

THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATION Professional Graduate Diploma

SYSTEMS DESIGN METHODS

22nd April 2004, 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.
 - a) Explain with the aid of diagrams the differences between the waterfall and prototyping approaches to systems development. **(8 marks)**
 - b) Discuss the appropriateness of the waterfall and prototyping approaches for developing:
 - i) A user interface
 - ii) A complex payroll calculation module
 - iii) A back-end database for a website **(9 marks)**
 - c) A systems development method includes the following stages: Feasibility, Analysis, Prototype, Plan increments to deliver, Design and build increment, User acceptance of an increment, Roll out an increment. Draw a diagram which shows the process of this method i.e. stages and 'paths' between stages. Use 'one way' arrows to denote paths. **(8 marks)**

2.
 - a) Discuss why systems design methods commonly include techniques to model the structural, procedural/functional, and temporal/dynamic aspects of an IT system. Give an example of the techniques that model these systems aspects in a systems design method of your choice. **(15 marks)**
 - b) Explain how you would cross-check the three models discussed above in question 2. a). **(10 marks)**

3.
 - a) You are the IT director in a software house that has grown in size significantly in the past few years. Previously your staff did not use a systems design method. Discuss what 'practical' factors you would consider when selecting a systems design method for use in your software house. **(12 marks)**
 - b) What is an integrated CASE tool? Identify and discuss briefly three potential advantages and three disadvantages of integrated CASE tools. **(13 marks)**

Turn over]

4. a) You are the IT personnel manager in a large company. You have been asked to provide training in an object oriented design method for the 30 graduates that will be joining the IT department shortly. Outline the different training approaches that might be used to train the graduate entrants in the object oriented design method. **(15 marks)**
- b) You are the IT manager in a large company. You have decided to introduce object oriented development techniques into your IT department. Discuss which approach to implementing object oriented development you would use: training staff in an object oriented design method first and then an object oriented programming language, training staff in an object oriented programming language first and then an object oriented design method, or training in both at the same time. Explain the reasons for your choice. **(10 marks)**
5. a) Avison and Fitzgerald provide a number of 'ideal – type' criteria that might be considered in assessing systems development methods. Some of these criteria are: life cycle coverage; effective communication; inter-stage communication; separation of analysis and design; visibility of product; designing for change; 'extendability'. Give an explanation of the meaning of each criterion. **(7 marks)**
- b) Discuss the reasons why systems design methods may not be used by IT practitioners. **(9 marks)**
- c) Discuss the reasons why systems design methods have been used by IT practitioners. **(9 marks)**