

THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATION Certificate

INFORMATION SYSTEMS

11th October 2004, 10.00 a.m.-12.00 p.m.
Time: TWO hours

SECTION A

Answer TWO questions out of FOUR. All question carry equal marks.

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

1.
 - a) You have been appointed as a consultant for a large clothing company, which has merged with several smaller companies. Your brief is to investigate the current systems and produce a report advising which methodology you would use in this investigation. Include the phases, tasks, tools and techniques you would use to do this. **(15 marks)**
 - b) The design of the interface is extremely important to the company, which intends to do most of its trading over the internet. Describe the issues that need to be taken into consideration when designing this interface. **(15 marks)**

2.
 - a) A specialist holiday company takes bookings from various sources. Customers visit its office in person, telephone or book over the internet. The holiday includes the flight and hotel. Details of the customer are held on file and discounts given for regular customers. A ten percent deposit is taken at the booking in cash (only when the booking is made in person) or credit card. Invoices are sent out immediately on confirmation of the booking. Payment is expected four weeks before the departure date. Tickets are issued only when payment is made.
 - i) Using a diagramming convention with which you are familiar, draw the above, showing you understand the processes and dataflows, taking into account maintenance of the system. **(8 marks)**
 - ii) Design a set of normalised tables for the above system, containing appropriate attributes. Define the primary and foreign keys for each table. **(7 marks)**
 - b) Define what is meant by:
 - i) A database management system **(5 marks)**
 - ii) An expert system **(5 marks)**
 - iii) Network analysis **(5 marks)**

3.
 - a) You have just been appointed manager for a project that deals with the ordering and payment of raw materials on-line from suppliers and will take six man months to prepare. You are responsible for the testing of this system. Describe the testing methods you would use, and what plans you would make to ensure that this is a successful implementation and integration with the company's financial application. **(15 marks)**
 - b) The information for the project above will be held on a large database and various applications will supply details to staff throughout the organisation. Using the above, describe and give examples of strategic, tactical and operational information and suggest what type of application would be used at each level and typically who would require this information. **(15 marks)**

Turn over]

4. a) The advent of networking, and the use of trading over the internet, have exposed corporate information systems to security issues. Describe the sort of problems which may occur with the hardware and software and what solutions you would propose to prevent these happening. **(14 marks)**
- b) Implementation of the new system occurs towards the end of the system development life cycle. Give details of THREE METHODS, which can be used to implement the system identifying the advantages and disadvantages of each. Provide examples of where each method may typically be used. **(9 marks)**
- c) Nowadays, developers of information systems must be aware of legal and ethical aspects. As a systems development manager, draft a memo to your team outlining the legal and ethical issues of which they ought to be aware. **(7 marks)**

SECTION B

Answer FIVE questions out of EIGHT. All questions carry equal marks.

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

5. a) Define what is meant by the term *Computer Aided Software Engineering (CASE)*. **(2 marks)**
- b) State FIVE reasons why companies may not be using CASE tools. **(5 marks)**
- c) In your opinion is Microsoft Access a CASE tool? You will need to justify your answer. (This needs to match your answer to a). **(5 marks)**
6. a) What is meant by prototyping with respect to systems analysis? **(2 marks)**
- b) Describe what you would expect to be the deliverables from a prototyping stage of a project. Include all aspects (such as the documents etc.) you would expect to be produced from the stage. **(10 marks)**
7. Discuss what is meant by THREE of the following four terms. State a methodology based on the approach and then define an advantage.
- a) Soft Methodology
- b) Hard Methodology
- c) Agile Methodology
- d) Hybrid Methodology **(3 x 4 marks)**
8. Company X is considering using text-only dumb terminals for all data entry and using high specification Windows PCs for all management functions (reports, queries, market trends etc.).
- Define, and then discuss, the advantages and disadvantages of using these two types of interfaces. **(12 marks)**

9. a) Explain the difference between a software fault and a software failure. **(2 marks)**
- b) Company X is recording 'defects' information about all its current products, including those under development and those in operation. Defects can be reported by: system designers (during formal inspections); testers (during systems and integration testing) or users. The figure below shows the basic format of the current 'Defect Report' form.

Describe the weaknesses of the current form.

(10 marks)

<u>Defect Report</u>
Date
Description of defect
Location
Cause
Change

10. a) Define what is meant by the following terms, then by reference to a standard employee table, give an example of each.
- i) Primary Key
 - ii) Foreign Key
 - iii) Composite Key
 - iv) Candidate Key
- (4 x 2 marks)**
- b) Nulls are a common feature in data design. Discuss the advantages and disadvantages of using Nulls in data design. **(4 marks)**
11. The data held in corporate databases is a valuable resource and may contain sensitive information which needs protecting. Describe the techniques that are used to protect corporate databases from the following threats:
- i) Theft by employees
 - ii) Accidental loss
 - iii) Corruption of operational data arising from a hardware failure
- (12 marks)**
12. A standard development environment, such as Microsoft Windows, has a number of features that assist development of data entry applications.
- Discuss THREE features and give examples of where they would be used to assist data entry (for example, radio buttons for selection of sex (male or female)). **(3 x 4 marks)**