External Assessment Report 2009

Subject	Biology
Level	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

Candidates performed very well in Higher Biology this year as is, once again, reflected in the increased pass rate in the examination. This year, fewer candidates seemed to have encountered real difficulties with the question paper and most were able to make appropriate responses. This perhaps suggests change to the inappropriate entry levels.

Section A (Objective Test – 30 marks)

Candidates responded very well to Section A and the average score was between 20 and 21 from 30. This average has now been fairly steady for a number of years. Candidates performed less well in questions from D031 *Control and Regulation* than they did in the other two Units. Knowledge and Understanding questions were done better than Problem solving.

Section B (Short Answer – 80 marks)

Candidates performed very well in Section B, keeping up the improvements noted in 2008.
Knowledge and Understanding responses, as last year, showed very good grasp of the basic biological ideas. Confusion of some biological terms was a noticeable concern, for example tyrosine, thymine and thyroxine. Very few candidates were able to give an explanation of the idea of photoperiodism and many struggled with the difference between adaptations of plants to tolerate grazing by herbivores and their adaptations to discourage grazing. In tackling questions on viral invasion of cells, many candidates found problems with the language and vocabulary required.
Problem Solving questions were again answered well.
As in previous years, candidates were very good at describing trends shown by graphs but still find problem in dealing with trends in figures shown in tables. This year candidates found more demand in the practical situation question (Q10) where many had problems with identification of variables than in the Data Handling question (Q5).

Section C (Extended Response – 20 marks)

In Q1, the option of 1A *DNA and Replication* was much more popular than 1B on *The structure and functions of plasma membrane and cell wall* although, on average 1B was higher scoring. In 1A many candidates failed to make the distinction between DNA and RNA nucleotides and lost marks. In 1B, very few candidates mentioned the idea of selective ion uptake.
In Q2, option 2B on *Density-dependent and density-independent factors* was much more popular than 2A on *Mineral importance and deficiency in plant growth* although, again, 2A was significant higher-scoring with many very concise answers being offered. In 2B, many candidates had difficulty in describing the effects of density-dependent and independent factors although they had little problem in naming these.

Areas in which candidates performed well

Candidate performed well in the following questions.

D029 Cell structure in relation to function – Qs A1, A2, B3b, Photosynthesis – Qs A5, B1a, bi and ci, Energy release – Qs A6, A7, B2, Synthesis and release of proteins – Qs B3aii, C1Bi, Cellular response in defence – Qs A10, B4ai and bii.

D030 Variation – Qs A15, B6, B7, Selection and speciation – Qs A16, B11ci, Adaptation – Qs A17, A19, B8aii.

D031 Control of growth – Qs A24, B13c, C2A, Physiological Homeostasis – Qs A25, Population Dynamics – Qs B15.

Areas which candidates found demanding

Candidates found the following questions particularly demanding.

D029 Cell structure in relation to function – Qs A3, Photosynthesis – Qs B1bii and cii, Synthesis and release of proteins – Qs A8, B3aiii, Cellular response in defence – Qs B4aii and bii2.

D030 Selection and speciation – Qs B11b and cii, Adaptation – Qs B8bi, Q9a.

D031 Control of growth – Qs A23, B12c, B14, Physiological homeostasis – Qs A29, Population Dynamics – Qs C2B.

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 A grade. In section A, Qs 3, 8, 11, 12, 13, 18, 23, 29, 30 were set with this broad intention. In Section B, Qs 1bii, 1cii, 3aiii, 4aii, 4bii2, 5cii, 5d, 5e, 8ai, 8bi, 9a, 10b, 10e, 11cii, 12c and 14bi are examples of questions in this category. In Section C, as always, certain expended response marks are designed to be more demanding than others.

Advice to centres for preparation of future candidates

In general, candidates for the 2009 examination were very well prepared.

In **Knowledge and Understanding** more subtle concepts continue to require emphasis. In this paper these would include the concepts of grazing impact on diversity (Q B9a), genetic isolation (Q B10ci) and density-dependence (Q C2B). Language and vocabulary continues to require emphasis, a good example being the need to refer to *viral* nucleic acid when describing viral invasion of cells (Q B4) and *DNA* nucleotides when describing DNA replication (Q C1A). Candidates should be encouraged to use Arrangements language, for example, use of the term *photoperiodism* (Q B14bi) allows more direct access to marks. Marks are unlikely to be available for detail not mentioned in Arrangements for example terms such as *hydrophilic* and *hydrophobic* (Q C1A) although not negating, do not attract marks and so time is potentially wasted.

In **Problem Solving**, the scaling and labelling of graph axes continues to require emphasis especially in the need for completely enclosed scales using zero points as appropriate (Q B10c). In describing trends in data, candidates should be aware that the skill can be tested from tabulated information (Q B8ai) as well from graphical. It is always worth stressing to candidates that information and evidence needed to answer problem solving questions can be given in written stem material (Q11a) as well as in other forms such as graph, charts and tables.

In **Extended Response** questions, choice continues to be important and candidates should allocate a little time to making the appropriate choice.

Biology: Biology Higher
Statistical information: update on Courses

Number of resulted entries in 2008	9130

Number of resulted entries in 2009	9104

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	22.0%	22.0%	2000	92
B	23.3%	45.2%	2117	77
C	25.5%	70.8%	2326	62
D	11.9%	82.6%	1079	54
No award	17.4%	100.0%	1582	-

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.