

What about the Chemistry test on Tuesday June 3?

This will consist of mostly of short answer or multiple choice questions similar to those of the MCAT or other types of standardized exams. Many of the questions will be conceptual in nature, dealing with major ideas, and as much as possible trivial details will not be asked for. All needed formulas and physical constants will be provided, but you will have to recognize which formula to use. The goal is to give you some practice in dealing with this type of question. It also gives me a chance to see what topics the group knows well and which topics are still fuzzy.

By its nature chemistry is cumulative; for example, calculation of molar amounts and balanced equations, although introduced in the fall, have been used innumerable times. I do want to focus more on topics dealt with near the end of program. This includes kinetics, free energy, and electrochemistry.

Examples of anticipated question types:

- Is a given reaction an oxidation-reduction reaction? If so, what is oxidized and what is reduced?
- Balance a given redox reaction
- Given a reaction and a table of reduction potentials, what is the spontaneous direction of a reaction and what is its total voltage?
- What are Gibbs free energy and entropy, and what do they tell us about chemical reactions?
- How are free energy, equilibrium, and voltage related for reactions?
- What is a rate law, and how does order of reaction show up in rate laws?
- What factors control the rates of chemical reactions, and what do catalysts and enzymes do that speed up rates?
- What are alpha, beta, and gamma particles? What changes does their release cause in the radioactive nucleus that produced them?
- How does the presence of solutes influence the physical properties of a solvent in a solution?