Advanced Chemistry: Acid/Base Worksheet Name

Be sure to show all your work.

1. A 0.001 M solution of HCl is prepared. What are the hydronium & hydroxide ion concentrations?

2. Calculate the pH of a 2.0×10^{-3}M solution of HCl.

3. Calculate the pOH and the pH of a 5.0×10^{-2} M solution of NaOH.

4. The pH of a solution is 9.67. Calculate $[H^+]$ for the solution

5. Calculate the pH of a solution prepared by mixing 2.0 mL of a strong acid (pH = 3.00) and 3.0 mL of a strong base (pH = 10.00).

6. Calculate the pH of a solution prepared by adding 25 mL of 0.10 M NaOH to 30 mL of 0.20 M acetic acid. (pKa of HAc = 4.76)

7. If the internal pH of a muscle cell is 6.8, what is the $[HPO_4^{-2}]/[H_2PO_4^{-1}]$ ratio in this cell? (Ka for $H_2PO_4^{-1} \rightarrow HPO_4^{-2}$ is 6.31×10^{-8})

8. The total cellular concentration of the phosphate system is 20 mM, what are the concentrations of the two anionic forms from #7?