

# CBCS SCHEME

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17CS81

## Eighth Semester B.E. Degree Examination, June/July 2023 Internet of Things and Applications

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. What is IOT? Explain in detail on genesis of IOT. (10 Marks)
- b. List and explain some of the differences between IT and OT Networks and their various challenges. (06 Marks)
- c. Illustrate the hierarchy of edge, fog and cloud, with neat diagram. (04 Marks)

OR

- 2 a. With a neat diagram, explain the one M2M IoT standardized architecture. (10 Marks)
- b. List and explain a few of the most significant challenges and problems that IoT is currently facing. (05 Marks)
- c. Explain Core IoT functional stack. (05 Marks)

### Module-2

- 3 a. Briefly explain the number of ways to group and clusters sensors into different categories. (07 Marks)
- b. How Sensors and Acutators interact with the Physical World? (05 Marks)
- c. Write short note on High Level Zigbee and Zigbee IP Protocol Stack. (08 Marks)

OR

- 4 a. Explain IoT Access Technologies. (07 Marks)
- b. Write a short note on Data Aggregation in Wireless Sensor Networks. (07 Marks)
- c. Briefly explain Protocol Stack utilization 802.15.4. (06 Marks)

### Module-3

- 5 a. Explain with example, the role of MQTT Protocol in IoT. (08 Marks)
- b. Discuss Tunnelling Legacy SCADA over IP network. (08 Marks)
- c. Compare COAP and MQTT with some factors. (04 Marks)

OR

- 6 a. Why Optimization is necessary of Internet Protocol? (08 Marks)
- b. Describe with neat diagram, the header stack of 6LOWPAN. (07 Marks)
- c. Discuss IoT application Protocols and their Transport methods. (05 Marks)

### Module-4

- 7 a. What do you mean by data and analytics for IoT? Explain. (05 Marks)
- b. Explain Big Data Analytics tools. (10 Marks)
- c. Machine learning is indeed control to IoT. Justify. (05 Marks)

OR

- 8 a. Explain Formal Risk Analysis Structure. (10 Marks)
- b. What is IoT data analytics and their challenges? (10 Marks)

**Module-5**

- 9 a. What is Arduino? Explore Arduino UNO learning board. (06 Marks)  
b. Write a simple Python Programs on Raspberry Pi :  
i) To add 2 numbers ii) To Print Fibonacci series upto n. (08 Marks)  
c. Explain in detail Smart City IoT Architecture. (06 Marks)
- OR**
- 10 a. What is Raspberry Pi? Explore the Raspberry Pi learning board with circuit diagram. (07 Marks)  
b. Explain the following with respect to Arduino Programming :  
i) Structure ii) Functions iii) Variables  
iv) Flow Control Statements v) Data type vi) Constants. (08 Marks)  
c. Write a short note on :  
i) IoT Challenges ii) Backhaul technologies. (05 Marks)

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