

**Chemistry 101**  
**Study Guide for Exam 3 (Monday, December 1st)**

Topics for the exam with associated practice problems from the text are below:

**Chapter 9**

- solutions (problems 9.3, 9.6)
- electrolytes (problem 9.15)
- solubility (problem 9.29, 9.33, 9.37)
- % concentrations (v/v, m/m, m/v) (problems 9.43, 9.45, 9.47)
- Molarity (problems 9.57, 9.61, 9.63)

**Chapter 10**

- identifying acids and bases (problem 10.7)
- conjugate acids and bases (problems 10.9, 10.13)
- $K_a$  - meaning of (problem 10.27)
- finding  $[\text{OH}^-]$  from  $[\text{H}_3\text{O}^+]$  using  $K_w$  (problem 10.39)
- finding  $[\text{H}_3\text{O}^+]$  from  $[\text{OH}^-]$  using  $K_w$  (problem 10.37)
- converting between pH and  $[\text{H}_3\text{O}^+]$  or  $[\text{OH}^-]$  (problems 10.47)
- reactions of acids and bases (problems 10.51, 10.53)
- acidity/basicity of salt solutions (problem 10.59)
- buffers (problem 10.65)
- titration (problem 10.79)

**Chapter 8**

- converting pressure units (problem 8.7)
- Boyle's Law (problems 8.15, 8.21, 8.23)
- Charles' Law (problem 8.27, 8.31)
- Gay-Lussac's Law (problem 8.37)
- Avogadro's Law (problem 8.51)
- Ideal Gas Law (problems 8.57, 8.59, 8.95)
- partial pressures (problem 8.63)

**Chapter 3**

- writing nuclear equations for alpha and beta decay (problem 3.47)
- writing nuclear equations and finding missing particle/nucleus (problems 3.49, 3.51)
- half-lives (problem 3.53, 3.55)
- definition of fission (problem 3.65)
- basic components of a nuclear power plant (see environmental note: pg 106)