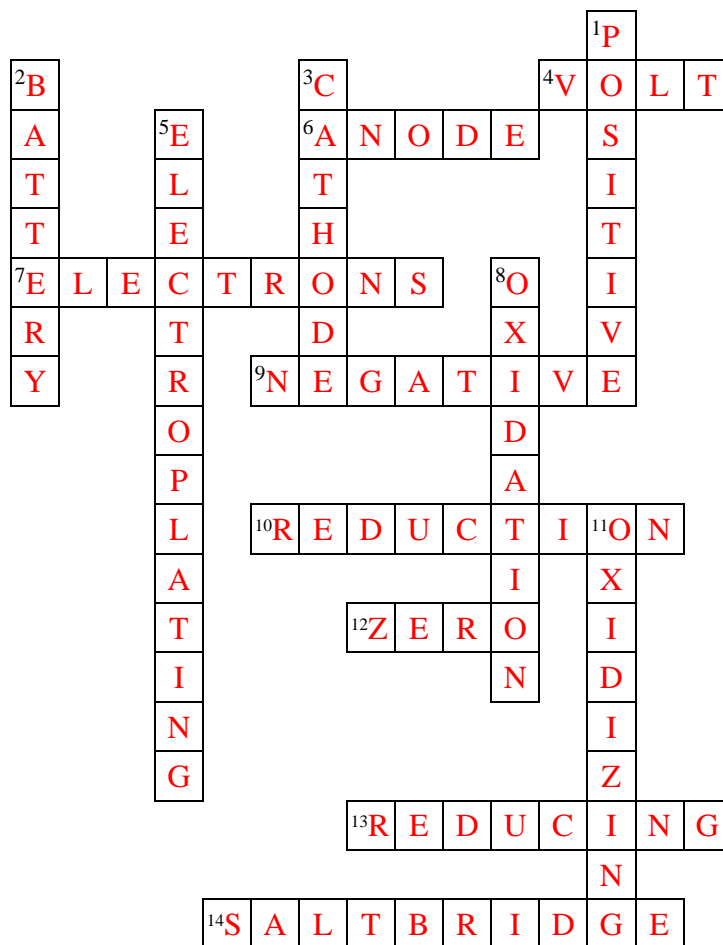




Electrochemistry Crossword



Across

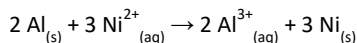
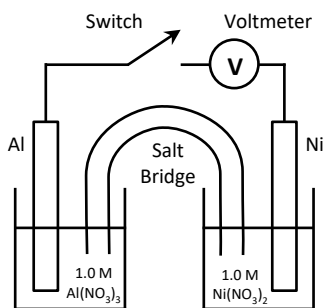
- Unit of electrical potential
- Electrode where oxidation takes place
- Both atoms and ____ must be balanced in a redox equation.
- The anode in a voltaic cell has this charge
- Gain of electrons
- Voltage of an electrochemical cell when it reaches equilibrium
- A substance that is oxidized is the ____ agent
- Allows the flow of ions in an electrochemical cell

Down

- The anode in an electrolytic cell has this charge
- A word for multiple electrochemical cells
- Electrode where reduction takes place
- Process of layering a metal onto a surface in an electrolytic cell
- Loss of electrons
- A substance that is reduced is the ____ agent

Answer the following questions.

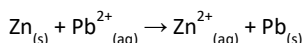
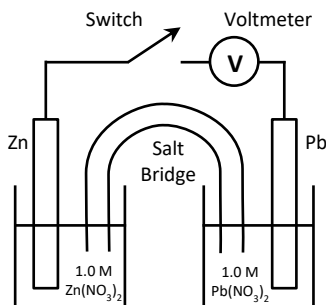
- 1 The diagram below represents a voltaic cell.



When the switch is closed, electrons flow from

Al(s) to the Ni(s).

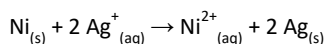
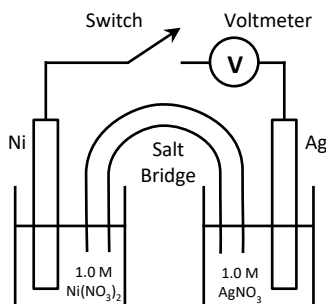
- 2 The diagram below represents a voltaic cell. The reaction occurs at 1 atm and 298 K.



What happens at the Zn electrode when the switch is closed?

Zn(s) oxidizes to Zn²⁺(aq) and e⁻ flow to the Pb(s).

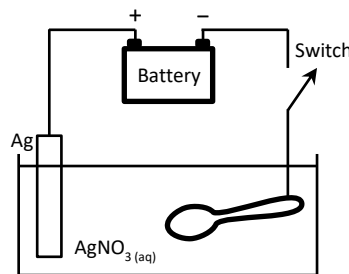
- 3 The diagram below represents a voltaic cell.



When the switch is closed, which particles undergo reduction?

Ag⁺(aq) will be reduced.

The diagram below represents the electroplating of a metal spoon with Ag(s).



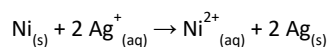
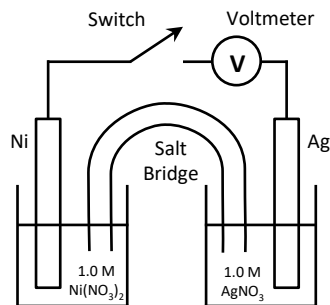
- 4 Write the equation that represents the half-reaction that takes place at the spoon.

Ag⁺(aq) → Ag(s).

- 5 Which electrode is represented by the spoon?

The spoon is the cathode. (Red Cat)

The diagram below represents a voltaic cell.



- 6 Explain the reaction that occurs at the Ag electrode.

As e⁻ flow to Ag(s), Ag⁺(aq) ions are reduced.

- 7 As the reaction in this cell takes place, the concentration of the Ni²⁺ ions will

The [Ni²⁺(aq)] will increase.

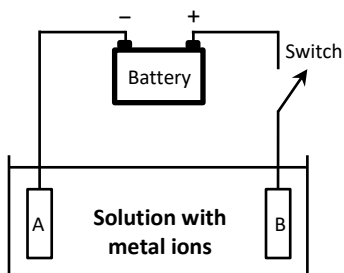
- 8 When operating, electrons will flow from

Ni(s) to the Ag(s).

- 9 Which metal represents the cathode?

Ag(s) is the cathode. (Red Cat)

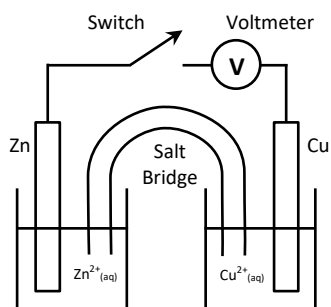
- 10 The diagram below represents an electroplating arrangement



Should the object to be plated be placed at A or B?

Reduction would occur at the cathode, A.

The diagram below represents a voltaic cell.



- 11 Which particles will be reduced when the switch is closed

$\text{Cu}^{2+}(\text{aq})$ will be reduced.

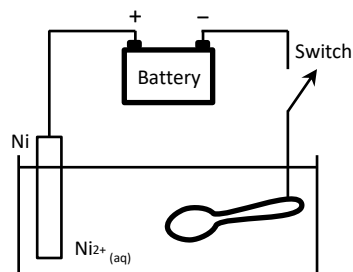
- 12 When operating, electrons will flow from

Zn(s) to the Cu(s).

- 13 When operating, positive ions will flow from

$\text{Zn}^{2+}(\text{aq})$ solution to the $\text{Cu}^{2+}(\text{aq})$ solution.

The diagram below represents a spoon that will be electroplated with nickel metal.



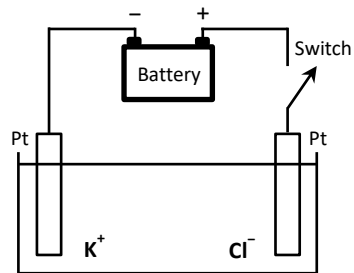
- 14 Will nickel ions be reduced or oxidized?

$\text{Ni}^{2+}(\text{aq})$ will be reduced.

- 15 What will happen to the spoon?

Gains mass as $\text{Ni}(\text{s})$ is added..

- 16 The diagram below shows the electrolysis of fused KCl.



What occurs when the switch is closed?

K^+ ions will migrate to the - electrode (left)

and be reduced to K liquid while Cl^- ions move

right (+ electrode) and oxidize to form $\text{Cl}_2(\text{g})$.