



External Assessment Report 2012

Subject(s)	Biotechnology
Level(s)	Higher

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

Once again, candidate numbers were down as compared to previous years. Overall performance was very good including a higher proportion of A grades, although no upper 'A's were awarded this year.

In general, candidates were well prepared for the exam.

Areas in which candidates performed well

Question 1 (b) (i) and (c) (ii) on protein structure and cell structures showed the candidates have very good knowledge of these areas.

Question 3 on cellular respiration was answered well by almost all candidates.

Question 5 (a) and (b)(i) which asked about selective and differential media, an area candidates have found demanding in the past, was well understood by candidates this year.

Candidates also showed a good knowledge of some aspects of risk assessment and controls in Question 6 (a) (ii) and (b) (ii), although the part on type of risk assessment in Question 6 (a) (i) was not well done.

Section C was generally completed well by most candidates. In particular, Question 1A and 2B were well answered.

Areas which candidates found demanding

As has often been the case, the areas requiring complex calculations and experimental procedure proved challenging.

Question 4 (a) (i) and 4 (c) (ii) on drawing conclusions and experimental procedure were not well done.

Question 6 (b) (i) produced unexpectedly poor responses for a question that required interpretation of data from the graph.

Question 7 (b) (iii) was poorly answered showing a general lack of understanding of plant growth substances and their actions.

Question 11 (c) (i) was not as well answered although the rest of this question produced good responses from most candidates.

Few candidates could clearly describe the function of tRNA — Question 1 (a) (ii).

Advice to centres for preparation of future candidates

General

Overall candidate performance is very good indicating they have a good knowledge and understanding of most areas and are well prepared for the exam.

However, as in previous years, it is the areas requiring complex calculations and understanding of experimental systems that candidates find demanding. Areas in which centres could develop candidates' skills further are; calculations which require candidates to use data from more than one source, making predictions from a given set of data, and drawing conclusions from experimental results.

A few areas (mostly from Unit 3 of the Course) requiring basic knowledge could be reinforced, for example advantages of using immobilised enzymes, and the purpose of pilot plant fermenters.

Statistical information: update on Courses

Number of resulted entries in 2011	27
------------------------------------	----

Number of resulted entries in 2012	18
------------------------------------	----

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%	8	91
B	27.8%	72.2%	5	78
C	22.2%	94.4%	4	65
D	5.6%	100.0%	1	58
No award	0.0%	100.0%	0	-

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 SQA therefore 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 Business Manager 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.