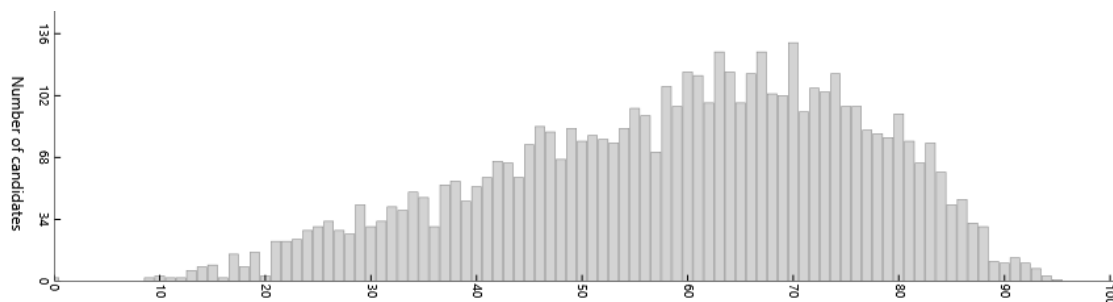




Summary report of the 2018 ATAR course examination: Chemistry

Year	Number who sat	Number of absentees
2018	4965	50
2017	5007	54
2016	4997	57

Examination score distribution-Written



Summary

Only slightly fewer candidates sat the Chemistry examination in 2018 than in previous years. Overall, the paper was of an appropriate length. There were fewer questions that were not attempted than in previous years; it is uncertain whether this was because of the examination paper itself or because it was the first examination scheduled.

The paper was pitched at an appropriate level of difficulty with individual questions varying in difficulty, allowing candidates to offer a response and gain some marks while stronger candidates could work through questions and gain more marks. There was an appropriate weighting of discriminating questions. Teacher feedback suggests that the examination was well received by candidates. The paper was considered accessible with the discrimination aspect coming from quality questions rather than a long examination. The paper allowed candidates to demonstrate their understanding of the syllabus and included some content that had not been assessed in the previous examinations. Consequently, the examination functioned well to discriminate between candidates and was a fair representation of the course.

Calculations in this examination made up 19.6% and met the design brief requirements of between 15% and 20%. The calculations were deemed to be straightforward with a sufficient number of questions serving to discriminate between the more able candidates.

The contexts used to cover the material were framed in real world contexts that were interesting and original. They gave candidates the opportunity to apply their knowledge to novel situations.

Attempted by 4965 candidates	Mean 58.96%	Max 95.42	Min 0.00
Section means were:			
Section One: Multiple-choice	Mean 71.47%		
Attempted by 4965 candidates	Mean 17.87(/25)	Max 25.00	Min 0.00
Section Two: Short answer	Mean 53.34%		
Attempted by 4963 candidates	Mean 18.67(/35)	Max 33.67	Min 0.00
Section Three: Extended answer	Mean 56.18%		
Attempted by 4957 candidates	Mean 22.47(/40)	Max 39.79	Min 0.00

General comments

The examination mean was 58.98%, which is generally consistent with previous years and slightly higher than that of 57.65% in 2016 and 58.73% in 2017.

Advice for candidates

- Examination questions are based on the syllabus not a textbook. Do not expect the examination to contain similar or standard questions from year to year.
- Do not use abbreviations or acronyms.
- Use appropriate units and express numerical answers to the appropriate significant figures.
- Know commonly used reactions (e.g. acid/base indicators and colour changes).
- Some questions require a response drawing on general principles while other questions require a response referring to a specific context, substance or reaction.
- Be conversant with the terms used in the syllabus.
- Understand the differences between related concepts (e.g. intermolecular force and intramolecular force, equivalence point and end point, ionisation and dissociation).
- Practise writing clear, concise and coherent explanations and justifications; incorporating illustrative, labelled diagrams that are clear and relevant.
- Be familiar with the content of, and how to use, the Chemistry Data Booklet.
- Know how to generate, read and apply data from graphs and tables.
- Use the formula given to determine the nature and bonding of a substance and all its intermolecular forces.
- Be familiar with, and how to express clearly, the expected observations and inferences that can be made for the reactions indicated in the syllabus.
- Solutions are clear; some are colourless and some exhibit a colour. Referring to a clear solution is redundant and is not the same as referring to a colourless solution. Copper sulfate solution is blue, while sodium sulfate solution is colourless; both are clear because they are solutions.
- Practise writing equations providing the appropriate formula and state symbols for only those species that are taking part in the reaction, unless otherwise directed.

Advice for teachers

- Ensure coverage of all syllabus dot points and be mindful that the entire syllabus is not necessarily examined in any one examination. Some syllabus points are examined regularly as they are essential for the understanding and communication of chemical concepts and processes.
- Prepare students to expect the examination to contain a range of difficulty and different types of questions often reflecting authentic chemistry contexts.
- Teach efficient and critical reading of information to extract and understand the relevant information.
- Engage students in conducting relevant experiments and problem solving. Candidates often struggle to apply knowledge of common laboratory procedures.
- Insist that students use the appropriate units and express numerical answers to the appropriate significant figures unless otherwise directed.

- Provide students with practise in writing extended answers, justifications and explanations; incorporating illustrative diagrams that are clear, labelled and relevant.
- Encourage students to set out their working and reasoning clearly.
- Teach students to think critically and apply their knowledge of chemistry.
- Teach students to recognise that molecules might exhibit more than one type of intermolecular force and the attraction between molecules is the result of the cumulative effect of all intermolecular forces.

Comments on specific sections and questions

Section One: Multiple-choice (25 Marks)

Attempted by 4965 candidates Mean 17.87(/25) Max 25.00 Min 0.00
 Based on the average marks achieved, the easiest questions were 1, 4, 7, 8, 16, 17, 19, 22, 24 and 25. The most challenging questions were 12, 13 and 20.

Section Two: Short answer (35 Marks)

Attempted by 4963 candidates Mean 18.67(/35) Max 33.67 Min 0.00
 The mean for Section Two was 53.34% with marks ranging from 0.00 to 33.67 out of 35 compared to a mean of 50.32% and a range of 0.00 to 34.38 out of 35 in 2017. Questions not well answered in Section Two related to, equilibriums, intermolecular forces, buffering systems and the dissolving processes.

Section Three: Extended answer (40 Marks)

Attempted by 4957 candidates Mean 22.47(/40) Max 39.79 Min 0.00
 The mean for Section Three of 56.18% was down from 57.34% in 2017. Marks ranged from 0.00 to 39.79 out of 40 compared with the range of 0.00 to 39.60 out of 40 in 2017. In Section Three candidates struggled to combine the percentage of elements in calculations, needed to be more specific in their answers relating to systematic or random errors, struggled with Collision theory, drawing peptide links and using ions instead of compounds.