HONORS CHEMISTRY

SUPPLEMENTAL TEXTBOOK PROBLEMS

The following problems will be helpful in reviewing for the Acids and Bases Exam.

pg. 597-599 # 42 - 54, 56. 57, 65, 70

p. 621 - 623 # 35, 37, 41 - 45, 58

**ANSWERS**

**pg. 597-599 # 42 - 54, 56. 57, 65, 70**

42) Acids produce H+  in water and bases produce OH- in water.

43) A proton is transferred from an acid to a water molecule where it coordinately covalently bonds to a previously unshared electron pair on the water molecule.

44)       A conjugate acid is a particle formed when a base acquires a proton.  A conjugate base is a particle formed when an acid loses a proton.  H3O+ is the conjugate acid for H2O and OH- is the conjugate base of H2­O.

45)     Acids                Base

a.         H3O+               NH3

b.         CH3OH           NH2-

c.         H3O+               OH-

d.         H2O                 NH2-

   Conjugate acid         Conjugate base

a.         NH4+                           H2O

b.         NH3                             CH3O-

c.         H2O                             H2O

d.         NH3                             OH-

46) Binary acids contain two elements; ternary acids contain three elements.

47)    a) AlCl3: Lewis acid

 b) SO3: Lewis acid

 c) PH3: Lewis base

 d) Xe: Lewis base

 e) Zn2+: Lewis acid

 f) CO32-: Lewis base

48)       a) Acids produce H+ ions and bases produce OH- ions in solution.

            b) Acids donate protons and bases accept protons.

            c) Acids accept electron pairs and bases donate electron pairs.

49)       hydrogen (binary); hydrogen and oxygen (ternary)

50)       An acidic anhydride is an oxide, such as SO3, that produces an acid when reacted with water (nonmetal oxides).  A basic anhydride is an oxide, such as Na2O that produces a base when dissolved in water (metal oxides).

51)       a) NaOH         b) Ca(OH)2      c) HNO3          d) RbOH         e) H2TeO3        f) CsOH

52)       a) Sc2O3           b) Cs2O           c) I2O5             d) Ga2O3         e) CdO                        f) K2O

53) it can act as either an acid or a base.

54)  HCl completely ionizes in solution while acetic acid only ionizes slightly.

56)       7.19 x 10-4

57)       2.09 x 10-3 M

65)       2.25 x 10-6 M

70)       sodium phosphate, Na3PO4

            Potassium borate, K3BO3

            Cadmium bromide, CdBr2

Lithium silicate, Li4SiO4

Barium sulfite, BaSO3

**p. 621 - 623 # 35, 37, 41 - 45, 58**

35)          [H3O+] = 3.61 x 10-5 M; pH = 4.442

37)          10

41)          52.7 cm3 LiOH

42)          0.323 M

43)          0.0678 M NaOH

44)          1.32 M HCl

45)          0.173 M KOH

58)          10-3