



General Certificate of Education
Advanced Subsidiary Examination
June 2011

Chemistry

CHM3T/P11/task

Unit 3T AS Investigative Skills Assignment

Task Sheet

The determination of the concentration of sulfuric(IV) acid (H_2SO_3) in a crater-lake solution

Some lakes close to active volcanoes are called *crater-lakes*. They contain acids such as sulfuric(IV) acid (H_2SO_3). Some of the most acidic lakes are found in craters surrounding the Kawah Ijen volcano in Indonesia. The pH of crater-lakes can be close to zero.

You are provided with a diluted solution, labelled solution **A**, prepared from a crater-lake containing sulfuric(IV) acid. Titrate solution **A** with a $0.100 \text{ mol dm}^{-3}$ solution of sodium hydroxide.

Wear eye protection at all times.

Assume that all solutions are toxic and corrosive.

Procedure

- 1 Rinse the burette with solution **A**. Set up the burette and use a funnel to fill it with solution **A**. Record the initial burette reading in a table of your own design on the Candidate Results Sheet.
- 2 Use a pipette filler to rinse the pipette with the sodium hydroxide solution provided. Use this pipette to transfer 25.0 cm^3 of the sodium hydroxide solution to a 250 cm^3 conical flask.
- 3 Add 3 or 4 drops of phenolphthalein indicator to the conical flask.
- 4 Add solution **A** from the burette until the mixture in the conical flask just turns colourless. Record your final burette reading in your table.
- 5 Rinse the conical flask with distilled or de-ionised water. Repeat the titration until you obtain **two** titres that are within 0.10 cm^3 of each other. You should do no more than five titrations.
Have one of your final burette readings checked by your teacher.
- 6 Calculate and record the average titre on the Candidate Results Sheet. Indicate clearly the titres you used in calculating this average titre.

You are not required to carry out any further calculations on the Candidate Results Sheet. You will use your results to determine the concentration of sulfuric(IV) acid in **Section A** of the Written Test.

ISA CHM3T/P11 Candidate Results Sheet
Centre Number

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Teacher Group

Candidate Name Candidate Number

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Results

Record your titration results in an appropriate table in the space below.

Average titre / cm³

For Teacher's use only					
B		R		P	
C		A			