Redox Titration in an Acidic Medium

Laboratory Simulation for the Titration between Potassium Permanganate and Iron (II)

$$5\ Fe^{2+}(aq) + MnO_4^-(aq) + 8\ H^+(aq) \rightarrow 5\ Fe^{3+}(aq) + Mn^{2+}(aq) + 4\ H_2O(l)$$

1) Using the reaction above, fill out the table below:

Element	Oxidation Number as a Reactant	Oxidation Number as a Product	Gaining or Losing Electrons?	Oxidized or Reduced?
Fe				
Mn				

2) How many electrons are transferred in this redox titration? _____
3) If the titration is known to be complete when it changes color, is this the end point or equivalence point of the titration? End point or Equivalence Point
4) Google "redox titration simulation".
5) Click on REDOX Titration in Acidic Solution Computer Simulation
6) Click on the link http://pages.uoregon.edu/tgreenbo/redox.html
7) You may have to Agree to the disclaimer.
8) You may have to enable Adobe Flash Player by clicking the right-hand side of the address puzzle piece, click Manage, unclick "Block Sites from Running Flash (recommended)", and then refresh your page.
9) Once the simulation is up, click on 1. Select the Reaction.
10) Click on the Oxidizing Agent $KMnO_4$ and the Reducing Agent Fe^{2+}.
11) What purple solution was filled in the buret? _____
12) What is the Molarity of $KMnO_4$? _____
13) Start your titration by adding the $KMnO_4$. Add the $KMnO_4$ by 2. Push Slider Up to Add a Volume of $KMnO_4$. Do not put too much in. Add about 1-3 mL each slide. Keep adding until you can start to see a color change. Once you see a color change, you may want to add using the Dropwise button. Do not go past your end point! Once the color totally changes, you are done your titration.
14) What was the Volume of $KMnO_4$ you added? _____
15) Calculate the number of moles of $KMnO_4$ added. _____
16) What is the molar ratio of moles of MnO_4^- : moles of Fe^{2+}? _____
17) Calculate the number of moles of Fe^{2+} that was reacted. _____
18) What was the Volume of Fe^{2+} initially? _____
19) Calculate the Molarity of Fe^{2+} (round to 2 significant digits). _____
20) Enter your Molarity of Fe^{2+} into 3. After Titration, Calculate and Enter Molarity of Fe^{2+}.
21) Did you calculate the correct Molarity? Yes or No
22) If you went past the end point or if you go the Molarity incorrect, you can always Repeat the Experiment by Pressing Repeat. If you got it correct, click Reset and do the next Oxidizing Agent.

Laboratory Simulation for the Titration between Potassium Dichromate and Tin (II)

$$3\ Sn^{2+}\ (aq) + \ Cr_2O_7^{\ 2-}\ (aq) + 14\ H^{+}\ (aq) \rightarrow \ 3\ Sn^{4+}\ (aq) + \ 2\ Cr^{3+}\ (aq) + 7\ H_2O\ (l)$$

1) Using the reaction above, fill out the table below:

Element	Oxidation Number as a Reactant	Oxidation Number as a Product	Gaining or Losing Electrons?	Oxidized or Reduced?
Sn				
Cr				

Molarity of $K_2Cr_2O_7$ _____

Volume Used of $K_2Cr_2O_7$ _____

Moles Used of $K_2Cr_2O_7$ _____

Molar Ratio of Moles of $K_2Cr_2O_7$: Moles of Sn^{2+} _____

Moles of Sn^{2+} _____

Volume of Sn^{2+} _____

Molarity of Sn^{2+} _____

Laboratory Simulation for the Titration between Iodine and Thiosulfate Ion

$$I_2\ (l) + 2\ S_2O_3^{2-}\ (aq) \rightarrow \ S_4O_6^{2-}\ (aq) + 2\ I^{-}\ (aq)$$

1) Using the reaction above, fill out the table below:

Element	Oxidation Number as a Reactant	Oxidation Number as a Product	Gaining or Losing Electrons?	Oxidized or Reduced?
I				
S				

Molarity of I_2 _____

Volume Used of I_2 _____

Moles Used of I_2 _____

Molar Ratio of Moles of I_2 : Moles of $S_2O_3^{2-}$ _____

Moles of $S_2O_3^{2-}$ _____

Volume of $S_2O_3^{2-}$ _____

Molarity of $S_2O_3^{2-}$ _____