External Assessment Report 2014

Subject(s)	Information Systems
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

All Markers reported that the performance of the 2014 cohort was poorer than last year (a decrease of 3.5 marks on the question paper, although the coursework mark had a slight increase of 0.4 marks to 50.8). This decrease in candidate performance was not, however, reflected by the centre estimates, with an increase in 2014 of 4.2% at Grade A and 3.8% at Grades A–C.

Uptake for the optional Units was more or less the same as last year. Applied Multimedia continues to be the most popular at 59%, the Internet has remained at 25% and Expert Systems at 16%.

This year, there was a significant increase in candidates' performance in Section 1 but a significant decrease in Section 2 and slight decreases across all 3 optional units. In Section 1, there was an increase of 4 marks, but in Section 2 there was a decrease of 6.3 marks. In Multimedia there was a drop of 1 mark, Expert Systems a drop of 2 marks and the Internet a drop of nearly 2 marks. Reports from the markers confirm these decreases — nearly all thought that candidate performance in Section 2 was very poor indeed.

Section 1

The standard of candidates' responses in Section 1 was much better this year. Candidates have got used to the meaningful identifier and description of normal form type questions, answering these very well. They were also able to give correct definitions of the terms compound key, metadata, data and information although the definitions of multi-valued attribute and knowledge could have been answered better.

Section 2

The responses to the normalisation question have continued to decline. This was a very straightforward normalisation question, yet markers noted that very few candidates achieved the full 17 marks, (one marker stated that out of 100 candidates, less than 5 achieved the full 17 marks). These statistics are very disappointing considering the question was meant to be as straightforward as possible, allowing candidates with a sound knowledge of the technique of normalising to successfully create the correct 4 entities at 3NF.

The E/R diagram question continues to be very well done, as does the entity integrity question, since this problem-solving approach to this type of question was introduced a few years ago. The referential integrity question, however, proved to be poorly answered as candidates tended to give a definition of the role of foreign keys in referential integrity rather than relating their answer to the scenario, which had to refer to the data dictionary and the process of looking up values.

The questions on version control, archive and recovery were very poorly answered. Candidates still do not seem to have the technical knowledge to answer these types of questions. Candidates should have scored much better on the features of word processing software, which was worth 8 marks and a very straightforward question. Also in the next part

on functionality and data migration, candidates did not relate their answer to the scenario. The question on global citizenship was also very poorly answered. Candidates did not grasp the global aspect and tended to answer in term of the effects on individual people.

Section 3

In the Applied Multimedia section, candidates continue to struggle with some of the more technical aspects, particularly those relating to the characteristics of graphics file types. They continue to answer questions on requirements specifications well and are improving in their ability to draw outline storyboards. However, in questions relating to breadcrumbs, backtracking, etc, candidates tend to know what these terms mean but still do not relate them to the screenshot to gain full marks. Candidates continue to have difficulty with some of the terms from the Arrangements, and again in this section it relates to the criteria used to evaluate multimedia applications and appropriate comparison criteria for delivery media.

In Expert Systems, candidates continue to do really well in questions on factor tables and rules, and are improving in their responses to questions on the benefits and limitations of expert systems and representing propositional logic. However, the more technical questions involving the RETE algorithm, context limiting and conflict resolution continue to be very challenging to candidates. Candidates are still not coping well with questions on predicate logic, despite the fact that this is an established type of question that features every year. Candidates continue to have difficulty with some of the terms from the Arrangements, particularly relating to features of evaluation of expert systems.

In the Internet section, markers noted that the majority of candidates continue to struggle with the technical aspects of this section. Although just under half of the cohort was able to state suitable entries for the missing sections of HTML code, they were not able to rewrite the HTML in line 17 to show the changes. Candidates really struggled with identifying the different style sheets in the HTML code, and were not at ease with the concept of style sheets in general. Although the majority of candidates were able to identify the Class A, B and C addresses, they really struggled with the concept of subnet masks. They did not know how many subnets would be created from a particular subnet mask and they could not give any benefits of using subnet masks. Surprisingly, candidates found it difficult to point out the benefit of ‘directly upload’ and also in describing how a firewall and secure sockets ensure security.

Areas in which candidates performed well

Section 1

- Question 2: most candidates knew how to transform data from 2NF to 3NF, mainly because they have to be able to do this in the normalisation question.
- Question 3(a): most candidates could define a compound key.
- Question 5: the majority of candidates could explain at least three out of the four terms, with ‘knowledge’ being the one that most struggled with.
- Question 7(b): the goal seek question was well answered.
- Question 9: any topology apart from a bus was acceptable, so most candidates got it correct.

Section 2

- Question 11(a): the E/R diagram question continues to be one of the best answered in the paper.
- Question 11(b): the responses to the entity integrity question are improving since the practical problem-solving approach to the question was introduced a few years ago.

Section 3

Applied Multimedia

- Question 15(a)(ii): the requirements specification continues to be well answered mainly due to its familiarity.
- Question 17(a): candidates are very good at drawing outline storyboards

Expert Systems

- Question 18(a)(i): candidates are used to questions on factor tables and consequently this one was well answered.
- Question 18(a)(ii): candidates know to expect a question on rules and they continue to perform well in this type of question.

The Internet

- Question 23(b): although this was a very technical question, the majority of candidates could match at least three of the five statements to the correct Class.

Areas which candidates found demanding

Section 1

- Question 1(c): candidates did not think about the difficulties this would cause for searching and sorting.
- Question 3(b): most candidates gave a definition of multi and value, eg an attribute with more than one value, but this lacks the specific detail required to get full marks. Candidates did not state that it has more than one value for a particular instance or record or occurrence.
- Question 4(a): this is the first time this question has been asked and almost all candidates confused entity occurrence with entity relationship and drew an E/R diagram.
- Question 6(a): most candidates gave a generic definition of sampled and secondary and did not relate this to the information in the screenshot.
- Question 8: although the majority of candidates were familiar with this Act they did not state that members of the public have to request this information from public bodies.

Section 2

- Question 11(c): candidates are now familiar with the practical problem solving approach to the question on referential integrity but in this case that just gave a generic definition involving the role of foreign keys and did not mention the importance of looking up values in the Sales person entity.
- Question 12(c): candidates really struggled with the concept of an archive. They did not have the technical knowledge to describe how an archive is maintained.

- Question 12(d): similarly they did not know enough detail about recovery methods. Recovery and archive are important aspects of the back-up strategy, yet candidates still do not seem to prepare for these types of questions.
- Question 13(a): a significant number of candidates managed to describe text wrapping for incorporation of graphics, but did not manage to give the detail required for the other three areas.
- Question 13(b)(i): a majority of candidates gave a generic definition of functionality and data migration and did not relate this to the context of the question. In particular, the functionality should have been related to the four areas in part (a).
- Question 13(c)(i): candidates did not grasp the concept of global citizenship. They did not get the idea of posting or broadcasting to a global audience.
- Question 13(c)(ii): again candidates did not grasp the concept of global. They struggled to understand what this term meant, and tended to give examples of behaviours that would affect individual people rather than the wider global aspect.

Section 3

Applied Multimedia

- Question 14(a)(ii): although candidates knew the term 'collaborative working', they were not able to give examples of specific multimedia applications that could facilitate this.
- Question 14(b): majority of candidates did not know the comparison criteria, which are straight from the Arrangements.
- Question 16(c): again candidates were not able to recall evaluation criteria from the Arrangements.
- Question 17(c)(i): candidates really struggled with drawing accurate representations of the navigation structure of the website which was described in the context of the question.

Expert Systems

- Question 18(a)(iii): a majority of candidates did not know that it would start with a hypothesis and then test each condition.
- Question 18(a)(iv): the average percentage mark on this question was 2%. Almost all candidates did not realise they had to create a rule tree for this question.
- Question 18(b)(ii): although most of the candidates knew that the problem was in identifying the seabird, they did not realise that the solution would be to introduce certainty factors.
- Question 19(b): candidates continue to struggle with questions on predicate logic despite the fact that this is in the question paper every year.
- Question 20(b): candidates were not able to recall the evaluation criteria from the Arrangements.
- Question 21(b): candidates continue to struggle with the technical knowledge associated with the RETE algorithm.
- Question 21(c): it would seem that almost all candidates had never come across the term 'context limiting', as this was particularly poorly answered.

The Internet

- Question 22(d)(i): candidates really struggled with the concept of style sheets and could not identify an external style sheet in the HTML code.

- Question 22(d)(ii): similarly they could not identify an internal style sheet in the HTML code.
- Question 22(e): consequently, they were not aware of any benefits or drawbacks of an inline style.
- Question 23(c)(i): majority of candidates continue to struggle with technical questions relating to subnets and in (c)(ii) subnet masks.
- Question 25(c): again candidates seem to struggle with questions relating to evaluation.
- Question 25(e): most candidates seemed to be confused with the term ‘direct upload’, and did not realise that the web authoring package could directly upload content to the web.
- Question 25(f): majority of candidates were not able to give enough technical detail on how a firewall and secure sockets ensure security.

Advice to centres for preparation of future candidates

Candidates must improve their performance in Section 2. These are more problem-solving type questions, and candidates need to be better prepared to answer these, relating their answers to the scenario where appropriate.

Candidates must become more familiar with the Arrangements documents, particularly with some of the technical terms and the evaluation criteria in each optional unit. Candidates are often asked for terms that come straight from the Arrangements.

Candidates must relate their answers to the scenario or context of the question presented to them if asked to do so.

Candidates must improve their knowledge of global information systems and global citizenship.

Candidates must improve their knowledge of backup strategies in the Using Information Unit, particularly in relation to the concepts of archive, recovery and storage methods.

Statistical information: update on Courses

Number of resulted entries in 2013	1223

Number of resulted entries in 2014	1059

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	11.6%	11.6%	123	139
B	28.6%	40.2%	303	118
C	32.1%	72.3%	340	98
D	11.1%	83.5%	118	88
No award	16.5%	-	175	-

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.