



ELECTROCHEMISTRY

THE OXIDATION NUMBER

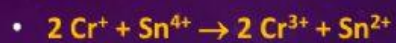
- Oxidation Number Rules:

- The oxidation number of any pure element is 0.
- The oxidation number of a monatomic ion equals that charge on the ion.
- The more electronegative element in a binary compound is assigned the number equal to the charge it would have if it were an ion.
- The oxidation number of fluorine in a compound is always -1.
- Oxygen has an oxidation number of -2 unless it is combined with F, in which it is +1 or +2, or it is in peroxide (such as H_2O_2 or Na_2O_2), in which it is -1.
- Hydrogen is +1, unless combined with a metal, and then it is -1.
- In compounds, Group 1 is +1, Group 2 is +2, and Aluminum is +3.
- The sum of the oxidation numbers of all atoms in a neutral compound is 0.
- The sum of the oxidation numbers in a polyatomic ion equals the charge of the ion.

ACTIVITY 1

- S in HSO_4^- _____
- _____
- Cl in $\text{Fe}(\text{ClO}_2)_3$ _____
- _____
- Fe in $\text{Fe}(\text{ClO}_2)_3$ _____
- _____
- N in $\text{NO}_3^- \cdot 2$

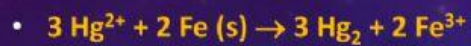
ACTIVITY 2



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- Oxidized: _____ Reduced: _____

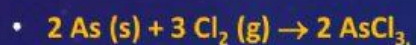
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- Oxidized: _____ Reduced: _____

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- Oxidized: _____ Reduced: _____

- study of the interchange between chemical change and electrical work

- **Electrochemical cells:**

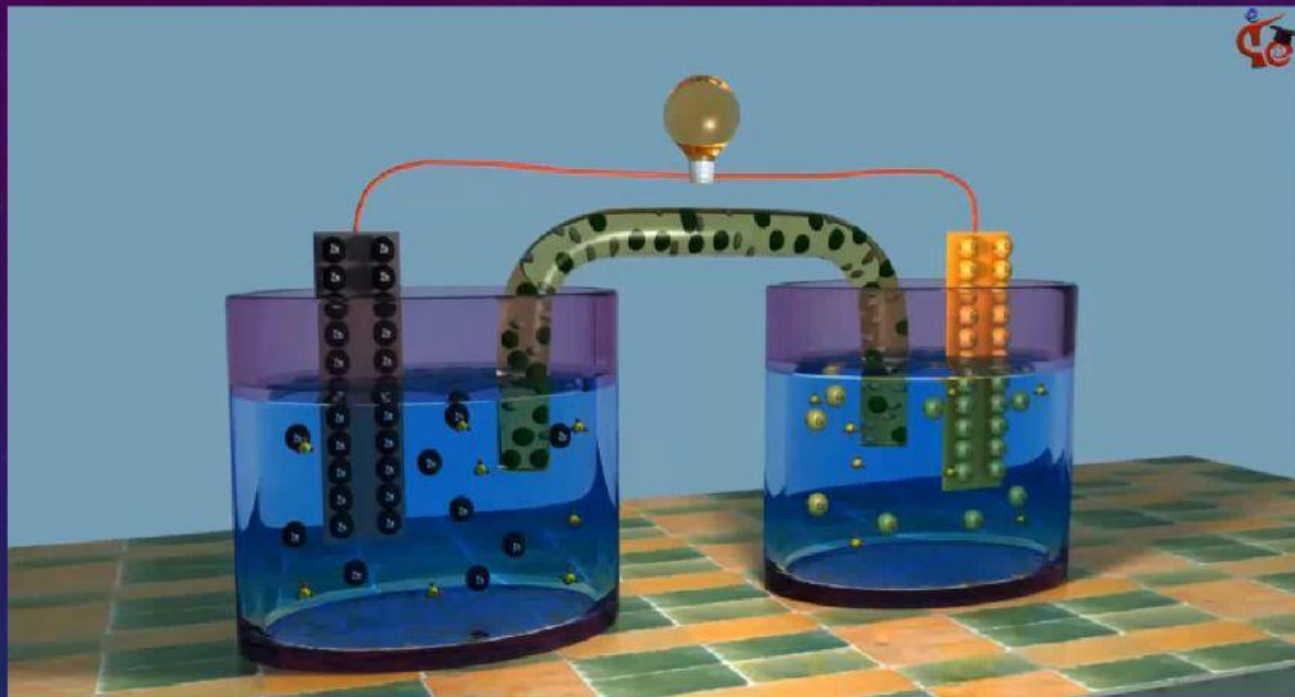
- systems utilizing a redox reaction to produce or use electrical energy

Voltaic (galvanic) cells:

a spontaneous reaction generates electrical energy

Electrolytic cells:

absorb free energy from an electrical source to drive a nonspontaneous reaction



ACTIVITY 3

- 1- what are the composition of the galvanic cell?
- 2- determine the anode , cathode and their charges?
- 3- what is the role of the salt bridge ?
- 4- Write the over all reaction of the galvanic cell?

GALVANIC CELL VOLTAIC

