BCS Higher Education Qualification

Certificate

Date November 2020

EXAMINERS' REPORT

Software Development November 2020

General comments
The paper seems to have been generally well-received by candidates. Overall, the achievement on the paper was good. The questions requiring candidates to write sections of code were the least popular but there were no questions where nobody achieved full marks which would suggest that the questions were appropriate for Certificate level candidates.

Question number: A1
Syllabus area: 1.1, 1.2
Total marks allocated: 30
Examiners' Guidance Notes
42% of candidates attempted this question, the average mark was 47% with 62% of candidates achieving a pass mark.
Many answers for part a) were reasonable and the majority of candidates were able to make a good attempt at part b). Part c) proved more difficult and a number of candidates did not attempt this part.

Question number: A2
Syllabus area: 3.3, 3.4, 7.1
Total marks allocated: 30
Examiners' Guidance Notes
Only 10% of candidates attempted this question, the average mark was 50% with 63% of candidates achieving a pass mark.
Many answers for part a) were good. Part b) seemed to be more challenging but the (more descriptive) answers for part c) were generally very clear.

Question number: A3
Syllabus area: 1.3, 2.2, 3.2, 7.1
Total marks allocated: 30
Examiners' Guidance Notes
55% of candidates attempted this question, the average mark was 57% with 74% of candidates achieving a pass mark. Most candidates made a good attempt of Part (a) presenting clear code for the required function with appropriate parameter passing. Some answers to part b) were a little more muddled but most candidates made a good job of the description required in part c).

Question number: A4
Syllabus area: 1.2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 6.1
Total marks allocated: 30
Examiners' Guidance Notes
This was by far the most popular question in Section A and was attempted by 87% of candidates, The average mark was 66% and 89% of candidates achieved a pass mark. Candidates were clearly comfortable with the descriptive nature of the answers required and most of them revealed a good understanding of basic software development concepts.

Question number: B5
Syllabus area: 1.1, 1.2. 1.3, 7.1
Total marks allocated: 12
Examiners' Guidance Notes

This was the least popular Section B question but produced a satisfactory range of performance overall although many attempts were cursory and gained no marks. Candidates were asked to construct an algorithm given a specification (part a) that described the concept of the Greatest Common factor of 2 integers and then to express the algorithm into code (part b), parts a) and b) had equal weight (6 marks each)

In answering part a) some candidates did not understand the difference between an algorithm and program code. Quite a few candidates produced code without any explanation of an algorithm. This part of the question was mainly to test the capability to understand a specification before writing any code.

For part b) an iteration approach was necessary. This part was answered fairly well overall with code very similar to the expected answer. Most candidates were familiar with iteration.

Question number: B6
Syllabus area: 1.3, 3.3, 3.4
Total marks allocated: 12
Examiners' Guidance Notes

Less than half of candidates answered this question with a good performance overall. There were two parts attracting 6 marks each.

Part a) required an explanation of a sorting technique of candidates own choosing. The answer required a demonstration of how the chosen sorting technique worked on the supplied sample data. A particular requirement was to sort a list in reverse order that demonstrated how the sorting technique worked in practice. Many candidates chose a bubble sort as expected a very familiar and perhaps the simplest of the many sorting techniques used.

Part b) required candidates translating the description of the technique into code. Therefore, a lot of emphasis is placed on expressing the technique as an algorithm to assist in this part of the question.

Some candidates chose a more complex sorting technique than a bubble sort such as a merge sort that meant the coding was much more complex and many candidates found it difficult to code. Some candidates used language specific functions to simplify the code rather than express these in simple understandable generic code and lost marks as a result.

Question number: B7
Syllabus area: 2.6
Total marks allocated: 12
Examiners' Guidance Notes

This question was well answered overall with most candidates understanding what was asked.

For part a) most candidates gave good answers to section i) and gave good accounts of outsourcing as an alternative to in-house development. For section ii) dealing with the aspects of bespoke packages candidates showed uncertainty about disadvantages to the approach. Good answers were able to describe that a range of bespoke types exist with each having advantages and disadvantages. In some attempt's candidates described advantages and disadvantages of in-house development which was not part of the question requiring an answer.

Part b) of this question proved difficult for many candidates with many offering vague explanations of hosting but not able to associate it with the concept of outsourcing. The general appreciation of the cloud as a storage facility was evident but for many candidates, not its role as part of a general outsourcing facility.

Question number: B8
Syllabus area: 2.1, 2.2, 3.2
Total marks allocated: 12
Examiners' Guidance Notes

This question covered three pairs of topics (related by terms within each topic)
This was a popular question but not particularly well answered overall. Many candidates could not adequately answer all three of the topics usually giving vague answers to one of the pairs of topics.

For section i) of this question many candidates were unable to state differences between recursion and iteration. A significant number of candidates didn't appreciate the context of the question and gave answers that focused on aspects of the software development life cycle, in particular iterative v incremental development methods. A minority of candidates gave solid correct explanations of recursion and iteration and could contrast the methods. In part ii) Very few candidates were able to make a good description of object-oriented methods and couldn't fully describe differences to a modular methodology, in some answers it was suggested that they are both the same. Part iii) of this question was generally well answered; however, some candidates could not highlight any differences between the constructs.

Question number: B9
Syllabus area: 1.3
Total marks allocated: 12
Examiners' Guidance Notes

This question was a popular choice amongst candidates. Part a) was almost universally well answered with candidates able to rewrite the code in an improved way gaining full marks. A few candidates lost a mark for being inattentive to the syntax and not showing correct ending of brackets or braces. Part b) which holds the majority of marks for this question proved difficult for many candidates many did not attempt this part at all. Good answers gave the full justification for the result and a few candidates did achieve this, many answers were brief and simply stated the result without any justification thus gaining minimal marks for each explanation and overall failing to achieve a pass mark for the question. In some cases, candidates demonstrated a weakness in understanding the logic used in the question and could not identify AND, OR and NOT constructs correctly. The majority of answers however did demonstrate a good understanding of constructs and were able to suitably justify the answers.

Question number: B10
Syllabus area: 4.1
Total marks allocated: 12
Examiners' Guidance Notes

This question covered files and file processing. A popular question but not reflected with a high average mark compared with other popular questions. Candidates produced quite a mix of answers.

Part a) worth 3 marks showed a misunderstanding by some candidates of the question thinking the sample data represented a table or flat file so *description* and *data sample* were interpreted as columns and the whole data sample as a table. This meant many candidates assumed description was a field and the sample table was a file. Instead the sample data was intended to represent a number of fields (RegNumber, Make, YearOfmanufacture,…… etc.)   and ONE row (a record) of data (eg "YW67 XAR", "Audi", 2006, 13/10/2019 ….. etc).

Part b) worth 5 marks also attracted either high marks or else candidates misinterpreted what was required. In this case it should be clear that file operations include only primitive operations on files supported in any programming languages, these include:

Part c) was worth 4 marks. Most candidates understood the basics of binary vs data files and provided examples of file formats.

Question number: B11
Syllabus area: 2.4
Total marks allocated: 12
Examiners' Guidance Notes
Part a) of this question was generally well answered with most of the candidates able to explain succinctly the importance of documentation. Part b) of this question proved reasonably challenging for many candidates with many answers unable to identify the type of relevant material expected for internal documentation, many answers were generic and concentrated on standard development stages such as requirements, feasibility studies and business case. Part c) of this question was concerned with external documentation. As in part b) many candidates did not address the context of a team of two programmers undertaking a small business project and included a range of unlikely content for such a team. Many answers did not correctly identify the focus being on the user and the requirements to provide documentation to that end. Part d) for this question showed candidates did have a good general idea of the sources of information needed but, in many cases, answers did not differentiate between internal and external sources.

Question number: B12
Syllabus area: 5.1
Total marks allocated: 12
Examiners' Guidance Notes
This question had poor overall performance. The majority of answers indicated a hurried effort often lacking in explanation or simple sketches of text boxes with multiple labels. The tools often chosen were not appropriate to the suggested task. There was little evidence of knowledge regarding appropriate design principles given to layout and placing of controls. In only a very few cases did answers show a comprehensive appreciation of interface design principles. Only a few answers gave any form of explanation of the controls for a given screen and most of the attempts did not show a sufficiently wide variation of appropriate controls. Many attempts for this question were so sparse that no marks were awarded.