Name: KEY Official Class: _____ Date: _____

Teacher: _____ Period: _____ Class: _____

Electrolytic Cells

YOYO: Compare and contrast the two images below. Note visible similarities and differences.

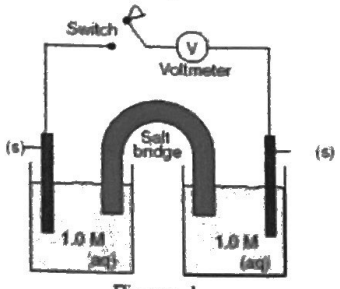


Figure 1

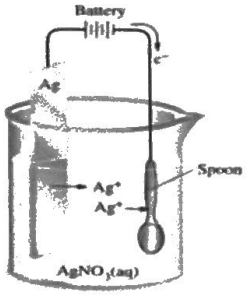


Figure 2

Similarities	Differences

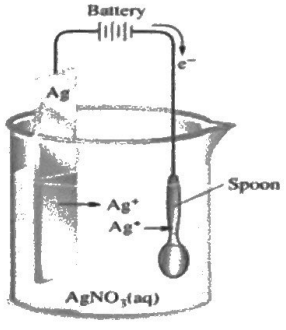
Electrolytic Cell

- Reaction cannot occur spontaneously, so electricity is used to force the reaction to occur. In other words, electrical energy is converted to chemical energy (opposite of voltaic cell)
- When electricity is used to force a chemical reaction to occur, the process is called electrolysis

Electrolytic Cell Cathode	Electrolytic Cell Anode
- Where electrons are sent - The negative electrode (opposite of voltaic) - Electrode where reduction occurs (red cat)	- Where electrons are drawn away from - The positive electrode (opposite of voltaic) - Electrode when oxidation occurs (an ox)

Electrolytic Cells: Uses

1. To obtain pure elements such as sodium and chlorine by the electrolysis of molten salts.
   a. Ex: $2\,NaCl(l) \rightarrow 2Na(s) + Cl_2(g)$
2. To electroplate metals onto a surface. The material to be plated with a metal is the cathode. The anode is made of the metal used for the plating.



Compare and Contrast

	Galvanic/Voltaic Cell	Electrolytic Cell
Flow of e- (Spontaneous or Forced)	Spontaneous	forced
(+) Electrode	cathode	anode
(-) Electrode	anode	Cathode
Direction of e- Flow	anode to cathode	anode to cathode
Reduction Half Cell	cathode	Cathode
Oxidation Half Cell	anode	anode