**Experience(7)**

**B- The calibration of a mixture of phosphoric acid and hydrochloric with a strong base by measurement effort.**

**Procedure**

**1.Prepare of the (0.1M) (NaOH) solution from the stock solution (1M).**

**2-take (6)ml of the mixture (HCI + H3PO4) dilute to 25 ml distilled water to the mark,then the solution titrate with (0.1M) of NaOH.**

**3. Add the base with 1 ml with the pH reading, when reach at the point of equivalent and added drops (0.1MM) of titrant with continue of adding to make pHI=12.**

**Experience(7)**

**Experiment name:**

**A-The calibration of phosphoric acid with a strong base (NaOH)**

**Procedure**

**1.Prepare of the (0.1M) (NaOH) solution from the stock solution (1M).**

**2. drew (3 ) ml of phosphoric acid and then diluted to 25 ml of distilled water to the mark an end and then titrate solutions with (0.1M) of NaOH with record pH before adding the titrant.**

**3. Add the base with 1 ml with the pH reading, when reach at the point of equivalent and added drops (0.1MM) of titrant with continue of adding to make pHI=12.**

**Accounts**

**1-plotted NaOH versus pH and and detect the concentration of the acid unknown**

**2-Draw the first derivative and the second derivative.**

**Questions**

**1-What is the purpose for doing this experiment?**

**2-why use the first derivative and second derivative?**

**3- why the last bend of calibration curve was not clear after calibration the phosphoric acid with sodium hydroxide?**

**4-who are first reacted? after calibration of mixture phosphoricacid and hydrochloric acid?**

**No Experience (8)**

**Experiment name: spectroscopy in the visible region (absorption spectrum and Peer law and the analysis mixtures of two component at the same time).**

**Procedure**

**Experience(A):**

**1-Take 3ml from a stock solution Cr+3(0.02M) in 25 ml volumetric**

**2-Take 3ml from a stock solutionCO+2(0.08M) in 25 mal volumetric**

**3-put of the solutions in each cell and Read the absorption (A) of each solution.**

**4-put rotary disk wavelength at 400 nm and thus carry an increase of 10 nm even reach to read 630 nm**

**No Experience (8)**

**Experiment name: spectroscopy in the visible region (absorption spectrum and Peer law and the analysis mixtures of two component at the same time).**

 **Experience(b)**

**1-Prepare series of chromium solutions (0.05,0.04,0.03,0.02,0.01 M) through take certain amount volumes of from chromium solutions in 25 ml volumetric flasks and dilute with distilled water.**

**2-Prepare series of cobalt solutions of( 0.18,0.16,0.12,0.08,0.04 M)) through take certain amount volumes from cobalt solutions in 25 ml volumetric flasks and dilute with distilled water.**

**3- Take stored solution as the blank solution (zeroing solution).**

**4-By returning to the forms obtained by the experiment (A) of the chromium Solution then choose wavelength to study absorption as a function of the concentration, Use the same wavelengths to study the solution of cobalt (II)**

**5-Use the same previous cells and the same arrangement of the first for distilled water and the second for chromium and third for cobalt.**

**Experience (C)**

**1-Take the values in the experiment (B) for the mixture Co".,Cr"**

**2-To determined the values of ε in Peers law schemes in experience (B) go back to the absorption spectrum of chromium and cobalt, and then find two wavelengths, to analyze the combination of Co and Cr, preferably to be between (510-575) nm, and then the determine the slope which equal of ε of chromium and cobalt..**

**Experience(9)**

**Experiment name: Determination of dissociation thermodynamic constant indicator**

**Procedure**

**1-Measure absorption of the solution prepared from indicator at the(350-700) nm,up 10 nm for each of the following solutions:-**

**A-Take exactly 0.5 ml of indicator solution and then add a drop of the HCI acid and dilute with distilled water to 25 ml Volumetric flask., with continuous addition until obtain yellow color.**

**B-Take exactly 0.5 ml of indicator solution and then add a drop of the Conc.NaOH and then dilute with distilled water to 25 ml Volumetric flask., with continuous addition until obtain violet color.**

**Experience(9)**

**Experiment name: Determination of dissociation thermodynamic constant indicator**

**Procedure**

**2-Choose the highest peak absorptionλ max which shows the highest wavelength absorption of the indicator in the acid and base medium and then prepare a series of buffer solutions to give a change in color from the color indicator to the other materials used are sodium acetate (0.2N) and acetic acid (0.2N), and then measure the absorption and pH for each of the solutions prepared.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **pH** | **3.42** | **3.72** | **4.05** | **4.27** | **4.45** | **4.63** | **4.8** | **4.99** | **5.23** | **5.37** | **5.57** | **5.89** |
| **0.2N Sodium Acetate (ml)** | **0.5** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **8.5** | **9** | **9.5** |
| **0.2N acetic acid (ml)** | **9.5** | **9** | **8** | **7** | **6** | **5** | **4** | **3** | **2** | **1.5** | **1** | **0.5** |

**Accounts**

**1-plotted Absorption versus( λ max) and then determine the highest wavelength.**

**2-plotted chart between Absorption and pH and detected pKa indicator**

**Questions**

**1·write formulas of indicator and the expected colors?**

**2·What is absorption spectrum?**

**3·What is the buffer solution?**

**Experience (10)**

**A-Quantative analysis of Ascorbic acid by using UV spectrum**

**Procedure**

**1-take 1ml of stock solution ascorbic acid 100 ppm and dilute to 50ml volumetric flask using distilled water.**

**2-Measured absorbance of solution extend record (200-300) nm 5nm up period to detected the max.**

**3-prepare series of ascorbic acid by (1,2,3,4,6,8 ) ppm from the stoke solution (100) in the volumetric flask 50ml and complete to the mark with distilled water and measure the absorbance to each solution at max detected.**

**Experience (10)**

**B-Determine content of Vitamin C in tablets of two different manufacturers with conductometry.**

**Procedure**

**1-take (1) table of vitamin C and dissolves in 20ml of HCL (0.02N) NaOH** $-$

**2-filter the solution and take the filterant then dilute in volumetric flask 50ml of distilled water.**

**3-Titrate the prepared solution in step (2) with 0.1M NaOH.**

**No Experience (11)**

**A-Name of Experiment: Conductometric Titration of Hydrochloric Acid with Sodium Hydroxide**

**Experimental method:**

**1-Fill the 50 ml burette with the 0.1M sodium hydroxide solution.**

**2-Obtain at least 25 ml of an acetic acid solution and at least 25 ml of a hydrochloric acid solution from the instructor. Record the sample numbers.**

**3-Use a pipette to add 25 ml of the hydrochloric acid solution to the tall beaker. Add about 200 ml of distilled or deionized water and a stirring bar to the beaker.**

**4-Measure the initial conductance of the stirred solution. Add 0.5 ml portions of the sodium hydroxide solution to the stirred solution. Record the conductance of the titrand solution and the total volume of the added titrant solution after each addition.Continue the titration until the end point has been passed**

**No Experience (11)**

**B-Name of Experiment: Conductometric Titration of Hydrochloric Acid and Acetic Acid with Sodium Hydroxide**

**Experimental method:**

**1-Fill the 50 ml burette with the 0.1M sodium hydroxide solution.**

**2-Use a pipette to add 25 ml of the hydrochloric acid solution to the tall beaker. Add about 200 ml of distilled or deionized water and a stirring bar to the beaker.**

**3-Measure the initial conductance of the stirred solution. Add 0.5 ml portions of the sodium hydroxide solution to the stirred solution. Record the conductance of the titrand solution and the total volume of the added titrant solution after each addition.Continue the titration until the end point has been passed**