

BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

WEB APPLICATION DEVELOPMENT

Thursday 20th April 2023 - Morning

Answer **any** FOUR questions out of SIX. All questions carry equal marks.
Time: TWO hours

Answer any Section A questions you attempt in Answer Book A
Answer any Section B questions you attempt in Answer Book B

For all questions, illustrate your answers with diagrams where appropriate.

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.

When leading a team to develop a website for an energy company, the leader of the web development team needs to consider a number of issues.

a) Describe the following tools that can be used for ensuring that appropriate tests are carried out:

- i) Cucumber;
- ii) JIRA;
- iii) Bugzilla;
- iv) JMeter;
- v) Trello.

(10 marks)

b) Discuss test-driven development and behaviour-driven development, including their advantages and disadvantages.

(10 marks)

c) List **FIVE** potential test methods that can be used to identify errors at various stages.

(5 marks)

A2.

a) Draw the diagram of the double diamond model in the web development.

(5 marks)

b) Describe **FIVE** project stages based on the double diamond model.

(5 marks)

c) Discuss **TWO** important agile software development platforms and provide examples of how they can be applied.

(15 marks)

A3.

a) Give **FIVE** common problems unique to web application design for server-side code.

(15 marks)

b)

i) Give the definition of web analytics.

(6 marks)

ii) List **FOUR** common web analytics tools.

(4 marks)

Section B
Answer Section B questions in Answer Book B

B4.

a) Discuss the difference between eventual and strong consistency in the context of web applications.

(4 marks)

b) Give **FOUR** examples of how web designers can use each to provide the most effective experience to end users.

(10 marks)

c) Give **TWO** examples of where you would use **each** technique and discuss how it would improve the user experience.

(11 marks)

B5.

a) What is JSON and how is it used?

(4 marks)

b) Discuss how YAML differs from JSON.

(6 marks)

c) Assess how Apache THRIFT is used to communicate between micro services.

What other services could be used and what are their advantages and disadvantages?

(15 marks)

B6.

a) Explain the difference between open source and proprietary software.

(4 marks)

b) Discuss the advantages and disadvantages of **each** with respect to the development of web applications.

(6 marks)

c) Assess when it would be most appropriate to use proprietary software rather than open source when developing web applications. Give examples of widely used products to illustrate your case.

(15 marks)

END OF EXAMINATION