![Government of Western Australia — School Curriculum and Standards Authority]

Summary report of the 2016 ATAR course examination:
Biology

Year	Number who sat	Number of absentees
2016	1822	30

Examination score distribution
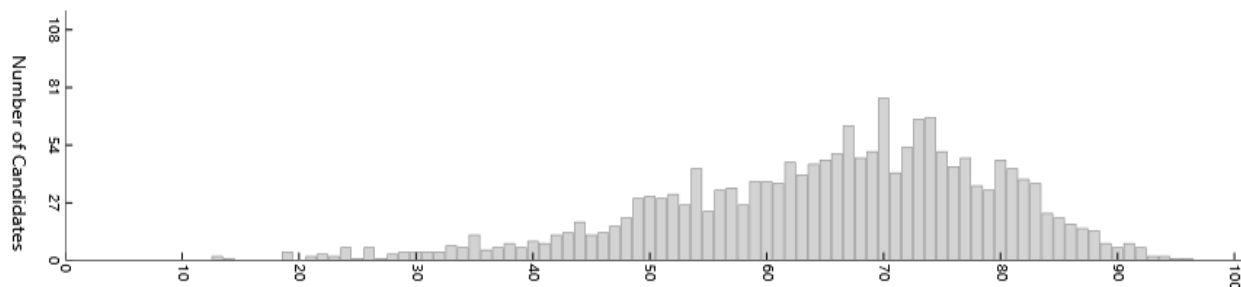
Summary

The examination had three sections. Section One comprised 30 multiple-choice questions, Section Two comprised five short-answer questions and Section Three comprised two components, each with two questions. Candidates were required to answer all questions in Sections One and Two, and one question from each component in Section Three.

The paper was attempted by 1822 candidates. The overall mean score was 65.13%. The standard deviation was 14.19% and the scores ranged from 95.50% to 12.50%.

Section means were:
Section One: Multiple-choice   Mean 23.09(/30)   Max 30.00   Min 8.00
Section Two: Short answer   Mean 30.04(/50)   Max 48.00   Min 1.50
Section Three: Extended answer   Mean 12.11(/20)   Max 20.00   Min 0.00

The scores for each section showed a strong positive correlation with the examination total, with the value of the correlation ranging from 0.97 for Section Two to 0.84 for Section One.

General comments

The mean score for the examination was higher (65.13%) than that of the Biological Sciences Stage 3 examination in 2015 (54.83%). This was due to higher mean scores in Sections Two and Three (the mean score for Section One was about the same for both examinations).

On average, candidates did best in Section One (76.95%) and about the same in Sections Two (60.09%) and Three (60.54%). Candidates appeared to be well prepared for the paper, as evidenced by mean scores above 60% for all three sections.

The paper achieved good discrimination, as evidenced by the range in the total score 95.50% to 12.50% and a standard deviation of 14.19% (compared to 12.29 and 11.31% in, respectively, the 2015 and 2014 Biological Sciences Stage 3 examinations). Section Three had the highest discrimination (scores ranged from 100% to 0%, with a standard deviation of 18.95%), while Section One had the lowest (scores ranged from 100% to 26.7%, with a standard deviation of 11.73%).

All 1822 candidates attempted Section One, 1821 attempted Section Two while 1808 completed Section Three. The high completion rate across all sections (> 99%) indicates

that the paper was an appropriate length, although the slightly lower completion rate for Section Three could indicate that a few candidates did not have sufficient time to complete the paper.

Advice for candidates
- Use formal and precise language, and scientific terminology, in answering questions.
- Read the question carefully and make sure that you answer the question asked.
- Use the notation specified and include units for quantitative data.
- Diagrams must be annotated and accompanied by written information that demonstrates the extent of understanding.

Advice for teachers
- Prepare candidates to answer questions from all areas of the syllabus.
- Use scientific terminology in class.
- Instruct candidates to prepare an answer according to the verb of the question (e.g. state, define, discuss and explain).
- Prepare candidates to develop in-depth answers to questions and to apply knowledge.

Comments on specific sections and questions

Overall, candidates did well in all three sections of the examination, with means scores ranging from 76.95% (Section One) to 60.09% (Section Two). At least one candidate achieved full marks in Sections One and Three; the maximum score in Section Two was 96%.

Section One: Multiple-choice
Attempted by 1822 candidates   Mean 23.09(/30)   Max 30.00   Min 8.00

The mean score in percentage terms was 76.95%. The standard deviation was 11.73% and the scores ranged from 100% to 26.7%. The correlation with the exam total was 0.84.

Most candidates got most questions correct.

The mean score was above 90% for 10 questions (1, 2, 3, 5, 10, 16, 20, 21, 22, and 23). These questions tested factual recall from different areas of the syllabus. The exceptions were: question 16, which required candidates to realise that a control was missing from an 'experiment'; question 22, which required candidates to calculate a mean; and question 23, which required candidates to recognise that a population with low genetic diversity is at an increased risk of extinction.

Section Two: Short answer
Attempted by 1821 candidates   Mean 30.04(/50)   Max 48.00   Min 1.50

The mean score for Section Two in percentage terms was 60.09%. The standard deviation was 16.00% and scores ranged from 96% to 3%. The correlation with the examination total was 0.97.

The mean scores for Questions 31 to 34 were similar, ranging from 65.91% (Question 34) to 59.57% (Question 32). The mean score for Question 35 was approximately 50%. At least one candidate achieved full marks for each question, except for Question 35, where the maximum score was 98%. On average, candidates made reasonable or better attempts at most parts of these questions. This was a notable improvement compared to the results for Section Two in the Biological Sciences Stage 3 examination in 2015, where the mean scores

for all but one question were below 50% and, on average, candidates struggled to answer most parts of most questions.

Section Three: Extended answer
Attempted by 1808 candidates   Mean 12.11(/20)   Max 20.00   Min 0.00

The mean score for Section Three in percentage terms was 60.54%. The standard deviation was 18.95% and the marks ranged from 100% to 0%. The correlation with the examination total was 0.88.

The mean scores for Questions 36 to 38 were similar, ranging from 66.35% (Question 37) to 59.08% (Question 38). At least one candidate achieved full marks for each question, except for Question 39, where the maximum score was 98%. This was a notable improvement compared to the results for Section Three in the Biological Sciences Stage 3 examination in 2015, where the mean scores for all but one question were below 50% and no candidate achieved full marks for any question.

As anticipated, for each question, the mean score for part (a) was higher than the mean score for part (b).