

UNIT 2 REACTIONS IN AQUEOUS SOLUTIONS

Textbook References: *Chemistry* Zumdahl 5th Edition Chapter 4

1. classify compound as electrolyte or nonelectrolyte
2. determine if a compound is a weak or strong electrolyte
3. predict if a compound is water soluble
4. determine if a double displacement reaction forms a precipitant, produces a gas or is a neutralization reaction
5. write net ionic equations
6. determine the molarity of a solution
7. prepare solutions by dilution
8. solve solution stoichiometry problems
9. describe titration
10. describe gravimetric analysis
11. solve titration problems
12. solve gravimetric analysis problems
13. identify oxidation reduction reactions
14. assign oxidation numbers to elements in a compound
15. balance oxidation reduction reactions by half reaction given the net ionic equation

Vocabulary:

electrolyte	weak electrolyte
strong electrolyte	nonelectrolyte
acid	base
spectator ion	molarity
titration	equivalence point
indicator	standard
buret	oxidation reduction reaction
oxidation	reduction
oxidizing agent	reducing agent
gravimetric analysis	precipitation reaction
precipitate	oxidation number

AP Course Guide correlation:

III. Reactions

A. Reaction types

2. Precipitation reactions

3. Oxidation-reduction reactions

a. Oxidation number

b. The role of the electron in oxidation-reduction

B. Stoichiometry

1. Ionic and molecular species present in chemical systems: net ionic equations

2. Balancing of equations including those for redox reactions

IB Course Outline correlation

8.3.1 Distinguish between *strong* and *weak* acids and bases in terms of the extent of dissociation, reaction with water and electrical conductivity.

8.3.2 State whether a given acid or base is strong or weak.

9.1.1 Define *oxidation* and *reduction* in terms of electron loss and gain.

9.1.2 Deduce the oxidation number of an element in a compound.

9.1.4 Deduce whether an element undergoes oxidation or reduction in reactions using oxidation numbers

1.5.1 Distinguish between the terms *solute*, *solvent*, *solution* and *concentration* (g dm^{-3} and mol dm^{-3}).

1.5.2 Solve problems involving concentration, amount of solute and volume of solution.