

# CBCS SCHEME

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18CS81

## Eighth Semester B.E. Degree Examination, July/August 2022 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 Internet of Things (IoT)? Explain Genesis of IoT, with a neat diagram. (08 Marks)
- b. Compare IT and OT Networks with different criterion. (08 Marks)
- c. Explain different challenges faced by IoT. (04 Marks)

**OR**

- 2 a. Explain One M2M IoT Standardized Architecture, with a neat diagram. (10 Marks)
- b. What is a Fog Node? Explain characteristics of Fog Computing Model. (05 Marks)
- c. Illustrate various access technologies with respect to distances in core IoT functional stack. (05 Marks)

### Module-2

- 3 a. Explain any 5 ways to group sensors into different categories. (05 Marks)
- b. List any two advantages of Wireless based solution. Illustrate with a neat diagram, the interaction of Sensors and Actuators, with the Physical World. (07 Marks)
- c. What is a Smart Object? Explain its characteristics. (08 Marks)

**OR**

- 4 a. Explain the following key factors involved in connecting smart objects to the network :  
i) Range ii) Frequency bands. (10 Marks)
- b. Explain IEEE 802.15.4 IoT Access technology. (10 Marks)

### Module-3

- 5 a. Explain the key advantages of IP suite for IoT. (05 Marks)
- b. Explain 6 LOWPAN Protocol Header Compression and Fragmentation, with a neat diagram. (08 Marks)
- c. Illustrate Routing Protocol for Low Power and Lossy Networks (RPL), with a neat diagram. (07 Marks)

**OR**

- 6 a. Explain the message format of the following protocols with a neat diagram :  
i) Constrained Application Protocol (CoAP).  
ii) Message Queuing Telemetry Transport (MQTT). (10 Marks)
- b. Describe the Scheduling Management Mechanisms and forwarding Models and Supported by 6 TiSCH. (10 Marks)

### Module-4

- 7 a. Explain different types of Data Analysis results with example. (08 Marks)
- b. Distinguish between Supervised and Unsupervised Machine Learning. (05 Marks)
- c. Explain Elements of Hadoop, with a neat diagram. (07 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. What is Apache Spark? Explain layers in Lambda Architecture, with a neat diagram. (10 Marks)  
b. Explain OCTAVE Allegro steps and phases, with a neat diagram. (10 Marks)

**Module-5**

- 9 a. Explain the following with respect to Arduino Programming :  
i) Structures ii) Functions iii) Variables iv) Flow control statements  
v) Data type with example. (10 Marks)  
b. Explain the steps to install operating system in the SD card of Raspberry Pi. Write a Python program to blink on LED. (10 Marks)

**OR**

- 10 a. Explain Key Verticals targeted in Smart Cities, with a neat diagram. (10 Marks)  
b. Explain Smart City IoT Architecture, with a neat diagram. (10 Marks)

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