BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 6 Professional Graduate Diploma in IT

SYSTEM DESIGN METHODS

Tuesday 26th April 2022 – Afternoon

Answer **any** THREE questions out of FIVE. All questions carry equal marks.

Time: THREE 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 B
Answer Section B questions in Answer Book B

B4.

a) If a new systems design method was adopted by an organisation, how could the effectiveness and the efficiency of the new systems design method be compared to the previous existing systems design method used by the organisation?

(10 marks)

b) Compare and contrast **THREE** different approaches to training IT staff in the use of a new systems design method.

(15 marks)

B5.

a) Outline the types of software tools that could be used to support systems development activities, explaining the potential benefits that they could provide.

(12 marks)

b) Give **TWO** reasons for comparing and evaluating systems design methods.

(4 marks)

c) NIMSAD (Normative Information Model-based Systems Analysis and Design) is a well-known framework for comparing and evaluating systems design methods.

NIMSAD recommends that evaluation of a method should involve evaluation of the Method Context (the problem situation), the Method User (the intended problem solver), and the Method itself (the problem-solving process).

Why is the evaluation of **all** three aspects necessary?

(3 marks)

d) Give **THREE** criteria that may be used to evaluate the Method User (i.e. the intended problem solver).

(6 marks)

End of Examination

Section A
Answer Section A questions in Answer Book A

A1.

a) What is the purpose of a class diagram?

(5 marks)

b) What is the purpose of a use case diagram?

(5 marks)

c) How does an activity diagram support the design of the detailed functionality of a system?

(5 marks)

d) Sequence diagrams model interactions and can be drawn at different levels of detail. Therefore, they serve different purposes. Identify at least **THREE** different purposes of sequence diagrams in systems development.

(5 marks)

e) How does a sequence diagram support the design of the detailed functionality of a system?

(5 marks)

A2.

a) An organisation wishes to develop a management information system that will store all the organisation's data in a data warehouse and provide various reporting functions that will display information in a highly visual manner via graphs and charts.

Discuss which structured design and human computer interface design techniques could be used for the following aspects of the management information system:

i) The data to be stored in the data warehouse

(5 marks)

ii) The reporting functions

(5 marks)

iii) The user interface.

(5 marks)

b) Component Based Systems Development (CBSD) methods place a lot of emphasis on component reuse when developing a new system and on developing ('fabrication') of new reusable components. Identify the main stages which should be provided by a typical CBSD method.

(10 marks)

A3.

a) Discuss the type of IT projects for which agile systems design methods would be appropriate.

(10 marks)

b) Discuss the type of IT projects for which agile systems design methods would be inappropriate.

(5 marks)

c) Provide a brief outline of DSDM (Dynamic Systems Development Method).

(10 marks)

[Turn Over]