External Assessment Report 2014

Subject(s)	Biology
Level(s)	Advanced Higher Revised

The statistics used in this report are prior to the outcome of any Post Results Services requests.

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

As in 2013, only one centre presented candidates for Advanced Higher Biology (Revised); 15 candidates in total. The decision to present the course is impressive given that so few resources are available, specifically for the new content. Though there are few SQA past papers to draw on for judging standards or to rehearse with, some material from the unrevised exam could be modified relatively simply to generate data questions.

In the revised course there are three mandatory Units. There are no optional Units. The revised question paper component has a total of 90 marks (10 less than the unrevised paper); there is also an Investigation component worth 25 marks, making the total mark 115 for the external assessment.

The question paper comprises a Section A of 25 objective test items, and a Section B worth 65 marks in which there is a variety of question styles. The long extended response (essay) is worth 10 marks, and there may be other, shorter, pieces of extended writing worth up to 5 marks.

It is not possible to provide relevant general remarks on errors and misconceptions on the revised question paper in the way that can be done for the unrevised question paper, because of the small sample size for the revised course. Performance analysis for individual assessment items will also be unreliable, and there is no way to be certain how well candidates in this exam compare with last year's, or where this candidate cohort fits in relation to the general range of candidates who were presented for the unrevised course.

There are, however, some indicators for comparison. The average prior attainment (at Higher level) of the candidates who were presented for the revised course closely matched that for the cohort presented for the unrevised course. The average score for the exam was a little higher than last year (+ 4%), mostly from higher scores in Section B. The Section A mean score (19/25) matched last year's revised question paper score and that for the 2014 unrevised question paper. The Investigation component was one mark higher than last year's.

Areas in which candidates performed well or found demanding

Question 1: Half the candidates scored 6/10 or better. The context and data in this question were also used in the unrevised exam to help compare standards. The PS items were largely identical but some questions were tailored a little to the content of the new course.

Question 2: Approximately half the candidates scored 4/5 or 5/5; some only picked up KU (a)(i); (a)(ii).

Question 3: This question was quite discriminating and was expected to be a more difficult context; half the candidates scored over half marks.

Question 4: This was testing Unit 3 KU and PS, and Unit 1 Lab Techniques on principles of colorimetry, p8 in the Arrangements. Most candidates knew about pilot experiments and confounding variables, but only the better candidates got the contents of the reference 'blank' and handled the results well.

Question 5: Generally good answers to most of the items. One or two candidates did not understand the background — a population bottleneck affecting the gene pool.

Question 6: Parts (a) and (b)(i) were answered well, but (b)(ii) proved difficult. Many candidates wanted to answer from the point of view of the male *Drosophila* when the question was about female choice; many were not clear about sexual selection.

Question 7: There is a good deal of information to master before even starting this question. Several candidates did not make it to half marks scoring mainly (a), (b) and (c)(ii). Several scored almost full marks and could see in (d)(ii) how Pfs25 picked up in blood from a vaccinated human limits the mosquito to one potentially infective bite.

Question 8: Generally candidates scored two out of three, but there were errors in each item. Most candidates knew (a)(ii).

Question 9: This question was partly testing concepts from Unit 3 — correlation (p43 2c) and reliability (p44, 2f). Item (c) proved difficult for most candidates.

Question 10: Essay scores were high, average 7.7/10; the majority of candidates chose essay B on ion movement and nerve transmission, for which they were very well prepared. The mean for this choice was 8.0.

In all questions, there were always some candidates who scored almost full marks. Often a candidate did very well in some contexts then not so well in others.

Advice to centres for preparation of future candidates

Centre staff are advised to go over SQA past paper data questions with candidates to show how these types of questions should be approached.

Candidates should be better prepared to answer Problem solving questions. Staff are advised to read the text and skim through the tables, graphs and diagrams with candidates — just as they ought to do themselves in the exam. Note the 'pointers' in the questions ('use data', 'refer to figure 2', 'explain ... for **2** marks'). In addition, if error bars or other error measures are given, they need to be considered when evaluating if treatments have been effective. Advise candidates to read the **whole** text and the questions before starting to answer.

In extended responses, candidates need to define the terms they are using. They should make a brief plan relating facts to the correct section of the title; this will also allow a double check that the essay content matches the question asked. Planning needs practice.

Accuracy of concepts and expression need to be checked by someone who knows the Biology; peer-marking using published marking instructions (MI) is unreliable for this purpose. Teachers can also be unreliable in the application of MIs when assessing candidates. Staff are advised not to stray from the MI by awarding marks for (even correct) statements that are not included; this is lenient marking and misleads candidates about national standards.

Staff should scan through Investigation Reports in draft form to check that simple things have been done correctly; candidates of all abilities can lose five or six marks on technical aspects of the Report, which will reduce a good study to an average score. Check for:

- suitable title, contents page, page numbers, summary (Aims and findings only)
- aims and (testable) hypotheses stated **in the introduction**
- correct referencing (see below)
- raw data submitted (in Appendix); averages calculated to a sensible number of decimal places
- a table to support each graph and a description of results/trends for each

For candidates to access 'A' marks, they should have repeated experiments to generate 'replicate' data. Candidates should be advised not to plot these separately but to plot the average. They can then discuss in the Evaluation how much the repeats differ from each other and explain how this could have happened. If there are obvious flaws, Markers will think they should not have passed the planning stage.

The reference style prescribed is the Harvard System. The requirements for references are illustrated in the SQA Advanced Higher Candidate Guidance document. Centres are advised to provide candidates with a copy of this document so they are aware of what is expected of them.

Statistical information: update on Courses

Number of resulted entries in 2013	12

Number of resulted entries in 2014	15

Statistical information: Performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark 115				
A	40.0%	40.0%	6	80
B	26.7%	66.7%	4	68
C	20.0%	86.7%	3	57
D	13.3%	100.0%	2	51
No award	0.0%	-	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.