Acid and Base Unit: pH and [H+], pOH and [OH-]

1. A pH meter probe immersed in a solution displays a reading of 4.21. The [OH-(aq) ] of the solution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_ 

|  |  |
| --- | --- |
| a | 1.6 x 10-10 |
| b | 6.2 x 10-5 |
| c | 1.6 x 104 |
| d | 6.2 x 109 |

1. A barium hydroxide solution has a concentration of 1.0 x 10-2  this solution will have a pH of \_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | 1.70 |
| b | 12.03 |
| c | 12.30 |
| d | 13.07 |

1. An apple was analyzed and found to have a pH of 3.30. The [OH-(aq)] ] for this sample is \_\_\_\_\_\_\_\_\_\_\_ 

|  |  |
| --- | --- |
| a | 1.0 x 10-3 |
| b | 5.0 x 10-4 |
| c | 2.0 x 10-11 |
| d | 1.0 x 10-10 |

1. The [H3O+(aq)] in 0.020 mol/L Sr(OH)2(aq) is \_\_\_\_\_\_\_\_\_\_\_ 

|  |  |
| --- | --- |
| a | 2.5 x 10-13 |
| b | 5.0 x 10-12 |
| c | 4.0 x 10-2 |
| d | * 1. x 10-1 |

1. A solution with a pH of 5 is \_\_\_\_\_\_\_\_ with \_\_\_\_\_\_\_\_\_\_\_ of 1.0 x 10-5 

|  |  |  |
| --- | --- | --- |
| a | Basic | [OH-(aq)] |
| b | Acidic | [H3O+(aq)] |
| c | Acidic | [OH-(aq)] |
| d | basic | [H3O+(aq)] |

1. When 12.2 g of Sr(OH)2(aq) is dissolved and dissociated completely to make 4.00 L of aqueous solution, the pH of the solution is \_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | 12.70 |
| b | 12.40 |
| c | 1.60 |
| d | 1.30 |

1. A solution of an unknown substance has [H3O+(aq)] of 4 x 10-8 . If HCl(aq) solution is added drop by drop, the pH \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the solution becomes more \_\_\_\_\_\_\_\_\_\_\_.

|  |  |  |
| --- | --- | --- |
| a | Increases | Basic |
| b | Decreases | Basic |
| c | Increases | Acidic |
| d | decreases | Acidic |

1. A solution of 0.030 HCl(aq) has a pH of \_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | 2.48 |
| b | 2.00 |
| c | 1.52 |
| d | 0.48 |

1. The pH of a detergent solution is 9.60. Its [H3O+(aq)] is \_\_\_\_\_\_\_ 

|  |  |
| --- | --- |
| a | 7.9 x 10-8 |
| b | 4.0 x 10-5 |
| c | 2.5 x 10-10 |
| d | * 1. x 10-7 |

1. If 2.00 g of NaOH(s) is dissolved in enough water to make 500 mL of solution, the [H3O+(aq)] will be \_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | 1.0 x 10-1 |
| b | 5.0 x 10-2 |
| c | 2.0 x 10-13 |
| d | 1. x 10-13 |

1. If 5.0g of NaOH(s) dissolves in enough water to form 0.60 L of solution, the pH of the solution would be\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | 0.21 |
| b | 0.68 |
| c | 13.10 |
| d | 13.32 |

1. The pH of a basic solution that has an [OH-(aq)] of 6.4 x 10-3  is \_\_\_\_\_

|  |  |
| --- | --- |
| a | 2.19 |
| b | 10.25 |
| c | 11.81 |
| d | 6.40 |

1. A 7.5 x 10-5  solution of Sr(OH)2(aq) will have a pH of \_\_\_\_\_\_\_\_\_.

|  |  |
| --- | --- |
| a | 3.82 |
| b | 4.12 |
| c | 9.88 |
| d | 10.18 |

1. As the pH of a solution decreases, the \_\_\_\_\_\_

|  |  |
| --- | --- |
| a | [OH-(aq)] increases |
| b | [H3O+(aq)] increases |
| c | Solution becomes more basic |
| d | Conductivity of the solution decreases |

1. A 3.5 x 10-3  of Li(OH)(aq) has a pH of \_\_\_\_\_

|  |  |
| --- | --- |
| a | 2.15 |
| b | 11.85 |
| c | 2.46 |
| d | 11.54 |

1. A drain cleaner was analyzed and found to have a pOH of 2.50. the [H3O+(aq)] for this sample is \_\_\_\_\_\_ 

|  |  |
| --- | --- |
| a | 3.2x 10-3 |
| b | 3.2x 10-12 |
| c | 3.2x 10-11 |
| d | 3.2x 10-4 |

1. Matt and Richard dissolve 16 g of KOH(s) in 0.55 L of water. The pH of this solution will be \_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | 0.29 |
| b | 0.80 |
| c | 13.71 |
| d | 13.20 |

1. The pH of 7.5 x 10­-5  Ba(OH)2(aq) is\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |
| --- | --- |
| a | 10.18 |
| b | 9.88 |
| c | 4.12 |
| d | 3.82 |

1. In a 0.20 (aq) solution of HNO3(aq), the concentration of the hydroxide ion is \_\_\_\_\_\_\_ 

|  |  |
| --- | --- |
| a | 5.0 x 10-14 |
| b | 2.0 x 10-14 |
| c | 5.0 x 10-7 |
| d | 1.0 x 10-7 |

1. If a solution has a pH of 4.0, then the [OH-(aq)] will be \_\_\_\_\_\_ 

|  |  |
| --- | --- |
| a | 1x 10-3 |
| b | 1x 10-4 |
| c | 1x 10-6 |
| d | 1x 10-10 |

1. **Numerical response question**

|  |  |  |  |
| --- | --- | --- | --- |
|  |  |  |  |

Left justify your answer in the boxes provided.

|  |
| --- |
| A solution has a hydronium ion concentration of 0.0050. This solution will have a pOH of \_\_\_\_\_\_\_\_. |

Solutions:

1. A
2. C
3. C
4. A
5. B
6. A
7. D
8. C
9. C
10. D
11. D
12. C
13. D
14. B
15. D
16. B
17. C
18. A
19. A
20. D
21. 11.70