Principal Assessor Report 2005

Assessment Panel:	**Biology**

Qualification area

Subject(s) and Level(s) Included in this report	**Biology Higher**

Statistical information: update

Number of resulted entries in 2004	8,850

Number of resulted entries in 2005	8,941

General comments re resulted entry numbers

There was a small overall increase in the number of candidates compared with 2004.
While the percentage of S6 entries remained constant, there was a small decrease in the percentage of S5 entries. An increase in the percentage of FE entries accounted for the overall small increase.

Statistical Information: Performance of candidates

Distribution of awards including grade boundaries

Distribution of awards	%	Cum %	Number of candidates	Lowest mark
Maximum Mark- **130**	-	-	-	-
A	22.7	22.7	2,034	94
B	24.2	46.9	2,161	78
C	23.8	70.7	2,127	63
D	11.4	82.1	1,019	55
No award	17.9	100.0	1,600	-

General commentary on passmarks and grade boundaries

- While SQA aims to set examinations and create mark schemes which will allow a competent candidate to score a minimum 50% of the available marks (notional passmark) and a very well-prepared, very competent candidate to score at least 70%, it is almost impossible to get the standard absolutely on target every year, in every subject and level
- Each year we therefore hold a passmark meeting for each subject at each level where we bring together all the information available (statistical and judgmental). 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 senior management team at SQA
- We adjust the passmark downwards if there is evidence that we have set a slightly more demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- We adjust the passmark upwards if there is evidence that we have set a slightly less demanding exam than usual, allowing the pass rate to be unaffected by this circumstance
- Where the standard appears to be very similar to previous years, we maintain similar grade boundaries
- 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 are different. This is also the case for exams set in centres. And just because SQA has altered a boundary in a particular year in say Higher Chemistry 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
- Our main aim is to be fair to candidates across all subjects and all levels and maintain standards across the years, even as arrangements evolve and change.

Comments on any significant changes in distribution of awards/grade boundaries

The examination overall was judged to provide good coverage of the course and to be a very fair but challenging test of candidates' ability.

It was felt that the level of demand in the examination was slightly higher than last year so the cut-off scores at both the A and C grade boundaries were lowered accordingly.

Compared with last year, there was a slight drop in candidate performance in Section A, the multiple choice questions that are pre-tested and/or have been used in previous examinations. This suggested that the candidate group was very slightly below the ability level of the previous year.

Section B questions require short answers of varying levels of demand while Section C questions require extended responses from candidates. An increase in the number of more discriminating short answer questions together with a high level of quality expected in candidate answers to these questions may have contributed to a drop in the mean mark for this part of the examination compared with last year. Many of the more demanding questions in the paper were not accessed by the average C candidates.

Comments on candidate performance

General comments

In general, candidate responses continued to show strong evidence of sound preparation for the examination. The distribution of marks and the comments made in Markers' Reports indicate generally poorer scores by candidates across the whole of the marks range compared with last year. This was most noticeable at the upper end of the marks range.

The main feature that differentiates between candidates who achieve grades at the A and C level is the ability of the former to provide good, concise explanations of important biological concepts thus demonstrating a clear understanding. The A grade candidates can also apply their knowledge and understanding effectively in situations or contexts that are less familiar to them.

Almost every candidate completed the paper and there was no evidence that candidates were short of time.

Areas of external assessment in which candidates performed well

Mitochondrial structure and function
Genetics dihybrid cross
Genetic engineering
Transpiration stream, transpiration rates and stomatal changes
Advantages of cooperative hunting
Applications of plant growth substances
Understanding of the terms endotherm and ectotherm
Growth and development in plants
Photosynthetic pigments and the light-dependent stage

Presenting information in line graphs
Calculation of ratios
Calculation of percentage decrease
Identification of variables

Areas of external assessment in which candidates had difficulty

Importance of ATP as a means of transferring chemical energy in cells
Detailed role of lysosomes in cellular defence
Role of lymphocytes in recognition of foreign antigens leading to tissue rejection
Detailed effect of ADH on kidney tubules
Understanding of the effect of mutations and natural selection in changing gene pools
Relation of structure to function in root hair cells
Explanation of changes in GP and RuBP levels in chloroplasts under changing environmental conditions
Significance of the net energy gain in the economics of foraging behaviour
Difference between intra-specific and inter-specific competition
Benefits of social defence mechanisms
Role of α-amylase in germination
Significance of heat loss from mammalian body and the resultant increase in metabolic rate

Importance of monitoring wild populations
Concept of population density
Role of tRNA in protein synthesis

Selecting appropriate values from a graph to describe a change
Purpose of experimental controls
Drawing conclusions from data tables or graphs
Purpose of procedures/precautions taken during experimentation
Drawing and labelling of diagrams in extended response questions

Recommendations

Feedback to centres

Centres are reminded that the examination only assesses knowledge and understanding which is detailed in the content statements plus supplementary notes as set out in the published SQA Arrangements document (fifth edition, 2002). There was evidence from candidate responses that information is being taught that goes beyond the limits of the published Arrangements e.g. conditions in humans resulting from over or under activity of the thyroid gland. While it appeared that A grade candidates could handle this extra teaching and still score highly in the questions, there were repeated examples of C grade candidates who appeared to be disadvantaged by this practice.

Candidates should be encouraged to look out for and follow the specific instruction given by key words and phrases in questions such as ‘explain’, ‘describe’, ‘use values from the graph’.

Questions assessing many aspects of Practical Abilities were still poorly tackled by too many candidates. In particular, concepts related to experimental design, the purpose of controls, the purpose and effectiveness of procedural precautions and the ability to draw valid conclusions from data were poorly attempted. More extensive, first hand experience by candidates of practical experimental situations would develop a greater understanding of all of the skills and concepts involved in the Practical Abilities area.