



Principal Assessor Report 2007

Assessment Panel:

Computing and Information Systems

Qualification area

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

Computing Higher

Comments on candidate performance

General comments

This is the third paper to examine candidates on the current arrangements for Higher Computing. The paper was well received by practitioners, candidates and the media. The paper was seen as a fair test of candidate ability.

In the light of information gained from performance on the 2006 paper, some changes were made to the structure and mark allocation of some questions for 2007. This has led to a further slight shift in the grade boundaries at the upper end. It is expected that the process of rebalancing of questions will continue and that this will bring the grade boundaries closer to the notional levels of 50% for a C, 70% for an A and so forth.

The general standard of response appears to have improved slightly on average. As in previous years, there were some excellent responses. However the standard of written English is still very varied, with poor spelling of even the most basic computing terms. It is also apparent that there are still many candidates being presented at the wrong level. Approximately one in twelve candidates gained 28 or fewer marks out of a possible 140 in the written exam. This would appear to support Centre estimates, which predict a “No Award” for 19.8% of candidates presented. There remains a gulf in performance between the written paper, with an average mark of 62 out of 140, and the coursework, with an average mark of 44 out of 60.

There is very little difference in the average mark gained for each of the optional sections. The trend of slight decline in numbers continues.

Areas in which candidates performed well

Candidates generally performed better when answering questions that tested their ability to recall knowledge, particularly in those questions requiring a shorter response. There were fewer questions left blank and fewer instances of candidates attempting questions from a section they had not studied. Better layout in the calculation questions has led to fewer marks being lost needlessly when the working goes awry.

Areas which candidates found demanding

Candidates experienced particular difficulties with questions in the following areas:

- Problem solving within a given context
- Understanding and appropriate use of technical terms, eg 1D array
- Comparison of hub and switch
- Labelling of diagrams, such as network topologies
- Identifying a range of numbers by stating its limits, eg 0 to 65535
- Distinctive features of scripting and declarative languages
- Differences between an interpreter and a compiler
- Tailoring of a standard algorithm to suit a given context
- Natural language processing, expert systems and justification in Artificial Intelligence
- Tracing a solution, training a neural net and vision systems in Artificial Intelligence
- Differentiation between the functions of TCP and IP in Computer Networking
- CSMA/CD, disaster avoidance strategies, CRC, WML in Computer Networking
- The level of technical detail beyond Core required by Multimedia Technology
- MPEG, container files, 3D graphics, data transfer rates in Multimedia Technology

Advice to centres for preparation of future candidates

This is the third examination of the current arrangements and the majority of candidates were clearly more confident in their responses. However there is still a large group of candidates who show little or no grasp of the basics. Approximately 25% of candidates gained no award, with less than 86 marks out of 200 inclusive of the Coursework, with Centres themselves predicting “no award” for nearly 20% of candidates. It is clear that many of these candidates are being presented against the best advice of subject specialists when a lower level course may be more appropriate.

Where there is a large or uniform discrepancy between a Centre’s estimates and the actual grades gained, Centres should seek advice on how to improve the quality of estimates. The SQA provide a range of support tools, including the Understanding Standards website.

Candidates are still misreading or misinterpreting questions, for example many respondents in question 25 offered responses about mobile phones rather than the expert system supporting the sales team. Candidates should also note that the context of a question is often vitally important, as too many marks were lost through the offering of generic responses during problem solving questions. There were too many marks lost through lack of depth in responses. Candidates must learn that “JPEG supports millions of colours” is a better response than “JPEG has more colours” and is more likely to gain credit. The use of short and/or “woolly” answers was widespread, particularly in Section I. This section should have been relatively straightforward for most candidates, but the average mark here was 16.7 out of 30.

Many candidates would benefit from a deeper knowledge of technical terms and a greater appreciation of the level of response required. Many markers raised concerns that candidates were offering answers more fitting to a Standard Grade paper. Note should be taken of the number of marks allocated to each question, as this gives candidates an indication of the depth of response required, generally one point is required for each mark. Single word answers are inappropriate in the majority of cases and should be avoided. Candidates who have problems with extended responses should be encouraged to use bullet points to enhance clarity. This can prevent accidental omissions and/or repetition.

In every exam there are questions designed to test integration across the core and optional topics. Candidates have difficulty combining knowledge from discrete areas of the course. There will also be questions drawn from the broad themes outlined in the Arrangements document.

Some types of question will appear in most years, for example tracing a solution in Artificial Intelligence; the OSI model or TCP/IP in Computer Networking; calculations, compression and file types in Multimedia Technology. Approaches to these, and other, “set piece” questions should be rehearsed. The arrangements documents contain a content grid detailing technical terms knowledge of which is required within the course. Candidates should be directed to this list of key points to help target their revision.

Where there is some confusion over detail, Centres are directed to the BCS Glossary of Computing Terms. An example of this is in question 34, where candidates assumed 1 megabit to be either 1 million bits or 2^{20} bits – the SQA and BCS agree that the latter is correct.

Wording of questions should be emphasised to candidates. Differences between responses required by “explain”, “describe”, “state” and “name” need to be clarified as part of preparation for examinations.

Statistical information: update on Courses

Number of resulted entries in 2006	4,341
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Number of resulted entries in 2007	4,177
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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	16.5	16.5	691	137
B	23.0	39.5	961	116
C	24.2	63.8	1,012	96
D	10.3	74.1	430	86
No award	25.9	100.0	1,083	-

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.