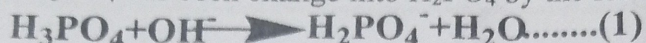
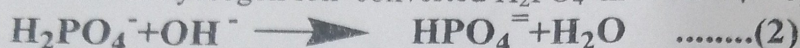


Experience (7)**Experiment name:****A - The calibration of phosphoric acid with a strong base (NaOH)****B - The calibration of a mixture of phosphoric acid and hydrochloric with a strong base by measurement effort.**

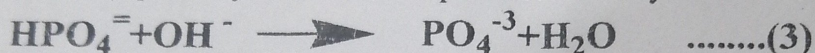
Theoretical part: During the process of titration adding OH⁻ solution will not increase pH of the solutions significantly until most of HCl has been neutralized and the H₃PO₄ has been change into H₂PO₄⁻ by the following equation:



Further addition of OH⁻ will increase the pH solution yielding the first bend for titration curve at the point of equivalent. And then reacts additional OH⁻ Ion with the second hydrogen ion converted H₂PO₄⁻ in to HPO₄⁼ by the following equation:



Until this conversions is almost completely, the only a small change seen in pH in the solution at added the base .as conversion is completed , The third ion hydrogen reacts only partially with the OH⁻ product PO⁻³ by the following equation

**Materials and equipment**

Equipment	S	Materials	S
100 ml Volumetric flask	.1	phosphoric acid	1
Graduated Cylinder	.2	sodium hydroxide (1M)	2
50 ml Burette	.3	distilled water	3
pipette	.4	mixture of hydrochloric acid and phosphoric	4
pH meter	.5		

Procedure

1. Prepare of the (0.1M) (NaOH) solution from the stock solution (1M).
2. drew (?) 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 (0.1M) of titrant with continue of adding to make pH = 12.
- 4-take (?)ml of the mixture (HCl + H₃PO₄) dilute to 25 ml distilled water to the mark, then the solution titrate with (0.1M) of NaOH.
5. Repeat paragraph 3.

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?
- 3-who are first reacted? after calibration of mixture phosphoric acid and hydrochloric acid?