BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 4 Certificate in IT

INFORMATION SYSTEMS

Thursday 17th April 2025 - 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.

Calculators are **NOT** allowed in this examination.

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

A1.
An old railway line has been renovated by a town council to create a bicycle path. A small bicycle shop is to be opened providing bicycles and bicycle helmets for hire by customers and a selection of healthy snacks and bottled water. The shop will be staffed by volunteers and one employee who will be responsible for purchasing the perishable stock, checking sell by dates and maintaining the bicycles. Each bicycle will be identified by a unique number and checked regularly to ensure safety. A small computer system will be required by the council to deal with the hiring and selling aspects of the shop.

a) Describe a suitable method which could be used to develop this small system, explain why you have chosen the method and any problems that may occur.
(12 marks)

b) Identify the entities, possible key attributes and relationships.
(8 marks)

c) Draw a data flow diagram identifying external entities, processes and data stores.
(10 marks)

A2.

a) Project management software is often used when developing a large computerised system. What features would you expect to find?
(12 marks)

b) Briefly describe the following object-oriented terms with examples: an object and class, inheritance and encapsulation.
(9 marks)

c) An entity history consists of the following: sequence, selection and iteration. Give examples of **each**.
(9 marks)

A3.
Compare and contrast with examples:

a) Histograms and network charts.

(10 marks)

b) Interviews and questionnaires.

(10 marks)

c) Normalised relations and a relational data model.

(10 marks)

A4.

a) Using the required bicycle shop system described in A1., prepare a report advising the council of the steps you have taken in your development to ensure security of the data being processed.

(12 marks)

b) Describe the following implementation techniques:

i. Parallel running.
ii. Direct changeover.
iii. Staged implementation.

(12 marks)

c) What is meant by BCS professionalism?

(6 marks)

[Turn Over]

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

B5.
Demonstrate, by giving example questions, how quantitative **and** qualitative questions can be used to gain suitable responses.

(12 marks)

B6.
Define the following terms:

a) HTML.

(3 marks)

b) Hypertext.

(3 marks)

c) Hypermedia.

(3 marks)

d) WEB 2.0.

(3 marks)

B7.
With reference to Human Computer Interaction, state the advantages **and** disadvantages of using the following input devices:

a) Keyboard.

(4 marks)

b) Touch screen.

(4 marks)

c) Microphone.

(4 marks)

B8.
A company is considering moving all its computing resources to a cloud provider.

Explain what is meant by a cloud provider and what advantages there are for the company.

(12 marks)

B9.
Big Data can use the following types of information flows. Define what is meant by **each**, giving examples:

a) Unstructured data.

(4 marks)

b) Semi Structured Data.

(4 marks)

c) Structured Data.

(4 marks)

B10.
Explain, using examples, what is meant by the following terms:

a) Strategic data**.**

(4 marks)

b) Operational data.

(4 marks)

c) Tactical data.

(4 marks)

B11.
Using data examples, outline what functions the following database related terms perform:

a) Primary Key.

(3 marks)

b) Foreign Key.

(3 marks)

c) Not nulls.

(3 marks)

d) Check constraints.

(3 marks)

B12.
Using the numbers below, calculate and explain what is meant by the following terms:

1,4,1,4,2,4,5,6,7,6

a) Mode.

(4 marks)

b) Median.

(4 marks)

c) Mean.

(4 marks)

END OF EXAMINATION