

BCS THE CHARTERED INSTITUTE FOR IT
BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT
INFORMATION SYSTEMS

Tuesday 25th September 2012 - Afternoon
Time: TWO hours

Section A and Section B each 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).

Answer the Section A questions you attempt in Answer Book A
Answer the Section B questions you attempt in Answer Book B

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

Calculators are NOT allowed in this examination.

SECTION A

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

- A1. A new business is being set up by a group of parents to organise a toy and book lending library in aid of a local charity. None of the parents are IT literate and require an IT technician to help with setting up a small database and a manageable system.

Advertisements will be placed in local newspapers, shops and local community halls asking for donations of suitable books and toys. After inspection for their suitability, the toys and books will be classified into age group categories and priced accordingly. This data will need to be stored on the database. Potential borrowers will need to register and provide contact details such as name, address, phone number and email address. A small charge will be imposed to register. The parents have arranged to hire a local community hall and will pay a small rent each month to the community hall committee, and have to pay for the newspaper advertisements so require enough money to cover the cost as well as make money for the charity. They also intend to make money by providing refreshments. Toys and books can be borrowed for a specified period, usually one week, with a fine being imposed if it is not returned within that period.

Toys or books which are no longer suitable for hire are offered for sale or destroyed if they cannot be sold and will be removed from the database.

The system is required to record the details of the toys and books, borrowers' details, hall rental due dates and payments, charity donations and simple accounts.

- a) Identify the processes, data stores and external entities in the above scenario.

(12 marks)

Turn over]

- b) Write brief notes on each of the following giving an example using the above scenario :
- i) Dataflow diagrams **(4 marks)**
 - ii) Class diagrams **(4 marks)**
 - iii) Entity life histories **(4 marks)**
- c) Describe the role of the following:
- i) Systems Analyst **(3 marks)**
 - ii) Database Administrator **(3 marks)**
- A2. a) Describe what issues need to be considered when designing screens and reports for the system described in Question A1. **(8 marks)**
- b) Design a set of screens which will deal with logging onto the system described in Question A1 and the borrowing of toys and books. Explain the process and validation behind each screen. **(12 marks)**
- c) Give the main reasons why a methodology is used to analyse an information system describing briefly the stages in a relevant methodology with which you are familiar. **(10 marks)**
- A3. a) Describe, with the aid of a diagram, each of the three main levels of information in an organisation. Provide an example of this information at each level. **(10 marks)**
- b) Briefly discuss the differences between the following specification techniques and give examples of each:
- i) Flowchart **(4 marks)**
 - ii) Decision Table **(4 marks)**
 - iii) Pseudocode **(4 marks)**

- c) Give examples of the following concepts used in relational data modelling:
- i) Optionality **(2 marks)**
 - ii) An arc **(2 marks)**
 - iii) Intersection entities **(2 marks)**
 - iv) Involved relationships **(2 marks)**
- A4. a) There are three ways a new system can be introduced to the user. Briefly describe the advantages and disadvantages of the following:
- i) Direct changeover **(4 marks)**
 - ii) Parallel running **(4 marks)**
 - iii) Pilot running **(4 marks)**
- b) Testing is a vital part of system development.
- i) Discuss how you would prepare a testing strategy. **(6 marks)**
 - ii) Describe the differences between black and white box testing. **(4 marks)**
- c) Protecting company data is vitally important. Outline measures you would take to protect the data. **(8 marks)**

SECTION B

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

B5. Write a brief description of what is meant by the following terms:

- a) RAD (4 marks)
- b) JAD (4 marks)
- c) JRP (4 marks)

B6. a) What is meant by the following terms?

- i) (raw) Data (2 marks)
- ii) Information (2 marks)

b) Discuss the following database terms and comment with respect to data and information.

- i) Database Management System (4 marks)
- ii) Data Warehouse (4 marks)

B7. Describe what is meant by the following terms and how they are used?

- a) PERT Chart (4 marks)
- b) CPM (4 marks)
- c) Gantt Chart (4 marks)

B8. a) Explain what is meant by the following data modelling techniques.

- i) Normalisation (4 marks)
- ii) Entity relationship modelling (4 marks)

b) Which would you recommend to use to develop a set of database tables and why?

(4 marks)

- B9. a) Name two different styles of prototyping. **(2 marks)**
- b) Discuss these two different styles of prototyping outlining the advantages and disadvantages of each. **(2 x 5 marks)**
- B10. a) Briefly discuss what is meant by the term *soft methodology* **(3 marks)**
- b) Outline the tools and techniques you would use when applying a soft methodology **(9 marks)**
- B11. With the increased use of Social Networking, there are reports that companies are monitoring their employees on Social Media sites
- a) In this context, discuss what is meant by the following terms:
- i) Ethics **(2 marks)**
- ii) Social networking / Social Media **(2 marks)**
- b) Do you agree or disagree with companies monitoring their employees activities on social networking sites and discuss why a company might do so? **(8 marks)**
- B12. One possible extraction of data from a database is an Excel spreadsheet.
- Discuss three different ways that an organisation could process and present the data from an Excel, or similar, spreadsheet, in a more visual manner and how this might aid decision making. **(3 x 4 marks)**

*** END OF EXAM ***