BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

Tuesday 23rd September 2014 – 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 2 questions (out of 4) in Answer Book A. Each question carries 30 marks

A1 A company has decided to open a training school, which will deal with trainees employed in several departments. It is also intended that the training school will accept students from the local university who will pay a small fee.

A new system is required to deal with registration, assigning trainees/students to one of the available classes, allocation of resources, (such as classrooms and tutors from the local university) and attendance. A class is always held in the same classroom. The university tutors will be paid for each hour they teach. They always teach in the same classroom but may teach different classes; however the classroom can be used by different tutors at different times.

a) Draft a Context and High Level Dataflow Diagram depicting the main processes, data stores and external entities.

(12 marks)

b) Identify the main entities, basic attributes, primary keys, foreign keys and relationships and draft an entity model showing allocation of trainee/student to a class and tutor.

(12 marks)

c) As this is a small system, prototyping is a suitable method of fact finding. Briefly describe a prototyping approach to providing this system.

(6 marks)

A2 a) Describe how information flows within a typical organisation, identifying the types of information and the systems most appropriate to provide that information. Give an example of each level of information.

(12 marks)

b) Write brief notes on the following:

i) A Data Warehouse
ii) Web Design software
iii) CASE

(3 x 3 marks)

c) A training school employs several tutors. Each tutor teaches several subjects and belongs to only one department. Each subject is taught in a specific class room. Normalise the following un-normalised list of data items into third normal form (3NF):

Tutor number, tutor name, room number, department number, department name, subject number, subject name

(9 marks)

A3 a) Briefly describe the issues and techniques which you would take into account when designing both input screens and printable reports.

(15 marks)

b) Give an example of a well designed screen which could be used to enter student details.

(5 marks)

c) An Entity Life History is a technique used in structured systems analysis. What is its purpose? Explain the following giving an example of each in the context of an Entity Life History

i) Selection
ii) Sequence
iii) Iteration **(10 marks)**

A4 a) You have been asked to give two formal presentations, one to the management and one to the clerical administrators, describing the new system they will be using. Describe how you would prepare for these and what you would include in each presentation.

(12 marks)

b) As a senior manager, you are involved in recruiting a project manager. Identify appropriate abilities and skills you consider necessary to be a good project manager.

(8 marks)

c) Draft a report identifying how you would ensure, as far as possible, complete security and recovery for a company's payroll system.

(10 marks)

SECTION B

Answer 5 questions (out of 8) in Answer Book B. Each question carries 12 marks.

B5 What is meant by the following terms?

a) Stress testing
b) Regression testing
c) Black box testing

(3 x 4 marks)

B6 You have been asked to conduct a survey concerning the quality of data entered for a stock control system. By using examples, discuss what type of data you would expect to collect with

a) Open questions
b) Closed questions

(2 x 6 marks)

B7 Discuss what is meant by the following RAD related terms

a) Time Boxing
b) JRP
c) JAD

(3 x 4 marks)

B8 Discuss what supporting documentation is required to produce an Entity Relationship Model (ERM), rather than an Entity Relationship Diagram (ERD).

(12 marks)

B9 a) What do you consider to be ethical behaviour when it comes to the role of a computing professional?

(4 marks)

b) Discuss how you would ensure that all projects within an organisation were operated ethically.

(8 marks)

B10 a) Discuss what is meant by the term *cloud database*.

(4 marks)

b) State FOUR advantages to an organisation of using a cloud database.

(4 marks)

c) State FOUR disadvantages of using a cloud database.

(4 marks)

B11 a) State a type of multimedia that enhances a web site. Outline the benefits of using the type of multimedia selected.

(1 mark for the media type and 6 marks for benefits outlined)

b) With reference to the type of multimedia stated in a), what are the disadvantages of using it?

(5 marks)

B12 a) What is meant by the following terms?

i) Information
ii) Data

(2 x 2 marks)

b) By using examples, define what is meant by the following mathematical terms?

i) Median
ii) Mean

(2 x 4 marks)