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THE BRITISH COMPUTER SOCIETY
THE BCS PROFESSIONAL EXAMINATION
Advanced Diploma

SOFTWARE ENGINEERING

10th April 2000 - 2:30p.m. - 5:30p.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. a) Illustrate the V-model software development process and describe each of its phases and the relationship between them. **(15 marks)**
- b) State the strengths and weaknesses of the V-model where the major requirement is to develop software to support rapidly changing business needs. **(6 marks)**
- c) Briefly describe and justify an alternative process model that may be better suited to the development of such software. **(4 marks)**
2. a) Briefly discuss the role of Software Quality Assurance within a software development project. **(5 marks)**
- b) Describe each of the following and explain how it contributes to the development of high quality software:
- i) configuration management;
 - ii) change control;
 - iii) software tools;
 - iv) standards;
 - v) metrics.
- (20 marks)**
3. After several years the software house you work for is contemplating changing from using a structured development method and a structured programming language to using an object-oriented development method and an object-oriented programming language.
- As a Software Team Leader you have been asked by your Technical Director to produce a risk assessment and an implementation plan for the proposed change.
- Provide a report to your Technical Director including the following:
- i) your risk assessment;
 - ii) a plan of the activities required to reduce the risk;
 - iii) the potential benefits of the proposed change.
- Your report must cover both technical and managerial issues. **(25 marks)**
4. “Compared to structured design, object-oriented design is well suited to managing the complexity inherent in developing large programs”.
- Discuss the success and failures of such methods in the design and implementation phases of software development. Illustrate your answer with examples. **(25 marks)**

[Turn over

5. You have recently joined a large IT department as a Software Requirements Analyst. However, key members of staff have already expressed the opinion that software requirements analysis is only about building prototypes that are merely refined until they become final production software.

Write a report that presents an overview of:

- i)* the role of requirements analysis;
- ii)* the tools and techniques available to support this task.

Your report should address some of the misconceptions that your colleagues may hold regarding your role as an analyst. **(25 marks)**