at the cathode



- 12. Write the half reaction which occurs at the anode

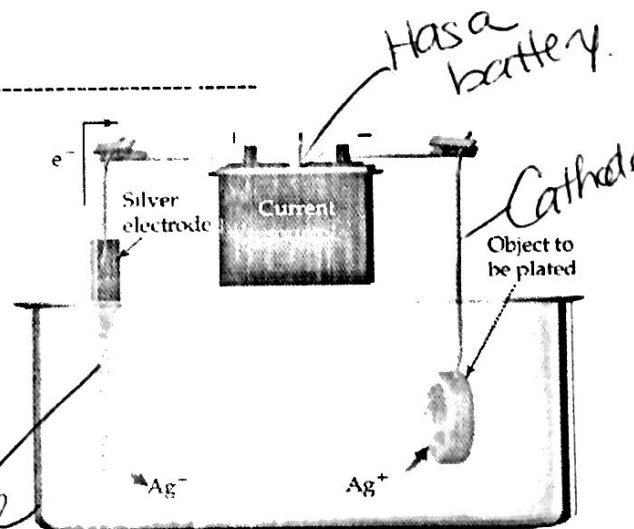


- 13. Show the direction of movement of Mg^{+2} ions on the diagram above
- 14. Show the direction of Zn^{+2} ions on the diagram above
- 15. Label and show the direction of movement of electrons

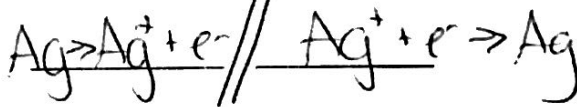


- 16. The diagram at right shows a cell for silver plating jewelry, adding a thin coat of silver on top of a cheaper metal such as steel.

- A. What is the name of this type of cell? electroplating or electrolytic
- B. There are two electrodes in the diagram, the silver electrode and the copper wire that holds the object to be plated. Label correctly in the diagram with anode or cathode.
- C. Write the half reaction next to each electrode.
- D. In what two ways does this differ from the other type of cell you have studied



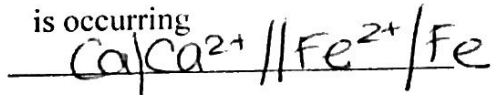
- 1) Has a battery
- 2) Same element but opp. reaction @ each halfcell



Honors ONLY

- 17. For the cell at right:

- A. Write the line notation, the shorthand, for the process which is occurring



- B. Determine the standard cell voltage 2.42 (use Old Table N)

- C. What would be the voltage of this cell if the anode and cathode reactions were reversed? -2.42 (nonspont.)

- D. Explain what would be necessary to make the reactions in # 3 above to occur

Apply an external energy source.

