17CS81

USN

Eighth Semester B.E. Degree Examination, Dec.2023/Jan.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. Define IoT. Discuss Genesis of IoT. Differentiate between IoT and digitization. **(10 Marks)**
   b. Compare and contrast IT and OT. **(05 Marks)**
   c. Explain the different challenges of IoT. **(05 Marks)**

OR

2 a. Describe IoT World Forum (IoTWF) standardized architecture. **(10 Marks)**
   b. Write a short note on Backhaul Technologies. **(04 Marks)**
   c. Differentiate between edge computing and fog computing. Define the characteristics fog computing. Define the characteristics of fog computing. **(06 Marks)**

Module-2

3 a. Define Sensors and Actuators. With a neat diagram, explain how actuators and sensors interact with physical world. **(10 Marks)**
   b. What is SANET? List its advantages and disadvantages. Explain 'Data Aggregation' in WSNs (Wireless Sensor Networks). **(10 Marks)**

OR

4 a. What is Zigbee? Explain 802.15.4 physical and MAC layer. **(10 Marks)**
   b. Explain LoRaWAN in detail with necessary diagram. **(10 Marks)**

Module-3

5 a. What are the advantages of IP suite for IoT? **(05 Marks)**
   b. Differentiate between Adoption and Adaptation model of IP. **(05 Marks)**
   c. What is 6TiSCH? Explain the schedule management mechanism of 6TiSCH. **(10 Marks)**

OR

6 a. Explain SCADA protocol translation and SCADA Transport over LNs with MAP-T. **(10 Marks)**
   b. Explain in detail COAP message format. **(06 Marks)**
   c. Compare COAP and MQTT. **(04 Marks)**

Module-4

7 a. Explain distributed Hadoop cluster and explain how to write a file to HDFS. **(10 Marks)**
   b. Explain in detail the Edge Analytics core functions with diagram. **(10 Marks)**

OR

8 a. Explain the following protocols :
      i) Modbus   ii) DNP3   iii) ICCP   iv) OPC   v) IEC **(10 Marks)**
   b. Explain the logical framework based on the Purdue model for control hierarchy. **(10 Marks)**

Module-5

9 a. What is Arduino? Briefly explain the Arduino Uno Board. **(10 Marks)**
   b. Describe briefly the System on Chip (SoC). **(05 Marks)**
   c. Write a python program on Raspberry Pi to blink an LED. **(05 Marks)**

OR

10 a. Explain smart city security architecture. **(10 Marks)**
   b. Explain the following use cases (i) Connected Street Lighting   (ii) Smart Parking. **(10 Marks)**

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