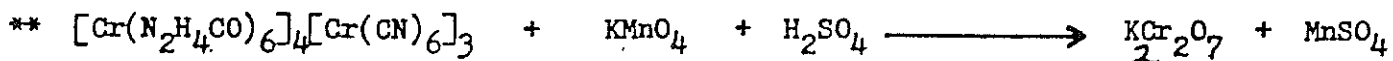
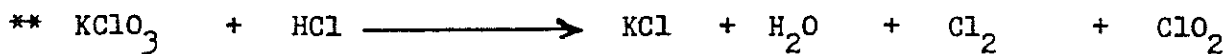
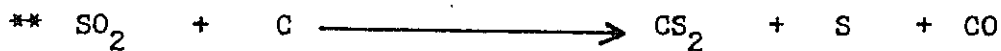
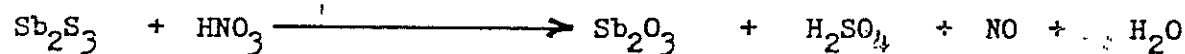
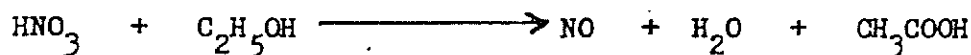
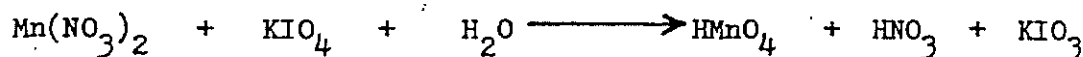
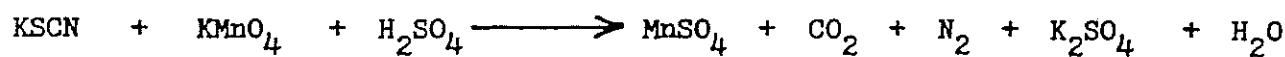
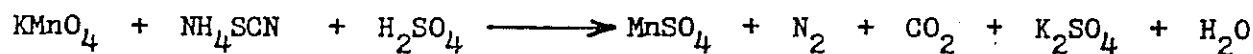
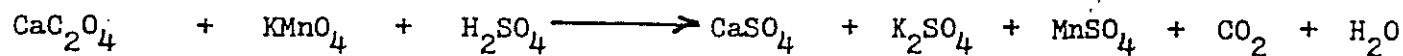
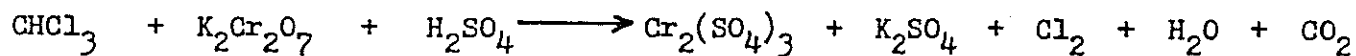
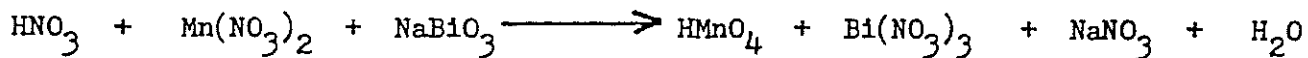
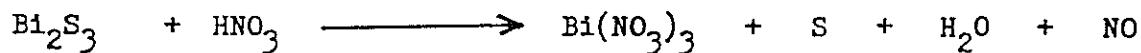


OXIDATION-REDUCTION EQUATIONS



Rules for Balancing Equations for Oxidation-Reduction Reactions (In Aqueous Solutions)

1. Write the equation in two parts, one representing the oxidation half-reaction and the other the reduction half-reaction. (It is not necessary to know which is which at this stage. Simply select two half-reactions in which some symbol appears in different form in reactants and products.)
2. By proper use of coefficients balance all symbols except H and O in each half reaction.
3. Balance the O's in each half-reaction by adding an appropriate number of water molecules to the side having the fewer O's.
4. Balance the H's in each half-reaction by adding an appropriate number of protons (H^+) to the side having the fewer H's. (If reaction occurs in basic solution, then add enough OH^- 's to side having H^+ ions to convert all these to H_2O and add the same number of OH^- to the other side).
5. Balance the net charge of reactants and products in each half-reaction by adding an appropriate number of electrons (written as e^-) to the side having the lesser negative charge (more positive charge).
6. Multiply each half-reaction by the smallest whole number which will give the same number of electrons in each half reaction.
7. Add the two half-reactions together and subtract any duplications so that any particular formula appears only in reactants and products.
8. Check to see that there are the same number of each element symbol in reactants and products and that the net charge of all reactants equals the net charge of all products.