BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

WEB APPLICATION DEVELOPMENT

Tuesday 22nd April 2025 - Morning

Answer <u>any</u> FOUR questions out of SIX. All questions carry equal marks.

Time: TWO hours

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 Section A questions in Answer Book A

A1.

a) Discuss why Model View Controller (MVC) architecture is popular when developing web applications.

(15 marks)

b) A website is designed to allow customers to buy outdoor clothes and equipment for hiking. This website uses both push and pull architecture.

Discuss the use of push and pull architecture in helping users to complete their desired goals when accessing the website. Use examples of **each** when accessing the hiking website within your discussion.

(10 marks)

A2.

a) A software development team is made up of many roles.

Discuss the differences between a front-end and back-end developer and how they combine to work together to create a website.

(10 marks)

b) Demonstrate why a user experience designer is important when developing a website.

(5 marks)

c) Write a job brief for a Database Developers role in a web environment.

(10 marks)

A3.

This is a user story for a favourite books feature within a library website:

"As a student member of BooksForU, I want to be able to save my favourite books from a search list and categorise them within a category of my own choosing (i.e. favourite Author/Web Application Unit/Present list). I would also like to rate the book and leave a note for myself." NOTE: the creation of the search list is not part of the acceptance criteria/tests.

a) Using the case study as an example, select a unit test and assess how the following stages within Test Driven Development helps to refine code and to meet the features requirements:

- Write Test
- Test Fails
- Write Code
- Test Passes
- Refactor

(10 marks)

b) Write **five** Acceptance criteria/test cases for the favourite books feature user story in the case study.

(10 marks)

c) Behaviour driven development can be seen as an extension of test-driven development. Compare and contrast behaviour driven and test-driven development and demonstrate this with a simple example using the case study on the favourite books feature.

(5 marks)

[Turn Over]

B4.

a) Explain the use of pre- and post-conditions and assess **three** situations where they are appropriate to use in web applications, with an example of each.

(10 marks)

b) Compare microservices and service-oriented architectures and give an example of when you would use each.

(15 marks)

B5.

a) Explain the role of content delivery networks, giving **four** examples of their use.

(15 marks)

b) Describe the function and give an example of the use for each of the following jQuery actions:

- Chaining
- Get Content

(10 marks)

B6.

a) What is GDPR and why is it important for data controllers?

(10 marks)

b) Discuss **five** of the obligations that GDPR places on data providers.

(15 marks)

END OF EXAMINATON