

BCS Higher Education Qualification

Diploma

MAY 2021

EXAMINERS' REPORT

Software Engineering 1

General comments

The number of candidates attempting this paper was lower than normal due to the global pandemic. A possible reason for poor performance in the examination is a reliance on answers which contain material related to the general subject area of a question but which do not focus on the specific topics the question addresses.

Question number: A1

Syllabus area:

3.3 OO approaches such as the UML modelling of use cases for a logical/end-user view, system components and architecture for the development view, behaviour and deployment for process and physical implementation views.

Total marks allocated: 25

Examiners' Guidance Notes

This was the second-most popular question in Section A, but had a very low pass rate.

Many candidates did not pay enough attention to what the question was actually asking and as a consequence, failed to display an adequate depth of knowledge.

For part a) very few candidates made an attempt to explain what use cases are.

Part b) was generally better addressed, but many answers were lacking in detail.

Part c) asked for a detailed discussion of a process. Many candidates focused on presenting a use case diagram, or use case descriptions for the example given, but misinterpreted question. This part was worth a comparatively large number of marks, and many candidates failed to achieve them, which accounts in large part for the low pass rate.

For part d) most candidates were not able to distinguish between use cases and scenarios.

There was a mixed response to part e), with several students focusing their answer on requirements elicitation, which the question specifically excluded.

Question number: A2

Syllabus area:

1.5 The cost of quality, 6 Project Management, 2 Software engineering key practices

Total marks allocated: 25

Examiners' Guidance Notes

This was the most popular question in Part A by a narrow margin.

Many candidates didn't read the question carefully, and there was a certain amount of re-stating parts of the question as answers. For many, the notion of software quality appears synonymous with software testing, which is a much too narrow view.

Part a) was generally not well answered, with many students failing to make the link between quality assurance, planning and control, and mainly focusing on test planning.

Part b) received the best answers. There is a wide range of quality aspects that candidates could identify, and most picked three appropriate things. The descriptions were sometimes lacking in detail and precision, however.

Part c) was not well answered, with many candidates failing to address the question posed. Many candidates chose verification and validation as their two answers. These are in fact two concrete examples of software review techniques, so in the context of this question are really the same example.

Part d) received some particularly poor answers, with some better answers which only addressed the cost of testing. Almost no answers commented on the relative costs, which the question asked for.

Question number: A3

Syllabus area:

3.2 OO notation for describing software components and architecture, 3.3 OO approaches such as the UML modelling of use cases for a logical/end-user view, system components and architecture for the development view, behaviour and deployment for process and physical implementation views

Total marks allocated: 25

Examiners' Guidance Notes

This was the least popular question by some margin, but those who did attempt it did much better than on the other questions.

In answering part a), several candidates incorporated a description of the behaviour of the system which was not asked for. However, the majority of candidates identified the visibilities and types of the attributes and methods, and on the cardinality of the relationships.

Part b) was generally answered well, with most candidates capturing the sequence of events correctly. Apart from minor mistakes with the notation, the most common issue was failure to match the messages being passed to the method names on the class diagram. Also, a few candidates showed messages being passed between objects where there was no navigable relationship on the class diagram.

Question number: B4

Syllabus area:

1. Software Engineering, 1.4 The cost of maintenance, 2. Software Engineering Key Practices, 2.5 Product maintenance

Total marks allocated: 25

Examiners' Guidance Notes

Part a) of this question was generally well answered and the different maintenance methods were well contrasted within the descriptions. A few answers indicated that the candidate did have some difficulty in giving a full description of all three methods and tended to repeat the same explanation of use for all three.

Part b) proved to be a more difficult question for many candidates. Most were able to offer some explanation of why it might be more expensive to add new features during the maintenance phase rather than the development phase, but a significant number of candidates did not acknowledge the significant overhead costs of adding features during maintenance and many candidates tended to neglect the important aspects of team dynamics and staff turnover.

Question number: B5

Syllabus area:

4 Validation Verification and Testing, 4.1 Product and process visibility, 4.2 Traceability in software systems and processes

Total marks allocated: 25

Examiners' Guidance Notes

Parts a) and b) of this question dealt with validation verification. In general, most candidates were able to adequately describe both techniques. However, some candidates showed confusion with the terms validation and verification, often giving a fairly comprehensive answer for validation techniques as an answer to verification techniques and vice versa. Some answers included reference to the appropriate techniques in their otherwise incorrect answer and were given appropriate marks for the correct portions.

For part c), most candidates showed a good appreciation of the independent test group (ITG) for software testing. In some answers it was evident that the particular benefits of using an independent test group were not fully appreciated and answers tended to focus on the techniques that a test routine might consist of and not the possible benefits of using an ITG.

Question number: B6

Syllabus area:

1. Software Engineering, 2.6 Software product life cycle, 5 Software Engineering Tools and Environments, 5.2 Role of repositories in supporting incremental development, 6. Project management, 6.2 Management and maintenance of software products in the consumer marketplace

Total marks allocated: 25

Examiners' Guidance Notes

This question was poorly answered by many candidates.

For part a) Only a few candidates actually answered the question. Most attempted to answer the stages of the software development process and not as the question required the software product stages. For those candidates that correctly identify the question high marks were gained.

Part b) of this question was also generally poorly answered. Most candidates simply listed some components of a repository with little attempt to reference the particular requirements of suitability for incremental development. Only a few candidates correctly identified the particular features that a repository would need to be suited to control an incremental project