**Acids and bases homework #5**

**Part I**

Write the equation for the self-ionization of water and the associated Kw for the reaction

To demonstrate you understand what it means, fill in the blanks:

In any aqueous solution the product of [\_\_\_] and [\_\_\_\_] will always equal \_\_\_\_\_\_\_\_

1. If the [\_\_\_\_] >[\_\_\_\_] the solution will be considered \_\_\_\_\_\_
2. If the [\_\_\_\_\_] > [\_\_\_\_\_] the solution will be considered \_\_\_\_\_
3. If the [\_\_\_\_\_] =[\_\_\_\_\_] the solution will be considered neutral

Use above situation 1-3 to answer the following:

Will have a pH < 7

Will turn litmus paper blue

Will be corrosive

Will have a pH = 7

Calculate the following:

[H+] = 1.2 x 10-6M what is [OH-]? Is this solution acidic or basic?

[OH-] = 1x10-3m what is the [H+]? Is this solution acidic or basic?

**Part II**

pH measures the concentration of what ion?

pOH measures the concentration of what ion?

pH + pOH = \_\_\_\_\_

calculate the following:

pH of 5 has a pOH of \_\_\_\_ is this solution acidic or basic?

pOH of 5 has a pH of \_\_\_\_\_ is this solution acidic or basic?

**Part III**

pH = -log[H+] and pOH = - log[OH-]

[H+] = antilog(-pH) and [OH-] = antilog(-pOH)

Putting all equations (part I-III) together, complete the chart (must show all applicable work)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| pH | pOH | [H+] | [OH-] | Nature of solution (acidic, basic, neutral) |
| 4.2 |  |  |  |  |
|  | 3.9 |  |  |  |
| 7.0 |  | 1 x 10-7M |  |  |
|  |  |  | 2.3 x 10-4M |  |
| 0.9 |  |  |  |  |