**Honors Chemistry Assignment Sheet- Unit 9**

**Extra Learning Objectives (beyond regular chem.)**:

* **Assign #1:** perform calculations related to pH and ion concentrations.

**Assignments Due the day of the Unit 9 Test**

* Use your textbook & reliable internet resources to learn material
* Answer Keys are posted on the WHS chemistry website (see “important handouts”)

**: Calculating Involving Acids/ Bases**

* **Calculating Conentrations (H3O+) & (OH-)**  pg 481-484 & **Calculating pH**  pg 487 -488
  + Try out Practice Problems on pg 484, 487, 488, & 490 and make sure you are able to calculate the answers that are provided (**you do not need to “officially” do these problems**), but this is how you check your understanding of the concept.
* **Do Chapter Review Problems pg 505 # 15, 16, 17, 18, 19, 20, 21, 22, & 23**

15. Calculate the [H3O+] and [OH-] for each of the following.

a. 0.03 M HCl

[H3O+] = 3 x 10-2 M

[OH-] = 3 x 10-13 M [OH-] = (1 x 10-14)/(0.03)

b. 1 x 10-4 M NaOH

[H3O+] = 1 x 10-10 M

[OH-] = 1 x 10-4 M

c. 5 x 10-3 M H2SO4

[H3O+] = 1 x 10-2 M [H+] = (1 x 10-14)/(2 x 5 x 10-3)

[OH-] = 1 x 10-12 M [OH-] = (1 x 10-14)/(1 x 10-2)

d. 0.01 M Ca(OH)2

[H3O+] = 5 x 10-13 M

[OH-] = 2 x 10-2 M

18. Determine the pH of each solution.

a. 1.0 x 10-2 M NaOH 12.00

b. 1.0 x 10-3 M KOH 11.00

c. 1.0 x 10-4 M LiOH 10.00

19. Determine the pH of solutions with each of the following [H3O+].

a. 2.0 x 10-5 M 4.70 pH = -log(2.0 x 10-5)

b. 4.7 x 10-7 M 6.33

c. 3.8 x 10-3 M 2.42

21. Given the following pH values, determine the [OH-] for each solution. [H+] = antilog(-pH) = 10-pH [OH-] = (1 x 10-14)/(10-pH)

a. 7.00 1.0 x 10-7 [H+] = antilog(-7) = 10-7 [OH-] = (1 x 10-14)/(10-7) = 1 x 10-7

b. 11.00 1.0 x 10-3

c. 4.00 1.0 x 10-10

d. 6.00 1.0 x 10-8

22. Determine [H3O+] for solutions with the following pH values.

a. 4.23 5.9 x 10-5 [H+] = antilog(-4.23) = 10-4.23 = 5.9 x 10-5

b. 7.65 2.2 x 10-8

c. 9.48 3.3 x 10-10

23. A nitric acid solution is found to have a pH of 2.70. Determine each of the following:

a. [H3O+] 2.0 x 10-3

b. [OH-] 5.0 x 10-12

c. the number of moles of HNO3 required to prepare 5.50L of this solution 1.1 x 10-2 mol HNO3

d. the mass of the moles of HNO3 in the solution (c) 0.69g HNO3

e. the milliliters of concentrated acid needed to prepare the solution in part (c) (Concentrated nitric acid is 69.5% HNO3 by mass and has a density of 1.42g/mL.) 0.70 mL concentrated acid