BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

Tuesday 27th September 2011 - 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 <u>Section A</u> questions you attempt in <u>Answer Book A</u>
Answer the <u>Section B</u> questions you attempt in <u>Answer Book B</u>

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. You have been appointed to investigate and to design an on-line system for a
large garage dealing with vehicle repairs and annual maintenance.

A customer will contact the garage to book in a vehicle for repairs or annual
maintenance. The system will check whether the customer is an existing
customer or a new one. If he/she is an existing customer then the details will
be displayed and confirmed. If he/she is a new customer then details will be
required such as name, address, vehicle type, make, and car registration
number. The system will then be used to find an appropriate time slot for the
repair or maintenance. Once confirmed by the customer, the system will need
to allocate a suitably qualified engineer to carry out the job. A time slot will be
allocated to the engineer's records.

At the appropriate time, the customer will bring the car in for the work to be
done. The engineer will inspect the car and carry out the repair/maintenance.
Sometimes a spare part may be required which is not in stock. The engineer
will raise a purchase order with the car parts supplier, inform the customer of
the delay and will stop the job until the spare part arrives. Once the job has
completed the customer will be informed and the job will be paid for and the
car collected

a) Draw a Context Diagram and a set of Data Flow Diagrams to depict
the above system.

(15 marks)

b) Draw a Data Model identifying the main Entities and Relationships
indicating the degree of relationship and optionality.

(10 marks)

c) Draw an entity life history of the entity job.

(5 marks)

Turn over]

A2. a) You are the head of a systems development team who has a number of impatient users. Draft a report explaining the advantages and disadvantages of a structured approach to system development compared with a prototyping approach suitable for these users. Identify the stages within each approach.

(20 marks)

b) Briefly describe the purpose and typical contents of a Feasibility Report

(10 marks)

A3. a) Discuss how information flows in a typical organisation hierarchy giving examples of the type of information at each level.

(9 marks)

b) Briefly describe the use of the following types of commercial software systems:

    i)   Executive Information Systems
    ii)   Management Information Systems
    iii)   Transaction Processing Systems

(9 marks)

c) Describe the main theories of a relational database approach to storing and accessing data.

(12 marks)

A4. a) As manager of a large systems development project, describe the steps you would take to ensure that a project is produced on time. (NOTE – the system development life cycle is not expected).

(12 marks)

b) After development and testing, a system can be installed in several different ways according to the type of system. Describe THREE possible ways this can be done, identifying advantages and disadvantages of each.

(12 marks)

c) *"There are several threats to an on-line system".* Discuss this statement and identify ways of preventing unauthorised access to the system's data.

(6 marks)

B5. You have been asked to produce a job description for a Business Analyst. What characteristics should they have and why?

(12 marks)

B6. What do you consider to be the most important aspects of Human Computer Interaction (HCI) and why?

(12 marks)

B7. What should be a computing code of conduct for an employee?

(12 marks)

B8. "*Video wastes bandwidth, text can represent information more clearly and uses less resources.*"

Discuss this statement, stating whether you agree or disagree with this statement and why.

(12 marks)

B9. What screen design elements could be used for developing an on-line questionnaire to determine the functions a person uses on their mobile phone?

(12 marks)

B10. A small company has asked that you suggest a backup plan for their database. The database only operates for 12 hours a day and you have been asked to provide a solution that does NOT use tapes or CDs/DVDs.

Discuss how and when the database can be backed up and comment on any dangers to your approach.

(12 marks)

B11. What is meant strategic by, tactical and operational information? Give two examples of each.

(12 marks)

B12. a)   What is meant by the following statistical terms?

　　　　i)   Mean

　　　　　　　　　　　　　　　　　　　　　　　　　(2 marks)

　　　　ii)   Mode

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　　　　iii)   Lower quartile

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　　　　iv)   Standard Deviation

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　　b)   What is a histogram and what is its primary function?

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