Question 1.

In addition to mass balance, oxidation-reduction reactions must be balanced such that the number of electrons lost in the oxidation equals the number of electrons gained in the reduction. This balancing can be done by two methods: the half-reaction method or the oxidation number method. The half-reaction method balances the electrons lost in the oxidation half-reaction with the electrons gained in the reduction half-reaction. In either method , , and may be added to complete the mass balance. Which substances are used depends on the reaction conditions.

Acidic solution

In acidic solution, the bromate ion can be used to react with a number of metal ions. One such reaction is



Since this reaction takes place in acidic solution, and will be involved in the reaction. Places for these species are indicated by the blanks in the following restatement of the equation:

$BrO\_{3}^{-}\left(aq\right)+ Sn^{2+}\left(aq\right)+ \\_\\_\\_\\_\rightarrow Br^{-}\left(aq\right)+$S$n^{4+}$(aq) + \_\_\_\_\_\_

The solution needs to be acidic – I used 2, 5, 12, 2, 5, 6 with H+ on the left side and H2O on the right. I was told I have the H and O balanced but not the electron transfer. Check half-reaction equation. I don’t understand.

Question 2.

Calculate the standard cell potential at 25°C for the following reaction:

 Mg(s) +Fe2+(aq) -> Mg2+(aq) + Fe(s)

when ΔH°=-617 kJ and ΔS°= -301J/K.

E° = \_\_\_\_\_\_\_\_V

Question