**CHEM 212**
**Practice exam 4**

**Mass spectrometry**

1. Diagram, label, and describe the following ionization methods.
    a. Electron ionization
    b. Chemical ionization
    c. Electrospray ionization
2. Diagram, label, and describe the following ion separating or selecting methods.
    a. Magnetic sector
    b. Quadropole
    c. Time of flight
3. Diagram, label, and describe the following ion detection methods work.
    a. Electron multiplier
    b. Continuous dynode electron multiplier (Channeltron)
4. Diagram, label, and describe how an ICP-MS works.

**Separations**

5. Solvent extraction problems- such as: 22-B, 22-1/2
6. List the different types of chromatography and describe how each works (p 543).
7. Be able to do separations efficiency problems: 22-28, 22-33, 22-36
8. Be able to explain fronting and tailing-why they exist and how to correct for them. Text: 22-34
9. Be able to describe fig 22-21
10. State the criteria for quantitative separation and calculate if this criteria is met.
11. Diagram, label, and describe how an HPLC works.
12. Diagram, label, and describe how a GC-MS works.

If covered in class:

13. Diagram, label, and describe how a CE works.
14. Diagram, label, and describe how a TLC works.

**On a separate piece of paper to be turned in**

15. Write 3 good questions you would like to see on the exam. You will turn this in to me.
16. List equations you would like to be provided on this exam.