

An alkaline (base) solution of hypochlorite ions (ClO^-) reacts with solid chromium (III) hydroxide to produce chromate ions (CrO_4^{2-}) and chloride ions

$\text{ClO}^-(\text{aq}) + \text{Cr}(\text{OH})_3(\text{s}) \rightarrow \text{CrO}_4^{2-}(\text{aq}) + \text{Cl}^-(\text{aq})$ how many electrons appear in the balanced half reaction?

- A) 0 B) 2 C) 3 D) 6 E) None of the Above

The reaction taking place in a nicad cell is
 $\text{Cd(s)} + \text{Ni(OH)}_3\text{(s)} \rightarrow \text{Cd(OH)}_2\text{(s)} + \text{Ni(OH)}_2\text{(s)}$ and the
emf of the cell when fully charged is 1.25 V. What is the
reaction free energy?

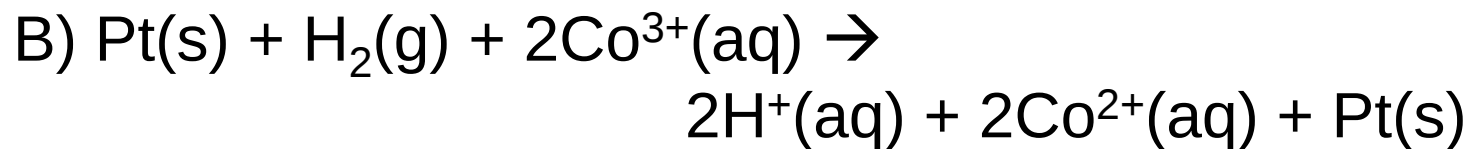
A) $-1.26 \times 10^5 \text{ J/mol}$

B) $-2.41 \times 10^5 \text{ J/mol}$

C) $-3.62 \times 10^5 \text{ J/mol}$

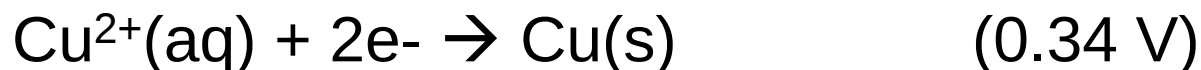
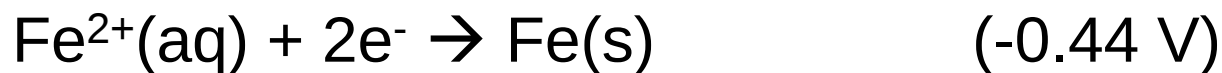
D) None of the Above

Write the balanced reaction for the given cell
 $\text{Pt(s)} \mid \text{H}_2(\text{g}) \mid \text{H}^+(\text{aq}) \mid \text{Co}^{3+}(\text{aq}), \text{Co}^{2+}(\text{aq}) \mid \text{Pt(s)}$



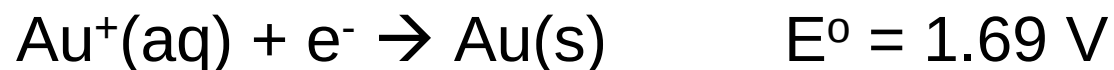
D) None of the Above

When the steal rod (mainly Fe) get put into the copper (II) sulfate and the copper gets put into the iron (II) sulfate what will happen given:



- A) Nothing will happen to either metals
- B) Both metals will get plated by the other metal
- C) The Cu will be plated with Fe and nothing will happen to the Fe
- D) The Fe will be plated with Cu and nothing will happen to the Cu

Calculate the standard potential of $\text{Au}^{3+}(\text{aq})/\text{Au}^+(\text{aq})$
given the following data



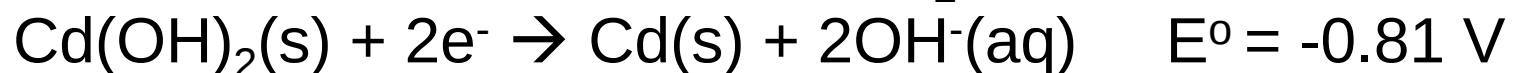
A) 0.63 V

B) 1.26 V

C) 1.47 V

D) None of the Above

Calculate the solubility product at 298.15 K of cadmium hydroxide, $\text{Cd}(\text{OH})_2$ given



A) 5.46×10^{-42}

B) 1.72×10^{-7}

C) 3.37×10^{13}

D) None of the Above

Calculate the emf of the cell
 $\text{Zn(s)}|\text{Zn}^{2+}(\text{aq}, 1.50 \text{ mol}\cdot\text{L}^{-1})||\text{Fe}^{2+}(\text{aq}, 0.10 \text{ mol}\cdot\text{L}^{-1})|\text{Fe(s)}$
at 25°C



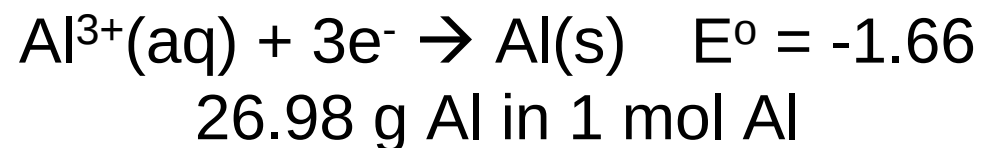
A) -0.35 V

B) 0.29 V

C) 0.35 V

D) None of the Above

How long will it take to plate out 1.0 kg of Al from aqueous Al^{3+} with a current of 100.0 A?



A) $2.89 \times 10^3 \text{ s}$

B) $1.07 \times 10^5 \text{ s}$

C) $1.07 \times 10^9 \text{ s}$

D) None of the Above