External Assessment Report 2015

Subject(s)	Computing
Level(s)	Higher

The statistics used in this report are prior to the outcome of any Post Results Services requests

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

Feedback for this question paper suggested that it was fair. Markers reported that many candidates had found most questions accessible. More cases of candidates not reading a question carefully enough before answering were reported than in previous years; as a result, marks were lost.

Entry statistics are based on the 2887 candidates for whom results were available at the Grade Boundary Meeting. There was a larger proportion than expected of candidates who came from a background of National 5 Computing Science. National 5 Computing Science is a very different course from Intermediate 2 Computing and Standard Grade Computing Studies, and the transition from National 5 to Higher Computing is not seamless due to differing course structure, content and examination styles.

Three optional topics are offered in the course. Whilst all options have had a good take-up, the increase in the percentage of candidates answering Multimedia Technology may reflect the background of candidates progressing from National 5 Computing Science; Artificial Intelligence and Computer Networking are less well represented in National 5 Computing Science.

The overall average mark for the external assessment was the lowest for several years. Some candidates are presented for Higher Computing when their performance in the external assessment may suggest that this was not the appropriate Course for them.

Areas in which candidates performed well

Core

Question 7 (a): This was answered well by most candidates. Others did not pay attention to the 2 marks available and did not discriminate between the failure of the central node and that of an outer node.

Questions 10 and 14: Details of the stages of the software development cycle were well demonstrated.

Question 18 (c): Candidates are now doing calculation questions well.

Question 19: Candidates demonstrated a reasonable knowledge about computer virus actions, although descriptions of checksum could have been improved.

Question 21 (a): Candidates could identify the link to two states.

Artificial Intelligence

Question 22: Candidates have a fairly sound understanding of the basic concepts of artificial intelligence but should non-trivialise their explanations.

Question 26 (a): Candidates were are able to find solutions to simple queries.

Computer Networking

Question 28 (g): Questions such as this have been well done over the last few years.

Question 29 (d) (ii): Candidates were quite inventive in their answers and clearly related to the restaurant scenario.

Multimedia Technology

Question 31 (a) / Question 32 (c): Candidates handled the calculation well.

Question 33 (d); Bluetooth and WiFi were well answered.

Areas which candidates found demanding

Core

Question 1: Candidates needed to refer to the **initiation** of the write process. The write line does not carry out the actual transfer.

Question 3: This question was about switches and routers, not about hubs and switches. Candidates who answered to the more traditional hubs and switches question did not gain any marks.

Question 4: This was a question which was not read carefully enough. **Two** reasons were looked for, and they needed to highlight why FLOPS is a better measure than MIPS.

Question 6: Some candidates did not read the question carefully and gave the two's complement for -42.

Question 7 (b): This referred to 'software'. Some candidates answered in terms of hardware.

Question 9 (b): Whilst candidates were able to name a graphical design notation, they found it challenging to identify advantages of such a notation over pseudocode.

Question 11: Scripting was not well understood by candidates.

Question 16: This question has been asked many times and candidates responded that the user/client writes a user-defined function.

Question 18 (a): This was about the control unit, not the more traditional question about naming two control lines.

Question 18 (f): Candidates had a lack of knowledge about how an interrupt is handled.

Question 18 (h): Candidates responded that the bicycle computer did not need an operating system and so did not need a bootstrap loader.

Question 20 e (ii): Some candidates did not refer to memory efficiency and just gave vague answers about how compilers and interpreters work.

Question 21 (c) (i): Candidates found the problem solving nature of this question challenging and gave general 'passing by reference' answers rather than relating to efficiency.

Artificial Intelligence

Question 23 (b) (iii): Two marks were available and a comparison was needed.

Question 24 (a): Candidates did not 'explain' a problem. Two explanations were needed but candidates answered in terms of 'state'.

Question 24 (f): This question has been asked before but candidates did not answer this fully.

Questions 25 (a) and (b): Given a labelled search tree, candidates have, in the past, been able to identify nodes visited in depth-first and breadth-first searches. This year, when asked to create part of the search tree, candidates found this more challenging than expected.

Question 26 (b): The trace was, historically was becoming quite well done but candidates found it challenging this year. Some candidates missed the first, straightforward solution and then in the recursion.

Computer Networking

Question 27 (g) (i): This was a challenge for some candidates. They seem to lack practice in writing HTML. Whilst most candidates managed to get the title tag, the center and font colour caused difficulties.

Question 27 (g) (ii): Few candidates knew the tag to use and candidates did not realise that there must be some text to add the link to.

Question 28 (b) (ii): This question did not ask how a CRC works, but that was the response most candidates gave.

Question 29 (e) (i): Candidates did not realise that functions of a general interface which related to data handling were appropriate here.

Multimedia Technology

Question 30 (a): Candidates had very few ideas about where scripts would be used in a web page. If they had little practical experience of adding scripts to a web page, they should have been able to apply their knowledge from the Core.

Question 30 (d): About one-third of candidates identified CLUT as the answer to part (i), but then could not progress their answer for part (ii).

Question 31 (b) / Question 31 (c): Where specific techniques are the focus of the question, candidates seem unable to explain/describe it.

Question 32 (g): Candidates found the second mark challenging to achieve. Two marks were available for their answer and should have prompted deeper explanations.

Advice to centres for preparation of future candidates

More than ever this year, Markers were reporting problems reading candidate's responses. Whilst teachers are sometimes able to read a candidate's handwriting, the legibility from a Marker's view does need to be considered. Illegible writing does lead to lost marks. Candidates should be reminded about the legibility of their responses.

Candidates must read questions carefully and are reminded not to assume what a question is about and respond with an answer not relating to the question. With the new Courses and assessments, candidates are encouraged to take more care to read the question and pay attention to the scenario they are presented with.

Candidates are reminded to practise answering questions using the given scenario rather than generic answers. It is important that candidates are able to apply their knowledge in context. At the level of Higher Computing, it is expected that candidates will use an appropriate level of terminology in their response to questions. Terms such as 'space', 'storage' and 'processor power' occur frequently and need to be tightened up into terms such

as ‘backing storage’, ‘clock speed’ or ‘multi-core’. Candidates frequently confuse backing storage and memory.

It is also important to keep stressing to candidates that answers involving terms such as faster/easier/cheaper/efficient and so on, need to be explained. An important part of exam technique is to take the mark allocation of a question into account when structuring a response.

Candidates should be given guidance on how to answer, for example, a two-mark question that asks for an explanation, justification or a description. Many candidates will get one mark, but few get two. A Marker needs to have two ‘places to put a tick’, eg a statement and a consequence.

Candidates should devote time to learning basic definitions and facts. Such knowledge is essential as the base for answering problem solving questions. It is worth taking time to introduce candidates to the Course documents and the list of contents on which the external assessment will be based; it is a useful revision tool. Candidates will also find it useful to be guided through the Internal and External Assessment reports, available on the SQA website.

Statistical information: update on Courses

Number of resulted entries in 2014	4468

Number of resulted entries in 2015	3008

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	19.3%	19.3%	581	133
B	23.9%	43.2%	719	113
C	24.3%	67.5%	730	94
D	11.0%	78.5%	331	84
No award	21.5%	-	647	-

For this Course, the question paper has been fairly consistent over recent years (past grade boundary fluctuations had a specific cause) and our intention was to produce a question paper of this standard again and to work towards the same grade boundaries as we have over the past few years. However, it was felt that the demand of the question paper had unintentionally increased and that this affected C candidates more that A candidates - this led to a movement of three marks at the C boundary and two marks at the A and Upper A boundaries. In addition to this, it was felt that the coursework task was less demanding this year and this led to a one mark movement to the C boundary. Finally, there was one specific question within the question paper that did not function as expected and this led to a one mark movement to the C boundary. The net result of these alterations are a two mark move down at A and Upper A and a three mark move down at the C boundary from our intention.

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.