**Dougherty Valley HS Chemistry**
**Acids & Bases – More Salts**

# Worksheet #9

**Name:** **Period:** **Seat#:**

**Directions:**

- Show your work!
- Box final answers when it makes sense.
- Some answers are provided at the end of the problem. They are underlined.

**1)** An unknown salt is either KBr, $NH_4Cl$, KCN, or $K_2CO_3$. If a 0.100 M solution of the salt is neutral, what is the identity of the salt? Justify your answer!

**2)** An unknown salt is either NaF, NaCl, or NaOCl. When 0.050 M of salt is dissolved in water to form 0.500 L of solution, the pH of the solution is 8.08. What is the identity of the salt? Justify your answer!

**3)** Identify if each substance would make the solution acidic, basic or neutral when added to water. Remember (Kw = Ka x Kb)

a. $Ba(ClO_4)_2$

b. $K_2CO_3$

c. $NH_4NO_2$
*Ka for $NH_4^+$ = 5.6 x10$^{-10}$*
*Kb for $NO_2^-$ = 2.2x10$^{-11}$*

d. CsOH

e. AgOH

f. $HClO_4$

g. $H_2CO_3$

h. $NH_4C_2H_3O_2$

i. $NH_4Cl$

j. NaClO

k. $Ca(NO_3)_2$

l. $KClO_4$

m. $NaNO_2$

n. $NH_4Br$

o. $Zn(NO_3)_2$

p. $NH_4F$

q. $K_2CO_3$

r. $KC_2H_3O_2$

s. $Fe(ClO_4)_2$

t. $NaClO_3$

u. NaF

v. $NH_4C_6H_6COO$
*Ka for $NH_4^+$ = 5.6x10$^{-10}$*
*Ka for $C_6H_5COOH$ = 6.5x10$^{-5}$*

w. $CH_3NH_3NO_2$
*Kb for $CH_3NH_2$ = 4.4x10$^{-4}$*
*Kb for $NO_2^-$ = 2.2x10$^{-11}$*

**4) salt of a weak acid** – Calculate the pH of 0.00125M NaOCl  Ka = $3.0 \times 10^{-8}$

a. write hydrolysis
b. calc Kb
c. determine $[OH^-]$ using ICE box
d. calc pOH
e. calc pH *9.28*

**5) salt of a weak base** – Calculate the pH of 0.00125M NH4Cl Kb = $1.8 \times 10^{-5}$

a. write hydrolysis
b. calc Ka
c. determine $[H^+]$ using ICE box
d. calc pH *6.08*

**6)** Sorbic acid ($C_5H_7COOH$) is a weak acid with Ka = $1.7 \times 10^{-5}$. Its salt, potassium sorbate, is added to cheese to inhibit the formation of mold. What is the pH of a solution containing 11.25g of potassium sorbate in 1.75 L of solution?