BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

Software Engineering

Friday 13th November 2020 – Afternoon

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.

The assessment of software quality is a subjective process where the quality management team has to use their judgment to decide if an acceptable level of quality has been achieved.

a) Give **THREE** examples of questions related to a system's quality characteristics you would ask as a member of the quality management team to determine whether or not the software is fit for its intended purpose.

(6 marks)

b) Software quality is not just about whether the software functionality has been correctly implemented, but also depends on the software quality attributes for example dependability, usability, efficiency and maintainability. List another **SIX** quality attributes.

(6 marks)

c) It is **NOT** possible for any system to be optimised for all quality attributes. Select **TWO** quality attributes and explain what factors may have to be sacrificed when these quality attributes are improved.

(4 marks)

d) Commercial pressure for an early product release will affect product quality.

i) State **THREE** quality attributes you might pay less attention to in these circumstances.

(3 marks)

ii) When less attention is paid to **EACH** of your quality attributes stated above, identify **TWO** characteristics of the final product that may be affected as a result.

(6 marks)

A2.

a) Discuss what is meant by Corrective, Adaptive and Perfective maintenance.

(9 marks)

b) Discuss the reasons why software systems require maintenance.

(9 marks)

c) Discuss why software systems typically become more difficult to maintain over time.

(7 marks)

A3.

a) As part of an incremental testing strategy, integration testing (often referred to as 'smoke testing') is used. Explain the particular benefits in using integration testing for complex or time-critical software development projects.

(8 marks)

b) End user testing of a software product that is intended to be used by a large variety of customers can be tested using a range of testing techniques. Explain any **TWO** techniques that you might use.

(10 marks)

c) Describe any **TWO** ways in which you might test a program's response to an unexpected or abnormal input.

(7 marks)

[Turn Over]

Section B
Answer Section B questions in Answer Book B

B4.

a) When planning to adopt a Reuse-based software development project there are several key factors which should be considered. Explain any **THREE** of these factors.
(12 marks)

b) Using a commercial-off-the-shelf (COTS) package is an example of software application system reuse.

i) List **THREE** benefits of using a COTS package.

ii) List **THREE** disadvantages of using a COTS package.
(6 marks)

c) Describe **TWO** important problems encountered when attempting to integrate a COTS package with other packages and systems.
(7 marks)

B5.

a) Describe any **FOUR** types of risk that might be identified in a software project checklist.
(12 marks)

b) Outline the difference between an avoidance strategy and a minimisation strategy in project risk management.
(8 marks)

c) Describe any **TWO** business risks that might be identified in a software development project.
(5 marks)

B6.

a) Describe each of the **FIVE** stages of the waterfall model.
(10 marks)

b) Explain the possible advantages and disadvantages in using an incremental approach to project delivery.
(9 marks)

c) Explain the possible benefits and problems of using prototypes in a software development project.
(6 marks)

End of Examination