

Principal Assessor Report 2004

Assessment Panel:

Biology

Qualification area

**Subject(s) and Level(s)
Included in this report**

Biology Higher

Statistical information: update

Number of entries in 2003	8,915 (Pre Appeal)
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Number of entries in 2004	8,850 (Pre Appeal)
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General comments re entry numbers

There was a small decrease in the number of candidates compared with 2003. This is similar to the pattern seen last year. There were fewer candidates with very poor scores which suggests that centres are more effectively matching candidates to courses in Biology.

Statistical Information: Performance of candidates

Distribution of awards

Distribution of awards	%	Cum %	Number of candidates	Lowest mark
A	25.9	25.9	2289	96
B	25.2	51.0	2228	80
C	24.3	75.3	2147	65
D	9.1	84.4	803	58
No award	15.6	100.0	1383	0

Comments on any significant changes in percentages or distribution of awards

Performance in Section A multiple choice questions which are pre-tested and/or have been used in previous examinations indicated that the candidate population was more able than in the previous year.

There was generally better performance by candidates in the 2004 examination compared with previous years. Candidates attempted all questions, produced many good quality responses and generally performed to a higher standard than in previous years. The standards of handwriting and written English also showed an improvement on previous years although a small number of candidates wrote all their answers in pencil.

Candidate responses to the extended writing questions were of a better quality than in previous years with almost every candidate attempting both questions in Section C. In particular, a large majority of the candidates who attempted the questions on meiosis and on viruses scored highly.

There were fewer very poor scores compared with 2003 and a good number of candidates scored highly in what was judged to be a very fair and testing paper.

In general candidates have revised their work well and were well prepared for the exam. A noticeable improvement was also observed in candidates' responses to the A type questions in the paper.

Some possible reasons for improved candidate performance

- ◆ Intermediate 2 Biology is increasing in popularity as a preparatory course for Higher Biology. The numbers of candidates being entered for Intermediate 2 Biology have continued to rise. The number was up from 3,920 in 2003 to 4672 in 2004. This may be a contributory factor towards a better quality of candidate being entered for Higher as more candidates sitting the Higher exam are now better prepared.
- ◆ Candidates being better prepared for examination as teaching staff in presenting centres develop a clearer understanding of national standards.
- ◆ The availability of multiple choice questions and related statistics. Prior to 2000 these were confidential. Since 2000 they have been released to centres.
- ◆ The on-going Understanding Standards work by SQA staff resulting in the provision of support materials that exemplify standards.
- ◆ The on-going staff development seminars for teachers/lecturers delivered by the Qualifications Manager.
- ◆ The availability of detailed Principal Assessor reports on the SQA website.
- ◆ The availability of recent published past papers together with their detailed marking schemes.
- ◆ Candidates themselves having a better understanding and being more familiar with the standards expected.

Grade boundaries for each subject area included in the report

Grade Boundaries	Lowest mark	Percentage of maximum marks
A	96	74
B	80	62
C	65	50
D	58	45
No award	0	0

General commentary on passmarks and grade boundaries

- While SQA aims to set examinations and create mark schemes which will allow a competent candidate to score a minimum 50% of the available marks (notional passmark) and a very well-prepared, very competent candidate to score at least 70%, it is almost impossible to get the standard absolutely on target every year, in every subject and level
- Each year we therefore hold a passmark meeting for each subject at each level where we bring together all the information available (statistical and judgmental). 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 senior management team at SQA
- We adjust the passmark downwards if there is evidence that we have set a slightly more demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- We adjust the passmark upwards if there is evidence that we have set a slightly less demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- Where the standard appears to be very similar to previous years, we maintain similar grade boundaries
- 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 are different. This is also the case for exams set in centres. And just because SQA has altered a boundary in a particular year in say Higher Chemistry 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
- Our main aim is to be fair to candidates across all subjects and all levels and maintain standards across the years, even as arrangements evolve and change.

Comments on grade boundaries for each subject area

The examination was judged to be of similar demand to last year at the upper end of the scale so the cut-off score for an A grade was held at 96.

The examination was felt to be slightly more accessible at the middle region of the scale so the cut-off score for a C grade was raised by two marks to 65.

Comments on candidate performance

General comments

Statistical data indicates a significant improvement in candidate performance in Section A (Multiple choice) and in Sections B and C (Structured questions and extended writing). Marker reports also noted a generally better performance by candidates across all aspects of the paper in 2004 compared with previous years.

Areas of external assessment in which candidates performed well

- ◆ Cell structures
- ◆ Respiration
- ◆ Structure of DNA
- ◆ Genetic engineering
- ◆ Osmoregulation in salmon
- ◆ Plant growth substances (IAA and GA)
- ◆ Plant meristems and annual rings
- ◆ Plant adaptations
- ◆ Density-dependent and density-independent factors
- ◆ Genetic control of metabolism
- ◆ Meiosis
- ◆ Virus reproduction
- ◆ Presenting information in line graphs
- ◆ Calculating ratios
- ◆ Identification of variables

Areas of external assessment in which candidates had difficulty

- ◆ Importance of nitrate for growth
- ◆ Importance of DNA replication for dividing cells
- ◆ Effect of gene mutation on metabolic pathways
- ◆ Action of ADH on kidney tubules
- ◆ Concepts underlying speciation
- ◆ Separation of photosynthetic pigments
- ◆ Selecting appropriate values from a graph to describe a change
- ◆ Selecting appropriate evidence to justify a choice
- ◆ Giving explanations of observations
- ◆ Using appropriate evidence to support an explanation
- ◆ Suggesting experimental design improvements
- ◆ Calculations involving several steps
- ◆ Calculations involving percentage changes
- ◆ Drawing and labelling of diagrams in extended response answers

Recommendations

Feedback to centres

Centres are to be congratulated on the selection of candidates appropriate for studying Biology at Higher level and in their preparation of the candidates for the examination. Centres should continue to draw on the detail given in the marking schemes available on the SQA website particularly in relation to extended response questions.

The areas of the external assessment noted in this report in which candidates had difficulty should receive careful consideration by centres to ensure that candidates are best prepared for future examinations.

Candidates should be advised to look out for and act on key words and phrases in questions such as ‘explain’, ‘describe’, ‘use values from the graph’.

Candidates should be encouraged to develop their Practical Ability skills and in particular their concepts of experimental design and the critical evaluation of collected data.

Where candidates have chosen to illustrate extended response questions with diagrams, they should be encouraged to draw these carefully and to label them accurately.

Candidates should be encouraged to write answers to extended response questions under distinct sub-headings or paragraphs as suggested in the rubric of the question. This would significantly improve a candidate’s chances of accessing the coherence and relevance marks for that question.

Centres should ensure that the depth of treatment of topics is appropriate for Higher level without being excessive. There is evidence that some candidates are being confused with unnecessarily excessive detail.