



Principal Assessor Report 2005

Assessment Panel:

Biology

Qualification area

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

Biotechnology Higher

Statistical information: update

Number of resulted entries in 2004	35
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Number of resulted entries in 2005	31
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General comments re resulted entry numbers

There were slightly fewer candidates presented in 2005 compared to 2004. There were 4 presenting centres, 1 less than in 2004. Of the 4 presenting centres, 3 were from the FE sector and 1 from the school sector. The candidates from the school sector were S6 presentations.

Statistical Information: Performance of candidates

Distribution of awards including grade boundaries

Distribution of awards	%	Cum %	Number of candidates	Lowest mark
Maximum Mark- 130	-	-	-	-
A	22.6	22.6	7	87
B	9.7	32.3	3	75
C	16.1	48.4	5	64
D	6.5	54.8	2	58
No award	45.2	100.0	14	-

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 any significant changes in distribution of awards/grade boundaries

The pass rate is similar to that in 2004. There is a decrease in the percentage number of candidates achieving A and C awards and a corresponding increase in the percentage number achieving a B award compared to 2004. The percentage number of candidates achieving a grade B and above is higher than that in 2004.

The 2005 exam was more demanding than that set in 2004, so the A and C grade boundaries were decreased accordingly.

Comments on candidate performance

General comments

Candidate performance varied from very good to poor.
Performance was better in section A (objective questions) than in section B (short answer structured questions) and section C (extended responses).
Many candidates appeared well prepared and attempted all sections of the exam paper.

Areas of external assessment in which candidates performed well

Section A

Candidates performed well in this section, especially the Knowledge and Understanding questions covering the content of unit 1 (microbiology) and unit 3 (biotechnology)

Candidates performed very well with some of the Problem Solving questions (e.g. Q7- restriction map, Q10- calculation of growth rates, Q21-DNA fingerprint analysis).

Section B

Candidates performed several questions to a high standard, for example Q2 (gene mutations and protein structure), Q4 (immunity), Q6 (antibiotics) Q8 (bacterial characteristics), and Q11 (transgenic plants).

Candidates performed well in the calculations in the data handling question (Q9) and in graph drawing (Q13).

Section C

There were some excellent responses to the Q1B (DNA structure and replication) and Q2A (embryo cloning).

Areas of external assessment in which candidates had difficulty

Section A

Candidates had difficulty with the serial dilution calculation (Q15) and interpreting information from the graph (Q19).

Section B

Many candidates had difficulty with C type Knowledge and Understanding questions requiring direct recall. Examples of this include Q1 (a) and (b) (fermentation), Q3 (a) and (b) (genetic engineering), Q10 (a) and (b) (growth media), and Q12 (a) (downstream processing).

Problem Solving questions that candidates had difficulty with include Q4 (bii) (describing a change in a trend from a graph), Q7 (b) and Q13 (biii) (experimental procedure) and Q7 (a) and Q9 (e) (complex calculations).

Section C

Q2B proved difficult. Many candidates discussed the advantages and disadvantages of transgenic animals but did not include an account of how transgenic animals are produced.

Recommendations

Feedback to centres

- Many candidates were well prepared for the exam and performed well in the exam.
- Many candidates have difficulty with direct recall of knowledge based questions. It is important that centres refer to the current H Biotechnology arrangements document (fifth edition – March 2004) for content coverage.
- Simple calculations were completed correctly by many candidates but they require more practise in complex calculations.
- Graph drawing was completed well by the majority of candidates.
- Candidates must be provided with opportunities to enhance their Problem Solving skills with relation to the plan, design and evaluation of experimental procedures.