Unit 13: pH, Acids, Bases, Net Ionic Equations

Answers to Homework Problems Not Found In Text

Chapter 7

6. Two strong acids: $HCl(aq)$ & H_2SO_4

   Two weak acids: $H_2CO_3(aq)$ & H_3PO_4

8. Strong acids completely dissociate into $H^+(aq)$ and their anions, while weak acids partially dissociate. So, in a weak acid solution, you will find mostly the intact weak acid molecules and some $H^+(aq)$ and its anion.

10. An acidic anhydride is a non-metal oxide while a basic anhydride is a metal oxide.

12. $Mg(OH)_2$ is nearly insoluble in water, while NaOH is completely soluble in water.

20. hydroxide ion, OH^-

30. a. Lithium hydroxide, LiOH
    b. sulfurous acid, H_2SO_3 or $(HO)_2SO$
    c. phosphoric acid, H_3PO_4 or $(HO)_3PO$
    d. calcium hydroxide, $Ca(OH)_2$

Ch. 7 (continued)

32.

a. $Mg(OH)_2$, magnesium hydroxide, (base)

b. NH_3, ammonia, (base)

c. H_2S, hydrogen sulfide, (acid)

34. $MgO(s) + H_2O \longrightarrow Mg(OH)_2$ (base)

remember: metal oxide + $H_2O \longrightarrow$ base

36. $CO_2(g) + H_2O \longrightarrow H_2CO_3(aq)$

remember: non-metal oxide + $H_2O \rightarrow$ acid

44. $LiOH(aq) + HNO_3(aq) \longrightarrow LiNO_3(aq) + H_2O$

46. $H_2SO_4(aq) + 2KOH(aq) \rightarrow K_2SO_4(aq) + 2H_2O$

↖ assume a "1" is here - we don't write it!

48. $H_2SO_4(aq) + Ca(OH)_2(aq) \rightarrow CaSO_4(s) + 2H_2O$

50. lime juice → pH = 2

52. $[H^+] = 1.0 \times 10^{-10}$; $pH = -\log[H^+] = 10$

54. $[H^+] = 1.0 \times 10^{-11}$

60. (a) pH = 11 (14 - 3) (b) pOH = 2 (0.01 M NaOH)
pH = 12 (14 - 2)