External Assessment Report 2010

Subject	**Computing**
Level	**Advanced 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

In general, candidates are demonstrating a good level of knowledge and understanding of many of the concepts in the Course. Candidates' responses in problem solving questions are improving and are very good in the more familiar contexts such as algorithms and pseudocode. However, in many problem solving questions candidates are not paying sufficient attention to the scenario.

Many candidates are still not providing answers with sufficient depth or detail to questions requiring description or explanations.

Areas in which candidates performed well

In Question 1 (c) candidates were knowledgeable about the contents of the ORD and in part (e) could describe beta testing of software.

Question 2 (d) demonstrated that candidates could differentiate between the operations of stacks and queues.

Question 3 was particularly well answered with many candidates demonstrating an excellent understanding of the binary search algorithm and able to explain how it is applied to a particular list.

In Question 5 (a) candidates could declare a suitable 2D array and in part (b) were able to apply the bubble sort to the list (though often failing to understand when the bubble sort terminates).

In Question 6 (a) candidates identified resultant states and could represent new states appropriately and in part (b) knew the correct situation for use of the minimax procedure.

In Question 9 (a) (i) candidates demonstrated good knowledge of both conflict set and conflict resolution and in part (c) the majority of candidates knew the correct situation for the application of the Waltz algorithm.

In Question 14 (b) most candidates knew the features of RISC processor design.

In Question 15 (a) many candidates could identify the different instruction types.

In Question 18 (b) most candidates could name a plug-in.

Question 19 (a) was answered well by most candidates.

Areas which candidates found demanding

In Question 2, the majority of candidates understood the queue data structure but were poor at applying the concepts involved to this problem solving context. They failed to grasp the use of pointers in the implementation of a queue and the efficiency of pointer management.

In general, candidates have improved their knowledge of object-oriented languages examined in Question 4 but some could not relate their knowledge to either modularity or maintainability.

In Question 5 (b) (i) many candidates could perform each pass of a bubble sort. However, they failed to realise that for the list shown the bubble sort will perform another pass after the list is sorted because a swap has taken place. Also in part (d) many candidates did not know how to delete from a file and instead chose to delete the entire file.

Some candidates are still not labelling the branches in the search tree for Question 6 (c) (ii).

In Questions 7 and 8 many candidates struggled with the writing of Prolog rules. Some candidates could not write the rule for Question 7 (b) (iii) despite having successfully written the rule for part (b)(ii).

In Question 10 (a) the description of each of the stages of natural language understanding was weak and lacking in the detail required at this level.

In Question 12 (a) (ii) few candidates could give a situation example and in part (b) details of the PCI-X bus lacked technical detail.

In Question 17 (b) few candidates could describe firewall rules.

In Question 18 (a) (i) most candidate's responses demonstrated a basic understanding.

In Question 18 (d) (ii) candidates struggled with the problem solving element of this question.

Advice to centres for preparation of future candidates

Centres should continue to encourage candidates to develop their problem solving skills by implementing complex data structures and algorithms in a variety of contexts. In particular, candidates should improve their understanding of the use of pointers in both stacks and queues.

Candidates are improving their knowledge of object-oriented languages but need to be able to compare these to other types of languages.

Candidates are improving on most areas of file handling but should consider how to delete an item from a file.

Candidates studying Artificial Intelligence should remember to label branches in search trees; practise implementing rules in Prolog (paying particular attention to inheritance and

recursive rules); and improve their knowledge of the different stages of natural language understanding.

Markers feel that candidates studying Computer Architecture should try to improve on the level of technical detail in their responses and practise using this knowledge in problem solving contexts.

Candidates studying Computer Networking should improve their knowledge of CIDR and firewall rules.

Statistical information: update on Courses

Number of resulted entries in 2009	411
Number of resulted entries in 2010	414

Statistical information: performance of candidates

Distribution of Course awards including grade boundaries

Distribution of Course awards	%	Cum. %	Number of candidates	Lowest mark
Maximum Mark — 200				
A	20.8%	20.8%	86	140
B	29.7%	50.5%	123	120
C	25.1%	75.6%	104	100
D	11.4%	87.0%	47	90
No award	13.0%	100.0%	54	—

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, therefore, SQA 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 Head of Service 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.