THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATION
Professional Graduate Diploma

SOFTWARE ENGINEERING

8th May 2001- 10.00 a.m. – 1.00 p.m.
Answer THREE questions out of FIVE. All questions carry equal marks.
Time: THREE hours.

*The marks given in brackets are **indicative** of the weight given to each part of the question.*

1. "The most important aspect of software development is conformance to an appropriate process model."

Referring to a Process Model of your choice ATTACK or DEFEND this statement. **(25 marks)**

2. The software development team you manage has been using structured programming and C for the last 20 years to develop real-time applications. A decision has been taken to move to an object-oriented development method and an object-oriented language.

Write a report to senior management explaining the technical, managerial and resource problems of making such a dramatic change and providing the management with some viable approaches. You must include in your report recommendations for a suitable object-oriented development method and a suitable language. **(25 marks)**

3. *a)* Using appropriate examples, compare and contrast a formal development method with a structured development method. **(14 marks)**

b) What are the difficulties in trying to combine these two approaches? **(11 marks)**

4. Models for data, architecture, interface, and components are said to be the most fundamental outputs of the design stage in any software engineering project.

a) Briefly explain the purpose of EACH design model in the complete specification of a software design. **(9 marks)**

b) Illustrate, using diagrams and appropriate explanations, the models produced by a typical commercial structured design method. **(10 marks)**

c) Briefly discuss whether the object-oriented approach has made an impact on the fundamental outputs of the design phase. **(6 marks)**

5. As a Quality Assurance and Metrics consultant you have been asked by a software development company to advise on establishing and operating an in-house software quality model.

Write a report that:

a) presents an overview of quantitative and qualitative models of software quality; **(10 marks)**

and

b) discusses the problems, difficulties, and potential pitfalls in applying these models. **(15 marks)**