pH Calculation Practice (Chemistry) Name: KEY Pd: ____

Show formula, setup and answer with units if appropriate.

1. What is the pH of a solution if its $[H^+]$ is as given? Determine if the solution is acidic or basic.

   a. 4.2×10^{-12} M

   $-\log(4.2 \times 10^{-12})$

   pH = 11.38

   b. 0.537 M

   $-\log(.537)$

   pH = 0.27

2. Determine the pH of the following solutions. Determine if the solution is acidic or basic.

   a. 0.033M HNO_3

   $-\log(.033)$

   pH = 1.48

   b. 0.017M HI

   $-\log(.017)$

   pH = 1.77

3. What is the pH of a solution if the pOH is as given? Determine if the solution is acidic or basic. $pH + pOH = 14$

   a. 13.25

   $14 - 13.25 = .75$

   b. 2.95

   $14 - 2.95 = 11.05$

4. Determine the [H+] for the following solutions: $10^{-pH} = [H^+]$

   a. pH = 3.95

   $10^{-3.95} = 1.12 \times 10^{-4}$ M

   b. pH = 12.82

   $10^{-12.82} = 1.51 \times 10^{-13}$ M

5. What is true about the relative concentrations of hydrogen ions $[H^+]$ & hydroxide ions $[OH^-]$ in each of these solutions:

   a. Basic $[OH^-] > [H^+]$

   b. Acidic $[H^+] > [OH^-]$

   c. Neutral $[H^+] = [OH^-]$

6. Identify each as an acid, base, conjugate acid and conjugate base. You may use BA, BB, ca, cb.

   a. $HC_2H_3O_2 + H_2O \leftrightarrows H_3O^+ + C_2H_3O_2^-$

   BA BB CA CB

   b. $H_2O + C_2H_3O_2^- \leftrightarrows HC_2H_3O_2 + OH^-$

   BA BB CA CB

7. Classify each of these as an Arrhenius acid or base:

   a. $Ca(OH)_2$ Arrhenius base

   b. HNO_3 Arrhenius acid

   c. KOH Arrhenius base

   d. C_2H_5COOH Arrhenius acid