Lab sheet #5

-Preparation of Buffer Solutions by Different Laboratory Ways -

Objective:

- To learn how to prepare a buffer by different laboratory ways.

Method and Calculations:

Prepare 0.1 litre of 0.045M sodium phosphate buffer, pH=7.5

[pKa1= 2.12, pKa2 = 7.21 and pKa3 = 12.30].

1st ➔ Write the equations of phosphoric acid dissociation and the pKa of corresponding ones:

.....

.....

.....

.....

.....

2nd ➔ Choose the pKa value which is near the pH value of the required buffer, to be able to know the ionic species involved in your buffer:

.....

.....

.....

3rd ➔ calculate number of moles for the two ionic species in the buffer:

.....

.....

.....

.....

.....

.....

.....

.....

.....

a) From concentrated (15M) H_3PO_4 and solution of 1.5 M NaOH.

.....

.....

.....

.....

.....

.....

.....

.....

.....

So: Add ……..ml of NaOH to the ……..ml of concentrate H_3PO_4, mix ; then add sufficient water to bring the final volume to 0.1 liters (100 ml), and check the pH.

pH= ……

b) From solid NaH_2PO_4 and solid NaOH.

.....

.....

.....

.....

.....

.....

.....

.....

So: Dissolve the ……g of NaH_2PO_4 and ……..g of NaOH in some water, mix ; then add sufficient water to bring the final volume to 0.1 liters (100 ml), and check the pH.

pH= ……

Note: Atomic weights: Na = 23, P= 30.97, O = 16, H = 1