

Study guide for Exam 1  
CHEM1002  
Professor Pojman  
Fall 2008

Exam will consist of 20 multiple choice questions and one 20 pt essay question on the oleic acid demonstration.

**Be able to:**

- 1) convert mass to moles and moles to mass.
- 2) Convert moles to number of atoms and/or molecules
- 3) Calculate concentration.
- 4) Calculate concentration after dilution
- 5) explain in words and with mathematics how we determined the size of an oleic acid molecule.
- 6) Calculate pH and pOH of a solution.
- 7) Define weak acid, strong acid, weak base, strong base, conjugate acid and conjugate base.
- 8) Recognize the following strong acids:
  - a.  $\text{HNO}_3$
  - b.  $\text{H}_2\text{SO}_4$
  - c.  $\text{HClO}_4$
  - d.  $\text{HCl}$
- 9) Recognize the following strong bases:
  - a.  $\text{NaOH}$
  - b.  $\text{Ba}(\text{OH})_2$
  - c.  $\text{Ca}(\text{OH})_2$
- 10) Recognize the following weak acids:
  - a.  $\text{H}_2\text{SO}_3$
  - b. Acetic acid
- 11) Recognize the follow weak bases:
  - a.  $\text{NH}_3$
- 12) calculate the final pH of a mixture of an acid & base.
- 13) predict qualitative changes in pH
- 14) calculate the amount of acid or base needed to achieve a given pH.
- 15) identify & balance all reactions given in class. E.g.,  $\text{CaC}_2 + \text{H}_2\text{O}$
- 16) explain what is chemical equilibrium