BCS THE CHARTERED INSTITUTE FOR IT
BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

SMART SYSTEMS

Thursday 21st April 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.
A1.

Artificial Intelligence (AI) is the science domain concerned with the development of systems that exhibit characteristics associated with intelligence in human behaviour.

a) There are two levels of duplication in AI. Identify and describe the TWO levels, using examples to illustrate your answer.

b) Identify and briefly describe FIVE aspects of human intelligence that might be used to characterise intelligent knowledge-based systems.

A2.

Machine Learning (ML) and Data Mining (DM), play a major role in Smart Systems development.

a) Explain the fundamental difference between Machine Learning and Data Mining.

b) Define the purpose of Big Data.

c) Using TWO relevant examples, explain how Machine Learning is useful in Smart applications for health care.

A3.

Cyber Physical Systems (CPS) are being increasingly used in the development of Smart Systems.

a) Give a definition for Cyber Physical Systems.

b) The security in Cyber Physical Systems is generally classified into two areas:
   
   1. Information (data) security
   2. Control security

   Define and discuss the purpose of these two areas of security.

   c) Identify and briefly discuss TWO examples of cybersecurity challenges in Smart Systems; illustrate your answer with relevant examples.