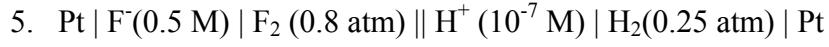
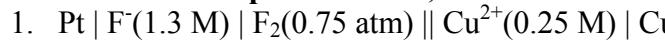


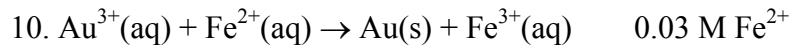
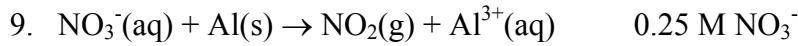
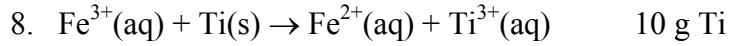
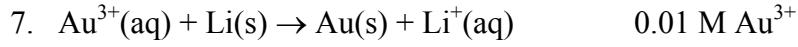
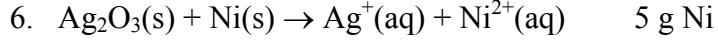
CH 302 Spring 2007 Worksheet 11

Half-reaction	ΔE_r° (V)
$\text{Li}^+(\text{aq}) + \text{e}^- \rightarrow \text{Li(s)}$	-3.05
$\text{Al}^{3+}(\text{aq}) + 3\text{e}^- \rightarrow \text{Al(s)}$	-1.68
$\text{TiO(s)} + 2\text{H}^+ + 2\text{e}^- \rightarrow \text{Ti(s)} + \text{H}_2\text{O}$	-1.31
$\text{Ti}^{3+}(\text{aq}) + 3\text{e}^- \rightarrow \text{Ti(s)}$	-1.21
$\text{Ni}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Ni(s)}$	-0.25
$\text{CO}_2(\text{g}) + 2\text{H}^+ + 2\text{e}^- \rightarrow \text{HCOOH(aq)}$	-0.11
$2\text{H}^+(\text{aq}) + 2\text{e}^- \rightarrow \text{H}_2(\text{g})$	0
$\text{SO}_4^{2-}(\text{aq}) + 4\text{H}^+ + 2\text{e}^- \rightarrow 2\text{H}_2\text{O(l)} + \text{SO}_2(\text{aq})$	+0.17
$\text{Cu}^{2+}(\text{aq}) + 2\text{e}^- \rightarrow \text{Cu(s)}$	+0.34
$\text{Fe}^{3+}(\text{aq}) + \text{e}^- \rightarrow \text{Fe}^{2+}(\text{aq})$	+0.77
$\text{NO}_3^-(\text{aq}) + 2\text{H}^+(\text{aq}) + \text{e}^- \rightarrow \text{NO}_2(\text{g}) + \text{H}_2\text{O(l)}$	+0.80
$\text{Au}^{3+}(\text{aq}) + 3\text{e}^- \rightarrow \text{Au(s)}$	+1.52
$\text{Ag}_2\text{O}_3(\text{s}) + 6\text{H}^+ + 4\text{e}^- \rightarrow 2\text{Ag}^+(\text{aq}) + 3\text{H}_2\text{O}$	+1.67
$\text{F}_2(\text{g}) + 2\text{e}^- \rightarrow 2\text{F}^-(\text{aq})$	+2.87

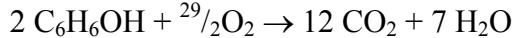
For problems 1-5, calculate ΔE for the given electrochemical cell.



For problems 6-10, calculate the current generated by the reaction when the given amount of reactant is used up in one hour.



11. If the rate of the following reaction is 1.3×10^{-5} M/s, what is $\Delta[\text{O}_2]/\Delta t$?



12. If $\Delta[\text{CO}_2]/\Delta t = 10^{-4}$ M/s for the same reaction as in problem 11, what is the rate of the reaction?

13. Predict whether the rate of the reaction in problem 11 will increase, decrease, or stay the same if the following changes are made to the system.

a. Add $\text{C}_6\text{H}_6\text{OH}$

b. Remove O_2

c. Increase the temperature

d. Keep the same amount of everything, but double the size of the reaction vessel.

e. Add a catalyst

For the reactions in problems 14-20, calculate either the rate or the $\Delta[\text{]}/\Delta t$ using the information given.

