An alkaline (base) solution of hypochlorite ions (ClO^-) reacts with solid chromium (III) hydroxide to produce chromate ions (CrO_4^{2-}) and chloride ions $ClO^-(aq) + Cr(OH)_3(s) \rightarrow CrO_4^{2-}(aq) + Cl^-(aq)$ how many electrons apear in the balenced half reaction?

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

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

A) -1.26×10^5 J/mol

B) -2.41×10^5 J/mol

C) -3.62×10^5 J/mol

D) None of the Above

Write the balanced reaction for the given cell

$Pt(s) \mid H_2(g) \mid H^+(aq) \mid Co^{3+}(aq)\ ,\ Co^{2+}(aq) \mid Pt(s)$

A) $H_2(g) + Co^{3+}(aq) \rightarrow 2H^+(aq) + Co^{2+}(aq)$

B) $Pt(s) + H_2(g) + 2Co^{3+}(aq) \rightarrow 2H^+(aq) + 2Co^{2+}(aq) + Pt(s)$

C) $H_2(g) + Co^{3+}(aq) \rightarrow H^+(aq) + Co^{2+} + 1e^-(aq)$

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:

$Fe^{2+}(aq) + 2e^- \rightarrow Fe(s)$ (-0.44 V)

$Cu^{2+}(aq) + 2e- \rightarrow Cu(s)$ (0.34 V)

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 $Au^{3+}(aq)/Au^{+}(aq)$ given the following data

$Au^{+}(aq) + e^{-} \rightarrow Au(s)$ $\quad E^{o} = 1.69$ V

$Au^{3+}(aq) + 3e^{-} \rightarrow Au(s)$ $\quad E^{o} = 1.40$ V

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, $Cd(OH)_2$ given

$Cd(OH)_2(s) + 2e^- \rightarrow Cd(s) + 2OH^-(aq)$ $E^o = -0.81$ V

$Cd^{2+}(aq) + 2e^- \rightarrow Cd(s)$ $E^o = -0.40$ V

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

$Zn(s)|Zn^{2+}(aq, 1.50\ mol \cdot L^{-1})||Fe^{2+}(aq, 0.10\ mol \cdot L^{-1})|Fe(s)$

at 25ºC

$Fe^{2+} + 2e^- \rightarrow Fe(s)$ $\quad E^o = -0.76\ V$

$Zn^{2+} + 2e^- \rightarrow Zn(s)$ $\quad E^o = -0.44\ V$

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?

$Al^{3+}(aq) + 3e^- \rightarrow Al(s) \quad E^o = -1.66$

26.98 g Al in 1 mol Al

A) 2.89×10^3 s

B) 1.07×10^5 s

C) 1.07×10^9 s

D) None of the Above