

**BCS THE CHARTERED INSTITUTE FOR IT**

BCS HIGHER EDUCATION QUALIFICATIONS  
BCS Level 5 Diploma in IT

**SMART SYSTEMS**

Monday 7<sup>th</sup> October 2024 – 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.**

- a) Define what is meant by the following terms and support your answer with **three** examples for **each**.
- i. Smart services.
  - ii. Smart manufacturing.
- (10 marks)**
- b) Artificial intelligence (AI) contributes to the adaptability, efficiency, and capabilities of smart systems in a variety of domains. Describe the influence of AI in **five** domains or applications in which smart systems can be used.
- (15 marks)**

**A2.**

- a) Define cloud computing and discuss its roles in smart systems. Illustrate your answer with **four** examples.
- (15 marks)**
- b) What is the purpose of distributed systems and list examples of its vital role in **five** applications.
- (10 marks)**

**A3.**

- a) Define pervasive computing and explain **three** of its benefits for smart systems.
- (12 marks)**
- b) Define what is meant by;
- i. A sensor.
  - ii. An actuator.
- Compare and contrast sensors and actuators. Illustrate your answer with examples.
- (13 marks)**

**Section B**  
**Answer Section B questions in Answer Book B**

**B4.**

A recent homeowner chose to enhance his residence by transitioning to a smart home setup and incorporating intelligent devices.

- a) Define what is meant by smart home.
- (3 marks)**
- b) Describe **five** examples of smart appliance devices.
- (10 marks)**
- c) Give details of **four** advantages and disadvantages of smart home.
- (12 marks)**

**B5.**

- a) There are a number of issues that confront organisations when using operational technology. Describe **five** challenges that organisations need to address when using operational technology.
- (15 marks)**
- b) Explain mobile computing and describe **five** of its features.
- (10 marks)**

**B6.**

- a) Discuss Near-Field communication (NFC) and Radio-Frequency Identification (RFID) along with their usages. Illustrate the answer with **five** examples for **each** technology.
- (20 marks)**
- b) Describe **five** ethical challenges related to smart health applications.
- (5 marks)**

**END OF EXAMINATION**