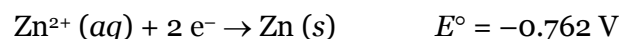
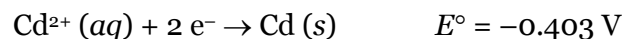
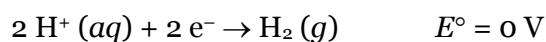
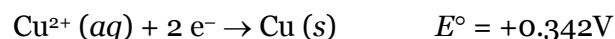
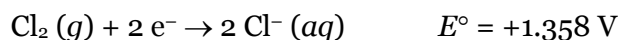
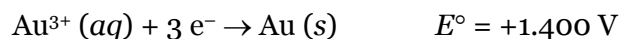


1. Consider the following half reactions and standard reduction potentials.



- A) Circle (○) the strongest oxidizing agent and box (□) the strongest reducing agent.
B) Write the balanced chemical equation and cell diagram for the Galvanic cell with the largest standard cell potential (E_{cell}°).

2. How long will it take to plate 0.0625 g of solid copper from an aqueous solution of copper(II) sulfate with a current of 0.200 A? Note: 1 A = 1 C/s and $F = 96,500 \text{ C/mol e}^{-}$

3. A Galvanic cell is constructed using two Au electrodes and two Au^{3+} solutions: one is 0.123 M and the other is 0.449 M. Fill in the concentrations in the cell diagram below for this cell?



4. You construct the following Galvanic/voltaic cell at 298.15 K.

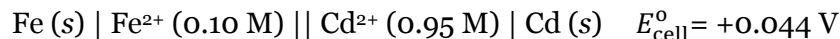


What will the potential of the cell be after 0.10 M of Cr^{2+} is consumed?

Assume that volume and temperature do not change.

$$E_{\text{cell}} = E_{\text{cell}}^{\circ} - \frac{RT}{nF} \ln Q$$

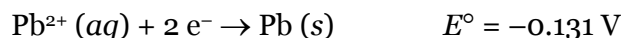
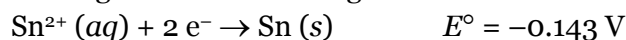
5. You construct the following Galvanic cell at 298.15 K.



The initial mass of the Fe electrode is 100.0 g and the volumes of the solutions are 1.00 L each. What will the cell potential be when the mass of the Fe electrode is 62.0 g? {Fe = 55.85 g/mol}

Assume that temperature does not change.

6. You construct a voltaic cell using the two reactions given.



If the cell starts with $[\text{Sn}^{2+}] = 1.35 \text{ M}$ and $[\text{Pb}^{2+}] = 2.11 \text{ M}$ at 298.15 K, what will be the concentration of Pb^{2+} when the cell is “dead”?

7. Consider a voltaic cell with the following cell diagram at 298.15 K.



- A) What will happen to the cell potential if $[\text{Pb}^{2+}]$ is doubled?

Increases Decreases Stays the same

- B) What will happen to the cell potential if $[\text{Cu}^{+}]$ is doubled?

Increases Decreases Stays the same

- C) What will happen to the cell potential if we added enough water to double the volumes of both the anodic and cathodic solutions?

Increases Decreases Stays the same