

BCS Higher Education Qualification

Diploma

May2021

EXAMINERS' REPORT

Object-Oriented Programming

General comments

Due to the pandemic situation, there were very few candidates for this paper at this sitting. However, despite this, the pass rate remained comparable with previous offering of the exam.

Questions Report:

A1	All candidates attempted question A1, but only 40% achieved a passing mark.
	Syllabus areas: Foundations 1.1, 1.2, 1.3
	Total Marks Allocated: 25
	Examiners' Guidance Notes
a)	Candidates were required to define some key terminology in Object Oriented Programming. Many candidates were unable to define all terms, and in particular confused Abstract Data Type with the concept of abstract classes, and seemed less clear on the distinction between typed and untyped languages.
b)	Candidates were asked to reflect on how each concept defined in (a) contributed to the development of object oriented languages. Most answers did not really do this, and just provided additional details about the definition of each term, or gave an example of how the terms manifest as programming language constructs.

A2	64% of candidates attempted this question, for which 83% achieved a passing mark.
	Syllabus areas: Practice 4.4
	Total Marks Allocated: 25
	Examiners' Guidance Notes
a)	Candidates were required to define and compare black box and white box testing, including providing some advantages and disadvantages of each. Many candidates provided a satisfactory answer, although fewer seemed to be sufficiently familiar with white box testing.
b)	Candidates were asked to identify additional approaches to testing and describe where they would be used as the project develops. A number of good answers were provided, in which additional approaches to testing distinct to black and white box testing were described and the point in the project at which they would be invoked was identified. For some candidates, further details of black and/or white box testing were given, which did not accrue marks because the question specifically asked for <i>additional</i> approaches.

A3	82% of candidates attempted this question, for which 100% achieved a passing mark.
	Syllabus areas: Design 3.1
	Total Marks Allocated: 25
	Examiners' Guidance Notes
a)	Candidates were required to draw a use-case diagram for the given scenario (a parcel company). Use case diagrams varied greatly in the level of detail provided (viz., the number of actors, number of scenarios), yielding differences in mark scored. However, in all cases a viable diagram was given, even if more rudimentary.
b)	In this part a more theoretical question was posed, asking about the role of use-case diagrams in the development of object oriented systems. This part was less well answered, although many candidates did allude to the fact that use case diagrams capture dynamic aspects of a system, and notably the manner in which users interact with a system, and can be used to identify test cases.

B4	Only 18% of candidates attempted this question, with no passes.
	Syllabus areas: (a) Concepts 2.4, Practice 4.3; (b) Concepts 2.2, Practice 4.2
	Total Marks Allocated: 25
	Examiners' Guidance Notes
a)	For this question, the candidate should include a brief explanation of what parametric polymorphism is and then give a real-world situation of where it would be appropriate to use it. This part was attempted by half the candidates. The answers given were often vague and did not distinguish parametric polymorphism from standard polymorphism, with very poor examples of a real-work scenario.
b)	For this part, the candidate should give a brief explanation of what hybrid inheritance means and then give a real-world situation of where it could be used. There was also a requirement to include a class diagram and stub code to show how the classes in the scenario would be interconnected. The real-world scenarios given were weak, with the candidates often just describing single or multiple inheritance, but not in the context of hybrid inheritance. The examples given were also for single or multiple inheritance and although these feature in hybrid inheritance, the candidate needed to explain how they worked in this situation, showing the difference from normal single or multiple inheritance.

B5	Over 82% of the candidates answered this question with 56% passing.
	Syllabus areas: (a) Concepts 2.4, Practice 4.3; (b) Concepts 2.2, Design 3.2, Practice 4.3
	Total Marks Allocated: 25
	Examiners' Guidance Notes
a)	For this question the candidate should include a brief explanation of method overloading, then give a practical situation in the real-world where this would be useful. There were some good examples given. The weaker answers included a lot of code, but provided little or no explanation, so gained less credit. Some examples were very vague, with little explanation of why you would want to use method overloading, or why it was useful.
b)	For this part, some description of composition and generalisation was needed to explain how they were different. Code was needed to show how these could be implemented in practice. Most candidates produced good answers for both concepts in this section, providing clear answers that showed the difference between the two. Some candidates were weak on composition, either missing it out completely, or providing very similar explanations for both parts.

B6	Over 55% of candidates answered this question with 83% passing.
	Syllabus area: (a) Foundations 1.1; (b) Foundations 1.3
	Total Marks Allocated: 25
	Examiners' Guidance Notes
a)	This part required an explanation of two advantages and disadvantages of the object oriented approach to programming. To gain a higher mark, some discussion was needed to show why they were either a good or bad aspect. The question was open ended and candidates could discuss any feature that was relevant to object oriented programming. Good answers included four distinct issues to show the advantages or disadvantages, with good examples to back up the points made. The weaker answers could only produce some advantages, or some just listed points without going into any detail over why they thought they were good or bad features.
b)	For this part, an explanation was needed of static and dynamic typing, with a discussion of how they related to strong and weak typing. Most candidates could explain the difference between static and dynamic typed languages, giving some good examples of how they differed. Marks were generally lost by not explaining how they related to strong and weak typing, with this part often missed completely.