BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

Wednesday 17th April 2024 - 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 Section A questions you attempt in Answer Book A
Answer any 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.

Section A
Answer two questions (out of four). Each question carries 30 marks.

A1.

A fire and rescue service wishes to analyse fire injuries resulting from accidental residential fires.

   a) Explain which statistical techniques could be used to analyse the relationship between age bands and rate of fire injury within each age band.

(10 marks)

   b) When examining the number of fire injuries across the different geographical areas covered by the fire and rescue service over a ten-year period, describe **THREE** measures of the average number of fires that could be used, and their limitations of use in practice.

(10 marks)

   c) Explain how probability is used in presenting the results of statistical analysis.

(10 marks)

A2.

A water company wishes to develop a dashboard system to display data regarding water levels in reservoirs, lakes and rivers, and the leakage rates in water pipes.

   a) Explain **THREE** different system development lifecycle approaches that could be used to develop the dashboard system.

(12 marks)

   b) Describe **TWO** fact-finding methods that could be used to determine the requirements for the dashboard system.

(8 marks)

   c) Describe how the data structures required for the dashboard system could be designed.

(10 marks)

A3.

A university wishes to develop a website to provide information about wellbeing to its staff and students.

    a) Explain the differences between hard and soft system methodologies and how they could be used to develop the website.

(10 marks)

    b) Explain how a structured methodology, such as the structured systems analysis and design method (SSADM), could be used to develop the website.

(10 marks)

    c) Explain how an object-oriented methodology could be used to develop the website.

(10 marks)

A4.
    a) Explain what is meant by 'accessibility' in terms of human computer interaction design.

(10 marks)

    b) Explain what is meant by 'usability' in terms of human computer interaction design.

(10 marks)

    c) Describe how the concepts of accessibility and usability could be applied to the design of a retail website.

(10 marks)

Section B
Answer five questions (out of eight). Each question carries 12 marks.

B5.

Describe methods of ensuring that a data centre is physically secure.

(12 marks)

B6.

The structured systems analysis and design method (SSADM) recommends the use of Throwaway Prototypes.

a) Explain what a Throwaway Prototype is.

(4 marks)

b) Explain the advantages of Throwaway Prototyping.

(4 marks)

c) Explain the disadvantages of Throwaway Prototyping.

(4 marks)

B7.

Describe what is meant by the following terms:

a) Stress testing.

(4 marks)

b) Regression testing.

(4 marks)

c) Black box testing.

(4 marks)

B8.

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

a) Open questions.

(6 marks)

b) Closed questions.

(6 marks)

B9.

Discuss what is meant by the following rapid application development (RAD) related terms:

a) Time boxing.

(4 marks)

b) Joint requirements planning (JRP).

(4 marks)

c) Joint application development (JAD).

(4 marks)

B10.

For less complex applications not all the features of a Database Management Systems (DBMS) are required.

a) Describe what you consider to be the advantages of using a DBMS.

(6 marks)

b) Describe what you consider to be the disadvantages of using a DBMS.

(6 marks)

B11.

Internet of Things (IoT) sensors can be used as a source for gathering data.

a) Define what is meant by 'Internet of Things'.

(4 marks)

b) By using an example, describe the type of sensors that could be used and the type of data that could be collected.

(8 marks)

B12.

Describe, using an example, what is meant by the following management structures:

a) Matrix.

(6 marks)

b) Hierarchical.

(6 marks)

END OF EXAMINATION