CBCS SCHEME

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18EC741

Seventh Semester B.E. Degree Examination, Feb./Mar. 2022
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. What is IoT? Explain conceptual framework of IoT with necessary equations and explain the reference model suggested by CISCO. **(08 Marks)**

b. What are three architectural domain functionalities in m2M architecture? Compare IoT with M2M. **(08 Marks)**

c. Explain Constrained Application Protocol (CoAP) for IoT/M2M. **(04 Marks)**

OR

2 a. Explain modified OSI model for the IoT/M2M systems with appropriate figures. **(08 Marks)**

b. Explain Message Queuing Telemetry Transport (MQTT) protocol with Pub/Sub model with proper figures. **(08 Marks)**

c. Write and explain four layer architectural framework developed at CISCO for a smart city. **(04 Marks)**

Module-2

3 a. Explain about cloud service and cloud development models with examples. **(08 Marks)**

b. Explain Internet Protocol version 4 (IPv4) and IP addressing in IoT. **(06 Marks)**

c. Explain HTTPs protocol. **(06 Marks)**

OR

4 a. Explain IoT cloud based data collection, storage and computing services using Nimbits. **(06 Marks)**

b. What is Cloud Computing? Explain the cloud service models with necessary figures. **(08 Marks)**

c. Explain 6LoWPAN with necessary figures. **(06 Marks)**

Module-3

5 a. Explain the importance of security in IoT. Explain briefly the security models used in IoT. **(08 Marks)**

b. Write a short note on IoT Security Tomography and explain layered attacker model. **(08 Marks)**

c. Write a short note on Arduino programming for IoT. **(04 Marks)**

OR

6 a. Explain about the security and threat analysis in IoT/M2M using neat figure. **(08 Marks)**

b. Explain layered attacker model with possible attacks and suggest the steps for mitigating attacks. **(08 Marks)**

c. Explain how data is read from sensors and devices. **(04 Marks)**

Module-4

7 a. Write a short note on operational states of a sensor node with different power consumptions with figure. **(10 Marks)**

b. Write a detailed note on Optimization goals and figure of merit for wireless sensor networks. **(10 Marks)**

OR

8 a. Write a note on embedded operating system suitable for WSN and explain about different programming paradigms. **(10 Marks)**

b. Explain the single node architecture with necessary hardware components. **(10 Marks)**

Module-5

9 a. Explain the crucial points influencing the physical layer of WSN. **(08 Marks)**

b. Explain Mediation Device Protocol with advantages and disadvantages. **(06 Marks)**

c. Explain the CSMA protocol with proper flow diagram. **(06 Marks)**

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OR

10 a. Explain the S-MAC protocol and explain how it handles the major sources of energy inefficiency in WSN. **(08 Marks)**

b. What is geographical routing and explain about Greedy Perimeter Stateless Routing for wireless networks with proper figure. **(08 Marks)**

c. Explain Leach protocol with necessary figure. **(04 Marks)**

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