Chapter 19- Reactions of Acids and Bases

19.1 The Self-ionization of Water and pH

What does amphoteric mean?

Write the equation representing the self-ionization of water.

What are the concentrations of H_3O^+ and OH^- in pure water at 25^oC?

What is the ion-product constant (K_w) for pure water at 25^oC?

What do you know about the concentrations of H_3O^+ and OH^- in acidic, basic, and neutral solutions?

** Do practice problems 1 and 2.*

Write the formula for solving for the pH of a solution given the H^+ concentration.

How much does one pH unit change the concentration of H_3O^+ ions?

How are significant figures calculated when calculating pH using logarithms?

** Do practice problems 3 and 4.*

What are chemical indicators?

Write the general equation used to model the reaction between an indicator and an acid or base.

19.2 Buffers

What is a buffer?

Write two equations showing how a H_2CO_3/HCO_3^- buffer resists changes in pH when H_3O^+ and OH^- ions are added.

What is buffer capacity?

Describe an ideal buffer.

19.3 Acid-Base Titration

What is a standard solution?

Describe how an acid-base titration is performed.

What does the equivalence point in a titration represent?

What is the purpose of an acid-base indicator?

When using an appropriate acid-base indicator for a titration, what does the endpoint indicate?

Why are wide-range indicators effective in titrations involving a strong acid and strong base?

Why is the resulting solution from a titration of a weak acid and strong base slightly basic?

How do the titration curves differ in strong acid-base and weak acid (or base)-strong base (or acid) titrations?

Why is it important to use an indicator with a narrow pH range for titrations involving weak acids or bases with strong bases or acids, respectively?

Why is the resulting solution from a titration of a weak base and strong acid slightly acidic?