

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 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,
- describe how to prepare a buffer of a given pH
- calculate the change in pH of a simple buffer solution of known composition caused by adding a small amount of strong acid or base.

Sketch the general shapes of titration curves and

- be able to calculate the pH at any point during a titration of a monoprotic strong or weak acid or monobasic strong or weak base.
- identify the dominant species present at various points in a titration, including the titration of a polyprotic acid or polybasic base.

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 a salts that contain a basic anion.
- relate the reaction quotient Q to K_{sp} to determine whether precipitation will occur.