Ex/ET/PE/B/T/424/N/2024

B.E. ELECTRONICS AND TELE-COMMUNICATION ENGINEERING

FOURTH YEAR SECOND SEMESTER - 2024

INTRODUCTION TO INTERNET OF THINGS (IOT)

Time: Three Hours Full Marks: 100

Answer all the questions and write down all the sub-parts of a question altogether

1. a) What is meant by connectionless service? How is connectionless service different from connection-oriented service? What is tunneling? What is multi-homing in IoT networks? 5+5+5+5 = 20 (CO1)

Or

b) What is a digital signature? Discuss IPSec. Describe the CPS paradigm. How is CPS different from WSN? 5+5+4+6 = 20 (CO1)

2. a) What is smart dust? Differentiate between IoT and WoT. Explain the working of MQTT with diagram. 5+6+9 = 20 (CO2)

Or

b) What is CoAP? Describe the working of CoAP. Differentiate between sensors and transducers. What are soft actuators? 5+5+5+5 = 20 (CO2)

3. a) What is Jingle? Explain in detail. What is Pub–Sub? Explain in detail. What is CORE? Explain in detail. 6+7+7 = 20 (CO3)

Or

b) Highlight the pros and cons of on-site and off-site processing. Differentiate between Structured and unstructured data. What is BOSH? Explain in detail.6+6+4+4 = 20 (CO3)

4. a) What is LonTalk? What is an Amazon Machine Image? What is a sensor-cloud? Why do we use sensor-cloud? What are the various types of interoperability encountered in IoT environments? With an example, briefly explain how software-as-a-service is different from platform-as a-service? 2+3+2+3+5+5 = 20 (CO4)

Or

b) Differentiate between semantic and syntactic interoperability. How can fog computing be used in a smart city? (iv) What is the role of the "protocol abstraction layer" of a fog node? What do you mean by community fog node? 6+4+6+4 = 20 (CO4)

5. a) How is cloud-based storage different from regular offsite storage in IoT networks? Design a case study to develop an IoT-based agricultural planter. Design a use case for developing an IoT-based driver sleep detection system. Mention all types of sensors required for developing the same. 6+6+8 = 20 (CO5)

Or

b) Explain two use cases where drones can be used for agricultural IoT. Discuss an idea for developing an IoT-based healthcare system, where we can include fingerprint sensor. How does EnOcean use energy harvesting for its operations? 8+8+4 = 20 (CO5)