CBCS SCHEME

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18EC741

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024
IOT and Wireless Sensor Networks

Time: 3 hrs. Max. Marks: 100

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

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-1

1 a. List the entities behind the IOT technology and give examples in each case. **(10 Marks)**

b. Represent the following:
i) Direct and indirect accesses between CoAP client and CoAP server.
ii) CoAP client access for resource using resource directory.
iii) CoAP client and server access using proxies. **(10 Marks)**

OR

2 a. Represent the following:
i) CoAP request or response communication to a machine, IoT device or MT.
ii) A computer or machine interface using IP communication to a mobile service provider.
iii) A machine or IOT device or MO communication of CoAP request or response communication. **(10 Marks)**

b. Write the equations that represent the simple conceptual framework of IOT and complex conceptual framework for IOT using cloud platform based processes and services. **(10 Marks)**

Module-2

3 a. Illustrate the different classes of internet network and for what reason subnet masks are used? **(10 Marks)**

b. Describe the different classification of cloud service models and give the example in each case. **(10 Marks)**

OR

4 a. Show the details of IP packets received or transmitted at or to network layer. **(10 Marks)**

b. Name two open source platform used in the IOT based data collection, storage and computing. Give the reasons for using these platform. **(10 Marks)**

Module-3

5 a. Write the program for Ardecino controlled traffic light control system in which green light is ON towards East-West in the starting. Three traffic lights-Red, Yellow and Green needs to be controlled on each of the north, east, south and west in clockwise pathways. Assume delays 5s each between successive states of LEDS and steady state for 70s for a pair of pathways. **(12 Marks)**

b. Illustrate the layered attacker model and possible attacks using IETF six layer modified model for IOT/M2M. **(08 Marks)**

OR

6 a. Write the programming of Arduino for usages of RFID serial data reading using UART port. Use port 2 and 5 for serial RX and serial TX. **(12 Marks)**

b. Mention the five levels of software development for application and services for IOT/M2M (no need to draw the block diagram and explanation). **(08 Marks)**

Module-4

7 a. Explain any five required mechanisms in case of wireless sensor network. **(10 Marks)**

b. Illustrate the energy consumption in microcontrollers used in WSN. **(10 Marks)**

OR

8 a. State the difference between microcontrollers versus microprocessor, FPGAS and ASICS. **(10 Marks)**

b. What are the 3 types of mobility in WSN scenario and illustrate. **(10 Marks)**

Module-5

9 a. Compare different modulation schemes available in the design of physical layer and transceiver in WSNs. **(10 Marks)**

b. Explain Perkins model of assignment of MAC address in WSN. **(10 Marks)**

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OR

10 a. Explain the general concept of geographic routing. **(10 Marks)**

b. Illustrate the S-MAC principle used in the low duty cycle protocols and wakeup concept. **(10 Marks)**

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