**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 liters 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) H3PO4 and solution of 1.5 M NaOH .**

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

**So:** Add ……..ml of NaOH to the ……..ml of concentrate H3PO4, mix ; then add sufficient water to bring the final volume to 0.1 liters (100 ml), and check the pH.

pH= ………….

**b) From solid NaH2PO4 and solid NaOH.**

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………

**So:** Dissolve the ………g of NaH2PO 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