



CBCS SCHEME

17CS81

Eighth Semester B.E. Degree Examination, Jan./Feb. 2023 Internet of Things Applications

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Define IoT. With a neat diagram discuss the genesis of IoT in detail. (05 Marks)
- b. Discuss the different challenges of IoT. (05 Marks)
- c. Explain the One M2M IoT architecture with a neat diagram. (10 Marks)

OR

- 2 a. Describe the IoTWF standardized architecture in detail with a diagram. (10 Marks)
- b. Explain the concept of IoT Data management and Compute Stack with Fog Computing using relevant diagrams. (05 Marks)
- c. List out the defining characteristics of Fog Computing. (05 Marks)

Module-2

- 3 a. With a neat diagram explain how the actuators and sensors interact with the physical world. Classify the actuators based on energy types. (08 Marks)
- b. Explain the physical layer frame format, MAC layer frame format and security implementation in IEEE 802.15.4 technology. (12 Marks)

OR

- 4 a. Briefly discuss the various communication criteria. (06 Marks)
- b. Explain LoRaWAN architecture and MAC layer frame format with neat diagrams. (10 Marks)
- c. Explain briefly the 4 defining characteristics of smart objects. (04 Marks)

Module-3

- 5 a. Explain in detail the key advantages of IP. (08 Marks)
- b. Explain the following with respect to 6LoWPAN technology:
 - i) Header Stacks
 - ii) Header Compression
 - iii) Fragmentation
 - iv) Mesh Addressing(12 Marks)

OR

- 6 a. Explain MQTT framework and message format with neat diagrams. (08 Marks)
- b. Explain in detail CoAP communication in IoT infrastructure, CoAP message frame format and a suitable example to demonstrate reliable transmission with relevant diagrams. (12 Marks)

Module-4

- 7 a. Explain in detail the core functions of Edge streaming analytics with neat diagrams. (08 Marks)
- b. Describe the different types of data analysis results with a neat diagram. (06 Marks)
- c. Explain Lambda architecture with a neat diagram. (06 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

OR

- 8 a. Explain in detail the Purdue Model for Control Hierarchy and OT Network characteristics with a neat diagram. (10 Marks)
- b. Discuss OCTAVE and FAIR formal risk Analysis structures with neat diagrams. (10 Marks)

Module-5

- 9 a. Explain the different of pin parts of Arduino UNO board with a diagram. (06 Marks)
- b. Explain Smart City Parking Architecture with a neat diagram. (08 Marks)
- c. Explain the structure of an Arduino program. (06 Marks)

OR

- 10 a. Write a program to blink an LED using Raspberry Pi. (08 Marks)
- b. Explain Smart City IoT Architecture with a neat diagram. (12 Marks)
