Chem 101 -Exam 3 Study Guide

Chapter 9. Key problems:M&C-Chapter 9- 58,59,60,62,65,91,94

1) Be able to define, use, and convert between the most common ways of expressing solution concentrations.
2) Be able to state the result of diluting a solution and explain how to make a desired dilution.$M_1 \times V_1 = M_2 \times V_2$
3) Be able to explain vapor pressure lowering, boiling point elevation, and freezing point depression for solutions.
4) Be able to use solution quantities to determine moles of solute

Chapter 10.
Key problems:M&C-Chapter 10.44,45,59,61,64,65,71,72,73,92,101

1) Be able to recognize acids and bases and write equations for common acid–base reactions. Recognize which is the acid and which is the base (Bronsted-Lowry definition).
2) Be able to interpret acid strength using acid dissociation constants K_a and predict the favored direction of acid–base equilibria. Know all the strong acids and strong bases
3) Be able to write the equation for this constant and use it to find the concentration of H_3O+ or OH-.
4) Be able to explain the pH scale and find pH from the H_30+ or OH- concentration and *vice versa*.
5) Be able to explain how a buffer maintains pH and how the bicarbonate buffer functions in the body. BE ABLE TO USE THE HENDERSON-HASSELBALCH EQUATION TO PREDICT pH and CHANGES UPON ADDING BASE OR ACID TO A BUFFER (you will need your skills at converting solution volumes to moles as well, $M_{H+} \times V_1$ = moles of acid.
6) Be able to explain how a titration (volumetric analysis)procedure works and use the results of a titration to calculate acid or base concentration in a solution. *See last Soda Acid Experiment in lab*. $M_{H+} \times V_1 = M_{OH-} \times V_2$

Chapter 12.
M&C-Chapter 12.17,21,22,28,29,32,34,36,42,46,49,52,56,64

1) Be able to recognize and draw constitutional isomers.
2) Be able to convert between structural formulas and condensed or line structures.
3) Be able to name an alkane or cycloalkane from its structure, or write the structure, given the name.
4) Be able to describe the physical properties of alkanes and the products formed in the combustion and halogenation reactions of alkanes.

A Parting Comment: USE THE STUDY GUIDE BOOK. It's really pretty good!