

THE BRITISH COMPUTER SOCIETY
THE BCS PROFESSIONAL EXAMINATIONS
Certificate

INFORMATION SYSTEMS

19th April 2006, 10.00 a.m.-12.00 p.m.
Time: TWO hours

Both Section A and Section B carry 50% of the marks.
You are advised to spend about 1 hour on Section A (30 minutes per question)
and 1 hour on Section B (12 minutes per question).

SECTION A

Answer TWO questions out of FOUR.

You are advised to spend about 1 hour on Section A (30 minutes per question)

All questions carry equal marks.

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

1. A large local travel company has acquired several smaller companies within the area and plans to provide specialist overseas holidays such as visits to historical sites, cookery classes, art classes and walking tours. A new computer system is required to cope with the new business. The following functions would be required: advertising, booking holidays, dealing with suppliers such as airlines, hotels, tour guides and coach companies, deposits, invoicing and payments for all the suppliers as well as customers.
- a) Imagine you are responsible for this development. Describe the stages you would follow to ensure a fully integrated and stable system using a methodology with which you are familiar. **(12 marks)**
- b) Give examples of the following techniques using the above example:
- i) Data flow diagramming including a context diagram and a high level data flow diagram **(8 marks)**
 - ii) Entity relationship modelling **(3 marks)**
 - iii) Rich picture **(4 marks)**
 - iv) Class diagram **(3 marks)**
2. a) Name and describe the advantages and disadvantages of THREE fact-finding techniques. **(10 marks)**
- b) There are many storage and retrieval techniques for accessing data. Define the following, giving examples:
- i) Indexed-sequential **(3 marks)**
 - ii) Relational **(3 marks)**
 - iii) Sequential **(3 marks)**
 - iv) Direct access **(3 marks)**
- c) Outline the measures you would use to provide good screen design using current HCI (human computer interface) techniques. **(8 marks)**

Turn over]

3. a) Explain the following business functions:
- i) Purchasing (Buying) (3 marks)
 - ii) Marketing (3 marks)
 - iii) Payroll and Human Resource Management (Personnel) (3 marks)
 - iv) Manufacturing (3 marks)
- b) Three main areas of management information are stored in a typical organisation. Identify the types of information and typical systems used in EACH area. (9 marks)
- c) Over the last few years the importance of controlling the information stored with regard to legal and ethical issues has resulted in laws designed to protect the data. Give THREE examples of laws with which you are familiar, explaining their use. (9 marks)
4. a) Recently there has been an explosion in the use of the web/internet. Draft a report indicating why this has happened, giving examples of how the following organisations could make use of the internet:
- i) A music production company
 - ii) A travel company
 - iii) A sports shop (12 marks)
- b) The use of the internet does have its problems, write BRIEF notes indicating typical security problems and solutions you would recommend. (6 marks)
- c) There are several ways in which new systems can be implemented, depending on the type of system. Identify THREE different implementation methods indicating advantages and disadvantages and examples of when each would be used. (12 marks)

SECTION B

Answer FIVE questions out of EIGHT.

You are advised to spend about 1 hour on Section B (12 minutes per question)

All questions carry equal marks.

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

5. A Data Flow Model (DFM) consists of the Data Flow Diagram (DFD) and associated documentation.
- a) What information should be included in the additional documentation? (5 marks)
 - b) Outline what you consider to be good practice for drawing a DFD. (4 marks)
 - c) List THREE other techniques that could be used to support a DFD. (3 marks)
6. Outline the procedures for testing the quality and function of the user interface for a website. (12 marks)
7. What is a requirements catalogue and what should it contain? (12 marks)

8. a) Define what is meant by the following database terms:
i) Primary Key
ii) Foreign Key
iii) Null (3 x 2 marks)
- b) Business rules are required for validating the data input for credit card details onto a system (i.e. card holder's name, credit card number, start date, expiry date). Outline SIX rules that you would expect to be implemented. (6 marks)
9. Discuss what is meant by the following terms with respect to systems analysis:
a) Hard methodology
b) Soft methodology
c) Agile methodology (12 marks)
10. Prototyping is often seen as an effective fact-finding technique.
a) Outline TWO different prototyping techniques. (8 marks)
b) State FOUR disadvantages for use of prototyping as a fact-finding technique. (4 marks)
11. a) How do development environments help to reduce programme errors? (6 marks)
b) Outline the facilities of a CASE tool. (6 marks)
12. Describe THREE project management techniques. For each technique described, specify the type of project the technique is best suited to and why. (12 marks)