

BCS Higher Education Qualification

Certificate

September 2019

EXAMINERS' REPORT

Software Development

Question number: A1

Total marks allocated: 30

Examiners' Guidance Notes

Only 20% of candidates chose this question and the average mark was 47%. As evidenced in previous papers, it seems that many candidates were uncomfortable with writing code to process numeric data stored in arrays. A minority of candidates obtained very high marks for this question offset by a similar number of candidates who provided very poor answers.

Question number: A2

Total marks allocated: 30

Examiners' Guidance Notes

An extremely unpopular question. Only 8% of candidates chose this question and the average mark was only 20% for this question. It seems that many candidates were uncomfortable with the problem-solving aspect of the question – failing to see the underlying algorithm required to solve the problem.

Question number: A3

Total marks allocated: 30

Examiners' Guidance Notes

A much more popular question than A1 or A2. This question was attempted by 68% of candidates and yielded an average mark of 34%. In spite of the low average mark many candidates obtained a high mark for this question. Part e) was not generally well-answered with few candidates being clear about the difference between the two types of loop. The answers were much better for the other parts of the question.

Question number: A4

Total marks allocated: 30

Examiners' Guidance Notes

This was another relatively popular question being attempted by 65% of candidates a number of whom obtained high marks. The average mark for this question was 50% with a number of candidates producing very detailed answers.

Question number: B5

Total marks allocated: 12

Examiners' Guidance Notes

Only 13% of candidates attempted this question with an average mark of 3.7 which was the lowest in Section B. A small number of candidates achieved full marks but the pattern from previous years continues with candidates performing poorly on questions that require coding from scratch.

Part a) asked candidates to mechanically work through the algorithm that determines whether a given integer was a Fibonacci number and in doing so should have helped understand the algorithm. As expected, a range of solutions to coding parts b) and c) were produced and marked on their merit.

The main weakness seemed to be in coding the *IsperfectSquare* function. Candidates who failed to successfully answer Part b) would have lost more marks because Part c) was dependent on Part b).

Many candidates produced pseudocode that was too far removed from actual code. For example, formulas involving squares and square roots should be computable not expressed as mathematical formulae. If candidates write pseudocode then it is recommended to base this as close as possible on actual code.

Question number: B6

Total marks allocated: 12

Examiners' Guidance Notes

This was a fairly popular question attempted by 65% of candidates. Despite its popularity the overall performance was poor in comparison to other popular questions with less than half gaining a pass mark of 5 out of 12. The relatively poor performance seems to be a lack of knowledge of flow charts and an inability to translate a flow chart into code. Some candidates produced code from the algorithm and did not produce a flow chart. Many candidates seemed to be unable to formulate the correct logic for IF THEN ELSE statements. Flow charts are a useful tool in deriving logic from an algorithm prior to coding and it was surprising to see so many poor attempts. Part c) in contrast required a written answer that related to black box testing and therefore required test data related to the algorithm. Marks were lost if relevant test data was not supplied in the answer. There were a number of candidates who lost marks by combining the IF THEN ELSE logic as follows:

```
IF a > b AND a > c THEN PRINT "a is largest"  
ELSE  
IF b > a AND b > c THEN PRINT "b is largest"  
ELSE  
IF c > a AND c > b THEN PRINT "c is largest"
```

There are a number of problems with this code.

What happens if $a = b$ and/or $b = c$? for example? The coding is inefficient and requires unnecessary testing of conditions which make it harder to debug.

Question number: B7

Total marks allocated: 12

Examiners' Guidance Notes

This was a fairly popular question attempted by 56% of candidates. However, despite its relative popularity, the overall performance was disappointing with the second lowest average mark in Section B and a pass rate of just under 50%.

The question parts a) and c) asked candidates to list different document artefacts based on who delivers them and at what stage they are delivered. The answer required very specific artefacts given the context of the question. Instead many candidates listed anything that immediately came into their minds usually artefacts/documents that were very generic and these were often repeated again in part c).

Question number: B8

Total marks allocated: 12

Examiners' Guidance Notes

This was the second least popular question in Section B attempted by 40% of candidates. The overall performance was good though with around 60% of candidates gaining a pass mark. There were not any major concerns with this question. Perhaps one weakness was the over emphasis of using prototypes in part b) when clearly the functional requirements had yet to be determined. Prototypes and mock-ups are clearly important in part c) but were not the only approach and other alternatives should have been mentioned.

Question number: B9

Total marks allocated: 12

Examiners' Guidance Notes

This was a popular question attempted by 67% of candidates. The overall performance was good with 66% of candidates gaining a pass mark. Answers were either completely or nearly correct or entirely wrong. It seems that some candidates misunderstood what was required in part a). About a half of candidates assumed the first part of the question was to simply list GUI elements rather than describe the design principles of a good UI based on Forms. The second part of the question required candidates to draw a screen form that consisted of GUI elements. Too many drawings of screen forms were scrappy of very poor quality and did not reveal very much functionality, Diagrams of GUI elements should be labelled to gain full marks and most of the GUI elements listed above should be present, Some candidates even went to great lengths of drawing all three screen forms for each application even though the question did not ask for this. Candidates are reminded to read questions thoroughly.

Question number: B10

Total marks allocated: 12

Examiners' Guidance Notes

This was the most popular question in Section B, attempted by 82% of candidates.

The overall performance was the best in this section of the paper, with 71% of candidates gaining a pass mark and it achieved the highest average mark. Most candidates produced similar fairly standard answers however some candidates incorrectly stated that open source was totally free to use, download and copy. Apart from some further misconceptions and some outdated knowledge, most candidates covered most of the points expected at this level.

Question number: B11

Total marks allocated: 12

Examiners' Guidance Notes

This was the second most popular question in Section B, attempted by 80% of candidates.

The overall performance was the second best in this section of the paper with 67% of candidates gaining a pass mark. Most candidates produced similar fairly standard answers to parts a) and c) with good knowledge of these topics. However, some candidates revealed patchy knowledge of indexed and sequential access often with reference to programming techniques applied to arrays and lists rather than program access to file structures which was more pertinent. Apart from this most candidates picked up most of their marks in parts a) and c) and revealed a range of knowledge that is expected at this level.

Question number: B12

Total marks allocated: 12

Examiners' Guidance Notes

This was the third most popular question in Section B, attempted by 70% of candidates.

The overall performance was good with 65% of candidates gaining a pass mark. Most candidates produced similar and fairly standard answers to all parts of the question with a wide range of knowledge and practice in using these testing techniques. Some candidates found it hard to differentiate between the various testing techniques, producing vague answers often duplicating the same answer in different parts of the question.