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17CS81

## Eighth Semester B.E. Degree Examination, June/July 2024 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. Explain the different challenges that IOT is currently facing. (05 Marks)
- b. Explain the impact of IOT on connected Roadways and how it helps to address the current challenges in transportation. (08 Marks)
- c. Compare Operational Technology (OT) and Information Technology (IT). (07 Marks)

OR

- 2 a. Explain with a neat diagram, one M2M IOT standardized architecture. (10 Marks)
- b. Explain IOT data management and compute stack in detail. (10 Marks)

### Module-2

- 3 a. Explain the different types of sensors with their functions along with examples. (08 Marks)
- b. What are smart objects? Explain the characteristics of smart objects. (05 Marks)
- c. What is SANET? Mention some advantages and disadvantages that a wireless based solution offers. (07 Marks)

OR

- 4 a. Discuss about the different communication criterias for connecting the smart objects. (10 Marks)
- b. Explain with a neat diagram IEEE 802.15.4 PHY and MAC frame format with the fields. (10 Marks)

### Module-3

- 5 a. With a neat diagram, explain 6LoWPAN protocol header compression and fragmentation. (10 Marks)
- b. List and explain the key advantages of Internet Protocol. (06 Marks)
- c. Name the schedule management mechanisms of 6TiSCH architecture. (04 Marks)

OR

- 6 a. Discuss different raw socket scenarios for tunneling Legacy SCADA over IP networks. (10 Marks)
- b. Give a comparison between COAP and MQTT. (05 Marks)
- c. Explain the different fields of COAP message form with diagram. (05 Marks)

### Module-4

- 7 a. Explain the different stages and functions of streaming analytics at the edge. (10 Marks)
- b. With a neat diagram, explain Lambda architecture. (06 Marks)
- c. Give a comparison between structured data and Unstructured data. (04 Marks)

OR

- 8 a. Explain the different steps and phases of OCTAVE Allegro risk assessment framework. (10 Marks)
- b. What are the common challenges in OT security? Explain briefly. (10 Marks)

**Module-5**

- 9 a. What is Arduino? What are the advantages of Arduino? (05 Marks)
- b. Explain the different parts of Arduino UNO learning Board. (08 Marks)
- c. Write a python program to record the temperature using DS18B22 temperature sensor and RaspberryPi board. (07 Marks)

OR

- 10 a. Explain the different layers of smart city layered architecture. (10 Marks)
- b. Explain smart connected street lighting architecture and mention its advantages. (10 Marks)

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