

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.

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)

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-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)

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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