* III-3 _____C _____NC
** III-4 _____C _____NC

**Chemistry 130**
**Worksheet 4**

Name: _____

*1. (0.6pt.) Indicate whether the following solutions are acidic, basic, or neutral.

$[H^+] = 6.3x10^{-6}M$ _____

$[H^+] = 1.0x10^{-7}M$ _____

$[OH^-] = 2.4x10^{-3}M$ _____

**2. (0.4pt.) Given the following buffering system $HCO_3^- \Leftrightarrow H^+ + CO_3^{-2}$, which direction will the reaction shift if the $[H^+]$ starts to decrease? _____

3. (0.6pt.) Given the following concentration, find the indicated concentrations.

A. $[H^+] = 5.2x10^{-8}M$ $[OH^-]$ = _____

B. $[OH^-] = 4.2x10^{-3}M$ $[H^+]$ = _____

4. (0.8pt.) List two properties of acids and two properties of bases.

Acids 1. _____ 2. _____

Bases 1. _____ 2. _____

5. (0.6pt.) Give the indicated reactions of the following:

A. Molecular equation: ___$H_2SO_4$ + ___NaOH $\rightarrow$ _____

B. Total ionic equation: _____

C. Net ionic equation: _____

6. (0.6pt.) Give the indicated reactions for the following:

A. Molecular equation: ___Mg + ___$HNO_3$ $\rightarrow$ _____

B. Total ionic equation: _____

C. Net ionic equation: _____

7. (0.6pt.) Give the indicated reactions for the following:

A. Molecular equation: ___HF + ___$Na_2CO_3$ → _____

B. Total ionic equation: _____

C. Net ionic equation: _____

8. (0.8pt.) Circle the weak acids and the weak bases in the following list of acids and bases.

$Fe(OH)_2$ LiOH $HNO_3$ $NH_3$ HBr NaOH HCN HI

9. (1.2pt.) Matching:

| | |
|---|---|
| ____1. $BaSO_4$ | A. Found in baking soda. |
| ____2. $NH_3$ | B. Household cleaner. |
| ____3. $Mg(OH)_2$ | C. Used in X-rays of gastrointestinal tract. |
| ____4. $NaHCO_3$ | D. Meat preservative. |
| ____5. $NaNO_2$ | E. Antiseptic and germicide. |
| ____6. $AgNO_3$ | F. Found in milk of magnesia. |

10. (0.8pt.) Calculate the number of grams per equivalent for each of the following. (C = 12.0, O = 16.0, P = 31.0, Ca = 40.0, H = 1.0, S = 32.0amu)

1. $HCO_3^-$ _____

2. $S^{-2}$ _____

3. $Ca^{+2}$ _____

4. $PO_4^{-3}$ _____

11. (1.0pt.) Analysis of a blood sample found the following data: $Na^+$ = 145meg/L; $Cl^-$ = 100meg/L; $HCO_3^-$ = 38meg/L. Calculate the anion gap. Is your value in the normal range? _____

12. (0.8pt.) Calculate the pH of the following solutions:

A. $[H^+] = 2.5x10^{-4}$ _____

B. $[OH^-] = 4.1x10^{-6}$ _____

13. (0.6pt.) Indicate whether aqueous solutions of the following salts will be acidic, basic, or neutral.

A. $NH_4Cl$

B. $K_2SO_4$

C. NaCN

14. (0.6pt.) A. The buffer that works inside the cells is called the _____ buffer.

B. The buffer that works in the blood is called the _____ buffer.