

THE BRITISH COMPUTER SOCIETY

THE BCS PROFESSIONAL EXAMINATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

23rd April 2007, 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).

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

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| Calculators are NOT allowed in this examination. |
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SECTION A

Answer TWO questions out of FOUR. Each question carries 30 marks.

- 1 a) Information systems development requires careful thought and planning. Several methods are available to support the development.

Give examples and a BRIEF overview of the main features in the following:

- i) Object-oriented development using UML
- ii) A soft system approach
- iii) A prototyping method
- iv) Structured systems analysis methodology

(20 marks)

- b) Using any system as an example, describe the use of TWO of the following techniques:

- i) Normalisation (1NF to 3NF)
- ii) Entity life history
- iii) Entity/relationship diagrams (logical data model)

(10 marks)

2. A large hotel company is opening a new hotel at holiday destination resort. A system will be required to deal with room reservations and bookings. It will need to provide an on-line (web-based) enquiry system as well as reservations, bookings and payments.

- a) As the senior analyst, you are responsible for planning the investigation and implementation of the above system. Using a structured systems methodology, with which you are familiar, describe the stages and tasks you would use within the project **(15 marks)**
- b) The first stage of the development life cycle is a feasibility study, which is not normally part of the methodology. What is a feasibility study and what areas would you expect to include in the feasibility report? **(9 marks)**
- c) Briefly describe THREE fact-finding techniques you would use in the analysis phase. **(6 marks)**

Turn over]

3. a) A hotel is upgrading its on-line booking system.
- i) Design a typical input screen, which can be used by the receptionist to record booking details. **(8 marks)**
 - ii) Comment on what design techniques you would use to ensure a user-friendly system. **(8 marks)**
 - iii) Define the validation needed for typical fields. **(4 marks)**
- b) As the hotel has an existing system, describe a suitable method of implementation that could be used for upgrading the system. Include in your answer other aspects that need to be considered when converting to the new system and justify your choice of implementation method. **(10 marks)**
4. A hotel company has been advised that it is losing its business as it is failing to keep up to date with new technology.
- a) Draft a report discussing and providing examples of how new technology could be used to give competitive advantage to the hotel company. **(15 marks)**
 - b) Define what is meant by each of the following:
 - i) An expert system
 - ii) A decision support system **(6 marks)**
 - c) Define the roles and responsibilities of the following systems personnel:
 - i) Systems analyst
 - ii) Network administrator
 - iii) Web designer **(9 marks)**

SECTION B

Answer FIVE questions out of EIGHT. Each question carries 12 marks.

5. Testing is often seen as the last stage of any project. Discuss where else within a typical project lifecycle, testing could occur. **(12 marks)**
6. a) Within a multi-national company, identify four key departments which need to exist. **(4 marks)**
- b) Give examples of the type of information that would flow between these departments. **(8 marks)**
7. a) Define what is meant by the following terms, and then using examples for a published book table provide an example for each.
- i) Primary Key
 - ii) Foreign Key
 - iii) Composite Key
 - iv) Candidate Key **(8 marks)**
- b) Nulls are a common feature in data design. Discuss the advantages of using Nulls in data design. **(4 marks)**

8. Discuss what is meant by the following methodology related terms. For EACH methodology state a type of project that is suitable for that methodology, and outline the methodology.
- i)* SSADM
 - ii)* Waterfall
 - iii)* UML
- (12 marks)**
9. Prototyping is often seen as an effective fact finding technique.
- a)* Name and describe ONE prototyping technique. **(4 marks)**
 - b)* State FOUR negative aspects of using prototyping as a fact finding technique. **(4 marks)**
 - c)* State FOUR positive aspects of using prototyping as a fact finding technique. **(4 marks)**
10. During every phase of a project, metrics should be gathered to assist in the planning of a new or the next project. Comment on what data you would gather to assist with the following areas:
- i)* Error rate
 - ii)* Productivity
 - iii)* Quality
- (12 marks)**
11. *a)* Black hat and white hat hackers are a potential risk to any company. Outline the differences between white hat and black hat hackers. **(3 marks)**
- b)* The use of SQL Injection is becoming an increasing threat to web sites, state what SQL Injection is. **(3 marks)**
- c)* When developing a web site, what design features would you implement to improve the security of that web site? **(6 marks)**
12. Discuss the types of media that could be used to present information on a web site. Your discussion should include comments on the advantages and disadvantages of each type of media. **(12 marks)**