



## External Assessment Report 2011

Subject	<b>Biotechnology</b>
Level	<b>Higher</b>

The statistics used in this report are pre-appeal.

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

Candidate performance this year was particularly good, with overall marks deservedly high. Markers were impressed with the quality of answers received and the breadth of knowledge demonstrated.

In particular, there were a high proportion of A-grade performances.

## Areas in which candidates performed well

Question 2: The standard of knowledge of respiration was very high with most parts of this question being answered by the majority of candidates.

Question 9 involved interpretation of an experimental situation. This is an area that traditionally proves difficult for candidates, but was answered well this year.

Section C Question 1 A parts (a) and (b) were well answered (although part (c) less so). This question had not been asked in essay format for a long time, so was not familiar to candidates.

Section C Question 1 B part (a) was well answered — again, this was not a familiar question in essay format.

Section C Question 2 B was another unfamiliar essay question that was answered very well.

## Areas which candidates found demanding

Question 2 (c) and Question 8 (a)(ii) were questions involving complex calculations. As often happens with such questions, they proved challenging to most candidates.

Question 1 (e) on the chloroplast had not been asked before and performed disappointingly for basic identification of structures.

Question 5 on plant culture and Question 10 on Bt toxin were overall poorly answered, suggesting that candidates are struggling to retain this information.

Section C Question 2 A on enzyme purification was very poorly answered.

## **Advice to centres for preparation of future candidates**

### **General**

Candidates are obviously being well prepared for the exam given the very high level of performance.

Areas requiring particular attention include complex calculations. While these calculations are intentionally demanding, centres are encouraged to provide opportunities to develop the skills needed to tackle such calculations.

Questions demanding basic knowledge such as those described (chloroplasts, plant cloning and Bt toxin) could perhaps be given a greater emphasis.

## Statistical information: update on Courses

Number of resulted entries in 2010	27
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Number of resulted entries in 2011	27
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## Statistical information: performance of candidates

### Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark 130				
A	44.4%	44.4%	12	91
B	7.4%	51.9%	2	78
C	22.2%	74.1%	6	65
D	18.5%	92.6%	5	58
No award	7.4%	100.0%	2	-

## **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, therefore, SQA 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 Head of Service 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.