

CHEMISTRY
Investigative Skills Assignment

CHM3T/P09/TN

Teachers' Notes

Unit 1 ISA

CONFIDENTIAL

The composition of antacid tablets

The aim of this task is to determine the sodium hydrogencarbonate content of an antacid by means of a titration of a solution of the antacid with hydrochloric acid.

Materials

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

Reagent	Concentration	Volume	Note
Hydrochloric acid	between 0.100 and 0.110 mol dm ⁻³	200 cm ³	Labelled ' Hydrochloric acid '
Sodium hydroxide	between 0.090 and 0.100 mol dm ⁻³	150 cm ³	Since a standard solution of sodium hydrogencarbonate can be difficult to prepare, and titrations have resulted in difficulties in the past, a solution of sodium hydroxide must be used. Labelled ' Antacid solution '
Phenolphthalein	standard indicator		Individual supply not required but labelled only as ' Indicator '

General

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

You must complete a Teacher Results Sheet.

Apparatus

Each candidate will require:

Number	Apparatus
1	50 cm ³ burette and stand
1	funnel suitable for filling a burette
1	25 cm ³ pipette
1	pipette filler
1	250 cm ³ conical flask
1	dropping pipette
	a plentiful supply of purified water (either distilled or deionised)
	suitable eye protection

Teacher Result

A teacher must carry out the task, using the same stock solutions, in order to obtain a value for the average titre. This value will be used by the teacher to assess the accuracy of the candidate's value (Stage 2, the ISA test). The teacher must not carry out the exercises in the presence of the candidates. The value for the average titre must be recorded on the Teacher Results Sheet.

Centres with more than one teaching set

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

Candidates with unsatisfactory results or no results from Stage 1

Some candidates may have been given no marks for accuracy. These candidates must use the teacher's value for the average titre. The teacher must record the teacher's value for the average titre on the Candidate Results Sheet, which must be given to the candidate at the start of Stage 2.

One week before sitting Stage 1 of the ISA you may inform your candidates:

The aim of this task is to determine the percentage by mass of sodium hydrogencarbonate in an antacid by means of a titration.

There should be no further discussion of this topic.

ISA CHM3T/P09 Teacher Results SheetCentre Number

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Teacher Name.....

Results

Present your titration results in an appropriate form in the space below.

Average titre/cm³.....