

### Honors Chemistry Practice Test: Acids and Bases

- 1.) Write the correct answer in the space at left. (10 pts.)
- Hydronium Term for  $H_3O^+$  ion.
  - $1.0 \times 10^{-14}$  Ion product constant of water,  $K_w$ , at  $25^\circ C$ .
  - $1 \times 10^{-7} M$ ,  $1.0 \times 10^{-7} M$  Concentration of  $[H^+]$  and  $[OH^-]$  in pure water
  - decreases As the  $pOH$  increases the  $[OH^-]$  (increases / decreases)
  - $10^5 = 100,000 \times$  How many times more acidic is a  $pH$  2.0 than  $pH$  7.0?
  - Strong Type of acid that is less than 100% dissociated into ions.
  - $H^+$  The Arrhenius definition of an acid is a substance that produces \_\_\_ ions in water.
  - donate  $H^+$ , Accept What is an acid by Bronsted Lowry Definition? A Base?
  - decreases When vinegar is added to a beaker of water the  $pH$  (increases / decreases).
  - pink, colorless What color is phenolphthalein in a solution that has a  $pH$  of 11.5, and 2.5?

- 2.) Identify each substance as (A)cid or (B)ase (12 pts.)  
 3.) Identify the Acid, Base, Conjugate Acid (CA) and Conjugate Base (CB) for each equation. (4 pts.)



- 4.) Name or provide the formula for the following acids. (4pts.)

$H_2S$	<u>hydrosulfuric acid</u>
$H_3AsO_3$	Arsenous Acid
$HC_2H_3O_2$	<u>Acetic</u>
$H_3PO_4$	Phosphoric Acid

- 5.) Complete each table. Maintain sig figs. Sig Figs Count as 2 points! (8 pts.)

pH	<u>9.24</u>	pH	<u>2.225</u>
[H <sup>+</sup> ]	<u><math>5.7 \times 10^{-10} M</math></u>	[H <sup>+</sup> ]	<u><math>5.96 \times 10^{-3} M</math></u>
pOH	<u>4.76</u>	pOH	<u>11.775</u>
[OH <sup>-</sup> ]	<u><math>1.8 \times 10^{-5} M</math></u>	[OH <sup>-</sup> ]	<u><math>1.68 \times 10^{-12} M</math></u>

- 6.) Calculate the  $[H^+]$ ,  $pH$ ,  $[OH^-]$ , and  $pOH$  of a solution in which 3.0 ml of 0.15M NaOH is dissolved into 5.00 liters of solution. Show work. (4 pts.)

$pH = \underline{9.96}$      $[H^+] = \underline{1.1 \times 10^{-10} M}$      $pOH = \underline{4.04}$      $[OH^-] = \underline{9.0 \times 10^{-5} M}$

- 7.) Write a balanced equation for the acid-base reaction of citric acid and sodium hydroxide. A chemist stalks a buret to the 3.58 ml mark with 0.230 M NaOH solution. This solution was used to titrate 10.00 ml of phosphoric acid. At the end point of the titration the buret reading was 36.50 ml. What is the molarity of the citric acid solution? (5 pts.)

- 8.) Write a balanced reaction for an acid-base neutralization reaction that would produce the salt Calcium Nitrate. (4 pts.)

- 9.) 24.02 ml of standardized 0.0948M NaOH is added to 0.3351 grams of an unknown triprotic acid. What is the molar mass of the unknown acid? (4 pts.)

- 10.) 46.33 ml of 0.227M  $HClO_3$  is added to 48.73 ml of 0.108 M KOH. Is the resulting mixture acidic or basic? What is the concentration of either excess  $H^+$  or  $OH^-$  AND the  $pH$  of the final mixture? (5 pts.)

