



External Assessment Report 2013

Subject(s)	Biology (Revised)
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

The **general performance** of candidates in the 2013 Revised Higher Biology examination was excellent and this has resulted in a significantly increased pass rate and increases in percentages of candidates attaining grades A and B. However, since there were very few candidates from only three centres, interpreting results statistically does require extreme caution.

It should also be noted that this was only the second examination of the Revised Arrangements for Higher Biology, so candidates had use of only one past paper, although a Specimen Question Paper (and associated Marking Instructions) was published in February 2012. There was clear evidence of a much better grasp of the new content by candidates this year, although this was more noticeable in the content area than, for example, in the practical problem solving area.

Literacy levels were very good, and the extended response questions in Section C were answered especially well this year. Spelling of biological terms was generally very good.

Numeracy levels were excellent. However, candidates should continue to be aware of the need to include units in answers that involve describing data. In describing trends in data, candidates should be aware of the crucial importance of changes in data trends and the need to quote figures and units when describing these. The presentation of data improved greatly this year, including very good graph scaling and axis labelling. There were very good responses to questions that required calculation.

Note

As always, certain questions are designed with the specific intent that they challenge candidates and allow the demonstration of knowledge and skills related to Grade A. These questions are:

Section A

- ◆ Questions 3, 6, 9, 11, 20, 18, 22, 25 and 26.

Section B

- ◆ Unit 1 Questions 2c), 3d), 4b)ii) andiii); 5a)iii), 5b), 5c); 6b); 7b)ii).
- ◆ Unit 2 Questions 8b), 8d); 9a)i) andii), 9b)i), 9c); 10a), 10b)ii).
- ◆ Unit 3 Questions 12b)i) andiii); 13a),b) andd); 14b).

Section C

Some extended response marks, often those with two part explanations, are designed to be more demanding than others.

Areas in which candidates performed well

Section A

- ◆ Candidates performed especially well in Questions 1, 5 and 10 from Unit 1; Questions 12, 13 and 16 from Unit 2; and Questions 23, 24 and 27 from Unit 3.

Section B

The following questions were answered particularly well. Most candidates clearly understood the questions and were able to make appropriate responses:

- ◆ Question 1b) and d)
- ◆ Q2a)
- ◆ Q3a) and c)
- ◆ Q4b)i) and iii)
- ◆ Q6a)
- ◆ Q7b)i)
- ◆ Q8b)
- ◆ Q9b)ii) and d)
- ◆ Q11b)
- ◆ Q12a)ii) and iii)
- ◆ Q15a)

Section C

- ◆ Candidates favoured Question 1A on Photosynthesis over Question 1B on Social Behaviour. The average mark attained for 1A was significantly better than that for 1B.
- ◆ Candidates strongly favoured Question 2A on Glycolysis and the Citric Acid Cycle over Question 2B on Enzyme Action and Inhibition. The average mark for the 2A option was higher than that for 2B.

Areas which candidates found demanding

Section A

Candidates had more difficulty with Questions 3, 4, 6 and 9 from Unit 1; Questions 11, 14, 17 and 18 from Unit 2; and Questions 21, 22 and 26 from Unit 3.

Section B

- ◆ Q1e): very few candidates were able to give a complete answer, most simply saying that the enzyme added nucleotides to DNA, but not indicating the 3' end.
- ◆ Q2c): most candidates could name the anticodon but struggled to give its importance in terms of ensuring the correct amino acid was linked in the polypeptide sequence.
- ◆ Q3d): many candidates lost marks by not mentioning both introns and exons in their answers.
- ◆ Q6b): as in the non-revised paper, many candidates failed to give full descriptions of the evidence in terms of unsuccessful interbreeding and infertile offspring.
- ◆ Q7c): many had not learned the names of the three domains.
- ◆ Q8a)i): many did not recognise the independent variable.

- ◆ Q8a)iii) and iv): few candidates were able to visualise what was happening in the flasks during the time delays, especially the second delay, which allowed the lead time to be absorbed and to have an effect.
- ◆ Q9a)i): the need for accurate values with units was not appreciated by all candidates.
- ◆ Q9b)i): the importance of information in the stem in terms of the migratory distances not noted by many candidates, so not appreciating the importance of the energy saving through torpor.
- ◆ Q10b)i): very few candidates mentioned the fact that H7 causes food poisoning.
- ◆ Q12a)i): although most candidates knew that a parasite gains from its host, they did not go on say that it harmed the host.
- ◆ Q14b): many candidates mentioned habitat corridors, but few gave explanations as to how these could lead to increased species diversity.
- ◆ Q15c): most candidates gave 'repeating' as the key to increased reliability however did not give additional detail needed to score the mark at Higher level, such as repeating 'with different pigs' or 'at a different time of day'.

Section C

- ◆ Q1B: although this was well answered in general, candidates struggled to explain the difficult concepts. Correct terminology is essential to prove understanding.
- ◆ Q2B: although this was generally well answered, candidates did not often give systematic accounts based on the prerequisite knowledge and many wrote little about inhibition.

Advice to centres for preparation of future candidates

As always, it is good practice to ensure that candidates attempting Higher Biology have appropriate prior attainment.

It is essential to realise the very significant differences between the revised and non-revised Arrangements for Higher Biology. Although a few topics appear in both sets of Arrangements, the vocabulary, contexts and emphases are different, and increased detail is often required in the Revised Higher. The additional detail given in the descriptions of problem solving skills in Revised Higher should be noted.

Centres are advised to share the points made in this report with candidates. The 'Areas candidates found demanding' section could be especially helpful.

It is highly recommended that candidates are given the opportunity to work with any published Marking Instructions from previous years' exams and those from the Specimen Paper. This may help in the pitching of answers to questions involving, for example, variables in experiments and the sources of related information in data questions.

Use of the vocabulary offered in the Arrangements documentation is crucial, for example, the terminology used to describe symbiosis and enzyme action.

Practical work continues to be very important in Biology and candidates should continue to be exposed to apparatus and experimental procedures appropriate to their studies. The

classification of variables is important. Candidates should be aware of the need to be able to link biological process to the timing of experimental procedures. It is worth noting that the area of practical investigation was tackled no better in the revised paper than in the non-revised, although the overall average score was better in the revised paper.

Choice of extended response questions continues to be important. Study of Marking Instructions for extended responses from past years, and the vocabulary used there, is highly recommended.

Statistical information: update on Courses

Number of resulted entries in 2012	33
Number of resulted entries in 2013	163

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	40.5%	40.5%	66	91
B	22.7%	63.2%	37	77
C	17.8%	81.0%	29	64
D	3.7%	84.7%	6	57
No award	15.3%	100.0%	25	-

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.