

**BCS THE CHARTERED INSTITUTE FOR IT**  
BCS HIGHER EDUCATION QUALIFICATIONS  
BCS Level 4 Certificate in IT

**INFORMATION SYSTEMS**

Wednesday 19<sup>th</sup> April 2023 - 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.

Top Auto is a garage whose primary business is car sales of both new and used cars. Their current system supports day-to-day operations of the garage including car purchasing, selling and test drive bookings.

The cars are available for customers to test drive or purchase. If a customer requires a particular car for a test drive, the booking has to be made in advance. In order to authorise the test drive, the salesman has to check if the particular car is not sold (a car that has already been sold is not available for a test drive). The salesman also has to check if the car is available for the requested time slot and if the customer holds a required driving licence. If the car is authorised for a test drive, the customer is then asked to confirm the booking and then the test drive booking is generated.

- a) Draw a use case diagram to represent the Top Auto test drive booking system.  
(11 marks)
- b) Describe **FIVE** benefits for applying use case modelling at the beginning of object-oriented analysis.  
(10 marks)
- c) Explain the difference between the <<include>> and <<extend>> relationships used in use case modelling.  
(9 marks)

#### A2.

- a) List the **FIVE** main components of the traditional system development life cycle (SDLC), giving a brief description of **each**.  
(15 marks)
- b) It is essential that good information is used in an organisation. List **FIVE** characteristics of good information with a simple example for **each**.  
(10 marks)
- c) Identify **FIVE** factors that can impact and cause change to project development.  
(5 marks)

**A3.**

Good project management is essential for successful systems development.

- a) Identify **FIVE** key responsibilities of an IT project manager. **(5 marks)**
  
- b) Explain what is meant by the IT Project Manager's Eternal Triangle. **(6 marks)**
  
- c) Explain the purpose of Risk Analysis and why it is so important. Support your answer with a relevant example. **(10 marks)**
  
- d) Using a simple example, explain the purpose of **each** of the following terms for a software project:
  - (i) Quality assurance;
  - (ii) Quality planning;
  - (iii) Quality control.**(9 marks)**

**A4.**

With the advances in technology, innovation and change can bring about many advantages for organisations and society but they can also bring misuse and unintended outcomes.

- a) Describe **THREE** issues of misuse that might arise in health systems, providing an example for **each** issue. **(15 marks)**
  
- b) Identify and describe **THREE** disadvantages for using 'Cloud' technology. **(15 marks)**

**[Turn Over]**

**Section B**

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

**B5.**

Define what is meant by the following data-related terms:

- a) Data. **(3 marks)**
- b) Information. **(3 marks)**
- c) Knowledge. **(3 marks)**
- d) Wisdom. **(3 marks)**

**B6.**

- a) List and describe **FOUR** of the elements you would find on a context diagram **and** a data flow diagram. **(8 marks)**
- b) How would you validate that the context diagram and data flow diagram are balanced and consistent with each other? **(4 marks)**

**B7.**

What guidelines would you provide for a developer when building a website in terms of multimedia considerations?

**(12 marks)**

**B8.**

Describe **THREE** different techniques for testing the functionality of a computer application. **(12 marks)**

**B9.**

Discuss what elements would typically make up a project that was built using a RAD (Rapid Application Development) approach.

**(12 marks)**

**B10.**

User IDs and passwords are basic methods of validating user identification.

- a) What additional methods would you recommend to ensure a more secure login process? **(4 marks)**
- b) What process would you recommend to allow a user to reset their password? **(4 marks)**
- c) Why can you **NOT** simply delete a user when they leave an organisation? **(4 marks)**

**B11.**

Describe the type of chart you would use to represent the following, giving your reasons:

- a) Daily takings (money that has been taken for sales in one day). **(4 marks)**
- b) Monthly sales figures. **(4 marks)**
- c) Year-on-year sales comparisons. **(4 marks)**

**B12.**

An Entity Relationship Model is a logical representation of data storage.

Explain how each component is converted into a physical version in a relational database. **(12 marks)**

**END OF EXAMINATION**