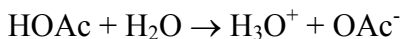


CHEM 122 – Problem Set 1

1. Name the following compounds:

- | | |
|-----------------------------------|------------------------------------|
| A. HCl | B. NaOH |
| C. KOH | D. H ₂ SO ₄ |
| E. HNO ₃ | F. H ₂ SO ₃ |
| G. HNO ₂ | H. H ₃ PO ₄ |
| I. H ₃ PO ₃ | J. Na ₂ CO ₃ |
| K. NaHCO ₃ | L. HOAc |

2. If a solution of 0.5M HOAc dissociates as follows:



What is the final [H₃O⁺] in the solution? K_a for HOAc = 1.8*10⁻⁵

3. What is the pH of the above solution?

4. What is the K_b for the HOAc?

5. Prove that K_aK_b = K_w

Match the pH at the number with the conditions at the letter of the solution.

- | | |
|---------|-------------|
| 6. 2.5 | A. Acidic |
| 7. 6.8 | B. Neutral |
| 8. 10 | C. Alkaline |
| 9. 12 | |
| 10. 7.0 | |
| 11. 9.4 | |
| 12. 6 | |
| 13. 14 | |
| 14. 3.5 | |
| 15. 4 | |
| 16. 7.4 | |

17. What is the [H₃O⁺] for all of the above pH's?

18. Determine the equivalent weight of the following:

- | | | | |
|----------------------|------------------------|-----------------------------------|-----------------------------------|
| A. HCl | B. Ba(OH) ₂ | C. MgSO ₄ | D. AlF ₃ |
| E. SrCl ₂ | F. LiOAc | G. H ₂ SO ₄ | H. H ₃ PO ₄ |

19. If each compound in question #18 is solvated to 0.5 M, determine its Normality.

20. What is the pOH of the solution in question #2?