

PRACTICE PACKET: ELECTROCHEMISTRY

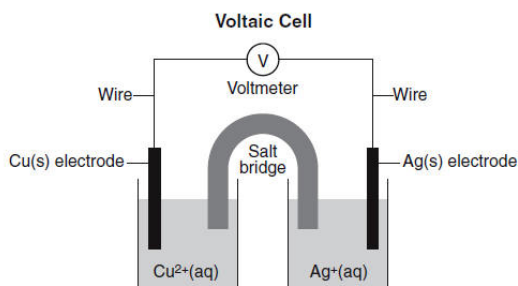
LESSON 5: Electrochemical Cells

Objective:

- Determine the flow of electrons in a battery (voltaic cell)
- Identify the anode and cathode in a voltaic cell

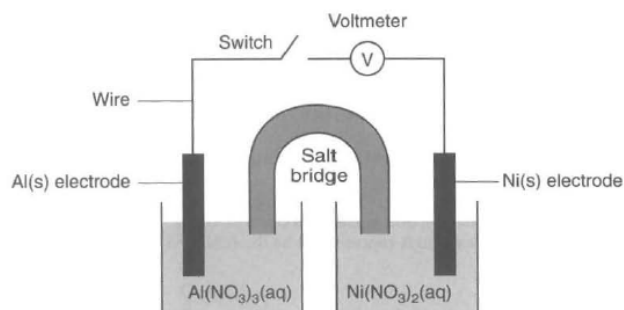
Voltaic Cells (batteries)

*Directions: In each of the following, determine which element oxidized easier on table J (higher up on table J). Then label the **anode**, **cathode**, **direction of e⁻ flow**, (remember electrons flow from high to low), **which electrode increases and decreases in mass** and then **write the half reactions in the spaces provided**.*



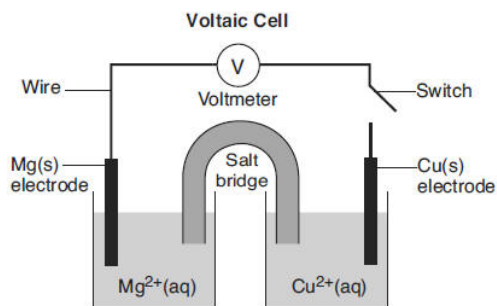
1.

ox:
red:



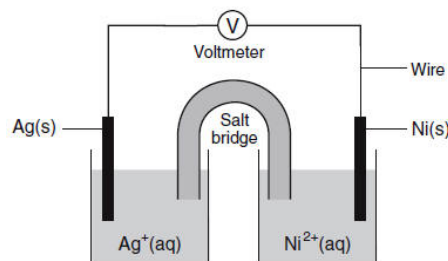
2.

ox:
red:



3.

ox:
red:

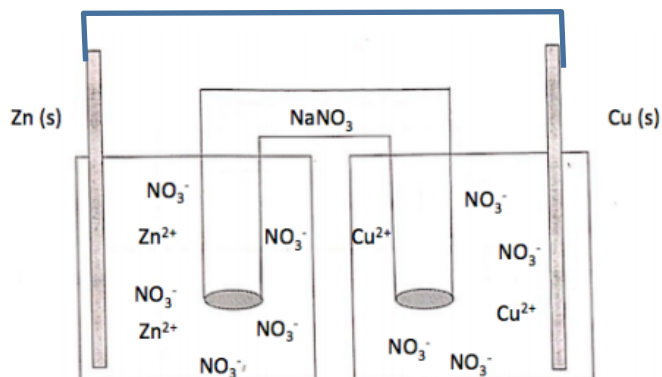


4.

ox:
red:

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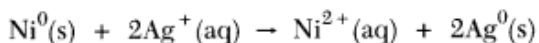
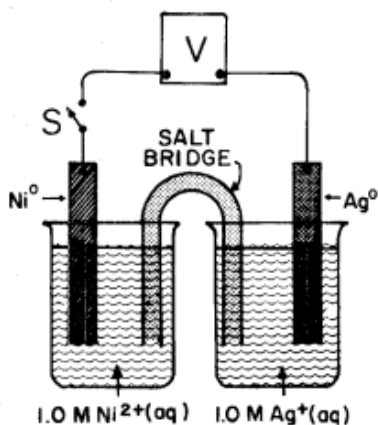
In the following diagram, show the direction of electron flow, label the anode and cathode then answer the questions.



- In all voltaic cells, _____ energy is converted into _____ energy.
- Write the oxidation half reaction:
- Write the reduction half reaction:
- In terms of atoms and ions, why is the mass of the anode decreasing?
- In terms of atoms and ions, why is the mass of the cathode increasing?
- Write the overall redox reaction:
- On the diagram, label the flow of ions in the salt bridge

REGENTS PRACTICE

- Which energy conversion occurs in an operating voltaic cell?
 - chemical energy to electrical energy
 - chemical energy to nuclear energy
 - electrical energy to chemical energy
 - electrical energy to nuclear energy
- Which statement is true for any electrochemical cell?
 - Oxidation occurs at the anode, only.
 - Reduction occurs at the anode, only.
 - Oxidation occurs at both the anode and the cathode.
 - Reduction occurs at both the anode and the cathode.
- Base your answer to the following question on the diagram of the chemical cell at 298 K and on the equation below.

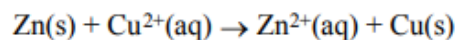


In the given reaction, the Ag^+ ions

- | | |
|-------------------|-------------------|
| A) gain electrons | B) lose electrons |
| C) gain protons | D) lose protons |
- When a voltaic cell operates, ions move through the

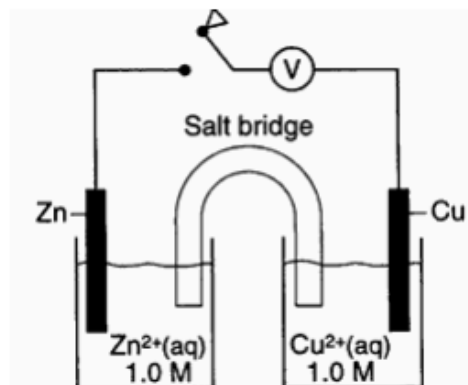
A) anode	B) cathode
C) salt bridge	D) external circuit

- Given the balanced ionic equation representing the reaction in an operating voltaic cell:



The flow of electrons through the external circuit in this cell is from the

- Cu anode to the Zn cathode
 - Cu cathode to the Zn anode
 - Zn anode to the Cu cathode
 - Zn cathode to the Cu anode
- The diagram below represents an electrochemical cell.



What occurs when the switch is closed?

- Zn is reduced.
- Cu is oxidized.
- Electrons flow from Cu to Zn.
- Electrons flow from Zn to Cu.

ASSESS YOURSELF ON THIS LESSON:

If you missed any regents practice questions you should see me for extra help and/or re-watch the lesson video assignment