

BCS THE CHARTERED INSTITUTE FOR IT

BCS HIGHER EDUCATION QUALIFICATIONS
BCS Level 5 Diploma in IT

SMART SYSTEMS

Thursday 6th October 2022 - 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.

Artificial Intelligence (AI) technologies are already present throughout our lives.

- a) Give a definition of AI and identify and describe the **TWO** different levels of AI. Use relevant examples to illustrate your answer. **(12 marks)**
- b) Give a definition for Neural Networks and using **TWO** relevant examples, discuss their purpose. **(13 marks)**

A2.

Cyber Physical Systems (CPS), form the basis for emerging and future smart services.

- a) Define the term Cyber Physical Systems. **(8 marks)**
- b) Identify and describe **FOUR** main features of Cyber Physical Systems. **(17 marks)**

A3.

There are a number of enabling technologies used in the development of smart systems.

- a) Identify and describe **THREE** enabling technologies used in the development of smart systems. **(15 marks)**
- b) Smart Manufacturing is becoming increasingly popular. Identify and discuss the purpose of **TWO** Smart Manufacturing Characteristics. **(10 marks)**

Section B
Answer Section B questions in Answer Book B

B4.

Data Mining has become an essential part of business and industry.

- a) Give a definition of Data Mining and explain how it functions. **(10 marks)**
- b) Describe the term 'Smart Data'. **(5 marks)**
- c) Define Data Analytics and explain its purpose. **(10 marks)**

B5.

With the increasing use of Cyber Physical Systems, there are a number of challenges that come with it.

- a) Using relevant examples, discuss **THREE** main issues with Cyber Physical Systems. **(15 marks)**
- b) Define and explain what is meant by Cyber Security Risk Management. **(10 marks)**

B6.

- a) There are a number of challenges with the use of smart applications. Identify and discuss **TWO** areas of smart systems applications and the challenges they might face. Support your answer with relevant examples. **(10 marks)**
- b) Cloud technology is one of the enabling technologies for the development of smart systems, however, it brings advantages and also many disadvantages. Discuss **THREE** disadvantages of cloud technology. Support your answer with relevant examples. **(15 marks)**

End of Examination