CHAPTER 8 BLM ANSWER KEY

BLM 8-1: Solution Chemistry Basics

Answers

1. **(a)** acid: a substance that dissociates in water to produce one or more H^+; base: a substance that dissociates in water to produce one or more OH^-

   (b) acid: a substance from which a proton can be removed; base: a substance that can remove a proton from an acid

2. As water is added, both the acid and base solutions will become more dilute and the pH will move towards neutral (pH = 7)

3. Complete:
   $HNO_{3(aq)} + NaOH_{(aq)} \rightarrow NaNO_{3(aq)} + H_2O_{(l)}$

   Ionic:
   $H^+_{(aq)} + NO_3{}^-_{(aq)} + Na^+_{(aq)} + OH^-_{(aq)} \rightarrow Na^+_{(aq)} + NO_3{}^-_{(aq)} + H_2O_{(l)}$

   Net Ionic: $H^+_{(aq)} + OH^-_{(aq)} \rightarrow H_2O_{(l)}$

4. $[H_2SO_4] = 0.80$ mol/L

5. **(a)** $HCl_{(aq)} + NaOH_{(aq)} \rightarrow NaCl_{(aq)} + H_2O_{(l)}$

   (b) 0.005 mol

   (c) 0.005 mol

   (d) 0.18 mol/L

BLM 8-3: Determining the Concentration of an Acid

Answers

1. Equivalence point is the point in a titration at which the number of moles of acid is equal to the number of moles of base.

2. End-point is the point in the titration where the acid-base indicator changes colour. Phenolphthale in was used.

3. 25.0 mL

4. 0.025 mol NaOH

5. 1.0 mol/L HCl

BLM 8-4: Chapter 8 Test

Answers

1. **(a)** pH = 1.0

   (b) pH = 12.3

   (c) pH = 2.9

2. **(a)** strong acid

   (b) strong base

   (c) weak base

   (d) weak acid

3. $[H_3O^+] = 2.5 \times 10^{-13}$ mol/L

4. **(a)** When $[H_3O^+] > [OH^-]$ then the solution is acidic.

   (b) When $[H_3O^+] < [OH^-]$ then the solution is basic.

   (c) When $[H_3O^+] = [OH^-]$ then the solution is neutral.

5. pH = 0.38

6. 0.02 g

7. $K_b = 7.1 \times 10^{-8}$

8. $K_a = 4.2 \times 10^{-7}$