

BCS THE CHARTERED INSTITUTE FOR IT

THE BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

Tuesday 27th March 2012 - Morning
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 town's local government wishes to encourage more investment in its town and wishes to offer more facilities. A new exhibition centre is going to be built as the current building is not large enough. More exhibition halls will be provided. Each hall will be capable of containing a specific number of stands. A specific number of tables and chairs are allocated to each stand depending on its size. Extra furniture and other requirements can be ordered.

A new computerised system is required to manage the centre, dealing with external caterers, specialist exhibition suppliers, event organisers and exhibitors.

A calendar of events has already been drawn up for the current building. An organiser (new or existing) wishing to run an event will contact the centre to check availability of date and number of halls required. On confirmation of availability from the centre, the organiser's details will be added to its database if they do not already exist. The number of halls and number of stands required and booking date will be entered on to the system. Prior to the date of the exhibition, the names and numbers of exhibitors need to be recorded, specialist furniture may need to be ordered and catering facilities need to be organised. If the exhibition is a success, the exhibitors will be asked to add or confirm the date for the calendar for future years.

- a)
- i) Draw a Context Diagram identifying the main entities. **(6 marks)**
 - ii) Draw a Dataflow Diagram identifying the main processes. **(6 marks)**
 - iii) Draft an Entity Relationship diagram for the above giving an example of optionality, which may occur and identify and resolve any many to many relationships. **(8 marks)**

Turn over]

- b) Briefly describe what is meant by the following:
- i) Systems Analysis **(5 marks)**
 - ii) Systems Design **(5 marks)**
- A2. a) You have been asked to interview the current exhibition centre manager from question A1, one of her clerical administrators and the technical manager. Describe how you would prepare for a formal interview with each of these and give examples of the type of information you require from them. **(9 marks)**
- b) Give examples and briefly describe other fact finding techniques you could use in investigating the current system and say how would use them. **(8 marks)**
- c) Describe the differences between the 'domain of change' and 'domain of computerisation'. **(4 marks)**
- d) Briefly describe the following prototyping techniques:
- i) Evolutionary **(3 marks)**
 - ii) Throwaway **(3 marks)**
 - iii) Staged **(3 marks)**
- A3. a) Write brief notes describing the stages and techniques in the following:
- i) Object Oriented Methodology **(8 marks)**
 - ii) Rapid Application Development **(8 marks)**
 - iii) An entity life history contains three constructs. Identify these and explain their purpose. **(6 marks)**

- b) The following is a copy of the current booking form for an event. Normalise the form into third normal form (TNF), identifying the relations, primary and foreign keys. You do NOT have to show your workings.

(8 marks)

Event	Title	Start Date	End Date	Event Organiser	Organiser's Name	Hall	Hall Name	Stand	Size
1	Clothes Show	2/2/12	9/2/12	1	BBC	1	Main	1	20
1	Clothes Show	2/2/12	9/2/12	1	BBC	1	Main	2	30
1	Clothes Show	2/12/12	9/2/12	1	BBC	2	Minor	1	15
2	Good Food	10/2/12	15/2/12	2	Cookery School	1	Main	1	20
2	Good Food	10/2/12	15/2/12	2	Cookery School	2	Minor	1	15

- A4. a) Highlight the main functions and differences of the following:

i) A database management system

(8 marks)

ii) A data dictionary

(6 marks)

- b) Briefly describe what would typically be contained in the following documentation:

i) Feasibility Report

(4 marks)

ii) System Specification

(4 marks)

iii) Technical Specification

(4 marks)

iv) Security and Recovery Report

(4 marks)

Turn over]

SECTION B

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

- B5. a) Define what is meant by the term CASE. **(3 marks)**
- b) Discuss how a CASE tool can improve the process of developing an Entity Relationship Diagram. **(9 marks)**
- B6. What is meant by the following methodology related terms?
- a) Hard Method **(4 marks)**
- b) Soft Method **(4 marks)**
- c) Hybrid Method **(4 marks)**
- B7. Discuss two different styles of software testing. **(2 x 6 marks)**
- B8. a) Discuss what is meant by the following related terms, providing one advantage and one disadvantage of each:
- i) WIMP **(3 marks)**
- ii) GUI **(3 marks)**
- iii) Command Line **(3 marks)**
- b) Are all GUIs WIMP? Give reasons for your answer. **(3 marks)**
- B9. What would you consider to be the main duties of a software development project manager? **(12 marks)**
- B10. What is meant by the following related terms?
- a) Hypertext **(4 marks)**
- b) Hypermedia **(4 marks)**
- c) Multimedia **(4 marks)**

- B11. a) Discuss the organisational structure of a typical company. **(8 marks)**
- b) What additional departments would you expect to find in a company that developed software? **(4 marks)**
- B12. Describe what is represented in the following diagrams and draw an example of each
- a) Scatter graph **(4 marks)**
- b) Pie chart **(4 marks)**
- c) Bar Chart **(4 marks)**

**** END OF EXAM ****