

Name _____	Lab Partner _____
TA Name _____	Section _____ Date _____

### Buffers Worksheet

As you work through the steps in the lab procedures, record your experimental values and the results on this worksheet.

1. Show your calculation for preparing the 0.60 M  $\text{HC}_2\text{H}_3\text{O}_2$  solution from your prelab assignment.
  
2. Show the calculation of how many grams of  $\text{NaC}_2\text{H}_3\text{O}_2 \cdot 3 \text{H}_2\text{O}$  are needed from your prelab assignment.

**Table A:** pH Data for Acetate Buffers (Direct Method)

Solution #	mL of 0.60 M $\text{HC}_2\text{H}_3\text{O}_2$	mL of 0.60 M $\text{NaC}_2\text{H}_3\text{O}_2$	pH
1A	30	0	
2A	30	10	
3A	0	30	
4A	10	30	
5A	20	20	

3. Explain the order of pH for the five solutions. Consider the relative amounts of acid and base in each.

**Table B:** pH Data for Acetate Buffers (Indirect Method)

Solution #	mL NaOH added	total mL NaOH added	pH	total mmol NaOH added	Buffer? Y/N
1B	0	0			
2B	4	4			
3B	5	9			
4B	6	15			
5B	10	25			

4. How many mmol of acetic acid are present in your sample 1B? Show your work.

5. How many total mmol of NaOH have you added at this point? (Show your setup.) Enter this amount in Data Table B.

6. Is this solution a buffer solution? Explain your reasoning. Fill in Data Table B with your choice.

7. Will you need to use  $\text{Na}_3\text{PO}_4 \cdot 12 \text{H}_2\text{O}$  or  $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$  in order to generate the desired pH? Explain your answer. Enter your choice in Data Table C.

8. What mass of the other phosphate compound will you need to add in order to generate the desired pH? Show your work. Enter this amount in Data Table C.

**Table C:** Data for Phosphate Buffer

pH Assigned	
mass of $\text{Na}_2\text{HPO}_4 \cdot 7\text{H}_2\text{O}$ used	g
other phosphate compound used	
mass used	g
initial measured pH of buffer	
action taken	
final measured pH of buffer	