

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

**INFORMATION SYSTEMS**

Tuesday 29th September 2015 - 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 <b>NOT</b> allowed in this examination.
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**SECTION A**

**Answer 2 questions (out of 4). Each question carries 30 marks.**

**A1**

- a) A small fruit and vegetable shop has been opened by a husband and wife who have no knowledge about computer systems. They are aware that they need to create a database and would need to record sales and purchases.

How would you approach this development? **(12 marks)**

- b) A large ferry shipping company is investing in a new route from England to France. The company needs an entirely new system to deal with all the applications such as bookings from passengers, buying food and drinks for the restaurants, selling the food, recruiting staff, paying staff etc.

Describe a suitable methodology that could be used to analyse all the requirements. **(12 marks)**

- c) Give examples of the following techniques:

- i) An entity model
- ii) An object model **(2 x 3 marks)**

**A2**

- a) Several systems can be used within an organisation. Discuss the main features of each of the following:

- i) Transaction Processing System
- ii) Data Warehouse System
- iii) Knowledge Based System
- iv) Decision Support System **(4 x 3 marks)**

- b) Describe the main functions of a database management system. **(15 marks)**
- c) Briefly describe a relational database management system. **(3 marks)**

### **A3**

- a) Explain the following business functions:
- i) Purchasing
  - ii) Marketing
  - iii) Human Resource Management (Personnel)
  - iv) Stock Control **(4 x 3 marks)**
- b) There are typically THREE levels of management information within an organisation. Identify the three levels giving an example of each. **(3 x 2 marks)**
- c) Describe and give an example of ONE narrative and ONE graphical specification technique **(6 marks)**
- d) Briefly describe the content of a program specification document. **(6 marks)**

### **A4**

- a) The use of the internet is now universal, however many data security problems can occur not only on the internet but within a company. Briefly describe typical security problems and solutions you would recommend to ensure a company's data is secure both externally and internally. **(12 marks)**
- b) Testing and training are two essential functions required during system development.
- i) Discuss the testing strategies you would adopt throughout the development. **(8 marks)**
  - ii) Prepare a brief report for management showing your plans for training all levels of users. **(4 marks)**
- c) System developers need to ensure they are up to date with legal issues concerning data and information. Give TWO examples of relevant legal acts you are familiar with and briefly state which areas they cover. **(6 marks)**

## **SECTION B**

**Answer 5 questions (out of 8). Each question carries 12 marks.**

### **B5**

Traditional HCI defines three type of users, *Novice*, *Intermediate* and *Expert*.

Discuss how you would design data capture screens that would be relevant to all three levels of user. **(12 marks)**

**B6**

Entity Relationship Modelling and Normalisation are two complementary techniques used to create data structures.

- a) Describe these TWO techniques (2 x 3 marks)
- b) Comment on the advantages and disadvantages of both techniques (2 x 3 marks)

**B7**

You have been asked to assemble a design and development team to produce a new large system application. Provide an outline of the roles and jobs that you consider essential to be in that team. (12 marks)

**B8**

Define the tools and techniques of

- a) hard methodology (6 marks)
- b) soft methodology (6 marks)

**B9**

Using the following numbers,

4,3,2,1,5,3,2,5,2

illustrate what is meant by the following terms:

- a) Mean (4 marks)
- b) Mode (4 marks)
- c) Median (4 marks)

**B10**

a) What is meant by the following terms and provide an example?

- i) Raw data
- ii) Information (2 x 2 marks)

b) For EITHER the term *Big Data* OR the term *Social Media Data*, describe what is meant and identify some of the difficulties in processing the data. (8 marks)

**B11**

What is meant by the following terms?

- a) Hypertext
- b) Hypertext mark-up language (HTML)
- c) Hypermedia
- d) Multimedia (4 x 3 marks)

**B12**

Documentation is often seen as the least important aspect of systems development. What quality assurances procedures would you put in place to ensure that any documentation produced is of the highest standard?

(12 marks)

