

# CBCS SCHEME

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18CS81

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

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? Discuss the evolutionary phases of the internet with neat diagram. (06 Marks)
- b. List the difference between Operation Technology (OT) and Information Technology (IT) with their challenges. (06 Marks)
- c. Explain the M2M IoT Architecture with neat diagram. (08 Marks)

OR

- 2 a. Discuss the significant challenges and problems facing by IoT. (05 Marks)
- b. With neat diagram explain the simplified IoT architecture. (08 Marks)
- c. Describe the Fog layer in the IoT data management and computer stack with neat diagram and Fog computing characteristics. (07 Marks)

### Module-2

- 3 a. Define sensors. List the different categories of the sensors. (05 Marks)
- b. Describe the different sensor types with an example. (Consider any 8 sensor type). (08 Marks)
- c. What is actuator and smart object? Explain the different characteristics of smart object. (07 Marks)

OR

- 4 a. With neat diagram explain ZigBee IP protocol stack. (10 Marks)
- b. Define LoRaWAN. Explain LoRaWAN layers with neat diagram. (10 Marks)

### Module-3

- 5 a. Explain any six key advantages of the IP suite for IoT. (06 Marks)
- b. With neat diagram explain 6 LoWPAN with and without header compression. (08 Marks)
- c. Define RPL and list the different RPL routing metrics and constraints of RFC 6551. (06 Marks)

OR

- 6 a. Describe CoAP message format with neat diagram. (08 Marks)
- b. Explain MQTT message format and its types with neat diagram. (08 Marks)
- c. Explain IoT – Data Broker with an example. (04 Marks)

### Module-4

- 7 a. Explain in detail how the IoT data is categorized. (06 Marks)
- b. With neat diagram explain the edge analytics processing unit with its functions. (08 Marks)
- c. Explain MPP Databases with its architecture. (06 Marks)

OR

- 8 a. Explain the Lambda architecture with neat diagram. (08 Marks)  
b. With neat diagram explain the OCTAVE risk assessment frameworks. (08 Marks)  
c. List the advantages of FNF. (04 Marks)

**Module-5**

- 9 a. Write an Arduino program to implement the traffic light simulation for pedestrians. (08 Marks)  
b. With neat diagram explain the parts of Raspberry Pi board. (08 Marks)  
c. Write a Raspberry Pi program to implement blinking an LED. (04 Marks)

OR

- 10 a. Explain in detail IoT smart parking architecture. (08 Marks)  
b. With neat diagram explain the role of the cloud for smart city applications. (10 Marks)  
c. Write a short note on Arduino. (02 Marks)

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