BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

WEB APPLICATION DEVELOPMENT

Thursday 6th October 2022 - 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

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) Describe the following types of web analytics:

   i). Click analytics

   ii). Page tagging

   iii). Logfile analysis

   iv). Customer lifecycle analytics

   v). Off-site web analytics.

(10 marks)

b) When using the Hypermedia as the Engine of Application State (HATEOAS) method to develop back-end technologies, discuss the:

   i). Advantages   **(5 marks)**

   ii). Disadvantages   **(5 marks)**

c) List **FIVE** potential issues that may occur when a web application has a large volume of network traffic.

(5 marks)

A2.

a) Discuss the potential uses for property-based testing.

(5 marks)

b) Describe the relationship between cross-functional testing and end-to-end testing.

(5 marks)

c) Discuss the importance of using Jira to manage a web application team with more than 20 members.

(15 marks)

A3.

    a) Describe **FIVE** main aspects of version control.

                                                (10 marks)

    b) Outline **FIVE** potential advantages of version control tools using a version control tool of your choice.

                                                (10 marks)

    c) Write the complete workflow of the 'commit-pull-push' mantra.

                                                  (5 marks)

Section B
Answer Section B questions in Answer Book B

B4.

a) Describe the Brewer's (CAP) Theorem, naming the **THREE** guarantees specified in the theorem **and** discuss its importance with respect to web applications?

(8 marks)

b) Describe each of the **THREE** guarantees for distributed systems that are specified by Brewer's Theorem.

(6 marks)

c) Evaluate to what extent all three can be achieved in practical web applications. Give examples to illustrate your answer.

(11 marks)

B5.

a) Describe **THREE** principal characteristics of a Graph Database.

(6 marks)

b) Assess **THREE** key advantages of using a Graph Database in a web application over other available storage systems.

(9 marks)

c) Outline a web application that demonstrates the advantages of deploying a graph database.

(10 marks)

B6.

a) What are cookies?

(5 marks)

b) Discuss how cookies are used in web applications.

(10 marks)

c) Explain the security implications of using cookies and how they can be addressed by the application builder.

(10 marks)

End of Examination