Name: Group: Data:

Report 3

1. Mechanism of buffer action

A. The influence of sodium acetate (CH_3COONa) addition on pH shift of CH_3COOH (acetic acid) solution.

Answer:

- what ions from the salt added to the solution of weak acid were responsible for the change of the colour of the solution and why. How pH of the solution of weak electrolytes was changed?
- how equilibrium state in the solution of weak acid was shifted after addition of sodium acetate?
- how dissociation degree of weak electrolyte solutions was changed after addition of the salts?

B. The influence of ammonium chloride (NH_4Cl) addition on pH shift of ammonia water ($NH_3 \bullet H_2O$) solution.

Answer:

- what ions from the salt added to the solution of weak base were responsible for the change of the colour of the solution and why. How pH of the solution of weak electrolytes was changed?
- how equilibrium state in the solution of weak base was shifted after addition of ammonium chloride?
- how dissociation degree of weak electrolyte solutions was changed after addition of the salts?

2. The influence of buffer concentration on pH value and buffer capacity

Complete the table:

beaker number	V [cm^3] **phosphate buffer**		V [cm^3] H_2O	pH_1	V [cm^3] added 0.05M HCl	pH_2	ΔpH	n_{HCl}/ 1 dm^3	β
	0.1M	0.01M							
1	40	—	—		2				
2	—	40	—		2				
3	—	—	40		2				

Calculations:

Conclusions:

3. The influence of lactic acid on buffer capacity of bicarbonate buffer

Complete the table:

Sample number	Lactic acid (10 ml)	Milimoles of lactic acid	pH_1	$NaHCO_3$ (1 ml)	Milimoles of $NaHCO_3$	pH_2	ΔpH	Milimoles of acid/milimoles of base
1	0.002 M			0.02 M				
2	0.02			0.02 M				

Write proper reaction of lactic acid neutralization by bicarbonate buffer, calculate number of moles of acid and base, compare pH change in both beakers, and calculate the ration of milimoles of acid to milimoles of base. Answer, how the excess of lactic acid influence buffer capacity of bicarbonate buffer.

Reaction of lactic acid neutralization:

Calculations:

Conclusion: