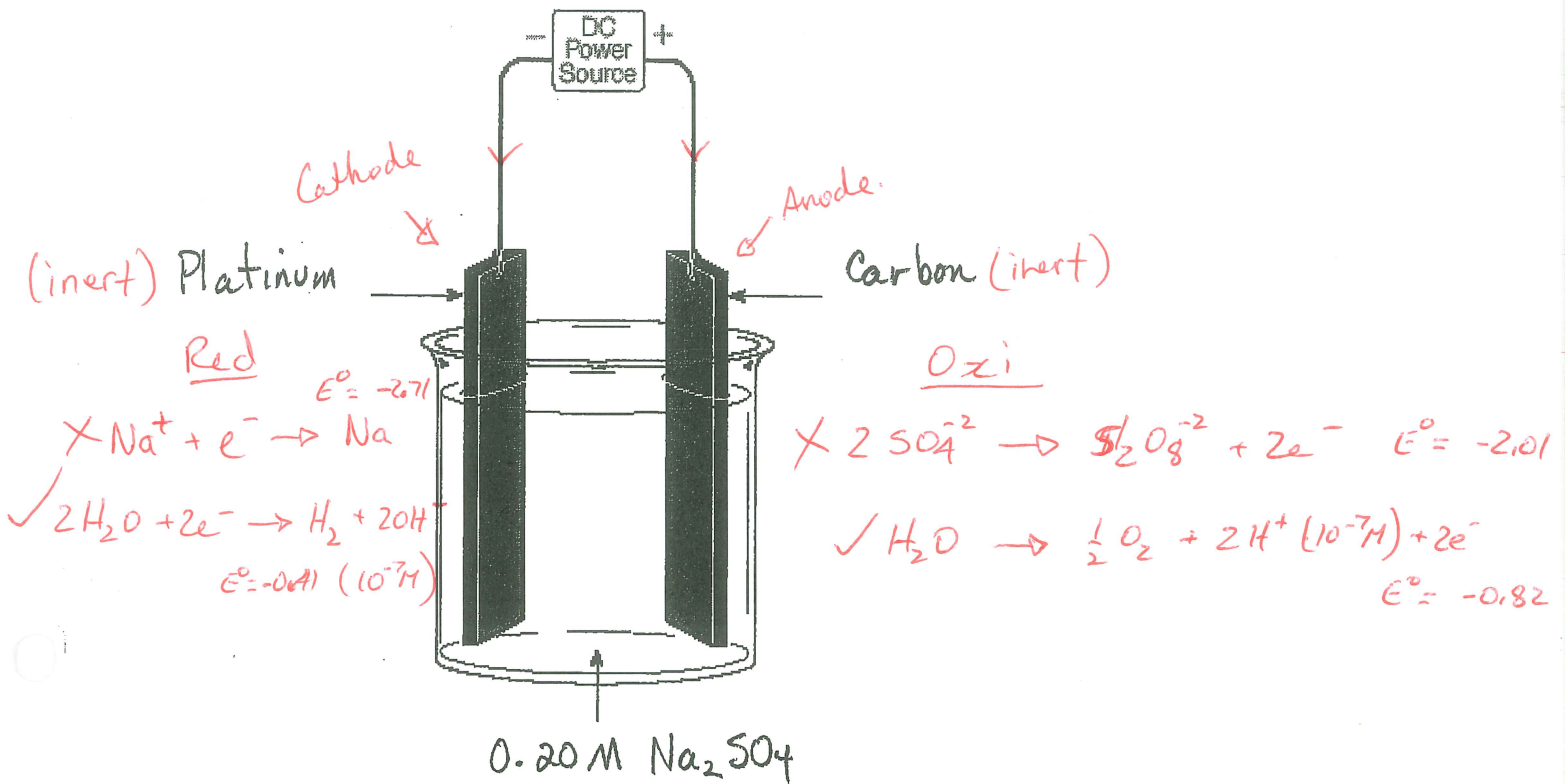


Electrolytic Cells



1/1 1. Which electrode is the anode? Carbon

1/1 2. Which electrode is the cathode? Platinum

3. What reaction takes place at the anode?

1/2 4. What reaction takes place at the cathode?

$$H_2O \rightleftharpoons \frac{1}{2} O_2 + 2H^+(10^{-7}M) + 2e^- \quad E^0 = -0.82 V$$

1/2 5. Calculate the voltage required to operate this cell.

$$2H_2O + 2e^- \rightarrow H_2 + 2OH^-(10^{-7}M) \quad E^0 = -0.41 V$$

$$(-0.41) + (-0.82) = \boxed{-1.23 V}$$

1/2 6. What will happen to the pH at the platinum cathode? Increase ↑

1/1 7. What will happen to the pH at the carbon cathode? Decrease ↓