FLINN SCIENTIFIC

Name_____

Laboratory Report

Model Carbonate Blood Buffer

Test Tube Number	1	2	3	4	5	6
Solution	Carbonic Acid (Reference)	Model Carbonate Blood Buffer	Water (Control)	Model Carbonate Blood Buffer	Water (Control)	Sodium Bicarbonate (Reference)
Bromthymol blue indicator color						
Initial pH value						
Number of drops of HCl required to convert solutions 2 and 3 to acid reference color						
Number of drops of NaOH required to convert solutions 4 and 5 tobicarbonate reference color						

Effect of HCl on Biological Phosphate Buffers

	Estimated pH (pH paper)	Universal Indicator Color and pH*			
		Initial	After 1 drop of HCl	After 5 drops of HCl	After 10 drops of HCl
Water (control)					
Buffer A					
Buffer B					

*From color chart

Data Table C. Effect of NaOH on Biological Phosphate Buffers

	Estimated pH (pH paper)	Universal Indicator Color and pH*			
		Initial	After 1 drop of NaOH	After 5 drops of NaOH	After 10 drops of NaOH
Water (control)					
Buffer A					
Buffer B					

*From color chart

1. Compare the measured pH value for the model carbonate blood buffer to the expected pH of an ideal carbonic acid–bicarbonate buffer and the actual pH of blood.

2. Based on the pH comparisons in Question 1, which solution, the model carbonate blood buffer or an actual blood buffer, is more likely to contain a greater proportion of the carbonic acid component compared to the bicarbonate component? Explain.

3. What is the effect of adding even one drop of HCl or NaOH on the pH value of water? Compare this to the pH changes observed when HCl or NaOH was added to the model carbonate blood buffer.

4. Which phosphate buffer corresponds to the composition of an ideal buffer solution? Compare its measured pH value with the calculated pH of the ideal buffer.

5. Use the universal indicator color chart to compare the observed pH changes for phosphate buffers A and B and the control (water) upon addition of HCl and NaOH. Were phosphate buffers A and B equally effective in resisting pH changes upon addition of either HCl or NaOH?