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.
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)

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)