



A-level

CHEMISTRY

CHM6T Investigative and Practical Skills in A2 Chemistry (ISA)
Report on the Examination

2420
June 2016

Version: 0.1

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CHM6T

General Comments

Again, most schools tackled the ISAs well but there is still evidence of inadequate trialling of the tasks. Though the Marking Guidelines are not seen at this stage, teachers ought to be aware of the results to be expected, especially for observation tasks, and to remedy any initial problems, most likely due to incorrect or contaminated solutions, internally or through their Assessment Adviser. It is not acceptable to submit teacher results that are clearly wrong without further action.

It is important for moderation to ensure that the rule of 'one tick per mark' is applied. This allows easier clerical checks by the school and moderators. There was, again this year, a significant number of students whose marks were changed because of clerical errors in addition. The process of internal moderation by schools was apparent for some but, where there is disagreement in the School, the final submitted mark for that student should be made clear on the script.

Applying 'benefit of doubt' to some responses is acceptable so long as, within the paper as a whole, there is a balance of judgment. Overall, the examination worked well and there was a good distribution of marks. The detail below highlights some of the problem areas in the answers and marking for this final session of the ISAs.

CHM6P

Task: This was the determination of the order of an 'iodine-clock' experiment where the expected result was second order and which gave very good results on trialling. In some schools, however, the teacher results were often wide of this mark but, fortunately, seemed consistent within the cohort of students. There must be some doubts raised as to the efficacy of pre-testing by these Schools and the actual composition of some of the mixtures used. The precision of timing was frequently ignored, yet credited. Too often markers relied on the student's own graph plots in the Written Test leading to many moderation changes in the accuracy marks and to the school being out of tolerance as a result.

In Section A of the Written Test the numerical work in Questions 1, 2 and 3 was generally well done with some issues relating to the usual poor understanding of 'significant figures'. The graph in Q4a was not frequently worthy of full marks with often-seen poor scales, careless plotting and dubious lines of best-fit. Schools would be advised to ensure they spend enough time with students to ensure their graphical skills can access these straightforward marks. The gradient calculation in Q4b was well done but many scripts used inappropriate triangles or values that did not lie on the drawn line. Half-equation manipulation was well done in Q5a and the mole calculation in Q5b elicited many good answers. Answers to Q5c were sometimes poorly expressed or incomplete. Q6 was done well with the usual proviso regarding an understanding of precision. In Section B, students appeared to understand Q7a but, again, answers were often penalised for poor chemical expression. Surprisingly, Q7b generated some unusual responses, possibly because students were looking for too complex an answer! Q7c was too generously marked by a significant number of schools – the need to extract a sample to prevent contamination or to state what the pH probe should record was often overlooked and had to be penalised on moderation. Q7d was well done but Q7e resulted in a few contradictory answers as students struggled to explain the process. In Q7f, despite the unfamiliar context, there were many excellent answers but in Q7g explanations were occasionally too brief and did not cover both marking points. Answers to the final question, Q7h, identified those students who had carried out recrystallisation and had thought about the background principles involved.

CHM6Q

Task: There were two parts to this task. The titration of a solution of iron(II) with manganate(VII) and some observations for reactions of iron(II) and iron(III) salts. The titration was extremely well

done and clearly, students were well prepared. The observation exercises still show weaknesses in the description of chemical reactions; the guidance in the Marking Guidelines is very thorough and yet some Teacher Results Sheets were seen with some very poor descriptions of the reactions. In Section A of the written test Q1 and Q2a produced many good answers, though weaker students struggled with the small amount of 'scaffolding' in place for the calculation. A common error was to muddle the number of tablets per litre. In the rest of Q2 there were many good answers but poor expression penalised some students in Q2d. A few students seemed to think that the pale pink solution at the end-point is due to manganese(II) ions and there was a failure to state explicitly that no indicator was needed. Q3 caused few problems but some students referred to the reaction of manganate(VII) with extra iron in the vitamin rather than iron(II) and lost the mark. Q4 was quite poorly marked by some centres where partial responses were given full credit and there was a failure to check that student answers matched their task observations. This failure to use task observations was a similar problem in Q5. In addition, many students missed the point and gave answers as if they were working with separate solutions of iron(II) and iron(III), not the mixture.

In Section B, better students had little problem with Q6 but there was some poor marking of Q6a with equation errors and missing state symbols often overlooked. Marking was sometimes overgenerous in Q6b where a clearer statement was needed for the second mark. Q7a posed a problem for some students because of the language they used – 'most negative' is more accurate than 'lowest'. Performance in Q7b was good but in Q7c credit was too often given for vague answers and for expanding on non-standard conditions for both marks. The sacrificial anode questions in Q8 were done well by the abler students but resulted in some vagueness from others including a restatement of the information in the stem of the question.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results Statistics](#) page of the AQA Website.

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