Study Guide 3 Chemistry 213

Student should be able to:

1. Understand the chemical principles behind demonstrations done in class.
2. Explain the chemical principles behind things done in lab.
3. Explain some of the biological effects of UV radiation
4. Explain how CFCs deplete the ozone layer.
5. Describe where the ozone hole primarily forms and why.
6. Describe some solutions to the ozone problem.
7. Categorize the pH of precipitation as either acid rain or not.
8. Describe the primary contributors to acid rain.
9. Know why certain areas are more susceptible to acid rain than others.
10. Describe some of the effects of acid rain.
11. Compare and contrast the greenhouse effect and global warming.
12. Explain, in terms of molecular structure, why some molecules are greenhouse gases and others are not.
13. List some causes of global warming.
14. Describe some possible global warming solutions.
15. Describe how water is made drinkable.
16. Explain eutrophication.
17. Describe some potential effects of pharmaceuticals in the water.
18. Describe some of the goals of green chemistry and give some examples.
19. State the 2nd and 3rd laws of thermodynamics.
20. Predict the sign of S for physical and chemical processes.
21. Calculate standard entropy changes for a system from standard molar entropies.
22. Calculate standard changes in Gibbs Free Energy for a system from standard molar Gibbs Free Energy values.
23. Calculate G from changes in H and S @ a given temperature.
24. Determine whether a reaction is spontaneous from G.
25. Predict the effect of temperature on spontaneity given H and S.
26. Calculate G under non-standard conditions.
27. Relate Go and Keq.
28. Identify oxidation, reduction, oxidizing agent, and reducing agent in a chemical equation.
29. Complete and balance redox equations using the method of half reactions.
30. Cacluate Eo from standard reduction potentials.
31. Identify components of a galvanic cell.
32. Use reduction potentials to predict whether a redox reaction is spontaneous.
33. Relate Eocell to Go and Keq.
34. Calculate E under non-standard conditions.
35. Describe properties of different types of batteries and fuel cells.
36. Relate amounts of products and reactants in redox reactions to electrical charge.