

Revision Gravimetric Analysis

Name:

1) A solution of accurately known ammonium phosphate concentration was made up using a 250 mL volumetric flask and 2.98 g of ammonium phosphate ($(\text{NH}_4)_3\text{PO}_4$).

i) Calculate the concentration of ammonium ions in the flask.

ii) Calculate the concentration of phosphate ions present in the flask.

iii) A 10.43 g sample of impure calcium carbonate was dissolved in 100.0 mL of 0.132 M HCl. To this solution excess ammonium phosphate solution was added to precipitate out all the calcium as calcium phosphate ($\text{Ca}_3(\text{PO}_4)_2$, molar mass 310.2 g mol⁻¹). Before the precipitate was filtered a few drops of ammonium phosphate solution were added as a test. As a result of this test, the precipitate was filtered.

The precipitate was then, washed with distilled water and only after the filtrate was tested with a drop of silver nitrate was the precipitate dried and weighed. The mass of the precipitate was 10.11 g. Calculate the percentage by mass of calcium carbonate in the sample.

iv) What was the purpose of the test and what result would not have allowed for the filtration of the precipitate?

v) What was the purpose of the test with silver nitrate and what result would not have allowed for the filtration of the precipitate?