

**CHM111 Lab Exam topic list Fall 2009**  
**Exam will take place during your lab time**  
**Nov 30, Dec 3, and Dec 4, 2009**

Be sure to study pre- and post-lab questions! What we are looking for is your *understanding* of the lab procedure, you will NOT be asked to regurgitate the procedure. Can you manipulate the data? Do you understand the significance of adding/using a particular reagent? Can you create spreadsheet formulas to do calculations? Do you understand where potential errors (uncertainties) are? Have you looked at the ChemPages for additional information about equipment and how it is used/how it works?

**Is this exam important? It is worth 160 lab points (that's equivalent to FOUR lab reports!)** Originally, this was to be out of 200 points.<sup>1</sup>

This exam will be taken at your LAB time, not recitation. Also, when you take the lab test you will need to turn in your lab portfolio—ALL graded lab assignments will be turned in for 30 lab points.

#### 4. Preparation of Alum

- Understanding what a “hydrate” is
- Determining moles from volume & molarity or mass data
- Adding reactions together
- Find limiting reagents, theoretical yield, and percent yield
- Determine the amount of non-limiting reactants left over
- Filtrate versus filtrant
- How yield is affected by extraneous material
- ChemPages on the “Filtration, vacuum”

#### 5. Solutions and Titrations

- Balance acid base reactions—know the one you did in lab!
- Determine molar concentration given mass and volume or a dilution
- Determine molar concentration of a reactant when given titration data
- ChemPages on the “Titration”, “Buret”, “Flask, volumetric”

#### 6. Chemistry of Copper

- All of the reactions that were done
- How to get % yield
- Prediction of double displacement, single displacement, synthesis, decomposition reactions
- Using the activity series of metals
- Colors of various copper products you observed in lab
- Writing net ionic equations
- ChemPages on the “Filtration, vacuum” and “pH paper”

#### 9. Molecular Structures and Shapes

- Be able to construct models of molecules
- Be able to draw Lewis dot structures
- Be able to draw appropriate shapes (electronic and molecular) for molecules and polyatomic ions
- Be able to name the appropriate shapes (electronic and molecular)
- Know those bond angles!
- Be able to determine the “molecular type” (i.e.,  $AB_xE_y$ )

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<sup>1</sup> Thermochemistry will not be covered on this test because there is not enough time to turn it in, have it graded, and turn it back to you before the exam.