BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

Wednesday 18th March 2020 - 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 any <u>Section A</u> questions you attempt in <u>Answer Book A</u>
Answer any <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 2 questions (out of 4). Each question carries 30 marks.

A1.
   a) There are several information system development methods. Describe a suitable method which could be used to develop the following new systems:

      i) A new system required by a government department to deal with new taxation laws. This will be a very large and complicated system.

(10 marks)

      ii) A small simple on-line system required by the membership secretary of an athletic club to deal with its membership.

(8 marks)

   b) Describe the function and components of the following giving a simple example of each using any scenario:

      i) A high level data flow diagram;
      ii) An entity life history;
      iii) A class diagram.

(12 marks)

A2.
   a) Discuss the advantages and disadvantages of the following ways to solve business problems:

      i) Developing required software internally;
      ii) Using a software house to develop the required software;
      iii) Buying an existing software package.

(10 marks)

   b) Describe typical functions of the following commercial software:

      i) Project management software;
      ii) Spreadsheet software;
      iii) Presentation software.

(10 marks)

   c) Briefly explain the main functions of the following and include the qualifications and skills required:

      i) Network engineer;
      ii) Web designer;
      iii) Technical support staff.

(10 marks)

[Turn Over]

A3.

a) What is the purpose of normalisation and what are the rules for normalising data from 1st to 3rd normal form?

(6 marks)

b) The following form shows the data an athletic club keeps to record the races and results of their members. Identify the relations in 3rd normal form and sketch an entity relationship model explaining your reasoning for the choice of entities.

(8 marks)

Race	Venue	Member No	Name	Class	Cost	Position
1	Wood Green	1	J Smith	Senior	£15	1
1	Wood Green	20	R Wells	Senior	£15	27
1	Wood Green	33	P Jones	Junior	£5	55
2	Valley	1	J Smith	Senior	£15	2
2	Valley	33	P Jones	Junior	£5	75
2	Valley	20	R Wells	Senior	£15	76

c) Name the physical files/tables which would be required, identifying the attributes, primary and foreign keys.

(6 marks)

d) The development of an information system is almost complete, and the system will soon be going live. What issues should be included in your implementation plan?

(10 marks)

A4.

a) Briefly describe how the internet has revolutionised business processing.

(6 marks)

b) Give examples of how the following organisations could make use of the internet to improve their business:

i) A music distributor;
ii) A hotel;
iii) A dress shop.

(12 marks)

c) The use of the internet has many problems. Write brief notes identifying typical security problems and potential solutions.

(12 marks)

[Turn Over]

B5.
Describe, with the aid of drawings, the following statistical terms and comment on what type of data they best represent:

      a) Pie chart;   **(4 marks)**
      b) Histogram;   **(4 marks)**
      c) Scatter chart.   **(4 marks)**

B6.
Your organisation is planning a major systems development and requires a project manager to oversee the project. You have been asked to draft an outline job description for the project manager.

Briefly outline the areas you would include in such a job description and discuss why.
(12 marks)

B7.
Testing is an essential part of the software development lifecycle. Blackbox and white box testing are two traditional ways to test an application.

What other testing approaches would you recommend to thoroughly test an application?
(12 marks)

B8.
Rapid Application Development (RAD) is an approach to developing applications in a shorter period of time, compared to traditional hard methodologies.

Discuss the different tools and management techniques that are used to ensure RAD projects achieve this.
(12 marks)

B9.
Cloud based data storage is often seen as one way small businesses can afford current technology.

Discuss the advantages and disadvantages of using a cloud based database for a small business.
(12 marks)

[Turn Over]

B10.
Describe what is meant by the following terms, providing examples for each term:

    a) Structured data;   **(3 marks)**
    b) Semi Structured data;   **(3 marks)**
    c) XML;   **(3 marks)**
    d) JSON.   **(3 marks)**

B11.
Discuss methods of ensuring that a data centre is physically secure.

(12 marks)

B12.
Without reference to cost or time, discuss the advantages and disadvantages of a throwaway prototype.

(12 marks)

END OF EXAMINATION