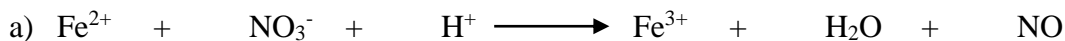
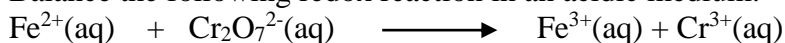


For complete credit show all the work for the calculations and give the answers in the correct significant figures.

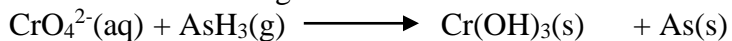
- 1) Which of the following elements is getting oxidized and which is getting reduced? Also indicate the elements is an oxidizing and which is a reducing agent the above reactions?



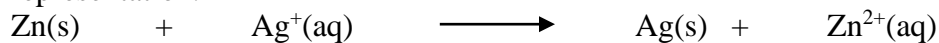
- 2) Balance the following redox reaction in an acidic medium.



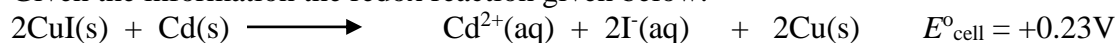
- 3) Balance the following redox reaction in a basic medium.



- 4) Write the half reactions for the following redox equation and show it in a voltaic cell representation.



- 5) Given the information the redox reaction given below:



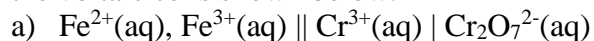
And

$$E^\circ \text{ for } \text{Cd}^{2+}(\text{aq})/\text{Cd(s)} = -0.403\text{V}$$

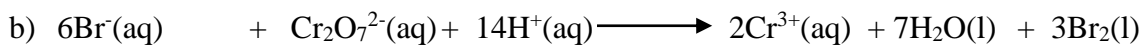
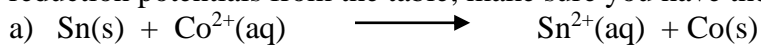
What is the E° for the reaction below (using the information above)?



- 6) Write the equation for the half reactions and overall cell reaction and calculate the E°_{cell} for the voltaic cells shown below.



7) Predict whether the following reactions will occur as written or no, i.e. if they are spontaneous. (**Strategy**: Find which element is getting reduced and oxidized first; find the reduction potentials from the table; make sure you have the correct sign!)



8) Are the following reactions possible – yes or no? (**Strategy**: use the reduction potential table)

a) Silver metal gets oxidized by HCl.

b) Reduction of $\text{Sn}^{4+}(\text{aq})$ to $\text{Sn}^{2+}(\text{aq})$ by Cu(s) .

Extra Credit

- 9) From the indicated voltages for the voltaic cell shown below, determine the standard electrode potential $E_{M^{3+}/M}$, if the metal M is a) Hg, $E^{\circ}_{\text{cell}} = 0.086 \text{ V}$ and b) Cr, $E^{\circ}_{\text{cell}} = -0.32 \text{ V}$.
(**Strategy:** Find the reduction potential for Cr^{2+} to Cr^{3+} ; What is this? Anode or cathode?)

