



## External Assessment Report 2013

Subject(s)	Information Systems
Level(s)	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

The majority of Markers reported that the performance of the 2013 cohort was less than last year (a decrease of 7.4 marks on the question paper and 2.1 marks on the coursework). This decrease in candidate performance is also backed up by centre estimates with a decrease in 2013 of 4% at Grade A and 5.7% at Grades A–C.

Uptake for the optional Units shows that Applied Multimedia continues to be the most popular at 58.9%, with the Internet increasing from 21% to 24.7% and Expert Systems a very slight increase from 16% to 16.4%.

This year, there was a significant decrease in candidates' performance across the paper. Most markers confirmed that candidate performance in Section 1, in particular, was poor. The markers also reported, however, that Section 2 was better answered this year.

## Section 1

The average mark for this section was 11.4 out of 30, compared to 18.1 last year. Candidates also had problems with the cardinality question, which was couched in a slightly different format this year. The majority of candidates got mixed up with the data type of an image, with most giving the incorrect answer as object even although a clue was given in the question when it stated that the image was not embedded.

## Section 2

The responses to the normalisation question were not as good as last year (9.14 out of 17 compared to 11.11 in 2012). This was a more challenging normalisation question, and markers noted that only one or two of the candidates achieved the full 17 marks. Markers reported that most candidates knew what they were doing with the process of normalisation and demonstrated a reasonable understanding of the technique involved in going from UNF to 3NF. Consequently, there were very few candidates with very low marks, but they did not select the correct key at 1NF and therefore had difficulty in deriving the correct attributes and keys at 3NF.

The E/R diagram question continues to be very well done, as does the data dictionary question. The entity integrity question was much better attempted this year mainly due to the fact that the problem solving approach to this type of question was introduced two years ago and candidates seem to be better prepared for this type of question.

Candidates had difficulty with the characteristics of information question in that they could not relate the specified characteristics to the scenario of the question. The majority of candidates had no trouble naming four strategies, but struggled to describe the features of a network strategy.

The social, legal and ethical question continues to cause problems, with many candidates getting these mixed up, particularly social and ethical. They had difficulty relating their

answers to the scenario and did not give the level of detail that was expected for this question.

### **Section 3**

- ◆ In the Applied Multimedia section, candidates continue to struggle with some of the more technical aspects and the ability to convey this across in the exam, eg asking candidates to write about the colour depth, resolution and degree of compression of JPEGs. However, the technical question on MP3 and MIDI was much better answered this year. Candidates still have difficulty with some of the terms from the Arrangements. For example, in Question 17b)ii), candidates had to evaluate web pages for good user interface with reference to two criteria. Candidates really struggled to state these two criteria which resulted in a loss of 4 marks in some cases as they had to use these criteria to evaluate the web pages that were presented to them. Candidates, generally, are managing to answer questions on project briefs and requirements specifications very well and are getting better at drawing diagrams for outline storyboards.
- ◆ Markers did note a significant decrease in the performance of candidates in the Expert Systems section. Candidates continue to do really well in questions on attribute-value pairs, factor tables and rules, but really struggle on straightforward questions such as the benefits and drawbacks of expert systems to particular people, and the more challenging questions involving propositional logic. The question on why an expert system might give bad advice was poorly done and turned out to be a very poor discriminator as well, meaning that both A and C candidates had problems with this question. The reason for this is that the question asked about the particular expert system used by Scotbank, and the majority of candidates responded with generic answers that did not relate to the expert system in question. Markers thought that the 8-mark question on firing rules worked well and proved to be a good discriminator for the A candidates.
- ◆ In the Internet section, markers noted that the majority of candidates struggled with the technical aspects of this section. Although the questions were very similar in level of technical demand to previous years, the candidates were not as well prepared to answer these questions. Although the majority of candidates did really well in the HTML question, they did not do so well in creating the cascading style sheet code. Answers on subnet masks and IP addresses continue to be poor. The responses to the technical question on the use of php were also poor.

## **Areas in which candidates performed well**

### **Section 1**

- ◆ Question 4a): most candidates could identify a Boolean data type.

### **Section 2**

- ◆ Question 12a): the E/R diagram question continues to be very well answered as this is a well established question.
- ◆ Question 14a): most candidates could name the other four strategies.

## **Section 3**

### **Applied Multimedia**

- ◆ Question 16a)ii): the requirements specification question is now well established, and most candidates did not have trouble in identifying three items with an example of each.

### **Expert Systems**

- ◆ Question 19b)ii): most candidates could create a factor table based on the information provided.
- ◆ Question 19b)iii): most candidates are very familiar with the rules question.

### **The Internet**

- ◆ Question 22a): most candidates are now familiar with identifying the missing entries from a section of HTML code.
- ◆ Question 24f): most candidates are very familiar with the construction of a domain name.

## **Areas which candidates found demanding**

### **Section 1**

- ◆ Question 1a): despite this type of question featuring as the first question in past papers, candidates still struggled with the concept of data modification problems.
- ◆ Question 2a): candidates had problems correctly identifying the normal form of the shop's data.
- ◆ Question 10: this question caused candidates problems where the majority of candidates seemed to have little knowledge of a data warehouse with many mixing this up with the concept of data mining.

### **Section 2**

- ◆ Question 15b): candidates still seem to have difficulty with social, legal and ethical implications. Even with the familiar context of social networking, most candidates were not able to differentiate between these three concepts. The majority mixed up social with ethical but a large number did not mention the appropriate Act under legal implications.

### **Section 3**

#### **Applied Multimedia**

- ◆ Question 16b)ii): this was a classic example where a large number of candidates knew what would need to be included in a detailed storyboard but the question asked them to relate their answers to the storyboard for the web page on the owl sanctuary. The majority of candidates gave a generic answer and did not relate it to the owl sanctuary web page.
- ◆ Question 16c): candidates still struggle with the technical aspects of graphic file types. This continues to be one of the most poorly answered questions, even though it is highlighted in this report every year. The majority of candidates had only a very basic knowledge of the effects of colour depth, resolution and compression on graphic file types.
- ◆ Question 16f)ii): this was a straight recall question on type of documentation but only 29% managed to answer it correctly.

- ◆ Question 17a): this question was poorly answered. Even although it is a routine comparison of two delivery media, candidates had real problems in stating the correct criteria. A large number used the terms: storage capacity or memory capacity or just capacity instead of the correct term, data capacity. There seemed to be difficulty in recalling the exact terms for comparison criteria as stated in the arrangements and consequently lost marks because of this.

### **Expert Systems**

- ◆ Question 19a): candidates had difficulty describing a benefit and a drawback of what would apply to an expert system on thistles. Perhaps candidates were looking for particular answers relating to thistles but in fact the normal generic answers still apply in this case, eg preservation of expertise, dissemination of expert knowledge, combining expertise of multiple experts, restricted domain, high development/maintenance costs.
- ◆ Question 20a)ii): although many candidates knew that the answer related to the use of certainty factors, they did not explain how the system could calculate the level of confidence. In order to do this they needed to mention the formulae for combining certainty factors in a rule.
- ◆ Question 20d)ii): the majority of candidates did not give an answer that related to the scenario. They were asked to state a reason why the bank's expert system might give 'bad' advice therefore the answer had to relate to this. Most candidates gave a generic answer that could apply to any expert system and consequently lost the marks.

### **The Internet**

- ◆ Question 22b): the majority of candidates really struggled with writing a style sheet. They did not know the correct syntax for a fairly simple procedure to change the size of the font.
- ◆ Question 24a)i): questions on subnet masks continue to cause difficulty with candidates.
- ◆ Question 24a)ii): the majority of candidates had difficulty in identifying the IP address for the gateway address for a new computer added to the network.
- ◆ Question 24d): The candidates' understanding of subnet masks and gateway addresses was poor.
- ◆ Question 25d): the majority of candidates had difficulty with the concept of php. They had limited knowledge of the benefits of using php to produce websites.
- ◆ Question 25e): A number of candidates were not able to describe the advantages of client-side scripting.

## **Advice to centres for preparation of future candidates**

Candidates must improve their performance in Section 1. These are predominantly straightforward recall of knowledge questions, and candidates need to be well prepared for these type of questions.

Candidates must become more familiar with the Arrangements documents, particularly with some of the technical terms. 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 social and ethical implications relating to using information. They should have a clear understanding of the difference between these two types of implications and be able to apply this knowledge to the context of the question.

Candidates must improve their knowledge of the main strategies in the *Using Information* Unit and become familiar with all aspects of each strategy.

## Statistical information: update on Courses

Number of resulted entries in 2012	1208
Number of resulted entries in 2013	1223

## 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	13.6%	13.6%	166	140
B	28.7%	42.3%	351	120
C	30.4%	72.7%	372	100
D	12.0%	84.7%	147	90
No award	15.3%	100.0%	187	-

## 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.