

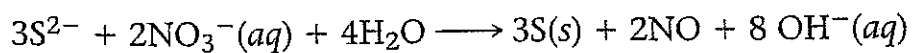
Electrochemistry Problems

20. Calculate E° for the following cells: (Draw Cell Also)
- (a) $\text{Pb} \mid \text{PbSO}_4 \parallel \text{Pb}^{2+} \mid \text{Pb}$
- (b) $\text{Pt} \mid \text{Cl}_2, \text{ClO}_3^- \parallel \text{O}_2, \text{H}_2\text{O} \mid \text{Pt}$

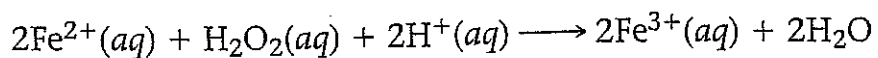
34. Consider a cell reaction at 25°C where $n = 4$. Fill in the following table.

	ΔG°	E°	K
(a)	_____	_____	1.6×10^{-3}
(b)	_____	0.117 V	_____
(c)	-5.8 kJ	_____	_____

WEB 38. Calculate E° , ΔG° , and K at 25°C for the reaction



45. Consider a voltaic cell in which the following reaction takes place.

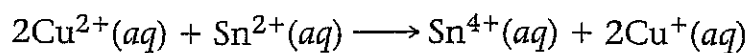


(a) Calculate E° .

(b) Write the Nernst equation for the cell.

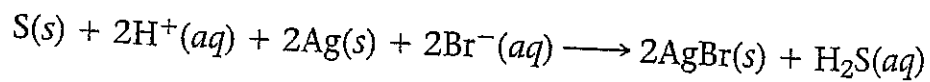
(c) Calculate E under the following conditions: $[\text{Fe}^{2+}] = 0.00813 \text{ M}$, $[\text{H}_2\text{O}_2] = 0.914 \text{ M}$, $[\text{Fe}^{3+}] = 0.199 \text{ M}$, $\text{pH} = 2.88$.

49. Consider the reaction



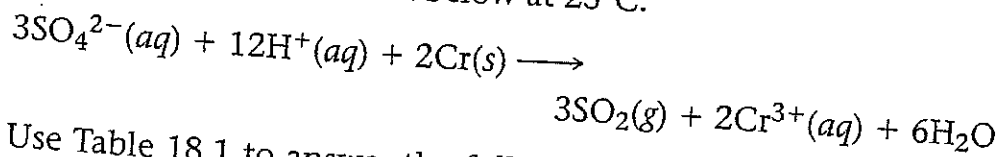
At what concentration of Cu^{2+} is the voltage zero, if all other species are at 0.200 M ?

50. Consider the reaction



At what pH is the voltage zero if all other species are at standard concentrations?

54. Consider the reaction below at 25°C:



Use Table 18.1 to answer the following questions. Support your answers with calculations.

- (a) Is the reaction spontaneous at standard conditions?
- (b) Is the reaction spontaneous at a pH of 3.00 with all other ionic species at 0.100 M and gases at 1.00 atm?
- (c) Is the reaction spontaneous at a pH of 8.00 with all other ionic species at 0.100 M and gases at 1.00 atm?
- (d) At what pH is the reaction at equilibrium with all other ionic species at 0.100 M and gases at 1.00 atm?