External Assessment Report 2015

Subject(s)	Chemistry
Level(s)	Intermediate 2

The statistics used in this report are prior to the outcome of any Post Results Services requests

This report provides information on the performance of candidates which it is hoped will be useful to teachers/lecturers in their preparation of candidates for future examinations. It is intended to be constructive and informative and to promote better understanding. It would be helpful to read this report in conjunction with the published question papers and marking instructions for the examination.

Comments on candidate performance

General comments

Feedback from markers, teachers and examiners considered the examination as a fair and well balanced assessment. The standard of the paper was deemed to be a suitable combination of challenging and straightforward questions. Questions were set in varying contexts which assessed fundamental principles and learning outcomes within the Arrangements for Intermediate 2 Chemistry.

There was little evidence of poorer performance in any one area, which indicated very good preparation of candidates by presenting centres.

The paper was accessible to all candidates, and there was no evidence of a lack of time.

Areas in which candidates performed well

In general, the multiple choice questions were answered very well, with candidates achieving an average test score of 22.5. The following multiple-choice questions had high facility values: 1, 2, 3, 4, 6, 7, 8, 10, 14, 16, 17, 18, 20, 21, 22, 23, 24, 27, 28 and 29. These covered elements, chemical properties, percentage composition of air, solutions, factors affecting reaction rate, electron arrangement, molecular formula, homologous series, isomers, general formula, properties of polymers, monomers, carbohydrates, hydrolysis of fats and oils, pH, the test for hydrogen, fertilisers and precipitation.

In Section B, candidates responded very well, achieving an average mark of 67%. Responses to the following questions were particularly good:

Question 1(a), (b) and (c): Nuclide notation, isotopes and radioactivity.

Question 2(a): Shapes of molecules.

Question 3 (a): Labelling a diagram.

Question 4(a): Explaining what is meant by a fuel

Question 4(b)(i): Identifying the compound formed in a reaction.

Question 5(b)(i), (ii) and (iii): Balancing an equation, comparing reactivity of metals and suggesting why a reaction should be carried out in an atmosphere of argon.

Question 6(b)(ii): Naming the type of chemical reaction.

Question 7(a)(i), (ii) and (b): Chromatography and amino acids.

Question 8(b)(i): Identifying the type of polymerization.

Question 9(c): Naming the type of catalyst.

Question 11(a), (b)(i) and (ii): Fair tests, cells and voltage.

Question 12(a) and (b): Evaporating a solution to dryness and calculating the concentration of a solution.

Question13(b): ion-electron equation for the oxidation of aluminium.

Question 14(a)(i): naming the acid used to prepare magnesium sulphate.

Areas which candidates found demanding

In the multiple-choice section, only Question 13 proved demanding for candidates. This covered viscosity.

In Section B, responses to the following questions posed particular difficulties for candidates:

Question 4 (b)(ii): Candidates found it difficult to write the ionic formula for sodium hydride.

Question 5 (a): Candidates found it difficult to suggest the type of bonding present in titanium chloride.

Question 8 (b)(ii): Candidates found it difficult to draw the repeating unit of the polymer.

Question 15 (b)(i), (ii) and (iii): Candidates had difficulty with the question about the titration to determine the concentration of vitamin C in orange juice. One common mistake in part (ii) was for candidates to include the non-concordant (rough) titre in the determination of the average volume.

Question 16 (b): Candidates had difficulty marking the path and direction of electron flow on the diagram.

Advice to centres for preparation of future candidates

Although this is the final year of the exam the following advice is still applicable for preparation of future candidates:

- Centres should stress to candidates that they should read the entire introduction to a question before attempting the question.
- Centres are also advised to encourage both staff and pupils to access SQA's website to make use of the available examination papers and marking instructions.
- Candidates should continue to make every effort to learn basic 'routines' for the different types of calculations in the Course. Due to partial marking, a significant number of part-marks can be picked up. There is also the opportunity for 'follow through' without further loss of marks once a mistake has been made.
- Centres should stress to candidates that they will require a calculator, and that they should always show their working as there are opportunities for partial marks.
- Centres should stress to candidates the need for rote learning, eg chemical reactions.
- Centres should provide greater opportunities for candidates to draw full structural formula for the range of organic compounds in the Course.

Statistical information: update on Courses

Number of resulted entries in 2014	3839

Number of resulted entries in 2015	464

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark - 80				
A	46.1%	46.1%	214	56
B	19.8%	65.9%	92	48
C	15.7%	81.7%	73	40
D	5.0%	86.6%	23	36
No award	13.4%	-	62	-

For this Course, the intention was to set an assessment with grade boundaries at the notional values of 50% for a Grade C and 70% for a Grade A. The Course assessment functioned as intended, therefore no adjustment to grade boundaries was required.

General commentary on grade boundaries

- While SQA aims to set examinations and create marking instructions which will allow a competent candidate to score a minimum of 50% of the available marks (the notional C boundary) and a well prepared, very competent candidate to score at least 70% of the available marks (the notional A boundary), it is very challenging to get the standard on target every year, in every subject at every level.

- Each year, SQA therefore holds a grade boundary meeting for each subject at each level where it brings together all the information available (statistical and judgemental). The Principal Assessor and SQA Qualifications Manager meet with the relevant SQA Business Manager and Statistician to discuss the evidence and make decisions. The meetings are chaired by members of the management team at SQA.

- The grade boundaries can be adjusted downwards if there is evidence that the exam is more challenging than usual, allowing the pass rate to be unaffected by this circumstance.

- The grade boundaries can be adjusted upwards if there is evidence that the exam is less challenging than usual, allowing the pass rate to be unaffected by this circumstance.

- Where standards are comparable to previous years, similar grade boundaries are maintained.

- An exam paper at a particular level in a subject in one year tends to have a marginally different set of grade boundaries from exam papers in that subject at that level in other years. This is because the particular questions, and the mix of questions, are different. This is also the case for exams set in centres. If SQA has already altered a boundary in a particular year in, say, Higher Chemistry, this does not mean that centres should necessarily alter boundaries in their prelim exam in Higher Chemistry. The two are not that closely related, as they do not contain identical questions.

- SQA's main aim is to be fair to candidates across all subjects and all levels and maintain comparable standards across the years, even as arrangements evolve and change.