B.Tech Even Semester Examination, May, 2025

Computer Science & Engineering

(8th Semester)

Course No: CSE-801(7)

(Internet of Things)

Full Marks: 50
Pass Marks: 25
Time: 2 hours

Note:

1. Attempt any five questions.
2. Begin each answer in a new page
3. Answer parts of a question at a place
4. Assume reasonable data wherever required
5. The figure in the right margin indicates full marks for the question
6. All the mathematical symbols and abbreviations have their usual meanings.

1. Define sensor and actuator. Mention the sensors used in cell phones with their functions. Mention advantages, disadvantages and applications of hydraulic and pneumatic actuators. 1+3+6

2. (a) Mention the components of a smart city. State and explain the IoT applications in landslide and industrial disaster management. 2+4

   (b) What is CoAP? Why CoAP is over CoRE& not REST? Mention the different types of messages used in CoAP. 1+2+1

3. (a) Give an overview of 6LoWPAN.Mention the functions of Adaptation layer of 6LoWPAN 3+3

(b) What is edge computing? Distinguish between fog computing and cloud computing. 1+3

4. (a) List the IoT vulnerabilities identified by OWASP. 3

(b) What is a Raspberry Pi? What are the components of a Raspberry Pi board? 1+2

(c) Mention the different short range and long range communication protocols used in IoT. What are the different key aspects to consider a communication protocol for any specific IoT environment? 2+2

5. (a) Draw the IoT Architecture Reference Model(ARM). Discuss the functional view design for 'Red Thread' example with neat diagram. 2+4

(b) What is an infrared sensor? What are its applications? What are its types? 1+2+1

6. (a) Discuss MQTT Publish/Subscribe Framework. What are the applications of SMQTT and MQTT-SN? 4+2

(b) What are Shape memory polymer (SMP) and Light activated polymers(LAP)? What are their applications? 2+2

7. (a) Compare between Arduino Uno and Raspberry Pi. Mention the features of Raspberry Pi OS. 3+4

(b) Briefly explain the different applications of IoT in Internet of Vehicles(IoV). 3

8. (a) Mention the different attacks that could be mounted on different layers of IoT. Also state their countermeasures. 1+4

(b) Explain the components of XMPP architecture. Compare XMPP and SIMPLE. 3+2

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