BCS Higher Education Qualification

Diploma

March 2019

EXAMINERS' REPORT

Object Oriented Programming

Question number: A1
Syllabus area: Question 1 examines syllabus section 2 (Concepts) Question (a) examines part 2.1 Questions (b) and (c) examines part 2.4
Total marks allocated: 25
Examiners' Guidance Notes
This question was attempted by over three quarters of the candidates but had a low pass rate. Most candidates could answer Part a well, obtaining full marks for this part. Some mixed the terms up, in particular the protected and private access modifiers. Weak answers thought protected meant a password was needed to use the variable or method. For Part b, some candidates did not read the question fully and compared object-oriented and structured programming, rather than the objects and variables found in these languages. Part c was often where most marks were lost, some candidates either did not attempt this at all, or just answered one or two of the concepts. Delegation in particular produced weak answers, with some candidates discussing it in a time management context rather than object-orientation. To gain full marks a discussion was needed of how the concepts were used by a programmer, which was often overlooked.

Question number: A2

Syllabus area:

This question examines syllabus section 1 (Foundations)
Question (a) examines part 1.3
Question (b) examines part 1.2
Question (c) examines part 1.1

Total marks allocated: 25

Examiners' Guidance Notes

This question was answered by two-thirds of the candidates, with over 50% passing it. Part a was often not answered, or a very weak comparison was made. Some candidates could give a good answer for typed languages but could not discuss how classes in untyped languages were implemented.

Part b was generally answered well; most candidates could give a reasonable definition of what encapsulation is. Some answers given just discussed data hiding, which is a related to encapsulation, but for full marks a fuller discussion was needed.

For Part c, some candidates only answered two of the programming paradigms, usually structured and object-oriented. Weaker answers often just repeated the concept, such as saying procedural programming involved using procedures and structured programming used structures. A more detailed description was needed, with a higher mark given to candidates who did compare and contrast the languages.

Question number: A3

Syllabus area:

This question examines syllabus section 3 (Design), part 3.1

Total marks allocated: 25

Examiners' Guidance Notes

This was a popular question, answered by over three-quarters of the candidates with a very high pass mark.

Most candidates could produce a good Use Case diagram, identifying the main use cases and actors. Marks were lost if the use cases were not connected correctly or uses/extends were not used appropriately. Some answers produced Class diagrams, which gained no marks.

Part b was answered well. For full marks, an example from the scenario was needed, which was sometimes missed, and the discussion needed to be in the context of Use Case diagrams. The concepts that were not well answered included associations and packages, the former was sometimes described with reference to class diagrams and the latter was not answered or discussed with reference to packages found in a language, such as Java.

Question number: B4

Syllabus area:

Question (a) examines syllabus section 2 (Concepts) part 2.3 and syllabus section 4 (Practice) part 4.3.
Question (b) examines syllabus section 2 (Concepts) part 2.1 and syllabus section 4 (Practice) part 4.3

Total marks allocated: 25

Examiners’ Guidance Notes

This question was very popular, having been attempted by 76% of candidates, most of whom provided adequate answers. In part a) most candidates could explain overloading and provide a code fragment; fewer candidates could describe overriding, and some candidates confused the two terms. In part b), most candidates could describe class and instance variables, but were unaware of the umbrella term *member variable* (which is the union of both class and instance variables).

Question number: B5

Syllabus area:

Question B5 examines syllabus section 1 (Foundations) part 1.2 and syllabus section 2 (Concepts) parts 2.1, 2.2 and 2.3.

Total marks allocated: 25

Examiners’ Guidance Notes

This question was attempted by 62% of candidates. In part(a) some candidates described abstract classes, whilst other described interfaces. Both possibilities were acceptable. Marks were lost in describing *why* this might be done and providing an illustrative example – many candidates showed the syntax for an abstract class/interface but were not able to clearly articulate why such classes may be used in practice and did not use an example that helped to underpin this. Part b) was clearly answered, with some confusion between multi-level and multiple inheritance. Many candidates correctly noted the non-availability of multiple inheritance in Java and described alternatives to achieve a similar outcome.

Question number: B6

Syllabus area:

Question a) examines syllabus section 1 (Foundations) part 1.2 and syllabus section 2 (Concepts) part 2.1.
Questions b) and c) examine syllabus section 4 (Practice) part 4.4.

Total marks allocated: 25

Examiners’ Guidance Notes

This question was attempted by 44% of candidates, and was the least well answered in Section B. Many answers provided some rationale for the avoidance of public data members (part a), but few candidates could describe the how mock objects might be used in a test plan (part b). Similarly, a number of candidates did not seem to be able to discriminate between compile-time and run-time errors, although some candidates provided very comprehensive answers.