

Fall 2008
CHEM 2101 – General Chemistry I

Half Reaction Method for Balancing Redox Reaction Equations in Acidic Medium

1. Write separate oxidation and reduction half reactions (*Remember, oxidation is loss, and reduction is gain*).
2. For each half reaction:
 - a) Balance all elements except **H** and **O**
 - b) Balance **O** using **H₂O**
 - c) Balance **H** using **H⁺**
 - d) Balance **charge** using **e⁻**
3. Equalize the number of **e⁻** in the half reactions by multiplying each reaction equation by an integer.
4. Add the half reactions and cancel the identical species.
5. Check that the elements and the charges are balanced.

Half Reaction Method for Balancing Redox Reaction Equations in Basic Medium

1. Follow steps (1 – 5) for balancing redox equations in acidic medium.
2. To both sides of the equation add **OH⁻** equal to the number of **H⁺**.
3. Form **H₂O** on the side of the equation that contains **H⁺** and **OH⁻**.
4. Cancel the **H₂O** that appear on both sides of the equation.
5. Check that the elements and the charges are balanced.