Study Guide 1 Chemistry 213

Student should be able to:

1. Explain how kinetics plays a role in reactions they experience in their lives.
2. Describe what things will determine the rate of a reaction.
3. Explain the effect the following variables will have on a reaction rate: concentration, temperature, surface area, and the presence of a catalyst.
4. Write rate laws given experimental data.
5. Determine the order of a reaction by looking at a graphical plot of the data.
6. Use the method of initial rates to determine the rate law.
7. Use the integrated first order rate law to determine concentration, rate constant, or amount of time elapsed.
8. Use half lives for 1st order reactions.
9. Determine the same things listed in #7 above for second and zero order reactions.
10. Explain how the activation energy affects a rate and be able to use the Arrhenius equation.
11. Explain how elementary steps can tell you how a reaction is occurring.
12. Give the reaction order knowing an elementary step’s stoichiometry.
13. Illustrate how a catalyst and intermediate plays a role in a reaction.
14. Determine the rate law given a mechanism and the rate determining step.
15. Know where a typical person’s radiation dose is coming from.
16. Balance nuclear equations.
17. Explain the relative penetrating power of the different forms of radiation.
18. Understand how the band of stability can predict whether or not a given isotope will be radioactive.
19. Calculate ages of objects or amounts of material from data on abundances using the half life of a radioactive material.
20. Explain what the equilibrium state is.
21. Given a chemical reaction, write the equilibrium expression including expressions for reactions involving solids or water.
22. Convert between Kc and Kp.
23. Manipulate equilibrium expressions.
24. Know what the relative value of K means in terms of the reaction being product favored or reactant favored.
25. Use Q to determine whether a given reaction is at equilibrium or whether it will go toward equilibrium by making more products or reactants.
26. Determine Keq if only initial concentrations are known.
27. Predict what will happen if LeChatlier’s Principle is applied to situations where the concentration of product or reactant is changing.
28. Understand the chemical principles behind demonstrations done in class.
29. Explain the chemical principles behind things done in lab.