

SC151 - CHAPTER 8 LEARNING OBJECTIVES

To satisfy the minimum requirements for this course, you should master the following learning objectives.

Explain the common ion effect, predict the direction an equilibrium will shift as a result of the common ion effect, and calculate the change in pH of acidic and basic solutions caused by the addition of a common ion.

Explain how a buffer works on the molecular level and be able to

- calculate the pH of a given buffer,
- choose the best components to prepare a buffer of a target pH.
- explain how the pH of a given buffer solution changes by adding a small amount of strong acid or strong base and how this behavior relates to buffer capacity.

Sketch the general shapes of titration curves and

- identify the dominant species present at various points in a titration, including the titration of a polyprotic acid or polybasic base.
- calculate the pH at the beginning, equivalence point, and the half-equivalence point of a titration curve.

Define the solubility-product constant (K_{sp}) for a salt and

- write the K_{sp} expression for a given reaction, or the balanced chemical reaction for a given K_{sp} .
- calculate K_{sp} from solubility data and solubility from the value of K_{sp} .
- describe and calculate the effect of an added common ion on the solubility of a slightly soluble salt.
- describe the effect of a change in pH on the solubility of salts that contain a basic anion.
- relate the reaction quotient Q to K_{sp} to determine whether precipitation will occur.