Buffer Lab

Buffers maintain constant pH and are so are essential components in cell homostasis.

Pre Lab Questions:

1. Why is pH maintenance necessary in biological systems?
2. Use Le Chatelier’s principle to explain how a carbonate buffer system can resist changes in cytoplasm pH, even if challenged by a large influx of H+ ions.

Steps:

1. Look at the molar mass in the bottle for Na2CO3  NaHCO3
2. Calculate the following:

|  |  |
| --- | --- |
| Na2CO3 | NaHCO3 |
| Find molar mass  | Find Molar Mass |

1. For **each salt**, you must mix 0.50 L of 0.10 M (mol/L ) of solution.

|  |  |
| --- | --- |
| Na2CO3 | NaHCO3 |
| Find n  | Find n  |
| Using n from above you must now find mass of salt  | Using n from above you must now find mass of salt  |

1. Now mix volumes of these stock solutions. Take 50 mL of your solution from salt #1 and #2. This is your buffer system.
2. Test your solution by adding HCl until the pH reaches 4. Record your volume of HCl.

|  |  |
| --- | --- |
| Volume of HCl | pH  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

1. Now test with only salt at a time of any other variation:

|  |  |
| --- | --- |
| Volume of HCl | pH  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

1. Try another variation.