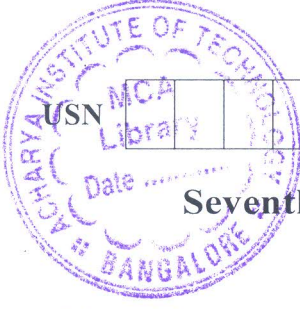


# CBCS SCHEME



USN

18EC741

## Seventh Semester B.E. Degree Examination, June/July 2023 IOT and Wireless Sensor Networks

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Explain IBM IOT conceptual framework with equation. (10 Marks)  
b. Explain Co-ap SMS and CO-ap MQ used in message communication. (10 Marks)

OR

- 2 a. Explain modified OSI model with protocols used in each layer. (06Marks)  
b. Explain the functions of data management and consolidation gateway. (08 Marks)  
c. Explain the features of MQTT protocol. (06Marks)

### Module-2

- 3 a. Explain the IPV<sub>4</sub> header format. (06 Marks)  
b. Explain four cloud service models. (06 Marks)  
c. With neat diagram, explain the features of 6LOWPAN adaptation layer protocol for IEEE802.15.4 for network device. (08 Marks)

OR

- 4 a. Explain four layer data stack generated during Internet communication. (08 Marks)  
b. Explain the features of IPV6. (04 Marks)  
c. Explain the features of HTTP protocol. (08 Marks)

### Module-3

- 5 a. Explain five levels of software development for the applications and service in IOT. (07Marks)  
b. Discuss about programming Embedded. Device Arduino platform using IDE. (07 Marks)  
c. Define Vulnerability and mention top ten vulnerabilities in IOT identified by OWASP. (06 Marks)

OR

- 6 a. Write a Arduino program to control the traffic light. (06 Marks)  
b. Explain IOT security Tomography and layered attack model. (06 Marks)  
c. What are the security requirements in IOT architecture and threat analysis using Microsoft threat model. (08 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.

**Module-4**

- 7 a. Explain the hardware components of single node architecture. (06 Marks)  
b. Explain the energy consumed in sensor node fan operation states with different power consumption. (06 Marks)  
c. Explain the optimization goal and figure of merit in WSN. (08 Marks)

**OR**

- 8 a. What are the desired characteristics to overcome the challenges in WS wire Sensor network? (08 Marks)  
b. What are the different types of mobility in WSN? (06 Marks)  
c. Explain the transceiver modules used in single node architecture. (06 Marks)

**Module-5**

- 9 a. Explain SMAC protocol. (10 Marks)  
b. With neat schematic diagram, explain CSMA protocol. (10 Marks)

**OR**

- 10 a. Explain low duty cycle and wake up concepts in WSN. (06 Marks)  
b. Explain LEACH protocol. (07 Marks)  
c. Explain any two considerations in energy efficient unicast routing with example. (07 Marks)

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