



General Certificate of Education  
Advanced Subsidiary Examination  
June 2011

**Chemistry**

**CHM3T/P11/TN**

Unit 3T AS Investigative Skills Assignment

**Teachers' Notes**

**Confidential**

**A copy should be given immediately to the teacher(s) responsible for  
GCE Chemistry**

## Teachers' Notes

### Confidential

These notes must be read in conjunction with *Instructions for the Administration of Investigative Skills Assignment: GCE Chemistry* published on the AQA Website.

#### The determination of the concentration of sulfuric(IV) acid ( $\text{H}_2\text{SO}_3$ ) in a crater-lake solution

Candidates are provided with a **sulfuric(VI) acid ( $\text{H}_2\text{SO}_4$ )** solution labelled **Solution A**. Note that sulfuric(VI) acid ( $\text{H}_2\text{SO}_4$ ) is used as a substitute for sulfuric(IV) acid ( $\text{H}_2\text{SO}_3$ ) for health and safety reasons.

#### Materials

Each candidate should be provided with the following reagents in suitable closed containers.

Reagents	Concentration	Volume	Note
Sulfuric(VI) acid ( $\text{H}_2\text{SO}_4$ )	between 0.0600 and 0.0700 mol dm <sup>-3</sup>	200 cm <sup>3</sup>	Labelled ' <b>Solution A</b> '
Sodium hydroxide	between 0.100 and 0.110 mol dm <sup>-3</sup>	175 cm <sup>3</sup>	Labelled ' <b>Sodium hydroxide</b> '
Phenolphthalein	standard indicator		Labelled ' <b>Phenolphthalein</b> '. Individual supply not required

#### General

It is the responsibility of the centre to ensure that the investigation works with the materials provided to the candidates before candidates carry out the task.

Reagents of good analytical quality should be used and spare supplies of all solutions specified in these notes must be available.

#### Apparatus

Each candidate will require the following:

Number	Apparatus
1	50 cm <sup>3</sup> burette and stand
1	funnel suitable for filling a burette
1	25 cm <sup>3</sup> pipette
1	pipette filler
1	250 cm <sup>3</sup> conical flask
1	dropping pipette
	a plentiful supply of distilled or de-ionised water
	suitable eye protection

### Checking the burette reading

In the Task, candidates are instructed to have one of their final burette readings checked by their teacher in order to assess their ability to read the burette. If the candidate has not read the burette correctly, the teacher must tell the candidate the correct reading. This is to ensure that a candidate does not lose several accuracy marks because of an incorrect reading.

### Teacher Result

A teacher must carry out the Task, the determination of the concentration of sulfuric(IV) acid ( $\text{H}_2\text{SO}_3$ ) in a crater-lake solution. Teacher results are required for **each** group of candidates.

**The teacher's results, along with the Teacher Group, must be recorded in the space provided on the Teacher Results Sheet.**

These results are needed by the teacher to assess the accuracy of each candidate's results. The teacher must **not** carry out the Task in the presence of the candidates.

In order to ensure that the appropriate Teacher Result can be matched with each candidate, teachers must ensure that candidates complete all the boxes on the Candidate Results Sheet, including 'Teacher Group'.

**The Teacher Results Sheet(s) must be included with the sample sent to the moderator.**

### Centres with more than one teaching set

Centres may wish to divide their candidates into manageable groups and to conduct the Task at different times. This is acceptable provided that candidates in a later session are given a sodium hydroxide or solution A whose concentration is slightly different from that given to candidates in the earlier sessions.

Candidates **must not** be given information about an ISA assessment until one week before Stage 1.

One week before Stage 1 candidates should be given the following information.

The aim of this task is to determine the concentration of an acid by means of a titration.

The main area of the specification in the Written Test is Section 3.1.2 (Amount of substance).

There **must** be no further discussion and candidates **must not** be given any further resources to prepare for the assessment.

**ISA CHM3T/P11 Teacher Results Sheet**Centre Number 

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Teacher Name ..... Teacher Group .....

**Results**

Record your titration results in the table below.

Final burette reading / cm <sup>3</sup>				
Initial burette reading / cm <sup>3</sup>				
Volume of acid used / cm <sup>3</sup>				
Tick the titres to be used in calculating the average titre				

Average titre / cm <sup>3</sup>	
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