

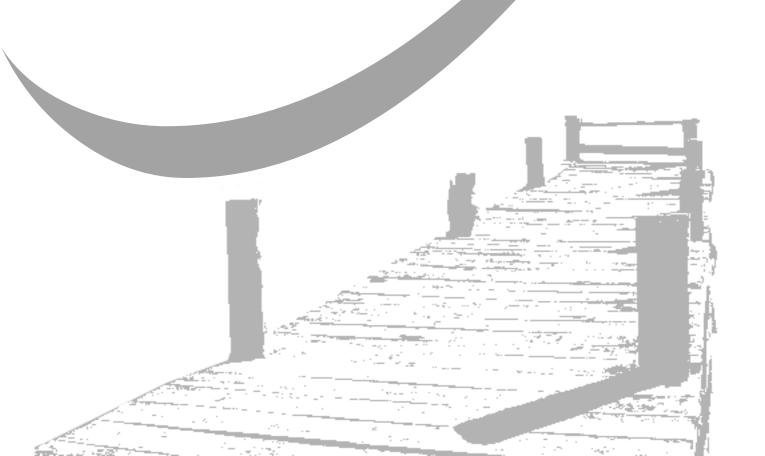
GCE AS and A Level

Chemistry

AS exams 2009 onwards A2 exams 2010 onwards

Unit 3T: ISA Specimen mark scheme

Version 1.2





General Certificate of Education

Chemistry 2420

CHM3T Investigative Skills Assessment (ISA) Centre Assessed Unit

Marking Guidelines

Specimen Paper

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. The specimen assessment materials are provided to give centres a reasonable idea of the general shape and character of the planned question papers and mark schemes in advance of the first operational exams.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

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ASSESSMENT OF IMPLEMENTATION

The following skills are assessed from the **Candidate Results Sheet**: Recording, precision, concordancy and accuracy

(a) the **recording** of results

results recorded clearly and in full in a table

1

(b) the awareness of **precision**

at least 2 titrations indicated and with all volumes recorded to 0.05 cm³

1

(ignore zero entries)

(c) the concordancy

concordant if two results are within 0.10 cm³ of each other (award the mark for concordancy if the table contains at least **two** concordant results)

1

(e) the **accuracy** of the mean value, measured against a target value for the titration.

5 max

mean titre is within 1% of target value	5 marks
mean titre is within 1.5% of target value	4 marks
mean titre is within 2% of target value	3 marks
mean titre is within 2.5% of target value	2 marks
mean titre is within 3% of target value	1 mark

Total 8

S	ECTION A	Guidance for Marking	Skill assessed	Analysing	
1	Ensure results see	en to be reproducible			1 mark
2	Calculates a mear	n titre correctly			1 mark
3	Correctly calculate	es the molarity of the undiluted acid	I		1 mark
4	Correctly calculate	es the molarity of the original acid	(ans to part 3 x 10)	1	1 mark
5	Correctly calculate	es the M _r of the acid			1 mark
6	unknown acid will unknown acid may	be corrosive/irritant y toxic			1 mark 1 mark
7	Dip-to-Clean				1 mark
				Total	8

SE	CTION B	Guidance for Marking	Skill assessed	Analysing
1	49.43% oxygen H ₃ SNO ₃ or varia	nt		1 mark 1 mark
2	(a) Experiment Result outsi			1 mark 1 mark
	(b) 200 cm ³			1 mark
	(c) PV=nRT			1 mark
	(d) $V = 2 \times 10^{-4}$ 8.17 x 10 ⁻³ r			1 mark 1 mark
	(e) 2 x answer t	to part (d)		1 mark
	(f) 97.9			1 mark
	(g) H ₃ SNO ₃			1 mark
3	any acceptable	structure		1 mark

Total 12

SECTION B		Guidance for Marking	Skill assessed Eva	aluating
1	removal of wat	er gives more accurate <u>volume</u> meas	surement	1 mark
2	gas escaping f hydrogen sligh	rom flask before bung replaced/ htly soluble		1 mark
	, ,	ethod which mixes after apparatus a bility in final volume measurement	ssembled/	1 mark
3		ula has to be a simple multiple of the evalue will distinguish between the c	•	1 mark 1 mark
4	chemist use po	ure substance/ cleaner may contain o	other acids	1 mark
5		ive/ toxic to wildlife by reaction with base/ incinerate		1 mark 1 mark
6	atom economy	is (97.1)/256.2 x 100 = 37.9%		1 mark
7	safer to handle	e/ easier to store		1 mark

Total 10