

CHM 111L Midterm Exam Topic list Fall 2010

Exam in recitation on Nov 3-5

Be sure to study pre- and post- lab questions and those ChemPages modules! What we are looking for is your *understanding* of the lab procedure/technique/data analysis, 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?

Is this exam important? It is worth 200 lab points (that's equivalent to FIVE lab reports!).

1. Basic Lab Techniques

- correctly reading measurement devices
- accuracy versus precision
- determine mass and volume delivered by a pipet (like in lab)
- calculate percent error
- ChemPages on the "Balance", the "Volumetric pipet", and the "Standard bulb"

2. Paper Chromatography

- interpret a chromatogram
- calculate R_f values and know what factors affect R_f values
- chromogenic reagents (what are they generally, what ones were used specifically, what was the purpose of the ones you used)
- ChemPages on "Chromatography, paper"

3. Physical Properties

- density calculation via displacement method or mass & volume data
- using a calibration curve (like in lab...be sure you can rearrange $y = mx+b$ to solve for x)
- ChemPages on the "Balance", the "Volumetric pipet", and the "Standard bulb"

7. Hydrogen emission

- You will be given the Rydberg equation, but you will have to know $c=\lambda\nu$ and $E=h\nu$. You will be given any constants you will need.
- Be able to construct a miniature energy level diagram given the appropriate information
- Be able to interpret an energy level diagram
- Be able to calculate ΔE from wavelength, be able to find n_i and n_f
- Given a calibration curve (and equation of the line) of wavelengths versus scale reading, determine the corresponding wavelength from a given scale reading
- ChemPages on "Spectroscopy, hand-held" and "Vernier scales (under the Scales module, additional topics)"

8. Periodic Properties

- Know the position of various groups of elements (alkali metals, alkaline earth metals, transition metals, metallic vs. non-metallic vs. metalloids, halogens, noble gases, noble metals, etc.)
- Predict reactivity of metals with water or acid (you should be able to balance reactions for this)
- Predict acidity/basicity of metallic oxides and nonmetallic oxides with H_2O
- Predict reaction trends (what happens to metal reactivity down a group or across a period).
- ChemPages on "Gas burner"