

Exam # 3 – Study Guide***Chapter 8 Activity and the Systematic Treatment of Equilibrium***

Section 8-1: Activity: based on Ionic strength and hydrated radii of ions. Calculate ionic strength.

Section 8-2: Calculate activity coefficient with the Debye-Huckel or the Davies equation (know both equations and what makes them different)

Section 8-3: Solve pH problems with activities. How can you accurately perform an experiment and still avoid using activities?

Section 8-4: Understand the systematic treatment of equilibrium and when to use it (see notes from Chapter 9).

Chapter 9: Monoprotic Acid/Base Equilibria.

Sections 9-1: Calculate the pH of any strong acid or strong base

Section 9-2: Write the equilibrium expression for any weak acid (acid dissociation) or weak base (base hydrolysis)

Section 9-3: Calculate the pH of any weak acid. Calculate the fraction of dissociation or association for a weak acid or base solution.

Section 9-4: Calculate the pH of any weak base.

Section 9-5: Calculate the pH of any buffer (be able to recognize when you have a buffer!), know the Henderson-Hasselbalch equation, buffer capacity

Chapter 11: Acid-Base Titrations

Section 11-1: Be able to create a titration curve for a strong acid with a strong base and vice versa

Section 11-2: Be able to create a titration curve for a weak acid with a strong base

Section 11-3: Be able to create a titration curve for a weak base with a strong acid

For all three situations be able to calculate the pH for any point along the course of the titration

Section 11-6: understand how acid-base indicators work and be able to choose one from a table.

Skip sections 11-4, 11-5, 11-7, 11-8, 11-9

Chapter 18: Fundamentals of Spectrophotometry

Section 18-1: EM spectrum, wavelength, frequency, what happens on the molecular level when chromophores absorb different types of EM energy (vibration, electron excitation, ionization, etc)

Section 18-2: Irradiance, transmittance, absorbance, Beer's law, molar absorptivity

Section 18-3: Understand how to measure absorbance

Section 18-4: Known how to use Beer's law in calculations